



The Antediluvian

Ohio's Floodplain Management Newsletter



{an · te · dā · lōō · vē · ən: Before the Flood}

Volume XXI, Issue 2

Ensuring the wise management of Ohio's floodplains

Fall 2014

When a State Agency Develops in a Floodplain

Christopher M. Thoms, CFM, Floodplain Management Program Manager, ODNR



*Would you tell me, please,
which way I ought to go from here?*
asked Alice.

*That depends a good deal
on where you want to get to,*
said the Cat..

I don't much care where,
said Alice.

Then it doesn't matter which way you go,
said the Cat.

Starting with the end result, all development in a federally identified Special Flood Hazard Area (SFHA) must comply with the performance standards of the respective locally adopted flood risk reduction regulations. While the desired required result is clear, the process whereby it is achieved may vary. But first,

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Keep Your Community's Information Current!

Please assist the
**Floodplain
Management
Program**
in keeping our records
current by submitting
new contact
information or
addresses to us at
614-265-6750.

some basics:

The National Flood Insurance Program (NFIP) is an attempt by the federal government to achieve flood damage reduction through a federal-state-local partnership. The Federal Emergency Management Agency (FEMA) has oversight of the NFIP. FEMA identifies SFHAs and provides Flood Insurance Studies (FISs) and Flood Insurance Rate Maps (FIRMs) to states and local jurisdictions. The FIS and FIRM are the basis for locally adopted flood damage reduction regulations. All NFIP-participating communities are required to adopt and enforce regulations that meet or exceed minimum NFIP-standards [The Code of Federal Regulations (CFR) 60.3(b)1]. In addition to the obvious flood risks, a community that fails to enforce its flood risk reduction regulations risks losing the NFIP-benefits. CFR Title 44 §§59-78 details the requirements for NFIP-participation, including minimum regulatory performance standards. Regardless of whether a development is insured (and only structures can be insured), all SFHA-development (structural and non-structural) is required to comply with applicable flood risk reduction standards.

Ohio Revised Code (ORC) 1521 clearly requires that state agencies (offices, departments, colleges, universities, regional parks, *etc.*) comply with federal, state, and local flood risk reduction performance standards for SFHA-development that they have funded, financed, undertaken, or preempted and maintain documentation of that compliance. A state agency is not required to use a local jurisdiction's existing permit system to document compliance, though it may choose to, or it may create its own; but compliance is required either way [ORC 1521.13(D)]. Reflecting guidance received, in my article, *Floodplain Development by a State Agency (The Antediluvian* Vol. XIX Issue 2), I stated, *...SFHA-development that is state agency financed or funded...but not directly undertaken or preempted by the agency, would be subject to the permitting process of the local jurisdiction(s)*. We have since been advised that

such development would be included with any other state agency SFHA-development and therefore not require a local permit.

If local regulations exceed NFIP-minimums, a state agency must comply with those higher standards [ORC 1521.13 (D)3]. Likewise, all federal agencies are required to meet or exceed NFIP minimum standards [E.O. 11988].

If the SFHA-development occurs in a community that does not have flood risk reduction regulations, the state agency must document that it meets or exceeds federal minimum flood risk reduction standards [ORC 1521.14 and CFR 60.3].

ORC 1521 also requires state agencies to work with the Division of Soil and Water Resources (DSWR) on floodplain development to assure compliance and requires state agencies to comply with DSWR rules pertaining to same. Also see the Vol. XIX Issue 2 article previously referenced for some related standards in the Ohio Administrative Code (OAC) .

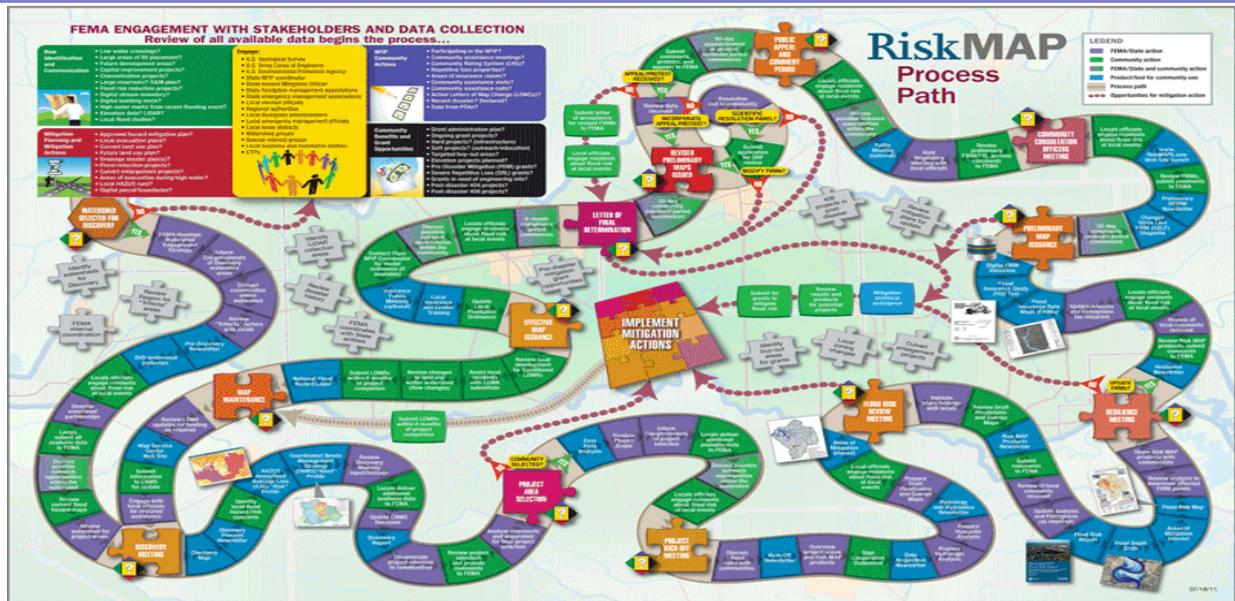
If using the local process, the agency provides documentation of compliance to the host community who consents to review and maintain the required records. If the agency opts to review and issue itself the permit, the documentation and performance standards are the same or stricter and the process should mirror that of a community issuing itself a permit. The ODNr fact sheet, *Floodplain Development by a State Agency* at <http://www2.ohiodnr.com/portals/soilwater/pdf/floodplain/fact%20sheet/s/ftsht69.pdf> provides further detail concerning a state agency's floodplain development permit responsibilities.

Unlike Alice, floodplain managers should care where they are going, regardless of the way chosen. Whichever way that is, our staff offers service with a smile and more, so let us know how we may help reach the goal of flood risk reduction and protection of natural beneficial function.



FEMA’s Mitigation Outreach Initiative for Ohio- History of Risk MAP and current projects

Katherine Skalak Goepfner, EI, CFM, Environmental Specialist, Floodplain Management Program, ODNR



Risk Mapping, Assessment, and Planning

(Risk MAP) is a Federal Emergency Management Agency (FEMA) program that provides communities with updated flood hazard information and risk assessment tools they can use to enhance their mitigation plans to better protect their citizens. This program ultimately is intended to result in local activities that reduce risk. Through more accurate flood maps, risk assessment tools, and outreach support, Risk MAP builds on FEMA’s previous initiative, **Map Modernization** (a nationwide map digitization effort), and strengthens local ability to make informed decisions about reducing risk. Risk MAP uses a watershed-based study approach, which improves engineering credibility and allows for better, more comprehensive understanding of risks.

Risk MAP came to Ohio in about 2009 and has been evolving ever since. Our first Risk MAP projects were very similar to Map Modernization projects of the mid-2000s with a few differences. Morgan and Medina were the first

counties in the state to receive non-regulatory products such as *Changes Since Last FIRM* (CSLF) and depth grids for new studies, in addition to the typical regulatory products: *Flood Insurance Rate Map* (FIRM), etc. These products are intended for educational and outreach purposes to help reduce risk. In 2011, the Scoping Meeting from Map Modernization (used to initiate a countywide map) was replaced by the watershed-wide Discovery Meeting. There were eight watershed-wide discovery projects conducted that year. Of those original eight watershed projects, FIRMs for ten of the counties in six of the watersheds were produced. These mapping updates included engineering model backed A-Zones, incorporating or updating detailed studies, and adding non-regulatory products as part of the data provided to all updated counties. Additionally, three of these counties (Meigs, Shelby, and Logan) were not previously modernized, and thus did not have the GIS digital information, which was created with this project. Most of these products for the original six updated watersheds are nearing completion. One of the re-

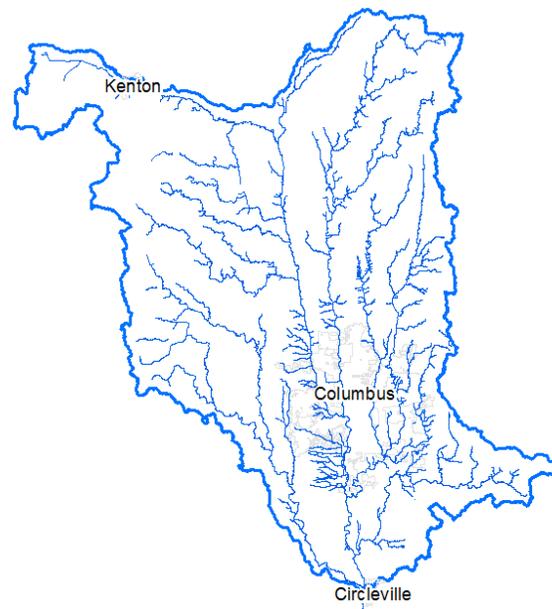
maining steps in the process is a resilience meeting. The purpose of the resilience meeting is to discuss incorporating Risk MAP data in local mitigation plans, and opportunities for mitigation project development within communities. These meetings will be conducted near the date of the Letter of Final Determination (LFD) of the regulatory products, for the last county in each watershed.

This year brought more programmatic changes to the Risk MAP procedure. As a result, there will be more mitigation outreach throughout the process. FEMA Region V, in conjunction with their contractor, Strategic Alliance for Risk Reduction (STARR), Ohio's Department of Natural Resources (ODNR) and Emergency Management Agency (OEMA), began efforts to further engage communities in discussions about local risk reduction activities that result in safer communities. These outreach efforts began in April and will continue over the next few years, starting with re-engaging various communities in most of the original watersheds, as well as beginning work in the Upper Scioto Watershed. In April, the Little Miami watershed and Huffman Dam areas were first to experience these outreach meetings. These meetings pertained to most counties (and several cities) in the watershed.

In May, there were several meetings that were directed towards homeowners or business property owners that were experiencing repetitive flood losses in Cuyahoga County. July brought mitigation outreach meetings for communities in the Auglaize Watershed. Region V, STARR, ODNR and OEMA are facilitating these meetings with community officials, mitigation consultants, and regional stakeholders to define: desired local mitigation activity implementation steps, challenges, and needed technical support. These mitigation outreach meeting are not intended to replace existing mitigation planning efforts, but to enhance them by helping to identify re-

sources and technical assistance that would enable progress to reduce risk. Additional mitigation outreach meetings are also planned with communities in the fall and winter. The selected communities can anticipate hearing from STARR about meeting dates, and may also be contacted by phone to discuss community mitigation interests, needs, and risk reduction goals. These risks include but are not limited to flooding, wind damage and earthquakes. Communities are invited to identify organizations and stakeholders to participate in the conversation, which is geared toward helping the community plan a risk reducing activity that may include technical support from FEMA.

This fall, the initial phase of Discovery began for the Upper Scioto Watershed. There were three watershed-wide Discovery Meetings, including the many communities upstream of Circleville. These meetings focused on mapping and mitigation needs.



For further information on any of the upcoming mitigation outreach meetings or to report a mapping need, please contact Katherine Skalak Goepner at Katherine.Goepner@dnr.state.oh.us or (614) 265-6709. 

The Sandy Recovery Improvement Act of 2013

FEMA-V and the Strategic Alliance for Risk Reduction (STARR)

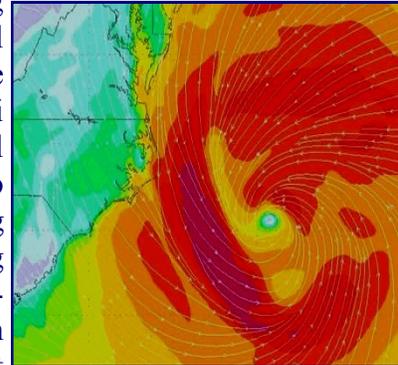
In recognition of the devastating impact of Superstorm Sandy along the East Coast in October 2012, Congress passed and President Obama signed into law the Sandy Recovery Improvement Act of 2013 (SRIA). This law granted FEMA new authorities and modified existing procedures to speed recovery from Superstorm Sandy and any disaster whose application period was still open as of the date of enactment (January 29, 2013), as well as all future disasters. SRIA amended the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988 (Stafford Act), which is FEMA's primary legislative authority, and implements lessons learned from the long and difficult recovery from Hurricanes Katrina and Rita.

SRIA attempts to improve the delivery of federal aid to state, tribal, and local governments by increasing the flexibility of funds granted; speeding the disbursement of funding; and providing incentives for the timely use of grant funds, in most cases requiring their expenditure within two months of disbursement.

SRIA amended several portions of the Stafford Act and includes changing the processes for removal of debris and repair/restoration of certain facilities; allowing *pre-payment* of up to 25 percent of hazard mitigation grant funds; amending the environmental and historical review process; allowing tribes to directly request a disaster declaration; and instructing FEMA to develop a national strategy for future disaster cost reduction.

Other initiatives enabled by SRIA include the addition of child care under the Other Needs Assistance program within the Individuals and Households Program; the reimbursement of salaries for government employees in certain

cases; allowing FEMA to deal with private owners of multi-unit rental properties to extend housing resources; using alternative dispute resolution to settle cost



and other issues; examining what constitutes a *small project*; and reviewing the factors considered when assessing needs under the Individual Assistance program. Due to the extent and broad impact of SRIA, only a few of the most relevant changes to mitigation and related topics are covered in the summary below.

Public Assistance

A major revision of SRIA changes the way FEMA may distribute Public Assistance (PA) funds used to repair or replace damaged facilities. Prior to SRIA, reimbursement was generally limited to the final, actual costs of repair/reconstruction and grants based on estimates were capped at \$67,500. SRIA authorizes FEMA to now award funding based on an estimate of anticipated costs, prepared by a licensed engineer, rather than final costs for all size projects. However, when availing themselves of this new provision, the grantee accepts responsibility for any costs over the estimate; conversely, any unspent grant funding for specific projects (if the estimated cost is higher than the final actual cost) may be used for eligible hazard mitigation and other activities that reduce risk from future disasters. In addition, SRIA allows multiple projects to be consolidated into a single project without penalty, thus allowing the applicant to rebuild what is needed, rather than what was de-

stroyed, and easing the administrative burden on the applicant (*i.e.*, consolidating damaged schools in one district).

Debris Removal

In an effort to expedite the removal of destroyed buildings and other debris, for large projects FEMA may now offer incentives for governments with pre-approved debris removal plans and contracts. SRIA also authorizes FEMA to reimburse straight time costs of public employees associated with debris removal where previously only overtime costs were eligible. In addition, a sliding scale will now be implemented that rewards applicants for the quick removal of debris within certain timeframes.

Importantly, SRIA allows an applicant to retain any proceeds from recycling debris material with no impact on PA grant funding, meaning that all proceeds from recycling can be used in addition to the already awarded grant for recovery. This is meant to encourage applicants to recycle reusable materials rather than place them in a landfill or use another disposal method.

Unified Federal Review

SRIA requires that a Unified Federal Review process be established, addressing the needs and requirements of various federal statutes such as the National Historic Preservation Act, Endangered Species Act, Clean Water Act, and others, to provide an expedited interagency review process for projects in a disaster-impacted area.

Hazard Mitigation

SRIA seeks to streamline the distribution of Hazard Mitigation Grant Program (HMGP) funding. This provision requires that FEMA expedite review of the National Environmental Policy Act and the National Historic Preservation Act as they pertain to properties of interest for mitigation purposes. This procedure also allows multiple properties to be considered as a group. It also permits FEMA to commit up to 25 percent of the estimated costs of mitigation



Lake Erie pushes over its banks when Sandy's winds struck.

projects to the state prior to the finalization of actual project costs. FEMA may now also omit the time generally used for notice and rule-making if it has been determined that this is needed to expedite the dispersal of the HMGP funding.

The long term changes in disaster recovery enabled by the Sandy Recovery and Improvement Act are not yet known, as there has been limited time to assess the changes to the process; however, it is expected that the Sandy Recovery Improvement Act of 2013 will enable residents and communities to begin the task of disaster recovery at a speed not possible following earlier events.

More Information:

The text of the Act itself may be found at www.govtrack.us/congress/bills/113/hr219/text.

A detailed discussion of the Act, written by the Congressional Research Service for members of Congress, can be found online at www.fas.org/sgp/crs/misc/R42991.pdf.

A section by section update on the current status of implementation of the law can be found at <https://www.fema.gov/about-agency/sandy-recovery-improvement-act-2013>.



Ohio Committee for Severe Weather Awareness Update

Poster Contest: *When Thunder Roars , Go Indoors*

Melissa E. Menerey, CFM, Environmental Specialist, Floodplain Management Program, ODNR

The Ohio Committee for Severe Weather Awareness (OCSWA) has been teaching Ohioans about severe weather safety and preparedness since 1978. The purpose of the poster contest is to have students demonstrate, through their artwork, how people can protect themselves and others from the dangers and hazards that accompany severe weather in Ohio.

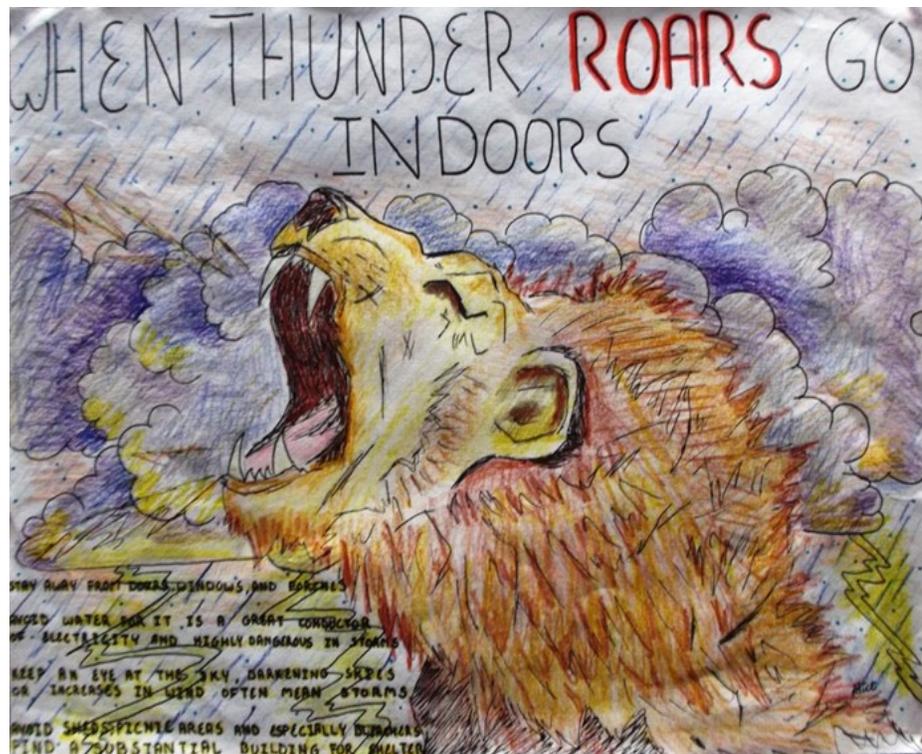
During Ohio's Spring Severe Weather Awareness Week (March 2-8, 2014) many of the students worked on developing a poster illustrating severe weather safety tips. The contest is open to any Ohio Student in 1st – 6th grades. Participating schools send their first-place posters (per grade) to their regional National Weather Service Offices. Then the NWS offices judge all poster entries and choose their top regional winners per grade.

OCSWA judges the top regional posters to determine the state and overall state winners. All regional winners and their parents or guardians received tickets to attend the awards ceremony at the Ohio State Fair on August 2, 2014.

This year over 40 students participated in the Awards Ceremony as Regional Winners! At the ceremony, students received a host of prizes, certificates, and awards.

Alice Yoshida, a 6th grader from Warren

County, was the overall winner and received a personalized trophy in addition to all of the prizes. The overall winner's school will be loaned a *traveling trophy* to be displayed during the school year.



OCSWA teams with Ready Ohio

While Ohioans were braving the arctic blast and propane shortages this winter, it became apparent to many preparedness partners that two webpages could be merged to better inform the citizens of Ohio.

Over the next few months <http://www.weathersafety.ohio.gov/> and <http://ready.ohio.gov/> will merge into one webpage. Looks for more details in the near future!



Natural Streams and Some Consequences of Realignment

Randall L. Keitz, P.E., CFM, Water Resources Engineer, Floodplain Management Program, ODNR

Natural streams meander, are straight for only short distances, and have a repeating sequence of riffles and pools that make up the habitat for fish and macro-invertebrates (*i.e.*, bugs) that live in streams and rivers. The face slopes of *riffles* are steeper with water flowing fast and shallow over them, whereas the water surface slopes of the *pools* are flatter with water flowing slow and deep. The fast moving water flowing over the gravel and cobbles that form the *riffles* create the babbling brook sound as the water sucks air down into the water forming bubbles that burst when they rise to the water surface. This joyous sound we find so relaxing is also very pleasing to the fish and bugs that live in the stream, because this process is *filling* the water with oxygen that they need to survive. Both fish and bugs will lay their eggs in *riffle* areas, because their eggs need lots of oxygen for survival. The slow moving water in the *pools* provide habitat (*i.e.*, homes) for the fish in the stream. Fish do not like to expend a lot of energy, so they tend to rest in *pools* and wait for bugs that live in the *riffle* areas to float downstream for them to eat. The water is thin flowing over the *riffles*, and the sunlight penetrates to the gravels and cobbles that form the riffle surface. This condition initiates photosynthesis for moss to grow. The bugs like to eat the moss and munch on leaves trapped on the riffle surface. Additionally, bugs will sample the bio-slimes that form on submerged logs and other woody material in the stream. The logs and woody material further provide cover for fish to hide.

Vegetation adds significant strength to stream banks, provides shade to keep stream water cool, and adds energy (*i.e.*, a food source) when leaves fall into the stream. Strong stream banks resist erosion and focus the

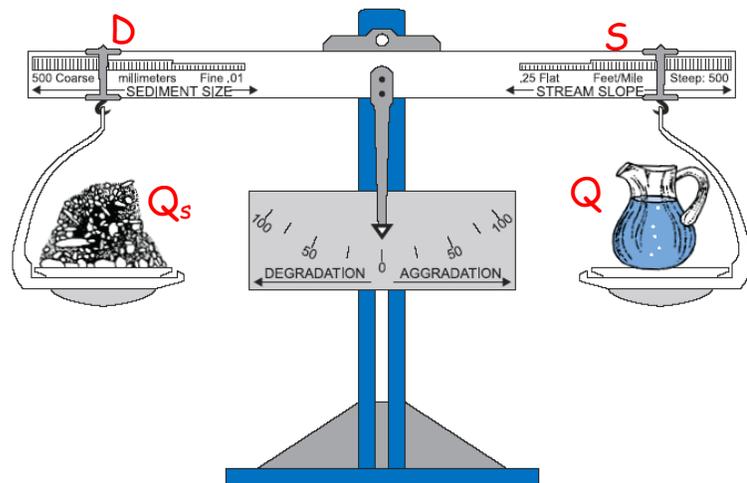
stream energy (*i.e.*, velocity) into the bed of the stream, which makes the pools deeper and the riffles steeper, thereby, improving habitat for the fish and bugs. Removing stream bank vegetation (*e.g.*, clear cutting), over time, will result in streams nearly doubling their width and halving their depth, plus the pools will fill, riffles will flatten and habitat for fish and bugs will be dramatically degraded.

Natural stable streams will have broad floodplains located at the bankfull stage of the stream. Naturally formed floodplain will have widths that are generally ten (10) times the bankfull width of the stream or wider. These wide, flat floodplains store water to reduce downstream flooding (*i.e.*, function as linear retention basins), they dramatically slow water flow that results in silts and clays depositing on the floodplain, and provide refuge for fish during flood events. Pollutants, such as nitrogen and phosphorus, significantly attach to the silts and clays; thus, when they are deposited on floodplains during flooding events, water quality is significantly improved.

Yet, given all of these valuable services provided by the structure and functions (*i.e.*, processes) of natural meandering streams and their floodplains, we have historically not recognized this considerable value. In my last article for *The Antediluvian* (Vol. XX, Issue 1), two research efforts estimated that the value of natural floodplain services alone were in excess of \$12,000 per acre per year. A classic impact that has had a major adverse impact on the natural structure and function of streams and floodplains is the straightening, deepening and/or widening of streams (*i.e.*, ditching).

When streams are ditched, in most cases the these channel designs *only* consider the con-

veyance of water (*i.e.*, the engineer thinks *how fast can the water be moved downstream*). Streams not only convey water, but also sediment that consists of bedload (*i.e.*, sands and gravels) and suspended load (*i.e.*, silts and clays). The principles of conveying a mixture of water and sediment are quite different than that of conveying only water. The conveyance of both water and sediment must strike a *balance* between the stream's flow capacity and transport of sediment (*i.e.*, effective discharge). In 1955, Lane



$$\underbrace{(Q_s \times D)}_{\text{Sediment LOAD} \times \text{Sediment SIZE}} \propto \underbrace{(S \times Q)}_{\text{Stream SLOPE} \times \text{Stream DISCHARGE}}$$

Figure 1 – Lane's balance. *Source:* North Carolina Cooperative Extension Ser-
demonstrated this balance by using a set of scales that mathematically defines that the product of the average flow (Q) and the average channel slope (S) (*i.e.*, the driving forces) is proportional to the product of the median channel bed size sediment (D) moved and the average sediment load (Q_s) transported by the flow (*i.e.*, the resisting forces), such that, over time, the stream bed does not aggrade (*i.e.*, deposit) or degrade (*i.e.*, down-cut) (Figure 1). Thus, in most all cases, stream ditching fails to recognize or account for this fundamental physical principle (*i.e.*, balance).

When streams are ditched (*i.e.*, straightened or realigned), this directly increases the average channel slope, which increases the channel velocity and channel bed erosion (Figure 2). Consequences due to the stream ditching will typically occur within, upstream and downstream of the realigned reach. Within the realigned channel, the stream is disconnected from its floodplain due to channel deepening that results in lost water storage and water quality services. Meanwhile fish and bug habitat is destroyed, flow velocities increase, and the channel bed begins to erode, among others. Upstream, the channel bed downcuts due to the headward advancement of channel bed erosion and may continue for great distances in the upstream direction (*e.g.*, many miles).

As the channel bed deepens, the channel bank heights increase and begin to fail. This process further disconnects the channel from its floodplain and adds to the potential for increased downstream flood heights. Further, this headward advancement of channel bed erosion regularly is observed to continue up tributaries flowing into the main channel. Downstream, major sediment loads will be delivered from the channel bed and bank erosion occurring within the realigned channel and upstream channel. The downstream channel will deposit sediment (*i.e.*, aggrade), which increases flood heights and forces water into the stream banks creating more erosion.

These processes begin almost immediately after stream realignment is completed, but the full extent of the consequences may take decades to be realized. In most cases, upstream and downstream landowners along the stream have no clue of the cause for the channel instability along their property because the source of the impact may have occurred a significant distance from their property and they cannot correlate the cause and effects. Sadly, these landowners spend large sums of money to protect their property trying to stabilize their stream banks. However, they do not realize that their problem is the channel bed is

downcutting due to the headward advancement of channel bed erosion; thus, their bank stabilization *solution* fails and only adds to the folly of consequences typically associated with ditching.

In regard to floodplain risk reduction, channel impacts that create unstable channels, such as the one described above, can have significant consequences for floodplain management. Floodplain mapping presumes that channels are stable and change their position very slowly (*e.g.*, decades). However, unstable streams can erode laterally significant distances in a short period (*e.g.*, a few years) and extend well beyond the mapped *Special Flood Hazard Area* (SFHA). This can present a dilemma for anyone trying to develop along an unstable stream when comparing the changed channel and floodplain position to that of the earlier mapped channel and floodplain position. Development may be technically outside the mapped floodplain area, but a future remapping effort will eventually *recapture* this area into the mapped floodplain. Regardless, financial institutions may likely require flood insurance in either situation. So proceed with caution!

Please be aware that consequences from ditching that occurred decades ago may still be

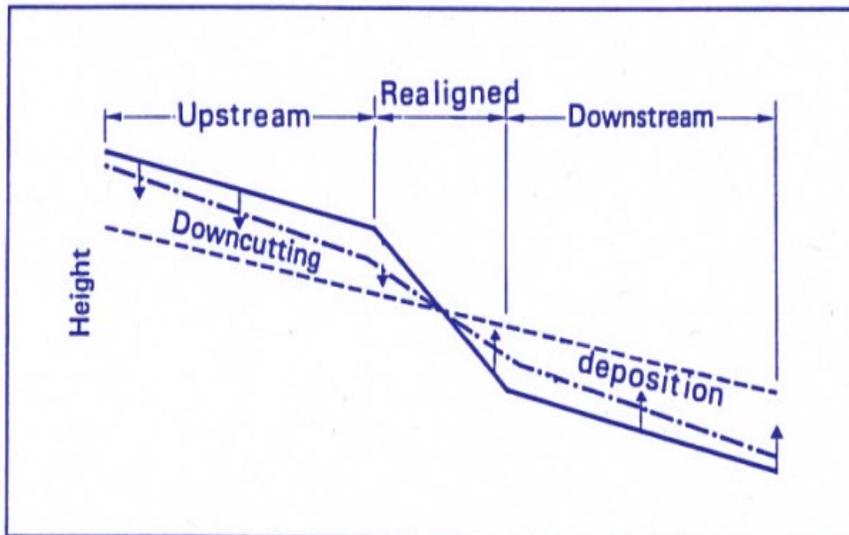


Figure 2 – Realigned or straightened channel shortens the stream length, thereby, increasing the channel slope that results in upstream and downstream consequences. *Source:* Brookes, A., *Channelized Rivers: Perspectives for Environmental Management*, John Wiley & Sons, NY, 1998, p. 85.

causing new impacts today. To define the source(s) of the stream instability and quantify the impacts, these situations need to be investigated and evaluated by an engineering firm with experience in *fluvial geomorphology*. This may come at a cost, but is necessary to develop a correct solution to the problem. The following quote by Ryckborst in 1980 to some degree summarizes the folly of stream realignment or ditching:

The [straightening] of rivers has been a terrain for some classical engineering trials. The reason is perhaps that a meandering river, upon preliminary inspection, looks like a very inefficient system, in need of serious correction. That the contrary is the case, is obviously not obvious.

Thorne, C., Hey, R., Newson M., *Applied Fluvial Geomorphology for River Engineering Management*, John Wiley & Sons, New York, 1997, pp. 232-233.

Brookes, A., *Channelized Rivers: Perspectives for Environmental Management*, John Wiley & Sons, New York, 1988, p. 84.



Redesign of FEMA's Flood Map Service Center (MSC)

Timothy D. Beck, CFM, GIMS, Floodplain Management Program ODNR

The FEMA Flood Map Service Center (MSC) site (<https://msc.fema.gov>) is constantly evolving; and this summer did it again. The Risk MAP stakeholders were given a sneak preview of what is coming. The MSC has been working to better provide the new digital products that have been produced during Map Modernization and Risk MAP.

Originally the MSC was dedicated to processing paper maps but they are moving the focus solely to digital download of products. One of the major changes announced is a move towards removing the charge for digital information. Previously, only select products were available free-of-charge without an exempt user account on the MSC site. Downloadable products continue to include: FIRMettes, Letters of Map Change, Preliminary FIRMs, and National Flood Hazard Layer (NFHL) datasets. With the website redesign, now you will be able to download the rest of the datasets as compressed zip files.

The reason for the compressed zip files is to speed up downloads of the data, and allow for you to receive all of your requested information from one link instead of selecting multiple links.

The MSC group made drastic changes over the summer to the look and functionality of the website. The link to the site is being maintained but all other links will no longer work. The ability to create FIRMettes is being main-

tained, and now you are also be able to download the full maps without a cost.

The homepage and searching is completely changed. Users search based on different criteria than in the past. When users select their data, they are able to download everything at one time as a single zip file. Search options such as selection data by region, and jurisdiction are available instead of just county. Instead of having to navigate different pages for Historic, Preliminary, and Effective data, the new search results show all available data on a single page.

Previous hyperlinks to the separate MSC website pages such as the Catalog or Letters of Map Change page, are broken with this new site. All old links will be forwarded to the main page. We anticipate further changes and will update you as appropriate.



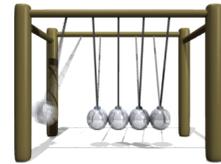
Permitting Continuous Development

Jarrod M. Hittle, CFM, Environmental Specialist, Floodplain Management Program, ODNR

We all have them in our communities; those old businesses in the floodplain that are stockpiling material or storing equipment. Often times, these sites have been in operation long before we would hear the phrase *pre-FIRM*. According to the definition of development in your flood damage reduction regulations, the storage of material or equipment is considered *development* and requires issuance of a floodplain development permit. Several examples come to mind, such as: sand and gravel operations, junk yards, rail yards, pre-cast concrete facilities, landscape supply companies, and cemeteries, just to name a few. But what is the proper way to issue permits? Do we require a permit for every new stockpile of sand, gravel, dirt, or mulch? Is a permit required for each new boat or tractor trailer stored in the flood hazard area? Technically, each of these activities is considered a separate development and is required to have a permit.

Fortunately, we have some discretion to make a common sense decision to permit these activities as a *continuous development* and avoid being burdensome to the property owners and to you, as the floodplain administrator. For developments in Zone A, AE (fringe), AO, or AH you may require an annual renewal of the permit. As long as the activity (*i.e.*, storage of what materials and/or equipment) is fully defined, as well as defining the area in which this development will take place, a community can opt to issue this extended (*e.g.*, annual) permit. By having the applicant come in each year, it allows you to review the development for any changes, as well as continuing to make the applicant aware of their flood risk. It also ensures you are permitting compliant development in the SFHA of your community. Some communities waive the fee requirement for the annual renewal after the initial fee has been collect-

ed, others do not; they look at it as the cost of doing business in the floodplain. That is also at your discretion.



For development taking place in the floodway, it can get a bit tricky when deciding how to permit continuous development. A Hydraulic and Hydrologic analysis (H&H)—performed by a licensed engineer—is required; there is no way around it. Whether to use this option is at each community's discretion. We have seen some communities require an H&H up front that covers all projected development for this area. For example a sand and gravel operation would have to submit the H&H study for all the ground the project will be developed for the entire life of the mine. In addition to the H&H they require an annual renewal of the permit similar to the example above but may add a stipulation that further review is required every three to five years just to ensure they are not exceeding the scope of development. Others have taken a pay as you go type approach. During the initial permit application the developer will phase their project much like a sub-division and submit an H&H based on the development for that area or phase. One of the advantages for the developer is that it may save a little money up front by having an H&H that is less costly. You will still have an annual renewal of the permit but you will have to keep a closer eye to make sure they aren't developing outside of the phase specified on the permit.

Always remember when using your discretion to make sure it is consistent; consistency is one of the keys to successful floodplain management. Following these examples are efficient and proven methods for permitting continuous development in the floodplain.



They Say I have a Model Backed Approximate A Zone- What Does that Mean?!

Melissa E. Menerey, CFM, Environmental Specialist, Floodplain Management Program, ODNR

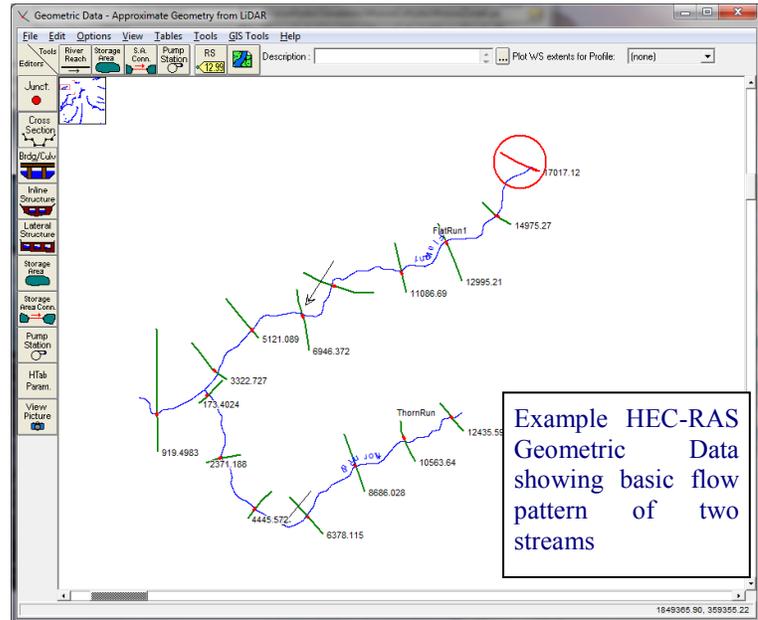
The short answer is with new technology sometimes Approximate A Zones have more data than in the past. With this expanded data and a couple of computer programs, an approximate water surface elevation of the 1%-annual chance flood can be developed. The water surface elevation is not a regulatory standard (it is NOT a BFE), but gives a ballpark figure of how high the water can get in those Approximate A Zones. For a slightly longer answer, please continue reading.

An Approximate A Zone is an area on FEMA's *Flood Insurance Rate Map* (FIRM) where approximate methods were utilized to determine the risk of the 1% annual chance flood (also known as the base flood, 100-year flood, *etc.*). Historically these Approximate A Zones were based on approximate engineering methods, flood history, and any other available data. Currently, the Approximate A Zones are still based on approximate engineering methods, however, modelling programs such as Hydrologic Engineering Center- River Analysis System (HEC-RAS) allow engineers to incorporate *more* data into that approximate analysis such as LiDAR (Light Detecting And Ranging).

LiDAR is a process similar to RADAR (Radio Detection And Ranging) for collecting precise and directly geo-referenced spatial information about the surface of the Earth (Most commonly this spatial information is elevation data when talking about floodplain mapping.). LiDAR uses light in the form of a pulsed laser to measure and record the distance to various features on the ground. Please see the National Oceanic

and Atmospheric Administration (NOAA)'s publication LiDAR 101: An Introduction to LiDAR Technology, Data, and Applications for further description, information and discussion on collecting and processing LiDAR data: http://www.csc.noaa.gov/digitalcoast/_pdf/lidar101.pdf.

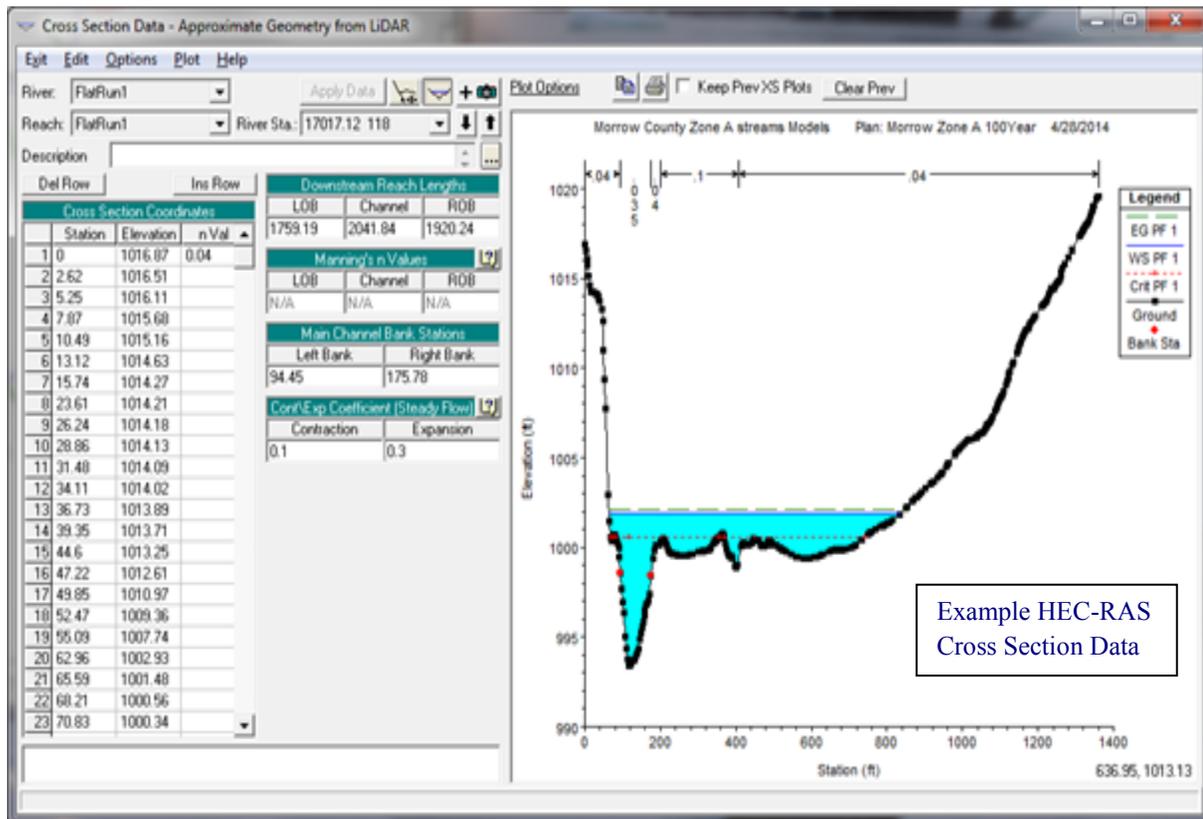
The State of Ohio is fortunate to have a statewide LiDAR set for professionals needing elevation data (see http://ogrip.oit.ohio.gov/ProjectsInitiatives/Statewide_Imagery.aspx for



more information). With this elevation data easily accessible, engineers can input the data into one of the standard models (such as HEC-RAS) and perform an approximate analysis.

These approximate analyses will not take into account bridges or culverts along a stream, but will incorporate the topography of the cross section showing differences in elevation between the stream bottom, stream banks, and after analysis water surface elevation.

So, these computer models make engineering calculations easier, but do not replace the



lengthy process for floodplain mapping. If you recall from *The Antediluvian* Winter 2014 Volume XX issue article, *Moving away from "In or Out" Mentality*, the floodplain mapping process, generally, has four steps:

- 1) gather topographic data (including floodplain topography and stream cross sections)
- 2) develop hydrology – figure out the 1%-annual chance discharge or stream flow (often with a combination of gage data and regional rainfall curves)
- 3) perform hydraulic analysis (to determine how the water and land elevation interact)
- 4) delineate floodplain boundaries on map based on that engineering.

These four steps are often followed with approximate model backed analysis but with less detail than is required in a detailed study area.

While many FIRMs in Ohio depict Approximate A Zones, currently only one third of Ohio's counties actually have a model-backed A Zone on file. In the areas of the state where these models are available, floodplain administrators can use a combination of HEC-RAS and GIS to pull approximate water surface elevation of the 1%-annual-chance-flood from these programs in order to aid in local floodplain management.

For further information, please email: melissa.menerey@dnr.state.oh.us or call (614) 265-6781.



NFIP... The Job Killer

Jarrod M. Hittle, CFM, Environmental Specialist, Floodplain Management Program, ODNR



I was recently in a small community at a council meeting answering questions and explaining substantial improvement requirements that all NFIP-participating communities must meet. The village council and residents were excited by an opportunity to bring a grocery into town. They were so excited, that—in the name of job creation—a council member wanted to ignore the substantial improvement requirements, permitting this business to be reconstructed 3.5 feet below BFE. He went on to say that requiring the applicant to follow the community's flood risk reduction regulations is a *job killer*. The conversation shifted quickly before I could offer a response to his statements.

During my two hour ride home, I had some time to think. As I thought on his comments, I realized I have heard this before. How should I have responded? How do I try to convince someone that the NFIP rules are beneficial to this structure? Better yet, how do I make this a learning opportunity for floodplain managers that deal with this same problem?

So how should we respond?

As we all know, proper floodplain management isn't just about costs, it is about the protection of lives, properties, and tax dollars. The intent of these regulations is not to stop jobs or development. It is designed for us to develop safer and smarter. From what I have found, the best way to respond, is to respond with the facts. You may not always be able to convince them, but it always gives a reasonable person something to think about. We have seen, time and time again, that compliance with the locally adopted floodplain regulations works.

But what are those facts? The average flood insurance claim for a commercial structure ex-

ceeds \$87,000. Additionally, 25 percent of flood damaged businesses never reopen, therefore causing a community to lose part of its tax base. Damage to businesses also means loss of inventory and loss of business from downtime associated with cleanup and repair. When considering this, it's easy to promote floodplain regulations. By following substantial improvement requirements and bringing a building into compliance, an owner can see a significant reduction in their flood insurance premium. This savings could be far more than the cost to retrofit the building. When a community can show how good floodplain management and compliance translate into longevity and cost savings, yesterday's critic can become today's advocate

One of my favorite examples is of a gentleman from northern Ohio who was substantially improving his home. When he was informed that he had to fill in a sub-grade crawlspace and install proper flood openings to bring the home into compliance, he (naturally) was upset with the local floodplain manager... and me.

After several conversations with the floodplain manager (and one long conversation with me), the homeowner learned that the building's lowest floor would be based on the elevation of the subgrade crawlspace floor and would trigger a higher flood insurance premium. We further explained that by filling the crawlspace (so that the inside grade elevation matched the lowest grade elevation outside the structure) and by installing the proper venting, he would be eligible for a much lower flood insurance premi-

um. Afterward, he said, *I have been in business for over 30 years and it just makes sense to invest in something that will save me a significant amount of money in the long run.*





We spend hundreds of thousands of dollars a year on alarm systems and security to protect our homes and businesses from being vandalized or robbed. For homes or businesses in Special Flood Hazard Areas, why would we not want to employ the same principles and protect our belongings? Floods take more than just your valuables; they ruin family scrapbooks, keepsakes, sentimental items, and many other things that are priceless to you. Flood losses can be mitigated or sometimes prevent-

ed. Floodplain management regulations are in place for a reason. The challenge for local administrators is conveying the importance and reason to their citizens. Allowing non-compliant development in flood hazard areas is not a sustainable practice and will result in greater devastation when the flood does come. So arm yourself with the facts and always be prepared for any push back you may receive from your own elected officials and the public.



Ohio Training Opportunities –Fall 2014

Ohio Emergency Management Agency

For additional information on these and many other training courses offered by the OE-MA, please visit the Ohio Emergency Management Agency’s website at <https://weboc.ema.state.oh.us/TrainingAndExercise/courselist.aspx>.

NFIP Sponsored WebEx Meeting Trainings

CRS Webinar Series: Introduction to CRS. One CEC for CFMs. October 21 at 1 p.m. central.

Additional sessions are continually added. Please visit <https://atkinsglobalna.webex.com/mw04011/mywebex/default.do?siteurl=atkinsglobalna&service=7> for more information and a current schedule of classes.

Letter from the Editor: *Matt's Farewell Advice*

Matthew J. Knittel, CFM, Environmental Specialist, Floodplain Management Program, ODNR

I am sad to say that after my two years with the ODNR Floodplain Management Program, I am moving on. While I look forward to my next experience with the Cleveland Metroparks, I will miss assisting Ohio communities and their local Floodplain Administrators (FPA) with their Floodplain Regulations. I was told when I started two years ago that this job requires a five year learning curve. I can now confirm the truth in that statement. I know much more about the National Flood Insurance Program, Floodplain Regulations, Floodplain Mapping, and Flood Insurance than I did two years ago, but I also know that there is so much more that I could have learned. Remember, I dealt with the NFIP daily in my position—which we all know is something that the majority of our local floodplain administrators can't say. Therefore, I wanted to leave by imparting what I found to be some of the best advice that I gathered over the past two years. I hope that by writing this down, I will be able to continue to assist some of you after I have left.

Call ODNR Floodplain Management Program Staff.

Seriously... like I said, I, along with the rest of the program staff, deal with NFIP issues daily.



It is our job to know the NFIP, and to assist you as the local floodplain administrator. I can understand why you might not want to call: perhaps you're too busy with your other duties, so you put your FPA duties

on the backburner; or maybe you're embarrassed that you don't already know the answer; or worse, you think you've made a mistake and don't want to cause trouble for yourself. Don't let these reasons or others stand in your way. We know that you're busy with other duties besides being the FPA: so call us, so we can help guide you through your FPA responsibilities to decrease the time spent on it. It's understandable that you might not know the answer: you probably haven't been solely working on FPA issues for five years. Our staff is knowledgeable and there to help. If you think you've made a mistake, call us! Let us help you correct it before it becomes a bigger issue. We don't want to see communities penalized when they could work through and correct errors. So remember, if you need assistance, don't hesitate to call.

Talk to other Floodplain Administrators:

Communicating with other FPAs may provide you with ideas on how to more efficiently, and more easily manage your own Floodplain Regulations. Whether its advice on how to learn about new development in rural counties, or how to correct violations made in the past; your fellow FPAs have experience dealing with these issues and more. Be sure to utilize this resource, either by calling them up, or meeting them at our annual statewide conference. Ohio is lucky to have great local FPAs who have excelled at managing their floodplains.

I hope that some of you will take my advice and that it will make your jobs easier. Thank you for working with me these past two years. Keep up the good work.

Matt



The Antediluvian

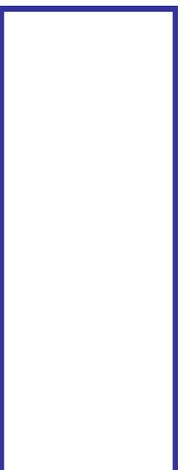
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Ohio's Floodplain Management Newsletter



Division of Soil and Water Resources
2045 Morse Road, B-2
Columbus, Ohio 43229

John R. Kasich, Governor
James Zehringer, Director
Michael D. Bailey, Chief



The Antediluvian is produced by the Division of Soil and Water Resources and is supported by funding through a FEMA Cooperative Agreement as part of the Community Assistance Program—State Support Services Element of the National Flood Insurance Program. The contents do not necessarily reflect the views and policies of the federal government.

Matthew J. Knittel, Editor.

Please send address corrections, additions, and other changes to 2045 Morse Road B-2 Columbus, Ohio 43229.

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