
WATERLINES

News affecting the management and use of Indiana's water resources

DIVISION OF WATER
INDIANA DEPARTMENT OF NATURAL RESOURCES
WINTER 2012

AUBURN –STEADY COMMITMENT TO MITIGATION

Indiana has a number of outstanding officials from towns, cities, and counties, who have carefully evaluated their communities and recognized areas vulnerable to flooding, then sought mitigation opportunities to fit individual community needs. One of these outstanding communities is the City of Auburn, in DeKalb County.

Known as the “Home of the Classics” for its pioneering role in the early automotive industry, Auburn also has been a mitigation pioneer in the state. The city has been a partner with the Indiana Department of Homeland Security in flood mitigation for more than 14 years. It received the first Floodplain Mitigation Assistance Planning Grant and was the first to develop a stand-alone community floodplain mitigation plan. More importantly, the city has made significant strides in carrying out its goals and objectives by completing the significant projects identified. These goals were accomplished through numerous small projects that were consistent with the needs and capabilities of the city. This approach took advantage of the wide variety of grants available to assist local communities in addressing flood damages in all segments of the community and by doing so, making the community more sustainable.



*National Automobile and Truck Museum (NATMUS) in Auburn, Indiana.
(Photo provided by Rod Renkenberger, Maumee River Basin Commission)*

These efforts began in 1997 and continued into 2011. In 2011, four projects in Auburn were funded under Hazard Mitigation Assistance grants. Through a well-thought-out projects implementation program, Auburn has acquired homes and maintained green space along Cedar Creek, removing a major portion of its flood risk and

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*Exterior view of Messenger Corporation's facility in Auburn, Indiana during the 2009 flooding along Cedar Creek.
(Photo provided by Rod Renkenberger, Maumee River Basin Commission)*

showing long-term commitment to responsible floodplain management. In 2011, the City acquired additional homes under the Flood Mitigation Assistance and Hazard Mitigation Grant Program.

When significant flooding in 2009 caused the Messenger Corporation to consider closing its operation in Auburn, the City started a project to bring relief from flooding to one of its major employers. When completed, the Messenger Corporation's printing operations will no longer be shut down due to infiltration of floodwater into the plant. Additionally, the project should prevent the loss of inventories as suffered during past flooding. More than 100 jobs were saved locally as a result of the Messenger project, and Auburn retained a vital asset to its economic well being.

The City of Auburn has expanded its commitment to include significant National Historical Land-

marks. The city is home to the National Automobile and Truck Museum (NATMUS). This museum is housed in a historic structure that has been subjected to numerous floods over the years. The



*Office area of the Messenger Corporation facility during the 2009 flood event.
(Photo provided by Rod Renkenberger, Maumee River Basin Commission)*



*Messenger Corporation presses stand in floodwater during the 2009 flood.
(Photo provided by Rod Renkenberger, Maumee River Basin Commission)*



*Messenger Corporation inventory enveloped by floodwater.
(Photo provided by Rod Renkenberger, Maumee River Basin Commission)*

museum has had a flood fight plan and has therefore avoided major damages. The plan, however, has depended upon the readiness of the few employees, volunteers and the Auburn Fire Department, and the ability to reach the museum during high water events. After realizing accessibility was an even greater unknown than the rising waters, museum officials, with the sponsorship of the City, applied for and received a grant to retrofit the museum for flooding. This is the first flood mitigation that the State of Indiana has done specifically to protect a historical landmark. Of all the City's mitigation projects, the NATMUS Project was the most challenging because of the historical designation that required final approval to be obtained through the National Park Service. The well-planned project to protect this treasure impressed FEMA and the Department of Interior reviewers, who commended the project's overall commitment to the "No Adverse Impact" ideology, proving a community can retain historical structures while maintaining a commitment to flood-risk reduction.

The City of Auburn is fortunate to be one of the communities within the authority of the Maumee River Basin Commission (MRBC). MRBC has worked closely with the City, providing assistance, project planning guidance, Hazard Mitigation Assistance (HMA) grant application preparation, and grant administration. MRBC committed \$10,000 toward the Messenger Project and \$10,000 toward the NATMUS Project. These projects accounted

for 12.5 percent (half of the required local cost-share) for the two flood-acquisition projects. The experienced staff and dedication of MRBC to mitigation has contributed to Auburn's steady accomplishments.

If your community would like more information about mitigation programs, visit in.gov/dhs/files/IDHS-Mitigation_Grant_Programs.pdf, or contact Jan Crider, State Hazard Mitigation Officer at jcrider@dhs.in.gov or (317)232-3833 or Mary Moran, Mitigation Program Manager at mmoran@dhs.in.gov or (317)232-3831. ☞



*Messenger Corporation equipment and supplies inundated by the waters from Cedar Creek.
(Photo provided by Rod Renkenberger, Maumee River Basin Commission)*

NGVD to NAVD?

Reprinted from NFIP/CRS Update (Summer 2007 Edition)

Regulatory floodplains are defined by the elevation of the base flood in relation to the elevation of the ground. Base flood elevations are used to determine the required elevation of new buildings in the floodplain. Floodplain management cannot succeed without accurate measurements of flood elevations, ground elevations, and building elevations. If flood elevations are based on one system and ground or building elevations are based on another, floodplain management won't work.



*DNR surveyor using a total station.
(Photo provided by DNR Division of Water)*

NGVD 29 stands for National Geodetic Vertical Datum of 1929. It is the system of vertical measurement that has been used by surveyors and engineers for most of the 20th century and was the basis for relating ground and flood elevations. NGVD 29 has been replaced by the more-accurate North American Vertical Datum of 1988 (NAVD 88). Because this has such an impact on floodplain management, it is important for local officials to understand what's happening.

First, what is a "datum?" If we say that a flood will rise to 100 feet, one must ask "100 feet above what?" We need a consistent starting point so we can compare flood and ground elevations. The starting point for measuring elevations is our "datum plane," and the system and records we develop based on that plane are usually just called the "datum." In most cases, when we talk about elevations, we mean "above sea level." But some inland communities' elevation records were developed in relation to some other starting point. For example, the Chicago City Datum was developed with the level of Lake Michigan as its datum plane.

The National Geodetic Survey (NGS), the government agency responsible for mapping, needed a common, consistent national datum plane from which to map the whole country. During the 1920s, the NGS

established a network of 26 tidal gauges in the United States and Canada. Maps were prepared with elevations based on "Mean Sea Level Datum of 1929." In the 1970s, the name was changed to the National Geodetic Vertical Datum of 1929 (NGVD 29).

One reason for the name change was that it was found that the sea is actually not level. There are local variations caused by currents, wind, barometric pressure, temperature, seabed topography, and salinity differences. The NGS ran more surveys around the country and had trouble making the numbers fit because mean ground elevations had risen or fallen due to earthquakes, subsidence, and rebounding of the earth that has continued since the glaciers receded. New satellite technology has discovered distortions in surveyed elevations caused by gravity.

Because of these shortcomings, the NGS established a new system on which to base elevation measurements. The North American Vertical Datum of 1988 (NAVD 88) corrects many of the problems with NGVD 29. It is also based on satellite systems that account for differences in gravitational forces in different areas. One can readily convert elevations in one datum to those based on another. For example, zero in the Chicago City Datum (CCD) is 579.48 feet above zero ("mean sea level") in NGVD 29. If one tries to compare ground eleva-

tion in CCD to a flood elevation in NGVD 29, the 579-foot difference will make it readily apparent that something is off. A simple formula can convert elevations from CCD to NGVD 29, and vice-versa.

Unfortunately, it's not so easy to convert to NAVD 88. The North American Vertical Datum is the product of thousands of corrections in elevation data. In the Rocky Mountains (where gravitational forces caused a lot of distortion to traditional surveys) the difference can be 3 feet or more. In other areas, the difference may be only a matter of inches. It takes a computer program called VERTCON to relate those two systems at any given point. (It should be noted that VERTCON 2.0 is not considered reliable beyond the boundaries of the lower 48 states.)

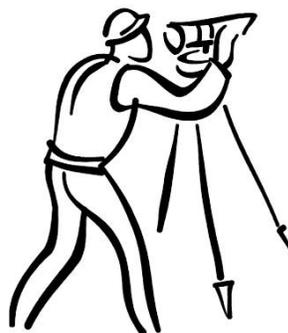
Until recently, most FEMA Flood Insurance Rate Maps (FIRMs) used NGVD 29; however, FEMA's new maps are using NAVD 88 as the basis for published flood elevations. If local surveyors or your community have not made the switch, errors will arise unless elevations in NGVD 29 or a local datum are converted to NAVD 88. What is most important is that the same datum be used consistently. Since the base flood elevations used by the National Flood Insurance Program are on the FIRM, the FIRM datum must be used for the FEMA Elevation Cer-

tificate, Letters of Map Amendment, Letters of Map Revision, and other insurance-related purposes.

A community and the surveyors in the community may normally use NAVD 88 for most purposes, but if the community's FIRM uses NGVD 29, then NGVD 29 must be used for all flood, ground, and building elevations on elevation certificates and other National Flood Insurance Program uses.

It is basically the responsibility of the professional surveyor, engineer or architect to use the appropriate datum on FEMA documents but the community must be aware of the potential for errors if more than one datum is used. You don't need to know the conversion factor between the two, but you need to ensure that the same datum is used for all elevations on the

same document. In time, the datum will be NAVD 88 for just about every community. Meanwhile, local officials should review their benchmarks and other elevation reference marks to ensure they state which datum is referenced and that they are consistent with any code requirements. ~~~



CONGRATULATIONS



Benjamin Miller, building commissioner for Evansville/Vanderburgh County, is Indiana's newest Certified Floodplain Manager (CFM).

He successfully passed the exam in late summer 2011 and now has the distinction of being a CFM. This national program for professional certification of floodplain managers was established by the Association of State Floodplain Managers. The program recognizes continuing education and professional development that enhance the knowledge and performance of local, state, federal, and private-sector floodplain managers. For information on the CFM program, see floods.org. ~~~

LEVEES AND FLOOD INSURANCE

FEMA urges all people living behind levees to purchase and maintain flood insurance coverage, whether it is required or not. Levees can and do decay over time if not properly maintained. They can also fail or be overtopped by flood events larger than those against which they were built to protect.

FEMA and the Army Corps of Engineers are working to identify risks associated with the nation's levees. If a levee is found to be deficient or unsafe, structures behind it will be mapped into high-risk areas and flood insurance will be required for most mortgage holders. Property owners can contact their insurance agents for more information. ~~~

CONFERENCE CORNER

2011 INAFSM CONFERENCE

The 2011 Indiana Association for Floodplain and Stormwater Management (INAFSM) Annual Conference was held on Sept. 14-16 at Potawatomi Inn in Pokagon State Park near Angola. The conference proved to be educational, entertaining, and topical.

Several awards were presented. Greg Lake of the Howard County Stormwater District was awarded the “*Excellence in Stormwater Management Award*.” The “*Outstanding Stormwater Management Award*” went to Hendricks County Surveyor’s Office/Williams Creek Consulting. The City of Auburn was presented the “*Excellence in Floodplain Management Award*.” The “*Outstanding Floodplain Project Award*” went to the DNR Division of Water. Mindy Bourne, Executive Director of the Posey County Area Plan Commission was the recipient of the “*Excellent Strides in Floodplain Management Award*.” The “*Chairman’s*

Award for Outstanding Service in Support of the INAFSM” was presented to Scott Morlock, USGS. Lastly, Unique Dahl, Executive Secretary for INAFSM, was recognized for her outstanding service to INAFSM.

2012 INAFSM CONFERENCE

The 2012 INAFSM Conference will be held at the Abe Martin Lodge in Brown County State Park on Sept. 12-14. Mark your calendars. For more information about the INAFSM conference and the organization, visit www.inafsm.net. ☞



2011 Award Winners: Rod Renkenberger, Outgoing INAFSM Chair; Bill Spohn and Mayor Norman Yoder of Auburn; Greg Main and Anita Nance of DNR Division of Water; Greg Lake, Howard County Stormwater District; Bill Hahn, Hendricks County Surveyor's Office; Unique Dahl, INAFSM Executive Secretary; Scott Morlock, USGS; and, Siavash Beik, INAFSM Awards Chair. (Photo by Darren Pearson, DNR)

OPERATION STAY AFLOAT 2012: EMBRACE THE REALITIES, ENVISION THE POSSIBILITIES

The Indiana Department of Natural Resources (DNR) and the Indiana Department of Homeland Security (IDHS) will present Operation Stay Afloat again this year. The Conference is scheduled for Thursday, March 15, 2012, from 8:30 am until 5 pm in the Indiana Government Center Conference Center.

The day will be full of interesting, pertinent information regarding flooding and mitigation. Attend-

ees will learn about projects and experiences that allow them to embrace the realities of flooding and erosion hazards. They will also receive information about projects and programs that will allow them to envision the possibilities of reducing risk in their communities.

No registration fees will be charged for this conference; however, participants are responsible for their own lunch and any parking expenses. Space is limited, so please register in advance. For more information, contact Anita Nance, Floodplain Management Section of the DNR Division of Water, at either (317) 234-1110 or anance@dnr.IN.gov.

Frequently Asked Questions



Q: When I see someone placing fill or building in an area that is probably a floodplain, what should I do?

A: The best way to report a possible violation of either the Flood Control Act or the Lake Preservation Act is to email the DNR Division of Water at water_inquiry@dnr.in.gov with as much detailed information as possible, including your name and contact information. Anonymous reports will also be accepted. The best way to get a quick response is to attach a map or a link to the location, such as from an aerial photo or an online mapping program, as well as digital photographs. Other information that can speed up a response includes name and contact information of property owner and/or contractor. Numerous reports of unpermitted work and a limited field staff make accurate site location information a must before the Compliance Section of the Division of Water can send an inspector. Municipal and county governments as well as other state and federal agencies may have separate permitting requirements. It is advisable to contact the local building department, too.

Q: I just found out that there is a dam upstream of my house. How do I find out if the dam is legal and is being inspected regularly?

A: Contact the Division of Water Dams and Levees Section by requesting that information through the Water Inquiry email address water_inquiry@dnr.IN.gov. Make sure you provide a map indicating the site and include an exact location description of the dam.

Q: There is a small stream right out behind my walkout basement. I checked the FEMA maps and there is no floodplain shown for my area. That means I am safe, right?

A: All streams have a floodplain (which includes a floodway). Many of the smaller streams (and some of the larger streams) in rural areas have not been mapped but they still have floodplains and will flood. It is quite possible that your home is in a floodplain. You should look into flood insurance and investigate ways to protect your home.

Q: My neighbor dumped several loads of dirt along the property line, and now each time it rains he floods my driveway. Can you arrest him?

A: It sounds like what you are referring to is storm water runoff. The DNR does not have the authority to regulate storm water runoff. Check with your local permitting office to see if your community has adopted stormwater regulations that may apply. If the flooding is damaging property, and there is no local requirement to correct the problem, you may wish to work things out with the neighbor.

Q: My neighbor filled his backyard, and it now causes my yard to flood each time we get moderate rainfall. He told me that DNR approved it. How can that be since it causes my property to flood?

A: It is possible that while his fill causes flooding problems during the more frequent, normal rainfall events, the fill causes an insignificant increase during a 1 percent annual chance flood (commonly referred to as a 100-year flood) due to the sheer volume of floodwater during such an event. DNR permits are based on regulations (Flood Control Act and Indiana Floodplain Management Rules) that pertain to the effect of fill or obstructions during the regulatory flood, also known as the 1 percent annual chance flood event. DNR does not regulate the smaller but more frequent floods. Instead, it considers them to be localized drainage issues. Check your local permitting office to see if your community has adopted storm water regulations or other rules to address localized drainage issues. ☞

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