

KANSAS

FLOODPLAIN MANAGEMENT

TIPS



December 2019

No-Rise Certification

The ancient Greek storyteller, Aesop, told a fable of a thirsty crow that found a half-full pitcher of water. The crow could not reach the water in the pitcher to quench its thirst. The bird gathered pebbles and dropped them, one by one, into the pitcher. The pebbles displaced water and caused the water level in the pitcher to rise. This is the exact same theory behind requiring a no rise certificate in a floodway. Anything you put in the floodway that might displace water during a flood must have an encroachment study to prove it won't cause a rise.

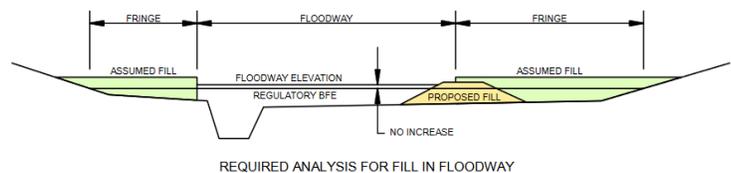
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Any development in a floodway that will cause a rise in the water surface elevation of a flood with a one percent annual chance of happening cannot be permitted. The option exists to file for a Conditional Letter of Map Revision (CLOMR) followed by an as-built Letter of Map Revision (LOMR) to change the flood map. With the change to the map there won't be any rise from what is shown on the map because the new development will match the newly revised map.

CLOMRs and LOMRs are required for any change in Base Flood Elevations (BFEs) and also for:

- Changes in regulatory floodway boundary delineations;
- Properties in alluvial fan areas;
- Cases involving fill being placed in regulatory floodway;
- Channelization projects;
- Bridge/culvert replacement projects;
- Other types of flood control improvements; or
- Changes in coastal high hazard areas.



Above: Most detailed study floodplains contain both floodway and flood fringe areas.

There have been instances when a property owner built a project first and worried about permits second. This is a bad idea because they could end up with a new development that can't meet the requirement of no rise in a floodway. There is the additional problem of not having the required permits from Kansas Department of Agriculture/Division of Water Resources (KDA/DWR). The fee for a KDA/DWR levee or floodplain fill permit doubles if the work has already started. This means that the permit fee would be \$1,000 for work in the floodway. The permit would not be approved if it is then found to have caused a rise.

There have been cases of no-rise encroachment studies that were not done correctly. On two occasions a permit was accompanied by a letter signed by an engineer stating that project **should not** cause a rise. That isn't exactly the same thing as saying the project **will not** cause a rise. No rise certifications without supporting technical documents do not provide enough information for review. Make it clear to permit applicants that a completed encroachment study will be required at start of any proposed project in a floodway.

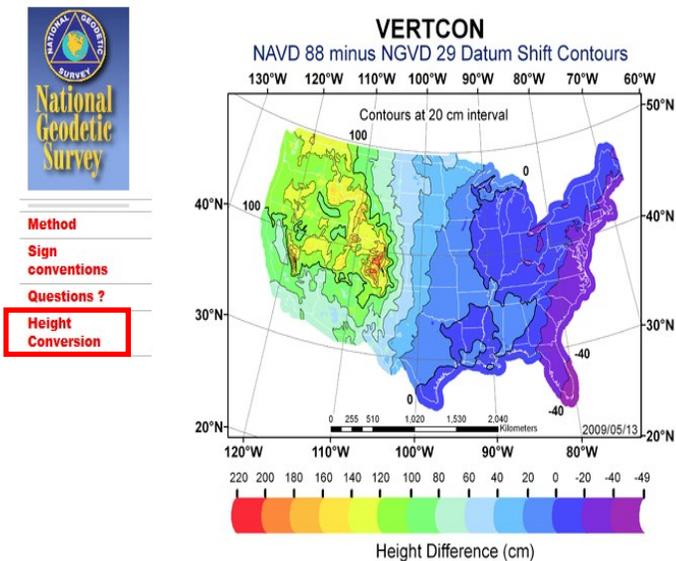
The regulatory floodway is defined as the area that must be preserved so that floodplain development does not increase the 1% annual chance flood elevation more than one foot. Even if you do a thorough job of keeping unpermitted development out of the floodway, it is still possible for BFEs to rise due to development in the flood fringe since no encroachment analysis is required there. This rise is known as "surcharge." To avoid this, you can add a higher standard to your ordinance that lowers the allowable surcharge and increases the area in which a no-rise is required. Some communities have expanded their floodway to the point where only 0.5 feet of surcharge is allowed and a no-rise is required in much of the SFHA.

Estimation of Inundation with Help From VERTCON and the BFE Portal

In December 2015, we published a *Floodplain Management Tips* article on [“Understanding Streamgages.”](#) This has been such a popular article that it is a good topic to revisit with help from new technological tools: National Geodetic Survey (NGS) VERTCON and the KDA-DWR Base Flood Elevation (BFE) Portal. The first step to estimating inundation is to visit <https://water.weather.gov/ahps/> and click on the streamgage of interest. Scroll down the page until you see the “About This Location” chart. If the “Elevation (gauge height = 0)” number is in National Geodetic Vertical Datum (NGVD) 1929 you’ll likely need to convert to North American Vertical Datum (NAVD) 88 using VERTCON. Datums are abstract coordinate systems

About This Location Collapse			
Latitude: 39.687222° N, Longitude: 96.639722° W, Horizontal Datum: NAD83/WGS84			
River Stage Reference Frame	Gauge Height	Flood Stage	Uses
NWS stage	0 ft	26 ft	Interpreting hydrographs and NWS watch warnings, and forecasts, and inundation maps
Vertical Datum	Elevation (gauge height = 0)	Elevation (gauge height = flood stage)	Elevation information source
NAVD88	Not Available	Not Available	Survey grade GPS equipment, FEMA flood plain maps, newer USGS topographic maps
NGVD 29	1075 ft	1101 ft	Older USGS topographic maps, NGVD29 benchmarks
MSL	Not Available	Not Available	Older USGS topographic maps, MSL benchmarks
Other	Not Available	Not Available	

Above: Latitude, Longitude, and Datum information are listed on the “About This Location” chart.



Above: The difference between NAVD 88 and NGVD 29 readings increases from east to west in Kansas.

with a reference surface (such as sea level) that serves to provide known locations relative to the center of the Earth. Like many elements of cartography, they have improved in accuracy and sophistication over time.

To begin the conversion, make note of the streamgage’s Latitude and Longitude values. Then, visit <https://www.ngs.noaa.gov/TOOLS/Vertcon/vertcon.html> and click on the “Height Conversion” text, which is the 4th menu item on the left side of the page. Enter the Latitude and Longitude using the decimal degrees format. Be sure to format exactly as specified in the instructions. Click “Submit.” VERTCON will return a conversion factor in meters.

Use a search engine to convert the measure in meters into feet. Then add the conversion factor to the NGVD 29 elevation to get the NAVD 88 elevation. (i.e. $1075 \text{ ft NGVD 29} + 0.4 = 1075.4 \text{ ft NAVD 88}$). Finally, add the current stage reading to the “gauge height = 0” value to get the current elevation above sea level of the water surface. (i.e. $1075.4 \text{ ft.} + 25 \text{ ft.} = 1100.4 \text{ ft.}$). Once you know the water surface elevation during a particular flood event, you can compare it to the LiDAR-estimated ground elevation from the KDA-DWR BFE Portal (http://maps.kgs.ku.edu/fpm_bfe/login.cfm) to estimate which road crossings, pasture areas, etc. will be inundated. The BFE Portal is free, easy to use, and allows new users to create an account in less than 5 minutes. Light Detection and Ranging (LiDAR) data is believed to be accurate to within a foot of actual ground elevation barring any land changes. Simply click on a location and refer to the red number in the top left corner of the screen. For further information on getting started with the BFE Portal, contact William Pace at william.pace@ks.gov or 785-296-5440.

VERTCON and the BFE Portal are also useful for land surveyors in your community. VERTCON helps surveyors avoid datum inconsistencies, which are one of the most common Elevation Certificate errors. The BFE Portal helps surveyors obtain BFE values in approximate A Zones and estimate which properties may qualify for a Letter of Map Amendment (LOMA).

Behind the Scenes at John Redmond Lake

In 1951, 408,000 cubic feet per second (CFS) of water poured through the Neosho River basin and filled downtown Burlington with several feet of water. Following the flood of 1951, the U.S. Army Corps of Engineers (USACE) built a network of reservoirs to manage water for purposes including flood risk management. Today, Burlington and other communities are protected by the John Redmond Reservoir. National Flood Insurance Program Specialist Martin Koch toured this facility in Oct., 2019 and learned about how it works. The John Redmond Dam was completed in 1964 at a cost of \$29 million and has since provided over \$850 million in flood risk management benefits.

The scale of the John Redmond project is remarkable, especially considering that the dam was constructed before the availability of modern hydraulic modeling software or GIS. The project encompasses 10,000 acres of flowage easement and 31,000 acres of land and water. The length of the John Redmond Dam across the Neosho River valley is quite impressive. A 20,636 ft. earthen embankment and a 964 ft. concrete spillway comprise a total length of 4 miles. Releases from the reservoir are precisely controlled by fourteen 40'X35' tainter gates. At high pool levels, strong wind gusts sometimes blow drops of water over the top of the gates. This may seem concerning to public observers, but is part of normal operations and does not indicate a safety risk. At the upper end of the lake pool, the town of Hartford, Kansas is protected by the Hartford Levee, an authorized part of the John Redmond Reservoir project.



Above: This campground is located upstream of the John Redmond Dam. It was evacuated prior to inundation during the spring 2019 flood event.



Above: Floodwaters from downstream releases scoured grooves in slate rock layers along the banks of the Neosho River.

The dam typically receives weekly inspections from USACE staff. During the flood of 2019, crews re-mained on a 24-hour watch schedule in order to inspect the dam and levee twice daily for 68 consecutive days. The reservoir reached a pool elevation of 1068.71 ft. earlier this year. This is just short of the record pool elevation of 1068.89 ft., which was set during the fall of 1998. USACE coordinates with local officials to help communities stay safe during flood events. Twenty thousand sandbags were distributed from the John Redmond project office this year alone. In addition, Directors of Emergency Management in each downstream county are provided with Emergency Action Plans containing inundation maps. USACE also offers tours of the facility for Emergency Managers and Floodplain Administrators. To learn more about scheduling a tour, contact Operations Project Manager Eugene Goff at Eugene.Goff@USACE.Army.mil or 620-364-8613.



Above: Water is released through open tainter gates and flows into a concrete-lined stilling basin.



Above: The soil of this wetland area is comprised largely of sediment dredged from the Reservoir.

Training Opportunities

The Floodplain Management Program will host the following free training sessions throughout Kansas. If you are interested in any of the no-cost training opportunities, please contact Martin Koch at 785-296-0854 or Steve Samuelson at 785-296-4622. A training registration form is in this newsletter.

Basics of the National Flood Insurance Program

This free class is for officials responsible for administering their local floodplain management ordinance. The focus is on the National Flood Insurance Program (NFIP) and concepts of floodplain management, maps and studies, ordinance administration, and the relationship between floodplain management and flood insurance. Provides 3.5 hours of Continuing Education Credit (CEC) toward the Certified Floodplain Manager (CFM) credential. Limited to 20 participants.

- **Valley Center—Monday, December 9th, 2019 from 8:30 a.m.-12:30 p.m.**
- **Fredonia—Thursday, January 16th, 2020 from 8:30 a.m.-12:30 p.m.**
- **Olathe—Tuesday, February 25th, 2020 from 8:30 a.m.-12:30 p.m.**
- **Ellis—Thursday, March 5th, 2020 from 8:30 a.m.-12:30 p.m.**

Elevation Certificates and Letters of Map Amendment (LOMA)

This free class is designed for floodplain managers who review Letter Of Map Amendment (LOMA) and Elevation Certificate forms. The course will focus on accurate completion of Federal Emergency Management Agency (FEMA) technical forms, building diagrams, record-keeping and base flood elevations. The Paola session provides 3.5 hours of CEC for CFMs and is limited to 20 participants. The Garden City session provides 2.5 hours of CEC for CFMs and is limited to 30 participants.

- **Paola—Thursday, December 5th, 2019 from 8:30 a.m.—12:30 p.m.**
- **Garden City—Thursday, December 12th, 2019 from 1:00 p.m.—4:00 p.m.**

Post-Flood Responsibilities

This free class is intended for community officials responsible for administering floodplain management regulations. The course focuses on what to do before, during, and after a disaster event. Topics include substantial damage, permitting, Increased Cost of Compliance and violations. Provides 3.5 hours of CEC for CFMs. Limited to 20 participants.

- **Herington—Wednesday, February 12th, 2020 from 8:30 a.m.– 12:30 p.m.**

Violations and Enforcement

This free class is intended for community officials responsible for enforcing floodplain management regulations. The course will focus on various types of violations, steps toward correcting violations, and enforcement procedures. Provides 3.0 hours of CEC toward the CFM credential. Limited to 30 participants.

- **Garden City—Thursday, December 12th, 2019 from 8:30 a.m.—12:00 p.m.**

Find more information about floodplain management from Kansas Department of Agriculture
Division of Water Resources on line at:

<http://agriculture.ks.gov/divisions-programs/dwr/floodplain>

Email saves money on postage. The electronic newsletter also has links and the photos are in color. If you are getting this newsletter by postal mail and would prefer email please contact Martin Koch at Martin.koch@ks.gov.

Mark your calendar. The Kansas Association for Floodplain Management 2020 conference will be held September 2020 in Mulvane. More information will be posted at the website: www.kafm.org. Registration will be done through a link on the website. If you have questions about registration please contact Jon Bristol, Chairman, at 620-326-2207.

Kansas Department of Agriculture
Division of Water Resources
Floodplain Program
Training Registration Form

Name _____

Title _____

Organization _____

Address _____

City _____ State _____ Zip _____

Telephone _____ Fax _____

E-mail _____

Name, date and location of training you will attend _____

*Please share this invitation with anyone else who could benefit from the training.

**Classroom locations will be sent to registered participants one week before the training.

Please scan and email your registration to martin.koch@ks.gov

or mail to:

KANSAS DEPARTMENT OF AGRICULTURE
FLOODPLAIN MANAGEMENT PROGRAM
6531 SE Forbes Ave., Suite B
TOPEKA, KS 66619

For questions about training, please contact Martin Koch by email at martin.koch@ks.gov or by phone at 785-296-0854, or contact Steve Samuelson by email at steve.samuelson@ks.gov or by phone at 785-296-4622.

Please help us keep our records current. If the name that appears on this newsletter is for an individual no longer with your organization, please call 785-296-4622, or email steve.samuelson@ks.gov to report the change.

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Kansas Department of Agriculture
Division of Water Resources
Topeka Field Office
Floodplain Management
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ASFPM 2020 National Conference in Fort Worth

The 2020 Association of State Floodplain Managers National Conference will be June 7-11, 2020 in Fort Worth, Texas. This conference is an excellent opportunity for floodplain managers to receive training on mapping technologies, regulations, permitting, outreach and best practices. It is estimated the conference will be attended by more than 1,000 floodplain management professionals. This conference is great chance to meet people for networking and to learn the latest news in floodplain management. Visit www.floods.org for more information.

KDA/DWR Water Structures Floodplain Program Staff

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