

# ENVIRONMENT COMMITTEE AGENDA

February 19, 2015 – North Conference Room

21630 11<sup>th</sup> Avenue South – Des Moines 98198

5:30P – 7:00P

1. Approve minutes of 1-15-2015 meeting
2. 2015 Comprehensive Plan Update – Conservation Element  
(Discussion Item – 25 min)  
*Staff to present and solicit feedback on proposed amendments to the Conservation Element.*
3. Draft Surface Water Comprehensive Plan Update  
(Informational Item 20 min)  
*Final Draft Plan is now available for review (please see attached CD). Staff is soliciting any final comments before presenting the Final Plan to full Council next month for adoption.*
4. 2014 Southwest Suburban Sewer District Comprehensive Plan  
(Discussion Item – 25 min)  
*SWSSD staff has been invited to present the Comprehensive Plan to the Committee. Attached is the Executive Summary from the Plan, as well as excerpts from the Plan including the District's policy for sewer extensions and service area maps for future sewer extensions. Also attached is the last draft franchise agreement that was issued to the District for comment/acceptance.*
5. FEMA Flood Plain Management  
(Discussion Item – 20 min)  
*The City received a letter from FEMA dated December 3, 2014 concerning alternatives for jurisdictions to allow development within the floodplain to meet requirements of the Endangered Species Act. FEMA is moving forward with the three alternatives as outlined in the letter. Staff is requesting direction to hire an environmental consultant to review the alternatives and City code and provide recommendations.*



## DRAFT MINUTES - ENVIRONMENTAL COUNCIL COMMITTEE MEETING 1.15.2015

The meeting was called to order @ 5:59 PM, Thursday, January 15, 2015, in the Council Chambers @ 21630 11<sup>th</sup> Avenue South, Des Moines with the following in attendance:

### Council Members

Dave Kaplan, Chair (excused)  
Melissa Musser  
Vic Pennington

### City Staff

Michael Matthias, Asst City Manager  
Loren Reinhold, SWM Utility Manager

### Consultants:

Austin Fisher - Parametrix  
Julie Brandt - Parametrix  
John Ghilarducci – FCS Group

### Citizens:

Donna Dascenzo – Woodmont Beach Club

### **AGENDA:**

1. Approve minutes of 11.6.2014 meeting
2. Review Surface Water Comp Plan – 1<sup>st</sup> Draft

### **MEETING:**

1. Approve minutes of the November 6, 2014 meeting: Unanimously passed.
2. Review Surface Water Comp Plan – 1<sup>st</sup> Draft: Consultants Austin Fisher and Julie Brandt from Parametrix, gave a power point presentation to the group which went over the elements of the Draft Surface Water Comp Plan. They talked about the gaps identified in the existing SWM program and regulatory compliance requirements. They also talked about what is needed to fill those gaps for the operation (maintenance, engineering and NPDES) and capital programs. The presentation also included a table showing three levels of service scenarios and associated costs as well as additional recommendations for changes within the program.

Meeting Adjourned @ 6:59 pm

Submitted by: Peggy Volin, Admin Asst II



## 2015 Comprehensive Plan Update Council Environment Committee Meeting February 19, 2015

### Introduction:

The purpose of this item is to provide the Council Environment Committee the opportunity to provide feedback on staff proposed amendments to "Chapter 4: Conservation Element" of the Des Moines Comprehensive Plan which staff proposes to rename "Conservation and Environment Element." The focus of the Committee discussion will be to provide feedback on the Background and Context section of the document and to provide input on several policy questions as summarized in the discussion section below. We are still working to further consolidate and align the goals, policies and implementation strategies and any feedback is appreciated.

The background and structure for the 2015 Comprehensive Plan Update has been previously discussed with the Committee and with the full Council. Key points discussed include:

- Formatting: update text and layout, add color and pictures, remove numbered paragraph format, and make text more concise and reader friendly (e.g., Healthy Des Moines Element).
- Background Sections: update to clarify purpose, streamline text, remove numbered paragraph format.
- Goals/Policies: remove duplicative language, combine like policies, improve layout, make goal/policy/strategy numbering consistent between plan elements.
- Strategies: rename "Implementation Strategies," remove duplicative language, streamline.
- Overall: create a positive tone and remove negative language.
- Consider replacing the General Planning Element with a Vision Statement for the City and general introduction to the Comprehensive Plan.
- Adding an Economic Development Element or Economic policies to the Land Use Element.

To facilitate the discussion you will see three documents for the chapter being discussed:

1. A copy of the proposed amendments shown in track changes with staff comments in the margins that clarify why text is being deleted or moved;
2. A copy of the chapter as it reads with the changes accepted; and
3. A copy of the original chapter as it reads today for comparison.

### Discussion:

This is a working draft document that is subject to change pending further Council and community input. Some of the text has not been updated since 1995 or has only had minor updates as part of our annual Comprehensive Plan review and amendment process.

The Conservation and Environment Element is one of the more complex elements of the Comprehensive Plan as it contains goals, policies and implementation strategies related to a number of issues including: conservation planning, environmentally critical areas, shoreline master program, solid and hazardous waste management, water management (surface and ground), air quality and energy. In addition, the City is updating the Surface Water Management Plan which may necessitate updates to the surface water components of the Conservation Element. As such, additional discussion with the Committee may be warranted.

There is a lot of information to cover in a short timeframe; particularly given we have compressed what was intended as two year robust outreach and update process into about a six month timeframe. We will work with the Committee to incorporate additions and edits into the plan. It would be most efficient use of staff time if the individual Committee members provide a consolidated set of questions and/or comments for staff to respond to or incorporate into the plan.

## **Chapter 4: Conservation and Environment Element**

The Conservation and Environment Element contains goals, policies and strategies aimed at environmental stewardship and protecting the City's environmental assets, with particular emphasis on environmentally critical areas, shorelines, and surface and groundwater quality.

The Background and Context section has been rewritten reflect a more concise description of our natural resource areas with references to other plans, technical reports and maps that provide detailed inventories. We have also attempted to consolidate the goals, policies, and implementation strategies. Duplicative have been modified, merged with others or deleted as noted in the margins. A number of goals, policies, and/or strategies were phrased as regulations and are currently addressed in the Des Moines Municipal Code or other State or Federal law, and have been deleted.

In general, we want to make sure the Committee is comfortable with the direction we have taken to update and amend the Conservation and Environment Element. The redline version of the document has comments in the margins and policy questions are highlighted in yellow. Several policy questions that are not noted in the document and that warrant discussion with the Committee relate to climate change and sustainability. Currently, Des Moines City Council has not explicitly stated their goals, policies or implementation strategies as it relates to these topics.

1. As it relates to Climate Change, the GMA requires that cities address Climate Change in their comprehensive plans. Many cities in the region have signed onto climate change initiatives such as: the *Conference of Mayor's Climate Protection Agreement*, the *Cascade Agenda*, the *Green City Partnerships Program*, and the *King County Cities Climate Collaboration*.

***Policy Question:*** *Does the Committee want staff to develop goals/policies/strategies that relate to any of these programs?*

2. King County Countywide Planning Policies (CPPs) t have been amended to increase reduction of greenhouse gas emissions as indicated below:

*EN-17 Reduce countywide sources of greenhouse gas emissions, compared to a 2007 baseline, by 25% by 2020, 50% by 2030, and 80% by 2050. Assuming a 1% annual population growth, these targets translate to per meecapita emissions of approximately 8.5 metric tons of carbon dioxide equivalent (MTCO<sub>2e</sub>) by 2020, 5 MTCO<sub>2e</sub> by 2030 and 1.5 MTCO<sub>2e</sub> by 2050.*

*EN-18A King County shall assess and report countywide greenhouse gas emissions associated with resident, business, and other local government buildings, on road vehicles and solid waste at least every two years. King County shall also update its comprehensive greenhouse gas emission inventory that quantifies all direct local sources of greenhouse gas emissions as well as emissions associated with local consumption at least every five years.*

These amendments were sent to the City on January 2, 2015 and the City has until Friday, April 3, 2015 to ratify or disapprove by legislative action (resolution or ordinance). A city will be deemed to have ratified if no action is taken on or before the April 3<sup>rd</sup> deadline.

***Policy Questions:*** *Does the Committee want to recommend that Council take action? If not, does the Committee want staff to draft goals/policies/strategies that articulate how Des Moines would work to meet these goals set by the County? Example policies are provided at the end of the Element.*

3. As it relates to sustainability, many jurisdictions have stated goals, policies and implementation strategies that promote the use of sustainable site/building practices such as *Leadership in Energy and Environmental Design (LEED)*, *Built Green*, *Salmon Safe and Living Building Challenge*.

***Policy Question:*** *Does the Committee want staff to develop goals/policies/strategies that promote the use of sustainable site/building practices?*

# Track Changes Version

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## WORKING DRAFT

### CHAPTER 4: CONSERVATION AND ENVIRONMENT ELEMENT

#### Background and Context

Des Moines is rich in beauty and natural resources that include the Puget Sound shoreline, hillsides and bluffs, urban forests, diverse streams and wetlands, fish, wildlife and open space. These are defining features of our City that are valued by our citizens and are important for us to protect for generations to come. Both individually and interacting as a whole, these resources provide valuable functions to the City's ecosystem including:

- Control of flooding, surface water runoff, erosion, and sedimentation;
- Groundwater and aquifer recharge;
- Soil and geologic stability; air and water cleansing; and
- Habitat for animals and marine life.

Reducing impacts on the environment is fundamental to the Growth Management Act and Des Moines' Comprehensive Plan. The Conservation and Environment Element contains goals, policies and strategies aimed at environmental stewardship and protecting the City's environmental assets, with particular emphasis on environmentally critical areas, shorelines, surface and groundwater quality, and climate change. The Washington State Growth Management Act mandates the protection of aquifer recharge areas, fish and wildlife habitat conservation areas, flood hazard areas, geologically hazardous areas, wetlands, stream corridors while the Shoreline Management Act provides for the protection of shorelines. Recognizing that a substantial portion of the City is located in geologic hazard areas, this element also addresses the health of ecological functions, public safety, and protection from natural dangers, including erosion, landslides and seismic hazards.

The City of Des Moines 2006 Best Available Science Review, Critical Areas Inventory and map folio, along with the Shoreline Master Program (2011) and Surface Water Management Plan (2015) provide the background data for this element. The City's natural resource inventory is supplemented on an ongoing basis by technical information that is provided through individual project reviews or special studies.

4-02-01 The City of Des Moines has a natural resource base of land, air, water, vegetation, fish, wildlife, and energy.

4-02-02 ——— Development and urbanization have resulted in serious environmental problems, including but not limited to, flooding; elimination of fish and wildlife habitat; pollution of land, water and air; inefficient energy use; noise; and soil and geologic instability.

4-02-03 ——— Sound planning, best management practices, , best available science (BAS), wise purchases, and application of technology can assist in protecting the remaining natural resource base from further loss or degradation, and can restore or improve the previously lost or degraded natural resource base.

4-02-04 ——— Both individually and interacting as a whole, natural resources provide the essential elements for human life. Moreover, they provide valuable functions to the City of Des Moines, including: control of flooding, surface water runoff, erosion, and sedimentation; groundwater and aquifer recharge; soil and geologic stability; air and water cleansing; and habitat for flora and fauna.

**Comment [d1]:** Policy Question 1: What is Council's position regarding climate change. See attached King County CWPP on Climate Change.

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~~4-02-05 The uplands and lowlands of the City of Des Moines are linked through the hydrologic cycle. Many of the impacts of urbanization are related to changes in hydrologic processes. Therefore, by focusing planning efforts on watersheds, impacts of development can be better estimated and understood, and solutions better implemented.~~

~~4-02-06 The natural resources of the City of Des Moines are affected by regional influences. Environmental processes and problems do not obey jurisdictional boundaries. Cooperative environmental management among neighboring jurisdictions, tribes, and state and federal agencies can prevent or overcome regionally influenced problems.~~

~~4-02-07 Pollution prevention and environmental improvements require an ongoing commitment from an informed, involved public.~~

~~4-02-08 The natural landscape of the City of Des Moines is made up of various streams, wetlands, shorelines, hillsides, forests and fields. Development has significantly disturbed the natural environment. However, the remaining environmentally critical areas, also referred to as sensitive areas, are important contributors to the City of Des Moines natural resource base and high quality of life.~~

~~4-02-09 The GMA requires that the City of Des Moines designate its critical areas and develop policies and development regulations to protect the functions and values of critical areas using "best available science" (BAS).~~

~~4-02-10 Critical areas within the City of Des Moines include wetlands, streams, areas with a critical recharging effect on aquifers, frequently flooded areas, geologically hazardous areas, and fish and wildlife habitat conservation areas. The locations of critical areas within the City of Des Moines are shown in figures 4-1 through 4-7.~~

~~4-02-11 Critical areas are unique resources, which if preserved and protected, can protect public and private resources from damage or loss due to flooding, erosion, landslides, seismic and volcanic events, soil subsidence, or steep slope failures. Environmentally critical areas also protect ground and surface water quality and quantity. Critical areas are also part of the aesthetic resources in the City and form distinctive features of natural lands and wooded hillsides.~~

~~4-02-12 Surface water management becomes more critical with urbanization as natural areas are covered with impervious surfaces such as buildings, streets, and parking lots. The City of Des Moines' surface water management program includes prevention and mitigation of problems due to flooding, erosion, and sedimentation.~~

~~4-02-13 State Law (RCW 35.27.370) grants the City of Des Moines specific authority to prevent and abate the pollution of surface water inside and outside the City and to enact ordinances that contain enforcement provisions.~~

~~4-02-14 The City of Des Moines's adopted surface water management program contains policies, and programmatic recommendations that enhance the City of Des Moines' ability to effectively manage surface waters. The surface water management plan and individual basin plans are developed with the cooperation of other affected jurisdictions. The City of Des Moines also operates a number of capital facilities that reduce flooding, erosion, and sedimentation, mitigate habitat loss, enhance ground water recharge, and prevent water quality degradation.~~

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~~4-02-15~~ The Growth Management Act requires that cities give special consideration to conservation or protection measures necessary to preserve or enhance anadromous fisheries. The City must also include best available science when developing protection policies.

~~4-02-16~~ Open spaces, critical areas and public watersheds provide benefits to wildlife. Preserving these resources also serves to protect wildlife.

~~4-02-17~~ The goal of conserving fish and wildlife habitat can be achieved through the implementation of several strategies, including: a) identification and protection, or purchase, of critical fish and wildlife habitat conservation areas; b) linking those critical habitat areas with other protected lands; and c) integrating fish and wildlife habitat and conservation goals into new and existing developments.

~~4-02-18~~ Since fish and wildlife and their habitats do not respect political boundaries, linkages of critical habitat areas should be made across boundaries.

~~4-02-19~~ Buffer requirements for streams and wetlands intended to protect wildlife resources in those critical areas were established using "best available science." Development regulations have also been established to protect areas with critical fish and wildlife habitat.

~~4-02-20~~ The most effective way to protect and enhance native fish populations is through protection of river, stream, and creek channels, riparian corridors, lakes, wetlands, and watersheds that provide or impact spawning and rearing habitat, food resources, and fish passage. Intermittent streams can also be critical to native fish populations. Presently, fish enhancement facilities and programs are critical to the maintenance of salmon stocks and the fisheries industry.

~~4-02-21~~ Protection of isolated blocks of habitat may not adequately protect wildlife in the City of Des Moines—critical fish and wildlife habitats and refuges may need to be connected across the landscape through a system of habitat corridors. Some areas may be important because they serve as vital linkages among habitat areas.

~~4-02-22~~ A key element in a comprehensive wildlife protection program is to encourage integration of wildlife habitat into new developments when possible. Protection of wildlife does not need to be at odds with land development.

~~4-02-23~~ Consideration of fish and wildlife during site design and construction can help to protect and preserve habitat areas.

~~4-02-24~~ Benefits to wildlife are enhanced when on-site landscaping includes native vegetation. Retention of natural vegetation can often provide similar aesthetic benefits as areas landscaped with non-indigenous plant materials.

~~4-02-25~~ Policies in other elements that recognize the value of natural amenities and wildlife habitat also serve to meet the goal of integrating wildlife habitat and new development.

~~4-02-26~~ Integrating wildlife goals with public land uses, such as parks, landscaping along roadways, stormwater control facilities, and landscaping around government buildings can help provide important habitat areas.

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**4-02-27** — Ground water is an important source of water used in the City. In the future, ground water may provide a greater percentage of our water supply needs.

**4-02-28** — Rainfall that enters the ground replenishes ground water and provides base flow for streams, wetlands and rivers during periods of limited rainfall. This base flow sustains fish, wildlife, their habitats, and recreational values.

**4-02-29** — The natural hydrologic cycle can be altered by development practices and overuse of the aquifer. The result may be depletion of aquifers.

**4-02-30** — Groundwater is subject to contamination from human activity. The cost of protection is considerably less than the cost of remediation and replacement.

**4-02-31** — The Growth Management Act requires the designation of "areas with a critical recharging effect on aquifers used for potable water." The procedural criteria to classify critical areas (chapter 365-190 WAC) further defines these areas as areas where an aquifer is a source of drinking water and is vulnerable to contamination that would affect the potability of the water. It is difficult to define and map ground water recharge areas because ground water systems are hydrologically and geologically complex.

**4-02-32** — Wellhead protection studies are required by the 1986 amendments to the Federal Safe Drinking Water Act. The three water districts that provide the City's water, King County Water District 54, Highline Water District, and Lakehaven Utility District, have completed such studies. The studies provide additional information about contamination susceptibility of aquifers and also increase understanding of where aquifer recharge areas are located.

**4-02-33** — The functions and values of environmentally critical areas can be severely damaged by improper clearing, grading, filling, refuse dumping, and construction. Such actions need to be reviewed for significant adverse environmental impacts before approval.

**4-02-34** — Scientific research has determined that wetlands are best protected by undisturbed buffer areas. Undisturbed buffers are vegetated areas in which no development occurs. The wetland buffer provides food, cover, travel routes, and roosting and nesting sites for many wildlife species. Wetland buffers are also critical to wetland ecology. Construction near or within a wetland or its buffer area can reduce or eliminate these habitat functions. Construction can lead to erosion and increased surface runoff that can cause silt and contaminants to enter the wetland. When upland buffers are present between the development and the wetland, the buffer receives the majority of the impact, thereby protecting the wetland.

**4-02-35** — Scientific research has determined that watercourses are best protected by undisturbed buffer areas. In addition to protecting the watercourse, the buffer protects adjacent upland areas from flooding while also providing wildlife habitat. The critical functions of the buffer include shading, input of organic debris, nutrient uptake, bank stabilization, and the interception of sediment.

**4-02-36** — Scientific research has determined that unstable slopes are best protected by undisturbed buffer areas. Certain hillsides in the City of Des Moines are either unstable or susceptible to instability when disturbed. These hillsides are underlain by permeable soils, and are subject to seepage. They also include areas that have experienced landslides in the past and have slopes that are being undermined by stream or beach erosion. Construction in these areas is expensive and difficult.

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Landslides on such slopes can result in enormous public and private costs, and severe threats to public safety and natural resources.

### GOALS

- CE 1 ~~4-01-01~~ To protect, improve, and sustain environmental quality through best management practices and the use of best available science.
- CE 2 ~~4-01-02, 4-01-07 and 4-01-06~~ To protect environmentally critical areas from damage caused by encroachment and development. AND To protect all stream and wetlands that in the public interest. AND To protect critical areas from noise impacts.
- CE 3** To maintain and monitor a shoreline master program, consistent with state law, to enhance and protect the quality of the shoreline environment consistent with the best available science.
- CE 4 ~~4-01-04~~ To conserve and replenish fish and wildlife resources. AND To protect species and their habitats that have been identified as endangered, threatened, or sensitive by the State and Federal governments.
- CE 5 ~~4-01-03~~ To prevent flooding, erosion, sedimentation, water quality, and habitat degradation, and to protect, restore, and enhance all surface waters.
- CE 6 (Placeholder)
- CE 7 To maintain a solid waste system that bases its primary means of solid waste disposal on the principles of reduction, reuse, and recycling.
- CE 8 To promote the conservation of energy in the location and design of public and private development.
- CE 9 To educate the community on how to improve Des Moines's natural environment.
- CE 10** To protect air quality to maintain a healthy environment for current and future generations.

Comment [d12]: New goal

Comment [NCP3]: New goal proposed

Comment [NCP4]: New proposed goal.

Comment [NCP5]: New proposed goal

### POLICIES AND IMPLEMENTATION STRATEGIES

#### Policies

- CE 1.1 ~~4-03-01~~ Plan and encourage sound management of natural resources—land, air, water, vegetation, fish, wildlife, and energy—considering entire watersheds and regional influences.
- CE 1.2 ~~4-03-03~~ Include “best available science” when reviewing, revising, or developing policies and ~~development~~ regulations to protect the functions and values of critical areas, giving special consideration to the protection of anadromous fisheries.

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### Strategies

EC 1.2.1 ~~Designate and protect critical areas using "best available science" (BAS) pursuant to RCW 36.70A.172 and WAC 365-195-900 through 365-195-925.~~

~~CE 1.1.1 4-04-02(10) Using "best available science" (BAS), review and update development regulations pertaining to development in and protection of critical areas (the Critical Areas Ordinance), particularly those which directly or indirectly effect the health of the regions' anadromous fisheries, in the City of Des Moines, between five and ten years of the adopted ordinance date.~~

~~CE 1.1.2 4-04-02 (10) In compliance with RCW 36.70A.172, the City should include a record of evidence that it has given "special consideration" to conservation or protection measures necessary to preserve or enhance anadromous fisheries. The record should be developed using the criteria set out in WAC 365-195-900 through 365-195-925 to insure that conservation or protection measures necessary to preserve or enhance anadromous fisheries are grounded in BAS.~~

~~CE 1.1.3 4-04-02(11) In designating and protecting critical areas the City shall include BAS, consistent with criteria set out in WAC 365-195-900 through 365-195-925.~~

**Comment [NCP6]:** Streamlined and summarized in CE 1.1.1

CE 1.2.2 ~~4-02-02(12)~~ BAS is information that (1) state or federal natural resource agencies have determined represents the best available science, (2) was derived from consultation with qualified scientific expert(s), as defined in WAC 365-195-905, or (3) was produced through a valid scientific process. A valid scientific process should have the following characteristics, as defined in WAC 365-195-905: peer review, methods, logical conclusions and reasonable inferences, quantitative analysis, context, and references.

CE 1.2.3 ~~4-04-02(15)~~ Document, ~~on the record,~~ the use of BAS and instances when non-scientific information was used in-lieu-of BAS during the process of developing policies and regulations to protect critical areas and anadromous fisheries. Documentation should include the relevant sources of BAS. Documentation should also include information that departs from BAS and was used as a basis for critical areas policies and regulations.

CE 1.2.4 ~~4-04-02(16)~~ The City should identify and document any non-scientific information (including legal, social, cultural, economic, and political), used as a basis for critical areas ordinance policies and regulations, that departs from recommendations derived from BAS. In these cases the City should provide a rationale for use of such information. The City should also identify potential risks to the functions and values of the critical areas at issue and any additional measures chosen to limit such risk.

### Policies

CE 2.1 ~~4-03-02~~ Review and revise the City's Critical Areas Ordinance, ~~on or before June 30, 2015, and every eight years thereafter at least every five years,~~ to ensure protection of the ecological functions and values of critical areas from cumulative adverse

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environmental impacts; and to ensure compliance with the requirements of the Growth Management Act.

CE 2.2 ~~4-03-23~~ Ensure that stream and wetland buffers ~~be of~~ are adequate size to protect critical wildlife species and habitat.

CE 2.3 ~~4-03-08~~ Promote the preservation of native vegetation and mature trees; revegetation; and appropriate landscaping to improve air and water quality and fish and wildlife habitat.

~~4-04-02(14) Take measures to control noise pollution and reduce noise impacts.~~

CE 2.4 ~~4-03-11~~ Analyze the chain of environmental impacts from public and private development proposals in context of the whole watershed. Approve, condition, restrict, or deny development proposals based upon accurate and well-documented environmental information.

~~CE 2.5 4-04-02(14) Strive to~~ Balance the City's goals of protecting environmentally critical areas with the other social, cultural, and economic goals of the City of Des Moines Comprehensive Plan.

### Strategies

~~GE2.1.1 The City of Des Moines shall maintain a map of Critical Areas.~~

CE 2.1.1 ~~4-04-02(1)~~ Identify environmentally critical areas and promulgate performance standards and development regulations for any proposed developments within or adjacent to them.

CE 2.1.2 ~~4-04-01(1)~~ Prepare studies of Des Moines area watersheds, identifying environmental problems and short-term and long-term means for solving the problems.

CE 2.1.3 ~~4-04-01(2)~~ Identify and rank capital improvement and land acquisition projects that can prevent flooding, protect surface and ground water quality, stabilize hillsides, and protect, restore, and enhance fish and wildlife habitat.

CE 2.1.4 ~~4-04-01(3)~~ Require that development proposals provide measures for restoring or enhancing any lost or degraded functions provided by the environment.

CE 2.1.5 ~~4-04-01(8)~~ Maintain and enforce development regulations ~~and a permitting system~~ to prevent the destruction of critical areas including wetlands, areas with a critical recharging affect on aquifers used for potable water, fish and wildlife habitat conservation areas, frequently flooded areas, and geologically hazardous areas.

CE 2.1.6 ~~4-04-01(5)~~ Regulate and plan land use and condition development proposals in ways that protect mature trees, native vegetation, stream flow, fish and wildlife habitat, groundwater recharge, and air quality, as well as natural topographic, geologic, and hydrologic features.

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**Comment [d17]:** City removed requirements for additional sound measures for building; however, the following regulations in place to control noise:

- City required to comply with IBC and Washington Energy Code.
- Chapter 7.16 Maximum Environmental Noise Levels
- Chapter 7.36 Public Disturbance Noises
- Chapter 18.185 Noise Levels

**Comment [NCP8]:** Move from strategies section

**Comment [NCP9]:** Not necessary

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~~CE 2.1.8 4-04-01(3) Require that development proposals contain measures to stabilize soils, hillsides, bluffs and ravine sidewalls and promote wildlife habitat by retaining critical areas of existing native vegetation.~~

**Comment [NCP10]:** Repetitive; covered in 2.1.5 and 2.1.6

CE 2.1.7 ~~4-04-02(2) Develop and update regulations on development in wetlands and streams, and require an undevelopable buffer of preferably native vegetation adjacent to them that is adequate in size to preserve the natural and beneficial values served by wetlands and streams.~~

CE 2.1.8 ~~4-04-02(5) Regulate development on bluffs and ravine sidewalls, and require a buffer of undisturbed native vegetation adjacent to them that is adequate in size to insure human safety, health and welfare and to restore and preserve other functions served by bluffs and ravines.~~

CE 2.1.9 ~~4-04-02(6) Restrict development proposals on potentially unstable land, such as areas with erosion, landslide, and seismic hazards, to insure safety and conformity with existing natural constraints.~~

CE 2.1.10 ~~4-04-02(7) Seek public acquisition of environmentally critical areas that have outstanding valuable natural functions and aesthetic assets.~~

~~CE 2.1.11 4-04-02(8) Administer and enforce adopted land use regulations that protect environmentally critical areas from the impacts of adjacent land uses.~~

**Comment [NCP11]:** Repetitive; covered in 2.1.5 and 2.1.6

CE 2.1.11 ~~4-04-02(9) Require the issuance of a permit and critical area review by the City prior to any construction activity that would occur in, be adjacent to, or would likely affect a critical area. A permit would be required because the functions and values of unique critical areas can be severely damaged by improper refuse dumping, clearing, grading, filling, and construction.~~

CE 2.1.12 ~~4-04-02(13) Where valid or complete scientific information is not available, the City shall take a precautionary or no risk approach, in which development and land use activities are strictly limited until the uncertainty is sufficiently resolved (as stated in WAC 365-195-920). As an interim approach the City should take an effective adaptive management approach, where the results of land use decisions are scientifically evaluated as to their impacts on critical areas.~~

### Policies

CE 3.1 ~~4-03-04~~ Provide protections for critical areas within shorelines, as designated by the City's Shoreline Management Program. Review and revise the City's Shoreline Management Program, at least every five years to ensure protection of the ecological functions and values of shorelines from cumulative adverse environmental impacts, and to ensure compliance with the requirements of the Growth Management Act.

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### Strategies

- 3.1.1 ~~4-04-03(1)~~ The *Des Moines Shoreline Master Program* (SMP) update was provisionally passed by the City Council Resolution No. 1122 on April 8, 2011. As provided by Chapter 18.90 DMMC, the SMP is incorporated as one chapter of the Des Moines ~~Zoning~~ Environment Code (Title ~~18-16~~ DMMC).
- 3.1.2 ~~4-04-01(7)~~ Maintain and monitor the Shoreline Master Program to control and regulate development in the shoreline area.

### Policies

- CE 4.1 ~~4-03-09~~ Regulate significant land clearing, grading, and filling to minimize the area, time, and slope length of exposed soils, and to reduce on-site erosion and off-site sediment transport.
- CE 4.2 ~~4-03-09 (part)~~ Prohibit any significant clearing, grading, or filling operations prior to drainage and erosion/sedimentation plan approval and implementation.
- CE 4.3 ~~4-03-17~~ Undertake all necessary actions to protect the quality of surface water bodies located in the city.
- CE 4.4 ~~4-03-18~~ Reduce flooding, erosion, and sedimentation; prevent and mitigate habitat loss; enhance ground water recharge; and prevent water quality degradation. The surface waters of the City of Des Moines should be managed through plans, programs and regulations developed by the City of Des Moines in cooperation with affected jurisdictions.
- CE 4.5 ~~4-03-19~~ Manage surface water using a watershed approach, with responsibility shared among the City of Des Moines and affected jurisdictions. Emphasize educational programs and implementation of Best Management Practices to reduce pollution entering surface waters.
- CE 4.6 Establish and/or maintain enforcement mechanisms that may be used to prevent or stop contamination to surface water quality
- CE 4.7 Identify innovative stormwater techniques that protect ground and surface water from contamination and pollution
- CE 4.8 ~~For~~ Protect, improve, and sustain ground water quality and quantity through best management practices, and sound innovative environmental management.

Comment [NCP12]: Moved from strategies

Comment [NCP13]: Proposed new policy

Comment [NCP14]: Formerly a goal. Moved to policy section.

### Strategies

- CE 4.1.1 ~~that will:~~ ~~4-04-05(1)~~ Develop a implement the surface water management program to:
1. Enhance water quality and control flooding;
  2. Effectively use and maintain existing drainage facilities that provide fish and wildlife habitat;
  3. Satisfy all regulatory requirements and compliance schedules; and
  4. Identify and fund capital improvements.

## WORKING DRAFT

- CE 4.1.2 ~~4-04-05(2)~~ Require that development proposals maintain surface water runoff rate, volume, and quality at pre-development levels. Where watershed studies show that the impacts of urbanization are significant, additional measures should be implemented to attenuate drainage problems posed by these impacts.
- CE 4.1.3 ~~4-04-05(3)~~ Protect and improve surface and ground water quality by requiring development proposals to implement best management practices and other available technology for controlling point and non-point sources of pollution.
- CE 4.1.4 ~~4-04-05(4)~~ Promote ground water infiltration and minimize surface water runoff by requiring development proposals to limit impervious surfaces.
- CE 4.1.5 ~~4-04-05(4) (part)~~ Grading and construction activities shall implement erosion control Best Management Practices and other development controls as necessary to reduce sediment and pollution discharge from construction sites to minimal levels.
- CE 4.1.5 ~~4-04-05(5)~~ Require that development proposals contain measures to control on-site soil erosion and off-site sediment transport during and after construction through the use of best management practices and other available erosion and sedimentation control technology.
- CE 4.1.6 ~~4-04-05(6)~~ Take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains.
- CE 4.1.7 ~~4-04-05(7)~~ Work with the Washington State Department of Ecology to implement the programs of the Puget Sound Water Quality Management Plan.
- CE 3.1.8 ~~4-04-05(8)~~ As authorized by the laws of State of Washington (such as RCW 35.24.280), act to prevent and fine any person or private or public entity causing pollution of surface waters flowing through or into the City of Des Moines from up to five miles from its corporate limits.
- CE 3.1.8 ~~4-04-05(9)~~ Establish and/or maintain enforcement mechanisms that may be used to prevent or stop contamination to surface water quality.
- CE 3.1.9 ~~4-04-05(10)~~ If surface water contamination is found in the City of Des Moines, consider requesting state or federal investigations or enforcement actions. Consider pursuing all appropriate civil actions under state and federal law to abate the pollution problem, including a citizen suit under the federal Clean Water Act.
- CE 4.1.8 ~~4-04-05(12)~~ Protect the quality and quantity of groundwater by:
1. Assisting ~~during~~ with the implementation of the South King County Groundwater Management Plan.
  2. Implement, as appropriate, Wellhead Protection Programs in conjunction with adjacent jurisdictions and ground water purveyors.

Comment [NCP15]: Repetitive. Subject matter covered in 3.1.8

Comment [NCP16]: More consistent with policy language. Moved to policy section.

## WORKING DRAFT

3. Encourage or require use of Best Management Practices for new development recommended by the South King County Groundwater Management Plan.
4. Refine land use and critical areas regulations, as appropriate, to protect critical aquifer recharge areas.

CE 4.1.9 ~~4-04-05(13)~~ In order to ensure the quality of surface water and protect the health and welfare of its citizens, the City of Des Moines will:

1. Establish a program to monitor surface water quality within its boundaries and encourage neighboring jurisdictions to implement similar monitoring programs.
2. Develop plans, programs and regulations, in cooperation with other jurisdictions, to manage the surface waters of the City.
3. Work with other jurisdictions to develop a watershed approach to surface water management that includes implementation of Best Management Practices and public education initiatives.

**Comment [NCP17]:** Has this been established? If so, change to "maintain."

### Policies

CE 5.1 ~~4-03-20~~ Consistent with land use density objectives, strive to maintain the existing diversity of species and habitat in the City and maintain a quality environment that includes fish and wildlife habitats that support the greatest diversity of native species.

CE 5.2 ~~4-03-24~~ Protect salmonid habitat by ensuring that land use and facility plans (transportation, water, sewer, power, gas) include riparian habitat conservation measures. Ensure that development within basins that contain fish enhancement facilities consider impacts to those facilities.

~~CE 4-3~~ ~~4-03-26~~ Be a good steward of public lands and integrate fish and wildlife habitat into capital improvement projects when practicable.

CE 5.3 ~~4-03-22~~ Designate and protect fish and wildlife habitat conservation areas including:

1. Priority species of local importance and their habitat as listed by the most current King County Comprehensive Plan and/or the Washington Department of Fish and Wildlife;
2. Commercial and recreational shellfish areas;
3. Kelp and eel grass beds;
4. Herring and smelt spawning areas, and
5. Wildlife habitat networks designated by the City of Des Moines.

### Strategies

CE 5.1.1 ~~4-04-01(9)~~ Continue to designate, map, and protect habitat networks throughout the City of Des Moines from significant adverse environmental impacts.

## WORKING DRAFT

CE 5.1.2 ~~4-03-21~~ Protect and preserve habitat for species that have been identified as endangered, threatened, or sensitive by the state or federal government, or as priority species or priority habitats by the County.

CE 5.1.3 ~~4-04-01 (11)~~ Conservation or protection measures necessary to preserve or enhance anadromous fisheries include measures that protect habitat important for all life stages of anadromous fish, including, but not limited to, spawning and incubation, juvenile rearing and adult residence, juvenile migration downstream to the sea, and adult migration upstream to spawning areas. Special consideration should be given to habitat protection measures based on the best available science relevant to stream flows, water quality and temperature, spawning substrates, instream structural diversity, migratory access, estuary and nearshore marine habitat quality, and the maintenance of salmon prey species. Conservation or protection measures can include the adoption of interim actions and long-term strategies to protect and enhance fisheries resources.

CE 5.1.4 ~~4-04-01 (12)~~ Encourage the integration of native plant communities and wildlife habitats with other land uses where possible. Encourage or require that development protect wildlife habitat through site design and landscaping. ~~Encourage or require that new development within or adjacent to wildlife habitat networks incorporate design techniques that protect and enhance wildlife habitat values.~~

Comment [NCP18]: Repetitive

CE 5.1.5 ~~4-04-01 (13)~~ Provide technical assistance, education, and information to citizens and groups wishing to install wildlife enhancement projects. Encourage public demonstration projects that show the range of possibilities for integration of wildlife into a variety of land uses. Consider demonstration projects done jointly by the City and a private landowner or organization.

CE 5.1.6 ~~4-04-01 (14)~~ ~~To the extent permitted by state and federal law, in order to minimize adverse impacts related to noise, protect fish and wildlife habitat conservation areas from environmental noise levels that exceed 55 Ldn (dBA), or the Ldn in existence on the effective date of this element, whichever is higher. To the extent permitted by state and federal law, a reduction in the exterior noise level shall become the new maximum exterior noise level.~~

Comment [NCP19]: Not sure if this is a policy that can be enforced. See Comment DL2

CE 5.1.7 ~~4-04-02(3)~~ The City of Des Moines shall evaluate programs and regulations to determine their effectiveness in contributing to ESA listed species conservation and recovery, and shall update and enhance programs and plans where appropriate including evaluation of the Zoning Code, the Critical Areas Ordinance, the Shoreline Master Program, the clearing and grading regulations, the landscaping regulations, best management practices for vegetation management and use of insecticides, herbicides and fungicides. The City of Des Moines shall amend these regulations, plans and best management practices to enhance their effectiveness in protecting and restoring salmonid habitat, ~~taking into consideration the model program developed by the Tri County Salmon Conservation Coalition and the recommendations of shared strategy.~~

Comment [NCP20]: Still relevant?

## WORKING DRAFT

- CE 5.1.8 ~~4-03-26~~ Be a good steward of public lands and integrate fish and wildlife habitat into capital improvement projects when practicable.
- CE 5.1.9 Preserve native vegetation in parks and other publicly owned lands in the design and construction of new public facilities.

Comment [NCP21]: Moved from policy section

Comment [NCP22]: Proposed new strategy.

### Policies

- CE 6.1 ~~4-03-05~~ Explore approaches to regulations and procedures that streamline the permit review process for development in or near shorelines and critical areas.
- CE 6.2 ~~4-03-25~~ Work with adjacent jurisdictions and state federal and tribal governments during land use plan development review to identify and protect habitat networks at jurisdictional boundaries.
- ~~CE 6.3 ~~4-03-16~~ Require review and permit approval before construction activity is allowed to occur within, adjacent to, or likely would affect an environmentally critical area.~~
- CE 6.3 ~~4-03-10~~ Regulate public and private development proposals in ways to insure that the valuable functions of natural resources are preserved, restored, or improved.
- CE 6.4 ~~4-03-06~~ Balance social, economic, and environmental goals to land use planning activities.
- CE 6.5 ~~4-03-07~~ Work with citizens, land owners, businesses, neighboring cities, King County, special purpose districts, and private and public agencies to protect and improve environmental quality, seeking shared responsibility and uniform environmental management.

Comment [NCP23]: Repetitive.

### Strategies

(Placeholder)

### Policies

- CE 7.1 ~~4-03-12~~ Manage solid and hazardous wastes in a manner that results in waste reduction, prevents land, air, and water pollution, and conserves natural resources.

### Strategies

- CE 7.1.1 ~~4-04-04(1)~~ Prepare, implement, and monitor a waste reduction and recycling plan consistent with State of Washington law and the King County Comprehensive Solid Waste Management Plan.
- CE 7.1.2 ~~4-04-04(2)~~ Prepare, implement, and monitor a hazardous waste management plan consistent with State of Washington law and the Local Hazardous Waste Management Plan for Seattle-King County.

### Policies

- CE 8.1 ~~4-03-14~~ Regulate land uses to conserve all forms of energy.

## WORKING DRAFT

### Strategies

- CE 8.1.1 ~~4-04-07(1)~~ Establish construction and site planning standards that result in energy conservation or utilize alternative energy sources.
- CE 8.1.2 ~~4-04-07(2)~~ Seek to stimulate a land use pattern that encourages an efficient transportation system.
- CE 8.1.3 ~~4-04-07(3)~~ Implement measures to improve bicycle and pedestrian circulation systems.

### Policies

- CE 9.1 ~~4-03-15~~ Encourage and support education and public involvement programs aimed at protecting environmental quality. These programs should: (1) inform, educate, and involve individuals, groups, businesses, industry, and government; (2) increase understanding; and (3) encourage commitment.

### Strategies

- CE 9.1.1 ~~4-04-01(6)~~ Promote public involvement in restoring, protecting, and enhancing natural resources through such programs as Adopt-A-Stream and the Backyard Wildlife Sanctuary Program, by working with local educational institutions, and by integrally involving citizens in developing, implementing, and monitoring environmental programs.

### Policies

(Placeholder)

### Strategies

- CE 10.1.1 ~~4-04-06(1)~~ Require that air pollution generated from all land uses be restricted to federal and state ambient air pollution standards. Restrict air pollution generated from solid fuel burning devices and open burning to state emission standards, curtailment rules, and fuel restrictions.
- CE 10.1.2 ~~4-04-06(2)~~ When other trees are not available or do not provide the needed screening, require that planting and maintenance of trees be an integral part of City street development standards. Require all developments to include landscaping improvements using trees, shrubs, and ground covers. Undertake measures to ensure the survival and good health of trees and plants.

Following are example policies to meet GMA requirement for Climate Change:

### CE 11

#### Policies

- CE 11.1.1 Develop policies and strategies for land use and development that result in reduced greenhouse gas emissions for new development as well as redevelopment activities.

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- CE 11.1.2 Develop mitigation programs and incentives that both public and private development entities can use to reduce or offset potential greenhouse gas emissions associated with both new development and redevelopment.
- CE 11.1.3 Develop programs and incentives that encourage existing land use, buildings, and infrastructure to reduce their carbon footprint. Demonstration programs and other cost-efficient efforts that do not rely on long-term government subsidies are preferred, unless dedicated funding sources can be found to sustain these efforts over time.
- CE 11.1.4 Develop mitigation strategies that can be used by both the public and private sectors to help mitigate the potential impacts of new and ongoing development and operations.

### Strategies

(Placeholder)



## Changes Accepted Version

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## CHAPTER 4: CONSERVATION AND ENVIRONMENT ELEMENT

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### Background and Context

Des Moines is rich in beauty and natural resources that include the Puget Sound shoreline, hillsides and bluffs, urban forests, diverse streams and wetlands, fish, wildlife and open space. These are defining features of our City that are valued by our citizens and are important for us to protect for generations to come. Both individually and interacting as a whole, these resources provide valuable functions to the City's ecosystem including:

- Control of flooding, surface water runoff, erosion, and sedimentation;
- Groundwater and aquifer recharge;
- Soil and geologic stability; air and water cleansing; and
- Habitat for animals and marine life.

Reducing impacts on the environment is fundamental to the Growth Management Act and Des Moines' Comprehensive Plan. The Conservation and Environment Element contains goals, policies and strategies aimed at environmental stewardship and protecting the City's environmental assets, with particular emphasis on environmentally critical areas, shorelines, surface and groundwater quality, and climate change. The Washington State Growth Management Act mandates the protection of aquifer recharge areas, fish and wildlife habitat conservation areas, flood hazard areas, geologically hazardous areas, wetlands, stream corridors while the Shoreline Management Act provides for the protection of shorelines. Recognizing that a substantial portion of the City is located in geologic hazard areas, this element also addresses the health of ecological functions, public safety, and protection from natural dangers, including erosion, landslides and seismic hazards.

The City of Des Moines 2006 Best Available Science Review, Critical Areas Inventory and map folio, along with the Shoreline Master Program (2011) and Surface Water Management Plan (2015) provide the background data for this element. The City's natural resource inventory is supplemented on an ongoing basis by technical information that is provided through individual project reviews or special studies.

### GOALS

- CE 1** *To protect, improve, and sustain environmental quality through best management practices and the use of best available science.*
- CE 2** *To protect environmentally critical areas from damage caused by encroachment and development. AND To protect all stream and wetlands that in the public interest. AND To protect critical areas from noise impacts.*
- CE 3** *To maintain and monitor a shoreline master program, consistent with state law, to enhance and protect the quality of the shoreline environment consistent with the best available science.*

## WORKING DRAFT

- CE 4 *To conserve and replenish fish and wildlife resources. AND To protect species and their habitats that have been identified as endangered, threatened, or sensitive by the State and Federal governments.*
- CE 5 *To prevent flooding, erosion, sedimentation, water quality, and habitat degradation, and to protect, restore, and enhance all surface waters.*
- CE 6 *(Placeholder)*
- CE 7 *To maintain a solid waste system that bases its primary means of solid waste disposal on the principles of reduction, reuse, and recycling.*
- CE 8 *To promote the conservation of energy in the location and design of public and private development.*
- CE 9 *To educate the community on how to improve Des Moines's natural environment.*
- CE 10 *To protect air quality to maintain a healthy environment for current and future generations.*
- CE 11 *(Placeholder for potential climate change policy)*

### POLICIES AND IMPLEMENTATION STRATEGIES

#### Policies

- CE 1.1 Plan and encourage sound management of natural resources—land, air, water, vegetation, fish, wildlife, and energy—considering entire watersheds and regional influences.
- CE 1.2 Include “best available science” when reviewing, revising, or developing policies and regulations to protect the functions and values of critical areas, giving special consideration to the protection of anadromous fisheries.

#### Strategies

- EC 1.2.1 Designate and protect critical areas using “best available science” (BAS) pursuant to RCW 36.70A.172 and WAC 365-195-900 through 365-195-925.
- CE 1.2.2 BAS is information that (1) state or federal natural resource agencies have determined represents the best available science, (2) was derived from consultation with qualified scientific expert(s), as defined in WAC 365-195-905, or (3) was produced through a valid scientific process. A valid scientific process should have the following characteristics, as defined in WAC 365-195-905: peer review, methods, logical conclusions and reasonable inferences, quantitative analysis, context, and references.
- CE 1.2.3 Document the use of BAS and instances when non-scientific information was used in-lieu-of BAS during the process of developing policies and regulations to protect critical areas and anadromous fisheries. Documentation should include the relevant sources of BAS. Documentation should also include

## WORKING DRAFT

information that departs from BAS and was used as a basis for critical areas policies and regulations.

- CE 1.2.4 The City should identify and document any non-scientific information (including legal, social, cultural, economic, and political), used as a basis for critical areas ordinance policies and regulations, that departs from recommendations derived from BAS. In these cases the City should provide a rationale for use of such information. The City should also identify potential risks to the functions and values of the critical areas at issue and any additional measures chosen to limit such risk.

### Policies

- CE 2.1 Review and revise the City's Critical Areas Ordinance, on or before June 30, 2015, and every eight years thereafter to ensure protection of the ecological functions and values of critical areas from cumulative adverse environmental impacts; and to ensure compliance with the requirements of the Growth Management Act.
- CE 2.2 Ensure that stream and wetland buffers are adequate size to protect critical wildlife species and habitat.
- CE 2.3 Promote the preservation of native vegetation and mature trees, revegetation, and appropriate landscaping to improve air and water quality and fish and wildlife habitat.
- CE 2.4 Analyze the chain of environmental impacts from public and private development proposals in context of the whole watershed. Approve, condition, restrict, or deny development proposals based upon accurate and well-documented environmental information.
- CE 2.5 Balance the City's goals of protecting environmentally critical areas with the other social, cultural, and economic goals of the City of Des Moines Comprehensive Plan.

### Strategies

- CE 2.1.1 Identify environmentally critical areas and promulgate performance standards and development regulations for any proposed developments within or adjacent to them.
- CE 2.1.2 Prepare studies of Des Moines area watersheds, identifying environmental problems and short-term and long-term means for solving the problems.
- CE 2.1.3 Identify and rank capital improvement and land acquisition projects that can prevent flooding, protect surface and ground water quality, stabilize hillsides, and protect, restore, and enhance fish and wildlife habitat.
- CE 2.1.4 Require that development proposals provide measures for restoring or enhancing any lost or degraded functions provided by the environment.

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- CE 2.1.5 Maintain and enforce development regulations to prevent the destruction of critical areas including wetlands, areas with a critical recharging affect on aquifers used for potable water, fish and wildlife habitat conservation areas, frequently flooded areas, and geologically hazardous areas.
- CE 2.1.6 Regulate and plan land use and condition development proposals in ways that protect mature trees, native vegetation, stream flow, fish and wildlife habitat, groundwater recharge, and air quality, as well as natural topographic, geologic, and hydrologic features.
- CE 2.1.7 Update regulations on development in wetlands and streams, and require an undevelopable buffer of preferably native vegetation adjacent to them that is adequate in size to preserve the natural and beneficial values served by wetlands and streams.
- CE 2.1.8 Regulate development on bluffs and ravine sidewalls, and require a buffer of undisturbed native vegetation adjacent to them that is adequate in size to insure human safety, health and welfare and to restore and preserve other functions served by bluffs and ravines.
- CE 2.1.9 Restrict development proposals on potentially unstable land, such as areas with erosion, landslide, and seismic hazards, to insure safety and conformity with existing natural constraints.
- CE 2.1.10 Seek public acquisition of environmentally critical areas that have outstanding valuable natural functions and aesthetic assets.
- CE 2.1.11 Require the issuance of a permit and critical area review by the City prior to any construction activity that would occur in, be adjacent to, or would likely affect a critical area. A permit would be required because the functions and values of unique critical areas can be severely damaged by improper refuse dumping, clearing, grading, filling, and construction.
- CE 2.1.12 Where valid or complete scientific information is not available, the City shall take a precautionary or no risk approach, in which development and land use activities are strictly limited until the uncertainty is sufficiently resolved (as stated in WAC 365-195-920). As an interim approach the City should take an effective adaptive management approach, where the results of land use decisions are scientifically evaluated as to their impacts on critical areas.

### Policies

- CE 3.1 Provide protections for critical areas within shorelines, as designated by the City's Shoreline Management Program. Review and revise the City's Shoreline Management Program, at least every five years to ensure protection of the ecological functions and values of shorelines from cumulative adverse environmental impacts, and to ensure compliance with the requirements of the Growth Management Act.

### Strategies

- 3.1.1 The *Des Moines Shoreline Master Program* (SMP) update was provisionally passed by the City Council Resolution No. 1122 on April 8, 2011. As

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provided by Chapter 18.90 DMMC, the SMP is incorporated as one chapter of the Des Moines Environment Code (Title 16 DMMC).

- 3.1.2 Maintain and monitor the Shoreline Master Program to control and regulate development in the shoreline area.

### Policies

- CE 4.1 Regulate significant land clearing, grading, and filling to minimize the area, time, and slope length of exposed soils, and to reduce on-site erosion and off-site sediment transport.
- CE 4.2 Prohibit any significant clearing, grading, or filling operations prior to drainage and erosion/sedimentation plan approval and implementation.
- CE 4.3 Undertake all necessary actions to protect the quality of surface water bodies located in the city.
- CE 4.4 Reduce flooding, erosion, and sedimentation; prevent and mitigate habitat loss; enhance ground water recharge; and prevent water quality degradation. The surface waters of the City of Des Moines should be managed through plans, programs and regulations developed by the City of Des Moines in cooperation with affected jurisdictions.
- CE 4.5 Manage surface water using a watershed approach, with responsibility shared among the City of Des Moines and affected jurisdictions. Emphasize educational programs and implementation of Best Management Practices to reduce pollution entering surface waters.
- CE 4.6 Establish and/or maintain enforcement mechanisms that may be used to prevent or stop contamination to surface water quality
- CE 4.7 Identify innovative stormwater techniques that protect ground and surface water from contamination and pollution.
- CE 4.8 Protect, improve, and sustain ground water quality and quantity through best management practices, and sound innovative environmental management.

### Strategies

- CE 4.1.1 Implement the surface water management program to:
1. Enhance water quality and control flooding;
  2. Effectively use and maintain existing drainage facilities that provide fish and wildlife habitat;
  3. Satisfy all regulatory requirements and compliance schedules; and
  4. Identify and fund capital improvements.
- CE 4.1.2 Require that development proposals maintain surface water runoff rate, volume, and quality at pre-development levels.

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- CE 4.1.3 Protect and improve surface and ground water quality by requiring development proposals to implement best management practices and other available technology for controlling point and non-point sources of pollution.
- CE 4.1.4 Promote ground water infiltration and minimize surface water runoff by requiring development proposals to limit impervious surfaces.
- CE 4.1.5 Grading and construction activities shall implement erosion control Best Management Practices and other development controls as necessary to reduce sediment and pollution discharge from construction sites to minimal levels.
- CE 4.1.6 Take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains.
- CE 4.1.7 Work with the Washington State Department of Ecology to implement the programs of the Puget Sound Water Quality Management Plan.
- CE 4.1.8 Protect the quality and quantity of groundwater by:
1. Assist with the implementation of the South King County Groundwater Management Plan.
  2. Implement, as appropriate, Wellhead Protection Programs in conjunction with adjacent jurisdictions and ground water purveyors.
  3. Encourage or require use of Best Management Practices for new development recommended by the South King County Groundwater Management Plan.
  4. Refine land use and critical areas regulations, as appropriate, to protect critical aquifer recharge areas.
- CE 4.1.9 In order to ensure the quality of surface water and protect the health and welfare of its citizens, the City of Des Moines will:
1. Establish a program to monitor surface water quality within its boundaries and encourage neighboring jurisdictions to implement similar monitoring programs.
  2. Develop plans, programs and regulations, in cooperation with other jurisdictions, to manage the surface waters of the City.
  3. Work with other jurisdictions to develop a watershed approach to surface water management that includes implementation of Best Management Practices and public education initiatives.

### Policies

- CE 5.1 Strive to maintain the existing diversity of species and habitat in the City and maintain a quality environment that includes fish and wildlife habitats that support the greatest diversity of native species.
- CE 5.2 Protect salmonid habitat by ensuring that land use and facility plans (transportation, water, sewer, power, gas) include riparian habitat conservation measures. Ensure

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that development within basins that contain fish enhancement facilities consider impacts to those facilities.

- CE 5.3 Designate and protect fish and wildlife habitat conservation areas including:
1. Priority species of local importance and their habitat as listed by the most current King County Comprehensive Plan and/or the Washington Department of Fish and Wildlife;
  2. Commercial and recreational shellfish areas;
  3. Kelp and eel grass beds;
  4. Herring and smelt spawning areas, and
  5. Wildlife habitat networks designated by the City of Des Moines.

### Strategies

- CE 5.1.1 Continue to designate, map, and protect habitat networks throughout the City of Des Moines from significant adverse environmental impacts.
- CE 5.1.2 Protect and preserve habitat for species that have been identified as endangered, threatened, or sensitive by the state or federal government, or as priority species or priority habitats by the County.
- CE 5.1.3 Conservation or protection measures necessary to preserve or enhance anadromous fisheries include measures that protect habitat important for all life stages of anadromous fish, including, but not limited to, spawning and incubation, juvenile rearing and adult residence, juvenile migration downstream to the sea, and adult migration upstream to spawning areas. Special consideration should be given to habitat protection measures based on the best available science relevant to stream flows, water quality and temperature, spawning substrates, instream structural diversity, migratory access, estuary and nearshore marine habitat quality, and the maintenance of salmon prey species. Conservation or protection measures can include the adoption of interim actions and long-term strategies to protect and enhance fisheries resources.
- CE 5.1.4 Encourage the integration of native plant communities and wildlife habitats with other land uses where possible. Encourage or require that development protect wildlife habitat through site design and landscaping.
- CE 5.1.5 Provide technical assistance, education, and information to citizens and groups wishing to install wildlife enhancement projects. Encourage public demonstration projects that show the range of possibilities for integration of wildlife into a variety of land uses. Consider demonstration projects done jointly by the City and a private landowner or organization.
- CE 5.1.6 The City of Des Moines shall evaluate programs and regulations to determine their effectiveness in contributing to ESA listed species conservation and recovery, and shall update and enhance programs and plans where appropriate including evaluation of the Zoning Code, the Critical Areas Ordinance, the Shoreline Master Program, the clearing and grading

## WORKING DRAFT

regulations, the landscaping regulations, best management practices for vegetation management and use of insecticides, herbicides and fungicides. The City of Des Moines shall amend these regulations, plans and best management practices to enhance their effectiveness in protecting and restoring salmonid habitat.

- CE 5.1.7 Be a good steward of public lands and integrate fish and wildlife habitat into capital improvement projects when practicable.
- CE 5.1.8 Preserve native vegetation in parks and other publicly owned lands in the design and construction of new public facilities.

### Policies

- CE 6.1 Explore approaches to regulations and procedures that streamline the permit review process for development in or near shorelines and critical areas.
- CE 6.2 Work with adjacent jurisdictions and state federal and tribal governments during land use plan development review to identify and protect habitat networks at jurisdictional boundaries.
- CE 6.3 Regulate public and private development proposals in ways to insure that the valuable functions of natural resources are preserved, restored, or improved.
- CE 6.4 Balance social, economic, and environmental goals to land use planning activities.
- CE 6.5 Work with citizens, land owners, businesses, neighboring cities, King County, special purpose districts, and private and public agencies to protect and improve environmental quality, seeking shared responsibility and uniform environmental management.

### Strategies

(Placeholder)

### Policies

- CE 7.1 Manage solid and hazardous wastes in a manner that results in waste reduction, prevents land, air, and water pollution, and conserves natural resources.

### Strategies

- CE 7.1.1 Prepare, implement, and monitor a waste reduction and recycling plan consistent with State of Washington law and the King County Comprehensive Solid Waste Management Plan.
- CE 7.1.2 Prepare, implement, and monitor a hazardous waste management plan consistent with State of Washington law and the Local Hazardous Waste Management Plan for Seattle-King County.

### Policies

- CE 8.1 Regulate land uses to conserve all forms of energy.

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## Strategies

- CE 8.1.1 Establish construction and site planning standards that result in energy conservation or utilize alternative energy sources.
- CE 8.1.2 Seek to stimulate a land use pattern that encourages an efficient transportation system.
- CE 8.1.3 Implement measures to improve bicycle and pedestrian circulation systems.

## Policies

- CE 9.1 Encourage and support education and public involvement programs aimed at protecting environmental quality. These programs should: (1) inform, educate, and involve individuals, groups, businesses, industry, and government; (2) increase understanding; and (3) encourage commitment.

## Strategies

- CE 9.1.1 Promote public involvement in restoring, protecting, and enhancing natural resources through such programs as Adopt-A-Stream and the Backyard Wildlife Sanctuary Program, by working with local educational institutions, and by integrally involving citizens in developing, implementing, and monitoring environmental programs.

## Policies

(Placeholder)

## Strategies

- CE 10.1.1 Require that air pollution generated from all land uses be restricted to federal and state ambient air pollution standards. Restrict air pollution generated from solid fuel burning devices and open burning to state emission standards, curtailment rules, and fuel restrictions.
- CE 10.1.2 When other trees are not available or do not provide the needed screening, require that planting and maintenance of trees be an integral part of City street development standards. Require all developments to include landscaping improvements using trees, shrubs, and ground covers. Undertake measures to ensure the survival and good health of trees and plants.

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Following are example policies to meet GMA requirement for Climate Change:

## Policies

CE 11.1.1 Develop policies and strategies for land use and development that result in reduced greenhouse gas emissions for new development as well as redevelopment activities.

CE 11.1.2 Develop mitigation programs and incentives that both public and private development entities can use to reduce or offset potential greenhouse gas emissions associated with both new development and redevelopment.

CE 11.1.3 Develop programs and incentives that encourage existing land use, buildings, and infrastructure to reduce their carbon footprint. Demonstration programs and other cost-efficient efforts that do not rely on long-term government subsidies are preferred, unless dedicated funding sources can be found to sustain these efforts over time.

CE 11.1.4 Develop mitigation strategies that can be used by both the public and private sectors to help mitigate the potential impacts of new and ongoing development and operations.

## Strategies

(Placeholder)

# Existing Comprehensive Plan Chapter



## CHAPTER 4 : CONSERVATION ELEMENT

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### **4-01**      **GOALS**

**4-01-01**      To protect, improve, and sustain environmental quality through best management practices and the use of best available science.

**4-01-02**      To protect environmentally critical areas from damage caused by encroachment and development.

**4-01-03**      To prevent flooding, erosion, sedimentation, water quality, and habitat degradation, and to protect, restore, and enhance all surface waters.

**4-01-04**      To conserve and replenish fish and wildlife resources.

**4-01-05**      To protect, improve, and sustain ground water quality and quantity through best management practices, and sound and innovative environmental management.

**4-01-06**      To protect critical areas from noise impacts.

**4-01-07**      To protect all streams and wetlands that are in the public interest.

**4-01-08**      To protect species and their habitats that have been identified as endangered, threatened, or sensitive by the State and Federal governments.

### **4-02**      **BACKGROUND AND CONTEXT**

**4-02-01**      The City of Des Moines has a natural resource base of land, air, water, vegetation, fish, wildlife, and energy.

**4-02-02**      Development and urbanization have resulted in serious environmental problems, including but not limited to, flooding; elimination of fish and wildlife habitat; pollution of land, water and air; inefficient energy use; noise; and soil and geologic instability.

**4-02-03**      Sound planning, best management practices, , best available science (BAS), wise purchases, and application of technology can assist in protecting the remaining natural resource base from further loss or degradation, and can restore or improve the previously lost or degraded natural resource base.

**4-02-04**      Both individually and interacting as a whole, natural resources provide the essential elements for human life. Moreover, they provide valuable functions to the City of Des Moines, including: control of flooding, surface water runoff, erosion, and sedimentation; groundwater and aquifer recharge; soil and geologic stability; air and water cleansing; and habitat for flora and fauna.

**4-02-05**      The uplands and lowlands of the City of Des Moines are linked through the hydrologic cycle. Many of the impacts of urbanization are related to changes in hydrologic

processes. Therefore, by focusing planning efforts on watersheds, impacts of development can be better estimated and understood, and solutions better implemented.

**4-02-06** The natural resources of the City of Des Moines are affected by regional influences. Environmental processes and problems do not obey jurisdictional boundaries. Cooperative environmental management among neighboring jurisdictions, tribes, and state and federal agencies can prevent or overcome regionally influenced problems.

**4-02-07** Pollution prevention and environmental improvements require an ongoing commitment from an informed, involved public.

**4-02-08** The natural landscape of the City of Des Moines is made up of various streams, wetlands, shorelines, hillsides, forests and fields. Development has significantly disturbed the natural environment. However, the remaining environmentally critical areas, also referred to as sensitive areas, are important contributors to the City of Des Moines natural resource base and high quality of life.

**4-02-09** The GMA requires that the City of Des Moines designate its critical areas and develop policies and development regulations to protect the functions and values of critical areas using “best available science” (BAS).

**4-02-10** Critical areas within the City of Des Moines include wetlands, streams, areas with a critical recharging effect on aquifers, frequently flooded areas, geologically hazardous areas, and fish and wildlife habitat conservation areas. The locations of critical areas within the City of Des Moines are shown in figures 4-1 through 4-7.

**4-02-11** Critical areas are unique resources, which if preserved and protected, can protect public and private resources from damage or loss due to flooding, erosion, landslides, seismic and volcanic events, soil subsidence, or steep slope failures. Environmentally critical areas also protect ground and surface water quality and quantity. Critical areas are also part of the aesthetic resources in the City and form distinctive features of natural lands and wooded hillsides.

**4-02-12** Surface water management becomes more critical with urbanization as natural areas are covered with impervious surfaces such as buildings, streets, and parking lots. The City of Des Moines’ surface water management program includes prevention and mitigation of problems due to flooding, erosion, and sedimentation.

**4-02-13** State Law (RCW 35. 27.370) grants the City of Des Moines specific authority to prevent and abate the pollution of surface water inside and outside the City and to enact ordinances that contain enforcement provisions.

**4-02-14** The City of Des Moines’s adopted surface water management program contains policies, and programmatic recommendations that enhance the City of Des Moines’ ability to effectively manage surface waters. The surface water management plan and individual basin plans are developed with the cooperation of other affected jurisdictions. The City of Des Moines also operates a number of capital facilities that reduce flooding, erosion, and sedimentation; mitigate habitat loss; enhance ground water recharge; and prevent water quality degradation.

**4-02-15** The Growth Management Act requires that cities give special consideration to conservation or protection measures necessary to preserve or enhance anadromous fisheries. The City must also include best available science when developing protection policies.

**4-02-16** Open spaces, critical areas and public watersheds provide benefits to wildlife. Preserving these resources also serves to protect wildlife.

**4-02-17** The goal of conserving fish and wildlife habitat can be achieved through the implementation of several strategies, including: a) identification and protection, or purchase, of critical fish and wildlife habitat conservation areas; b) linking those critical habitat areas with other protected lands, and c) integrating fish and wildlife habitat and conservation goals into new and existing developments.

**4-02-18** Since fish and wildlife and their habitats do not respect political boundaries, linkages of critical habitat areas should be made across boundaries.

**4-02-19** Buffer requirements for streams and wetlands intended to protect wildlife resources in those critical areas were established using “best available science.” Development regulations have also been established to protect areas with critical fish and wildlife habitat.

**4-02-20** The most effective way to protect and enhance native fish populations is through protection of river, stream, and creek channels, riparian corridors, lakes, wetlands, and watersheds that provide or impact spawning and rearing habitat, food resources, and fish passage. Intermittent streams can also be critical to native fish populations. Presently, fish enhancement facilities and programs are critical to the maintenance of salmon stocks and the fisheries industry.

**4-02-21** Protection of isolated blocks of habitat may not adequately protect wildlife in the City of Des Moines -- critical fish and wildlife habitats and refuges may need to be connected across the landscape through a system of habitat corridors. Some areas may be important because they serve as vital linkages among habitat areas.

**4-02-22** A key element in a comprehensive wildlife protection program is to encourage integration of wildlife habitat into new developments when possible. Protection of wildlife does not need to be at odds with land development.

**4-02-23** Consideration of fish and wildlife during site design and construction can help to protect and preserve habitat areas.

**4-02-24** Benefits to wildlife are enhanced when on-site landscaping includes native vegetation. Retention of natural vegetation can often provide similar aesthetic benefits as areas landscaped with non-indigenous plant materials.

**4-02-25** Policies in other elements that recognize the value of natural amenities and wildlife habitat also serve to meet the goal of integrating wildlife habitat and new development.

**4-02-26** Integrating wildlife goals with public land uses, such as parks, landscaping along roadways, stormwater control facilities, and landscaping around government buildings can help provide important habitat areas.

**4-02-27** Ground water is an important source of water used in the City. In the future, ground water may provide a greater percentage of our water supply needs.

**4-02-28** Rainfall that enters the ground replenishes ground water and provides base flow for streams, wetlands and rivers during periods of limited rainfall. This base flow sustains fish, wildlife, their habitats, and recreational values.

**4-02-29** The natural hydrologic cycle can be altered by development practices and overuse of the aquifer. The result may be depletion of aquifers.

**4-02-30** Groundwater is subject to contamination from human activity. The cost of protection is considerably less than the cost of remediation and replacement.

**4-02-31** The Growth Management Act requires the designation of "areas with a critical recharging effect on aquifers used for potable water." The procedural criteria to classify critical areas (chapter 365-190 WAC) further defines these areas as areas where an aquifer is a source of drinking water and is vulnerable to contamination that would affect the potability of the water. It is difficult to define and map ground water recharge areas because ground water systems are hydrologically and geologically complex.

**4-02-32** Wellhead protection studies are required by the 1986 amendments to the Federal Safe Drinking Water Act. The three water districts that provide the City's water; King County Water District 54, Highline Water District, and Lakehaven Utility District, have completed such studies. The studies provide additional information about contamination susceptibility of aquifers and also increase understanding of where aquifer recharge areas are located.

**4-02-33** The functions and values of environmentally critical areas can be severely damaged by improper clearing, grading, filling, refuse dumping, and construction. Such actions need to be reviewed for significant adverse environmental impacts before approval.

**4-02-34** Scientific research has determined that wetlands are best protected by undisturbed buffer areas. Undisturbed buffers are vegetated areas in which no development occurs. The wetland buffer provides food, cover, travel routes, and roosting and nesting sites for many wildlife species. Wetland buffers are also critical to wetland ecology. Construction near or within a wetland or its buffer area can reduce or eliminate these habitat functions. Construction can lead to erosion and increased surface runoff that can cause silt and contaminants to enter the wetland. When upland buffers are present between the development and the wetland, the buffer receives the majority of the impact, thereby protecting the wetland.

**4-02-35** Scientific research has determined that watercourses are best protected by undisturbed buffer areas. In addition to protecting the watercourse, the buffer protects adjacent upland areas from flooding while also providing wildlife habitat. The critical functions of the buffer include shading, input of organic debris, nutrient uptake, bank stabilization, and the interception of sediment.

**4-02-36** Scientific research has determined that unstable slopes are best protected by undisturbed buffer areas. Certain hillsides in the City of Des Moines are either unstable or susceptible to instability when disturbed. These hillsides are underlain by permeable soils, and are subject to seepage. They also include areas that have experienced landslides in the past and have slopes that are being undermined by stream or beach erosion. Construction in these areas is expensive and difficult. Landslides on such slopes can result in enormous public and private costs, and severe threats to public safety and natural resources.

#### **4-03**        **POLICIES**

**4-03-01** Plan and encourage sound management of natural resources--land, air, water, vegetation, fish, wildlife, and energy--considering entire watersheds and regional influences.

**4-03-02** Review and revise the City's Critical Areas Ordinance, at least every five years, to ensure protection of the ecological functions and values of critical areas from cumulative adverse environmental impacts; and to ensure compliance with the requirements of the Growth Management Act.

**4-03-03** Include "best available science" when reviewing, revising, or developing policies and development regulations to protect the functions and values of critical areas, giving special consideration to the protection of anadromous fisheries.

**4-03-04** Provide protections for critical areas within shorelines, as designated by the City's Shoreline Management Program. Review and revise the City's Shoreline Management Program, at least every five years to ensure protection of the ecological functions and values of shorelines from cumulative adverse environmental impacts, and to ensure compliance with the requirements of the Growth Management Act.

**4-03-05** Explore approaches to regulations and procedures that streamline the permit review process for development in or near shorelines and critical areas.

**4-03-06** Balance social, economic, and environmental goals to land use planning activities.

**4-03-07** Work with citizens, land owners, businesses, neighboring cities, King County, special purpose districts, and private and public agencies to protect and improve environmental quality, seeking shared responsibility and uniform environmental management.

**4-03-08** Promote the preservation of native vegetation and mature trees; revegetation; and appropriate landscaping to improve air and water quality and fish and wildlife habitat.

**4-03-09** Regulate significant land clearing, grading, and filling to minimize the area, time, and slope length of exposed soils, and to reduce on-site erosion and off-site sediment transport.

Prohibit any significant clearing, grading, or filling operations prior to drainage and erosion/sedimentation plan approval and implementation.

**4-03-10** Regulate public and private development proposals in ways to insure that the valuable functions of natural resources are preserved, restored, or improved.

**4-03-11** Analyze the chain of environmental impacts from public and private development proposals in context of the whole watershed. Approve, condition, restrict, or deny development proposals based upon accurate and well-documented environmental information.

**4-03-12** Manage solid and hazardous wastes in a manner that results in waste reduction, prevents land, air, and water pollution, and conserves natural resources.

**4-03-13** Take measures to control noise pollution and reduce noise impacts.

**4-03-14** Regulate land uses to conserve all forms of energy.

**4-03-15** Encourage and support education and public involvement programs aimed at protecting environmental quality. These programs should: (1) inform, educate, and involve individuals, groups, businesses, industry, and government; (2) increase understanding; and (3) encourage commitment.

**4-03-16** Require review and permit approval before construction activity is allowed to occur within, adjacent to, or likely would affect an environmentally critical area.

**4-03-17** Undertake all necessary actions to protect the quality of surface water bodies located in the city.

**4-03-18** Reduce flooding, erosion, and sedimentation; prevent and mitigate habitat loss; enhance ground water recharge; and prevent water quality degradation. The surface waters of the City of Des Moines should be managed through plans, programs and regulations developed by the City of Des Moines in cooperation with affected jurisdictions.

**4-03-19** Manage surface water using a watershed approach, with responsibility shared among the City of Des Moines and affected jurisdictions. Emphasize educational programs and implementation of Best Management Practices to reduce pollution entering surface waters.

**4-03-20** Consistent with land use density objectives, strive to maintain the existing diversity of species and habitat in the City and maintain a quality environment that includes fish and wildlife habitats that support the greatest diversity of native species.

**4-03-21** Protect and preserve habitat for species that have been identified as endangered, threatened, or sensitive by the state or federal government, or as priority species or priority habitats by the County.

**4-03-22** Designate and protect fish and wildlife habitat conservation areas including:

- (1) Priority species of local importance and their habitat as listed by the most current King County Comprehensive Plan and/or the Washington Department of Fish and Wildlife;
- (2) Commercial and recreational shellfish areas;
- (3) Kelp and eel grass beds;

- (4) Herring and smelt spawning areas, and
- (5) Wildlife habitat networks designated by the City of Des Moines.

**4-03-23** Ensure that stream and wetland buffers be of adequate size to protect critical wildlife species and habitat.

**4-03-24** Protect salmonid habitat by ensuring that land use and facility plans (transportation, water, sewer, power, gas) include riparian habitat conservation measures. Ensure that development within basins that contain fish enhancement facilities consider impacts to those facilities.

**4-03-25** Work with adjacent jurisdictions and state federal and tribal governments during land use plan development review to identify and protect habitat networks at jurisdictional boundaries.

**4-03-26** Be a good steward of public lands and integrate fish and wildlife habitat into capital improvement projects when practicable.

## **4-04**      **STRATEGIES**

### **4-04-01**      **Conservation Planning**

- (1) Prepare studies of Des Moines area watersheds, identifying environmental problems and short-term and long-term means for solving the problems.
- (2) Identify and rank capital improvement and land acquisition projects that can prevent flooding, protect surface and ground water quality, stabilize hillsides, and protect, restore, and enhance fish and wildlife habitat.
- (3) Require that development proposals provide measures for restoring or enhancing any lost or degraded functions provided by the environment.
- (4) Grading and construction activities shall implement erosion control Best Management Practices and other development controls as necessary to reduce sediment and pollution discharge from construction sites to minimal levels.
- (5) Regulate and plan land use and condition development proposals in ways that protect mature trees, native vegetation, stream flow, fish and wildlife habitat, groundwater recharge, and air quality, as well as natural topographic, geologic, and hydrologic features.
- (6) Promote public involvement in restoring, protecting, and enhancing natural resources through such programs as Adopt-A-Stream and the Backyard Wildlife Sanctuary Program, by working with local educational institutions, and by integrally involving citizens in developing, implementing, and monitoring environmental programs.

- (7) Maintain and monitor the Shoreline Master Program to control and regulate development in the shoreline area.
- (8) Maintain development regulations and a permitting system to prevent the destruction of critical areas including wetlands, areas with a critical recharging affect on aquifers used for potable water, fish and wildlife habitat conservation areas, frequently flooded areas, and geologically hazardous areas.
- (9) Designate, map, and protect habitat networks throughout the City of Des Moines from significant adverse environmental impacts.
- (10) In compliance with RCW 36.70A.172, the City should include a record of evidence that it has given "special consideration" to conservation or protection measures necessary to preserve or enhance anadromous fisheries. The record should be developed using the criteria set out in WAC 365-195-900 through 365-195-925 to insure that conservation or protection measures necessary to preserve or enhance anadromous fisheries are grounded in BAS.
- (11) Conservation or protection measures necessary to preserve or enhance anadromous fisheries include measures that protect habitat important for all life stages of anadromous fish, including, but not limited to, spawning and incubation, juvenile rearing and adult residence, juvenile migration downstream to the sea, and adult migration upstream to spawning areas. Special consideration should be given to habitat protection measures based on the best available science relevant to stream flows, water quality and temperature, spawning substrates, instream structural diversity, migratory access, estuary and nearshore marine habitat quality, and the maintenance of salmon prey species. Conservation or protection measures can include the adoption of interim actions and long-term strategies to protect and enhance fisheries resources.
- (12) Encourage the integration of native plant communities and wildlife habitats with other land uses where possible. Encourage or require that development protect wildlife habitat through site design and landscaping. Encourage or require that new development within or adjacent to wildlife habitat networks incorporate design techniques that protect and enhance wildlife habitat values.
- (13) Provide technical assistance, education, and information to citizens and groups wishing to install wildlife enhancement projects. Encourage public demonstration projects that show the range of possibilities for integration of wildlife into a variety of land uses. Consider demonstration projects done jointly by the City and a private landowner or organization.
- (14) To the extent permitted by state and federal law, in order to minimize adverse impacts related to noise, protect fish and wildlife habitat conservation areas from environmental noise levels that exceed 55 Ldn (dBA), or the Ldn in existence on the effective date of this element, whichever is higher. To the extent permitted by state and federal law, a reduction in the exterior noise level shall become the new maximum exterior noise level.

**Environmentally Critical Areas**

- (1) Identify environmentally critical areas and promulgate performance standards and development regulations for any proposed developments within or adjacent to them.
- (2) Develop and update regulations on development in wetlands and streams, and require an undevelopable buffer of preferably native vegetation adjacent to them that is adequate in size to preserve the natural and beneficial values served by wetlands and streams.
- (3) The City of Des Moines shall evaluate programs and regulations to determine their effectiveness in contributing to ESA listed species conservation and recovery, and shall update and enhance programs and plans where appropriate including evaluation of the Zoning Code, the Critical Areas Ordinance, the Shoreline Master Program, the clearing and grading regulations, the landscaping regulations, best management practices for vegetation management and use of insecticides, herbicides and fungicides. The City of Des Moines shall amend these regulations, plans and best management practices to enhance their effectiveness in protecting and restoring salmonid habitat, taking into consideration the model program developed by the Tri-County Salmon Conservation Coalition and the recommendations of shared strategy.
- (4) Require that development proposals contain measures to stabilize soils, hillsides, bluffs and ravine sidewalls and promote wildlife habitat by retaining critical areas of existing native vegetation.
- (5) Regulate development on bluffs and ravine sidewalls, and require a buffer of undisturbed native vegetation adjacent to them that is adequate in size to insure human safety, health and welfare and to restore and preserve other functions served by bluffs and ravines.
- (6) Restrict development proposals on potentially unstable land, such as areas with erosion, landslide, and seismic hazards, to insure safety and conformity with existing natural constraints.
- (7) Seek public acquisition of environmentally critical areas that have outstanding valuable natural functions and aesthetic assets.
- (8) Administer and enforce adopted land use regulations that protect environmentally critical areas from the impacts of adjacent land uses.
- (9) Require the issuance of a permit and review by the City prior to any construction activity that would occur in, be adjacent to, or would likely affect a critical area. A permit would be required because the functions and values of unique critical areas can be severely damaged by improper refuse dumping, clearing, grading, filling, and construction.

- (10) Using “best available science” (BAS), review and update development regulations pertaining to development in and protection of critical areas (the Critical Areas Ordinance), particularly those which directly or indirectly effect the health of the regions’ anadromous fisheries, in the City of Des Moines, between five and ten years of the adopted ordinance date.
- (11) In designating and protecting critical areas the City shall include BAS, consistent with criteria set out in WAC 365-195-900 through 365-195-925.
- (12) BAS is information that (1) state or federal natural resource agencies have determined represents the best available science, (2) was derived from consultation with qualified scientific expert(s), as defined in WAC 365-195-905, or (3) was produced through a valid scientific process. A valid scientific process should have the following characteristics, as defined in WAC 365-195-905: peer review, methods, logical conclusions and reasonable inferences, quantitative analysis, context, and references.
- (13) Where valid or complete scientific information is not available, the City shall take a precautionary or no risk approach, in which development and land use activities are strictly limited until the uncertainty is sufficiently resolved (as stated in WAC 365-195-920). As an interim approach the City should take an effective adaptive management approach, where the results of land use decisions are scientifically evaluated as to their impacts on critical areas.
- (14) Strive to balance the City’s goals of protecting environmentally critical areas with the other social, cultural, and economic goals of the City of Des Moines Comprehensive Plan.
- (15) Document, on the record, the use of BAS and instances when non-scientific information was used in-lieu-of BAS during the process of developing policies and regulations to protect critical areas and anadromous fisheries. Documentation should include the relevant sources of BAS. Documentation should also include information that departs from BAS and was used as a basis for critical areas policies and regulations.

- (16) The City should identify and document any non-scientific information (including legal, social, cultural, economic, and political), used as a basis for critical areas ordinance policies and regulations, that departs from recommendations derived from BAS. In these cases the City should provide a rationale for use of such information. The City should also identify potential risks to the functions and values of the critical areas at issue and any additional measures chosen to limit such risk.

#### **4-04-03 Shoreline Master Program**

- (1) **The *Des Moines Shoreline Master Program* (SMP)** update was provisionally passed by the City Council Resolution No. 1122 on April 8, 2011. As provided by Chapter 18.90 DMMC, the SMP is incorporated as one chapter of the Des Moines Zoning Code (Title 18 DMMC).

#### **4-04-04 Solid and Hazardous Waste Management**

- (1) Prepare, implement, and monitor a waste reduction and recycling plan consistent with State of Washington law and the King County Comprehensive Solid Waste Management Plan.
- (2) Prepare, implement, and monitor a hazardous waste management plan consistent with State of Washington law and the Local Hazardous Waste Management Plan for Seattle-King County.

#### **4-04-05 Water Management**

- (1) Develop a surface water management program that will:
  - (a) Enhance water quality and control flooding;
  - (b) Effectively use and maintain existing drainage facilities that provide fish and wildlife habitat;
  - (c) Satisfy all regulatory requirements and compliance schedules; and
  - (d) Identify and fund capital improvements.
- (2) Require that development proposals maintain surface water runoff rate, volume, and quality at pre-development levels. Where watershed studies show that the impacts of urbanization are significant, additional measures should be implemented to attenuate drainage problems posed by these impacts.
- (3) Protect and improve surface and ground water quality by requiring development proposals to implement best management practices and other available technology for controlling point and non-point sources of pollution.

- (4) Promote ground water infiltration and minimize surface water runoff by requiring development proposals to limit impervious surfaces.
- (5) Require that development proposals contain measures to control on-site soil erosion and off-site sediment transport during and after construction through the use of best management practices and other available erosion and sedimentation control technology.
- (6) Take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains.
- (7) Work with the Washington State Department of Ecology to implement the programs of the Puget Sound Water Quality Management Plan.
- (8) As authorized by the laws of State of Washington (such as RCW 35.24.280), act to prevent and fine any person or private or public entity causing pollution of surface waters flowing through or into the City of Des Moines from up to five miles from its corporate limits.
- (9) Establish and/or maintain enforcement mechanisms that may be used to prevent or stop contamination to surface water quality.
- (10) If surface water contamination is found in the City of Des Moines, consider requesting state or federal investigations or enforcement actions. Consider pursuing all appropriate civil actions under state and federal law to abate the pollution problem, including a citizen suit under the federal Clean Water Act.
- (11) The City of Des Moines shall maintain a map of Critical Areas.
- (12) Protect the quality and quantity of groundwater by:
  - (a) Assisting during implementation of the South King County Groundwater Management Plan.
  - (b) Implement, as appropriate, Wellhead Protection Programs in conjunction with adjacent jurisdictions and ground water purveyors.
  - (c) Encourage or require use of Best Management Practices for new development recommended by the South King County Groundwater Management Plan.
  - (d) Refine land use and critical areas regulations, as appropriate, to protect critical aquifer recharge areas.

- (13) In order to ensure the quality of surface water and protect the health and welfare of its citizens, the City of Des Moines will:
  - (a) Establish a program to monitor surface water quality within its boundaries and encourage neighboring jurisdictions to implement similar monitoring programs.
  - (b) Develop plans, programs and regulations, in cooperation with other jurisdictions, to manage the surface waters of the City.
  - (c) Work with other jurisdictions to develop a watershed approach to surface water management that includes implementation of Best Management Practices and public education initiatives.

**4-04-06**      **Air**

- (1) Require that air pollution generated from all land uses be restricted to federal and state ambient air pollution standards. Restrict air pollution generated from solid fuel burning devices and open burning to state emission standards, curtailment rules, and fuel restrictions.
- (2) When other trees are not available or do not provide the needed screening, require that planting and maintenance of trees be an integral part of City street development standards. Require all developments to include landscaping improvements using trees, shrubs, and ground covers. Undertake measures to ensure the survival and good health of trees and plants.

**4-04-07**      **Energy**

- (1) Establish construction and site planning standards that result in energy conservation or utilize alternative energy sources.
- (2) Seek to stimulate a land use pattern that encourages an efficient transportation system.
- (3) Implement measures to improve bicycle and pedestrian circulation systems.

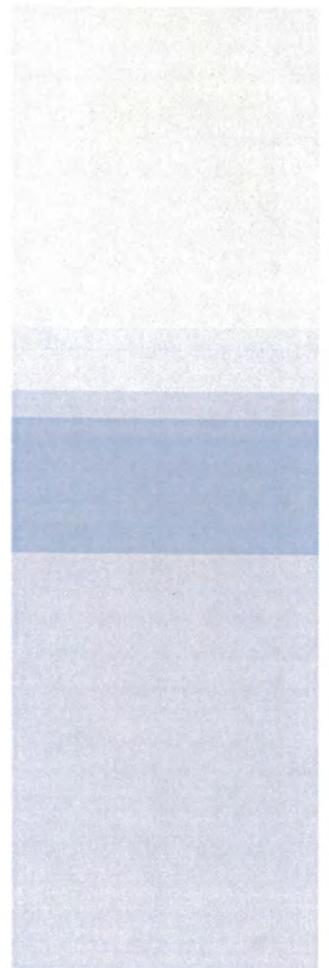


# Surface Water Comprehensive Plan (Final Draft)

Prepared for  
**City of Des Moines**  
21630 11th Ave South  
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February 2015

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## Certification

The technical material and data contained in this document were prepared under the supervision and direction of the undersigned, whose seal, as a professional engineer licensed to practice as such, is affixed on this page.



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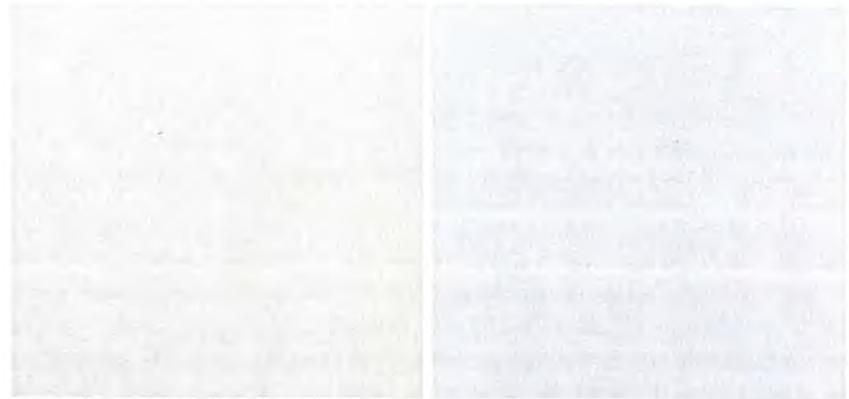
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Surface Water Group Lead

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Approved by Austin Fisher, P.E.  
Project Manager



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# Executive Summary

## Plan Goals and Development

### Purpose

The City of Des Moines Surface Water Management Division is responsible for implementing practices and technologies to address stormwater-related issues throughout the city. The Surface Water Management Division's mission is to:

- Control and minimize flooding, erosion, sedimentation, and water quality degradation;
- Protect the stream ways and wetlands within the city limits;
- Accommodate future urban growth and correct existing surface water problems; and
- Safeguard public safety, prevent property damage, and improve water quality.

(DMMC 11.08.010)

The purpose of this surface water comprehensive plan (SWCP) is to outline the City's surface water management program that will be implemented over the next 10 years, including the current Washington State Department of Ecology (Ecology) Municipal Stormwater Permit term (2013–2018), and discuss the steps taken to identify the crucial program elements. Two major components of the SWCP are the Surface Water Capital Improvement Plan and the Surface Water Rate and General Facilities Charge Update Analysis, which are discussed in the Program Recommendations section of this summary.

### Methodology

The City's current surface water program was evaluated and summarized through review of existing operational, water quality, flood control, and habitat reports and

data within the City records and other publicly available resources. In addition, existing surface water issues, potential capital projects, staffing needs, maintenance effectiveness, pollution sources, and public awareness were identified and prioritized based on City staff questionnaires, a City staff workshop, five public meetings enlisting citizen involvement, and three presentations to the City Council Environment Committee.

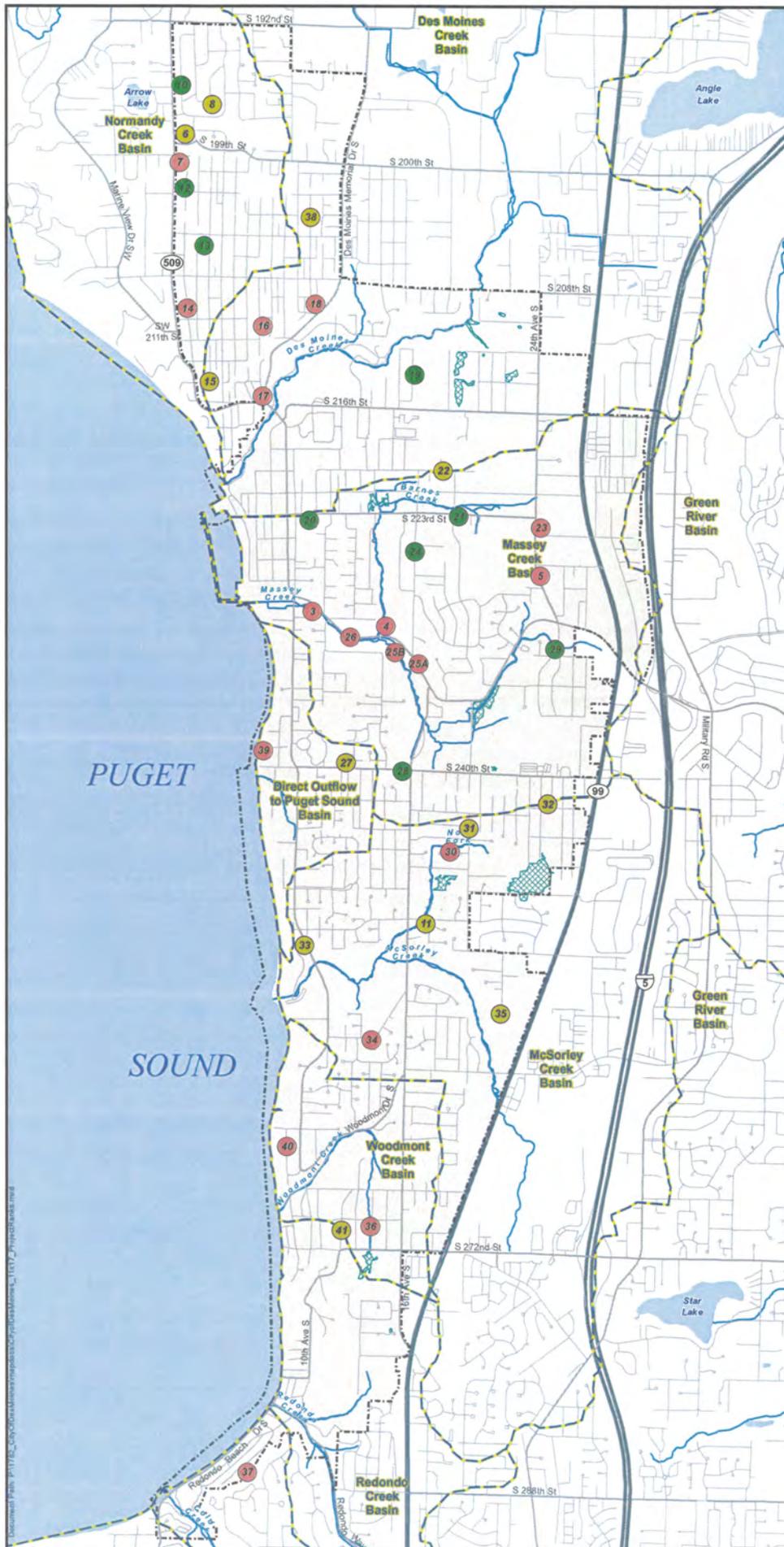
The current surface water management program was evaluated based on City and state regulatory requirements, feedback from the City, and public participation. The program was evaluated to determine where the current level of service did not fully meet with existing program expectations. In addition, recommendations for higher levels of service were developed based on future City goals and additional programs or technologies that would increase the efficiency of the current program and potentially reduce long-term costs. To objectively compare and prioritize potential capital projects, a ranking system was developed based on City input, citizen involvement, and feedback from the City Council Environment Committee. Finally, the surface water rate analysis was conducted by developing and evaluating three different scenarios that would each address a baseline level of service compliant with all regulatory requirements, combined with different levels of operational efficiencies and completion of capital projects.

## Future Updates

This SWCP provides a snapshot of the stormwater management program as it can be assessed from a 2014 perspective; however, changes and influence from external (e.g., regulations) and internal (e.g., change in staff or elected officials, flood events) events will occur. The program status should be briefly reviewed bi-annually, reconfirmed for adjustments due to the NPDES Permit renewal in 2018, and a status report and possible adjustments prepared at the 5-year mark (2020) to determine progress toward achieving goals in its 10-year time frame.

## Study Area

The city of Des Moines is located within eight stream basins that are part of the larger Duwamish/Green Watershed (Figure ES-1). Waterbodies within these basins include Des Moines Creek, Massey Creek, Barnes Creek, McSorley Creek, Normandy Creek, Woodmont Creek, Redondo Creek, and Cold Creek, all of which drain directly to Puget Sound. Issues identified in each stream basin within the city and summarized below are based on findings of individual basin plans; however, substantial efforts have been made to address these issues since publication of the original basin plans and additional monitoring may be needed to determine the success of these efforts.



**City of Des Moines**

**Parametrix**  
ENGINEERING, PLANNING, ENVIRONMENTAL SCIENCES

**Capital Project and Rank**

- High
- Medium
- Low

**Project Area**

□

**Stream**

—

**Drainage Basin**

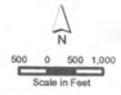
▭

**Wetland**

▨

**Des Moines City Limits**

---



Source: City of Des Moines, King County

**Figure ES-1**  
Drainage Basins and  
Capital Project  
Locations

Des Moines Surface Water  
Comprehensive Plan

Document Path: P:\1142\_2017\GIS\MapServer\workspace\desmoines\1142\_2017\ProjectArea.mxd

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Des Moines Creek, Massey Creek, and McSorley Creek have characteristics in common. Each of these streams experiences varying levels of localized flooding due to uncontrolled runoff from developed areas and inadequate detention storage. In addition, each stream contains a combination of varying habitat quality, though much of the streams still provides good fish habitat and some reaches may be suitable for restoration. Also, Des Moines Creek, Massey Creek, and McSorley Creek have been identified on Ecology's 303(d) list for exceeding state water quality standards for dissolved oxygen, fecal coliform bacteria, and copper. Des Moines Creek and Massey Creek have also been identified on Ecology's 303(d) list for exceedances of the zinc water quality standard.

The remaining streams within the city are each considered to have lower habitat value. Both Normandy Creek and Woodmont Creek have good canopy cover; however, Normandy Creek contains fish barriers and Woodmont Creek is heavily incised with high flows. Redondo Creek and Cold Creek basins are each heavily developed with less remaining canopy cover and offer very low habitat value overall. Normandy, Woodmont, Redondo, and Cold creeks have not been listed by the state for water quality exceedances.

## Current Surface Water Management Program

### Overview

An overview of the current Surface Water Management Program is provided in Table ES-1.

### Budgeting

The current surface water management program is funded through a surface water utility fee, grants, and Interlocal agreements. The Surface Water Management Division periodically evaluates the surface water fee to determine if the base amount is adequate to meet program needs and if the portions of the rates allocated between commercial and residential customers is appropriate. In addition, the Surface Water Management Division generates an annual budget outlining how the surface water rate revenue will be allocated to its costs and needs for the coming year.

Table ES-1. Overview of Current Surface Water Management Program

		Program Element										Administration	Capital Projects
Planning and Engineering	Inspections and Maintenance	NPDES	Public Education	Public Involvement	Illicit Discharges	Control Runoff	Operation and Maintenance	Monitoring	Tracking and Reporting				
Staff salaries, supplies, and specific labor required for stormwater engineering and planning (Stormwater Comprehensive Plan, NPDES SWMP Plan, etc.).	Routine system inspections and maintenance (includes NPDES-required work): field crew staff salaries, equipment, interfund transfers for repairs, etc.	Implementation of NPDES Permit program <ul style="list-style-type: none"> <li>SWMP document updates included under Planning and Engineering</li> <li>NPDES inspections and maintenance included under Inspections and Maintenance general program component</li> </ul>	Reduce or eliminate public stormwater impacts and encourage participation in stewardship.	Ongoing opportunities for involvement, such as advisory councils, public hearings, watershed committees, and rate-structure input.	Prevent, detect, characterize, trace, and eliminate illicit connections and discharges into the storm drain system.	Reduce pollutants in stormwater runoff from new development, redevelopment, and construction site activities through permitting, plan review, and inspections.	Perform operation and maintenance on the storm drain system and provide staff training.	Conduct local water quality monitoring or pay into a fund to support regional monitoring.	Gather information, track program success, set action priorities, retain records, and submit reports to Ecology.	Overhead costs of operating the program: support staff salaries, state taxes, utility taxes, and non-element-specific expenses.	Large-scale construction, expansion, renovation, or replacement projects; purchases of major, long-term use equipment; or major long-term maintenance, repair, or rehabilitation projects.		

## Identified Compliance Gaps in Current Program

In general, the current surface water management program complies with most regulatory requirements and provides an adequate level of service to the surface water rate customers. However, the following gaps were identified in the existing program:

- **NPDES Operation and Maintenance:** Stormwater management facilities must be inspected at least once per year. The City crews are able to inspect each existing facility annually and upgrade them to maintenance standards as needed. However, since 2012, at least four major facilities have been constructed or soon will be. The Surface Water Management Division is in the process of modifying operation and maintenance procedures to include these facilities and have maintenance crews provide these inspection duties. With the existing maintenance staff, a gap exists in the time needed to meet the permit inspection and maintenance requirements as additional facilities are constructed.
- **NPDES Tracking, Recordkeeping, and Reporting:** The existing inspection and maintenance records contain a large backlog of paper activity reports that have not been entered into the electronic database.
- **Capital Project Implementation:** The City currently does not have an emergency fund within the capital projects budget or a systematic program for replacement of failing infrastructure.

## Program Recommendations

### Key Drivers

The Surface Water Management Division's mission statement focuses on issues such as flooding, erosion, sedimentation, water quality degradation, stream and wetland protection, future growth, public safety, and property protection. All of these elements are part of three main focus areas around which the Surface Water Management Program is centered:

- Drainage
- Water Quality
- Habitat

Future program upgrades centered on these focus areas will provide continuity of efforts while aligning with local and state requirements, regional initiatives, City goals and priorities, and public needs.

The City's existing storm drain system and flow control facilities are generally adequate to address drainage needs to the level of service in place when the

systems were constructed. However, the infrastructure within the storm drain system includes extended lengths of pipe that are near the end of their useful life and the Surface Water Management Division does not currently have a dedicated plan or funding mechanism to pay for the repair and replacement of these aged components. It is recommended that the City establish a repair and replacement fund to handle these anticipated, but unpredictable, repairs of pipe failure.

Based on recent regulatory developments, it is anticipated that future versions of the Municipal NPDES Permit will require the City to implement a stormwater retrofit plan. It is recommended that the City begin preparing for the future potential need by compiling and organizing information related to stormwater quality and flow retrofitting, mapping, water quality problem identification and tracking, and flow monitoring. In addition, the City should consider establishing funding for add-on opportunities, preparing a prioritized retrofit plan.

Similar to water quality data, the City does not have a central clearinghouse of information for City habitat areas and improvement opportunities. Therefore, it is recommended that the City begin compiling and organizing habitat-specific information as part of the data gathering effort discussed above.

## Components

Recommended approaches for addressing gaps in the current surface water management program, including additions of full-time employees, and recommendations to increase program efficiencies and reduce costs are presented in Table ES-2.

## Implementation

Implementation of the recommended operational procedures and construction of capital projects are presented in three different funding scenarios, as summarized in Table ES-3. Each of these scenarios would address a baseline level of service compliant with all regulatory requirements, and combined with different levels of operational efficiencies and completion of capital projects. Identified capital projects are summarized in Figures ES-1 and ES-2.

Tables ES-4 through ES-6 show the long-term revenue requirement forecast and the associated utility fee increase for each of the scenarios. The rate of fee increases in Scenario 1 are based on inflation only, while Scenarios 2 and 3 include increases beyond inflation to achieve higher levels of operational and capital service.

Table ES-2. Surface Water Management Program Findings and Recommendations

Findings	Program Element								Administration	Capital Improvement Program		
	Planning and Engineering	Maintenance	Public Education	Public Involvement	Illicit Discharge	Control Runoff	Operation and Maintenance	Monitoring			Tracking and Reporting	
Gaps in Existing Program and Compliance Needs	<ul style="list-style-type: none"> <li>None</li> </ul>	<ul style="list-style-type: none"> <li>Crews inspecting approximately 60% of all catch basins annually.</li> <li>Add 0.33 FTE, maintenance (back-up to maintain 2 full 2-person crews)</li> </ul>	None	None	None	None	<ul style="list-style-type: none"> <li>2 to 3 public facilities added each year, requiring additional staff to meet permit requirements</li> <li>Add 0.33 FTE, increase inspection coverage</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>	<ul style="list-style-type: none"> <li>Inspection and maintenance database not current with most recent activities.</li> <li>Add 0.33 FTE, input records backlog</li> </ul>	<ul style="list-style-type: none"> <li>Maintenance of all stormwater facilities required by DMMC 11.20.080 (2)(a).</li> <li>No current systematic repair or replacement of aging capital assets</li> <li>Add emergency repair and replacement service fund.</li> </ul>		
	<ul style="list-style-type: none"> <li>Programmatic SEPA evaluation of Capital Program</li> <li>Project Management Manual/ training to support Capital Program</li> <li>Add 1.0 FTE to manage Capital Program</li> <li>Charge drainage permit fee, help fund development support</li> </ul>	<ul style="list-style-type: none"> <li>Closed-circuit television inspection of 15% of the drainage system annually until complete (City to purchase equipment: \$15k)</li> <li>Discontinue Pipe Program. Reallocate to Pipe Replacement capital project.</li> </ul>	None	None	None	None	None	<ul style="list-style-type: none"> <li>None</li> </ul>	<ul style="list-style-type: none"> <li>Update tracking database to electronic software.</li> <li>Organize water quality retrofit data.</li> </ul>	<ul style="list-style-type: none"> <li>Increase budget proportionately to support upgrades of other program elements</li> <li>Track division revenue growth, use proceeds to cover new costs</li> </ul>	None	
Recommendations												

FTE = full-time employee; SEPA = State Environmental Policy Act; DMMC = Des Moines Municipal Code; NPDES = National Pollutant Discharge Elimination System

**Table ES-3. Program Implementation Funding Scenarios**

Funding Scenario	Operations	Capital Projects
Scenario 1	<p><b>Immediate</b> personnel additions for NPDES inspections, non-NPDES inspections, input backlog of maintenance records</p> <ul style="list-style-type: none"> <li>- <b>1.0 FTE</b> (maintenance) in 2015</li> </ul>	Fund 14 out of 19 <b>High Priority</b> projects
Scenario 2	<p><b>Immediate</b> personnel additions for NPDES inspections, non-NPDES inspections, input backlog of maintenance records</p> <ul style="list-style-type: none"> <li>- <b>1.0 FTE</b> (maintenance) in 2015</li> </ul> <p><b>Eventual</b> personnel addition to support Capital Improvement Plan implementation</p> <ul style="list-style-type: none"> <li>- <b>1.0 FTE</b> (engineer) as growth permits</li> </ul>	Fund all <b>High Priority</b> projects by 2025
Scenario 3	<p><b>Immediate</b> personnel additions for NPDES inspections, non-NPDES inspections, input backlog of maintenance records</p> <ul style="list-style-type: none"> <li>- <b>1.0 FTE</b> (maintenance) in 2015</li> </ul> <p><b>Immediate</b> personnel addition to support Capital Improvement Plan implementation.</p> <ul style="list-style-type: none"> <li>- <b>1.0 FTE</b> (engineer) in 2015</li> </ul>	Fund all <b>High Priority and Medium Priority</b> projects by 2025

Capital Project	Public Meeting Focus Area	Project Title	Estimated Cost	Score
<b>High-Ranked Projects</b>				
16	A	5th Avenue South/212th Street Pipe Upgrade	\$724,220	68
3	B	Lower Massey Creek Channel Modifications	\$1,248,565	64
30	C	North Fork McSorley Creek Diversion Project	\$372,960	60
4	B	Barnes Creek/Kent Des Moines Road Culvert Replacement	\$1,470,081	58
39	C	6th Avenue/239th St. Pipe Replacement	\$164,220	56
36	D	14th Avenue (268th to 272nd) Pipe Upgrade	\$411,740	56
17	A	216th Place/Marine View Drive Pipe Upgrade	\$258,300	54
25A	B	KDM/16th Avenue Pipe Replacement Project	\$227,080	52
18	A	Des Moines Memorial Drive - S. 208th to S. 212th Pipe Project	\$504,980	48
40	D	8th Avenue (264th to 265th) Pipe Project	\$219,800	48
5	B	24th Avenue Pipeline Replacement	\$260,100	46
25B	B	KDM/16th Avenue (228th to KDM Rd) Pipe Project	\$714,420	46
7	A	1st Avenue Pond Expansion	\$334,672	34
9	ALL	Pipe Replacement Program (unidentified projects)	\$1,474,667	34
Sub-Total Estimated Cost of High-Ranked Projects			\$8,385,805	
26	C	232nd Street (10th to 14th) Pipe Project	\$496,580	44
23	B	24th Avenue (223rd to 224th) Pipe Upgrade	\$226,100	42
34	C	258th Street (13th Pl to 16th Ave) Pipe Project	\$341,600	42
37	D	6th Place/287th Street Pipe Replacement Project	\$496,300	40
14	A	1st Place South (209th to 210th) Pipe Project	\$211,260	36
Sub-Total Estimated Cost of High-Ranked Projects			\$1,771,840	
<b>Grand Total Estimated Cost of High-Ranked Projects</b>			<b>\$10,157,645</b>	
<b>Medium-Ranked Projects</b>				
38	A	9th Avenue (202nd to 206th) Pipe Project	\$185,920	32
15	A	3rd Avenue South (213th to 216th) Pipe Project	\$322,140	30
31	C	20th Avenue/243rd Street Pipe Upgrade	\$371,840	30
35	C	22nd Avenue Outfall Project	\$191,380	28
6	A	199th North Hill Trunkline Upgrade	\$231,395	26
8	A	North Hill NE and 197th Street Trunkline Upgrade	\$482,857	26
32	C	242nd Street (26th Ave to 26th Pl) Pipe Project	\$100,100	26
11	C	Saltwater Highlands Tract A pond replacement (and/or stabilize adjacent rav	\$360,962	24
27	C	240th Street (MVD to 11th Place) Pipe Project	\$343,840	24
22	A	220th Street (15th Ave to SJU Park) Pipe Replacement Project	\$335,860	22
33	C	252nd Street/9th Avenue Pipe Project	\$191,240	22
41	D	12th/13th Avenue (270th to 272nd Street)	\$496,020	22
<b>Total Estimated Cost of Medium-Ranked Projects</b>			<b>\$3,613,554</b>	
<b>Low-Ranked Projects</b>				
12	A	1st Place South (201st to 204th) Pipe Upgrade	\$415,100	20
20	A	222nd/223rd 8th Avenue to 11th Avenue Pipe Project	\$472,220	18
21	B	223rd Street (13th Avenue to 19th Avenue) Pipe Project	\$292,880	16
28	B	240th Street (13th to 16th Ave) Pipe Project	\$248,080	16
29	B	25th Avenue (n/o 232nd Street) Pipe Replacement Project	\$99,680	16
10	A	1st Place South (197th to 192nd)	\$237,860	14
19	A	14th Avenue/15th Avenue N/O 215th Place Pipe Project	\$110,600	14
24	B	16th Avenue (224th to 228th) Pipe Project	\$331,240	14
13	A	3rd Avenue (206th to 207th) Pipe Project	\$165,060	10
<b>Total Estimated Cost of Low-Ranked Projects</b>			<b>\$2,372,720</b>	

**Figure ES-2**  
Capital Project Cost, Priority, and Scoring Summary

**Table ES-4. Scenario 1 Revenue Requirement Forecast**

Summary	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Rate Revenue	\$ 2,511,145	\$ 2,619,044	\$ 2,692,678	\$ 2,768,383	\$ 2,846,216	\$ 2,926,237	\$ 3,008,508	\$ 3,093,093	\$ 3,180,055	\$ 3,269,462
Rate Funded Capital	\$ 482,133	\$ 753,344	\$ 861,904	\$ 480,829	\$ 686,728	\$ 733,092	\$ 781,559	\$ 862,297	\$ 854,204	\$ 876,814
Rate Increases	3.65%	2.30%	2.30%	2.30%	2.30%	2.30%	2.30%	2.30%	2.30%	2.30%
Monthly Rate / EBU	\$ 14.76	\$ 15.10	\$ 15.45	\$ 15.80	\$ 16.17	\$ 16.54	\$ 16.92	\$ 17.31	\$ 17.70	\$ 18.11

**Table ES-5. Scenario 2 Revenue Requirement Forecast**

Summary	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Rate Revenue	\$ 2,511,145	\$ 2,688,168	\$ 2,836,689	\$ 2,993,416	\$ 3,128,719	\$ 3,270,137	\$ 3,417,947	\$ 3,514,043	\$ 3,612,840	\$ 3,714,415
Rate Funded Capital	\$ 482,133	\$ 753,344	\$ 856,450	\$ 901,007	\$ 1,007,893	\$ 988,616	\$ 1,031,041	\$ 1,116,400	\$ 1,121,783	\$ 1,151,916
Rate Increases	3.65%	5.00%	5.00%	5.00%	4.00%	4.00%	4.00%	2.30%	2.30%	2.30%
Monthly Rate / EBU	\$ 14.76	\$ 15.50	\$ 16.27	\$ 17.09	\$ 17.77	\$ 18.48	\$ 19.22	\$ 19.66	\$ 20.11	\$ 20.58

**Table ES-6. Scenario 3 Revenue Requirement Forecast**

Summary	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Rate Revenue	\$ 2,511,145	\$ 2,816,176	\$ 3,113,283	\$ 3,441,734	\$ 3,735,658	\$ 4,054,683	\$ 4,278,705	\$ 4,399,000	\$ 4,522,678	\$ 4,649,833
Rate Funded Capital	\$ 482,133	\$ 703,121	\$ 951,176	\$ 1,139,649	\$ 1,461,111	\$ 1,581,620	\$ 1,834,061	\$ 1,915,515	\$ 1,963,565	\$ 2,017,365
Rate Increases	3.65%	10.00%	10.00%	10.00%	8.00%	8.00%	5.00%	2.30%	2.30%	2.30%
Monthly Rate / EBU	\$ 14.76	\$ 16.24	\$ 17.86	\$ 19.65	\$ 21.22	\$ 22.91	\$ 24.06	\$ 24.61	\$ 25.18	\$ 25.76

EBU = equivalent billing unit, which represents number of customers

# 1 Introduction

## 1.1 Background

In developed areas such as Des Moines, the addition of impervious surfaces (hard surfaces such as roads, parking lots, sidewalks, and rooftops) has reduced the amount of rainwater that can soak into the ground compared to its natural condition. The resulting increased stormwater runoff volumes can increase the potential for landslides on steep slopes, erode natural stream banks, damage fish-spawning habitat, and increase flooding in low-lying areas. In addition, stormwater runoff accumulates pollutants such as sediment, metals, and oil and grease from built areas; various chemicals from drips and spills on industrial sites; soil and other materials from construction sites; and fertilizers and pesticides from landscaped areas where these substances are used. These pollutants are carried by the stormwater runoff to nearby streams, wetlands, and Puget Sound where they can affect water quality and endanger fish and wildlife.

Many practices and technologies have been developed that help reduce stormwater runoff volumes, safely convey stormwater to natural water bodies, prevent pollutants from collecting in stormwater, and remove the pollutants entrained in stormwater. The City of Des Moines (City) Surface Water Management (SWM) Division is responsible for implementing such practices and technologies to address stormwater-related issues throughout the city. SWM's mission is to:

- Control and minimize flooding, erosion, sedimentation, and water quality degradation;
- Protect the stream ways and wetlands within the city limits;
- Accommodate future urban growth and correct existing surface water problems; and

- Safeguard public safety, prevent property damage, and improve water quality.

(Des Moines Municipal Code 11.08.010)

SWM develops and implements stormwater management programs based on public safety; complies with city, state, and federal requirements; participates in regional initiatives; and responds to citizen feedback. SWM is part of the City's Planning, Building, and Public Works Department and shares staff with the Engineering Division to support these programs. SWM is funded through a stormwater property tax that is administered by King County. King County acts as a collection agency on behalf of the City and redistributes the stormwater fees back to SWM on a monthly basis.

## 1.2 Regulatory Context

Regulatory requirements that directly govern SWM's program development and implementation are highlighted in the following sections.

### 1.2.1 State Permit

The federal Clean Water Act contains a permit program known as the National Pollutant Discharge Elimination System (NPDES). When the United States Congress updated the Clean Water Act to include stormwater in 1987, the U.S. Environmental Protection Agency (EPA) developed rules to implement the stormwater component in phases, known as Phase I and Phase II. In general, Phase I rules apply to cities and counties serving populations greater than 100,000. The Phase II rules apply to discharges from small municipal separate storm sewers, which includes the city of Des Moines. The Washington State Department of Ecology (Ecology) implements these rules on behalf of the EPA through the NPDES municipal permit program (Ecology 2014).

The state permit that applies to Des Moines is the Western Washington Phase II Municipal Stormwater Permit (NPDES Permit; Ecology 2013), which was first issued in 2007 and subsequently renewed in 2012 and 2013. The NPDES Permit requires each permittee to develop a Stormwater Management Program that encompasses public education; public involvement; detection and elimination of illicit (non-stormwater) discharges; control of runoff from new development, redevelopment, and construction sites; operation and maintenance of the existing system; water quality monitoring program tracking; and reporting back to Ecology. The NPDES Stormwater Management Program is a subset of the City's overall surface water management program and includes specific activities, documentation, and deliverables to maintain compliance with the permit, as discussed in Chapter 3 of this plan. The NPDES Permit is typically issued on a 5-year cycle, and the current permit term ends on July 31, 2018.

## 1.2.2 City Codes

Sections of the Des Moines Municipal Code (DMMC) relevant to SWM's regular operations include:

- 11.08 Surface Water Management Program
- 11.12 Surface Water Utility Rates
- 11.20 National Pollutant Discharge Elimination System (NPDES) Program
- 14.20 Land Clearing and Grading
- 16.10 Environmentally Critical Areas
- 16.15 Flood Hazard Areas
- 16.20 Shoreline Master Program

## 1.3 Purpose

The purpose of this surface water comprehensive plan (SWCP) is to outline the City's surface water management program that will be implemented over the next 10 years, including the NPDES Permit term (2013–2018), and discuss the steps taken to identify the crucial program elements. A major component of the SWCP is the Surface Water Capital Improvement Plan (Surface Water CIP). The purpose of the Surface Water CIP is to identify and evaluate known issues and potential capital projects that would help to address those issues.

## 1.4 Plan Development Methodology

In developing the surface water management program, the City's current surface water program was summarized, existing surface water issues were identified, and potential solutions were developed based on the elements discussed below.

### 1.4.1 Existing Data Review

This SWCP builds on several studies that have previously evaluated the stormwater management program, water quality, and habitat conditions within Des Moines. These studies, which were reviewed as part of the SWCP development, are listed below. General geographic information system (GIS) data provided by the City were also included in the plan's development.

#### Surface Water Management Program

- Stormwater Rate Structure Study (FCS 20122013)
- 2012 NPDES Annual Report (Des Moines 2013a)
- 2014 Budget (Des Moines 2013c)
- 2014-2019 Capital Improvement Plan (Des Moines 2013b)
- City Fleets and Facilities Stormwater Pollution Prevention Plan (Des Moines 2010a)
- Comprehensive Plan (Des Moines 2012)

- NPDES Stormwater Management Program Plan (SWMP Plan; Des Moines 2014)
- Planning, Building, and Public Works Department Organizational Chart
- Surface Water Rate Study (FCS 2006)
- Surface Water Utility Performance Review (FCS 2004)

#### Water Quality

- Integrated Pest and Vegetation Management Plan (Des Moines 2009)
- Water Quality Monitoring Program (Des Moines 2001)
- Copper and Zinc Levels in Des Moines, Massey and McSorley Creeks (Ecology 2012/2012b)

#### Flood Control and Habitat

- Des Moines Creek Basin Plan (Des Moines Creek Basin Committee 1997)
- Executive Proposed Basin Plan, Hylebos Creek and Lower Puget Sound (King County 1991)
- Lower Massey Creek Alternative Analysis (Des Moines 1994)
- Massey Creek Comprehensive Flood Control Management Plan (Des Moines 1990)
- North Fork of Smith Creek Drainage Basin Study (Des Moines 1987)
- Shoreline Master Program (Des Moines 2010b)

### 1.4.2 Public Involvement

As part of the SWCP development, input was solicited from City staff, local residents, and elected officials to focus on the City's needs and priorities for addressing drainage, water quality, and habitat issues within the city. Existing surface water issues, potential capital projects, staffing needs, maintenance effectiveness, pollution sources, and public awareness were identified and prioritized based on City staff questionnaires, a City staff workshop, five public meetings enlisting citizen involvement, and three presentations to the City Council Environment Committee. Appendix A presents materials used in the public involvement process.

### 1.4.3 Surface Water Capital Improvement Plan

The Surface Water CIP was developed by identifying City and public-nominated projects recommended during public meetings. No other technical evaluations or modeling was conducted to identify projects that were not meeting levels of services or enumerated performance goals. A ranking system was developed for the City to objectively compare and prioritize these projects as well as future projects. The project ranking criteria and scoring convention were developed

based on City input, citizen involvement, and feedback from the City Council Environment Committee. Appendix B provides a detailed discussion of the Surface Water CIP and Appendix C provides details on recommended capital projects.

#### 1.4.4 Gap Analysis

The current surface water management program was evaluated based on the regulatory requirements outlined in Section 1.2, feedback from the City, and public participation. The Program was mainly evaluated to determine where the current level of service did not fully meet with existing program expectations. In addition, recommendations for higher levels of service were developed based on future City goals and additional programs or technologies that would increase the efficiency of the current program and potentially reduce long-term costs.

### 1.5 Updates to this Plan

This SWCP provides a snapshot of the stormwater management program as it can be assessed from a 2014 perspective. The data availability, regulations, and value systems for prioritization reflect today's understanding of the City's stormwater program. However, changes and influence from external (e.g., regulations) and internal (e.g., change in staff or elected officials, flood events) events will occur. The program defined and described here should be briefly reviewed bi-annually for progress status, reconfirmed in 2017 and 2018 for adjustments due to the NPDES Permit renewal in 2018, and a status report and possible adjustments prepared at the 5-year mark (2019) to determine if minor adjustments are needed to keep the long-term program on target and achieving goals in its 10-year time frame.

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# 2 Surface Water Study Area

## 2.1 Overview

The SWCP study area was identified to include elements that reflect the current state of drainage, water quality, and habitat within the city boundaries. The study area comprises the area within the city boundary and includes the following components:

- Drainage: Drainage basins, flooded areas, steep slopes and topography, and geologically hazardous areas (Figures 2-1 through 2-4; Des Moines 2014).
- Water Quality: Water bodies identified on Ecology's 303(d) list of threatened and impaired water bodies (Figure 2-5), areas susceptible to groundwater contamination, and wellhead protection areas (Figure 2-6).
- Habitat: Habitat resources such as wetlands and streams (Figure 2-7) and fish and wildlife conservation areas (Figure 2-8).

## 2.2 Major Drainage Basins

The city of Des Moines is located within eight stream basins. Though these basins have been delineated by Ecology as part of the larger Duwamish/Green Watershed (see Figure 2-1), each of the streams that flow through the city discharge directly to Puget Sound. All surface water runoff from city roads, parking lots, parks, lawns, and other areas flows to one of these eight streams or directly to Puget Sound. Basin plans have been prepared for each of these streams, summarized in the following sections, which include discussion of drainage, flooding, water quality, and habitat. In almost every basin, substantial efforts have been made to address the issues and complete the projects identified in the basin plans. It may be appropriate to prepare a status update of the basin

plans, evaluate improvements, and potentially collect additional flow modeling and water quality monitoring data.

## 2.2.1 Des Moines Creek Basin

### 2.2.1.1 Natural Waterbodies

The Des Moines Creek Basin is approximately 3.5 miles long and includes three distinct reaches: Plateau, Ravine, and Lower; and two main branches known as the East and West Forks. In addition, there are over 30 acres of wetlands in the basin with diverse communities including emergent, forested, scrub-shrub, and open water (King County 2007). Des Moines Creek is the largest stream flowing through the city of Des Moines (Des Moines 2001). It flows from an elevation of about 350 feet (at Bow Lake) to sea level where it meets Puget Sound at Des Moines Creek Beach Park (SeaTac 2013).

### 2.2.1.2 Land Uses

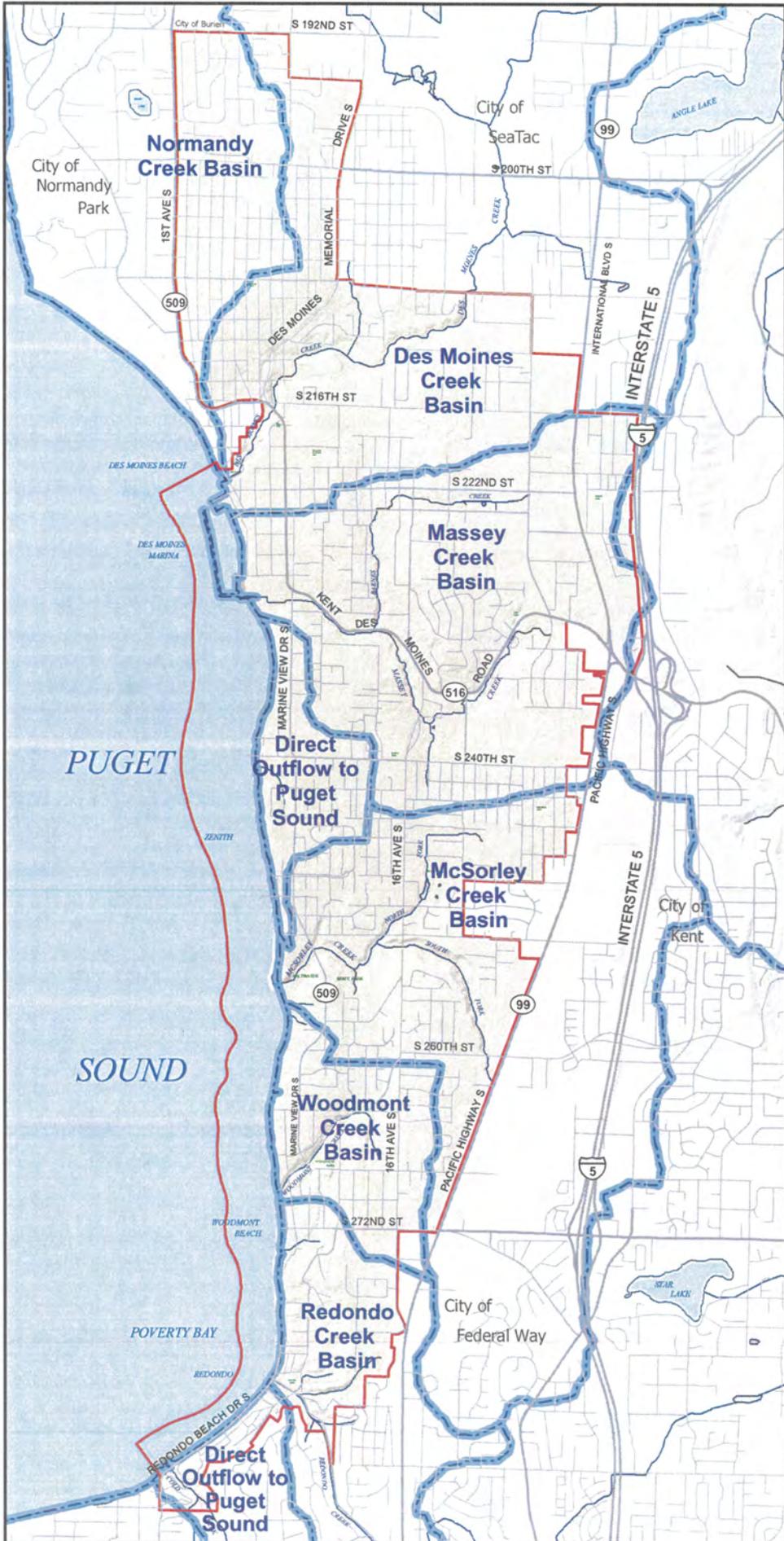
The Des Moines Creek Basin is approximately 5.8 square miles (3,700 acres) with land cover that is largely developed, including residential, commercial, and industrial uses. In addition, Seattle-Tacoma International Airport is located at the headwaters of Des Moines Creek and occupies approximately 27 percent of the total basin area (King County 2007; CH2M HILL 2003). Bow Lake, the Northwest Ponds, and Tyee Pond provide some of the major stormwater detention and treatment in the basin, although additional smaller facilities are present throughout the basin (CH2M HILL 2003).

### 2.2.1.3 Known Issues

#### Drainage and Flooding

Within the Des Moines Creek ravine reaches, the stream channel becomes confined. Here, it has limited pools and woody debris (which support insect and fish life), and it is impaired by regular high flows. Des Moines Creek has inadequate flow control measures, which lead to downstream flooding. These issues, combined with a reduced summer base flow, lead to degraded water quality and an impaired fish habitat (King County 2007).

Impervious surfaces (hard surfaces such as roads, sidewalks, parking lots, and roofs) associated with development in the watershed have increased peak runoff flows that have resulted in flooding, channel bank erosion, and scouring of spawning gravel in downstream reaches. The addition of impervious surfaces has also limited groundwater recharge and resulted in reduced summer base flows (CH2M HILL 2003).



**City of Des Moines**  
Critical Area Map Series

**Parametrix**  
ENGINEERING PLANNING ENVIRONMENTAL SCIENCES

Generalized Drainage Basins



Surface Water

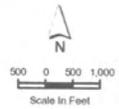


Streams



Jurisdictions

- Normandy Park
- Burien
- SeaTac
- Kent
- Federal Way
- Unincorporated King County



Source: City of Des Moines GIS  
April 2007

**Figure 2-1**  
Drainage Basins

Des Moines Surface Water  
Comprehensive Plan

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**City of Des Moines**  
Critical Area Map Series

**Parametrix**  
ENGINEERING PLANNING ENVIRONMENTAL SCIENCES

**Hillsides / Slope**

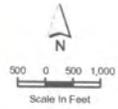
- 0 - 15%
- 15 - 25%
- 25 - 45%
- 45% or Greater

**Streams**

**Des Moines City Limits**

**Jurisdictions**

- Normandy Park
- Burien
- SeaTac
- Kent
- Federal Way
- Unincorporated King County

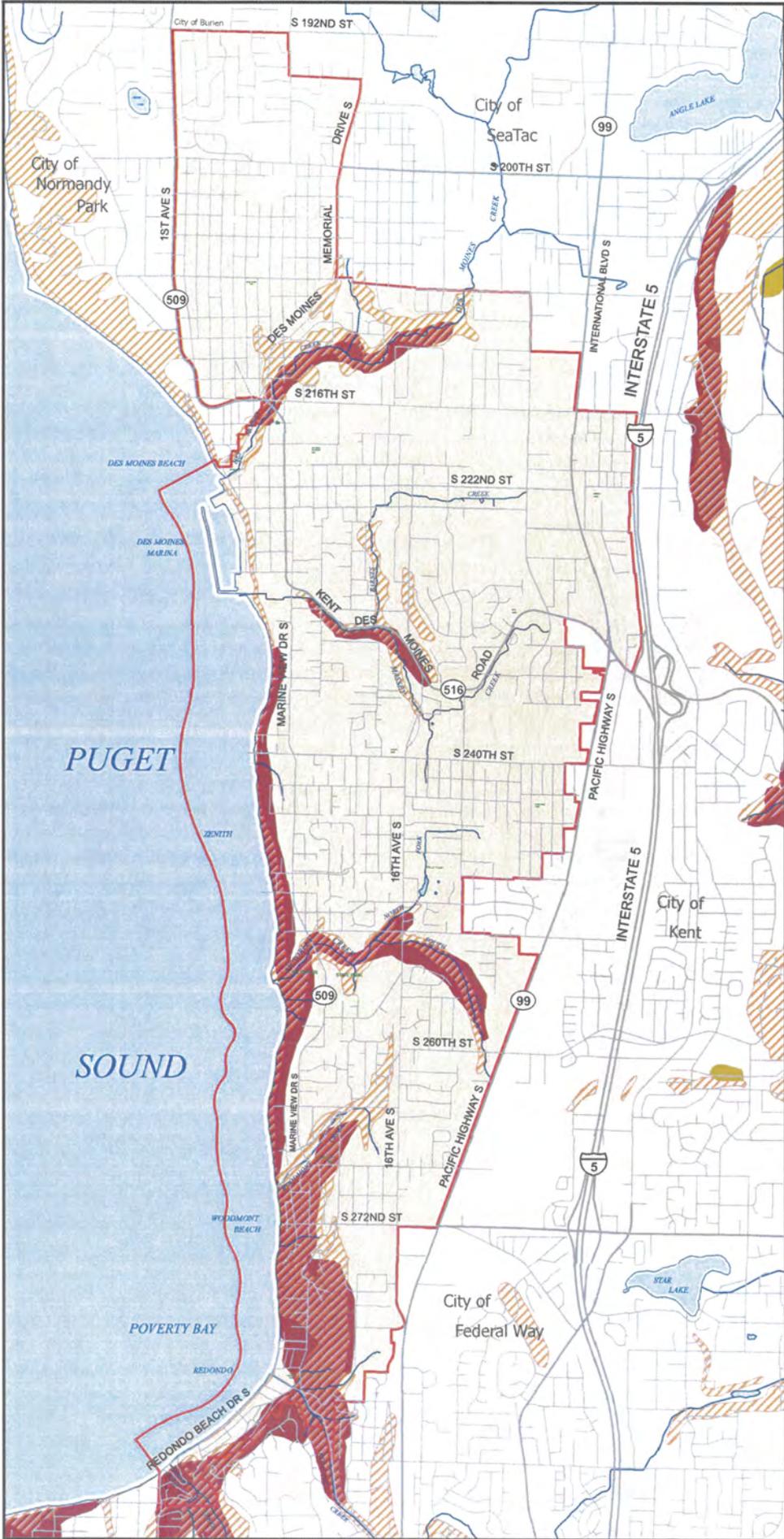


Source: City of Des Moines GIS  
April 2007

**Figure 2-3**  
Slope and  
Topography

Des Moines Surface Water  
Comprehensive Plan

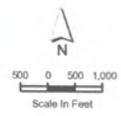
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**City of Des Moines**  
Critical Area Map Series

**Parametrix**  
ENGINEERING · PLANNING · ENVIRONMENTAL SCIENCES

- Seismic Hazards
- Erosion Hazards
- Landslide Hazards
- Streams
- 10 ft Interval Contours

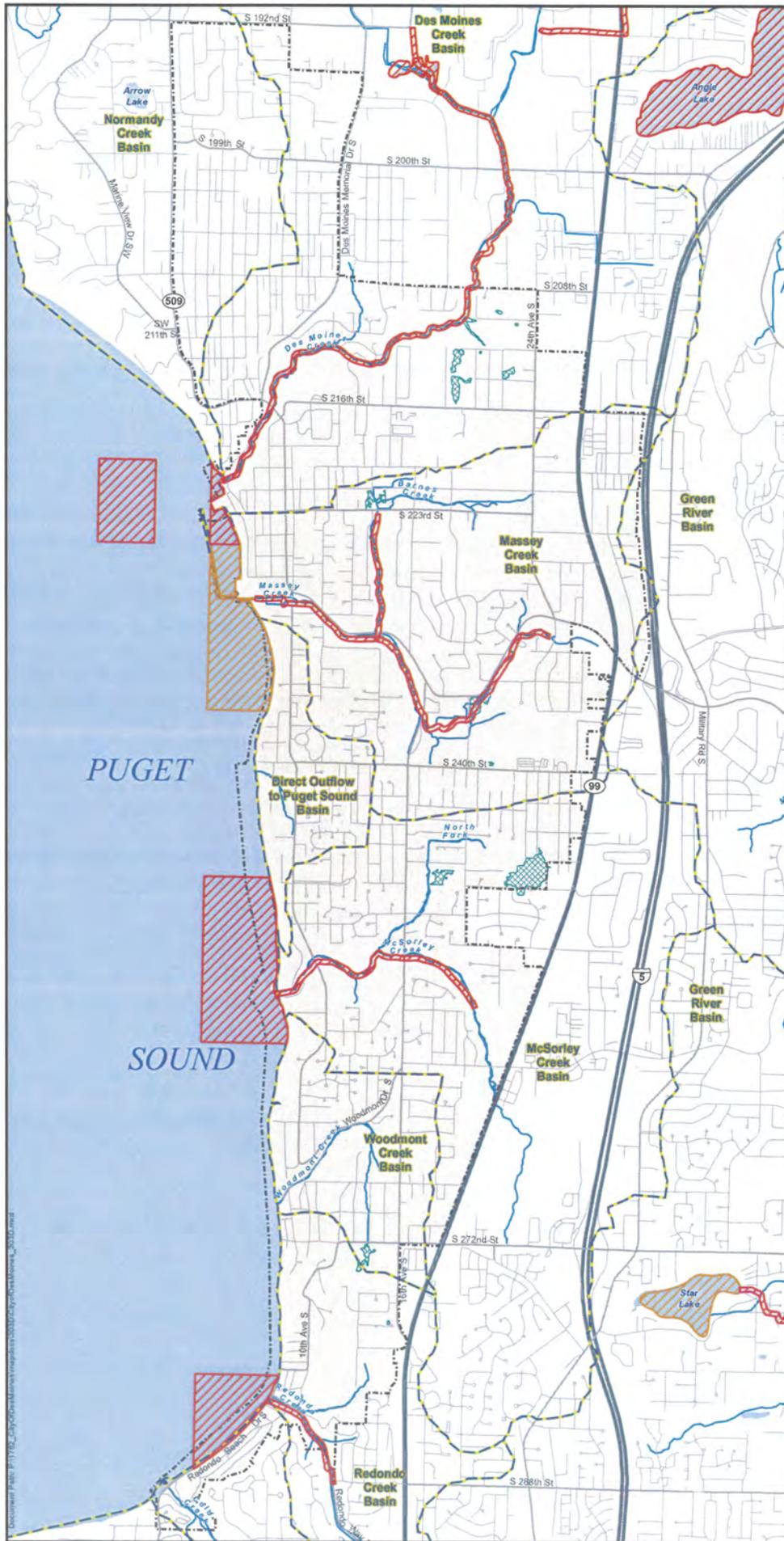


Source: City of Des Moines GIS  
April 2007

**Figure 2-4**  
Geologically Hazardous Areas

Des Moines Surface Water  
Comprehensive Plan

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**City of Des Moines**

**Parametrix**  
ENGINEERING, PLANNING, ENVIRONMENTAL SCIENCES

303(d) Category 5



303(d) Category 4



Stream



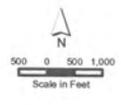
Drainage Basin



Wetland



Des Moines City Limits

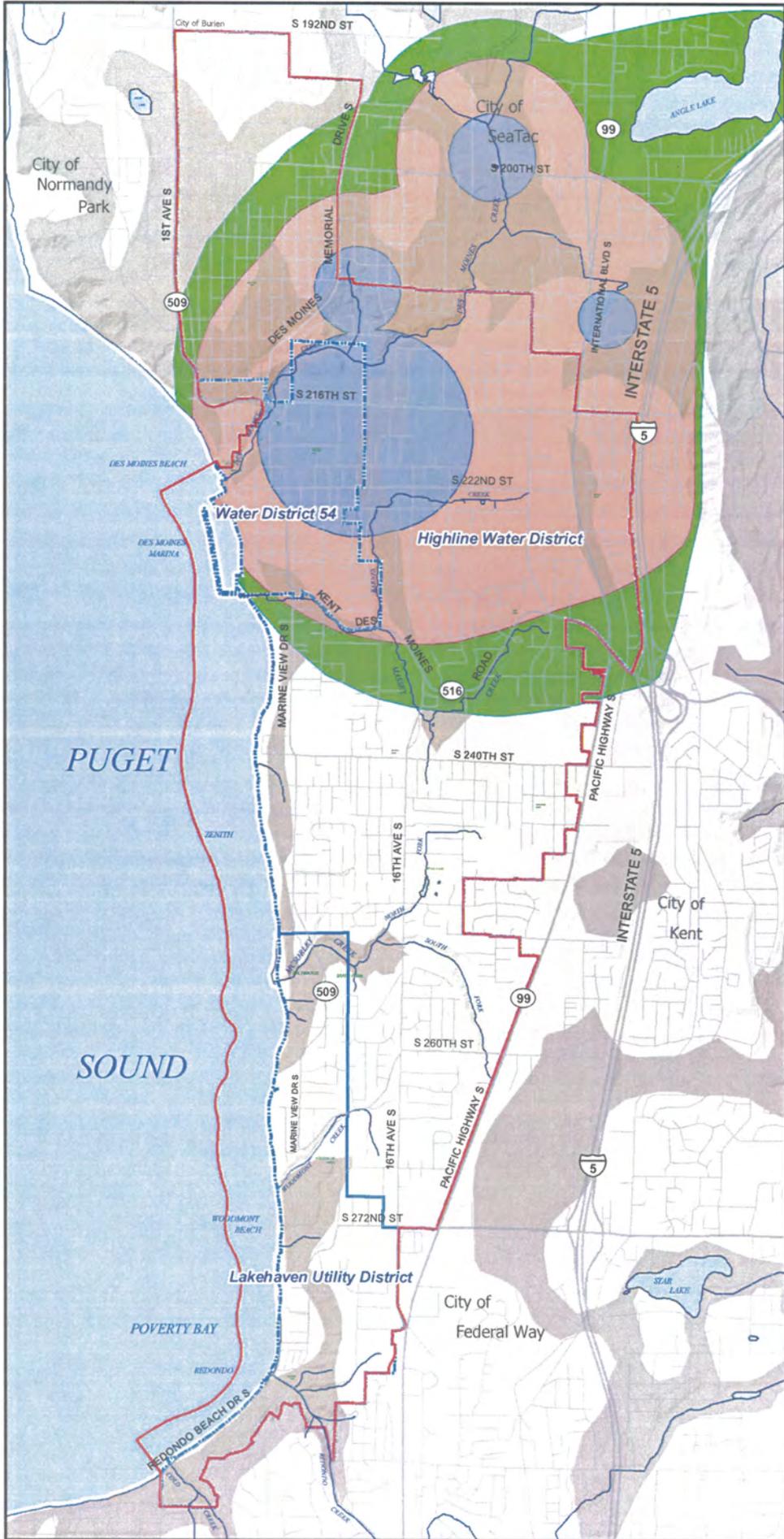


Source: City of Des Moines, King County

**Figure 2-5**  
Impaired Water Bodies

Des Moines Surface Water  
Comprehensive Plan

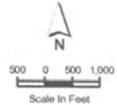
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**City of Des Moines**  
Critical Area Map Series

**Parametrix**  
ENGINEERING, PLANNING, ENVIRONMENTAL SCIENCES

- Streams**
- Des Moines City Limits**
- Water District Boundary**
- Areas of High Susceptibility (King Co.)**
- Wellhead Protection Zones**
  - Class 1 - One Year
  - Class 1 - 5 Year
  - Class 2 - 10 Year
- Jurisdictions**
  - Normandy Park
  - Burien
  - SeaTac
  - Kent
  - Federal Way
  - Unincorporated King County

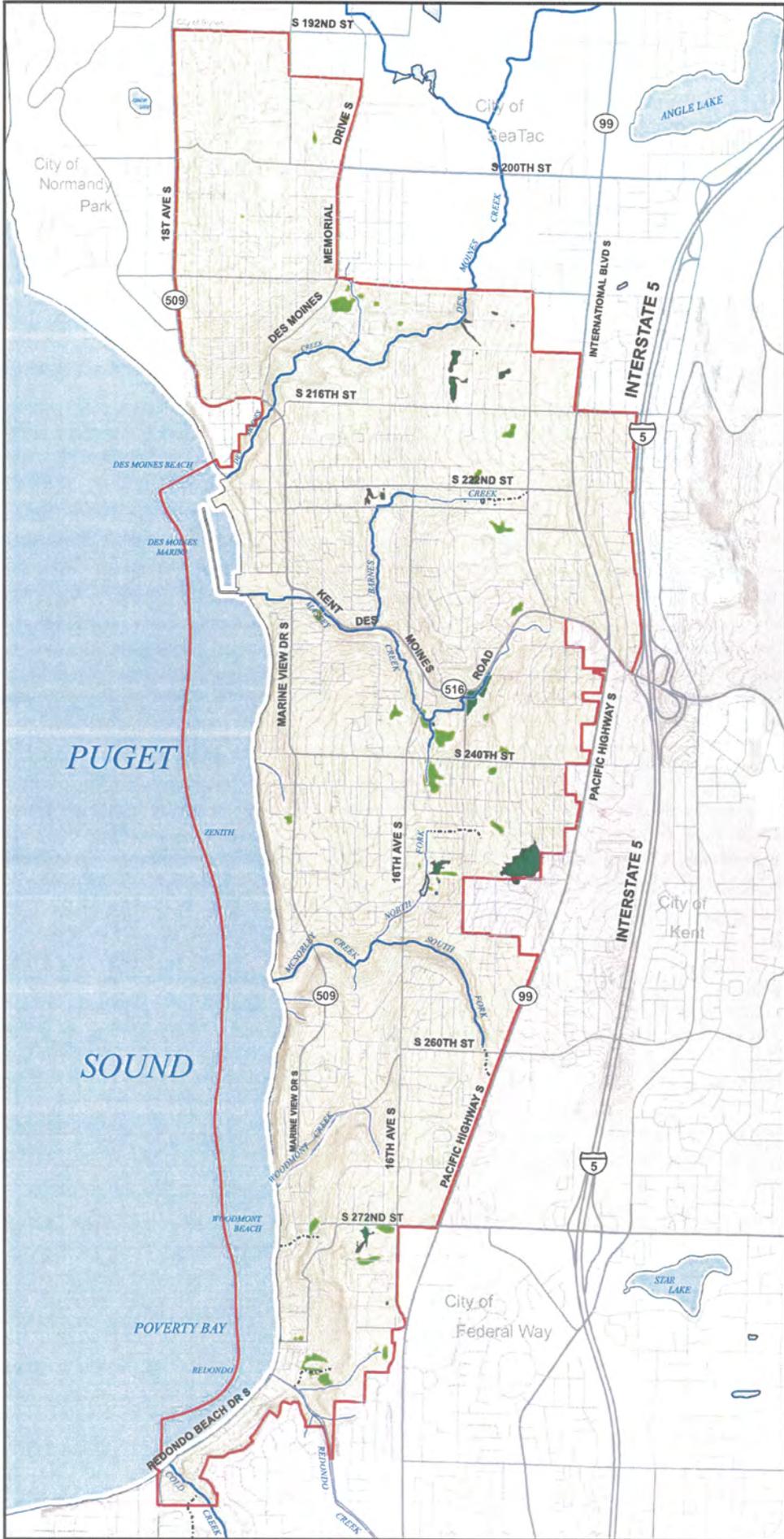


Source: City of Des Moines GIS  
April 2007

**Figure 2-6**  
Critical Aquifer Recharge Areas

Des Moines Surface Water Comprehensive Plan

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**City of Des Moines**  
Critical Area Map Series

**Parametrix**  
ENGINEERING PLANNING ENVIRONMENTAL SCIENCES

10 ft Interval Contours

Des Moines City Limits

Streams

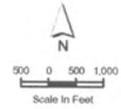
- F - Fish habitat
- N - Non-Fish habitat
- S - Shorelines
- U - Unknown
- X - Mapped feature - no water type

Wetlands Status

- Delineation
- Potential Wetland / Not Field Surveyed

Jurisdictions

- Normandy Park
- Burien
- SeaTac
- Kent
- Federal Way
- Unincorporated King County

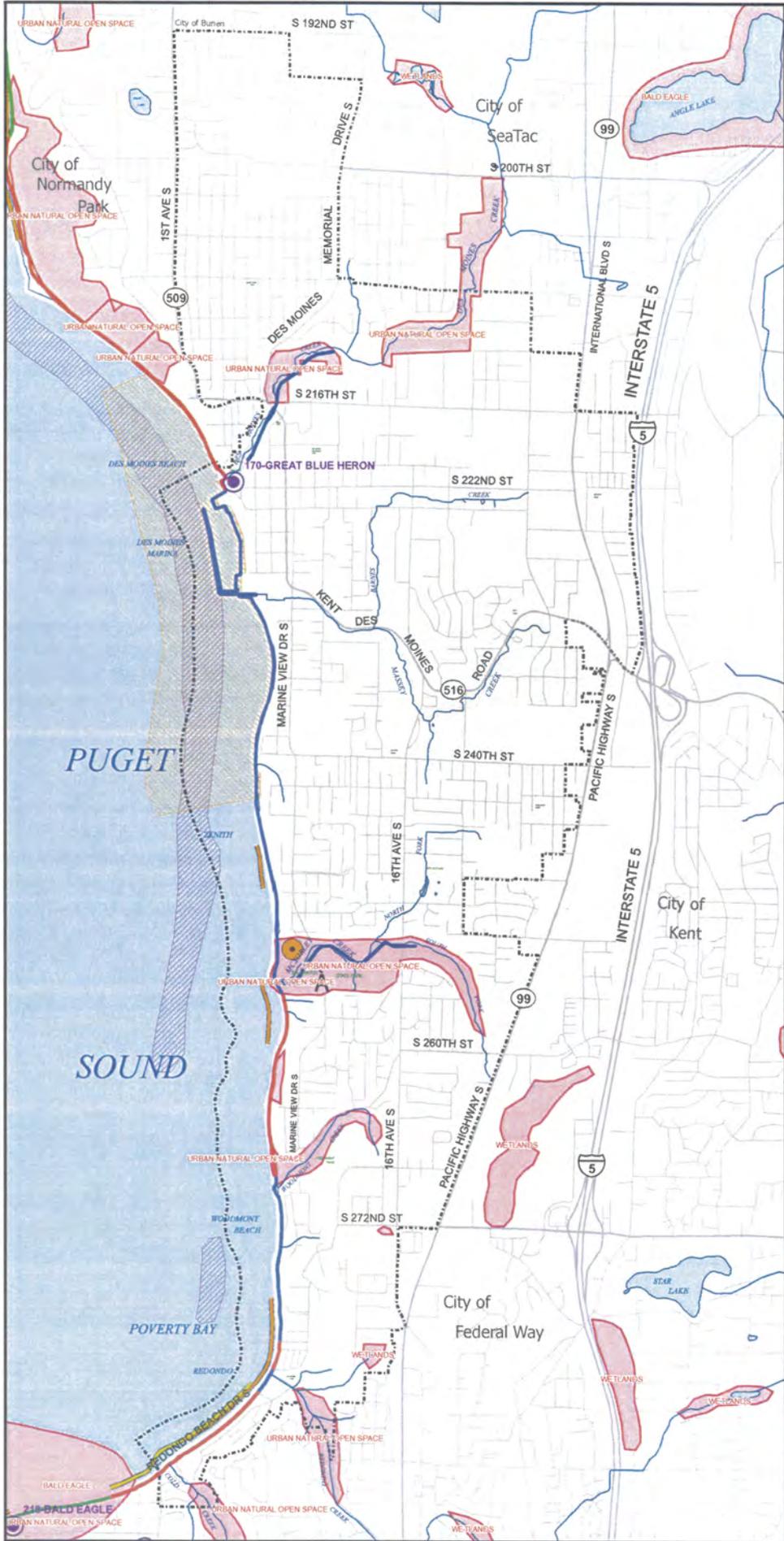


Source: City of Des Moines GIS  
April 2007

**Figure 2-7**  
Wetlands and  
Surface Water

Des Moines Surface Water  
Comprehensive Plan

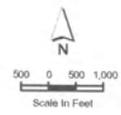
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**City of Des Moines**  
Critical Area Map Series

**Parametrix**  
ENGINEERING · PLANNING · ENVIRONMENTAL SCIENCES

- Wildlife Heritage Pts (WDFW)**  
●
- Seabird Colony (WDFW)**  
●
- Eelgrass (WDNR)**  
— ABSENT  
— CONTINUOUS  
— PATCHY
- Priority Habitats and Species Fish Presence**  
— PHS Fish Presence  
**Sand Lance (WDFW)**  
—  
**Surf Smelt (WDFW)**  
—  
**Hard Shell Clam (WDFW)**  
—  
**Geoduck (WDFW)**  
—  
**PHS Polygons**  
—  
**Des Moines City Limits**  
—  
**Streams**  
—
- Jurisdictions**  
Normandy Park  
Burien  
SeaTac  
Kent  
Federal Way  
Unincorporated King County



Source: City of Des Moines GIS  
April 2007

**Figure 2-8**  
Fish and Wildlife  
Conservation  
Areas

Des Moines Surface Water  
Comprehensive Plan

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## Water Quality and Pollution Sources

Des Moines Creek is classified by Ecology as a Class AA (extraordinary) water. Class AA waters are intended to be usable for water supply, livestock watering, fish and wildlife, and recreation (CH2M HILL 2003). Over the years, water quality in Des Moines Creek has been adversely affected by jet fuel spills, commercial and industrial stormwater runoff, and poorly maintained septic systems. These have contributed to elevated concentrations of contaminants in Des Moines Creek (SeaTac 2013). Des Moines Creek has been identified on Ecology's 303(d) list for exceeding water quality standards for dissolved oxygen, fecal coliform bacteria, zinc, and copper. Ecology developed this version of the 303(d) list in 2010 (Ecology 2012a). In 2012, Ecology conducted a study and found that dissolved copper and zinc levels in Des Moines Creek were within water quality criteria levels throughout all 303(d)-listed sites, likely due to habitat improvements (Ecology 2012b).

### Habitat

Historically, coho salmon, chum salmon, and steelhead trout had access to Des Moines Creek. Today, there are typically only resident cutthroat trout throughout the waterways. Access above Marine View Drive is severely limited, leading to degraded water quality and impaired fish habitat (King County 2007).

## 2.2.2 Massey Creek Basin

### 2.2.2.1 Natural Waterbodies

#### Massey Creek

The Massey Creek Basin is the largest drainage basin in the city of Des Moines, covering approximately 1,700 acres (Des Moines 2001). It is located on the western portion of the ridge separating Puget Sound from the Green River valley. Massey Creek drains approximately 2 square miles of bluff between the Green River Basin and Puget Sound. There are approximately 9 acres of wetlands with approximately 4 acres contained within riparian corridors. The basin contains 11,000 feet of riparian corridor (Des Moines 1994).

#### Barnes Creek

Barnes Creek is a major tributary to Massey Creek. It covers approximately 5.7 acres and includes a valley bottom and the two adjacent slopes. A relatively steep hill slopes towards the valley bottom from the west. A gentler hill slopes toward the valley bottom from the east (Des Moines 2008).

### 2.2.2.2 Land Uses

The three dominant land uses in the basin are single-family residential, high-density multi-family residential, and commercial. Commercial areas are predominant in the upper basin, straddling Pacific Highway South, and in the downtown area of Des Moines along Marine View Drive. Apartments are prevalent along Kent-Des Moines Road and in the upper basin along Pacific Highway South. Single-family homes dominate the remaining area (Des Moines 1994).

### 2.2.2.3 Known Issues

#### Drainage and Flooding

Significant flooding has historically occurred along lower Massey Creek, resulting from development upstream of, and within, the floodplain. Inadequate capacity for storm flows and stream erosion have also been problems along lower Massey Creek (Des Moines 1994).

#### Water Quality and Pollution Sources

Similar to Des Moines Creek, Massey Creek has been identified on Ecology's 303(d) list (Ecology 2012a) for exceeding water quality standards for dissolved oxygen, fecal coliform, zinc, and copper.

#### Habitat

Massey Creek, from the mouth to 16th Place South, provides the most valuable anadromous fish habitat in the drainage basin. Approximately 1,000 feet downstream of 16th Place South is a key fish-spawning habitat area (approximately 1,500 feet long). The stream reach from 16th Place South to 3,000 feet upstream provides a good habitat for resident trout. Typically, an abundance of trout indicates low use by anadromous salmonids. This condition is often found upstream of a barrier to migration, or situations where anadromous fish are scarce (Des Moines 1994). Amphibious species in this basin include northwestern and long-toed salamander and Pacific tree frog (Des Moines 1994).

Barnes Creek, from the outfall into Massey Creek to 3,000 feet upstream, is a key habitat area due to the undisturbed nature of this reach. The water quality is good, but salmon production is limited by low stream flows. The population of small resident cutthroat trout is relatively large for this size of creek (Des Moines 1994). A 2-acre wetland area exists within the Barnes Creek area, with emergent, scrub-shrub, and forested wetland communities that have developed in response to historical disturbance (past agricultural use, then abandoned) (Des Moines 2008).

## 2.2.3 McSorley Creek Basin

### 2.2.3.1 Natural Waterbodies

The North Fork of McSorley Creek (formerly Smith Creek) drains an area largely within the southeast corner of Des Moines, along with a portion of the State Route (SR) 99 corridor and the Saltair Hills area within the city of Kent (Des Moines 1987). Limited study information is available for the South Fork of McSorley Creek.

#### Land Uses

The North Fork of the McSorley Creek drainage basin is approximately 300 acres and located within Saltwater State Park (CH2M HILL 2003). Within this area, approximately 15 acres are zoned medium-density residential, 31 acres comprise the commercial areas along Highway 99, and the remaining 254 acres are zoned single-family residential (Des Moines 1987).

### 2.2.3.2 Known Issues

#### Drainage and Flooding

The existing drainage basin experiences localized flooding, ponding, and channel overflows that run across private yards. This flooding is the result of uncontrolled runoff from developed areas and inadequate capacity in existing storm drainage systems. Existing flooding problems occur along the main stem of McSorley Creek and in localized areas within the drainage basin during moderate to severe rainfall events (Des Moines 1987).

#### Water Quality and Pollution Sources

Because the North Fork of McSorley Creek receives stormwater runoff from the Midway Landfill, several water quality studies have been conducted to monitor potential impacts. During base flow conditions, water quality was generally good; however, the following conditions have been observed, particularly during storm flows (Des Moines 2001):

- High temperatures during base flow, and low dissolved oxygen concentrations during storm and base flow
- High turbidity during storm flow
- High ammonia nitrogen concentrations during storm flow
- High total metals concentrations during storm flow
- High fecal coliform bacteria concentrations during storm and base flow

Similar to Des Moines Creek and Massey Creek, the North Fork of McSorley Creek has been identified on Ecology's 303(d) list for exceeding water quality standards for dissolved oxygen, fecal coliform, and copper (Ecology 2012a).

### Habitat

King County conducted a habitat survey of Massey Creek in 1987. Similar to Des Moines Creek and Massey Creek, McSorley Creek exhibited widely varying habitat quality along several reaches. Channelization, loss of channel diversity, and sedimentation were typical problems associated with the varying habitat quality. However, much of the stream still provided good fish habitat, and many areas were suitable for restoration (Des Moines 2001).

## 2.2.4 Additional Basins

### 2.2.4.1 Normandy Creek

The northwest portion of the city of Des Moines lies in the upstream portion of the Normandy Creek Basin, although no part of the stream itself flows through the city. The Normandy Creek Basin is approximately 800 acres with approximately 30 percent of that area within the city of Des Moines. The predominant land use in the basin is single-family residential. Canopy cover is good throughout most of Normandy Creek, with the exception of channelized portions within residential yards in the downstream reach. Fish passage barriers are present at the outfall to Puget Sound and 500 feet upstream of the outfall at a pond weir. Also, flooding occurs on the banks of Arrow Lake during high flows due to capacity limitations of 1,100 lineal feet of 24-inch pipe downstream of the outlet weir. Stream gradients are steep in the upstream reaches and extensive bank erosion and seepage is present just downstream of Marine View Drive. Above Marine View Drive, the stream flows through wetland habitat in Nature Trails Park. Historically, fish have not been observed in the stream and the current fish habitat is insignificant (Normandy Park 1992). Normandy Creek was not identified on Ecology's 303(d) list for any exceedances (Ecology 2012a).

### 2.2.4.2 Lower Puget Sound Basins

#### Woodmont Creek

Woodmont Creek originates in a forested ravine, and functions primarily as a stormwater conveyance channel with severe bank erosion. This creek flows directly into Puget Sound (CH2M HILL 2003). Woodmont Creek was not identified on Ecology's 303(d) list for any exceedances (Ecology 2012a).

### Redondo Creek

Redondo Creek is one of the most severely incised channels in the basin, with heavy erosion associated with high flows and poor water quality resulting from non-point pollution from residential and commercial sources. This creek flows directly into Puget Sound (CH2M HILL 2003). Redondo Creek has been identified on Ecology's 303(d) list for exceeding water quality standards for fecal coliform bacteria (Ecology 2012a). Habitat quality in this basin, measured by factors that include wetland presence and quality, stream geometry and condition, gradients, and presence of woody debris, is considered low (King County 1991).

### Cold Creek

Cold Creek drains from Easter Lake and flows into Puget Sound. This creek has been piped and channeled in several locations (CH2M HILL 2003). Cold Creek was not identified on Ecology's 303(d) list for any exceedances (Ecology 2012a). Habitat quality in this basin, measured by factors similar to Redondo Creek, is also considered low (King County 1991).

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# 3 Current Surface Water Management Program

## 3.1 Overview

The major elements of SWM's current surface water management program consist of planning and engineering, inspections and maintenance, NPDES Permit compliance, administration, and capital project implementation. Table 3-1 summarizes the existing activities provided within each of these elements, and additional discussion is included below.

SWM oversees the implementation of the surface water management program with support from the City's Engineering Division, which is also part of the City's Planning, Building, and Public Works Department (Figure 3-1). Specific staff numbers, funded in association with each component of the surface water management program, are discussed in the following sections. Appendix D presents a summary matrix of the level of service provided in the current surface water management program.

## 3.2 Planning and Engineering

SWM's Planning and Engineering Group is responsible for the planning, project design, and long-range implementation of the surface water management program. The group's activities include:

- Design and management of capital projects
- Preparation of engineered work orders for maintenance crews
- Permitting plan review
- Response and resolution of public drainage complaints

Table 3-1. Overview of Current Surface Water Management Program

		Program Element										Administration	Capital Projects
Planning and Engineering	Inspections and Maintenance	NPDES											
Staff salaries, supplies, and specific labor required for stormwater engineering and planning (Stormwater Comprehensive Plan, NPDES SWMP Plan, etc.).	Routine system inspections and maintenance (includes NPDES-required work): field crew staff salaries, equipment, interfund transfers for repairs, etc.	Implementation of NPDES Permit program										Overhead costs of operating the program: support staff salaries, state taxes, utility taxes, and non-element-specific expenses.	Large-scale construction, expansion, renovation, or replacement projects; purchases of major, long-term use equipment; or major long-term maintenance, repair, or rehabilitation projects.
		<ul style="list-style-type: none"> <li>SWMP document updates included under Planning and Engineering</li> <li>NPDES inspections and maintenance included under Inspections and Maintenance general program component</li> </ul>	Public Education	Public Involvement	Illicit Discharges	Control Runoff	Operation and Maintenance	Monitoring	Tracking and Reporting				
		Reduce or eliminate public stormwater impacts and encourage participation in stewardship.	Ongoing opportunities for involvement, such as advisory councils, public hearings, watershed committees, and rate-structure input.	Prevent, detect, characterize, trace, and eliminate illicit connections and discharges into the storm drain system.	Reduce pollutants in stormwater runoff from new development, redevelopment, and construction site activities through permitting, plan review, and inspections.	Perform operation and maintenance on the storm drain system and provide staff training.	Conduct local water quality monitoring or pay into a fund to support regional monitoring.	Gather information, track program success, set action priorities, retain records, and submit reports to Ecology.					

CITY OF DES MOINES  
 PLANNING, BUILDING, AND PUBLIC WORKS

Organizational Chart - 2014

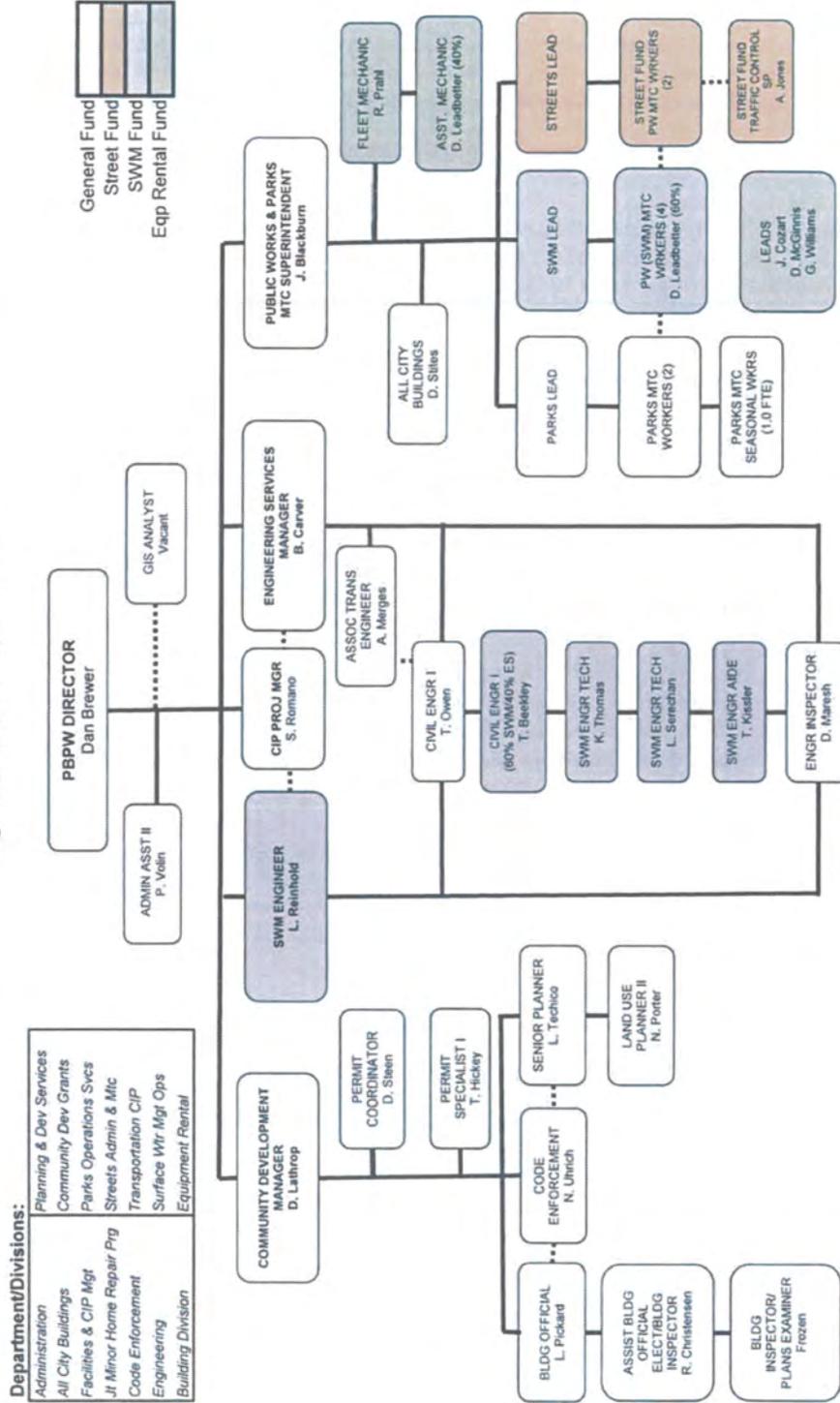


Figure 3-1. Planning, Building, and Public Works Department Organizational Chart

- Inspection of construction projects; review, revision, and adoption of local development-related codes, rules, and standards to incorporate low impact development (LID) principles and best management practices (BMPs)
- Funding for outside consultant services, such as development of the Surface Water Comprehensive Plan
- Miscellaneous consultant engineering services
- Drainage basin planning
- Des Moines Creek Basin Committee participation
- Pipe Program management
- Preparation of applications and management of awards for grants related to non-NPDES work

The Planning and Engineering component funds a total of 2.5 full-time employees (FTEs) consisting of:

- 0.7 SWM Utility Manager
- 1.0 Engineering Technician
- 0.5 Engineering Aide
- 0.3 GIS Analyst

### 3.3 Inspections and Maintenance

SWM's Inspections and Maintenance Group is responsible for routine inspections and regular maintenance of the existing storm drain system and implements smaller pipe replacement and repair projects.

The group's activities include:

- Inspecting facilities annually as required under the NPDES Permit (i.e., detention facilities, treatment facilities, bioretention, vegetated roofs, and permeable pavements), and by the City's Code (i.e., pipes, swales, ditches, culverts, street gutters, and catch basins) (DMMC 11.20.080(5)(a)(ii)).
- Paper filing of records and tracking through a spreadsheet database.
- Purchasing and maintaining field gear and uniforms.
- Renting heavy equipment (stream dredging, catch basin placement, landslide response).
- Paying debris and liquid dump fees from cleaning of storm drain systems.
- Reserving a contingency fund for equipment repair.
- Contracting street sweeping services. Downtown streets are currently swept twice monthly. Residential streets are swept twice monthly in the winter and once monthly during the remainder of the year.

- Contracting outside services for drainage repair (large drainage projects beyond time, equipment, or experience limitations of work crew).
- Implementing the Pipe Program, in which the City provides heavy equipment and labor to replace residential ditches if the property owner pays for materials (catch basins, backfill, etc.).

The Inspections and Maintenance component funds a total of 5.9 FTEs consisting of:

- 0.3 Public Works and Parks Maintenance Superintendent
- 1.0 Senior Maintenance Worker (assigned to the Park Operations group)
- 4.0 Maintenance Workers
- 0.6 Assistant City Mechanic

### 3.4 NPDES Permit Program

SWM is the lead division responsible for compliance with the NPDES Permit described in Section 1.2.1. General activities funded through the NPDES Permit component of SWM's surface water management program include:

- Preparing applications and managing awards for NPDES-related grants
- Contracting and managing outside professional services, as needed
- Administering NPDES training expenses, including travel
- Collecting NPDES Permit fee

The NPDES Permit Program component funds a total of 2.3 FTEs consisting of:

- 0.2 SWM Utility Manager
- 0.6 Water Quality Specialist or Civil Engineer
- 0.5 Engineering Aide
- 1.0 Engineering Technician (currently, this role is filled by a Transportation Technician temporarily assigned to SWM)

Specific elements within the NPDES Permit Program component are described in the following sections.

#### 3.4.1 Public Education and Outreach

The City's Public Education and Outreach Program is intended to educate the public, engineers, contractors, developers, and land use planners doing business in Des Moines about stormwater problems, and identify specific actions they can follow to minimize such problems.

The components of SWM's Public Education and Outreach Program consist of:

- Website
- Brochures
- Quarterly City newsletter
- Participation in the "Puget Sound Starts Here" campaign, which is a partnership of cities, counties, state and federal agencies, non-profit groups, and local organizations working to improve water quality and aquatic habitat in the Puget Sound region (Puget Sound Partnership 2014)
- Televised City Council meetings
- Storm drain marker program
- Car wash kits for public fund raisers that encourage proper containment and capture of wash water

### 3.4.2 Public Involvement and Participation

The goal of SWM's Public Involvement and Participation Program is to create opportunities for the public to participate in decision-making processes involving development, implementation, and update of the surface water management program.

The components of SWM's Public Involvement and Participation Program consist of:

- Providing the Stormwater Management Program Plan and NPDES Annual Report to the public on the City's Website; all other NPDES Permit submittals available upon request
- Collecting and tracking Website comments
- Collaborating with Friends of Des Moines Creek
- Collaborating on WRIA 9 (Duwamish-Green River Water Resource Inventory Area) salmon habitat recovery
- Conducting public meetings regarding surface water-related issues

### 3.4.3 Illicit Discharge, Detection and Elimination

The City's Illicit Discharge, Detection and Elimination (IDDE) Program is intended to prevent, detect, characterize, trace, and eliminate illicit connections and discharges into the storm drain system. The IDDE Program is required to maintain a complete map of the storm drain system; implement regulations to effectively prohibit non-stormwater, illicit discharges; detect and identify non-stormwater discharges and illicit connections; address illicit discharges, including spills and illicit connections; train staff in IDDE techniques; and track and maintain IDDE records.

The components of SWM's IDDE Program consist of:

- Developing and updating a comprehensive GIS map of the City's storm drain system
- Identifying high-priority issues
- Conducting staff training
- Ensuring follow-up of public reports and conducting field screening of potential illicit connections (In 2012, 18 public reports were received, all of the reports were inspected, and 9 illicit connections were identified [Des Moines 2013a].)

#### 3.4.4 New Development, Redevelopment, and Construction Site Runoff Control

The goal of the City's New Development, Redevelopment, and Construction Site Runoff Control Program is to reduce pollutants in stormwater runoff from new development, redevelopment, and construction site activities. As part of the program, SWM is required to implement regulations that incorporate and prioritize LID standards for new development, redevelopment, and construction site projects; include a permitting process with site plan review, inspection, and enforcement; verify adequate long-term operation and maintenance of stormwater treatment and flow control facilities for these projects; and train staff responsible for implementing the program.

The components of SWM's New Development, Redevelopment, and Construction Site Runoff Control Program consist of:

- New development design review in accordance with local codes pertaining to pollution prevention (budget reflected in Planning and Engineering).
- Inspection of new development stormwater facilities. In 2012, all 63 public facilities and 67 private facilities were inspected.
- As allowed by the NPDES Permit, some facilities were identified for reduced inspection frequency in 2010.

#### 3.4.5 Pollution Prevention and Operation and Maintenance

The NPDES Permit requires SWM to perform operation and maintenance on the storm drain system and provide staff training. SWM must conduct annual inspections of all municipally owned or operated permanent stormwater treatment and flow control facilities as defined by the NPDES Permit (i.e., bioretention, detention facilities, infiltration facilities, constructed wetlands, oil and water separators, sediment basins, porous pavement, vegetated roofs, and permeable

pavements); inspect catch basins and inlets every 2 years; perform spot checks of potentially damaged permanent stormwater treatment and flow control facilities after major storm events; and take appropriate maintenance actions in accordance with adopted standards. In addition, SWM must train staff responsible for implementing the program; develop and implement a Stormwater Pollution Prevention Plan for all heavy equipment maintenance or storage yards; and maintain records of inspections and maintenance or repair.

The components of SWM's Pollution Prevention and Operation and Maintenance Program consist of:

- Development and implementation of the City Fleets and Facilities Stormwater Pollution Prevention Plan (Des Moines 2010a)
- Annual inspections of existing stormwater management facilities and upgrading to efficient maintenance standards, as needed

### 3.4.6 Monitoring

Under provisions of the NPDES Permit, the City is required to:

- Conduct status and trends monitoring of stream and marine water quality, benthos, habitat, and sediment chemistry, or pay into a collective fund to implement the Regional Stormwater Monitoring Program (RSMP) for status and trends monitoring of small streams and nearshore areas in Puget Sound
- Conduct stormwater discharge monitoring, or pay into a collective fund to implement RSMP effectiveness studies
- Pay into a collective fund to support source identification and diagnostic monitoring through the RSMP Source Identification Information Repository

The City has elected to pay into the RSMP for all of the above requirements and provides the following annual contributions:

- \$7,152 – Status and Trends Monitoring
- \$11,916 – Effectiveness Studies (stormwater monitoring)
- \$1,105 – Source Identification

### 3.4.7 Tracking, Recordkeeping, and Reporting

The NPDES Permit requires the City to gather information, track the implementation of the surface water management program, and set priorities for permit compliance. In addition, the City is required to generate certain reports to be submitted to Ecology and retain records documenting compliance with the NPDES Permit requirements. The required submittals to Ecology include an

annual report with supporting documents, and the SWMP Plan. The purpose of the SWMP Plan is to inform the public of the planned SWMP activities for the upcoming calendar year. The Plan is updated annually.

Activities that the City includes in its Tracking, Recordkeeping, and Reporting Program are:

- Receiving and following-up of public complaints through a Web-based comment form and telephone hotline
- Tracking of data via a spreadsheet log of activities
- Ensuring a budget tracking system is in place
- Generating the annual NPDES report and updating the SWMP Plan, when necessary

### 3.5 Administration

The SWM budget also includes funding for routine operations of the department. These costs include:

- King County billing services and tax collection services (SWM's surface water management program is funded by a property tax that is administered by King County. King County acts as a collection agency on behalf of the City and redistributes the stormwater fees back to SWM on a monthly basis.)
- WRIA 9 (Duwamish-Green River Water Resource Inventory Area) salmon habitat recovery collaboration fees
- Employee benefits
- Office supplies
- Janitorial services
- Advertising (job announcements and public notices of pending actions)
- Training-related travel expenses
- Taxes
- Professional dues and conferences
- Interfund services (computer maintenance, facility insurance, and administrative repairs)
- Postage, telephone, Internet, and utilities for Public Works Building

The Administration component of SWM's surface water management program funds a total of 0.3 FTEs consisting of:

- 0.15 Public Planning, Building, and Public Works Director
- 0.15 Administrative Assistant

### 3.6 Capital Project Implementation

The City performs capital construction of stormwater-related projects, funded by rates and fund balance. The Capital Projects List for 2014–2019 has nine projects that use a percentage of SWM's overall rate revenue.

### 3.7 Budgeting

The current surface water management program is primarily funded through a surface water property tax rate, with some additional funding provided by grants and Interlocal agreements. SWM periodically evaluates the surface water rate to determine if the base amount is adequate to meet program needs and if the portions of the rates allocated between commercial and residential customers is appropriate. SWM evaluated the efficiency and general rate structure of the surface water management program in 2004 (FCS 2004), followed by a detailed assessment of the surface water rate and levels of service in 2006 (FCS 2006). Most recently, SWM conducted a detailed evaluation of the division of the surface water rate between residential and commercial customers (FCS 2013) and made adjustments in the rates charged the following year. An additional financial analysis has been conducted as part of this SWCP, which is discussed in Appendix E.

SWM generates an annual budget outlining how the surface water rate revenue will be allocated to its costs and needs for the coming year. A copy of the 2014 SWM Budget is presented in Appendix F.

### 3.8 Identified Gaps in Current Program

In general, SWM's current surface water management program complies with most regulatory requirements and provides an adequate level of service to the surface water rate customers. However, the following gaps were identified in the existing program:

- **NPDES Operation and Maintenance:** Stormwater management facilities must be inspected at least once per year. The City crews inspected each existing facility annually and bring them up to full performance as needed. However, since 2012, at least four major facilities have been constructed or soon will be. SWM is in the process of updating operation and maintenance procedures to include these facilities and have maintenance crews provide these inspection duties. As additional facilities are constructed, the ability of existing maintenance staff to continue to meet the permit inspection and maintenance requirements may be affected.

- **NPDES Tracking, Recordkeeping, and Reporting:** The existing inspection and maintenance records contain a large backlog of paper activity reports that have not been entered into the electronic database.
- **Capital Project Implementation:** The City currently does not have an emergency fund within the capital projects budget or a systematic program for replacement of failing infrastructure.

Recommended approaches to address these gaps are discussed in Chapter 4.

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# 4 Program Recommendations

## 4.1 Purpose

SWM's current surface water management program provides an appropriate level of service and is in compliance with its NPDES Permit. Gaps in the desired level of service and evolving priorities have been identified in Section 3.8 above. The purpose of this chapter is to present recommended approaches for addressing identified gaps, provide additional recommendations to increase program efficiencies and costs, adjust priorities, and offer a cohesive framework for all future program upgrades centered on key focus areas.

## 4.2 Key Focus Area Recommendations

SWM's mission statement, presented in Section 1.1, focuses on issues such as flooding, erosion, sedimentation, water quality degradation, stream and wetland protection, future growth, public safety, and property protection. All of these elements are part of three main focus areas around which the surface water management program is centered: drainage, water quality, and habitat. Future program upgrades centered on these focus areas will provide continuity of efforts while aligning with local and state requirements, regional initiatives, City goals and priorities, and public needs. Each of the focus areas is discussed below.

### 4.2.1 Drainage

Activities pertaining to drainage management address the safety and convenience of those living or working within an area subject to stormwater runoff. In general, drainage management consists of a functional storm drain system, sometimes equipped with flow control facilities, that safely and efficiently conveys stormwater runoff to receiving waters. Drainage management controls and minimizes flooding and erosion, accommodates future urban growth, corrects existing surface water problems, addresses public safety, and prevents property damage.

The City's existing storm drain system and flow control facilities are generally adequate to address drainage needs to the level of service in place when the systems were constructed. However, the infrastructure within the storm drain system includes extended lengths of pipe that are near the end of their useful life and SWM does not currently have a dedicated plan or funding mechanism to pay for the repair and replacement of these aged components. It is recommended that the City establish a repair and replacement fund to handle these anticipated, but unpredictable, repairs of pipe failure.

### 4.2.2 Water Quality

Activities pertaining to water quality management both prevent pollutants from mixing with stormwater runoff and reduce or remove pollutants already entrained in runoff. In general, a functional water quality program includes public education; activities and practices that control sources of pollutants; constructed facilities that reduce or remove pollutants from stormwater runoff; and monitoring plans to assess the effectiveness of the program. The management of water quality controls and minimizes sedimentation in local streams and wetlands, and controls and minimizes water quality degradation in surface waters from lack of dissolved oxygen, high temperatures, and discharges of oil and grease, metals, industrial toxins, and other pollutants harmful to aquatic life. In the long term, the goal of an effective water quality program is to not only protect the current water quality, but improve the water quality in future years.

Based on recent regulatory developments, it is anticipated that future versions of the Municipal NPDES Permit will require the City to implement a stormwater quality retrofit plan. It is recommended that the City begin preparing for the future potential need by compiling and organizing information related to stormwater quality and flow retrofitting, including:

- Updating the mapping and inventory of surface water features, including streams and wetlands
- Updating maps of the City's stormwater management infrastructure and treatment facilities (including minimization of impacts through retained vegetation, and other beneficial water quality features such as roadside ditches), along with indicating key attributes of each facility, such as structure inverts, size, property limits, and ownership, etc.
- Identifying and tracking existing water quality problems and existing pollution sources
- Collect flow monitoring data in local streams
- Establishing policies and opportunity funding for add-on retrofits to other capital projects
- Preparing a retrofit plan to identify potential improvement opportunities in preparation of obtaining available grant funding

Water quality retrofit projects tend to involve long planning periods. By initiating information gathering at an early stage, the City can evaluate options early on and make use of funding and construction opportunities as they arise. In addition, even if specific requirements for water quality retrofit are not imposed on the City, all groups within the surface water management program will benefit from access to the information gathered.

### 4.2.3 Stream and Receiving Water Habitat

Habitat management programs typically focus on the protection of existing fish and wildlife habitat, and work to create new habitat where possible. Drainage and stormwater quality are directly linked to habitat protection. Habitat management helps to protect the stream ways and wetlands within the city limits. Creation of new habitat can help to mitigate the negative impacts of new development projects. Similar to water quality data, the City does not have a central clearinghouse of information for City habitat areas and improvement opportunities. Therefore, it is recommended that the City begin compiling and organizing habitat-specific information as part of the data gathering effort discussed in the previous section.

## 4.3 Program Component Recommendations

Recommended approaches for addressing gaps in the current surface water management program identified in Section 3.8 are presented below. Recommendations to increase program efficiencies and reduce costs are also provided.

### 4.3.1 Planning and Engineering

#### Activities to Address Gaps in Current Program:

- No gaps identified.

#### Additional Recommendations:

- Develop a programmatic evaluation for compliance with the State Environmental Policy Act for surface water capital projects
- Prepare a project management manual or provide project management training for staff to effectively manage additional surface water capital projects
- Add (or reallocate) 1.0 FTE to support additional capital project implementation (project management, construction management, procurement, etc.)
- Establish a drainage permit fee to help fund new development design reviews and inspections

### 4.3.2 Inspections and Maintenance

#### Activities to Address Gaps in Current Program:

- Add 0.33 FTE to maintenance staff to increase inspections to required frequency of once per year for all facilities (1.0 FTE shared between Maintenance and Inspection and NPDES compliance groups). Current staffing provides four workers to complete two crews. The City does not require more than two crews to complete the maintenance and inspection efforts necessary to meet permit requirements; however, when one staff member is out due to sickness or vacation, one crew is not functional and needs are not fully met.

#### Additional Recommendations:

- To better assess the stormwater infrastructure and identify where a pipe is either failing or at risk of failure, SWM should establish a program to inspect and document the City's entire enclosed storm drain system using closed-circuit television (CCTV) equipment. The City plans to purchase the CCTV equipment and have staff crews conduct the assessments. It is recommended that the City assess 15 percent of the storm drain system annually until complete.
- Update the City Code to reduce the required inspection frequency for pipes, swales, ditches, culverts, street gutters, and catch basins to once every 2 years to be consistent with the NPDES Permit.
- Discontinue the Pipe Program and reallocate staff and funds to the Pipe Replacement capital program.

### 4.3.3 NPDES Permit Program

#### Activities to Address Gaps in Current Program:

- Operation and Maintenance: Add 0.33 FTE to increase inspection coverage (1.0 FTE shared between Maintenance and Inspection and NPDES compliance groups)
- Tracking and Reporting: Add 0.33 FTE to input backlog of inspections and maintenance records (1.0 FTE shared between Maintenance and Inspection and NPDES compliance groups)

#### Additional Recommendations:

- Tracking and Reporting: Update tracking database from paper inspection forms and spreadsheet log to software tracking system that includes direct field data entry through an electronic interface

- Water Quality and Habitat: Track information collected as part of permit compliance to support the water quality and habitat information clearing houses discussed in Section 4.2

#### 4.3.4 Administration

In general, administrative activities, budget, and staffing should be increased proportionate to other program components to maintain an adequate level of support.

#### 4.3.5 Capital Project Implementation

##### Activities to Address Gaps in Current Program:

- As discussed in Section 4.2.1, the City does not have a current systematic plan for repair and replacement of aging capital assets (storm drain system, flow control facilities, and water quality treatment facilities). It is recommended that an emergency repair and replacement service fund be established to address this issue. Budgeting options for this fund are discussed in Section 4.4.2.

##### Additional Recommendations:

- To provide a consistent approach to capital project planning and prioritization, it is recommended that the project scoring system outlined in Appendix B be applied to future potential capital projects.

### 4.4 Implementation

#### 4.4.1 Project Identification

Capital project locations are shown on Figure 4-1 and in Appendix C. These projects were identified by City staff and the public in meetings and workshops held during the course of the SWCP planning effort. These projects will be initiated using the prioritization process described in Appendix B. Over the life of the SWCP, additional projects will be identified in this same process of discovery that includes public reporting and staff inspections. In addition, the SWCP recommends additional study and activities that may lead to new capital projects, including the Pipe Replacement program and a water quality retrofitting evaluation. It is recommended, as described in Section 1.5, that a periodic review be conducted of the prioritized projects. After year five of the program, new projects and uncompleted existing projects should be re-prioritized to generate and update the capital projects list.

## 4.4.2 Financial Planning and Staffing

Potential costs of the recommended program components and capital projects have been evaluated in three different funding scenarios, as described below. Each scenario would address a baseline level of service compliant with all regulatory requirements combined with different levels of operational efficiencies and completion of capital projects. The City will evaluate each scenario and select one to incorporate into future budget planning. A listing of the High, Medium, and Low Priority capital projects included in the scenarios is presented in Appendix B. Details of the financial analysis of each of the scenarios is presented in Appendix E.

### Scenario 1:

- Operations: Addition of 1 FTE to the maintenance staff in 2015 for support of NPDES and operational inspections and input of maintenance record backlogs. No additional engineering staff.
- Capital Program: Fund 14 out of 19 of the High Priority projects.
- Utility Fee Increase: No increase beyond an assumed inflation rate of 2.30 percent annually through 2024.

### Scenario 2:

- Operations: Addition of 1 FTE to the maintenance staff in 2015 for support of NPDES and operational inspections and input of maintenance record backlogs. Eventual addition of 1 FTE to the engineering staff to support CIP implementation as growth permits.
- Capital Program: Fund all High Priority projects by 2025.
- Utility Fee Increase: An annual 5.00 percent increase beginning in 2016, tapering back down to a standard increase based on inflation by 2022.

### Scenario 3:

- Operations: Addition of 1 FTE to the maintenance staff in 2015 for support of NPDES and operational inspections and input of maintenance record backlogs, and 1 FTE to the engineering staff in 2015 to support CIP implementation.
- Capital Program: Fund all High Priority and Medium Priority projects by 2025.
- Utility Fee Increase: An annual 10.00 percent increase beginning in 2016, tapering back down to a standard increase based on inflation by 2022.



**City of Des Moines**

**Parametrix**  
ENGINEERING, PLANNING, ENVIRONMENTAL SCIENCES

**Capital Project and Rank**

- High
- Medium
- Low

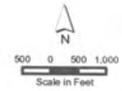
**Project Area**

**Stream**

**Drainage Basin**

**Wetland**

**Des Moines City Limits**



Source: City of Des Moines,  
King County

**Figure 4-1**  
**Capital Project**  
**Locations**

Des Moines Surface Water  
Comprehensive Plan

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## 5 References

- CH2M HILL. 2003. SR 509: Corridor Completion/I-5/ South Access Road EIS Final Environmental Impact Statement. January 2003.
- Des Moines, City of. 1987. North Fork of Smith Creek Drainage Basin Study, Final Draft. Prepared by R.W. Beck and Associates for the City of Des Moines. June 1987.
- Des Moines, City of. 1990. Massey Creek Comprehensive Flood Control Management Plan. Prepared by R.W. Beck and Associates for the City of Des Moines Department of Public Works. June 1990.
- Des Moines, City of. 1994. Lower Massey Creek Alternative Analysis. Prepared by KCM, Inc., for the City of Des Moines. August 1994.
- Des Moines, City of. 2001. Five-Year Project Report: City of Des Moines Water Quality Monitoring Program. Prepared by Herrera Environmental Consultants for the City of Des Moines Surface Water Management Utility. February 2001.
- Des Moines, City of. 2008. Barnes Creek Stormwater Detention Basin Wetland Delineation Report. Prepared by TetraTech, Inc., for the City of Des Moines, Public Works Department. May 2008.
- Des Moines, City of. 2009. Integrated Pest and Vegetation Management Plan. December 2009.
- Des Moines, City of. 2010a. City Fleets and Facilities Stormwater Pollution Prevention Plan (SWPPP). January 2010.

- Des Moines, City of. 2010b. Shoreline Master Program. Prepared by the City of Des Moines Department of Planning, Building, and Public Works. Approved by the Department of Ecology November 1, 2010. Adopted by City of Des Moines Ordinance Number 1502 January 27, 2011.
- Des Moines, City of. 2012. City of Des Moines Comprehensive Plan. Prepared by the City of Des Moines Planning, Building, and Public Works Department. Adopted by Ordinance Number 1469 on November 12, 2009. Amended by Ordinance Number 1551 on October 25, 2012.
- Des Moines, City of. 2013a. NPDES Annual Report for the City of Des Moines, 2012 Reporting Year. Permittee Coverage Number WAR04-5511. Certified by the City of Des Moines on March 28, 2013.
- Des Moines, City of. 2013b. 2014-2019 Capital Improvement Plan. Resolution Number 1244. Adopted by the City Council on November 14, 2013.
- Des Moines, City of. 2013c. 2014 Budget. Ordinance Number 1589. Adopted by the City Council December 5, 2013.
- Des Moines, City of. 2014. Stormwater Management Program Plan. May 2014.
- Des Moines Creek Basin Committee. 1997. Des Moines Creek Basin Plan. Prepared in cooperation with the City of SeaTac, City of Des Moines, Port of Seattle, and King County. November 1997.
- Ecology (Washington State Department of Ecology). 2012a. Current EPA Approved Water Quality Assessment. Approved by EPA December 2012. <http://www.ecy.wa.gov/programs/wq/303d/currentassessmt.html>
- Ecology (Washington State Department of Ecology). 2012b. Copper and Zinc Levels in Des Moines, Massey, and McSorley Creeks, King County. Publication Number 12-03-041. Washington State Department of Ecology Environmental Assessment Program. Olympia, Washington. July 2012.
- Ecology (Washington State Department of Ecology). 2013. Western Washington Phase II Municipal Stormwater Permit—National Pollutant Discharge Elimination System and State Waste Discharge General Permit for Discharges from Small Municipal Separate Storm Sewers in Western Washington. Issued August 1, 2012; effective August 1, 2013; expires July 31, 2018.
- Ecology (Washington State Department of Ecology). 2014. Municipal Stormwater Permits Frequently Asked Questions. Water Quality Program. Revised July 2014.

- FCS (Financial Consulting Solutions Group, Inc.) 2004. City of Des Moines Surface Water Utility Performance Review. July 2004.
- FCS (Financial Consulting Solutions Group, Inc.). 2006. Surface Water Rate Study. Letter from John Ghilarducci, FCS Group, to Loren Reinhold, P.E., City of Des Moines. April 30, 2006.
- FCS (Financial Consulting Solutions Group, Inc.). 2013. City of Des Moines Stormwater Utility Final Report for Stormwater Rate Structure Study. July 2013.
- King County. 1991. Executive Proposed Basin Plan, Hylebos Creek and Lower Puget Sound. King County Department of Public Works Surface Water Management Division.
- King County. 2007. Des Moines Creek—A Holistic Approach to Watershed Restoration. King County Department of Natural Resources & Parks. December 2007.
- Normandy Park, City of. 1992. Surface Water Management Plan. Prepared by R.W. Beck and Associates for the City of Normandy Park. November 1992.
- Puget Sound Partnership. 2014. Puget Sound Starts Here website. <http://www.pugetsoundstartshere.org/about-us/>. 2014.
- SeaTac, City of. 2013. Surface Water Plan. Prepared for the City of SeaTac by Herrera Environmental Consultants, Inc. July 2013.

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## Appendix A

### City and Public Involvement Documents





- We have listed below the types of data and records we believe we need to collect in order to develop a comprehensive understanding of the City's current surface water system. Are there additional documents, studies, or modeling files that Parametrix did not request that you feel will benefit the comprehensive plan? If so, please list.

## **NEXT STEPS**

Following this effort we will send out a second questionnaire related to specific surface water problems. Prior to that we will try to gather as much background data as possible and then along with your responses to this questionnaire we will facilitate a stakeholder meeting at the City. The goal of that meeting will be to develop a list of known problems within the City so that we can investigate and develop solutions that will be the basis of a construction/capital improvement plan.

## **DATA GATHERING**

Our goal is to gather as much of the following information as possible:

- 1991 Surface Water Plan.
- Previous Surface Water Rate Studies.
- Available staffing analysis.
- 2013 Annual Reports and Stormwater Management Program (SWMP) documents.
- City Illicit Discharge Detection and Elimination (IDDE) and Erosion and Sedimentation Control Inspection policies.
- City codes and ordinances pertaining to stormwater.
- City comments on the draft Phase II Permit.
- Capital Improvement Program 2011-12 – 2015-16, plus any additional project lists or records of stormwater problem areas.
- Basin Plans, delineations and related studies.
- Geographic information system (GIS) data including existing stormwater system, soils, water resources, utilities, land uses, aerial photos, streets, topography, zoning, tax lots, buildings, and private stormwater facilities.
- Water quality data from surface water or stormwater monitoring programs.
- Record drawings (as-builts) for stormwater facilities that require rehabilitation or replacement (if applicable and available).
- Information on groundwater resources, including wellhead protection areas.

- A synthesized list of historic CIP and basin-plan related stormwater projects. The list should identify incomplete projects, completed projects, success of the projects, and additional projects that are needed, if known.
- Information on planned developments, annexation areas, or land use changes from the Community Development Department.
- Information on the City's existing storm and surface water operations and maintenance program.
- Existing modeling data on the City's stormwater system and drainage basins within the City, if available.
- Background information on the City's current stormwater utility fee and other information related to financial policy.

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# CITY OF DES MOINES SURFACE WATER COMPREHENSIVE PLAN

## Questionnaire 2 – Identifying the City’s Stormwater Needs

### PURPOSE

The purpose of this questionnaire is to identify specific surface water problems. The content of this questionnaire will be used to guide a workshop discussion between City staff and our consultant, Parametrix, which will take place on Monday, March 24<sup>th</sup>.

The goal of the workshop will be to develop a list of known problems within the City so that we can investigate and develop solutions that will be the basis of a construction/capital improvement plan.

### RESULTS OF QUESTIONNAIRE 1

The following is a summary of the input provided from Questionnaire 1<sup>1</sup>:

Identified Issues	Goal/Proposed Approach	Examples/Observations (if applicable)
Update the operation and maintenance (O&M) tracking system	Data collection software to be updated and use of field electronics to be implemented	Hand-held tablets/iPads, need software suggestions
City has aging storm system consisting of degraded CMP	Need to begin replacing CMP proactively, not reactively	Most of existing SWM CIP list consists of pipe replacements/upgrades
City has deep roadside ditches that may pose a safety risk on some local roads and arterial streets	Fill ditches and install enclosed drainage systems	Potentially merge ditch replacements with sidewalk installations.
Public outreach and education improvements		Staff witnessed citizen "stuffing garbage down a storm grate at Pac Hwy and S 216 <sup>th</sup> St"
Surface Water Comprehensive Plan should be forward thinking document that is relevant/applicable for 10+ years	Should address O&M needs, CIP projects, and SWM utility rates	
Resolve public/private ownership of Stormwater easements	Determine who maintains SW facilities and who pays for CMP replacements	
Please list additional drainage problems that are not covered in the attached document.		Ex: Are there current flooding or water quality issues? If so, where?
Keeping up with growth	Track increase of SWM Fees and direct those funds to additional staffing/equipment	

<sup>1</sup> A list of outstanding projects from the Stormwater Capital Improvement Projects and NPDES Phase II Stormwater Management Program are attached on a separate sheet.

## QUESTIONNAIRE 2

The following table lists criteria that may be used to prioritize future drainage improvement projects. Please select what you think are the three most important criteria and rank them from 1 to 3 (1 being the most important):

Project Selection Criteria	Importance (Top 3)
Improvements spread throughout the City/at least one project in each neighborhood and/or stream area	
Maintain/improve the existing drainage pipe system	
Addressing landslide/ground settling/seepage/erosion problems	
Use of more "natural-based" approaches to rainwater management (green stormwater infrastructure/low impact development)	
Removing pollutants from rainwater runoff	
Ditch removals	
Stream enhancements/wildlife habitat/fish access improvements	
Reduce/eliminate flooding	
Funding: spend money where it will result in the largest overall impact	
CMP Pipe Replacement	
Other:	

Do you know of any opportunities for or limitations against use of "natural-based" approaches to rainwater management (green stormwater infrastructure/low impact development)?

Please describe any other areas/topics that you feel should be included in future drainage system planning, such as annexation of new areas, coordination with surrounding jurisdictions, etc.

### **OPERATION & MAINTENANCE-SPECIFIC QUESTIONS**

Regarding the City's operation and maintenance (O&M) practices for City-owned stormwater facilities (pipes, catch basins, ponds, ditches, etc.), what are some of the most effective current practices?

What O&M practices would you like to see changed, if any?

Regarding the City's pollution prevention procedures (e.g., street sweeping, catch basin cleaning, etc.), what do you think are some of the most effective current practices?

What pollution-prevention practices would you like to see changed, if any??

The City will likely start collecting field data electronically through the use of hand-held devices (i.e. tablets, iPads, etc.). Do you know of any existing software that you would recommend? Do you have colleagues at other Cities that might have recommendations?

Do you know of any specific areas and/or stormwater facilities (pipes, catch basins, ponds, ditches, etc.) are in need of rehabilitation?

Are there any other issues/topics that you would like included for consideration in future drainage system planning?



# YOU'RE INVITED: RAINWATER AND YOUR UTILITY BILL

The City of Des Moines uses the money from stormwater fees that you pay in your utility bill to maintain the drainage system and rainwater management facilities in your neighborhood. This money goes toward things like:

- **Flood Control**
- **Pipe and Ditch Replacements**
- **Stream Health**

The City is working on a future plan for management of your surface water facilities and **would like your input!** Please join the City at one of several **public meetings**.

## WHAT HAS THE CITY DONE SO FAR?

The Surface Water Management Division has already reviewed data on the current surface water management program, conducted several surveys of City staff who work on managing surface water, and met with the Environment Committee. A draft list of potential surface water management projects and ranking criteria have been developed and we need your input!

## HOW DO I FIT IN TO THIS PROCESS?

The City would like to invite you to attend a public meeting in your drainage area to provide input on what is most important to you for future stormwater spending. For example, should we select projects first that reduce flooding or keep pollutants out of the water? Should the rainwater management projects all be selected based on the most extreme problems, even if that means there is no project in your neighborhood? These and other issues will be discussed at each meeting.

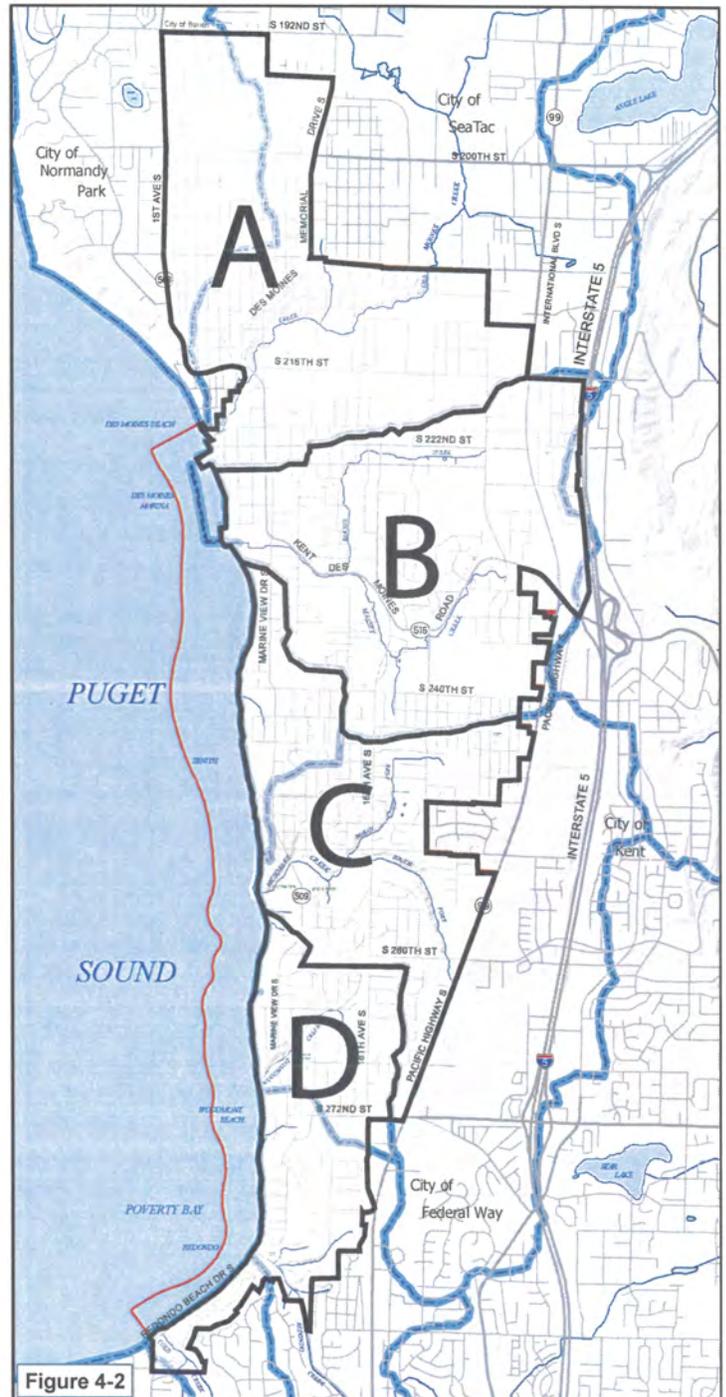


Figure 4-2

## PUBLIC MEETINGS:

Meeting will be held in each of the Basin Areas noted on the map above. If you are unable to attend the meeting for your area, please attend one of the others.

**Area A:** May 19, 2014, 5:30 – 7:30 pm  
**Area B:** May 20, 2014, 5:30 – 7:30 pm  
Founders Lodge at the Beach Park  
22030 Cliff Ave S, Des Moines

**Area C:** May 29, 2014, 5:30 – 7:30 pm  
**Area D:** May 30, 2014, 5:30 – 7:30 pm  
Woodmont Elementary School  
26454 16th Ave S, Des Moines

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# 1 WELCOME!



## PUBLIC MEETING: SURFACE WATER COMPREHENSIVE PLAN

The City of Des Moines uses the money from stormwater fees that you pay to maintain the public drainage system and rainwater management facilities in your neighborhood. This money goes toward things like:

- **Flood Control**
- **Street Pipe and Ditch Maintenance**
- **Water Quality and Stream Health**

The City is working on a future plan for management of your surface water facilities and **would like your input!**

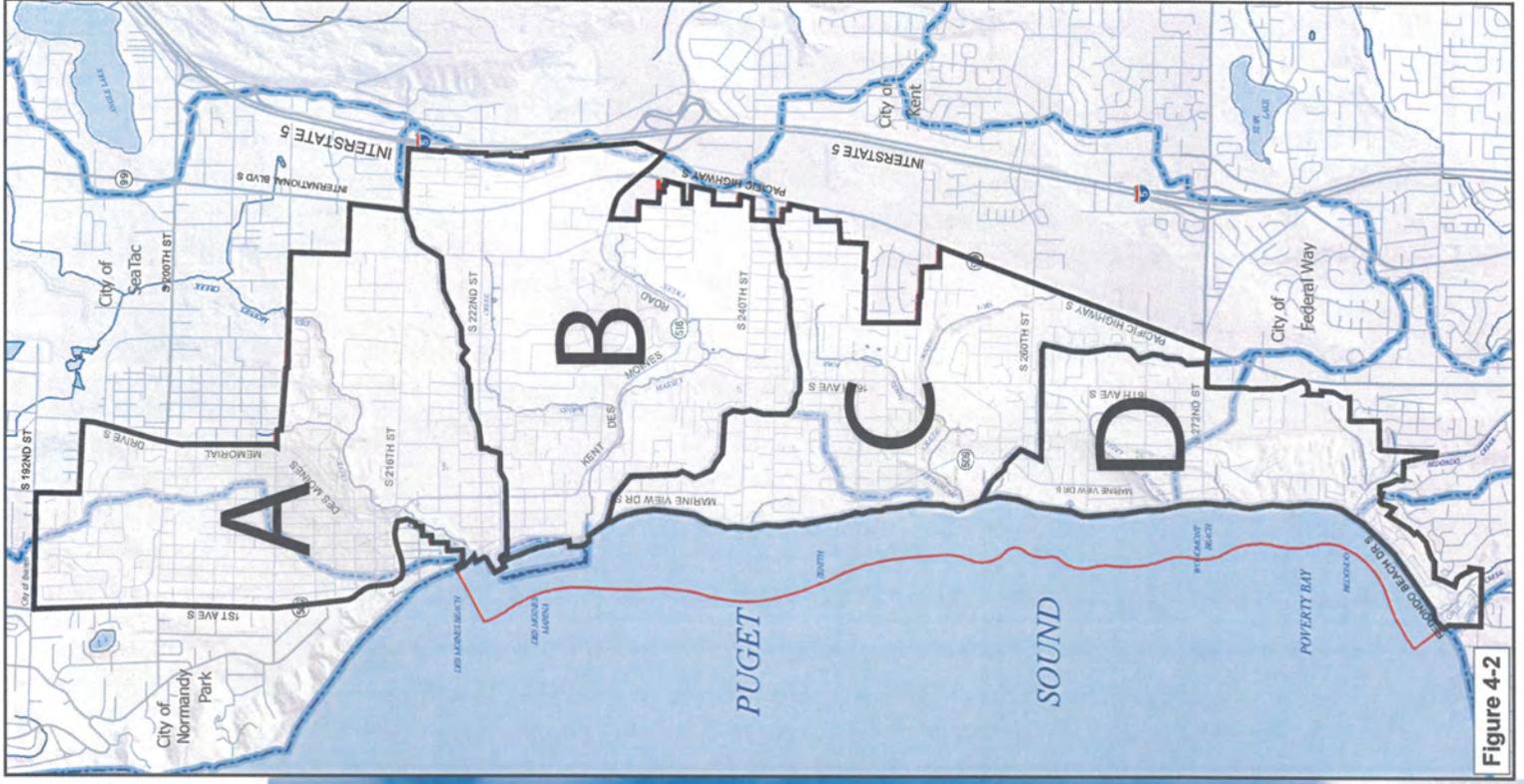
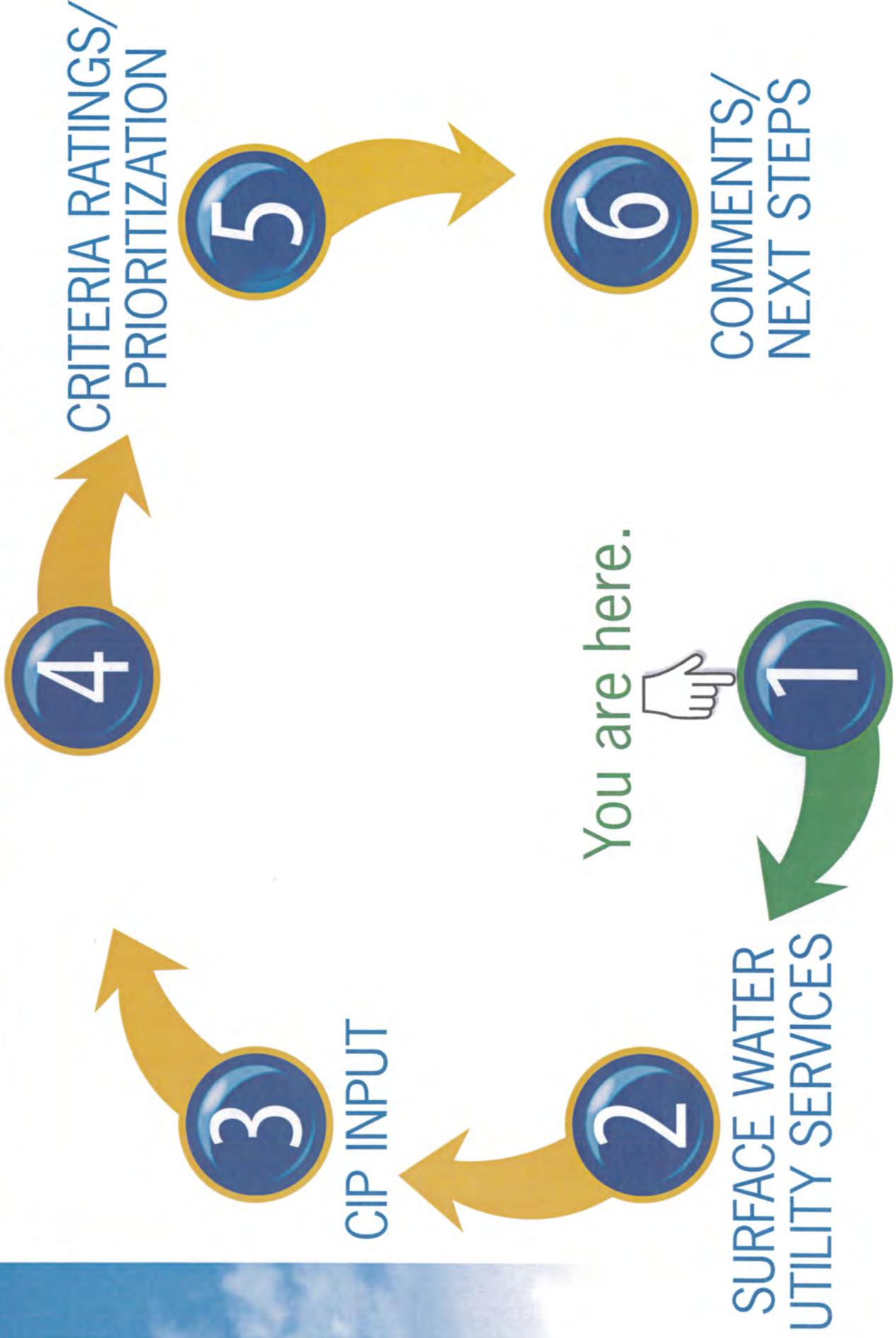


Figure 4-2



You are here.

WELCOME!

## SURFACE WATER UTILITY SERVICES

### CLEAN WATER AND HEALTHY STREAMS

**Monitoring/Water Sampling:** Collecting water samples from ditches, pipes, and streams.

**Illegal Connections:** The City detects and removes illegal connections of sewer/wastewater, and works to eliminate spills.

**Car Wash Kits – Environmentally Friendly:** Free kits for charities, to keep car wash water out of the storm drain. Car wash water contains soap, gasoline, oil, and other car pollutants. If it goes down the storm drain, it travels to streams, wetlands, and the Puget Sound, where it poisons aquatic life.

More Info: <http://charitycarwash.org/>

**How to Help At Home:** Remember – Driveway car washing is one of the most environmentally unfriendly chores around the house! Use these options instead:

- Go to a commercial car wash station.
- Wash your car on gravel, grass, or other surfaces that will soak up the water.
- Use hoses with nozzles that automatically shut off when not in use.

**Storm Drain Marker Volunteer Program:** We need volunteer(s) to place “Puget Sound Starts Here” markers near catch basins in your community. Help raise awareness about pollution, help stop illegal dumping down our drains, and protect Des Moines streams, wetlands, and Puget Sound!

STATE PERMIT SERVICES  
PROVIDED BY CITY

(Current Permit Expires July 2018)



### PREVENTING FLOODING

**Controlling Runoff:** Control and reduce high flows and pollution in rainwater runoff from roads, parking, buildings, and construction sites.

**Operations and Maintenance:** Train staff and prevent pollution from city operations.

**Pipe Program:** Public Works crews provide the heavy equipment and labor to install pipes, catch basins and backfill material (gravel) to replace ditches if the owner pays for the materials. Some restrictions apply.

### INCLUDING YOU IN THE PROCESS

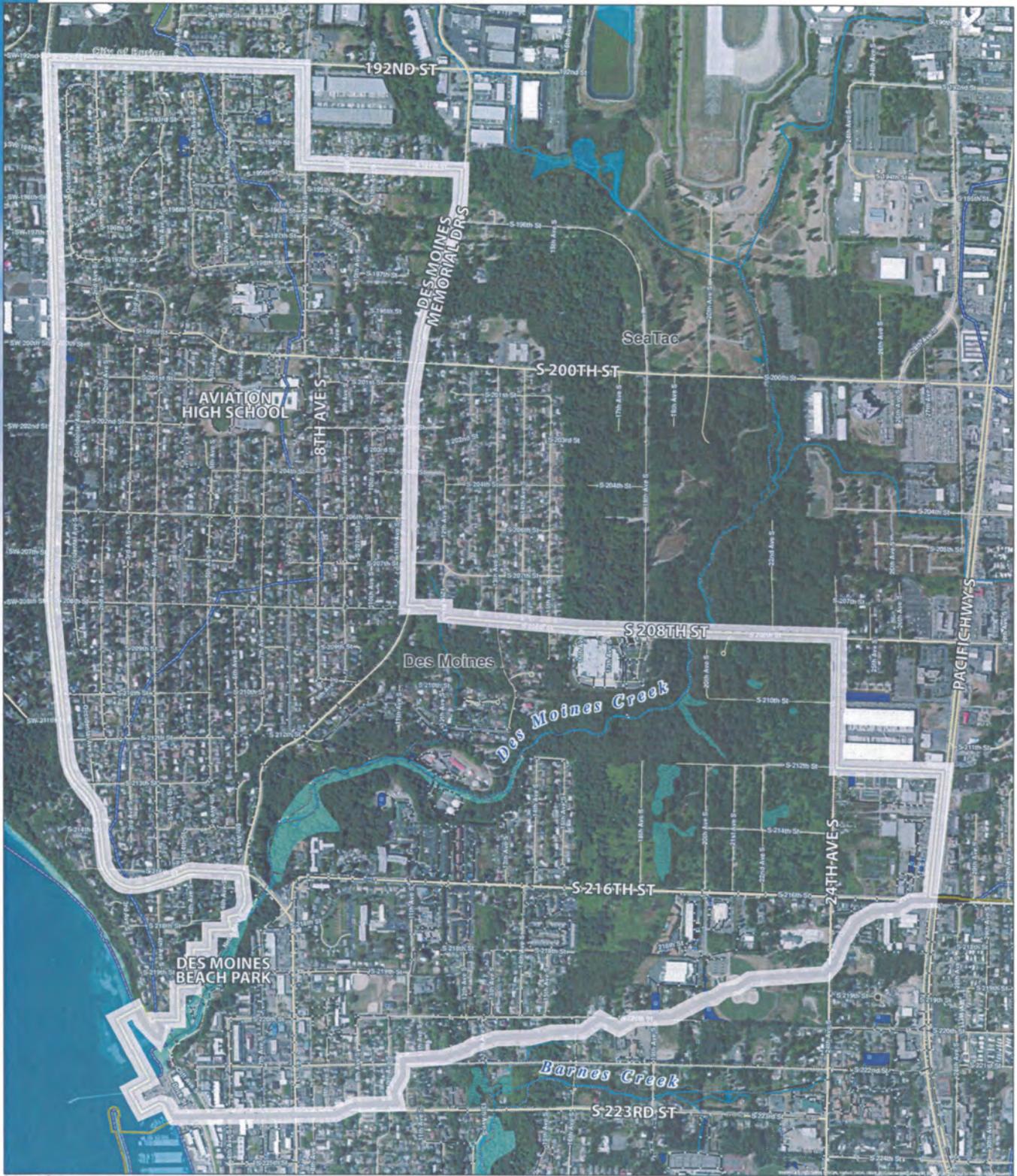
**Public Education and Outreach:** Website information, City Currents newsletter, brochures, and public signs.

**Public Involvement and Participation:** Friends of Des Moines Creek, salmon habitat recovery, and other volunteer events.

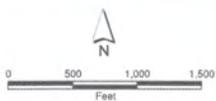


Please report any illegal storm drain dumping activities! For more info please call 206.870.6585. For the after hours hotline, please call 206.550.5612.



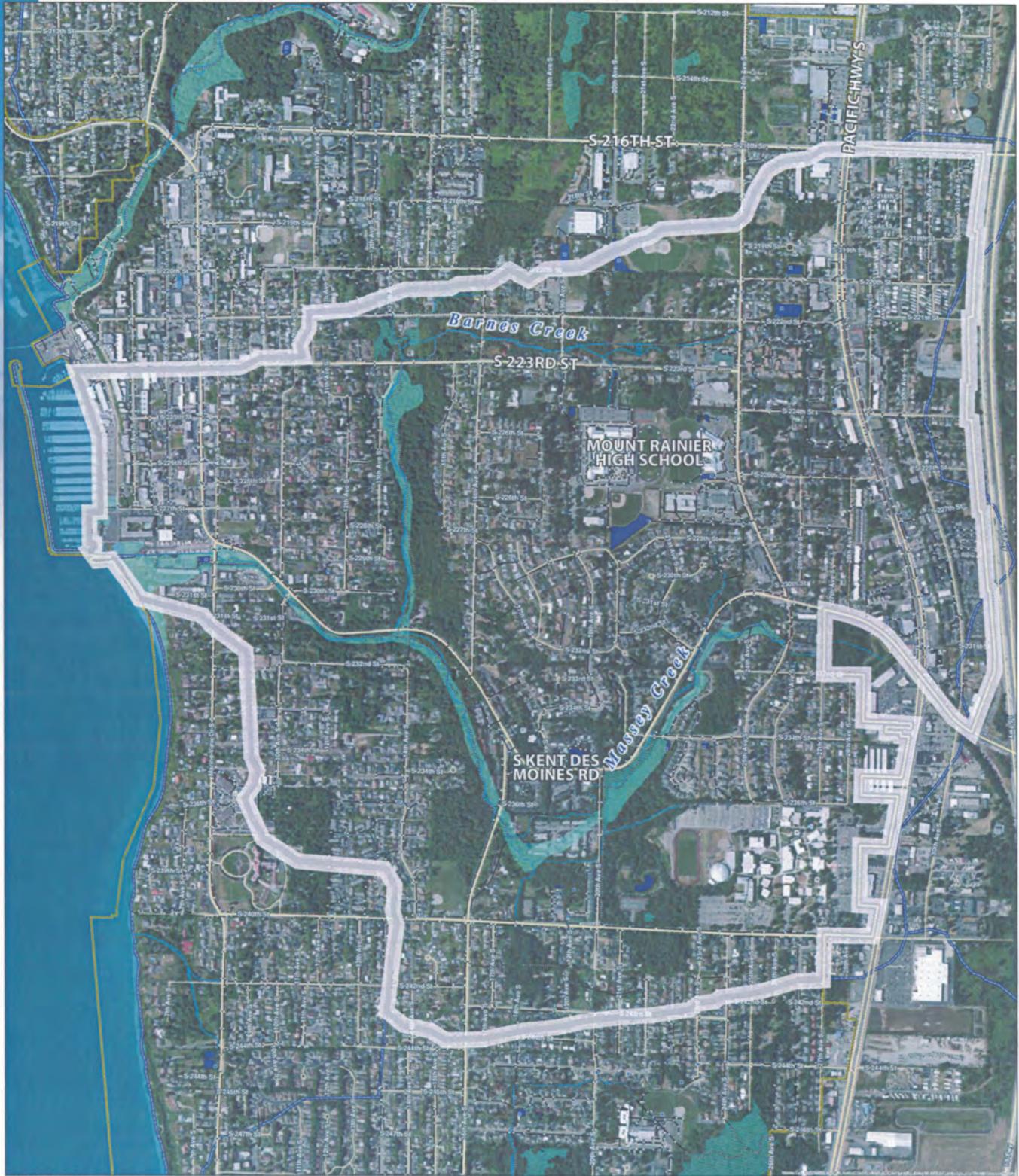


Parametrix

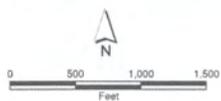


- |                     |                          |                                 |              |
|---------------------|--------------------------|---------------------------------|--------------|
| Streams             | Storm Discharge Point    | Storm Open Drain Lines          | Interstate   |
| Surface Water       | Storm Control Structures | Storm Conveyance                | Arterial     |
| Wetlands            | Storm Catchments         | Storm Detention Area / Easement | Collector    |
| 100 Year Flood Area | Storm WQ Facility        | City Limits                     | Focus Area A |
| Drainage Basins     |                          |                                 |              |

City of Des Moines  
Area A

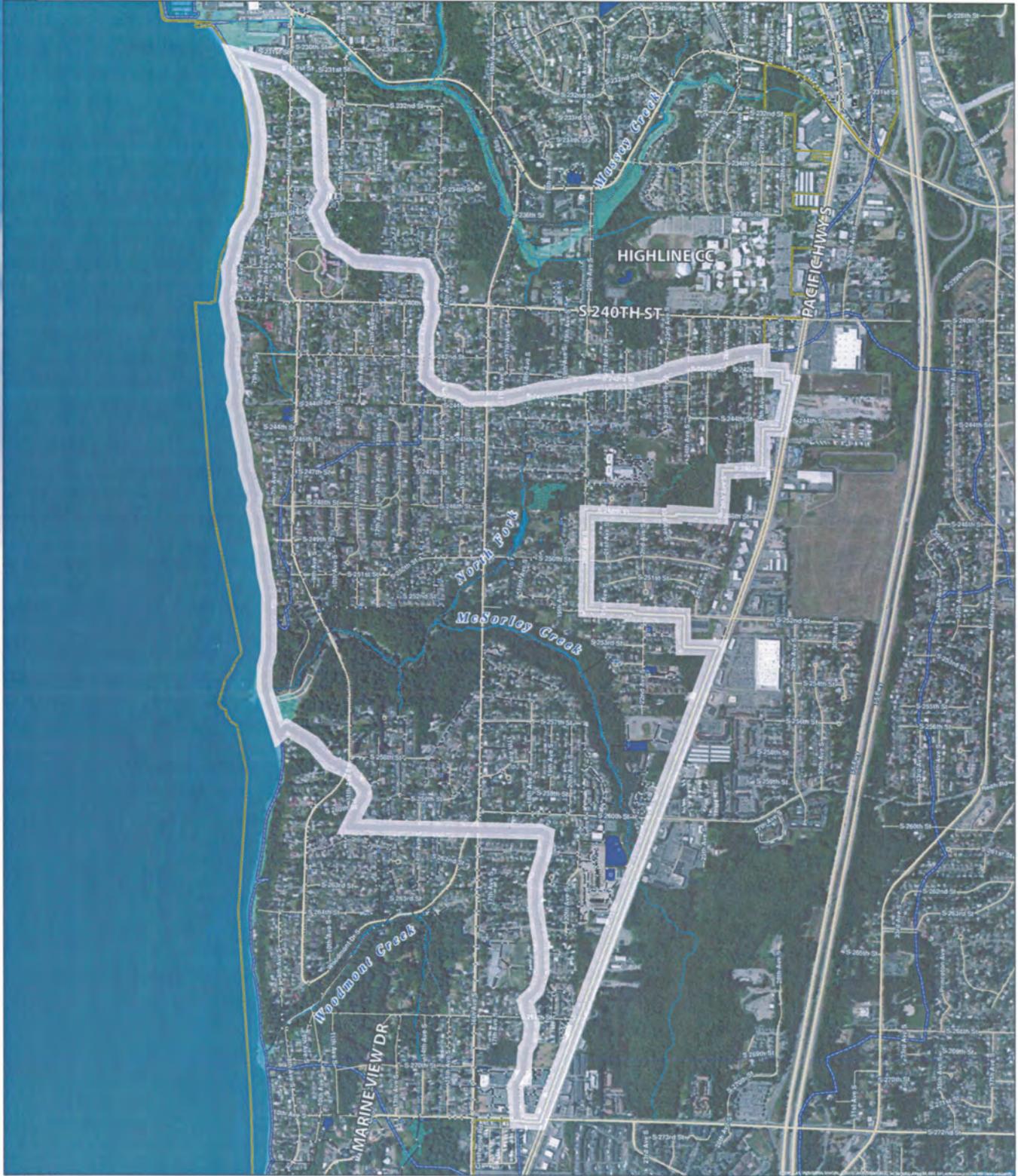


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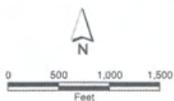


- |                     |                          |                                 |              |
|---------------------|--------------------------|---------------------------------|--------------|
| Streams             | Storm Discharge Point    | Storm Open Drain Lines          | Interstate   |
| Surface Water       | Storm Control Structures | Storm Conveyance                | Arterial     |
| Wetlands            | Storm Catchments         | Storm Detention Area / Easement | Collector    |
| 100 Year Flood Area | Storm WQ Facility        | City Limits                     | Focus Area B |
| Drainage Basins     |                          |                                 |              |

City of Des Moines  
Area B

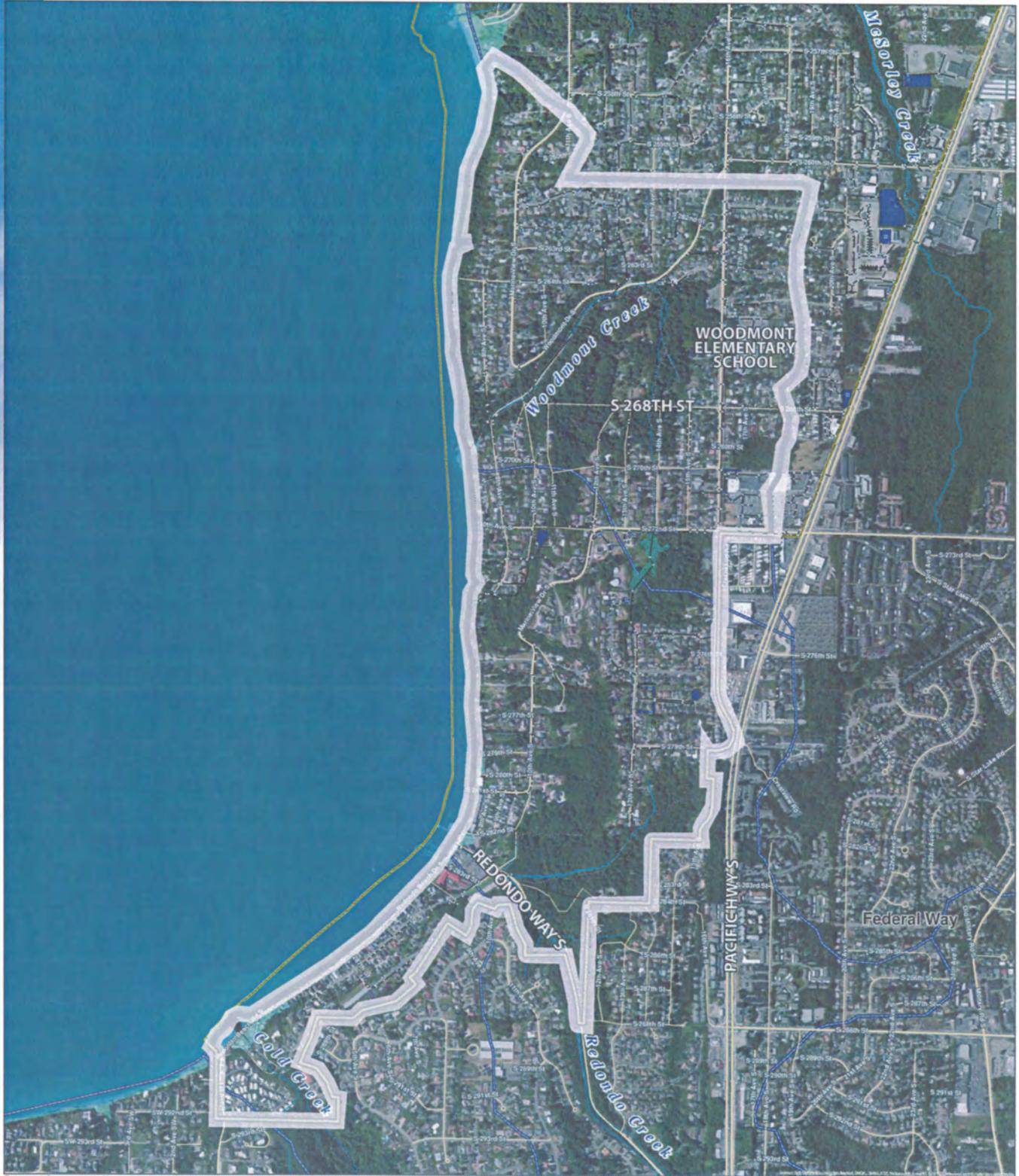


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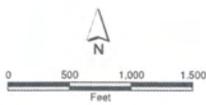


- |                     |                          |                                 |              |
|---------------------|--------------------------|---------------------------------|--------------|
| Streams             | Storm Discharge Point    | Storm Open Drain Lines          | Interstate   |
| Surface Water       | Storm Control Structures | Storm Conveyance                | Arterial     |
| Wetlands            | Storm Catchments         | Storm Detention Area / Easement | Collector    |
| 100 Year Flood Area | Storm WQ Facility        | City Limits                     | Focus Area C |
| Drainage Basins     |                          |                                 |              |

City of Des Moines  
Area C



Parametrix



- |                     |                            |                                 |              |
|---------------------|----------------------------|---------------------------------|--------------|
| Streams             | • Storm Discharge Point    | Storm Open Drain Lines          | Interstate   |
| Surface Water       | • Storm Control Structures | Storm Conveyance                | Arterial     |
| Wetlands            | • Storm Catchments         | Storm Detention Area / Easement | Collector    |
| 100 Year Flood Area | • Storm WQ Facility        | City Limits                     | Focus Area D |
| Drainage Basins     |                            |                                 |              |

City of Des Moines  
Area D

**This document will layout the plan for how the City will spend your stormwater utility fees for the next 10 years.**

**Goals:**

**Improve and Maintain Drainage:** Safeguard public safety and prevent flooding and property damage, correct existing problems, and accommodate future building projects.

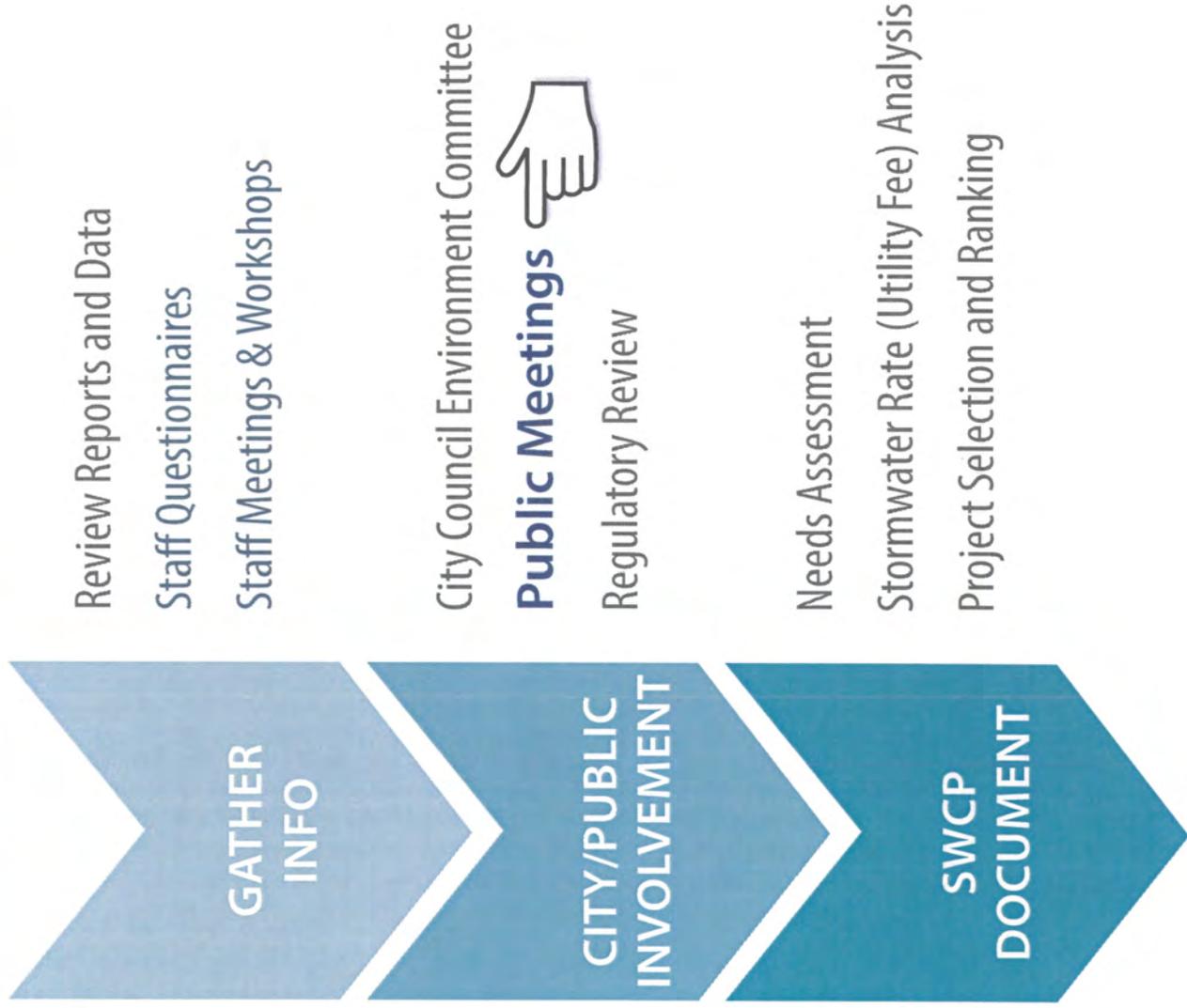
**Keep Rainwater Runoff Clean:** Control and prevent pollutants from going down the storm drains.

**Protect Habitat:** Ensure that Des Moines streams, wetlands, and Puget Sound shorelines are healthy and full of fish.

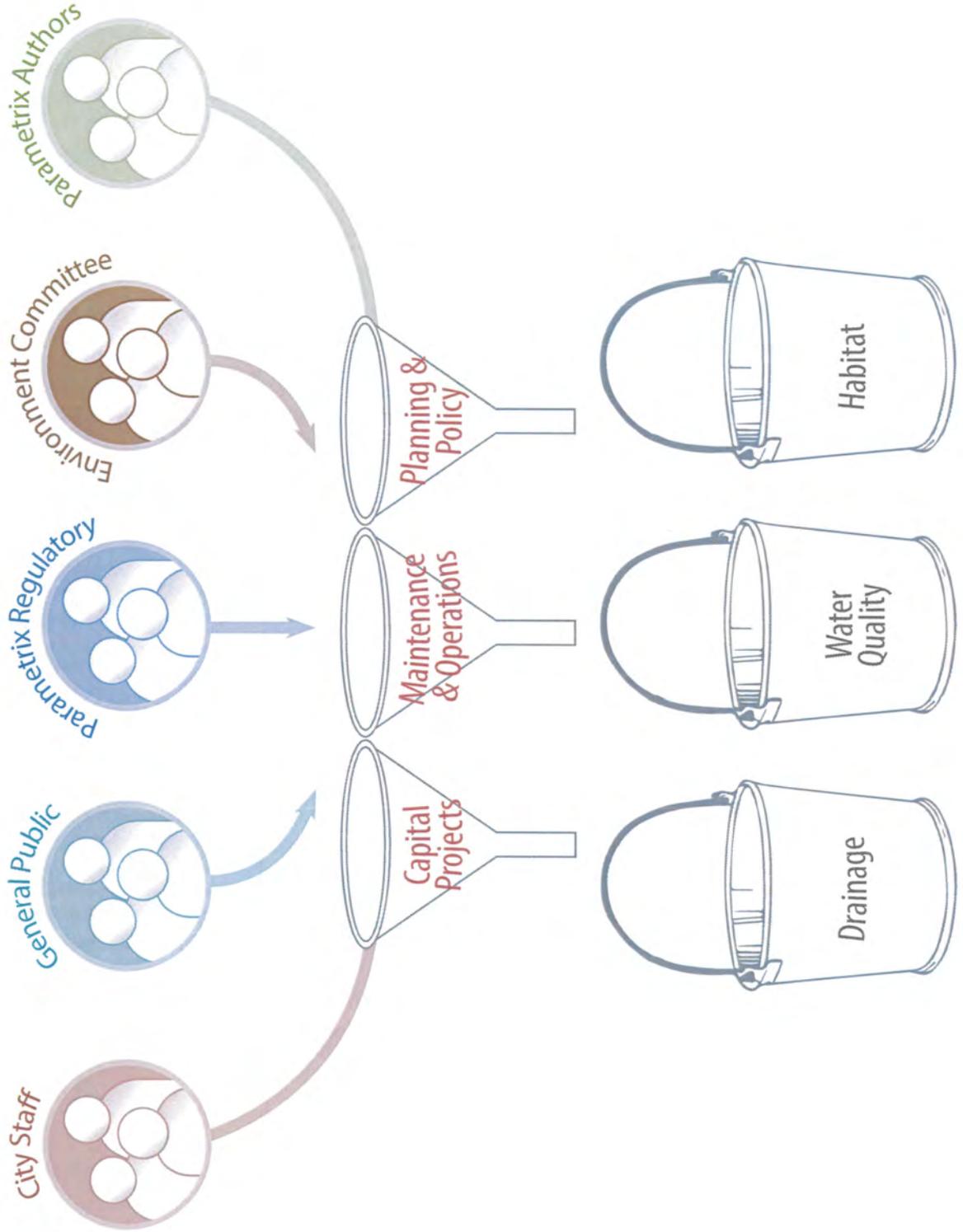
**Proactive, Not Reactive:** By making a budget and plan in advance, the City is able to spend your utility fees in the best manner possible. This includes quick response to emergencies like broken pipes and flooding, saving up funds over time to buy new equipment for crews, and planning ahead to partner with other City departments on big development projects.



# SURFACE WATER COMPREHENSIVE PLAN: DEVELOPMENT PROCESS

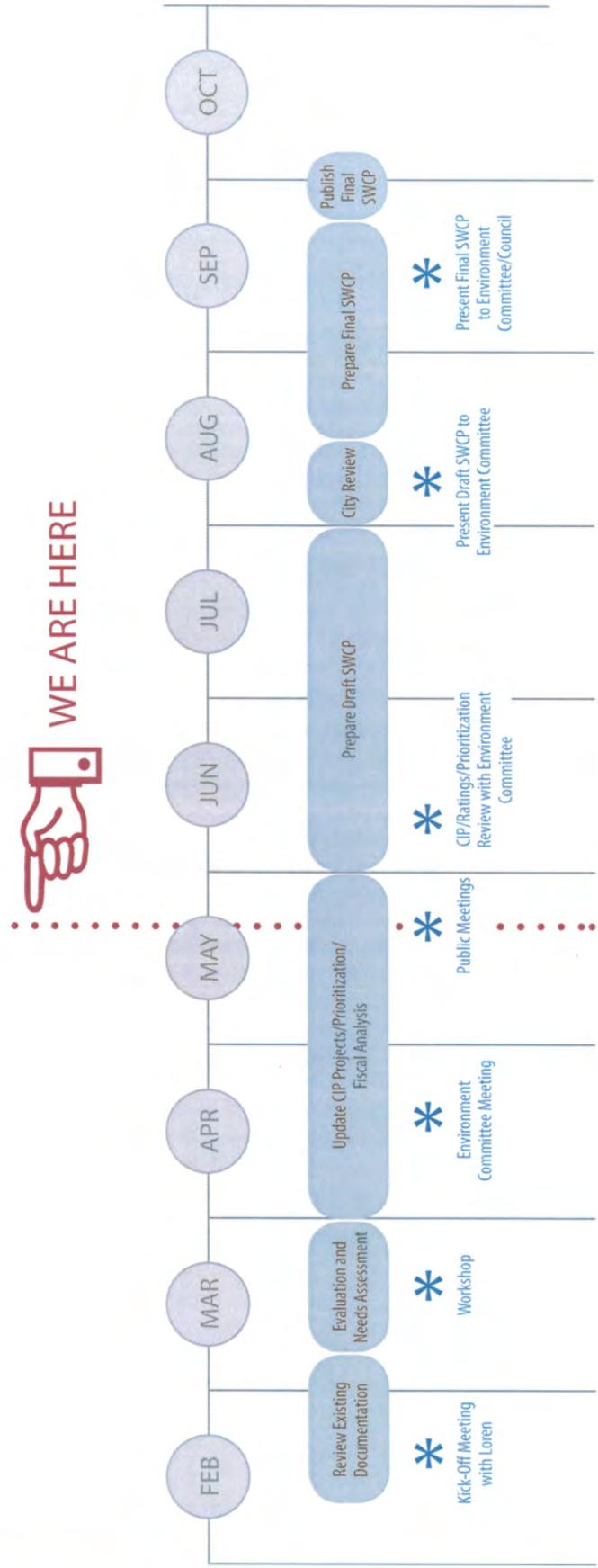


# SURFACE WATER COMPREHENSIVE PLAN: PERSPECTIVES



6

COMMENTS/NEXT STEPS



Public Meetings

**Area A:**  
May 19, 2014, 5:30 – 7:30 pm  
Founders Lodge at the Beach Park  
22030 Cliff Ave S, Bldg A, Des Moines

**Area B:**  
May 20, 2014, 5:30 – 7:30 pm  
Founders Lodge at the Beach Park  
22030 Cliff Ave S, Bldg A, Des Moines

**Area C:**  
May 29, 2014, 5:30 – 7:30 pm  
Woodmont Elementary School  
26454 16th Ave S, Des Moines

**Area D:**  
May 30, 2014, 5:30 – 7:30 pm  
Woodmont Elementary School  
26454 16th Ave S, Des Moines



# YOU'RE INVITED:

## RAINWATER AND YOUR UTILITY BILL

The City of Des Moines recently held public meetings in May. We invited you to attend one of four public meetings to provide input on what was most important to you for future stormwater spending.

### WE HAVE COMPILED THE RESULTS

from the meetings and have updated our list of projects and programs based on your input and input we received from City staff and the Environment Committee.

**WE WOULD LIKE TO SHARE** these results with you and again ask for your input so that we can continue to develop a solid plan for the future management of stormwater in Des Moines.

### PUBLIC MEETING:

**September 17, 2014, 5:30 – 7:30 pm**  
Des Moines Activity Center  
2045 216th S, Des Moines



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## UPDATE FROM THE PUBLIC MEETINGS

Location		Comments									
Area	Attendees	Reduce Flooding/ Flooding Complaint	Replace Ditches	Public Involvement	Maintenance Issue	Funding	Water Quality	Habitat	Geographic	Unrelated	
A	11	2			1		1			1(Sidewalk Request)	
B	12	1	1								
C	15	4				1		2	1	1(Landslide Risks)	
D	18	6		1							
<b>Totals</b>	<b>56</b>	<b>13</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>2</b>	

# PRIORITIZATION CRITERIA

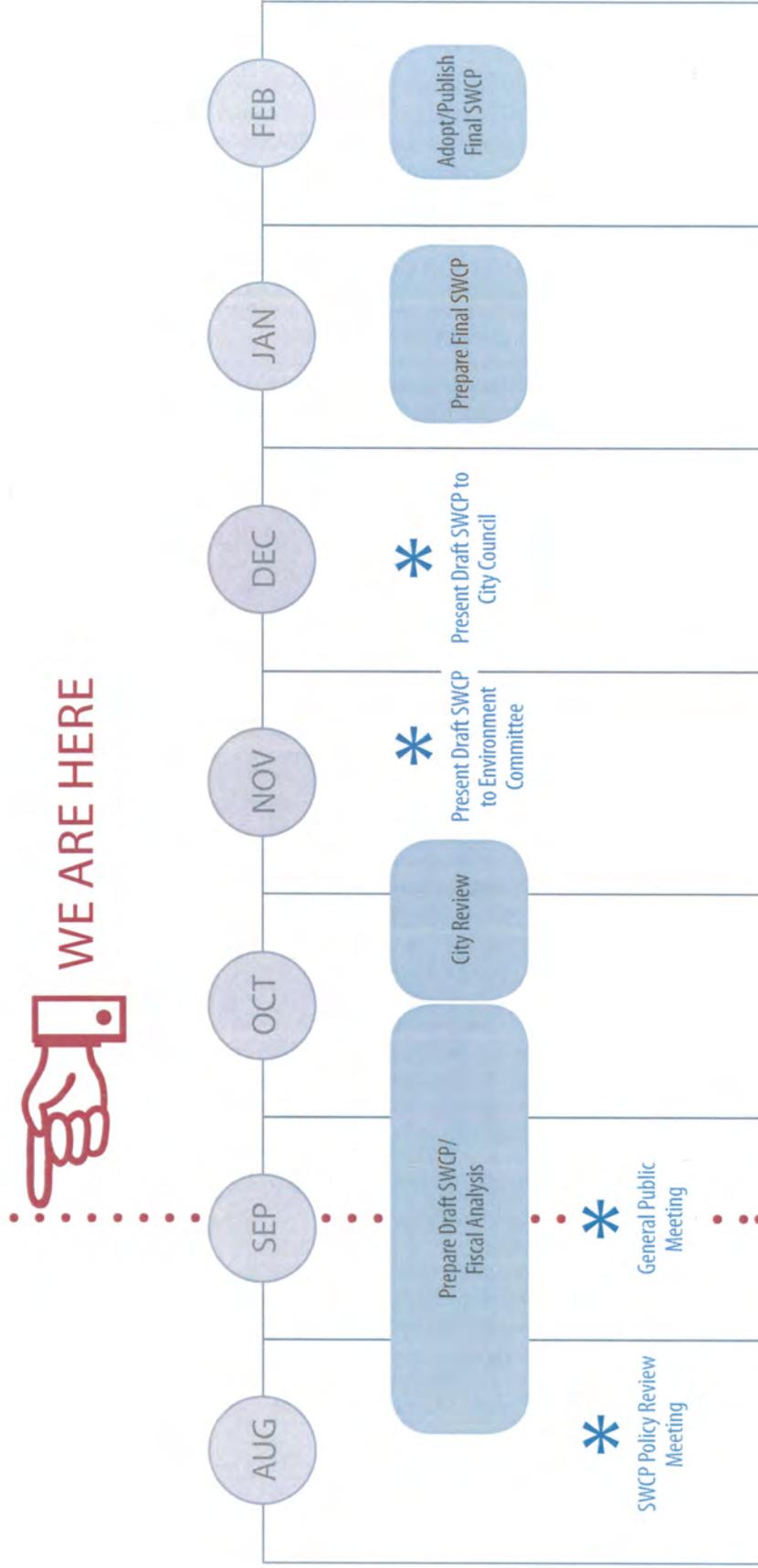
Criteria Rating - wording for workshop and EC Council		Criteria Rating - wording for Public Meetings		Workshop Results	City Council EC Results	Public Meeting Aggregate Score	Parametric Regulatory Review Results	Compiled Results
Criteria Rating - wording for workshop and EC Council	Criteria Rating - wording for Public Meetings	Group Rating	Group Rating	Group Rating	Group Rating	Group Rating	PMX Rating	Group Rating
Funding: spend money where it will result in the largest overall impact	Funding: ...how willing would you be to pay a higher stormwater utility fee if it meant faster and more complete improvements to drainage, water quality, and habitat (streams & wetlands)?	H	H	H (7); M (5); L (10)	H	H (7); M (5); L (10)	L	H
Maintenance/Inspection: improve the existing drainage pipe system	Maintenance/Inspection: ...how important is it that the City spend more time and money maintaining the existing drainage system?	H	H	H (10); M (7)	H	H (10); M (7)	H	H
CMP Pipe Replacement	CMP Pipe Replacement: ...the City inherited thousands of feet of corrugated metal pipe that was installed by King County. This pipe is nearing the end of its useable life and many systems may fail in the near future. How important is it that the City spend more time and money to replace this failing pipe?	M/H	H	H (10); M (4); L (3)	H	H (10); M (4); L (3)	LM	H
Ditch Removal	Ditch Replacement: ...how important is it that the City spend more time and money to replace roadside ditches that may pose safety risks by either installing pipe and filling them in or by constructing shallower swales to convey runoff?	M	M	H (2); M (9); L (2)	M	H (2); M (9); L (2)	M/H	M
Preventing Pollutants: Removing pollutants from rainwater runoff	Water Quality: ...how important is it that the City spend more time and money on removing pollutants from rainwater runoff before it is discharged into our streams and Puget Sound?	M	M/H	H (3); M (5); L (2)	M/H	H (3); M (5); L (2)	H	H
Geology: Addressing landslide/ground settling/seepage/erosion problems	Geology: ...how important is it that the City spend more time and money to reduce the risk of landslides, ground settling, seepage, or erosion problems?	L/H	M	H (2); M (2)	M	H (2); M (2)	LM	M
Reduce/Eliminate Flooding	Reduce/Eliminate Flooding: ...how important is it that the City spend more time and money to reduce or eliminate flooding?	L/H	M	H (2); M (3); L (2)	M	H (2); M (3); L (2)	M	M
Environmental: Stream enhancements/wildlife habitat/fish access improvements	Environmental: ...how important is it that the City spend more time and money to provide new wildlife habitat, habitat improvements, fish access to stream reaches, or stream enhancements?	L	M	H (6); M (2); L (10)	M	H (6); M (2); L (10)	LM	L
LID: Use of more "natural-based" approaches to rainwater management (green stormwater infrastructure/low impact development)	LID: ...how important is it that the City focus on using a more "natural-based" approach to rainwater management (green stormwater infrastructure/low impact development)?	L	M	H (6); M (8); L (6)	M	H (6); M (8); L (6)	H	M
Geographic: Improvements spread throughout the City/at least one project in each neighborhood and/or stream area	Geographic: ...how important is it to you that the City spend time and money to work on surface water issues evenly in each neighborhood/drainage area?	L	L	H (3); M (10); L (3)	L	H (3); M (10); L (3)	L	L
Other Criteria (Added During Workshop): Safety	Safety: ...how important is it that the City spend more time and money to improve pedestrian or traffic safety to a level beyond what it is now?	H	H	H (9); M (6); L (5)	H	H (9); M (6); L (5)	L	H
Other Criteria (Added During Workshop): Public Education / Public Involvement	Public Education / Public Involvement: ...how important is it that the City spend more time and money to inform the Des Moines citizens about surface water management? (Does the City need to increase public awareness? Do citizens want to get involved?)	M/H	M/H	H (3); M (10); L (4)	M/H	H (3); M (10); L (4)	H	M
Other Criteria (Added During Workshop): Regulatory Requirements	Regulatory Requirements: ...how important is it that the City spend more time and money to satisfy surface water legal requirements (State surface water [NPDES] permit for cities, City ordinances, etc.)?	M	M	H (3); M (6); L (7)	M	H (3); M (6); L (7)	H	M



## SERVICE LEVEL MATRIX

SERVICE LEVEL	PROGRAM ELEMENT			
	Planning & Engineering	Inspections & Maintenance	NPDES	Administration
Description of Expense Activities	Engineering staff salaries, supplies, and specific responsibilities required of the engineering department (stormwater comprehensive plan, annual SWMP update, etc).	Routine system inspections and maintenance (includes NPDES-required): field crew staff salaries, equipment, interfund transfers for repairs, etc.	Implementation of NPDES Permit program: monitoring, permit fees, public outreach, and program-specific administration. - SWMP document updates included under Planning & Engineering - Inspections & Maintenance included under I&M Category	Non-element-specific support: support staff salaries, state taxes, utility taxes, and miscellaneous expenses.
\$14.24	\$3.07 22%	\$5.22 37%	\$1.61 11%	\$0.91 6%
% of Revenue Req.				\$3.43 24%
CURRENT	<ul style="list-style-type: none"> <li>2.80 FTE</li> <li>Design and manage CIP projects</li> <li>Permitting plan review.</li> <li>Respond/resolve drainage public drainage complaints</li> <li>Inspect construction projects; review, revise and adopt local development related codes, rules and standards to incorporate LID principles and BMPs.</li> </ul>	<ul style="list-style-type: none"> <li>5.90 FTE</li> <li>Currently able to provide annual maintenance for certain facilities, 6 mo. for CBs, 2 yrs for maintenance that requires capital construction &lt; \$25K;</li> <li>annual inspection of all treatment and flow control facilities; bi-annual inspection for certain vaults, manholes, and takes under Reduced Frequency Inspection</li> </ul>	<ul style="list-style-type: none"> <li>0.5 FTE Engineer Aide and 0.2 FTE SWM Utility Manager (paid by NDPES Permit Program)</li> <li>Program includes:                             <ol style="list-style-type: none"> <li>Public Education</li> <li>Public Involvement</li> <li>Illicity Discharge and Detection</li> <li>Control Runoff</li> <li>O&amp;M Tracking</li> <li>6 &amp; 7: (These permit elements N/A)</li> <li>Monitoring</li> <li>Annual Reporting</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>The City performs a minimal amount of capital construction, funded by rates and fund balance.</li> <li>2014 - 2019 has 9 projects being funded by SWM funds</li> </ul>
Gaps in Existing Program (Potential Considerations in Italics)		<ul style="list-style-type: none"> <li>May need to add 1 FTE or consider contracting services to increase inspection frequency</li> <li>Implement Electronic Record Keeping</li> <li>CCTV 15% of SD system/annually until complete</li> </ul>	(Full-NPDES program review to be conducted)	<ul style="list-style-type: none"> <li>Increase capital expenditures to build high priority projects with next 10 years</li> <li>Add a "Rainy Day" fund to capital program for unanticipated drainage related issues</li> </ul>
Recommendations	<ul style="list-style-type: none"> <li>Programmatic SEPA for Surface Water CIPs</li> <li>Prepare Project Management Manual or Project Management training for staff to effectively manage additional Surface Water CIPs</li> </ul>			<ul style="list-style-type: none"> <li>Increase capital expenditures to build high priority projects within the next 5 years and medium priority projects within the next 10 years</li> </ul>

## SCHEDULE AND NEXT STEPS



## Appendix B

### Capital Improvement Plan



# 1 Purpose

One goal of the Surface Water Comprehensive Plan (SWCP) is to assess the City's aging stormwater infrastructure and develop a detailed Capital Improvement Plan (CIP) for the City's Surface Water Management program (SWM). The focus of the CIP is to identify and evaluate known problems and develop solutions. A key long-term solution is a plan for repair and replacement of aging stormwater infrastructure. To accompany the list of capital projects, the CIP includes a ranking system to provide a straightforward project prioritization framework specific to the City. This system is used to objectively evaluate projects and provide the City with a universal tool to score and rank projects now and in the future. Finally, the ranked capital project list presents a tiered expenditure approach where three levels of spending provide minimum, moderate, and high levels of service. This framework is used to prioritize the capital projects based on need and schedule them into horizons of 5, 10, 15 and 20 years. This approach captures the most important issues for the City while grounding the CIP financially.

The methodology, results, and recommendations for the developing the CIP and project ranking system are presented in subsequent sections of this appendix. The financial element of the capital expenditures is summarized in Section 3.2 below and a detailed discussion is presented in Section 4.3 of the SWCP.

# 2 Methodology

The CIP consists of two elements: 1) identification of surface water capital projects and 2) a ranking system for the City to objectively compare and prioritize capital projects. The capital projects list and ranking criteria were developed through a process that included data gathering questionnaires for the City staff, a workshop with the City staff, five public meetings for citizen involvement, and two presentations to the City Council Environment

Committee. The consultant facilitated these opportunities for involvement. This section describes the methodology for developing the capital project list and ranking system.

## 2.1 Project Identification

SWM capital projects are projects that are funded by SWM that improve at least one of the following:

- Drainage Infrastructure (i.e. increase pipe diameters to reduce flooding or erosion),
- Water Quality (i.e. stormwater treatment pond, bioswale), or
- Environmental Habitat (i.e. stream enhancement or restoration).

SWM capital projects do not include standard operation and maintenance activities (i.e. dredging ditches, replacing broken catch basin covers, etc.), or small drainage projects, which have construction costs less than \$30,000. Further discussion regarding the capital project list is presented in subsequent sections.

To identify City drainage, water quality, and environmental habitat needs the consultant reviewed existing documents provided by the City. The list of documents is provided in Section 1.4.1 of the SWCP. In addition, the existing stormwater infrastructure was reviewed based primarily on GIS data provided by the City.

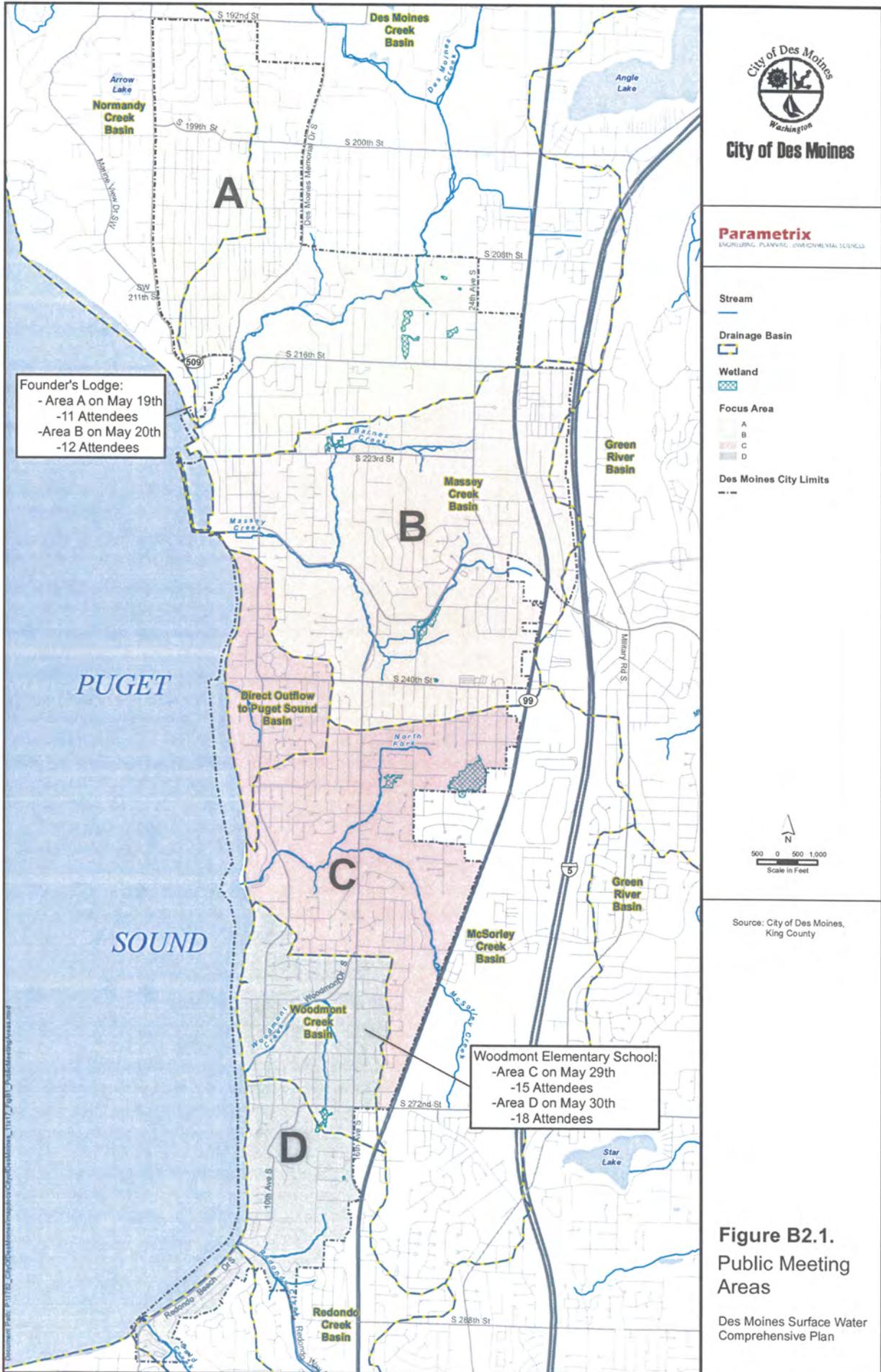
To accompany this data review the consultant solicited input from City staff, the local residents, and elected officials to further identify stormwater infrastructure needs and generate a list of capital projects. Discussion regarding the final capital project list, and estimated project costs is presented in Section 3 below.

### 2.1.1 Staff nominations

City staff have an integral knowledge of the needs of the stormwater infrastructure. City staff members provided input regarding City stormwater needs via completion of two questionnaires and attending one workshop to help identify stormwater projects. Members of the SWM engineering, planning, permitting, and maintenance departments participated in the questionnaires and workshop.

### 2.1.2 Public nominations

Four preliminary public meetings were held to provide an opportunity for residents to be involved in the SWCP. Each meeting was targeted to a focus area of city residents, although all residents were encouraged to attend any of the other three meetings if they had schedule conflicts. Advertisements were mailed to every City residence with a request for attendance and involvement. Focus areas (A, B, C, and D) were established based on drainage basins boundaries and the size of the relative areas (Figure B2.1). Meeting attendees were encouraged to talk with each other about neighborhood drainage issues, and then provide comments and nominate potential stormwater projects.



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A fifth public meeting was held for all residents who attended one of the preliminary four public meetings. The purpose of this meeting was for attendees to review the draft capital project list and provide comments on a project or to nominate additional projects.

### 2.1.3 City Council Review

City Council approves budgets and is interested in where and how the City's only utility, Surface Water Management (SWM), is spending the funds generated by the residents. The Environment Committee was presented with opportunity for input on two occasions; first after the data gathering and workshop with the City staff, and second after the first four public meetings. At both meetings the Environment Committee reviewed the list of potential stormwater projects, and had the opportunity to add projects to the list.

## 2.2 Ranking Criteria

A ranking system was developed for this CIP. The ranking system consists of criteria or elements that are specific to stormwater projects. Each criterion is given a priority to determine which project elements are valued higher or lower in the viewpoint the City staff, local residents, and elected officials. This section discusses how the criteria were established and how the ranking for each criterion was established. Section 3, below, discusses how the ranking criteria are applied to the City's stormwater CIP.

### 2.2.1 Staff Involvement

City staff completed two questionnaires during the data gathering process. Project ranking criteria was introduced in the second questionnaire. The consultant provided an initial list of ten criteria that apply to surface water specific projects and City specific needs. The ten criteria are presented in Figure B2.2. It should be noted that the additional wording provided for the public meetings was verbally explained to the City staff and Environment Committee.

The workshop provided the City staff opportunity to rate each criterion with a high, medium, or low ranking. City staff rated the list of ten criteria as individuals, and then discussed their rankings in small groups. The small groups then presented their criteria ranking to each other as one large group. The consultant facilitated the group discussion and a high, medium, or low ranking was assigned to each criteria. During the large group discussion, staff proposed three additional project ranking criteria: safety, public education and public involvement, and regulatory requirements. These criteria were defined and ranked as part of the large group ranking exercise. Figures B2.2 depicts the progression of the ranking criteria beginning with the first criteria definitions and results from the workshop rankings.

Criteria - description for workshop and EC Council	Criteria - description for Public Meetings	Workshop Results	City Council EC Results	Public Meeting Aggregate Score	Parametrix Regulatory Review Results	Complied Results
Funding: spend money where it will result in the largest overall impact	Funding: ... how willing would you be to pay a higher stormwater utility fee if it meant faster and more complete improvements to drainage, water quality, and habitat (streams & wetlands)?	H	H	H (7); M (5); L (10)	L	H
Maintenance/Inspection: improve the existing drainage pipe system	Maintenance/Inspection: ...how important is it that the City spend more time and money maintaining the existing drainage system?	H	H	H (16); M (7)	H	H
CMP Pipe Replacement	CMP Pipe Replacement: ... the City inherited thousands of feet of corrugated metal pipe that was installed by King County. This pipe is nearing the end of its useable life and many systems may fail in the near future. How important is it that the City spend more time and money to replace this failing pipe?	M/H	H	H (18); M (4); L (3)	LM	H
Ditch Removal	Ditch Replacement: ...how important is it that the City spend more time and money to replace roadside ditches that may pose safety risks by either installing pipe and filling them in or by constructing shallower swales to convey runoff?	M	M	H (12); M (9); L (2)	MH	M
Preventing Pollutants: Removing pollutants from rainwater runoff	Water Quality: ...how important is it that the City spend more time and money on removing pollutants from rainwater runoff before it is discharged into our streams and Puget Sound?	M	MH	H (13); M (5); L (2)	H	H
Geology: Addressing landslide/ground settling/seepage/erosion problems	Geology: ...how important is it that the City spend more time and money to reduce the risk of landslides, ground settling, seepage, or erosion problems?	L/M	M	H (24); M (2)	LM	M
Reduce/Eliminate Flooding	Reduce/Eliminate Flooding: ... how important is it that the City spend more time and money to reduce or eliminate flooding?	L/M	M	H (22); M (3); L (2)	M	M
Environmental: Stream enhancements/wildlife habitat/fish access improvements	Environmental: ...how important is it that the City spend more time and money to provide new wildlife habitat, habitat improvements, fish access to stream reaches, or stream enhancements?	L	M	H (6); M (2); L (10)	LM	L
LID: Use of more "natural-based" approaches to rainwater management (green stormwater infrastructure/low impact development)	LID: ...how important is it that the City focus on using a more "natural-based" approach to rainwater management (green stormwater infrastructure/low impact development)?	L	M	H (6); M (8); L (6)	H	M
Geographic: Improvements spread throughout the City/at least one project in each neighborhood and/or stream area	Geographic: ...how important is it to you that the City spend time and money to work on surface water issues evenly in each neighborhood/drainage area?	L	L	H (3); M (10); L (3)	L	L
Other Criteria (Added During Workshop): Safety	Safety: ...how important is it that the City spend more time and money to improve pedestrian or traffic safety to a level beyond what it is now?	H	H	H (9); M (6); L (5)	L	H
Other Criteria (Added During Workshop): Public Education / Public Involvement	Public Education / Public Involvement: ...how important is it that the City spend more time and money to inform the Des Moines citizens about surface water management? (Does the City need to increase public awareness? Do citizens want to get involved?)	M/H	M/H	H (3); M (10); L (4)	H	M
Other Criteria (Added During Workshop): Regulatory Requirements	Regulatory Requirements: ...how important is it that the City spend more time and money to satisfy surface water legal requirements (State surface water [NPDES] permit for cities, City ordinances, etc.)?	M	M	H (3); M (6); L (7)	H	M



**Figure B2.2**  
Criteria Ranking Summary

Des Moines Surface Water  
Comprehensive Plan

## 2.2.2 Public Involvement

At the first four public meetings, each attendee was requested to rank each criteria as high, medium, or low. Through discussion with meeting attendees the definition of the each ranking criteria evolved to include questions that people would answer in order to determine which rank to give to a criterion. Most meeting attendees elected not to participate in ranking the criteria, and those that did participate did not always rate all thirteen criteria. Many participants elected to only identify criteria that were, from their point of view, high-ranked, and criteria that were considered less than high-ranked were not evaluated. After the public meetings, the criteria ranking tallies were compiled and the aggregate ranking was evaluated and assigned for the final public meeting.

After the projects were identified and criteria ranking was completed, the projects were scored and ranked, and the results were presented at a fifth and final public meeting. Participants of the four previous meetings were invited to review and comment on the compiled results. Several adjustments to the project scoring resulted from this meeting. Discussion regarding project scoring is provided in Section 3 below. Figure B2.2 depicts the combined workshop results and modified criteria wording.

## 2.2.3 City Council Involvement

As previously mentioned, the Environment Committee was presented with opportunity for input on two occasions; first after the data gathering and workshop with the City staff, and second after the first four public meetings and consultant review of the ranking criteria from a regulatory perspective. At the first Environment Committee meeting, committee members rated each criterion individually, and then discussed each ranking criteria as a group before finalizing an agreed rank for each criteria. At the second meeting, the Environment Committee was presented with the compiled public meeting results and comments and with the results from the regulatory perspective review. As a result of the meeting, the Environment Committee elected to change the rank of the water quality criteria from Medium to Medium/High. This decision was made because it better reflects the public opinion and the regulatory review regarding water quality. Figure B2.2 depicts the City Council Environment Committee results.

## 2.2.4 Regulatory Review

The consultant reviewed the project ranking criteria from a regulatory perspective. The purpose of this was to identify which criteria may increase or decrease the importance of a project depending on how it would impact the City's compliance with the National Pollutant Discharge Elimination System (NPDES) Phase II Municipal Stormwater Permit. Five criteria stood out as having a significantly different ranking as compared to the perspectives of the other groups. Those criteria were funding, CMP pipe replacement, low impact development (LID), safety, and regulatory requirements.

Regarding funding, from the regulatory perspective it is a low priority to determine where the funds come from if the project is necessary for the proper function of stormwater infrastructure or the protection of water quality or habitat.

Regarding CMP pipe replacement, the independent regulatory review ranked this criterion low/medium while the public, City Staff, and Environment Committee ranked this criterion high or medium/high. The NPDES Phase II Municipal Stormwater Permit regulations require the City to inspect, inventory, and keep records of the storm drain systems, but these regulations do not require City's to replace drainage structures prior to failure. The City of Des Moines Municipal Code requires that stormwater facilities be maintained so that they operate as intended, and that systematic, routine preventative maintenance is preferred (DMMC 11.20.080(2)(a)). The City prefers to maintain a level of service that replaces drainage pipes and drainage structures prior to failure. Therefore, this criterion is ranked high with intent of meeting the City Code and indicating that the City is intent of providing a pro-active level of service with respect to the City's stormwater infrastructure.

Regarding LID, it is not a project category or criteria of itself, but rather an approach to be applied to projects as applicable. However, the Washington Department of Ecology 2012 Stormwater Management Manual for Western Washington (2012 SWMMWW) requires LID to be considered as the primary design approach unless it can be demonstrated that LID is not feasible for a project. Therefore, although the City has not yet adopted the 2012 SWMMWW or an equivalent manual, LID is a design approach that City projects will need to comply with when in the future.

Regarding safety, it is not a project category or criteria of itself, but instead is a byproduct of a project that reduces or eliminates flooding. Therefore, safety is considered a low regulatory priority.

Regarding regulatory requirements, this is not a project category or criteria of itself, but is required to satisfy surface water legal requirements of the NPDES Phase II Municipal Stormwater Permit. Thus, regulatory requirements are considered high priority.

Figure B2.2 depicts the results from the consultant's review using a regulatory perspective.

# 3 Results

## 3.1 Ranking Criteria

Upon completion of the criteria ranking from the perspectives described in the previous section the consultant compiled the results to provide the final criteria ranking (see Figure B2.2).

With the ranks established, the consultant prepared a convention to score the criterion. Although ranks of Low/Medium and Medium/High were given to criteria, it was determined that only high, medium and low would be established as ranking criteria levels. To create separation of values and emphasize the difference between the three levels, high was scored at six points, medium was scored at four points, and low was scored at two points. Once the initial convention was established, projects were scored and ordered from highest to lowest total points. A range of points was then selected to identify high-, medium-, and low-ranked projects. These results were presented to the elected officials at the second Environment Committee meeting, and separately to the local residents at the fifth public meeting. Discussion and feedback allowed the consultant to further refine the scoring of the thirteen criteria. It became apparent that criteria, such as preventing pollutants, geology, CMP replacement, or Public Involvement, had opportunity for projects to receive partial credit. Therefore, a revised scoring key was created to include multipliers of 0, 1 or 2 depending on criteria application. Figure B3.1 presents the final score card which depicts the scores of the entire capital project list. Figure B3.2 presents the score key which was developed as reference and provide basis of scoring decision making when evaluating a capital project.

The revised scoring key does not change the importance of individual criteria, but rather provides clarity in the definition of each criterion and how it should be applied to a project. Generally speaking, a 0 multiplier is used for criteria that do not apply to a project, a 1 multiplier is used when there are project elements that have limited or peripheral application, and a 2 multiplier is used when criteria fully apply.

For each criterion, the applicable multipliers are as follows:

### **Funding:**

- 0 Projects that have no funding identified.
- 1 Projects that may be eligible for grants or funds outside of the City SWM funds.
- 2 Projects that have funding secured, including City SWM funds or grants.

**Maintenance and Inspection:**

- 0 Projects that would increase maintenance activity. This applies to projects that install new stormwater pipe and catch basins to City streets that not currently do not have stormwater infrastructure, therefore installing new infrastructure would add to the maintenance required on the system.
- 1 Projects that have no net change to maintenance. Examples of this are projects where an existing storm system of pipes and catch basins is being replaced in kind, or if an existing ditch which requires maintenance is being replaced by storm drain pipes and catch basins that will need to be maintained.
- 2 Projects that reduce maintenance activity. This type of project is most valuable to the City because it would reduce annual maintenance activity and cost, therefore it would receive the highest point total for this criterion. No listed projects reduce maintenance.

**Safety:**

- 0 Projects that do not include safety improvements.
- 1 Multiplier not used. This criterion does not have a partial element.
- 2 Projects that include safety improvements.

**CMP Pipe Replacement:**

- 0 Projects that do install or replace storm pipe.
- 1 Projects that add new storm drain pipe where existing enclosed drainage does not exist. The addition of this mid-range definition stemmed from the fact that projects that were resolving drainage issues by installing a formal drainage system were not receiving points from any project criteria, except for Reduce or Eliminate Flooding when applicable. These projects are important, but no criteria existed to rate them, so rather than adding a new criterion, this definition was created within the CMP Pipe Replacement criterion.
- 2 Projects that replace existing storm pipe.

**Public Education / Public Involvement**

- 0 Projects that do not include public education or public involvement element
- 1 Projects provide public education opportunities, such as signage that would inform residents of the important, function, or improvement of the drainage project.
- 2 Projects that were created as a result of public comments.

Capital Project	Project Title	Funding		Performance/Impedance		Safety		Traffic Impedance		Public Education/Public Involvement		Ditch Removal		Floodplain		Regulatory Requirements		Geology		Reduce/Eliminate Flooding		Environmental		Low Impact Development (LID)		Geographic		TOTAL PROJECT SCORE	
		M	V	M	V	M	V	M	V	M	V	M	V	M	V	M	V	M	V	M	V	M	V	M	V	M	V		
<b>PUBLIC MEETING FOCUS AREA A</b>																													
6	1595th North Hill Trunkline Upgrade	0	12	0	0	0	0	0	2	12	0	0	0	0	0	0	0	0	0	0	2	8	1	2	0	0	0	0	26
7	1st Avenue Pond Expansion	2	12	0	0	0	0	0	2	12	0	0	0	0	0	0	0	0	0	0	2	8	1	2	0	0	0	0	34
8	North Hill NE and 137th Street Trunkline Upgrade	0	1	6	0	0	0	0	2	12	0	0	0	0	0	0	0	0	0	0	2	8	1	2	0	0	0	0	26
10	1st Place South (137th to 152nd)	0	0	0	0	0	0	0	2	12	0	0	0	0	0	0	0	0	0	0	2	8	0	0	0	0	0	0	14
12	1st Place South (201st to 204th) Pipe Upgrade	0	0	0	0	0	0	0	2	12	0	0	0	0	0	0	0	0	0	0	2	8	0	0	0	0	0	0	20
13	3rd Avenue (206th to 207th) Pipe Project	0	0	0	0	0	0	0	2	12	0	0	0	0	0	0	0	0	0	0	2	8	0	0	0	0	0	0	10
14	1st Place South (206th to 210th) Pipe Project	0	1	6	0	0	0	0	1	6	2	8	2	8	0	0	0	0	0	0	2	8	0	0	0	0	0	0	36
15	3rd Avenue South (213th to 218th) Pipe Project	0	1	6	0	0	0	0	1	6	2	8	2	8	0	0	0	0	0	0	2	8	0	0	0	0	0	0	30
16	5th Avenue South (213th to 218th) Pipe Project	0	1	6	0	0	0	0	1	6	2	8	2	8	0	0	0	0	0	0	2	8	0	0	0	0	0	0	68
17	216th Place/Maine View Drive Pipe Upgrade	1	6	1	6	2	12	2	12	2	8	2	8	0	0	0	0	0	0	2	8	2	8	0	0	0	0	54	
18	Des Moines Memorial Drive - S. 200th to S. 212th Pipe Project	0	1	6	0	0	0	0	1	6	2	8	2	8	0	0	0	0	0	2	8	2	8	0	0	0	0	48	
19	14th Avenue/15th Avenue N/O 215th Place Pipe Project	0	0	0	0	0	0	0	1	6	0	0	0	0	0	0	0	0	0	2	8	2	8	0	0	0	0	14	
20	222nd/223rd 8th Avenue to 11th Avenue Pipe Project	0	0	0	0	0	0	0	1	6	0	0	0	0	0	0	0	0	0	2	8	2	8	0	0	0	0	18	
22	220th Street (15th Ave to S.J.U. Park) Pipe Replacement Project	0	1	6	0	0	0	0	2	12	0	0	0	0	0	0	0	0	0	2	8	2	8	0	0	0	0	22	
38	5th Avenue (202nd to 206th) Pipe Project	0	1	6	0	0	0	0	1	6	2	8	1	4	0	0	0	0	0	2	8	2	8	0	0	0	0	32	
<b>PUBLIC MEETING FOCUS AREA B</b>																													
3	Lower Massey Creek Channel Modifications	2	12	1	6	2	12	0	0	0	2	8	0	0	0	0	0	0	0	2	8	2	4	0	0	0	0	0	64
4	Barnes Creek/Kent Des Moines Road Culvert Replacement	2	12	1	6	2	12	0	0	0	2	8	0	0	0	0	0	0	0	2	8	2	4	0	0	0	0	58	
5	24th Avenue Pipeline Replacement	2	12	1	6	0	0	0	2	12	2	8	0	0	0	0	0	0	0	2	8	2	4	0	0	0	0	46	
21	229th Street (13th Avenue to 19th Avenue) Pipe Project	0	0	0	0	0	0	0	1	6	0	0	1	4	0	0	0	0	0	0	2	8	0	0	0	0	0	0	16
23	24th Avenue (223rd to 224th) Pipe Upgrade	0	0	0	0	0	0	0	2	12	2	8	2	8	0	0	0	0	0	0	2	8	0	0	0	0	0	0	42
24	16th Avenue (224th to 226th) Pipe Project	0	0	0	0	0	0	0	1	6	0	0	0	0	0	0	0	0	0	0	2	8	0	0	0	0	0	0	14
25A	16th Avenue (224th to 226th) Pipe Project	0	1	6	0	0	0	0	1	6	2	8	1	4	0	0	0	0	0	2	8	2	8	0	0	0	0	0	32
25B	16th Avenue (226th to 228th) Pipe Project	0	1	6	0	0	0	0	1	6	2	8	1	4	0	0	0	0	0	2	8	2	8	0	0	0	0	0	46
26	250th Street (13th to 14th) Pipe Project	0	0	0	0	0	0	0	1	6	2	8	1	4	0	0	0	0	0	2	8	2	8	0	0	0	0	0	46
28	250th Street (13th to 15th Ave) Pipe Project	0	0	0	0	0	0	0	1	6	2	8	1	4	0	0	0	0	0	2	8	2	8	0	0	0	0	0	16
29	250th Street (15th to 16th Ave) Pipe Project	0	1	6	0	0	0	0	1	6	2	8	1	4	0	0	0	0	0	2	8	2	8	0	0	0	0	0	16
<b>PUBLIC MEETING FOCUS AREA C</b>																													
11	Sawater Highlands Tract A pipe replacement	0	1	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4	0	1	2	0	0	0	0	0	24
27	242nd Street (M/O to 11th Place) Pipe Project	0	1	6	0	0	0	0	1	6	2	8	1	4	0	0	0	0	0	2	8	2	4	0	0	0	0	0	24
30	North Fork McSorley Creek Diversion Project	2	12	1	6	2	12	0	0	0	2	8	0	0	0	0	0	0	0	2	8	1	2	0	0	0	0	0	60
31	20th Avenue/243rd Street Pipe Upgrade	0	0	0	0	0	0	0	2	12	2	8	0	0	0	0	0	0	0	0	2	8	0	0	0	0	0	0	30
32	242nd Street (26th Ave to 26th Pl) Pipe Project	0	1	6	0	0	0	0	2	12	2	8	0	0	0	0	0	0	0	0	2	8	0	0	0	0	0	0	26
33	252nd Street/5th Avenue Pipe Project	0	0	0	0	0	0	0	1	6	2	8	0	0	0	0	0	0	0	0	2	8	0	0	0	0	0	0	22
34	258th Street (13th Pl to 16th Ave) Pipe Project	0	1	6	0	0	0	0	1	6	2	8	2	8	0	0	0	0	0	0	2	8	0	0	0	0	0	0	42
35	22nd Avenue Outfall Project	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	8	0	0	0	0	0	0	28
39	6th Avenue/230th St. Pipe Replacement	1	6	1	6	2	12	2	12	2	8	2	8	0	0	0	0	0	0	1	4	2	8	0	0	0	0	0	56
<b>PUBLIC MEETING FOCUS AREA D</b>																													
36	14th Avenue (208th to 272nd) Pipe Upgrade	1	6	1	6	0	0	0	1	6	2	8	1	4	0	0	0	0	0	2	8	2	4	0	0	0	0	0	56
37	6th Place/287th Street Pipe Replacement Project	0	0	0	0	0	0	0	2	12	2	8	0	0	0	0	0	0	0	2	8	2	4	0	0	0	0	0	40
40	8th Avenue (264th to 265th) Pipe Project	1	6	0	0	0	0	0	1	6	2	8	0	0	0	0	0	0	0	2	8	2	8	0	0	0	0	0	48
41	12th/13th Avenue (270th to 272nd Street)	0	0	0	0	0	0	0	1	6	2	8	0	0	0	0	0	0	0	0	2	8	0	0	0	0	0	0	22
CITYWIDE		0	1	6	2	12	2	12	2	12	0	0	0	0	0	0	0	0	0	1	4	0	0	0	0	0	0	0	34

Figure B3.1  
Capital Project Score Card

Des Moines Surface Water  
Comprehensive Plan

Total Possible Points: 116



1000 East 17th Avenue, Des Moines, IA 50319



Ranking Criteria	Multiplier	Multiplier Description
Funding	0	= No outside funding identified
	1	= Grant funding may be available
	2	= Grant funding secured, or City funds already allotted for capital project
Maintenance/ Inspection Existing Pipe System	0	= Increase maintenance activity
	1	= No net change in maintenance activity
	2	= Reduce maintenance activity
Safety	0	= No apparent safety improvement
	1	= Score not used
	2	= Safety improvement
CMP Pipe Replacement	0	= No pipe replacement
	1	= Add new pipe where existing enclosed conveyance does not exist
	2	= Replaces existing pipe
Public Education / Public Involvement	0	= No public education/involvement element
	1	= Provides public education (e.g. signage)
	2	= Result of public input
Ditch Removal	0	= Not ditch project
	1	= Ditch removal, result is no improvement to water quality
	2	= Ditch removal, result is water quality improvement
Preventing Pollutants	0	= No change to water quality
	1	= project results in a water quality improvement
	2	= Targeted water quality project
Regulatory Requirements	0	= No regulatory requirement element
	1	= Results achieved in NPDES permit (project would be listed in Annual Report)
	2	= Meets requirement not currently met
Geology	0	= No effect to geology
	1	= Score not used
	2	= Addresses geologic hazards
Reduce / Eliminate Flooding	0	= No flood control element
	1	= Score not used
	2	= Addresses flooding problem
Environmental	0	= No change to environmentally sensitive areas
	1	= Environmental benefit
	2	= Environmental specific project
Low Impact Development (LID)	0	= No LID element
	1	= Has LID components
	2	= Project has LID focus
Geographic	0	= Does not meet the geographic rule
	1	= Score not used
	2	= Meets the geographic standard

Color	Rank	Rank Weight
	High	6
	Medium	4
	Low	2

**Figure B3.2**  
Scoring Key

Des Moines Surface Water  
Comprehensive Plan

### **Ditch Removal**

- 0 Projects that do not involve ditch removal.
- 1 Projects that remove a ditch and the removal creates a negative impact to water quality because the ditch was removing pollutants by slowing down runoff rates and increasing sediment deposition in the ditch.
- 2 Projects that remove a ditch and the ditch removal has either a positive impact or no impact on water quality.

### **Preventing Pollutants**

- 0 Projects that do not improve water quality.
- 1 Projects that provide water quality as an incidental result of the project, but the project does not have a water quality focus. This would apply to a project that may remove a ditch because of the steep slopes that cause erosion and sediment load problems in the receiving water. The project may not install a water quality treatment facility, but it does provide water quality by reducing erosion and sedimentation at the receiving water.
- 2 Projects that are water quality specific projects such as installing or expanding a water quality treatment facility.

### **Regulatory Requirements**

- 0 Projects that have no relevance to regulatory requirements.
- 1 Projects that would be mentioned in the Annual Report for the City's Surface Water Management Program, but do not result in achieving an NPDES Phase II Permit requirement that was not currently met.
- 2 Projects that would result in achieving an NPDES Phase II Permit requirement that was not currently met.

No projects in the capital projects list developed for the SWCP received a score for this criterion.

### **Geology**

- 0 Projects that do not have geologic improvements.
- 1 Multiplier not used. This criterion does not have a partial element.
- 2 Projects that will improve a geologic hazard, such as reduce or remove erosion or landslide hazard.

### **Reduce or Eliminate Flooding**

- 0 Projects that do not address a flooding problem.
- 1 Multiplier not used. This criterion does not have a partial element.
- 2 Projects that address a flooding problem.

### **Environmental**

- 0 Projects that do not have environmental benefits receive zero points for this criterion.
- 1 Projects that provide an environmental benefit as a secondary result of the project, but the project does not have an environmental habitat focus.
- 2 Projects that have are targeted for environmental improvements, such as a stream restoration project or a fish passage culvert installation.

### **Low Impact Development (LID)**

- 0 Projects that do not have LID elements receive zero points for this criterion.
- 1 Projects that include LID as an element of the drainage project.
- 2 Projects that are LID specific such as stormwater retrofit with LID design focus.

### **Geography**

- 0 Projects that do not meet the geography rule.
- 1 Multiplier not used. This criterion does not have a partial element.
- 2 Projects that meet the geographic rule.

Geography is a criterion that places importance on how many projects are being constructed in one drainage basin or geographic region within the City compared to another. This criterion received an overall low ranking and therefore, no a precedence or standards was not established for this criterion. No projects in the capital projects list developed for this SWCP received a score for the geographic criterion.

This ranking system allows the City to objectively compare multiple projects to each other and ultimately determine which project should be funded for design and construction. This tool will continue to be useful for the City in the future as the CIP evolves and new drainage, water quality or habitat projects are identified.

## 3.2 Identified Projects

As previously discussed, projects were identified by City staff and through residents' input by way of either the public meetings other public comment forms.

Projects were numbered 1 through 41 beginning with projects that were already identified in the City's 2014-2019 SWM CIP. These capital projects were numbered 1 through 9. Capital Projects 10 through 37 were provided by the City staff. As a result of public comments, Capital Project 25 was separated into two projects, 25A and 25B, Capital Projects 38, 39, 40, and 41 were created, and Capital Projects 4 and 15 were further identified as projects with high public interest. Finally, Capital Project 1 - Des Moines Memorial Drive - S. 212th to S. 213th Pipeline Replacement and Capital Project 2 - 216th Place Culvert Replacement were removed from the list because they have already been constructed. Capital Project 3 – Lower Massey Creek Channel Modification is in the SWM CIP budget to be constructed in 2015, but since that will not occur until after this SWCP will be completed, that project remains on the capital project list. Projects were not renumbered, for continuity of the report and discussion with the residents who became familiar with the project numbers.

Project identification is important for developing a list of needs, and project ranking is important to determine which projects are most important to the City and its staff according to the scoring system. Similarly as important is an estimated project cost for each capital project. The consultant used project sketches provided by City staff to develop project descriptions and cost estimates for all 39 capital projects. The assumptions for each capital project are provided with the cost estimate. A map depicting each capital project location and rank is found in Section 4 of the SWCP. Individual capital project maps depicting project descriptions and cost estimates are provided in Appendix C.

A summary of the 39 capital projects arranged by score and separated by rank and cost is provided in Figure B3.3. There are 19 high-ranked projects, 12 medium-ranked projects, and 9 low-ranked projects. The project score ranges that were selected to represent the high-, medium-, and low-ranked projects are as follows:

- 0-20: Low
- 22-34: Medium
- 34 and above: High

The medium range is relatively narrow, when compared to the low and high ranges; however, this narrow range was set for this SWCP because of the large number of projects that have been identified. Thus, the score of 34 was set as the low score threshold for the high rank projects because it is the mid-point of the project scores and will set up the City to complete half of the capital projects identified in this SWCP in a 10 year CIP.

Funding of capital projects was evaluated through three scenarios, which vary according to the rate at which future projects will be funded (in order of priority) and the operating program additions made. The capital project elements included in the scenarios are:

- Scenario 1: Fund 14 high-ranked capital projects by the end of the planning period (2015-2024) while maintaining the City's current rate increase structure. The 14 projects included in Scenario 1 are presented as the un-shaded high-ranked projects in Figure B3.3.
- Scenario 2: Fund all 19 high-ranked projects by the end of 2024 with a surface water rate increase. The five additional, high-ranked projects included in Scenario 2 are presented as the grey, shaded high-ranked projects in Figure B3.3.
- Scenario 3: Fund all high-ranked (19) and medium ranked (12) projects by the end of 2024 with a larger surface water rate increase.

Scenario 1 includes Capital Project 7 and Capital Project 9, even though these projects have the lowest scores (34) of all high-ranked projects (Figure B3.3). Capital Project 7, the 1<sup>st</sup> Avenue Pond Expansion, has already been adopted in the current CIP and the City anticipates an inter-local agreement with the City of Normandy Park to provide funds to support this project. Capital Project 9, Pipe Replacement Program, will use allocated Capital Funds to replace degraded pipes as needed. This program will work in conjunction with the closed circuit television (CCTV) video assessment of the City's existing storm sewer system that is also being proposed as a funded element of Scenario 1. Therefore, although the program is not a standalone capital project, the capital funds will be used annually to improve the City's aged storm sewer infrastructure.

For further discussion regarding the funding scenarios in and the fiscal analysis, see Appendix E.

Capital Project	Public Meeting Focus Area	Project Title	Estimated Cost	Score
<b>High-Ranked Projects</b>				
16	A	5th Avenue South/212th Street Pipe Upgrade	\$724,220	68
3	B	Lower Massey Creek Channel Modifications	\$1,248,565	64
30	C	North Fork McSorley Creek Diversion Project	\$372,960	60
4	B	Barnes Creek/Kent Des Moines Road Culvert Replacement	\$1,470,081	58
39	C	6th Avenue/239th St. Pipe Replacement	\$164,220	56
36	D	14th Avenue (268th to 272nd) Pipe Upgrade	\$411,740	56
17	A	216th Place/Marine View Drive Pipe Upgrade	\$258,300	54
25A	B	KDM/16th Avenue Pipe Replacement Project	\$227,080	52
18	A	Des Moines Memorial Drive - S. 208th to S. 212th Pipe Project	\$504,980	48
40	D	8th Avenue (264th to 265th) Pipe Project	\$219,800	48
5	B	24th Avenue Pipeline Replacement	\$260,100	46
25B	B	KDM/16th Avenue (228th to KDM Rd) Pipe Project	\$714,420	46
7	A	1st Avenue Pond Expansion	\$334,672	34
9	ALL	Pipe Replacement Program (unidentified projects)	\$1,474,667	34
Sub-Total Estimated Cost of High-Ranked Projects			\$8,385,805	
26	C	232nd Street (10th to 14th) Pipe Project	\$496,580	44
23	B	24th Avenue (223rd to 224th) Pipe Upgrade	\$226,100	42
34	C	258th Street (13th Pl to 16th Ave) Pipe Project	\$341,600	42
37	D	6th Place/287th Street Pipe Replacement Project	\$496,300	40
14	A	1st Place South (209th to 210th) Pipe Project	\$211,260	36
Sub-Total Estimated Cost of High-Ranked Projects			\$1,771,840	
<b>Grand Total Estimated Cost of High-Ranked Projects</b>			<b>\$10,157,645</b>	
<b>Medium-Ranked Projects</b>				
38	A	9th Avenue (202nd to 206th) Pipe Project	\$185,920	32
15	A	3rd Avenue South (213th to 216th) Pipe Project	\$322,140	30
31	C	20th Avenue/243rd Street Pipe Upgrade	\$371,840	30
35	C	22nd Avenue Outfall Project	\$191,380	28
6	A	199th North Hill Trunkline Upgrade	\$231,395	26
8	A	North Hill NE and 197th Street Trunkline Upgrade	\$482,857	26
32	C	242nd Street (26th Ave to 26th Pl) Pipe Project	\$100,100	26
11	C	Saltwater Highlands Tract A pond replacement (and/or stabilize adjacent rav	\$360,962	24
27	C	240th Street (MVD to 11th Place) Pipe Project	\$343,840	24
22	A	220th Street (15th Ave to SJU Park) Pipe Replacement Project	\$335,860	22
33	C	252nd Street/9th Avenue Pipe Project	\$191,240	22
41	D	12th/13th Avenue (270th to 272nd Street)	\$496,020	22
Total Estimated Cost of Medium-Ranked Projects			\$3,613,554	
<b>Low-Ranked Projects</b>				
12	A	1st Place South (201st to 204th) Pipe Upgrade	\$415,100	20
20	A	222nd/223rd 8th Avenue to 11th Avenue Pipe Project	\$472,220	18
21	B	223rd Street (13th Avenue to 19th Avenue) Pipe Project	\$292,880	16
28	B	240th Street (13th to 16th Ave) Pipe Project	\$248,080	16
29	B	25th Avenue (n/o 232nd Street) Pipe Replacement Project	\$99,680	16
10	A	1st Place South (197th to 192nd)	\$237,860	14
19	A	14th Avenue/15th Avenue N/O 215th Place Pipe Project	\$110,600	14
24	B	16th Avenue (224th to 228th) Pipe Project	\$331,240	14
13	A	3rd Avenue (206th to 207th) Pipe Project	\$165,060	10
Total Estimated Cost of Low-Ranked Projects			\$2,372,720	

**Figure B3.3**  
Capital Project Cost, Priority, and Scoring Summary

Appendix C  
Capital Project Sheets





**Description:** This project will widen the Massey Creek channel and berm the north side of the stream. Existing vegetation will be removed and replaced with "controlled riparian" vegetation. In addition, fish habitat, spawning gravel, eddy pools, bushes, shrubs and shade trees will be added to improve water quality and fish resources. The finished project will alleviate flooding in this reach of Massey Creek.

**Estimated Cost (\$):** 1,248,565

**Scoring Criteria:** \$, M/I, S, PE/PI, PP, Geology, REF, E

Parametrix

- Discharge Point
- Control Structure
- Catchment
- WQ Facility
- Open Channel
- Storm Main

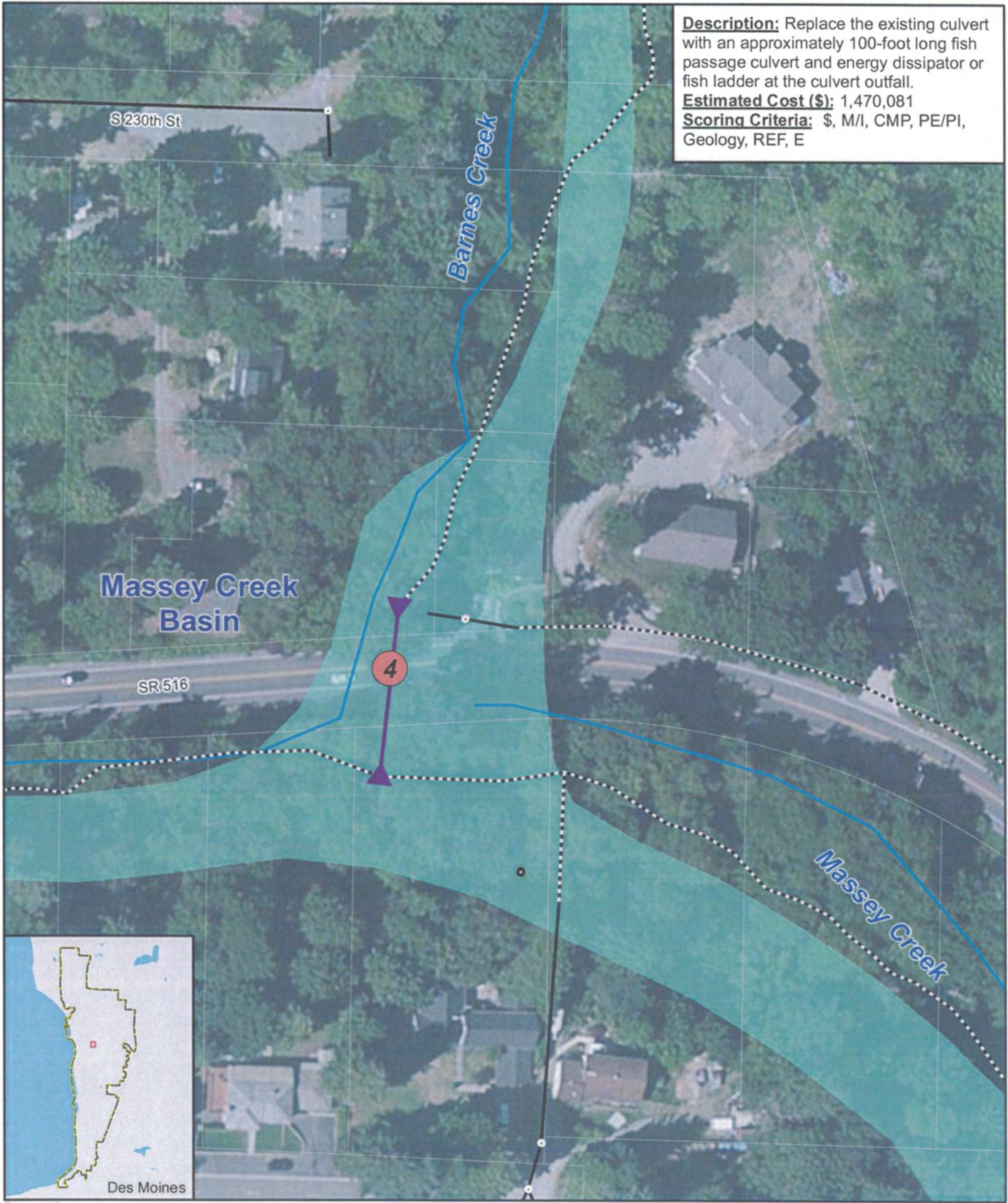
- Capital Project and Rank**
- High
  - Medium
  - Low
  - Proposed Stream Improvement
  - Proposed Catch Basin

- Streams
- 100 Year Flood
- Drainage Basin
- City Limits

**Capital Project 3.**  
Lower Massey Creek Channel Modifications

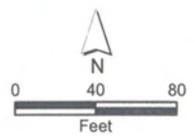
City of Des Moines  
Surface Water Comprehensive Plan

**Description:** Replace the existing culvert with an approximately 100-foot long fish passage culvert and energy dissipator or fish ladder at the culvert outfall.  
**Estimated Cost (\$):** 1,470,081  
**Scoring Criteria:** \$, M/I, CMP, PE/PI, Geology, REF, E



Parametrix  
AN IRVING-CLOUD COMPANY

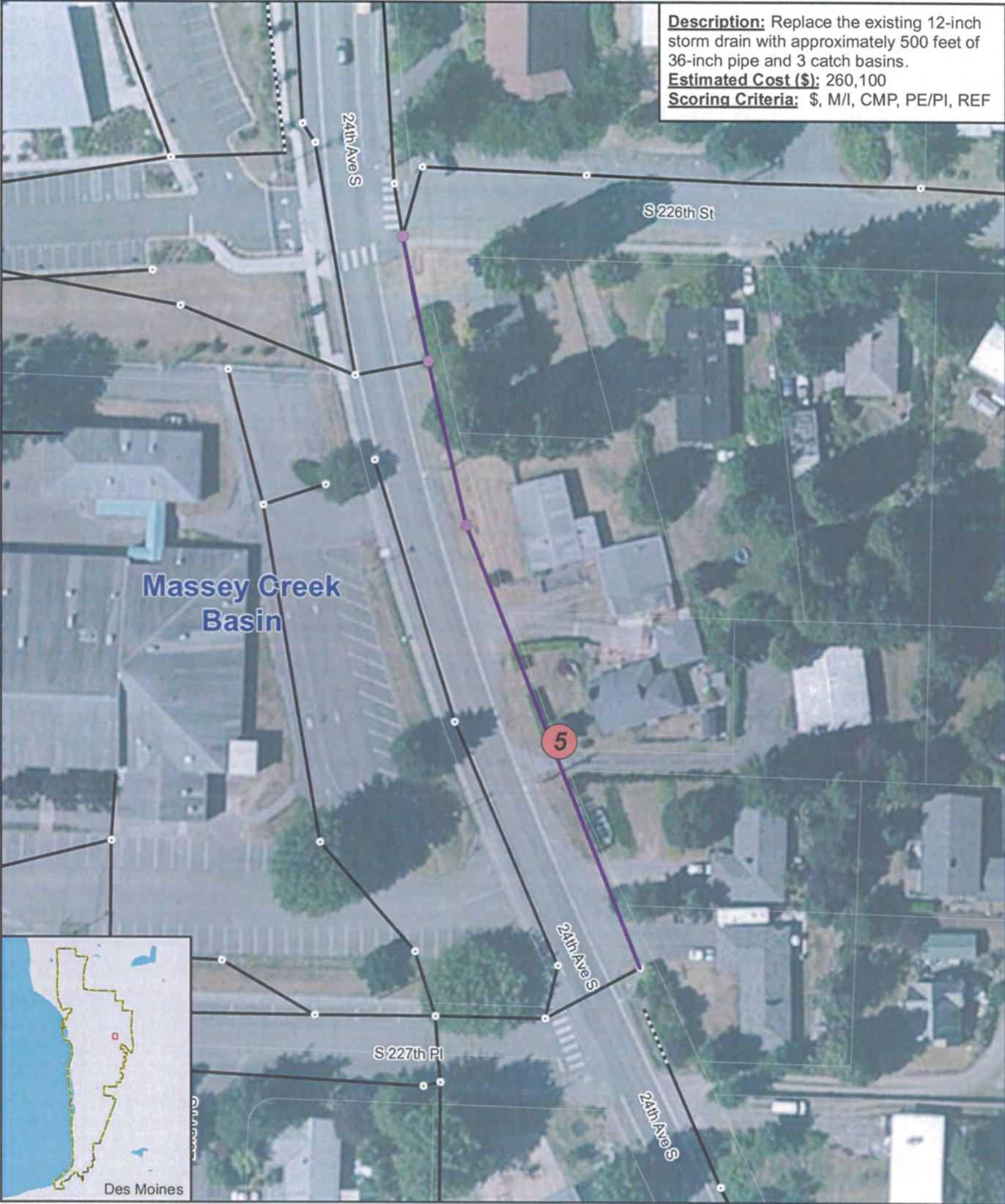
- |                     |                            |                  |
|---------------------|----------------------------|------------------|
| ● Discharge Point   | ● Capital Project and Rank | — Streams        |
| ● Control Structure | ● High                     | ■ 100 Year Flood |
| ○ Catchment         | ● Medium                   | ▭ Drainage Basin |
| ■ WQ Facility       | ● Low                      | ▭ City Limits    |
| --- Open Channel    | ▶ Proposed Culvert         |                  |
| — Storm Main        | ● Proposed Catch Basin     |                  |



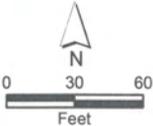
**Capital Project 4.**  
 Barnes Creek/Kent Des Moines  
 Road Culvert Replacement

**City of Des Moines**  
 Surface Water Comprehensive Plan

**Description:** Replace the existing 12-inch storm drain with approximately 500 feet of 36-inch pipe and 3 catch basins.  
**Estimated Cost (\$):** 260,100  
**Scoring Criteria:** \$, M/I, CMP, PE/PI, REF



Parametrix  
AN IRVING-CLOUD COMPANY



- Discharge Point
- Control Structure
- Catchment
- WQ Facility
- Open Channel
- Storm Main

- Capital Project and Rank
- High
  - Medium
  - Low
  - Proposed Drain Pipe
  - Proposed Catch Basin

- Streams
- 100 Year Flood
- Drainage Basin
- City Limits

**Capital Project 5.**  
**24th Avenue Pipeline Replacement**

**City of Des Moines**  
**Surface Water Comprehensive Plan**

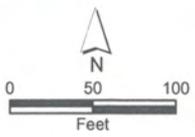


**Description:** Replace the existing 12, 15, and 18-inch pipe with approximately 450 feet of 24-inch pipe and 4 storm drain manholes.  
**Estimated Cost (\$):** 231,395  
**Scoring Criteria:** M/I, CMP, REF

**Normandy Creek Basin**



Parametrix



- Discharge Point
- Control Structure
- Catchment
- WQ Facility
- Open Channel
- Storm Main

- Capital Project and Rank**
- High
  - Medium
  - Low
  - Proposed Drain Pipe
  - Proposed Catch Basin

- Streams
- 100 Year Flood
- Drainage Basin
- City Limits

**Capital Project 6.**  
**199th North Hill Trunkline Upgrade**

**City of Des Moines**  
**Surface Water Comprehensive Plan**



**Description:** Expand the existing pond south on City of Des Moines owned parcel to add approximately 1.9 acre-ft of capacity. Existing pond is owned by Normandy Park. An interlocal agreement with Normandy Park will be necessary for expansion and long-term maintenance  
**Estimated Cost (\$):** 334,672  
**Scoring Criteria:** \$, PP, REF, E

Pond (Parcel Owned by WSDOT, Pond Maintained by Normandy Park)

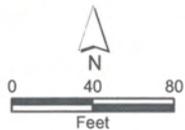
Normandy Creek Basin

Pond Expansion Area

Potential Additional Expansion Area



Parametrix



- Discharge Point
- Control Structure
- Catchment
- WQ Facility
- Open Channel
- Storm Main

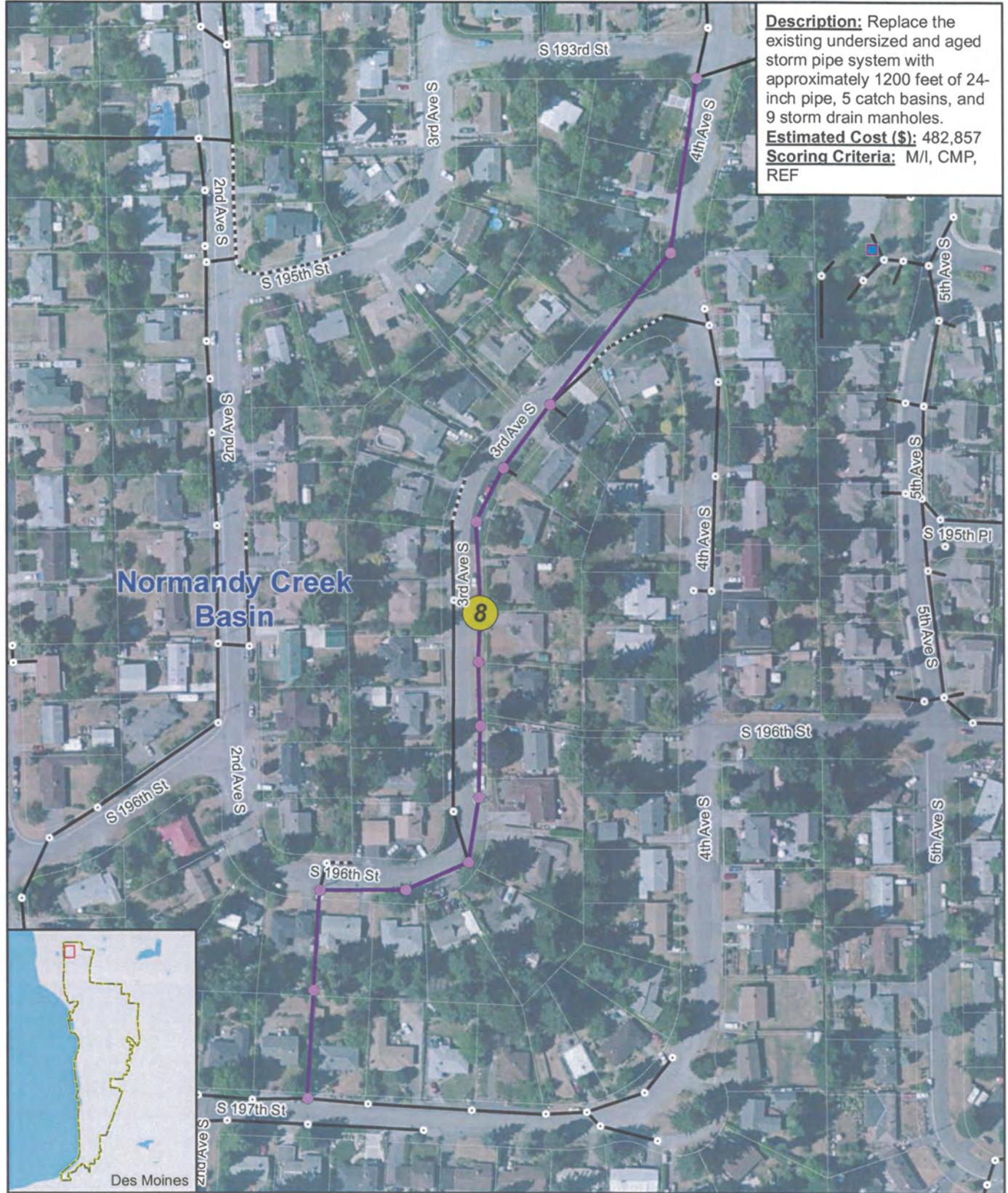
Capital Project and Rank

- High
- Medium
- Low
- ▨ Existing Pond Area
- ▨ Proposed Pond Expansion
- ▨ Potential Expansion Area
- Proposed Catch Basin

- Streams
- 100 Year Flood
- ▭ Drainage Basin
- ▭ City Limits

**Capital Project 7.**  
1st Avenue Pond Expansion

City of Des Moines  
Surface Water Comprehensive Plan



**Description:** Replace the existing undersized and aged storm pipe system with approximately 1200 feet of 24-inch pipe, 5 catch basins, and 9 storm drain manholes.  
**Estimated Cost (\$):** 482,857  
**Scoring Criteria:** M/I, CMP, REF

**Normandy Creek Basin**

Parametrix  
AN IRIDIUM COMPANY | CORPORATION OF IOWA

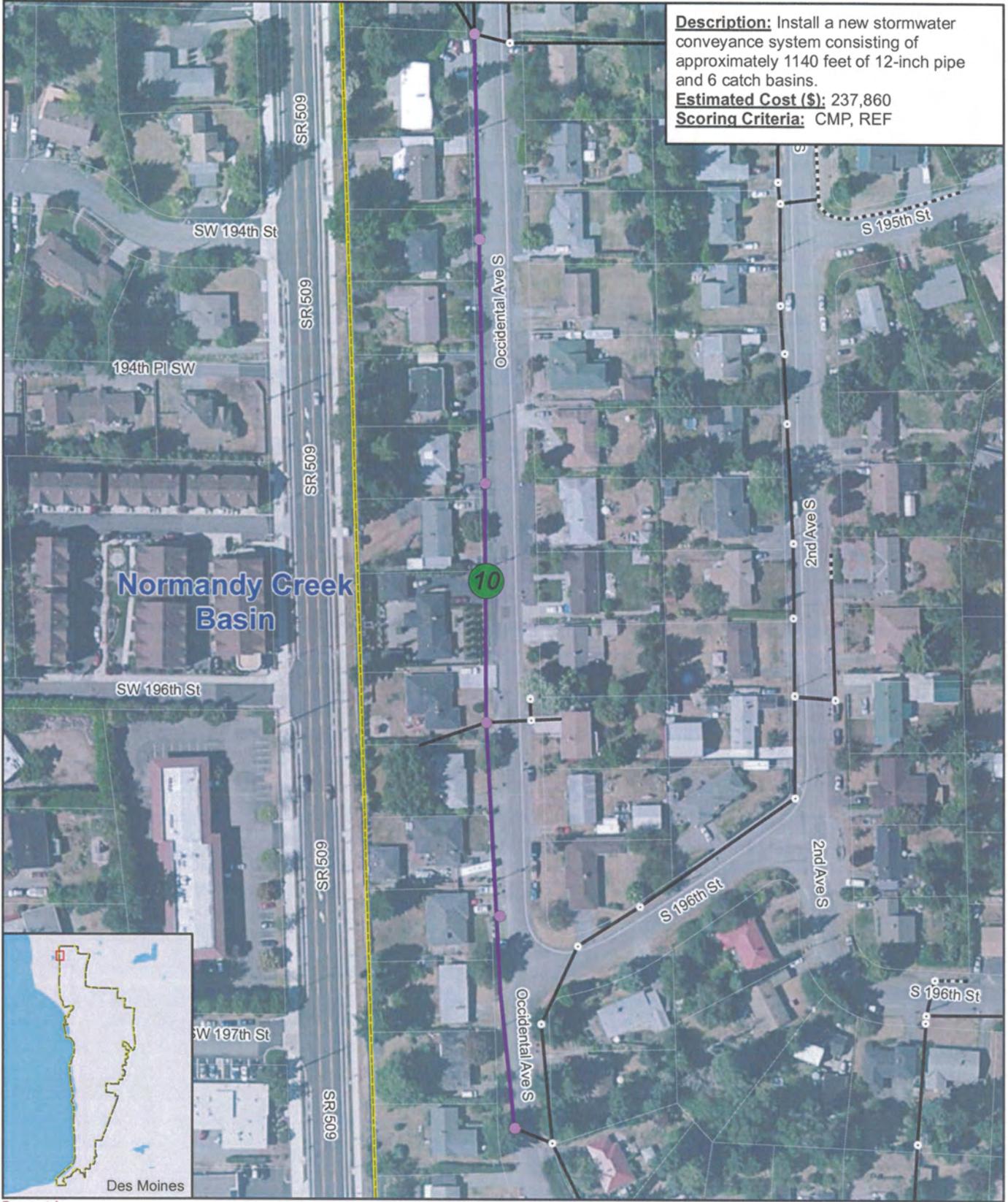
- Discharge Point
- Control Structure
- Catchment
- WQ Facility
- Open Channel
- Storm Main

- Capital Project and Rank**
- High
  - Medium
  - Low
  - Proposed Drain Pipe
  - Proposed Catch Basin

- Streams
- 100 Year Flood
- Drainage Basin
- City Limits

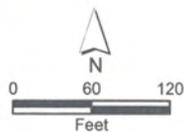
**Capital Project 8.**  
 North Hill NE and 197th Street Trunkline Upgrade

City of Des Moines  
 Surface Water Comprehensive Plan



**Description:** Install a new stormwater conveyance system consisting of approximately 1140 feet of 12-inch pipe and 6 catch basins.  
**Estimated Cost (\$):** 237,860  
**Scoring Criteria:** CMP, REF

Parametrix  
AN IRVING-CLOUD COMPANY



- Discharge Point
- Control Structure
- Catchment
- WQ Facility
- Open Channel
- Storm Main

- Capital Project and Rank
- High
  - Medium
  - Low
  - Proposed Drain Pipe
  - Proposed Catch Basin

- Streams
- 100 Year Flood
- Drainage Basin
- City Limits

**Capital Project 10.**  
 1st Place South (197th to 192nd)

City of Des Moines  
 Surface Water Comprehensive Plan

CITY OF DES MOINES  
 2015 Comprehensive Stormwater Plan Update  
 Preliminary Opinion of Probable Cost

Capital Project 10  
 Project Name: 1st Place South (197th to 192nd)  
 Prepared By: Mallory Miller

Checked By: Craig Buitrago

Project Description:  
 New 12" SD system and curb along W side of 1st Pl S. Connect SD system to existing SD system in front of house number 19367, and to CB in front of house number 19613. Install 2-foot wide pavement beyond the existing W edge of pavement for approximately 465 LF.

Item No.	Estimated Quantity	Unit	Description	Unit Cost	Amount
1	1	LS	Mobilization	\$10,700	\$10,700
2	1	LS	Traffic Control	\$2,100	\$2,100
3	1	LS	Erosion/Sedimentation Control	\$2,100	\$2,100
4	1140	LF	Pavement Restoration	\$20	\$22,800
5	1140	LF	Schedule A Storm Sewer Pipe, 12-Inch Diameter	\$60	\$68,400
6	6	EA	Catch Basin Type I	\$1,930	\$11,580
7					
8					
9					
10					

Construction Subtotal (2014 Dollars) =		\$117,680
Inflation from 2014 to 2015	3.65%	\$4,295
<b>Construction Subtotal (2015 Dollars) =</b>		<b>\$121,975</b>
Contingency	30.0%	\$36,593
Sales Tax	9.3%	\$11,344
<b>Planning Level Construction Cost =</b>		<b>\$169,900</b>
Environmental Permitting and Documentation	5.0%	\$8,495
Administration	5.0%	\$8,495
Preliminary Engineering, PS&E Engineering and Construction Management	30.0%	\$50,970
<b>2015 TOTAL =</b>		<b>\$237,860</b>

**ASSUMPTIONS:**

Length of pipe, pipe diameter, number of structures and structure size were provided by City of Des Moines.  
 Mobilization equals approximately 10-percent of Subtotal.  
 Traffic Control equals approximately 2-percent of Subtotal.  
 Erosion/Sedimentation Control equals approximately 2-percent of Subtotal (\$1,000 min).  
 Pavement Restoration includes the cost of HMA (2-inch), CSTC (2-inch), and CSBC (4-inch).  
 Cost of pipe installation includes structure excavation and shoring.  
 Cost of catch basin installation includes structure excavation and shoring.

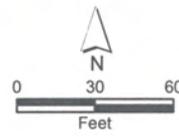
**Description:** This project will replace the existing pond with a new stormwater detention/water quality facility.  
**Estimated Cost (\$):** 360,962  
**Scoring Criteria:** M/I, PP, Geology, E



avine bank)



Parametrix  
INCORPORATED • 1000 EAST 17TH AVENUE • DES MOINES, IOWA 50319



- |                     |                             |                  |
|---------------------|-----------------------------|------------------|
| ● Discharge Point   | ● Capital Project and Rank  | — Streams        |
| ● Control Structure | ● High                      | ■ 100 Year Flood |
| ○ Catchment         | ● Medium                    | ■ Drainage Basin |
| ■ WQ Facility       | ● Low                       | ■ City Limits    |
| --- Open Channel    | ▨ Proposed Pond Replacement |                  |
| — Storm Main        | ● Proposed Catch Basin      |                  |

**Capital Project 11.**  
 Saltwater Highlands Tract A  
 pond replacement (and/or  
 stabilize adjacent ravine bank)

**City of Des Moines**  
 Surface Water Comprehensive Plan

CITY OF DES MOINES  
 2015 Comprehensive Stormwater Plan Update  
 Preliminary Opinion of Probable Cost

Capital Project: 11  
 Project Name: Saltwater Highlands Tract A pond replacement (and/or stabilize adjacent ravine bank)  
 Prepared By: Mallory Miller **Checked By:** Craig Buitrago  
 Project Description:

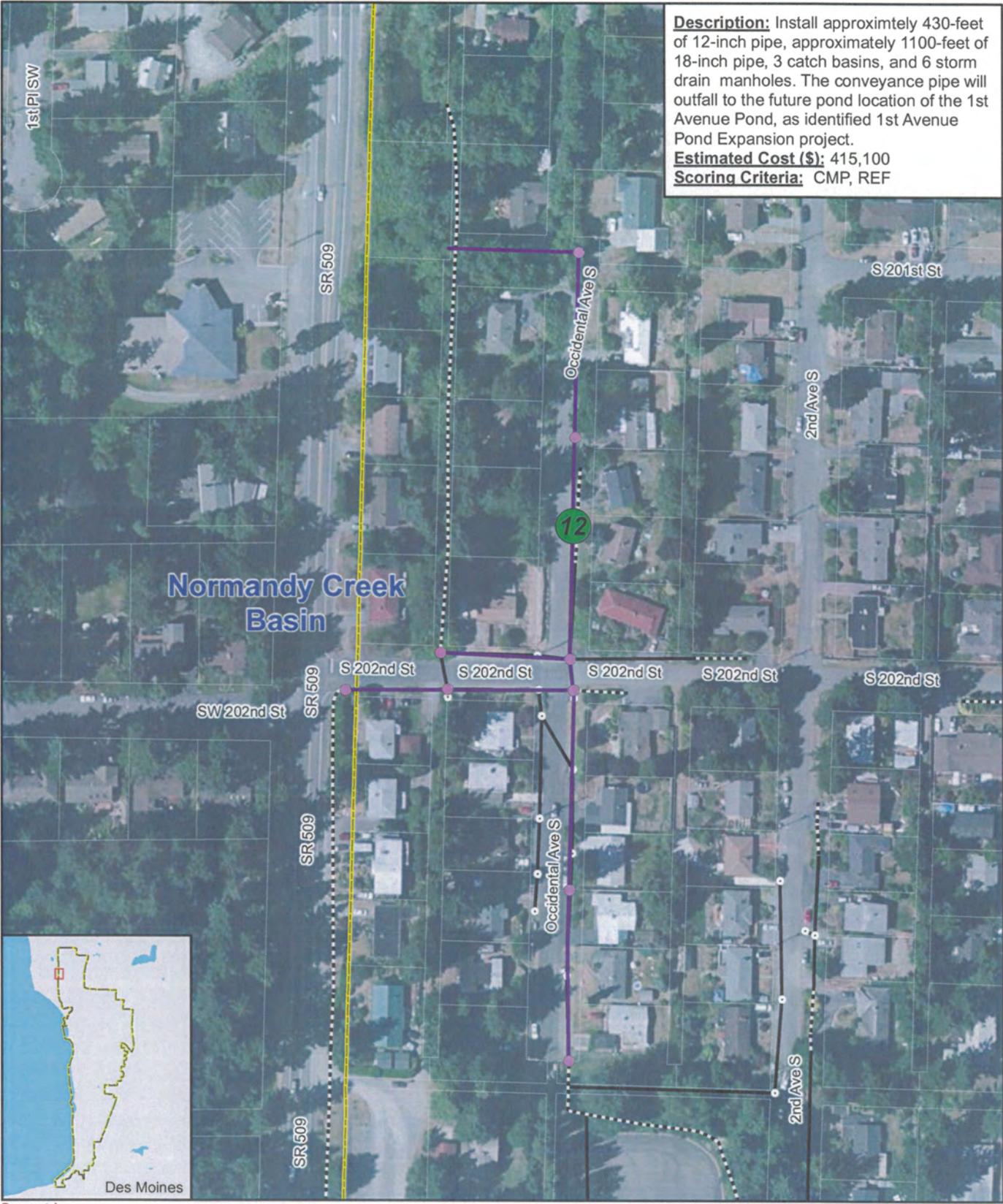
Item No.	Estimated Quantity	Unit	Description	Unit Cost	Amount
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
				Construction Subtotal (2014 Dollars) =	\$250,000
				Inflation from 2014 to 2015 3.65%	\$9,125
				<b>Construction Subtotal (2015 Dollars) =</b>	<b>\$259,125</b>
				Contingency 30.0%	\$77,738
				Sales Tax 9.3%	\$24,099
				<b>2015 Planning Level Construction Cost =</b>	<b>\$360,962</b>

**ASSUMPTIONS:**  
 The estimate of \$250,000 is the City's Planning Level Construction Cost. Project cost is highly variable and a Geotechnical evaluation of the site will be required.

**Description:** Install approximately 430-feet of 12-inch pipe, approximately 1100-feet of 18-inch pipe, 3 catch basins, and 6 storm drain manholes. The conveyance pipe will outfall to the future pond location of the 1st Avenue Pond Expansion project.

**Estimated Cost (\$):** 415,100

**Scoring Criteria:** CMP, REF

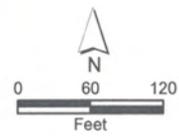


Parametrix  
PLANNING. ANALYSIS. SUPERSTITION CONTROL.

- Discharge Point
- Control Structure
- Catchment
- WQ Facility
- Open Channel
- Storm Main

- Capital Project and Rank**
- High
  - Medium
  - Low
  - Proposed Drain Pipe
  - Proposed Catch Basin

- Streams
- 100 Year Flood
- Drainage Basin
- City Limits



**Capital Project 12.**  
 1st Place South (201st to 204th)  
 Pipe Upgrade

**City of Des Moines**  
 Surface Water Comprehensive Plan

CITY OF DES MOINES  
 2015 Comprehensive Stormwater Plan Update  
 Preliminary Opinion of Probable Cost

Capital Project 12  
 Project Name: 1st Place South (201st to 204th) Pipe Upgrade  
 Prepared By: Mallory Miller  
 Project Description:

Checked By: Craig Buitrago

New 18" SD system and curb along E side of 1st Pl S. New SD system on N side of S 202nd St. S of S 202nd St the SD system will replace the existing storm CBs and storm pipe. Improvements on S 202nd St will include 12" SD system, 2-feet-wide pavement, and curb (approx. 320 LF total) on both N and S sides of the road. 18" SD system will connect to 1st Ave Pond Expansion CIP at the N end of 1st Pl S. Connection will cross approx. 55 LF of pavement and 115LF of vegetated area. Typically, Type 1 and Type 2 CBs will be installed along the curb flowline.

Item No.	Estimated Quantity	Unit	Description	Unit Cost	Amount
1	1	LS	Mobilization	\$18,700	\$18,700
2	1	LS	Traffic Control	\$3,600	\$3,600
3	1	LS	Erosion/Sedimentation Control	\$3,600	\$3,600
4	1530	LF	Pavement Restoration	\$20	\$30,600
5	430	LF	Schedule A Storm Sewer Pipe, 12-Inch Diameter	\$60	\$25,800
6	1100	LF	Schedule A Storm Sewer Pipe, 18-Inch Diameter	\$80	\$88,000
7	3	EA	Catch Basin Type I	\$1,930	\$5,790
8	6	EA	Catch Basin Type II, 48" Diam.	\$4,880	\$29,280
9					
10					
Construction Subtotal (2014 Dollars) =					\$205,370
Inflation from 2014 to 2015 3.65%					\$7,496
<b>Construction Subtotal (2015 Dollars) =</b>					<b>\$212,866</b>
Contingency 30.0%					\$63,860
Sales Tax 9.3%					\$19,797
<b>Planning Level Construction Cost =</b>					<b>\$296,500</b>
Environmental Permitting and Documentation 5.0%					\$14,825
Administration 5.0%					\$14,825
Preliminary Engineering, PS&E Engineering and Construction Management 30.0%					\$88,950
<b>2015 TOTAL =</b>					<b>\$415,100</b>

**ASSUMPTIONS:**

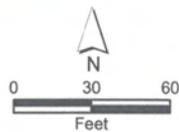
Length of pipe, pipe diameter, number of structures and structure size were provided by City of Des Moines.  
 Mobilization equals approximately 10-percent of Subtotal.  
 Traffic Control equals approximately 2-percent of Subtotal.  
 Erosion/Sedimentation Control equals approximately 2-percent of Subtotal (\$1,000 min).  
 Pavement Restoration includes the cost of HMA (2-inch), CSTC (2-inch), and CSBC (4-inch).  
 Cost of pipe installation includes structure excavation and shoring.  
 Cost of catch basin installation includes structure excavation and shoring.



**Description:** Install a new stormwater conveyance system consisting of approximately 700 feet of 12-inch pipe and 8 catch basins.  
**Estimated Cost (\$):** 165,060  
**Scoring Criteria:** CMP, REF

**Normandy Creek Basin**

Parametrix  
ENGINEERING PLANNING ARCHITECTURE ENVIRONMENTAL



- |                     |                            |                  |
|---------------------|----------------------------|------------------|
| ● Discharge Point   | ● Capital Project and Rank | — Streams        |
| ● Control Structure | ● High                     | ■ 100 Year Flood |
| ○ Catchment         | ● Medium                   | □ Drainage Basin |
| ■ WQ Facility       | ● Low                      | □ City Limits    |
| --- Open Channel    | — Proposed Drain Pipe      |                  |
| — Storm Main        | ● Proposed Catch Basin     |                  |

**Capital Project 13.**  
 3rd Avenue (206th to 207th)  
 Pipe Project

**City of Des Moines**  
 Surface Water Comprehensive Plan

**CITY OF DES MOINES**  
**2015 Comprehensive Stormwater Plan Update**  
**Preliminary Opinion of Probable Cost**

**Capital Project** 13  
**Project Name:** 3rd Avenue (206th to 207th) Pipe Project  
**Prepared By:** Mallory Miller

**Checked By:** Craig Buitrago

**Project Description:**

New 12" SD system, 2-foot wide pavement, and curb (approx 840 LF total) on W side of 3rd Ave S, and S side of S 206th St. New 12" SD on S side of S 206th St will connect to existing SD system from SE corner of intersection of 3rd Ave S and S 206th St and connect to existing SD system between 1st Pl S and 3rd Ave S. Improvements also include connecting existing SD system from 2nd Ave S to new 12" SD system in S 206th St (approx. 125 LF through vegetation).

Item No.	Estimated Quantity	Unit	Description	Unit Cost	Amount
1	1	LS	Mobilization	\$7,400	\$7,400
2	1	LS	Traffic Control	\$1,400	\$1,400
3	1	LS	Erosion/Sedimentation Control	\$1,400	\$1,400
4	700	LF	Pavement Restoration	\$20	\$14,000
5	700	LF	Schedule A Storm Sewer Pipe, 12-Inch Diameter	\$60	\$42,000
6	8	EA	Catch Basin Type I	\$1,930	\$15,440
7					
8					
9					
10					
Construction Subtotal (2014 Dollars) =					\$81,640
Inflation from 2014 to 2015 3.65%					\$2,980
<b>Construction Subtotal (2015 Dollars) =</b>					<b>\$84,620</b>
Contingency 30.0%					\$25,386
Sales Tax 9.3%					\$7,870
<b>Planning Level Construction Cost =</b>					<b>\$117,900</b>
Environmental Permitting and Documentation 5.0%					\$5,895
Administration 5.0%					\$5,895
Preliminary Engineering, PS&E Engineering and Construction Management 30.0%					\$35,370
<b>2015 TOTAL =</b>					<b>\$165,060</b>

**ASSUMPTIONS:**

- Length of pipe, pipe diameter, number of structures and structure size were provided by City of Des Moines.
- Mobilization equals approximately 10-percent of Subtotal.
- Traffic Control equals approximately 2-percent of Subtotal.
- Erosion/Sedimentation Control equals approximately 2-percent of Subtotal (\$1,000 min).
- Pavement Restoration includes the cost of HMA (2-inch), CSTC (2-inch), and CSBC (4-inch).
- Cost of pipe installation includes structure excavation and shoring.
- Cost of catch basin installation includes structure excavation and shoring.



**Description:** Install a new stormwater conveyance system consisting of approximately 900 feet of 12-inch pipe and 7 catch basins.  
**Estimated Cost (\$):** 211,260  
**Scoring Criteria:** M/I, CMP, PE/PI, DR, REF

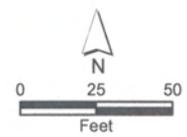
Parametrix

INCORPORATING CONSULTING ENGINEERS

- Discharge Point
- Control Structure
- Catchment
- WQ Facility
- Open Channel
- Storm Main

- Capital Project and Rank
- High
  - Medium
  - Low
  - Proposed Drain Pipe
  - Proposed Catch Basin

- Streams
- 100 Year Flood
- Drainage Basin
- City Limits



**Capital Project 14.**  
**1st Place South (209th to 210th)**  
**Pipe Project**

**City of Des Moines**  
**Surface Water Comprehensive Plan**

**CITY OF DES MOINES**  
**2015 Comprehensive Stormwater Plan Update**  
**Preliminary Opinion of Probable Cost**

**Capital Project** 14  
**Project Name:** 1st Place South (209th to 210th) Pipe Project  
**Prepared By:** Mallory Miller  
**Project Description:**

**Checked By:** Craig Buitrago

New 12" SD system that will extend existing SD on both E and W sides of 1st Pl S and connect to existing SD on S 210th St. Curb not needed on 1st Pl S. New 12" SD system will cross approx 445 LF of vegetated area prior to connecting to new 12" SD system on N side of S 210th St. New curb and 12" SD system on N side of S 210th St will replace existing ditch and connect to existing SD system via CB between 1ST Pl S and 1st Ave S.

Item No.	Estimated Quantity	Unit	Description	Unit Cost	Amount
1	1	LS	Mobilization	\$9,500	\$9,500
2	1	LS	Traffic Control	\$1,800	\$1,800
3	1	LS	Erosion/Sedimentation Control	\$1,800	\$1,800
4	900	LF	Pavement Restoration	\$20	\$18,000
5	900	LF	Schedule A Storm Sewer Pipe, 12-Inch Diameter	\$60	\$54,000
6	5	EA	Catch Basin Type I	\$1,930	\$9,650
7	2	EA	Catch Basin Type II, 48" Diam.	\$4,880	\$9,760
8					
9					
10					
Construction Subtotal (2014 Dollars) =					\$104,510
Inflation from 2014 to 2015 3.65% =					\$3,815
<b>Construction Subtotal (2015 Dollars) =</b>					<b>\$108,325</b>
Contingency 30.0% =					\$32,498
Sales Tax 9.3% =					\$10,074
<b>Planning Level Construction Cost =</b>					<b>\$150,900</b>
Environmental Permitting and Documentation 5.0% =					\$7,545
Administration 5.0% =					\$7,545
Preliminary Engineering, PS&E Engineering and Construction Management 30.0% =					\$45,270
<b>2015 TOTAL =</b>					<b>\$211,260</b>

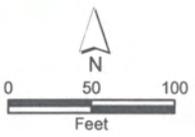
**ASSUMPTIONS:**

- Length of pipe, pipe diameter, number of structures and structure size were provided by City of Des Moines.
- Mobilization equals approximately 10-percent of Subtotal.
- Traffic Control equals approximately 2-percent of Subtotal.
- Erosion/Sedimentation Control equals approximately 2-percent of Subtotal (\$1,000 min).
- Pavement Restoration includes the cost of HMA (2-inch), CSTC (2-inch), and CSBC (4-inch).
- Cost of pipe installation includes structure excavation and shoring.
- Cost of catch basin installation includes structure excavation and shoring.

**Description:** Install a new stormwater conveyance system consisting of approximately 1500 feet of 12-inch pipe and 10 catch basins.  
**Estimated Cost (\$):** 322,140  
**Scoring Criteria:** CMP, PE/PI, DR, REF



Parametrix  
 ENVIRONMENTAL ENGINEERING & SCIENCE



- Discharge Point
- Control Structure
- Catchment
- WQ Facility
- Open Channel
- Storm Main

- Capital Project and Rank
- High
  - Medium
  - Low
  - Proposed Drain Pipe
  - Proposed Catch Basin

- Streams
- 100 Year Flood
- Drainage Basin
- City Limits

**Capital Project 15.**  
 3rd Avenue South (213th to 216th) Pipe Project

City of Des Moines  
 Surface Water Comprehensive Plan

CITY OF DES MOINES  
 2015 Comprehensive Stormwater Plan Update  
 Preliminary Opinion of Probable Cost

Capital Project 15  
 Project Name: 3rd Avenue South (213th to 216th) Pipe Project  
 Prepared By: Mallory Miller  
 Project Description:

Checked By: Craig Buitrago

New 12" SD system on the S side of S 213th St replace existing ditch. New 12" SD system on 3rd Ave S to collect runoff on E side of street and drain south to S 216th St. New 12" SD system on the N side of S 216th St will connect to existing CB located at NW corner of intersection with 4th Ave S.

Item No.	Estimated Quantity	Unit	Description	Unit Cost	Amount
1	1	LS	Mobilization	\$14,500	\$14,500
2	1	LS	Traffic Control	\$2,800	\$2,800
3	1	LS	Erosion/Sedimentation Control	\$2,800	\$2,800
4	1500	LF	Pavement Restoration	\$20	\$30,000
5	1500	LF	Schedule A Storm Sewer Pipe, 12-Inch Diameter	\$60	\$90,000
6	10	EA	Catch Basin Type I	\$1,930	\$19,300
7					
8					
9					
10					
Construction Subtotal (2014 Dollars) =					\$159,400
Inflation from 2014 to 2015 3.65%					\$5,818
<b>Construction Subtotal (2015 Dollars) =</b>					<b>\$165,218</b>
Contingency 30.0%					\$49,565
Sales Tax 9.3%					\$15,365
<b>Planning Level Construction Cost =</b>					<b>\$230,100</b>
Environmental Permitting and Documentation 5.0%					\$11,505
Administration 5.0%					\$11,505
Preliminary Engineering, PS&E Engineering and Construction Management 30.0%					\$69,030
<b>2015 TOTAL =</b>					<b>\$322,140</b>

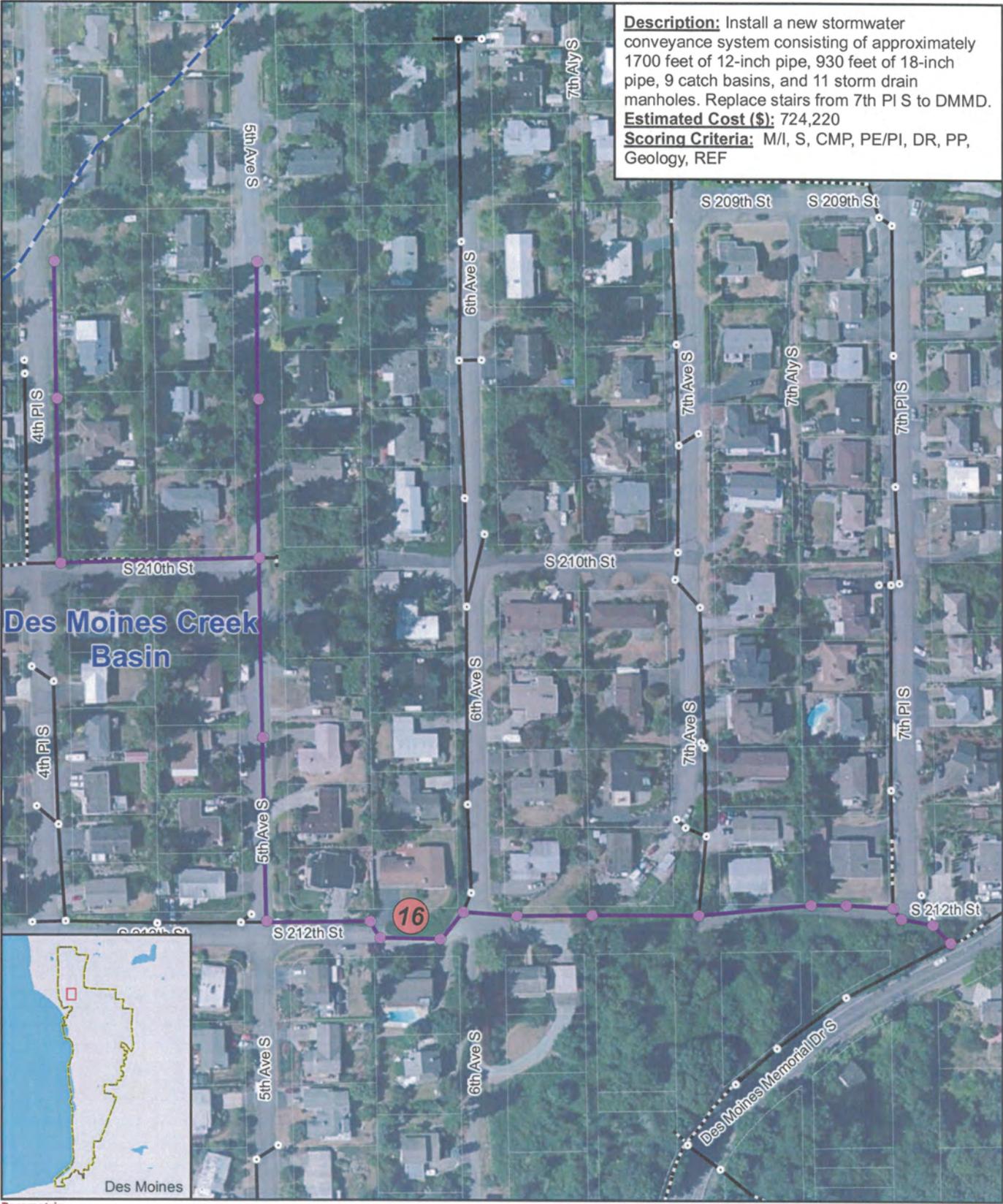
**ASSUMPTIONS:**

- Length of pipe, pipe diameter, number of structures and structure size were provided by City of Des Moines.
- Mobilization equals approximately 10-percent of Subtotal.
- Traffic Control equals approximately 2-percent of Subtotal.
- Erosion/Sedimentation Control equals approximately 2-percent of Subtotal (\$1,000 min).
- Pavement Restoration includes the cost of HMA (2-inch), CSTC (2-inch), and CSBC (4-inch).
- Cost of pipe installation includes structure excavation and shoring.
- Cost of catch basin installation includes structure excavation and shoring.

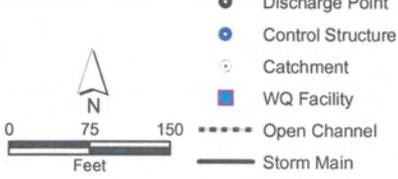
**Description:** Install a new stormwater conveyance system consisting of approximately 1700 feet of 12-inch pipe, 930 feet of 18-inch pipe, 9 catch basins, and 11 storm drain manholes. Replace stairs from 7th PI S to DMMD.

**Estimated Cost (\$):** 724,220

**Scoring Criteria:** M/I, S, CMP, PE/PI, DR, PP, Geology, REF



Parametrix  
AN IRVING-CLOUD COMPANY



- Discharge Point
  - Control Structure
  - Catchment
  - WQ Facility
  - Open Channel
  - Storm Main
- Capital Project and Rank
  - High
  - Medium
  - Low
  - Proposed Drain Pipe
  - Proposed Catch Basin

- Streams
- 100 Year Flood
- Drainage Basin
- City Limits

**Capital Project 16.**  
**5th Avenue South/212th Street**  
**Pipe Upgrade**

**City of Des Moines**  
**Surface Water Comprehensive Plan**

CITY OF DES MOINES  
 2015 Comprehensive Stormwater Plan Update  
 Preliminary Opinion of Probable Cost

Capital Project 16  
 Project Name: 5th Avenue South/212th Street Pipe Upgrade  
 Prepared By: Mallory Miller  
 Project Description:

Checked By: Craig Buitrago

New 12" SD system on the E side of 4th PI S and 5th Ave S to connect to new 12" SD system on N side of S 210th St. New 12" SD system on S 210th St to replace existing ditches and culverts on N side of street. New 12" SD system on 5th Ave S in curb and gutter line on E side of street from S 210th St to S 212th St. New 18" SD system on S 212th St that will connect to SD system on DMMD. Replace stairs from 7th PI S to DMMD

Item No.	Estimated Quantity	Unit	Description	Unit Cost	Amount
1	1	LS	Mobilization	\$32,600	\$32,600
2	1	LS	Traffic Control	\$6,300	\$6,300
3	1	LS	Erosion/Sedimentation Control	\$6,300	\$6,300
4	2630	LF	Pavement Restoration	\$20	\$52,600
5	1700	LF	Schedule A Storm Sewer Pipe, 12-Inch Diameter	\$60	\$102,000
6	930	LF	Schedule A Storm Sewer Pipe, 18-Inch Diameter	\$80	\$74,400
7	9	EA	Catch Basin Type I	\$1,930	\$17,370
8	11	EA	Catch Basin Type II, 48" Diam.	\$4,880	\$53,680
9	100	LF	Concrete Stair with Metal Handrail	\$130	\$13,000
10					
				Construction Subtotal (2014 Dollars) =	\$358,250
				Inflation from 2014 to 2015 3.65%	\$13,076
				<b>Construction Subtotal (2015 Dollars) =</b>	<b>\$371,326</b>
				Contingency 30.0%	\$111,398
				Sales Tax 9.3%	\$34,533
				<b>Planning Level Construction Cost =</b>	<b>\$517,300</b>
				Environmental Permitting and Documentation 5.0%	\$25,865
				Administration 5.0%	\$25,865
				Preliminary Engineering, PS&E Engineering and Construction Management 30.0%	\$155,190
				<b>2015 TOTAL =</b>	<b>\$724,220</b>

**ASSUMPTIONS:**

Length of pipe, pipe diameter, number of structures and structure size were provided by City of Des Moines.  
 Mobilization equals approximately 10-percent of Subtotal.  
 Traffic Control equals approximately 2-percent of Subtotal.  
 Erosion/Sedimentation Control equals approximately 2-percent of Subtotal (\$1,000 min).  
 Pavement Restoration includes the cost of HMA (2-inch), CSTC (2-inch), and CSBC (4-inch).  
 Cost of pipe installation includes structure excavation and shoring.  
 Cost of catch basin installation includes structure excavation and shoring.  
 Cost includes rebuilding of stairs from 7th PI S to DMMD.



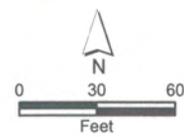
**Description:** Replace the existing ditches and storm drain pipes, with approximately 310 feet of 12-inch pipe, 300 feet of 18-inch pipe, 170 feet of 24-inch pipe, 3 catch basins and 7 storm drain manholes.  
**Estimated Cost (\$):** 258,300  
**Scoring Criteria:** \$, M/I, S, CMP, DR, PP, REF

Parametrix  
INCORPORATED FLOODING SUPPLEMENTAL SERVICES

- Discharge Point
- Control Structure
- Catchment
- WQ Facility
- Open Channel
- Storm Main

- Capital Project and Rank
- High
  - Medium
  - Low
  - Proposed Drain Pipe
  - Proposed Catch Basin

- Streams
- 100 Year Flood
- Drainage Basin
- City Limits



**Capital Project 17.**  
 216th Place/Marine View Drive  
 Pipe Upgrade

City of Des Moines  
 Surface Water Comprehensive Plan

CITY OF DES MOINES  
 2015 Comprehensive Stormwater Plan Update  
 Preliminary Opinion of Probable Cost

Capital Project 17  
 Project Name: 216th Place/Marine View Drive Pipe Upgrade  
 Prepared By: Mallory Miller

Checked By: Craig Bufrago

Project Description:

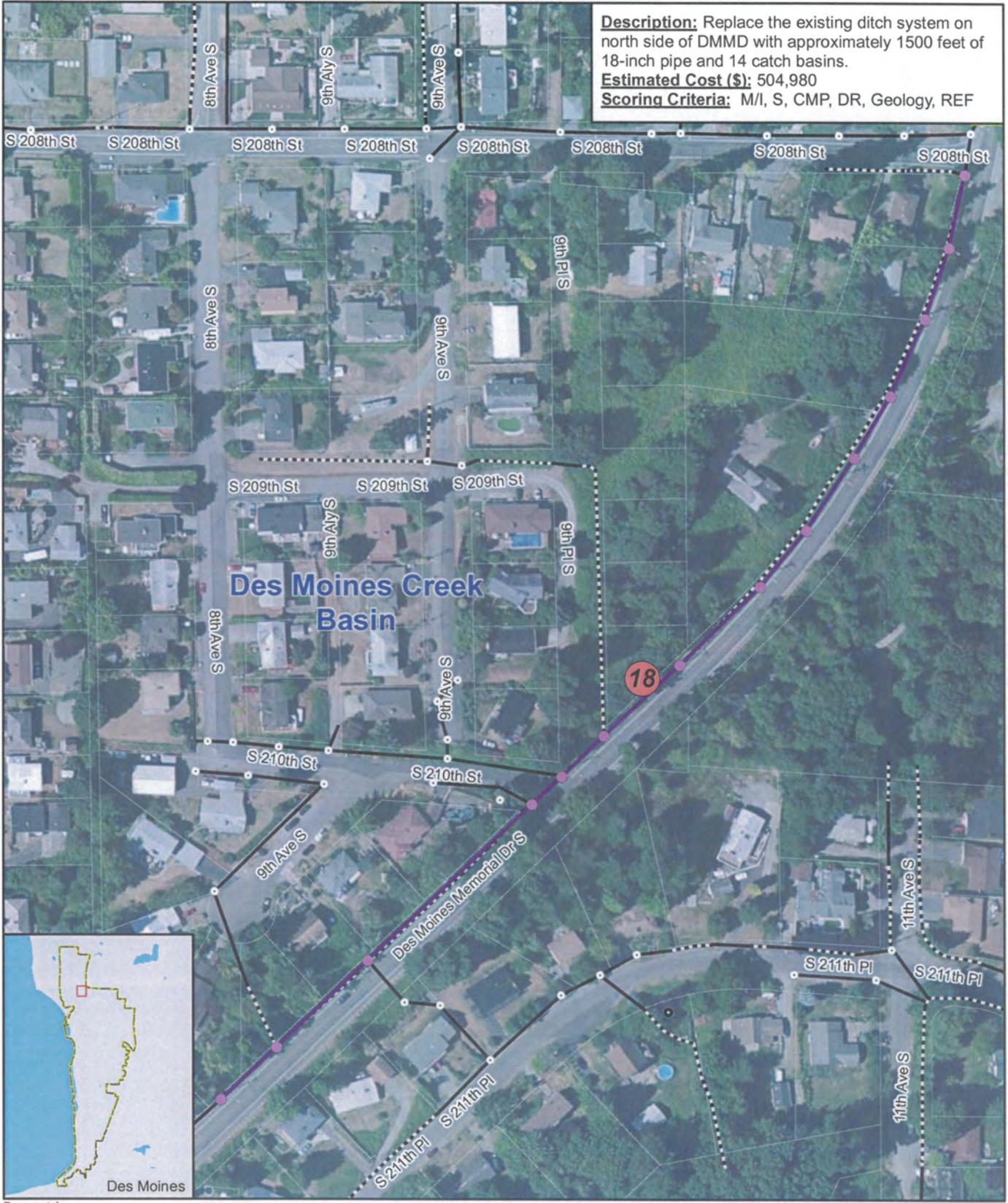
New 12" SD system to replace ditches on W side of 6th Ave S and W side of DMMD. Install Curb and CBs at pavement edge. Tie into existing structures SW of 6th Ave S cul-de-sac; replace ditch with 18" SD system. Upgrade to 24" SD system across Marine View Dr S intersection. Two new Type 2 CBs in Marine View Dr S, tie into existing SD structure SE of intersection.

Item No.	Estimated Quantity	Unit	Description	Unit Cost	Amount
1	1	LS	Mobilization	\$11,600	\$11,600
2	1	LS	Traffic Control	\$2,200	\$2,200
3	1	LS	Erosion/Sedimentation Control	\$2,200	\$2,200
4	610	LF	Pavement Restoration	\$20	\$12,200
5	310	LF	Schedule A Storm Sewer Pipe, 12-Inch Diameter	\$60	\$18,600
6	300	LF	Schedule A Storm Sewer Pipe, 18-Inch Diameter	\$80	\$24,000
7	170	LF	Schedule A Storm Sewer Pipe, 24-Inch Diameter	\$100	\$17,000
8	3	EA	Catch Basin Type I	\$1,930	\$5,790
9	7	EA	Catch Basin Type II, 48" Diam.	\$4,880	\$34,160
10					
Construction Subtotal (2014 Dollars) =					\$127,750
Inflation from 2014 to 2015 3.65%					\$4,663
<b>Construction Subtotal (2015 Dollars) =</b>					<b>\$132,413</b>
Contingency 30.0%					\$39,724
Sales Tax 9.3%					\$12,314
<b>Planning Level Construction Cost =</b>					<b>\$184,500</b>
Environmental Permitting and Documentation 5.0%					\$9,225
Administration 5.0%					\$9,225
Preliminary Engineering, PS&E Engineering and Construction Management 30.0%					\$55,350
<b>2015 TOTAL =</b>					<b>\$258,300</b>

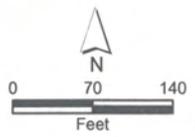
ASSUMPTIONS:

- Length of pipe, pipe diameter, number of structures and structure size were provided by City of Des Moines.
- Mobilization equals approximately 10-percent of Subtotal.
- Traffic Control equals approximately 2-percent of Subtotal.
- Erosion/Sedimentation Control equals approximately 2-percent of Subtotal (\$1,000 min).
- Pavement Restoration includes the cost of HMA (2-inch), CSTC (2-inch), and CSBC (4-inch).
- Cost of pipe installation includes structure excavation and shoring.
- Cost of catch basin installation includes structure excavation and shoring.

**Description:** Replace the existing ditch system on north side of DMMD with approximately 1500 feet of 18-inch pipe and 14 catch basins.  
**Estimated Cost (\$):** 504,980  
**Scoring Criteria:** M/I, S, CMP, DR, Geology, REF



Parametrix  
ENGINEERING • PLANNING • ENVIRONMENTAL SERVICES



- |                     |                            |                  |
|---------------------|----------------------------|------------------|
| ● Discharge Point   | ● Capital Project and Rank | — Streams        |
| ● Control Structure | ● High                     | — 100 Year Flood |
| ○ Catchment         | ● Medium                   | — Drainage Basin |
| ■ WQ Facility       | ● Low                      | — City Limits    |
| --- Open Channel    | — Proposed Drain Pipe      |                  |
| — Storm Main        | ● Proposed Catch Basin     |                  |

**Capital Project 18.**  
 Des Moines Memorial Drive - S.  
 208th to S. 212th Pipe Project

**City of Des Moines**  
 Surface Water Comprehensive Plan

**CITY OF DES MOINES**  
**2015 Comprehensive Stormwater Plan Update**  
**Preliminary Opinion of Probable Cost**

**Capital Project** 18  
**Project Name:** Des Moines Memorial Drive - S. 208th to S. 212th Pipe Project  
**Prepared By:** Mallory Miller **Checked By:** Craig Buitrago  
**Project Description:**

New 18" SD system to replace ditches on NW side of DMMD. From S 208th St to S 210th St, add 2' of pavement and curb from existing paved edge. Install new curb at pavement edge (new or existing) for entire improvement segment. Install Type 2 CBs at new curb flowline. Install new SDMH with vaned grate at intersection of S 208th St and DMMD. Replace existing SDMH's where existing structures will be connected to from S 210th St and 9th Pl S and side neighborhoods. Improvements will not impact existing power/telephone poles that are located in existing ditchline.

Item No.	Estimated Quantity	Unit	Description	Unit Cost	Amount
1	1	LS	Mobilization	\$22,700	\$22,700
2	1	LS	Traffic Control	\$4,400	\$4,400
3	1	LS	Erosion/Sedimentation Control	\$4,400	\$4,400
4	1500	LF	Pavement Restoration	\$20	\$30,000
5	1500	LF	Schedule A Storm Sewer Pipe, 18-Inch Diameter	\$80	\$120,000
6	14	EA	Catch Basin Type II, 48" Diam.	\$4,880	\$68,320
7					
8					
9					
10					
Construction Subtotal (2014 Dollars) =					\$249,820
Inflation from 2014 to 2015 3.65%					\$9,118
<b>Construction Subtotal (2015 Dollars) =</b>					<b>\$258,938</b>
Contingency 30.0%					\$77,681
Sales Tax 9.3%					\$24,081
<b>Planning Level Construction Cost =</b>					<b>\$360,700</b>
Environmental Permitting and Documentation 5.0%					\$18,035
Administration 5.0%					\$18,035
Preliminary Engineering, PS&E Engineering and Construction Management 30.0%					\$108,210
<b>2015 TOTAL =</b>					<b>\$504,980</b>

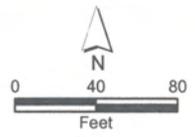
**ASSUMPTIONS:**

- Length of pipe, pipe diameter, number of structures and structure size were provided by City of Des Moines.
- Mobilization equals approximately 10-percent of Subtotal.
- Traffic Control equals approximately 2-percent of Subtotal.
- Erosion/Sedimentation Control equals approximately 2-percent of Subtotal (\$1,000 min).
- Pavement Restoration includes the cost of HMA (2-inch), CSTC (2-inch), and CSBC (4-inch).
- Cost of pipe installation includes structure excavation and shoring.
- Cost of catch basin installation includes structure excavation and shoring.

**Description:** Install a new stormwater conveyance system consisting of approximately 500 feet of 12-inch pipe and 4 catch basins.  
**Estimated Cost (\$):** 110,600  
**Scoring Criteria:** CMP, REF



Parametrix  
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- |                     |                            |                  |
|---------------------|----------------------------|------------------|
| ● Discharge Point   | ● Capital Project and Rank | — Streams        |
| ● Control Structure | ● High                     | ■ 100 Year Flood |
| ○ Catchment         | ● Medium                   | ▭ Drainage Basin |
| ■ WQ Facility       | ● Low                      | ▭ City Limits    |
| --- Open Channel    | — Proposed Drain Pipe      |                  |
| — Storm Main        | ● Proposed Catch Basin     |                  |

**Capital Project 19.**  
 14th Avenue/15th Avenue N/O  
 215th Place Pipe Project

**City of Des Moines**  
 Surface Water Comprehensive Plan

CITY OF DES MOINES  
 2015 Comprehensive Stormwater Plan Update  
 Preliminary Opinion of Probable Cost

Capital Project 19  
 Project Name: 14th Avenue/15th Avenue N/O 215th Place Pipe Project  
 Prepared By: Mallory Miller

Checked By: Craig Buitrago

Project Description:

New 12" SD system, curb and gutter to replace existing curb on E side of 14th Ave S. Connect to existing SD system at NE corner of intersection with S 215th Pl. New 12" SD system, curb and gutter to replace existing curb and gutter on E side of 15th Ave S. Connect to existing SDMH in front of driveway at 21254 15th Ave S.

Item No.	Estimated Quantity	Unit	Description	Unit Cost	Amount
1	1	LS	Mobilization	\$5,000	\$5,000
2	1	LS	Traffic Control	\$1,000	\$1,000
3	1	LS	Erosion/Sedimentation Control	\$1,000	\$1,000
4	500	LF	Pavement Restoration	\$20	\$10,000
5	500	LF	Schedule A Storm Sewer Pipe, 12-Inch Diameter	\$60	\$30,000
6	4	EA	Catch Basin Type I	\$1,930	\$7,720
7					
8					
9					
10					

Construction Subtotal (2014 Dollars) =		\$54,720
Inflation from 2014 to 2015	3.65%	\$1,997
<b>Construction Subtotal (2015 Dollars) =</b>		<b>\$56,717</b>

Contingency	30.0%	\$17,015
Sales Tax	9.3%	\$5,275
<b>Planning Level Construction Cost =</b>		<b>\$79,000</b>

Environmental Permitting and Documentation	5.0%	\$3,950
Administration	5.0%	\$3,950
Preliminary Engineering, PS&E Engineering and Construction Management	30.0%	\$23,700

**2015 TOTAL = \$110,600**

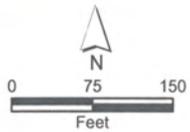
ASSUMPTIONS:

- Length of pipe, pipe diameter, number of structures and structure size were provided by City of Des Moines.
- Mobilization equals approximately 10-percent of Subtotal.
- Traffic Control equals approximately 2-percent of Subtotal.
- Erosion/Sedimentation Control equals approximately 2-percent of Subtotal (\$1,000 min).
- Pavement Restoration includes the cost of HMA (2-inch), CSTC (2-inch), and CSBC (4-inch).
- Cost of pipe installation includes structure excavation and shoring.
- Cost of catch basin installation includes structure excavation and shoring.

**Description:** Install a new stormwater conveyance system consisting of approximately 2070 feet of 12-inch pipe and 20 catch basins. The new SD system will replace the existing ditch on N side of S 222nd St.  
**Estimated Cost (\$):** 472,220  
**Scoring Criteria:** CMP, DR, REF



Parametrix  
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- Discharge Point
- Control Structure
- Catchment
- WQ Facility
- Open Channel
- Storm Main

- Capital Project and Rank**
- High
  - Medium
  - Low
  - Proposed Drain Pipe
  - Proposed Catch Basin

- Streams
- 100 Year Flood
- Drainage Basin
- City Limits

**Capital Project 20.**  
 222nd/223rd 8th Avenue to 11th Avenue Pipe Project

**City of Des Moines**  
 Surface Water Comprehensive Plan

CITY OF DES MOINES  
 2015 Comprehensive Stormwater Plan Update  
 Preliminary Opinion of Probable Cost

Capital Project 20

Project Name: 222nd/223rd 8th Avenue to 11th Avenue Pipe Project

Prepared By: Mallory Miller

Checked By: Craig Bultrago

Project Description:

New 12" SD system on W side of 11th Ave S and N side of S 222nd St. Install new curb at existing paved edge along 11th Ave S and S 222nd St. Connect storm pipe to existing CB at NE corner of S 222nd St and 10th Pl S. Install new SD system that will replace existing ditch on N side of S 222nd St. SD system will begin with a new CB that will connect to existing culvert end at NW corner of S 222nd St and 9th Ave S. Install new curb at pavement edge for entire improvement segment. All new Type 1 CBs. Install new CB to connect with existing 8th Ave S pipe at in NW corner intersection with S 222nd St. Install new CB to connect with existing culvert at NE corner of alley between Marine View Dr S and 8th Ave S. Install new SD system along existing curb on W side of 9th Ave S. Install new SD system and new curb at W edge of pavement on 10th Ave S. New SD systems on 9 Ave S and 10th Ave S will connect to existing SD system on north side of S 223rd St. Install new SD system and new curb at S edge of pavement on S 223rd St between 10th Ave S and 9th Ave S. Connect SD to new 9th Ave S SD system that will extend S to the end of the gravel driveway. Project description and estimate does no consider any existing underground utilities that may exist.

Item No.	Estimated Quantity	Unit	Description	Unit Cost	Amount
1	1	LS	Mobilization	\$21,200	\$21,200
2	1	LS	Traffic Control	\$4,100	\$4,100
3	1	LS	Erosion/Sedimentation Control	\$4,100	\$4,100
4	2070	LF	Pavement Restoration	\$20	\$41,400
5	2070	LF	Schedule A Storm Sewer Pipe, 12-Inch Diameter	\$60	\$124,200
6	20	EA	Catch Basin Type I	\$1,930	\$38,600
7					
8					
9					
10					
Construction Subtotal (2014 Dollars) =					\$233,600
Inflation from 2014 to 2015 3.65%					\$8,526
<b>Construction Subtotal (2015 Dollars) =</b>					<b>\$242,126</b>
Contingency 30.0%					\$72,638
Sales Tax 9.3%					\$22,518
<b>Planning Level Construction Cost =</b>					<b>\$337,300</b>
Environmental Permitting and Documentation 5.0%					\$16,865
Administration 5.0%					\$16,865
Preliminary Engineering, PS&E Engineering and Construction Management 30.0%					\$101,190
<b>2015 TOTAL =</b>					<b>\$472,220</b>

ASSUMPTIONS:

Length of pipe, pipe diameter, number of structures and structure size were provided by City of Des Moines.

Mobilization equals approximately 10-percent of Subtotal.

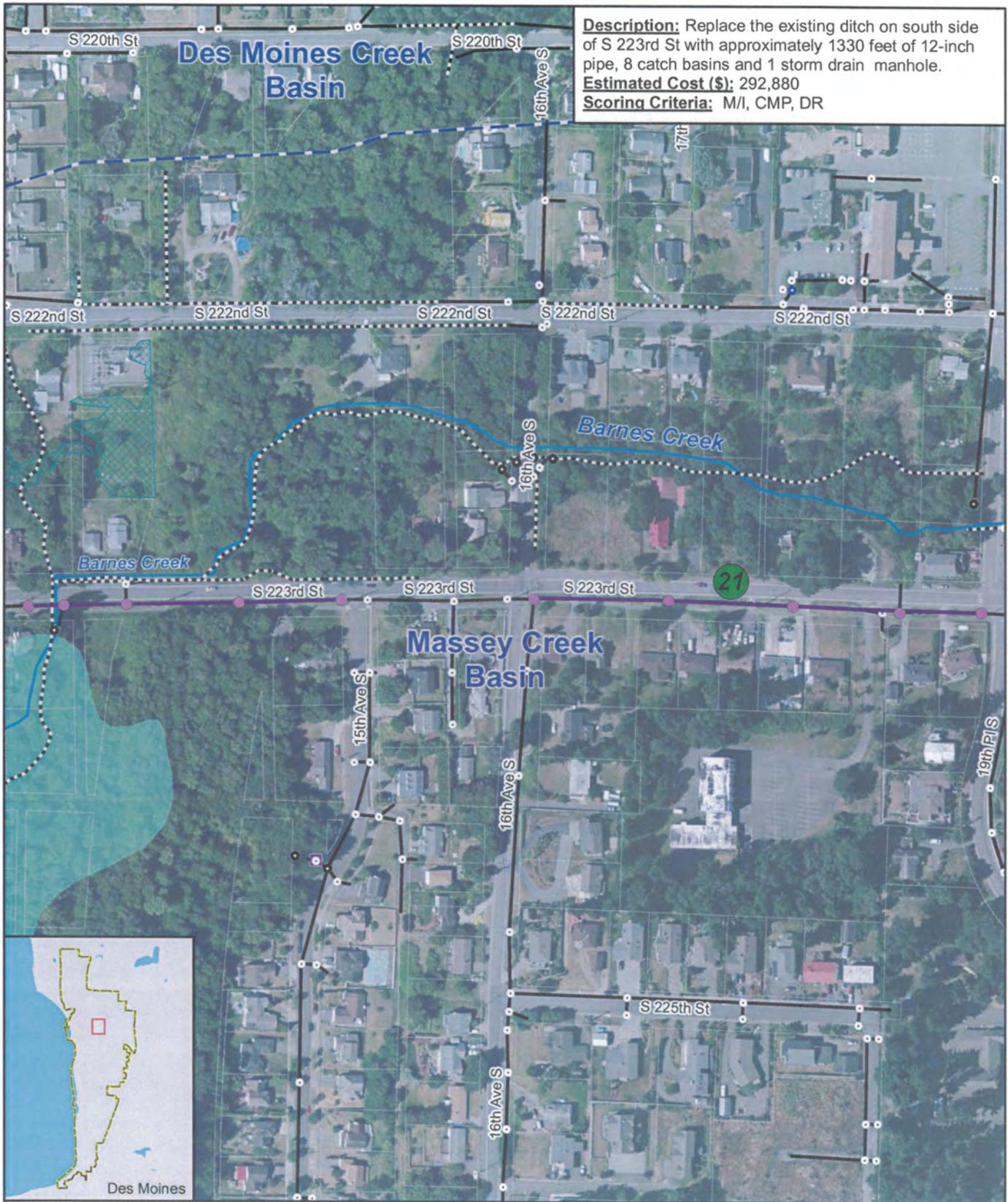
Traffic Control equals approximately 2-percent of Subtotal.

Erosion/Sedimentation Control equals approximately 2-percent of Subtotal (\$1,000 min).

Pavement Restoration includes the cost of HMA (2-inch), CSTC (2-inch), and CSBC (4-inch).

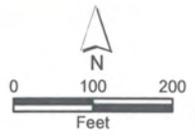
Cost of pipe installation includes structure excavation and shoring.

Cost of catch basin installation includes structure excavation and shoring.



**Description:** Replace the existing ditch on south side of S 223rd St with approximately 1330 feet of 12-inch pipe, 8 catch basins and 1 storm drain manhole.  
**Estimated Cost (\$):** 292,880  
**Scoring Criteria:** M/I, CMP, DR

Parametrix  
AN IRIDIUM COMPANY



- |                     |                            |                  |
|---------------------|----------------------------|------------------|
| ● Discharge Point   | ● Capital Project and Rank | — Streams        |
| ● Control Structure | ● High                     | ■ 100 Year Flood |
| ○ Catchment         | ● Medium                   | ■ Drainage Basin |
| ■ WQ Facility       | ● Low                      | ■ City Limits    |
| --- Open Channel    | — Proposed Drain Pipe      |                  |
| — Storm Main        | ● Proposed Catch Basin     |                  |

**Capital Project 21.**  
 223rd Street (13th Avenue to 19th Avenue) Pipe Project

**City of Des Moines**  
 Surface Water Comprehensive Plan

CITY OF DES MOINES  
 2015 Comprehensive Stormwater Plan Update  
 Preliminary Opinion of Probable Cost

Capital Project 21  
 Project Name: 223rd Street (13th Avenue to 19th Avenue) Pipe Project  
 Prepared By: Mallory Miller

Checked By: Craig Bultrago

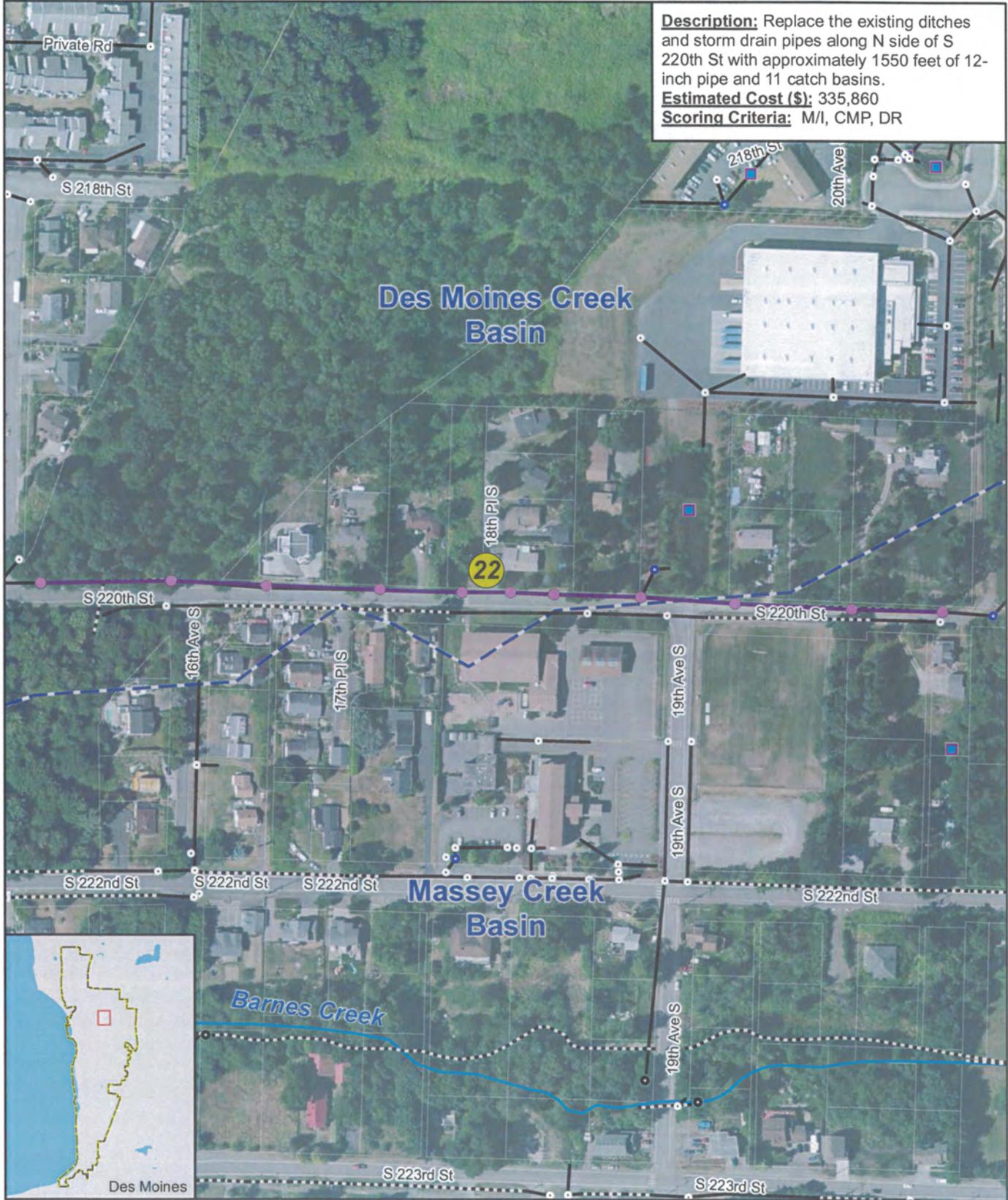
Project Description:

New 12" SD along S side of S 223rd St to replace roadside ditches. Install 2-foot paved shoulder, curb, and CBs at pavement edge. Maintain existing culvert from 16th Ave S and 15th Ave S.

Item No.	Estimated Quantity	Unit	Description	Unit Cost	Amount
1	1	LS	Mobilization	\$13,200	\$13,200
2	1	LS	Traffic Control	\$2,500	\$2,500
3	1	LS	Erosion/Sedimentation Control	\$2,500	\$2,500
4	1330	LF	Pavement Restoration	\$20	\$26,600
5	1330	LF	Schedule A Storm Sewer Pipe, 12-Inch Diameter	\$60	\$79,800
6	8	EA	Catch Basin Type I	\$1,930	\$15,440
7	1	EA	Catch Basin Type II, 48" Diam.	\$4,880	\$4,880
8					
9					
10					
Construction Subtotal (2014 Dollars) =					\$144,920
Inflation from 2014 to 2015 3.65%					\$5,290
<b>Construction Subtotal (2015 Dollars) =</b>					<b>\$150,210</b>
Contingency 30.0%					\$45,063
Sales Tax 9.3%					\$13,970
<b>Planning Level Construction Cost =</b>					<b>\$209,200</b>
Environmental Permitting and Documentation 5.0%					\$10,460
Administration 5.0%					\$10,460
Preliminary Engineering, PS&E Engineering and Construction Management 30.0%					\$62,760
<b>2015 TOTAL =</b>					<b>\$292,880</b>

ASSUMPTIONS:

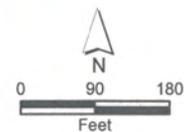
- Length of pipe, pipe diameter, number of structures and structure size were provided by City of Des Moines.
- Mobilization equals approximately 10-percent of Subtotal.
- Traffic Control equals approximately 2-percent of Subtotal.
- Erosion/Sedimentation Control equals approximately 2-percent of Subtotal (\$1,000 min).
- Pavement Restoration includes the cost of HMA (2-inch), CSTC (2-inch), and CSBC (4-inch).
- Cost of pipe installation includes structure excavation and shoring.
- Cost of catch basin installation includes structure excavation and shoring.



**Description:** Replace the existing ditches and storm drain pipes along N side of S 220th St with approximately 1550 feet of 12-inch pipe and 11 catch basins.  
**Estimated Cost (\$):** 335,860  
**Scoring Criteria:** M/I, CMP, DR

Parametrix

300 WEST 10TH AVENUE, SUITE 200, DES MOINES, IA 50319



- |                     |                            |                  |
|---------------------|----------------------------|------------------|
| ● Discharge Point   | ● Capital Project and Rank | — Streams        |
| ● Control Structure | ● High                     | ■ 100 Year Flood |
| ○ Catchment         | ● Medium                   | ■ Drainage Basin |
| ■ WQ Facility       | ● Low                      | ■ City Limits    |
| --- Open Channel    | — Proposed Drain Pipe      |                  |
| — Storm Main        | ● Proposed Catch Basin     |                  |

**Capital Project 22.**  
 220th Street (15th Ave to SJU Park) Pipe Replacement Project

City of Des Moines  
 Surface Water Comprehensive Plan

CITY OF DES MOINES  
 2015 Comprehensive Stormwater Plan Update  
 Preliminary Opinion of Probable Cost

Capital Project 22  
 Project Name: 220th Street (15th Ave to SJU Park) Pipe Replacement Project  
 Prepared By: Mallory Miller

Checked By: Craig Buifrago

Project Description:

New SD along N side of S 220th St. Install curb and new CBs at edge of existing pavement (15th Ave S to 18th Pl S). Install new 2-foot paved shoulder, curb, and CBs at pavement edge from 18th Pl S to 19th Ave S. Repair gravel road between 19th Ave S and eastern end of project.

Item No.	Estimated Quantity	Unit	Description	Unit Cost	Amount
1	1	LS	Mobilization	\$15,100	\$15,100
2	1	LS	Traffic Control	\$2,900	\$2,900
3	1	LS	Erosion/Sedimentation Control	\$2,900	\$2,900
4	1550	LF	Pavement Restoration	\$20	\$31,000
5	1550	LF	Schedule A Storm Sewer Pipe, 12-Inch Diameter	\$60	\$93,000
6	11	EA	Catch Basin Type I	\$1,930	\$21,230
7					
8					
9					
10					
Construction Subtotal (2014 Dollars) =					\$166,130
inflation from 2014 to 2015 3.65%					\$6,064
<b>Construction Subtotal (2015 Dollars) =</b>					<b>\$172,194</b>
Contingency 30.0%					\$51,658
Sales Tax 9.3%					\$16,014
<b>Planning Level Construction Cost =</b>					<b>\$239,900</b>
Environmental Permitting and Documentation 5.0%					\$11,995
Administration 5.0%					\$11,995
Preliminary Engineering, PS&E Engineering and Construction Management 30.0%					\$71,970
<b>2015 TOTAL =</b>					<b>\$335,860</b>

ASSUMPTIONS:

- Length of pipe, pipe diameter, number of structures and structure size were provided by City of Des Moines.
- Mobilization equals approximately 10-percent of Subtotal.
- Traffic Control equals approximately 2-percent of Subtotal.
- Erosion/Sedimentation Control equals approximately 2-percent of Subtotal (\$1,000 min).
- Pavement Restoration includes the cost of HMA (2-inch), CSTC (2-inch), and CSBC (4-inch).
- Cost of pipe installation includes structure excavation and shoring.
- Cost of catch basin installation includes structure excavation and shoring.

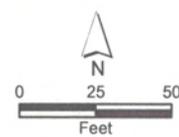


**Description:** Replace the existing 18-inch storm drain on 24th Ave S and existing ditch at the corner of 24th Ave S and 2 224th St with approximately 570 feet of 24-inch pipe and 6 storm drain manholes.  
**Estimated Cost (\$):** 226,100  
**Scoring Criteria:** M/I, CMP, P/E, DR, REF

Massey Creek Basin



Parametrix



- Discharge Point
- Control Structure
- Catchment
- WQ Facility
- Open Channel
- Storm Main

- Capital Project and Rank
- High
  - Medium
  - Low
  - Proposed Drain Pipe
  - Proposed Catch Basin

- Streams
- 100 Year Flood
- Drainage Basin
- City Limits

**Capital Project 23.**  
 24th Avenue (223rd to 224th)  
 Pipe Upgrade

City of Des Moines  
 Surface Water Comprehensive Plan

CITY OF DES MOINES  
 2015 Comprehensive Stormwater Plan Update  
 Preliminary Opinion of Probable Cost

Capital Project 23  
 Project Name: 24th Avenue (223rd to 224th) Pipe Upgrade  
 Prepared By: Mallory Miller

Checked By: Craig Buitrago

Project Description:  
 Replace CBs and SD on E side of 24th Ave S. Install 2-foot paved shoulder, curb, and CBs at edge of pavement. Install CB on N side of S 224th St to replace roadside ditch (connect to ex culvert).

Item No.	Estimated Quantity	Unit	Description	Unit Cost	Amount
1	1	LS	Mobilization	\$10,200	\$10,200
2	1	LS	Traffic Control	\$2,000	\$2,000
3	1	LS	Erosion/Sedimentation Control	\$2,000	\$2,000
4	570	LF	Pavement Restoration	\$20	\$11,400
5	570	LF	Schedule A Storm Sewer Pipe, 24-Inch Diameter	\$100	\$57,000
6	6	EA	Catch Basin Type II, 48" Diam.	\$4,880	\$29,280
7					
8					
9					
10					

Construction Subtotal (2014 Dollars) =	\$111,880
Inflation from 2014 to 2015 3.65%	\$4,084
<b>Construction Subtotal (2015 Dollars) =</b>	<b>\$115,964</b>

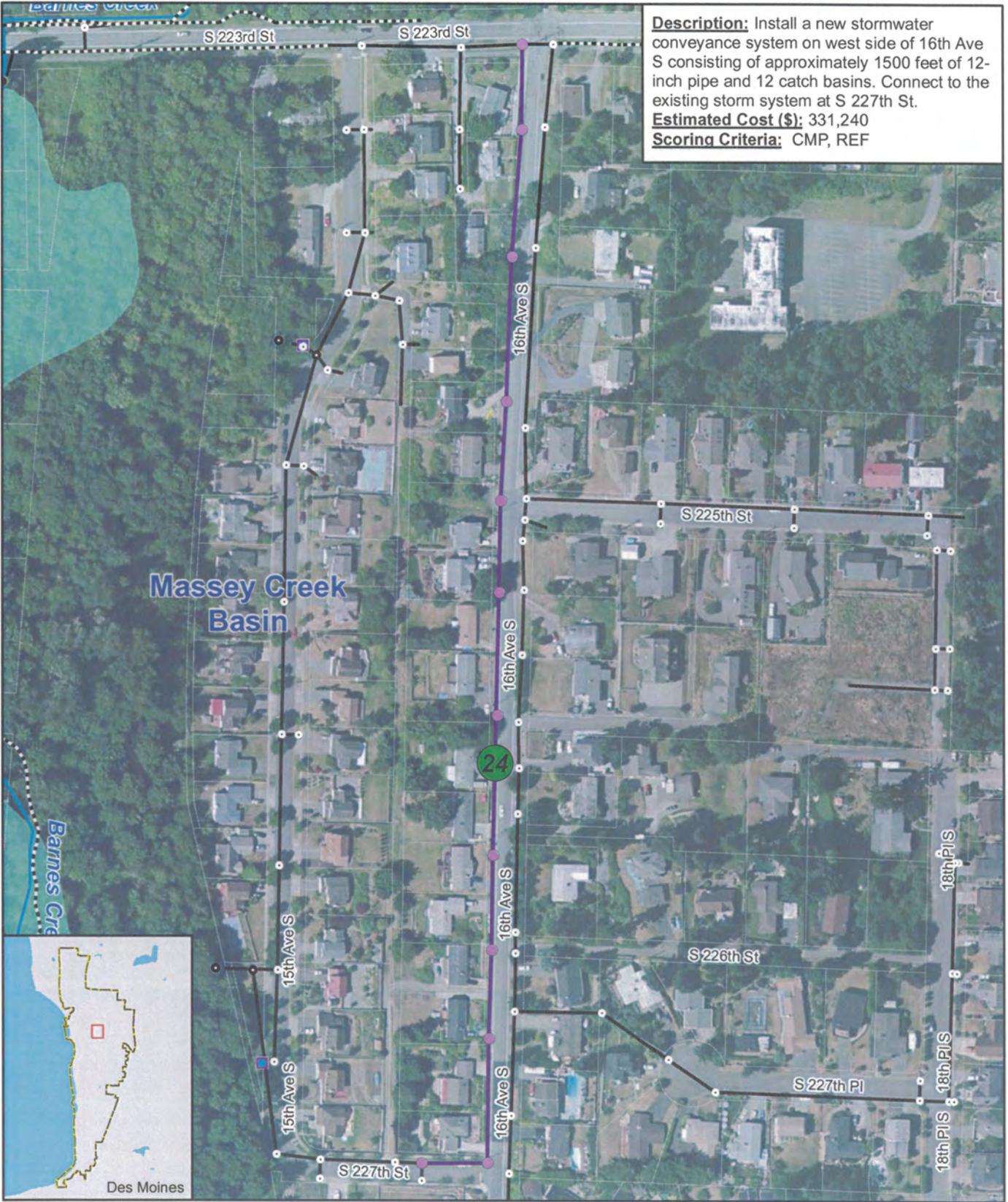
Contingency 30.0%	\$34,789
Sales Tax 9.3%	\$10,785
<b>Planning Level Construction Cost =</b>	<b>\$161,500</b>

Environmental Permitting and Documentation 5.0%	\$8,075
Administration 5.0%	\$8,075
Preliminary Engineering, PS&E Engineering and Construction Management 30.0%	\$48,450

**2015 TOTAL = \$226,100**

**ASSUMPTIONS:**

- Length of pipe, pipe diameter, number of structures and structure size were provided by City of Des Moines.
- Mobilization equals approximately 10-percent of Subtotal.
- Traffic Control equals approximately 2-percent of Subtotal.
- Erosion/Sedimentation Control equals approximately 2-percent of Subtotal (\$1,000 min).
- Pavement Restoration includes the cost of HMA (2-inch), CSTC (2-inch), and CSBC (4-inch).
- Cost of pipe installation includes structure excavation and shoring.
- Cost of catch basin installation includes structure excavation and shoring.



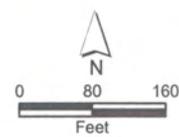
**Description:** Install a new stormwater conveyance system on west side of 16th Ave S consisting of approximately 1500 feet of 12-inch pipe and 12 catch basins. Connect to the existing storm system at S 227th St.  
**Estimated Cost (\$):** 331,240  
**Scoring Criteria:** CMP, REF

Parametrix

- Discharge Point
- Control Structure
- Catchment
- WQ Facility
- Open Channel
- Storm Main

- Capital Project and Rank
- High
  - Medium
  - Low
  - Proposed Drain Pipe
  - Proposed Catch Basin

- Streams
- 100 Year Flood
- Drainage Basin
- City Limits



**Capital Project 24.**  
 16th Avenue (224th to 228th)  
 Pipe Project

CITY OF DES MOINES  
 2015 Comprehensive Stormwater Plan Update  
 Preliminary Opinion of Probable Cost

Capital Project 24  
 Project Name: 16th Avenue (224th to 228th) Pipe Project  
 Prepared By: Mallory Miller

Checked By: Craig Buitrago

Project Description:

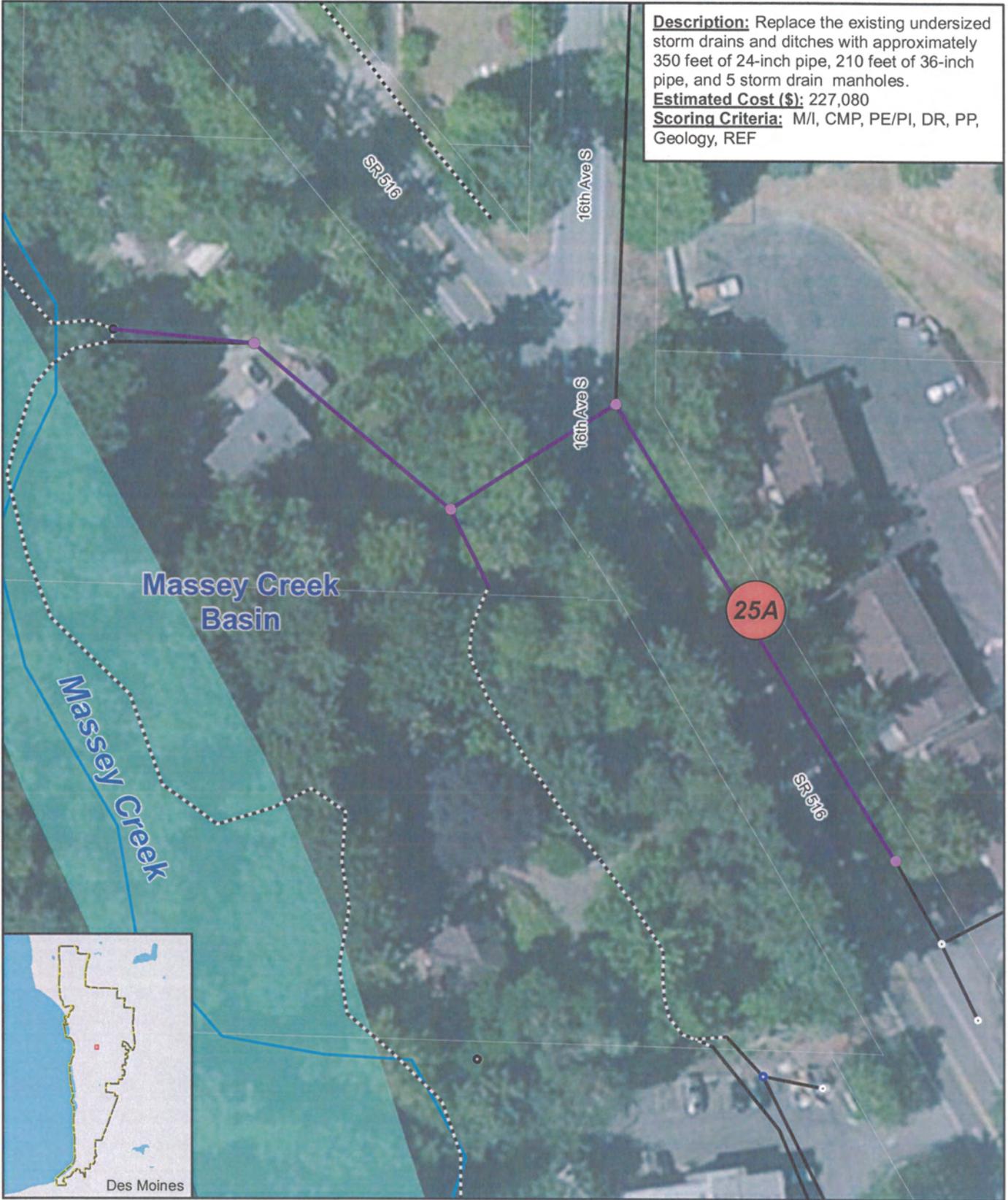
Install new 12" SD and Type 1 CBs along W side of 16th Ave S. Install CBs along edge of existing pavement. Connect to ex CB on S 228th St, and replace curb and gutter disturbed by pipe installation.

Item No.	Estimated Quantity	Unit	Description	Unit Cost	Amount
1	1	LS	Mobilization	\$14,900	\$14,900
2	1	LS	Traffic Control	\$2,900	\$2,900
3	1	LS	Erosion/Sedimentation Control	\$2,900	\$2,900
4	1500	LF	Pavement Restoration	\$20	\$30,000
5	1500	LF	Schedule A Storm Sewer Pipe, 12-Inch Diameter	\$60	\$90,000
6	12	EA	Catch Basin Type I	\$1,930	\$23,160
7					
8					
9					
10					
				Construction Subtotal (2014 Dollars) =	\$163,860
				Inflation from 2014 to 2015 3.65%	\$5,981
				<b>Construction Subtotal (2015 Dollars) =</b>	<b>\$169,841</b>
				Contingency 30.0%	\$50,952
				Sales Tax 9.3%	\$15,795
				<b>Planning Level Construction Cost =</b>	<b>\$236,600</b>
				Environmental Permitting and Documentation 5.0%	\$11,830
				Administration 5.0%	\$11,830
				Preliminary Engineering, PS&E Engineering and Construction Management 30.0%	\$70,980
				<b>2015 TOTAL =</b>	<b>\$331,240</b>

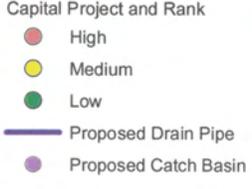
ASSUMPTIONS:

Length of pipe, pipe diameter, number of structures and structure size were provided by City of Des Moines.  
 Mobilization equals approximately 10-percent of Subtotal.  
 Traffic Control equals approximately 2-percent of Subtotal.  
 Erosion/Sedimentation Control equals approximately 2-percent of Subtotal (\$1,000 min).  
 Pavement Restoration includes the cost of HMA (2-inch), CSTC (2-inch), and CSBC (4-inch).  
 Cost of pipe installation includes structure excavation and shoring.  
 Cost of catch basin installation includes structure excavation and shoring.

**Description:** Replace the existing undersized storm drains and ditches with approximately 350 feet of 24-inch pipe, 210 feet of 36-inch pipe, and 5 storm drain manholes.  
**Estimated Cost (\$):** 227,080  
**Scoring Criteria:** M/I, CMP, PE/PI, DR, PP, Geology, REF



Parametrix



**Capital Project 25A.**  
**KDM/16th Avenue Pipe Replacement Project**

**City of Des Moines**  
**Surface Water Comprehensive Plan**

CITY OF DES MOINES  
 2015 Comprehensive Stormwater Plan Update  
 Preliminary Opinion of Probable Cost

Capital Project 25A  
 Project Name: KDM/16th Ave Pipe Replacement Project  
 Prepared By: Mallory Miller

Checked By: Craig Buitrago

Project Description:

Replace existing roadside ditch along KDM RD with 24" SD. Connect to ex 12" Conc pipe with new Type II CB at SE extents of project, and connect to ex 18" CAP with new Type II CB at SE corner of 16th Ave S.  
 Install new Type II CB and 24" SD SW of KDM Rd (connect CB to ex 18" CAP under KDM Rd). 24" pipe intersects with new 36" SD installed to connect ex ditch to Massey Creek.

Item No.	Estimated Quantity	Unit	Description	Unit Cost	Amount
1	1	LS	Mobilization	\$10,200	\$10,200
2	1	LS	Traffic Control	\$2,000	\$2,000
3	1	LS	Erosion/Sedimentation Control	\$2,000	\$2,000
4	350	LF	Pavement Restoration	\$20	\$7,000
5	350	LF	Schedule A Storm Sewer Pipe, 24-Inch Diameter	\$100	\$35,000
6	210	LF	Schedule A Storm Sewer Pipe, 36-Inch Diameter	\$140	\$29,400
7	2	EA	Catch Basin Type II, 48" Diam.	\$4,880	\$9,760
8	3	EA	Catch Basin Type II, 60" Diam.	\$5,660	\$16,980
9					
10					

Construction Subtotal (2014 Dollars) =	\$112,340
Inflation from 2014 to 2015 3.65%	\$4,100
<b>Construction Subtotal (2015 Dollars) =</b>	<b>\$116,440</b>

Contingency 30.0%	\$34,932
Sales Tax 9.3%	\$10,829
<b>Planning Level Construction Cost =</b>	<b>\$162,200</b>

Environmental Permitting and Documentation 5.0%	\$8,110
Administration 5.0%	\$8,110
Preliminary Engineering, PS&E Engineering and Construction Management 30.0%	\$48,660

**2015 TOTAL = \$227,080**

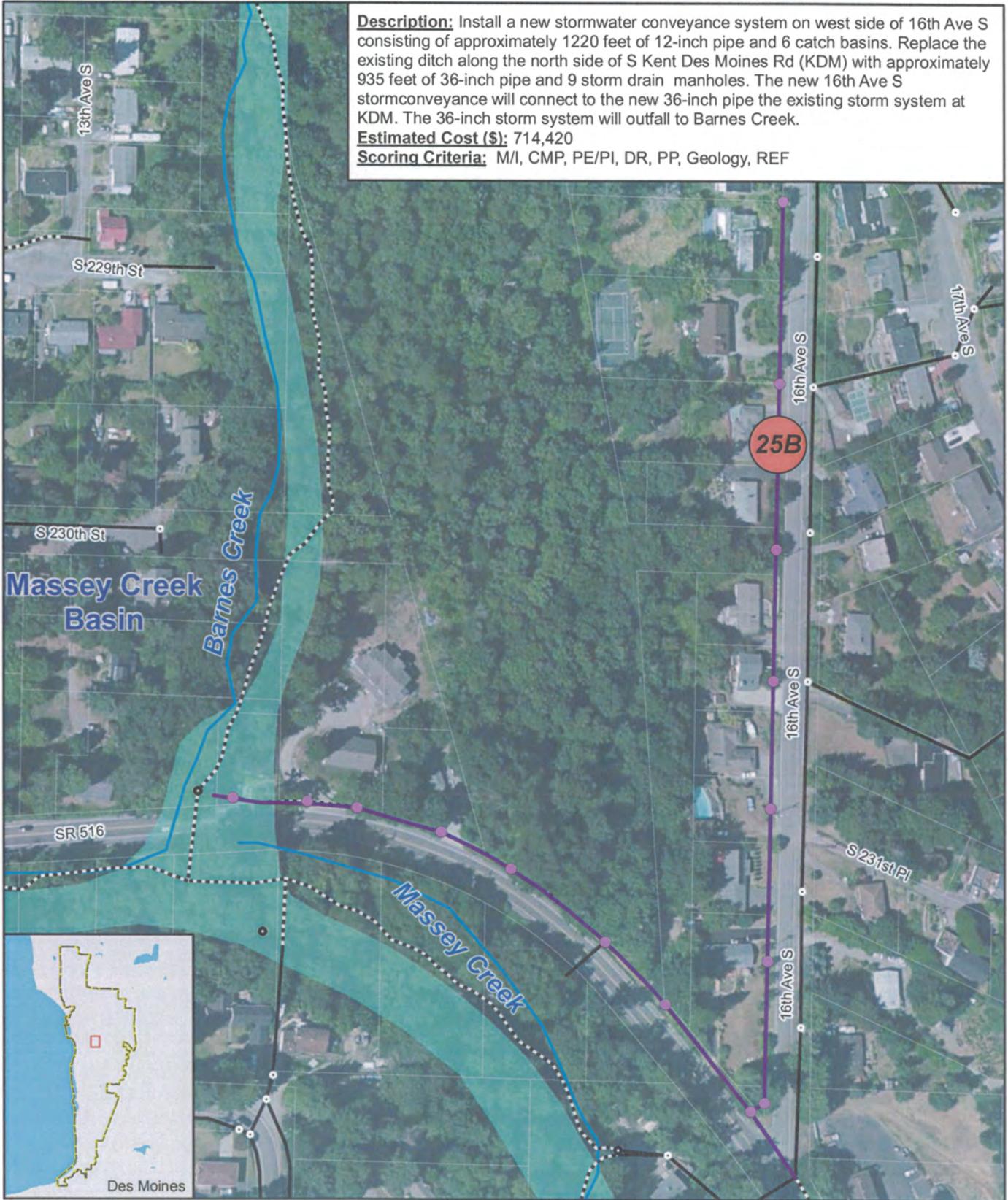
ASSUMPTIONS:

- Length of pipe, pipe diameter, number of structures and structure size were provided by City of Des Moines.
- Mobilization equals approximately 10-percent of Subtotal.
- Traffic Control equals approximately 2-percent of Subtotal.
- Erosion/Sedimentation Control equals approximately 2-percent of Subtotal (\$1,000 min).
- Pavement Restoration includes the cost of HMA (2-inch), CSTC (2-inch), and CSBC (4-inch).
- Cost of pipe installation includes structure excavation and shoring.
- Cost of catch basin installation includes structure excavation and shoring.

**Description:** Install a new stormwater conveyance system on west side of 16th Ave S consisting of approximately 1220 feet of 12-inch pipe and 6 catch basins. Replace the existing ditch along the north side of S Kent Des Moines Rd (KDM) with approximately 935 feet of 36-inch pipe and 9 storm drain manholes. The new 16th Ave S stormconveyance will connect to the new 36-inch pipe the existing storm system at KDM. The 36-inch storm system will outfall to Barnes Creek.

**Estimated Cost (\$):** 714,420

**Scoring Criteria:** M/I, CMP, PE/PI, DR, PP, Geology, REF



Parametrix  
INCORPORATED



- Discharge Point
- Control Structure
- Catchment
- WQ Facility
- Open Channel
- Storm Main

- Capital Project and Rank
- High
  - Medium
  - Low
  - Proposed Drain Pipe
  - Proposed Catch Basin

- Streams
- 100 Year Flood
- Drainage Basin
- City Limits

**Capital Project 25B.**  
KDM/16th Avenue (228th to KDM Rd) Pipe Project

City of Des Moines  
Surface Water Comprehensive Plan

**CITY OF DES MOINES**  
**2015 Comprehensive Stormwater Plan Update**  
**Preliminary Opinion of Probable Cost**

**Capital Project:** 25B  
**Project Name:** KDM/16th Avenue (228th to KDM) Pipe Project  
**Prepared By:** Mallory Miller  
**Project Description:**

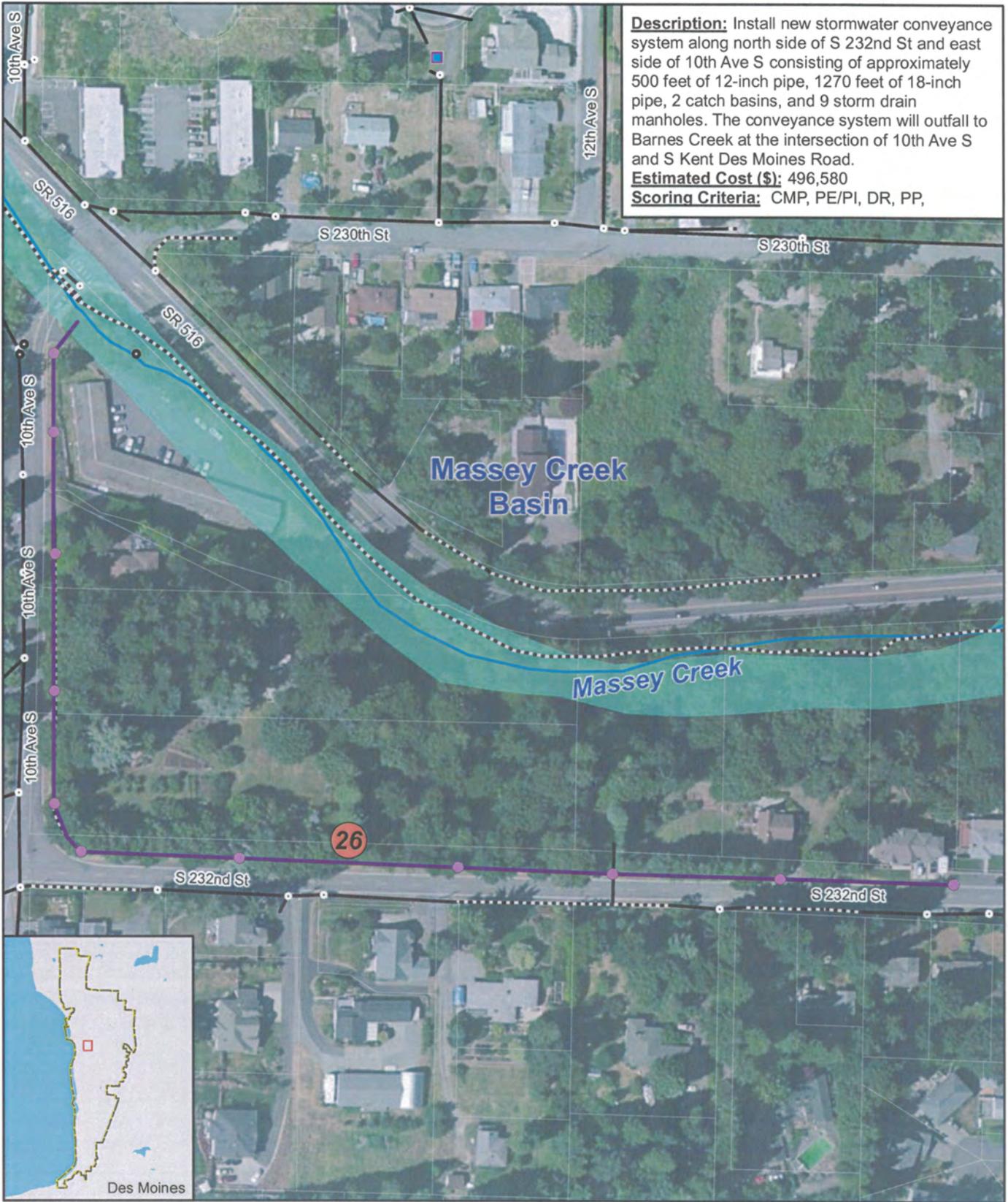
**Checked By:** Craig Buitrago

New 12" SD on W side of 16th Ave S. Install 2-foot paved shoulder and new CBs at pavement edge.  
 Install new 36" SD along N side of S Kent-Des Moines Rd. Connect to Type II CB (installed with CIP-25A), cross 16th Ave S, and replace roadside roadside ditches along KDM Rd. Install new CBs and curb and gutter at edge of existing pavement. Outfall 36" pipe to Barnes Creek.

Item No.	Estimated Quantity	Unit	Description	Unit Cost	Amount
1	1	LS	Mobilization	\$32,100	\$32,100
2	1	LS	Traffic Control	\$6,200	\$6,200
3	1	LS	Erosion/Sedimentation Control	\$6,200	\$6,200
4	2155	LF	Pavement Restoration	\$20	\$43,100
5	1220	LF	Schedule A Storm Sewer Pipe, 12-Inch Diameter	\$60	\$73,200
6	935	LF	Schedule A Storm Sewer Pipe, 36-Inch Diameter	\$140	\$130,900
7	6	EA	Catch Basin Type I	\$1,930	\$11,580
8	1	EA	Catch Basin Type II, 48" Diam.	\$4,880	\$4,880
9	8	EA	Catch Basin Type II, 60" Diam.	\$5,660	\$45,280
10					
<b>Construction Subtotal (2014 Dollars) =</b>					<b>\$353,440</b>
Inflation from 2014 to 2015 3.65%					\$12,901
<b>Construction Subtotal (2015 Dollars) =</b>					<b>\$366,341</b>
Contingency 30.0%					\$109,902
Sales Tax 9.3%					\$34,070
<b>Planning Level Construction Cost =</b>					<b>\$510,300</b>
Environmental Permitting and Documentation 5.0%					\$25,515
Administration 5.0%					\$25,515
Preliminary Engineering, PS&E Engineering and Construction Management 30.0%					\$153,090
<b>2015 TOTAL =</b>					<b>\$714,420</b>

**ASSUMPTIONS:**

- Length of pipe, pipe diameter, number of structures and structure size were provided by City of Des Moines.
- Mobilization equals approximately 10-percent of Subtotal.
- Traffic Control equals approximately 2-percent of Subtotal.
- Erosion/Sedimentation Control equals approximately 2-percent of Subtotal (\$1,000 min).
- Pavement Restoration includes the cost of HMA (2-inch), CSTC (2-inch), and CSBC (4-inch).
- Cost of pipe installation includes structure excavation and shoring.
- Cost of catch basin installation includes structure excavation and shoring.



**Description:** Install new stormwater conveyance system along north side of S 232nd St and east side of 10th Ave S consisting of approximately 500 feet of 12-inch pipe, 1270 feet of 18-inch pipe, 2 catch basins, and 9 storm drain manholes. The conveyance system will outfall to Barnes Creek at the intersection of 10th Ave S and S Kent Des Moines Road.

**Estimated Cost (\$):** 496,580

**Scoring Criteria:** CMP, PE/PI, DR, PP,

Parametrix

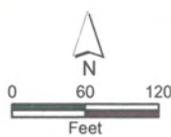
- Discharge Point
- Control Structure
- Catchment
- WQ Facility
- Open Channel
- Storm Main

- Capital Project and Rank
- High
  - Medium
  - Low
  - Proposed Drain Pipe
  - Proposed Catch Basin

- Streams
- 100 Year Flood
- Drainage Basin
- City Limits

**Capital Project 26.**  
232nd Street (10th to 14th) Pipe Project

City of Des Moines  
Surface Water Comprehensive Plan



CITY OF DES MOINES  
 2015 Comprehensive Stormwater Plan Update  
 Preliminary Opinion of Probable Cost

Capital Project 26  
 Project Name: 232nd Street (10th to 14th) Pipe Project  
 Prepared By: Mallory Miller

Checked By: Craig Bultrago

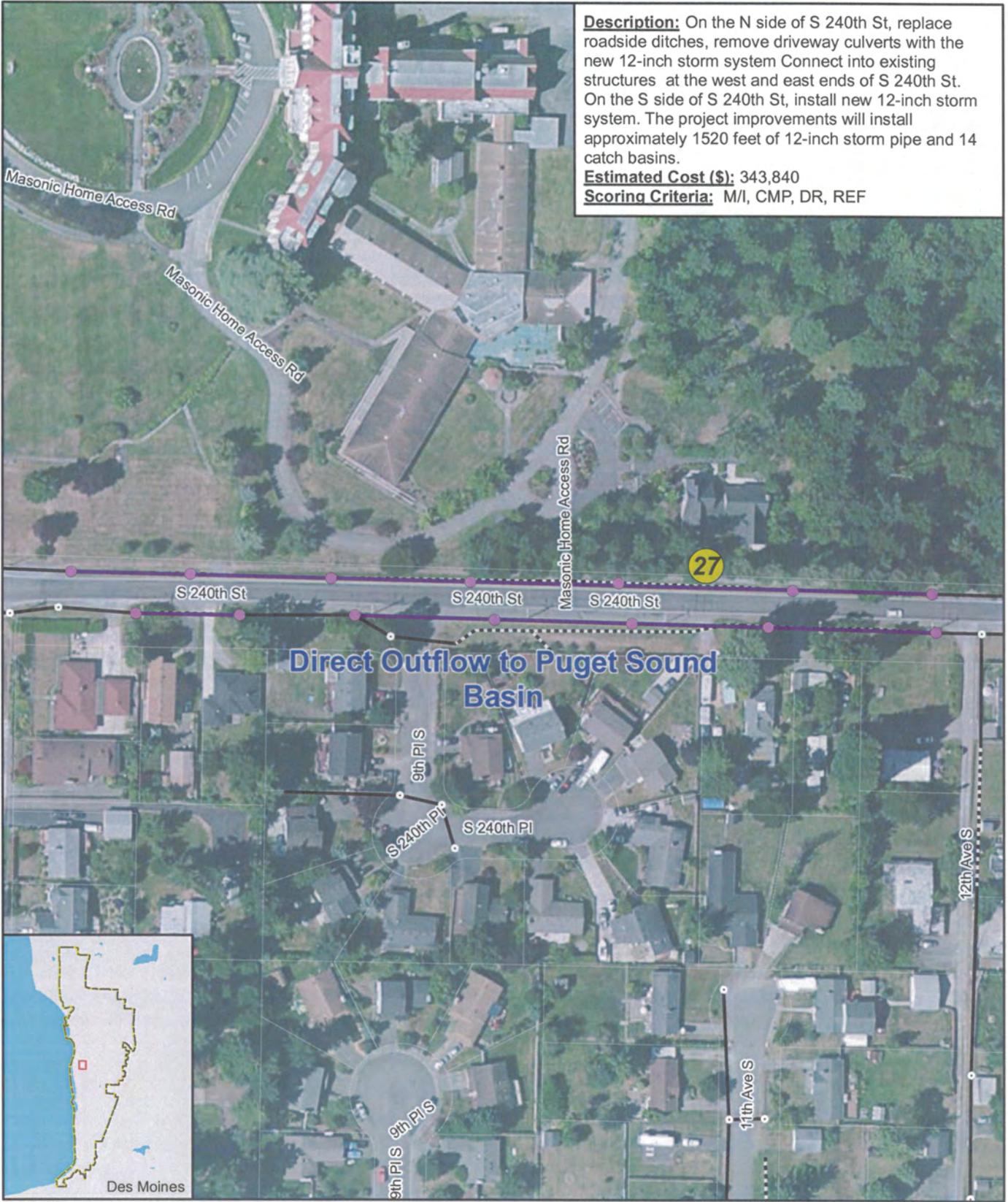
Project Description:

Install new SD system, 2-foot paved shoulder, and curb along north side of S 232nd St and east side of 10th Ave S. 18" pipe shall outfall to Barnes Creek at the intersection of 10th Ave S and S Kent Des Moines Road,

Item No.	Estimated Quantity	Unit	Description	Unit Cost	Amount
1	1	LS	Mobilization	\$22,300	\$22,300
2	1	LS	Traffic Control	\$4,300	\$4,300
3	1	LS	Erosion/Sedimentation Control	\$4,300	\$4,300
4	1770	LF	Pavement Restoration	\$20	\$35,400
5	500	LF	Schedule A Storm Sewer Pipe, 12-Inch Diameter	\$60	\$30,000
6	1270	LF	Schedule A Storm Sewer Pipe, 18-Inch Diameter	\$80	\$101,600
7	2	EA	Catch Basin Type I	\$1,930	\$3,860
8	9	EA	Catch Basin Type II, 48" Diam.	\$4,880	\$43,920
9					
10					
Construction Subtotal (2014 Dollars) =					\$245,680
Inflation from 2014 to 2015 3.65%					\$8,967
<b>Construction Subtotal (2015 Dollars) =</b>					<b>\$254,647</b>
Contingency 30.0%					\$76,394
Sales Tax 9.3%					\$23,682
<b>Planning Level Construction Cost =</b>					<b>\$354,700</b>
Environmental Permitting and Documentation 5.0%					\$17,735
Administration 5.0%					\$17,735
Preliminary Engineering, PS&E Engineering and Construction Management 30.0%					\$106,410
<b>2015 TOTAL =</b>					<b>\$496,580</b>

ASSUMPTIONS:

- Length of pipe, pipe diameter, number of structures and structure size were provided by City of Des Moines.
- Mobilization equals approximately 10-percent of Subtotal.
- Traffic Control equals approximately 2-percent of Subtotal.
- Erosion/Sedimentation Control equals approximately 2-percent of Subtotal (\$1,000 min).
- Pavement Restoration includes the cost of HMA (2-inch), CSTC (2-inch), and CSBC (4-inch).
- Cost of pipe installation includes structure excavation and shoring.
- Cost of catch basin installation includes structure excavation and shoring.



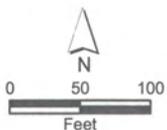
**Description:** On the N side of S 240th St, replace roadside ditches, remove driveway culverts with the new 12-inch storm system Connect into existing structures at the west and east ends of S 240th St. On the S side of S 240th St, install new 12-inch storm system. The project improvements will install approximately 1520 feet of 12-inch storm pipe and 14 catch basins.

**Estimated Cost (\$):** 343,840

**Scoring Criteria:** M/I, CMP, DR, REF

**Direct Outflow to Puget Sound Basin**

Parametrix  
AN IRIDIUM COMPANY



- |                     |                            |                  |
|---------------------|----------------------------|------------------|
| ● Discharge Point   | ● Capital Project and Rank | — Streams        |
| ● Control Structure | ● High                     | ■ 100 Year Flood |
| ○ Catchment         | ● Medium                   | ■ Drainage Basin |
| ■ WQ Facility       | ● Low                      | ■ City Limits    |
| --- Open Channel    | — Proposed Drain Pipe      |                  |
| — Storm Main        | ● Proposed Catch Basin     |                  |

**Capital Project 27.**  
240th Street (MVD to 11th Place) Pipe Project

City of Des Moines  
Surface Water Comprehensive Plan

**CITY OF DES MOINES**  
**2015 Comprehensive Stormwater Plan Update**  
**Preliminary Opinion of Probable Cost**

**Capital Project** 27  
**Project Name:** 240th Street (MVD to 11th Place) Pipe Project  
**Prepared By:** Mallory Miller

**Checked By:** Craig Buitrago

**Project Description:**

N side of S 240th St: Pipe to replace roadside ditches. Install 2-foot shoulder and curb and CBs at new pavement edge. Remove driveway culverts. Tie into existing structures at the west and east ends of S 240th St.

S side of S 240th St: Install new SD system. Install curb and CBs at edge of existing pavement (ex pavement spans approx. 425 feet). The remainder of the improvements will require a new 2-foot shoulder and curb for CB installation.

Item No.	Estimated Quantity	Unit	Description	Unit Cost	Amount
1	1	LS	Mobilization	\$15,500	\$15,500
2	1	LS	Traffic Control	\$3,000	\$3,000
3	1	LS	Erosion/Sedimentation Control	\$3,000	\$3,000
4	1520	LF	Pavement Restoration	\$20	\$30,400
5	1520	LF	Schedule A Storm Sewer Pipe, 12-Inch Diameter	\$60	\$91,200
6	14	EA	Catch Basin Type I	\$1,930	\$27,020
7					
8					
9					
10					
Construction Subtotal (2014 Dollars) =					\$170,120
Inflation from 2014 to 2015 3.65%					\$6,209
<b>Construction Subtotal (2015 Dollars) =</b>					<b>\$176,329</b>
Contingency 30.0%					\$52,899
Sales Tax 9.3%					\$16,399
<b>Planning Level Construction Cost =</b>					<b>\$245,600</b>
Environmental Permitting and Documentation 5.0%					\$12,280
Administration 5.0%					\$12,280
Preliminary Engineering, PS&E Engineering and Construction Management 30.0%					\$73,680
<b>2015 TOTAL =</b>					<b>\$343,840</b>

**ASSUMPTIONS:**

Length of pipe, pipe diameter, number of structures and structure size were provided by City of Des Moines.

Mobilization equals approximately 10-percent of Subtotal.

Traffic Control equals approximately 2-percent of Subtotal.

Erosion/Sedimentation Control equals approximately 2-percent of Subtotal (\$1,000 min).

Pavement Restoration includes the cost of HMA (2-inch), CSTC (2-inch), and CSBC (4-inch).

Cost of pipe installation includes structure excavation and shoring.

Cost of catch basin installation includes structure excavation and shoring.

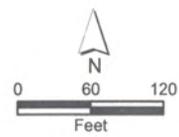
**Description:** Replace roadside ditches and driveway culverts along S side of S 240th St with approximately 1100 feet of 12-inch pipe and 10 catch basins.  
**Estimated Cost (\$):** 248,080  
**Scoring Criteria:** M/I, CMP, DR



**Massey Creek  
Başın**

**28**

Parametrix  
INCORPORATED • 1000 EAST 17TH AVENUE • DENVER, COLORADO 80202



- |                     |                            |                  |
|---------------------|----------------------------|------------------|
| ● Discharge Point   | ● Capital Project and Rank | — Streams        |
| ● Control Structure | ● High                     | ■ 100 Year Flood |
| ○ Catchment         | ● Medium                   | — Drainage Basin |
| ■ WQ Facility       | ● Low                      | ■ City Limits    |
| --- Open Channel    | — Proposed Drain Pipe      |                  |
| — Storm Main        | ● Proposed Catch Basin     |                  |

**Capital Project 28.**  
 240th Street (13th to 16th Ave)  
 Pipe Project

**City of Des Moines**  
 Surface Water Comprehensive Plan

CITY OF DES MOINES  
 2015 Comprehensive Stormwater Plan Update  
 Preliminary Opinion of Probable Cost

Capital Project 28  
 Project Name: 240th Street (13th to 16th Ave) Pipe Project  
 Prepared By: Mallory Miller

Checked By: Craig Buitrago

Project Description:  
 Pipe to replace roadside ditches and driveway culverts along S side of S 240th St. Add 2-foot of paved shoulder and curb, and install CB's at pavement edge.

Item No.	Estimated Quantity	Unit	Description	Unit Cost	Amount
1	1	LS	Mobilization	\$11,200	\$11,200
2	1	LS	Traffic Control	\$2,100	\$2,100
3	1	LS	Erosion/Sedimentation Control	\$2,100	\$2,100
4	1100	LF	Pavement Restoration	\$20	\$22,000
5	1100	LF	Schedule A Storm Sewer Pipe, 12-Inch Diameter	\$60	\$66,000
6	10	EA	Catch Basin Type I	\$1,930	\$19,300
7					
8					
9					
10					
				Construction Subtotal (2014 Dollars) =	\$122,700
				Inflation from 2014 to 2015 3.65%	\$4,479
				<b>Construction Subtotal (2015 Dollars) =</b>	<b>\$127,179</b>
				Contingency 30.0%	\$38,154
				Sales Tax 9.3%	\$11,828
				<b>Planning Level Construction Cost =</b>	<b>\$177,200</b>
				Environmental Permitting and Documentation 5.0%	\$8,860
				Administration 5.0%	\$8,860
				Preliminary Engineering, PS&E Engineering and Construction Management 30.0%	\$53,160
				<b>2015 TOTAL =</b>	<b>\$248,080</b>

**ASSUMPTIONS:**

Length of pipe, pipe diameter, number of structures and structure size were provided by City of Des Moines.  
 Mobilization equals approximately 10-percent of Subtotal.  
 Traffic Control equals approximately 2-percent of Subtotal.  
 Erosion/Sedimentation Control equals approximately 2-percent of Subtotal (\$1,000 min).  
 Pavement Restoration includes the cost of HMA (2-inch), CSTC (2-inch), and CSBC (4-inch).  
 Cost of pipe installation includes structure excavation and shoring.  
 Cost of catch basin installation includes structure excavation and shoring.

**Description:** Replace roadside ditches and driveway culverts along W side of 25th Ave S with approximately 380 feet of 12-inch pipe, 4 catch basins, and 1 storm drain manhole. The north end of the project outfalls to Massey Creek.

**Estimated Cost (\$):** 99,680

**Scoring Criteria:** M/I, CMP, DR

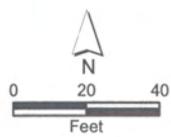


Parametrix  
AN IRIDIUM COMPANY | 505 WEST CENTER AVENUE, SUITE 200 | DES MOINES, IA 50319

- Discharge Point
- Control Structure
- Catchment
- WQ Facility
- Open Channel
- Storm Main

- Capital Project and Rank**
- High
  - Medium
  - Low
  - Proposed Drain Pipe
  - Proposed Catch Basin

- Streams
- 100 Year Flood
- Drainage Basin
- City Limits



**Capital Project 29.**  
 25th Avenue (n/o 232nd Street)  
 Pipe Replacement Project

CITY OF DES MOINES  
 2015 Comprehensive Stormwater Plan Update  
 Preliminary Opinion of Probable Cost

Capital Project 29  
 Project Name: 25th Avenue (n/o 232nd Street) Pipe Replacement Project  
 Prepared By: Mallory Miller

Checked By: Craig Buitrago

Project Description:  
 Pipe to replace roadside ditches and driveway culverts along W side of 25th Ave S. North end of project outfalls to creek (name unknown). South end crosses 232nd St, where existing CB will be replaced with Type 2 CB. Install curb and CBs along edge of existing pavement.

Item No.	Estimated Quantity	Unit	Description	Unit Cost	Amount
1	1	LS	Mobilization	\$4,500	\$4,500
2	1	LS	Traffic Control	\$900	\$900
3	1	LS	Erosion/Sedimentation Control	\$900	\$900
4	380	LF	Pavement Restoration	\$20	\$7,600
5	380	LF	Schedule A Storm Sewer Pipe, 12-inch Diameter	\$60	\$22,800
6	4	EA	Catch Basin Type I	\$1,930	\$7,720
7	1	EA	Catch Basin Type II, 48" Diam.	\$4,880	\$4,880
8					
9					
10					
Construction Subtotal (2014 Dollars) =					\$49,300
Inflation from 2014 to 2015 3.65%					\$1,799
<b>Construction Subtotal (2015 Dollars) =</b>					<b>\$51,099</b>
Contingency 30.0%					\$15,330
Sales Tax 9.3%					\$4,752
<b>Planning Level Construction Cost =</b>					<b>\$71,200</b>
Environmental Permitting and Documentation 5.0%					\$3,560
Administration 5.0%					\$3,560
Preliminary Engineering, PS&E Engineering and Construction Management 30.0%					\$21,360
<b>2015 TOTAL =</b>					<b>\$99,680</b>

**ASSUMPTIONS:**

Length of pipe, pipe diameter, number of structures and structure size were provided by City of Des Moines.  
 Mobilization equals approximately 10-percent of Subtotal.  
 Traffic Control equals approximately 2-percent of Subtotal.  
 Erosion/Sedimentation Control equals approximately 2-percent of Subtotal (\$1,000 min).  
 Pavement Restoration includes the cost of HMA (2-inch), GSTC (2-inch), and CSBC (4-inch).  
 Cost of pipe installation includes structure excavation and shoring.  
 Cost of catch basin installation includes structure excavation and shoring.

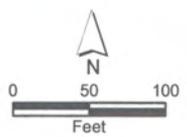
**Description:** Install diversion structure on the west end of the North Fork McSorley Creek culvert on 20th Ave S, between S 244th PI and S 245th PI. From diversion structure, a new 24-inch high flow bypass pipeline will be installed on the W side of 20th Ave S, turn W and follow the S side of S 245th PI. This bywill discharge to the creek west of the S 245th PI cul-de-sac.

**Estimated Cost (\$):** 372,960

**Scoring Criteria:** \$, M/I, S, CMP, PE/PI, PP, REF, E



Parametrix  
AN IRVING-CLOUD COMPANY



- |                     |                            |                  |
|---------------------|----------------------------|------------------|
| ● Discharge Point   | ● Capital Project and Rank | — Streams        |
| ● Control Structure | ● High                     | ■ 100 Year Flood |
| ○ Catchment         | ● Medium                   | ▭ Drainage Basin |
| ■ WQ Facility       | ● Low                      | ▭ City Limits    |
| --- Open Channel    | — Proposed Drain Pipe      |                  |
| — Storm Main        | ● Proposed Catch Basin     |                  |

**Capital Project 30.**  
 North Fork McSorley Creek  
 Diversion Project

**City of Des Moines**  
 Surface Water Comprehensive Plan

**CITY OF DES MOINES**  
**2015 Comprehensive Stormwater Plan Update**  
**Preliminary Opinion of Probable Cost**

**Capital Project** 30  
**Project Name:** North Fork McSorley Creek Diversion Project  
**Prepared By:** Mallory Miller

**Checked By:** Craig Buitrago

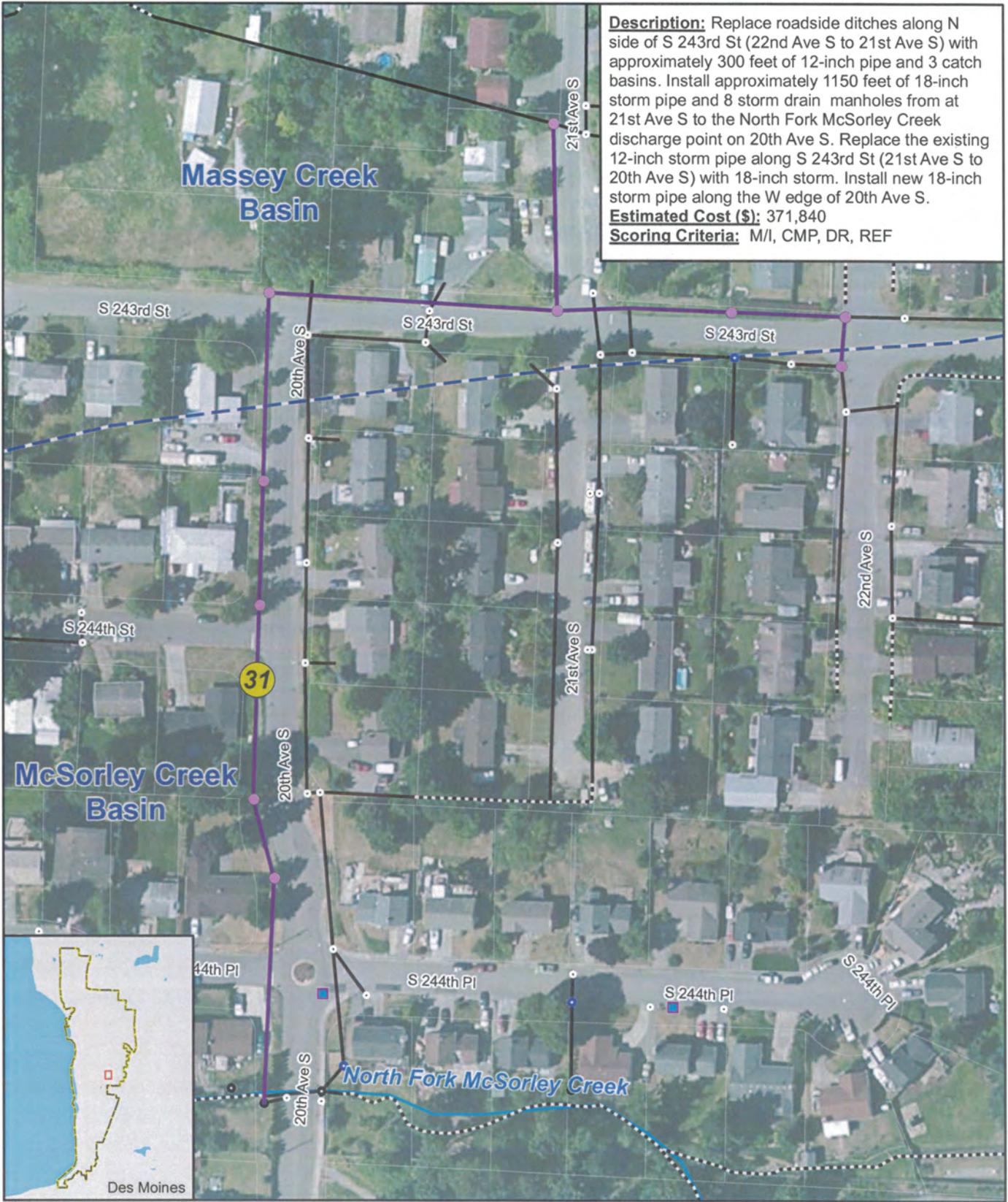
**Project Description:**

Install diversion structure on 20th Ave S, between S 244th Pl and S 245th Pl. From diversion structure, new 24" SD will run on the W side of 20th Ave S, turn W and follow the S side of S 245th Pl. Replace C&G along 20th Ave S, and C&G and sidewalk along S 245th Pl. At the end of S 245th Pl, pipe veers SW and follows King County property until it outfalls to McSorley Creek.

Item No.	Estimated Quantity	Unit	Description	Unit Cost	Amount
1	1	LS	Mobilization	\$16,800	\$16,800
2	1	LS	Traffic Control	\$3,200	\$3,200
3	1	LS	Erosion/Sedimentation Control	\$3,200	\$3,200
4	1100	LF	Pavement Restoration	\$20	\$22,000
5	1100	LF	Schedule A Storm Sewer Pipe, 24-Inch Diameter	\$100	\$110,000
6	6	EA	Catch Basin Type II, 48" Diam.	\$4,880	\$29,280
7					
8					
9					
10					
Construction Subtotal (2014 Dollars) =					\$184,480
Inflation from 2014 to 2015 3.65%					\$6,734
<b>Construction Subtotal (2015 Dollars) =</b>					<b>\$191,214</b>
Contingency 30.0%					\$57,364
Sales Tax 9.3%					\$17,783
<b>Planning Level Construction Cost =</b>					<b>\$266,400</b>
Environmental Permitting and Documentation 5.0%					\$13,320
Administration 5.0%					\$13,320
Preliminary Engineering, PS&E Engineering and Construction Management 30.0%					\$79,920
<b>2015 TOTAL =</b>					<b>\$372,960</b>

**ASSUMPTIONS:**

Length of pipe, pipe diameter, number of structures and structure size were provided by City of Des Moines.  
 Mobilization equals approximately 10-percent of Subtotal.  
 Traffic Control equals approximately 2-percent of Subtotal.  
 Erosion/Sedimentation Control equals approximately 2-percent of Subtotal (\$1,000 min).  
 Pavement Restoration includes the cost of HMA (2-inch), CSTC (2-inch), and CSBC (4-inch).  
 Cost of pipe installation includes structure excavation and shoring.  
 Cost of catch basin installation includes structure excavation and shoring.



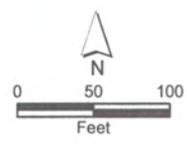
**Description:** Replace roadside ditches along N side of S 243rd St (22nd Ave S to 21st Ave S) with approximately 300 feet of 12-inch pipe and 3 catch basins. Install approximately 1150 feet of 18-inch storm pipe and 8 storm drain manholes from at 21st Ave S to the North Fork McSorley Creek discharge point on 20th Ave S. Replace the existing 12-inch storm pipe along S 243rd St (21st Ave S to 20th Ave S) with 18-inch storm. Install new 18-inch storm pipe along the W edge of 20th Ave S.

**Estimated Cost (\$):** 371,840

**Scoring Criteria:** M/I, CMP, DR, REF

Parametrix

- |                     |                            |                  |
|---------------------|----------------------------|------------------|
| ● Discharge Point   | ● Capital Project and Rank | — Streams        |
| ● Control Structure | ● High                     | — 100 Year Flood |
| ○ Catchment         | ● Medium                   | — Drainage Basin |
| ■ WQ Facility       | ● Low                      | — City Limits    |
| --- Open Channel    | — Proposed Drain Pipe      |                  |
| — Storm Main        | ● Proposed Catch Basin     |                  |



**Capital Project 31.**  
20th Avenue/243rd Street Pipe Upgrade

City of Des Moines  
Surface Water Comprehensive Plan

CITY OF DES MOINES  
 2015 Comprehensive Stormwater Plan Update  
 Preliminary Opinion of Probable Cost

Capital Project 31  
 Project Name: 20th Avenue/243rd Street Pipe Upgrade  
 Prepared By: Mallory Miller

Checked By: Craig Buitrago

Project Description:

New 12" SD to replace roadside ditches along N side of S 243rd St (22nd Ave S to 21st Ave S). Install 2-foot paved shoulder, curb, and CBs at pavement edge. Pipe size increases to 18" at 21st Ave S. Remove ex SD pipe and CB along S 243rd St (21st Ave S to 20th Ave S). Replace wedge curb with curb and gutter and install CB at edge of pavement. 18" pipe turns south and runs along W edge of 20th Ave S. Install CBs along edge of pavement and replace C&G as required.

Item No.	Estimated Quantity	Unit	Description	Unit Cost	Amount
1	1	LS	Mobilization	\$16,700	\$16,700
2	1	LS	Traffic Control	\$3,200	\$3,200
3	1	LS	Erosion/Sedimentation Control	\$3,200	\$3,200
4	300	LF	Pavement Restoration	\$20	\$6,000
5	300	LF	Schedule A Storm Sewer Pipe, 12-Inch Diameter	\$60	\$18,000
6	1150	LF	Schedule A Storm Sewer Pipe, 18-Inch Diameter	\$80	\$92,000
7	3	EA	Catch Basin Type I	\$1,930	\$5,790
8	8	EA	Catch Basin Type II, 48" Diam.	\$4,880	\$39,040
9					
10					
Construction Subtotal (2014 Dollars) =					\$183,930
Inflation from 2014 to 2015 3.65%					\$6,713
<b>Construction Subtotal (2015 Dollars) =</b>					<b>\$190,643</b>
Contingency 30.0%					\$57,193
Sales Tax 9.3%					\$17,730
<b>Planning Level Construction Cost =</b>					<b>\$265,600</b>
Environmental Permitting and Documentation 5.0%					\$13,280
Administration 5.0%					\$13,280
Preliminary Engineering, PS&E Engineering and Construction Management 30.0%					\$79,680
<b>2015 TOTAL =</b>					<b>\$371,840</b>

ASSUMPTIONS:

- Length of pipe, pipe diameter, number of structures and structure size were provided by City of Des Moines.
- Mobilization equals approximately 10-percent of Subtotal.
- Traffic Control equals approximately 2-percent of Subtotal.
- Erosion/Sedimentation Control equals approximately 2-percent of Subtotal (\$1,000 min).
- Pavement Restoration includes the cost of HMA (2-inch), CSTC (2-inch), and CSBC (4-inch).
- Cost of pipe installation includes structure excavation and shoring.
- Cost of catch basin installation includes structure excavation and shoring.

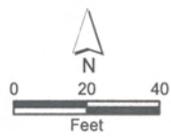


**Description:** Install approximately 370 feet of new 12-inch storm pipe and 4 catch basins along N side of S 242nd St. Remove existing storm pipe and catch basins on S side of S 242nd ST/26th Pl S intersection to outfall in Parkside Park.

**Estimated Cost (\$):** 100,100

**Scoring Criteria:** M/I, CMP, PE/PI

Parametrix



- Discharge Point
- Control Structure
- Catchment
- WQ Facility
- Open Channel
- Storm Main

- Capital Project and Rank**
- High
  - Medium
  - Low
  - Proposed Drain Pipe
  - Proposed Catch Basin

- Streams
- 100 Year Flood
- Drainage Basin
- City Limits

**Capital Project 32.**  
242nd Street (26th Ave to 26th Pl) Pipe Project

City of Des Moines  
Surface Water Comprehensive Plan

CITY OF DES MOINES  
 2015 Comprehensive Stormwater Plan Update  
 Preliminary Opinion of Probable Cost

Capital Project 32  
 Project Name: 242nd Street (26th Ave to 26th Pl) Pipe Project  
 Prepared By: Mallory Miller

Checked By: Craig Buitrago

**Project Description:**

Install 12" SD along N side of S 242nd St. Remove vegetation to install pipe in wooded area. Replace approx. 112 LF of sidewalk, curb and gutter on S 242nd St (east of road divide). Install new curb along north side of S 242nd St (east of road divide). Remove ex pipe from CB on S side of S 242nd ST/26th Pl S intersection to outfall in Parkside Park.

Item No.	Estimated Quantity	Unit	Description	Unit Cost	Amount
1	1	LS	Mobilization	\$4,500	\$4,500
2	1	LS	Traffic Control	\$900	\$900
3	1	LS	Erosion/Sedimentation Control	\$900	\$900
4	370	LF	Pavement Restoration	\$20	\$7,400
5	370	LF	Schedule A Storm Sewer Pipe, 12-Inch Diameter	\$60	\$22,200
6	2	EA	Catch Basin Type I	\$1,930	\$3,860
7	2	EA	Catch Basin Type II, 48" Diam.	\$4,880	\$9,760
8					
9					
10					
Construction Subtotal (2014 Dollars) =					\$49,520
Inflation from 2014 to 2015 3.65%					\$1,807
<b>Construction Subtotal (2015 Dollars) =</b>					<b>\$51,327</b>
Contingency 30.0%					\$15,398
Sales Tax 9.3%					\$4,773
<b>Planning Level Construction Cost =</b>					<b>\$71,500</b>
Environmental Permitting and Documentation 5.0%					\$3,575
Administration 5.0%					\$3,575
Preliminary Engineering, PS&E Engineering and Construction Management 30.0%					\$21,450
<b>2015 TOTAL =</b>					<b>\$100,100</b>

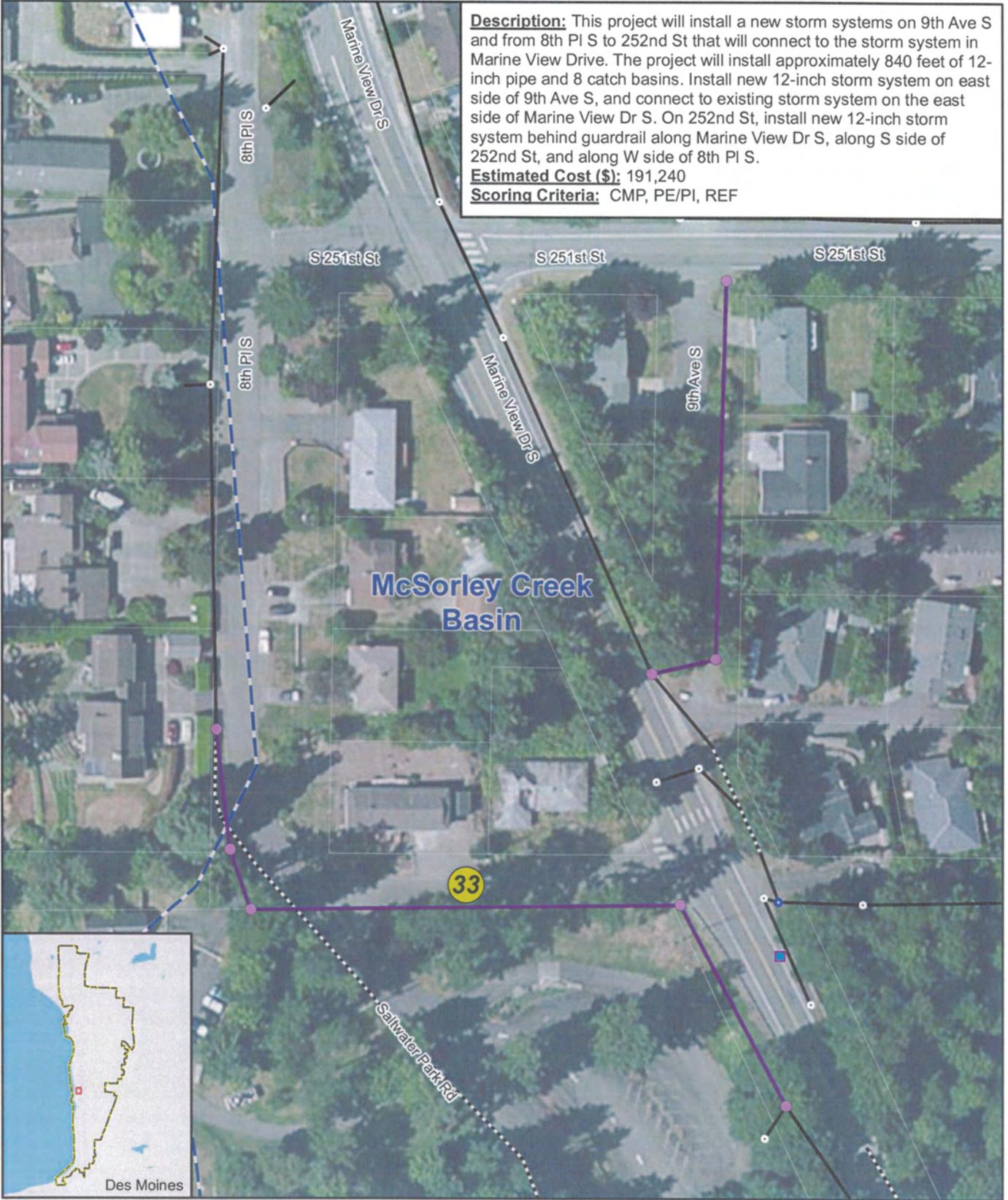
**ASSUMPTIONS:**

- Length of pipe, pipe diameter, number of structures and structure size were provided by City of Des Moines.
- Mobilization equals approximately 10-percent of Subtotal.
- Traffic Control equals approximately 2-percent of Subtotal.
- Erosion/Sedimentation Control equals approximately 2-percent of Subtotal (\$1,000 min).
- Pavement Restoration includes the cost of HMA (2-inch), CSTC (2-inch), and CSBC (4-inch).
- Cost of pipe installation includes structure excavation and shoring.
- Cost of catch basin installation includes structure excavation and shoring.

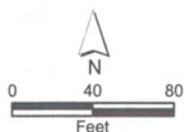
**Description:** This project will install a new storm systems on 9th Ave S and from 8th PI S to 252nd St that will connect to the storm system in Marine View Drive. The project will install approximately 840 feet of 12-inch pipe and 8 catch basins. Install new 12-inch storm system on east side of 9th Ave S, and connect to existing storm system on the east side of Marine View Dr S. On 252nd St, install new 12-inch storm system behind guardrail along Marine View Dr S, along S side of 252nd St, and along W side of 8th PI S.

**Estimated Cost (\$):** 191,240

**Scoring Criteria:** CMP, PE/PI, REF



Parametrix  
INCORPORATING CONSULTING ENGINEERS & ARCHITECTS



- Discharge Point
- Control Structure
- Catchment
- WQ Facility
- Open Channel
- Storm Main

- Capital Project and Rank
- High
  - Medium
  - Low
  - Proposed Drain Pipe
  - Proposed Catch Basin

- Streams
- 100 Year Flood
- Drainage Basin
- City Limits

**Capital Project 33.**  
 252nd Street/9th Avenue Pipe Project

**City of Des Moines**  
 Surface Water Comprehensive Plan

CITY OF DES MOINES  
 2015 Comprehensive Stormwater Plan Update  
 Preliminary Opinion of Probable Cost

Capital Project 33  
 Project Name: 252nd Street/9th Avenue Pipe Project  
 Prepared By: Mallory Miller

Checked By: Craig Bultrago

Project Description:

9th Ave: New 12" SD on east side of 9th Ave S. Pipe turns west to connect into ex SD on Marine View Dr S. Vegetation removal may be required for this stretch of pipe. Replace ex CB, sidewalk, and C&G at connection.  
 252nd St: Install new 12" SD behind guardrail along Marine View Dr S, along S side of 252nd St, and along W side of 8th Pl S.

Item No.	Estimated Quantity	Unit	Description	Unit Cost	Amount
1	1	LS	Mobilization	\$8,600	\$8,600
2	1	LS	Traffic Control	\$1,700	\$1,700
3	1	LS	Erosion/Sedimentation Control	\$1,700	\$1,700
4	840	LF	Pavement Restoration	\$20	\$16,800
5	840	LF	Schedule A Storm Sewer Pipe, 12-Inch Diameter	\$60	\$50,400
6	8	EA	Catch Basin Type I	\$1,930	\$15,440
7					
8					
9					
10					
Construction Subtotal (2014 Dollars) =					\$94,640
Inflation from 2014 to 2015 3.65%					\$3,454
<b>Construction Subtotal (2015 Dollars) =</b>					<b>\$98,094</b>
Contingency 30.0%					\$29,428
Sales Tax 9.3%					\$9,123
<b>Planning Level Construction Cost =</b>					<b>\$136,600</b>
Environmental Permitting and Documentation 5.0%					\$6,830
Administration 5.0%					\$6,830
Preliminary Engineering, PS&E Engineering and Construction Management 30.0%					\$40,980
<b>2015 TOTAL =</b>					<b>\$191,240</b>

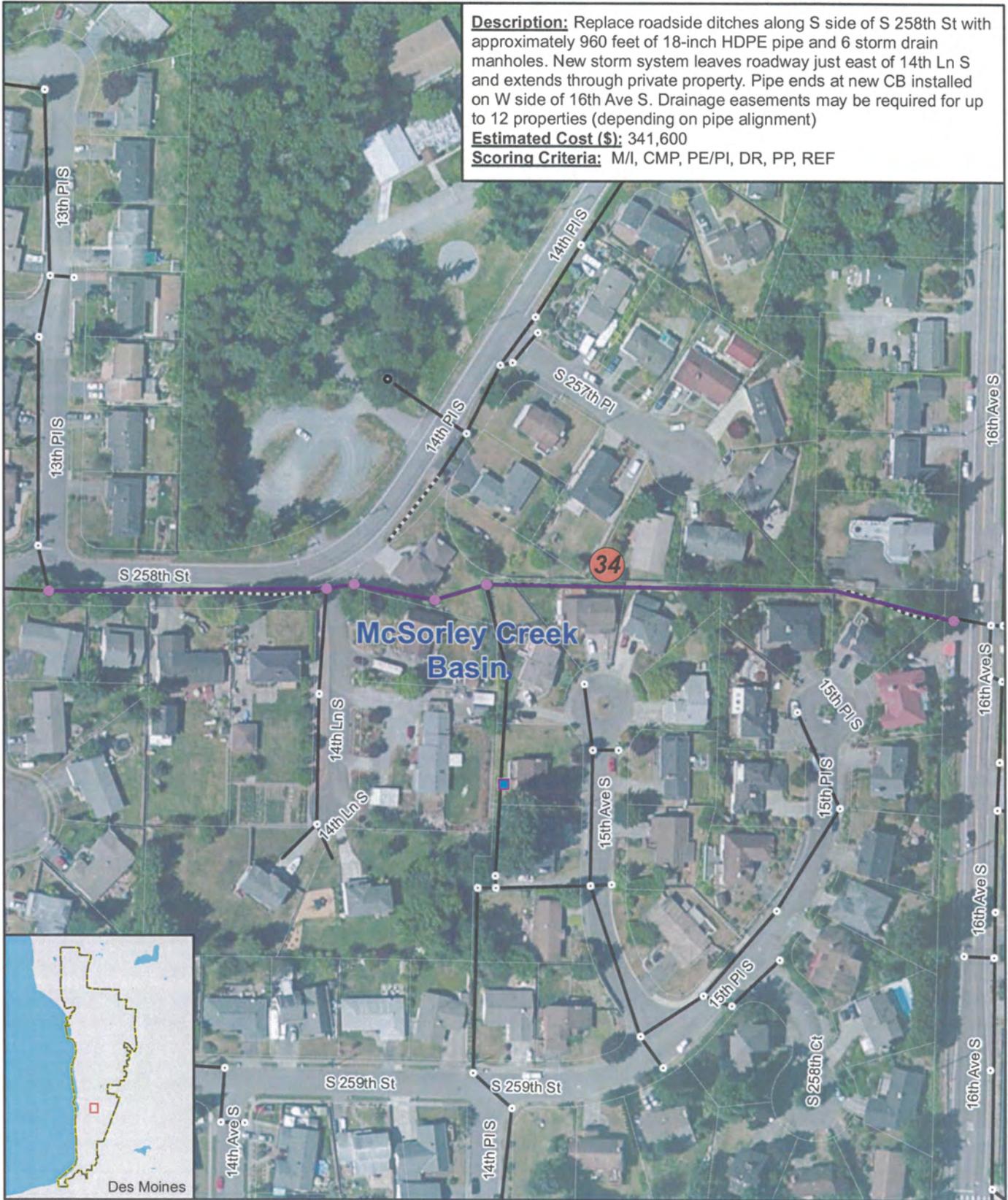
ASSUMPTIONS:

Length of pipe, pipe diameter, number of structures and structure size were provided by City of Des Moines.  
 Mobilization equals approximately 10-percent of Subtotal.  
 Traffic Control equals approximately 2-percent of Subtotal.  
 Erosion/Sedimentation Control equals approximately 2-percent of Subtotal (\$1,000 min).  
 Pavement Restoration includes the cost of HMA (2-inch), CSTC (2-inch), and CSBC (4-inch).  
 Cost of pipe installation includes structure excavation and shoring.  
 Cost of catch basin installation includes structure excavation and shoring.

**Description:** Replace roadside ditches along S side of S 258th St with approximately 960 feet of 18-inch HDPE pipe and 6 storm drain manholes. New storm system leaves roadway just east of 14th Ln S and extends through private property. Pipe ends at new CB installed on W side of 16th Ave S. Drainage easements may be required for up to 12 properties (depending on pipe alignment)

**Estimated Cost (\$):** 341,600

**Scoring Criteria:** M/I, CMP, PE/PI, DR, PP, REF

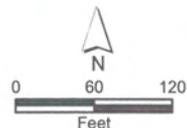


Parametrix

- Discharge Point
- Control Structure
- Catchment
- WQ Facility
- Open Channel
- Storm Main

- Capital Project and Rank
- High
  - Medium
  - Low
  - Proposed Drain Pipe
  - Proposed Catch Basin

- Streams
- 100 Year Flood
- Drainage Basin
- City Limits



**Capital Project 34.**  
258th Street (13th Pl to 16th Ave) Pipe Project

City of Des Moines  
Surface Water Comprehensive Plan

CITY OF DES MOINES  
 2015 Comprehensive Stormwater Plan Update  
 Preliminary Opinion of Probable Cost

Capital Project 34  
 Project Name: 258th Street (13th Pl to 16th Ave) Pipe Project  
 Prepared By: Mallory Miller

Checked By: Craig Buitrago

Project Description:  
 Replace roadside ditches along S side of S 258th St with 18" HDPE pipe. Install 2" shoulder, curb, and CBs at pavement edge. Remove ex driveway culverts. New pipe leaves roadway just east of 14th Ln S and extends through private property. Pipe ends at new CB installed on W side of 16th Ave S. Drainage easements will be required for up to 12 properties (depending on pipe alignment)

Item No.	Estimated Quantity	Unit	Description	Unit Cost	Amount
1	1	LS	Mobilization	\$13,000	\$13,000
2	1	LS	Traffic Control	\$2,500	\$2,500
3	1	LS	Erosion/Sedimentation Control	\$2,500	\$2,500
4	960	LF	Pavement Restoration	\$20	\$19,200
5	960	LF	Schedule A Storm Sewer Pipe, 18-Inch Diameter	\$80	\$76,800
6	6	EA	Catch Basin Type II, 48" Diam.	\$4,880	\$29,280
7					
8					
9					
10					
				Construction Subtotal (2014 Dollars) =	\$143,280
				Inflation from 2014 to 2015 3.65%	\$5,230
				<b>Construction Subtotal (2015 Dollars) =</b>	<b>\$148,510</b>
				Property Acquisition/Easements 25.0%	\$37,128
				Contingency 30.0%	\$44,553
				Sales Tax 9.3%	\$13,811
				<b>Planning Level Construction Cost =</b>	<b>\$244,000</b>
				Environmental Permitting and Documentation 5.0%	\$12,200
				Administration 5.0%	\$12,200
				Preliminary Engineering, PS&E Engineering and Construction Management 30.0%	\$73,200
				<b>2015 TOTAL =</b>	<b>\$341,600</b>

**ASSUMPTIONS:**

Length of pipe, pipe diameter, number of structures and structure size were provided by City of Des Moines.  
 Mobilization equals approximately 10-percent of Subtotal.  
 Traffic Control equals approximately 2-percent of Subtotal.  
 Erosion/Sedimentation Control equals approximately 2-percent of Subtotal (\$1,000 min).  
 Pavement Restoration includes the cost of HMA (2-inch), CSTC (2-inch), and CSBC (4-inch).  
 Cost of pipe installation includes structure excavation and shoring.  
 Cost of catch basin installation includes structure excavation and shoring.



**Description:** This project will re-direct stormwater from the existing drainage ditch on 22nd Ave S to the stormwater pond west of the Mack parking lot. The project will install approximately 900 feet of 12-inch storm pipe, 3 catch basins, and 1 storm drain manhole. This new storm system alignment will require a public drainage easement along N and W perimeter of Mack parking lot.

**Estimated Cost (\$):** 191,380

**Scoring Criteria:** CMP, DR, PP, REF

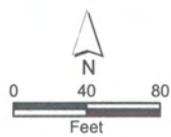
Parametrix

300 WEST GARDEN, SUITE 200, DES MOINES, IA 50319

- Discharge Point
- Control Structure
- Catchment
- WQ Facility
- Open Channel
- Storm Main

- Capital Project and Rank
- High
  - Medium
  - Low
  - Proposed Drain Pipe
  - Proposed Catch Basin

- Streams
- 100 Year Flood
- Drainage Basin
- City Limits



**Capital Project 35.**  
22nd Avenue Outfall Project

CITY OF DES MOINES  
 2015 Comprehensive Stormwater Plan Update  
 Preliminary Opinion of Probable Cost

Capital Project 35  
 Project Name: 22nd Avenue Outfall Project  
 Prepared By: Mallory Miller

Checked By: Craig Buitrago

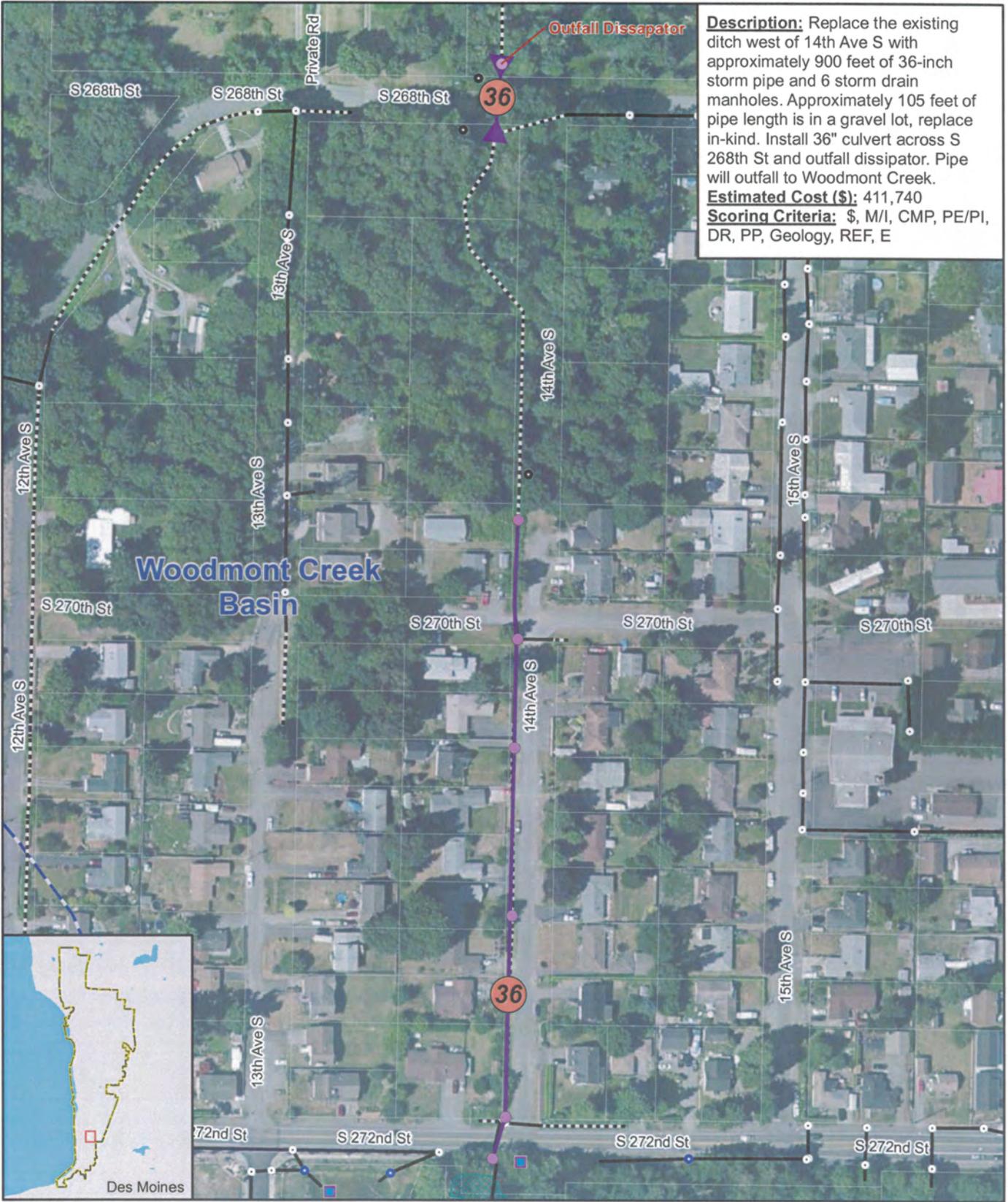
**Project Description:**

Replace ex CB in 22nd Ave S and install 12" SD along E side of roadway. Pipe alignment runs east of roadside ditches. Public easement required for pipe installation along N and W perimeter of Mack parking lot. Pipe to outfall to existing SW pond.

Item No.	Estimated Quantity	Unit	Description	Unit Cost	Amount
1	1	LS	Mobilization	\$8,600	\$8,600
2	1	LS	Traffic Control	\$1,700	\$1,700
3	1	LS	Erosion/Sedimentation Control	\$1,700	\$1,700
4	900	LF	Pavement Restoration	\$20	\$18,000
5	900	LF	Schedule A Storm Sewer Pipe, 12-Inch Diameter	\$60	\$54,000
6	3	EA	Catch Basin Type I	\$1,930	\$5,790
7	1	EA	Catch Basin Type II, 48" Diam.	\$4,880	\$4,880
8					
9					
10					
Construction Subtotal (2014 Dollars) =					\$94,670
Inflation from 2014 to 2015 3.65%					\$3,455
<b>Construction Subtotal (2015 Dollars) =</b>					<b>\$98,125</b>
Contingency 30.0%					\$29,438
Sales Tax 9.3%					\$9,126
<b>Planning Level Construction Cost =</b>					<b>\$136,700</b>
Environmental Permitting and Documentation 5.0%					\$6,835
Administration 5.0%					\$6,835
Preliminary Engineering, PS&E Engineering and Construction Management 30.0%					\$41,010
<b>2015 TOTAL =</b>					<b>\$191,380</b>

**ASSUMPTIONS:**

- Length of pipe, pipe diameter, number of structures and structure size were provided by City of Des Moines.
- Mobilization equals approximately 10-percent of Subtotal.
- Traffic Control equals approximately 2-percent of Subtotal.
- Erosion/Sedimentation Control equals approximately 2-percent of Subtotal (\$1,000 min).
- Pavement Restoration includes the cost of HMA (2-inch), GSTC (2-inch), and CSBC (4-inch).
- Cost of pipe installation includes structure excavation and shoring.
- Cost of catch basin installation includes structure excavation and shoring.



**Description:** Replace the existing ditch west of 14th Ave S with approximately 900 feet of 36-inch storm pipe and 6 storm drain manholes. Approximately 105 feet of pipe length is in a gravel lot, replace in-kind. Install 36" culvert across S 268th St and outfall dissipator. Pipe will outfall to Woodmont Creek.

**Estimated Cost (\$):** 411,740

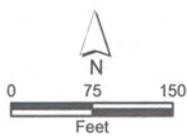
**Scoring Criteria:** \$, M/I, CMP, PE/PI, DR, PP, Geology, REF, E

Parametrix

- Discharge Point
- Control Structure
- Catchment
- WQ Facility
- Open Channel
- Storm Main

- Capital Project and Rank**
- High
  - Medium
  - Low
  - Proposed Drain Pipe
  - Proposed Culvert
  - Proposed Catch Basin

- Streams
- 100 Year Flood
- Drainage Basin
- City Limits



**Capital Project 36.**  
 14th Avenue (268th to 272nd)  
 Pipe Upgrade

**City of Des Moines**  
 Surface Water Comprehensive Plan

CITY OF DES MOINES  
 2015 Comprehensive Stormwater Plan Update  
 Preliminary Opinion of Probable Cost

Capital Project 36  
 Project Name: 14th Avenue(268th to 272nd) Pipe Upgrade  
 Prepared By: Mallory Miller

Checked By: Craig Buitrago

Project Description:  
 New 36" SD along W side of 14th Ave S to replace roadside ditches. Install 2-foot paved shoulder, curb, and Type 2 CBs at pavement edge. Approx. 105 feet of pipe length is in a gravel lot, replace in-kind. Install 36" culvert across S 268th St and outfall dissipator. Pipe will outfall to creek (name unknown).

Item No.	Estimated Quantity	Unit	Description	Unit Cost	Amount
1	1	LS	Mobilization	\$18,500	\$18,500
2	1	LS	Traffic Control	\$3,600	\$3,600
3	1	LS	Erosion/Sedimentation Control	\$3,600	\$3,600
4	900	LF	Pavement Restoration	\$20	\$18,000
5	900	LF	Schedule A Storm Sewer Pipe, 36-Inch Diameter	\$140	\$126,000
6	6	EA	Catch Basin Type II, 60" Diam.	\$5,660	\$33,960
7					
8					
9					
10					
Construction Subtotal (2014 Dollars) =					\$203,660
Inflation from 2014 to 2015 3.65%					\$7,434
<b>Construction Subtotal (2015 Dollars) =</b>					<b>\$211,094</b>
Contingency 30.0%					\$63,328
Sales Tax 9.3%					\$19,632
<b>Planning Level Construction Cost =</b>					<b>\$294,100</b>
Environmental Permitting and Documentation 5.0%					\$14,705
Administration 5.0%					\$14,705
Preliminary Engineering, PS&E Engineering and Construction Management 30.0%					\$88,230
<b>2015 TOTAL =</b>					<b>\$411,740</b>

**ASSUMPTIONS:**

Length of pipe, pipe diameter, number of structures and structure size were provided by City of Des Moines.  
 Mobilization equals approximately 10-percent of Subtotal.  
 Traffic Control equals approximately 2-percent of Subtotal.  
 Erosion/Sedimentation Control equals approximately 2-percent of Subtotal (\$1,000 min).  
 Pavement Restoration includes the cost of HMA (2-inch), CSTC (2-inch), and CSBC (4-inch).  
 Cost of pipe installation includes structure excavation and shoring.  
 Cost of catch basin installation includes structure excavation and shoring.

Puget Sound

**Description:** This project will install approximately 1670 feet of 12-inch storm pipe, 15 catch basins, and 4 storm drain manholes. Install new storm systems along NW side of 4th PI S, long SE side of S 287th St, and NW side of 6th PI S. Install flow splitter at intersection of 4th PI S and S 287th St. Drainage easement may be required for work done on condominium property. Replace 12" CMP with new 12" SD, and install diversion structure.

**Estimated Cost (\$):** 496,300

**Scoring Criteria:** S, CMP, PE/PI, REF



Parametrix

- Discharge Point
- Control Structure
- Catchment
- WQ Facility
- Open Channel
- Storm Main

- Capital Project and Rank
- High
  - Medium
  - Low
  - Proposed Drain Pipe
  - Proposed Catch Basin

- Streams
- 100 Year Flood
- Drainage Basin
- City Limits

**Capital Project 37.**  
6th Place/287th Street Pipe Replacement Project

City of Des Moines  
Surface Water Comprehensive Plan

CITY OF DES MOINES  
 2015 Comprehensive Stormwater Plan Update  
 Preliminary Opinion of Probable Cost

Capital Project 37  
 Project Name: 6th Place/287th Street Pipe Replacement Project  
 Prepared By: Mallory Miller

Checked By: Craig Buitrago

Project Description:

4th Pl S: New SD along NW side of roadway. Install new CBs at pavement edge. Install splitter at intersection of 4th Pl S and S 287th St.  
 S 287th St: New SD along SE side of S 287th St. Install new CBs at pavement edge.  
 6th Pl S: New SD along NW side of roadway. Install new CBs at pavement edge, and remove ex structures.  
 Drainage easement required for work done on condominium property. Replace 12" CMP with new 12" SD, and install diversion structure.

Item No.	Estimated Quantity	Unit	Description	Unit Cost	Amount
1	1	LS	Mobilization	\$18,900	\$18,900
2	1	LS	Traffic Control	\$3,600	\$3,600
3	1	LS	Erosion/Sedimentation Control	\$3,600	\$3,600
4	1670	LF	Pavement Restoration	\$20	\$33,400
5	1670	LF	Schedule A Storm Sewer Pipe, 12-inch Diameter	\$60	\$100,200
6	15	EA	Catch Basin Type I	\$1,930	\$28,950
7	4	EA	Catch Basin Type II, 48" Diam.	\$4,880	\$19,520
8					
9					
10					
Construction Subtotal (2014 Dollars) =					\$208,170
Inflation from 2014 to 2015 3.65%					\$7,598
<b>Construction Subtotal (2015 Dollars) =</b>					<b>\$215,768</b>
Property Acquisition/Easements 25.0%					\$53,942
Contingency 30.0%					\$64,730
Sales Tax 9.3%					\$20,066
<b>Planning Level Construction Cost =</b>					<b>\$354,500</b>
Environmental Permitting and Documentation 5.0%					\$17,725
Administration 5.0%					\$17,725
Preliminary Engineering, PS&E Engineering and Construction Management 30.0%					\$106,350
<b>2015 TOTAL =</b>					<b>\$496,300</b>

ASSUMPTIONS:

Length of pipe, pipe diameter, number of structures and structure size were provided by City of Des Moines.  
 Mobilization equals approximately 10-percent of Subtotal.  
 Traffic Control equals approximately 2-percent of Subtotal.  
 Erosion/Sedimentation Control equals approximately 2-percent of Subtotal (\$1,000 min).  
 Pavement Restoration includes the cost of HMA (2-inch), CSTC (2-inch), and CSBC (4-inch).  
 Cost of pipe installation includes structure excavation and shoring.  
 Cost of catch basin installation includes structure excavation and shoring.



**Description:** Replace existing ditches along east and west sides of 9th Ave S with approximately 860 feet of 12-inch storm pipe and 6 catch basins. The new storm drain system will connect to existing storm system at S 202nd St.

**Estimated Cost (\$):** 185,920

**Scoring Criteria:** M/I, CMP, PE/PI, DR, REF

Parametrix

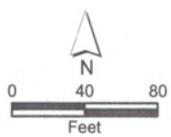
- Discharge Point
- Control Structure
- Catchment
- WQ Facility
- Open Channel
- Storm Main

- Capital Project and Rank
- High
  - Medium
  - Low
  - Proposed Drain Pipe
  - Proposed Catch Basin

- Streams
- 100 Year Flood
- Drainage Basin
- City Limits

**Capital Project 38.**  
9th Avenue (202nd to 206th)  
Pipe Project

**City of Des Moines**  
Surface Water Comprehensive Plan



CITY OF DES MOINES  
 2015 Comprehensive Stormwater Plan Update  
 Preliminary Opinion of Probable Cost

Capital Project 38  
 Project Name: 9th Avenue (202nd to 206th) Pipe Project  
 Prepared By: Mallory Miller

Checked By: Craig Buitrago

Project Description:

New SD to connect into ex SD at S 202nd St and run south along E side of 9th Ave S to house number 20410. Cross over to W side of 9th Ave S and continue new SD to its termination at new Type I CB located just north of house number 20437. Install new 2-foot paved shoulder and install CBs at pavement edge.

Item No.	Estimated Quantity	Unit	Description	Unit Cost	Amount
1	1	LS	Mobilization	\$8,400	\$8,400
2	1	LS	Traffic Control	\$1,600	\$1,600
3	1	LS	Erosion/Sedimentation Control	\$1,600	\$1,600
4	860	LF	Pavement Restoration	\$20	\$17,200
5	860	LF	Schedule A Storm Sewer Pipe, 12-inch Diameter	\$60	\$51,600
6	5	EA	Catch Basin Type I	\$1,930	\$11,580
7					
8					
9					
10					
Construction Subtotal (2014 Dollars) =					\$91,980
inflation from 2014 to 2015 3.65%					\$3,357
<b>Construction Subtotal (2015 Dollars) =</b>					<b>\$95,337</b>
Contingency 30.0%					\$28,601
Sales Tax 9.3%					\$8,866
<b>Planning Level Construction Cost =</b>					<b>\$132,800</b>
Environmental Permitting and Documentation 5.0%					\$6,640
Administration 5.0%					\$6,640
Preliminary Engineering, PS&E Engineering and Construction Management 30.0%					\$39,840
<b>2015 TOTAL =</b>					<b>\$185,920</b>

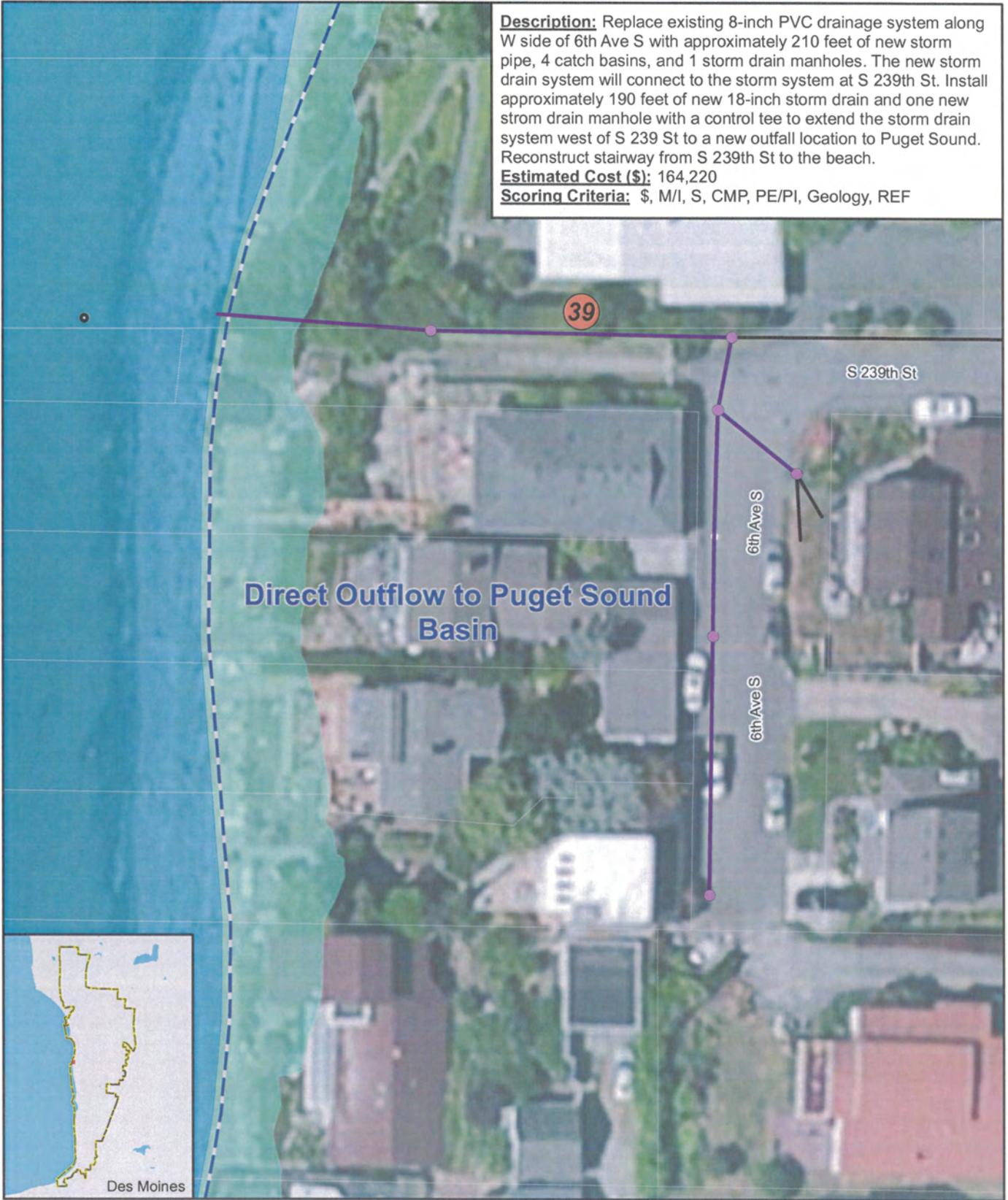
ASSUMPTIONS:

- Length of pipe, pipe diameter, number of structures and structure size were provided by City of Des Moines.
- Mobilization equals approximately 10-percent of Subtotal.
- Traffic Control equals approximately 2-percent of Subtotal.
- Erosion/Sedimentation Control equals approximately 2-percent of Subtotal (\$1,000 min).
- Pavement Restoration includes the cost of HMA (2-inch), CSTC (2-inch), and CSBC (4-inch).
- Cost of pipe installation includes structure excavation and shoring.
- Cost of catch basin installation includes structure excavation and shoring.

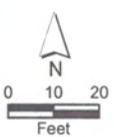
**Description:** Replace existing 8-inch PVC drainage system along W side of 6th Ave S with approximately 210 feet of new storm pipe, 4 catch basins, and 1 storm drain manholes. The new storm drain system will connect to the storm system at S 239th St. Install approximately 190 feet of new 18-inch storm drain and one new storm drain manhole with a control tee to extend the storm drain system west of S 239 St to a new outfall location to Puget Sound. Reconstruct stairway from S 239th St to the beach.

**Estimated Cost (\$):** 164,220

**Scoring Criteria:** \$, M/I, S, CMP, PE/PI, Geology, REF



Parametrix



- Discharge Point
- Control Structure
- Catchment
- WQ Facility
- Open Channel
- Storm Main

- Capital Project and Rank
- High
  - Medium
  - Low
  - Proposed Drain Pipe
  - Proposed Catch Basin

- Streams
- 100 Year Flood
- Drainage Basin
- City Limits

**Capital Project 39.**  
6th Avenue/239th St. Pipe Replacement

City of Des Moines  
Surface Water Comprehensive Plan

CITY OF DES MOINES  
 2015 Comprehensive Stormwater Plan Update  
 Preliminary Opinion of Probable Cost

Capital Project 39  
 Project Name: 6th Avenue/239th St. Pipe Replacement  
 Prepared By: Mallory Miller  
 Project Description:

Checked By: Craig Buitrago

Replace existing drainage system along W side of 6th Ave S and connect to drainage system on S 239th St. Remove and replace ex CBs and 8" PVC. Install new 18-inch storm drain outfall from S 239 St to Puget Sound. Reconstruct stairway from S 239th St to the beach.

Item No.	Estimated Quantity	Unit	Description	Unit Cost	Amount
1	1	LS	Mobilization	\$7,400	\$7,400
2	1	LS	Traffic Control	\$1,400	\$1,400
3	1	LS	Erosion/Sedimentation Control	\$1,400	\$1,400
4	210	LF	Pavement Restoration	\$20	\$4,200
5	210	LF	Schedule A Storm Sewer Pipe, 12-Inch Diameter	\$60	\$12,600
6	190	LF	Schedule A Storm Sewer Pipe, 18-Inch Diameter	\$80	\$15,200
7	4	EA	Catch Basin Type I	\$1,930	\$7,720
8	1	EA	Catch Basin Type II, 48" Diam.	\$4,880	\$4,880
9	1	EA	Catch Basin Type II, 48" Diam. w/ Control Tee	\$5,660	\$5,660
10	160	LF	Concrete Stair with Metal Handrail	\$130	\$20,800
Construction Subtotal (2014 Dollars) =					\$81,260
Inflation from 2014 to 2015 3.65%					\$2,966
<b>Construction Subtotal (2015 Dollars) =</b>					<b>\$84,226</b>
Contingency 30.0%					\$25,268
Sales Tax 9.3%					\$7,833
<b>Planning Level Construction Cost =</b>					<b>\$117,300</b>
Environmental Permitting and Documentation 5.0%					\$5,865
Administration 5.0%					\$5,865
Preliminary Engineering, PS&E Engineering and Construction Management 30.0%					\$35,190
<b>2015 TOTAL =</b>					<b>\$164,220</b>

**ASSUMPTIONS:**

- Length of pipe, pipe diameter, number of structures and structure size were provided by City of Des Moines.
- Mobilization equals approximately 10-percent of Subtotal.
- Traffic Control equals approximately 2-percent of Subtotal.
- Erosion/Sedimentation Control equals approximately 2-percent of Subtotal (\$1,000 min).
- Pavement Restoration includes the cost of HMA (2-inch), CSTC (2-inch), and CSBC (4-inch).
- Cost of pipe installation includes structure excavation and shoring.
- Cost of catch basin installation includes structure excavation and shoring.

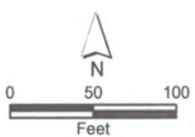


**Description:** Install approximately 910 feet of new 12-inch storm pipe, 9 catch basins, and 1 storm drain manhole along the west side of 8th Ave S. Replace the existing storm drain manhole at the intersection of S 265th PI and 8th Ave S, where the new storm drain connects to the existing storm drain system.

**Estimated Cost (\$):** 219,800

**Scoring Criteria:** \$, S, CMP, PE/PI, Geology, REF

Parametrix



- Discharge Point
- Control Structure
- Catchment
- WQ Facility
- Open Channel
- Storm Main

- Capital Project and Rank
- High
  - Medium
  - Low
  - Proposed Drain Pipe
  - Proposed Catch Basin

- Streams
- 100 Year Flood
- Drainage Basin
- City Limits

**Capital Project 40.**  
8th Avenue (264th to 265th)  
Pipe Project

City of Des Moines  
Surface Water Comprehensive Plan

CITY OF DES MOINES  
 2015 Comprehensive Stormwater Plan Update  
 Preliminary Opinion of Probable Cost

Capital Project 40  
 Project Name: 8th Avenue (264th to 265th) Pipe Project  
 Prepared By: Mallory Miller Checked By: Craig Buitrago  
 Project Description:  
 New 12" SD along W side of 8th Ave S. Remove and replace ex CB at 8th Ave S and S 265th St.

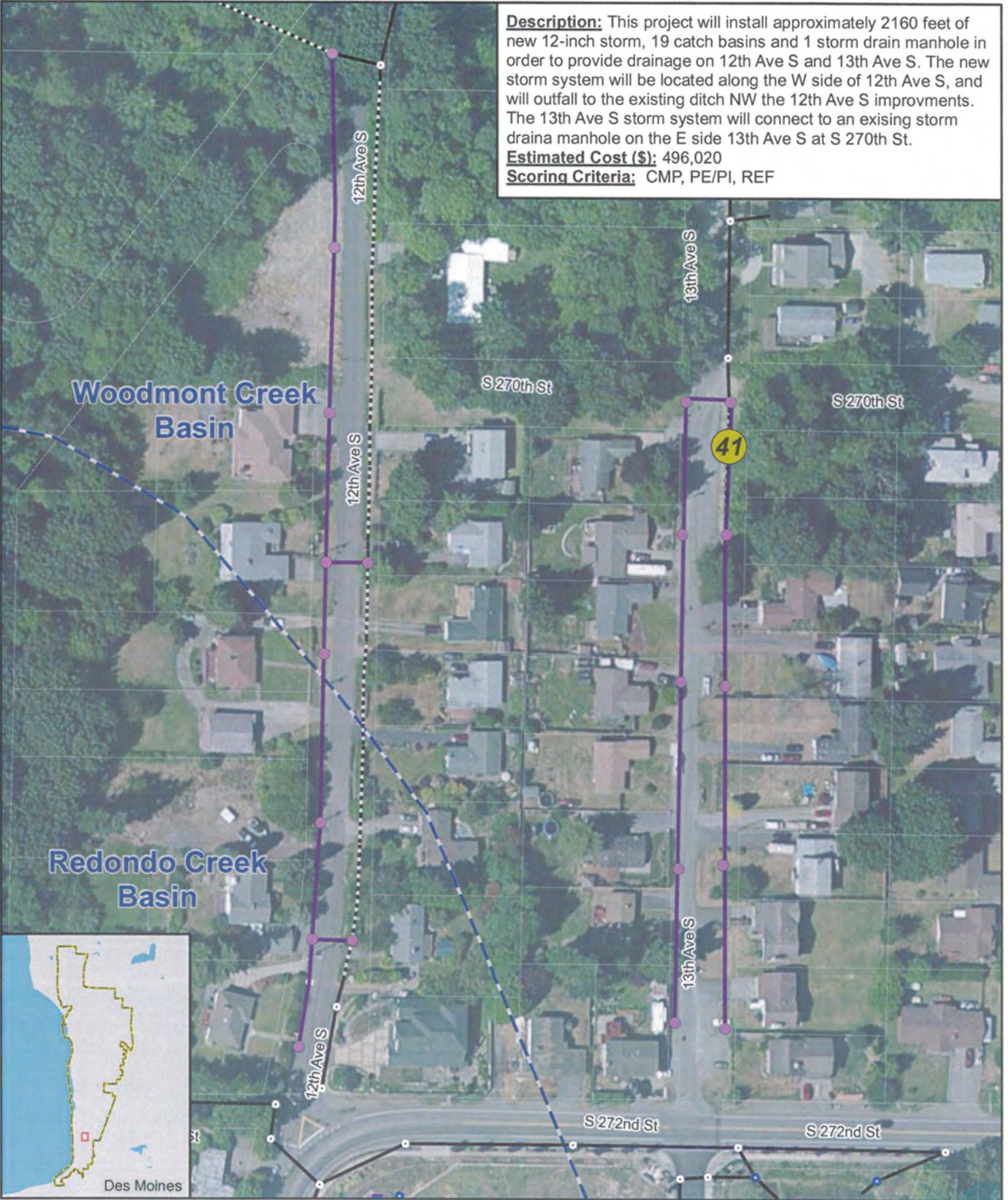
Item No.	Estimated Quantity	Unit	Description	Unit Cost	Amount
1	1	LS	Mobilization	\$9,900	\$9,900
2	1	LS	Traffic Control	\$1,900	\$1,900
3	1	LS	Erosion/Sedimentation Control	\$1,900	\$1,900
4	910	LF	Pavement Restoration	\$20	\$18,200
5	910	LF	Schedule A Storm Sewer Pipe, 12-Inch Diameter	\$60	\$54,600
6	9	EA	Catch Basin Type I	\$1,930	\$17,370
7	1	EA	Catch Basin Type II, 48" Diam.	\$4,880	\$4,880
8					
9					
10					
Construction Subtotal (2014 Dollars) =					\$108,750
Inflation from 2014 to 2015 3.65%					\$3,969
<b>Construction Subtotal (2015 Dollars) =</b>					<b>\$112,719</b>
Contingency 30.0%					\$33,816
Sales Tax 9.3%					\$10,483
<b>Planning Level Construction Cost =</b>					<b>\$157,000</b>
Environmental Permitting and Documentation 5.0%					\$7,850
Administration 5.0%					\$7,850
Preliminary Engineering, PS&E Engineering and Construction Management 30.0%					\$47,100
<b>2015 TOTAL =</b>					<b>\$219,800</b>

**ASSUMPTIONS:**  
 Length of pipe, pipe diameter, number of structures and structure size were provided by City of Des Moines.  
 Mobilization equals approximately 10-percent of Subtotal.  
 Traffic Control equals approximately 2-percent of Subtotal.  
 Erosion/Sedimentation Control equals approximately 2-percent of Subtotal (\$1,000 min).  
 Pavement Restoration includes the cost of HMA (2-inch), CSTC (2-inch), and CSBC (4-inch).  
 Cost of pipe installation includes structure excavation and shoring.  
 Cost of catch basin installation includes structure excavation and shoring.

**Description:** This project will install approximately 2160 feet of new 12-inch storm, 19 catch basins and 1 storm drain manhole in order to provide drainage on 12th Ave S and 13th Ave S. The new storm system will be located along the W side of 12th Ave S, and will outfall to the existing ditch NW the 12th Ave S improvements. The 13th Ave S storm system will connect to an existing storm draina manhole on the E side 13th Ave S at S 270th St.

**Estimated Cost (\$):** 496,020

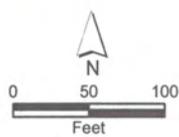
**Scoring Criteria:** CMP, PE/PI, REF



Parametrix  
AN IRVING-CLOUD COMPANY

- |                   |                     |             |                       |                        |              |
|-------------------|---------------------|-------------|-----------------------|------------------------|--------------|
| ● Discharge Point | ● Control Structure | ○ Catchment | ■ WQ Facility         | --- Open Channel       | — Storm Main |
| ● High            | ● Medium            | ● Low       | — Proposed Drain Pipe | ● Proposed Catch Basin |              |

- |           |                  |                  |               |
|-----------|------------------|------------------|---------------|
| — Streams | — 100 Year Flood | — Drainage Basin | — City Limits |
|-----------|------------------|------------------|---------------|



**Capital Project 41.**  
 12th/13th Avenue (270th to 272nd Street)

**City of Des Moines**  
 Surface Water Comprehensive Plan

CITY OF DES MOINES  
 2015 Comprehensive Stormwater Plan Update  
 Preliminary Opinion of Probable Cost

Capital Project 41  
 Project Name: 12th/13th Ave (270th to 272nd Street)  
 Prepared By: Mallory Miller

Checked By: Craig Bultrago

Project Description:

12th Ave S: New 12" SD along W side of 12th Ave S. Install new CB at downstream end of driveway culverts for house address 27010 and 27044, and cross 12th Ave S to connect these to new SD on W end.  
 13th Ave S: New 12" SD along W and E side of 13th Ave S. Install curb, paved shoulder, and CBs along W side of road. Install CBs along edge of pavement along E side of road. Connect to ex SD on E side of road at S 270th St.

Item No.	Estimated Quantity	Unit	Description	Unit Cost	Amount
1	1	LS	Mobilization	\$22,300	\$22,300
2	1	LS	Traffic Control	\$4,300	\$4,300
3	1	LS	Erosion/Sedimentation Control	\$4,300	\$4,300
4	2162	LF	Pavement Restoration	\$20	\$43,240
5	2162	LF	Schedule A Storm Sewer Pipe, 12-inch Diameter	\$60	\$129,720
6	19	EA	Catch Basin Type I	\$1,930	\$36,670
7	1	EA	Catch Basin Type II, 48" Diam.	\$4,880	\$4,880
8					
9					
10					
Construction Subtotal (2014 Dollars) =					\$245,410
Inflation from 2014 to 2015 3.65%					\$8,957
<b>Construction Subtotal (2015 Dollars) =</b>					<b>\$254,367</b>
Contingency 30.0%					\$76,310
Sales Tax 9.3%					\$23,656
<b>Planning Level Construction Cost =</b>					<b>\$354,300</b>
Environmental Permitting and Documentation 5.0%					\$17,715
Administration 5.0%					\$17,715
Preliminary Engineering, PS&E Engineering and Construction Management 30.0%					\$106,290
<b>2015 TOTAL =</b>					<b>\$496,020</b>

ASSUMPTIONS:

- Length of pipe, pipe diameter, number of structures and structure size were provided by City of Des Moines.
- Mobilization equals approximately 10-percent of Subtotal.
- Traffic Control equals approximately 2-percent of Subtotal.
- Erosion/Sedimentation Control equals approximately 2-percent of Subtotal (\$1,000 min).
- Pavement Restoration includes the cost of HMA (2-inch), CSTC (2-inch), and CSBC (4-inch).
- Cost of pipe installation includes structure excavation and shoring.
- Cost of catch basin installation includes structure excavation and shoring.

Appendix D  
Service Level Matrix



SERVICE LEVEL		PROGRAM ELEMENT																					
		Planning & Engineering		Inspections & Maintenance		NPDES						Administration		Capital Improvement Projects									
<b>Description</b>		Staff salaries, supplies, and specific labor required for stormwater engineering and planning (stormwater comprehensive plan, annual NPDES reports, etc.).		Routine system inspections and maintenance (includes NPDES- required); field crew staff salaries, equipment, interfund transfers for repairs, etc.		Implementation of NPDES Permit program; monitoring, permit fees, public outreach, and program-specific administration. <ul style="list-style-type: none"> <li>SWMP document updates included under Planning &amp; Engineering</li> <li>Inspections &amp; Maintenance included under Inspections and Maintenance Category</li> </ul>						Overhead costs of operating the programs support staff salaries, state taxes, utility taxes, and non-element-specific expenses.		Large-scale construction, expansion, renovation, or replacement projects; purchases of major, long-term use equipment; or major long-term maintenance, repair, or rehabilitation project.									
<b>\$14.24</b> Percent of Total Rate		<b>\$3.07</b> 22%		<b>\$5.22</b> 37%		<b>\$1.41</b> 11%		<b>\$3.43</b> 24%		<b>\$0.91</b> 6%		<b>\$3.43</b> 24%											
<b>Current Activities Included in Budget</b>		<ul style="list-style-type: none"> <li>Design and manage CIP projects</li> <li>Permitting plan review, public drainage complaints</li> <li>Respond/resolve drainage</li> <li>Inspect construction projects; review, revise and adapt local development related codes, rules, and standards to incorporate LD principles and BMPs.</li> <li>2014 Surface Water Comprehensive Plan</li> <li>Miscellaneous consultant engineering services</li> <li>Drainage basin planning</li> <li>Des Moines Creek Basin Committee participation</li> <li>Preparation of engineered work orders for maintenance crews</li> <li>Pipe Program management</li> <li>General Grants: writing applications and managing awards</li> </ul>		<ul style="list-style-type: none"> <li>In addition to NPDES, City requires annual inspections of pipes, swales, ditches, culverts, street gutters, and catch basins (DMWC 11.20.080)(a)(ii))</li> <li>Paper filing of records and spreadsheet database</li> <li>Field gear, uniforms, laundry</li> <li>Heavy equipment rental (stream dredging, catch basin placement, landslide response)</li> <li>Debris/liquid dump fees from drainage system cleaning.</li> <li>Equipment repair contingency</li> <li>Street sweeping (contracted); downtown streets twice monthly, residential streets once monthly, writer/once monthly remainder of year.</li> <li>Outside contracted drainage repair (large drainage projects beyond time, equipment, or experience limitations of work crew).</li> <li>Pipe Program labor: City provides heavy equipment and labor to replace residential ditches if owner pays for materials (catch basins, backfill, etc.).</li> </ul>		<ul style="list-style-type: none"> <li>Website info</li> <li>Brochure</li> <li>Quarterly City newsletter</li> <li>Installation of drainage markers</li> <li>Pugot Sound Signs</li> <li>Televised City Council meetings</li> </ul>		<ul style="list-style-type: none"> <li>Website comments</li> <li>Friends of Des Moines Creek collaboration</li> <li>WRRA 9 salmon habitat recovery collaboration</li> <li>Public meetings</li> </ul>		<ul style="list-style-type: none"> <li>SW system GIS map developed, being maintained</li> <li>High-priority issues identified</li> <li>Staff trained</li> <li>Field screening</li> <li>18 public reports received, all inspected (2012)</li> <li>9 illicit connections identified (2012)</li> </ul>		<ul style="list-style-type: none"> <li>New development design review per local codes/pollution prevention (budget reflected in Planning &amp; Engineering)</li> <li>New development stormwater facility inspections</li> <li>63 public and 67 private stormwater facilities (2012)</li> <li>Some facilities identified for reduced inspection frequency (2010)</li> </ul>		<ul style="list-style-type: none"> <li>Annual inspections of all flow control and water quality facilities (swales, detention/infiltration, constructed wetlands, oil/water separators, sediment basins, porous pavement), inspect catch basins and inlets every 2 years.</li> </ul>		<ul style="list-style-type: none"> <li>Annual contributions to Regional Program</li> <li>\$7,152 monitoring</li> <li>\$11,916 effectiveness studies</li> <li>\$1,103 source identification</li> </ul>		<ul style="list-style-type: none"> <li>Complaints: web-based; phone hotline.</li> <li>Data Tracking: spreadsheet log</li> <li>Budget tracking system in place</li> <li>Annual NPDES report</li> </ul>		<ul style="list-style-type: none"> <li>King County Billing Services</li> <li>King County Collection Services</li> <li>WRRA 9 fees</li> <li>Personnel benefits</li> <li>Janitorial services</li> <li>Advertising</li> <li>Travel</li> <li>Taxes</li> <li>Professional dues, conferences</li> <li>Interfund services (computer maintenance, locally insurance, administrative repairs)</li> <li>Postage, phone, internet</li> <li>Utilities for Public Works Building</li> </ul>		<ul style="list-style-type: none"> <li>The City performs a minimal amount of capital construction, funded by rates and fund balance.</li> <li>2014: 2019 has 9 projects being funded by SWM funds at a 30% allocation of rate revenue</li> </ul>	
<b>2.5.FEES:</b> 0.70 SWM Utility Manager 1.00 Engineering Technician 0.50 Engineering Aide 0.30 GIS Analyst		<ul style="list-style-type: none"> <li>2.5.FEES:</li> <li>0.70 SWM Utility Manager</li> <li>1.00 Engineering Technician</li> <li>0.50 Engineering Aide</li> <li>0.30 GIS Analyst</li> </ul>		<ul style="list-style-type: none"> <li>5.90 FEES:</li> <li>0.30 PW &amp; Parks Maintenance Superintendent</li> <li>1.00 Senior Maintenance Workers</li> <li>4.00 Maintenance Workers</li> <li>0.60 Asst. City Mechanic (1.00 Senior Maintenance Worker - moved to Parks Operations)</li> </ul>		<ul style="list-style-type: none"> <li>2.3.FEES:</li> <li>0.30 SWM Utility Manager</li> <li>0.60 Water Quality Specialist/Civil Engineer</li> <li>0.50 Engineering Aide</li> <li>1.00 Engineering Technician (Transportation Tech temporarily assigned to SWM)</li> </ul>		<ul style="list-style-type: none"> <li>NPDES Grants: writing applications and managing awards</li> <li>Outside professional services, as needed</li> <li>NPDES training expenses, including travel</li> <li>NPDES Permit Fee</li> </ul>		<ul style="list-style-type: none"> <li>NPDES Grants: writing applications and managing awards</li> <li>Outside professional services, as needed</li> <li>NPDES training expenses, including travel</li> <li>NPDES Permit Fee</li> </ul>		<ul style="list-style-type: none"> <li>NPDES Grants: writing applications and managing awards</li> <li>Outside professional services, as needed</li> <li>NPDES training expenses, including travel</li> <li>NPDES Permit Fee</li> </ul>		<ul style="list-style-type: none"> <li>NPDES Grants: writing applications and managing awards</li> <li>Outside professional services, as needed</li> <li>NPDES training expenses, including travel</li> <li>NPDES Permit Fee</li> </ul>		<ul style="list-style-type: none"> <li>NPDES Grants: writing applications and managing awards</li> <li>Outside professional services, as needed</li> <li>NPDES training expenses, including travel</li> <li>NPDES Permit Fee</li> </ul>							

SERVICE LEVEL	PROGRAM ELEMENT										Capital Improvement Projects
	Planning & Engineering	Inspections & Maintenance	Public Education	Public Involvement	Illicit Discharges	Control Runoff	Operations & Maintenance	Monitoring	Tracking & Reporting	Administration	
<p><b>Gaps in Existing Program</b></p> <ul style="list-style-type: none"> <li>None identified</li> </ul>	<ul style="list-style-type: none"> <li>None identified</li> </ul>	<ul style="list-style-type: none"> <li>Crews inspecting approximately 60% of all catch basins annually. Add 0.33 FTE to maintenance staff (as a back-up to maintain 2 full 2-person crews at all times)</li> </ul>	<ul style="list-style-type: none"> <li>None identified</li> </ul>	<ul style="list-style-type: none"> <li>None identified</li> </ul>	<ul style="list-style-type: none"> <li>None identified</li> </ul>	<ul style="list-style-type: none"> <li>None identified</li> </ul>	<ul style="list-style-type: none"> <li>93% of private facilities and 93% of public facilities inspected during last 5-year permit cycle. Add 0.33 FTE to increase inspection coverage</li> </ul>	<ul style="list-style-type: none"> <li>None identified</li> </ul>	<ul style="list-style-type: none"> <li>Inspection and maintenance database not current with most recent activities. Add 0.33 FTE to input backlog of inspections and maintenance records</li> </ul>	<ul style="list-style-type: none"> <li>None identified</li> </ul>	<ul style="list-style-type: none"> <li>City requires all storm water facilities to be maintained so that (DMMC 11.20.080 (2)(a)).</li> <li>No current systematic repair and/or replacement of aging capital assets (conveyance system, flow control facilities, and water quality treatment facilities). Add emergency repair and replacement service fund of \$380k, paid for through CIP transfer in 2015. Then increased only to adjust for inflation in subsequent years.</li> </ul>
<p><b>Recommendations</b></p>	<ul style="list-style-type: none"> <li>Programmatic SEPA for Surface Water CIPs</li> <li>Prepare Project Management Manual or Project Management training for staff to effectively manage additional Surface Water CIPs</li> <li>Add (or reallocate) 1.0 FTE to support additional CIP implementation (project management, construction management, procurement, etc.)</li> <li>Establish a drainage permit fee to help fund new development design reviews and inspections.</li> </ul>	<ul style="list-style-type: none"> <li>CCTV condition assessment of 13% of SD system annually until complete (City plans to purchase equipment for \$13k)</li> <li>Reduce required inspection frequency for pipes, swales, ditches, culverts, street gutters, and catch basins to once per two years</li> <li>Discontinue Pipe Program and reallocate staff and funds to Pipe Replacement capital project.</li> </ul>	<ul style="list-style-type: none"> <li>None identified</li> </ul>	<ul style="list-style-type: none"> <li>Update tracking database to electronic software.</li> <li>Organize and assess existing basin/water quality info (monitoring data, mapping, reports) to identify and prioritize potential water quality retrofit projects.</li> </ul>	<ul style="list-style-type: none"> <li>Increase budget proportionately to support upgrades of other program elements</li> <li>Track SWM revenue grown and use proceeds to cover additional staff and equipment</li> </ul>						

## Appendix E

Surface Water Management Program  
Financial Analysis



**To:** Loren Reinhold; City of Des Moines  
Julie Brandt, Austin Fisher; Parametrix

**Date:** January 7, 2015

**From:** John Ghilarducci, Ryan Bert; FCS GROUP

**RE:** Surface Water Rate & General Facilities Charge Update

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## 1.0 Introduction & Background

In support of the 2014 Surface Water Plan (SWP) update, Parametrix, Inc. (Parametrix) contracted with Financial Consulting Solutions Group, Inc. (FCS GROUP) to perform a surface water rate update for the City of Des Moines. Specific tasks included:

- ◆ Developing an estimated revenue requirement and cash flow projection for the next 10 years (2015-2024), incorporating:
  - The list of prioritized capital improvement projects, as developed by Parametrix.
  - Recommended surface water utility program changes, as developed by Parametrix, in order to respond to any existing gaps in surface water operations.
  - Various service level scenarios for both capital funding aspects and additions to the operating program.
  - Current financial information including a review of the utility's capital funding status, financial policies, and procedures.
- ◆ Summarizing revenue requirement and rate results in a level of service matrix to communicate varying service levels and associated costs.
- ◆ Updating surface water general facilities charges (GFC), developing alternatives for each capital service level.

This memorandum discusses the various aspects of the process used to develop surface water rates and GFCs for the City.

## 2.0 Fiscal Policies

Fiscal policies provide the basic framework for evaluating utility revenue needs. These policies, which can address a variety of topics including cash management, capital funding, and financial performance, intend to promote long-term financial viability for the City's utility.

### 2.1 Utility Reserves

Reserves are a key component of any utility financial strategy, as they provide the flexibility to manage variations in costs and revenues that could otherwise have an adverse impact on ratepayers. For the purpose of this analysis, the City's surface water utility resources are separated into three funds:

- **Operating Fund:** Operating reserves are designed to provide a liquidity cushion to ensure that adequate cash working capital will be maintained to address significant cash balance fluctuations, such as seasonal fluctuations in billings and receipts, unanticipated cash operating expenses, or lower than expected revenue collections. Target funding levels are generally expressed in number of days' cash operating expenses, with the minimum requirement varying with the expected risk of unanticipated needs. Surface water customers are billed *annually* on the King County property tax statement, for which the County charges the City a small billing fee per account. A majority of these bills are paid in April and October installments. Because the impervious service area basis of charging changes very little from year to year, the surface water utility generates relatively constant and predictable rate revenue. Due to the fee's inclusion on the property tax statement, however, the City must plan for a twice yearly revenue generation pattern, and begin each year with a substantial fund balance to ensure positive cash flow. The City's current fiscal policy requires the Operating Fund to maintain a minimum fund balance equal to (4) months of operating expenses, plus an additional 7% contingency intended to be used for emergency purposes only. The target minimum balance for 2014 equates to roughly \$862,000.
- **Capital Fund:** The Capital Fund represents the hub of the surface water utility's capital activity. Inflows include debt proceeds (if applicable), GFC revenues, capital grants and other contributions, and the rate-funded capital transfer from the Operating Fund. The City spends these funds on capital projects. This analysis assumes a target minimum balance equal to 1% of plant-in-service, which equates to roughly \$212,000 based on the constructed plant assets listed in the 2013 audited financial statements.
- **Capital Reserve Fund:** In 2015, the City is planning to establish a Capital Reserve Fund for added emergency protection. The Capital Reserve Fund will be made available in case of an emergency, should a piece of equipment or a portion of the utility's infrastructure fail unexpectedly. Additionally, reserve balances could be used for other unanticipated capital needs, including project cost overruns. These reserves are not intended to cover the costs of system-wide failures resulting from catastrophic events. The Capital Reserve Fund is assumed to receive initial funding through expected general facilities charges in 2015, primarily through the estimated GFCs from Des Moines Creek Business Park (\$343,778), kicking off the fund with a total beginning balance of \$350,000. Should the Capital Fund require the use of Capital Reserve Fund dollars, a transfer of funds will be made; it is assumed that the transferred amount will be replenished within a three year time period through increased rate-funded capital transfers.

## 2.2 Capital Funding

The City can use a variety of funding sources to pay for capital costs:

- **Grants/Developer Contributions:** These funds are outside sources of funding that derive from third-party sources and contribute toward certain capital projects – the City would most rationally use this money to fund project costs before tapping its own resources.
- **Capital Fund Cash:** This is the pool of money that the City has set aside for capital purposes, and would include GFC revenues (to the extent that it is not used for debt repayment), interest earned on money in the Capital Fund, and money transferred to the Capital Fund from other funds.
- **Loans:** To the extent that low-cost loans are available, they would be used to supplement cash funding for projects. These funds generally require the availability of a loan program, and may come with other requirements. Based on input from City staff, the analysis does not assume any low-cost loans.
- **Revenue Bonds:** Revenue bonds would be used to cover capital needs in excess of other available resources. They are considered less desirable than other forms of debt due to their relatively high interest rates and additional coverage requirements; they require the City to pledge its surface water utility revenues for their repayment. Based on input from City staff, the analysis does not assume any revenue bond issues.

## 2.3 Financial Performance

The utility's financial performance policies define the minimum standards for annual financial performance. The City's budget process establishes a common utility standard for a balanced budget. Beyond that minimum, the utility budgeting process should also meet the minimum reserve requirements outlined above. In general, this standard results in an annual requirement for positive cash flow from operations. A possible short-term exception would be when the Operating Fund balance exceeds the relevant minimum balance requirements and the City makes an explicit decision to transfer the surplus for capital project funding, or to phase in rate increases over time.

The second criterion relates to utility debt service coverage. The City's surface water utility currently has no outstanding revenue bond debt. When applicable, however, a debt service coverage calculation takes into consideration the coverage requirements, allowable revenues, and expenses that are considered to be "operational". All subordinate debt is excluded from the calculation on the premise that such debt would hold a junior position and would only be repaid after revenue bond payments are satisfied. Because the coverage test does not consider rate-funded capital funding (depreciation), other rate-funded capital outlays, or reserve funding needs, it is conceptually possible that a utility could meet its coverage requirements yet end up with negative cash flow after all debt service is paid.

A common requirement for utility bond coverage is a coverage ratio of 1.25, meaning that the utility must generate enough revenue to cover operating expenses plus 125% of annual revenue bond debt service. Besides being a legal requirement, the coverage ratio actually realized is an important statistic used to rate a utility's financial integrity and ability to meet its existing and future debt obligations. Revenue generated to comply with coverage requirements may be used for capital purposes, and may reduce the amount of revenue needed to meet cash needs in subsequent years – it

can also be used to meet capital requirements (and may thus reduce future borrowing), but generally cannot be held over to reduce coverage needs in subsequent years.

## 2.4 Service Level Scenarios

As part of this study, three service levels and their resulting rate impacts were defined and analyzed. Summaries of the capital funding and operating program assumptions are outlined below for each service level:

- **Capital Funding:** Incorporating the prioritized CIP from Parametrix, service levels vary according to the number of future capital projects funded by the utility (in order of priority). In order to fund a more comprehensive capital program without issuing debt, rate increases and adjustments to the rate-funded capital transfer are utilized to generate results.
  - Service Level 1: Holding rate increases at an inflationary level of 2.3% (weighted average of City inflation assumptions), Scenario 1 funds as many high priority capital projects as possible by the end of the planning period (2015-2024).
  - Service Level 2: All high priority capital projects are funded by the end of 2024; surface water rates must increase as a result.
  - Service Level 3: All high priority and medium priority capital projects are funded by the end of 2024; surface water rates must increase as a result.
- **Operating Program Additions:** In addition to the capital funding assumptions listed above, the following operating program additions are assumed under each service level. Outlined below are the operating additions occurring under all levels, as well as any assumptions unique to individual levels. Unless otherwise noted, operating additions are assumed to take effect in 2015. All cost estimates were provided by Parametrix.
  - Service Level 1 is assumed to be the baseline scenario, as changes to the operating program maintain existing regulatory requirements and increase cost efficiency.
    - Establish a drainage permit fee: revenues of \$25,000 per year.
    - Charge the Street Fund for waste disposal: revenues of \$10,000 per year.
    - Increased use of utility staff for CIP management: savings of \$30,000 per year.
    - Discontinue pipe program: savings of \$110,000 per year.
    - CCTV 15% of the surface water system: one-time expense of \$15,000 in 2015.
    - Addition of 1.0 FTE to perform surface water tasks necessary to adhere to regulatory requirements. 1.0 FTE (maintenance pay grade) includes 0.33 FTE allocated for NPDES inspections, 0.33 FTE allocated for non-NPDES inspections, and 0.33 FTE allocated for the input of backlog information. Incorporating the City's average maintenance employee salary and benefit costs, 1.0 FTE at a maintenance pay grade is expected to cost \$91,290 per year.

In addition to the operating additions listed in the baseline (Service Level 1) above, the following FTE additions are assumed to occur under each additional service level:

- Service Level 2: The operating program adds an additional full-time employee (engineering pay grade at \$113,923 per year) as customer growth permits to help manage CIP implementation. With the assumed customer growth rate of 0.50% per year and the expected Des Moines Business Park rate revenue in 2016 (\$35,000 per year), the surface water utility is expected to reach enough growth related revenue (applying 2014 rates to expected new customers) to pay for the FTE in 2021.

- Scenario 3: The operating program adds an additional FTE (engineering pay grade) immediately in 2015 to help manage the CIP.

### 3.0 Surface Water Revenue Requirement Forecast

The revenue requirement is the amount of revenue that rates must generate to enable the City to meet the various financial obligations of its surface water utility. This analysis has two main purposes – it serves as a means of evaluating the utility’s fiscal health and adequacy of current rate levels, and it sets the basis for near and long-term rate planning. The rate revenue requirement is defined as the net difference between total revenue needs and the revenue generated through non-rate sources. Hence, the revenue requirement analysis involves defining and forecasting both needs and resources.

#### 3.1 Key Assumptions

Before a revenue requirement analysis can be done, a series of assumptions are formulated to create a basis for the analysis. The assumptions affecting the analysis are discussed below.

- **Customer Growth:** To represent current trends in customer growth, the City budget estimates customer growth to be about 0.50% per year. In the near-term, these growth projections add 70 – 75 EBUs to the system each year.
- **Debt Financing:** This analysis assumes that the City will not need to issue debt to pay for capital projects, as the rate-funded capital transfer is adjusted each year to cover capital expenditures. It should be noted that if additional financial flexibility is needed, the City could pursue revenue bond issuances in the future.
- **Cost Inflation:** This analysis assumes that all costs will increase with inflation in the future.
  - Capital costs are assumed to increase by the Engineering News Record (ENR) City of Seattle Construction Cost Index (CCI) of 3.0% per year, and operating costs are assumed to increase by the Seattle Consumer Price Index (CPI) of 2.0% per year, consistent with the inflationary assumptions built into the City’s budgets.

#### 3.2 Capital Funding Strategy

To remain debt-free, the City is planning to fund its projected capital costs through a combination of internal cash resources (rate revenue, non-rate revenue, GFCs) and grant funding. The financial forecast assumes the following conceptual capital funding hierarchy:

- Any available grant funds or developer contributions would be considered first, as they are generally restricted in use but could free up City funding resources for other purposes. This analysis assumes the following funding in the future:
  - King County Flood Reduction Grant: \$200,000 in 2015 for Lower Massey Creek modifications.
  - King County Flood Control Grant: \$180,000 in 2015 for Lower Massey Creek modifications.
  - Normandy Park Interlocal Agreement: \$29,800 in 2018 and \$204,750 in 2019 for the 1<sup>st</sup> Avenue Pond Expansion project.
  - King County Flood District: All cities within the District boundary receive a share of this non-competitive grant each year to go towards any project that reduces flooding. These

funds may be used each year or accumulated over time to use for a larger project. The City's share of the King County Flood District grant is \$36,500 per year.

- ✦ Anticipated low-cost loans would then be used, if any are available. Based on input from City staff, the analysis assumes no future debt or low-cost loan financing.
- ✦ Cash resources are next, including projected GFC revenues, rate-funded capital transfers, and available cash reserves (to the extent that they exceed the policy minimum balances). In the event that the Operating Fund has a balance above the minimum target, this analysis assumes that funds may be transferred to the capital fund as needed to avoid future debt issuance.
- ✦ Revenue bonds are a relatively high-cost source of funding with additional coverage requirements, and as such are the last resort to cover costs in excess of other available resources.

**Exhibit 1** shows the CIP for each service level as described previously, and the funding strategies developed as part of this study.

**Exhibit 1: Summary of Capital Cost Projections and Funding Strategy**

CIP PROJECTS	LOS 1		LOS 2		LOS 3	
	Year [a]	Escalated Cost	Year [a]	Escalated Cost	Year [a]	Escalated Cost
<b>HIGH PRIORITY (ordered by ranking)</b>						
CIP-16: 5th Avenue South/212th Street Pipe Upgrade	2020	\$ 839,569	2019	\$ 815,116	2019	\$ 815,116
CIP-3: Lower Massey Creek Channel Modifications	2015	\$ 1,248,565	2015	\$ 1,248,565	2015	\$ 1,248,565
CIP-30: North Fork McSorley Creek Diversion Project	2021	\$ 445,334	2019	\$ 419,770	2019	\$ 419,770
CIP-4: Barnes Creek/Kent Des Moines Road Culvert Replacement	2015-2017	\$ 1,544,436	2015-2017	\$ 1,544,436	2015-2017	\$ 1,544,436
CIP-39: 6th Avenue/239th St. Pipe Replacement	2021	\$ 196,087	2020	\$ 190,376	2020	\$ 190,376
CIP-36: 14th Avenue (268th to 272nd) Pipe Upgrade	2022	\$ 506,388	2020	\$ 477,320	2020	\$ 477,320
CIP-17: 216th Place/Marine View Drive Pipe Upgrade	2022	\$ 317,676	2021	\$ 308,424	2020	\$ 299,440
CIP-25A: KDM/16th Avenue Pipe Replacement Project	2022	\$ 279,280	2021	\$ 271,145	2020	\$ 263,248
CIP-18: Des Moines Memorial Drive - S. 208th to S. 212th Pipe Project	2023	\$ 639,694	2021	\$ 602,973	2021	\$ 602,973
CIP-40: 8th Avenue (264th to 265th) Pipe Project	2023	\$ 278,436	2022	\$ 270,326	2021	\$ 262,453
CIP-5: 24th Avenue Pipeline Replacement	2015	\$ 260,100	2015	\$ 260,100	2015	\$ 260,100
CIP-25B: KDM/16th Avenue (228th to KDM Rd) Pipe Project	2024	\$ 932,156	2022	\$ 878,646	2021	\$ 853,055
CIP-26: 232nd Street (10th to 14th) Pipe Project			2023	\$ 629,053	2022	\$ 610,731
CIP-23: 24th Avenue (223rd to 224th) Pipe Upgrade			2023	\$ 286,417	2022	\$ 278,074
CIP-34: 258th Street (13th Pl to 16th Ave) Pipe Project			2024	\$ 445,711	2022	\$ 420,125
CIP-37: 6th Place/287th Street Pipe Replacement Project			2024	\$ 647,559	2022	\$ 610,386
CIP-14: 1st Place South (209th to 210th) Pipe Project			2024	\$ 275,646	2022	\$ 259,823
CIP-7: 1st Avenue Pond Expansion	2018-2019	\$ 374,922	2018-2019	\$ 374,922	2018-2019	\$ 374,922
CIP-9: Pipe Replacement Program (unidentified projects)	2016-2020	\$ 1,609,403	2016-2020	\$ 1,609,403	2016-2020	\$ 1,609,403
<b>MEDIUM PRIORITY (ordered by ranking)</b>						
CIP-38: 9th Avenue (202nd to 206th) Pipe Project					2023	\$ 235,518
CIP-15: 3rd Avenue South (213th to 216th) Pipe Project					2023	\$ 408,077
CIP-31: 20th Avenue/243rd Street Pipe Upgrade					2023	\$ 471,036
CIP-35: 22nd Avenue Outfall Project					2023	\$ 242,434
CIP-6: 199th North Hill Trunkline Upgrade					2018-2019	\$ 259,345
CIP-8: North Hill NE and 197th Street Trunkline Upgrade					2017-2018	\$ 525,291
CIP-32: 242nd Street (26th Ave to 26th Pl) Pipe Project					2023	\$ 126,804
CIP-11: Saltwater Highlands Tract A pond replacement					2023	\$ 457,256
CIP-27: 240th Street (MVD to 11th Place) Pipe Project					2024	\$ 448,633
CIP-22: 220th Street (15th Ave to SJU Park) Pipe Replacement Project					2024	\$ 438,221
CIP-33: 252nd Street/9th Avenue Pipe Project					2024	\$ 249,525
CIP-41: 12th/13th Avenue (270th to 272nd Street)					2024	\$ 647,194
Emergency Contingency: Estimated @ \$150K (unescalated) every (3) years	-	\$ 507,807	-	\$ 507,807	-	\$ 507,807
<b>Total</b>		<b>\$ 9,979,854</b>		<b>\$ 12,063,715</b>		<b>\$ 16,417,457</b>

[a] Study Period: 2015-2024

CAPITAL FUNDING STRATEGY	LOS 1	LOS 2	LOS 3
Grants / Developer Contributed	\$ 943,050	\$ 943,050	\$ 943,050
GFCs	\$ 1,507,157	\$ 1,578,608	\$ 1,722,282
Rate-Funded Capital	\$ 7,529,647	\$ 9,542,056	\$ 13,752,125
<b>Total</b>	<b>\$ 9,979,854</b>	<b>\$ 12,063,715</b>	<b>\$ 16,417,457</b>

### 3.3 Operating Forecast

Operating expense projections for 2015 are generally based on the City's 2014 Budget and service level information provided by Parametrix. The forecast of operating expenses beyond 2014 is also based on this information, generally reflecting annual inflationary increases. Operating revenues are also forecasted to offset projected operating expenses – these revenues are generally assumed to grow with customer growth. As an exception to this, the analysis computes interest earnings on projected reserve balances assuming an annual interest earnings rate of 0.26% for the study period, based on the City's 2014 projected investment interest earnings.

Surface water rate revenue levels for 2015 are initially based on 2014 budgeted revenues and adjusted for growth. As discussed with City staff, the 2015 budgeted rate revenues include the expected inflationary rate increase of 3.65%, implemented in January 2015.

### 3.4 Policy-Based & Other Revenue Needs

Other costs that the City's surface water rates must fund include:

- **Rate-Funded Capital Transfer:** Effective 2009, the City established an internal budgetary goal to transfer 30% of rate revenues to the Capital Fund to be used for capital purposes. For purposes of this analysis, it is assumed that the City may adjust this transfer on an annual basis in order to balance the objectives of adequately funding the City's capital needs with each service level and maintain affordable rates. Each service level therefore has a unique schedule of rate-funded capital transfers over the study period.
- **Reserve Funding:** As previously noted, this analysis assumes that the City remains consistent with its historical practices and maintains an operating reserve with a minimum target balance equal to 4 months of projected operating expenses, plus an additional 7% contingency. It is worth noting that as operating expenses are projected to increase over time, the target balance for the operating reserve increases – if the operating reserve balance is projected to fall short of its moving target, rates must generate a corresponding surplus to cover the difference. This analysis also assumes a minimum target balance for the Capital Fund equal to 1% of fixed plant assets, or roughly \$212,000 in 2014. The City will begin funding a Capital Reserve Fund in 2015 with a beginning balance of \$350,000. Per input from City staff, the City expects to make a \$150,000 transfer to the Capital Fund every three years, assuming the Capital Reserve Fund will be reimbursed \$50,000 each year over the following three years through an increased rate-funded capital transfer.

### 3.5 Revenue Sufficiency

With revenues and expenses defined and projected, the next step is to define the amount of revenue needed to meet the surface water utility's financial needs and policy objectives. The financial forecast defines the level of revenue needed via a series of tests:

#### 3.5.1 Cash Flow Sufficiency Test

Conceptually, the cash flow test determines the amount of revenue the surface water utility needs to generate in order to meet its cash obligations. The cash flow obligations relating to rates include:

- Operating, maintenance and administrative expenses
- Debt service payments (if applicable)
- Rate-funded capital transfers
- Additions to operating reserves

Offsetting these obligations are various sources of revenue, including:

- Surface water rate revenues
- Operating Fund interest earnings
- Miscellaneous operating and non-operating revenues
- Interest earned on bond reserves (if applicable)
- Use of bond reserves to make final-year payments (if applicable)

To satisfy this test, surface water rate revenue must be sufficient to meet the projected cash flow needs net of other revenue sources. Capital resources such as grant funding, bond proceeds, or GFC revenues are not typically considered available for meeting these cash flow needs, but become part of the resources used for capital project funding. This policy is conservative in that it avoids reliance on growth-dependent charges to meet the utility's financial objectives.

### 3.5.2 Coverage Sufficiency Test

The City's surface water utility does not currently, and is not expected to acquire any debt financing proceeds within the study period. Should the City decide to pursue debt financing in the future, revenue bond covenants include a bond coverage requirement in which the borrower must agree to collect enough revenue so that "net revenue" (defined as rate revenue plus interest earnings and miscellaneous operating revenue, less cash operating expenses) covers a multiple of annual debt service costs. Typically, bond issuers will set the legal minimum coverage ratio at 1.25.

Note that the calculation would exclude rate-funded capital, reserve funding, and loan debt service; as it is a test of annual financial performance, it also precludes the use of reserves to cover shortfalls in net revenue.

### 3.5.3 Evaluation of Revenue Sufficiency

The cash flow and coverage sufficiency tests each provide a different perspective on how much revenue is appropriate and helps ensure that appropriate rate adjustments, if any, fulfill the utility's near-term needs and long-term goals. This multi-faceted approach reduces the utility's financial risk and increases financial stability – any near-term increases which result will help to ensure lower and more stable long-term rates.

**Exhibits 2-4** show the revenue requirement forecast for all three service levels. Both a detailed short-term (2014-2019), and summarized long-term projection (2015-2024) are provided. **Exhibit 5** provides summarized 2016 results in a single service level matrix.

**Exhibit 2: Surface Water Revenue Requirement Forecast: Service Level 1**

Revenue Requirement	2014	2015	2016	2017	2018	2019	2020
<b>Revenues</b>							
Rate Revenues Under Existing Rates	\$ 2,410,663	\$ 2,422,716	\$ 2,470,005	\$ 2,482,355	\$ 2,494,767	\$ 2,507,241	\$ 2,519,777
Non-Rate Revenues	289,270	335,454	319,629	320,425	321,031	322,724	323,987
<b>Total Revenues</b>	<b>\$ 2,699,933</b>	<b>\$ 2,758,170</b>	<b>\$ 2,789,634</b>	<b>\$ 2,802,780</b>	<b>\$ 2,815,798</b>	<b>\$ 2,829,965</b>	<b>\$ 2,843,763</b>
<b>Expenses</b>							
Cash Operating Expenses	\$ 2,451,376	\$ 2,297,041	\$ 2,298,491	\$ 2,337,308	\$ 2,376,889	\$ 2,417,249	\$ 2,458,404
Existing Debt Service	1,020	1,020	1,020	1,020	1,020	-	-
New Debt Service	-	-	-	-	-	-	-
Rate Funded Transfer to Capital Fund	486,455	482,133	753,344	811,904	430,829	636,728	683,092
Rate Funded Transfer to Capital Reserve Fund	-	-	-	50,000	50,000	50,000	50,000
Additions to Meet Required Operating Reserve	-	-	-	-	190,464	-	-
<b>Total Expenses</b>	<b>\$ 2,938,851</b>	<b>\$ 2,780,194</b>	<b>\$ 3,052,854</b>	<b>\$ 3,200,231</b>	<b>\$ 3,049,201</b>	<b>\$ 3,103,977</b>	<b>\$ 3,191,495</b>
<b>Net Surplus (Deficiency) Before Rate Increase</b>	<b>\$ (238,918)</b>	<b>\$ (22,023)</b>	<b>\$ (263,220)</b>	<b>\$ (397,451)</b>	<b>\$ (233,403)</b>	<b>\$ (274,012)</b>	<b>\$ (347,732)</b>
Additions to Meet Coverage	-	-	-	-	-	-	-
<b>Total Surplus (Deficiency) Before Rate Increase</b>	<b>\$ (238,918)</b>	<b>\$ (22,023)</b>	<b>\$ (263,220)</b>	<b>\$ (397,451)</b>	<b>\$ (233,403)</b>	<b>\$ (274,012)</b>	<b>\$ (347,732)</b>
<b>ANNUAL RATE INCREASE</b>	<b>0.00%</b>	<b>3.65%</b>	<b>2.30%</b>	<b>2.30%</b>	<b>2.30%</b>	<b>2.30%</b>	<b>2.30%</b>
<b>CUMULATIVE RATE INCREASE</b>	<b>0.00%</b>	<b>3.65%</b>	<b>6.03%</b>	<b>8.47%</b>	<b>10.97%</b>	<b>13.52%</b>	<b>16.13%</b>
Rate Revenues After Rate Increase	\$ 2,410,663	\$ 2,511,145	\$ 2,619,044	\$ 2,692,678	\$ 2,768,383	\$ 2,846,216	\$ 2,926,237
Additional Taxes from Rate Increase	\$ -	\$ 6,632	\$ 11,178	\$ 15,774	\$ 20,521	\$ 25,423	\$ 30,485
<b>Net Cash Flow After Rate Increase</b>	<b>\$ (238,918)</b>	<b>\$ 59,774</b>	<b>\$ (125,359)</b>	<b>\$ (202,902)</b>	<b>\$ 19,692</b>	<b>\$ 39,540</b>	<b>\$ 28,244</b>
Bond Coverage After Rate Increases	n/a						
Sample Monthly Bill per EBU [a]	\$ 14.24	\$ 14.76	\$ 15.10	\$ 15.45	\$ 15.80	\$ 16.17	\$ 16.54
Average Monthly Increase (\$)	\$ -	\$ 0.52	\$ 0.34	\$ 0.35	\$ 0.36	\$ 0.36	\$ 0.37

[a] | EBU = 3,450 impervious sq. ft. Before taxes.

Projected Ending Fund Balance	2014	2015	2016	2017	2018	2019	2020
Operating Fund	\$ 914,168	\$ 973,942	\$ 848,583	\$ 645,680	\$ 855,836	\$ 895,376	\$ 923,620
Capital Fund	\$ 1,190,537	\$ 525,575	\$ 773,044	\$ 273,990	\$ 503,661	\$ 843,964	\$ 528,547
Capital Reserve Fund	\$ -	\$ 350,000	\$ 200,000	\$ 250,000	\$ 300,000	\$ 200,000	\$ 250,000
<b>COMBINED ENDING BALANCE</b>	<b>\$ 2,104,705</b>	<b>\$ 1,849,517</b>	<b>\$ 1,821,626</b>	<b>\$ 1,169,670</b>	<b>\$ 1,659,497</b>	<b>\$ 1,939,340</b>	<b>\$ 1,702,167</b>

Summary	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Rate Revenue	\$ 2,511,145	\$ 2,619,044	\$ 2,692,678	\$ 2,768,383	\$ 2,846,216	\$ 2,926,237	\$ 3,008,508	\$ 3,093,093	\$ 3,180,055	\$ 3,269,462
Rate Funded Capital	\$ 482,133	\$ 753,344	\$ 861,904	\$ 480,829	\$ 686,728	\$ 733,092	\$ 781,559	\$ 862,297	\$ 854,204	\$ 876,814
<b>Rate Increases</b>	<b>3.65%</b>	<b>2.30%</b>								
Monthly Rate / EBU	\$ 14.76	\$ 15.10	\$ 15.45	\$ 15.80	\$ 16.17	\$ 16.54	\$ 16.92	\$ 17.31	\$ 17.70	\$ 18.11

**Exhibit 3: Surface Water Revenue Requirement Forecast: Service Level 2**

Revenue Requirement	2014	2015	2016	2017	2018	2019	2020
<b>Revenues</b>							
Rate Revenues Under Existing Rates	\$ 2,410,663	\$ 2,422,716	\$ 2,470,005	\$ 2,482,355	\$ 2,494,767	\$ 2,507,241	\$ 2,519,777
Non-Rate Revenues	289,270	335,454	320,042	321,019	322,001	323,159	324,281
<b>Total Revenues</b>	<b>\$ 2,699,933</b>	<b>\$ 2,758,170</b>	<b>\$ 2,790,047</b>	<b>\$ 2,803,374</b>	<b>\$ 2,816,767</b>	<b>\$ 2,830,400</b>	<b>\$ 2,844,058</b>
<b>Expenses</b>							
Cash Operating Expenses	\$ 2,451,376	\$ 2,297,041	\$ 2,299,013	\$ 2,337,849	\$ 2,377,449	\$ 2,417,828	\$ 2,459,004
Existing Debt Service	1,020	1,020	1,020	1,020	1,020	-	-
New Debt Service	-	-	-	-	-	-	-
Rate Funded Transfer to Capital Fund	486,455	482,133	753,344	806,450	851,007	957,893	938,616
Rate Funded Transfer to Capital Reserve Fund	-	-	-	50,000	50,000	50,000	50,000
Additions to Meet Required Operating Reserve	-	-	-	-	-	3,776	38,715
<b>Total Expenses</b>	<b>\$ 2,938,851</b>	<b>\$ 2,780,194</b>	<b>\$ 3,053,377</b>	<b>\$ 3,195,319</b>	<b>\$ 3,279,476</b>	<b>\$ 3,429,498</b>	<b>\$ 3,486,335</b>
<b>Net Surplus (Deficiency) Before Rate Increase</b>	<b>\$ (238,918)</b>	<b>\$ (22,023)</b>	<b>\$ (263,330)</b>	<b>\$ (391,946)</b>	<b>\$ (462,708)</b>	<b>\$ (599,098)</b>	<b>\$ (642,277)</b>
Additions to Meet Coverage	-	-	-	-	-	-	-
<b>Total Surplus (Deficiency) Before Rate Increase</b>	<b>\$ (238,918)</b>	<b>\$ (22,023)</b>	<b>\$ (263,330)</b>	<b>\$ (391,946)</b>	<b>\$ (462,708)</b>	<b>\$ (599,098)</b>	<b>\$ (642,277)</b>
<b>ANNUAL RATE INCREASE</b>	<b>0.00%</b>	<b>3.65%</b>	<b>5.00%</b>	<b>5.00%</b>	<b>5.00%</b>	<b>4.00%</b>	<b>4.00%</b>
<b>CUMULATIVE RATE INCREASE</b>	<b>0.00%</b>	<b>3.65%</b>	<b>8.83%</b>	<b>14.27%</b>	<b>19.99%</b>	<b>24.79%</b>	<b>29.78%</b>
Rate Revenues After Rate Increase	\$ 2,410,663	\$ 2,511,145	\$ 2,688,168	\$ 2,836,689	\$ 2,993,416	\$ 3,128,719	\$ 3,270,137
Additional Taxes from Rate Increase	\$ -	\$ 6,632	\$ 16,362	\$ 26,575	\$ 37,399	\$ 46,611	\$ 56,277
<b>Net Cash Flow After Rate Increase</b>	<b>\$ (238,918)</b>	<b>\$ 59,774</b>	<b>\$ (61,529)</b>	<b>\$ (64,186)</b>	<b>\$ (1,457)</b>	<b>\$ (24,231)</b>	<b>\$ 51,807</b>
Bond Coverage After Rate Increases	n/a						
Sample Monthly Bill per EBU [a]	\$ 14.24	\$ 14.76	\$ 15.50	\$ 16.27	\$ 17.09	\$ 17.77	\$ 18.48
Average Monthly Increase (\$)	\$ -	\$ 0.52	\$ 0.74	\$ 0.77	\$ 0.81	\$ 0.68	\$ 0.71

[a] 1 EBU = 3,450 impervious sq. ft. Before taxes.

Projected Ending Fund Balance	2014	2015	2016	2017	2018	2019	2020
Operating Fund	\$ 914,168	\$ 973,942	\$ 912,413	\$ 848,227	\$ 846,770	\$ 826,315	\$ 916,837
Capital Fund	\$ 1,190,537	\$ 525,575	\$ 779,931	\$ 282,571	\$ 939,822	\$ 375,179	\$ 493,847
Capital Reserve Fund	\$ -	\$ 350,000	\$ 200,000	\$ 250,000	\$ 300,000	\$ 200,000	\$ 250,000
<b>COMBINED ENDING BALANCE</b>	<b>\$ 2,104,705</b>	<b>\$ 1,849,517</b>	<b>\$ 1,892,344</b>	<b>\$ 1,380,798</b>	<b>\$ 2,086,592</b>	<b>\$ 1,401,494</b>	<b>\$ 1,660,684</b>

Summary	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Rate Revenue	\$ 2,511,145	\$ 2,688,168	\$ 2,836,689	\$ 2,993,416	\$ 3,128,719	\$ 3,270,137	\$ 3,417,947	\$ 3,514,043	\$ 3,612,840	\$ 3,714,415
Rate Funded Capital	\$ 482,133	\$ 753,344	\$ 856,450	\$ 901,007	\$ 1,007,893	\$ 988,616	\$ 1,031,041	\$ 1,116,400	\$ 1,121,783	\$ 1,151,916
Rate Increases	3.65%	5.00%	5.00%	5.00%	4.00%	4.00%	4.00%	2.30%	2.30%	2.30%
Monthly Rate / EBU	\$ 14.76	\$ 15.50	\$ 16.27	\$ 17.09	\$ 17.77	\$ 18.48	\$ 19.22	\$ 19.66	\$ 20.11	\$ 20.58

**Exhibit 4: Surface Water Revenue Requirement Forecast: Service Level 3**

Revenue Requirement	2014	2015	2016	2017	2018	2019	2020
<b>Revenues</b>							
Rate Revenues Under Existing Rates	\$ 2,410,663	\$ 2,422,716	\$ 2,470,005	\$ 2,482,355	\$ 2,494,767	\$ 2,507,241	\$ 2,519,777
Non-Rate Revenues	289,270	335,454	320,577	321,717	322,840	324,172	325,287
<b>Total Revenues</b>	<b>\$ 2,699,933</b>	<b>\$ 2,758,170</b>	<b>\$ 2,790,582</b>	<b>\$ 2,804,072</b>	<b>\$ 2,817,606</b>	<b>\$ 2,831,412</b>	<b>\$ 2,845,064</b>
<b>Expenses</b>							
Cash Operating Expenses	\$ 2,451,376	\$ 2,410,964	\$ 2,416,266	\$ 2,457,462	\$ 2,499,471	\$ 2,542,308	\$ 2,585,991
Existing Debt Service	1,020	1,020	1,020	1,020	1,020	-	-
New Debt Service	-	-	-	-	-	-	-
Rate Funded Transfer to Capital Fund	486,455	482,133	703,121	901,176	1,089,649	1,411,111	1,531,620
Rate Funded Transfer to Capital Reserve Fund	-	-	-	50,000	50,000	50,000	50,000
Additions to Meet Required Operating Reserve	-	-	-	14,086	50,842	12,501	63,588
<b>Total Expenses</b>	<b>\$ 2,938,851</b>	<b>\$ 2,894,117</b>	<b>\$ 3,120,407</b>	<b>\$ 3,423,745</b>	<b>\$ 3,690,983</b>	<b>\$ 4,015,920</b>	<b>\$ 4,231,199</b>
Net Surplus (Deficiency) Before Rate Increase	\$ (238,918)	\$ (135,947)	\$ (329,825)	\$ (619,673)	\$ (873,376)	\$ (1,184,508)	\$ (1,386,136)
Additions to Meet Coverage	-	-	-	-	-	-	-
<b>Total Surplus (Deficiency) Before Rate Increase</b>	<b>\$ (238,918)</b>	<b>\$ (135,947)</b>	<b>\$ (329,825)</b>	<b>\$ (619,673)</b>	<b>\$ (873,376)</b>	<b>\$ (1,184,508)</b>	<b>\$ (1,386,136)</b>
<b>ANNUAL RATE INCREASE</b>	<b>0.00%</b>	<b>3.65%</b>	<b>10.00%</b>	<b>10.00%</b>	<b>10.00%</b>	<b>8.00%</b>	<b>8.00%</b>
<b>CUMULATIVE RATE INCREASE</b>	<b>0.00%</b>	<b>3.65%</b>	<b>14.02%</b>	<b>25.42%</b>	<b>37.96%</b>	<b>48.99%</b>	<b>60.91%</b>
Rate Revenues After Rate Increase	\$ 2,410,663	\$ 2,511,145	\$ 2,816,176	\$ 3,113,283	\$ 3,441,734	\$ 3,735,658	\$ 4,054,683
Additional Taxes from Rate Increase	\$ -	\$ 6,632	\$ 25,963	\$ 47,320	\$ 71,023	\$ 92,131	\$ 115,118
<b>Net Cash Flow After Rate Increase</b>	<b>\$ (238,918)</b>	<b>\$ (54,150)</b>	<b>\$ (9,617)</b>	<b>\$ (36,065)</b>	<b>\$ 2,568</b>	<b>\$ (48,222)</b>	<b>\$ 33,653</b>
Bond Coverage After Rate Increases	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Sample Monthly Bill per EBU [a]	\$ 14.24	\$ 14.76	\$ 16.24	\$ 17.86	\$ 19.65	\$ 21.22	\$ 22.91
Average Monthly Increase (\$)	\$ -	\$ 0.52	\$ 1.48	\$ 1.62	\$ 1.79	\$ 1.57	\$ 1.70

[a] 1 EBU = 3,450 impervious sq. ft. Before taxes.

Projected Ending Fund Balance	2014	2015	2016	2017	2018	2019	2020
Operating Fund	\$ 914,168	\$ 860,018	\$ 850,402	\$ 828,424	\$ 881,834	\$ 846,114	\$ 943,355
Capital Fund	\$ 1,190,537	\$ 525,575	\$ 743,556	\$ 277,151	\$ 704,184	\$ 384,566	\$ 549,475
Capital Reserve Fund	\$ -	\$ 350,000	\$ 200,000	\$ 250,000	\$ 300,000	\$ 200,000	\$ 250,000
<b>COMBINED ENDING BALANCE</b>	<b>\$ 2,104,705</b>	<b>\$ 1,735,593</b>	<b>\$ 1,793,958</b>	<b>\$ 1,355,574</b>	<b>\$ 1,886,018</b>	<b>\$ 1,430,680</b>	<b>\$ 1,742,830</b>

Summary	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Rate Revenue	\$ 2,511,145	\$ 2,816,176	\$ 3,113,283	\$ 3,441,734	\$ 3,735,658	\$ 4,054,683	\$ 4,278,705	\$ 4,399,000	\$ 4,522,678	\$ 4,649,833
Rate Funded Capital	\$ 482,133	\$ 703,121	\$ 951,176	\$ 1,139,649	\$ 1,461,111	\$ 1,581,620	\$ 1,834,061	\$ 1,915,515	\$ 1,963,565	\$ 2,017,365
Rate Increases	3.65%	10.00%	10.00%	10.00%	8.00%	8.00%	5.00%	2.30%	2.30%	2.30%
Monthly Rate / EBU	\$ 14.76	\$ 16.24	\$ 17.86	\$ 19.65	\$ 21.22	\$ 22.91	\$ 24.06	\$ 24.61	\$ 25.18	\$ 25.76

**Exhibit 5: Service Level Matrix (2016 Projected Rates)**

SERVICE LEVEL	PROGRAM ELEMENT				
	Planning & Engineering	Inspections & Maintenance	NPDES	Administration	Capital Improvement Projects
<b>Program Element Function</b>	<ul style="list-style-type: none"> <li>Staff salaries, supplies, and specific labor required for stormwater engineering and planning (stormwater comprehensive plan, annual NPDES reports, etc.).</li> </ul>	<ul style="list-style-type: none"> <li>Routine system inspections and maintenance (includes NPDES-required); field crew staff salaries, equipment, interfund transfers for repairs, etc.</li> </ul>	<ul style="list-style-type: none"> <li>Implementation of NPDES Permit program: monitoring, permit fees, public outreach, and program-specific administration.</li> <li>SWMP document updates included under Planning &amp; Engineering</li> <li>Inspections &amp; Maintenance included under I&amp;M Category</li> </ul>	<ul style="list-style-type: none"> <li>Overhead costs of operating the program: support staff salaries, state taxes, utility taxes, and non-element-specific expenses.</li> </ul>	<ul style="list-style-type: none"> <li>Large-scale construction, expansion, renovation, or replacement projects; purchases of major, long-term use equipment; or major long-term maintenance, repair, or rehabilitation project.</li> </ul>
\$14.24	\$4.23	\$5.23	\$1.51	\$0.91	\$2.36
<b>Service Level 1 (baseline)</b>	<ul style="list-style-type: none"> <li>Increased use of utility staff for CIP management</li> </ul>	<ul style="list-style-type: none"> <li>Discontinue Pipe Program and reallocate staff and funds elsewhere</li> <li>CCTV 15% of system annually until complete</li> <li>Add 0.33 FTE to maintenance staff (as a back-up to maintain 2 full 2-person crews at all times)for non-NPDES inspections</li> </ul>	<ul style="list-style-type: none"> <li>Establish Drainage Permit Fee</li> <li>Add 0.33 FTE (maintenance) to increase NPDES inspection coverage area</li> <li>Add 0.33 FTE (maintenance) to input backlog of inspection and maintenance records</li> </ul>	<ul style="list-style-type: none"> <li>Charge Street Fund for waste disposal</li> </ul>	<ul style="list-style-type: none"> <li>Addition of Capital Reserve Fund with beginning balance of \$350,000.</li> <li>Fund as many High Priority projects as possible, given inflationary rate increases of 2.3% / year</li> </ul>
\$15.10	\$2.67	\$5.51	\$1.63	\$1.10	\$4.19
<b>Service Level 2</b>	<ul style="list-style-type: none"> <li>Increased use of utility staff for CIP management</li> <li>Add 1.0 FTE (engineering) as customer growth permits to help manage CIP implementation. Estimated implementation year: 2021.</li> </ul>	<ul style="list-style-type: none"> <li>Discontinue Pipe Program and reallocate staff and funds elsewhere</li> <li>CCTV 15% of system annually until complete</li> <li>Add 0.33 FTE to maintenance staff (as a back-up to maintain 2 full 2-person crews at all times)for non-NPDES inspections</li> </ul>	<ul style="list-style-type: none"> <li>Establish Drainage Permit Fee</li> <li>Add 0.33 FTE (maintenance) to increase NPDES inspection coverage area</li> <li>Add 0.33 FTE (maintenance) to input backlog of inspection and maintenance records</li> </ul>	<ul style="list-style-type: none"> <li>Charge Street Fund for waste disposal</li> </ul>	<ul style="list-style-type: none"> <li>Addition of Capital Reserve Fund with beginning balance of \$350,000.</li> <li>Fund all High Priority projects by end of study period.</li> </ul>
\$15.50	\$2.67	\$5.51	\$1.63	\$1.50	\$4.19
<b>Service Level 3</b>	<ul style="list-style-type: none"> <li>Increased use of utility staff for CIP management</li> <li>Add 1.0 FTE (engineering) immediately to help manage CIP implementation.</li> </ul>	<ul style="list-style-type: none"> <li>Discontinue Pipe Program and reallocate staff and funds elsewhere</li> <li>CCTV 15% of system annually until complete</li> <li>Add 0.33 FTE to maintenance staff (as a back-up to maintain 2 full 2-person crews at all times)for non-NPDES inspections</li> </ul>	<ul style="list-style-type: none"> <li>Establish Drainage Permit Fee</li> <li>Add 0.33 FTE to increase NPDES inspection coverage area</li> <li>Add 0.33 FTE to input backlog of inspection and maintenance records</li> </ul>	<ul style="list-style-type: none"> <li>Charge Street Fund for waste disposal</li> </ul>	<ul style="list-style-type: none"> <li>Addition of Capital Reserve Fund with beginning balance of \$350,000.</li> <li>Fund all High Priority and Medium Priority projects by end of study period.</li> </ul>
\$16.24	\$3.78	\$5.51	\$1.63	\$1.60	\$3.71

Exhibits 6-7 provide rate survey comparisons, estimating how the service level scenarios might compare to other jurisdictions in the future. Exhibit 6 compares the City's existing rates (2014) with rates currently charged in other jurisdictions.

**Exhibit 6: Comparative Surface Water Rate Survey - 2014**

2014 Residential Rates	
Tacoma	\$ 19.97
Auburn	\$ 18.78
Redmond	\$ 16.56
Kirkland	\$ 15.60
Mercer Island	\$ 15.32
Seattle	\$ 15.08
<b>Des Moines (Existing)</b>	<b>\$ 14.24</b>
Issaquah	\$ 14.08
Renton	\$ 12.69
King County	\$ 12.58
North Bend	\$ 12.36
Bothell	\$ 12.08
Bellevue	\$ 11.82
Kent	\$ 11.64
Tukwila	\$ 9.83
Seatac	\$ 8.30
Federal Way	\$ 7.38
Woodinville	\$ 7.26

**Exhibit 7** compares the proposed City rate strategy in 2016 (inflation increase in 2015, scenario increases in 2016) with inflation adjusted rates at other jurisdictions, incorporating the City's current weighted average inflation assumption, 2.3% per year. This assumption reflects the idea that cost inflation will affect operating costs and construction costs in any jurisdiction. Without knowing the detail behind each utility's capital program, it is reasonable to assume that on average, other jurisdictions will respond to increased costs with a proportional increase in surface water rates.

**Exhibit 7: Comparative Surface Water Rate Survey - 2016**

2016 Residential Rates [a]	
Tacoma	\$ 20.90
Auburn	\$ 19.73
Redmond	\$ 17.33
Kirkland	\$ 16.33
<b>Des Moines (Scenario 3)</b>	<b>\$ 16.24</b>
Mercer Island	\$ 16.03
Seattle	\$ 15.78
<b>Des Moines (Scenario 2)</b>	<b>\$ 15.42</b>
<b>Des Moines (Scenario 1)</b>	<b>\$ 15.10</b>
Issaquah	\$ 14.74
King County	\$ 14.62
Renton	\$ 13.28
North Bend	\$ 12.94
Bothell	\$ 12.65
Bellevue	\$ 12.37
Kent	\$ 12.18
Seatac	\$ 10.53
Tukwila	\$ 10.29
Federal Way	\$ 8.13
Woodinville	\$ 7.60

[a] 2.3% annual inflationary increases applied to other utilities

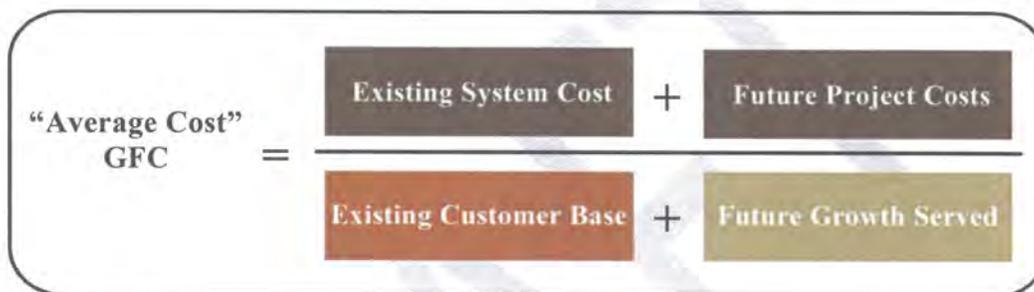
The rate surveys shown in **Exhibits 6-7** suggest that the City's current surface water rate is comparable to other utilities in the area – for all three service levels considered, the City's 2016 rate is expected to retain a similar relative ranking.

## 4.0 General Facilities Charge Update

General facilities charges (connection charges) are imposed as a condition of service on new customers connecting to the system. In addition to any other costs related to physically connecting a customer to the system, the GFC is typically based on a blend of historical and planned future capital investment in system infrastructure – its underlying premise is that growth (future customers) will pay for growth-related costs that the utility has incurred (or will incur) to provide capacity to serve new customers. The GFC cost basis excludes costs associated with assets funded by grants and developer contributions on the premise that a utility should not recover a cost that it did not incur.

**Exhibit 8** summarizes the approach used to calculate general facilities charges in this study.

### Exhibit 8: GFC Calculation Methodology


$$\text{"Average Cost" GFC} = \frac{\text{Existing System Cost} + \text{Future Project Costs}}{\text{Existing Customer Base} + \text{Future Growth Served}}$$

This “Average Cost” approach views the system from an aggregate perspective, acknowledging that existing and future facilities will benefit both existing and future customers. The cost basis for the charge includes both the cost of existing infrastructure and the cost of facilities planned for construction within the next ten years; the total allocable cost is divided by the total number of equivalent billing units (existing plus growth) to determine the average cost per unit. This method is relatively easy to implement and explain to customers. The following sections expand on the GFC methodology and calculation specifics.

### 4.1 Existing Facilities Cost Basis

The GFC existing cost basis includes costs associated with existing assets to recognize that those assets will provide benefit to new customers – per the City’s most recent audited financial statements, 2013 constructed capital assets total approximately \$20.2 million. The total cost of the system is adjusted to reflect:

- ♦ **Contributed Capital:** Any costs which the utility did not originally incur are deducted from the existing cost basis. The City has developer contributed assets totaling roughly \$8.9 million (based on estimates from historical rate studies and financial statements) – resulting in \$11.2 million in net utility-funded capital assets.
- ♦ **10-Year Provision for Capital Retirements:** The provision for capital retirements recognizes that some capital projects will replace assets that are currently included in the City’s fixed asset schedule. This adjustment intends to avoid double charging customers for an asset and its replacement concurrently, while accounting for the fact that assets are generally replaced at a cost that exceeds their original installation cost. The total adjustment is estimated to be between \$1.3 million - \$2.1 million, depending on the service level scenarios described in Section 2.4.

- **Interest on Non-Contributed Assets:** In addition to the documented cost of existing assets, the City is allowed to recover a provision for interest accrued on those eligible assets. Conceptually, this interest provision (which is limited to ten years of interest accrual on each asset) attempts to account for opportunity costs that the City's customers incurred by supporting investments in infrastructure rather than having it available for investment or other uses. The total amount included for interest purposes is \$3.6 million.
- **Net Debt Principal Outstanding:** Another adjustment to the existing system cost basis is to deduct the net liability of outstanding utility debt, recognizing that new customers will bear a proportionate share of this debt related to existing assets through their utility rates. Therefore, the cost of those assets charged to new development is offset to some degree by the remaining debt liability. Since the utility typically has cash resources that are not included in the system cost basis, the net debt load is defined as total debt minus outstanding cash and investments. As the surface water's only outstanding debt item is a small capital lease (copier), cash balances far outweigh debt service payments, and thus, there is no deduction to the GFC cost basis.

With these adjustments, the existing cost basis ranges from \$12.8 million - \$13.6 million, depending on the service level, as described in Section 2.4.

## 4.2 Future Facilities Cost Basis

The future cost basis was calculated with input from two sources which outline the City's surface water capital program: the 2015-2020 adopted CIP (provided by City staff) and the prioritized comprehensive plan CIP (provided by Parametrix). These two sources identify all potential capital projects in the ten-year planning period, listed in order of highest priority to lowest priority (high, medium, and low priorities). The service levels described in Section 2.4 include varying levels of future capital funding, resulting in a future cost basis ranging from \$9.4 million to \$14.8 million.

## 4.3 Customer Base

The customer base is separated into two groups: existing customers and expected customer growth.

- The existing customer base is based on the actual number of EBUs in the system during the 2012 rate study; totaling 14,311 EBUs.
- Growth in the customer base is estimated in the City budget at 0.50% per year, extrapolated for 20 years (2015-2034) to yield a 2034 customer base estimate of 15,812 EBUs. Although the project list utilizes a 10-year planning period, the improvements are expected to serve 20 years of growth.

## 4.4 GFC Calculation

**Exhibit 9** summarizes the GFC calculation for all three service level scenarios using the components discussed above, differences may occur due to rounding.

**Exhibit 9: GFC Calculation - Average Cost Approach**

<b>COST BASIS &amp; CUSTOMER DATA</b>	<b>LOS 1</b>	<b>LOS 2</b>	<b>LOS 3</b>
<b>Existing Cost Basis</b>			
<b>Plant-In-Service</b>			
Utility Capital Assets	\$ 20,168,606	\$ 20,168,606	\$ 20,168,606
less: Contributed Capital	(8,930,176)	(8,930,176)	(8,930,176)
plus: Interest on Non-Contributed Capital	3,624,027	3,624,027	3,624,027
less: 10-year Provision for Capital Retirements	(1,265,264)	(1,522,792)	(2,091,389)
less: Net Debt Principal Outstanding	-	-	-
<b>Total Existing Cost Basis</b>	<b>\$ 13,597,193</b>	<b>\$ 13,339,665</b>	<b>\$ 12,771,068</b>
<b>Future Cost Basis</b>			
<b>Capital Improvement Plan</b>			
Total Future Projects	\$ 9,422,873	\$ 11,194,713	\$ 14,808,267
less: Future Contributed Growth Related Assets	-	-	-
<b>Total Future Cost Basis</b>	<b>\$ 9,422,873</b>	<b>\$ 11,194,713</b>	<b>\$ 14,808,267</b>
<b>Customer Base</b>			
Existing Customer Base - # of Units	14,311 EBU's	14,311 EBU's	14,311 EBU's
Future Customer Base (Incremental # of Units)	1,501 EBU's	1,501 EBU's	1,501 EBU's
<b>Total Customer Base</b>	<b>15,812 EBU's</b>	<b>15,812 EBU's</b>	<b>15,812 EBU's</b>
<b>GFC CALCULATION</b>			
<b>Existing Cost Component</b>			
Total Costs	\$ 13,597,193	\$ 13,339,665	\$ 12,771,068
Allocable Customer Base	15,812	15,812	15,812
<b>GFC per Unit - Existing Cost</b>	<b>\$ 860</b>	<b>\$ 844</b>	<b>\$ 808</b>
<b>Future Cost Component</b>			
Total Costs	\$ 9,422,873	\$ 11,194,713	\$ 14,808,267
Allocable Customer Base	15,812	15,812	15,812
<b>GFC per Unit - Future Cost</b>	<b>\$ 596</b>	<b>\$ 708</b>	<b>\$ 937</b>
<b>Total GFC per Unit</b>	<b>\$ 1,456</b>	<b>\$ 1,552</b>	<b>\$ 1,744</b>

## 5.0 Recommendations

Key recommendations from the study include:

- ◆ Adopt a strategy of rate adjustments based on the [REDACTED] scenario.
- ◆ Monitor the utility's financial position regularly, adjusting the rate strategy as needed based on anticipated costs.
- ◆ Increase the City's "general facilities" connection charge from \$1,041 to the appropriate charge based on the selected scenario. This change is based on the Average Cost Approach, which defines the connection charge as a pro rata share of existing and planned future capital investments.
  - Scenario 1: \$1,456 / EBU
  - Scenario 2: \$1,552 / EBU
  - Scenario 3: \$1,744 / EBU

## Appendix F

Surface Water Management  
2014 Budget



## BUDGET NARRATIVE 2014

FUND: SURFACE WATER MANAGEMENT UTILITY  
DEPARTMENT: PLANNING, BUILDING AND PUBLIC WORKS

Surface Water Management fund is accrued through the billing of property tax statements administered by King County. The County, as collection agency, distributes Surface Water Management fees to the City on a monthly basis. This fund is designated for maintenance of existing natural and man-made drainage features within the City of Des Moines.

	Projection 2013	Budget 2014
<b>BEGINNING FUND BALANCE **</b>	<b>\$ 1,256,487</b>	<b>\$ 1,153,086</b>
<b>REVENUE</b>		
Storm Drainage Fees	2,364,945	2,410,663
Partial Year Storm Drainage Fees	5,000	5,000
Utility Tax on Storm Drainage Fees	141,897	144,640
SWM - Engineering Plan Review Fees	49,299	43,630
Interest Income	2,500	3,000
Other Misc Charges	13,000	13,000
NPDES Grant	-	50,000
Salary CIP Reimbursement	15,000	30,000
<b>REVENUE</b>	<b>\$ 2,591,641</b>	<b>\$ 2,699,933</b>
<b>OPERATING EXPENSES</b>		
SWM Engineering	(771,061)	(1,060,661)
SWM Maintenance	(963,380)	(1,079,511)
SWM NPDES	(250,065)	(311,172)
<b>Total Operating Expenses</b>	<b>\$ (1,984,506)</b>	<b>\$ (2,451,344)</b>
<b>TRANSFER-OUT TO FUND 451</b> (Annual Cash Available for capital projects and debt service)	<b>\$ (709,484)</b>	<b>\$ (486,455)</b>
<b>TRANSFER-OUT TO FUND 220</b> (for Energy Savings Prog)	<b>(1,052)</b>	<b>(1,052)</b>
<b>ENDING FUND BALANCE</b>	<b>\$ 1,153,086</b>	<b>\$ 914,168</b>

\* Hook-up Fees are receipted under SWM - Capital.

\*\* Beginning Fund Balance to be maintained at a minimum of 33% (4 months) of Operating Expenses plus 7% to ensure positive balance before April collection of Storm Drainage fees.

**CITY OF DES MOINES**  
**SURFACE WATER MANAGEMENT REVENUE REQUIREMENTS**

Revenue Requirements	2011 Actual	2012 Actual	2013 Estimate	2014 Forecast	2015 Forecast	2016 Forecast
Rate Revenues	\$ 2,274,323	\$ 2,308,392	\$ 2,410,781	\$ 2,464,059	\$ 2,532,643	\$ 2,603,140
Billing Correction						
Growth Factor (0.5% 2011-2014)			11,643		11,970	12,307
<b>Total Rate Revenues</b>	<b>\$ 2,274,323</b>	<b>\$ 2,308,392</b>	<b>\$ 2,410,781</b>	<b>\$ 2,475,702</b>	<b>\$ 2,544,613</b>	<b>\$ 2,615,447</b>
<b>Monthly Rate (Residential Billing Unit)</b>			\$12.20	\$14.24	\$14.57	\$14.90
<b>Rate Increase</b>						
ENR Cost Index - March	-0.80%	1.00%	3.60%	4.10%	3.00%	3.00%
Sea Consumer Price Index - June	-0.50%	3.20%	2.70%	1.40%	2.00%	2.00%
ENR Cost Index @ 30%	-0.24%	0.30%	1.08%	1.23%	0.90%	0.90%
Sea Consumer Price Index @ 70%	-0.35%	2.24%	1.89%	0.98%	1.40%	1.40%
Base Rate Increase	-0.59%	2.54%	2.97%	2.21%	2.30%	2.30%
Phase-in	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CPI correction/adjustments	0.59%	0.00%	0.00%	0.00%	0.00%	0.00%
<b>Total Rate Increase</b>	<b>0.00%</b>	<b>2.54%</b>	<b>2.97%</b>	<b>2.21%</b>	<b>2.30%</b>	<b>2.30%</b>
<b>Capital Contributions - Target</b>	<b>\$ 682,297</b>	<b>\$ 682,871</b>	<b>\$ 709,484</b>	<b>\$ 742,711</b>	<b>\$ 763,384</b>	<b>\$ 784,634</b>
CIP Allocation from Rate Revenues	683,530	682,871	709,484	486,455	763,384	784,634
Utilize From Excess Operation Fund Balance						
<b>Total Capital Transfer</b>	<b>\$ 683,530</b>	<b>\$ 682,871</b>	<b>\$ 709,484</b>	<b>\$ 486,455</b>	<b>\$ 763,384</b>	<b>\$ 784,634</b>
Capital Contribution (% of Rate Revenue)	30.05%	29.58%	29.43%	19.65%	30.00%	30.00%

The City Council on September 25, 2008 gave direction with adoption of Ordinance No. 1437 to adjust the current rate of \$9.83 to \$11.55 (per equivalent billing unit) for 2009 and include inflation rates thereafter. This approach in increasing rates would meet the "Moderate Level of Servicing" funding described in the rate study. The capital transfer would be maintained at 30% of total rate revenues beginning in 2009, yet allowing for the SWM Operation's beginning fund balance to build up to a 4-month plus 7% reserve (to ensure positive cash flow before the drainage fees are collected in April).

The City Council on August 8, 2013 gave direction with adoption of Ordinance No. 1574 to adjust the structure of the rates, resulting in an increase of the 2014 monthly residential charge to \$13.93 but keeping the overall revenue of the utility neutral. The \$14.24 residential rate shown above reflects a 2.21% inflation adjustment for 2014.

2014 transfer to CIP reduced by \$250,000 to cover costs for Stormwater Comprehensive Plan.

CITY OF DES MOINES

2014 BUDGET REQUEST

PLANNING, BUILDING, AND PUBLIC WORKS  
SURFACE WATER MANAGEMENT  
ENGINEERING

450.100.040	ENGINEERING	2012 ACTUAL	2013 ADOPTED	2013 AMEND	2013 ACTUAL Jan-June	2013 EST YR TOTAL	2014 DEPT REQ	2014 NEW REQUEST	2014 EXEC AMEND	2014 ADOPTED
531.10.10.00	SALARIES & WAGES	199,573	208,524	208,524	103,738	208,734	215,612		214,282	214,282
531.10.11.00	OVERTIME	-	2,000	2,000	-	1,000	2,000		2,000	2,000
531.10.19.00	COMP ABSENCE ACCRUAL (GASB 16)	801	-	-	-	-	-		-	-
531.10.10	SUB TOTAL	200,374	210,524	210,524	103,738	209,734	217,612		216,282	216,282
531.10.20.00	PERSONNEL BENEFITS	86,307	94,046	94,046	49,756	96,667	112,955		106,054	106,054
531.10.20.90	EMPLOYEE MED. CONTRIBUTION	(2,975)	(2,815)	(2,815)	(1,617)	(3,233)	(3,686)		(3,351)	(3,351)
531.10.21.00	UNIFORMS	-	-	-	101	-	-		-	-
531.10.20	SUB TOTAL	83,332	91,231	91,231	48,240	93,434	109,269		102,703	102,703
531.10.31.00	OFFICE/OPERATING SUPPLIES	1,604	2,500	2,500	540	2,000	2,500		2,500	2,500
531.10.32.01	UNLEADED FUEL (ISF)	1,448	1,860	1,860	645	1,291	1,365		1,365	1,365
531.10.35.00	SM TOOLS & EQUIPMENT	2,079	1,500	1,500	-	1,500	1,500		1,500	1,500
531.10.35.90	SM TOOLS & EQUIPMENT >\$1,000<\$5,000	-	3,500	3,500	-	-	3,500		3,500	3,500
531.10.30	SUB TOTAL	5,131	9,360	9,360	1,185	4,791	8,865		8,865	8,865
531.10.41.00	PROFESSIONAL SERVICES	57,707	93,200	93,200	49,712	55,000	73,200	250,000	323,200	323,200
531.10.41.32	JANITORIAL SERVICES	528	650	650	264	477	650		650	650
531.10.41.45	ADVERTISING	-	250	250	-	250	250		250	250
531.10.42.00	COMMUNICATIONS	1,389	1,450	1,450	240	520	611		611	611
531.10.43.00	TRAVEL	-	3,000	3,000	-	2,000	3,000		3,000	3,000
531.10.44.03	B & O TAX-STATE	43,586	45,123	45,123	22,392	41,052	42,000		42,000	42,000
531.10.44.05	UTILITY TAX	137,803	141,897	141,897	70,414	140,829	144,640		144,640	144,640
531.10.45.02	COPIER LEASE	953	975	975	956	1,196	1,200		1,200	1,200
531.10.47.00	UTILITIES	1,169	1,275	1,275	517	1,322	1,375		1,375	1,375
531.10.48.00	REPAIRS AND MAINTENANCE	-	1,000	1,000	-	1,000	1,000		1,000	1,000
531.10.49.00	MISCELLANEOUS	920	2,500	2,500	237	2,000	2,500		2,500	2,500
531.10.49.22	DUES, SCHOOLS, AND CONFERENCES	515	5,000	5,000	239	5,000	5,000		5,000	5,000
531.10.49.25	PRINTING AND BINDING	-	500	500	-	-	500		500	500
531.10.40	SUB TOTAL	244,569	296,820	296,820	144,971	250,646	275,926	250,000	525,926	525,926
531.10.99.00	INTERFUND ADMIN CHRGS.-GEN FUND	185,000	190,000	190,000	95,000	190,000	190,000		190,000	190,000
531.10.99.01	COMPUTER INTERFUND-MAINTENANCE	7,955	7,955	7,955	3,977	7,955	6,463		6,463	6,463
531.10.99.02	COMPUTER INTERFUND REPLACEMENT	1,548	1,553	1,553	777	1,553	1,775		1,775	1,775
531.10.99.05	INTERFUND INSURANCE	9,280	11,429	11,429	11,429	11,429	7,128		7,128	7,128
531.10.99.06	FACILITY REPAIR/REPLACEMENT	499	499	499	250	499	499		499	499
531.10.90	SUB TOTAL	204,282	211,436	211,436	111,433	211,436	205,865		205,865	205,865

CITY OF DES MOINES

2014 BUDGET REQUEST

PLANNING, BUILDING, AND PUBLIC WORKS  
SURFACE WATER MANAGEMENT  
ENGINEERING

450.100.040	ENGINEERING	2012 ACTUAL	2013 ADOPTED	2013 AMEND	2013 ACTUAL Jan-June	2013 EST YR TOTAL	2014 DEPT REQ	2014 NEW REQUEST	2014 EXEC AMEND	2014 ADOPTED
591.31.75.03	PRINCIPAL-COPIER CAPITAL LEASE	872	910	910	-	910	949		949	949
592.31.83.03	INTEREST-COPIER CAPITAL LEASE	148	110	110	-	110	71		71	71
594.31.64.00	EQUIPMENT	-	-	-	-	-	-		-	-
	SUB TOTAL	1,020	1,020	1,020	0	1,020	1,020	0	1,020	1,020
	TOTAL SWM ENGINEERING	738,708	820,391	820,391	409,566	771,061	818,557	250,000	1,060,661	1,060,661

# BUDGET NARRATIVE

2014

FUND: SURFACE WATER MANAGEMENT UTILITY  
 DEPARTMENT: PLANNING, BUILDING AND PUBLIC WORKS  
 DIVISION: ENGINEERING

Account No.	Title	Narrative	Departmental Request	Executive Amendment	Adopted
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450.100.040.531.10.00.00

**ENGINEERING**

531.10.10.00 Salaries & Wages

**SALARIES AND WAGES**  
 This provides salaries & wages for the following staff:

- 0.15 PBPW Director
- 0.15 Administrative Assistant II
- 0.70 SWM Utility Manager
- 1.00 Engineering Technician I
- 0.50 Engineering Aide
- 0.30 GIS Analyst
- 2.80 FTE's

(Remaining .3 FTE SWM Utility Manager is budgeted 0.1 FTE in 001.480 PBPW Engineering Services to perform duties related to environmental issues and utilities other than SWM and 0.2 FTE for the NPDES Permit program. The remaining 0.5 Engineering Aide is budgeted in the NPDES Permit program.)

531.10.11.00

Overtime

Provides for overtime for staff.

2,000

2,000

**TOTAL SALARIES AND WAGES**

**\$ 217,612 \$ 216,282 \$ 216,282**

**PERSONNEL BENEFITS**

531.10.20.00 Personnel Benefits

Provides for benefits for surface water staff.

\$ 112,955 \$ 106,054 \$ 106,054

531.10.20.90 Employee Med. Contribution

Employee's share of health insurance premium cost for spouse and/or dependents.

(3,686)

(3,351)

**TOTAL PERSONNEL BENEFITS**

**\$ 109,269 \$ 102,703 \$ 102,703**

# BUDGET NARRATIVE

## 2014

FUND: SURFACE WATER MANAGEMENT UTILITY  
 DEPARTMENT: PLANNING, BUILDING AND PUBLIC WORKS  
 DIVISION: ENGINEERING

Account No.	Title	Narrative	Departmental Request	Executive Amendment	Adopted
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450.100.040.531.10.00.00

**ENGINEERING**

**SUPPLIES**

531.10.31.00 Office/Operating Supplies Cost of office and operating supplies. Also includes office billing supplies, forms, computer paper, etc. \$ 2,500 \$ 2,500 \$ 2,500

Office Supplies	\$ 880
Plotter Materials	\$ 250
Photo Processing	\$ 100
Plan copier materials	\$ 660
Misc	\$ 610
Total	<u>\$ 2,500</u>

531.10.32.01 Unleaded Fuel Gasoline for two cars. \$ 1,365 \$ 1,365 \$ 1,365

531.10.35.00 Small Tools and Equipment Hand tools, field equipment, safety equipment. \$ 1,500 \$ 1,500 \$ 1,500

531.10.35.90 Small Tools and Equipment >\$1,000<-\$5,000 \$ 3,500 \$ 3,500 \$ 3,500

**TOTAL SUPPLIES**

**\$ 8,865 \$ 8,865 \$ 8,865**

**OTHER SERVICES AND CHARGES**

531.10.41.00 Professional Services This line item includes outside professional services that may be required for site specific engineering, tests or analysis, such as surveying, soils reports and testing. It also pays for billing and collection services provided by King County. \$ 73,200 \$ 323,200 \$ 323,200

K.C. Billing Services	\$ 14,700
K.C. Collection Services (1%)	\$ 21,500
2014 Stormwater Comprehensive Plan	\$ 250,000
Other Consultant Engineering services	\$ 25,000
WRIA 9	<u>\$ 12,000</u>
	<u>\$ 73,200</u>

# BUDGET NARRATIVE

2014

FUND: SURFACE WATER MANAGEMENT UTILITY  
 DEPARTMENT: PLANNING, BUILDING AND PUBLIC WORKS  
 DIVISION: ENGINEERING

Account No.	Title	Narrative	Departmental Request	Executive Amendment	Adopted
<b>450.100.040.531.10.00.00</b>		<b>ENGINEERING</b>			
531.10.41.32	Janitorial Services	Provides for janitorial services for 10% of the Public Works-Engineering Building.	\$ 650	\$ 650	\$ 650
531.10.41.45	Advertising	Expenses for advertising position openings, project bids, and legal publications.	\$ 250	\$ 250	\$ 250
531.10.42.00	Communications	Provides for postage, phone and fax service. Wireless (field laptop) Telephone Lines Long Distance	\$ 611	\$ 611	\$ 611
		\$ 536			
		\$ -			
		\$ 75			
		<u>\$ 611</u>			
531.10.43.00	Travel	Travel expenses associated with training.	\$ 3,000	\$ 3,000	\$ 3,000
531.10.44.03	B & O Taxes-State	Provides for 1.8 % B & O tax to State.	\$ 42,000	\$ 42,000	\$ 42,000
531.10.44.05	Utility Tax	Provides for 6% utility tax to City.	\$ 144,640	\$ 144,640	\$ 144,640
531.10.45.02	Copier Lease	One-half copier, shared with Engineering	\$ 1,200	\$ 1,200	\$ 1,200
531.10.47.00	Utilities	Provides for 10% of the utilities for the Public Works-Engineering Building:	\$ 1,375	\$ 1,375	\$ 1,375
		Electric \$ 948			
		Water \$ 95			
		Sewer \$ 71			
		Natural Gas \$ 261			
		<u>\$ 1,375</u>			
531.10.48.00	Repairs And Maintenance	Expenses for repairs and adjustments to SWM engineering office equipment/instruments.	\$ 1,000	\$ 1,000	\$ 1,000
531.10.49.00	Miscellaneous	Minor expenses not otherwise categorized.	\$ 2,500	\$ 2,500	\$ 2,500

# BUDGET NARRATIVE

2014

FUND: SURFACE WATER MANAGEMENT UTILITY  
 DEPARTMENT: PLANNING, BUILDING AND PUBLIC WORKS  
 DIVISION: ENGINEERING

Account No.	Title	Narrative	Departmental Request	Executive Amendment	Adopted
<b>450.100.040.531.10.00.00</b>		<b>ENGINEERING</b>			
531.10.49.22	Dues, Schools and Conferences	ASCE Membership \$ 300 WEF Membership \$ 200 Professional Licenses \$ 700 Subscriptions \$ 300 Conferences/Registrations \$ 2,000 Classes/Training* \$ 1,500 Total \$ 5,000	5,000 \$	5,000 \$	5,000 \$
531.10.49.25	Printing And Binding	*Includes basic training, GIS classes, safety training for confined spaces, other permit and regulation training. Provides for printing costs of basin plans, project specifications and manuals, large maps, exact scale reductions, color copies, etc.	500 \$	500 \$	500 \$
<b>TOTAL OTHER SERVICES AND CHARGES</b>			<b>\$ 275,926 \$</b>	<b>\$ 525,926 \$</b>	<b>\$ 525,926 \$</b>
<b>INTERFUND SERVICES</b>					
531.10.99.00	Interfund Administrative Charge	Indirect charge for services.	190,000 \$	190,000 \$	190,000 \$
531.10.99.01	Computer Maintenance	Provides for Computer Maintenance.	6,463 \$	6,463 \$	6,463 \$
531.10.99.02	Computer Replacement	Provides for replacement of computer hardware assigned to SWM Engineering.	1,775 \$	1,775 \$	1,775 \$
531.10.99.05	Interfund Insurance	Division's contribution to the Self Insurance Fund.	7,128 \$	7,128 \$	7,128 \$
531.10.99.06	Facility Repair and Replacement	Provides for major repairs for City facilities.	499 \$	499 \$	499 \$
<b>TOTAL INTERFUND SERVICES</b>			<b>\$ 205,865 \$</b>	<b>\$ 205,865 \$</b>	<b>\$ 205,865 \$</b>

# BUDGET NARRATIVE

2014

FUND: SURFACE WATER MANAGEMENT UTILITY  
 DEPARTMENT: PLANNING, BUILDING AND PUBLIC WORKS  
 DIVISION: ENGINEERING

Account No.	Title	Narrative	Departmental Request	Executive Amendment	Adopted
<b>450.100.040.531.10.00.00</b>		<b>ENGINEERING</b>			
		<b>DEBT SERVICES</b>			
591.31.75.03	Principal-Copier Capital Lease		\$ 949	\$ 949	\$ 949
592.31.83.03	Interest-Copier Capital Lease		\$ 71	\$ 71	\$ 71
		<b>TOTAL DEBT SERVICES</b>	<b>\$ 1,020</b>	<b>\$ 1,020</b>	<b>\$ 1,020</b>
		<b>CAPITAL OUTLAY</b>			
594.31.64.00	Equipment		\$ -	\$ -	\$ -
		<b>TOTAL CAPITAL OUTLAY</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
		<b>TOTAL ENGINEERING</b>	<b>\$ 818,557</b>	<b>\$ 1,060,661</b>	<b>\$ 1,060,661</b>

CITY OF DES MOINES

2014 BUDGET REQUEST

PLANNING, BUILDING, AND PUBLIC WORKS  
SURFACE WATER MANAGEMENT  
MAINTENANCE

	2012 ACTUAL	2013 ADOPTED	2013 AMEND	2013 ACTUAL Jan-June	2013 EST YR TOTAL	2014 DEPT REQ	2014 EXEC AMEND	2014 ADOPTED
450.200.040 MAINTENANCE								
531.20.10.00 SALARIES & WAGES	347,627	394,941	394,941	190,864	391,912	372,757	370,368	370,368
531.20.11.00 OVERTIME	13,289	8,100	8,100	1,930	7,293	8,100	8,100	8,100
531.20.19.00 COMP ABSENCE ACCRUAL (GASB 16)	89	-	-	-	-	-	-	-
531.20.10 SUB TOTAL	361,005	403,041	403,041	192,795	399,206	380,857	378,468	378,468
531.20.20.00 PERSONNEL BENEFITS	125,654	159,361	159,361	71,236	142,619	170,404	162,948	162,948
531.20.20.90 EMPLOYEE MED. CONTRIBUTION	(1,484)	(2,356)	(2,356)	(806)	(1,613)	(2,955)	(2,810)	(2,810)
531.20.21.00 UNIFORMS	1,415	1,600	1,600	2,096	2,425	1,600		
531.20.20 SUB TOTAL	125,586	158,605	158,605	72,525	143,431	169,049	160,138	160,138
531.20.31.00 OFFICE SUPPLIES	1,872	2,000	2,000	939	2,000	2,000	2,000	2,000
531.20.31.21 REPAIR SUPPLIES	22,891	43,000	43,000	13,699	27,398	43,000	43,000	43,000
531.20.32.01 UNLEADED FUEL (ISF)	9,348	8,749	8,749	4,855	9,710	10,389	10,389	10,389
531.20.32.02 DIESEL FUEL (ISF)	21,737	23,390	23,390	13,504	27,008	26,406	26,406	26,406
531.20.35.00 SM TOOLS & EQUIPMENT	819	2,000	2,000	547	2,000	2,000	2,000	2,000
531.20.35.90 SMALL EQP >\$1,000 <=\$5,000	-	5,000	5,000	-	-	5,000	5,000	5,000
531.20.30 SUB TOTAL	56,668	84,139	84,139	33,544	68,116	88,795	88,795	88,795
531.20.41.00 PROFESSIONAL SERVICES	62,331	87,500	87,500	66,167	87,500	90,600	90,600	90,600
531.20.41.32 JANITORIAL SERVICES	1,804	1,850	1,850	738	1,476	1,850	1,850	1,850
531.20.41.45 ADVERTISING	-	500	500	-	500	500	500	500
531.20.42.00 COMMUNICATIONS	2,003	2,050	2,050	1,481	2,959	3,048	3,048	3,048
531.20.43.00 TRAVEL EXPENSES	-	500	500	-	500	500	500	500
531.20.45.00 OPERATING RENTALS & LEASES	1,619	6,000	6,000	115	3,306	6,000	6,000	6,000
531.20.45.02 COPIER LEASE	55	75	75	129	56	260	260	260
531.20.47.00 UTILITIES	24,362	31,549	31,549	17,654	30,992	31,921	31,921	31,921
531.20.47.12 STREET SWEEPING DISPOSAL	12,609	22,500	22,500	1,568	14,168	22,500	22,500	22,500
531.20.48.00 REPAIRS & MTC (Vehicles & Equipment)	754	25,000	25,000	-	17,000	17,000	17,000	17,000
531.20.48.20 STREET SWEEPING	48,591	53,000	53,000	19,436	45,351	53,000	53,000	53,000
531.20.48.22 CONTRACTED DRAINAGE REPAIR	7,004	50,000	50,000	3,745	50,000	50,000	50,000	50,000
531.20.48.23 WEST NILE VIRUS MOSQUITO CONTROL	453	25,000	25,000	-	-	25,000	25,000	25,000
531.20.49.00 MISCELLANEOUS	133	3,800	3,800	133	500	500	500	500
531.20.49.20 LAUNDRY	1,737	3,100	3,100	441	1,111	1,500	1,500	1,500
531.20.49.22 DUES, SCHOOLS, & CONF	524	700	700	33	700	700	700	700
531.20.40 SUB TOTAL	163,978	313,124	313,124	111,639	256,318	304,879	304,879	304,879

CITY OF DES MOINES

2014 BUDGET REQUEST

PLANNING, BUILDING, AND PUBLIC WORKS  
SURFACE WATER MANAGEMENT  
MAINTENANCE

	2012 ACTUAL	2013 ADOPTED	2013 AMEND	2013 ACTUAL Jan-June	2013 EST YR TOTAL	2014 DEPT REQ	2014 EXEC AMEND	2014 ADOPTED
<b>450.200.040 MAINTENANCE</b>								
531.20.99.01 COMPUTER MAINTENANCE	4,520	4,522	4,522	2,261	4,520	3,350	3,350	3,350
531.20.99.02 COMPUTER REPLACEMENT	1,111	1,115	1,115	558	1,111	1,118	1,118	1,118
531.20.99.03 EQUIPMENT RENTAL MAINTENANCE	32,944	42,120	42,120	21,060	32,944	38,120	38,120	38,120
531.20.99.04 EQUIPMENT RENTAL REPLACEMENT	35,262	49,094	49,094	24,547	35,262	79,500	79,500	79,500
531.20.99.05 INTERFUND INSURANCE	21,110	22,107	22,107	22,107	21,110	23,781	23,781	23,781
531.20.99.06 FAC REP AND REPLACEMENT	1,362	1,362	1,362	681	1,362	1,362	1,362	1,362
531.20.90 SUB TOTAL	96,309	120,320	120,320	71,214	96,309	147,231	147,231	147,231
594.31.64.00 EQUIPMENT								
- Ford F450 Super Duty Truck	46,754	-	-	-	-	-	-	-
594.31.60 SUB TOTAL	46,754	-	-	-	-	-	-	-
TOTAL SWM MAINTENANCE	850,300	1,079,229	1,079,229	481,717	963,380	1,090,811	1,079,511	1,079,511

# BUDGET NARRATIVE

2014

FUND: SURFACE WATER MANAGEMENT UTILITY  
 DEPARTMENT: PLANNING, BUILDING AND PUBLIC WORKS  
 DIVISION: MAINTENANCE

Account No.	Title	Narrative	Departmental Request	Executive Amendment	Adopted
<b>450.200.040.531.20.00.00</b>		<b>MAINTENANCE</b>			
		<b>SALARIES AND WAGES</b>			
531.20.10.00	Salaries & Wages	Provides for salaries and wages for staff. 0.30 PW & Parks Maintenance Superintendent 2.00 Senior Maintenance Workers (1.00) Senior Maintenance Worker - Moved to Parks Operations 4.00 Maintenance Workers 0.60 Asst. City Mechanic <u>5.90 FTE's</u>	\$ 372,757	\$ 370,368	\$ 370,368
531.20.11.00	Overtime	Provides for standby pay and overtime.	\$ 8,100	\$ 8,100	\$ 8,100
		<b>TOTAL SALARIES AND WAGES</b>	<b>\$ 380,857</b>	<b>\$ 378,468</b>	<b>\$ 378,468</b>
		<b>PERSONNEL BENEFITS</b>			
531.20.20.00	Personnel Benefits	Provides payroll related benefits for salary and overtime for the surface water management maintenance workers.	\$ 170,404	\$ 162,948	\$ 162,948
531.20.20.90	Employee Med Contribution	Employee's share of health insurance premium cost for spouse and/or dependent/s.	\$ (2,955)	\$ (2,810)	\$ (2,810)
531.20.21.00	Uniforms	Provided uniform replacement and annual purchase of steel-toed boots.	\$ 1,600	\$ -	\$ -
		<b>TOTAL PERSONNEL BENEFITS</b>	<b>\$ 169,049</b>	<b>\$ 160,138</b>	<b>\$ 160,138</b>

# BUDGET NARRATIVE

2014

FUND: SURFACE WATER MANAGEMENT UTILITY  
 DEPARTMENT: PLANNING, BUILDING AND PUBLIC WORKS  
 DIVISION: MAINTENANCE

Account No.	Title	Narrative	Departmental Request	Executive Amendment	Adopted
<b>450.200.040.531.20.00.00</b>		<b>MAINTENANCE</b>			
		<b>SUPPLIES</b>			
531.20.31.00	Office Supplies	Cost of office and operating supplies. Also includes billing supplies, forms, computer paper, etc.	\$ 2,000	\$ 2,000	\$ 2,000
531.20.31.21	Repair Supplies	Cost of repair supplies, pipe, couplings, pit run gravel and safety supplies.	\$ 43,000	\$ 43,000	\$ 43,000
531.20.32.01	Unleaded Fuel	Gasoline for pickup, backhoe, dump trucks.	\$ 10,389	\$ 10,389	\$ 10,389
531.20.32.02	Diesel Fuel	Diesel fuel for pickup, backhoe, dump trucks.	\$ 26,406	\$ 26,406	\$ 26,406
531.20.35.00	Small Tools & Equipment	Provides for small tools and equipment such as tapes, shovels, hand tools, small power saws, etc.	\$ 2,000	\$ 2,000	\$ 2,000
531.20.35.90	Small Equipment >\$1,000 <\$5,000		\$ 5,000	\$ 5,000	\$ 5,000
		<b>TOTAL SUPPLIES</b>	<b>\$ 88,795</b>	<b>\$ 88,795</b>	<b>\$ 88,795</b>
		<b>OTHER SERVICES AND CHARGES</b>			
531.20.41.00	Professional Services	DM Creek Basin Projects OM Fund	\$ 29,500	\$ 90,600	\$ 90,600
		DM Creek Basin Projects RR Fund	\$ 35,100		
		Lower DM Creek OM Fund	\$ 15,000		
		City of Kent/Hwy 99 SWM Facility Maint	\$ 5,000		
		Miscellaneous Prof Services	\$ 6,000		
			<u>\$ 90,600</u>		
531.20.41.32	Janitorial Services	Provides for janitorial services for Surface Water Management's share of the Public Works Service Center.	\$ 1,850	\$ 1,850	\$ 1,850
531.20.42.00	Communications		\$ 3,048	\$ 3,048	\$ 3,048

# BUDGET NARRATIVE

2014

FUND: SURFACE WATER MANAGEMENT UTILITY  
 DEPARTMENT: PLANNING, BUILDING AND PUBLIC WORKS  
 DIVISION: MAINTENANCE

Account No.	Title	Narrative	Departmental Request	Executive Amendment	Adopted
<b>450.200.040.531.20.00.00</b>		<b>MAINTENANCE</b>			
531.20.43.00	Travel	Travel, mileage, meals and lodging associated with professional training for maintenance personnel.	\$ 500	\$ 500	\$ 500
531.20.44.02	Advertising	Expenses for advertising position openings, project bids and legal publications.	\$ 500	\$ 500	\$ 500
531.20.45.00	Operating Leases and Rentals	Rental of heavy equipment for stream dredging and catch basin placement, or in the event of a major landslide, equipment that may be needed to support operations.	\$ 6,000	\$ 6,000	\$ 6,000
531.20.45.02	Copier Lease	Provides for operating costs of copier for the department.	\$ 260	\$ 260	\$ 260
531.20.47.00	Utilities	Dump fees for catch basin and ditch cleaning debris and liquids. In the event that Vactor waste was to be contaminated, disposal of this debris could be very costly. Also provides for 22% of the utilities for the Public Works/Parks Service Center:	\$ 31,921	\$ 31,921	\$ 31,921
		Electric		\$ 3,034	
		Water		\$ 1,992	
		Sewer		\$ 100	
		SWM		\$ 4,420	
		Dirt Removal		\$ 13,085	
		Vactor Waste		\$ 9,290	
				<u>\$ 31,921</u>	
531.20.47.12	Street Sweeping Disposal		\$ 22,500	\$ 22,500	\$ 22,500
531.20.48.00	Repair and Maintenance - Vehicles and Equipment	Contingency for outside repair and maintenance of vehicles and equipment that is not part of Equipment Rental budget, e.g., vibrator plate, trash dumps, generator, jackhammer, and other pneumatic tools.	\$ 17,000	\$ 17,000	\$ 17,000

# BUDGET NARRATIVE

2014

FUND: SURFACE WATER MANAGEMENT UTILITY  
 DEPARTMENT: PLANNING, BUILDING AND PUBLIC WORKS  
 DIVISION: MAINTENANCE

Account No.	Title	Narrative	Departmental Request	Executive Amendment	Adopted
<b>450.200.040.531.20.00.00</b>		<b>MAINTENANCE</b>			
531.20.48.20	Repair and Maintenance - Street Sweeping	The City currently contracts for street sweeping. 3.3 miles of downtown streets are swept twice a month. All residential streets are swept once a month from February through October and twice a month from November through January.	\$ 53,000	\$ 53,000	\$ 53,000
531.20.48.22	Repair and Maintenance - Drainage Repair	Outside contracted drainage repair. This account funds large drainage projects that the city crew cannot perform for various reasons (e.g., time or equipment limitations, lack of work crew experience).	\$ 50,000	\$ 50,000	\$ 50,000
531.20.48.23	West Nile Virus Mosquito Control	Outside contracted services for mosquito control in response to the West Nile Virus.	\$ 25,000	\$ 25,000	\$ 25,000
531.20.49.00	Miscellaneous	Provides for miscellaneous items not budgeted elsewhere.	\$ 500	\$ 500	\$ 500
531.20.49.20	Laundry	Provides for laundry of uniforms of SWM maintenance.	\$ 1,500	\$ 1,500	\$ 1,500
531.20.49.22	Dues, Schools, and Conferences	Training, tuition and professional memberships.	\$ 700	\$ 700	\$ 700
<b>TOTAL OTHER SERVICES AND CHARGES</b>			<b>\$ 304,879</b>	<b>\$ 304,879</b>	<b>\$ 304,879</b>

# BUDGET NARRATIVE

2014

FUND: SURFACE WATER MANAGEMENT UTILITY  
 DEPARTMENT: PLANNING, BUILDING AND PUBLIC WORKS  
 DIVISION: MAINTENANCE

Account No.	Title	Narrative	Departmental Request	Executive Amendment	Adopted
<b>450.200.040.531.20.00.00</b>		<b>MAINTENANCE</b>			
<b>INTERFUND SERVICES</b>					
531.20.99.01	Computer Maintenance	Provides for Computer Maintenance.	\$ 3,350	\$ 3,350	\$ 3,350
531.20.99.02	Computer Replacement	Provides for replacement of computer hardware.	\$ 1,118	\$ 1,118	\$ 1,118
531.20.99.03	Equipment Maintenance	Provides for the repair and maintenance of vehicles at the City garage.	\$ 38,120	\$ 38,120	\$ 38,120
531.20.99.04	Equipment Replacement	Provides for contributions to the eventual replacement of SWM-owned vehicles.	\$ 79,500	\$ 79,500	\$ 79,500
531.20.99.05	Insurance	Provides for proportional share of liability and property insurance.	\$ 23,781	\$ 23,781	\$ 23,781
531.20.99.06	Fac Repair and Replacement	Provides for major repairs for City facilities.	\$ 1,362	\$ 1,362	\$ 1,362
		<b>TOTAL INTERFUND SERVICES</b>	<b>\$ 147,231</b>	<b>\$ 147,231</b>	<b>\$ 147,231</b>
		<b>CAPITAL OUTLAY</b>			
594.35.64.00	Equipment		\$ -	\$ -	\$ -
		<b>TOTAL CAPITAL OUTLAY</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
		<b>TOTAL MAINTENANCE</b>	<b>\$ 1,090,811</b>	<b>\$ 1,079,511</b>	<b>\$ 1,079,511</b>

CITY OF DES MOINES

2014 BUDGET REQUEST

PLANNING, BUILDING, AND PUBLIC WORKS  
SURFACE WATER MANAGEMENT  
NPDES PERMIT PROGRAM

	2012 ACTUAL	2013 ADOPTED	2013 AMEND	2013 ACTUAL Jan-June	2013 EST YR TOTAL	2014 DEPT REQ	2014 EXEC AMEND	2014 ADOPTED
<b>450.400.040 NPDES PERMIT PROGRAM</b>								
531.40.10.00 SALARIES & WAGES	150,874	186,084	186,084	64,740	130,163	170,718	169,670	169,670
531.40.11.00 OVERTIME	-	900	900	-	-	900	900	900
	SUB TOTAL	186,984	186,984	64,740	130,163	171,618	170,570	170,570
531.40.20.00 PERSONNEL BENEFITS	61,638	90,301	90,301	28,973	76,287	88,083	83,186	83,186
531.40.20.90 EMPLOYEE MED. CONTRIBUTION	(1,192)	(2,528)	(2,528)	(647)	(1,295)	(2,457)	(2,237)	(2,237)
531.40.20	60,447	87,773	87,773	28,326	74,992	85,626	80,949	80,949
	SUB TOTAL	423	400	131	200	500	500	500
531.40.31.00 OFFICE/OPERATING SUPPLIES	329	1,000	1,000	-	575	1,000	1,000	1,000
531.40.35.00 SM TOOLS & EQUIPMENT	-	5,000	5,000	-	-	5,000	5,000	5,000
531.40.35.90 SM TOOLS & EQUIPMENT >\$1,000-<\$5,000	-	-	-	-	-	-	-	-
531.40.30	753	6,400	6,400	131	775	6,500	6,500	6,500
	SUB TOTAL	15,081	15,000	-	4,000	15,000	15,000	15,000
531.40.41.00 PROFESSIONAL SERVICES	12	500	500	-	500	500	500	500
531.40.43.00 TRAVEL EXPENSES	-	5,000	5,000	-	725	5,000	5,000	5,000
531.40.49.00 MISCELLANEOUS	15,530	16,000	16,000	7,944	16,285	16,500	16,500	16,500
531.40.49.15 NPDES PERMIT FEE	184	1,500	1,500	-	1,500	1,500	1,500	1,500
531.40.49.22 DUES, SCHOOLS AND CONFERENCE	-	-	-	-	-	-	-	-
531.40.40	30,807	38,000	38,000	7,944	23,010	38,500	38,500	38,500
	SUB TOTAL	9,389	6,556	3,278	6,556	5,384	5,384	5,384
531.40.99.01 COMPUTER INTERFUND-MAINTENANCE	1,667	1,115	1,115	558	1,115	1,118	1,118	1,118
531.40.99.02 COMPUTER INTERFUND REPLACEMENT	10,009	5,804	5,804	5,804	5,804	8,151	8,151	8,151
531.40.99.05 INTERFUND INSURANCE	-	-	-	-	-	-	-	-
531.40.90	21,065	13,475	13,475	9,640	13,475	14,653	14,653	14,653
	SUB TOTAL	84,882	-	7,650	7,650	-	-	-
594.38.64.00 EQUIPMENT-Cityworks Program	-	-	-	-	-	-	-	-
594.31.64.00 EQUIPMENT-GPS Mapping Tool	-	-	-	-	-	-	-	-
594.31.60	84,882	-	-	7,650	7,650	-	-	-
	SUB TOTAL	348,826	332,632	118,431	250,065	316,897	311,172	311,172
<b>TOTAL NPDES PERMIT PROGRAM</b>			332,632	118,431	250,065	316,897	311,172	311,172
<b>TOTAL SWM MAINTENANCE</b>	850,300	1,079,229	1,079,229	481,717	963,380	1,090,811	1,079,511	1,079,511
<b>TOTAL SWM ENGINEERING</b>	738,708	820,391	820,391	409,566	771,061	818,557	1,060,661	1,060,661
<b>TOTAL SWM ENGR, MAINT &amp; NPDES</b>	1,937,834	2,232,252	2,232,252	1,009,714	1,984,506	2,226,265	2,451,344	2,451,344
TRANSFER-OUT/FUND 220	657	657	657	149	1,052	1,052	1,052	1,052
TRANSFER-OUT/CAPITAL	682,871	709,484	709,484	354,742	709,484	486,455	486,455	486,455
TOTAL INCLUDING TRANSFERS	2,621,363	2,942,393	2,942,393	1,364,605	2,695,042	2,713,772	2,938,851	2,938,851
ENDING FUND BALANCE	1,256,487	936,203	936,203		1,153,086	914,168	914,168	914,168
<b>TOTAL INCLUDING EFB</b>	3,877,850	3,878,596	3,878,596	1,364,605	3,848,128	3,627,940	3,853,019	3,853,019

# BUDGET NARRATIVE

2014

FUND: SURFACE WATER MANAGEMENT  
 DEPARTMENT: PLANNING, BUILDING AND PUBLIC WORKS  
 DIVISION: NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT PROGRAM

Account No.	Title	Narrative	Departmental Request	Executive Amendment	Adopted
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450.400.040.538.31.00.00 NPDES PERMIT PROGRAM

**SALARIES AND WAGES**

531.40.10.00	Salaries & Wages	Provides for salaries and wages for: 0.20 SWM Utility Manager 0.60 Water Quality Specialist/Civil Engr I 0.50 Engineering Aide 1.00 Engineering Technician (Transportation Tech temporarily assigned to SWM) <u>2.30 FTE's</u> (Remaining .4 FTE Water Quality Specialist/Civil Engr I is budgeted 001.480 PBPW Engineering Services)	\$ 170,718	\$ 169,670	\$ 169,670
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531.40.11.00	Overtime	Provides for overtime for staff.	\$ 900	\$ 900	\$ 900
<b>TOTAL SALARIES AND WAGES</b>			<b>\$ 171,618</b>	<b>\$ 170,570</b>	<b>\$ 170,570</b>

**PERSONNEL BENEFITS**

531.40.20.00	Personnel Benefits	Provides for benefits for surface water staff.	\$ 88,083	\$ 83,186	\$ 83,186
531.40.20.90	Employee Med. Contribution	Employee's share of health insurance premium cost for spouse and/or dependents.	\$ (2,457)	\$ (2,237)	\$ (2,237)

**TOTAL PERSONNEL BENEFITS**      **\$ 85,626**      **\$ 80,949**      **\$ 80,949**

# BUDGET NARRATIVE

2014

FUND: SURFACE WATER MANAGEMENT  
 DEPARTMENT: PLANNING, BUILDING AND PUBLIC WORKS  
 DIVISION: NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT PROGRAM

Account No.	Title	Narrative	Departmental Request	Executive Amendment	Adopted
<b>450.400.040.538.31.00.00</b>		<b>NPDES PERMIT PROGRAM</b>			
		<b>SUPPLIES</b>			
531.40.31.00	Office/Operating Supplies	Cost of office and operating supplies. Also includes office billing supplies, forms, computer paper, etc.	\$ 500	\$ 500	\$ 500
531.40.35.00	Sm Tools & Equipment	Hand tools, field equipment, safety equipment.	\$ 1,000	\$ 1,000	\$ 1,000
531.40.35.90	Sm Tools & Equipment >\$1,000<\$5,000		\$ 5,000	\$ 5,000	\$ 5,000
		<b>TOTAL SUPPLIES</b>	<b>\$ 6,500</b>	<b>\$ 6,500</b>	<b>\$ 6,500</b>
		<b>OTHER SERVICES AND CHARGES</b>			
531.40.41.00	Professional Services	This line item includes outside professional services that may be required for site specific NPDES Program, such as compliance, testing, consulting services, public outreach program, etc.	\$ 15,000	\$ 15,000	\$ 15,000
531.40.43.00	Travel Expenses	Travel expenses associated with training.	\$ 500	\$ 500	\$ 500
531.40.49.00	Miscellaneous	Minor expenses not otherwise categorized.	\$ 5,000	\$ 5,000	\$ 5,000
531.40.49.15	NPDES Permit Fee	Provides for stormwater discharge permit fee.	\$ 16,500	\$ 16,500	\$ 16,500
531.40.49.22	Dues, Schools And Conference	Provides basic training, NPDES seminars, other permit and regulation training.	\$ 1,500	\$ 1,500	\$ 1,500
		<b>TOTAL OTHER SERVICES AND CHARGES</b>	<b>\$ 38,500</b>	<b>\$ 38,500</b>	<b>\$ 38,500</b>

# BUDGET NARRATIVE

2014

FUND: SURFACE WATER MANAGEMENT  
 DEPARTMENT: PLANNING, BUILDING AND PUBLIC WORKS  
 DIVISION: NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT PROGRAM

Account No.	Title	Narrative	Departmental Request	Executive Amendment	Adopted
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450.400.040.538.31.00.00 NPDES PERMIT PROGRAM

**INTERFUND SERVICES**

538.31.99.01	Computer Maintenance	Provides for Computer Maintenance.	\$ 5,384	\$ 5,384	\$ 5,384
538.31.99.02	Computer Replacement	Provides for replacement of computer hardware.	\$ 1,118	\$ 1,118	\$ 1,118
538.31.99.05	Interfund Insurance	Provides for proportional share of liability and property insurance.	\$ 8,151	\$ 8,151	\$ 8,151

**TOTAL INTERFUND SERVICES**

**CAPITAL OUTLAY**

594.31.64.00 Equipment

			\$ -	\$ -	\$ -
			\$ -	\$ -	\$ -

**TOTAL CAPITAL OUTLAY**

**TOTAL NPDES PERMIT PROGRAM \$ 316,897 \$ 311,172 \$ 311,172**

## BUDGET NARRATIVE 2014

FUND: SURFACE WATER MANAGEMENT  
 DEPARTMENT: PLANNING, BUILDING AND PUBLIC WORKS  
 DIVISION: OPERATING TRANSFERS-OUT

Account No.	Title	Narrative	Departmental Request	Executive Amendment	Adopted
<b>450.300.040</b>		<b>TRANSFERS OUT</b>			
597.31.00.00	Transfer-out/Fund 220	This is a transfer out to Fund 220 for SWM share of Energy Savings Program loan principal and interest.	\$ 1,052	\$ 1,052	\$ 1,052
597.31.00.01	Transfer-out/Fund 450	This is a transfer out to Fund 451, which is maintained at 30% of total rate revenues.	\$ 486,455	\$ 486,455	\$ 486,455
			<u>\$ 487,507</u>	<u>\$ 487,507</u>	<u>\$ 487,507</u>
		<b>TOTAL TRANSFERS</b>			
		<b>TOTAL SWM FUND EXPENDITURES</b>	<u>\$ 2,226,265</u>	<u>\$ 2,451,344</u>	<u>\$ 2,451,344</u>
<b>450.000.000.508.80.00.00</b>		Ending Fund Balance - Unreserved	<u>\$ 914,168</u>	<u>\$ 914,168</u>	<u>\$ 914,168</u>
		<b>TOTAL INCLUDING ENDING FUND BALANCE</b>	<u>\$ 3,627,940</u>	<u>\$ 3,853,019</u>	<u>\$ 3,853,019</u>



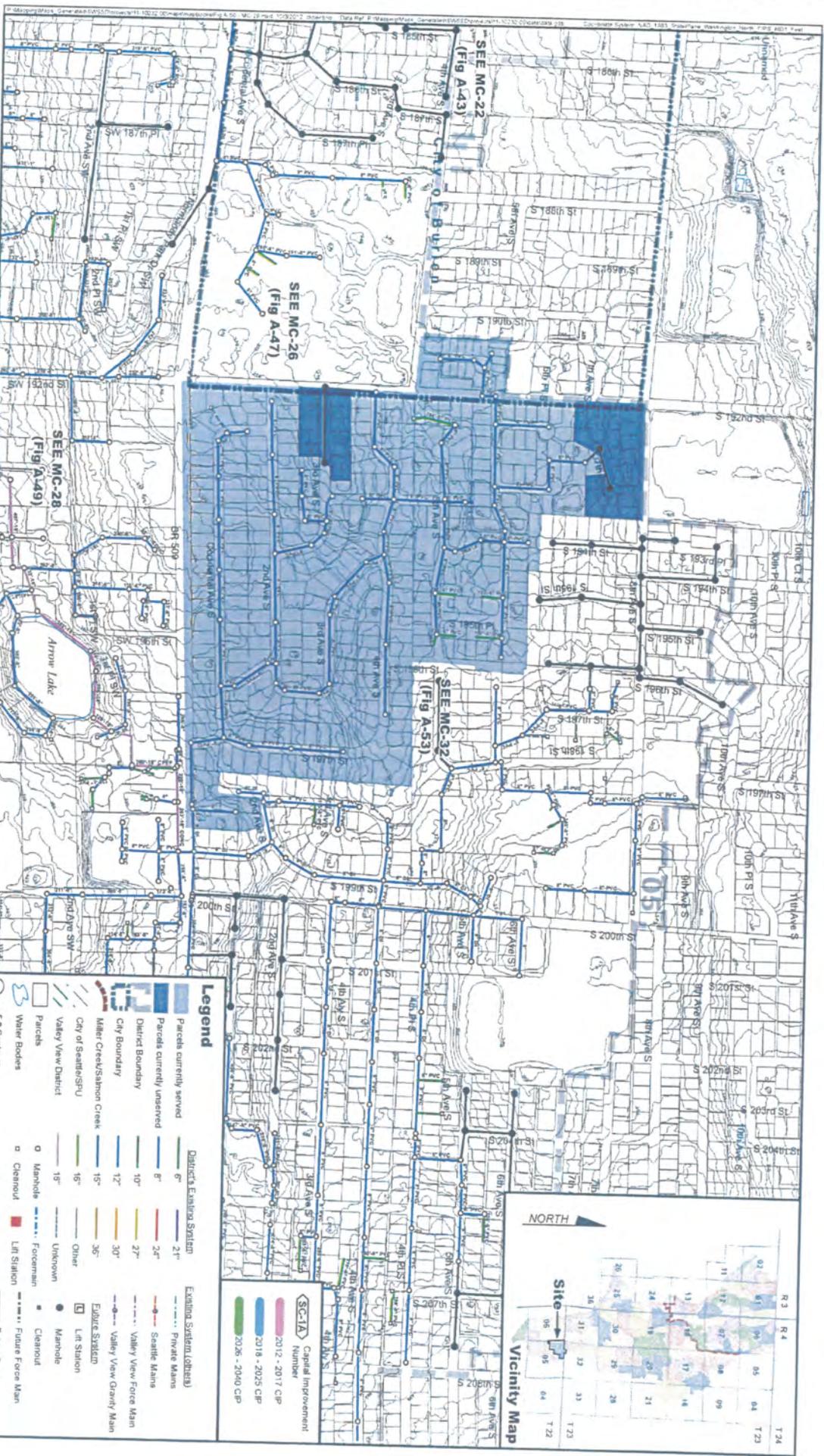


SWMSD Sewer System, Aug 2011  
 King County base data 2012 of record current or actual conditions. This map is a geographic representation of the sewer system and does not constitute a representation of the sewer system or any other facility. The accuracy of the data is not guaranteed. The map is for informational purposes only and is not to be used for legal or engineering purposes. The map is the property of BHC CONSULTANTS, LLC. All rights reserved.  
 MAP DATE: SEPTEMBER 2012



**MC-29**  
 Southwest Suburban Sewer District  
 King County, Washington  
**A-50**

Figure



**Legend**

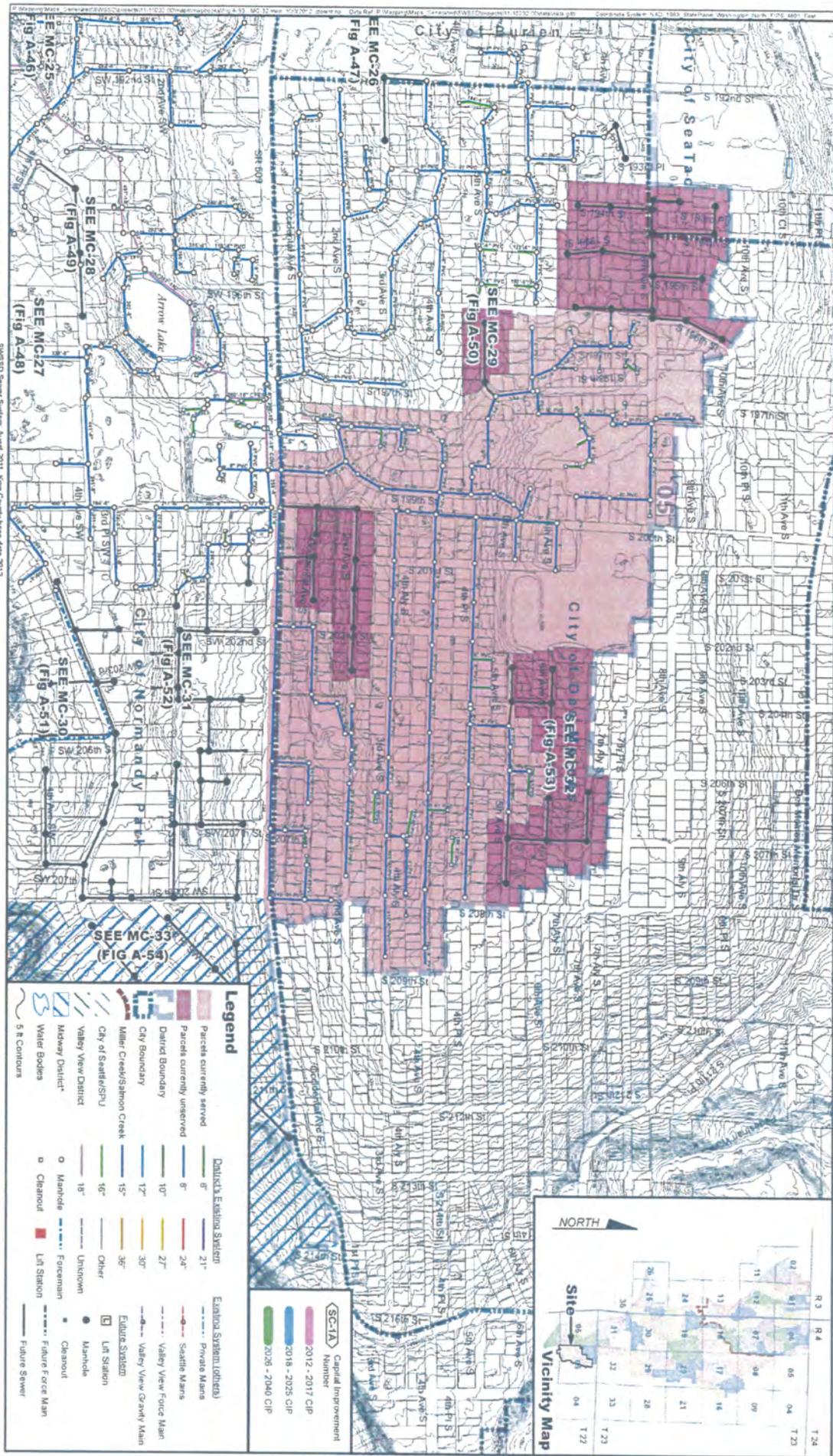
Parcels currently unserved	District Evaluation System 6"	Existing System (Lifts)
District Boundary	District Evaluation System 24"	Private Mans
City Boundary	District Evaluation System 27"	Valley View Force Main
Miller Creek/Salmon Creek	District Evaluation System 30"	Valley View Grassy Main
City of Seattle/SPU	District Evaluation System 36"	Edifice System
Valley View District	District Evaluation System 15"	Lift Station
Parcels	District Evaluation System 15"	Manhole
Water Bodies	District Evaluation System 15"	Cleanout
S R Contours	District Evaluation System 15"	Foreman
	District Evaluation System 15"	Lift Station
	District Evaluation System 15"	Future Force Main
	District Evaluation System 15"	Future Sewer

**SCIA**  
 Capital Improvement Number

2012 - 2017 CIP
2018 - 2025 CIP
2026 - 2040 CIP



NWP



**BHC Consultants, LLC**  
 1601 Poplar Ave, Suite 600  
 Seattle, Washington 98101  
 206.292.3400  
 info@bhc.com  
 www.bhcconsultants.com

SWSSD Sewer System, April 2011, King County base data 2012  
 \*Area is within District corporate boundary but will likely serve to Midway Sewer District  
 Data source updated, may not reflect current or actual conditions. This map is for informational purposes only. BHC Consultants, LLC is not responsible for the accuracy or completeness of data depicted on this map.  
 MAP DATE: SEPTEMBER 2012



**MC-32**  
 Southwest Suburban Sewer District  
 King County, Washington  
**A-53**

Figure

## 2.4 SERVICE AREA CHARACTERISTICS

The service area lies entirely within King County. The service area includes two major drainage basins: Miller Creek and Salmon Creek.

The service area is generally built out and is characterized as a bedroom community largely comprising of single or multi-family residential units. The topography within the District ranges from flat and gently rolling to hilly with steep slopes along the stream corridors and those properties immediately adjacent to Puget Sound. Wetlands are found adjacent to the many creeks, small streams and lakes within the District (see Figure 3.2). Ground surface elevations range from sea level near Puget Sound to about 485 feet near the eastern boundaries of the District.

Sewer service extensions presented in this report are planned only within the District's service area boundary. These boundaries are shown on Figure 3.1. Since the District is bounded by other sewerage agencies on all sides, it is not anticipated that the service area boundaries would be expanded. However, it is possible that the District could purchase sewer infrastructure and annex areas of SPU or Valley View Sewer District into the corporate boundary. It is also possible that the District may form an agreement to send the unsewered area at the south end of the District boundary to Midway Sewer District. The area could be sent to Midway either through by formalizing an Interlocal agreement or allowing Midway to annex the area.

## 2.5 DISTRICT POLICIES

Development of the District's Comprehensive Sewer Plan is currently guided by the Comprehensive Plans from the adjacent agencies.

The District's policy for sewer service recognizes that its function is not to plan land uses for the service area but to respond to land uses planned by the land use planning agencies.

The public sewer system in the District may be extended by one of two methods. First being a developer extension agreement, where a developer, property owner or a group of property owners request and construct a sewer under the terms and conditions of a developer extension agreement. The second method is a Utility Local Improvement District (ULID) process following RCW 35.43.040 and 35.43.042, where a group of property owners petition the District to extend sanitary sewers to their area and then are assessed for the sewer improvements.

It is the District's policy to respond to the property owners desiring sewer service but not to initiate such a request for sanitary sewer service. After entering a Developer's Extension Agreement with the District, the proposed sewer design will be reviewed by the District to ensure compliance with the District standards and design criteria. Sewer extensions shall follow the current version of the Southwest Suburban Sewer District "Standard Specifications Manual" and the "Developer Extensions Manual" as provided

in the Developer's Extension Agreement. Once the improvements have been constructed and confirmed through the District inspection to meet District's established standards, then the improvements and infrastructure will be deeded to the District.

District policies are set and reviewed by the District Board of Commissioners. The City Councils from the affected cities also have the authority to set policies, ordinances, and zoning that may affect the District. The District may then find it necessary from time to time to reevaluate their policies based on King County and City land use, policies and ordinances.

- A stub shall be provided for each parcel on a Developer Extension, regardless of whether the homeowner connects or not. For homes not connecting to the sewer line, the stub shall extend a minimum of 5 feet onto the property. The stub shall be located and terminate in accordance with Detail No. 10.

#### 4.1.4 Pump Stations

Developers/Owners of developments that may require a pump station to provide sewer service shall contact the District regarding the design requirements of the station and the current District Pump Policies.

#### 4.1.5 Individual Grinder Pumps

The use of individual grinder pumps to serve residential connections shall be limited to connections in which a gravity alternative is not feasibly possible. The District shall make the determination as to which connections qualify for service by grinder pump.

Grinder pumps shall meet the following standards.

1. Grinder pumps shall be owned and maintained by the property owner and shall only serve a single ERU.
2. Grinder pumps Systems shall be Environmental One Model DH071 or better.
3. Minimum velocity for Grinder pump pipelines shall be 2 feet per second.
4. Pipelines shall be installed with cleanouts at the end of each line and at critical line size changes to facilitate cleaning.
5. Minimum storage volumes shall be 70 gallons. The Developer shall provided estimated flows to verify adequate storage capacity.

#### 4.2 FATS, OILS AND GREASE REMOVAL

The District has adopted a fats, oils and grease policy regarding the prevention and discharge of these types of waste into the collection system. Developers proposing the construction of facilities which will be discharging these wastes shall contact the District to receive information regarding the design of systems to meet the District standards. The design of oil/water separators and grease interceptors shall be per King County Standards and the latest edition of the King County Manual "A Guide to Restaurant Grease Management."

#### 4.3 EASEMENTS

Easements dedicated to the District shall be provided for the construction, maintenance and operation of sewer mains or any other related District-owned facilities which lie outside of public street rights-of-way. Easement documents shall be drawn up from the District's standard forms and shall include drawings and legal descriptions for each easement. Drawings and legal descriptions shall be signed and stamped by a Professional Land Surveyor, currently registered in the State of Washington.

Models were constructed to represent the network in 2010, 2017, 2025 and 2040. The year 2010 was used for calibration purposes utilizing flow metering data at a three locations in the collection system and flow data collected the both Miller and Salmon Creek WWTPs.

Estimated flows included base flow; representing residential, commercial and school water consumption; and inflow and infiltration (I/I) resulting from surface water and groundwater entering the sewer system. Peak base flow contributions were estimated by combining the residential, commercial and school populations with the unit flows and peaking factors.

2010 I/I contribution was calibrated to different (recorded) wet weather events at the WWTPs. A 2010 calculated I/I contribution was estimated in gallons per acre day and a degradation factor was applied to future I/I. Degradation of the sewer network after 2010 was accounted for with a 7-percent per decade increase in I/I which is also in line with MWPAAC methodology.

Though it might be acceptable to allow conditional surcharging of the conveyance lines, for the purposes of this analysis it has been conservatively estimated that no surcharging will be allowed. This effectively means that there is added and reserve capacity within the surcharging volumes.

Where pipe sections were identified as requiring an upgrade, the proposed upgrade was sized to provide capacity greater than the estimated 2040 flows and to prevent any conditional surcharging from occurring.

At lift stations where the estimated peak I/I event flows were shown to exceed the current firm capacity, a suitable 2040 upgrade flow capacity was estimated. This 2040 capacity was incorporated into the model for the planning horizon showing evidence of capacity limitation. This enabled the impact of the increased flow on the downstream sewer network to be investigated.

The results of the capacity analysis were used to develop the capital improvement program detailed in Chapter 8.

#### 1.4 CAPITAL IMPROVEMENTS PROJECTS

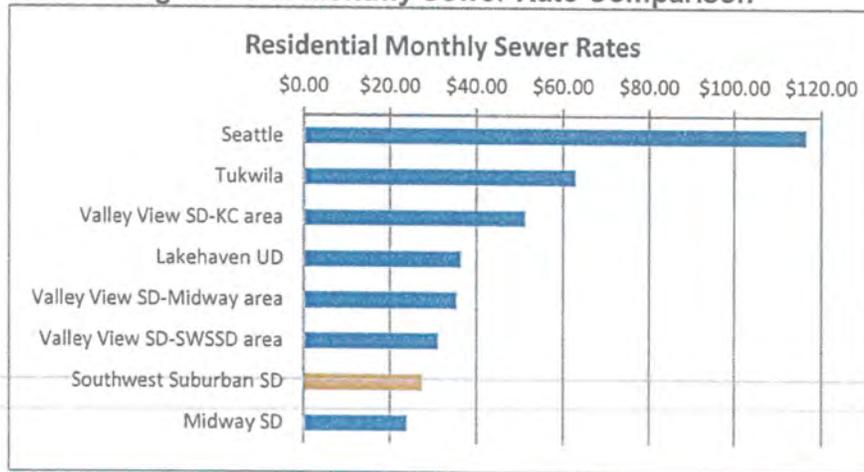
The capital improvement projects (CIP) developed in Chapter 9 are presented by time period and segregated by Drainage Basin. It should be noted that, though the plan has presented a proposed means of extending sewer to every lot within the service boundary, it is not the intention of this plan to finance those line extensions. The CIP does not include the line extensions and pump stations needed to serve presently unsewered areas. These line extensions are assumed to be initiated and financed by developers or through ULIDs. Consequently, no District financing mechanism is proposed for these lines.

**Table 11-6: Residential Sewer Rate Comparison**

Sewer Provider	Monthly Sewer
Seattle	\$116.50
Tukwila	\$62.89
Valley View SD-KC area	\$51.30
Lakehaven UD	\$36.47
Valley View SD-Midway area	\$35.50
Valley View SD-SWSSD area	\$31.25
Southwest Suburban SD	\$27.50
Midway SD	\$24.00

Southwest Suburban is second from the lowest in the neighboring districts. Lakehaven, Midway and SWSSD operate their own wastewater treatment facilities. Valley View contracts for wastewater treatment services from three providers due to the topography – King County, Midway and SWSSD. Seattle, Tukwila and Valley View-KC area contract for King County treatment services.

**Figure 11-3: Monthly Sewer Rate Comparison**



It is important to remember that while it may be nice to know what the neighboring jurisdictions charge for sewer, each system must be self-supporting to meet its own costs with the available customers.

### 11.6 CAPITAL IMPROVEMENT FUNDING SOURCES

SWSSD has successfully used a combination of grants, low-interest PWTF loans, bond sales and contributions from joint partners in the past to fund large capital improvements. Common methods of funding capital improvements include some form of borrowing

the Seattle-Tacoma-Bremerton Consumer Price Index for Wage Earners for adjusting costs and this has been in the 1-3% range in recent years.

Given the assumptions described, the revenue is not sufficient to pay for the expenditures beginning 2014. The cumulative impact on monthly rates has been calculated so there is no increase or use of reserves. Over the six-year period, a rate increase of up to \$9.00 appears necessary to maintain the current fund balance of approximately \$3 million. Residential rates would increase from the current \$27.50 to a potential \$36.50 by 2019. The rate could be reduced by obtaining grants for capital projects, scheduling the use of reserves, increasing the number of customers, modifying the schedule of projects, planning more frequent annual rate increases, or a combination of measures.

The District is planning a detailed discussion of rates during 2013 in preparation for a potential bond sale later in the year. More rate scenarios will be prepared to support the decision-making process.

If the rates presented in Table 11-12 were implemented, the maintenance fund balance would remain at approximately \$3 million with \$1,283,000 available (see Table 10-2). The District will be considering rate scenarios to strike an appropriate balance between rates, reserves and borrowing to complete the necessary improvements.

## Loren Reinhold

---

**From:** Loren Reinhold  
**Sent:** Monday, February 09, 2015 9:27 AM  
**To:** Ron Hall  
**Cc:** Peter Ruppert; Tim George  
**Subject:** FW: Des Moines - Southwest Suburban Sewer - Draft Franchise Agreement  
**Attachments:** Southwest Suburban City's comments to Districts reply 4.9.13.doc

Ron,

This is the latest version of the draft Franchise Agreement and City comments (summarized below) issued to the District.

### *Loren Reinhold, P.E.*

Surface Water Management (SWM) Utility Manager  
City of Des Moines  
21650 11th Avenue South  
Des Moines, WA 98198

(206)870-6524 Phone  
(206)870-6596 Fax

---

**From:** Loren Reinhold  
**Sent:** Monday, April 15, 2013 11:58 AM  
**To:** 'ron.hall@swssd.com'  
**Cc:** Dan Brewer; Tim George; Peter Ruppert  
**Subject:** RE: Des Moines - Southwest Suburban Sewer - Draft Franchise Agreement

Hi Ron,

Please find attached our reply to the District's comments for the draft franchise agreement. In summary, our comments are as follows:

1. Cure language added to Section 2 per District's request.
2. Automatic extension added to Section 3 per District's request.
3. No changes were made to Section 5. This is language that is used in our other recent franchise agreements that we have with other water and sewer Districts.
4. Language was added to Section 8 now exclude the value of any District facilities in the event of eminent domain by the City.
5. "Sole negligence" changed to City's negligence or willful misconduct in Sections 11 and 12.
6. Insurance in Section 12 to remain at \$5,000,000, which is the amount our insurance provider (WCIA) requires and is consistent with the insurance coverage in our other recent franchise agreements.
7. Section 13 is unchanged and is consistent with our recent water and sewer franchise agreements.
8. Section 19 deleted.
9. Section 24 moved to Section 3.
10. Section 30 concerning franchise fees has not changed. The City believes that a flat fee of \$5,000.00 is reasonable and allows the City to recover most of the costs for the development of this agreement. However, if the

District desires to pay the actual cost based on documentation, the City would like to increase the amount to a not to exceed amount of \$10,000, to ensure that the City is able to fully recover its costs.

Please review and let me know if the changes are acceptable.

***Loren Reinhold, P.E.***

Assistant Director - Utilities & Environmental Engineering  
City of Des Moines  
21650 11th Avenue South  
Des Moines, WA 98198

(206)870-6524 Phone

(206)870-6596 Fax

---

**From:** Ron Hall [<mailto:ron.hall@swssd.com>]  
**Sent:** Monday, 04 March, 2013 9:41 AM  
**To:** Loren Reinhold  
**Subject:** RE: Des Moines - Southwest Suburban Sewer - Draft Franchise Agreement

Hi Loren,

No other changes or additions. Just the comments within the attached document.

Ron  
Ron Hall  
General Manager, Southwest Suburban Sewer District  
431 SW Ambaum Blvd, Burien, WA 98166  
Office 206-244-9575 Direct 206-432-3512 Fax 206-433-8546  
[ronh@swssd.com](mailto:ronh@swssd.com)  
[www.SWSSD.com](http://www.SWSSD.com)

Dedicated to Preserve the Purity of Your Environment.

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**From:** Loren Reinhold [<mailto:L.Reinhold@desmoineswa.gov>]  
**Sent:** Monday, March 04, 2013 8:37 AM  
**To:** Ron Hall  
**Subject:** FW: Des Moines - Southwest Suburban Sewer - Draft Franchise Agreement

Ron,

Did you have any additional changes? Let me know please. Thanks.

***Loren Reinhold, P.E.***

Assistant Director - Utilities & Environmental Engineering  
City of Des Moines  
21650 11th Avenue South  
Des Moines, WA 98198

(206)870-6524 Phone  
(206)870-6596 Fax

---

**From:** Loren Reinhold  
**Sent:** Thursday, 31 January, 2013 1:25 PM  
**To:** 'Ron Hall'  
**Subject:** FW: Des Moines - Southwest Suburban Sewer - Draft Franchise Agreement

Hi Ron,

Sorry for not getting back on this but the Council would like to reinitiate the process for a new franchise agreement (and hopefully get one done the first part of the year). I have attached the last comments that you provided. Are there any other changes? If not, I will pass these on to our Council Committee to consider. Thanks Ron.

***Loren Reinhold, P.E.***

Assistant Director - Utilities & Environmental Engineering  
City of Des Moines  
21650 11th Avenue South  
Des Moines, WA 98198

(206)870-6524 Phone  
(206)870-6596 Fax

---

**From:** Ron Hall [<mailto:ronh@swssd.com>]  
**Sent:** Tuesday, 13 December, 2011 8:27 PM  
**To:** Loren Reinhold  
**Subject:** RE: Des Moines - Southwest Suburban Sewer - Draft Franchise Agreement

Loren,

See attached for comments.

Ron Hall  
General Manager, Southwest Suburban Sewer District  
431 SW Ambaum Blvd, Burien, WA 98166  
Office 206-244-9575 Direct 206-432-3512 Fax 206-433-8546  
[ronh@swssd.com](mailto:ronh@swssd.com)  
[www.SWSSD.com](http://www.SWSSD.com)

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**From:** Loren Reinhold [<mailto:LReinhold@desmoineswa.gov>]  
**Sent:** Monday, December 12, 2011 12:56 PM  
**To:** Ron Hall  
**Subject:** RE: Des Moines - Southwest Suburban Sewer - Draft Franchise Agreement

Ron,

Do know when you will be returning comments on the draft Agreement?

***Loren Reinhold, P.E.***

Assistant Director - Utilities & Environmental Engineering  
City of Des Moines  
21650 11th Avenue South  
Des Moines, WA 98198

(206)870-6524 Phone  
(206)870-6596 Fax

---

**From:** Ron Hall [<mailto:ronh@swssd.com>]  
**Sent:** Monday, 31 October, 2011 11:21 AM  
**To:** Loren Reinhold  
**Subject:** Thank you Loren.RE: electronic copy request

Great!

Thank you Loren....

Ron

---

**From:** Loren Reinhold [<mailto:LReinhold@desmoineswa.gov>]  
**Sent:** Monday, October 31, 2011 10:53 AM  
**To:** Ron Hall  
**Subject:** RE: electronic copy request

Hi Ron,

Here you go.

***Loren Reinhold, P.E.***

Assistant Director - Utilities & Environmental Engineering  
City of Des Moines  
21650 11th Avenue South  
Des Moines, WA 98198

(206)870-6524 Phone

---

**From:** Ron Hall [<mailto:ronh@swssd.com>]  
**Sent:** Monday, 31 October, 2011 9:42 AM  
**To:** Loren Reinhold  
**Subject:** electronic copy request

Good morning Loren,

May I please have an electronic Word draft copy of the proposed franchise agreement between the City of Des Moines and Southwest Suburban Sewer District?

Thank you,

Ron Hall  
General Manager, Southwest Suburban Sewer District  
431 SW Ambaum Blvd, Burien, WA 98166  
Office 206-244-9575 Direct 206-432-3512 Fax 206-433-8546  
[ronh@swssd.com](mailto:ronh@swssd.com)  
[www.SWSSD.com](http://www.SWSSD.com)

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**DRAFT ORDINANCE NO. 11-158**

**AN ORDINANCE OF THE CITY OF DES MOINES, WASHINGTON**, granting Southwest Suburban Sewer District, King County, Washington, a municipal corporation, its successors and assigns, the right, privilege, authority, and nonexclusive Franchise, to construct, maintain, operate, replace, and repair a sewer system, in, across, over, along, under, through, and below the public rights-of-way of the City.

**WHEREAS**, the Southwest Suburban Sewer District ("District") currently owns, operates, and maintains a sewer system within Des Moines' public right-of-way located in the franchise area, and

**WHEREAS**, the District is seeking to establish a comprehensive franchise with the City of Des Moines for sewer system lines within Des Moines' current and future public right-of-way, and

**WHEREAS**, in order to maintain control over the use of City of Des Moines' rights-of-way by utilities operating within the City of Des Moines, it is appropriate to enter into franchise agreements with such utilities, and

**WHEREAS**, the District is such a utility, and has negotiated this franchise agreement with the City of Des Moines acceptable to both parties, and

**WHEREAS**, the City Council has the authority to grant franchises for the use of its right-of-way and other public properties (RCW 35A.47.040), and

**WHEREAS**, the City of Des Moines has determined that it is in the best interests of the public to grant the District a franchise on the terms and conditions set forth in this franchise agreement; now, therefore,

**THE CITY COUNCIL OF THE CITY OF DES MOINES ORDAINS AS FOLLOWS:**

**Sec. 1. Definitions.** Where used in this franchise agreement ("Franchise"), the following definitions shall apply:

(1) "District" means the Southwest Suburban Sewer District, a special purpose municipal corporation, and its respective successors and assigns. (2) "City" means the City of Des Moines, a Washington municipal corporation, and its successors and assigns.

(3) "Franchise Area" means all of the public roads, streets, avenues, alleys, highways, and other rights-of-way of the City as now laid out, platted, dedicated or improved; and any and all public City roads, streets, avenues, alleys, highways, and other rights-of-way that may hereafter be laid out, platted, dedicated or improved within the District's sewer service areas as may be amended in which the City has jurisdiction, as depicted in Exhibit B, attached hereto, which is by this reference incorporated as if fully set forth herein; provided, that the Franchise Area shall not include or convey any right to the District to install facilities on, or

Draft 8.18.11

1 to otherwise use, City owned or leased properties; and provided that the terms of this franchise  
2 (i.e., permitting and enforcement) shall not apply to those public roads, streets, avenues, alleys,  
3 highways, and other rights-of-way that may hereafter be laid out, platted, dedicated or improved  
4 within the area as depicted in Exhibit B until such time that the City has assumed jurisdiction  
5 thereof.

6 (4) "Facilities" means the District's sewer system, lines, mains, pump  
7 stations, and all other necessary or convenient appurtenances owned, operated and maintained by  
8 the District for the purpose of providing sewer service.

9 **Sec. 2. Franchise grant.** Subject to the terms and conditions set forth in this  
10 Franchise, the City grants to the District the right to construct, install, replace, maintain, and own  
11 its Facilities, including, but not limited to, sewer pipelines, pump stations, and appurtenances  
12 within the City's public right-of-way and the District's sewer service area. In exercising authority to  
13 construct and install its Facilities and to excavate trenches in City roads for the purposes of  
14 constructing, installing, operating, maintaining, removing, and replacing its Facilities, and  
15 making connections between the same to the dwellings and other buildings of the consumers, the  
16 District shall be governed by and conform to the general rules adopted by the City's Public Works  
17 Department, and the District, at no expense to the City, shall complete all work and shall replace  
18 and restore the City roads to the condition of the City roads existing immediately prior to such  
19 disturbance; PROVIDED, HOWEVER, that no such work shall be done prior to the obtaining of  
20 a permit therefore issued by the City's Planning, Building and Public Works Director (hereinafter  
21 "Director"), which permit shall set forth conditions pertaining to the work to be done and  
22 specifications for the restoration of the roads to the same condition as they were immediately prior to  
23 such work.

24 (1) If the District does not repair the City roads to the satisfaction of the Director,  
25 the City shall notify the District in writing, stating with reasonable specificity the nature of the  
26 unsatisfactory condition. The District shall have fifteen (15) days from the receipt of such notice  
27 to: (a) contest the City's assertion that the restoration is not satisfactory and request a hearing in  
28 accordance with subsection (2) below; or (b) cure the default.

29 (2) If the District does not cure the alleged default within the cure period stated  
30 above and requests a hearing, the Director shall notify the District of the hearing in writing and  
31 such hearing shall take place no less than seven (7) days after the District's receipt of notice of the  
32 hearing. At the hearing, the District shall be provided an opportunity to be heard and to present  
33 evidence in its defense.

34 (3) If, after the hearing, the Director determines that the repair of the road is  
35 unsatisfactory, the District shall have fifteen days in which to remedy the unsatisfactory  
36 condition. If the District does not cure the condition during that timeframe, then the City may, at

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1 its sole discretion, repair such City roads, or cause them to be repaired, and the District hereby  
2 agrees to reimburse the City for the cost of such work, including reasonable overhead costs.

3 **Sec. 3. Franchise term.** This Franchise shall take full force and effect five  
4 calendar days after being approved by the City, and shall be valid for a period of 20 years, expiring  
5 in 2031; provided, that this Franchise shall not take effect and the District shall have no rights  
6 under this Franchise unless the District files a written acceptance of this Franchise with the City  
7 pursuant to Section 4 of this Franchise.

8 (1) Renewal Option of Term. One hundred and eighty days prior to expiration  
9 of the current term the District may request a renewal of the Franchise Agreement and the parties  
10 may, by mutual written agreement, renew this Franchise for an additional five (5) year period.

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11 (2) Failure to Renew Franchise – Automatic Extension. If the Parties fail to  
12 formally renew this Franchise prior to the expiration of its term or any extension thereof, the  
13 Franchise shall automatically continue month to month until renewed or either party gives  
14 written notice at least one hundred and eighty (180) days in advance of intent not to renew the  
15 Franchise.

16 (3) Upon the expiration of this Franchise, the District shall continue to be  
17 responsible for the operation and maintenance of the District's existing facilities in the Franchise  
18 Area. This section and sections 11, 14, 15, 16, 19 and 23 of this Franchise shall continue in force  
19 until such time as the District's Facilities are abandoned to the City's satisfaction.

20 **Sec. 4. Acceptance by District of terms and conditions.**

21 (1) This Franchise, and any rights granted hereunder, shall not become effective  
22 for any purpose unless and until the District files with the City Clerk the Statement of  
23 Acceptance, attached hereto as Exhibit "A," and incorporated by reference.

24 (2) Should the District fail to file the Franchise Acceptance with the City Clerk  
25 within forty five (45) days after the effective date of the Ordinance approving the Franchise, said  
26 agreement shall automatically terminate and shall be null and void.

27 **Sec. 5. Non-Exclusive Franchise.** This Franchise is not exclusive. It does not  
28 prohibit the City from granting franchises for other public or private utilities in, over, along,  
29 across, and under any City property, including the Franchise Area. This Franchise does not prevent  
30 or prohibit the City from constructing, altering, maintaining or using any of the Franchise Area.  
31 The City retains full power to make all changes, relocations; repair, maintenance or other work to or  
32 in the Franchise Area as the City deems fit.

33 **Sec. 6. Jurisdiction.** This Franchise is intended to convey limited rights and interest  
34 only as to those roads and rights-of-way in which the City has an actual interest within the Franchise

1 Area. It is not a warranty of title or of interest in City road rights-of-way. None of the rights granted  
2 to the District shall affect the jurisdiction of the City over City road rights-of-way or the City's power  
3 to perform work upon its roadways, rights-of-way or appurtenant drainage facilities including by  
4 constructing, altering, renewing, paving, widening, grading, blasting or excavating. The parties  
5 shall comply with all applicable rules and regulations pertaining to them in connection with the  
6 matters covered herein.

7 **Sec. 7. Regulation of use and control.** This Franchise does not deprive the City of  
8 any powers, rights, or privileges it now has or may later acquire in the future to regulate the use of  
9 and to control the City road rights-of-way covered by this Franchise. The City reserves the right  
10 and power at all times to exercise its police powers with respect to the time, manner and location  
11 of the placement of the District's Facilities.

12 **Sec. 8. Eminent domain.** This Franchise and the limited rights and interests  
13 granted by this Franchise are subject to the exercise of eminent domain. In the event of an  
14 exercise of eminent domain by the City, the value to be attributed to all the rights and interests  
15 granted under this Franchise, excluding the value of District Facilities, shall not exceed the actual  
16 amount the District paid to the City in obtaining this Franchise.

17 **Sec. 9. Vacation.** If at any time the City vacates any City rights-of-way covered by  
18 this Franchise, the City will not be held liable for any damages or loss to the District by reason  
19 of such vacation. The City may, after giving thirty (30) days written notice to the District,  
20 terminate this Franchise with respect to any City road or rights-of-way vacated. However, should the  
21 District notify the City that an easement is required for existing or proposed facilities within the  
22 proposed vacation area, the City shall withhold approval of such vacation until the District has  
23 notified the City that the necessary easement(s) have been secured, or provisions otherwise made to  
24 maintain the viability and use of existing Facilities.  
25

26 **Sec. 10. Enforcement.** The City's failure to enforce any provision of this Franchise  
27 does not constitute a waiver of its right to enforce that provision or any other provision of this  
28 Franchise.

29 **Sec. 11. — Indemnity and Hold Harmless.**

30 (1) The District shall defend, indemnify and hold harmless the City, its  
31 appointed and elected officials, and its employees and agents from and against liability for all  
32 claims, actions, injuries, demands, liabilities, losses, costs, damages and judgments, including  
33 costs of defense thereof, (collectively referred to as "damages") for injury to persons, death or  
34 property damage caused by, arising out of, or incidental to the District's exercise of the rights and  
35 privileges granted by this Franchise, except for damages caused by or arising out of the City's  
36 negligence or willful misconduct. In the event that any such claim or demand for damages is  
37 presented to or filed with the City, or if any suit or action is initiated against the City based on

1 such claims or demands for damages, the City shall promptly notify the District of the claim,  
2 demand, suit or action and the District shall have the right, at its election and its sole cost and  
3 expense, to settle and compromise such claim, demand, suit or action, or defend the same at the  
4 District's sole cost and expense.

5 (2) If it is determined that RCW 4.24.115 applies to this Franchise, the  
6 District agrees to defend, hold harmless and indemnify the City to the maximum extent permitted  
7 under that statute, and specifically for the District's negligence concurrent with that of the City to  
8 the full extent of the District's negligence.

9 **Sec. 12. Insurance.**

10 (1) The District shall keep a policy of insurance in force with a minimum  
11 limit of five million dollars (\$5,000,000,00). Verification of insurance coverage is a  
12 condition precedent to the effectiveness of this Franchise.

13 (2) The insurance shall be maintained in full force and effect at  
14 the District's sole expense throughout the term of the Franchise, and, should such insurance be  
15 terminated, this Franchise shall terminate as of the date of the termination of insurance coverage.

16 (3) The coverage provided by the District's insurance policies shall be  
17 primary to any insurance maintained by the City, except as to losses or damages attributable to  
18 the negligence or willful misconduct of the City. Any insurance maintained by the City that might  
19 relate to this Franchise shall be in excess to the District's insurance and shall not contribute with  
20 or to it. The City has no obligation to report occurrences to the insurance companies unless a  
21 claim is filed with the City's City Council; and the City has no obligations to pay the District's  
22 premiums.

23 (4) The District shall be solely and completely responsible to perform all  
24 work related to this Franchise in compliance with all applicable federal, state, county and city  
25 statutes, rules, regulations, ordinances, orders and codes as presently constituted or as may be  
26 subsequently amended. The District's attention is directed to the requirements of the Washington  
27 Industrial Safety and Health Act, Chapter 49.17 RCW. The District shall be solely and completely  
28 responsible for safety and safety conditions on its job sites and for its work within the Franchise  
29 Area, including the safety of all persons and property during performance of any works therein.  
30 The services of the City or City's consultant personnel in conducting construction review of the  
31 District's work relating to the Franchise is not intended to include review of the adequacy of the  
32 District's work methods, equipment, scaffolding, or trenching, or safety measures in, on or near  
33 such Franchise Area or job site. The District shall provide reasonable and appropriate access for  
34 the City and its inspectors to adequately inspect the work and its conformance with applicable  
35 statutes, ordinances, rules, regulations, and the Franchise.

**Comment [p1]:** This amount is what WCIA requires and has been accepted by Midway and Lakehaven.

1           **Sec. 13. Installation, repair, removal or relocation.**

2           (1) The District shall, at no expense to the City, expeditiously repair all  
3 existing Facilities that it owns, operates and maintains within the Franchise Area, including any  
4 damage caused directly or indirectly by its Facilities and appurtenant Facilities. The District shall  
5 also coordinate and manage the repair of service lines connecting its system to users, if the City  
6 requires such repair for any reasonable purpose.

7           (2) The District shall, at no expense to the City, manage the adjustment,  
8 removal or relocation of existing Facilities within the Franchise Area, including all appurtenant  
9 Facilities and service lines connecting its system to users, if the City determines such adjustment,  
10 removal or relocation is reasonably necessary to allow for an improvement or alteration planned by  
11 the City. The City shall give the District written notice of such requirement as soon as practicable.  
12 The written notice shall include all available information, such as plans and specifications, as is  
13 reasonably necessary for the District to plan for such adjustment, removal or relocation. The City  
14 shall make reasonable effort to plan around existing facilities to help minimize project costs on  
15 sewer utility relocations.

16           (3) District's Facilities shall be constructed, installed, maintained and  
17 repaired within the Franchise Area so as to provide safety of persons and property, and not interfere  
18 with the free passage of traffic, all in accordance with the laws of the State of Washington, and the  
19 ordinances, resolutions, rules and regulations of the City.

20           (4) For projects that are a part of the City's capital improvement program,  
21 in addition to any other notice given to the District, the City shall provide a copy of the capital  
22 improvement plan and six (6) year transportation improvement plan when requested. Further,  
23 the City shall provide a horizontal plan and vertical profile of the roadway and drainage facilities  
24 within it, both existing and as proposed by the City, and the proposed construction schedule. The  
25 initial design information shall be given at least one hundred and eighty (180) days before  
26 construction is scheduled to begin, except in cases of urgent construction or emergencies. The  
27 District shall respond to this notice, and to any later notices of revised designs, within twenty  
28 (20) days of the date of the notice, by providing to the City the District's best available information  
29 as to the location of all the District's Facilities, including all appurtenant Facilities and service  
30 lines connecting its system to users, and all Facilities that it has abandoned, within the area  
31 proposed for the project.

32           (5) The City shall offer the District the opportunity to participate in the  
33 preparation of bid documents for the selection of a contractor to perform the public works project as  
34 well as all required adjustments, removals or relocations of the District's Facilities. The City shall  
35 have sole authority to choose the contractor to perform such work. Such bid documents shall  
36 provide for an appropriate cost allocation between the parties. In addition to the District's allocation  
37 of contractor costs, the District shall reimburse the City for all costs, to include but not be limited

1 to legal, engineering, inspections, administration and/or soils testing, related to the District's work  
2 and reasonably incurred by the City in the administration of such joint construction contracts. Such  
3 costs shall include the direct salary cost of the time of City professional and technical  
4 personnel, including the City's consultants, spent productively engaged in such work, plus overhead  
5 costs at the standard rate charged by the City on other similar projects. The specific terms of the  
6 joint participation on any public work shall be as set forth in a written agreement between the  
7 parties.

8 (6) It is understood that emergency situations may arise that could  
9 threaten public health and/or continued operation of the District's utility system and the  
10 District may be unable to notify the City in the manner prescribed in Section 14 of this Franchise. In  
11 such a situation the District shall immediately correct the hazardous situation and continue to use  
12 best efforts to contact the City staff at (206) 870-6522. Dialing 911 is advised for emergency  
13 situations that may result in imminent threats to life and/or property.

14 **Sec. 14. Requirement of construction permits.**

15 (1) The District has the right, privilege and authority to enter the City road  
16 rights-of-way for the purpose of constructing, installing, operating, maintaining, replacing or  
17 repairing its Facilities and any service lines on the condition that it obtains construction,  
18 excavation, and right-of-way use permits issued by the City. Any work performed, whether by  
19 District, its contractors, or third parties, shall include necessary paving, patching, grading and any  
20 other reasonably necessary repair or restoration to the City rights-of-way. All work shall be done  
21 to the City's satisfaction.

22 (2) All equipment, pipelines and appurtenances which are used in the  
23 construction, installation, operation, maintenance or repair of the District's Facilities and which  
24 are located within the City road rights-of-way and owned, operated and maintained by the  
25 District shall be considered to be part of the District's system and shall be the responsibility of  
26 the District. All permits for the construction, installation, operation, maintenance or repair of the  
27 District's system shall be applied for and given in the name of the District, who will be  
28 responsible for all work done under the permit. The District remains responsible whether the  
29 work is performed by the District, its contractors, or by third parties.

30 **Sec. 15. Performance of work.** Any work performed by the District in the  
31 Franchise Area shall conform to all City ordinances and requirements including, but not  
32 limited to, Des Moines City Code and the City's Design and Construction Standards in force  
33 when the work is performed. All traffic control shall conform to the current edition of the Manual of  
34 Uniform Traffic Control Devices in force when the work is performed.

35 **Sec. 16. Restoration of City rights-of-way.** After performing work on, under or  
36 adjacent to City road rights-of-way, the District is responsible for and shall leave all City road

1 rights-of-way in the condition of the City road rights-of-way existing immediately prior to such  
2 disturbance. If the District, its contractors, or third parties working under permit should fail to  
3 diligently restore City road rights-of-way to the satisfaction of the City, the City may make  
4 such repairs or restorations as are necessary to return the City road rights-of-way to a condition  
5 reasonably comparable to the condition of the City road rights-of-way existing immediately prior  
6 to such disturbance. Upon presentation of an itemized invoice for repairs or restorations,  
7 including all applicable costs, both direct and indirect, to include, but not be limited to, the cost of  
8 labor, tools, materials and equipment, the District shall pay the invoice within sixty-five (65) days  
9 of its receipt and approval.

10 **Sec. 17. Information on location of facilities.** The District shall provide the City  
11 with all information requested by the City regarding the location of the District's current Facilities,  
12 including, but not limited to, copies of all record drawings for such Facilities. If the District performs  
13 any work to install, repair, reconstruct, or replace Facilities in the Franchise Area after this  
14 Franchise's effective date, the District shall provide the City with all information requested by  
15 the City regarding the location of those Facilities, including, but not limited to, copies of record  
16 drawings.

17 **Sec. 18. Coordination of work in Franchise Area.** To facilitate the coordination  
18 of work in City rights-of-way, if either the District or the City plans to make excavations in the  
19 Franchise Area, the party planning such excavation shall provide written notice to the other of the  
20 planned excavation, affording the other party the opportunity to share in the excavation; provided,  
21 that (1) such joint use shall not unreasonably delay the work of the party causing the excavation to  
22 be made, (2) such joint use shall be arranged and accomplished on terms and conditions satisfactory  
23 to both parties, and (3) either party may deny such request for safety reasons.

24 ~~**Sec. 19. Blasting requirements.** The District's right to construct, install, operate,  
25 maintain and repair Facilities does not preclude the City, its agents or contractors from blasting,  
26 grading, or doing other road work contiguous to the District's Facilities. When practical, the City  
27 shall give the District forty-eight (48) hours notice of blasting or excavating.~~

28 **Sec. 2019. Survey markers and monuments.** Before any work is performed under  
29 this Franchise, the District shall establish two or more reference marks to all monuments and  
30 markers of every nature relating to subdivisions, plats, rights-of-way, and all other surveys. The  
31 reference points shall be located so that they will not be disturbed during any of District's operations  
32 under this Franchise. The method of referencing monuments or other markers or points shall be  
33 approved by the City before placement. The replacement of all markers or monuments disturbed  
34 during any construction of the District shall be made as promptly as conditions permit. The cost  
35 of monuments or markers lost, destroyed, or disturbed and the expense or replacement with  
36 approved markers or monuments shall be borne by the District.

37 **Sec. 2120. Reservation of rights.**

1 (1) The District agrees that it shall be subject to all authority now or later  
2 possessed by the City or any other governing body having competent jurisdiction to fix just,  
3 reasonable and compensatory rates for services under this Franchise.

4 (2) The City reserves the right, upon thirty (30) days written notice to the  
5 District, to amend or modify the provisions or conditions of this Franchise to conform to any  
6 state, county, federal, or City statute, ordinance, rule or regulation. The City may terminate this  
7 Franchise upon thirty (30) days written notice to the District if the District fails or refuses to  
8 comply with such amendment or modification.

9 **Sec. 2221. Assignment.** The District shall not have the right to assign this Franchise  
10 without the written consent of the City. No assignment shall be effective unless an acceptance  
11 by the assignee of all rights, conditions, terms, provisions and responsibilities contained within the  
12 Franchise, as well as surety bonds which the City deems necessary to be posted, are received as  
13 allowed by law. The City's approval of the assignment may be made subject to the assignee's  
14 acceptance of new or modified terms of the Franchise.

15 **Sec. 2322. Penalty for violation of conditions.** If the District fails to comply with  
16 any material term, condition or responsibility under this Franchise, the City may provide the  
17 District with written notice of the City's intent to revoke the Franchise if the District's failure is not  
18 cured within thirty (30) days of the date of the notice. During the thirty (30) days following the  
19 date of the notice, the District shall have the opportunity to remedy the failure to comply. A  
20 public hearing shall be scheduled before the Des Moines City Council at least thirty (30) days  
21 following the notification on the issue of the revocation. If at the hearing, the City Council finds  
22 that grounds exist to revoke the Franchise under this paragraph and that the revocation is in the  
23 public interest, the City Council may by resolution revoke the Franchise. The revocation shall be  
24 effective ninety (90) days after the public hearing.

25 ~~**Sec. 24. Expiration and renewal.**~~

26 ~~(1) If the District requests a renewal of this Franchise prior to its expiration~~  
27 ~~date, which renewal shall be granted, on terms reasonable to the parties, unless the City can~~  
28 ~~demonstrate, in good faith, that such renewal would be contrary to its operation of the right-of-way,~~  
29 ~~the City may, at the City's sole discretion, extend the term of this Franchise for up to one year~~  
30 ~~beyond the expiration date to allow for processing of the renewal. If the City elects to extend the~~  
31 ~~term of this Franchise, written notice of the extension shall be provided to the District prior to the~~  
32 ~~Franchise expiration date.~~

33 ~~(2) If the District has not requested a renewal of this Franchise prior to its~~  
34 ~~expiration date, the City has the right, upon thirty (30) day's prior notice to the District, to remove or~~  
35 ~~relocate any of the District's Facilities as is reasonably necessary for the public's health, welfare or~~  
36 ~~safety, or for the construction, alteration, or improvement of the Franchise Area, or for the~~

Comment [p2]: This entire section deleted and moved to Section3

1 ~~construction or installation of lines or facilities of other franchise holders. The District shall be liable~~  
2 ~~for costs incurred in any removal or relocation of the District's Facilities under this section.~~

3 ~~————— (3) ——— Upon the expiration of this Franchise, the District shall continue to be~~  
4 ~~responsible for the operation and maintenance of the District's existing facilities in the Franchise~~  
5 ~~Area, but shall not have the right to provide additional services. This section and sections 11, 13,~~  
6 ~~14, 15, 16, 18, and 20 of this Franchise shall continue in force until such time as the District's~~  
7 ~~Facilities are abandoned to the City's satisfaction.~~

8 **Sec. 2523. Abandonment and/or removal of District facilities.**

9 (1) Within one hundred and eighty days (180) of the District's permanent  
10 cessation of use of its Facilities, or any portion thereof, the District shall, provide the City with  
11 record drawings showing the location of the facilities to be abandoned; and (ii) written  
12 documentation showing its plans for compliance with all applicable regulations pertaining to  
13 such abandonment if the facilities to be abandoned contain asbestos materials.

14 (2) The City shall have the discretion, to either allow the District to abandon  
15 such facilities in place, or to require that such facilities be removed from the Franchise Area.  
16 Facilities that are allowed to be abandoned in place shall be abandoned pursuant to the City  
17 Street Standards to the satisfaction of the City Engineer.

18 (3) Whenever a conflict cannot be resolved except by removal from the right-of-  
19 way of previously abandoned District Facilities, then the District shall, at the District's expense,  
20 remove such abandoned facilities. In removing such material, the District shall conform to all  
21 local, state, and federal regulations applicable to asbestos abatement, when applicable.

22 (4) Whenever an unidentified abandoned facility of the District results in a  
23 conflict on a City project, the City will expeditiously notify the District and provide the District  
24 an opportunity to resolve the conflict. If the conflict results in a construction claim or Contractor  
25 delay to the City, the District agrees to pay the City for all costs reasonably incurred in  
26 connection with such construction claim and or Contractor delay.

27 (5) The parties expressly agree that this Section shall survive the expiration,  
28 revocation or termination of this Franchise.

29 **Sec. 2624. Non-Discrimination clause.** In all hiring or employment made possible  
30 or resulting from this Franchise, there shall be no discrimination against any employee or  
31 applicant for employment because of sex, sexual orientation, age, race, color, national origin,  
32 marital status or the presence of any sensory, mental, or physical handicap, unless based upon a  
33 bona fide occupation qualification. No person shall be denied or subjected to discrimination in  
34 receipt of the benefit of any services or activities made possible by or resulting from this Franchise

1 on the grounds of sex, sexual orientation, race, color, national origin, age, except minimum age and  
2 retirement provisions, marital status, or the presence of any sensory, mental or physical handicap.

3 | **Sec. 2725. Notice.** All notices between the two agencies hereunder may be  
4 delivered or mailed. If mailed, they shall be sent to the following respective addresses:

CITY OF DES MOINES	SOUTHWEST SUBURBAN SEWER DISTRICT
Planning, Building and Public Works Director	General Manager
21630 11th Ave. S., Ste D	431 Ambaum Blvd
Des Moines, WA 98198	Burien, WA 98166
Tel: 206-870-6522	Tel: 206-244-9575
Fax: 206-870-6544	Fax: 206-433-8346

5  
6 or to such other representative addresses as either party may hereafter from time to time designate in  
7 writing. All notices and payments mailed by regular post (including first class) shall be deemed  
8 to have been given on the second business day following the date of mailing, if properly mailed  
9 and addressed. Notices and payments sent by certified or registered mail shall be deemed to have  
10 been given on the day next following the date of mailing, if properly mailed and addressed. For all  
11 types of mail, the postmark affixed by the United States Postal Service shall be conclusive  
12 evidence of the date of mailing.

13 If an emergency situation develops, it is recommended that the City or the District call 911 to solicit  
14 an emergency response.

15 | **Sec. 2826+. Compliance with laws.** The District shall conform to all  
16 applicable federal, state and local laws and regulations including, but not limited to, the State  
17 Environmental Policy Act and the City's Environmental Standards and Ordinances.

18 | **Sec. 2927. Dispute resolution.**

19 (1) – Alternative Dispute Resolution. If a dispute arises from or relates  
20 to this Franchise Agreement or the breach thereof and if the dispute cannot be resolved through  
21 direct discussions, the parties agree to endeavor first to settle the dispute in an amicable manner  
22 by mediation administered by a mediator under JAMS Alternative Dispute Resolution service  
23 rules or policies before resorting to arbitration. The mediator may be selected by agreement of  
24 the parties or through JAMS. Following mediation, or upon written agreement of the parties to  
25 waive mediation, any unresolved controversy or claim arising from or relating to this Agreement  
26 or breach thereof shall be settled through arbitration which shall be conducted under JAMS rules  
27 or policies. The arbitrator may be selected by agreement of the parties or through JAMS. All  
28 fees and expenses for mediation or arbitration shall be borne by the parties equally. However,

1 each party shall bear the expense of its own counsel, experts, witnesses, and preparation and  
2 presentation of evidence.

3 (2). Applicable Law and Jurisdiction. This Franchise Agreement shall  
4 be governed by the laws of the State of Washington. Although the agreed to and designated  
5 primary dispute resolution method as set forth above, in the event any claim, dispute or action  
6 arising from or relating to this Agreement cannot be submitted to arbitration, then it shall be  
7 commenced exclusively in the King County Superior Court or the United States District Court,  
8 Western District of Washington as appropriate. In any claim or lawsuit for damages arising from  
9 the parties' performance of this Agreement, each party shall pay all its legal costs and attorney's  
10 fees incurred in defending or bringing such claim or lawsuit, in addition to any other recovery or  
11 award provided by law; provided, however, nothing in this paragraph shall be construed to limit  
12 the City's right to indemnification under Section XI of this Agreement.

13 | **Sec. 3028. Franchise administrative costs.** The District agrees to pay the amount of  
14 \$5,000 representing the City's cost and expenses associated with the preparation and execution  
15 of this Franchise. Payment shall be due within 60 days of the effective date of this Franchise.

**Comment [ecf3]:** Des Moines is seeking the payment of \$5k as a franchise fee. The District should request backup documentation for this fee if Des Moines is unwilling to remove it entirely. I have had other cities waive this request.

16 | **Sec. 3129. Severability.** If any term, provision, condition or portion of this  
17 Franchise is held to be invalid, such invalidity shall not affect the validity of the remaining portions  
18 of this Franchise which shall continue in full force and effect, unless the dominant purpose of the  
19 Franchise would be prevented or the public interest would no longer be served, as determined by  
20 the City.

21 | **Sec. 3230. Effective date.** This ordinance shall take effect and be in full force five  
22 (5) days after its passage, approval, and publication in accordance with law.

23 | **Sec. 3331 Existing utilities.** This Franchise shall govern existing and future sewer  
24 system facilities currently owned, operated and maintained by Southwest Suburban Sewer  
25 District within the City of Des Moines.

26 **PASSED BY** the City Council of the City of Des Moines this \_\_\_\_ day of \_\_\_\_\_,  
27 2011 and signed in authentication thereof this \_\_\_\_ day of \_\_\_\_\_, 2013.

28 \_\_\_\_\_  
29 MAYOR

30 APPROVED AS TO FORM:

31 \_\_\_\_\_  
32  
33 City Attorney

34  
35 ATTEST:

1  
2 \_\_\_\_\_  
3 City Clerk  
4  
5 Published: \_\_\_\_\_, 2013

DRAFT

STATE OF WASHINGTON        )  
  )ss.  
COUNTY OF KING            )

I, Bonnie Wilkins, the duly qualified City Clerk of the City of Des Moines, a Non-charter Code City, situated in the County of King, State of Washington, do hereby certify that the foregoing is a full, true and correct copy of Ordinance No. \_\_\_\_\_, an ordinance of the City of Des Moines, entitled:

ORDINANCE NO. \_\_\_\_\_

AN ORDINANCE approving and granting a non-exclusive franchise for utilities (Water and Sewer) to Midway Sewer District.

I further certify that said Ordinance No. 11-158 was: (i) introduced on the \_\_\_\_\_ day of \_\_\_\_\_, 2013; (ii) submitted to the City Attorney on the \_\_\_\_\_ day of \_\_\_\_\_, 2013; (iii) published on the \_\_\_\_\_ day of \_\_\_\_\_, 2013, according to law; (iv) approved by a majority of the entire legislative body of the City of Des Moines, at a regular meeting thereof on the \_\_\_\_\_ day of \_\_\_\_\_, 2013; and (v) approved and signed by the Mayor of the City of Des Moines on the \_\_\_\_\_ day of \_\_\_\_\_, 2013.

WITNESS my hand and official seal of the City of Des Moines, this \_\_\_\_\_ day of \_\_\_\_\_, 2013.

\_\_\_\_\_  
Bonnie Wilkins, City Clerk  
City of Des Moines, WA

EXHIBIT A

HONORABLE MAYOR AND CITY COUNCIL  
CITY OF DES MOINES, WASHINGTON

In the Matter of the Application of Southwest  
Suburban Sewer District, a special purpose  
municipal corporation, for a Franchise to  
Construct, Operate, and Maintain Facilities  
In, Upon, Over, Under Along, Across and  
Through the Franchise Area of the City of  
Des Moines, WA

FRANCHISE ORDINANCE  
NO. 11-158

ACCEPTANCE

WHEREAS, the City Council of the City of Des Moines, Washington, has granted a franchise to Southwest Suburban Sewer District, a special purpose municipal corporation, its successors and assigns, by enacting Ordinance No. 11-158, bearing the date of \_\_\_\_\_, 2011 and

WHEREAS, a copy of said Ordinance granting said franchise was received by the Southwest Suburban Sewer District on \_\_\_\_\_, 2011, from said City of Des Moines, King County, Washington; now therefore,

SOUTHWEST SUBURBAN SEWER DISTRICT, a Washington a special purpose municipal corporation, for itself, its successors and assigns, hereby accepts said Ordinance and all the terms and conditions thereof, and files this, its written acceptance, with the City of Des Moines, King County, Washington.

IN TESTIMONY WHEREOF said Southwest Suburban Sewer District has caused this written Acceptance to be executed in its name by its undersigned \_\_\_\_\_ thereunto duly authorized on this \_\_\_\_ day of \_\_\_\_\_, 2011.

ATTEST:  
SOUTHWEST SUBURBAN SEWER  
DISTRICT

COPY RECEIVED FOR CITY OF DES  
MOINES:

By: \_\_\_\_\_  
Its \_\_\_\_\_

\_\_\_\_\_  
Des Moines City Clerk

EXHIBIT B

Maps of Franchise area



LEGAL NOTICE  
SUMMARY OF ADOPTED ORDINANCE  
CITY OF DES MOINES

ORDINANCE NO. 11-158, Adopted \_\_\_\_\_, 2011.

DESCRIPTION OF MAIN POINTS OF THE ORDINANCE:

This ordinance grants Southwest Suburban Sewer District, a Washington Municipal Corporation, its successors and assigns, the right, privilege, authority, and nonexclusive Franchise, to construct, maintain, operate, replace, and repair a water system and sewer system, in, across, over, along, under, through, and below the public rights-of-way of the City.

The full text of the ordinance will be mailed without cost upon request.

Bonnie Wilkins  
City Clerk

Published: \_\_\_\_\_, 2011