



City of Kenmore - 18120 68th Avenue NE - P.O. Box 82607 - Kenmore, WA 98028
Phone: 425-398-8900 - Fax: 425-481-3236 - E-mail: cityhall@kenmorewa.gov

City of Kenmore
City Council Regular Meeting Agenda
7:00 p.m., Tuesday, February 17, 2015
Kenmore City Hall, Council Chambers
18120 68th Ave. NE, Kenmore, WA 98028

If you have any questions or to confirm agenda items prior to the meeting, or if you require special accommodations, please call the City Clerk at 425-398-8900. You may also stop by City Hall at 18120 68th Avenue NE, Kenmore. Council agendas are also available on our website at www.kenmorewa.gov.

I. CALL MEETING TO ORDER

II. ROLL CALL

III. FLAG SALUTE

IV. AGENDA APPROVAL

V. CITIZEN COMMENTS

- A. This is an opportunity to express your views on issues that are important to you and to the community. Please limit your comments to three (3) minutes.

VI. CONSENT AGENDA

- A. Adopt Minutes for the January 26, 2015 City Council Meeting
[Draft 01 26 2015 Minutes](#)
- B. Approve Check Nos. 31473 - 31568 in the Amount of \$413,716.50 and Electronically Transferred Payroll Funds Totaling \$67,515.77 for the Period Ending January 30, 2015.
[Checks for Approval](#)
- C. Approve Appointment of Paul Steere to the Kenmore Library Board, Replacing Ellen Stein
[Agenda Bill](#)
- D. Authorize the City Manager to Execute Amendment No. 1 to Contract 12-C1033 with King County, Extending the Regional Animal Services Interlocal Agreement through December 31, 2017
[Agenda Bill & Attachments](#)
- E. Authorize Sidewalk Grant Agreements - Kris Overleese, Public Works Director/City Engineer

- Contract No. 15-C1369 - Community Development Block Grant (CDBG)/King County for NE 181st Street Sidewalk
- Contract No. 15-C1370 - Transportation Improvement Board (TIB) for NE 181st Street Sidewalk
- Contract No. 15-C1371 - Highway Safety Improvement Program (HSIP)/WSDOT for 62nd Avenue Sidewalk
- Contract No. 15-C1372 - Safe Routes to School (SRTS)/WSDOT for NE 202nd Street Sidewalk

[Agenda Bill & Attachment](#)

- F. Authorize the City Manager to Execute Contract No. 15-C1368 with the Washington State Department of Transportation and Other Necessary Documents to Receive \$12,000,000 in Federal Funds from the State's Bridge Replacement Advisory Committee (BRAC)
- G. Authorize the City Manager to Execute Contract No. 15-C1367 with King County Flood Control District in Order to Accept Grant Funding for the 192nd Street Culvert Replacement

[Agenda Bill & Attachment](#)

VII. BUSINESS AGENDA

- A. Draft Surface Water Master Plan - Kris Overleese, Public Works Director/City Engineer, and Richard Sawyer, Surface Water Program Manager

[Agenda Bill](#)

[Attachment 1](#)

[Attachment 2](#)

[Attachment 3](#)

[PowerPoint Presentation](#)

VIII. STAFF REPORT

IX. COUNCILMEMBER REPORTS & COMMENTS

X. COUNCILMEMBER INITIATIVES

XI. ADJOURNMENT

Upcoming Meetings:

Mon., February 23, 2015 7:00 p.m. City Council Regular & Special Joint Planning Commission Meeting

Tues., February 24, 2015 7:00 p.m. Planning Commission Regular Meeting

Mon., March 2, 2015 7:00 p.m. City Council Special Meeting

**City of Kenmore, Washington
City Council Regular Meeting
Minutes
January 26, 2015**

CALL TO ORDER – The regular meeting of the Kenmore City Council was called to order by Mayor David Baker at 7:02 p.m.

Councilmembers present: Mayor David Baker, Deputy Mayor Allan Van Ness and Councilmembers Brent Smith, Laurie Sperry, Milton Curtis, Nigel Herbig and Stacey Denuski

Staff present: Rob Karlinsey, City Manager; Kris Overleese, Engineering & Environmental Services Director; Debbie Bent, Community Development Director; Lauri Anderson, Senior Planner; Andrew Calkins, Graduate Intern; Rod Kaseguma, City Attorney; and Patty Safrin, City Clerk

FLAG SALUTE

Sheri Baker led the flag salute.

AGENDA APPROVAL

It was Council consensus to approve the agenda as submitted.

PROCLAMATION

Proclamation in Support of the Kenmore Cascade Canoe & Kayak Team (KCCKT) Paracanoe Program – Mayor Baker read the proclamation into the record.

CITIZEN COMMENTS

Dennis Mendrey, 6410 NE 182nd Street, Kenmore, was present to thank the Council and staff for all the things they do to encourage development and economic growth in the City. He also addressed his request for an addendum to the Comprehensive Plan for his personal property.

Mayor Baker thanked him for his comments.

CONSENT AGENDA

Councilmember Sperry moved to approve the consent agenda as submitted. Deputy Mayor Van Ness seconded the motion to Adopt the Minutes for the January 12, 2015 City Council Meeting; and Approve Check Nos. 31308 - 31383 Totaling \$801,060.79 and Electronically Transferred Payroll Funds In the Amount of \$70,983.76 and Payroll Check Nos. 7071 and 7072 Totaling \$1,000.41 for the Period Ending January 2, 2015. The motion passed unanimously.

BUSINESS AGENDA

2015 Annual Planning Commission Work Plan Docket for Comprehensive Plan and Development Regulation Amendment – Debbie Bent, Community Development Director, and Lauri Anderson, Senior Planner, were present to give a brief report. Director Bent noted that the annual docket review process is outlined in Chapter 19.20 of the Kenmore Municipal Code (KMC). She stated that staff is looking for Council direction on the docket. Senior Planner Anderson gave an overview of the work plan docket and the staff recommendations. They were also available to answer any questions.

Councilmember Curtis moved to Approve the 2015 Annual Planning Commission Work Plan Docket as submitted. Councilmember Smith seconded the motion. The motion passed 7-0.

Analysis of Pedestrian and Bicycle Collision Data for the City of Kenmore – Kris Overleese, Public Works Director/City Engineer; Rob Karlinsey, City Manager; and Andrew Calkins, Graduate Intern, were present to give a brief report. City Manager Karlinsey stated that the reason staff is looking at this data is to help determine where best to spend the City's money to make safety improvements. Graduate Intern Calkins provided a brief PowerPoint presentation detailing the data collection process and the analysis of the data. They were also available to answer any questions.

STAFF REPORT

City Manager Karlinsey stated that there would be a "Hawk Walk" this Saturday at 3:00 p.m. starting at City Hall. He announced that the City is trying to promote our business directory, and he distributed "SHOP MORE, PLAY MORE, FIND MORE, KENMORE" stickers.

CITY COUNCILMEMBER REPORTS & COMMENTS

Mayor Baker announced a family-friendly walk with him and Councilmember Denuski scheduled for Saturday, February 7th in celebration of the 5th anniversary of First Lady Michelle Obama's "Let's Move" program. He noted that the Regional Project Evaluation Committee (RPEC) has approved moving SR 522 funds from right-of-way to construction and that they will recommend approval by two additional boards. On Thursday he will be in Olympia with the Eastside chambers of commerce and will be doing some lobbying work in Olympia in support of the RPEC decision.

ADJOURNMENT

Mayor Baker adjourned the regular meeting at 8:27 p.m.

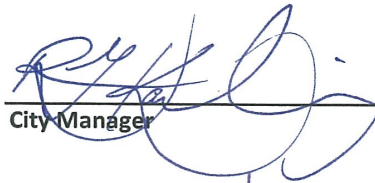
David Baker, Mayor

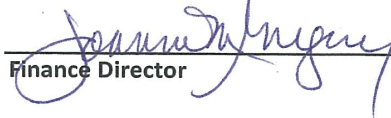
ATTEST:

Patty Safrin, City Clerk

City of Kenmore Voucher Certification and Approval

I, the undersigned, do hereby certify under penalty of perjury that the materials have been furnished, the services rendered or the labor performed as described herein and that the following claims, paid by checks 31473-31568 which total \$413,716.50, and electronically transferred payroll funds totalling \$67,515.77, are just, due and unpaid obligations against the City of Kenmore/King County/Washington, and that I am authorized to authenticate and certify to said claims.


 City Manager 1-31-15
 Date


 Finance Director 1/30/15
 Date

Check #	Vendor Name	Description	Check Amount
31473	BAKER, DAVID	1/7-1/13/15 Mileage Reimbursement	128.23
31474	BANNER BANK KENMORE	Books, Keys, Phone Supplies, & Driving Record	242.61
31475	NATIONWIDE FINANCIAL 401a	Social Security Replacement Plan	10,725.06
31476	NATIONWIDE RETIREMENT SOLUTIONS 457	Deferred Comp Payroll Deduction	285.00
31477	ICMA RETIREMENT TRUST 457 - 304745	Deferred Comp Payroll Deduction	2,835.43
31478	DRS 457	Deferred Comp Payroll Deduction	890.00
31479	AFLAC	Private Medical/ Disability Plans	438.51
31480	CITY OF KENMORE FS	Flexible Spending Medical Plans	334.21
31481	BANK OF AMERICA 941	Payroll Taxes	13,384.22
31482	WA GUARANTEED EDUCATION TUITION	WA Pre-Tax Education Plan	100.00
31483	DEPARTMENT OF RETIREMENT SYSTEMS	WA State Retirement	12,857.26
31484	DEPARTMENT OF LABOR AND INDUSTRIES	Worker's Compensation	1,627.93
31485	UNITED WAY OF KING COUNTY	Employee Charitable Contribution	513.24
31486	NATIONAL LIFE OF VERMONT	Life Insurance	234.89
31487	AMERICAN GENERAL	Life Insurance	443.72
31488	STATE OF FLORIDA DISBURSEMENT UNIT	Payroll Deduction	275.00
31489	AWC EMPLOYEE BENEFITS	Employee Health Insurance	40,954.77
31490	LINCOLN NATIONAL LIFE INSURANCE	Life/Long Term Disability/AD&D	796.02
31491	DEPARTMENT OF LABOR AND INDUSTRIES	Dec. Volunteer Hrs.	28.76
31492	DEPARTMENT OF LABOR AND INDUSTRIES	Oct/Nov Volunteer Hrs.	14.60
31493	WA CITIES INSURANCE AUTHORITY	Liability Assessment for 2015	210,391.00
31494	WA CITIES INSURANCE AUTHORITY	Transportation Benefit District Assessment	2,500.00
31495	SANDRA OWEN DESIGN	Kenmore Reporter Ad Design/Holiday Poster	420.00
31496	ACTION ENTERTAINMENT	Entertainment for Kenmore Jr High Dance	395.00
31497	ASSOCIATION OF WA CITIES	2015 Membership Fee	14,672.00
31498	BAKER, DAVID	Jan. Meetings Mileage Reimbursement	250.70
31499	BASTYR UNIVERSITY	City Information Tent	200.00
31500	CASCADE PEST CONTROL	Rhododendron Park Pest Control	142.35
31501	CITY OF BELLEVUE	4th Qtr 2014 Mybuildingpermit.com	3,784.48

31502	COASTWIDE LABORATORIES	City Hall Maintenance Supplies	373.81
31503	DAILY JOURNAL OF COMMERCE	RFP Media & Marketing	79.20
31504	KING CTY EASTSIDE TRANSP PARTNERSH	2015 ETP Annual Dues	200.00
31505	FRUHLING SAND & TOPSOIL	Asphalt & Brush Dumping	82.50
31506	CALPORTLAND COMPANY	Gravel for Pipe Installation	151.25
31507	JET CITY PRINTING	NUD Insert/Kenmore 2035 Survey	172.74
31508	KING COUNTY FINANCE	Adult/Juvenile Detention Dec. Charges	4,594.58
31509	KING COUNTY FINANCE	December Dump Fees	22.00
31510	KING COUNTY FINANCE	Dec. Adult/Juv Detention CWP Program	4,030.00
31511	KING COUNTY OFFICE OF FINANCE	Dec. Public Defence Indigency Screening	1,128.59
31512	KING COUNTY SHERIFF	December School District Overtime	1,911.65
31513	KUSTOM SIGNALS, INC.	Shipping Charges for Radar Certification	18.00
31514	NEOPOST NORTHWEST	Postage Machine Supplies	274.82
31515	NORTHSHORE UTILITY DIST	Utility Bills	971.56
31516	HONEY BUCKET	January Squires Landing Rental	220.15
31517	OFFICE DEPOT	Office Supplies	141.53
31518	PEOPLES STORAGE	Feb. 2015 Storage Rent #C304	190.00
31519	PUGET SOUND CLEAN AIR AGENCY	2015 Clean Air Assessment	14,740.00
31520	PUGET SOUND ENERGY	Electricity/Street Lights/Traffic Signals	4,525.37
31521	CEMEX	Asphalt for Pothole/Drainage Repairs	509.82
31522	SEATTLE TIMES	Legal Notices	662.31
31523	SOUND CITIES ASSOC	2015 Dues	12,798.49
31524	TOTAL LANDSCAPE CORP	Jan. Parks & City Hall Landscape Maintenance	5,703.41
31525	WA ASSOC OF BUILDING OFFICIALS	Training Registration	900.00
31526	WASHINGTON CITY/COUNTY MGMT ASSOC	City Manager Membership Dues	187.00
31527	WA FINANCE OFFICERS ASSOCIATION	2015 Annual Membership Dues	150.00
31528	WA STATE DEPT OF TRANSPORTATION	December Traffic Signal Maintenance	253.97
31529	COLUMBIA RIDGE LANDFILL	Dump Fees for December	303.66
31530	ARTS OF KENMORE	Public Art Acquisition & Exhibit Contribution	792.75
31531	THE KIPLINGER LETTER	Subscription Renewal	99.00
31532	SPERRY, LAURIE	Retreat Mileage Reimbursement	67.85
31533	VOID	Void	-
31534	STOPTECH, LTD.	Police Department Equipment	3,571.89
31535	NORTHSHORE ROTARY CLUB	Quarterly Membership Dues Jul-Sep 2014	256.00
31536	BANNER BANK JG	GFOA Conference	380.00
31537	TOPIA TECHNOLOGY/ BIS	Website Hosting	200.00
31538	VAUGHAN, KENT	Engineer License Renewal Reimbursement	116.00
31539	SHRED-IT	Jan. 7th Shredding Services	53.96
31540	ALCALDE & FAY	Jan. 2015 Gov't. Affairs Consulting	5,024.28
31541	COASTAL WEAR PRODUCTS INC	Street Sweeper Broom Heads	1,356.71
31542	COMCAST	Incubator Bldg & City Hall Internet/Cable	487.00
31543	KING COUNTY MUNICIPAL CLERKS ASSOC	City Clerk Annual Dues	25.00
31544	iWORQ SYSTEMS	Permit Mgmt. Software 02/15-01/16	2,800.00
31545	INTEGRA TELECOM	1/8-2/7 City Hall Phone Service	757.62
31546	PHSI PURE WATER FINANCE	Incubator Bldg. Filtered Water	70.31
31547	FRONTIER	12/28-1/27 City Hall & Elevator Phone Svc.	1,012.41
31548	LAW OFFICE OF JOHN RUNGERUDE, PS	Jan. 2015 Conflict Public Defender Services	300.00
31549	INDEPENDENT STATIONERS	Office Supplies/Engineering Plotter Paper/Ink	944.00
31550	WELLS FARGO FINANCIAL	1st & 2nd Floor Copier Leases	1,041.25

31551	ACTIVE SHOOTER TRAINING LLC	Police Training Course 2/27/15	184.52
31552	HOPKINS, CRAIG	1/6-1/29 Mileage Reimbursement	81.20
31553	DEVRIES, DENIS	1/1-1/26 Mileage Reimbursement	35.28
31554	MILLER STEPHENS, MARY	Dec. Public Defense Svcs @ SCORE	1,250.00
31555	SESAC	2015 Annual License	360.00
31556	VERIZON WIRELESS	Jan. Staff & Police Cell Phones	1,010.05
31557	JOYCE ZIKER PARKINSON	Dec. Kenmore Vill. & Lk WA Sediments Legal	1,807.50
31558	ANCHOR QEA, LLC	2014-15 Sediment Technical Support	1,592.00
31559	WAGE WORKS	Dec. Flex Plan Acct. Administrative Fee	50.00
31560	KARLINSEY, ROB	Reimbursement - Retirement Pendant	219.00
31561	KENMORE COMMERCIAL LLC	Incubator Bldg. February Lease	3,281.00
31562	NORTHWEST LANDSCAPE SERVICES	January SR522 ROW Landscaping	1,199.81
31563	ECONOMIC DEV COUNCIL OF SEATTLE/KC	2015 Dues	5,000.00
31564	REDMOND, MICHAEL	Jan 2015 Vehicle and Phone Reimbursement	61.25
31565	NORTHWEST TROPHY	Retirement Plaque	97.46
31566	STARDOM SERVICES, INC.	Jan. Incubator Bldg. Janitorial Service	510.00
31567	TWEDT, CHARLES	Metal Sculpture for Squires Landing	1,500.00
31568	AMERICAN PUBLIC WORKS ASSOCIATION	Engineering/PW Membership 2/1/15-1/31/16	960.00
1/23/2015	PAYROLL	Direct Deposit	67,515.77
			<u>\$ 481,232.27</u>



City Council Business Agenda Item
City of Kenmore, WA

Subject/Topic: Kenmore Library Advisor Board Appointment Proposed Council Action/Motion: Approve Appointment of Paul Joseph Steere to the Kenmore Library Board as Replacement for Ellen Traxel Stein	For Council Meeting Agenda of: February 17, 2015 Consent Agenda Department: Prepared by: Patty Safrin <u>Initial & Date</u> Approved by Department Head: _____ Approved by City Attorney: _____ Approved by Finance Director: <u>pmc</u> 2/6/15 Approved by City Manager: <u>RJK</u> Exhibits/Attachments: N/A
Expenditure Required \$ NA Amount Budgeted \$ NA Appropriation Required \$ NA	
<u>INFORMATION/BACKGROUND:</u> At their meeting on December 8, 2014, the City Council appointed three regular Library Advisory Board members and three alternates. Paul Steere was chosen as an alternate at that time. If approved, he would be appointed to a regular position replacing Ellen Stein, who has resigned.	
<u>FISCAL CONSIDERATION:</u>	
<u>COUNCIL GOAL/BUDGET OBJECTIVE BEING ADDRESSED:</u> Consistent with Kenmore Municipal Code Chapter 2.35	

Subject/Topic:
Regional Animal Services of King County
Interlocal Agreement Extension

1. Proposed Amendment #1
2. Background Information
3. Contract No.12-C1033

Appropriation Required \$0

COUNCIL GOAL/BUDGET OBJECTIVE BEING ADDRESSED:

**AGREEMENT TO EXTEND
ANIMAL SERVICES INTERLOCAL AGREEMENT
THROUGH DECEMBER 31, 2017**

This AGREEMENT is made and entered into by and between KING COUNTY, a Washington municipal corporation and legal subdivision of the State of Washington (the "County") and the undersigned Cities ("Contracting Cities").

WHEREAS, the County and each Contracting City entered into an Interlocal Agreement regarding the provision of animal control, sheltering and licensing services for the period of 2013 through 2015 ("Interlocal Agreement"); and

WHEREAS, the Interlocal Agreement took effect on July 1, 2012 and remains in effect through December 31, 2015, unless otherwise extended through December 31, 2017; and

WHEREAS, the Interlocal Agreement provides for a two-year extension of Term in Subparagraph 4.b.; and

WHEREAS, Subparagraph 4.b, section i, states either Party may propose amendments to the Agreement as a condition of an extension; and

WHEREAS, Subparagraph 4.b, section ii, states that nothing in this Agreement shall be construed to compel either Party to agree to an extension or amendment of the Agreement, either on the same or different terms; and

WHEREAS, Subparagraph 4.b, section iii, states that the County agrees to give serious consideration to maintaining the various credits provided to the Contracting City under this Agreement in any extension of the Agreement; and

WHEREAS, the County and Contracting Cities ("the Parties") wish to extend the Interlocal Agreement through December 31, 2017, as contemplated within Section 4 of the Interlocal Agreement;

NOW THEREFORE, in consideration of the promises, covenants and agreements contained in the Interlocal Agreement, as extended, the Parties agree as follows:

1. The Interlocal Agreement shall remain in effect through December 31, 2017 under the same terms and conditions and may not be terminated for convenience.
2. In order to maintain the same terms and conditions, dates within Interlocal Agreement shall reflect the extended 2016 and 2017 period, as set forth in Attachment A.
3. The County may sign an agreement with additional cities for provision of animal services prior to the expiration of the extended Interlocal Agreement, but only if the additional city agreement will not increase the Contracting Cities' costs payable to the County under the Interlocal Agreement.

City of Kenmore
January 14, 2015

4. The Parties agree that, in light of their decision to now extend the Interlocal Agreement for an additional two year term as provided herein, procedures set forth in Section 4 of the Interlocal Agreement for meeting to discuss the prospect of an extension, for proposing amendments to the Interlocal Agreement during the extended term and for providing notice of intent to extend the Interlocal Agreement are superfluous. The Parties accordingly waive their rights to such procedures.
5. This Agreement to extend the Interlocal Agreement may be executed in counterparts by each Contracting City and each such counterpart shall be deemed to be an original instrument, but all such counterparts together shall constitute one instrument.

IN WITNESS WHEREOF, the Parties hereto have caused this Agreement to be executed effective this ____ day of _____, 2015.

King County

City of Kenmore

Dow Constantine
King County Executive

Rob Karlinsey
City of Kenmore City Manager

Date

Date

Approved as to Form:

Approved as to Form:

Deputy Prosecuting Attorney

Kenmore City Attorney

Date

Date

City of Kenmore
January 14, 2015

ATTACHMENT A

RASKC ILA Extension Dates

Section 1(d)	Definition of "Agreement" means this Animal Services Interlocal Agreement for 2013-2015 <u>2016 and 2017....</u>
Section 4(e)	Limited Reopener and Termination: "If a countywide, voter approved property tax levy for funding some or all of the Animal Services program is proposed that would impose new tax obligations before January 1, 2016 <u>2018...</u> "
Section 7(c)	ii – "The City may request licensing revenue support from the County in 2014 and 2015 <u>2016 and 2017...</u> " - "...provision of licensing revenue support in 2014 and 2015-2016 and 2017... "
Exhibit A, Part II Shelter Services	"During 2013-2015-2016 and 2017 "
Exhibit C, Part 2	
- Bullet #2	"(fixed at 2013 level, payable annually through 2015-2017)" "(also fixed at a 2013 level, payable annually through 2015-2017)"
- Bullet #3	"In 2014 and 2015 <u>2016 and 2017...</u> " ".. Licensing Revenue Support Cities with a licensing Revenue Target over \$20,000/year will be assured such services in 2013-2015-2016 and 2017 "
- Bullet #4	"...of total New Regional Revenues, in 2014 and 2015-2016 and 2017... "
- Bullet #5	"In Service Years 2014 and 2015-2016 and 2017... "
Exhibit C4 – Transition Funding Credit, Shelter Credit, Estimated new Regional Revenue	
A. Transition Funding Credit	"..these cities will receive credit at the level calculated for 2013 in the 2010 Agreement for Service Years 2013, 2014 and 2015-2016 and 2017, ... "
B. Shelter Credit	"A total of \$750,000 will be applied as a credit in each of the Service Years 2013-2015-2016 and 2017... "
	Table 3 title "Annual Shelter Credit Allocation – 2013-2015-2016 and 2017 "
Exhibit C5 Licensing Revenue Support (E)	"In 2014 and 2015-2016 and 2017... " and "...Exhibit F with respect to all 3 service years (2016 and 2017)"
Exhibit C5 Licensing Revenue Support, Table 2	"For Service Year 2015-2016 and 2017.... "
Exhibit C-7	"...Licensing Revenue Support in Service Years 2014 or 2015-2016 or 2017... "

City of Kenmore
January 14, 2015

ATTACHMENT B

King County – Regional Animal Services – Contracting Cities

Beaux Arts	Maple Valley
Bellevue	Mercer Island
Black Diamond	Newcastle
Carnation	North Bend
Clyde Hill	Redmond
Covington	Sammamish
Duvall	SeaTac
Enumclaw	Shoreline
Issaquah	Snoqualmie
Kenmore	Tukwila
Kent	Woodinville
Kirkland	Yarrow Point
Lake Forest Park	

City of Kenmore
January 14, 2015

**King County****Regional Animal Services of King County
Extension of Interlocal Agreement****SUBJECT**

Authorizing a two-year extension to the current City/County Interlocal Agreement (ILA) for King County to continue to provide animal services, for unincorporated King County and 25 contract cities (see map of service area and list of contracting cities – attachment 1). The current (2013-2015) ILA contains provisions for the contracting parties to agree to a two-year extension under the same terms and conditions of the current ILA.

SUMMARY

The two-year ILA extension is for King County to continue providing; animal control services (officers in the field responding to events), shelter services and pet licensing services. The term of the ILA extension is two-years, covering 2016 and 2017.

Negotiating the current ILA was a complex and lengthy undertaking, taking almost 18 months. Given the interdependent nature of the contracting model, the contracting parties agreed to certain prescribed contracting milestones, so all parties would: a) know the costs of services to their jurisdiction, and b) should all parties not agree, provide sufficient time for alternative service provision arrangements to be secured. The current ILA contains the following contracting milestones:

- March 1, 2015 – Deadline for RASKC/City partner notification of ILA extension
- July 1, 2015 – Formal deadline for Contracting parties to extend ILA

In 2014(July and September) the contracting parties expressed interest in executing the two-year extension defined in the current ILA. The County has prepared an extension agreement for the parties to execute.

BACKGROUND

King County has provided regional animal services for a number of years. In June of 2010 the County created a partnership with 26 cities within the County called Regional Animal Services of King County (RASKC). In 2012, 25 cities contracted with the County for animal services for a 3 year term, covering 2013 through 2015.

The RASKC program and services are supported directly by program revenues (pet licensing, and fees/fines), as well as the General Funds from King and many of the contracting cities. In 2013, the RASKC program generated revenues supported 49% of the RASKC program expenses, with pet licensing accounting for 44% and fees/fines accounting for 5%. The remaining 51% of operating expenses are supported by contributions from the County's General Fund and payments from contract cities.



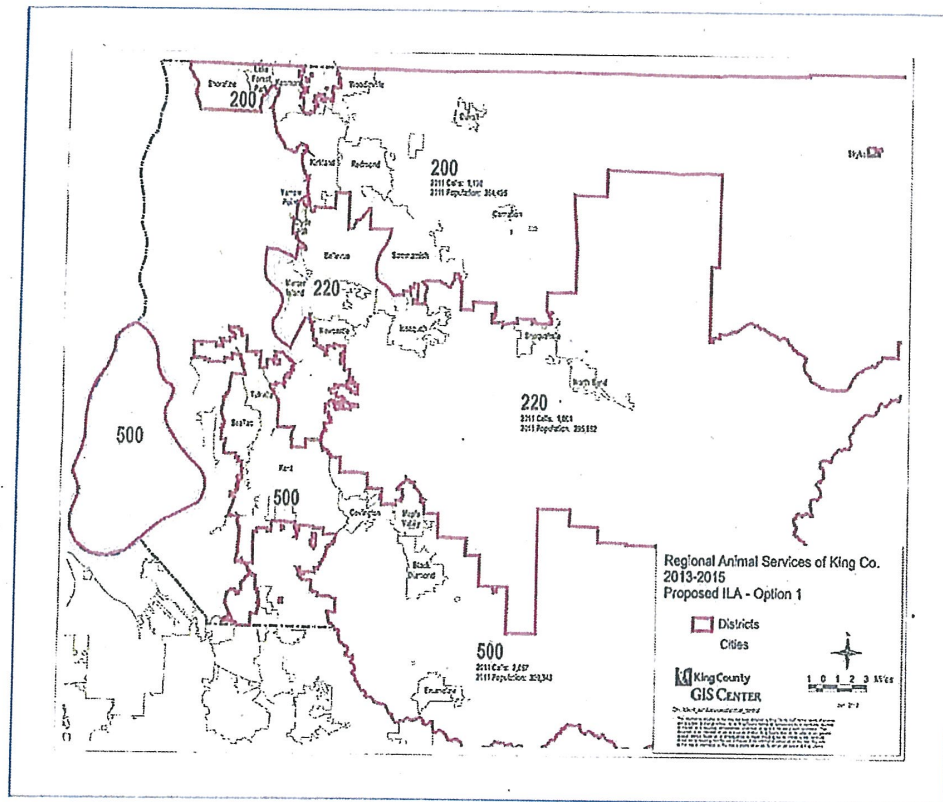
King County

**Regional Animal Services of King County
Extension of Interlocal Agreement**

RASKC pet licensure rate of approximately 21% is on the high end of animal services programs in the County, but is insufficient to fund the overall program. RASKC uses mailings, direct and saturation; creates and implements jurisdictional marketing campaigns, partners with over 450 pet licensing sales and/or information providers, has a presence at dozens of events annually and uses door to door canvassing.

The cost allocation model assigns 80% based on use and 20% based on population to provide correlation between costs and use of the system. Credits are provided for high use cities. Assistance to other cities comes in the form of license support in order to increase license revenues within each city receiving the assistance. Cities receiving license revenue support are required to provide specific in-kind assistance to help generate license revenues.

2012 Interlocal Agreement Control Districts - RASKC



District 200 (Northern District)

Shoreline
Lake Forest Park
Kenmore
Woodinville
Kirkland
Redmond
Sammamish
Duvall
Carnation

District 220 (Eastern District)

Bellevue
Mercer Island
Yarrow Point
Clyde Hill
Town of Beaux Arts
Issaquah
Snoqualmie
North Bend
Newcastle

District 500 (Southern District)

Tukwila
SeaTac
Kent
Covington
Maple Valley
Black Diamond
Enumclaw

Regional Animal Services of King County
Estimated Payments 2014 - 2017

Jurisdiction	2014 Load Factor	2014 Final Estimated Net Final Cost	2015 Load Factor	2015 Final Estimated Net Final Cost	New 2016 Program Load Factor ¹	2013-2015 Transition Funding (Annual)	2013 - 2015 Shelter Credits (Annual)	Estimated Revenue from Licensing Support	2016 Estimated Net Final Cost	2017 Estimated Net Final Cost	Load Factor Change 2015 to 2016
Carnation	0.1771%	-\$3,242	0.1772%	-\$2,403	0.2062%	\$552	\$0	\$0	-\$5,095	-\$5,452	0.0290%
Duvall	0.6431%	-\$10,271	0.6433%	-\$8,770	0.5227%		\$0	\$0	-\$3,369	-\$4,275	-0.1206%
Kenmore	1.2871%	-\$5,832	1.2875%	-\$5,647	1.1527%	\$0	\$0	\$0	-\$554	-\$2,555	-0.1348%
Kirkland	4.8320%	\$0	4.8337%	\$118	4.4598%		\$0	\$0	\$12,145	\$4,407	-0.3739%
Lake Forest Park	0.8323%	\$4,791	0.8326%	\$1,170	0.6352%	\$0	\$0	\$0	\$10,383	\$9,280	-0.1974%
Redmond	2.4832%	-\$4,805	2.4843%	-\$10,876	2.9478%	\$0	\$0	\$0	-\$39,901	-\$45,015	0.4635%
Sammamish	2.1805%	\$8,744	2.1815%	\$4,990	2.1763%	\$0	\$0	\$0	\$1,635	-\$2,141	-0.0052%
Shoreline	3.1717%	-\$13,214	3.1728%	-\$21,740	2.9692%	\$0	\$0	\$0	-\$16,090	-\$21,243	-0.2036%
Woodinville	0.5096%	\$4,604	0.5098%	\$2,914	0.5133%	\$0	\$0	\$0	\$1,877	\$986	0.0035%
Beaux Arts	0.0099%	\$412	0.0099%	\$594	0.0095%	\$0	\$0	\$0	\$595	\$579	-0.0003%
Bellevue (10)	7.7708%	-\$66,574	7.7734%	-\$72,707	6.9867%		\$0	\$0	-\$65,527	-\$77,647	-0.7868%
Clyde Hill	0.1393%	\$662	0.1393%	\$697	0.1208%	\$0	\$0	\$0	\$1,463	\$1,253	-0.0186%
Issaquah	2.2882%	-\$57,296	2.2888%	-\$57,536	2.3364%	\$0	\$0	\$0	-\$63,903	-\$67,955	0.0476%
Mercer Island	0.8954%	\$6,518	0.8958%	\$6,329	1.1342%	\$0	\$0	\$0	-\$7,962	-\$9,929	0.2384%
Newcastle	0.6669%	-\$13,125	0.6671%	-\$9,951	0.8298%	\$0	\$0	\$0	-\$24,211	-\$25,651	0.1628%
North Bend	0.7270%	-\$12,226	0.7272%	-\$9,794	0.7892%	\$1,376	\$586	\$0	-\$22,723	-\$24,091	0.0620%
Snoqualmie	0.6053%	-\$2,646	0.6055%	-\$1,625	0.7212%	\$0	\$0	\$0	-\$8,846	-\$10,097	0.1157%
Yarrow Point	0.0392%	\$905	0.0392%	\$1,074	0.0569%	\$0	\$0	\$0	\$61	-\$38	0.0177%
Black Diamond	0.5058%	-\$9,718	0.5059%	-\$5,936	0.5143%	\$1,209	\$3,263	\$0	-\$7,232	-\$8,124	0.0084%
Covington	2.8950%	-\$53,993	2.8954%	-\$45,886	3.8827%	\$5,070	\$36,409	\$0	-\$113,723	-\$120,453	0.9873%
Enumclaw	2.0616%	-\$33,472	2.0619%	-\$31,493	1.8439%	\$11,188	\$28,407	\$0	-\$32,670	-\$35,866	-0.2180%
Kent	22.4358%	-\$271,193	22.4382%	-\$301,387	20.7743%	\$110,495	\$495,870	\$0	-\$249,457	-\$285,460	-1.6640%
Maple Valley	2.4860%	-\$49,310	2.4865%	-\$43,304	3.1164%	\$6,027	\$6,867	\$0	-\$91,717	-\$97,120	0.6299%
SeaTac	5.4870%	-\$107,508	5.4876%	-\$114,352	5.4660%	\$7,442	\$116,611	\$0	-\$122,341	-\$131,814	-0.0216%
Tukwila	3.3815%	-\$69,849	3.3819%	-\$73,750	3.6299%	\$5,255	\$61,987	\$0	-\$92,709	-\$99,000	0.2481%
KC Unincorporated	31.4888%	-\$735,903	31.4736%	-\$744,025	32.2047%	\$148,614	\$750,000	\$0	-\$835,733	-\$891,574	0.7311%

¹The Program Load Factor is to be Reset based on 2014 usage and 2015 population for 2016 per the 2013-15 ILA. For the draft 2016 estimate, 2013 usage and 2014 population was used.
General Note: 2013 Pet Licensing Revenue has been used for 2015, 2016 and 2017. Non-Licensing revenue (\$334,000) has been assumed for purposes of this estimate for 2015-2017.

Budgeted Allocable Cost 2013-2017 (Estimated)

		Budget Inflator Cap applied to Budgeted Total Allocable Cost					Budget Inflator Cap applied to Service Categories (for purposes of creating a 2016 Cost Estimate Only)			
		Control	Shelter	Licensing	Total	Actual/ Estimated Budget Inflator Cap ¹	Control	Shelter	Licensing	Total
Base Year	2013 Budgeted Total Allocable Cost (Base)	1,770,487	2,819,960	673,640	5,264,087		1,770,487	2,819,960	673,640	5,264,087
	2013 Budgeted Non-Licensing Revenue	90,574	119,678	13,265	223,517					
	2013 Budgeted New Regional Revenue (50%)				-					
	2013 Budgeted Net Allocable Costs	1,679,913	2,700,282	660,375	5,040,570					
2014 Budgeted Total Allocable					5,383,056	2.26%	1,810,500	2,883,691	688,864	5,383,056
2014 Budgeted Non-Licensing Revenue					279,000					279,000
2014 Budgeted New Regional Revenue (50%)					-					-
2013 Budgeted Net Allocable Costs					5,104,056					5,104,056
2015 Budgeted Total Allocable (Preliminary)					5,537,011	2.86%	1,862,280.31	2,966,165	708,565.78	5,537,011
2015 Budgeted Non-Licensing Revenue					334,400					334,400
2015 Budgeted New Regional Revenue (50%)					-					-
2015 Budgeted Net Allocable Costs					5,202,611					5,202,611
New Base Year²	2016 Budgeted Total Allocable (Preliminary)	1,918,335	3,055,447	729,894	5,703,675	3.01%	1,918,335	3,055,447	729,894	5,703,676
	2016 Budgeted Non-Licensing Revenue	131,000	123,400	80,000	334,400		131,000	123,400	80,000	334,400
	2016 Budgeted New Regional Revenue (50%)				-					-
	2016 Budgeted Net Allocable Costs	1,787,335	2,932,047	649,894	5,369,275		1,787,335	2,932,047	649,894	5,369,276
2017 Budgeted Total Allocable (Preliminary)					5,877,067.18	3.04%				5,877,067
2017 Budgeted Non-Licensing Revenue					334,400					334,400
2017 Budgeted New Regional Revenue (50%)					-					-
2017 Budgeted Net Allocable Costs					5,542,667					5,542,667

¹ The Budget Inflator Cap for 2014 is final. The Budget Inflator Cap for 2015 is Final. The Budget Inflator Cap for 2016 and 2017 are based on a 1% annual population growth estimate and the estimated CPI-U for 2015 and 2016 (King County Office of Economic and Financial Analysis - August 2014 Forecast)

² New Base Year - The 2013-15 ILA established 2013 and 2016 as base years, whereby the allocated cost is updated for actual usage and population and a new Program Load Factor is set. In 2014 and 2015, as well as 2017, costs are allocated based on the Program Load Factor established in the base year unless adjustments to the Program Load Factor are made due to annexations and/or the addition of a "Latecomer City" as defined in the ILA.

City of Kenmore Contract No. 12-C1033

Animal Services Interlocal Agreement for 2013 Through 2015

This AGREEMENT is made and entered into effective as of this 1st day of July, 2012, by and between KING COUNTY, a Washington municipal corporation and legal subdivision of the State of Washington (the "County") and the City of Kenmore, a Washington municipal corporation (the "City").

WHEREAS, the provision of animal control, sheltering and licensing services protects public health and safety and promotes animal welfare; and

WHEREAS, providing such services on a regional basis allows for enhanced coordination and tracking of regional public and animal health issues, consistency of regulatory approach across jurisdictional boundaries, economies of scale, and ease of access for the public; and

WHEREAS, the Contracting Cities are partners in making regional animal services work effectively, and are customers of the Animal Services Program provided by the County; and

WHEREAS, in light of the joint interest among the Contracting Parties in continuing to develop a sustainable program for regional animal services, including achievement of sustainable funding resources, the County intends to include cities in the process of identifying and recommending actions to generate additional revenues through the Joint City-County Committee, and further intends to convene a group of elected officials with a representative from each Contracting City to discuss and make recommendations on any potential countywide revenue initiative for animal services requiring voter approval, the implementation of which would be intended to coincide with the end of the term of this Agreement; and

WHEREAS, by executing this Agreement, the City is not implicitly agreeing to or supportive of any potential voter approved levy initiative in support of animal services; and

WHEREAS, the City and the County are parties to an Animal Services Interlocal Agreement dated July 1, 2010, which will terminate on December 31, 2012 (the "2010 Agreement"); and

WHEREAS, the City and County have negotiated a successor agreement to the 2010 Agreement in order to extend delivery of Animal Services to the City for an additional three years beginning January 1, 2013; and

WHEREAS, certain notification and other commitments under this successor Agreement arise before January 2013, but the delivery of Animal Services under this Agreement will not commence until January 1, 2013; and

WHEREAS, nothing in this Agreement is intended to alter the provision of service or manner and timing of compensation and reconciliation specified in the 2010 Agreement for services provided in 2012; and

WHEREAS, the City pursuant to the Interlocal Cooperation Act (RCW Chapter 39.34) , is authorized and desires to contract with the County for the performance of Animal Services; and

WHEREAS, the County is authorized by the Interlocal Cooperation Act, Section 120 of the King County Charter and King County Code 11.02.030 to render such services and is willing to render such services on the terms and conditions hereinafter set forth; and

WHEREAS, the County is offering a similar form of Animal Services Interlocal Agreement to cities in King County listed in Exhibit C-1 to this Agreement, and has received a non-binding statement of intent to sign such agreement from those cities;

NOW THEREFORE, in consideration of the promises, covenants and agreements contained in this Agreement, the parties agree as follows:

1. **Definitions.** Unless the context clearly shows another usage is intended, the following terms shall have these meanings in this Agreement:
 - a. **"Agreement"** means this Animal Services Interlocal Agreement for 2013 Through 2015 between the Parties including any and all Exhibits hereto, unless the context clearly indicates an intention to reference all such Agreements by and between the County and other Contracting Cities.
 - b. **"Animal Services"** means Control Services, Shelter Services and Licensing Services combined, as these services are described in **Exhibit A**. Collectively, "Animal Services" are sometimes referred to herein as the **"Program."**
 - c. **"Enhanced Control Services"** are additional Control Services that the City may purchase under certain terms and conditions as described in **Exhibit E** (the "Enhance Control Services Contract").
 - d. **"Contracting Cities"** means all cities that are parties to an Agreement.
 - e. **"Parties"** means the City and the County.
 - f. **"Contracting Parties"** means all Contracting Cities and the County.
 - g. **"Estimated Payment"** means the amount the City is estimated to owe to the County for the provision of Animal Services over a six month period per the

formulas set forth in **Exhibit C**. The Estimated Payment calculation may result in a credit to the City payable by the County.

- h. **"Pre-Commitment Estimated 2013 Payment"** means the preliminary estimate of the amount that will be owed by (or payable to) each Contracting Party for payment June 15, 2013 and December 15, 2013 as shown on **Exhibit C-1**.
- i. **"Preliminary Estimated 2013 Payment"** means the amount estimated by the County on or before August 1, 2012 per Section 5, to be owed by each Contracting Party on June 15, 2013 and December 15, 2013 based on the number of Contracting Cities with respect to which the Agreement goes into effect per Section 15. This estimate will also provide the basis for determining whether the Agreement meets the "2013 Payment Test" in Section 15.
- j. The **"Final Estimated 2013 Payment"** means the amount owed by each Contracting Party on June 15, 2013 and December 15, 2013, notice of which shall be given to the City by the County no later than December 15, 2012.
- k. **"Control District"** means one of the three geographic areas delineated in **Exhibit B** for the provision of Animal Control Services.
- l. **"Reconciliation Adjustment Amount"** means the amount payable each August 15 by either the City or County as determined per the reconciliation process described in **Exhibit D**. **"Reconciliation"** is the process by which the Reconciliation Adjustment Amount is determined.
- m. **"Service Year"** means the calendar year in which Animal Services are or were provided.
- n. **"2010 Agreement"** means the Animal Services Agreement between the Parties effective July 1, 2010, and terminating at midnight on December 31, 2012.
- o. **"New Regional Revenue"** means revenue received by the County specifically for support of Animal Services generated from regional marketing campaigns (excluding local licensing canvassing efforts by Contracting Cities or per Section 7), and new foundation, grant, donation and entrepreneurial activities, except where revenues from these sources are designated for specific purposes within the Animal Services program; *provided that* New Regional Revenue does not include Licensing Revenue, Non-Licensing Revenue or Designated Donations, as defined in **Exhibit C**. The manner of estimating and allocating New Regional Revenue is prescribed in **Exhibit C-4** and **Exhibit D**.
- p. **"Latecomer City"** means a city receiving animal services under an agreement with the County executed after July 1, 2012, per the conditions of Section 4.a.

2. **Services Provided.** Beginning January 1, 2013, the County will provide the City with Animal Services described in **Exhibit A**. The County will perform these services consistent with governing City ordinances adopted in accordance with Section 3. In providing such Animal Services consistent with **Exhibit A**, the County will engage in good faith with the Joint City-County Committee to develop potential adjustments to field protocols; provided that, the County shall have sole discretion as to the staffing assigned to receive and dispatch calls and the manner of handling and responding to calls for Animal Service. Except as set forth in Section 9 (Indemnification and Hold Harmless), services to be provided by the County pursuant to this Agreement do not include services of legal counsel, which shall be provided by the City at its own expense.
 - a. Enhanced Control Services. The City may request Enhanced Control Services by completing and submitting **Exhibit E** to the County. Enhanced Services will be provided subject to the terms and conditions described in **Exhibit E**, including but not limited to a determination by the County that it has the capacity to provide such services.
3. **City Obligations.**
 - a. Animal Regulatory Codes Adopted. To the extent it has not already done so, the City shall promptly enact an ordinance or resolution that includes license, fee, penalty, enforcement, impound/ redemption and sheltering provisions that are substantially the same as those of Title 11 King County Code as now in effect or hereafter amended (hereinafter "the City Ordinance"). The City shall advise the County of any City animal care and control standards that differ from those of the County.
 - b. Authorization to Act on Behalf of City. Beginning January 1, 2013, the City authorizes the County to act on its behalf in undertaking the following:
 - i. Determining eligibility for and issuing licenses under the terms of the City Ordinance, subject to the conditions set forth in such laws.
 - ii. Enforcing the terms of the City Ordinance, including the power to issue enforcement notices and orders and to deny, suspend or revoke licenses issued thereunder.
 - iii. Conducting administrative appeals of those County licensing determinations made and enforcement actions taken on behalf of the City. Such appeals shall be considered by the King County Board of Appeals unless either the City or the County determines that the particular matter should be heard by the City.
 - iv. Nothing in this Agreement is intended to divest the City of authority to independently undertake such enforcement actions as it deems appropriate to respond to violations of any City ordinances.

- c. Cooperation and Licensing Support. The City will assist the County in its efforts to inform City residents regarding animal codes and regulations and licensing requirements and will promote the licensing of pets by City residents through various means as the City shall reasonably determine, including but not limited to offering the sale of pet licenses at City Hall, mailing information to residents (using existing City communication mechanisms such as bill inserts or community newsletters) and posting a weblink to the County's animal licensing program on the City's official website. The City will provide to the County accurate and timely records regarding all pet license sales processed by the City. All proceeds of such sales shall be remitted to the County by the City on a quarterly basis (no later than each March 31, June 30, September 30, and December 31).
4. **Term**. Except as otherwise specified in Section 15, this Agreement will take effect as of July 1, 2012 and, unless extended pursuant to Subparagraph 4.b below, shall remain in effect through December 31, 2015. The Agreement may not be terminated for convenience.
- a. Latecomers. The County may sign an agreement with additional cities for provision of animal services prior to the termination or expiration of this Agreement, but only if the later agreement will not cause an increase in the City's costs payable to the County under this Agreement. Cities that are party to such agreements are referred to herein as "Latecomer Cities."
 - b. Extension of Term. The Parties may agree to extend the Agreement for an additional two-year term, ending on December 31, 2017. For purposes of determining whether the Agreement shall be extended, the County will invite all Contracting Cities to meet in September 2014, to discuss both: (1) a possible extension of the Agreement under the same terms and conditions; and (2) a possible extension with amended terms.
 - i. Either Party may propose amendments to the Agreement as a condition of an extension.
 - ii. Nothing in this Agreement shall be construed to compel either Party to agree to an extension or amendment of the Agreement, either on the same or different terms.
 - iii. The County agrees to give serious consideration to maintaining the various credits provided to the Contracting City under this Agreement in any extension of the Agreement.
 - c. Notice of Intent to Not Extend. No later than March 1, 2015, the Parties shall provide written notice to one another of whether they wish to extend this Agreement on the same or amended terms. The County will include a written reminder of this March 1 deadline when providing the City notice of

its 2015 Estimated Payments (notice due December 15, 2014 per Section 5). By April 5, 2015, the County will provide all Contracting Cities with a list of all Contracting Parties submitting such notices indicating which Parties do not seek an extension, which Parties request an extension under the same terms, and which Parties request an extension under amended terms.

- d. Timeline for Extension. If the Contracting Parties wish to extend their respective Agreements (whether under the same or amended terms) through December 31, 2017, they shall do so in writing no later than July 1, 2015. Absent such an agreed extension, the Agreement shall terminate on December 31, 2015.
- e. Limited Reopener and Termination. If a countwide, voter approved property tax levy for funding some or all of the Animal Services program is proposed that would impose new tax obligations before January 1, 2016, this Agreement shall be re-opened for the limited purposes of negotiating potential changes to the cost and revenue allocation formulas herein. Such changes may be made in order to reasonably ensure that the Contracting Cities are receiving equitable benefits from the proposed new levy revenues. Re-opener negotiations shall be initiated by the County no later than 60 days before the date of formal transmittal of such proposal to the County Council for its consideration. Notwithstanding anything in this Agreement to the contrary, if the re-opener negotiations have failed to result in mutually agreed upon changes to the cost and revenue allocation formulas (as reflected in either an executed amendment to this Agreement or a memorandum of understanding signed between the chief executive officers of the Parties) within 10 days of the date that the election results confirming approval of such proposal are certified, either Party may terminate this Agreement by providing notice to the other Party no sooner than the date the election results are certified and no later than 15 days following the end of such 10-day period. Any termination notice so issued will become effective 180 days following the date of the successful election, or the date on which the levy is first imposed, whichever is sooner.
- f. The 2010 Agreement remains in effect through December 31, 2012. Nothing in this Agreement shall limit or amend the obligation of the County to provide Animal Services under the 2010 Agreement as provided therein and nothing in this Agreement shall amend the obligations therein with respect to the calculation, timing, and reconciliation of payment of such services.

5. **Compensation.** The County will develop an Estimated Payment calculation for each Service Year using the formulas described in **Exhibit C**, and shall transmit the payment information to the City according to the schedule described below. The

County will also calculate and inform the City as to the Reconciliation Adjustment Amount on or before June 30 of each year, as described in Section 6 below and **Exhibit D**, in order to reconcile the Estimated Payments made by the City in the prior Service Year. The City (or County, if applicable) will pay the Estimated Payment, and any applicable Reconciliation Adjustment Amounts as follows (a list of all payment-related notices and dates is included at **Exhibit C-7**):

- a. Service Year 2013: The County will provide the City with a calculation of the Preliminary Estimated Payment amounts for Service Year 2013 on or before August 1, 2012, which shall be derived from the Pre-Commitment Estimated 2013 Payment Amount set forth on **Exhibit C-1**, adjusted if necessary based on the Contracting Cities and other updates to Calendar Year 2011 data in **Exhibit C-2**. The County will provide the City with the Final Estimated Payment calculation for Service Year 2013 by December 15, 2012. The City will pay the County the Preliminary Estimated Payment Amounts for Service Year 2013 on or before June 15, 2013 and December 15, 2013. If the calculation of the Preliminary Estimated Payment shows the City is entitled to receive a payment from the County, the County will pay the City such amount on or before June 15, 2013 and December 15, 2013. The Reconciliation Adjustment Amount for Service Year 2013 shall be paid on or before August 15, 2014, as described in Section 6.
- b. Service Years after 2013.
 - i. Initial Estimate by September 1. To assist the City with its budgeting process, the County will provide the City with a non-binding, preliminary indication of the Estimated Payments for the upcoming Service Year on or before each September 1.
 - ii. Estimated Payment Determined by December 15. The Estimated Payment amounts for the upcoming Service Year will be determined by the County following adoption of the County's budget and applying the formulas in **Exhibit C**. The County will by December 15 provide written notice to all Contracting Parties of the schedule of Estimated Payments for the upcoming Service Year.
 - iii. Estimated Payments Due Each June 15 and December 15. The City will pay the County the Estimated Payment Amount on or before each June 15 and December 15. If the calculation of the Estimated Payment shows the City is entitled to receive a payment from the County, the County will pay the City such amount on or before each June 15 and December 15.
 - iv. The Reconciliation Adjustment Amount for the prior Service Year shall be paid on or before August 15 of the following calendar year, as described in Section 6.

- v. If a Party fails to pay an Estimated Payment or Reconciliation Adjustment Amount within 15 days of the date owed, the Party owed shall notify the owing Party that they have ten (10) days to cure non-payment. If the Party fails to cure its nonpayment within this time period following notice, the amount owed shall accrue interest thereon at the rate of 1% per month from and after the original due date and, if the nonpaying Party is the City, the County at its sole discretion may withhold provision of Animal Services to the City until all outstanding amounts are paid. If the nonpaying Party is the County, the City may withhold future Estimated Payments until all outstanding amounts are paid. Each Party may examine the other's books and records to verify charges.
 - vi. Unless the Parties otherwise direct, payments shall be submitted to the addresses noted at Section 14.g.
 - c. Payment Obligation Survives Expiration or Termination of Agreement. The obligation of the City (or as applicable, the County), to pay an Estimated Payment Amount or Reconciliation Adjustment Amount for a Service Year included in the term of this Agreement shall survive the Expiration or Termination of this Agreement. For example, if this Agreement terminates on December 31, 2015, the Final Estimated 2015 Payment is nevertheless due on or before December 15, 2015, and the Reconciliation Adjustment Amount shall be payable on or before August 15, 2016.
 - d. The Parties agree the payment and reconciliation formulas in this Agreement (including all Exhibits) are fair and reasonable.
6. **Reconciliation of Estimated Payments and Actual Costs and Revenues.** In order that the Contracting Parties share costs of the regional Animal Services Program based on their actual, rather than estimated, licensing revenues, there will be an annual reconciliation. Specifically, on or before June 30 of each year, the County will reconcile amounts owed under this Agreement for the prior Service Year by comparing each Contracting Party's Estimated Payments to the amount derived by recalculating the formulas in **Exhibit C** using actual revenue data for such Service Period as detailed in **Exhibit D**. There will also be an adjustment if necessary to account for annexations of areas with a population of 2,500 or more and for changes in relative population shares of Contracting Parties' attributable to Latecomer Cities. The County will provide the results of the reconciliation to all Contracting Parties in writing on or before June 30. The Reconciliation Adjustment Amount will be paid on or before August 15 of the then current year, regardless of the prior termination of the Agreement as per Section 5.c.

7. Regional Revenue Generation and Licensing Revenue Support

- a. The Parties intend that the provision of Animal Services becomes significantly more financially sustainable over the initial three year term of this Agreement through the development of New Regional Revenue and the generation of additional Licensing Revenue. The County will develop proposals designed to support this goal. The County will consult with the Joint City-County Committee before proceeding with efforts to implement proposals to generate New Regional Revenue.
- b. The Parties do not intend for the provision of Animal Services or receipt of such Services under this Agreement to be a profit-making enterprise. Where a Contracting Party receives revenues in excess of its costs under this Agreement (including costs of PAWS shelter service and Enhanced Control Service, if applicable), they will be reinvested in the Program to reduce the costs of other Contracting Parties and to improve service delivery: the cost allocation formulas of this Agreement are intended to achieve this outcome.
- c. Licensing Revenue Support.
 - i. In 2013, the County will provide licensing revenue support to the nine Contracting Cities identified on **Exhibit C-5** (the "Licensing Revenue Support Cities").
 - ii. The City may request licensing revenue support from the County in 2014 and 2015 by executing **Attachment A** to **Exhibit F**. The terms and conditions under which such licensing revenue support will be provided are further described at **Exhibit C-5** and **Exhibit F**. Except as otherwise provided in **Exhibit C-5** with respect to Licensing Revenue Support Cities with a Licensing Revenue Target of over \$20,000 (per Table 1 of **Exhibit C-5**), provision of licensing revenue support in 2014 and 2015 is *subject to* the County determining it has capacity to provide such services, with priority allocation of any available services going first to Licensing Revenue Support Cities on a first-come, first-served basis and thereafter being allocated to other Contracting Cities requesting service on a first-come, first-served basis. Provision of licensing revenue support is further subject to the Parties executing a Licensing Support Contract (**Exhibit F**).
 - iii. In addition to other terms described in **Exhibit F**, receipt of licensing revenue support is subject to the recipient City providing in-kind services, including but not limited to: assisting in communication with City residents; publicizing any canvassing efforts the Parties have agreed should be implemented; assisting in the recruitment of canvassing staff, if applicable; and providing information to the County to assist in targeting its canvassing activities, if applicable.

8. **Mutual Covenants/Independent Contractor.** The Parties understand and agree that the County is acting hereunder as an independent contractor with the intended following results:

- a. Control of County personnel, standards of performance, discipline, and all other aspects of performance shall be governed entirely by the County;
- b. All County persons rendering service hereunder shall be for all purposes employees of the County, although they may from time to time act as commissioned officers of the City;
- c. The County contact person for the City staff regarding all issues arising under this Agreement, including but not limited to citizen complaints, service requests and general information on animal control services is the Manager of Regional Animal Services.

9. **Indemnification and Hold Harmless.**

- a. City Held Harmless. The County shall indemnify and hold harmless the City and its officers, agents, and employees, or any of them from any and all claims, actions, suits, liability, loss, costs, expenses, and damages of any nature whatsoever, by any reason of or arising out of any negligent act or omission of the County, its officers, agents, and employees, or any of them relating to or arising out of performing services pursuant to this Agreement. In the event that any such suit based upon such a claim, action, loss, or damages is brought against the City, the County shall defend the same at its sole cost and expense; provided that the City reserves the right to participate in said suit if any principle of governmental or public law is involved; and if final judgment in said suit be rendered against the City, and its officers, agents, and employees, or any of them, or jointly against the City and the County and their respective officers, agents, and employees, or any of them, the County shall satisfy the same.
- b. County Held Harmless. The City shall indemnify and hold harmless the County and its officers, agents, and employees, or any of them from any and all claims, actions, suits, liability, loss, costs, expenses, and damages of any nature whatsoever, by any reason of or arising out of any negligent act or omission of the City, its officers, agents, and employees, or any of them relating to or arising out of performing services pursuant to this Agreement. In the event that any suit based upon such a claim, action, loss, or damages is brought against the County, the City shall defend the same at its sole cost and expense; provided that the County reserves the right to participate in said suit if any principle of governmental or public law is involved; and if final judgment be rendered against the County, and its officers, agents, and

employees, or any of them, or jointly against the County and the City and their respective officers, agents, and employees, or any of them, the City shall satisfy the same.

- c. Liability Related to City Ordinances, Policies, Rules and Regulations. In executing this Agreement, the County does not assume liability or responsibility for or in any way release the City from any liability or responsibility that arises in whole or in part as a result of the application of City ordinances, policies, rules or regulations that are either in place at the time this Agreement takes effect or differ from those of the County; or that arise in whole or in part based upon any failure of the City to comply with applicable adoption requirements or procedures. If any cause, claim, suit, action or administrative proceeding is commenced in which the enforceability and/or validity of any such City ordinance, policy, rule or regulation is at issue, the City shall defend the same at its sole expense and, if judgment is entered or damages are awarded against the City, the County, or both, the City shall satisfy the same, including all chargeable costs and reasonable attorney's fees.
- d. Waiver Under Washington Industrial Insurance Act. The foregoing indemnity is specifically intended to constitute a waiver of each party's immunity under Washington's Industrial Insurance Act, Chapter 51 RCW, as respects the other party only, and only to the extent necessary to provide the indemnified party with a full and complete indemnity of claims made by the indemnitor's employees. The parties acknowledge that these provisions were specifically negotiated and agreed upon by them.

10. **Dispute Resolution.** Whenever any dispute arises between the Parties or between the Contracting Parties under this Agreement which is not resolved by routine meetings or communications, the disputing parties agree to seek resolution of such dispute in good faith by meeting, as soon as feasible. The meeting shall include the Chief Executive Officer (or his/her designee) of each party involved in the dispute and the Manager of the Regional Animal Services Program. If the parties do not come to an agreement on the dispute, any party may pursue mediation through a process to be mutually agreed to in good faith by the parties within 30 days, which may include binding or nonbinding decisions or recommendations. The mediator(s) shall be individuals skilled in the legal and business aspects of the subject matter of this Agreement. The parties to the dispute shall share equally the costs of mediation and assume their own costs.

11. **Joint City-County Committee and Collaborative Initiatives.** A committee composed of 3 county representatives (appointed by the County) and one

representative from each Contracting City that chooses to appoint a representative shall meet upon reasonable request of a Contracting City or the County, but in no event shall the Committee meet less than twice each year. Committee members may not be elected officials. The Committee shall review service issues and make recommendations regarding efficiencies and improvements to services, and shall review and make recommendations regarding the conduct and findings of the collaborative initiatives identified below. Subcommittees to focus on individual initiatives may be formed, each of which shall include membership from both county and city members of the Joint City-County Committee. Recommendations of the Joint City-County Committee are non-binding. The collaborative initiatives to be explored shall include, but are not necessarily limited to:

- a. Proposals to update animal services codes, including fees and penalties, as a means to increase revenues and incentives for residents to license, retain, and care for pets.
- b. Exploring the practicability of engaging a private for-profit licensing system operator.
- c. Pursuing linkages between County and private non-profit shelter and rescue operations to maximize opportunities for pet adoption, reduction in homeless pet population, and other efficiencies.
- d. Promoting licensing through joint marketing activities of Contracting Cities and the County, including recommending where the County's marketing efforts will be deployed each year.
- e. Exploring options for continuous service improvement, including increasing service delivery efficiencies across the board.
- f. Studying options for repair and/or replacement of the Kent Shelter.
- g. Reviewing the results of the County's calculation of the Reconciliation Adjustment Amounts.
- h. Reviewing preliminary proposed budgets for Animal Services.
- i. Providing input into the formatting, content and details of periodic Program reports as per Section 12 of this Agreement.
- j. Reviewing and providing input on proposed Animal Services operational initiatives.
- k. Providing input on Animal Control Services response protocols with the goal of supporting the most appropriate use of scarce Control Services resources.
- l. Establishing and maintaining a marketing subcommittee with members from within the Joint City-County committee membership and additional staff as may be agreed.
- m. Collaborating on response and service improvements, including communication with 911 call centers.

- n. Developing alternative dispute mechanisms that may be deployed to assist the public in resolving low-level issues such as barking dog complaints.
- o. Working with Contracting Cities to plan disaster response for animal sheltering and care.
- p. Ensuring there is at least one meeting each year within each Control District between the County animal control officer representatives and Contracting Cities' law enforcement representatives.
- q. Identifying, discussing and where appropriate recommending actions to implement ideas to generate additional revenue to support operation and maintenance of the Animal Services Program, including but not limited to providing input and advice in shaping the terms of any proposed Countywide voted levy to provide funding support for the Animal Services Program.

12. **Reporting.** The County will provide the City with an electronic report not less than monthly summarizing call response and Program usage data for each of the Contracting Cities and the County and the Animal Services Program. The formatting, content and details of the report will be developed in consultation with the Joint City-County Committee.

13. **Amendments.** Any amendments to this Agreement must be in writing. This Agreement shall be deemed to incorporate amendments to Agreements between the Contracting Parties that are approved by the County and at least two thirds (66%) of the legislative bodies of all other Contracting Parties (in both number and in the percentage of the prior total Estimated Payments owing from such Contracting Parties in the then current Service Year), evidenced by the authorized signatures of such approving Parties as of the effective date of the amendment; *provided that* this provision shall not apply to any amendment to this Agreement affecting the Party contribution responsibilities, hold harmless and indemnification requirements, provisions regarding duration, termination or withdrawal, or the conditions of this Section.

14. **General Provisions.**

- a. **Other Facilities.** The County reserves the right to contract with other shelter service providers for housing animals received from within the City or from City residents, whose levels of service meet or exceed those at the County shelter for purposes of addressing shelter overcrowding or developing other means to enhance the effectiveness, efficiency or capacity of animal care and sheltering within King County.

- b. Survivability. Notwithstanding any provision in this Agreement to the contrary, the provisions of Section 9 (Indemnification and Hold Harmless) shall remain operative and in full force and effect, regardless of the withdrawal or termination of this Agreement.
- c. Waiver and Remedies. No term or provision of this Agreement shall be deemed waived and no breach excused unless such waiver or consent shall be in writing and signed by the Party claimed to have waived or consented. Failure to insist upon full performance of any one or several occasions does not constitute consent to or waiver of any later non-performance nor does payment of a billing or continued performance after notice of a deficiency in performance constitute an acquiescence thereto. The Parties are entitled to all remedies in law or equity.
- d. Grants. Both Parties shall cooperate and assist each other toward procuring grants or financial assistance from governmental agencies or private benefactors for reduction of costs of operating and maintaining the Animal Services Program and the care and treatment of animals in the Program.
- e. Force Majeure. In the event either Party's performance of any of the provisions of this Agreement becomes impossible due to war, civil unrest, and any natural event outside of the Party's reasonable control, including fire, storm, flood, earthquake or other act of nature, that Party will be excused from performing such obligations until such time as the Force Majeure event has ended and all facilities and operations have been repaired and/or restored.
- f. Entire Agreement. This Agreement represents the entire understanding of the Parties and supersedes any oral representations that are inconsistent with or modify its terms and conditions.
- g. Notices. Except as otherwise provided in this Agreement, any notice required to be provided under the terms of this Agreement shall be delivered by E-mail (deemed delivered upon E-mail confirmation of receipt by the intended recipient), certified U.S. mail, return receipt requested or by personal service to the following person (or to any other person that the Party designates in writing to receive notice under this Agreement):

For the City:

For the County: Caroline Whalen, Director
King County Dept. of Executive Services
401 Fifth Avenue, Suite 135
Seattle WA. 98104

- h. Assignment. No Party may sell, transfer or assign any of its rights or benefits under this Agreement without the approval of the other Party.
- i. Venue. The Venue for any action related to this Agreement shall be in Superior Court in and for King County, Washington.
- j. Records. The records and documents with respect to all matters covered by this Agreement shall be subject to inspection and review by the County or City for such period as is required by state law (Records Retention Act, Ch. 40.14 RCW) but in any event for not less than 1 year following the expiration or termination of this Agreement.
- k. No Third Party Beneficiaries. This Agreement is for the benefit of the Parties only, and no third party shall have any rights hereunder.
- l. Counterparts. This Agreement and any amendments thereto, shall be executed on behalf of each Party by its duly authorized representative and pursuant to an appropriate motion, resolution or ordinance. The Agreement may be executed in any number of counterparts, each of which shall be an original, but those counterparts will constitute one and the same instrument.

15. Terms to Implement Agreement. Because it is unknown how many parties will ultimately approve the Agreement, and participation of each Contracting Party impacts the costs of all other Contracting Parties, the Agreement will go into effect as of July 1, 2012, only if certain "Minimum Contracting Requirements" are met or waived as described in this section. These Minimum Contracting Requirements will not be finally determined until August 15, 2012. If it is determined on or about August 15 that Minimum Contracting Requirements are **not** met and not waived, then the Agreement will be deemed to have never gone into effect, regardless of the July 1, 2012 stated effective date. If the Minimum Contracting Requirements are met or waived, the Agreement shall be deemed effective as of July 1, 2012. The Minimum Contracting Requirements are:

a. For both the City and the County:

- 1. 2013 Payment Test:** The Preliminary Estimated 2013 Payment, calculated on or before August 1, 2012, to include the County and all cities that have executed the Agreement on or prior to July 1, 2012, does not exceed the Pre-Commitment Estimated 2013 Payment as set forth in **Exhibit C-1** by more than five percent (5%) or \$3,500, whichever is greater. **If the 2013 Payment Test is not met**, either Party may waive this condition and allow the Agreement to go into effect, provided that such waiver must be exercised by giving notice to the other Party (which notice shall meet the requirements of Section 14.g) no later than August 15, 2012.

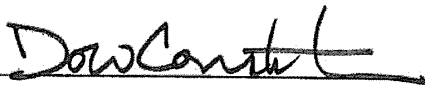
- b. **For the County:** The **Minimum Contiguity of Service Condition** must be met, such that the County is only obligated to enter into the Agreement if the County will be providing Animal Services in areas contiguous to the City, whether by reason of having an Agreement with another City or due to the fact that the City is contiguous to unincorporated areas (excluding unincorporated islands within the City limits). The Minimum Contiguity of Service Condition may be waived by the County in its sole discretion. The County shall provide the City notice meeting the requirements of Section 14.g no later than July 21, 2012 if the Minimum Contiguity of Service Condition has not been met.
- c. On or before August 21, 2012, the County shall send all Contracting Cities an informational email notice confirming the final list of all Contracting Cities with Agreements that have gone into effect.

16. **Administration.** This Agreement shall be administered by the County Administrative Officer or his/her designee, and by the City Manager, or his/her designee.

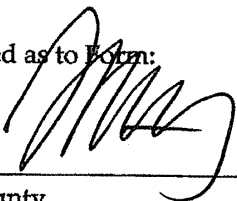
IN WITNESS WHEREOF, the Parties hereto have caused this Agreement to be executed effective as of July 1, 2012.

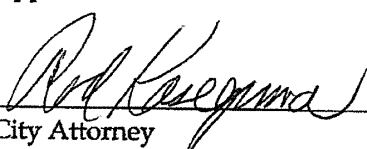
King County

City of Kenmore


 Dow Constantine
 King County Executive
July 30, 2012
 Date


 Rob Karlinsey
 City Manager
6/13/12
 Date

Approved as to Form:

 King County
 Deputy Prosecuting Attorney
7.24.12
 Date

Approved as to Form:

 City Attorney
10/25/12
 Date

List of Exhibits

Exhibit A: Animal Services Description

Exhibit B: Control Service District Map Description

Exhibit B-1: Map of Control Service District

Exhibit C: Calculation of Estimated Payments

Exhibit C-1: Pre-Commitment Estimated 2013 Payment (*showing participation only by jurisdictions that have expressed interest in contracting for an additional 3 year term*)

Exhibit C-2: Estimated Population, Calls for Service, Shelter Use and Licensing Data for Jurisdictions, Used to Derive the Pre-Commitment Estimated 2013 Payment

Exhibit C-3: Calculation of Budgeted Total Allocable Animal Services Costs, Budgeted Total Non-Licensing Revenue and Budget Net Allocable Animal Services Costs for 2013

Exhibit C-4: Calculation and Allocation of Transition Credit, Shelter Credit, and Estimated New Regional Revenue

Exhibit C-5: Licensing Revenue Support

Exhibit C-6: Summary of Calculation Periods for Use and Population Components

Exhibit C-7: Payment and Calculation Schedule

Exhibit D: Reconciliation

Exhibit E: Enhanced Control Services Contract (Optional)

Exhibit F: Licensing Support Contract (Optional)

Exhibit A
Animal Service Description

Part I: Control Services

Control Services include the operation of a public call center, the dispatch of animal control officers in response to calls, and the handling of calls in the field by animal control officers, including the collection and delivery of animals to the Kent Shelter (or such other shelters as the County may utilize in accordance with this Agreement).

1. Call Center

- a. The County will operate an animal control call center five days every week (excluding holidays and County-designated furlough days, if applicable) for a minimum of eight hours per day (normal business hours). The County will negotiate with applicable unions with the purpose of obtaining a commitment for the five day call center operation to include at least one weekend day. The County may adjust the days of the week the call center operates to match the final choice of Control District service days.
- b. The animal control call center will provide callers with guidance, education, options and alternative resources as possible/appropriate.
- c. When the call center is not in operation, callers will hear a recorded message referring them to 911 in case of emergency, or if the event is not an emergency, to either leave a message or call back during regular business hours.

2. Animal Control Officers

- a. The County will divide the area receiving Control Services into three Control Districts as shown on **Exhibit B**. Subject to the limitations provided in this Section 2, Control Districts 200 and 220 will be staffed with one Animal Control Officer during Regular ACO Service Hours and District 500 will be staffed with two Animal Control Officers (ACOs) during Regular ACO Service Hours. Regular ACO Service Hours is defined to include not less than 40 hours per week. The County will negotiate with applicable unions with the intention of obtaining a commitment for Regular ACO Service Hours to include service on at least one weekend day. Regular ACO Service Hours may change from time to time.
 - i. Except as the County may in its sole discretion determine is necessary to protect officer safety, ACOs shall be available for responding to calls within their assigned Control District and will not be generally available to respond to calls in other Control Districts. **Exhibit B-1** shows the map of Control Districts.

- ii. Countywide, the County will have a total of not less than 6 ACOs (Full-Time Equivalent employees) on staff to maximize the ability of the County to staff all Control Districts notwithstanding vacation, sick-leave, and other absences, and to respond to high workload areas on a day-to-day basis. While the Parties recognize that the County may at times not be able to staff all Control Districts as proposed given unscheduled sick leave or vacancies, the County will make its best efforts to establish regular hourly schedules and vacations for ACOs in order to minimize any such gaps in coverage. In the event of extended absences among the 6 ACOs, the County will re-allocate remaining ACOs as practicable in order to balance the hours of service available in each Control District. In the event of ACO absences (for any causes and whether or not such absences are extended as a result of vacancies or other issues), the first priority in allocating ACOs shall be to ensure there is an ACO assigned in each Control District during Regular ACO Service Hours.
- b. Control District boundaries have been designed to balance work load, correspond to jurisdictional boundaries and facilitate expedient transportation access across each district. The County will arrange a location for an Animal Control vehicle to be stationed overnight in Control Districts ("host sites") in order to facilitate service and travel time improvements or efficiencies.
- c. The County will use its best efforts to ensure that High Priority Calls are responded to by an ACO during Regular ACO Service Hours on the day such call is received. The County shall retain full discretion as to the order in which High Priority calls are responded. High Priority Calls include those calls that pose an emergent danger to the community, including:
 - 1. Emergent animal bite,
 - 2. Emergent vicious dog,
 - 3. Emergent injured animal,
 - 4. Police assist calls—(police officer on scene requesting assistance from an ACO),
 - 5. Emergent loose livestock or other loose or deceased animal that poses a potential danger to the community, and
 - 6. Emergent animal cruelty.
- d. Lower priority calls include all calls that are not High Priority Calls. These calls will be responded to by the call center staff over the telephone, referral to other resources, or by dispatching of an ACO as necessary or available, all as determined necessary and appropriate in the sole discretion of the

County. Particularly in the busier seasons of the year (spring through fall), lower priority calls may only receive a telephone response from the Call Center. Lower Priority calls are non-emergent requests for service, including but not limited to:

1. Non-emergent high priority events,
 2. Patrol request – (ACO requested to patrol a specific area due to possible code violations),
 3. Trespass,
 4. Stray Dog/Cat/other animal confined,
 5. Barking Dog,
 6. Leash Law Violation,
 7. Deceased Animal,
 8. Trap Request,
 9. Female animal in season, and
 10. Owner's Dog/Cat/other animal confined.
- e. The Joint-City County Committee is tasked with reviewing response protocols and recommending potential changes to further the goal of supporting the most appropriate use of scarce Control Service resources countywide. The County will in good faith consider such recommendations but reserves the right to make final decisions on response protocols. The County will make no changes to its procedures that are inconsistent with the terms of this **Exhibit A**, *except that* upon the recommendation of the Joint City-County Committee, the County may agree to modify response with respect to calls involving animals other than horses, livestock, dogs and cats.
- f. In addition to the ACOs serving specific districts, the following Control Service resources will be available on a shared basis for all Parties and shall be dispatched as deemed necessary and appropriate by the County.
1. An animal control sergeant will provide oversight of and back-up for ACOs five days per week at least 8 hours/day (subject to vacation/sick leave/training/etc.).
 2. Staff will be available to perform animal cruelty investigations, to respond to animal cruelty cases, and to prepare related reports (subject to vacation/sick leave/training/etc.).
 3. Not less than 1 ACO will be on call every day at times that are not Regular ACO Service Hours (including the days per week that are not included within Regular ACO Service Hours), to respond to High Priority Calls posing an extreme life and safety danger, as determined by the County.
- g. The Parties understand that rural areas of the County will generally receive a less rapid response time from ACOs than urban areas.

- h. Contracting Cities may contract with King County for “Enhanced Control Services” through separate agreement (as set forth in **Exhibit E**); *provided that* a City may not purchase Enhanced Control Services under Option 1 as described in **Exhibit E** if such City is receiving a Transition Funding Credit, Shelter Credit, or licensing revenue support the cost of which is not reimbursed to the County.

Part II: Shelter Services

Shelter services include the general care, cleaning and nourishment of owner-released, lost or stray dogs, cats and other animals. Such services shall be provided 7-days per week, 365 days per year at the County’s animal shelter in Kent (the “Shelter”) or other shelter locations utilized by the County, including related services described in this section. The County’s Eastside Pet Adoption Center in the Crossroads area of Bellevue will be closed to the public.

During 2013-2015, major maintenance of the Shelter will continue to be included in the Program costs allocated under this Agreement (as part of the central County overhead charges allocated to the Program), but no major renovation, upgrades or replacements of the Shelter established as a capital project within the County Budget are anticipated nor will any such capital project costs be allocated to the Contracting Cities in Service Years 2013-2015.

1. Shelter Services

- a. Services provided to animals will include enrichment, exercise, care and feeding, and reasonable medical attention.
- b. The Public Service Counter at the Shelter will be open to the public not less than 30 hours per week and not less than 5 days per week, excluding holidays and County designated furlough days, for purposes of pet redemption, adoption, license sales services and (as may be offered from time to time) pet surrenders. The Public Service Counter at the shelter may be open for additional hours if practicable within available resources.
- c. The County will maintain a volunteer/foster care function at the Shelter to encourage use of volunteers working at the shelter and use of foster families to provide fostering/transitional care between shelter and permanent homes for adoptable animals.
- d. The County will maintain an animal placement function at the Shelter to provide for and manage adoption events and other activities leading to the placement of animals in appropriate homes.
- e. Veterinary services will be provided and will include animal exams, treatment and minor procedures, spay/neuter and other surgeries. Limited

emergency veterinary services will be available in non-business hours, through third-party contracts, and engaged if and when the County determines necessary.

- f. The County will take steps through its operating policies, codes, public fee structures and partnerships to reduce the number of animals and their length of stay in the Shelter, and may at times limit owner-surrenders and field pick-ups, adjust fees and incentivize community-based solutions.

2. Other Shelter services

- a. Dangerous animals will be confined as appropriate/necessary.
- b. Disaster/emergency preparedness for animals will be coordinated regionally through efforts of King County staff.

3. **Shelter for Contracting Cities contracting with PAWS (Potentially including Woodinville, Shoreline, Lake Forest Park, Kenmore ("Northern Cities"))**. For so long as a Northern City has a contract in effect for sheltering dogs and cats with the Progressive Animal Welfare Society in Lynnwood (PAWS), the County will not shelter dogs and cats picked up within the boundaries of such City(s), except in emergent circumstances and when the PAWS Lynnwood shelter is not available. Dogs and cats picked up by the County within such City(s) will be transferred by the County to the PAWS shelter in Lynnwood for shelter care, which will be provided and funded solely through separate contracts between each Northern City and PAWS, and the County will refer residents of that City to PAWS for sheltering services. The County will provide shelter services for animals other than dogs and cats that are picked up within the boundaries of Northern Cities contracting with PAWS on the same terms and conditions that such shelter services are provided to other Contracting Parties. Except as provided in this Section, the County is under no obligation to drop animals picked up in any Contracting City at any shelter other than the County shelter in Kent.

4. **County Contract with PAWS**. Nothing in this Agreement is intended to preclude the County from contracting with PAWS in Lynnwood to care for animals taken in by County ACOs.

5. **Service to Persons who are not Residents of Contracting Cities**. The County will not provide routine shelter services for animals brought in by persons who are not residents of Contracting Cities, but may provide emergency medical care to such animals, and may seek to recover the cost of such services from the pet owner and/or the City in which the resident lives.

Part III: Licensing Services

Licensing services include the operation and maintenance of a unified system to license pets in Contracting Cities.

1. The public will be able to purchase pet licenses in person at the County Licensing Division public service counter in downtown Seattle (500 4th Avenue), King County Community Service Centers and the Kent Animal Shelter during regular business hours. The County will maintain on its website the capacity for residents to purchase pet licenses on-line.
2. The County may seek to engage and maintain a variety of private sector partners (e.g. veterinary clinics, pet stores, grocery stores, city halls, apartment complexes) as hosts for locations where licenses can be sold or promoted in addition to County facilities.
3. The County will furnish licenses and application forms and other materials to the City for its use in selling licenses to the public at City facilities and at public events.
4. The County will publicize reminders and information about pet licensing from time to time through inserts in County mailings to residents and on the County's public television channel.
5. The County will annually mail or E-mail at least one renewal form, reminder and late notice (as applicable) to the last known addresses of all City residents who purchased a pet license from the County within the previous year (using a rolling 12-month calendar).
6. The County may make telephone reminder calls in an effort to encourage pet license renewals.
7. The County shall mail pet license tags or renewal notices as appropriate to individuals who purchase new or renew their pet licenses.
8. The County will maintain a database of pets owned, owners, addresses and violations.
9. The County will provide limited sales and marketing support in an effort to maintain the existing licensing base and increase future license sales. The County reserves the right to determine the level of sales and marketing support provided from year to year in consultation with the Joint City-County Committee. The County will work with any City in which door-to-door canvassing takes place to reach agreement with the City as to the hours and locations of such canvassing.
10. The County will provide current pet license data files (database extractions) to a Contracting City promptly upon request. Data files will include pets owned, owners, addresses, phone numbers, E-mail addresses, violations, license renewal status, and any other relevant or useful data maintained in the County's database on pets licensed within the City's limits. A City's database extraction will be provided in electronic format agreed to by both parties in a timely fashion and in a standard data release format that is easily usable by the City.

Exhibit B: Control Service District Map

The attached map (**Exhibit B-1**) shows the boundaries of the 3 Control Service Districts as established at the commencement of this Amended and Restated Agreement.

The cities and towns included in each Control District are as follows:

<u>District 200 (Northern District)</u> Shoreline Lake Forest Park Kenmore Woodinville Kirkland Redmond Sammamish Duvall Carnation	<u>District 220 (Eastern District)</u> Bellevue Mercer Island Yarrow Point Clyde Hill Town of Beaux Arts Issaquah Snoqualmie North Bend Newcastle
<u>District 500 (Southern District)</u> Tukwila SeaTac Kent Covington Maple Valley Black Diamond Enumclaw	

The Districts shall each include portions of unincorporated King County as illustrated on **Exhibit B-1**.

Exhibit B-1
Control District Map

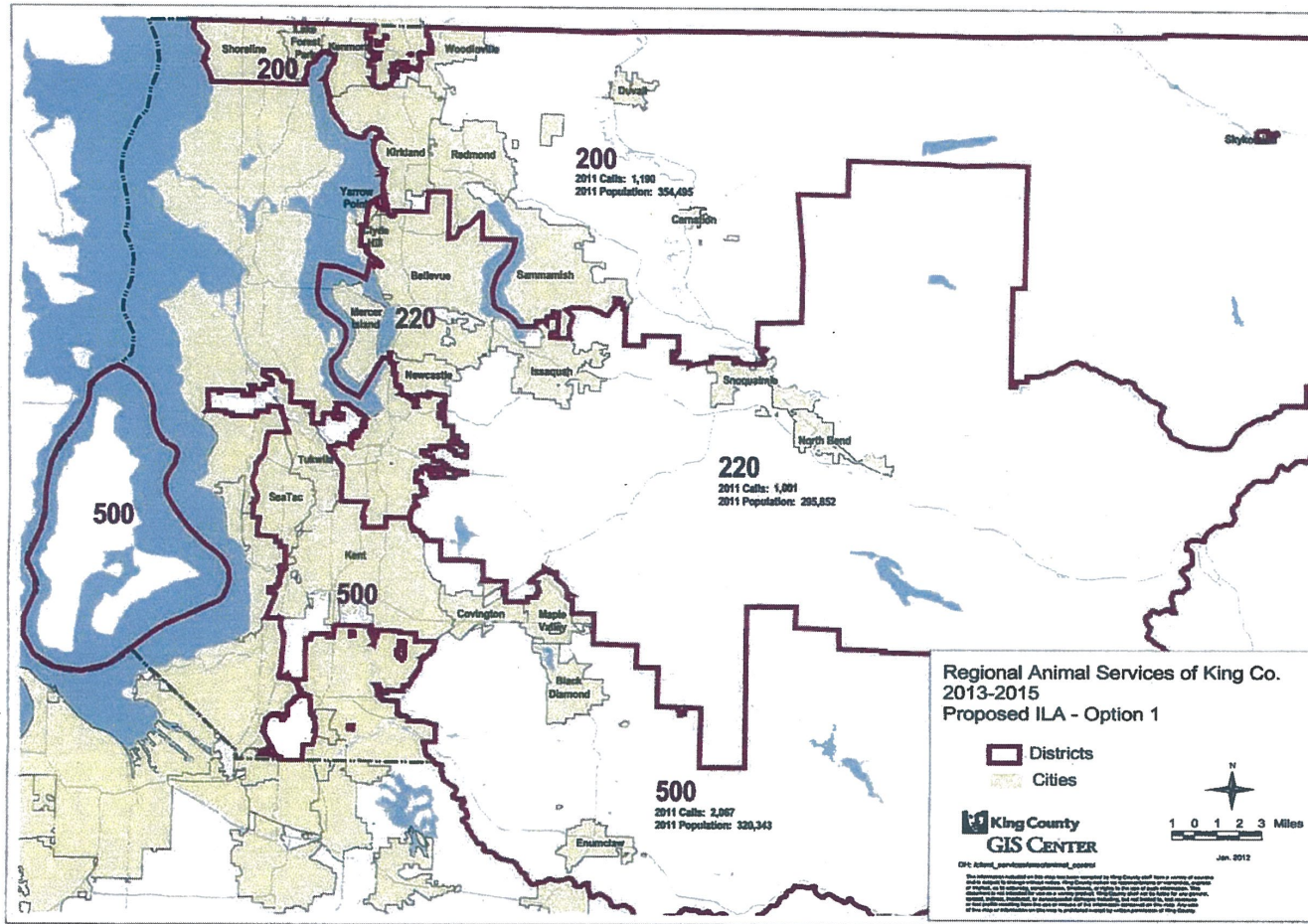


Exhibit C

Calculation of Estimated Payments

The Estimated Payment is the amount, before reconciliation, owed by the City to the County (or owed by the County to the City if the amount calculated is less than \$0) for the provision of six months of Animal Services, based on the formulas below.

In summary and subject to the more detailed descriptions below, an initial cost allocation is made for Service Year 2013 based on the cost factors described in **Part 1** below; costs are offset by various revenues as described in **Part 2**. An annual reconciliation is completed as described in **Part 3**. In Service Years 2014 and 2015, the Contracting Parties' allocable costs are adjusted based on: (1) the actual change in total allocable costs over the previous Service Year (subject to an inflator cap), (2) changes in revenues, and (3) to account for annexations (in or out of the Program service area) of areas with a population of 2,500 or more, and for changes in relative population share of all Contracting Parties due to any Latecomer Cities. If the Agreement is extended past 2015, the cost allocation in 2016 will be recalculated in the same manner as for Service Year 2013 and adjusted in 2017 per the process used for Service Years 2014 and 2015.

Based on the calculation process described in **Parts 1 and 2**, an "Estimated Payment" amount owed by each City for each Service Year is determined. Each Estimated Payment covers six months of service. Payment for service is made by each City every June 15 and December 15.

Part 1: Service Year 2013 Cost Allocation Process

- Control Services costs are to be shared among the 3 geographic Control Districts; one quarter of such costs are allocated to Control District 200, one quarter to Control District 220, and one half are allocated to Control District 500. Each Contracting Party located within a Control District is to be allocated a share of Control District costs based 80% on the Party's relative share of total Calls for Service within the Control District and 20% on its relative share of total population within the Control District.
- Shelter Services costs are to be allocated among all Contracting Parties based 20% on their relative population and 80% on the total shelter intake of animals attributable to each Contracting Party, except that cities contracting for shelter services with PAWS will pay only a population-based charge.

- Licensing Services costs are to be allocated among all Contracting Parties, based 20% on their relative population and 80% on the number of licenses issued to residents of each Contracting Party.

Part 2: Revenue and Other Adjustments to the 2013 Cost Allocation.

In 2013 and each Service Year thereafter, the costs allocable to each Contracting Party are reduced by various revenues and credits:

- Licensing revenue will be attributed to each Contracting Party based on the residency of the individual purchasing the license (see **Part 3** for reconciliation of Licensing Revenues). As Licensing Revenue and Non-Licensing Revenues change from year to year, the most recent historical actual data for these amounts will be incorporated to offset costs (See **Exhibit C-6** for calculation periods).
- Two credits are applicable to various Contracting Cities to reduce the amount of their Estimated Payments: a Transition Funding Credit (fixed at 2013 level, payable annually through 2015) for cities with high per-capita costs and a Shelter Credit (for Contracting Cities with the highest per capita intakes (usage)) (also fixed at a 2013 level, payable annually through 2015). Application of these Credits is limited such that the Estimated Payment cannot fall below zero (before or after the annual Reconciliation calculation).
- In addition to the Transition Funding and Shelter credits, in 2013 the County will provide Licensing Revenue Support to nine identified Contracting Cities (selected based on the general goal of keeping 2013 costs the same or below 2012 costs). In exchange for certain in-kind support, these "Licensing Revenue Support Cities" are assured in 2013 of receiving an identified amount of additional licensing revenue or credit equivalent (the "Licensing Revenue Target"). In 2014 and 2015, all Contracting Cities may request licensing revenue support by entering into a separate licensing support contract with the County (**Exhibit F**): this support is subject to availability of County staff, with priority going to the nine Licensing Revenue Support Cities, *provided that*, Licensing Revenue Support Cities with a Licensing Revenue Target over \$20,000/year will be assured such service in 2013-2015 by entering into a licensing support contract by September 1, 2012.
- As New Regional Revenues are received by the County to support the Animal Services Program, those Revenues shall be allocated as follows:

- Half of New Regional Revenues shall be applied to reduce allocable Control Services Costs, Shelter Services Costs, and Licensing Services Costs (in 2013, by 17%, 27% and 6%, respectively, of total New Regional Revenues; in 2014 and 2015 the 50% reduction is simply made against Total Allocable Costs).
- The remaining half of New Regional Revenues shall be applied in the following order of priority:
 - (a) to offset amounts expended by the County as Transition Funding Credits, Shelter Credits and unreimbursed licensing revenue support;
 - (b) to offset other County Animal Services Program costs that are not allocated in the cost model;
 - (c) to reduce on a *pro-rata* basis up to 100% of the costs allocated to each Contracting Party by the population factor of the cost allocation formulas (20%) with the intent of reducing or eliminating the population-based cost allocation; and
 - (d) if any funds remain thereafter, as an offset against each Contracting Party's final reconciled payment obligation. Items(c) and (d) above are unlikely to arise during the 3 year term of the Agreement and shall be calculated only at Reconciliation.
- In Service Years 2014 and 2015, allocable costs are adjusted for each Contracting Party based on the actual increase or decrease in allocable costs from year to year for the whole Program. Total Budgeted Allocable Costs cannot increase by more than the Annual Budget Inflator Cap. The Annual Budget Inflator Cap is the rate of inflation (based on the annual change in the September CPI-U for the Seattle-Tacoma-Bremerton area over the rate the preceding year) plus the rate of population growth for the preceding year for the County (including the unincorporated area and all Contracting Cities).
- In all Service Years, costs are also adjusted for annexations (in or out of the Program service area) of areas with a population greater of 2,500 or more and the shift in relative population shares among all Contracting Parties as a result of any Latecomer Cities.

Part 3: Reconciliation

- Estimated Payments are reconciled to reflect actual revenues as well as changes in population attributable to annexations of areas with a population of 2,500 or more (in or out of the Program) and the shifts in relative population among all Contracting Parties as a result of any Latecomer Cities. The Reconciliation occurs

by June 30 of the following calendar year. The Reconciliation calculation and payment process is described in **Exhibit D**.

- The receipt of Transition Funding Credits or Shelter Credits can never result in the amount of the Estimated Reconciliation Adjustment Payment falling below \$0.
- If a jurisdiction's licensing revenues exceed its net costs payable under this Agreement, then in the annual reconciliation process, the excess licensing revenue is reallocated *pro rata* amongst all Contracting Parties which will otherwise incur net costs; *provided that*, the determination of net costs shall be adjusted as follows: (1) for a Contracting City purchasing shelter services from PAWS, net costs includes consideration of the amounts paid by such City to PAWS; and (2) for a Contracting City purchasing Enhanced Control Services per Exhibit E, net costs includes consideration of the amounts paid for such services.

Part 4: Estimated Payment Calculation Formulas

For Service Year 2013:¹

$$EP = [(EC + ES + EL) - (ER + T + V)] \div 2$$

For Service Years 2014 and 2015:

$$EP = [(B \times LF) - (ER + T + V)] \div 2$$

Where:

"EP" is the Estimated Payment. For Contracting Cities receiving a Transition Credit or Shelter Credit, the value of EP may not be less \$0.

"EC" or "Estimated Control Services Cost" is the City's estimated share of the Budgeted Net Allocable Control Services Cost for the Service Year. See formula below for deriving "EC."

"ES" or "Estimated Shelter Services Cost" is the City's estimated share of the Budgeted Net Allocable Shelter Services Cost for the Service Year. See formula below for deriving "ES."

¹ This formula also applies to Service Year 2016 if the Agreement is extended. The EP formula for Years 2014 and 2015 would apply to Service Years after 2016.

"EL" or "Estimated Licensing Services Cost" is the City's estimated share of the Budgeted Net Allocable Licensing Services Cost for the Service Year. See formula below for deriving "EL."

"ER" is Estimated Licensing Revenue attributable to the City. For purposes of determining the Estimated Payment in Year 2013, ER is based on the number of each type of active license issued to City residents in years 2011 (the "Calculation Period"). **Exhibit C-2** shows a preliminary estimate of 2011 Licensing Revenue; the numbers in this exhibit are subject to Reconciliation by June 30, 2012. For Licensing Revenue Support Cities identified in **Exhibit C-5**, or other Contracting Cities which have entered into a Licensing Support Contract per **Exhibit F**, **ER** is increased by adding the amount of revenue, if any, estimated to be derived as a result of licensing revenue support provided to the City (the "Licensing Revenue Target" or **"RT"**); this amount is also shown in the column captioned "Estimated Revenue from Proposed Licensing Support" on **Exhibit C-1**). License Revenue that cannot be attributed to a specific Party (e.g., License Revenue associated with incomplete address information), which generally represents a very small fraction of overall revenue, is allocated amongst the Parties based on their respective percentages of ER as compared to Total Licensing Revenue. Notwithstanding the foregoing, **"ER"** may be based on a *estimated* amount of licensing for the Service Year for the City if, in the reasonable judgment of the County, an estimated Licensing Revenue amount can be proposed that is likely to more closely approximate the actual Licensing Revenue for the Service Year than the data from the Calculation Period; *provided that* the use of any estimates shall be subject to the conditions of this paragraph. The County shall work with the Joint City-County Committee to develop estimated Licensing Revenue amounts for all Contracting Cities for the upcoming Service Year. If the Joint City County Committee develops a consensus proposal (agreement shall be based on the consensus of those Contracting Cities present at the Joint City/County meeting in which Licensing Revenue estimates are presented in preparation for the September 1 Preliminary Estimated Payment Calculation notification), it shall be used in developing the September 1 Preliminary Estimated Payment Calculation. If a consensus is *not* reached, the County shall apply the actual Licensing Revenue from the Calculation Period for the Service Year to determine the Preliminary Estimated Payment. For the Final Estimated Payment Calculation (due December 15), the County may revisit the previous estimate with the Joint City-County Committee and seek to develop a final consensus revenue estimate. If a consensus is not reached, the County shall apply the Actual Licensing Revenue from the applicable Calculation Period in the calculation of the Final Estimated Payment.

"T" is the **Transition Funding Credit**, if any, allocable to the City for each Service Year calculated per **Exhibit C-4**.

"V" is the **Shelter Credit**, if any, allocable to the City for each Service Year calculated per **Exhibit C-4**.

"B" is the **"Budgeted Total Net Allocable Costs"** estimated for the Service Year for the provision of Animal Services which are allocated among all the Contracting Parties for the purposes of determining the Estimated Payment. The Budgeted Total Net Allocable Costs are calculated as the **Budgeted Total Allocable Costs** (subject to the **Annual Budget Inflation Cap**) *less* **Budgeted Total Non-Licensing Revenue** and *less* **50% of Estimated New Regional Revenues**. The Budgeted Total Allocable Costs *exclude* any amount expended by the County as Transition Funding Credits, or Shelter Credits (described in **Exhibit C-4**), or to provide Licensing Revenue Support (described in **Section 7** and **Exhibit C-5**). A preliminary calculation (by service area—Control, Shelter, Licensing) of Budgeted Total Net Allocable Costs, Budgeted Total Allocable Costs and Budgeted Total Non-Licensing Revenue for purposes of calculating the Pre-Commitment Estimated 2013 Payments is set forth in **Exhibit C-3**.

"LF" is the **"Program Load Factor"** attributable to the City. LF has two components, one fixed, and one subject to change each Service Year and at Reconciliation. The first, fixed component relates to the City's share of Budgeted Total Net Allocable Costs: it is the City's 2013 Service Year Total Animal Services Cost Allocation (See Column 6 of **Exhibit C-1**) *expressed as a percentage* of the Budgeted Total Net Allocable Costs for 2013. The pre-commitment estimate of LF appears in column 7 of **Exhibit C-1**. This component of LF (as determined based on the Final 2013 Estimated Payment) remains constant for Service Years 2014 and 2015. The second component of LF relates to annexations of areas with a population of 2,500 or more or to Latecomer Cities. This second component is calculated as described in the definition of **"Population,"** below.

"Total Licensing Revenue" means all revenue received by the County's Animal Services Program attributable to the sale of pet licenses excluding late fees. With respect to each Contracting Party, the amount of **"Licensing Revenue"** is the revenue generated by the sale of pet licenses to residents of the jurisdiction. (With respect to the County, the jurisdiction is the unincorporated area of King County.)

"Total Non-Licensing Revenue" means all revenue from fine, forfeitures, and all other fees and charges imposed by the County's Animal Services program in connection with the operation of the Program, *but excluding* **Total Licensing Revenue, Estimated New Regional Revenues and Designated Donations**.

“Estimated New Regional Revenues” (“ENR”) are revenues projected to be received by the County specifically for support of Animal Services which result from regional marketing campaigns (thus excluding local licensing canvassing efforts pursuant to **Section 7**), and new foundation, grant, donation and entrepreneurial activities, except where revenues from these sources are designated for specific purposes within the Animal Services Program. Calculation and allocation of Estimated and Actual New Regional Revenues are further described in **Exhibit C-4**. For Service Year 2013, Estimated New Regional Revenues are assumed to be zero. If New Regional Revenues are received in 2013, they will be accounted for in the reconciliation of 2013 Payments. **ENR** excludes **Designated Donations, Total Non-Licensing Revenue** and **Total Licensing Revenue**.

“Designated Donations” mean donations from individuals or other third parties to the County made for the purpose of supporting specific operations, programs or facilities within the Animal Services Program.

“Licensing Revenue Support” means activities or funding to be undertaken in specific cities to enhance licensing revenues, per **Section 7, Exhibit C-5** and **Exhibit F**.

“Annual Budget Inflator Cap” means the maximum amount by which the Budgeted Total Allocable Costs may be increased from one Service Year to the next Service Year, and year to year, which is calculated as the rate of inflation (based on the annual change in the September CPI-U for the Seattle-Tacoma-Bremerton area over the rate the preceding year) plus the rate of population growth for the preceding year for the County (including the unincorporated area and all Contracting Cities), as identified by comparing the two most recently published July OFM city and county population reports. The cost allocations to individual services (e.g. Control Services, Shelter Services or Licensing Services) or specific items within those services may be increased or decreased from year to year in so long as the Budgeted Total Annual Allocable Costs do not exceed the Annual Budget Inflator Cap.

“Service Year” is the calendar year in which Animal Services are/were provided.

“Calculation Period” is the time period from which data is used to calculate the Estimated Payment. The Calculation Period differs by formula component and Service Year. **Exhibit C-6** sets forth in table form the Calculation Periods for all formula factors for Service Years 2013, 2014 and 2015.

“Population” with respect to any Contracting Party for Service Year 2013 means the population number derived from the State Office of Financial Management (OFM) most recent annually published report of population used for purposes of allocating state shared revenues in the subsequent calendar year (typically published by OFM each July,

reflecting final population estimates *as of April of the same calendar year*). For each Service Year, the OFM reported population will be adjusted for annexations of 2,500 or more residents known to be occurring after April, 2012 and before the end of the Service Year. For example, when the final Estimated Payment calculation for 2013 is provided on December 15, 2012, the population numbers used will be from the OFM report issued in July 2012 and will be adjusted for all annexations of 2,500 or more residents that occurred (or are known to be occurring) between April 2012 and December 31, 2013. In any Service Year, if: (1) annexations of areas with a population of 2,500 or more people occurs to impact the population within the jurisdiction of a Contracting Party; or (2) a Latecomer City is brought under contract with the County, these changes shall be accounted for in the calculation of the Estimated Payment for such Service Year by adjusting the “**Program Load Factor**” (or “**LF**”) for each Contracting Party. Such adjustment shall be made at the next occurring possibility (e.g., at calculation of the Preliminary Estimated Payment, Final Estimated Payment, or Reconciliation, whichever is soonest). The adjustment in LF will be made on a *pro rata* basis to reflect the portion of the year in which the population change was in effect.

- In the case of an annexation, the LF calculation will consider the time the annexed area was in the Contracting Party’s jurisdiction and the portion of the year in which the area was not in such Party’s jurisdiction, as well as the relative shift in population (if any) *attributable solely to the annexation* as between all Contracting Parties, by adding (or subtracting) to the LF for each Contracting Party an amount that is 20% (reflecting the general allocation of cost under the Agreement based on population) of the *change in population* for each Contracting Party (*expressed as a percentage of the Contracting Party’s population as compared to the total population for all Contracting Parties*) derived by comparing the Final 2013 Estimated Payment population percentage (LF) to the population percentage after considering the annexation. The population of an annexed area will be as determined by the Boundary Review Board, in consultation with the annexing city. The population of the unincorporated area within any District will be determined by the County’s demographer.
- In the case of a Latecomer City, the population shall be similarly adjusted among all Contracting Parties in the manner described above for annexations, by considering the change in population between all Contracting Parties *attributable solely to the Latecomer City becoming a Contracting Party*.

Exhibit C-1 shows the calculation of Pre-Commitment **EP** for Service Year 2013, assuming that the County and all Cities that have expressed interest in signing this Agreement as of May 16, 2012, do in fact approve and sign the Agreement and as a result the Minimum Contract Requirements with respect to all such Cities and the County are met per **Section 15**.

Component Calculation Formulas (used in Service Year 2013):

EC is calculated as follows:

$$EC = \{[(C \times .5) \times .8] \times CFS\} + \{[(C \times .5) \times .2] \times D\text{-}Pop\}$$

Where:

"C" is the **Budgeted Net Allocable Control Services Cost** for the Service Year, which equals the County's Budgeted Total Allocable Costs for Control Services in the Service Year, *less* the Budgeted Total Non-Licensing Revenue attributable to Control Services in the Service Year (for example, fines issued in the field) *and less* 17% of Estimated New Regional Revenues ("ENR"). For purposes of determining the Pre-Commitment Estimated Payments for 2013, the Budgeted Net Allocable Control Services Cost is \$1,690,447, calculated as shown on **Exhibit C-3**, and shall be similarly derived to determine the Preliminary and Final Estimated Payment for 2013 and for Service Year 2016 if the Agreement is extended beyond December 31, 2015.

"CFS" is the total annual number of Calls for Service for the Service Year for Control Services originating within the City *expressed as a percentage* of the CFS for all Contract Parties within the same Control District. A Call for Service is defined as a request from an individual, business or jurisdiction for a control service response to a location within the City, or a response initiated by an Animal Control Officer in the field, which is entered into the County's data system (at the Animal Services call center or the sheriff's dispatch center acting as back-up to the call center) as a request for service. Calls for information, hang-ups and veterinary transfers are not included in the calculation of Calls for Service. A response by an Animal Control Officer pursuant to an Enhanced Control Services Contract will not be counted as a Call for Service. For purposes of determining the Estimated Payment in 2013, the Calculation Period for CFS is calendar year 2011 actual data. **Exhibit C-2** shows a preliminary estimate of 2011 CFS used to determine the Pre-Commitment Estimated 2013 Payment; the numbers in this Exhibit C-2 are subject to Reconciliation by June 30, 2012.

"D-Pop" is the **Population** of the City, *expressed as a percentage* of the Population of all jurisdictions within the applicable Control District.

ES for Service Year 2013 is calculated as follows:

If, as of the effective date of this Agreement, the City has entered into a contract for shelter services with the Progressive Animal Welfare Society (PAWS) in Lynnwood, WA, then, for so long as such contract remains in effect, the City will not pay a share of shelter costs associated with shelter usage ("A" as defined below) and instead the Estimated Payment will include a **population-based charge only**, reflecting the regional shelter benefits nonetheless received by such City, calculated as follows (the components of this calculation are defined as described below).

$$ES = (S \times .2 \times Pop)$$

If the City **does not** qualify for the population-based shelter charge only, ES is determined as follows:

$$ES = (S \times .2 \times Pop) + (S \times .8 \times A)$$

Where:

"S" is the Budgeted Net Allocable Shelter Services Cost for the Service Year, which equals the County's Budgeted Total Allocable Costs for Shelter Services *less* Budgeted Total Non-Licensing Revenue attributable to Shelter operations (i.e., adoption fees, microchip fees, impound fees, owner-surrender fees, from all Contracting Parties) *and less* 27% of Estimated New Regional Revenues (ENR) in the Service Year. For purposes of determining the Pre-Commitment Estimated Payments for 2013, the Budgeted Net Allocable Shelter Services Cost is \$2,707,453, calculated as shown on **Exhibit C-3**, and shall be similarly derived to determine the Preliminary and Final Estimated Payments for 2013 and for Service Year 2016 if the Agreement is extended beyond December 31, 2015.

"Pop" is the population of the City expressed as a percentage of the Population of all Contracting Parties.

"A" is the total number of animals that were: (1) picked up by County Animal Control Officers from within the City, (2) delivered by a City resident to the County shelter, or (3) delivered to the shelter that are owned by a resident of the City *expressed as a percentage* of the total number of animals in the County Shelter during the Calculation Period. For purposes of the 2013 Estimated Payment, the Calculation Period for "A" is calendar year 2011. **Exhibit C-2** shows a preliminary estimate of "A" for 2011 used to determine the Pre-Commitment Estimated 2013 Payments; the numbers in this exhibit are subject to Reconciliation by June 30, 2012.

EL for Service Year 2013 is calculated as follows:

$$EL = (L \times .2 \times Pop) + (L \times .8 \times I)$$

Where:

"L" is the Budgeted Net Licensing Services Cost for the Service Year, which equals the County's Budgeted Total Allocable Costs for License Services in the Service Year *less* Budgeted Total Non-Licensing Revenue attributable to License Services (for example, pet license late fees) in the Service Year *and less* 6% of Estimated New Regional Revenues (ENR) in the Service Year. For purposes of determining the Pre-Commitment Estimated Payments for 2013, the Budgeted Net Licensing Cost is \$660,375, calculated as shown on **Exhibit C-3**, and shall be similarly derived to determine the Preliminary and final Estimated Payments for 2013 and for Service Year 2016 if the Agreement is extended beyond December 31, 2015.

"Pop" is the Population of the City expressed as a percentage of the population of all Contracting Parties.

"I" is the number of active paid regular pet licenses (e.g., excluding 'buddy licenses' or temporary licenses) issued to City residents during the Calculation Period. For purposes of calculating the Estimated Payment in 2013, the Calculation Period for **"I"** is calendar year 2011. **Exhibit C-2** shows a preliminary estimate of **"I"** to be used for calculating the Pre-Commitment Estimated 2013 Payments; the numbers in this Exhibit are subject to reconciliation by June 30, 2012.

Exhibit C-1

**Regional Animal Services of King County
Pre-Commitment Estimated 2013 Payment Calculation (Annualized)**

Allocation Method: Population = 20%, Usage = 80%, Three (3) Control Districts: 200, 220, with Control Districts 240 and 260 combined into one (500), costs to districts 25%, 25%, 50%. Usage and Licensing Revenue based on 2011 Preliminary Year End.

	Control	Shelter	Licensing	Total Allocated Costs (1)	2011 Licensing Revenue (est)	Estimated Net Cost
Budgeted Total Allocable Costs	\$1,770,487	\$2,619,960	\$673,640	\$5,064,087		
Budgeted Non-Licensing Revenue	\$80,040	\$112,507	\$13,285	\$205,832		
Budgeted New Regional Revenue (50%)	\$0	\$0	\$0	\$0		
Budgeted Net Allocable Costs	\$1,690,447	\$2,707,453	\$660,355	\$5,058,275	\$2,480,689	-\$2,577,586

Animal Control District Number	Jurisdiction	Estimated Animal Control Cost Allocation (2)	Estimated Sheltering Cost Allocation (3)	Estimated Licensing Cost Allocation (4)	Estimated Total Animal Services Cost Allocation	Program Load Factor (5)	2011 Licensing Revenue (Estimated)	Estimated Net Cost Allocation	2013-2015 Transition Funding (Annual) (6)	2013 - 2015 Shelter Credits (Annual) (6)	Estimated Net Costs with Transition Funding and Credits	Estimated Revenue from Proposed Licensing Support (7)	Estimated Net Final Cost (8)
200	Carnation	\$4,118	\$3,497	\$1,239	\$8,854	0.1750%	\$4,752	-\$4,102	\$552	\$0	-\$3,550	\$998	-\$2,552
	Duvall	\$11,281	\$15,284	\$5,351	\$31,916	0.6322%	\$21,343	-\$10,533			-\$10,533	\$7,658	-\$3,875
	Estimated Unincorporated King County	\$83,637	(see total below)	(see total below)	(see total below)		(see total below)	(see total below)	NA	NA	NA	NA	NA
	Kennmore	\$37,911	\$11,992	\$15,423	\$64,926	1.2836%	\$58,802	-\$6,324	\$0	\$0	-\$6,324	\$0	-\$6,324
	Kirkland	\$84,595	\$29,928	\$39,845	\$154,368	4.8720%	\$208,050	-\$36,152	\$0	\$0	-\$36,152	\$23,853	-\$12,300
	Lake Forest Park	\$32,894	\$7,034	\$19,095	\$59,023	0.8309%	\$48,524	-\$8,477	\$0	\$0	-\$8,477	\$0	-\$8,477
	Redmond	\$37,887	\$54,303	\$39,308	\$124,478	2.4609%	\$118,407	-\$8,071	\$0	\$0	-\$8,071	\$0	-\$8,071
	Sammamish	\$35,341	\$44,214	\$31,128	\$110,684	2.1882%	\$117,649	-\$8,955	\$0	\$0	-\$8,955	\$0	-\$8,955
	Shoreline	\$62,519	\$29,877	\$38,184	\$130,581	3.1709%	\$145,688	-\$14,702	\$0	\$0	-\$14,702	\$0	-\$14,702
	Woodinville	\$12,258	\$8,183	\$7,708	\$28,149	0.5186%	\$29,240	\$3,141	\$0	\$0	\$3,141	\$0	\$3,141
SUBTOTAL FOR CITIES IN 200 (excludes unincorporated area)		\$338,778	\$271,310	\$203,362	\$813,450		\$789,189	-\$83,315	\$552	\$0	-\$82,763	\$32,477	-\$50,286
220	Beaux Arts	\$99	\$187	\$749	\$1,035	0.0099%	\$930	\$430	\$0	\$0	\$430	\$0	\$430
	Bellevue	\$142,322	\$181,485	\$78,249	\$399,056	7.4924%	\$273,931	-\$105,125	\$0	\$0	-\$105,125	\$34,449	-\$70,676
	Clyde Hill	\$1,868	\$3,188	\$1,952	\$6,958	0.1381%	\$7,170	\$185	\$0	\$0	\$185	\$0	\$185
	Estimated Unincorporated King County	\$188,106	(see total below)	(see total below)	(see total below)		(see total below)	(see total below)	NA	NA	NA	NA	NA
	Issaquah	\$53,351	\$46,187	\$16,278	\$115,797	2.2893%	\$55,847	-\$9,850	\$0	\$0	-\$9,850	\$0	-\$9,850
	Mercer Island	\$15,581	\$18,177	\$13,853	\$47,611	0.9017%	\$49,962	\$4,351	\$0	\$0	\$4,351	\$0	\$4,351
	Newcastle	\$18,484	\$12,218	\$4,857	\$35,559	0.8115%	\$15,271	-\$18,188	\$0	\$0	-\$18,188	\$7,682	-\$10,506
	North Bend	\$15,851	\$18,273	\$4,128	\$38,252	0.7181%	\$15,894	-\$20,558	\$1,378	\$586	-\$18,594	\$6,469	-\$12,125
	Snodgrass	\$12,248	\$11,118	\$8,737	\$32,103	0.5951%	\$25,085	-\$5,038	\$0	\$0	-\$5,038	\$0	-\$5,038
	Yarrow Point	\$675	\$561	\$760	\$1,996	0.0389%	\$2,700	\$705	\$0	\$0	\$705	\$0	\$705
SUBTOTAL FOR CITIES IN 220 (excludes unincorporated area)		\$296,413	\$288,432	\$123,962	\$708,807		\$446,670	-\$262,137	\$1,378	\$586	-\$250,173	\$43,511	-\$206,662
500	Kent	\$283,232	\$794,101	\$69,400	\$1,146,733	22.2750%	\$253,844	-\$897,789	\$110,485	\$495,870	-\$286,424	\$0	-\$286,424
	SeaTac	\$76,732	\$184,894	\$13,311	\$274,937	5.4947%	\$47,232	-\$230,705	\$7,442	\$118,611	-\$105,853	\$0	-\$105,853
	Tukwila	\$48,635	\$110,287	\$9,228	\$168,150	3.3533%	\$32,105	-\$136,045	\$5,265	\$81,887	-\$68,725	\$0	-\$68,725
	Black Diamond	\$8,094	\$14,340	\$2,885	\$25,319	0.4984%	\$19,105	-\$14,828	\$1,209	\$3,263	-\$10,451	\$2,001	-\$8,450
	Covington	\$52,490	\$92,495	\$12,634	\$157,619	3.0178%	\$48,982	-\$98,599	\$5,070	\$36,409	-\$57,119	\$0	-\$57,119
	Enumclaw	\$41,747	\$68,672	\$8,820	\$119,239	2.3620%	\$25,307	-\$80,033	\$11,188	\$28,407	-\$40,438	\$5,973	-\$34,465
	Estimated Unincorporated King County	\$326,082	(see total below)	(see total below)	(see total below)		(see total below)	(see total below)	NA	NA	NA	NA	NA
	Merida Valley	\$43,215	\$89,380	\$18,080	\$150,675	2.4848%	\$58,628	-\$92,047	\$8,027	\$6,867	-\$85,180	\$8,104	-\$77,076
	Marble Valley	\$536,139	\$1,311,831	\$129,299	\$1,977,269		\$474,863	-\$1,502,406	\$148,689	\$749,414	-\$605,007	\$14,839	-\$590,168
SUBTOTAL FOR CITIES IN 500 (excludes unincorporated area)		\$1,131,322	\$1,852,373	\$456,514	\$3,440,209		\$1,671,819	-\$1,768,390	\$148,614	\$750,000	-\$869,776	\$90,918	-\$778,858
TOTAL FOR CITIES		\$1,131,322	\$1,852,373	\$456,514	\$3,440,209		\$1,671,819	-\$1,768,390	\$148,614	\$750,000	-\$869,776	\$90,918	-\$778,858
Total King County Unincorporated Area Allocation		\$558,125	\$655,080	\$203,881	\$1,417,086	31.0885%	\$808,870	-\$808,795					-\$808,795
		\$1,690,447	\$2,707,453	\$660,375	\$5,058,275	100.00%	\$2,480,689	-\$2,577,586					

Source: Regional Animal Services of King County
Date: Jan 26, 2012 (Draft) Updated 6-25-12
Numbers are estimates only for the purpose of negotiation discussions. The numbers and allocation methodology are subject to change while negotiations are underway.

Exhibit C-1, cont'd.

Notes:

1. Based on various efficiencies and changes to the RASKC operating budget, adjustments for reduced intakes overall, reduced usage with Auburn out, and shifting two positions out of the model (county sponsored), the 2013 Estimated Budgeted Total Allocable Cost has been reduced to \$5,264,087.
2. One quarter of control services costs are allocated to control districts 200 and 220, and one half of control costs are allocated to district 500, then costs are further allocated 80% by total call volume (2011 Calls - Preliminary year end) and 20% by 2011 population.
3. This excludes the cost to northern cities of sheltering their animals at PAWS under separate contracts. Shelter costs are allocated 80% by King County shelter volume intake (2011 Preliminary year end) and 20% by 2011 population.
4. Licensing costs are allocated 20% by population (2011) and 80% by total number of Pet Licensees issued (2011) less \$0.00 Sr. Lifetime Licensees.
5. Transition funding is allocated per capita in a two tier formula to cities with certain per capita net cost allocations. For additional detail, see 2010 Interlocal Agreement Exhibit C-4 (2013 column) for more information. Transition Funding does not change for years 2013 - 2015.
6. Credits are allocated to those jurisdictions whose shelter intakes per capita exceeded the system average (.0043) and are intended to help minimize the impact of changing the cost allocation methodology from 50% population/50 usage to the new 20% population/80% usage model. See Interlocal Agreement Exhibit C-4 for more detail.
7. New Transition Licensee Funding has been included for certain jurisdictions to help limit the Estimated Net Final Cost to the 2012 estimated level. Receipt of support is contingent on city providing in-kind services and county ability to provide resources and/or recover costs.
8. Net Final Costs greater than \$0 will be reallocated to remaining jurisdictions with a negative net final cost. northern cities Net Final Costs shall be inclusive of their PAWS Sheltering costs.
9. Program Load Factor (LF), per ILA Exhibit C, Part 4, Estimated Payment Calculation Formula, is the City's share of Budgeted Total Net Allocable Costs. It is the City's 2013 Service Year Total Animal Services Cost Allocation expressed as a percentage of the Budgeted Total Net Allocable Costs for 2013. Refer to the ILA for additional details.

Exhibit C-2

**Population, Calls for Service, Shelter Use and Licensing Data for Jurisdictions,
Used to Derive the Pre-Commitment 2013 Estimated**

*Source: Wash. St. Office of Financial Management, KC Office of Management and Budget, Regional Animal Services of KC
Date: February 22, 2012*

Proposed District	Jurisdiction	2011 Population	Estimated 2013 Calls	Estimated 2013 Intakes	Estimated 2013 Licenses
200	Bothell				
	Carnation	1,780	13	5	160
	Duvall	6,715	34	23	712
	Estimated Unincorporated King County	65,642	240	(see total below)	(see total below)
	Kenmore	20,780	116	0	2,021
	Kirkland	80,738	230	109	7,855
	Lake Forest Park	12,610	70	0	1,666
	Redmond	55,150	87	47	3,980
	Sammamish	46,940	85	36	3,970
	Shoreline	53,200	281	0	4,967
	Woodinville	10,940	34	0	998
220	Beaux Arts	300	0	0	33
	Bellevue	123,400	317	185	9,380
	Clyde Hill	2,985	3	3	248
	Estimated Unincorporated King County	87,572	418	(see total below)	(see total below)
	Issaquah	30,690	132	58	1,942
	Mercer Island	22,710	21	11	1,727
	Newcastle	10,410	40	13	520
	North Bend	5,830	42	26	535
	Snoqualmie	10,950	27	10	842
	Yarrow Pt	1,005	1	0	100
500	Kent (Includes Panther Lake Annexation)	118,200	614	1,454	8,555
	SeaTac	27,110	200	339	1,544
	Tukwila	19,050	121	200	1,065
	Auburn	0	0	0	0
	Black Diamond	4,160	18	24	340
	Covington	17,640	132	145	1,642
	Enumclaw	10,920	110	101	872
	Estimated Unincorporated King County	100,333	783	(see total below)	(see total below)
	Maple Valley	22,930	89	111	1,919
City Totals		782,785	2,817	2,900	57,593
King County Unincorporated Area Totals		187,905	1,441	1,425	27,175
TOTALS		970,690	4,258	4,325	84,768

Note: Usage data from 2011 activity. License count excludes Senior Lifetime Licenses

Exhibit C-3**Calculation of Budgeted Total Allocable Costs, Budgeted Total Non-Licensing Revenue, and Budgeted Net Allocable Costs**

This Exhibit Shows the Calculation of Budgeted Total Allocable Costs, Budgeted Total Non-Licensing Revenue, and Budgeted Net Allocable Costs to derive Pre-Commitment Estimated 2013 Payments. All values shown are based on annualized costs and revenues. The staffing levels incorporated in this calculation are for year 2013 only and except as otherwise expressly provided in the Agreement may change from year to year as the County determines may be appropriate to achieve efficiencies, etc.

Control Services: Calculation of Budgeted Total Allocable Costs, Budgeted Total Non-Licensing Revenue, and Budgeted Net Allocable Costs

The calculation of Pre-Commitment Estimated 2013 Control Services Costs is shown below (all costs in 2012 dollars).

		Cost Methodology
1	Direct Service Management Staff Costs	\$148,361
2	Direct Service Field Staff Costs	\$725,879
3	Call Center Direct Service Staff Costs	\$229,697
4	Overtime, Duty, Shift Differential and Temp Costs	\$80,891
5	Facilities Costs	\$8,990
6	Office and Other Operational Supplies and Equipment	\$17,500
7	Printing, Publications, and Postage	\$34,000
8	Medical Costs	\$22,500
9	Other Services	\$80,000
10	Transportation	\$141,904
11	Communications Costs	\$38,811
12	IT Costs and Services	\$50,626
13	Misc Direct Costs	\$41,900
14	General Fund Overhead Costs	\$15,842
15	Division Overhead Costs	\$110,490
16	Other Overhead Costs	\$23,096
	2010 Budgeted Total Allocable Control Services Cost	\$1,770,487
17	Less 2010 Budgeted Total Non-Licensing Revenue Attributable to Control Services	\$80,040
18	Less 17% of Estimated New Regional Revenues for 2013	0
	2010 Budgeted Net Allocable Control Services Cost	\$1,690,447

NOTES:

- 4 These additional salary costs support complete response to calls at the end of the day, limited response to emergency calls after hours, and extra help during peak call times.
- 5 Facilities costs include maintenance and utilities for a portion (5%) of the Kent Shelter (which houses the call center staff operations and records retention as well as providing a base station for field officers). Excludes all costs associated with the Crossroads facility.
- 6 This item includes the office supplies required for both the call center as well as a wide variety of non-computer equipment and supplies related to animal control field operations (e.g., uniforms, tranquilizer guns, boots, etc.).
- 7 This cost element consists of printing and publication costs for various materials used in the field for animal control.
- 8 Medical costs include the cost for ambulance and hospital care for animals requiring emergency services.
- 9 Services for animal control operations vary by year but consist primarily of consulting vets and laboratory costs associated with cruelty cases.
- 10 Transportation costs include the cost of the maintenance, repair, and replacement of the animal care and control vehicles and cabs, fuel, and reimbursement for occasional job-related use of a personal vehicle.
- 11 Communication costs involve the direct service costs for telephone, cell phone, radio, and pager use.
- 12 Information technology direct costs include IT equipment replacement as well as direct services costs. Excludes approximately \$50,000 in service costs associated with mainframe systems.
- 13 Miscellaneous direct costs consist of all animal control costs not listed above including but not limited to contingency, training, certification, and bad checks.
- 14 General fund overhead costs included in this model include building occupancy charges and HR/personnel services. No other General Fund overhead costs are included in the model.
- 15 Division overhead includes a portion of the following personnel time as well as a portion of division administration non-labor costs, both based on FTEs: division director, assistant division director, administration, program manager, finance officer, payroll/accounts payable, and human resource officer.
- 16 Other overhead costs include IT, telecommunications, finance, and property services.
- 17 Non-licensing revenue attributable to field operations include animal control violation penalties, charges for field pickup of deceased/owner relinquished animals, and fines for failure to license.

Shelter Services: Calculation of Budgeted Total Allocable Costs, Budgeted Total Non-Licensing Revenue, and Budgeted Net Allocable Costs

The calculation of Pre-Commitment Estimated 2013 Shelter Services Costs is shown below (all costs in 2012 dollars).

		Cost Methodology
1	Direct Service Management Staff Costs	\$214,815
2	Direct Service Shelter Staff Costs	\$1,168,436
3	Direct Service Clinic Staff Costs	\$286,268
4	Overtime, Duty, Shift Differential and Temp Costs	\$159,682
5	Facilities Costs	\$170,814
6	Office and Other Operational Supplies and Equipment	\$94,200
7	Printing, Publications, and Postage	\$20,000
8	Medical Costs	\$127,500
9	Other Services	\$122,500
10	Transportation	\$10,566
11	Communications Costs	\$6,200
12	IT Costs and Services	\$51,360
13	Misc Direct Costs	\$60,306
14	General Fund Overhead Costs	\$113,614
15	Division Overhead Costs	\$176,572
16	Other Overhead Costs	\$37,124
	2010 Budgeted Total Allocable Shelter Services Cost	\$2,819,960
17	Less 2010 Budgeted Total Non-Licensing Revenue Attributable to Shelter Services	\$112,507
18	Less 27% of Estimated New Regional Revenues for 2013	0
	2010 Budgeted Net Allocable Shelter Services Cost	\$2,707,453

NOTES:

- 5 Facilities costs include maintenance and utilities for the majority (95%) of the Kent Shelter (which also houses the call center staff operations and records retention as well as providing a base station for field officers). It excludes all costs associated with the Crossroads facility.
- 6 This item includes the office supplies as well as a wide variety of non-computer equipment and supplies related to animal care (e.g., uniforms, food, litter, etc.).
- 7 This cost element consists of printing and publication costs for various materials used at the shelter.
- 8 Medical costs include the cost for ambulance and hospital care for animals requiring emergency services as well as the cost for consulting vets, laboratory costs, medicine, and vaccines.

- 9 Services for animal control operations vary by year but include costs such as shipping of food provided free of charge and sheltering of large animals.
- 10 Transportation costs include the cost of the maintenance, repair, and replacement of and fuel for the animal care and control vehicles used by the shelter to facilitate adoptions, as well as reimbursement for occasional job-related use of a personal vehicle.
- 11 Communication costs involve the direct service costs for telephone, cell phone, radio, and pager use.
- 12 Information technology direct costs include IT equipment replacement as well as direct services costs.
- 13 Miscellaneous direct costs consist of all animal care costs not listed above including but not limited to contingency, training, certification, and bad checks.
- 14 General fund overhead costs included in this model include building occupancy charges and HR/personnel services. No other General Fund overhead costs are included in the model.
- 15 Division overhead includes a portion of the following personnel time as well as a portion of division administration non-labor costs, both based on FTEs: division director, assistant division director, administration, program manager, finance officer, payroll/accounts payable, and human resource officer.
- 16 Other overhead costs include IT, telecommunications, finance, and property services.
- 17 Non-licensing revenue attributable to sheltering operations include impound fees, microchip fees, adoption fees, and owner relinquished euthanasia costs.

Licensing Services: Calculation of Budgeted Total Allocable Costs, Budgeted Total Non-Licensing Revenue, and Budgeted Net Allocable Costs

The calculation of Pre-Commitment Estimated 2013 Licensing Services Costs is shown below (all costs in 2012 dollars).

		Cost Methodology
1	Direct Service Management Staff Costs	\$52,917
2	Direct Service Licensing Staff Costs	\$346,523
3	Overtime, Duty, Shift Differential and Temp Costs	\$26,295
4	Facilities Costs	\$13,100
5	Office and Other Operational Supplies and Equipment	\$3,300
6	Printing, Publications, and Postage	\$74,600
7	Other Services	\$14,500
8	Communications Costs	\$2,265
9	IT Costs and Services	\$77,953
10	Misc Direct Costs	\$2,000
11	General Fund Overhead Costs	\$9,884
12	Division Overhead Costs	\$39,280
13	Other Overhead Costs	\$11,023
	2010 Budgeted Total Allocable Licensing Services Cost	\$673,640
14	Less 2010 Budgeted Total Non-Licensing Revenue Attributable to Licensing Services	\$13,265
15	Less 6% of Estimated New Regional Revenue	-0-
	2010 Budgeted Net Allocable Licensing Services Cost	\$660,375

NOTES:

- 4 Facilities costs include maintenance and utilities for the portion of the King County Administration building occupied by the pet licensing staff and associated records.
- 5 This item includes the office supplies required for the licensing call center.
- 6 This cost element consists of printing, publication, and distribution costs for various materials used to promote licensing of pets, including services to prepare materials for mailing.
- 7 Services for animal licensing operations include the purchase of tags and monthly fees for online pet licensing hosting.
- 8 Communication costs involve the direct service costs for telephone, cell phone, radio, and pager use.
- 9 Information technology direct costs include IT equipment replacement as well as direct services costs. Excludes approximately \$120,000 in service costs associated with mainframe systems.
- 10 Miscellaneous direct costs consist of all pet licensing costs not listed above including but not limited to training, certification, transportation, and bad checks.

- 11 General fund overhead costs included in this model include building occupancy charges and HR/personnel services. No other General Fund overhead costs are included in the model.
- 12 Division overhead includes a portion of the following personnel time as well as a portion of division administration non-labor costs, both based on FTEs: division director, assistant division director, administration, program manager, finance officer, payroll/accounts payable, and human resource officer.
- 13 Other overhead costs include IT, telecommunications, finance, and property services.
- 14 Non-licensing revenue attributable to licensing operations consists of licensing late fees.

Exhibit C-4**Calculation and Allocation of Transition Funding Credit ("T"), Shelter Credit ("V"),
and Estimated New Regional Revenue ("ENR")****A. Transition Funding Credit**

The Transition Funding Credit as originally calculated in the 2010 Agreement offset costs to certain Contracting Cities that would have otherwise paid the highest per capita costs for Animal Services in 2010. The credit was scheduled on a declining basis over four years (2010-2013). In this Agreement, the Contracting Cities qualifying for this credit are listed in Table 1 below; these cities will receive the credit at the level calculated for 2013 in the 2010 Agreement for Service Years 2013, 2014 and 2015, provided that, application of the credit can never result in the Estimated Payment Amount being less than zero (\$0) (i.e., cannot result in the County owing the City an Estimated Payment). The allocation of the Transition Funding Credit is shown in Table 1 below.

Table 1: Transition Funding Credit – Annual Amount to be allocated each year in the period from 2013-2015

Jurisdiction	Transition Funding Credit
Carnation	\$552
North Bend	\$1,376
Kent	\$110,495
SeaTac	\$7,442
Tukwila	\$5,255
Black Diamond	\$1,209
Covington	\$5,070
Enumclaw	\$11,188
Maple Valley	\$6,027

Note: The Transitional Funding Credit is the same regardless of which cities sign the Agreement.

B. Shelter Credit

The Shelter Credit is designed to offset costs for those Contracting Cities whose per capita shelter intakes ("A") exceed the average for all Contracting Parties. A total of \$750,000 will be applied as a credit in each of the Service Years 2013-2015 to Contracting Cities whose per capita average shelter intakes ("A") exceeds the average for all Contracting Parties; *provided that* application of the Shelter Credit can never result in the Estimated Payment amount being less than zero (\$0) (i.e., cannot result in the County owing the City an Estimated Payment.) The 2013 Shelter Credit was determined based on estimated animal

intakes ("A") for Calendar Year 2011 as shown on **Exhibit C-2**. The \$750,000 was allocated between every Contracting City with animal intakes over the estimated 2011 Program average, based on each Contracting City's relative per capita animal intakes in excess of the average for all Contracting Parties. The Shelter Credit will be paid at the 2013 level in Service Years 2014 and 2015. The County will consider providing the Shelter Credit in Service Years 2016 and 2017 at the same level as for Service Year 2013.

Table 3: Annual Shelter Credit Allocation—2013 through 2015

City	Shelter Credit
North Bend	\$586
Kent	\$495,870
SeaTac	\$116,611
Tukwila	\$61,987
Black Diamond	\$3,263
Covington	\$36,409
Enumclaw	\$28,407
Maple Valley	\$6,867

C. New Regional Revenue: Estimation and Allocation

Goal

New Regional Revenue for each Service Year shall be estimated as part of the development of the Estimated Payment calculations for such Service Year. The goal of the estimate shall be to reduce the amount of Estimated Payments where New Regional Revenue to be received in the Service Year can be calculated with reasonable certainty. The Estimated New Regional Revenue will be reconciled annually to account for actual New Regional Revenue received, per **Exhibit D**.

Calculation of Estimated New Regional Revenue (ENR)

1. The value of the Estimated New Regional Revenue for Service Year 2013 is zero.
2. For Service Years after 2013, the Estimated New Regional Revenue will be set at the amount the County includes for such revenue in its adopted budget for the Service Year. For purposes of the Preliminary Estimated Payment calculation, the County will include its best estimate for New Regional Revenue at the time the calculation is issued, after first presenting such estimate to the Joint City County Committee for its input.

Application of ENR

1. For Service Years 2013 and 2016, 50% of the Estimated New Regional Revenue is incorporated into the calculations of EC and ES and EL as described in **Exhibit C**, specifically:
 - a. 17% of total Estimated New Regional Revenue is applied to reduce the total Budgeted Net Allocable Control Services Cost.
 - b. 27% of total Estimated New Regional Revenue is applied to reduce the total Budgeted Net Allocable Shelter Services Cost.
 - c. 6% of total Estimated New Regional Revenue is applied to reduce the total Budgeted Net Allocable Licensing Services Cost.

These amounts are reconciled as against actual New Regional Revenue (**ENR_A**) in the annual Reconciliation process. In 2014, 2015 and 2017 the 50% is simply deducted against Budgeted Total Allocable Costs to derive Budgeted Total Net Allocable Costs.

2. For each Service Year, the remaining 50% of Estimated New Regional Revenue is first applied to offset County contributions to the Program, in the following order of priority.
 - a. Offset payments made by the County to fund Transition Funding Credits, Shelter Credits, Impact Mitigation Credits (if any) and un-reimbursed Licensing Revenue Support.
 - b. Offset County funding of Animal Services Program costs that are not included in the cost allocation model described in **Exhibit C**, specifically, costs of:
 - i. The medical director and volunteer coordinator staff at the Kent Shelter.
 - ii. Other County-sponsored costs for Animal Services that are not included in the cost models described in **Exhibit C**.
 - c. In the event any of the 50% of Estimated New Regional Revenue remains after applying it to items (a) and (b) above, the remainder ("**Residual New Regional Revenue**") shall be held in a reserve and applied to the benefit of all Contracting Parties as part of the annual Reconciliation process, in the following order of priority:
 - i. First, to reduce *pro-rata* up to 20% of each Contracting Party's Estimated Total Animal Services Cost Allocation (6th column in the spreadsheet at **Exhibit C-1**), thereby reducing up to all cost allocations based on population. This is the factor "**X**" in the Reconciliation formula.
 - ii. Second, to reduce *pro rata* the amount owing from each Contracting Party with net final costs > 0 after consideration of all other factors in the Reconciliation formula.

Offsets described in (a) and (b) above do not impact the calculation of Estimated Payments or the Reconciliation of Estimated Payments since they are outside the cost model. The allocations described in (c) above, if any, will be considered in the annual Reconciliation as described in **Exhibit D**.

Exhibit C-5
Licensing Revenue Support

- A. The Contracting Cities that will receive licensing revenue support in 2013 are listed below (collectively, these nine cities are referred to as the "Licensing Revenue Support Cities"). These Cities have been selected by comparing the estimated 2013 Net Final Costs shown in **Exhibit C-1** to the 2012 Estimated Net Final Cost.² Where the 2013 Net Final Cost estimate was higher than the 2012 estimate, the difference was identified as the 2013 Licensing Revenue Target.
- B. For any Licensing Revenue Support City in **Table 1** whose Preliminary 2013 Estimated Payment is lower than the Pre-Commitment Estimate shown in **Exhibit C-1**, the Licensing Revenue Target ("RT") and the Revenue Goal ("RG") will be the reduced by an amount equivalent to the reduction between the Pre-Commitment and Preliminary Estimated Payment amounts for 2013.

Table 1:
2013 Licensing Revenue Support Cities, Licensing Revenue Targets and Revenue Goals*

City	2013 Licensing Revenue Target "RT" (increment)	Base Year Revenue (2011 Estimate per Exhibit C-2) "Base Amount"	Revenue Goal "RG" (total)
City of Carnation	\$966	\$4,752	\$5,718
City of Duvall	\$7,658	\$21,343	\$29,001
City of Kirkland	\$23,853	\$208,000	\$231,853
City of Bellevue	\$34,449	\$273,931	\$308,380
City of Newcastle	\$2,599	\$15,271	\$17,870
City of North Bend	\$6,463	\$15,694	\$22,157
City of Black Diamond	\$2,001	\$10,185	\$12,186
City of Enumclaw	\$5,973	\$25,307	\$31,280
City of Maple Valley	\$6,956	\$56,628	\$63,584

*Amounts in this table are subject to adjustment per Paragraph B above.

- C. The 2013 Licensing Revenue Target ("RT") is the amount each City in **Table 1** will receive in 2013, either in the form of additional licensing revenues over the Base Year amount or as a **Licensing Revenue Credit ("LRC")** applied at Reconciliation.

² For Contracting Cities that purchase shelter services from PAWS, the target was based on the Pre-Commitment 2013 Estimated Payment calculated in February 2012 during contract negotiations.

- D. As further described in **Section 7** and **Exhibit C-5**, licensing revenue support services include the provision of County staff and materials support (which may include use of volunteers or other in-kind support) as determined necessary by the County to generate the Licensing Revenue Target.
- E. In 2014 and 2015, any Licensing Revenue Support City or other Contracting City may request licensing revenue support services from the County under the terms of **Exhibit F**. Provision of such services is subject to the County determining it has capacity to perform such services. *Notwithstanding the foregoing*, a Licensing Revenue Support City for which RT is in excess of \$20,000 per year may receive licensing revenue support service in all three years, but only if by September 1, 2012, it commits to providing in-kind support in all three Services Years by executing the contract in **Exhibit F** with respect to *all 3 Service Years* (2013, 2014 and 2015). Allocation of licensing revenue support services in 2014 and 2015 will be prioritized first to meet the County's contractual commitment, if any, to a Licensing Revenue Support City that has entered into a 3-year agreement for such service. Thereafter, service shall be allocated to Licensing Revenue Support Cities requesting such service on first-come, first-served basis; and thereafter to any other Contracting City requesting such service on a first-come, first-served basis.

Table 2:
Calculation of Estimated Payments and Licensing Revenue Credits
for Licensing Revenue Support Cities

For Service Year 2013:

- The Estimated Payment calculation will include the 2013 Licensing Revenue Support Target ("RT"), if any, for the City per Table 1 above in the calculation of Estimated Licensing Revenues ("ER") (these amounts are shown in separate columns on **Exhibit C-1**).
- At Reconciliation:
 - For Cities with a RT > \$20,000, Actual Licensing Revenue for 2013 ("AR₂₀₁₃") will be determined by allocating 65% of Licensing Revenues received (if any) over the Base Amount to determine AR₂₀₁₃
 - if Actual Licensing Revenue for 2013 ("AR₂₀₁₃") ≥ Revenue Goal ("RG"), then no additional credit is payable to the City ("LRC" = \$0)
 - If AR₂₀₁₃ < RG, then the difference (RG-AR) is the Licensing Revenue Credit ("LRC") included in the Reconciliation Adjustment Amount *provided that*, for Cities whose RT > \$20,000, 35% of Licensing Revenues over the Base Amount shall be allocated to *increase* ("LRC") when the value of ANFC₀ is being calculated at Reconciliation, *and provided further*, that in all cases LRC cannot exceed the 2013 Licensing Revenue Target for the City.

For **Service Year 2014**, if the City and County have executed a Licensing Support Contract per **Exhibit F**, and the City is therefore providing additional in-kind services in order to generate licensing revenue support in 2014, then:

- The Estimated Payment for 2014 will include Estimated Licensing Revenues calculated at the amount of Actual Revenue ("**AR**") for 2012 or the Revenue Goal (**RG**), whichever is greater. **RG** will be the amount in Table 1 for Licensing Revenue Support Cities, or such other amount as the Parties may agree in the Licensing Support Contract.
- At Reconciliation:
 - For Cities with a **RT** > \$20,000, **AR**₂₀₁₄ will be determined by allocating 65% of Licensing Revenues received (if any) over the Base Amount to determine **AR**₂₀₁₄
 - If Actual Licensing Revenue in 2014 is greater than the Revenue Goal (**AR**₂₀₁₄ ≥ **RG**), then
 - no Licensing Revenue Credit is payable to the City (**LRC** = \$0), and
 - The County shall charge the City for an amount which is *the lesser of*: (a) the cost of County's licensing support services in 2014 to the City (as defined in the Licensing Support Contract for 2014), or (b) the amount by which **AR**₂₀₁₄ > **RG**.
 - If **AR**₂₀₁₄ < **RG**, then the difference (**RG** - **AR**₂₀₁₄) is **LRC**. The **LRC** amount is added to reduce the City's costs when calculating the Reconciliation Adjustment Amount, *provided that*, for Cities whose **RT** > \$20,000, 35% of Licensing Revenues over the Base Amount shall be allocated to *increase* ("**LRC**") a when the value of **ANFC**₀ is being calculated at Reconciliation, and *provided further* that in all cases **LRC** cannot exceed the 2013 Licensing Revenue Target for the City.

For **Service Year 2015**, the process and calculation shall be the same as for 2014, e.g.: if the City and County have executed **Exhibit F**, and the City is therefore providing additional in-kind services in order to generate Licensing Revenue Support in 2015, then:

- The Estimated Payment for 2015 will include Estimated Licensing Revenues calculated at the amount of Actual Revenue ("**AR**") for 2013 (excluding **LRC** paid for Service Year 2013) or **RG**, whichever is greater. **RG** will be the amount in **Table 1** for Licensing Revenue Support Cities, or such other amount as the Parties may agree in the Licensing Support Contract.
- At Reconciliation:
 - For Cities with a **RT** > \$20,000, **AR**₂₀₁₅ will be determined by allocating 65% of Licensing Revenues received (if any) over the Base Amount to determine **AR**₂₀₁₅
 - If Actual 2015 Licensing Revenue is greater than the Revenue Goal (**AR**₂₀₁₅ ≥

RG), then

- no Licensing Revenue Credit is payable to the City (**LRC** = \$0), and
- The County shall charge the City for an amount which *is the lesser of*:
 - (a) the cost of County's licensing support services in 2015 to the City (as defined in the Licensing Support Contract for 2015), or (b) the amount by which **AR₂₀₁₅** > **RG**.
- If **AR₂₀₁₅** < **RG**, then the difference (**RG-AR₂₀₁₅**) is **LRC**. The **LRC** amount is added to reduce the City's costs when calculating the Reconciliation Adjustment Amount; *provided that*, for Cities whose **RT** > \$20,000, 35% of Licensing Revenues over the Base Amount shall be allocated to *increase* ("LRC") when the value of **ANFC₀** is being calculated at Reconciliation, and *and provided further* that in all cases **LRC** cannot exceed the 2013 Licensing Revenue Target for the City.

Exhibit C-6:**Summary of Calculation Periods for Use and Population Components**

This Exhibit restates in summary table form the Calculation Periods used for calculating the usage and population components in the formulas to derive Estimated Payments. *See Exhibit C* for complete formulas and definitions of the formula components.

ER is estimated Licensing Revenue attributable to the City

CFS is total annual number of Calls for Service originating in the City

A is the number of animals in the shelter attributable to the City

I is the number of active paid regular pet licenses issued to City residents

ENR is the New Regional Revenue estimated to be received during the Service Year

Pop is Population of the City expressed as a percentage of all Contracting Parties; **D-Pop** is Population of the City expressed as a percentage of the population of all jurisdictions within a Control District

Calculation Periods -- Service Year 2013

Component	Preliminary Estimated 2013 Payment (published August 2012)	Estimated 2013 Payment (final) (published December 15 2012)	Reconciliation Payment Amount (determined June 2014)
ER (Estimated Revenue)	Actual 2011	Same	Actual 2013
CFS (Calls for Service)	Actual 2011	Same	N/A
A (Animal intakes)	Actual 2011	Same	N/A
I (Issued Pet Licenses)	Actual 2011	Same	N/A
ENR (Estimated New Regional Revenue)	Estimated 2013 (\$0)	Estimated 2013 (\$0)	Actual 2013
Pop, D-Pop (Population)	July 2012 OFM report, adjusted for annexations ≥ 2,500 occurring (and Latecomer Cities joining) after April 2012 and before the	Same, adjusted for all annexations ≥ 2,500 occurring (and Latecomer Cities joining) after April 2012 and before the end of 2013	Same, adjusted for all annexations ≥ 2,500 occurring (and Latecomer Cities joining) after April and before the end of 2013

	end of 2013.		
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Calculation Periods: Service Year 2014

Component	Preliminary Estimated 2014 Payment (published September 2013)	Estimated 2014 Payment (published December 2013)	Reconciliation Payment Amount (determined June 2015)
ER	Actual 2012	Same	Actual 2014
CFS	N/A	N/A	N/A
A	N/A	N/A	N/A
I	N/A	N/A	N/A
ENR	Estimated 2014	Estimated 2014	Actual 2014
Pop, D-Pop	July 2012 OFM report, adjusted for all annexations $\geq 2,500$ known to take effect (and Latecomer Cities joining) after April 2012 and before the end of 2014.	Same, adjusted for all annexations $\geq 2,500$ known to take effect (and Latecomer Cities joining) after April 2012 and before the end of 2014	Same, adjusted for all annexations $\geq 2,500$ (and Latecomer Cities joining) occurring after April 2012 and before the end of 2014

Calculation Periods: Service Year 2015

Component	Preliminary Estimated 2015 Payment (published September 2014)	Estimated 2015 Payment (published December 2014)	Reconciliation Payment Amount (determined June 2016)
ER	Actual 2013	Same	Actual 2015
CFS	N/A	N/A	N/A
A	N/A	N/A	N/A
I	N/A	N/A	N/A
ENR	Estimated 2015	Estimated 2015	Actual 2015
Pop, D-Pop	July 2012 OFM report, adjusted for all annexations $\geq 2,500$ known take effect (and Latecomer Cities joining) after April 2012 and before the end of 2015.	Same, adjusted for all annexations $\geq 2,500$ known to take effect (and Latecomer Cities joining) after April 2012 and before the end of 2015	Same , adjusted for all annexations $\geq 2,500$ occurring (and Latecomer Cities joining) after April 2012 and before the end of 2015

If the Agreement is extended past 2015 for an additional 2 years, the calculation periods for 2016 shall be developed in a manner comparable to Service Year 2013, and for 2017 shall be developed in a manner comparable to year 2014.

Exhibit C-7
Payment and Calculation Schedule

Service Year 2013

Item	Date
Preliminary estimate of 2013 Estimated Payments provided to City by County	August 1, 2012
Final Estimated 2013 Payment calculation provided to City by County	December 15, 2012
First 2013 Estimated Payment due	June 15, 2013
Second 2013 Estimated Payment due	December 15, 2013
2013 Reconciliation Adjustment Amount calculated	On or before June 30, 2014
2013 Reconciliation Adjustment Amount payable	On or before August 15, 2014

Service Year 2014

Item	Date
Preliminary estimate of 2014 Estimated Payments provided to City by County	September 1, 2013
Final Estimated 2014 Payment calculation provided to City by County	December 15, 2013
First 2014 Estimated Payment due	June 15, 2014
Second 2014 Estimated Payment due	December 15, 2014
2014 Reconciliation Adjustment Amount calculated	On or before June 30, 2015
2014 Reconciliation Adjustment Amount Payable	August 15, 2015

Service Year 2015

Item	Date
Preliminary estimate of 2015 Estimated Payments provided to City by County	September 1, 2014
Final Estimated 2015 Payment calculation provided to City by County	December 15, 2014
First 2015 Estimated Payment due	June 15, 2015
Second 2015 Estimated Payment due	December 15, 2015
2015 Reconciliation Adjustment Amount calculated	On or before June 30, 2016
2015 Reconciliation Adjustment Amount Payable	August 15, 2016

If the Agreement is extended past December 31, 2015, the schedule is developed in the same manner as described above for years 2016 and 2017.

Additional timelines are in place to commence and complete negotiations for an extension of the Agreement:

County convenes interested Contracting Cities to discuss (1) a possible extension on the same terms and (2) a possible extension on different terms.	September 2014
Notice of Intent by either Party not to renew agreement on the same terms (Cities also indicate whether they wish to negotiate for an extension on different terms or to let Agreement expire at end of 2015)	March 1, 2015
Deadline for signing an extension (whether on the same or amended terms)	July 1, 2015

See Section 4 of Agreement for additional details on Extension of the Agreement Term for an additional two years.

Dates for remittal to County of pet license sales revenues processed by Contracting Cities (per section 3.c)	Quarterly, each March 31, June 30, September 30, December 31
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Except as otherwise provided for Licensing Revenue Support Cities with a Licensing Revenue Target greater than \$20,000/year, requests for **Licensing Revenue Support** in Service Years 2014 or 2015 may be made at any time between June 30 and October 31 of the prior Service Year. (See **Exhibit C-5** for additional detail).

Exhibit D Reconciliation

The purpose of the reconciliation calculation is to adjust payments made each Service Year by Contracting Parties to reflect actual licensing and non-licensing revenue, various credits, and New Regional Revenue, as compared to the estimates of such revenues and credits incorporated in the Estimated Payment calculations, and to adjust for population changes resulting from annexations of areas with a population of over 2,500 (if any) and the addition of Latecomer Cities. To accomplish this, an **"Adjusted Net Final Cost" ("ANFC")** calculation is made each June for each Contracting Party as described below, and then adjusted for various factors as described in this **Exhibit D**.

As noted in **Section 7** of the Agreement, the Parties intend that receipt of Animal Services should not be a profit-making enterprise. When a City receives revenues in excess of its costs under this Agreement (including costs of PAWS shelter service, if applicable), such excess will be reinvested to reduce costs incurred by other Contracting Parties. The cost allocation formulas of this Agreement are intended to achieve this outcome.

Terms not otherwise defined here have the meanings set forth in **Exhibit C** or the body of the Agreement.

Calculation of ANFC and Reconciliation Adjustment Amount

The following formula will be used to calculate the Reconciliation Adjustment Amount, which shall be payable by August 15. The factors in the formula are defined below. As described in paragraphs A and B, the subscript "0" denotes the initial calculation; subscript "1" denotes the final calculation.

$$ANFC_0 = (AR + T + V + X + LRC) - (B \times LF)$$

- A. If $ANFC_0 \geq 0$, i.e., revenues and credits are greater than costs (adding the cost factor "W" in the formula for Contracting Cities purchasing shelter services from PAWS or purchasing Enhanced Control Services), then:

$ANFC_1 = 0$, i.e., it is *reset to zero* and the difference between $ANFC_0$ and $ANFC_1$ is set aside by the County (or, if the revenues are not in the possession of the County, then the gap amount is payable by the City to the County by August 15) and **all such excess amounts from all Contracting Parties where $ANFC_0 \geq 0$ are allocated pro-rata to parties for which $ANFC_1 < 0$, per paragraph B below.** Contracting Parties for which $ANFC_0 \geq 0$ do not receive a reconciliation payment.

- B. If $ANFC_0 < 0$, i.e., costs are greater than revenues (*without* considering “W” for those Contracting Cities purchasing shelter services from PAWS or purchasing Enhanced Control Services), then the negative dollar amount is not “reset” and $ANFC_1$ is the same as $ANFC_0$. Contracting Parties in this situation will receive a ***pro-rata* allocation from the sum of excess revenues from those Parties for which $ANFC_0 \geq 0$** per paragraph A. In this way, excess revenues are reallocated across Contracting Parties with net final costs.
- C. If, after crediting the City with its *pro rata* share of any excess revenues per paragraph B, $ANFC_1 < \text{Total Estimated Payments made in the Service Year}$, then the difference shall be paid by the County to the City no later than August 15; if $ANFC_1 > \text{Total Estimated Payments made in the Service Year}$, then the difference shall be paid by the City to the County no later than August 15.

Where:

“AR” is **Actual Licensing Revenue** attributable to the City, based on actual Licensing Revenues received from residents of the City in the Service Year, adjusted for Cities with a Licensing Revenue Target $> \$20,000$ as described in **Exhibit C-5**. (License Revenue that cannot be attributed to a specific Party (e.g., License Revenue associated with incomplete address information), will be allocated amongst the Parties based on their respective percentages of total AR).

“T” is the Transition Funding Credit, if any, for the Service Year.

“V” is the Shelter Credit, if any, for the Service Year.

“W” is the actual amount paid by a City receiving shelter services to PAWS for such services during the Service Year, if any, plus the actual amount paid by a City to the County for the purchase of Enhanced Control Services during the Service Year, if any.

“X” is the amount of Residual New Regional Revenue, if any, allocable to the City from the 50% of New Regional Revenues which is first applied to offset County costs for funding Shelter Credits, Transition Funding Credits and any Program costs not allocated in the cost model. The residual is shared amongst the Contracting Parties to reduce *pro-rata* up to 20% of each Contracting Party’s Estimated Total Animal Services Cost Allocation (See column titled “Estimated Total Animal Services Cost Allocation” in the spreadsheet at **Exhibit C-1**).

“LRC” is the amount of any **Licensing Revenue Credit or Charge** to be applied based on receipt of licensing support services. For a Licensing Revenue Support City designated in **Exhibit C-5**, the amount shall be determined per **Table 2 of Exhibit C-5** and the associated

Licensing Support Contract, if any. Where a Licensing Revenue Support City is due a Licensing Revenue Credit, the amount applied for this factor is a positive dollar amount (e.g., increases City's revenues in the amount of the credit); if a Licensing Revenue Support City is assessed a Licensing Revenue Charge, the amount applied for this factor is a negative amount (e.g., increases City's costs). For any Contracting City receiving licensing support services per a Licensing Support Contract/ **Exhibit F** other than a Licensing Revenue Support City, **LRC** will be a negative amount (increasing the City's costs) equal to the County's cost of the licensing support set forth in the Attachment A to the Licensing Support Contract.

"B" is the **"Budgeted Total Net Allocable Costs"** as *estimated* for the Service Year for the provision of Animal Services to be allocated between all the Contracting Parties for the purposes of determining the Estimated Payment, calculated as described in **Exhibit C**.

"LF" is the **"Program Load Factor"** attributable to City for the Service Year, calculated as described in **Exhibit C**. **LF** will be recalculated if necessary to account for annexations of areas with a population of 2,500 or more people, or for Latecomer Cities if such events were not accounted for in the Final Estimated Payment Calculation for the Service Year being reconciled.

Additional Allocation of New Regional Revenues after calculation of all amounts

above: If there is any residual New Regional Revenue remaining after allocating the full possible **"X"** amount to each Party (to fully eliminate the population based portion of costs), the remainder shall be allocated on a *pro rata* basis to all Contracting Parties for which $ANFC_1 < 0$. If there is any residual thereafter, it will be applied to improve Animal Services.

Exhibit E

Enhanced Control Services Contract (Optional)

Between City of _____ ("City") and King County ("County")

The County will to offer Enhanced Control Services to the City during Service Years 2013, 2014 and 2105 of the **Animal Services Interlocal Agreement for 2013 Through 2015** between the City and the County dated and effective as of July 1, 2012 (the "Agreement") subject to the terms and conditions as described herein. **The provisions of this Contract are optional to both Parties and shall not be effective unless executed by both Parties.**

A. The City may request services under two different options, summarized here and described in further detail below:

Option 1: for a period of *not less than one year*, the City may request service from an Animal Control Officer dedicated to the City ("Dedicated Officer"). Such service must be confirmed in writing through both Parties entering into this Enhanced Control Services Contract no later than August 15 of the year prior to the Service Year in which the service is requested.

Option 2: for a period of *less than one year*, the City may request a specified number of over-time service hours on specified days and time from the 6 Animal Control Officers staffing the three Control Districts. Unlike Option 1, the individual officers providing the service will be determined by the County and may vary from time to time; the term "Dedicated Officer" used in context of Option 2 is thus different than its meaning with respect to Option 1. Option 2 service must be requested no later than 60 days prior to the commencement of the period in which the service is requested, unless waived by the County.

The City shall initiate a request for enhanced service by completing and submitting **Attachment A** to the County. If the County determines it is able to provide the requested service, it will so confirm by completing and countersigning **Attachment A** and signing this Contract and returning both to the City for final execution.

- B. The County will provide enhanced Control Services to the City in the form of an Animal Control Officer dedicated to the City ("Dedicated Officer") as described in **Attachment A** and this Contract.
1. Costs identified in **Attachment A** for **Option 1** are for one (1) year of service in 2010, in 2010 dollars, and include the cost of the employee (salary, benefits), equipment and animal control vehicle for the employee's use). Costs are subject

to adjustment each year, limited by the Annual Budget Inflator Cap (as defined in the Agreement).

2. Costs for **Option 2** will be determined by the County each year based on its actual hourly overtime pay for the individual Animal Control Officers providing the service, plus mileage at the federal reimbursement rate. The number of miles for which mileage is charged shall be miles which would not have been traveled but for the provision of the enhanced service.
 3. Costs paid for enhanced services will be included in the Reconciliation calculation for each Service Year, as described in **Exhibit D** of the Agreement.
- C. Services of the Dedicated Officer shall be in addition to the Animal Services otherwise provided to the City by the County through the Agreement. Accordingly, the calls responded to by the Dedicated Officer shall **not** be incorporated in the calculation of the City's Calls for Service (as further described in **Exhibit C and D** to the Agreement).
- D. The scheduling of work by the Dedicated Officer will be determined by mutual agreement of the contract administrators identified in the Agreement, and (in the case of a purchase of service under **Option 1**) the mutual agreement of officials of other Contracting Cities named as contract administrators that have committed to sharing in the expense of the Dedicated Officer. In the event the parties are unable to agree on scheduling, the County shall have the right to finally determine the schedule of the Dedicated Officer(s).
- E. Control Services to be provided to the City pursuant to this Enhanced Services Contract include Control Services of the type and nature as described under the Agreement with respect to Animal Control Officers serving in Control Districts, and include but are not limited to, issuing written warnings, citations and other enforcement notices and orders on behalf of the City, or such other services as the Parties may reasonably agree.
- F. The County will provide the City with a general quarterly calendar of scheduled service in the City, and a monthly report of the types of services offered and performed.
- G. **For Services purchased under Option 1:** An FTE will be scheduled to serve 40 hour weeks, however, with loss of service hours potentially attributable to vacation, sick leave, training and furlough days, not less than 1600 hours per year will be provided. Similarly, a half-time FTE will provide not less than 800 hours per year. The County shall submit to the City an invoice and billing voucher at the end of each calendar

quarter, excepting that during the 4th quarter of each year during the term of this Contract, an invoice shall be submitted to the City no later than December 15th. All invoiced amounts shall be payable by the City within 30 days of the invoice date.

- H. **For Services purchased under Option 2:** The County shall submit to the City an invoice and billing voucher at the end of each calendar quarter. All invoiced amounts shall be payable by the City within 30 days of the invoice date.
- I. The City or County may terminate this Enhanced Services Contract with or without cause upon providing not less than 3 months written notice to the other Party; provided that, if the City has purchased services under **Option 1** and is sharing the Enhanced Control Services with other Contracting Cities, this Contract may only be terminated by the City if: (1) all such other Contracting Cities similarly agree to terminate service on such date, or (2) if prior to such termination date another Contracting City or Cities enters into a contract with the County to purchase the Enhanced Control Service that the City wishes to terminate; *provided further:* except as provided in Paragraph A.1, a Contract may not be terminated if the term of service resulting is less than one year.
- J. All terms of the Agreement, except as expressly stated otherwise in this Exhibit, shall apply to this Enhanced Control Services Contract. Capitalized Terms not defined herein have those meanings as set forth in the Agreement.

IN WITNESS WHEREOF, the Parties hereto have caused this Enhanced Services Contract to be executed effective as of this ____ day of _____, 201__.

King County

City of _____

Dow Constantine
King County Executive

By:
Mayor /City Manager

Date

Date

Approved as to Form:

Approved as to Form:

Deputy Prosecuting Attorney

City Attorney

Exhibit E: Attachment A

ENHANCED CONTROL SERVICES OPTION REQUEST

(to be completed by City requesting Enhanced Control Services; final service terms subject to adjustment by County and agreement by City and will be confirmed in writing executed and appended to Enhanced Control Service Contract/Exhibit E)

City _____

Requested Enhanced Control Services Start Date: _____

Requested Enhanced Control Services End Date: _____ *

*term of service must be at least one year, except if purchasing services under Option 2.

Please indicate whether City is requesting services under Option 1 or Option 2:

_____ Option 1:

% of Full Time Equivalent Officer (FTE) requested: _____ (minimum request: 20%; requests must be in multiples of either 20% or 25%)

_____ Option 2:

Overtime Hours purchase from existing ACO staff: _____ hours per (week /month)

General Description of desired services (days, hours, nature of service):

_____.

For Option 1:

Contracting Cities with whom the City proposes to share the Enhanced Control Services, and proposed percentages of an FTE those Cities are expected to request:

_____.

On behalf of the City, the undersigned understands and agrees that the County will attempt to honor requests but reserves the right to propose aggregated, adjusted and variously scheduled service, *including but not limited to adjusting allocations of service from*

increments of 20% to 25%, in order to develop workable employment and scheduling for the officers within then-existing workrules, and that the City will be allowed to rescind or amend its request for Enhanced Control Services as a result of such proposed changes.

Requests that cannot be combined to equal 50% of an FTE, 100% of an FTE, or some multiple thereof may not be honored. Service must be requested for a minimum term of one-year, except as permitted by Paragraph A.1. Service may not extend beyond the term of the Agreement.

City requests that alone or in combination with requests of other Contracting Cities equal at least 50% of an FTE will be charged at the rate in Column 1 below.

City requests that alone or in combination with other requests for Enhanced Control Services equal 100% of an FTE will be charged at the rate in Column 2 below.

Cities may propose a different allocation approach for County consideration.

An FTE will be scheduled to serve 40 hour weeks, however, with loss of hours potentially attributable to vacation, sick leave, training and furlough days, a minimum of 1600 hours per year will be provided. A half-time FTE will provide a minimum of 800 hours per year. *For example*, a commitment to purchase 20% of an FTE for enhanced service will result in provision of not less than 320 hours per year.

Hours of service lost for vacation, sick leave, training and furlough days will be allocated on *pro rata* basis between all Contracting Cities sharing the services of that FTE.

Column 1: Aggregate of 50% of an FTE Requested by all Participating Cities	Column 2: Aggregate of 1 FTE Requested by all Participating Cities
Cost to City: (% of Half-Time FTE requested) x \$75,000/year in 2010*	Cost to City: (% of FTE requested) x \$115,000/year in 2010 *
<i>Example:</i> if City A requests 25% of an FTE ** and City B requests 25% of an FTE**, then each city would pay \$18,750 for Enhanced Control Services from July 1, 2010 through December 31, 2011 (6 months).	<i>Example:</i> If City A requests 25% of an FTE and City B requests 25% of an FTE and City C requests 50% of an FTE, Cities A and B would pay \$14,375 and City C would pay \$28,750 for Enhanced Control Services from July 1, 2010 through December 31, 2011 (6 months)
** (50% of a Half-Time FTE)	

* This example is based on 2010 costs. Actual costs will be based on actual Service Year FTE costs.

For Option 2:

On behalf of the City, the undersigned understands and agrees that the County will confirm what services, if any, it can provide, and at what costs, by completing this Attachment A, and the City must signify whether it accepts the County's offer by signing the Enhanced Services Contract.

Request Signed as of this ____ day of _____, 201__.
City of _____
By: _____
Its _____

To be completed by King County:

____ **Option 1:** The County hereby confirms its ability and willingness to provide Enhanced Control services as requested by the City in this **Attachment A**, *with adjustments as noted below (if any):*

The FTE Cost for the Service Year in which the City has requested service is:
\$_____.

____ **Option 2:** the County confirms its ability to provide control service overtime hours as follows (*insert description—days/hours*):

Such overtime hours shall be provided at a cost of \$_____, (may be a range) per service hour, with the actual cost depending on the individual(s) assigned to work the hours, plus mileage at the federal reimbursement rate.

King County

By: _____
Its _____
Date: _____

Exhibit F**Licensing Support Contract (Optional)**

Between City of _____ ("City") and King County ("County")

The County is prepared to offer licensing revenue support to the City subject to the terms and conditions described in this Licensing Support Contract ("Contract"). The provisions of this Exhibit are optional and shall not be effective unless this Exhibit is executed by both the City and the County and both parties have entered into the underlying Animal Services Interlocal Agreement for 2013 Through 2015 (the "Agreement").

- A. Service Requests, Submittal:** Requests to enter into a licensing support contract should be made by submitting the Licensing Revenue Support Services Request (**Attachment A** to this **Exhibit F**) to the County between June 30 and October 31 of the calendar year prior to year in which such services are requested ("Service Year"). A separate Request shall be submitted for each Service Year, excepting that a Licensing Support City with a revenue target in excess of \$20,000/year may submit a request by September 1, 2012 in order to receive service in all three Service Years (2013, 2014 and 2015).
- B. County to Determine Service Availability:** The County will determine whether it has capacity to provide the requested service based on whether it has staff available, and consistent with the priorities stated in **Section 7.c** and **Exhibit C-5** of the Agreement.
- C. Services Provided by County, Cost:** The County will determine the licensing revenue support activities it will undertake to achieve the Licensing Revenue Target. Activities may include, but are not limited to canvassing, mailings, calls to non-renewals. In completing **Attachment A** to confirm its ability to provide licensing support services to the City, the County shall identify the cost for such service for each applicable Service Year. If the City accepts the County's proposed costs, it shall so signify by countersigning **Attachment A**.
- D. Services Provided by City:** In exchange for receiving licensing revenue support from the County, the City will provide the following services:
1. Include inserts regarding animal licensing in bills or other mailings as may be allowed by law, at the City's cost. The County will provide the design for the insert and coordinate with the City to deliver the design on an agreed upon schedule.
 2. Dedicate a minimum level of volunteer/staff hours per month (averaged over the year), based on the City's Licensing Revenue Target for the Year (as

specified/selected in Attachment A) to canvassing and/or mailings and outbound calls to non-renewals. City volunteer/staff hour requirements are scaled based on the size of the Licensing Revenue Target per **Table A** below:

Table A: Volunteer/Staff Hours to be Provided by City

If the Licensing Revenue Target for the Service Year is between:	The City shall provide volunteer/staff hours support (averaged over the year)
\$0 and \$5,000	9 hours per month
\$5,001-\$10,000	18 hours per month
\$10,000-\$20,000	27 hours per month
\$20,001 and \$40,000	36 hours per month
>\$40,000	45 hours per month

3. Provide representation at a minimum of two public events annually to inform City residents about the Animal Services Program and promote pet licensing.
4. Inform City residents about the Animal Services Program and promote pet licensing utilizing print and electronic media including the city's website, social media, community brochures and newsletter ads/articles, signage/posters and pet licensing applications in public areas of city buildings and parks.
5. Appoint a representative to serve on the joint City-County marketing subcommittee; this representative shall attend the quarterly meetings of the subcommittee and help shape and apply within the City the joint advertising strategies developed by consensus of the subcommittee.

E. Selection of Licensing Revenue Target and Payment for Licensing Revenue Support:

1. For **Licensing Revenue Support Cities** (those identified in **Exhibit C-5** of the Agreement):
In 2014 and 2015, Licensing Revenue Support Cities may receive licensing revenue support intended to generate total annual Licensing Revenue at or above the Revenue Goal in Table 1 of **Exhibit C-5**. The City will receive a **Licensing Revenue Credit or Charge** at Reconciliation in accordance with the calculations in **Table 2** of **Exhibit C-5**. A Licensing Revenue Support City may request service under subparagraph 2 below.
2. For **all other Contacting Cities**: The City will identify a proposed Licensing Revenue Target in **Attachment A**. The County may propose an alternate Revenue Target. If the Parties agree upon a Licensing Revenue Target, the County shall indentify its annual cost to provide service designed to achieve the target. At Reconciliation, the City shall be charged for licensing support service at the cost specified and agreed in **Attachment A** (the "**Licensing Revenue Charge**"),

regardless of the amount of Licensing Revenue received by the City during the Service Year (see Exhibit D of the Agreement for additional detail).

F. Other Terms and Conditions:

1. Before January 31 of the Service Year, each Party will provide the other with a general calendar of in-kind services to be provided over the course of the Service Year.
2. Each Party will provide the other with a monthly written report of the services performed during the Service Year.
3. Either Party may terminate this Contract with or without cause by providing not less than 2 months' advance written notice to the other Party; provided that all County costs incurred to the point of termination remain chargeable to the City as otherwise provided.
4. All terms of the Agreement, except as expressly stated otherwise herein, shall apply to this Contract, and Capitalized Terms not defined herein have the meanings as set forth in the Agreement.

IN WITNESS WHEREOF, the Parties hereto have caused this Contract for Licensing Support Services to be executed effective as of this ____ day of ____, 201__.

King County

City of _____

Dow Constantine
King County Executive

By:
Mayor /City Manager

Date

Date

Approved as to Form:

Approved as to Form:

Deputy Prosecuting Attorney

City Attorney

Exhibit F: Attachment A
LICENSING REVENUE SUPPORT SERVICES REQUEST

(to be completed by City requesting licensing support services; one request per Service Year except for a Licensing Support City with a Licensing Revenue Target over \$20,000/year; final terms subject to adjustment by County and agreement by City confirmed in writing, executed and appended to the Contract for Licensing Support Services—Exhibit F of the *Animal Services Interlocal Agreement for 2013 Through 2015* ("the Agreement") dated effective as of July 1, 2012.)

1. City _____ Date of Request: _____
2. Licensing Revenue Target (the amount by which the City seeks to increase its revenues in the Service Year): \$ _____

Note:

- For Licensing Revenue Support Cities, the Licensing Revenue Support Target is defined in **Table 1 of Exhibit C-5** of the Agreement, unless the Parties otherwise agree.
 - The amount of volunteer/staff hours and other in-kind services required of the City in exchange for receipt of licensing support services is based on the size of the Licensing Revenue Target (see Licensing Support Contract/**Exhibit F of Agreement**).
3. Contact person who will coordinate City responsibilities associated with delivery of licensing support services:
 Name:
 Title:
 Phone:
 Fax:

I understand that:

- A. provision of licensing revenue support services is subject to the County determining it has staff available to provide the services;
- B. For Contracting Cities other than Licensing Revenue Support Cities, the County may propose an adjustment in the requested Licensing Revenue Target;
- C. the County will, by September 1 of the current calendar year, provide the City with a firm cost to provide the amount of licensing support services the County proposes to provide by completing this **Attachment A**;
- D. the County cannot verify and does not guarantee a precise level of Licensing Revenues to be received by the City as a result of these services;
- E. Receipt of service is subject to County and City agreeing on the Licensing Revenue Target and County charge for these services (incorporated in

calculation of the **Licensing Revenue Credit/Charge** per the Agreement), and executing the Licensing Support Contract (**Exhibit F** of the Agreement).

Request signed as of this ____ day of _____, 201__.
City of _____

By: _____
Its: _____

To be completed by King County:

The County offers to provide the City licensing revenue support services in Service Year 201__ intended to generate \$_____ (the "Licensing Revenue Target") in additional Licensing Revenue for a total Service Year cost of \$_____, some or all of which cost may be charged to the City in calculating the Licensing Revenue Charge, as further described in the Licensing Support Contract and **Exhibits C-5** (for Licensing Support Cities) and **D** of the Agreement.

King County

By: _____
Its: _____
Date: _____

To be completed by the City:

The County offer is accepted as of this ____ day of _____, 201__.
City of _____

By: _____
Its: _____



City Council Business Agenda Item
City of Kenmore, WA

Subject/Topic: Sidewalk Grant Agreement Authorization Proposed Council Action/Motion: Authorize the City Manager to Enter into Agreements and execute appropriate documentation for the following projects: • NE 181st Street Sidewalk: CDBG - King County (15-C1369); • NE 181st Street Sidewalk: TIB (15-C1370); • 62nd Avenue NE Sidewalk: HSIP - WSDOT (15-C1371). • NE 202nd Street Sidewalk: SRTS - WSDOT (15-C1372)	For Council Meeting Agenda of: 2/17/2015 Department: <u>Public Works</u> Prepared by: <u>Kris Overleese, PE</u> To Be Presented By: <u>N/A</u> Approved by Department Head: <u>2/10/15 KMO</u> Approved by City Attorney: <u>NA</u> Approved by Finance Director: <u>2/10/15</u> Approved by City Manager: <u>[Signature]</u> Exhibits/Attachments: Attachment A –Sidewalk Grant Award Matrix	
Expenditure Required: \$1,256,000	Amount Budgeted \$95,000 in Sidewalk Program \$201,000 in school zone/crosswalk funding	Appropriation Required \$960,000
<u>INFORMATION/BACKGROUND:</u> The City of Kenmore aggressively pursues sidewalk grant funds. In 2013, no grants were awarded, but 2014 was a successful year. In 2014, the City applied for six sidewalk grants: three grants were awarded, one is pending state legislative action, and a partial 2013 grant was awarded after federal funds were redistributed by the Puget Sound Regional Council. New grants awarded from the 2014 selection process include: • South side of NE 181st (68th to 73rd Avenues): Community Development Block Grant funds - CDBG (King County) • North side of NE 181st (68th to 73rd Avenues): Transportation Improvement Board funds (TIB) • 62nd Avenue NE (NE 181st to Ne 187th Streets): Highway Safety Improvement Program - HSIP (WSDOT) Pending Award from Washington Legislature: • NE 202nd Street (68th Ave to Kenmore Jr. High): Safe Routes to Schools Program - SRTS (WSDOT) Partial Grant Awarded: • South side of NE 181st (68th to 73rd Avenues) Design: Transportation Alternatives Program - TAP (WSDOT) Attachment A summarizes the grants identified above including the total project costs, grant award, City match requirements and whether the funds have been awarded. <u>Staff Recommendation:</u> On July 21, 2014 Council authorized the City Manager to execute appropriate agreements for the grant funding with the WA State Department of Transportation (WSDOT) for the TAP grant. The project is included for this big picture review of sidewalk grants. At the February 9, 2015 Council meeting, Council approved moving		

forward with undergrounding utilities within the project limits of the NE 181st Sidewalk Projects.

This Council Agenda item requests that the Council authorize the City Manager to execute appropriate agreements and documentation with the above referenced funding partners which obligates the City to the outlined match requirements. Documentation may also include project updates and tracking information with the Puget Sound Regional Council.

FISCAL CONSIDERATION:

Attachment A summarizes the recent grant awards, match required and total project costs. The grant award total for the five referenced projects is \$2,165,000 requiring a City match of \$556,000. Staff also recommends a \$300,000 contingency for the projects as there is no design completed on any of them. Staff will return to Council on February 23rd with an Ordinance updating the Capital Improvement Program to be consistent with the Council action February 9, 2015 and this evening's grant acceptance outcome.

COUNCIL GOAL/BUDGET OBJECTIVE BEING ADDRESSED:

Council goal 1: To focus and emphasize multimodal transportation safety in the City of Kenmore with a specific focus on pedestrian, bicycle and other means of travel.

CITY OF KENMORE - 2014 Sidewalk Grant Applications

ATTACHMENT A

Sidewalk Location	Phase	Funding Agency	Funding Source	Grant Type	Status of Grant Award	Funds Obligated	Total Project Cost	Grant \$	City \$	Comments
South side NE 181st ST	Design	PSRC	Federal	TAP	Yes	Yes	\$109,480	\$92,970	\$16,510	(Rounded) approved by council 2/9/15
*South side NE 181st ST	Construction	King County	Federal	CDBG	Yes	No	\$487,826	\$254,960	\$232,866	
North side NE 181st ST	All	TIB	State		Yes	No	\$277,524	\$189,793	\$87,731	
NE 202nd ST	All	WSDOT	To Be Det.	SRTS	Pending	No	\$1,017,570	\$814,056	\$203,514	
62nd Ave NE	All	WSDOT	Federal	HSIP	Yes	No	\$828,000	\$813,200	\$14,800	
NE 155th ST Sidewalk	All	WSDOT	N/A	SRTS	No					
Rhody Park/68th Ave NE Sidewalk	All	WSDOT	N/A	Ped/Bike	No					
							\$2,721,000	\$2,165,000	\$556,000	
								Contingency:	\$300,000	
								NE 181st ST UG Cost:	\$400,000	
									\$1,256,000	

*With Utility Undergrounding

Distance (LF) \$ per LF

700 \$550

Estimated Cost

\$385,000

CDBG - Community Development Block Grant
SRTS - Safe Routes to Schools
HSIP - Highway Safety Improvement Program
Ped/Bike - Pedestrian & Bicycle Safety Program

VI. F. Authorize the City Manager to Execute Contract No. 15...

Per the CIP, expenditures over the next three years for design, permitting and right of way is estimated to be \$4.69M of which the City would pay 20% or \$938,000. These numbers are not refined as the scope of work with Jacobs Engineering has not been completed and no design work has been completed yet. The City programmed \$1,059,000 in City funds over the next three years for the project.

Note that the BRAC grant limits work on the bridge approaches to 15% of the overall project. In addition, BRAC does not pay for aesthetic improvements (art and aesthetic treatments) which will be part of the project. Staff will keep Council informed as the project progresses if this becomes an issue.

COUNCIL GOAL/BUDGET OBJECTIVE BEING ADDRESSED:

Council Goal 1: To focus and emphasize multimodal transportation safety in the City of Kenmore with a specific focus on pedestrian, bicycle and other means of travel.



Attachment A

City of Kenmore Capital Improvement Program

Project Name: West Sammamish River Bridge Replacement

Project No. T- 37

CURRENT DOLLARS

Year	2013-2014*	2015	2016	2017	2018	2019	2020	Total
Expenses								
Project Administration	\$ 20,000	\$ 120,000	\$ 120,000	\$ 120,000	\$ 120,000	\$ 120,000	\$ 50,000	\$ 670,000
Pre-Design	\$ 190,000							\$ 190,000
Design*		\$ 800,000	\$ 1,500,000	\$ 270,000				\$ 2,570,000
ROW/ Acquisition**		\$ 200,000	\$ 510,000	\$ 500,000				\$ 1,210,000
Construction					\$ 6,185,000	\$ 6,185,000		\$ 12,370,000
WSDOT		\$ 50,000	\$ 50,000	\$ 50,000	\$ 125,000	\$ 125,000		\$ 400,000
Contingency		\$ 100,000	\$ 100,000	\$ 200,000	\$ 1,200,000	\$ 1,200,000		\$ 2,800,000
Total	\$ 210,000	\$ 1,270,000	\$ 2,280,000	\$ 1,140,000	\$ 7,630,000	\$ 7,630,000	\$ 50,000	\$ 20,210,000
Revenue								
Impact Fees		\$ 200,000	\$ 200,000	\$ 200,000	\$ 330,000	\$ 330,000	\$ 50,000	\$ 1,310,000
REET		\$ 74,000	\$ 307,000	\$ 78,000				\$ 459,000
City Bridge	\$ 210,000							\$ 210,000
Unfunded		\$ 996,000	\$ 1,773,000	\$ 862,000	\$ 7,300,000	\$ 7,300,000		\$ 18,231,000
Total	\$ 210,000	\$ 1,270,000	\$ 2,280,000	\$ 1,140,000	\$ 7,630,000	\$ 7,630,000	\$ 50,000	\$ 20,210,000

*Does not include inspection/monitoring

SCHEDULE

	2015				2016				2017				2018				2019				2020			
Project Timeline	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Design																								
Permitting																								
Right of Way																								
Construction																								
Closeout																								



City of Kenmore Capital Improvement Program

Project Name: West Sammamish River Bridge Replacement Project No. T- 37

Project Location: 68th Avenue NE (NE 170th to NE 175th Street). Structure replacement is for southbound structure only.

Project Manager: Kris Overleese

Project Description: Replace the West Sammamish River Bridge (southbound traffic) that crosses the Sammamish River on 68th Avenue NE. The project will also include improvements to the 68th/NE 170th Street and 68th/NE 175th Street intersections. Between the two intersections, pedestrian and bicycle safety will be improved with a wider facility.

Background: The West Sammamish River Bridge was constructed in the 1930s and is at the end of its life. It is considered to be structurally obsolete. To date (over the last biennium), the City has completed a load rating analysis, geotechnical analysis, replace vs. rehabilitation review, and scour analysis on the bridge. The bridge weight limits went into effect in 2014. An enhanced monitoring plan is in place and the City completed an additional underwater inspection in 2014.

Funding Status:

In 2014, the City applied for four grants to begin design to replace the structure. The City was not successful in acquiring funds through the spring Puget Sound Regional Council process to distribute federal funds. The City is waiting to hear about the Bridge Replacement Advisory Committee (BRAC) process for federal funding and the Transportation Improvement Board (TIB) application process. If funds are acquired, design would begin in 2015.

Environmental Review Status:

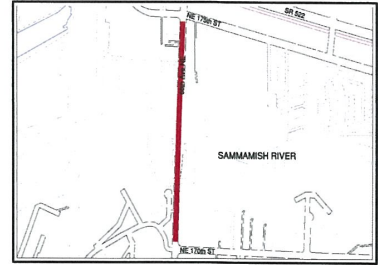
Exempt ☐ Mitigated DNS ☐ SEPA/NEPA ☒

SEPA will be required for the project as well as NEPA if federal funds are secured. The project will also be reviewed by a number of other agencies given its river impact.

Potential Project Issues: Design cannot begin until grant funds are secured.

Operations: This project will result in lower maintenance and inspection costs for structure review and repair. Costs would increase if additional landscaping is added for irrigation and vegetation maintenance.

Attachment A





City Council Business Agenda Item
City of Kenmore, WA

Subject/Topic: Authorize 192nd Culvert Grant Agreement Proposed Council Action/Motion: 1. Authorize the City Manager to execute Agreement No. 15-C1367 with King County Flood Control District in order to accept grant funding.	For Council Meeting Agenda of: 2/17/2015 Department: <u>Engineering</u> Prepared by: <u>Zack Richardson</u> To Be Presented By: <u>N/A</u> Initial & Date Approved by Department Head: <u>KMO 2/4/15</u> Approved by City Attorney: <u>via email</u> Approved by Finance Director: <u>[Signature] 2/4/15</u> Approved by City Manager: <u>[Signature]</u> Exhibits/Attachments: Attachment A – Agreement No. 15-C1367: <i>Agreement for Award of Flood Reduction Grant Funds Between City of Kenmore and King County.</i>	
Expenditure Required \$100,000	Amount Budgeted \$100,000	Appropriation Required \$0
<u>INFORMATION/BACKGROUND:</u> <u>Project Status:</u> The replacement of the culvert for Little Swamp Creek across NE 192nd St, which has a history of being exceeded in large storm events resulting in flooding of the roadway, has been included in the CIP for several years. The City budget previously accounted for design of the project with a high-flow bypass. This option is not feasible given current Washington Department of Fish and Wildlife (WDFW) requirements for fish passage. Staff sought alternative funding sources to pay for the more expensive fish passable culvert design. The City was recently awarded \$330,000 from King County Flood Control Districts' <i>Flood Reduction Grant</i> to supplement the \$100,000 of City money already included in the budget. Consultant design begins this month with the goal of construction occurring in the 2016 'fish window' (Summer/Fall). <u>Project Agreements:</u> The attached agreement is required in order to accept the grant funding. Design will be completed by the City's engineering consultant. The reporting and documentation associated with the grant funding requirements will be managed directly by the City's in-house engineering staff. <u>Staff Recommendation:</u> Staff recommends that Council authorize the City Manager to execute Agreement No. 15-C1367 with King County Flood Control District in order to accept grant funding.		
<u>FISCAL CONSIDERATION:</u> The City will combine the \$100,000 in City Surface Water Funding budgeted for this project with \$330,000 of grant funding to fully fund the \$430,000 project.		
<u>COUNCIL GOAL/BUDGET OBJECTIVE BEING ADDRESSED:</u> Council goal #12: To address watershed issues affecting the City.		

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Agreement No. 15-C1367

AWARD NUMBER 4.14.03

**AGREEMENT FOR AWARD OF
FLOOD REDUCTION GRANT FUNDS
BETWEEN CITY OF KENMORE AND KING COUNTY**

This Agreement is made between King County, a municipal corporation, and the City of Kenmore (referred to herein as "Recipient"), for the purposes set forth herein. This Agreement shall be in effect from the date of execution to December 31, 2016.

SECTION 1. RECITALS

- 1.1 Whereas, the King County Flood Control District ("District") is a quasi-municipal corporation of the State of Washington, authorized to provide funding for flood control and stormwater protection projects and activities; and ;
- 1.2 Whereas King County is the service provider to the District under the terms of an interlocal agreement ("ILA") by and between King County and the District, dated February 17, 2009, as amended, and as service provider implements the District's annual work program and budget; and
- 1.3 Whereas, on November 11, 2013, the Board of Supervisors of the District, the District's governing body, passed Resolution FCD2013-14 which authorizes an allocation of \$2,666,329 from the District's budget for the Flood Reduction Grant Program; and
- 1.4 Whereas, on September 29, 2014 the King County Flood Control District Board of Supervisors passed Resolution FCD 2014-12.1, which established criteria for awarding grants under the allocation of \$2,666,239 from the District's budget, and approved funding for the projects described in Attachment A to that Resolution; and
- 1.5 Whereas, in accordance with the terms of Resolutions FCD2013-14 and FCD 2014-12.1, and in its capacity as service provider to the District, King County has established a grant award program, called the Flood Reduction Grant Program, to fund projects consistent with Section 1.4 above; and
- 1.6 Whereas, the Recipient has previously submitted an application for a project to King County in accordance with the Flood Reduction Grant Program Policies and Procedures, a copy of which has been furnished by King County to the Recipient and which are incorporated herein by this reference ("Grant Policies and Procedures"); and
- 1.6 Whereas the District's Board of Supervisors approved funding of Recipient's application for the project, as described in Attachment A to Resolution FCD2014-12.1 in the amount of \$330,000 ("Award"); and
- 1.7 Whereas King County has received a Scope of Work and a Budget for the Project from

the Recipient and has determined that the Scope of Work, attached hereto and incorporated herein as **Exhibit B** ("Scope of Work"), and the Budget, attached hereto and incorporated herein as **Exhibit C** ("Budget"), are consistent with the Grant Policies and Procedures; and

- 1.8 Whereas, King County and the Recipient desire to enter into this Agreement for the purpose of establishing the terms and conditions under which King County will provide funding from the District in accordance with the Policies and Procedures, and the Recipient will implement the Project.

SECTION 2. AGREEMENT

- 2.1. The Recitals are an integral part of this Agreement and are incorporated herein by this reference.
- 2.2. King County agrees to award the Recipient an award in the total amount of **\$330,000** from District funds (the Award). The Award shall be used by the Recipient solely for the performance of the Project, as described in **Exhibit A** of this Agreement. Exhibit A, attached hereto and incorporated herein by this reference, contains a description of the Project as described in Attachment A to Resolution FCD2014-12.1. King County shall pay the Recipient in accordance with the Grant Policies and Procedures.
- 2.3. The Recipient represents and warrants that it will only use the Award for the Scope of Work of this Agreement and in accordance with the Project Budget. The Recipient shall be required to refund to King County that portion of the Award which is used for work or tasks not included in the Scope of Work. Further, the Recipient agrees to return to King County any portion of the Award that is not expended or remains after completion of the Scope of Work.
- 2.4. Activities carried out for this Project and expenses incurred by the Recipient may predate the execution date of this Agreement provided that 1) they have been identified by Recipient as being within the scopes of nos. 2) and 3) below, and have been approved by the County as being within such scopes; 2) The activities are specified in the Scope of Work of this Agreement; 3) the expenses are incurred in carrying out the Scope of Work and are authorized by this award as identified in the Budget of this Agreement; 4) such activities and expenses otherwise comply with all other terms of this Agreement; and 5) reimbursements shall be paid to the Recipient only after this Agreement has been fully executed.
- 2.5. The Recipient shall invoice King County for incurred expenses using the Request for Payment form and Progress Report, attached hereto and incorporated herein as **Exhibit D**, for those documented and allowable expenses identified in the Budget and according to the rules set forth in the Grant Policies and Procedures. A progress report (with or without a request for payment) shall be made no less frequently than every six months

after the effective date of this Agreement nor more frequently than every three months after the aforementioned date. Advances are allowable only for anticipated expenses to be incurred in the next three months from the date of submission of the Request for Payment for work that is included in the Scope of Work of this Agreement, and identified as such in the Request. Documentation of payments made from advances shall be submitted to King County prior to any further requests for payment. No advances shall exceed 80% of the total Award. The final request for payment shall be submitted with the Final Report described in Section 2.5 of this Agreement and shall be no less than 20% of the Award.

- 2.6. The Recipient shall be required to submit to King County a final report which documents the Recipient's completion of the work in conformance with the terms of this Agreement within thirty (30) days after the completion of the work and submit a Close-out Report, the form of which is attached and incorporated herein as **Exhibit E** to this Agreement. The final report shall, among other things, summarize the project's successes and shall address the watershed benefits accomplished by the work in a format provided by King County for this purpose as set forth in the Grant Policies and Procedures.
- 2.7. The Recipient's expenditures of Award funds shall be separately identified in the Recipient's accounting records. If requested, the Recipient shall comply with other reasonable requests made by King County with respect to the manner in which Project expenditures are tracked and accounted for in the Recipient's accounting books and records. The Recipient shall maintain such records of expenditures as may be necessary to conform to generally accepted accounting principles further described in Section 2.8. below and to meet the requirements of all applicable state and federal laws.
- 2.8. The Recipient shall be required to track project expenses using the Budget Accounting and Reporting System for the State of Washington ("BARS") or Generally Accepted Accounting Principles set forth by the Financial Accounting Standards Board or by the Governmental Accounting Standards Board.
- 2.9. King County or its representative, and the District or its representative shall have the right from time to time, at reasonable intervals, to audit the Recipient's books and records in order to verify compliance with the terms of this Agreement. The Recipient shall cooperate with King County and the District in any such audit.
- 2.10. The Recipient shall retain all accounting records and project files relating to this Agreement in accordance with criteria established by the Washington State Archivist Local Government Common Records Retention Schedule (CORE) as revised.
- 2.11. The Recipient shall ensure that all work performed by its employees, agents, contractors or subcontractors is performed in a manner which protects and safeguards the environment and natural resources and which is in compliance with local, state and federal laws and regulations. The Recipient shall implement an appropriate monitoring system or program to ensure compliance with this provision.

- 2.12. The Recipient agrees to indemnify, defend and hold harmless King County, and the District, their elected or appointed officials, employees and agents, from all claims, alleged liability, damages, losses to or death of person or damage to property arising out of any acts or omissions of the Recipient, its employees, agents, contractors or subcontractors in performing its obligations under the terms of this Agreement.
- 2.13. The Recipient agrees to acknowledge the District as a source of funding for this project on all literature, signage or press releases related to said project.

SECTION 3. GENERAL PROVISIONS

- 3.1. This Agreement shall be binding upon and inure to the benefit of the parties hereto and their respective successors and assigns.
- 3.2. This Agreement constitutes the entire agreement between the parties with respect to the subject matter hereof. No prior or contemporaneous representation, inducement, promise or agreement between or among the parties which relate to the subject matter hereof which are not embodied in this Agreement shall be of any force or effect.
- 3.3. No amendment to this Agreement shall be binding on any of the parties to this Agreement unless such amendment is in writing and is executed by the parties. The parties contemplate that this Agreement may from time to time be modified by written amendment which shall be executed by duly authorized representatives of the parties and attached to this Agreement.
- 3.4. Each party warrants and represents that such party has full and complete authority to enter into this Agreement and each person executing this Agreement on behalf of a party warrants and represents that he/she has been fully authorized to execute this Agreement on behalf of such party and that such party is bound by the signature of such representative.
- 3.5. The Project shall be completed by no later than December 31, 2016. In the event that the Project is not completed by this date, King County has the discretion, but not the obligation, to terminate this Agreement and request and receive any unexpended Award funds that may be held by the Recipient.
- 3.6. This Agreement may be signed in multiple counterparts.
- 3.7. If any provision of this Agreement or of any other agreement, document or writing pursuant to or in connection with this Agreement, shall be wholly or partially invalid or unenforceable under applicable law, said provision will be ineffective to that extent only, without in any way affecting the remaining parts or provision of said agreement, provided that the remaining provisions continue to effect the purposes of this Agreement.

Agreement No. 15-C1367

- 3.8. The amount of the Award has been fully funded by the District. To the extent that funding of the Award requires future appropriations by the King County Council, King County's obligations are contingent upon the appropriation of sufficient funds by the King County Council to complete the Scope of Work. If no such appropriation is made, this Agreement will terminate at the close of the appropriation year for which the last appropriation that provides funds under this Agreement was made.

This document has been approved as to form by the King County Prosecuting Attorney's Office as of October 24, 2014.

KING COUNTY:

RECIPIENT:

By _____

By _____

Name _____

Name Rob Karlinsey

Title _____

Title City Manager

Date _____

Date _____

Agreement No. 15-C1367

EXHIBIT A: Project Description

APPLICANT	PROJECT DESCRIPTION	AMOUNT
City of Kenmore	NE 192nd St Culvert Replacement Little Swamp Creek regularly exceeds the current capacity of the existing culvert and floods over the roadway of NE 192nd St. The City is looking to install a culvert to eliminate the flooding at this location. The culvert must be fish-passable to meet state (WDFW) requirements.	\$330,000

EXHIBIT B: SCOPE OF WORK

TASKS	ACTIVITIES AND DELIVERABLES	TOTAL SHARE OF AWARD FUNDS	DATES When is the task starting and ending?
TASK 1 Culvert design	Osborn Consulting, Inc will prepare the design plans and specifications for a fish passable culvert as soon as funds are secured. Recipient shall deliver: A copy of the final Project Design (Design) approved by the Recipient within one month of the last date of signature of this Agreement. All documents can be made available in downloadable electronic media or in paper form or both.	\$ 79,500	Winter 2014/2015 – Spring 2016
TASK 2 Obtain HPA Permit	Osborn Consulting will coordinate with WDFW and revise plans as needed to obtain an HPA permit for work within the stream several months prior to the beginning of the fish work window.	\$22,100	Spring 2016
TASK 3 Obtain City Permits	Prior to beginning any construction, City staff will coordinate the necessary permits from the City of Kenmore, including any SEPA requirements, using the plans prepared under Task 1. This task can be accomplished concurrently with Task 2.	\$ 7,900	Spring 2016
Permits/ permission (if applicable)	State all required project permits and authorizations (including right-of-way access) as follows: Name of permit, issuer, recipient, purpose and inclusive dates. If no permits or authorizations are required, state that none required.		Spring 2016
	SEPA 'DNS'/Mitigated 'DNS'/EIS , City of Kenmore (as coordinating agency), City of Kenmore, To determine appropriate environmental impacts and require mitigation.		
	HPA , WDFW, City of Kenmore, To obtain permission to work in the waters of the state.		
	Grading Permit , City of Kenmore, City of Kenmore, To ensure City codes are met.		

Agreement No. 15-C1367

TASK 4 Culvert construction	The City will follow public bidding procedures in order to contract with a contractor for the final construction of the culvert; a preliminary cost estimate has been prepared by Osborn Consulting Inc. Recipient shall deliver: • A copy of the fully executed contract (Contract) between the Recipient and the selected contractor prior to any work carried out by the contractor to include, as an integral part or addendum or by reference, the Design to be carried out by the Contractor. • Documentation that the terms and conditions of the Contract have been carried out to the satisfaction of the Recipient(to include, but not to be limited to, copies of continuations sheets, release of funds to contractor and other approving documents generated by the Recipient, final acceptance of Contractor deliverables) • As they occur and as they are approved by the Recipient, copies of any change orders that involve and increase or decrease of funds to the contractor, or transfer within the scope of the Contract, funds greater than 10% of the award. All documents can be made available in downloadable electronic	\$ 220,500	Summer/Fall 2016
Credits	As part of your project deliverables, provide a plan of <u>how, where and when</u> this grant will be acknowledged. The City will include acknowledgment of the grant funding in press releases, website updates, and social media posts pertaining to the project. In addition, the City would be willing to display any provided signs or banners during the construction process.		Summer/Fall 2016
TASK 5 Final report	Submit a final report and the financial closeout documentation no later than 30 days after the end date of the project.		Fall 2016
		\$ 330,000 Total	

Agreement No. 15-C1367

EXHIBIT C: BUDGET

BUDGET ITEM	TOTAL	GRANT AWARD SHARE	FINANCIAL MATCH (not required)			MATCH TOTAL
			SOURCE	SOURCE	SOURCE	
			City of Kenmore			
			AMOUNT			
STAFFING	\$ 146,000	\$ 109,500	\$ 36,500			\$ 36,500
PROJECT SUPPLIES						
COMMERCIAL SERVICES AND CREW TIME	\$ 284,000	\$ 220,500	\$63,500			\$63,500
TRANSPORTATION						
OFFICE EXPENSES/OVERHEA D						
OTHER						
REAL ESTATE- RELATED COSTS						
TOTAL	\$ 430,000	\$ 330,000	\$ 100,000			\$ 100,000

Agreement No. 15-C1367

EXHIBIT D: REQUEST FOR PAYMENT AND PROGRESS REPORT

Water and Land Resources Division
River and Floodplain Management Section



KING COUNTY FLOOD REDUCTION GRANT PROGRAM Payment Request
--

Date _____ Request number _____

Recipient Name _____

Contact Name _____

Phone _____

Address 1 _____

Address 2 _____

City, State, Zip Code _____

Request # _____ Dates (beginning & end date for this claim) _____

Instructions: Complete this spreadsheet and attach your financial / accounting system reports to document all expenses

PROJECT NAME _____ PROJECT CODE _____

Budget Line Item (From Exhibit B Budget)	Budgeted	Current Request	Amount of all Previous Requests	Balance Remaining
				\$ -
				\$ -
				\$ -
				\$ -
				\$ -
				\$ -
				\$ -
				\$ -
				\$ -
				\$ -
				\$ -
TOTALS:	\$ -	\$ -	\$ -	\$ -

Amount from Current Request above requested as an advance

EXPLANATION:

Agreement No. 15-C1367



Water and Land Resources Division
River and Floodplain Management Section



FLOOD REDUCTION GRANT PROGRESS REPORT

Date	01/00/00
PROJECT	0
PROJECT NUMBER	0
Recipient Name	0
Contact Name	0
Phone	0
Address 1	0
Address 2	0
City, State, Zip Code	0
Request #	0
Dates (beginning & end date for this claim)	0

SCOPE OF WORK ITEM	DELIVERABLES: Progress / Status/percentage completed (note approximate or actual dates)
1)	
2)	

Agreement No. 15-C1367

3)	
4)	
5)	

Add more pages if necessary

Please mail or e-mail all documents to:

Maureen Dahlstrom
Water and Land Resources Division
Department of Natural Resources and Parks
KSC-NR-0600
201 South Jackson
Street, Suite 600
Seattle, WA 98104-3855
Maureen.dahlstrom@kingcounty.gov
206-477-4777

Agreement No. 15-C1367

EXHIBIT E**CLOSE-OUT REPORT**

Recipient	
Project title	
Project start and end dates	
Total award	\$
Total spent	\$
Amount due at close-out	\$
Total unspent	\$

Submit the following:

		Checklist	
		Previously Submitted	Attached
PROGRAMMATIC CLOSE-OUT			
1. Letter(s) of commitment from key partners		☐	☐
2. Final report documenting the successful completion of the project according to the exhibit A: Scope of Work & timeline in your agreement.		☐	☐
3. Documentation of measurement methods and timelines and any results to date.		☐	☐
FOLLOWING ITEMS TO BE INCLUDED AS APPLICABLE			
	KCFCD acknowledge- ment		
4. Selection of outreach materials, such as: handouts, brochures, posters, newspaper clippings, press releases, and web page screen hard copies	☐	☐	☐
5. Copies of selected printed materials, created for the project or about it, &/or other items that illustrate the successful completion of the project	☐	☐	☐
6. Selected copies of pictures, film, video, PowerPoint presentation in CD, DVD, email &/or documentation presenting your project, if applicable	☐	☐	☐
FINANCIAL CLOSE-OUT			
7. Attach receipts &/or auditable accounting detail (may include: ledger-based copies, cancel checks, & payroll records)		☐	☐
8. Documentation of cash and in-kind match if any		☐	☐

CONTINUED

Agreement No. 15-C1367

King County Flood Reduction Grant Program Fiscal Close-Out

Date _____

Recipient Name _____

PROJECT NAME 0 PROJECT CODE 0

AWARD

Budget Line Item (From Exhibit B Budget)	Budgeted	Amount of all Previous Requests	Balance Forfeited
	\$ -		\$ -
	\$ -		\$ -
	\$ -		\$ -
	\$ -		\$ -
	\$ -		\$ -
	\$ -		\$ -
	\$ -		\$ -
	\$ -		\$ -
	\$ -		\$ -
TOTALS:	\$ -	\$ -	\$ -

MATCH

Item	Budgeted	Actual	Balance	Source
			\$ -	
			\$ -	
			\$ -	
			\$ -	
			\$ -	
			\$ -	
			\$ -	
			\$ -	
			\$ -	
			\$ -	
			\$ -	
	\$ -	\$ -	\$ -	

NOTES

CONTINUED

Agreement No. 15-C1367

PROVISIONS

By signing this Financial CLOSEOUT, I _____, an authorized representative of the above named award recipient (RECIPIENT), confirm that I have examined the information contained herein and that, to the best of my knowledge, it is a true and accurate account of all the financial expenses and in-kind contributions incurred by the above named project in the course of fulfilling the conditions of the AGREEMENT between RECIPIENT and King County (COUNTY).

I hereby acknowledge that there are no further expenses associated with this project, nor any pending or future claims to the COUNTY and that the COUNTY is not liable for any expenses not documented in Attachment B (Budget) of the AGREEMENT. I understand that the RECIPIENT is fully bound by the provisions of the AGREEMENT including, but not limited to, the return of COUNTY funds that are unspent or whose spending is unsubstantiated according to the terms of the AGREEMENT and the right to examine records. I further understand that the COUNTY, upon examining the financial close-out and the final report submitted by the RECIPIENT will determine the amount of the balance due to the RECIPIENT.

SIGNED _____ DATE _____

☐ Approved for Close-Out ☐ Not approved for close-out

EXAMINER SIGNATURE: _____ DATE: _____

Notes:

END OF EXHIBIT E



**City Council Business Agenda Item
City of Kenmore, WA**

Subject/Topic: Surface Water Master Plan	For Council Meeting Agenda of: February 17, 2015
	Department: Public Works
	Prepared by: Richard Sawyer
	To Be Presented By: Richard Sawyer
Proposed Council Action/Motion: No Council action is requested at this time.	Initial & Date Approved by Department Head: <u>KMO 2/4/15</u> Approved by City Attorney: <u>NA</u> Approved by Finance Director: <u>[Signature]</u> Approved by City Manager: <u>[Signature]</u> Exhibits/Attachments: Attachment 1: Draft 2015 Surface Water Master Plan Attachment 2: O&M Practices and Policies Manual Attachment 3: IDDE Program Manual
Expenditure Required NA	Amount Budgeted NA Appropriation Required NA
<u>INFORMATION/BACKGROUND:</u> The Surface Water Master Plan (Plan) is periodically updated as surface water management programs, policies and projects evolve over time. This evolution is in response to continually changing conditions, regulations, environmental stresses and other factors which affect surface water management in the City. This update is the City's third since incorporating in 1998 (2001, 2008 and 2015). Ideally, the Plan should be updated every 5 to 6 years and remain consistent with the City's Comprehensive Plan and NPDES Western Washington Phase II Municipal Stormwater Permit. During the Plan update, staff has provided and discussed with Council components of the plan on issues such as surface water service charge rate reductions, private property surface water management (including drainage easements), beaver management, capital improvement program projects and Swamp Creek floodplain management. The Plan update is also closely tied to the update of the City's Comprehensive Plan Surface Water Element, which was updated and approved by Council in late 2014. This report provides Council with the complete draft 2015 Surface Water Master Plan. Staff will also present the draft Plan to the public at an open house later this month. Comments and suggestions received from Council and from the public will be evaluated and appropriate edits will be made to the draft Plan. The final Plan is expected to be presented to Council in March for adoption. The draft Plan (Attachment 1) includes five sections, six appendices and associated figures and tables. The Plan is closely tied to two supplemental documents, which are included with this report, including the Kenmore Operations & Maintenance Practices and Policies Manual (OMPPM) included as Attachment 2 and the Kenmore Illicit Discharge Detection and Elimination (IDDE) Program Manual included as Attachment 3. The goal of the update is to produce a readable and informative document that describes the surface water environment of Kenmore and educate readers about surface water programs, policies and projects implemented by the City.	

The Plan is organized as follows:

Section 1 – Introduction

This section provides details regarding the drivers behind the Plan and its relationship to other planning efforts, the goals for surface water management in the City, achievements since the last Plan update and surface water staffing and responsibilities.

Section 2 – Surface Water Trends, Challenges and Opportunities

This section describes regional trends in the management of surface water that affect Kenmore, regulatory requirements, surface water management issues in Kenmore and opportunities for improvement.

Section 3 – Existing Policies

This section summarizes the general policies that guide Kenmore’s surface water management program, particularly the goals and objectives of the Comprehensive Plan Surface Water Element and Kenmore Municipal Code, before diving into more detailed discussion regarding current policy issues affecting Kenmore. Some policy discussions persist through each Plan update (e.g. Swamp Creek floodplain management, capital projects) and others change as new challenges impact surface water management in Kenmore. Previous Plan policy discussions have focused on issues such as development standards, rate structures, Permit implementation and staffing, and are not discussed in great detail in this Plan update. This Plan update focuses on changes and updates to policies since the 2008 Plan update, including:

- Changing the current surface water charge rate reduction procedure for privately owned drainage facilities. This policy incorporates feedback received from Council, including 1) provide rate adjustments (discount) to private drainage facility owners that maintain their facility, 2) consider the level of service provided by the facility (age and design standard), 3) consider the area of the property serviced by the facility and 4) provide a simple and consistent reduction amount (flat percentage). This policy discussion is in section 3.2.2.3.
- Clarifying Kenmore administrative policies regarding private property surface water management. Much of Kenmore’s surface and storm water originates and/or conveys through private property. The policy discussion in this section doesn’t necessarily establish “new” practices, however, it provides clarification and documentation on how Kenmore manages private drainage issues. The policy incorporates feedback received from council, which included 1) in general, private property owners are responsible for managing surface water on their property, 2) Kenmore may provide technical assistance and education, 3) Kenmore may reserve the right to manage surface and storm water on private property under certain circumstances. This policy is discussed in section 3.3.1.
- Clarifying Kenmore administrative practices regarding beaver management. As before, this policy discussion does not necessarily establish “new” practice, however, it provides clarification and documentation on how Kenmore manages beaver activity within the City. This policy is discussed in section 3.3.2.

Section 4 – Current Conditions

This section describes the City’s existing surface water and stormwater system conditions, including types and locations of infrastructure and facilities, natural resources, operations and maintenance and programmatic management.

Section 5 – The Next 6-10 Years

This section provides recommendations for capital projects and programmatic strategies that address issues described in previous sections.

Appendix A – Swamp Creek Technical Memorandum

A major component of this Plan update included the report contained in this appendix. A summary and presentation of this report was given to Council on January 20, 2015.

Appendix B – Basin Characteristics Summary Sheets

Basin characteristic summary sheets provide detailed information for each basin and sub-basin within Kenmore. The sheets are new for this Plan update and provide a snapshot of basin characteristics, including zoning and land cover data, topographic and critical area information, and drainage system statistics.

Appendix C – 2014 Swamp Creek TMDL Monitoring Report

This appendix includes a summary of Kenmore's Swamp Creek Total Maximum Daily Load (TMDL) monitoring activities during 2009-2013, which was required under the City's 2007 Western Washington Phase II Municipal Stormwater Permit.

Appendix D – Stormwater Retrofit Memorandum

This appendix contains a technical memorandum describing the City's surface water facility retrofit strategy. The purpose of the retrofit strategy is to provide the City with a framework for identifying opportunities to improve and expand upon existing stormwater treatment.

Appendix E – Capital Improvement Project Summary Sheets

This appendix contains capital improvement project summary sheets for surface water projects.

Appendix F – Programmatic Strategy Project Summary Sheets

This appendix contains the programmatic strategy project summary sheets. These sheets describe the process for implementing programmatic projects (e.g. stormwater manual adoption, developing LID tools, assessing culverts, etc...). *In particular, NPDES requirements require substantial updates to development codes and standards.*

SCHEDULE:

July 22, 2013: Introduction to the Surface Water Master Plan update
 July 21, 2014: Review updated policies
 October 20, 2014: Review updated Surface Water Capital Improvement Program
 November 17, 2014: Review updated Surface Water Element Goals and Policies
 January 20, 2015: Review Swamp Creek Basin component of Surface Water Master Plan update
 February 17, 2015: Review Draft Surface Water Master Plan update
 February 2015: Public Open House for Draft Surface Water Master Plan update
 March 2015: Adoption of Final Surface Water Master Plan update
July 2015: Update Kenmore Municipal Code to be consistent with Plan

FISCAL CONSIDERATION:

The City's adopted 2013-2014 Biennium Budget included \$140,000 for updating the Surface Water Master Plan, including a Swamp Creek Basin Study, which was incorporated into the Master Plan. Approximately \$110,000 of the budget was expended during 2013-2014 and the carryover balance will be used in 2015.

COUNCIL GOAL/BUDGET OBJECTIVE BEING ADDRESSED:

Consistent with Kenmore's Vision Statement to see Kenmore as a community that actively protects natural and environmentally sensitive areas, significant open space, and trees.

Consistent with City Council Goal: Address watershed issues affecting the City.

Consistent with the City's 2015-2016 budget result: A sustainable, healthy environment and the preservation of natural resources.

DRAFT



City of Kenmore
Surface Water Master Plan

January 30, 2015



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List of Acronyms/Terms

AKART	All Known and Reasonable Treatments
BMP	Best Management Practice
BO	Biological Opinion
CIP	Capital Improvement Project
City	City of Kenmore
County	King County
CWA	Clean Water Act
DNR	Washington State Department of Natural Resources
Ecology	Washington State Department of Ecology
ECOSS	Environmental Coalition of South Seattle
EPA	US Environmental Protection Agency
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
GIS	Geographic Information System
GMA	Growth Management Act
IDDE	Illicit Discharge Detection and Elimination
KCC	King County Code
KCSWDM	King County Surface Water Design Manual
KMC	Kenmore Municipal Code
LID	Low Impact Development
MS4	Municipal Separate Storm Sewer
N/A	Not Applicable
NFIP	National Flood Insurance Program
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
O&M	Operations and Maintenance
PSP	Puget Sound Partnership
QAPP	Quality Assurance Project Plan
RCW	Revised Code of Washington
ROW	Right of Way
RSMP	Regional Stormwater Management Program
SEPA	State Environmental Protection Act
SMA	Shoreline Management Act
SR	State Route
SWMMWW	Stormwater Management Manual for Western Washington
SWMP	Stormwater Management Program
TMDL	Total Maximum Daily Load
USACE	US Army Corps of Engineers
WAC	Washington Administrative Code
WDFW	Washington Department of Fish and Wildlife
WRIA	Water Resources Inventory Area



1. Introduction

This Surface Water Master Plan (Plan) presents strategies and projects for managing surface water and stormwater in the City of Kenmore (City) through 2020. This Plan builds upon previous planning efforts, including National Pollutant Discharge Elimination System (NPDES) compliance efforts that have been implemented in response to issuance of the first Phase II Municipal Separate Storm Sewer (MS4) permit in 2007.

This Plan is organized by the following sections:

- 1) **Introduction** - Details the drivers behind the Plan and its relationship to other planning efforts, the goals for surface water management in the context of the City's goals and vision, achievements since the last Plan update, and surface water staffing and responsibilities.
- 2) **Surface Water Trends, Challenges, and Opportunities** - Describes regional trends in the management of surface water that will affect Kenmore, regulatory requirements, surface water management issues in Kenmore, and opportunities for improvement.
- 3) **Existing Policies** - Describes Kenmore's surface water management policies and provides recommendations for modifications and updates to existing policies and development of new policies.
- 4) **Current Conditions** - Describes the City's existing surface water and stormwater system conditions, including types and locations of infrastructure and facilities, natural resources, operations and maintenance (O&M), and programmatic management.
- 5) **The Next 6-10 Years** - Provides recommendations for capital projects and programmatic strategies that address issues described in previous sections.

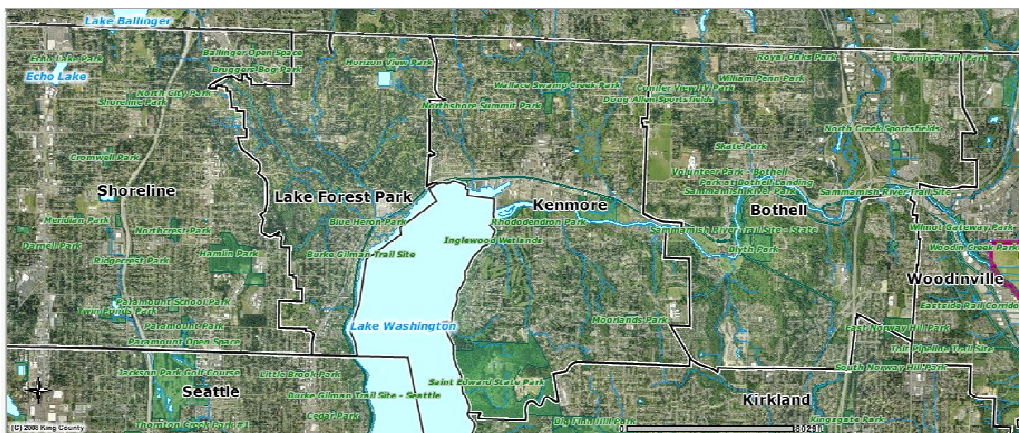
What is NPDES?

NPDES or the National Pollutant Discharge Elimination System is the permit program under which States and sometimes other designated authorities (in this case, Washington State Department of Ecology) implement the requirements of the Federal Clean Water Act to control water pollution. Kenmore has a NPDES Phase II Permit for their municipal storm sewer system.

1.2 Kenmore Then and Now

Kenmore is located on the north end of Lake Washington and is surrounded by the Cities of Lake Forest Park, Bothell, Kirkland, Brier, and Lynnwood and Snohomish County (Figure 1-1).

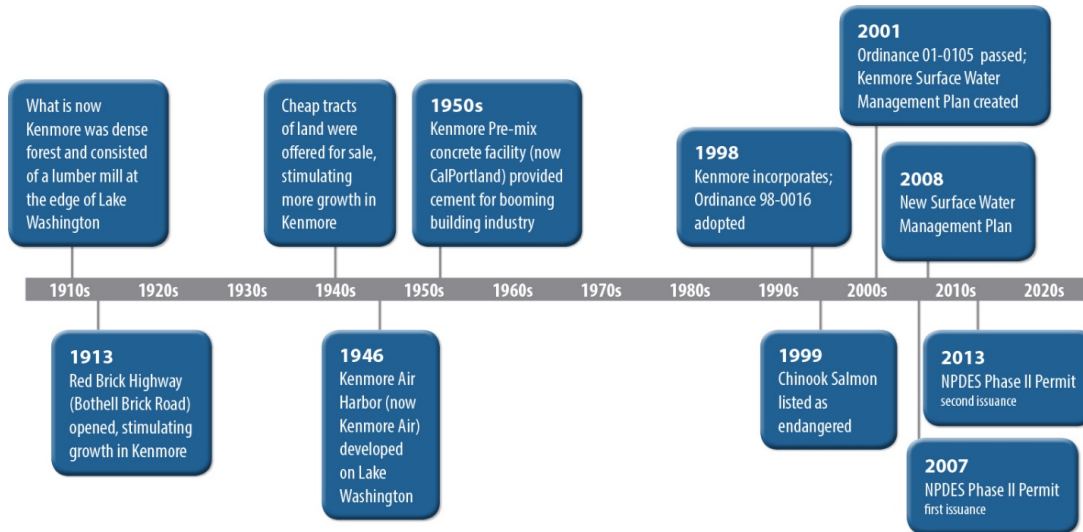
Figure 1-1. Kenmore location





The history of land use, development, and stormwater regulations in Kenmore (Figure 1-2) and surrounding areas is important in the context of current and potential future stormwater planning.

Figure 1-2. History of Kenmore development and surface water management

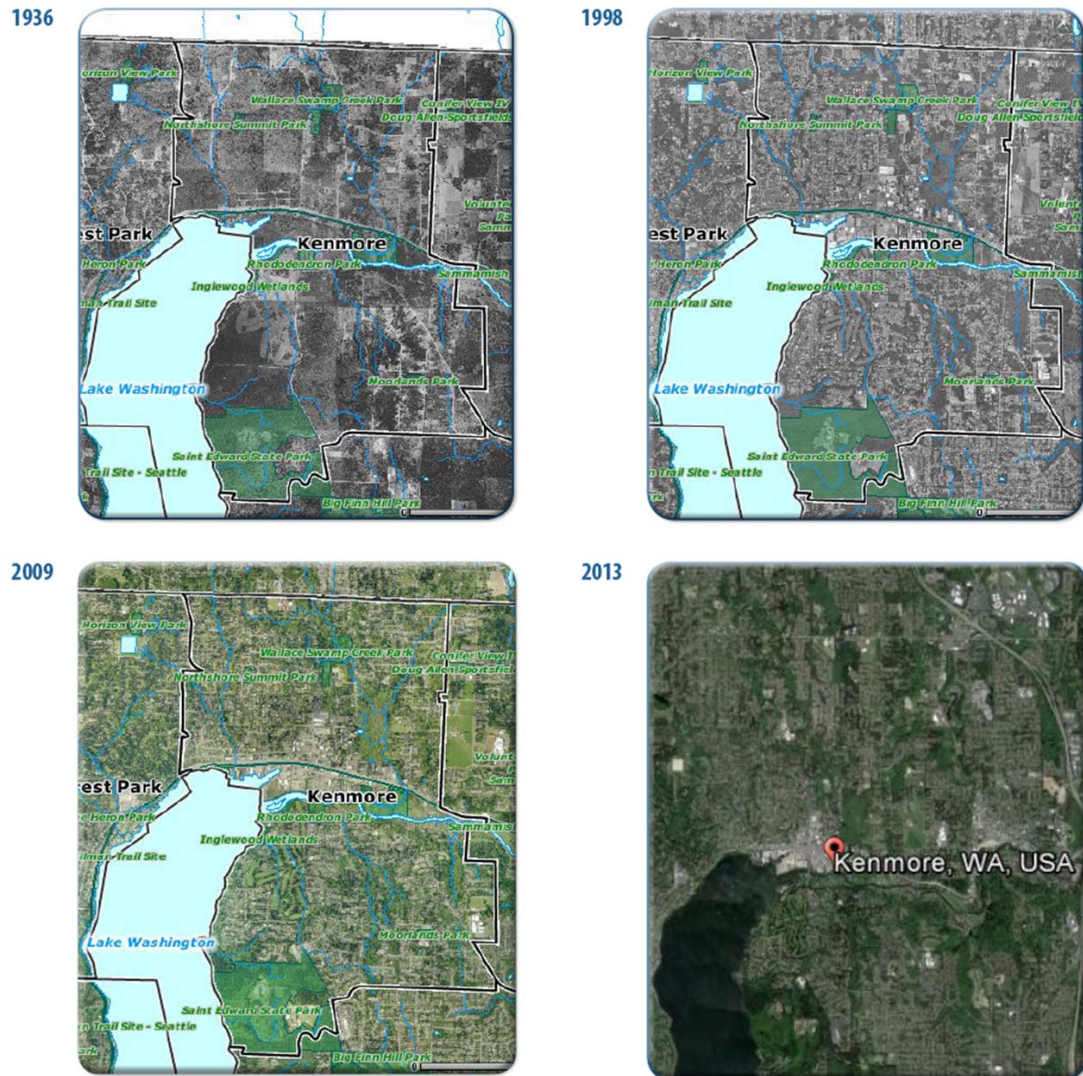


Kenmore's current population is over 21,000 (Washington State Office of Financial Management 2014), and the City is largely residential outside of the State Route (SR) 522 Commercial Business District. In the early 1900s, the area was densely forested and did not begin to develop until after the 1930s (based on a review of aerial photographs). A selective review of housing ages throughout Kenmore indicates that much of the development occurred in the 1950s through 1970s and started to taper off in the 1980s. Infill areas of new development appear to have started in the 1990s and are still occurring today. Select aerial photos (Figure 1-3) show general development in Kenmore since 1936 (the earliest aerial photograph available).

The City of Kenmore incorporated in 1998 from what was previously unincorporated King County (County). Following incorporation, the City adopted Ordinance 98-0016, which created a stormwater utility and stormwater utility fund for which rates are collected. The ordinance also adopted Chapters 9.04, 9.08, and 9.12 of the King County Code, which described the County's surface water management program at the time and effectively became the City's surface water management program. In 2001, through the passing of Ordinance 01-0105, the City adopted the Kenmore Stormwater Management Plan (SWMP). In 2008, a new SWMP was developed to: 1) address new regulatory requirements under the NPDES Phase II MS4 permit, for which Kenmore became a permit holder; 2) identify capital facility needs; and 3) recommend funding options for ongoing surface water management needs (Otak 2008). The 2008 SWMP is comprised of a series of technical memoranda that documented strategies for 2007-2012 NPDES Phase II permit compliance, City stormwater assets management, capital improvement projects (CIPs) and implementation schedules, and staffing needs and stormwater rate increases necessary for permit compliance.



Figure 1-3. Aerial photographs depicting land use changes in Kenmore



1.3 Need for an Updated Plan

There are a number of reasons for updating this Plan in 2014, including:

- Coordination with the City's 2014 Comprehensive Plan Update,
- Compliance with the second issuance of the NPDES Phase II MS4 Permit (effective August 2013), and
- Need for updated CIPs.

Figure 1-4 shows the planning framework into which the Surface Water Master Plan fits.



Figure 1-4. Surface water planning framework



1.3.1 Kenmore Comprehensive Plan

The City developed a Comprehensive Plan in 2001, which included a Surface Water Element and Capital Facilities Element (includes the Surface Water Capital Improvement Program) (City of Kenmore 2001). In 2014, City Council approved updates to the Surface Water and Capital Facilities Elements. The Surface Water Element update incorporated NPDES requirements that had emerged during the City's three NPDES Permit implementations since 2001. The Capital Facilities Element updated the Surface Water Capital Improvement Program list, which had become outdated. The Surface Water Master Plan must be consistent with the Comprehensive Plan, which must also be consistent with:

- The Washington State Growth Management Act (GMA) (Chapter 36.70A Revised Code of Washington [RCW]),
- Puget Sound Regional Council's Vision 2040 (Puget Sound Regional Council 2009), and
- King County Countywide Planning Policies (King County 2012).

1.3.1.1 Washington State GMA

The GMA requires jurisdictions within urban growth areas, such as Kenmore, to conduct comprehensive city planning and to develop policies and regulations that protect the functions and values of critical areas.

1.3.1.2 Puget Sound Regional Council's Vision 2040

The Puget Sound Regional Council's Vision 2040 is a multi-county planning and regional growth strategy created to accommodate the 5 million people expected to live in our region by 2040.

"...envision a significant share of the region's growth being accommodated in already urbanized areas, with the growth occurring in an environmentally sensitive manner. VISION 2040 also encourages the efficient use of urban land, maintaining natural hydrological functions and, where feasible, restoring them to a more natural state. VISION2040 promotes a sustainable approach, such that these goals are not seen as mutually exclusive."

1.3.1.3 2012 King County Countywide Planning Policies

King County first adopted Countywide Planning Policies in 1992 and updated the policies in 2012 to address changes in the GMA and reflect regional direction established in Puget Sound Regional Council's Vision 2040. As part of the 2012 Countywide Planning Policies, the County articulated a Vision for King County 2030. One ideal of that Vision is:

Protected Critical Areas. Effective stewardship of the environment has preserved and protected the critical areas in the County, including wetlands, aquifer recharge areas, and fish and wildlife conservation areas. These critical areas continue to provide beneficial functions and values for reducing flooding, protecting water quality, supporting biodiversity, and enriching our quality of life for future generations as the region's population continues to grow.



Countywide Planning Policies are organized by topic. The Environment (EN) section's overarching goal: "The quality of the natural environment in King County is restored and protected for future generations." Several of the policies that support that goal apply to surface water and stormwater management. These policies (as stated in the 2012 Countywide Planning Policies) include:

- EN-2: Encourage low impact development (LID) approaches for managing stormwater, protecting water quality, minimizing flooding and erosion, protecting habitat, and reducing greenhouse gas emissions.
- EN-6: Coordinate approaches and standards for defining and protecting critical areas especially where such areas and impacts to them cross jurisdictional boundaries.
- EN-7: Encourage basin-wide approaches to wetland protection, emphasizing preservation and enhancement of the highest quality wetlands and wetland systems.
- EN-8: Develop an integrated and comprehensive approach to managing fish and wildlife habitat conservation, especially protecting endangered, threatened, and sensitive species.
- EN-9: Implement salmon habitat protection and restoration priorities in approved Water Resource Inventory Area plans.
- EN-10: Coordinate and fund flood hazard management efforts through the King County Flood Control District.
- EN-11: Work cooperatively to meet regulatory standards for floodplain development as these standards are updated for consistency with relevant federal requirements including those related to the Endangered Species Act (ESA).
- EN-13: Collaborate with the Puget Sound Partnership to implement the Puget Sound Action Agenda and to coordinate land use and transportation plans and actions for the benefit of Puget Sound and its watersheds.
- EN-14: Manage natural drainage systems to improve water quality and habitat functions, minimize erosion and sedimentation, protect public health, reduce flood risks, and moderate peak storm water runoff rates. Work cooperatively among local, regional, state, national and tribal jurisdictions to establish, monitor and enforce consistent standards for managing streams and wetlands throughout drainage basins.
- EN-15: Establish a multi-jurisdictional approach for funding and monitoring water quality, quantity, biological conditions, and outcome measures and for improving the efficiency and effectiveness of monitoring efforts.



What is LID?

LID or Low Impact Development is a stormwater planning and best management practice technique that is designed to mimic natural hydrologic processes. Low impact development techniques often focus on preserving native vegetation and soils and utilizing infiltrative stormwater management practices.

1.3.2 NPDES Phase II Permit

The primary changes made in the City's third issuance of the NPDES Phase II permit (2013) include the following, which could affect Kenmore's SWMP:

- No minimum area threshold for controlling runoff from new development, redevelopment, and construction sites. The previous permit had a 1-acre threshold.
- LID principles and Best Management Practices (BMPs) are required and must be incorporated into local development code, rules, standards, and other enforceable documents. LID was encouraged, but not required in the previous permit cycle.
- All catch basins and inlets owned by the permittee must be inspected once every 2 years. The previous permit required 1 inspection before the end of the permit cycle.



- Water quality monitoring is now required by Phase II permittees (either through payment to a regional water quality monitoring fund or through individual efforts by the permittee). Water quality monitoring was not previously required.
- On-site stormwater management requirements include a LID Performance Standard that requires stormwater discharges to match developed discharge durations to pre-developed durations for the range of pre-developed discharge rates from 8 percent of the 2-year peak flow to 50 percent of the 2-year peak flow.

1.3.3 New Capital Projects

The capital projects identified in Kenmore's 2008 SWMP have been constructed, are on the books for construction, or are no longer relevant. At the same time, new issues have arisen and grant funding has become increasingly available for identified LID projects. Now is the time for a fresh look at the stormwater capital improvement program.

1.4 Surface Water Goals

Kenmore's primary goal for surface water management is to:

Develop, maintain, manage and improve a surface water system that serves the community, enhances the quality of life, and protects the environment (Surface Water Element of 2014 Comprehensive Plan).

This is generally achieved through projects and programs that are designed to maintain, repair, and replace existing stormwater infrastructure; prevent and minimize flooding; prevent and minimize water quality issues; and preserve or improve aquatic habitat. The NPDES Phase II permit requires many elements that also support these goals. The Permit and other regulatory requirements are discussed in Section 2.

Kenmore's City vision is shown below (with surface water management-related elements in blue italics) (City of Kenmore 2000).

As we look into the future, 20 years from now, we see Kenmore as a place that residents, businesses, and visitors find special with welcoming, courteous people, offering a high quality of life as a place to live, raise children, shop, work, recreate, and socialize. In 2020, we see Kenmore as...

- A community that is family friendly with a small town feeling that recognizes its history, and is open to and values diversity.
- A community that fosters a sense of belonging and pride, makes use of the vast skills of its citizens, and promotes volunteerism.
- A community that has preserved the character of its single family residential neighborhoods, which offers a range of housing types and prices to ensure an adequate choice of attractive living accommodations, and promotes compatible housing.
- A community that actively protects natural and environmentally sensitive areas, significant open space, and trees.
- A community with an attractive, vital, pedestrian-friendly city center offering commercial, civic, cultural and park spaces, integrated with higher density housing.
- A community with clear design standards creating attractive, functional, and enduring buildings and places.
- A community that manages its traffic well, and is united by a safe and effective system of streets, transit routes, sidewalks, and trails, linking significant regional and local destinations.



- A community that supports and encourages quality schools, diverse and continuing education opportunities.
- A community with a network of parks, trails, open spaces, and recreational facilities providing for passive and active recreation, and waterfront access.
- A community with clear public priorities that efficiently and effectively utilizes its public resources.
- A community with an economic base that provides for the needs of its citizens and provides quality employment opportunities.
- A community that is attentive to, and seeks to provide for, the health, safety, and welfare of all its citizens.
- A community that is a good partner with citizens and governments throughout the region.
- A community with an informed citizenry working with an open, responsive government that seeks out and integrates public input.

To achieve this vision, responsible commitments in planning and resources will be made. We share and support this vision for Kenmore.

In addition, City Council Goal #11 shown below is directly related to surface water management.

City Council Goal #11: To address watershed issues affecting the City.

This Plan aims to be consistent and supportive of the City's vision and goals.

1.5 Achievements since Last Plan

Kenmore has made great strides in surface water management since the last Plan update in 2008. A full-time Surface Water Manager was hired in 2009 and a full-time Surface Water Technician was hired in 2012. These positions have allowed the City to effectively address the requirements of the NPDES Phase II permit, develop documents and tools to make program implementation easier, and complete several CIPs that were identified in the previous plan. Specific accomplishments include:

- Adoption of the 2009 King County Surface Water Design Manual (KCSWDM) (King County 2009).
- Updated Kenmore water quality municipal codes to comply with Phase II permit requirements.
- Mapping of the surface water and stormwater system in geographic information system (GIS) and making those maps publicly available online.
- Development of a stormwater pollution prevention manual.
- Participation in a stormwater attitudes survey in conjunction with neighboring communities in 2009 and 2012.
- Development of an O&M policies and practices manual.
- Development of an illicit discharge detection and elimination (IDDE) manual.
- Completion of a LID barriers summary to identify potential limitations of using LID.
- Completion of outfall reconnaissance surveys in Swamp Creek, Sammamish River, and Tributary 0057 evaluating potential for illicit discharges.
- Completion of on-going water quality measurements and evaluation in support of the Swamp Creek total maximum daily load (TMDL).
- Annual inspections of public and private stormwater treatment facilities.
- Annual inspections of public stormwater conveyance system.



1.5.1 Projects Constructed

The surface water-related projects below were either constructed or are in the process of being constructed.

- SR 522 Drainage Improvements (SR 522 Corridor Improvement Project)
- NE 181st Street Box Culvert (Tributary 0056)
- NE 175th Street Box Culvert (Tributary 0057)
- Juanita Drive NE Ditch Improvements
- Swamp Creek Property Acquisitions for Open Space
- NE 192nd Street Box Culvert (Little Swamp Creek - Scheduled 2015/2016)

1.6 Surface Water Staffing and Responsibilities

A simplified City of Kenmore organizational chart is shown in Figure 1-5, identifying where surface water management functions reside within the City's structure. Currently, the City has 2 full-time, dedicated surface water management staff including a Surface Water Manager and a Surface Water Technician. A temporary summer position is hired each year to support surface water inspection and outreach activities. Additionally, City staff in other departments also support surface water management through development review and other activities described in section 1.6.1. O&M activities are currently implemented through Interlocal Agreements with King County and the neighboring City of Lake Forest Park as well as with private contractors.

Figure 1-5. City of Kenmore organizational chart





1.6.1 Responsibilities

Surface water functions include the following types of responsibilities:

- **Development review and permitting** – New development and redevelopment activities within the City require stormwater site plans showing how and where stormwater from the site will be treated and where it will discharge to the City's system (if applicable).
- **Water quality/NPDES compliance** – As a permittee, the City must comply with the NPDES Phase II MS4 Permit and relevant TMDLs. The permit is all encompassing and compliance requires a multi-faceted program and approach to surface water management.
- **Identification and implementation of capital projects** – Surface water related projects (e.g., stormwater infrastructure repair, culvert replacements, and stormwater retrofit) are the types of capital projects recommended by Surface Water Staff. Public Works engineers typically design or manage the design and construction of the projects once they are included in the Capital Improvement Program.
- **Response to complaints** – Drainage complaints ranging from flooding to water quality and ditch or hillslope erosion are received and addressed by Surface Water staff.
- **Education and outreach** – Individual choices in everyday life can greatly affect water quality, habitat, and flooding. Surface water education and outreach is important to the goal of preventing water quality issues, flooding, and/or habitat impacts. Education and outreach is also required by the NPDES Phase II MS4 Permit. The City participates in regional programs, pooling resources to accomplish societal change.
- **Regional forums and participation** – Surface Water staff participate in a variety of regional forums for the purpose of sharing information and resources and being part of the discussion regarding regional issues that affect Kenmore.

2. Surface Water Trends, Challenges, and Opportunities

The management of surface water and stormwater runoff can be challenging, especially for a city such as Kenmore that is geographically situated at the bottom of large upstream drainage areas that extend beyond the City limits. Unlike other public utilities, the functionality of stormwater infrastructure and the characteristics of runoff can be significantly affected by the actions of the public and individuals. Likewise, the runoff itself can impact property and aquatic habitat. These and other challenges are discussed in this section.

2.1 History — Jurisdictional and Surface Water Management

Stormwater regulations have evolved over the last 2 decades as more research has been conducted on the effects of stormwater runoff on water and natural resources. The current regulations continue to require greater flow controls and water quality treatment than in the past – generally prior to 1990 – and focus on impacts other than just flood control. Additionally, different types of stormwater BMPs are being implemented on the regional and national scales, and there has been a shift toward "greener" solutions (e.g., LID).

An example of the shift toward greater flow control is shown in Table 2-1, which compares stormwater facility sizes needed for the same development under different versions of the Washington State Department of Ecology (Ecology) Stormwater Management Manual for Western Washington (SWMMWW).



Table 2-1. Evolution of flow control standards and facility sizes based on previous and current Ecology manuals

SWMMWW Year	Relative Facility Size Footprint*	Description
Pre-1992		Prior to 1992, no flow control was necessary.
1992 (Ecology 1992)		The 1992 manual required that peak flows for certain size events be matched.
2001 (Ecology 2001)		In 2001, Ecology added flow duration requirements to matching peak events, resulting in larger stormwater facility sizes.
2012 (Ecology 2014)		The 2012, Ecology required even greater flow control – particularly with regard to providing on-site stormwater flow control that matches between 8 percent and 50 percent of the 2-year flow event. This standard requires implementation of LID.

* For illustrative purposes, the footprint of a traditional stormwater detention facility was assumed.



■ How does the Ecology SWMMWW differ from NPDES?

NPDES lays the groundwork for the requirements – what the permittee (e.g., Kenmore) has to do to comply. The permit references the Ecology manual (the current permit references Ecology's 2012 SWMMWW) that provides standards on how to meet the requirements.

2.2 Current Issues

Since incorporation in 1998, Kenmore's primary surface water issue has been flooding associated with Swamp Creek. Other surface water issues include the inheritance of stormwater facilities from King County during incorporation that are undersized or require significant maintenance, and the lack of stormwater treatment (water quality or flow control) in many parts of the City that were developed ahead of current regulations. As infill development occurs within the City, and also in upstream jurisdictions, additional surface water and stormwater conveyance and capacity issues have come to light.

2.2.1 Swamp Creek Flooding

Swamp Creek has been studied extensively over the years in an attempt to reduce flooding. Numerous actions have also been taken by King County and the City of Kenmore to reduce flood-related impacts. Figure 2-1 shows the history of actions taken and studies conducted at Swamp Creek since the 1950s. A description of current conditions in Swamp Creek is provided in Section 4 and Appendix A.



Figure 2-1. Timeline of actions and studies related to Swamp Creek



2.2.2 Inherited King County Facilities

Upon incorporation in 1998, Kenmore assumed responsibility for stormwater facilities previously constructed or maintained by King County. These facilities were sized according to the standards in place at the time of construction, and many are currently undersized. Additionally, several sediment management facilities were installed and, in many cases, these facilities must be maintained on a more frequent basis than was originally planned. The Wallace Park sedimentation pond is one example.

2.2.3 Existing Development

Much of Kenmore was developed prior to 1990 when regional stormwater regulations began to require stormwater facilities to retain or detain water to lower flow rates to the downstream conveyance and eventually control flow durations and provide water quality treatment as described above. The areas of the City that are currently lacking treatment are primarily on the west side of the City. Recent transportation projects along SR 522 and major Kenmore arterials have implemented modern stormwater treatment in those locations. As older neighborhoods



Why will stormwater retrofit occur as older neighborhoods redevelop?

New stormwater regulations require developers and property owners to implement stormwater treatment for redeveloped parcels. This is a shift from past requirements that only focused on stormwater treatment for newly developed parcels.



redevelop, stormwater retrofit will improve conditions.

2.2.4 Upstream Jurisdictions

Kenmore is in the unfortunate geographic position of being downstream of large watersheds for which it has no control. The actions and inactions of upstream jurisdictions have created and can create impacts in the City of Kenmore. Swamp Creek is the primary example. The Cities of Lynnwood, Brier, Everett, Bothell, Mountlake Terrace and unincorporated areas of Snohomish County contribute runoff to Swamp Creek, which discharges to the Sammamish River in the City of Kenmore. Water and sediment transported from upstream reaches is slowed through the natural shift in gradient near Wetland #3 (located on the east side of 73rd Avenue NE) in Kenmore. The City has participated in regional forums with upstream jurisdictions to collectively manage stormwater runoff to reduce impacts for all stakeholders. However, there is more to be done.

2.3 Future Issues and Opportunities

There are a number of potential future surface water- and stormwater-related issues that the City will need to manage in the coming years, including compliance with changing permit conditions, implementation of new stormwater standards, and different maintenance needs for new facilities. Additionally, influences beyond the City's control (e.g., climate change and invasive species) may also affect surface water and stormwater management approaches.

On the positive side, Kenmore has the opportunity for incremental improvement in water quality, aquatic habitat, and flood conditions as portions of the City are redeveloped and more stringent stormwater controls are implemented according to current regulations. Additionally, the City may wish to start retrofitting its properties and roads to include new or updated stormwater facilities as grant funding is increasingly available for stormwater retrofit, particularly if LID techniques are included in the design.

2.3.1 Regulatory Changes

LID is soon to become the commonly used and preferred BMP for managing stormwater impacts. The NPDES Phase II MS4 Permit requires that permittees (e.g., Kenmore) require LID by the end of 2016. For cities like Kenmore that are largely built out already, the LID BMPs most likely to be incorporated are those that infiltrate into the ground (e.g., pervious pavement and bioretention facilities). These types of LID BMPs require maintenance personnel and different maintenance frequencies, tools, and skill sets. These LID solutions also provide ancillary benefits beyond stormwater treatment, including aesthetic, cooling, and air quality benefits. Implementing LID will require significant changes to established standards and will change how developments, roads, parcels and buildings look and function. However, Kenmore's surface water and topographic characteristics will provide challenges to implementing LID due to the abundance of shallow groundwater, steep slopes, and till soils throughout the City.

2.3.2 Invasive Species

Invasive species have wreaked havoc on native populations of fish, animals, and vegetation for centuries. The new threat in our region is the New Zealand Mud Snail. Although this snail has not been identified in Kenmore's streams, it is present in other streams draining to Lake Washington, including McAleer Creek in Lake Forest Park. This species is of concern because it can quickly dominate river and lakebed habitats, thus outcompeting native aquatic snails and insects, leading to implications for fish and other species that rely on these insect for their food source. Widespread presence of the New Zealand Mudsnaill is almost inevitable. However, regional efforts are being made to educate biologists, contractors, and maintenance staff about methods to avoid proliferation. Decontamination of equipment when moving between streams is the best method to prevent spread of the species, but it does add time and costs to projects that involve in-water work.



2.3.3 Climate Change

Researchers at the University of Washington and elsewhere predict climate change could increase the frequency and intensity of precipitation events in the Pacific Northwest (Snover, et al. 2013), with heavy rainfall events becoming more severe, leading to increased periods of flooding in low-land areas. The City of Kenmore's downtown core is located in a low-lying area and already experiences flooding problems, so the impacts of heavier rain events could be worse than other areas of Puget Sound. Stormwater infrastructure designed to convey a certain size storm event may not be adequate if more frequent, higher-intensity, or longer duration storms become commonplace. Already unstable slopes could also experience more frequent slope failures due to prolonged saturated conditions. As the City upgrades its piped infrastructure and replaces culverts, there are opportunities to upsize systems to accommodate predicted future flow increases.

2.4 Regulatory Context

There are a variety of local, state, and federal regulations and permits pertaining to surface water and stormwater with which Kenmore must comply. Table 2-2 provides a summary of applicable regulations and permits. Regulations and permits that have been subject to recent revisions or planned future changes are highlighted in bold text and described in more detail below.



Table 2-2. Regulations and permits applicable to the City of Kenmore

Entity	Law	Program	Intent	Relevance to Kenmore Surface Water Management
Federal or Tribal	Clean Water Act (CWA)	NPDES MS4	Eliminate discharge of pollutants to nation's water and achieve water quality that supports beneficial uses (e.g., fishing and swimming)	NPDES permit delegates Kenmore responsible for water quality leaving the City's system. New NPDES Permit in effect as of August 1, 2013 , with phased implementation schedule for new requirements.
		Other NPDES Permits (e.g., Industrial, Sand and Gravel, Boatyard, etc.)	Reduce discharge of pollutants to nation's water and hold permittees accountable for meeting water quality standards.	Requires entities in Kenmore that conduct certain pollutant-generating activities to obtain a permit and implement a plan to eliminate or minimize discharge of pollutants to Kenmore's receiving waters.
		Water quality standards (303(d) list)	Protect human health and the environment using research-based numeric criteria for acceptable values of constituents.	Requires development of a TMDL for each pollutant in water bodies at levels greater than the water quality standards. Kenmore is party to a TMDL for fecal coliform bacteria in Swamp Creek.
		Section 401 and 404	Limits filling and dredging activities in nation's waters.	Requires a permit for activities that produce discharge or dredge fill material to or from waters of the United States. Any in-water work, such as culvert replacements or stream restoration activities require Section 401 and 404 permits from the US Army Corps of Engineers (USACE).
	Tribal Agreements and Related Case Law	"Culvert Case" (March 29, 2013) - US District Court rules that the State of Washington must replace culverts that impede fish passage to their spawning grounds.	Protect fish populations in traditional fishing grounds of Indian Tribes.	The Muckleshoot Indian Tribe is party to the State Environmental Policy Act (SEPA) review of development proposals and programs. The March 29, 2013, US District Court ruling could lead to future implications for counties and cities whose culverts impede fish passage.
	National Flood Insurance Act, Flood Disaster Protection Act	National Flood Insurance Program (NFIP)	Reduce property damage and public safety threats from flooding.	City enacts restrictions/requirements on development in floodplain and residents get reduced flood insurance rates in return. The National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) issued a Biological Opinion requiring changes to the NFIP to comply with the ESA.
	ESA	Chinook salmon listed as a threatened species	Prevent further decline of Chinook salmon populations through prohibition on "take" of the fish or their habitat.	City participates in Water Resources Inventory Area (WRIA) 8 Salmon Conservation Planning. Chinook salmon are present in Lake Washington.



Entity	Law	Program	Intent	Relevance to Kenmore Surface Water Management
State	SEPA (Chapter 43.21C RCW)	City of Kenmore reviews proposals and issues SEPA determinations	Identify and require mitigation for the environmental impacts or proposals and programs.	SEPA is used to address impacts that are not covered in other City requirements.
	Shoreline Management Act (SMA) (Chapter 90.58 RCW)	Kenmore Shoreline Master Program	Protect use and functions (e.g., economic, ecological, and aesthetic) of shoreline areas. Implemented by Kenmore Municipal Code (KMC) Title 16.	Kenmore's Shoreline Master Program was updated and made effective in 2012. The shoreline sub-element in the City's Comprehensive Plan addresses shoreline policies, some of which are related to surface water management.
	Hydraulic Code (Chapter 22-110 Washington Administrative Code [WAC])	WAC	Set requirements for placement of culverts and other hydraulic devices that may impact fish use.	Projects proposing work within the wetted perimeter of a stream must obtain a Washington Department of Fish and Wildlife (WDFW) Hydraulic Project Approval (HPA), including culvert replacements and stream restoration work.
	GMA	City Comprehensive Plan, City zoning, and critical areas regulations	Regulate land use to meet growth targets while providing necessary services and protecting sensitive environmental resources.	City of Kenmore Comprehensive Plan and supporting municipal code sections address land use and growth management.



2.4.1 Federal Clean Water Act (CWA) - NPDES Phase II Permit

The federal CWA is implemented through a variety of regulations and programs. The most significant of these for the City is the NPDES MS4 Permit. Under Phase II of this program, the City must apply for a permit from the US Environmental Protection Agency (EPA) (or, in this case the State of Washington, which has been authorized to act as the EPA's agent) to discharge stormwater from streets, public facilities, and drainage network into waters of the United States.

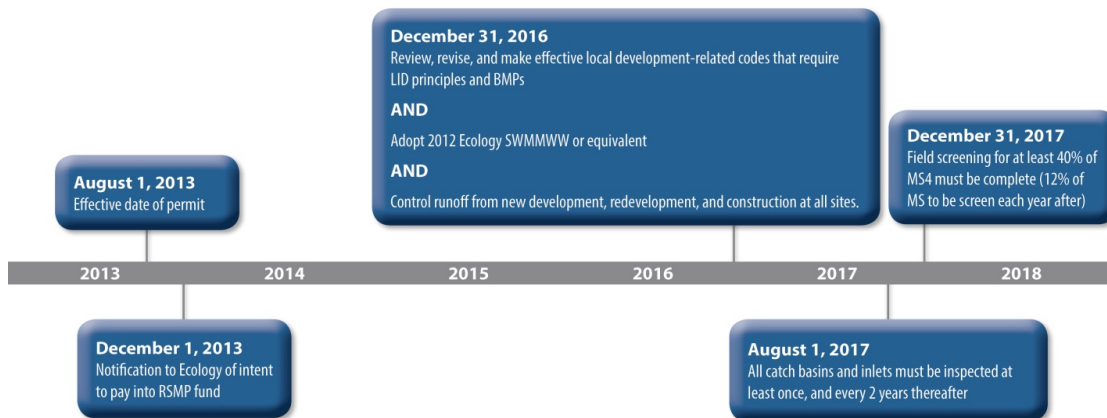
The City was issued its first NPDES Permit in 2007, which was effective from February 16, 2007, until February 15, 2012. The City's second permit was issued in 2012 and was effective from September 1, 2012 through July 31, 2013. The City's third, and current, permit was issued in 2012 and is effective from August 1, 2013, through July 31, 2018. The City's NPDES Permit authorizes the discharge of stormwater into surface and ground waters of the state, subject to several limitations and conditions designed to protect and improve water quality. The core of the permit revolves around the development and implementation of the Stormwater Management Program (SWMP) and compliance with Total Maximum Daily Load (TMDL) requirements. In each permit issuance, the SWMP has consisted of the same five components:

- Public Education and Outreach
- Public Involvement and Participation
- Illicit Discharge Detection and Elimination (IDDE)
- Controlling Runoff from New Development, Redevelopment, and Construction Sites
- Municipal Operations and Maintenance (O&M)

SWMP implementation deadlines are staggered throughout the permit cycle to give permit holders time to develop and implement new or updated programs. Each permit issuance may see additional requirements added to existing programs or more stringent standards required (e.g., more frequent inspections or more stringent flow control standards for stormwater facilities).

There were a number of substantive new requirements in the 2013-2018 permit that are to be phased in over the 5-year permit cycle (Figure 2-2).

Figure 2-2. NPDES Phase II permit timeline of new requirements





The primary changes are:

- **Monitoring** – The Phase II permit includes monitoring and assessment requirements that allow permittees to conduct individual monitoring or pay into a Regional Stormwater Management Program (RSMP) fund that: 1) collects status and trends monitoring data, 2) conducts stormwater program effectiveness studies, and 3) performs source identification and diagnostic monitoring. Kenmore has opted to pay into the regional monitoring fund.
- **LID** – The Phase II permit requires permittees to adopt LID site-scale standards and update development-related codes in addition to adopting Ecology's 2012 SWMMWW or an equivalent manual which emphasizes the incorporation of LID standards and has a new LID performance standard for flow control.
- **O&M** – The Phase II permit has new inspection and maintenance frequencies, increasing catch basin inspections from once per permit cycle to every 2 years.
- **Threshold for sites requiring flow control** – The Phase II permit changes the threshold for controlling runoff from new development, redevelopment, and construction from 1 acre to all sites regardless of size.
- **IDDE** – The Phase II permit requires 40 percent of the MS4 to be field screened by December 31, 2017, and 12 percent of the MS4 to be screened each year thereafter.

These changes will mean a shift in how the City permits development projects, and inspects and maintains the stormwater system. Because the changes are required by regionally based permits, most cities and counties are making similar changes to their programs and collectively going through the process. Kenmore is active in regional stormwater groups and continued participation and collaboration will inform Kenmore's program adaptations.

2.4.2 Federal CWA – Total Maximum Daily Load (TMDL)

Under section 303(d) of the CWA, Washington State is required to develop lists of impaired water bodies (waters that are too polluted or otherwise degraded to meet water quality standards). Washington State performs a water quality assessment of all surface waters that have available data and categorizes them based upon the status of their water quality (ranging from "Category 1 - meets water quality standards" to "Category 5 - polluted"). Those water bodies whose beneficial uses (e.g., drinking, recreation, aquatic habitat, and industrial use) are impaired by pollutants are placed into the polluted category. These Category 5 polluted water bodies require a water cleanup plan, such as a TMDL, or other approved water quality improvement project. A TMDL identifies how much pollution is allowed in a water body so that the beneficial uses of the water are not impaired and allocates that amount among various sources.

The City currently has one TMDL for fecal coliform bacteria pollution in Swamp Creek. Ecology established the TMDL in 2006 and approved the City's Quality Assurance Project Plan (QAPP) for Swamp Creek Fecal Coliform Bacteria TMDL in 2008 (City of Kenmore 2008). The TMDL is primarily administered through its NPDES municipal stormwater permit. The City's QAPP was updated in February 2015.

2.4.3 Federal Endangered Species Act (ESA) – Chinook Salmon

Puget Sound Chinook salmon and bull trout were listed as threatened species under the ESA in 1999. To prevent further decline of the species and to encourage restoration, the ESA prohibits "take" of the species or its habitat. Those agencies or individuals found to be creating take of the species are subject to third-party lawsuits. The outcome of such lawsuits could have severe economic consequences for the region, such as curtailing of development or requirements for specific, potentially costly habitat restoration activities.

The listing of Puget Sound Chinook salmon required National Oceanic Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) to develop a recovery plan for the species. NMFS worked with the Shared Strategy for Puget Sound and other local partners to develop the Puget Sound Chinook Recovery



Plan, which was presented in 2005 and adopted in 2007. In 2008, a new state agency called the Puget Sound Partnership (PSP) became the responsible agency for implementing the plan. NMFS, PSP, as well as federal, state, tribal and local partners work together to implement the recovery plan.

Kenmore participates regionally in Water Resource Inventory Area (WRIA) 8 Salmon Recovery efforts and implements actions in the WRIA 8 Chinook Salmon Conservation Plan, as well as other guidelines such as the Regional Road Maintenance ESA Program Guidelines for road maintenance activities that contribute to conservation of Chinook salmon, bull trout and other aquatic species listed under the ESA.

2.4.4 Tribal Agreements - Culvert Case

In 1974, US District Court Judge George Boldt ruled that treaties signed in the 1850s guaranteed tribes the right to take fish “in common with” other residents of the area. The decision became known as the “Boldt” decision, and Boldt further held that Washington State had a duty to make sure fish were available to catch and that it had a duty to protect the environment. In 2007, US District Court Judge Ricardo Martinez ruled that the State was violating treaty rights by operating culverts that hinder fish passage.

In March 2013, the US District Court ruled that Washington State is not fulfilling obligations to remove barriers that impede fish movement. This has become known as the “Culvert Case,” and requires the State to accelerate their program to upgrade and replace state-owned culverts. The ruling is under appeal, but, nonetheless, many jurisdictions around the State are assessing their culverts in anticipation of future rulings. Kenmore has assessed some of its culverts for fish passage and may wish to prioritize culverts specifically for fish passage modifications in the future to address potential future rulings.

2.4.5 National Flood Insurance Program (NFIP)

The NFIP was created in 1968 as a way to offer flood damage assistance in exchange for regulated development within the Federal Emergency Management Agency (FEMA) mapped 100-year floodplains. This program focuses on public health, safety, and welfare by protecting all new and substantially improved buildings. In exchange for a city regulating development in floodplains, property owners within that city obtain the ability to purchase flood insurance at substantially reduced rates.

The NFIP was revised based on findings from a NMFS study that showed how floodplain development can negatively affect aquatic habitat. NMFS issued a BO that required changes to the NFIP in order to meet the requirements of the ESA as well as protect buildings from flood damage. Kenmore complies with the NFIP by conducting a review of floodplain impacts on a case-by-case basis for all development within the City’s 100-year floodplains, which include Swamp Creek, Little Swamp Creek and Sammamish River.

2.4.6 Other Related Regulations

In addition to directly related regulations (e.g., NPDES and CWA), the state Growth Management Act (GMA) (Chapter 36.70A RCW) and the state Shoreline Management Act (SMA) have significant overlap with surface water and SWMPs. The GMA requires jurisdictions within urban growth areas, such as Kenmore, to conduct comprehensive city planning and develop policies and regulations that protect the functions and values of critical areas. The City of Kenmore’s Comprehensive Plan, zoning regulations, and supporting municipal code sections address land use and growth management.

The SMA of 1971 requires local governments to develop shoreline management programs that protect the public interest associated with shorelines of the State while, at the same time, recognizing and protecting private property rights consistent with the public interest.

Kenmore, a waterfront city, adheres to the SMA through the City’s Shoreline Master Program (updated in 2012) and KMC Title 16: Environment, which includes sections on requirements for implementation of the program. Many of the priorities require involvement and cooperation of the Surface Water Management Division, as they involve managing surface water in the context of shoreline beneficial uses. Shorelines



covered under the City's Shoreline Master Program include the entire shoreline of Lake Washington within Kenmore and the Sammamish River, Swamp Creek, and portions of Little Swamp Creek.

2.4.6.1 Critical Areas

Critical areas include:

- Wetlands
- Areas with a critical recharging effect on aquifers used for potable water
- Fish and wildlife habitat conservation areas
- Frequently flooded areas
- Geologically hazardous areas

Critical areas are, more often than not, inexplicitly linked to the built and natural surface water and stormwater systems. The City's wetlands, streams, and open spaces provide beneficial surface water functions, and stormwater regulations are designed to protect these important functions. Title 18.55 of the KMC designates and classifies the City's critical areas such that they are ecologically protected and that life and property are protected from hazards while allowing reasonable use of private property.

2.4.6.2 Development Code

Land use and activities conducted in Kenmore directly affect surface water and stormwater management through the creation of impervious surfaces and pollution-generating activities. The City's code is designed to ensure that development is carried out in locations and methods that are safe, do not negatively impact public resources, and fit within the overall context of the City's neighborhoods. The City's Comprehensive Plan outlines goals and policies related to development activities, and the municipal code outlines how the goals and policies are to be met. Surface water management is included in KMC Title 13: Utilities and Public Works, and zoning, development standards, land alterations, and permits are located in other sections of the municipal code.

2.4.6.3 Transportation Standards

Most of the City's public stormwater infrastructure is located within road right-of-way (ROW). Pollutants from roadway runoff contribute to water quality issues in the City's water bodies. Transportation design standards affect the amount and quality of stormwater runoff that is conveyed and/or treated. Non-motorized transportation planning and design also involves coordination with surface water and stormwater management, as hard surfaces such as trails and sidewalks contribute flow to the surface water system.

Kenmore adopted the 1993 King County Road Standards (King County 1993), with a few minor amendments. The standards are located in KMC Title 12: Streets and Bridges. Kenmore is currently working on a new road standards manual, which is expected to be adopted in 2015. Subsequent amendments may be required to meet LID requirements before December 31, 2016.



What's the purpose of having stormwater policies?

Kenmore's stormwater policies provide the basic framework and principles from which the stormwater utility operates and functions. Policy statements are intended to provide clarity to the City's goals for surface and stormwater management. Opportunities to update goals and policies coincide with updates to the City's Comprehensive Plan.

3. Existing Policies

Surface water and stormwater management policies and current relevance are discussed in this section. These policies provide the framework for managing the City's natural surface water systems, MS4, and privately constructed storm sewer systems.



Current financial policies guiding the management of the City's surface water management service charge are also included in this section.

Surface water and stormwater management policies have been established and administered primarily through the City's Comprehensive Plan, KMC, and the City's SWMP. The Surface Water Element of the City's Comprehensive Plan provides long-range goals and policies that support the community's vision of the City's future. The KMC establishes the surface water management program and outlines policies to fund and carry out the program's mission. The SWMP describes the program components that meet NPDES municipal stormwater permit requirements.

3.1 Comprehensive Plan – Surface Water Element

The City's Comprehensive Plan contains the community's vision of the City's future and a statement of the City's long-range goals and policies. The Plan serves as the guide for City staff and the City Council in making decisions regarding ordinances, regulations, and public facility investments to ensure the overall goals and policies are furthered by those decisions. The Surface Water Element of the Comprehensive Plan (established in 2001 and updated in 2014) addresses the surface water portion of that vision and has one primary goal:

Develop, maintain, manage and improve a surface water system that serves the community, enhances the quality of life, and protects the environment.

Two objectives relate to obtaining the Surface Water Element goal:

- **Objective SW-1:** Effectively manage the City's MS4 and private surface water systems in a manner that reduces flooding, maintains water quality, and protects the natural environment.
- **Objective SW-2:** Protect, maintain, enhance, and restore natural surface water systems.

Tables 3-1 and 3-2 provides a summary of policies that support objectives SW-1 and SW-2, respectively, as well as a description of the policies and how they are implemented. References to supporting documentation are provided where appropriate.

Table 3-1. Objective SW-1 policies and implementation

Policy	Policy and Description	How is it Implemented?
<u>SW 1.1</u>	Comply with the current Western Washington Phase II Municipal Stormwater Permit (NPDES and Washington Waste Discharge General Permit).	The City's Surface Water Program Manager oversees the development, implementation, tracking, and reporting of the City's NPDES Municipal Stormwater Permit. An annual report and updated SWMP Plan is submitted to Ecology annually.
<u>SW 1.2</u>	Implement and update as necessary the City's SWMP Plan, which describes the City's programs for public education and outreach public involvement and participation; IDDE; controlling runoff from new development, redevelopment, and construction sites; municipal O&M; and TMDL.	The City updates the SWMP Plan, as needed, to meet NPDES Municipal Stormwater Permit requirements and submits it to Ecology annually.
<u>SW 1.3</u>	Adopt and implement an approved Surface Water Design Manual, as needed, which is equivalent to the Ecology SWMMWW.	Upon incorporation, the City adopted the 1998 KCSWDM (King County 1998). The City's 2007 NPDES Municipal Stormwater Permit required an update to the design manual and Ordinance 10-0305 adopted the 2009 KCSWDM, which became effective January 21, 2010, satisfying Permit requirements. The City's 2013 NPDES Municipal Stormwater Permit requires an update to the current design manual by December 31, 2016, and the City will review and consider King County's 2015 manual or Ecology's 2012 manual for adoption.



Policy	Policy and Description	How is it Implemented?
<u>SW 1.4</u>	Where feasible, the City will make LID the preferred and commonly used approach to site development. LID is a stormwater and land use management strategy that strives to mimic pre-disturbance hydrologic processes of infiltration, filtration, storage, evaporation, and transpiration by emphasizing conservation, use of on-site natural features, site planning, and distributed stormwater management practices that are integrated into a project design.	This policy is primarily implemented through the City's Road Design and Construction Standards, Surface Water Design Standards, various KMC sections and the NPDES Municipal Stormwater Permit. These standards and regulations will see significant updates in 2015 and 2016 to meet requirements making LID the preferred and commonly used approach to site development.
<u>SW 1.5</u>	Implement a Capital Improvement Program that maintains and improves the MS4 in a manner that enhances and protects the City's natural environment; mitigates flooding problems; improves water quality; promotes a reliable and safe transportation network; and provides the community a safe and healthy place for living, working, and recreation.	The Surface Water Capital Improvement Program is periodically reviewed and updated through several processes, including: Capital Facilities Element updates of the Comprehensive Plan (2001 and 2014); budget updates (most recently for the 2015-2016 biennium budget); Surface Water Master Plan updates (2001, 2008, and 2015); and 6-year Capital Improvement Program updates (every 1-2 years to ensure appropriate prioritization).
<u>SW 1.6</u>	In an effort to protect public resources, water quality, and reduce flooding, the City manages private surface water systems by providing inspections, education, technical assistance, and, if necessary, enforcement action to private property owners within the City. The City does not operate or maintain privately owned surface water systems unless that system has been formally accepted by the City and is located within the ROW or within a tract or easement dedicated to the City for the purpose of operating and maintaining said system.	The City conducts annual inspections of privately owned and maintained surface water facilities and notifies owners of outstanding maintenance items, which must be completed by the property owner.
<u>SW 1.7</u>	Seek opportunities to design and implement surface water management facilities that are functional, serve as amenities, and serve multiple purposes such as those described in the Parks Element of the City of Kenmore Comprehensive Plan.	KMC Title 18: Zoning provides incentive to developers to combine stormwater tracts and recreational open space areas. Emerging LID techniques integrate site function with surface water management by utilizing BMPs such as permeable pavements and bio-filtration in landscaping.
<u>SW 1.8</u>	Participate in the RSMP, which includes effectiveness monitoring of SWMP activities and source identification information repository.	The City provides funds, annually, to the RSMP for effectiveness studies and source identification and diagnostic monitoring. Funds collected from multiple permit holders are combined into one regional program. By contributing funds to the RSMP, the City is in compliance with section S8 of its NPDES Municipal Stormwater Permit.

Table 3-2. Objective SW-2 policies and implementation

Policy	Policy and Description	How is it Implemented?
<u>SW 2.1</u>	Support shoreline management policies outlined in the Shoreline Element of the City of Kenmore Comprehensive Plan, which strive to preserve, protect, and enhance the City's abundant shoreline habitat.	Kenmore's Public Works Department and Planning and Community Development Department coordinate efforts to implement the Shoreline Element, primarily through appropriate project and permit review.



Policy	Policy and Description	How is it Implemented?
<u>SW 2.2</u>	Support natural environment policies outlined in the Natural Environment Element of the City of Kenmore Comprehensive Plan, which include protection of wetlands, plants and wildlife, maintaining and promoting a diversity of species and habitat, participation in WRIA 8 and using LID BMPs.	Kenmore's Public Works Department and Planning and Community Development Department coordinate efforts to implement the Shoreline Element, primarily through appropriate project and permit review.
<u>SW 2.3</u>	Implement critical and sensitive area regulations that protect and enhance surface waters, which may include but are not limited to buffers; setbacks; erosion and sediment control; mitigation; SEPA compliance; HPA compliance; and compliance with any other applicable local, state, and federal requirements.	The City's Development Department implements critical and sensitive area regulations through permits and code enforcement.
<u>SW 2.4</u>	Protect, enhance, and restore flood storage, conveyance functions, and ecological values of floodplains, wetlands, and riparian corridors through the development and implementation of CIPs, studies, and plans.	Each year, City departments construct and improve infrastructure through various CIPs. Environmental impacts, including those to surface water, are evaluated for each project and projects often improve surface water environments within their limits. Examples include recent park projects that have created or expanded wetland areas in the City. Recent transportation projects have installed stormwater treatment facilities where none previously existed and removed undersized culverts, which were replaced with fish-passable culverts.
<u>SW 2.5</u>	Promote and support opportunities for public involvement and participation, which may include, but are not limited to, stewardship groups, volunteer opportunities, and grant partnerships.	The City's volunteer program has expanded significantly over the last 2 years, including the creation of a dedicated volunteer coordinator position. Volunteers interested in surface water-related activities are connected with appropriate staff. Recent projects include construction of surface water informational displays, invasive species removal, and catch basin stenciling. The City also provided support for private parties seeking water quality grant funds. No formal stewardship groups have been formed in Kenmore, but City staff have communicated with interested residents and will continue to promote and support stewardship roles in the community.
<u>SW 2.6</u>	Promote and support opportunities for regional coordination and watershed-level management of the City's natural surface water systems. Kenmore often contains only a portion, and in some cases a very small portion, of the natural surface water systems that pass through the City. The City will actively pursue coordination with upstream jurisdictions and partners to manage these natural resources and share responsibility.	The City participates with WRIA 8 for large-scale management of the Lake Washington/Cedar/Sammamish Watershed. The City also coordinates with Swamp Creek Watershed partners for managing TMDL requirements for fecal coliform. Additionally, the City has provided support to private parties seeking water quality grant funds and has supported formation of stewardship groups.
<u>SW 2.7</u>	Participate in RSMP, which includes status and trends monitoring in receiving waters.	The City provides funds, annually, to the RSMP for status and trends monitoring. Funds collected from multiple permit holders are combined into one regional program. By contributing funds to the RSMP, the City is in compliance with section S8 of its NPDES Municipal Stormwater Permit.



3.2 Kenmore Municipal Code (KMC)

Ordinance 98-0016, passed in 1998, established the City's Surface Water Utility, adopted its Surface Water Management Program, and created the Stormwater Utility Fund. It adopted by reference, with slight modification, Chapters 9.04, 9.08, and 9.12 of King County Code (KCC) Title 9: Surface Water Management, along with all subsequent amendments (King County 2014). KCC Title 9 establishes surface water runoff policy, a surface water management program, water quality requirements, and groundwater protection requirements. Since that time, the City has codified its surface water management requirements within the KMC. Today, the City's Surface Water Management Program operates primarily through KMC

Title 13: Utilities and Public Works that includes the following chapters, some of which are discussed below:

- KMC Chapter 13.30: General Provisions - outlines establishment of the stormwater utility.
- KMC Chapter 13.35: Surface Water Runoff Policy - outlines development policies.
- KMC Chapter 13.40: Surface Water - general policies are outlined and a utility fee structure is established.
- KMC Chapter 13.45: Water Quality - addresses water quality.
- Utility rates are adopted by resolution.

Additional chapters relevant to the stormwater program include:

- KMC Chapter 1.20: Code Enforcement
- KMC Chapter 12.50: Street Standards
- KMC Chapter 15.25: Grading
- KMC Chapter 16.00: Environment
- KMC Chapter 20.00: Development Permits
- KMC Chapter 21.00: Financial Guarantees

3.2.1 KMC Chapter 13.35: Surface Water Runoff Policy

The City Council adopted KMC Chapter 13.35 to provide comprehensive management of surface water and stormwater with thorough permit review, construction inspection, enforcement, and maintenance associated with development and redevelopment within the City. The goals: Promote public health, safety, and welfare; preserve and utilize the many values of the City's natural drainage system (e.g., open space and fish and wildlife); reduce flooding, erosion, and sedimentation; prevent and mitigate habitat loss; enhance groundwater recharge; and prevent water quality degradation.

The City Council initially adopted the 1998 King County Surface Water Design Manual (KCSWDM), which provides standards and specifications for projects within the City. The manual outlines many "core requirements" that must be addressed by applicable projects, which include: discharge location, offsite analysis, flow control, conveyance, erosion and sediment control, O&M, financial guarantees and liability, and water quality. Other "special requirements" are also considered for applicable projects, including: area-specific requirements, flood hazard areas, flood protection facilities, source control, and oil control. In 2010, the City Council adopted the 2009 KCSWDM, which has a similar structure to the 1998 version but contains updated standards, specifications and thresholds to meet State requirements at that time. By December 31, 2016, City Council will adopt a Surface Water Design Manual to meet current State requirements outlined in the 2013 Western Washington Phase II Municipal Stormwater Permit and Ecology's 2012 Stormwater Management Manual for Western Washington (SWMWW), as amended in December 2014.



3.2.2 KMC Chapter 13.40: Surface Water

KMC Chapter 13.40 was adopted by the City Council to provide comprehensive management of surface and storm waters with basin planning, land use regulation, construction of facilities, maintenance, public education and provision of surface water and stormwater management services. The chapter also establishes a sustainable surface water fund to financially support the City's surface water and stormwater management programs.

3.2.2.1 General Policies

Basin Coordination

The majority of the City's surface water basins are shared with other cities and counties and Kenmore, located on Lake Washington, is at the low point of these watersheds. Kenmore has limited ability to manage surface water and stormwater that emanates outside of City limits. Therefore, it is the City's policy to support basin-wide efforts that would improve downstream conditions within Kenmore. These efforts may include participation and support for regional watershed groups that focus on issues such as salmon recovery, flood reduction, pollutant load reduction, and water quality improvement. Private watershed associations are supported and encouraged by the City. The City also provides support for regional regulations that reduce stormwater runoff and improves stormwater quality from development, redevelopment, and construction sites.

Public Education

Historically, there has been a general lack of public knowledge about the relationship between human actions and surface water and stormwater management. Therefore, it is the City's policy to reduce or eliminate behaviors and practices that cause or contribute to adverse surface water and stormwater impacts through public education and outreach programs and by integrating education into code enforcement. The City may implement these programs locally or participate in regional public education and outreach programs. The City's surface water and stormwater education and outreach programs target many audiences, including the general public, school age children, business owners, and developers.

Impacts of Development

Developed parcels contribute to an increase in surface water and stormwater runoff to the surface water management system. In many cases, storm and surface water runoff also contain pollutants which contaminant the surface water management system and receiving water bodies. Developed parcels have had their native soils, vegetation, and trees removed and replaced with impervious surfaces such as streets, sidewalks, buildings, driveways, and parking lots and non-native pervious areas such as lawns, pastures, and open fields. Undeveloped parcels comprised of native soils, vegetation, and trees have little to no impact on the surface water and stormwater system.

The City implements many policies to mitigate the effects of development. Engineering, planning, and construction standards and regulations are continually updated as science and technology improve. The City's surface water funding structure is also influenced by development and land use, which is discussed in more depth in the following section.

City Streets and Highways

City streets and SR 522 contribute surface water and stormwater runoff to the surface water management system. However, the City Council recognizes that much of the City's surface water management system is located and operated within street ROWs.



Capital Improvement Program

The Surface Water Management Program prepares and updates a multi-year Capital Improvement Program which encompasses all of the program's activities related to the acquisition, construction, replacement, or renovation of capital facilities or equipment. All proposed new or retrofitted facilities are subject to a consistent and thorough needs analysis and updated appropriately. The program's capital facilities are planned and financed to ensure that the benefits of the facilities and the costs for them are balanced over time.

The Capital Improvement Program is a six year, living document that undergoes review and update through various processes. The Capital Facilities Element of the Comprehensive Plan contains a long-range program list. The Surface Water Master Plan (updated approximately every 5 years) and the biennium budget (updated every 2 years) prioritize, update, and budget surface water CIPs.

3.2.2.2 Surface Water Service Charge

Surface water service charges are assessed for each parcel within the City. The assessment considers land use, parcel size, and impervious area to determine the annual surface water service charge. Residential and very lightly developed parcels are charged a flat rate service charge. Residential parcels, which account for a majority of the parcels in the City, have minimal variance in impervious area and determining the ratio of impervious area for each parcel is not cost effective to administer. Very lightly developed parcels (less than 10 percent impervious area) have much less impact to the City's surface water and stormwater systems than those that have higher impervious areas. Nonresidential parcels with impervious area ratios higher than 10 percent are charged a variable rate service charge. The rate is determined by the ratio of impervious area of the parcel and increases as the ratio increases. The City contracts with King County to collect surface water service charges. King County includes the service charge on each parcel's property tax statement, which is sent out twice a year.

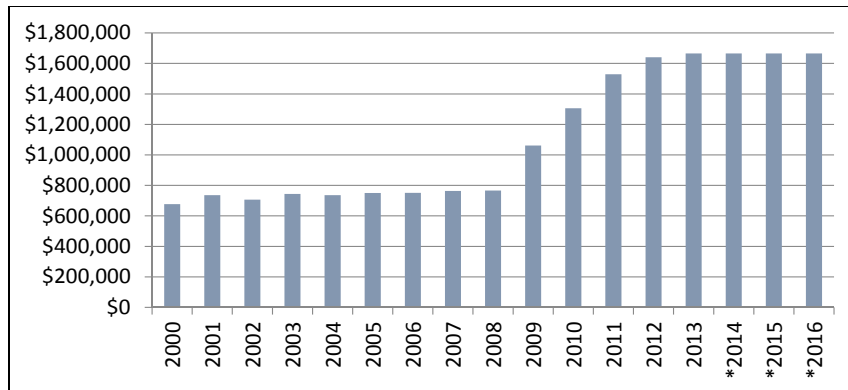
Table 3-3 summarizes the rate categories and provides a history of the City's surface water service charge rates since incorporation in 1998. The 2008 Surface Water Master Plan update included a detailed financial analysis that resulted in a phased increase in service charge rates from 2009 through 2012. Additional rate increases may be considered in the future, if needed, to sustain surface water management services and capital projects, but rate increases are not currently planned through 2016. Figure 3-1 summarizes the City's surface water service charge annual revenue from 2000 through 2016.

Table 3-3. Summary of Kenmore's surface water management service charges

Class	Impervious Area Ratio	Annual Rates				
		1998-2008	2009	2010	1998-2008	2012-2016
Residential	NA	\$85.02	\$120.24	\$143.40	\$166.80	\$167.40
Very Light	0 ≤ 10%	\$85.02	\$120.24	\$143.40	\$166.80	\$167.40
Light	>10% to ≤ 20%	\$198.40	\$280.59	\$334.63	\$389.24	\$390.64
Moderate	>20% to ≤ 45%	\$410.98	\$581.23	\$693.18	\$806.30	\$809.20
Moderately Heavy	>45% to ≤ 65%	\$793.60	\$1,122.35	\$1,338.53	\$1,556.96	\$1,562.56
Heavy	>65% to ≤ 85%	\$1,006.16	\$1,422.97	\$1,697.05	\$1,973.98	\$1,981.08
Very Heavy	>85% to ≤ 100%	\$1,317.94	\$1,863.90	\$2,222.92	\$2,585.66	\$2,594.96



Figure 3-1. Surface water service charge annual revenue



* Estimate

3.2.2.3 Surface Water Service Charge Rate Adjustments

Surface water service charge rate adjustments are available to parcel owners if the parcel owner qualifies for a low-income senior citizen exemption, the parcel qualifies as open space, or the parcel is served by a qualified flow control and/or water quality treatment facility.

Qualification for the low-income senior citizen exemption is determined by the County Assessor and is authorized under Chapter 84.36.381 RCW. Through the contract with King County for service charge collection, the County Assessor applies the rate adjustment to the parcel owner's property tax statement and surface water service charges are not collected from qualifying residential parcels.

The City recognizes that undeveloped parcels may conserve and enhance natural resources and protect streams or other aquatic habitats. Therefore, parcels may qualify for an open space rate adjustment if they are classified as open space or agricultural or timber lands under criteria contained in Chapter 84.34 RCW or for which the development rights have been sold to the City.

Design and construction of surface water facilities is a required and integral component of the development process. However, the City recognizes that privately maintained surface water facilities offer a benefit to the City's surface water systems. Therefore, parcels may qualify for a rate adjustment if the parcel is served by a qualified flow control and/or water quality treatment facility. The facility must be maintained at the expense of the parcel owner to the City's current maintenance standards. Currently, the City has adopted the maintenance standards in Appendix A of the 2009 KCSWDM.

The City recognizes that engineering standards have changed over time and the level of service provided by facilities can vary significantly depending on the age of the facility. To account for this variance in level of service, the City provides a four-tier rate adjustment depending on the design standard used for the facility. Facilities permitted prior to 1998 (designed under the 1969, 1977, 1979 or 1990 KCSWDM) may receive a 10 percent reduction in their total service charge. Facilities permitted from 1998 to 2009 (designed under the 1998 KCSWDM) may receive a 20 percent reduction in their total service charge. Facilities permitted from 2009 to 2016 (estimated date of next KCSWDM update) may receive a 30 percent reduction in their total service charge. Facilities permitted after 2016 may receive a 40 percent reduction in their total service charge. Table 3-4 summarizes the surface water facility rate reduction options.



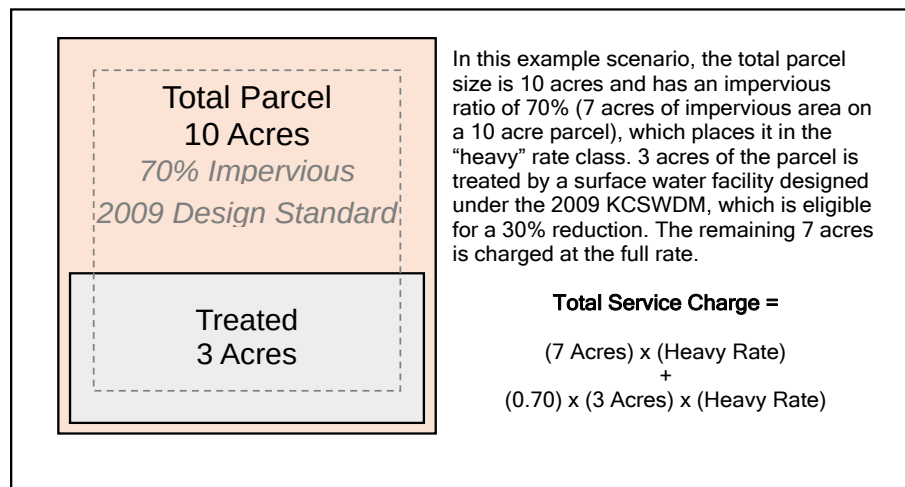
Table 3-4. Private Facility Service Charge Reductions

	King County Surface Water Design Standard (KC SWDM) Version & Permit Year			
	Before 1998	1998-2009	2009-2016*	After 2016*
Service Charge Reduction	10%	20%	30%	40%

* Estimated year of KCSWDM update

The City recognizes that some larger parcels may be partially served by a qualified flow control and/or water quality treatment facility. In this scenario, the area of the parcel served by the facility may receive the appropriate reduction in the total area served by the facility and the non-served portion of the parcel will be charged at the full rate applicable to that parcel. Figure 3-2 provides an example of a partial surface water facility rate reduction.

Figure 3-2. Example surface water service charge calculation for parcels partially served by a qualified flow control and/or water quality treatment facility



3.2.3 KMC Chapter 13.45: Water Quality

City Council adopted this chapter to protect the City’s surface and ground water quality by providing minimum requirements for reducing and controlling the discharge of contaminants. Water quality degradation can result either directly from one discharge or through the collective impact of many small discharges. Therefore, KMC Chapter 13.45 establishes policies restricting or prohibiting the discharge of contaminants into surface, storm, and ground waters.

Prohibited discharges are not allowed in surface, storm, and ground waters. The most common examples include sediment, trash, petroleum products, pesticides, herbicides, fertilizers, and soap. Some activities may result in allowable discharges if appropriate BMPs are implemented to eliminate or restrict prohibited discharges into surface, storm, and ground waters. Examples of activities that may result in allowable discharges with application of BMPs include application of pesticides, vehicle washing and maintenance, building washing and maintenance, and potable water line flushing. Common exceptions to discharge rules include dye testing and emergency response activities. If property and project owners are appropriately implementing BMPs and all known, available, and reasonable treatments (AKART) to prevent, control, or abate pollutants associated with a discharge, then an exception may be provided for the discharge.



Ordinance 09-0299 adopted the Stormwater Pollution Prevention Manual, which provides BMPs for commercial, multi-family, and residential properties. BMPs for a wide range of activities are addressed in the manual, including storage of hazardous materials; maintenance of vehicles, buildings, and ground surfaces; landscaping; animal handling; and swimming pool maintenance.

In addition to enforcement actions outlined in KMC Chapters 1.15: General Penalty and 1.20: Code Enforcement, Chapter 13.45 includes enforcement procedures specific to water quality. Generally, compliance with this chapter is achieved through public education, warnings, technical assistance, implementation of BMPs, and, if necessary, AKART. Immediate penalties may be assessed if the violation is a result of a flagrant act or if the discharge is posing a hazard to the public.

3.2.4 KMC Chapter 12.50: Street Standards

City Council adopted the 1993 King County Road Design and Construction Standards (KC RDCS), which provides additional standards and specifications for projects within the City specific to stormwater conveyance systems. The City is currently working on updates to these standards and by December 31, 2016 they will include low impact development (LID) standards, which may include elements such as permeable pavements, narrower road options and bioretention swales.

3.3 Administrative Policies

3.3.1 Private Property Surface Water Management

Surface water (which includes surface, storm, and ground water) impacts properties in Kenmore regardless of land use or ownership. Generally, the City is responsible for managing surface water in public ROWs, publicly owned properties, and dedicated easements on private property that have been formally accepted by the City for the purpose of managing surface water. Generally, private property owners are responsible for managing surface water on their property.

The City frequently responds to private property drainage questions, complaints, and issues. The City attempts to provide a consistent response to private property owners. City staff reviews existing surface water information on and around the property, including historical complaints, GIS information, and plat or construction documents. Staff will look to see if there are publicly maintained facilities involved or easements present. Site visits will be conducted to meet with the property owner and to assess adjacent ROW conditions to determine if public infrastructure or ROW is associated with the private property issue. If the ROW is associated with a private property surface water issue, staff will assess the situation case-by-case to determine a course of action.

Often times, a property owner will want staff to assist them with assessing their problem. Staff may provide general assessments (e.g., determining that groundwater seeps are impacting the property or educating the property owner about the local drainage in the neighborhood and how it is potentially affecting their issue). Staff may walk the site with the owner to inspect drainage structures, look for maintenance issues, or look at downspouts to see where they discharge.

After assessing an issue, property owners will often ask staff to provide a solution to their problem or recommend a course of action. Staff will not direct or recommend any particular action and will always advise the owner to consult a private professional if they are not comfortable managing the issues themselves. Staff may also direct property owners to publicly available resources, such as King County's small site drainage manual. Property owners often ask staff to recommend a contractor to design or conduct work. The City does not provide recommendations to private property owners for any particular company or individual for surface water management services. In short, staff will provide general technical assistance to property owners, but it is up to the property owner to decide on a course of action, if needed, to address their private drainage issue.



When private property owners have an issue or dispute arising from neighboring private property and they want the City to legally address the issue with the neighboring property or properties, the City will generally advise the owner to consult a legal professional to address the issue. The City may become involved and can use the KMC to enforce surface water issues on private property when it involves water quality and critical area (e.g., streams) violations. Otherwise, surface water is considered a “common enemy” to all property owners and private property situations need to be addressed by the property owner.

On rare occasions, the City may assess a private property surface water management issue and determine that City involvement is warranted. In these cases, the issue is carefully evaluated using the following criteria:

- The affected private property or properties are residential.
- The issue is beyond the control of the private property owner.
- The issue does not involve waters of the State (e.g., streams, wetlands, Lake Washington, etc.).
- The issue is not caused primarily by ground water.
- The issue does not only involve runoff from neighboring private properties.
- The issue does not require an expensive CIP.
- The cost of addressing the issue compared to the public benefit (how is the public being affected by the issue compared to the benefit received by the private property owner).
- The private property, or properties, provides an easement to the City for the purpose of managing the surface water issue.

3.3.2 Beaver Management

Beavers and beaver dams located in the public ROW or on public property that are not negatively impacting public infrastructure and do not appear to pose a hazard to the public welfare and safety will be allowed to remain. At the City’s discretion, vegetation (e.g., significant trees) may be protected.

When beavers and beaver dams located in public ROWs or on public property that have potential to negatively impact public infrastructure or pose a hazard to the public welfare and safety, but could be controlled through engineered solutions (e.g., use of barriers or “Beaver Deceivers”), the City may choose to pursue these methods.

When beavers and beaver dams located in public ROWs or on public property that have potential to negatively impact public infrastructure or pose a hazard to the public welfare and safety, and the City determines that engineered solutions are not practical or recommended, then beaver removal is required. Non-lethal removal methods (e.g., live trapping and relocation) are the City’s preferred choice, but, as a last resort, lethal control may be required if non-lethal methods are not effective.

Beavers and beaver dams located on private property are the responsibility of the property owner to manage. The City may require private property owners to remove beavers and associated dams when they impact public ROWs. The City may also require private property owners to assess tree damage caused by beavers if the trees pose a hazard to the public ROW and remove said trees if the hazard is confirmed.



4. Current Conditions

This section describes the conditions of Kenmore's physical setting, built environment, natural systems and the surface water and stormwater infrastructure that has been constructed to manage surface water and stormwater conveyance, storage, and treatment.

4.1 Physical and Biological Setting

The physical location of Kenmore is a big factor in the City's management of surface water and stormwater because much of the water that is conveyed through Kenmore comes from outside of its jurisdictional boundaries. Kenmore is located at the low point of 2 major drainages: the Sammamish River and Swamp Creek. It is situated on the northwestern shore of Lake Washington (Figure 4-1) and is approximately 6 square miles in size. Topographically, Kenmore is somewhat of a bowl shape with higher elevations to the north, east, and south (ranging from 100 to 500 feet above mean sea level) and low elevations in the downtown area where the Sammamish River valley cuts through the City and enters Lake Washington (around 18 feet above mean sea level). The Swamp Creek valley and floodplain forms another topographically low area in the City from its confluence with the Sammamish River in downtown Kenmore to the northern boundary of the City. Figure 4-2 shows relative elevation differences in the City and the topographically higher (darker) and lower (lighter) areas.

4.1.1 Geologic Conditions

Geologic conditions in Kenmore are typical of the Puget Sound lowland, consisting of Quaternary-age glacially deposited sediments that have been reworked by more recent river processes in the Sammamish and Swamp Creek valleys. Figure 4-3 shows surficial geology in Kenmore. The high points in the City are typically composed of glacial till, a very dense deposit of fine-grained material mixed with sand, gravel, cobbles, and sometimes very large boulders. Glacial till typically has very low permeability and is generally not well-suited for stormwater infiltration. The Swamp Creek and Sammamish River valleys are dominated by alluvium that consists of material that has eroded from the landscape upstream, been transported and reworked by the stream channel processes, and deposited in the floodplain and valley since the glaciers retreated. Other surficial geologic units in Kenmore are: 1) advance outwash, primarily noted on the west flanks of Swamp Creek and the north slopes of Finn Hill; 2) transitional beds stratigraphically beneath the advance outwash; 3) recessional outwash in a few small areas; and 4) landslide deposits.

From a surface water management standpoint, advance outwash typically represents the best opportunity for stormwater infiltration. Advance outwash generally consists of fine-to-medium sand that is fairly permeable and readily infiltrates water. Advance outwash can also be very erosive and prone to landslides, so the ability to infiltrate into this geologic unit will depend on proximity to steep slopes, thickness of the unsaturated zone, or ability to accept additional water.



How does geology influence surface water runoff?

Geologic conditions affect how much water runs off the landscape naturally, how much is infiltrated and how easily stream channels and hillslopes are eroded. The Swamp Creek drainage is mapped with naturally high potential for infiltration, but the stream channel bed and banks are also highly erodible.

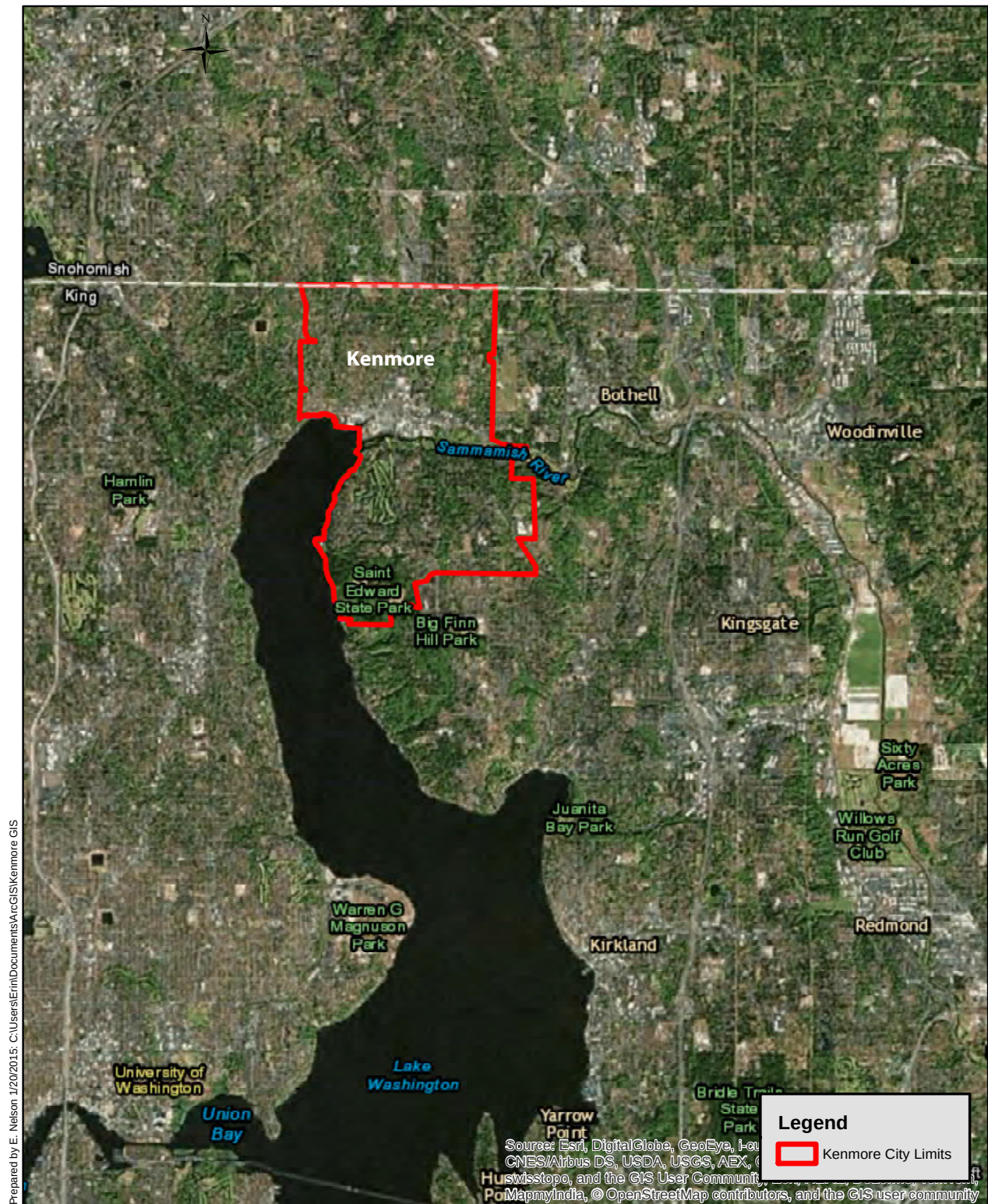
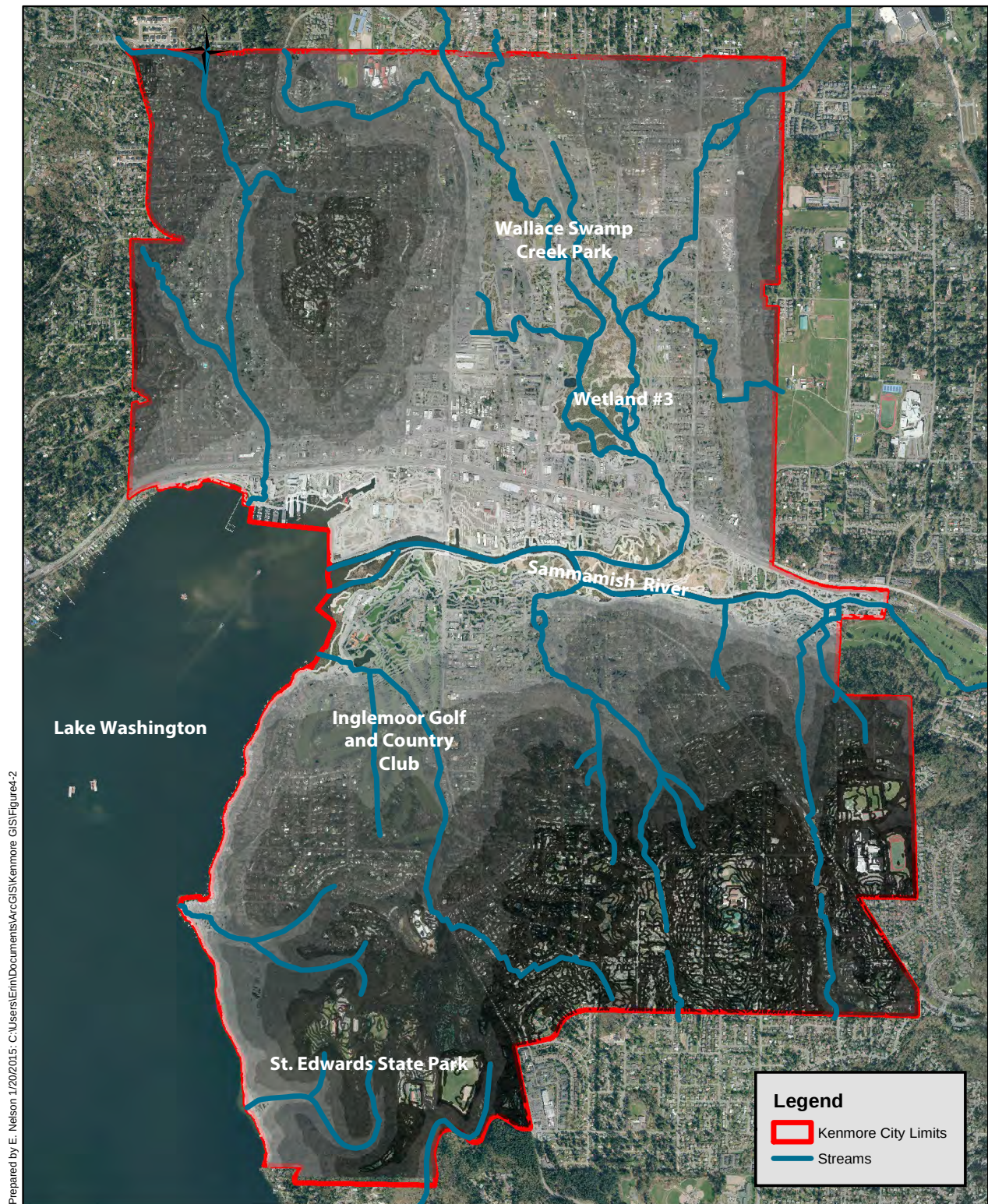


Figure 4-1
Kenmore Vicinity

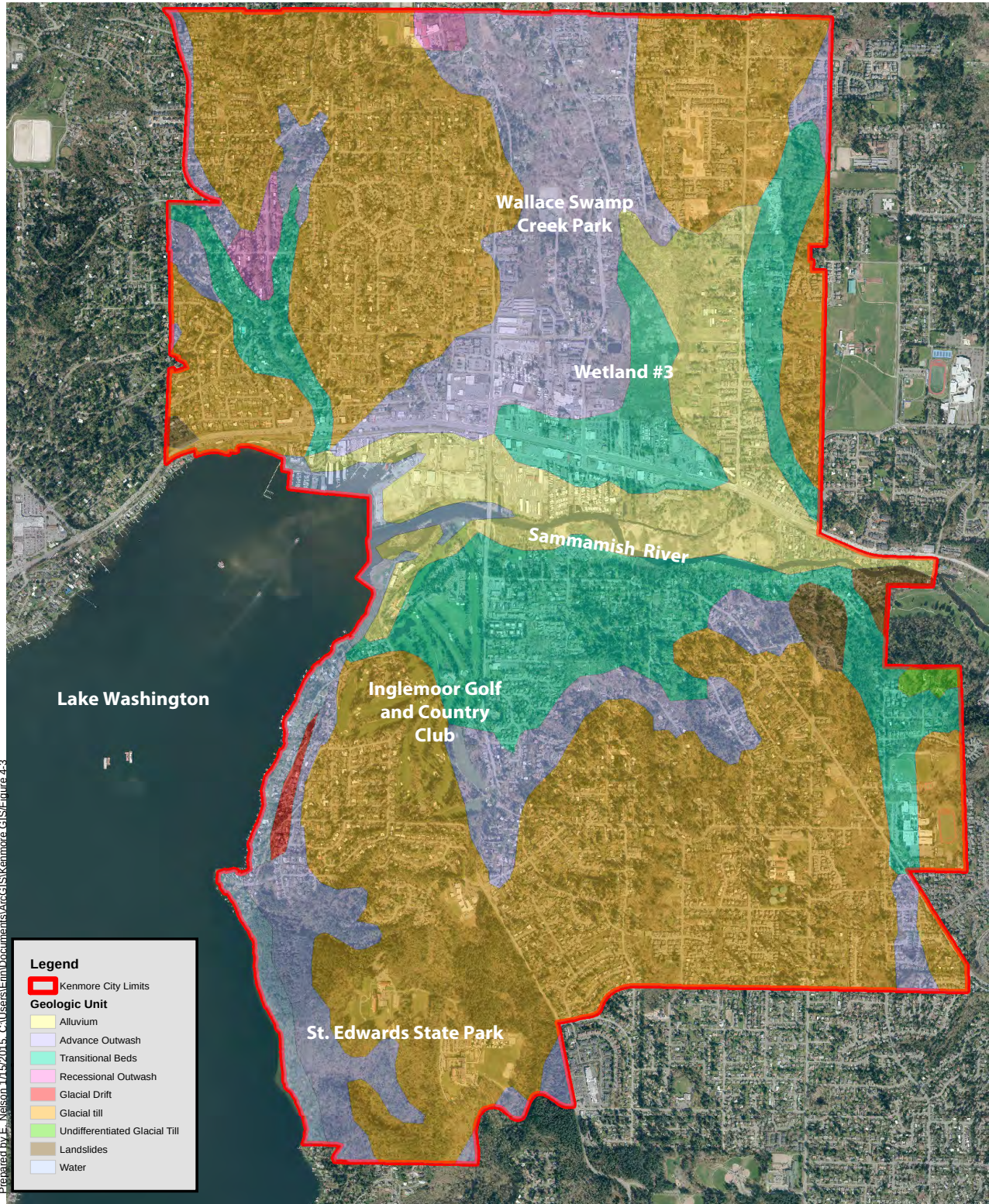


Prepared by E. Nelson 1/20/2015: C:\Users\Eln\Documents\ArcGIS\Kenmore GIS\Figure4-2



0 1,875 3,750 7,500 Feet

Figure 4-2
Kenmore Topographic Features



Prepared by E. Nelson 11/15/2015 C:\Users\Eni\Documents\ArcGIS\Kenmore GIS\Figure 4-3



0 1,850 3,700 7,400 Feet

Figure 4-3
Kenmore Geology



4.1.2 Stream Channels and Drainage Basins

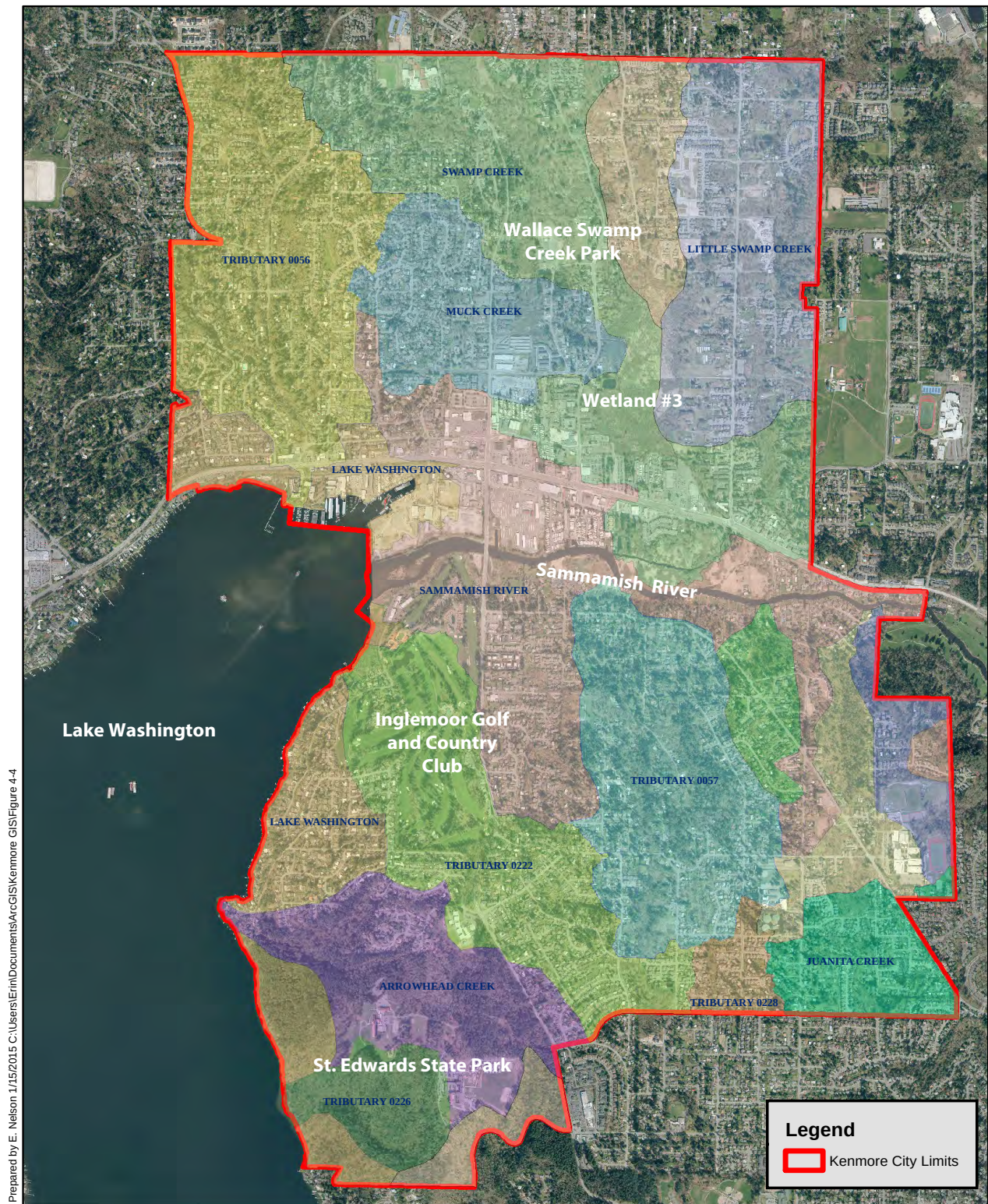
There are nearly 27 miles of stream channel in Kenmore, but only a few small stream systems that are wholly within City's jurisdictional boundaries. Figure 4-4 shows the locations of the drainage basins that make up Kenmore and Table 4-1 provides a summary of each drainage basin's acreage. The Sammamish River and Swamp Creek are the largest drainage basins in Kenmore, at 14 percent each, and approximately 60 percent of the City's water drains to these drainages. The remaining drainage basins enter Lake Washington either directly through tributaries in Kenmore (i.e., Tributary 0056 and Arrowhead Creek), or to the south in Kirkland (i.e., Juanita Creek).

Table 4-1. Kenmore drainage basins and sizes

Drainage Basin	Watershed	Basin Size (acres)	Percent of City
Arrowhead Creek	Lake Washington	250.88	6%
Juanita Creek	Lake Washington	117.97	3%
Lake Washington Drainages	Lake Washington	303.27	8%
Little Swamp Creek	Swamp Creek	330.60	8%
Little Swamp Creek Tributary 01	Swamp Creek	114.16	3%
Muck Creek	Swamp Creek	206.36	5%
Sammamish River	Sammamish River	547.47	14%
Sammamish Tributary 01	Sammamish River	65.49	2%
Sammamish Tributary 02	Sammamish River	111.59	3%
Sammamish Tributary 03	Sammamish River	69.27	2%
Swamp Creek	Swamp Creek	567.98	14%
Tributary 0056	Lake Washington	407.47	10%
Tributary 0057	Sammamish River	333.42	8%
Tributary 0222	Lake Washington	347.69	9%
Tributary 0226	Lake Washington	86.33	2%
Tributary 0227	Lake Washington	46.22	1%
Tributary 0228	Lake Washington	43.86	1%

Streams in Kenmore are designated by type according to KMC Section 18.55.400: Designation and Rating of Streams as follows:

- **Type 1** streams are those streams identified as "shorelines of the State" under Chapter 90.58 RCW, including the Sammamish River and the main stem of Swamp Creek.
- **Type 2** streams are those streams that are:
 - a. Natural streams that have perennial (year-round) flow and are used by salmonid fish, or
 - b. Natural streams that have intermittent flow and are used by salmonid fish.
- **Type 3** streams are those streams that are:
 - a. Natural streams that have perennial flow and are used by fish other than salmonids, or
 - b. Natural streams that have intermittent flow and are used by fish other than salmonids.
- **Type 4** streams are those natural streams with perennial or intermittent flow that are not used by fish.



Prepared by E. Nelson 1/15/2015 C:\Users\Erin\Documents\ArcGIS\Kenmore GIS\Figure 4-4



0 1,875 3,750 7,500 Feet

Figure 4-4
Kenmore Drainage Basins



Table 4-2 provides a summary of stream length of each type, including stream channels that are unclassified, and Figure 4-5 shows the location of stream channels in Kenmore and stream type designation.

Table 4-2. Summary of stream types and lengths in Kenmore

Stream Type	Example Stream Channels	Length of stream (miles)
Type 1	Sammamish River, main stem of Swamp Creek	7.7
Type 2	Little Swamp Creek, main stems of Tributaries 0056 and 0057	6.9
Type 3	Small tributaries to Tributaries 0056 and 0057	4.1
Type 4	Headwater tributaries	3.6
Unclassified	Upper reaches of streams that flow to Kirkland	4.6
Total		26.9

WDFW's SalmonScape mapping application (<http://apps.wdfw.wa.gov/salmonscape/map.html>) was reviewed for a general overview of the type of salmonids documented in Kenmore and the general life history phases (i.e., spawning, rearing) known to occur in what reaches. Chinook, coho, sockeye, bull trout, and steelhead salmon have been documented in 1 or more stream reaches in Kenmore, including the Sammamish River, Swamp Creek, and Little Swamp Creek. Table 4-3 summarizes the overview from SalmonScape.

Table 4-3. List of documented salmonid presence in Kenmore stream reaches

Stream Reach	Salmon Species							
	Spring Chinook	Summer Chinook	Fall Chinook	Coho	Winter Steelhead	Sockeye	Kokane	Bull Trout
Sammamish River	DP	DP	DS	DR	DP	DP	DP	DP
Swamp Creek (Main Stem)	DP	DP	DS	DS	DP	DS	--	--
Little Swamp Creek	DP	DP	MP	DR	DP	DP	--	--

DP = Documented Presence

DR = Documented Rearing

DS = Documented Spawning

MP = Modeled Presence

-- = nothing noted on SalmonScape

The SalmonScape application also lists fish passage barriers. Partial or total fish passage barriers include:

- SR 522 culvert on Tributary 0056
- 61st Avenue NE on Tributary 0056
- NE 192nd Street Crossing on Little Swamp Creek
- NE 195th Street Crossing on Little Swamp Creek
- Several driveway crossings on 80th Avenue NE on Little Swamp Creek
- Two roadway culverts on Holmes Point Drive

Additionally, other private blockages were noted downstream of SR 522 on Tributary 0056. Stream types, salmonid presence or absence, and confirmation of fish barriers were not confirmed for this Surface Water



Master Plan. Rather, information from SalmonScape and City GIS data was used to provide an overview of current conditions.

4.1.3 Wetlands

Kenmore has several wetlands that are integral parts of the surface water and drainage network, including the largest wetland in Kenmore, Wetland No. 5603, commonly referred to as Wetland #3. Wetland #3 is located on the east side of 73rd Avenue NE, south of NE 192nd ST and is associated with Swamp Creek and its floodplain. It is approximately 92 acres in size and is designated as a Class 1 wetland according to KMC Section 18.55.30: Designation and Rating of Wetlands. The confluence of Little Swamp Creek and Swamp Creek is near the middle of Wetland #3 and a very large Great Blue Heron rookery is on the south end of this wetland as well. The other Class 1 wetland in Kenmore is Wetland No. 1601, located near the mouth of Swamp Creek on Lake Washington.

The City defines Class 1 wetlands as those wetlands that meet any of the following criteria:

- 1) Documented habitat for federal or State listed endangered or threatened fish, animal or plant species; or
- 2) Wetlands listed as high quality habitats in the Natural Heritage Information System; or
- 3) Wetlands with irreplaceable ecological functions, including sphagnum bogs and fens or natural forested swamps; or
- 4) Wetlands of exceptional local significance, specifically those wetlands proximal to and influenced by the main stem of Swamp Creek, the Sammamish River, or Lake Washington.

Table 4-4 summarizes the wetlands in Kenmore, their sizes, and their ratings. The wetlands are shown in Figure 4-5.

Table 4-4. Summary of Kenmore wetlands, sizes and ratings

Wetland Identification	City of Kenmore Rating	Size (acres)
5601	3	0.3
1660	2	3.9
5604	2	6.2
5603 (Wetland #3)	1	92
5605	2	9.2
5120	2	12.5
5151	2	9.3
5152	2	26
5153A	4 (NWI)	0
5120	2	12.5
1601	1 (A)	9.5
5130	2	8.5
1632	2	8
2701	2	1
5199	2	0.9
Total		199.8

? What is the role of wetlands in surface and stormwater management?

Wetlands naturally play an important role in surface water management.

Wetlands typically attenuate peak flows by providing storage space for water to spread out and slow down, alleviating flooding problems. They also provide water quality benefits through filtering actions of vegetative matter, soils, and residence time as pollutants and sediments drop out of the water column in these flat environments. Kenmore's largest wetland, Wetland #3, likely serves some of these surface water management functions although flood-related problems still occur on Swamp Creek.



Summary characteristics of each drainage basin, including physical characteristics, land use, zoning, and stormwater infrastructure are included on basin summary sheets in Appendix B.

Figure 4-5. Kenmore streams and wetland locations

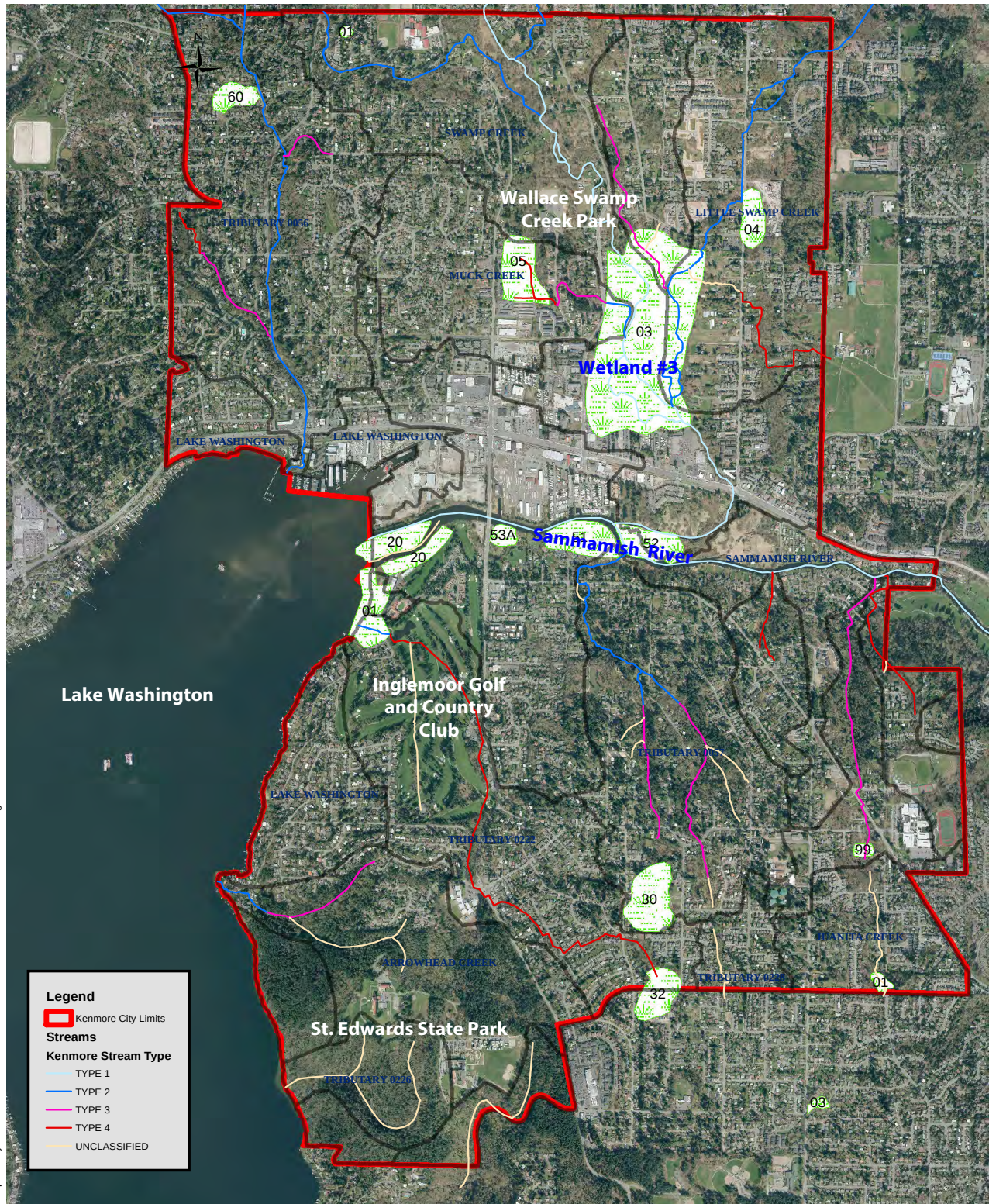


Figure 4-5
Kenmore Streams and
Wetland Locations



4.2 Water Quality Conditions

Two Kenmore water bodies - Swamp Creek and the Sammamish River - are listed on Ecology's Category 5 303(d) list for impairment by various pollutants, including fecal coliform bacteria, high temperature, and low dissolved oxygen. Kenmore has been monitoring bacteria levels in Swamp Creek in an effort to identify sources and implement a source reduction strategy as part of the regional TMDL established by Ecology for Swamp Creek. The 2012 monitoring report is provided in Appendix C.

4.3 Overview of City's Built Environment

In addition to the City's physical and biological attributes, the built environment influences how and where surface water and stormwater runoff is conveyed. That influence starts with the City's zoning and density of development relative to geologic, topographic, and other drainage basin features. How the City's stormwater is managed can also be different dependent on the types of land uses in a given area.

4.3.1 Zoning and Impervious Surfaces

Most of the City is zoned as residential R-6 (6 dwelling units per acre). Table 4-5 summarizes the zoning designations and statistics and Figure 4-6 show the City's current zoning.

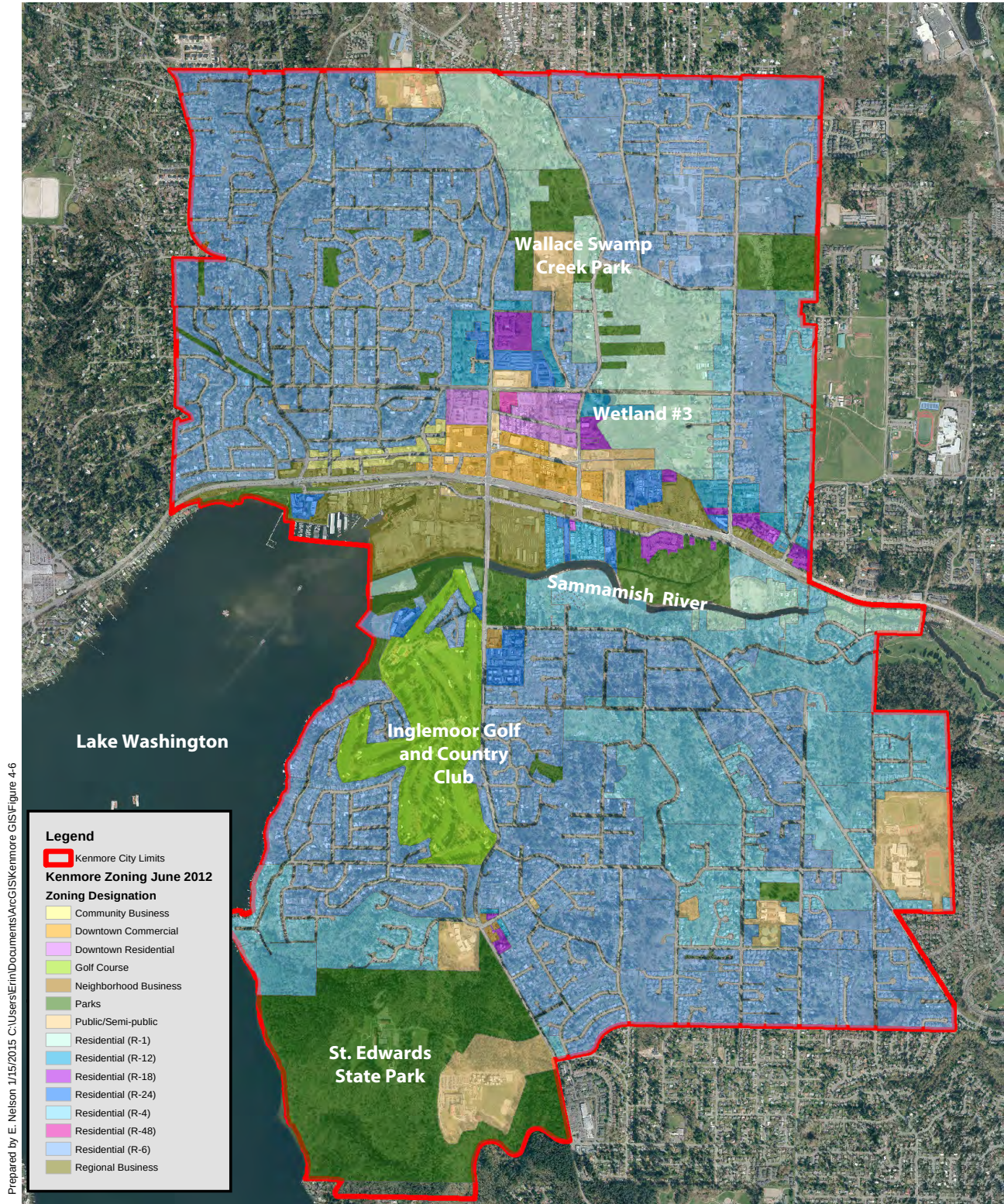
Table 4-5. Zoning designation and percent of Kenmore

Zoning Designation	Percent of City
Community Business	<1
Downtown Commercial	1
Downtown Residential	1
Golf Course	4
Neighborhood Business	<1
Parks	13
Public/Semi-public	5
Residential R-1 (1 dwelling unit per acre)	7
Residential R-12 (12 dwelling units per acre)	2
Residential R-4 (4 dwelling units per acre)	15
Residential R-6 (6 dwelling units per acre)	45
Residential R-18 (18 dwelling units per acre)	1
Residential R-24 (24 dwelling units per acre)	1
Residential R-48 (48 dwelling units per acre)	<1
Regional Business	4



How does the built environment affect stormwater runoff?

The type and density of development affect the quantity of hard surfaces (imperviousness) that create runoff, as well as the types of pollutants that could be transported from different surface types. Whereas, one single family home doesn't have a great impact, the cumulative effect of many does.



Prepared by E. Nelson 1/15/2015 C:\Users\Erin\Documents\ArcGIS\Kenmore GIS\Figure 4-6



0 1,875 3,750 7,500 Feet

Figure 4-6
Kenmore Current
Zoning Designations



Since the City is predominantly zoned single-family residential, the density of development is not as high as other urban or suburban areas; however, as infill is occurring, densities are increasing, especially in the downtown area. Table 4-6 summarizes the impervious surface coverages based on 2012 mapping completed for the City. Figure 4-7 shows impervious surfaces in Kenmore.

Table 4-6. Summary of impervious surfaces in Kenmore

Type of Impervious Surface	Acres	Percent of City
Roofs	~450	11
Roadways	~297	7.5
Other Surfaces (e.g., sidewalks, patios, parking lots)	~71	1.8
Approximate Percent Impervious		20.3

There are some relatively large mostly undeveloped green spaces in Kenmore that are both publicly and privately owned including the following:

- Washington State Parks, Saint Edwards State Park - ~300 acres
- Inglewood Golf and Country Club - ~ 144 acres
- City of Kenmore Wallace Swamp Creek Park - ~25 acres

Other relatively undeveloped green spaces include:

- Wetland #3, which is a combination of both public and private ownership, but is largely undevelopable because of the wetland and floodplain;
- Open space adjacent to the Sammamish River that is also considered floodplain, wetland, or otherwise undevelopable property; and
- Ravines adjacent to tributary streams (e.g., Tributary 0057).

These areas are good for surface water and stormwater management in that surface water can infiltrate into the ground and can generally be less confined and free to move across the landscape without damaging built infrastructure. The spaces also provide opportunities for vegetation that can support water quality treatment, water uptake, and evapotranspiration.



Prepared by E. Nelson 1/15/2015 C:\Users\Erin\Documents\ArcGIS\Kenmore GIS\Figure 4-7



4.3.2 Stormwater Infrastructure

As the landscape in Kenmore has developed, drainage infrastructure has been constructed to manage and convey surface water and stormwater flows away from properties (e.g., agricultural properties) and roadways to prevent flooding and minimize impacts from prolonged wet conditions. Additionally, as knowledge and awareness of stormwater impacts to natural resources and water quality have increased and stormwater regulations have evolved, stormwater management has focused on construction of facilities that detain water. These facilities slow the release of water (reducing peak flows and durations to small stream channels that experience erosion), provide water quality treatment, and reduce pollution. Most stormwater runoff eventually is conveyed to a natural water body (e.g., Swamp Creek, the Sammamish River, or Lake Washington), so it is important to understand how actions upstream impact downstream.

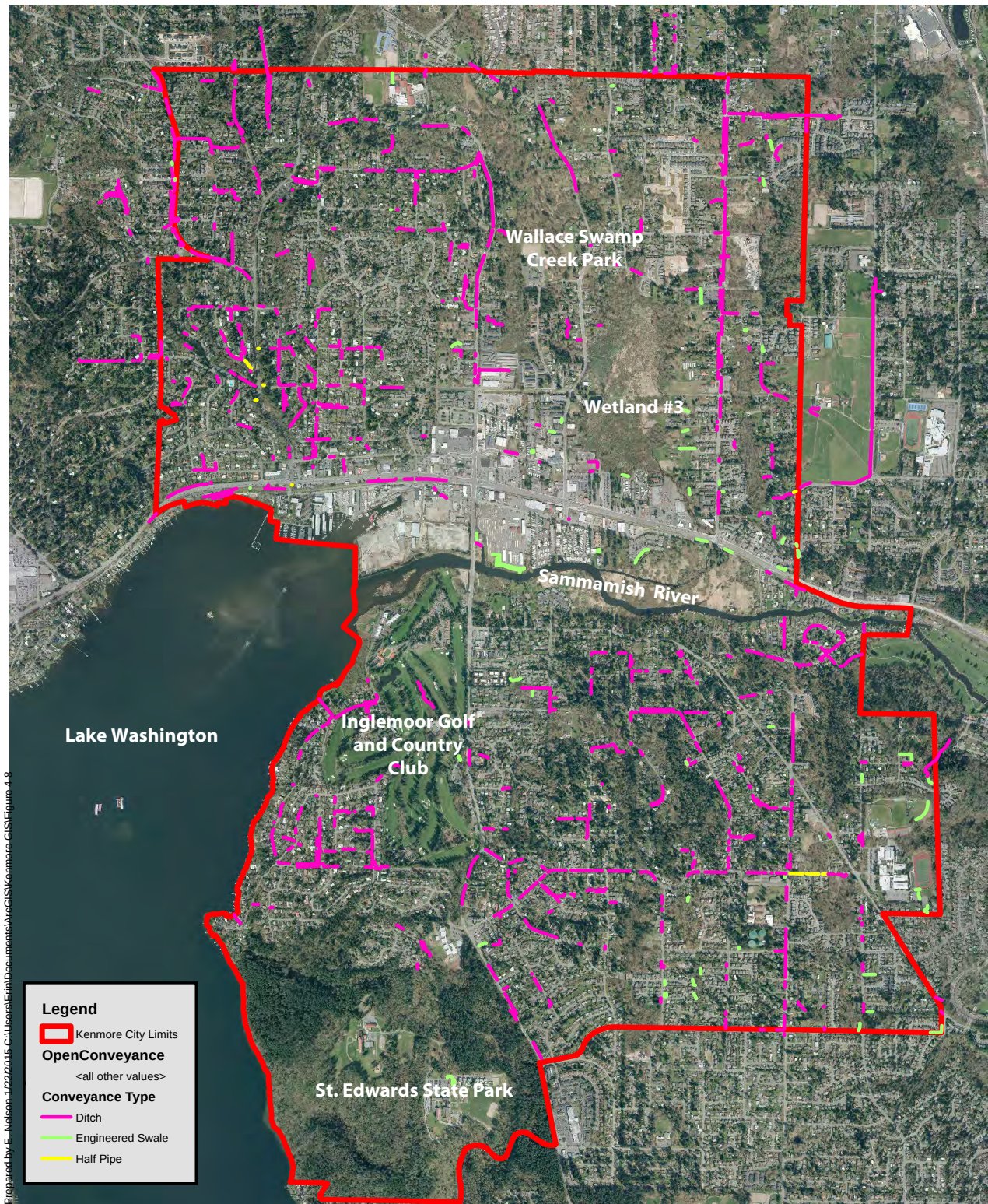
The conveyance infrastructure matches the type of development in Kenmore, from rural roads with adjacent drainage ditches in the outlying areas to curb, gutter, and sidewalk configurations in the downtown area. Currently, Kenmore has a mix of an open and enclosed conveyance system of ditches and pipes, although it is predominantly enclosed. The conveyance system includes pipes, ditches, and other infrastructure that is owned and maintained by Kenmore and also infrastructure that is privately owned and maintained. The tables below provide a summary of the entire system as mapped in the City's GIS system, public and private. Table 4-7 provides a summary of the open conveyance system types and lengths; and Table 4-8 provides a summary of the enclosed conveyance system types, sizes, and lengths. Figures 4-8 and 4-9 show locations and types of the open and enclosed conveyance systems.

Table 4-7. Open conveyance system types and lengths and City maintenance

Type of Open Conveyance	Length (mi)	City Maintained (miles)
Bridge	0.06	0.057 (95%)
Ditch	14.84	12.77 (86%)
Engineered Swale	1.76	0.68 (39%)
Half Pipe	0.15	0.14 (95%)
Non-channel/Other	1.21	0.97 (81%)
Total	18.02	14.617 (81%)

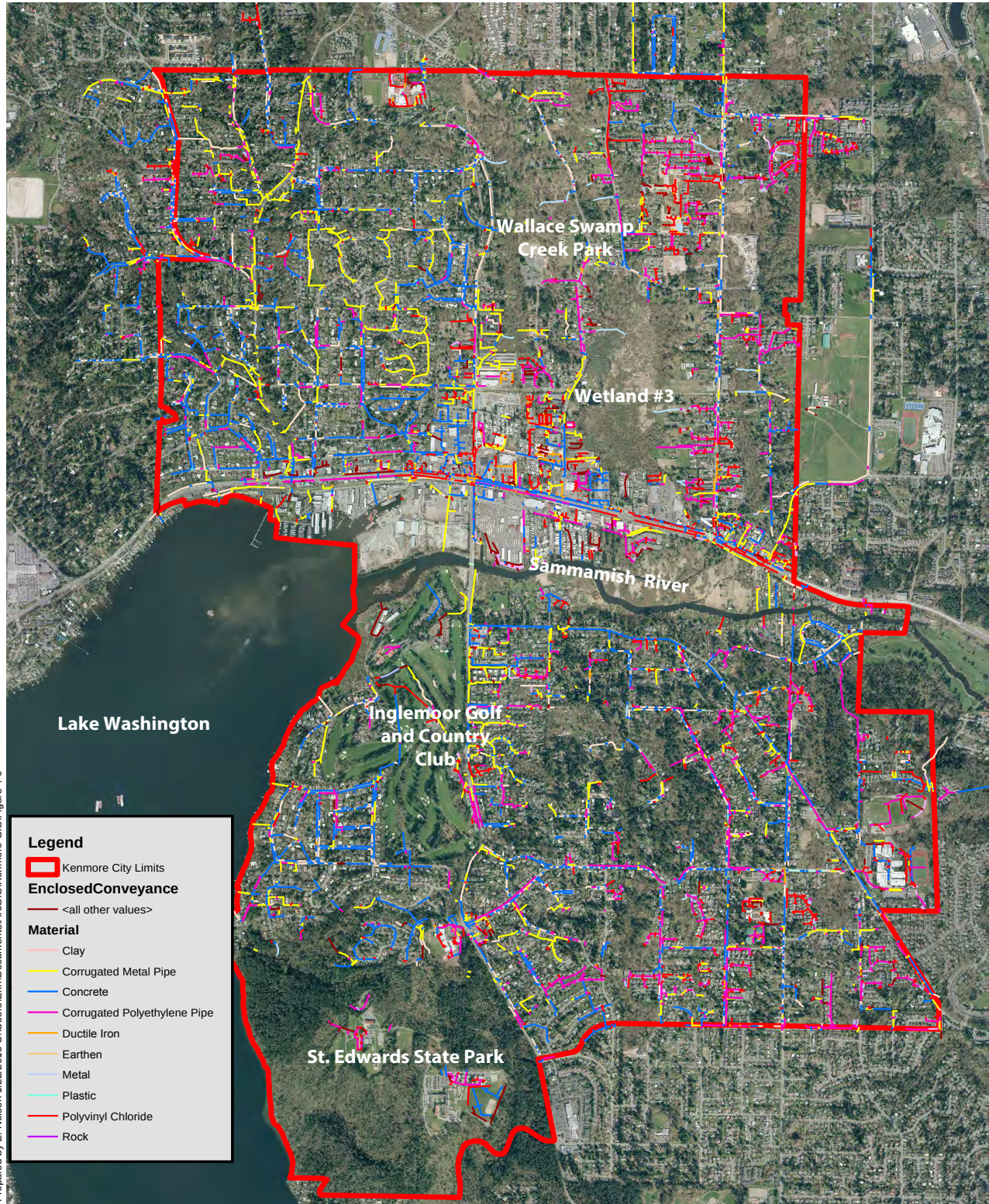
Table 4-8. Enclosed conveyance type, sizes, and lengths

Pipe Material	Pipe Diameter and Length (miles)						Total
	<12 inches	12-24 inches	30-48 inches	54-72 inches	> 72 inches	No diameter reported	
Clay	0.03	0.00	0.00	0.00	0.00	0.00	0.03
Corrugated Metal Pipe	1.94	18.42	2.50	0.80	0.27	0.58	24.51
Concrete	2.47	34.45	0.72	0.01	0.00	0.15	37.8
Corrugated Polyethylene	3.69	23.89	0.44	0.05	0.00	0.05	28.12
Ductile Iron	0.55	1.40	0.02	0.00	0.00	0.01	1.98
Earthen	0.00	0.01	0.00	0.00	0.00	0.00	0.01
Metal	0.02	0.03	0.00	0.04	0.00	0.00	0.09
NA	0.99	1.80	0.08	0.03	0.00	2.35	5.25
Plastic	0.08	0.03	0.00	0.00	0.00	0.00	0.11
Polyvinyl Chloride	10.97	6.77	0.04	0.00	0.00	0.04	17.82
Rock	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	20.74	86.8	3.8	0.93	0.27	3.18	115.70



0 1,875 3,750 7,500 Feet

Figure 4-8
Location and Types of
Open Conveyance



Prepared by E. Nelson 1/22/2015 C:\Users\Eln\Documents\ArcGIS\Kenmore GIS\Figure 4-9



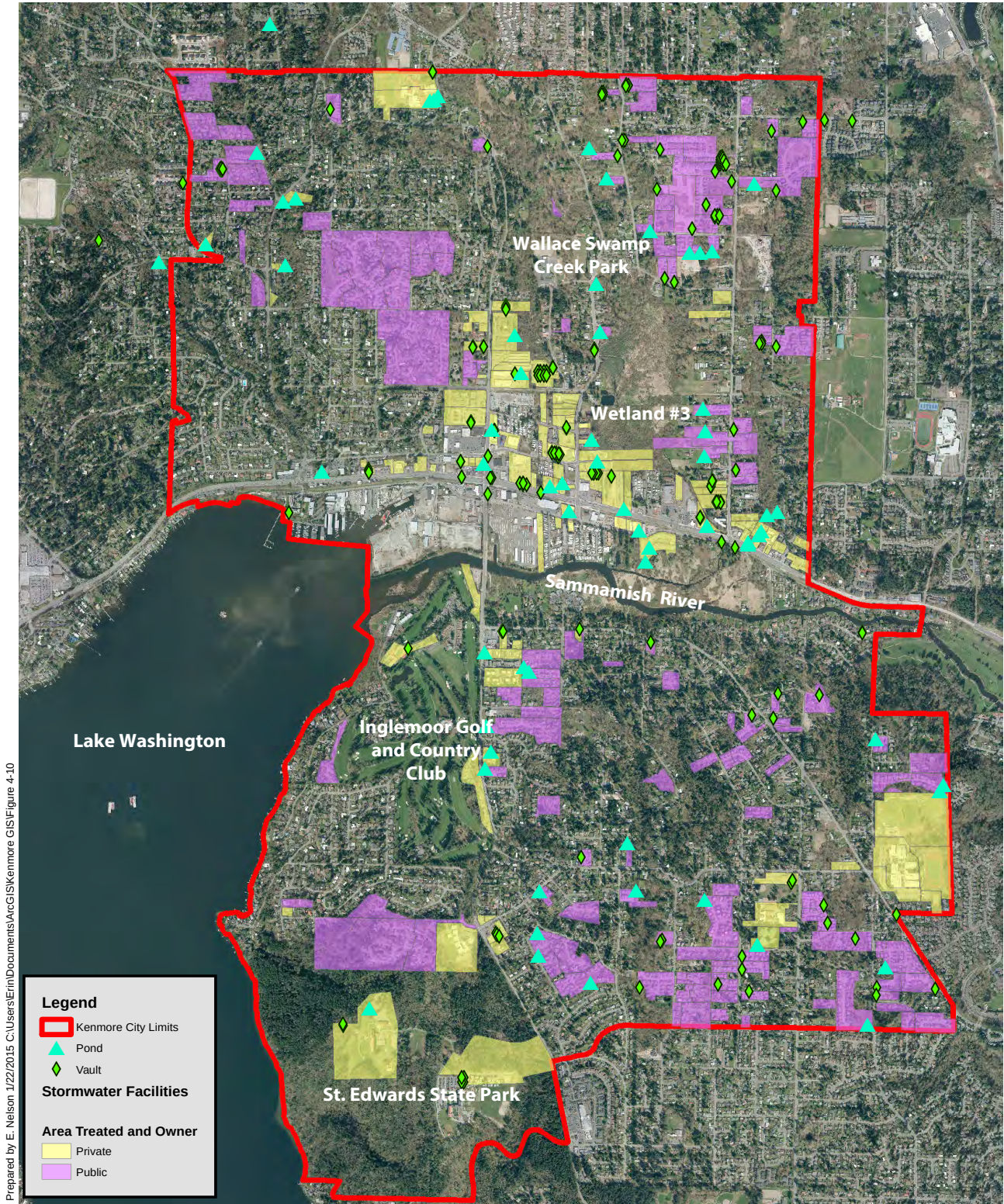
0 1,875 3,750 7,500 Feet

Figure 4-9
Location and Types of
Enclosed Conveyance



Pipes in Kenmore are composed primarily of concrete, corrugated polyethylene, and corrugated metal, and over 70 percent of the pipes are between 12 and 24 inches in diameter. Of the smaller diameter pipes, 70 percent are privately owned and are typically the pipes that connect homes and private parcels to the public stormwater system. Only 15 percent of the pipes in the 12- to 24-inch diameter range are privately owned; however, up to 40 percent of the larger diameter pipes are also privately owned.

There are nearly 300 stormwater treatment facilities in Kenmore. Of these facilities over 100 privately owned and operated facilities including stormwater treatment ponds and vaults. Figure 4-10 shows the locations of these facilities. An analysis of where stormwater facilities are located and where there are none was completed for this plan to identify potential stormwater retrofit opportunities. The stormwater retrofit memorandum is in Appendix D. Section 4.5 describes the City responsibilities for operating and maintaining its stormwater treatment facilities and ensuring that privately owned facilities are also properly maintained and operated.



Prepared by E. Nelson 1/22/2015 C:\Users\Erin\Documents\ArcGIS\Kenmore GIS\Figure 4-10



0 1,875 3,750 7,500 Feet

Figure 4-10
Location, Type, and Owner of
Stormwater Facilities



4.4 Existing Problems

Existing drainage complaints reported to the City were reviewed to evaluate the types, locations, frequency, and timing of surface water and stormwater related problems. One of the most problematic areas in Kenmore is flooding associated with Swamp Creek in the vicinity of 73rd Avenue NE. This particular area has been the subject of many past studies and flood reduction projects. Additional analysis on the Swamp Creek flooding problem was also completed for this Plan and the summary memorandum is provided in Appendix A.

Figure 4-11 shows the number of drainage-related calls received between 1999 and 2014. Figure 4-12 shows the months in which the calls were received over the same time period. Generally, a higher number of calls were received in the winter months.

Figure 4-11. Number of drainage-related calls received between 1999 and 2014

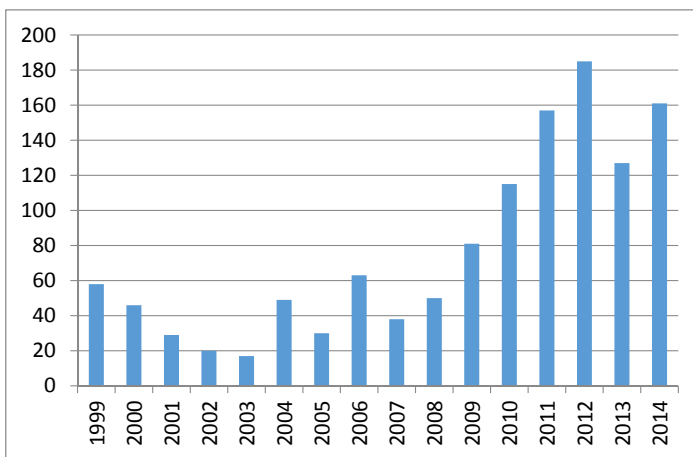
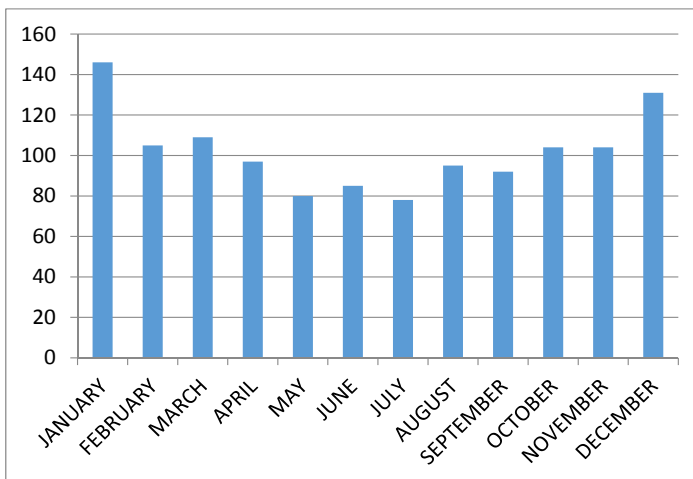


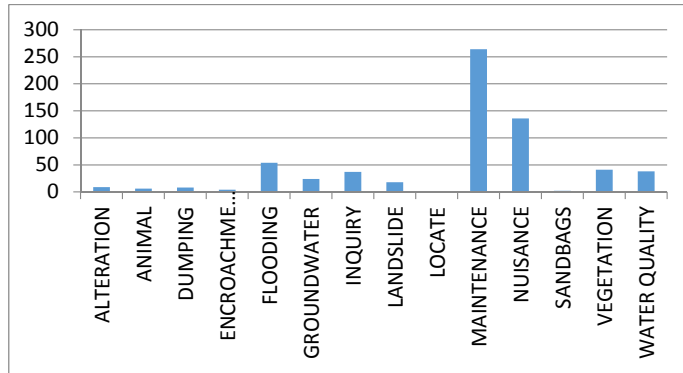
Figure 4-12. Drainage-related calls by month between 1999 and 2014





The predominant type of drainage-related call received was requests for maintenance of infrastructure, including ditches and catch basins. Flooding and water quality complaints were also quite high. Figure 4-13 shows the number of drainage calls by type between 1999 and 2014.

Figure 4-13. Drainage-related calls by type between 1999 and 2014



Note: Current project is underway to update all the historical drainage complaints into the City's new tracking system and these figures will be updated before the final Plan is published to reflect the most up to date data.

4.5 Operations and Maintenance

O&M of the stormwater system is challenging and needs to be flexible and occur at many levels, because of the varied ownership and cross-jurisdictional connections, combination of constructed and natural features, and unpredictable frequency of storm events that cause major problems.

Cities and counties with NPDES MS4 Permits, such as Kenmore (described in Section 2), are required to operate and maintain their systems according to standards set forth in the permit. All jurisdictions in Western Washington of a certain minimum size are subject to the same NPDES Permit standards, providing some level of certainty for Kenmore that upstream jurisdictions are maintaining their systems for stormwater that discharges to streams and rivers that flow into Kenmore.

The constructed stormwater system (e.g. pipes, ditches, vaults, ponds) flows to naturally formed stream channels, rivers, and wetlands in Kenmore and ultimately Lake Washington. Issues that occur in one part of the system can have profound effects on the other. Of particular challenge is managing the natural system in what is now an urban/suburban environment. Natural processes that used to occur in these natural systems without negative effects on infrastructure or properties can now cause damage because of human encroachment. Examples of natural processes include deposition of sediment, wood, and debris that alters the course of water flow or blocks stormwater outfalls and beaver dams that cause the same result. These are some of the problems that City staff encounter in management of the stormwater system that is linked to the natural system.

Although there is some predictability in seasonal weather patterns (the rainy season is typically during the winter months), the degree to how often and how much rainfall occurs is not predictable. This makes managing stormwater challenging - especially for dealing with known problem areas that need to be inspected prior to storm events.

The City documents its O&M procedures in a detailed Operations and Maintenance Practices and Policies Manual (City of Kenmore 2010) that is updated as necessary to be current with NPDES Phase II Permit requirements or changing procedures. The sections below provide a summary of how Kenmore operates and maintains the public stormwater system and the procedures that are in place to ensure that the private system is adequately maintained.



The City's current NPDES Phase II Permit has new requirements to adopt stormwater management standards equivalent to Ecology's 2012 SWMMWW by December 31, 2016, as well as revised inspection and maintenance requirements (described in Section 2). The City will need to modify its maintenance program to meet these new standards and requirements., which may result in additional staffing and funding needs.

Kenmore's public stormwater system includes stormwater infrastructure that is within the City's ROW, or infrastructure for which the City has an easement or agreement to operate and maintain. Stormwater infrastructure and facilities associated with SR 522 are also operated and maintained by Kenmore.

Table 4-9 summarizes the types of O&M activities conducted, the general frequency of those activities, and the entity that does the work. Kenmore contracts out much of the labor to operations crews from Lake Forest Park or King County through Interlocal Agreements and uses maintenance contractors for other types of services.

Table 4-9. Summary of stormwater O&M tasks

O&M Task	General Frequency	Infrastructure	Ownership	Who Does the Work?
Inspection	Routine	Stormwater facilities	Public	City of Kenmore
			Private	City of Kenmore
		Catch basins	Public	City of Kenmore
	Storm-related spot checks	Culverts, known problem areas	Public/Private	Lake Forest Park City of Kenmore
Cleaning	Routine	Pipes	Public	Private Contractor
		Culverts associated with ditch conveyance	Public	Private Contractor
		Ditches	Public	Private Contractor
		Streets (vacuum sweeping)	Public	Lake Forest Park
		Private systems	Private	Property Owner
Maintenance	Routine (vegetation management)	Stormwater facilities	Public	Private Contractor Lake Forest Park
		Private systems	Private	Property Owner
	Non-routine (dependent on inspection results)	Stormwater facilities	Public	Lake Forest Park King County Roads Maintenance
		Pipes	Public	Private Contractor King County Roads Maintenance
		Private systems	Private	Property Owner
Repairs	Non-routine	Stormwater facilities	Public	If the project is too large for Lake Forest Park or King County, then a Small Works Project or CIP is created
		Culverts	Public	
		Pipes	Public	
		Ditches	Public	
		Private systems	Private	Property Owner

Because the stormwater system is a combination of private and public infrastructure, the facilities often cross between public and private properties. One of the problems that occur in the O&M of the public system is when the public system becomes private and responsibility becomes unclear. The City does not knowingly maintain private drainage systems and takes a conservative approach when dealing with private property drainage systems. Many drainage systems on private property may have an easement indicated on the plat. However, these systems will only be maintained by Kenmore if an easement, or other legally acceptable document, has specifically provided Kenmore the right to access the drainage system and clearly indicates



what actions the City is authorized to conduct on the drainage system. The City is not necessarily obligated to maintain private drainage systems because an easement exists. Easements may exist for many reasons, including: protecting the drainage system from being removed by the property owner, allowing the City access to inspect the system, and providing adequate space for the property owner to maintain the system.

4.5.1 Ensuring Private System Maintenance

The City relies on property owners to operate and maintain their own stormwater systems in a manner that contributes to the functionality of the system as a whole, and in many cases maintenance is required by code. The methods that the City uses to ensure that private systems are operated properly include annual facility inspections that detail any deficiencies, corrections that need to be made, and a timeline to make them, followed by repeat inspections to verify that corrections have been made. If deficiencies aren't corrected, the City can use other measures, including enforcement actions. As an incentive for complying with stormwater regulations, the City offers stormwater rate reductions for properly operating and maintaining private facilities (see Section 3 for a description).

4.6 Asset Management

Kenmore manages surface water and stormwater assets using a combination of GIS software and asset management software. Asset information for surface water and stormwater features (e.g., catch basins, pipes, ponds, etc.) is stored in GIS using ArcGIS, which is a GIS software developed by Environmental Systems Research Institute. Kenmore's surface water and stormwater assets have been thoroughly mapped and updated in GIS for many years. Surface water and stormwater GIS information is available through the City's online map application located on the City's webpage. Kenmore uses Cityworks, an asset management software developed by Azteca, Inc., to manage inspections, work orders, and service requests. Cityworks leverages the City's existing GIS information and adds the ability to track actions associated with any asset in GIS. In addition to assets, Cityworks also tracks and manages surface water and stormwater related service requests (historically called a citizen action request "CAR"). Service requests may include complaints, requests for maintenance, inquiries, reported water quality issues, etc., and are spatially referenced for easy reporting and analysis.

4.7 Coordination with Neighboring Jurisdictions

By virtue of its location at the bottom of 2 very large drainages that pass through Kenmore, the City must pursue coordination with upstream jurisdictions and partners to effectively manage natural resources and share responsibility. The City participates in the WRIA 8 Watershed Forum for the Lake Washington/Cedar/Sammamish Watershed. The City also coordinates with Swamp Creek watershed partners for managing the TMDL requirements for fecal coliform bacteria (as described in Section 2) and partners with other jurisdictions, such as Lake Forest Park and King County in sharing O&M resources through Interlocal Agreements.

4.8 Development and Business Support

The thresholds that trigger implementation of stormwater management on properties in Kenmore and elsewhere in Western Washington are changing with the most recent NPDES Phase II Permit. However, the manner with which the City ensures new development or redevelopment that triggers stormwater requirements meets the current standards is through the development review and permitting process conducted by the City's Development Services Department, which implements and enforces the City's stormwater management requirements.



4.8.1 Permit Review

In 2014, Kenmore received 30 engineering permit applications; issued 20 engineering permits (for plats, clearing and grading, and commercial and multi-family development); received 172 building permit applications; and issued 135 building permits (for new or remodeled residential, commercial, and multi-family buildings). These types of permits may involve drainage review and require stormwater management facilities if certain thresholds identified in the KCSWDM are triggered. The number of permits received and issued annually fluctuates with economic conditions and is dependent on how much growth and building is occurring. However, drainage review needs are expected to rise with the elimination of a lower size threshold for requiring stormwater management with the current NPDES Phase II Permit. The elimination of existing thresholds requiring stormwater management will be implemented no later than December 31, 2016.

4.8.2 Business Outreach and Technical Assistance

The City uses business outreach and technical assistance as the primary method for helping businesses and private property owners comply with surface water and stormwater regulations. One of the primary areas where outreach and technical assistance is provided is for illicit discharges to the stormwater system. The City uses its Illicit Discharge Detection and Elimination (IDDE) program to identify and resolve water quality problems. A detailed description of the program is in the City's IDDE Program Manual (City of Kenmore 2011). When a problem is identified, either through facility inspection, staff observation, or citizen complaint, a site visit is made to investigate and try to identify the source. If the source is tied to a property unknowingly or willingly discharging unallowable materials to the stormwater system, the City works with those individuals to try to correct the problem in the most expeditious way possible.

The City has utilized King County water quality staff and The Environmental Coalition of South Seattle (ECOSS), a non-profit environmental organization, to provide water quality outreach and technical assistance to Kenmore business owners and will continue to participate in these kinds of partnerships. King County conducts a water quality audit program in which qualified staff meet with business owners, often after a water quality issue has been discovered, and provide guidance and resources to bring the business back into compliance. ECOSS provides a more proactive outreach and education program to businesses, often before a water quality issue has occurred, which includes guidance on how to avoid illicit discharges and how to respond to spills if they occur (spill response kits are also provided to businesses).

4.9 Public Education and Outreach

Public education and outreach is a big component of surface water and stormwater management because of the collective impacts of individual decisions on water resources. Recognizing its importance, Ecology also requires NPDES Phase II permittees, such as the City, to conduct stormwater-related public education and outreach as a condition of the permit. The City has expanded its volunteer program significantly over the last 2 years, which included the creation of a dedicated volunteer coordinator position. Volunteers interested in surface water-related activities are connected with appropriate staff. Recent projects include construction of surface water informational displays, invasive species removal, and catch basin stenciling. The City has provided support for private parties seeking water quality grant funds. No formal stewardship groups have been formed in the City, but City staff has communicated with interested residents and will continue to promote and support stewardship roles in the community.



5. The Next 6-10 Years

Surface water and stormwater management has continued to evolve in the Puget Sound region over the past 2 decades. At the same time, the region has experienced tremendous growth. Kenmore, now in its second decade of incorporation, has made many strides in the management of its surface water and stormwater resources, and this Plan will help guide the City's strategy for the next several years.

The primary surface water and stormwater issues that the City will continue to manage include:

- Swamp Creek floodplain issues.
- Flooding-related issues. Flood-related issues typically result from undersized culverts, lack of appropriate drainage systems, or changes in local hydrology.
- Groundwater issues, particularly within geologically hazardous areas of the City.
- Compliance with NPDES Phase II requirements (to be phased in by December 31, 2016), including:
 - o Adoption and implementation of Surface Water Manual equivalent to Ecology's 2012 SWMMWW,
 - o Implementation of LID techniques, and
 - o Increased inspection and maintenance frequencies.
 - o Increased development review.
 - o Swamp Creek TMDL.
- Issues associated with older flow control and water quality facilities and conveyance systems, both public and private, which have reached or exceeded their functional lifespan. Many of these facilities and conveyance systems are 30 to 60 years old.

Opportunities to improve water quality and reduce flow volumes in Kenmore will occur as properties are redeveloped. However, the City should also take an active approach to implementing stormwater treatment where none currently exists through available grant opportunities or incentive programs for private citizens. Recommended projects and strategies are described in the sections below.

5.1 Capital Projects

Surface water capital projects were identified to address specific surface and storm water issues in Kenmore. These issues were identified by maintenance crews, through drainage complaints or City staff. Small Works capital projects (SW-20) are intended to provide annual funding for on-going, city-wide issues that are smaller in size. Table 5-1 lists the projects, problems addressed, and associated costs. Detailed information for each capital improvement project can be found in summary sheets located in Appendix E.

Table 5-1. Updated CIP list (not fiscally constrained)

CIP Number	Basin	Description	Cost
SW-08	Tributary 0056	Final design and construction of box culvert, rockery, new sidewalk, and stream channel reconstruction of Tributary 0056 adjacent to 61 st Avenue NE.	\$1,111,000
SW-17	Little Swamp Creek	Replace culverts and relocate Little Swamp Creek adjacent to 80 th Avenue NE to alleviate flooding.	\$1,264,000
SW-19	Little Swamp Creek	Replace existing culvert with a fish-passable box culvert to alleviate flooding at NE 192 nd Street.	\$395,000
SW-20	City-wide	Small works projects in various basins include repair and replacement of half-pipe conveyance structures, interception of groundwater seepage, installation of new stormwater infrastructure, and improvement of a diversion structure.	\$50,000
SW-21	Tributary 0056	Use ground penetrating radar to evaluate and develop preliminary design of new rockery wall adjacent to	\$100,000



		Tributary 0056 and 61 st Avenue NE.	
SW-22	Tributary 0057	Evaluate rate and risks of on-going erosion in Tributary 0057 on infrastructure and properties to determine capital project, if necessary.	\$25,000
SW-23	Swamp Creek	Design and construction of a Beaver Deceiver at Wallace Swamp Creek Park sedimentation pond.	\$96,400
SW-24	Sammamish River Tributaries 02 and 03	Evaluate upstream sediment sources and causes of excessive maintenance for existing sedimentation vaults and determine whether vaults should be upsized or other upstream projects should be considered.	\$25,000
SW-25	Tributary 0222	Replace failing stormwater detention tanks in the Strawberry Hills neighborhood.	\$459,700
SW-26	Arrowhead Creek	Replace existing stormwater detention pipe with a larger pipe and control structure adjacent in the ROW of Juanita Drive NE to provide improved stormwater flow control.	\$698,200
SW-27	City-wide	Re-establish ditches throughout the City that have been impacted with sedimentation, filled, or otherwise do not function properly.	\$50,000
SW-28	Swamp Creek	Install LID facilities along NE 185 th Street between 64 th Avenue NE and 68 th Avenue NE to manage runoff in the Northlake Heights neighborhood.	\$1,500,000
T-06	Tributary 0056 Lake Washington	Install water quality facilities and improve conveyance systems along NE Bothell Way between 61 st Avenue NE and 65 th Avenue NE.	\$633,500
Total			\$6,408,200

There are no capital projects being recommended for Swamp Creek Wetland #3 and associated floodplains at this time. The analysis conducted for this Plan determined that the flood reduction projects completed in 2005 were adequate to protect the City's road, 73rd Avenue NE (See Appendix A, Swamp Creek Memorandum). Some properties adjacent to 73rd Avenue NE continue to have impacts from Swamp Creek due to natural processes, sediment deposition and upstream flows. The City does not have plans to purchase privately owned properties. The current funding available for surface water capital projects is approximately \$600,000 per year. A preliminary schedule for design and construction of these projects is shown in Figure 5-1, which does not consider the potential for grants and loans.

Figure 5-1. CIP preliminary project schedule





5.2 Programmatic Strategies

Programmatic strategies recommended below are strategies primarily focused on tasks that need to be completed for NPDES permit compliance. Table 5-2 lists the recommended programmatic strategies and estimated costs. Programmatic strategy project sheets are included in Appendix F.

Table 5-2. List of surface water programmatic strategies (not fiscally constrained)

Project Number	Description	Estimated Cost
SProg-01	LID Code Review - Conduct city-wide review of development codes and standards and revise where necessary to ensure that LID is the preferred and commonly used approach to site development.	\$46,800
SProg-02	Adopt a new stormwater manual, revise engineering standards and procedures, and conduct education and outreach to implement the manual.	\$28,600
SProg-03	Develop LID infeasibility tools (e.g., an infiltration potential map) to assist City staff and permit applicants with preliminary understanding of what types of BMPs may or may not be appropriate for site conditions.	\$42,900
SProg-04	Evaluation of stormwater incentive and rebate programs, including voluntary rain garden programs and initiatives used by other jurisdictions, and review of current incentive, rebate, and stormwater discount program	\$14,300
SProg-05	Easement management - Evaluate existing drainage easements and whether easements need to be acquired or renewed, or policies need to be developed to address this issue.	\$20,800
SProg-06	Stormwater retrofit - Identify potential stormwater retrofit opportunities and prioritize and pursue grant funding.	\$24,700
SProg-07	Evaluation of landslide and groundwater issues - Conduct review of on-going landslide and groundwater seepage issues in the City where routine complaints are received to evaluate potential solutions and measures to prevent additional impacts.	\$31,200
SProg-08	Culvert assessment -Conduct fish barrier analysis of Kenmore culverts and prioritize for replacement and/or replacement.	\$16,500
Total		\$225,800

Two NPDES-related programmatic projects for LID code review and stormwater manual adoption (Pr-SW-01 and Pr-SW-02) are tasks that need to be completed by December 31, 2016, and will require engagement by City staff at multiple levels. A third NPDES-related project to develop LID infeasibility tools (Pr-SW-03) will help development review staff and permit applicants better understand where they may and may not be able to implement certain stormwater BMPs, in the hope of saving time and money.

Other programmatic recommendations include:

- An evaluation of possible incentive and rebate programs to encourage voluntary implementation of on-site stormwater management on residential or commercial properties (SProg-04),
- A review of easements, or lack thereof, where drainage infrastructure crosses private properties and an analysis of appropriate action, if needed (SProg-05),
- Identification and prioritization of stormwater retrofit opportunities, preferably grant eligible, for which the City should pursue (SProg-06).
- Evaluation of geologic-related issues including landslides and groundwater seepage (SProg-07); and
- A culvert assessment to evaluate Kenmore's culverts with regard to fish passage barriers (SProg-08).



It will take decades to reverse the impacts from development that occurred prior to the requirement for stormwater flow control and water quality treatment. Two programmatic measures (SProg-04 and SProg-06) could help accelerate the trend to reverse impacts by treating small areas of stormwater runoff one parcel at a time. Impacts happen cumulatively, and the collective actions of many may help reverse them. Grant opportunities have become more available for stormwater retrofits in the last few years, as Ecology has recognized that the scale of the stormwater problem and that new regulations alone will not solve the problem.



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Appendix A:

Swamp Creek Technical Memorandum

Swamp Creek Technical Memorandum

To: Richard Sawyer, City of Kenmore Surface Water Manager
From: Erin Nelson P.E.,L.G., Altaterra Consulting LLC
Hugh Mortensen, The Watershed Company
Date: December 8, 2014
Subject: Swamp Creek Technical Memorandum

1. Introduction

Swamp Creek flooding has been a persistent issue in Kenmore for decades in the vicinity of 73rd Avenue NE and NE 192nd Street, both in the main channel upstream of the bridge located near this intersection and in the wetland complex just downstream of this bridge. The Federal Emergency Management Agency (FEMA) King County and Kenmore have invested millions of dollars over the last 20 years to control flooding, sedimentation and improve habitat through various capital projects and property acquisitions. These projects have had varying degrees of success in protecting public infrastructure and reducing the frequency of flooding in some locations. However, high flows and sediment loads continue to impact Swamp Creek. Staff have prepared this report to provide City Council and the City Manager capital project and programmatic alternatives, if desired, to address this issue. The report summarizes decades of research, provides results from updates to existing hydrologic model calculations and evaluates potential outcomes for Swamp Creek surface water levels in areas of continued flooding as sediment accumulates and high flows persist.

2. Swamp Creek Basin

The Swamp Creek watershed extends north to south from Snohomish County to the City of Kenmore where Swamp Creek meets the Sammamish River and enters Lake Washington (Figure 1). Over 95 percent of the 24 square-mile watershed is within Snohomish County, including about 20% in the City of Lynnwood and smaller portions within the cities of Bothell, Brier, Everett and Mountlake Terrace. Once Swamp Creek passes into Kenmore, it flows approximately 2,700 feet where it reaches a sediment pond in Wallace Swamp Creek Park. From the pond, it flows another 2,000 feet before reaching the 73RD Avenue NE bridge, which was constructed in 2005. From the bridge, Swamp Creek flows east-southeast into a large wetland complex (Wetland #3) where the main channel becomes braided into numerous shallow streams which wind through the wetland. Approximately 3,500 feet southeast of the bridge, Swamp Creek re-establishes itself as a single channel and continues under State Route 522 to the Sammamish River.

“The Swamp Creek watershed lies on the intercity plateau, an upland till plateau between Puget Sound and the Snohomish River. Most of the northern two-thirds of the watershed is moderately sloped, undulating terrain draining to the stream network as it traversed the till plateau. Downstream of I-5, the stream corridor enters an outwash valley consisting of recessional outwash embedded in advance outwash, with the intervening till typical of glacial formations largely missing. The channel flows primarily through advance outwash between I-5 and Scriber Creek and again south of the county line: in between, the channel traverses recessional outwash.

(Personal communication, Derek Booth, University of Washington, January 25, 2002 described in *Snohomish County Drainage Needs Report* [Snohomish County, 2002]).”

Advance and recessional outwash deposits are typically very erodible and highly mobile under the high flows that have been documented in Swamp Creek. These geologic and topographic conditions north of Kenmore and Wetland #3 is consistent with the large volumes of sediment that are being transported and deposited in the downstream Swamp Creek reaches in Kenmore.

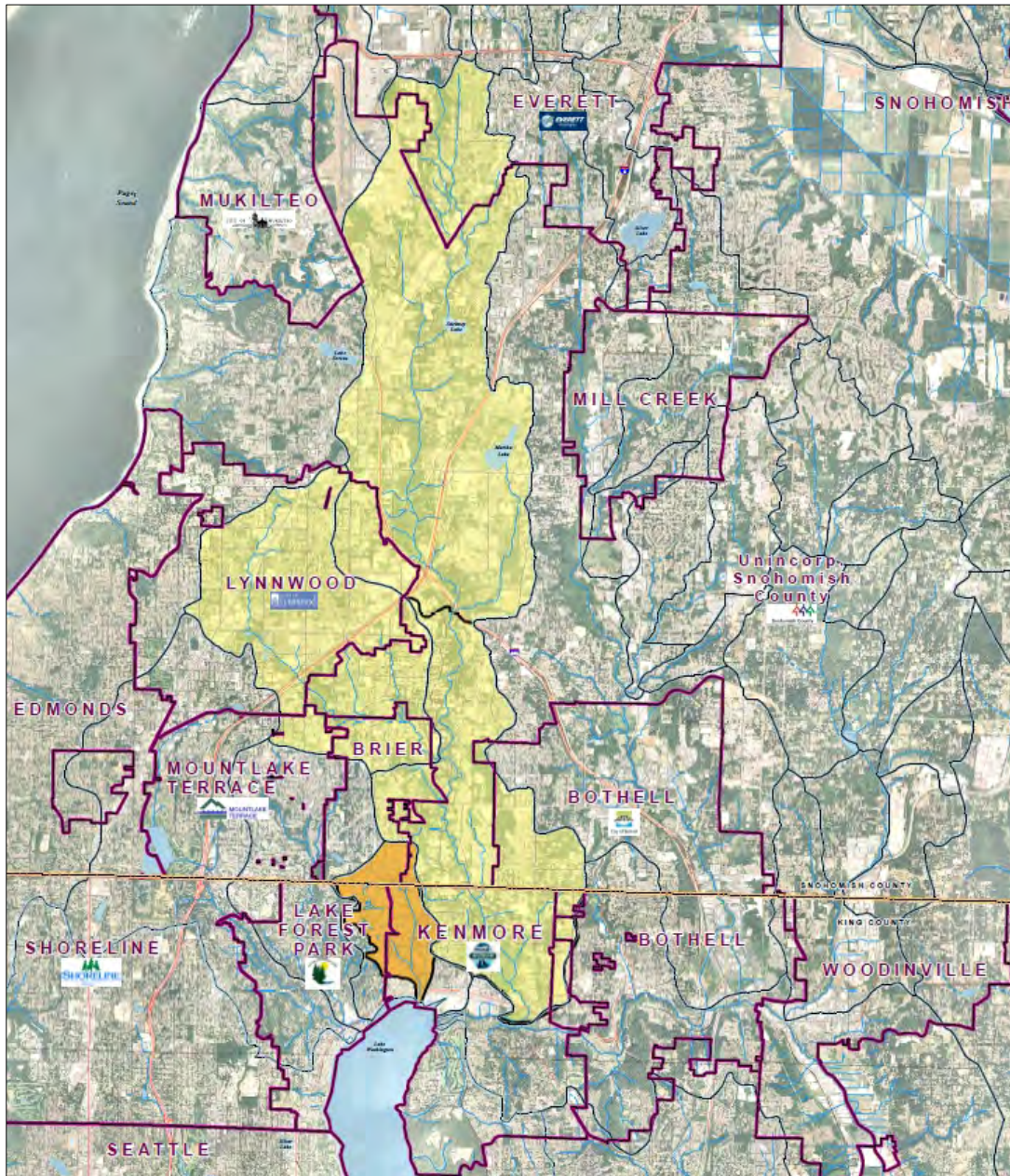


Figure 1. Swamp Creek Basin

3. History

Much like the rest of Puget Sound, the Swamp Creek basin has experienced significant increases in population and land development over the years. Even before the extensive development, historical documentation indicates that flooding associated with Swamp Creek has been occurring in Kenmore for decades.

3.1 Development

The Swamp Creek basin has experienced significant growth and development over the last 80 years. Snohomish County's population alone grew approximately 40% from 1990 to 2010 (Snohomish County Growth Monitoring Reports, 1999 and 2014). Aerial photographs of Kenmore from 1936 and 1998 show land use changes in the vicinity of Swamp Creek (Figure 2). Wetland #3 and the Swamp Creek channel configuration within the wetland have remained relatively unchanged in size. However, the surrounding land has been extensively developed.

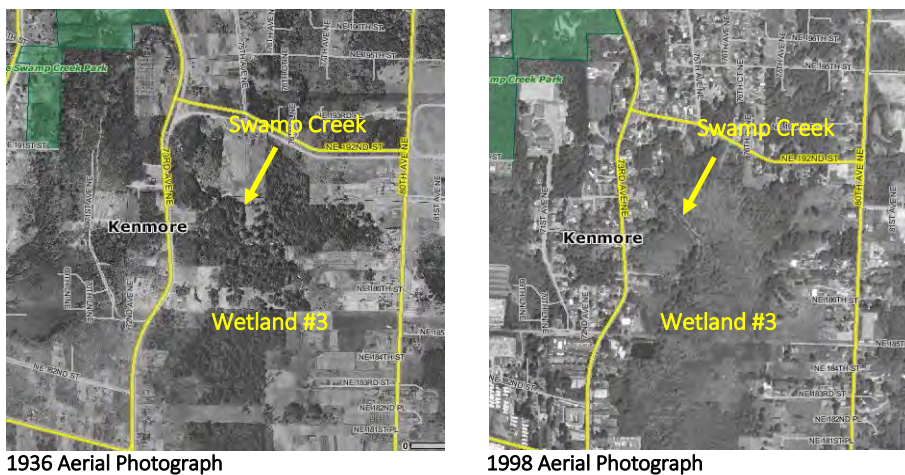


Figure 2. Land use changes in the vicinity of Kenmore and Swamp Creek. Wetland #3 has been developed on its flanks and has largely filled in with woody vegetation, but remains undeveloped. Swamp Creek is in roughly the same configuration in both photos.

Surface water development standards and regulations began taking shape in the 1980's and have slowly become more stringent, particularly since the implementation of National Pollutant Discharge Elimination System (NPDES) municipal stormwater permits in Washington State over the last 10 years. Despite the stringent regulations, a significant amount of existing development, if not the majority of it, has been constructed with little to no surface water mitigation. A review of the hydrologic modeling parameters and predicted future land uses assuming built out conditions based on 2002 Snohomish County zoning indicated an increase of approximately 1,849 acres of effective impervious surfaces. The modeling estimated over 350 acre-feet of detention would be needed under the future land use assuming detention standards in Snohomish County Title 24 in 2002 (approximately 18 percent of the effective impervious area). Existing effective impervious area in the 2002 Snohomish County Drainage Needs Report was estimated to be 2,485 acres. Assuming that only a small fraction of the 2002 impervious surfaces in the Swamp Creek watershed were treated with stormwater detention facilities, and applying the ballpark ratio modeled above (acre-feet of detention required equals 18 percent of total effective impervious area), the 2002 existing impervious surfaces would require up to 470 acre-feet of detention to

meet the 2002 standards. One acre foot is equivalent to one foot of water covering an acre of area. Figure 3 provides a visualization of how much area would be needed to detain 470 acre feet of water, using Kenmore as an example. Ecology's most recent 2012 Western Washington Stormwater Management Manual requires even more stringent standards with the goal of mimicking surface water flows that would have occurred under forested conditions prior to any development (Ecology 2012). The new standards would require even more area to manage flows.



Figure 3. Example of area needed to detain 470 acre-feet of stormwater, using Kenmore as a visual. Area shown would be under 4-feet of water to achieve the necessary volume.

3.2 Flooding

Within the City of Kenmore, Swamp Creek has flooded multiple times over the past 50 years, and the City and King County (prior to Kenmore's incorporation in 1998) have conducted several basin and flood reduction studies and implemented a variety of projects and approaches to minimize flood-related impacts to property and infrastructure. Still, Swamp Creek continues to flood.

Historical documentation indicates that flooding associated with Swamp Creek has been occurring in Kenmore for decades. 1934 photos from the University of Washington shows extensive flood damage near the mouth of Swamp Creek at the Sammamish River and Bothell Way (Photo 1 and Photo 2)



Property of MSCUA, University of Washington Libraries. Photo Coll 263

Photo 1. Flood damage in 1934 on Swamp Creek



Property of MSCUA, University of Washington Libraries. Photo Coll 263

Photo 2. Cleaning up from flood damage on Swamp Creek in 1934

Large precipitation events that resulted in flooding occurred in 1997, 2005, 2006, and 2007 (Table 1) (Otak, City Council Packet March 23, 2009). Photos of these events and a 1980 flood event and Muck Creek flooding are shown in Photos 3 through 7.

Table 1. Summary of rainfall and flow statistics for storm events that caused flooding

Rainfall Summary	January 1997	December 2005	January 2006	December 2007
24-hour rainfall	2.32 inches	0.93 inches	2.63 inches	3.63 inches
1-day flood level	10 year	< 2 year	25 year	100 year
Total storm precipitation	4.7 inches (12/29 – 12/31)	2.4 inches (12/22 – 12/25)	3.1 inches (1/28 – 1/30)	4.7 inches (12/2 – 12/3)
Estimated flow (cfs)	970	425	700	1,100



Photo 3. January 1980 flood event at 19070 73rd Avenue NE (March 23, 2009, City Council Packet)



Photo 4. January 1997 flood event at 19070 73rd Avenue NE (March 23, 2009, City Council Packet)



Photo 5. January 2006 flood event at Wallace Park (March 23, 2009, City Council Packet)



Photo 6. 2007 flood event (~1,100 cfs) at Wallace Park Bridge (March 23, 2009, City Council Packet)



Photo 7. Muck Creek flooding at 73rd Avenue NE crossing (March 23, 2009, City Council Packet)

3.3 Studies and Projects Completed

As part of efforts to reduce flooding on Swamp Creek, King County, the City of Kenmore, and Snohomish County have conducted various studies and constructed flood reduction projects. Figure 4 shows studies and actions completed over the years. A discussion of relevant studies and projects completed are described below.



Figure 4. Actions and studies conducted on Swamp Creek

3.3.1 Sediment Transport Analysis

Sediment transport analysis was conducted in 2002 for the flood reduction projects that were completed in 2005 (West Consultants 2002). Hydraulic data coupled with estimates of sediment particle sizes in different reaches within the flood reduction project vicinity were used to evaluate the potential for sediment of various sizes to be mobilized under different flow scenarios. Some factors that influence sediment transport are sediment supply, particle sizes, channel gradient, and flow velocities. Swamp Creek was broken into reaches from the Wallace Swamp Creek Park sedimentation pond to the Sammamish River for sediment transport analysis. The reaches where flooding occurs currently include reaches 2, 3, and 4 shown in Figure 5 (between the 73rd Avenue bridge and approximately 600 feet downstream of the Tolt pipeline). Reaches 3 and 4 are downstream of the confluence with Muck Creek, and these reaches are flatter and have 50 percent lower average velocities for the 2-year flow event than reach 2. An analysis of incipient motion characteristics for sediment particle sizes within each reach was evaluated for general erosion, armoring, and deposition of sediments from upstream. In reaches 3 and 4, the incipient motion analysis indicates that Swamp Creek is not capable of transporting the majority of sediment that would be supplied from upstream, making it a depositional reach for flows ranging from the 1-year to 100-year events. The analysis indicates reach 2, between the 73rd Ave NE bridge and Muck Creek, is capable of transporting much of the upstream sediment load.

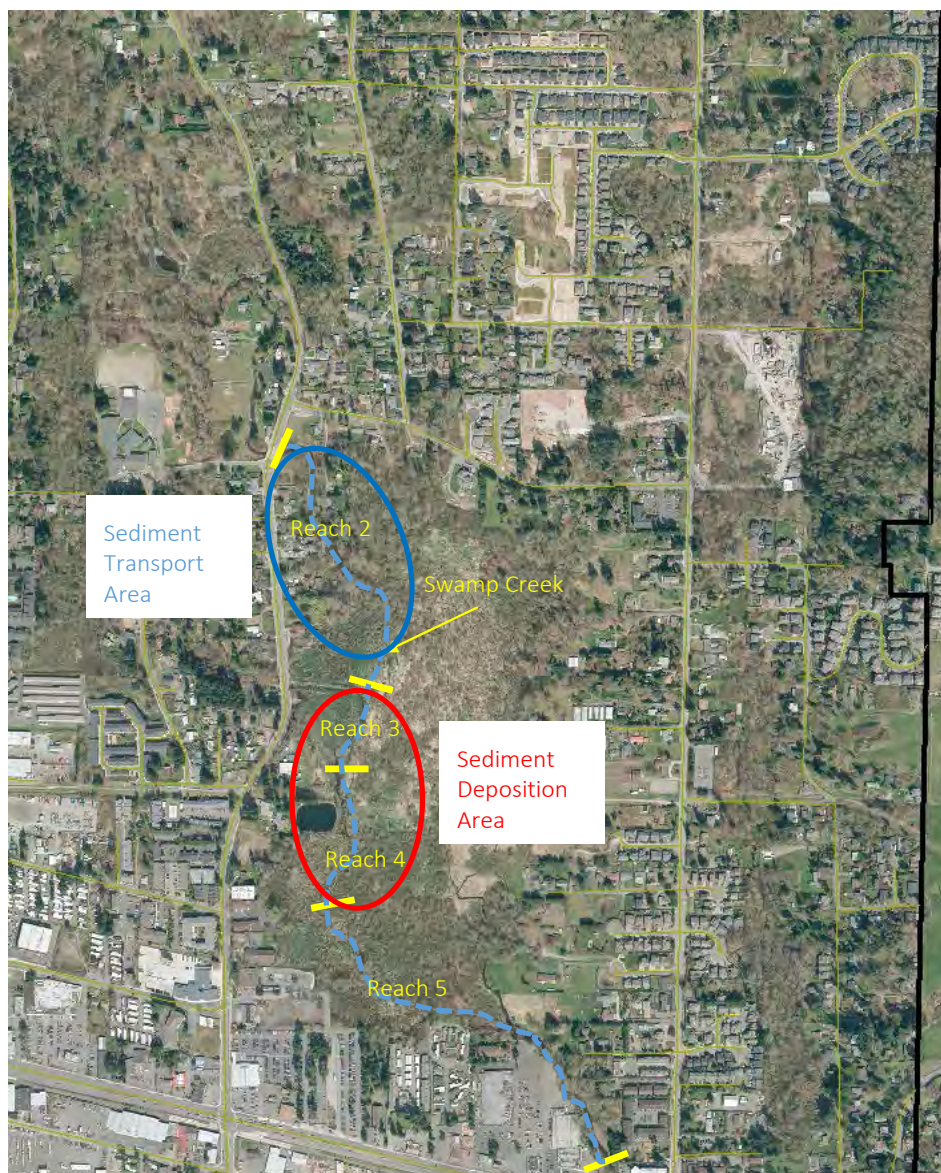


Figure 5. Approximate location of reaches evaluated in Sediment Trasnport Analysis (West Consultants. 2002)

3.3.2 Constructed City of Kenmore Capital Projects

The City has implemented several improvements geared at reducing flooding and flood damage adjacent to Swamp Creek. Table 2 lists the capital improvement projects completed prior to 2009, including the acquisition of several homes.

Table 2. Capital projects completed in Kenmore (pre-2009)

Year	Project Completed	
2008	FEMA flood damage repairs (from December 2007 flood)	
2006	Wallace Swamp Creek Park study and construction	Creation of habitat bypass channel
		Weir modifications
		Installation of plant materials
2005	73 rd Avenue flood reduction improvements	Raise school access road
		Replace 73 rd Avenue bridge over Swamp Creek
		Swamp Creek main channel flood reduction and habitat improvements
		Raise 73 rd Avenue at Muck Creek
		73 th Avenue drainage revisions
		Property acquisitions

Figure 6 shows City owned properties highlighted in orange that have been purchased by FEMA, King County and the City in an effort to manage Swamp Creek. Privately owned properties, shown in red, continue to experience impacts from Swamp Creek.

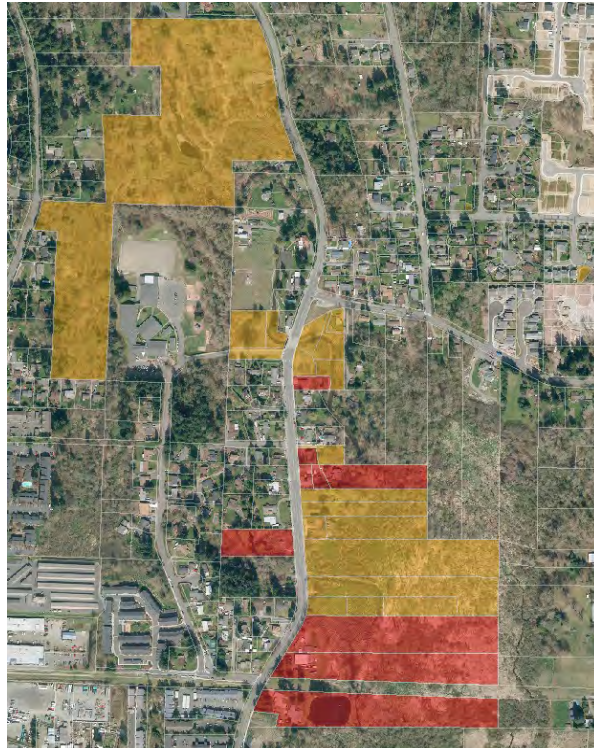


Figure 6 – City owned properties along Swamp Creek are highlighted orange. Privately owned properties that continue to experience impacts from Swamp Creek are shown in red.

Wallace Swamp Creek Park Sedimentation Pond

The Wallace Swamp Creek sedimentation pond provides an opportunity to understand the sediment volumes that are eroded from upstream Swamp Creek reaches and mobilized to downstream Swamp Creek reaches within Kenmore.

The City removes sediment from the Wallace Swamp Creek Park sedimentation pond (constructed by King County) almost every year. The City has considered ceasing dredging operations on occasions in the past due to the maintenance expense. The sedimentation pond has been the source of several recommended basin actions in the last 20 years, including the following:

- Expansion of the existing sedimentation basin to improve efficiency (King County 1997) – not completed.
- Creation of Wallace Park by-pass channel to divert flows around the sedimentation basin during maintenance (King County 1997) – completed.
- Construction of a new outlet structure to reduce overbank flood volumes, depths, and erosion during severe storms (Kato and Warren, 2001) – completed.
- Kenmore considered decommissioning the pond in 2001. GeoEngineers conducted a geomorphic evaluation and discussed potential ongoing downstream deposition, channel aggradation, and local flooding that may result.
- Repair of flood damage in the bypass channel and sedimentation pond from December 2007 flood event – completed in 2009.
- Otak conducted an analysis of sediment dredging in 2010 and recommended a potential trigger elevation of 55 feet based on the fall 2008 dredging design elevation and historical dredging data.

According to Otak's 2010 dredging analysis, sediment was removed from the pond 13 times between 1988 and 2010. The volume of sediment removed ranged from 500 cubic yards (2002) to 3,500 cubic yards (1996), with a mean dredging volume of 1,464 cubic yards. The sedimentation pond had significant accumulation of gravel and cobbles during a field visit in April 2013 (Photo 8) and was since dredged in August 2013 (3,400 cubic yards) and again in July 2014 (2,800 cubic yards).



Photo 8. Wallace Swamp Creek Park sedimentation pond looking upstream

4. Current Swamp Creek Conditions in Kenmore

The focus of this Swamp Creek evaluation was on Wetland #3 in the vicinity of flood-related problems. Current conditions described below are based on survey data collected in October 2013, a field visit in April 2014, and a description of current complaints (fall 2014) provided by the City.

4.1 Sediment Deposition in Wetland #3

Cross sections of Swamp Creek through Wetland #3 were surveyed during the 73rd Avenue flood reduction projects in 2004. Several of these cross sections were resurveyed in 2013 in order to evaluate sediment deposition rates in Wetland #3 and determine whether sediment deposition was reducing the Swamp Creek channel conveyance capacity in this area. Figures 7 (upstream) and Figure 8 (downstream) show the channel cross sections and relative position in the wetland. A comparison of the cross section data indicates deposition is occurring in the vicinity of 73rd Avenue NE and the confluence within Muck Creek. Downstream cross sections (Figure 8) indicate no deposition or slight erosion. Cross section F, the most northerly cross section surveyed in Wetland #3, shows some channel migration from west to east. Deposition as shown on the cross sections ranges from 1.5 to 6 feet in the area surveyed. If an average deposition of 3 feet is assumed across the reach (estimated to be 1,800 feet) and the average channel width is 20 feet, approximately 4,000 cubic yards of sediment were deposited in the 9 years between measurements (less than 450 cubic yards per year). These estimates provide an approximation of deposition rates in Wetland #3, which are consistent with the previous sediment transport evaluation that indicated this area is a depositional environment (West Consultants, 2002). The hydraulic model used in the 2004 flood reduction projects was re-ran with the 2013 cross section data to evaluate the effect of sedimentation on water surface levels. Model results indicate water level changes between the 73rd Avenue NE bridge and the Tolt pipeline range from a decrease of 0.71 feet to an increase of 0.47 feet at the 2-year flow event and a decrease of 0.12 feet to an increase of 0.22 feet at the 100-year flow event. The changes in water surface elevation occur at different cross sections through the wetland, and the greatest increases are on properties already owned by Kenmore. Modeling results are presented in Attachment A.

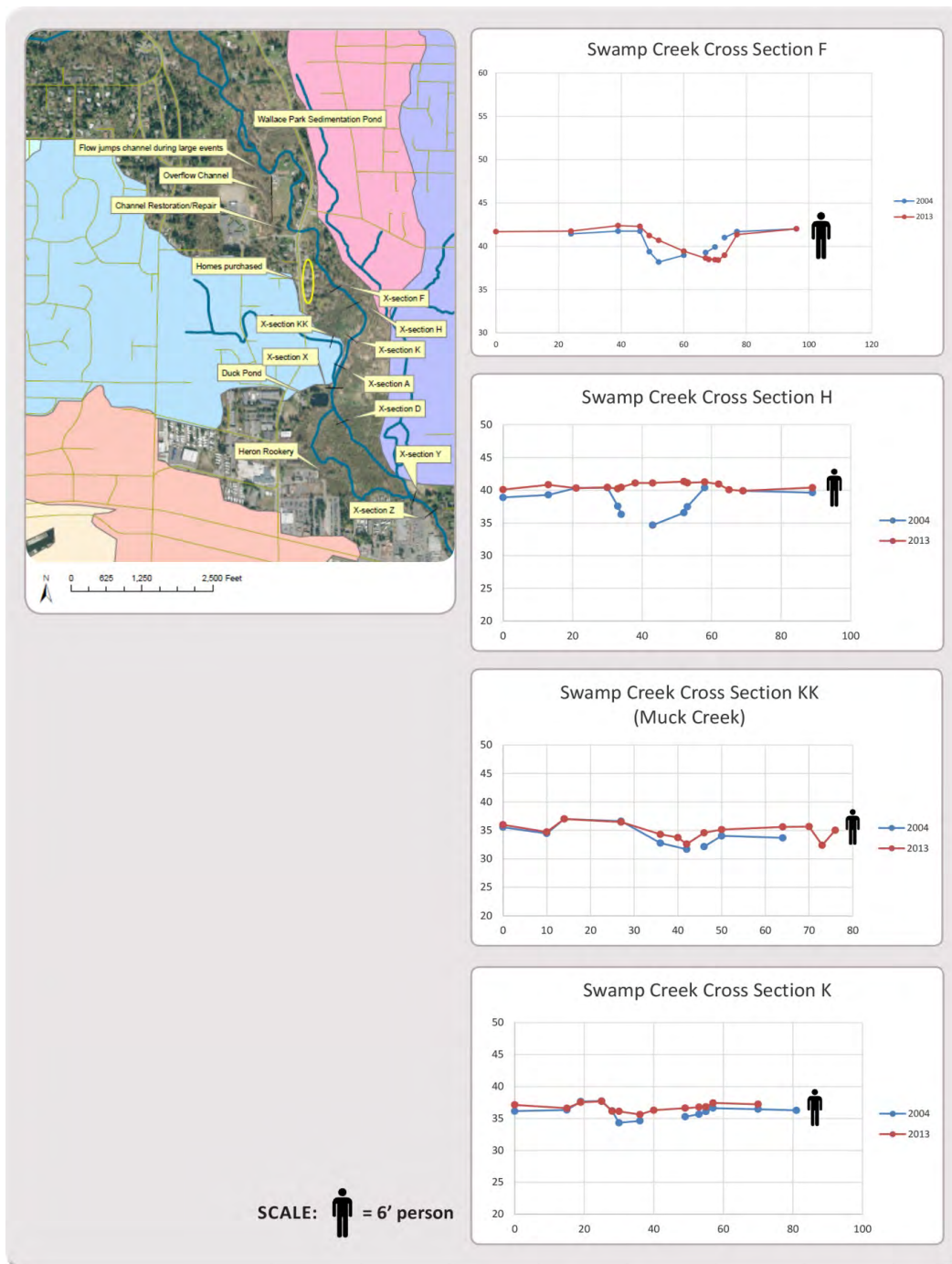


Figure 7. Upstream Wetland #3 cross sections

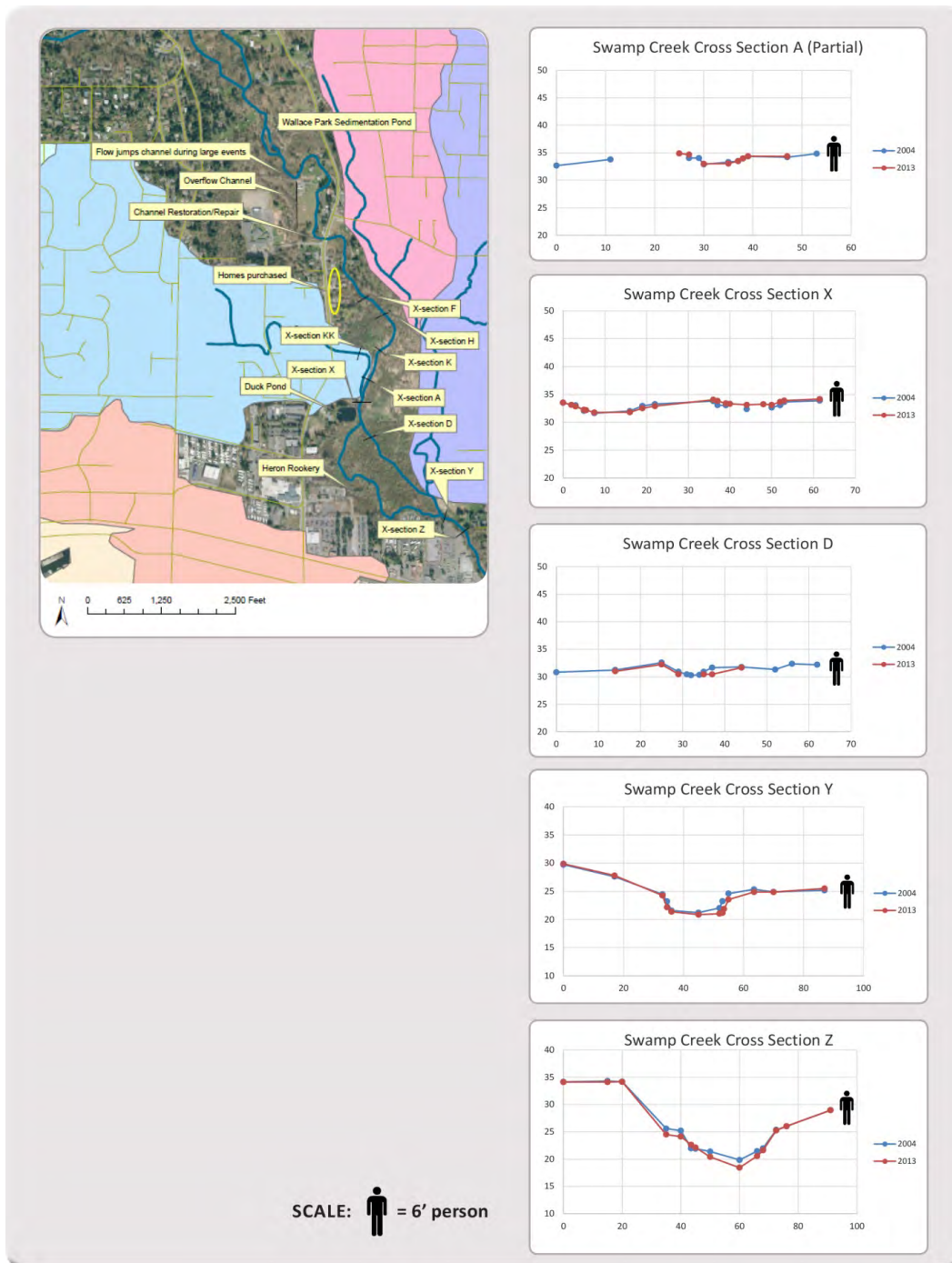


Figure 8. Downstream Wetland #3 cross sections

4.2 On-going Flooding

Based on recent complaints received by the City, several properties on the east side of 73rd Avenue NE adjacent to Wetland #3 continue to be affected by flooding, even by smaller flow events (i.e., 2-year or less). Many of these properties were expected to continue flooding even after the flood reduction projects (e.g., the 73rd Avenue NE bridge replacement) since the focus of those projects was to reduce flooding upstream of the 73rd Avenue NE bridge. Table 3 lists the house numbers and parcel identification numbers (PINs) on 73rd Avenue NE currently being affected and anticipated impacts reported in Otak's *Swamp Creek Flood Reduction Improvements- Phase I Design Report* (Otak, 2003).

In addition to a review of predicted flooding in Otak's 2003 study and current complaints received by the City, hydraulic modeling was conducted with the new 2013 cross section data that shows sedimentation to evaluate changes in water surface elevations at different flow events and whether 73rd Avenue NE would potentially be impacted by flooding during the 100-year flood event. Current predicted changes to water surface elevations at the 2-year event are also included in Table 3. Based on the current modeling results, 73rd Avenue NE should not be overtopped during the 100-year flood event.

Table 3. Summary of Current and Predicted Flooding Impacts

Swamp Creek Properties Along 73 RD AVE NE (From North to South)			
House Number and Parcel Identification Number	Current Impacts (Updated Fall 2014)	Predicted Flooding*	Special Conditions
19034 0114-100709	Property Flooding December 2012	Property flooding at 5-year event (Otak 2003)	
19026 0114-100698	No Known Flooding of Property or Structures	Property flooding at 5-year event (Otak 2003) No change in 2-year water surface elevation (2014)	
19016 0114-100697	No Known Flooding of Property or Structures	Property flooding at 2-year event (Otak 2003) No change in 2-year water surface elevation (2014)	
19010 0114-100702	No Known Flooding of Property or Structures	No impacts noted (Otak 2003) No significant (<0.1 foot lower) change in 2-year water surface elevation (2014)	
18926 0114-100700	Property Flooding (Vacant) October 2014	Property flooding at 5-year event (Otak 2003) No significant (~0.14 foot lower) change in 2-year water surface elevation (2014)	City of Kenmore Owns Property
19004 0114-100701	No Known Flooding of Property or Structures	Potential house flooding (within 1 foot of finished first floor) at 5- year event (Otak 2003)	2005 agreement with City to accept funds to raise home.

		No significant (<0.1 foot lower) change in 2-year water surface elevation (2014)	City released of flooding liability
18922 0114-100699	Property Flooding October 2014	Potential house flooding (within 1 foot of finished first floor) at 2-year event (Otak 2003) No significant (~0.13 foot lower) change in 2-year water surface elevation (2014)	2005 agreement with City to accept funds to raise home. City released of flooding liability
18904 0114-101017	Property flooding October 2014	Property flooding at 2-year event (Otak 2003) No significant (~0.13 foot lower) change in 2-year water surface elevation (2014)	
18908 0114-101011	Property flooding October 2014	Potential house flooding (within 1 foot of finished first floor) at 2-year event (Otak 2003) No significant (<0.1 foot lower) change in 2-year water surface elevation (2014)	2005 agreement with City to accept funds to raise home. City released of flooding liability
18918 0114-101015	Property flooding October 2014	Property flooding at 2-year event (Otak 2003) No significant (<0.1 foot) change in 2-year water surface elevation (2014)	2005 agreement with City to accept funds to raise home. City released of flooding liability
0114-100995 to 0114-101012	Property Flooding (Vacant) October 2014	Property flooding at 2-year event (Otak 2003) Increase (~0.47 foot) in water surface elevation at 2-year event (2014)	City of Kenmore Owns Properties (9)
18522 0114-100990	Property flooding September 2013	No impacts noted in report. Increase (~0.27 foot) in water surface elevation at 2-year event (2014)	
18510 0114-100985	Property flooding September 2013	No impacts noted in report. Increase (~0.27 foot) in water surface elevation at 2-year event (2014)	
18254 0114-100979	Property flooding September 2010	No impacts noted in report. No significant (<0.1 foot) change in 2-year water surface elevation (2014)	
18727 0114-100410	Property Flooding October 2014		

*Hydraulic modeling was conducted in 2003 and again in 2014 using new data obtained in Wetland #3 to evaluate changes in water surface elevation compared to the 2003 modeled results.

4.3 Ecological Conditions

Swamp Creek Wetland #3 is the largest wetland in Kenmore. It is a complex riparian wetland that receives hydrology from overbank flooding of Swamp Creek, Little Swamp Creek, and several smaller tributaries. It also receives groundwater inputs from seeps along the valley slopes. Wetland #3 qualifies as a Class 1 wetland per KMC 18.55.090 due to its exceptional local significance and proximity to and influence on Swamp Creek. While the wetland has not been formally rated under the state classification system (which was just revised in July), it would likely rate as either Category 1 or 2.

The wetland is dominated by native shrub and tree vegetation, but also contains large expanses of reed canary grass in the central portion that are likely relic agricultural pastures (see 1936 aerial photo – Figure 2). The wetland offers good forage and nesting habitat for birds (including a large great blue heron rookery) and good forage and shelter habitat for amphibians, reptiles, and small mammals. Ponded areas in the wetland provide resting sites for migrating and resident waterfowl.

Water depths appear to be increasing in and around the Oregon ash forest that supports the great blue heron rookery. While Oregon ash trees tolerate inundation better than most other native trees, there is a risk that future increases in water depths, especially during the growing season, will eventually cause the decline and subsequent loss of the rookery trees. The decline will most likely be gradual with the most inundated trees losing leaves and eventually dying over the course of several seasons. Nests will be abandoned as the trees die, either gradually or if they topple from loss of soil support and/or decay. In general, increasing water depths will favor reed canary grass and, where deep enough, some areas may transition to a more aquatic-bed (floating-leaved plants) vegetation type.

4.4 Factors that Contribute to Flooding

There are multiple factors that likely contribute to flooding in Swamp Creek and particularly adjacent to Wetland #3 in Kenmore. These factors have been discussed previously, but it's worth repeating here. Urbanization and resulting increases in impervious surface without commensurate stormwater controls are considered to be the primary factors that have contributed to continued flooding and sedimentation issues in this part of the basin (King County, 1997; Kato and Warren 1999). As alluded to above, there is not nearly enough detention in upstream basins to account for stormwater impacts in Kenmore. Other factors likely include:

- Previous filling of area wetlands that formerly provided natural flood storage (King County 1997).
- Kenmore's position in the watershed – Kenmore is at the lowest point within the basin, and sedimentation is common in low gradient reaches that are preceded by higher gradient erosive reaches such as are present in the Swamp Creek watershed in Snohomish County (Figure 9 shows the local gradient in the vicinity of Wetland #3).
- Change in active management of the Swamp Creek channel within Wetland #3 – sedimentation in Wetland #3 was likely managed in the past, starting with excavation of the main Swamp Creek channel in 1956. The open channel was likely maintained for many years through periodic dredging, as was common during this era to drain pasture land and adjacent crops.

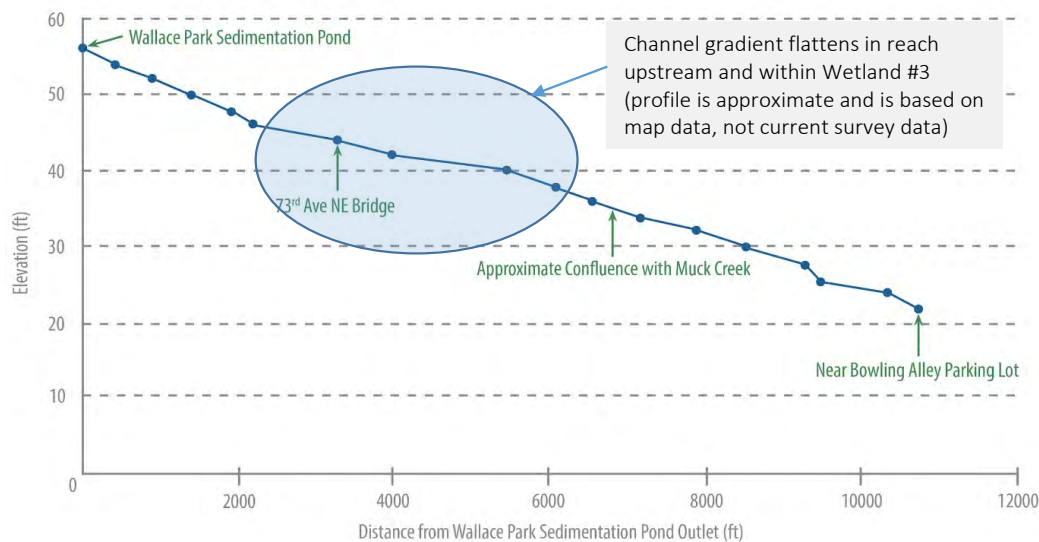


Figure 9. Swamp Creek channel profile in vicinity of Wetland #3

Since at least 1998 (see aerial photograph in Figure 2) and probably earlier, homes have been built adjacent to Wetland #3 in a floodplain environment. The location of infrastructure and homes in this area has resulted in property damage by flooding and acquisition by the City and King County to minimize losses.

5. Alternatives

The ultimate goal of this evaluation is to provide City Council with alternatives to address the ongoing flooding issues in Swamp Creek. While reviewing alternatives, it is important to consider the the current and potential future impacts of Swamp Creek with regard to three different goals, including protection of 1) public infrastructure 2) privately owned properties, and 3) wetland habitat. Updated modeling results indicate that 73rd Avenue NE will not be impacted by a 100-year storm event in both current or potential future conditions. No additional action would be required by the City for protection of public infrastructure for a relatively infrequent 100-year flow event.

Several privately owned properties along 73rd Avenue NE will be impacted in both current and potential future conditions (see Table 3). These properties are also identified on FEMA's Flood Insurance Rate Map (FIRM) as being located within the 100 year flood zone. The City is not legally obligated to protect these homes from Swamp Creek flood waters, which come from upstream jurisdictions (the overwhelming majority of the watershed is outside of Kenmore).

Wetland #3 is a high quality wetland. Under current conditions, the wetland will persist mainly in its current state that includes patches of invasive reed canarygrass with hedgerows, pockets, and large fringes of mainly native- shrubs and trees. Tree and shrub health may decline in the sediment deposition area shown on Figure 5 along with increases in wetland water levels. Future deposition of sediment and episodic heavy flows may alter the spatial distribution of plant and animal communities over time within the wetland, but the overall quality of the wetland would be expected to remain high.

5.1 Previous Basinwide Projects and Strategies

There are multiple ways to approach the flooding problem occurring in Kenmore, including: 1) developing strategies to reduce the causes of the problem (e.g. flow and sediment transport); 2) engineering solutions that deal with flooding where it occurs; and 3) protecting properties and infrastructure from flood damages when it occurs.

These are the types of projects and strategies that have been identified in previous studies, some of which have been implemented with varying degrees of success.

Table 4 lists previously identified flood reduction projects and strategies and the current relevance for today's flooding problem.

Table 4. Summary of Previously Identified Flood Reduction Projects and Strategies

Type of Project	Project Description	Current Relevance
Regional detention	Scriber Creek above confluence with Swamp Creek – Lynnwood and Snohomish County (1996)	Regional detention upstream in the Swamp Creek basin should continue to be pursued as one part of the overall approach to flood reduction in Kenmore. However, it will need to be widespread to make a difference and would take decades (if not longer) to achieve results.
	Topsoil site at 46 th Avenue W and 204 th Street SW – near Lynnwood Park and Ride (1996)	
	North of 164 th Street SW between Manor Way and 22 nd Avenue W in Snohomish County (1996)	
	Downstream of Alderwood Mall – Lynnwood and Snohomish County (1996)	
	Wallace Park in Kenmore (1996)	Regional detention in Kenmore at Wallace Park will likely not be very effective without upstream detention given its low position in the watershed (95 percent of the basin is upstream).
Flood and Erosion Reduction	Sediment removal in Swamp Creek downstream of 73 rd Avenue NE Debris jams in this location in the early 1990s caused accumulation of sediment, logs, and litter, backing up water. Sediment removal was proposed as a follow-on project to debris jam removal that was conducted manually.	Estimates of sediment deposition in Swamp Creek within Wetland #3 is less than 450 cubic yards per year, less than half of what is removed from the Wallace Park sedimentation pond annually. Sediment removal to improve conveyance capacity may alleviate some of the localized flooding. Modeling was conducted to determine impacts from sedimentation and potential flood reduction benefits from dredging. Results are discussed below.
	Debris trap at 73 rd Avenue NE	More information needed to evaluate this option.
	Wallace Park sedimentation basin expansion	Expansion of the sedimentation pond could reduce dredging frequency. It is unclear if it would reduce flooding. The sedimentation pond appears to collect larger material, whereas smaller material is likely passed through and settled out in Wetland #3.
	Interlocal coordination for regional stormwater facilities outside of King County	Still relevant in order to coordinate regional flow control to alleviate flooding in the entire Swamp Creek watershed.

Type of Project	Project Description	Current Relevance
Flood and Erosion Reduction (continued)	Selective local berming • Relief for some flooded properties	This could potentially be a short-term approach to limiting local property damage, but would not be considered a long-term solution.
	Improve capacity of Swamp Creek overflow channel (west side of Llama farm property)	May reduce flooding upstream of 73 rd Avenue NE, but overflow channel re-enters Swamp Creek prior to Wetland #3 and may not have any effect on properties in that vicinity that are currently flooded.
	Leary/King bank stabilization • Plant streambank to alleviate residential flooding upstream of 73rd Avenue on Leary and King properties	May have limited effectiveness for flooding, but positive benefits for habitat.
	Carter Road bank stabilization coordination • Upstream source of sediment	Likely still relevant – needs evaluation with respect to sediment transport.
	Biofiltration swales in roadside ditches • Reduce sediment transport	Positive benefits for water quality and marginal reduction in sediment sources to Swamp Creek. Would need to be widespread to make a difference.
	Ongoing debris removal • Work with private property owners to manually remove debris on an as-needed basis in Wetland #3	Relevant in that debris jams have a role in local sedimentation and channel movement that could result in new areas being flooded.
	Wallace Park by-pass • By-pass to temporarily route flows around Wallace Pond during maintenance	This project was completed.
Open Space, Taxation, and Property Acquisition	Pursue acquisition of significant lands	Needs to be evaluated to determine if property acquisition upstream in areas that could be converted or modified to provide flood storage would deliver a flood-reduction benefit.
	Register interested residents into the Public Benefit Rating System (open space)	Unclear how this would alleviate flooding. Wetland #3 is undeveloped and critical areas regulations prevent future development.
	Pursue acquisition of chronic flood-prone properties	Several flood-prone properties have been acquired; consider further acquisition for current flood-prone properties.

Type of Project	Project Description	Current Relevance
Wetland Management	Long-term wetland management plan - Remove debris jams, restore old main channel in Swamp Creek Wetland #3 - Remove reed canary grass – re-introduce native vegetation - Annual channel maintenance	Similar to sediment removal in Swamp Creek project listed above under flood and erosion reduction, channel maintenance and wetland management may help improve conveyance through Wetland #3 and alleviate flooding.
	Wetland community link project Long-term monitoring by community members	Could provide positive benefits, but may not be effective at reducing flood risks.
	Reed canary grass working group Share information regarding control of reed canary grass	In addition to sedimentation, reed canary grass plays a role in limiting conveyance capacity in Wetland #3. Efforts to control reed canary grass should be explored.
Infrastructure	Replace 73 rd Avenue NE bridge with a longer span	Project completed.
	Construct overflow spillway for Wallace Park sediment pond	Project completed.
	Construct berm north of the access road to Kenmore Elementary school	Project completed.
	Elevate police precinct parking lot and access road serving Kenmore Park and Ride	Police department has moved, however, property is still wet. Future redevelopment will need to identify options to reduce flooding.
	Construct berms to protect private properties located east of Kenmore Park and Ride	Redevelopment will need to identify options to reduce local flooding.
	Replace undersized culverts in Muck Creek, including culverts draining the Northshore Utility District headquarters	Project completed.
	Raise 73 rd Avenue NE above the 100-year floodplain at the low point near Muck Creek	Project completed.

5.2 Upstream Alternatives

Regional detention facilities in jurisdictions upstream of Kenmore have been considered in the past (Table 4), and specific locations have been identified. As discussed above, the 2002 Snohomish County Drainage Needs Report hydrologic modeling indicated that up to 350 acre-feet of detention would be required for 1,800 acres of new effective impervious surfaces that will likely occur with future development. Much of the basin was developed prior to 1990 with little to no flow control, and, based on a limited review of Snohomish County documents, there is still very few detention facilities in the Swamp Creek basin. Retrofitting the existing impervious surfaces and providing detention for new impervious surfaces is a significant effort and would take decades (if not longer) to realize any effect in Kenmore. Nonetheless, steps should be taken to begin the process of controlling upstream flows, and the City should continue to work with Snohomish County and other upstream jurisdictions in this regard. Regional surface water development standards have become much more protective, however, these standards are only applied as properties develop or redevelop.

Additionally, the City should work with Snohomish County and upstream jurisdictions to ensure that local flood reduction projects (e.g., increasing culvert capacities in Lynnwood and Snohomish County) do not exacerbate flooding in Kenmore. Undersized culverts that cause backwater flooding could be providing some flood reduction benefits downstream.

5.3 City of Kenmore Alternatives

The City of Kenmore's goal is to reduce flood-related impacts at the least possible cost. Considerable time and resources have been spent by the City and previously by King County on the Swamp Creek flooding issue. Millions of dollars have been spent on flood reduction efforts, including acquisitions of flood-prone properties and capital projects associated with infrastructure and conveyance improvements in Swamp Creek. The funding for much of this work was from King County as mitigation for and protection of the Brightwater Treatment Plant sanitary sewer trunk line that traverses the area. Potential flood-management alternatives the City could enact are described in Table 5.

Table 5. List of Alternatives

Alternative	Description	Considerations
1. Emergency Planning	This alternative assumes that no actions are taken until necessary – when flooding happens.	• Permitting for flood damage repairs would happen after the fact • Risk for property and infrastructure damage • Potential short- and long-term ecological consequences from emergency work or allowing elevated water levels • Lower up-front cost
2. Property Acquisition	Purchase up to 11 properties in what has historically been the flood-prone area	• Large up-front cost • May not completely solve flooding problem, if upstream or channel conditions change
3. Sediment Removal and Maintenance	Conduct routine channel maintenance, including debris, sediment, and reed canary grass removal to improve conveyance through Wetland #3	• Extensive permitting process • Slight water surface elevation improvement. See discussion below.

5.3.1 Alternative 1: Emergency Planning

Swamp Creek flooding has occurred for decades, even before the extensive development and urbanization that occurred in the upstream watershed. Part of the problem is the location of Kenmore at the bottom of the drainage basin. One potential approach to the on-going flooding problem is to manage it as it occurs. Despite property acquisition in flood-prone areas and implementation of infrastructure improvements and sediment management facilities, Swamp Creek still floods and will likely continue to regardless of actions that are taken in the future. Knowing that flooding will happen, one alternative would be to be ready for it when it does through emergency notification of potentially affected property owners, mobilization of crews to prevent damage, and follow-up flood damage repairs. As mentioned before, the potential risk to public infrastructure is believed to be minimal up to the 100-year storm event. Application of this alternative for private property flooding will have to be determined at the policy level.

Permitting

The normal course of action during an emergency is to mobilize contractors and equipment to conduct rapid repairs in the most expeditious way possible to remove the immediate threats to public safety and infrastructure. From an environmental permitting standpoint, the Washington Department of Fish and Wildlife Area Habitat Biologists are to be contacted as soon as possible ahead of, during, or immediately after the work. However, contact and on-site meetings are not always possible to arrange in short order, especially during large, regional, or particularly severe events. After the event, work involving wetland or stream sediment excavation or fill would need to be coordinated with the US Army Corps of Engineers (Corps) and/or the Washington State Department of Ecology. Additionally, any work within wetlands, streams, and/or their buffers would require coordination with the City of Kenmore Development Services

Department to assure compliance with the City's Critical Areas regulations, the State Environmental Policy Act (SEPA), and the Shoreline Master Program. The outcome of coordination is an agreed plan that studies or details environmental damage and often retroactively proposes design and implementation of a mitigation plan to offset impacts.

The "after-the-fact" permitting risk is that the project must first meet the definition of an emergency. Per WAC 220-110-020, "Emergency" means an immediate threat to life or public or private property; or an immediate threat of serious environmental degradation, arising from weather or stream flow conditions, other natural conditions, or fire. In addition, Kenmore Municipal Code 18.55.150.A exempts emergency activities necessary to prevent an immediate threat to public health, safety, property, or welfare. However, as an exempt activity, emergency work is still required to restore, rehabilitate, or replace critical area impacts to the prior condition or better. Proceeding on an emergency basis outside of the normal permitting route will require after-the-fact coordination and permitting at the local, state, and federal jurisdictional levels. The lack of pre-project coordination combined with the somewhat unpredictable actions of contractors working under time and weather constraints may result in agency-required repair/mitigation plans, studies, and evaluations that could be burdensome, and potentially pose significantly large costs to the City.

Ecological Consequences

From an ecological standpoint, the consequences of doing nothing until an emergency are best understood by reviewing both short- and long-term changes. In the short-term, the wetland will persist mainly in its current state that includes patches of invasive reed canarygrass with hedgerows, pockets, and large fringes of mainly native-species dominated shrubs and trees. Tree health will decline along with increases in wetland water levels. Current hydraulic modeling does not suggest increased water levels in the southern part of the wetland, but rather the middle segment. However, increased water levels in the southern part of the wetland, for whatever reason, could cause the Oregon ash forest¹ that supports the heron rookery to be lost, along with the rookery itself eventually (as discussed above). In the long-term, consequences from emergency repairs will be locally severe but episodic in nature as they will occur as frequently as the storms that cause them. Eventually, the region will experience another large storm event or series of events that cause water to overtop, threaten, and possibly damage 73rd Avenue NE. During such an event, the response will be to mobilize contractors with heavy equipment to clear out the stream channel. Due to the rapid need to remedy the emergency, the construction will proceed without the benefit of professional analysis, environmental review, work plans, construction plans, or erosion/sedimentation control plans. Emergency in-water dredging and other work will temporarily lower water quality and disrupt aquatic life, including salmon, and possibly cause long-term damage to wetland, riparian, and buffer vegetation.

Risks to Infrastructure

Choosing not to protect infrastructure in advance of an emergency has obvious risks for greater damages. Acquisitions of the most flood-prone properties have already occurred and projects associated with 73rd Avenue NE have been implemented to reduce risks to the City transportation network. Depending on the size and severity of future floods, the risk to properties and infrastructure could be minimal or substantial.

¹Because of the importance of herons in Kenmore and the possibility that the current rookery trees could decline, the city should consider implementing a plan to establish Oregon Ash saplings in strategic locations through the wetland. This tree planting could also be staggered over a number of years such that a variety of tree ages and sizes would be available to herons as the trees mature over time.

According to Otak's analysis presented to Kenmore City Council in March 2009, the Swamp Creek flood-reduction improvement projects resulted in modifications to the 100-year floodplain such that 73rd Avenue NE and some of the previously affected properties on 73rd Avenue NE are now outside of the 100-year floodplain (Figure 10). Coupled with the City's recent modeling update, this would indicate that City infrastructure has low potential risk for impact up to the 100-year storm event.

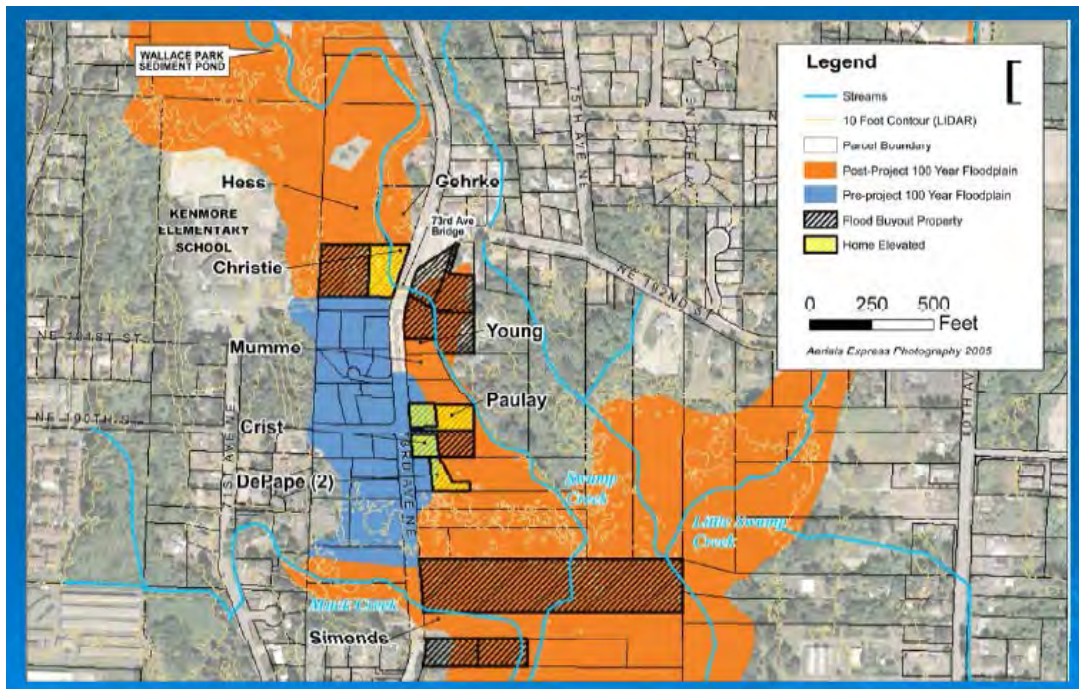


Figure 10. Pre- and post-Swamp Creek flood reduction project implementation 100-year floodplain. Prior to implementation of the 2008 flood reduction projects, the blue-shaded area was previously within the 100-year floodplain.

5.3.2 Alternative #2: Property Acquisition

Acquiring privately owned properties is an alternative to address private flooding impacts, however, as mentioned earlier, this alternative would not be required to protect public infrastructure. In the past, when the City has acquired properties along Swamp Creek, structures are removed and the property is returned to a natural state. Removal of structures and associated impervious areas on acquired private properties will have negligible impacts to the level of flood waters within Wetland #3.

The hatched and yellow properties in Figure 10 indicate properties that were either acquired or structurally modified to reduce flood damage. Since 2009, an additional 4 properties were acquired. In the area downstream of 73rd Avenue NE bridge crossing in the previous and current flood-prone area, there are up to 11 additional properties that are potentially at risk for flooding. Based on current King County assessment information (King County imap <http://gismaps.kingcounty.gov/parcelviewer2/?pin=0114100708>, accessed July 27, 2014), the total assessed value of these properties is \$3,380,000.

If additional property acquisition was pursued, the cost of acquisition could be phased in over the years, similar to previous acquisitions, starting with the properties at greatest risk for flood damages.

5.3.3 Alternative #3: Sediment Removal and Maintenance

This alternative proposes to remove sediment within the central portion of Wetland #3 to establish a Swamp Creek channel similar to what currently exists near the 73rd Avenue NE bridge. Removal of sediment deposited in the Swamp Creek channel in Wetland #3 would provide minimally improved conveyance through the wetland and would not result in significant flood reduction based on modeled scenarios that evaluated sediment removal in Swamp Creek in the vicinity of Muck Creek and the Tolt pipeline. Sediment removal likely occurred in the past, either through farming practices at the time or for flood reduction. Based on estimated sedimentation rates from comparison of the 2004 and 2013 cross sections in Wetland #3 (~450 cubic yards annually) and depending on weather patterns that produce large storm events capable of mobilizing and transporting tons of sediment, channel maintenance could be part of a comprehensive strategy to improve ecological conditions and reduce flooding on some properties.

To make sediment removal a potentially more viable option, the scope of this alternative would have to expand beyond simply removing sediment in the channel and consider changing elevations throughout the wetland to achieve the goal of reducing flooding. Considering the flat topography of the wetland and the volume of water flowing in Swamp Creek, designing and constructing this type of project would be very challenging. Costs associated with this type of project, including ongoing maintenance, would likely exceed the cost of purchasing private properties.

Permitting

Permitting for sediment removal would require coordination and authorization from the Corps, the Washington State Departments of Ecology and Fish and Wildlife, and Kenmore Development Services pursuant to the City's Critical Areas regulations, SEPA, and the Shoreline Master Program.. Coordination with The Muckleshoot Indian Tribe is encouraged since they would comment on SEPA decisions and Corps permits. Prolonged analysis and discussion of dredging techniques, alternatives and effects on species of concern/listed species, and cultural resource impacts should be anticipated. Mitigation for impacts in the form of environmental restoration projects will likely be required.

There are regional examples where dredging has been conducted for flood reduction, however, most are in rivers that are classified as navigable, such as the Cedar River in Renton. King County has conducted sediment removal on May Creek, east of Renton, on a few occasions and successfully obtained permits from the Corps (Permit #NWS-2010-158) and other regulatory agencies. Should this option be pursued, consultation with jurisdictions that have successfully negotiated the permitting process would be warranted.

The project would likely be permitted through the Corps' Individual Permit process, which requires a substantially higher level of analysis, documentation, and justification compared to the more streamlined Nationwide permits. Though cumbersome, the fact that the City of Kenmore has undertaken pro-active and less intrusive actions in the past (e.g., sediment ponds, road improvements, property acquisition) will aid in the justification argument.

5.3.4 By-pass Pipe Alternative

One additional alternative considered was the construction of a high-flow bypass pipe around Wetland #3. This alternative is not viable for a number of reasons that would result in project costs that would likely exceed property acquisition costs and require long-term on-going maintenance. These include:

-
- **Flood frequency** – Properties adjacent to Wetland #3 are impacted by flooding at flow events as small as the 2-year return frequency. A high-flow bypass would need to be sized to accommodate events between under the 2-year and the 100-year to provide flood reduction benefits (sized for over 500 cubic feet per second).
 - **Length and diameter of pipe** – Based on the size of the flow events that would need to be contained, a bypass pipe would need to be in excess of 5 feet in diameter. In order to bypass Wetland #3 where flooding is currently occurring, the pipe would need to extend from about Wallace Swamp Creek Park at the sediment pond to the Sammamish River, a distance of at least 8,000 feet depending on the route taken.
 - **Pipe maintenance and sediment management** – Significant volumes of sediment are transported from upstream Swamp Creek reaches to the lower Swamp Creek reaches. The Wallace Swamp Creek sediment pond collects an average of 1,400 cubic yards of sediment each year and an additional large volume of sediment is transported downstream to Wetland #3 and beyond. The bypass pipe would have to be sized and sloped to accommodate sediment transport as well, or a larger sedimentation facility at the upstream end of the pipe would be need to effectively settle out material so that primarily only water was routed through the bypass pipe.
 - **Utility conflicts** – There are a number of large utility corridors that transect the City of Kenmore, including Seattle’s Tolt water pipeline and King County’s brightwater effluent conveyance pipe. Potential conflicts with these and other utilities would require careful planning and may add cost to what would already be a very expensive endeavour.

6. References

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- Kato and Warren. 1999. *City of Kenmore Swamp Creek Basin Review of Current Conditions – Phase 1*. July 8, 1999.
- Kato and Warren. 2001. *Swamp Creek Flood Reduction Study*. February 2001.
- King County. 1997. *Swamp Creek Action Report*. February 1997.
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- Otak. 2010. *Swamp Creek Dredging Analysis Technical Memorandum*. July 21, 2010.
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- West Consultants. 2002. *Bridge Scour and Sediment Transport Analysis for Swamp Creek*. December 2002.



Appendix B:

Basin Characteristic Summary Sheets



Tributary 0056

Basin Characteristics

Kenmore area: 407 acres

Other basin jurisdictions:

Lake Forest Park

Highest elevation in Kenmore:

342 feet

Lowest elevation in Kenmore:

20 feet

Stream channel length in

Kenmore: 2.6 miles

Wetland area: 5.7 acres

Zoning

Commercial: <1%

Neighborhood business,
public/semi-public and regional
business: 1.2%

Parks: 2%

Residential (R24): <1%

Residential (R6): 94%

Land Cover

Roads: 45.2 acres

Roofs: 63.9 acres

Other impervious: 7.2 acres

Vegetated: 290 acres

Drainage System Characteristics

Open conveyance: 3.5 miles

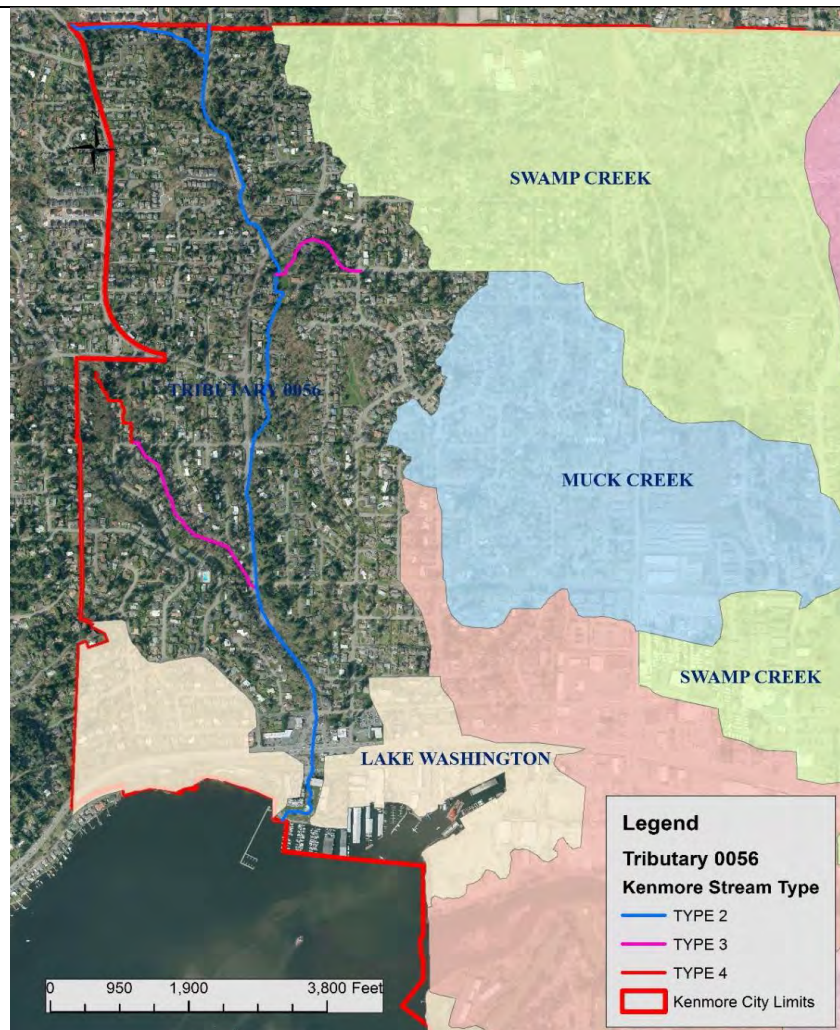
Closed conveyance: 13.5 miles

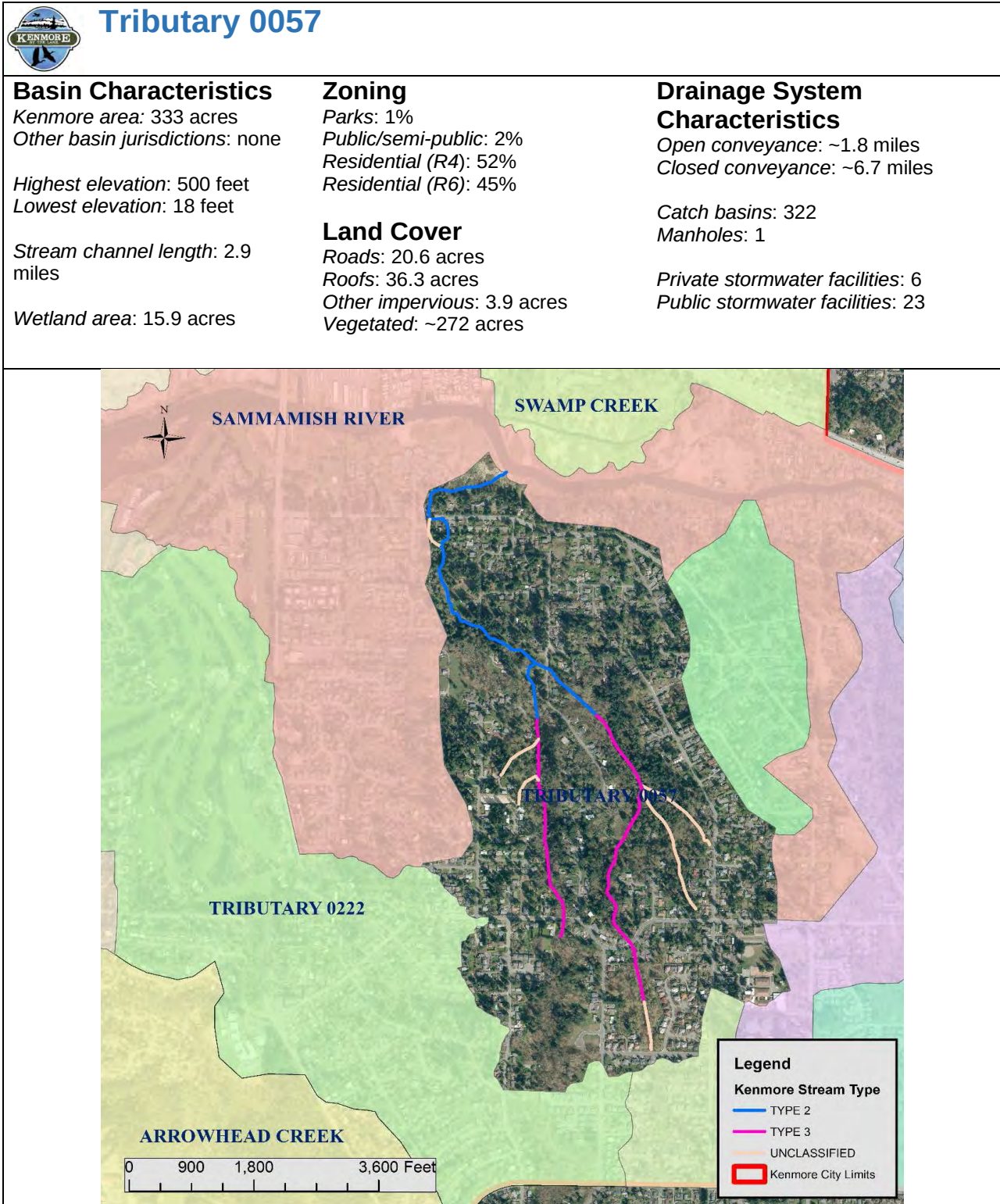
Catch basins: 664

Manholes: 9

Private stormwater facilities: 26

Public stormwater facilities: 33







Arrowhead Creek

Basin Characteristics

Kenmore area: 251 acres
Other basin jurisdictions: none

Highest elevation: 464 feet
Lowest elevation: 20 feet

Stream channel length: 1.1 miles

Wetland area: no wetlands mapped

Zoning

Parks: 45%
Public/semi-public: 21 %
Residential (R4): 27%
Residential (R6): 8%

Land Cover

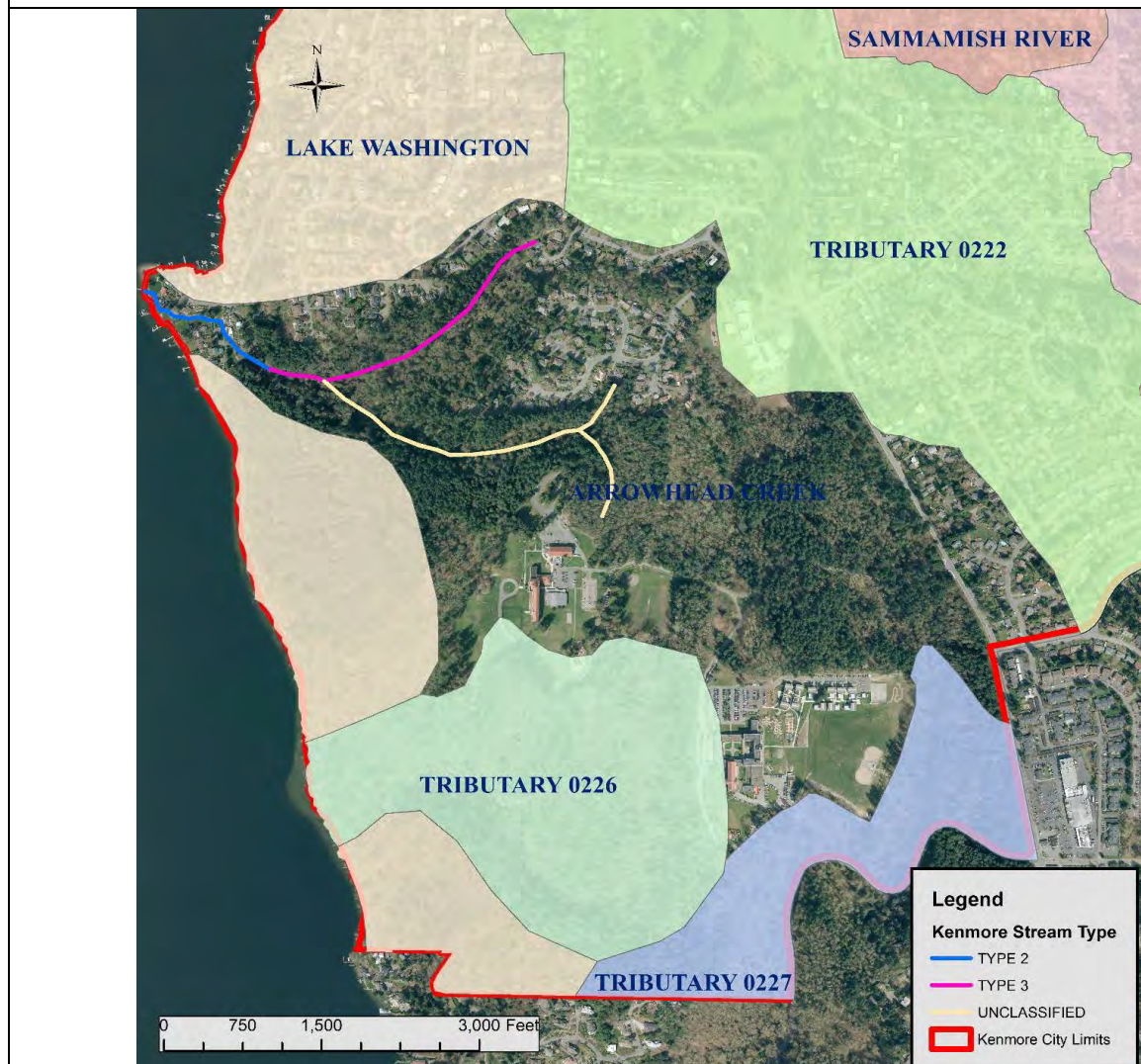
Roads: 14 acres
Roofs: 11 acres
Other impervious: 3 acres
Vegetated: 223 acres

Drainage System Characteristics

Open conveyance: 0.4 miles
Closed conveyance: ~3.8 miles

Catch basins: 181
Manholes: 1

Private stormwater facilities: 7
Public stormwater facilities: 6





Juanita Creek

Basin Characteristics

Kenmore area: 118 acres
Other basin jurisdictions:
Kirkland

Highest elevation in Kenmore:
498 feet
Lowest elevation in Kenmore:
362 feet

Stream channel length in
Kenmore: 0.41 miles

Wetland area: 1.56 acres

Zoning

Residential (R4): 2%
Residential (R6): 98%

Land Cover

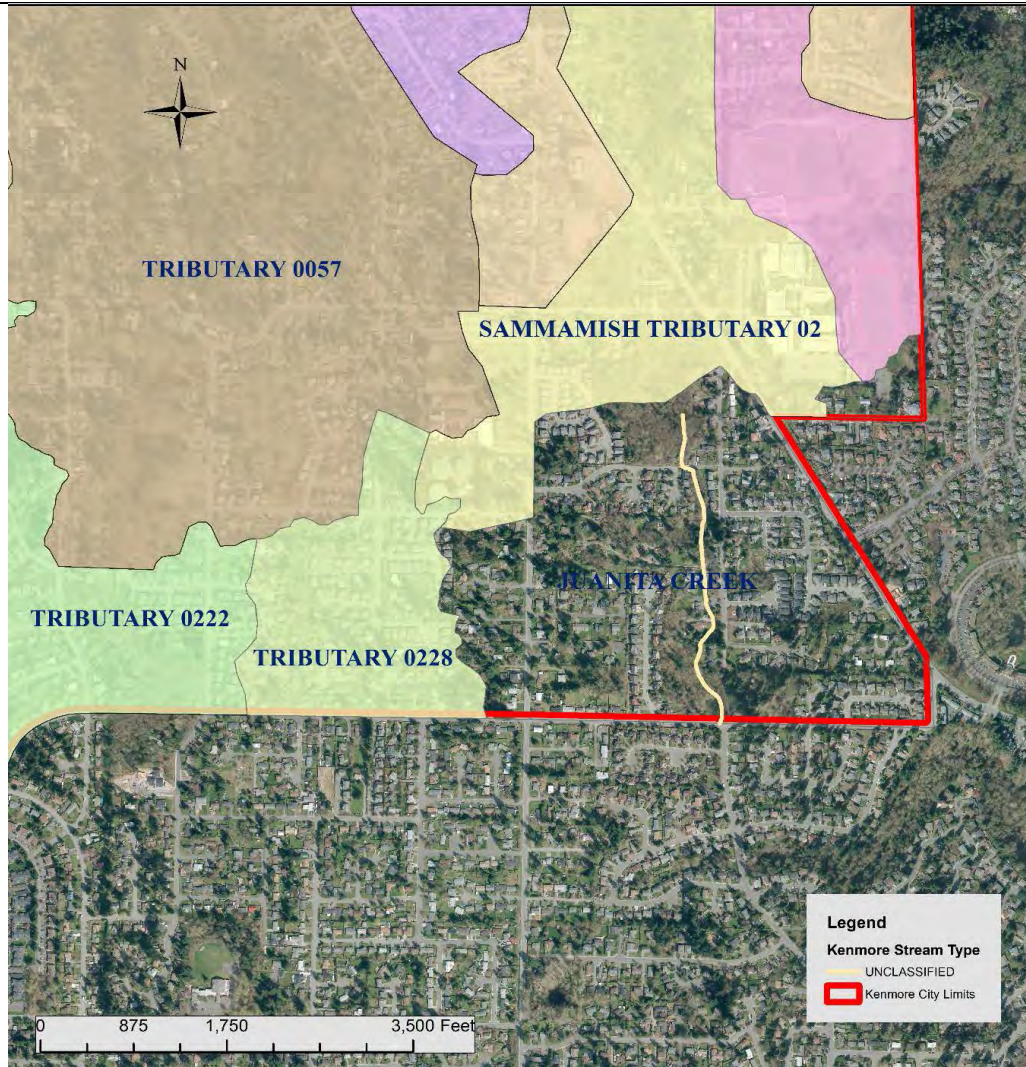
Roads: 11.5 acres
Roofs: 18.4 acres
Other impervious: 2.7 acres
Vegetated: ~85 acres

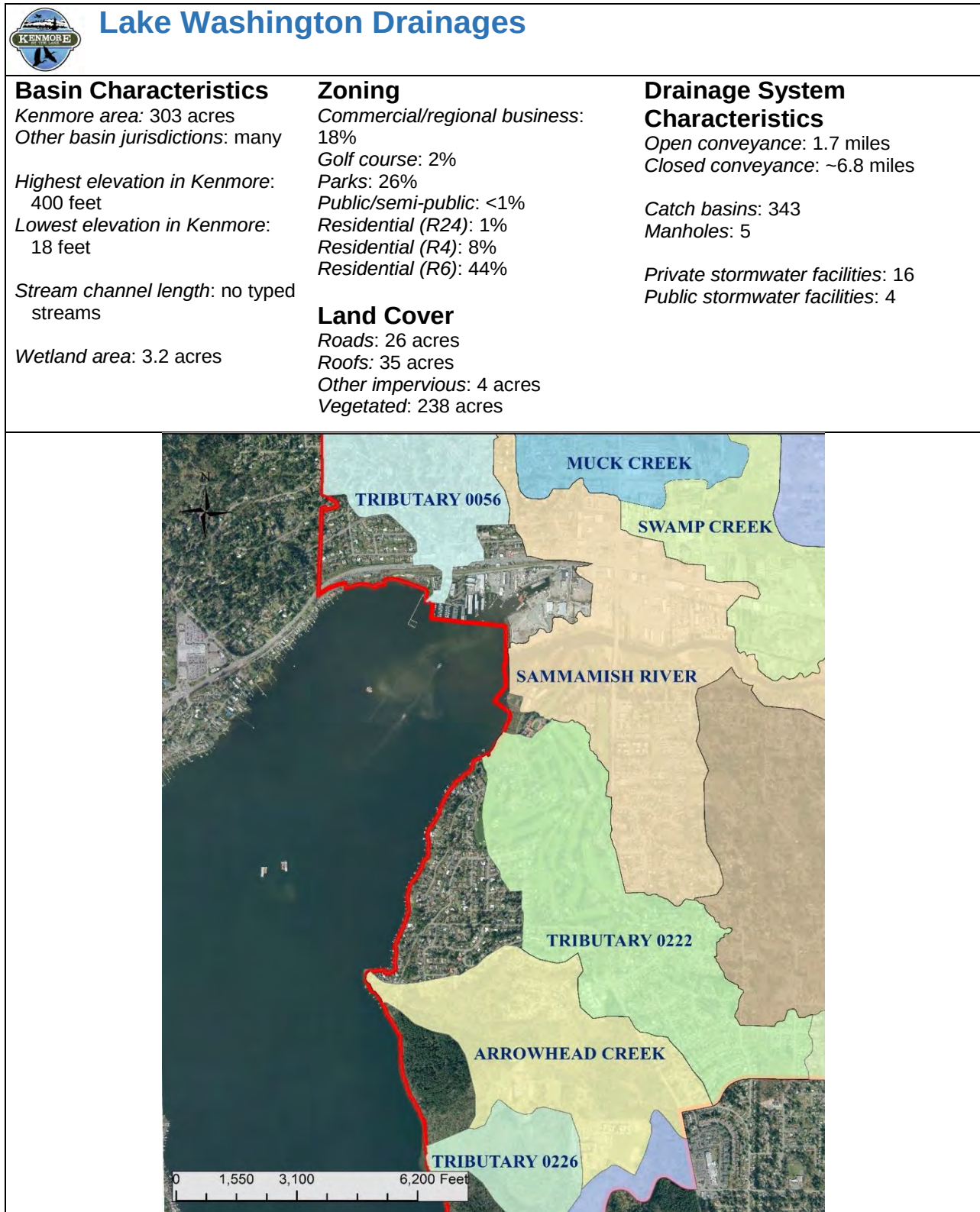
Drainage System Characteristics

Open conveyance: ~0.6 miles
Closed conveyance: ~2.9 miles

Catch basins: 203
Manholes: 1

Private stormwater facilities: 3
Public stormwater facilities: 19







Little Swamp Creek

Basin Characteristics

Kenmore area: 330 acres
 Other basin jurisdictions:
 Unincorporated Snohomish
 County

Highest elevation in Kenmore:
 244 feet

Lowest elevation in Kenmore:
 24 feet

Stream channel length in
 Kenmore: 2.5 miles

Wetland area: ~30 acres

Zoning

Parks: 9 %
 Residential (R1): 11%
 Residential (R4): 13%
 Residential (R6): 60%

Land Cover

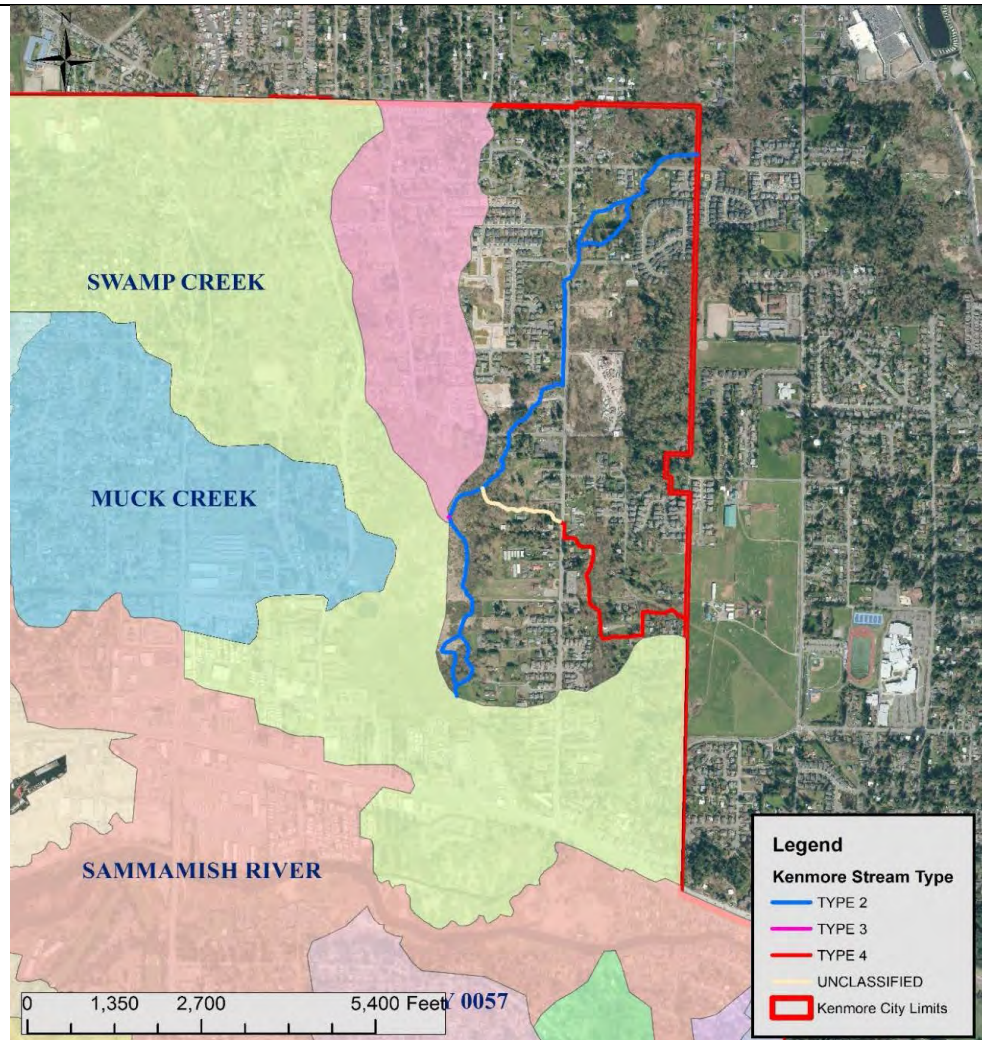
Roads: 23 acres
 Roofs: 29 acres
 Other impervious: 4 acres
 Vegetated: 274 acres

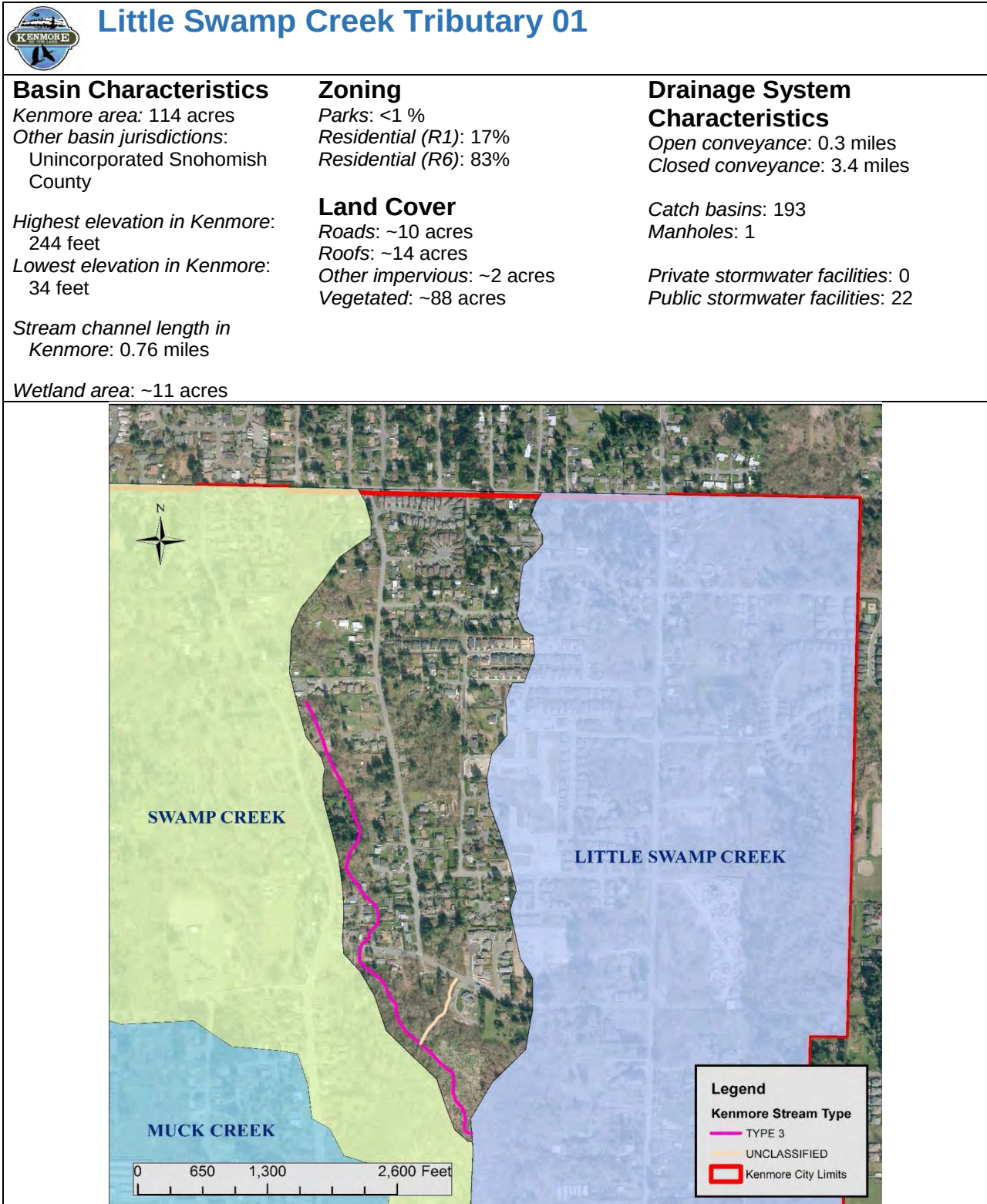
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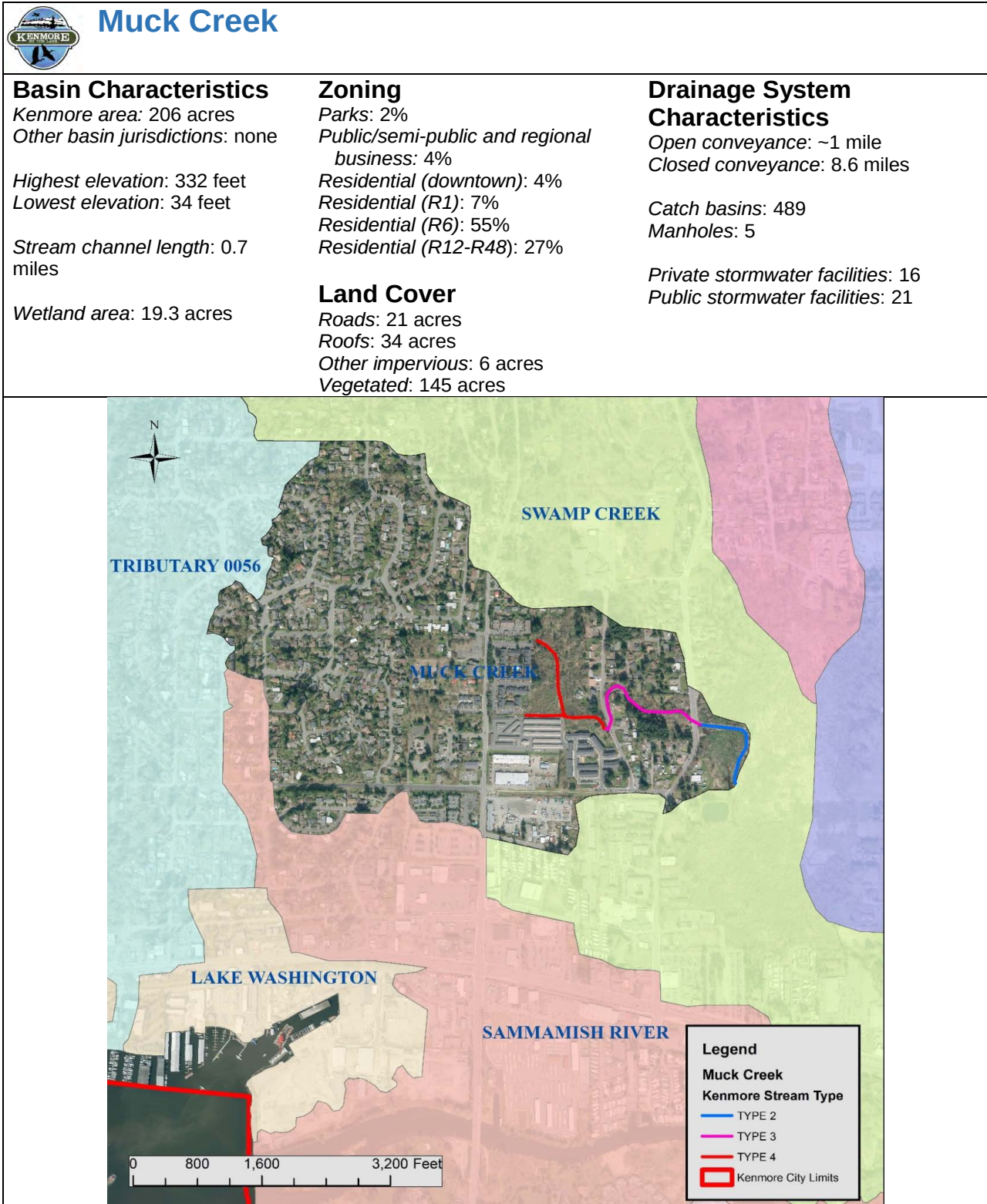
Open conveyance: 2.9 miles
 Closed conveyance: ~8.2 miles

Catch basins: 506
 Manholes: 4

Private stormwater facilities: 3
 Public stormwater facilities: 38









Sammamish River Tributary 01

Basin Characteristics

Kenmore area: 65 acres
Other basin jurisdictions: none

Highest elevation: 424 feet
Lowest elevation: 20 feet

Stream channel length: 0.35 miles

Wetland area: no wetlands mapped

Zoning

Residential (R1): <1%
Residential (R4): 31%
Residential (R6): 69%

Land Cover

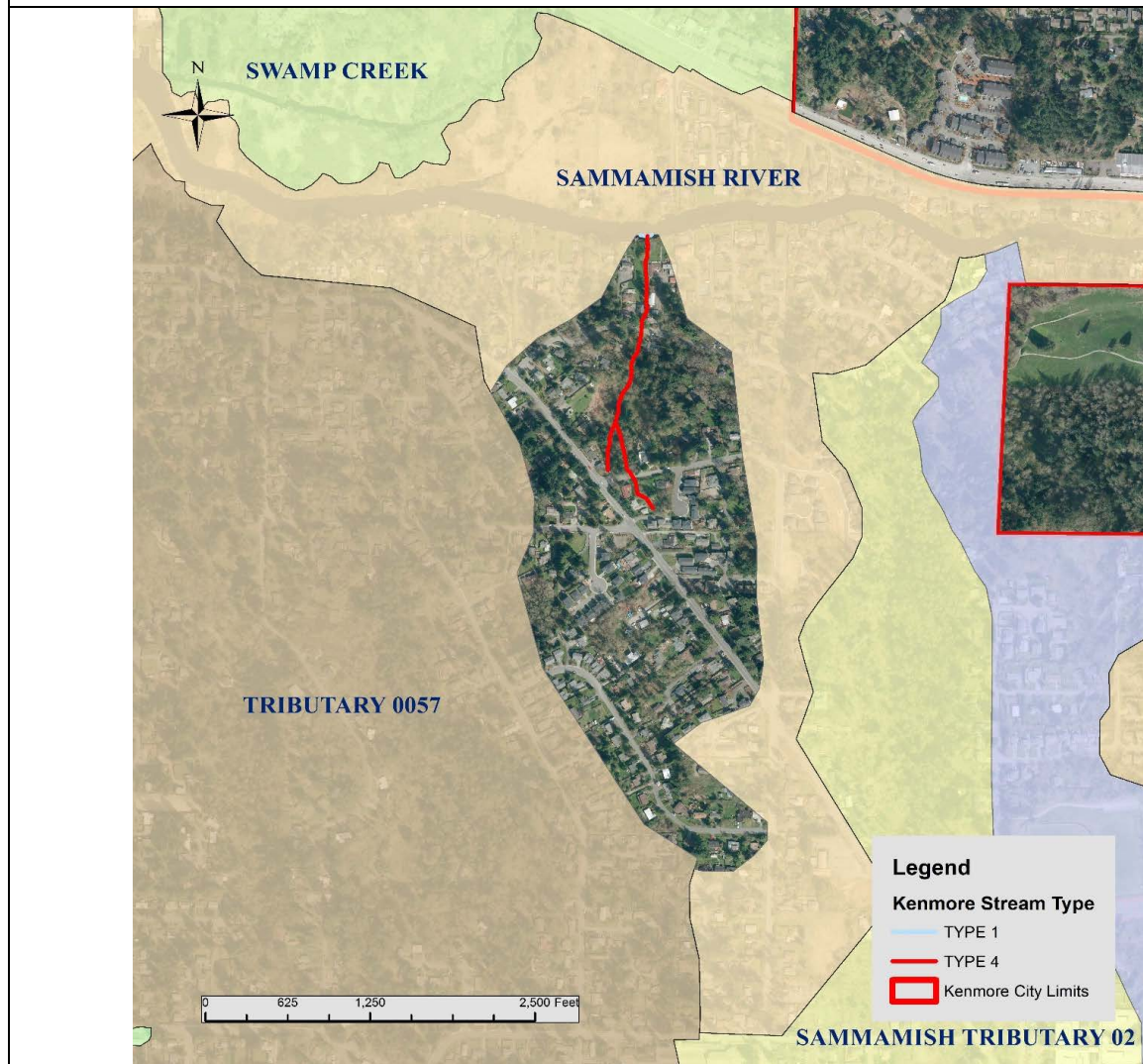
Roads: 5.6 acres
Roofs: 8.96 acres
Other impervious: 1.1 acres
Vegetated: 49 acres

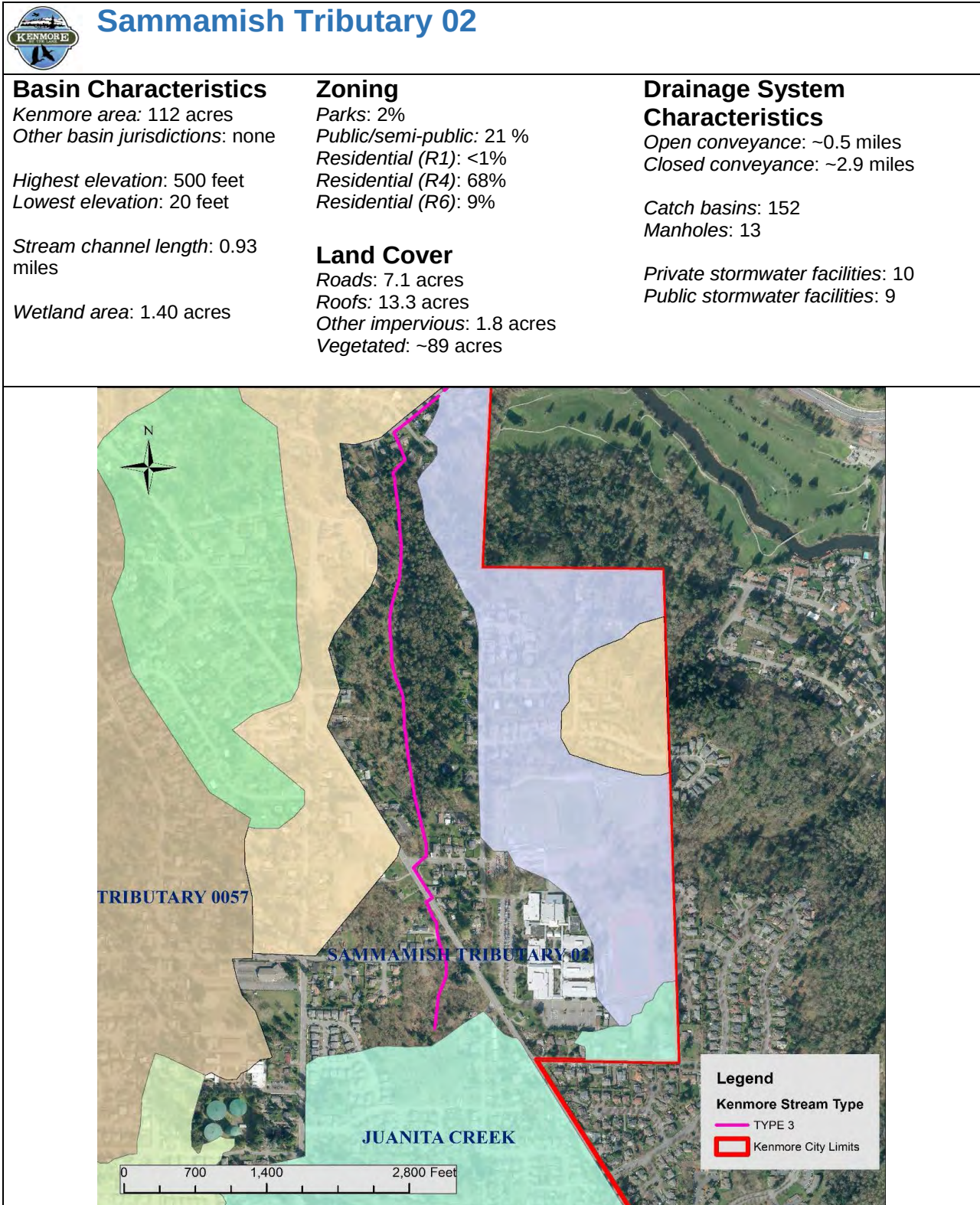
Drainage System Characteristics

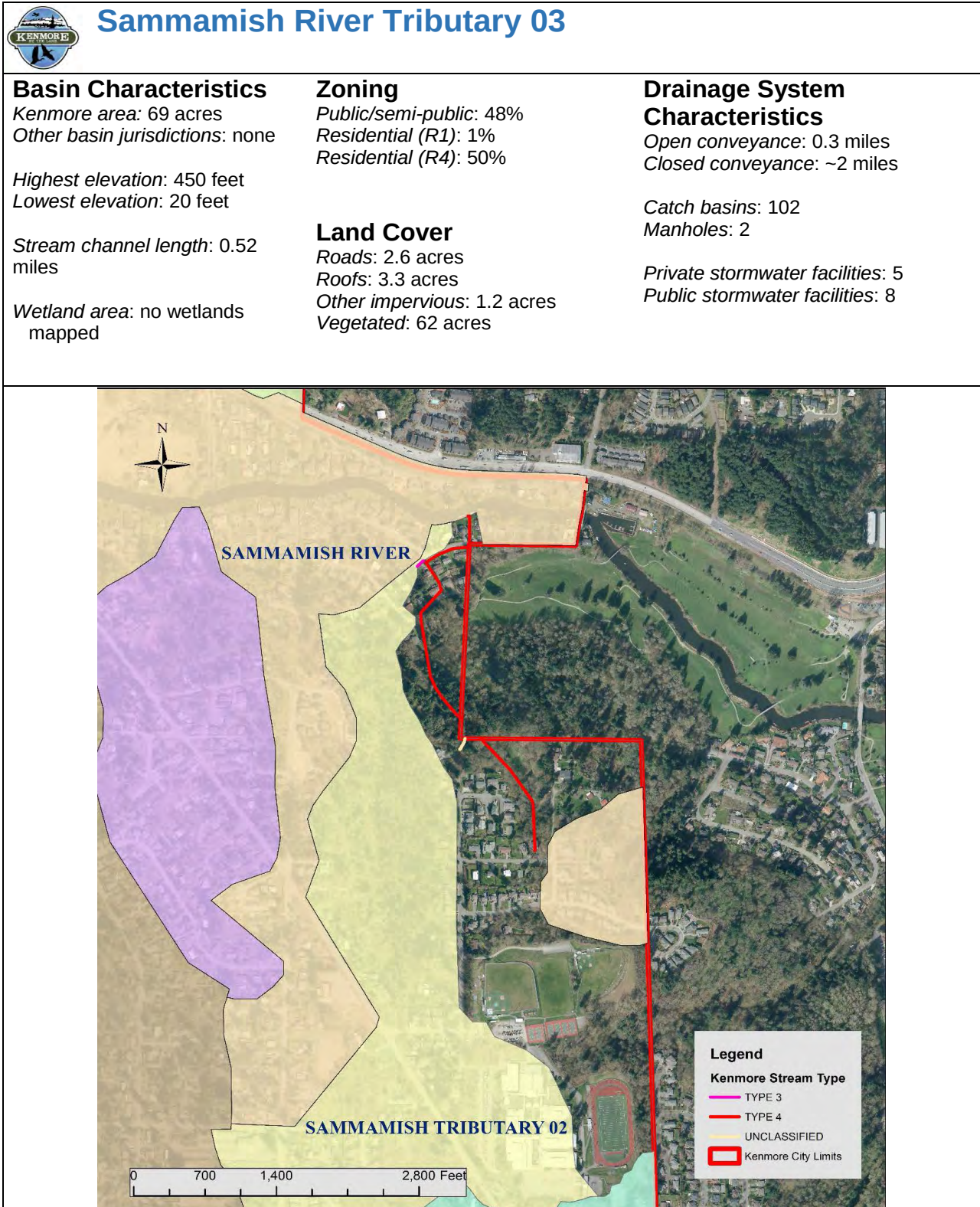
Open conveyance: 0.4 miles
Closed conveyance: ~2.2 miles

Catch basins: 137
Manholes: 1

Private stormwater facilities: 0
Public stormwater facilities: 10









Sammamish River

Basin Characteristics

Kenmore area: 534 acres
 Other basin jurisdictions:
 Redmond, Bothell, Kirkland,
 and Bellevue

Highest elevation in Kenmore:
 486 feet

Lowest elevation in Kenmore:
 18 feet

Stream channel length in
 Kenmore: 2.1 miles

Wetland area: 32.8 acres

Zoning

Commercial/residential
 (downtown): 7%
 Commercial/neighborhood/regional
 business: 14%
 Parks/golf course: 14%
 Public/semi-public: <1%
 Residential (R1): 9%
 Residential (R4): 20%
 Residential (R6): 29%
 Residential (R12/R18/R24): 8%

Land Cover

Roads: 48 acres
 Roofs: 11 acres
 Other impervious: 14 acres
 Vegetated: 404 acres

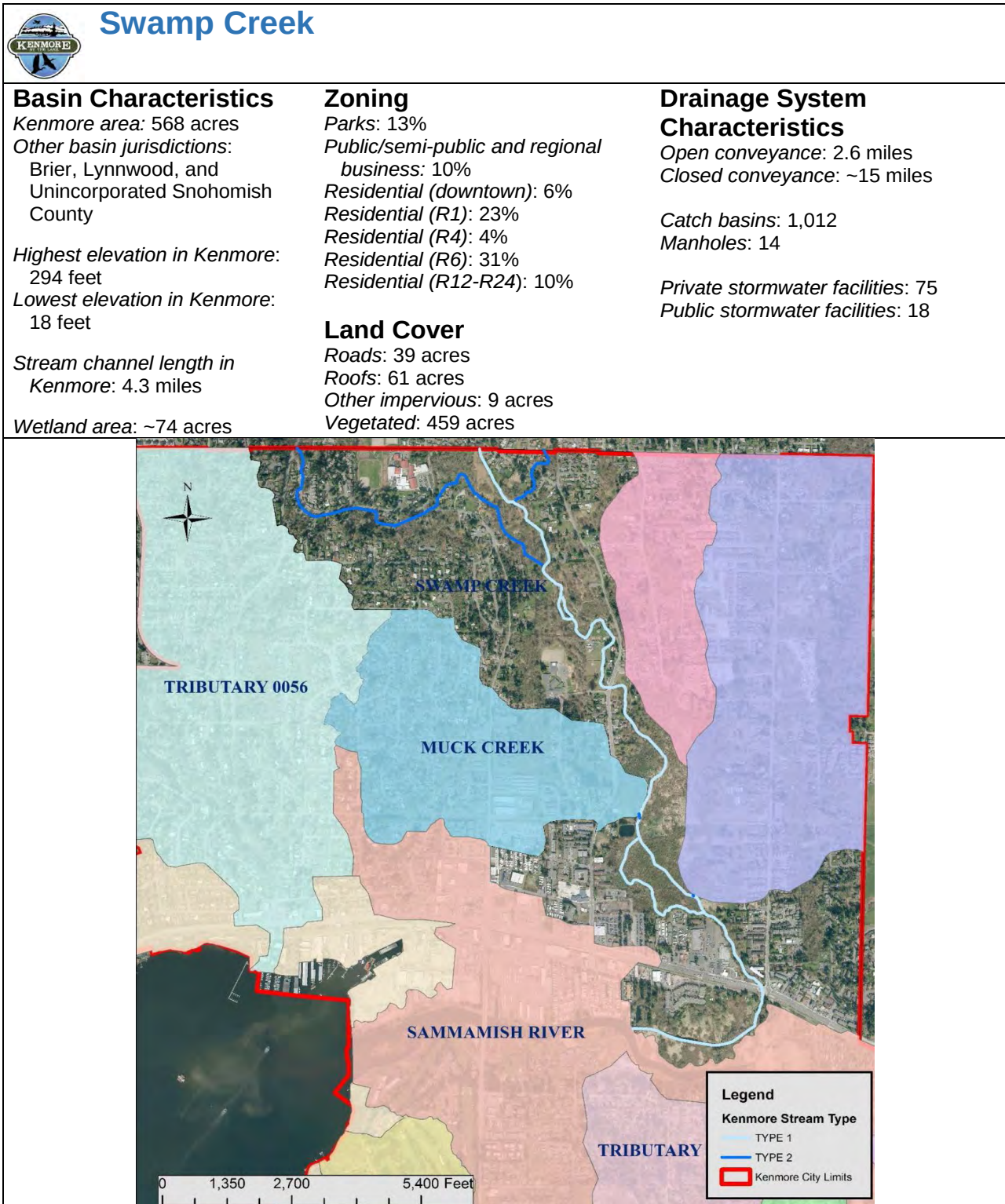
Drainage System Characteristics

Open conveyance: 1.8 miles
 Closed conveyance: ~19.5 miles

Catch basins: 1,162
 Manholes: 21

Private stormwater facilities: 91
 Public stormwater facilities: 30







Tributary 0222

Basin Characteristics

Kenmore area: 318 acres
Other basin jurisdictions: none

Highest elevation: 468 feet
Lowest elevation: 20 feet

Stream channel length: 2.4 miles

Wetland area: ~9 acres

Zoning

Golf course: 28%
Parks: 1 %
Neighborhood business: 28%
Public/semi-public: 1 %
Residential (R6): 41%
Residential (R12): <1%
Residential (R18): 1%

Land Cover

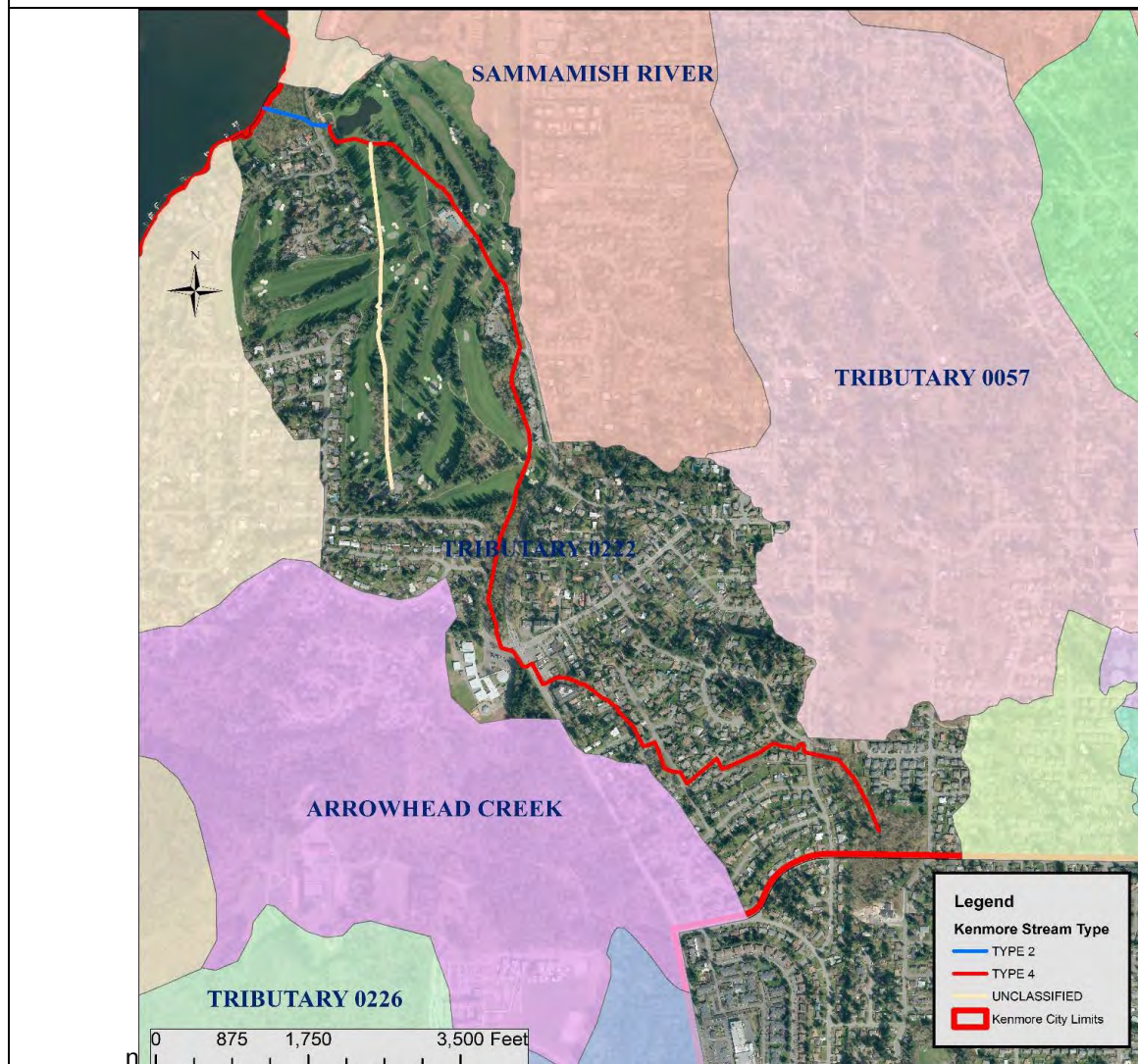
Roads: 24 acres
Roofs: 38 acres
Other impervious: 8 acres
Vegetated: 248 acres

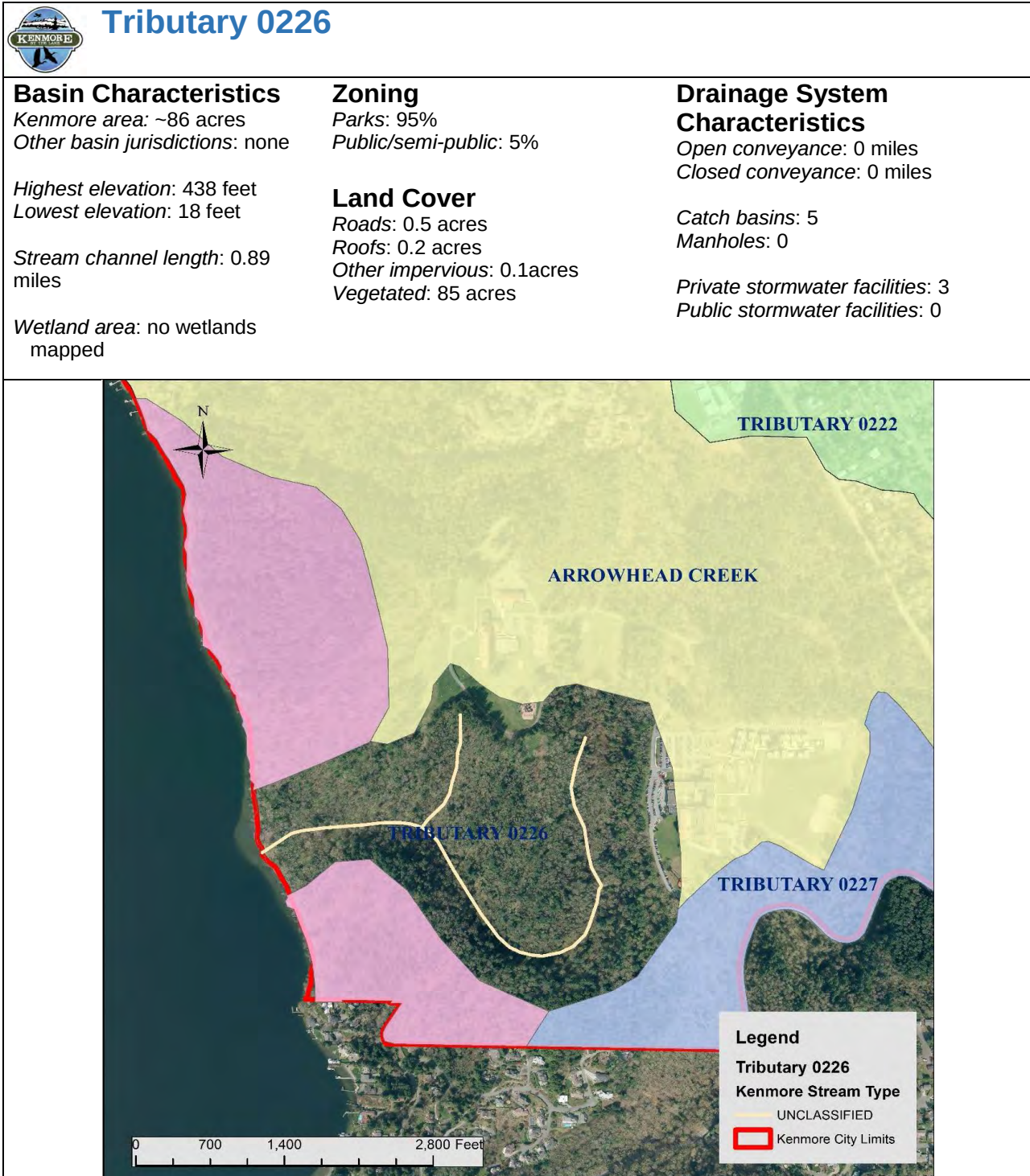
Drainage System Characteristics

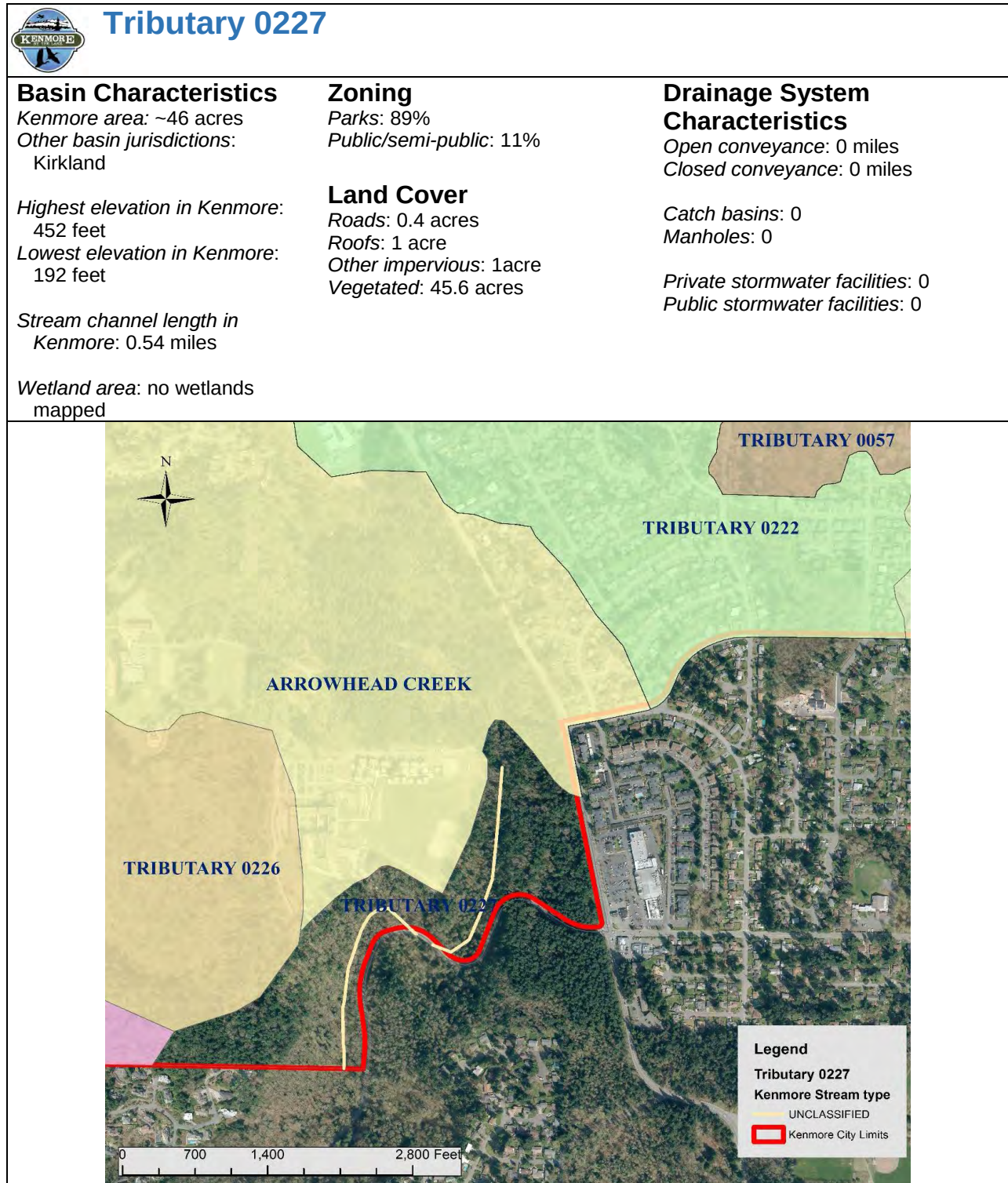
Open conveyance: 1.8 miles
Closed conveyance: ~8.4 miles

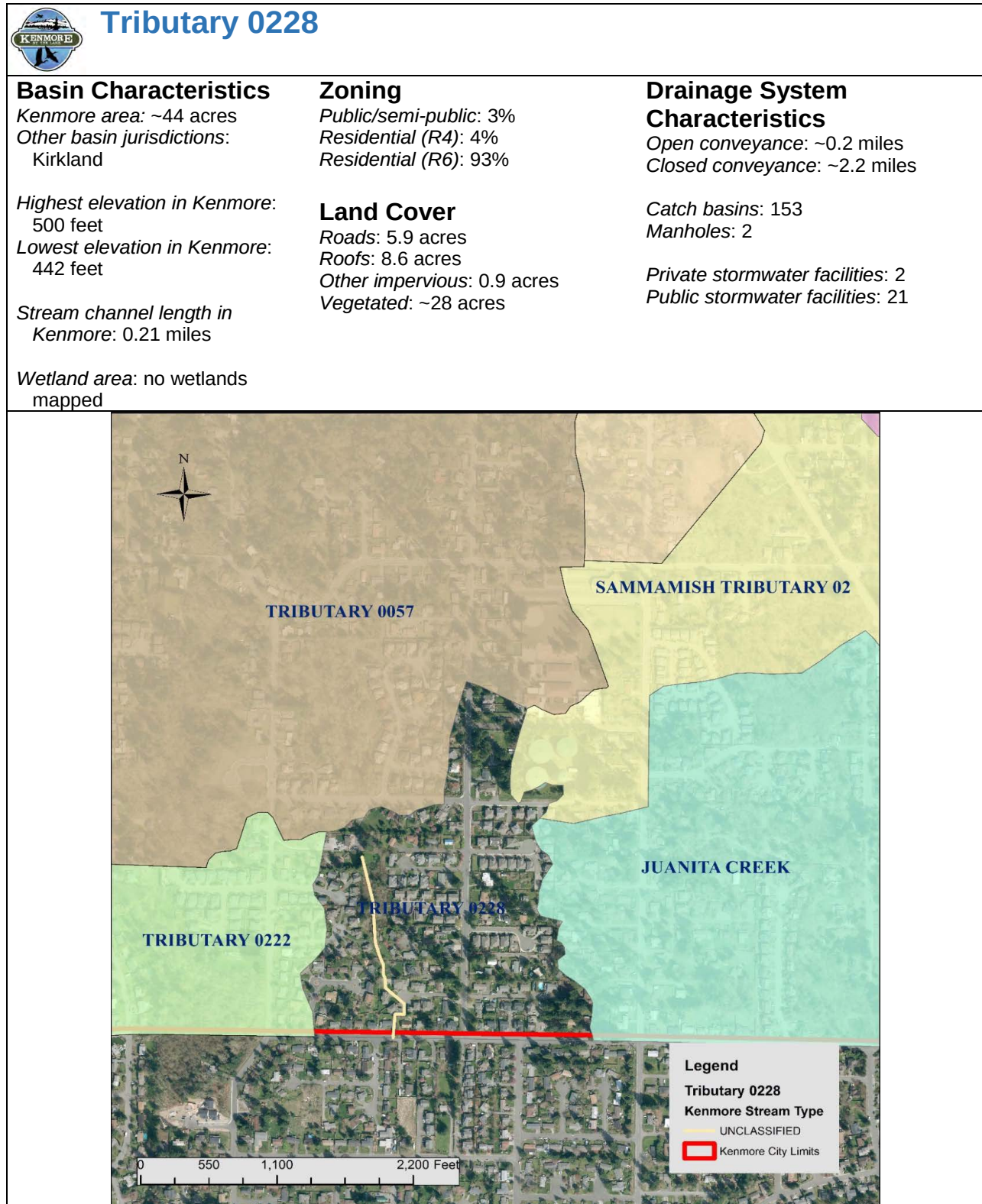
Catch basins: 419
Manholes: 3

Private stormwater facilities: 12
Public stormwater facilities: 19











Appendix C:

2014 Swamp Creek TMDL Monitoring Report



Status Report

Swamp Creek TMDL Monitoring - 2012

March 31, 2013

Prepared by:

Richard Sawyer

City of Kenmore

Department of Engineering Services

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INTRODUCTION

Swamp Creek is located in Watershed Resource Inventory Area (WRIA) 8 and flows south, from Everett to its terminus in the City of Kenmore, where it discharges into the Sammamish River, just upstream of the river's union with Lake Washington. Swamp Creek is polluted by bacterial pollution from a variety of sources throughout the watershed. Although specific sources have not been identified, many of the potential sources are believed to come from humans and/or human activities, including pet wastes, failing septic tanks and illegal discharges. Swamp Creek was listed by the State of Washington under Section 303(d) of the federal Clean Water Act for failing to meet the U.S. Environmental Protection Agency (EPA) human health criteria for fecal coliform. A Total Maximum Daily Load (TMDL) Report and Implementation Plan for Swamp Creek was submitted by Washington State Department of Ecology (Ecology) and Approved by EPA in August 2006. This Implementation Plan and Appendix 2 of Ecology's Western Washington Phase II Municipal Permit (Permit) established water quality monitoring requirements for the City.

The goal of this monitoring is to estimate the concentration and loading of bacteria levels to Swamp Creek from stormwater within the City after five years of monitoring and to ultimately identify potential drainage areas within the City that may contain fecal coliform sources. To accomplish this, a Quality Assurance Project Plan (QAPP) to track fecal coliform levels and assess major drainage areas for potentially elevated fecal coliform levels within the City of Kenmore was submitted to Ecology in August 2008. Following are the results of the first four years of monitoring.

RESULTS

During the first year of monitoring (2009), bacterial levels in Swamp Creek and tributaries to Swamp Creek exceeded water quality standards. All sites exceeded the geometric mean standard of 50 colonies/100 ml and all samples exceeded the "not-more-than-10 percent" (90th percentile) standard of 100 colonies/100ml. This was the case for both the dry season (May to September) and the wet season (October to April) samples. Consistent with the TMDL report, the bacteria concentrations of the dry weather samples exceeded the standard by a larger margin than did the samples taken during the wet season.

During the second year of monitoring (2010), bacterial levels in Swamp Creek and tributaries to Swamp Creek continued to exceed water quality standards at some sites. Two of the five sites exceeded the geometric mean standard of 50 colonies/100 ml during the dry season and one of five during the wet season. Three of the five sites exceeded the "not-more-than-10 percent" (90th percentile) standard of 100 colonies/100 ml during both the wet and dry seasons. This was an improvement from 2009 where all sites exceeded water quality standards all year.

During the third year of monitoring (2011), bacterial levels in Swamp Creek and tributaries to Swamp Creek continued to exceed water quality standards at some sites. Four of the five sites exceeded the geometric mean standard of 50 colonies/100 ml during the dry season and two of five during the wet

season. Four of the five sites exceeded the “not-more-than-10 percent” (90th percentile) standard of 100 colonies/100 ml during the dry season and three of the five during the wet season.

During the fourth year of monitoring (2012), bacterial levels in Swamp Creek and tributaries to Swamp Creek continued to exceed water quality standards at some sites. All five sites exceeded the geometric mean standard of 50 colonies/100 ml during the dry season and four of the five during the wet season. All five sites exceeded the “not-more-than-10-percent” (90th percentile) standard of 100 colonies/100 ml during both the dry and wet season.

Sixteen replicates (a second grab sample simultaneously collected immediately following the first grab sample) at various sites were collected in order to calculate variability in 2012. Replicate grab samples varied between 3 – 171 percent with an average of 35 percent. The lab also performed duplicate analysis on random grab samples (total of ten grab samples in 2012) to determine variability within the same grab sample. In 2012, variability within same grab samples ranged between 0 – 33% with an average of 14%.

Appendix 1 summarizes data collected at each site from 2009 through 2012.

Appendix 2 summarizes the geometric mean and 90TH percentile statistics for each site from 2009 through 2012.

DISCUSSION

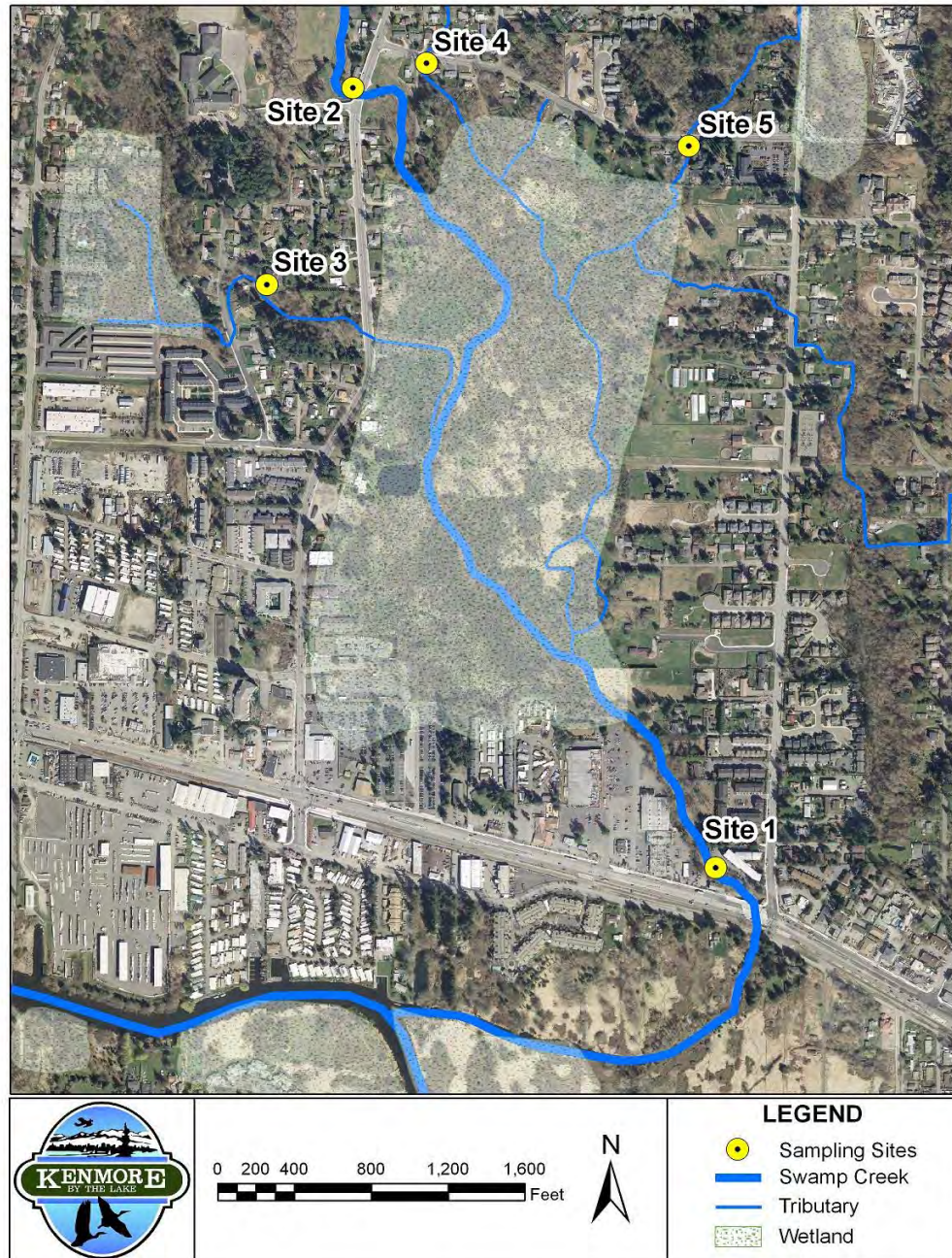
2012 was the fourth consecutive year of monitoring bacterial levels in Swamp Creek and tributaries to Swamp Creek. In total, there have been 83 dry season (May through September) sampling events and 138 wet season (October through April) sampling events during the four year period.

Next year (2013) will mark the fifth year of monitoring. Per the QAPP, after five years of monitoring the City will document trends in flow duration, and fecal coliform concentrations. Preliminary results from 2009 through 2012 indicate high variability of bacteria concentrations within sites over time which may make subsequent source tracking efforts difficult. Also, there does not appear to be a strong relationship between flow and bacteria concentration. There does appear to be a trend of higher bacteria concentrations during the dry season and during storm influenced events. An effort will be made during 2013, particularly the dry season, to capture more storm influenced events so that they can be analyzed in the 5-year report.

The 5-year report will coincide with the City's upcoming Permit (effective August 1, 2013) requirement to review fecal coliform data collected from existing QAPPs by February 2, 2014. Revised QAPPs will be due to Ecology by February 2, 2015.

Figure 1

Figure 1 shows the location of the five monitoring locations.



Appendix 1

2009 through 2012 monitoring results.

DATE	SITE 1		SITE 2		SITE 3		SITE 4		SITE 5	
	MAIN CHANNEL 522 BRIDGE		MAIN CHANNEL 73RD BRIDGE		MUCK CREEK 71 ST AVE NE		TRIBUTARY NE 192ND ST		LITTLE SWAMP CREEK NE 192 ND ST	
	Fecal Coliform	Flow	Fecal Coliform	Flow	Fecal Coliform	Flow	Fecal Coliform	Flow	Fecal Coliform	Flow
	CFU/100mL	CFS	CFU/100mL	CFS	CFU/100mL	CFS	CFU/100mL	CFS	CFU/100mL	CFS
20090102	90		66		56		62		54	
20090223	1060	58.26	47	38.73	258	0.4	72	0.17	20	1.20
20090323	2101	143.48	150	129.79	440	0.87	148	0.31	148	4.05
20090423	310	40.53	60	38.2	130	0.36	30	0.13	310	1.36
20090508	1100	88.17	130	86.77	72	0.73	18	0.28	210	3.81
20090618	78	13.52	150	14.31	230	NM	NM	NF	520	0.22
20090717	240	13.71	180	NM	350	NM	NM	NF	150	NM
20090814	1400	27.52	530	25.7	7100	0.2	4900	NM	2700	1.14
20090902	380	9.39	220	Bypass	1400	NM	280	NM	210	NM
20091002	330	21.9	220	19.82	540	NM	210	NM	180	0.5
20091104	260	52.07	90	50.41	150	0.18	40	NM	10	1.32
20091211	36	35.72	46	30.66	18	0.28	14	NM	180	1.08
20100119	18	145.57	24	120.32	20	1.36	2	0.86	24	5.91
20100218	30	92.20	8	85.11	6	0.83	6	0.54	10	4.05
20100311	120	89.11	56	75.36	88	2.13	1700	0.89	250	6.91
20100414	22	45.63	32	43.57	48	0.59	2	NM	36	1.76
20100521	110	36.10	120	33.01	100	0.22	10	NM	140	1.11
20100623	40	38.09	5	34.25	220	0.24	20	NM	95	1.19
20100709	38	15.96	22	17.39	42	NM	28	NM	6	0.43
20100813	40	13.79	25	13.61	60	NM	5	NM	40	0.24
20100915	94	18.73	22	18.73	220	NM		NM	46	0.47
20101013	140	35.84	4	33.21	110	NM	16	NM	6	0.98
20101202	130	NM	8	NM	10	NM	2	NM	4	NM
20101230	190	NM	12	NM	2	NM	2	NM	16	NM
20110131	200	NM	14	NM	8	NM	2	NM	6	NM
20110304	470	46.95	8	46.45	20	NM	2	0.26	86	2.82
20110408	260	60.9	58	58.42	34	0.5	2	0.29	54	2.14
20110503	440	73.46	190	73.56	120	0.43	26	0.19	200	1.7
20110617	90	13.36	40	13.7	220	0.13	15	0.11	460	1.34
20110728	180	8.99	160	9.65	80	NM		NF	200	0.28
20110912	380	5.82	170	7.37	75	NM		NF	70	0.22
20111018	580	5.96	120	8.1	210	NM		NF	50	0.26
20111205	580	18.51	35	18.16	70	0.19	10	0.1	15	1.03
20111228	2700	38.48	320	35.47	380	0.44	110	0.1	90	1.59
1/31/2012	60	61.79	10	61.75	10	0.45	10	0.34	60	2.35
3/5/2012	52	40.84	42	40.09	14	0.88	20	0.38	44	2.97
3/27/2012	20	27.85	35	26.2	10	0.42	10	0.47	10	1.14
4/20/2012	550/530	65.73	1200/1100	67.58	1600	1.52	340	0.63	1300	4.13
5/16/2012	350/360	14.81	70/50	14.14	360	0.10	440/350	0.03	190	0.43
6/27/2012	210/200	35.92	110/140	39.45	230	0.18	350	0.21	110	0.90
8/1/2012	220/340	NM	220/250	NM	24	NM		NF	110/150	NM
9/6/2012	35/95	4.77	370/100	6.24	140	NM		NF	200	0.10
10/15/2012	200/220	16.57	260/100	17.56	560/360	0.16		NF	160/180	0.40
12/20/2012	240	NM	750	NM	950	6.07	980	4.94	1400	24.59
12/21/2012	320	NM	410	NM	80	NM	10	NM	50	
12/28/2012	100	120.40	160	107.28	120	1.00	10	0.55	50	3.75
Dry Season (May – September)		NM: No Measurement NF: No Flow Bypass: Flows Bypassed For Construction								
Wet Season (October – April)										

Appendix 2

Table 2 shows the water quality statistics for samples taken in 2009 through 2012, including the geometric mean and 90th percentile for fecal coliform concentrations each calendar year.

SITE	YEAR	Dry Season (May – Sept)			Wet Season (Oct – April)		
		# of Samples	Geometric Mean	90th Percentile	# of Samples	Geometric Mean	90th Percentile
SITE 1	2009	5	405	1280	7	294	1476
SITE 2	2009	5	210	406	7	82	178
SITE 3	2009	5	565	4820	7	143	480
SITE 4	2009	3	291	3976	7	58	173
SITE 5	2009	5	392	1828	7	108	245
SITE 1	2010	5	58	104	7	65	160
SITE 2	2010	5	24	82	7	14	42
SITE 3	2010	5	104	220	7	20	97
SITE 4	2010	4	13	26	7	8	690
SITE 5	2010	5	43	122	7	19	122
SITE 1	2011	4	228	422	6	530	1640
SITE 2	2011	4	120	184	6	45	220
SITE 3	2011	4	112	190	6	90	295
SITE 4	2011	2	20	25	5	6	70
SITE 5	2011	4	189	382	6	35	88
SITE 1	2012	4	184	353	8	151	532
SITE 2	2012	4	135	286	8	174	1110
SITE 3	2012	4	129	295	8	117	1080
SITE 4	2012	2	378	422	7	35	596
SITE 5	2012	4	147	196	8	115	1320



Appendix D:

Stormwater Retrofit Memorandum



1800 112TH AVENUE NE
SUITE 220E
BELLEVUE, WA 98004
(425) 451-4009

Date: May 16, 2014
To: Erin Nelson, PE, LG
Altaterra Consulting, LLC

From: Laura Ruppert, PE and Marie Phelan, EIT
Osborn Consulting, Inc.

Subject: Kenmore Surface Water Master Plan
Retrofit Strategy Memorandum

This memorandum documents the stormwater retrofit strategy for stormwater management and water quality treatment for the City of Kenmore.

EXISTING CONDITIONS

Osborn Consulting, Inc. (OCI) utilized the Geographic Information System (GIS) to conduct a review of existing conditions within the City of Kenmore related to stormwater management. The City provided OCI with GIS map layers including parcels, sensitive areas, zoning, impervious surfaces, basin boundaries, and stormwater pipes, channels, and existing treatment facilities. Existing stormwater treatment facility drainage areas were also provided. The majority of stormwater facilities have a recorded installation year, with approximately 60% installed since 1990. Nearly half the land is impervious, with the majority of land zoned for residential use.

RETROFIT STRATEGY

The purpose of the stormwater retrofit strategy is to provide the City with a framework for identifying opportunities to improve and expand upon existing stormwater treatment. To facilitate this, parcels were placed into one of five categories, where “old” is defined as pre-1990, and “newer” is post-1990:

- Areas that are **built-out** and **untreated**.
- Areas that are **built-out** and have **old facilities**.
- Areas that have **development potential** and are **untreated**.
- Areas that have **development potential** and **old facilities**.
- Areas that have **newer facilities**.

Table 1 identifies the different stormwater retrofit strategies associated with a variety of existing condition scenarios.

Table 1: Stormwater Retrofit Strategies		
Existing Condition	(Re-)Development Potential Existing % Impervious is < Zoning Requirements	Built-Out* Existing % Impervious is ≥ Zoning Requirements
Untreated	Install new facilities - Regional facilities - Partnering opportunity - Rely on developers to provide treatment - Focus on treatment of right-of-way (ROW)	Install new facilities - Focus on treatment of ROW - Incentivize private property owners to install treatment
Old Treatment (Pre-1990)	Retrofit old facilities - Modify facility size and/or control structure Install new facilities - Regional facilities - Partnering opportunity - Rely on developers to provide treatment - Focus on treatment of ROW	Retrofit old facilities - Modify facility size and/or control structure Install new facilities - Focus on treatment of ROW - Incentivize private property owners to install treatment
“Newer” Treatment (1990- current)	No retrofit recommended - assumes adequate treatment is provided or that other areas should have higher priority	
*Properties may still re-develop but will not increase % impervious compared to existing condition.		

METHODOLOGY

Potential area-specific retrofit opportunities were identified through a GIS analysis of existing data using the following steps:

1. Create a development GIS layer that shows parcels that can or cannot be developed in the future, based on current zoning.
2. Modify the existing stormwater facility GIS layer to include general categories of installation year.
3. Combine the development and existing stormwater facility GIS layers to evaluate the existing condition scenarios described in Table 1.

The process is described below.

Development

A “Development” layer was created to display parcels that are built-out or have development potential based on current zoning. The parcel GIS layer was modified with the addition of a “Development” field with the two choices of “Can Be Developed” and “Cannot Be Developed,” according to current zoning.

OCI queried impervious surfaces and zoning categories. Impervious surfaces queried include rooflines, driveways, parking lots, patios/concrete pads, railroad yards, and walkways/sidewalks; ROW associated with roadways were not included in the query as ROW is not included in the zoning categories. The sum of the existing impervious area within each zoning category was divided by the total area of the zoning category to determine the average percent impervious. The average percent impervious was applied to each parcel within that zoning category. The City of Kenmore Zoning Code (Title 18) documents the maximum percent impervious allowable for each zoning category. OCI compared the average percent impervious calculated to the maximum allowable by the applicable zoning category to assess if there was potential for increased percent impervious. Parcels which did not meet the maximum allowable percent impervious were categorized as “Can Be Developed,” while parcels which met or exceeded the maximum allowable were categorized as “Cannot Be Developed.”

Several parcel-specific edits were made to the “Cannot Be Developed” parcels because of other conditions that would warrant them undevelopable, including the following:

- GIS information provided by the City for sensitive areas was used to identify areas where no future development will be allowed. These areas included wetlands, floodplains, and streams. Any parcel within a 150-foot buffer (which is the maximum width for wetlands and streams as shown in Chapter 18.55 Critical Areas of the Kenmore City Code) of these sensitive areas was removed from the query for development potential parcels and labeled “Cannot Be Developed.”
- Parcels in some zoning categories were also removed, including parks, golf courses, and public or semi-public areas. OCI assumed these dedicated zoning areas would remain relatively unchanged in the future. These parcels were labeled “Cannot Be Developed.”

The parcels remaining in the development potential query were labeled “Can Be Developed.” A few flaws should be noted in this strategy.

1. Existing residential neighborhoods may not be utilizing the maximum lot impervious surface allowed in the zoning code, but are not likely to develop on a large scale.
2. Downtown Kenmore already meets the maximum impervious surface coverage for existing zoning categories, but also has parking lots, staging areas, trailer parks, etc. which could still be redeveloped.

See **Figure 1** for a map of the “Development” layer.

Facility Structures

The City of Kenmore provided a GIS shapefile with stormwater treatment facility structures named “Facility Structure.” OCI updated the existing shapefile to include an attribute for installation year, which were noted in the existing description/name provided in GIS by the City and King County. To determine which facilities lie in the “old facilities” class, OCI grouped the facilities by their installation date. Installation years were broken into the following groups:

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- <1980
- 1980-1989
- 1990-1997
- 1998-2004
- 2005-Present
- “Null” facilities did not have installation year recorded

These year ranges were chosen to capture individual decades or to generally correspond with Department of Ecology Manual updates. This analysis considers “old” to be pre-1990 installation. See **Figure 2** for a map of the “Facility Structures” layer.

Retrofit Potential

A “Retrofit Potential” layer was also copied from the parcel shapefile, and joined with the “Development” layer and the “COK Facilities” shapefile provided by the City of Kenmore. The “COK Facilities” shapefile contained the drainage areas for each of the facilities. OCI queried the shapefile for any areas which drained to “old” facilities, and created a new layer called “COK Facilities OLD” (see **Figure 3** for the facility drainage areas). By querying the “Development” and “COK Facilities OLD” layers, OCI overlapped those parcels that met the conditions of interest with regard to retrofit potential as described below:

- “Cannot Be Developed” and non-treated parcels were labeled **Built-Out & Untreated**;
- “Cannot Be Developed” and “COK Facilities OLD” were labeled **Built-Out & Old Facilities**;
- “Can Be Developed” and non-treated parcels were labeled **Dev Potential & Untreated**; and
- “Can Be Developed” and “COK Facilities OLD” were labeled **Dev Potential & Old Facilities**.

All other parcels were labeled “Treated1990 and Newer” and are not recommended for retrofit. See **Figure 4** for a map of the “Retrofit Potential” layer.

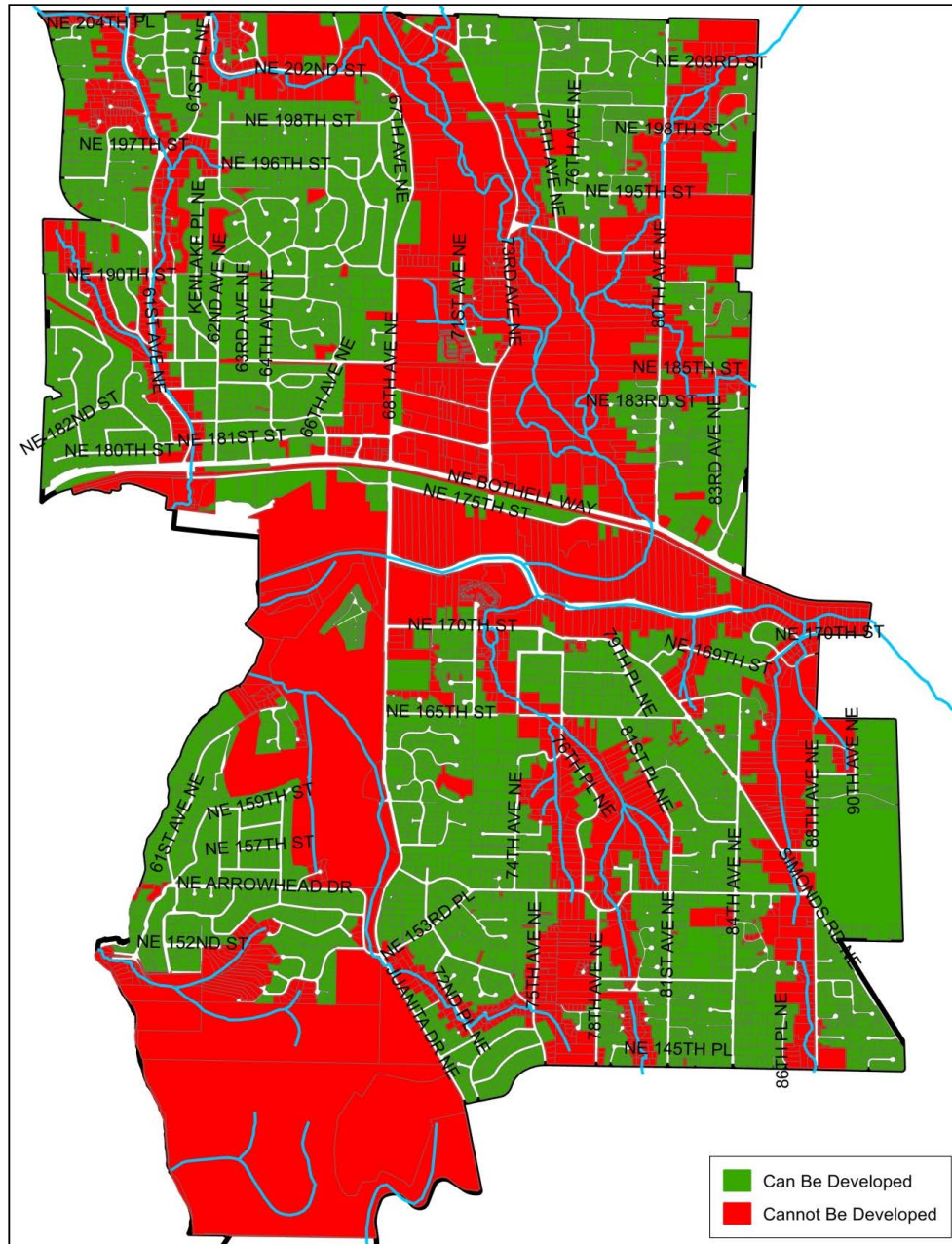


Figure 1: Development Layer

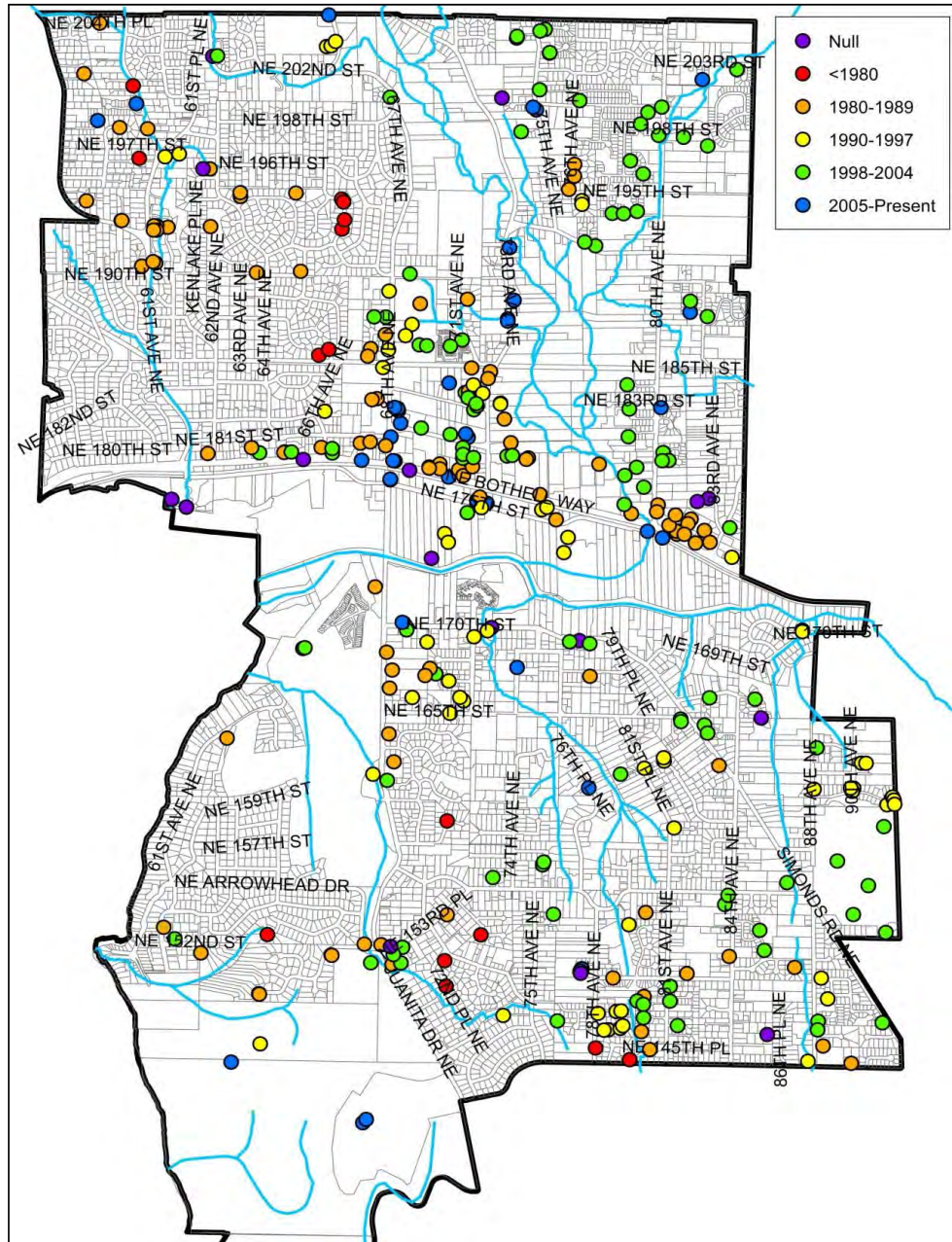


Figure 2: Facility Structures Layer

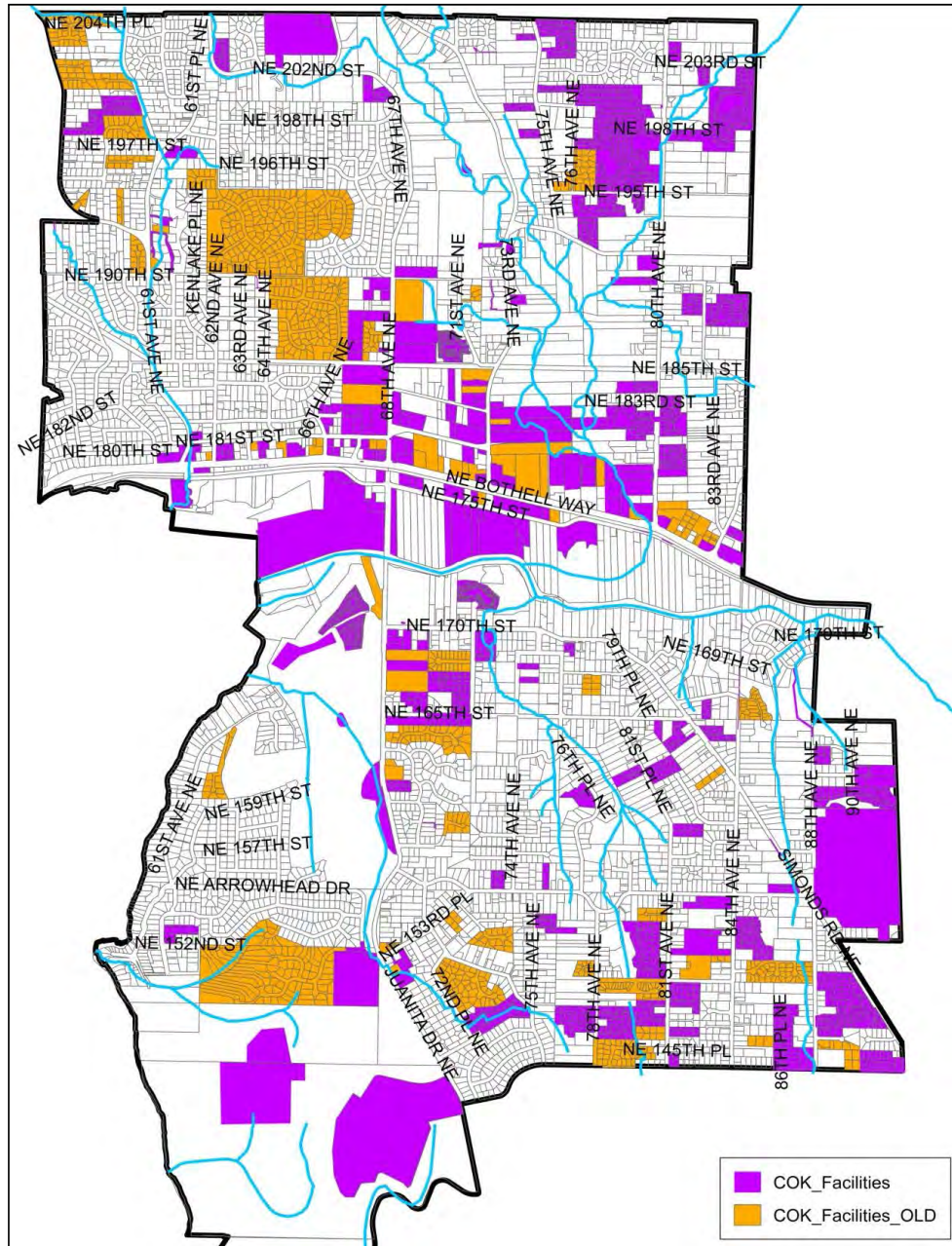


Figure 3: Facility Drainage Areas Layers

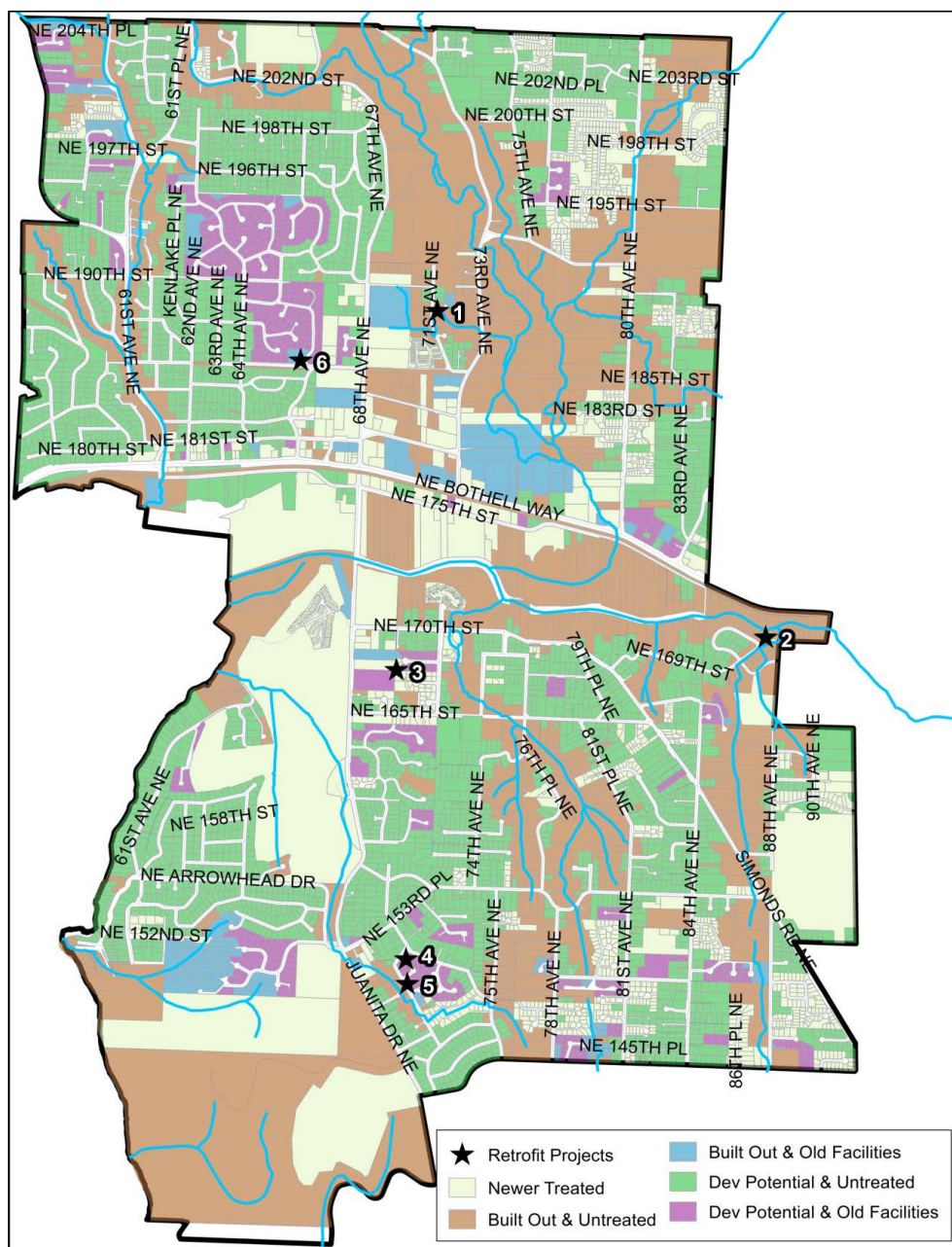


Figure 4: Retrofit Potential Layer

RETROFIT ANALYSIS

Using the layers developed above, OCI reviewed ponds, vaults, and swales within the “Built Out & Old Facilities” and “Dev. Potential & Old Facilities” parcels to identify retrofit possibilities. OCI focused on facilities located on City-owned properties. Facilities within these parcels were analyzed for space and functionality of a retrofit project. Several meetings were conducted with the City to discuss problem areas, proposed development areas, and known capital improvement projects (CIPs). Six potential retrofit projects were developed with City input using the above process. These projects are outlined below, and numbered on **Figure 4** above.

1) Muck Creek Duck Pond

An existing pond on private property at 18810 71st Ave. NE serves as a duck pond (see **Figure 5**). The pond has filled with sediment and does not provide flow control. The pond may, however, provide water quality benefits. Potential retrofit options include converting the duck pond to a stormwater facility by dredging the pond to provide additional dead storage or adding a control structure to serve as live storage.



Figure 5: Muck Creek Duck Pond

2) *Sammamish River Vaults*

Two existing vaults adjacent to the Sammamish River at NE 170th Street and NE 169th Place collect sediment from stormwater runoff that is routed to these facilities and require annual cleaning (see **Figure 6**). One vault is 6.5-feet by 12-feet, while the other is 6.5-feet by 10-feet. Inlet and outlet pipes are 30-inch diameter concrete pipes. The vaults were installed in 1990 and are likely undersized to meet current stormwater regulations. Replacing and upsizing the vaults, as well as replacing the 30-inch CMP pipes will provide increased storage capacity to improve water quality by allowing additional time for pollutants to settle.



Figure 6: Sammamish River Vaults

3) Inglewood Place Detention Pond

An existing detention pond was installed in 1988 (see **Figure 7**). The pond has an existing surface area of approximately 850 square feet, and is designed to treat runoff from NE 168th St. The pond outfalls to a piped conveyance system that flows to Juanita Drive NE, then to the Sammamish River. While the parcel is not large enough to extensively increase pond size, there is an opportunity to add water quality features, such as wetland vegetation or bio-filtration elements along NE 168th Street.



Figure 7: Inglewood Place Detention Pond

4) Bixby Knoll Pond 1

The Bixby Knoll Stormwater Pond 1 is located on 72nd Place NE, just west of NE 150th Street (see **Figure 8** for a photo of the pond exit). The pond was installed in 1977 and receives runoff from NE 150th Street and 73rd Avenue NE. The pond does not have a control structure, however a structure could be installed at the outlet to provide additional detention.



Figure 8: Bixby Knoll Stormwater Pond 1

5) Bixby Knoll Pond 2

The Bixby Knoll Stormwater Pond 2 is located at the corner of 72nd Place NE and NE 149th Place (see **Figure 9** for a photo of the pond outlet). The pond was installed in 1977 and receives runoff from NE 149th Place, NE 148th Place, and 72nd Place NE. No control structure is currently in place, however, a control structure could be installed at the outlet to provide additional detention. Water quality structures can be installed along 72nd Place NE to provide water quality treatment before runoff enters the pond.



Figure 9: Bixby Knoll Stormwater Pond 2

6) Northlake Heights Detention Pipes

Two 60-inch CMP detention pipes installed in 1978 are located at 66th Avenue NE and NE 185th Street (see **Figure 10**). A Department of Ecology grant-funded Low Impact Development (LID) project is currently being designed for the Northlake Heights Basin, which includes the detention pipes. The LID project may include detention pipe replacement as part of the project. Updated pipes and structures will provide flow control and contribute to water quality improvements proposed along NE 185th Street.



Figure 10: Detention Pipes along NE 185th Street

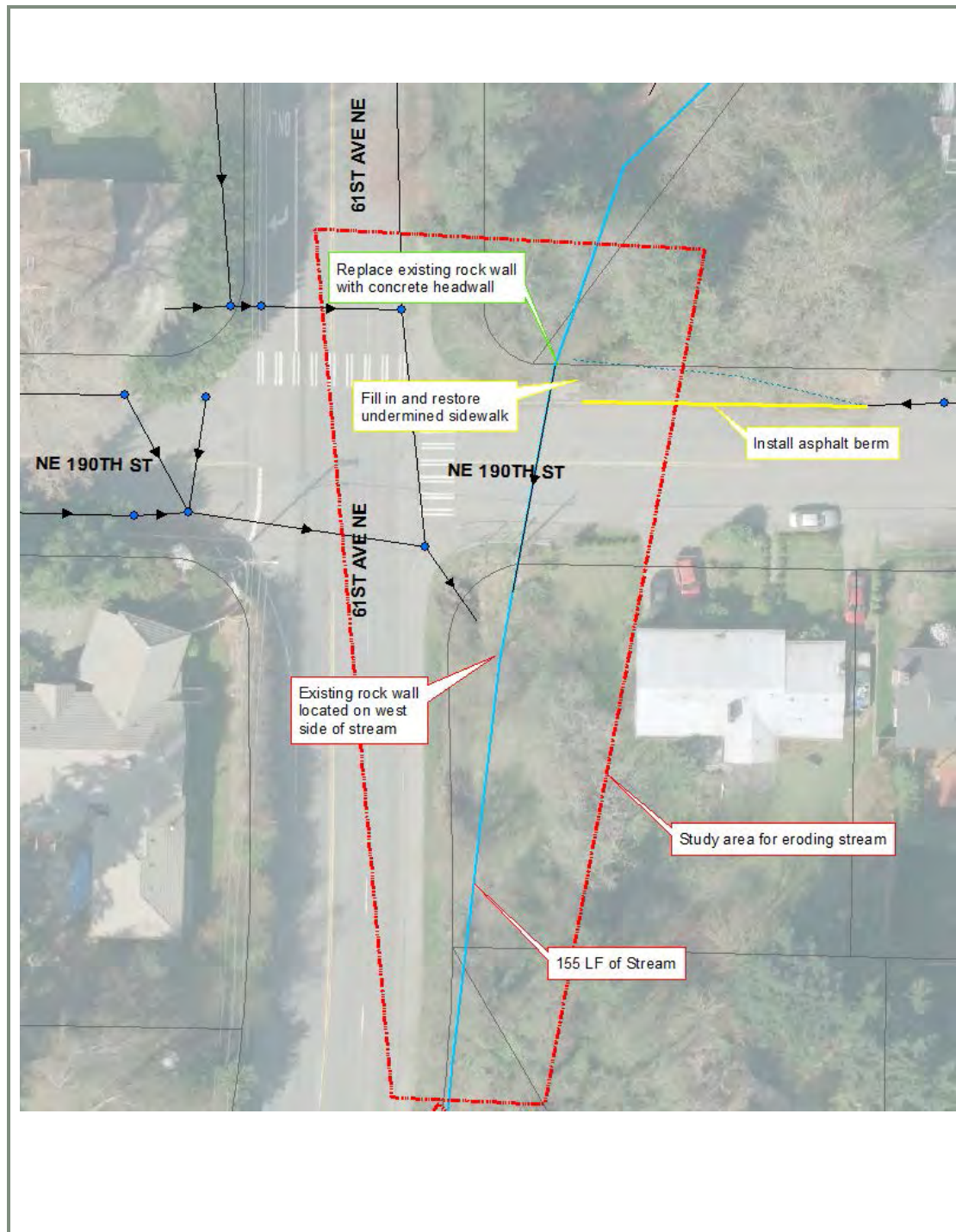


Appendix E:

Capital Improvement Project Summary Sheets

Project: Tributary 0056 Erosion and Stream Repair			ID: SW-08
Location:	61 st Avenue NE and NE 190 th Street	Basin:	Tributary 0056
Project Type:	☐ Water Quality ☐ Fish Passage ☐ Flow Control ☒ Erosion ☐ Drainage ☐ Flooding	Preliminary Project Cost:	\$1,111,000
Problem:	Stream channel and sidewalk erosion		
Project Overview	Tributary 0056 flows from north to south along the east side 61st Avenue NE. There are three problems where Tributary 0056 crosses NE 190th Street: 1. Stream channel bank erosion along a 155-LF section of rock wall has resulted in failed sections where rocks have fallen into the channel. The full extent of the damage is unclear. 2. Rock wall headwalls are at the inlet and outlet of the culvert and protect 61st Avenue NE from stream flow. Stream flows have eroded the existing slope and rock headwall north of NE 190th Street, resulting in an unstable headwall. Stream flows have been observed bypassing the culvert. It is unknown where the piping water goes. 3. Runoff from NE 190th Street concentrates at the northeast side of the street where the sidewalk transitions to gravel, causing the sidewalk to be undermined. This project was identified by the City in 2013. A surface water field investigation report and recommendations were prepared by consultants in February 2013. The preferred solutions include: 1. Conducting a geotechnical and structural evaluation of 155-LF of rock wall to determine stabilization measures necessary to protect 61st Avenue NE. If rock wall improvements are needed, stream improvements will likely be required for mitigation associated with stabilization of the rock wall and will also serve to redirect flow away from the stream bank. 2. Replacing the upstream culvert headwall with a concrete headwall in accordance with recommendations in the February 2013 surface water field investigation report. 3. Installing an asphalt berm along NE 190th Street from the existing curb to the edge of the first driveway to direct runoff to the stormwater system on 61st Avenue NE rather than the stream. This solution also involves filling the void under the existing sidewalk with grout or concrete. Project benefits include protection of existing infrastructure (sidewalk and roadway) and improved stream habitat.		
	 Rocks from wall that fell into the stream  Undercut sidewalk at NE 190th Street		
Conceptual Design	1 & 2. Conduct geotechnical and structural evaluations to determine the full extent of rock wall repair and mitigation necessary to protect existing infrastructure. • The cost estimate assumes the entire 155-LF section of wall will need to be repaired. Geotechnical and structural evaluation will determine the actual amount of wall repair needed. • Wall repairs below the stream's ordinary high water mark will likely require stream restoration mitigation, along the entire 155 LF. Stream restoration will include a modified channel cross-section that includes a floodplain bench, removal of invasive plant species, and installation of large woody debris and riparian planting. • Resource agencies may encourage replacing the existing culvert with a wider, fish-passable culvert if headwall repairs are proposed. The cost estimate below assumes both headwalls are repaired and a new culvert is installed. • The design schedule for stream restoration shall account for time to obtain temporary or permanent easements and in-water work permits from WDFW and USACE. 3. The preferred solution for the undermined sidewalk is to install an asphalt berm along the north side of NE 190th Street and fill in the damaged portion of the sidewalk with grout or concrete. A loss of parking will occur. This work is within the City ROW and above the stream's ordinary high water mark, so the solution can be designed and constructed faster than the in-water work described above.		

Considerations for Implementation	• Bundle all improvements with work below the ordinary high water mark as one project with one set of permit documents. • Remove vegetation, with the exception of trees. If tree removal is necessary, a tree removal permit will be required. Environmental permitting will include a SEPA checklist, WDFW HPA, USACE permits, and Tribe coordination. • Temporary construction easements may be needed for in-stream work along 61st Avenue NE. Acquiring permanent easements will allow more flexibility in stream restoration design.
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Planning-level Cost Estimate

Asphalt Berm				
Item	Unit	Unit Cost	Quantity	Cost
Water Pollution/Erosion Control	%	5%		\$75
SPCC Plan	LS	\$500	0	\$0
Traffic Control	%	7%		\$100
Clearing & Grubbing	SY	\$5	20	\$100
Extruded Curb	LF	\$15	81	\$1,215
Subtotal				\$1,490
Contractor overhead, profit, and mobilization			10%	\$149
Washington State Sales Tax			9.5%	\$142
Construction Contingency			50%	\$745
Subtotal Construction Costs				\$2,526
City Staff Time			10%	\$253
Administration and engineering design			20%	\$505
Design Contingency			20%	\$505
Permitting				\$0
Land acquisition and easements	SF	\$5	0	\$0
Total Berm Cost				\$3,800
Geotechnical/Structural Analysis				\$5,000
Rock Wall and Stream work				
Item	Unit	Unit Cost	Quantity	Cost
Water Pollution/Erosion Control	%	5%		\$21,000
SPCC Plan	LS	\$500	1	\$500
Traffic Control	%	7%		\$29,000
Rock wall repair (along 61st Ave NE)	LF	\$1,000	155	\$155,000
Temporary Stream Bypass	LS	\$24,000	1	\$24,000
Stream restoration	LF	\$460	155	\$71,300
New Concrete Headwall	EA	\$50,000	2	\$100,000
HMA CL 1/2 IN PG 64-22	TON	\$200	10	\$2,000
Fish Passage Culvert (83-In. X 53-In.)	LF	\$700	30	\$21,000
Subtotal				\$423,800
Contractor overhead, profit, and mobilization			10%	\$42,380
Washington State Sales Tax			9.5%	\$40,261
Construction Contingency			50%	\$211,900
Subtotal Construction Costs				\$718,341
City Staff Time			10%	\$71,834
Administration and engineering design			20%	\$143,668
Design Contingency			20%	\$143,668
Permitting				\$15,000
Land acquisition and easements	SF	\$5	1,860	\$9,300
Total Rock Wall and Stream Work Cost				\$1,101,900
Combined Total				\$ 1,111,000.00

Project: Little Swamp Creek Flooding		ID:	SW-17
Location:	80 th Avenue NE – Between NE 200 th Street and NE 193 rd Place	Basin:	Little Swamp Creek
Project Type:	☐ Water Quality ☐ Fish Passage ☐ Flow Control ☐ Erosion ☐ Drainage ☒ Flooding	Preliminary Project Cost:	\$1,264,400
Problem:	Stream flooding roadway		
Project Overview	Little Swamp Creek flows from north to south along 80th Avenue NE and crosses from the east side to the west side of the street just south of NE 198th Street. The project site is located between NE 200th Street and NE 193rd Place. There are two problems at this location: 1. A channel on the west side of 80th Avenue NE overflows the culverts at NE 200th Street and NE 198th Street, causing roadway flooding. Culvert inlet capacity and debris clogs are the assumed problems. 2. Little Swamp Creek overtops multiple road and driveway culverts, flooding both public ROW and private properties between NE 198th Street and NE 193rd Place. The City of Kenmore has begun to obtain additional ROW along the west side of 80th Avenue NE and will continue to do so as properties develop. The additional ROW allows room to modify the Little Swamp Creek cross section and alignment. Solutions to the problems include: 1. Installing a trash rack/debris barrier at the NE 200th Street culvert inlet to prevent debris clogs and maintain inlet capacity. Mowing vegetation along the Type 4 stream banks to maintain channel conveyance capacity. 2. Removing 1 culvert and replacing 3 undersized culverts with larger, fish-passable culverts. Modifying the Little Swamp Creek cross section to include a floodplain bench. Installing riparian plantings and floodplain bench. Allowing channel to meander within the extended ROW. Project benefits include flood reduction and improved stream habitat.		
			Existing stream channel along 80 th Avenue NE

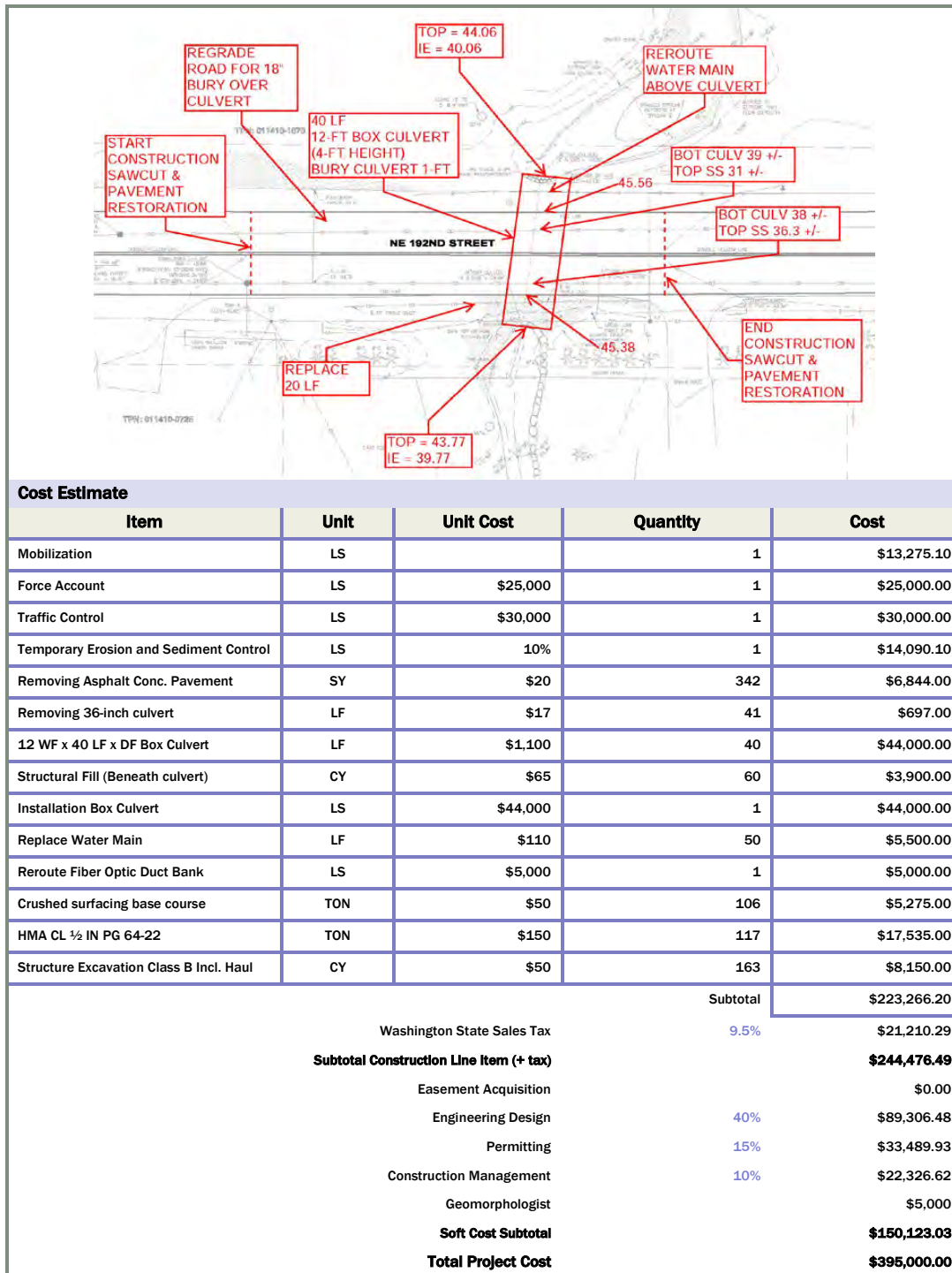
Conceptual Design	Solutions for flooding at Type 4 stream (indicated with red in the figure below): • Install a trash rack/debris barrier at the NE 200th Street culvert inlet to capture debris and prevent downstream system clogging. This solution assumes debris clogs reduce inlet capacity. • Verify conveyance capacity of the existing culverts (NE 200th Street and NE 198th Street). Solutions for flooding in Little Swamp Creek (indicated with yellow in the figure below): • Modify the Little Swamp Creek cross section to include the floodplain. Move the thalweg away from 80th Avenue NE and allow the stream to meander and fully utilize the newly obtained ROW. • Remove 1 unnecessary culvert (verify with property owner that field access is no longer needed). • Replace 3 existing undersized culverts with fish-passable culverts. • Widen the floodplain at the 90-degree bend in Little Swamp Creek downstream of NE 195th Street. Install large woody debris on the outside of the turn and install rocks to help facilitate the sharp turn.
Considerations for Implementation	• Environmental permitting will include a SEPA checklist, WDFW HPA, and USACE permits. • ROW acquisition will need to be completed before Little Swamp Creek stream restoration can commence. • Downstream analyses and coordination with downstream projects (e.g., the 192nd Culvert Options Analysis) will need to be conducted to ensure properties are not adversely affected, and the downstream culvert replacement project at NE 192nd Street is not impacted. The new channel will have increased roughness and floodplain, which will help to reduce stream velocity. The detention effect of the undersized culverts is assumed to be minimal as floodwater overtopped the culverts and remained in the creek. • Temporary stream bypass and fish exclusion should be used during construction. • Traffic control will be needed.

Cost Estimate				
Item	Unit	Unit Cost	Quantity	Cost
Water Pollution/Erosion Control	%	5%		\$17,000
SPCC Plan	LS	\$500	1	\$500
Traffic Control	%	5%		\$17,000
Clearing & Grubbing	SY	\$5	1700	\$8,500
Excavation Incl. Haul	CY	\$35	840	\$29,400
Cement Conc. Sidewalk	SY	52	333.333333	\$17,333
Temporary Stream Bypass	LS	\$24,000	1	\$24,000
Trash Rack / Debris Barrier	EA	\$1,000	1	\$1,000
HMA CL 1/2 IN PG 64-22	TON	\$200	30	\$6,000
Fish Passage Culvert (83-In. X 53-In.)	LF	\$700	120	\$84,000
Streambed Gravel	CY	\$50	280	\$14,000
Large Woody Debris	EA	\$1,200	55	\$66,000
Planting and Bioengineered Restoration	SY	\$40	1700	\$68,000
Subtotal				\$352,733
Contractor overhead, profit, and mobilization			10%	\$35,273
Washington State Sales Tax			9.5%	\$33,510
Construction Contingency			50%	\$176,367
Subtotal Construction Costs				\$597,883
City Staff Time			10%	\$59,788
Administration and engineering design			20%	\$119,577
Design Contingency			20%	\$119,577
Permitting				\$15,000
ROW acquisition contingency				\$352,500
Total Project Cost				\$1,264,400

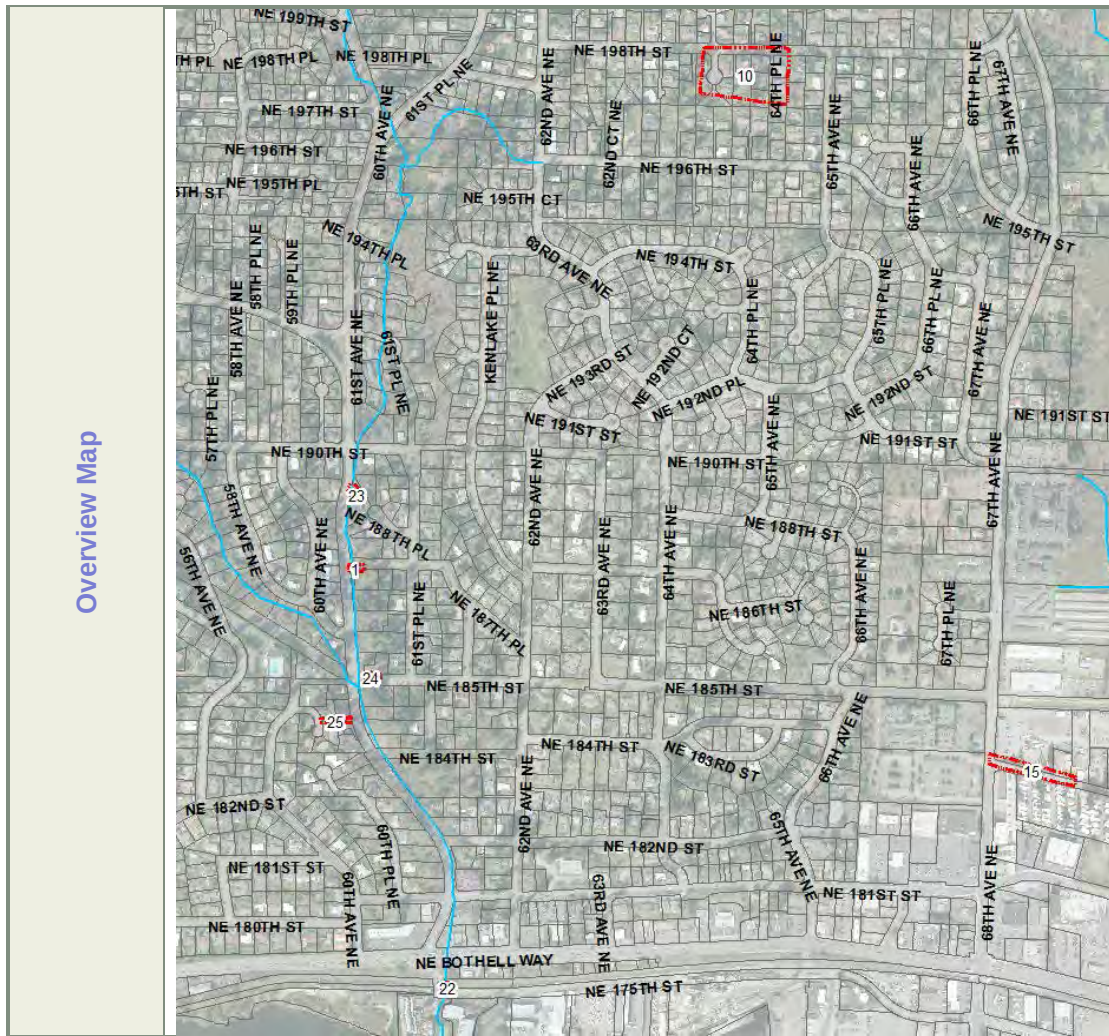
Project: Little Swamp Creek Culvert Replacement at NE 192 nd Street		ID: SW-19
Location:	NE 192 nd Street – West of 80 th Avenue NE	Basin: Little Swamp Creek
Project Type:	☐ Water Quality ☒ Fish Passage ☐ Flow Control ☐ Erosion ☐ Drainage ☒ Flooding	Preliminary Project Cost: \$395,000
Problem:	Flooding at low point in road	
Project Overview	Flooding occurs at the NE 192nd Street culvert carrying Little Swamp Creek at the low point in the road. Based on modeling results, the road floods at the 25-year event because the culvert is undersized. Modeling showed flooding to be as high as 1 foot on the roadway. This is the depth at which most cars and sport utility vehicles can float. This project was identified by the City in 2006. OCI was contracted in 2014 to develop the 192nd Culvert Final Options Analysis Report (OCI 2014). Several options were considered: high-flow bypass, existing culvert replacement with a fish-passable culvert, a street elevation increase, and a no-build alternative. The preferred solution is to replace the existing culvert with a 12-foot by 3-foot fish-passable culvert. Project benefits include flood reduction and improved fish passage. Additional modeling or analysis may be needed to determine impacts to downstream Swamp Creek.	
Conceptual Design	The preferred solution is installation of a 12-foot by 3-foot box culvert in place of the existing culvert. This size conveys the 100-year event without flooding or overtopping. Other solutions considered: - High-flow bypass - A 24-inch bypass culvert was considered in conjunction with a riser structure, which would convey flows in the 25-year event and higher. - This option will likely not be approved by WDFW because it does not meet code requirements for culvert depth. 1-foot road elevation increase - This option is not feasible because the water levels rise more than 5 feet during large storm events. - No-build - This option would allow continued flooding and debris blockage of the culvert.	
Considerations for Implementation	- Environmental permitting will require a SEPA checklist, WDFW HPA, and USACE permits. - A geomorphologic assessment is recommended. - A downstream analysis should be conducted to evaluate how or if downstream infrastructure or properties could be affected by improvements. - Temporary stream bypass and fish exclusion should be used during construction. - Coordination with the upstream Little Swamp Creek Flooding CIP (included in the SWMP as CIP #7) will need to be conducted to ensure upstream project is not adversely affected (no modeling or analysis has been performed to determine impacts of the preferred solution to the upstream or downstream system). - Traffic control will be needed. - Cost estimate is from the options analysis report discussed in the narrative above, with the addition of a geomorphologic analysis.	



**Culvert at NE 192nd Street
(downstream side)**

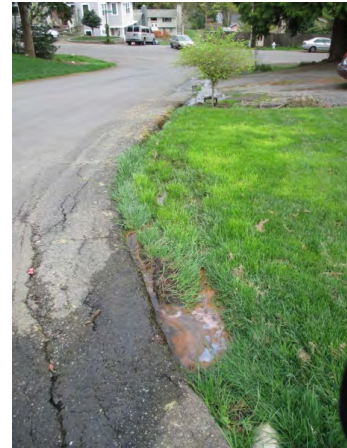


Project:	Small Works Projects		ID:	SW-20
Location:	1) 61 st Avenue NE and NE 187 th Street 10) 64 th Avenue NE and NE 198 th Street 15) NE 182 nd Street and 68 th Avenue NE 22) NE 175 th Street – South of SR-522 23) 61 st Avenue NE – South of NE 190 th Street 24) NE 185 th Street and 61 st Avenue NE 25) Connecting 60 th Place NE and 61 st Avenue NE	Basins:	Tributary 0056, Swamp Creek, and Muck Creek	
Project Type:	☐ Water Quality ☐ Fish Passage ☐ Flow Control ☒ Erosion ☒ Drainage ☐ Flooding	Preliminary Project Cost:	\$50,000 budgeted annually	
Problem:	Erosion and drainage problems at various locations			
Small Works Projects Overview	Seven locations (shown on the overview map below) in Kenmore have erosion or drainage problems with solutions that City staff are capable of designing and constructing without outside assistance. Three locations (projects 1, 23, and 24) have issues with half pipes leading from private properties to Tributary 0056. The half pipes are broken or deteriorating and causing stream erosion. A fourth location (25) has a deteriorating half pipe that is impacting the City ROW by depositing debris onto the roadway. Groundwater seepage is occurring at location 10, resulting in surface water flow down the steep street. Flooding and icy roads are a concern in this area. (Note: Photo at right was taken during a period with no rainfall.) A private drive to the east of this location is experiencing similar issues. At NE 182nd Street and 68th Avenue NE (location 15), runoff from the City ROW is flooding private property due to a lack of conveyance system. Just south of SR-522 at NE 175th Street (location 22), a diversion structure has poor access and requires frequent maintenance. Maintenance crews have trouble with the gate, ladder, and fence. The diversion procedure also requires some modifications to improve functionality of the structure. Potential solutions and benefits for each project (by basin) are outlined in the following pages. No cost estimates are provided at this time.		 	
			Gro... 10	



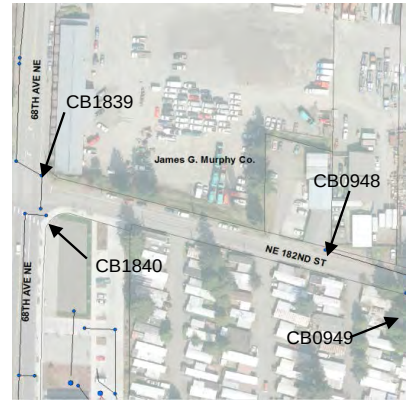
Project: Half Pipe Projects			ID: SW-10 (1, 23, 24, 25)
Location:	1) 61 st Avenue NE and NE 187 th Street 23) 61 st Avenue NE – South of NE 190 th Street 24) NE 185 th Street and 61 st Avenue NE 25) Connecting 60 th Place NE and 61 st Avenue NE	Basin:	Tributary 0056
Project Type:	☐ Water Quality ☐ Fish Passage ☐ Flow Control ☒ Erosion ☐ Drainage ☐ Flooding	Preliminary Project Cost:	N/A
Problem:	Erosion and deteriorating half pipes		
Project Overview	Three locations (1, 23, and 24) have issues with half pipes leading from private properties to Tributary 0056. The half pipes are broken or deteriorating and causing erosion problems. A fourth location (25) has a deteriorating half pipe, impacting the City ROW by depositing debris onto the roadway. These projects were identified by the City in 2013 during a field walk of Tributary 0056. The preferred solution to resolve the issues of deteriorating half pipes is to replace the existing half pipes with new tightline pipes. Outfalls to Tributary 0056 shall be placed above the ordinary high water mark with energy dissipation to minimize erosion. Existing erosion damage shall be repaired to match the surrounding ground cover. The existing half pipe between 60th Place NE and 61st Avenue NE (location 25) is not within an easement. The proposed pipe shall be re-aligned through existing ROW or easement or a new easement established. The proposed pipe would connect to the existing storm drainage system. Project benefits include reduced erosion in and adjacent to Tributary 0056 and reduced debris deposition within the ROW. 		
Conceptual Design	Preferred solutions: - Locations 1, 23, and 24 - Replace existing half pipe with 12-inch PVC or HDPE tightline. - Pipe anchors may be needed to ensure pipe does not move. - Location 25 - Establish a permanent easement for the tightline alignment. - Replace existing system with 12-inch PVC or HDPE tightline. - Pipe anchors may be needed to ensure pipe does not move.		
Considerations for Implementation	- Proposed pipe sizes are based on the sizes of surrounding pipes. No analysis was conducted to verify conveyance capacity. - Field visits should be conducted to assess the need for additional inlets. - Vegetation removal is necessary, but removing trees shall be avoided. If tree removal becomes necessary, a tree removal permit will be required. - Protect existing roadway, sidewalks, and property. Restore disturbed areas to original condition. - Environmental permitting will require a SEPA checklist and WDFW HPA. - Temporary construction easements may be needed for half pipe replacement on private property. - In-stream work should be minimized. - Traffic control may be needed.		

Project:	Groundwater Seepage		ID: SW-10 (10)
Location:	10) 64th Avenue NE and NE 198th Street	Basin:	Swamp Creek
Project Type:	☐ Water Quality ☐ Fish Passage ☐ Flow Control ☐ Erosion ☒ Drainage ☐ Flooding	Preliminary Project Cost:	N/A
Problem:	Groundwater seepage causing flooding		
Project Overview	Groundwater seepage issues are occurring at location 10 (in the cul-de-sac of 64th Avenue NE), which send flow down the steeply sloped street. Flooding on private property and icy roads are a concern in this area. This project was identified by the City in 2013 through complaints submitted by residents in the cul-de-sac. The preferred solution for this project is to capture and convey the groundwater flow before it reaches the surface. One inlet is proposed to be installed in the grassy area between the driveways for 19704 64th Avenue NE and 19712 64th Avenue NE. A second inlet is proposed to be installed on the property of 19722 64th Avenue NE (shown in the photo at right). A series of pipes should lead from these inlets to the existing catch basin at NE 198th Street. Project benefits include reduced flooding and hazardous conditions on 64th Avenue NE. A similar issue is occurring at 64th Place NE, a private drive to the east of 64th Avenue NE. The City is not responsible for alleviating flooding on that roadway. However, this CIP design would work for the 64th Place NE issue as well, should the residents wish to resolve the problem.		
Conceptual Design	Preferred solution: - Install two catch basins along 64th Avenue NE at the locations mentioned above. Inlets shall be placed within the ROW to collect surface water from the yards. - Install 12-inch PVC storm drain pipe connecting the proposed catch basins to the existing storm drain system at 64th Avenue NE and NE 198th Street. - If additional groundwater collection is desired, PVC storm drain pipe may be replaced with an interceptor trench comprised of perforated pipe in a gravel backfill trench wrapped in a non-woven geotextile fabric. Prior to implementing this solution, perform additional analyses to estimate the amount of groundwater that may be collected and verify the conveyance capacity of the downstream system.		
Considerations for Implementation	- Coordinate with adjacent properties mentioned above. - All work will be performed within the ROW. Should any work be required on private property, temporary construction easements will be needed. - Roadway and properties (e.g., lawns, driveways, etc.) should be restored to original condition following construction. - The 12-inch pipe diameter was assumed based on other pipes in the region. No analysis was conducted to determine the size required to convey the groundwater.		



19722 64th Avenue NE
(looking north toward NE 198th Street).

Project:	Stormwater Infrastructure Installation		ID:	SW-10 (15)
Location:	15) NE 182 nd Street and 68 th Avenue NE	Basin:	Muck Creek	
Project Type:	☐ Water Quality ☐ Fish Passage ☐ Flow Control ☐ Erosion ☒ Drainage ☐ Flooding	Preliminary Project Cost:	N/A	
Problem:	Runoff from ROW flooding private property			
Project Overview	At NE 182nd Street and 68th Avenue NE (location 15), runoff from the City ROW is flooding private property due to the lack of conveyance system. Drainage issue complaints were filed by James G. Murphy Co. (located at 18226 68th Avenue NE). No other sites have reported issues, but may be experiencing flooding as well. In 2014, the City constructed intersection improvements at NE 182nd Street and 68th Avenue NE. A stub out for a new system at the northeast corner (catch basin [CB]1839) may have been included with this work (to be confirmed by the City). This project was identified by the City after James G. Murphy Co. filed complaints. The preferred solution includes adding a collection and conveyance system along NE 182nd Street in conjunction with proposed intersection improvements. The City shall provide stub outs for businesses along NE 182nd Street. Project benefits include alleviating flooding at nearby properties. By combining the conveyance installation with improvements along NE 182nd Street, the City would save money, resources, and time.		 NE 182nd Street and 68th Avenue NE; James G. Murphy Co. location	
	Conceptual Design	Preferred solution: - Install conveyance system connecting existing catch basins on north side of NE 182nd Street. - Install two 12-inch pipes and one catch basin Type 1 between existing catch basins CB0948 and CB1839. - Install conveyance system on the south side of NE 182nd Street. - Install three 12-inch pipes and two catch basins type 1 between existing catch basins CB0949 and CB1840.		
Considerations for Implementation	- No analysis has been conducted to size the conveyance system. Proposed sizes and types are assumed based on surrounding systems. - All work should be within the City ROW. - Coordinate construction with intersection improvement designers. - Traffic control is assumed to be part of the intersection improvement project.			



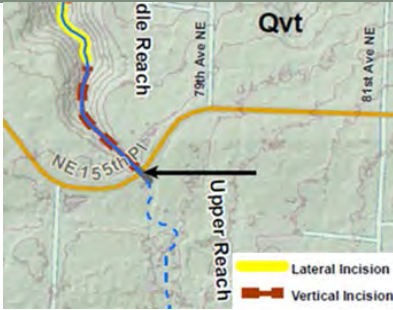
**NE 182nd Street and 68th Avenue NE;
James G. Murphy Co. location**

Project:	Diversion Structure Improvement		ID:	SW-10 (22)
Location:	22) NE 175 th Street – South of SR-522	Basin:	Tributary 0056	
Project Type:	☐ Water Quality ☐ Fish Passage ☐ Flow Control ☐ Erosion ☒ Drainage ☐ Flooding	Preliminary Project Cost:	N/A	
Problem:	Poor access and frequent maintenance issues			
Project Description	South of SR-522 at NE 175th Street (location 22), a diversion structure has poor access and requires frequent maintenance. Maintenance crews have trouble with the gate, ladder, and fence. The diversion procedure also requires some improvements. This project was identified by City maintenance crews in 2013. Potential solutions include replacing the old and rusted flap gate, replacing the aging ladder, improving maintenance crew access, and developing an enhanced diversion procedure. Better access may include coordinating with King County on access improvements to the diversion structure (e.g., a gate or opening in the fence with limited access). Project benefits include easier maintenance for City crews, improved functionality of the diversion structure, improved safety for the maintenance crews, and prolonged life of area culverts.		 Diversion structure at Burke-Gilman Trail at NE 175th Street, looking east	
Conceptual Design	Potential solutions: • Replace the existing flap gate. • Replace the existing ladder with a new, more accessible ladder. • Improve access to the diversion structure. • Improve the diversion procedure. This may include adding an on-site storage building that houses diversion materials (e.g., sand bags or a bladder dam). • Update the O&M Manual to include the improvements.			
Considerations for Implementation	• Coordinate with King County on any fence improvements. • Environmental permitting may be required. • The tree adjacent to the diversion structure should not be affected by the project. • Protect existing trail and roadway. • Traffic control may be needed.			



Diversion structure at Burke-Gilman Trail at NE 175th Street, looking east

Project:	61st Avenue NE Ground Penetrating Radar Evaluation and Preliminary Design		ID:	SW-21
Location:	61st Ave NE and NE 190th Street	Basin:	Tributary 0056	
Project Type:	☐ Water Quality ☐ Fish Passage ☐ Flow Control ☒ Erosion ☐ Drainage ☐ Flooding		Preliminary Project Cost:	\$100,000
Problem:	Stream eroding near roadway			
Narrative	Tributary 0056 flows from north to south along the east side 61st Ave NE. There are three problems where Tributary 0056 crosses NE 190th St.: 1. Stream channel bank erosion along a 155-LF section of rock wall has resulted in failed sections where rocks have fallen into the channel. The full extent of the damage is unclear. 2. Rock wall headwalls are at the inlet and outlet of the culvert and protect 61st Ave NE from stream flow. Stream flows have eroded the existing slope and rock headwall north of NE 190th St. resulting in an unstable headwall. Stream flows have been observed bypassing the culvert. It is unknown where the piping water goes. 3. Sidewalk on the northeast side of NE 190th St. is being undermined by runoff from NE 190th St. Runoff concentrates where the sidewalk transitions to gravel, causing the sidewalk to be undermined. This project was identified by the City in 2013. A surface water field investigation report and recommendations was prepared by consultants in February 2013. This project is to provide preliminary analysis and design necessary for repair of the rock wall adjacent to 61st Avenue NE using ground penetrating radar geophysical techniques that are minimally intrusive. The preliminary cost estimate for this project is \$100,000.		 Rocks from wall which fell into the stream.  Undercut sidewalk at NE 190th St.	

Project: Tributary 0057 Perched Pipe		ID: SW-22	
Location:	NE 155 th Place – East of 78 th Avenue NE	Basin:	Tributary 0057
Project Type:	☐ Water Quality ☒ Fish Passage ☐ Flow Control ☒ Erosion ☐ Drainage ☐ Flooding	Preliminary Project Cost:	\$25,000
Problem:	Perched pipe eroding stream		
Project Overview	A culvert carrying flows from Tributary 0057 is located at NE 155th Place. The culvert outfall is located roughly 10 feet above the stream bed, causing erosion and subsequent downstream sedimentation. This project was identified by the City in a previous CIP plan. This project requires additional analysis to determine the best solution and any risks to public infrastructure and downstream properties if nothing is done. Stream channel monitoring is recommended to evaluate the rate and severity of erosion and potential impacts on infrastructure and properties. The estimate for this work is approximately \$25,000 (\$5,000 for City staff time; \$20,000 for a consultant to conduct stream channel geomorphic monitoring).		
	 Incision downstream of the culvert at NE 155th Place (Graphic courtesy of the Tributary 057 Sediment Study provided by Gray & Osborne, Inc.)		

Project:	Wallace Pond Beaver Deceiver		ID:	SW-23
Location:	Wallace Park 19907 73rd Avenue NE	Basin:	Swamp Creek	
Project Type:	☐ Water Quality Control ☐ Fish Passage ☐ Flow Control ☐ Erosion ☐ Drainage ☒ Flooding		Preliminary Project Cost:	\$96,400
Problem:	Beavers damming stream			
Project Overview	Beavers have taken up residence in the Wallace Park Sediment Pond. The beavers dam the pond outlet weir, causing the pond water surface elevation to rise and more water to flow through the fish passage channel and/or overtop the berm separating the pond from the fish passage channel. (During a site visit that was conducted by OCI on April 8, 2014, evidence of a wash-out over the berm was observed.) A bypass pipe system may have been installed when the sediment pond was constructed. This pipe could not be found during the site visit on April 8, 2014. Plans for the sediment pond will need to be reviewed to determine existence and location of the bypass pipe. The preferred solution for the beaver dam problem includes installing a Beaver Deceiver near the pond outlet weir. The Beaver Deceiver (a trapezoidal-shaped culvert fence) would regulate the water level of the beaver dam and keep the outlet weir or culvert open. Project benefits include maintaining the design flow distribution through the pond and the fish passage channel. The Beaver Deceiver will not deter the beavers from cutting down trees.		 Beaver dam at weir outlet	
Conceptual Design	The preferred solution is installation of a Beaver Deceiver around the weir outlet of sediment pond. • Beaver Deceiver perimeter must be 40 feet or more. • Wire fencing used for deceiver should extend at least 2 feet above the water surface elevation to ensure beavers do not climb over the fence. • A footing of wire fencing should also be installed so beavers cannot dig under the Beaver Deceiver. • If the beavers dam the length of the deceiver, it may be necessary to install a pipe under the water surface to allow flow through the deceiver.			
Considerations for Implementation	• The schedule of this improvement is recommended to co-occur with sediment pond dredging to take advantage of shared permitting, bypass, and fish exclusion costs. • Environmental permitting will include a SEPA checklist, WDFW HPA, and USACE permits. Design may also require mitigation for buffer impacts. • Temporary stream bypass will be needed. • Plans for sediment pond shall be reviewed to determine location of high-flow bypass pipe. • May require beaver management during construction. • Routine maintenance is suggested to ensure Beaver Deceiver is functioning properly. • Wire fencing may be placed around individual trees or around the pond to protect trees from beavers. (Fencing needs to be 3 to 4 feet high and is not included in cost estimate.)			



Cost Estimate

Item	Unit	Unit Cost	Quantity	Cost
Water Pollution/Erosion Control	%	5%		\$1,500
SPCC Plan	LS	\$500	1	\$500
Clearing & Grubbing	SY	\$5	200	\$1,000
Temporary Stream Bypass	LS	\$15,000	1	\$15,000
Planting and Bioengineered Restoration	SY	\$40	200	\$8,000
Beaver Deceiver	EA	\$6,000	1	\$6,000
Subtotal				\$32,000
Contractor overhead, profit, and mobilization			10%	\$3,200
Washington State Sales Tax			9.5%	\$3,040
Construction Contingency			50%	\$16,000
Subtotal Construction Costs				\$54,240
City Staff Time			10%	\$5,424
Administration and engineering design			20%	\$10,848
Design Contingency			20%	\$10,848
Permitting				\$15,000
Land acquisition and easements	SF	\$5	0	\$0
Total Project Cost				\$96,400

Project: Sammamish River Vaults		ID: SW-24	
Location:	NE 170 th Street and NE 169 th Place	Basin:	Sammamish Tributary 02 and 03
Project Type:	☐ Water Quality ☐ Fish Passage ☐ Flow Control ☐ Erosion ☐ Drainage ☒ Flooding	Preliminary Project Cost:	\$25,000
Problem:	Undersized vaults fill with sediment		
Project Overview	Two existing vaults adjacent to the Sammamish River collect sediment and require annual cleaning. One vault is 6.5 feet by 12 feet, while the other is 6.5 feet by 10 feet. Inlet and outlet pipes are 30-inch diameter concrete pipes. The vaults were installed in 1990 and may be undersized. This project was identified by City maintenance crews because the vaults require frequent cleaning. Before a solution is recommended for these vaults, additional analyses are recommended to determine the source of sediment and whether upstream sediment controls could reduce maintenance frequency. The project cost assumptions include \$5,000 for City staff time and \$20,000 for a consultant to evaluate sediment sources in the system.		
	 Catch Basin Type 2 and Vaults (looking north toward the Sammamish River)		

Project: Strawberry Hills Tank Replacement			ID: SW-25
Location:	72 nd Avenue NE and NE 152 nd Place	Basin:	Tributary 0222
Project Type:	☐ Water Quality ☐ Fish Passage ☐ Flow Control ☐ Erosion ☒ Drainage ☐ Flooding	Preliminary Project Cost:	\$459,700
Problem:	Failing tank requires replacement		
Project Overview	A 120-LF, 60-inch detention tank was installed in 1978 underneath 71st Place NE, a private road. In 1980, maintenance of the facility fell to King County. The natural drainage channel which was previously the outfall for the tank was deemed inadequate by King County because of erosion. Therefore, the downstream system was tightlined with two 12-inch CMP pipes to a pond at NE 152nd Court. CCTV inspection performed by the City showed that the tank is failing. It has collapsed beams and water marks at the top of the pipe. Surface settling has also been reported at the upstream and downstream catch basins. The existing tank does not comply with current flow control standards (2005 Ecology). The City has received complaints of flooding at the downstream pond. This project was identified by the City through video inspections and maintenance evaluations in 2013. The preferred solution is to replace the failing detention tank with two 120 LF 60-inch detention tanks and replace the existing catch basin and restrictor with control structures. Project benefits include improved stormwater flow control. Peak flows are reduced by 80 percent at the 2-year storm and 75 percent at the 50-year storm compared to the current, un-detained condition.		
Conceptual Design	Preferred solution: - Replace 120-LF failing 60-inch CMP tank with 2 (two) 120-LF, 60-inch PVC detention tanks. - Install a new riser and flow control structure. Other scenarios considered under the WWHM (see Appendix for results): - Remove detention. This option was used for comparison. - Replace existing detention tank with new tank of the same dimensions. Replace existing catch basin and restrictor with control structure. This option provides minimal detention. - Size pond or tank to pass 2005 Ecology flow control requirements. There is not enough space at the site for this option.		
Considerations for Implementation	Preferred solution: - Protect existing homes, structures, and roadway during construction. - Restore driveway to pre-project condition. - CCTV the downstream conveyance system and evaluate the remaining life of those pipes. - Coordinate with homeowners on installation and restoration of tank under private drive. 15219 72nd Avenue NE 15213 72nd Avenue NE 15209 72nd Avenue NE - The proposed solution will not provide a full retrofit for the existing basin due to the limited space available.		



71st Place NE – location of underground detention tank



Cost Estimate

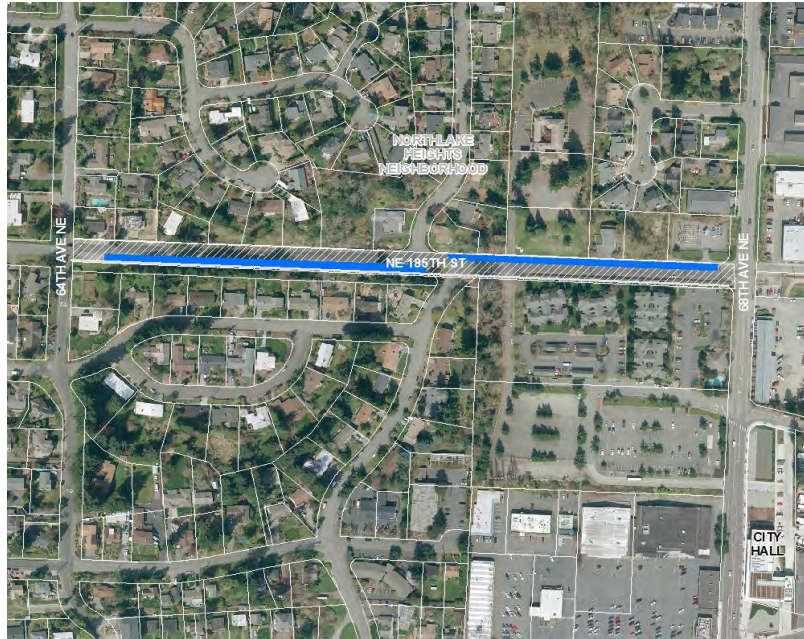
Item	Unit	Unit Cost	Quantity	Cost
Water Pollution/Erosion Control	%	5%		\$9,000
SPCC Plan	LS	\$500	1	\$500
Traffic Control	%	7%		\$12,700
Potholing	EST	\$1,000	1	\$1,000
Sawcut Pavement	LF	\$5	290	\$1,450
Remove Asphalt Conc. Pavement	SY	\$28	280	\$7,840
Roadway Excavation Incl. Haul	CY	\$92	650	\$59,800
Shoring or Extra Excavation Class B	SF	\$1	900	\$900
Catch Basin Type 2, 54 In. Diam. Flow Control Structure	EA	\$6,000	1	\$6,000
Schedule A 60" Storm Sewer Pipe	LF	\$260	240	\$62,400
HMA CL 1/2 IN PG 64-22	TON	\$200	96	\$19,200
Subtotal				\$180,790
Contractor overhead, profit, and mobilization			10%	\$18,079
Washington State Sales Tax			9.5%	\$17,175
Construction Contingency			50%	\$90,395
Subtotal Construction Costs				\$306,439
City Staff Time			10%	\$30,644
Administration and engineering design			20%	\$61,288
Design Contingency			20%	\$61,288
Permitting				\$0
Land acquisition and easements	SF	\$5	0	\$0
Total Project Cost				\$459,700

Project:		Opportunity Fund: Juanita Drive Detention Facility		ID:	SW-26	
Location:	NE 149 th Street and Juanita Drive NE			Basin:	Arrowhead Creek	
Project Type:	☐ Water Quality ☐ Fish Passage ☒ Flow Control ☐ Erosion ☒ Drainage ☐ Flooding			Preliminary Project Cost:	\$698,200	
Problem:	Control structure and tank system not functioning					
Project Overview	An existing 36-inch diameter pipe along Juanita Drive NE at NE 149th Street likely functioned as a detention facility until the control structure was removed (reason for removal is unknown). Approximately 15 acres east of Juanita Drive NE drain to the system, which then discharges to a natural drainage area. A flooding complaint was received from a private lot downstream in 2010. Then, in 2013, this project was identified by the City during a maintenance stormwater infrastructure inspection. The preferred solution includes replacing the control structure and upsizing the detention pipe for increased flow control. Project benefits include increased detention compared to the current, un-detained condition: peak flows would be reduced by 67 percent at the 2-year storm and 52 percent at the 50-year storm. The preferred solution does not meet current flow control requirements (2005 Ecology). A larger detention tank and stormwater pond sized to retrofit the system to meet current flow control standards were considered; however, adequate space was not available.					
				vegetation along Juanita Drive NE		
Conceptual Design	Preferred solution: • Replace existing catch basin Type 2 - 54-inch with new control structure. • Replace and relocate existing catch basin Type 2. • Replace 57 LF of 36-inch CMP detention pipe with 715 LF of 60-inch detention pipe. • Check condition of 12-inch CMP outlet pipe. If in poor condition, replace along with control structure and detention pipe. (Not included in the cost estimate.) Other scenarios considered under the WWHM (see Appendix for results): • No action: do not restore detention. This option was used for comparison. • Replace both the flow control structure and the existing 57 LF 36-inch diameter detention tank. This option provides minimal detention benefits compared to the current condition. • Size pond or detention pipe to pass 2005 Ecology flow control requirements. Preliminary sizing indicates there is not enough space at the site for this option. Infiltration was not considered at this location due to its close proximity to the road and steep slopes.					
Considerations for Implementation	Preferred solution: • Assumed no easements will be needed. • Traffic control will be needed. • Tree removal will likely be necessary. • This solution does not provide a full retrofit for the existing basin due to limited space available.					



Cost Estimate				
Item	Unit	Unit Cost	Quantity	Cost
Water Pollution/Erosion Control	%	5%		\$13,700
SPCC Plan	LS	\$500	1	\$500
Traffic Control	%	7%		\$19,200
Clearing & Grubbing	SY	\$5	800	\$4,000
Remove Tree	EA	\$500	10	\$5,000
Structure Excavation Cl B Incl. Haul	CY	\$20	1320	\$26,400
Shoring or Extra Excavation Class B	SF	\$1	5075	\$5,075
Catch Basin Type 2, 48 In. Diam.	EA	\$4,000	1	\$4,000
Catch Basin Type 2, 54 In. Diam. Flow Control Structure	EA	\$6,000	1	\$6,000
Schedule A 60" Storm Sewer Pipe	LF	\$260	715	\$185,900
Hydroseed	SY	\$6	800	\$4,800
Subtotal				\$274,575
Contractor overhead, profit, and mobilization			10%	\$27,458
Washington State Sales Tax			9.5%	\$26,085
Construction Contingency			50%	\$137,288
Subtotal Construction Costs				\$465,405
City Staff Time			10%	\$46,540
Administration and engineering design			20%	\$93,081
Design Contingency			20%	\$93,081
Permitting				\$0
Land acquisition and easements	SF	\$5	0	\$0
Total Project Cost				\$698,200

Project:	Northlake Heights LID Retrofit		ID:	SW-28
Location:	NE 185 TH Street between 64 th Avenue NE and 68 th Avenue NE		Basin:	Swamp Creek Muck Creek
Project Type:	☒ Water Quality Control ☐ Fish Passage ☒ Flow ☐ Erosion ☐ Drainage ☒ Flooding		Preliminary Project Cost:	\$1,587,863
Problem:	No stormwater treatment			
Project Description	Ecology provided a grant to the City to design a surface water project that LID techniques which will improve water quality and reduce flooding impacts in an area that currently has minimal surface water management in place. Design of the project began in late 2013 and 90 percent plans were produced in 2014 with the intent to apply for construction grants in 2015. The selected site drains the Northlake Heights neighborhood north of NE 185th Street, which is largely underserved in terms of flow control or water quality treatment. The basin flows east and discharges into Muck Creek and eventually Swamp Creek. The downstream end of this basin experiences localized flooding and sedimentation issues and the confluence of Muck Creek and Swamp Creek also experience flooding and sedimentation issues as well as high bacteria concentrations (Swamp Creek has a TMDL for fecal coliform). This project will reduce flows and improve water quality in runoff from the Northlake Heights neighborhood as well as provide the City an opportunity to install and monitor LID facilities, which will become a regulatory requirement for the City by the end of 2017.		 The Northlake Heights LID retrofit project offers opportunities to replace impervious areas with native vegetation, install LID facilities, and improve pedestrian access and safety along NE185th Street	
Conceptual Design	Conceptual design includes: - Reducing impervious areas of NE 185th Street. - Replacing impervious areas with native vegetation. - Treating runoff with bioretention (NE 185th Street and maximum amount of off-site runoff that is practical). - Installing sidewalk between 64th Avenue NE and 68th Avenue NE.			
Considerations for Implementation	- Steep topography will require strategic placement of biofiltration facilities in order to control flows into the biofiltration facilities. - Geotechnical analysis will be required to determine infiltration rates and groundwater levels near proposed sites of biofiltration. - Traffic control will be needed.			



Cost Estimate				
Item	Unit	Unit Cost	Quantity	Cost
Water Pollution Erosion Control	%	5%	-	\$35,000
Traffic Control	%	7%	-	\$49,000
Clearing and Grubing	Acre	\$15,000	0.8	\$12,000
Bioretention	LF	\$300	875	\$262,500
Stormwater Detention Pipes	LF	\$550	420	\$231,000
Excavation Incl. Haul	CY	\$50	740	\$37,000
Landscaping and Establishment	SY	\$52	1580	\$82,160
Cement Conc. Sidewalk	SY	\$40	750	\$30,000
Cement Conc. Curb Ramp	EA	\$1600	9	\$14,400
Cement Conc. Curb & Gutter	LF	\$30	920	\$27,600
Subtotal				\$780,660
Contractor overhead, profit, and mobilization			10%	\$78,066
Washington State Sales Tax			9.5%	\$74,163
Construction Contingency			50%	\$390,330
Subtotal Construction Costs				\$1,323,219
City Staff Time			0%	\$0
Administration and engineering design			20%	\$264,644
Design Contingency			0%	\$0
Permitting			0%	\$0
Land acquisition and easements			0%	\$0
Total Cost				\$1,587,863

Schedule		2015												2016											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	Preliminary Design																								
	Permitting																								
	Final Design and PS&E																								
	Advertise and Contractor Procurement																								
	Construction																								

Project:	SR 522 Corridor Improvement Project Surface Water Component (West A)				ID:	T-06									
Location:	SR 522 between 61st Avenue NE and 65th Avenue NE				Basins:	Tributary 0056 and Lake Washington									
Project Type:	☒ Water Quality Control ☐ Fish Passage ☐ Flow ☐ Erosion ☒ Drainage ☐ Flooding				Preliminary Project Cost:	\$633,500									
Problem:	Aged conveyance system with no water quality treatment														
Project Description	Surface water improvements are only a component of this transportation project; however, the improvements are significant enough to warrant mentioning in the surface water capital improvement program. This project is a continuation of previous completed phases of the SR 522 Corridor Improvement Project, which have already installed water quality treatment facilities and conveyance system improvements east of 65th Avenue NE to the eastern border of the City. Currently, the project area discharges untreated stormwater runoff to Tributary 0056 and Lake Washington. The project will install several Filterra systems designed to remove pollutants such as total suspended solids, nutrients, dissolved metals, and oil from stormwater runoff. Much of the aged conveyance infrastructure will be replaced.														
Project Location															
Project Cost Estimate	Total Project Cost \$15,150,735 Surface Water Component: City Surface Water Funds \$633,500 Surface Water Grant Funds \$475,125 Total \$1,108,625														
Schedule		2014				2015				2016					
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4		
	ROW														
	Final Design														
	Construction														
	Closeout														



Appendix F:

— **Programmatic Strategy Project Summary Sheets**

Project: LID Code Review					ID: SProg-01	
Project Type: NPDES compliance			Preliminary Project Cost:		\$46,800	
Deadline: December 31, 2016						
Project Description	Permit Language No later than December 31, 2016, permittees shall review, revise, and make effective their local development-related codes, rules, standards, or other enforceable documents to incorporate and require LID principles and LID BMPs. For permittees in Lewis and Cowlitz counties, the deadline for this requirement is no later than June 30, 2017; for the City of Aberdeen the deadline for this requirement is no later than June 30, 2018. The intent of the revisions shall be to make LID the preferred and commonly used approach to site development. The revisions shall be designed to minimize impervious surfaces, native vegetation loss, and stormwater runoff in all types of development situations. Permittees shall conduct a similar review and revision process, and consider the range of issues, outlined in the following document: Integrating LID into Local Codes: A Guidebook for Local Governments (Puget Sound Partnership 2012).				Goal: Allow LID, where feasible How? Revise codes and standards such that barriers to LID implementation are removed Who? City staff (planning, development review, engineering) and/or consultant	
When?						
Deadline for code revision is December 31, 2016						
2014		2015			2016	
QTR4	QTR1	QTR2	QTR3	QTR4	QTR1	QTR2
Tasks: - Attend training - Make list of codes to review - Coordinate with other City staff (send a memo describing what needs to be done, or have a kick-off meeting). - Review comprehensive plan for LID policies	Tasks: - Begin code review. - Narrow list of codes that may require revisions. - Meet with relevant staff where code revisions may be necessary. - Jointly develop strategy for code revisions. - Determine public outreach and City Council schedule for revising codes.	Tasks: - Conduct first public and City Council outreach - Work with planning to ensure comprehensive Plan update is consistent with potential revised codes. - Draft proposed amendments, standard revisions, and implementation procedures	Tasks: - Public and Council review on draft amendments and standard revisions - Revise drafts based on feedback from the public and City Council	Tasks: - Finalize amendments and revisions. - Final Council Approval and Adoption.		

What?

The following Kenmore codes likely have some language that either supports implementation of LID, or would prevent implementation.

Code	Elements	Considerations
Critical Areas (Ch. 18.55)	All	Ensure compatibility with LID and allowances only where appropriate
Vehicles and Traffic (Title 10)	Fire Lanes (Ch. 10.30)	
	Parking (Ch. 10.20)	May need to add something for future LID facilities in ROW that may affect parking
Streets and Bridges (Title 12)	ROW (Ch. 12.35)	Access, covenants, etc.
	Street Standards (Ch. 12.50)	Street and driveway setbacks, widths, constructed drainage, etc.
	Utilities on City ROW (Ch. 12.55)	Utility conflicts with LID facilities (once in place), other potential issues?
	Sidewalks, Planting Strips, and Street Trees (Ch. 12.70)	Planting strips as LID facilities? Curb and gutter?
Utilities and Public Works (Title 13)	Side Sewer Connections (Ch. 13.05)	Restoration of LID facilities in ROW?
	Design, Installation, and Repair of Sewage Disposal Systems (Ch. 13.10)	Septic system placement relative to LID facilities?
	Surface Water Policy (Ch. 13.35)	New manual adoption
	Surface Water Management Program (Ch. 13.40)	Adjustments, incentives?
Buildings and Construction (Title 15)	Fire Code (Ch. 15.10)	Driveway, road dimensions?
	Building Codes (Ch. 15.20)	Roof loads----vegetated roofs? Plumbing for water reuse (cisterns?)
	Land Alterations (Ch. 15.25)	Vegetation, trees, and soil protection and restoration? Protection of LID facilities
Environment (Title 16)	Shorelines (all chapters)	Check for consistency that code doesn't preclude LID.
Land Division (Title 17)	Subdivisions and Short Subdivisions (Ch. 17.20)	Lot widths, configurations, clustered development, vegetation and soils preservation, etc.
Zoning (Title 18)	Landscaping Standards (Ch. 18.35)	Check for consistency with LID
	Parking and Circulation (Ch. 18.40)	Access, parking spaces, widths
	Signs (Ch. 18.42)	Placement relative to LID facilities in ROW?
	Adequacy of Public Facilities and Services (Ch. 18.45)	Check for consistency relating adequacy (road widths, access, etc.) with LID
	Downtown Design Standards (Ch. 18.52)	Check for consistency---building, roads, access, parking, etc. to allow for LID
	Critical Areas (Ch. 18.55)	Ensure LID is consistent with critical areas codes, allowed where appropriate, disallowed where not
	Tree Management and Protection (Ch. 18.57)	Consistency for LID
	Animals (Ch. 18.70)	Manure management---away from LID facilities
	Density Incentives (Ch. 18.80)	LID?
	Site Plan Review (Ch. 18.105)	
	Master Plans (Ch. 18.120)	Impervious surface coverage, vegetation retention, open space, road and sidewalk widths, etc.
Land Use Policies and Procedures (Title 19)	Environmental Procedures (Ch. 19.35)	Review categorical exclusions, procedures, etc. related to LID

Cost Estimate

Task	Description	Estimated Level of Effort (hrs)	Personnel	Estimated Cost
1	Conduct Code Review	80	Staff and/or Consultant	\$ 10,000.00
2	Develop strategy for revisions and public review	40	Staff and/or consultant	\$ 6,000.00
3	Public outreach, council meetings	80	Staff	\$ 8,000.00
4	Draft and Final Revisions to Codes	120	Staff	\$ 12,000.00
			Subtotal	\$ 36,000.00
			Contingency (30%)	\$ 10,800.00
			TOTAL	\$ 46,800.00

Project: Stormwater Manual Adoption			ID: SProg-02	
Project Type:	NPDES compliance	Preliminary Project Cost:		\$28,600
Deadline:	December 31, 2016, for manual adoption			
Project Description	The NPDES Phase II Permit references Ecology's 2012 SWMMWW requirements and standards in numerous sections. In order for the City to comply with the permit, it will either have to adopt the 2012 Ecology manual or an equivalent manual (2015 King County Manual, in progress) by December 31, 2016. This process will take time, not only to decide the most appropriate manual for Kenmore, but also to educate planning and development review staff and permit applicants about the new stormwater requirements. Implementation of LID techniques on a city-wide basis will likely take more time at first as this represents a paradigm shift from previous stormwater practices.		Goal: Adopt a new stormwater management manual How? Review options and make a timely decision such that the necessary internal and external outreach can be conducted ahead of the implementation date Who? City staff (engineering, planning, and development review)	
	When? Deadline for manual adoption is December 31, 2016.			
Cost Estimate				
Task	Description	Estimated Level of Effort (hrs)	Personnel	Total
1	Review and compare manual options	20	Staff	\$ 2,000.00
2	Adoption Process	80	Staff	\$ 8,000.00
3	Staff and community education and outreach	120	Staff	\$ 12,000.00
			Subtotal	\$ 22,000.00
			Contingency (30%)	\$ 6,600.00
			TOTAL	\$ 28,600.00

Project: Develop LID Infeasibility Tools			ID: SProg-03	
Project Type:	NPDES compliance support		Preliminary Project Cost:	\$42,900
Deadline:	Not applicable			
Project Description	The NPDES Phase II Permit requires use of low impact development BMPs according to Ecology's 2012 SWMMWW unless it is not feasible according to infeasibility criteria outlined in the manual. Kenmore may choose to help development review staff and applicants ahead of time by mapping those areas that are clearly not feasible for infiltrative LID because of steep slopes, landslide hazards, or high groundwater and wetland conditions. This programmatic project creates a broad-scale map of the City, showing areas that should not be considered for infiltration, and those that based on mapped surficial geology would be considered high, medium, or low potential for infiltration.		Goal: Develop a map of infiltration potential to help applicants and development review staff understand where to consider LID techniques How? Existing geologic mapping, landslide maps, and field visits Who? Consultant and/or City staff	
	When?			
	No specific deadline.			
	Cost Estimate			
Task	Description	Estimated Level of Effort	Personnel	Total
1	Review Existing Data	40	Consultant/Staff	\$ 6,000.00
2	Conduct GIS analysis	100	Consultant/Staff	\$ 15,000.00
3	Field Validation	40	Consultant/Staff	\$ 6,000.00
4	Map Preparation and Report	40	Consultant/Staff	\$ 6,000.00
			Subtotal	\$ 33,000.00
			Contingency (30%)	\$ 9,900.00
			TOTAL	\$ 42,900.00

Project:	Evaluation of Stormwater Incentive and Mini Grant Programs			ID:	SProg-04																																								
Project Type:	Volunteer Stormwater Retrofit			Preliminary Project Cost:	\$14,300																																								
Deadline:	Not applicable																																												
Project Description	Much of the City of Kenmore was developed prior to the requirement for any stormwater treatment. In order to reverse the impacts that have occurred from past development, stormwater facilities will need to be put in place to treat surfaces. Many jurisdictions have voluntary incentive programs to encourage homeowners to install residential rain gardens to treat residential runoff on-site. This programmatic project evaluates and considers implementing such a program in Kenmore. The focus would be primarily on residential properties, but could be considered for other types of land uses as well. In this evaluation, other incentive programs that are currently in place should be considered.			Goal: Evaluate stormwater incentive and mini-grant programs How? Review other jurisdictions programs and successes, consolidate list of Kenmore's current incentives Who? City staff																																									
When? No specific deadline.																																													
Cost Estimate <table border="1"> <thead> <tr> <th>Task</th> <th>Description</th> <th>Estimated Level of Effort</th> <th>Personnel</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Review Incentive Programs from Other Jurisdictions</td> <td>20</td> <td>Staff</td> <td>\$ 2,000.00</td> </tr> <tr> <td>2</td> <td>Consolidate list of Kenmore's incentives</td> <td>10</td> <td>Staff</td> <td>\$ 1,000.00</td> </tr> <tr> <td>3</td> <td>Prepare recommendation for Council</td> <td>40</td> <td>Staff</td> <td>\$ 4,000.00</td> </tr> <tr> <td>4</td> <td>Implement recommendation</td> <td>40</td> <td>Staff</td> <td>\$ 4,000.00</td> </tr> <tr> <td></td> <td></td> <td></td> <td>Subtotal</td> <td>\$ 11,000.00</td> </tr> <tr> <td></td> <td></td> <td></td> <td>Contingency (30%)</td> <td>\$ 3,300.00</td> </tr> <tr> <td></td> <td></td> <td></td> <td>TOTAL</td> <td>\$ 14,300.00</td> </tr> </tbody> </table>						Task	Description	Estimated Level of Effort	Personnel	Total	1	Review Incentive Programs from Other Jurisdictions	20	Staff	\$ 2,000.00	2	Consolidate list of Kenmore's incentives	10	Staff	\$ 1,000.00	3	Prepare recommendation for Council	40	Staff	\$ 4,000.00	4	Implement recommendation	40	Staff	\$ 4,000.00				Subtotal	\$ 11,000.00				Contingency (30%)	\$ 3,300.00				TOTAL	\$ 14,300.00
Task	Description	Estimated Level of Effort	Personnel	Total																																									
1	Review Incentive Programs from Other Jurisdictions	20	Staff	\$ 2,000.00																																									
2	Consolidate list of Kenmore's incentives	10	Staff	\$ 1,000.00																																									
3	Prepare recommendation for Council	40	Staff	\$ 4,000.00																																									
4	Implement recommendation	40	Staff	\$ 4,000.00																																									
			Subtotal	\$ 11,000.00																																									
			Contingency (30%)	\$ 3,300.00																																									
			TOTAL	\$ 14,300.00																																									

Project: Easement Management			ID: SProg-05	
Project Type:	Policy	Preliminary Project Cost:		\$20,800
Deadline:	Not applicable			
Project Description	The City's stormwater infrastructure sometimes crosses private parcels for which a drainage easement has not been maintained or was never obtained. There are various situations that date back to before the City incorporated.		Goal: Evaluate existing drainage easements	
	This situation can create challenges for maintenance and repair when problems arise at the interface of public and private property.		How? Consider range of solutions for dealing with public infrastructure on private property.	
	This programmatic project is to review existing drainage easements and determine how easements should be managed. Additionally, other solutions, such as moving public pipes into city ROW should be considered.		Who? City staff	
When? No specific deadline.				
Cost Estimate				
Task	Description	Estimated Level of Effort	Personnel	Total
1	Conduct GIS and paper analysis of drainage easements and public stormwater pipes	60	Staff	\$ 6,000.00
2	Alternative evaluation and policy formulation	60	Staff	\$ 6,000.00
3	Policy recommendation for Council	40	Staff	\$ 4,000.00
			Subtotal	\$ 16,000.00
			Contingency (30%)	\$ 4,800.00
			TOTAL	\$ 20,800.00

Project: Stormwater Retrofit		ID: SProg-06		
Project Type:	Accelerate stormwater retrofit through pursuit of identification and of grant-funding opportunities	Preliminary Project Cost: \$24,700		
Deadline:	Not applicable			
Project Description	Much of the City of Kenmore was developed prior to the requirement for any stormwater treatment. In order to reverse the impacts that have occurred from past development, stormwater facilities will need to be put in place to treat surfaces.	Goal: Pursue regional stormwater retrofit grants for Kenmore projects		
	In addition to encouraging voluntary stormwater retrofit, the City should undertake its own stormwater retrofit projects, where appropriate, taking advantage of available grant funding.	How? Identify potential projects and prepare grant applications		
	A retrofit strategy memorandum was prepared for this Plan and outlines areas of the City that would be good candidates for retrofit. Additionally, specific facilities were reviewed for potential retrofit as well. The retrofit memorandum is in Appendix D.	Who? City staff and consultants		
When? No specific deadline.				
Cost Estimate				
Task	Description	Estimated Level of Effort	Personnel	Total
1	Prepare list of candidate stormwater retrofit sites	20	Staff	\$ 2,000.00
2	Develop prioritized short-list of sites that would be grant eligible	20	Staff	\$ 2,000.00
3	Develop conceptual designs for grant applications	100	Consultant	\$ 15,000.00
			Subtotal	\$ 19,000.00
			Contingency (30%)	\$ 5,700.00
			TOTAL	\$ 24,700.00

Project: Landslide and Groundwater Issues			ID: SProg-07	
Project Type:	Evaluation of geologic issues associated with landslides and groundwater seepage	Preliminary Project Cost:		\$31,200
Deadline:	Not applicable			
Project Description	Many of the drainage complaints received by the City were related to landslide or groundwater issues.		Goal: Evaluate landslide and groundwater issues in Kenmore	
	This programmatic project is to evaluate the areas of the City that are particularly susceptible to high groundwater, groundwater seepage, or landslides and develop possible strategies to mitigate impacts or prevent future problems.		How? Review drainage complaint data and geologic maps and conduct field investigations	
			Who? City staff and consultants	
When? No specific deadline.				
Cost Estimate				
Task	Description	Estimated Level of Effort	Personnel	Total
1	Review drainage complaints and geologic maps	20	Staff/Consultant	\$ 3,000.00
2	Conduct Field Investigations	40	Staff/Consultant	\$ 6,000.00
3	Develop menu of strategies for dealing with similar types of problems	100	Staff/Consultant	\$ 15,000.00
			Subtotal	\$ 24,000.00
			Contingency (30%)	\$ 7,200.00
			TOTAL	\$ 31,200.00

Project: Stream Culvert Assessment		ID: SProg-08		
Project Type:	Conduct fish passage barrier analysis of streams in Kenmore	Preliminary Project Cost:		
Deadline:	Not applicable	\$16,500		
Project Description	The recent “Culvert Case” related to treaty rights has prompted Washington State Department of Transportation and other jurisdictions to review their culverts for fish passage and begin the process of prioritizing culverts for replacement.	Goal: Evaluate culverts for fish passability in Kenmore		
	This programmatic project is to conduct a review of Kenmore’s culverts for streams that are presumed to have fish habitat according to Washington Department of Natural Resources (DNR). A prioritized list would be repaired for culverts to be replaced or modified as resources are available or other projects are conducted in the vicinity.	How? Conduct field assessment and rank culverts according to criteria established by DNR.		
		Who? City staff and consultants		
When? No specific deadline.				
Cost Estimate				
Task	Description	Estimated Level of Effort	Personnel	Total
1	Overlay maps with DNR stream typing to determine presumed fish presence	8	Staff/Consultant	\$ 1,000.00
2	Determine which streams need to be field screened	12	Staff/Consultant	\$ 1,200.00
3	Field culvert evaluations	22	Staff/Consultant	\$ 3,000.00
4	Analysis, prioritization, and report preparation and recommendations	55	Staff/Consultant	\$ 7,500.00
			Subtotal	\$ 12,700.00
			Contingency (30%)	\$ 3,810.00
			TOTAL	\$ 16,510.00



Operations & Maintenance Practices and Policies Manual

February 2015

Prepared by:
City of Kenmore
Public Works



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FOREWORD

The City of Kenmore Operations & Maintenance (O&M) Policies and Procedures Manual was developed to comply with requirements of the Federal Clean Water Act-National Pollutant Discharge Elimination System Program and the Western Washington Phase II Municipal Stormwater Permit issued by the Washington State Department of Ecology. The intent of these policies and procedures is to reduce stormwater impacts and pollutants in discharges from O&M activities. This manual provides a general overview of what industry standard Best Management Practices (BMPs), policies, procedures, practices, standards or plans are used by City of Kenmore O&M staff, contractors or partners when conducting specific O&M activities.

ACKNOWLEDGEMENTS

City of Kenmore, Public Works Department

Richard Sawyer, Surface Water Program Manager

Jennifer Gordon, Public Works Operations Manager

Arthur Simpson, Surface Water Technician

VERSIONS

2015 OMPPM – February 5, 2015

OMPPM Version 1.2 – 3/13/2012

OMPPM Version 1.1 – 12/29/2010

OMPPM Version 1.0 – 2/4/2010

OVERVIEW

OVERVIEW

The City of Kenmore (Kenmore) is responsible for the operation and maintenance (O&M) of its infrastructure, including: streets, traffic (signs & markings and traffic signals), surface water and parks. Many O&M activities have the potential to adversely impact the environment. In particular, contaminated runoff poses a significant risk to the quality of surface and ground waters.

Since the passage of the federal Clean Water Act, requirements for cities and counties to control the quality of stormwater runoff have become more stringent. In particular, Kenmore has been issued a Western Washington Phase II Municipal Stormwater Permit (Permit) from the Washington State Department of Ecology (Ecology) in 2007, 2012 and 2013. The Permit requires that standards, policies and procedures be developed for a list of specific O&M activities as part of Kenmore's Stormwater Management Program (SWMP). The structure of this document will be modeled after these requirements. This document, the Operations and Maintenance Policies and Procedures Manual (OMPPM) is intended to compliment the SWMP and the City's Surface Water Master Plan.

DOCUMENT STRUCTURE

The Permit, which can be downloaded in its entirety on Washington State Department of Ecology's webpage, outlines six sections of O&M requirements that must be implemented by the City.

Section 1 requires the development of maintenance standards that are as protective, or more protective, of facility function than those specified in Chapter 4 of Volume V of the Stormwater Management Manual for Western Washington (SMMWW). Current maintenance standards in Kenmore were adopted from the 2009 King County Surface Water Design Manual (SWDM) and are provided in Appendix A. Public and private surface water facilities are inspected and maintained to these standards.

Section 2 requires the development of an inspection program that consists of three elements. First, the City must annually inspect all municipally owned or operated permanent stormwater treatment and flow control BMPs/facilities, other than catch basins. Second, the City must "spot check" potentially damaged permanent treatment and flow control BMPs/facilities (other than catch basins) after major storms. Major storms are defined as a 24 hour storm event with a 10 year or greater recurrence interval. Third, the City must inspect all the catch basins owned or operated by Kenmore by August 1, 2017 then at least every two years thereafter.

Section 3 requires the implementation of practices, policies and procedures to reduce stormwater impacts associated with runoff from all lands owned or maintained by Kenmore, and road maintenance activities under the functional control of Kenmore.

Section 4 requires an ongoing training program for employees of Kenmore whose construction, operations or maintenance job functions may impact stormwater quality. This section describes relevant training for Kenmore staff and appendix E provides up to date training logs for Kenmore personnel.

OVERVIEW

Section 5 requires development of a Stormwater Pollution Prevention Plan (SWPPP) for all heavy equipment maintenance or storage yards and material storage facilities owned or operated by Kenmore. Kenmore stores sweeping materials at a facility located in Rhododendron Park. Kenmore also utilizes the Lake Forest Park maintenance yard, and a copy of this facility's SWPPP can be obtained by contacting Lake Forest Park.

ACRONYMS AND DEFINITIONS

ACRONYMS AND DEFINITIONS

BMP means Best Management Practice.

Best Management Practice means a schedule of activities, prohibitions of practices, physical structures, maintenance procedures and other management practices undertaken to reduce or prevent increases in runoff quantity and pollution.

CESCL means Certified Erosion and Sediment Control Lead.

Certified Erosion and Sediment Control Lead means an individual who has satisfied the requirements set forth in Ecology's Stormwater Management Manual for Western Washington (Volume II, Chapter 4, BMP C160) for the designation of certified erosion and sediment control lead.

Ecology means the Washington State Department of Ecology.

ESC means Erosion and Sediment Control.

Facility means drainage facilities, including either flow control or water quality facilities.

Flow Control Facility means a drainage facility designed to mitigate the impacts of increased surface and storm water runoff generated by site development in accordance with the drainage requirements in KMC Chapter 13.35. Flow control facilities are designed either, to hold water for a considerable length of time and then release it by evaporation, plant transpiration, or infiltration into the ground, or to hold runoff for a short period of time and then release it to the conveyance system.

Maintenance (also Operations and Maintenance) means those usual activities taken to prevent a decline, lapse, or cessation in the use of currently serviceable structures, facilities, equipment, or systems if there is no expansion of the structure, facilities, equipment, or system and there are no significant hydrologic impacts. Maintenance includes the repair or replacement of non-functional facilities and the replacement of existing structures with different types of structures, if the repair or replacement is required to meet current engineering standards or is required by one or more environmental permits and the functioning characteristics of the original facility or structure are not changed.

NPDES means National Pollutant Discharge Elimination System.

National Pollutant Discharge Elimination System means the part of the federal Clean Water Act which requires point source discharges to obtain permits. These permits, referred to as NPDES permits, are administered by the Washington State Department of Ecology.

OMPPM means Operations and Maintenance Policies and Procedures Manual.

O&M means Operations and Maintenance. See Maintenance.

RRMPG means Regional Road Maintenance Endangered Species Act Program Guidelines.

ACRONYMS AND DEFINITIONS

Regional Road Maintenance Endangered Species Act Program Guidelines means the manual developed by the Regional Road Maintenance Technical Working Group that provides a consistent, Regional Program that can be used by any agency wishing to limit, reduce or eliminate the prohibition on take of threatened species under the 4(d) Rule (NMFS), special 4(d) rule and/or Section 7 take exemption (USFWS).

SPPM means the Stormwater Pollution Prevention Manual.

Stormwater Pollution Prevention Manual means the manual referenced in KMC 13.45, Water Quality, including supporting documentation referenced or incorporated in the manual, describing best management practices and procedures for eliminating or reducing surface, storm and ground water contamination from existing facilities and existing and new activities not covered by the SWDM.

SWDM means 2009 King County Surface Water Design Manual.

SMMWW means the 2005 Ecology Stormwater Management Manual for Western Washington.

Water Quality Facility means a drainage facility designed to reduce pollutants once they are already contained in surface and storm water runoff. Water quality (WQ) facilities are a structural component of best management practices (BMPs). When used singly or in combination, WQ facilities reduce the potential for contamination of both surface and ground waters.

WQ means water quality.

SECTION 1 – MAINTENANCE STANDARDS

SECTION 1 – MAINTENANCE STANDARDS

Ordinance 10-0305, approved by Kenmore City Council on January 11, 2010, adopted the 2009 King County Surface Water Design Manual (SWDM). Appendix A of the SWDM contains maintenance standards for flow control, conveyance and water quality facilities in Kenmore (equivalent to Ecology's 2005 Stormwater Management Manual for Western Washington). Prior to January 11, 2010 Kenmore used the maintenance standards in the 1998 King County Surface Water Design Manual.

The City will adopt new maintenance standards that are as protective, or more protective, of facility function than those specified in Ecology's 2012 Stormwater Management Manual for Western Washington by December 31, 2016.

The purpose of the maintenance standard is to determine if maintenance is required. The maintenance standard is not a measure of the facilities required condition at all times between inspections.

Unless there are circumstances beyond Kenmore's control, when an inspection identifies an exceedence of the maintenance standard, maintenance shall be performed:

- Within 1 year for typical maintenance of facilities, except catch basins
- Within 6 months for catch basins
- Within 2 years for maintenance that requires capital construction of less than \$25,000

Circumstances beyond Kenmore's control include denial or delay of access by property owners, denial or delay of necessary permit approvals, and unexpected reallocations of maintenance staff to perform emergency work. For each exceedence of the required timeframe, Kenmore shall document the circumstances and how they were beyond their control.

A copy of the SWDM maintenance standards can be found in appendix A of this document.

SECTION 2 – INSPECTION PROGRAMS

SECTION 2 – INSPECTION PROGRAMS**Facility Inspections**

Storm water facilities are engineered facilities that are designed to convey storm runoff, remove pollutants, and control flow rates. The City categorizes surface and storm water facilities as either privately or publicly maintained.

Publicly maintained facilities are often developed as part of a plat or subdivision and are transferred to the City after successfully passing a two year maintenance defect inspection (with associated repairs if needed). Publicly maintained facilities are required to be in the right-of-way, dedicated tract or easement. Currently, Kenmore inspects and conducts maintenance on 175 publicly maintained facilities, annually (Map 2-1, Table 2-1). Another 18 facilities are currently under bond and will eventually be added to the City's public facility list. Kenmore contracts with Lake Forest Park, King County Roads Maintenance and private contractors to conduct facility maintenance.

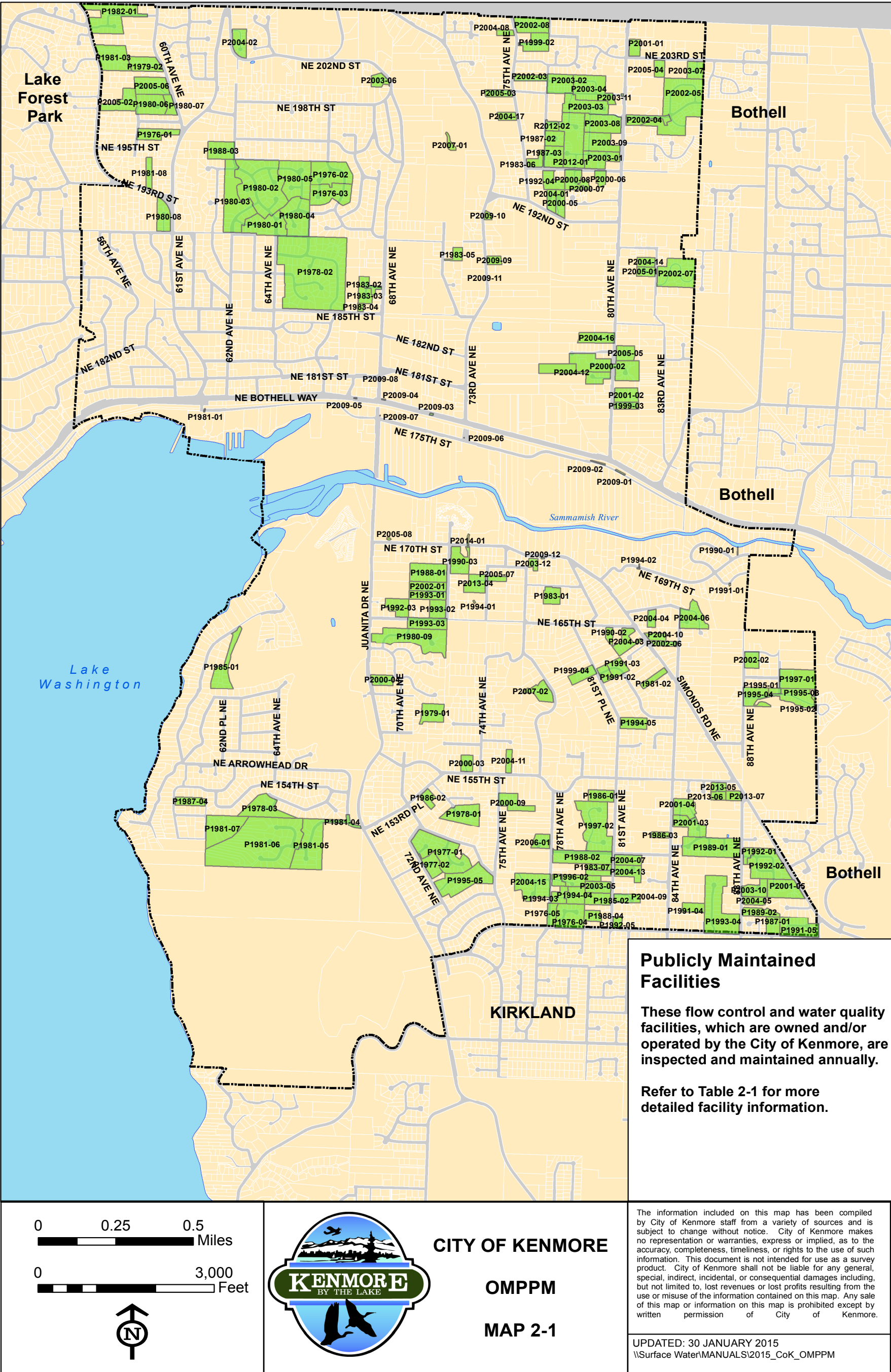
Privately maintained facilities are developed as part of a private development and are privately owned and maintained. Often, these facilities are part of a commercial or industrial development but can include plats and subdivision facilities that are not accepted by the City. Currently, Kenmore inspects 107 privately maintained facilities, annually (Map 2-2, Table 2-2). Upon inspection, Kenmore staff provide maintenance correction lists to private facility owners which outline any necessary work needed to comply with maintenance standards. Property owners are required to conduct any needed maintenance on privately maintained facilities.

Catch Basin Inspections

The Permit requires that all catch basins and inlets owned or operated by Kenmore be inspected and maintained once by August 1, 2017 and then every two years thereafter. Before 2010, catch basins and associated conveyance structures were inspected and maintained as needed. In 2010, Kenmore began conducting annual inspections of publicly owned and operated catch basins and associated conveyance structures, which exceeds Permit requirements. In addition to maintenance needs, Kenmore inspectors check catch basins for water quality issues, such as illicit discharges. Catch basin cleaning is conducted by a private contractor and a new contract is implemented every two to three years. Lake Forest Park and King County Roads Maintenance conduct conveyance system maintenance as needed.

Spot Check Inspections

Spot checks of potentially damaged permanent treatment and flow control facilities after major storm events (24 hour storm event with a 10 year or greater recurrence interval) are required. During the ten year span from 2005 through 2014, three storm events met, or were close to, the definition of a major storm. In reality, Kenmore conducts spot check inspections more frequently to ensure that facilities are functioning properly. Kenmore contracts with Lake Forest Park to conduct these inspections.



CITY OF KENMORE
PUBLICLY MAINTAINED FACILITIES

NUMBER	FACILITY ID	PROJECT NAME	ADDRESS	FACILITY TYPE
1	P1976-01	KENMORE LANE	19603 61ST PL NE	INFILTRATION TANK
2	P1976-02	UPLAKE VISTA DIV 2	19410 65TH PL NE	TANK
3	P1976-03	UPLAKE VISTA DIV 2	19226 65TH PL NE	TANK
4	P1976-04	CARLA HILLS	7846 NE 145TH ST	TANK
5	P1976-05	CARLA HILLS	14520 78TH AVE NE	TANK
6	P1977-01	BIXBY KNOLLS DIV 1	14926 72ND PL NE	POND
7	P1977-02	BIXBY KNOLLS DIV 1	7203 NE 149TH ST	POND
8	P1978-01	STRAWBERRY HILL	15213 72ND AVE NE	TANK
9	P1978-02	NORTHLAKE HEIGHTS #5	18501 66TH AVE NE	TANK
10	P1978-03	HIGHLAND VISTA	15208 64TH AVE NE	TANK
11	P1979-01	PACIFIC NORTHWEST ESTATES	NE 159TH ST & 71ST AVE NE	TANK
12	P1979-02	JOHNSON	20021 60TH AVE NE	TANK
13	P1980-01	PRESTIGE HEIGHTS #2	19003 64TH AVE NE	TANK
14	P1980-02	PRESTIGE HEIGHTS	NE 195TH ST & 62ND AVE NE	TANK
15	P1980-03	PRESTIGE HEIGHTS	19101 62ND AVE NE	TANK
16	P1980-04	PRESTIGE HEIGHTS #2	19009 65TH AVE NE	TANK
17	P1980-05	PRESTIGE HEIGHTS #2	6366 NE 194TH ST	TANK
18	P1980-06	NORTHLAKE HILLS	5820 NE 198TH PL	TANK
19	P1980-07	NORTHLAKE HILLS	19717 60TH AVE NE	TANK
20	P1980-08	FOREST HILLS ESTATES	19007 61ST AVE NE	TANK
21	P1980-09	INGLEWOOD HIGHLANDS	16400 JUANITA DR NE	POND
22	P1981-01	HARBOR VILLAGE CREEK CULVERT	6115 NE 175TH ST	ENCLOSED DRAIN
23	P1981-02	SP 1278021	8323 NE 162ND CT	TANK
24	P1981-03	DEKOEKOEK	5637 NE 200TH PL	TANK
25	P1981-04	MCDONALD HIGHLANDS	NE 151ST ST & ARROWHEAD PT DR	VAULT
26	P1981-05	MCDONALD HEIGHTS TRACT K	6635 NE 151ST ST	TANK, TRENCH
27	P1981-06	MCDONALD HEIGHTS TRACT F	6332 NE 151ST ST	TANK
28	P1981-07	MCDONALD HEIGHTS TRACT H	15033 62ND AVE NE	TANK
29	P1981-08	SUNDQUIST	19311 59TH PL NE	TRENCH
30	P1982-01	MAPLEBROOK	5830 NE 204TH ST	TANK
31	P1983-01	SP 0183098	7703 NE 167TH ST	TANK
32	P1983-02	BON AIR HEIGHTS	18537 68TH AVE NE	TANK
33	P1983-03	BON AIR HEIGHTS	18616 67TH PL NE	TRENCH, FROP-T
34	P1983-04	BON AIR HEIGHTS	67TH PL NE & NE 185TH ST	TANK
35	P1983-05	SP 0779095	7105 NE 188TH CT	TANK
36	P1983-06	SP 0582068	NE 195TH ST & 76TH AVE NE	POND
37	P1983-07	SP 1081078	8000 NE 149TH ST	TANK, TRENCH
38	P1985-01	FAIRWAY WOODS	16328 INGLEWOOD TERRACE	TANK
39	P1985-02	SP 0484006, SP 0484007	8003 NE 147TH PL	TANK
40	P1986-01	SP 0883087, SP 883088 (MOSHER)	8008 NE 153RD PL	TANK, TRENCH
41	P1986-02	SP 1185057, SP 1285039	7007 NE 153RD PL	POND
42	P1986-03	SP 0985025	15109 84TH AVE NE	TANK
43	P1987-01	SP 0986003	14511 89TH PL NE	TANK
44	P1987-02	KENMORE PLACE NORTH	19606 76TH AVE NE	TANK
45	P1987-03	KENMORE PLACE SOUTH	19518 76TH AVE NE	TANK
46	P1987-04	KC SP 785030	15302 61ST PL NE	TANK
47	P1988-01	INGLEWOOD PLACE	16710 JUANITA DR NE	POND
48	P1988-02	RAINBERRY PARK	NE 150TH ST & 78TH AVE NE	TANK
49	P1988-03	BRIGHTON PARK	6186 NE 195TH CT	TANK
50	P1988-04	KSP S0985048, SP S0985049 (NASLUND)	7119 NE 165TH ST	TANK
51	P1989-01	BERKELEY ESTATES	15010 87TH AVE NE	VAULT
52	P1989-02	SP 1286049	14536 88TH AVE NE	TANK
53	P1990-01	Quinault Estates Sediment Vaults	8646 NE 170TH ST	SEDIMENT VAULT (2)
54	P1990-02	SP 0388001 (LINDSTROM/BRANDT SP)	8157 NE 165TH ST	FROP-T
55	P1990-03	SP S8950150	16926 72ND AVE NE	TANK
56	P1991-01	QUINAULT ESTATES EAST SEDIMENT POND	16300 88TH AVE NE	SEDIMENT POND
57	P1991-02	BRYAN PARK	16200 81ST PL NE	TANK
58	P1991-03	BRYAN PARK	8138 NE 161ST PL	TANK, TRENCH
59	P1991-04	SP 1276024	84TH AVE NE & NE 146TH ST	TANK, BIOSWALE
60	P1991-05	BELMONT LANE	14501 92ND AVE NE	BIOSWALE, TANK
61	P1992-01	AMBER HEIGHTS	8802 NE 150TH ST	TANK
62	P1992-02	AMBER HEIGHTS	14803 88TH AVE NE	BIOSWALE, POND
63	P1992-03	SP S8950242, SP S8950243	16507 69TH PL NE	TANK
64	P1992-04	SP S8950312, SP S8950313	19433 76TH CT NE	TANK
65	P1992-05	KEARNEY/COOPER SP 0788023	14510 81ST AVE NE	TANK
66	P1993-01	VINCENT COURT	7169 NE 167TH ST	BIOSWALE, TANK
67	P1993-02	INGLEWOOD MEADOWS	7187 NE 165TH PL	BIOSWALE, TANK
68	P1993-03	INGLEWOOD COURT	7110 NE 165TH ST	TANK
69	P1993-04	BELMONT HEIGHTS	8802 NE 145TH ST	BIOSWALE, POND
70	P1994-01	MOORLANDS CULVERT REPLACEMENT	16527 74TH AVE NE	CULVERT
71	P1994-02	QUINAULT ESTATES WEST SEDIMENT POND	8404 NE 169TH ST	SEDIMENT POND
72	P1994-03	BROOKFIELD DIV 2	7800 NE 147TH ST	BIOSWALE, TANK
73	P1994-04	BROOKFIELD DIV 2	7800 NE 147TH ST	BIOSWALE, TANK
74	P1994-05	SP S8950268	15808 81ST AVE NE	TANK
75	P1995-01	THE PARK AT INGLEMOOR, TRACT H	8850 NE 160TH PL	TANK
76	P1995-02	THE PARK AT INGLEMOOR, TRACT F	9052 NE 160TH PL	TANK
77	P1995-03	THE PARK AT INGLEMOOR, TRACT B & F	9050 NE 160TH PL	BIOSWALE, POND (2), TANK
78	P1995-04	THE PARK AT INGLEMOOR, TRACT A	8800 NE 160TH PL	BIOSWALE
79	P1995-05	EAGLEBROOK II	7235 NE 147TH PL	POND
80	P1996-01	INGLEWOOD ESTATES, TRACT A	14806 78TH AVE NE	BIOSWALE

TABLE 2-1
Updated 1/30/2015

CITY OF KENMORE
PUBLICLY MAINTAINED FACILITIES

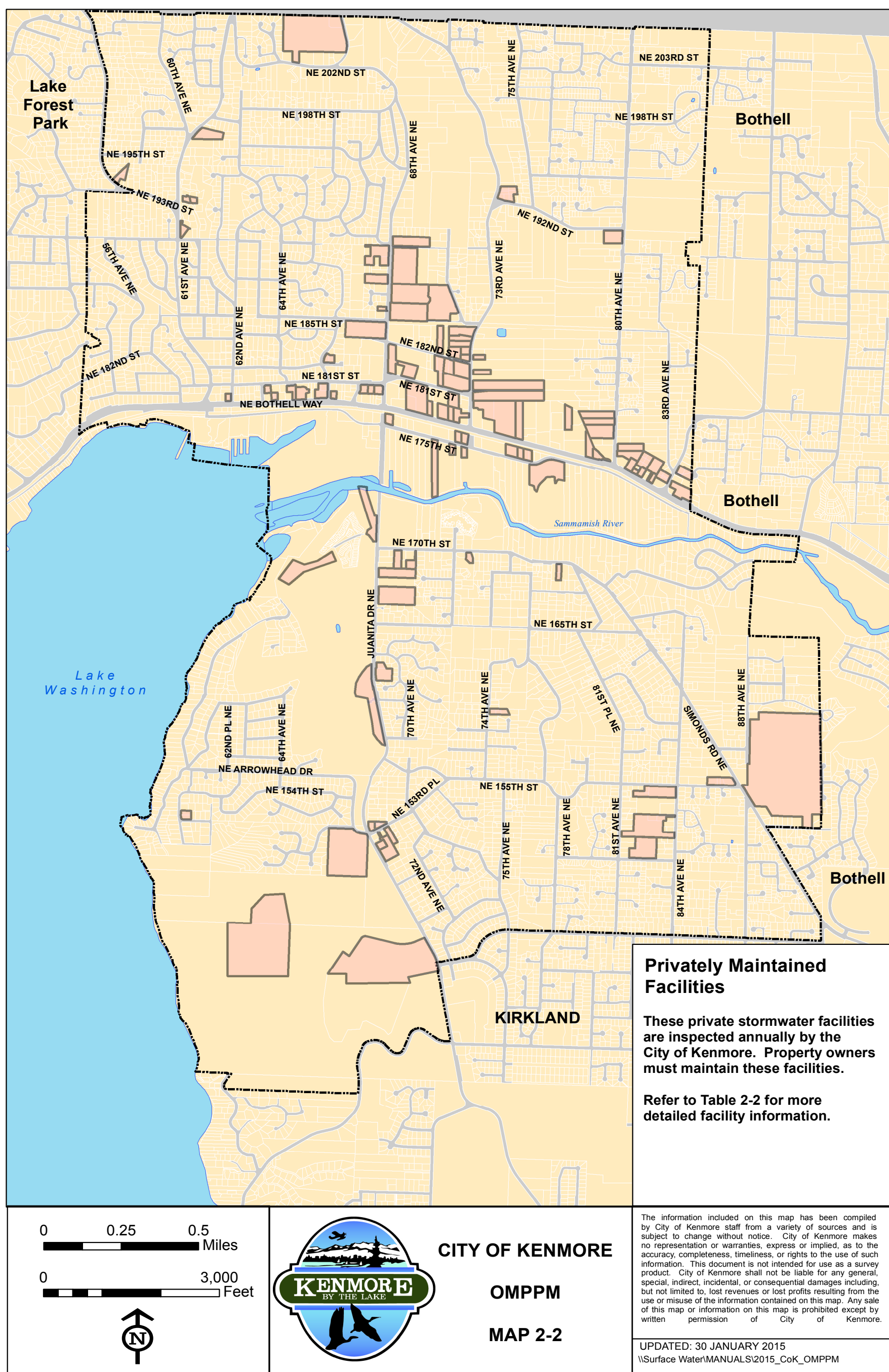
NUMBER	FACILITY ID	PROJECT NAME	ADDRESS	FACILITY TYPE
81	P1996-02	INGLEWOOD ESTATES, TRACT B & D	7858 NE 148TH ST	TANK, BIOSWALE
82	P1997-01	BRUNSDON KCSP S90S046	16100 90TH AVE NE	BIOSWALE (2), TANK
83	P1997-02	NORTHSHORE GLEN	15233 80TH AVE NE	POND, BIOSWALE
84	P1998-01	KCSP L96S0014 (LYLE BLANK)	8034 NE 148TH CT	SWALE, TRENCH
85	P1999-02	GREENBACK CIRCLE	7500 NE 203RD PL	BIOSWALE, TANK
86	P1999-03	BERGS LANE	17914 80TH AVE NE	BIOSWALE, TANK
87	P1999-04	LEOPOLD ADDITION	8022 NE 162ND CT	BIOSWALE, TANK
88	P2000-01	RICE SHORT PLAT	8009 NE 148TH LN	TANK
89	P2000-02	SHADOWBROOK NO 1	7908 NE 182ND PL	POND,SWALE, TRENCH
90	P2000-03	RIDGELANE	15515 73RD PL NE	VAULT
91	P2000-04	WARBURTON PLAT	16100 JUANITA DR NE	POND
92	P2000-05	HERON ESTATES	19200 76TH PL NE	VAULT
93	P2000-06	NELSON GARDENS TRACT H	19421 79TH CT NE	POND
94	P2000-07	NELSON GARDENS TRACT I	19412 77TH PL NE	POND
95	P2000-08	NELSON GARDENS TRACT J	19411 77TH PL NE	POND
96	P2000-09	JACOBSON NIAD SP	7526 NE 153RD PL	POND
97	P2001-01	LEE SHORT PLAT	NE 203RD ST & 80TH AVE NE	OWS
98	P2001-02	WILLOW CREEK	18012 81ST AVE NE	VAULT
99	P2001-03	BERRY PROPERTY PLAT	151XX 85TH AVE NE	VAULT
100	P2001-04	BERRY PROPERTY PLAT	15211 85TH AVE NE	VAULT
101	P2001-05	EMERALD COURT	90XX NE 148TH PL	VAULT
102	P2002-01	CEDARLANE aka DECKER SUBDIVISION (OOSTERWYCK)	16625 72nd Ave NE	POND, TRENCH
103	P2002-02	NOBLE	16190 88TH AVE NE	POND
104	P2002-03	HART PLAT	7500 NE 201ST PL	VAULT
105	P2002-04	BRIDLE PATH	8109 NE 198TH ST	POND
106	P2002-05	BRIDLE PATH	8119 NE 198TH ST	BIOSWALE, VAULT
107	P2002-06	CORT RIDGE	16370 SIMONDS RD NE	BIOSWALE, TANK
108	P2002-07	WESTHILL PLACE	8200 NE 187TH WY	BIOSWALE, VAULT
109	P2002-08	ASPEN GROVE ESTATES	75XX NE 204TH PL	VAULT, BIOSWALE
110	P2003-01	SHADOWCREEK LONG PLAT	7820 NE 195th Street	VAULT
111	P2003-02	WYNFIELD MEADOWS TRACT E	19919 80th Ave NE	VAULT
112	P2003-03	WYNFIELD MEADOWS TRACT D	19919 80th Ave NE	VAULT
113	P2003-04	WYNFIELD MEADOWS TRACT C	19919 80th Ave NE	VAULT
114	P2003-05	FERNWOOD COURT SHORT PLAT	14715 81st Ave. NE	VAULT, TRENCH
115	P2003-06	BLUEBERRY	6743 NE 201ST PL	VAULT, PUMP
116	P2003-07	CREEKSIDE COURT	203XX 83RD PL NE	VAULT
117	P2003-08	KENMORE ESTATES	NE 197TH ST & 80TH AVE NE	VAULT
118	P2003-09	HERONS REACH	78XX NE 197TH ST	VAULT
119	P2003-10	INGLEMOOR COURT	8801 NE 148TH PL	VAULT
120	P2003-11	WYNFIELD MEADOWS STORMFILTER	19919 80th Ave NE	FILTER CB
121	P2003-12	HARRIS	NE 169TH ST & 76TH AVE NE	VAULT
122	P2004-01	FEDEROV LONG PLAT	7614/7622 NE 192nd Street	VAULT
123	P2004-02	MICHAELS PLACE	62nd Ave NE & NE 202nd ST	VAULT, FILTER MANHOLE
124	P2004-03	RIDGEWOOD PLAT (& REPPAS)	16337 Simonds Road NE	VAULT, FILTER MANHOLE
125	P2004-04	TURNER LONG PLAT	8221 NE 166th Street	VAULT
126	P2004-05	CAMBELL	147xx 88th Ave	VAULT
127	P2004-06	HAWTHORNE GLEN	NE 165TH PL & 85TH PL NE	FILTER VAULT
128	P2004-07	TRADITIONS/ASHTON	149XX 81ST AVE NE	VAULT
129	P2004-08	SCHMIDT	7431 NE 203RD LN	VAULT, FILTER MANHOLE
130	P2004-09	LUKE LONG PLAT	14706 81st Avenue NE	VAULT
131	P2004-10	QUAILRIDGE LONG PLAT	16504 Simonds Road NE	VAULT
132	P2004-11	EASTWOOD SHORT PLAT	7514 NE 155th Street	POND WITH LINING, FILTER CB
133	P2004-12	CLEARWATER LONG PLAT	18117 80th Avenue NE	POND
134	P2004-13	BROADFIR	14848 81ST AVE NE	VAULT
135	P2004-14	FRANCES PARK	812X NE 189TH PL	BIOSWALE, TANK
136	P2004-15	CLIFTON	7603 NE 148TH PL	VAULT
137	P2004-16	LARA LANE	7911 NE 184TH ST	BIOSWALE, POND
138	P2004-17	GARDNER SP	7401 NE 198TH PL	POND
139	P2005-01	BROOKSTONE	18725 82nd Ave NE	VAULT
140	P2005-02	HIMMELMAN PLAT	5522 NE 198th Place	VAULT
141	P2005-03	MCKENZIE PLACE LONG PLAT	19925 75th Ave NE	VAULT, FILTER MANHOLE
142	P2005-04	MCCANN PROJECT	81xx NE 203rd Street	VAULT, DISPERSAL TRENCH
143	P2005-05	BOULDER ESTATES	8001 NE 183RD ST	VAULT
144	P2005-06	LAKE FOREST PARK PLAT	60TH AVE NE & NE 199TH ST	POND
145	P2005-07	UPRIGHT SHORT PLAT	16710 74th Avenue NE	FILTER CB
146	P2006-01	ARBOR LAND	15021 78TH AVE NE	VAULT, FILTER VAULT, FILTER CB, TRENCH
147	P2007-01	SWAMP CREEK SEDIMENT POND	19600 73RD AVE NE	SEDIMENT POND
148	P2007-02	HANCOCK	16027 76TH PL NE	FILTER CB
149	P2009-01	522 VAULT 01	8015 NE 175TH ST (ROW)	FILTER VAULT, SWALE
150	P2009-02	522 VAULT 02	7911 NE 175TH ST (ROW)	FILTER VAULT, SWALE
151	P2009-03	522 VAULT 03	7024 NE BOTHELL WAY (ROW)	FILTER VAULT
152	P2009-04	522 VAULT 04	6828 NE BOTHELL WAY (ROW)	FILTER VAULT, COALESCING VAULT
153	P2009-05	522 VAULT 05	6702 NE BOTHELL WAY (ROW)	FILTER VAULT
154	P2009-06	522 MH FILTER 01	7204 NE 175TH ST (ROW)	FILTER MANHOLE
155	P2009-07	522 MH FILTER 02	6806 NE 175TH ST (ROW)	FILTER MANHOLE, COALESCING VAULT
156	P2009-08	68TH AVE VAULT	18022 68TH AVE NE (ROW)	FILTER VAULT
157	P2009-09	73RD AVE POND 01	18816 73RD AVE NE	POND
158	P2009-10	73RD AVE POND 02	19040 73RD AVE NE	POND
159	P2009-11	73RD AVE FILTER VAULT	18727 73RD AVE NE (ROW)	VAULT, FILTER VAULT
160	P2009-12	CAREFREE HOMES	7621 NE 170TH ST	FILTER CB

TABLE 2-1
Updated 1/30/2015

CITY OF KENMORE
PUBLICLY MAINTAINED FACILITIES

NUMBER	FACILITY ID	PROJECT NAME	ADDRESS	FACILITY TYPE
161	P2011-01	CANYON VIEW ESTATES	16438 85TH PL NE	FILTER MH
162	P2012-01	WYNFIELD SOUTH TRACT A	7708 NE 195TH ST	VAULT, FILTER MANHOLE
163	P2012-02	WYNFIELD SOUTH TRACT I	7609 NE 198TH PL	VAULT
164	P2013-01	WEST CREEK	7724 NE 193RD PL	VAULT, DISPERSAL TRENCH (2)
165	P2013-04	NORTHLAKE LANDING	16707 74TH AVE NE	VAULT, BIOSWALE
166	P2013-05	INGLEMOOR HEIGHTS VAULT	15457 87TH PL NE	VAULT, DISPERSION TRENCH
167	P2013-06	INGLEMOOR HEIGHTS WEST TANK	15431 87TH PL NE	TANK, FILTER CB, DISPERSION TRENCH
168	P2013-07	INGLEMOOR HEIGHTS EAST TANK	15305 88TH AVE NE	TANK, FILTER CB, DISPERSION TRENCH
169	P2013-08	NUD PUMP HOUSE (ROW)	8024 NE 150TH ST	DETENTION TANK
170	P2014-01	0057 Box Culvert	7235 NE 170TH ST	BOX CULVERT, STORMFILTER MH, FROP

TABLE 2-1
Updated 1/30/2015



CITY OF KENMORE
COMMERCIAL FACILITIES
(PRIVATELY MAINTAINED)

NUMBER	CITY FAC ID	PROJECT NAME	ADDRESS	FACILITY TYPE
1	R1983-01	BANK OF AMERICA	7110 NE BOTHELL WY	PARKING LOT POND
2	R1983-02	THE TIMBERS AT KENMORE	18810 68TH AVE NE	POND, TANK
3	R1983-03	KENMORE INN MOTEL	8202 NE BOTHELL WY	TANK
4	R1983-04	CHASE BANK	6701 NE 181ST ST	VAULT
5	R1983-05	US BANK	6460 NE BOTHELL WY	TRENCH
6	R1983-06	KENMORE LANES	7638 NE BOTHELL WY	TANK
7	R1983-07	BROOKSIDE APARTMENTS	19020 61ST AVE NE	TRENCH
8	R1983-08	CASA 61 APARTMENTS	6106 NE 192TH PL	TRENCH
9	R1983-09	JIFFY LUBE	7204 NE BOTHELL WY	TANK, SUMP PUMP
10	R1983-10	KC FIRE DIST 16, STATION 1	18030 73RD AVE NE	POND, PARKING LOT POND
11	R1983-11	MCDONALDS 046/0081	7234 NE BOTHELL WY	PARKING LOT POND, TANK
12	R1983-12	MR T'S TROPHIES	7900 NE BOTHELL WY	PARKING LOT POND
13	R1983-13	FOURPLEX APARTMENTS	17612-17624 80TH CT NE	PARKING LOT POND
14	R1983-14	T&D MACHINE	8030 NE BOTHELL WY	PARKING LOT POND
15	R1983-15	KEN MAR APARTMENTS	8044 NE BOTHELL WY	TRENCH
16	R1983-16	TACO TIME	18029 68TH AVE NE	
17	R1984-01	RIVERPARK APARTMENTS	6116 NE 192ND PL	POND
18	R1984-02	JET CITY PRINTING, INC	6134 NE BOTHELL WY	ROOF POND
19	R1984-03	SAFEWAY STORE #3500	6850 NE BOTHELL HWY	TANK, WETVAULT, WQ VAULT
20	R1984-06	PRIME PACIFIC BANK	6717 NE 181ST ST	TANK
21	R1984-07	VOLKSWAGEN REPAIR	7204 NE 175TH ST	PARKING LOT POND, TANK
22	R1984-08	7016 BOTHELL WY RETAIL CENTER	7016 NE BOTHELL WY	TRENCH
23	R1984-09	BOTHELL SKI AND BIKE	8020 NE BOTHELL WY	TANK
24	R1984-10	KC PRECNT 2, KENMORE	18118 73RD AVE NE	DRYWELL
25	R1984-11	FERNWOOD TRAIL APARTMENTS	17515, 17519, 17523, 17527 83RD PL NE	TANK
26	R1984-12	HIGH 5 SOFTWARE	18138 73RD AVE NE	POND
27	R1984-13	KENMORE COMMUNITY CHURCH	7504 NE BOTHELL WY	PARKING LOT POND
28	R1984-14	NORTHLAKE VIEW CONDOS	6303 NE 181ST ST	TANK
29	R1985-01	WINSOME TRADING CO	19314 56TH AVE NE	PARKING LOT POND, TRENCH
30	R1985-02	ROCKY'S CORNER FOOD STORE	15012 JUANITA DR NE	TANK
31	R1985-03	NORTHSHORE UTILITY DISTRICT	8350 NE 150TH ST	POND, TRENCH
32	R1985-04	CFN PROPERTIES	7534 NE 175TH ST	TRENCH, PARKING LOT POND
33	R1985-06	INGLEWOOD VILLAGE #3	6800 INGLEWOOD RD NE	DISPERSAL TRENCH
34	R1986-01	EVERGREEN MANOR TOWNHOMES	8001 NE 177TH CT	TANK
35	R1986-02	ELITE MARTIAL ARTS & FAMILY SUCCESS CENTER	6810 NE 153RD PL	TANK
36	R1987-01	73RD AVE APARTMENTS	18235 73RD AVE NE	TRENCH
37	R1987-03	NORTHSHORE PARK & RIDE	68TH AVE NE & NE 182ND ST	TANK, WQ VAULT
38	R1987-04	KENMORE VILLAGE APTS (W SYSTEM)	17620 80TH AVE NE	TANKS
39	R1987-06	VERMONT CONDOS	16724 JUANITA DR NE	POND
40	R1987-07	GROVE SHORT PLAT	7330 NE 192ND ST	TANK
41	R1988-01	SUDS CITY NORTH CAR WASH	17606 80TH CT NE	TANK
42	R1988-02	HERON VIEW APARTMENTS	18249 73RD AVE NE	INFILTRATION CHAMBER, TRENCH
43	R1988-04	INGLEWOOD FOREST APTS	16600 JUANITA DR NE	TANK
44	R1989-01	SHERWIN WILLIAMS PAINT	6410 NE BOTHELL HWY	TANK
45	R1989-02	SPRINGTIME CHRISTIAN DAYCARE	16114 JUANITA DR NE	POND
46	R1992-01	SUNRIDGE ESTATES	18241 73RD AVE NE	TRENCH
47	R1992-02	SC WAREHOUSE	7027 NE 175TH ST	TRENCH
48	R1992-04	COVENTRY PLACE APARTMENTS	6700 NE 182ND ST	TANK
49	R1992-05	CEDAR LANE TOWNHOMES	6923-6945 NE 170TH ST	TANK
50	R1992-06	VERIZON BLDG SIMONDS RD RSU (2332B01)	7215 NE 170TH ST	TANK, TRENCH
51	R1992-07	FOREST PARK ESTATES	19616 61ST PL NE	POND
52	R1992-08	KENMORE SELF STORAGE	18550 68TH AVE NE	TANK
53	R1992-10	NORTHPOINTE HIGHLANDS APTS	17512 83RD PL NE	BIOSWALE, TANK
54	R1994-01	PARKSIDE CONDOMINIUMS	18210 73RD AVE NE	TRENCH
55	R1994-02	NORTHLAKE CONDOMINIUMS	18523 68TH AVE NE	TANK
56	R1995-01	18 UNIT APARTMENTS	18223 73RD AVE NE	BIOSWALE, INFILTRATION TANK
57	R1995-02	CEDAR PARK NORTHSHORE	18737 68TH AVE NE	TANK
58	R1995-03	PACIFIC TOPSOILS, INC	7500 NE 175TH ST	TRENCH
59	R1995-04	BUSINESS PARK	7504 NE 175TH ST	TRENCH
60	R1995-05	LAKEWOOD CONDOMINIUM	7223 NE 175TH ST	TANK
61	R1996-02	CANTERBURY AT INGLEWOOD	16000 67TH LN NE	BIOSWALE, TANK
62	R1996-03	TRAILWALK APARTMENTS	7711 NE 175TH ST	PONDS, BIOSWALES, TRENCHES
63	R1997-01	KENMORE FAMILY MEDICAL CENTER	18208 66TH AVE NE	TANK
64	R1998-01	ARROWHEAD VISTA	15000 Juanita Drive	DETENTION VAULT, TANK
65	R1998-03	ARROWHEAD ELEMENTARY SCHOOL	6701 NE 151ST ST	TANK
66	R1999-01	EMILY LANE	19010 68th Ave. NE	DETENTION VAULT
67	R1999-02	KENMORE 10 UNIT APARTMENTS (TRAILSIDE)	7121 NE 175th Street	INFILTRATION TANK, DISPERSAL TRENCH
68	R1999-03	SENIOR AND FAMILY HOUSING	7025 NE 182nd St	INFILTRATION TANK, BIOSWALE
69	R1999-04	PEOPLE SELF STORAGE	6908 NE 181ST ST	TANK
70	R1999-05	INGLEWOOD HEIGHTS APTS	6835 NE 153RD PL	TANK
71	R1999-06	SPRING ESTATES SENIOR LIVING	7221 NE 182ND ST	BIOSWALE, INFILTRATION TANK
72	R1999-07	NORTHLAKE GROVE APARTMENTS (VAULT 1)	18725 68TH AVE NE	DETENTION VAULTS, BIOSWALE
73	R2000-01	KENMORE TOWNHOMES	7224 NE 182ND ST	WETVAULT, INFILTRATION TANK
74	R2000-02	HUGHES TOWNHOMES	8308 NE 176TH CT	TANK, BIOSWALE
75	R2000-03	HERON LANDING APARTMENTS	7025 NE 182ND ST	BIOSWALE, INFILTRATION PIPE
76	R2001-01	AURIA TOWNHOUSES (CREEKSIDE)	80th Avenue NE	DETENTION VAULT
77	R2001-02	KENMORE 19 TOWNHOMES or BLUE HERON RIDGE	NE 179th Place & 80th Ave NE	DETENTION VAULT
78	R2001-03	SMILOWECZ FAMILY (TROON TERRACE)	NE 153rd Place	TRENCH, STORMFILTER CB
79	R2001-04	TAI HO	6312 Bothell Way	WETVAULT
80	R2001-05	ROMANIAN PENTECOSTAL CHURCH	8315 NE 155TH ST	BIOSWALE, DETENTION VAULT
81	R2001-06	OSTRUM'S DRUG AND GIFT	6414 NE BOTHELL WY	TANK
82	R2001-07	MOORLANDS ELEMENTARY SCHOOL	15115 84TH AVE NE	TANK
83	R2001-08	Hamper Short Plat	7711 NE 170th St	TANK
84	R2002-01	KENMORE PARK AND RIDE	73rd Ave NE & SR 522	WETVAULT, SANDFILTER VAULT, TANKS
85	R2002-02	INGLEMOOR HIGH SCHOOL	15252 SIMONDS RD NE	TANKS, BIOSWALES
86	R2002-07	PENDELTON CONDOMINIUMS	17827 80TH AVE NE	BIOSWALE, TRENCH

TABLE 2-2
Updated 1/30/2015

CITY OF KENMORE
COMMERCIAL FACILITIES
(PRIVATELY MAINTAINED)

NUMBER	CITY FAC ID	PROJECT NAME	ADDRESS	FACILITY TYPE
87	R2002-08	NORTHSHORE UTILITY DISTRICT SERVICE CENTER	6830 NE 185TH ST	POND
88	R2002-09	KENMORE PLAZA	7850 NE BOTHELL WAY	INFILTRATION TANK, WETVAULT
89	R2003-01	CHELSEA COURT APARTMENTS	7206 NE 182nd Street	INFILTRATION TANK, STORMFILTER MANHOLES
90	R2003-02	PAGLIACCI	6504 NE BOTHELL WAY	FILTER CB
91	R2003-04	WATERFORD SQUARE CONDOMINIUMS	6831 NE 170TH ST	VAULT
92	R2003-05	WORSHIP CENTER	7915 NE 192ND ST	BIOSWALE, TANK
93	R2003-06	SEQUOIAS	7111 NE 181ST ST	INFILTRATION TANKS, STORMFILTER CB'S
94	R2003-07	Rhodes	15519 Simonds Rd NE	TANK
95	R2004-01	INGLEWOOD GOLF COURSE	Inglewood Road NE (private)	INFILTRATION TANKS, STORMFILTER VAULT
96	R2004-02	NORTHSHORE TOWNHOMES	71st Ave NE at NE 185th Street	DETENTION VAULT, STORMFILTER VAULT
97	R2005-01	COPPER LANTERN CONDOS	7026 NE 182nd Street	INFILTRATION TANK, STORMFILTER MANHOLE
98	R2005-02	GB SYSTEMS	7202 NE 175th Street	STORMFILTER CB
99	R2005-03	HOOVER	6110 NE 152ND ST	TANK
100	R2007-01	KENMORE JR HIGH PHASE II IMPROVEMENTS	20323 66th Ave NE	FILTER VAULT, FILTER CB, SWALE, RAIN GARDEN, CDS MANHOLE
101	R2008-01	BASTYR UNIVERSITY	14500 Juanita Drive NE	VAULT, BIOSWALE, STORMFILTER MANHOLE
102	R2008-02	CITY HALL	18120 68th Ave NE	WET VAULT, RAIN GARDEN, FILTER CB, PERVIOUS PAVEMENT
103	R2008-03	NSFD HEADQUARTERS PROJECT	7114 NE 181st Street	DETENTION VAULT, STORMFILTER VAULT
104	R2008-04	ST EDWARDS STATE PARK SEMINARY	14445 Juanita Drive NE	INFILTRATION VAULT, POND
105	R2012-01	NORTHSHORE TERRACE	15830 74th Ave NE	STORMFILTER CB, DRYWELLS
106	R2013-01	SUPER SUPPLEMENTS	6806 NE 175th St	BIOSWALE, INFILTRATION PIPE

TABLE 2-2
Updated 1/30/2015



SECTION 3 – PRACTICES, POLICIES & PROCEDURES

SECTION 3 – PRACTICES, POLICIES & PROCEDURES

Practices, policies and procedures (hereby referred to as policies) have been developed by Kenmore to reduce the impacts associated with runoff from lands owned or maintained by Kenmore, which include streets, parking lots, roads, buildings, parks, open space, road rights-of-way, maintenance yards and stormwater facilities owned or maintained by Kenmore. This section describes Kenmore's O&M policies by describing typical O&M activities and how they are applied to various publicly owned and maintained lands.

Typical O&M activities are described in detail in *O&M Activity Worksheets* included in section 3.1. Descriptions of O&M policies for specific land uses and associated O&M activities are provided in *O&M Land Use Worksheets* included in section 3.2.

SECTION 3.1 O&M ACTIVITY WORKSHEETS

The following O&M Activity Worksheets address the following 15 activities:

- (1) Pipe cleaning,
- (2) Cleaning of culverts that convey stormwater in ditch systems,
- (3) Ditch maintenance,
- (4) Street cleaning,
- (5) Road repair and resurfacing, including pavement grinding,
- (6) Snow and ice control,
- (7) Utility installation,
- (8) Pavement striping maintenance,
- (9) Maintaining roadside areas, including vegetation management,
- (10) Dust control,
- (11) Application of fertilizers, pesticides, and herbicides according to the instructions for their use, including reducing nutrients and pesticides using alternatives that minimize environmental impacts,
- (12) Sediment and erosion control,
- (13) Landscape maintenance and vegetation disposal,
- (14) Trash and pet waste management, and
- (15) Building exterior cleaning and maintenance.

Each O&M Activity Worksheet contains the following sections:

Description – A short description of what typical maintenance in the category includes.

Performance Criteria – A general description of Kenmore practices that promote proper structure operation and reduces stormwater impacts associated with runoff.

Maintenance Standard – Any applicable maintenance standards are referenced in this section. Maintenance standards are differentiated from procedural criteria by the fact that they have a numeric threshold versus un-quantified observations (i.e. clean a structure when you have x amount of material versus clean a structure when material accumulation is judged to be an issue). Currently, maintenance

SECTION 3 – PRACTICES, POLICIES & PROCEDURES

standards only apply to flow control and water quality stormwater facilities and stormwater conveyance structures.

Current Contracts – Many activities are contracted to outside agencies or private contractors. This section will reference the appropriate entity contracted to do the activity. Companies or agencies conducting work in Kenmore are expected to comply with Kenmore and Permit regulations.

Policy, Procedure, BMP – This section outlines what policies, procedures or BMPs are applicable to road maintenance activities conducted by Kenmore or contracted businesses/agencies. This section often references the Regional Road Maintenance Program Guidelines (RRMPG), which can be found on King County's webpage (<http://www.kingcounty.gov>). The RRMPG were developed by a consortium of public agencies in 2002 in an effort to create O&M policies that jurisdictions could utilize to reduce road maintenance activities' impacts on surface waters and habitat. The effort was driven by the 1999 listings of several salmonids under the Endangered Species Act. Additionally, Kenmore has adopted the 2009 Kenmore Stormwater Pollution Prevention Manual which outlines Best Management Practices (BMPs) for property and business owners in Kenmore. BMPs may be schedules of activities, prohibitions of practices, physical structures, maintenance procedures and other management practices undertaken to reduce or prevent increases in runoff quantity and pollution.

SECTION 3 – PRACTICES, POLICIES & PROCEDURES

O&M ACTIVITY 1 – PIPE CLEANING

City of Kenmore O&M ACTIVITY WORKSHEET ACTIVITY 1 – PIPE CLEANING
DESCRIPTION: Removal of dirt, debris and other materials from enclosed drainage systems by using a vactor with a jet rodder.
PROCEDURAL CRITERIA: Enclosed drainage systems should be cleaned of trash, debris, sediment and/or any other material when they are functionally restricted.
MAINTENANCE STANDARD (if applicable): King County Surface Water Design Manual, Appendix A, Section 6 – Conveyance Pipes and Ditches (also in found in appendix A of this manual)
Current Contracts (Updated JAN 2015): • Innovative Vacuum Services, Inc. (12-C1075) • King County Roads Maintenance ILA (98-C15)
Policy, Procedure, BMP: Refer to the BMPs in the Regional Road Maintenance Program Guidelines (RRMPG) for proper actions: Maintenance Category #3 – Cleaning enclosed drainage systems Part 2 BMPs (2.166) – Vactoring Have all applicable environmental/regulatory permits on site during project. Have spill kits available. Monitor BMPs during and following project until site conditions stabilize. Remove BMPs according to RRMPG.

SECTION 3 – PRACTICES, POLICIES & PROCEDURES

O&M ACTIVITY 2 – CLEANING OF CULVERTS THAT CONVEY STORMWATER IN DITCH SYSTEMS

City of Kenmore O&M ACTIVITY WORKSHEET ACTIVITY 2 – CLEANING OF CULVERTS THAT CONVEY STORMWATER IN DITCH SYSTEMS	
DESCRIPTION:	Removal of dirt, debris and other materials from culverts by using a vactor with a jet rodder.
PERFORMANCE CRITERIA:	Culverts should be cleaned of trash, debris, sediment and/or any other material when they are functionally restricted.
MAINTENANCE STANDARD (if applicable):	King County Surface Water Design Manual, Appendix A, Section 6 – Conveyance Pipes and Ditches (also in found in appendix A of this manual)
Current Contracts (Updated JAN 2015):	• Innovative Vacuum Services, Inc. (12-C1075) • King County Roads Maintenance ILA (98-C15)
Policy, Procedure, BMP:	Refer to the BMPs in the Regional Road Maintenance Program Guidelines (RRMPG) for proper actions: Maintenance Category #3 – Cleaning enclosed drainage systems Part 2 BMPs (2.166) – Vactoring Have all applicable environmental/regulatory permits on site during project. Have spill kits available. Monitor BMPs during and following project until site conditions stabilize. Remove BMPs according to RRMPG.

SECTION 3 – PRACTICES, POLICIES & PROCEDURES

O&M ACTIVITY 3 – DITCH MAINTENANCE

City of Kenmore O&M ACTIVITY WORKSHEET ACTIVITY 3 – DITCH MAINTENANCE
DESCRIPTION: All ditch maintenance activities using a front end loader, a Drott, vactor or a backhoe.
PERFORMANCE CRITERIA: Ditches should be routinely maintained to ensure adequate roadside drainage. Bucket ditching should be performed when using a road grader is impractical due to: extreme depth of ditch, short distances between culverts or spot cleaning.
MAINTENANCE STANDARD (if applicable): King County Surface Water Design Manual, Appendix A, Section 6 – Conveyance Pipes and Ditches (also in found in appendix A of this manual)
Current Contracts (Updated JAN 2015): • Lake Forest Park ILA (00-C48, 00-C86) • Innovative Vacuum Services, Inc. (12-C1075) • King County Roads Maintenance ILA (98-C15)
Policy, Procedure, BMP: Refer to the BMPs in the Regional Road Maintenance Program Guidelines (RRMPG) for proper actions: Maintenance Category #4 – Open drainage systems Have all applicable environmental/regulatory permits on site during project. Have spill kits available. Monitor BMPs during and following project until site conditions stabilize. Remove BMPs according to RRMPG.

SECTION 3 – PRACTICES, POLICIES & PROCEDURES

O&M ACTIVITY 4 – STREET CLEANING

City of Kenmore O&M ACTIVITY WORKSHEET ACTIVITY 4- STREET CLEANING
DESCRIPTION: Removal of dirt, debris and other material by vacuum sweeping. Removal of sand after snow and ice control operations.
PERFORMANCE CRITERIA: Sweeping provides a safe roadway surface for the traveling public, minimizes contamination of stormwater and reduces airborne dust. Roadways should be swept when they begin to show an accumulation of material and after snow and ice control operations where sand has been used.
MAINTENANCE STANDARD (if applicable): • Not applicable
Current Contracts (Updated JAN 2015): • Lake Forest Park ILA (00-C48, 00-C86) • King County Roads Maintenance ILA (98-C15)
Policy, Procedure, BMP: Refer to the BMPs in the Regional Road Maintenance Program Guidelines (RRMPG) for proper actions: Maintenance Category #8 – Street surface cleaning Part 2 BMPs (2.152) – Sweeping Have all applicable environmental/regulatory permits on site during project. Have spill kits available. Monitor BMPs during and following project until site conditions stabilize. Remove BMPs according to RRMPG.

SECTION 3 – PRACTICES, POLICIES & PROCEDURES

O&M ACTIVITY 5 – ROAD REPAIR AND RESURFACING, INCLUDING PAVEMENT GRINDING

City of Kenmore O&M ACTIVITY WORKSHEET ACTIVITY 5 – ROAD REPAIR AND RESURFACING, INCLUDING PAVEMENT GRINDING	
DESCRIPTION:	Repair, replace, install or maintain roadway surfaces. Activities include, but are not limited to: pothole and square cut patching; removing paved surface or roadway base; repairing roadway base; repaving; adding gravel or grading roads; access roads, or ROW surfaces; dust control; extending pavement edge; paving graveled shoulder; crack sealing; overlay; chip seal; and resurfacing.
PERFORMANCE CRITERIA:	Road repairs are performed to provide a safe roadway surface for the traveling public and to reduce further roadway deterioration or failure. Potholes are repaired as they occur within established guidelines to reduce accidents, vehicle damage and adverse environmental impacts.
MAINTENANCE STANDARD (if applicable):	Not Applicable
Current Contracts (Updated JAN 2015):	- Lake Forest Park ILA (00-C48, 00-C86) - King County Roads Maintenance ILA (98-C15)
Policy, Procedure, BMP:	Refer to the BMPs in the Regional Road Maintenance Program Guidelines (RRMPG) for proper actions: Maintenance Category #1 – Roadway surface Maintenance Category #12 – Concrete Have all applicable environmental/regulatory permits on site during project. Have spill kits available. Monitor BMPs during and following project until site conditions stabilize. Remove BMPs according to RRMPG.

SECTION 3 – PRACTICES, POLICIES & PROCEDURES

O&M ACTIVITY 6 – SNOW AND ICE CONTROL

City of Kenmore O&M ACTIVITY WORKSHEET ACTIVITY 6 – SNOW AND ICE CONTROL
DESCRIPTION: Road maintenance crews are responsible for sanding and plowing operations during periods of freezing weather. Snow and ice removal is considered to be work of such importance that it is classified as an emergency operation. Safety for the traveling public and road department personnel shall be given primary consideration at all times. Snow and ice removal reduces vehicle accidents that may adversely impact sensitive areas. Post-event cleanup is considered a continuation of the event and removal of sediment from the road surface reduces sediment loading and preserves water quality.
PERFORMANCE CRITERIA: Snow and ice control is performed during periods of freezing weather when slippery road conditions pose a risk to the safety of the traveling public.
MAINTENANCE STANDARD (if applicable): • Not Applicable
Current Contracts (Updated JAN 2015): • Lake Forest Park ILA (00-C48, 00-C86) • King County Roads Maintenance ILA (98-C15)
Policy, Procedure, BMP: Refer to the BMPs in the Regional Road Maintenance Program Guidelines (RRMPG) for proper actions: Maintenance Category #10 – Snow and ice control Have all applicable environmental/regulatory permits on site during project. Have spill kits available. Monitor BMPs during and following project until site conditions stabilize. Remove BMPs according to RRMPG.

SECTION 3 – PRACTICES, POLICIES & PROCEDURES

O&M ACTIVITY 7 – UTILITY INSTALLATION

City of Kenmore O&M ACTIVITY WORKSHEET ACTIVITY 7 – UTILITY INSTALLATION
DESCRIPTION: Water and sewer utilities are owned and operated, within Kenmore ROW, by the Northshore Utility District. Electric and gas utilities are owned and operated, within Kenmore ROW, by PSE. Communication utilities are owned and operated, within Kenmore ROW, by various companies.
PERFORMANCE CRITERIA: Utility maintenance is required to provide a safe and consistent service of water, sewer, power and communications in Kenmore. Utility work is administered through Right-of-Way permits.
MAINTENANCE STANDARD (if applicable): • Not Applicable
Current Contracts (Updated JAN 2015): • Utility Franchise Agreements
Policy, Procedure, BMP: Refer to the BMPs in the Regional Road Maintenance Program Guidelines (RRMPG) for proper actions: Maintenance Category #1 – Roadway surface Maintenance Category #12 – Concrete Maintenance Category #13 – Sewer Systems Maintenance Category #14 – Water Systems Have all applicable environmental/regulatory permits on site during project. Have spill kits available. Monitor BMPs during and following project until site conditions stabilize. Remove BMPs according to RRMPG.

SECTION 3 – PRACTICES, POLICIES & PROCEDURES

O&M ACTIVITY 8 – PAVEMENT STRIPING MAINTENANCE

City of Kenmore O&M ACTIVITY WORKSHEET ACTIVITY 8 – PAVEMENT STRIPING MAINTENANCE
DESCRIPTION: Pavement striping is required for a functioning and safe roadway.
PERFORMANCE CRITERIA: Pavement striping maintenance is needed when existing (or lack of) striping impairs the function and/or safety of the roadway.
MAINTENANCE STANDARD (if applicable): • Not Applicable
Current Contracts (Updated JAN 2015): • King County Roads Maintenance ILA (98-C15)
Policy, Procedure, BMP: Refer to the BMPs in the Regional Road Maintenance Program Guidelines (RRMPG) for proper actions: Maintenance Category #1 – Roadway surface Follow state and federal guidelines for handling paint and other traffic marking materials. Stripe roadways in dry weather. Have all applicable environmental/regulatory permits on site during project. Have spill kits available. Monitor BMPs during and following project until site conditions stabilize. Remove BMPs according to RRMPG.

SECTION 3 – PRACTICES, POLICIES & PROCEDURES

O&M ACTIVITY 9 – MAINTAINING ROADSIDE AREAS, INCLUDING VEGETATION MGMT.

City of Kenmore O&M ACTIVITY WORKSHEET ACTIVITY 9 – MAINTAINING ROADSIDE AREAS, INCLUDING VEGETATION MANAGEMENT
DESCRIPTION: Maintenance on roadside areas improve drainage, restore proper grade, restore filtering capability, maintain vegetation to provide adequate sight distance, smooth rutting and remove buildup of sediment before entering drainage system.
PERFORMANCE CRITERIA: Maintenance of roadside areas is needed when proper drainage is compromised, sight distance is below acceptable levels or roadway safety is being impaired.
MAINTENANCE STANDARD (if applicable): • Not Applicable
Current Contracts (Updated JAN 2015): • Lake Forest Park ILA (00-C48, 00-C86) • King County Roads Maintenance ILA (98-C15) • Northwest Landscaping Services Contract (13-C1160)
Policy, Procedure, BMP: Refer to the BMPs in the Regional Road Maintenance Program Guidelines (RRMPG) for proper actions: Maintenance Category #1 – Roadway surface Maintenance Category #7 – Gravel Shoulders Maintenance Category #15 – Vegetation Have all applicable environmental/regulatory permits on site during project. Have spill kits available. Monitor BMPs during and following project until site conditions stabilize. Remove BMPs according to RRMPG.

SECTION 3 – PRACTICES, POLICIES & PROCEDURES

O&M ACTIVITY 10 – DUST CONTROL

City of Kenmore O&M ACTIVITY WORKSHEET ACTIVITY 10 – DUST CONTROL
DESCRIPTION: Dust control is the use of water, products and/or measures for reducing wind erosion. Particles moved by wind may cause air pollution, soil loss and/or water quality degradation.
PERFORMANCE CRITERIA: Any maintenance activity that has the potential to produce dust or any kind of airborne matter needs to apply dust control BMPs.
MAINTENANCE STANDARD (if applicable): • Not Applicable
Current Contracts (Updated JAN 2015): • Applicable to any work in Kenmore with all contracts
Policy, Procedure, BMP: Refer to the BMPs in the Regional Road Maintenance Program Guidelines (RRMPG) for proper actions: All maintenance categories. Part 2 BMPs (2.61) – Dust Control Refer to the Kenmore Stormwater Pollution Prevention Manual BMP A-44 (Dust Control and Soil Erosion and Sediment Control for Manufacturing and Other Commercial Operations)

SECTION 3 – PRACTICES, POLICIES & PROCEDURES

O&M ACTIVITY 11 – APPLICATION OF FERTILIZERS, PESTICIDES AND HERBICIDES

City of Kenmore O&M ACTIVITY WORKSHEET ACTIVITY 11 – APPLICATION OF FERTILIZERS, PESTICIDES AND HERBICIDES		
DESCRIPTION: Pesticides and herbicides are chemicals or biological agents applied to a target pest as a control measure. Fertilizers are chemical or natural substances composed of target nutrients added to soil or land to increase fertility.		
PERFORMANCE CRITERIA: Application of fertilizers, pesticides and herbicides may be needed to effectively maintain healthy, vibrant landscapes in Kenmore.		
MAINTENANCE STANDARD (if applicable): Not Applicable		
Current Contracts (Updated JAN 2015): - Lake Forest Park ILA (00-C48, 00-C86) - King County Roads Maintenance ILA (98-C15) - King County CWP Contract (09-C787) - Northwest Landscape Services Contract (13-C1160)		
Policy, Procedure, BMP: <u>Pesticides and Herbicides</u> For application of pesticides and herbicides refer to Appendix B – City of Kenmore Integrated Pest Management (IPM) Manual. <u>Fertilizers</u> Nutrient runoff pollution is the most severe problem facing local waterways. Runoff that carries excess nitrogen increases the growth of algae and reduces water clarity, which stresses underwater plant and animal life. The Public Works Department is committed to maintaining healthy landscapes with the minimal use of pesticides and fertilizers. The following is a list of things to be considered and evaluated before the decision to apply fertilizer to City maintained landscapes and grounds: <table border="0" style="width: 100%;"> <tr> <td style="vertical-align: top;"> ❖ Plant Identification ▪ Trees ▪ Shrubs ❖ Plant location ▪ Parks (Active and Passive) ▪ City Hall Grounds ▪ Rights- of – Way (street trees and parking strips) ❖ Plant age </td> <td style="vertical-align: top;"> ❖ Soil type ❖ Proximity to waterways ❖ Plant health evaluation ❖ Application timing ❖ Fertilizer type ▪ 100% Organic ▪ Organic-Synthetic Blends ▪ Synthetic ❖ Appropriate fertilizer application rate </td> </tr> </table> Once a full evaluation has been completed, a fertilizer application may be determined to be beneficial. All fertilizer applications will be recorded and logged. Fertilizers shall be purchased in the appropriate amounts for the specific application and should not be purchased in excessive amounts. If fertilizers are to be stored, they will be stored in a secured, weatherproof container.	❖ Plant Identification ▪ Trees ▪ Shrubs ❖ Plant location ▪ Parks (Active and Passive) ▪ City Hall Grounds ▪ Rights- of – Way (street trees and parking strips) ❖ Plant age	❖ Soil type ❖ Proximity to waterways ❖ Plant health evaluation ❖ Application timing ❖ Fertilizer type ▪ 100% Organic ▪ Organic-Synthetic Blends ▪ Synthetic ❖ Appropriate fertilizer application rate
❖ Plant Identification ▪ Trees ▪ Shrubs ❖ Plant location ▪ Parks (Active and Passive) ▪ City Hall Grounds ▪ Rights- of – Way (street trees and parking strips) ❖ Plant age	❖ Soil type ❖ Proximity to waterways ❖ Plant health evaluation ❖ Application timing ❖ Fertilizer type ▪ 100% Organic ▪ Organic-Synthetic Blends ▪ Synthetic ❖ Appropriate fertilizer application rate	

SECTION 3 – PRACTICES, POLICIES & PROCEDURES

O&M ACTIVITY 12 – SEDIMENT AND EROSION CONTROL

City of Kenmore O&M ACTIVITY WORKSHEET ACTIVITY 12 – SEDIMENT AND EROSION CONTROL
DESCRIPTION: Activities can expose soil and dirt making it vulnerable for erosion, which may cause sediment to enter local surface waters and negatively impact wildlife, water quality and habitat.
PERFORMANCE CRITERIA: Any maintenance activity that has the potential to cause erosion and sediment transport must apply erosion and sediment control BMPs.
MAINTENANCE STANDARD (if applicable): Not Applicable
Current Contracts (Updated JAN 2015): Applicable to any work in Kenmore.
Policy, Procedure, BMP: Construction related policies are described in Appendix D of the King County Surface Water Design Manual (Erosion and Sediment Control Standards). Maintenance related policies are described in BMPs in the Regional Road Maintenance Program Guidelines (RRMPG), which include all maintenance categories and Part 2 BMPs (2.61) – Dust Control. In general, sediment should never be allowed to leave a work site unless appropriate BMPs are utilized and specific conditions allowed by appropriate permits have been satisfied.

SECTION 3 – PRACTICES, POLICIES & PROCEDURES

O&M ACTIVITY 13 – LANDSCAPE MAINTENANCE AND VEGETATION DISPOSAL

City of Kenmore O&M ACTIVITY WORKSHEET ACTIVITY 13 – LANDSCAPE MAINTENANCE AND VEGETATION DISPOSAL	
DESCRIPTION:	Activities include repair, replacement, installation, removal and/or maintenance of landscaping on publicly maintained lands and rights-of-way. Vegetation and landscape maintenance includes, but is not limited to mechanical, chemical, cultural and biological control. It also includes the systems and structures that support the vegetation and landscaping.
PERFORMANCE CRITERIA:	The primary purpose of vegetation and landscape maintenance is to promote, maintain, sustain, manage or encourage vegetation growing on publicly maintained lands and rights-of-way to comply with a variety of regulations and standards.
MAINTENANCE STANDARD (if applicable):	King County Surface Water Design Manual, Appendix A, Various Sections (All sections that include a landscaping and/or vegetation component)
Current Contracts (Updated JAN 2015):	- Lake Forest Park ILA (00-C48, 00-C86) - King County Roads Maintenance ILA (98-C15) - King County CWP Contract (09-C787) - Total Landscape Contract (01-C121) - Northwest Landscape Services Contract (13-C1160)
Policy, Procedure, BMP:	Refer to the BMPs in the Regional Road Maintenance Program Guidelines (RRMPG) for proper actions: Maintenance Category #15 – Vegetation Refer to O&M Activity Sheet 11 for application of fertilizers, pesticides and herbicides Refer to the Kenmore Stormwater Pollution Prevention Manual BMP A-26 (Landscaping Activities and Vegetation Management) Refer to the Kenmore Stormwater Pollution Prevention Manual BMP A-5 (Storage of Pesticides and Fertilizers) Refer to the Kenmore Stormwater Pollution Prevention Manual BMP A-3 (Storage of Liquid Materials in Portable Containers) Mowed turf areas are completed by mulching mowers and all clean green debris is properly recycled.

SECTION 3 – PRACTICES, POLICIES & PROCEDURES

O&M ACTIVITY 14 – TRASH AND PET WASTE MANAGEMENT

City of Kenmore O&M ACTIVITY WORKSHEET ACTIVITY 14 – TRASH AND PET WASTE MANAGEMENT
DESCRIPTION: Trash accumulates on publicly maintained lands and rights-of-way in designated containers and in non-designated areas (litter). Residents bring their pets to various public areas including parks, streets and buildings.
PERFORMANCE CRITERIA: Trash should be removed from City maintained lands and rights-of-way if present.
MAINTENANCE STANDARD (if applicable): • Not Applicable
Current Contracts (Updated JAN 2015): • Lake Forest Park ILA (00-C48, 00-C86) • King County Roads Maintenance ILA (98-C15) • King County CWP Contract (09-C787)
Policy, Procedure, BMP: Loose trash is picked up and disposed of properly by maintenance crews and King County Community Work Program crews. The city participates in the “Adopt a Street” Program which requires a minimum of two trash pick-up events annually by the adopter. King County Metro Transit maintains trash receptacles located at various bus stops throughout the city. Streets are mechanically swept and stormwater conveyance systems are cleaned of trash by vector crews. Pet waste bags and disposal containers are offered at public parks. Pet waste left at public buildings is collected and disposed of. The public is responsible for collecting their pet waste and properly disposing of it in the garbage. The City provides education and outreach to promote this behavior.

SECTION 3 – PRACTICES, POLICIES & PROCEDURES

O&M ACTIVITY 15 – BUILDING EXTERIOR CLEANING AND MAINTENANCE

City of Kenmore O&M ACTIVITY WORKSHEET ACTIVITY 15 – BUILDING EXTERIOR CLEANING AND MAINTENANCE
DESCRIPTION: Public buildings must be maintained and cleaned in order to function properly and promote a professional and welcoming environment to Kenmore residents and visitors.
PERFORMANCE CRITERIA: Buildings are maintained and cleaned as needed.
MAINTENANCE STANDARD (if applicable): • Not Applicable
Current Contracts (Updated JAN 2015): • Lake Forest Park ILA (00-C48, 00-C86) • King County CWP Contract (09-C787) • Total Landscaping Contract (01-C121)
Policy, Procedure, BMP: Refer to the Kenmore Stormwater Pollution Prevention Manual BMP A-15 (Pressure Washing of Buildings, Rooftops, and Other Large Objects) Refer to the Kenmore Stormwater Pollution Prevention Manual BMP A-29 (Building Repair, Remodeling, and Construction)

SECTION 3 – PRACTICES, POLICIES & PROCEDURES

SECTION 3.2 O&M LAND USE WORKSHEETS

Kenmore owns approximately 94 properties in addition to all of the public Right-of-Way (See Map 4-1, Table 4-1). King County owns approximately 29 properties in Kenmore and is responsible for O&M of these properties (and any other requirements set forth by King County's Phase I Permit). Washington State owns four properties in Kenmore (St. Edwards Park) and is responsible for O&M on these parcels. City of Seattle owns four properties in Kenmore (Tolt Pipeline) and is responsible for O&M on these parcels. Kenmore does not own or maintain any maintenance yards; however Kenmore does utilize the Lake Forest Park maintenance yard located in Lake Forest Park, WA. Lake Forest Park maintains a Stormwater Pollution Prevention Plan (SWPPP) for that facility. Kenmore and Lake Forest Park store sweeper materials at Rhododendron Park before transporting it to a proper disposal facility. A SWPPP for this storage facility is provided in Section 5.

Land use categories included with the O&M Land Use Worksheets include:

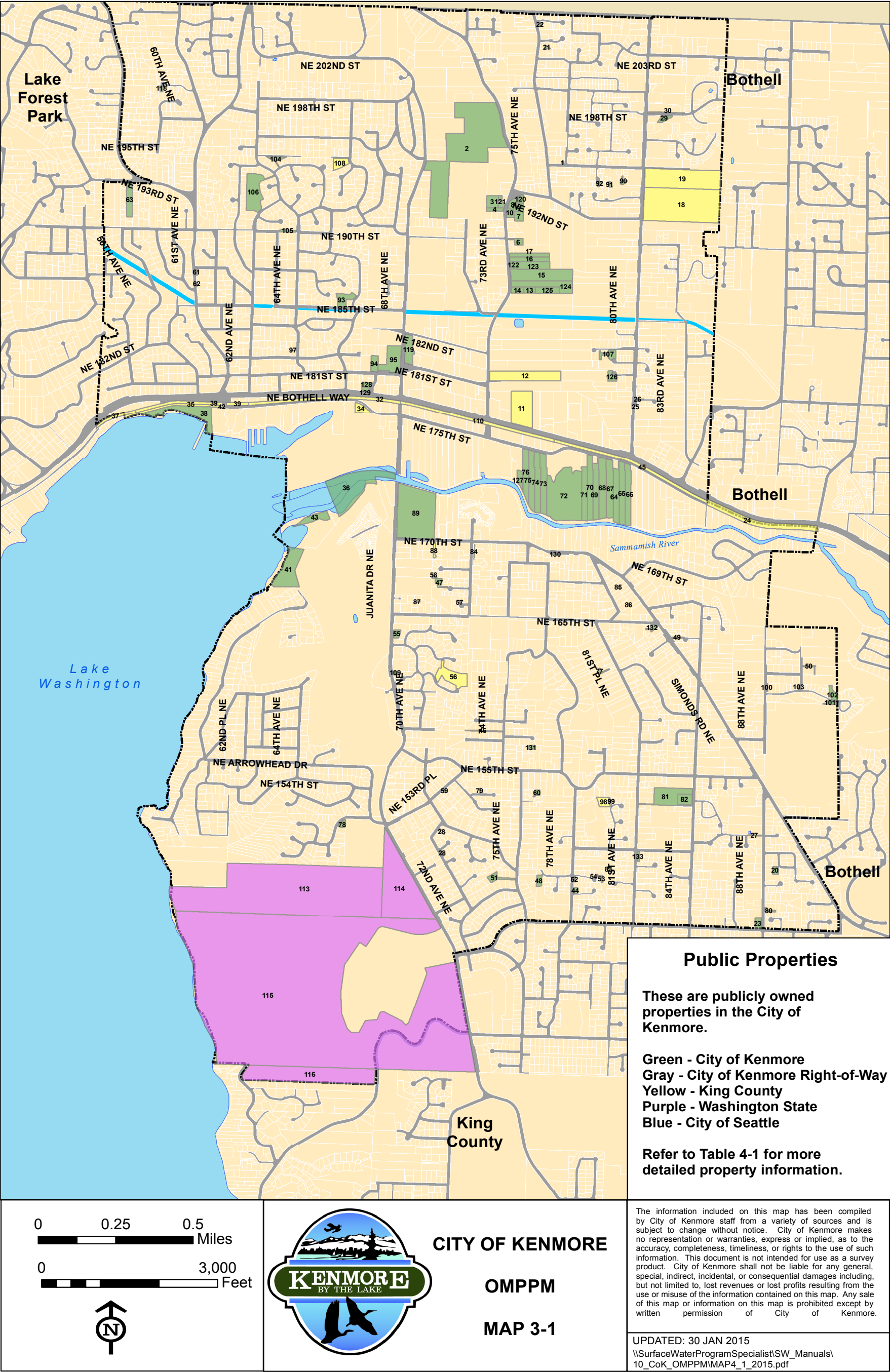
- Right-of-Way
- Parks
- Developed Parcels
- Undeveloped Parcels
- Stormwater Facilities

Each O&M Land Use Worksheet contains the following sections:

Description – A short description of what typical maintenance in the category includes

Applicable O&M Activities – O&M activities that apply to the land use are stated. Refer to the corresponding O&M Activity Worksheet for more detailed information.

Notes – Additional information pertaining to that land use.



CITY OF KENMORE
PUBLIC PROPERTIES

OMPPM MAP ID	PIN	TAXPAYER	DESCRIPTION	NAME
1	114100074	CITY OF KENMORE	UNDEVELOPED LAND	
2	114100205	CITY OF KENMORE	PASSIVE PARL/STORMWATER FACILITY	WALLACE SWAMP CREEK PARK/DRC118
3	114100240	CITY OF KENMORE	UNDEVELOPED LAND	SWAMP CREEK PROPERTIES
4	114100241	CITY OF KENMORE	UNDEVELOPED LAND	SWAMP CREEK PROPERTIES
6	114100700	CITY OF KENMORE	UNDEVELOPED LAND	SWAMP CREEK PROPERTIES
7	114100703	CITY OF KENMORE	UNDEVELOPED LAND	SWAMP CREEK PROPERTIES
8	114100704	CITY OF KENMORE	UNDEVELOPED LAND	SWAMP CREEK PROPERTIES
9	114100706	CITY OF KENMORE	UNDEVELOPED LAND	SWAMP CREEK PROPERTIES
10	114100708	CITY OF KENMORE	STORMWATER FACILITY	DRC125
11	114100920	KING COUNTY	PARK AND RIDE/STORMWATER FACILITY	D95752
12	114100955	KING COUNTY	PRECINCT/STORMWATER FACILITY	D95828
13	114100995	CITY OF KENMORE	UNDEVELOPED LAND	SWAMP CREEK PROPERTIES
14	114100997	CITY OF KENMORE	UNDEVELOPED LAND	SWAMP CREEK PROPERTIES
15	114101000	CITY OF KENMORE	UNDEVELOPED LAND	SWAMP CREEK PROPERTIES
16	114101005	CITY OF KENMORE	STORMWATER FACILITY	
17	114101012	CITY OF KENMORE	STORMWATER FACILITY	DRC124
18	126049013	KING COUNTY	INDUSTRIAL FACILITY	BRIGHTWATER SITE
19	126049107	KING COUNTY	INDUSTRIAL FACILITY	BRIGHTWATER SITE
20	200300320	CITY OF KENMORE	STORMWATER FACILITY	D91846
21	253600220	CITY OF KENMORE	STORMWATER FACILITY	D92633
22	293720280	CITY OF KENMORE	STORMWATER FACILITY	D92930
23	704450300	CITY OF KENMORE	STORMWATER FACILITY	D92164
24	726059053	KING COUNTY	ACTIVE PARK	BURKE-GILMAN TRAIL
25	762000110	CITY OF KENMORE	ROW ACQUISITION	WILLOW CREEK
26	762000120	CITY OF KENMORE	ROW ACQUISITION	WILLOW CREEK
27	766900350	KING COUNTY	KING COUNTY UTILITIES, TRACT OR OPEN SPACE	
28	837000170	KING COUNTY	STORMWATER FACILITY	D90109
28	837000170	KING COUNTY	STORMWATER FACILITY	D90110
29	1088650560	CITY OF KENMORE	STORMWATER FACILITY	D92886
30	1088650570	CITY OF KENMORE	UNDEVELOPED LAND	
32	1126049008	KING COUNTY	ACTIVE PARK	BURKE-GILMAN TRAIL
34	1126049133	KING COUNTY	INDUSTRIAL/COMMERCIAL	PUMP STATION
35	1126049140	KING COUNTY	KING COUNTY UTILITIES, TRACT OR OPEN SPACE	BURKE-GILMAN TRAIL
36	1126049142	CITY OF KENMORE	UNDEVELOPED LAND	INGLEWOOD WETLANDS
37	1126049144	KING COUNTY	ACTIVE PARK	BURKE-GILMAN TRAIL
38	1126049148	CITY OF KENMORE	ACTIVE PARK	LOG BOOM PARK
39	1126049151	KING COUNTY	ACTIVE PARK	BURKE-GILMAN TRAIL
39	1126049151	KING COUNTY	ACTIVE PARK	BURKE-GILMAN TRAIL
41	1126049160	CITY OF KENMORE	UNDEVELOPED LAND	INGLEWOOD WETLANDS
42	1126049166	CITY OF KENMORE	ACTIVE PARK	LOG BOOM PARK
43	1126049174	CITY OF KENMORE	UNDEVELOPED LAND	INGLEWOOD WETLANDS
44	1137610170	CITY OF KENMORE	STORMWATER FACILITY	D92210
45	1226049014	KING COUNTY	ACTIVE PARK	BURKE-GILMAN TRAIL
46	1326049192	KING COUNTY	KING COUNTY UTILITIES, TRACT OR OPEN SPACE	
47	1472330120	CITY OF KENMORE	STORMWATER FACILITY	D92897
48	1635500260	CITY OF KENMORE	STORMWATER FACILITY	D92904
49	1762800090	KING COUNTY	UNDEVELOPED LAND	
50	1826059118	CITY OF KENMORE	STORMWATER FACILITY	D92530
51	2140700240	CITY OF KENMORE	STORMWATER FACILITY	D92491
52	3578200140	CITY OF KENMORE	STORMWATER FACILITY	D92429
53	3578200150	CITY OF KENMORE	STORMWATER FACILITY	D92430
54	3578200160	CITY OF KENMORE	STORMWATER FACILITY	D92430
55	3579000830	CITY OF KENMORE	STORMWATER FACILITY	D90925
56	3579000850	KING COUNTY	KING COUNTY UTILITIES, TRACT OR OPEN SPACE	
57	3582100100	CITY OF KENMORE	STORMWATER FACILITY	D92051
58	3582200210	CITY OF KENMORE	STORMWATER FACILITY	D91369
59	3649100127	CITY OF KENMORE	STORMWATER FACILITY	D91157
60	3649100334	CITY OF KENMORE	STORMWATER FACILITY	D93020
61	3818700145	KING COUNTY	KING COUNTY UTILITIES, TRACT OR OPEN SPACE	
62	3818700156	KING COUNTY	KING COUNTY UTILITIES, TRACT OR OPEN SPACE	
63	4027701311	CITY OF KENMORE	ACTIVE PARK	LINWOOD PARK
64	4156700004	CITY OF KENMORE	UNDEVELOPED LAND	FUTURE PARK
65	4156700010	CITY OF KENMORE	UNDEVELOPED LAND	FUTURE PARK
66	4156700015	CITY OF KENMORE	UNDEVELOPED LAND	FUTURE PARK
67	4164100140	CITY OF KENMORE	UNDEVELOPED LAND	FUTURE PARK
68	4164100145	CITY OF KENMORE	UNDEVELOPED LAND	FUTURE PARK
69	4164100150	CITY OF KENMORE	UNDEVELOPED LAND	FUTURE PARK

TABLE 3-1

CITY OF KENMORE
PUBLIC PROPERTIES

OMPPM MAP ID	PIN	TAXPAYER	DESCRIPTION	NAME
70	4164100155	CITY OF KENMORE	UNDEVELOPED LAND	FUTURE PARK
71	4164100163	CITY OF KENMORE	UNDEVELOPED LAND	FUTURE PARK
72	4164100171	CITY OF KENMORE	UNDEVELOPED LAND	FUTURE PARK
73	4164100195	CITY OF KENMORE	UNDEVELOPED LAND	FUTURE PARK
74	4164100200	CITY OF KENMORE	UNDEVELOPED LAND	FUTURE PARK
75	4164100205	CITY OF KENMORE	UNDEVELOPED LAND	FUTURE PARK
76	4164100210	CITY OF KENMORE	UNDEVELOPED LAND	FUTURE PARK
77	4276600070	CITY OF KENMORE	STORMWATER FACILITY	D93098
78	5302400680	CITY OF KENMORE	STORMWATER FACILITY	D90874
79	5628400030	KING COUNTY	KING COUNTY UTILITIES, TRACT OR OPEN SPACE	
80	5630500087	CITY OF KENMORE	STORMWATER FACILITY	D91613
81	5631500015	CITY OF KENMORE	ACTIVE PARK	MOORLANDS PARK
82	5631500020	CITY OF KENMORE	ACTIVE PARK	MOORLANDS PARK
83	5631500259	CITY OF KENMORE	STORMWATER FACILITY	D92571
84	5634500002	CITY OF KENMORE	RESIDENTIAL FRONTAGE	
85	5634500295	KING COUNTY	KING COUNTY UTILITIES, TRACT OR OPEN SPACE	
86	5634500332	KING COUNTY	KING COUNTY UTILITIES, TRACT OR OPEN SPACE	
87	5634500888	CITY OF KENMORE	STORMWATER FACILITY	D92047
88	5634500929	KING COUNTY	KING COUNTY UTILITIES, TRACT OR OPEN SPACE	
89	5634500980	CITY OF KENMORE	PASSIVE PARK	RHODODENDRON PARK
90	6020500250	CITY OF KENMORE	STORMWATER FACILITY	D92602
91	6020500260	CITY OF KENMORE	STORMWATER FACILITY	D92603
92	6020500270	CITY OF KENMORE	STORMWATER FACILITY	D92604
93	6178930560	CITY OF KENMORE	STORMWATER FACILITY	D90480
94	6181700350	CITY OF KENMORE	RETAIL	KENMORE VILLAGE
95	6181700410	CITY OF KENMORE	RETAIL	KENMORE VILLAGE
97	6181700644	KING COUNTY	KING COUNTY UTILITIES, TRACT OR OPEN SPACE	
98	6190500520	KING COUNTY	STORMWATER FACILITY	D92654
99	6190500530	KING COUNTY	STORMWATER FACILITY	D92654
100	6641020250	CITY OF KENMORE	STORMWATER FACILITY	D92423
101	6641020260	CITY OF KENMORE	STORMWATER FACILITY	D92422
102	6641020270	CITY OF KENMORE	STORMWATER FACILITY	D92421
103	6641020280	CITY OF KENMORE	STORMWATER FACILITY	D92420
104	6891800590	CITY OF KENMORE	STORMWATER FACILITY	D90214
105	6891800600	CITY OF KENMORE	STORMWATER FACILITY	D90213
106	6891800610	CITY OF KENMORE	PASSIVE PARK/STORMWATER FACILITY	NORTHSHORE SUMMIT PARK/D90215
107	7702010120	CITY OF KENMORE	STORMWATER FACILITY	D92895
108	8833510370	KING COUNTY	UNDEVELOPED LAND	
109	9159900080	CITY OF KENMORE	STORMWATER FACILITY	D92892
110	1226049014	KING COUNTY	ACTIVE PARK	BURKE-GILMAN TRAIL
113	1426049015	WASHINGTON STATE	STATE PARK	ST EDWARDS STATE PARK
114	1326049026	WASHINGTON STATE	STATE PARK	ST EDWARDS STATE PARK
115	2326049001	WASHINGTON STATE	STATE PARK	ST EDWARDS STATE PARK
116	9388100005	WASHINGTON STATE	STATE PARK	ST EDWARDS STATE PARK
118	4019500090	CITY OF KENMORE	UNDEVELOPED LAND	
119	114100495	CITY OF KENMORE	DEVELOPED PARCEL	CITY HALL
120	114100705	CITY OF KENMORE	UNDEVELOPED LAND	SWAMP CREEK PROPERTIES
121	114100244	CITY OF KENMORE	UNDEVELOPED LAND	SWAMP CREEK PROPERTIES
122	114101010	CITY OF KENMORE	UNDEVELOPED LAND	SWAMP CREEK PROPERTIES
123	114101009	CITY OF KENMORE	UNDEVELOPED LAND	SWAMP CREEK PROPERTIES
124	114100999	CITY OF KENMORE	UNDEVELOPED LAND	SWAMP CREEK PROPERTIES
125	114100998	CITY OF KENMORE	UNDEVELOPED LAND	SWAMP CREEK PROPERTIES
126	1622000090	CITY OF KENMORE	STORMWATER FACILITY	P2004-12
127	4164100216	CITY OF KENMORE	WATERFRONT ACCESS	
128	7946300195	CITY OF KENMORE	VACANT LAND	
129	7946300196	CITY OF KENMORE	VACANT LAND	
130	5634500239	CITY OF KENMORE	VACANT LAND	
131	5631500714	CITY OF KENMORE	STORMWATER FACILITY	P2004-11
132	5631500908	CITY OF KENMORE	STORMWATER FACILITY	P2004-03
133	293610110	CITY OF KENMORE	STORMWATER FACILITY	P2004-07
134	022604UNKN	CITY OF SEATTLE	TOLT PIPELINE	
135	6178700066	CITY OF SEATTLE	TOLT PIPELINE	
136	1126049117	CITY OF SEATTLE	TOLT PIPELINE	
137	114101565	CITY OF SEATTLE	TOLT PIPELINE	

TABLE 3-1

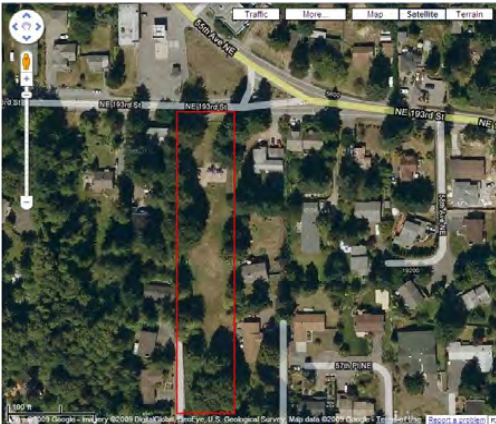
SECTION 3 – PRACTICES, POLICIES & PROCEDURES

RIGHT-OF-WAY

City of Kenmore O&M LAND USE WORKSHEET RIGHT-OF-WAY	
DESCRIPTION: Kenmore operates and maintains all the right-of-way within the city. The right-of-way is dominated by paved roadway surfaces, but also includes undeveloped land, sidewalks, landscaping, utilities, etc. Stormwater facilities, if applicable, are inspected and maintained under section 2 of the OMPPM. Maintenance activities, including pipe cleaning, culvert cleaning, ditch maintenance, street cleaning, road repair, snow & ice control, utility installation, pavement striping and roadside area maintenance are covered under section 3 of the OMPPM.	
APPLICABLE O&M ACTIVITIES:	
O&M Activity 1 – Pipe Cleaning	X
O&M Activity 2 – Cleaning of culverts that convey stormwater in ditch systems	X
O&M Activity 3 – Ditch maintenance	X
O&M Activity 4 – Street cleaning	X
O&M Activity 5 – Road repair and resurfacing, including pavement grinding	X
O&M Activity 6 – Snow and ice control	X
O&M Activity 7 – Utility installation	X
O&M Activity 8 – Pavement striping maintenance	X
O&M Activity 9 – Maintaining roadside areas, including vegetation mgmt.	X
O&M Activity 10 – Dust control	X
O&M Activity 11 – Application of fertilizers, pesticides, and herbicides	X
O&M Activity 12 – Sediment and erosion control	X
O&M Activity 13 – Landscape maintenance and vegetation disposal	X
O&M Activity 14 – Trash and pet waste management	X
O&M Activity 15 – Building exterior cleaning and maintenance	
NOTES:	

SECTION 3 – PRACTICES, POLICIES & PROCEDURES

PARKS**LINWOOD PARK**

City of Kenmore O&M LAND USE WORKSHEET PARKS – LINWOOD PARK	
DESCRIPTION: Linwood Park is located at 601 NE 193 RD ST. It is approximately 3 acres in size and drains to Lake Washington via Stream 0056. Amenities include: • playground equipment • open grass areas • benches • picnic tables • trash receptacles	
APPLICABLE O&M ACTIVITIES:	
O&M Activity 1 – Pipe Cleaning	X
O&M Activity 2 – Cleaning of culverts that convey stormwater in ditch systems	X
O&M Activity 3 – Ditch maintenance	X
O&M Activity 4 – Street cleaning	
O&M Activity 5 – Road repair and resurfacing, including pavement grinding	
O&M Activity 6 – Snow and ice control	
O&M Activity 7 – Utility installation	
O&M Activity 8 – Pavement striping maintenance	
O&M Activity 9 – Maintaining roadside areas, including vegetation mgmt.	
O&M Activity 10 – Dust control	
O&M Activity 11 – Application of fertilizers, pesticides, and herbicides	X
O&M Activity 12 – Sediment and erosion control	
O&M Activity 13 – Landscape maintenance and vegetation disposal	X
O&M Activity 14 – Trash and pet waste management	X
O&M Activity 15 – Building exterior cleaning and maintenance	
NOTES:  ©Google	

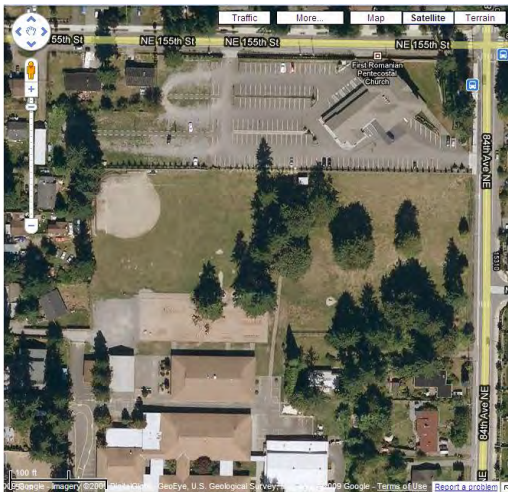
SECTION 3 – PRACTICES, POLICIES & PROCEDURES

LOG BOOM PARK

City of Kenmore O&M LAND USE WORKSHEET PARKS – LOG BOOM PARK	
DESCRIPTION: Log Boom Park is located at 17415 61 ST AVE NE. It is approximately 16 acres in size and drains to Lake Washington. Amenities include:	
• public pier • paved parking • fishing • playground equipment	• bike racks • picnic table • benches • restrooms • trash receptacles • daytime moorage
APPLICABLE O&M ACTIVITIES:	
O&M Activity 1 – Pipe Cleaning	X
O&M Activity 2 – Cleaning of culverts that convey stormwater in ditch systems	X
O&M Activity 3 – Ditch maintenance	X
O&M Activity 4 – Street cleaning	X
O&M Activity 5 – Road repair and resurfacing, including pavement grinding	X
O&M Activity 6 – Snow and ice control	
O&M Activity 7 – Utility installation	
O&M Activity 8 – Pavement striping maintenance	X
O&M Activity 9 – Maintaining roadside areas, including vegetation mgmt.	
O&M Activity 10 – Dust control	
O&M Activity 11 – Application of fertilizers, pesticides, and herbicides	X
O&M Activity 12 – Sediment and erosion control	
O&M Activity 13 – Landscape maintenance and vegetation disposal	X
O&M Activity 14 – Trash and pet waste management	X
O&M Activity 15 – Building exterior cleaning and maintenance	X
NOTES:	
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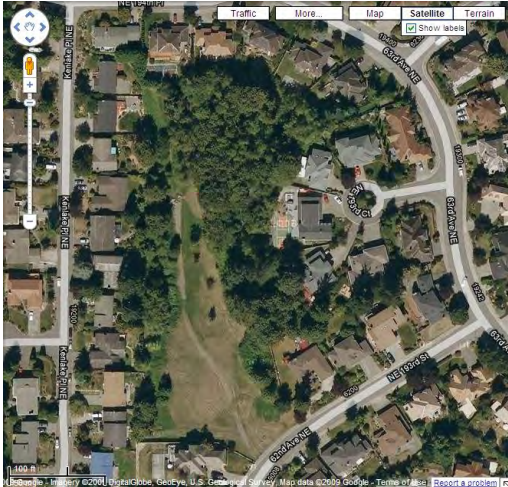
SECTION 3 – PRACTICES, POLICIES & PROCEDURES

MOORLAND PARK

City of Kenmore O&M LAND USE WORKSHEET PARKS – MOORLANDS PARK	
DESCRIPTION: Moorland Park is located at 15221 84 TH AVE NE. It is approximately 5 acres in size and drains to Lake Washington via unnamed streams and Sammamish River. Moorlands Park is owned by Kennore, but it is maintained by the Northshore School District through ILA 00-C88. Amenities include: - picnic tables - baseball field - playground - basketball court - trash receptacles	
APPLICABLE O&M ACTIVITIES:	
O&M Activity 1 – Pipe Cleaning	X
O&M Activity 2 – Cleaning of culverts that convey stormwater in ditch systems	X
O&M Activity 3 – Ditch maintenance	X
O&M Activity 4 – Street cleaning	
O&M Activity 5 – Road repair and resurfacing, including pavement grinding	
O&M Activity 6 – Snow and ice control	
O&M Activity 7 – Utility installation	
O&M Activity 8 – Pavement striping maintenance	
O&M Activity 9 – Maintaining roadside areas, including vegetation mgmt.	
O&M Activity 10 – Dust control	
O&M Activity 11 – Application of fertilizers, pesticides, and herbicides	X
O&M Activity 12 – Sediment and erosion control	
O&M Activity 13 – Landscape maintenance and vegetation disposal	X
O&M Activity 14 – Trash and pet waste management	X
O&M Activity 15 – Building exterior cleaning and maintenance	
NOTES:	
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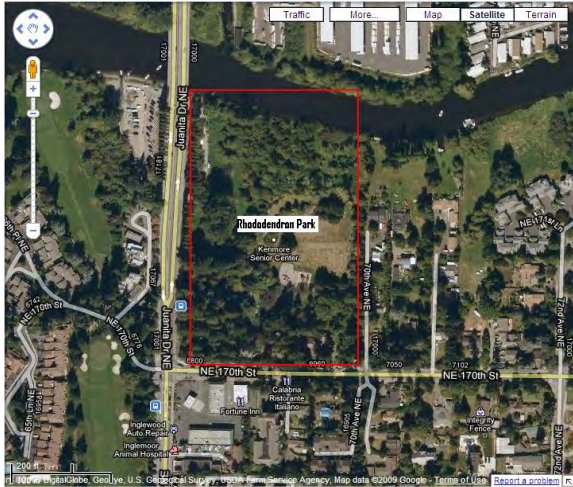
SECTION 3 – PRACTICES, POLICIES & PROCEDURES

NORTHSHORE SUMMIT PARK

City of Kenmore O&M LAND USE WORKSHEET PARKS – NORTHSHORE SUMMIT PARK	
DESCRIPTION: Northshore Summit Park is located at 6200 NE 193 RD ST. It is approximately 3.5 acres in size and drains to Tributary 0056. Amenities include:	
• picnic tables • playground • gravel trails	• trash receptacles • benches • Surface Water Facility
APPLICABLE O&M ACTIVITIES:	
O&M Activity 1 – Pipe Cleaning	X
O&M Activity 2 – Cleaning of culverts that convey stormwater in ditch systems	X
O&M Activity 3 – Ditch maintenance	X
O&M Activity 4 – Street cleaning	
O&M Activity 5 – Road repair and resurfacing, including pavement grinding	
O&M Activity 6 – Snow and ice control	
O&M Activity 7 – Utility installation	
O&M Activity 8 – Pavement striping maintenance	
O&M Activity 9 – Maintaining roadside areas, including vegetation mgmt.	
O&M Activity 10 – Dust control	
O&M Activity 11 – Application of fertilizers, pesticides, and herbicides	X
O&M Activity 12 – Sediment and erosion control	
O&M Activity 13 – Landscape maintenance and vegetation disposal	X
O&M Activity 14 – Trash and pet waste management	X
O&M Activity 15 – Building exterior cleaning and maintenance	
NOTES:	
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SECTION 3 – PRACTICES, POLICIES & PROCEDURES

RHODODENDRON PARK

City of Kenmore O&M LAND USE WORKSHEET PARKS – RHODODENDRON PARK	
DESCRIPTION: Rhododendron Park is located at 6910 NE 170 TH ST. It is approximately 13 acres in size and drains to Lake Washington via Sammamish River. Amenities include: • picnic tables • covered picnic shelter • cooking facilities • playgrounds • restroom facilities • gravel and paved trails • trash and recycling receptacles • senior center • paved parking	
APPLICABLE O&M ACTIVITIES:	
O&M Activity 1 – Pipe Cleaning	X
O&M Activity 2 – Cleaning of culverts that convey stormwater in ditch systems	X
O&M Activity 3 – Ditch maintenance	X
O&M Activity 4 – Street cleaning	X
O&M Activity 5 – Road repair and resurfacing, including pavement grinding	X
O&M Activity 6 – Snow and ice control	X
O&M Activity 7 – Utility installation	
O&M Activity 8 – Pavement striping maintenance	X
O&M Activity 9 – Maintaining roadside areas, including vegetation mgmt.	X
O&M Activity 10 – Dust control	
O&M Activity 11 – Application of fertilizers, pesticides, and herbicides	X
O&M Activity 12 – Sediment and erosion control	
O&M Activity 13 – Landscape maintenance and vegetation disposal	X
O&M Activity 14 – Trash and pet waste management	X
O&M Activity 15 – Building exterior cleaning and maintenance	X
NOTES:	
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SECTION 3 – PRACTICES, POLICIES & PROCEDURES

WALLACE SWAMP CREEK PARK

City of Kenmore O&M LAND USE WORKSHEET PARKS – WALLACE SWAMP CREEK PARK	
DESCRIPTION: Wallace Swamp Creek Park is located at 19851 73 RD AVE NE. It is approximately 17 acres in size and drains to Lake Washington via Swamp Creek. Amenities include: • Trails • Picnic tables • Surface Water Facility • Paved parking • Gravel trails	
APPLICABLE O&M ACTIVITIES:	
O&M Activity 1 – Pipe Cleaning	X
O&M Activity 2 – Cleaning of culverts that convey stormwater in ditch systems	X
O&M Activity 3 – Ditch maintenance	X
O&M Activity 4 – Street cleaning	X
O&M Activity 5 – Road repair and resurfacing, including pavement grinding	X
O&M Activity 6 – Snow and ice control	
O&M Activity 7 – Utility installation	
O&M Activity 8 – Pavement striping maintenance	
O&M Activity 9 – Maintaining roadside areas, including vegetation mgmt.	
O&M Activity 10 – Dust control	X
O&M Activity 11 – Application of fertilizers, pesticides, and herbicides	X
O&M Activity 12 – Sediment and erosion control	X
O&M Activity 13 – Landscape maintenance and vegetation disposal	X
O&M Activity 14 – Trash and pet waste management	X
O&M Activity 15 – Building exterior cleaning and maintenance	
NOTES:	
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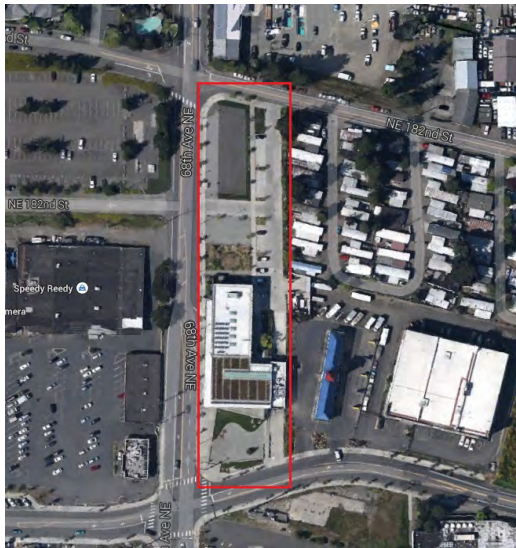
SECTION 3 – PRACTICES, POLICIES & PROCEDURES

SQUIRES LANDING PARK

City of Kenmore O&M LAND USE WORKSHEET PARKS – SQUIRES LANDING PARK	
DESCRIPTION: Squire's Landing Park is located at 7515 NE 175 TH ST. It is approximately 40 acres in size and drains to Swamp Creek and Sammamish River. Amenities include: • trails • parking • boat House • water Access	
APPLICABLE O&M ACTIVITIES:	
O&M Activity 1 – Pipe Cleaning	
O&M Activity 2 – Cleaning of culverts that convey stormwater in ditch systems	
O&M Activity 3 – Ditch maintenance	
O&M Activity 4 – Street cleaning	
O&M Activity 5 – Road repair and resurfacing, including pavement grinding	
O&M Activity 6 – Snow and ice control	
O&M Activity 7 – Utility installation	
O&M Activity 8 – Pavement striping maintenance	
O&M Activity 9 – Maintaining roadside areas, including vegetation mgmt.	
O&M Activity 10 – Dust control	
O&M Activity 11 – Application of fertilizers, pesticides, and herbicides	X
O&M Activity 12 – Sediment and erosion control	
O&M Activity 13 – Landscape maintenance and vegetation disposal	X
O&M Activity 14 – Trash and pet waste management	X
O&M Activity 15 – Building exterior cleaning and maintenance	X
NOTES:	
 ©Google	

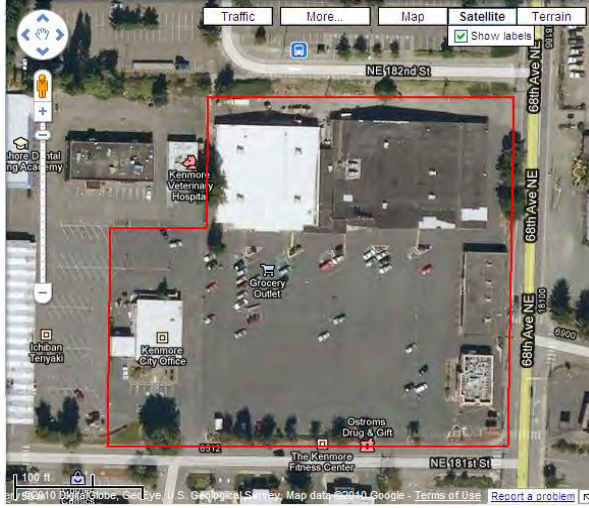
SECTION 3 – PRACTICES, POLICIES & PROCEDURES

DEVELOPED PARCELS**CITY HALL**

City of Kenmore O&M LAND USE WORKSHEET DEVELOPED PARCELS – CITY HALL	
DESCRIPTION: City Hall is located at 18120 68 TH AVE NE. It is approximately 1.6 acres in size and drains to Swamp Creek.	
APPLICABLE O&M ACTIVITIES:	
O&M Activity 1 – Pipe Cleaning	X
O&M Activity 2 – Cleaning of culverts that convey stormwater in ditch systems	
O&M Activity 3 – Ditch maintenance	
O&M Activity 4 – Street cleaning	
O&M Activity 5 – Road repair and resurfacing, including pavement grinding	X
O&M Activity 6 – Snow and ice control	X
O&M Activity 7 – Utility installation	
O&M Activity 8 – Pavement striping maintenance	X
O&M Activity 9 – Maintaining roadside areas, including vegetation mgmt.	
O&M Activity 10 – Dust control	
O&M Activity 11 – Application of fertilizers, pesticides, and herbicides	X
O&M Activity 12 – Sediment and erosion control	
O&M Activity 13 – Landscape maintenance and vegetation disposal	X
O&M Activity 14 – Trash and pet waste management	X
O&M Activity 15 – Building exterior cleaning and maintenance	X
NOTES:	
 ©Google	

SECTION 3 – PRACTICES, POLICIES & PROCEDURES

KENMORE VILLAGE & POST OFFICE

City of Kenmore O&M LAND USE WORKSHEET DEVELOPED PARCEL – KENMORE VILLAGE	
DESCRIPTION: Kenmore Village occupies 3 parcels in Kenmore on NE 181 ST ST & 68 TH AVE NE. The properties are approximately 4.8 acres in size and drain to Sammamish River. The site is undergoing development and the configuration and ownership may change in 2015 or sometime after.	
APPLICABLE O&M ACTIVITIES:	
O&M Activity 1 – Pipe Cleaning	X
O&M Activity 2 – Cleaning of culverts that convey stormwater in ditch systems	
O&M Activity 3 – Ditch maintenance	
O&M Activity 4 – Street cleaning	X
O&M Activity 5 – Road repair and resurfacing, including pavement grinding	X
O&M Activity 6 – Snow and ice control	
O&M Activity 7 – Utility installation	
O&M Activity 8 – Pavement striping maintenance	X
O&M Activity 9 – Maintaining roadside areas, including vegetation mgmt.	
O&M Activity 10 – Dust control	
O&M Activity 11 – Application of fertilizers, pesticides, and herbicides	X
O&M Activity 12 – Sediment and erosion control	
O&M Activity 13 – Landscape maintenance and vegetation disposal	X
O&M Activity 14 – Trash and pet waste management	X
O&M Activity 15 – Building exterior cleaning and maintenance	X
NOTES:	
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SECTION 3 – PRACTICES, POLICIES & PROCEDURES

UNDEVELOPED PARCELS

City of Kenmore O&M LAND USE WORKSHEET UNDEVELOPED PARCELS	
DESCRIPTION: The City owns approximately 14 undeveloped parcels. 9 of these properties were purchased in the Swamp Creek flood plain, 3 properties are within the Sammamish River floodplain (Inglewood Wetlands), and two are roadside parcels.	
APPLICABLE O&M ACTIVITIES:	
O&M Activity 1 – Pipe Cleaning	
O&M Activity 2 – Cleaning of culverts that convey stormwater in ditch systems	
O&M Activity 3 – Ditch maintenance	
O&M Activity 4 – Street cleaning	
O&M Activity 5 – Road repair and resurfacing, including pavement grinding	
O&M Activity 6 – Snow and ice control	
O&M Activity 7 – Utility installation	
O&M Activity 8 – Pavement striping maintenance	
O&M Activity 9 – Maintaining roadside areas, including vegetation mgmt.	
O&M Activity 10 – Dust control	
O&M Activity 11 – Application of fertilizers, pesticides, and herbicides	
O&M Activity 12 – Sediment and erosion control	
O&M Activity 13 – Landscape maintenance and vegetation disposal	
O&M Activity 14 – Trash and pet waste management	X
O&M Activity 15 – Building exterior cleaning and maintenance	
NOTES: For locations refer to: Map 4-1, Table 4-1 (Public Lands)	

SECTION 3 – PRACTICES, POLICIES & PROCEDURES

STORMWATER FACILITIES

City of Kenmore O&M LAND USE WORKSHEET STORMWATER FACILITIES	
DESCRIPTION: Stormwater facilities are engineered facilities that are designed to convey storm runoff, remove pollutants, and to control flow rates. Kenmore has adopted the facility management process used by King County. Approximately 40 Kenmore properties contain stormwater facilities. Appendix A of the SWDM addresses sediment and erosion control, landscape maintenance and vegetation disposal and trash management.	
APPLICABLE O&M ACTIVITIES:	
O&M Activity 1 – Pipe Cleaning	X
O&M Activity 2 – Cleaning of culverts that convey stormwater in ditch systems	X
O&M Activity 3 – Ditch maintenance	X
O&M Activity 4 – Street cleaning	
O&M Activity 5 – Road repair and resurfacing, including pavement grinding	X
O&M Activity 6 – Snow and ice control	
O&M Activity 7 – Utility installation	
O&M Activity 8 – Pavement striping maintenance	
O&M Activity 9 – Maintaining roadside areas, including vegetation mgmt.	X
O&M Activity 10 – Dust control	
O&M Activity 11 – Application of fertilizers, pesticides, and herbicides	X
O&M Activity 12 – Sediment and erosion control	X
O&M Activity 13 – Landscape maintenance and vegetation disposal	X
O&M Activity 14 – Trash and pet waste management	X
O&M Activity 15 – Building exterior cleaning and maintenance	X
NOTES: For locations refer to: Map 2-2, Table 2-2 (Public Stormwater Facilities) Map 2-3, Table 2-3 (Private Stormwater Facilities)	

SECTION 5 – SWPPP

SECTION 4 - TRAINING

Training is required for Kenmore employees whose construction, operations or maintenance job functions may impact water quality. Relevant training addresses the importance of protecting water quality, the requirements of this Permit, operation and maintenance standards, inspection procedures, selecting appropriate BMPs, ways to perform job activities to prevent or minimize impacts to water quality, and procedures for reporting water quality concerns, including potential illicit discharges.

The City of Kenmore contracts out most O&M work. The city has approximately six staff that oversees all components of O&M activities and contracts. The Permit does not require Kenmore to provide, oversee or enforce any training programs for its contractors, however, Kenmore expects any O&M contractor conducting work for Kenmore or on Kenmore's behalf to fully comply with any federal, state and local water quality regulations including the provisions set forth in the Permit.

For more specific information on current Kenmore contractors' training records please contact:

Current Kenmore O&M Contractors

Updated February 2015

NAME/ORGANIZATION	CONTACT	PHONE	ADDRESS	SERVICE
KING COUNTY WATER AND LAND RESOURCES DIVISION	ADMIN	(206)477-4800	201 S JACKSON ST STE 600 SEATTLE, WA 98104	ENGINEERING/ WQ AUDITS
KING COUNTY ROAD SERVICES DIVISION – MAINTENANCE & OPERATIONS	ADMIN	(206)296-8100	155 MONROE AVE NE RENTON, WA 98056	FACILITY MAINTENANCE
KING COUNTY COMMUNITY WORK PROGRAM	ADMIN	(206)477-0667	400 YESLER WAY RM 260 SEATTLE, WA 98104	VEGETATION & LANDSCAPE MAINTENANCE
LAKE FOREST PARK	FRANK ZENK	(206)368-5440	17425 BALLINGER WAY NE LAKE FOREST PARK, WA 98155	GENERAL OPERATIONS AND MAINTENANCE
INNOVATIVE VACUUM SERVICES	ROBERT WINKOSKI	(206)783-3317	20909 70 TH AVE W EDMONDS, WA 98026	VACTORING
TOTAL LANDSCAPING CORPORATION	MAIN LINE	(425)820-4358	6013 238 TH ST SE WOODINVILLE, WA 98072	LANDSCAPE MAINTENANCE
NORTHWEST LANDSCAPE SERVICES	MAINLINE	(425)481-0919	7627 W BOSTIAN RD WOODINVILLE, WA 98072	LANDSCAPE MAINTENANCE
JSH PROPERTIES	MAINLINE	(425)455-0500	10655 NE 4 TH ST #901 BELLEVUE, WA 98004	PROPERTY MANAGEMENT
WASTE MANAGEMENT	MAINLINE	(800)592-9995	6311 234 TH ST SE WOODINVILLE, WA 98072	WASTE DISPOSAL MANAGEMENT

SECTION 5 – SWPPP

SECTION 5 – SWPPP

CITY OF LAKE FOREST PARK MAINTENANCE YARD

Kenmore does not own or maintain any maintenance yards; however Kenmore does utilize the Lake Forest Park maintenance yard located in Lake Forest Park, WA. Lake Forest Park is responsible for maintaining a Stormwater Pollution Prevention Plan (SWPPP) for this facility.

Lake Forest Park can be contacted at:

Frank Zenk
Director of Public Services
(206) 368-5440

17425 Ballinger Way NE
Lake Forest Park, WA 98155

SECTION 5 – SWPPP

CITY OF KENMORE RHODODENDRON FACILITY SWPPP**GENERAL FACILITY INFORMATION**

Kenmore and Lake Forest Park utilize a small paved area in Rhododendron Park for storage and transportation of sweeping materials. Rhododendron Park is located at 6910 NE 170TH ST in Kenmore, WA. The facility is located in the southwestern corner of the park and is accessible via a city only access driveway off of NE 170TH ST (Map 6-1). Site runoff is contained in an underground tank. Solids are consolidated and removed from the site and disposed of appropriately. Solids consist primarily of sediment and vegetation debris. Small amounts of trash can also be present in solids.

STORMWATER POLLUTION PREVENTION TEAM

NAME/TITLE	RESPONSIBILITY	CONTACT INFO
RICHARD SAWYER KENMORE SURFACE WATER MANAGER	OPERATIONS/MAINTENANCE CESCL LIC# UW-260364	425-398-8900
JENNIFER GORDON KENMORE O&M MANAGER	OPERATIONS/MAINTENANCE CESCL LIC# UW-321938	425-398-8900
SCOTT WALKER LFP PW SUPERINTENDENT	OPERATIONS/MAINTENANCE	206-957-2825

SITE MAP

The facility site is located in the southwestern corner of Rhododendron Park at 6910 NE 170TH ST in Kenmore, WA (FIG 6-1).

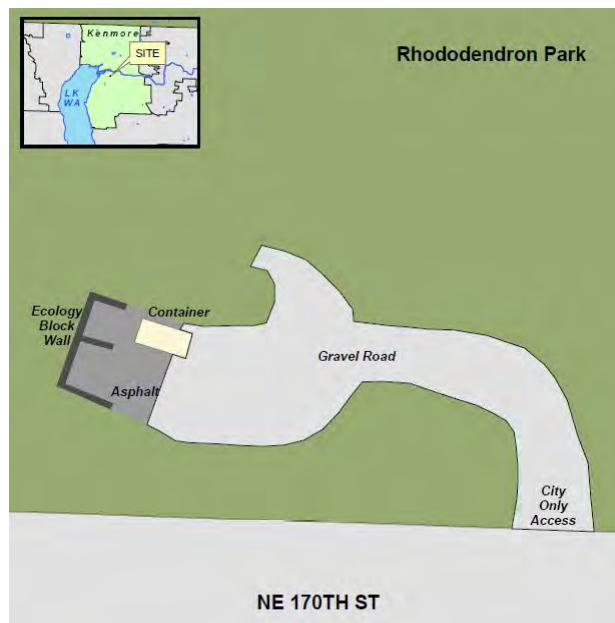


FIG 6-1 Facility is located at southwestern corner of Rhododendron Park.

SECTION 5 – SWPPP

FACILITY DRAINAGE

The materials storage area drains to an enclosed underground tank (FIG 6-2). The tank is comprised of two interconnected polyethylene 1700 gallon cisterns.

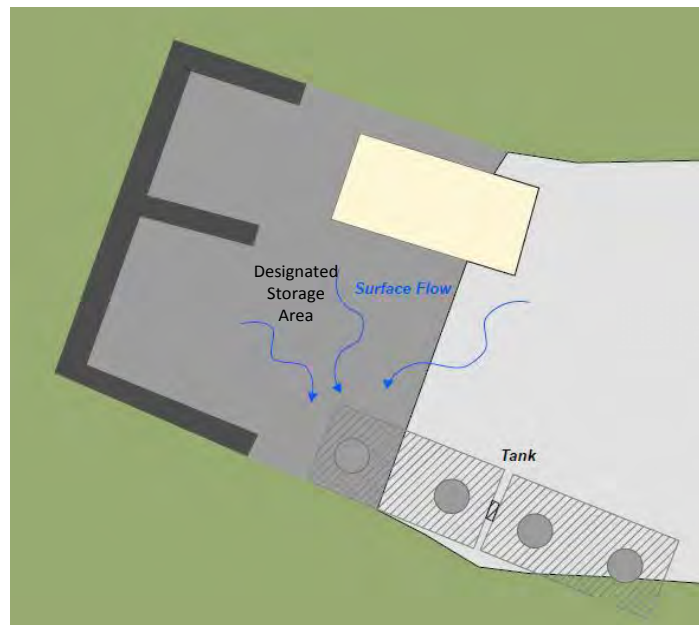


FIG 6-2 Paved area of facility drains to enclosed tank.

NONSTRUCTURAL CONTROLS

- Solids are removed from site regularly in transport container.
- Enclosed detention tank is pumped regularly.
- No storage of hazardous materials.
- No storage of materials outside designated storage areas.

STRUCTURAL CONTROLS

- Enclosed detention tank.
- Ecology block walls contain materials on site.
- Site perimeter is bermed with natural vegetation.
- Site is signed for City access only.

NON STORMWATER DISCHARGES

- The site does not have non-stormwater discharges when properly maintained.
- Enclosed detention tank does not discharge (containment only).

SECTION 5 – SWPPP

FACILITY PHOTOS



View of Facility looking west from entrance.



View of facility from north looking south. All surface runoff is collected in drain.

SECTION 5 – SWPPP



Entrance to facility from NE 170TH ST.

MAINTENANCE

Liquids are removed from the holding tanks approximately every 2-3 months depending on weather.

Solids are hauled from the site approximately twice per month, depending on quantity and season, in covered 20 yard Waste Management containers.

ANNUAL REVIEW

This SWPPP will be reviewed annually to account for any potential changes to the site, operations and/or personnel.

APPENDIX A – SWDM MAINTENANCE STANDARDS

APPENDIX A – SWDM MAINTENANCE STANDARDS

NO. 1 – DETENTION PONDS			
Maintenance Component	Defect or Problem	Conditions When Maintenance Is Needed	Results Expected When Maintenance Is Performed
Site	Trash and debris	Any trash and debris which exceed 1 cubic foot per 1,000 square feet (this is about equal to the amount of trash it would take to fill up one standard size office garbage can). In general, there should be no visual evidence of dumping.	Trash and debris cleared from site.
	Noxious weeds	Any noxious or nuisance vegetation which may constitute a hazard to County personnel or the public.	Noxious and nuisance vegetation removed according to applicable regulations. No danger of noxious vegetation where County personnel or the public might normally be.
	Contaminants and pollution	Any evidence of contaminants or pollution such as oil, gasoline, concrete slurries or paint.	Materials removed and disposed of according to applicable regulations. Source control BMPs implemented if appropriate. No contaminants present other than a surface oil film.
	Grass/groundcover	Grass or groundcover exceeds 18 inches in height.	Grass or groundcover mowed to a height no greater than 6 inches.
Top or Side Slopes of Dam, Berm or Embankment	Rodent holes	Any evidence of rodent holes if facility is acting as a dam or berm, or any evidence of water piping through dam or berm via rodent holes.	Rodents removed or destroyed and dam or berm repaired.
	Tree growth	Tree growth threatens integrity of slopes, does not allow maintenance access, or interferes with maintenance activity. If trees are not a threat or not interfering with access or maintenance, they do not need to be removed.	Trees do not hinder facility performance or maintenance activities.
	Erosion	Eroded damage over 2 inches deep where cause of damage is still present or where there is potential for continued erosion. Any erosion observed on a compacted slope.	Slopes stabilized using appropriate erosion control measures. If erosion is occurring on compacted slope, a licensed civil engineer should be consulted to resolve source of erosion.
	Settlement	Any part of a dam, berm or embankment that has settled 4 inches lower than the design elevation.	Top or side slope restored to design dimensions. If settlement is significant, a licensed civil engineer should be consulted to determine the cause of the settlement.
Storage Area	Sediment accumulation	Accumulated sediment that exceeds 10% of the designed pond depth.	Sediment cleaned out to designed pond shape and depth; pond reseeded if necessary to control erosion.
	Liner damaged (If Applicable)	Liner is visible or pond does not hold water as designed.	Liner repaired or replaced.
Inlet/Outlet Pipe.	Sediment accumulation	Sediment filling 20% or more of the pipe.	Inlet/outlet pipes clear of sediment.

APPENDIX A - 1

APPENDIX A – SWDM MAINTENANCE STANDARDS

NO. 1 – DETENTION PONDS			
Maintenance Component	Defect or Problem	Conditions When Maintenance Is Needed	Results Expected When Maintenance Is Performed
	Trash and debris	Trash and debris accumulated in inlet/outlet pipes (includes floatables and non-floatables).	No trash or debris in pipes.
	Damaged	Cracks wider than ¼-inch at the joint of the inlet/outlet pipes or any evidence of soil entering the vault at the joint of the inlet/outlet pipes.	No cracks more than ¼-inch wide at the joint of the inlet/outlet pipe.
Emergency Overflow/Spillway	Tree growth	Tree growth impedes flow or threatens stability of spillway.	Trees removed.
	Rock missing	Only one layer of rock exists above native soil in area five square feet or larger or any exposure of native soil on the spillway.	Spillway restored to design standards.

APPENDIX A – SWDM MAINTENANCE STANDARDS

NO. 2 – INFILTRATION FACILITIES			
Maintenance Component	Defect or Problem	Conditions When Maintenance Is Needed	Results Expected When Maintenance Is Performed
Site	Trash and debris	Any trash and debris which exceed 1 cubic foot per 1,000 square feet (this is about equal to the amount of trash it would take to fill up one standard size office garbage can). In general, there should be no visual evidence of dumping.	Trash and debris cleared from site.
	Noxious weeds	Any noxious or nuisance vegetation which may constitute a hazard to County personnel or the public.	Noxious and nuisance vegetation removed according to applicable regulations. No danger of noxious vegetation where County personnel or the public might normally be.
	Contaminants and pollution	Any evidence of contaminants or pollution such as oil, gasoline, concrete slurries or paint.	Materials removed and disposed of according to applicable regulations. Source control BMPs implemented if appropriate. No contaminants present other than a surface oil film.
	Grass/groundcover	Grass or groundcover exceeds 18 inches in height.	Grass or groundcover mowed to a height no greater than 6 inches.
Infiltration Pond, Top or Side Slopes of Dam, Berm or Embankment	Rodent holes	Any evidence of rodent holes if facility is acting as a dam or berm, or any evidence of water piping through dam or berm via rodent holes.	Rodents removed or destroyed and dam or berm repaired.
	Tree growth	Tree growth threatens integrity of dams, berms or slopes, does not allow maintenance access, or interferes with maintenance activity. If trees are not a threat to dam, berm, or embankment integrity or not interfering with access or maintenance, they do not need to be removed.	Trees do not hinder facility performance or maintenance activities.
	Erosion	Eroded damage over 2 inches deep where cause of damage is still present or where there is potential for continued erosion. Any erosion observed on a compacted slope.	Slopes stabilized using appropriate erosion control measures. If erosion is occurring on compacted slope, a licensed civil engineer should be consulted to resolve source of erosion.
	Settlement	Any part of a dam, berm or embankment that has settled 4 inches lower than the design elevation.	Top or side slope restored to design dimensions. If settlement is significant, a licensed civil engineer should be consulted to determine the cause of the settlement.
Infiltration Pond, Tank, Vault, Trench, or Small Basin Storage Area	Sediment accumulation	If two inches or more sediment is present or a percolation test indicates facility is working at or less than 90% of design.	Facility infiltrates as designed.
Infiltration Tank Structure	Plugged air vent	Any blockage of the vent.	Tank or vault freely vents.
	Tank bent out of shape	Any part of tank/pipe is bent out of shape more than 10% of its design shape.	Tank repaired or replaced to design.

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APPENDIX A – SWDM MAINTENANCE STANDARDS

NO. 2 – INFILTRATION FACILITIES			
Maintenance Component	Defect or Problem	Conditions When Maintenance Is Needed	Results Expected When Maintenance Is Performed
	Gaps between sections, damaged joints or cracks or tears in wall	A gap wider than ½-inch at the joint of any tank sections or any evidence of soil particles entering the tank at a joint or through a wall.	No water or soil entering tank through joints or walls.
Infiltration Vault Structure	Damage to wall, frame, bottom, and/or top slab	Cracks wider than ½-inch, any evidence of soil entering the structure through cracks or qualified inspection personnel determines that the vault is not structurally sound.	Vault is sealed and structurally sound.
Inlet/Outlet Pipes	Sediment accumulation	Sediment filling 20% or more of the pipe.	Inlet/outlet pipes clear of sediment.
	Trash and debris	Trash and debris accumulated in inlet/outlet pipes (includes floatables and non-floatables).	No trash or debris in pipes.
	Damaged	Cracks wider than ½-inch at the joint of the inlet/outlet pipes or any evidence of soil entering the vault at the joint of the inlet/outlet pipes.	No cracks more than ¼-inch wide at the joint of the inlet/outlet pipe.
Access Manhole	Cover/lid not in place	Cover/lid is missing or only partially in place. Any open manhole requires immediate maintenance.	Manhole access covered.
	Locking mechanism not working	Mechanism cannot be opened by one maintenance person with proper tools. Bolts cannot be seated. Self-locking cover/lid does not work.	Mechanism opens with proper tools.
	Cover/lid difficult to remove	One maintenance person cannot remove cover/lid after applying 80 lbs of lift.	Cover/lid can be removed and reinstalled by one maintenance person.
	Ladder rungs unsafe	Missing rungs, misalignment, rust, or cracks.	Ladder meets design standards. Allows maintenance person safe access.
Large access doors/plate	Damaged or difficult to open	Large access doors or plates cannot be opened/removed using normal equipment.	Replace or repair access door so it can be opened as designed.
	Gaps, doesn't cover completely	Large access doors not flat and/or access opening not completely covered.	Doors close flat and covers access opening completely.
	Lifting Rings missing, rusted	Lifting rings not capable of lifting weight of door or plate.	Lifting rings sufficient to lift or remove door or plate.
Infiltration Pond, Tank, Vault, Trench, or Small Basin Filter Bags	Plugged	Filter bag more than ½ full.	Replace filter bag or redesign system.
Infiltration Pond, Tank, Vault, Trench, or Small Basin Pre-settling Ponds and Vaults	Sediment accumulation	6" or more of sediment has accumulated.	Pre-settling occurs as designed

APPENDIX A – SWDM MAINTENANCE STANDARDS

NO. 2 – INFILTRATION FACILITIES			
Maintenance Component	Defect or Problem	Conditions When Maintenance Is Needed	Results Expected When Maintenance Is Performed
Infiltration Pond, Rock Filter	Plugged	High water level on upstream side of filter remains for extended period of time or little or no water flows through filter during heavy rain storms.	Rock filter replaced evaluate need for filter and remove if not necessary.
Infiltration Pond Emergency Overflow Spillway	Rock missing	Only one layer of rock exists above native soil in area five square feet or larger, or any exposure of native soil at the top of out flow path of spillway. Rip-rap on inside slopes need not be replaced.	Spillway restored to design standards.
	Tree growth	Tree growth impedes flow or threatens stability of spillway.	Trees removed.

APPENDIX A – SWDM MAINTENANCE STANDARDS

NO. 3 – DETENTION TANKS AND VAULTS			
Maintenance Component	Defect or Problem	Conditions When Maintenance is Needed	Results Expected When Maintenance is Performed
Site	Trash and debris	Any trash and debris which exceed 1 cubic foot per 1,000 square feet (this is about equal to the amount of trash it would take to fill up one standard size office garbage can). In general, there should be no visual evidence of dumping.	Trash and debris cleared from site.
	Noxious weeds	Any noxious or nuisance vegetation which may constitute a hazard to County personnel or the public.	Noxious and nuisance vegetation removed according to applicable regulations. No danger of noxious vegetation where County personnel or the public might normally be.
	Contaminants and pollution	Any evidence of contaminants or pollution such as oil, gasoline, concrete slurries, or paint.	Materials removed and disposed of according to applicable regulations. Source control BMPs implemented if appropriate. No contaminants present other than a surface oil film.
	Grass/groundcover	Grass or groundcover exceeds 18 inches in height.	Grass or groundcover mowed to a height no greater than 6 inches.
Tank or Vault Storage Area	Trash and debris	Any trash and debris accumulated in vault or tank (includes floatables and non-floatables).	No trash or debris in vault.
	Sediment accumulation	Accumulated sediment depth exceeds 10% of the diameter of the storage area for ½ length of storage vault or any point depth exceeds 15% of diameter. Example: 72-inch storage tank would require cleaning when sediment reaches depth of 7 inches for more than ½ length of tank.	All sediment removed from storage area.
Tank Structure	Plugged air vent	Any blockage of the vent.	Tank or vault freely vents.
	Tank bent out of shape	Any part of tank/pipe is bent out of shape more than 10% of its design shape.	Tank repaired or replaced to design.
	Gaps between sections, damaged joints or cracks or tears in wall	A gap wider than ½-inch at the joint of any tank sections or any evidence of soil particles entering the tank at a joint or through a wall.	No water or soil entering tank through joints or walls.
Vault Structure	Damage to wall, frame, bottom, and/or top slab	Cracks wider than ½-inch, any evidence of soil entering the structure through cracks or qualified inspection personnel determines that the vault is not structurally sound.	Vault is sealed and structurally sound.
Inlet/Outlet Pipes	Sediment accumulation	Sediment filling 20% or more of the pipe.	Inlet/outlet pipes clear of sediment.
	Trash and debris	Trash and debris accumulated in inlet/outlet pipes (includes floatables and non-floatables).	No trash or debris in pipes.
	Damaged	Cracks wider than ½-inch at the joint of the inlet/outlet pipes or any evidence of soil entering the vault at the joint of the inlet/outlet pipes.	No cracks more than ¼-inch wide at the joint of the inlet/outlet pipe.
Access Manhole	Cover/lid not in place	Cover/lid is missing or only partially in place. Any open manhole requires immediate maintenance.	Manhole access covered.

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APPENDIX A – SWDM MAINTENANCE STANDARDS

NO. 3 – DETENTION TANKS AND VAULTS			
Maintenance Component	Defect or Problem	Conditions When Maintenance is Needed	Results Expected When Maintenance is Performed
	Locking mechanism not working	Mechanism cannot be opened by one maintenance person with proper tools. Bolts cannot be seated. Self-locking cover/lid does not work.	Mechanism opens with proper tools.
	Cover/lid difficult to remove	One maintenance person cannot remove cover/lid after applying 80 lbs of lift.	Cover/lid can be removed and reinstalled by one maintenance person.
	Ladder rungs unsafe	Missing rungs, misalignment, rust, or cracks.	Ladder meets design standards. Allows maintenance person safe access.
Large access doors/plate	Damaged or difficult to open	Large access doors or plates cannot be opened/removed using normal equipment.	Replace or repair access door so it can be opened as designed.
	Gaps, doesn't cover completely	Large access doors not flat and/or access opening not completely covered.	Doors close flat and covers access opening completely.
	Lifting Rings missing, rusted	Lifting rings not capable of lifting weight of door or plate.	Lifting rings sufficient to lift or remove door or plate.

APPENDIX A – SWDM MAINTENANCE STANDARDS

NO. 4 – CONTROL STRUCTURE/FLOW RESTRICTOR			
Maintenance Component	Defect or Problem	Condition When Maintenance is Needed	Results Expected When Maintenance is Performed
Structure	Trash and debris	Trash or debris of more than ½ cubic foot which is located immediately in front of the structure opening or is blocking capacity of the structure by more than 10%.	No Trash or debris blocking or potentially blocking entrance to structure.
		Trash or debris in the structure that exceeds 1/3 the depth from the bottom of basin to invert the lowest pipe into or out of the basin.	No trash or debris in the structure.
		Deposits of garbage exceeding 1 cubic foot in volume.	No condition present which would attract or support the breeding of insects or rodents.
	Sediment	Sediment exceeds 60% of the depth from the bottom of the structure to the invert of the lowest pipe into or out of the structure or the bottom of the FROP-T section or is within 6 inches of the invert of the lowest pipe into or out of the structure or the bottom of the FROP-T section.	Sump of structure contains no sediment.
	Damage to frame and/or top slab	Corner of frame extends more than ¼ inch past curb face into the street (If applicable).	Frame is even with curb.
		Top slab has holes larger than 2 square inches or cracks wider than ¼ inch.	Top slab is free of holes and cracks.
		Frame not sitting flush on top slab, i.e., separation of more than ¼ inch of the frame from the top slab.	Frame is sitting flush on top slab.
	Cracks in walls or bottom	Cracks wider than ½ inch and longer than 3 feet, any evidence of soil particles entering structure through cracks, or maintenance person judges that structure is unsound.	Structure is sealed and structurally sound.
		Cracks wider than ½ inch and longer than 1 foot at the joint of any inlet/outlet pipe or any evidence of soil particles entering structure through cracks.	No cracks more than 1/4 inch wide at the joint of inlet/outlet pipe.
	Settlement/misalignment	Structure has settled more than 1 inch or has rotated more than 2 inches out of alignment.	Basin replaced or repaired to design standards.
	Damaged pipe joints	Cracks wider than ½-inch at the joint of the inlet/outlet pipes or any evidence of soil entering the structure at the joint of the inlet/outlet pipes.	No cracks more than ¼-inch wide at the joint of inlet/outlet pipes.
	Contaminants and pollution	Any evidence of contaminants or pollution such as oil, gasoline, concrete slurries or paint.	Materials removed and disposed of according to applicable regulations. Source control BMPs implemented if appropriate. No contaminants present other than a surface oil film.
	Ladder rungs missing or unsafe	Ladder is unsafe due to missing rungs, misalignment, rust, cracks, or sharp edges.	Ladder meets design standards and allows maintenance person safe access.
FROP-T Section	Damage	T section is not securely attached to structure wall and outlet pipe structure should support at least 1,000 lbs of up or down pressure.	T section securely attached to wall and outlet pipe.

APPENDIX A – SWDM MAINTENANCE STANDARDS

NO. 4 – CONTROL STRUCTURE/FLOW RESTRICTOR			
Maintenance Component	Defect or Problem	Condition When Maintenance is Needed	Results Expected When Maintenance is Performed
		Structure is not in upright position (allow up to 10% from plumb).	Structure in correct position.
		Connections to outlet pipe are not watertight or show signs of deteriorated grout.	Connections to outlet pipe are water tight; structure repaired or replaced and works as designed.
		Any holes—other than designed holes—in the structure.	Structure has no holes other than designed holes.
Cleanout Gate	Damaged or missing	Cleanout gate is missing.	Replace cleanout gate.
		Cleanout gate is not watertight.	Gate is watertight and works as designed.
		Gate cannot be moved up and down by one maintenance person.	Gate moves up and down easily and is watertight.
		Chain/rod leading to gate is missing or damaged.	Chain is in place and works as designed.
Orifice Plate	Damaged or missing	Control device is not working properly due to missing, out of place, or bent orifice plate.	Plate is in place and works as designed.
	Obstructions	Any trash, debris, sediment, or vegetation blocking the plate.	Plate is free of all obstructions and works as designed.
Overflow Pipe	Obstructions	Any trash or debris blocking (or having the potential of blocking) the overflow pipe.	Pipe is free of all obstructions and works as designed.
	Deformed or damaged lip	Lip of overflow pipe is bent or deformed.	Overflow pipe does not allow overflow at an elevation lower than design
Inlet/Outlet Pipe	Sediment accumulation	Sediment filling 20% or more of the pipe.	Inlet/outlet pipes clear of sediment.
	Trash and debris	Trash and debris accumulated in inlet/outlet pipes (includes floatables and non-floatables).	No trash or debris in pipes.
	Damaged	Cracks wider than ½-inch at the joint of the inlet/outlet pipes or any evidence of soil entering the vault at the joint of the inlet/outlet pipes.	No cracks more than ¼-inch wide at the joint of the inlet/outlet pipe.
Metal Grates (If Applicable)	Unsafe grate opening	Grate with opening wider than 7/8 inch.	Grate opening meets design standards.
	Trash and debris	Trash and debris that is blocking more than 20% of grate surface.	Grate free of trash and debris. footnote to guidelines for disposal
	Damaged or missing	Grate missing or broken member(s) of the grate.	Grate is in place and meets design standards.
Manhole Cover/Lid	Cover/lid not in place	Cover/lid is missing or only partially in place. Any open structure requires urgent maintenance.	Cover/lid protects opening to structure.
	Locking mechanism Not Working	Mechanism cannot be opened by one maintenance person with proper tools. Bolts cannot be seated. Self-locking cover/lid does not work.	Mechanism opens with proper tools.
	Cover/lid difficult to Remove	One maintenance person cannot remove cover/lid after applying 80 lbs. of lift.	Cover/lid can be removed and reinstalled by one maintenance person.

APPENDIX A – SWDM MAINTENANCE STANDARDS

NO. 5 – CATCH BASINS AND MANHOLES			
ERROR! NO TABLE OF CONTENTS ENTRIES FOUND.			
Maintenance Component	Defect or Problem	Condition When Maintenance is Needed	Results Expected When Maintenance is Performed
Structure	Sediment	Sediment exceeds 60% of the depth from the bottom of the catch basin to the invert of the lowest pipe into or out of the catch basin or is within 6 inches of the invert of the lowest pipe into or out of the catch basin.	Sump of catch basin contains no sediment.
	Trash and debris	Trash or debris of more than ½ cubic foot which is located immediately in front of the catch basin opening or is blocking capacity of the catch basin by more than 10%.	No Trash or debris blocking or potentially blocking entrance to catch basin.
		Trash or debris in the catch basin that exceeds 1/3 the depth from the bottom of basin to invert the lowest pipe into or out of the basin.	No trash or debris in the catch basin.
		Dead animals or vegetation that could generate odors that could cause complaints or dangerous gases (e.g., methane).	No dead animals or vegetation present within catch basin.
		Deposits of garbage exceeding 1 cubic foot in volume.	No condition present which would attract or support the breeding of insects or rodents.
	Damage to frame and/or top slab	Corner of frame extends more than ¼ inch past curb face into the street (If applicable).	Frame is even with curb.
		Top slab has holes larger than 2 square inches or cracks wider than ¼ inch.	Top slab is free of holes and cracks.
		Frame not sitting flush on top slab, i.e., separation of more than ¼ inch of the frame from the top slab.	Frame is sitting flush on top slab.
	Cracks in walls or bottom	Cracks wider than ½ inch and longer than 3 feet, any evidence of soil particles entering catch basin through cracks, or maintenance person judges that catch basin is unsound.	Catch basin is sealed and structurally sound.
		Cracks wider than ½ inch and longer than 1 foot at the joint of any inlet/outlet pipe or any evidence of soil particles entering catch basin through cracks.	No cracks more than 1/4 inch wide at the joint of inlet/outlet pipe.
	Settlement/misalignment	Catch basin has settled more than 1 inch or has rotated more than 2 inches out of alignment.	Basin replaced or repaired to design standards.
	Damaged pipe joints	Cracks wider than ½-inch at the joint of the inlet/outlet pipes or any evidence of soil entering the catch basin at the joint of the inlet/outlet pipes.	No cracks more than ¼-inch wide at the joint of inlet/outlet pipes.
	Contaminants and pollution	Any evidence of contaminants or pollution such as oil, gasoline, concrete slurries or paint.	Materials removed and disposed of according to applicable regulations. Source control BMPs implemented if appropriate. No contaminants present other than a surface oil film.
Inlet/Outlet Pipe	Sediment accumulation	Sediment filling 20% or more of the pipe.	Inlet/outlet pipes clear of sediment.

APPENDIX A – SWDM MAINTENANCE STANDARDS

NO. 5 – CATCH BASINS AND MANHOLES			
ERROR! NO TABLE OF CONTENTS ENTRIES FOUND.			
Maintenance Component	Defect or Problem	Condition When Maintenance is Needed	Results Expected When Maintenance is Performed
	Trash and debris	Trash and debris accumulated in inlet/outlet pipes (includes floatables and non-floatables).	No trash or debris in pipes.
	Damaged	Cracks wider than ½-inch at the joint of the inlet/outlet pipes or any evidence of soil entering the vault at the joint of the inlet/outlet pipes.	No cracks more than ¼-inch wide at the joint of the inlet/outlet pipe.
Metal Grates (Catch Basins)	Unsafe grate opening	Grate with opening wider than 7/8 inch.	Grate opening meets design standards.
	Trash and debris	Trash and debris that is blocking more than 20% of grate surface.	Grate free of trash and debris. footnote to guidelines for disposal
	Damaged or missing	Grate missing or broken member(s) of the grate. Any open structure requires urgent maintenance.	Grate is in place and meets design standards.
Manhole Cover/Lid	Cover/lid not in place	Cover/lid is missing or only partially in place. Any open structure requires urgent maintenance.	Cover/lid protects opening to structure.
	Locking mechanism Not Working	Mechanism cannot be opened by one maintenance person with proper tools. Bolts cannot be seated. Self-locking cover/lid does not work.	Mechanism opens with proper tools.
	Cover/lid difficult to Remove	One maintenance person cannot remove cover/lid after applying 80 lbs. of lift.	Cover/lid can be removed and reinstalled by one maintenance person.

APPENDIX A – SWDM MAINTENANCE STANDARDS

NO. 6 – CONVEYANCE PIPES AND DITCHES			
Maintenance Component	Defect or Problem	Conditions When Maintenance is Needed	Results Expected When Maintenance is Performed
Pipes	Sediment & debris accumulation	Accumulated sediment or debris that exceeds 20% of the diameter of the pipe.	Water flows freely through pipes.
	Vegetation/roots	Vegetation/roots that reduce free movement of water through pipes.	Water flows freely through pipes.
	Contaminants and pollution	Any evidence of contaminants or pollution such as oil, gasoline, concrete slurries or paint.	Materials removed and disposed of according to applicable regulations. Source control BMPs implemented if appropriate. No contaminants present other than a surface oil film.
	Damage to protective coating or corrosion	Protective coating is damaged; rust or corrosion is weakening the structural integrity of any part of pipe.	Pipe repaired or replaced.
	Damaged	Any dent that decreases the cross section area of pipe by more than 20% or is determined to have weakened structural integrity of the pipe.	Pipe repaired or replaced.
Ditches	Trash and debris	Trash and debris exceeds 1 cubic foot per 1,000 square feet of ditch and slopes.	Trash and debris cleared from ditches.
	Sediment accumulation	Accumulated sediment that exceeds 20% of the design depth.	Ditch cleaned/flushed of all sediment and debris so that it matches design.
	Noxious weeds	Any noxious or nuisance vegetation which may constitute a hazard to County personnel or the public.	Noxious and nuisance vegetation removed according to applicable regulations. No danger of noxious vegetation where County personnel or the public might normally be.
	Contaminants and pollution	Any evidence of contaminants or pollution such as oil, gasoline, concrete slurries or paint.	Materials removed and disposed of according to applicable regulations. Source control BMPs implemented if appropriate. No contaminants present other than a surface oil film.
	Vegetation	Vegetation that reduces free movement of water through ditches.	Water flows freely through ditches.
	Erosion damage to slopes	Any erosion observed on a ditch slope.	Slopes are not eroding.
	Rock lining out of place or missing (If Applicable)	One layer or less of rock exists above native soil area 5 square feet or more, any exposed native soil.	Replace rocks to design standards.

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NO. 7 – DEBRIS BARRIERS (E.G., TRASH RACKS)			
Maintenance Component	Defect or Problem	Condition When Maintenance is Needed	Results Expected When Maintenance is Performed.
Site	Trash and debris	Trash or debris plugging more than 20% of the area of the barrier.	Barrier clear to receive capacity flow.
	Sediment accumulation	Sediment accumulation of greater than 20% of the area of the barrier	Barrier clear to receive capacity flow.
Structure	Cracked broken or loose	Structure which bars attached to is damaged - pipe is loose or cracked or concrete structure is cracked, broken or loose.	Structure barrier attached to is sound.
Bars	Bar spacing	Bar spacing exceeds 6 inches.	Bars have at most 6 inch spacing.
	Damaged or missing bars	Bars are bent out of shape more than 3 inches.	Bars in place with no bends more than ¼ inch.
		Bars are missing or entire barrier missing.	Bars in place according to design.
		Bars are loose and rust is causing 50% deterioration to any part of barrier.	Repair or replace barrier to design standards.

APPENDIX A – SWDM MAINTENANCE STANDARDS

NO. 8 – ENERGY DISSIPATERS			
Maintenance Component	Defect or Problem	Conditions When Maintenance is Needed	Results Expected When Maintenance is Performed.
Site	Trash and debris	Trash and/or debris accumulation.	Dissipater clear of trash and/or debris.
	Contaminants and pollution	Any evidence of contaminants or pollution such as oil, gasoline, concrete slurries or paint.	Materials removed and disposed of according to applicable regulations. Source control BMPs implemented if appropriate. No contaminants present other than a surface oil film.
Rock Pad	Missing or moved Rock	Only one layer of rock exists above native soil in area five square feet or larger or any exposure of native soil.	Rock pad prevents erosion.
Dispersion Trench	Pipe plugged with sediment	Accumulated sediment that exceeds 20% of the design depth.	Pipe cleaned/flushed so that it matches design.
	Not discharging water properly	Visual evidence of water discharging at concentrated points along trench (normal condition is a “sheet flow” of water along trench).	Water discharges from feature by sheet flow.
	Perforations plugged.	Over 1/4 of perforations in pipe are plugged with debris or sediment.	Perforations freely discharge flow.
	Water flows out top of “distributor” catch basin.	Water flows out of distributor catch basin during any storm less than the design storm.	No flow discharges from distributor catch basin.
	Receiving area over-saturated	Water in receiving area is causing or has potential of causing landslide problems.	No danger of landslides.
Gabions	Damaged mesh	Mesh of gabion broken, twisted or deformed so structure is weakened or rock may fall out.	Mesh is intact, no rock missing.
	Corrosion	Gabion mesh shows corrosion through more than ¼ of its gage.	All gabion mesh capable of containing rock and retaining designed form.
	Collapsed or deformed baskets	Gabion basket shape deformed due to any cause.	All gabion baskets intact, structure stands as designed.
	Missing rock	Any rock missing that could cause gabion to lose structural integrity.	No rock missing.
Manhole/Chamber	Worn or damaged post, baffles or side of chamber	Structure dissipating flow deteriorates to ½ or original size or any concentrated worn spot exceeding one square foot which would make structure unsound.	Structure is in no danger of failing.
	Damage to wall, frame, bottom, and/or top slab	Cracks wider than ½-inch or any evidence of soil entering the structure through cracks, or maintenance inspection personnel determines that the structure is not structurally sound.	Manhole/chamber is sealed and structurally sound.
	Damaged pipe joints	Cracks wider than ½-inch at the joint of the inlet/outlet pipes or any evidence of soil entering the structure at the joint of the inlet/outlet pipes.	No soil or water enters and no water discharges at the joint of inlet/outlet pipes.

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NO. 9 – FENCING			
Maintenance Component	Defect or Problem	Conditions When Maintenance is Needed	Results Expected When Maintenance is Performed
Site	Erosion or holes under fence	Erosion or holes more than 4 inches high and 12-18 inches wide permitting access through an opening under a fence.	No access under the fence.
Wood Posts, Boards and Cross Members	Missing or damaged parts	Missing or broken boards, post out of plumb by more than 6 inches or cross members broken	No gaps on fence due to missing or broken boards, post plumb to within 1½ inches, cross members sound.
	Weakened by rotting or insects	Any part showing structural deterioration due to rotting or insect damage	All parts of fence are structurally sound.
	Damaged or failed post foundation	Concrete or metal attachments deteriorated or unable to support posts.	Post foundation capable of supporting posts even in strong wind.
Metal Posts, Rails and Fabric	Damaged parts	Post out of plumb more than 6 inches.	Post plumb to within 1½ inches.
		Top rails bent more than 6 inches.	Top rail free of bends greater than 1 inch.
		Any part of fence (including post, top rails, and fabric) more than 1 foot out of design alignment.	Fence is aligned and meets design standards.
		Missing or loose tension wire.	Tension wire in place and holding fabric.
	Deteriorated paint or protective coating	Part or parts that have a rusting or scaling condition that has affected structural adequacy.	Structurally adequate posts or parts with a uniform protective coating.
	Openings in fabric	Openings in fabric are such that an 8-inch diameter ball could fit through.	Fabric mesh openings within 50% of grid size.

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NO. 10 – GATES/BOLLARDS/ACCESS BARRIERS			
Maintenance Component	Defect or Problem	Conditions When Maintenance is Needed	Results Expected When Maintenance is Performed
Chain Link Fencing Gate	Damaged or missing members	Missing gate.	Gates in place.
		Broken or missing hinges such that gate cannot be easily opened and closed by a maintenance person.	Hinges intact and lubed. Gate is working freely.
		Gate is out of plumb more than 6 inches and more than 1 foot out of design alignment.	Gate is aligned and vertical.
		Missing stretcher bar, stretcher bands, and ties.	Stretcher bar, bands, and ties in place.
	Locking mechanism does not lock gate	Locking device missing, no-functioning or does not link to all parts.	Locking mechanism prevents opening of gate.
	Openings in fabric	Openings in fabric are such that an 8-inch diameter ball could fit through.	Fabric mesh openings within 50% of grid size.
Bar Gate	Damaged or missing cross bar	Cross bar does not swing open or closed, is missing or is bent to where it does not prevent vehicle access.	Cross bar swings fully open and closed and prevents vehicle access.
	Locking mechanism does not lock gate	Locking device missing, no-functioning or does not link to all parts.	Locking mechanism prevents opening of gate.
	Support post damaged	Support post does not hold cross bar up.	Cross bar held up preventing vehicle access into facility.
Bollards	Damaged or missing	Bollard broken, missing, does not fit into support hole or hinge broken or missing.	No access for motorized vehicles to get into facility.
	Does not lock	Locking assembly or lock missing or cannot be attached to lock bollard in place.	No access for motorized vehicles to get into facility.
Boulders	Dislodged	Boulders not located to prevent motorized vehicle access.	No access for motorized vehicles to get into facility.
	Circumvented	Motorized vehicles going around or between boulders.	No access for motorized vehicles to get into facility.

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NO. 11 – GROUNDS (LANDSCAPING)			
Maintenance Component	Defect or Problem	Conditions When Maintenance is Needed	Results Expected When Maintenance is Performed
Site	Trash or litter	Any trash and debris which exceed 1 cubic foot per 1,000 square feet (this is about equal to the amount of trash it would take to fill up one standard size office garbage can). In general, there should be no visual evidence of dumping.	Trash and debris cleared from site.
	Noxious weeds	Any noxious or nuisance vegetation which may constitute a hazard to County personnel or the public.	Noxious and nuisance vegetation removed according to applicable regulations. No danger of noxious vegetation where County personnel or the public might normally be.
	Contaminants and pollution	Any evidence of contaminants or pollution such as oil, gasoline, concrete slurries or paint.	Materials removed and disposed of according to applicable regulations. Source control BMPs implemented if appropriate. No contaminants present other than a surface oil film.
	Grass/groundcover	Grass or groundcover exceeds 18 inches in height.	Grass or groundcover mowed to a height no greater than 6 inches.
Trees and Shrubs	Hazard	Any tree or limb of a tree identified as having a potential to fall and cause property damage or threaten human life. A hazard tree identified by a qualified arborist must be removed as soon as possible.	No hazard trees in facility.
	Damaged	Limbs or parts of trees or shrubs that are split or broken which affect more than 25% of the total foliage of the tree or shrub.	Trees and shrubs with less than 5% of total foliage with split or broken limbs.
		Trees or shrubs that have been blown down or knocked over.	No blown down vegetation or knocked over vegetation. Trees or shrubs free of injury.
		Trees or shrubs which are not adequately supported or are leaning over, causing exposure of the roots.	Tree or shrub in place and adequately supported; dead or diseased trees removed.

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NO. 12 – ACCESS ROADS			
Maintenance Component	Defect or Problem	Condition When Maintenance is Needed	Results Expected When Maintenance is Performed
Site	Trash and debris	Trash and debris exceeds 1 cubic foot per 1,000 square feet (i.e., trash and debris would fill up one standard size garbage can).	Roadway drivable by maintenance vehicles.
		Debris which could damage vehicle tires or prohibit use of road.	Roadway drivable by maintenance vehicles.
	Contaminants and pollution	Any evidence of contaminants or pollution such as oil, gasoline, concrete slurries or paint.	Materials removed and disposed of according to applicable regulations. Source control BMPs implemented if appropriate. No contaminants present other than a surface oil film.
	Blocked roadway	Any obstruction which reduces clearance above road surface to less than 14 feet.	Roadway overhead clear to 14 feet high.
		Any obstruction restricting the access to a 10- to 12 foot width for a distance of more than 12 feet or any point restricting access to less than a 10 foot width.	At least 12-foot of width on access road.
Road Surface	Erosion, settlement, potholes, soft spots, ruts	Any surface defect which hinders or prevents maintenance access.	Road drivable by maintenance vehicles.
	Vegetation on road surface	Trees or other vegetation prevent access to facility by maintenance vehicles.	Maintenance vehicles can access facility.
Shoulders and Ditches	Erosion	Erosion within 1 foot of the roadway more than 8 inches wide and 6 inches deep.	Shoulder free of erosion and matching the surrounding road.
	Weeds and brush	Weeds and brush exceed 18 inches in height or hinder maintenance access.	Weeds and brush cut to 2 inches in height or cleared in such a way as to allow maintenance access.
Modular Grid Pavement	Contaminants and pollution	Any evidence of contaminants or pollution such as oil, gasoline, concrete slurries or paint.	Materials removed and disposed of according to applicable regulations. Source control BMPs implemented if appropriate. No contaminants present other than a surface oil film.
	Damaged or missing	Access surface compacted because of broken or missing modular block.	Access road surface restored so road infiltrates.

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NO. 13 – BASIC BIOFILTRATION SWALE (GRASS)			
Maintenance Component	Defect or Problem	Condition When Maintenance is Needed	Results Expected When Maintenance is Performed
Site	Trash and debris	Any trash and/or debris accumulated in the bioswale.	No trash or debris in bioswale.
	Contaminants and pollution	Any evidence of contaminants or pollution such as oil, gasoline, concrete slurries or paint.	Materials removed and disposed of according to applicable regulations. Source control BMPs implemented if appropriate. No contaminants present other than a surface oil film.
Swale Section	Sediment accumulation	Sediment depth exceeds 2 inches in 10% of the swale treatment area.	No sediment deposits in grass treatment area of the bioswale.
		Sediment inhibits grass growth over 10% of swale length.	Grass growth not inhibited by sediment.
		Sediment inhibits even spreading of flow.	Flow spreads evenly through swale
	Erosion/scouring	Eroded or scoured swale bottom due to channelization or high flows.	No eroded or scoured areas in bioswale. Cause of erosion or scour addressed.
	Poor vegetation coverage	Grass is sparse or bare or eroded patches occur in more than 10% of the swale bottom.	Swale has no bare spots and grass is thick and healthy.
	Grass too tall	Grass excessively tall (greater than 10 inches), grass is thin or nuisance weeds and other vegetation has taken over.	Grass is between 3 and 4 inches tall, thick and healthy. No clippings left in swale. No nuisance vegetation present.
	Excessive shade	Grass growth is poor because sunlight does not reach swale.	Health grass growth or swale converted to a wet bioswale.
	Constant baseflow	Continuous flow through the swale, even when it has been dry for weeks or an eroded, muddy channel has formed in the swale bottom.	Baseflow removed from swale by a low-flow pea-gravel drain or bypassed around the swale.
	Standing water	Water pools in the swale between storms or does not drain freely.	Swale freely drains and there is no standing water in swale between storms.
	Channelization	Flow concentrates and erodes channel through swale.	No flow channels in swale.
Flow Spreader	Concentrated flow	Flow from spreader not uniformly distributed across entire swale width.	Flows are spread evenly over entire swale width.
Inlet/Outlet Pipe	Sediment accumulation	Sediment filling 20% or more of the pipe.	Inlet/outlet pipes clear of sediment.
	Trash and debris	Trash and debris accumulated in inlet/outlet pipes (includes floatables and non-floatables).	No trash or debris in pipes.
	Damaged	Cracks wider than ½-inch at the joint of the inlet/outlet pipes or any evidence of soil entering the vault at the joint of the inlet/outlet pipes.	No cracks more than ¼-inch wide at the joint of the inlet/outlet pipe.

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NO. 14 – WET BIOFILTRATION SWALE			
Maintenance Component	Defect or Problem	Condition When Maintenance is Needed	Results Expected When Maintenance Is Performed
Site	Trash and debris	Any trash and/or debris accumulated at the site.	No trash or debris at the site.
	Contaminants and pollution	Any evidence of contaminants or pollution such as oil, gasoline, concrete slurries or paint.	Materials removed and disposed of according to applicable regulations. Source control BMPs implemented if appropriate. No contaminants present other than a surface oil film.
Swale Section	Sediment accumulation	Sediment depth exceeds 2 inches in 10% of the swale treatment area.	No sediment deposits in treatment area.
	Erosion/scouring	Eroded or scoured swale bottom due to channelization or high flows.	No eroded or scoured areas in bioswale. Cause of erosion or scour addressed.
	Water depth	Water not retained to a depth of about 4 inches during the wet season.	Water depth of 4 inches through out swale for most of wet season.
	Vegetation ineffective	Vegetation sparse, does not provide adequate filtration or crowded out by very dense clumps of cattail or nuisance vegetation.	Wetland vegetation fully covers bottom of swale and no cattails or nuisance vegetation present.
	Insufficient water	Wetland vegetation dies due to lack of water.	Wetland vegetation remains healthy (may require converting to grass lined bioswale)
Flow Spreader	Concentrated flow	Flow from spreader not uniformly distributed across entire swale width.	Flows are spread evenly over entire swale width.
Inlet/Outlet Pipe	Sediment accumulation	Sediment filling 20% or more of the pipe.	Inlet/outlet pipes clear of sediment.
	Trash and debris	Trash and debris accumulated in inlet/outlet pipes (includes floatables and non-floatables).	No trash or debris in pipes.
	Damaged	Cracks wider than ½-inch at the joint of the inlet/outlet pipes or any evidence of soil entering the vault at the joint of the inlet/outlet pipes.	No cracks more than ¼-inch wide at the joint of the inlet/outlet pipe.

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NO. 15 – FILTER STRIP			
Maintenance Component	Defect or Problem	Condition When Maintenance is Needed	Results Expected When Maintenance Is Performed
Site	Trash and debris	Any trash and debris accumulated on the filter strip.	Filter strip free of any trash or debris
	Contaminants and pollution	Any evidence of contaminants or pollution such as oil, gasoline, concrete slurries or paint.	Materials removed and disposed of according to applicable regulations. Source control BMPs implemented if appropriate. No contaminants present other than a surface oil film.
Grass Strip	Sediment accumulation	Sediment accumulation on grass exceeds 2 inches depth.	No sediment deposits in treatment area.
	Erosion/scouring	Eroded or scoured swale bottom due to channelization or high flows.	No eroded or scoured areas in bioswale. Cause of erosion or scour addressed.
	Grass too tall	Grass excessively tall (greater than 10 inches), grass is thin or nuisance weeds and other vegetation has taken over.	Grass is between 3 and 4 inches tall, thick and healthy. No clippings left in swale. No nuisance vegetation present.
	Vegetation ineffective	Grass has died out, become excessively tall (greater than 10 inches) or nuisance vegetation is taking over.	Grass is healthy, less than 9 inches high and no nuisance vegetation present.
Flow Spreader	Concentrated flow	Flow from spreader not uniformly distributed across entire swale width.	Flows are spread evenly over entire swale width.
Inlet/Outlet Pipe	Sediment accumulation	Sediment filling 20% or more of the pipe.	Inlet/outlet pipes clear of sediment.
	Trash and debris	Trash and debris accumulated in inlet/outlet pipes (includes floatables and non-floatables).	No trash or debris in pipes.
	Damaged	Cracks wider than ½-inch at the joint of the inlet/outlet pipes or any evidence of soil entering the vault at the joint of the inlet/outlet pipes.	No cracks more than ¼-inch wide at the joint of the inlet/outlet pipe.

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NO. 16 – WETPOND			
Maintenance Component	Defect or Problem	Condition When Maintenance is Needed	Results Expected When Maintenance is Performed
Site	Trash and debris	Any trash and debris accumulated on the wetpond site.	Wetpond site free of any trash or debris.
	Noxious weeds	Any noxious or nuisance vegetation which may constitute a hazard to County personnel or the public.	Noxious and nuisance vegetation removed according to applicable regulations. No danger of noxious vegetation where County personnel or the public might normally be.
	Contaminants and pollution	Any evidence of contaminants or pollution such as oil, gasoline, concrete slurries or paint.	Materials removed and disposed of according to applicable regulations. Source control BMPs implemented if appropriate. No contaminants present other than a surface oil film.
	Grass/groundcover	Grass or groundcover exceeds 18 inches in height.	Grass or groundcover mowed to a height no greater than 6 inches.
Side Slopes of Dam, Berm, internal berm or Embankment	Rodent holes	Any evidence of rodent holes if facility is acting as a dam or berm, or any evidence of water piping through dam or berm via rodent holes.	Rodents removed or destroyed and dam or berm repaired.
	Tree growth	Tree growth threatens integrity of dams, berms or slopes, does not allow maintenance access, or interferes with maintenance activity. If trees are not a threat to dam, berm, or embankment integrity or not interfering with access or maintenance, they do not need to be removed.	Trees do not hinder facility performance or maintenance activities.
	Erosion	Eroded damage over 2 inches deep where cause of damage is still present or where there is potential for continued erosion. Any erosion observed on a compacted slope.	Slopes stabilized using appropriate erosion control measures. If erosion is occurring on compacted slope, a licensed civil engineer should be consulted to resolve source of erosion.
Top or Side Slopes of Dam, Berm, internal berm or Embankment	Settlement	Any part of a dam, berm or embankment that has settled 4 inches lower than the design elevation.	Top or side slope restored to design dimensions. If settlement is significant, a licensed civil engineer should be consulted to determine the cause of the settlement.
	Irregular surface on internal berm	Top of berm not uniform and level.	Top of berm graded flat to design elevation.
Pond Areas	Sediment accumulation (except first wetpool)	Accumulated sediment that exceeds 10% of the designed pond depth.	Sediment cleaned out to designed pond shape and depth.
	Sediment accumulation (first wetpool)	Sediment accumulations in pond bottom that exceeds the depth of sediment storage (1 foot) plus 6 inches.	Sediment storage contains no sediment.
	Liner damaged (If Applicable)	Liner is visible or pond does not hold water as designed.	Liner repaired or replaced.
	Water level (first wetpool)	First cell empty, doesn't hold water.	Water retained in first cell for most of the year.

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NO. 16 – WETPOND			
Maintenance Component	Defect or Problem	Condition When Maintenance is Needed	Results Expected When Maintenance Is Performed
	Algae mats (first wetpool)	Algae mats develop over more than 10% of the water surface should be removed.	Algae mats removed (usually in the late summer before Fall rains, especially in Sensitive Lake Protection Areas.)
Gravity Drain	Inoperable valve	Valve will not open and close.	Valve opens and closes normally.
	Valve won't seal	Valve does not seal completely.	Valve completely seals closed.
Emergency Overflow Spillway	Tree growth	Tree growth impedes flow or threatens stability of spillway.	Trees removed.
	Rock missing	Only one layer of rock exists above native soil in area five square feet or larger, or any exposure of native soil at the top of out flow path of spillway. Rip-rap on inside slopes need not be replaced.	Spillway restored to design standards.
Inlet/Outlet Pipe	Sediment accumulation	Sediment filling 20% or more of the pipe.	Inlet/outlet pipes clear of sediment.
	Trash and debris	Trash and debris accumulated in inlet/outlet pipes (includes floatables and non-floatables).	No trash or debris in pipes.
	Damaged	Cracks wider than ½-inch at the joint of the inlet/outlet pipes or any evidence of soil entering the vault at the joint of the inlet/outlet pipes.	No cracks more than ¼-inch wide at the joint of the inlet/outlet pipe.

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NO. 17 – WETVAULT			
Maintenance Component	Defect or Problem	Condition When Maintenance is Needed	Results Expected When Maintenance is Performed
Site	Trash and debris	Trash and debris accumulated on facility site.	Trash and debris removed from facility site.
Treatment Area	Trash and debris	Any trash and debris accumulated in vault (includes floatables and non-floatables).	No trash or debris in vault.
	Sediment accumulation	Sediment accumulation in vault bottom exceeds the depth of the sediment zone plus 6 inches.	No sediment in vault.
	Contaminants and pollution	Any evidence of contaminants or pollution such as oil, gasoline, concrete slurries or paint.	Materials removed and disposed of according to applicable regulations. Source control BMPs implemented if appropriate. No contaminants present other than a surface oil film.
Vault Structure	Damage to wall, frame, bottom, and/or top slab	Cracks wider than ½-inch, any evidence of soil entering the structure through cracks, vault does not retain water or qualified inspection personnel determines that the vault is not structurally sound.	Vault is sealed and structurally sound.
	Baffles damaged	Baffles corroding, cracking, warping and/or showing signs of failure or baffle cannot be removed.	Repair or replace baffles or walls to specifications.
	Ventilation	Ventilation area blocked or plugged.	No reduction of ventilation area exists.
Inlet/Outlet Pipe	Sediment accumulation	Sediment filling 20% or more of the pipe.	Inlet/outlet pipes clear of sediment.
	Trash and debris	Trash and debris accumulated in inlet/outlet pipes (includes floatables and non-floatables).	No trash or debris in pipes.
	Damaged	Cracks wider than ½-inch at the joint of the inlet/outlet pipes or any evidence of soil entering the vault at the joint of the inlet/outlet pipes.	No cracks more than ¼-inch wide at the joint of the inlet/outlet pipe.
Gravity Drain	Inoperable valve	Valve will not open and close.	Valve opens and closes normally.
	Valve won't seal	Valve does not seal completely.	Valve completely seals closed.
Access Manhole	Access cover/lid damaged or difficult to open	Access cover/lid cannot be easily opened by one person. Corrosion/deformation of cover/lid.	Access cover/lid can be opened by one person.
	Locking mechanism not working	Mechanism cannot be opened by one maintenance person with proper tools. Bolts cannot be seated. Self-locking cover/lid does not work.	Mechanism opens with proper tools.
	Cover/lid difficult to remove	One maintenance person cannot remove cover/lid after applying 80 lbs of lift.	Cover/lid can be removed and reinstalled by one maintenance person.
	Access doors/plate has gaps, doesn't cover completely	Large access doors not flat and/or access opening not completely covered.	Doors close flat and covers access opening completely.
	Lifting Rings missing, rusted	Lifting rings not capable of lifting weight of door or plate.	Lifting rings sufficient to lift or remove door or plate.
	Ladder rungs unsafe	Missing rungs, misalignment, rust, or cracks.	Ladder meets design standards. Allows maintenance person safe access.

APPENDIX A – SWDM MAINTENANCE STANDARDS

NO. 18 – STORMWATER WETLAND			
Maintenance Component	Defect or Problem	Condition When Maintenance is Needed	Results Expected When Maintenance Is Performed
Site	Trash and debris	Trash and debris accumulated on facility site.	Trash and debris removed from facility site.
	Noxious weeds	Any noxious or nuisance vegetation which may constitute a hazard to County personnel or the public.	Noxious and nuisance vegetation removed according to applicable regulations. No danger of noxious vegetation where County personnel or the public might normally be.
	Contaminants and pollution	Any evidence of contaminants or pollution such as oil, gasoline, concrete slurries or paint.	Materials removed and disposed of according to applicable regulations. Source control BMPs implemented if appropriate. No contaminants present other than a surface oil film.
	Grass/groundcover	Grass or groundcover exceeds 18 inches in height.	Grass or groundcover mowed to a height no greater than 6 inches.
Side Slopes of Dam, Berm, internal berm or Embankment	Rodent holes	Any evidence of rodent holes if facility is acting as a dam or berm, or any evidence of water piping through dam or berm via rodent holes.	Rodents removed or destroyed and dam or berm repaired.
	Tree growth	Tree growth threatens integrity of dams, berms or slopes, does not allow maintenance access, or interferes with maintenance activity. If trees are not a threat to dam, berm, or embankment integrity or not interfering with access or maintenance, they do not need to be removed.	Trees do not hinder facility performance or maintenance activities.
	Erosion	Eroded damage over 2 inches deep where cause of damage is still present or where there is potential for continued erosion. Any erosion observed on a compacted slope.	Slopes stabilized using appropriate erosion control measures. If erosion is occurring on compacted slope, a licensed civil engineer should be consulted to resolve source of erosion.
Top or Side Slopes of Dam, Berm, internal berm or Embankment	Settlement	Any part of a dam, berm or embankment that has settled 4 inches lower than the design elevation.	Top or side slope restored to design dimensions. If settlement is significant, a licensed civil engineer should be consulted to determine the cause of the settlement.
	Irregular surface on internal berm	Top of berm not uniform and level.	Top of berm graded flat to design elevation.
Pond Areas	Sediment accumulation (first cell/forebay)	Sediment accumulations in pond bottom that exceeds the depth of sediment storage (1 foot) plus 6 inches.	Sediment storage contains no sediment.
	Sediment accumulation (wetland cell)	Accumulated sediment that exceeds 10% of the designed pond depth.	Sediment cleaned out to designed pond shape and depth.
	Liner damaged (If Applicable)	Liner is visible or pond does not hold water as designed.	Liner repaired or replaced.
	Water level (first cell/forebay)	Cell does not hold 3 feet of water year round.	3 feet of water retained year round.

APPENDIX A – SWDM MAINTENANCE STANDARDS

NO. 18 – STORMWATER WETLAND			
Maintenance Component	Defect or Problem	Condition When Maintenance is Needed	Results Expected When Maintenance Is Performed
	Water level (wetland cell)	Cell does not retain water for at least 10 months of the year.	Water retained at least 10 months of the year or wetland plants are surviving.
	Algae mats (first cell/forebay)	Algae mats develop over more than 10% of the water surface should be removed.	Algae mats removed (usually in the late summer before Fall rains, especially in Sensitive Lake Protection Areas.)
	Vegetation	Vegetation dead, dying or not meeting original planting specifications.	Plants in wetland cell surviving and not interfering with wetland function.
Gravity Drain	Inoperable valve	Valve will not open and close.	Valve opens and closes normally.
	Valve won't seal	Valve does not seal completely.	Valve completely seals closed.
Emergency Overflow Spillway	Tree growth	Tree growth impedes flow or threatens stability of spillway.	Trees removed.
	Rock missing	Only one layer of rock exists above native soil in area five square feet or larger, or any exposure of native soil at the top of out flow path of spillway. Rip-rap on inside slopes need not be replaced.	Spillway restored to design standards.
Inlet/Outlet Pipe	Sediment accumulation	Sediment filling 20% or more of the pipe.	Inlet/outlet pipes clear of sediment.
	Trash and debris	Trash and debris accumulated in inlet/outlet pipes (includes floatables and non-floatables).	No trash or debris in pipes.
	Damaged	Cracks wider than ½-inch at the joint of the inlet/outlet pipes or any evidence of soil entering the vault at the joint of the inlet/outlet pipes.	No cracks more than ¼-inch wide at the joint of the inlet/outlet pipe.

APPENDIX A – SWDM MAINTENANCE STANDARDS

NO. 19 – SAND FILTER POND			
Maintenance Component	Defect or Problem	Condition When Maintenance is Needed	Results Expected When Maintenance Is Performed
Site	Trash and debris	Trash and debris accumulated on facility site.	Trash and debris removed from facility site.
	Noxious weeds	Any noxious or nuisance vegetation which may constitute a hazard to County personnel or the public.	Noxious and nuisance vegetation removed according to applicable regulations. No danger of noxious vegetation where County personnel or the public might normally be.
	Contaminants and pollution	Any evidence of contaminants or pollution such as oil, gasoline, concrete slurries or paint.	Materials removed and disposed of according to applicable regulations. Source control BMPs implemented if appropriate. No contaminants present other than a surface oil film.
	Grass/groundcover (not in the treatment area)	Grass or groundcover exceeds 18 inches in height.	Grass or groundcover mowed to a height no greater than 6 inches.
Pre-Treatment (if applicable)	Sediment accumulation	Sediment accumulations in pond bottom that exceeds the depth of sediment storage (1 foot) plus 6 inches.	Sediment storage contains no sediment.
	Liner damaged (If Applicable)	Liner is visible or pond does not hold water as designed.	Liner repaired or replaced.
	Water level	Cell empty, doesn't hold water.	Water retained in first cell for most of the year.
	Algae mats	Algae mats develop over more than 10% of the water surface should be removed.	Algae mats removed (usually in the late summer before Fall rains, especially in Sensitive Lake Protection Areas.)
Pond Area	Sediment accumulation	Sediment or crust depth exceeds ½-inch over 10 % of surface area of sand filter.	No sediment or crust deposit on sand filter that would impede permeability of the filter section.
	Grass (if applicable)	Grass becomes excessively tall (greater than 6 inches) or when nuisance weeds and other vegetation start to take over or thatch build up occurs.	Mow vegetation and/or remove nuisance vegetation.
Side Slopes of Pond	Rodent holes	Any evidence of rodent holes if facility is acting as a dam or berm, or any evidence of water piping through dam or berm via rodent holes.	Rodents removed or destroyed and dam or berm repaired.
	Tree growth	Tree growth threatens integrity of dams, berms or slopes, does not allow maintenance access, or interferes with maintenance activity. If trees are not a threat to dam, berm, or embankment integrity or not interfering with access or maintenance, they do not need to be removed.	Trees do not hinder facility performance or maintenance activities.
	Erosion	Eroded damage over 2 inches deep where cause of damage is still present or where there is potential for continued erosion. Any erosion observed on a compacted slope.	Slopes stabilized using appropriate erosion control measures. If erosion is occurring on compacted slope, a licensed civil engineer should be consulted to resolve source of erosion.

APPENDIX A – SWDM MAINTENANCE STANDARDS

NO. 19 – SAND FILTER POND			
Maintenance Component	Defect or Problem	Condition When Maintenance is Needed	Results Expected When Maintenance Is Performed
Sand Filter Media	Plugging	Drawdown of water through the sand filter media, takes longer than 24 hours, and/or flow through the overflow pipes occurs frequently. A sieve analysis of >4% -100 or >2% -200 requires replacing sand filter media.	Sand filter media surface is aerated and drawdown rate is normal.
	Prolonged flows	Sand is saturated for prolonged periods of time (several weeks) and does not dry out between storms due to continuous base flow or prolonged flows from detention facilities.	Excess flows bypassed or confined to small portion of filter media surface.
	Short circuiting	Flows become concentrated over one section of the sand filter rather than dispersed or drawdown rate of pool exceeds 12 inches per hour.	Flow and percolation of water through the sand filter is uniform and dispersed across the entire filter area and drawdown rate is normal.
	Media thickness	Sand thickness is less than 6 inches.	Rebuild sand thickness to a minimum of 6 inches and preferably to 18 inches.
Underdrains and Clean-Outs	Sediment/debris	Underdrains or clean-outs partially plugged or filled with sediment and/or debris. Junction box/cleanout wyes not watertight.	Underdrains and clean-outs free of sediment and debris and are watertight.
Inlet/Outlet Pipe	Sediment accumulation	Sediment filling 20% or more of the pipe.	Inlet/outlet pipes clear of sediment.
	Trash and debris	Trash and debris accumulated in inlet/outlet pipes (includes floatables and non-floatables).	No trash or debris in pipes.
	Damaged	Cracks wider than ½-inch at the joint of the inlet/outlet pipes or any evidence of soil entering the vault at the joint of the inlet/outlet pipes.	No cracks more than ¼-inch wide at the joint of the inlet/outlet pipe.
Rock Pad	Missing or out of place	Only one layer of rock exists above native soil in area five square feet or larger, or any exposure of native soil.	Rock pad restored to design standards.
Flow spreader	Concentrated flow	Flow from spreader not uniformly distributed across sand filter.	Flows spread evenly over sand filter.

APPENDIX A – SWDM MAINTENANCE STANDARDS

NO. 20 – SAND FILTER VAULT			
Maintenance Component	Defect or Problem	Condition When Maintenance is Needed	Results Expected When Maintenance is Performed
Site	Trash and debris	Trash and debris accumulated in facility.	Trash and debris removed from facility.
	Noxious weeds	Any noxious or nuisance vegetation which may constitute a hazard to County personnel or the public.	Noxious and nuisance vegetation removed according to applicable regulations. No danger of noxious vegetation where County personnel or the public might normally be.
	Contaminants and pollution	Any evidence of contaminants or pollution such as oil, gasoline, concrete slurries or paint.	Materials removed and disposed of according to applicable regulations. Source control BMPs implemented if appropriate. No contaminants present other than a surface oil film.
	Grass/groundcover	Grass or groundcover exceeds 18 inches in height.	Grass or groundcover mowed to a height no greater than 6 inches.
Pre-Treatment Chamber	Sediment accumulation	Sediment accumulation in first chamber exceeds the depth of the sediment zone plus 6 inches.	Sediment storage contains no sediment.
Sand Filter Media	Sediment accumulation	Sediment depth exceeds ½-inch on sand filter media.	Sand filter freely drains at normal rate.
	Trash and debris	Trash and debris accumulated in vault (floatables and non-floatables).	No trash or debris in vault.
	Plugging	Drawdown of water through the sand filter media, takes longer than 24 hours, and/or flow through the overflow pipes occurs frequently. A sieve analysis of >4% -100 or >2% -200 requires replacing sand filter media.	Sand filter media drawdown rate is normal.
	Short circuiting	Seepage or flow occurs along the vault walls and corners. Sand eroding near inflow area. Cleanout wyes are not watertight.	Sand filter media section re-laid and compacted along perimeter of vault to form a semi-seal. Erosion protection added to dissipate force of incoming flow and curtail erosion.
Vault Structure	Damaged to walls, frame, bottom and/or top slab.	Cracks wider than ½-inch, any evidence of soil entering the structure through cracks or qualified inspection personnel determines that the vault is not structurally sound.	Vault replaced or repaired to provide complete sealing of the structure.
	Ventilation	Ventilation area blocked or plugged.	No reduction of ventilation area exists.
Underdrains and Cleanouts	Sediment/debris	Underdrains or clean-outs partially plugged or filled with sediment and/or debris or are not watertight.	Underdrains and clean-outs free of sediment and debris and sealed.
Inlet/Outlet Pipe	Sediment accumulation	Sediment filling 20% or more of the pipe.	Inlet/outlet pipes clear of sediment.
	Trash and debris	Trash and debris accumulated in inlet/outlet pipes (includes floatables and non-floatables).	No trash or debris in pipes.
	Damaged	Cracks wider than ½-inch at the joint of the inlet/outlet pipes or any evidence of soil entering the vault at the joint of the inlet/outlet pipes.	No cracks more than ¼-inch wide at the joint of the inlet/outlet pipe.
Access Manhole	Cover/lid not in place	Cover/lid is missing or only partially in place. Any open manhole requires immediate maintenance.	Manhole access covered.

APPENDIX A – SWDM MAINTENANCE STANDARDS

NO. 20 – SAND FILTER VAULT			
Maintenance Component	Defect or Problem	Condition When Maintenance is Needed	Results Expected When Maintenance is Performed
	Locking mechanism not working	Mechanism cannot be opened by one maintenance person with proper tools. Bolts cannot be seated. Self-locking cover/lid does not work.	Mechanism opens with proper tools.
	Cover/lid difficult to remove	One maintenance person cannot remove cover/lid after applying 80 lbs of lift.	Cover/lid can be removed and reinstalled by one maintenance person.
	Ladder rungs unsafe	Missing rungs, misalignment, rust, or cracks.	Ladder meets design standards. Allows maintenance person safe access.
Large access doors/plate	Damaged or difficult to open	Large access doors or plates cannot be opened/removed using normal equipment.	Replace or repair access door so it can be opened as designed.
	Gaps, doesn't cover completely	Large access doors not flat and/or access opening not completely covered.	Doors close flat and covers access opening completely.
	Lifting Rings missing, rusted	Lifting rings not capable of lifting weight of door or plate.	Lifting rings sufficient to lift or remove door or plate.

APPENDIX A – SWDM MAINTENANCE STANDARDS

NO. 21 – STORMFILTER® (CARTRIDGE TYPE)			
Maintenance Component	Defect or Problem	Condition When Maintenance is Needed	Results Expected When Maintenance is Performed
Site	Trash and debris	Any trash or debris which impairs the function of the facility.	Trash and debris removed from facility.
	Contaminants and pollution	Any evidence of contaminants or pollution such as oil, gasoline, concrete slurries or paint.	Materials removed and disposed of according to applicable regulations. Source control BMPs implemented if appropriate. No contaminants present other than a surface oil film.
	Life cycle	System has not been inspected for three years.	Facility is re-inspected and any needed maintenance performed.
Vault Treatment Area	Sediment load on vault floor	Greater than 2 inches of sediment.	Vault is free of sediment.
	Sediment load on top of cartridges	Greater than ½ inch of sediment.	Vault is free of sediment.
	Multiple scum lines above top of cartridges	Thick or multiple scum lines above top of cartridges. Probably due to plugged canisters or underdrain manifold.	Cause of plugging corrected, canisters replaced if necessary.
Vault Structure	Damage to wall, Frame, Bottom, and/or Top Slab	Cracks wider than ½-inch and any evidence of soil particles entering the structure through the cracks, or qualified inspection personnel determines the vault is not structurally sound.	Vault replaced or repaired to design specifications.
	Baffles damaged	Baffles corroding, cracking warping, and/or showing signs of failure as determined by maintenance/inspection person.	Repair or replace baffles to specification.
Filter Media	Standing water in vault	9 inches or greater of static water in the vault for more than 24 hours following a rain event and/or overflow occurs frequently. Probably due to plugged filter media, underdrain or outlet pipe.	No standing water in vault 24 hours after a rain event.
	Short circuiting	Flows do not properly enter filter cartridges.	Flows go through filter media.
Underdrains and Clean-Outs	Sediment/debris	Underdrains or clean-outs partially plugged or filled with sediment and/or debris.	Underdrains and clean-outs free of sediment and debris.
Inlet/Outlet Pipe	Sediment accumulation	Sediment filling 20% or more of the pipe.	Inlet/outlet pipes clear of sediment.
	Trash and debris	Trash and debris accumulated in inlet/outlet pipes (includes floatables and non-floatables).	No trash or debris in pipes.
	Damaged	Cracks wider than ½-inch at the joint of the inlet/outlet pipes or any evidence of soil entering the vault at the joint of the inlet/outlet pipes.	No cracks more than ¼-inch wide at the joint of the inlet/outlet pipe.
Access Manhole	Cover/lid not in place	Cover/lid is missing or only partially in place. Any open manhole requires immediate maintenance.	Manhole access covered.
	Locking mechanism not working	Mechanism cannot be opened by one maintenance person with proper tools. Bolts cannot be seated. Self-locking cover/lid does not work.	Mechanism opens with proper tools.
	Cover/lid difficult to remove	One maintenance person cannot remove cover/lid after applying 80 lbs of lift.	Cover/lid can be removed and reinstalled by one maintenance person.

APPENDIX A – SWDM MAINTENANCE STANDARDS

NO. 21 – STORMFILTER® (CARTRIDGE TYPE)			
Maintenance Component	Defect or Problem	Condition When Maintenance is Needed	Results Expected When Maintenance is Performed
	Ladder rungs unsafe	Missing rungs, misalignment, rust, or cracks.	Ladder meets design standards. Allows maintenance person safe access.
Large access doors/plate	Damaged or difficult to open	Large access doors or plates cannot be opened/removed using normal equipment.	Replace or repair access door so it can be opened as designed.
	Gaps, doesn't cover completely	Large access doors not flat and/or access opening not completely covered.	Doors close flat and covers access opening completely.
	Lifting Rings missing, rusted	Lifting rings not capable of lifting weight of door or plate.	Lifting rings sufficient to lift or remove door or plate.

APPENDIX A – SWDM MAINTENANCE STANDARDS

NO. 22 – BAFFLE OIL/WATER SEPARATOR			
Maintenance Component	Defect	Condition When Maintenance is Needed	Results Expected When Maintenance is Performed
Site	Trash and debris	Any trash or debris which impairs the function of the facility.	Trash and debris removed from facility.
	Contaminants and pollution	Floating oil in excess of 1 inch in first chamber, any oil in other chambers or other contaminants of any type in any chamber.	No contaminants present other than a surface oil film.
Vault Treatment Area	Sediment accumulation	Sediment accumulates exceeds 6 inches in the vault.	No sediment in the vault.
	Discharge water not clear	Inspection of discharge water shows obvious signs of poor water quality- effluent discharge from vault shows thick visible sheen.	Effluent discharge is clear.
	Trash or debris accumulation	Any trash and debris accumulation in vault (floatables and non-floatables).	Vault is clear of trash and debris.
	Oil accumulation	Oil accumulations that exceed 1 inch, at the surface of the water in the oil/water separator chamber.	No visible oil depth on water.
Vault Structure	Damage to Wall, Frame, Bottom, and/or Top Slab	Cracks wider than ½-inch or evidence of soil particles entering the structure through the cracks, or maintenance/inspection personnel determines that the vault is not structurally sound.	Vault replaced or repaired to design specifications.
	Baffles damaged	Baffles corroding, cracking, warping and/or showing signs of failure as determined by maintenance inspection personnel.	Repair or replace baffles to specifications.
Gravity Drain	Inoperable valve	Valve will not open and close.	Valve opens and closes normally.
	Valve won't seal	Valve does not seal completely.	Valve completely seals closed.
Inlet/Outlet Pipe	Sediment accumulation	Sediment filling 20% or more of the pipe.	Inlet/outlet pipes clear of sediment.
	Trash and debris	Trash and debris accumulated in inlet/outlet pipes (includes floatables and non-floatables).	No trash or debris in pipes.
	Damaged	Cracks wider than ½-inch at the joint of the inlet/outlet pipes or any evidence of soil entering the vault at the joint of the inlet/outlet pipes.	No cracks more than ¼-inch wide at the joint of the inlet/outlet pipe.
Access Manhole	Cover/lid not in place	Cover/lid is missing or only partially in place. Any open manhole requires immediate maintenance.	Manhole access covered.
	Locking mechanism not working	Mechanism cannot be opened by one maintenance person with proper tools. Bolts cannot be seated. Self-locking cover/lid does not work.	Mechanism opens with proper tools.
	Cover/lid difficult to remove	One maintenance person cannot remove cover/lid after applying 80 lbs of lift.	Cover/lid can be removed and reinstalled by one maintenance person.
	Ladder rungs unsafe	Missing rungs, misalignment, rust, or cracks.	Ladder meets design standards. Allows maintenance person safe access.
Large access doors/plate	Damaged or difficult to open	Large access doors or plates cannot be opened/removed using normal equipment.	Replace or repair access door so it can be opened as designed.
	Gaps, doesn't cover completely	Large access doors not flat and/or access opening not completely covered.	Doors close flat and covers access opening completely.

APPENDIX A – SWDM MAINTENANCE STANDARDS

NO. 22 – BAFFLE OIL/WATER SEPARATOR			
Maintenance Component	Defect	Condition When Maintenance is Needed	Results Expected When Maintenance is Performed
	Lifting Rings missing, rusted	Lifting rings not capable of lifting weight of door or cover/lid.	Lifting rings sufficient to lift or remove cover/lid.

APPENDIX A – SWDM MAINTENANCE STANDARDS

NO. 23 – COALESCING PLATE OIL/WATER SEPARATOR			
Maintenance Component	Defect	Condition When Maintenance is Needed	Results Expected When Maintenance is Performed
Site	Trash and debris	Any trash or debris which impairs the function of the facility.	Trash and debris removed from facility.
	Contaminants and pollution	Floating oil in excess of 1 inch in first chamber, any oil in other chambers or other contaminants of any type in any chamber.	No contaminants present other than a surface oil film.
Vault Treatment Area	Sediment accumulation in the forebay	Sediment accumulation of 6 inches or greater in the forebay.	No sediment in the forebay.
	Discharge water not clear	Inspection of discharge water shows obvious signs of poor water quality - effluent discharge from vault shows thick visible sheen.	Repair function of plates so effluent is clear.
	Trash or debris accumulation	Trash and debris accumulation in vault (floatables and non-floatables).	Trash and debris removed from vault.
	Oil accumulation	Oil accumulation that exceeds 1 inch at the water surface in the in the coalescing plate chamber.	No visible oil depth on water and coalescing plates clear of oil.
Coalescing Plates	Damaged	Plate media broken, deformed, cracked and/or showing signs of failure.	Replace that portion of media pack or entire plate pack depending on severity of failure.
	Sediment accumulation	Any sediment accumulation which interferes with the operation of the coalescing plates.	No sediment accumulation interfering with the coalescing plates.
Vault Structure	Damage to Wall, Frame, Bottom, and/or Top Slab	Cracks wider than ½-inch and any evidence of soil particles entering the structure through the cracks, or maintenance inspection personnel determines that the vault is not structurally sound.	Vault replaced or repaired to design specifications.
	Baffles damaged	Baffles corroding, cracking, warping and/or showing signs of failure as determined by maintenance/inspection person.	Repair or replace baffles to specifications.
Ventilation Pipes	Plugged	Any obstruction to the ventilation pipes.	Ventilation pipes are clear.
Shutoff Valve	Damaged or inoperable	Shutoff valve cannot be opened or closed.	Shutoff valve operates normally.
Inlet/Outlet Pipe	Sediment accumulation	Sediment filling 20% or more of the pipe.	Inlet/outlet pipes clear of sediment.
	Trash and debris	Trash and debris accumulated in inlet/outlet pipes (includes floatables and non-floatables).	No trash or debris in pipes.
	Damaged	Cracks wider than ½-inch at the joint of the inlet/outlet pipes or any evidence of soil entering the vault at the joint of the inlet/outlet pipes.	No cracks more than ¼-inch wide at the joint of the inlet/outlet pipe.
Access Manhole	Cover/lid not in place	Cover/lid is missing or only partially in place. Any open manhole requires immediate maintenance.	Manhole access covered.
	Locking mechanism not working	Mechanism cannot be opened by one maintenance person with proper tools. Bolts cannot be seated. Self-locking cover/lid does not work.	Mechanism opens with proper tools.
	Cover/lid difficult to remove	One maintenance person cannot remove cover/lid after applying 80 lbs of lift.	Cover/lid can be removed and reinstalled by one maintenance person.

APPENDIX A – SWDM MAINTENANCE STANDARDS

NO. 23 – COALESCING PLATE OIL/WATER SEPARATOR			
Maintenance Component	Defect	Condition When Maintenance is Needed	Results Expected When Maintenance is Performed
	Ladder rungs unsafe	Missing rungs, misalignment, rust, or cracks.	Ladder meets design standards. Allows maintenance person safe access.
Large access doors/plate	Damaged or difficult to open	Large access doors or plates cannot be opened/removed using normal equipment.	Replace or repair access door so it can be opened as designed.
	Gaps, doesn't cover completely	Large access doors not flat and/or access opening not completely covered.	Doors close flat and covers access opening completely.
	Lifting Rings missing, rusted	Lifting rings not capable of lifting weight of door or plate.	Lifting rings sufficient to lift or remove door or plate.

APPENDIX A – SWDM MAINTENANCE STANDARDS

NO. 24 – CATCHBASIN INSERT			
Maintenance Component	Defect or Problem	Conditions When Maintenance is Needed	Results Expected When Maintenance is Performed
Media Insert	Visible Oil	Visible oil sheen passing through media	Media inset replaced.
	Insert does not fit catch basin properly	Flow gets into catch basin without going through media.	All flow goes through media.
	Filter media plugged	Filter media plugged.	Flow through filter media is normal.
	Oil absorbent media saturated	Media oil saturated.	Oil absorbent media replaced.
	Water saturated	Catch basin insert is saturated with water, which no longer has the capacity to absorb.	Insert replaced.
	Service life exceeded	Regular interval replacement due to typical average life of media insert product, typically one month.	Media replaced at manufacturer's recommended interval.
	Seasonal maintenance	When storms occur and during the wet season.	Remove, clean and replace or install new insert after major storms, monthly during the wet season or at manufacturer's recommended interval.



City of Kenmore IPM Manual



City of Kenmore
February 2010

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APPENDIX B – INTEGRATED PEST MANAGEMENT PLAN

INTRODUCTION

The City's parks and natural areas are a reflection of the values of the community. The Public Works Department strives to ensure that public landscapes remain attractive while meeting the expectations of its users as well as preserve natural ecosystems for the future. Park landscapes including trees, shrubs, flower beds, ponds, streams, rivers and lakes make up these open spaces which require maintenance and protection from damage by both humans as well as biological pests.

Integrated pest management (IPM) is a sustainable approach to managing pests by combining biological, cultural, physical and chemical methods in a way that will minimize the effects on the environment, minimize domestic and health risks, while considering budgetary restrictions. The objectives of the IPM program are:

To protect the health, safety, and welfare of the community

To provide efficient cost effective maintenance of the City's park resources, which includes non-chemical controls whenever possible

To design new and renovate existing landscape areas that suit site conditions with sustainable maintenance practices, thus providing a comprehensive stewardship of parks and natural resources

To restore, create and protect environmentally valuable areas such as wetlands and riparian areas, aquatic and terrestrial wildlife habitat, forests, and meadow areas.

DEFINITIONS

Integrated Pest Management (IPM) – A decision-making process to determine if, where, when and how pest problems will be managed. An IPM program includes all potential pest control strategies, but focuses on non-chemical controls whenever possible, in order to perpetuate a sustainable environment. The following four pest control methods may be employed in an IPM program:

Cultural Control: The use of sound horticultural practices to optimize plant health and to suppress insects, disease, and weed growth. Other cultural controls include site-appropriate design and the use of disease or drought-resistant plants.

Mechanical Control: The use of a variety of tools and equipment for the purpose of eliminating pests.

Biological Control: The use of biological control agents that act as predators or parasites of pest species or the use of other beneficial organisms that improve plant health by enhancing soil quality.

Chemical Control: The application of various agricultural products such as herbicides, insecticides or fungicides or other chemical compounds to a target pest as a means of control.

MSDS – Material Safety Data Sheets or MSDS are prepared by manufacturers of chemical products to relay the necessary safety and protective information to users about the said chemical compounds.

APPENDIX B – INTEGRATED PEST MANAGEMENT PLAN

Pesticide – Any material including agricultural chemicals, herbicides, insecticides and fungicides, or biological agents applied to a target pest as a control measure.

Pest – The word “pest” has been broadly defined in this document to include “injurious” insect species, plant pathogens, noxious or invasive vegetation, vertebrate animals such as rodents, structural pests or any other factor that creates an unhealthy environment for landscapes and structures.

Threshold – The term “threshold” refers to the point at which pest injury can no longer be tolerated without compromising the health or aesthetic value of a plant, ecosystem or other assets of value including human health. Once a threshold is being approached, some control measure may be necessary to suppress pest activity to acceptable levels.

BACKGROUND

Policies and Regulations

By legal definition, a pesticide is any substance for which a manufacturer or distributor claims pesticidal value. Today there are more than 32,000 pesticide products registered to destroy, prevent, attract, or in some manner, control pests.

The first act of pesticide control was passed in 1910 called the Insecticide Act of 1910. Since then there has been the Federal Insecticide, Fungicide, and Rodenticide Act of 1947 (FIRFA) and more recently, the Federal Environmental Pesticide Control Act of 1972. The major provisions of this act are:

- All pesticides must be registered with the U.S. Environmental Protection Agency (EPA). Qualified states may also register pesticides under special conditions.
- All pesticides will be classified for either general or restricted use.
- Only certified applicators, or those under their supervision, may apply restricted use pesticides. States have the authority to certify applicators.
- Use of pesticide inconsistent with labeling instructions is prohibited.
- Violators may be fined or imprisoned or both.

Other important regulations pertain to working within a protected areas, such as wetlands and riparian corridors, steep slopes and native growth protection areas. Certain activities are restricted in these areas and may require special permits granted by the City of Bellevue and other regulatory agencies. Further description of these areas and their restrictions will be described in specific chapters of this manual.

Pesticide Use Decision

The following agencies and individuals are involved in the determination of when to use pesticides in the City of Kenmore.

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- The **Washington State Department of Agriculture (WSDA)** sets the overall policy for pesticide use in the state of Washington. The approved chemical list can be seen on their website at www.agr.wa.gov.
- The **Washington Department of Ecology (WDOE)** requires a special permit for all aquatic herbicide applications. This permit allows herbicide control for all listed noxious weeds within an aquatic environment and monitors impacts levels on non-target plants.
- The **Public Works Operations Manager** is responsible for upholding and applying City’s pesticide policies and procedures within their areas of control. They are also responsible for ensuring that any personal protective equipment (PPE) is available and properly fitted for use by applicable staff for any chemical application.
- The **City’s Contractors**, under the direction of the Public Works Operations Manager, will determine the most appropriate control measure for actual landscape pest situations, including selecting the most appropriate pesticide products, if necessary. They are also responsible for the safe storage and handling of pesticides, spill responses, and related training.
- The **Public Works Operations Manager** is responsible for ensuring that City Contractors and Public Works staff are maintaining their mandatory annual recertification training for all licensed pesticide applicators, officially called “Pesticide Operators” that may be performing pesticide applications to any City owned properties.

Pest Management Guidelines

The following pest management guidelines generally apply to all City of Kenmore’s Parks and other public landscapes:

- City landscapes will be designed to minimize pest management. Where resources are available and existing design themes will not be compromised, modifying landscapes will be considered to reduce pest management.
- All reasonable, cost effective non-chemical pest control options will be considered first before resorting to the use of pesticides.
- Public Works will practice IPM in all pest management situations, understanding that some situations will require the use of a pesticide product.
- Certain levels of pest problems or populations will be accepted within established thresholds. Those thresholds will vary with the pest and the landscape setting.
- Public Works will not perform prophylactic or calendar-based pesticide applications.
- Only pesticides approved for that particular use will be used for the prescribed applications. When pesticides are applied, the smallest effective area will be treated, and the application will be timed to minimize public contact and the effects on the environment.
- Whenever possible, pesticide applications will be carefully timed to control the pest and reduce the need for re-treatment.
- In accordance with the Washington State Licensing Guidelines, all staff and contractors who are engaged in the use, application and storage of pesticides shall have a current Washington State

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Pesticide License. Contractors must notify the Public Works Department prior to the application of any pesticide for approval to use such pesticides.

- Public Works pesticide applicators shall strictly observe all pesticide products label requirements. All chemicals used on City property will have an MSDS on file, and will be available to all staff, contractors and the public upon request.
- Pesticides shall not be used to control plants with edible fruit during the fruiting season unless the plant being controlled is not of sufficient size to produce fruit. Fruiting plants such as blackberries should be first cut to the ground, allowed to re-sprout and then chemically controlled before the plant can produce fruit. Plants controlled in this manner should never be allowed to produce fruit in the future.
- All sites where pesticides have been applied shall be posted, as required by the Washington State Department of Agriculture (WSDA). As required by the WSDA, all applications of pesticides will be recorded.
- Public Works will continue its aggressive training program for all staff that apply pesticides, and will continue to emphasize learning new pest control techniques, as they are available.
- Public Works will continue to field test alternative controls to pesticide use and will implement successful control options as budget allows.
- To promote public understanding and support of the benefits of the IPM program, educational assistance and information will be provided to the public regarding the use of pesticides.
- The City shall comply with all Federal, State and Local regulations pertaining to the application, handling, storage, and disposal of pesticides.

Components of an IPM Program

IPM involves a structured decision-making process that embodies the philosophy and components of the IPM system. Through the following applications, as well as the proceeding guidelines, a well managed IPM program can be implemented.

- **Identification of pest populations:** Identify the nature, location, scale and the intensity of the problem.
- **Determine plant injury levels:** Define the tolerance levels for aesthetic and economic injuries. Prescribe the point at which actions must be taken to avoid exceeding the tolerance level.
- **Design and implement the pest management treatment:** Research all possible options and design strategies. Non-target organisms must be considered at this time. Use of pesticides is limited to situations where other cultural and biological options are not likely to be successful within the context of available resources. The pesticide chosen shall be the least toxic of those available and with the minimal of impact, as defined by that chemical's use.
- **Evaluate results.** Conduct follow-up inspections to support evaluation:
 - Did the pest population decline to acceptable levels?
 - Was there a negative impact on non-target organisms?
 - Do the host plants appear to be able to thrive following a successful treatment?

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- **Adjust and extend program as indicated.** Decide whether further treatment will be necessary, either on a temporary or permanent basis. If the treatment is to be on a permanent basis, schedule to plan potential site modifications to eradicate the problem or prevent future recurrences.
- **Create documentation of all research, monitoring, and application data.** A comprehensive system of forms for monitoring data and documenting treatment is a key component of a successful IPM program.
- **Share pest management information with decision-makers and maintenance staff.** Professional staff must know the degree to which landscape pest management programs impact existing staff, maintenance budgets, and park assets. Only through such understanding and ongoing communication can the best long-term strategies be developed for managing pest populations.

IPM Alternatives Selection Hierarchy

The following selection rationales are used as a guide in determining whether pesticides shall be used in place of other control methods:

- Proper planning and management decisions begin the IPM process.
- Cultural methods of vegetation and pest control are preferred and will be employed first.
- If unsuccessful, mechanical means of vegetation and pest control will be employed next where feasible, and then,
- Biological means of vegetation and pest control will be employed next where they are practical and feasible.
- Pesticides will only be used when no other feasible method exists that will control the pest within the realities of the location, site conditions, budget and other relevant considerations. At the same time, it is recognized that pesticide use is a legitimate element of an IPM program.

BEST MANAGEMENT PRACTICES

Storage and Use Guidelines

Every employee has a personal responsibility to themselves, other staff, and the public to follow safe work practices when storing or using pesticides.

Management Practices

- Always read the label of the chemical that you will be using.
- Store and handle all chemicals or fertilizers in a manner that minimizes worker exposure and potential for contamination of surface and ground water.
- Always have the correct Material Safety Data Sheet (MSDS) on hand for all chemicals or fertilizers at your site (required by law).
- Always check the MSDS for the type of protection needed and the recommended re-entry time before the chemical is applied.

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- When possible, purchase the smallest amount of any pesticide needed and avoid stockpiling of chemicals.
- Store fertilizer in a separate weatherproof area.
- All spray equipment shall be maintained in proper working order and stored in an OSHA-approved site.
- All protective gear (masks, filters, rain gear) will be stored separately from any possible contamination.
- Store and mix all chemicals in a WSDA-approved storage and mixing area. Label storage area with an NFPA-coded sign to protect Fire Department or Hazmat personnel in case of emergency.
- Any pesticides in inventory that are no longer needed for use will be disposed of through hazardous materials disposal practices.
- A pesticide inventory is maintained by the Resource Management Division.

Pesticide Application Equipment

Pesticide application for all listed areas will be carried out by hand with directed, low-volume, single-wand sprayers, wiping, daubing and painting equipment, injection systems, or drop spreaders. Typically, applications are done with backpack sprayers, but may also include sprayers with larger fill tanks providing the same kind of hand application method is used. These methods of delivery result in low-volume applications at low nozzle pressures. This practice minimizes the formation of fine mists that can result in pesticide drift. These practices also help ensure that the pesticide applied will reach only its intended target. In large open turf areas, boom type sprayers may also be employed. Boom sprayers are efficient and expedient, used to destroy weeds species after they have exceeded the acceptable threshold level.

Personal Protective Equipment (PPE)

The table on the following page shows the personal protective equipment required by City, state and federal regulations for pesticide use.

Chemical Application near Watercourses & Aquatic Habitats

Generally, the use of chemical products within 50 feet of a watercourse shall be prohibited in favor of an alternative control method. If a pesticide or herbicide must be applied within the 50 foot buffer, only products registered for use near water bodies shall be used, and great care will be taken to ensure that the product does not migrate into the watercourse either through drift or by overland flow. Weather conditions must be monitored carefully to avoid applying a chemical near a watercourse immediately before heavy rains. Soil conditions and site topography must also be carefully studied to determine the appropriate timing of a chemical application **and/or whether a chemical should even be applied at the site.**

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Personal Protective Equipment (PPE) Guide for Using Pesticides			
Pesticide Formulation	LABEL SIGNAL WORD		
	Caution	Warning	Danger
Dry	• long-legged pants • long-sleeved shirt • shoes & socks	• long-legged pants • long-sleeved shirt • shoes & socks • wide-brimmed hat • gloves	• long-legged pants • long-sleeved shirt • shoes & socks • hat • gloves • cartridge or canister respirator if dusts in air or if label precautionary statement says "Poisonous or fatal if inhaled"
Liquid	• long-legged pants • long-sleeved shirt • shoes & socks • wide-brimmed hat • gloves	• long-legged pants • long-sleeved shirt • shoes & socks • wide-brimmed hat • rubber gloves • goggles if required label precautionary statement • cartridge or canister respirator if label precautionary statement says "Do not breathe vapors or spray mist" or "Poisonous if inhaled"	• long-legged pants • long-sleeved shirt • rubber boots • rubber gloves • goggles or face shield if required label precautionary statement • cartridge or canister respirator if label precautionary statement says "Do not breathe vapors or spray mist" or "Poisonous if inhaled"
Liquid when mixing	• long-legged pants • long-sleeved shirt • shoes & socks • wide-brimmed hat • gloves • rubber apron	• long-legged pants • long-sleeved shirt • shoes & socks • wide-brimmed hat • rubber gloves • goggles or face shield • rubber apron • Respirator if label precautionary statement says: "Do not breathe vapors or spray mist" or "Poisonous (or fatal or harmful) if inhaled"	• long-legged pants • long-sleeved shirt • rubber boots • wide-brimmed hat • rubber gloves • rubber apron • canister respirator
Liquid (prolonged exposure to spray)	• long-legged pants • long-sleeved shirt • boots • rubber gloves • waterproof wide brimmed hat	• water-repellent long-legged pants & long sleeved shirt • rubber boots • rubber gloves • rubber apron • waterproof wide brimmed hat • face shield • cartridge or canister respirator	• waterproof suit • rubber boots • rubber gloves • rubber apron • waterproof hood or wide brimmed hat • face shield • canister respirator

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APPENDIX B – INTEGRATED PEST MANAGEMENT PLAN

IPM BEST MANAGEMENT PRACTICES

Public Works maintains a wide variety of landscape types, each with unique pest control issues and control measures. For these reasons, the pest control measures specific to each landscape are dealt with separately in this section. If chemical applications are required, only chemicals approved for a specific location will be used in that location.

Control of Special Pests

- **Blackberries** – An aggressive, invasive plant, blackberry will overtake a disturbed site at an alarming rate. Mechanical control is not very effective by itself. But combined with chemical control measures and replanting of the site, effective control can be maintained. Chemical applications shall be kept to the area of infestation. Treatment efforts should include re-vegetating the site with desirable plant species.
- **Scotch Broom** – An unruly plant, it thrives on disturbed sites. It is difficult to control, and spreads rapidly. The seeds and flowers are toxic, making it a high priority for eradication. Manual control can have some effect, but it must be done at the proper time of year. Chemical control can also be effective, but requires follow up management techniques until full eradication occurs. Chemical applications shall be kept to the area of infestation.
- **English Ivy** – A very aggressive, invasive, introduced plant, Ivy is difficult to control or eradicate. Manual or mechanical control is somewhat effective, but highly time consuming. A combination of mechanical and chemical control is more effective, and spread can be kept to a minimum, with continuous control measures. Chemical applications shall be kept to the area of infestation.
- **Horsetail** – One of the most tenacious weeds in the Northwest gardens is horsetail. It is almost impossible to control manually or mechanically. Horsetail can be controlled with herbicides. As with other chemical controls, chemical application shall be contained to the area of infestation. Horsetail is an indication of high water content in soil, so any use of herbicides should be well thought out and carefully timed.
- **Garden Slugs** – As in all Northwest gardens, garden slugs can have a significant impact on park floral beds. Approved control strategies include manual control and careful use of chemical control products. One non-toxic chemical that is found to work is iron phosphate, which is biodegradable and is even healthy for garden soil.
- **Rats** – Rats are only somewhat of a pest problem in Bellevue parks. Bellevue does have some natural predators of rats which helps alleviate many of the problems that could occur. They do pose a human health risk and will be controlled in given situations. The common method of control is baiting with an approved rat bait/trap. Extreme caution must be taken to place rat bait in locations where people or domestic animals cannot access it.
- **Mice** – Mice are becoming an increasing human health problem from Hanta virus. Mice control is not currently a major pest control issue in Parks facilities, but increased control measures may be required in the future based on the history of the virus.

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- **Yellow Jackets, Hornets, and Wasps** – These insects often require control in parks. Control is typically through use of an approved insecticide. Only individual nests are treated and only if the nest poses an imminent risk to humans using park facilities.
- **Vector-borne Disease** – Here in the Pacific Northwest, vector-borne diseases are only starting to become an issue. The most significant is mosquito-borne diseases, such as the West Nile Virus. Complete control of mosquito infestations is near impossible, but cultural control can have some effect, such as removing any standing-stagnant water from any sites. Larvicides may also be used to control mosquito infestations if it's determined that public health concerns warrant their use.

IPM for Plant Beds

Plant beds are defined as non-turf planted areas that include woody plant material such as shrubs and trees and ground covers. The category also includes floral color displays containing herbaceous plants such as perennials, annuals, and bulbs. The most serious pest management issue in plant beds is weed control. If not controlled, weeds not only make a plant bed look unkempt but, more importantly, can out-compete desirable landscape plants resulting in a loss of assets.

Pest Tolerance Thresholds

- In general, weeds are not tolerated in park plant beds.
- Insect pests are tolerated, unless they pose a threat to humans.
- Diseased plants are not tolerated and are usually removed.

Pest Management Strategies**Weed Control**

- Weeds are controlled by hand pulling, or by mechanical methods in larger plant beds.
- Plant beds will be mulched after planting to suppress new weed growth.
- Use of landscape fabric can be used.
- Herbicides can be sprayed, if necessary.

Disease Control

- Diseased plants shall be hand pulled from plant bed and discarded appropriately.
- Disease resistant plants shall be planted in all parks plant beds, whenever possible.

IPM for Trees

Trees are an integral part of most landscapes, whether formal or natural, and are considered an asset. They provide shade, clean the air of pollutants, modify both micro and macro climates, and provide visual relief to the urban environment. Because trees are often very large and tall, accessing and managing insects and disease can be quite difficult and costly.

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Pest Tolerance Thresholds

- In general, insect and disease pests in trees are tolerated
- Insect or disease pests in selected, high-value specimen trees may be subject to control measures.

Pest Management Strategies

Physical Damage to Trees

Physical damage to trees can be a major factor in overall loss of trees. This damage most often occurs in one of two ways. One is when trees are repeatedly struck by mowing equipment. A second form of injury is by string trimmers, which can damage bark leading ultimately to tree loss. Many trees are also lost to lack of appropriate care during construction projects within existing parks.

- Removing turf from around the tree base to create tree mulch rings 3 to 4 feet in diameter can substantially reduce damage caused by mowers and trimmers. With tree mulch rings, a mower or trimmer never has to come close enough to the tree to cause damage. The tree mulch ring will need to be kept free of grass and weeds.
- All pruning for tree health reasons and for hazard reduction will be done in conformance with the International Society of Arboriculture standards.

Insect Control

Public Works does not actively control insect pests in trees. This is particularly true of large trees where the control of the pest might require the use of large aerial spray equipment, which carries with it a high probability of the insecticide applied leaving the area due to wind drift. For example, Public Works does not spray aphids despite the “honeydew” problem associated with them. When insect pests are controlled in trees, the following measures are used:

- Trees that are highly susceptible to specific insect pests (such as blue spruce and spruce aphids) may be removed from the landscape and replaced with resistant species.
- When possible, the portion of the tree affected by the insect (such as tent caterpillars) can be physically removed, eliminating the pest.
- An insecticide may be applied to control a specific insect pest in very selected situations. These situations include pests on specimen quality trees at special gardens or in high visibility locations where the presence of the pest threatens the life of the tree. In these situations, general foliar applications will not be made unless the potential for product drift can be controlled.
- New injection technology may allow for systemic control of certain insect pests with minimal or no impact to human or environmental health. Public Works will continue to explore this technology as a potential control in the future for insect pests that may threaten the health of valuable park trees.

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Disease Control

Most diseases are tolerated in trees, unless they lead to a tree becoming a hazard to the surrounding environment. As with insecticides, it is unlikely that Public Works will subscribe to general foliar applications of fungicides or similar pesticide products to control disease pests in trees. The following are control measures that can be performed:

- Trees that are susceptible to particular disease pathogens may be removed from the landscape and replaced with resistant varieties.
- When possible, parts of trees affected by disease should be pruned out and properly disposed to stop the spread of disease within the tree and to adjacent trees.
- An appropriate fungicide may be applied to control a specific disease pathogen in very selected situations. These cases include specimen quality trees in special gardens or in high-visibility park locations where the presence of the disease threatens the life of the tree. In these situations, general foliar applications will not be made unless the potential for product drift can be controlled.
- New “injection” technology may allow for systemic control of certain disease in trees pests with minimal or no impact to human or environmental health. Parks will continue to explore this technology as a potential control for disease pests that may threaten valuable trees in City parks.

IPM for Turf

Public works maintains variety of turf types. These include park lawn areas (both formal and informal), meadow areas and other turf types. Each of these turf types has different pest management challenges, and practices may vary accordingly.

Pest Tolerance Thresholds

- Some level of weed, insect, and disease pests are tolerated in general park lawn areas.
- Pests in highly maintained turf such as athletic fields, bathing beaches and other high-visibility/high-use areas are generally controlled through good turf cultural practices.
- Because of the unique conditions present on golf courses, a variety of pest control measures are used, including mechanical, cultural and chemical.

Pest Management Strategies**Broadleaf Weeds**

Weeds in turf are tolerated, to some level, with the exception a few high-visibility park turf areas. When control is necessary, the primary method is through the following cultural practices:

- careful monitoring of watering practices
- fertilization

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- aeration
- top-dressing
- over-seeding

By performing these cultural practices, park turf is made healthier and better able to compete with various broadleaf weeds. Chemical weed control will be used only as a last resort for controlling particularly difficult weeds in high-visibility turf areas.

- In these limited situations the least toxic, least residual pesticide will be used for spot treatments.
- General broadcast treatments will generally be avoided.
- Timing of such applications will be made to avoid contact with the public to the extent possible.
- Posting of the site that has been treated will meet or exceed legal requirements.

Insect Control

The only real insect pest currently of significance for turf in the Kenmore area is the European Crane Fly. While it can be quite damaging to turf areas, the crane fly is not controlled by prophylactic means.

- Chemical control is used only in the very limited circumstances to turf of very high visibility and value such as selected high-visibility/high-use turf areas.
- Any chemical applications will be spot treatments directed specifically at the turf areas containing the pest.
- The preferred initial choice for application in high-use areas is the “safest” or least toxic product available.

Disease Control

General Park Turf

Disease in general park turf is typically tolerated and not actively controlled.

- In high-use/high-visibility park turf areas, disease will be controlled to a considerable degree by performing sound cultural practices.
- Pesticides may be used as a last resort to control disease in park turf areas.

Grass Trimming Abatement

The control of grass growing along fence lines and around trees, bollards, posts and other landscape features is a regular maintenance activity that helps preserve the asset by allowing large riding lawn mowers to steer clear of objects. This is especially important around trees where impact from mower damage can easily lead to tree loss. At the same time, keeping this grass controlled allows Parks to present parks that appear clean and well kept. This grooming affects how the public uses our facilities.

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Well-maintained parks are subject to less vandalism and related misuse. The following are BMPs for grass trimming:

- **String trimmers or push mowers.** The grass is trimmed using gas-powered string trimmers or push-type lawn mowers. This labor-intensive practice is costly and produces noise and air pollution.
- **Herbicide.** Applications are performed annually or semi-annually, to provide pre-emergent control of weed and grass seed not yet germinated in tree mulch rings, plant beds and similar areas.

IPM for Natural and Sensitive Areas

Natural areas are City-owned property with critical environmental resources. These sensitive habitats shelter native ecosystems and wildlife habitat. For the purposes of this IPM manual, these resource assets are divided into three major groups:

- Wetlands, riparian corridors, shorelines and aquatic habitats
- Forests
- Meadows

Pest Tolerance Thresholds

For all natural and sensitive areas:

- Invasive plants are generally not tolerated. Invasive plants will be controlled in conjunction with natural resource enhancement efforts in these environments as resources permit and where control can be practically achieved.
- Noxious weeds will not be tolerated and will be controlled when found in conformance with State of Washington mandate.
- Only insect pests that pose a risk to the public (such as hornets) or to the resource (such as gypsy moth) will be controlled.
- Plant diseases will generally be tolerated unless: a specific control can be employed that will be effective in ensuring the health of particularly valuable assets; or if they pose a threat to other plant populations outside of the natural area; or if they pose an unacceptable risk to the public.
- Herbicide Use: The use of herbicides in any natural environment must be carefully considered. Herbicides will be used for weed control in natural areas only when other control measures have been tried and failed, and only if control can be achieved through the use of a herbicide, and is imperative to the health of the site. For wetland or water environments, only approved wetland herbicides will be used.

When needed, herbicide use practices are as follows:

- Cut and stem treatment (daubing or painting) is the preferred choice for natural area management.

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- Certain invasive plants are difficult to treat and control in their mature form. If possible, remove existing growth manually or mechanically. Wait for new growth to become established. Then treat with the appropriate and approved herbicide.

Pest Management Strategies

Weed Control

An overriding principle of IPM is the maintenance of healthy plant communities. That means weed control of the following types:

- **Timed mowing.** Carefully timed mowing before seed set can effectively reduce weed seed sources. Frequent mowing can eliminate blackberry and other woody species.
- **Mulching.** Mulching around the base of plantings is widely accepted as a horticultural practice for soil fertility and weed control. In most instances, composted wood chips or onsite recycle leaf litter are adequate materials. Avoid wood chips from diseased trees. Mulch should be between 2 to 3 inches deep for best results.
- **Weed watch during mulching.** Care must be given to not incorporate new weed problems when importing mulch materials.

Woody Brush Control

The control of woody brush, like blackberry, is very important in certain park locations. Often these plants are found in transition areas between developed park areas and natural areas. If not controlled, woody brush can easily over take forest-edge environments, eliminating vital habitat opportunities. Control measures for woody brush include the following:

- Manual or mechanical removal using hand tools or gas-powered equipment. Special tools are now available for removing woody brush. In many areas, this can provide effective control.
- Chemical control can be employed when other measures are not mechanically or economically feasible. Spot applications are preferred, whenever possible, to large area applications.

Insect Control

Insects like the European and Asian Gypsy moth and the Asian Long Horned Beetle can potentially devastate Bellevue's urban forest. Parks will cooperate with state and federal agencies in their monitoring and control programs to prevent the introduction of these pests.

Disease Control: Root Rots

Even native forests can have serious disease problems. Root rots are the most serious problem, leading often to the death of significant trees. Several strategies help control root rot in forests:

- inoculate with mycorrhizae
- remove infected wood

APPENDIX B – INTEGRATED PEST MANAGEMENT PLAN

- plant resistant varieties
- treat resulting stumps with borax on Western Hemlock
- do not change site conditions on mature trees

Stump Re-Sprouting Control

Often there is a need to remove small trees and prevent re-sprouting of a stump. Methods for controlling the re-sprouting of stumps include the following:

- If the location of the stump(s) will allow access by equipment, then they can be mechanically removed providing the location is not within an environmentally critical area.
- Small stumps may be removed manually providing they are not on steep slopes or in other environmentally critical areas.
- The re-sprouting of stumps can also be controlled by painting newly cut stump surfaces with an herbicide. Care will be taken to limit the application of the selected herbicide to the stump surface only.

Invasive Plant Control

Invasive plant control shall follow the guidelines established by *King County Noxious Weed Boards*. Except in the case of Class A weeds, the goal is suppression of weed populations to below threshold (damage causing) levels. Eradication of certain ecological weeds (blackberry or ivy) in all of the City's natural areas is neither feasible nor cost-effective. However, controlling spread of the problem and eradicating it in certain priority locations are Public Works goals.

Control methods include:

- Use **extent of removal** and **type of habitat** to determine the pest control method.
- Large areas that are totally infested can be mowed. Areas that are interspersed with invasive pests require more selective procedures such as manual removal.
- Heavy equipment or manual removal can be used on firm soils. On either steep or saturated soil, use techniques that will minimize site or slope disturbance.
- Where mechanical or manual removal is neither possible nor practical but control is essential, careful and selective use of an approved herbicide is permitted. Use of these chemicals shall conform to the guidelines listed below in "Herbicide Use."
- Re-establishing a new native planting regime as quickly as possible following the removal of invasive plants is critical to successful forest restoration. These new plantings will require care for several years to guarantee establishment.
- Preserve established native plants when possible rather than reestablishing new plants after the clearing of invasives.
- Public education and outreach concerning plant identification and management techniques will also aid the City in controlling noxious weeds.

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Nuisance Wildlife Control

Mountain beavers, moles, coyotes, beavers, opossums, raccoons, waterfowl and other species can be destructive to natural areas when their activities are excessive. Overall, Parks does not encourage the interference with wildlife, and prefers to leave them to their natural behaviors. If control of wildlife is deemed necessary, Public Works will work with the most appropriate agency to formulate a control solution.

IPM for Trails**Pest Tolerance Thresholds**

- Invasive plants that invade the trail area are generally not tolerated. Invasive plants will be controlled in conjunction with ecosystem restoration efforts on any park trail as resources permit.
- Noxious weeds will not be tolerated and will be controlled when found in conformance with State of Washington mandate.
- Weeds are generally found on trails and many will be tolerated. Weeds that begin to form a hindrance of trail function will be eradicated.
- Only insect pests that pose a risk to the public (e.g. hornets) will be controlled.

Pest Management Strategies**Weed Control**

Weeds on trails are generally tolerated, until they begin to interfere with trail function. When control is necessary, the primary method is increasing mulch on, or re-surfacing, trail surface. Chemical weed control is often not necessary on trail surfaces, but will be used only as a last resort for controlling particularly difficult weeds.

- In these rare situations the least toxic, least residual herbicide will be used for spot treatments.
- General broadcast treatments will be avoided.
- Timing of such applications will be made to avoid contact with the public to the extent possible.
- Posting of the site that has been treated will be done as legally required.

Insect Control

Overall, insects on trails are tolerated. Only insects that can cause a health risk are controlled. Wasps and hornets are some of the few insects that will be eradicated immediately when encountered. When this is necessary, chemical control, with an approved insecticide, is the preferred method, and only the individual nests will be treated.

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TRAINING

Because IPM is an ecologically sophisticated process that requires professional expertise in vegetation and pest management, it demands trained field personnel that are knowledgeable about:

- Ecological interactions and relationships among vegetation and pests;
- Potential tools and materials that can be used to effectively manage vegetation and pests by manipulating environmental conditions; and
- Correct timing for implementing specific management practices relative to vegetation and pest biology.

Educational and career opportunities in IPM will enhance crew professionalism, their knowledge of current vegetation and pest management practices, and their stewardship of managed landscapes.

APPENDIX C – O&M CONTRACTS AND AGREEMENTS

APPENDIX C – O&M CONTRACTS AND AGREEMENTS

NAME	CONTRACT/AGREEMENT	DESCRIPTION	YEAR	TERM
King County Roads	98-C15	Roads Maintenance ILA	10/29/1998	Renews Annually
Lake Forest Park	00-C48	PW Admin ILA	2000	Renews Annually
Lake Forest Park	00-C86 & addenda, amendments	PW Admin ILA	2000	Renews Annually
Northshore ILA	00-C88 (Component of)	Moorlands Park Agreement	6/13/1995	Renews every 5 years after 2005
Total Landscape Corporation	01-C121	Contract for Services	2001	Renews Annually
JSH Properties	12-C1058	Property Management Agreement	9/1/2012	8/31/2013
Northwest Landscape Services	13-C1160	Contract for Services	6/17/2013	6/30/2015
King County CWP	11-C936	Agreement for Services	1/1/2011	12/31/2011
Innovative Vacuum Services	12-C1075 (Amended 1/2015)	Contract for Services	2012	3 Years
Waste Management		Services Agreement	4/14/2009	Renews Annually



Illicit Discharge Detection and Elimination Program Manual

February 2015

Prepared by:
City of Kenmore
Public Works



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FOREWORD

The City of Kenmore Illicit Discharge Detection and Elimination Program Manual was developed to comply with requirements of the Federal Clean Water Act-National Pollutant Discharge Elimination System Program and the Western Washington Phase II Municipal Stormwater Permit issued by the Washington State Department of Ecology. The intent of this manual is to describe the policies and procedures in place to reduce illicit discharges into the City's municipal separate storm sewer system (MS4). This manual is intended to be a supplement to the City's Stormwater Management Plan and the City's Surface Water Master Plan.

ACKNOWLEDGEMENTS

City of Kenmore, Public Works

Richard Sawyer, Surface Water Program Manager

VERSIONS

2015 IDDE Manual – 2/5/2015

IDDE Manual Version 1.1 – 3/12/2012

IDDE Manual Version 1.0 – 6/22/201

ACRONYMS AND DEFINITIONS

OVERVIEW

Since the passage of the federal Clean Water Act (CWA), requirements for cities and counties to control the quality of stormwater runoff have become more stringent. In particular, Kenmore was issued Western Washington Phase II Municipal Stormwater Permits (Permit) from the Washington State Department of Ecology (Ecology) in 2007, 2012 and 2013. The Permit requires that the City implement an Illicit Discharge Detection and Elimination (IDDE) program. This document is intended to describe how the City is compliant with CWA and Permit requirements and supplements the City's Stormwater Management Program and Surface Water Master Plan.

DOCUMENT STRUCTURE

Section 1 describes the City's municipal storm sewer system mapping program.

Section 2 describes the City's IDDE and water quality ordinances and codes.

Section 3 describes the City's program to inspect, identify and respond to IDDE issues.

Section 4 describes the City's IDDE outreach, education and training efforts.

Section 5 describes City's IDDE program tracking responsibilities.

ACRONYMS AND DEFINITIONS

ACRONYMS AND DEFINITIONS

AKART means “All Known and Reasonable Technologies”

BMP means Best Management Practice.

Best Management Practice means a schedule of activities, prohibitions of practices, physical structures, maintenance procedures and other management practices undertaken to reduce or prevent increases in runoff quantity and pollution.

CESCL means Certified Erosion and Sediment Control Lead.

Certified Erosion and Sediment Control Lead means an individual who has satisfied the requirements set forth in Ecology’s Stormwater Management Manual for Western Washington (Volume II, Chapter 4, BMP C160) for the designation of certified erosion and sediment control lead.

Ecology means the Washington State Department of Ecology.

ESC means Erosion and Sediment Control.

Facility means drainage facilities, including either flow control or water quality facilities.

Flow Control Facility means a drainage facility designed to mitigate the impacts of increased surface and storm water runoff generated by site development in accordance with the drainage requirements in KMC Chapter 13.35. Flow control facilities are designed either, to hold water for a considerable length of time and then release it by evaporation, plant transpiration, or infiltration into the ground, or to hold runoff for a short period of time and then release it to the conveyance system.

IDDE means Illicit Discharge Detection and Elimination

Illicit Connection means any infrastructure connection to the MS4 that is not intended, permitted or used for collecting and conveying stormwater or non-stormwater discharges allowed as specified in this permit (S5.C.3 and S6.D.3). Examples include sanitary sewer connections, floor drains, channels, pipelines, conduits, inlets, or outlets that are connected directly to the MS4.

Illicit Discharge means any discharge to a MS4 that is not composed entirely of stormwater or of non-stormwater discharges allowed as specified in this permit (S5.C.3 and S6.D.3).

Maintenance (also Operations and Maintenance) means those usual activities taken to prevent a decline, lapse, or cessation in the use of currently serviceable structures, facilities, equipment, or systems if there is no expansion of the structure, facilities, equipment, or system and there are no significant hydrologic impacts. Maintenance includes the repair or replacement of non-functional facilities and the replacement of existing structures with different types of structures, if the repair or replacement is required to meet current engineering standards or is required by one or more environmental permits and the functioning characteristics of the original facility or structure are not changed.

ACRONYMS AND DEFINITIONS

MS4 means Municipal Separate Storm Sewer System

Municipal Separate Storm Sewer System means a conveyance, or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains):

- (i) Owned or operated by a state, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to state law) having jurisdiction over disposal of wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of Washington State.
- (ii) Designed or used for collecting or conveying stormwater.
- (iii) Which is not a combined sewer;
- (iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.; and
- (v) Which is defined as “large” or “medium” or “small” or otherwise designated by Ecology pursuant to 40 CFR 122.26.

NPDES means National Pollutant Discharge Elimination System.

National Pollutant Discharge Elimination System means the national program for issuing, modifying, revoking, and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under sections 307, 402, 318, and 405 of the Federal Clean Water Act, for the discharge of pollutants to surface waters of the state from point sources. These permits are referred to as NPDES permits and, in Washington State, are administered by the Washington **State** Department of Ecology.

OMPPM means Operations and Maintenance Policies and Procedures Manual.

O&M means Operations and Maintenance. See Maintenance.

RRMPG means Regional Road Maintenance Endangered Species Act Program Guidelines.

Regional Road Maintenance Endangered Species Act Program Guidelines means the manual developed by the Regional Road Maintenance Technical Working Group that provides a consistent, Regional Program that can be used by any agency wishing to limit, reduce or eliminate the prohibition on take of threatened species under the 4(d) Rule (NMFS), special 4(d) rule and/or Section 7 take exemption (USFWS).

SPPM means the Stormwater Pollution Prevention Manual.

Stormwater Pollution Prevention Manual means the manual referenced in KMC 13.45, Water Quality, including supporting documentation referenced or incorporated in the manual, describing best management practices and procedures for eliminating or reducing surface, storm and ground water contamination from existing facilities and existing and new activities not covered by the SWDM.

SWDM means Surface Water Design Manual (King County).

ACRONYMS AND DEFINITIONS

SMMWW means Stormwater Management Manual for Western Washington (Ecology).

Water Quality Facility means a drainage facility designed to reduce pollutants once they are already contained in surface and storm water runoff. Water quality (WQ) facilities are a structural component of best management practices (BMPs). When used singly or in combination, WQ facilities reduce the potential for contamination of both surface and ground waters.

WQ means water quality.

SECTION 1 – MS4 MAP

SECTION 1 – MS4 MAP

The City maintains a map of the MS4 in Geographical Information System (GIS) software provided by Environmental Systems Research Institute, Inc (ESRI) called ArcGIS. ArcGIS is industry standard software that is widely used by public and private entities. The City's Permit requires mapping of the municipal separate storm sewer system (MS4), including;

- Known MS4 outfalls and known MS4 discharge points
- Tributary conveyances to MS4 outfalls and discharge points with ≥ 24 " nominal diameter
- Receiving waters, other than ground waters
- Stormwater treatment and flow control BMPs/facilities owned or operated by the City
- All connections authorized after February 16, 2007
- Geographical areas served by the MS4 that do not discharge stormwater to surface waters

The City has met or exceeded Ecology's requirements in regards to MS4 mapping. In addition to the requirements set forth by Ecology, the City has also mapped:

- Tributary conveyances to MS4 outfalls and discharge points with < 24 " nominal diameter
- Privately owned and operated treatment and flow control BMPs/facilities
- Many privately owned and operated conveyances

Surface water maps are available on the City's website at www.kenmorewa.gov.

SECTION 2 – WATER QUALITY ORDINANCE

SECTION 2 – WATER QUALITY ORDINANCE

The United States defines an Illicit Discharge as any discharge to a municipal separate storm sewer that is not composed entirely of storm water except discharges pursuant to a NPDES permit (other than the NPDES permit for discharges from the municipal separate storm sewer) and discharges resulting from fire fighting activities (40 CFR 122.26(b)(2)).

Revised Code of Washington State (RCW) Chapter 90.48.080 states: It shall be unlawful for any person to throw, drain, run, or otherwise discharge into any of the waters of this state, or to cause, permit or suffer to be thrown, run, drained, allowed to seep or otherwise discharged into such waters any organic or inorganic matter that shall cause or tend to cause pollution of such waters according to the determination of the department, as provided for in this chapter.

The City of Kenmore adopted much of King County's water quality code upon incorporation in 1998, which prohibited the discharge of contaminants into surface, storm, and ground water or the Puget Sound (Chapter 13.45 Kenmore Municipal Code (KMC)). On November 2, 2009 the City of Kenmore Council passed Ordinance 09-0299, which updated Chapter 13.45 KMC to standards set forth in the City's Permit. The remainder of this section summarizes Chapter 13.45 KMC. The full text of Chapter 13.45 KMC can be found in Appendix A or on the City's webpage.

2.1 Prohibited Discharges

Chapter 13.45.030(A) KMC prohibits the discharge of any contaminants into surface and storm water, ground water or the Puget Sound. Contaminants include, but are not limited to, the following:

- a. Trash or debris;
- b. Construction materials;
- c. Petroleum products (oil, gasoline, grease, fuel oil, heating oil, etc...);
- d. Antifreeze and other automotive products;
- e. Metals in either particulate or dissolved form;
- f. Flammable or explosive materials;
- g. Radioactive materials;
- h. Batteries;
- i. Acids, alkalis, or bases;
- j. Paints, stains, resins, lacquers, or varnishes;
- k. Degreasers and solvents;
- l. Drain cleaners;
- m. Pesticides, herbicides, or fertilizers;
- n. Steam cleaning wastes;
- o. Soaps, detergents, or ammonia;
- p. Swimming pool backwash;
- q. Chlorine, bromine, and other disinfectants;

SECTION 2 – WATER QUALITY ORDINANCE

- r. Heated water;
- s. Domestic animal wastes;
- t. Sewage;
- u. Recreational vehicle waste;
- v. Animal carcasses;
- w. Food wastes;
- x. Bark and other fibrous materials;
- y. Collected lawn clippings, leaves, or branches;
- z. Silt, sediment, or gravel;
- aa. Dyes (except as stated in 13.45.030(D)(1));
- bb. Chemicals not normally found in uncontaminated water;
- cc. Any hazardous material or waste not listed above.

2.2 Allowable Discharges with the application of BMPs

Certain discharges are allowed with the application of appropriate Best Management Practices (BMPs). These discharges could apply to certain business and residential activities that have the potential to contribute contaminants to surface and storm water, ground water or Puget Sound.

To prevent a prohibited discharge, BMPs from the Stormwater Pollution Prevention Manual (SPPM), or supplemental BMPs as determined by the City Manager, shall be applied to the activity.

Common activities identified in the SPPM that might result in prohibited discharges include, but are not limited to, the following:

- 1. Potable water line flushing;
- 2. Dust control with water;
- 3. Automobile and boat washing;
- 4. Pavement and building washing;
- 5. Swimming pool and hot tub maintenance;
- 6. Vehicle and equipment repair and maintenance;
- 7. Building repair and maintenance;
- 8. Landscaping activities and vegetation management;
- 9. Hazardous waste handling;
- 10. Solid and food waste handling; and
- 11. Application of pesticides or other chemicals (other than landscaping maintenance).

2.3 Allowable Discharges

The following discharges are not considered prohibited discharges unless the City Manager determines that the type of discharge, whether singly or in combination with other discharges, is causing significant contamination of surface and storm water, ground water or Puget Sound:

SECTION 2 – WATER QUALITY ORDINANCE

1. Spring Water;
2. Diverted stream flows;
3. Uncontaminated water from crawl space pumps, foundation drains, or footing drains;
4. Pumped ground water flows that are uncontaminated;
5. Materials placed as part of an approved habitat restoration or bank stabilization project;
6. Natural uncontaminated surface water or ground water;
7. Flows from riparian habitats and wetlands;
8. Collected rainwater that is uncontaminated;
9. Uncontaminated ground water that seeps into or otherwise enters storm water conveyance systems;
10. Air conditioning condensation;
11. Irrigation water from agricultural sources that is commingled with storm water runoff; and
12. Other types of discharges as determined by the City Manager.

2.4 Prohibited Discharges Exceptions

Exceptions are provided for prohibited discharges including:

Dye testing is allowable but requires verbal notification to the City Manager at least one day prior to the date of test;

1. A person is not in violation for a prohibited discharge if:
 - a. That person has properly designed, constructed, implemented and is properly maintaining BMPs and is using the most current methodology that can be reasonably required for preventing, controlling or abating the pollutants associated with a discharge (known as AKART or all known and reasonable technologies), but contaminants continue to enter surface and storm water or ground water; or
 - b. That person can demonstrate that there are no additional contaminants being discharged above the background conditions of the water entering the site.
2. A person who has properly designed, constructed, implemented and maintained BMPs is still liable for any prohibited discharges through illicit connections, dumping, spills or other discharges not addressed by said BMPs.
3. Emergency response activities

2.5 Stormwater Pollution Prevention Manual

The City adopted the Kenmore Stormwater Prevention Manual to provide BMPs for commercial, multi-family and residential properties covering a broad spectrum of activities that have the potential to create prohibited discharges. The Stormwater Pollution Prevention Manual is available on the City's webpage at www.kenmorewa.gov.

SECTION 2 – WATER QUALITY ORDINANCE

2.6 Enforcement

The City prefers to address nonhazardous illicit discharge violations by first providing public education, warnings, technical assistance and requiring the implementation of BMPs, and when necessary, AKART, as the primary methods of gaining compliance with Chapter 13.45 KMC. If the illicit discharge poses a hazard to public health, safety, or welfare, endangers any property, adversely affects the safety and operation of City Right-of-Way, utilities and/or property owned by the City, or the violation is the result of a flagrant act then the City may immediately take action or impose penalties.

SECTION 3 – IDDE PROCEDURES

SECTION 3 – IDDE PROCEDURES**3.1 – 2007-2013****OUTFALL RECONNAISSANCE INVENTORY**

Past efforts to proactively search for and manage illicit discharges and connections included the Outfall Reconnaissance Inventory (ORI), which were required by the City's 2007 Permit. The ORI visually inspected known outfalls from the City's MS4 in an effort to identify areas of obvious pollution or non-stormwater discharges. Outfall inspections located potential problem areas without the need for in-depth laboratory analysis. Potential problem discharges could be identified by outfalls that were flowing during dry weather (potential illicit connection) or outfalls that had high turbidity, strong odors, unusual colors or those that triggered indicator parameters such as high Fluoride, ammonia/potassium ratios, surfactants or fecal coliform levels. The City utilized the Illicit Discharge Detection and Elimination: A Guidance Manual (Center for Watershed Protection, October 2004) when conducting ORIs.

In summer 2010 the City conducted an ORI on the main channel of Swamp Creek, Muck Creek, Little Swamp Creek and five tributaries to Swamp Creek. The Permit required the City to place water bodies with a Total Maximum Daily Load (TMDL) as a top priority. Currently, Swamp Creek is the only water body with a TMDL in Kenmore. A copy of the 2010 Swamp Creek ORI Summary can be found in Appendix B.

In summer 2011 the City conducted an ORI on Lake Washington and Sammamish River. Most of the City's non-residential properties drain into these two water bodies, therefore, they were placed as the second and third highest priority for conducting an ORI. A copy of the 2011 Sammamish River and Lake Washington ORI Summary can be found in Appendix C.

In summer 2013 the City conducted an ORI on Tributary 0057. Tributary 0057 flows into the Sammamish River from the south. A copy of the 2012 Tributary 0057 ORI Summary can be found in Appendix D

Regionally, ORIs did not prove to be effective at discovering illicit discharges and connections. Kenmore discovered no illicit discharges or connections during the Swamp Creek, Muck Creek, Little Swamp Creek, Lake Washington, Sammamish River or Tributary 0057 ORIs. However, the ORIs did provide Kenmore with valuable information in regards to unknown outfall and drainage system locations, which were added to the City's surface water GIS.

SECTION 3 – IDDE PROCEDURES

3.2 – 2014 – Present**FIELD SCREENING**

Ecology departed from the OCI program with the issuance of the 2013 Permit and shifted to a new strategy – field screening. Field screening includes checking MS4 components for water quality issues, illicit discharges and illicit connections using methodology consistent with *Illicit Discharge Detection and Elimination: A Guidance Manual for Program Discharge Detection and Technical Assessments* (Center for Watershed Protection, October 2004). Field screening is primarily conducted during routine maintenance inspections each year, but can also be applied in response to citizen complaints. Ecology mandates that Kenmore must screen at least 40% of the MS4 no later than December 31, 2017 and then average 12% each year thereafter, but Kenmore has already exceeded this requirement by including field screening during routine inspections already conducted annually.

Field screening is conducted by City staff, consultants or contractors who are appropriately trained to identify water quality issues, illicit discharges and illicit connections. When issues are discovered, they are input into the City's surface water asset management system (Cityworks) and routed to appropriate staff for response and tracking.

Field screening consists of:

- Inspection
- Discharge Source Tracing
- Follow-up

INSPECTION

Similar to the ORI, dry weather offers an advantage for field screening because it allows the inspector to notice unusual flows that might indicate an IDDE issue. Most field screening occurs during annual maintenance inspections in summer months, which is ideal for field screening.

Inspectors visually inspect each MS4 component (e.g. catch basins, pipes, ditches) and the immediate surrounding area. An IDDE issue may be occurring if the inspector notices the presence of key indicators, which include; flowing water in dry weather, foul odors, discolored water, stains and suds.

When illicit discharge problems are identified, the inspector will photograph the problem area and begin the Discharge Source Tracing process described below. Inspectors should also report IDDE issues to the Surface Water Program Manager within 24 hours of the initial observation or sooner if possible.

DISCHARGE SOURCE TRACING

The source of illicit connections or discharges can be located by conducting windshield surveys and then, if needed, systematically isolating the area from which the polluted discharge originates. Discharge source tracing is ideal to identify constant or frequent discharge sources or a discharge that is happening

SECTION 3 – IDDE PROCEDURES

at that moment, but may not identify more infrequent discharges unless those discharges leave a strong IDDE indicator for the inspector to notice.

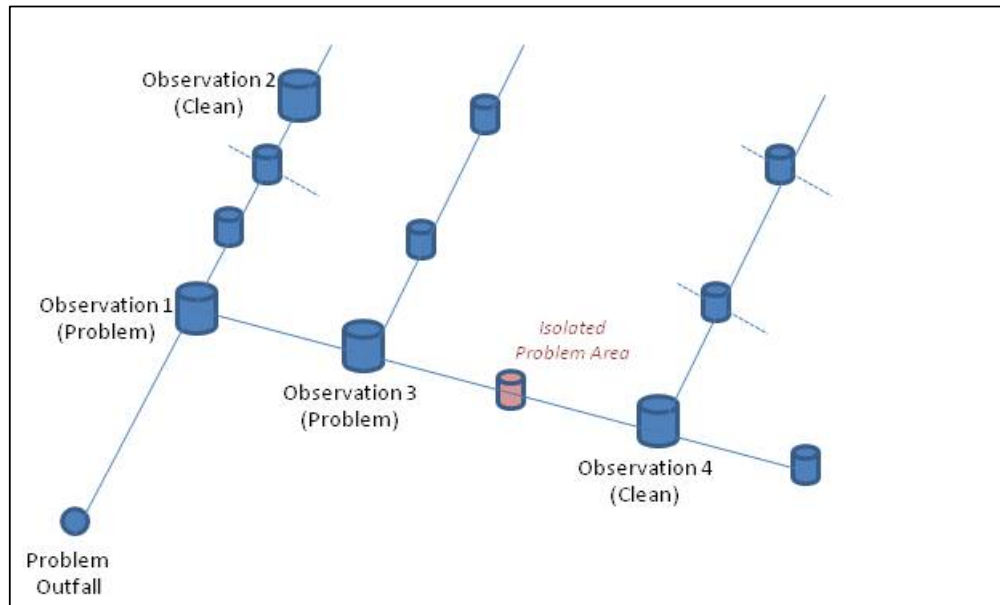
The inspector should initially conduct a quick windshield survey to see if the discharge source can easily and quickly be located. The following table lists potential causes for several types of observed indicators. For instance, observing thick algae growth could indicate to the inspector that they should look for nearby landscaping activity or heavy sediment could point to nearby construction activity.

Table 3.2.1 Windshield Survey - Common Discharges and Potential Sources	
Observed Discharge	Potential Causes
Clogging Sediment	Construction activity without proper erosion and sediment controls Roadway sanding operations Outdoor work areas or material storage areas
Thick Algae Growth	Fertilizer leak or spill Landscaping operations Hydroseeding following construction Failing or leaking septic system
Oil	Refueling operations Vehicle or machinery maintenance activities
Sudsy Discharge	Power washing of buildings Vehicle or equipment washing operations Mobile cleaning crew dumping Laundry or Cleaner Household greywater discharge
Clogged Grease	Restaurant sink drain connection to stormwater system
Sewage	Failing or leaking septic systems

If a windshield survey is unsuccessful, then a progressive investigation of the upstream MS4 to narrow down the location of the illicit discharge is required. A thorough investigation of the MS4 may still be required, even if the windshield survey is successful, to determine the scope of cleanup needed. The inspector works progressively upstream from the initial observation point and inspects the MS4 until the illicit discharge is no longer present. MS4 observations can be time-consuming, but they are a necessary step before conducting other tests. In particularly large storm drain systems, it may be helpful to first identify major branches of the system and inspect one spot at the downstream end of each branch. This can help to reduce the area that must be investigated. The following figure shows how this step of the discharge source tracing process works.

SECTION 3 – IDDE PROCEDURES

Figure 3.2.1 shows the observation steps to isolate the location where an illicit discharge is entering the storm drainage network.



If visual inspections are not successful in isolating the source of the illicit discharge, a number of additional options are available, including dye testing, smoke testing, video inspection and analytical testing. Analytical testing will determine what the illicit discharge is made and aid in finding the source. The following water quality parameters are recommended for testing, if needed (Table 3.2.2):

Water Quality Test	Use of Water Quality Test	Sewage	Washwater	Tap Water	Industrial or Commercial Liquid Wastes
Temperature	Sanitary wastewater and industrial cooling water can substantially influence outfall discharge temperatures.	⊙	N/A	N/A	⊙
pH	Extreme pH values (high or low) may indicate commercial or industrial flows. Not useful in determining the presence of sanitary wastewater (tends to have a neutral pH like uncontaminated base flows)	○	⊙	○	⊙
Conductivity	Used as an indicator of dissolved solids. Used to distinguish between seawater and stormwater.	⊙	⊙	○	⊙

Continued on next page

SECTION 3 – IDDE PROCEDURES

Table 3.2.2 Continued					
Water Quality Test	Use of Water Quality Test	Sewage	Washwater	Tap Water	Industrial or Commercial Liquid Wastes
Turbidity		⊙	⊙	○	⊙
Ammonia	High levels can be an indicator of the presence of sanitary wastewater.	●	⊙	○	⊙
Fluoride	Indicates presence of potable water.	○	○	●	⊙
Potassium	High levels may indicate the presence of sanitary sewer.	⊙	○	○	●
Surfactants	Indicates the presence of detergent (e.g. laundry, car washing)	●	●	○	⊙
Fecal Coliform	Indicates presence of bacteria found in sanitary sewer or septic systems.	⊙	○	○	○

Source: *Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments* (Center for Watershed Protection, October 2004)

- Can almost always (>80% of samples) distinguish this discharge from clean flow types (e.g. tap water or natural water). For tap water, can distinguish from natural water.
- ⊙ Can sometimes (>50% of samples) distinguish this discharge from clean flow types depending on regional characteristics, or can be helpful in combination with another parameter.
- Poor indicator. Cannot reliably detect illicit discharges, or cannot detect tap water.
- N/A Data are not available to assess the utility of this parameter for this purpose

Results from analytical testing should be recorded in Cityworks and reported to the Surface Water Program Manager. Testing results may lead to another round of discharge source tracing.

In summary, Discharge Source Tracing includes the following steps:

- Consult the drainage system map (if available) and identify the major branches.
- Windshield survey to quickly determine potential source, or if needed proceed to next step.
- Starting from the initial observation point, observe the next upstream catch basin or junction to see if there is evidence of polluted discharge. Inspectors are looking for the presence of flow during dry weather, foul odors, colors or stained deposits, oily sheens, floatable materials, etc...
- Repeat observations at each upstream catch basin or junction until a junction is found with no evidence of discharge; the discharge source is likely located between the junction with no evidence of discharge and the next downstream junction.
- Work downstream from the “clean” catch basin or junction to isolate the location where the polluted discharge is entering the storm drain system.
- If the discharge source can’t be located, then consider dye testing, smoke testing, video inspections and/or analytical testing.
- Once the discharge source is located proceed to Follow-up Actions described below.
- Document all information in Cityworks.

FOLLOW-UP ACTIONS

The City responds to identified illicit discharges, illicit connections or illegal dumping activities with an escalating level of enforcement response. Corrective actions will initially focus on education to promote voluntary compliance and then escalate to increasingly severe enforcement actions if voluntary compliance is not obtained. Surface Water staff and the Code Enforcement Officer should use judgment

SECTION 3 – IDDE PROCEDURES

in exercising the right mix of education, technical assistance and enforcement to correct identified problems. The City may immediately levy fines if the violation is found to be willful, intentional or egregious.

In the event the violation constitutes an immediate danger to public health or safety, the City is authorized to enter upon the subject property and take any and all measures necessary to abate the violation and/or restore the property. Any expense related to such remediation shall be fully reimbursed by the property owner and/or responsible party to the City.

Voluntary Compliance

The preferred approach to address illicit discharge problems is to pursue voluntary compliance through property owner or responsible party education. Often, business operators and property owners are not aware of the existence of illicit connections or activities on their properties that may constitute an illegal discharge. In these cases, providing the responsible party with information about the connection or operation, the environmental consequences and suggestions on how to remedy the problem may be enough to secure voluntary compliance.

Education begins during the site investigation when the operation or connection is first confirmed. Property owners and operators should be notified that the problems must be corrected in a timely manner and that the City will be conducting a follow-up site visit to verify compliance. Field staff should also provide the property operator with Stormwater Pollution Prevention Manual BMP documents (if applicable).

Operational Problems

Property owners are responsible for correcting operational problems that are leading to illicit discharges to the storm drainage system. This could include moving washing activities indoor or under cover, covering material storage areas, locating an appropriate discharge location for liquid wastes or other operational modifications. Through site visits and education, the City can provide technical assistance to aid property owners in identifying the required modifications.

Structural Problems

Illicit connection problems may require a structural modification to correct the problem. Structural repairs can be used to redirect discharges such as sewage, industrial and commercial cross-connections. Such cross-connections must be re-routed to an approved sanitary sewer system. Correcting structural problems is the responsibility of the property owner, though the City may provide technical assistance throughout the process.

Enforcement Actions

When voluntary compliance does not produce the desired results, the City is required to pursue follow-up enforcement action. Enforcement actions are the responsibility of the Surface Water Program Manager and Code Enforcement Officer. Table 3.3 outlines the detailed enforcement steps. More

SECTION 3 – IDDE PROCEDURES

serious violations or continued non-compliance may warrant a more aggressive, enforcement oriented approach.

Table 3.3.3 City of Kenmore IDDE Enforcement Steps				
Preliminary Actions		Open IDDE Case ↓		
		Investigation ↓		
		Confirm Problem Determine Responsible Party ↓	Egregious or Hazardous Issue ↓ Step 3	
Step 1 Initial Actions	← Flagrant Act and/or Poses Danger to Public Skip to Step 3	Alert Owner to Problem Distribute Educational Material ↓		
		Encourage Voluntary Compliance ↓		
		Send Summary Letter and Provide Technical Support ↓		
		Follow-up Site Visit to Verify Compliance ↓	→ Problem Corrected ↓ Close Case	
Step 2 Follow-up Actions		Problem Persists ↓		
		Send Notice of Violation Letter with Compliance Date ↓		
		Follow-up Site Visit to Verify Compliance ↓	→ Problem Corrected ↓ Close Case	
Step 3 Final Actions			Problem Persists ↓	
			Send Second Notice of Violation Letter ↓	
			City Corrects Structural Problems at Owner Expense ↓	
			Assess fines and/or Civil Penalties ↓	→ Close Case
			Refer Unresolved Problems to City Manager and City Attorney	

SECTION 3 – IDDE PROCEDURES

Enforcement Timelines

The timeline of corrective action procedures is highly dependent on the nature of the violation and the responsiveness and cooperation from the person(s) responsible. The urgency of addressing identified problems will be based on the nature of the pollutant in question and potential impacts to downstream waters. Compliance dates should be included in all violation notices.

The Permit requires identified problems to be corrected and illicit connections removed within 180 days of identifying the source. If property owners are not addressing problems in a timely manner, the City may step in and perform the repairs necessary to remove an illicit connection, eliminate an illicit discharge and/or clean-up a dumping incident. Property owners will also be responsible for reimbursing the City for any costs occurred in correcting IDDE problems.

Fines and Civil Penalties

Illicit Discharge violations are subject to fines and penalties under Chapters 1.15, 1.20 and 13.45 KMC and other enforcement provisions adopted by rule.

Fines and penalties include;

- An amount reasonably determined to be equivalent to the economic gain as a result of the violation (Chapter 13.45 KMC), and
- An amount, up to \$25,000, that is reasonably based upon the gravity and nature of the violation (Chapter 13.45 KMC), and
- Reimbursement of all costs incurred by the City in response to the violation (Chapters 13.45 & 1.20 KMC), and
- Responsible person(s) is guilty of a misdemeanor (Chapter 1.15 KMC), and
- Monetary fines of \$250.00 per day that violation occurs up to \$5,000 (Chapter 1.15 KMC), and
- Imprisonment up to one year (Chapter 1.15 KMC).

Record Keeping

Effective enforcement procedures require comprehensive recordkeeping and documentation to show that all program steps have been followed. Throughout the problem investigation and corrective action activities, all information related to the incident or property in question should be documented in the case file. Section 5 discusses illicit discharge record keeping in greater detail.

SECTION 4 – EDUCATION

SECTION 4 – EDUCATION

The City's IDDE education program informs public employees, businesses and the general public of hazards associated with illegal discharges and improper disposal of waste.

4.1 Employee Education/Training

Staff responsible for identification, investigation, termination, cleanup and reporting of illicit discharges, including spills and illicit connections are trained to conduct these activities. Additionally, field staff that as part of their normal job responsibilities might come into contact with or otherwise observe an illicit discharge or illicit connection to the MS4 are trained on the identification of an illicit discharge/connection and on the proper procedures for reporting and responding to the illicit discharge/connection. Follow-up training to all field staff is provided as needed.

4.2 General Public Education

The City has implemented many programs aimed at educating the general public on how stormwater drainage systems operate and the hazards associated with polluting runoff. Educational demonstrations and material are presented at community events by City staff. IDDE education and outreach is provided to Kenmore residents via newsletters, online media and public advertisements. The City also partners with regional stormwater outreach and education groups to produce materials and media such as the *Puget Sound Starts Here* campaign.

4.3 Business Education

The City has adopted the Kenmore Stormwater Pollution Prevention Manual (SPPM). The SPPM identifies Best Management Practices (BMPs) for commercial, multi-family and residential properties for activities that have the potential to contaminate surface, storm or groundwater. SPPM materials are often utilized when assisting property and business owners.

The City has worked with non-profit organizations that met in-person with Kenmore business owners to educate them on stormwater issues, including IDDE. Businesses also received spill response kits as part of these outreach efforts. The City continues to support and promote this kind of business education.

The City conducts Water Quality Audits for commercial and multi-family properties as needed or in response to inspection findings. Water Quality Audits provide assistance to property owners and assures that BMPs are correctly chosen and implemented. Water quality audits can often achieve compliance with water quality regulations without the need for civil penalties and fines.

SECTION 5 – TRACKING

SECTION 5 – TRACKING

The City tracks IDDE issues, including illicit discharges, connections, spills and water quality violations using Cityworks (asset management and tracking software system). Cityworks can manage service requests, inspections and work orders associated with IDDE. The City also occasionally conducts public surveys to assess the Public's knowledge regarding many stormwater issues, including IDDE.

IDDE issues are tracked and reported, annually, to Ecology as part of the City's Western Washington Phase II Municipal Stormwater Permit.

APPENDIX A – CHAPTER 13.45 KENMORE MUNICIPAL CODE

Chapter 13.45**WATER QUALITY****Sections:**

- 13.45.010 Purpose.
- 13.45.020 Definitions.
- 13.45.030 Discharges into city waters.
- 13.45.040 Stormwater Pollution Prevention Manual.
- 13.45.050 Administration.
- 13.45.060 Enforcement.
- 13.45.070 Hazards.
- 13.45.080 Criminal penalty.
- 13.45.090 Civil penalties for water quality.
- 13.45.100 Construction – Intent.
- 13.45.110 Severability.
- 13.45.120 Penalty.

13.45.010 Purpose.

A. The purpose of this chapter is to protect the city's surface and ground water quality by providing minimum requirements for reducing and controlling the discharge of contaminants. The city council recognizes that water quality degradation can result either directly from one discharge or through the collective impact of many small discharges. Therefore, this chapter prohibits the discharge of contaminants into surface and stormwater and groundwater, and outlines preventive measures to restrict contaminants from entering such waters. These measures include the implementation of best management practices (BMPs) by the residents of the city of Kenmore.

B. The city council finds this chapter is necessary to protect the health, safety and welfare of the residents of the city of Kenmore and the integrity of the city's resources for the benefit of all by: minimizing or eliminating water quality degradation; preserving and enhancing the suitability of waters for recreation, fishing, and other beneficial uses; and preserving and enhancing the aesthetic quality and biotic integrity of the water. The city council recognizes that implementation of this chapter is required under the federal Clean Water Act, 33 U.S.C. 1251 et seq. In meeting the intent of the Clean Water Act the city council also recognizes the importance of maintaining economic viability while providing necessary environmental protection and believes this chapter helps achieve both goals. [Ord. 09-0299 § 1; Ord. 01-0124 § 1; Ord. 98-0016 §§ 2, 3 (KCC 9.12.005).]

13.45.020 Definitions.

The following definitions shall apply in the interpretation and enforcement of this chapter:

A. "AKART" is an acronym for "all known, available, and reasonable methods of prevention, control, and treatment." "AKART" represents the most current methodology that can be reasonably required for preventing, controlling, or abating the pollutants associated with a discharge. "AKART" applies to both point and nonpoint sources of pollution.

B. "Best management practices" or "BMPs" means the best available and reasonable physical, structural, managerial, or behavioral activities, that, when used singly or in combination, eliminate or reduce the contamination of both surface and ground waters.

C. "Chapter" means this chapter and any administrative rules and regulations adopted to implement this chapter.

D. "City manager" means the Kenmore city manager or his or her designee, other department directors specified in enforcement procedures established pursuant to this chapter, or any duly authorized representatives of such directors.

E. "Clean Water Act" means 33 U.S.C. 1251 et seq., as amended.

F. "County" means the municipality of King County.

G. "Discharge" means throw, drain, release, dump, spill, empty, emit, or pour forth any matter or to cause or allow matter to flow, run, or seep from land or be thrown, drained, released, dumped, spilled, emptied, emitted or poured into water.

H. "Drainage facility" means the system that collects, conveys, and stores surface and stormwater runoff. Drainage facilities shall include but not be limited to all surface and stormwater conveyance and containment facilities including streams, pipelines, channels, ditches, swamps, lakes, wetlands, closed depressions, infiltration facilities, retention/detention facilities, erosion/sedimentation control facilities and other drainage structures and appurtenances, both natural and artificial.

I. "Farm management plan" means a comprehensive site-specific plan developed by the farm owner in cooperation with the city of Kenmore taking into consideration the landowner's objectives while protecting water quality and related natural resources.

J. "Forest practices" means any activity conducted on or directly pertaining to forest land and relating to growing, harvesting, or processing timber, as defined in Chapter 222-16 WAC.

K. "Ground water" means all waters that exist beneath the land surface or beneath the bed of any stream, lake, or reservoir, or other body of surface water, whatever may be the geological formation or structure in which such water stands or flows, percolates or otherwise moves.

L. "National Pollutant Discharge Elimination System" or "NPDES" means the national program for controlling pollutants from point source discharges directly into waters of the United States under the Clean Water Act.

M. "National Pollutant Discharge Elimination System permit" means an authorization, license, or equivalent control document issued by the Environmental Protection Agency or the Washington State Department of Ecology to implement the requirements of the NPDES program.

N. "Person" means an individual, and his or her agent or assign, municipality, political subdivision, government agency, partnership, corporation, business, or any other entity.

O. "Source control BMP" means a BMP intended to prevent contaminants from entering surface and stormwater and/or ground water including the modification of processes to eliminate the production or use of contaminants. "Source control BMPs" can be either structural or nonstructural. Structural source control BMPs involve the construction of a physical structure on site, or other type of physical modification to a site. An example of a structural source control BMP is building a covered storage area. A nonstructural source control BMP involves the modification or addition of managerial or behavioral practices. An example of a nonstructural source control BMP is using less toxic alternatives to current products or sweeping parking lots.

P. "State waste discharge permit" means an authorization, license, or equivalent control document issued by the Washington State Department of Ecology in accordance with Chapter 173-216 WAC.

Q. "Stormwater Pollution Prevention Manual" means the manual (and supporting documentation referenced or incorporated in the manual) describing best management practices and procedures for existing facilities and existing and new activities not covered by the Surface Water Design Manual.

R. "Surface and stormwater" means water originating from rainfall and other precipitation that is found on ground surfaces and in drainage facilities, rivers, streams, springs, seeps, ponds, lakes and wetlands as well as shallow groundwater.

S. "Treatment BMP" means a BMP intended to remove contaminants once they are already contained in stormwater. Examples of treatment BMPs include: oil/water separators, biofiltration swales, and wet ponds. [Ord. 09-0299 § 2; Ord. 01-0124 § 1; Ord. 98-0016 §§ 2, 3 (KCC 9.12.015).]

13.45.030 Discharges into city waters.

A. Prohibited Discharges.

1. It is unlawful for any person to discharge any contaminants into surface and stormwater, ground water, or the Puget Sound. Contaminants include, but are not limited to, the following:

- a. Trash or debris;
- b. Construction materials;
- c. Petroleum products including but not limited to oil, gasoline, grease, fuel oil, and heating oil;
- d. Antifreeze and other automotive products;
- e. Metals in either particulate or dissolved form;
- f. Flammable or explosive materials;
- g. Radioactive material;
- h. Batteries;
- i. Acids, alkalis, or bases;
- j. Paints, stains, resins, lacquers, or varnishes;
- k. Degreasers and solvents;
- l. Drain cleaners;
- m. Pesticides, herbicides, or fertilizers;
- n. Steam cleaning wastes;
- o. Soaps, detergents, or ammonia;
- p. Swimming pool backwash;
- q. Chlorine, bromine, and other disinfectants;
- r. Heated water;
- s. Domestic animal wastes;
- t. Sewage;
- u. Recreational vehicle waste;
- v. Animal carcasses;
- w. Food wastes;
- x. Bark and other fibrous materials;
- y. Collected lawn clippings, leaves, or branches;
- z. Silt, sediment, or gravel;
- aa. Dyes (except as stated in subsection (D)(1) of this section);

bb. Chemicals, not normally found in uncontaminated water;

cc. Any hazardous material or waste not listed above.

2. Illicit Connections. Any connection, identified by the city manager, that could convey anything not composed entirely of surface and stormwater directly to surface and stormwater or ground water is considered an illicit connection and is prohibited, with the following exceptions:

a. Connections conveying allowable discharges;

b. Connections conveying discharges pursuant to an NPDES permit (other than an NPDES stormwater permit) or a state waste discharge permit; and

c. Connections conveying effluent from on-site sewage disposal systems to subsurface soils.

B. Allowable Discharges with the Application of BMPs. This section applies to certain business and residential activities that have the potential to contribute pollutants to stormwater runoff or directly to receiving waters. To prevent a prohibited discharge, BMPs from the Stormwater Pollution Prevention Manual, or supplemental BMPs as determined necessary by the city manager, shall be applied to the activities identified in the Stormwater Pollution Prevention Manual. Examples of common activities identified in the Stormwater Pollution Prevention Manual that might result in prohibited discharges include, but are not limited to, the following:

1. Potable water line flushing;
2. Dust control with water;
3. Automobile and boat washing;
4. Pavement and building washing;
5. Swimming pool and hot tub maintenance;
6. Vehicle and equipment repair and maintenance;
7. Building repair and maintenance;
8. Landscaping activities and vegetation management;
9. Hazardous waste handling;
10. Solid and food waste handling; and
11. Application of pesticides or other chemicals (other than landscaping maintenance).

C. The following types of discharges shall not be considered prohibited discharges for the purpose of this chapter unless the city manager determines that the type of discharge, whether singly or

in combination with other discharges, is causing significant contamination of surface and stormwater or ground water:

1. Spring water;
2. Diverted stream flows;
3. Uncontaminated water from crawl space pumps, foundation drains, or footing drains;
4. Pumped ground water flows that are uncontaminated;
5. Materials placed as part of an approved habitat restoration or bank stabilization project;
6. Natural uncontaminated surface water or ground water;
7. Flows from riparian habitats and wetlands;
8. Collected rainwater that is uncontaminated;
9. Uncontaminated ground water that seeps into or otherwise enters stormwater conveyance systems;
10. Air conditioning condensation;
11. Irrigation water from agricultural sources that is commingled with stormwater runoff; and
12. Other types of discharges as determined by the city manager.

D. Exceptions.

1. Dye testing is allowable but requires verbal notification to the city manager at least one day prior to the date of test. The city of Kenmore health department is exempt from this requirement.

2. A person does not violate subsection A of this section if:

a. That person has properly designed, constructed, implemented and is properly maintaining BMPs, and is carrying out AKART as required by this chapter, but contaminants continue to enter surface and stormwater or groundwater; or

b. That person can demonstrate that there are no additional contaminants being discharged from the site above the background conditions of the water entering the site.

3. A person who, under subsection (D)(2) of this section, is not in violation of subsection A of this section, Prohibited Discharges, is still liable for any prohibited discharges through illicit connections, dumping, spills, or other discharges not addressed by BMPs satisfying subsection (D)(2) of this section that allow contaminants to enter surface and stormwater or ground water.

4. Emergency response activities or other actions that must be undertaken immediately or within a time too short to allow full compliance

with this chapter in order to avoid an imminent threat to public health or safety shall be exempt from this section. The city manager may specify actions that qualify for this exception in city procedures. A person undertaking emergency response activities shall take steps to ensure that the discharges resulting from such activities are minimized to the greatest extent possible. In addition, this person shall evaluate BMPs and the site plan, where applicable, to restrict recurrence. [Ord. 09-0299 § 3; Ord. 01-0124 § 1; Ord. 98-0016 §§ 2, 3 (KCC 9.12.025).]

13.45.040 Stormwater Pollution Prevention Manual.

A. Adoption. The Kenmore Stormwater Pollution Prevention Manual is adopted for use in the city of Kenmore. Future versions of said manual shall be adopted only if approved by the Kenmore city council. The manual is available in electronic form from the city of Kenmore.

B. Compliance with this chapter shall be achieved through the use of best management practices described in the Kenmore Stormwater Pollution Prevention Manual. In applying the Stormwater Pollution Prevention Manual, the city manager shall first require the implementation of source control BMPs. If these are not sufficient to prevent contaminants from entering surface and stormwater or ground water, the city manager may require implementation of treatment BMPs, as set forth in AKART. The city manager will provide, upon reasonable request, available technical assistance materials and information, and information on outside financial assistance options to persons required to comply with this chapter.

C. In applying the Stormwater Pollution Prevention Manual to prohibited discharges from normal single-family residential activities, the city manager shall use public education and warnings as the primary method of gaining compliance with this chapter and shall not use citations, notice and orders, assessment of civil penalties and fines, or other compliance actions as authorized in Chapter 1.20 KMC unless the city manager determines:

1. The discharge from a normal single-family residential activity, whether singly or in combination with other discharges, is causing a significant contribution of contaminants to surface and stormwater or ground water; or
2. The discharge from a normal single-family residential activity poses a hazard to the public health, safety or welfare, endangers any property or

adversely affects the safety and operation of city right-of-way, utilities or other city-owned or maintained property.

D. Persons implementing BMPs through another federal, state, or local program will not be required to implement the BMPs prescribed in the Stormwater Pollution Prevention Manual, unless the city manager determines the alternative BMPs are ineffective at reducing the discharge of contaminants. If the other program requires the development of a stormwater pollution prevention plan or other best management practices plan, the person shall make their plan available to the city of Kenmore upon request. Persons who qualify for exemptions include, but are not limited to, persons:

1. Required to obtain a general or individual NPDES permit from the Washington State Department of Ecology;
2. Implementing and maintaining, as scheduled, a city-approved farm management plan;
3. Implementing BMPs in compliance with Chapter 18.70 KMC;
4. Implementing BMPs in compliance with the management program of the city's municipal NPDES permit;
5. Engaged in forest practices, with the exception of forest practices occurring on lands platted after January 1, 1960, or on lands being converted to another use, or when regulatory authority is otherwise provided to local government by RCW 76.09.240; or
6. Identified by the city manager as being exempt from this section. [Ord. 09-0299 § 4; Ord. 01-0124 § 1; Ord. 98-0016 §§ 2, 3 (KCC 9.12.035).]

13.45.050 Administration.

The city manager is authorized to implement the provisions of this chapter. The city manager is authorized to promulgate and adopt administrative rules and regulations for the purpose of implementing and enforcing the provisions of this chapter. The city manager will coordinate the implementation and enforcement of this chapter with other departments of city of Kenmore government. [Ord. 09-0299 § 5; Ord. 01-0124 § 1; Ord. 98-0016 §§ 2, 3 (KCC 9.12.045).]

13.45.060 Enforcement.

A. The city manager is authorized to carry out enforcement actions pursuant to the enforcement and penalty provisions of this chapter, and Chap-

ters 1.15 and 1.20 KMC and other enforcement provisions adopted by rule.

B. The city manager shall use public education, warnings, technical assistance and the implementation of BMPs and, when necessary, AKART, as the primary methods of gaining compliance with this chapter, unless the city manager determines a violation is a result of a flagrant act that should be addressed through immediate penalties or poses a hazard as defined in KMC 13.45.070, Hazards.

C. The city manager, in consultation with other departments of the city of Kenmore government, shall develop and implement additional enforcement procedures. These procedures shall indicate how the city will investigate and respond to reports or instances of noncompliance with this chapter and shall identify by title the official(s) responsible for implementing the enforcement procedures.

D. The city manager is authorized to make such inspections and take such actions as may be required to enforce the provisions of this chapter.

1. The city manager may observe BMPs or examine or sample surface and stormwater or ground water as often as may be necessary to determine compliance with this chapter. Whenever an inspection of a property is made, the findings shall be recorded and a copy of the inspection findings shall be furnished to the owner or the person in charge of the property after the conclusion of the investigation and completion of the inspection findings. The person in violation of this chapter shall be responsible for all costs and expenses related to the city's sampling, examination, analysis, application of BMPs authorized herein and/or abatement of the violation.

2. When the city manager has made a determination under subsection (D)(1) of this section that any person is violating this chapter, the city manager may require the violator to sample and analyze any discharge, surface and stormwater, ground water, and/or sediment, in accordance with sampling and analytical procedures or requirements determined by the city manager. If the violator is required to complete this sampling and analysis, a copy of the analysis shall be provided to the city manager. The person in violation of this chapter shall be responsible for all costs and expenses related to the sampling, examination, analysis, application of BMPs required by the city manager and/or abatement of the violation.

E. In addition to any other penalty or method of enforcement, the city may bring actions for injunctive or other relief to enforce this chapter. [Ord. 09-0299 § 6; Ord. 01-0124 § 1; Ord. 98-0016 §§ 2, 3 (KCC 9.12.050).]

13.45.070 Hazards.

A. Whenever the city manager determines that any violation of this chapter poses a hazard to public health, safety, or welfare, endangers any property, or adversely affects the safety and operation of city right-of-way, utilities, and/or other property owned or maintained by the city, the person holding title to the subject property, and/or other person or agent in control of said property, upon receipt of notice in writing from the city manager, shall within the period specified therein address the cause of the hazardous situation in conformance with the requirements of this chapter.

B. Notwithstanding any other provisions of this chapter, whenever it appears to the city manager that conditions covered by this chapter exist requiring immediate action to protect the public health and/or safety, the city manager is authorized to enter at all times in or upon any such property, public or private, for the purpose of inspecting and investigating such emergency conditions. The city manager, without prior notice, may order the immediate discontinuance of any activity leading to the emergency condition. Failure to comply with such order shall constitute a misdemeanor. [Ord. 09-0299 § 7; Ord. 01-0124 § 1; Ord. 98-0016 §§ 2, 3 (KCC 9.12.060).]

13.45.080 Criminal penalty.

Any willful violation of an order issued pursuant to KMC 13.45.060 or 13.45.070 for which a criminal penalty is not prescribed by state law is a misdemeanor. [Ord. 01-0124 § 1; Ord. 98-0016 §§ 2, 3 (KCC 9.12.070).]

13.45.090 Civil penalties for water quality.

The enforcement provisions for water quality are intended to encourage compliance with this chapter. To achieve this, violators will be required to take corrective action and comply with the requirements of this chapter, and may be required to pay a civil penalty for the redress of ecological, recreational, and economic values lost or damaged due to their unlawful action.

A. The provisions in this section are in addition to and not in lieu of any other penalty, sanction or right of action provided by law.

B. Any person in violation of this chapter may be subject to civil penalties assessed as follows:

1. An amount reasonably determined by the city manager to be equivalent to the economic benefit the violator derives from the violation as measured by the greater of the resulting increase in market value of the property or business value received by the violator, or savings of construction or retrofitting costs realized by the violator performing any act in violation of this chapter; and

2. An amount, not to exceed \$25,000, that is reasonably based upon the nature and gravity of the violation and the cost to the city of enforcing this chapter against the violator.

C. Any person who, through an act of commission or omission, aids or abets in a violation shall be considered to have committed the violation for the purposes of the civil penalty.

D. Each violator is jointly and severally liable for a violation of this chapter. The city manager may take enforcement action, in whole or in part, against any violator. The decisions whether to take enforcement action, what type of action to take, and which person to take action against, are all entirely within the city manager's discretion. Factors to be used in taking such enforcement actions shall be:

1. Awareness of the violation;
2. Ability to correct the violation;
3. Cooperation with government agencies;
4. Degree of impact or potential threat to water or sediment quality, human health, or the environment.

E. In the event more than one person is determined to have violated the provisions of this chapter, all applicable civil penalties may be imposed against each person, and recoverable damages, costs, and expenses may be allocated among the persons on any equitable basis. Factors that may be considered in determining an equitable allocation include:

1. Awareness of the violation;
2. Ability to correct the violation;
3. Ability to pay damages, costs, and expenses;
4. Cooperation with government agencies;
5. Degree of impact or potential threat to water or sediment quality, human health, or the environment.

F. The city manager may engage in mitigation discussions with the violator. The city manager may reduce the penalties based upon one or more of the following mitigating factors:

1. The person responded to city attempts to contact the person and cooperated with efforts to correct the violation;

2. The person showed due diligence and/or substantial progress in correcting the violation; or

3. An unknown person was the primary cause of the violation.

Payment of a monetary penalty pursuant to this chapter does not relieve the person of the duty to correct the violation.

G. All civil penalties recovered during the enforcement of this chapter under Chapter 1.20 KMC shall be deposited into a fund of the city and shall be used for the protection of surface and stormwater or ground water as set forth in this chapter, through education or enhanced implementation. [Ord. 09-0299 § 8; Ord. 01-0124 § 1; Ord. 98-0016 §§ 2, 3 (KCC 9.12.080).]

13.45.100 Construction – Intent.

A. This chapter is enacted as an exercise of the city's power to protect and preserve the public health, safety and welfare. Its provision shall be exempted from the rule of strict construction and shall be liberally construed to give full effect to the objectives and purposes for which it was enacted. This chapter is not enacted to create or otherwise establish or designate any particular class or group of persons who will or should be especially protected or benefited by the terms of this chapter.

B. The primary obligation of compliance with this chapter is placed upon the person holding title to the property. Nothing contained in this chapter is intended to be or shall be construed to create or form a basis for liability for the city, the department, its officers, employees or agents for any injury or damage resulting from the failure of the person holding title to the property to comply with the provisions of this chapter, or by reason or in consequence of any act or omission in connection with the implementation or enforcement of this chapter by the city, department, its officers, employees or agents. [Ord. 01-0124 § 1; Ord. 98-0016 §§ 2, 3 (KCC 9.12.090).]

13.45.110 Severability.

If any provision of this chapter or its application to any person or property is held invalid, the remainder of the chapter or the application of the provision to other persons or property shall not be affected. [Ord. 01-0124 § 1; Ord. 98-0016 §§ 2, 3 (KCC 9.12.110).]

13.45.120 Penalty.

Except as provided in KMC 13.45.090(B)(1) and (2) for civil penalties, any person violating any of the provisions of this chapter may be subject to the general penalty and enforcement provisions in this chapter and Chapters 1.15 and 1.20 KMC. [Ord. 09-0299 § 9; Ord. 01-0124 § 1; Ord. 98-0016 § 5.]

APPENDIX B – 2010 OUTFALL RECONNAISSANCE INVENTORY (ORI)



2010 Outfall Reconnaissance Inventory Summary

**Swamp Creek, Little Swamp Creek, Muck Creek, and Associated
Tributaries**

September 2010

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INTRODUCTION

The City of Kenmore (City) was issued a Western Washington Phase II Municipal Stormwater Permit (Permit) on January 17, 2007. The Permit contains requirements to develop a Stormwater Management Program (SWMP). One of the requirements outlined in the SWMP was to develop an Illicit Discharge Detection and Elimination (IDDE) program. As part of the IDDE program, receiving waters were prioritized for visual inspection and screened for illicit connections. Three receiving waters were required to be completed prior to February 15, 2011. One receiving water will be required to be completed prior to February 15, 2012 and then one each year thereafter.

In 2010, the City visually inspected the Swamp Creek basin, which included 8 receiving water bodies (See Fig 1):

- Swamp Creek (Type 1^a)
- Little Swamp Creek (Type 2^a)
- Muck Creek (Type 2^a)
- Swamp Creek Tributary 01 (Unclassified^a)
- Swamp Creek Tributary 02 (Type 3^a)
- Swamp Creek Tributary 03 (Type 2^a)
- Swamp Creek Tributary 04 (Type 2^a)
- Swamp Creek Tributary 05 (Unclassified^a)

^aStream classification types are described in Kenmore Municipal Code, Chapter 18.55.400.

METHOD

Outfall Reconnaissance Inventory (ORI)

The City structured the ORI as described in the “Illicit Discharge and Elimination – A Guidance Manual for Program Development and Technical Assessments” (the Manual) by the Center for Watershed Protection and Robert Pitt released in October, 2004.

Initial mapping of the Municipal Separate Storm Sewer System (MS4) was conducted during the summer of 2010 before walking the streams in fall. Potential outfall locations were identified and mapped in the geographical information system (GIS) and provided to ORI staff. Additional outfalls discovered during the stream walks were mapped and input into the City’s GIS. ‘Outfall’ is defined in the Permit as a point source as defined by 40 CFR 122.2 at the point where a municipal separate storm sewer discharges to waters of the State and does not include open conveyances connecting two municipal separate sewer systems, or pipes, tunnels, or other conveyances which connect segments of the same stream or other waters of the State and are used to convey waters of the State. In reality, an outfall is not always a well defined point on the ground. Efforts were made to accurately capture each outfall, as defined, but in some cases a judgment call was required to decide where an outfall would be placed. For instance, if a stream flowed through a series of catch basins while crossing a road, an outfall was identified where the last catch basin discharged back into the ‘natural’ stream channel.

Receiving waters were walked by at least two staff members, one walking each bank of stream when practical. Typically, streams were walked in an upstream direction to minimize disturbance to potential in-stream sample areas.

If flow was present at an outfall, an ORI worksheet was completed, a picture was taken and water was collected to test for the illicit discharge indicators identified in table 1 below. Pictures of each flowing outfall can be found in Appendix A.

Table 1 – Illicit Discharge Indicators

Indicator	Instrument	Method	Accuracy	Range
Temperature	YSI 63	Thermistor Sensor	±0.1°C	
pH	YSI 63	Combination Sensor with Gel Reference	±0.1 unit within 10°C of calibration ±0.2 unit within 20°C of calibration	0-14
Conductivity	YSI 63	Four Electrode Cell Sensor	±0.5% full scale and 0.1 uS/cm resolution	0 to 499.0 us/cm
Salinity	YSI 63	ASTM document <i>Standard Methods of Test for Electrical Conductivity of Water and Industrial Wastewater</i> , ASTM Designation D1125-82, and OIML Recommendation Number 56	±0.1 ppt	
Turbidity	LaMotte 2020e Turbidity Meter	USEPA Method 180.1	±2% NTU ±3% NTU	0-100 NTU >100 NTU

Table 1 continued on next page

Indicator	Instrument	Method	Accuracy	Range
Ammonia Nitrogen	LaMotte Smart2 Colorimeter	Nesslerization		0.00-4.00 ppm
Fluoride	LaMotte Smart2 Colorimeter	SPADNS		0.00-2.00 ppm
Potassium	LaMotte Smart2 Colorimeter	Tetraphenylboron		0.0-10.0 ppm
Surfactants	LaMotte Smart2 Colorimeter	Ion Pair Extraction-Bromophenol Blue Indicator		0.5-8.0 ppm as Linear Alkyl Sulfonates (LAS)
Fecal Coliform	AMTEST Labs	SM9222D		

RESULTS

A total of 61 outfalls were identified in the Swamp Creek Basin ORI (See Fig 1). Eleven outfalls had flowing water and were tested for illicit discharge indicators and are labeled in Figure 1 (SCOF001 – SCOF012).

Figure 1 – Map of Swamp Creek Basin Outfalls

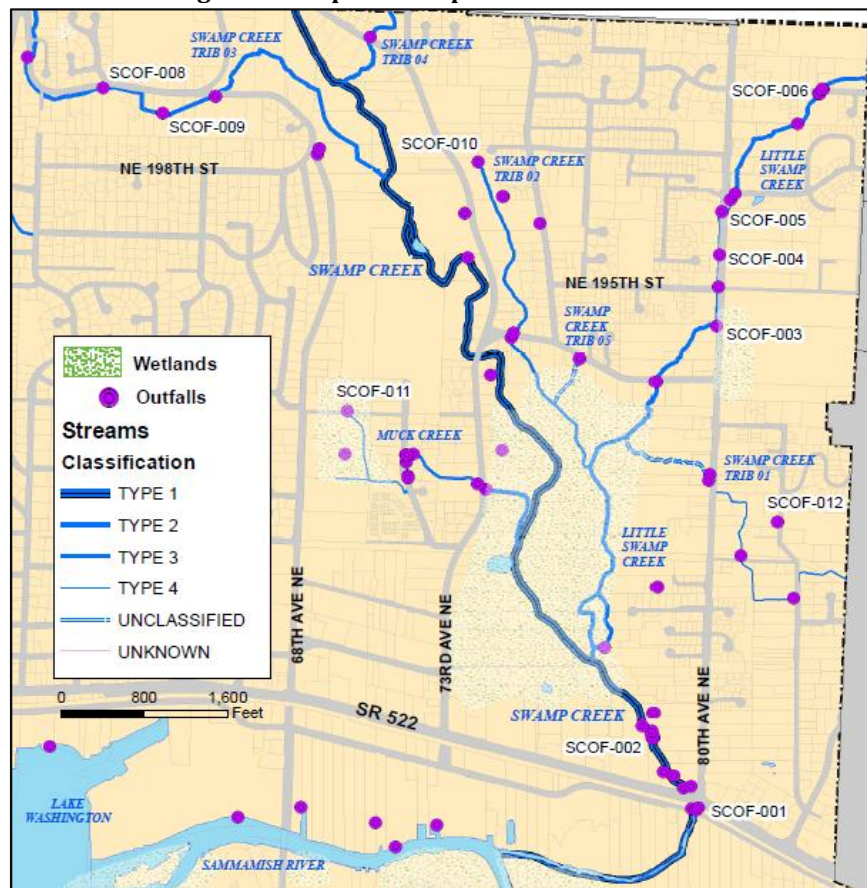


Table 2 summarizes the concentrations found for each illicit discharge indicator sampled.

Table 2 – Outfall Illicit Discharge Indicator Results

	SCOF-001	SCOF-002	SCOF-003	SCOF-004	SCOF-005	SCOF-006	SCOF-008	SCOF-009	SCOF-010	SCOF-011	SCOF-012
Temp (°C)	16.7	15.2	13.6	15.0	15.7	15.2	15.8	15.3	15.5	15.0	15.0
pH	7.19	6.75	7.88	7.43	7.59	7.46	7.17	7.91	7.2	8.23	7.71
Conductivity (uS/cm)	248.4	224.5	166.1	185.3	34.1	109.6	180.6	62.3	274	178.1	221.4
Salinity (ppt)	-	-	0.1	0.1	0.0	0.1	0.1	0.0	0.2	0.1	0.1
Turbidity (NTU)	-	-	2.63	3.47	0.22	1.76	0.64	0.86	13.6	1.7	9.47
Ammonia (ppm)	0.10	.37	0.17	0.17	0.11	0.19	0.14	0.11	0.67	0.13	0.17
Fluoride (ppm)	0.04	0.01	0.79	0.19	0.56	0.66	0.05	0.14	0.23	0.05	0.04
Potassium (ppm)	5.0	2.0	1.9	2.1	2.1	1.8	2.6	1.7	5.7	2.3	6.0
Surfactant (ppm)	1.2	2.2	2.8	1.9	1.6	2.4	1.0	1.1	1.0	1.5	1.7
Fecal Coliform (FCU/100mL)	10	6	35	20	5	40	<2	8	-	-	-

Table 3 summarizes the concentrations found for each illicit discharge indicator sampled in the main channel of Swamp Creek. Fecal Coliform samples were not collected in Swamp Creek. Swamp Creek samples were not collected the same day as outfall samples.

Table 3 – Swamp Creek Illicit Discharge Indicator Results

	Swamp Creek 204 TH AVE NE	Swamp Creek 73 RD AVE NE	Swamp Creek NE BOTHELL WAY
Temp (°C)	12.2	12.5	12.2
pH	8.07	8.06	7.6
Conductivity (uS/cm)	148.7	155.7	152.7
Salinity (ppt)	0.1	0.1	0.1
Turbidity (NTU)	0.83	0.97	1.54
Ammonia (ppm)	0.17	0.18	0.25
Fluoride (ppm)	0.22	0.23	0.27
Potassium (ppm)	1.6	1.9	1.8
Surfactant (ppm)	2.5	1.6	1.4
Fecal Coliform (FCU/100mL)	Not Collected	Not Collected	Not Collected

CONCLUSION

Only surfactants and fluoride exceeded the benchmark concentration (BC) suggested in the Manual (Table 4). Surfactants surpassed the BC (>0.25 mg/L) in every sample. Fluoride surpassed the BC (>0.25 mg/L) in three samples. Surfactants also exceeded the BC in all three Swamp Creek samples. Fluoride exceeded the BC in one of three Swamp Creek samples, which seems unlikely. Upstream reconnaissance did not reveal any obvious source for the observed concentrations of surfactant and fluoride.

Surfactant concentration results suggest that surfactant concentrations are exceeding the BC basin wide. Surfactant concentrations in Swamp Creek entering the City were at 2.5 ppm and decreased to 1.4 ppm before reaching Lake Washington. Elevated surfactant levels observed at the outfall were not accompanied with any visual cues that could be used to track potential sources upstream.

In general, fluoride testing seemed unreliable. Multiple readings of the same sample resulted in readings that were $\pm 75\%$ at times.

It is interesting to note that visual inspection, without sampling, would have only triggered further investigation at one outfall due to the presence of suds and discoloration. However, that outfall had the lowest measured surfactant concentration and slightly elevated turbidity (but still well below the BC).

Additional samples should be collected during the next ORI and tested at a qualified lab to compare the measurements of the field equipment to the lab results. Surfactant and fluoride results seemed questionable.

Table 4 – Indicator Benchmark Concentrations

	Swamp Creek Basin Outfalls ORI Range	Washington State WQ Standard 173-201A WAC	Manual Benchmark Concentration
Temp (°C)	15.0 – 16.7	ND	ND
pH	6.75 – 7.91	6.5 – 8.5	≤ 5
Conductivity (uS/cm)	34.1 – 248.4	ND	≥ 2,000
Salinity (ppt)	0.0 – 0.1	ND	ND
Turbidity (NTU)	0.22 – 3.47	5 NTU over background (when ≤50 NTU)	≥ 1,000
Ammonia (ppm)	0.096 – 0.372	ND	≥50 mg/L*
Fluoride (ppm)	0.01 – 0.79	ND	> 0.25 mg/L
Potassium (ppm)	1.7 – 5.0	ND	≥ 20 mg/L*
Surfactant (ppm)	1.0 – 2.8	ND	> 0.25 mg/L*
Fecal Coliform (FCU/100mL)	<2 - 40	50	ND

* mg/L and ppm are roughly equivalent (it is equivalent with pure water)

ND – Not Determined

APPENDIX A – PHOTOS

	 SCOF-001 C0855 09/03/2010 07:45		SCOF-001 GIS # C0855 09/03/2010 07:45 24" CMP Drains SR 522 from 80TH AVE NE to 83RD PL NE.
	 SCOF-002 C1584 09/03/2010 13:26 C1583		SCOF-002 GIS # C1584 09/03/2010 13:26 12" CMP Drains residential area along 80TH AVE NE.

	SCO-003 GIS # C0869 09/09/2010 13:00 36" CMP Drains the east side of 80TH AVE NE from NE 192ND ST to NE 198TH ST.
	SCO-004 GIS # C0829 09/09/2010 13:25 12" CMP into 36" CMP Drains NE 196TH ST residential Cul-de-sac at 78TH AVE NE.

	SCOF-005 GIS # C0866 09/09/2010 14:00 18" CMP Drains west side of 80TH AVE NE from NE 198TH ST to the north border of Kenmore at NE 205TH ST.
	SCOF-006 GIS # C1562 09/09/2010 14:30 Vegetated Ditch Drains the south side of NE 203RD ST from approximately the 8200 block east to the Kenmore border.

 SCOF-008 C1593 09/10/2010 11:30	SCOF-008 GIS # C1593 09/10/2010 11:30 12" RCP Drains the north side of NE 202ND ST between 63RD AVE NE and 62ND AVE NE.
 SCOF-009 C0868 09/10/2010 12:05	SCOF-009 GIS # C0868 09/10/2010 12:05 Vegetated Ditch Drains NE 198TH ST between 62ND AVE NE and 65TH AVE NE.

	SCOF-010 GIS # C1615 10/1/2010 11:00 24" CPEP Drains private area between 73RD AVE NE and 75TH AVE NE north of NE 200TH ST.
	SCOF-011 GIS # C1610 10/1/2010 11:18 30" CMP Drains between 68TH AVE NE and 65TH AVE NE from NE 190TH ST to NE 196TH ST.



SCOF-012

GIS # C1605

10/1/2010

11:57

18" CMP

Drains the east side of 82ND
AVE NE from NE 185TH ST to NE
187TH ST.

APPENDIX C – 2011 OUTFALL RECONNAISSANCE INVENTORY (ORI)



2011 Outfall Reconnaissance Inventory Summary

**Sammamish River
Lake Washington**

August 2011

Prepared by:
Richard Sawyer

Field Staff:
Richard Sawyer
Art Simpson

City of Kenmore
Engineering Department



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INTRODUCTION

The City of Kenmore (City) was issued a Western Washington Phase II Municipal Stormwater Permit (Permit) on January 17, 2007. The Permit contains requirements to develop a Stormwater Management Program (SWMP). One of the requirements outlined in the SWMP was to develop an Illicit Discharge Detection and Elimination (IDDE) program. As part of the IDDE program, receiving waters were prioritized for visual inspection and screened for illicit connections. Three receiving waters were required to be completed prior to February 15, 2011. One receiving water will be required to be completed prior to February 15, 2012 and then one each year thereafter.

In 2011, the City visually inspected outfalls along Sammamish River and Lake Washington.

METHOD

Outfall Reconnaissance Inventory (ORI)

The City structured the ORI as described in the “Illicit Discharge and Elimination – A Guidance Manual for Program Development and Technical Assessments” (the Manual) by the Center for Watershed Protection and Robert Pitt released in October, 2004.

Initial mapping of the Municipal Separate Storm Sewer System (MS4) was conducted during the summer of 2010. Potential outfall locations were identified and mapped in the geographical information system (GIS) and provided to ORI staff. Additional outfalls discovered during the ORI were mapped and input into the City’s GIS. ‘Outfall’ is defined in the Permit as a point source as defined by 40 CFR 122.2 at the point where a municipal separate storm sewer discharges to waters of the State and does not include open conveyances connecting two municipal separate sewer systems, or pipes, tunnels, or other conveyances which connect segments of the same stream or other waters of the State and are used to convey waters of the State. In reality, an outfall is not always a well defined point on the ground. Efforts were made to accurately capture each outfall, as defined, but in some cases a judgment call was required to decide where an outfall would be placed. For instance, if a stream flowed through a series of catch basins while crossing a road, an outfall was identified where the last catch basin discharged back into the ‘natural’ stream channel.

Access to outfalls along Sammamish River and Lake Washington was achieved by using a kayak and inspecting them along the shoreline. Many of the outfalls were remote and inaccessible from land so this method proved to be very successful.

If flow was present at an outfall, an ORI worksheet was completed, a picture was taken and water was collected to test for the illicit discharge indicators identified in table 1 below. Pictures of each flowing outfall can be found in Appendix A.

Table 1 – Illicit Discharge Indicators

Indicator	Instrument	Method	Accuracy	Range
Temperature	YSI 63	Thermistor Sensor	±0.1°C	
pH	YSI 63	Combination Sensor with Gel Reference	±0.1 unit within 10°C of calibration ±0.2 unit within 20°C of calibration	0-14
Conductivity	YSI 63	Four Electrode Cell Sensor	±0.5% full scale and 0.1 uS/cm resolution	0 to 499.0 us/cm
Salinity	YSI 63	ASTM document <i>Standard Methods of Test for Electrical Conductivity of Water and Industrial Wastewater</i> , ASTM Designation D1125-82, and OIML Recommendation Number 56	±0.1 ppt	
Turbidity	LaMotte 2020e Turbidity Meter	USEPA Method 180.1	±2% NTU ±3% NTU	0-100 NTU >100 NTU

Table 1 continued on next page

Indicator	Instrument	Method	Accuracy	Range
Ammonia Nitrogen	LaMotte Smart2 Colorimeter	Nesslerization		0.00-4.00 ppm
Fluoride	LaMotte Smart2 Colorimeter	SPADNS		0.00-2.00 ppm
Potassium	LaMotte Smart2 Colorimeter	Tetraphenylboron		0.0-10.0 ppm
Surfactants	LaMotte Smart2 Colorimeter	Ion Pair Extraction-Bromophenol Blue Indicator		0.5-8.0 ppm as Linear Alkyl Sulfonates (LAS)
Fecal Coliform	AMTEST Labs	SM9222D		

RESULTS

A total of 31 outfalls were identified in the Sammamish River ORI (Figure 1). Six outfalls had flowing water and were tested for illicit discharge indicators and are labeled in Figure 1.

Figure 1 – Map of Sammamish River Outfalls

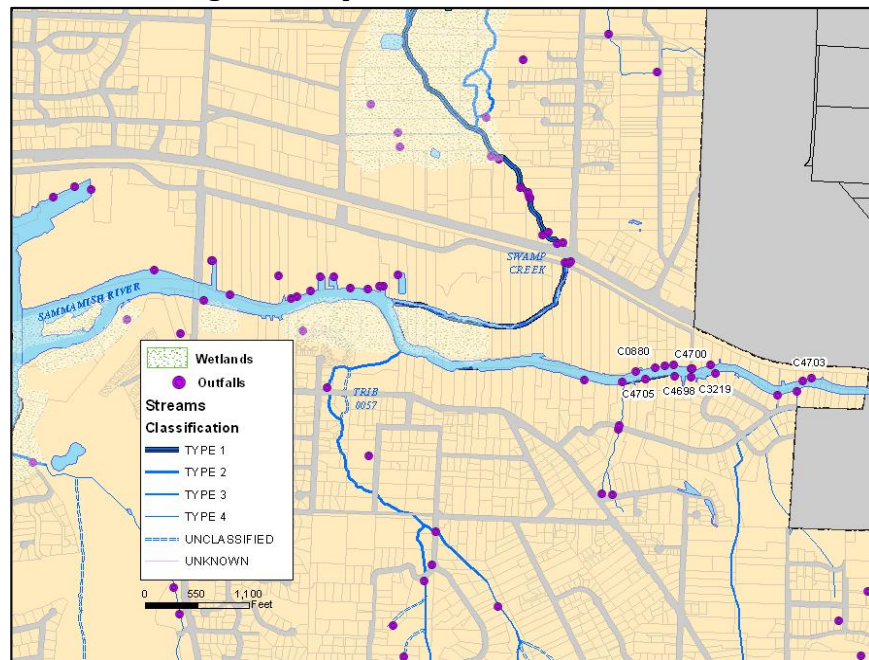


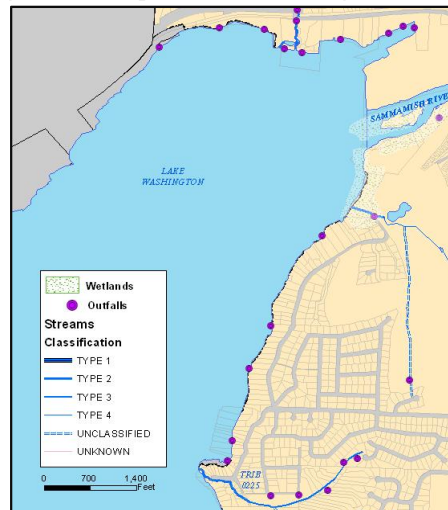
Table 2 summarizes the concentrations found for each illicit discharge indicator sampled. Duplicate samples were collected at two outfalls (C0880 and C4703) and sent to AMTEST, INC. for comparison to samples analyzed in the field. Ammonia and surfactant concentrations tested higher in the field than in the lab. Four stations had flows too low to use the YSI probe.

Table 2 – Outfall Illicit Discharge Indicator Results (Sammamish River)

	C0880	C0880 DUPLICATE	C4703	C4703 DUPLICATE	C4698	C4700	C3219	C4705
Temp (°C)	19.0	-	15.6	-	-	-	-	-
pH	7.70	-	7.45	-	-	-	-	-
Conductivity (uS/cm)	179.8	-	132.1	-	-	-	-	-
Salinity (ppt)	0.1	-	0.1	-	-	-	-	-
Turbidity (NTU)	1.19	-	0.0	-	1.23	0.42	1.98	6.22
Ammonia (ppm)	0.19	0.026	0.17	0.008	0.14	0.17	0.20	1.61
Fluoride (ppm)	0.06	<0.02	0	<0.02	0.0	0.03	0.0	0.0
Potassium (ppm)	2.2	2.4	1.9	2.1	2.6	2.7	2.3	3.6
Surfactant (ppm)	1.9	<0.25	1.1	<0.25	1.5	1.5	1.7	1.3

Duplicate samples were analyzed in the lab at AMTEST, INC.

A total of thirteen outfalls were identified in the Lake Washington ORI (Figure 2). Five of the outfalls were not observed during the field screening. The presumed outfall location may have been incorrect or they may have not been easily visible. No visible indicators of an illicit discharge or connection were observed in the presumed areas of these outfalls. Three outfalls had a small discharge, but flows were too small to collect a sample or conditions didn't allow it. No visible indicators of an illicit discharge or connection were observed at these locations.

Figure 2 – Map of Lake Washington Outfalls

CONCLUSION

No illicit discharges or connections were discovered during the Sammamish River or Lake Washington ORI. AMTEST, INC. analyses indicated that field instrumentation provided higher than actual concentrations for both ammonia and surfactants.

Table 3 shows indicator benchmark concentrations that would indicate a potential illicit discharge or connection.

Table 3 – Indicator Benchmark Concentrations

	Swamp Creek Basin Outfalls ORI Range	Washington State WQ Standard 173-201A WAC (Not Stormwater)	Manual Benchmark Concentration
Temp (°C)	15.6 – 19.0	ND	ND
pH	7.45 – 7.70	6.5 – 8.5	≤ 5
Conductivity (uS/cm)	132.1 – 179.8	ND	≥ 2,000
Salinity (ppt)	0.1	ND	ND
Turbidity (NTU)	0.00 – 6.22	5 NTU over background (when ≤50 NTU)	≥ 1,000
Ammonia (ppm)	0.14 – 1.61**	ND	≥50 mg/L*
Fluoride (ppm)	0.00 – 0.06	ND	> 0.25 mg/L
Potassium (ppm)	1.9 – 3.6	ND	≥ 20 mg/L*
Surfactant (ppm)	1.1 – 1.9**	ND	> 0.25 mg/L*

* mg/L and ppm are roughly equivalent (it is equivalent with pure water)

** Duplicate results suggest much lower concentrations

ND – Not Determined

APPENDIX A – SAMMAMISH RIVER OUTFALL PHOTOS

	C0880 GIS # C0880 08/29/2011 11:08 12c" CMP Drains 83RD CT NE from NE 175TH ST.
	C4703 GIS # C4703 08/29/2011 11:57 18" HDPE Drains from NE Bothell Way in Bothell.
	C4698 & C4700 GIS # C0869 08/29/2011 11:35 8" CPEP Drains private property at 84TH AVE NE & NE 175TH ST.

	C3219 GIS # C0829 08/29/2011 12:27 42" PVC Drains 84TH AVE NE from Simonds RD NE to the river.
	C4705 GIS # C0866 08/29/2011 12:35 8" PVC Drains private property at 8216 NE 169TH ST.

APPENDIX D – 2012 OUTFALL RECONNAISSANCE INVENTORY (ORI)



2012 Outfall Reconnaissance Inventory Summary

Tributary 0057

August 2012

Prepared by:
Richard Sawyer

Field Staff:
Richard Sawyer
Art Simpson

City of Kenmore
Engineering Department



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INTRODUCTION

The City of Kenmore (City) was issued a Western Washington Phase II Municipal Stormwater Permit (Permit) on January 17, 2007. The Permit contains requirements to develop a Stormwater Management Program (SWMP). One of the requirements outlined in the SWMP was to develop an Illicit Discharge Detection and Elimination (IDDE) program. As part of the IDDE program, receiving waters were prioritized for visual inspection and screened for illicit connections. Three receiving waters were required to be completed prior to February 15, 2011. One receiving water was required to be completed prior to February 15, 2012 and then one each year thereafter.

In 2010, the City visually inspected the main channel of Swamp Creek and several tributaries to Swamp Creek. In 2011, the City visually inspected Sammamish River and Lake Washington shoreline. In 2012 (this report), the City visually inspected outfalls along Tributary 0057.

METHOD

Outfall Reconnaissance Inventory (ORI)

The City structured the ORI as described in the “Illicit Discharge and Elimination – A Guidance Manual for Program Development and Technical Assessments” (the Manual) by the Center for Watershed Protection and Robert Pitt released in October, 2004.

Initial mapping of the Municipal Separate Storm Sewer System (MS4) was conducted during the summer of 2010. Potential outfall locations were identified and mapped in the geographical information system (GIS) and provided to ORI staff. Additional outfalls discovered during the ORI were mapped and input into the City’s GIS. ‘Outfall’ is defined in the Permit as a point source as defined by 40 CFR 122.2 at the point where a municipal separate storm sewer discharges to waters of the State and does not include open conveyances connecting two municipal separate sewer systems, or pipes, tunnels, or other conveyances which connect segments of the same stream or other waters of the State and are used to convey waters of the State. In reality, an outfall is not always a well defined point on the ground. Efforts were made to accurately capture each outfall, as defined, but in some cases a judgment call was required to decide where an outfall would be placed. For instance, if a stream flowed through a series of catch basins while crossing a road, an outfall was identified where the last catch basin discharged back into the natural stream channel.

Two City staff members walked sections of Tributary 0057 in August 2012. Typically, the stream was walked in an upstream direction to minimize disturbance to potential in-stream sample areas.

If flow was present at an outfall, an ORI worksheet was completed, a picture was taken and water was collected to test for the illicit discharge indicators identified in Table 1 below. Pictures of each flowing outfall can be found in Appendix A.

Table 1 – Illicit Discharge Indicators

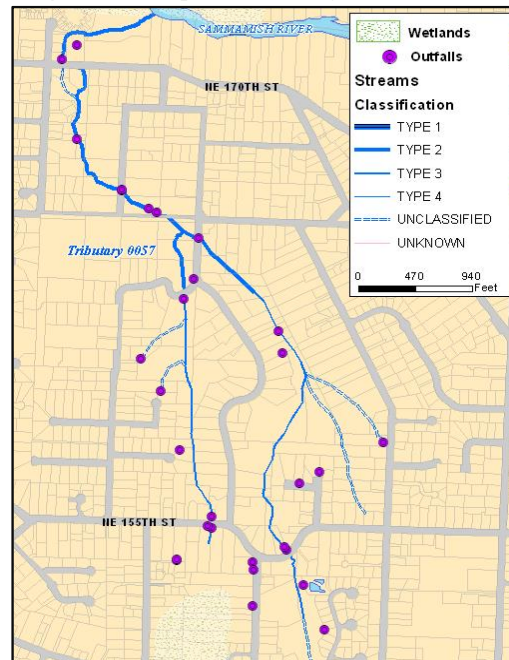
Indicator	Instrument	Method	Accuracy	Range
Temperature	YSI 63	Thermistor Sensor	±0.1°C	
pH	YSI 63	Combination Sensor with Gel Reference	±0.1 unit within 10°C of calibration ±0.2 unit within 20°C of calibration	0-14
Conductivity	YSI 63	Four Electrode Cell Sensor	±0.5% full scale and 0.1 uS/cm resolution	0 to 499.0 us/cm
Salinity	YSI 63	ASTM document <i>Standard Methods of Test for Electrical Conductivity of Water and Industrial Wastewater</i> , ASTM Designation D1125-82, and <i>OIML Recommendation Number 56</i>	±0.1 ppt	-
Turbidity	Eye	Visual Indicator	-	-
Ammonia Nitrogen	AMTEST Labs	EPA 350.1	Refer to published EPA Analytical Methods	Refer to published EPA Analytical Methods
Fluoride	AMTEST Labs	EPA 300.0	Refer to published EPA Analytical Methods	Refer to published EPA Analytical Methods
Potassium	AMTEST Labs	EPA 200.7	Refer to published EPA Analytical Methods	Refer to published EPA Analytical Methods
Surfactants	AMTEST Labs	SM 5540C	Refer to published EPA Analytical Methods	Refer to published EPA Analytical Methods
Fecal Coliform	AMTEST Labs	SM9222D	Refer to published EPA Analytical Methods	Refer to published EPA Analytical Methods

RESULTS

A total of 30 outfalls were identified in the Tributary 0057 ORI (Figure 1). One outfall had flowing water and was tested for illicit discharge indicators. Two additional samples were collected from the main stream channel and analyzed to determine background levels. Samples were analyzed at AmTest, Inc. in Kirkland, WA.

Table 2 – Outfall Illicit Discharge Indicator Results (Tributary 0057)

	Temp (°C)	pH	Conductivity (uS/cm)	Salinity (ppt)	Turbidity (NTU)	Ammonia (ppm)	Fluoride (ppm)	Potassium (ppm)	Surfactant (ppm)
CB0718 (Stream)	-	-	-	-	CLEAR	0.01	<0.2	2.2	<0.025
C2937 (Stream)	14.5	7.98	93.4	0.1	CLEAR	0.01	<0.2	2.3	<0.025
C3245 (Outfall)	19.1	7.97	0	0	CLEAR	0.01	<0.2	2	<0.025

Figure 1 - Map of Tributary 0057 Outfalls

CONCLUSION

No illicit discharges or connections were discovered during the Tributary 0057 ORI.

Table 3 shows indicator benchmark concentrations that would indicate a potential illicit discharge or connection.

Table 3 - Indicator Benchmark Concentrations

	Tributary 0057 ORI Range (Only one value)	Washington State WQ Standard 173-201A WAC (Not Stormwater)	Manual Benchmark Concentration
Temp (°C)	19.1	ND	ND
pH	7.98	6.5 – 8.5	≤ 5
Conductivity (uS/cm)	0	ND	≥ 2,000
Salinity (ppt)	0	ND	ND
Turbidity (NTU)	CLEAR	5 NTU over background (when ≤50 NTU)	≥ 1,000
Ammonia (ppm)	0.01	ND	≥50 mg/L*
Fluoride (ppm)	<0.2	ND	> 0.25 mg/L
Potassium (ppm)	2	ND	≥ 20 mg/L*
Surfactant (ppm)	<0.025	ND	> 0.25 mg/L*

* mg/L and ppm are roughly equivalent (it is equivalent with pure water)

ND – Not Determined

APPENDIX A – TRIBUTARY 0057 OUTFALL PHOTOS

	CB0718 GIS # CB0718 08/23/2012 60" Type 2 Catch Basin (No pipe outlet with open top) Energy dissipater outlet for stream overflow on north side of NE 170TH ST.
	
	C3245 GIS # C3245 08/23/2012 12" CMP Drains from 81ST AVE NE.

Surface Water Master Plan



City Council Meeting
February 17, 2015
Presented By: Richard Sawyer, SWM Manager



Surface Water Master Plan

This plan describes the surface water environment of Kenmore and the regulations, programs, policies and projects used to manage it.

- The Plan is periodically updated as regulations, programs, policies and projects evolve over time (5-7 years).
- The Plan supports the City's Comprehensive Plan - Surface Water Element.
- The Plan supports compliance with the City's NPDES Western Washington Phase II Municipal Stormwater Permit.



Plan Update Timeline

July 22, 2013: Introduction to the Surface Water Master Plan update

July 21, 2014: Reviewed updated policies

October 20, 2014: Reviewed updated Surface Water Capital Improvement Program

November 17, 2014: Comprehensive Plan - Surface Water Element Updated and Adopted Nov. 24th

January 20, 2015: Reviewed Swamp Creek Basin component of Surface Water Master Plan update



Policy

Incorporated Council feedback regarding surface water charge rate reductions for private drainage facilities

- Continue offering rate reduction
- Evaluate facility level of service
- Evaluate facility service area of parcel
- Simplify rate reduction (percentage)



Policy – Rate Reduction

Private Drainage Facilities



Example Scenario The total parcel size is 10 acres and has an impervious ratio of 70% (7 acres of impervious area on a 10 acre parcel) which places it in the “heavy” rate class. 3 acres of the parcel is treated by a surface water facility designed under the 2009 SWDM, which is eligible for a 30% reduction. The remaining 7 acres is charged at the full rate.

Total Service Charge

$$(7 \text{ Acres}) \times (\text{Heavy Rate})$$

$$+$$

$$(0.70) \times (3 \text{ Acres}) \times (\text{Heavy Rate})$$

	Surface Water Design Standard (Manual Version & Permit Year)			
	Before 1998	1998-2009	2009-2016*	After 2016*
Reduction	10%	20%	30%	40%



Policy

Incorporated Council feedback regarding private property surface water management issues (not part of private stormwater facility)

- Private property owners are responsible for stormwater on their property
- Kenmore staff provide technical assistance and education
- Kenmore reserves the right to manage surface water on private property under certain circumstances when it is in the public's best interest.



Capital Improvement Program

GIS data, complaints, maintenance records and staff input was evaluated to update the City's surface water capital improvement program

- Culvert Replacements
- Retrofit opportunities
- Stream enhancements
- Large scale maintenance issues



Comprehensive Plan

Updated the City's Comprehensive Plan

- Updated Surface Water Element goals and objectives to reflect current regulatory requirements and issues impacting Kenmore
- Updated Capital Facilities Element – surface water component



Swamp Creek Floodplain

Management strategies for Swamp Creek floodplains and Wetland 3 were evaluated and presented to Council

- 2005 improvements should continue to protect 73rd up to 100-year storm events
- Private properties in the floodplain will continue to be impacted by Swamp Creek
- Dredging or high-flow bypasses are not recommended or economically feasible
- Habitat improvements are encouraged



Next Steps

The full draft Surface Water Master Plan has been provided for Council review.

- Receive comments and questions from Council at February 17th meeting
- Receive comments and questions from the public at February 19th open house
- Depending on feedback, staff will need 4 to 6 weeks for final draft preparation and Council adoption in March/April.



Questions/Comments

Richard Sawyer

Surface Water Program Manager

City of Kenmore, WA

Kris Overleese

Public Works Director

City of Kenmore, WA

