

City of Des Moines
and
WRA Flood Protection Plan

Section 1: Executive Summary

Background: City of Des Moines & WRA

The City of Des Moines is the capital city of Iowa, as well as the state's most populated city. The City of Des Moines is also a member of the Des Moines Metropolitan Wastewater Reclamation Authority (WRA) which includes the following member communities: Altoona, Ankeny, Bondurant, Clive, Cumming, Des Moines, Greenfield Plaza/Hills of Coventry, Johnston, Norwalk, Pleasant Hill, Polk City, Polk County, Urbandale Sanitary Sewer District, Urbandale-Windsor Heights Sanitary District, Warrant County, Waukee, and West Des Moines. In 2008, portions of the City of Des Moines suffered significant flood damage along the Des Moines River. Two-hundred seventy (270) homes and businesses in the area protected by the Birdland levee were inundated with floodwaters and evacuated. The Des Moines Metropolitan Wastewater Reclamation Authority's (WRA) Wastewater Reclamation Facility (WRF) is located within the city limits of Des Moines and is bounded on the south by the Des Moines River. In 2008 and 2010, the WRF was severely impacted by the high river levels and floodwater that entered the facility through the conveyance system. The facility was at maximum capacity for an extended period of time. The WRF was extremely close to being incapacitated, however was able to continue to provide service to the seventeen (17) participating communities.

In the time since the 2008 Flood, the City of Des Moines has implemented a Flood Protection Plan to prevent future flood damage. Significant improvements have been completed since 2008. These improvements include, reconstruction of the Birdland and Central Place levees, construction of floodwalls as part of the Principal Riverwalk in downtown Des Moines, construction of new pump stations, sewer lining, and facility hardening. Following the 2008 Flood, the Army Corps of Engineers released their Des Moines River Regulated Flow Frequency Study. This is the third Federal study within the past twenty-five (25) years that showed flood flow frequencies have increased over the previous estimate. In addition to identifying the higher risk of flooding, the Corps of Engineers' study showed the levees in downtown Des Moines do not provide the required freeboard for a 100-year flood, thus affecting accreditation of the levees and affecting Federal Emergency Management Agency (FEMA) flood hazard mapping. This led the City to identify flood mitigation strategies that would either lower the regulatory flood profile or raise the height of flood protection. These strategies are included in the presented Flood Protection Plan. The Des Moines River Regulated Flow Frequency Study is included in Appendix 1.

Any flooding in Des Moines, especially along the Des Moines River, has a direct impact on the WRA's ability to provide uninterrupted wastewater treatment service to its customers. In addition, interrupted service would impact the citizens, businesses, and economy of the City of Des Moines most, as the city is the largest customer base of the WRA. If the WRF is not operational, the water quality impacts to the Des Moines River and downstream locations, such as the Red Rock Reservoir, could potentially be devastating. If the WRF were to be inundated by flood water, the emergency repairs and permanent repairs necessary to return the facility to operating condition are estimated to exceed \$44 million. Service interruption would vary from thirty days (30) to restore minimal operation, to six (6) months for full operation.

Following the 2008 and 2010 flood events, HDR Engineering conducted a WRF Flood Protection Study for the WRA. This study identified immediate high water elevation concerns and provided flood mitigation alternatives with corresponding benefit/cost ratio (BCR) analysis for each. Future phases of the Flood Protection Plan include projects identified in this Study. Multiple projects exceed 1.0 (break-even point) BCR. These projects provide the greatest net benefit. The completed projects will provide flood protection for the WRA in the event of a 500-year flood. The WRF Flood Protection Study is included in Appendix 1.

The City of Des Moines and the WRA have entered into a 28E Agreement for the joint application and responsibilities to administer and fund the Iowa Flood Mitigation Project Plan. The WRA, organized under Chapters 28E and 28F of the Iowa Code, is currently comprised of seventeen (17) participating communities. The 2014 28E Agreement for the joint FMP application, and the two Amendments are included in Appendix 4. Also included in Appendix 4, is the Second Amended and Restated Agreement for the Des Moines Metropolitan Wastewater Reclamation Authority, effective July 1, 2014.

The City of Des Moines and the WRA have spent over \$178.3 million on completed flood projects, as well as \$2.5 million on flood projects currently in process. The purpose of each flood project is to maximize the protection of critical infrastructure from the effects of floodwaters. Funding through the Flood Mitigation Program is essential to the City of Des Moines and the WRA's 17 participating communities. Without support from the Flood Mitigation Program, many of the proposed projects would potentially not occur, and others would be deferred until funding became available. Any delay in funding for the projects identified in the Flood Protection Plan will increase the likelihood of continued damage in the event of a major flood event. Future flooding in Des Moines would be catastrophic. The fiscal and economic impact would be far reaching, as Des Moines is the home to several large, national insurance companies. Wellmark, Nationwide, Principal, and EMC all reside downtown Des Moines, making it the third largest insurance capital in the world. Other companies such as Kemin Industries, Cargill, Helena Industries, Systech Environmental, the WRF, and major regional natural gas and other fuel distribution facilities would also be directly affected by a future flood. All told, the metropolitan area annually generates \$42 billion in Gross Domestic Product (GDP), the equivalent of \$115 million per day. Flooding damages to the WRF would lead to disruptions to each of the businesses listed above as well as the 17 participating communities including State Capitol Complex offices.

On May 28, 2014, the City of Des Moines and the WRA submitted an application to the Flood Mitigation Board. This application requested \$95,529,352 for projects in progress and planned future projects. The future projects were identified by Consultant studies and relevant technical data. However, in the past year, the current projects such as the SE 4th & Shaw Pump Station, WRA Combined Sewer Solids Separation Facility, WRA New Main Outfall Sewer, and the WRA Southwest Outfall Bank Stabilization have been finished or are near completion. Each of these projects provide a significant tool in flood protection efforts by conveying floodwater from the downtown area of the City of Des Moines, pumping the floodwater back to the regulated floodway, and by preventing inundation of critical WRA facilities from floodwater.

With the completion of these projects, their eligibility for Sales Tax Increment Funding ceased. This reduces approximately \$11 million from the original application.

However, since May 2014, Consultants for the City of Des Moines and WRA have identified additional projects that provide an efficient and cost effective method of flood prevention and protection. The new projects include: WRA Ingersoll Run Outlet, Stantec Consultant Services - Hydraulic Modeling and External Review, and DM River Levee Interior Drainage – Phase I, II, & III. These improvements will help reduce flood risk resulting from locally heavy rainfall including periods when river levels are above flood stage. As required by FEMA, the design of the interior drainage improvements will take into account the joint probabilities of local runoff from within the levee protected areas as well as river levels to provide a comprehensive approach to flood risk reduction. These new projects replace the Drainage District 9 Ag Levee Removal, Quarry & Meander Grading, and Wetland Mitigation projects. The difference in the sales tax increment request due to these project changes are negligible.

The revised funding request is consistent with the limits of available sales tax increment through the FMP rules. These limitations result in additional financing expenses of \$2.3 million. With the revised Project Plan, the total sales tax increment request increases by \$16 million. This amount is added to the original total sales tax increment request of \$95 million to a new total of \$111 million.

Further flood protection will lead to an increase in areas accessible for development. Riverpoint West, Market District, SE Connector, and the Historic Court Avenue District are all locations in Des Moines that would directly benefit from the future Flood Protection Plan. Flood hardening and levee certification will provide enticement for future development in these areas, which would lead to increased tax revenue. Reliable flood protection and affordable flood insurance will ensure Des Moines is able to maintain current businesses and development, as well as attract future development.

Each year the City of Des Moines spends \$12,400,000 of the Stormwater utilities budget solely for operations and maintenance services. These services include a routine levee maintenance program. This program is further described in the Project Plan. The Army Corps of Engineers also performs annual levee inspections within the City of Des Moines. The WRA also collects \$21,531,350 annually from the participating communities for operations and maintenance services associated with the WRA facilities. These services include levee maintenance and inspections surrounding the WRF.

Phases: Flood Protection Projects

Phase 1 - Completed projects.

Phase 2 – Projects that are currently underway.

Phase 3 and Phase 4 – Projects identified to provide the most effective and a higher level of flood protection for the City of Des Moines and WRA.

Cost: Sales Tax Increment Request - \$111,100,273 Total Project - \$308,609,720

The City and the WRA are requesting Sales Tax Increment Funding of **\$111,100,273** for projects identified in Phases 3 and 4. Once all four phases of projects are complete, at a total cost of **\$308,609,720** the City of Des Moines and the WRA will have FEMA accredited flood protection and facility improvements that increase resiliency and reduce the risk of damage caused by flooding.

The Iowa Department of Revenue is accumulating recent historical data on sales tax revenue and trends in sales tax revenue growth for the WRA's 17 participating communities including the City of Des Moines. Sales and Use Tax Reports from the Iowa Department of Revenue illustrate growth has averaged 2.7% per year since 2004 within the applicant's area. Sales tax revenue within the applicants' boundaries is therefore projected by local officials to increase on average by 2.7% per year over the next twenty (20) years.

These projections would make available \$9,100,000 in annual growth of Sales Tax Revenue factoring in the 70% discount required by the program. The revised Sales Tax Increment Request schedule is now calculated to be the amount remaining available under the statewide annual limitation of \$30,000,000. The first year's request is slightly higher than the projected 2.7% projected growth, but all other annual requested amounts could be fully funded even with a much lower growth rate (1.1%). The total for the revised schedule of requested amounts is greater than the original amount requested because more of the funding has been pushed to later years requiring the debt to remain outstanding longer and the accumulation of higher interest costs.

Result: Decreased Flood Risk

In 2013, the City of Des Moines hired Stantec Consulting Services to perform a comprehensive review of the levee system which protect areas along the Des Moines and Raccoon Rivers from the downtown area downstream to the WRF. This review also included a limited hydraulic review of the Corps of Engineers owned Southeast Des Moines levee. This is significant since the City of Des Moines' levee system is hydraulically connected, and dependent upon the Corps' levee system for FEMA accreditation. The Stantec review includes assessment of a wide range of options. These options include improvements that increase the height of the existing levees, as well as improvements that removed constrictions in the river in order to reduce water surface elevations. Each option attempts to reach full FEMA levee accreditation at minimal cost of levee improvements. Options were reviewed regarding cost and flood risk reduction benefits, including structural levee improvements, agricultural levee removal near US Highway 65, quarry grading, and elevating the Red Pedestrian Bridge on the downtown Riverwalk.

Stantec's analysis resulted in a comprehensive Flood Protection Plan providing a balanced flood mitigation approach which:

- Protects key municipal infrastructure, commercial districts, and residential areas from riverine flooding by improving existing levees to meet FEMA standards including raising levees generally less than one and a half (1.5) feet, but up to seven (7) feet in some locations.

- Reduces water elevation by reducing constrictions at the Riverwalk Red Pedestrian Bridge and Grand Avenue Bridge.
- Reduces flood risk due to rainfall interior to the levee system by upgrading storm sewer and pump station systems to meet FEMA standards.

The planned work will complement the current Iowa DOT project that includes the new US 65 overflow bridges that have been constructed, and the recent removal of the UPRR Bridge downstream of Scott Avenue. These improvements have a positive upstream impact by lowering the 100-year water surface elevation along the Southeast Des Moines Levee by as much as two (2) feet. This approach also helps to minimize the impacts downstream by allowing floodwater to spread out across a much greater area, thus reducing the velocity of the floodwater. The Corps of Engineers Section 408 requirements include review of risks within the project area, as well as upstream and downstream. Negative impacts, if any, will have to be addressed to obtain the Corps of Engineers approval for the project improvements. The Flood Protection Plan also includes WRA improvements that reduce the impacts of floodwaters downstream by conveying, partially treating, and removing the water from the combined sewer system and returning the water back to the regulated floodway. By doing so, the Flood Protection Plan protects the WRF from inundation and allows the WRA to continue to convey and process wastewater from the 17 participating communities.