



South Park Community Center Open Space Design Plan: Rapid Health Impact Assessment (HIA) Findings & Recommendations



This report was prepared by Sinang Lee and Amy Shumann of The Healthy Community Planning (HCP) Program at Public Health-Seattle & King County’s Environmental Health Services Division. HCP believes where we live matters to our health. Our team of planners, health educators and environmental health investigators work with many partners to integrate health and equity principles into community planning. We deliver technical assistance, policy analysis, and education and outreach to local governments, agencies and residents on crosscutting community health issues, such as land-use, transportation, and housing.

Acknowledgements

The authors would like to acknowledge the expert panel, South Park residents, community groups and agencies involved in this process and that have documented conditions in South Park. The South Park community has been tireless in its work to improve the health and wellbeing of its residents and we want to acknowledge their commitment and contributions to planning efforts like the Seattle Parks Foundation’s *South Park Green Space Vision Plan* and Just Health Action and Duwamish River Cleanup Coalition/TAG’s *Duwamish Valley Cumulative Health Impacts Analysis*. These two planning documents guided this effort and we are grateful for the work that came before ours.

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Forward

A Health Impact Assessment (HIA) is a useful and adaptable tool to qualitatively assess how a proposed decision could affect community health. An HIA also provides the opportunity to engage communities in decisions that impact them. Public Health Seattle & King County's Environmental Health Services (EHS) Division staff conducted a rapid HIA to assess whether the proposed siting of the South Park Community Center play areas could adversely impact the health of children and other residents (e.g., people with existing respiratory conditions). EHS staff initiated this HIA after learning about the community concerns and that Seattle Parks & Recreation staff would welcome public health inputs during their planning and design phase.

South Park is one of Seattle's lowest income and most ethnically diverse communities. Residents live in an area with many health inequities that include lower life expectancy, poorer air quality, and higher childhood asthma hospitalizations; a result of long-standing racial and social inequities in land-use, economic, environmental, and education policies and decisions. With about one-tenth of the accessible green space available to the average King County resident, South Park residents have identified their Community Center as a high priority for improvements.

We are pleased that Seattle Parks & Recreation has focused attention on the South Park Community Center; and are open to taking public health inputs into consideration. When opportunities arise to improve or expand limited park space, we believe it is critical that community members (and public agencies) have full and meaningful engagement in planning processes and that information about community health and environmental conditions is available to make informed decisions. This effort to proactively identify opportunities to promote health equity aligns with the *King County Equity and Social Justice Ordinance*, *City of Seattle Race and Social Justice Initiative*, *Seattle Equity and Environment Agenda*, and *City of Seattle's Equitable Development Framework - Strategy 5: Develop healthy and safe neighborhoods*.

We see this report as a resource for Seattle Parks & Recreation and the community as they undergo the planning and design phase. The high-level recommendations in this report are meant to serve as a starting point for discussions among agencies, the community and possible funders on how to redevelop a South Park Community Center open space that will not have unintended health consequences. EHS staff is available to present and discuss in more detail the findings and recommendations to City of Seattle departments and community groups.



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Executive Summary

The Problem

South Park is one of Seattle's lowest income and most ethnically diverse communities. Residents live in an area with many health inequities, including lower life expectancy, poor air quality, higher childhood asthma hospitalizations, and one-tenth of the accessible green space available to the average King County resident. Community members expressed concerns about Seattle Parks & Recreation's proposal to upgrade and add new play structures at the South Park Community Center in a location nearest to State Route 99, a major highway with heavy truck traffic.

We have very high asthma rates in our community already. We can't expose our children to more pollution by placing a playground next to a highway. We deserve better.

- Paulina Lopez, South Park resident, parent, and community advocate

What we did

From August to October 2016, Environmental Health Services (EHS) staff conducted a rapid Health Impact Assessment (HIA) to inform Seattle Parks & Recreation's design and planning decisions that could improve the health and well-being of South Park children and other residents, particularly in light of the existing inequities the community already faces. Our rapid HIA process included a desk-based review of published literature, best practices and recent community recommendations; and consultations with technical subject matter experts and community representatives. We focused on these health determinants: air pollution, environmental noise, crime and safety, social and mental health, physical activity, heat, and pedestrian safety.

What we found

Without mitigation and innovative redesign of the limited open space available at the Community Center, the proposal could negatively impact the health of children and other users (e.g., people with asthma), particularly related to air pollution, noise, crime and safety and social and mental health. One key recommendation is for Seattle Parks & Recreation to engage the South Park community in a comprehensive review of the community center's entire open space to decide: How can we best use and redesign the open space to allow for relocating the play areas as far from the highway as possible?

When we all stood out there together in the proposed location I felt an immense sense of dread that if this is the location we would be putting kids at risk of so many hazards.

- Cari Simson, parent, local business owner and neighborhood advocate

Actions

EHS staff will share the HIA findings and discuss recommendations with Seattle Parks & Recreation staff and community representatives in October 2016.

1.0 Introduction

Where we live, work, play and learn matters to our health. Healthy natural and built environments¹ support healthy personal choices. Neighborhood characteristics and amenities like parks, places to walk or be active, and sources of affordable, nutritious foods influence our health. Parks and playgrounds support community and individual well-being. Access to quality and safe parks and open space promotes health by increasing physical activity, supporting mental health, and fostering community and social interactions. Parks and playgrounds provide children with opportunities for play which is critical in the development of muscle strength and coordination, language, and cognitive abilities (TPL, 2006).

The conditions in which people live are shaped by broader economic, social, environmental, and political systems. South Park residents live in an area with many health inequities, including lower life expectancy, poorer air quality, and higher childhood asthma hospitalizations; a result of long-standing racial and social inequities in land-use, economic, environmental, and education policies and decisions.

In 2014, South Park community prioritized improving their community center as part of the Seattle Parks Foundation's (SPF) *South Park Green Space Vision Plan* (SPF, 2014). This year, Seattle Parks & Recreation (Seattle P&R) began to plan how to upgrade and add new play structures at the community center. Seattle P&R used SPF's Conceptual Design Plan for the community center open space as a starting point (Figure 1). While the community welcomed the much needed attention, some residents raised concerns that the play areas would be too close to State Route (SR) 99, a major highway with heavy truck traffic that runs along the western border of the community center.

We have very high asthma rates in our community already. We can't expose our children to more pollution by placing a playground next to a highway. We deserve better.

- Paulina Lopez, South Park resident, parent, and community advocate

After learning about the concerns, Environmental Health Services (EHS) staff with Public Health Seattle and King County (PHSKC) discussed with Seattle P&R staff about the opportunity to provide public health inputs². Seattle P&R staff shared that they are in the planning and design phase and would welcome any public health inputs. With a two-month timeframe, EHS staff conducted a rapid Health Impact Assessment (HIA) to identify at a high-level whether the proposed siting of the play areas can potentially have unintended impacts on the health of South Park children and other residents (e.g., people with asthma).

¹ The built environment includes all of the physical parts of where we live and work (e.g., homes, buildings, streets, open spaces, and infrastructure) (CDC).

² Meeting between Sinang Lee (EHS) and Karimah Edwards (Seattle P&R) on July 27, 2016.

Our goal for the HIA is to provide recommendations to help Seattle P&R and the community make design and planning decisions that would enhance community health and wellbeing. EHS staff gathered the best available evidence and convened a panel of technical Subject Matter Experts (SMEs) to conduct a site assessment. Based on the evidence gathered, we determined that the proposed design will likely have multiple negative health impacts, particularly related to air pollution, noise, crime and safety and social and mental health.

This report discusses the supporting evidence for the HIA findings and the recommendations to protect community health and wellbeing. The HIA and recommendations are meant to serve as a starting point for discussions among agencies, the community and possible funders on how to redevelop the South Park Community Center open space that:

- does not exacerbate long-standing health inequities in the community;
- provides the best opportunities for physical activity and active play for all ages; and
- reflects the interests and needs of the community.

2.0 Approach

An HIA is a useful tool to assess how a proposed decision will affect the health of a population and whether overburdened populations are more likely to be impacted (CDC’s Healthy Community Design Initiative). It is a systematic and evidence-based process that can be tailored to fit specific needs, timeline, and resources of each particular project. HIAs are typically carried out for plans, projects, and policies that fall outside traditional public health arenas, such as transportation and land use.

We focused our assessment on specific community concerns and experiences related to:

- air quality,
- environmental noise,
- crime and safety,
- social and mental health,
- physical activity,
- heat, and
- pedestrian safety.

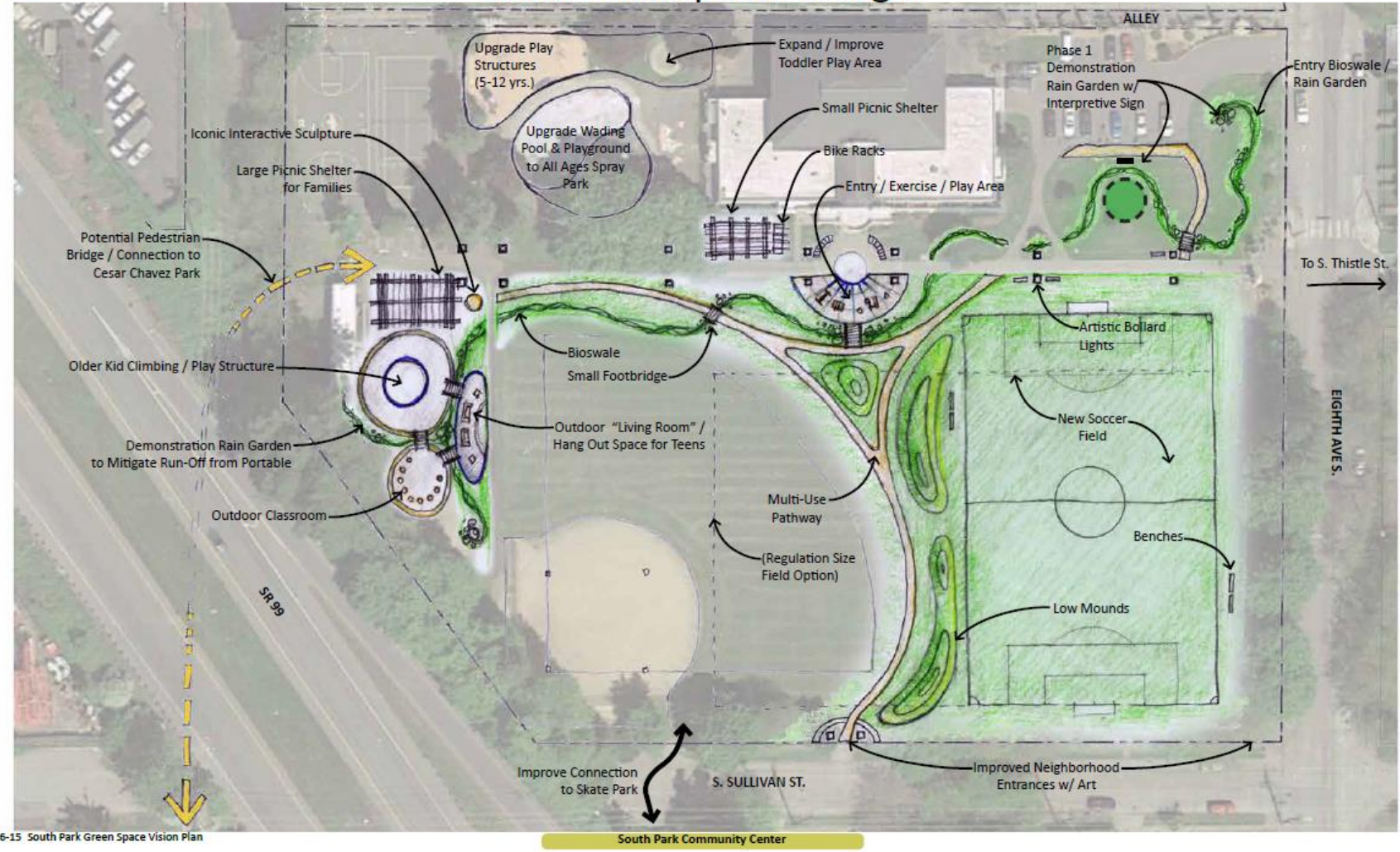
2.1 Understanding of Seattle Parks & Recreation’s Plans for South Park Community Center

The South Park Community Center has a 1980s era adobe-style building (14,000 square feet), one toddler play area/wading pool and two ball fields. The following outlines our understanding of Seattle P&R’s current redevelopment plans for the South Park Community Center³:

- Seattle P&R has \$750,000 from Metropolitan District Maintenance Program to renovate the South Park Community Center play area due to old age (15+ years) and to comply with American Disability Act. Seattle P&R is in the planning and design phase now (2016), with construction phase in 2017. There will be approximately \$460,000 for the construction phase. Seattle P&R is conducting community engagement to capture input on the design of the play structures and play areas.
- Seattle P&R is using the Seattle Parks Foundation (SPF) “Final Conceptual Design Plan” as a starting point for their design (Figure 1). SPF produced the plan based on extensive community engagement during the South Park Green Space Visioning Process (SPF, 2014). However, no comprehensive health inputs informed the SPF final conceptual design plan.
- Seattle P&R intends on upgrading the existing play area in its current location on the west side of the building and proposes to construct an older kid play structure on the western edge of the community center. It is not clear whether Seattle P&R has plans to add a spray park or plant trees.

³ Meeting between Sinang Lee (EHS) and Karimah Edwards (Seattle P&R) on July 27, 2016.

Final Conceptual Design



6-15 South Park Green Space Vision Plan

South Park Community Center

Figure 1 Seattle Parks Foundation's (SPF) Final Conceptual Design Plan (SPF, 2014).

2.2 Data Collection

HIAs draw on the best available evidence from research papers and reports, and commonly include qualitative and quantitative evidence. This information must also be supplemented with local and expert knowledge, policy information, and proposal specific information. From August to September 2016, EHS staff gathered and reviewed data and information from various sources: (1) to understand existing community inequities; (2) to qualitatively assess the potential health impacts; and (3) to develop recommendations that can minimize adverse impacts while promoting positive health benefits.

- EHS staff conducted a desk-based review of available demographics and health statistics; relevant studies; recent neighborhood planning efforts; and literature on relevant mitigations and best practices. EHS captured the desk-based information, along with data gaps, in a health impacts scoping table (Appendix C).
- Just Health Action (JHA) subcontractor conducted an extensive literature review on health effects from air pollution and noise (Appendix A).
- Puget Sound Clean Air Agency (PSCAA) staff collected ultrafine particle sampling over a 1.5-hour period at and around the community center on September 16, 2016 (Appendix B).
- EHS staff convened a panel of subject matter experts (SME) in air pollution, noise, public health, physical activity, healthy play areas, pedestrian safety, and local community knowledge on September 19, 2016 (Table 1, Appendix C). The SME panel toured the South Park Community Center to assess the site conditions and discuss potential impacts and recommendations. During the site assessment, the panel used a sound level meter⁴ to capture decibel levels at the community center from 2pm to 3pm.
- EHS staff consulted with Mark Solomon, Crime Prevention Coordinator with Seattle Police Department, during a site visit on September 22, 2016.
- EHS staff consulted with Tari Nelson-Zagar of Seattle Neighborhood Group on public safety/CPTED on September 23, 2016.



SME Panel Site Visit on September 19, 2016

Please note that a robust community engagement was not done as part of this rapid HIA because of the limited time and resources; and additionally, Seattle P&R's community engagement process was already underway.

⁴ Radioshack 3300099 Digital Level Meter, range 30-130dB, accuracy of +/-2dB at 94dB sound pressure level

Table 1 Subject Matter Experts who participated in EHS’s site assessment on September 19, 2016.

Panel Member	Organization	Subject Matter Expertise (SMEs)
1. Erik Saganić	Puget Sound Clean Air Agency	Air Pollution
2. Bill Daniell	UW’s Department of Environmental & Occupational Health	Noise, Public Health
3. Brian Saelens	Seattle Children’s Hospital	Physical Activity, Play Areas & Health
4. Linn Gould	Just Health Action	Greenwalls, Public Health
5. Andrew Schiffer	Just Health Action, Georgetown resident	Greenwalls, Trees
6. Shirlee Tan	Public Health Seattle & King County	Toxicology, Public Health
7. Paulina Lopez	Duwamish River Cleanup Coalition/TAG & South Park Parent/Resident	Community concerns & interests
8. Robin Pfohman	Public Health Seattle & King County	Heat, Climate and Community Resilience
9. Diane Wiatr	Seattle Department of Transportation	Active Transportation, Pedestrian Safety
10. Michelle Benetua	Seattle Parks Foundation	Community concerns & interests
11. John Barclay	Seattle Parks & Recreation	Community Center usage & plans



SME panel discusses potential impacts and recommendations on September 19.

3.0 Community Health Profile

A community health profile can serve as a useful profile of the potential users of the South Park Community Center. It provides an understanding of the underlying health inequities that can make the community more susceptible to adverse health impacts. With this knowledge, we can inform the project planning and design to avoid exacerbating existing inequities and find opportunities to improve the health of the community. This section provides a snapshot of the demographics, general health status, and relevant health inequities for the South Park neighborhood. Most of the available health statistics are reported for zip code 98108 (South Park, Georgetown, and Beacon Hill), which serves as a proxy for South Park neighborhood.

EHS relied on published data and information from several significant community engagement/planning processes in the last several years that created reports on South Park history, existing conditions, needs, and priorities. For more detailed information, please see:

- *South Park Green Space Vision Plan* by Seattle Parks Foundation (SPF, 2014). The report includes research about existing conditions and a set of recommendations for partnership opportunities, funding sources, and priority sites to improve over the next five years.
<https://www.seattleparksfoundation.org/2014-pages/step-up/south-park-green-spaces>
- *Duwamish Valley Cumulative Health Impacts Analysis. Seattle, WA* by Linn Gould of Just Health Action and BJ Cummings of Duwamish River Cleanup Coalition/Technical Advisory Group (Gould and Cummings, 2013). Study examined a range of disproportionate health exposures and impacts affecting people in the Duwamish Valley. <http://justhealthaction.org/resources/jha-publications/>
- *Seattle 2035: Growth and Equity Analyzing Impacts on Displacement and Opportunity Related to Seattle's Growth Strategy, May 2016* by Seattle Office of Planning and Community Development (Seattle OPCD, 2016). Study conducted a Growth & Equity Analysis to identify impacts and mitigation associated with the recommended Growth Strategy in the Comprehensive Plan, and opportunities for equitable development.
http://www.seattle.gov/dpd/cs/groups/pan/@pan/documents/web_informational/p2427615.pdf

Other major sources of health statistics and demographic data came from recent *King County City Health Profile Seattle* (PHSKC, 2016).

3.1 South Park Demographics

The South Park neighborhood is in southwest Seattle, on the western bank of the lower Duwamish River, an EPA Superfund cleanup site. It is the largest residential center of the Duwamish Valley industrial corridor with a population of 4,673 (WOFM, 2016). The South Park neighborhood is one of the lowest-income and most ethnically diverse communities in Seattle.

- Between 1990 and 2010, South Park saw a 31 percent increase in the people of color (Seattle OPCD, 2016). South Park is nearly 40 percent Latino; 17 percent Asian; 12 percent African-American; and 38 percent identify as other “non-white” or multiracial, including Pacific Islanders and Native Americans (WOFM, 2015). Approximately 23 percent of South Park residents report that they speak English “less than very well” (compared to 9 percent Seattle-wide) (ACS, 2014).
- Twenty-eight percent of South Park residents live below the poverty level (ACS, 2014); the 2016 federal poverty level is \$24,300 for a family of 4. In 2013, median household incomes in South Park were approximately 34 percent below the Seattle average (US Census Bureau, 2014). Seventy-eight percent of children enrolled at South Park's Concord Elementary School qualify for reduced price lunch (SPS, 2011).
- South Park has a higher than average percent of children compared to Seattle-wide. About 28 percent of South Park population is school-aged children (3 years or older and in K-12 schools) compared to 14 percent Seattle-wide (US Census Bureau, 2014).

3.2 Community Inequities for South Park & 98108

South Park residents live in an area with many health and environmental inequities relative to the rest of Seattle⁵. Tables 2 and 3 summarize the relevant inequities for this HIA, which includes a lower life expectancy, poor air quality, higher childhood asthma hospitalizations, and one-tenth of the accessible green space available to the average King County resident. In 2011, 12 percent of adults from South Park, Georgetown and Beacon Hill reported “fair” or “poor” health, more than Seattle overall (9%), and much higher than the NE Seattle area (5%) (Futurewise, 2016).

The general poorer health status and lower socio-economic status in this area is partly a result of land-use and policy decisions rooted in historical racial and social inequities that make it harder for residents to achieve an optimal quality of life. For example, at the time SR 99 was constructed in 1957, the community had to convince freeway engineers to bypass the playfield instead of going through it. As a result, a busy highway now borders one of the few parks in the neighborhood.

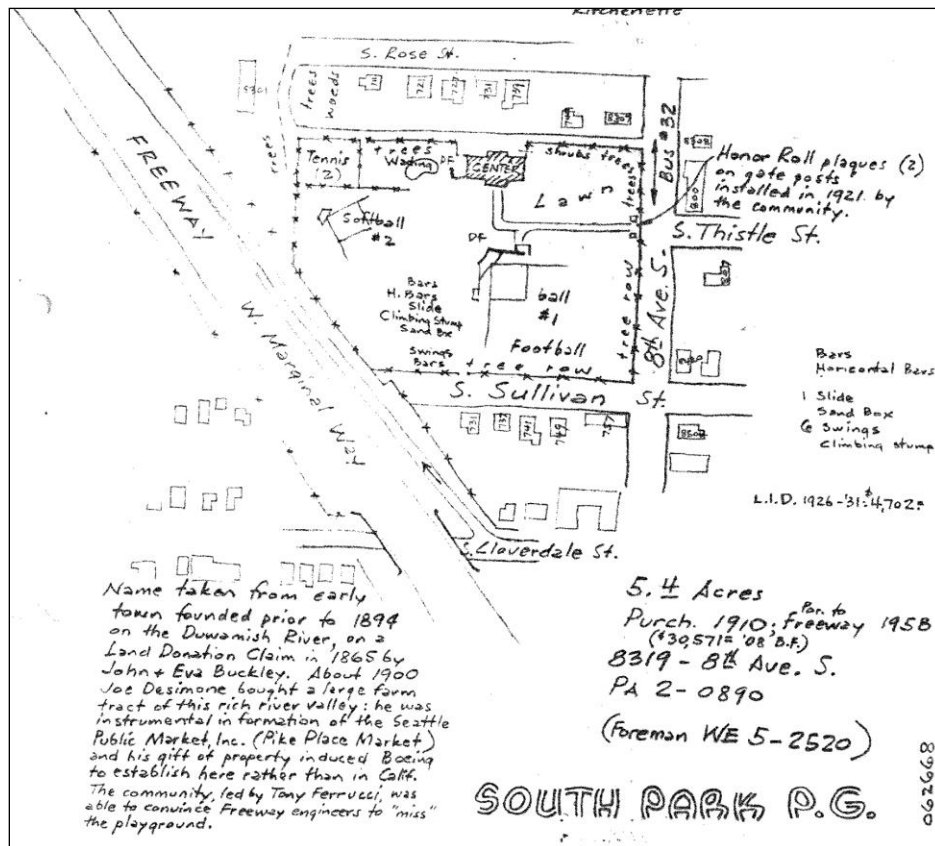
South Park, as part of Duwamish Valley, has been documented as a community with environmental injustices—a community with disproportionately high environmental health burdens and risks and fewer positive environmental benefits than the rest of Seattle (Gould and Cummings, 2013). The Duwamish Valley ranks poorly for most environmental health factors and has the highest number of known or suspected contaminated waste sites and Toxic Release Inventory (TRI) sites in Seattle (Gould and Cummings, 2013).

⁵ A health inequity is a “particular type of difference in health in which disadvantaged social groups - such as the poor, racial/ethnic minorities, women, or other groups who have persistently experienced social disadvantage or discrimination - systematically experience worse health or greater health risks than more advantaged social groups” (Braveman, 2006).

In addition, Puget Sound Clean Air Agency (PSCAA) identified the Duwamish Valley as a “Highly Impacted Area”; a geographic location characterized by degraded air quality whose residents face economic or historic barriers to participation in clean air decisions and solutions; as well as, having higher rates of hospitalizations for air-quality related health outcomes than the rest of Puget Sound (PSCAA 2012 and 2014). According to PSCAA, poor air quality in the Duwamish Valley is generally concentrated around industrial centers and transportation corridors. Trucks and other diesel exhaust, along with less wind and stagnant winter weather in the Duwamish Valley, contribute to the poor air quality.

Furthermore, South Park experiences relatively high level of noise from heavy truck traffic along highways and roadways (i.e., SR 99, SR 509, and South Cloverdale Street) that are part of the freight network for the Port of Seattle and other industrial activity. In addition, South Park lies underneath both SeaTac and Boeing Field flight corridors (King County, 2004).

Recently, the City of Seattle conducted an equity analysis of its Comprehensive Plan’s Growth Strategy and identified South Park as “a Residential Urban Village with high displacement risk and low access to opportunity, regardless of the level of transit service” (Seattle OPCD, 2016). Figure 2 shows the maps produced by City of Seattle’s OPCD for the Displacement Risk Index and Access to Opportunity Index.



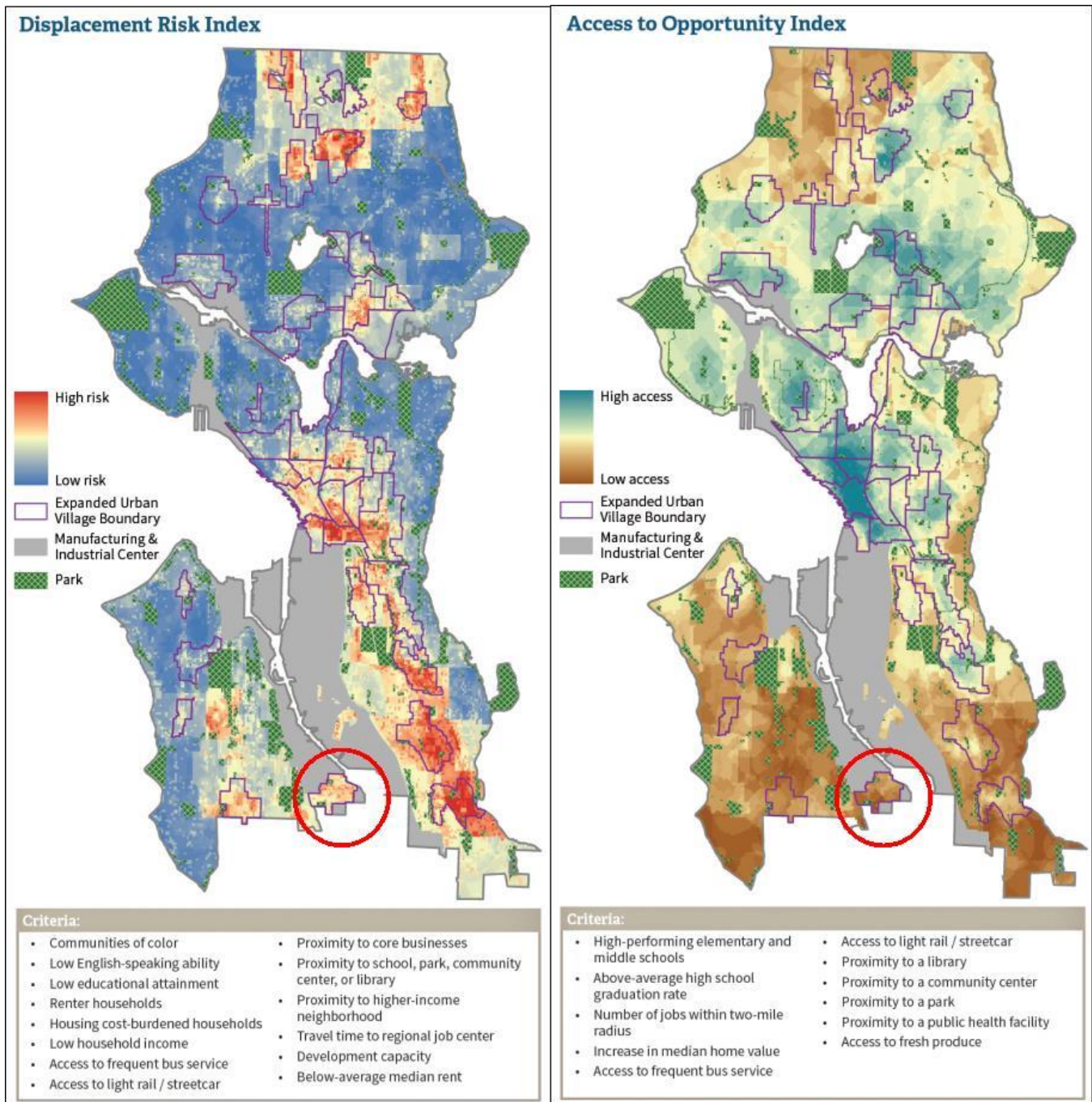


Figure 2 Maps of Displacement Risk Index and the Access to Opportunity Index in Seattle (Seattle OPCD, 2016). South Park is located within the red circle.

Table 2 Summary of Health Inequities in South Park or 98108

Health Indicator	Inequity	Supporting Data			
		<i>South Park or 98108</i>	<i>vs</i>	<i>Seattle or other</i>	<i>Data Source</i>
Life expectancy (years)	Much Lower	73.3 (South Park & Georgetown)		81.5 (Seattle) 86.4 (Laurelhurst)	Gould & Cummings (2013); Data period: 2005-2009
No Exercise (Adults) (%)	Higher / Much Higher	18 (98108)		13 (Seattle) 6 (Fremont & Green Lake)	PHSKC, 2016; Data period: 2010-2014
Obesity (Adults) (%)	Same / Higher	17 (98108)		17 (Seattle) 9 (Fremont & Green Lake)	PHSKC, 2016; Data period: 2010-2014
Diabetes (Adults) (%)	Higher / Much Higher	8 (98108)		6 (Seattle) 3 (Fremont & Green Lake)	PHSKC, 2016; Data period: 2010-2014
Lung Cancer (Adults) (deaths per 100,000 people)	Higher	41 (98108)		38 (Seattle)	Gould & Cummings (2013); Data period: 2006-2010
Heart Diseases Hospitalization Rate (per million per year)	Much Higher	10,628 (98108)		8,941 (Puget Sound)	PSCAA Community Air Tool (2012)
Frequent Mental Distress (%)	Higher	14 (98108)		11 (Seattle)	PHSKC, 2016; Data period: 2010-2014
COPD Hospitalization Rate (per million per year)	Much Higher	532 (98108)		471 (Puget Sound)	PSCAA Community Air Tool (2012)
Adult Asthma Hospitalization Rate (per million per year)	Much Higher	954 (98108)		493 (Puget Sound)	PSCAA Community Air Tool (2012)
Adult Asthma Prevalence (%)	Higher	12 (98108)		9 (Seattle)	PHSKC, 2016; Data period: 2010-2014
Childhood Asthma Hospitalization Rate (per 100,000 per year)	Much Higher	322 (98108)		212 (Seattle)	PHSKC, 2016; Data period: 2010-2014

Table 3 Summary of Environmental Inequities in South Park or 98108

Environmental Indicator	Inequity	Supporting Data			
		South Park or 98108	vs	Seattle or other	Data Source
Toxic Release Inventory (TRI) Sites (number)	Highest	38 (98108)		0-13 (all other Seattle neighborhoods)	Gould & Cummings (2013)
Air Pollution (annual average concentration of pollutant in human breathing zone, µg/m ³)	Among Highest	<i>diesel particulate</i> 2.3 (98108) <i>benzene</i> 2.7 (98108)		<i>diesel particulate</i> 1.03 (King County) <i>benzene</i> 1.7 (King County)	Gould & Cummings (2013); data year: 2005
Noise (decibels, dBA)	Much Higher	~ 65-80 (South Park Community Center)		55-70 (range of WAC 173-60-040 state standards for environmental noise)	Sound level meter collected data during SME Site Visit on 9/19/16
		Observed multiple sources of noise in South Park: cars, trucks, airplanes, industries.			SME Site Visit on 9/9/16
Green Space (square feet of park area per resident)	Median	454 (98108)		175-1634 (range for Seattle)	Gould & Cummings (2013)
	Much Lower	South Park has about one-tenth of the accessible green space available to the average King County resident.			Seattle Parks Foundation (SPF, 2014)
Tree Canopy (%)	Among Lowest	6 (98108)		4-27 (range for Seattle)	Gould & Cummings (2013)
Walkability (score)	Lower	62 somewhat walkable (South Park)		83 very walkable (Green Lake)	Accessed on 10/11/16 at www.walkscore.com
Crime & Safety	Lower sense of community safety	High property crime rate & two homicides in past years likely contribute to perceptions of unsafety.			EHS consultation with Mark Solomon, Seattle Police Department on 9/22/16

4.0 Findings: Potential Health Impacts for Design Considerations

This section summarizes the potential key health impacts (negative, positive, or neutral) identified by EHS staff in collaboration with technical SMEs and community representatives, and based on the evidence reviewed. In light of the existing community inequities, the proposed siting of the play areas on the western side of the community center will likely have multiple negative impacts on children and other residents (e.g., people with asthma), particularly related to air quality, noise, crime and safety, and social and mental health (Table 4). Furthermore, we anticipate that the noise, air pollution and safety concerns may deter use of the play areas; and thereby, the proposed design will not likely increase physical activity substantially.

Table 4 Summary of Potential Health Impacts

Health Determinant	Community Health Inequities*	Potential Impact	Priority to Address
Air Quality	Higher air pollution levels, higher childhood asthma hospitalizations	NEGATIVE	HIGH
Environmental Noise	Higher levels of noise from heavy truck traffic and airplanes	NEGATIVE	HIGH
Crime & Safety	Lower sense of community safety and security	NEGATIVE	HIGH
Social & Mental Health	Higher stress among adults	NEGATIVE	HIGH
Physical Activity	Higher percentage of adults with chronic diseases and low physical activity	NEUTRAL	HIGH
Heat	Low tree canopy to provide shade; nearest spray parks are 2.5-3 miles away	<i>Not enough information about Seattle P&R' plans for the wading pool or spray park to assess</i>	MEDIUM
Pedestrian Safety	Low walkability	NEUTRAL	N/A

* See Section 3.0 for more details.

4.1 Air Quality

NEGATIVE IMPACT: Air pollution levels are highest closer to SR 99 and are expected generally to improve by about 200-500 yards. The community center is located within 150 yards from SR 99. The freeway on-ramp adjacent to the community center is likely a large source of air pollution because of accelerating cars. Therefore, the proposed siting of the play areas will likely expose children and others to higher levels of traffic pollution. In light of the existing community inequities (e.g., poor air quality, higher childhood asthma hospitalization rates), the play areas should be relocated as far from SR 99 as possible.

Multiple studies suggest that living and going to schools near busy roads and highways are not healthy and some people are particularly vulnerable (Appendix A). Children, expectant mothers, and people with compromised heart/lung health are at greatest risks from health effects associated with air pollutants. Because of their fast growth and development, children are more susceptible to air pollution and their undeveloped lungs are less able to repair itself after injury (Bateson et al., 2007; Wang S. et al, 2009). One study suggest that higher traffic flows may be related to an increase in repeated medical visits for children with asthma that live within 183 yards (550 feet) of busy roads (English P et al., 1999).

Air pollution levels are highest closer to major roadways. Most pollution levels improve by about 200 yards (600 feet) from the road, but some do not improve until 500 yards away (1,500 feet) (Appendix B; Karner et al. 2010). Studies show poor health outcomes as far as 500 yards away (Appendix B; Karner et al. 2010). The community center is within 150 yards (or 400-500 feet) from SR 99 with the current playground, tennis and basketball courts, and parts of the baseball field within 50-100 yards (150-300 feet) of SR 99 and its on-ramp. The proposed play areas will likely expose children and other residents (e.g., people with asthma) to higher levels of traffic pollution.

PSCAA captured some air quality data at the community center (Figure 3) during a 1.5-hour period on Friday, September 16, 2016. The monitoring⁶ captured a small snapshot in time and levels may be better or worse at times depending on traffic volumes, wind direction, etc. Additionally, the measurements used were intended to understand the pollution gradient from the highway but not enough to correlate to any potential health effects.

However, with the limited dataset, the results indicate the on ramp entrance onto SR 99 is likely a source of air pollution due to accelerating vehicles. According to Washington Department of Transportation (WSDOT), the adjacent on-ramp averages 1,300 vehicles per day and the annual average daily count along SR 99 was 31,000 in 2015. In addition, the building wall of the community center may act as a barrier in trapping air pollutants in the toddler play area.

⁶ Air quality monitors captured: Black carbon concentration (microAeth AE51, measured unit: nanograms per cubic meter) and Ultrafine particle counts (Enmont PUPF C100, measured units: Ultrafine particle counts per cubic centimeter).

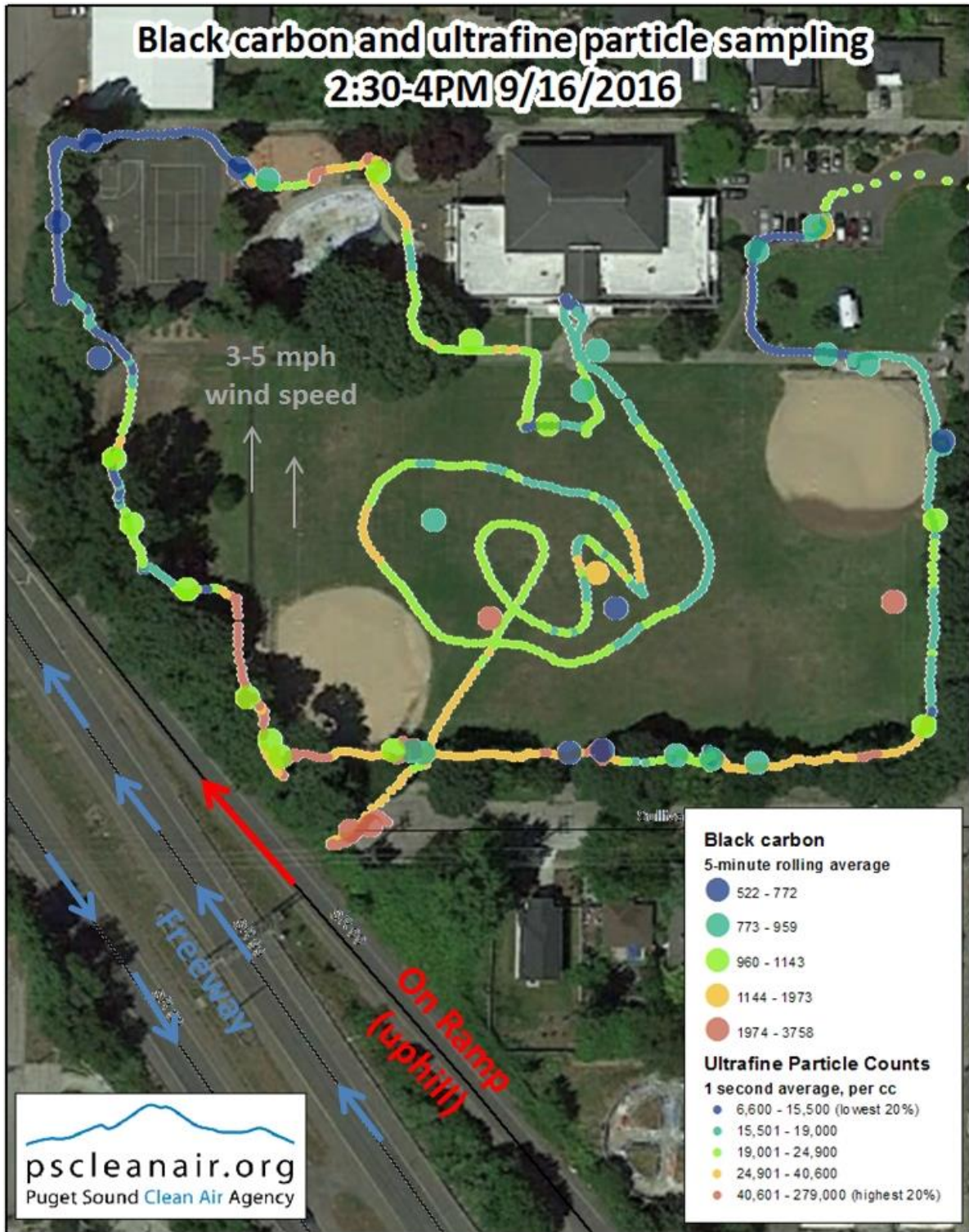


Figure 3 PSCAA's air quality monitoring at the community center on September 16, 2016.

There are approximately 500 children per day who visit the community center. Most children come by foot or bike. The play areas are mostly used in the afternoon and early evenings. This period coincides with rush hour traffic on SR 99 which puts users at greater risk of exposure to higher levels of vehicle emissions and noise.

The existing mature deciduous trees along the west boundary do not sufficiently screen out air pollutants or mitigate noise. According to Erik Saganic of PSCAA, air quality conditions are worse in the winter when the trees lose their leaves and when air currents tend to be more stagnant, especially evening through the morning hours.

A comprehensive review of the latest evidence on the impacts of pre- and post-natal exposure to air pollution on neuropsychological development in children concluded: “The public health impact of air pollutants cannot be ignored and the precautionary principle should be applied to protect children” (Suades-Gonzalez et al., 2015). In light of the existing community inequities (e.g., poor air quality, higher childhood asthma hospitalization rates), the play areas should be relocated as far from SR 99 as possible.

4.2 Environmental Noise

NEGATIVE IMPACT: The noise levels at the South Park Community Center’s outdoor play areas and fields exceed the Washington State standard (WAC 173-60-040) for maximum permissible environmental noise levels for residential, commercial, and industrial areas. The proposed siting of the play areas will likely put children at higher risk for stress and other health effects related to traffic and aircraft noise.

Noise levels in this neighborhood are relatively high due to its proximity to SR 99, area industry, and the flight paths of SeaTac airport and Boeing Field. Noise levels measured using a hand held sound level meter⁷ during a non-rush hour site visit to the South Park neighborhood revealed noise levels from ~65-80 decibels (dBA). The noise measurements were loudest (~70-80 dBA) in the existing playground and wading pool area and in areas proposed for the older kids play areas, the outdoor classroom, and the hang-out space for teens. On the east side of the Community Center, furthest from SR 99, the noise measurements were the lowest detected during the site visit (~65 dBA). All technical SMEs during the site visit made note of the relatively high noise at the community center, particularly in the proposed play areas, and how it was difficult to conduct conversation during the walk. Community representatives noted that the noise levels are even higher during peak traffic times.

Noise levels in the South Park Community Center Park at non-peak traffic times exceed those outlined in WAC 173-60-040. The code states that: the maximum allowed amount of noise coming into a residential property is 55 dBA from another residential area, 57 dBA from a commercial area, and 60 dBA from an industrial area. The maximum allowed amount of noise coming into a commercial property is 57 dBA from a residential area, 60 dBA from another commercial area, and 65 dBA from an industrial area. The maximum allowed amount of noise coming into an industrial property is 60 dBA from a residential area, 65 dBA from a commercial area, and 70 dBA from another industrial area (WADOE, Table 5). It should be noted that exemptions to this law exist for certain vehicular traffic and airplane noise, and although the noise exceedance in this area may be exempt from state standards, levels of noise detected in the current play area are not recommended for residential, commercial, or even industrial areas.

⁷ Radioshack 3300099 Digital Level Meter, range 30-130dB, accuracy of +/-2dB at 94dB sound pressure level

Table 5 Washington State Standards for Environmental Noise

Noise Source	Receiving Property		
	Residential	Commercial	Industrial
Residential	55 dBA	57 dBA	60 dBA
Commercial	57	60	65
Industrial	60	65	70

Most public health standards for noise are based on auditory damage and annoyance and the noise-levels cited above may not consider other known effects of noise on human health. Some reports suggest that the effects of noise and air pollution must be studied together as their effects are linked. It is difficult to separate the effects of one from the other, and their health impacts are likely cumulative (European Commission, 2016). Low-income communities suffer from additional stressors and have been shown to suffer more health problems from both air and noise pollution due to road traffic than wealthier communities.

Major health impacts of noise and air pollution cited are respiratory health, cardiovascular health (hypertension, tachycardia, myocardial infarction), mental health, and sleep disturbance. Stress caused by excessive noise can cause elevated cortisol release, and the production of other hormones that lead to elevated blood pressure and hypertension. Chronic environmental noise can also be linked to annoyance, psychosocial-stress, noise-induced hearing loss, and endocrine effects (Hammer et al., 2014).

Because children go through periods of rapid growth and development and have higher metabolism rates, they are more vulnerable to environmental noise and associated pollutants than adults (Stansfield and Clark, 2015). School noise has clear effects on learning, concentration, school performance, behavior, reading comprehension and memory, and standardized test scores. Studies link traffic and aircraft noise exposures in children to general lowered wellbeing, greater annoyance responses, hearing loss, stress responses that include higher adrenaline and noradrenaline levels and higher blood pressure, increase hyperactivity symptoms, changes in cardiovascular function, and nervous and helpless feelings (Stansfield and Clark, 2015; Hammer et al., 2014; Viet et al., 2015). An estimated 5.2 million children in the US suffer from irreversible noise-induced hearing impairment (Viet et al., 2015).

Natural areas and parks are known to have important benefits for mental health, providing quiet places for stress relief and exercise. Noise and related pollution are important considerations in parks and neighborhoods already impacted by health inequities.

4.3 Crime and Safety

NEGATIVE IMPACT: The northwestern portion of the community center, including the existing play area and tennis court, poses a safety threat to children and other users. There is low natural surveillance (“eyes”) on the current play area because it is blocked by the community center exterior wall. With a general low sense of

community safety and security in the neighborhood, guardians may feel uneasy and unsafe when using the play area.

There is a general perception that South Park is unsafe, possibly due to the high property crime rate and other visible illicit activity (e.g., drug activity, illegal garbage dumping, homeless encampments). In addition, two very high-profile homicides in close proximity of the community center (2009 and 2015) continue to have significant impact on the community's sense of safety and security. Mark Solomon, Seattle Police Department, shared that violent crime rates in the South Park community are not significantly higher than the Seattle average but perceptions in the community are that violent crime is a significant problem. Tari Nelson-Zagar of Seattle Neighborhood Group shared that *"many of the communities we work in have experienced a variety of traumas that must inform our approach to designing public space; including serious crime such as homicide, and history of other types of street crime. This site is one with traumatic events haunting it, including the past reputation for gang crime/activity, and violence and homicides that have shaken the community every few years."*

The existing play area is tucked behind the western side of the community center building and bordered by an alley to the north. According to Tari, *"the children's play area caters to the most vulnerable populations in the park – and those who use it range from elders bringing grandchildren to parents with several kids, to older siblings put in positions of responsibility for younger ones. Positive guardianship is supported by CPTED principles, including natural surveillance, access control, image/maintenance & reputation, territorial definition, and community activation."*

Both Mark Solomon and Tari Nelson-Zagar informed EHS that the existing play area lacks important public safety features:

- **Access Control Challenges:** Mark Solomon noticed during our site assessment that the fence door was unlocked which indicates access control challenges. Tari Nelson-Zagar made similar observations during a separate site visit: *"Access control challenges include the play area's proximity to an alleyway with easy access on the part of pedestrians, bicycles, and vehicles. While there is a fence running along the perimeter, and a locked gate, a Parks Dept. person told me that the padlocks on the gates leading into the play area from the alley are often cut, so access control at the entry point is lost at times. The day I visited the site last week, metal from some bleachers located at the rear of the playfield (west perimeter near the highway on-ramp) had been stolen, and although there was no indication of it being transported through the play area, it is not out of the question, if there were a waiting vehicle in the alley. (Although it is just as likely that the metal was transported out of the park by other paths – the neighborhood is quiet, and there is not great natural surveillance into the back area of the play field, even in daylight."*
- **Lack of Natural Surveillance ("Eyes"):** Tari Nelson-Zagar shared that *"From my observation of the physical layout of the site, the playground is isolated, and lacks opportunities for natural surveillance on the part of anyone except someone specifically accompanying a child. There are few occupied windows on the back of the community center, the other activity areas are oriented to face away from the children's playground."* PSCAA staff also attested to feelings of uneasiness when he was collecting air quality samples in the area and observed a couple of men "lurking behind the trees".

- **Image/Maintenance, Reputation and Territorial Definition:** Tari Nelson-Zagar shared: *“The sense of isolation is striking; as I moved around behind the community center I really sensed a disconnect from others on the site who might be able to help if something were to go wrong. The way the site is ‘declared’ (its Territorial Definition) is also a bit odd. The building is oriented to face away from the most public and well-declared entrance and the main entrance is for vehicles – a parking lot on the east side of the building. The community center building itself “reads” as a utility structure to some degree because of the features on the east wall. The parking lot entrance/exit is narrow, and while brightly painted curbs help delineate where vehicles can go, the shape and layout of the driveway made it seem as though it were an exit only.”*

4.4 Social and Mental Health

NEGATIVE IMPACT: The adverse health impacts related to noise and crime and safety will likely also impact social and mental health. Therefore, children and other users of the play areas, in particular, may be at a higher risk for social and mental distress.

See impacts discussion for noise and crime and safety.

4.5 Physical Activity

NEUTRAL IMPACT: The proposed plan will have a neutral impact on physical activity. The plan keeps the playground structure in an area of the park where community members feel unsafe and where conditions are unpleasant and unhealthy (noise and air pollution). This may deter use for some children and their guardians. Without a comprehensive review and innovative redesign of the open space, there could be missed opportunities to promote physical activity and improve access to much-needed play opportunities for all ages.

Parks and open space provide critical opportunities for physical activity and play. Research shows that proximity to parks significantly reduces the risk of being overweight or obese among children (Wolch et al, 2011). A study involving 1,556 adolescent girls found that teenage girls reported 33 additional minutes of physical activity per week for each park located within a half-mile from home. The teens were also more active when parks were lighted and had walking paths (Cohen et al, 2006). Creating new parks, renovating old ones, and improving all parks with features that promote organized and free play are proven strategies for improving health and reducing the costs associated with physical inactivity.

The current plan keeps the new children’s play structure in an area of the park where community members feel unsafe and where conditions are unpleasant and unhealthy (Sections 4.1, 4.2, and 4.3). According to Brian Saelens of Seattle Children’s Hospital, studies, such as Tappe (2013), that sought to understand where children play (and where parents allow their children to play) found that parks and other proximal play spaces are highly valued and that one of the important parts about parks is their perceived safety, that is driven by how visible play areas and structures are to the surrounding neighborhood.

The proposed play area for older kids could provide new opportunities for play but the high levels of noise and public safety concerns in the planned location may deter use. In addition, community representatives shared that they are not able to keep the playground in sight when they use the walking path around the playfield. Relocating the playfield to a location with less noise and air pollution and more visibility can create better opportunities for adults and youth to get physical activity while younger children are in the playground area.

According to community representatives at the site visit on September 19, 2016, the current open space facilities are not fully utilized by the South Park community: the baseball field is being used by a few teams outside of the South Park community and the soccer field is not well maintained and does not have lighting for all-season play. Many low-income children and youth lack the resources to play on organized sports teams and many others are not interested in competitive team sports. Innovative uses of open space for recreation and free play for all include spray parks, futsal courts, adventure playgrounds, and mod soccer fields.

In addition, community representatives reported that Seattle Academy has proposed providing funding for a new turf soccer field and lighting but would require scheduling priority as a condition of support. This proposal is problematic for community members who are concerned that they would have very limited access to the field. Engaging the community in a comprehensive review and innovative redesign of the entire community center open space will be essential to determining the best use of the open space, including the most opportunities to promote physical activity and active play for all ages.

4.6 Heat

NOT ENOUGH INFORMATION TO ASSESS IMPACT. The proposed plan does not appear to increase heat-related impacts but may miss an important opportunity to improve community resiliency to climate change by providing additional shaded areas and water features (spray park). South Park has a higher than average percentage of children and opportunities for cooling during hot summer months are especially important.

The South Park Community is among the lowest in Seattle for tree canopy per acre (6% in 98108, in a range of 4-27% citywide) and has few shady green spaces or other places to cool off during warm weather. Seattle has had an increased number of heat alerts over recent summer periods and this trend is expected to continue. Residents in the South Park community requested a free and easily accessible place for children to cool off during hot days (SPF, 2014). The closest public pools to South Park are the Rainier Beach Pool (~6.4 miles away) and the Southwest Pool (~4 miles away). The closest spray parks are at the Georgetown Playfield and the Highland Park Playfield (~2.5 to 3 miles away). Important health considerations when determining what to install at the South Park Community Center include:

- Many residents do not have the funds for transportation and admission to public pools or spray parks in other neighborhoods across Seattle.
- Wading pools provide cooling and play opportunities for children.
- Spray parks provide cooling and play opportunities for people of all ages and abilities.
- Wading pools have important safety considerations due to drowning dangers and sanitary problems (e-coli).

- Spray parks have many moving parts that need regular inspection/maintenance, and thorough analysis is needed during the planning process to ensure that any spray feature would be safe and sanitary (physical environment and parts are safe and the feature contains fresh (not recycled) water).
- A spray park or wading pool system at the South Park Community Center should be flushed with clean water at the start of each season due to high pollution levels at the site.

4.7 Pedestrian Safety

NEUTRAL IMPACT: The proposed plan does not directly affect pedestrian or bicycle safety but community members expressed concerns about the lack of a marked crosswalk and ADA accessible curb ramps at the 8th Ave. S. and Sullivan St. intersection.

The community center is bordered by 8th Avenue South to the east, Sullivan Street to the south, driveway/alley to the north, and SR 99 to the west. Residents of South Park have a much lower average income and many depend on walking, biking and transit for their daily transportation. Barriers to walking and biking in the community include heavy freight usage on local roads, lack of sidewalks and protected bike lanes, and SR 99 which impacts connectivity between the eastern and western halves of the neighborhood.

In addition, the *South Park Green Spaces Vision Plan* provided an analysis of transit access in the community and determined that accessibility was poor. Only one neighborhood in Seattle (Interbay) received a lower score than South Park. Community members shared that many children and youth access the park on foot or by bike. According to the website, www.Walkscore.com, South Park has a walkable score of 62 (somewhat walkable), compared to 83 in Green Lake (very walkable).

Providing quality bicycle and pedestrian facilities and improved transit access around the South Park Community Center could increase access to the park and improve safety for current users.

When we all stood out there together in the proposed location I felt an immense sense of dread that if this is the location we would be putting kids at risk of so many hazards.

- Cari Simson, parent, local business owner and neighborhood advocate

5.0 Recommendations

The high-level recommendations in this section are meant to serve as a starting point for discussions among agencies, the community and possible funders on how to redevelop a South Park Community Center open space that will enhance the health and wellbeing in the community. EHS staff developed these recommendations in collaboration with technical SMEs and community representatives (see Section 2 - Data Collection). They are also based on published best practices and results from the *South Park Green Space Vision Plan* (SPF, 2014) and *Duwamish Valley Cumulative Health Impacts Analysis* (Gould and Cummings, 2013).

The mitigations, design alternatives, and best practices outlined below are important ways to minimize or prevent the possible negative impacts on community health, particularly related to air quality, noise, crime and safety, and social and mental health. In addition, we identified some opportunities to better promote physical activity and social and mental wellbeing. However, it is beyond our scope and expertise to assess the feasibility of implementing the recommendations, which will likely warrant more detailed design and assessment, along with a robust community engagement.

Recommendation #1: Meaningfully engage the South Park community in a comprehensive review and innovate redesign of the community center’s entire open space to decide: *How can we best use and redesign the open space to allow for relocating the play areas as far from the highway as possible?* This “big picture” redesign process can help to identify the best opportunities:

- to help reverse long-standing health inequities and injustices;
- to promote physical activity and active play for all ages; and
- to meet the interests and needs of the community.

Recommendation #2: Relocate the play areas as far from SR 99 as possible. See Figure 4 for our suggested best locations for the play areas to protect children and others from noise and air pollution exposure. Siting the play areas at these alternative locations will likely improve real and perceived safety by increasing natural surveillance (“eyes on the playground”) and can likely result in more parents using the walking paths or participating in other physical activities nearby. Preferred alternative locations:

- a. Northeastern portion (grass area and parking lot): The grass area will not be large enough to have both toddler and older kid play areas; therefore, we recommend relocating most of the parking lot to the space between the community center building and SR 99 (the location of the current playground). According to Mark Solomon, safety for kids is a priority and if the parking lot is moved to the back there will need to be increased lighting and other public safety features.
- b. In front of the building door entrance (between the ball fields): To allow for safe play area at this location the ball fields will still need to be reconfigured or relocated.



Figure 4 Alternative locations for play areas to protect children's health

Recommendation #3: Consider constructing a concrete noise barrier wall along the SR 99 right-of-way to protect people from air pollution, noise pollution and vehicular crashes. It is beyond the scope of this rapid HIA to assess the potential effectiveness of such a barrier at this location. However, in general, "highway traffic noise barriers can reduce the loudness of traffic noise by as much as half" (US Federal Highway Administration, 2011). Future planning of the South Park Community Center Open Space should include expert evaluation of noise barrier options and their potential effectiveness for reducing open-space (and Community Center) noise exposures to acceptable levels.

In addition, consider installing vegetative barriers (i.e., green walls), where appropriate, to filter air pollution. Greenwalls or other vegetated buffers will need to be designed with public safety in mind (e.g., hiding places, sightline). A barrier (vegetative or concrete) should be at least five meters in height to be effective for air pollution reduction (EPA, 2016).

Recommendation #4: Plan and maintain fields in a way that prioritizes the needs and interests of the community (mod soccer, futsal courts, soccer) and gives them priority access to the fields.

Recommendation #5: Design and build play structures that are appropriate for a wide range of ages. In addition, design and build an all-ages spray park near the alternative locations for the play areas. This will promote more play and physical activity (and protection from heat) for all kids in South Park. Integrate the play area into the other activity nodes in the park.

Recommendation #6: Preserve mature trees and strategically plant conifers to provide public health and environmental benefits (e.g., screen out air pollutants, provide shade, exposure to nature) while not creating unsafe features (e.g., hiding places, blocks sightline). Incorporate garden spaces throughout the park. Funds are available through the RainWise program (www.rainwise.seattle.gov) to install both a cistern that would capture rainwater from the Community Center roof and a garden that the water would irrigate. Such a system could add green space and an educational feature to the park. A RainWise garden was requested by the South Park community in the past.

Recommendation #7: Enhance lighting around the community center building and along pathways. Integrating lighting into public spaces (CPTED) and along sidewalks is important to pedestrian safety and perceived safety. Adequate lighting allows park users to see others at a distance of at least 200 meters away. Additionally, the following recommendations from the SPF South Park Green Space Vision Plan (SPF, 2014) to improve public safety at the South Park Community Center should be considered in the design process:

- *Improve visibility between the building and surrounding gathering areas.*
- *The building turns its side to the street and does not provide a strong visual connection to the east, in the direction that most people come from.*
- *Concept design would benefit from central gathering areas/play areas that are visible from as much of the property as possible.*

Other general best practices to promote health benefits to consider:

- Look for ways to integrate the history and culture of the community into the design of the park.
- Support community activation by addressing the cultural needs around childcare and any specific site-use patterns particular to the communities in South Park.
- Provide opportunities to strengthen the relationship between the park and the surrounding community.
- Design places within the park for relaxation and meditation to improve the mental health of community residents. Exposure to nature enhances the ability to cope with and recover from stress and observing nature can restore concentration and improve productivity. Neighborhood green spaces are beneficial in reducing aggressive behaviors in adolescents who live in urban areas.
- Install amenities such as seating, shade, drinking fountains, bike racks, picnic tables, pavilions, and open lawns that promote opportunities for congregation and socialization.
- Implement traffic calming along park edges and routes to park to: incorporate the preferences and requirements of residents and park users; reduce vehicular speeds; promote safe and pleasant conditions for bicyclists, pedestrians, and residents; improve the environment and livability of neighborhood streets; improve safety for bikes and pedestrians.
- Coordinate with KC Metro to improve transit access to the park.

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7.0 List of Appendices

Appendix A - Just Health Action (JHA) subcontractor conducted a literature review on health effects from air pollution and noise (9/15/16)

Appendix B – Puget Sound Clean Air presentation on Air Quality at the South Park Community Center (9/19/16)

Appendix C – Environmental Health Services Division’s SME Site Visit and Meeting at the South Park Community Center: Agenda and Scoping Table Example (9/19/16)