Flooding is an act of Nature...
Flood damage is an act of humans...
Flood Damage Prevention is the responsibility of the local community.
1966 Federal Government Focus on Floodplains

Creating stronger and safer communities:

• Reduces loss of life and property

• Lessens financial impacts

• Enables individuals and localities to prepare for future events
1968 National Flood Insurance Act

- Program established by Congress
- Resulted from storms in 1965
- Some communities began participating
How to access Floodplain Application from KYDOW Website

Enter web address water.ky.gov
Floodplain Management Section

Administrative Staff
- Specialists/Technical
  - Kathy Carigan
  - Kathy Allen
- Permit Reviewers (Engineers)
  - Ron Dutta, PE (Supervisor)
  - Jim Oerther
  - Ross Bishop
  - Kourosh Namin
  - Soheyl Bigdeli
  - Solitha Dharman
- National Flood Insurance Coordinator (NFIP)
  - Alex Vanpelt
### Floodplain Permit Information (2013-2016)

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151.250 Plans for dams, levees, etc. to be approved and permit issued by cabinet -- Jurisdiction of Department for Natural Resources

401 KAR 4:060- Stream Construction Criteria
• Located in Chapter 44 of Code of Federal Regulations (44 CFR)
  – Part 59 – General Provisions
  – Part 60 – Criteria for Land Management and Use
  – Primary Section of Concern for Floodplain Regulations: 44 CFR 60.3(a-e)
Sec #1- Definitions
Sec #2- Applicability
Sec #3- General Provisions
Sec #4- Uses of Regulatory Floodway
Sec #5- Floodway Boundary Determination
Sec #6- Placement of Flood-damageable Property
Sec #7- Types of Construction Materials Allowed
Sec #8- Variances and Exceptions
Sec #9- Incorporation by Reference
Sec 2 - Applicability

- Administrative regulations applies to all constructions across, along and adjacent to a stream Floodway

- Permit is required

- Except for construction of dam according to KRS 151.100
COALITION OF KENTUCKY
ENERGY AND ENVIRONMENT CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
DIVISION OF WATER

APPLICATION FOR PERMIT TO CONSTRUCT ACROSS OR ALONG A STREAM
AND - OR WATER QUALITY CERTIFICATION

Chapter 53 of the Kentucky Revised Statutes requires approval from the Division of Water prior to any construction or other activity in or along a stream that could result in any water or sediment flow into that stream, which could impact water quality. If the project proposed is a stream, such as
drainage, erosion, or wetlands, a Water Quality Certification (WQC) from the Division of Water will be required. This completed form will be forwarded to the Water Quality Branch for WQC processing. The project may not begin until all necessary approvals are
received from the KDWPR. For questions concerning the WQC process, contact the WQC Section at 859-367-3209.

If the project will displace more than 1 acre of land, a Notice is required for Stream Discharges. This notice is to be
completed. Both forms must be returned to the Floodplain Management Section of the Division of Water.

1. OWNER: ________________________
   MAILING ADDRESS: ________________________
   TELEPHONE #: ________________________
   EMAIL: ________________________

2. AGENT: ________________________
   MAILING ADDRESS: ________________________
   TELEPHONE #: ________________________
   EMAIL: ________________________

3. ENGINEER: ________________________
   P.E. NUMBER: ________________________
   TELEPHONE #: ________________________
   EMAIL: ________________________

4. DESCRIPTION OF CONSTRUCTION: ________________________

5. COUNTY: ________________________
   NEAREST COMMUNITY: ________________________
   USGS QUAD NAME: ________________________
   LATITUDE-LONGITUDE: ________________________

6. STREAM NAME: ________________________
   WATERSHED SIZE (in acres): ________________________

7. LINEAR FEET OF STREAM IMPACTED: ________________________

8. DIRECTIONS TO SITE: ________________________

9. IS ANY PORTION OF THE REQUESTED PROJECT NON-COMMERCIAL? Yes No If Yes, identify the
   completed portion on the drawings you submit and indicate the date work was completed.
   DATE: ________________________

10. ESTIMATED BEGIN CONSTRUCTION DATE: ________________________

11. ESTIMATED END CONSTRUCTION DATE: ________________________

12. HAS A PERMIT BEEN ISSUED FROM THE US ARMY, CORPS OF ENGINEERS? Yes No If Yes, attach a copy of the
    permit.

13. THE APPLICANT MUST ADDRESS PUBLIC NOTICE:
    (a) PUBLIC NOTICE HAS BEEN GIVEN FOR THIS PROPOSAL BY THE FOLLOWING MEANS:
    (b) I REQUEST WAIVER OF PUBLIC NOTICE BECAUSE:

14. I HAVE CONTACTED THE FOLLOWING CITY OR COUNTY OFFICIALS CONCERNING THIS PROJECT:
   ________________________
   ________________________
   ________________________
   ________________________
   ________________________

15. LIST OF ATTACHMENTS:

   (c) (1/2) acre or more USGS topographic map clearly showing the project location.

16. SIGNATURES:
   ________________________
   ________________________
   ________________________

17. I, (owner/agent) CERTIFY THAT THE OWNER OWNS OR HAS EASEMENT RIGHTS ON ALL
   PROPERTY ON WHICH THIS PROJECT WILL BE LOCATED OR ON WHICH RELATED CONSTRUCTION
   WILL OCCUR. (For ease, this includes the area that would be impacted during the design stage).

18. REMARKS: ________________________

   I hereby request approval for construction across or along a stream as described in this application and any
   accompanying documents. To the best of my knowledge, all information provided is true and correct.

   SIGNATURE: ________________________
   DATE: ________________________
   SIGNATURE OF LOCAL FLOODPLAIN COORDINATOR:
   DATE: ________________________

   SUBMIT APPLICATION AND ATTACHMENTS TO:
   Floodplain Management Section
   Division of Water
   200 Frankfort Lane
   Frankfort, KY 40601

   DOW 7116 Revised 06-2009

   DOW 7116 Revised 06-2009

   23
- Applicant shall properly complete application

**APPLICATION FOR PERMIT TO CONSTRUCT ACROSS OR ALONG A STREAM AND / OR WATER QUALITY CERTIFICATION** (excerpts)

If the project will disturb more than 1 acre of soil, a Notice of Intent for Storm Water Discharges will also be returned to the Floodplain Management Section of the Division of Water.

1. **OWNER:** Dave and Sally Jones
   - Give name of person(s), company, governmental unit, or other owner of proposed project.
   - MAILING ADDRESS: 781 Any Street
2. **TELEPHONE #:** 000-000-0000  
   - EMAIL: Dave and Sally@
3. **ENGINEER:** Joe Engineer  
   - P.E. NUMBER: 000
   - Contact Division of Water if waiver can be granted.
4. **DESCRIPTION OF CONSTRUCTION:** New Single Family Home
   - List the items to be constructed in the floodplain.
5. **COUNTY:** Anycounty  
   - NEAREST COMMUNITY: Anytown
6. **USGS QUAD NAME:** Anyquad  
   - LATITUDE/LONGITUDE: 38.15
7. **STREAM NAME:** Water Creek
8. **LINEAR FEET OF STREAM IMPACTED:** 122
9. **DIRECTIONS TO SITE:** South on Highway X to Water Creek turn
Local Floodplain Coordinator’s and Owner’s Signatures are required

- We MUST have the signature of the applicant.
- Floodplain Coordinator signature is recommended

SIGNATURE: __________________________

Owner or Agent sign here. (If signed by Agent, a Power of Attorney should be attached.)

DATE: __________________________

SIGNATURE OF LOCAL FLOODPLAIN COORDINATOR:

Date application will be returned to applicant if not properly endorsed by the local floodplain coordinator.

DATE: __________________________

SUBMIT APPLICATION AND ATTACHMENTS TO:

Floodplain Management Section
Division of Water
200 Fair Oaks Lane
Frankfort, KY 40601
Certification of Ownership of the project location must be provided

17. I, _______ (owner's initials) CERTIFY THAT THE OWNER OWNS OR HAS EASEMENT RIGHTS ON ALL
PROPERTY ON WHICH THIS PROJECT WILL BE LOCATED OR ON WHICH RELATED CONSTRUCTION
WILL OCCUR (for dams, this includes the area that would be impounded during the design flood).

This is one of the most common reasons for a Notice of Deficiency (NOD) to be issued and delay the processing of the application.
Provide details of the project location relative to the stream
After permit has been issued, any construction limits specified in the permit shall be plainly staked or otherwise marked on the site.
Types of Approvals

- Permit with a Approval Cover Letter
- Permit Exemption Letter
When Application is Required

- Any construction along or across a stream.

- Any residential or commercial structure or fill in an area subject to inundation.

- Any water impounding structure.

- Stream Bank Stabilization Work

- All applications are reviewed based on regulated flood zones (100 yr)
Types of Constructions

• Construction in Floodplain

• Construction in Floodway
  (Projects involve with Floodway Encroachment)
• Stream Crossing-subfluvial (Directional Boring or Open Cut methods )

• Stream Banks Restoration

• Streams Realignment, Relocation

• Culvert/Bridge (new construction, Replacement)
Permit Exemptions: 4:050 Sec 1

• No permit required for less than 1 mi²
  If no adverse effect on adjacent properties.
Less than 1 mi² exemption does not apply to:

- Any activity that may endanger life or result in severe damage
- Water impounding structures.

DOW can choose not to exempt any project.
No permit required for Subfluvial Crossings – with certain guidelines

Now, Directional boring is most common

Stream bed must be returned to original elevation. Pipe must be anchored or be sufficiently weighted to resist flotation.
Review Time

- Turnaround time is normally 20 working days if all the information has been submitted.

- We do expedite under special circumstances. Contact supervisor of the floodplain management section.
Two Paths for Application Review

- **Mapped Areas**
  - Floodplain has been identified

- **Un-mapped Areas**
  - We have to generate hydraulic information to before issuing the permit.
Stream Bank Stabilization Projects

Before

After

Plan View

Streambank Armor. Armor 2 sections of bank for a total of approximately 400 LF. Bank height of approximately 8 ft. See sheet 3 for cross section and details.

Debris Removal. Approximately 500 LF. Remove woody debris and manmade materials, dispose of out of the flood plane or as directed by NRCS personnel.

no scales
Provide Section View of the Construction

Cross Section at 1+50

NOTES:
1. Geotextile, see construction specifications for non woven Class filter fabric.
2. Rock Riprap, see construction specifications for KY DOT Class III.
3. Place larger rock in base.
4. Rock thickness of approximately 1.5 ft at top of bank and 3 ft at base.
401/404 Water Quality Public Notice does not meet the format of floodplain management requirements stated in 401 KAR 4:060
EXAMPLE OF PUBLIC NOTICE

Public Notice

Notice is hereby given that (NAME AND ADDRESS), has filed an application with the Energy and Environment Cabinet to (BRIEF DESCRIPTION OF CONSTRUCTION). The property is located (ADDRESS, LOCATION DESCRIPTION, INCLUDE MILES FROM NEAREST TOWN OR MAJOR ROAD INTERSECTION AND NAME OF STREAM). Any comments or objections concerning this application shall be directed to: Kentucky Division of Water, Surface Water Permit Branch, Flood Plain Management Section 200 Fair Oaks Lane, Frankfort, Kentucky 40601. Phone: (502) 564-3410.
Affidavit of Understanding

If impact is localized, submit affidavit from all parties.

[Form]

AFFIDAVIT OF UNDERSTANDING

I, ____________________________,
(Participant Name)

of ________________________________
(Address)

An adjacent landowner to the Applicant below, hereby confirm that I have been made aware that

of ________________________________
(Address of Applicant)

has made application to the Kentucky Division of Water, Water Resources Branch for a permit to

______________________________
(Brief Description of Project)

at ________________________________
(Location of Project)

I am aware that any comments or objections concerning this application can be made by writing the Floodplain Management Section, of the Division of Water at:

Floodplain Management Section
Division of Water
200 Fair Oak Lane
Frankfort, Kentucky 40601
(502) 564-3418

______________________________
(Signature of Adjacent Property Owner)

______________________________
(Signature of Applicant)

Subscribed and sworn to before me this ___ day of ________ 20_.__.

Notary Public

My commission expires:

[Stamp]
• If permit is denied, a hearing can be requested based on KRS 151.182(2).

Someone filing a complaint can also request an Administrative Hearing.
Typical Zones

• Zone AE - Zones that have a detailed flood study. Floodway boundaries are usually available. BFE is available.

• Zone A - Approximate floodplain area. No BFE or Floodway boundary established.

• Zone X - Areas of 500 year or shallow (<1 foot) 100 year flooding.

• Zone X - Areas outside of 0.2% annual chance floodplain.
Flood Insurance Rate Map (FIRM)
Floodplain and Floodway Identification
Floodway Determination

100 YEAR FLOODPLAIN

FLOODWAY

Fill

1 Feet SURCHARGE

Base Flood Elevation (BFE)

Fill
All encroachments:

including fill,
new construction
substantial improvements
and other development

Except no impact certification is generated
• KYDOW use HECRAS Hydraulic Analysis

• Needs Cross Sections
To determine hydraulic design of Bridges and Culverts

- Needs geometry of the finished product
- Do not need actual elevations. Assumed elevations are acceptable.
- Needs critical points of the bridge or culvert
Cross sections need to be identified on the site plan.

1. Sections are numbered from downstream to upstream.
2. Distances are measured from the left bank, perpendicular to the stream, starting with 0.0'.
3. Ground elevations are measured at every break in the slope.
4. Elevation and Distance data should be submitted in tabular form to facilitate entry into the HEC-RAS computer model.
Flood Flow in the HECRAS Model

• Ineffective Flow Areas
  In order to avoid underestimating the BFE, areas with low or zero flows need to be identified as ineffective stations in the model.

• Peak flow values need be accordance with the methods in section # 5.

• If FIS available, flow data need to be obtained from FIS study.
Ineffective Flow Station Upstream of a Bridge

Permanent Ineffective Flow Area

Legend
- WGS 1984
- Ground
- Inflow
- Bank Sta
### Floodway Data Table from FEMA FIS Report

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<th>DISTANCE (FEET)</th>
<th>WIDTH (FEET)</th>
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<th>REGULATORY</th>
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1. Stream distance in feet above confluence with Green River
2. Elevation computed without consideration of backwater effects from the Ohio River

---

**Floodway Data**

**Table 5**

**Daviess County, KY and Incorporated Areas**

**Panther Creek**
Exception to 401 KAR 4:060 Sec # 4
(Use of Regulatory Floodway)

If the encroachment shall have “no impact” or
not result in increase in flood levels during base flood discharge
submitted by a licensed engineer.

Currently, it is not that expensive.

• KY Div of Water has so much information available and may
  provide you help to determine BFE or no impact.
• 75% of the projects DOW receive do not need surveyed cross
  sections.
KY DOW uses LIDAR data to generate Cross sections

Can the public access LIDAR data? KYGEONET.
KY DOW uses LIDAR data to generate Cross-sections - Video
Then we use cross section data to run HECRAS Model.
Section #6 Sec 1
Placement of Flood Damageable Material

All new Constructions/substantial improvements

Elevate lowest floor (including basement) to Base Flood Elevation.

No Dry Floodproofing is permitted in Residential structures below Base Flood Elevation
- Provide minimum of 2 openings = total net area not less than 1 square inch for every square foot of enclosed area.

- Bottom of the openings no higher than interior grade
Examples of Opening Covers

Screening  Louver  Grate

Openings may be equipped with screens, louvers, valves, or other “automatic” coverings.
Elevate all permanent electrical appliances above Base Flood Elevation or provided with ground fault breakers.

Design with application of dry flood proof below the base flood to prevent passage of water and resist hydrostatic and hydrodynamic loads and effects of buoyancy.
YouTube Video
Substantial Improvement

Any Substantial improvement that increases the current market value of a structure by 50%, considered as new construction.

- Market value of a structure is
- (a) Appraised fair market value
- (b) If damaged has occurred, fair market value of the structure before damage
Substantial Damage

Damage of any origin sustained by a structure whereby the cost of restoring the structure to its before damaged condition would equal or exceed 50% of the market value of the structure before the damage occurred.
401 KAR 4:060 Section #6 (e)
Manufactured Home Parks
New installation of a manufactured home should be raised to BFE

If placed in an existing manufactured home park or subdivision the homes shall be elevated no less than three (3) feet above grade and properly anchored.
Manufactured home with Substantial Damage

- If placed in an existing manufactured home park or subdivision shall be elevated to the base flood elevation and properly anchored.

- The expansion of an existing manufactured home park or subdivision constitutes new construction

and

- placement in the newly developed area shall conform to both base flood elevation and anchoring requirements.
Exceptions to 401 KAR 4:060 section #6

- Exceptions to Placement of flood-damageable Property in Floodplain
  may be allowed for reconstruction, rehabilitation or restoration of historic structures
Exceptions to 401 KAR 4:060 section #6

Hydraulic Requirement for City or County Bridge

• Exceptions may be allowed for the requirement of hydraulic or hydrologic study
  - if capable of passing base flood flow
  - if no significant changes in elevation and grades of existing and approaches and roadway
If the deck abutments are recessed within the stream banks with no approach fill and if the cords depth, including curbs are no greater than 18 inches.
Exception to 401 KAR 4:060 Sec #5 (Low Water Crossing)

- Exceptions allowed for the requirement of hydraulic study for Low Water Crossings if the structure is constructed according to cabinets template.
4 parts of LIDAR
Any Questions?