

# ENVIRONMENT

## GOAL **Protect and enhance our natural environment for current residents and future generations.**

City implements comprehensive natural resource management system

MEASURE	2009	2010	2011	2012	Target
Compliance with NPDES Stormwater Permits	100%	100%	100%	100%	100%
Diversion rate <sup>1</sup>	49.3%	50.1%	52%	53.3%	Increase
City building electricity use (kilowatt/hour)	2,875,575 kWh -5% change	2,581,213 kWh -10% change	2,674,348 kWh	2,669,158 kWh	Decrease
City building natural gas usage (therm)	68,507 therm +16% change	55,557 therm -19% change	66,795 therm	61,944 therm	Decrease

So that...

Kirkland protects and enhances its natural environment

Tree canopy coverage	*	36%	40.7%		40%
Benthic Index of Biotic Integrity in Forbes Creek <sup>2</sup>	17.3	16	18	17	Increase
Benthic Index of Biotic Integrity in Juanita Creek <sup>2</sup>	20.5	19.5	20.5	22.5	Increase
Waste entering landfill from residences	14,320 tons (0%)	13,726 tons (-4.1%)	17,861 tons (+30.0%)	22,109 tons (+23.8%)	Annual 2.5% decrease
Annual reduction in City's greenhouse gas emissions as a percent of 2005 levels	23.4%	38%	22%	10%**	80% below 2005 levels by 2050

So that...

Current and future citizens of Kirkland enjoy a healthy natural environment and resources

<sup>1</sup> Diversion rate-percent of waste materials diverted from the landfill to be recycled, composted or reused. Includes single family and multi-family residences.

<sup>2</sup> BIBI scores of 10-15 indicate very poor, 18-26 indicate poor stream conditions. Scores are an average of the 3-4 testing sites' scores in each creek.

\* No data available due to data collection occurring less than annually.

\*\*Data includes the service areas comprised of the new neighborhoods - Juanita, Finn Hill, and Kingsgate.

## HOW DO WE MEASURE ENVIRONMENTAL SUSTAINABILITY?

National Pollutant Discharge Elimination System (NPDES) stormwater permit compliance encompasses the wide range of actions the City undertakes to improve surface water quality.

The Benthic Index of Biotic Integrity (B-IBI) provides a standard measure for the health of streams, which are vital ecosystems. This index is a measurement of human impact on a stream. The score can range from 10 to 50. A value of 50 indicates that a stream's biology is equivalent to what would be found in a "natural" stream in the region with little or no human impact (ecologically intact, able to support the most sensitive organisms); 10 indicates poor biological conditions within the stream (unable to support a large proportion of once-native organisms).

Recycling diversion rates and waste entering the landfill measure the effect of the City's waste reduction efforts.

High-resolution satellite imagery and remote sensing and geographic information system (GIS) mapping is used to determine the amount of tree leaf surface covering a large area. Urban tree canopy coverage is a gauge of growth balanced with development and natural resource protection. Low canopy coverage is linked to increased flooding, energy use and urban heat island effects and a decline in air quality.

The annual greenhouse gas emissions inventory of City operations measures our progress towards reducing emissions to 80% of 2005 levels by 2050.

# HOW ARE WE DOING?

Since the NPDES Phase II Stormwater Permit became effective in 2007, Kirkland has maintained 100% compliance. B-IBI scores remain in the poor to very poor range in Juanita and Forbes Creek. However, these conditions are “population measures,” therefore improvement requires concerted long term effort by multiple jurisdictions in our region. The City will work long term to improve the conditions in both creeks.

In 2012, for the sixth consecutive year, Kirkland single family residents achieved the highest recycling diversion rate among cities in King County at 66%. While the multifamily sector continues to be a challenge for many cities, the multifamily diversion rate increased to 17.9% which contributed to the increase in the City’s combined residential diversion rate to 53.3% in 2012. Kirkland’s tree canopy coverage increased from 2002 to 2010 and following annexation has reached its 40% target.

The City has made substantial progress towards meeting its long term emissions goal. We are pleased to report that an interim goal of a 10% reduction by 2012 was met despite the service area expanding from 11 to 18 miles, an additional 30,000 new citizens, an increase in City streets from 149 miles to 265 miles, and a 17% increase in City employees as a result of recent annexation. The City has continued to decrease its building electricity usage and its natural gas usage in 2012. Both of these numbers have declined each year since at least 2009.

These reductions have been made possible through increasing energy efficiency, reducing waste and increasing recycling, encouraging alternative commute options and enhancing the fleet’s fuel efficiency.

# WHAT ARE WE DOING?

In 2012, the City supported installation of Low Impact stormwater development features such as rain gardens, cisterns, green roofs and permeable pavement. 15,039 tons of material were removed from the City stormwater system, protecting streams and lakes from pollution that runs off of streets and parking lots. Flood reduction and response was also a priority in 2012, as the City set up a sand bag filling station to help citizens protect themselves from flood waters, and developed plans for new culverts to relieve flooding in the Totem Lake area. A tributary of Juanita Creek (informally known as Billy Creek) was restored to reduce sediment delivery to downstream properties which will help to reduce flooding and property damage.

The Planning Department along with the Public Works, and Fire and Building Departments worked to formulate zoning codes that encourage sustainable actions by all citizens including the development community. These Green Codes promote electric cars and their infrastructure, solar panels, energy efficiency, allow clustering of houses and give density credits for use of Low Impact stormwater facilities. The City is one of the first in the State of Washington to use Green Codes, which have been successful and well used.

The City continued to expand its food scrap and recycling programs to businesses and multi-family residences by providing collection services at no extra cost and offering recycling materials and educational outreach to participants. Through special recycling events and programs in 2012, Kirkland diverted from the landfill 19 tons of electronic waste, 13,670 pounds of batteries, and 114 tons of reusable and hard-to-recycle materials including 2,450 pounds of polystyrene foam.

Kirkland remains committed to building its successful recycling program. In 2012, 160 businesses participated in Kirkland’s Commercial Organics Program, recycling 330 tons of food scraps and compostable service ware. The City continues to reduce waste through its biannual recycling collection events and by increasing opportunities for Kirkland residents to divert materials, such as the new ‘Used Cooking Oil Recycling Station’ established at the North Kirkland Community Center in 2012.

Having met the 40% tree canopy goal with annexation, the City drafted an Urban Forest Strategic Management Plan in 2012. This document provides a sustainable framework for efficient and consistent management of Kirkland’s urban forest.



## Neighborhood Rain Garden Program

Rain gardens are a beautiful and effective means of reducing the volume and improving the quality of stormwater runoff. They are shallow depressions planted with a variety of plants that function like native forests to help slow and filter polluted runoff from downspouts, driveways and other hard surfaces.

The purpose of Kirkland’s rain garden program is threefold: to reduce stormwater runoff, to educate our citizens about stormwater issues and to involve them in stormwater management by installing rain gardens on existing residential properties.

Constructing rain gardens to serve existing residential properties is a win-win proposition: The City receives the benefit of reduced stormwater flow at a very low cost compared to traditional flow control facilities in the city right of way, while the homeowner receives a beautiful garden that will complement their home. The project also educates residents about stormwater problems, and involves them in a solution to those problems.

The specific goal of the program is to install a cluster of 6-8 rain gardens on residential properties in a different neighborhood each year. Property owners agree to maintain the rain gardens.

2012 was the pilot year of the rain garden program. Seven rain gardens were constructed on six properties in October 2012. The City of Kirkland worked with a group of NE 138th Street homeowners along with Rain Dog Designs, a landscape design company, to design, construct and plant the gardens.