

HOW IT AFFECTS YOU

Find out if your street is on the list and what you need to do to be prepared for slurry seal. **Page 4 & 5**

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CAPITAL PROJECTS



CARING FOR YOUR INFRASTRUCTURE TO KEEP KIRKLAND HEALTHY, SAFE AND VIBRANT



George Minassian, Kirkland's streets engineer, inspects Finn Hill's 76th Avenue Northeast to ensure it is in good enough condition for street sealing later in summer 2016. This summer, the City of Kirkland will seal nearly 17 lane-miles of neighborhood roads in Finn Hill, Central Houghton and Kingsgate.

THE STREET SAVER

Kirkland is protecting 17 lane-miles of residential roads this year in the Finn Hill and Houghton neighborhoods with a layer of asphalt armor

Finn Hill's Northeast 122nd Street doesn't seem like a street in dire need of maintenance. The quiet neighborhood road that provides access to 76th Avenue Northeast has no potholes, no sections of alligator cracks. It doesn't even have a crack. That, says

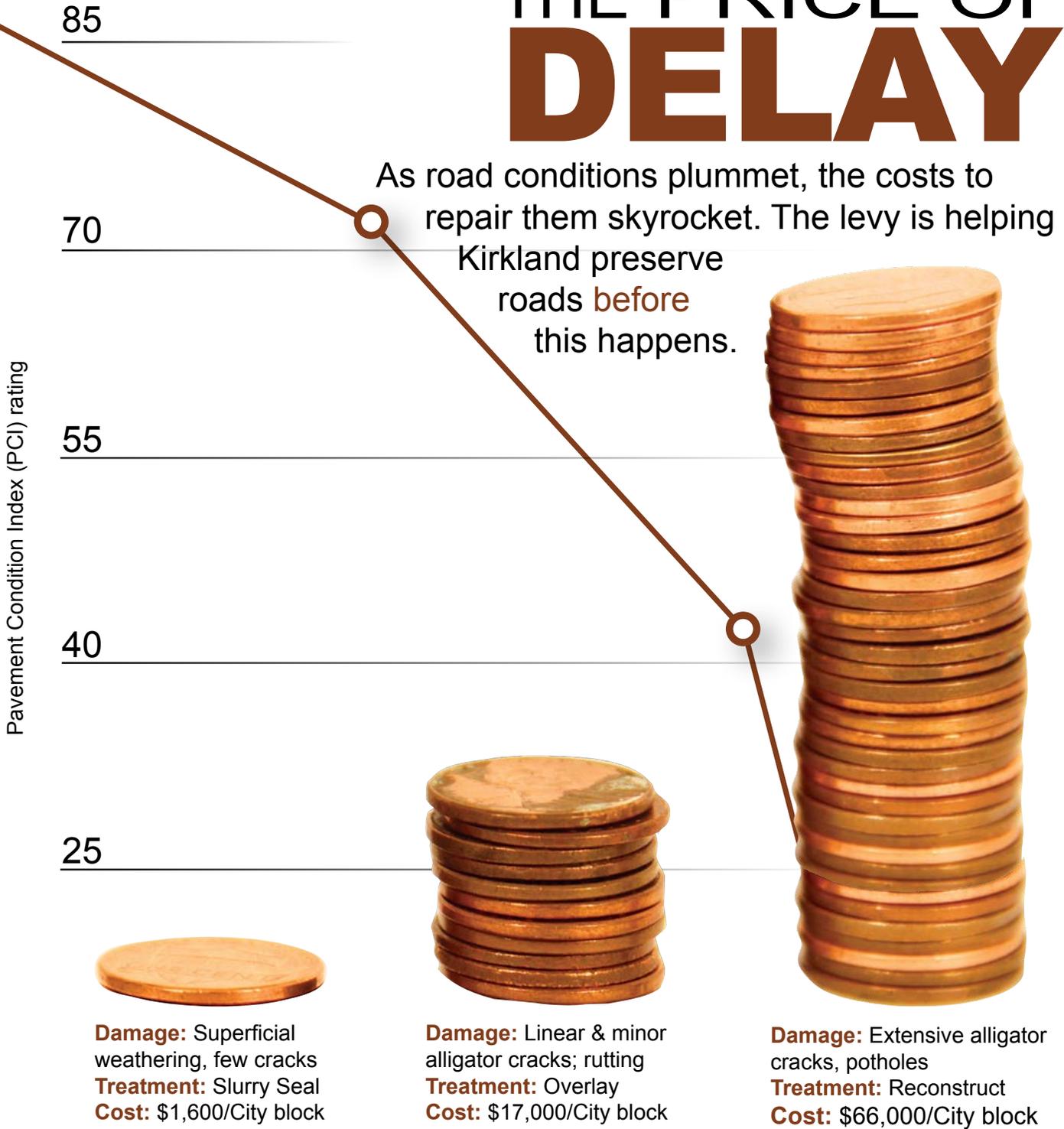
George Minassian, Kirkland's streets engineer, is partly because the road isn't burdened by much traffic and because it is sitting on high-quality soil.

It's also sitting on a tipping point—when a little maintenance now will prevent costly repairs later.

TO LEARN MORE

- Contact George Minassian, Ph.D., P.E., streets engineer: 587-3829; gminassian@kirklandwa.gov
- Or Christian Knight, outreach: 587-3831; cknight@kirklandwa.gov

THE PRICE OF DELAY



Minassian points to the evidence of this maintenance need along the road’s edges. There, patches of the asphalt—the pavement’s glue—have eroded away, isolating individual pieces of gravel.

“Even though it’s in good condition, the color is

changing,” Minassian says. “Soon, it will crack. You see these aggregates? The asphalt cement is becoming more brittle. Once that happens, the aggregate gets loose, ravels, and eventually potholes form.”

The tipping point-condition of this neighborhood

What Kirkland residents said about street seal

City staff asked focus group participants in November 2013 for their thoughts on Slurry Seal. Here's what they said:

“Best ever. Awesome. Love it. They came, they did it. It's terrific. If someone is going to fix my street, this is awesome. I love this!”
—Mark, *Bridle Trails*
Received slurry seal in 2012

“They brush it with a brush truck a half-dozen times. It took several months to clean up that aggregate. Now it's smoothed out. It's been nine months. It's still rough.”
—Grant, *Kingsgate*
Received slurry seal in 2012

“I thought it would be like oil. A dusty, dirty, country road. That's what I was envisioning. And then of course it hardened and appeared to be like asphalt.”
—Frank, *North Rose Hill*
Received slurry seal in 2012

“I remember reading that a couple weeks after they were done they would come back and clean stuff up. There was some stuff on the road and loose areas. But I thought it was fine.”
—Lynda, *Finn Hill*
Received slurry seal in 2013

“My kids bike up and down the road. It's not as comfortable now.”
—Mary Ann, *Bridle Trails*
Received slurry seal in 2012

“I thought it would be a pain ... because of parking—having to park a block away. It was just inconvenient. After I saw it, though, it was worth it.”
—Diane, *Bridle Trails*
Received slurry seal in 2012

road, Minassian says, is what makes it prime for maintenance.

Which is why this summer, the street preservation program he manages will seal this street and sections of more than 50 others in Finn Hill and Houghton.

The substance the street preservation program will use to preserve these roads is called ‘slurry seal,’ a non-toxic mixture of emulsified liquid asphalt—an oil-like substance—and tiny pieces of gravel, which Minassian calls “aggregates” or “fines.” When it dries, the seal provides a quarter-inch layer of pavement that acts like sunscreen for these lightly trafficked roads—sealing out weather and moisture—and, as a result, extending the functional lives of the roads by five to 10 years. Slurry seal also replenishes years of aggregate-loss in the pavement beneath it.

“Slurry seal isn't structural. It is only a preservation method.”
—George Minassian, Ph.D.
Kirkland's streets engineer

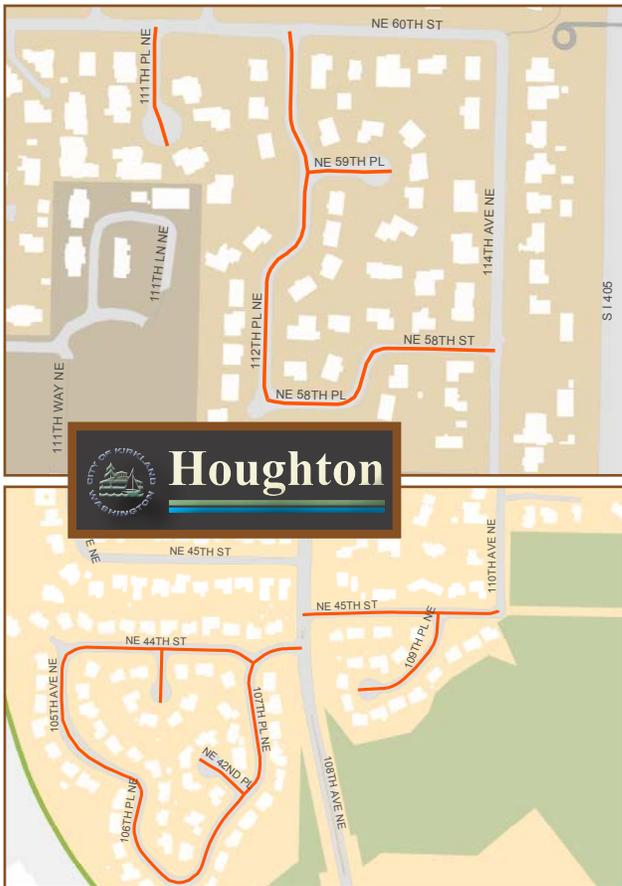
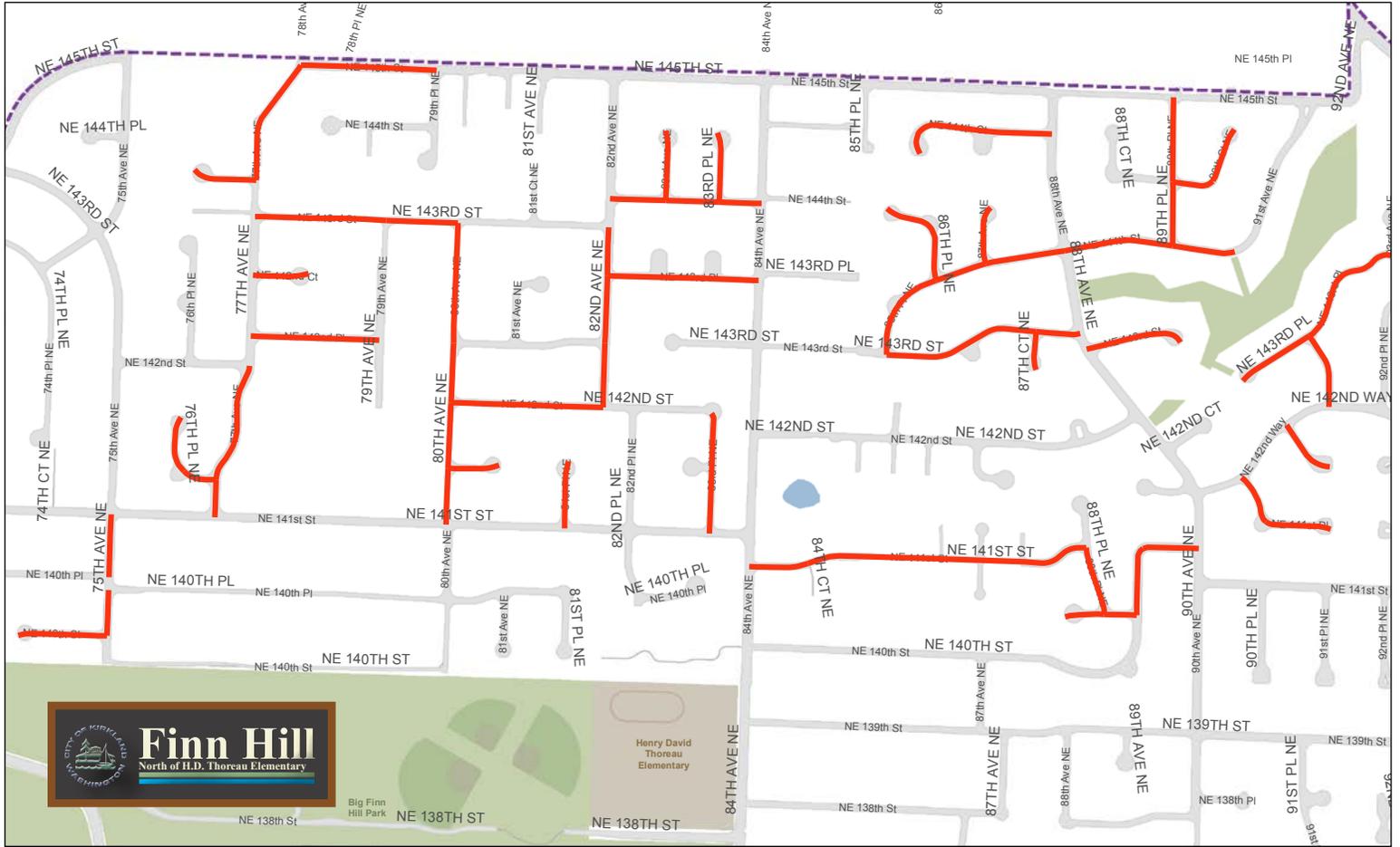
And it does all this at a rough cost of \$1,600 per city block.

The 2012 levy

Residents doubled Kirkland's capacity to preserve their neighborhood roads in 2012 when they approved the Streets Levy. Since then, Kirkland has used slurry seal to extend the functional lives of 90 lane miles of neighborhood roads.

If not for the levy, the City might not be able to slurry seal Northeast 122nd Street. Under this scenario, traffic and weather would continued to grind away its asphalt

Continued on page 6



Kirkland's contractor will finish by September the slurry seal process on streets highlighted in orange.

WHAT TO EXPECT WHEN WE'RE PROTECTING

The slurry seal guide that reassuringly answers the questions of residents, from the preparation stage through application and follow-up.



PHASE 1

City crews repair small areas of damaged pavement. Residents prune their vegetation—especially low-growing vegetation—to create 14 feet of vertical clearance near the right-of-way so work crews can apply the slurry seal up to the curb. Roads remain open.



PHASE 2

As the application date nears, work crews sweep pavement surfaces and remove any vegetation that infringes into the right-of-way. Crews make final repairs to pavement surfaces. Roads remain open to traffic with possible, temporary delays.



PHASE 3

Work crews notify residents at least one day prior to slurry seal's application. Residents remove all motorized vehicles, and personal items from the road. Residents don't water their lawns or wash their cars. Work crews apply slurry seal to the street. The road is closed for one day.



PHASE 4

After application, the slurry seal is brown and sticky. To prevent damage to the street's treated surface, residents keep motor vehicles, bikes, pets and themselves off the street until the slurry seal has cured and the City of Kirkland has reopened the street.



PHASE 5

The new road surface has more friction and sheds some of the finer aggregate, creating a sandy surface. Work crews usually sweep the streets twice—approximately one week after application and then again three weeks after application.

ALTERNATIVE FORMATS

People with disabilities may request materials in alternate formats. Kirkland's policy is to fully comply with Title VI of the Civil Rights Act by prohibiting discrimination against any person on the basis of race, color, national origin or sex in the provision of benefits and services resulting from its programs and activities. Any person who believes his/her Title VI protection has been violated, may file a complaint with the City. To request an alternate format, file a complaint or for questions about Kirkland's Title VI Program, contact the Title VI Coordinator at 425.587.3831 (TTY Relay: 711) or titleviordinator@kirklandwa.gov.

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until chunks of pavement begin breaking loose and webs of alligator cracks morph into archipelagos of potholes that would

\$66 K

The estimated costs per City block for reconstructing a road from the subgrade to the surface.

undermine the road’s basic structure. At that point, the only comprehensive, long-term solution available to those

residential roads would be reconstruction. And reconstruction is exorbitantly expensive, costing on average \$66,000 per block. These high costs are what have made reconstruction a once-in-a-decade solution in Kirkland—a solution to which the City resorted in 2013 for 341 linear feet of 97th Avenue Northeast, from Juanita Drive to 119th Way.

The constraints

Like any solution, however, slurry seal comes with a catch. Actually, a few of them:

“Slurry seal isn’t structural,” Minassian says. “It is only a preservation method.”

This means it’s not suitable for Kirkland’s more-trafficked roads, such as 84th Avenue Northeast, which accommodates more than 3,000 vehicles every day. For those arterials, Kirkland uses a process called “overlay,” which replaces two to three inches of the street surface with an entirely new surface, at an estimated cost of \$17,000 per block—nearly \$50,000 less expensive than reconstruction.

Slurry seal’s role as a preservation



A toddler pushes his bike up Northeast 61st Street in the Bridle Trails neighborhood, shortly after Kirkland treated it in 2012 with slurry seal.

method also means it’s not suitable for roads that have too many cracks. Those roads are generally beyond slurry seal’s capacity to protect them.

“Within a few weeks, the cracks that are in the road will reflect through the slurry seal as well,” Minassian says. “And moisture will continue to infiltrate it.”

Unless, of course, Kirkland’s street maintenance crews patch the cracks before sealing the road. Patching requires workers to tear out the damaged pavement and rebuild that section of

STREET SEAL

Best use: **Neighborhoods**
 Cost per city block **\$1,600**
 Requires: **~70 PCI**

PAVING

Best use: **Arterials**
 Cost per city block: **\$17,000**
 Requires: **<60 PCI**



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the road.

"Too many patches is expensive," Minassian explains. "Eventually, it becomes more cost-effective and more effective in general to just overlay it."

Minassian's challenge is to treat the road before it reaches that point of no return. Of course, Kirkland has more than 450 lane miles of neighborhood and collector roads. And, thanks to the 2012 streets levy, Minassian has enough funding to repave roughly 10 lane-miles of arterials and to seal the neighborhood roads that are in the most urgent need.

The selection process

To determine which roads are most urgent, Minassian relies on three data sources—two of them are human-generated. The third is computer-generated.

Every four years, a team of pavement specialists walks along randomly selected sections of every

road in Kirkland, counting the number and types of distresses in the surface—rutting, raveling, swelling, slippage cracking, transverse cracking, and, yes, alligator cracking.

"Some distresses are more problematic than others," Minassian says.

Each of these distresses reduces the street's condition, which is reflected in a score on the Pavement Condition Index, a nationally used system for measuring road conditions.

A 100 on the Pavement Condition Index means the street is in perfect condition. A zero means the road has no functioning surface and requires total

70

The Pavement Condition Index score generally required for Slurry Seal to effectively preserve residential and collector streets.



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WE'RE SAVING THE STREETS

The City of Kirkland is extending the lives of your neighborhood roads this summer. This document will help you understand how it works, how the City chose your street and how you can help.



George Minassian inspects in 2013 a section of Norkirk's 21st Place to determine whether slurry seal would be effective.

reconstruction. For slurry seal to be effective, the street should generally score near or above 70, Minassian says. The Pavement Condition Index score of Northeast 122th Street, for example, is 75, Minassian says—on par with the average score for all of Kirkland's 450 lane miles of residential and collector roads.

Minassian enters these scores into the City's pavement monitoring software, which uses variables, such as time and projected traffic-load to forecast how the Pavement Condition Index scores of every road in Kirkland will decline with time. The software, then, uses these forecasts to recommend a treatment plan for each road. On Northeast 122th Street, for example, the software recommended slurry seal in 2016.

These treatment plans are based largely on the streets' Pavement Condition Index scores, which are in turn based on surveys of randomly selected sections of each street. The 2013 survey of Northeast 122nd Street was 100 feet long, less than half its total length.

"Some streets will deteriorate faster than the curves predict," Minassian continues. "And some will deteriorate slower. That's why we have to go out there and walk these roads." ◀