Madison Middle School Athletic Field Improvement Project

Draft SEPA Checklist

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For questions and more information about this document, please contact the following:

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While the Madison Middle School Athletic Field Improvement Project Draft State Environmental Policy Act (SEPA) Checklist is accessible and ADA compliant, the attached figures and appendices which support the checklist contain complex material that are not accessible. The following is a description of what is contained in the figures and appendices:

- Figure 1, Madison Middle School Vicinity, Seattle, Washington
  Figure 1 is an aerial photograph of the Madison Middle School site including its surrounding neighborhood to approximately 800 feet in the four compass directions from the athletic field. The athletic field for which the lighting is proposed is outlined in red. There is an inset map showing where the site is located within the city of Seattle.

- Figure 2, Madison Middle Proposed Light Poles
  Figure 2 is a close-up aerial view of the athletic field showing where the proposed light poles will be located around its perimeter. The length of the field is oriented north to south. The pole locations are indicated with yellow triangles pointing in the direction of the field. There are three light poles proposed along the west, and three along the east edges of the field for a total of six light poles.

- Appendix A: Traffic Impact Analysis
  Appendix A consists of a report titled, "Transportation Technical Report for Athletic Field Improvements at Madison Middle School" prepared by Heffron Transportation, Inc. dated April 20, 2020. The report provides a project description; background conditions related to the transportation network, traffic volumes, level of services, parking, traffic safety, transit facilities and non-motorized facilities. The report addresses impacts of the proposed lighting project on the same and concludes with a summary and recommendations. Attached to the end of the report are Appendix A – Level of Service Definitions, and Appendix B – Parking Utilization Study Data. There are figures and tables throughout this document, including in the appendices, which graphically depict and organizes data to support the findings in the report.

- Appendix B: Existing Noise Conditions and Potential Post-Project Noise Conditions
  Appendix B is a noise evaluation prepared by Environmental Science Associates (ESA). It documents existing evening noise conditions and presents results of noise monitoring and technical analysis of environmental noise impacts that may result from implementation of the athletic field lighting project. It includes the methodology used to gather information, a description of the existing noise environment, anticipated noise and potential effects, and concludes with the results of the noise assessment. The report includes tables which organize noise measurement data that illustrate the report's findings. Figure 1 – Madison Middle School, Noise Monitoring Location, follows the report. The figure is an aerial view of the athletic field and its surrounding area showing the locations of the five land use zones that make up the neighborhood and the two sites where noise measurements were taken.

- Appendix C: Light and Glare Report

  Appendix C is the Light and Glare Report, prepared by Stantec dated April 22, 2020. The report provides a description of existing conditions, existing light and glare sources in and around the Madison Middle School area, the lighting equipment proposed for this project, a discussion of glare, spill light and skyglow and their impacts to the environment, ending with how the proposed lighting will be controlled. The report includes photographs to illustrate and support discussions in the text portion of the report. The report also includes two drawings titled, "Spill Light Calcs." The drawings have identical backgrounds showing an aerial photograph of the field overlaid with an evenly spaced grid of numbers representing spill light calculations at various points across the field. The first drawing shows calculations based on the proposed light pole heights of 70-feet tall. For comparison purposes, the second drawing shows spill light calculations based on the light pole height of 29-feet.

  This concludes the description of the draft SEPA checklist figures and appendices for the Madison Middle School Athletic Field Improvement project.

Madison Middle School Athletic Field Improvement Project

SEPA Checklist

April 2020

PREPARED FOR:

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PREPARED BY:

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ENVIRONMENTAL CHECKLIST

A. BACKGROUND

1. Name of the proposed project, if applicable:

Madison Middle School Athletic Field Improvements

2. Name of Applicant:

Seattle Public Schools (SPS)

3. Address and phone number of applicant and contact person:

Conrad Plyler
Seattle Public Schools
2445 3rd Ave S
Seattle, WA 98134
(206) 252-0662

4. Date checklist prepared:

April 2020

5. Agency requesting checklist:

Seattle Public Schools (SPS)

6. Proposed timing or schedule (including phasing, if applicable):

SPS plans to replace the athletic field and install the field lighting in summer 2021. Installation is anticipated to take approximately 1-2 months.

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.

SPS is currently developing a plan for a classroom addition at the Madison Middle School Campus. The addition is expected to be a two-story, eight classroom addition and the removal of existing portables, but complete details have not yet been determined. Project-specific SEPA review will be conducted separately for the addition.

This addition is unrelated to the Madison Middle School Athletic Field Improvement project, and construction is likely to occur in 2021.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

Madison Middle School Field Athletic Field Improvements Project Project Cultural Resources Assessment, Short Report, ESA, March 2020

Geotechnical Engineering Investigations, Proposed Athletic Field Improvements Madison Middle School, Krazan & Associates, Inc., December 12, 2019

Madison Middle School Athletic Field Lighting Project – Existing Noise Conditions and Potential Post-Project Noise Conditions, ESA, April 22, 2020

Transportation Technical Report for Athletic Field Improvements at Madison Middle School, Heffron Transportation, Inc., April 20, 2020

Madison Middle School Athletic Field Lighting, Light and Glare Report, DA Hogan and Stantec, April 22, 2020

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.

SPS and Seattle Department of Parks and Recreation (Parks) have entered into a Joint Use Agreement for Parks' use of school fields for the time period of 2016 - 2019 that is anticipated to be extended.

10. List any governmental approvals or permits that will be needed for your proposal, if known:

The following permits/approvals may be required for this project:

- Type 2 Master Use Permit (MUP), City of Seattle
- NPDES, Washington State Department of Ecology
- Building Permit, City of Seattle
- Construction Permit, City of Seattle
- Right-of-Way Permit, City of Seattle

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page.

The proposed project would convert the existing grass field to a synthetic turf field, resurface the existing track, and install six new light poles.

SPS and the Seattle Department of Parks and Recreation (Parks) have been working together to develop plans for installing lights at athletic fields around the City. Lighting is being installed as mitigation for the impacts of SPS's change in school start times. In fall 2016, SPS changed start times so that high school students start at 8:50 a.m. and are dismissed at 3:20 p.m., approximately 1 hour

later than the previous schedule. The later dismissal time for high schools means that school athletic fields are used for school practice and games later in the day, reducing the time that unlighted fields are available for community use under the Joint Use Agreement with Parks. This was identified as a significant adverse impact in the Change in School Start Times Programmatic Environmental Impact Statement (EIS) (SPS, 2016).

The proposed lighting at Madison Middle School would be located at the athletic field to the west of the school (Figure 2). Lighting of the field would allow SPS and Parks to schedule events later in the evening than currently possible, extending the use of the field during certain times of the year. The field would assist in relieving the demand for all-season, multi-use, lighted fields in the City.

SPS proposes to light the athletic field at Madison Middle School to allow for both SPS use and community use. The athletic field at Madison Middle School accommodates soccer and football activities, with a surrounding track. Light fixtures would be installed on six galvanized steel poles around the perimeter of the field. The poles would be 70 feet tall.

SPS and Parks propose to schedule events at the lighted field from dusk until 10 p.m. The proposal would not change the school enrollment or any other facilities on the site, but would allow increased use of the athletic fields for scholastic and non-scholastic recreational activities schedules to end by 9:45 p.m., with lights automatically turned off at 10:00 p.m. In setting the cutoff time for lights, SPS considered the following:

> Parks has adopted Policy # 060-P 7.1.1, Use and Scheduling of Outdoor Athletic Facilities, which became effective on July 1, 2002. For lighted fields, Parks' policy is to schedule play until 10:45 p.m., except on fields where residences adjoin the length of the field on two or more sides (unless arterials, significant topography, and/or other buffers are found between the field and adjacent residences on one or both sides). Fields that meet these criteria are scheduled until 10:00 p.m. Unless security lighting is available, lights at all fields will be turned off 15 minutes after the end of scheduled play to allow players to leave the site safely (Policy # 060-P 7.7.1, Section 4.3.3). Because residences adjoin Madison Middle School on all sides, events at those fields would be scheduled until 9:45 p.m.

Other lighting considerations include:

- There is potential for the field to be used before school starts in the morning.
- The lights will not be turned on when no one is using the field.

In addition to the lighting, SPS proposes to convert the existing under-drained, irrigated, sand-based grass playing surface with a similarly under-drained

synthetic turf surface. The District's experience is that replacing the field will allow all scheduled activities to occur without weather delays or cancellations. In order to accommodate the currently programmed football and soccer uses in better alignment with current standards (the National Federation of High School Associations, or NFHS, establishes recommendations which are adopted by the "local" Association, in this case the Washington Interscholastic Activities Association or WIAA), the project proposes to expand the width of the field by approximately 6.5 feet. To better support track and field activities, the western lanes of the surrounding rubberized track will be increased by 2.0 feet. To accomplish this, the existing chain link fence along the west edge and top-of-slope will be moved west about 0.7 foot.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.

The school site is located at 3429 45th Ave SW, Seattle, WA 98116, with the outdoor sports, athletics, and physical educational facilities, along with surface water management facilities, occupying the west half of the campus. The site is bounded on all sides by a residential neighborhood. The site is located in the northwest quarter of Section 14, Township 24, Range 3. The site is made up of two parcels (927830-0010 and 927830-0005) totaling 8.9 acres with the following legal description:

W S 5-ACRE TRACTS # 5 LESS STREET

Figure 1 shows the project vicinity. Figure 2 shows the athletic field and the proposed layout for the lighting poles.

B. ENVIRONMENTAL ELEMENTS

1. Earth

A geotechnical investigation was performed at the project site by Krazan & Associates, Inc. (2019). The work included a review of existing subsurface information for the property as well as drilling six soil borings on the project site. Information from this report is summarized in this section and incorporated throughout the SEPA Checklist as appropriate.

a. General description of the site (underline):

Flat, rolling, hilly, steep slopes, mountainous, other _____

The ground surface slopes down from the school buildings to the playing field at an angle of about 23 degrees. Directly west of the athletic field, the ground slopes down to the west at an angle of approximately 22 degrees. A concrete wall up to about 13 feet in height is located near the toe of the lower slope west of the athletic field and just above 47th Avenue SW.

b. What is the steepest slope on the site (approximate percent slope)?

The City of Seattle designates slopes greater than 40% with a rise of at least 10 feet as critical areas (Seattle Municipal Code [SMC] 25.09.012). Steep slopes are located to the west and east of the Madison Middle School athletic field area (Krazan & Associates, Inc., 2019).

c. What general types of soils are found on the site (for example clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils.

The Natural Resources Conservation Service (NRCS) map for King County indicates that the soils in the site vicinity consist of Urban Land – Alderwood complex soils (0 to 5 percent slopes) and Urban Land – Alderwood complex soils (12 to 35 percent slopes).

d. Are there any surface indications or a history of unstable soils in the immediate vicinity? If so, describe.

According to the geotechnical report prepared by Krazan & Associates, Inc., the areas of sloping ground at the site have a low risk for movement and erosion under static conditions, provided that vegetation cover is maintained on the slopes and that surface water is directed away from the sloping areas.

e. Describe the purpose, type, total area, and approximate quantities of total affected area of any filling or grading proposed. Indicate source of fill.

Conversion of the grass field to synthetic turf will result in an estimated 75,000 square feet of new or replaced surfaces on the field and track and the base and drainage infrastructure conditions required for them. Below is an estimate of earthwork volumes required.

- Stripping of existing vegetation (sod) and other surfacing materials to a depth of 0.25 foot will result in an estimated 680 cubic yards of material removed.
- Excavation of up to 1.9 feet of excess on-site soils will result in approximately 3,900cubic yards of export.
- Import of engineered aggregates and other bulk materials is estimated at 3,140cubic yards.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

The NRCS indicates that the Alderwood complex soils with 0 to 5 percent slopes have a slight risk of soil erosion when exposed, and the Alderwood complex soils with 12 to 35 percent slopes have a severe risk of soil erosion when exposed.

As with any construction project, erosion can occur during construction. Measures described below will be implemented to minimize the erosion potential.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

Per the City's 2016 Stormwater Manual, under-drained natural or synthetic fields are considered to be pollution-generating hard surfaces and are modeled as 100% impervious. The new synthetic turf field would be approximately 66,350 square feet, which is approximately 2,350 square feet larger than the existing grass field. Grass and existing vegetation would be retained in the area surrounding the proposed field and nearby steep slopes.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

The contractor is responsible for maintaining the stability of the temporary cut slopes and minimizing slope erosion during construction. The temporary cut slopes should be covered with plastic sheeting to help minimize erosion during wet weather and the slopes should be closely monitored until the permanent retaining systems are complete. Standard erosion control measures would also be implemented to minimize erosion potential.

2. Air

a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known.

During lighting installation and field replacement, there may be a small increase in exhaust emissions from construction vehicles and equipment and a temporary increase in fugitive dust. When the project is complete, the increased vehicular traffic accessing the athletic field for events may cause a small increase in exhaust emissions.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

There are no off-site sources of emissions or odors that would affect the project.

c. Proposed measures to reduce or control emissions or other impacts to air, if any.

Contractors will use best management practices to minimize construction-related emissions. These emissions are expected to be minimal. Construction equipment would also be equipped with the appropriate emission controls.

3. Water

a. Surface Water:

1. Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

There are no known surface water bodies on or in the immediate vicinity of the site.

2. Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.

The project would not require any work over, in, or adjacent to any surface water bodies.

3. Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.

The proposed project would not require any work in or near surface water, and would not place any amount of fill or dredge material in surface waters or associated wetlands.

4. Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities, if known.

The project would not require surface water withdrawals or diversions.

5. Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Maps, the site is not located within a 100-year floodplain.

6. Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.

The project would not involve the discharge of waste materials to any surface waters.

b. Ground Water:

1. Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known.

No groundwater will be withdrawn for drinking or other purposes.

2. Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals. . . ; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.

No waste materials would be discharged into the ground and the project would not utilize septic tanks.

c. Water Runoff (including stormwater)

1. Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

The new athletic field will generate additional stormwater due to its increased size and less-pervious nature. Stormwater generated from the field will be routed into an on-site water quality treatment system before entering the City's existing storm drainage system. The project will comply with all City and state code requirements for stormwater discharge.

2. Could waste materials enter ground or surface waters? If so, generally describe.

It is unlikely that sediment generated during lighting installation and field construction could leave the site with the implementation of construction best management practices. The proposed synthetic turf field will be constructed with natural cork and sand infill. Once the field and track are constructed and the light poles are installed, the surrounding area would be restored to existing conditions.

3. Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe

The proposed project would not alter or affect drainage patterns in the vicinity of the project.

d. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any:

The project is required to implement on-site Stormwater Management to the extent feasible as it includes more than 1,500 square feet (SF) of new plus replaced hard surface. Additionally, the project proposes more than

5,000 square feet of pollution generating hard surfaces and will require Basic Water Quality treatment. The project will comply with Washington State Department of Ecology and City of Seattle stormwater discharge requirements.

4. Plants

a. Check the types of vegetation found on the site:

_X_ deciduous tree: alder, maple, aspen, other

_X_ evergreen tree: fir, cedar, pine, other

__ shrubs

_X_ grass

____pasture

____crop or grain

____ Orchards, vineyards or other permanent crops.

____ wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other

____water plants: water lily, eelgrass, milfoil, other

____other types of vegetation

b. What kind and amount of vegetation will be removed or altered?

The proposed project would remove the existing grass field and replace it with synthetic turf.

c. List threatened or endangered species known to be on or near the site.

No threatened or endangered plant species or critical habitat are known to be on or near the site (WDFW, 2019).

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:

No landscaping is proposed as part of the project.

e. List all noxious weeds and invasive species known to be on or near the site.

There are no noxious weeds or invasive species known to be on or near the site.

5. Animals

a. List any birds and other animals which have been observed on or near the site or are known to be on or near the site. Examples include:

Animals observed on the site are restricted to typical urban birds and animals.

Fish: not applicable

Amphibians: none observed

Reptiles: none observed

Birds: species adapted to urban areas such as gulls, American crow, rock pigeon, chickadee, robin, Steller's jay, northern flicker, and Bewick's wren.

Mammals: species adapted to urban areas such as Norway rat and other rodents, raccoon, opossum.

b. List any threatened or endangered species known to be on near the site.

According to the WDFW Priority Habitats and Species program maps, no threatened or endangered species are known to be on or near the site. In addition, the U.S. Fish and Wildlife Service (USFWS) Environmental Conservation Online System (ECOS) Information for Planning and Consultation (IPaC) online tool does not designate critical habitat for threatened or endangered species on or near the site.

c. Is the site part of a migration route? If so, explain.

The Puget Sound area is located within the Pacific Flyway, which is a flight corridor for migrating waterfowl and other avian fauna. The Pacific Flyway extends south from Alaska to Mexico and South America. No portion of the proposed project would interfere with or alter the Pacific Flyway.

d. Proposed measures to preserve or enhance wildlife, if any.

The proposed project is not expected to result in any impacts to wildlife or wildlife habitat. The athletic field area does not provide quality habitat for wildlife: shrub and vegetated areas of the site are isolated habitat patches within a larger matrix of residential buildings, pavement, and cleared areas at the existing school and surrounding residential neighborhoods. These small vegetated areas do not provide a contiguous connection to other habitat areas and do not function as a wildlife corridor. Wildlife using the site and surrounding areas are accustomed to ambient urban lighting from the surrounding residences, street lights, and the existing school. Wildlife

using the site and surrounding area are also accustomed to current noise levels from surrounding residence and the existing school, making it unlikely that noise from the proposed athletic field and events would present an issue. Wildlife could temporarily avoid the area during athletic events, but would likely return after athletic events have ended. Light spill from the athletic field would be reduced by the taller light poles, and would not shine on trees or shrubby areas around the edge of field where wildlife might be located.

There is evidence that migrating birds become disoriented by lighted towers and collide with the towers, or the guy wires supporting the towers. The literature does not report bird fatalities at lighted towers less than 200 feet tall, and the U.S. Fish and Wildlife Service guidelines for siting towers do not address those less than 200 feet tall. The proposed athletic field light towers would be less than 100 feet tall, and would not use guy wires. It is unlikely that the proposed athletic field light towers would present problems for migrating birds, since the average migration elevation is 1,000 to 2,000 feet.

e. List any invasive animal species known to be on or near the site.

No animal surveys were conducted for this checklist. Invasive animal species likely to be in the area include rats and opossums, typical of an urban area.

6. Energy and Natural Resources

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

The proposed athletic field lights would be powered by electricity.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

The new athletic field, lighting poles and associated equipment would not block the use of solar energy by adjacent properties. No aspect of the project would interfere with solar energy use by others.

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:

To conserve energy, the athletic field lights would use high efficiency light emitting diode (LED) floodlights. The LED floodlights would reduce

the electrical energy load used for lighting by approximately 33 percent compared to floodlights that use metal halide lamps.

A fully programmable control system with remote operation will allow the fields to be lighted independently and to automatically turn off after play is completed. This feature ensures that lights would be on only during the hours that events are scheduled on the field. If necessary, the lights could also be operated manually through separate switches that would be installed.

The control system will be connected to the Seattle Public Schools energy management system. The lighting controls will be operated and programmed by SPS staff only. Automated control of the lighting system will be located at the central office. Manual controls will be located inside a locked electrical cabinet on site with keyed access by SPS staff only. Public use of the lighting system is scheduled through the Seattle Parks Department, who then puts in a request to SPS to program the lights to turn on.

Additionally, the new athletic field lighting would be in compliance with the Washington State Energy Code and the City of Seattle Energy Code.

7. Environmental Health

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.

Accidental spills of hazardous materials from equipment and vehicles could occur during construction. Replacement of the field and track and installation of the light poles would require construction vehicles equipment, so there is a potential for spills. The contractor would develop a spill prevention and control plan to prevent the accidental release of contaminants into the environment.

1. Describe any known or possible contamination at the site from present or past uses.

According to the Department of Ecology Facility/Sites database Madison Middle School is not known to be contaminated (Ecology 2019).

2. Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity.

There are no existing hazardous chemicals or conditions that would affect project development.

3. Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project.

Chemicals stored and used during construction would be limited to gasoline and other petroleum based products required for maintenance and operation of construction equipment and vehicles.

4. Describe special emergency services that might be required.

The project would not require any special emergency services.

5. Proposed measures to reduce or control environmental health hazards, if any:

Site-specific pollution prevention plans, spill prevention and control plans would be developed to prevent or minimize impacts from hazardous materials.

b. Noise

1. What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?

There are no existing sources of noise in the area that would adversely affect the proposal. Madison Middle School is surrounded by single-family residential, with homes located to the north, west, and south of the athletic field across SW Hinds Street, 47th Avenue SW, and SW Spokane Street.

2. What types and levels of noise would be created by or associated with the project on a short-term or long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.

The City of Seattle Noise Ordinance (SMC Chapter 25.08) regulates noise in the City. Noise is typically defined as an

unwanted sound that can disrupt quality of life (EPA, 2019). Noise is typically measured in units called decibels (dB). For the purposes of environmental analysis noise is commonly quantified as "A weighted" decibels (dBA), which corresponds to the frequencies that are audible to the human ear. Use of the dBA frequency is consistent with SMC 25.08.090. Leq or the "equivalent sound level" is used to describe noise over a specified period of time in terms of a single numerical value. The Leq of a time-varying signal and that of a steady signal are the same if they deliver the same acoustic energy over a given time. The Leq may also be referred to as the average sound level.

The City sets exterior sound level limits according to the land use of both the property generating the noise (the source) and the property receiving the noise (SMC 25.08.410). From one property to another when both properties within a residential district, the maximum allowable noise during daytime and evening hours (7:00 a.m. to 10:00 p.m.) is limited to 55 Leq (dBA). The code allows for short duration increases of up to 15 dBA over the 55 dBA limit, as long as the hourly Leq exterior sound level limit is not exceeded (SMC 25.08.410.B).

The code further regulates noises considered "unreasonable" including "loud and raucous, and frequent repetitive or continuous sounds made by the amplified or unamplified human voice" between the hours of 10:00 p.m. and 7:00 a.m. During these hours, maximum allowable noise from one property to another within residential districts is reduced to 45 Leq (dBA). Madison Middle School, including the athletic field, and surrounding residences are all located within residential districts per City of Seattle Zoning and would adhere to the Seattle Noise Ordinance.

Long-term noise impacts would result from increased traffic associated with the athletic events at the fields. Increased noise from field use, including cheering, whistles, and voices of the sports participants, would also occur during the extended hours of field use allowed by the lighting. Hours of increased noise would be from dusk to 10:00 p.m. every day during the darker wintertime afternoon/evenings of the year to accommodate both SPS and Parks activities.

While the increase in environmental noise and the character of noise is anticipated to be noticeable for residences to the north and west of the field, late evening athletic activities occurring before 10:00 p.m. are anticipated to be consistent with environmental noise limits of the Seattle Noise Ordinance (SMC 25.08), since the events alone are not expected to exceed the environmental noise limit. For residences to the east and south of the athletic field, further separated from the athletic field by Madison Middle School

buildings and an extended setback, changes in the noise environment resulting from the project are not anticipated to be perceptible.

Additional information about existing evening noise conditions at Madison Middle School and results of noise monitoring and technical analysis of environmental noise impacts that may result from implementation of the athletic field lighting project are included in the Noise Memorandum found in Appendix B of this Checklist.

3. Proposed measures to reduce or control noise impacts, if any:

SPS and Parks would schedule evening games to end by 9:45 p.m. to minimize noise impacts on the neighborhood. Security lighting would be provided for an additional 15 minutes (until 10:00 p.m.) to allow players to safely leave the field.

No public address system would be used at the athletic fields, and SPS will prohibit the use of portable speakers on the athletic fields.

8. Land and Shoreline Use

a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe.

The site is currently used as a school and is comprised of two large rectangular buildings with portable classrooms to the north, a parking lot, and a soccer/football field with a surrounding track.

The school is located in a predominantly single-family residential neighborhood. The project would not affect the current land uses. The site has been used as a school and would continue to be used as a school.

b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use?

The site is not currently and has not been previously used for working farmlands or working forest lands. No agricultural or forest land would be converted to other uses. The site has been developed as a school since 1929 (SPS, 2020).

1) Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how:

No working farm or forest lands are located near the proposed project, so the project would not affect or be affected by farm or forest land operations.

c. Describe any structures on the site.

Structures on site include the two school buildings, approximately four free-standing portable buildings, a soccer/football field and track, and parking lot.

The proposed eight classroom addition located to the northeast of the project would remove the portables currently on site. This work is planned to occur independently in 2021.

d. Will any structures be demolished? If so, what?

No structures would be demolished as part of the project, however the existing grass field would be removed and replaced with synthetic turf.

e. What is the current zoning classification of the site?

The current zoning classification of the school site is Residential Single Family 5000 (City of Seattle, 2019).

f. What is the current comprehensive plan designation of the site?

The City of Seattle comprehensive plan designation of the site as a "Single Family Residential Area" (City of Seattle, 2019a).

g. If applicable, what is the current shoreline master program designation of the site?

The project site is not located within a shoreline jurisdiction; therefore, there is no applicable shoreline master plan designation.

h. Has any part of the site been classified as a critical area by the city or county? If so, specify.

Review of the City of Seattle Department of Construction and Inspections (SDCI) GIS mapping database for environmental critical areas indicated that steep slopes are found to the east and west of the athletic field.

i. Approximately how many people would reside or work in the completed project?

No people would reside or work in the completed project. The proposed field lighting would allow for increased use of the field during the late fall, winter and spring months when daylight is limited. Average attendance/participation is expected to range from 118 to 135 persons per scholastic athletic event and 51 to 57 for non-scholastic athletic activities. The combined peak number of added attendees and participants on site that would occur for a short time between consecutive activities is estimated to range from 169 to 192 persons (Heffron Transportation, 2020).

j. Approximately how many people would the completed project displace?

The completed project would not displace any people.

k. Proposed measures to avoid or reduce displacement impacts, if any:

No displacement would occur; therefore, no mitigation measures are proposed.

l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:

The proposed height of the light poles is taller than permitted by Seattle Municipal Code in a single-family residential area. The height limit for light poles in residential areas is 30 feet and the proposed poles would be 70 feet (SMC 23.76). SMC 23.51B.002(D)(6) permits light poles at public school athletic fields to exceed the maximum permitted height up to a maximum of 100 feet if the Director of the SDCI determines that the additional height is necessary to ensure adequate illumination and that light and glare are minimized to the extent practicable. Section B.11 of this Checklist describes how the taller poles reduce light and glare impacts.

m. Proposed measures to ensure the proposal is compatible with nearby agricultural and forest lands of long-term commercial significance, if any:

The project is not located near any agricultural or forest lands, so no measures to ensure compatibility are required.

9. Housing

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

No housing units would be provided as a part of this project.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

No housing units would be eliminated.

c. Describe proposed measures to reduce or control housing impacts, if any.

The project would not result in any impacts to housing; therefore, no mitigation has been proposed.

10. Aesthetics

a. What is the tallest height of any of the proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?

The athletic field lighting system would consist of six 70 foot galvanized steel poles with LED shielded floodlights. Three lights would be located on each side of the athletic field (Figure 2).

b. What views in the immediate vicinity would be altered or obstructed?

Views across the athletic fields would be altered by the new light poles. The light poles would be visible, but would not obstruct any views.

c. Proposed measures to control or reduce aesthetic impacts, if any:

The steel poles are designed to minimize size and bulk. The floodlights and brackets are designed to minimize quantity, size, and bulk.

11. Light and Glare

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

The proposed lighting for the field would include 20 - 900 Watt and 8 - 600 watt shielded LED floodlights mounted on six galvanized steel poles located on the two sides of the field. The poles would be 70 feet tall. The four corner poles will have one additional 575 watt shielded LED floodlight mounted at a height of 16 feet above grade and aimed above the field. The two mid-field poles will have two additional 575 watt shielded

LED floodlights mounted at a height of 16 feet above grade and aimed above the field. One additional low wattage "full cutoff" area light will be mounted at a height of 30 feet above grade on each pole. For examples of the LED and associated shields, please refer to the *Madison Middle School Athletic Fields Lighting, Light and Glare Report* (Appendix C).

The height of the poles has been proposed in order to minimize light spillage outside the athletic complex. The lights would comply with the guidelines established by Parks (Parks, 2002). SPS and Parks propose to schedule events at the lighted fields from dusk until 10 p.m. While not currently planned, the fields may also be lit in the morning hours of winter to allow high school practice. Such future field use would be conducted in compliance with noise ordinance requirements. The proposal would not change the school enrollment or any other facilities on the site, but would allow increased use of the athletic fields for scholastic and non-scholastic recreational activities schedules to end by 9:45 p.m., with lights automatically turned off at 10:00 p.m.

The sports field lighting would be designed to a Class IV lighting level, as prescribed by the Illuminating Engineering Society of North America (IESNA) standard Recommended Practice for Sports Lighting (RP)-8. The field would be lighted to an average maintained lighting level of 29 foot-candles using a 0.95 Light Loss Factor.

Current City of Seattle guidelines recommend that athletic field spill light not exceed 1.0 foot-candles initial at residential property lines. To comply with this requirement, the District will obtain a special exception to the height limit from the Seattle Department of Construction and Inspections. This special exception will ensure adequate illumination for safe play and reduce the amount of impacts from light and glare into the neighborhood.

The lighting systems would operate from dusk to the pre-set curfew time. The lighting systems would be operated by a fully programmable control system with remote operation. The lights for the field would be operated separately so that they could be turned off when not in use. The area lights would be on a separate zone and would remain on for a short time after each event to provide ample light for egress from the site following the completion of scheduled field use each evening.

The new lighting system will increase the overall light and glare in the area during evening hours. The proposal will produce direct glare, reflected glare, spill light (light trespass) and sky glow. A definition of the terms used is as follows:

> **glare** is the sensation produced by luminance within the visual field that is sufficiently greater than the luminance to which the eyes are adapted to, causing annoyance, discomfort, or loss in visual performance and visibility.

direct glare describes when an observer can see directly into a luminaire's light source, where the lamp or the reflector are visible.

foot candles a measurement of the light intensity, the illuminance being a one-square foot surface from a uniform source of light.

luminance refers to direct glare and reflected glare.

reflected glare describes when light reflected from a surface causes disability glare. It is assumed that the surface is not intentionally a light source. Surfaces attributable to reflected glare will have a higher luminance than adjacent or nearby surfaces.

spill light is light from a source, which does not strike the area intended for illumination. Spill light can be characterized by foot-candles (fc) calculated or measured in a horizontal or vertical plane.

light trespass is when spill light extends beyond the property line of the owner of a light source, and onto or above another owner's property.

sky glow is the haze or glow of light emitted above the lighting installation and reduces the ability to view the darkened night sky. This is a combination of light emitted directly from the light source, light reflected upward from the illuminated surface, and light reflected from airborne particles between the light source and the illuminated surface.

Direct glare would be visible from all directions overlooking the athletic field. The amount of glare visible depends on proximity to the site, orientation of the floodlights, distribution of intervening buildings, terrain or vegetation that would block the glare. Due to their proximity to the field at a lower elevation to the field, properties directly to the west of the field would be exposed to direct glare. Low to moderate levels would affect three residential properties near the center of the field. These properties are close to the fields with direct exposure to the light poles and floodlight assemblies. The direct glare visible at these residences is due to a small portion of light from one or two floodlights at each pole on the east side of the field.

Other adjacent residential properties located on the west, north and south sides of the field will have low to minimal exposure to direct glare. Residential properties that are located farther away from the field will have minimal to no direct glare impacts.

Reflected glare would be visible from all directions overlooking the site, depending direct views into the site, exposure to poles\floodlights,

distribution of intervening buildings, terrain or vegetation that would block the glare. Of the surfaces that are visible from offsite locations, the synthetic athletic field surface would be the greatest contributor to reflected glare. The reflected light off the floodlight housings, floodlight visors and poles would be a lesser contributor.

The residential properties that are at a higher elevation above the field to the north and south have the greatest amount of exposure to reflected glare. These properties are close to the fields with direct exposure to the field surfaces, adjacent grass\pavement surfaces, light poles, and floodlight assemblies. The main component of the impact is the light reflected off the synthetic turf field surface.

Residential properties that are located farther away from the field or below the field will have low to minimal reflected glare impacts. These properties will have limited to no direct views of the playing surface due to their location away from the fields. The reflected glare impact associated with the poles and floodlights is much less from more remote viewing points, as the impact is reduced at greater distances. This is true even though reflected glare from the floodlights and tops of the poles will be visible at greater distances due to their elevation above the field.

The athletic field lighting system will generate minimal amounts of spill light. Spill light impacts will be primarily located at residential properties directly west of the proposed field across 47th Avenue SW. The maximum amount of spill light at this location is 0.70 foot-candles. The spill light generated is well below the recommended maximum of 1.0 foot-candles per City of Seattle.

The athletic field lighting system would generate a minimal amount of "sky glow" at locations near the fields. Sky glow would be very minor during heavy low overcast skies and small amounts of sky glow would be evident during conditions of low to heavy fog.

b. Could light or glare from the finished project be a safety hazard or interfere with views?

The illumination system would not pose a safety hazard or interfere with views from off-site locations.

c. What existing off-site sources of light or glare may affect your proposal?

No off-site sources of light or glare would affect this proposal.

d. Proposed measures to reduce or control light and glare impacts, if any:

The lighting systems selected for the proposed athletic fields are designed to minimize light and glare impacts. To reduce the amount of glare, spill light and sky glow that is visible off-site the floodlights would need to be mounted higher than the 30 feet permitted by City code (SMC 23.76). The increased mounting height of 70 feet would reduce the maximum spill light at the residential property lines and meet recommended practice of maximum of 1.0 foot-candles set by the City of Seattle.

After installation and testing of the floodlighting system additional adjustments to the floodlight shielding and floodlight aiming will be completed as necessary to further reduce glare\spill light.

SPS has proposed to use an athletic field lighting system designed to mitigate the negative impacts of light and glare. The proposed system consists of the latest technology available on the market for shielded LED floodlights designed for the lighting of athletic fields.

The use of high efficiency LED arrays provide more precise control of light to be delivered to the field. The reflector and shielding design further reduce the amount of light transmitted off site and into the atmosphere. The floodlights utilize an additional external visor mounted to the floodlight that extends in front of the floodlight. The floodlight design is similar to "full cutoff" style lights as they dramatically limit the amount of light that is emitted above the plane of the floodlight. The proposed lighting system is similar to recently lighted fields at Roosevelt High School and Ballard High School.

A fully programmable automatic lighting controller will be provided. The controller will be able to be operated remotely to be able to turn lights off when the field is not in use.

12. Recreation

a. What designated and informal recreational opportunities are in the immediate vicinity?

Recreation opportunities on the Madison Middle School site include a soccer/football field surrounded by a track. There are no other recreation opportunities in the immediate vicinity of the project.

b. Would the proposed project displace any existing recreational uses? If so, describe.

The proposed project would temporarily displace all existing recreational uses on the field while construction takes place. Activities will resume following construction.

c. Proposed measures to reduce or control impacts on recreation, including recreational opportunities to be provided by the project or applicant, if any:

This project would increase the number of available hours for use of Madison's athletic field. The proposed lighting project is intended to mitigate for the impacts of reduced Parks use of SPS athletic fields caused by the later start times of high schools (see Section A.11). No additional mitigation measures are required.

13. Historic and Cultural Preservation

A Cultural Resources Short Report for the Madison Middle School site was developed by ESA (ESA, 2020). Cultural resources reports are exempt from public disclosure under RCW 42.56.300. Information from the review is summarized in this section.

a. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers located on or near the site? If so, specifically describe.

Madison Middle School opened in 1929. Its three story floor plan with gothic details is unique in the district. It is a designated City of Seattle Landmark. The structure has been recorded on Washington State Historic Property Inventory Forms, and it is also listed on the National Register of Historic Places (NRHP). Additions to the property were made in 1931 and 1971. The field area itself does not contain any structures; however, it is adjacent to 34 historic aged single family homes. Of these, a single dwelling at 3258 45th Ave SW has been evaluated and listed on the NRHP. It has been listed for its unique 1½ story Tudor revival architectural style. None of the other 33 historic aged structures are listed on local, state, or national historic registers (ESA, 2020).

b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources.

The project is located within the traditional territory of the Southern Coast Salish people, whose members include but are not limited to the Duwamish and Suquamish people. Oral traditions support the presence of Southern Coast Salish people in this portion of Puget Sound since time immemorial. One published Indigenous place name was identified near the Study Area: dəxʷqutəb, or "place of disease" for a depression "a mile or more inland from Duwamish Head" on the top of the ridge. The study area is approximately 1.50 miles inland from Duwamish Head.

No previously recorded archaeological sites, cemeteries, or traditional cultural properties are located within the project area. ESA considers the project area to be low risk for containing subsurface precontact and historic period archaeological resources due to past development of the site (ESA, 2020).

c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc.

ESA conducted a literature review and reviewed the geotechnical report. The literature review study area examined included the parcel containing the school and those immediately adjacent. Information reviewed included any previous archaeological survey reports, ethnographic studies, historic maps, government landowner records, aerial photographs, regional histories, geologic maps, soils surveys, and environmental reports. These records were reviewed in order to determine the presence of any potentially significant cultural resources, including Traditional Cultural Properties (TCPs), within the project area. Relevant documents were examined at the Washington State Department of Archaeology and Historic Preservation (DAHP), the University of Washington Libraries, online, and within ESA's research library (ESA, 2020).

d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required.

No impacts to historic or cultural resources are anticipated as a result of this project. In order to account for unanticipated discoveries during construction, SPS has developed an inadvertent discovery plan (IDP). The IDP sets forth procedures and protocols to follow in the event of an

archaeological resources discovery, including discovery of human remains. The IDP stipulates pre-construction briefings and on-call response if required. SPS would provide tribal representatives, including those of the Duwamish Tribe, with one-week advance notification of the project schedule and invite them to observe construction. Based on the results of the cultural resources technical report, no on-site archaeological monitoring is recommended during project construction.

14. Transportation

A *Transportation Technical Report* (Heffron Transportation, Inc., April 20, 2020) has been prepared for the proposed project and the results of the report are summarized in this section. For further details on the *Transportation Technical Report*, please refer to Appendix A of this Checklist.

a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any.

The Madison Middle School site is bounded on the east by 45th Avenue SW, on the south by SW Spokane Street, on the west by 47th Avenue SW, and on the north by SW Hinds Street. The school building occupies the eastern portion of the site and the athletic field is located on the western portion.

There are three surface parking lots located on the site. A 43-space lot, located at the southeast corner, is accessed from SW Spokane Street. A 19-space lot at the northeast corner is accessed from SW Hinds Street. A small northwest lot is located directly to the west of that lot; it provides access to the school's truck loading dock and has a separate driveway on SW Hinds Street. It does not have formal marked parking spaces, but field observations indicate that it is regularly used for parking of up to 5 vehicles. In summer 2018, SPS installed two portable classrooms in an unpaved area on the west side of the northwest lot and two additional portable classrooms in the northeast surface lot, which currently displace six parking spaces and reduce the total on-site supply from 67 to 61 spaces. The project would not change access to the school site.

b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop?

King County Metro Transit (Metro) provides bus service within the site vicinity. The nearest stops are about 750 feet from the site. Stops on California Avenue SW at SW Hinds Street serve Metro Routes 50, 55 and 128. Stops on 49th Avenue SW at S Hinds Street serve Route 57. These routes provide direct connection to and from the Admiral District, Alaska

Junction, Alki, Genesee Hill, Downtown, Beacon Hill, and Othello neighborhoods.

c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate?

The project would not add or eliminate any parking spaces.

d. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private).

No, the project would not require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities.

e. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

The project would not use or occur in the immediate vicinity of water, rail, or air transportation

f. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates?

The field improvement and lighting project could generate between 240 to 300 additional trips per day during part of the year—during other times, the natural turf field and natural lighting conditions allow some recreational use. Peak volumes (estimated at about 85 trips per hour associated with scholastic athletics) added due to the field lights could occur in PM peak hour as a high school athletic practice ends (up to 55 outbound trips) and the spectators and participants of a recreational game arrive (estimated at 25 trips in and 5 trips out).

Based on observations of traffic at other athletic fields, none of the new trips are expected to be trucks (commercial or non-passenger vehicles). However, participants in some scholastic athletic practices could be transported to and from the site (e.g. school buses), including the transportation of students from the West Seattle High School.

Potential traffic impacts of morning field use are expected to be minimal because of the limited participants (students only, no spectators) and limited number of days that lights would be needed.

Although the specific traffic and parking impacts of the future classroom addition project cannot yet be fully evaluated because many details remain unknown, it is not anticipated to result in significant adverse cumulative impacts to traffic or parking. This is because the classroom addition would generate additional traffic during different peak hours (morning and early afternoon) and the parking analysis showed there is more than enough parking capacity to accommodate additional demand from both projects.

g. Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe.

The proposal would not interfere with the movement of agricultural or forest products on streets in the area because no agricultural or working forest lands are located within the vicinity of the project site.

h. Proposed measures to reduce or control transportation impacts, if any:

Based on the analyses presented in the referenced *Transportation Technical Report,* the project would not result in significant adverse impacts to traffic or parking within the study area. The following measures are recommended.

On-Site Parking – SPS and Madison Middle School should ensure that the on-site parking lots are open and available for users during all times that the field is scheduled for use.

Construction Transportation Management Plan (CTMP) – The District will require the selected contractor to develop a CTMP that addresses traffic and pedestrian control during construction of the athletic field and track project. It would define truck routes, lane closures, walkway closures, and parking or load/unload area disruptions, as necessary. To the extent possible, the CTMP would direct trucks along the shortest route to arterials and away from residential streets to avoid unnecessary conflicts with resident and pedestrian activity. The CTMP may also include measures to keep adjacent streets clean on a daily basis at the truck exit points (such as street sweeping or on-site truck wheel cleaning) to reduce tracking dirt offsite.

15. Public Services

a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe.

Lighting the field would add activities to the facility during evening hours during winter months. Scheduling of night games may require additional security, however attendance at these events is anticipated to be small.

b. Proposed measures to reduce or control direct impacts on public services, if any.

According to the 2016-2019 Joint Use Agreement with Parks, SPS would provide and schedule all necessary staff for all SPS owned fields including field attendants, supervision, and security for the fields. This includes, but is not limited to, unlocking gates, bathrooms, storage rooms and security support.

16. Utilities

a. Underline utilities currently available at the site:

electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other _____

Existing utilities currently at the site include natural gas, water, refuse service, telephone, storm drain, sanitary sewer and electricity.

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.

All public utilities would continue to be provided to the school. The new lights require additional electricity which would be provided by an existing electrical panel at the school.

C. SIGNATURE

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: _____

Name of signee: _____

Position and Agency/Organization: _____

Date Submitted: _____

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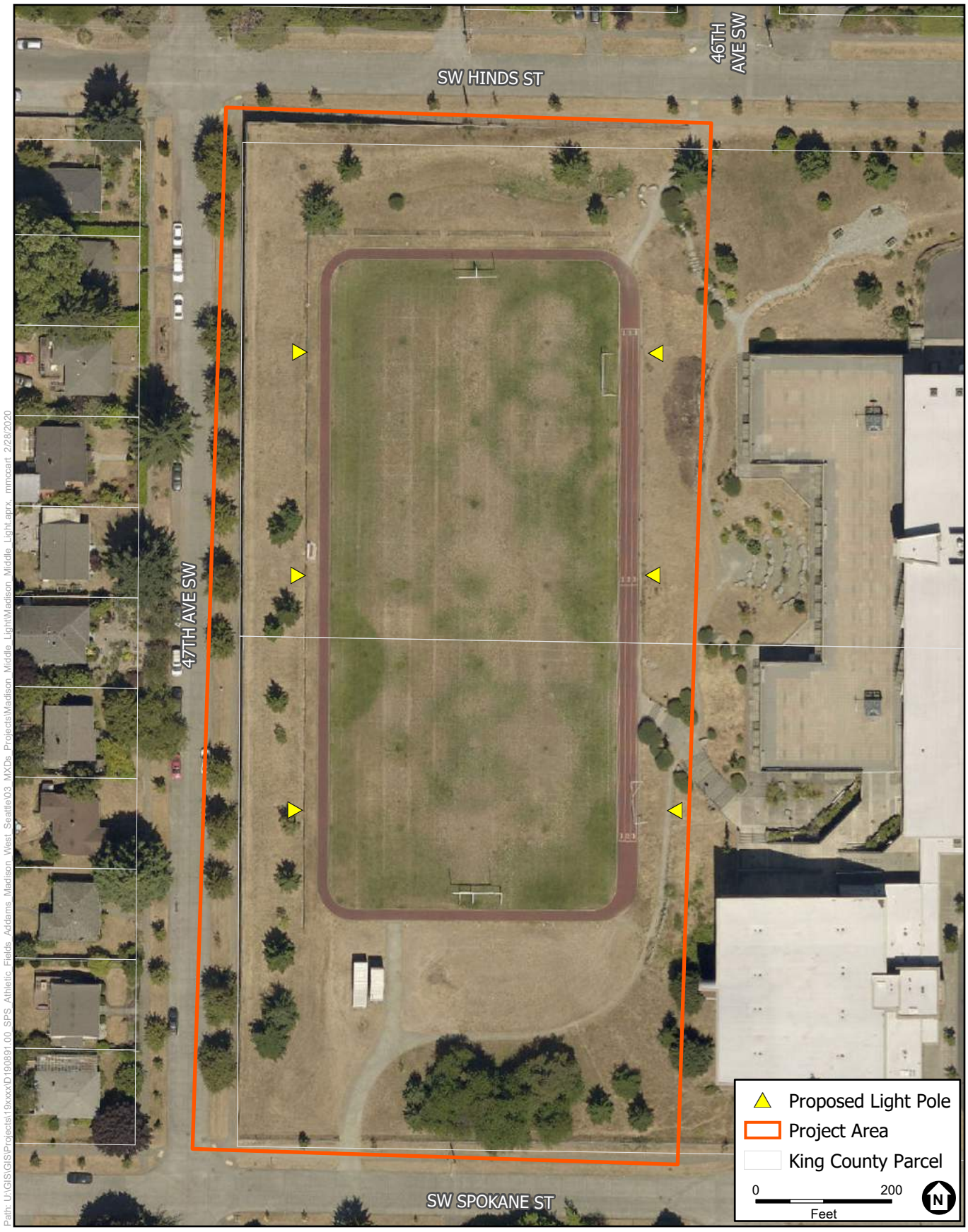
SOURCE: ESRI, 2020; ESA, 2020

D190891 SPS Athletic Fields

Figure 1
Madison Middle School Vicinity
Seattle, Washington

ESA



SOURCE: ESA, 2019; ESRI, 2017

SPS Jane Addams Field Improvements

Figure 2

Madison Middle Proposed Light Poles

Seattle, WA

ESA

Appendix A: Transportation Technical Report

TRANSPORTATION TECHNICAL REPORT

for

Athletic Field Improvements at Madison Middle School

PREPARED FOR:

Seattle Public Schools

PREPARED BY:

heffron transportation inc

6544 NE 61st Street, Seattle, WA 98115
ph: (206) 523-3939 ◆ fx: (206) 523-4949

April 20, 2020

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1. INTRODUCTION

This report presents the transportation impact analysis for the Seattle Public Schools' (SPS) proposed athletic field lighting project at Madison Middle School. The scope of analysis and approach were based on extensive past experience performing transportation impact analyses for numerous SPS projects in Seattle and athletic facility improvement projects throughout Western Washington. This report was prepared to support the SEPA Checklist for the project and documents the existing transportation conditions in the site vicinity, presents estimates of project-related traffic, and evaluates the anticipated impacts to the surrounding transportation system.

1.1. Project Description

Seattle Public Schools plans to widen the existing athletic field and install synthetic turf and field lights at Madison Middle School. The school is located at 3429–45th Avenue SW in West Seattle. The following sections describe the existing school site and the proposal.

1.1.1. Existing Site

The Madison Middle School site is bounded on the east by 45th Avenue SW, on the south by SW Spokane Street, on the west by 47th Avenue SW, and on the north by SW Hinds Street. The school building occupies the eastern portion of the site and the athletic field is located on the western portion. The school's existing outdoor athletic field is a narrow natural-turf football/soccer field within a rubberized running track (marked with three lanes on the east side and unmarked with narrower width on the remaining three sides).

There are three surface parking lots located on the site. A 43-space lot, located at the southeast corner, is accessed from SW Spokane Street. A 19-space lot at the northeast corner is accessed from SW Hinds Street. A small northwest lot is located directly to the west of that lot; it provides access to the school's truck loading dock and has a separate driveway on SW Hinds Street. It does not have formal marked parking spaces, but field observations indicate that it is regularly used for parking of up to 5 vehicles. For the purposes of the analysis presented in this report, it is estimated to have capacity for 5 vehicles. In summer 2018, SPS installed two portable classrooms in an unpaved area on the west side of the northwest lot and two additional portable classrooms in the northeast surface lot, which currently displace six parking spaces and reduce the total on-site supply from 67 to 61 spaces.

1.1.2. Proposed Site Changes

SPS proposes to replace the existing natural-turf field with synthetic turf, re-spray the rubberized running track, and install lights to be available for use by fall 2021. The site plan with the location of the proposed lights is shown on Figure 1.

The proposal would not change school enrollment or any other facilities on the site, but would allow increased use of the athletic field for scholastic and non-scholastic recreational activities scheduled to end by 9:45 P.M., with lights automatically turned off at 10:00 P.M. Usage levels of the facilities are expected to increase with the improved surface and the added ability to hold practices and recreational games later in the day during the school year.

Source: DA Hogan, Layout Plan, Sheet M-1.1, November 15, 2019

SPS MADISON MS
ATHLETIC FIELD IMPROVEMENTS

Figure 1

Overall Site Improvement and Lighting Plan

heffron transportation inc

02.14.20

Although not currently planned, the lights could be used in the morning (after 7:00 A.M.) for scholastic activities. Based on the joint-use agreement[1] between SPS and Seattle Parks & Recreation (which is expected to be extended for another year), scholastic athletics on the field are expected to end between 5:30 and 6:45 P.M. Other increases in field use would be non-scholastic recreational athletics scheduled through Parks such as youth and adult soccer, lacrosse, and ultimate (Frisbee), occurring after school-use ends and until 9:45 P.M.

SPS is beginning design development for a classroom addition at Madison Middle School that is planned for summer 2021. This addition is expected to provide permanent classroom space allowing for the removal of the four portables that are currently on the site. The classroom addition could increase school capacity by about 100 students and will be evaluated as part of a separate SEPA environmental review and permitting process when more is known about the project design. However, it is not expected to change access, parking supply, or roadway channelization conditions at or around the school.

[1] *An Agreement for the Joint Use of Facilities between The Seattle School District No.1 and Seattle Parks and Recreation 2016 – 2019*, Jointly prepared by: Seattle Parks and Recreation and the Seattle School District No. 1, January 31, 2017.

2. BACKGROUND CONDITIONS

This section presents the existing and future conditions without the proposed project. The impacts of the proposal project were evaluated against these base conditions. Year 2021 was selected as the future horizon year for the analyses, because this is likely when full use of the improved field and lighting is likely to occur. For comparison, and to provide an analysis of potential new traffic and parking impacts, year 2021 without-project conditions assume the existing field would remain unimproved and unlit. The following sections describe the existing roadway network, traffic volumes, traffic operations (in terms of levels of service), traffic safety, transit facilities, non-motorized facilities, and parking.

The selection of the off-site study area intersections was based on the travel routes used to access the off-street and nearby on-street parking including the following.

- SW Hinds Street / 47th Avenue SW
- SW Hinds Street / 45th Avenue SW
- SW Spokane Street / 47th Avenue SW
- SW Spokane St / 45th Avenue SW
- SW Spokane Street / California Avenue SW
- SW Charlestown Street / 45th Avenue SW
- SW Charlestown Street / California Avenue SW

2.1. Transportation Network

2.1.1. Existing Network

The following describes key roadways in the site vicinity. The surrounding area predominantly consists of single-family residences, with commercial development along California Avenue SW, two blocks to the east. Key roadways that serve the site are described below. Roadway classifications were obtained from the City of Seattle's (City's) *Street Classification Maps*.[2] Speed limits are 25 miles per hour (mph) on arterials (unless otherwise marked) and 20 mph on local access streets. The site location and vicinity are shown on Figure 2.

45th Avenue SW is a north-south local access street that provides connection throughout West Seattle. It has one travel lane in each direction and sidewalk, curb, and gutter on both sides. Parking is allowed on both sides along most of its length, but the segment adjacent to the school is restricted to school bus load/unload only from 7:00 to 9:00 A.M., and 2:00 to 4:00 P.M. In the vicinity of the school it is signed as a School Zone with speed limit of 20 mph when children are present.

SW Spokane Street is an east-west local access street that provides connection between 42nd Avenue SW and 51st Avenue SW. It has sidewalk, curb, and gutter on both sides. With the exception of one wider segment adjacent to the school, the travel way along its length is effectively restricted to one lane for both directions of travel when on-street parking occurs on both sides.

47th Avenue SW is a north-south local access street that provides connection throughout West Seattle. In the vicinity of the school, it has sidewalk, curb, gutter, and parking on both sides. Due to its width, the travel way is effectively restricted to one lane for both directions of travel when on-street parking occurs on both sides. In the vicinity of the school it is signed as a School Zone with speed limit of 20 mph when children are present.

[2] Seattle Department of Transportation (SDOT), Street Classification Maps, accessed March 2020.

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Figure 2

Site Location and Vicinity

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SW Hinds Street is an east-west local access street that provides connection between 49th Avenue SW and California Avenue SW. In the vicinity of the school, it has sidewalk, curb, gutter, and parking on both sides. Due to its width, the travel way is effectively restricted to one lane for both directions of travel when on-street parking occurs on both sides. In the vicinity of the school it is signed as a School Zone with speed limit of 20 mph when children are present.

49th Avenue SW provides north-south connection throughout West Seattle. In the vicinity of the site, between SW Admiral Way and SW Charlestown Street, it is a Collector Arterial. It has sidewalk, curb, and gutter on both sides. Parking is allowed on the west side of the street.

California Avenue SW provides north-south connection throughout West Seattle. It is a Minor Arterial between SW Admiral Way and Fauntleroy Way SW, and a Collector Arterial to the north and south of that section. It has one travel lane in each direction and a center two-way left-turn lane. There is sidewalk, curb, and gutter on both sides. Parking is generally allowed on both sides; some sections adjacent to the commercial development have time restrictions or are signed as loading zones.

SW Charlestown Street is an east-west roadway that provides connection between 55th Avenue SW and California Avenue SW. To the west of California Avenue SW, it is a Collector Arterial; to the east it is a local access street. It has sidewalk, curb, gutter, and parking on both sides.

2.1.2. Planned Improvements

The following plans and programs were reviewed to determine if any planned transportation improvements could affect the roadways and intersections near Madison Middle School by 2021 when the field improvements would be complete.

City of Seattle's Proposed 2020-2025 Proposed Capital Improvement Program (CIP)[3] – No improvements to the transportation network were identified in the site vicinity.

Adopted Seattle Bicycle Master Plan (BMP)[4] – The plan proposes future improvements along several roadways within the site vicinity. Neighborhood greenways (low-speed, low-volume streets that are designed to be shared by pedestrian, bicycle, and vehicular traffic) are recommended along SW Hinds Street, 48th Avenue SW, and 45th Avenue SW; an in-street local connector (a bicycle facility with minor separation) is recommended along SW Charlestown Street, and California Avenue SW is identified as an existing shared-street. The *Seattle Bicycle Master Plan – 2019-2024 Implementation Plan*[5], which defines the priorities of the projects, does not identify any of these projects for implementation by 2021 when the field improvements would be complete.

Seattle's Neighborhood Greenway Network[6] – Neighborhood greenway information provided by the Seattle Department of Transportation (SDOT) indicates no additional greenways currently in design or planning stages in the site vicinity.

Levy to Move Seattle – Workplan Report[7] – This document outlines SDOT's workplan to deliver citywide transportation projects and services funded in part or in full by the *Levy to Move Seattle* (approved by voters in 2015). The nine-year workplan (2016-2024) documents achievements and challenges and sets the agency's plan for future years. There are no projects defined in the site vicinity.

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3 City of Seattle, 2019.
4. City of Seattle, March 2015.
5 SDOT, June 13, 2019.
6 https://www.seattle.gov/transportation/projects-and-programs/programs/greenways-program, Map updated January 24, 2020, Accessed February 2020.
7 SDOT, November 2018.

None of the planning documents included any transportation improvements that would affect the roadway network operations or intersection capacity within the study area by 2021. Therefore, the existing roadway and intersection configurations were assumed to remain unchanged the 2021 analysis presented in this report.

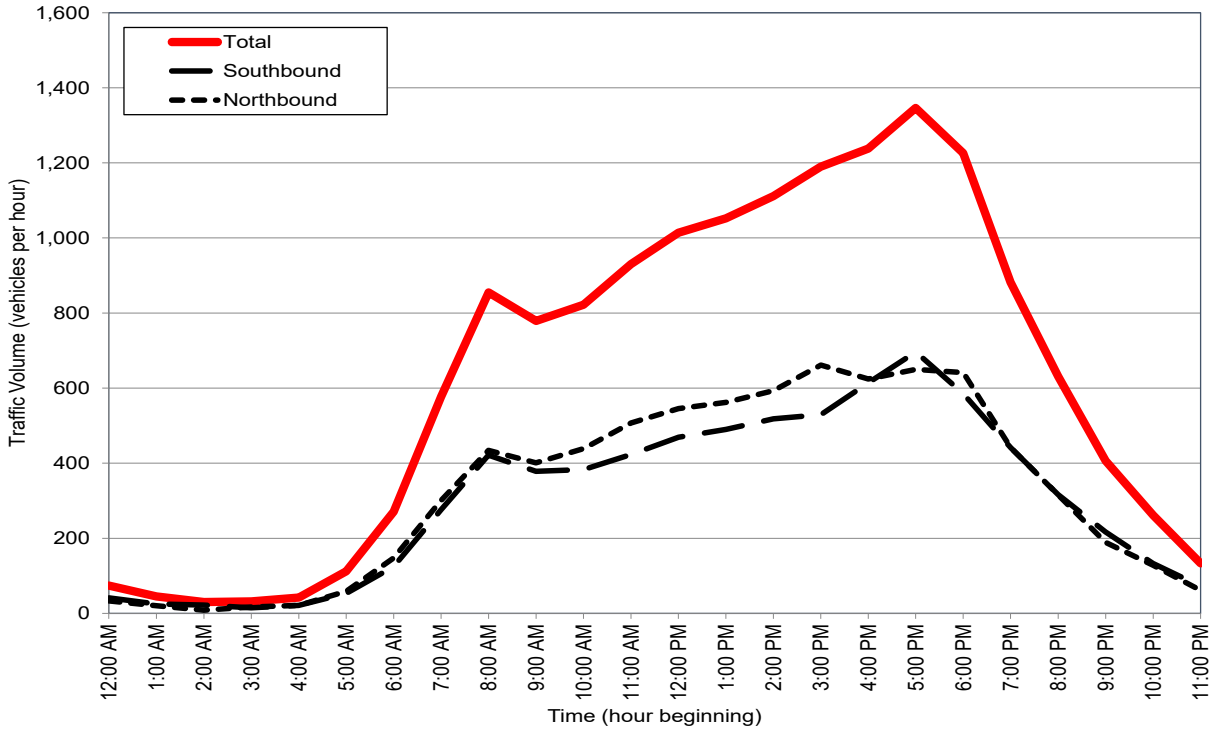
2.2. Traffic Volumes

2.2.1. Historical Traffic Volumes

Review of historical daily traffic counts collected by SDOT on California Avenue SW near SW Charlestown Street between early 2012 and mid 2018 found that volumes grew by under 1%.[8] Over this period, volumes have been relatively steady with a decline in 2007 and 2008 (at the time of the economic slowdown) and recovery by 2012.

Traffic count data on California Avenue SW north of SW Charlestown Street were also compiled to determine how volume changes by time of day. SDOT's most recent data were collected in February 2018. These data, shown on Figure 3, show the morning peak and then a steady increase to the PM peak hour corresponding to peak commuter travel. In the hours following the commuter PM peak hour (the highest hour between 4:00 and 6:00 P.M.), traffic volumes decline at a rapid rate. The volume from 6:00 to 7:00 P.M. is about 9% lower than the PM peak hour. The volume from 7:00 to 8:00 P.M. is about 35% lower than the PM peak hour, and it is about 53% lower from 8:00 to 9:00 P.M.

Figure 3. Hourly Traffic Volumes on SW California Ave n/o SW Charlestown St – Feb. 2018



Source: Average weekday volumes from counts performed by SDOT on California Ave SW n/o SW Charlestown St, Feb. 14-15, 20, 2018.

[8] SDOT, 24-hour machine count database, 2012 – 2018.

2.2.2. Existing Traffic Volumes

Weekday PM peak period and early evening turning movement traffic counts were conducted on Tuesday, January 28, 2020, at the seven study area intersections as well as the site access driveway on SW Spokane Street. All counts were performed from 4:00 to 8:00 P.M. and include the period in which the proposed field improvements and lights could result in increased traffic at the school site.

The count data indicate that the peak hour volumes for the study area network occurred from 5:00 to 6:00 P.M. Similar to the hourly data presented in the previous section, the turning movement counts throughout the study area confirm that volumes decline considerably after the commuter PM peak hour (down by about 22% in the 6:00 to 7:00 P.M. hour and by about 37% in the 7:00 to 8:00 P.M. hour).

Based on observed traffic patterns and schedules for other lighted athletic fields, participants and spectators often arrive or depart the site during both the commuter PM peak hour and the 6:00 to 7:00 P.M. hour. These are often the time periods when scholastic athletics, such as soccer and ultimate (frisbee) practices, finish and non-scholastic community uses begin. Therefore, the commuter PM peak hour and the 6:00 to 7:00 P.M. hour were selected for detailed operational analysis.

As noted previously, it is possible that the field lights could be used in the morning for scholastic activities; however, there are no current plans for this use. Potential traffic impacts of morning field use are expected to be minimal because of the limited participants (students only, no spectators) and limited number of days that lights would be needed. Figure 4 presents the existing (2020) PM peak hour traffic volumes within the study area; Figure 5 presents the existing early evening (6:00 to 7:00 P.M.) traffic volumes.

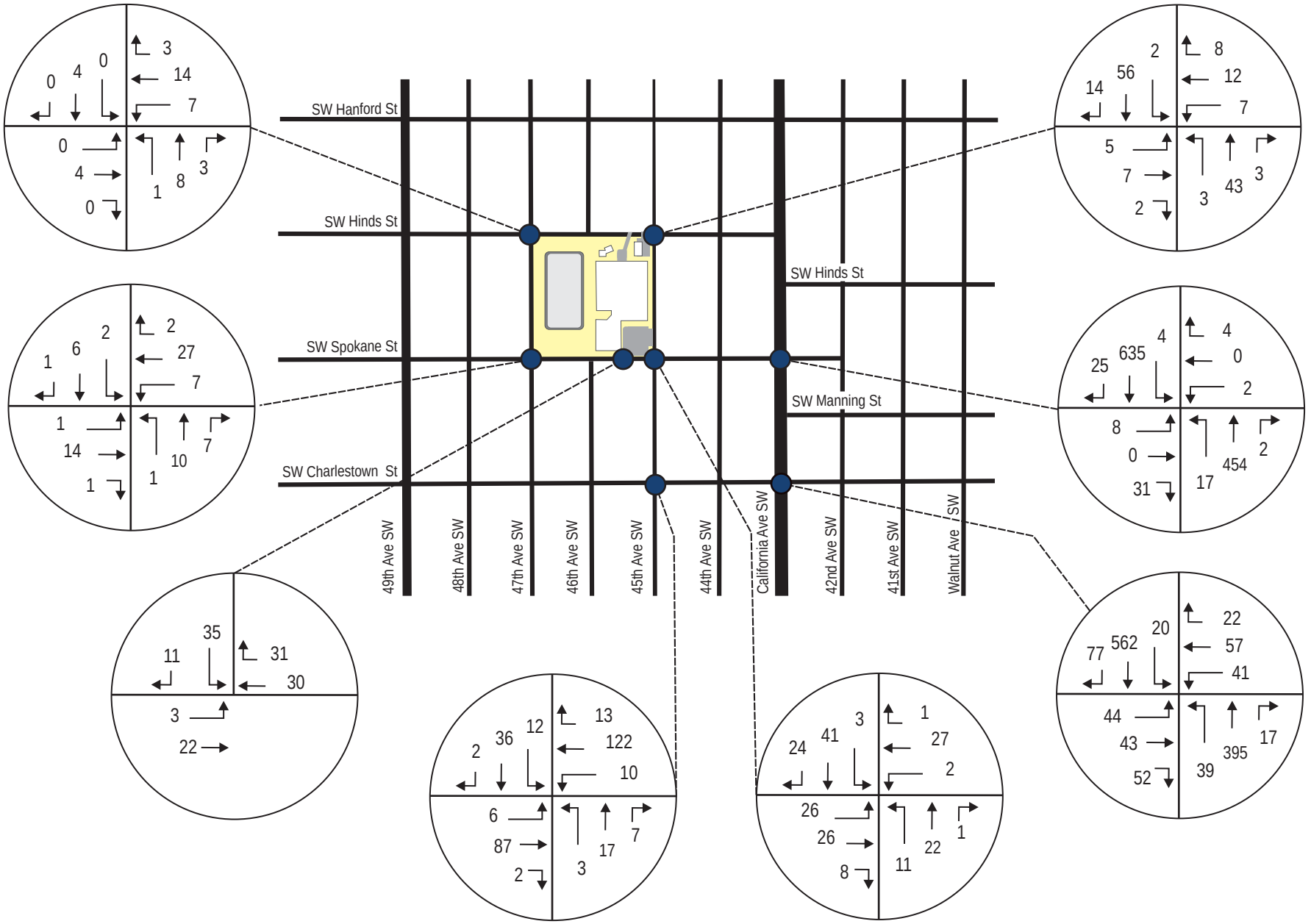


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Figure 4

Existing (2020) Traffic Volumes
PM Peak Hour

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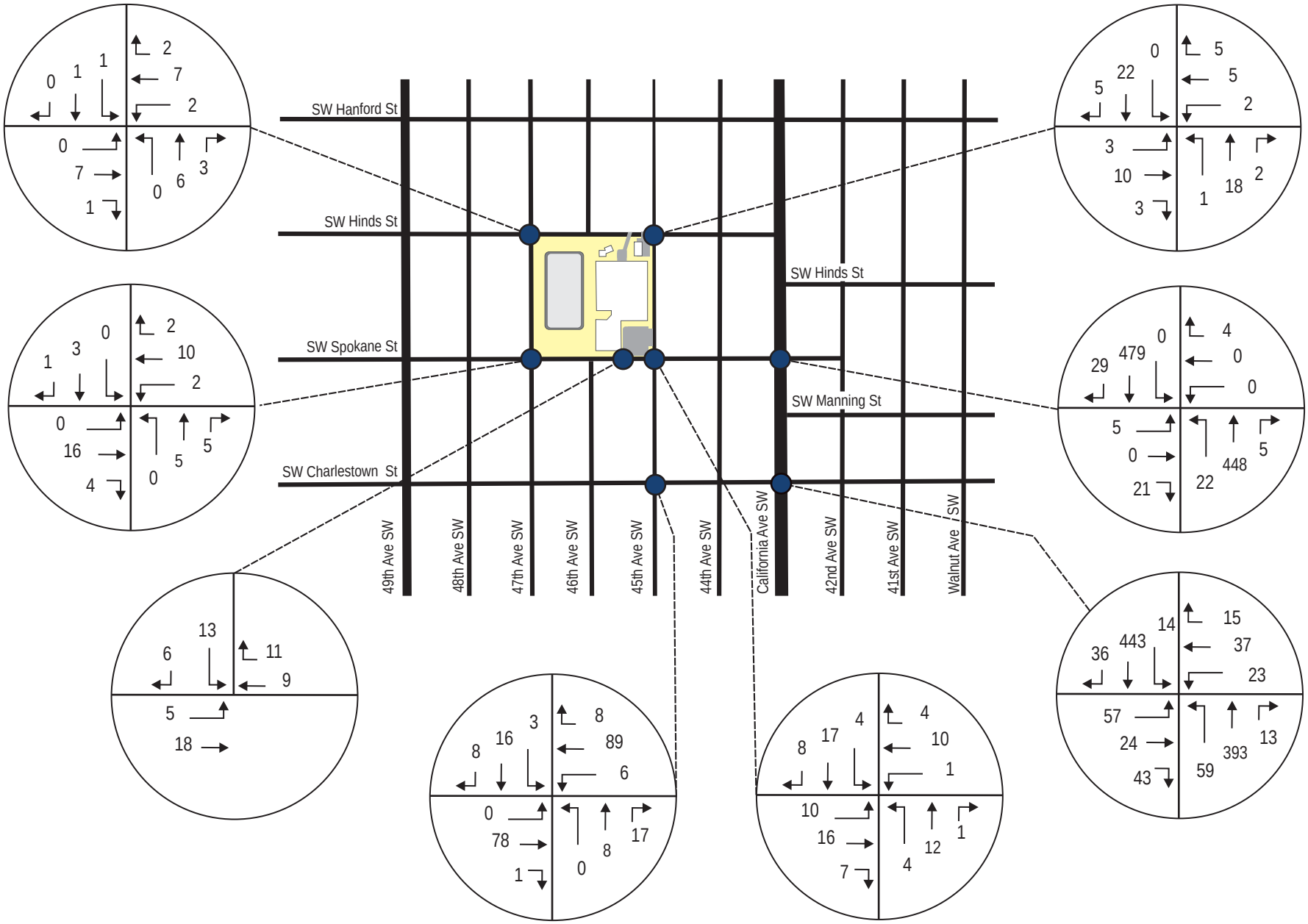

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Figure 5

Existing (2020) Traffic Volumes
Early Evening Hour

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2.2.3. Existing Site-Related Traffic Volumes

Madison Middle School currently generates traffic during the PM peak hour and early evening hour. Traffic generation by middle schools during the PM peak hour and early evening hour on non-event nights can be related to after-school student activities or athletics, and also may include some staff leaving for the day. However, they are often related to community use of school facilities (e.g. use of the gymnasium or meeting spaces for groups such as Boy Scouts and Girl Scouts) or athletic fields.

Counts of the main site driveway and intersections surrounding the site (included as part of the data collection effort described previously) reflect conditions with typical afternoon and early evening activities, but no large event. During the analysis hours, school-generated traffic at the access driveway on SW Spokane Street was 82 trips (35 in, 47 out) during the PM peak hour and 35 trips (16 in, 19 out) during the early evening (6:00 to 7:00 P.M.) hour. These trips were most likely associated with some of the activities at the school, such as athletic practices ending and possibly some staff leaving for the day. Additional school-generated traffic during these hours also likely occurred to and from on-street parking surrounding the site and was captured in the study-are traffic counts.

2.2.4. Forecast Without-Project Traffic Volumes

The Madison Middle School field improvements project is expected to be completed for use by fall 2021. The Seattle Department of Construction & Inspection's (SDCI's) Property and Building Activity permit map was reviewed to determine if any large future development projects are planned that could potentially generate additional traffic in the project study area. Although a number of developments have been completed in the last several years (particularly along California Avenue SW), no development projects were identified that are expected add noticeable traffic during the analysis peak hours by 2021 within the immediate project study area. For example, a proposed development located at 4508 California Avenue SW (SDCI Project #3031518) plans 75 multifamily apartment units and 4,660 sf of commercial space. The traffic analysis for that project indicates it would generate 20 PM peak hour trips and 4 or fewer through the two study-area intersections on California Avenue SW.[9]

Therefore, future traffic volume forecasts for 2021 conditions without the project were developed using a compound annual growth rate. Based upon recent growth trends described previously, a 1.0% annual growth rate was applied to the existing traffic volumes to reflect year 2021 volumes. This is consistent with rates used for traffic analyses of other developments in the vicinity and throughout Seattle and would account for planned development projects such as the one described above. The 2021-without-project PM peak hour and early evening hour traffic volumes are shown on Figure 6 and Figure 7, respectively.

[9] Transportation Engineering NorthWest, Transportation and Parking Analysis – 4508 California Ave (DCI Project #3031518), April 24, 2019.

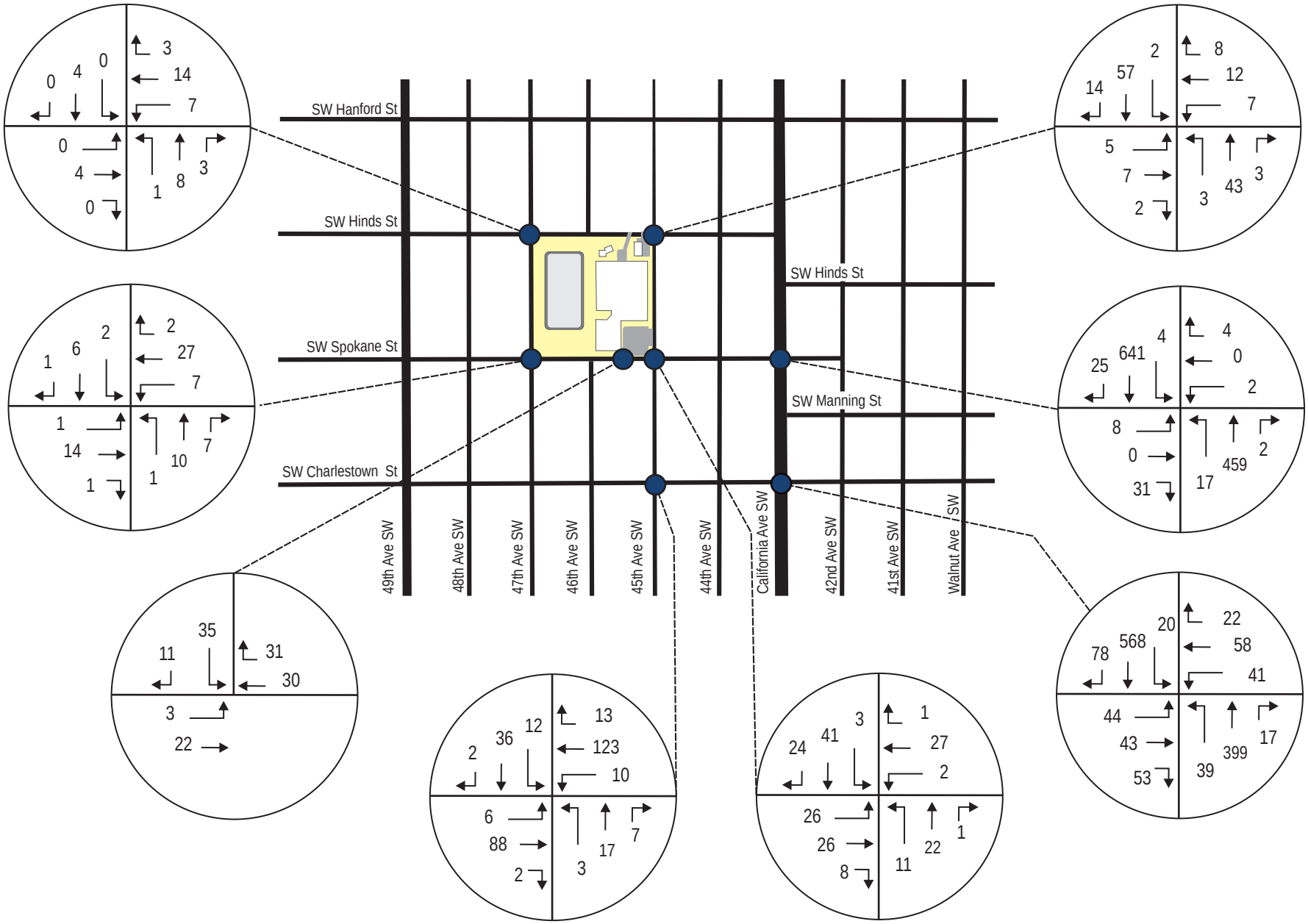

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Figure 6

Forecast (2021) Without-Project Traffic Volumes
PM Peak Hour

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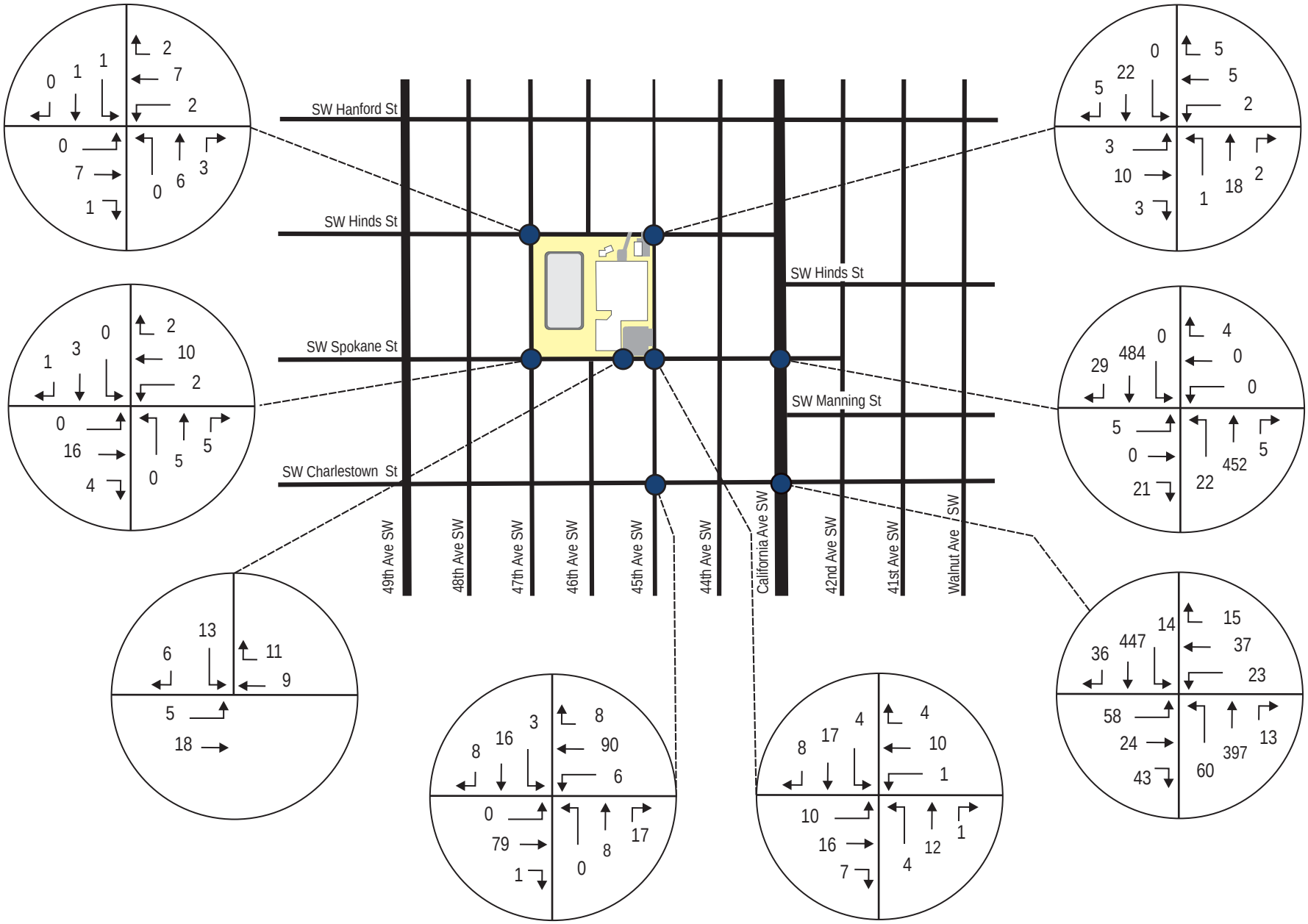

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Figure 7

Forecast (2021) Without-Project Traffic Volumes
Early Evening Hour

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2.3. Level of Service

Level of service (LOS) is a qualitative measure used to characterize traffic operating conditions. Six letter designations, "A" through "F," are used to define level of service. LOS A is the best and represents good traffic operations with little or no delay to motorists. LOS F is the worst and indicates poor traffic operations with long delays. The City of Seattle does not have adopted intersection level of service standards; however, project-related intersection delay that causes a signalized intersection to operate at LOS E or F, or increases delay at a signalized intersection that is projected to operate at LOS E or F without the project, may be considered a significant adverse impact. The City may tolerate delays in the LOS E or F range for minor movements at unsignalized intersections where traffic control measures (such as conversion to all-way-stop-control or signalization) are not applicable or desirable.

Levels of service for the eight off-site study area intersections were determined using the methodology in the *Highway Capacity Manual, Sixth Edition.*[10] Appendix A includes level of service thresholds and definitions for signalized and unsignalized intersections. Delay calculations rely on complex equations that consider a number of variables. For example, delay at signalized intersections is determined based on a combination of variables including: the quality of progression, cycle length, green ratio, and a volume-to-capacity ratio for the lane group or approach in question. Delay at unsignalized intersections is determined for vehicles that must stop or yield for oncoming traffic. That delay is related to the availability of gaps in the main street's traffic flow and the ability of a driver to enter or pass through those gaps. All level-of-service calculations were performed using the *Synchro 10.3 (Build 122)* traffic operations analysis software. Input data for this analysis, including geometric characteristics were collected during field observations; signal timing was based on timing cards provided by SDOT. These conditions are expected to stay the same in the future analysis year. Results for unsignalized intersections were reported using the *HCM 6* module; levels of service for the signalized intersection were reported using the *Synchro* module which refines *Highway Capacity Manual* methods to account for more detailed driving behavior and signal operations.

Table 1 summarizes existing (2020) and forecast 2021-without-project levels of service at the off-site analysis intersections for both the PM peak hour and early evening hour conditions. As shown, all intersections currently operate at LOS A overall and are expected to continue at those levels in 2021 without the project. All movements at the two-way-stop and uncontrolled intersections operate at LOS C or better during both periods. The projected growth in background traffic is expected to add negligible delay (estimated at 0.3 second or less) by 2021.

[10] Transportation Research Board [TRB], 2016.

Table 1. Level of Service Summary – Existing (2020) and 2021 Without-Project Conditions

Intersections	PM Peak Hour (5:00–6:00 P.M.)				Early Evening Hour (6:00–7:00 P.M.)			
	Existing (2020)		2021 w/o project		Existing (2020)		2021 w/o project	
Signalized	LOS [1]	Delay [2]	LOS	Delay	LOS	Delay	LOS	Delay
SW Charlestown St / California Ave SW	A	9.5	A	9.6	A	8.1	A	8.1
All-Way-Stop Controlled	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**
SW Spokane Street / 45th Avenue SW	A	7.9	A	7.9	A	7.2	A	7.2
Two-Way-Stop Controlled	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**
SW Hinds Street / 47th Avenue SW [3]	A	4.9	A	4.9	A	3.8	A	3.8
Northbound Movements	A	9.2	A	9.2	A	9.0	A	9.0
Eastbound Left-Turn	A	0.0	A	0.0	A	0.0	A	0.0
Westbound Left Turn	A	7.3	A	7.3	A	7.2	A	7.2
Southbound Movements	A	9.5	A	9.5	A	9.0	A	9.0
SW Hinds Street / 45th Avenue SW	A	2.6	A	2.6	A	3.7	A	3.7
Northbound Left Turn	A	7.4	A	7.4	A	7.3	A	7.3
Eastbound Movements	A	10.0	A	10.0	A	9.3	A	9.3
Westbound Movements	A	9.9	A	9.9	A	9.0	A	9.0
Southbound Left Turn	A	7.4	A	7.4	A	0.0	A	0.0
SW Spokane Street / 47th Avenue SW [3]	A	3.7	A	3.7	A	3.2	A	3.2
Northbound Movements	A	9.3	A	9.3	A	9.0	A	9.0
Eastbound Left-Turn	A	7.3	A	7.3	A	0.0	A	0.0
Westbound Left Turn	A	7.3	A	7.3	A	7.3	A	7.3
Southbound Movements	A	9.5	A	9.5	A	9.2	A	9.2
SW Spokane St / California Avenue SW	A	1.3	A	1.3	A	0.9	A	0.9
Northbound Left Turn	A	9.5	A	9.6	A	9.1	A	9.1
Eastbound Movements	C	21.5	C	21.7	C	17.3	C	17.5
Westbound Movements	C	19.9	C	20.2	B	11.8	B	11.8
Southbound Left Turn	A	8.5	A	8.5	A	0.0	A	0.0
SW Charlestown St / 45th Avenue SW	A	3.2	A	3.2	A	2.2	A	2.2
Northbound Movements	B	10.8	B	10.8	A	9.7	A	9.7
Eastbound Left-Turn	A	7.6	A	7.6	A	0.0	A	0.0
Westbound Left Turn	A	7.5	A	7.5	A	7.5	A	7.5
Southbound Movements	B	11.8	B	11.8	B	10.4	B	10.4

Source: Heffron Transportation, Inc., February 2020.

1. *Level of service.*
2. *Average seconds of delay per vehicle.*
3. *Uncontrolled intersection evaluated as stop-controlled for north-south legs.*

2.4. Parking

On-street parking at and around the Madison Middle School site was surveyed to determine the existing parking supply and occupancy. This information was then used to estimate how parking occupancy could be affected by new parking demand generated by the proposed athletic field improvement and lighting project (which is presented later in Section 3.7). The following sections describe the on-street parking supply as well as the current parking occupancy and utilization rates.

2.4.1. Methodology and Study Area

A detailed on-street parking study was performed and supply was documented according to the methodology outlined in the City's Tip #117.[11] Although Tip #117 was created for another purpose, it outlines the City's preferred methodology to determine the number and type of on-street parking spaces that may exist within a defined study area, and how much of that supply is currently utilized at different times of the day. This analysis was completed to document the existing supply and how it is currently utilized.

The study area for the on-street parking analysis included all roadways within an 800-foot *walking* distance from the school site, as is typically required by the City for evaluations of new development for SEPA review. The 800-foot walking distance results in a study area that extends just north of SW Hanford Street, just west of 49th Avenue SW, just south of SW Charlestown Street, and east to SW California Avenue. As discussed previously, the study area consists primarily of residential land uses, with commercial development concentrated along sections of California Avenue SW. Much of the residential development has access to off-street parking, with several north-south alleys also present in the area. Details about parking supply and demand are provided in the following sections.

Existing On-Street Parking Supply

In the study area, most of the local access residential streets are at least 25 feet wide and parking is generally permitted on both sides of the street. The study area was separated into individual block faces. The study area and block face designations are shown on Figure 8. A block face consists of one side of a street between two cross-streets. For example, the west side of 45th Avenue SW between SW Hinds Street and SW Spokane Street is one block face (identified as block face 'BV').

Each block face was measured and analyzed to determine the number of on-street parking spaces. First, common street features—such as driveways, fire hydrants, and special parking zones—were noted and certain distances adjacent to the street features were noted. No on-street parking capacity was assumed within 30 feet of a signalized or marked intersection, within 20 feet of an uncontrolled intersection, within 15 feet on either side of a fire hydrant, or within 5 feet on either side of a driveway or alley. The remaining unobstructed lengths of street between street features were converted to legal on-street parking spaces using values in the City's Tip #117. It should be noted that the curb-face values in Tip #117 reflect variable parking space lengths. Based on extensive experience preparing on-street parking utilization studies, the increased popularity of smaller cars (such as Smart cars) and the tendency for drivers to park closer together in areas with higher utilization can result in more available supply than would be suggested by the Tip #117 guidance. No adjustments were made to these values for this analysis and as a result, the reported supply may be conservatively low.

The on-street inventory estimated a total supply of 1,054 parking spaces within the study area; of these, 997 have no restrictions. The restrictions that do exist do not affect parking supply during the analysis periods, so the on-street parking supply is the same for both analysis periods. Detailed parking supply by block face is provided in Appendix B.

[11] Seattle Department of Planning and Development, Tip 117, *Parking Waivers for Accessory Dwelling Units*, Updated May 12, 2011.

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Figure 8

Study Area for
On-Street Parking Occupancy Surveys

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Existing On-Street Parking Occupancy

Existing parking occupancy counts within the study area were performed in February 2020. Occupancy counts on school-day evenings were performed during times when the future use of the improved and lighted athletic field could generate added parking demand. The counts were conducted in the early evening (between 5:45 and 6:45 P.M.) and later evening (between 8:15 and 9:15 P.M.) to reflect conditions that could be affected by new scholastic and recreational athletics under the lights. The counts were performed on Tuesday, February 4, Thursday, February 6, Saturday, February 8, and Sunday, February 9, 2020. The counts for each day were compiled and averaged. The results of the parking occupancy surveys are summarized in Table 2. Detailed summaries of the on-street parking occupancy by block face for all counts are provided in Appendix B.

On-street parking utilization was calculated using the methodology described in Tip #117 and is the number of vehicles parked on-street divided by the number of legal on-street parking spaces within the study area or on a specific block face. The study area utilization totals are also summarized in Table 2.

Table 2. On-Street Parking Occupancy Survey Results – Winter 2020

	Weeknights			Weekend Evenings		
Periods / Survey Element	Tue., 2/4 [a]	Thu., 2/6	Average	Sat., 2/8 [c]	Sun., 2/9	Average
Early Evening (5:45 to 6:45 P.M.)						
Supply	1,054	1,054	1,054	1,054	1,054	1,054
Occupancy	338	341	340	343	357	350
% Utilization	32%	32%	32%	33%	34%	34%
Evening (8:15 p.m. to 9:15 P.M.)						
Supply	1,054	1,054	1,054	1,054	1,054	1,054
Occupancy	385	361	373	355	384	370
% Utilization	37%	34%	36%	34%	36%	35%

Source: Heffron Transportation, Inc., February 2020.

a. Event posted on Madison Middle School PTSA Facebook page – "On February 4th from 6:30 P.M. to 8:00 P.M. in the Madison Library, Principal, Dr. Gary, will discuss teacher professional development as well as advanced placement programs at Madison for next year.

The counts found on-street parking in the study area during the early evening weeknight period was 32% utilized (an average of 340 vehicles parked) and 36% utilized (an average of 373 vehicles parked) during the later evening period. During the weekend evenings observations, on-street parking was 34%% utilized (an average of 350 vehicles parked) in the early evening and 35% utilized (an average of 370 vehicles parked) in the later evening. Within the study area, unused parking ranged from 669 to 716 spaces over the eight observations. Parking occupancy in the same study area was evaluated in May 2018 as part of the parking code departure process required to place two portables in the north parking lot. Those analyses[12] included observations on three evenings (between 6:30 and 7:30 P.M.)—two with no event and one during a science Night Event at the school. The non-event observations found parking occupancy averaged 33% (698 unused spaces); event-night observations found occupancy of 40% (with 630 unused spaces). For the purpose of evaluating the potential on-street parking impacts associated with new development, the City considers utilization rates of 85% or higher to be effectively full.

12 Heffron Transportation, Inc., *Transportation Technical Report for the Madison Middle School Portables Project*, May 29, 2018.

2.4.2. Off-Street Parking

On-site parking lots are located on the north and south sides of the Madison Middle School campus. Currently, the lots provide 61 total spaces (56 formally marked in the northeast and southeast lots, and 5 informal spaces in the northwest lot), including four spaces that require disabled permits, and 57 general spaces. The north lot has 19 striped spaces; however, at the time of this analysis, six were unusable due to the placement of portables. Existing parking demand counts within the lot were performed during the same study periods described previously for the on-street parking utilization study. Parking occupancy counts, summarized in Table 3, were performed on the same dates and times as the on-street counts presented previously.

Table 3. Off-Street Parking Demand Survey Results – Winter 2020

		Weeknights			Weekend Evenings		
Periods / On-Site Lots	Supply	Tues., 2/4 [b]	Thurs., 2/6	Average	Sat., 2/8	Sun., 2/9	Average
Early Evening (5:45 to 6:45 p.m.)							
Service Area [a]	5	3	2	3	Closed	Closed	Closed
North Lot	13	2	0	1	Closed	Closed	Closed
Main (South) Lot	43	13	15	14	Closed	0	0
Total	61	18	17	18	--	0	0
Unused Spaces		43	44	43	61	61	61
Evening (8:15 p.m. to 9:15 p.m.)							
Service Area [a]	5	2	2	2	Closed	Closed	Closed
North Lot	13	Closed	0	0	Closed	Closed	Closed
Main (South) Lot	43	31	5	18	Closed	0	0
Total	61	33	7	20	--	0	0
Unused Spaces		28	54	41	61	61	61

Source: Heffron Transportation, Inc., February 2020.

a. Provides access to truck loading dock with driveway on SW Hinds Street. Although it does not have formal marked parking spaces, field observations indicate that it is regularly used for parking of up to 5 vehicles.

b. Event posted on Madison Middle School PTSA Facebook page – "On February 4th from 6:30 P.M. to 8:00 P.M. in the Madison Library, Principal, Dr. Gary, will discuss teacher professional development as well as advanced placement programs at Madison for next year."

As shown, during the winter 2020 counts, the off-street parking lots had variable demand with more than 28 unused spaces at all times. It is also noted that during several of the observation periods, the parking lots were gated closed and unavailable for parking. These conditions reflect the availability of off-street parking at times when the field improvements and lighting could result in new parking demand. As shown, the highest level of demand occurred during the evening period on Tuesday, February 4, when there was an event in the library. Even with this activity, the off-street lots had unused capacity for up to 28 additional vehicles. As noted in the prior section, the on-street parking occupancy within 800 feet of the site during this same period found utilization of 37% with 669 unused spaces. During the counts performed in May 2018, demand averaged 6 vehicles on non-event nights; an event-night observation counted a total of 55 vehicles in the three on-site parking areas.

2.5. Traffic Safety

Collision data for the study area intersections and roadway segments were obtained from SDOT's *Open Data Portal* for the period between January 1, 2016, and the most recent records available as of February 14, 2020 (4.1 years).[13] The data were examined to determine if there are any unusual traffic safety conditions that could impact or be impacted by the proposed project.

Table 4 summarizes the collision data. Unsignalized intersections with five or more collisions per year and signalized intersections with 10 or more collisions per year are considered high collision locations by the City. As shown, all of the study area intersections averaged one or fewer collisions per year, and none meet the criteria for a high collision location for the period of time evaluated. None of the reported collisions resulted in fatalities. Overall, these data do not indicate any unusual traffic safety conditions.

Table 4. Collision Summary (January 1, 2016 through February 14, 2020)

Intersections	Rear-End	Side-Swipe	Right Turn	Left Turn	Right Angle	Ped / Cycle	Other	Total for 4.1 Years	Average/ Year
Signalized Intersections									
SW Charlestown St / California Ave SW	0	0	0	1	2	1	0	4	1.0
Unsignalized Intersections									
SW Hinds St / 47th Ave SW	0	0	0	0	0	0	0	0	0.0
SW Hinds St / 45th Ave SW	0	0	0	0	0	0	0	0	0.0
SW Spokane St / 47th Ave SW	0	0	0	0	0	0	1	1	0.2
SW Spokane St / MMS driveway	0	0	0	0	0	0	0	0	0.0
SW Spokane St / 45th Ave SW	0	0	0	0	0	0	0	0	0.0
SW Spokane St / California Ave SW	1	0	0	0	0	0	0	1	0.2
SW Charlestown St / 45th Ave SW	0	0	0	0	0	0	0	0	0.0

Source: SDOT, https://data-seattlecitygis.opendata.arcgis.com/datasets/collisions, February 14, 2020.

2.6. Transit Facilities & Service

King County Metro Transit (Metro) provides bus service within the site vicinity. The nearest stops are about 750 feet from the site. Stops on California Avenue SW at SW Hinds Street serve Metro Routes 50, 55 and 128. Stops on 49th Avenue SW at S Hinds Street serve Route 57. These routes provide direct connection to and from the Admiral District, Alaska Junction, Alki, Genesee Hill, Downtown, Beacon Hill, and Othello neighborhoods.

SPS provides yellow bus, door-to-door, Metro, and cab service. Eligibility for District-provided transportation depends on several factors including grade level and proximity to assigned schools. Middle school students who reside within the boundaries of the Seattle School District and who live more than 2.0 miles from their assigned school are eligible for transportation. ORCA cards may be provided for students attending a school outside of their service area or linked service area, if they reside farther than 2.0 miles from the school. Exceptions are allowed for students who require specialized transportation services or who require medical transportation as approved by District Health Services.[14]

[13] SDOT, https://data-seattlecitygis.opendata.arcgis.com/datasets/collisions, *accessed February 14, 2020.*
[14] Seattle Public Schools, *Transportation Service Standards 2019-20*, Effective September 1, 2019.

2.7. Non-Motorized Facilities

2.7.1. Existing Conditions

Sidewalks exist along all streets in the site vicinity. Crosswalks are present on 45th Avenue SW mid-block (at the school entrance) and across the north and west legs of the SW Spokane Street /45th Avenue SW intersection. Signed and marked crosswalks are also present on California Avenue SW, just north of SW Hinds Street and SW Spokane Street.

2.7.2. Planned Improvements

As described previously, the City has plans for neighborhood greenways (low-speed, low-volume streets that are designed to be shared by pedestrian, bicycle, and vehicular traffic) along SW Hinds Street, 48th Avenue SW, and 45th Avenue SW; an in-street local connector (a bicycle facility with minor separation) along SW Charlestown Street. However, these projects are not expected to be completed by 2021.

3. PROJECT IMPACTS

This section describes the conditions that would exist with the Madison Middle School field improvement and lighting project. The forecast 2021 without-project traffic volumes were increased to account for new trips that could be generated by activities associated with the proposed field improvements. Level-of-service analyses were performed to determine the proposed project's impact on traffic operations in the study area. Potential impacts to parking, safety, and transit are also addressed.

3.1. Transportation Network

No changes to the roadway network are proposed as part of the field improvement and lighting project.

3.2. Traffic Volumes

This section describes the estimated increases in traffic that could occur as a result of increased use of the athletic field made possible by the field improvement and lighting project. As noted previously, the joint-use agreement between Seattle Public Schools and Seattle Parks & Recreation allows for the shared use of school and park facilities throughout Seattle. Under this agreement, which is expected to be extended for 2020, District-identified fields are reserved for school activities on Saturday from 8:00 A.M. to noon and on weekdays after school (typically until 6:30 or 6:45 P.M.), throughout the school year. Non-scholastic activities scheduled through Parks may occur outside of those periods.

3.2.1. Scholastic Athletics Activities

Typical Event Types, Frequency, Times, and Participation

Currently, the Madison Middle School athletic field is used by students for daytime physical education classes, Monday through Friday from 8:55 A.M. until 3:45 P.M., as well as for athletic practices from 3:45 P.M. until about 5:30 P.M. Madison Middle School athletic programs that use the fields for after-school practices include girls' soccer and co-ed ultimate in the fall months (September to November), and boys' soccer and co-ed track in the spring months (March to May). Games and competitions are currently held off-site on Saturdays. There are no outdoor middle school scholastic sports during winter months. The proposed field lights could allow middle school activities to extend to 5:30 P.M. in late fall and early spring, which natural lighting does not allow.

With the proposed improvements, West Seattle High School may use the Madison Middle School field for soccer and football practices in the fall and soccer practices in spring.[15] It may also be used occasionally for ultimate (frisbee). Due to the limited dimensions (not meeting minimum width requirements of the Washington Interscholastic Activities Association [WIAA]), the field is not expected to be used for high school soccer games. High school practices are typically between 3:45 and 6:45 P.M. The site is not expected to offer seating (such as the small portable bleachers that are often located near other fields) to accommodate spectators for practices. Instead, any spectators are likely to stand on sidelines or adjacent hillside. There are no WIAA sanctioned outdoor sports during winter months—some high schools, including West Seattle High School, have club activities such as ultimate, which could occur at the Madison Middle School field during fall, winter, or spring. The field lights are expected to allow for use of the field for the above described activities by West Seattle High School. Although no competitive high school games are expected to be played at the site, traffic and parking generation for those activities were assumed to evaluate the potential impacts of the project.

Participation levels and attendance for the scholastic athletic activities described above fluctuate based on the sport, level of competition, team success, and day of week. In Spring 2015, Heffron

[15] Email communication, E. Gold, D.A. Hogan, January 24, 2020.

Transportation performed observations of participants and spectators for several high-school-level games/matches for another field lighting project. Table 5 summarizes the observed scholastic sports competitions, locations, opponents, date, time, numbers of participants (total from both schools), and ranges in numbers of spectators. As shown, most activities have between 30 and 60 participants (athletes, coaches, trainers, and support staff) with between about 35 and 135 spectators.

Table 5. Scholastic Athletic Events Observed – Spring 2015

Activity / Location / Teams	Date/Time of Observation	Participants [1]	Spectators [2]	Total
Varsity Baseball / Kennedy-Tyee	April 6, 2015; 4:00-6:00 P.M.	38	55 to 69	93 to 107
Varsity Soccer / Starfire-Hazen	April 6, 2015; 6:00 -7:00 P.M.	53	104 to 133	157 to 186
Varsity Soccer / Kennedy-Highline	April 16, 2015; 4:30 -6:00 P.M.	49	75 to 125	124 to 174
Lacrosse / Kennedy-Seattle Academy	April 25, 2015; 1:00-3:00 P.M.	57	78 to 80	135 to 137
Baseball C-Team / Kennedy-Nathan Hale	April 25, 2015; 1:00-3:00 P.M.	43	33 to 38	76 to 81
Varsity Soccer / Starfire / Kennedy-Tyee	April 28, 2015; 6:00-7:00 P.M.	49	74 to 75	123 to 124
Average of Observations		48	70 to 87	118 to 135

Source: Heffron Transportation, Inc., April 2015.

1. *Participants include players, substitutes, coaches, support staff (e.g. trainers), referees, ticket staff, press-box personnel, and concession staff.*
2. *Range of spectators observed during several counts during game.*

Traffic Generation

The proposed field improvements and lighting would allow for extended use during several months of the year. This would allow some activities that are currently scheduled elsewhere, due to field conflicts and darkness, to occur at the Madison Middle School site. As a result of later start and dismissal times for high schools implemented for the 2016-17 school year, after-school athletics are occurring later in the day and it is expected that some soccer practices and ultimate practices or games, as well as occasional football practices, could occur under the lights on the Madison Middle School field. This activity could result in new trips being generated during the commuter PM peak hour as a practice or could begin or end during that time, with participants and spectators arriving at or leaving the site. It is noted that this potential increase in activity and traffic due to the field lights would be limited to about two to four months per year, since natural lighting conditions during the remainder of the fall and spring do not require use of field lights until after most scholastic activities end.

The potential impact of added scholastic athletics (e.g. soccer, football, or ultimate practices) that would generate traffic during the commuter PM peak hour was evaluated. Traffic generation observations performed at Kennedy Catholic High School during and after the games confirmed the typical range of traffic generated by these types of activities—practices are likely to generate less traffic. Observations of traffic flows at Kennedy High School after games indicated that the athletic events generated trips at rates ranging from about 0.30 to 0.58 trips per participant / spectator. For a typical soccer, lacrosse, or ultimate event, this relates to between 25 and 55 trips leaving the site during the hour after a game. Due to the start and finish times of some games or practices, some or all of this traffic could occur during the commuter PM peak hour.

It is noted that the trip generation estimates reflect rates derived from locations where little or no transit access is provided and field users and spectators did not generally commute by transit. However, the Madison Middle School site vicinity is served by Metro transit bus routes. Some West Seattle High School students and family members and some school staff likely use these transit options for trips to and from the school. Therefore, the estimates assuming that all trips occur by vehicle are likely conservatively high for this site location.

3.2.2. Recreational (Non-Scholastic) Athletics Activities

Typical Event Types, Frequency, Times, and Participation

During times when the field is not reserved for use by Madison Middle School or other Seattle Public Schools activities, it would continue to be available to community users and would be scheduled through the Seattle Parks & Recreation Department. Due to its size and condition, the existing field only supports limited organized non-scholastic youth and micros soccer (for youth age 4 to 6). The Madison Middle School field is expected to continue to be used these activities without or with the lighting project. Athletic practices can be scheduled until at least 8:30 P.M. in late spring and summer. When not reserved for scholastic athletics, weekend games and practices can occur from 9:00 A.M. and last until about 4:00 P.M. in early spring, extending to 9:00 P.M. by May.

The field lighting project is expected to result in increased usage for non-scholastic recreational activities. Youth and adult athletics could be added during late fall, winter, and spring months and scheduled after 5:30 P.M. until 9:45 P.M. Some of these activities would be new to the site. The field could be scheduled consecutively on any given night. As a result, it is estimated that two youth and/or adult athletic activities could be added on an average weekday or weekend evening (during times when natural lighting conditions do not currently allow them).

Historical spectator and participant counts performed for youth and adult athletic activities were used to estimate potential traffic generation for these activities. Counts were performed at four youth baseball games and three youth soccer matches in 2000. These counts were supplemented with new counts performed at Ingraham High School in January 2017. The number of adults (driving age), including coaches and officials was between 30 and 60. Based on numerous observations, adult recreational soccer matches (men's and co-rec games) typically draw between 23 and 30 people (including participants, spectators, and referee). The participants and spectators at evening athletic activities were observed in January 2017 at Ingraham High School's fields. These activities consisted of a high-school sports practice and two non-scholastic recreational activities (one practice and one game). The observations, presented in Table 6, are representative of typical participant and spectator levels for the majority of new activities that would be made possible by the proposed field lighting project.

Table 6. Athletic Events Observed – Winter 2017

Activity / Location / Teams	Date/Time of Observation	Participants	Spectators	Total
Ultimate (Frisbee) / Ingraham HS / Practice	Jan 23, 2017; 6:45-7:30 P.M.	30	0	36
Soccer / Ingraham HS / SYSA Practice	Jan 23, 2017; 6:45-7:30 P.M.	80 to 88	20	100 to 108
Soccer / Ingraham HS / GSSL Game	Jan 23, 2017; 6:45–7:30 P.M.	22 to 27	0	22 to 27
Average of Observations		44 to 48	20	51 to 57

Source: Heffron Transportation, Inc., January 2017.

1. *Participants include players, coaches, support staff (e.g. trainers), referees, ticket staff, press-box personnel, and concession staff.*
2. *Range of spectators observed during several counts during game.*

Traffic Generation

On an average day, the proposed field lighting project would allow for two additional non-scholastic recreation athletic activities the field between 5:30 and 9:45 P.M. Based on data collected for adult and youth athletics, an average game or practice is estimated to generate approximately 60 vehicle trips (30 inbound and 30 outbound). This estimate assumes most adults drive to these activities in separate vehicles, which is typical for adult recreational soccer and is likely conservatively high for most youth sports activities, since some children typically carpool to athletic practices. The added trips would likely

occur during the times between consecutively scheduled games. For example, if soccer practices or games were scheduled consecutively with the first activity beginning at 5:30 P.M. and the next at 7:00 P.M., the highest traffic generation would be expected during the 6:00 to 7:00 P.M. hour when participants and spectators from the first activity would leave the site and the spectators and participants from the next would arrive.

3.2.3. Combined Project Trip Generation for Analysis

Based on the analysis presented in the previous sections, the estimated worst case for traffic generation during the two analysis periods—the commuter PM peak hour and the early evening hour—were estimated. The worst-case increase in traffic during the commuter PM peak hour is expected to occur as a high school athletic practice ends (up to 55 outbound trips) and the spectators and participants of a recreational game arrive (estimated at 25 in and 5 out). In total, this would result in an estimated 85 trips during the commuter PM peak hour.

During the early evening hour between 6:00 and 7:00 P.M., consecutive recreational activities on the field are estimated to generate a total of 60 trips (30 in, 30 out). The estimated net increases in field-lighting-related traffic are presented in Table 7. Trips were assigned to the local roadways based on existing traffic patterns derived from the traffic counts during each period and are shown on Figure 9.

Table 7. Net New Trip Generation from Madison Field Improvement & Lighting Project

	PM Peak Hour			Early Evening Hour (6:00 to 7:00 P.M.)		
Field	In	Out	Total	In	Out	Total
Soccer / Softball/Baseball Field	25	60	85	30	30	60

Source: Heffron Transportation, Inc., February 2020.

3.2.4. Forecast With-Project Traffic Volumes

The project trips described in the previous section were added to the forecast without-project traffic volumes to estimate volumes with the project for each analysis hour. The resulting with-project traffic forecasts are shown on Figure 10 for the commuter PM peak hour and on Figure 11 for the early evening hour (between 6:00 and 7:00 P.M.).

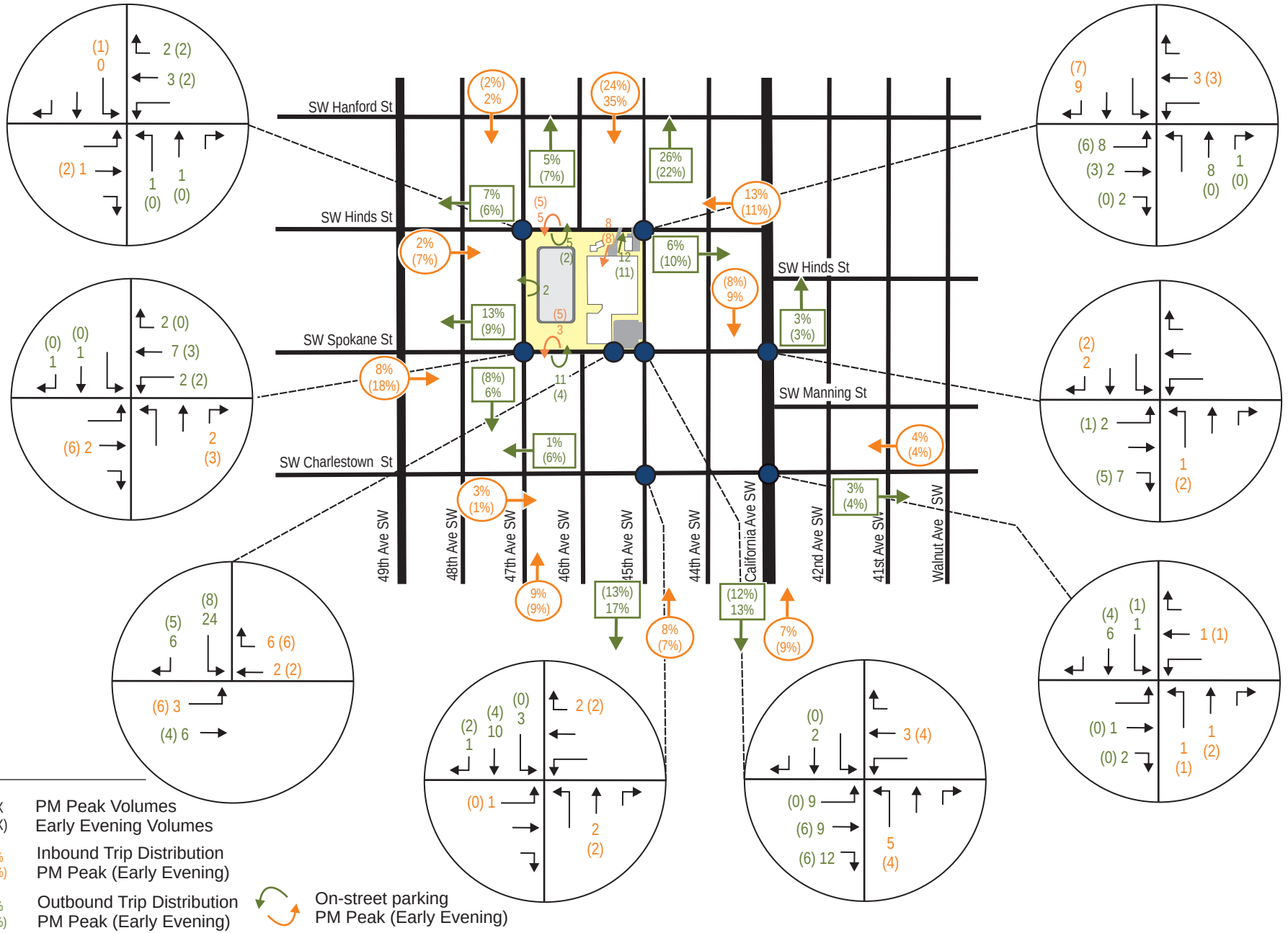


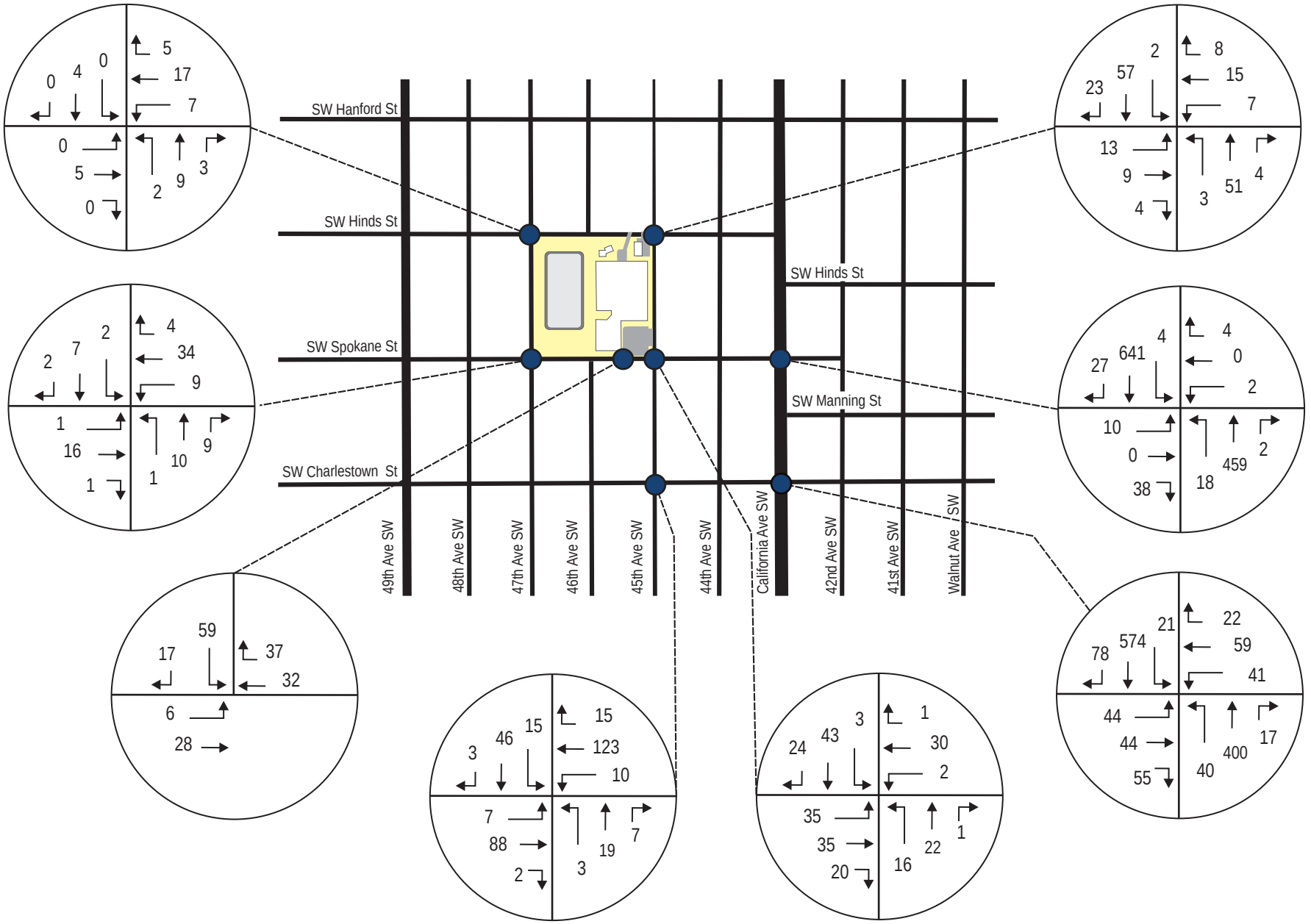
Figure 9

Project Trip Assignments
PM Peak Hour and Early Evening Hour

SPS MADISON MS
ATHLETIC FIELD IMPROVEMENTS

heffron transportation inc

02.14.20



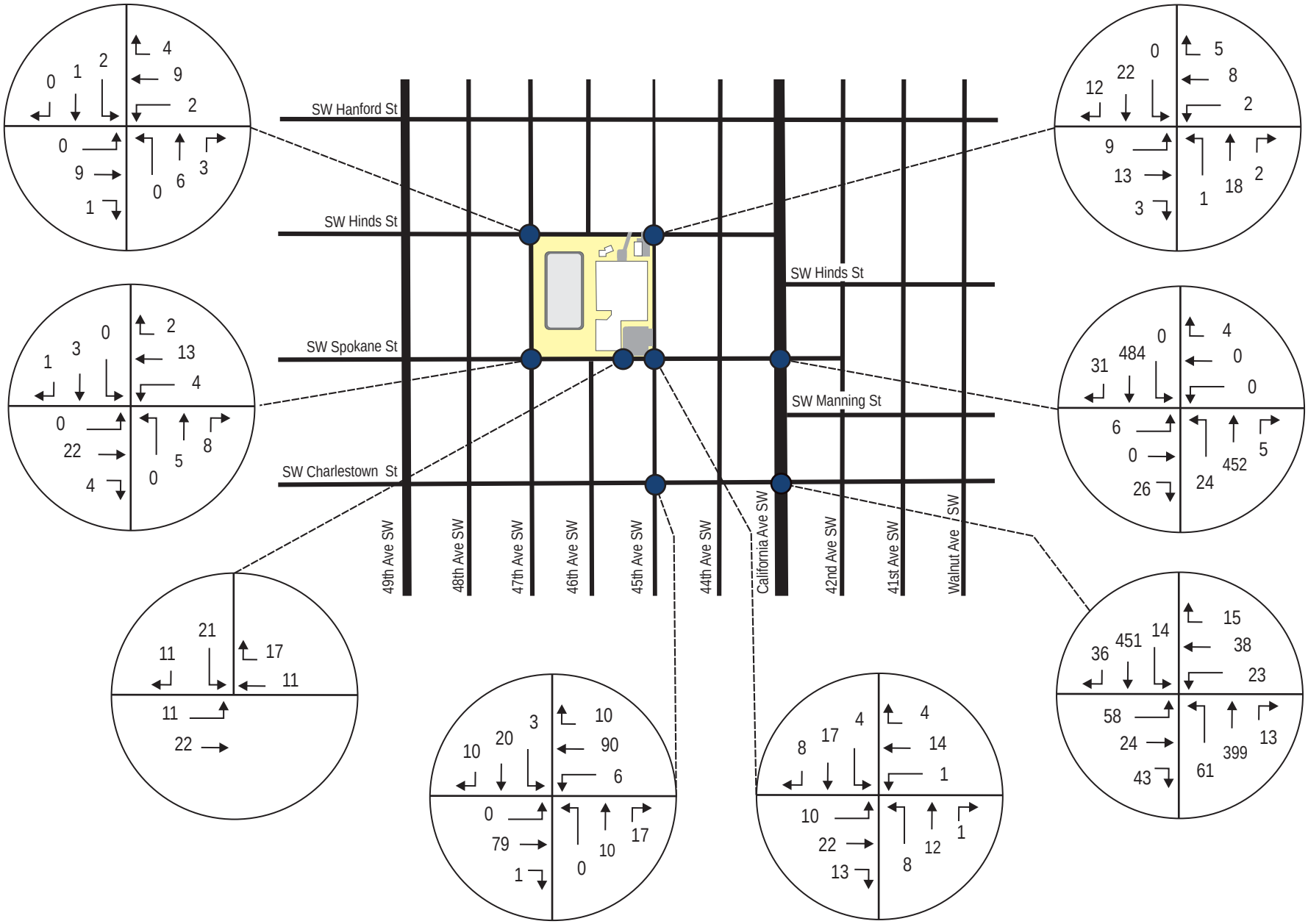
SPS MADISON MS
ATHLETIC FIELD IMPROVEMENTS

Figure 10

Forecast (2021) With-Project Traffic Volumes
PM Peak Hour

heffron transportation inc

02.14.20



SPS MADISON MS
ATHLETIC FIELD IMPROVEMENTS

Figure 11

Forecast (2021) With-Project Traffic Volumes
Early Evening Hour

heffron transportation inc

02.14.20

3.3. Traffic Operations Impacts

Intersection levels of service for future with-project conditions were determined using the same methodology described previously for existing and future without-project conditions. Table 8 shows the results of the analysis of the off-site study area intersections; levels of service for the without-project conditions are shown for comparison.

Table 8. Level of Service Summary – Forecast 2021 Conditions Without- and With-Project

Intersections	PM Peak Hour (5:00–6:00 P.M.)				Early Evening Hour (6:00–7:00 P.M.)			
	Without Project		With Project		Without Project		With Project	
Signalized	LOS [1]	Delay [2]	LOS	Delay	LOS	Delay	LOS	Delay
SW Charlestown St / California Ave SW	A	9.6	A	9.7	A	8.1	A	8.1
All-Way-Stop Controlled	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
SW Spokane Street / 45th Avenue SW	A	7.9	A	8.2	A	7.2	A	7.3
Two-Way-Stop Controlled	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
SW Hinds Street / 47th Avenue SW [3]	A	4.9	A	4.6	A	3.8	A	3.4
Northbound Movements	A	9.2	A	9.3	A	9.0	A	9.0
Eastbound Left-Turn	A	0.0	A	0.0	A	0.0	A	0.0
Westbound Left Turn	A	7.3	A	7.3	A	7.2	A	7.2
Southbound Movements	A	9.5	A	9.5	A	9.0	A	9.0
SW Hinds Street / 45th Avenue SW	A	2.6	A	3.0	A	3.7	A	4.2
Northbound Left Turn	A	7.4	A	7.5	A	7.3	A	7.3
Eastbound Movements	A	10.0	B	10.3	A	9.3	A	9.3
Westbound Movements	A	9.9	B	10.1	A	9.0	A	9.2
Southbound Left Turn	A	7.4	A	7.4	A	0.0	A	0.0
SW Spokane Street / 47th Avenue SW [3]	A	3.7	A	3.6	A	3.2	A	3.2
Northbound Movements	A	9.3	A	9.3	A	9.0	A	9.0
Eastbound Left-Turn	A	7.3	A	7.3	A	0.0	A	0.0
Westbound Left Turn	A	7.3	A	7.3	A	7.3	A	7.3
Southbound Movements	A	9.5	A	9.6	A	9.2	A	9.3
SW Spokane St / California Avenue SW	A	1.3	A	1.6	A	0.9	A	1.1
Northbound Left Turn	A	9.6	A	9.6	A	9.1	A	9.1
Eastbound Movements	C	21.7	C	23.0	C	17.5	C	17.9
Westbound Movements	C	20.2	C	20.6	B	11.8	B	11.8
Southbound Left Turn	A	8.5	A	8.5	A	0.0	A	0.0
SW Charlestown St / 45th Avenue SW	A	3.2	A	3.7	A	2.2	A	2.4
Northbound Movements	B	10.8	B	10.9	A	9.7	A	9.8
Eastbound Left-Turn	A	7.6	A	7.6	A	0.0	A	0.0
Westbound Left Turn	A	7.5	A	7.5	A	7.5	A	7.5
Southbound Movements	B	11.8	B	12.1	B	10.4	B	10.4

Source: Heffron Transportation, Inc., February 2020.

1. *Level of service.*
2. *Average seconds of delay per vehicle.*
3. *Uncontrolled intersection evaluated as stop-controlled for north-south legs.*

As shown, the proposed project is expected to add some delay to a few of the study area locations (all less than 1.5 seconds per vehicle) but is not expected to change the overall level of service at any of the analysis intersections (LOS A overall). All movements at the two-way-stop and uncontrolled intersections would also continue to operate at LOS C or better during both periods. The analysis indicates a slight decline in total overall average delay at two intersections, which can occur when volumes increase on non-critical movements that have little or no delay, thus reducing the overall average delay. The site access intersection on SW Spokane Street is also expected to continue operating at LOS A overall with all turns operating at LOS B or better in 2021 with the project.

3.4. Traffic Safety

The project would increase traffic at the study-are intersections and statistically, the number of collisions could increase as traffic increases. However, the project does not include any changes to the roadway network that are expected to result in new adverse safety concerns.

3.5. Transit

It is likely that some of the new trips generated as a result of the field improvement and lighting project would occur by transit. These are expected to include students and family members that already commute to and from West Seattle High School by transit. Most of the new transit trips generated as a result of the field lighting project are expected to occur outside of peak commute hours and are not expected to adversely impact transit service or facilities in the vicinity.

3.6. Non-Motorized Facilities

Based on observations of scholastic athletic activities, participants may drive or be driven/transported; however, since the field is located within about 0.5-mile walking distance from West Seattle High School, some student athletes may walk to and from the site or nearby transit stops to participate in practices. Spectators, such as parents or friends, typically arrive via automobile. Similarly, most of the new participants and spectators using the site for non-scholastic recreational activities are expected to arrive via automobile. However, some could arrive on foot or bicycle from the local neighborhood or nearby transit stops. As a result, the field improvement and lighting project proposed may result in some increases in pedestrian or bicycle activity to the site beyond what occurs at the site today. The school site vicinity has pedestrian walkways and crosswalks used by students; therefore, no adverse impacts are expected for the number of pedestrians that could walk to the field.

3.7. Parking Demand and Occupancy

The proposed field improvement and lighting project does not include any physical changes to the existing parking supply (on-street or on-site). The planned future classroom addition is also not expected to change parking supply; however, it could increase typical school-day demand modestly based on a small increase in employees. Demand from occasional evening events could also increase somewhat.

The additional scholastic and non-scholastic athletics activities made possible by the field lighting project are expected to generate some additional parking demand that may occur on-site or on nearby streets. Participants and spectators who drive to the site for scholastic and non-scholastic athletics may use on-site parking or on-street parking in the site vicinity.

Average attendance/participation for practices at this site is expected to be below the range typically observed for games and matches (between 118 and 135 persons per scholastic athletic event) and 50 to 60 for non-scholastic athletic activities (such as well attended youth soccer matches). The combined peak number of added attendees and participants on site that would occur for a short time between consecutive activities is estimated to range from 168 to 195 persons. Observations for the Kennedy High School field improvements project in spring 2015 indicated that the athletic events generate parking

demand at rates ranging from about 0.6 to 0.7 vehicle per participant/spectator. However, those rates do not reflect the higher levels of transit use that occur at and around the West Seattle High School site, due to its proximity to Metro transit stops and service. Mode-of-travel data for the site area were derived from 'Journey-to-Work' survey results from the year *2010 Census* compiled by the PSRC. These surveys were conducted 10 years ago and may underestimate current transit use. From these surveys, results for residents living in Transportation Analysis Zones (TAZs) 173 and 174 (the zones that include and surround Madison Middle School and West Seattle High School) indicate that at the time of the 2010 census, about 19% of residents living in these zones commuted by transit, walking, or biking; about 14% of employees working the area used one of those non-automobile modes. For high school students, the percentages are expected to be higher, since 40% to 50% are not old enough to drive. To reflect some use of transit by West Seattle High School students after scholastic athletic activities at the site, the observed demand rates from the other school sites were reduced by 30% for application at the site. No adjustments were made for the demand rates applied to non-scholastic adult or youth activities at this site. At the adjusted rates, the peak demand is estimated to range from about 80 to 108 vehicles during the short period between activities—between 5:15 and 5:45 P.M. Outside of these periods, total demand is expected to range from 30 to about 65 vehicles.

The parking demand estimates described above reflect parked vehicles of spectators as well as participants (e.g., coaches, players that driver, referees/umpires, trainers, support staff, etc.).

As described previously, the data collected from the on-site parking lots at Madison Middle School found between 28 and 61 unused spaces and on-street parking occupancy near the facility averaged 32% to 35% utilized with an average of nearly 700 unused spaces. The addition of 76 to 103 vehicles during the short overlapping peak periods could be accommodated by the unused supply and on-street-parking occupancy rates are expected to remain well below 85%—the level considered to be effectively full by the City of Seattle. This is expected even with the possible increase in demand from the planned classroom addition. Since one of the demand counts was performed on an evening with an event in the Madison Middle School library, those results reflect the potential parking availability for conditions with a typical concurrent event.

3.8. Short-Term Impacts from Construction

Construction is planned to occur over 16 to 20 weeks and would include excavation and export of material (removal of the existing field, subsurface drainage, and track) and import of fill for the new facility. The project is estimated to require removal of about 5,220 cubic yards (cy) of material and import of about 3,830 cy of fill. This effort is expected to occur with a combination of hauling trips with some export-only, some import-only, and some back-haul trips (when an import truck is reloaded at the site to haul export material). The project design team estimates that, with use of 24-cubic yard trucks (truck/trailer combinations), the haul effort would generate 242 truckloads (242 trucks in and 242 trucks out) intermittently over 8 to 12 weeks. If assumed to be the shorter eight-week period, the transport would generate an average of about 12 truck trips per day (6 in, 6 out) and 1 or 2 truck trips per hour. This volume of truck traffic may be noticeable to residents living near the truck access point, but would not result in significant impacts to traffic operations in the site vicinity.

The construction of the project would also generate employee and equipment trips to and from the site. It is anticipated that construction workers would arrive at the construction site before the AM peak traffic period on local area streets and depart the site prior to the PM peak period; construction work shifts for schools are usually from 7:00 A.M. to 3:30 P.M., with workers arriving between 6:30 and 6:45 A.M., but work not starting until 7:00 A.M. The number of workers at the project site at any one time would vary depending upon the construction element being implemented. During the construction effort, construction personnel may park on site (if working when school is not in session such as during summer) or on-street in the site vicinity. School-day parking occupancy evaluated in May 2018 as part of the parking code departure process found parking occupancy averaged 25% with 780 or more unused on-street spaces). The unused supply would accommodate the temporary added demand during construction.

4. SUMMARY AND RECOMMENDATIONS

Seattle Public Schools proposes to replace the existing natural-turf field with synthetic turf, re-spray the rubberized running track, and install lights for use by fall 2021. The project would allow increased use of the athletic field for scholastic and non-scholastic recreational activities. Usage levels of the facility are expected to increase with the added ability to hold practices and recreational games later in the day during the school year. The primary increase in field use due to the lighting project would be non-scholastic recreational athletics scheduled through Seattle Parks & Recreation such as youth and adult soccer and ultimate. The field lights could increase weeknight and weekend use during winter months from sunset until 9:45 P.M. (lights would be scheduled to turn off at 10 P.M.). Madison Middle School use of the field, which already occurs until about 5:30 P.M. when natural light allows, could be extended to other parts of the year (late fall and early spring). West Seattle High School use of the field for practices could also require use of the lights (especially at the start of the Spring sports season in late February and early March).

The increase in traffic during the commuter PM peak hour is expected to be up to 85 trips (25 in, 60 out); not including any adjustment for transit use. During the early evening hour between 6:00 and 7:00 P.M., consecutive recreational activities on the field could generate a total of 60 trips (30 trips in, 30 trips out). Some of these estimated increases in trips would only be new to the site and local roadways for part of the year—primarily from about October until early March. During the remainder of the year, natural lighting conditions allow for field use during these times without the need for field lights. As a result, these trips are already occurring (or could occur) without the project from late spring through early fall when natural lighting allows but would simply occur on more days of the year.

The proposed project is forecast to cause negligible changes to delay at off-site study-area intersections, but is not expected to change the overall level of service at any of the analysis intersections.

The project is expected to generate some additional parking demand that is not currently occurring at the site. The peak demand is estimated to range from about 80 to 108 vehicles during the short period between consecutive activities. Outside of these periods, total demand is expected to range from about 30 to 65 vehicles when activities are occurring on the field. Unused on-site and on-street parking can accommodate the added demand from new activities on the field.

During evenings when there may be an event at the, the combined demand from the event and from added activities on the athletic field could increase utilization in the area, but combined occupancy is expected to remain below 85%. This is expected even with the possible increase in demand associated with the planned future classroom addition.

Based on these analyses, the project would not result in significant adverse impacts to traffic or parking within the study area. The following measures are recommended.

On-Site Parking – The District and Madison Middle School should ensure that the on-site parking lots are open and available for users during all times that the field is scheduled for use.

Construction Transportation Management Plan (CTMP) – The District will require the selected contractor to develop a CTMP that addresses traffic and pedestrian control during construction of the athletic field and track project. It would define truck routes, lane closures, walkway closures, and parking or load/unload area disruptions, as necessary. To the extent possible, the CTMP would direct trucks along the shortest route to arterials and away from residential streets to avoid unnecessary conflicts with resident and pedestrian activity. The CTMP may also include measures to keep adjacent streets clean on a daily basis at the truck exit points (such as street sweeping or on-site truck wheel cleaning) to reduce tracking dirt offsite.

APPENDIX A

LEVEL OF SERVICE DEFINITIONS

Levels of service (LOS) are qualitative descriptions of traffic operating conditions. These levels of service are designated with letters ranging from LOS A, which is indicative of good operating conditions with little or no delay, to LOS F, which is indicative of stop-and-go conditions with frequent and lengthy delays. Levels of service for this analysis were developed using procedures presented in the *Highway Capacity Manual, Sixth Edition* (Transportation Research Board, 2016).

Signalized Intersections

Level of service for signalized intersections is defined in terms of average delay for all vehicles that travel through the intersection. Delay can be a cause of driver discomfort, frustration, inefficient fuel consumption, and lost travel time. Specifically, level-of-service criteria are stated in terms of the average delay per vehicle in seconds. Delay is a complex measure and is dependent on a number of variables including: number and type of vehicles by movement, intersection lane geometry, signal phasing, the amount of green time allocated to each phase, transit stops and parking maneuvers. Table A-1 shows the level of service criteria for signalized intersections from the *Highway Capacity Manual, Sixth Edition.*

Table A-1. Level of Service for Signalized Intersections

Level of Service	Average Control Delay Per Vehicle
A	≤ 10 seconds
B	> 10 – 20 seconds
C	> 20 – 35 seconds
D	> 35 – 55 seconds
E	> 55 – 80 seconds
F	> 80 seconds

Source: Transportation Research Board, Highway Capacity Manual, Exhibit 19.8, 2016.

Unsignalized Intersections

For unsignalized intersections, level of service is based on the average delay per vehicle for each turning movement. The level of service for all-way stop or roundabout-controlled intersections is based upon the average delay for all vehicles that travel through the intersection. The level of service for a one- or two-way, stop-controlled intersection, delay is related to the availability of gaps in the main street's traffic flow, and the ability of a driver to enter or pass through those gaps. Table A-2 shows the level of service criteria for unsignalized intersections from the *Highway Capacity Manual, Sixth Edition*.

Table A-2. Level of Service Criteria for Unsignalized Intersections

Level of Service	Average Control Delay per Vehicle
A	0 – 10 seconds
B	> 10 – 15 seconds
C	> 15 – 25 seconds
D	> 25 – 35 seconds
E	> 35 – 50 seconds
F	> 50 seconds

Source: Transportation Research Board, Highway Capacity Manual, Exhibit 20.2, 2016.

APPENDIX B

PARKING UTILIZATION STUDY DATA

Project **Madison Middle School Field Lighting**

Block Face ID	Street Name	Street Segment	Side of Street	Parking Supply												
				Unrestricted Parallel	Unrestricted Angle	1-Hour Parking 7a - 6p Except Sun/Hol	2-Hour Parking 7a - 6p Except Sun/Hol	4-Hour Parking 7a - 6p Except Sun/Hol	30-minute l/ul only	30 minute l/ul only 8a - 4p, exc Sat, Sun, & Hol	3 minute l/ul 7a-6p, exc Sun & Hol	School Bus Only 7-9a, 2-4p	No Parking 7-10a, 1-4p, exc Sat, Sun, & Hol	3-minute Passenger Load Only	Disabled	**Total Spaces**
AA	47th Avenue SW	800' boundary and SW Hanford St	W	1	0	0	0	0	0	0	0	0	0	0	0	**1**
AB	47th Avenue SW	800' boundary and SW Hanford St	E	1	0	0	0	0	0	0	0	0	0	0	0	**1**
AC	46th Avenue SW	800' boundary and SW Hanford St	W	3	0	0	0	0	0	0	0	0	0	0	0	**3**
AD	46th Avenue SW	800' boundary and SW Hanford St	E	6	0	0	0	0	0	0	0	0	0	0	0	**6**
AE	45th Avenue SW	800' boundary and SW Hanford St	W	3	0	0	0	0	0	0	0	0	0	0	0	**3**
AF	45th Avenue SW	800' boundary and SW Hanford St	E	3	0	0	0	0	0	0	0	0	0	0	0	**3**
AG	SW Hanford Street	800 ' boundary 47th Ave SW	N	4	0	0	0	0	0	0	0	0	0	0	0	**4**
AH	SW Hanford Street	800 ' boundary 47th Ave SW	S	2	0	0	0	0	0	0	0	0	0	0	0	**2**
AI	SW Hanford Street	47th Ave SW and 46th Ave SW	N	10	0	0	0	0	0	0	0	0	0	0	0	**10**
AJ	SW Hanford Street	47th Ave SW and 46th Ave SW	S	8	0	0	0	0	0	0	0	0	0	0	0	**8**
AK	SW Hanford Street	800' boundary and 45th Ave SW	N	4	0	0	0	0	0	0	0	0	0	0	0	**4**
AL	SW Hanford Street	800' boundary and 45th Ave SW	S	5	0	0	0	0	0	0	0	0	0	0	0	**5**
AM	SW Hanford Street	45th Ave SW and 800' boundary	N	2	0	0	0	0	0	0	0	0	0	0	0	**2**
AN	SW Hanford Street	45th Ave SW and 800' boundary	S	3	0	0	0	0	0	0	0	0	0	0	0	**3**
AO	49th Avenue SW	800 ' boundary and SW Hinds St	W	2	0	0	0	0	0	0	0	0	0	0	0	**2**
AP	49th Avenue SW	800 ' boundary and SW Hinds St	E	0	0	0	0	0	0	0	0	0	0	0	0	**0**
AQ	48th Avenue SW	800 ' boundary and SW Hinds St	W	16	0	0	0	0	0	0	0	0	0	0	0	**16**
AR	48th Avenue SW	800 ' boundary and SW Hinds St	E	7	0	0	0	0	0	0	0	0	0	0	0	**7**
AS	47th Avenue SW	SW Hanford St and SW Hinds St	W	18	0	0	0	0	0	0	0	0	0	0	0	**18**
AT	47th Avenue SW	SW Hanford St and SW Hinds St	E	19	0	0	0	0	0	0	0	0	0	0	0	**19**
AU	46th Avenue SW	SW Hanford St and SW Hinds St	W	29	0	0	0	0	0	0	0	0	0	0	0	**29**
AV	46th Avenue SW	SW Hanford St and SW Hinds St	E	23	0	0	0	0	0	0	0	0	0	0	0	**23**
AW	45th Avenue SW	SW Hanford St and SW Hinds St	W	21	0	0	0	0	0	0	0	0	0	0	0	**21**
AX	45th Avenue SW	SW Hanford St and SW Hinds St	E	25	0	0	0	0	0	0	0	0	0	0	1	**26**
AY	44th Avenue SW	800 ' boundary and SW Hinds St	W	21	0	0	0	0	0	0	0	0	0	0	0	**21**
AZ	44th Avenue SW	800 ' boundary and SW Hinds St	E	17	0	0	0	0	0	0	0	0	0	0	0	**17**
BA	California Avenue SW	800 ' boundary and SW Hinds St	W	0	0	0	2	0	0	0	1	0	0	0	0	**3**

Project **Madison Middle School Field Lighting**

				Parking Supply												
Block Face ID	Street Name	Street Segment	Side of Street	Unrestricted Parallel	Unrestricted Angle	1-Hour Parking 7a - 6p Except Sun/Hol	2-Hour Parking 7a - 6p Except Sun/Hol	4-Hour Parking 7a - 6p Except Sun/Hol	30-minute l/ul only	30 minute l/ul only 8a - 4p, exc Sat, Sun, & Hol	3 minute l/ul 7a-6p, exc Sun & Hol	School Bus Only 7-9a, 2-4p	No Parking 7-10a, 1-4p, exc Sat, Sun, & Hol	3-minute Passenger Load Only	Disabled	**Total Spaces**
BB	California Avenue SW	800 ' boundary and 800 ' boundary	E	0	0	3	4	0	0	0	0	0	0	0	0	**7**
BC	SW Hinds Street	800 ' boundary and 49th Ave SW	N	3	0	0	0	0	0	0	0	0	0	0	0	**3**
BD	SW Hinds Street	800 ' boundary and 49th Ave SW	S	3	0	0	0	0	0	0	0	0	0	0	0	**3**
BE	SW Hinds Street	49th Ave SW and 48th Ave SW	N	10	0	0	0	0	0	0	0	0	0	0	0	**10**
BF	SW Hinds Street	49th Ave SW and 48th Ave SW	S	10	0	0	0	0	0	0	0	0	0	0	0	**10**
BG	SW Hinds Street	48th Ave SW and 47th Ave SW	N	9	0	0	0	0	0	0	0	0	0	0	0	**9**
BH	SW Hinds Street	48th Ave SW and 47th Ave SW	S	10	0	0	0	0	0	0	0	0	0	0	0	**10**
BI	SW Hinds Street	47th Ave SW and 46th Ave SW	N	8	0	0	0	0	0	0	0	0	0	0	0	**8**
BJ	SW Hinds Street	46th Ave SW and 45th Ave SW	N	10	0	0	0	0	0	0	0	0	0	0	0	**10**
BK	SW Hinds Street	47th Ave SW and 45th Ave SW	S	23	0	0	0	0	0	0	0	0	0	0	0	**23**
BL	SW Hinds Street	45th Ave SW and 44th Ave SW	N	10	0	0	0	0	0	0	0	0	0	0	0	**10**
BM	SW Hinds Street	45th Ave SW and 44th Ave SW	S	10	0	0	0	0	0	0	0	0	0	0	0	**10**
BN	SW Hinds Street	44th Ave SW and California Ave SW	N	10	0	0	0	0	0	0	0	0	0	0	0	**10**
BO	SW Hinds Street	44th Ave SW and California Ave SW	S	9	0	0	0	0	0	0	0	0	0	0	0	**9**
BP	49th Avenue SW	SW Hinds St and 800 ' boundary	W	4	0	0	0	0	0	0	0	0	0	0	0	**4**
BQ	49th Avenue SW	SW Hinds St and 800 ' boundary	E	0	0	0	0	0	0	0	0	0	0	0	0	**0**
BR	48th Avenue SW	SW Hinds St and SW Spokane St	W	27	0	0	0	0	0	0	0	0	0	0	0	**27**
BS	48th Avenue SW	SW Hinds St and SW Spokane St	E	23	0	0	0	0	0	0	0	0	0	0	0	**23**
BT	47th Avenue SW	SW Hinds St and SW Spokane St	W	29	0	0	0	0	0	0	0	0	0	0	0	**29**
BU	47th Avenue SW	SW Hinds St and SW Spokane St	E	27	0	0	0	0	0	0	0	0	0	0	0	**27**
BV	45th Avenue SW	SW Hinds St and SW Spokane St	W	0	0	0	0	0	0	0	0	30	0	0	0	**30**
BW	45th Avenue SW	SW Hinds St and SW Spokane St	E	25	0	0	0	0	0	0	0	0	0	0	2	**27**
BX	44th Avenue SW	SW Hinds St and SW Spokane St	W	27	0	0	0	0	0	0	0	0	0	0	0	**27**
BY	44th Avenue SW	SW Hinds St and SW Spokane St	E	26	0	0	0	0	0	0	0	0	0	0	0	**26**
BZ	California Avenue SW	SW Hinds St and 800' boundary	W	2	0	0	4	0	1	0	0	0	0	0	0	**7**
CA	SW Hanford Street	End of block	--	0	3	0	0	0	0	0	0	0	0	0	0	**3**
CB	49th Avenue SW	800 ' boundary and SW Spokane St	W	5	0	0	0	0	0	0	0	0	0	0	0	**5**

Project **Madison Middle School Field Lighting**

				Parking Supply												
Block Face ID	Street Name	Street Segment	Side of Street	Unrestricted Parallel	Unrestricted Angle	1-Hour Parking 7a - 6p Except Sun/Hol	2-Hour Parking 7a - 6p Except Sun/Hol	4-Hour Parking 7a - 6p Except Sun/Hol	30-minute l/ul only	30 minute l/ul only 8a - 4p, exc Sat, Sun, & Hol	3 minute l/ul 7a-6p, exc Sun & Hol	School Bus Only 7-9a, 2-4p	No Parking 7-10a, 1-4p, exc Sat, Sun, & Hol	3-minute Passenger Load Only	Disabled	**Total Spaces**
CC	49th Avenue SW	800 ' boundary and SW Spokane St	E	0	0	0	0	0	0	0	0	0	0	0	0	**0**
CD	California Avenue SW	800 ' boundary and SW Spokane St	W	4	0	0	1	0	0	0	0	0	0	0	0	**5**
CE	California Avenue SW	800 ' boundary and SW Spokane St	E	0	0	0	0	0	0	1	0	0	0	0	0	**1**
CF	SW Spokane Street	800 ' boundary and 49th Ave SW	N	0	0	0	0	0	0	0	0	0	4	0	0	**4**
CG	SW Spokane Street	800 ' boundary and 49th Ave SW	S	3	0	0	0	0	0	0	0	0	0	0	0	**3**
CH	SW Spokane Street	49th Ave SW and 48th Ave SW	N	9	0	0	0	0	0	0	0	0	0	0	0	**9**
CI	SW Spokane Street	49th Ave SW and 48th Ave SW	S	8	0	0	0	0	0	0	0	0	0	0	0	**8**
CJ	SW Spokane Street	48th Ave SW and 47th Ave SW	N	10	0	0	0	0	0	0	0	0	0	0	0	**10**
CK	SW Spokane Street	48th Ave SW and 47th Ave SW	S	8	0	0	0	0	0	0	0	0	0	0	0	**8**
CL	SW Spokane Street	47th Ave SW and 45th Ave SW	N	23	0	0	0	0	0	0	0	0	0	0	0	**23**
CM	SW Spokane Street	47th Ave SW and 46th Ave SW	S	9	0	0	0	0	0	0	0	0	0	0	0	**9**
CN	SW Spokane Street	46th Ave SW and 45th Ave SW	S	7	0	0	0	0	0	0	0	0	0	0	0	**7**
CO	SW Spokane Street	45th Ave SW and 44th Ave SW	N	9	0	0	0	0	0	0	0	0	0	0	0	**9**
CP	SW Spokane Street	45th Ave SW and 44th Ave SW	S	9	0	0	0	0	0	0	0	0	0	0	0	**9**
CQ	SW Spokane Street	44th Ave SW and California Ave SW	N	9	0	0	0	0	0	0	0	0	0	0	0	**9**
CR	SW Spokane Street	44th Ave SW and California Ave SW	S	5	0	0	0	3	0	0	0	0	0	0	0	**8**
CS	SW Spokane Street	California Ave SW and 800' boundary	N	0	0	0	0	0	0	0	0	0	0	0	0	**0**
CT	SW Spokane Street	California Ave SW and 800' boundary	S	2	0	0	0	0	0	0	0	0	0	0	0	**2**
CU	49th Avenue SW	SW Spokane St and 800' boundary	W	1	0	0	0	0	0	0	0	0	0	0	0	**1**
CV	49th Avenue SW	SW Spokane St and 800' boundary	E	0	0	0	0	0	0	0	0	0	0	0	0	**0**
CW	48th Avenue SW	SW Spokane St and 800' boundary	W	21	0	0	0	0	0	0	0	0	0	0	0	**21**
CX	48th Avenue SW	SW Spokane St and 800' boundary	E	17	0	0	0	0	0	0	0	0	0	0	0	**17**
CY	47th Avenue SW	SW Spokane St and SW Charlestown St	W	31	0	0	0	0	0	0	0	0	0	0	0	**31**
CZ	47th Avenue SW	SW Spokane St and SW Charlestown St	E	28	0	0	0	0	0	0	0	0	0	0	0	**28**
DA	46th Avenue SW	SW Spokane St and SW Charlestown St	W	20	0	0	0	0	0	0	0	0	0	0	0	**20**
DB	46th Avenue SW	SW Spokane St and SW Charlestown St	E	23	0	0	0	0	0	0	0	0	0	0	0	**23**
DC	45th Avenue SW	SW Spokane St and SW Charlestown St	W	31	0	0	0	0	0	0	0	0	0	0	0	**31**

Project **Madison Middle School Field Lighting**

				Parking Supply												
Block Face ID	Street Name	Street Segment	Side of Street	Unrestricted Parallel	Unrestricted Angle	1-Hour Parking 7a - 6p Except Sun/Hol	2-Hour Parking 7a - 6p Except Sun/Hol	4-Hour Parking 7a - 6p Except Sun/Hol	30-minute l/ul only	30 minute l/ul only 8a - 4p, exc Sat, Sun, & Hol	3 minute l/ul 7a-6p, exc Sun & Hol	School Bus Only 7-9a, 2-4p	No Parking 7-10a, 1-4p, exc Sat, Sun, & Hol	3-minute Passenger Load Only	Disabled	**Total Spaces**
DD	45th Avenue SW	SW Spokane St and SW Charlestown St	E	28	0	0	0	0	0	0	0	0	0	0	0	**28**
DE	44th Avenue SW	SW Spokane St and 800' boundary	W	22	0	0	0	0	0	0	0	0	0	0	0	**22**
DF	44th Avenue SW	SW Spokane St and 800' boundary	E	19	0	0	0	0	0	0	0	0	0	0	0	**19**
DG	California Avenue SW	SW Spokane St and 800' boundary	W	1	0	0	0	0	0	0	0	0	0	0	0	**1**
DH	California Avenue SW	SW Spokane St and 800' boundary	E	5	0	0	0	0	0	0	0	0	0	0	0	**5**
DI	SW Charlestown Street	47th Ave SW and 46th Ave SW	N	3	0	0	0	0	0	0	0	0	0	0	0	**3**
DJ	SW Charlestown Street	47th Ave SW and 46th Ave SW	S	2	0	0	0	0	0	0	0	0	0	0	0	**2**
DK	SW Charlestown Street	800 ' boundary and 47th Ave SW	N	7	0	0	0	0	0	0	0	0	0	0	0	**7**
DL	SW Charlestown Street	800 ' boundary and 47th Ave SW	S	12	0	0	0	0	0	0	0	0	0	0	0	**12**
DM	SW Charlestown Street	46th Ave SW and 45th Ave SW	N	10	0	0	0	0	0	0	0	0	0	0	0	**10**
DN	SW Charlestown Street	46th Ave SW and 45th Ave SW	S	10	0	0	0	0	0	0	0	0	0	0	0	**10**
DO	SW Charlestown Street	45th Ave SW and 800' boundary	N	2	0	0	0	0	0	0	0	0	0	0	0	**2**
DP	SW Charlestown Street	45th Ave SW and 800' boundary	S	2	0	0	0	0	0	0	0	0	0	0	0	**2**
DQ	47th Avenue SW	SW Charlestown St and 800' boundary	W	3	0	0	0	0	0	0	0	0	0	0	0	**3**
DR	47th Avenue SW	SW Charlestown St and 800' boundary	E	2	0	0	0	0	0	0	0	0	0	0	0	**2**
DS	46th Avenue SW	SW Charlestown St and 800' boundary	W	2	0	0	0	0	0	0	0	0	0	0	0	**2**
DT	46th Avenue SW	SW Charlestown St and 800' boundary	E	2	0	0	0	0	0	0	0	0	0	0	0	**2**
DU	45th Avenue SW	SW Charlestown St and 800' boundary	W	2	0	0	0	0	0	0	0	0	0	0	0	**2**
DV	45th Avenue SW	SW Charlestown St and 800' boundary	E	0	0	0	0	0	0	0	0	0	0	0	0	**0**
			TOTAL	**994**	**3**	**3**	**11**	**3**	**1**	**1**	**1**	**30**	**4**	**0**	**3**	**1054**

Project **Madison Middle School Field Lighting**

				Supply	Parking Occupancy											
					Weekday						Weekend					
					5:45 PM			8:15 PM			5:45 PM			8:15 PM		
Block Face ID	Street Name	Street Segment	Side of Street	Total Spaces	Tues 2/4	Thurs 2/6	Average	Tues 2/4	Thurs 2/6	Average	Sat 2/8	Sun 2/9	Average	Sat 2/8	Sun 2/9	Average
AA	47th Avenue SW	800' boundary and SW Hanford St	W	**1**	0	0	0	0	0	0	0	0	0	0	0	0
AB	47th Avenue SW	800' boundary and SW Hanford St	E	**1**	1	1	1	1	1	1	1	1	1	1	1	1
AC	46th Avenue SW	800' boundary and SW Hanford St	W	**3**	2	0	1	2	0	1	0	0	0	0	0	0
AD	46th Avenue SW	800' boundary and SW Hanford St	E	**6**	0	0	0	0	0	0	0	0	0	0	0	0
AE	45th Avenue SW	800' boundary and SW Hanford St	W	**3**	2	1	2	1	2	2	2	2	2	2	2	2
AF	45th Avenue SW	800' boundary and SW Hanford St	E	**3**	2	2	2	2	1	2	2	2	2	2	2	2
AG	SW Hanford Street	800 ' boundary 47th Ave SW	N	**4**	0	0	0	0	0	0	0	0	0	0	0	0
AH	SW Hanford Street	800 ' boundary 47th Ave SW	S	**2**	1	1	1	1	1	1	1	1	1	1	1	1
AI	SW Hanford Street	47th Ave SW and 46th Ave SW	N	**10**	1	1	1	1	1	1	0	2	1	1	1	1
AJ	SW Hanford Street	47th Ave SW and 46th Ave SW	S	**8**	0	0	0	0	0	0	0	0	0	0	0	0
AK	SW Hanford Street	800' boundary and 45th Ave SW	N	**4**	1	2	2	2	2	2	1	4	3	1	2	2
AL	SW Hanford Street	800' boundary and 45th Ave SW	S	**5**	5	4	5	5	5	5	3	5	4	3	4	4
AM	SW Hanford Street	45th Ave SW and 800' boundary	N	**2**	1	0	1	0	1	1	1	0	1	2	0	1
AN	SW Hanford Street	45th Ave SW and 800' boundary	S	**3**	2	2	2	1	2	2	1	2	2	1	2	2
AO	49th Avenue SW	800 ' boundary and SW Hinds St	W	**2**	0	0	0	0	0	0	0	0	0	0	0	0
AP	49th Avenue SW	800 ' boundary and SW Hinds St	E	**0**	0	0	0	0	0	0	0	0	0	0	0	0
AQ	48th Avenue SW	800 ' boundary and SW Hinds St	W	**16**	8	5	7	6	6	6	9	7	8	10	9	10
AR	48th Avenue SW	800 ' boundary and SW Hinds St	E	**7**	4	6	5	6	7	7	8	6	7	7	7	7
AS	47th Avenue SW	SW Hanford St and SW Hinds St	W	**18**	6	3	5	5	4	5	4	5	5	3	6	5
AT	47th Avenue SW	SW Hanford St and SW Hinds St	E	**19**	7	7	7	8	8	8	6	3	5	6	5	6
AU	46th Avenue SW	SW Hanford St and SW Hinds St	W	**29**	9	16	13	10	13	12	12	14	13	13	14	14
AV	46th Avenue SW	SW Hanford St and SW Hinds St	E	**23**	8	7	8	12	7	10	8	9	9	9	10	10
AW	45th Avenue SW	SW Hanford St and SW Hinds St	W	**21**	10	11	11	8	12	10	11	10	11	10	12	11
AX	45th Avenue SW	SW Hanford St and SW Hinds St	E	**26**	11	9	10	13	10	12	12	11	12	13	8	11
AY	44th Avenue SW	800 ' boundary and SW Hinds St	W	**21**	9	8	9	11	14	13	11	9	10	13	13	13
AZ	44th Avenue SW	800 ' boundary and SW Hinds St	E	**17**	8	10	9	10	14	12	10	9	10	11	9	10
BA	California Avenue SW	800 ' boundary and SW Hinds St	W	**3**	3	3	3	3	3	3	1	3	2	2	3	3

Project **Madison Middle School Field Lighting**

				Supply	Parking Occupancy											
					Weekday						Weekend					
					5:45 PM			8:15 PM			5:45 PM			8:15 PM		
Block Face ID	Street Name	Street Segment	Side of Street	Total Spaces	Tues 2/4	Thurs 2/6	Average	Tues 2/4	Thurs 2/6	Average	Sat 2/8	Sun 2/9	Average	Sat 2/8	Sun 2/9	Average
BB	California Avenue SW	800 ' boundary and 800 ' boundary	E	**7**	6	6	6	6	4	5	6	6	6	6	6	6
BC	SW Hinds Street	800 ' boundary and 49th Ave SW	N	**3**	0	0	0	0	1	1	1	0	1	0	0	0
BD	SW Hinds Street	800 ' boundary and 49th Ave SW	S	**3**	1	1	1	1	1	1	1	1	1	1	1	1
BE	SW Hinds Street	49th Ave SW and 48th Ave SW	N	**10**	1	2	2	1	1	1	1	1	1	1	1	1
BF	SW Hinds Street	49th Ave SW and 48th Ave SW	S	**10**	0	0	0	0	1	1	0	1	1	0	1	1
BG	SW Hinds Street	48th Ave SW and 47th Ave SW	N	**9**	2	2	2	2	2	2	1	2	2	2	2	2
BH	SW Hinds Street	48th Ave SW and 47th Ave SW	S	**10**	1	1	1	2	1	2	1	0	1	1	1	1
BI	SW Hinds Street	47th Ave SW and 46th Ave SW	N	**8**	0	0	0	1	0	1	0	0	0	0	0	0
BJ	SW Hinds Street	46th Ave SW and 45th Ave SW	N	**10**	1	2	2	0	0	0	0	0	0	0	0	0
BK	SW Hinds Street	47th Ave SW and 45th Ave SW	S	**23**	0	0	0	0	0	0	0	0	0	0	0	0
BL	SW Hinds Street	45th Ave SW and 44th Ave SW	N	**10**	5	4	5	4	3	4	2	3	3	2	4	3
BM	SW Hinds Street	45th Ave SW and 44th Ave SW	S	**10**	5	7	6	4	6	5	5	5	5	3	5	4
BN	SW Hinds Street	44th Ave SW and California Ave SW	N	**10**	7	7	7	6	8	7	9	7	8	9	10	10
BO	SW Hinds Street	44th Ave SW and California Ave SW	S	**9**	6	10	8	8	7	8	9	10	10	10	11	11
BP	49th Avenue SW	SW Hinds St and 800 ' boundary	W	**4**	1	2	2	1	2	2	2	2	2	2	2	2
BQ	49th Avenue SW	SW Hinds St and 800 ' boundary	E	**0**	0	0	0	0	0	0	0	0	0	0	0	0
BR	48th Avenue SW	SW Hinds St and SW Spokane St	W	**27**	8	9	9	9	8	9	9	10	10	10	11	11
BS	48th Avenue SW	SW Hinds St and SW Spokane St	E	**23**	9	9	9	11	11	11	9	9	9	11	10	11
BT	47th Avenue SW	SW Hinds St and SW Spokane St	W	**29**	10	12	11	11	14	13	12	12	12	12	14	13
BU	47th Avenue SW	SW Hinds St and SW Spokane St	E	**27**	0	0	0	0	0	0	0	0	0	0	0	0
BV	45th Avenue SW	SW Hinds St and SW Spokane St	W	**30**	1	0	1	12	0	6	0	0	0	0	0	0
BW	45th Avenue SW	SW Hinds St and SW Spokane St	E	**27**	12	11	12	15	8	12	13	8	11	13	12	13
BX	44th Avenue SW	SW Hinds St and SW Spokane St	W	**27**	9	9	9	13	11	12	10	9	10	13	10	12
BY	44th Avenue SW	SW Hinds St and SW Spokane St	E	**26**	12	10	11	13	13	13	7	16	12	9	17	13
BZ	California Avenue SW	SW Hinds St and 800' boundary	W	**7**	6	6	6	6	6	6	5	7	6	6	6	6
CA	SW Hanford Street	End of block	--	**3**	3	3	3	3	3	3	3	3	3	2	3	3
CB	49th Avenue SW	800 ' boundary and SW Spokane St	W	**5**	0	0	0	0	0	0	2	2	2	0	2	1

Project **Madison Middle School Field Lighting**

				Supply	Parking Occupancy											
					Weekday						Weekend					
					5:45 PM			8:15 PM			5:45 PM			8:15 PM		
Block Face ID	Street Name	Street Segment	Side of Street	Total Spaces	Tues 2/4	Thurs 2/6	Average	Tues 2/4	Thurs 2/6	Average	Sat 2/8	Sun 2/9	Average	Sat 2/8	Sun 2/9	Average
CC	49th Avenue SW	800 ' boundary and SW Spokane St	E	**0**	0	0	0	0	0	0	0	0	0	0	0	0
CD	California Avenue SW	800 ' boundary and SW Spokane St	W	**5**	2	2	2	2	2	2	1	0	1	0	0	0
CE	California Avenue SW	800 ' boundary and SW Spokane St	E	**1**	0	0	0	0	0	0	0	0	0	0	0	0
CF	SW Spokane Street	800 ' boundary and 49th Ave SW	N	**4**	0	0	0	0	0	0	0	0	0	0	0	0
CG	SW Spokane Street	800 ' boundary and 49th Ave SW	S	**3**	0	1	1	2	1	2	1	1	1	2	2	2
CH	SW Spokane Street	49th Ave SW and 48th Ave SW	N	**9**	0	0	0	1	1	1	0	2	1	1	2	2
CI	SW Spokane Street	49th Ave SW and 48th Ave SW	S	**8**	1	1	1	1	1	1	1	1	1	1	1	1
CJ	SW Spokane Street	48th Ave SW and 47th Ave SW	N	**10**	2	2	2	3	2	3	3	2	3	3	3	3
CK	SW Spokane Street	48th Ave SW and 47th Ave SW	S	**8**	0	0	0	0	0	0	0	0	0	0	0	0
CL	SW Spokane Street	47th Ave SW and 45th Ave SW	N	**23**	1	2	2	5	1	3	0	0	0	0	0	0
CM	SW Spokane Street	47th Ave SW and 46th Ave SW	S	**9**	0	0	0	0	0	0	0	0	0	0	0	0
CN	SW Spokane Street	46th Ave SW and 45th Ave SW	S	**7**	0	1	1	2	1	2	1	1	1	1	1	1
CO	SW Spokane Street	45th Ave SW and 44th Ave SW	N	**9**	4	4	4	5	4	5	3	2	3	4	2	3
CP	SW Spokane Street	45th Ave SW and 44th Ave SW	S	**9**	1	0	1	2	0	1	1	3	2	1	2	2
CQ	SW Spokane Street	44th Ave SW and California Ave SW	N	**9**	9	10	10	7	7	7	5	9	7	6	9	8
CR	SW Spokane Street	44th Ave SW and California Ave SW	S	**8**	5	9	7	5	5	5	4	6	5	2	3	3
CS	SW Spokane Street	California Ave SW and 800' boundary	N	**0**	0	0	0	0	0	0	0	0	0	0	0	0
CT	SW Spokane Street	California Ave SW and 800' boundary	S	**2**	3	3	3	3	3	3	2	2	2	2	2	2
CU	49th Avenue SW	SW Spokane St and 800' boundary	W	**1**	1	0	1	0	0	0	0	0	0	0	0	0
CV	49th Avenue SW	SW Spokane St and 800' boundary	E	**0**	0	0	0	0	0	0	0	0	0	0	0	0
CW	48th Avenue SW	SW Spokane St and 800' boundary	W	**21**	5	10	8	7	10	9	11	11	11	9	9	9
CX	48th Avenue SW	SW Spokane St and 800' boundary	E	**17**	3	2	3	2	2	2	2	2	2	5	2	4
CY	47th Avenue SW	SW Spokane St and SW Charlestown St	W	**31**	11	7	9	16	16	16	19	17	18	16	17	17
CZ	47th Avenue SW	SW Spokane St and SW Charlestown St	E	**28**	13	12	13	14	11	13	13	3	8	11	13	12
DA	46th Avenue SW	SW Spokane St and SW Charlestown St	W	**20**	9	9	9	9	9	9	7	10	9	10	10	10
DB	46th Avenue SW	SW Spokane St and SW Charlestown St	E	**23**	10	8	9	10	7	9	12	12	12	12	11	12
DC	45th Avenue SW	SW Spokane St and SW Charlestown St	W	**31**	6	7	7	10	7	9	6	9	8	8	9	9

Project **Madison Middle School Field Lighting**

				Supply	Parking Occupancy											
					Weekday						Weekend					
					5:45 PM			8:15 PM			5:45 PM			8:15 PM		
Block Face ID	Street Name	Street Segment	Side of Street	Total Spaces	Tues 2/4	Thurs 2/6	Average	Tues 2/4	Thurs 2/6	Average	Sat 2/8	Sun 2/9	Average	Sat 2/8	Sun 2/9	Average
DD	45th Avenue SW	SW Spokane St and SW Charlestown St	E	**28**	7	7	7	3	8	6	7	10	9	6	11	9
DE	44th Avenue SW	SW Spokane St and 800' boundary	W	**22**	11	10	11	13	14	14	10	13	12	12	16	14
DF	44th Avenue SW	SW Spokane St and 800' boundary	E	**19**	12	10	11	12	13	13	12	11	12	9	8	9
DG	California Avenue SW	SW Spokane St and 800' boundary	W	**1**	1	0	1	0	0	0	1	0	1	0	0	0
DH	California Avenue SW	SW Spokane St and 800' boundary	E	**5**	5	3	4	4	2	3	0	3	2	3	2	3
DI	SW Charlestown Street	47th Ave SW and 46th Ave SW	N	**3**	1	2	2	1	2	2	2	1	2	1	1	1
DJ	SW Charlestown Street	47th Ave SW and 46th Ave SW	S	**2**	0	0	0	0	0	0	0	0	0	0	0	0
DK	SW Charlestown Street	800 ' boundary and 47th Ave SW	N	**7**	0	0	0	0	0	0	0	0	0	0	0	0
DL	SW Charlestown Street	800 ' boundary and 47th Ave SW	S	**12**	0	0	0	0	0	0	0	0	0	0	0	0
DM	SW Charlestown Street	46th Ave SW and 45th Ave SW	N	**10**	3	3	3	3	3	3	2	2	2	2	3	3
DN	SW Charlestown Street	46th Ave SW and 45th Ave SW	S	**10**	0	0	0	0	0	0	0	0	0	0	0	0
DO	SW Charlestown Street	45th Ave SW and 800' boundary	N	**2**	1	2	2	2	2	2	2	2	2	1	2	2
DP	SW Charlestown Street	45th Ave SW and 800' boundary	S	**2**	0	0	0	0	0	0	0	0	0	0	0	0
DQ	47th Avenue SW	SW Charlestown St and 800' boundary	W	**3**	0	0	0	0	0	0	0	0	0	0	0	0
DR	47th Avenue SW	SW Charlestown St and 800' boundary	E	**2**	2	0	1	2	0	1	2	2	2	2	2	2
DS	46th Avenue SW	SW Charlestown St and 800' boundary	W	**2**	0	1	1	1	1	1	1	1	1	1	1	1
DT	46th Avenue SW	SW Charlestown St and 800' boundary	E	**2**	1	0	1	0	0	0	0	0	0	0	0	0
DU	45th Avenue SW	SW Charlestown St and 800' boundary	W	**2**	1	1	1	1	1	1	0	0	0	0	0	0
DV	45th Avenue SW	SW Charlestown St and 800' boundary	E	**0**	0	0	0	0	0	0	0	0	0	0	0	0
			TOTAL	**1054**	**338**	**341**	**340**	**385**	**361**	**373**	**343**	**357**	**350**	**355**	**384**	**370**

Project **Madison Middle School Field Lighting**

				Supply	Parking Utilization											
					Weekday						Weekend					
					5:45 PM			8:15 PM			5:45 PM			8:15 PM		
Block Face ID	Street Name	Street Segment	Side of Street	Total Spaces	Tues 2/4	Thurs 2/6	Average	Tues 2/4	Thurs 2/6	Average	Sat 2/8	Sun 2/9	Average	Sat 2/8	Sun 2/9	Average
AA	47th Avenue SW	800' boundary and SW Hanford St	W	**1**	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
AB	47th Avenue SW	800' boundary and SW Hanford St	E	**1**	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
AC	46th Avenue SW	800' boundary and SW Hanford St	W	**3**	67%	0%	33%	67%	0%	33%	0%	0%	0%	0%	0%	0%
AD	46th Avenue SW	800' boundary and SW Hanford St	E	**6**	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
AE	45th Avenue SW	800' boundary and SW Hanford St	W	**3**	67%	33%	50%	33%	67%	50%	67%	67%	67%	67%	67%	67%
AF	45th Avenue SW	800' boundary and SW Hanford St	E	**3**	67%	67%	67%	67%	33%	50%	67%	67%	67%	67%	67%	67%
AG	SW Hanford Street	800 ' boundary 47th Ave SW	N	**4**	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
AH	SW Hanford Street	800 ' boundary 47th Ave SW	S	**2**	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
AI	SW Hanford Street	47th Ave SW and 46th Ave SW	N	**10**	10%	10%	10%	10%	10%	10%	0%	20%	10%	10%	10%	10%
AJ	SW Hanford Street	47th Ave SW and 46th Ave SW	S	**8**	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
AK	SW Hanford Street	800' boundary and 45th Ave SW	N	**4**	25%	50%	38%	50%	50%	50%	25%	100%	63%	25%	50%	38%
AL	SW Hanford Street	800' boundary and 45th Ave SW	S	**5**	100%	80%	90%	100%	100%	100%	60%	100%	80%	60%	80%	70%
AM	SW Hanford Street	45th Ave SW and 800' boundary	N	**2**	50%	0%	25%	0%	50%	25%	50%	0%	25%	100%	0%	50%
AN	SW Hanford Street	45th Ave SW and 800' boundary	S	**3**	67%	67%	67%	33%	67%	50%	33%	67%	50%	33%	67%	50%
AO	49th Avenue SW	800 ' boundary and SW Hinds St	W	**2**	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
AP	49th Avenue SW	800 ' boundary and SW Hinds St	E	**0**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
AQ	48th Avenue SW	800 ' boundary and SW Hinds St	W	**16**	50%	31%	41%	38%	38%	38%	56%	44%	50%	63%	56%	59%
AR	48th Avenue SW	800 ' boundary and SW Hinds St	E	**7**	57%	86%	71%	86%	100%	93%	114%	86%	100%	100%	100%	100%
AS	47th Avenue SW	SW Hanford St and SW Hinds St	W	**18**	33%	17%	25%	28%	22%	25%	22%	28%	25%	17%	33%	25%
AT	47th Avenue SW	SW Hanford St and SW Hinds St	E	**19**	37%	37%	37%	42%	42%	42%	32%	16%	24%	32%	26%	29%
AU	46th Avenue SW	SW Hanford St and SW Hinds St	W	**29**	31%	55%	43%	34%	45%	40%	41%	48%	45%	45%	48%	47%
AV	46th Avenue SW	SW Hanford St and SW Hinds St	E	**23**	35%	30%	33%	52%	30%	41%	35%	39%	37%	39%	43%	41%
AW	45th Avenue SW	SW Hanford St and SW Hinds St	W	**21**	48%	52%	50%	38%	57%	48%	52%	48%	50%	48%	57%	52%
AX	45th Avenue SW	SW Hanford St and SW Hinds St	E	**26**	42%	35%	38%	50%	38%	44%	46%	42%	44%	50%	31%	40%
AY	44th Avenue SW	800 ' boundary and SW Hinds St	W	**21**	43%	38%	40%	52%	67%	60%	52%	43%	48%	62%	62%	62%
AZ	44th Avenue SW	800 ' boundary and SW Hinds St	E	**17**	47%	59%	53%	59%	82%	71%	59%	53%	56%	65%	53%	59%
BA	California Avenue SW	800 ' boundary and SW Hinds St	W	**3**	100%	100%	100%	100%	100%	100%	33%	100%	67%	67%	100%	83%

Project **Madison Middle School Field Lighting**

				Supply	Parking Utilization											
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					5:45 PM			8:15 PM			5:45 PM			8:15 PM		
Block Face ID	Street Name	Street Segment	Side of Street	Total Spaces	Tues 2/4	Thurs 2/6	Average	Tues 2/4	Thurs 2/6	Average	Sat 2/8	Sun 2/9	Average	Sat 2/8	Sun 2/9	Average
BB	California Avenue SW	800 ' boundary and 800 ' boundary	E	**7**	86%	86%	86%	86%	57%	71%	86%	86%	86%	86%	86%	86%
BC	SW Hinds Street	800 ' boundary and 49th Ave SW	N	**3**	0%	0%	0%	0%	33%	17%	33%	0%	17%	0%	0%	0%
BD	SW Hinds Street	800 ' boundary and 49th Ave SW	S	**3**	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%
BE	SW Hinds Street	49th Ave SW and 48th Ave SW	N	**10**	10%	20%	15%	10%	10%	10%	10%	10%	10%	10%	10%	10%
BF	SW Hinds Street	49th Ave SW and 48th Ave SW	S	**10**	0%	0%	0%	0%	10%	5%	0%	10%	5%	0%	10%	5%
BG	SW Hinds Street	48th Ave SW and 47th Ave SW	N	**9**	22%	22%	22%	22%	22%	22%	11%	22%	17%	22%	22%	22%
BH	SW Hinds Street	48th Ave SW and 47th Ave SW	S	**10**	10%	10%	10%	20%	10%	15%	10%	0%	5%	10%	10%	10%
BI	SW Hinds Street	47th Ave SW and 46th Ave SW	N	**8**	0%	0%	0%	13%	0%	6%	0%	0%	0%	0%	0%	0%
BJ	SW Hinds Street	46th Ave SW and 45th Ave SW	N	**10**	10%	20%	15%	0%	0%	0%	0%	0%	0%	0%	0%	0%
BK	SW Hinds Street	47th Ave SW and 45th Ave SW	S	**23**	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
BL	SW Hinds Street	45th Ave SW and 44th Ave SW	N	**10**	50%	40%	45%	40%	30%	35%	20%	30%	25%	20%	40%	30%
BM	SW Hinds Street	45th Ave SW and 44th Ave SW	S	**10**	50%	70%	60%	40%	60%	50%	50%	50%	50%	30%	50%	40%
BN	SW Hinds Street	44th Ave SW and California Ave SW	N	**10**	70%	70%	70%	60%	80%	70%	90%	70%	80%	90%	100%	95%
BO	SW Hinds Street	44th Ave SW and California Ave SW	S	**9**	67%	111%	89%	89%	78%	83%	100%	111%	106%	111%	122%	117%
BP	49th Avenue SW	SW Hinds St and 800 ' boundary	W	**4**	25%	50%	38%	25%	50%	38%	50%	50%	50%	50%	50%	50%
BQ	49th Avenue SW	SW Hinds St and 800 ' boundary	E	**0**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
BR	48th Avenue SW	SW Hinds St and SW Spokane St	W	**27**	30%	33%	31%	33%	30%	31%	33%	37%	35%	37%	41%	39%
BS	48th Avenue SW	SW Hinds St and SW Spokane St	E	**23**	39%	39%	39%	48%	48%	48%	39%	39%	39%	48%	43%	46%
BT	47th Avenue SW	SW Hinds St and SW Spokane St	W	**29**	34%	41%	38%	38%	48%	43%	41%	41%	41%	41%	48%	45%
BU	47th Avenue SW	SW Hinds St and SW Spokane St	E	**27**	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
BV	45th Avenue SW	SW Hinds St and SW Spokane St	W	**30**	3%	0%	2%	40%	0%	20%	0%	0%	0%	0%	0%	0%
BW	45th Avenue SW	SW Hinds St and SW Spokane St	E	**27**	44%	41%	43%	56%	30%	43%	48%	30%	39%	48%	44%	46%
BX	44th Avenue SW	SW Hinds St and SW Spokane St	W	**27**	33%	33%	33%	48%	41%	44%	37%	33%	35%	48%	37%	43%
BY	44th Avenue SW	SW Hinds St and SW Spokane St	E	**26**	46%	38%	42%	50%	50%	50%	27%	62%	44%	35%	65%	50%
BZ	California Avenue SW	SW Hinds St and 800' boundary	W	**7**	86%	86%	86%	86%	86%	86%	71%	100%	86%	86%	86%	86%
CA	SW Hanford Street	End of block	--	**3**	100%	100%	100%	100%	100%	100%	100%	100%	100%	67%	100%	83%
CB	49th Avenue SW	800 ' boundary and SW Spokane St	W	**5**	0%	0%	0%	0%	0%	0%	40%	40%	40%	0%	40%	20%

Project **Madison Middle School Field Lighting**

				Supply	Parking Utilization											
					Weekday						Weekend					
					5:45 PM			8:15 PM			5:45 PM			8:15 PM		
Block Face ID	Street Name	Street Segment	Side of Street	Total Spaces	Tues 2/4	Thurs 2/6	Average	Tues 2/4	Thurs 2/6	Average	Sat 2/8	Sun 2/9	Average	Sat 2/8	Sun 2/9	Average
CC	49th Avenue SW	800 ' boundary and SW Spokane St	E	**0**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
CD	California Avenue SW	800 ' boundary and SW Spokane St	W	**5**	40%	40%	40%	40%	40%	40%	20%	0%	10%	0%	0%	0%
CE	California Avenue SW	800 ' boundary and SW Spokane St	E	**1**	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
CF	SW Spokane Street	800 ' boundary and 49th Ave SW	N	**4**	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
CG	SW Spokane Street	800 ' boundary and 49th Ave SW	S	**3**	0%	33%	17%	67%	33%	50%	33%	33%	33%	67%	67%	67%
CH	SW Spokane Street	49th Ave SW and 48th Ave SW	N	**9**	0%	0%	0%	11%	11%	11%	0%	22%	11%	11%	22%	17%
CI	SW Spokane Street	49th Ave SW and 48th Ave SW	S	**8**	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%
CJ	SW Spokane Street	48th Ave SW and 47th Ave SW	N	**10**	20%	20%	20%	30%	20%	25%	30%	20%	25%	30%	30%	30%
CK	SW Spokane Street	48th Ave SW and 47th Ave SW	S	**8**	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
CL	SW Spokane Street	47th Ave SW and 45th Ave SW	N	**23**	4%	9%	7%	22%	4%	13%	0%	0%	0%	0%	0%	0%
CM	SW Spokane Street	47th Ave SW and 46th Ave SW	S	**9**	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
CN	SW Spokane Street	46th Ave SW and 45th Ave SW	S	**7**	0%	14%	7%	29%	14%	21%	14%	14%	14%	14%	14%	14%
CO	SW Spokane Street	45th Ave SW and 44th Ave SW	N	**9**	44%	44%	44%	56%	44%	50%	33%	22%	28%	44%	22%	33%
CP	SW Spokane Street	45th Ave SW and 44th Ave SW	S	**9**	11%	0%	6%	22%	0%	11%	11%	33%	22%	11%	22%	17%
CQ	SW Spokane Street	44th Ave SW and California Ave SW	N	**9**	100%	111%	106%	78%	78%	78%	56%	100%	78%	67%	100%	83%
CR	SW Spokane Street	44th Ave SW and California Ave SW	S	**8**	63%	113%	88%	63%	63%	63%	50%	75%	63%	25%	38%	31%
CS	SW Spokane Street	California Ave SW and 800' boundary	N	**0**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
CT	SW Spokane Street	California Ave SW and 800' boundary	S	**2**	150%	150%	150%	150%	150%	150%	100%	100%	100%	100%	100%	100%
CU	49th Avenue SW	SW Spokane St and 800' boundary	W	**1**	100%	0%	50%	0%	0%	0%	0%	0%	0%	0%	0%	0%
CV	49th Avenue SW	SW Spokane St and 800' boundary	E	**0**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
CW	48th Avenue SW	SW Spokane St and 800' boundary	W	**21**	24%	48%	36%	33%	48%	40%	52%	52%	52%	43%	43%	43%
CX	48th Avenue SW	SW Spokane St and 800' boundary	E	**17**	18%	12%	15%	12%	12%	12%	12%	12%	12%	29%	12%	21%
CY	47th Avenue SW	SW Spokane St and SW Charlestown St	W	**31**	35%	23%	29%	52%	52%	52%	61%	55%	58%	52%	55%	53%
CZ	47th Avenue SW	SW Spokane St and SW Charlestown St	E	**28**	46%	43%	45%	50%	39%	45%	46%	11%	29%	39%	46%	43%
DA	46th Avenue SW	SW Spokane St and SW Charlestown St	W	**20**	45%	45%	45%	45%	45%	45%	35%	50%	43%	50%	50%	50%
DB	46th Avenue SW	SW Spokane St and SW Charlestown St	E	**23**	43%	35%	39%	43%	30%	37%	52%	52%	52%	52%	48%	50%
DC	45th Avenue SW	SW Spokane St and SW Charlestown St	W	**31**	19%	23%	21%	32%	23%	27%	19%	29%	24%	26%	29%	27%

Project **Madison Middle School Field Lighting**

Block Face ID	Street Name	Street Segment	Side of Street	Supply: Total Spaces	Parking Utilization: Weekday: 5:45 PM: Tues 2/4	Weekday: 5:45 PM: Thurs 2/6	Weekday: 5:45 PM: Average	Weekday: 8:15 PM: Tues 2/4	Weekday: 8:15 PM: Thurs 2/6	Weekday: 8:15 PM: Average	Weekend: 5:45 PM: Sat 2/8	Weekend: 5:45 PM: Sun 2/9	Weekend: 5:45 PM: Average	Weekend: 8:15 PM: Sat 2/8	Weekend: 8:15 PM: Sun 2/9	Weekend: 8:15 PM: Average
DD	45th Avenue SW	SW Spokane St and SW Charlestown St	E	**28**	25%	25%	25%	11%	29%	20%	25%	36%	30%	21%	39%	30%
DE	44th Avenue SW	SW Spokane St and 800' boundary	W	**22**	50%	45%	48%	59%	64%	61%	45%	59%	52%	55%	73%	64%
DF	44th Avenue SW	SW Spokane St and 800' boundary	E	**19**	63%	53%	58%	63%	68%	66%	63%	58%	61%	47%	42%	45%
DG	California Avenue SW	SW Spokane St and 800' boundary	W	**1**	100%	0%	50%	0%	0%	0%	100%	0%	50%	0%	0%	0%
DH	California Avenue SW	SW Spokane St and 800' boundary	E	**5**	100%	60%	80%	80%	40%	60%	0%	60%	30%	60%	40%	50%
DI	SW Charlestown Street	47th Ave SW and 46th Ave SW	N	**3**	33%	67%	50%	33%	67%	50%	67%	33%	50%	33%	33%	33%
DJ	SW Charlestown Street	47th Ave SW and 46th Ave SW	S	**2**	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
DK	SW Charlestown Street	800 ' boundary and 47th Ave SW	N	**7**	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
DL	SW Charlestown Street	800 ' boundary and 47th Ave SW	S	**12**	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
DM	SW Charlestown Street	46th Ave SW and 45th Ave SW	N	**10**	30%	30%	30%	30%	30%	30%	20%	20%	20%	20%	30%	25%
DN	SW Charlestown Street	46th Ave SW and 45th Ave SW	S	**10**	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
DO	SW Charlestown Street	45th Ave SW and 800' boundary	N	**2**	50%	100%	75%	100%	100%	100%	100%	100%	100%	50%	100%	75%
DP	SW Charlestown Street	45th Ave SW and 800' boundary	S	**2**	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
DQ	47th Avenue SW	SW Charlestown St and 800' boundary	W	**3**	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
DR	47th Avenue SW	SW Charlestown St and 800' boundary	E	**2**	100%	0%	50%	100%	0%	50%	100%	100%	100%	100%	100%	100%
DS	46th Avenue SW	SW Charlestown St and 800' boundary	W	**2**	0%	50%	25%	50%	50%	50%	50%	50%	50%	50%	50%	50%
DT	46th Avenue SW	SW Charlestown St and 800' boundary	E	**2**	50%	0%	25%	0%	0%	0%	0%	0%	0%	0%	0%	0%
DU	45th Avenue SW	SW Charlestown St and 800' boundary	W	**2**	50%	50%	50%	50%	50%	50%	0%	0%	0%	0%	0%	0%
DV	45th Avenue SW	SW Charlestown St and 800' boundary	E	**0**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
			TOTAL	**1054**	**32%**	**32%**	**32%**	**37%**	**34%**	**35%**	**33%**	**34%**	**33%**	**34%**	**36%**	**35%**

Appendix B: Existing Noise Conditions and Potential Post-Project Noise Conditions

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memorandum

date April 22, 2020

to Conrad Plyler, Seattle Public Schools

from Aaron Booy and Madeline Remmen, ESA

subject Madison Middle School Athletic Field Improvements Project – Existing Noise Conditions and Potential Post-Project Noise Conditions

Seattle Public Schools (SPS) is proposing to install athletic field lighting at multiple school locations in the Seattle School District (District) under the Buildings, Technology and Academics/Athletics IV Program (BTA IV) and Building Excellence V (BEX V) funding. The existing multipurpose athletic field at Madison Middle School, located at 3429 45th Ave SW, in the North Admiral neighborhood of Seattle, has been identified for field lighting under this funding program.

The height limit for light poles in residential areas is 30 feet (Seattle Municipal Code [SMC] 23.46.020). The proposed pole heights for each of six poles at the Madison Middle School athletic field would be 70 feet. City code permits light poles at public school athletic fields to exceed the maximum permitted height up to a maximum of 100 feet if the Director of Seattle Department of Construction and Inspections (SDCI) determines that the additional height is necessary to ensure adequate illumination and that light and glare are minimized to the extent practicable (SMC 23.51B.002(D)(6)). When a lighting project associated with the exception for taller poles extends the duration of use of the athletic field, SPS must address and mitigate potential impacts, including increased duration of noise, traffic, and parking demand. This memorandum was prepared to document the existing evening noise conditions at Madison Middle School and presents results of noise monitoring and technical analysis of environmental noise impacts that may result from implementation of the athletic field lighting project at Madison Middle School. The memorandum also evaluates compliance with the environmental sound level limits established by SMC 25.08.410.

Methods

Methods for gathering information needed to support review of existing and potential post-project environmental noise included a field survey and analysis of measurement results. ESA's noise specialists documented existing noise levels at Madison Middle School, providing documentation of existing environmental noise conditions and the basis for analysis of potential project impacts. Noise levels at Miller Playfield, an existing lighted athletic field that adjoins the Edmond S Meany Middle School site to the north, were recorded during a scheduled athletic event to provide a point of comparison for the noise environment associated with a lighted athletic field facility.

Noise measurements were completed on January 28, 2020, February 3, 2020 and February 11, 2020 at Madison Middle School and on February 3, 2020 and February 11, 2020 at Miller Playfield. The areas immediately surrounding Madison Middle School are characterized as single-family residential, with homes located to the north, west, and south of the athletic field across SW Hinds Street, 47th Avenue SW, and SW Spokane Street, respectively. The areas surrounding Miller Playfield are characterized predominantly as single-family and multi-family residential land uses. The closest residential uses are located to the east of the athletic field, across 21st Avenue E.

Miller Playfield, which adjoins Meany Middle School, was used as a point of comparison because the surrounding land uses are similar to Madison Middle School, especially with consideration of the closest proximity residences and the similar character of the respective local access roadways at the two schools. In addition, evening athletic activities anticipated to occur at Madison Middle School would be similar to activities that currently occur at Miller Playfield.

Measurement locations were chosen to record outdoor environmental sound levels near representative noise sensitive receivers (residential properties), in areas adjacent to the school athletic fields. Measurement locations were established within right-of-way areas approximating, to the greatest extent possible, the setback between the respective athletic fields and the nearest adjacent residential properties. The time period for measurements was also identified to be representative of existing conditions during evening and early nighttime hours, the period of time during which the noise environment surrounding the Madison Middle School athletic field is anticipated to change due to the field lighting project. Short-term measurements were conducted between 6:45 p.m. and 10:00 p.m. The results are intended to inform the understanding of existing noise conditions and the potential late evening noise level increase that could be associated with lighting Madison Middle School's athletic field.

A Larson Davis Sound Track LXT sound level meter was used for all the short-term noise measurements completed. Figure 1 shows the noise measurement locations immediately north of the athletic field fronting the residence at 4604 SW Hinds Street (Site 1) and west fronting the residence at 3447 47th Avenue SW (Site 2, Figure 1). The noise measurement location at Miller Playfield for all measurements was fronting the residence at 226 21st Avenue E, immediately east of the athletic field on the eastern side of 21st Avenue E.

For all measurements, the noise meter was located approximately 5 feet above ground surface, with multiple 15 minute measurements completed at each short-term survey location. The precision sound level meter was calibrated immediately prior to each measurement date to ensure accuracy. The meters were programmed to record the average (Leq), maximum (Lmax), L10, and L90 noise levels over a 15-minute period. The Leq noise level is a standard measure that provides the equivalent steady-state noise level that is representative of variable noise experienced over a given period of time. L10 and L90 are standard measurements that represent the noise levels that are equaled or exceeded for 10 percent and 90 percent of the time for each measurement, respectively. Measurements were completed adjacent to Madison Middle School athletic field on three occasions. Measurements were also completed adjacent to the existing lighted field at Miller Playfield. Summarized results for each location are shown in Table 1 below.

All noise monitoring days were specifically chosen to avoid recent or active precipitation (rain and wet pavement increase environmental noise associated with vehicular traffic). Weather was typical for the

months during which measurements were completed, with no significant winds or unseasonal temperatures. Additionally, no atypical activities generating significant noise were occurring at Madison Middle School, Miller Playfield, or surrounding uses during any of the monitoring periods.

Existing Noise Environment

The results of the short-term noise measurements at Madison Middle School generally reflect existing evening / early nighttime noise conditions, which are quiet[1] and influenced by activities surrounding residential land uses and roadways near the school field site. Two-way local access roadways (45th Avenue SW, SW Spokane Street, 47th Avenue SW and SW Hinds Street) surround Madison Middle School, with single family residential land uses on the opposite side of all streets. Results of noise measurements are presented in Table 1.

Based on short-term noise measurements adjacent to the Madison Middle School athletic field on, January 28, 2020, February 3, 2020 and February 11, 2020 the predominant existing noise sources observed in the project area were vehicular traffic and overhead air traffic. Occasional domestic activity from adjacent residential properties also was noted as contributing to the existing noise environment. Vehicular traffic on SW Hinds Street and 47th Avenue SW was observed. All roadways directly adjacent to the school are designated as local access streets. The speed limit surrounding Madison Middle School is 20 mph at all times.

Table 1. Noise Measurements (dBA)

Short-term Measurement Period	Leq	Lmax	L10	L90	Observations
Madison Middle School Site 1					
Site 1, February 3, 2020					
#1 – 7:19 – 7:32 p.m	53.2	72.6	50.8	35.5	Cars, dogs barking, airplanes, cars honking in distance
#2: 7:36 – 7:51 p.m	51.4	70.3	48.8	37.1	Cars, airplanes, dog walker, cars honking, people talking
Site 1, February 11, 2020					
#1- 7:25 - 7:40 p.m.	51.3	70.7	45.5	37.3	Cars, people walking and talking, car doors shutting, sirens
#2- 9:46 - 10:00 p.m.	37.5	48.0	37.4	33.1	Cars, airplanes, distance train horn and back up beeping

[1] Noise levels considered quiet are based off of the HUD Exchange Noise Guidebook published in 2009 and available at: https://www.hudexchange.info/resource/313/hud-noise-guidebook/

Short-term Measurement Period	Leq	Lmax	L10	L90	Observations
Madison Middle School Site 2					
January 28, 2020					
#1 – 6:47 – 7:02 p.m.	48.1	67.6	49.8	35.7	Cars, airplane, child shouting in distance, dog barking/howling, neighbors leaving and driving away
#2: 7:15 – 7:30 p.m.	48.8	67.6	47.0	36.7	People walking and talking, cars, dog barking/yowling, car playing music, neighbors arriving home
February 11, 2020					
#1 – 7:46 – 8:01 p.m.	48.8	69.4	43.7	35.9	Cars, airplanes, dogs barking, people walking and talking, car doors shutting
#2: 9:27 – 9:42 p.m.	37.4	52.3	39.8	32.1	Airplanes, car, dog walker on athletic field, distant train horn
Miller Playfield (Meany Middle School adjoins to the north) - during adult soccer games					
February 3, 2020					
#1 – 8:22 – 8:36 p.m.	54.7	72.0	59.5	46.4	Traffic (cars and busses on E Thomas St.), airplanes, yelling on field, sports whistle, dog walkers on sidewalk
#2 - 8:40 – 8:55 p.m.	56.0	68.6	60.0	45.3	Traffic (cars and busses E Thomas St.), airplanes, yelling on field, sports whistle
February 11, 2020					
#1 – 8:30 – 8:45	58.4	72.3	61.8	48.2	Traffic (cars and busses on E Thomas St.), airplanes, yelling on field, sports whistle, people walking and talking on sidewalk, sirens
#2 – 8:46 – 9:01	55	64.8	58.9	48.0	Traffic (cars and busses on E Thomas St.), airplanes, yelling on field, sports whistle, people walking and talking on sidewalk, sirens, distant train horn, skate boarders

Notes:

- Noise is typically measured in units called decibels (dB). For the purposes of environmental analysis noise is commonly quantified as "A weighted" decibels (dBA), which corresponds to the frequencies that are audible to the human ear. Use of the dBA frequency is consistent with SMC 25.08.090).
- Leq or the "equivalent sound level" is used to describe noise over a specified period of time in terms of a single numerical value. The Leq of a time-varying signal and that of a steady signal are the same if they deliver the same acoustic energy over a given time. The Leq may also be referred to as the average sound level.
- Lmax is the instantaneous maximum noise level during a given period of time; Lmax events commonly occur momentarily, such as a loud passing motorcycle or child yelling nearby the noise meter, and within an urban environment with variable noise sources are inherently higher than the Leq level measured for a given period of time.
- L10 and L90 are standard measures that represent the noise levels that are equaled or exceeded 10 percent and 90 percent of a specified time period, respectively.

The existing evening and early nighttime noise environment at Madison Middle School is generally quiet, ranging from 37.5 to 53.2 Leq (dBA) at Site 1 and 37.4 to 48.8 Leq (dBA) at Site 2. Measurements taken later in the evening showed a distinct drop in Leq at both sites; noise levels were below 40 Leq (dBA) after 9:00 pm. These noise levels are consistent with evening and nighttime hours within urban environments, especially for areas primarily supporting residential uses, adjacent to school and park facilities, and not located within 0.25 mile of any major freeway. Within this range, the higher measurements occurred when cars drove by the noise monitoring site on SW Hinds Street and 47th Avenue SW. The peak sound levels (measured Lmax levels reported in Table 1) ranged from 48.0 to 72.6 dBA at Site 1 and 52.3 to 69.4 dBA at Site 2. Measurements recorded between 6:45pm and 8:00pm had higher Lmax's between 67.6 and 72.6 dBA.

The results of the short-term noise measurements at Miller Playfield generally reflect existing noise conditions, which are also generally quiet and primarily influenced by vehicular traffic and overhead air traffic. Active soccer games occurring on the lighted playfield and domestic activities surrounding and within the residential land uses also contributed to the noise environment. Noise generating activity from athletic field activities included occasional yelling, whistles, and ball kicking. The roadway south of the lighted athletic field (E Thomas Street) is classified as a Minor Arterial (SDOT, 2020), and from observations during noise measurements showed generally higher traffic volumes and somewhat faster speeds (posted speed limit of 25 mph) than the local access roadways surrounding Madison Middle School. 21st Avenue E, which passes between the project athletic field and the residences to the east, is designated as a local access street, and during noise measurements had lower levels of vehicular traffic which is more similar to roads surrounding Madison Middle School. 21st Avenue E is a one-way street for vehicular traffic in the southbound direction.

Anticipated Noise and Potential Effects

The City of Seattle Noise Ordinance (SMC Chapter 25.08) regulates noise in the City. Noise is typically defined as an unwanted sound that can disrupt quality of life (EPA, 2019). The City sets exterior sound level limits according to the land use of both the property generating the noise (the source) and the property receiving the noise (Table 2; SMC Chapter 25.08.41). From one property to another when both properties are within a residential district, the maximum allowable noise during weekday daytime and evening hours (7:00 a.m. to 10:00 p.m.) is limited to 55 Leq (dBA). This is the maximum noise that may be generated from a specific property that is experienced by another property (not the cumulative noise from all surrounding properties and activities). Normal vehicular traffic, including garbage trucks, are exempt from the noise requirements set forth in SMC 25.08. The code further regulates noises considered "unreasonable" including "loud and raucous, and frequent repetitive or continuous sounds made by the amplified or unamplified human voice" between the hours of 10:00 p.m. and 7:00 a.m. During these nighttime hours, maximum allowable noise from one property to another within residential districts is reduced to 45 Leq (dBA). Madison Middle School, including the athletic field and surrounding residences, are located within residential districts per City of Seattle Zoning.

Table 2. Exterior Sound Level Limits

District of Sound Source	Residential Receiving Property (Experiencing the Noise)	
	7a.m. – 10 p.m. Limit (Leq)	10 p.m.– 7a.m. Limit (Leq)
Residential	55 dBA	45 dBA
Commercial	57 dBA	47 dBA
Industrial	60 dBA	50 dBA

Source: SMC Chapter 25.08.410

For noise sources that are not continuous, higher levels are allowed for short durations. Seattle Municipal Code specifies that shorter duration noises up to 15 dBA above the continuous limit are allowable, as long as the hourly Leq exterior sound level limit is not exceeded (SMC 25.08.410.B).

Potential noise impacts to residential properties surrounding Madison Middle School athletic field were predicted based on review of existing conditions and anticipated noise from proposed late evening athletic activities. The existing lighted Miller Playfield, adjoining Meany Middle School to the north, was selected as the point of comparison because surrounding conditions are similar and applicable for estimating future noise that would be expected surrounding the Madison athletic field. Similarities in surrounding uses, roadways, and associated environmental noise, especially at the locations selected for noise monitoring measurements, is appropriate for making reasonable comparison of conditions between the two fields and determining the potential implications of the Madison field lighting project. However, since E Thomas Street is a Minor Arterial adjacent to Miller Playfield, noise levels associated with vehicular traffic at this location may be slightly higher than those that would be experienced at Madison Middle School, which is exclusively surrounded by local access roads.

For purposes of this evaluation, a noise impact would potentially occur where the anticipated noise from late evening athletic events occurring with field lighting would exceed the exterior sound level limits established by SMC 25.08.410. To consider implications of the project, ESA also assessed the potential for cumulative exceedances of the exterior noise level limit. The addition of field lighting would extend field use in the evening and have the potential to change the character of noise experienced at nearest residential receptors.

The nearest residential receptors to the north of the field at Madison Middle School are setback approximately 130 feet, compared to the approximate 80-foot setback at Miller Playfield. The closer setback at Miller Playfield and presence of increased vehicular traffic noise due to the proximity of Thomas Street, resulted in noise levels that ranged from 54.7 to 58.4 Leq (dBA) at nearby residences. Considering the additional setback to the north of the Madison athletic field, and the other contributing environmental noise sources, it is anticipated future noise levels experienced by the nearest residential properties to the north would likely be lower at Madison Middle School.

For residences to the north of the field along SW Hinds Street (as represented by Site 1 measurements), it is anticipated that the contribution of noise directly from athletic activities occurring at all times when field lights are in use would be below the 55 Leq (dBA) threshold. It is anticipated that the cumulative

noise associated with athletic events, vehicular traffic, overhead air traffic and other noise generating activities in the project area would occur at or slightly above the 55 Leq (dBA) limit; however, the contribution of noise generated from athletic events alone is not anticipated to exceed the 55 Leq (dBA) limit. Evening athletic activities occurring with field lighting would likely result in a noticeable change in the existing noise environment for the residences to the north, but would not result in an exceedance of the noise ordinance established by the SMC.

For residences to the west of the field along the west side of 47th Avenue SW (as represented by Site 2 measurements), it is not anticipated that the cumulative noise environment would increase to above 55 Leq (dBA) with the addition of field lighting. A 13-foot retaining wall and additional grass slope are located directly below the field to the west, with 47th Avenue SW and adjoining residences located more than 20 feet lower than the elevation of the field. The retaining wall and slope create a line-of-site barrier between the athletic field area and the residences to the west, with associated noise attenuation. The retaining wall and grade difference will remain with the proposed project, continuing to decrease the amount of noise from athletic field activities experienced by residential receptors located along 47th Avenue SW. Any change in the noise environment from additional late evening athletic activities would be less noticeable for residences located along 47th Avenue SW. Instantaneous noise from whistles or shouts may be audible, potentially changing the character of noise experienced at these residential receptors; however, the contribution of noise directly from lighted athletic field activities are anticipated to be substantially below the 55 Leq (dBA) limit established by the Seattle Noise Ordinance. All athletic activities would be scheduled to end by 9:45 p.m., and field lights would be turned off by 10:00 p.m.

Measurement of conditions at Sites 1 and 2 collected after 9:00 pm showed a drop in the existing noise levels to below 40 Leq (dBA), due to less vehicular traffic along SW Hinds Street and 47th Avenue SW and less domestic noise from nearby residences. This quieter existing environment may result in field activity noise being more noticeable at the residences later in the evening, however, it is anticipated that the cumulative noise environment would remain well below 55 Leq (dBA) during this time period.

Changes in the noise environment for residences to the south of the project athletic field are not anticipated to be perceptible, due to a minimum setback of approximately 180 feet for residences south of SW Spokane Street. Changes in the noise environment for residences to the east of the project athletic field are setback more than 425 feet and are generally behind the Madison Middle School buildings – no changes in the noise environment would occur for these residences.

While the character of environmental noise and specific events (whistles, loud yells) during athletic activities would likely be perceptible at adjacent residential properties, especially those immediately surrounding the athletic field, these activities would all be of short duration (generally no more than a few seconds for any given event). Based on measurements at Miller Playfield during soccer games, discrete events are not anticipated to exceed approximately 60 dBA. The highest noise levels for discrete events were associated with a loud vehicle on an adjacent street and overhead air traffic (not associated with athletic field activities), while the loudest athletic event noise levels were associated with yelling on the field. These levels would be within the limits established by SMC 25.08.410.B, which allows for short duration noises up to 15 dBA above the continuous limit as long as the hourly Leq exterior sound level limit is not exceeded.

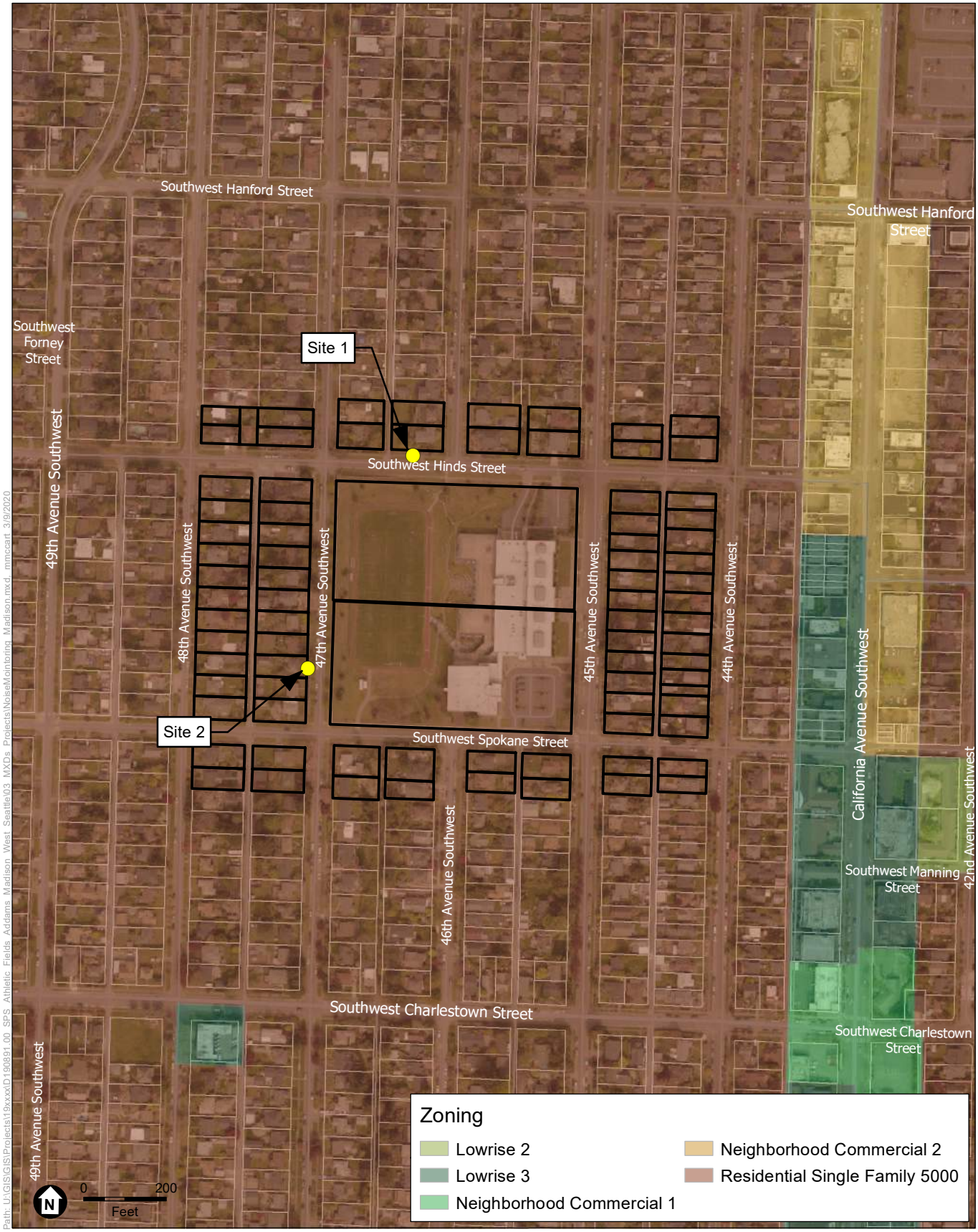
Conclusions

This assessment shows that evening use of a lighted athletic field at Madison Middle School would result in a slight change to the overall noise environment, with the cumulative noise from athletic events, vehicular traffic, overhead air traffic and other noise generating activities generally remaining below 55 Leq (dBA) during evening hours. To the north of the athletic field, residences may experience cumulative environmental noise during early evening hours at or slightly above 55 Leq (dBA); however, the predominant noise source would remain vehicular traffic along SW Hinds Street. While the increase in environmental noise, and the character of noise, is anticipated to be noticeable for these residences during late evening athletic activities occurring before 10:00 p.m., the noise contributed by athletic activities is anticipated to be consistent with environmental noise limits of the Seattle Noise Ordinance (SMC 25.08). The contribution of noise generated from athletic events alone is not anticipated to exceed the 55 Leq (dBA) maximum environmental noise limit as experienced at the property line of any nearby residences. For residences located to the west of the field along 47th Avenue SW, both the contribution of noise directly from athletic events and cumulative environmental noise levels from all sources are expected to remain below 55 dBA (Leq). For residences to the east and south of the school, further separated from the athletic field by Madison Middle School buildings and an extended setback, changes from the project are not predicted to be noticeable.

References

EPA (Environmental Protection Agency). 2019. Clean Air Act Overview. Available at: https://www.epa.gov/clean-air-act-overview/clean-air-act-title-iv-noise-pollution Accessed on February 14, 2020.

SDOT (Seattle Department of Transportation). 2020. Seattle Roadway Classification Map. Available at: http://seattlecitygis.maps.arcgis.com/apps/webappviewer/index.html?id=a808f790a24e474d86ecde00dae81cee Accessed on February 13, 2020.



SOURCE: NAIP, 2015; OSM, 2016; King County, 2013

D190891 SPS Athletic Field Noise Monitoring

Figure 1
Madison Middle School
Noise Monitoring Location

ESA

Appendix C: Light and Glare Report

Madison Middle School
Athletic Field Lighting

Light and Glare Report

April 22, 2020

Prepared for:

Seattle Public Schools
Capital Projects
Seattle, Washington

Prime Consultant:

DA HOGAN

Lighting Consultant:

Stantec

Proposal

The existing athletic field at Madison Middle School is proposed to be lighted.

The design levels for the field lighting are proposed at a Class IV level of play. Class IV is the lowest recommended level listed in RP-8 (Recommended Practice for Sports Lighting) by the Illuminating Engineering Society of North America. The field is designed to an average maintained lighting level of 29 foot-candles. The lighting system is designed using a .95 design factor to achieve the initial lighting levels.

These lighting design levels meet current practices for both the City of Seattle and Seattle School District for the lighting of athletic fields. The proposed lighting levels will be consistent with recently lighted fields at Roosevelt High School and Ballard High School.

Existing Codes and Policies

Section 23.51B.002 (Public schools in residential zones) of the Seattle Municipal Code limits the height of lighting standards in Single Family and Lowrise zones. Section D-6-a permits light standards up to a maximum height of 100 feet, "if the Director determines that the additional height is necessary to ensure adequate illumination and that impacts from light and glare are minimized to the greatest extent practicable". In addition, Section 23.46.020 (Light and glare standards) paragraph A of the Seattle Municipal Code also requires that "Exterior lighting be shielded or directed away from adjacent uses". Also, current City of Seattle guidelines recommend that athletic field spill light not exceed 1.0 foot-candles initial at residential property lines.

To comply with existing codes an exemption to the height limit is requested. This exemption will ensure adequate illumination and reduce the amount of impacts from light and glare into the neighborhood.

Existing Conditions

A survey of the existing site was conducted on February 21st, 2020. The school site is located within a residential community between 45th Avenue SW - 47th Avenue SW (East to West) and SW Hinds Street -SW Spokane Street (North to South). The field is located on the west side of the school site. The field is adjacent to residential homes across 47th Avenue SW, SW Hinds Street, and SW Spokane Street.

The school site slopes down from west to east. The field is at a higher elevation than the homes located to the west of the field on the opposite side of 47th Avenue SW. The main school building is at a higher elevation to the east of the existing fields.

Field View From NE Corner of Field

Field View From NE Corner of Field

View Down 47th Avenue SW

Existing Homes West Side of 47th Avenue SW

View of Wall From 47th Avenue SW

School View From SW Hinds Street

Existing Light and Glare

A survey of the existing lighting in the area was conducted on February 21st, 2020. Light readings were taken on the school site surrounding the fields and on several residential streets.

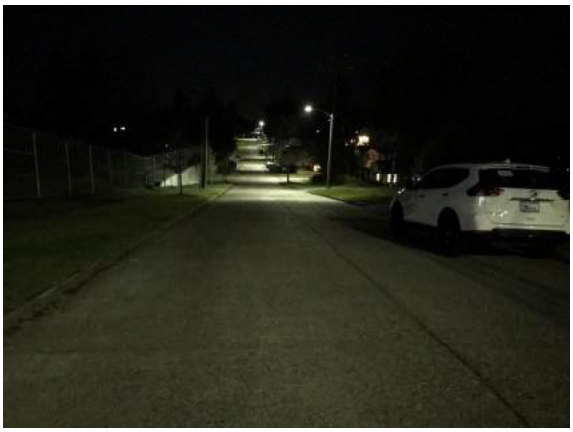
The existing light sources on the school site consist of parking lot lighting, building perimeter lighting, school covered area lighting and portable building lighting on the northwest side of the main school building. The primary components of the lighting are the parking lot lights, building perimeter lights and school covered area lights. The parking lot lights, and main school building perimeter lights were not turned on during this site visit.

Existing Portable Building Wall Pack Lights

Existing Covered Area Lights Under School Building

The existing light sources surrounding the site are typical for a suburban residential area. The primary component of the lighting is associated with streetlights surrounding the school. The streetlights along SW Hinds Street, NW 47th Street, SW Spokane Street are LED cobra head style mounted to existing utility poles at an approximate height of 20' above grade. The balance of the lighting is associated with adjacent residential properties with porch\yard lights and interior lighting visible through windows.

The exception for existing light sources surrounding the site are the higher wattage streetlights and high wattage Hiawatha Playfield flood lights located three blocks to the east at California Avenue SW.



Existing Street Lighting SW Hinds Street

Existing Street Lighting 47th Avenue SW

Existing Yard Light 47th Avenue SW

Existing Street SW Spokane

Existing Street Lighting California Avenue SW

Existing Field Lighting Hiawatha Playfield

Various measured lighting levels on and surrounding the site are as follows (Foot-Candles).

Wall Pack Light on Portable Building	10.0 ft-c (Max Horizontal)
Streetlight – SW Hinds Street	1.8 ft-c (Max Horizontal)
Streetlight – 47th Avenue SW	2.4 ft-c (Max Horizontal)
Streetlight – SW Spokane Street	2.0 ft-c (Max Horizontal)
Streetlight – California Avenue SW	4.8 ft-c (Max Horizontal)
Hiawatha Playfield	12.0 – 330.0 ft-c (Horizontal)

Proposed Equipment

The athletic field lighting system will consist of six 70' tall galvanized steel poles with LED shielded floodlights. The proposed lighting for the field consists of 20 - 900 watt and 8 – 600 watt shielded LED floodlights. The floodlights will be mounted at the top of the poles. The four corner poles will have 1 additional 575 watt shielded LED floodlight mounted at a height of 16'above grade and aimed above the field. The two mid-field poles will have 2 additional 575 watt shielded LED floodlights mounted at a height of 16'above grade and aimed above the field. One additional low wattage "full cutoff" area light will be mounted at a height of 30' above grade on each pole.

Seattle Public Schools has proposed to use an athletic field lighting system designed to mitigate the negative impacts of light and glare. The proposed system consists of the latest technology available on the market for shielded LED floodlights designed for the lighting of athletic fields.

The use of high efficiency LED arrays provide more precise control of light to be delivered to the field. The reflector and shielding design further reduce the amount of light transmitted off site and into the atmosphere. The floodlights utilize an additional external visor mounted to the floodlight that extends in front of the floodlight. The floodlight design is similar to "full cutoff" style lights as they dramatically limit the amount of light that is emitted above the plane of the floodlight. The proposed lighting system is similar to recently lighted fields at Roosevelt High School and Ballard High School.

Shielded LED Floodlight used at Roosevelt\Ballard HS Fields

Unshielded LED Floodlight

Analysis

The proposed lighting system will increase the amount of light in the area during evening hours. The primary impacts of the lighting system are direct glare, reflected glare, spill light (light trespass), and "sky glow".

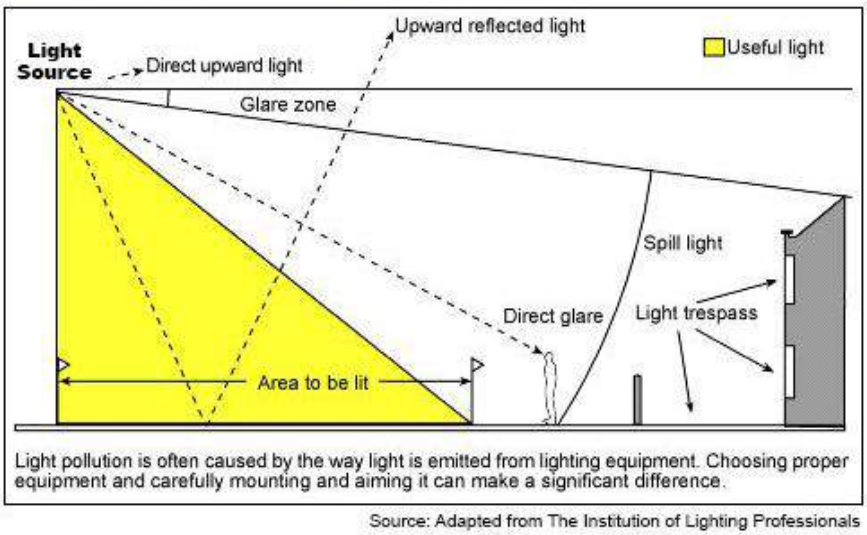


Diagram illustrating Direct-Glare, Spill Light and Light Trespass

GLARE

The athletic field lighting system will generate visible glare. The primary sources of glare from the proposed lighting system consist of direct glare from the floodlights and reflected glare (luminance) off the poles, floodlights, athletic field surface, and surfaces around the playing field.

The amount of glare that is present correlates directly to how much of the floodlight lamp and reflector can be observed. The intent of Seattle Municipal Code Section 23.24.020 is to have floodlight luminaires directed as far down as possible to reduce the amount of glare that is visible from off-site locations.

To reduce the amount of glare that is visible off-site the floodlights will need to be mounted higher than 30 feet. At a height of 30 feet the visibility of the high wattage LED's and reflectors from the adjacent residences is excessive. With the increased mounting heights floodlights will have steeper aiming angles resulting in more effective use of the floodlight shields. A smaller portion of the floodlight reflectors and lamps will be visible off site with the increased height.

Direct glare will be visible from all directions overlooking the site. The amount of glare visible depends on proximity to the site, orientation of the floodlights, distribution of intervening buildings, terrain or vegetation that would block the glare. The impacts of direct glare are extremely difficult to quantify, as varying conditions such as existing ambient light levels and current atmospheric conditions will vary the impact. Elevation differences between the level of the sports field lights and the viewpoint is a key determinant in the existence of glare at any given viewing location.

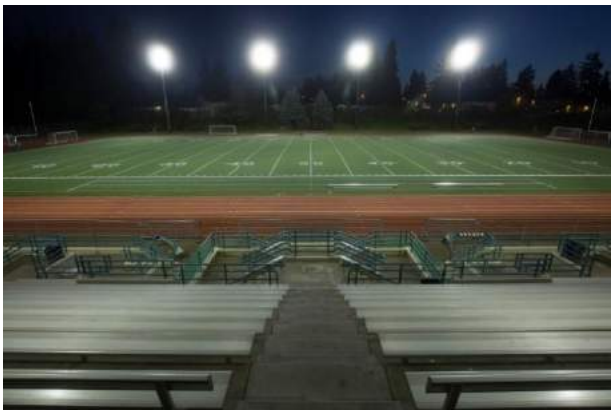
To maximize glare reduction, the owner is providing additional mitigation with the use of "full cutoff" style LED floodlights that provide the most advanced light control and shielding currently available in the sports lighting industry. Additional reduction in direct glare is also provided by internal shielding of the LED diodes. The additional shielding nearly eliminates direct view of the very bright LED's from off-site viewing locations.

Off-site exposure to low and moderate levels of direct glare is primarily to the three residences directly west of the proposed field across 47th Avenue SW. These properties are at a lower elevation to the field with direct exposure to the light poles and floodlight assemblies. The direct glare visible at these residences is primarily from the floodlights on the east side of the field aimed towards the west. There will be low levels of direct glare from a small portion of the light from floodlights on the west side of the field aimed away from 47th Avenue SW. Other adjacent residential properties located on the north and south sides of the field will have low to minimal exposure to direct glare. Residential properties that are located farther away from the field will have minimal to no direct glare impacts.

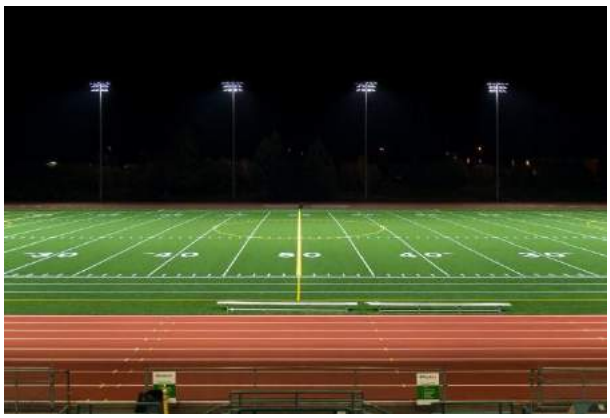
Reflected glare would be visible from all directions overlooking the site, depending direct views into the site, exposure to poles\floodlights, distribution of intervening buildings, terrain or vegetation that would block the glare. Of the surfaces that are visible from off site locations, the synthetic athletic field surface would be the greatest contributor to reflected glare. The amount of light reflected from synthetic turf is generally equivalent to natural turf. It may be slightly higher depending on how the surfaces wear, direction of how the fibers lay and which direction they are viewed from. The difference in amount of reflected glare visible between the surfaces is minimal. The reflected light off the floodlight housings, floodlight visors and poles would be a lesser contributor.

The residential properties are at a higher elevation above the field to the north and south have the greatest amount of exposure to reflected glare. These properties are close to the fields with direct exposure to the field surfaces, adjacent grass\pavement surfaces, light poles, and floodlight assemblies. The main component of the impact is the light reflected off the synthetic turf field surface.

Residential properties that are located farther away from the field or below the field will have low to minimal reflected glare impacts. These properties will have limited to no direct views of the playing surface due to their location away from the fields. The reflected glare impact associated with the poles and floodlights is much less from more remote viewing points, as the impact is reduced at greater distances. This is true even though reflected glare from the floodlights and tops of the poles will be visible at greater distances due to their elevation above the field.



Direct glare from unshielded floodlights (Edmonds-Woodway HS) , Reflected glare from synthetic turf surface



Direct glare reduction with use of shielded LED floodlights Reflected glare from synthetic turf surface

The increased mounting heights for the athletic field lighting poles will dramatically decrease the overall amount of glare visible from off-site locations as compared to using 30' pole height. The use of the latest generation of shielded floodlights will dramatically reduce the amount of visible glare compared to standard shielded and unshielded LED floodlighting systems. It is critical that taller poles are used to minimize glare as much as practical. At 30-foot mounting heights the surrounding residences will be more fully exposed to excessive levels of direct glare from the floodlights. Glare impacts will be evaluated after construction of the lighting system and adjustments to the shielding and aiming of the floodlights will be implemented as necessary.

SPILL LIGHT

The athletic field lighting system will generate minimal amounts of spill light. Spill light impacts will be primarily located at residential properties directly west of the proposed field across 47th Avenue SW. The maximum amount of spill light at this location is 0.70 foot-candles.

The increase in pole height from 30 feet to 70 feet tall will dramatically reduce the amount of spill light generated by the lighting system. The higher pole heights allow the floodlights to be aimed down to the athletic field and away from the adjacent properties. This height also provides for greater effectiveness of the internal\external shielding on the floodlights to control the emitted light and prevent light escaping beyond the site.

The increased mounting heights increase the angle of aiming below the horizontal level of the floodlights. At a mounting height of 30 feet this project would require aiming angles of 12.5 degrees (worst case) and 21.8 degrees (best case) below the horizontal plane of the floodlight. The increased mounting height to 700 feet will provide for aiming angles of 27.4 degrees (worst case) and 43.0 degrees (best case) below the horizontal plane of the floodlight.

The use of steeper aiming angles allows for less direct light to be delivered beyond the boundaries of the playing surface. The external shielding blocks more direct light and more light is delivered to the field with the use of increased mounting heights. The proposed taller mounting heights are typical for this application and similar to many existing installations throughout the City. The use of shorter mounting heights is typical to the lighting of driving ranges which requires that light is delivered over hundreds of feet down range to light the back of a golf ball to distances over 300 feet.

The vertical spill light from the field lighting has been calculated along the adjacent residential property lines on the north, south and west sides of the site. The light readings are calculated in foot-candles. The calculated light readings do not account for the existing trees and vegetation that will provide some screening to reduce spill light at the property lines

At the standard mounting height of 70 feet the maximum amount of measurable light delivered along the west residential property line is 0.70 foot-candles. At the standard mounting height of 70 feet the amount of measurable light delivered along the north residential property line is 0.13 foot-candles. At the standard mounting height of 70 feet the amount of measurable light delivered along the south residential property line is 0.10 foot-candles.

At the non-standard mounting height of 30 feet the maximum amount of measurable light delivered along the west residential property line is 5.42 foot-candles. At the non-standard mounting height of 30 feet the amount of measurable light delivered along the north residential property line is 1.04 foot-candles. At the non-standard mounting height of 30 feet the amount of measurable light delivered along the south residential property line is 0.26 foot-candles.

The increased mounting height will dramatically reduce the maximum spill light at the residential property lines as compared to using 30' pole height. Increased mounting height also reduces spill light to meet recommended practice of maximum of 1.0 foot-candles set by the City of Seattle. Spill light impacts will be evaluated after construction of the lighting system and adjustments to the shielding and aiming of the floodlights will be implemented as necessary.

SKY GLOW

The athletic field lighting system will generate a minimal amount of "sky glow". The "sky glow" impacts will be at locations near the fields.

The amount of "sky glow" that is visible from a lighting system is difficult to quantify. There is no current method to calculate "sky glow" but it is recognized that there is a direct correlation to the amount of direct and reflected light that is emitted into the atmosphere. The amount of visible "sky glow" is dependent on a multitude of factors. Several factors include the amount of ambient light that exists, darkness of the night sky, amount of moonlight, atmospheric conditions, level of cloud ceiling, amount particulate matter, location of the observer and age of the observer.

To reduce the amount of "sky glow" that is visible the floodlights will need to be mounted higher than 30 feet. At a height of 30 feet the amount of direct light emitted into the atmosphere is excessive. With the increased mounting heights floodlights will have steeper aiming angles resulting in more effective use of the external shields. Most of the total light output will be directed down to the field with the increased mounting height.

To maximize "sky glow" reduction the owner is providing additional mitigation with the use of "full cutoff" style LED floodlights that provide the most advanced light control and shielding currently available in the sports lighting industry. The use of this equipment will also block a significant amount of direct light that is emitted into the atmosphere.

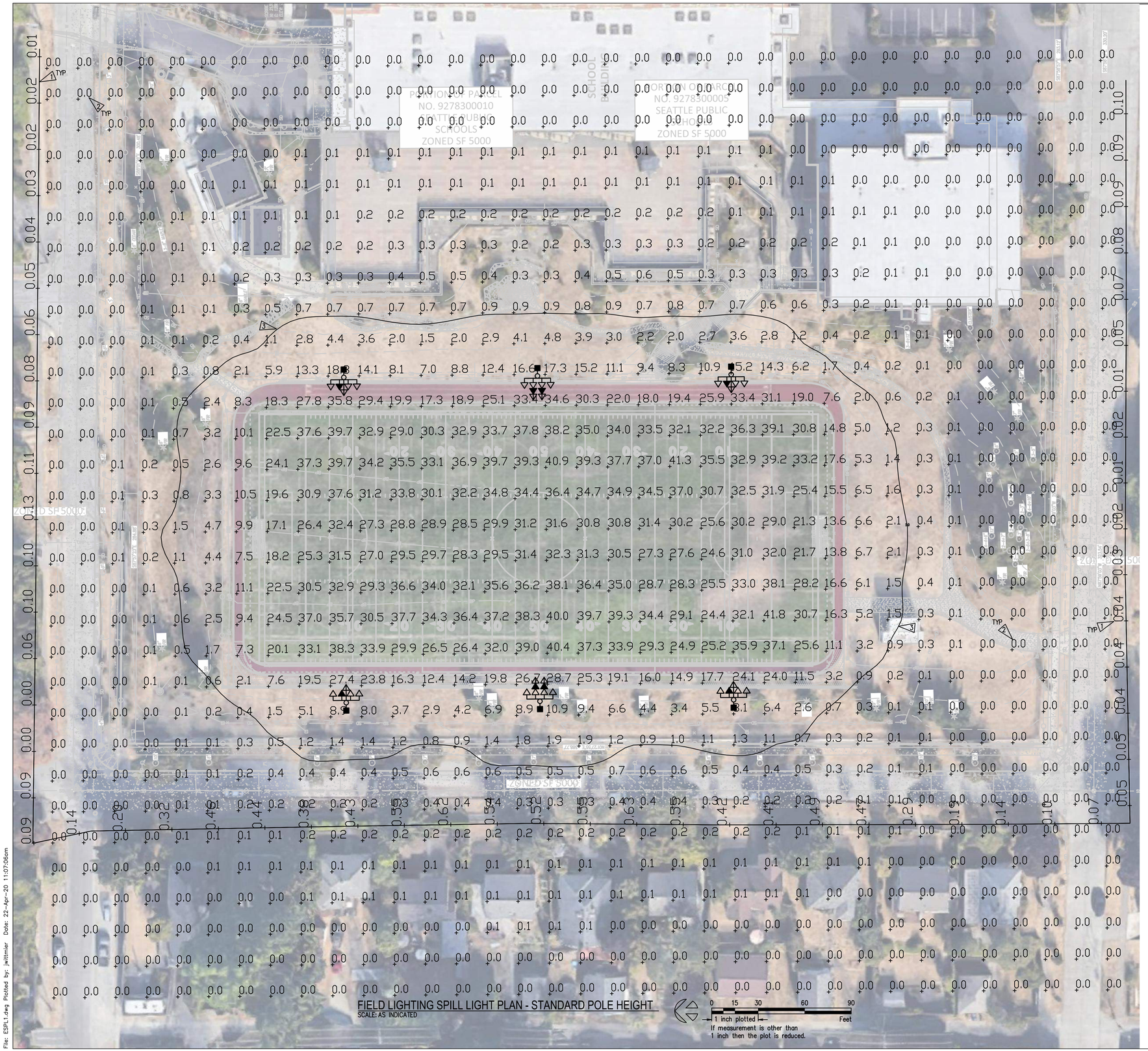
Based on the existing conditions and the limited impact expected for the project, the impact of the project on "sky-glow" evident in the surrounding area will likely be small. "The appearance of "sky-glow" will be very minor with heavy low overcast skies and be most prevalent during conditions of dense fog.

Due to the dramatic reductions in the amount of up-light generated there will be a zone of darkness above the field. This creates a safety hazard for baseball play to safely track balls hit high into the air. This will require the use of up-lights for the lighting system similar to the up-lights used at the recently lighted fields at Roosevelt High School and Ballard High School. These will provide the minimal amount of light necessary for safe play.

The increased mounting heights for the athletic field lighting poles will decrease the overall amount of "sky-glow" visible as compared to using 30' pole height. The use of the latest generation of shielded floodlights will dramatically reduce the amount of direct light emitted into the atmosphere compared to the older shielded floodlighting systems. It is critical that taller poles are used to minimize "sky-glow". The amount of "sky-glow" visible will be localized to the area above the field and immediate vicinity. The amount of "sky-glow" generated will be typical of the recently lighted field using LED floodlights at Ballard High School and Roosevelt High School and will be much less as compared to the amount generated using 30' poles.

<u>Controls</u>

The new athletic field lighting system will be connected to a fully programmable control system with remote operation. There will be separate switches installed to manually operate the lights at the site if necessary. The field lights will be on a separate lighting zone with a separate switch. This will allow the field lights to be turned off after play is completed. The area lights are on a separate zone and will remain on for a short time after each event to provide ample light for egress from the site.



FLAG NOTES:

1. VERTICAL SPILL LIGHT CALCULATION IN FOOT-CANDLES AT A HEIGHT OF 3'-0" ABOVE GRADE.
2. HORIZONTAL SPILL LIGHT CALCULATION IN FOOT-CANDLES AT A HEIGHT OF 3'-0" ABOVE GRADE.
3. ISO FOOT-CANDLE LINE AT 1.0 FOOT-CANDLES.

LEGEND:

- ○ FLOODLIGHT POLE
- △ FLOODLIGHT WITH GLARE CONTROL SHIELDING, 900 WATT LED, 480 VOLT
- ▲ FLOODLIGHT WITH GLARE CONTROL SHIELDING, 600 WATT LED, 480 VOLT
- ⚠ BALL TRACKING LIGHT WITH GLARE CONTROL SHIELDING, 575 WATT LED, 480 VOLT
- ■ AREA LUMINAIRE, 130 WATT LED, 480 VOLT, FULL CUTOFF

POLE AND FLOODLIGHT SCHEDULE

POLE	HEIGHT	FLOODLIGHTS	TRACKING	AREA LIGHTS
F1	70'	4	1	1
F2	70'	6	2	1
F3	70'	4	1	1
F4	70'	4	1	1
F5	70'	6	2	1
F6	70'	4	1	1
		28	8	6

FIELD LIGHTING SPILL LIGHT PLAN - STANDARD POLE HEIGHT
SCALE: AS INDICATED

0 15 30 60 90
1 inch plotted — Feet
If measurement is other than 1 inch then the plot is reduced.

Stantec
4100 194th Street SW Suite 400
Lynnwood Washington 98036-4613
(206) 667-0555

REVISION	DATE

SEATTLE PUBLIC SCHOOLS

ATHLETIC FIELD IMPROVEMENTS AT MADISON MIDDLE SCHOOL & WEST SEATTLE HIGH SCHOOL

DA HOGAN
119 1st Avenue South, Suite 110
Seattle, Washington 98104
p. 206.285.0400
f. 206.285.0480

CHRISTOPHER F. HOYT — STATE OF WASHINGTON — 31353 — REGISTERED PROFESSIONAL ENGINEER

NORTH

PROGRESS SET

DATE	4-22-20
SCALE	AS INDICATED
DRAWN	JTW
CHECKED	CBF

FIELD LIGHTING SPILL LIGHT PLAN - STANDARD POLE HEIGHT

SHEET

ESPL1

File: ESPL1.dwg Plotted by: jwittmer Date: 22-Apr-20 11:07:06am
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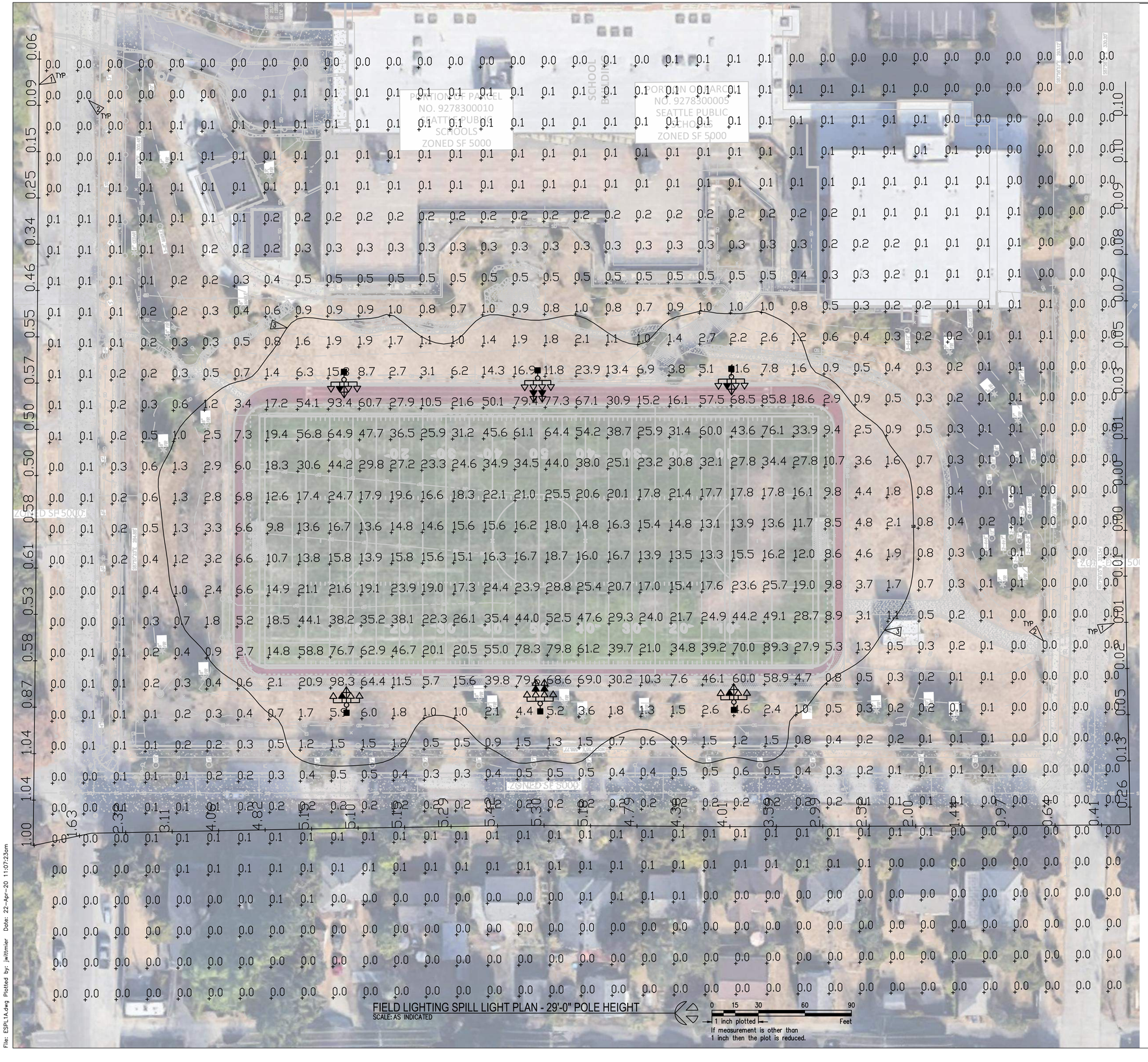

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LEGEND:

- ○ FLOODLIGHT POLE
- △ FLOODLIGHT WITH GLARE CONTROL SHIELDING, 900 WATT LED, 480 VOLT
- ▲ FLOODLIGHT WITH GLARE CONTROL SHIELDING, 600 WATT LED, 480 VOLT
- ⚠ BALL TRACKING LIGHT WITH GLARE CONTROL SHIELDING, 575 WATT LED, 480 VOLT
- ■ AREA LUMINAIRE, 130 WATT LED, 480 VOLT, FULL CUTOFF

POLE AND FLOODLIGHT SCHEDULE

POLE	HEIGHT	FLOODLIGHTS	TRACKING	AREA LIGHTS
F1	29'	4	1	1
F2	29'	6	2	1
F3	29'	4	1	1
F4	29'	4	1	1
F5	29'	6	2	1
F6	29'	4	1	1
		28	8	6

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NORTH

PROGRESS SET

DATE	4-22-20
SCALE	AS INDICATED
DRAWN	JTW
CHECKED	CBF

FIELD LIGHTING SPILL LIGHT PLAN -29' POLE HEIGHT

SHEET

ESPL1A

File: ESPL1A.dwg Plotted by: jwittmier Date: 22-Apr-20 11:07:23am
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