IMPROVING OUR COMMUNITIES with Natural Drainage Systems (NDS)

What are Natural Drainage Systems?

When it rains in Northeast Seattle, pollution from our streets runs directly into Thornton Creek untreated. Untreated runoff is not healthy for Thornton Creek, the Salish Sea, or people. The good news is: there is something we can do.

**Natural Drainage Systems** consist of shallow depressions built in the roadway shoulder (the space between the street edge and the property line) and are filled with deep-rooted plants and spongy soils that temporarily hold and clean polluted stormwater from streets. These features capture and clean pollutants before they can reach Thornton Creek.

Seattle Public Utilities (SPU) is planning to build natural drainage systems in your neighborhood in 2022.

Community benefits

**Natural Drainage Systems** offer multiple benefits to local neighborhoods and ecosystems, including:

- Lower risk of flooding
- Healthier creek ecosystems
- Increased landscaping
- Creation of habitat along our streets
- Traffic calming
- More street trees

What is the NDS Program?

The 2016-2024 Natural Drainage Systems Program is a SPU multi-year capital improvement program focused on Longfellow, Piper’s, and Thornton Creek watersheds.

The program’s goal is to construct street-side natural drainage systems that filter and manage stormwater and improve neighborhoods with street trees and traffic calming patterns. All projects include plants that help the natural drainage systems do their jobs: infiltrate and clean stormwater.

This project is being led by SPU and includes funding from the King County Flood Control District.

Learn more online at: [www.seattle.gov/utilities/SouthThorntonNDS](http://www.seattle.gov/utilities/SouthThorntonNDS)
The South Thornton Natural Drainage System (NDS) Project has completed preliminary planning and field investigations.

At the 30% Design Phase we present potential street and drainage improvements to the community, answer questions, and gather community concerns as we work toward finalizing the project scope based on regulatory requirements and project funding.

30% INPUTS
- Neighborhood priorities
- Current drainage conditions
- Location of utilities
- Local topography + mature trees
- Rainfall runoff patterns along the street
- Soil testing + analysis
- Location of homes + paths
- Location of driveways
- On-street parking patterns
- City right-of-way impacts
- Zoning code
- Projected construction costs
- Maintenance of NDS
- Permitting
- Community concerns

60% INPUTS
- Neighborhood priorities
- Local ecosystem needs
- Detailed utility locations + impacts
- Planting palettes & new street trees
- NDS sizing adjustments
- Refinements to design dimensions + details
- City right-of-way impacts
- Balance of costs with budget
- Maintenance of NDS
- Permitting
- Community concerns

FINAL INPUTS
- Accessibility impacts
- Construction costs + impacts
- Ongoing maintenance costs + responsibility
- Permitting requirements
- Construction questions

We Are Here
A Healthier & Safer Thornton Creek!

PROJECT TIMELINE
Where we are now and where we are going

SITING, FIELD INVESTIGATIONS
SURVEY + CONCEPT DEVELOPMENT
2018 to 2019

2020
30% DESIGN PHASE

OUTREACH FOR 30% DESIGN
MID 2020

OUTREACH FOR 60% DESIGN
LATE 2020

2021

30% DESIGN

FINALE DESIGN

BEGIN CONSTRUCTION

PRE-CONSTRUCTION OUTREACH
2022

FINAL DESIGN

60% DESIGN

60% INPUTS

FINALE DESIGN / OBTAIN PERMITS

AUGUST 2020

30% DESIGN PHASE

Seattle Public Utilities

King County Flood Control District
THORNTON CREEK WATERSHED
BOUNDARY

LAKE WASHINGTON

LEGEND

- WATERSHED AREA FLOWING INTO THORNTON CREEK
- THORNTON CREEK
- THORNTON CREEK (PIPED)
- NDS SITE

THORNTON CREEK (PIPED)

SOUTH BRANCH

MAIN BRANCH

SOUTH THORNTON NATURAL DRAINAGE SYSTEMS (NDS)

Project Area Map

Seattle Public Utilities

AUGUST 2020

30% DESIGN PHASE

King County Flood Control District
The Site Selection Process: How we got here

SPU completed the initial analysis and selected locations for NDS in the Thornton Creek Basin based on a variety of factors, including community input, recurring drainage and flooding issues, and existing soil conditions. SPU selected sites that are technically feasible for the project that are optimal for flood mitigation and drainage issues.

### Technical Assessment
Identified blocks that could include natural drainage systems.

### Community Input
Asked a large pool of residents about interest in these projects.

### Site Selection Criteria
Selected project sites based on ability to optimize drainage benefits, clean water, and support from the community.

What we’ve heard:
The Thornton Creek community is interested in...

- Improving water quality in the neighborhood
- Pedestrian safety
- Roadway parking changes
- Reinforcing the public right-of-way in the project area
- Addressing drainage and flooding issues in Northeast Seattle
WHAT TO EXPECT

How a typical NDS planting installation changes over time

BEFORE

NEWLY PLANTED

~1 year

GROWING

~5 years

MATURE
SOUTH THORNTON NATURAL DRAINAGE SYSTEMS (NDS)

Wedgwood

NATURAL DRAINAGE SYSTEMS
NE 88TH ST, NE 87TH ST, 29TH AVE NE, 30TH AVE NE
(30% DESIGN PHASE - ADJUSTMENTS MAY BE MADE AS DESIGN IS FINALIZED)

STREET RIGHT OF WAY UTILIZATION KEY

KEY

INFORMAL PEDESTRIAN ZONE
INFORMAL PARKING/PEDESTRIAN ZONE
ON-STREET PARKING ZONE
NO PARKING
NATURAL DRAINAGE SYSTEM & PLANTING ZONE
EXISTING SIDEWALK
NOTE: IMPROVEMENTS AND ON STREET PARKING WILL NOT BLOCK RESIDENTIAL DRIVEWAYS OR WALKWAYS
SOUTH THORNTON NATURAL DRAINAGE SYSTEMS (NDS)

Wedgwood

NATURAL DRAINAGE SYSTEMS
NE 88TH ST: 27TH AVE NE TO 30TH AVE NE
(30% DESIGN PHASE - ADJUSTMENTS MAY BE MADE AS DESIGN IS FINALIZED)

KEY
- EXISTING SIDEWALK REPLACEMENT
- MULCH REPLACEMENT
- NATURAL DRAINAGE SYSTEM (NDS)
- PLANTING AREA
- REPLACED PAVEMENT EDGE WITH CURBING. THE FULL EXTENTS OF EXISTING PAVEMENT REPAIR AND RESTORATION ARE NOT SHOWN FOR CLARITY.

RIGHT-OF-WAY PARKING
CURRENT PARKING CAPACITY*: 31
PEAK WEEKDAY USAGE**: 13
PARKING CAPACITY PER IMPROVEMENT PLANS: 27

*CURRENT PARKING CAPACITY IS THE ESTIMATED NUMBER OF SPACES AVAILABLE, BASED ON 20' PARKING SPACE LENGTH AND LEGAL SETBACKS FROM DRIVEWAYS, HYDRANTS, STOP SIGNS, ETC., ACCORDING TO THE OBSERVED PARKING PATTERNS OF RESIDENTS ON THIS STREET.
** BASED ON PARKING COUNTS CONDUCTED AT 5:00 AM, 12:00 PM, 6:00 PM & 11:00 PM.
SOUTH THORNTON NATURAL DRAINAGE SYSTEMS (NDS)

Wedgwood

NATURAL DRAINAGE SYSTEMS
30TH AVE NE: NE 88TH ST TO 29TH AVE NE
(30% DESIGN PHASE - ADJUSTMENTS MAY BE MADE AS DESIGN IS FINALIZED)

KEY
- EXISTING SIDEWALK
- MULCH REPLACEMENT
- 10’ WIDE REPLACEMENT DRIVEWAY (CITY STANDARD WIDTH)
- NATURAL DRAINAGE SYSTEM (NDS)
- PLANTING AREA
- REPLACED PAVEMENT EDGE WITH CURBING. THE FULL EXTENTS OF EXISTING PAVEMENT REPAIR AND RESTORATION ARE NOT SHOWN FOR CLARITY.

RIGHT-OF-WAY PARKING
CURRENT PARKING CAPACITY*: 29
PEAK WEEKDAY USAGE**: 10
PARKING CAPACITY PER IMPROVEMENT PLANS: 18

*CURRENT PARKING CAPACITY IS THE ESTIMATED NUMBER OF SPACES AVAILABLE, BASED ON 20’ PARKING SPACE LENGTH AND LEGAL SETBACKS FROM DRIVEWAYS, HYDRANTS, STOP SIGNS, ETC., ACCORDING TO THE OBSERVED PARKING PATTERNS OF RESIDENTS ON THIS STREET.
** BASED ON PARKING COUNTS CONDUCTED AT 5:00 AM, 12:00 PM, 6:00 PM & 11:00 PM.
NATURAL DRAINAGE SYSTEMS
NE 87TH ST: 30TH AVE NE TO 32ND AVE NE
(30% DESIGN PHASE - ADJUSTMENTS MAY BE MADE AS DESIGN IS FINALIZED)

KEY
- MULCH
- NATURAL DRAINAGE SYSTEM (NDS)
- REPLACED PAVEMENT EDGE WITH CURBING. THE FULL EXTENTS OF EXISTING PAVEMENT REPAIR AND RESTORATION ARE NOT SHOWN FOR CLARITY.

RIGHT-OF-WAY PARKING
CURRENT PARKING CAPACITY*: 23
PEAK WEEKDAY USAGE**: 5-6
PARKING CAPACITY PER IMPROVEMENT PLANS: 11

*CURRENT PARKING CAPACITY IS THE ESTIMATED NUMBER OF SPACES AVAILABLE, BASED ON 20' PARKING SPACE LENGTH AND LEGAL SETBACKS FROM DRIVEWAYS, HYDRANTS, STOP SIGNS, ETC., ACCORDING TO THE OBSERVED PARKING PATTERNS OF RESIDENTS ON THIS STREET.

**BASED ON PARKING COUNTS CONDUCTED AT 5:00 AM, 12:00 PM, 6:00 PM & 11:00 PM.
SOUTH THORNTON NATURAL DRAINAGE SYSTEMS (NDS)

Wedgwood

NATURAL DRAINAGE SYSTEMS
NE 87TH ST & 29TH AVE NE: 26TH AVE NE TO 30TH AVE NE
(30% DESIGN PHASE - ADJUSTMENTS MAY BE MADE AS DESIGN IS FINALIZED)

RIGHT-OF-WAY PARKING

CURRENT PARKING CAPACITY*: 78
PEAK WEEKDAY USAGE**: 2-3
PARKING CAPACITY PER IMPROVEMENT PLANS: 69

*CURRENT PARKING CAPACITY IS THE ESTIMATED NUMBER OF SPACES AVAILABLE, BASED ON 20' PARKING SPACE LENGTH AND LEGAL SETBACKS FROM DRIVEWAYS, HYDRANTS, STOP SIGNS, ETC., ACCORDING TO THE OBSERVED PARKING PATTERNS OF RESIDENTS ON THIS STREET.

** BASED ON PARKING COUNTS CONDUCTED AT 5:00 AM, 12:00 PM, 6:00 PM & 11:00 PM. DATA WAS NOT COLLECTED DURING DROPOFF/PICKUP TIMES FOR WEDGWOOD ELEMENTARY, HOWEVER IT IS EXPECTED THAT USE OF AVAILABLE PARKING ON 29TH IS CLOSE TO 100% AT THOSE TIMES.

KEY

EXISTING SIDEWALK REPLACEMENT
MULCH
10' WIDE REPLACEMENT DRIVEWAY (CITY STANDARD WIDTH)
NEW STORM DRAINAGE PIPES
EXISTING TREE REMOVAL & REPLACEMENT, TYPICAL
CURB BULB WITH NATURAL DRAINAGE SYSTEM
CURB BULB WITH NATURAL DRAINAGE SYSTEM & NEW ACCESSIBLE CURB RAMPS
EXISTING SIDEWALK
NEW STREET TREE
ILLUSTRATION MARKER
EXISTING SIDEWALK
NEW CURB AND GUTTER TO CREATE CURB BULBS. NO PARKING AT CURB BULBS. THE FULL EXTENTS OF EXISTING PAVEMENT REPAIR AND RESTORATION ARE NOT SHOWN FOR CLARITY.

EXISTING TREE REMOVAL & REPLACEMENT, TYPICAL
CURB BULB WITH NATURAL DRAINAGE SYSTEM
CURB BULB WITH NATURAL DRAINAGE SYSTEM & NEW ACCESSIBLE CURB RAMPS
HISTORIC BRICK COLUMNS REMAIN AS IS
NO PARKING OPPOSITE CURB BULB AT INTERSECTION

SEE ILLUSTRATION #2

PARALLEL PARKING BOTH SIDES OF STREET REMAINS AS IS EXCEPT AT CURB BULBS

WEDGWOOD ELEMENTARY SCHOOL
NE 87TH ST
29TH AVE NE
30TH AVE NE
26TH AVE NE

Seattle Public Utilities
King County Flood Control District

AUGUST 2020
30% DESIGN PHASE
SOUTH THORNTON NATURAL DRAINAGE SYSTEMS (NDS)

Wedgwood

EXISTING STREET SECTION
NE 88TH ST

TYPICAL STREET SECTION - NEW VERTICAL CURBING AND NATURAL DRAINAGE SYSTEM
NE 88TH ST BETWEEN 27TH & 30TH
NE 88TH ST
SOUTH THORNTON NATURAL DRAINAGE SYSTEMS (NDS)

Wedgwood

EXISTING STREET SECTION
NE 87TH ST

TYPICAL STREET SECTION - NEW VERTICAL CURBING AND NATURAL DRAINAGE SYSTEM
NE 87TH ST BETWEEN 30TH & 32ND
NE 87TH ST
SOUTH THORNTON NATURAL DRAINAGE SYSTEMS (NDS)

Wedgwood

EXISTING STREET SECTION
NE 87TH ST AT INTERSECTION WITH 29TH AVE NE

NE 87TH ST

TYPICAL STREET SECTION - NATURAL DRAINAGE SYSTEM AND CURB BULB
NE 87TH ST AT INTERSECTION WITH 29TH AVE NE

NE 87TH ST
SOUTH THORNTON NATURAL DRAINAGE SYSTEMS (NDS)

Wedgwood

EXISTING STREET SECTION
29TH AVE NE AT INTERSECTION WITH 30TH AVE NE

TYPICAL STREET SECTION - NATURAL DRAINAGE SYSTEM AND CURB BULB
29TH AVE NE AT INTERSECTION WITH 30TH AVE NE
SOUTH THORNTON NATURAL DRAINAGE SYSTEMS (NDS)

Wedgwood

ILLUSTRATION #1

LOOKING EAST BETWEEN
27TH AVE NE AND 30TH AVE NE
NE 88TH ST

ILLUSTRATION #2

LOOKING WEST
29TH AVE NE AT 30TH AVE NE