

INDIANA SILVER JACKETS NORTH BRANCH ELKHART RIVER WEST LAKES TASK TEAM



CHAPTER 5 – Overview of Basin-Wide Floodplain Management Activities

Floodplain Management Facts

- “Floods are ‘Acts of God,’ but flood losses are largely acts of man.” White, G.F. 1945. *Human Adjustment to Floods*. Department of Geography Research Paper no. 29. Chicago: The University of Chicago.
- Throughout the nation, floodplain regulation is approached through a combination of federal, state, and local laws and ordinances. Federal direction is primarily given through the requirements of the National Flood Insurance Program (NFIP). Indiana specific strategies and permitting requirements are found in regulations administered by the Department of Natural Resources, Division of Water (see www.IN.gov/dnr/water). While some local communities have adopted ordinances meeting minimum standards, other communities have adopted broader standards dealing with issues related to storm water management and compensating for lost flow area and storage due to development.
- Participation in the NFIP makes flood insurance available for all insurable structures, regardless of Flood Zone designation.
- New and substantially improved structures located in Special Flood Hazard Areas (SFHA) are required to meet minimum building protection standards. This requirement also applies to the repair/reconstruction of substantially damaged structures. The key requirement is to have the lowest floor located at or above the Flood Protection Grade, which is two feet above the 1 percent annual chance flood elevation (100-year), or the Base Flood Elevation (BFE).
- In addition to minimum federal and state standards required to participate in the NFIP, Noble County has adopted a more restrictive standard in regard to compensatory storage; requiring the volume of space occupied by fill or a structure placed in the floodplain below the BFE be compensated for and balanced by an equivalent volume of extraction taken below the BFE at least equal to the volume lost. Higher regulatory standards take precedence, and are encouraged.
- A majority of the homes (164) located in the North Branch Elkhart River (NBR Elkhart River)/West Lakes Chain was constructed prior to 1970, with the largest concentration (110) built in the 1950s and 1960s.
- More than half of the homes in the NBR Elkhart River/West Lakes Chain are seasonal homes.
- Accessibility during flood events is problematic for nearly every home in the NBR Elkhart River/West Lakes Chain.
- Elevating homes/buildings does not improve/change accessibility problems during flood events.
- In a recent survey, 58 property owners in the NBR Elkhart River/West Lakes Chain indicated some interest in a buyout of their home.

- It is important to identify areas for future development that will minimize potential losses due to flooding, avoid sensitive species, and avoid impacts to areas that have high natural resource values or high potential for wetland restoration and floodwater storage.

National Flood Insurance Program (NFIP)

In 1973, Noble County (unincorporated) began participating in the NFIP. This includes the area of the West Lakes Chain. Participation in the NFIP is voluntary, based on an agreement between the federal government and a local community.

This partnership requires the local community to adopt minimum floodplain regulations, which meet or exceed applicable federal and state floodplain regulations, regulating development in flood hazard areas. A key requirement is that new and/or substantially improved buildings must be constructed with the lowest floor at or above the Flood Protection Grade, which is two feet above the BFE. This includes structures that are substantially damaged. In return, the federal government makes flood insurance available for structures located within the community's jurisdiction. Noble County's participation in the NFIP makes flood insurance available for all insurable structures located in the unincorporated areas of the county. Additionally, participation in the NFIP makes certain federal disaster assistance available to residents of the community.

The Federal Emergency Management Agency (FEMA) provided Noble County an initial Flood Hazard Boundary Map in 1978 to identify approximate flood hazard areas within the unincorporated areas of the County. At that time, the County adopted floodplain regulations and incorporated those regulations into the Noble County Zoning Ordinance. In 1979, Noble County was provided its first Flood Insurance Rate Map (FIRM) and Flood Boundary Floodway Map (FBFM) along with the corresponding Flood Insurance Study (FIS), establishing BFEs for the many of the waterbodies in Noble County, including the West Lakes Chain. The 1979 FIS and corresponding maps are currently effective. (A project to update Noble County's Flood Insurance Rate Maps is in progress. Preliminary Countywide Digital FIRMs and corresponding FIS for Noble County are expected to be made available for public review in 2010 with final maps anticipated to be effective in 2011.)

Within the NBR Elkhart River watershed, Rome City, Kendallville, and LaGrange County (unincorporated) also participate in the National Flood Insurance Program.

Noble County Flood Insurance Study (FIS) excerpts - February 1978

The currently effective Noble County FIS, dated February 1978, includes valuable pertinent and historical information gathered as part of the studies performed for various streams within Noble County. Excerpts from the study's text provide documentation of the conditions and findings of that time.

“Several residences and a few businesses are located in flood-prone areas throughout the county.”

“Concentrations of houses in flood-prone areas occur near certain lakes.” Intermittent low-lying areas along the streams and lakes studied are subject to periodic flooding. The most severe flooding occurs during winter and spring months as a result of prolonged rain periods followed by intense rainfall. Adding to flood heights to a limited extent are snowmelt and ice jams. The stream gage record for the Elkhart River at Goshen for the years 1932 through 1969 was used to study seasonal probability.”

“Floods of record causing unusual damage during the last 40 years have occurred in March 1939, May 1943, April 1950, July 1951, October 1954, February 1956, April 1956, December 1966, and February 1968. Of these floods, the largest were the 1943, 1950, 1951, and 1954 events which range in magnitude with regard to recurrence interval between 20 years and 30 years. Floods during the 1960 through 1976 period have been relatively small in comparison with what has occurred in the past and with what can be expected in the future.”

Local Floodplain Administration

Until June 29, 2009, the Director of the Noble County Plan Commission was the designated Floodplain Administrator for the unincorporated areas of Noble County as appointed by the County Commissioners. The Noble County Building Inspector currently is appointed this role.

Higher Regulatory Standards of Flood Hazard Ordinance

Noble County is a member of the Maumee River Basin Commission (MRBC), a quasi State/Local Government entity charged by the Indiana Legislature to mitigate flood damages in the Maumee River watershed in Indiana. As a member of the MRBC, Noble County, along with the other five participating counties, has adopted higher regulatory standards and incorporated them into its respective Flood Hazard Ordinances.

In addition to the minimum federal and state standards, Noble County has adopted a more restrictive standard in regards to compensatory storage requirements. Although the NBR Elkhart River/West Lakes Chain is not located in the Maumee River Watershed, this requirement still applies, because it is required in all Special Flood Hazard Areas within unincorporated Noble County.

Noble County is to be commended for adopting higher regulatory standards. The NFIP’s minimum requirements are just that — minimums. Federal Regulations, 44 CFR 60.1, also recognize the value of higher regulatory standards in stating “any floodplain management regulations adopted by a state or a community which are more restrictive than the criteria set for in this part are encouraged and shall take precedence.”

The minimum requirements for construction standards often do not provide sufficient protection from all local flood hazards, nor do they account for the effects of development on future flood levels. Minimum requirements for development in flood hazard areas may allow floodwater conveyance areas to be reduced, essential valley storage to be filled, or velocities to be increased; all of which can adversely affect others in the floodplain and watershed.

Noble County Community Assistance Visit (CAV) History

As the State coordinating agency for the NFIP in Indiana, the Department of Natural Resources, Division of Water, periodically conducts a community assistance visit (CAV) with each participating community to determine the community's effectiveness in the program. The CAV provides a "snap shot" of a community's permit procedures and recent construction activities in flood hazard areas. CAVs were conducted with Noble County officials in 1981, 1988, 1991, 1994, 2000, and 2006. No deficiencies were noted.

More recently, Nov. 4, 2009, a CAV was conducted. Building Department officials indicated that 61 floodplain permits had been issued in the last year. Approximately 18 were for electrical and similar maintenance or code related improvements. Some of the permits issued in the past year were for reconstruction of flood-damaged structures with the remaining being additions and new construction. They reported that no variances have been issued in the floodplain in the last year.

The community's permit process appears to be adequate. The CAV has been closed. It appears Noble County is compliant with the NFIP.

Flood Insurance

Helpful flood insurance related definitions:

Repetitive loss: flood-related damages sustained by a structure on two separate occasions during a 10-year period ending on the date of the event for which the second claim is made, in which the cost of repairing the flood damage, on the average, equaled or exceeded 25 percent of the market value of the structure at the time of each such flood event.

Increased Cost of Compliance (ICC): the cost to repair a substantially damaged structure that exceeds the minimal repair cost and that is required to bring a substantially damaged structure into compliance with the local flood damage prevention ordinance. Acceptable mitigation measures are elevation, relocation, demolition, or any combination thereof. All renewal and new business flood insurance policies with effective dates on or after June 1, 1997, include ICC coverage.

Pre-FIRM: construction or substantial improvement that started before the effective date of the initial Flood Insurance Rate Map (FIRM) of the community. (For Noble County, 1/3/1979)

Post-FIRM: construction or substantial improvement that started on or after the effective date of the initial Flood Insurance Rate Map (FIRM) of the community. (For Noble County, 1/3/1979)

Participation in the NFIP makes flood insurance available for any insurable structure within the unincorporated areas of Noble County. According to FEMA's official site of the NFIP

(www.FloodSmart.gov), the average flood insurance policy cost is \$540 per year as of Nov. 2, 2009.

Flood insurance information for Unincorporated Noble County as of Aug. 31, 2009:

▪ Total number of policies	201
▪ Total premiums	\$112,761
▪ Average premium in Noble County	\$561

Additional flood insurance notes for Noble County:

- 195 policies are for residential structures with only two policies for manufactured homes. One policy is listed as other residential (condo). There are five policies shown for non-residential structures.
- 167 policies for structures in Zones A1-30 and AE (High Risk)
- 34 policies for structures in Zones B, C, and X (Low to Moderate Risk)
- 114 total closed/paid losses; total \$916,461 (since 1978)
- Paid claims shown for structures in both the high risk and low to moderate risk zones
- 7 ICC claims (closed); total \$195,000 (*approximately six listed North Branch Elkhart River/West Lakes Chain Area*) since 1994
- 150 policies are for Pre-FIRM structures
- 51 policies are for Post-FIRM structures
- 48 total repetitive losses (*approximately 15 listed for North Branch Elkhart River/West Lakes Chain Area*)
- One Post-FIRM building shown as a repetitive loss building

Flood Insurance Misinformation

Throughout the nation and the State, misinformation regarding flood insurance is common.

A common misconception is that fire insurance is more important than flood insurance. A home in a 1 percent annual chance floodplain (100-year) has at least a 26 percent chance of being damaged by a flood during the course of a 30-year mortgage, compared to only a 9 percent chance of fire.

Another common misconception is that the floodplain shown on insurance rate maps are the ultimate extent of what could be flooded. Again this is not true. FEMA reports that nationally, 26 percent of flood insurance claims are for structures located outside of identified Special Flood Hazard Areas. It is not uncommon for floods to occur that are significantly larger than the minimum criteria used for insurance purposes. Many times, even a smaller flood can behave like a larger flood due to unpredictable events such as ice jams, floating debris plugging bridge openings, and the cumulative behavior of back-to-back floods.

The financial benefit of constructing to at least minimum elevation expectations is often misunderstood. Compliant repair, reconstruction, and new construction not only is realized in the reduction of flood risk, but also in reduced flood insurance premiums. See Figures 5-1 through 5-

5 at the end of this chapter. (The rating information was provided by FEMA.) There is a significant flood insurance savings for building in compliance and at least elevating 2 feet above the BFE as required in Indiana.

On the heels of the January/February 2008 historic flooding, the Indiana Department of Insurance took steps to decrease misunderstandings and increase the knowledge of those selling, soliciting, or negotiating flood insurance policies.

On Feb. 12, 2008, Indiana Commissioner of Insurance directed a bulletin (Bulletin 160; www.IN.gov/idoi/files/Bulletin160.pdf) to all current and future licensed property and casualty insurance producers who sell, solicit, or negotiate flood insurance policies through the National Flood Insurance Program (NFIP). In part, the bulletin states: Flood insurance training is now required for producers selling, soliciting, or negotiating flood insurance policies. A producer who sells federal flood insurance policies shall demonstrate to the commissioner, upon request, compliance with the minimum flood insurance training requirement.

Noble County Multi-Hazard Mitigation Plan excerpts – March 2008

Flooding is a relatively common occurrence in Noble County. The National Climatic Data Center (NCDC) has identified three significant floods in Noble County between January 1993 (*according to local officials the report should state December 1990, not January 1993*) and June 2006. Estimated total property loss figures reported for all flood events is approximately \$5 million with no deaths or injuries attributed to the events occurring during the 13-year period.

According to the NCDC, the worst recorded event occurred in January 1993 (*according to local officials the report should state December 1990/January 1991 for this event, not 1993*), leading to \$5 million in property damages. This damage was spread among nine counties, including Noble County. The Town of Rome City was especially hard hit in Noble County with damages estimated at \$1 million and numerous lake homes flooded as lake levels countywide rose. According to the Noble County Comprehensive Hazard Analysis, more than 200 homes surrounding Steinbarger, Jones, and Waldron lakes west of Rome City were affected.

In January 1998, flooding near Waldron Lake was caused by several inches of rainfall. Piers along the inlet to the lake and mobile homes along the shoreline were damaged by rising lake levels. Near the City of Kendallville, nearly 4 inches of rain fell. In May 1996, County Road 100S collapsed as culverts were washed away by floodwaters, and several homes in the Town of Avilla were damaged. A disaster declaration was issued in December 1991 as nearly 50 homes in Rome City, 20 homes near Wolf Lake, and several homes scattered throughout the County experienced flood damages. According to the Comprehensive Hazard Analysis, many of the damaged homes did not have flood insurance.

Historical Crests – Stream Gage Record for Elkhart River at Goshen as of 12/2009

- (1) 11.94 ft on 03/14/1982
- (2) 11.87 ft on 02/24/1985
- (3) 11.03 ft on 12/30/1990

- (4) 10.46 ft on 03/17/1982
- (5) 10.40 ft on 02/06/2008
- (6) 10.33 ft on 07/10/1951
- (6) 10.33 ft on 03/05/1979
- (8) 10.27 ft on 10/11/1954
- (9) 10.20 ft on 06/09/1993
- (10) 10.15 ft on 04/04/1950

0' Gage height = 769.43' NGVD
USGS Gage Data

Recent Presidential Declarations (flood) - Noble County

- FEMA-891-DR-IN, January 1991
- FEMA-962-DR-IN, September 1992
- DR 1476, July 2003
- DR 1520, May/June 2004
- DR 1573, January/February 2005
- DR 1740, January 2008
- DR 1832, March 2009

2009 Post Flood Numbers/Information

The flood event that occurred in March 2009 impacted the entire North Branch Elkhart River/West Lakes Chain. According to information provided by the Noble County Plan Commission on May 12, 2009, there were 156 homes affected by floodwaters. Thirteen of the homes were elevated homes constructed during the years 2004 through 2009. While accessibility was an issue, no damage occurred to these homes. Another 31 homes reportedly had floodwaters only to the foundation and no resulting damage. Eighty-eight of those reported homes affected had floodwaters into the crawlspaces and only required the crawlspace areas to be dried out with no resulting damage to the structures. Flood waters reached the living areas of 15 homes; however, no damage was noted after the structures were dried out. Reportedly, nine homes sustained major damage. Of those, reportedly four were not covered by flood insurance and no building permits have been obtained to repair/reconstruct. Photos from the March 2009 event are shown in Figures 5-6 through 5-11.

1983 USACE Report – (Section 208 Reconnaissance Report on Flood Control on the North Branch of the Elkhart River and the West Lakes Chain in Noble County, Indiana)

This report prepared by the U.S. Army Corps of Engineers (USACE) covered areas identified as reaches 1-7. In the 1983 report, 115 homes were reported to be located within the area identified as 100-year floodplain (1percent statistical chance of being equaled or exceeded each year). Of the 115 homes identified, 93 homes (92 percent) were located within the area identified also as being in the 2-year floodplain (50 percent statistical chance of being equaled or exceeded each year).

Data Collection 2009

The Silver Jackets North Branch Elkhart River/West Lakes Chain Task Team sought to collect and collate current data for use as a comparison to the 1983 U.S. Army Corps of Engineers (USACE) Report that shall serve as the baseline data in this chapter. For evaluation purposes, the task team attempted to replicate the same “reach areas” (1-7) identified in the USACE Report, while adding seven additional reach areas (8-14) within the immediate area that were not included in the 1983 Report (See Figure 5-12 at the end of this chapter). Data collected included: property address, parcel number, parcel description, resident lake, structure data such as type of foundation, finished floor area, date of construction to determine Pre-FIRM/Post-FIRM status, assessed value of improvements and land, nearest contour to determine approximate flood-depth, elevation history, damage history, and mailing address to determine whether residency is permanent or seasonal. This method allows an analysis of present day conditions on a reach-by-reach basis and compares current conditions with those used for the same reaches included in the 1983 USACE Report.

Within the identified North Branch Elkhart River/West Lakes Chain area of concern, 303 structures currently exist within the area of the 1 percent annual chance (100-year) floodplain. Of those 303 structures (primarily residential), 121 (36 percent) are located within areas also included in 50 percent annual chance (2-year) floodplain.

The oldest structure was reported to have been built in 1900. Reportedly there were five structures built prior to 1930. Since then, the numbers of structures with known construction dates were as follows:

- 1930s 30 structures
- 1940s 51 structures
- 1950s 67 structures
- 1960s 66 structures
- 1970s 34 structures
- 1980s 15 structures
- 1990s 25 structures
- 2000s 8 structures

A majority of the structures were built prior to the flood studies of the NBR Elkhart River/West Lakes Chain and prior to adoption of any regulations regarding construction methods to reduce the risk of flood damage in these known high risk areas.

Approximately 47 of the structures are considered post-FIRM, built after the County entered the NFIP. The identification of the flood risks provided through the flood insurance study of the NBR Elkhart River/West Lakes Chain has provided vital information allowing for informed decision making by community officials, individual property owners, and developers.

Floodwater depths at these structures during the 1 percent annual chance (100-year) flood ranges from 0 to approximately 4 feet above existing grade, posing a major problem for access as

previously referenced. While structures that have been elevated may not sustain structure damage, access during flood events remains difficult or impossible.

Another unique aspect of the NBR Elkhart River/West Lakes Chain area is that there are many seasonal homes. Of the 303 structures, 167 (approximately 56 percent) are seasonal homes.

Local 2009 NBR Elkhart River/West Lakes Survey

The Silver Jackets NBR Elkhart River/West Lakes Task Team coordinated with the local steering group to conduct a survey of property owners in the NBR Elkhart River/West Lakes Chain in Noble County. The survey consisted of 17 questions intended to gain knowledge about several factors related to property in the NBR Elkhart River/West Lakes Chain.

A total of 298 survey forms were mailed Nov. 4, 2009 to known property owners in the NBR Elkhart River/West Lakes Chain. The local steering group compiled the results of the returned surveys.

Property owners returned 163 completed surveys (59 percent of the total). Two of those survey forms were received after this compilation was completed, and that information is not included. An additional 12 surveys were returned undeliverable due to incorrect or expired addresses. Survey questions and results are located in Appendix F of this report.

Observations related to the questionnaires:

1. There is a discrepancy between the number reporting having flood insurance in question 1 and those answering questions 3 and 4.
2. Among the 50 with Flood Insurance, 16 reported having submitted claims at some time, and 10 had flooding in 2009.
3. Among those with flood insurance and/or have submitted claims against their insurance, 11 would sell or are not certain whether they would sell if there were a government buyout.
4. Several indicated they have taken steps to elevate or otherwise flood proof their property.
5. Several noted their property received no flood damage, but they either could not get to their property or could not leave their property because roads were flooded.
6. Many property owners who have never experienced flooding (both with and without flood insurance) have indicated an interest in selling their property should a government buyout be available and if the price is right. Some commented that flooding in the region has caused property values to decline.
7. It should be pointed out that any volunteer buyout program should include sufficient funding to pay off the debt of the West Lakes Regional Sewer District. Otherwise, the increased cost to those remaining property owners would be an extreme burden.

Chapter Key Points

1. Approximately 275 homes (about 91 percent) in the subject area were built between the period of 1900 and 1978 – prior to the adoption of floodplain management regulations in Noble County. It appears many of those homes were constructed during drier periods and built too low.
2. Approximately 56 percent of the homes in the NBR Elkhart River/West Lakes Chain are seasonal.
3. The County has maintained a good standing with the NFIP, making flood insurance available to county residents. However, not all owners of homes in the West Lake Chain area of concern carry this available protection.
4. Prior to March 2009, at least six homeowners in the NBR Elkhart River/West Lakes Chain used the Increased Cost of Compliance (ICC) component of their flood insurance policies to elevate their homes damaged by floods during earlier floods. As a result, these homes did not incur flood damage during the March 2009 flood event. *Additionally, flood insurance premiums for these elevated homes are substantially lower due to the reduced flood risk.*
5. Noble County adopted compensatory storage requirements, which are a higher regulatory standard. This requirement contributes to the protection of the natural features of this area and is viewed as a “good neighbor” policy – not negatively impacting another.
6. The best method to reduce flood risk and eliminate property damage and loss is to allow known flood prone areas to remain undeveloped and either remove or relocate existing development to safer sites. Regardless of the extent homes/buildings are affected during flood events, accessibility proves to be a common threat for homes in the NBR Elkhart River/West Lakes Chain. During winter flood events, which are common in this area, temperatures and ice can increase the risk of structural damage and further complicate accessibility. This accessibility issue contributes to the public safety issues in the area, particularly in regards to evacuation and emergency services. Structures that meet the building protection standards of the County’s floodplain regulations have demonstrated that property damage and overall flood risk can be avoided or greatly reduced.
7. More than half of the structures in the West Lake Chain are seasonal/second homes and many are not covered by flood insurance. On homes that are not covered, in certain instances, there is no trigger to require compliance with the flood protection requirements of the County’s floodplain regulations. These instances include non-substantial damage which do not require compliance with the flood protection requirements, repetitive damage which has not been documented or tracked, underestimated damage (intentional and unintentional), and flood damages not reported or identified. Flood waters are generally not great depths with many structures sustaining low or no damage – clean-up, carpeting, baseboards, crawlspace inundation, and access limitations. Many of the homes without flood insurance coverage and subject to greater flood depths have no insurance

funds to repair and subsequently are unable to use the Increased Cost of Compliance (ICC) benefit that accompanies a standard flood insurance policy. Also problematic is this area is subject to many winter flood events. It is not uncommon for ice to contribute to structural damage as well as making access to the flooded homes extremely difficult.

8. The new training requirement for insurance agents selling flood insurance will improve but not eliminate the problem of misinformation.

Additional Flood Risk Management Considerations:

Flood risk is most often measured by the probability of a water surface crest elevation occurring in a year. It is through the probability determination process that flood risk is most commonly measured, maps are drawn, and decisions are based. Appendix H contains map images depicting the aerial coverage of the flood that has a 1 percent annual chance (100-year), or the Special Flood Hazard Area, for the area around West Lakes Chain, Indian Lakes Chain, and Sylvan Lake. These areas are identified on the Flood Insurance Rate Maps which are available for viewing at the County government offices and on FEMA's website.

The 1 percent annual chance (100-year) occurrence flood shown on a flood insurance map should never be thought of as the largest flood that can occur. Typical flood prediction modeling does not take into account or have a factor of safety against unpredictable events such as multiple smaller storms occurring consecutively before basins dry out, storm events that exceed the 1 percent annual chance (100-year) size, debris jams at bridges, or ice jams. Standard 1 percent annual chance (100-year) flood insurance modeling also does not capture site-specific risk conditions that may exist, such as when residents live downstream of a large man-made dam. These flood risks are often thought to be limited to failure of the dam. However, dams are designed to minimize, to the extent possible, catastrophic failure of the embankment through the use of a controlled release of water to decrease the forces acting on the dam. When operated properly and under specific, predefined conditions, often extreme, a dam operator can still be faced with a need to release substantial amounts of water from the dam (because failing to release the water could result in a breach of the structure and total devastation to the downstream community).

The citizens along the NBR Elkhart River living downstream of Sylvan Lake Dam must be aware of the need to manage their personal risk associated with the required operation of the outlet works associated with the dam under specific conditions. Sylvan Lake Dam has a combination of features associated with the outlet works that were designed to maintain water level in the lake at the required level and then release water at a defined rate during increases in lake levels. (See Chapter 4 of this report for additional information regarding the Sylvan Lake Dam outlet works.) Under extreme conditions, additional water can and must be released to preserve the integrity of the dam. The operation of the gate and fuse plug associated with the outlet works for Sylvan Lake Dam has been defined by the Emergency Action Plan (EAP) for the structure. The Rome City Conservancy District maintains the operational status of the structure and the EAP.

Sylvan Lake Dam is a very old structure with a recent upgrade. As previously stated, the oldest residence currently on West Lakes Chain was built around 1900. Sylvan Lake dam was constructed from approximately 1837 to 1839, over 60 years earlier than the oldest existing residential structure on West Lakes. A brief history of the early days of the structure can be found in “History of Orange Township” by MF Owen (Owen 1950). The dam catastrophically failed, breached, three times – 1839, 1844 and 1855. The 1855 failure was reported to have caused destruction of all in-channel dams and bridges downstream to Elkhart with only the bridge at Ligonier saved by local efforts. The dam nearly failed an additional time in 1877. The dam was upgraded extensively in the mid-1990s, including the addition of the present outlet works.

The outlet works are designed to release water as needed to secure the integrity of the embankment in an attempt to prevent catastrophic failure. However, an additional release from Sylvan Lake Dam is not factored into the 1 percent annual chance (100-year) flood levels for the downstream area, nor has any resultant breach wave should the dam fail. Therefore, this additional flow would increase the water levels to the downstream area beyond any mapped flood zone. Residents in the downstream area should factor that risk into their personal risk management plan. It is important the residents of the West Lakes area have in-place, and practice, an Emergency Flood Response Plan to accompany the Sylvan Lake Emergency Action Plan. This plan would provide for event notification along with evacuation notification and routes should these extreme measures be required.

Future Local Considerations

1. A concerted effort should be made to provide a comprehensive educational format to better inform local residents on flood insurance, opportunities, and to encourage all those at risk to obtain/maintain this vital protection. Focus should include:
 - Clear message that anyone can purchase flood insurance as long as their community participates in the NFIP
 - NFIP “minimum” requirements versus recommendations, and individual efforts to go beyond minimums to further reduce their property’s flood risk
 - Lenders’ role in NFIP
 - Coverage – what is and is not covered
 - Availability of contents coverage
 - Mitigation opportunities available through Standard Flood Insurance Policy – in addition to claims for repair after incurring flood damage, up to \$30,000 is available for Increased Cost of Compliance (ICC) for substantially damaged structures and repetitive loss structures (ICC funds can be used for elevation, relocation, floodproofing, or demolition.)
 - Elevating a home in the flood hazard area can greatly reduce flood insurance premiums
 - Obtaining a Letter of Map Amendment, removing a home by letter from the Special Flood Hazard Area (SFHA) designation, will eliminate mandatory flood insurance requirements, but only indicates that the structure is in a lower flood

risk zone. Flood insurance premiums for structures in a low risk zone are substantially less than those in a SFHA.

- Grandfathering policy. New DFIRMs will be completed in little more than a year for Noble County. Property owners who have a structure where the flood zone will be changing from Zone X to Zone A can take advantage of FEMA’s grandfathering policy by purchasing flood insurance prior to the effective date of the new maps – maintaining the less expensive Zone X rates.
- Flood Insurance should not be viewed any different (any less essential) than a Standard Homeowner’s Insurance Policy covering fire, wind, tornado, etc.
- A home has a 26 percent chance of being damaged by a flood during the course of a 30-year mortgage in a high-risk area, compared to a 9 percent chance of fire.
- Last year, one-third of all claims paid by the NFIP were for policies in low-risk communities.
- Most homeowner’s insurance does not cover flood damage.
- If you live in a Special Flood Hazard Area (SFHA) or high-risk area and have a federally backed mortgage, your mortgage lender requires you to have flood insurance.
- Just an inch of water can cause costly damage to your property
- Not all flood events qualify for a Presidential Disaster Declaration. Federal disaster assistance is only made available as a result of a Presidential Disaster Declaration.
- A flood insurance claim may be submitted and paid whether or not there has been Presidential Disaster Declaration.
- Most federal disaster assistance is in the form of loans (usually a Small Business Administration Disaster Loan), rather than grants. Disaster loans must be paid back with interest.
- Maintaining a flood insurance policy long term, particularly in a high risk zone, would be substantially less expensive than not having flood insurance and repaying a disaster loan after a damaging flood event. (For example: For a \$50,000 loan at 4 percent interest, the monthly payment would be around \$240 a month (\$2,880 a year) for 30 years. Compare that to a \$100,000 flood insurance premium, which is about \$300-\$775 a year.)

Staff from DNR Division of Water, MRBC, and IDHS would be a resource for this type of public education/outreach effort.

2. In addition to the above, the community may greatly benefit from having a “Flood Forum” held in a local venue much like the recent Upper Tippecanoe Flood Forum, which was organized by the local watershed foundation, Upper Tippecanoe Watershed Foundation, and the Kosciusko Lakes and Streams Program, which is centered at Grace College. Using the same “Flood Forum” format, attendees would have the opportunity to hear a short presentation providing an overview of the area and pertinent flood related information at the start of the event. This would be followed by an open house at which attendees have the opportunity to discuss their concerns one-on-one with representatives from various federal, state and local agencies. For late-comers, the presentation could be repeated later at a scheduled time during the event.

3. Residents in the North Branch Elkhart River/West Lakes Chain (as well as the remaining areas of the County) should be adequately informed of the importance of reporting all flood damages, obtaining permits for repair, applicable building protection requirements, and the potential for ICC funds for those buildings covered by flood insurance.
4. ICC funds can be used to elevate, relocate, or demolish residential structures substantially damaged by flood or those that have incurred repetitive loss. Following future flood events, the community should carefully evaluate each and any insured structure(s) eligible for ICC and work with each property owner to achieve the best possible option. Particularly in situations where a buy-out may be desirable, ICC funds may be used to cover the non-federal portion of a mitigation grant.
5. The higher local standards regarding compensatory storage are vital to efforts to protect the unique and natural features in this area. Deviation from these higher standards should be discouraged.
6. In general, focus should be on protecting what exists – either by removing existing structures from the Special Flood Hazard Area (SFHA) or elevating existing structures in the SFHA. New development in the SFHA should be discouraged or prohibited to avoid putting additional development at risk from known risk, particularly in light of the accessibility problems during periods of flood. The properties of owners who may be interested in a buy-out program should be looked at on a case-by-case basis to see if there is a concentration of properties in one area to determine if this would be a worthwhile pursuit. Alternatives to address the issue related to the Regional Sewer District should be sought.
7. It is recommended that urban planners work diligently to identify areas for future development that will minimize potential losses due to flooding, avoid sensitive species, and avoid impacts to areas that have high natural resource values or high potential for wetland restoration and floodwater storage. Areas proposed for future development should also avoid the land adjacent to and in between the many nature preserves and protected wetlands areas which are logical areas for future expansion of flood water storage through restoration. By identifying appropriate areas in advance, it will be easier to attract new development and easier to preemptively avoid situations where considerable financial investments have been made in inappropriate areas. Identified areas should be sited well above local flood elevations and located in close proximity to existing infrastructure outside of flood prone areas. This should be an integral part of zoning decisions and any long range planning.
8. It is important the residents of the West Lakes area have an Emergency Flood Response Plan to accompany the Sylvan Lake Emergency Action Plan.

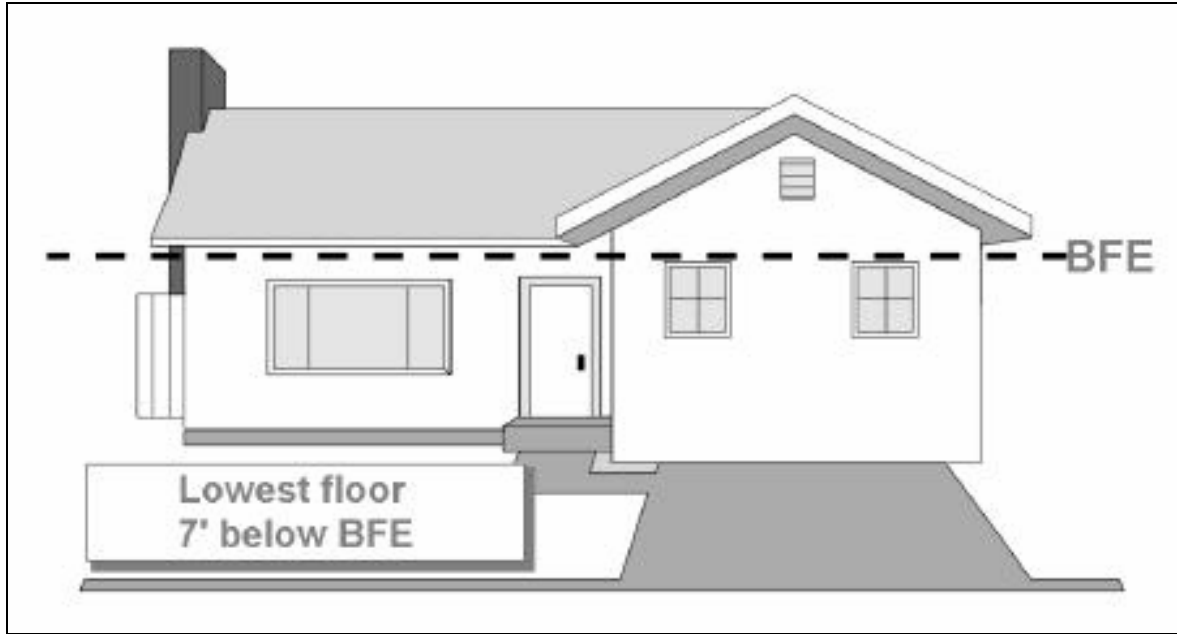


Figure 5-1. Pre-FIRM building. (Elevation is not part of the calculation). **Annual premium: \$846.** (Rate effective 10/1/2009 based on \$100,000 coverage on building, single family, one floor, slab-on-grade, Zone AE, \$1000 deductible, and no contents coverage; includes federal policy fee and ICC premium.) **Over the life of a 30-year mortgage premiums would equal \$25,380.**

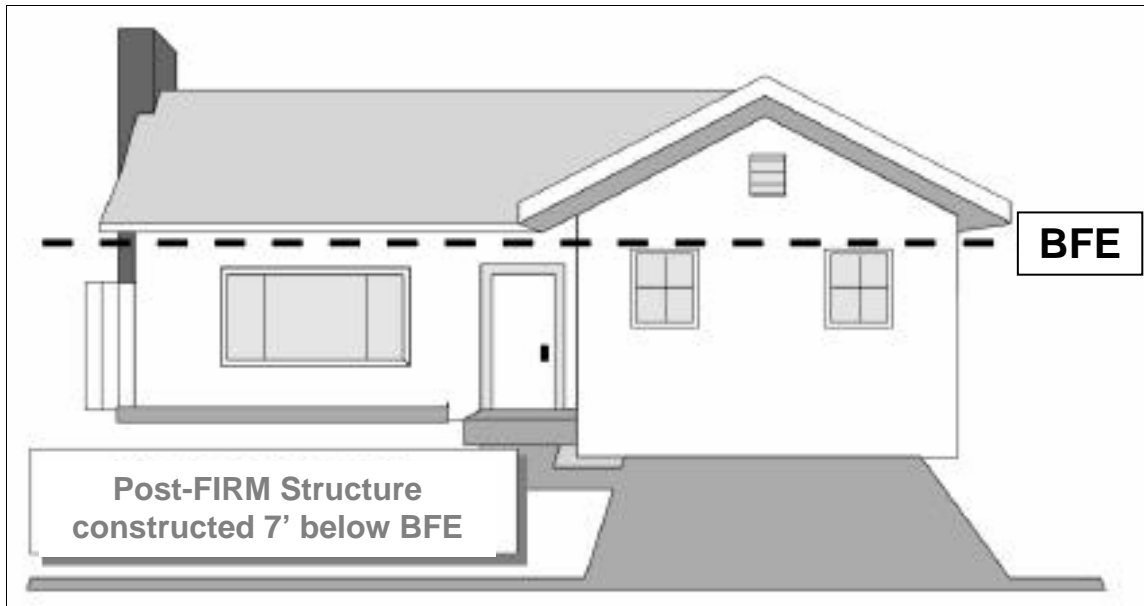
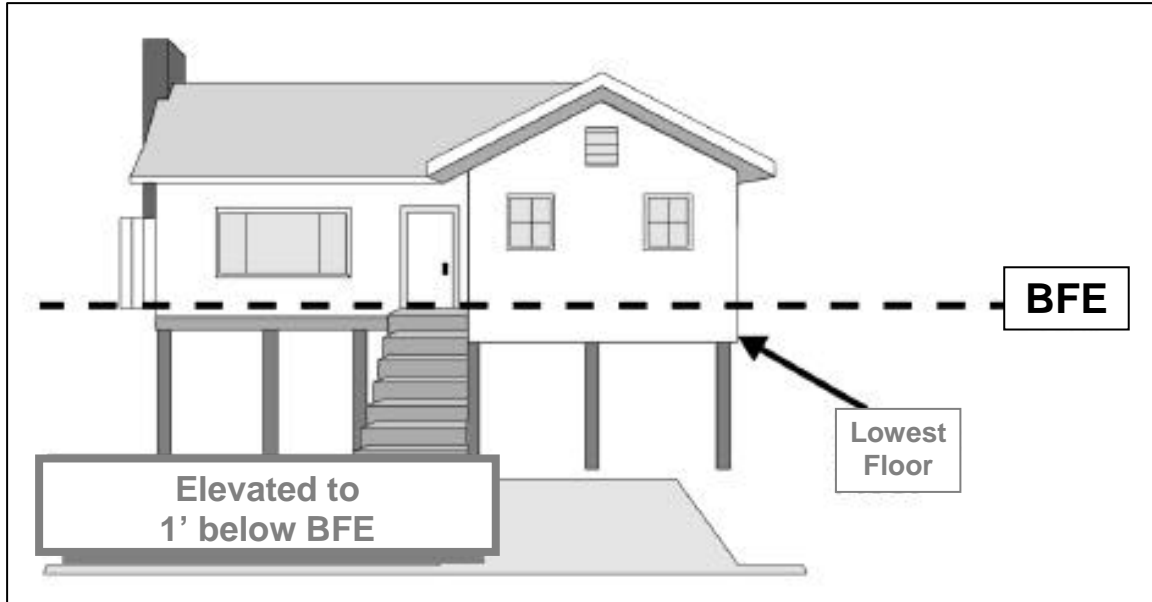
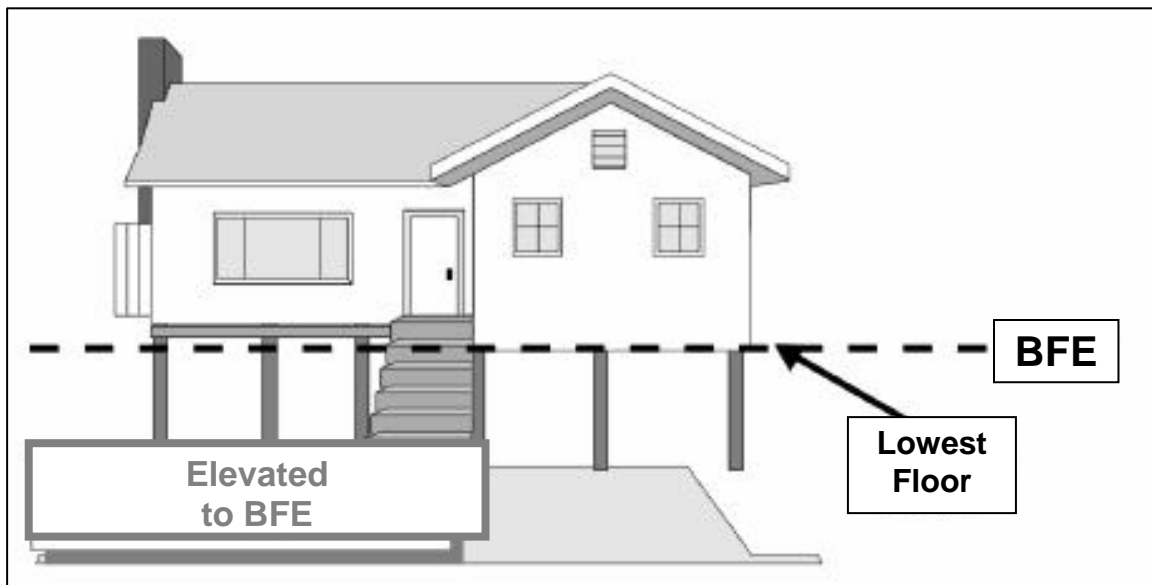


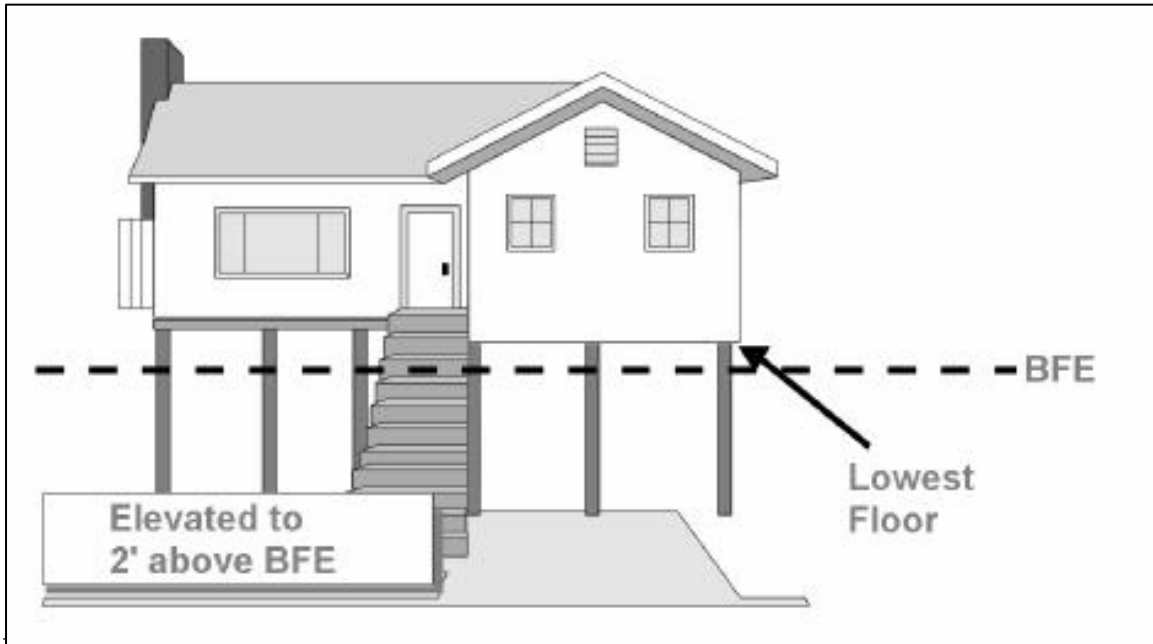
Figure 5-2. Post-FIRM structure constructed with lowest floor 7 feet below BFE. **Annual premium: \$13,417.** (Submit-to-Rate effective 10/1/2009 based on \$100,000 coverage on building, single family, one floor, slab-on-grade, Zone AE, \$1000 deductible, and no contents coverage; includes federal policy fee and ICC premium.) **Over the life of a 30-year mortgage this would equal \$402,510.**



*Figure 5-3. Post-FIRM structure constructed with lowest floor 1 foot below BFE. **Annual premium: \$2,875.** (Rate effective 10/1/2009 based on \$100,000 coverage on building, single family, one floor, slab-on-grade, Zone AE, \$1000 deductible, and no contents coverage; includes federal policy fee and ICC premium.) **Over the life of a 30-year mortgage this would equal \$86,250.***



*Figure 5-4. Post-FIRM structure constructed with lowest floor at the BFE). **Annual premium: \$941** (Rate effective 10/1/2009 based on \$100,000 coverage on building, single family, one floor, slab-on-grade, Zone AE, \$1000 deductible, and no contents coverage; includes federal policy fee and ICC premium.) **Over the life of a 30 year mortgage this would equal \$28,230.***



*Figure 5-5. Post-FIRM structure constructed with lowest floor 2 feet above BFE. **Annual premium: \$305.** (Rate effective 10/1/2009 based on \$100,000 coverage on building, single family, one floor, slab-on-grade, Zone AE, \$1000 deductible, and no contents coverage; includes federal policy fee and ICC premium.) **Over the life of a 30-year mortgage this would equal \$9,150.***



Figure 5-6. Waldron Lake – home damaged by 2008 flood repaired and elevated (enclosure beneath lowest floor with flood vents), utilizing flood insurance/ICC.



Figure 5-7. Waldron Lake – homes and accessory buildings surrounded by floodwaters in March 2009.



Figure 5-8. Waldron Lake – home with crawl space flooded and flooded garage in March 2009.



Figure 5-9. Waldron Lake – home damaged by 2008 flood in process of being repaired and elevated utilizing flood insurance/ICC in March 2009.



Figure 5-10. Waldron Lake – home damaged in 2008 repaired and elevated (stem wall construction), utilizing flood insurance/ICC undamaged in March 2009 flood.



Figure 5-11. Waldron Lake – sandbagging efforts to protect home in March 2009.

Figure 5-12. Topographic map of the West Lakes Chain area with the Reaches 1-14 identified.

