

Appendix I-1: Stormwater Element of  
the City's Comprehensive Plan (2009)



## 2.8 STORM WATER ELEMENT

### Goal ST.1

*Manage stormwater runoff in such a manner as to:*

- *protect steep slopes, streams, wetlands and shorelines from erosion and sedimentation to avoid the degradation of environmental quality, wildlife habitat, and natural system aesthetics;*
- *preserve, protect, and restore natural habitat critical for the conservation of salmonid species listed under the federal ESA;*
- *protect the quality of surface water and groundwater;*
- *provide recharge of groundwater where appropriate; and*
- *ensure natural control mechanisms are preferred, where appropriate.*

### Managing Stormwater (General)

Pol. ST 1.1 The City shall separately adopt a detailed Storm Drainage Master Plan to implement these stormwater policies based on this comprehensive plan. This plan shall:

- a. Provide a plan of drainage improvements and regulatory actions that will reduce or eliminate local erosion, landslide and flooding problems in Burien, thereby protecting existing and future development and property values;
- b. Provide protection from erosion, landslides and flooding in the Puget Sound basins where perennial and seasonal streams exist, and also protect these streams from the impacts of urban runoff;
- c. Provide for the long-term protection and restoration of Miller Creek Basin as a viable fish habitat and a natural amenity for the urban area. Require higher detention and water quality standards for development within this basin because it supports a federally listed species.
- d. Provide long-term protection and restoration of Salmon Creek Basin, as a viable fish habitat and a natural amenity for the urban area. Require higher detention and water quality standards for development within this basin because it supports a federally listed species.

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Note: Policy numbers may not be consecutive. Through the Comprehensive Plan amendment process, some policies have been deleted from this chapter while existing policy numbers have retained their original sequence. Information on past Comprehensive Plan amendments is available at the City of Burien Community Development Department.

- e. Encourage developers to incorporate into site planning various environmentally sensitive approaches to stormwater management, including low-impact development techniques, and preservation and restoration of natural landforms.
- Pol. ST 1.2 The City should encourage regional approaches to managing stormwater to provide improved performance, maintenance and cost efficiency. Land should be acquired that is adequate for the development of regional detention and water quality facilities.
- Pol. ST 1.3 Wherever possible, stormwater facilities should be considered as a multi-functional community resource which provides other public benefits such as recreational, habitat, cultural, educational, open space and aesthetic opportunities.
- Pol. ST 1.4 Stormwater retention/detention facilities may be allowed to be used as partial fulfillment of open space requirements, where the facility provides significant recreation and open space amenities. In determining the degree to which this is allowed, consideration shall be given to the nature of the development. Where the development is non-residential, a greater percentage may be allowed for fulfillment. Commercial development shall make retention/detention facilities part of a more extensive landscaping. These facilities should be designed as an amenity, particularly in commercial developments, and to ensure the safety of its users.
- Pol. ST 1.5 A watershed approach should be taken to surface water management, with responsibility shared among the City and other contributing jurisdictions. This approach should emphasize:
- a. Prevention of water quality degradation through implementation of Best Management Practices and educational programs to reduce pollution entering surface waters;
  - b. Reduction of volumes and duration of urban flows to prevent flooding and erosion;
  - c. Cost sharing;
  - d. Consistency with the City's risk management practices; and
  - e. Maintenance and restoration of stream habitat for habitat preservation and enhancement.
  - f. Coordinated, knowledge based management decisions.

## Protecting Natural Drainage Systems

- Pol. ST 1.6 Development shall be designed and constructed to minimize disruption and/or degradation of natural drainage systems and the habitat they provide, both during and after construction. Development design which minimizes impervious surfaces through the use of appropriate low-impact development techniques, such as by limiting site coverage and maximizing the exposure of natural surfaces for the infiltration of water shall be required.
- Pol. ST 1.7 Stormwater shall be detained and infiltrated on-site where possible. If on-site detention and infiltration is not possible, stormwater shall be detained so that the release rate is equal to or less than predevelopment or natural conditions. Any release must be to an approved drainage system, either natural or constructed, as approved by the City.
- Pol. ST 1.8 As part of its review process, the City shall consider the impacts of stormwater runoff from new development on the City's natural drainage systems, and require any appropriate mitigating measures. When redevelopment occurs, and the amount of impervious surface increases, the City shall require existing development to be retrofitted with stormwater management facilities. Criteria for implementing this policy should also be developed using a threshold approach patterned after SEPA requirements.
- Pol. ST 1.9 The City shall require development to provide off-site improvements necessary to avoid adverse downstream impacts.

## Protecting Water Quality

- Pol. ST 1.10 In the interest of the residents of Burien, the Puget Sound area and adjoining communities, the City will protect the quality of surface water bodies that are located within drainage basins of the City.
- Pol. ST 1.11 The City will encourage all City residents and require businesses to implement Best Management Practices to prevent erosion and sedimentation from occurring, and to prevent pollutants from entering ground or surface waters to maintain natural aquatic communities and beneficial uses.
- Pol. ST 1.12 The City shall establish enforcement mechanisms that may be used to prevent or stop contamination to surface water quality, as well as to implement all City stormwater policies. Enforcement mechanisms should address surface water contamination, including surface water flows. Through intergovernmental coordination, the city will seek similar

enforcement mechanisms for all waters through or into the City from up to five miles from its corporate limit.

**Discussion:** The City currently does not have an adopted water quality ordinance.

Pol. ST 1.13 The City shall incorporate facilities such as detention ponds, bioswales, wetlands, and other natural drainage facilities to improve the water quality of surface water runoff from existing and new roadway improvements.

#### Providing Groundwater Recharge

Pol. ST 1.14 Where infiltration will not adversely effect down gradient properties, infiltration of stormwater is preferred over surface discharge to a natural stream system. The return of precipitation to the soil at natural rates near where it falls should be encouraged through the use of infiltration mechanisms, including but not limited to well designed open drainage systems, infiltration ponds, detention ponds and grass lined swales.

Pol. ST 1.15 The City should use Geographic Information Systems (GIS) and other analysis tools to assist in determining appropriate locations for implementation of low impact development techniques that are complementary to their respective geographic context. The resulting analysis (document/map) should be made available to the public to increase education and awareness of best storm water management practices. (Amended, Ord. 497, 2008)

#### Goal ST.2

***Ensure that standards used for the design and development of stormwater drainage systems reflect and support the character of adjacent development and the stormwater, land use, and environmental protection goals of the City.***

Pol. ST 2.1 Appropriate stormwater management practices shall be employed to prevent stormwater problems from urban runoff, which may include flooding, erosion, or stream channel scouring in natural drainage systems. These practices at a minimum should include the collection, control and treatment of storm water runoff at a rate and quantity that will prevent damage to both man-made and natural drainage systems. One or a combination of the following three approaches can be used to managed excessive storm water runoff:

- a. Collect, control, and treat stormwater runoff to a level that will prevent damage to the natural drainage system and restore the ability of the natural drainage system to function as a productive biosystem; and/or

- b. Remove excessive stormwater runoff from the natural drainage system by artificial means such as bypass systems in accordance with SEPA or other adopted plans, regulations or regional programs.
- c. Repair/retrofit private storm drainage lines that route City stormwater to prevent damage to both man-made and natural drainage systems.

Pol. ST 2.2 The following guidelines shall be used to develop stormwater quantity and quality standards within the City:

- a. *Multifamily and Moderate Density Single Family Neighborhoods:* The City shall require new development, as well as redevelopment projects involving external construction that may have drainage implications, to comply with full urban stormwater drainage standards. Seek to implement stormwater management, including low-impact development standards, which require all development proposals to establish systems, preferably natural, for filtering the “first flush” (delivery of disproportionately large amounts of pollutants which occur during the early stages of the storm) of urban runoff near its source. The standards should also address maximum impervious lot coverage. Where appropriate, the Director of Public Works may modify these standards but only to the extent that runoff quantity and quality levels are maintained.
- b. *Commercial and Industrial Areas:* The City shall require new development, as well as redevelopment projects involving external construction that may have drainage implications, to comply with full urban stormwater drainage standards, as described above.
- c. *Low Density Single Family Neighborhoods:* The City shall allow low-impact development techniques that are appropriately designed to match the character of adjacent land uses, such as allowing well designed, open drainage systems which increase the amount of infiltration of rainfall as it occurs, as opposed to gutters and pipes which do not provide infiltration. (Facilities on arterials in these areas may require full urban stormwater drainage standards.)
- d. *Low and Moderate Density Single Family Neighborhoods located in landslide hazard areas, on steep slopes, or in erosion hazard areas (as defined in the City’s Environmentally Sensitive Areas Ordinance), or in areas with existing or potential drainage problems:* The City shall require new development, as well as redevelopment projects involving external construction that may have adverse impacts on the stormwater drainage system, to comply with stormwater drainage standards that include on-site drainage

controls. (Facilities on arterials in these areas may require full urban stormwater drainage standards.)

- Pol. ST 2.3. The City shall develop and adopt regulations to supplement the adopted King County Surface Water Design Manual to ensure that any clearing, grading or the addition of impervious area in steep slopes or landslide hazard areas (or projects that drain or discharge into such areas) be reviewed for drainage implications and regulated accordingly.
- Pol. ST 2.4 Design and construction standards for development should address rate of discharge, water quality, method and point of discharge, and method of storm drainage control.
- Pol. ST 2.5 Design and construction standards for development should require the use of temporary erosion and sedimentation control measures that minimize the transport of sediment to drainage facilities, water resources, and adjacent properties.
- Pol. ST 2.6 Stormwater conveyance systems for proposed projects must be analyzed, designed and constructed to accommodate stormwater runoff originating off-site that are conveyed onto the project site, as well as runoff from the project itself. Encourage the use of semi-pervious or pervious surfaces, and other low-impact development techniques to ensure that stormwater discharge from the site occurs at the natural location.
- Pol. ST 2.7 The City shall enact ordinances and review development and redevelopment proposals in a manner which controls the duration and discharge of storm water from new development. At a minimum, peak discharge shall not exceed the rate of the predevelopment or natural conditions.
- Pol. ST 2.8 Maintenance of all drainage facilities constructed or modified by a proposed project becomes the responsibility of the property owner. The City of Burien may assume maintenance of all approved drainage facilities constructed for formal plat subdivisions, planned unit developments, and short plat subdivisions two years after construction approval and upon assurance that they are in working order.
- Pol. ST 2.9 The City shall not convert any pervious residential driveways to impervious surfaces following completion of a stormwater improvement or capital improvement project, unless the residential driveway was impervious prior to the commencement of the project.
- Pol. ST 2.10 Increase the overall coverage of tree canopies and other vegetation in the City by encouraging new site development and retrofit plans to include provisions for the addition or preservation of trees and vegetation.

- Pol. ST 2.11 Implement public educational programs encouraging homeowners to use development modifications to reduce stormwater impacts. The program should distribute materials to the community or conduct outreach activities about the impacts of stormwater discharges on water bodies and the steps the public can take to reduce pollutants in stormwater runoff.
- Pol. ST 2.12 The public shall be involved in creating, implementing, and updating the storm/surface water management program. Municipalities should make efforts to reach out and engage all economic and ethnic groups.
- Pol. ST 2.13 The City shall enforce a program to detect and eliminate illicit discharges into the city's stormwater system, including illegal dumping to the system.
- Pol. ST 2.14 Develop and implement an operation and maintenance program that includes a training component and has the ultimate goal of preventing or reducing pollutant runoff from municipal operations.

### **Goal ST.3**

#### ***Minimize the risk to property and residents from flooding hazards.***

- Pol. ST 3.1 Flood prone properties outside of the floodway are developable provided that such development can meet the standards set forth in the federal flood insurance program.

***Discussion:*** The general location of areas within the 100-year floodplain is depicted on the City's environmentally sensitive areas map.

- Pol. ST 3.2 Site plan review shall be required under SEPA for all development in the flood plain, including single family development, short plats and redevelopment. Appropriate mitigating measures shall be required whenever needed to reduce potential hazards.
- Pol. ST 3.3 Any development within the floodway, which would reduce the capacity of the floodway or create risks to property, shall be prohibited.



Appendix 3-1: New Draft NPDES  
Phase II Permit Review Memo



# Technical Memorandum



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**To:** Heungkook Lim, PE, City of Burien Surface  
Water Management Engineer  
**From:** Jessica Christofferson, EIT  
**Copies:**  
**Date:** December 23, 2011  
**Subject:** New Draft NPDES Phase II Permit Review  
**Project No.:** 31760

The purpose of this memo is to summarize the major changes between the current NPDES Phase II Permit and the draft NPDES Phase II Permit published in October of 2011.

## Summary Overview of New Activities and Changes in the Permit

- Additional public education and outreach activities must include new target audiences and education on LID.
- Annual Reports must be posted by May 31 each year.
- Stormwater Mapping must include: treatment/flow control BMPs, land use for all drainage areas draining to a 24-inch storm line.
- Changes to the IDDE program requirements: allowable discharges (Spa and Hot Tub Discharges with temperature controls), IDDE compliance strategy, updated IDDE ordinance (if applicable), IDDE Program implementation and procedures, IDDE response/follow up timeline.
- The City's site planning process, BMP selection and design criteria must meet the 2012 Ecology Manual requirements OR a program approved by Ecology under the Phase I Permit. The one acre threshold was eliminated; thresholds include replaced hard surfaces; Onsite Stormwater Management (LID) standards (see Appendix 1).
- Increased inspection frequency of all new treatment/flow control and BMPs (every 6 months until 90% of lots are constructed) and catch basin in permanent residential developments. Increased inspection compliance (conducting at least 80% of scheduled inspections).
- Requiring all codes, rules, standards and other enforceable documents must REQUIRE LID principles/BMPs. LID may not be required if the site is unsuitable, then an LID feasibility analysis is required to document code exemption.
- Watershed-scale stormwater planning: The City must select a watershed selected by a Phase I County for watershed-scale stormwater planning to participate in. IF the County selects a watershed that the city is located in, then the city must participate in the watershed planning process.

- Maintenance standards must meet 2012 Ecology Manual standards.
- Increased spot checks (conduct after all major storms), catch basin inspection frequency (every 2 years) and cleaning of the conveyance system.
- Pay-in option or conduct in-house option for: Status and Trends Monitoring, Effectiveness Studies, and Source Identification and Diagnostic Monitoring Information Repository. Pay-in costs for Burien total \$31,698 annually.
- Annual reports must be submitted using Ecology's WA WebDMR program and include attachments to support work completed during the reporting period.
- There are no TMDLs applicable to the City of Burien.
- In Appendix 1, the one acre threshold was eliminated from the "regulatory threshold" triggering the regulations to be applied to new development, redevelopment and construction site activities. All minimum requirements apply to projects of 5,000 sqft or greater or new PLUS REPLACED HARD surface area. All minimum requirements apply to projects that convert 3/4 acres or more of vegetation (native vegetation has been eliminated) to lawn or landscaped areas or convert 2.5 acres or more of vegetation to pasture. Minimum requirements #1 - #5 apply to projects that result in 2,000 sqft or greater of new plus replaced HARD surface area. All new development and redevelopment projects regardless of size must comply with minimum requirement #2.
- Appendix 1: Note that the elimination of the 1 acre threshold might not be significant depending on the City's current code. The current permit allowed Phase II jurisdictions to only regulate projects over 1 acre, unless they were already regulating lower – anti-backsliding. This change will depend on how the current code is written.
- In Appendix 1, the other major change is the LID performance standard. If the jurisdiction is currently using the King County Manual, they may already be requiring "flow control BMPs", which "onsite stormwater management measures". A change is that the City may be required to do more from the mandatory list and/or meet the performance standard.

## **Detailed Summary on New Activities and Changes in the Permit**

Below is a summary of the new activities and changes in the Permit by major element.

### **Public Education and Outreach**

- Focus education and outreach efforts on prioritized target audience, including school aged children.
- General public, business education program should include the subject area for BMPs for equipment maintenance.
- Homeowners, landscapers, and property managers' education program should include LID principles and BMPs, Stormwater facility maintenance and dumpster maintenance for property owners.
- Create a stewardship opportunities and/or build on existing organizations to encourage residents to participate in activities.

- Public education requirements for measuring behaviors and implementing programs can be done locally or as a member of a regional group.

#### Public Involvement and Participation

- Ongoing opportunities for public involvement and participation shall include public hearings.
- The annual report must be posted on the jurisdiction's website no later than May 31 each year.

#### IDDE

- Stormwater treatment and flow control BMPs/facilities must be mapped. The City may rely on permanent stormwater control plans for mapping of LID BMPs.
- Land use must be mapped for all drainage areas going to a 24-inch diameter conveyance line.
- New conditionally allowable discharge: Spa and Hot Tub Discharges. All discharges shall be thermally controlled to prevent an increase in temperature of the receiving waters.
- The City's IDDE compliance strategy should include the applicable of operational and/or structural source control BMPs for pollutant generating sources associated with existing land uses and activities. The strategy shall also include maintenance of permanent stormwater treatment facilities and catch basins.
- Update IDDE ordinance as needed to meet new requirements.
- IDDE Program implementation and procedures: 1) Develop procedures for conducting investigations for the purpose of detecting illicit discharges and illicit connections (include field screenings and methods of identifying potential sources). 2) Implement a field screening methodology appropriate to the characteristics of the water quality concern. 3) Prioritize conveyances and outfalls and complete field screening for at least 40% of the system.
- IDDE Response/Follow up Timeline: Immediate response, Investigate within 7 days and Report within 21 days.

#### Controlling Runoff from New Development, Redevelopment and Construction Sites

- The City's site planning process, BMP selection and design criteria must meet the 2012 Ecology Manual requirements OR a program approved by Ecology under the Phase I Permit. The one acre threshold was eliminated; thresholds include replaced hard surfaces; Onsite Stormwater Management (LID) standards (see Appendix 1).
- The City must have the legal authority to inspect and enforce the maintenance standards for all private stormwater facilities.
- Inspect all new stormwater treatment and flow control BMPs/facilities and catch basins for permanent residential developments every 6 months until 90% of lots are constructed to identify maintenance needs and enforce compliance of maintenance standards.
- Inspection compliance is achieved by conducting at least 80% of scheduled inspections.
- LID Code related requirements: All codes, rules, standards and other enforceable documents must be reviewed and revised to incorporate and REQUIRE LID principles and LID BMPs. The City must conduct and review and revision process and report the results to Ecology.

- LID amendments must include: measures to minimize impervious surfaces, measures to minimize loss of native vegetation, and measures to minimize stormwater runoff.
- Watershed-scale stormwater planning: The City must select a watershed selected by a Phase I County for watershed-scale stormwater planning to participate in. IF the County selects a watershed that the city is located in, then the city must participate in the watershed planning process.

#### Municipal Operation and Maintenance (new title)

- The City must implement maintenance standards specified in the 2012 Ecology Manual.
- Spot checks after all major storm events are required for permanent stormwater treatment and flow control BMPs/facilities.
- Catch basin inspection schedule of every 2 years may be changed as appropriate to meet the maintenance standards based on maintenance records of double the length of time of the proposed inspection frequency. Catch basin inspections at least once every two years is required.
- The City may clean the entire MS4 within a circuit, including, including all conveyances and catch basins, once during the permit term.
- Implement practices, policies and procedures to reduce stormwater impacts associated with runoff from all lands.

#### Monitoring

- Status and Trends Monitoring: Notify Ecology in writing of the chosen option.
  - Option 1: Pay into a collective fund that will cost Burien \$11,238 annually.
  - Option 2: Conduct in house monitoring sites will be selected for the Ecology-approved QAPP; If the QAPP lists a potential sampling location within Burien, then the City can monitor the site through option 2. If a site is not selected in the jurisdiction, therefore this may not be a viable.
- Effectiveness Studies: Notify Ecology in writing of the chosen option.
  - Option 1: Pay into a collective fund that will cost Burien \$18,724 annually.
  - Option 2: Conduct in house
- Source Identification and Diagnostic Monitoring Information Repository: Notify Ecology in writing of the chosen option.
  - Option 1: Pay into a collective fund that will cost Burien \$1,736 annually
  - Option 2: Conduct in house

#### Reporting

- Annual Reports must be posted by May 31 each year.
- Submit annual reports electronically using Ecology's WA WebDMR program available on Ecology's website.

- Include attachments to the annual report including summaries, descriptions, reports and other information as required, or as applicable, to meet the requirement of the permit during the reporting period.

#### TMDLs

- The City of Burien has no TMDL requirements.

#### Appendix 1

\*In all sections the 2005 Ecology Manual was replaced with the 2012 Ecology Manual.

#### Section 1: Exemptions

- Road Maintenance: Exemptions for road maintenance apply to both new or redevelopment projects.

#### Section 2: Definitions

- Some definitions were updated and definitions were added for Bioretention BMPs, Converted Pervious Surface, Erodible or Leachable Materials, Hard Surface, Low Impact Development, LID Best Management Practices, LID Principles, Permeable Pavement, Pervious Surface, Pollution-generating hard surface (PGHS), and Rain garden.
- Hard surface replaces impervious surfaces through the document. Hard surfaces are defined as: An impervious surface, a permeable pavement, or a green roof.

#### Section 3: Applicable of the Minimum Requirements (M.R.)

- The one acre threshold was eliminated from the “regulatory threshold” triggering the regulations to be applied to new development, redevelopment and construction site activities. All minimum requirements apply to projects of 5,000 sqft or greater or new PLUS REPLACED HARD surface area. All minimum requirements apply to projects that convert 3/4 acres or more of vegetation (native vegetation has been eliminated) to lawn or landscaped areas or convert 2.5 acres or more of vegetation to pasture. Minimum requirements #1 - #5 apply to projects that result in 2,000 sqft or greater of new plus replaced HARD surface area.
- All new development and redevelopment projects regardless of size must comply with minimum requirement #2.

#### Section 4: Minimum Requirements

- M.R. #1: Stormwater Site plan shall use site- appropriate development principles to retain native vegetation and minimize impervious surfaces to the extent feasible.
- M.R. #2: Two things have been removed from this requirement. 1) Permittees may no longer choose to allow site operators to apply an “Erosivity Waiver.” 2) Permittees may no longer develop an abbreviated SWPPP. SWPPPs are required for all projects which result in 2000 sqft or more of new replaced hard surface area or which disturb 7000 sqft or more. Projects below

these thresholds can prepare Construction SWPPPs. Guidance on the content of the SWPPP document was updated. See section for further detail.

- M.R. #5: New project thresholds detailed further in this section, including the requirement for LID Development Performance Standards and BMP T5.12 or the Mandatory List for LID Performance Standards (provided in text – see text for me details).
- M.R. #8: Projects within the drainage area of a wetland shall comply with Guide Sheets #1 through #1 in Appendix I-D of the 2012 Ecology Manual.

NEW Section 8: Feasibility Criteria for Selected Low Impact Development Best Management Practices

- This is a new section to Appendix 1 that requires feasibility criteria for Site/Engineering-based Conditions, Bioretention BMPs and Rain Gardens, Permeable Pavements, and Vegetated Roofs. This section also addresses competing needs for on-site stormwater management requirements with public health and safety standards etc.

Appendix 3-2: Existing and Future  
Program Analysis



**CITY OF BURIEN**

**Stormwater Management Program Gap Analysis  
June 2012**





# CITY OF BURIEN

## Stormwater Management Program Gap Analysis

June 2012

Stormwater Management Program Element	Existing SWM Program			Future SWM Program		
	Staff FTE	Staff Cost (\$)	Expense Cost (\$)	Staff FTE	Staff Cost (\$)	Expense Cost (\$)
SWMP Element #1 - Public Education and Outreach	0.10	\$8,600	\$10,000	0.15	\$13,000	\$15,000
SWMP Element #2 - Public Involvement and Participation	0.05	\$7,800	\$0	0.05	\$5,000	\$0
SWMP Element #3 - Illicit Discharge Detection and Elimination	0.50	\$43,200	\$42,700	0.60	\$50,000	\$30,000
SWMP Element #4 - Controlling Runoff from New Development, Redevelopment, and Construction Sites	0.50	\$53,700	\$7,700	1.30	\$109,000	\$25,000
SWMP Element #5 - Pollution Prevention and Operation and Maintenance for Municipal Operations	6.40	\$412,900	\$520,700	7.30	\$608,000	\$503,000
SWMP Element #6 - Program Implementation	0.00	\$0	\$0	0.05	\$4,200	\$30,000
SWMP Element #7 - Total Maximum Daily Load Allocations	N/A	N/A	N/A	N/A	N/A	N/A
SWMP Element #8 - Monitoring	0.00	\$0	\$0	0.05	\$4,200	\$32,500
SWMP Element #9 - Reporting	0.05	\$5,400	\$10,000	0.05	\$5,000	\$5,000
SWMP Element #10 - Regional Watershed Planning and ESA	0.05	\$5,400	\$76,000	0.10	\$9,000	\$76,000
SWMP Element #11 - Underground Injection Control Rule	N/A	N/A	N/A	0.00	\$0	\$0.00
SWMP Element #12 - Capital Improvement Program	0.40	\$52,900	See CIP	0.60	\$50,000	See CIP
SWMP Element #13 - Additional Activities	0.70	\$70,400	\$284,100	1.00	\$84,000	\$365,000
<b>TOTAL</b>	<b>8.75</b>	<b>\$660,000</b>	<b>\$951,000</b>	<b>11.25</b>	<b>\$942,000</b>	<b>\$1,082,000</b>
<b>GRAND TOTAL</b>	<b>\$1,611,000</b>			<b>\$2,024,000</b>		
	Future Funding Gap		<b>\$413,000</b>			

# CITY OF BURIEN

## Stormwater Management Program Gap Analysis

June 2012

Requirements			Existing SWM Program Activities (2011)				Future SWM Program Activities (Average Annual 2013-17)				Comments
Stormwater Program Element	Activities/BMPs Needed for Regulatory Compliance (includes new DRAFT NPDES Phase II Permit activities/BMPs in red)	Permit Milestone Date (New Draft Permit in red)	2011 Current Activities	Staff FTE	Staff Cost (\$)	Expense (\$)	Future Activities	Staff FTE	Staff Cost (\$)	Expense (\$)	
<b>SWMP Element #1 - Public Education and Outreach</b>											
S5.C.1.a	<p>1.1 Outreach to Target Audiences</p> <p>Begin implementing or participating in an education and outreach program. Prioritize target audiences and subject areas:                      -General Public about stormwater basics;                      -Businesses about chemical use/storage and illicit discharges;                      -Homeowners/Landscapers/Property Managers about yard care, fertilizers, carpet cleaning, auto maintenance, LID and pond maintenance;                      -Development Community about flow control, stormwater treatment, LID, and erosion control.                      -Focus education and outreach efforts on prioritized target audiences, including school aged children.                      -General public, business education program should include the subject area for BMPs for equipment maintenance.                      -Homeowners, landscapers, and property managers' education program should include LID principles and BMPs, stormwater facility maintenance and dumpster maintenance for property owners.                      -Create a stewardship opportunity and/or build on existing organizations to encourage residents to participate in activities.</p>	<p>Begin By Year 2 (2/15/2009)</p> <p>Start in New Permit Term</p>	<p>The City has public education programs with the Environmental Science Center.</p> <p>The City has a storm drain stenciling program.</p> <p>The City participates in the Miller and Walker Creek Basin Stewardship program.</p> <p>The City makes an Erosion and Sediment Control (ESC) brochure available for small construction sites.</p> <p>The City distributes Low Impact Development (LID) information to target audiences.</p> <p>The City posted on their website educational information regarding allowable and prohibited discharge information.</p> <p>The City has posted on their website educational materials on residential car wash and the impacts to stormwater.</p> <p>The City has included a link to the "Puget Sound Starts Here" information on the City's website.</p> <p>The City posts all education workshop information on the City's website, as needed.</p> <p>City staff actively participate in the STORM Group (the Regional NPDES Education and Outreach Forum) and the <i>Puget Sound Starts Here</i> campaign.</p> <p>The City sponsored an LID workshop.</p>			\$5,000	<p>Continue current practice.</p> <p>In 2012, the City plans to start a Business public education program with ECOSS for car care businesses and restaurants.</p> <p>The City will need to focus education and outreach efforts on prioritized target audiences, including school aged kids.</p>	Add 100 staff hours		\$10,000	<p>See Element 3.4 for further public education information through the King County Water Quality Audit Program. \$5,000 is allocated for the "Surface Water Management" expenditure line item for the 2011 budget. Increase the annual expense budget to \$10,000 allocated for the education and outreach program to cover new target audiences.</p>
S5.C.1.b	<p>1.2 Measure Results of the Educational Activities</p> <p>Begin participating in an effort to measure understanding and adoption of the targeted behaviors for at least one targeted audience in at least one subject area.                      Public education requirements for measuring behaviors and implementing programs can be done locally or as a member of a regional group. No later than February 2, 2015, Each Permittee shall begin measuring the understanding and adoption of the targeted behaviors for at least one new targeted audience in at least one new subject area. No later than February 2, 2016, The resulting measurements shall be used to direct education and outreach resources most effectively, as well as to evaluate changes in adoption of the targeted behaviors. Permittees may meet this requirement individually or as a member of a regional group.</p>	<p>Begin By Year 2 (2/15/2009)</p> <p>No later than 2/2/2015, 2/2/2016</p>	<p>The City conducted an initial survey of stormwater understanding among residents. The City currently contracts with the Environmental Science Center to conduct and measure educational activities.</p>			\$5,000	<p>Conduct a follow up survey to measure the stormwater understanding among residents. In the next Permit Cycle the City may choose to participate in a regional group for conducting educational surveys.</p>			\$5,000	<p>\$5,000 is allocated for the "Surface Water Management" expenditure line item of the 2011 budget. Continue funding education program evaluation at \$5,000 per year.</p>
S5.C.1.c	<p>1.3 Maintain Records</p> <p>Track and maintain records of public education and outreach activities.</p>	<p>Required to Begin By Year 2 (2/15/2009)</p> <p>Continue in New Permit Term</p>	<p>The City records all public education and outreach activities via CityWorks Asset Management system and Excel spreadsheets.</p>				<p>Continue current practice.</p>				
<b>Total -Element #1</b>				0.10	\$8,647	\$10,000		0.15	\$13,000	\$15,000	<p>Increase to 0.15 FTE to participate in the educational components of KC Water Quality Audit Program's business outreach program and working with new target audiences.</p>
<b>SWMP Element #2 - Public Involvement and Participation</b>											
S5.C.2.a	<p>2.1 Input to SWMP</p> <p>Create on-going opportunities for public to participate in decision-making processes involving the development, implementation and update of the SWMP.                      Create ongoing opportunities for public involvement and participation including public hearings.</p>	<p>Year 1 (2/15/2008)</p> <p>Continue in New Permit Term</p>	<p>The City has an Advisory Committee (AC) formed to participate in the development of the Drainage Master Plan (DMP). The City also hold Public Hearings for Stormwater related topics. The Advisory Committee meetings will be the main mechanism for soliciting public comments on the Drainage Master Plan.</p>				<p>Continue current practice until DMP is completed.</p>				<p>The following City staff are involved with the Public Involvement and Participation element of the SWM Program: the Public Works Director, SWM Engineer, SWM Technician and the City Manager.</p>
S5.C.2.b	<p>2.2 Availability of Stormwater Program Documents</p> <p>Make the SWMP and the Annual Report available to the public by posting on the City Website.                      The Annual Report must be posted on the jurisdiction's website no later than May 31 each year.</p>	<p>March 31 Each Year, May 31 Each Year</p>	<p>The City has posted the City's the latest version of the SWMP on the City website. The City accepts and reviews public comments on the SWMP.</p> <p>The City posts the prior year annual report on the website as it is developed.</p> <p>The City makes stormwater related documents available at the front desk at City Hall upon request.</p>				<p>Continue current practice.</p> <p>Continue current practice.</p> <p>Continue current practice.</p>				
<b>Total -Element #2</b>				0.05	\$7,848	\$0.00		0.05	\$5,000	\$0.00	<p>0.05 FTE is for the Public Works Director to work with the AC on the development of the DMP or other assigned staff to work on the future SWM Program implementation.</p>

Requirements			Existing SWM Program Activities (2011)				Future SWM Program Activities (Average Annual 2013-17)				Comments	
Stormwater Program Element	Activities/BMPs Needed for Regulatory Compliance (includes new DRAFT NPDES Phase II Permit activities/BMPs in red)	Permit Milestone Date (New Draft Permit in red)	2011 Current Activities	Staff FTE	Staff Cost (\$)	Expense (\$)	Future Activities	Staff FTE	Staff Cost (\$)	Expense (\$)		
<b>SWMP Element #3 - Illicit Discharge Detection and Elimination</b>												
SS.C.3.a 3.1 Storm Sewer System Map	Develop a municipal storm sewer system map of: -All storm sewer outfalls (including tributary areas and land use); -Receiving waters; -Structural stormwater facilities; -Connection points authorized during permit term; -Areas not draining to surface water. -Stormwater treatment and flow control BMPs/facilities must be mapped. -The City may rely on permanent stormwater controls plans for mapping of LID BMPs. -Land use must be mapped for all drainage areas going to a 24-inch diameter conveyance line.	Year 4 (2/15/2011), Continue in New Permit Term	The City has updated their GIS stormwater map using existing as-built drawings and from new/re-development project that have either privately and publicly owned stormwater facilities. All stormwater system data is available in a GIS format and is maintained by the GIS and IT Department, and by the SWM Technician.			\$15,000	Update mapping to meet the new permit requirements including mapping all stormwater treatment and flow control BMPs/facilities. Map all land uses for drainage areas going to a 24-inch diameter conveyance line.			\$15,000	\$15,000 is allocated for the "GIS Plan Implementation" expenditure line item of the 2011 budget. Maintain current budget for ongoing stormwater system mapping.	
			The GIS Stormwater Map is available on the City's website and upon request from the public.				Continue current practice					
SS.C.3.b 3.2 Illicit Discharge Ordinance	Develop and implement an ordinance prohibiting non-stormwater discharge to the MS4. The ordinance should cover: -Potable water flushing; -Lawn and landscape irrigation runoff; -Swimming pool discharges; -Street and sidewalk wash water; -Other non-stormwater discharge. Include enforcement procedures in the ordinance and develop an enforcement strategy. -Update IDDE ordinance to include a new conditionally discharge: Spa and Hot Tub Discharges. All spa and hot tub discharges shall be thermally controlled to prevent an increase in temperature in receiving waters. -Update the IDDE Ordinance as needed to meet all new requirements in the Permit.	Year 2.5 (8/15/2009) Update in New Permit Term	The City has adopted an ordinance to address Illicit Connections and Illicit Discharge Detection and Elimination (Burien Municipal Code Chapter 13). The ordinance includes a list of allowable and prohibited discharges to the City's drainage system or streams. The City has developed an enforcement strategy and the SWM ordinance including escalating enforcement procedures and actions. The Code Enforcement group is responsible for all IDDE Code Enforcement activities.								The City is already meeting the new Permit requirements for their IDDE Ordinance because the City adopted the KC SPPM, which addresses conditions discharges for Spas and Hot Tubs.	
SS.C.3 & SS.C.3.c 3.3 Detection and Elimination Program	Develop and implement program to detect and address non-stormwater discharges, including spills and illicit connections.	Permit End (8/19/2011), Start in New Permit Term	See individual program activities below.				See individual program activities below.					
	Develop procedures for: -Locating priority areas based on land use, previous complaints, and storage practices; -Field assessment during dry weather of outfalls in 3 priority receiving waters; Once a problem is reported or identified: -Characterizing nature and potential threat of illicit discharges; -Tracing the source of illicit discharge; -Notifying property owners; -Removing the source and conducting follow-up inspections. The City's IDDE compliance strategy should include the applicable operational and/or structural source control BMPs for pollutant generating sources associated with existing land uses and activities. The strategy shall also include maintenance of permanent stormwater treatment facilities and catch basins.	Permit End (8/19/2011), Start in New Permit Term	The City has an IDDE program in place. The City does not have a formal IDDE procedures manual or forms they use for tracking of the IDDE Program. This is on the City's work plan for NPDES Permit Compliance related items. The City pays King County on an hourly basis to conduct a "Water Quality Audit" program that performs visits to commercial businesses to provide education on illicit discharge (City pays for up to 300 hours a year). County looks for problems and begins corrective action process - sends letters, follow-up etc. Ongoing problems are referred to the City for fines/enforcement.			\$25,000	The City shall develop a formal IDDE procedures manual with tracking forms and standard operating procedures. Update the City's IDDE program compliance strategy to include applicable operational and/or structural source control BMPs for pollutant generating sources associated with existing land uses and activities. The strategy shall also include maintenance of permanent stormwater treatment facilities and catch basins. IDDE Program manual shall include procedures for: 1) conducting investigations for the purpose of detecting illicit discharges and illicit connections. 2) characterizing the nature of identified problems. 3) tracing the source of illicit discharges. 4) Removing the source and conducting follow-up inspections.	Add 200 staff hours		\$10,000	\$25,000 is allocated for the "Swm Billed By Swm Dept" expenditure line item of the 2011 budget to cover the County's Water Quality Audit Program. The City anticipates moving this program in-house. Allocate an additional 200 staff hours/year to implement the program. Retain \$10,000/year for external clean-up and enforcement activities. See Element 6.1 for developing the written documentation of the IDDE program and Standard Operating Procedures for identifying, tracking, reporting, and resolving IDDE problems.	
	Field Assessments of three high priority receiving waters by Year 4 and one high priority receiving water each year after. Prioritize conveyances and outfalls. Complete field screenings of at least 40% of the City's conveyances and outfalls.	Year 4 (2/15/2011), Annually After Year 5 (2/15/2012), Start in New Permit Term	The City has prioritized receiving waters for visual inspection. The evaluation was based on the sub basins delineated by King County and the City, which are, Miller Creek basin, Walker Creek basin, Salmon Creek basin and the Puget Sound sub basin. City staff performs the dry weather outfall inspections for the City for approximately 1 site per year.				See above.	Complete field screenings of at least 40% of the conveyances and outfalls.	See Element 5.4.	See Element 5.4.	See Element 5.4.	Significant increase in staff effort is needed under proposed permit. Previous requirement only required screening of outfalls. New requirement will require screening 40% of all elements within the City's conveyances and outfalls. These screenings will be conducted under Element 5.4 Catch Basin Inspection.
	Characterization, source tracing (includes visual inspections, and when necessary opening manholes, using mobile cameras, collecting and analyzing water samples, and/or other detailed inspection procedures) and removal.	As needed, As needed in New Permit Term	Conducted by King County as needed under Water Quality Audit Program.				See above.	Continue to characterize discharges, trace sources, and remove IDDE threats.			See Element 6.1 and activities above	Source Tracing includes visual inspections, and when necessary opening manholes, using mobile cameras, collecting and analyzing water samples, and/or other detailed inspection procedures. See Element 6.1 for developing the written documentation of the IDDE program and Standard Operating Procedures for identifying, tracking, reporting, and resolving IDDE problems.

Requirements			Existing SWM Program Activities (2011)				Future SWM Program Activities (Average Annual 2013-17)				Comments
Stormwater Program Element	Activities/BMPs Needed for Regulatory Compliance (includes new DRAFT NPDES Phase II Permit activities/BMPs in red)	Permit Milestone Date (New Draft Permit in red)	2011 Current Activities	Staff FTE	Staff Cost (\$)	Expense (\$)	Future Activities	Staff FTE	Staff Cost (\$)	Expense (\$)	
SS.C.3.d 3.4 Public Education and Spill Reporting	Inform public employees, businesses, and general public of hazards associated with illegal discharges.	Permit End (8/19/2011), Continue in New Permit Term	The City utilizes the Water Quality Audit program assisted by King County to provide public education on the IDDE program.				Continue current practice				
	Publicize a hotline for public reporting of spills and illicit discharges.	Year 2 (2/15/2009), Continue in New Permit Term	The City has established a hotline number to report spills and illicit discharges. The City publicizes the hotline on their website.				Continue current practice				
	Keep records of calls and follow-up actions taken. Include the new IDDE Response/Follow Up Timeline in the new IDDE procedures.	Year 2 (2/15/2009), Continue in New Permit Term	The City first responds to spill and King County conducts secondary response to spills.				Continue current practice. Include new IDDE response/follow up timeline in the new IDDE procedures.				
SS.C.3.e 3.5 Program Evaluation and Tracking	Track number and type of illicit discharges, including spills, identified and inspections made.	Permit End (8/19/2011), Continue in New Permit Term	The City keeps records of drainage complaints, spills and IC/IDDE in a program called "CityWorks" is an asset management software program. This program is integrated with GIS. City uses it for SWM Program items only (mapping, IDDE, problem area identification, maintenance).				Continue current practice				
	Track feedback from public education efforts.	Permit End (8/19/2011), Continue in New Permit Term	In place through web link on the City's website.				Continue current practice				
SS.C.3.f 3.6 Staff Training	Train responsible staff on illicit discharge identification, investigation, clean-up, and reporting.	Year 2.5 (8/15/2009), Continue in New Permit Term	The City has provided IC/IDDE trainings to City staff for IC/IDDE on identification and reporting on the illicit discharges.			\$2,667	Train staff upon development of the IDDE Procedures Manual.			\$5,000	1/3 of the \$8,000 staff training budget is allocated for the "Registration - Training/workshop" expenditure line item of the 2011 budget. Provide training to the SWM Tech, ROW Inspectors, Maintenance Crews and SWM Engineers/Technicians. Continue trainings in the New Permit Term.
	Ongoing training for all municipal field staff and other appropriate staff on identification and reporting.	Year 3 (2/15/2010), Continue in New Permit Term	The City has provided training to all staff on IDDE.				Train new and existing staff as needed.				
	Document and maintain records of training.	Year 2.5 (8/15/2009), Continue in New Permit Term	The City maintains records of training activities.				Continue current practice.				
<b>Total -Element #3</b>				0.50	\$43,236	\$42,667		0.60	\$50,000	\$30,000	Existing 0.50 FTE is for the SWM Engineering Tech allocated to IDDE related activities (0.4 FTE) and working with KC on the Water Quality Audit Program (0.1 FTE under Element 1.1), plus 0.1 FTE working on GIS Mapping with IT staff. Increase the required staff time as noted above.
<b>SWMP Element #4 - Controlling Runoff from New Development, Redevelopment, and Construction Sites</b>											
SS.C.4.a 4.1 Stormwater Runoff Control Ordinance	Adopt an ordinance to address runoff from new development, redevelopment, and construction site projects disturbing 1 or more acre. The ordinance should include: -Minimum technical requirements equivalent to the 2005 Ecology Manual; -Legal authority for inspection of private facilities; -Provisions to allow LID techniques.	Year 3 (2/16/2010), Adopt by Ordinance by 12/31/2015	In 2009, the City adopted the 2009 King County Surface Water Design Manual (KCSWDM) through ordinance (BMC Chapter 13) to address runoff from new development, redevelopment, and construction site activities. The Ordinance includes the minimum requirements, technical thresholds, and definitions in Appendix 1 for new development, redevelopment and construction site activities. The adopted ordinance and the 2009 KCSWDM include a site planning process, BMP selection, and design criteria that reduce the discharge of pollutants to the maximum extent practicable. The ordinance allows non-structural preventive actions and source reduction approaches, such as LID Techniques, to minimize the creation of impervious surface and the disturbance of native soils and vegetation.				Update the City's stormwater runoff control ordinance to adopt the 2012 Ecology Manual or an equivalent approved Manual (expected to be 2012 KCSWD). Work with the Planning Department to adopt/revise codes, rules, standards and other enforceable documents as necessary to require LID principles and LID BMPs. This will require the City to conduct and review the revision process for LID code writing/implementation etc and report the results to Ecology.	Add 200 staff hours		\$15,000	The City shall include the Planning Department for adopting LID regulations (for subdivisions, permitting etc.). The City may need a feasibility study in applying LID in Burien that identifies areas of steep slopes, critical recharges areas, soils mapping (infiltration capacities identified), etc). Add 200 staff hours and \$15,000 in consultant support to adopt new King County Manual and LID regulations.
	The City's site plan process, BMP selection and design criteria must meet the 2012 Ecology Manual requirements or an approved equivalent Manual. The one acre threshold has been eliminated. Enhanced emphasis on Onsite Stormwater Management (LID) standards. All codes, rules, standards, and other enforceable documents must be reviewed and revised to incorporate and require LID principles and LID BMPs. LID amendments must include: measures to minimize impervious surfaces, measures to minimize loss of native vegetation, and measures to minimize stormwater runoff.	Adopt LID Codes by 12/31/2016									
SS.C.4.b 4.2 Site Plan Review and Inspection	Develop a permitting process with plan review, inspection, and enforcement for public and private projects that disturb one acre of land or greater. -Review all stormwater site plans; -Inspect high risk sites prior to clearing and construction; -Inspect all sites during and after construction; Verify all sites have a maintenance plan in place and maintenance responsibility has been assigned; -Implement an enforcement strategy. -Compliance = 80% of scheduled inspections. -Develop a permitting process with plan review, inspection, and enforcement to ensure that the ordinance guidelines meeting the 2012 Ecology Manual requirements.	Year 3 (2/16/2010), Start in New Permit Term	The City has applied the Technical Thresholds in Appendix 1 to all sites one acre or greater, including projects less than one acre that are a part of a larger common plan of development or sale. The City has also applied the permitting process to all sites that disturb a land area of one acre or greater, including projects less than one acres that are part of a larger common plan of the development or sale.				Additional staff time to review projects for compliance with 2012 Ecology Manual requirements. The City currently has smaller review thresholds then required by the Permit as described in BMC 13.10.130. Drainage review is required for projects that are subject to a City permit.	Add 800 staff hours			Additional staff time (approx 800 hours/year) will be required for the permitting process as new requirements are implemented. Reminder: Ecology eliminated the 1 acre threshold for the new Permit. The City now requires projects that add 500 sqft or of new impervious area be routed to the Public Works department for drainage review.

Requirements			Existing SWM Program Activities (2011)				Future SWM Program Activities (Average Annual 2013-17)				Comments
Stormwater Program Element	Activities/BMPs Needed for Regulatory Compliance (includes new DRAFT NPDES Phase II Permit activities/BMPs in red)	Permit Milestone Date (New Draft Permit in red)	2011 Current Activities	Staff FTE	Staff Cost (\$)	Expense (\$)	Future Activities	Staff FTE	Staff Cost (\$)	Expense (\$)	
§5.C.4.c 4.3 Long Term Operation and Maintenance	Adopt an ordinance requiring inspection and maintenance of stormwater facilities and establishing enforcement procedures. <b>The City is required to have the legal authority to inspect and enforce the maintenance standards for all private stormwater facilities.</b>	Year 3 (2/16/2010), <b>Implement by 12/31/2015</b>	The City has adopted an ordinance that provides the legal authority through the approval process for new development, to inspect private stormwater facilities that discharge to the City. The City has conducted site inspection (ESC) for single family residential (SFR) homes. The Building Department is responsible for the inspections of SFRs.				Obtain a covenant or easement for future private facility maintenance activities/inspections				
	Adopt maintenance standards for facilities consistent with the 2005 Ecology Manual. <b>Adopt maintenance standards for facilities consistent with the 2012 Ecology Manual.</b>	Year 3 (2/16/2010), <b>Implement by 12/31/2015</b>	The City has adopted the 2009 KCSWDM includes stormwater maintenance standards and requirements that are equivalent to the Washington State Department of Ecology's 2005 Stormwater Manual.				Adopt maintenance standards consistent with the 2012 Ecology Manual.	See Element 4.1			The City will coordinate with King County to ensure the maintenance standards are consistent with the 2012 Ecology Manual. Staff time included in Element 4.1.
	Inspect new treatment and flow control facilities annually. <b>Inspect all new stormwater treatment and flow control BMPs/facilities and catch basins for permanent residential developments every 6 months until 90% of lots are constructed to identify maintenance needs and enforce compliance of maintenance standards.</b> <b>Inspection compliance is achieved by conducting at least 80% of scheduled inspections.</b>	Year 3 (2/16/2010), <b>Implement by 12/31/2015</b>	The City has conducted site inspections for new development and redevelopment projects that disturb a land area of one acre or greater, including project less than one acre that area part of a larger common plan of the development. The City contracts with King County to annually inspect all stormwater treatment and flow control facilities (other than catch basins) permitted by the City.			See Element 5.2	Ensure the City has the proper legal authority to enforce the maintenance standards for all private stormwater facilities. Inspect all new stormwater treatment and flow control BMPs/facilities and catch basin for permanent residential developments every 6 months until 90% of lots are constructed to identify maintenance needs and enforce compliance of maintenance standards. Inspections compliance is achieved by conducting at least 80% of scheduled inspections.	Add 500 staff hours		See Element 5.2 and 6.1	See Element 6.1 for the expense to develop a Private Facility Inspection and Maintenance Program. Add 500 staff hours/year to implement the Private Facility Inspection program.
	For new residential developments that are part of a larger common plan of development, inspect new water quality and flow control facilities every six months during building construction.	Year 3 (2/16/2010), <b>Implement by 12/31/2015</b>	The City has inspected new stormwater treatment and flow control facilities privately owned or operated to identify maintenance needs and enforce compliance with maintenance standards as needed.								
§5.C.4.d 4.4. Permit Tracking and Inspection Records	Keep records of all inspections, enforcement actions, maintenance activities, and construction sites.	Year 3 (2/16/2010), <b>Continue in New Permit Term</b>	The City purchased City works, a Stormwater Asset Management system. The City is using the system to keep records of drainage inspections and maintenance, create work tickets, and to track cost and time. The City has reviewed and maintained the review records of Stormwater Site Plans for new development and redevelopment projects. The City has also inspected and maintained the inspection records, prior to clearing and construction, of all known development sites that have a high potential for sediment transport as determined through plan review. The City has also implemented a procedure for keeping inspection records and enforcement actions by staff, including inspection reports, warning letters, notices of violations, and other enforcement records, maintenance inspections and maintenance activities. "City View" software program is used to track permit status, development review, comments, construction site inspections, etc - links to "MyBuildingPermit.com."			\$5,000	Continue current practice.			\$5,000	\$5,000 is allocated for the "Computer Consultand Pro Services" expenditure line item of the 2011 budget, which includes the purchase and maintenance of the City Works software. Computer support is an ongoing expense to the stormwater program.
§5.C.4.e 4.5 NOI for Construction Activity	Make copies of the "Notice of Intent for Construction Activity" and/or "Notice of Intent for Industrial Activity" available to developers.	Immediately (2/16/2007), <b>Continue in New Permit Term</b>	The City has provided copies of the "Notice of Intent for Construction Activity" and "Notice of Intent for Industrial Activity" to developers of proposed new development and redevelopment sites				Continue current practice.				The Erosion and Sediment Control (ESC) brochure for small project site has been created and is available to the public. The Small Project Drainage Requirement brochure has been created and is available to the public. (Source: 2011 SWMP)
§5.C.4.f 4.6 Staff Training	Conduct training for staff in permitting, plan review, construction site inspection, and enforcement concerning the Stormwater Runoff Control program (Element 4.1). Maintain records of training.	Year 3 (2/16/2010), <b>Train staff after new stormwater runoff control is adopted</b>	The City has provided training to City staff who are responsible for implementing the program to control runoff from new development, redevelopment, and construction sites, including permitting, plan review, construction site inspection, and enforcement. The City has provided certified Erosion and Sediment Control (ESC) training to relevant City staff.			\$2,667	Train staff on the new 2012 Ecology Manual and the updated stormwater runoff control ordinance.	Add 100 staff hours		\$5,000	1/3 of the \$8,000 staff training budget is allocated for the "Registration - Training/workshop" expenditure line item of the 2011 budget. Increase training budget to \$5,000 annually to train new staff as needed and current staff on the new stormwater control ordinance and 2012 Ecology Manual. Assume 2 staff attend up to one week of training each per year.
			The City maintains records of training activities.				Continue current practice.				
§5.4.h 4.7 Watershed-Scale Stormwater Planning	<b>City must participate in watershed-scale stormwater planning as initiated by the King County. (The County is required to select one watershed for stormwater planning.)</b>	<b>Start in New Permit Term</b>	Not Applicable.				Continue participation in watershed planning for Miller-Walker Watershed as initiated by King County.			See Element 10	See Element 10 for Watershed Planning.
<b>Total -Element #4</b>				0.50	\$53,713	\$7,667		1.30	\$109,000	\$25,000	0.50 FTE is for a portion of the CIP Engineers allocated to stormwater development review for the existing SWM Program. Increased staff time as noted above.

Requirements			Existing SWM Program Activities (2011)				Future SWM Program Activities (Average Annual 2013-17)				Comments	
Stormwater Program Element	Activities/BMPs Needed for Regulatory Compliance (includes new DRAFT NPDES Phase II Permit activities/BMPs in red)	Permit Milestone Date (New Draft Permit in red)	2011 Current Activities	Staff FTE	Staff Cost (\$)	Expense (\$)	Future Activities	Staff FTE	Staff Cost (\$)	Expense (\$)		
<b>SWMP Element #5 - Pollution Prevention and Operation and Maintenance for Municipal Operations</b>												
SS.C.5.a	5.1 Adopt Maintenance Standards	Adopt maintenance standards consistent with the 2005 Ecology Manual. <b>Adopt maintenance standards consistent with the 2012 Ecology Manual.</b>	Year 3 (2/16/2010), <b>Adopt maintenance standards by 12/31/2015</b>	The City adopted the 2009 KCSWDM in February of 2010, which includes the maintenance standard and requirements of drainage structures such as flow control, conveyance, and water quality. The City also adopted the 2009 Stormwater Pollution Prevention Manual (KCSPPM) in August of 2009, which includes Best Management Practices (BMPs) for Commercial, Multi-Family and Residential Properties.				Adopt and implement maintenance standards consistent with the the 2012 Ecology Manual.			See Element 6.1	Adopting the updated King County Manual (Element 4.1) should cover this requirement. Staff may need additional training (Element 5.7) to implement the revised maintenance standards. See Element 6.1 for developing the written documentation of the maintenance standards and implementation plan.
SS.C.5.b	5.2 Annual Inspections of Water Quality and Flow Control Facilities	Conduct annual inspections of City owned stormwater treatment and flow control facilities; Perform necessary maintenance actions. Compliance = 95% of scheduled inspections.	Annually Starting in Year 3 (2/15/2010), <b>Continue in New Permit Term</b>	The City inspects City-owned water quality and flow control facilities on an annual basis. The City also conducted site inspections for City-owned new drainage facilities, and documents and maintains all records.			\$125,000	Continue current practice.	Add 250 staff hours		\$75,000	\$75,000 is allocated for the "Repairs And Maintenance" expenditure line item of the 2011 budget. \$50,000 is allocated for the "Swm Billed By Swm Dept" expenditure line item of the 2011 budget, which covers the County's inspection of stormwater facilities. The City would like to take on inspections internally, replacing the expense to King County with 150 internal staff hours for inspections (2 people inspecting 8 facilities/day) and 100 staff hours for program management. Retain the \$75K Repair and Maintenance budget for facility maintenance identified during the inspections. See Element 6.1 for developing the written documentation of the maintenance standards and implementation plan.
SS.C.5.c	5.3 Spot Checks after Storm Events	Spot check stormwater treatment and flow control facilities after major storm events (>10-year recurrence interval or <i>approximately 3.0 inches in 24 hours for Barien</i> ); Conduct repairs as necessary. Spot checks after all storm events are required for permanent stormwater treatment and flow control BMPs/facilities.	After major storm events Starting in Year 3 (2/15/2010) <b>Continue in New Permit Term</b>	King County conducts spot checks for the City. Fifteen facilities were spot checked in 2010.			\$43,000	Conduct spot checks of treatment and flow control facilities after all storm events. The City will need to keep an inspection procedures log and identify who will be doing inspections.	Add 200 staff hours		\$43,000	\$43,000 is allocated from the following 2011 budget expenditure line items: "Maintenance-Pump Stations," "Util - Pump 28: 142nd St," "Util - Pump 28: Hermes Deprsn," "Util - Pump 21: Chelsea Park," and "Chelsea Pond." Add staff time to include spot checks of flow control and water quality facilities after storm events (approx 70 facilities for drive-by inspections 6 times/year)
SS.C.5.d	5.4 Catch Basin Inspection	Inspect all catch basins and inlets at least once during the permit term; Clean catch basins as necessary; Dispose of decant water appropriately. <b>Catch basin inspection schedule of every 2 years may be changed as appropriate to meet the maintenance standards based on maintenance records of double the length of the proposed inspection frequency. Catch basin inspections at least once every two years is required.</b>	Permit End (8/19/2011), <b>Continue in New Permit Term</b>	The City is in the process of inspecting the City's catch basins and plans to have all catch basins inspected at least once before the permit ends. At the end of 2010 the City had cleaned 3,263 catch basins out of 5,913.			\$150,000	Catch basin inspection schedule of every 2 years shall be changed as appropriate to meet the maintenance standards based on maintenance records of double the length of the proposed inspection frequency. Catch basin inspections at least once every two years is required.	Add 1,250 staff hours		\$100,000	\$50,000 of \$250,000 is allocated for the "Swm Billed By King Co Roads" expenditure line item of the 2011 budget to cover catch basin inspections. \$100,000 is allocated for the "Surface Water Mgmt Inventory" expenditure line item of the 2011 budget for video inspection and cleaning of the conveyance system. The City would like to shift to internal inspections for publically owned facilities. The inspection program will cover all half of the publically owned catch basins each year to meet this permit requirement. The inspections will also document potential IDDE problems to meet the IDDE field screenings requirements (Element 3.3). New staff time: 6,000 catch basins and 3,200 inlets; 1/2 inspected each year; assume one staff person conducts 40 inspections per work day (approximately 1000 staff hours per year) and the program requires an additional 250 hours of management, planning, and recordkeeping time. Maintain \$100,000 budget for video inspection and cleaning. See Element 6.1 for developing the written documentation of the maintenance standards and implementation plan.
SS.C.5.f	5.5 Road Maintenance	Implement practices to reduce stormwater impacts from street, parking lot, and highway runoff. Address the following activities: -Pipe and culvert cleaning; -Ditch and roadside vegetation management; -Street cleaning; -Street repair, resurfacing, and striping; -Snow and ice control; -Utility installation; -Dust control.  <b>The City may clean the entire MS4 within a circuit, including all conveyances, catch basins. The system must be cleaned once during the Permit term.</b>	Year 3 (2/15/2010), <b>Continue in New Permit Term</b>	On an annual basis, the City is implementing practices to reduce stormwater impacts associated with runoff from streets, parking lots and roads maintained by the City including pipe and culvert cleaning, ditch and roadside areas maintenance including vegetation management, street sweeping and cleaning, and street repair and resurfacing per the requirements of the King County Road Standards. The City also conducts snow and ice control as needed; arterials are high priority and residential snow and ice control are conducted on an emergency basis.			\$200,000	The City shall clean the entire MS4 in within a circuit including all conveyances and catch basins. The system must be cleaned once during the Permit term.			\$200,000	\$200,000 of \$250,000 is allocated for the "Swm Billed By King Co Roads" expenditure line item of the 2011 budget to cover street sweeping, pipe, ditch, and culvert maintenance. Retain existing program in future years

Requirements			Existing SWM Program Activities (2011)				Future SWM Program Activities (Average Annual 2013-17)				Comments
Stormwater Program Element	Activities/BMPs Needed for Regulatory Compliance (includes new DRAFT NPDES Phase II Permit activities/BMPs in red)	Permit Milestone Date (New Draft Permit in red)	2011 Current Activities	Staff FTE	Staff Cost (\$)	Expense (\$)	Future Activities	Staff FTE	Staff Cost (\$)	Expense (\$)	
SS.C.5.g 5.6 Non-Roadway Property Maintenance	Implement practices to reduce stormwater impacts from City-owned non-roadway property runoff (parks, open space, right-of-way, and maintenance yards). Address the following: -Application of fertilizer, pesticides, and herbicides; -Sediment and Erosion control; -Landscape maintenance and vegetation disposal; -Trash management; -Building exterior cleaning and maintenance.	Year 3 (2/15/2010), Continue in New Permit Term	The City has an Integrated Pest Management (IPM) Brochure that refers to EPA and King County IPM materials. The City does not have a formal IPM Document; however, the City does perform sediment and erosion control, landscape maintenance and vegetation disposal, street repair/resurfacing and trash management (through a franchise agreement). The City is not conducting building exterior cleaning and maintenance.				Continue current practice.			\$75,000	In 2012, the City added six seasonal staff to conduct mowing and other non-property roadway maintenance activities. Temporary staff perform approximately 5,000 hours of service per year at a pay rate of \$13/hour. For budgeting purposes, temporary staff are shown as an expense rather than FTE, as they are not fully benefited positions. Contract services are covered under other elements.
SS.C.5.h 5.7 Staff Training	Implement ongoing training activities for construction, maintenance, and operations personnel. Include training on: -O&M standards; -inspection procedures; -selecting appropriate BMPs; -Reducing water quality impact in daily activities; -Reporting of water quality concerns and illicit discharges. Maintain records of training.	Year 3 (2/15/2010), Continue in New Permit Term	The City has conducted training on O&M standards.			\$2,667	Continue current practice and train new staff as needed.	Add 100 staff hours		\$10,000	1/3 of the \$8,000 staff training budget is allocated for the "Registration - Training/workshop" expenditure line item of the 2011 budget. Increased staff training is needed to educate staff about stormwater facility maintenance standards and to educate new staff hired to conduct internal inspections. Assume 8 maintenance staff attend up to 2 days of training per year.
SS.C.5.i 5.8 SWPPP for Maintenance Yards	Develop and implement Stormwater Pollution Prevention Plans (SWPPP) for all equipment maintenance and storage yards not covered under the Industrial Stormwater General Permit. Include an implementation schedule for structural BMPs and conduct occasional visual inspection of discharge from the site.	Year 3 (2/15/2010), Update as needed in New Permit Term	The City is implementing a SWPPP for all heavy equipment maintenance or storage yards, and material storage facilities owned or operated in the areas subject to the Permit that are not required to have coverage under the General NPDES Permit for stormwater discharges Associated with Industrial Activities or another NPDES Permit.				Update SWPPP if needed.				
SS.C.5.j 5.9 Record Keeping	Maintain records of inspection and/or repair activities.	Ongoing, Continue in New Permit Term	The City will continue to develop, implement and keep track of the development and implementation records of the City's O&M program that includes a training component and has the ultimate goal of preventing or reducing pollutant runoff from municipal operations. The City uses City works to track O&M activities.				Continue current practice.				
<b>Total -Element #5</b>				6.40	\$412,877	\$520,667		7.30	\$608,000	\$503,000	In the existing program, there are 6.0 FTE allocated for Maintenance Staff (Maintenance Worker II (2 FTE), Maintenance Worker III (2 FTE), Maintenance Assistant (1.5 FTE), the Street/SWM Managers time (0.5 FTE) and the SWM Engineering Tech (0.4 FTE). Increase staff time as noted above.
<b>Total Gap - Element #5</b>											
<b>SWMP Element #6 - Program Implementation</b>											
SS.A.1 6.1 SWMP Implementation	Develop and implement a SWMP that covers the geographic area subject to the permit. Included with Elements 1 through 5.	Permit End (8/19/2011), Continue in New Permit Term	The City develops an updated SWMP each year to be included with their Annual Report to Ecology.				The City needs to develop policies and standard operating procedures for IDDE, Private Facility Inspections, and Facility and Catch Basin Inspections and Maintenance.	Add 100 staff hours		\$30,000	Add staff time and consultant funding to develop policies and standard operating procedures for IDDE (\$10,000), Private Facility Inspection and Maintenance Program (\$10,000), and Facility and Catch Basin Inspection and Maintenance Program (\$10,000). Cost to train staff to implement these programs is included in Elements 3.6 and 5.7 (\$15,000 total).
SS.A.2 6.2 SWMP Documentation	Prepare written documentation of the SWMP and issue annual updates with the Annual Report to Ecology. Annual reports must be submitted using Ecology's WA WebDMR program and include attachments to support work completed during the reporting period. Include attachments to the annual report including summaries, descriptions, reports and other information as required, or as applicable, to meet the requirement of the permit during the reporting period.	March 31 Each Year, March 31 Each Year in the New Permit Term	The City submitted its 2010 SWMP to Ecology by the due date.  SWMP due to Ecology by 3/31/2012.				Continue current practice. Submit SWMPs on an annual basis.  Submit the annual report using Ecology's WA WebDMR program and include attachments to support work completed during the reporting period.				See Element #9.1.
SS.A.3 6.3 Program Tracking	Track the cost or estimated cost of development and implementation of the SWMP; provide this information to Ecology upon request.	Annually starting in 2009, Continue in New Permit Term	See Elements #1 through 5.				See Elements #1 through 5.				See Elements #1 through 5.
	Track the number of inspections, enforcement actions, and public education activities. Include this information in the Annual Report.	As stipulated by Permit, Continue in New Permit Term	See Elements #1 through 5.				See Elements #1 through 5.				See Elements #1 through 5.
SS.B 6.4 MEP and AKART	Design the SWMP to reduce discharge of pollutants to the Maximum Extent Practicable (MEP), meet State AKART requirements, and protect water quality.	N/A, N/A	Burien Municipal Code focuses on MEP and AKART standards for reducing pollutants.								
<b>Total -Element #6</b>				0	\$0.00	\$0.00		0.05	\$4,160	\$30,000	See Elements 1 through 5 for FTE for program implementation.

Requirements			Existing SWM Program Activities (2011)				Future SWM Program Activities (Average Annual 2013-17)				Comments
Stormwater Program Element	Activities/BMPs Needed for Regulatory Compliance (includes new DRAFT NPDES Phase II Permit activities/BMPs in red)	Permit Milestone Date (New Draft Permit in red)	2011 Current Activities	Staff FTE	Staff Cost (\$)	Expense (\$)	Future Activities	Staff FTE	Staff Cost (\$)	Expense (\$)	
<b>SWMP Element #7 - Total Maximum Daily Load Allocations</b>											
7.A	7.1 Permit Recognized TMDLs	Applicable TMDLs are listed in Appendix 2 of the NPDES Permit. None apply to the City of Burien at this time.	N/A, N/A	Not Applicable. There are no TMDL waterbodies in Burien.				Not Applicable.			
7.B	7.2 TMDLs not Listed in Permit	Compliance with TMDLs not listed in Appendix 2 of the Permit is achieved by meeting the requirements of the Permit; Keep records and report activities relevant to applicable TMDLs.	N/A, N/A	Not Applicable. There are no TMDL waterbodies in Burien.				Not Applicable.			
7.C	7.3 TMDLs Approved during the Permit Cycle	Comply with future TMDL requirements issued through permit modifications.	N/A, N/A	Not Applicable; however this is dependent on Ecology. Pending new Permit language.				Not Applicable; however this is dependent on Ecology.			
Total -Element #7				N/A	N/A	N/A		N/A	N/A	N/A	
<b>SWMP Element #8 - Monitoring</b>											
8.B	8.1 Existing Monitoring	With Burien having a population between 10,000 and 75,000 the City shall identify two outfalls or conveyances where stormwater sampling could be conducted. One outfall shall represent commercial land use and the second will represent high-density residential and use. Describe any stormwater monitoring or studies and type of information gathered in annual report; Assess the appropriateness of the BMPs in the SWMP and note any proposed changes.	March 31 Each Year, N/A in New Permit Term	See Element 8.2.							
8.C.1.a	8.2 Stormwater Monitoring	Prepare for future monitoring by selecting two outfalls for flow-weighted composite sampling (must meet Ecology requirements). Document site selection, possible constraints, basin description, and water quality concerns in receiving waters.	12/31/2010, N/A in New Permit Term	The City has submitted the required monitoring site selection documents to Ecology that identifies the locations for the potential future outfall monitoring.							For more information see the "Stormwater Monitoring Plan Report" document dated March 31, 2011.
8.C.1.b	8.3 SWMP Effectiveness Monitoring	Prepare for future monitoring by identifying two questions to be studied and selecting monitoring sites. Develop a monitoring plan based on Ecology requirements.	12/31/2010, N/A in New Permit Term	The City has submitted the required effectiveness monitoring documents to Ecology.							
8.C.2	8.4 Annual Reporting	Describe the status of identifying monitoring sites, questions, and developing monitoring plan.	Starting with 2010 Annual Report (3/31/2011), N/A in New Permit Term	The City submitted a status of their program to identifying monitoring sites, questions, and developing monitoring plan in the 2010 Annual Report/2011 SWMP. This is a place holder for the 2011 monitoring reporting (to be submitted in 2012).							
8.C.1	8.5 Status and Trends Monitoring	The City has two options for status trends monitoring. They are required to notify Ecology of which option is selected. Option 1: Pay into a collective fund that will cost Burien \$11,238 annually. Option 2: Conduct in house monitoring sites will be selected for the Ecology-approved QAPP; If the QAPP lists a potential sampling location within Burien, then the City can monitor the site through option 2. If a site is not selected in the jurisdiction, therefore this may not be a viable.	Annually, Payment due 8/15 starting in 2014	Not Applicable.				Elect Option 1: Pay an annual fee to Ecology of \$11,238. Option 1 is the most cost effective option for the City because implementing their own monitoring program could be very costly.		\$11,500	Assumes annual pay in program remains the same each year.
8.C.2	8.6 Effectiveness Studies	The City has two options for effectiveness studies. They are required to notify Ecology of which option is selected. Option 1: Pay into a collective fund that will cost Burien \$18,724 annually. Option 2: Conduct in house.	Annually, Payment due 8/15 starting in 2014	Not Applicable.				Elect Option 1: Pay an annual fee to Ecology of \$18,724. Option 1 is the most cost effective option for the City because implementing their own monitoring program could be very costly.		\$19,000	Assumes annual pay in program remains the same each year.
8.D	8.7 Source Identification and Diagnostic Monitoring Information Repository	The City has two options for source identification and diagnostic monitoring information repository. They are required to notify Ecology of which option is selected. Option 1: Pay into a collective fund that will cost Burien \$1,736 annually. Option 2: Conduct in house.	Annually, Payment due 8/15 starting in 2014	Not Applicable.				Elect Option 1: Pay an annual fee to Ecology of \$1,736. Option 1 is the most cost effective option for the City because implementing their own monitoring program could be very costly.		\$2,000	Assumes annual pay in program remains the same each year.
Total -Element #8				0	\$0	\$0		0.05	\$4,160	\$32,500	Add staff time to track and coordinate with regional monitoring program.
<b>SWMP Element #9 - Reporting</b>											
9.A&B	9.1 Annual Reports	Submit annual reports each year on the previous year's NPDES Phase II activities. Report includes current SWMP, Annual Report Form (Appendix 3 of Phase II Permit), and applicable supporting documentation. Submit annual report by May 31 each year, electronically using Ecology's WA WebDMR program.	March 31 Each Year, March 31 Each Year	The City has completed each year's annual report and SWMP for submittal to Ecology.			\$5,000	Continue current practice. Submit Annual Reports and SWMPs to Ecology each March (May under new Permit). Submit reports using Ecology's WA WebDMR program, which is available through the Ecology's website.		\$5,000	\$5,000 is allocated for the "Surface Water Management" expenditure line item of the 2011 budget.

Requirements			Existing SWM Program Activities (2011)				Future SWM Program Activities (Average Annual 2013-17)				Comments	
Stormwater Program Element	Activities/BMPs Needed for Regulatory Compliance (includes new DRAFT NPDES Phase II Permit activities/BMPs in red)	Permit Milestone Date (New Draft Permit in red)	2011 Current Activities	Staff FTE	Staff Cost (\$)	Expense (\$)	Future Activities	Staff FTE	Staff Cost (\$)	Expense (\$)		
S9.C.2	9.2 Ongoing Tracking	To support annual report submittal, maintain records of activities completed and implementation status of each element in Elements 1 through 5. Track progress toward meeting minimum performance measures and plans for meeting future permit deadlines.	Ongoing, Ongoing	See Elements #1 through 5 for additional information on activity and program tracking.				See Elements #1 through 5 for additional information on activity and program tracking.				
S9.C	9.3 Maintaining Records	Maintain records of SWMP and permit activities for five years.	Ongoing, Ongoing	See Elements #1 through 8.				See Elements #1 through 8.				
S9.D	9.4 Public Access	Make all records of SWMP and permit activities available to the public at reasonable times during business hours.	Ongoing, Ongoing	See Elements #1 through 8.				See Elements #1 through 8.				
S9.E.4	9.5 LID Barriers	Submit a LID barriers memo with the Annual Report that summarizes the City's identified barriers to the use of LID.	3/31/2011, N/A in New Permit Term	The City identified and measured barriers and gap to the use of LID. The findings were reported to Ecology with the City's 2010 Annual Report.			\$5,000					For more information see the "City of Burien Low Impact Development Implementation Framework" document dated April 2008. \$5,000 is allocated for the "Surface Water Management" expenditure line item of the 2011 budget. This is an existing program element only.
Total -Element #9					0.05	\$5,371	\$10,000		0.05	\$5,000	\$5,000	0.05 FTE is for a portion of the CIP Engineers (0.8 FTE for all 3) allocated to write the Annual Report and SWMP. Continue this level of staffing for the current program.
<b>SWMP Element #10 - Regional Watershed Planning and ESA</b>												
WRIA 9	10.1 Miller and Walker Stewardship Program	King County currently runs the Miller and Walker Creeks Stewardship Program.	N/A	This Program conducts adult salmon monitoring, a volunteer program conducting stream restoration projects including planting trees and controlling invasive weeds, provides public education presentations, and works towards a healthy basin. The City also conducts basin planning, an IC/IDDE program and has pre-development standards to help improve the health of these two Creeks.			\$76,000	Continue current practice.			\$76,000	\$30,000 is allocated for the "Regional Watershed (wria 9)" expenditure line item and \$46,000 from the "Surface Water Management" expenditure line item of the 2011 budget to support the work of King County and Green/Duwamish Forum. 2011 actual expenditures included \$17,500 for WRIA 9 and \$58,500 for Miller/Walker Creek. Increase expenses = \$76,000.
WRIA 9	10.2 Prioritization of Marine Shorelines of WRIA 9 for Juvenile Salmonid Habitat Protection and Restoration	In May of 2006 King County published a reported titled "Prioritization of Marine Shorelines of WRIA 9 for Juvenile Salmonid Habitat Protection and Restoration."	N/A	This report identified Puget Sound shoreline habitat in southern King County that should be preserved or restored to help salmon, including prioritizing nearshore habitat in Burien that provides important habitat for young salmon after they have left the freshwater streams where they hatched and reared.				Continue current practice.				See Element 10.1 for funding.
WRIA9	10.3 Green/Duwamish & Central Puget Sound Watershed Projects	A list of Green/Duwamish & Central Puget Sound Watershed Projects was published to document projects completed in the watershed from 1998-2009.	N/A	Between 1998-2009 the Green/Duwamish and Central Puget Sound Watershed Ecosystem Form comprised of 16 cities, including Burien, made recommendations to the King Conservation District on watershed protection, restoration and salmon conservation projects to be funded with a portion of the KCD per-parcel assessment and implemented in eligible jurisdictions within the watershed. Projects completed included: -King County Miller Creek Basin Plan (inter-jurisdictional plan for stormwater management, water quality protection and habitat improvements); -City of Burien: Seahurst Park Monitoring 2007 (monitoring to determine success of a 2005 bulkhead and shoreline restoration project); -City of Burien Walker Creek Headwaters Purchase (acquired 21 acres of wetlands to protect them from development); -City of Burien Seahurst Park Nearshore Restoration Monitoring (identified fish use and other habitat elements before construction of site restoration project).				Continue current practice.				See Element 10.1 for funding. In 2009 the Forum made recommendations for ~\$1.19 million in projects, based on the 2009 assessment of \$10 per parcel.
Total -Element #10					0.05	\$5,405	\$76,000		0.10	\$9,000	\$76,000	City budgets \$30K per year to support WRIA 9, but actual expenditures have been \$76K in recent years. 0.05 FTE is for a portion of the CIP Engineers time allocated to coordinate with King County on the WRIA projects. Increase City participation to 0.1 FTE.
<b>SWMP Element #11 - Underground Injection Control Rule</b>												
WAC 173-218-070 1.a.i-v	11.1 Register Wells	Complete Ecology Registration forms and submit (WAC 173-218-070.1.a.i-v). Information includes: Operator/Owner information; site location; BMPs used to protect groundwater quality, UIC well description; information necessary to demonstrate that the non-endangerment standard (WAC 173-218-080 and WAC 173-218-090) has been met.	February 2, 2009 (WAC 173-218-090.2.a.i)	All publicly owned infiltration facilities have been registered.				Register new publicly owned infiltration facilities as they are built.				

Requirements			Existing SWM Program Activities (2011)				Future SWM Program Activities (Average Annual 2013-17)				Comments
Stormwater Program Element	Activities/BMPs Needed for Regulatory Compliance (includes new DRAFT NPDES Phase II Permit activities/BMPs in red)	Permit Milestone Date (New Draft Permit in red)	2011 Current Activities	Staff FTE	Staff Cost (\$)	Expense (\$)	Future Activities	Staff FTE	Staff Cost (\$)	Expense (\$)	
WAC 173-218-070 1.b.i 11.2 Assess Wells	According to WAC 173-218-090.2.a.ii, the approach to conducting the well assessment will be determined by the Owner. The assessment evaluates the potential risks to groundwater from the use of UIC wells. Any assessment that identifies a well as a high threat to groundwater must include a retrofit schedule (WAC 173-218-090.a.iii), and immediate action must be taken to correct the use of a well that is determined to be an imminent public health hazard (WAC 173-218-090.a.iv).	February 2, 2011 (WAC 173-218-090.2.a.ii)	No program in place.				Implement prior to use.				
WAC 173-218-070 1.b.i 11.3 New Well Requirements	Prior to use, new wells must meet the requirements of WAC 173-218-080 and WAC 173-218-090 which call for preventing the movement of fluid containing any contaminant into the groundwater if it may cause a violation of groundwater quality standards. Compliance with the nonendangerment standard can be met through one or a combination of two approaches: presumptive (WAC 173-218-090.1.c.i.A-D) or demonstrative (WAC 173-218-090.1.c.ii.A-E).	N/A	No program in place.				Implement as needed.				
WAC 173-218-070 1.b.ii 11.4 Annual Updates	After initial well registrations have been sent to Ecology, provide an annual update on any well status changes.	N/A	There is no program in place for annually reporting to Ecology on UICs.				Implement as needed annually.				
WAC 173-218-120 11.5 Well Decommissioning	Wells must be decommissioned by filling or plugging the well so that it will not result in an environmental, public health or safety hazard, and will not serve as a channel for movement of water or pollution to the aquifer as specified in WAC 173-218-120.3.b.i-ii). Ecology must be notified 30 days prior to decommissioning wells that pose an imminent public health hazard, otherwise notification must occur within one year of closure.	N/A	No program in place.				Implement as needed.				
<b>Total -Element #11</b>				N/A	N/A	N/A		0.00	\$0	\$0	Staff time is minimal and absorbed into other activities.
<b>SWMP Element #12 - Capital Improvement Program</b>											
12.1: CIP Projects	This element cover stormwater related stormwater related CIP Project design and construction.	N/A	In 2011, the Stormwater Program transferred \$827,500 to the City's CIP program to fund stormwater related projects.			See CIP Analysis	Capital costs are not included in this analysis, as the CIP program varies based on the projects identified in a given year.	Add 400 staff hours		See CIP Analysis	\$827,500 is allocated for the "Operating Transfers Out" expenditure line item of the 2011 budget. See CIP Program analysis for specific expenditures. Additional CIP Dollars may be needed for project implementation. The DMP is being funded out of the Capital Fund.
<b>Total -Element #12</b>				0.40	\$52,879	See CIP Analysis		\$1	\$50,000	See CIP Analysis	The existing SWM Program allocates 0.20 FTE for CIP Engineers and 0.2 for Public Works Director to stormwater related projects. Increase the CIP Engineers allocation to 0.40 FTE to implement the proposed capital improvement program.
<b>SWMP Element #13 - Additional Activities</b>											
13.1 Equipment, Materials and Supplies	This element covers equipment, materials, supplies to the support the SWM Program.	N/A	The City owns their own fleet of O&M equipment.			\$95,000	Continue current practice.			\$165,000	\$30,000 is allocated for the "Shop Remodel" (one time expense) of the 2011 budget. \$115,000 is allocated for the "Machinery & Equipment" expenditure line item of the 2011 budget. \$50,000 is allocated for "Operating Rentals And Leases". Retain existing funding, replacing the \$30K shop remodel line item with a \$100k/year transfer to begin funding a City maintenance facility and/or other shared equipment purchases.
13.2 Program Overhead, Administration and Transfers Out	This element covers Program Overhead, Administration and Transfers Out to the support the SWM Program.	N/A	This element includes Computer Consultant Professional Services, janitorial services at the maintenance shop and expenditures for telephone, dues/memberships, subscription/publication, and printing/binding/copying.			\$75,500	Continue current practice.			\$75,000	From the 2011 budget: \$12,000 ="Janitorial - Shop". \$12,000 ="Office and Operating Supplies". \$1,000 ="Telephone". \$1,000 ="Travel". \$500 ="Dues/Memberships". \$1,500 ="Subscription/Publication". \$1,500 ="Printing/Binding/Copying". \$46,000 = remaining funds from "Surface Water Management" expenditure line item of the 2011 budget. Maintain costs at \$75K annually.
13.3 Professional Services	This element covers Professional Services to the support the SWM Program.	N/A	This element covers unexpected needed professional services during the year.			\$21,000	Continue current practice.			\$25,000	\$1,000 is allocated for the "Professional Services" expenditure line item of the 2011 budget. \$20,000 is allocated for the "Engineering Nonreimb Prof Svcs" expenditure line item of the 2011 budget. Maintain cost at \$25K annually for miscellaneous professional services. See Element 6.1 for NPDES specific professional services.

Requirements			Existing SWM Program Activities (2011)				Future SWM Program Activities (Average Annual 2013-17)				Comments
Stormwater Program Element	Activities/BMPs Needed for Regulatory Compliance (includes new DRAFT NPDES Phase II Permit activities/BMPs in red)	Permit Milestone Date (New Draft Permit in red)	2011 Current Activities	Staff FTE	Staff Cost (\$)	Expense (\$)	Future Activities	Staff FTE	Staff Cost (\$)	Expense (\$)	
13.4 Accounting/Budgeting/ Stormwater Utility	This element covers Accounting/Budgeting/Stormwater Utility to the support the SWM Program.	N/A	This element cover utility services and covers the interest payments for the PWTFL Ambaum Pond Project.			\$72,100	Continue current practice.			\$75,000	\$7,600 is allocated for the "Interest on PWTFL Ambaum Pond" expenditure line item of the 2011 budget. \$2,500 is allocated for the "Utility Services" expenditure line item of the 2011 budget. \$27,000 is allocated for the "County Collection Fee" expenditure line item of the 2011 budget. \$34,000 is allocated for the "Swm Assessment/tax" expenditure line item of the 2011 budget. Allocate \$75,000 in the future SWM Program for Accounting/Budgeting/Stormwater Utility support to the future SWM Program.
13.5 NPDES Permit Fee	The City pays an annual NPDES Permit Fee to Ecology.	N/A				\$10,000				\$10,000	\$10,000 is allocated for the "Surface Water Management" expenditure line item of the 2011 budget for the NPDES Permit Fee.
13.6 Miscellaneous Expenditures	This element covers Miscellaneous Expenditures to the support the SWM Program.	N/A	The City allocates a portion of the SWM Program Fund to miscellaneous expenditures needed to support the program on an annual basis.			\$10,500	Continue current practice.			\$15,000	\$10,500 is allocated for the "Miscellaneous" expenditure line item of the 2011 budget. Allocate \$15,000 for miscellaneous expenditures for the future SWM Program.
<b>Total -Element #13</b>				0.70	\$70,388	\$284,100		1.00	\$84,000	\$365,000	0.50 FTE is for the Department Assistant and 0.20 for the Public Works Director to perform administrative and directive tasks to support the City's stormwater program. In the Future program allocate an additional 0.10 FTE for the Public Works Director and 0.20 FTE for the Department Assitance to implement SWM Program Additional Activities.
			<b>TOTALS*</b>	8.75	\$660,000	\$951,000		11.25	\$942,000	\$1,082,000	
			<b>GRAND TOTAL*</b>	8.75	\$1,611,000			11.25	\$2,024,000		
			<b>GRAND TOTAL GAP*</b>					2.50	\$413,000		

\*Does not include annual Capital Improvement Program projects.

**Notes**

- Required activities are based on the *Western Washington Phase II Municipal Stormwater Permit*, issued January 17, 2007 and modified June 17, 2009.
- Future anticipated requirements based on the DRAFT Proposed Permit issued Fall 2011 with expected implementation date of August 2013.
- "2005 Ecology Manual" and "2012 Ecology Manual" refer to the Washington State Department of Ecology's 2005 and 2012 *Stormwater Management Manual for Western Washington*.

Appendix 4-1: 2005 DMP  
CIP Project Status



City of Burien  
 Drainage Master Plan  
 Project #31760  
 Revised: April 25, 2012

**2005 Stormwater Drainage Master Plan: CIP Project List**

2005 Stormwater Drainage Master Plan: CIP Project List					April 2012 Action
Project ID	Otak ID	Basin	Project Title	Previously Listed Project Cost	
CIP-M03		Miller Creek	SW 132nd Street Flooding	\$26,000	Completed previously.
CIP-M11	1	Miller Creek	SW 155th Street Storm Drain System Improvements	\$61,000	Problem resolved through increased maintenance. No further complaints recorded.
CIP-PS07		Puget Sound	SW 172nd Street Outlet	\$29,000	Problem resolved through increased maintenance. No further complaints recorded.
CIP-S01	2	Salmon Creek	Overflow Replacement at Salmon Creek Bypass	\$51,000	Problem area reviewed: Ongoing Tracking.
CIP-M14	55, 56, 92	Miller Creek	SW 165th Street Drainage System	\$290,000	Problem area reviewed: Rank for CIP.
CIP-M27		Miller Creek	Century Apartments Drainage Systems	\$205,000	Completed previously.
CIP-M28	3	Miller Creek	Drainage System at 129th Street	\$111,000	Problem area reviewed: Ongoing Tracking.
CIP-M01A	4	Miller Creek	New storm drainage system at 1st Avenue S and SW 132nd Street	\$276,000	Problem area reviewed: Maintenance Referral.
CIP-M01B	4	Miller Creek	New storm drainage system at 1st Avenue S and SW 132nd Street	\$670,000	Alternate solution to CIP-M01A. Problem area reviewed: Maintenance Referral.
CIP-M02		Miller Creek	Acquisitions of Local Depressions at 4th Avenue South and S 132nd Street	\$70,000	Improvements to Chelsea Pond conveyance system eliminated need for property purchase.
CIP-M06A		Miller Creek	142nd Street Depression	\$956,000	City completed past project. Additional complaints recorded. Problem area reviewed and categorized as "Rank for CIP."
CIP-M06B		Miller Creek	142nd Street Depression	\$740,000	City completed past project. Additional complaints recorded. Problem area reviewed and categorized as "Rank for CIP."
CIP-M26		Miller Creek	21st Ave SW Storm Drainage System	\$185,000	Completed previously.
CIP-M09	5	Miller Creek	14th Ave South	\$582,000	Problem area reviewed: Maintenance Referral.
CIP-M13		Miller Creek	15th Ave SW Drainage System	\$258,000	Completed previously.
CIP-PS02	6	Puget Sound	30th Avenue SW Outfall Repair	\$200,000	Problem area reviewed: Ongoing Tracking.
CIP-PS04	7	Puget Sound	25th Avenue SW Drainage System	\$662,000	Problem area reviewed: Rank for CIP.
CIP-PS05	8	Puget Sound	Maplewild Avenue SW Drainage System Outlet at SW 156th Street	\$255,000	Problem area reviewed: Ongoing Tracking.
CIP-M07	9	Miller Creek	S 140th Street Horse Pasture	\$384,000	Problem area reviewed: Ongoing Tracking.
CIP-M08		Miller Creek	S 132nd Street Depression	\$518,000	Completed previously.
CIP-M04	10	Miller Creek	Hermes Depression	\$1,885,000	Problem area reviewed: Rank for CIP.
CIP-M20	11	Miller Creek	S 136th Street Wetland Enhancement	\$244,000	Problem area reviewed: Ongoing Tracking.
CIP-M05	10	Miller Creek	Mayfair Depression	\$1,003,000	Combine with CIP-M04. Problem area reviewed: Rank for CIP.
CIP-PS-6	12	Puget Sound	SW 174th Street Storm Drainage System Outlet SW 156th Street	\$692,000	Problem area reviewed: Ongoing Tracking.

**2011 Drainage Master Plan: New CIP Projects**

	Basin	Project Title		Project Type
	Miller Creek	Master Planning: Hermes Depression, Mayfair Depression, 142nd Street Depression and 132nd Street Drainage	-	Master Plan
		S 136th Street Wetland Enhancement	-	Master Plan
	Arbor Lake	Arbor Lake Monitoring	-	Monitoring Plan
	Miller Creek	Lake Burien Monitoring	-	Monitoring Plan
	Salmon Creek	Salmon Creek Enhancement Plan	-	Watershed Enhancement Plan
	Miller Creek	Miller Creek Enhancement Plan	-	Watershed Enhancement Plan



Appendix 4-2: Drainage Complaint  
Ranking and Rating Criteria



## City of Burien Drainage Complaints - Rating/Ranking

Prepared by Otak Inc. Updated: 3/21/12

Complaints deleted - 1, 35, 36, 39, 40, 41, 42, 43, 111 (follow-up to #109), 63 (IDDE Problem), 95 (no address, cannot locate/follow-up)

Otak Work (November 2011, updated January 2012)									Otak Work (updated March 2012)										
Otak ID	Date	Source	Address	Related Complaints	Problem Description	Type of Problem - City Defined	City Action/Other Information	Site Visit Conducted?	Categorization	Flood Location	Flood Source	Flood Frequency	Erosion	Water Quality	Habitat	Economic Impact	Complaint History	Total Score	Ranking for CIP
										1.5	1.5	1	1	1.5	1	1	1.5		
88	Jul-11	2011 City Maintenance Staff, 2012 Maintenance Staff	4th Ave SW and SW 158th St	60, 88	None Provided		Site visit was conducted in late 2011. There is an erosion issue and a culvert in need of repair.	√	Potential Capital Project	3	5	3	5	3	3	1	5	36	1
60	12/5/2008	City Staff Recorded Public Citizen Complaint, 2012 Maintenance Staff	15815 4TH AVE SW	60,88	Erosion in his property. Mr Saboe claimed that WD 49 might pour the concrete on his property and it make worse by diverting stream		Scheduled meeting with Kenny and Michael Harres (206-242-8535)												
90	Jul-11	2011 City Maintenance Staff, Public Works Director (2012)	Ambaum - Miller Creek	90, 117, 118, 128	None Provided														
117	7/20/2011 000	Advisory Committee Meeting - Public Surveys	Miller Creek	90, 117, 118, 128	There are water quality issues in Miller Creek. The Creek has experienced significant damage this last winter from 152nd SW south. The speed at which stormwater is entering the creek needs to be looked at as well as the non-point pollution issues.		Received during the AC meeting from Chestine Edgar. A Map was provided of problems areas and can be found in a pdf titled "Comment from Chestine Edgar."	N/A - Regional Plan needed	Potential Capital Project	3	4	2	4	4	3	2	5	35	2
118	7/20/2011 000	Advisory Committee Meeting - Public Surveys	Miller Creek east of Ambaum by Kennedy High School and 136th	90, 117, 118, 128	The creek has not been classified correctly and the required building setbacks in that area are not sufficient. Additionally, there a storm water management issue in that area when the rains are heavy. Something needs to be addressed for stormwater retention in this area. Water quality is an issue in this area also.		Received during the AC meeting from Chestine Edgar. A Map was provided of problems areas and can be found in a pdf titled "Comment from Chestine Edgar."												
128	28-Feb-12	Public Works Director (2012)	NERA Project	90, 117, 118, 128	Funding needed for regional facilities for the NERA.				Potential Capital Project	3	4	2	4	4	3	2	5	35	
87	Jul-11	2011 City Maintenance Staff, 2012 Maintenance Staff	Des Moines Memorial Drive S and S 175th St	38, 87	Beaver Dam		Beaver Decceiver has been installed. Ongoing sediment problem requiring ongoing maintenance. There is flooding of private property, but no flooding of the roadway. A HPA may be needed.	√	Potential Capital Project	5	5	3	2	1	2	2	3	30	3
38	12/14/2007	City Staff Recorded Public Citizen Complaint	Des Moines Memorial Drive	38, 87	Water over roadway		Sam is getting signs put out												
119	1/31/2012	City Staff recorded Public Citizen Complaint 2012 Maintenance Staff	Ambaum Blvd SW and SW 120th Block	No other related complaints identified	Three phone calls were received in the last two weeks of January 2012 reporting water accumulation over the street. When there was an overlay done last year, this area became an issue with water ponding over the northbound lane. There is no drainage nearby to drop in a CB.		Maintenance Manager sent SW Program Manager email on 1/31/12 to ask for advise on how to address this issue.	√	Potential Capital Project	5	5	4	0	0	0	3	5	29.5	4
113	7/20/2011 000	Advisory Committee Meeting - Public Surveys	15240 20th Ave SW	No other related complaints identified	Flooding from Street (20th Ave SW). The untreated water flows into the lake (Lake Burien)		Received during the AC Meeting. Photos were included and can be found in a pdf titled "Photos from Robbie Howell." There is an oil/water separator onsite - maintenance keeps this facility maintained.	√	Potential Capital Project	5	4	4	0	3	0	3	3	29.5	4
10	2005	2005 Stormwater Drainage Master Plan: CIP Project List, 2012 Maintenance Staff	Hermes Depression	10, 19	Private property and right of way flooding around and near the depression. Hermes Depression needs a plan. There is an existing pump, plus a tight lined 18" pipe through private property - may need to build a new stormwater system through public ROW. This a maintenance intensive area.		A new pump station is no longer needed in the Hermes Depression along with a new generator to provide backup power. May need to re-route force main that is currently under residential homes - could be re-routed to 1st Ave.. Possible need for a bypass pipe. Project may require three phases: Master Plan / Pump Station / Rerouting of Force Main; See "new" projects below. The Hermes and Mayfair Depressions are connected - therefore do a joint Master Plan for the two depressions.	√	Potential Capital Project	5	5	3	0	0	0	3	5	28.5	6
19	1/10/2006	City Staff Recorded Public Citizen Complaint, 2012 Maintenance Staff	Mayfair Depression, SW 128TH ST and Ambaum BLVD	10, 19	Received complaint that Mayfair Pond was getting very high.		The Mayfair Depression needs a study. Maintenance crews report sediment accumulation occurs, but no construction CIP is needed at this time. The Hermes and Mayfair Depressions are connected - therefore do a joint Master Plan for the two depressions.												
13	2011	Engineering Staff - 2011, 2012 Maintenance Staff	20th Ave S between S 120th and S 124th St	13, 15	Expiring age of pipe, collapse pipe, broken joint and pipe, sub-standard basin structures		Potential solution: Replace the entire drainage system including 12 CBs, 1,300 LF length of pipe, and new drainage system on the other side of the street.	√	Potential Capital Project	5	5	3	0	0	0	3	5	28.5	6
15	2011	Engineering Staff - 2011, 2012 Maintenance Staff	20th Ave S from S 120th Ave S to 124th Ave	13, 15	Failed stormwater pipe.														
55	10/14/08	City Staff Recorded Public Citizen Complaint, 2012 Maintenance Staff	SW 165th St between 16th Ave SW and 19th Ave SW	55, 56, 92	Christie M. wanted to know the latest action from the City regarding to a flooding on SW 165th St		Site visit and bring her concern to Samir and HK. There is no existing stormwater system in this area. The road is collapsing.												
56	10/22/08	City Staff Recorded Public Citizen Complaint, 2012 Maintenance Staff	1604 SW 165th Street	55, 56, 92	Concern about the backyard flooding		will request VDO inspection	√	Potential Capital Project	5	3	3	3	0	0	3	5	28.5	6
92	Jul-11	2011 City Maintenance Staff, 2012 Maintenance Staff	SW 165th St and 16th Ave SW - 19th Ave SW	55, 56, 92	flooding														

## City of Burien Drainage Complaints - Rating/Ranking

Prepared by Otak Inc.

Updated: 3/21/12

Complaints deleted - 1, 35,36,39,40,41,42,43, 111(follow-up to #109), 63 (IDDE Problem), 95 (no address, cannot locate/follow-up)

Otak Work (November 2011, updated January 2012)									Otak Work (updated March 2012)										
Otak ID	Date	Source	Address	Related Complaints	Problem Description	Type of Problem - City Defined	City Action/Other Information	Site Visit Conducted?	Categorization	Flood Location	Flood Source	Flood Frequency	Erosion	Water Quality	Habitat	Economic Impact	Complaint History	Total Score	Ranking for CIP
										1.5	1.5	1	1	1.5	1	1	1.5		
17	1/10/2006	City Staff Recorded Public Citizen Complaint	607 SW 135TH ST	17, 104, 106	Has a lot of water by her house and says she cant park there cause there is too much. Wants some gravel or something so she can park there. I had Ken Thurman stop by and he said that she just has a low spot in the shoulder next to her house. There seems to be a bit of water coming thru the gravel from the neighbors house that she says has always been there. The road is pretty flat there and there may have been ditches there historically that were filled Ken thinks.		There is no existing drainage system. Public water onto private water.	√	Potential Capital Project	5	3	3	3	0	0	3	5	28.5	6
104	4/1/2011 14:18	City Staff Recorded Public Citizen Complaint	SW 135th St. & 8th Ave SW	17, 104, 106	Water coming up out of the shoulder between the street and the gravel on SW 135th Street on the south side about 3 houses from 8th Avenue SW (she did not specify which direction).	Erosion Damage	Groundwater - 300' of pipe.												
106	4/4/2011 14:30	City Staff Recorded Public Citizen Complaint	645 SW 135TH ST	17, 104, 106	Water is coming up out of the shoulder. It's not from storm drainage and I called water dist. 20 to have someone come out and they said it's not their water line either.	Surface water run-off issue													
82	Jul-11	July Public Survey	648 SW 152nd St	82, 50, 93	Critical areas issue. Two existing problems. #1. Storm drain at the corner of 152nd and 8th ave SW backs up when there is a constant heavy rainfall which then backs up into the drain on 8th Ave. SW. Which then backs up the alley drain and then comes into our business through the back doors. This rain floods our building at least once each year and sometimes up to four. This has been a problem since purchasing the building in 1989. It has been brought to the attention of the city many times and I have been told it is my problem. #2. There was a new street laid on 152nd st. and when it was made the water now accumulates in front of our businesses (at least 5 of us) at the rear of our cars. For most this would not be a problem, but our business requires us to CONSTANTLY be loading things in and out of customers cars at the rear of their cars. It is extremely annoying.		Water flowing onto private property from city street, Standing water, Water over road or sidewalk impacting vehicles or pedestrians. Otak suggests the City needs to follow-up with the person who made the complaint in the July Public Survey.	√	Potential Capital Project	3	5	3	0	0	0	5	5	27.5	11
50	10/06/08	City Staff Recorded Public Citizen Complaint	15008 8th SW	82, 50, 93	Backwater from ROW drainage		Site Visit												
93	6/3/2010 13:01	City Staff Recorded Public Citizen Complaint	825 SW 152ND ST	82, 50, 93	Flooding in public parking at SE corner of T intersection SW 152nd St & 8th Ave SW	Surface water run-off issue													
25	11/6/2006	City Staff Recorded Public Citizen Complaint, 2012 Maintenance Staff	SW 141 <sup>st</sup> Street	25, 26, 27, 85	Yard is flooding		SW 142 <sup>nd</sup> Street flooding is severe. Roads have been closed												
26	11/6/2006	City Staff Recorded Public Citizen Complaint, 2012 Maintenance Staff	SW 142 <sup>nd</sup> Street	25, 26, 27, 85	Water is running from the street into her garage and under her house. The drain in her driveway cannot handle the street runoff.		SW 142 <sup>nd</sup> Street flooding is severe. Roads have been closed. No outlet - not enough capacity.	√	Potential Capital Project	4	5	1	0	1	0	3	5	26.5	12
27	11/6/2006	City Staff Recorded Public Citizen Complaint, 2012 Maintenance Staff	SW 142 <sup>nd</sup> Street	25, 26, 27, 85	Pond is full and water is bubbling out the pipe above it - worried that it will flood.		1:06 - All roads to the depression have been closed.												
85	7/1/2011	2011 City Maintenance Staff, 2012 Maintenance Staff	142nd St Depression	25, 26, 27, 85	None Provided														
86	Jul-11	2011 City Maintenance Staff, 2012 Maintenance Staff	Des Moines Memorial Drive S and S 116th St - S 118th St	No other related complaints identified	Private, public, to private system. Flood in December 2010		City maintenance crews report that public water drains to private property and back to public right-of-way.	√	Potential Capital Project	5	5	3	0	0	0	3	3	25.5	13
105	4/4/2011 8:33	City Staff Recorded Public Citizen Complaint	12833 Occidental Avenue South	105, 103	Emily reports that the water comes in off the street and is pooling in their yard at 12833 Occidental Avenue South.	Surface water run-off issue	AMM Comment: One block over from #65 and 108, but likely a joint solution or maybe a need to clean all ditch systems in this area.												
103	3/29/2011	City Staff Recorded Public Citizen Complaint	12455 2nd Ave S	105, 103	Hi Larry -One more thing that I need to ask you about. At 12455 2nd Ave.S Burien Wa 98168 there is a house with a gravel parking strip with no drainage. Our street has a combination of drainage ditches and graveled parking strips with catch basins. This house and the house directly North of it have no catch basins on their graveled parking strip that result in a giant puddle that when it rains extends out to the middle of the road. There is always a giant puddle(20 by 10 feet) here but sometime it	Surface water run-off issue		√	Potential Capital Project	4	5	3	0	0	0	1	5	25	14
80	Jul-11	July Public Survey	14639 25th AVE SW	No other related complaints identified	Critical areas issue. water collected over several blocks pours into the park, contributing to slides below on the slope near the beach		Water flowing onto private property from city street. The slides affect both the park and adjacent property. The water should be channeled to the beach rather than infiltrate the steep slope. It is piped there from an area of many blocks. This problem is located on Parks Property.	√	Potential Capital Project	5	5	2	4	2	0	0	0	24	15
7	2005	2005 Stormwater Drainage Master Plan: CIP Project List	25th Avenue SW Drainage System	No other related complaints identified	Erosion and sedimentation of streams 0367 and 0368.		A new stormwater system is needed.	N/A - Use design from 2005 Plan	Potential Capital Project	3	3	1	5	3	0	0	3	24	15
125	2/16/2012	City Staff - Maintenance Crew, 2012 Maintenance Staff	116th Ave SW between 1st Ave SW and 4th Ave SW	No other related complaints identified	There is a 30" pipe that drains to an existing ditch (City has a 10' easement) adjacent to a church parking lot that abruptly ends. Water disperses into a forested area then drains to an existing pipe and then into an existing detention pond. The dispersion into the wooded area causes the water to slow down and silt up behind the existing pipe. Maintenance crews have to clean out the pipe often. This is a reoccurring problem.			√	Potential Capital Project	0	0	0	5	5	0	2	5	22	16
48	39701	City Staff Recorded Public Citizen Complaint, 2012 Maintenance Staff	16521 4th Ave S	No other related complaints identified	No adequate drainage at the Blake Manor neighborhood. There is no drainage on 4th Ave S. The road is flat and there is standing water in the road.		Site Visit	√	Potential Capital Project	5	5	2	0	0	0	0	3	21.5	17
127	2/28/2012	2012 City Maintenance Crews	Arbor Lake	No other related complaints identified	Arbor Lake is owned by the Park's Department. There are water quality issues in the lake including algae blooms and no swimming warnings in the summer.			√	Potential Capital Project	0	0	0	0	5	5	3	3	20	18

## City of Burien Drainage Complaints - Rating/Ranking

Prepared by Otak Inc. Updated: 3/21/12

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										1.5	1.5	1	1	1.5	1	1	1.5		
23	11/6/2006	City Staff Recorded Public Citizen Complaint	S. 160 <sup>th</sup> Street	No other related complaints identified	Water building up – her son is trying to pump it back.		2:11 – needs drainage investigation long-term. CB appears to be badly plugged but on private street.		Ongoing Tracking									0	
6	2005	2005 Stormwater Drainage Master Plan: CIP Project List	30th Avenue	No other related complaints identified	Beach erosion due to storm drainage system outfall with no energy dissipation. Potential erosion of coastal bluff due to damaged storm drain line.		Follow-up needed to determine current CIP needs. Expand/redesign an existing energy dissipater at the outfall.		Ongoing Tracking									0	
11	2005	2005 Stormwater Drainage Master Plan: CIP Project List	S 136th Street	No other related complaints identified	Lack of LWD, limited stream buffers, bank hardening, lack of gravel and limited estuary area.		Combine with S 136th Street Wetland Enhancement Master Planning JC: Is this on Miller Creek? Look up old CIP Details.		Ongoing Tracking									0	
77	Jul-11	July Public Survey	15826 16th Ave. S.W.	77, 96	Stream or Ditching Issue. Purchased home from builder who was denied permit to put down drain pipe from north end of property to south end of property and putting down a parking strip on top. Most all of my neighbors storm sewers are covered (grass, gravel, & blacktop). 1.) Ditch sides are "very steep" and extremely hard to maintain. 2.) Water running down street flows towards my ditch washing out the edges of my driveway. 3.) Ditch is lower than neighbors causing standing water that does not drain.		Water flowing onto private property from city street, Standing water. 1.) Standing water in ditch is breeding ground for mosquitoes in warm weather, West Nile Virus is a concern. 2.) Mowing grass is dangerous due to depth & slope. City staff to follow up with person making the complaint.		Ongoing Tracking									0	
96	3/3/2011 15:59	City Staff Recorded Public Citizen Complaint	15838 16TH AVE SW	77, 96	City's storm drain pipe was very deep from the surface near his driveway	Check Gravity Main													
8	2005	2005 Stormwater Drainage Master Plan: CIP Project List	Maplewild Avenue at SW 156th Street	No other related complaints identified	Beach erosion due to storm drainage system outfall with no energy dissipation. Potential erosion of coastal bluff due to damaged storm drain line.		New stormwater system with new outfall is needed.		Ongoing Tracking									0	
12	2005	2005 Stormwater Drainage Master Plan: CIP Project List	SW 174th Street and SW 156th Street	No other related complaints identified	Potential erosion of coastal bluff and damage to existing residential structures due to damaged storm drain line.		Follow-up needed to determine current CIP needs.		Ongoing Tracking									0	
2	2005	2005 Stormwater Drainage Master Plan: CIP Project List	Salmon Creek Bypass	No other related complaints identified	Culvert is a partial fish barrier.		Nothing has been completed to date on this project. Follow-up to determine current CIP needs.		Ongoing Tracking									0	
3	2005	2005 Stormwater Drainage Master Plan: CIP Project List	129th Street	No other related complaints identified	Stormwater system is failing.		System on private property needs replacement, upgrade, and easement acquisition; good project for the annual replacement program.		Ongoing Tracking									0	
9	2005	2005 Stormwater Drainage Master Plan: CIP Project List, 2012 Maintenance Staff	1022 S 140th Street	No other related complaints identified	Potential private property flooding as additional impervious areas are created upstream due to insufficient hydraulic capacity in the existing drainage system. There is a 36" concrete pipe and a depression on the road.		No recent complaints. Conduct further investigations. - As of February 2012, this is no longer the case. This is still a problem reported by the maintenance staff.		Ongoing Tracking									0	
72	Jul-11	July Public Survey	831 SW 134th St	No other related complaints identified	The entire street floods at that point		Water flowing onto private property from city street, Standing water, Water over road or sidewalk impacting vehicles or pedestrians, Flooding of yards or homes. There is no existing drainage system. <b>Low point in the road needs a drainage system.</b>	√	Private Issue	5	3	3	3	0	0	3	5	28.5	6
126	28-Feb-12	2012 Maintenance Staff	11232 21st Ave SW	No other related complaints identified	Flooding of public water on to private property.		This is a private issue - private water drains onto private property.	√	Private Issue									0	
58	11/12/2008	City Staff Recorded Public Citizen Complaint, 2012 Maintenance Staff	16218 16th Ave SW	No other related complaints identified	Water from alley flow into driveway. This a private issue - the source of surface water runoff is the alley, which is privately owned.		Field visit (11/12/08), Call leave message (11/13/08), sent out BMP		Private Issue										
129	2/28/2012	2012 Maintenance Staff	S. 116th Pl and 30th Ave SW	No other related complaints identified	Public water to private water and back to public water through an existing cul-de-sac that has an existing bioswale. There are houses on steep slopes. The sewer main is broken and has taken house down the hills. A study is needed. This may be a private issue?		This location was to be designed by the City two years ago. Depending on design, the City may be able to do in house. Otak needs a copy of the design to determine an appropriate cost estimate. Past review by attorney indicated that this is a private issue. Drainage pattern matches natural flow path. Private owner is responsible for accepting and passing City water through her the property.		Private Issue										
24	11/6/2006	City Staff Recorded Public Citizen Complaint	SW 130 <sup>th</sup> Street	67, 112	Basement is flooding		Given to Daniel & Ramesh. UPDATE: 10:40: Richard heading in that direction now.	Location could not be identified	Private Issue									0	
67	4/29/2009	City Staff Recorded Public Citizen Complaint	14922 S 132nd St	67, 112	Flooding in his property		Request meeting with Drainage Engineer		Private Issue										
131	2/28/2012	2012 Maintenance Staff	SW 140th and 17th Ave SW	No other related complaints identified	Private road that serves 10 properties has a failed stormwater system. The City has done maintenance in the area, but private property owner has not replaced the aging system.		This is a private issue.		Private Issue									0	
16	1/10/2006	City Staff Recorded Public Citizen Complaint	1051 SW 149TH ST	No other related complaints identified	Has a lot of water in the ground in backyard bad says that he found a clay pipe in his backyard last summer. Wants to know what it is. Neighbor says it is her irrigation line? I think he wants to know if it is a pipe he can get rid of if its bringing more water to his yard from a neighbor.				Private Issue									0	

## City of Burien Drainage Complaints - Rating/Ranking

Prepared by Otak Inc.

Updated: 3/21/12

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47	09/03/08	City Staff Recorded Public Citizen Complaint	467 S 190th St	No other related complaints identified	Sink hole in owner's backyard near bioswale		Site Visit		Private Issue									0	
74	Jul-11	July Public Survey	12017 24th Ave S	No other related complaints identified	Culvert/drainage pipe		There is a concrete pipe that someone put a corrugated plastic pipe inside. Also, the pipe system has an opening and an angle change that is impossible for me to correct. I just want help to correct this problem! It requires heavy equipment that can only access from the stormwater pond parcel. City staff should follow up with the person making the complaint.		Private Issue									0	
49	09/30/08	City Staff Recorded Public Citizen Complaint	1457 SW 150th	No other related complaints identified	Concerning about runoff from Driveway at 1451 SW 150th		Site Visit		Private Issue									0	
76	Jul-11	July Public Survey	16040 14th Ave SW	No other related complaints identified	rain runs down back yard problems with basement flooding.		Water flowing onto private property from city street, Flooding of yards or homes		Private Issue									0	
57	11/12/2008	City Staff Recorded Public Citizen Complaint	156th Ave & 1st Ave S	No other related complaints identified	Parking lot flooding		Give the City SWM map to maintenance crew	√	Private Issue									0	
115	7/20/2011 0900	Advisory Committee Meeting - Public Surveys	15714 15th Pl SW	75, 115	Backyard flooding on the south side of Lake Burien.		Received during the AC Meeting. Photos were included and can be found in a pdf titled "Photos from Robbie Howell."		Private Issue									0	
52	10/07/08	City Staff Recorded Public Citizen Complaint	148 18th AVE SW	No other related complaints identified	Two Storm Drain		Site Visit		Not Enough Information									0	
5	2005	2005 Stormwater Drainage Master Plan: CIP Project List	14th Ave South	5, 31, 66, 89 (?)	Private property flooding due to damaged storm drainage system.		Keep this project on list.												
31	12/14/2007	City Staff Recorded Public Citizen Complaint	14 <sup>th</sup> Avenue South	5, 31, 66, 89 (?)	Swale is not working – overflowing		Dan Bath assigned. Swale is operating as planned, simply over-capacity.	√	Maintenance Referral									0	
66	4/28/2009	City Staff Recorded Public Citizen Complaint	1228 S 132nd St	5, 31, 66, 89 (?)	Flooding property		HK, Sam, Ken will meet with property owner												
89	7/1/2011	2011 City Maintenance Staff	14th Ave S and S 132nd St	5, 31, 66, 89 (?)	None Provided														
122	2/1/2012	City Council Member via Public Works Director	Ambaum & 142nd	122, 123, 124, 130	There is a puddle at the intersection. Need a CB installed to collect the water.		A City Council member submitted photos to the Public Works Director to document this problem.												
123	2/1/2012	City Council Member via Public Works Director	Ambaum & 146th	122, 123, 124, 130	There is a puddle at the intersection. Need a new CB added to the existing stormwater system installed to collect the water.		A City Council member submitted photos to the Public Works Director to document this problem.	√	Maintenance Referral									0	
124	2/1/2012	City Council Member via Public Works Director	Ambaum & 148th	122, 123, 124, 130	There are puddles along the street curb.		A City Council member submitted photos to the Public Works Director to document this problem.												
130	3/19/2012	2012 Maintenance Staff	Ambaum & 140th through 148th	122, 123, 124, 130	The problem on Ambaum has had bubbling catch basins from 140 <sup>th</sup> to 146 <sup>th</sup> (roughly).		This problem could be because Ambaum drains to the 142nd Depression.												
81	Jul-11	July Public Survey	12244 22nd Ave S	No other related complaints identified	After a rain event, storm water drains from street down my graded driveway (eventually puddling around the south east corner of the house). I have added more gravel to level the area off and provide drainage, but the problem persists. Possible		Water flowing onto private property from city street. City maintenance crews will pave a berm to direct water to the nearest CB.		Maintenance Referral									0	
79	Jul-11	July Public Survey	410 SW 139th Street	No other related complaints identified	Critical areas issue. consistently standing water causing a hazard to pedestrians and bicyclers crossing the street as well as to drivers turning right from 4th Ave onto 139th Street South and drivers going west on 139th street crossing 4th Ave.		Standing water. Nonfunctioning storm drainage. Water over road or sidewalk impacting vehicles or pedestrians. Maintenance crews will fix this issue by installing a new CB and tie it into the existing system.		Maintenance Referral									0	
97	3/14/2011 10:41	City Staff Recorded Public Citizen Complaint	1028 S 117th St	No other related complaints identified	Street runoff missed storm drain & run into his property down S 116th St to S 117th St	Surface water run-off issue			Maintenance Referral									0	
61	1/13/2009	City Staff Recorded Public Citizen Complaint	345 S 184th St	No other related complaints identified	Runoff did not drain to ditch but on the road		Will visit the site during raining again, berm or new CB might be a solution		Maintenance Referral									0	
108	4/5/2011 14:40	City Staff Recorded Public Citizen Complaint	12846 2nd Avenue South	No other related complaints identified	He says when it rains the ditch overflows and runs down his driveway almost into his house. Please check it out and have it cleaned.	Ditch Back-up	SWM Maintenance crew will grade ditch to fix the problem.		Maintenance Referral									0	
84	Jul-11	2011 City Maintenance Staff	S 160th St and 1st Ave S	No other related complaints identified	Northbound on 1st Ave S				Maintenance Referral									0	
4	2005	2005 Stormwater Drainage Master Plan: CIP Project List, 2012 Maintenance Staff	1st Avenue S and SW 132nd Street, Local Depressions at 4th Avenue South and S 132nd Street, 1st Avenue S and SW 132nd Street,	No other related complaints identified	Private property and right of way flooding around and near the depression.		Whatney Property There is an issue with yard flooding and some flooding of homes during the 100-year+ storm event. Purchase additional property, design infiltration pond, and pipe water to the new facility. Maintenance crews can grad this ditch so that it has proper flow.	√	Maintenance Referral									0	
75	Jul-11	July Public Survey	1808 SW 156th	75, 115	Critical areas issue. storm drain drains into Lake Burien and frequently it functions poorly and does not sequester the oils and other pollutants. It is a poor quality separator. Over the years it has backed up or overflowed.		Water flowing onto private property from city street, Nonfunctioning storm drainage, Flooding of yards or homes. fairly large quantities of water flowing onto private property Below: I am blind and do not have photos. NOTE ALSO that on 152nd between 10th and 18th, there are large quantities of pollutants that wash into the lake.	√	Maintenance Referral									0	
107	4/5/2011 14:34	City Staff Recorded Public Citizen Complaint	112 SW 157th Street	No other related complaints identified	The large area where the road meets their parking lot that keeps eroding or sinking so that people are bottoming out when they pull into the lot. This is at 112 SW 157th Street and she says that there is quite a pond that forms there whenever it rains.	Erosion Damage	This is a paving issue - can be completed by the Street Department.	√	Maintenance Referral									0	
62	1/16/2009	City Staff Recorded Public Citizen Complaint	15855 11th Ave SW	62, 83, 116	- Flooded house due to clogged catch basin on the driveway - Sand from the street to her catch basin - Asked asphalt berm on her property		Maintenance crews can pave a berm to redirect the water.												
83	Jul-11	July Public Survey	15648 11 ave sw	62, 83, 116	Stream or Ditching Issue. The drain itself location does not catch correct. It pushes the water to the street, then gravel in parking strip keep in street, which in turn my drain not correct so on down the street on 11th SW What it does is push the gravel down the street, drains not utilized.		Water flowing onto private property from city street, Nonfunctioning storm drainage. Maintenance crews can lower the existing CB.		Maintenance Referral									0	

## City of Burien Drainage Complaints - Rating/Ranking

Prepared by Otak Inc.

Updated: 3/21/12

Complaints deleted - 1, 35,36,39,40,41,42,43, 111(follow-up to #109), 63 (IDDE Problem), 95 (no address, cannot locate/follow-up)

Otak Work (November 2011, updated January 2012)									Otak Work (updated March 2012)										
Otak ID	Date	Source	Address	Related Complaints	Problem Description	Type of Problem - City Defined	City Action/Other Information	Site Visit Conducted?	Categorization	Flood Location	Flood Source	Flood Frequency	Erosion	Water Quality	Habitat	Economic Impact	Complaint History	Total Score	Ranking for CIP
										1.5	1.5	I	I	1.5	I	I	1.5		
116	7/20/2011 0000	Advisory Committee Meeting - Public Surveys	152nd SW, 20th SW 155th SW 158th, 11th SW, 10th SW, 9th SW and 149th SW.	62, 83, 116	Street flooding programs and standing water problems.		Received during the AG meeting from Christine Edgar. A Map was provided of problems areas and can be found in a pdf titled "Comment from Christine Edgar."												
78	Jul-11	July Public Survey	14626 12th Avenue SW	No other related complaints identified	localized flooding occurred this last fall during heavy rains. Flooding is about midway down towards right side of property and covered the sidewalk between row of shrubs and grass adjacent to street. Deepest area of flooding was 3-4".		Water over road or sidewalk impacting vehicles or pedestrians, Flooding of yards or homes		Maintenance Referral									0	
71	Jul-11	July Public Survey	1458 SW 152nd St	No other related complaints identified	Flooding of side yard. In fall and winter months. Water flowing out from curb on East side of 16th.		Nonfunctioning storm drainage, Water over road or sidewalk impacting vehicles or pedestrians, Flooding of yards or homes		Maintenance Referral									0	
101	3/18/2011 13:47	City Staff Recorded Public Citizen Complaint	2844 SW 167th Pl	No other related complaints identified	Check gravity main.	Check Gravity Main			Maintenance Referral									0	
102	3/24/2011 11:20	City Staff Recorded Public Citizen Complaint	411 S 164TH ST	No other related complaints identified	Underground water reportedly found by Brian. Water District 49 near the incident address.	Check Gravity Main			Maintenance Referral									0	
91	Jul-11	2011 City Maintenance Staff	1st Ave and 163rd St pond	No other related complaints identified	None Provided		Check on site visit in Feb 2012.		Maintenance Referral									0	
73	Jul-11	July Public Survey	1032 sw 150th	No other related complaints identified	Stream or Ditching Issue. Needs gravel and packing.		Standing water, Nonfunctioning storm drainage, Water over road or sidewalk impacting vehicles or pedestrians, Flooding of yards or homes		Maintenance Referral									0	
64	2/6/2008	City Staff Recorded Public Citizen Complaint	1058 SW 150th St Mailing address: 1210 SW 152nd St, Burien. 98166	64, 68	Claiming flooding from city street into her basement.		Field visit. System was cleaned in 2009.												
68	5/5/2009	City Staff Recorded Public Citizen Complaint	1058 SW 150th St	64, 68	Claiming flooding from city street into his basement		Field visit, photos taken, telling him that flooding occurred in private property. His property located at a low point All drainage structures cleaned a few month ago. He contacted HK for wanting immediate response. He still believed the problem descriptions, Vector completed on 5/7/2009. System was cleaned in 2009.		Completed									0	
51	10/06/08	City Staff Recorded Public Citizen Complaint	16048 9th AVE SW	No other related complaints identified	Neighbor filled the ditch		Site Visit		Completed									0	
69	5/29/2009	City Staff Recorded Public Citizen Complaint	2325 SW 172nd St	No other related complaints identified	Runoff overflow into their property		Field check on 5/28/2008		Completed									0	
120	2/1/2012	City Council Member via Public Works Director	21st & 156th		No existing stormwater system. There is puddling along 21st.		A City Council member submitted photos to the Public Works Director to document this problem. Maintenance crews will monitoring - there are existing ditches at this location.		Maintenance Referral									0	
121	2/1/2012	City Council Member via Public Works Director	152nd & 18th		There is a puddle at the intersection of 152nd & 18th. There is an existing CB at the intersection.		A City Council member submitted photos to the Public Works Director to document this problem. Paving issue - Street Department will make the repairs.		Maintenance Referral									0	
94	1/7/2010 10:15	City Staff Recorded Public Citizen Complaint	12029 26TH AVE SW	No other related complaints identified	Claiming that existing CB did not collect street runoff leading to flooding into private property and eroding existing retaining wall	Surface water run-off issue			Maintenance Referral									0	
65	4/6/2009	City Staff Recorded Public Citizen Complaint	12841 2nd Ave S	No other related complaints identified	Sinking hole water coming out and flooding into her property		Field visit on 4-6-2009, will schedule VDO inspection on 3-15-2009		Completed									0	
30	12/14/2007	City Staff Recorded Public Citizen Complaint	12 <sup>th</sup> Avenue SW	No other related complaints identified	Street runoff is overflowing her driveway drain. Would like to talk to King County vector crew.		Called Ken @ 12:56 pm. Sam dug a trench in the shoulder and rerouted the water so it won't go into her garage. She will need sandbags.		Completed									0	
98	3/14/2011 10:46	City Staff Recorded Public Citizen Complaint	11844 12th Ave S	No other related complaints identified	Exposed pipe & Drain Washout	Check Gravity Main			Completed									0	
20	11/6/2006	City Staff Recorded Public Citizen Complaint	6 <sup>th</sup> Avenue South	No other related complaints identified	Silt from Cedarhurst is running down street and into yards. Flooding house				Completed									0	
109	4/11/2011 15:38	City Staff Recorded Public Citizen Complaint	1407 sw 143rd st	No other related complaints identified	Ditching the ditch request	Check Gravity Main	Meet with Steve Hopkins on Friday 5/31 at 8am to look at the work he wants to have done on the ditch in front of his house.		Completed									0	
114	7/20/2011 0000	Advisory Committee Meeting - Public Surveys	1431 SW 152nd St	No other related complaints identified	Flooding from 152nd clogged and inadequate Burien stormwater drainage system. The untreated water flows into the Lake Burien.		Received during the AG Meeting. Photos were included and can be found in a pdf titled "Photos from Robbie Howell."		Completed									0	
100	3/18/2011 13:45	City Staff Recorded Public Citizen Complaint	531 S 137th pl	No other related complaints identified	Check gravity main.	Check Gravity Main	GM inspection request.		Completed									0	

## City of Burien Drainage Complaints - Rating/Ranking

Prepared by Otak Inc. Updated: 3/21/12

Complaints deleted - 1, 35,36,39,40,41,42,43, 111(follow-up to #109), 63 (IDDE Problem), 95 (no address, cannot locate/follow-up)

Otak Work (November 2011, updated January 2012)									Otak Work (updated March 2012)										
Otak ID	Date	Source	Address	Related Complaints	Problem Description	Type of Problem - City Defined	City Action/Other Information	Site Visit Conducted?	Categorization	Flood Location	Flood Source	Flood Frequency	Erosion	Water Quality	Habitat	Economic Impact	Complaint History	Total Score	Ranking for CIP
										1.5	1.5	I	I	1.5	I	I	1.5		
70	7/16/2009	City Staff Recorded Public Citizen Complaint	2335 SW 116 <sup>th</sup> St	70, 110	Puddling on the street. The property owners asked installation of a CB or overlay. Issued originally to Daniel Bretzky and Samir B.		HK visited the site, met De Eda (206-268-0633), Terry Joggins, Colleen Webster. Inform to Samir AMM Comment: if this is a maintenance referral, is the problem at 2223 SW 114th a similar issue that can be addressed at the same time?		Completed									0	
110	5/16/2011 9:55	City Staff Recorded Public Citizen Complaint	2223 sw 114th st	70, 110	Flooding. want to check if we have any solutions or recommendations for her	Surface water run-off issue													
18	1/10/2006	City Staff Recorded Public Citizen Complaint, 2012 Maintenance Staff	4TH AVE SW between 146TH and 148TH	No other related complaints identified	the depression on 4th AVE SW between 146th ST and 148th ST flooded. King County crews unclogged the basins along the west side of 4th. Lanes were temporarily closed.				Completed									0	
112	6/3/2011 16:23	City Staff Recorded Public Citizen Complaint	13226 4th Ave S	No other related complaints identified	Ditch check	Check Gravity Main		√	Completed									0	
99	3/14/2011 10:47	City Staff Recorded Public Citizen Complaint	16025 25th Avenue SW	No other related complaints identified	Mr. Sharkey reports that a depression is forming in the roadway and his rockery has shifted a bit because of it.	Erosion Damage	No existing drainage system; a new system needs to be installed. This has been completed by the Street Department.	√	Completed									0	
14	2011	Engineering Staff - 2011	17225 Ambaum Blvd S	No other related complaints identified	The runoff from the City's drainage system at the discharge point (DC6898)-near 17225 Ambaum Blvd S, has not been discharged well. There is also a shoulder erosion problem nearby. It was reported that these problems have been going on in the past few years. This discharge point is collected the runoff from the street and shoulder of street on Ambaum Blvd S from S. 170 <sup>th</sup> St to S 173 <sup>rd</sup> Pl. Most of street and shoulder runoff on easterly side of Ambaum Blvd S going into our storm drain system. Also, the discharge point DC6898 (outlet) is at least 1.5 feet below existing ground level of the wetland; as a result, the runoff trends to stand near the point, which leads to sometimes having high water level in CB3923 or backup runoff. The level of the wetland downstream may also have higher elevation than the discharge point.		Perform wetland enhancement or mitigation. Since this wetland belongs to private, it may need to get a drainage easement from property owner. It was estimated per our GIS map that the length of this wetland to where the runoff finally meet the Walker Creek was 530 ft. The appropriate environmental permits are required. Shoulder or drainage works are also part of these scopes to reduce existing erosion problems or to increase the capacity of the systems		Completed									0	
21	11/6/2006	City Staff Recorded Public Citizen Complaint	8 <sup>th</sup> Avenue SW	21, 46	Sam reports that water is by-passing the drains and they will need sandbags or some way to divert the water.		Sam & Richard sent out to this location. Unplugged culvert – water is bypassing catch basin – built in WRONG location.		Completed									0	
46	12/14/2007	City Staff Recorded Public Citizen Complaint	8 <sup>th</sup> Avenue SW	21,46	Water is missing the ditch and eroding around mailboxes		Dan checked it out – no flooding problem but needs to have erosion problem fixed. E-mailed to Daniel to attend to after storm event is over.												
22	11/6/2006	City Staff Recorded Public Citizen Complaint	Des Moines Memorial Drive	No other related complaints identified	Water coming off of Moshier Field into the back of her "C" Building – units are starting to flood		Dan/Mike sent to this location. UPDATE: 10:48 a.m.: Myron is out there with sandbags to alleviate the problem.		Completed									0	
28	11/6/2006	City Staff Recorded Public Citizen Complaint	Sylvester Road SW	Maybe related: 28, 45	Water running into the yard/house of a 94-year old man. Linda is his "watcher".		Small berm put in; FD will check into bagging the driveway.		Completed									0	
45	12/14/2007	City Staff Recorded Public Citizen Complaint	Sylvester Road SW	Maybe related: 28, 45	Water is building up on 8 <sup>th</sup> Place SW		Sam & Richard sent out to this location												
29	12/14/2007	City Staff Recorded Public Citizen Complaint	Shorecrest Drive SW	No other related complaints identified	Water bubbling up from CB		Daniel inspected; normal storm flow, CB overwhelmed by not clogged		Completed									0	
32	12/14/2007	City Staff Recorded Public Citizen Complaint	15 <sup>th</sup> Avenue SW	No other related complaints identified	Yard is flooding		Dan/Richard sent there.		Completed									0	
33	12/14/2007	City Staff Recorded Public Citizen Complaint	30 <sup>th</sup> Avenue SW	No other related complaints identified	Concerned about water going down 30 <sup>th</sup> Avenue SW and flooding at the bottom. Drain that was installed is too high and water is just going around it and down the hill		John O out to check on it @ 11:02. 12:02 – John checked it out and all is OK, some water going past CBs, but entering them further down the road.		Completed									0	
34	12/14/2007	City Staff Recorded Public Citizen Complaint	4 <sup>th</sup> Avenue South	No other related complaints identified	Water coming down hill into her yard.		Ken will check it out. Trench was dug to relieve water runoff		Completed									0	
37	12/14/2007	City Staff Recorded Public Citizen Complaint	8 <sup>th</sup> Place SW	No other related complaints identified	8 <sup>th</sup> Place is overflowing. She checked drains and cleared leaves. Water is bubbling out at the fire hydrant		Given to Dan/Richard. They checked and it looks like where the water was coming out is from a neighbor's house drain. All is flowing OK – just too much water.		Completed									0	
44	12/14/2007	City Staff Recorded Public Citizen Complaint	SW 148 <sup>th</sup> Street	No other related complaints identified	Coluccio setting traffic control at flooding. Outside lane closed		UPDATE: 1:07 – 1 WB lane to be opened & turn lane on 1 <sup>st</sup> reopened. Swept is needed to get rid of bark on roadway.		Completed									0	
53	10/07/08	City Staff Recorded Public Citizen Complaint	1218 SW 118th St	No other related complaints identified	Owner complained that there was existing ditch in front of his property and was filled by the City 3 years ago		Site Visit and perform GIS verification; there was no existing ditch at location		Completed									0	
54	10/08/08	City Staff Recorded Public Citizen Complaint	1409 SW 164th St	No other related complaints identified	Drainage coming from alley and going into his property		City & King County will install a berm at driveway in front of his property so that storm water will be drained to existing ditch		Completed									0	
59	11/12/2008	City Staff Recorded Public Citizen Complaint	14906 21st ST SW - the previous owner passed away and the son want to sell the house - Lower land	No other related complaints identified	Pipe flow into property owner's back yard ditch system		Field visit, Need review of BSF114 and BSF180 - Natural water course, no drainage complaints records before		Completed									0	

Appendix 4-3: CIP Projects: Project  
Descriptions, Cost Estimates and  
Project Sketches



**City of Burien**  
**Project #31760**  
**Prepared by Otak Inc.**  
**Updated: 6/10/12**

**City of Burien Stormwater Capital Improvement Projects**

Project Title	CIP ID	Complaint IDs	Location	Type	Problem Description	Project Description	Project Cost
Capacity Improvement at 4th Avenue SW	CIP 1	60, 88	Near the intersection of 4th Ave SW and SW 158th St	Capital Construction Project	Large Scour Hole on Creek - close to a privately owned garage. Erosion of the stream is moving more sediment downstream.	Re-routing of roadway drainage away from erosion area; increasing capacity on 4th Avenue SW drainage system.	\$552,000
20th Ave SW Drainage Improvements	CIP 2	113	20th Ave SW Near Lake Burien	Capital Construction Project	No existing stormwater system causes localized flooding of the roadway. Possible water quality concern.	Add new stormwater system on the east side of the street. Consider installing water quality treatment to treat road runoff.	\$390,000
20th Ave S between S 120th Ave and S 124th St Drainage Improvements	CIP 3	13, 15	20 <sup>th</sup> Ave S between S 120 <sup>th</sup> Ave and S 124 <sup>th</sup> St	Capital Construction Project	Replace aging/failing stormwater system on 20th Ave S.	Replace existing stormwater system to 20 <sup>th</sup> Ave S. Verify/upgrade system capacity. Consider installing water quality treatment to treat road runoff.	\$441,000
SW 165th St between 16th Ave SW and 19th Ave SW	CIP 4	55, 56, 92	SW 165th St between 16th Ave SW and 19th Ave SW	Capital Construction Project	No existing stormwater system causes localized flooding of the roadway.	Add new stormwater system to SW 165 <sup>th</sup> St. Consider installing water quality treatment to treat road runoff and adding sidewalks to the street.	\$322,000
SW 135th St and 6th Ave SW Drainage Improvements	CIP 5	17, 104, 106	SW 135th St and 6th Ave SW (Near House #607)	Capital Construction Project	No existing stormwater system causes localized flooding of the roadway and adjacent private property.	Add new stormwater system to SW 135 <sup>th</sup> St at 6 <sup>th</sup> Ave SW to manage public water and keep it off private property. Consider use of LID techniques.	\$154,000
SW 152nd and 8th Ave SW Drainage Improvements	CIP 6	50, 82, 93	SW 152nd and 8th Ave SW	Capital Construction Project	The City's stormwater system is under capacity, which causes flooding of a privately owned commercial parking lot. The City has an easement for the stormwater system that is partially located on private property.	Upsize existing stormwater conveyance system.	\$457,000
25th Ave SW Drainage Improvements	CIP 7	7	25th Avenue SW Drainage System near Maplewild Avenue NW	Capital Construction Project	Erosion and sedimentation of streams 0367 and 0368. (Project Identified in 2005 DMP)	Provide a new 18- to 24-inch diameter pipe along 25th Ave SW and connect to the existing storm drainage system located at Maplewild Ave SW. Acquire storm drainage easement for the portion of the new storm drainage system that is located on private property. Provide water quality treatment manhole at the downstream end of the new drainage system.	\$799,000
4th Ave S/Blake Manor Neighborhood Drainage Improvements	CIP 8	48	4th Ave S between S 168th St and S 165th St	Capital Construction Project	No existing stormwater system causes localized flooding of the roadway.	Add new stormwater system at 4 <sup>th</sup> Ave S from S 165 <sup>th</sup> St to S 168 <sup>th</sup> St	\$639,000
Lake Burien System Retrofit	Study 1	90, 117, 118	Lake Burien/Miller Creek Watershed	Study	Flooding and water quality issues in Lake Burien and downstream system to Miller Creek.	Evaluation of water quality retrofit opportunities in Lake Burien drainage basin and capacity evaluation for downstream system.	\$250,000
NERA Master Drainage Plan	Study 2	128	NERA	CIP	Regional stormwater plan needed to support NERA development.	Master Drainage Plan to locate and design regional stormwater management facilities.	\$350,000
Des Moines Memorial Drive and S 175th St Sediment Study	Study 3	38, 87	Des Moines Memorial Drive S and S 175th St	Study	Sediment accumulation behind a recently installed beaver deceiver is causing flooding of the roadway.	Sediment Management Study/Source Tracing	\$100,000
Hermes and Mayfair Depressions Master Plan	Study 4	10, 19	Hermes Depression, Mayfair Depression	Study	Flooding occurs in the Hermes and Mayfair Depressions. Long term regional stormwater management needed.	Regional Plan for stormwater retention and water quality facilities	\$200,000
142nd Street Depression Improvements	Study 5	25, 26, 27, 85	142nd St Depression	Study	Two detention ponds are connected, but have no outlet. During large rainfall events the pond overflow and flood public ROW and adjacent private property.	Geotechnical investigation to confirm infiltration capacity. Possible retrofit of pond with infiltration or install a high flow bypass or add a pump to the pond with no outlet.	\$150,000
Arbor Lake Water Quality Lake Management Plan	Study 6	127	Arbor Lake	Study	There are water quality issues in the lake including algae blooms and no swimming warnings in the summer.	Arbor Lake has water quality issues, especially in the summer. Develop a Water Quality Lake Management Plan.	\$150,000
Ambaum Blvd SW/SW 120th Block Drainage Improvements	SWP 1	119	Ambaum Blvd SW and SW 120th Block	Small Works Project	No existing stormwater system causes localized flooding of the roadway.	Add new CB and pipe to existing system in the low point in the road	\$100,000 <i>allocated</i>
Occidental Ave S Drainage Improvements	SWP 2	103, 105	Des Moines Memorial Drive S and S 116th St - S 118th St	Small Works Project	Overland erosion on both sides of street. Runoff from the roadway floods a local property owner.	Repave road and install asphalt berms to keep stormwater within public ROW. There is a 12" high pressure gas main, which means installing a new stormwater system may be impossible.	\$100,000 <i>allocated</i>
Eagle Landing Park/25th Ave SW Drainage Improvements	SWP 3	80	25th AVE SW (Near House #14639)/Eagle Landing Park	Capital Construction Project	Overland erosion caused by public water onto private property.	Install a dispersion trench into the park to divert water over a larger area into the park and away from private property.	\$100,000 <i>allocated</i>
116th Ave SW between 1st Ave and 4th Ave SW at Church Drainage Improvements	SWP 4	125	116th Ave SW between 1st Ave SW and 4th Ave SW	Small Works Project	There is a 30" pipe that drains to an existing ditch (City has a 10' easement) adjacent to a church parking lot that abruptly ends. Water disperses into a forested area then drains to an existing pipe and then into an existing detention pond. The dispersion into the wooded area causes the water to slow down and silt up behind the existing pipe.	Install new stormwater system on existing 10' easement from the church property to the downstream pond. (This solution needs some further refinement/discussion)	\$100,000 <i>allocated</i>



# City of Burien: CIP Project Summary Sheet

## **PROJECT TITLE:**

**CIP #1: Capacity Improvement at 4<sup>th</sup> Avenue SW**

## **PROJECT SKETCH**

*City to Provide*

## **PROJECT LOCATION (OTAK IDs):**

Near the Intersection of 4<sup>th</sup> Ave SW and SW 158<sup>th</sup> St, near the creek that runs from Lake Burien to Miller Creek. (Otak IDs 66, 88)

## **PROBLEM DESCRIPTION:**

Large Scour Hole on Creek - close to a privately owned garage. Erosion of the stream is moving more sediment downstream.

## **PROJECT DESCRIPTIONS:**

Reroute existing stormwater flows from 4<sup>th</sup> Ave SW (north of SW 158<sup>th</sup> St) away from problem area and into existing stormwater system on 4<sup>th</sup> Ave SW.

Replace existing 12" pipe with a new 18" pipe to increase capacity for 720 linear feet. Consider installation of energy dissipator on the creek upstream of SW 158<sup>th</sup> St.

## **DESIGN CONSIDERATIONS:**

- Conduct an H&H Analysis of the system to ensure an 18" pipe is large enough to convey the re-routed flow rates.

## **ESTIMATED PROJECT COSTS:**

\$552,000

## **PROJECT LOCATION PHOTOS**



**PLANNING LEVEL PROJECT COST OPINION**

**PROJECT:** Capacity Improvement at 4th Ave SW  
**PROJECT ID:** CIP 1  
**BY:** JSA

**CHECK BY:** JLC  
**DATE:** 5/22/2012

ITEM NO.	ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
<i>Construction Elements</i>					
1	REMOVING ASPHALT CONC. PAVEMENT	300	SY	\$ 40.00	\$ 12,000
2	STRUCTURE EXCAVATION CLASS B INCL. HAUL	500	CY	\$ 7.00	\$ 3,500
3	SHORING OR EXTRA EXCAVATION CLASS B	1,440	SF	\$ 2.00	\$ 2,900
4	SAWCUTTING	1,448	LF	\$ 4.00	\$ 5,800
5	CORRUGATED POLYETHYLENE STORM SEWER PIPE, 18-IN DIAM	720	LF	\$ 30.00	\$ 21,600
6	CATCH BASIN TYPE 1	5	EA	\$ 2,500.00	\$ 12,500
7	ASPHALT TREATED BASE	85	TON	\$ 150.00	\$ 12,900
8	HMA, CL 1/2-IN PG	68	TON	\$ 150.00	\$ 10,300
9	GRAVEL BACKFILL FOR PIPE ZONE BEDDING	213	CY	\$ 55.00	\$ 11,800
10	GRAVEL BORROW INCL. HAUL	401	TON	\$ 20.00	\$ 8,100
11	CONNECT TO DRAINAGE STRUCTURE	2	EA	\$ 1,000.00	\$ 2,000
12	UTILITY RELOCATIONS	1	LS	\$ 15,000.00	\$ 15,000
13	ROADSIDE RESTORATION	1	LS	\$ 5,000.00	\$ 5,000
14	STREAM BANK STABILIZATION	1	LS	\$ 100,000.00	\$ 100,000
<b>Subtotal Construction Elements</b>					<b>\$ 223,400</b>
<i>Required Ancillary Items</i>					
15	EROSION & SEDIMENTATION CONTROL		10%	(see note 3)	\$ 22,400
16	TRAFFIC CONTROL		10%	(see note 4)	\$ 22,400
17	CONTINGENCY		30%		\$ 67,100
Subtotal Ancillary					\$ 111,900
<b>Subtotal Construction + Ancillary</b>					<b>\$ 335,300</b>
<i>Mobilization</i>					
18	MOBILIZATION		10%		\$ 33,530
<b>Subtotal Construction + Ancillary + Mobilization</b>					<b>\$ 368,830</b>
<i>Tax/Engineering/Management/Permitting</i>					
19	STATE SALES TAX		9.5%		\$ 35,100
20	ENGINEERING/LEGAL/ADMIN		25%		\$ 92,300
21	CONSTRUCTION MANAGEMENT		10%		\$ 36,900
22	PERMITTING		5%		\$ 18,500
Subtotal					\$ 182,800
<b>Subtotal Construction + Ancillary + Mobilization + Tax/Engineering/Management/Permitting</b>					<b>\$ 551,630</b>
<b>2012 Dollars Total Estimated Project Cost (Rounded)</b>					<b>\$ 552,000</b>

**Notes:**

- The above cost opinion is in 2012 dollars and does not include future escalation, financing, or O&M costs.
- The order-of-magnitude cost opinion has been prepared for guidance in project evaluation from the information available at the time of preparation and for the assumptions stated. The final costs of
- Increase percentage markup if work is in or immediately adjacent to flowing or standing water, steep slope, and/or other erosion-prone conditions.
- Increase percentage markup if work is in or immediately adjacent to secondary, arterial, or other high-volume road or temporarily closes a roadway.
- Land Acquisition unit costs include Administrative Costs and Condemnation and are based on a unit price of \$8/SF. These costs are not the assessed value of the property.





# City of Burien: CIP Project Summary Sheet

## **PROJECT TITLE:**

**CIP #2: 20<sup>th</sup> Ave SW Drainage  
Improvements**

## **PROJECT SKETCH**

*City to Provide*

## **PROJECT LOCATION (OTAK IDs):**

20<sup>th</sup> Ave SW near Lake Burien between  
SW 152<sup>nd</sup> St and SW 154<sup>th</sup> St (113)

## **PROBLEM DESCRIPTION:**

No existing stormwater system causes  
localized flooding of the roadway and  
private property. Overland flow during  
flooding drains to Lake Burien. There is  
no existing water quality treatment, with  
the exception of oil/water separator that  
treats a portion of 20<sup>th</sup> Ave SW.

## **PROJECT DESCRIPTIONS:**

Install up to 5 new catch basins and 550  
linear feet of new 12" pipe along the east  
side of 20<sup>th</sup> Ave SW. Upgrade the existing  
oil/water separator to provide stormwater  
treatment before discharging to Lake  
Burien using a mechanical system such a  
StormFilter.

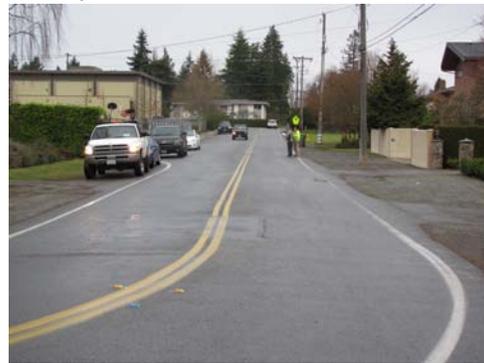
## **DESIGN CONSIDERATIONS:**

- Right-of-way limits
- Water Quality/Lake Water  
Quality

## **ESTIMATED PROJECT COSTS:**

\$390,000

## **PROJECT LOCATION PHOTOS**



**PLANNING LEVEL PROJECT COST OPINION**

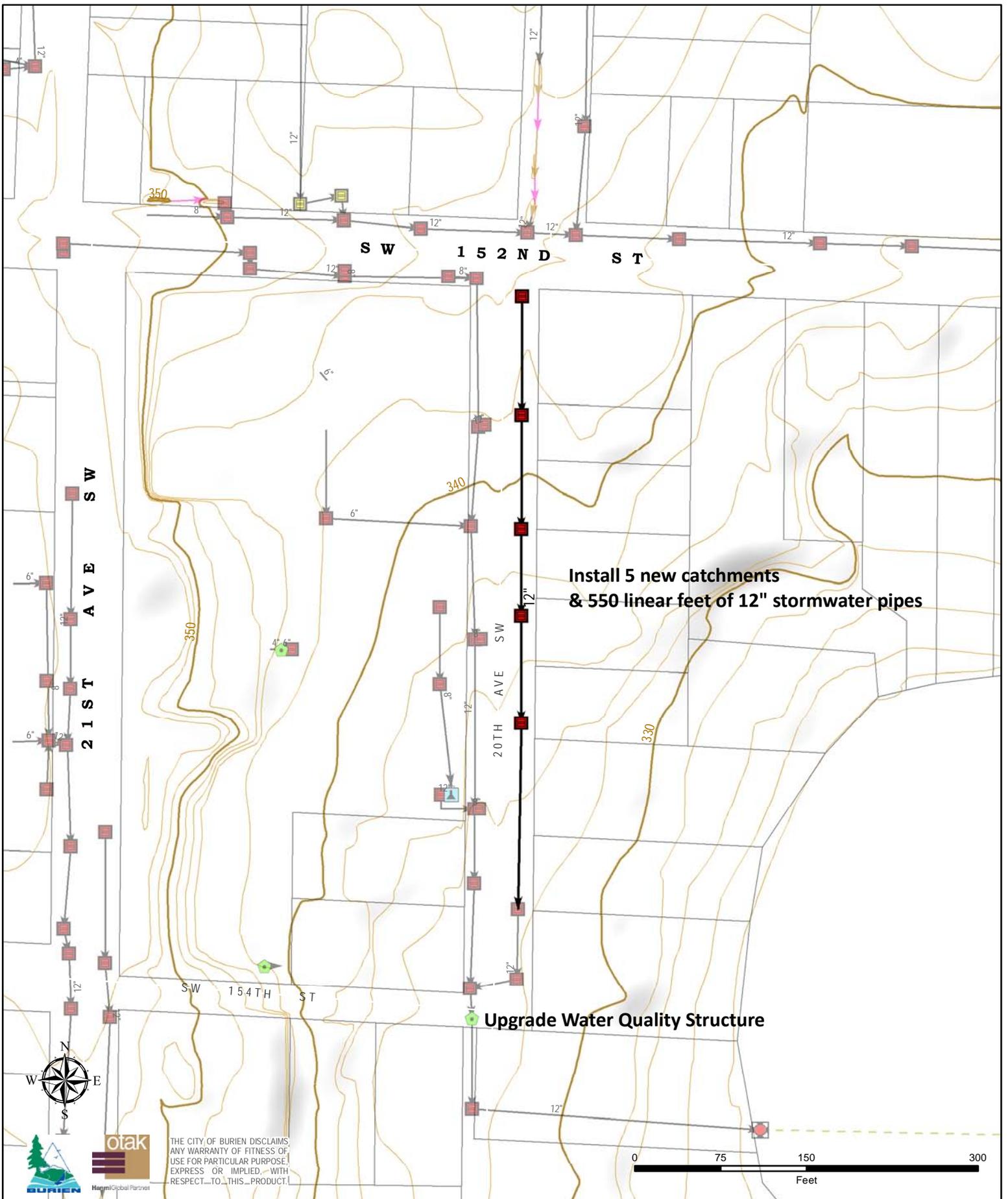
**PROJECT:** 20th Avenue SW Drainage Improvements  
**PROJECT ID:** CIP 2  
**BY:** JSA

**CHECK BY:** JLC  
**DATE:** 04/25/2012

ITEM NO.	ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
<i>Construction Elements</i>					
1	REMOVING ASPHALT CONC. PAVEMENT	199	SY	\$ 40.00	\$ 8,000
2	STRUCTURE EXCAVATION CLASS B INCL. HAUL	397	CY	\$ 7.00	\$ 2,800
3	SHORING OR EXTRA EXCAVATION CLASS B	2,200	SF	\$ 2.00	\$ 4,400
4	SAWCUTTING	1,107	LF	\$ 4.00	\$ 4,500
5	CORRUGATED POLYETHYLENE STORM SEWER PIPE, 12-IN DIAM	550	LF	\$ 25.00	\$ 13,800
6	CATCH BASIN TYPE 1	5	EA	\$ 2,500.00	\$ 12,500
7	ASPHALT TREATED BASE	57	TON	\$ 150.00	\$ 8,500
8	HMA, CL 1/2-IN PG	45	TON	\$ 150.00	\$ 6,800
9	GRAVEL BACKFILL FOR PIPE ZONE BEDDING	134	CY	\$ 55.00	\$ 7,400
10	GRAVEL BORROW INCL. HAUL	388	TON	\$ 20.00	\$ 7,800
11	CONNECT TO DRAINAGE STRUCTURE	1	EA	\$ 1,000.00	\$ 1,000
12	OIL/WATER SEPARATOR	1	EA	\$ 15,000.00	\$ 15,000
13	STORMFILTER	1	EA	\$ 45,000.00	\$ 45,000
14	UTILITY RELOCATIONS	1	LS	\$ 15,000.00	\$ 15,000
15	ROADSIDE RESTORATION	1	LS	\$ 5,000.00	\$ 5,000
<b>Subtotal Construction Elements</b>					<b>\$ 157,500</b>
<i>Required Ancillary Items</i>					
15	EROSION & SEDIMENTATION CONTROL		10%	(see note 3)	\$ 15,800
16	TRAFFIC CONTROL		10%	(see note 4)	\$ 15,800
17	CONTINGENCY		30%		\$ 47,300
Subtotal Ancillary					\$ 78,900
<b>Subtotal Construction + Ancillary</b>					<b>\$ 236,400</b>
<i>Mobilization</i>					
18	MOBILIZATION		10%		\$ 23,640
<b>Subtotal Construction + Ancillary + Mobilization</b>					<b>\$ 260,040</b>
<i>Tax/Engineering/Management/Permitting</i>					
19	STATE SALES TAX		9.5%		\$ 24,800
20	ENGINEERING/LEGAL/ADMIN		25%		\$ 65,100
21	CONSTRUCTION MANAGEMENT		10%		\$ 26,100
22	PERMITTING		5%		\$ 13,100
Subtotal					\$ 129,100
<b>Subtotal Construction + Ancillary + Mobilization + Tax/Engineering/Management/Permitting</b>					<b>\$ 389,140</b>
<b>2012 Dollars Total Estimated Project Cost (Rounded)</b>					<b>\$ 390,000</b>

Notes:

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- The order-of-magnitude cost opinion has been prepared for guidance in project evaluation from the information available at the time of preparation and for the assumptions stated. The final costs
- Increase percentage markup if work is in or immediately adjacent to flowing or standing water, steep slope, and/or other erosion-prone conditions.
- Increase percentage markup if work is in or immediately adjacent to secondary, arterial, or other high-volume road or temporarily closes a roadway.
- Land Acquisition unit costs include Administrative Costs and Condemnation and are based on a unit price of \$8/SF. These costs are not the assessed value of the property.

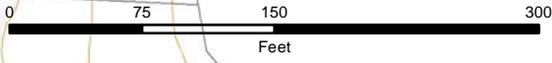


**Install 5 new catchments  
& 550 linear feet of 12" stormwater pipes**

**Upgrade Water Quality Structure**



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<b>CIP 2</b>	<b>20th Ave SW Drainage Improvements</b>	<b>May 2012</b>
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# City of Burien: CIP Project Summary Sheet

## PROJECT SKETCH

### PROJECT TITLE:

CIP #3: 20<sup>th</sup> Ave S between S 120<sup>th</sup> Ave and S 124<sup>th</sup> St Drainage Improvements

*City to Provide*

### PROJECT LOCATION (OTAK IDs):

20th Ave S between S 120th Ave and S 124th St (55, 56, 92)

### PROBLEM DESCRIPTION:

Replace aging/failing stormwater system on 20th Ave S.

### PROJECT DESCRIPTIONS:

Replace existing stormwater system to 20th Ave S. Install 1300 LF of new 12" pipe and 8 new catch basins. Verify/upgrade system capacity.

### DESIGN CONSIDERATIONS:

- Right-of-way limits

### ESTIMATED PROJECT COSTS:

\$441,000

## PROJECT LOCATION PHOTOS



**PLANNING LEVEL PROJECT COST OPINION**

**PROJECT:** 20th Avenue South Between S. 120th Avenue & S. 124th Street Drainage Improvements  
**PROJECT ID:** CIP 3 **CHECK BY:** JLC  
**BY:** JSA **DATE:** 04/25/2012

ITEM NO.	ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
<i>Construction Elements</i>					
1	REMOVING ASPHALT CONC. PAVEMENT	433	SY	\$ 40.00	\$ 17,400
2	STRUCTURE EXCAVATION CLASS B INCL. HAUL	867	CY	\$ 7.00	\$ 6,100
3	SHORING OR EXTRA EXCAVATION CLASS B	5,200	SF	\$ 2.00	\$ 10,400
4	SAWCUTTING	2,606	LF	\$ 4.00	\$ 10,500
5	CORRUGATED POLYETHYLENE STORM SEWER PIPE, 12-IN DIAM	1,300	LF	\$ 25.00	\$ 32,500
6	CATCH BASIN TYPE 1	8	EA	\$ 2,500.00	\$ 20,000
7	ASPHALT TREATED BASE	123	TON	\$ 150.00	\$ 18,600
8	HMA, CL 1/2-IN PG	99	TON	\$ 150.00	\$ 14,900
9	GRAVEL BACKFILL FOR PIPE ZONE BEDDING	264	CY	\$ 55.00	\$ 14,600
10	GRAVEL BORROW INCL. HAUL	1,013	TON	\$ 12.00	\$ 12,200
11	CONNECT TO DRAINAGE STRUCTURE	1	EA	\$ 1,000.00	\$ 1,000
12	UTILITY RELOCATIONS	1	LS	\$ 15,000.00	\$ 15,000
13	ROADSIDE RESTORATION	1	LS	\$ 5,000.00	\$ 5,000

**Subtotal Construction Elements \$ 178,200**

<i>Required Ancillary Items</i>					
14	EROSION & SEDIMENTATION CONTROL	10%		(see note 3)	\$ 17,900
15	TRAFFIC CONTROL	10%		(see note 4)	\$ 17,900
16	CONTINGENCY	30%			\$ 53,500

Subtotal Ancillary \$ 89,300

**Subtotal Construction + Ancillary \$ 267,500**

<i>Mobilization</i>					
17	MOBILIZATION	10%			\$ 26,750

**Subtotal Construction + Ancillary + Mobilization \$ 294,250**

<i>Tax/Engineering/Management/Permitting</i>					
18	STATE SALES TAX	9.5%			\$ 28,000
19	ENGINEERING/LEGAL/ADMIN	25%			\$ 73,600
20	CONSTRUCTION MANAGEMENT	10%			\$ 29,500
21	PERMITTING	5%			\$ 14,800

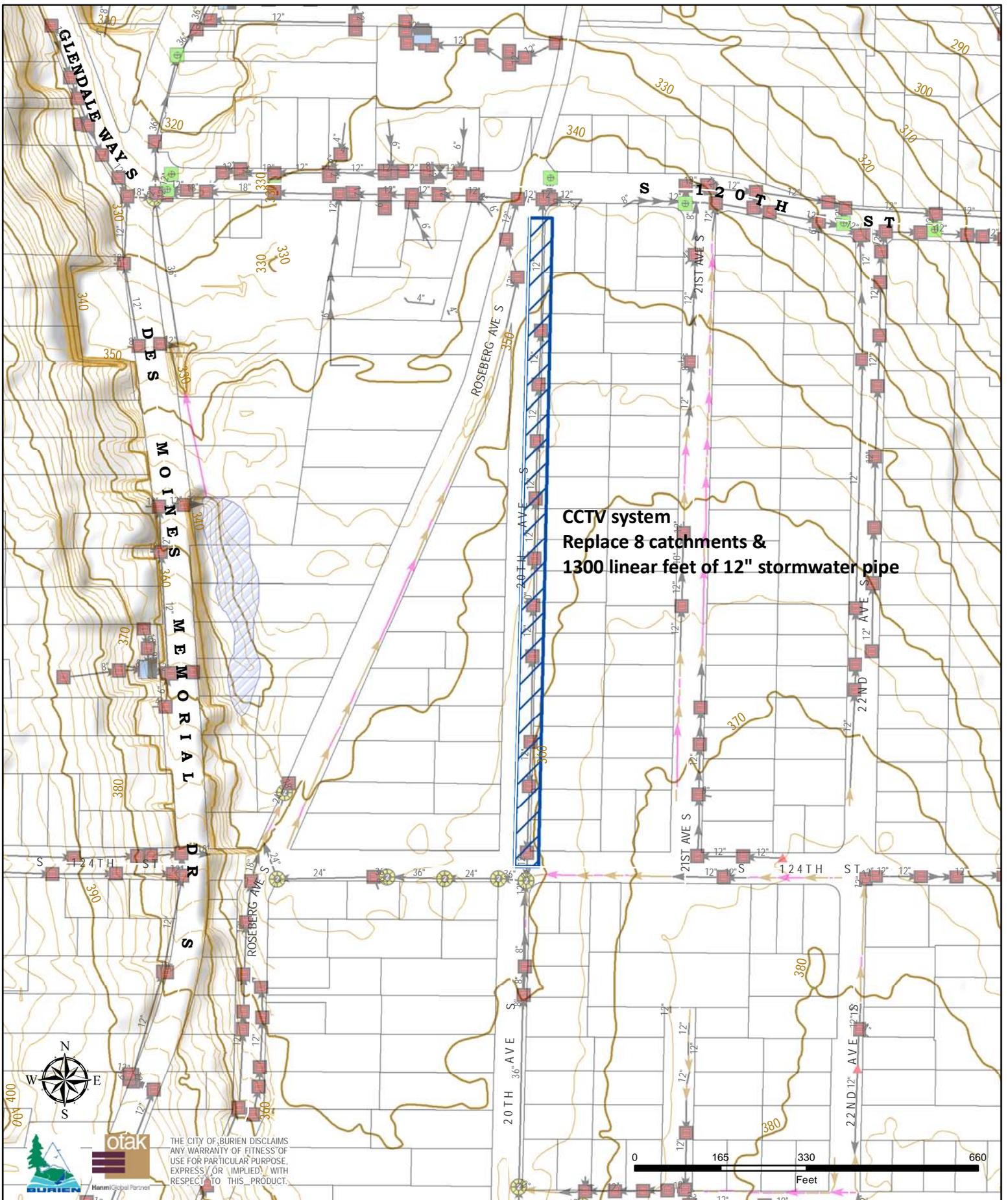
Subtotal \$ 145,900

**Subtotal Construction + Ancillary + Mobilization + Tax/Engineering/Management/Permitting \$ 440,150**

**2012 Dollars Total Estimated Project Cost (Rounded) \$ 441,000**

**Notes:**

- The above cost opinion is in 2012 dollars and does not include future escalation, financing, or O&M costs.
- The order-of-magnitude cost opinion has been prepared for guidance in project evaluation from the information available at the time of preparation and for the assumptions stated. The final costs
- Increase percentage markup if work is in or immediately adjacent to flowing or standing water, steep slope, and/or other erosion-prone conditions.
- Increase percentage markup if work is in or immediately adjacent to secondary, arterial, or other high-volume road or temporarily closes a roadway.
- Land Acquisition unit costs include Administrative Costs and Condemnation and are based on a unit price of \$8/SF. These costs are not the assessed value of the property.



**CCTV system**  
 Replace 8 catchments &  
 1300 linear feet of 12" stormwater pipe



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<p><b>CIP 3</b></p>	<p><b>20th Ave S between S 120th Ave and S 124th St Drainage Improvements</b></p>	<p><b>May 2012</b></p>
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# City of Burien: CIP Project Summary Sheet

## PROJECT SKETCH

### PROJECT TITLE:

CIP #4: SW 165th St between 16th Ave SW and 19th Ave SW

*City to Provide*

### PROJECT LOCATION (OTAK IDs):

SW 165th St between 16th Ave SW and 19th Ave SW (55, 56, 92)

### PROBLEM DESCRIPTION:

No existing stormwater system causes localized flooding of the roadway.

### PROJECT DESCRIPTIONS:

Add 2 new catch basin and 300 linear feet of new 12" pipe. Overlay the road with concave pavement to drain all water towards the center of the roadway.

### DESIGN CONSIDERATIONS:

- Do not decrease the existing roadside parking.

### ESTIMATED PROJECT COSTS:

\$322,000

## PROJECT LOCATION PHOTOS



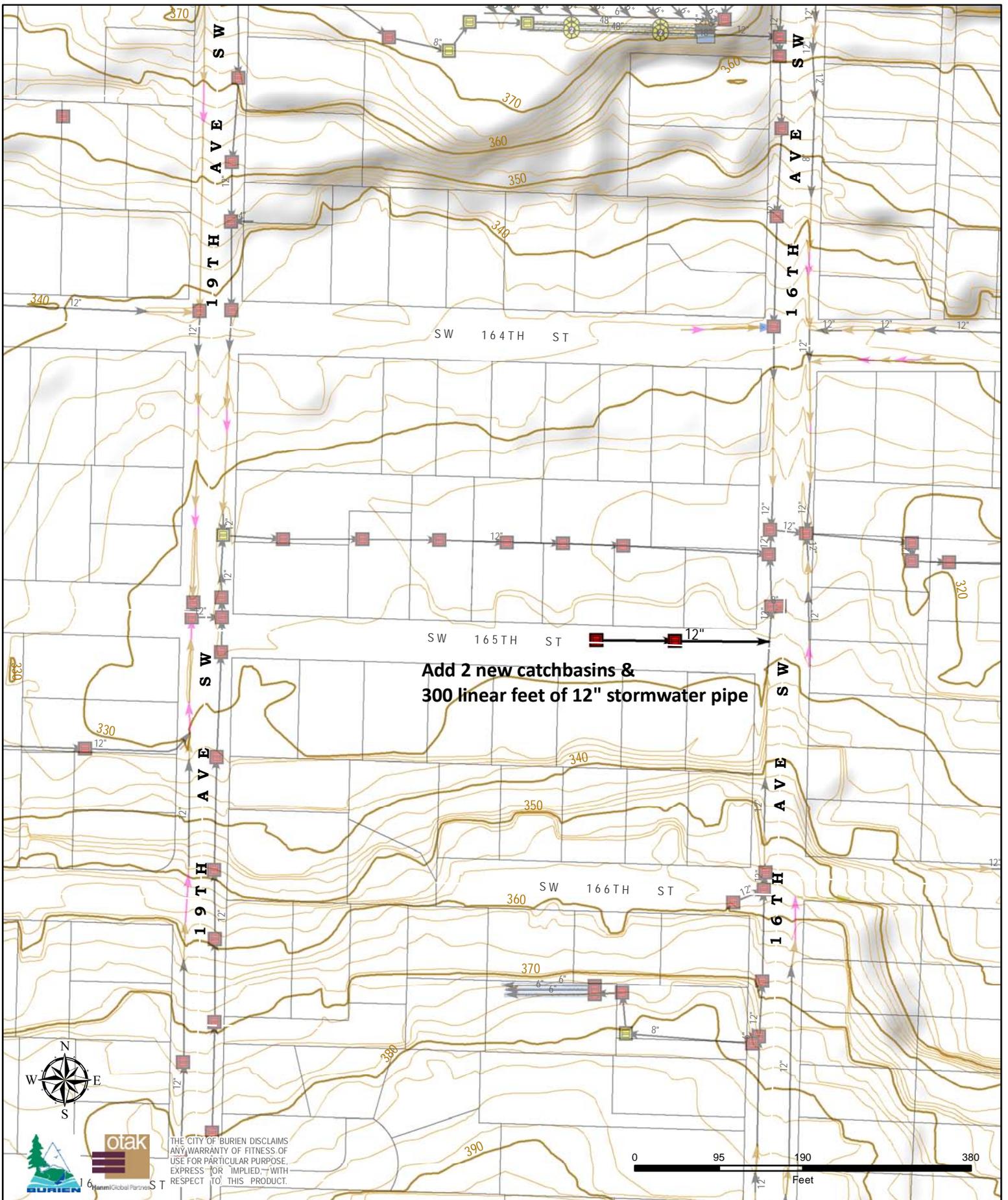
**PLANNING LEVEL PROJECT COST OPINION**

**PROJECT:** SW 165TH Street between 16th Avenue SW and 19th Avenue SW Drainage Improvements  
**PROJECT ID:** CIP 4 **CHECK BY:** JLC  
**BY:** JSA **DATE:** 04/25/2012

ITEM NO.	ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
<i>Construction Elements</i>					
1	REMOVING ASPHALT CONC. PAVEMENT	800	SY	\$ 40.00	\$ 32,000
2	SAWCUTTING	100	LF	\$ 4.00	\$ 400
3	STRUCTURE EXCAVATION CLASS B INCL. HAUL	395	CY	\$ 7.00	\$ 2,768
4	CORRUGATED POLYETHYLENE STORM SEWER PIPE, 12-IN DIAM	300	LF	\$ 25.00	\$ 7,500
5	GRAVEL BACKFILL FOR PIPE ZONE BEDDING	67	CY	\$ 55.00	\$ 3,686
6	GRAVEL BORROW INCL. HAUL	47	CY	\$ 30.00	\$ 1,400
7	CATCH BASIN TYPE 1	2	EA	\$ 3,500.00	\$ 7,000
8	CONNECT TO DRAINAGE STRUCTURE	1	EA	\$ 1,000.00	\$ 1,000
9	CRUSH SURFACING BASE COURSE	247	TON	\$ 30.00	\$ 7,400
10	ASPHALT TREATED BASE	273	TON	\$ 120.00	\$ 32,800
11	HMA, CL 1/2-IN PG	91	TON	\$ 120.00	\$ 10,934
12	UTILITY RELOCATIONS	1	LS	\$ 10,000.00	\$ 10,000
13	ROADSIDE RESTORATION	1	LS	\$ 5,000.00	\$ 5,000
<b>Subtotal Construction Elements</b>					<b>\$ 121,888</b>
<i>Required Ancillary Items</i>					
13	EROSION & SEDIMENTATION CONTROL	10%		(see note 3)	\$ 12,200
14	TRAFFIC CONTROL	10%		(see note 4)	\$ 12,200
15	CONTINGENCY	30%			\$ 36,600
Subtotal Ancillary					\$ 61,000
<b>Subtotal Construction + Ancillary</b>					<b>\$ 182,888</b>
<i>Mobilization</i>					
16	MOBILIZATION	10%			\$ 18,289
<b>Subtotal Construction + Ancillary + Mobilization</b>					<b>\$ 201,177</b>
<i>Tax/Engineering/Management/Permitting</i>					
17	STATE SALES TAX	9.5%			\$ 19,200
18	ENGINEERING/LEGAL/ADMIN	35%			\$ 70,500
19	CONSTRUCTION MANAGEMENT	10%			\$ 20,200
20	PERMITTING	5%			\$ 10,100
Subtotal					\$ 120,000
<b>Subtotal Construction + Ancillary + Mobilization + Tax/Engineering/Management/Permitting</b>					<b>\$ 321,177</b>
<b>2012 Dollars Total Estimated Project Cost (Rounded)</b>					<b>\$ 322,000</b>

**Notes:**

- The above cost opinion is in 2012 dollars and does not include future escalation, financing, or O&M costs.
- The order-of-magnitude cost opinion has been prepared for guidance in project evaluation from the information available at the time of preparation and for the assumptions stated. The final costs of the project will depend on actual labor and material.
- Increase percentage markup if work is in or immediately adjacent to flowing or standing water, steep slope, and/or other erosion-prone conditions.
- Increase percentage markup if work is in or immediately adjacent to secondary, arterial, or other high-volume road or temporarily closes a roadway.
- Land Acquisition unit costs include Administrative Costs and Condemnation and are based on a unit price of \$8/SF. These costs are not the assessed value of the property.



**CIP 4**

**SW 165th St between 16th Ave SW and 19th Ave SW**

**May 2012**



# City of Burien: CIP Project Summary Sheet

## **PROJECT TITLE:**

**CIP #5: SW 135th St and 6th Ave SW  
Drainage Improvements**

## **PROJECT SKETCH**

*City to Provide*

## **PROJECT LOCATION (OTAK IDs):**

SW 135th St and 6th Ave SW (Near  
House #607) (17)

## **PROBLEM DESCRIPTION:**

No existing stormwater system causes  
localized flooding of the roadway and  
adjacent private property.

## **PROJECT DESCRIPTIONS:**

Install a new bioretention ditch  
stormwater conveyance system on SW  
135th St at 6th Ave SW (within the public  
right-of-way) on both the west and sides  
of the street. The purpose of the new  
bioretention ditches is to manage public  
water and keep it off private property.

## **DESIGN CONSIDERATIONS:**

- Some local residential parking will be lost with the addition of stormwater features on SW 135<sup>th</sup> St.
- Project requires coordination with neighbors and local citizens.
- Combine with two other CIPs for design and construction bids: SW 165th St between 16th Ave SW and 19th Ave SW CIP and SW 134th St and 8th Ave SW Drainage Improvements CIP

## **ESTIMATED PROJECT COSTS:**

\$154,000

## **PROJECT LOCATION PHOTOS**



**PLANNING LEVEL PROJECT COST OPINION**

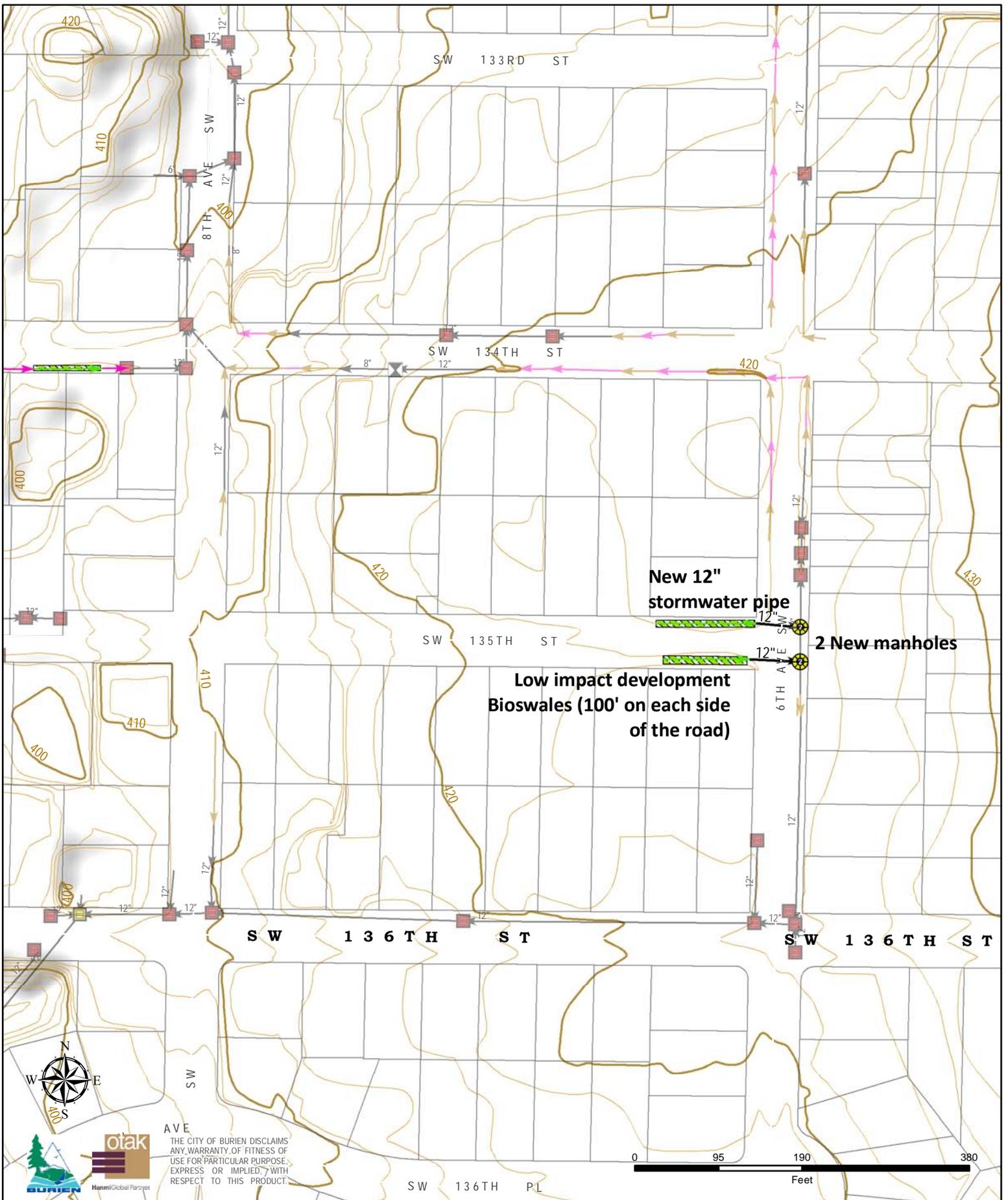
**PROJECT:** SW 135TH Street and 6th Avenue Drainage Improvements  
**PROJECT ID:** CIP 5  
**BY:** JSA

**CHECK BY:** JLC  
**DATE:** 04/25/2012

ITEM NO.	ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
<i>Construction Elements</i>					
1	REMOVING ASPHALT CONC. PAVEMENT	150	SY	\$ 40.00	\$ 6,000
2	SAWCUTTING	697	LF	\$ 4.00	\$ 2,786
3	STRUCTURE EXCAVATION CLASS B INCL. HAUL	211	CY	\$ 7.00	\$ 1,478
4	CORRUGATED POLYETHYLENE STORM SEWER PIPE, 12-IN DIAM	200	LF	\$ 25.00	\$ 5,000
5	GRAVEL BACKFILL FOR PIPE ZONE BEDDING	45	CY	\$ 55.00	\$ 2,457
6	GRAVEL BORROW INCL. HAUL	124	TON	\$ 30.00	\$ 3,730
7	MANHOLE TYPE 2 48" DIAM.	2	EA	\$ 2,500.00	\$ 5,000
8	CONNECT TO DRAINAGE STRUCTURE	1	EA	\$ 1,000.00	\$ 1,000
9	ASPHALT TREATED BASE	32	TON	\$ 150.00	\$ 4,841
10	HMA, CL 1/2-IN PG	16	TON	\$ 150.00	\$ 2,373
11	AMENDED SOIL	199	CY	\$ 35.00	\$ 6,981
12	PLANTINGS	78	SY	\$ 20.00	\$ 1,556
13	UTILITY RELOCATIONS	1	LS	\$ 10,000.00	\$ 10,000
14	ROADSIDE RESTORATION	1	LS	\$ 5,000.00	\$ 5,000
<b>Subtotal Construction Elements</b>					<b>\$ 58,202</b>
<i>Required Ancillary Items</i>					
14	EROSION & SEDIMENTATION CONTROL		10%	(see note 3)	\$ 5,900
15	TRAFFIC CONTROL		10%	(see note 4)	\$ 5,900
16	CONTINGENCY		30%		\$ 17,500
Subtotal Ancillary					\$ 29,300
<b>Subtotal Construction + Ancillary</b>					<b>\$ 87,502</b>
<i>Mobilization</i>					
17	MOBILIZATION		10%		\$ 8,750
<b>Subtotal Construction + Ancillary + Mobilization</b>					<b>\$ 96,252</b>
<i>Tax/Engineering/Management/Permitting</i>					
18	STATE SALES TAX		9.5%		\$ 9,200
19	ENGINEERING/LEGAL/ADMIN		35%		\$ 33,700
20	CONSTRUCTION MANAGEMENT		10%		\$ 9,700
21	PERMITTING		5%		\$ 4,900
Subtotal					\$ 57,500
<b>Subtotal Construction + Ancillary + Mobilization + Tax/Engineering/Management/Permitting</b>					<b>\$ 153,752</b>
<b>2012 Dollars Total Estimated Project Cost (Rounded)</b>					<b>\$ 154,000</b>

**Notes:**

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- Increase percentage markup if work is in or immediately adjacent to flowing or standing water, steep slope, and/or other erosion-prone conditions.
- Increase percentage markup if work is in or immediately adjacent to secondary, arterial, or other high-volume road or temporarily closes a roadway.
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**CIP 5**

**SW 135th St and 6th Ave SW Drainage Improvements**

**May 2012**



# City of Burien: CIP Project Summary Sheet

## PROJECT SKETCH

### PROJECT TITLE:

**CIP #6: SW 152nd and 8th Ave SW  
Drainage Improvements**

*City to Provide*

### PROJECT LOCATION (OTAK IDs):

SW 152nd and 8th Ave SW (50, 82, 93)

### PROBLEM DESCRIPTION:

The City's stormwater system is under capacity, which causes flooding of a privately owned commercial parking lot. The City has an easement for the stormwater system that is partially located on private property.

### PROJECT DESCRIPTIONS:

Upsize existing stormwater conveyance system along SW 152<sup>nd</sup> St and Ambaum Blvd SW to the intersection with SW 154<sup>th</sup> St. with 165 ft of new 18" pipe, 800 linear feet of 24" pipe and 9 new catch basins.

### DESIGN CONSIDERATIONS:

- Design needed to verify 18" pipe size and location/cause of backwater effect.
- Coordination with private property owner.
- Need H&H analysis and downstream system review

## PROJECT LOCATION PHOTOS



### ESTIMATED PROJECT COSTS:

\$457,000

**PLANNING LEVEL PROJECT COST OPINION**

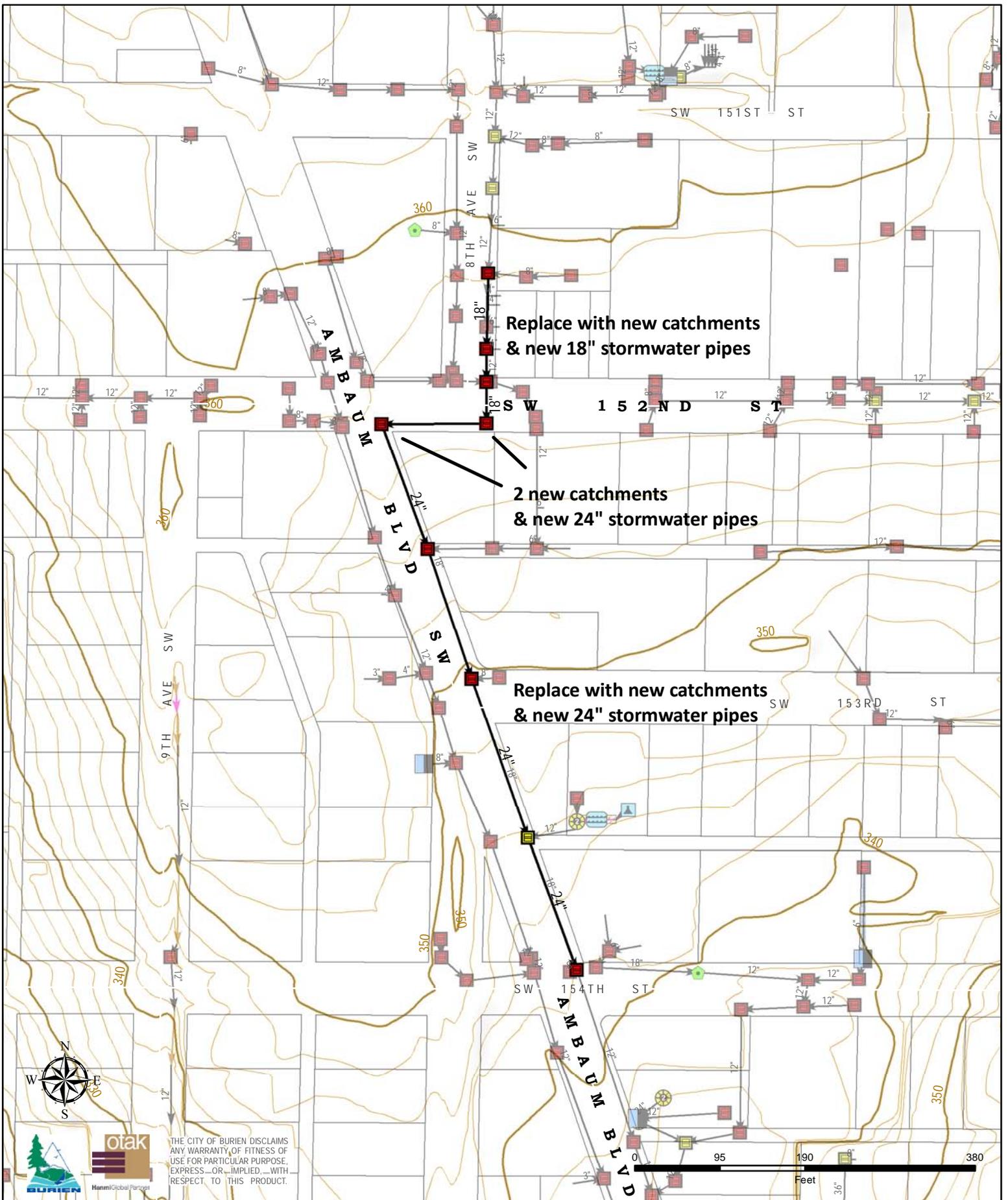
**PROJECT:** SW 152nd and 8th Ave SW Drainage Improvements  
**PROJECT ID:** CIP 6  
**BY:** JSA

**CHECK BY:** JLC  
**DATE:** 5/22/2011

ITEM NO.	ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
<i>Construction Elements</i>					
1	REMOVING ASPHALT CONC. PAVEMENT	483	SY	\$ 40.00	\$ 19,300
2	SAWCUTTING	1,939	LF	\$ 4.00	\$ 7,756
3	STRUCTURE EXCAVATION CLASS B INCL. HAUL	804	CY	\$ 7.00	\$ 5,630
4	CORRUGATED POLYETHYLENE STORM SEWER PIPE, 18-IN DIAM	165	LF	\$ 30.00	\$ 4,950
5	CORRUGATED POLYETHYLENE STORM SEWER PIPE, 24-IN DIAM	800	LF	\$ 35.00	\$ 28,000
6	GRAVEL BACKFILL FOR PIPE ZONE BEDDING	314	CY	\$ 55.00	\$ 17,281
7	GRAVEL BORROW INCL. HAUL	831	TON	\$ 30.00	\$ 24,920
8	CATCH BASIN TYPE 1	9	EA	\$ 1,500.00	\$ 13,500
9	CONNECT TO DRAINAGE STRUCTURE	2	EA	\$ 1,000.00	\$ 2,000
10	ASPHALT TREATED BASE	172	TON	\$ 150.00	\$ 25,868
11	HMA, CL 1/2-IN PG	63	TON	\$ 150.00	\$ 9,382
12	CONCRETE CURB AND GUTTER	165	LF	\$ 7.00	\$ 1,155
13	ROADSIDE RESTORATION	1	LS	\$ 10,000.00	\$ 10,000
14	UTILITY RELOCATIONS	1	LS	\$ 15,000.00	\$ 15,000
<b>Subtotal Construction Elements</b>					<b>\$ 184,742</b>
<i>Required Ancillary Items</i>					
15	EROSION & SEDIMENTATION CONTROL		10%	(see note 3)	\$ 18,500
16	TRAFFIC CONTROL		10%	(see note 4)	\$ 18,500
17	CONTINGENCY		30%		\$ 55,500
Subtotal Ancillary					\$ 92,500
<b>Subtotal Construction + Ancillary</b>					<b>\$ 277,242</b>
<i>Mobilization</i>					
18	MOBILIZATION		10%		\$ 27,724
<b>Subtotal Construction + Ancillary + Mobilization</b>					<b>\$ 304,966</b>
<i>Tax/Engineering/Management/Permitting</i>					
19	STATE SALES TAX		9.5%		\$ 29,000
20	ENGINEERING/LEGAL/ADMIN		25%		\$ 76,300
21	CONSTRUCTION MANAGEMENT		10%		\$ 30,500
22	PERMITTING		5%		\$ 15,300
Subtotal					\$ 151,100
<b>Subtotal Construction + Ancillary + Mobilization + Tax/Engineering/Management/Permitting</b>					<b>\$ 456,066</b>
<b>2012 Dollars Total Estimated Project Cost (Rounded)</b>					<b>\$ 457,000</b>

**Notes:**

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**CIP 6**

**SW 152nd St and 8th Ave SW Drainage Improvements**

**May 2012**



# City of Burien: CIP Project Summary Sheet

## PROJECT SKETCH

### PROJECT TITLE:

**CIP #7: 25<sup>th</sup> Ave SW Drainage Improvements (Project Design from the 2005 Storm Drainage Master Plan)**

*City to Provide*

### PROJECT LOCATION (OTAK IDs):

25<sup>th</sup> Avenue SW near Maplewild Avenue NW (80)

### PROBLEM DESCRIPTION:

Potential private property flooding along 25<sup>th</sup> Ave SW because there is no existing stormwater system.

### PROJECT DESCRIPTIONS:

Provide a new 24" diameter pipe along 25<sup>th</sup> Ave SW and connect to the existing storm drainage system located at Maplewild Ave SW. Acquire storm drainage easement for the portion of the new storm drainage system that is located on private property. Provide water quality treatment manhole (StormFilter – 96" WQ Treatment Manhole) at the downstream end of the new drainage system.

New storm drainage system reduces property flooding on the west side of 25<sup>th</sup> Ave SW. Water quality treatment manhole will remove oil and sediment street runoff.

### DESIGN CONSIDERATIONS:

- Project requires acquiring a drainage easement on private property.

### ESTIMATED PROJECT COSTS:

\$799,000

## PROJECT LOCATION PHOTOS

*No photos were taken at this site.*

**PLANNING LEVEL PROJECT COST OPINION**

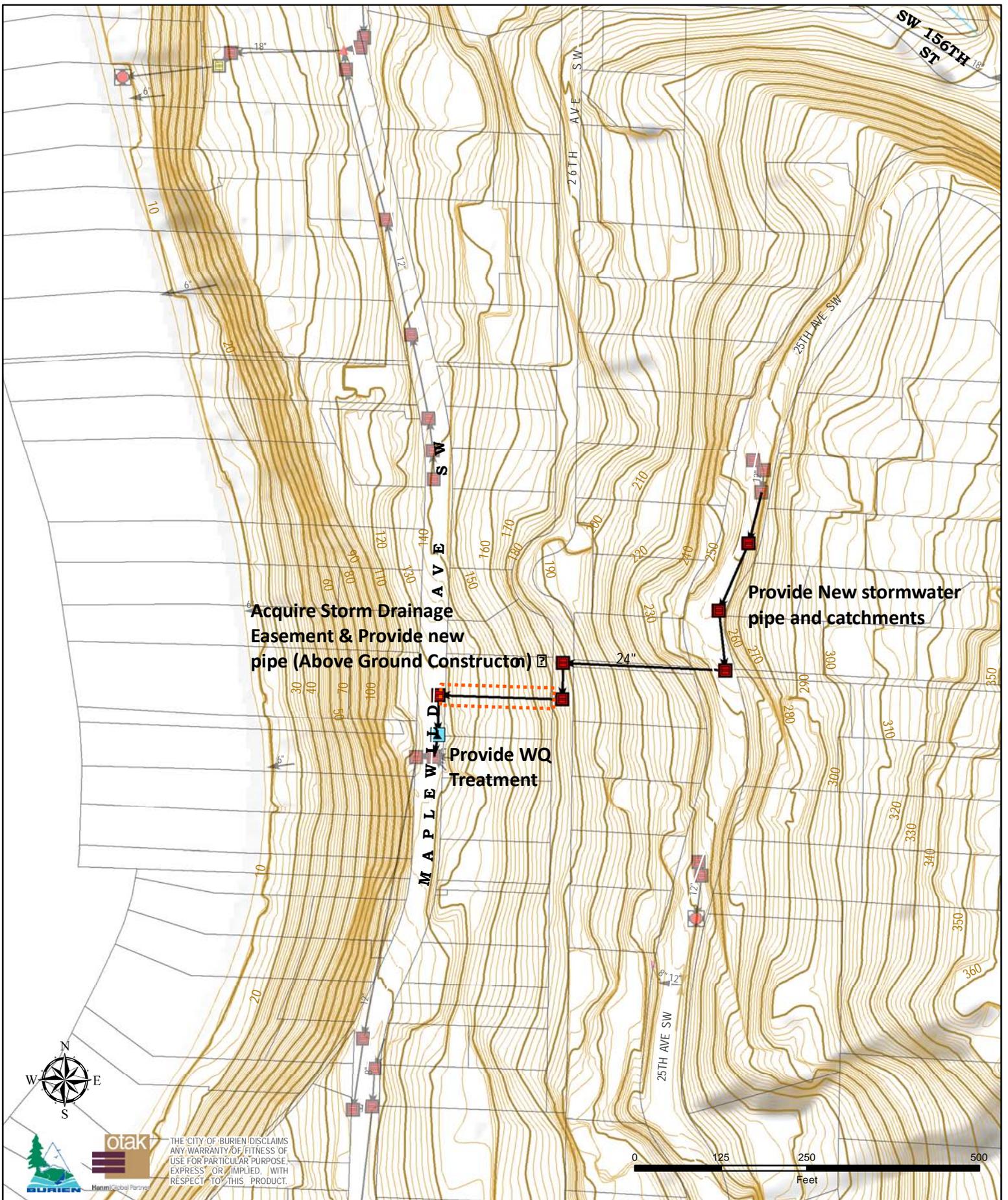
**PROJECT:** 25th Ave SW Drainage Improvements  
**PROJECT ID:** CIP 7  
**BY:** JSA

**CHECK BY:** JLC  
**DATE:** 04/25/2012

ITEM NO.	ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
<i>Construction Elements</i>					
1	REMOVING ASPHALT CONC. PAVEMENT	150	SY	\$ 40.00	\$ 6,000
2	SAWCUTTING	609	LF	\$ 4.00	\$ 2,436
3	STRUCTURE EXCAVATION CLASS B INCL. HAUL	400	CY	\$ 7.00	\$ 2,800
4	TEMPORARY BYPASS	1	EA	\$ 10,000.00	\$ 10,000
5	CORRUGATED POLYETHYLENE STORM SEWER PIPE, 24-IN DIAM	480	LF	\$ 35.00	\$ 16,800
6	JACK AND BORE PIT	1	EA	\$ 35,000.00	\$ 35,000
7	JACK AND BORE PIPE	210	LF	\$ 500.00	\$ 105,000
8	GRAVEL BACKFILL FOR PIPE ZONE BEDDING	156	CY	\$ 55.00	\$ 8,596
9	GRAVEL BORROW INCL. HAUL	413	TON	\$ 30.00	\$ 12,395
10	STORMFILTER - 96" DIAM MH	1	EA	\$ 45,000.00	\$ 45,000
11	CATCH BASIN TYPE 1	7	EA	\$ 1,500.00	\$ 10,500
12	CONNECT TO DRAINAGE STRUCTURE	1	EA	\$ 1,000.00	\$ 1,000
13	ASPHALT TREATED BASE	59	TON	\$ 150.00	\$ 8,827
14	HMA, CL 1/2-IN PG	25	TON	\$ 150.00	\$ 3,702
15	PLANTINGS	1	EA	\$ 35,000.00	\$ 35,000
16	UTILITY RELOCATIONS	1	LS	\$ 5,000.00	\$ 5,000
17	CONCRETE CURB AND GUTTER	300	LF	\$ 7.00	\$ 2,100
18	ROADSIDE RESTORATION	1	LS	\$ 5,000.00	\$ 5,000
<b>Subtotal Construction Elements</b>					<b>\$ 315,156</b>
<i>Required Ancillary Items</i>					
17	EROSION & SEDIMENTATION CONTROL		10%	(see note 3)	\$ 31,600
18	TRAFFIC CONTROL		10%	(see note 4)	\$ 31,600
19	CONTINGENCY		30%		\$ 94,600
Subtotal Ancillary					\$ 157,800
<b>Subtotal Construction + Ancillary</b>					<b>\$ 472,956</b>
<i>Mobilization</i>					
20	MOBILIZATION		10%		\$ 47,296
<b>Subtotal Construction + Ancillary + Mobilization</b>					<b>\$ 520,252</b>
<i>Tax/Engineering/Management/Permitting</i>					
21	STATE SALES TAX		9.5%		\$ 49,500
22	ENGINEERING/LEGAL/ADMIN		25%		\$ 130,100
23	CONSTRUCTION MANAGEMENT		10%		\$ 52,100
24	LAND ACQUISITION (STORMWATER UTILITY EASEMENT)		4%		\$ 20,900
25	PERMITTING		5%		\$ 26,100
Subtotal					\$ 278,700
<b>Subtotal Construction + Ancillary + Mobilization + Tax/Engineering/Management/Permitting</b>					<b>\$ 798,952</b>
<b>2012 Dollars</b>	<b>Total Estimated Project Cost (Rounded)</b>				<b>\$ 799,000</b>

**Notes:**

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**CIP 7**

**25th Ave SW Drainage Improvements**

**May 2012**



# City of Burien: CIP Project Summary Sheet

## PROJECT SKETCH

### PROJECT TITLE:

**CIP #8: 4th Ave S/Blake Manor  
Neighborhood Drainage  
Improvements**

*City to Provide*

### PROJECT LOCATION (OTAK IDs):

4th Ave S between S 168th St and S 165th St (48)

### PROBLEM DESCRIPTION:

There is no existing stormwater system causes localized flooding of the roadway.

### PROJECT DESCRIPTIONS:

Add new stormwater system along both sides of 4th Ave S from S 165th St to S 168th St that includes ~2,610 linear feet of 12-inch pipe and 14 new catch basins (7 on each side of the street). Provide outfall protection at the outlet into Miller Creek. Provide treatment to roadway runoff with 14 StormFilter catch basins (1 to 2 cartridges each).

### DESIGN CONSIDERATIONS:

- Outfall location into a fish bearing stream.
- Outfall protection at the stream.
- Right-of-way limits
- Water Quality Treatment
- Annual Maintenance of StormFilter
- Alternative Design: LID, green street approach

### ESTIMATED PROJECT COSTS:

\$639,000

## PROJECT LOCATION PHOTOS



**PLANNING LEVEL PROJECT COST OPINION**

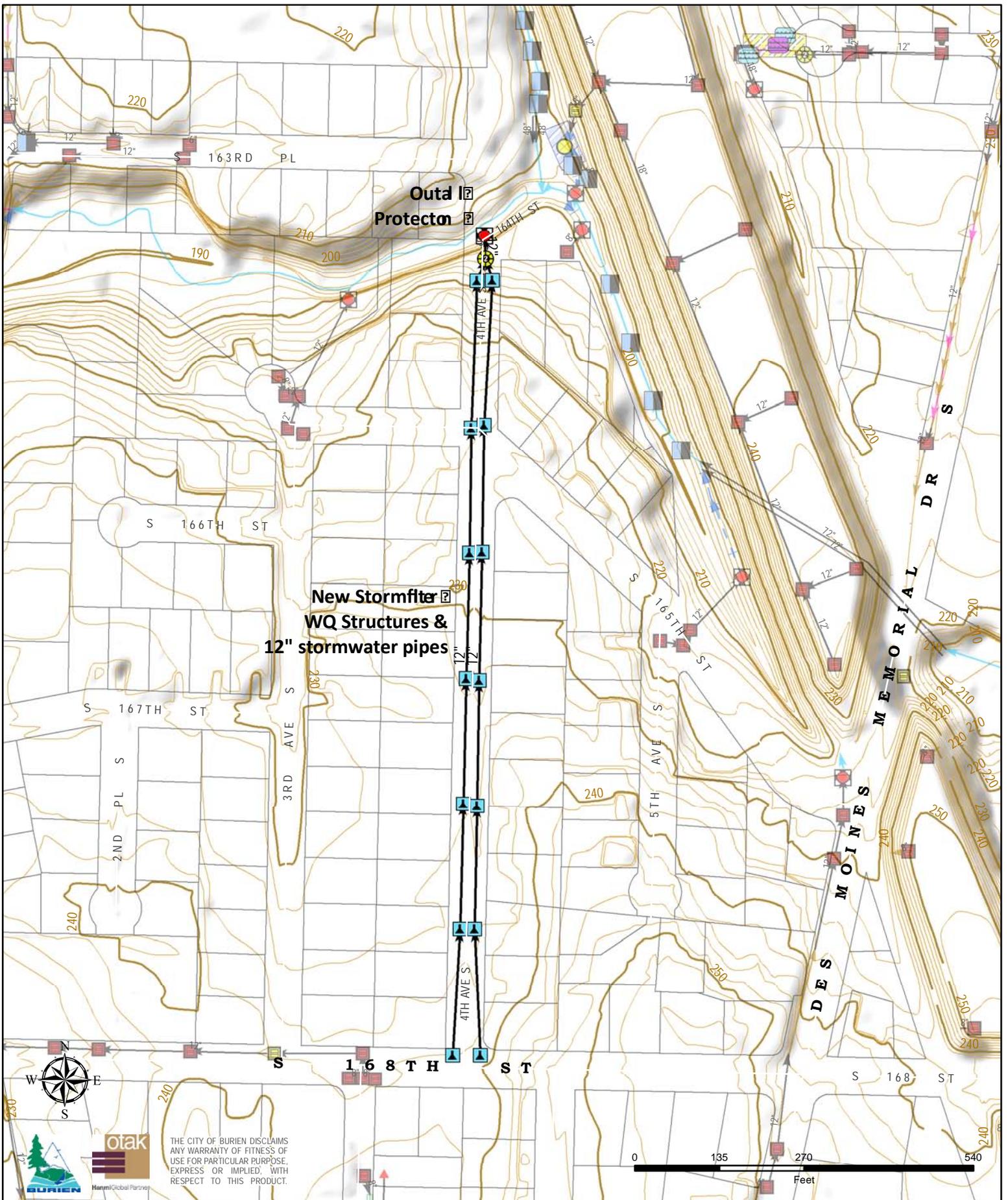
**PROJECT:** 4th Ave S/Blake Manor Neighborhood Drainage Improvements  
**PROJECT ID:** CIP 8  
**BY:** JSA

**CHECK BY:** JLC  
**DATE:** 04/25/2012

ITEM NO.	ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
<i>Construction Elements</i>					
1	REMOVING ASPHALT CONC. PAVEMENT	506	SY	\$ 40.00	\$ 20,223
2	SAWCUTTING	2,607	LF	\$ 4.00	\$ 10,428
3	STRUCTURE EXCAVATION CLASS B INCL. HAUL	843	CY	\$ 7.00	\$ 5,899
4	CORRUGATED POLYETHYLENE STORM SEWER PIPE, 12-IN DIAM	1,300	LF	\$ 25.00	\$ 32,500
5	GRAVEL BACKFILL FOR PIPE ZONE BEDDING	317	CY	\$ 55.00	\$ 17,432
6	GRAVEL BORROW INCL. HAUL	870	TON	\$ 30.00	\$ 26,110
7	CATCH BASIN TYPE 1	14	EA	\$ 1,500.00	\$ 21,000
8	STORMWATER OUTFALL	1	EA	\$ 5,000.00	\$ 5,000
9	ASPHALT TREATED BASE	180	TON	\$ 150.00	\$ 27,049
10	HMA, CL 1/2-IN PG	65	TON	\$ 150.00	\$ 9,776
11	UTILITY RELOCATIONS	1	LS	\$ 20,000.00	\$ 20,000
12	STORMFILTERS	2	EA	\$ 25,000.00	\$ 50,000
13	ROADSIDE RESTORATION	1	LS	\$ 5,000.00	\$ 5,000
<b>Subtotal Construction Elements</b>					<b>\$ 250,417</b>
<i>Required Ancillary Items</i>					
12	EROSION & SEDIMENTATION CONTROL		10%	(see note 3)	\$ 25,100
13	TRAFFIC CONTROL		10%	(see note 4)	\$ 25,100
14	CONTINGENCY		30%		\$ 75,200
Subtotal Ancillary					\$ 125,400
<b>Subtotal Construction + Ancillary</b>					<b>\$ 375,817</b>
<i>Mobilization</i>					
15	MOBILIZATION		10%		\$ 37,582
<b>Subtotal Construction + Ancillary + Mobilization</b>					<b>\$ 413,399</b>
<i>Tax/Engineering/Management/Permitting</i>					
16	STATE SALES TAX		9.5%		\$ 39,300
17	ENGINEERING/LEGAL/ADMIN		25%		\$ 103,400
18	CONSTRUCTION MANAGEMENT		10%		\$ 41,400
19	PERMITTING		10%		\$ 41,400
Subtotal					\$ 225,500
<b>Subtotal Construction + Ancillary + Mobilization + Tax/Engineering/Management/Permitting</b>					<b>\$ 638,899</b>
<b>2012 Dollars Total Estimated Project Cost (Rounded)</b>					<b>\$ 639,000</b>

**Notes:**

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Outfall  
Protecton

New Stormfilter  
WQ Structures &  
12" stormwater pipes



THE CITY OF BURIEN DISCLAIMS ANY WARRANTY OF FITNESS OF USE FOR PARTICULAR PURPOSE, EXPRESS OR IMPLIED, WITH RESPECT TO THIS PRODUCT.



<p><b>CIP 8</b></p>	<p><b>4th Ave S/Blake Manor Neighborhood Drainage Improvements</b></p>	<p><b>May 2012</b></p>
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## City of Burien: Watershed Based Studies Summary Sheet

The following studies are recommended to address problem areas that require a specialized investigation to determine the background source of the drainage issues or problem areas that require an extensive watershed study to identify the preferred long term solution.

Project Location (Otak IDs)	Problem Description	Study Description	Estimated Cost
<b>Study 1                      Lake Burien System Retrofit</b>			
Lake Burien/Miller Creek Watershed (90, 117, 118)	Flooding and water quality issues in Lake Burien and downstream system to Miller Creek.	Evaluation of water quality retrofit opportunities in Lake Burien drainage basin and capacity evaluation for downstream system.	<b>Study Cost:</b> \$250,000
<b>Study 2                      NERA Master Drainage Plan</b>			
	Regional stormwater plan needed to support NERA development.	Master Drainage Plan to locate and design regional stormwater management facilities to serve future redevelopment.	<b>Study Cost:</b> \$350,000
<b>Study 3                      Des Moines Memorial Drive and S 175th St Sediment Study</b>			
Des Moines Memorial Drive S and S 175th St (38, 87)	Sediment accumulation behind a recently installed beaver deceiver is causing flooding of the roadway.	Sediment Management Study source tracing and alternatives analysis to address ongoing sediment accumulation.	<b>Study Cost:</b> \$100,000
<b>Study 4                      Hermes and Mayfair Depressions Master Plan</b>			
Hermes Depression, Mayfair Depression (10, 19)	Flooding occurs in the Hermes and Mayfair Depressions. Long term regional stormwater management needed.	Study cost effective options for water quality retrofit and possible bypass of higher flows. Consider recommendations in Miller and Walker Creeks basin plan.	<b>Study Cost:</b> \$200,000
<b>Study 5                      142nd Street Depression Improvements</b>			
142nd St Depression (25, 26, 27, 85)	Two detention ponds are connected, but have no outlet. During large rainfall events the pond overflow and flood public ROW and adjacent private property.	Geotechnical investigation to confirm infiltration capacity. Alternatives analysis to identify preferred solution retrofitting of the 142 <sup>nd</sup> depression and/or modifying FEMA floodplain map.	<b>Study Cost:</b> \$200,000
<b>Study 6                      Arbor Lake Water Quality Lake Management Plan</b>			
Arbor Lake (127)	There are water quality issues in the lake including algae blooms and no swimming warnings in the summer.	Establish Water Quality monitoring Program and develop a Water Quality Lake Management Plan.	<b>Study Cost:</b> \$150,000
<b>TOTAL</b>			<b>\$1,150,000</b>

## City of Burien: Small Works Projects Summary Sheet

### Small Works Projects

Small Works Projects are projects that will be designed by City Engineering Staff and constructed by City Maintenance Staff or contractors from the City's Small Works Roster. Projects have straight forward design (no specialized analysis required) and an estimated construction cost under \$100,000 per project.

Project Location (Otak IDs)	Problem Description	Small Works Project Description
<b>SWP 1</b> Ambaum Blvd SW/SW 120th Block Drainage Improvements		
Ambaum Blvd SW and SW 120th Block (119)	No existing stormwater system causes localized flooding of the roadway.	Add new CB and pipe to existing system in the low point in the road
<b>SWP 2</b> Occidental Ave S Drainage Improvements		
Des Moines Memorial Drive S and S 116th St - S 118th St	Overland erosion on both sides of street. Runoff from the roadway floods a local property owner.	Repave road and install asphalt berms to keep stormwater within public ROW. There is a 12" high pressure gas main, which means installing a new stormwater system may be impossible.
<b>SWP 3</b> Eagle Landing Park/25th Ave SW Drainage Improvements		
25th AVE SW (Near House #14639)/Eagle Landing Park	Overland erosion caused by public water onto private property.	Install a dispersion trench into the park to divert water over a larger area into the park and away from private property. This project will also require install 150 linear feet of 12-inch pipe and 3 new catch basins.
<b>SWP 4</b> 116th Ave SW between 1st Ave and 4th Ave SW at Church Drainage Improvements		
116th Ave SW between 1st Ave SW and 4th Ave SW	There is a 30" pipe that drains to an existing ditch (City has a 10' easement) adjacent to a church parking lot that abruptly ends. Water disperses into a forested area then drains to an existing pipe and then into an existing detention pond. The dispersion into the wooded area causes the water to slow down and silt up behind the existing pipe.	Install new stormwater system on existing 10' easement from the church property to the downstream pond. (This solution needs some further refinement/discussion).