

The Oxbow

FROM THE NORTH DAKOTA STATE WATER COMMISSION

SWC Grants Approved for Flood Control in Enderlin, Hazen, Pembina, and Grafton

At their March 11 meeting in Bismarck, the State Water Commission approved cost-share grants for flood control project repairs in Enderlin, Hazen, and Pembina, and for a new federal flood control project in Grafton.

Enderlin

Enderlin completed building its flood protection levee system back in 1986. The system was originally designed and constructed by the U.S. Army Corps of Engineers (USACE), and was certified as meeting permanent flood protection criteria of the National Flood Insur-

ance Program (NFIP) at the time.

Due to the current Map Modernization program of the NFIP, recertification of the features of the 1986 system is being required for the city to retain its existing permanent flood protection status. If the permanent flood protection recertification is not done, or is found to be deficient, the NFIP mapping process must ignore the levee system and map the flood hazard as though no flood protection exists. One pitfall of not recertifying permanent flood protection is mandatory purchase of flood insurance for those property owners that have a mortgage – a situation that doesn't

exist with a recognized, permanent

flood protection system.

Toward rectifying this situation, Enderlin was recently able to get several USACE reports concerning the soils and design of the levee. However, the information received was not detailed enough for the city's engineering consultant to certify. Therefore, an engineering and soils investigation must be completed. In addition, an emergency warning system, operations and manual updates, and levee repairs will be certified by the project engineers, and later submitted to FEMA for approval.

The total estimated cost of the repairs and other work associated with project recertification is about \$250,000, of which \$176,380 was considered eligible for Water Commission cost-share. In response, the Water Commission approved a grant in the amount of \$100,578 to assist Enderlin with their levee repairs and recertification.

Hazen

The roadbed of U.S. Highway 200, which runs through Hazen, was raised and constructed to form a



At left: The city of Enderlin and the location of their levee repair project. Below: Flooding along Highway 200 in Hazen (spring of 2009).



flood protection levee in 1979. And, although Hazen's Flood Insurance Rate Map (FIRM) was changed to recognize this flood protection system in 1983, no formal certification process was done. This was probably due to the fact that current NFIP flood protection standards began in 1986.

Similar to Enderlin's situation, certification of the 1979 flood control system is being required in order for the city to retain its existing permanent flood protection status. Again, if certification of the permanent flood protection features is not done, or the system is found to be deficient, mandatory purchase of flood insurance will be required for those with a loan on their property.

FEMA notified Hazen and the Mercer County Water Board in October that the Highway 200 levee system protecting the city would be de-accredited because it only had a two-foot freeboard. As a result, most residents would be required to carry flood insurance. To avoid that situation, Hazen made the decision to move forward with a levee improvement project that will meet FEMA's standards.

As part of the project, Antelope Creek has been subdivided into four areas of focus. The eastern most reach, which involves 6,800 feet of channel, will be snagged and cleared to increase conveyance and reduce ice jams. Some trees will also be removed upstream of a bridge.

The second reach requires the removal of trees that have grown adjacent to the channel, and a double-barrel box culvert will be installed near Hazen's 3rd Ave. NW bridge to increase conveyance – bringing the levee freeboard to the required three foot FEMA standard. In addition, the dike at the intersection of Highway 200 and 3rd Ave. NW will be raised, and walking paths will be relocated.

Reach three contains the major portion of the city's 1979-built re-channelization of Antelope Creek. This area will also require some tree removal.

The fourth and final reach, including a stretch of Antelope Creek that is 8,300 feet in length – flowing through native prairie, will require no modifications. However, a section of dike in that area will be extended 700 feet to provide the required three

feet of freeboard.

The total cost of the project is estimated at \$1.14 million, of which \$949,000 was eligible for Water Commission cost-share. The Water Commission approved a \$567,700 grant for the project at their March 11 meeting.

Pembina

Pembina's permanent levee and floodwall were originally designed and constructed by the USACE in 1975. Since that time, the USACE has assisted the city with inspections and maintenance. As time has passed, maintenance concerns have surfaced to the extent that the existing condition of the levee and floodwall will probably not meet current permanent flood protection requirements – without a detailed analysis.

In March 2009, Pembina received a letter from FEMA requiring that their levee and floodwall be recertified to permanent flood protection standards within two years for the city to maintain its protected status. Complicating this issue is the fact that the USACE is not presently able to provide certification, despite its role in designing, financing, and constructing Pembina's flood control system. Therefore, like Enderlin and Hazen, Pembina is required to contract with the private sector for the certification analysis. And again, like those other communities, without an analysis of the condition of the flood control system, Pembina faces being mapped back into the flood hazard area, and residents with loans on their property would be required to purchase flood insurance.

The total cost of the analysis is estimated to be \$91,000, of which \$45,260 is eligible for a Water Commission grant. In response, the Commission approved a \$27,156 grant for Pembina. Any future requests from Pembina to complete levee rehabilitation efforts (based on the analysis)

Pembina's levee and floodwall have been instrumental in protecting the city from flooding for years, as illustrated in this spring of 2009 photo.



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will be addressed separately at that time.

Grafton

Recurring flooding along the South Branch and mainstem of the Park River has caused problems in Grafton for decades, with a large portion of the city being located in the 100-year floodplain.

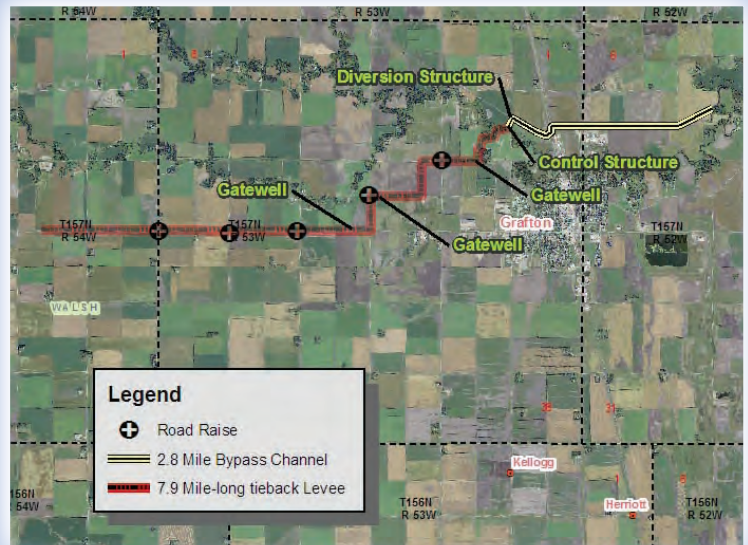
For years, the USACE has been working with local interests to develop a permanent flood control project. As recently as 2004, an assessed project was proposed, but the assessment vote failed – resulting in no local funding source for the project to move forward. Recognizing the dire need for permanent flood control, the city of Grafton devised a funding plan to meet their local cost-share for a federal project that will be pursued without an assessment vote.

The project features provide 100-year level protection and consists of a 2.8-mile bypass channel around Grafton; a 7.9-mile tieback levee;

a control structure, diversion structure, erosion control weir on channel; interior drainage facilities, including ditching, culverts, and gatewalls; new railroad bridges; a new Highway 81 bridge across the new channel; five county road raises; and 434 acres of permanent channel and levee easements.

The estimated timeline of the project is to have it completed and certified by 2015. At that time the FIRMs will be revised to allow removal of Grafton from the 100-year floodplain.

The estimated total cost of the



Elements of the Grafton flood control project and their locations.

project is \$41.1 million – all of which is eligible for state cost-share participation. The USACE will fund 75 percent, and Grafton has requested 17.5 percent from the Water Commission, leaving 7.5 percent for the city of Grafton. Of the local 25 percent share, the Water Commission approved \$7.2 million at their March 11 meeting. Grafton will cover the remaining \$3.1 million.

Devils Lake Flood Facts Flier Available

The State Water Commission recently completed a new, full-color Devils Lake Flood Facts flier that is available for download via their website at www.swc.nd.gov.

The new four-page flier includes photos, hydrographs, maps, and a myriad of factoids related to the Devils Lake flooding situation.

Some of the general Devils Lake flood-related topics covered in the fact sheet include: basin geology, current and historic water levels, inundation statistics, economic damages, the city of Devils Lake levee, and the Devils Lake outlet.



North Dakota State Water Commission
Dale L. Frink, State Engineer
900 East Boulevard Ave. • Bismarck, ND 58505
(701) 328-2750 • <http://swc.nd.gov>

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