FINAL

Environmental Justice Technical Report

I-5 Rose Quarter Improvement Project

Oregon Department of Transportation

January 8, 2019

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Figures[1]

Appendices

[1] Appendix B includes written descriptions of all figures referenced in this Technical Report. If needed, additional figure interpretation is available from the ODOT Senior Environmental Project Manager at (503) 731-4804.

Acronyms and Abbreviations

ACS	American Community Survey
API	Area of Potential Impact
dBA	A-weighted decibels
DBE	disadvantaged business enterprises
EB	eastbound
EJ	environmental justice
FHWA	Federal Highway Administration
I-405	Interstate 405
I-5	Interstate 5
I-84	Interstate 84
L_{eq}	equivalent noise level
MSA	Metropolitan Statistical Area
mvmt	million vehicle miles travelled
NAAC	Noise Abatement Approach Criteria
NB	northbound
NEPA	National Environmental Policy Act
ODOT	Oregon Department of Transportation
PBOT	Portland Bureau of Transportation
Project	I-5 Rose Quarter Improvement Project
SAC	Stakeholder Advisory Committee
SB	southbound
SPIS	Safety Priority Index System
WB	westbound

Executive Summary

The I-5 Rose Quarter Improvement Project (Project) would occur in a community with several notable concentrations of minority and low-income populations and a history of Black and low-income residents being displaced by major public infrastructure projects since the late 1940s. Because federal funds administered by the Federal Highway Administration (FHWA) would likely be used to construct the Project, the Oregon Department of Transportation (ODOT) has prepared this report to comply with Executive Order 12898, which requires all federal agencies to identify and address disproportionately high and adverse effects of the agency's programs, policies, and activities on minority and low-income populations to achieve an equitable distribution of benefits and burdens. ODOT has prepared this report following the requirements of FHWA Order 6640.23A, *FHWA Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* and instructions in FHWA's *Environmental Justice Reference Guide* (FHWA 2015) and concludes with an environmental justice (EJ) finding.

ODOT has conducted extensive public outreach during the planning and environmental review of the Project, including EJ-specific outreach. Concerns frequently expressed included economic opportunity, gentrification, historical injustice with past developments in the area (including I-5), distrust of agencies from past actions or perceived broken promises with development initiatives, and government services.

This *Environmental Justice Technical Report* assesses a range of environmental issues documented in other technical reports prepared for the Project to determine the potential for disproportionate adverse effects on EJ populations. These include the following:

- *Air Quality Technical Report* (ODOT 2019a)
- *Archaeological Resources Technical Report* (ODOT 2019b)
- *Hazardous Materials Technical Report* (ODOT 2019c)
- *Historic Resources Technical Report* (ODOT 2019d)
- *Land Use Technical Report* (ODOT 2019e)
- *Noise Study Technical Report* (ODOT 2019f)
- *Right of Way Technical Report* (ODOT 2019g)
- *Section 4(f) Technical Report* (ODOT 2019h)
- *Socioeconomics Technical Report* (ODOT 2019i)
- Transportation Technical Reports (*Transportation Access, Active Transportation, Safety, Traffic, and Transit* [ODOT 2019j, 2019k, 2019l, 2019m, 2019n])
- *Utilities Technical Report* (ODOT 2019o)

- *Water Resources Technical Report* (ODOT 2019p)

For most of these topic areas, disproportionate impacts to EJ populations were not identified. However, the EJ analysis did identify several types of temporary transportation and mobility-related impacts that could disproportionately affect EJ populations during the construction phase of the Project. Mitigation measures have been proposed that would ensure those impacts are reduced to a level that would not be considered "disproportionately high and adverse effects." These temporary impacts and mitigation measures are as follows:

- EJ populations may be disproportionately impacted by the temporary rerouting of bus routes and adjustments to streetcar service in the Area of Potential Impact (API) during the 4-year construction period, as EJ populations are often more dependent on transit services and other non-automobile mode of transportation than other segments of the population (Transit Center 2016). Potential mitigation to address this impact would be to work with the community to identify preferred alternative bus routes and streetcar schedules and possibly increase the frequency of service on the affected bus routes to maintain and possibly improve access to employment and services in the API for EJ populations.
- Similarly, temporary closures of key walking and bicycling routes may disproportionately inconvenience EJ populations who rely on these modes to commute to work and access services in the API. Potential mitigation to address this impact would be to provide safe alternative walking and bicycling routes, and if necessary, free shuttle service through areas of construction.

The Project would also provide substantial long-term benefits to EJ populations in the API, which would include the following:

- Enhanced east-west connectivity across I-5 in the form of the Hancock-Dixon highway cover and Clackamas bicycle/pedestrian overcrossing of I-5.
- Revised localized travel patterns in the Broadway/Weidler interchange area and the creation of new and enhanced pedestrian and bicycle facilities.
- Improved urban design by reducing the physical and visual barrier I-5 presents to the surrounding area.
- Enhanced quality of life through the provision of safety improvements and expanded modal choices for local residents.
- Improved safety benefits for all modes, especially for pedestrian, bicycle, and transit users.
- Improved traffic operations and safety on I-5 during all periods of the day, but particularly during the morning and evening peak commute times.

Improved efficiency in the movement of people and goods within and through the API in support of the economic development goals of adopted plans and policies, including the City of Portland's vision for land use and future development in the Project Area.

The Project was conceived and developed in consideration of detrimental effects past public infrastructure projects have had on Black residents in the API. The proposed concept was developed concurrently with City of Portland's Central City 2035 N/NE Quadrant Plan, consistent with the vision for future land use, urban design, transportation, public infrastructure, and development entitlements in the Lloyd and Lower Albina subdistricts of the Central City. Neighborhood connectivity, housing production and preservation of historic and cultural resources are key areas in which the plan attempts to correct damage done in the past. Policies are included that attempt to discourage displacement, while allowing for significant new development, including the Build Alternative. This approach is intended to accommodate substantial new development with access to transit, jobs and other Central City amenities with very limited displacement (City of Portland et al. 2012).

Considering that the construction phase impacts to EJ populations described above would be temporary and would be addressed by developing mitigation measures in cooperation with the local community, and the fact that the Project would provide notable beneficial effects for EJ populations living and working in the API, it has been determined that the Project would not cause disproportionate high and adverse effects on any minority or low-income populations in accordance with the provisions of Executive Order 12898 and FHWA Order 6640.23A.

1 Introduction

1.1 Project Location

The I-5 Rose Quarter Improvement Project (Project) is located in Portland, Oregon, along the 1.7-mile segment of Interstate 5 (I-5) between Interstate 405 (I-405) to the north (milepost 303.2) and Interstate 84 (I-84) to the south (milepost 301.5). The Project also includes the interchange of I-5 and N Broadway and NE Weidler Street (Broadway/Weidler interchange) and the surrounding transportation network, from approximately N/NE Hancock Street to the north, N Benton Avenue to the west, N/NE Multnomah Street to the south, and NE 2nd Avenue to the east.

Figure 1 illustrates the Project Area in which the proposed improvements are located. The Project Area represents the estimated area within which improvements are proposed, including where permanent modifications to adjacent parcels may occur and where potential temporary impacts from construction activities could result.

1.2 Project Purpose

The purpose of the Project is to improve the safety and operations on I-5 between I-405 and I-84, of the Broadway/Weidler interchange, and on adjacent surface streets in the vicinity of the Broadway/Weidler interchange and to enhance multimodal facilities in the Project Area.

In achieving the purpose, the Project would also support improved local connectivity and multimodal access in the vicinity of the Broadway/Weidler interchange and improve multimodal connections between neighborhoods located east and west of I-5.

1.3 Project Need

The Project would address the following primary needs:

- **I-5 Safety:** I-5 between I-405 and I-84 has the highest crash rate on urban interstates in Oregon. Crash data from 2011 to 2015 indicate that I-5 between I-84 and the merge point from the N Broadway ramp on to I-5 had a crash rate (for all types of crashes[2]) that was approximately 3.5 times higher than the statewide average for comparable urban interstate facilities (ODOT 2015a).

[2] Motor vehicle crashes are reported and classified by whether they involve property damage, injury, or death.

Figure 1. Project Area

  - Seventy-five percent of crashes occurred on southbound (SB) I-5, and 79 percent of all the crashes were rear-end collisions. Crashes during this 5-year period included one fatality, which was a pedestrian fatality. A total of seven crashes resulted in serious injury.
  - The Safety Priority Index System (SPIS) is the systematic scoring method used by the Oregon Department of Transportation (ODOT) for identifying potential safety problems on state highways based on the frequency, rate, and severity of crashes (ODOT 2015b). The 2015 SPIS shows two SB sites in the top 5 percent and two northbound (NB) sites in the top 10 percent of the SPIS list.
  - The 2015 crash rate on the I-5 segment between I-84 and the Broadway ramp on to I-5 is 2.70 crashes per million vehicle miles. The statewide average for comparable urban highway facilities is 0.77 crashes per million vehicle miles travelled (mvmt).
  - The existing short weaving distances and lack of shoulders for accident/incident recovery in this segment of I-5 are physical factors that may contribute to the high number of crashes and safety problems.

- **I-5 Operations:** The Project Area is at the crossroads of three regionally significant freight and commuter routes: I-5, I-84, and I-405. As a result, I-5 in the vicinity of the Broadway/Weidler interchange experiences some of the highest traffic volumes in the State of Oregon, carrying approximately 121,400 vehicles each day (ODOT 2017), and experiences 12 hours of congestion each day (ODOT 2012a). The following factors affect I-5 operations:
  - Close spacing of multiple interchange ramps results in short weaving segments where traffic merging on and off I-5 has limited space to complete movements, thus becoming congested. There are five on-ramps (two NB and three SB) and six off-ramps (three NB and three SB) in this short stretch of highway. Weaving segments on I-5 NB between the I-84 westbound (WB) on-ramp and the NE Weidler off-ramp, and on I-5 SB between the N Wheeler Avenue on-ramp and I-84 eastbound (EB) off-ramp, currently perform at a failing level-of-service during the morning and afternoon peak periods.
  - The high crash rate within the Project Area can periodically contribute to congestion on this segment of the highway. As noted with respect to safety, the absence of shoulders on I-5 contributes to congestion because vehicles involved in crashes cannot get out of the travel lanes.
  - Future (2045) traffic estimates indicate that the I-5 SB section between the N Wheeler on-ramp and EB I-84 off-ramp is projected to have the most critical congestion in the Project Area, with capacity and geometric constraints that result in severe queuing.

- **Broadway/Weidler Interchange Operations:** The complexity and congestion at the I-5 Broadway/Weidler interchange configuration is difficult to navigate for vehicles (including transit vehicles), bicyclists, and pedestrians, which impacts

access to and from I-5 as well as to and from local streets. The high volumes of traffic on I-5 and Broadway/Weidler in this area contribute to congestion and safety issues (for all modes) at the interchange ramps, the Broadway and Weidler overcrossings of I-5, and on local streets in the vicinity of the interchange.

- The Broadway/Weidler couplet provides east-west connectivity for multiple modes throughout the Project Area, including automobiles, freight, people walking and biking, and Portland Streetcar and TriMet buses. The highest volumes of vehicle traffic on the local street network in the Project Area occur on NE Broadway and NE Weidler in the vicinity of I-5. The N Vancouver Avenue/N Williams couplet, which forms a critical north-south link and is a Major City Bikeway within the Project Area with over 5,000 bicycle users during the peak season, crosses Broadway/Weidler in the immediate vicinity of the I-5 interchange.
- The entire length of N/NE Broadway is included in the Portland High Crash Network—streets designated by the City of Portland for the high number of deadly crashes involving pedestrians, bicyclists, and vehicles.[3]
- The SB on-ramp from N Wheeler and SB off-ramp to N Broadway experienced a relatively high number of crashes per mile (50-70 crashes per mile) compared to other ramps in the Project Area during years 2011-2015. Most collisions on these ramps were rear-end collisions.
- Of all I-5 highway segments in the corridor, those that included weaving maneuvers to/from the Broadway/Weidler ramps tend to experience the highest crash rates:
  - SB I-5 between the on-ramp from N Wheeler and the off-ramp to I-84 (SB-S5) has the highest crash rate (15.71 crashes/mvmt).
  - NB I-5 between the I-84 on-ramp and off-ramp to NE Weidler (NB-S5) has the second highest crash rate (5.66 crashes/mvmt).
  - SB I-5 between the on-ramp from I-405 and the off-ramp to NE Broadway (SB-S3) has the third highest crash rate (4.94 crashes/mvmt).

- **Travel Reliability on the Transportation Network:** Travel reliability on the transportation network decreases as congestion increases and safety issues expand. The most unreliable travel times tend to occur at the end of congested areas and on the shoulders of the peak periods. Due to these problems, reliability has decreased on I-5 between I-84 and I-405 for most of the day. Periods of congested conditions on I-5 in the Project Area have grown over time from morning and afternoon peak periods to longer periods throughout the day.

[3] Information on the City of Portland's High Crash Network is available at https://www.portlandoregon.gov/transportation/54892.

1.4 Project Goals and Objectives

In addition to the purpose and need, which focus on the state's transportation system, the Project includes related goals and objectives developed through the joint ODOT and City of Portland N/NE Quadrant and I-5 Broadway/Weidler Interchange Plan process, which included extensive coordination with other public agencies and citizen outreach. The following goals and objectives may be carried forward beyond the National Environmental Policy Act (NEPA) process to help guide final design and construction of the Project:

- Enhance pedestrian and bicycle safety and mobility in the vicinity of the Broadway/Weidler interchange.
- Address congestion and improve safety for all modes on the transportation network connected to the Broadway/Weidler interchange and I-5 crossings.
- Support and integrate the land use and urban design elements of the Adopted N/NE Quadrant Plan (City of Portland et al. 2012) related to I-5 and the Broadway/Weidler interchange, which include the following:
    - Diverse mix of commercial, cultural, entertainment, industrial, recreational, and residential uses, including affordable housing
    - Infrastructure that supports economic development
    - Infrastructure for healthy, safe, and vibrant communities that respects and complements adjacent neighborhoods
    - A multimodal transportation system that addresses present and future needs, both locally and on the highway system
    - An improved local circulation system for safe access for all modes
    - Equitable access to community amenities and economic opportunities
    - Protected and enhanced cultural heritage of the area
    - Improved urban design conditions
- Improve freight reliability.
- Provide multimodal transportation facilities to support planned development in the Rose Quarter, Lower Albina, and Lloyd.
- Improve connectivity across I-5 for all modes.

2 Project Alternatives

This technical report describes the potential effects of no action (No-Build Alternative) and the proposed action (Build Alternative).

2.1 No-Build Alternative

NEPA regulations require an evaluation of the No-Build Alternative to provide a baseline for comparison with the potential impacts of the proposed action. The No-Build Alternative consists of existing conditions and any planned actions with committed funding in the Project Area.

I-5 is the primary north-south highway serving the West Coast of the United States from Mexico to Canada. At the northern portion of the Project Area, I-5 connects with I-405 and the Fremont Bridge; I-405 provides the downtown highway loop on the western edge of downtown Portland. At the southern end of the Project Area, I-5 connects with the western terminus of I-84, which is the east-west highway for the State of Oregon. Because the Project Area includes the crossroads of three regionally significant freight and commuter routes, the highway interchanges within the Project Area experience some of the highest traffic volumes found in the state (approximately 121,400 average annual daily trips). The existing lane configurations consist primarily of two through lanes (NB and SB), with one auxiliary lane between interchanges. I-5 SB between I-405 and Broadway includes two auxiliary lanes.

I-5 is part of the National Truck Network, which designates highways (including most of the Interstate Highway System) for use by large trucks. In the Portland-Vancouver area, I-5 is the most critical component of this national network because it provides access to the transcontinental rail system, deep-water shipping and barge traffic on the Columbia River, and connections to the ports of Vancouver and Portland, as well as to most of the area's freight consolidation facilities and distribution terminals. Congestion on I-5 throughout the Project Area delays the movement of freight both within the Portland metropolitan area and on the I-5 corridor. I-5 through the Rose Quarter is ranked as one of the 50 worst freight bottlenecks in the United States (ATRI 2017).

Within the approximately 1.5 miles that I-5 runs through the Project Area, I-5 NB connects with five on- and off-ramps, and I-5 SB connects with six on- and off-ramps. Drivers entering and exiting I-5 at these closely spaced intervals, coupled with high traffic volumes, slow traffic and increase the potential for crashes. Table 1 presents the I-5 on- and off-ramps in the Project Area. Table 2 shows distances of the weaving areas between the on- and off-ramps on I-5 in the Project Area. Each of the distances noted for these weave transitions is less than adequate per current highway design standards (ODOT 2012b). In the shortest weave section, only 1,075 feet is available for drivers to merge onto I-5 from NE Broadway NB in the same area where drivers are exiting from I-5 onto I-405 and the Fremont Bridge.

Table 1. I-5 Ramps in the Project Area

I-5 Travel Direction	On-Ramps From	Off-Ramps To
Northbound	• I-84 • N Broadway/N Williams Avenue	• NE Weidler Street/NE Victoria Avenue • I-405 • N Greeley Avenue
Southbound	• N Greeley Avenue • I-405 • N Wheeler Avenue/N Ramsay Way	• N Broadway/N Vancouver Avenue • I-84 • Morrison Bridge/Highway 99E

Notes: I = Interstate

Table 2. Weave Distances within the Project Area

I-5 Travel Direction	Weave Section	Weave Distance
Northbound	I-84 to NE Weidler Street/NE Victoria Avenue	1,360 feet
Northbound	N Broadway/N Williams Avenue to I-405	1,075 feet
Southbound	I-405 to N Broadway	2,060 feet
Southbound	N Wheeler Avenue/N Ramsay Way to I-84	1,300 feet

Notes: I = Interstate

As described in Section 1.3, the high volumes, closely spaced interchanges, and weaving movements result in operational and safety issues, which are compounded by the lack of standard highway shoulders on I-5 throughout much of the Project Area.

Under the No-Build Alternative, I-5 and the Broadway/Weidler interchange and most of the local transportation network in the Project Area would remain in its current configuration, with the exception of those actions included in the Metro 2014 *Regional Transportation Plan* financially constrained project list (Metro 2014).[4] One of these actions includes improvements to the local street network on the Broadway/Weidler corridor within the Project Area. The proposed improvements include changes to N/NE Broadway and N/NE Weidler from the Broadway Bridge to NE 7th Avenue. The current design concept would remove and reallocate one travel

[4] Metro Regional Transportation Plan ID 11646. Available at: https://www.oregonmetro.gov/sites/default/files/Appendix%201.1%20Final%202014%20RTP%20%20Project%20List%208.5x11%20for%20webpage_1.xls.

lane on both N/NE Broadway and N/NE Weidler to establish protected bike lanes and reduce pedestrian crossing distances. Proposed improvements also include changes to turn lanes and transitions to minimize pedestrian exposure and improve safety. The improvements are expected to enhance safety for people walking, bicycling, and driving through the Project Area. Implementation is expected in 2018-2027.

2.2 Build Alternative

The Project alternatives development process was completed during the ODOT and City of Portland 2010-2012 N/NE Quadrant and I-5 Broadway/Weidler Interchange planning process. A series of concept alternatives were considered following the definition of Project purpose and need and consideration of a range of transportation-related problems and issues that the Project is intended to address.

In conjunction with the Stakeholder Advisory Committee (SAC) and the public during this multi-year process, ODOT and the City of Portland studied more than 70 design concepts, including the Build Alternative, via public design workshops and extensive agency and stakeholder input. Existing conditions, issues, opportunities, and constraints were reviewed for the highway and the local transportation network. A total of 19 full SAC meetings and 13 subcommittee meetings were held; each was open to the public and provided opportunity for public comment. Another 10 public events were held, with over 100 attendees at the Project open houses providing input on the design process. Of the 70 design concepts, 13 concepts advanced for further study based on SAC, agency, and public input, with six concepts passing into final consideration.

One recommended design concept, the Build Alternative, was selected for development as a result of the final screening and evaluation process. The final I-5 Broadway/Weidler Facility Plan (ODOT 2012a) and recommended design concept, herein referred to as the Build Alternative, were supported by the SAC and unanimously adopted in 2012 by the Oregon Transportation Commission and the Portland City Council.[5] The features of the Build Alternative are described below.

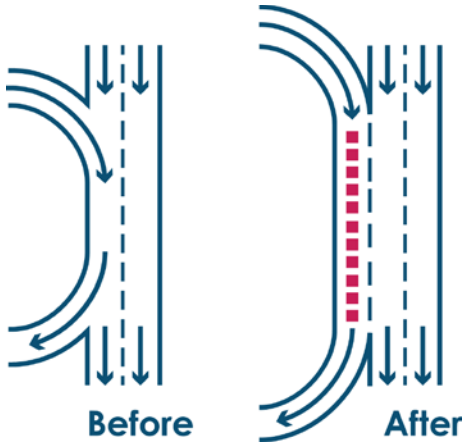
The Build Alternative includes I-5 mainline improvements and multimodal improvements to the surface street network in the vicinity of the Broadway/Weidler interchange. The proposed I-5 mainline improvements include the construction of auxiliary lanes (also referred to as ramp-to-ramp lanes) and full shoulders between I-84 to the south and I-405 to the north, in both the NB and SB directions. See Section 2.2.1 for more detail.

Construction of the I-5 mainline improvements would require the rebuilding of the N/NE Weidler, N/NE Broadway, N Williams, and N Vancouver structures over I-5.

[5] Resolution No. 36972, adopted by City Council October 25, 2012. Available at: https://www.portlandoregon.gov/citycode/article/422365

With the Build Alternative, the existing N/NE Weidler, N/NE Broadway, and N Williams overcrossings would be removed and rebuilt as a single highway cover structure over I-5 (see Section 2.2.2). The existing N Vancouver structure would be removed and rebuilt as a second highway cover, including a new roadway crossing connecting N/NE Hancock and N Dixon Streets. The existing N Flint Avenue structure over I-5 would be removed. The I-5 SB on-ramp at N Wheeler would also be relocated to N/NE Weidler at N Williams, via the new Weidler/Broadway/Williams highway cover. A new bicycle and pedestrian bridge over I-5 would be constructed at NE Clackamas Street, connecting Lloyd with the Rose Quarter (see Section 2.2.4.3).

Surface street improvements are also proposed, including upgrades to existing bicycle and pedestrian facilities and a new center-median bicycle and pedestrian path on N Williams between N/NE Weidler and N/NE Broadway (see Section 2.2.4.4).



What are Ramp-to-Ramp or Auxiliary Lanes?

Ramp-to-Ramp lanes provide a direct connection from one ramp to the next. They separate on-and off-ramp merging from through traffic, and create better balance and smoother maneuverability, which improves safety and reduces congestion.

2.2.1 I-5 Mainline Improvements

The Build Alternative would modify I-5 between I-84 and I-405 by adding safety and operational improvements. The Build Alternative would extend the existing auxiliary lanes approximately 4,300 feet in both NB and SB directions and add 12-foot shoulders (both inside and outside) in both directions in the areas where the auxiliary lane would be extended. Figure 2 illustrates the location of the proposed auxiliary lanes. Figure 3 illustrates the auxiliary lane configuration, showing the proposed improvements in relation to the existing conditions. Figure 4 provides a cross section comparison of existing and proposed conditions, including the location of through lanes, auxiliary lanes, and highway shoulders.

A new NB auxiliary lane would be added to connect the I-84 WB on-ramp to the N Greeley off-ramp. The existing auxiliary lane on I-5 NB from the I-84 WB on-ramp to the NE Weidler off-ramp and from the N Broadway on-ramp to the I-405 off-ramp would remain.

The new SB auxiliary lane would extend the existing auxiliary lane that enters I-5 SB from the N Greeley on-ramp. The existing SB auxiliary lane currently ends just south of the N Broadway off-ramp, in the vicinity of the Broadway overcrossing structure.

Figure 2. Auxiliary Lane/Shoulder Improvements

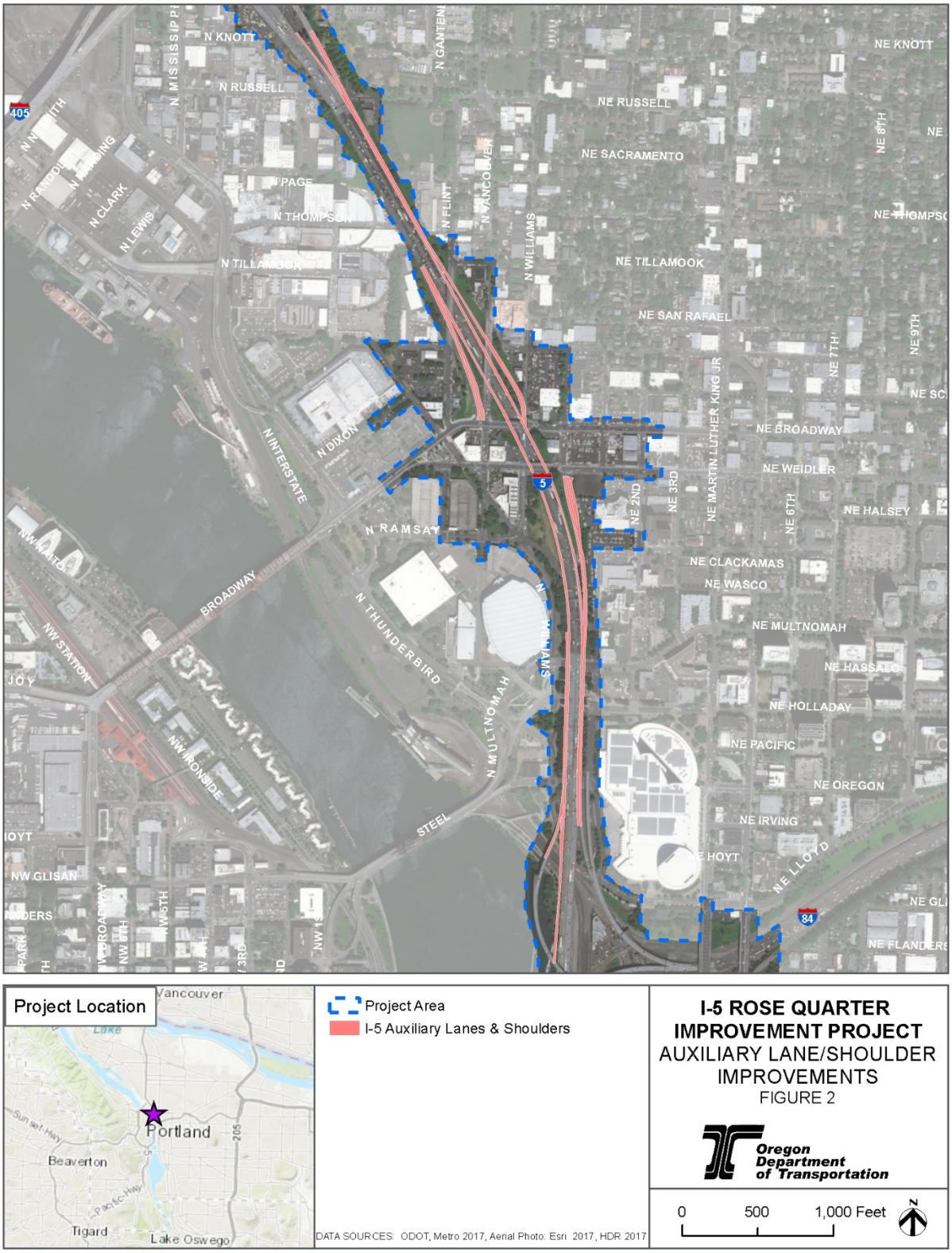


Figure 3. I-5 Auxiliary (Ramp-to-Ramp) Lanes – Existing Conditions and Proposed Improvements

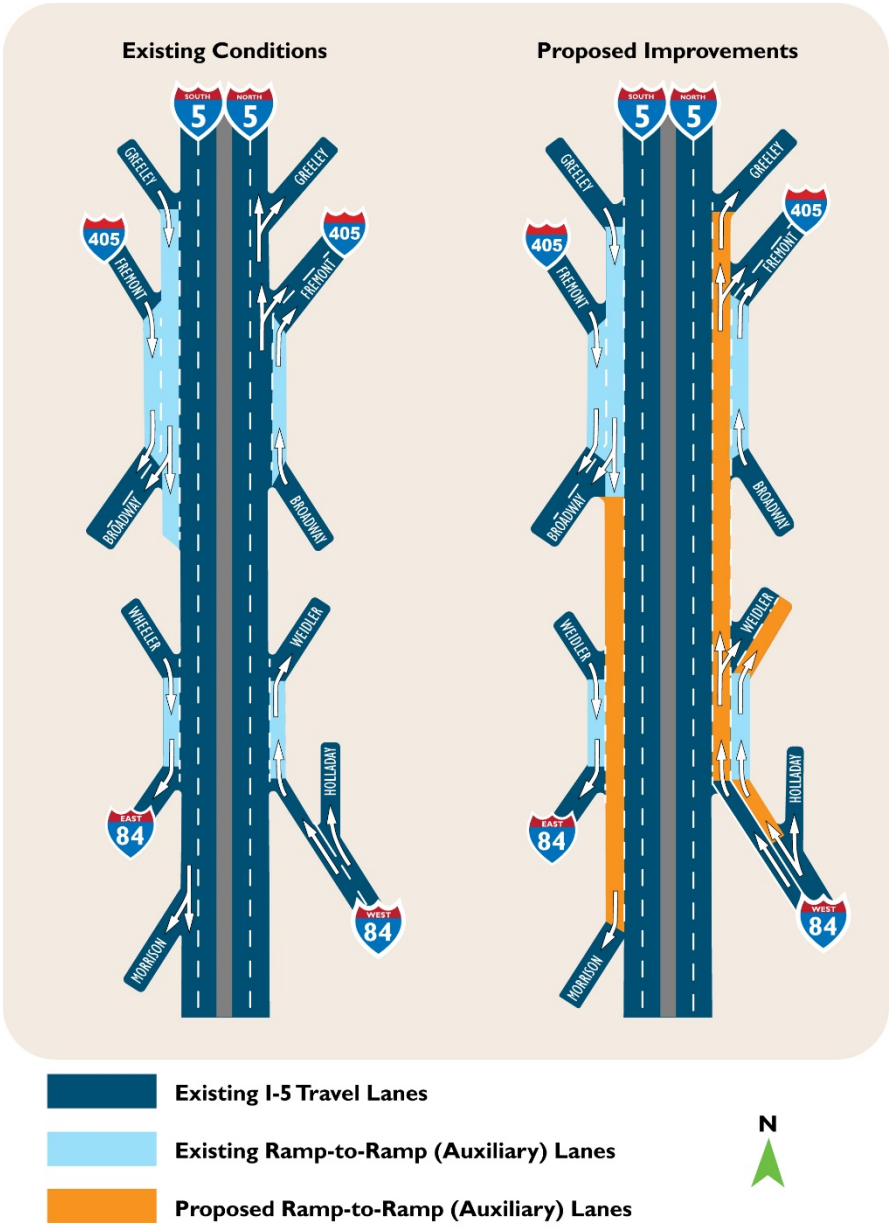
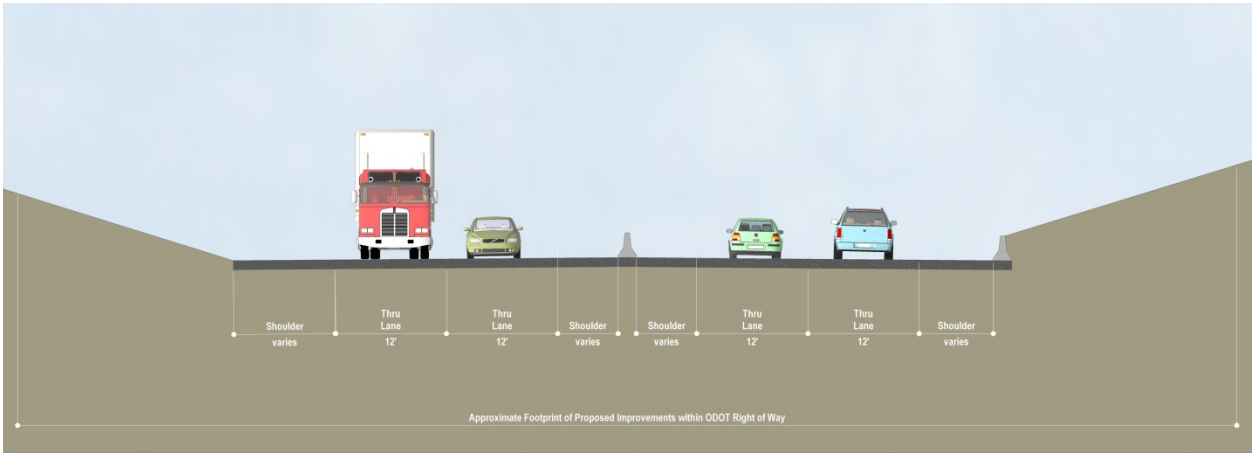
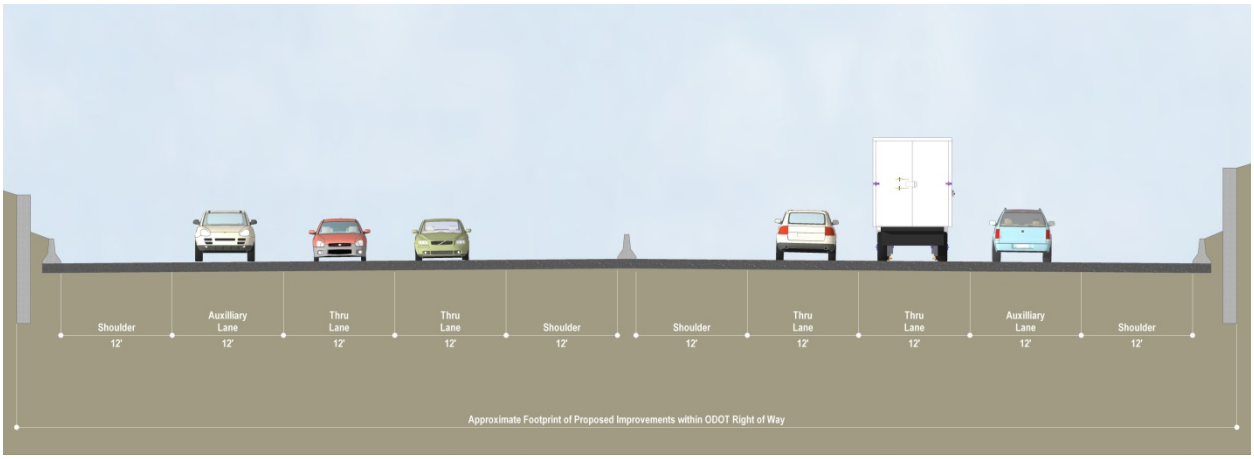


Figure 4. I-5 Cross Section (N/NE Weidler Overcrossing) – Existing Conditions and Proposed Improvements



Existing Lane Configuration



Proposed Lane Configuration

Under the Build Alternative, the SB auxiliary lane would be extended as a continuous auxiliary lane from N Greeley to the Morrison Bridge and the SE Portland/Oregon Museum of Science and Industry off-ramp. Figure 4 presents a representative cross section of I-5 (south of the N/NE Weidler overcrossing within the Broadway/Weidler interchange area), with the proposed auxiliary lanes and shoulder, to provide a comparison with the existing cross section.

The addition of 12-foot shoulders (both inside and outside) in both directions in the areas where the auxiliary lanes would be extended would provide more space to allow vehicles that are stalled or involved in a crash to move out of the travel lanes. New shoulders would also provide space for emergency response vehicles to use to access an incident within or beyond the Project Area.

No new through lanes would be added to I-5 as part of the Build Alternative; I-5 would maintain the existing two through lanes in both the NB and SB directions.

2.2.2 Highway Covers

2.2.2.1 Broadway/Weidler/Williams Highway Cover

To complete the proposed I-5 mainline improvements, the existing structures crossing over I-5 must be removed, including the roads and the columns that support the structures. The Build Alternative would remove the existing N/NE Broadway, N/NE Weidler, and N Williams structures over I-5 to accommodate the auxiliary lane extension and new shoulders described in Section 2.2.1.

The structure replacement would be in the form of the Broadway/Weidler/Williams highway cover (Figure 5). The highway cover would be a wide bridge that spans east-west across I-5, extending from immediately south of N/NE Weidler to immediately north of N/NE Broadway to accommodate passage of the Broadway/Weidler couplet. The highway cover would include design upgrades to make the structure more resilient in the event of an earthquake.

The highway cover would connect both sides of I-5, reducing the physical barrier of I-5 between neighborhoods to the east and west of the highway while providing additional surface area above I-5. The added surface space would provide an opportunity for new and modern bicycle and pedestrian facilities and public spaces when construction is complete, making the area more connected, walkable, and bike friendly.

Figure 5. Broadway/Weidler/Williams and Vancouver/Hancock Highway Covers

2.2.2.2 N Vancouver/N Hancock Highway Cover

The Build Alternative would remove and rebuild the existing N Vancouver structure over I-5 as a highway cover (Figure 5). The Vancouver/Hancock highway cover would be a concrete or steel platform that spans east-west across I-5 and to the north and south of N/NE Hancock. Like the Broadway/Weidler/Williams highway cover, this highway cover would provide additional surface area above I-5. The highway cover would provide an opportunity for public space and a new connection across I-5 for all modes of travel. A new roadway connecting neighborhoods to the east with the Lower Albina area and connecting N/NE Hancock to N Dixon would be added to the Vancouver/Hancock highway cover (see element "A" in Figure 6).

2.2.3 Broadway/Weidler Interchange Improvements

Improvements to the Broadway/Weidler interchange to address connections between I-5, the interchange, and the local street network are described in the following subsections and illustrated in Figure 6.

2.2.3.1 Relocate I-5 Southbound On-Ramp

The I-5 SB on-ramp is currently one block south of N Weidler near where N Wheeler, N Williams, and N Ramsay come together at the north end of the Moda Center. The Build Alternative would remove the N Wheeler on-ramp and relocate the I-5 SB on-ramp north to N Weidler. Figure 6 element "B" illustrates the on-ramp relocation.

2.2.3.2 Modify N Williams between Ramsay and Weidler

The Build Alternative would modify the travel circulation on N Williams between N Ramsay and N Weidler. This one-block segment of N Williams would be closed to through-travel for private motor vehicles and would only be permitted for pedestrians, bicycles, and public transit (buses) (Figures 6 and 7). Private motor vehicle and loading access to the facilities at Madrona Studios would be maintained.

2.2.3.3 Revise Traffic Flow on N Williams between Weidler and Broadway

The Build Alternative would revise the traffic flow on N Williams between N/NE Weidler and N/NE Broadway. For this one-block segment, N Williams would be converted from its current configuration as a two-lane, one-way street in the NB direction with a center NB bike lane to a reverse traffic flow two-way street with a 36-foot-wide median multi-use path for bicycles and pedestrians. These improvements are illustrated in Figures 6 and 7.

Figure 6. Broadway/Weidler Interchange Area Improvements

The revised N Williams configuration would be designed as follows:

- Two NB travel lanes along the western side of N Williams to provide access to the I-5 NB on-ramp, through movements NB on N Williams, and left-turn movements onto N Broadway.
- A 36-foot-wide center median with a multi-use path permitted only for bicycles and pedestrians. The median multi-use path would also include landscaping on both the east and west sides of the path.
- Two SB lanes along the eastern side of N Williams to provide access to the I-5 SB on-ramp or left-turn movements onto NE Weidler.

Figure 7. Conceptual Illustration of Proposed N Williams Multi-Use Path and Revised Traffic Flow

2.2.4 Related Local System Multimodal Improvements

2.2.4.1 New Hancock-Dixon Crossing

A new roadway crossing would be constructed to extend N/NE Hancock west across and over I-5, connecting it to N Dixon (see Figure 6, element "E"). The new crossing would be constructed on the Vancouver/Hancock highway cover and would provide a new east-west crossing over I-5. Traffic calming measures would be incorporated east of the intersection of N/NE Hancock and N Williams to discourage use of NE Hancock by through motor vehicle traffic. Bicycle and pedestrian through travel would be permitted (see Figure 6, element "F").

2.2.4.2 Removal of N Flint South of N Tillamook and Addition of New Multi-Use Path

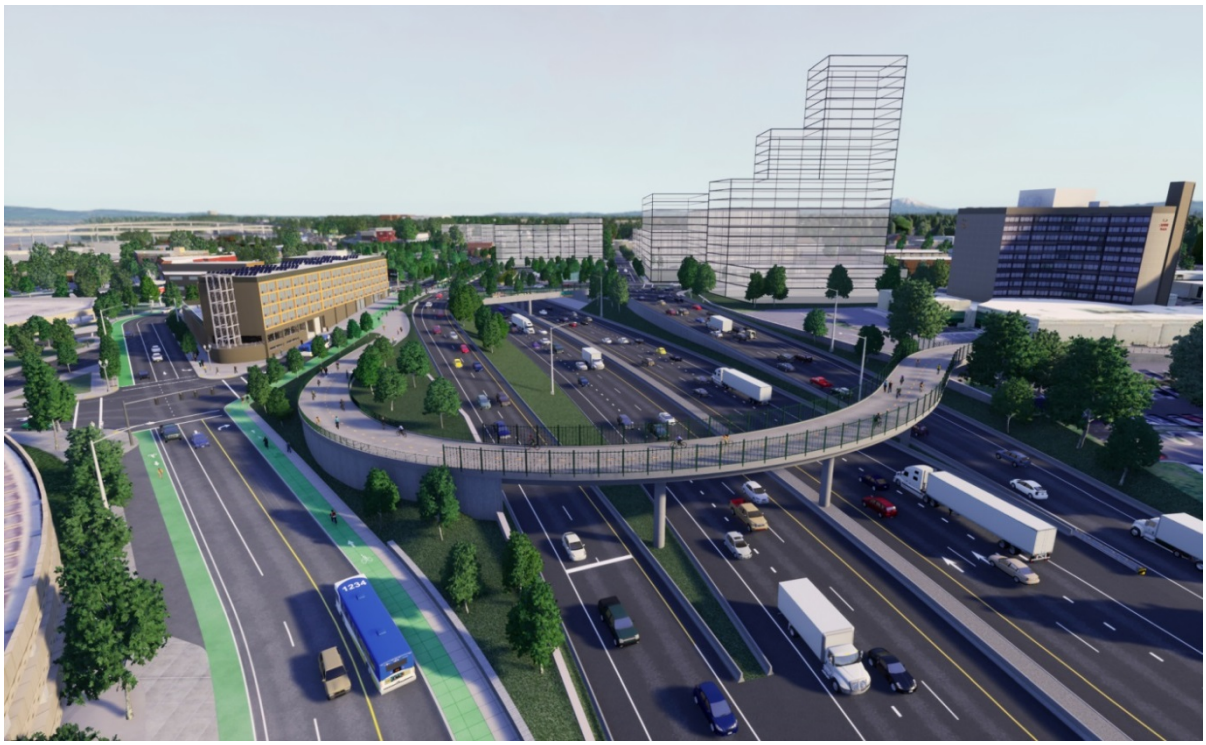
The existing N Flint structure over I-5 would be removed, and N Flint south of N Russell Street would terminate at and connect directly to N Tillamook (see Figure 6, element "G"). The portion of Flint between the existing I-5 overcrossing and Broadway would be closed as a through street for motor vehicles. Driveway access would be maintained on this portion of N Flint to maintain local access.

A new multi-use path would be added between the new Hancock-Dixon crossing and Broadway at a grade of 5 percent or less to provide an additional travel route option for people walking and biking. The new multi-use path would follow existing N Flint alignment between N Hancock and N Broadway (see Figure 6, element "G").

2.2.4.3 Clackamas Bicycle and Pedestrian Bridge

South of N/NE Weidler, a new pedestrian- and bicycle-only bridge over I-5 would be constructed to connect NE Clackamas Street near NE 2nd Avenue to the N Williams/ N Ramsay area (see Figure 6, element "H," and Figure 8). The Clackamas bicycle and pedestrian bridge would offer a new connection over I-5 and would provide an alternative route for people walking or riding a bike through the Broadway/Weidler interchange.

Figure 8. Clackamas Bicycle and Pedestrian Crossing



2.2.4.4 Other Local Street, Bicycle, and Pedestrian Improvements

The Build Alternative would include new widened and well-lit sidewalks, Americans with Disabilities Act-accessible ramps, high visibility and marked crosswalks,

widened and improved bicycle facilities, and stormwater management on the streets connected to the Broadway/Weidler interchange.[6]

A new two-way cycle track would be implemented on N Williams between N/NE Hancock and N/NE Broadway. A two-way cycle track would allow bicycle movement in both directions and would be physically separated from motor vehicle travel lanes and sidewalks. This two-way cycle track would connect to the median multi-use path on N Williams between N/NE Broadway and N/NE Weidler.

The bicycle lane on N Vancouver would also be upgraded between N Hancock and N Broadway, including a new bicycle jug-handle at the N Vancouver and N Broadway intersection to facilitate right-turn movements for bicycles from N Vancouver to N Broadway.

Existing bicycle facilities on N/NE Broadway and N/NE Weidler within the Project Area would also be upgraded, including replacing the existing bike lanes with wider, separated bicycle lanes. New bicycle and pedestrian connections would also be made between the N Flint/N Tillamook intersection and the new Hancock-Dixon connection.

These improvements would be in addition to the new Clackamas bicycle and pedestrian bridge, upgrades to bicycle and pedestrian facilities on the new Broadway/Weidler/Williams and Vancouver/Hancock highway covers, and new median multi-use path on N Williams between N/NE Broadway and N/NE Weidler described above and illustrated in Figure 6.

[6] Additional details on which streets are included are available at http://i5rosequarter.org/local-street-bicycle-and-pedestrian-facilities/.

3 Regulatory Framework

3.1 Regulatory Setting

The following environmental justice (EJ) regulatory requirements are applicable to the Project and addressed in this report:

- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority and Low-Income Populations (1994)
- Federal Highway Administration (FHWA) Order 6640.23A, FHWA Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (2012)

Applicable guidance in the *Environmental Justice Reference Guide* (FHWA 2015) was also used during preparation of this report.

An environmental review is being conducted under NEPA, which requires a discussion of the potential impacts and potential mitigation measures for adverse effects that could result from proposed actions using federal funding. In summary, NEPA and other federal directives require the following:

- Identification of minority and low-income populations in the geographic area where Project impacts are anticipated
- Analysis of whether the Project would have high and disproportionate impacts on these populations, considering both adverse and beneficial impacts
- Description of public outreach efforts to engage minority and low-income populations regarding the proposed Project

4 Methodology and Data Sources

This technical report addresses the potential impacts of the Project on EJ populations and identifies Project Area demographics and potential impacts on minority and low-income groups. This information will support the NEPA document evaluating environmental impacts of the proposed transportation improvements.

4.1 Area of Potential Impact

The Area of Potential Impact (API) for the EJ analysis is defined by the boundaries of Census Tract 23.03 plus the portions of the Project Area that extend north and south of the census tract boundary (Figure 9).

4.2 Resource Identification and Evaluation

4.2.1 Agency Coordination

Impacts on low-income and minority populations and how to avoid, minimize, and mitigate them were among the issues on which ODOT coordinated with FHWA and the City of Portland. Input on the Project's public involvement process was also coordinated at the Project Community Liaisons meetings and used to inform the community engagement approach and process to maximize outreach to minority and low-income populations. Additional information on outreach efforts to EJ populations conducted as part of the Project's public involvement process is presented in Section 8 of this report.

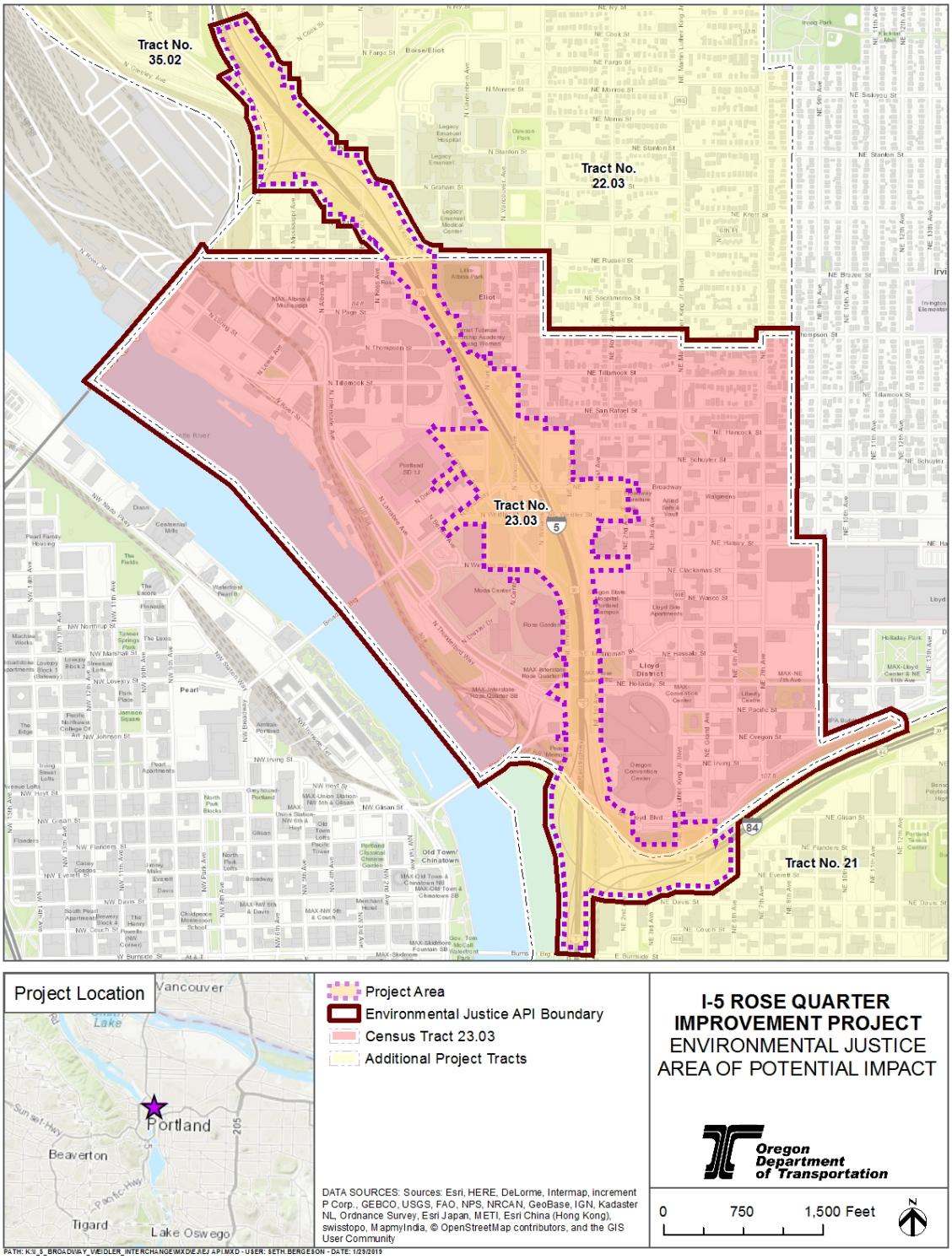
4.2.2 Data Sources and Collection

The data used to identify the location of low-income and minority populations, their numbers compared to the City of Portland and region, and businesses and institutions that provide goods or services to low-income and minority populations are from the following:

- 2010 Census (U.S. Bureau of the Census n.d.-a)
- American Community Survey (ACS) (U.S Census Bureau 2015)
- An inventory conducted for this report of multifamily housing for low-income households and businesses and social service organizations that serve low-income and minority persons in the API

In addition to information listed above, the analysis relied on information gathered through public outreach efforts for the Project, including the EJ-specific public outreach described above. Information from public outreach for this Project was used to supplement population and demographic data to obtain more local detail than could be obtained from the U.S. Census Bureau.

Figure 9. Environmental Justice Area of Potential Impacts



The cumulative impacts assessment for this report includes counts of residential displacements in the API from prior major public infrastructure projects. Source literature includes displacement counts for some, but not all, of these projects, and the sources lack details on how the numbers were derived, including the areas covered. The counts for this report were conducted using computer technology that superimposes present-day maps on Sanborn Fire Insurance Maps prepared before the major transportation infrastructure projects in the Project Area were built. This enabled counting the residential structures that the earlier transportation infrastructure projects had displaced.

Community outreach before and during the NEPA environmental review was used to communicate with minority and low-income groups. Information regarding issues and concerns expressed by these groups is provided in Chapter 8.

ODOT also convened a group of community liaisons to engage and involve low-income and minority populations with current and historical ties to the Project Area in the planning process. The purpose of the community liaison group was to understand community perspectives early in the process, incorporate input into the public involvement process and decisions, and inform the analysis in this report. Outreach activities involving the community liaison group are also described in Chapter 8.

4.3 Assessment of Impacts

Census data for Census Tract 23.03 were used to compare the proportion of minority and low-income populations located in the API with that of the City of Portland and the Portland-Vancouver-Hillsboro Portland Metropolitan Statistical Area (MSA). Census Block demographic data from the 2010 census were used to identify the location of Black populations in the API. The EJ analysis applied the definitions for low-income, minority, low-income population, minority population, and adverse effects described in FHWA Order 6640.23A.

Census statistics for Census Tract 23.03 were used to characterize the population of the API. Only one residence is located within the API, but outside the boundaries of Census Tract 23.03. The analysis of localized impacts on EJ populations considered that its occupants include minorities.

The following potential impacts on EJ populations were evaluated:

- Short-term impacts due to construction activities
- Long-term impacts from Project operations
- Cumulative impacts from construction and operations of the proposed Project

In determining potential impacts, the location, duration, and intensity of Project actions were considered for the No-Build Alternative and the Build Alternative. For temporary impacts, a qualitative assessment was made of the Project's impacts on the ability to travel to and from local residences, faith centers, services, transit stops, and businesses resulting from construction activities.

Long-term impacts consider changes to existing conditions from the Project. Long-term impacts were assessed primarily through a review of other technical reports prepared for the Project to determine how the impacts they describe would affect minority and low-income populations. In particular, impacts identified in the socioeconomics, noise, air quality, and transportation technical reports were considered to assess potential impacts to EJ populations.

4.3.1 Basis for Determining Disproportionately High and Adverse Impacts

The determination of disproportionately high and adverse impacts was based on FHWA Order 6640.23A. The order states that a disproportionately high and adverse effect on minority and low-income populations is "an adverse effect that: 1) is predominantly borne by a minority population and/or a low-income population; or 2) will be suffered by the minority population and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the nonminority population and/or non-low-income population."

Pursuant to FHWA Order 6640.23A, the analysis accounted for "mitigation and enhancement measures and potential offsetting benefits to the affected minority and/or low-income populations."

4.4 Cumulative Impacts

The cumulative impacts analysis considered the Project's impacts combined with other past, present, and reasonably foreseeable future actions that would result in environmental impacts in the Project Area. A list of reasonably foreseeable future actions was developed with the City of Portland and Metro staff (Appendix A). This list includes any permitted public and private construction projects within the Project Area and any projects that are in the permit application process. The cumulative impact assessment qualitatively assessed the magnitude of impacts expected from reasonably foreseeable future actions in combination with anticipated Project impacts. This assessment also identified the contribution of the Project to overall cumulative impacts.

4.5 Mitigation Approach

According to FHWA Order 6640.23A, "When determining whether a particular program, policy or activity will have disproportionately high and adverse effects on minority and low-income populations, FHWA managers and staff should take into account mitigation and enhancement measures …" FHWA Order 6640.23A also states that "programs, policies and activities that will have disproportionately high and adverse effects on minority and low-income populations will only be carried out if further mitigation measures or alternatives that would avoid or reduce the disproportionately high and adverse effects are not practicable." Where potential impacts on EJ groups were identified, mitigation measures were identified to address these guidelines.

5 Affected Environment

Census data from the U.S. ACS from 2011 to 2015 (referred to herein as "2015") provided the most current data for demographic characteristics in the API. ACS 2006 to 2010 data (referred to herein as "2010") provided data for the same demographic categories and is included in the EJ analysis as a point of comparison for changes between 2010 and 2015.

5.1 Minority Populations

The U.S. Census reports demographic information using the following racial and ethnic categories:

- White
- Black or African American
- Asian
- American Indian and Alaska Native
- Native Hawaiian and Other Pacific Islander
- Some other race
- Hispanic/Latino
- Not Hispanic/Latino

Table 3 presents race and Hispanic/Latino characteristics for the API, the City of Portland, and the MSA. While the population of the API is predominantly white, a substantial number of Black residents live within the API. It is notable that the percentage of Black residents within the API is higher than the percentage of Black residents living in the City of Portland or the Portland metropolitan area.[7]

Figure 10 shows the location of Black residents within the API based on 2010 Census Block data. Most Black residents within the API live in the Albina neighborhood located north of NE Broadway and east of I-5. Figure 10 also shows the locations of notable Black-owned businesses and civic organizations in the API. The Urban League of Portland, one of the Portland Black community's principal advocacy and service organizations, is located in the API at 10 N Russell, as is the Harriet Tubman Middle School located adjacent to I-5 at 2231 N Flint, which has a substantial enrollment of students of color.

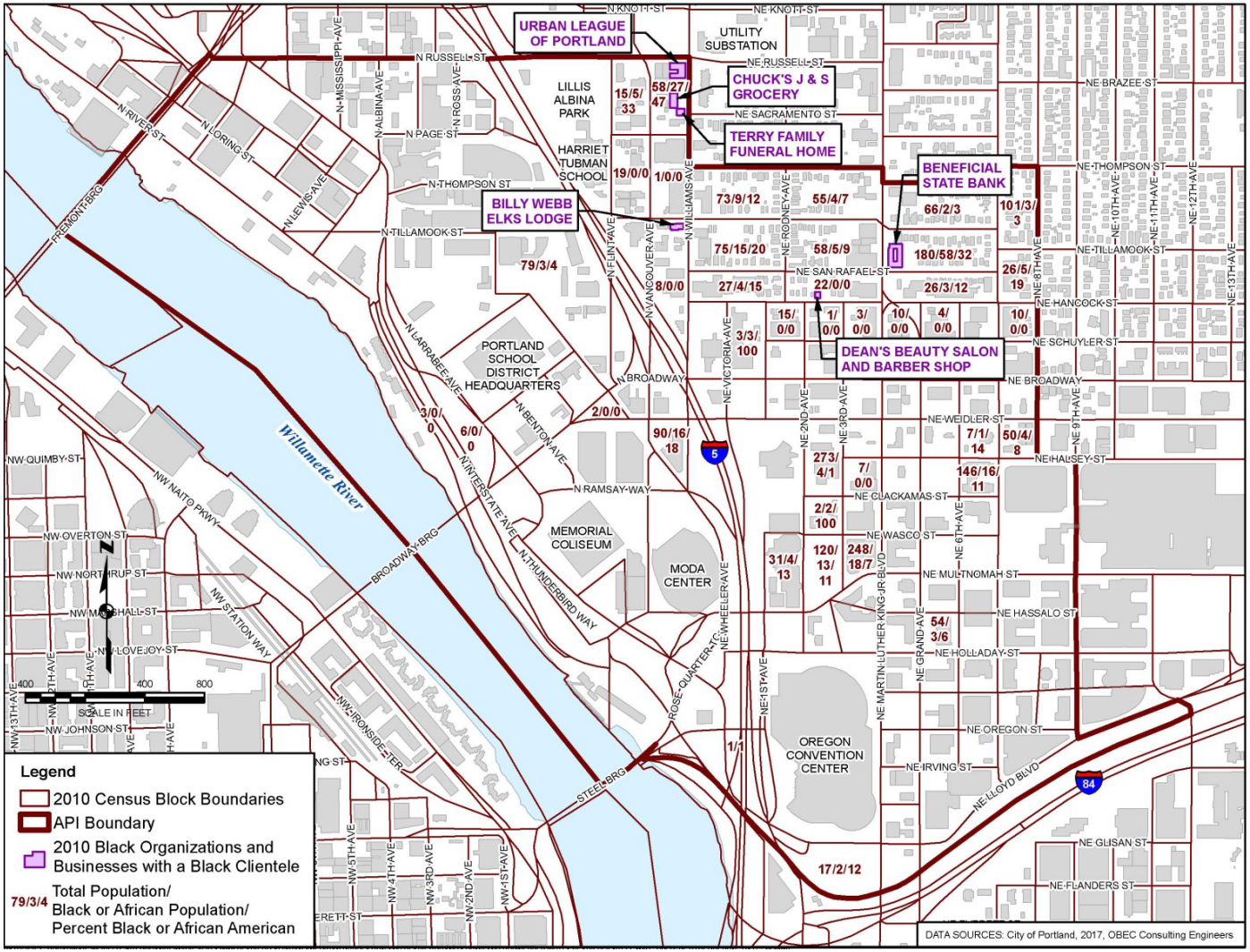
[7] For implementation of EJ policies, the FHWA definition of minorities includes "Blacks," defined as "a person having origins in any of the black racial groups of Africa" (FHWA 2012, p. 2). The U.S. Census uses "Black or African American." This report uses "Black."

Table 3. Population: Race and Hispanic/Latino

Population Characteristic	API 2010 Population/ Percentage	API 2015 Population/ Percentage	City of Portland 2010 Population/ Percentage	City of Portland 2015 Population/ Percentage	MSA 2010 Population/ Percentage	MSA 2015 Population/ Percentage
Total	1,842	2,099	583,776	612,206	2,170,801	2,320,323
White	1,421 / 77%	1,459 / 72%	444,216 / 76%	475,155 / 78%	1,793,290 / 83%	1,901,910 / 82%
Black/African American	170 / 9%	270 / 13%	36,695 / 6%	35,667 / 6%	61,304 / 3%	65,734 / 3%
American Indian/ Alaska Native	23 / 1%	8 / less than 1%	5,991 / 1%	4,523 / 1%	24,878 / 1%	18,056 / less than 1%
Asian	80 / 4%	121 / 6%	41,692 / 7%	46,389 / 8%	121,476 / 6%	141,079 / 6%
Native Hawaiian/ Pacific Islander	0 / 0%	0 / 0%	3,109 / 1%	3,322 / 1%	9,141 / less than 1%	12,282 / less than 1%
Some other race	8 / less than 1%	29 / 1%	24,793 / 4%	16,587 / 3%	79,411 / 4%	80,254 / 4%
Two or more races	140 /8%	162 / 8%	27,280 / 5%	30,563 / 5%	81,301 / 4%	101,008 / 4%
Not Hispanic/Latino	1,833 / 99%	2,011 / 96%	528,936 / 91%	552,536 / 90%	1,946,495 / 90%	2,057,476 / 89%
Hispanic/Latino	9 / less than 1%	88 / 4%	54,840 / 9%	59,670 / 10%	224,306 / 10%	262,847 / 11%

Notes: API = Area of Potential Impact; MSA = Metropolitan Statistical Area

Figure 10. Location of Black or African American Residents and Black Businesses and Organizations



Past public infrastructure projects in the Albina area, including the construction of I-5, Veterans Memorial Coliseum, and other road, street, and school projects, displaced businesses and hundreds of homes, many occupied by low-income residents, in this traditionally Black neighborhood (see Section 6.3.3 for additional information on the history of displacement of Black and low-income residents in the API). Current concentrations of racial minority residents in the API include the Urban Plaza Apartments at the corner of N/NE Russell and N Williams, the Albina Corner Apartments at the corner of NE Martin Luther King Jr. Boulevard and NE San Rafael Street, a duplex on N Kerby Avenue, and the Madrona Studios apartment building at 10 N Weidler, where more than half of the residents are racial minorities (Figure 11).

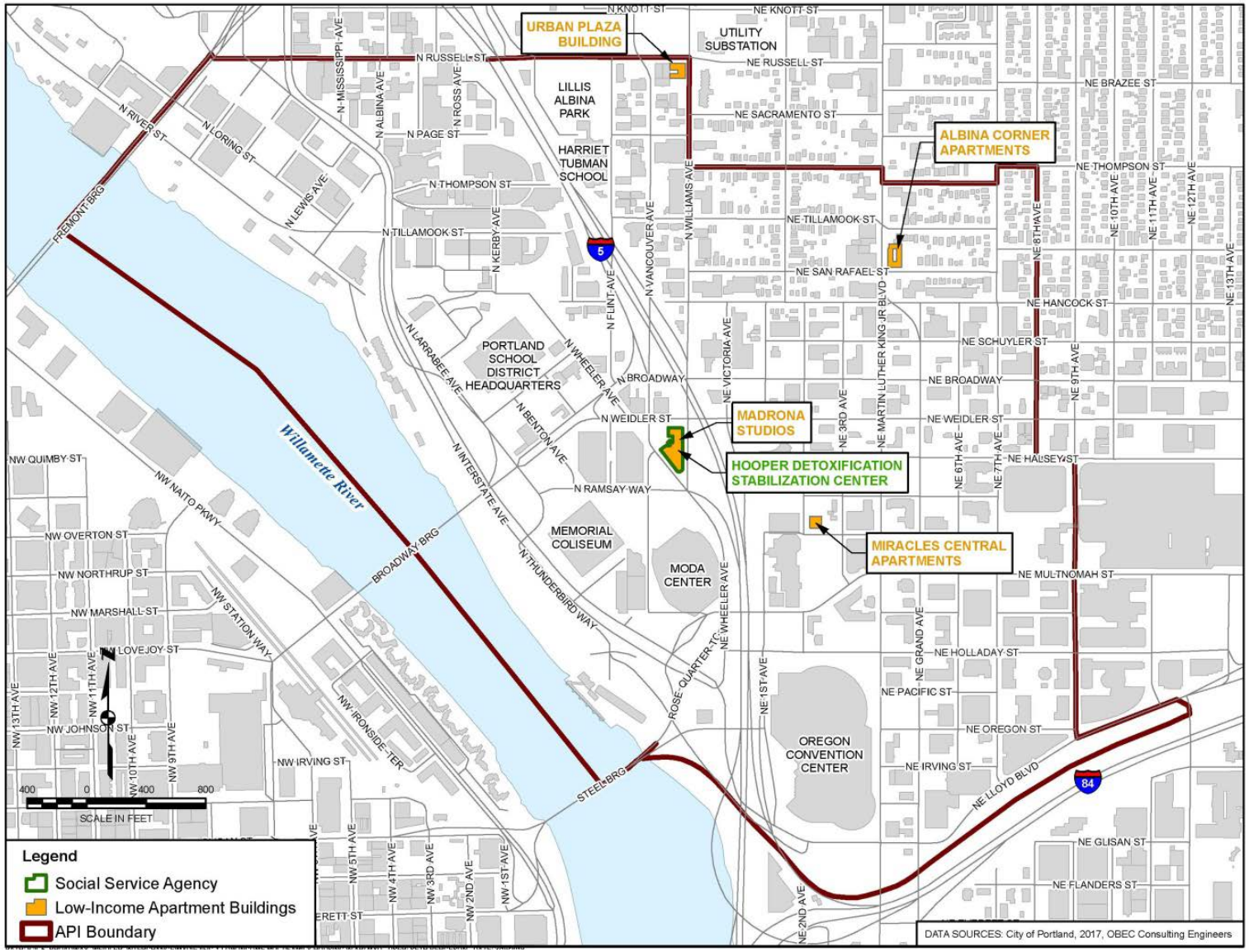
In addition to public infrastructure projects, the process of gentrification[8] has had a substantial impact on the community of Albina by displacing low-income Black residents (Bates 2013; Gibson 2007; Portland Housing Bureau n.d.-a). A new apartment building on N Williams at N/NE San Rafael (the Cadence Apartments) and recent infill housing on NE Hancock near its intersection with NE 3rd Avenue reflect a growing demand for housing in the neighborhood and suggests that the process of gentrification in the Albina neighborhood is continuing.

The City of Portland has initiated a number of plans and programs to address past displacement and ongoing gentrification in the Albina neighborhood, including the N/NE Neighborhood Housing Strategy, which plans to invest over $100 million over 10 years to build apartments, preserve buildings, help residents stay in their homes, and help others return to the neighborhoods of North and Northeast Portland. A central feature of the strategy is the N/NE Preference Policy, which gives priority for the City's affordable housing investments in the Interstate Corridor Urban Renewal Area (which includes portions of the API) to current and former residents of the N/NE Portland community (see Section 6.4 for additional information on this program) (Portland Housing Bureau n.d.-b).

The number of Hispanic or Latino residents in the API and their percentages compared to the City of Portland and the MSA are relatively small, and there are no known concentrations of Hispanic or Latino residents living at locations that could make them subject to disproportionate impacts from the Project. Similarly, the number of other racial minorities (i.e., Asian Americans, American Indians, Alaskan Natives, Native Hawaiians, and other Pacific Islanders) in the API and their percentages compared to the City of Portland and the MSA are relatively small, and there are no known concentrations of these populations living at locations that could make them subject to disproportionate impacts from the Project. For these reasons,

[8] Gentrification is the process of repairing and rebuilding homes and businesses in a deteriorating area (such as an urban neighborhood) accompanied by an influx of middle-class or affluent people and that often results in the displacement of earlier, usually poorer residents.

Figure 11. Low-Income Multifamily Housing in API



this report does not further address impacts on Hispanic or Latino residents or minorities other than the Black population.

5.2 Low-Income Populations

For analysis of EJ impacts, FHWA defines a person with low-income as "a person whose median household income is at or below the Department of Health and Human Services poverty guidelines" (FHWA 2012). Table 4 shows these guidelines for 2010 and 2015.

Table 4. U.S. Department of Health and Human Services Poverty Guidelines

Persons in Family	Household Income	
	2010	2015
1	$10,830	$11,770
2	$14,570	$15,930
3	$18,310	$20,090
4	$22,050	$24,250
5	$25,790	$28,410
6	$29,530	$32,570
7	$33,270	$36,730
8	$37,010	$40,890

Source: HHS (n.d.)

In 2015, the percentage of low-income households in the API with income below the poverty level was over 27 percent compared to 12 percent for the MSA. Table 5 shows the median and mean household income and percentage of households living below poverty level in 2010 and 2015 for the API, the City of Portland, and the MSA. In 2010, the number of households living below poverty level in the API was slightly less than for the City of Portland but greater than the MSA. The number of households living below poverty level in the API increased from 14 percent to 27 percent between 2010 and 2015. This increase in low-income residents in the API likely resulted in part from the opening in 2010 of the 176-unit Madrona Studios apartment building, where the occupants of at least 146 units are low-income.

Table 5. Household Income[1] and Poverty

	API 2010	API 2015	Portland 2010	Portland 2015	MSA 2010	MSA 2015
Median Household Income	$35,096	$38,450	$48,831	$55,003	$56,275	$60,286
Mean Household Income	$52,272	$46,764	$67,266	$76,685	$73,217	$79,370
Households below Poverty	14%	27%	16%	18%	11%	12%

Notes: API = Area of Potential Impact; MSA = Metropolitan Statistical Area

[1]Income expressed in current year dollars (2010 and 2015).

Figure 11 shows the location of four subsidized apartment buildings in the API: the Urban Plaza Apartments, Albina Corner Apartments, Miracle Central, and Madrona Studios apartments. Because of the income limits to be eligible to live in these apartment buildings, many of the residents are likely to meet the definition of low-income.

6 Environmental Consequences

The analysis in Chapter 6 summarizes the analyses in the technical reports listed below as it relates to minority and low-income populations.

- *Air Quality Technical Report* (ODOT 2019a)
- *Archaeological Resources Technical Report* (ODOT 2019b)
- *Hazardous Materials Technical Report* (ODOT 2019c)
- *Historic Resources Technical Report* (ODOT 2019d)
- *Land Use Technical Report* (ODOT 2019e)
- *Noise Study Technical Report* (ODOT 2019f)
- *Right of Way Technical Report* (ODOT 2019g)
- *Section 4(f) Technical Report* (ODOT 2019h)
- *Socioeconomics Technical Report* (ODOT 2019i)
- Transportation Technical Reports (*Transportation Access, Active Transportation, Safety, Traffic, and Transit* [ODOT 2019j, 2019k, 2019l, 2019m, 2019n])
- *Utilities Technical Report* (ODOT 2019o)
- *Water Resources Technical Report* (ODOT 2019p)

6.1 No-Build Alternative

As described in Section 2.1, the No-Build Alternative consists of existing conditions and other planned and funded transportation improvement projects that would be completed in and around the Project Area by 2045. Under the No-Build Alternative, construction impacts such as temporary air emissions and noise from construction equipment, traffic and transit disruptions, temporary closures of pedestrian and bicyclist routes, and potential disruptions in utility service that could potentially affect EJ populations in the API would not occur. Similarly, any potential long-term benefits to EJ populations from the Build Alternative, such as expanded travel choices and improved mobility and safety for all modes of transportation, enhanced east-west connectivity across I-5, and improved traffic operations and safety on the I-5 mainline and surface streets in the API, would not occur under the No-Build Alternative.

6.2 Build Alternative

Under the Build Alternative, the Project's proposed roadway, bicycle, and pedestrian improvements would be constructed, as described in Section 2.2.

6.2.1 Short-Term (Construction) Impacts

Potential short-term impacts from construction of the Build Alternative could include noise, exhaust, and dust emissions from various types of construction equipment; ground disturbance that could cause erosion, release of unidentified hazardous materials, or discovery of unknown cultural resources; traffic and transit disruptions that could inconvenience residents, workers, and shoppers; and potential interruptions in utility service. A summary of these potential temporary construction impacts by resources topic is presented below:

- **Air Quality:** As stated in the *Air Quality Technical Report* (ODOT 2019a), construction activities emit air pollutants, but emissions are of short duration and controlled by regulations and mandatory construction practices. Demolition, excavation, grading, and hauling generate dust and construction equipment emits carbon monoxide, oxides of nitrogen, volatile organic compounds, particulate matter, and toxic air contaminants. However, Oregon law requires measures such as the use of water or chemicals to control dust, the enclosure of stockpiled materials, the covering of open-bodied trucks when they are in motion during the transport of materials that are likely to become airborne, and the prompt removal from paved streets of earth or other material that may become airborne. In addition, ODOT standard construction specifications applicable to contractors include air pollution control measures that address vehicle and equipment idling, dirt and other materials tracked out of construction zones on vehicle tires, and fugitive dust. Temporary air quality impacts that would disproportionately affect minority and low-income populations in the API are not anticipated.
- **Historic and Archaeological Resources:** As the *Historic Resources Technical Report* (ODOT 2019d) states, the construction of the Build Alternative would not adversely affect any historic properties. As the *Archaeological Resources Technical Report* (ODOT 2019b) states, no archaeological resources have been documented within the Project Area but encountering archaeological resources during construction is possible. Both pre-construction work (e.g., geological testing) and construction work (e.g., demolition and excavation) would be monitored for the discovery of cultural materials.

  An Inadvertent Discovery Plan outlining protocol to be followed in the event of an unexpected discovery of archaeological materials or human remains would be prepared for the Project by ODOT (see the *Archaeological Resources Technical Report)*. According to the report, in the event of a discovery of an archaeological resource associated with Native Americans, a representative identified by the Commission of Indian Services would be given the opportunity to monitor archaeological field investigations and to consult with ODOT regarding appropriate archaeological treatment of the resource or recovered data from the resource, and, if applicable, any interpretive treatment of the resource. If an archaeological resource associated with the Black population is discovered, the same opportunities would be accorded representatives of the Black community.

With the implementation of these commitments by ODOT, no disproportionate impacts to minority or low-income populations are anticipated.

- **Hazardous Materials:** Exposure of members of the public to hazardous materials and unprotected exposure of workers during construction are unlikely. As stated in the *Hazardous Materials Technical Report* (ODOT 2019c), construction activities can result in the release of hazardous materials from spills and leaks from equipment during construction and the exposure of existing contamination that was previously not exposed, possibly exposing construction workers and public to potential health hazards. The technical report identifies measures that would be taken to avoid such exposure. These measures include hazardous waste studies of properties to be acquired, surface areas that construction would disrupt, and existing structures that would be demolished; contractor compliance with regulations regarding the transport, use, and storage of hazardous materials; contractor preparation and compliance with Project-specific pollution control plans; and contractor preparation and compliance with a contaminated media management plan. The latter would specify the correct handling and disposal of hazardous materials encountered during construction and include procedures to be used in the event of encountering previously unexpected hazardous materials. With proper use and storage of hazardous materials during construction, no disproportionate affects to minority and low-income populations are anticipated.
- **Noise:** The only dwelling units to be impacted by temporary construction noise, other than those in apartment buildings occupied by minority residents, are in a duplex in the northern portion of the Project Area. As the *Noise Study Technical Report* (ODOT 2019f) states, construction noise can be disturbing but drops off with distance and is temporary. This duplex is in the vicinity of N Kerby and is the only residential structure, other than apartment buildings, close enough to where construction would occur for construction noise levels to be high (i.e., up to 100 A-weighted decibels [dBA]) for certain types of equipment operating within 50 feet of a receptor). Existing peak-hour ambient noise levels at the duplex are currently 73 dBA equivalent noise level (L_{eq}), which is higher than the 65 dBA L_{eq} standard for residential property described below in Section 6.2.2.5. Nevertheless, ODOT would implement noise abatement measures as necessary to ensure that residents in the duplex are not disproportionately affected by short-term construction noise.

  Construction impacts on the residents of apartment buildings near where construction would occur would not disproportionately impact low-income or minority residents. Approximately one-half of the units in the apartment buildings close enough to Project construction activity to experience high noise levels are occupied by low-income tenants. As stated previously, the Madrona Studios apartment building has 176 units of which at least 146 units are occupied by low-income residents. All of the other apartment buildings are market rate, are unlikely to have low-income tenants, and based on the Census statistics, likely have low percentages of minority tenants. These buildings are the 166-unit

Cadence Apartments between N Vancouver and Williams at San Rafael, the 56-unit Paramount Apartments on N Flint near Broadway, the 24-unit Milano Apartments at the corner of NE First and Multnomah, and the 26-unit Serene Court Apartments adjacent to the Milano Apartments on NE 1st Avenue. Existing exterior ambient noise levels are high at the Cadence Apartments (72 dBA L_{eq}) and the Milano and Serene Court Apartments (75 dBA L_{eq}) but much lower at the Madrona Studios (49 dBA L_{eq}). Indoor noise levels at all of the apartment buildings would be lower than exterior levels. Windows at the Madrona Studios do not open and are double-paned. Windows at the Milano Apartments and the Cadence Apartments are likely to be at least double-paned. The Paramount and Serene Court apartment buildings are older construction, and the windows open and may provide less noise reduction. With implementation of proper mitigation measures to address noise generated during construction, disproportionate impacts on minority and low-income populations are not anticipated.

- **Section 4(f) Properties:** As stated in the *Section 4(f) Technical Report* (ODOT 2019h), Project construction may necessitate periodic, temporary occupation and closure of segments of the Vera Katz Eastbank Esplanade, which is also the Willamette River Greenway Trail in the Project Area. The Project would create temporary detours for users to allow for the continued continuity of the trail during construction. Project construction would result in construction noise on the Eastbank Esplanade and at Lillis Albina Park and Portland Peace Memorial Park. Of the Section 4(f) properties impacted by Project construction, only Lillis Albina Park holds special significance for the Black community. ODOT specifications and best management practices would be followed to help minimize high noise levels during construction. Temporary impacts to Vera Katz Eastbank Esplanade and Lillis Albina Park during construction are not expected to result in disproportionate impacts on minority and low-income populations.
- **Socioeconomics:** As stated in the *Socioeconomics Technical Report* (ODOT 2019i), Project construction would have temporary adverse impacts (such as noise and utilities impacts), delays on I-5 and the local transportation system, diversion of traffic, and potential limitations of access to local land uses. In turn, these effects would have temporary adverse effects on neighborhoods, public services, and businesses in the API. The impact on the businesses that are Black-owned and/or cater to a primarily Black clientele would be limited because of their distance from where construction would occur. Therefore, disproportionate adverse impacts on minority and low-income populations, including Black-owned or businesses that cater to a primarily Black clientele, are not anticipated.

  The Build Alternative would have notable beneficial socio-economic impacts related to increased construction employment and spending on procurement of construction materials and equipment. For example, a substantial portion of the funds to design and construct the Build Alternative would be directed to qualified DBEs, which include local small and minority-owned businesses. ODOT is

currently pursuing a variety of innovative ways to engage certified DBE firms in the Project, including the following:

  - Develop and implement a tailored DBE program establishing hard goals in both design and construction related to contract amount and disciplines of work.
  - Increase and improve the capacity and capabilities of certified DBEs that are in a position to further their expertise, which is required to pursue and be successful with Project contracts and subcontracts.
  - Increase and improve the capacity and capability to provide on-the-job apprenticeships and workforce training in the construction phase of the Project.
  - Identify areas and opportunities for on-the-job workforce training during the construction phase of the Project for women and minorities to help them develop skills in the building trades.

- **Transportation:** As described in the various transportation technical reports prepared for the Project (ODOT 2019j-n), all transportation modes (pedestrian, bicycle, motor vehicle, streetcar, and bus) would experience disruption during construction and would require a sequence of temporary accommodations. These impacts and disruptions would occur in phases over a period of up to 4 years. Highway lane closures during late nights and weekends are likely on I-5 during removal and construction of the overcrossing structures including potential closure of all directional lanes. Bus routes may be temporarily rerouted for the duration of construction to avoid a series of temporary route changes that could be confusing for riders. Adjustments to streetcar service would be needed to maintain reliability and comparable transit connections during construction. Because EJ populations are often transit dependent, these groups may experience a disproportionate impact due to temporary changes to bus routes. Similarly, temporary closures of key walking and bicycling routes may disproportionately inconvenience EJ populations who rely on these modes to commute to work and access services in the API. These impacts would be minimized through construction phasing, temporary alternative routes, traffic control plans, and pedestrian detours and signage.
- **Utilities:** As stated in the *Utilities Technical Report* (ODOT 2019o), while construction of the Build Alternative would necessitate the relocation of many utility facilities, including electric power, water, sewer, phone, and cable facilities, standard project design and construction procedures are expected to result in no or minimal interruptions to service. Therefore, disproportionate impacts to minority and low-income populations from utility relocations or service interruptions in the API are not anticipated.
- **Water Resources:** As stated in the *Water Resources Technical Report* (ODOT 2019p), construction activities, including vegetation removal, excavation, and use of staging areas have the potential to increase sediment loads in receiving

waters, adversely impacting water quality. Contractor compliance with ODOT construction specifications and City of Portland erosion control requirements can be expected to avoid most of this type of impact. No disproportionate impacts on minority and low-income populations from potential impacts to water resources are anticipated.

6.2.2 Long-Term and Operational Impacts

The Build Alternative would potentially have both beneficial and adverse impacts on the minority and low-income community. After construction, long-term changes would also affect the community as described below.

6.2.2.1 Air Quality

As stated in the *Air Quality Technical Report* (ODOT 2019a), the Build Alternative would not adversely impact air quality. The results of emissions modeling of traffic operations were found to be virtually identical between the No-Build and Build Alternatives, with the Build Alternative showing a slight improvement in terms of reduced emissions of mobile source air toxics (approximately 3 percent lower) compared to the No-Build Alternative. Projections of toxic pollutants affecting Harriet Tubman Middle School, which has a substantial number of students of color and a long history and identity important to residents in the Albina neighborhood, yielded similar results. The analysis concluded that the Build Alternative would not worsen in air quality conditions at the school relative to the No-Build Alternative.

Future air pollutant emissions for both the No-Build and Build Alternative are projected to be substantially lower than existing conditions. This follows the trend of reductions in pollutant concentrations since the 1970s that has resulted from compliance with emission standards. These results were found for both carbon monoxide and toxic pollutants. Therefore, no long-term air quality impacts that could disproportionately affect minority and low-income populations in the API are anticipated.

6.2.2.2 Cultural Resources

As stated in the *Archaeological Resources Technical Report* (ODOT 2019b), no previously documented archaeological resources are located within the Project Area, and long-term and operational impacts to archaeological resources are unlikely. However, the Project would have minor direct and indirect impacts on several historic properties (*see Historic Resources Technical Report* (ODOT 2019d). Among the impacted properties are five historic properties that would experience slightly increased peak-hour ambient noise levels, two of which have ties to the area's African American history. The first of the two properties is the Mt. Olivet Baptist Church, located on NE 1st between NE Broadway and NE Schuyler Street. The congregation has relocated but rents the building to another church for Sunday services. The church may also experience impacts from construction-related vibration, but these effects would be avoided and/or minimized through a construction vibration monitoring program implemented for the property. The second

of the two properties is known as the Beatrice Mott Reed House and is at the intersection of N Vancouver and Tillamook. It is the single-family residence referred to in the discussion of noise impacts in Section 6.2.2.5. While no increase in noise is anticipated at the Mt. Olivet Baptist Church under the Build Alternative, future noise levels at the Beatrice Mott Reed House would increase from the current 64 dBA to 67 dBA, which would exceed the ODOT Noise Abatement Approach Criteria (NAAC) of 65 dBA. A noise analysis showed that a sound wall erected along I-5 would reduce future noise levels at the Beatrice Mott Reed House to 64 dBA, but the wall would not achieve minimum noise reduction goals and would therefore not be feasible (ODOT 2019c). Both of these properties have been recommended as eligible for the National Register of Historic Places. The minor direct and indirect impacts on these properties would not represent a disproportionate affect to minority or low-income populations.

6.2.2.3 Hazardous Materials

The Build Alternative would have beneficial long-term and operational impacts for three reasons. First, the rigorous requirements for hazardous waste site identification and remediation that would apply to Project property acquisition would result in the clean-up of existing contaminated sites. Second, as the *Hazardous Materials Technical Report* (ODOT 2019c) states, the improved traffic safety resulting from the Build Alternative would likely reduce spills from motor vehicle crashes, the source of many existing hazardous waste sites in the area. Third, the redevelopment enabled and fostered by the Build Alternative would result in the remediation of additional hazardous waste sites in the area. The beneficial long-term operational impacts associated with the clean-up of existing contaminated sites would benefit all residents in the API, including minority and low-income populations.

6.2.2.4 Land Use

As the *Land Use Technical Report* (ODOT 2019e) states, the Build Alternative supports the realization of the City of Portland's vision for land use in the Central City and immediate area of the Project, complies with all applicable state planning laws and regional and local plans, and would therefore not have adverse land use impacts that could potentially disproportionately affect minority or low-income populations.

6.2.2.5 Noise

The long-term noise impacts of the Build Alternative at residences are projected to be small and not disproportionately affect minority or low-income residents, as follows:

- ODOT considers a project to substantially increase noise levels when it increases exterior peak-hour ambient noise levels by 10 dBA over existing levels. It considers a project to have a noise impact at residences when it causes exterior peak-hour ambient noise levels to meet or exceed 65 dBA L_{eq}.
- The Build Alternative is projected to cause future (2045) exterior peak-hour noise levels to meet or exceed the 65 dBA L_{eq} standard at one single-family residence.

The forecasted noise level is 67 dBA L_{eq} and the increase would be only 3 dBA over the existing level (64 dBA) and 3 dBA over the forecasted future No-Build Alternative level (also 64 dBA). The single-family residence is at the intersection of N Vancouver and Tillamook. A member of the family that lives in the house may qualify as Hispanic or Latino.

- The Build Alternative is also projected to result in noise levels of 65 dBA L_{eq} or higher thereby meeting or exceeding ODOT NAAC at some of the units in the Calaroga Terrace Senior Living building at NE 2nd Avenue and Clackamas. It would also increase by 1 dBA noise levels at other units where existing noise levels are as high as 67 dBA L_{eq}. At all the affected Calaroga Terrace units, the increase in future exterior ambient noise level under the Build Alternative over the No-Build Alternative level would be no more than 1 dBA. Based on 2010 Census data, a small percentage of the affected residents is likely to be racial or ethnic minorities (U.S. Bureau of the Census n.d.-a).
- Exterior ambient noise levels would be no more than 1 dBA higher under the Build Alternative compared to the No-Build Alternative at any other residence.
- The Build Alternative would not alter ambient noise levels at the duplex in the vicinity of N Kerby. The forecasted future peak-hour exterior ambient noise level is 73 dBA L_{eq} at the duplex, which is the same as the existing level and forecasted future level under the No-Build Alternative.
- Forecasted future noise levels under the Build Alternative at the Madrona Studios, where most residents are low-income, are 46 to 51 dBA L_{eq}; in one case, levels are 3 dBA above both the existing level and the forecasted future level under the No-Build Alternative.

Under the Build Alternative future noise levels on the interior of Harriet Tubman Middle School would increase from the current level of 49 dBA to 50 dBA, which is the Oregon NAAC threshold for requiring noise abatement. If a 16-foot high noise wall were installed between I-5 and the school, as recommended in the noise analysis conducted for the Project, noise levels on the interior of the school would decrease to 48 dBA, which would be 1 dBA below the Oregon NAAC. This would be a beneficial reduction in noise compared to existing noise levels at the school.

6.2.2.6 Right of Way

Right of way acquisition for the Build Alternative would have the following approximate impacts: 3.5 to 4.0 acres in fee simple (permanent acquisition); 0.5 to 1.5 acres of permanent easement for surface and/or subsurface uses (primarily related to retaining walls and maintenance access); and approximately 1.5 to 2.5 acres of temporary easement for construction work areas, driveway reconnections, and staging (ODOT 2019g). The Build Alternative would acquire property from 23 privately owned parcels and displace 4 businesses that are close to the Broadway/Weidler interchange. While the owners of the properties and businesses have not been interviewed, none are known to be minorities, and the businesses do not primarily cater to minority or low-income persons.

6.2.2.7 Section 4(f) Properties

The Build Alternative would require the acquisition of a permanent surface easement across a short segment of the Vera Katz Eastbank Esplanade. Periodic closures and detours may be required during facility operation, but they are expected to be short in duration. According to the *Noise Study Technical Report*, the Build Alternative would not alter ambient noise levels at the Vera Katz Eastbank Esplanade, the Willamette River Greenway Trail, the Portland Peace Memorial Park, or the Lillis Albina Park, which holds special significance for the Black community because of its location. Minor periodic impacts to Section 4(f) properties during Project operations would not result in disproportionate impacts to minority or low-income populations.

6.2.2.8 Socioeconomics

The Build Alternative would have long-term socio-economic benefits by supporting the movement of goods and people and economic development goals of adopted plans and policies. It would enhance connectivity and community cohesion between areas east and west of I-5 by providing new multimodal connections in the form of the Hancock-Dixon highway cover and Clackamas bicycle/pedestrian overcrossing of I-5. The Build Alternative would revise localized travel patterns in the Broadway/Weidler interchange area and provide new and enhanced active transportation facilities. The Build Alternative would also have beneficial urban design effects in the API by reducing the physical and visual barrier I-5 presents to the surrounding area by creating new highway covers over I-5, including the potential for public open space.

These improvements would be a contributing factor to ongoing regional trends that make the areas within the API located north of Broadway and east of I-5 attractive for redevelopment. Because of the economics of housing development (except when residential redevelopment takes the form of subsidized, low-income housing) it is likely that if the area redevelops, rents and sale prices would be higher than the rents and sale prices of the replaced housing. Increased cost of living in the Project Area could result in displacement of minority and low-income residents from the API north of Broadway and east of I-5 due to the process of gentrification.

Table 5 indicates that a substantial percentage of residents living in the API are low-income. Low-income residents live in the Urban Plaza Apartments and Albina Corner Apartments, both of which specifically serve low-income households. These residents would continue to be buffered from the displacement effects of gentrification. The effect of the Project on low-income residents who do not live in these apartments would be small because the effect of the Project would be low relative to other market factors driving gentrification in the API north of Broadway and east of I-5, including the recent rapid growth of Portland's population, the neighborhood's central location, and its high level of transportation access.

According to Census Block estimates, 143 Black residents lived in this part of the API in 2010, which was 17 percent of the neighborhood's total population. It is likely that some members of this population are low-income and potentially vulnerable to

displacement by gentrification. However, as with other low-income persons, Black residents who live in apartments serving specifically low-income residents would be buffered from displacement. As with other low-income residents, the displacement effect of the Project on low-income Black residents who do not live in apartments serving specifically low-income residents would likely be small relative to other market factors driving gentrification in the API.

Since 2014, the City has been actively addressing the effects of past public infrastructure and urban renewal projects that displaced large numbers of Black residents from areas in and around the API. For example, as part of the City's N/NE Neighborhood Housing Strategy, the City developed the N/NE Preference Policy, which funds the development of affordable housing, both rental and owner occupied, and gives preference for access to the housing to persons who can document that they are current or former residents of areas "within N/NE Portland that were subject to high levels of urban renewal" or their descendants (Portland Housing Bureau n.d.-b). These include areas within the API where displacements resulted from past actions.

As described in the *Land Use Technical Report* (ODOT 2019c), the Build Alternative is consistent with planned land use in the API and would support growth consistent with adopted plans and policies, including the City's N/NE Neighborhood Housing Strategy and Preference Policy.

Therefore, the Build Alternative would not be expected to have long-term adverse socioeconomic impacts.

6.2.2.9 Transportation

As stated in the *Traffic Technical Report* (ODOT 2019m), the Build Alternative would improve highway traffic operations in both the morning and evening peak periods. During the morning peak hour, intersection performance on surface streets in the API would be acceptable with most intersections operating with similar performances under both the No-Build and Build Alternatives. During the evening peak hour, local intersections would generally operate better compared to the No-Build Alternative, with all intersections operating at acceptable standards. Streetcar travel times along N Broadway and N/NE Weidler Street would be improved slightly with the Build Alternative. During the morning and evening peak hours, the eastbound and westbound streetcar travel times would be reduced slightly.

Buses and streetcars would continue to operate in mixed traffic and transit operations impacts (e.g., corridor travel times) would be similar to those experienced by motor vehicles. Transit operations along the Broadway/Weidler couplet could be impacted if motor vehicle capacity is reduced to make way for protected bike lanes between the existing curbs. However, signal timing and stop spacing adjustments could potentially minimize or offset these impacts. Bicycle movements on local streets in the API are expected to operate with acceptable delay at signalized intersections and rider safety and comfort would be improved. No direct light rail impacts are anticipated.

Planned increases in transit service within and near the API and the addition of transit boarding islands on N/NE Broadway, N/NE Weidler, and N/NE Multnomah could increase ridership on Lines 8-Jackson Park/NE 15th Avenue, 17-Holgate/Broadway, and 77-Broadway/Halsey through the provision of a more accessible, comfortable, and attractive transit stop environment, thereby benefitting EJ populations. Similarly, the addition of lids, protected bike lanes and pedestrian crossing enhancements on N/NE Broadway and N/NE Weidler would benefit EJ populations by improving connectivity, increasing safety for those who depend on walking and bicycling to commute to work, and access services in the API. The removal of the N Flint structure over I-5 would reduce traffic on N Flint adjacent to Harriet Tubman Middle School which would improve the safety of students and faculty walking and biking to and from school.

6.2.2.10 Utilities

As stated in the *Utilities Technical Report* (ODOT 2019o), the Build Alternative is not expected to reduce the reliability of utility service in the area. NW Natural, the utility that provides natural gas in the area, does not plan to replace the distribution main that crosses I-5 on the Flint overcrossing, which the Project would remove. Instead, NW Natural plans to reinforce its system redundancy by improvements to its distribution network on local streets. All other utilities are expected to be unaffected by Project operations over the long term. Therefore, disproportionate impacts to minority and low-income populations in terms of long term reliability are not anticipated.

6.2.2.11 Water Resources

As stated in the *Water Resources Technical Report* (ODOT 2019p), because of the obligation of the Build Alternative to comply with ODOT and City of Portland standards for the treatment of stormwater, the Build Alternative would reduce pollutants levels in stormwater in the Project Area, which would benefit all residents in the API including minority and low-income populations.

6.3 Cumulative Effects

Cumulative impacts are those environmental effects that result from the incremental effect of the proposed action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes those other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 Code of Federal Regulations 1508.7).

The analysis of cumulative impacts involves a series of steps conducted in the following order:

- Identify the resource topics that could potentially experience direct or indirect impacts from construction and operation of the proposed project.

- Define the geographic area (spatial boundary) within which cumulative impacts will be assessed, as well as the timeframe (temporal boundary) over which other past, present, and reasonably foreseeable future actions will be considered.
- Describe the current status or condition of the resource being analyzed, as well as its historical condition (prior to any notable change) and indicate whether the status or condition of the resource is improving, stable, or in decline.
- Identify other actions or projects that are reasonably likely to occur within the area of potential impact during the established timeframe and assess whether they could beneficially or adversely affect the resource being analyzed.
- Describe the combined effect on the resource being analyzed when the direct and indirect impacts of the project are combined with the impacts of other actions or projects assumed to occur within the same geographic area during the established time frame.

6.3.1 Spatial and Temporal Boundaries

The geographic area used for the cumulative impact analysis is the same as the API described in Section 4.1 and shown on Figure 9. The time frame for the cumulative impact analysis extends from the beginning of large-scale urban development in and around the Project Area to 2045, the horizon year for the analysis of transportation system changes.

6.3.2 Past, Present, and Reasonably Foreseeable Future Actions

The past, present, and reasonably foreseeable future actions that were considered in assessing cumulative effects are as follows.

6.3.2.1 Past Actions

Past actions include the following:

- Neighborhood and community development
  - Historical development of the Portland area and accompanying changes in land use
  - Development of the local transportation system (including roads, bicycle and pedestrian facilities, and bus transit)
  - Utilities (water, sewer, electric, and telecommunications)
  - Parks, trails, bikeways
- Commercial and residential development in and around the Project Area
  - Veterans Memorial Coliseum (1960)
  - Lloyd Center (1960)
  - Emanuel Hospital (1970)

  - Oregon Convention Center (1990)
  - Rose Garden (1995)
- Regional transportation system development
  - Marine terminal facilities on the Willamette River
    - Port of Portland (1892)
    - Commission of Public Docks (1910)
    - Port of Portland (1970; consolidation of Port of Portland and Commission of Public Docks)
  - Freight rail lines (late 1800s and early 1900s)
  - Highways
    - I-84 (1963)
    - I-5 (1966)
    - I-405 (1973)
  - Rail transit system
    - MAX light rail (1986)
    - Portland Streetcar (2001)

6.3.2.2 Present Actions

Present actions include the ongoing operation and maintenance of existing infrastructure and land uses, including the following:

- Ongoing safety improvements for bicycles and pedestrians
- Local and regional transportation system maintenance
- Utility maintenance

6.3.2.3 Reasonably Foreseeable Future Actions

Reasonably foreseeable future actions were identified collaboratively with the City of Portland and consist of the following:

- Redevelopment of existing urban areas in the Project Area and vicinity
- Ongoing maintenance and development of existing urban infrastructure in the Project Area and vicinity

These actions include private redevelopment, public development, and infrastructure projects, as well as combined public/private redevelopments. Specific projects and the plans identifying them are described in detail in Appendix A. Given the highly developed nature of the Project Area and vicinity, the reasonably foreseeable future actions are not expected to substantially change the types or intensities of existing land uses.

6.3.3 Results of Cumulative Impact Analysis

The API has a long history of major public infrastructure projects that displaced Black and low-income residents. The archaeological resources and historic resources technical reports (ODOT 2019b, 2019d) contain detailed histories that explain what led to most Black residents of the metropolitan area living in the Albina area in the post-World War II period. The API includes the Lower Albina neighborhood (Figure 12). Starting in the late 1940s, the sequence of public infrastructure projects listed in Table 6 gradually displaced nearly all the residents of Lower Albina from I-5 west. In addition to the projects listed in Table 6, property acquisition in 1971 and 1972 for the expansion of Emanuel Hospital (now Legacy Emanuel Medical Center) immediately north of the API removed 188 properties, mostly residences (Legacy Emanuel Medical Center n.d.). In all, public infrastructure projects displaced more than 900 dwelling units in and near the API from the 1940s to the 1970s, mostly single-family homes.

Figure 12. Western Portion of Area of Potential Impact in 1948

Table 6. Estimated Residential Displacements from Major Public Infrastructure Projects in the API

Project	Dwelling Units[1]
Widening of Interstate Avenue and construction of ramps connecting Interstate Avenue with the Broadway and Steel Bridges, which began in the late 1940s	80
Construction of the Veterans Memorial Coliseum in 1959 - 1960	235
Construction of I-5 in the early 1960s	275
Construction of the Fremont Bridge and ramps connecting it to I-5 and the local street network in the early 1970s	95
Construction of the Blanchard Education Service Center, the administration and central support services building for Portland Public Schools, in 1978	65
Construction of Harriet Tubman School	15
Total	765

Source: OBEC Consulting Engineers

Notes: API = Area of Potential Impact; I-5 = Interstate 5

[1]The numbers listed are from counts conducted for this report using computer technology from Environmental Data Resources, Inc. The technology enables superimposing present-day maps on Sanborn Fire Insurance Maps drawn before the infrastructure projects were built. Sanborn Fire Insurance Maps contain the footprints of dwellings and other buildings, with use labels. The count for widening Interstate Avenue used 1924 Sanborn Maps; all other counts used 1950 Sanborn Maps. The counts are rounded to the nearest five for two reasons: 1) whether a listed infrastructure project displaced a structure was clear in most, but not every, instance; and, 2) the number of dwelling units in some multifamily structures is estimated because the unit counts are unclear or lacking in some instances.

Figure 13 shows the widened Interstate Avenue and ramps connecting it to the Broadway and Steel Bridges. Figure 14 shows the blocks cleared for the Veterans Memorial Coliseum. The projects in Table 6 also indirectly led to the displacement of an undetermined number of additional residences. For example, the widening of Interstate Avenue isolated the homes in the strip of land between Interstate Avenue and the railroad tracks and river shown on Figure 14. The Veterans Memorial Coliseum created market demand for nearby commercial uses, which led to the development of a motel on the strip of land. (The motel was later demolished, and the site is now vacant.)

Similarly, the construction of the Fremont Bridge and its interchange with I-5 made the environment inhospitable to the remaining residential uses and attractive for industrial uses. Industrial uses in the area now include extensive operations and maintenance buildings and yards for City of Portland public works bureaus, as well as privately owned industrial uses. Residences in the API west of I-5 are now limited to two apartment buildings near the interchange and several apartments in a small building in the northwest corner of the API.

Figure 13. Interstate Avenue Widening and Bridge Access Ramps

Figure 14. Veterans Memorial Coliseum

Most of the displaced households were Black, and most were low-income. A survey of households displaced by I-5 construction through the API found that 55 percent of the displaced households and 70 percent of the persons displaced were "non-white" in the language of the survey report (*East Bank Freeway Occupancy Survey* 1959). The survey report states: "Reported incomes were predominantly low. Slightly over half of each racial group reporting had incomes under $3,000 a year; 73% of all these households (75% of the white households, 73.3% of the non-white) had annual incomes under $4,000. Only 10.7% of the white households and 16.3% of the non-white households who reported their incomes received $5,000 or over per year" (*East Bank Freeway Occupancy Survey* 1959). The poverty threshold in 1959 for a four-person household was $2,973 (U.S. Bureau of the Census n.d.-b). The socioeconomic profile of the populations displaced by the other projects in the list above was likely similar.

As described in Section 6.2, the contribution of the Project to displacement effects from past actions would likely be small relative to the other factors that may cause displacement of EJ populations in the API. The Build Alternative is consistent with planned land use and would support growth consistent with adopted plans and policies (see the *Land Use Technical Report* [ODOT 2019c] for additional information on the Build Alternative's consistency with adopted plans and policies). Therefore, the Build Alternative would not have a long-term adverse effect on population, demographics, housing or income, beyond what is already planned for in the API.

It should be noted that the Build Alternative was conceived and developed with a deep sensitivity to the detrimental effects past public infrastructure projects have had on Black residents in the API. For example, the proposed concept for the Build Alternative was developed concurrently with City of Portland's Central City 2035

N/NE Quadrant Plan (City of Portland et al. 2012). The N/NE Quadrant Plan sets the vision for future land use, urban design, transportation, public infrastructure, and development entitlements in the Lloyd and Lower Albina subdistricts of the Central City. As stated in the plan, "The goals, policies and actions included in the N/NE Quadrant Plan are in many ways intended to help repair a neighborhood that has been done significant harm by large public projects of the past." Neighborhood connectivity, housing production and preservation of historic and cultural resources are key areas in which the plan attempts to correct damage done in the past. Policies are included that attempt to discourage displacement, while allowing for significant new development, including the Build Alternative. This approach is intended to accommodate substantial new development with access to transit, jobs and other Central City amenities with very limited displacement (City of Portland et al. 2012).

Overall, the Build Alternative is consistent with planned land use and would support growth in the API consistent with the vision in the N/NE Quadrant Plan (see the *Land Use Technical Report* [ODOT 2019c] for additional information on the Build Alternative's consistency with and support of adopted plans and policies).

When combined with other reasonably foreseeable future actions, the Build Alternative would have a net beneficial effect on EJ populations by improving access, mobility, safety, and neighborhood connectivity within the API.

6.4 Conclusion/Environmental Justice Finding

This section provides a summary and conclusion of the Project's likelihood to result in disproportionately high and adverse impacts as described in Executive Order 12898, consistent with the December 16, 2011, FHWA guidance memorandum on EJ and NEPA, and other U.S. Department of Transportation and FHWA Orders.

Based on the analysis in this report, the Project could cause small, short-term, disproportionate adverse impacts to minority and low-income populations. These small disproportionate impacts may result from the temporary relocation of bus routes and adjustments to streetcar service in the API during the multi-year construction period and temporary closures of key walking and bicycling routes. The Project also has the potential to marginally accelerate the ongoing displacement of Black and low-income residents from the neighborhood north of Broadway and east of I-5 as a result of gentrification. However, this effect would be small compared to other factors that are driving gentrification in the area, including rapid growth in the City of Portland, the neighborhood's central location, and its high level of transportation access.

In determining whether an effect on EJ populations is disproportionately high and adverse, FHWA may consider planned mitigation measures and offsetting benefits to the affected minority and low-income populations. As described previously, the potential benefits the Build Alternative would provide to EJ populations in the API include enhanced east-west connectivity across I-5, the creation of new pedestrian and bicycle facilities, improved safety measures that would benefit all travel modes, and the creation of new public open space on the highway covers over I-5. Possible

mitigation measures to address the small disproportionate impacts that could temporarily affect EJ populations during the construction phase of the Project include the following:

- Working with the community to identify preferred alternative bus routes and streetcar schedules and possibly an increase in the frequency of service on the affected bus routes to maintain access to employment and services for EJ populations in the API.
- Providing safe alternative walking and bicycling routes, and if necessary, free shuttle service through areas of construction.

The following questions derived from several EJ guidance and reference documents were also considered during the EJ evaluation (Table 7). While there are expected to be some small EJ impacts during construction, those impacts would be temporary, could be addressed by the mitigation measures described above, and would end once construction is completed.

Table 7. Summary of Potential Project Impacts to Environmental Justice

Additional EJ Analysis Questions	Answer
Would the Project result in disproportionately high and adverse impacts?	No
Does the Project affect a resource that is especially important to a minority or low-income population?	No
Would the Project result in disproportionately high and adverse impacts that would be predominately borne by a minority or low-income population?	No
Would the Project result in disproportionately high and adverse impacts on a minority or low-income population that would be appreciably more severe or greater in magnitude than the impact that would be suffered by the non-minority or low-income population?	No
Does the Project propose mitigation measures?	Yes
Are there potential benefits that would accrue to minority or low-income populations as a result of the proposed Project?	Yes

Considering the mitigation measures described above and the fact that the Project would provide notable beneficial effects for EJ populations living and working in the API in terms of improved access to employment and services (for all modes) and enhanced public safety, it has been determined that the Project would not cause disproportionate high and adverse effects on any minority or low-income populations in accordance with the provisions of Executive Order 12898 and FHWA Order 6640.23A. No further EJ analysis is required.

7 Avoidance, Minimization, and Mitigation Measures

While the unavoidable adverse impacts to EJ populations would be small and not rise to the level of "disproportionately high and adverse effects" as defined in Executive Order 12898, ODOT has proposed the following mitigation measures to address past, present, and future impacts to EJ populations:

- ODOT would coordinate with the City of Portland and TriMet to monitor the effects of relocated bus routes on EJ populations during the anticipated 4-year construction period. If it is determined that EJ populations are experiencing disproportionate impacts, ODOT, the City, and TriMet would coordinate with the community to identify alternative bus routes to better serve EJ populations, including possibly an increase in the frequency of service on those routes.
- ODOT would coordinate with the City of Portland and members of the community to identify alternative routes for pedestrians and bicyclists to use during periods when key walking and bicycling routes are closed during construction.
- ODOT would monitor the effects the temporary closure of key walking and bicycling routes may have on EJ populations. If it is determined that disproportionate impacts to EJ populations are occurring, ODOT would identify additional reasonable measures to reduce those impacts, including providing free shuttle service through areas of construction.
- ODOT would provide substantial opportunities for participation in design and construction of the Build Alternative to qualified DBE firms, including local small and minority-owned businesses. ODOT would provide the following assistance to assure qualified DBE firms have increased opportunities to participate in future design and construction efforts:
    - **Earlier Outreach**: Establish 3-way discussions to provide early networking opportunities with the DBE community and potential contractors. Develop communication lines before Project solicitations to enable better DBE anticipation of and participation in business opportunities. Early outreach has been performed concurrent with the EA process.
    - **Pre-application Support**: Encourage broader participation through additional resources to help non-certified firms interested in the Project achieve certification.
    - **Strategic Work Packaging**: Develop contracting approaches in partnership with bidding contractors to promote higher levels of DBE participation (e.g., dividing work into smaller packages or more specified areas).
    - **DBE Tracking**: Maintain a DBE database to link DBE's core abilities to Project opportunities and track participation by discipline.

8 Outreach to Environmental Justice Populations

Early recognition of EJ issues in the Project Area led to substantial targeted outreach to raise awareness about the Project and the environmental studies underway. Early in the Project, ODOT conducted interviews with 17 members and leaders of the African American community to better understand perception of ODOT, local agencies, and the Project. Their feedback helped inform engagement activities and approach to public involvement for the Project.

The Project team also held a number of large events in the immediate neighborhood, including an open house at Matt Dishman Community Center attended by about 80 participants, and a Community and Neighborhood Forum at Billy Webb Elks Lodge attended by more than 90 participants. During these events, EJ issues were one focal point of discussions. Concerns frequently expressed included economic opportunity, gentrification, historical injustice with past developments in the area (including I-5), distrust of agencies from past actions or perceived broken promises with development initiatives, and government services.

These events, along with other public participation efforts, helped identify further specific activities to engage community members—particularly those from the black community. This section describes some of these targeted outreach efforts and information learned.

Project outreach specifically directed to EJ communities included a community liaisons group, participation in local summer events, a Pastors breakfast, briefings, a targeted open house and local door-to-door business canvassing.

Community Liaisons Group
To further guide and inform locally relevant outreach efforts and activities to reach the local African American community, the Project team assembled a 14-member Community Liaisons Group. This group, which includes interests and leadership for people of color and low-income and elderly populations, met two times: in September 2017 and again in March 2018. It served as a sounding board to discuss outreach opportunities and Project information materials. The Project team will continue to reconvene this group near key Project milestones.

Local Summer Event Participation
The Project team participated in a number of summer festivals, including two that focused on neighborhood heritage: Good in the Hood, which celebrates local multiculturalism in inner North and Northeast Portland, and Juneteenth, which commemorates the 1865 announcement of the abolition of slavery and the emancipation of African American slaves. The Project team sponsored booths at both events to hand out Project information, discuss the Project with festival attendees, and identify further outreach opportunities within the community.

Briefings: Pastors Breakfast and Soul District Business Association
On March 20, 2018, the Project team worked with a local pastor to organize a

Pastors Breakfast, gathering 15 spiritual leaders in the Project Area to discuss Project issues and opportunities at a local restaurant. Participants in this discussion were concerned about their communities being included in public outreach efforts and requested to be involved in the process. Creating parking for churches was important to them, as well preventing environmental impacts to Harriet Tubman Middle School. They were also interested in how the Project could create economic opportunity for the Black community, particularly regarding DBE contracting.

In October 2018, Project team representatives provided a presentation and held a discussion with the Soul District Business Association, which promotes and supports the economic and business development of urban North/Northeast Portland. This group expressed interest in the Project's employment opportunities, but also concern for extended construction disruption. They also expressed interest in being involved with the types of businesses and development that might come to the area as a result of the Project and their effect on the area's affordability.

"What's Happening in Our Streets? A Transportation Open House for the Black Community"

As a result of recommendations from the Community Liaisons and other outreach event inquiries, ODOT and the City of Portland partnered to design and hold an event to engage with the Black community about transportation investments being made in North and Northeast Portland. More than 90 people attended the event, which spotlighted the Project and provided information about the Vancouver Ave. Restriping Project, the Lloyd to Woodlawn Greenway, MLK Jr. Blvd. Improvements, Vision Zero, Safe Routes to School, Portland Fire and Rescue, and PBOT jobs and contracting opportunities.

The idea was to create an interactive space where community members could have their questions answered, identify where they lived in relationship to infrastructure projects on maps provided listing each project, and participate in a survey collecting feedback on the Project. The Project team presented proposed ideas for safety and infrastructure improvements within the Rose Quarter area. Survey responses from about half of the attendees indicated that of those that responded, 87.5 percent identified as African American/Black, 5 percent identified as Asian/Pacific Islander, and 7.5 percent identified as American Indian/Native American. The feedback from this event encouraged the agencies to continue to engage community members about broader issues related to transportation investments, such as housing, procurement, and job opportunities. They also expressed interest in bringing back to the neighborhood residents who have been displaced by past projects and policies.

Business Canvassing

In August and September 2018, the Project team canvassed area businesses to raise awareness about the Project, answer questions, and provide contact information for those interested. This outreach effort reached more than 60 businesses, representing a wide range of business types and services. The discussions also included a number of businesses that have had a long-time presence in the area. Issues frequently mentioned by the local businesses included current congestions problems and future concerns about getting deliveries to and

from their businesses. Most were highly appreciative of the personal attention provided through the door-to-door outreach effort.

9 Preparers

Name	Discipline	Education	Years of Experience
John Kelly, OBEC Consulting Engineers	Planning	M.S., City and Regional Planning, *Juris Doctor*	41
Jan Aarts, AECOM	NEPA/Impact Assessment	M.S., Urban Planning	35

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