

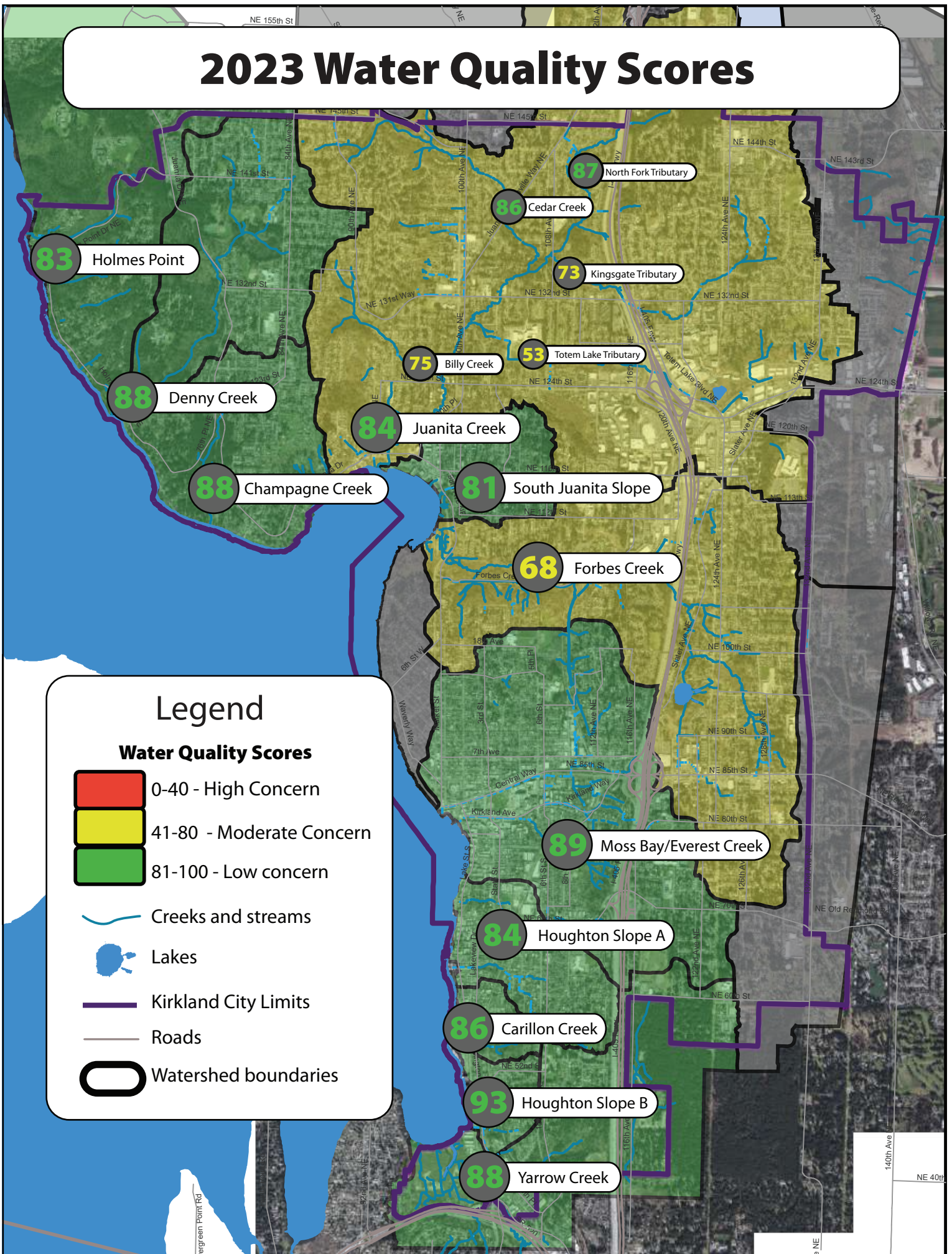
2024 WATERSHED REPORT CARDS



KIRKLAND PUBLIC WORKS
Storm & Surface Water Division
www.kirklandwa.gov/CreekHealth



2023 Water Quality Scores



Legend

Water Quality Scores

- 0-40 - High Concern
- 41-80 - Moderate Concern
- 81-100 - Low concern

- Creeks and streams
- Lakes
- Kirkland City Limits
- Roads
- Watershed boundaries

2023 Watershed Report Card

Water quality scores for almost all Kirkland creeks **held steady in 2023**. We're also encouraged by statistical analysis that shows long-term stream bug scores are improving. While we're cautiously optimistic that the long-term trends are showing slight improvement, it's also important to remember that water quality scores can fluctuate widely year to year due to many different factors.

It's also vital that we all continue to take simple actions in our daily lives to help improve Kirkland's creeks. Learn more about specific actions on each watershed report card.






What's new this year?

We're excited to share that Kirkland's interactive watershed dashboard has a new habitat monitoring section. The new habitat dashboard shows the health of creek habitat throughout Kirkland. Visit the dashboard online at www.kirklandwa.gov/kirklandwatersheds.

Kirkland's Watersheds

A **watershed** is the area of land that drains water to a specific creek or waterbody. The thick black lines on the map of Kirkland outline the various watersheds in the city. Watersheds are also referred to as "basins" in these report cards.

What We Measure - Watershed Health Indicators

Water Quality Scores	
	0-40 - High Concern
	41-80 - Moderate Concern
	81-100 - Low concern

Kirkland monitors the health of 12 watersheds, using physical, chemical, and biological factors. These report cards share the results of these monitoring efforts and data collected in 2023.

Water quality is a measure of the chemical and physical characteristics of the water that affect stream health. The **Water Quality Index (WQI)** presents water quality data as a number ranging from 1 to 100. A higher number indicates better overall water quality. The WQI Score results from a combination of scores for the following indicators:

Dissolved Oxygen (DO) is the amount of oxygen dissolved in water. All aquatic plants and animals need dissolved oxygen to survive. Higher levels of dissolved oxygen indicate healthier streams. Low levels of DO are primarily caused by high water temperature and decomposing algae/plants in the water.

pH is a measure of how acid or alkaline the water is. In general, a balanced pH is optimal for salmon and other stream life. The pH level can be affected by polluted runoff, polluted rainfall (unusual), and decaying vegetation.

Temperature measures the intensity of heat. Water temperature can increase due to seasonal climate cycles, removal or lack of streamside trees and plants, and polluted runoff. Warm temperatures reduce dissolved oxygen in the water. This impacts the spawning, rearing, feeding, and migration behavior of fish and other aquatic species.

Total Nitrogen and Total Phosphorus are the amount of nitrogen and phosphorus in water. High levels of nitrogen and phosphorus cause excessive algae and plant growth. When these plants die and decompose, they consume large amounts of dissolved oxygen. Common sources of nitrogen and phosphorus are fertilizers and human/animal waste.

Total Suspended Solids (TSS) is the measure of particles that are suspended in the water. Materials like silt, decaying plants, industrial waste, and sewage contribute to TSS. Metals, pesticides, and other contaminants "stick" to sediment particles. High TSS can cover fish spawning grounds, clog fish gills, and increase water temperature.

Turbidity is a measure of water clarity. Algae and silt can increase turbidity, making the water cloudy. Particles in the water increase water temperature and reduce dissolved oxygen. Heavy metals and other toxics can attach to the suspended materials. High turbidity can block sunlight and reduce plant photosynthesis and affect the food chain for fish.



Stream bugs live on the stream bottom. Most are insects such as mayfly and dragonfly larvae that live part of their life in the water, but it also includes things like aquatic snails and clams.

Monitoring stream bugs tells us about the biological health of a stream. Different bugs are more or less tolerant of water pollution, and their presence or absence can tell us a lot about the quality of the water.



CARILLON CREEK 2023 Report Card

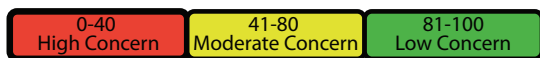
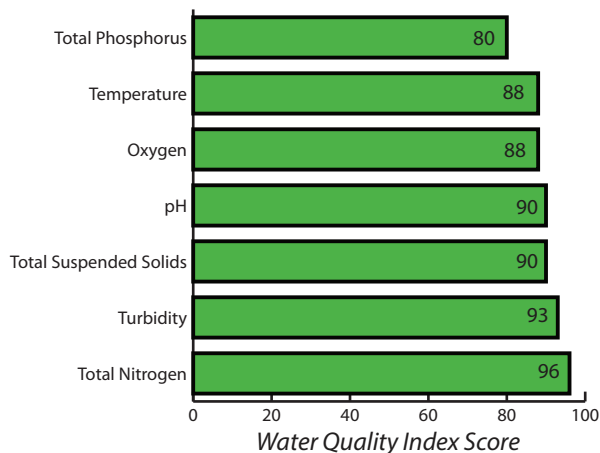
2023 Water Quality

86

Overall Health: **Some or Low Concern**

-2 since 2022

Higher levels of phosphorus, which can come from fertilizer or pet waste, is the primary reason this creek did not score higher.



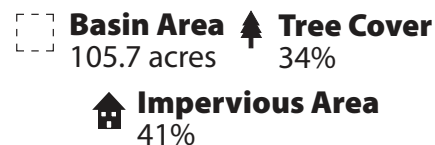
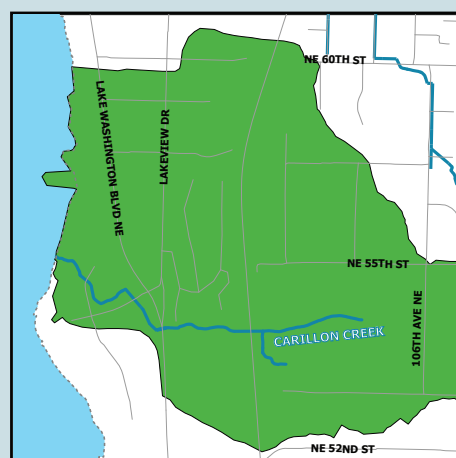
How to Help Phosphorus in Carillon Creek



Scoop and throw away **pet waste** to reduce phosphorus runoff.



Basin Facts



- Cutthroat trout and coho salmon have been found in the lower section of Carillon Creek.
- Development below Lake Washington Boulevard led to a restoration project on Carillon Creek that restored creek habitat.
- Development has significantly increased hard surfaces (pavement and buildings) in the Carillon Creek basin. This impacts the creek's water quality, aquatic habitat, and increases the potential for flooding.



CHAMPAGNE CREEK 2023 Report Card

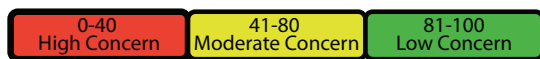
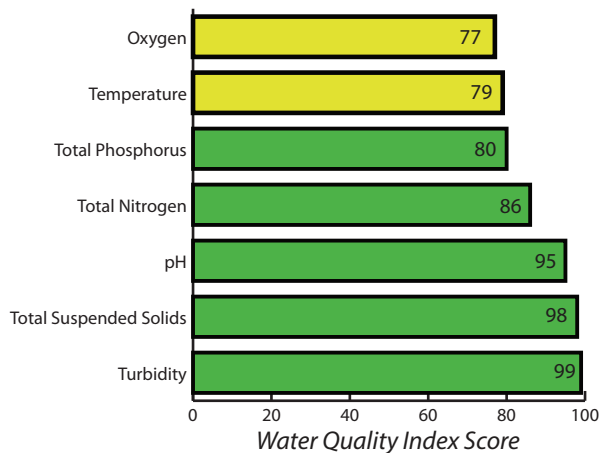
2023 Water Quality

88

Overall Health: **Some or Low Concern**

+1 since 2022

Higher water temperatures and lower oxygen levels are the primary reasons this creek did not score higher.



Stream Bugs

Score (10-50)



20

Poor

Monitoring stream bugs tells us about the biological health of a stream. Different bugs are more or less tolerant of water pollution like pesticides. Their presence or absence can tell us a lot about the quality of the water.



Basin Facts



Basin Area 621 acres

Tree Cover 45%

Impervious Area 32%

- Cutthroat trout have been found in the downstream section of Champagne Creek.
- Most development in this basin occurred before regulations required stormwater flow control and treatment, causing Champagne Creek to have erosion problems along the creek.

How to Help Temperature in Champagne Creek

- ✓ **Plant a tree** - trees help lower water temperatures.
- ✓ If pressure washing, **use cold water only**. Avoid heated water and chemicals.

Learn more at www.kirklandwa.gov/CreekHealth



DENNY CREEK 2023 Report Card

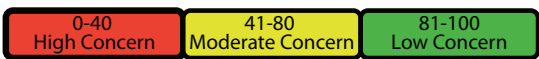
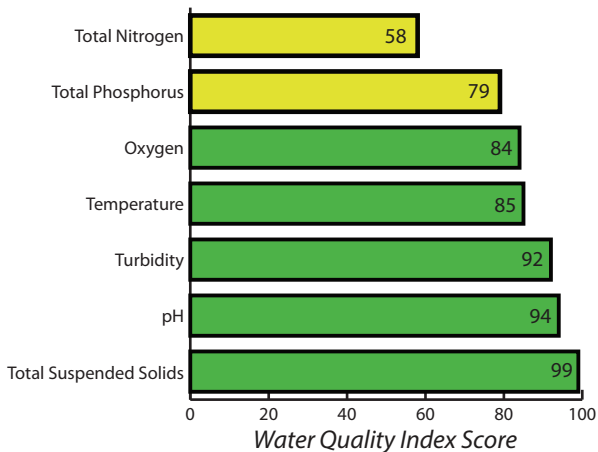
2023 Water Quality

88

Overall Health: **Some or Low Concern**

+1 since 2022

Higher levels of nutrients like nitrogen and phosphorus, which can come from fertilizers and pet waste, were the primary reasons this creek did not score higher.



Stream Bugs

Score (10-50)



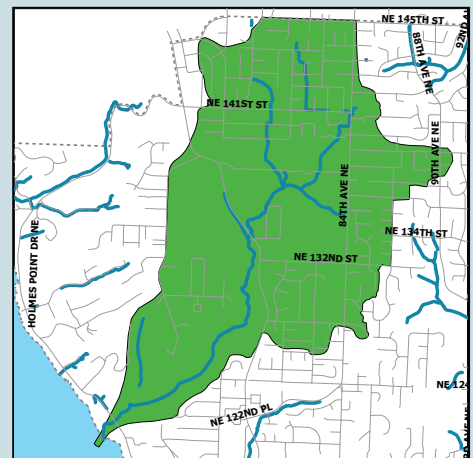
26

Poor

Monitoring stream bugs tells us about the biological health of a stream. Different bugs are more or less tolerant of water pollution like pesticides. Their presence or absence can tell us a lot about the quality of the water.



Basin Facts



Basin Area 811 acres **Tree Cover** 53%
Impervious Area 25%

- Sockeye, cutthroat trout, juvenile coho, and sculpin have been found in the lower section and mouth of the creek.
- This basin has the 2nd highest forest cover of any basin in Kirkland. This provides quality wildlife habitat and can help decrease the volume of runoff and contaminants entering Denny Creek and Lake Washington.

How to Help Nitrogen and Phosphorus in Denny Creek

- Scoop and throw away **pet waste** to reduce phosphorus runoff.
- Minimize fertilizer use** in your lawn and garden to reduce nitrogen



EVEREST CREEK 2023 Report Card

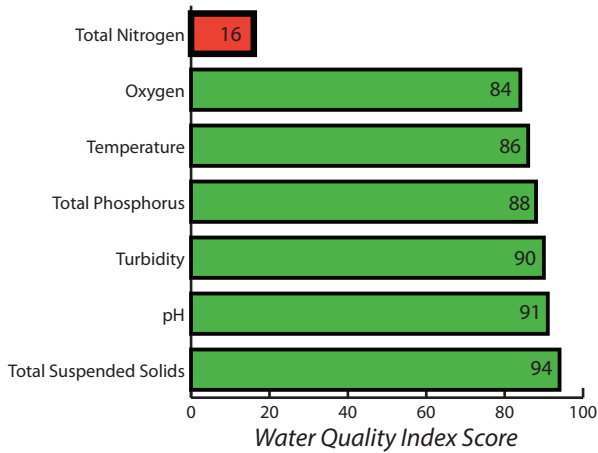
2023 Water Quality

89

Overall Health: **Some or Low Concern**

No change since 2022

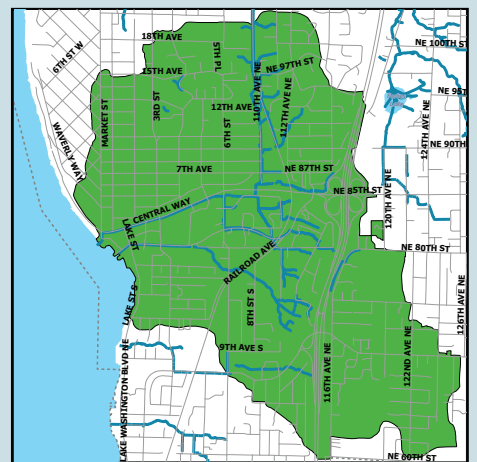
Higher levels of nitrogen, which can come from fertilizer, is the primary reason this creek did not score higher.



How to Help Nitrogen in Everest Creek

- ✓ **Minimize fertilizer use** in your lawn and garden to reduce nitrogen

Basin Facts



Basin Area 1,487 acres

 🌳 **Tree Cover**
30%

 🏠 **Impervious Area**
48%

- The stream channels in this basin have been straightened, ditched, or piped through the lower reaches prior to entering Lake Washington. This has resulted in no viable habitat for fish to enter from Lake Washington.
- The Moss Bay/Everest Creek basin is the most developed basin in Kirkland, with the highest level of coverage by hard surfaces (pavement and buildings). This impacts the creek’s water quality, aquatic habitat, and increases potential for flooding.



FORBES CREEK 2023 Report Card

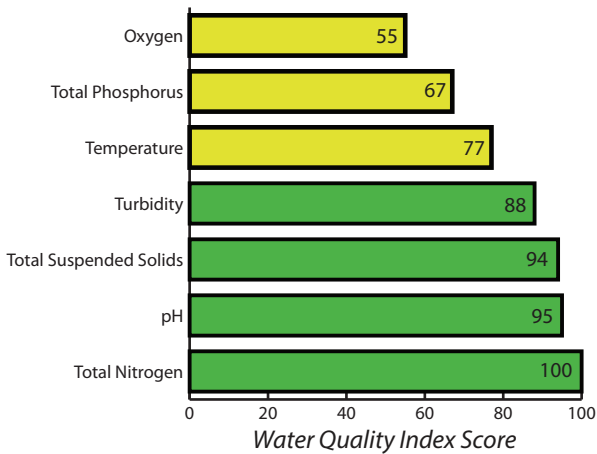
2023 Water Quality

68

Overall Health: **Moderate Concern**

-12 since 2022

High temperatures, high levels of phosphorus, and low levels of oxygen were the primary reasons this creek did not score higher.



Stream Bugs

Score (10-50)

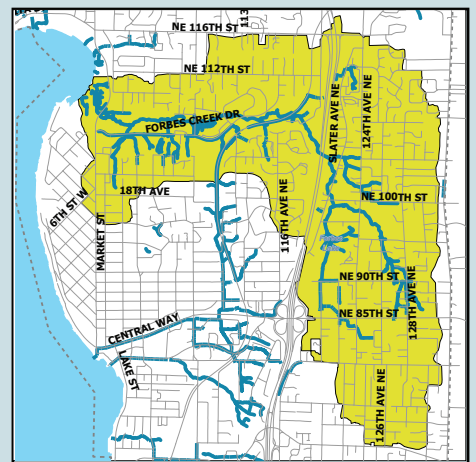


18
Poor

Monitoring stream bugs tells us about the biological health of a stream. Different bugs are more or less tolerant of water pollution like pesticides. Their presence or absence can tell us a lot about the quality of the water.



Basin Facts



Basin Area 1,847 acres **Tree Cover** 39%

Impervious Area 39%

- Sockeye, cutthroat trout, coho salmon, stickleback, dace and lamprey have been documented in Forbes Creek.
- Wetlands and open space line the sides of Forbes Creek at its mouth and extend upstream. I-405 creates a barrier to fish and wildlife movement.

How to Help Temperature and Phosphorus in Forbes Creek

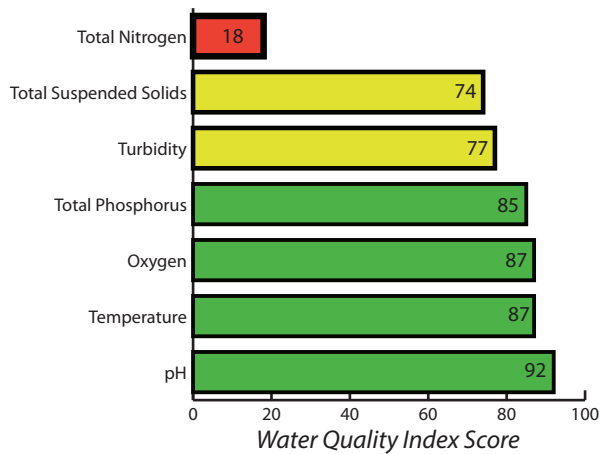
- ✓ Scoop and throw away **pet waste** to reduce phosphorus runoff.
- ✓ **Plant a tree** - trees help lower water temperatures.
- ✓ If pressure washing, **use cold water only**. Avoid heated water and chemicals.



2023 Water Quality

83 Overall Health: **Some or Low Concern**
-3 Since 2022

Higher levels of nitrogen and sediment are the primary reasons this creek did not score higher.



How to Help Nitrogen in Everest Creek

Minimize fertilizer use in your lawn and garden to reduce nitrogen

i Basin Facts



Basin Area 458 acres **Tree Cover** 60%
Impervious Area 23%

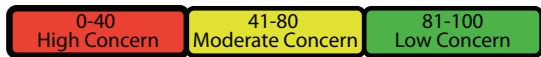
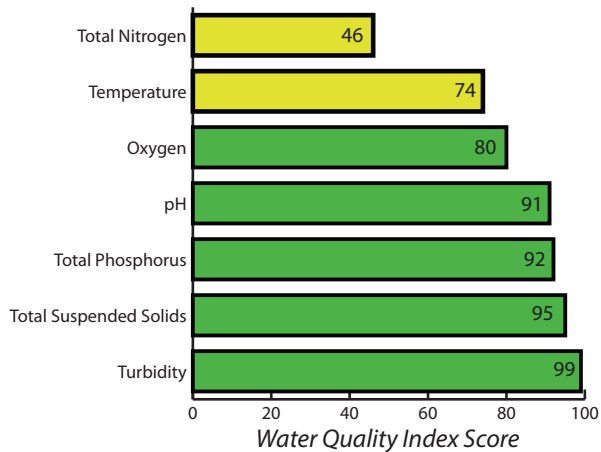
- Many fish passage barriers are present in the creek.
- Most of the lower section of Holmes Point Creek is armored and flows through several yards with lawn extending to the edge of the creek.
- There is very low impervious surface coverage in the basin due to high forest coverage and Holmes Point Overlay Zone development restrictions.



2023 Water Quality

84 Overall Health: **Some or Low Concern**
-1 Since 2022

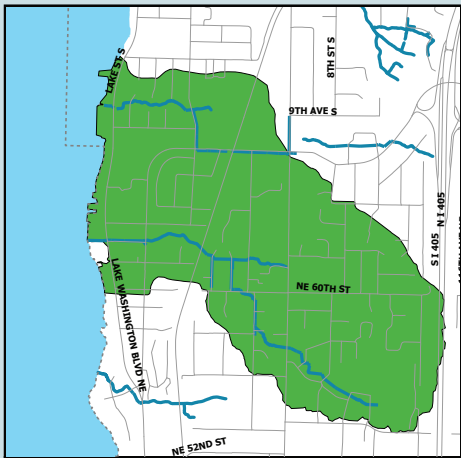
Higher levels of nitrogen and high creek temperatures are the primary reasons this creek did not score higher.



How to Help Nitrogen and Temperature in Northwest CollegeCreek

- ✓ **Minimize fertilizer use** in your lawn and garden to reduce nitrogen runoff.
- ✓ **Plant a tree** - shade from trees helps lower water temperatures.
- ✓ If pressure washing, **use cold water only**. Avoid heated water and chemicals.

Basin Facts



Basin Area 377 acres
Tree Cover 26%
Impervious Area 49%

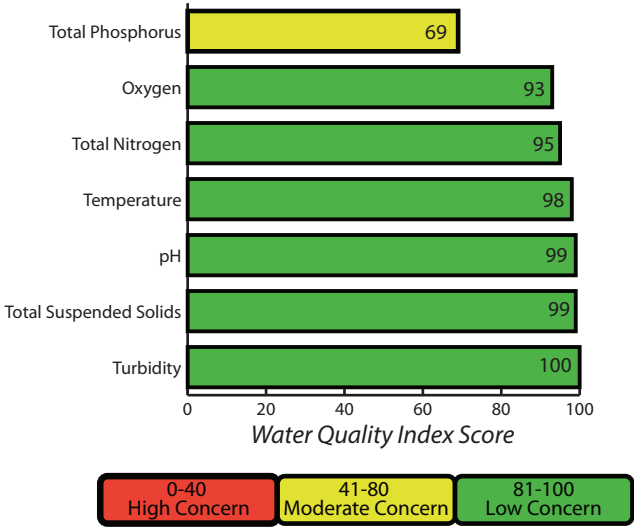
- 71% of the stream channel in the Houghton Slope A basin is in pipes.
- The basin has the lowest amount of tree coverage of any basin in Kirkland. This impacts habitat quality, increases rainwater runoff, and reduces water quality.
- Development in this basin has led to a significant increase in hard surfaces like pavement and buildings. This impacts the creek’s water quality, aquatic habitat, and increases the potential for flooding.



2023 Water Quality

93 Overall Health: **Some or Low Concern**
No change since 2022

Higher levels of phosphorus, which can come from fertilizer or pet waste, kept this creek from scoring higher.



How to Help Phosphorus in Houghton Slope B

Scoop and throw away **pet waste** to reduce phosphorus runoff.

i Basin Facts



Basin Area 134 acres **Tree Cover** 33%
Impervious Area 43%

- Houghton Slope B is one of the most developed basins in Kirkland. A high percentage of the stream channel is in pipes due to steep slopes and erosion problems.
- Development in this basin has led to a significant increase in hard surfaces like pavement and buildings. This impacts the creek's water quality, aquatic habitat, and increases the potential for flooding.

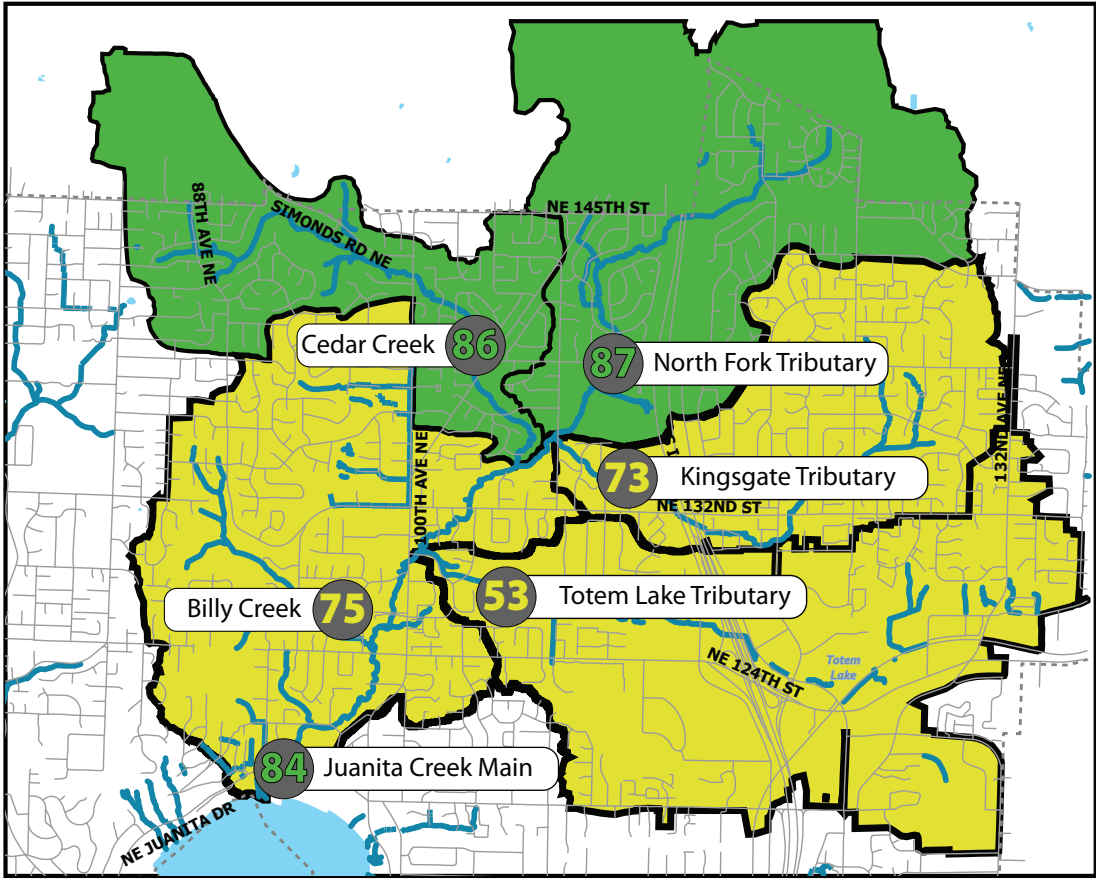


2023 Water Quality

76 Overall Health: **Moderate Concern**
-5 since 2022

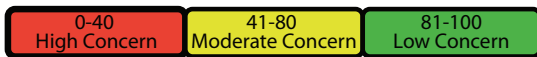
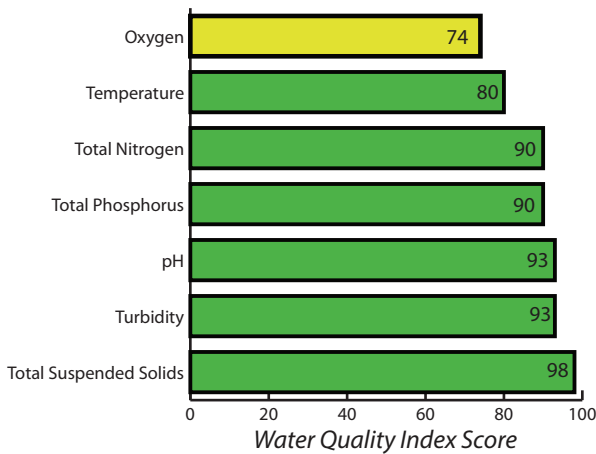
Juanita Creek is the largest basin in Kirkland. 1 in 3 Kirkland residents live in the Juanita Creek basin.

Higher levels of nutrients like nitrogen and phosphorus, which can come from fertilizer, pet waste, and leaking septic systems, as well as low oxygen levels and higher temperatures kept Juanita Creek from scoring higher.



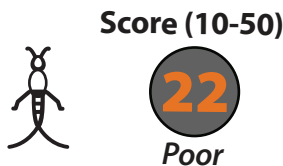
2023 Water Quality

Based on sampling results from the Juanita Creek sampling site near Juanita Beach Park.



Stream Bugs

Based on sampling results from the main stem of Juanita Creek.



Monitoring stream bugs tells us about the biological health of a stream. Different bugs are more or less tolerant of water pollution, and their presence or absence can tell us a lot about the quality of the water.

Notable Scores at Other Sites

Billy Creek



Cedar Creek



Kingsgate Tributary



Totem Lake Tributary



Basin Facts

Basin Area 4,389 acres **Tree Cover** 35%

Impervious Area 43%

- Cutthroat trout, coho salmon, sockeye, Chinook salmon, peamouth minnow, sculpin, stickleback and lamprey have been observed. Kokanee salmon, winter steelhead and longfin smelt were historically present in Juanita Creek.
- Juanita Creek is one of the most confined creeks due to residential development along its banks.

How to Help Juanita Creek

Nitrogen

- Minimize fertilizer use** in your lawn and garden to reduce nitrogen runoff.

Phosphorus

- Scoop and throw away **pet waste** to reduce phosphorus runoff.

Temperature

- Plant a tree** - shade from trees helps lower water temperatures.

pH

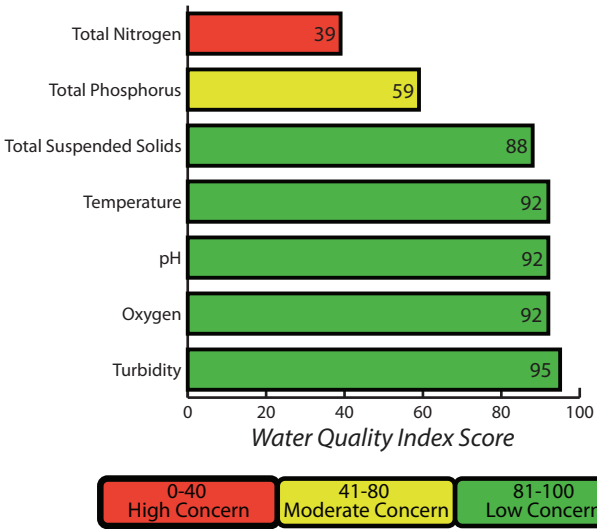
- Only rain down the drain**- keep dirty wash water, cement, paint, dry wall slurry out of streets and out of storm drains.



2023 Water Quality

81 Overall Health: **Some or Low Concern**
-15 since 2022

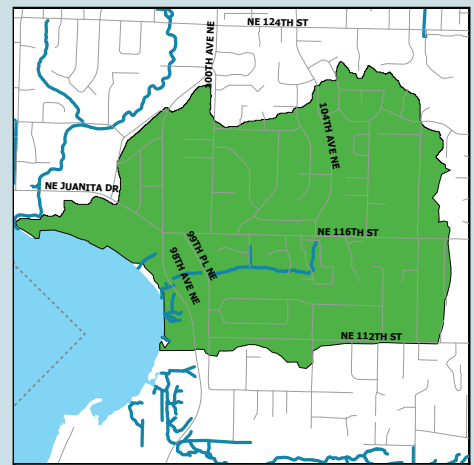
Higher levels of nitrogen and phosphorus, which can come from fertilizer and pet waste, kept this creek from scoring higher.



How to Help Nitrogen and Phosphorus in South Juanita Slope

- ✓ Scoop and throw away **pet waste** to reduce phosphorus runoff.
- ✓ **Minimize fertilizer use** in your lawn and garden to reduce nitrogen

Basin Facts



Basin Area 287 acres
Tree Cover 33%
Impervious Area 45%

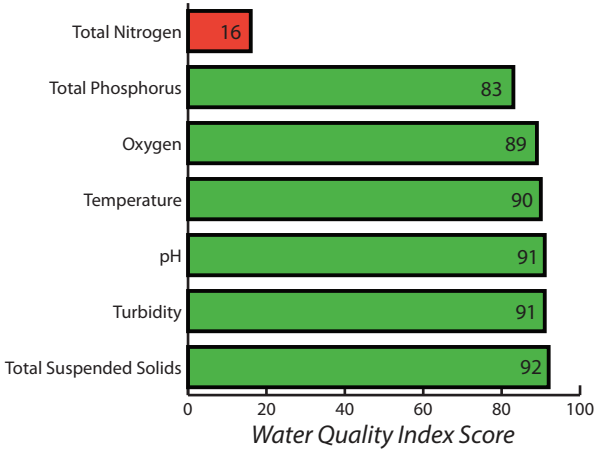
- Salmon have been identified in the open channels in the Juanita Bay wetlands up to 98th Avenue NE. The salmon have not been able to migrate further upstream due to fish barriers and lack of habitat.
- Much of the development in this basin happened before regulations required flow control and water quality treatment. This can impact stream health and potential for flooding.



2023 Water Quality

88 Overall Health: **Some or Low Concern**
-1 since 2022

Higher levels of nitrogen, which can come from lawn fertilizer, kept this creek from scoring higher.

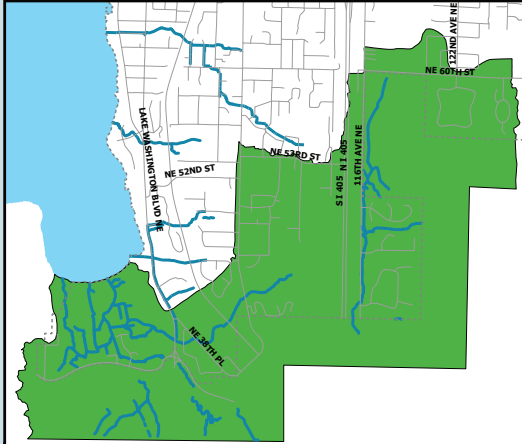


Stream Bugs



Monitoring stream bugs tells us about the biological health of a stream. Different bugs are more or less tolerant of water pollution, and their presence or absence can tell us a lot about the quality of the water.

Basin Facts



Basin Area 5281 acres (only 11% in Kirkland)
Tree Cover 50%
Impervious Area 28%

- Coho salmon, cutthroat trout, sculpin and lamprey have been found in Yarrow and Cochran Springs Creeks.
- There is a large wetland where Yarrow Creek enters Lake Washington. This wetland filters pollution, manages flood waters during storm events, and is home to many fish and wildlife species.

How to Help Nitrogen in Yarrow Creek

- ✓ **Minimize fertilizer use** in your lawn and garden to reduce nitrogen

Thanks for helping protect our waterways!



Yard Care and Maintenance

Minimize use of fertilizers and chemicals in your yard. Follow directions on label and never use more than suggested.

Do not sweep, blow, or dump yard debris into streets, sidewalks, ditches or drains. Dispose of yard waste in yard waste bins.

Did you know? More than 35 different pesticides have been detected in our local creeks. Adding just a 3-inch layer of mulch in your garden can prevent weeds as effectively as yard chemicals.



Pressure Washing

Use a broom to sweep up dirt and debris. Divert wash water to a landscaped area where wash water can soak into the ground. If you can't divert wash water, use only cold water with no soap or chemicals.

Don't allow soap, chemicals, or dirt into street or storm drain.



Roof Cleaning

Use a broom, stiff brush, or leaf blower to remove moss. If you must use chemical cleaners, disconnect roof downspouts so chemicals do not flow into the stormwater drainage system.

Direct wash water to adjacent lawn and landscape to soak into the ground.



Car Washing

Use a commercial car wash or wash your car on a lawn or gravel area. Keep soap (even biodegradable soap) and dirty water out of streets and storm drains.

Did you know? The average driveway car wash wastes more than 120 gallons of water. The average commercial car wash uses 60% less water and keeps soap and chemicals out of our streams.



Paint and Chemical Disposal

Never dump chemicals, paint, or rinse water in your yard or down storm drains. Always rinse paint brushes and rollers in a sink, never outside.

Visit hazwastehelp.org for info on safe disposal of household chemicals or paintcare.org/WA for FREE paint disposal.

If you see soap, oil, or other pollution in your neighborhood storm drains or creeks, call our 24/7 Spill Hotline:

425-587-3900

Learn more at kirklandwa.gov/stormwater

Alternative language formats of this publication are available upon request. For more information contact (425) 587-3831 or titleVIcoordinator@kirklandwa.gov.

City of Kirkland Public Works
Storm & Surface Water Division