



TO: The Honorable Mayor and City Council Members

FROM: Michael C. Van Milligen, City Manager

SUBJECT: Upper Bee Branch Creek - Channels, Streets & Utilities Project
(CIP#7201654 & 3401654)

DATE: May 15, 2015

City Engineer Gus Psihoyos is recommending City Council award the construction contract for the Upper Bee Branch Creek – Channel, Streets, & Utilities Project to the low bidder, Portzen Construction, in the amount of \$27,819,266.00, which is 50.2% greater than the \$18,518,300.00 engineer's estimate. I also recommend modifying the Bee Branch Watershed Flood Mitigation Project construction schedule so that awarding the contract can be done without increasing planned debt and without increasing previously adopted Stormwater Utility rates.

Since 1999 there have been six Presidential Disaster Declarations which included the Bee Branch Creek Watershed. More than 50% of Dubuque's population either lives or works in the watershed. The Drainage Basin Master Plan, completed and adopted by the City Council in 2001, established that there are more than 1,100 properties at risk of flood damage as a result of the flash flooding. Based on a subsequent study in 2009 by the Federal Emergency Management Agency (FEMA), 1,373 properties are at risk. In addition to homes, there are over 70 businesses in the at-risk area with over \$500 million in annual sales. Eighty -five percent (85 %) of the impacted properties have buildings that are potentially eligible for listing on the National Register of Historic Places, the official list of the Nation's historic places worthy of preservation. In fact, fifty-seven percent (57%) of the buildings are more than 100 years old. The flood prone area in the Bee Branch Watershed encompasses historic neighborhoods offering some of the community's most affordable workforce housing. Most residents are working families, and many are elderly -- those least likely to recover from repetitive flood loss. Repetitive flood damage leads to disinvestment. From 2004 to 2009, while commercial property values grew by 39% citywide, they fell by 6% in the Bee Branch Watershed flood prone area. Residential property grew city wide by 21% during the same period, but only grew by 14 % in the flood prone area.

Since 2001, the City has implemented many of the improvements outlined in the Drainage Basin Master Plan. But since 2001, several intense rain storms have occurred in the Dubuque metropolitan area so that revisiting the predicted hydrology and hydraulic behavior of the Bee Branch Watershed was appropriate. Over a 12-year

period starting in 1999, there have been three 100-year storms, two 50-year storms, one 25-year storm, and one 10-year storm. Finally, it is important to consider how additional flood mitigation efforts undertaken by the City since 2001 fit with the overall effort to mitigate flooding. Therefore, work began to update/amend the Drainage Basin Master Plan.

On November 18, 2013 the City Council adopted the 2013 Drainage Basin Master Plan Amendment. The 2013 Amendment did not replace the 2001 Drainage Basin Master Plan. Instead, it built upon its foundation. The amended Drainage Basin Master Plan outlined several improvements throughout the Bee Branch watershed to mitigate the effects of future flooding and disasters. Collectively, the improvements form the basis of the Bee Branch Watershed Flood Mitigation Project. The subject of this bid is the Upper Bee Branch Creek Restoration component of the Watershed Project.

With a total estimated cost of \$179 million, the Bee Branch Watershed Flood Mitigation Project will prevent an estimated \$582 million in damages over the 100-year design life of the project. That represents a return on investment of roughly \$3 for each \$1 spent.

The Bee Branch Watershed Flood Mitigation Project represents a multi-phased, fiscally responsible investment. It reflects a holistic approach to mitigate flooding as it will improve water quality, stimulate investment, and enhance the quality of life of watershed residents.

On February 3, 2014 the City Council approved the execution of a funding agreement with the State of Iowa Flood Mitigation Board authorizing the City's use of \$98.5 million of state sales tax increment funding for the Bee Branch Watershed Flood Mitigation Project. The funding agreement incorporates the 20 year Project Plan and established the schedule as to when the various elements of the plan will be completed.

The Upper Bee Branch Creek Restoration Project (Phase 7 of the Bee Branch Watershed Flood Mitigation Project) will be constructed through multiple contracts with the Upper Bee Branch Creek – Channel, Streets, & Utilities Project as the first. As the name suggests, the improvements associated with this contract are generally associated with the channel grading, the reconstruction of streets, and the relocation of City utilities (storm sewer, sanitary sewer, and water main) from Garfield Avenue to 24th Street.

The grading work involves the removal and hauling away of roughly 200,000 cubic yards of soil to create the 2,000-foot long creek and flood plain area. To create the design flood capacity, creek construction includes the installation of retaining walls at various points along the length of the project. The creation of the flood plain involves the planting of over 300,000 square feet of vegetative surface restoration and the planting of over 550 trees and shrubs. The plantings are not purely aesthetic. They enhance the flood mitigation capabilities of the project, the overall health of the restored creek, and help prevent erosion.

The streets to be reconstructed as part of the project include Garfield Avenue at Kniest Street, Kniest Street between Rhomberg Avenue and Lincoln Avenue, Lincoln Avenue near Kniest Street, and finally 24th Street between Washington Street and Prince Street. Limited portions of Rhomberg Avenue and 22nd Street will also be reconstructed where they intersect the creek corridor. Prince Street, between 22nd Street and 24th Street, will be resurfaced with new curb and gutter.

The utility work will include the relocation/reconstruction of roughly 4,000 feet of 8-inch through 36-inch sanitary sewer and roughly 3,000 feet of 6-inch through 20-inch water main at various locations. Storm sewer relocation includes roughly 3,000 linear feet of 12-inch through 72-inch storm sewer sizes. Included in the storm sewer work is the installation of baffle boxes at locations where storm sewers will discharge into the proposed creek. The baffle box system will capture trash, yard waste, and sediment in the storm sewer and prevent it from entering into the creek. The location of each collection system can be easily accessed by city maintenance equipment for the collection and proper disposal of waste material. This will help minimize long-term maintenance costs.

Additional site work associated with this contract includes the installation of over 10,000 feet of conduit and fiber optic cable, over 60 lights, over 50 security cameras, drinking fountains, bike racks, benches, and interpretive signs.

On April 20, 2015 the City Council adopted Resolution 135-15 approving the proposed plans, specifications, form of contract and estimated cost for the Upper Bee Branch Creek — Channel, Streets & Utilities Project in the estimated amount of \$22,360,847.00 which includes construction (\$18,518,300), construction contingency (\$925,915), and engineering (\$2,916,632).

The City received two sealed bids on May 7, 2015, for the Upper Bee Branch Creek – Channel, Streets, & Utilities Project.

One from Portzen Construction, Inc. of Dubuque, Iowa in the amount of \$27,819,266.00 and one from Tricon General Construction of Dubuque, Iowa in the amount of \$29,996,861.77.

The plan holder's list included 18 prime contractors but only two submitted bids. Also, thirty-three (33) sub-contractors were on the plan holder's list.

The design engineers, Strand Associates, provided their findings relating to their review of the bids. Six work items accounted for 77.7% of the \$9,300,966 difference between the engineer's estimate and the low bidder.

The design engineer is at a disadvantage when trying to arrive at an opinion of probable cost. They can look at past, similar work and adjust for inflation or increases in material costs. For example, the unit price to install 36-inch diameter sanitary sewer as part of the Lower Bee Branch Creek Restoration Project let in 2010 was \$202 per linear foot.

The Engineering News Record Construction Cost Index increased a total of 14.8% from 2010 to the present. Therefore, for similar work, the 2015 estimate for the same work would be roughly \$232 per linear foot. Strand Associates estimated that the work would cost \$340 per linear foot. Based on the low bid, the cost of this work is \$402 per linear foot which represents nearly a 100% cost increase since 2010. Moreover, the 2010 unit price of \$202 included the placement and compaction of backfill whereas the 2015 unit price of \$402 did not. The engineer's estimate also reflects information obtained from potential contractors, sub-contractors, and suppliers. But the estimates provided by these firms are not binding, nor is there a guarantee that these firms will actually place a bid reflecting the very estimates provided to the engineer.

It is difficult to factor in the bidding environment when providing an estimate because it is impossible to know the number of bidders who will submit a bid and actually compete for the job. Based on recent conversations with contractors and suppliers, there are other economic forces that cause bids to exceed estimated costs, including:

- A regional concrete pipe supplier stated April, 2015 was the best April for shipping and production that his company has ever had. In fact, it exceeded their record April by over 15%. Last year their company had the best year ever in Iowa for sales.
- A local general contractor stated that last year their company had their best year ever which exceeded previous year's work by over 15%. This year they are anticipating a record breaking year with an increase of work by 20%.
- A local church went out for bids for an expansion project. The engineer's estimate was \$1.2 million. The low bid received in the fall of 2014 of \$1.7 million was 41.7% over the engineer's estimate. The church re-bid the project including alternates and re-engineered plans anticipating bids to be lower in the spring of 2015. The low bid received in March 2015 was 2.2 million, 83.3% over the original engineer's estimate.
- A city in southeast Iowa is currently taking bids on water plant improvements. According to a local contractor, only one bidder is showing any interest in the project. That city is currently in the process of attempting to find other suitable bidders.
- A local contractor said that they have lost employees to other contractors in Iowa that are starting to pay above prevailing wages to workers. This is exacerbated by a \$1.8 billion fertilizer plant in southern Iowa that is using thousands of construction workers.
- According to the U. S. Department of Labor, the unemployment rate for experienced construction workers is at its lowest since 2007. In last month's national employment numbers approximately one fourth of all new jobs created were in the construction industry with approximately 45,000 new jobs.

It is likely that risk also played a role in limiting the number of bidders and in the prices associated with the two actual bids. Due to the physical location of the Upper Bee Branch Creek Project in the heart of the flood prone area and the flooding history, there are inherently higher risks of damage to contractor operations and adjacent structures than are typically found on other construction projects. Construction risk can generally be defined as the potential for unknown, negative events to occur while the contractor is working on a project. The primary sources of risk on this project generally fall into three categories – local rainfall, Mississippi River levels, and the proximity of adjacent buildings to the project work area.

The primary sources of risk impact the contractor's work in the following ways:

- Intense localized rainfall during construction will generally flow toward the project area. Both overland rainfall and stormwater in pipes entering the project work area can cause flash flooding damage to work that is in the middle of being completed. Contractors have to mitigate this risk by building additional temporary stormwater handling facilities and controls greater than what is normally required on a typical construction project.
- Some stormwater will ultimately enter the new open channel as it is being excavated, causing ground soils to become overly saturated so that contractors will not be able to operate heavy equipment until the soils have dried out. Work stoppages could be in the range of 3-7 days before excavation work can resume after a large rain storm. It is difficult for contractors to mitigate this risk. They can only pump dry the excavation hole after the rain event is over.
- A secondary impact of local rainfall is a rise in the groundwater levels. The groundwater in the project area is also influenced by the Mississippi River stage. Groundwater trending measurements indicate that as the river level goes up, groundwater levels in the project area also increase. Additionally long-term groundwater monitoring data indicates that groundwater levels within the project area can rise and fall as much as 8 feet. In order for any deep utility or channel excavation work to occur on the project, a dewatering pump system will need to be installed by the contractors to artificially reduce the groundwater levels below the bottom of the excavation by an additional 2-4 feet. This means natural groundwater levels in the area will have to be lowered by as much as 15 feet. High groundwater levels result in additional dewatering pumping costs for contractors. The only practical way to mitigate this risk is to have additional dewatering pumping capability available to respond in a timely manner when groundwater levels increase.
- There are several locations within the project limits that will require deep excavations in near proximity to adjacent buildings. The primary areas of concern include Garfield Avenue, 22nd Street and 24th Street. Advanced technology sheet piling and shoring systems will be required to ensure adjacent

buildings remain stable during excavation work. High groundwater levels in these same areas add to the overall complexity of the shoring systems. Risk mitigation strategies primarily consist of the selection of more expensive shoring systems to support the excavation work and active monitoring for excessive ground vibration and ground settlement.

As part of the design phase, the project team conducted a risk assessment to identify major sources of risk during construction. After the areas of risk were identified, their potential of probability to occur along with their impact to project scope, quality, schedule, and cost were evaluated. Areas with high risk ratings were further evaluated and considered while making final updates to the design. Bid item 2 (Project Coordination & Administration), which was intended to quantify the contractor's costs associated with contract administration, coordination with others, etc. was bid at \$2.4 million more than estimated. This is where the bidding contractors included some of the costs related to the higher risks associated with this project. The bid prices for sanitary sewer, storm sewer, and water main were also higher than expected indicating that risk concerns were reflected in these bid items as well.

When the low bid exceeds the engineer's estimate by a significant amount such as 50%, the immediate thought is that the bids should be rejected. Typically the belief is that if the work is re-bid, it will result in lower bids and cost savings to the City. Because the Upper Bee Branch Creek – Channel, Streets, & Utilities Project is not a typical project, it is prudent to consider whether rejecting the current bids would actually result in cost savings to the City.

The Upper Bee Branch Creek – Channel, Streets, & Utilities Project is just one of several improvement projects associated with the Bee Branch Creek Restoration Project and the larger, more encompassing Bee Branch Watershed Flood Mitigation Project. Rejection of the bids would prevent the City from moving forward with other improvement projects. Rejection of the bids would necessitate the rejection of the bids for the Upper Bee Branch Creek – Structures Project because the structures (bridges) cannot be constructed without the relocation of utilities and other work to be done as part of this bid. Without first completing this component of the creek project, the 22nd Street Storm Sewer and North End Storm Sewer projects would provide no flood mitigation benefit.

In addition to simply delaying the completion of the improvements, rejecting the bids could result in the loss of \$5,327,138 in grant funding due to scheduling requirements.

The loss of grant funding will further delay the construction of improvements. The delays are due both to the time it takes to re-bid or re-package a project and to the loss of grant revenue.

A typical course of action following the rejection of bids is to employ a value engineering process to try and reduce costs associated with the project in an attempt to re-bid the work and obtain more favorable bids. The estimated cost to re-package and re-bid the

current design would be approximately \$150,000. Due to the loss of \$5.3 million in grant funding, even if value engineering and more competitive bids were realized, so that the bids came in \$5 million less than the current bids, the City would be no better off than it if it awarded the current bid.

Based on the current bidding market, it is likely that rejecting the bids and value engineering might not result in lower bids, even if project elements were removed. For example, the difference in costs between the lowest bidder and the second low bidder to build the two bridges associated with the Upper Bee Branch Creek – Structures Project was over \$1 million. With a report of 20 to 30 bridge projects to be let in the next several months, the low bidder might not re-bid on the City job if it has secured alternative work. Therefore, any potential savings would be offset by a higher cost to construct the bridge.

Inflation is also a factor. According to many economists, the national unemployment rate of 5.5% reported in February, 2015 represents “full employment.” As reported in the Wall Street Journal, if the unemployment rate drops below the “full employment” rate, it could result in inflation.

Two major projects in SE Iowa and Central Iowa are sapping up the available work force. A \$1.8 billion fertilizer plant is still under construction in Weyer, Iowa. Construction of a \$700 million Alliant Energy Plant is drawing workers to Marshalltown, Iowa. IIW, P.C. states in the attached letter that “construction industry associations are indicating a growing shortage of qualified workers consistent with reports from some local contractors. One example is the Associated General Contractors of America, 2015 Construction Hiring and Business Outlook provided a survey and reported 81% of construction firms expect it will either become harder or remain difficult to find qualified workers in the next 12 months.”

These bid results show that it is difficult to predict what will happen in terms of bidding in a few months if the project is re-bid. It is certain that rejecting the bids would delay the construction of incremental flood mitigation improvements, will result in the loss of grant funding so the City would have less money for improvements, and might not result in cost savings as the result of future lower bids. Despite being significantly more costly than anticipated, awarding the contract deserves consideration.

Most importantly, awarding the bid will provide another incremental increase in the flood protection, just as the completed Carter Road Detention Basin, the completed W. 32nd Street Detention Basin, and the completed green alley systems do. Based on the hydraulic model, the improvements associated with the Upper Bee Branch Creek – Channel, Streets, & Utilities Project and the Upper Bee Branch Creek – Structures Project will reduce the depth of floodwaters by two feet from Garfield Avenue to 24th Street.

Since the bid opening on May 7, City staff looked into the potential options associated with awarding the contract without an increase to planned debt or previously adopted

Stormwater Utility rates. The determination was that this could be accomplished by shifting funding from other phases of the Bee Branch Watershed Flood Mitigation Project to this phase. This would result in delaying improvements such as the work related to the railroad property and the flood protection for the Eagle Point Water Plant. The most significant component changes related to flood mitigation are the Bee Branch Creek Railroad Culverts and the pervious pavement systems (green alleys). In the case of the 240 alleys, the project plan showed them being completed within 20 years, but that time line could be extended. The design team also reviewed the bids to determine why the bids are so high. If awarded, two project improvements relating to soil handling and disposal could reduce the project cost by up to \$1.6 million.

Awarding the contract also allows the City to award the Upper Bee Branch Creek – Structures contract which came in at just 4.2% over the engineer's estimate.

Awarding the contract will not require the issuance of additional debt outlined in the already adopted Project Plan and will not require an increase in the stormwater utility rate structure already established by Ordinance 16-14.

The recommendation outlines a plan that will allow the contract to be awarded and the project to proceed without increasing planned debt for the project and without increasing previously adopted stormwater utility rates. The recommendation will, however, include rescheduling other phases of the overall Bee Branch Watershed Flood Mitigation Project because it includes shifting funding for other phases of the project to this phase.

The project will be funded by the Fiscal Year 2016 appropriation in the amount of \$43,359,000 for the Bee Branch Creek Restoration Project – Phase 4 and Phase 7 of the Bee Branch Watershed Flood Mitigation Project.

The City will continue to seek additional outside funding assistance. To date, the City has successfully secured \$127 million in funding for the improvements associated with the Bee Branch Watershed Flood Mitigation Project.

The \$98,494,178 in sales tax increment funding from the state as part of the State Flood Mitigation Program will not be disbursed in one lump sum or as the City incurs expenses. Instead, the City is to receive the funding over a twenty-year period starting in 2014. The legislation enacting the program recognized that the issuance of debt might be required in order to immediately realize the flood mitigation improvements. In fact, a new type of revenue bond was born: a sales tax increment revenue bond to be issued this month.

In accordance with the adopted Fiscal Year 2016 budget, the Upper Bee Branch Creek Restoration Project will be funded through the issuance of sales tax increment and state revolving loan fund (SRF) debt to be retired utilizing the schedule of annual payments of sales tax increment from the state.

I concur with the recommendation and respectfully request Mayor and City Council approval.



Michael C. Van Milligen

MCVM:sv

Attachment

cc: Barry Lindahl, City Attorney
Maureen Quann, Assistant City Attorney
Cindy Steinhauser, Assistant City Manager
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