

# 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)



# PROJECT TIMELINE

Where we are now and where we are going

The South Thornton Natural Drainage System (NDS) Project has completed preliminary planning and field investigations.

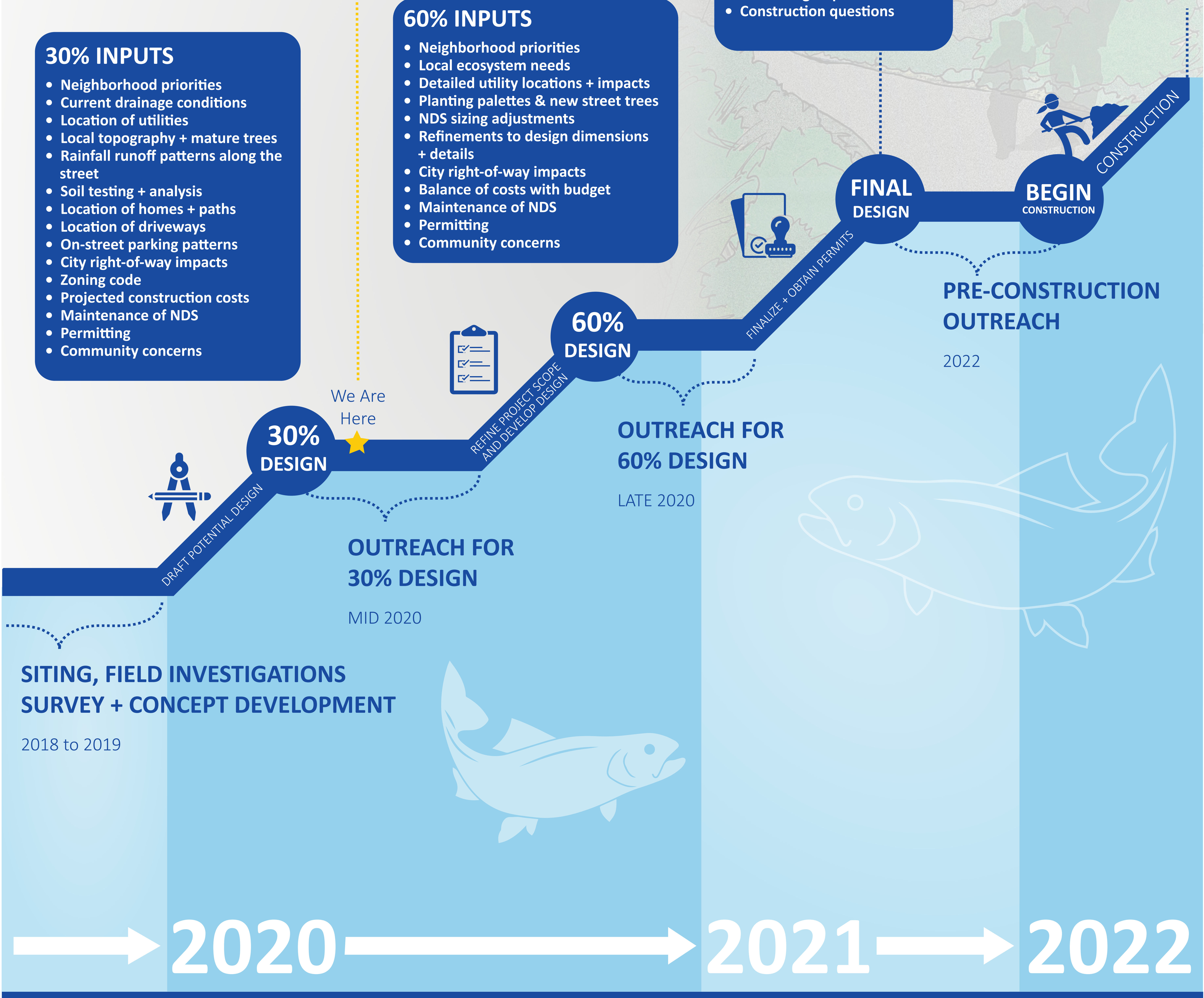
At the **30% Design Phase** we present potential street and drainage improvements to the community, answer questions, and gather community concerns as we work toward finalizing the project scope based on regulatory requirements and project funding.

- ### 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

A Healthier & Safer Thornton Creek!

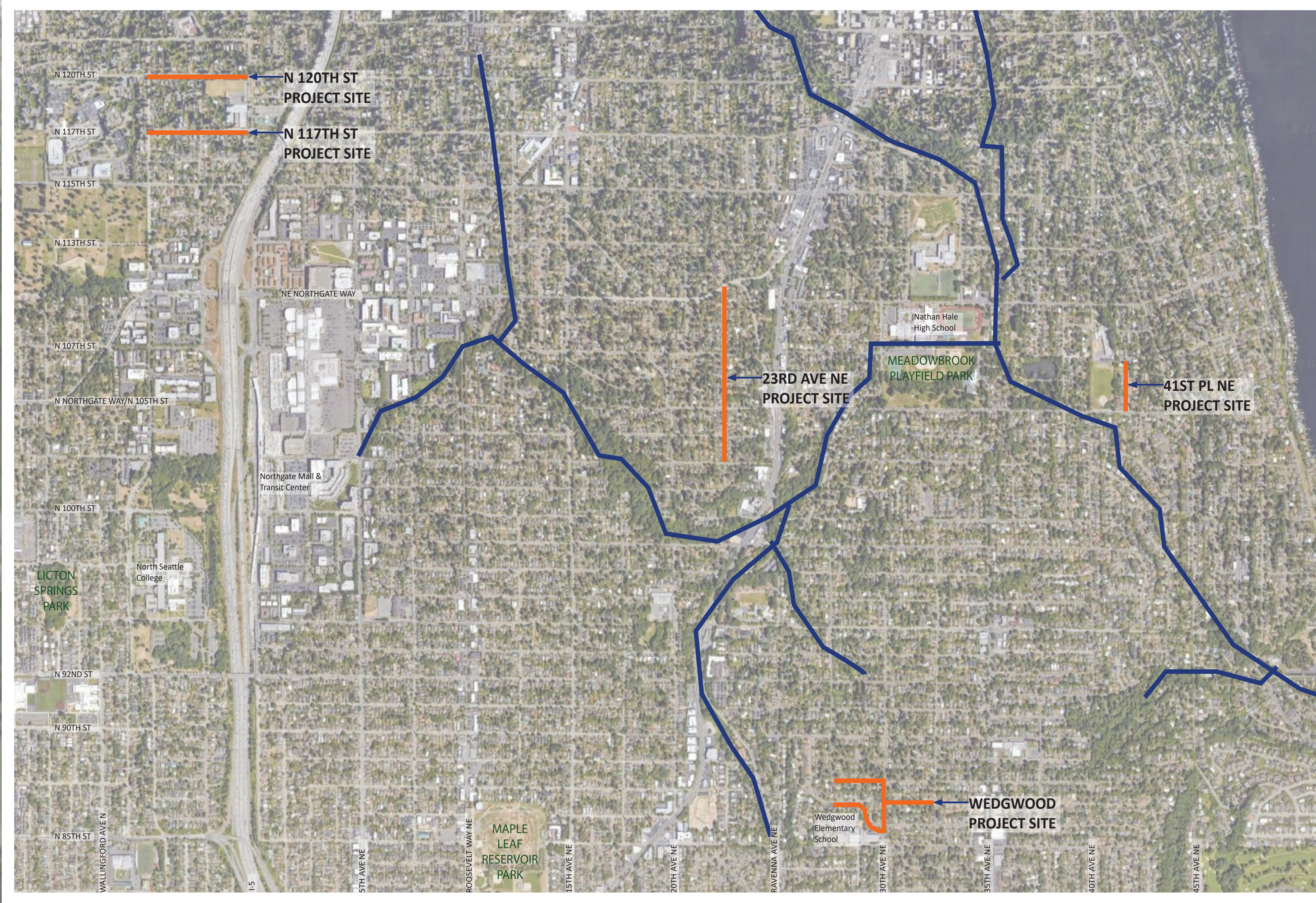


Seattle Public Utilities



AUGUST 2020  
30% DESIGN PHASE

# SOUTH THORNTON NATURAL DRAINAGE SYSTEMS (NDS) Project Area Map



**LEGEND**

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

# 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.



Identified blocks that could include natural drainage systems.



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



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

Roadway  
parking  
changes

Pedestrian  
safety

Reinforcing the  
public right-of-  
way in the  
project area

Addressing  
drainage and  
flooding issues  
in Northeast  
Seattle



Seattle  
Public  
Utilities



KING COUNTY  
FLOOD CONTROL  
DISTRICT

AUGUST 2020  
30% DESIGN PHASE

# WHAT TO EXPECT

How a typical NDS planting installation changes over time



BEFORE



NEWLY PLANTED

~1 year



GROWING

~5 years



MATURE



Seattle  
Public  
Utilities



KING COUNTY  
FLOOD CONTROL  
DISTRICT

AUGUST 2020

30% DESIGN PHASE

# SOUTH THORNTON NATURAL DRAINAGE SYSTEMS (NDS)

## 41<sup>st</sup> PI NE

### NATURAL DRAINAGE SYSTEMS 41ST PL NE: 41ST PL NE TO NE 105TH ST (30% DESIGN PHASE - ADJUSTMENTS MAY BE MADE AS DESIGN IS FINALIZED) STREET RIGHT OF WAY UTILIZATION KEY



#### KEY

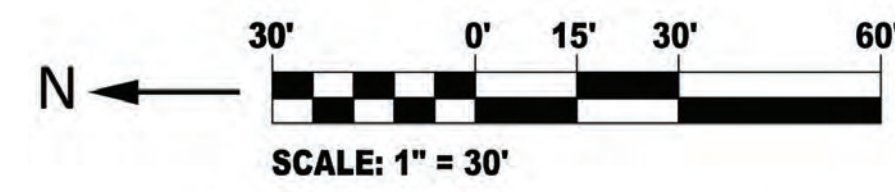
- INFORMAL PEDESTRIAN ZONE
- ////// INFORMAL PARKING/PEDESTRIAN ZONE
- ON-STREET PARKING ZONE
- ..... NO PARKING
- NATURAL DRAINAGE SYSTEM & PLANTING ZONE
- SIDEWALK

NOTE: IMPROVEMENTS AND ON STREET PARKING WILL NOT BLOCK RESIDENTIAL DRIVEWAYS OR WALKWAYS

# SOUTH THORNTON NATURAL DRAINAGE SYSTEMS (NDS)

## 41<sup>st</sup> PI NE

### NATURAL DRAINAGE SYSTEMS 41ST PL NE: 41ST PL NE TO NE 105TH ST (30% DESIGN PHASE - ADJUSTMENTS MAY BE MADE AS DESIGN IS FINALIZED)



#### KEY

-  EXISTING SIDEWALK REPLACEMENT
-  MULCH
-  10' WIDE REPLACEMENT DRIVEWAY (CITY STANDARD WIDTH)
-  NEW STORM DRAINAGE PIPES
-  NATURAL DRAINAGE SYSTEM (NDS)
-  PLANTING AREA
-  ILLUSTRATION MARKER
-  IN NORTH SECTION - ROAD WIDENING AND NEW ASPHALT THICKENED EDGE ON THE WEST SIDE OF THE STREET. IN SOUTH SECTION - ROAD WIDENING AND NEW CURB ON EAST SIDE OF THE STREET. THE FULL EXTENTS OF EXISTING PAVEMENT REPAIR AND RESTORATION ARE NOT SHOWN FOR CLARITY.

#### RIGHT-OF-WAY PARKING

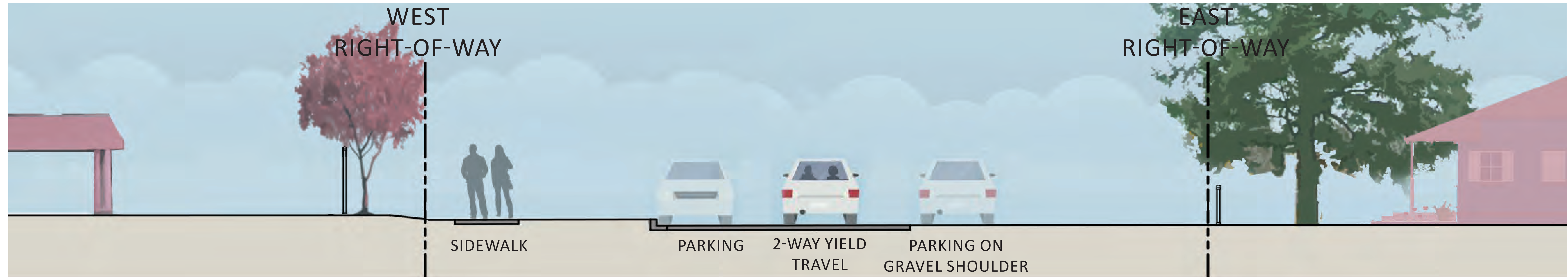
CURRENT PARKING CAPACITY\*: 34  
 PEAK WEEKDAY USAGE\*\*: 8-9  
 PARKING CAPACITY PER IMPROVEMENT PLANS: 29

\*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.

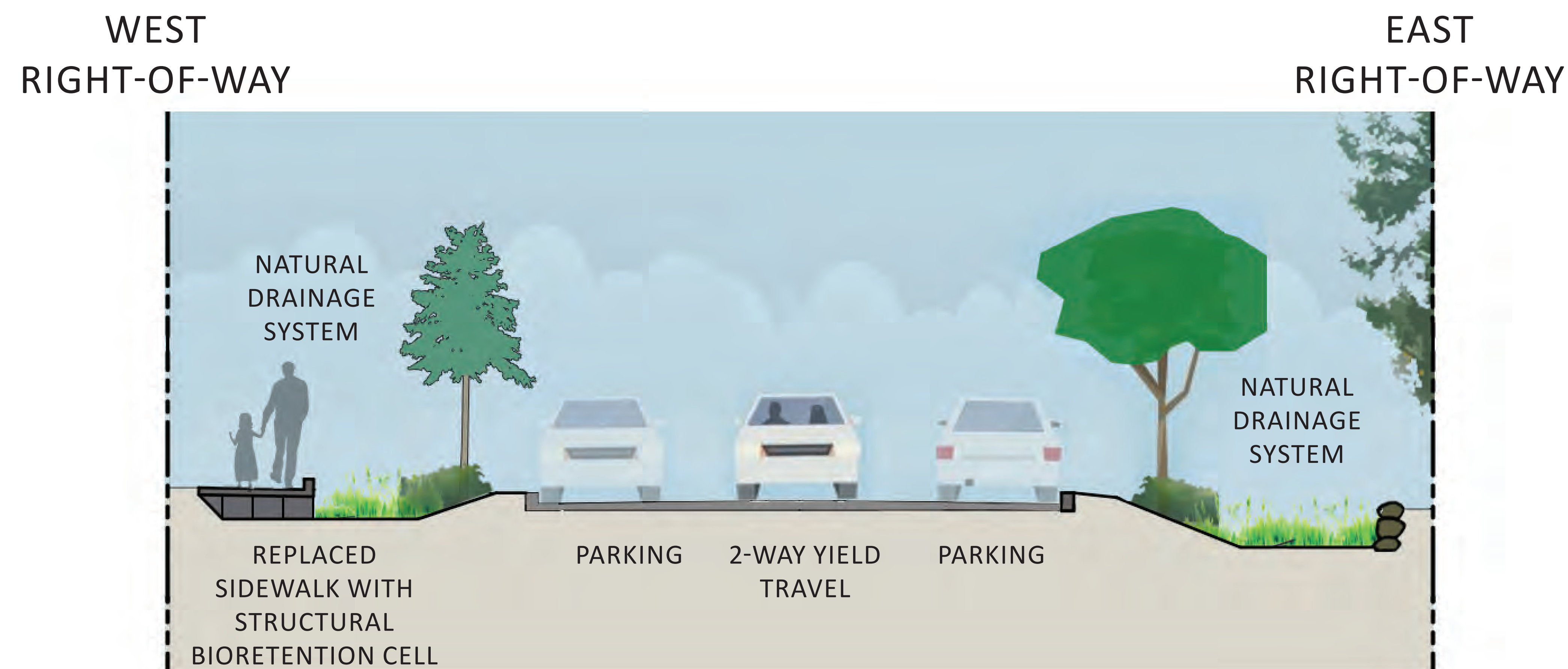
\*\* BASED ON PARKING COUNTS CONDUCTED AT 5:00 AM, 12:00 PM, 6:00 PM & 11:00 PM.

# SOUTH THORNTON NATURAL DRAINAGE SYSTEMS (NDS)

## 41<sup>st</sup> PI NE



EXISTING STREET SECTION  
41ST PL NE

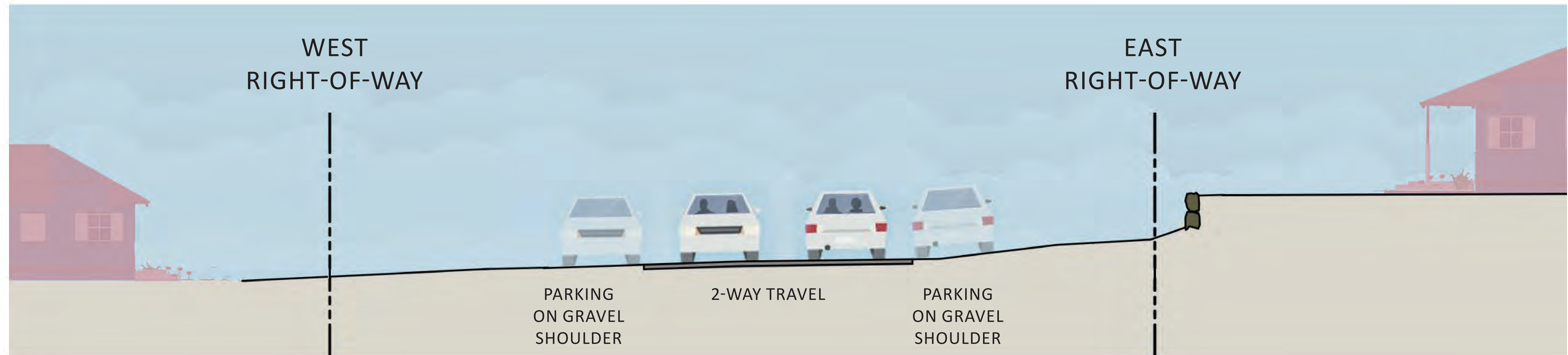


TYPICAL STREET SECTION (SOUTH SECTION)  
NEW CURB EAST SIDE & NATURAL DRAINAGE SYSTEMS BOTH SIDES  
41ST PL NE

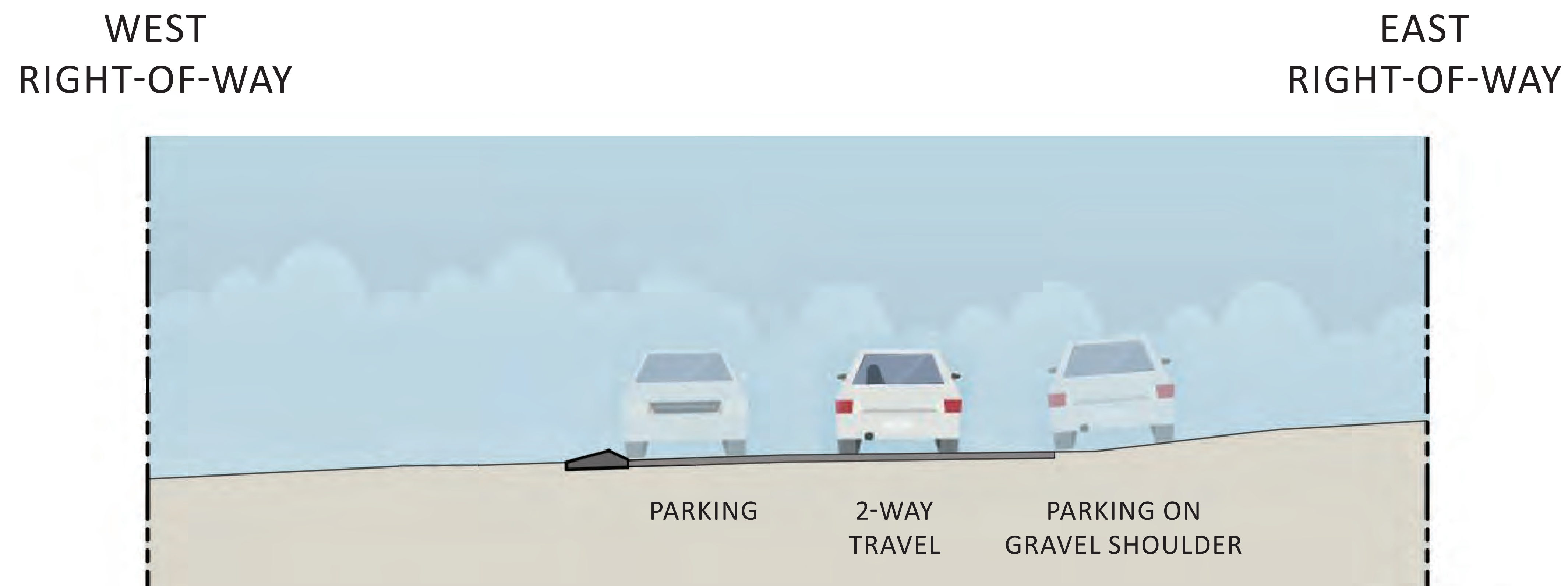


# SOUTH THORNTON NATURAL DRAINAGE SYSTEMS (NDS)

## 41<sup>st</sup> PI NE



EXISTING STREET SECTION  
41ST PL NE



TYPICAL STREET SECTION (NORTH SECTION)  
NEW ASPHALT THICKENED EDGE EAST SIDE  
41ST PL NE

# SOUTH THORNTON NATURAL DRAINAGE SYSTEMS (NDS)

## 41<sup>st</sup> PI NE



ILLUSTRATION #1

VIEW LOOKING NORTH  
41ST PL NE AT NE 105TH ST