4.10.3 Mitigation Measures

Any subsurface excavation, including geotechnical borings, at WPR-02-06 and at the outfall along Oyster Bay should be monitored by a professional archaeologist. Monitoring should occur at the outfall if excavation extends beyond fill into native sediments. It is recommended that a monitoring and inadvertent discovery plan be developed in conjunction with development approval and made available onsite to construction and supervisory personnel. Such a document should provide the procedures to be followed in case archaeological materials or human remains are discovered during construction, a list of persons and agencies to be contacted, and instructions for contacting the responsible parties.

The BHA possesses a significant number of original blueprints and other documents associated with the construction, operation, and maintenance of Westpark and other defense housing complexes they manage. It is recommended that historical material, such as the blueprints, photographs, drawings, paintings, and models of Westpark be donated or placed on long-term loan to a curation facility equipped to preserve these important documents. The Kitsap County Historical Society Museum, Washington State Archives, National Archives and Records Administration, and the University of Washington Special Collections are recommended facilities.

4.10.4 Significant Unavoidable Adverse Impacts

No significant unavoidable adverse impacts have been identified.

4.11 AESTHETICS, LIGHT & GLARE

4.11.1 Impacts of the Proposed Master Plan

Visual Impacts

Construction

Demolition and construction activities would be visible from off-site locations and to on-site residents. Visual impacts would include dust, the presence of construction equipment, stockpiles of materials, and construction activity. These impacts would be temporary, would occur in phases, and would not be significant.

Operation

Redevelopment of Westpark would result in significant and dramatic changes in visual character. Change would occur incrementally, as the site is redeveloped in phases. Change would primarily be related to an increase in the number, density, bulk, scale and design of new buildings, interspersed landscaping and open space, and changes in site topography. Architectural character would also change significantly. Many elements of this change would likely be considered to be positive by many viewers, although some viewers could perceive it to be adverse.

The *Proposed Master Plan* would provide a mix of single family and multi-family residential units in a variety of forms; unit types are shown in Table 2-2. Single family building would generally be 2 to 3 stories (35 to 45 feet) in height, while multi-family and mixed-use buildings could be up to 4.5 stories (55 feet). Residential units would be the predominant use and would be dispersed across the site; they would be visible from locations along Kitsap Way, Oyster Bay Road and SR 3. Development regulations and design guidelines contained in the Westpark Sub-Area Plan, are intended to achieve variety in architectural style, design and color between blocks and between neighborhoods. In general, buildings would be located closer to the street and tree-lined pedestrian walkways. Landscaping would enhance the appearance of the community, and perimeter buffers would help screen development from off-site views. An illustration of the expected change in design character is shown in Figures 4.11-1 and 4.11-2.

The larger, taller multi-family buildings included in the *Proposed Master Plan* would be concentrated on the western portion of the site adjacent to SR 3. Visual change to these viewers would be significant, as this portion of the site would be developed more intensively than at present. Landscaping would be located between the SR 3 right-of-way and the site boundary. Based on the analysis in Section 4.6, *Noise*, it is possible that noise walls or berms could also be constructed in a portion of this area, to abate the effects of existing off-site noise on Westpark. These would also be visible to passing motorists.

Figure 4.11-1 Westpark Character Illustration 1 & Figure 4.11-2 Westpark Character Illustration 2

The Village Center, proposed in the northwestern portion of the site, would consist of larger-scale commercial buildings (0.5 floor area ratio, and up to 50 feet in height) and surface parking areas. As a result of proposed earthwork, this portion of the site would be higher in elevation and more prominent than at present; it is intended to function as an entry to Westpark and a "gateway" to the City. The commercial center would be visible from Kitsap Way/Arsenal Way and from SR 3. Landscaping and transitions in density would occur between the commercial area and adjacent residential neighborhoods.

Open spaces would include a major park and open space on the northern/central portion of the site (the 12-acre Summit Park), along Kitsap Way, two neighborhood parks and dispersed common areas. The Summit Park location is currently devoted to open space and would not change significantly in appearance. Some improvements – including usable recreation spaces and other amenities -- would occur but would be internal to the site. The dense existing vegetation blocks visual access to the site in this area, and also provides a natural, park-like setting for motorists along Kitsap Way. This character would not change.

The intersection of Kitsap Way and Oyster Bay Road is the northeastern gateway to the Westpark site. The visual character of this portion of the site has previously been altered by construction of Bay Vista Commons, a three-story (plus basement), 72-unit assisted living facility. This corner of the site is elevated and has greater visual prominence from adjacent streets and land uses. The *Proposed Master Plan* includes an office building in this location, which would increase the intensity and urban character of development visible at this gateway.

Proposed changes in topography and increased building height will result in views of Oyster Bay from several locations on the Westpark site. This would be a positive change for residents and visitors.

The Proposed Master Plan includes improvements to the existing drainage outfall in Oyster Bay, north of the Westpark site, both to manage existing stormwater runoff and accommodate Westpark's runoff. The improvements will be a joint City/BHA project and is subject to further analysis and refinement. The design concept included in the Draft EIS, however, includes potential removal of the existing outfall up to the mean lower low water (MLLW) elevation, rather than abandoning it in place. Removal would enhance view of the water from the shoreline. The outfall proposal also includes a number of options for enhancing visual access of the shoreline for the public.

Light & Glare Impacts

Light from streetlights, parking areas, vehicles headlights and buildings would increase with the number of residential units on-site. Glare could occur from larger scale buildings along SR 3 or Kitsap Way. However, the Westpark Sub-Area Plan's design standards and guidelines would limit the type and intensity of on-site lighting and building materials; use of reflective building materials is not anticipated. Light and glare impacts are not expected to be significant.

4.11.2 Impacts of the Alternatives

No Action

With *No Action*, there would be no immediate change to the sites existing visual character. Aesthetic improvements included in the *Proposed Master Plan* would not occur. Over time, the site's existing residential structures would continue to deteriorate, which would also result in a decline in visual character.

Design Alternative

Visual impacts of the Design Alternative would generally be similar to those associated with the *Proposed Master Plan*, with two major differences. First, the Village Center would be twice as large (approximately 12 acres). More, larger-scale buildings and surface parking areas would characterize this visible portion of the site, which functions as the City's western gateway. The overall scale and visual prominence of the commercial area and the nature of change from existing conditions would be more significant to off-site viewers (primarily motorists along Kitsap Way and SR 3) compared to the *Proposed Master Plan*. It would result in a more "commercial" development character.

The second major difference would occur in the scale of proposed multi-family buildings in the western portion of the site, adjacent to SR 3. Both buildings would be one story (approximately 10 feet higher) than buildings in the *Proposed Master Plan*. They would generally appear more prominent to off-site and on-site viewers.

4.11.3 Mitigation Measures

Expected changes in visual quality are generally considered to be positive in nature and do not require mitigation. The development regulations, design standards and design guidelines contained in the Westpark Sub-Area Plan will apply to redevelopment of the site and would help to achieve positive visual and aesthetic change, and would reduce the potential for glare..

4.11.4 Significant Unavoidable Adverse Impacts

No significant unavoidable adverse impacts to visual quality are anticipated.

4.12 TRANSPORTATION

The analysis in this section was conducted for PM peak hour conditions in 2010, which is consistent with the expected build-out year for the *Proposed Master Plan*. In the following analysis, the *No Action* alternative is presented first. It indicates future conditions without the *Proposed Master Plan*, and provides a baseline against which the impacts and mitigation measures associated with Proposed Master Plan and Design Alternative can be compared and measured.

4.12.1 Impacts of the No Action Alternative (Future Conditions without the Proposed Master Plan)

Functional Classifications and Roadway Characteristics

The functional classifications of the roadways within the study area are not expected to change before the project's 2010 horizon year.

Transit Facilities

A variety of transit service and facility improvements in Bremerton have been identified in Kitsap Transit's Transit Development Plan (2001-2007). The plan addresses transit service, routes and fleet, park-and-ride lots, HOV facilities, transfer centers, ferry terminals, multi-modal improvements, and operations and maintenance. In general, the plan entails: promoting the use of public transportation while sustaining the existing public transportation facilities and equipment, building public and private partnerships to improve public transportation planning and coordinate service delivery, and improving transit connectivity to the Bremerton Transportation Center by expanding the East Bremerton and McWilliams park-and-ride lots. Both of these park-and-ride expansion projects are outside of the Westpark project study area.

In addition to Kitsap Transit's Transit Development Plan, PSRC's Destination 2030 Metropolitan Transportation Plan (MTP) has also identified transit improvement projects that would enhance transit in the City of Bremerton and Kitsap County. These projects include building an East Bremerton Transit Center by the year 2010, and providing transit signal priority improvements throughout Kitsap County by the year 2008.

While these projects would increase transit service within and around the study area, these projects are the responsibility of Kitsap Transit, PSRC. City of Bremerton, and WSDOT and are not directly impacted by the proposed Westpark project.

Non-motorized Facilities

The Kitsap County Bicycle Facilities Plan and the Mosquito Fleet Trail Master Plan, established under the umbrella of the Kitsap County Greenways Plan, both identify projects to increase the extent, continuity, and overall quality of Bremerton's non-motorized component of their transportation system. These projects generally include: paved shoulders, bicycle lanes (exclusive and shared), raised sidewalks, and separated paths.

In addition to the non-motorized improvements identified under in the Kitsap County Bicycle Facilities and Mosquito Fleet Trail Master Plans, PSRC has proposed additional bicycle improvements in their Destination 2030 MTP. The MTP improves the existing bicycle lane segment along Kitsap Way to a class 2 bicycle lane. This improvement would entail lengthening the bicycle lane to extend from 9th Avenue to Auto Center Way, designation for exclusive use by bicyclists, and delineation from automobile traffic lanes by a broad, painted white stripe or raised pavement marker.

Similar to the future transit projects described above, these planned non-motorized facility improvement projects are not directly related to and would not be impacted by the Proposed Master Plan.

Local Traffic Safety

Review of accident history data did not reveal any apparent trends in accident frequency or location within the study area, except for the intersections of Kitsap Way at Oyster Bay Avenue and Kitsap Way at Pershing Avenue. These intersections currently experience relatively high accident rates and the majority of these collisions are rear ends. Since high traffic volumes could be a primary contributor to accidents in these locations, both project alternatives could increase the frequency of accidents. Future accident rates at other intersections are expected to be similar to existing conditions.

Year 2010 No Action (Without Project) Level of Service Conditions

City of Bremerton staff identified a background traffic growth rate of 1.7 percent per year as appropriate for analysis purposes, which is consistent with the amount of growth identified in the transportation element of the Bremerton Comprehensive Plan (2004). City staff did not identify any other planned, proposed or known development projects nearby that would add additional traffic to the Westpark study intersections within the analysis timeframe.

The analysis used Synchro 6.0 (build 614) to evaluate intersections; signal timing assumptions remained the same. Table 4.12-1 compares existing and future without project traffic LOS at the 10 study intersections and Figure 4.12-1 shows the year 2010 traffic volumes without the project.

As shown in Table 4.12-1, traffic delay would generally increase in the year 2010 compared to existing conditions, and the level of service would worsen at the intersection of Kitsap Way/National Avenue from LOS B to LOS C. However, all intersections would continue to operate at or above the City of Bremerton’s LOS standards.

Table 4.12-1.
Existing and Year 2010 No Action Level of Service Conditions

Study Intersection	Existing		Year 2010 Without Project	
	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)
Signalized Intersections				
Kitsap Way at Marine Drive/Adele Avenue	E	62.2	E	76.3
Kitsap Way at National Avenue	B	18.9	C	20.7
Kitsap Way at Oyster Bay Avenue	B	13.7	B	14.1
Kitsap Way at Shorewood Drive/Arsenal Way	C	22.5	C	25.5
Kitsap Way at SR 3 Northbound ramps	A	8.3	A	9.0
Kitsap Way at SR 3 Southbound ramps	D	43.3	D	49.3
Unsignalized Intersections				
Kitsap Way at Weslon Place	A	4.3	A	6.5
Southbound approach	F	129.5	F	197.1
Oyster Bay Avenue at Russell Road	A	4.2	A	4.2
Eastbound approach	B	10.4	B	10.6
Oyster Bay Avenue at McNeal Avenue	A	3.3	A	3.3
Eastbound approach	A	9.3	A	9.3
Oyster Bay Avenue at W Arsenal Way	A	3.4	A	3.4
Southbound approach	A	9.2	A	9.2

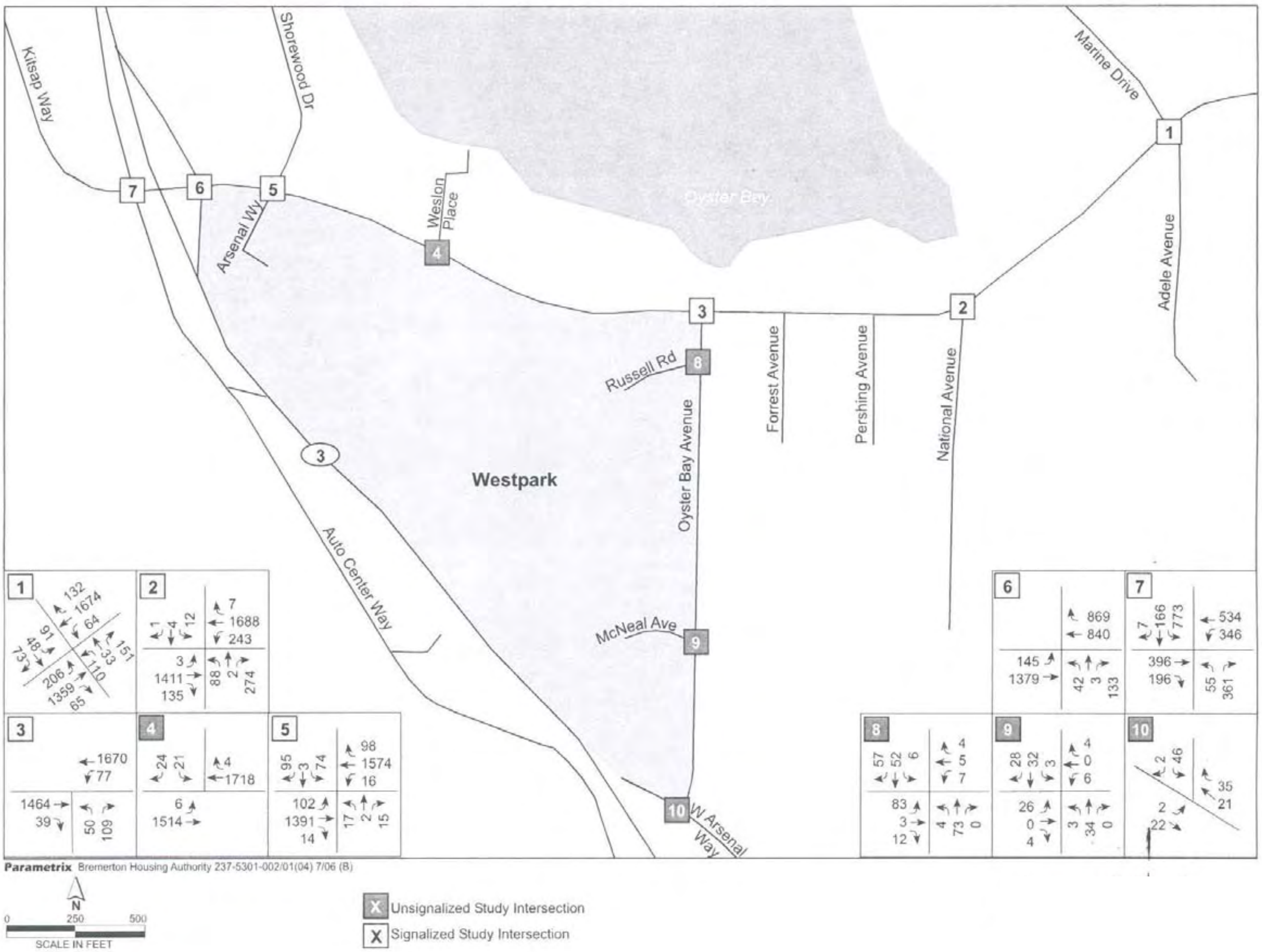


Figure 4.12-1 No Action 2010 Peak Hour Traffic Volumes

4.12.2 Impacts of the Proposed Master Plan & Design Alternative

Trip Generation

Trips generated by the *Proposed Master Plan* and the *Design Alternative* were estimated using the Institute of Transportation Engineers' (ITE) *Trip Generation, 7th Edition* report. Trip generation regression equations were used for the proposed land uses based on statistical validity and ITE's recommendations for best practices.

The residential unit mix for the Proposed Master Plan and Design Alternative are shown in Table 2-2 and Figure 2-9, respectively. Given similar characteristics and ITE land use descriptions, the residential component of Westpark was aggregated into the following land uses to estimate trip generation:

ITE Land Use Code	Proposed Master Plan	Design Alternative
210	97 detached single-family units	74 detached single family units
220	110 apartment units	138 apartment units
220	552 condominium & townhome units. (This category includes the attached cluster cottage and attached single-family units in addition to the townhouse and condominium units.)	547 condominium and townhome units

The modified residential component of the *Design Alternative* would likely generate approximately 76 fewer total daily trips and 9 PM peak hour trips than the *Proposed Master Plan*, due to the revised mix of housing types. However, for purposes of analysis and to avoid the need for an additional computer model run, the *Design Alternative* was assumed to generate the same number of residential-based trips as the *Proposed Master Plan*.

ITE land use code 820 (Shopping Center) was used to estimate the number of trips generated by the commercial portion of the project alternatives. The *Proposed Master Plan* assumed gross leasable area (GLA) of 50,000-60,000 square feet, and the likely tenants would include a grocery store and smaller businesses, such as a dry cleaner, coffee shop, and other neighborhood supporting services. The *Design Alternative* would increase the commercial/retail area (and mixed-use commercial) to between 125,000 and 132,000 square feet. While the likely tenants would be similar to those in the Proposed Master Plan, the grocery store would likely be larger and the center would include additional neighborhood service businesses. For both alternatives, the upper end of the GLA range was used to provide a conservatively high estimate of trip generation.

Table 4.12-2 shows the average daily traffic (ADT) and PM peak hour traffic that Westpark is expected to generate under both alternatives. This table also includes the reduction in traffic associated with the replacement of existing residential units, which was estimated using recent volumes entering and exiting the site during the PM peak hour. Table 4.12-2 also shows the amount of trips that are expected to remain within Westpark (internal trips), which do not affect external traffic operations.

Table 4.12-2.
Daily and PM Peak Hour Trips Generated by the Project

	Proposed Master Plan						**Design Alternative**					
	Daily			**PM Peak Hour**			**Daily**			**PM Peak Hour**		
Proposed Land Use	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**
SF Detached	1,011	506	505	104	66	38	1,011	506	505	104	66	38
Apartment	811	406	405	78	51	27	811	406	405	78	51	27
Condo/Townhome	2,742	1,371	1,371	244	163	81	2,742	1,371	1,371	244	163	81
Gross Residential	4,564	2,283	2,281	426	280	146	4,564	2,283	2,281	426	280	146
Internal Trips	487	268	219	47	28	19	813	447	366	79	47	32
Net Residential	4,077	2,015	2,062	379	252	127	3,751	1,836	1,915	347	233	114
Shopping Center[1]	3,333	1,685	1,648	264	129	135	5,564	2,813	2,751	444	217	227
Total Site Traffic	7,410	3,700	3,710	643	381	262	9,315	4,649	4,666	791	450	341
Existing Site Traffic	3,190	1,595	1,595	319	206	113	3,190	1,595	1,595	319	210	109
NET TRAFFIC INCREASE	**4,220**	**2,105**	**2,115**	**324**	**175**	**149**	**6,125**	**3,054**	**3,071**	**472**	**240**	**232**

[1] Does not include pass-by trips (24 percent daily; 34 percent PM Peak Hour)

As shown in Table 4.12-2, Westpark would result in a net traffic increase of between 4,220 and 6,125 trips daily, and between 324 to 472 trips during the PM peak hour, depending on the alternative.

Trip Distribution and Assignment

Project Trip Distribution

Trip distribution refers to travel activity patterns and the general areas where trips begin and end. Existing travel patterns were evaluated based on existing traffic volumes; locations of residential communities, employment destinations, and retail/restaurant/services; the desirability and availability of alternative travel routes; and communications with City staff. These factors, along with knowledge of the City and surrounding areas and engineering judgment, were used to distribute project-generated traffic onto the street system.

Figures 4.12- 2 and 4.12- 3 show the general areas where project-generated traffic is expected to be distributed. In general, approximately 50 percent is expected to travel west towards SR 3. Of that 50 percent, 25 percent would travel north on SR 3, 15 percent south on SR 3, and 10 percent is expected to continue west on Kitsap Way. Approximately 40 percent of the project-generated traffic is expected to travel east along Kitsap Way past National Avenue, with five percent destined to the north on Marine Drive, five percent south on Adele Avenue, and the remaining 30 percent continuing east along Kitsap Way towards downtown Bremerton. Roughly 10 percent of the project-generated trips are expected to travel east along W Arsenal Way.

Project Trip Assignment

Trip assignment specifically identifies the routes, access points, and volumes of traffic that are expected to travel on each roadway. Trips were assigned to the network based on trip distribution, access points, and site layout.

Four additional access points were evaluated as part of the proposed project. Along Oyster Bay Avenue, one access point would be located between Russell Road and McNeal Avenue, and two would be located between McNeal Avenue and Arsenal Way. The fourth access point, Paradise Road, would be located on Kitsap Way approximately 400 feet west of Weslon Place and directly across from the existing Tony's Pizza driveway. This new intersection would be limited to right-in/right-out turning movements and would be stop-controlled for the minor approach (Paradise Road).

Commercial/retail and residential trips were assumed to follow the same general distribution pattern, but differ in the locations accessing the site. Based on the layout of Westpark and desirability of routes and proposed access points, 100 percent of the commercial/retail trips were assumed to use the access points along Kitsap Way. For the residential trips, 40 percent were assumed to access Westpark via Kitsap Way, and 60 percent were assumed to use Oyster Bay Avenue. Distribution of trips among the access points along Oyster Bay Avenue was based on the density of residences likely to use each driveway. Figures 4.12-2 and 4.12-3 show the weekday daily and weekday PM peak hour trips that were assigned to the street network for each alternative in the study area.

4.12.2 Impacts of the Proposed Master Plan and Design Alternative (Year 2010 With Project Level of Service Conditions)

LOS analyses for the development alternatives were based on the year 2010 without project volumes and signal timing assumptions, and added the additional traffic generated by the project. Additionally, both alternatives include the addition of a right-in/right-out access point at Paradise Road, and the addition of three additional access points along Oyster Bay Avenue. Table 4.12-3 summarizes the expected traffic operations for both development alternatives, and provides a comparison to the existing and without project conditions. Figures 4.12-4 and 4.12-5 show the expected intersection volumes in 2010 for each alternative.

As shown in Table 4.12-3, the majority of study intersections would have higher delay in the year 2010 with the project compared to the future conditions without the project. For the Proposed Master Plan, the increase in delay would result in a lower LOS at three intersections (Kitsap Way/Adele Avenue, Kitsap Way/Shorewood Drive, and Kitsap Way/SR 3 northbound ramps) compared to No Action, and the Kitsap Way/Adele Avenue would operate at LOS F, which exceeds the city's LOS E standard. Under the Design Alternative, the same intersections would experience a lower LOS grade; however two intersections (Kitsap Way/Adele Avenue and Kitsap Way/Shorewood Drive) would operate at LOS F.

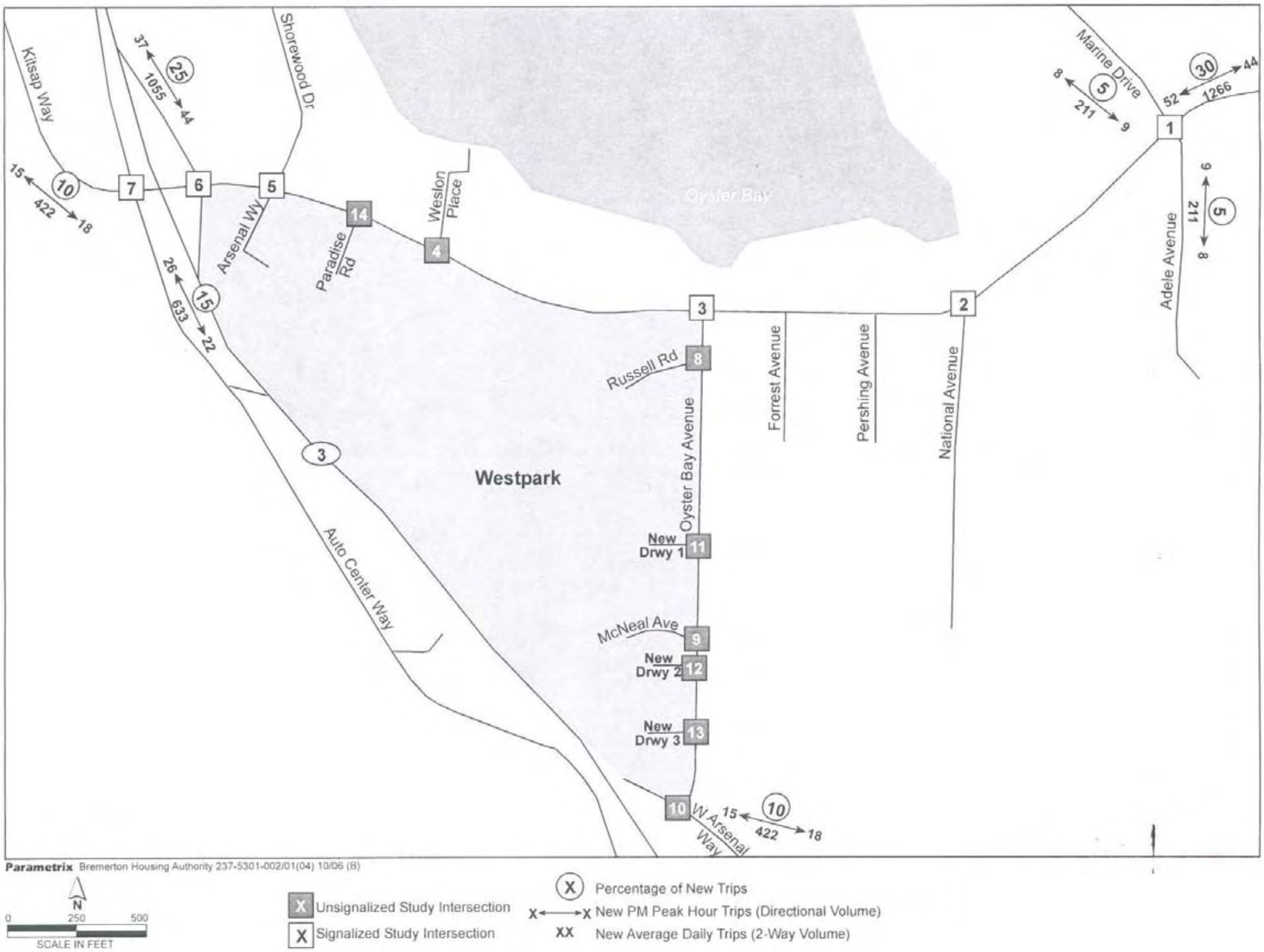
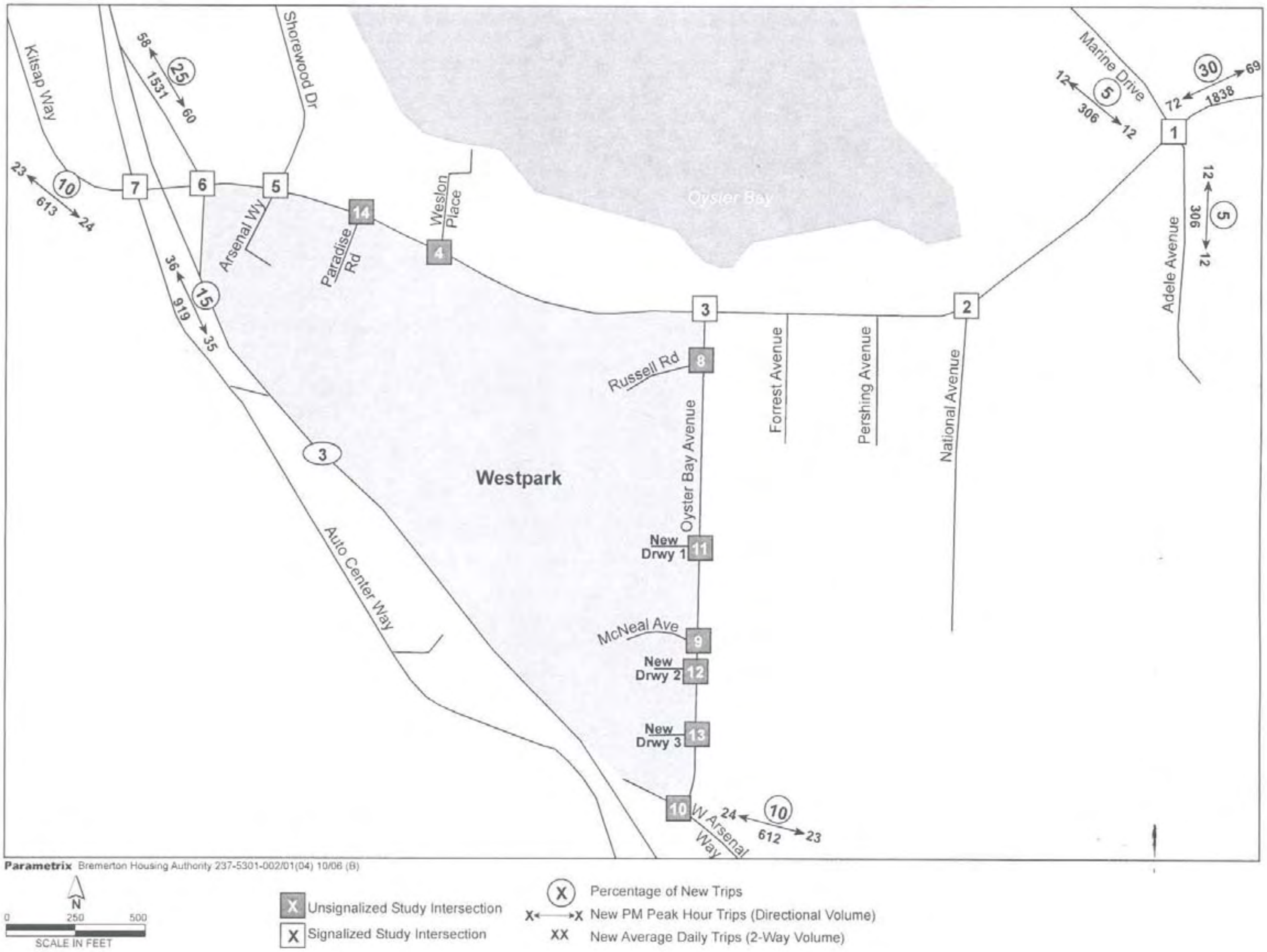


Figure 4.12-2 Proposed Master Plan Trip Distribution and Assignment


Kitsap Way
Shorewood Dr
Marine Drive
Oyster Bay
Arsenal Wy
Paradise Rd
Weston Place
Russell Rd
Forrest Avenue
Pershing Avenue
National Avenue
Adele Avenue
Oyster Bay Avenue
Westpark
Auto Center Way
New Drwy 1
McNeal Ave
New Drwy 2
New Drwy 3
W Arsenal Way
Parametrix Bremerton Housing Authority 237-5301-002/01(04) 10/06 (B)
N
0 250 500
SCALE IN FEET
Unsignalized Study Intersection
Signalized Study Intersection
Percentage of New Trips
New PM Peak Hour Trips (Directional Volume)
New Average Daily Trips (2-Way Volume)

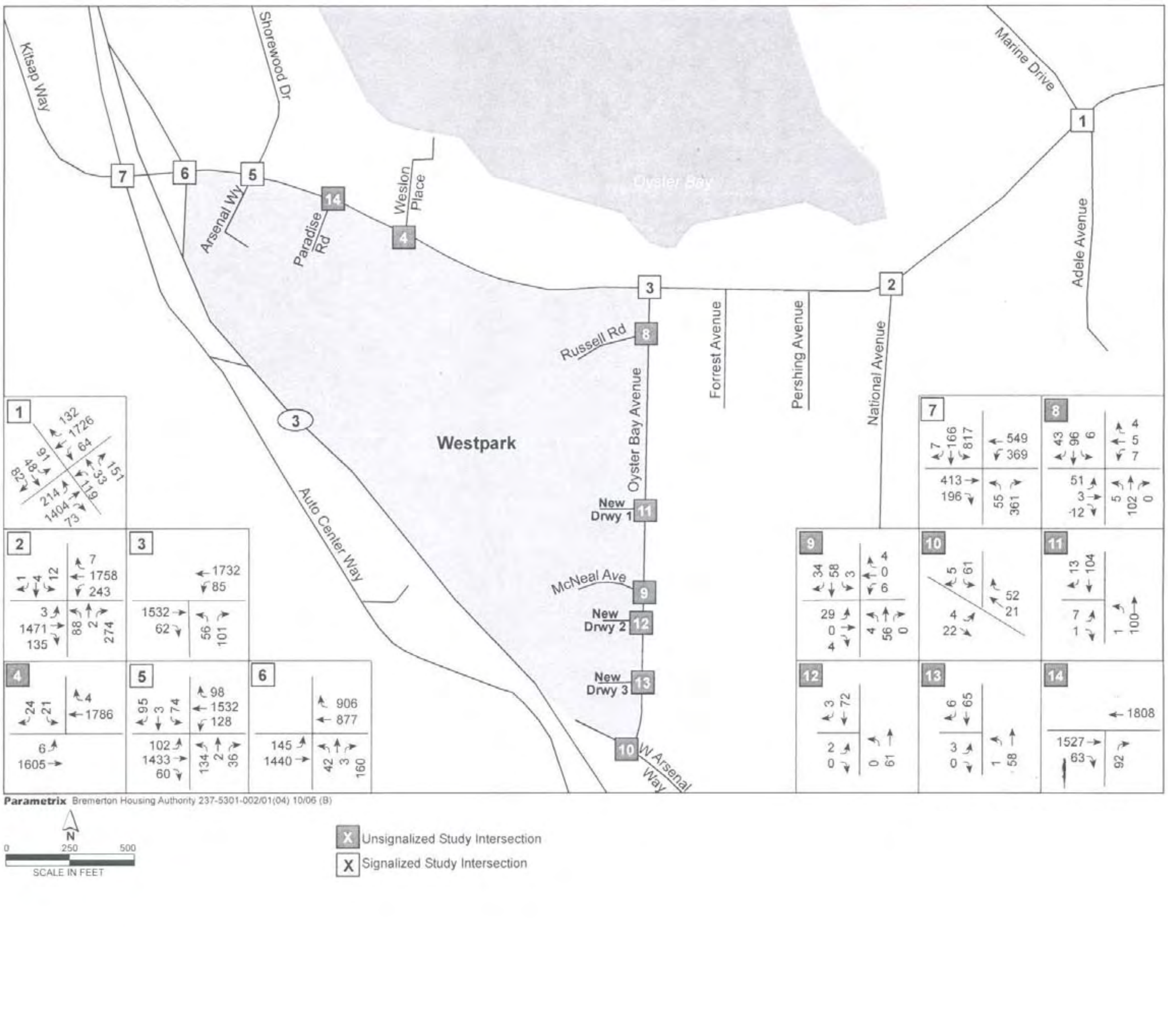


Figure 4.12-4 Proposed Master Plan 2010 PM Peak Hour Volumes

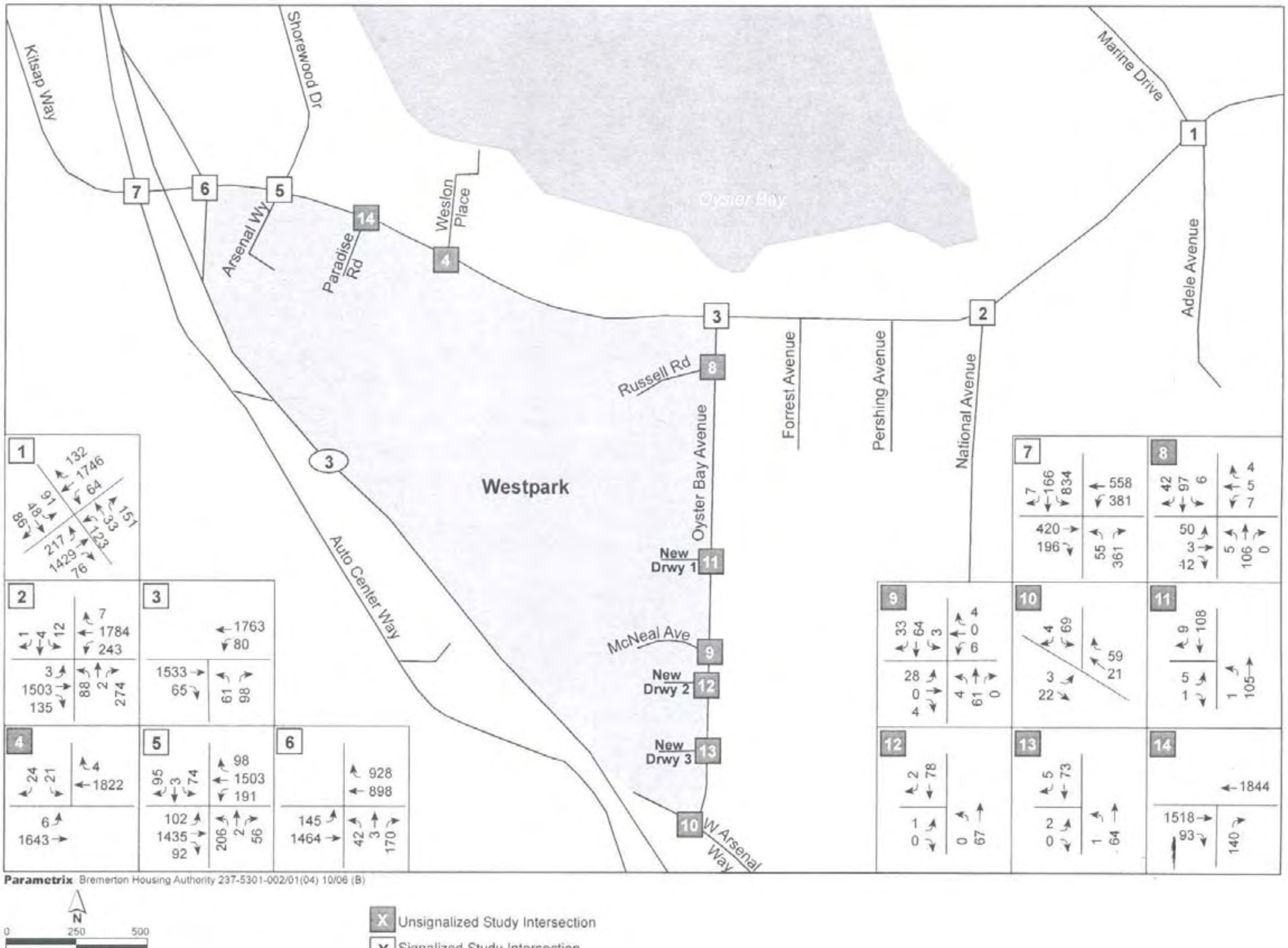


Figure 4.12-5 Design Alternative 2010 PM Peak Hour Volumes

Table 4.12-3.
Existing and Year 2010 Level of Service Conditions

Study Intersection	Existing 2006 LOS	Existing 2006 Delay (sec/veh)	2010 No Action LOS	2010 No Action Delay (sec/veh)	2010 Proposed Master Plan LOS	2010 Proposed Master Plan Delay (sec/veh)	2010 Design Alternative LOS	2010 Design Alternative Delay (sec/veh)
Signalized Intersections								
Kitsap Way at Marine Drive/Adele Avenue	E	62.2	E	76.3	F	82.8	F	85.5
Kitsap Way at National Avenue	B	18.9	C	20.7	C	20.9	C	21.3
Kitsap Way at Oyster Bay Avenue	B	13.7	B	14.1	B	18	B	17.7
Kitsap Way at Shorewood Drive/Arsenal Way	C	22.5	C	25.5	E	57.6	F	102.6
Kitsap Way at SR 3 Northbound ramps	A	8.3	A	9.0	A	9.1	A	9.3
Kitsap Way at SR 3 Southbound ramps	D	43.3	D	49.3	E	55.7	E	58.5
Unsignalized Intersections								
Kitsap Way at Welson Place	A	4.3	A	6.5	A	7.3	A	8.2
Southbound approach	F	129.5	F	197.1	F	> 200.0	F	> 200.0
Kitsap Way at Paradise Road [1] Northbound approach	N/A	N/A	N/A	N/A	C	16.9	C	19.8
Oyster Bay Avenue at Russell Road	A	4.2	A	4.2	A	2.9	A	2.9
Eastbound approach	B	10.4	B	10.6	B	10.9	B	10.9
Oyster Bay Avenue at McNeal Avenue	A	3.3	A	3.3	A	2.7	A	2.7
Eastbound approach	A	9.3	A	9.3	A	9.8	A	9.8
Oyster Bay Avenue at W Arsenal Way	A	3.4	A	3.4	A	3.9	A	3.9
Southbound approach	A	9.2	A	9.2	A	9.4	A	9.4
Oyster Bay Avenue at New Driveway 1	N/A	N/A	N/A	N/A	A	0.4	A	0.4
Eastbound approach	N/A	N/A	N/A	N/A	B	10.1	B	10.1
Oyster Bay Avenue at New Driveway 2	N/A	N/A	N/A	N/A	A	0.1	A	0.1
Eastbound approach	N/A	N/A	N/A	N/A	A	9.5	A	9.5
Oyster Bay Avenue at New Driveway 3	N/A	N/A	N/A	N/A	A	0.3	A	0.3
Eastbound approach	N/A	N/A	N/A	N/A	A	9.5	A	9.5

[1] New right-in/right-out access point under both alternatives.

Existing non-motorized facilities described above would generally remain or be enhanced in the future conditions. Frontage improvements along Kitsap Way and Oyster Bay Avenue would be constructed as part of the project to meet current city standards. Such improvements could include increased sidewalk widths, vegetative planters, increased lighting, and compliance with Americans with Disabilities Act (ADA) standards. Westpark would also be developed with internal sidewalks.

4.12.3 Mitigation Measures

Level of Service Conditions

The Kitsap Way at Marine Drive/Adele Avenue intersection is estimated to operate at LOS E in year 2010 without the project (No Action), and is expected to degrade to LOS F in the year 2010 under both alternatives without mitigation. A proportional share approach is commonly used to identify project-specific mitigation responsibilities and is recommended. Using this technique, Westpark's responsibility to contribute to this intersection's improvement would be based on the project's proportionate share, which is calculated by the project-generated volumes divided by the future total entering volumes. This would equate to 3.2 percent for the *Proposed Master Plan* or 4.5 percent for the *Design Alternative*).

The Kitsap Way at Shorewood Drive/Arsenal Way intersection is expected to operate at LOS C in 2010 without the project (No Action), and LOS F under the *Design Alternative* without mitigation. For the *Proposed Master Plan*, this intersection is expected to operate at an acceptable LOS E and would not require mitigation. Using the proportionate share methodology, Westpark's mitigation responsibility would equate to 11.8 percent for this intersection.

Optimization of network cycle lengths and intersection splits was analyzed as a potential mitigation measure, which resulted in LOS improvements to several intersections. Table 4.12-4 shows the calculated intersection LOS and delays for the optimized existing, year 2010 No Action, and year 2010 with project alternatives.

As shown in Table 4.12-4, network optimization of cycle lengths and phase splits would result in acceptable LOS conditions for both alternatives in 2010. Network optimization would also improve travel times along Kitsap Way. For the *Proposed Master Plan*, the total (eastbound and westbound) corridor travel time would decrease from 422.3 seconds (un-optimized) to 365.1 seconds (optimized). For the *Design Alternative*, the total travel time would decrease from 421.7 seconds (un-optimized) to 379.5 seconds (optimized). For both optimized alternatives, one segment of Kitsap Way (eastbound between the SR 3 ramps) within the study area would operate at arterial LOS F, as would year 2010 with No Action; however the Kitsap Way corridor as a whole would operate at or above LOS D. As mentioned previously, the poor arterial performance of this segment is likely attributed to short intersection spacing.

Other possible mitigation measures that could further improve operation include:

Increased storage (lengthen turn pockets),
Restrict nearby driveway access movements (e.g. right-in, right-out), and
Limit number of driveways near intersection approaches.

Table 4.12-4.
Mitigated Existing and Year 2010 Level of Service Conditions with Optimized Signal Timings

	Existing [1]		Year 2010 No Action [1]		Mitigated Year 2010 With Project: Proposed Master Plan		Mitigated Year 2010 With Project: Design Alternative	
Study Intersection	**LOS**	**Delay (sec/veh)**	**LOS**	**Delay (sec/veh)**	**LOS**	**Delay (sec/veh)**	**LOS**	**Delay (sec/veh)**
Signalized Intersections								
Kitsap Way at Marine Drive/Adele Avenue	D	38.2	D	52.4	E	62.2	E	61.4
Kitsap Way at National Avenue	B	13.9	B	14.2	B	12.1	B	12.7
Kitsap Way at Oyster Bay Avenue	A	9.0	A	9.5	B	10.7	A	9.3
Kitsap Way at Shorewood Drive/Arsenal Way	B	12.3	B	12.7	C	24.2	D	38.2
Kitsap Way at SR 3 Northbound ramps	A	7.7	A	6.9	A	6.9	A	7.9
Kitsap Way at SR 3 Southbound ramps	C	32.4	C	33.6	C	34.4	D	36.1
Unsignalized Intersections								
Kitsap Way at Weslon Place	A	4.2	A	6.4	A	7.1	A	7.8
Southbound approach	F	129.3	F	196.2	F	> 200	F	> 200
Kitsap Way at Paradise Road [2]	N/A	N/A	N/A	N/A	A	0.4	A	0.5
Northbound approach					B	13.4	B	13.2
Oyster Bay Avenue at Russell Road	A	4.2	A	4.2	A	2.9	A	2.9
Eastbound approach	B	10.4	B	10.6	B	10.9	B	10.9
Oyster Bay Avenue at McNeal Avenue	A	3.3	A	3.3	A	2.7	A	2.5
Eastbound approach	A	9.3	A	9.3	A	9.8	A	9.9
Oyster Bay Avenue at W Arsenal Way	A	3.4	A	3.4	A	3.9	A	3.9
Southbound approach	A	9.2	A	9.2	A	9.4	A	9.5
Oyster Bay Avenue at New Driveway 1	N/A	N/A	N/A	N/A	A	0.4	A	0.3
Eastbound approach	N/A	N/A	N/A	N/A	B	10.1	B	10.1
Oyster Bay Avenue at New Driveway 2	N/A	N/A	N/A	N/A	A	0.1	A	0.1
Eastbound approach	N/A	N/A	N/A	N/A	A	9.5	A	9.6
Oyster Bay Avenue at New Driveway 3	N/A	N/A	N/A	N/A	A	0.3	A	0.2
Eastbound approach	N/A	N/A	N/A	N/A	A	9.5	A	9.6

[1] Existing and Year 2010 Without Project network cycle lengths and offsets were optimized to illustrate the affects of the project.
[2] New right-in/right-out access point under both alternatives.

Local Traffic Safety

As stated above, the high proportion of rear end collisions at the Kitsap Way at Oyster Bay Avenue and Kitsap Way at Pershing Avenue may be attributed to a number of factors. Based on the nature of collisions, the following contributing factors and possible mitigation measures were identified:

Hidden Intersections/Driveways

- Install advanced warning signs
- Remove potential sight obstructions
- Restrict nearby driveway access movements (e.g. right-in, right-out)
- Limit number of driveways near intersection approaches

Poor visibility of traffic signals

- Relocate signal heads
- Install large (12-inch) signal heads
- Use additional signal heads
- Install backplates, visors etc. on signals to improve contrast and visibility
- Install louvers to avoid confusion on intersection approaches

High dilemma zone frequency

- Place vehicle detector in dilemma zone that extends green time if vehicle presence is detected

Excessive Speeds

- Reduce speed limit on approaches if justified by spot speed study
- Provide police enforcement of the speed limit

High Traffic Volumes

- Add traffic signals if warranted (per MUTCD)
- Widen roadway approach and/or provide additional lanes
- Restrict nearby driveway access movements (e.g. right-in, right-out)
- Limit number of driveways near intersection approaches

As mentioned previously, accidents generally result from a combination of several factors, and the relatively high accident rates within the study area are likely the product of the aforementioned causes and possibly others. Since the relatively high accident rates exist today and direct causal relationships are often difficult to identify, the potential mitigation measures identified above should not be required to mitigate project impacts.

4.12.4 Significant Unavoidable Adverse Impacts

Traffic and congestion would increase as a result of population growth, including the incremental growth associated with the *Proposed Master Pan*. As identified in the analysis, implementation of recommended mitigation measures would maintain adopted levels of service.

4.13 PUBLIC SERVICES & UTILITIES

4.13.1 Public Services

Impacts of the Proposed Master Plan

4.13.1.1 Police, Fire and EMS

During construction, some calls for service could be generated by construction site theft or trespass, and construction-related injuries,

On-going demand for police, fire and emergency medical service is generally related to population growth and calculated on a per capita basis. The incremental increase in population associated with redevelopment of Westpark – approximately 885 additional people (see Section 4.8.2, *Population & Employment*) – would increase the demand for these services. Employment would also increase, although commercial uses typically generate fewer service calls than residential uses. Based on the City's existing level of service for police (1.65 officers per 1,000 persons), Westpark would generate a need for 1.4 additional officers, and for the additional equipment, vehicles and facility space to support those officers. Commercial and retail development typically generates minor calls for police and fire services, and impacts associated with these uses are considered minor and incidental.

Westpark has historically been associated with greater than average crime rates and higher than average demand for police service. It is possible that demand for service could decrease after redevelopment, based on potential changes in demographic and socioeconomic characteristics of a mixed-income community.

4.13.1.2 Schools

Construction and phased redevelopment would result in the temporary and/or permanent relocation of some students. Some may relocate within the same school service area and attend the same school, while others would attend different schools and/or schools in different districts. This could affect existing capacity in other schools or districts to a minor degree.

The additional population accommodated in Westpark after redevelopment could increase the number of families with school age children and the number of students attending Bremerton School District facilities. Some school district facilities are currently over capacity, particularly in the district's elementary schools, and additional student population would exacerbate exiting capacity problems. Impacts would be determined to the incremental increase in population after redevelopment, since Westpark's school age population currently attend local schools. The *Proposed Master Plan* would provide 188 more housing units than currently exist in Westpark. The number of additional students generated by Westpark would depend, among other factors, on the number of bedrooms constructed in new units; this is not known at this time.

4.13.1.3 Parks & Recreation

Redevelopment of the *Proposed Master Plan* would result in an increase in housing units and on-site population, which would also increase the demand for additional parks land and recreational services. The City's adopted level of service per 1,000 population is 1.7 acres of local parks, 14.4 acres of regional parks, and 2.2 acres of open space. This equates to a total 18.33 acres per 1,000 people for local and regional parks and open space. For Westpark's projected population (1,973 total in 759 housing units), this implies a need for approximately 3 acres of local parks, approximately 28 acres of regional parks, and 36 acres of open space. Total population is not certain and could vary depending on the mix of bedroom in the proposed units. The *Proposed Master Plan* includes 28 acres of parks and open space, which would meet the city-wide level of service standards for local and regional parks, but is slightly under the total level of service. The increased population would also increase demand on existing city park facilities. Demand generated by employees is expected to be minor and incidental.

4.13.1.4 Community Services

As noted previously in Section 2, *Project Description*, the Community Center would be remodeled and would continue to provide a variety of programs for all age groups in Westpark and the surrounding community. Program ideas are still being developed, but will likely include a combination of health and fitness, education and career development, culture and arts, life skills, and social/recreational programs.

Some community programs currently provided at Westpark are funded by HUD and/or are associated with the existing concentration of low income families on-site. Redevelopment of Westpark would result in a reduction of the number of public housing units on site, replacement in other locations in Bremerton and Kitsap County, and relocation of existing tenants. The *Proposed Master Plan*, therefore, would result in some dispersal of families needing community services, reduced demand on the Westpark site, and a potential reduction or change in on-site community services.

Impacts of the Alternatives

No Action

No changes to existing demands for public services would occur.

Design Alternative

The *Design Alternative* would involve the same quantity of housing units and the same population as the *Proposed Master Plan*. Demand (and level of service) for City services are generally estimated based on residential population; therefore, impacts of the Design Alternative would generally be the same as the *Proposed Master Plan*. The larger retail center could incrementally increase the service demand associated with non-residential uses.

Mitigation Measures

Police, Fire & EMS

All new buildings would be constructed according to City building codes which address life and safety concerns. Sprinklers would be provided in larger buildings.

Security measures would be implemented during construction to reduce potential criminal activity. Measures would include on-site security, lighting and fencing to prevent public access.

Site planning, street layout and lighting are intended to promote visibility for residents and police.

Schools

No mitigation measures are required.

Parks & Recreation

Existing park and recreational facilities currently in Westpark are minimal compared to the amount and type of facilities included in the *Proposed Master Plan* and the *Design Alternative.* Measures that will mitigate potential impacts to parks and recreation include:

Provision of park and recreation facilities, trails and open space across the entire Westpark site, including the Summit Park and two neighborhood parks. These would provide opportunities for active recreation, passive enjoyment of open space, and facilities designed to accommodate a spectrum of age groups. Private open space would also be provided in individual yards, common areas, balconies. The existing playfield adjacent to the community center would be retained

Community Facilities

As part of its program planning, the BHA is evaluating potential changes to the range of programs provided at the Community Center.

Significant Unavoidable Adverse Impacts

Demand for services will increase incrementally in conjunction with the additional population associated with Westpark. No significant unavoidable adverse impacts related to police, fire/EMS, schools, parks and recreation or community facilities are identified.

4.13.2 Utilities

Impacts of the Proposed Master Plan

Sewer and Water

The *Proposed Master Plan* would demolish and replace all existing on-site sewer and water systems. Utility infrastructure would be constructed within public road rights-of-way and would be connected to the existing distribution system. Some off-site sewer and water conveyance infrastructure (e.g., pump stations) may need to be upgraded as well; any such needs would be determined in conjunction with preparation of more detailed development and engineering plans.

A conceptual utility plan is shown in Figure 2-7; detailed engineering and design have not occurred at this time. Conveyance facilities would be sized to accommodate the proposal and would be constructed according to City standards. Hydraulic modeling will be conducted to determine water pressure and fire flow needs will be accommodated.

The incremental increase in population (approximately 885) and jobs (approximately 130) would increase consumption of water for potable use and wastewater systems. Assuming an average consumption of 100 gallons per person per day, Westpark would consume an average of approximately 200,000 gallons per day (gpd). The incremental increase over existing residential usage would be approximately 88,500 gpd. Wastewater flows would be similar. Water would also be consumed by retail and commercial uses and for irrigation of landscaped areas.

Westpark is anticipated to be built-out by 2010, and its estimated population is included in the City's calculation of water demand/capacity and wastewater treatment capacity (City of Bremerton, 2004). Based on available information, the City has adequate capacity to serve the Proposed Master Plan. Sewer and water availability letters have been obtained from applicable service providers.

Stormwater

The proposed stormwater system includes both detention and water quality treatment, both of which are absent in existing facilities. The system would be designed to meet applicable City requirements; see the description of the proposed system in Section 2.9, *Project Description*. Stormwater flows in the sub-area would increase as a result of higher density development and increased impervious surface. An overall improvement in the quality of stormwater discharged from the site is expected to occur; refer to the discussion in Section 4.5, *Fish Resources*.

Stormwater from most of the site would be discharged via an upgraded outfall in Oyster Bay. The *Proposed Master Plan* includes a design concept for upgrading the outfall as a joint City/BHA project. The existing outfall could be removed or abandoned in place.

Solid Waste

Solid waste would be generated from demolition and construction activities. Demolition waste typically consists of concrete, brick, wood, masonry, roofing, steel and other metals. Construction waste typically consists of scraps of building materials. Demolition debris from certain areas of the site may contain hazardous materials and is addressed in Section 3.7, *Environmental Health.* Disposal of construction and demolition debris would occur at appropriate facilities.

Generation of household waste would increase relative to existing conditions, as a result of the incremental increase in population associated with the *Proposed Master Plan*. Adequate capacity is present at area landfills.

Electricity/Energy Use

The *Proposed Master Plan* would consume energy for demolition and construction activities, for typical household uses, and for proposed commercial services. The size of proposed units is not known at this time and estimates of energy use cannot be accurately quantified. Structures would be constructed to meet building and energy code requirements. No significant adverse impacts are anticipated.

Impacts of the Alternatives

No Action

Existing utility systems would remain in operation generating the same demands as at present. No upgrades to the existing stormwater system (detention, water quality treatment) would occur.

Design Alternative

Impacts would generally be the same as for the *Proposed Master Plan*. Somewhat greater consumption or generation of water, wastewater, solid waste and energy would occur in connection with the larger commercial area.

Mitigation Measures

Sewer and Water

Sewer and water distribution systems would be designed consistent with applicable City and state engineering and construction requirements.

Hydraulic modeling of the water distribution system would be conducted prior to building permit issuance to verify that fire flows are adequate

Stormwater

To mitigate for potential stormwater impacts, the proposed system incorporates detention and water quality treatment including use of bio-filtration swales. The *Design Alternative* would also incorporate infiltration for a portion of the expanded retail/commercial site.

Additional low impact design concepts should be evaluated, including roof runoff in roof drain downspout systems.

The design concept for upgrading the outfall in Oyster Bay, which is proposed as a joint City/BHA project, would address the additional stormwater generated by Westpark, and the existing capacity and maintenance problems in this regional system.

Energy

Electric cables would be placed underground wherever possible. All connections to existing utilities along perimeter roadways would be coordinated with utility providers.

Newly constructed buildings would implement energy conservation measures included in applicable energy codes.

Significant Unavoidable Adverse Impacts

Demand for utility service would increase in conjunction with anticipated population growth. No significant unavoidable adverse impacts to utilities are anticipated.

4.14 IRREVERSIBLE & IRRETRIEVABLE COMMITMENT OF RESOURCES

Implementation of either the *Proposed Master Plan* or the *Design Alternative Master Plan* would require a commitment, and potentially an irreversible and irretrievable commitment, of natural, physical, energy, human and fiscal resources. The importance of these actions would vary, depending on the scarcity of resources and their ability to be reclaimed.

The proposed commitment of physical, energy, human and fiscal resources is based on the belief that businesses, employees and residents of the surrounding area, and the City as a whole, would benefit from the replacement of distressed public housing and removal of blighted conditions. Creation of a new mixed-use, mixed-income neighborhood, including public housing units, would provide rental and home ownership opportunities for a broad cross-section of families and individuals. Proposed commercial uses would generate new jobs for the local economy, and revenue for local businesses and workers.

In addition, the Proposed Master Plan has been designed to meet the following goals:

maintain significant open space and existing trees;
manage stormwater quantity and improve stormwater quality;
provide a catalyst and model for future development; and
reduce street widths to help reduce impervious surface.

4.15 LOCAL SHORT TERM USES OF THE ENVIRONMENT & LONG TERM PRODUCTIVITY

Implementation of the *Proposed Master Plan* or *Design Alternative Master Plan* would involve trade-offs between short-term environmental losses and long-term gains. Short-term construction effects would include temporary displacement and relocation of residents, generation of noise, particulate air pollution, and inconvenient traffic conditions. Short-term soil erosion and water quality impacts may also occur during and shortly after construction. However, mitigation measures would be incorporated into the design and approvals to minimize these potential impacts.

The *Proposed Master Plan* would balance efficient land use, enhanced design and preservation of valuable natural features. Higher densities would use urban land more efficiently, and would help the City of Bremerton achieve its population and housing objectives under the Growth Management Act. Housing affordable to a cross section of the population, including public housing for low income persons, would provide attractive rental and homeownership opportunities, Increased employment opportunities would be provided on-site, and increased spending for goods and services by residents would support local businesses and foster economic development. Redevelopment would remove the blighted condition of the site and create a modern urban community.

5. COORDINATION WITH AGENCIES & TRIBES

5. COORDINATION WITH AGENCIES & TRIBES

The BHA has initiated consultation with agencies and tribes regarding permit requirements and to identify any areas of concerns regarding the potential environmental impacts of the Proposed Master Plan. The following correspondence is included to document this initial outreach:

Suquamish Tribe. March 9, 2006. Initiation of consultation.

State Historic Preservation Officer. March 10, 2006. Initiation of consultation.

Department of Archaeology & Historic Preservation. March 14, 2006. Concurring with Area of Potential Effect (APE).

Suquamish Tribe. March 15, 2006. Letter identifying archaeological resources as a concern.

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Housing Authority of
The City of Bremerton

STATE OF WASHINGTON

DEPARTMENT OF ARCHAEOLOGY & HISTORIC PRESERVATION

1063 S. Capitol Way, Suite 106 • Olympia, Washington 98501
Mailing address: PO Box 48343 • Olympia, Washington 98504-8343
(360) 586-3065 • Fax Number (360) 586-3067 • Website: www.dahp.wa.gov

March 14, 2006

Mr. David W. Gitch
Housing Authority of City of Bremerton
P.O. Box 4640
Bremerton, Washington 98312

In future correspondence please refer to:
Log: 031406-04-HUD
Property: Westpark Redevelopment
Re: Archaeology - APE Concur

Dear Mr. Gitch:

We have reviewed your letter and map provided to our office for the above referenced project. Thank you for your description of the area of potential effect for the project (APE). We concur with the definition of the APE. We look forward to the results of your cultural resources survey efforts at Westpark, your consultation with the concerned tribes, and receiving the survey data and report. We would appreciate receiving any correspondence or comments from concerned tribes or other parties that you receive as you consult under the requirements of 36CFR800.4(a)(4) and the survey report when it is available.

These comments are based on the information available at the time of this review and on behalf of the State Historic Preservation Officer (SHPO) in conformance with Section 106 of the National Historic Preservation Act and its implementing regulations 36CFR800. Should additional information become available, our assessment may be revised. Please note that DAHP has developed a set of cultural resource reporting guidelines. You can obtain a copy of these guidelines from our web site.

Thank you for the opportunity to review and comment. Should you have any questions, please feel free to contact me at 360-586-3073 or greg.griffith@dahp.wa.gov.

Sincerely,

Greg Griffith

Gregory Griffith
Deputy State Historic Preservation Officer

HOUSING AUTHORITY OF THE CITY OF BREMERTON

March 9, 2006

Mr. Leonard Forsman, Chairman
Suquamish Tribe
P.O. Box 498
Suquamish, WA 98392-0498

Subject: Bremerton Housing Authority / Westpark Redevelopment

Dear Chairman Forsman:

The Bremerton Housing Authority (BHA) will receive funding from the U.S. Department of Housing and Urban Development to continue redevelopment of Westpark, a low income residential housing neighborhood on the west side of Bremerton in Kitsap County. Last year, BHA consulted with the Suquamish Tribe about the Firs II project that was Phase 1 of the redevelopment. The current redevelopment plan includes the remainder of Westpark (Figure 1). BHA has determined that continued redevelopment of Westpark is an undertaking and therefore subject to Section 106 to the National Historic Preservation Act of 1966, as amended (NHPA).

Westpark is in the SE¼ of Section 16 and the NE¼ of Section 21, Township 24 North, Range 1 East and is west of Oyster Bay Avenue, south of Kitsap Way (State Route 310), and north of State Route 3. The existing housing was built in 1940-41 by the BHA for workers at the Puget Sound Naval Shipyard. Although the current redevelopment design has not been finalized, most or all of the existing housing will be razed to accommodate construction of new residential, commercial, and retail buildings and for open space. Utilities will also be upgraded or replaced including the storm water main and outfall at Oyster Bay.

Pursuant to compliance with Section 106 of the NHPA and 36 CFR 800.2 (c)(4), BHA is hereby initiating consultation for this project. BHA invites you to comment on the project's Area of Potential Effect (APE) which is defined as approximately 75 acres within the Westpark housing development and the route of the storm water main and outfall (Figure 1)

Your response to this letter by April 10, 2006 is greatly appreciated. Please contact me if you have any questions. Thank you.

Sincerely,

David W. Gitch

David Gitch
Executive Director

Enclosure
cc: Dennis E. Lewarch - Archaeologist, The Suquamish Tribe

345 6th Street, Ste. 200 • P.O. Box 4640 • Bremerton, WA 98312 • Phone: (360) 479-3694 • TDD (360) 377-8606 • Fax: (360) 377-5355

HOUSING AUTHORITY OF THE CITY OF BREMERTON

March 10, 2006

Dr. Allyson Brooks
State Historic Preservation Officer
Department of Archaeology and Historic Preservation
P.O. Box 48343
Olympia, WA 98504-8343

Subject: Bremerton Housing Authority
Westpark Redevelopment

Dear Dr. Brooks:

The Bremerton Housing Authority (BHA) will receive funding from the U.S. Department of Housing and Urban Development to continue redevelopment of Westpark, a low income residential housing neighborhood on the west side of Bremerton in Kitsap County. Last year, BHA consulted with your office about the Firs II project that was Phase 1 of the redevelopment (see DAHP Log No. 070805-10-HUD). The current redevelopment plan includes the remainder of Westpark (Figure 1). BHA has determined that continued redevelopment of Westpark is an undertaking and therefore subject to Section 106 to the National Historic Preservation Act of 1966, as amended (NHPA).

Westpark is in the SE¼ of Section 16 and the NE¼ of Section 21, Township 24 North, Range 1 East and is west of Oyster Bay Avenue, south of Kitsap Way (State Route 310), and north of State Route 3. The existing housing was built in 1940-41 by the BHA for workers at the Puget Sound Naval Shipyard. Although the current redevelopment design has not been finalized, most or all of the existing housing will be razed to accommodate construction of new residential, commercial, and retail buildings and for open space. Utilities will also be upgraded or replaced including the storm water main and outfall at Oyster Bay.

Pursuant to compliance with Section 106 of the NHPA and 36 CFR 800.2 (c)(4), BHA is hereby initiating consultation for this project. BHA invites you to comment on the project's Area of Potential Effect (APE) which is defined as approximately 75 acres within the Westpark housing development and the route of the storm water main and outfall (Figure 1)

BHA has also initiated consultation with the Suquamish Tribe. Please contact me if you have any questions. Thank you.

Sincerely,

David W. Gitch

David Gitch
Executive Director

Enclosure

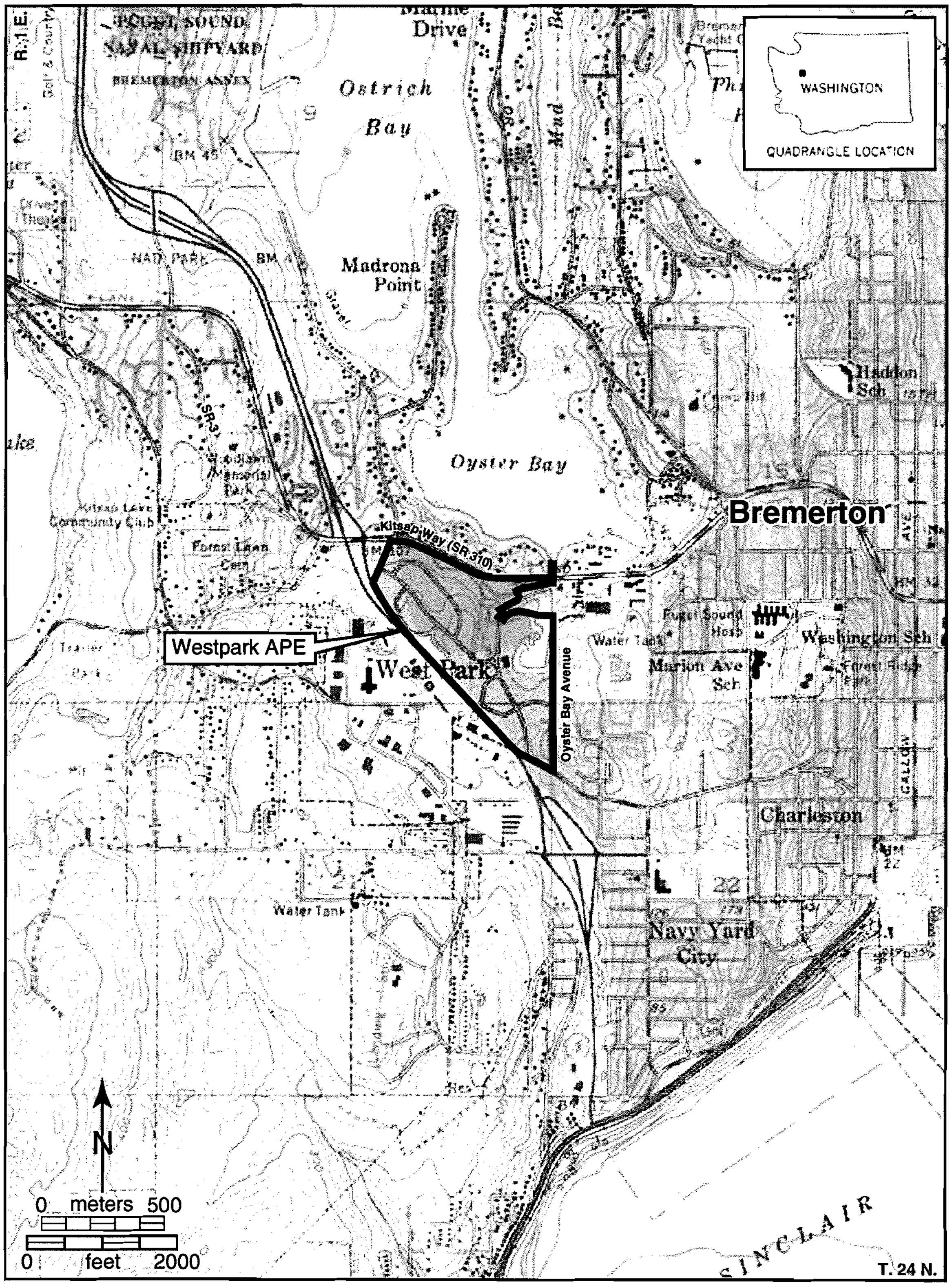

Figure 1. Westpark Area of Potential Effect (APE) (USGS Bremerton West, WA, 7.5' Quad., 1953, revised 1981).

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THE SUQUAMISH TRIBE

P.O. Box 498 Suquamish, Washington 98392

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Housing Authority of
The City of Bremerton

March 15, 2006

Mr. David W. Gitch, Executive Director
Housing Authority of the City of Bremerton
P.O. Box 4640
Bremerton, WA 98312

RE: Bremerton Housing Authority
Westpark Redevelopment
Suquamish Tribe Reference: 06-3-13-1

Dear Mr. Gitch:

Thank you for your continued consultation with the Suquamish Tribe regarding the Westpark Redevelopment Project in Bremerton, Washington. The Area of Potential Effect (APE) is an area used traditionally by the Suquamish Tribe, and four Suquamish place names occur adjacent to, or in, the APE, which documents intensive Tribal land use during the ethnographic period.

The Suquamish Tribe requests that the City of Bremerton secure the services of a Professional Archaeologist to review project plans, to assess the kinds and depths of subsurface ground disturbing activities that will occur, to conduct a cultural resources assessment of the APE, and to develop consultation protocols, construction monitoring protocols, and an unanticipated discovery plan for the project.

The Washington State Department of Archaeology and Historic Preservation provides guidelines for cultural resources reports in the State of Washington. A cultural resources assessment typically includes:

- A review of soil boring records and other data on the environment and soils of an APE
- A review of historic maps, ethnographies, histories, and archival information
- A summary of known Traditional Cultural Places and evidence of Tribal consultation regarding unrecorded traditional places
- A review and assessment of nearby archaeological studies, including development of implications or estimates of the probability for archaeological resources in the APE based on patterns in the distribution of recorded sites and the kinds of environments that occur in the APE
- A review of construction excavation plans and techniques to determine where construction excavation may intersect native soils that could have archaeological deposits
- Recommendations for additional cultural resource investigations based on the presence of recorded archaeological resources and Traditional Cultural Properties, probability estimates for unrecorded archaeological deposits that may occur, and additional consultation that may be necessary to document Tribal use of the APE

The Suquamish Tribe looks forward to continued dialog and consultation with the City of Bremerton regarding the Westpark Redevelopment Project.

Please contact me at (360) 394-8529 or via e-mail at dlewarch@suquamish.nsn.us if you ha questions regarding the requests.

Sincerely,

Dennis E. Lewarch

Dennis E. Lewarch
Archaeologist

Cc: Stephenie Kramer, Assistant State Archaeologist, Department of Archaeology and Historic Preservation

<u>APPENDICES</u>

A. STORMWATER REPORT
B. EARTH
C. PLANTS & ANIMALS
D. FISHERIES
E. TRANSPORTATION
F. AESTHETICS

A. STORMWATER REPORT

Technical Information Report (TIR)
Westpark Redevelopment

Prepared for

Marathon Development
409 Pacific Avenue, Suite 301
Bremerton, WA 98337

Prepared by

Parametrix
1231 Fryar Avenue
Sumner, WA 98390-1516
253-863-5128
www.parametrix.com

October 2006 | 237-5301-002 (01/02)

CITATION

Parametrix. 2006. Technical Information Report (TIR)
Westpark Redevelopment. Prepared by Parametrix,
Sumner, Washington. October 2006.

CERTIFICATION

The technical material and data contained in this document were prepared under the supervision and direction of the undersigned, whose seal, as a professional engineer licensed to practice as such, is affixed below.

JEFFREY L. COOP
STATE OF WASHINGTON
28493
REGISTERED
PROFESSIONAL ENGINEER
EXPIRES 8/31/08

11/2/06
Prepared by Jeffrey L. Coop, P.E.

11/2/2006
Checked by Joy Angsioco, P.E.

11/2/06
Approved by Damon McAlister, P.E.

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APPENDICES

KEY TERMS

BHA	Bremerton Housing Authority
BMPs	Best Management Practices
City	City of Bremerton
DCS	Design and Construction Standards
Ecology	Department of Ecology
ESC	Erosion and Sediment Control
HSG	Hydrologic Soil Group
JARPA	Joint Aquatic Resources Permit Application
KCSWDM	King County Surface Water Design Manual
NPDES	Nonpoint Pollution Discharge Elimination System
O&M	operation and maintenance
SBUH	Santa Barbara Urban Hydrograph
SMMWW	Stormwater Management Manual for Western Washington
SMODM	Stormwater Management Ordinance and Design Manual
TDAs	Threshold Discharge Areas
TIR	Technical Information Report
TMDL	Total Maximum Daily Load
USACE	U.S. Army Corps of Engineers
WSDOT	Washington State Department of Transportation
WWHM2	Western Washington Hydrology Model Version 2

1. PROJECT OVERVIEW

1.1 PROJECT DESCRIPTION

The Westpark Redevelopment Project involves redeveloping the existing Westpark area within the city of Bremerton. This area is currently under the authority of the Bremerton Housing Authority (BHA). The redevelopment is being designed and implemented by Marathon Development under contract to BHA. This Technical Information Report (TIR) discusses the 15 percent drainage design that has been prepared to mitigate for the potential stormwater impacts associated with the project. The TIR has been prepared in a format similar to that required in the King County Surface Water Design Manual (KCSWDM) and is based on Section 4-50 of the City of Bremerton (City) Design and Construction Standards (DCS).

Major elements of the Westpark Redevelopment Project include:

- Clearing and grading approximately 76 acres of existing developed area, including removal of existing single and multifamily residential units, existing lawns, existing roadway, parking areas, and sidewalks.
- Construction of approximately 27,000 linear feet of new roadway.
- Construction of approximately 15,800 linear feet of new water lines.
- Construction of approximately 15,300 linear feet of new sanitary sewers.
- Construction of approximately 18,200 linear feet of new storm drains.
- Construction of approximately six stormwater management facilities.
- Construction of commercial, single family residential, and multifamily residential units.
- Construction of a new stormwater discharge system at Oyster Bay north of the intersection of Kitsap Way and Oyster Bay Avenue.

The project currently does not include any modifications to Kitsap Way or Oyster Bay Avenue. If such improvements are required, the drainage design will need to be updated to reflect the additional project elements.

Drainage design has been based on the following standards in order of priority. Various sections of this report address the specific design standards used.

- Division 4 of the City's DCS.
- Chapter 15.04 of the City's Municipal Code.
- KCSWDM as referenced by Division 4-50 of the City's DCS.
- Kitsap County's Stormwater Management Ordinance and Design Manual (SMODM).

The Firs II assisted housing project is located within the northeasterly portion of the Westpark area and is currently under construction. A new, larger pipe crossing under Kitsap Way (as discussed further in this TIR) is scheduled to be constructed during the Firs II project. Additionally, a 24-inch-diameter storm drain along the westerly side of Oyster Bay Avenue is a part of the Firs II project construction. As a part of the Westpark Redevelopment Project, the 24-inch-diameter storm drain will be extended further south to accommodate future connections from the proposed storm drain system.

1.2 EXISTING DRAINAGE

The Westpark Redevelopment Project includes the area bounded by Kitsap Way, Oyster Bay Avenue, SR 3, and Arsenal Way. The total area within this boundary is approximately 81 acres. Stormwater within the site is conveyed by overland flow and through a rudimentary system of open ditches and enclosed drainage pipes. Outside of the project area, stormwater is conveyed away from the site in open ditches and enclosed drainage systems. The area currently contains a mixed use of commercial, single family residential, multifamily residential, and multi-use facilities.

Stormwater leaves the project area at the locations listed below. Accordingly, the Westpark area has been divided into five main basins and three Threshold Discharge Areas (TDAs). See Appendix A for a basin exhibit. The basin delineation is based on current mapping.

- Kitsap Way Basin is along the northerly portion of the project area and includes Kitsap Way. Stormwater from the roadway is collected and conveyed through an existing drainage system. Although stormwater from Kitsap Way does not enter the project area, stormwater from the project area and Kitsap Way combines downstream. Stormwater from Kitsap Way ultimately discharges into Oyster Bay through an existing outfall. The location of the discharge point is unknown but is thought to be 300 to 500 feet into Oyster Bay. Modifying Kitsap Way or the existing drainage system within Kitsap Way is not proposed as a part of this project.
- Basin 2 is within the central portion of the project area. Basin 2 discharges from Westpark through two existing storm drains under Kitsap Way. The Basin 2 westerly crossing is through a 24-inch storm drain approximately 150 feet west of Weslon Place. The drainage system along Weslon Place discharges into Oyster Bay approximately 1,300 feet west of the outfall from Oyster Bay Road. The Basin 2 easterly crossing is through an 18-inch storm drain under Kitsap Way approximately 250 feet west of Oyster Bay Avenue. This storm drain connects with the Kitsap Way Basin pipe system noted above and discharges into Oyster Bay. Basin 2 is similar in location to Basin 2 as shown in the October 2004 Stormwater TIR (AHBL). However, the basin size has been increased for this TIR based on specific project information.
- Basin 3 is located along the easterly portion of the project area adjacent to Oyster Bay Avenue. Basin 3 discharges from Westpark through an existing storm drain crossing Kitsap Way at Oyster Bay Road. The pipe diameter currently under Kitsap Way is a 12-inch-diameter pipe that transitions to a 24-inch-diameter pipe on the north side of Kitsap Way. The storm drain continues north and discharges into Oyster Bay. Basin 3 is similar in location to Basin 3 as shown in the October 2004 Stormwater TIR (AHBL). However, the basin size has been adjusted for this TIR based on specific project information. Also, only the portion of Basin 3 on the west side of Oyster Bay Avenue is included in the storm drainage design for the project.
- Basin SE is located in the southeasterly portion of the project area. Basin SE discharges from the project area through an existing storm drain system that appears to connect to the Washington State Department of Transportation (WSDOT) drainage system for SR 3. Sinclair Inlet is likely the receiving waterbody for the WSDOT drainage system. A portion of Basin SE will continue to discharge into the WSDOT drainage system. However, a portion of Basin SE will be rerouted to Basin 3 and discharge into Oyster Bay.

- Basin OBC ultimately discharges into Ostrich Bay Creek and Ostrich Bay. Basin OBC is located in the westerly portion of the project area. Stormwater enters an enclosed regional drainage system that conveys stormwater from the City and WSDOT areas and discharges into Ostrich Bay Creek. No changes are proposed to the overall size of Basin OBC since it discharges into a creek.

Based on the mapping currently available, the Westpark site contains three Threshold Discharge Areas (TDAs):

- *Oyster Bay:* Kitsap Way Basin, the easterly portion of Basin 2, and Basin 3 combine into the same drainage system on the north side of Kitsap Way at Oyster Bay Avenue. The outfall for the westerly portion of Basin 2 at Weslon Place is also within Oyster Bay and is less than 1/4 mile from the outfall at Oyster Bay Avenue. Therefore, the westerly portion of Basin 2 is considered to be within the same TDA as the Kitsap Way Basin, the easterly portion of Basin 2, and Basin 3.
- *Sinclair Inlet:* Basin SE is considered to be a separate TDA because stormwater from this basin does not combine with stormwater from other basins within 1/4 mile from the project area.
- *Ostrich Bay:* Basin OBC is considered a separate TDA because stormwater from this basin does not combine with stormwater from other basins within 1/4 mile from the project area.

The grading and changes in stormwater conveyance systems may change the sub-basins within the project area from existing conditions. However, these proposed changes should not alter the overall number and size of TDAs, with the exception of a portion of Basin SE.

Stormwater from the on-site area combines with stormwater from off-site areas in the conveyance systems outside of the project area. There are no known sources of off-site stormwater that is routed through the existing Westpark drainage system.

Based on observations of the topographical map of the existing site, the amount of impervious cover under existing conditions for the portions of Westpark that are currently developed is approximately 50 to 60 percent. Based on project area land use concept plans, the amount of post-project impervious cover may vary from 70 to 90 percent. The developed coverage used for the calculations prepared for this TIR varies by basin and is reflected in Table 3-1, page 3-2. Mitigation for the increase in stormwater flows and downstream water quality impacts is described in Section 2 of this TIR. The mitigation design will be further developed as the project proceeds.

2. CONDITIONS AND REQUIREMENTS SUMMARY

2.1 DISCHARGE AT THE NATURAL LOCATION

The project area will continue to have three separate TDAs and will maintain existing discharge points. Although the westerly portion of Basin 2 will be routed to the new crossing at Kitsap Way, the receiving water body will not change.

2.2 OFF-SITE ANALYSIS

A downstream analysis was not prepared for this project. The drainage design has been prepared to mitigate for potential impacts associated with the additional impervious area within the project area. Mitigation for potential downstream impacts is discussed further in this TIR.

2.3 FLOW CONTROL

Flow control is typically required based on potential stream impacts or impacts to existing downstream conveyance systems. The Kitsap Way Basin, Basin 2, and Basin 3 are exempt from flow control since a new on-site conveyance system will be constructed and since improvements to the downstream conveyance system will be constructed. If these downstream conveyance system improvements are not constructed, on-site flow control within these three basins will be required. Flow control will be provided for Basin OBC since this basin discharges to a stream. Flow control is not proposed for Basin SE because the post-project impervious area discharging to the off-site system will match the existing amount of impervious surface. The remaining portion of Basin SE will be routed to Basin 3 and the Kitsap Way crossing. Adverse impacts to Sinclair Inlet are not anticipated for rerouting a portion of Basin SE to Oyster Bay.

The flow control in Basin OBC is subject to change in future design phases as the project site design changes.

See Section 3 for further information regarding flow control.

2.4 CONVEYANCE SYSTEM

Due to the extensive regrading of the existing site, a new conveyance system will be constructed throughout the project area. The conveyance system has been laid out based on requirements in the City's DCS. The conveyance system layout is subject to change in future design phases as the project site design changes.

The discharge from Basin 2, Basin 3, and Basin SE is contingent upon construction of the proposed storm drain under Kitsap Way at Oyster Bay Avenue. The storm drain will need to be constructed as part of the Firs II project to provide adequate capacity for the off-site system. This project has been directed to review impacts only for the Kitsap Way crossing and the Oyster Bay outfall. No other impacts to off-site systems have been considered.

See Section 4 for further information regarding the conveyance system design.

2.5 EROSION AND SEDIMENT CONTROL

Erosion and sediment control design plans will be prepared in future design phases as the project proceeds. The Erosion and Sediment Control (ESC) plans will need to be implemented during construction.

See Section 7 for further information.

2.6 WATER QUALITY

The project will provide basic water quality treatment Best Management Practices (BMPs). Enhanced treatment BMPs are not required due to the receiving water bodies and/or on-site land uses.

See Section 3 for further information.

2.7 FLOODPLAIN/FLOODWAY DELINEATION

The project is not within a delineated floodplain.

3. FLOW CONTROL AND WATER QUALITY FACILITY ANALYSIS AND DESIGN

3.1 WATER QUALITY

Currently, there are no known existing water quality treatment facilities within the site. Stormwater treatment for the post-project conditions will be provided in accordance with Title 15.04.042 of the City's municipal code. Stormwater treatment is required whether or not flow control is required. Water quality treatment is required for all post-project areas rather than just the additional impervious surface because of the amount of redevelopment.

Water quality treatment facilities will be designed based on the King County Surface Water Design Manual as referenced in Division 4 – Storm Drainage of the City's Public Works Standards. Washington State Department of Ecology (Ecology) has developed hydrologic simulation software to calculate flow rates and volumes for the design of water quality treatment facilities. This software, Western Washington Hydrology Model Version 2 (WWHM2), was used for the project because it is the most current software developed for consistency with the requirements of Ecology's 2005 Stormwater Management Manual for Western Washington (SMMWW). Single event methodology is allowed by City Code; however, this approach may not meet potential requirements in the future from the Nonpoint Pollution Discharge Elimination System (NPDES) Phase II permit.

Oyster Bay and Ostrich Bay are shown as Categories 1 and 2 waters, respectively, in Ecology's 303(d) list (see Appendix B). A Category 1 listing means the test results meet the requirements for the specified pollutant of concern. A Category 2 listing means there is some water quality concern but not extensive enough to require a Total Maximum Daily Load (TMDL) plan. Ostrich Bay Creek is shown as a Category 5 waterbody. Pollutants are mercury, fecal coliform, and dissolved oxygen. A Category 5 listing requires preparation of a TMDL plan.

No specialized stormwater treatment techniques are proposed because Oyster Bay and Ostrich Bay are Categories 1 and 2 waterbodies, respectively. Although Ostrich Bay Creek is a Category 5 waterbody, the project is not anticipated to exacerbate existing water quality problems. Zoning for Basin OBC would need to prohibit any industrial activities that could be a source of mercury. To assist in mitigating fecal coliform and dissolved oxygen, any open water quality treatment facilities should be fenced off and the banks heavily vegetated to prevent access by animals or other sources of fecal coliform and oxygen-demanding compounds. If a future TMDL requires more restrictive land use, it may become necessary that the zoning prohibit any domestic animals from the portion of the project area that discharges to Ostrich Bay Creek.

The drainage design is based on providing basic water quality treatment facilities, such as wet ponds, wet vaults, or biofiltration swales. The type, size, and location of water quality treatment facilities are subject to change in future design phases as the project site design proceeds.

Water quality treatment calculations are included in Appendix C. Table 3-1 below summarizes the areas and volumes used in the water quality calculations for the project area. The treatment volumes are based upon the area within each basin and do not reflect subdividing the basins into individual sub-basins. During future design phases, it may be determined that such subdivision is necessary. If that is the case, basic water quality treatment facilities will be designed in accordance with the criteria discussed in this TIR. Multiple conveyance systems will be designed as needed to avoid combining treated and untreated stormwater and routing flows to water quality treatment Best Management Practices (BMPs) that are sized for a smaller sub-basin.

Table 3-1. Summary of Water Quality Treatment[a]

Description	Unit	Basin 2	Basin 3[b]	Basin OBC	Basin SE[b]
Basin Location	N/A	Central Project Area	Easterly Project Area	Northwest Project Area	Southeast Project Area
Area Remaining as Forested Cover	acre	4.45	0	0	0
Redeveloped Area	acre	32.53	37.32	4.62	3.97
Assumed Post-Project Impervious Cover[c]	percent	76	74	90	83
Post-Project Impervious Cover	acre	27.96	25.60	4.16	3.30
Post-Project Pervious Cover	acre	9.02	8.78	0.46	0.66
On-line Design Water Quality Volume	acre-foot	6.25	6.38	0.88	0.72
On-line Design Water Quality Flow Rate[d]	cfs[e]	6.63	6.75	N/A	N/A
On-line Design Water Quality Flow Rate	gpm[f]	2,980	3,030	N/A	N/A
Wet Pond					
Cell 1 Design Depth	foot	8	4	4	4
Cell 2 Design Depth	foot	7	2	2	3
Side Slopes	H:1V	3	3	3	3
Cell 1 Design Water Surface Area (including access allowance)	sq ft[g]	18,840	28,960	5,300	4,550
Cell 2 Design Water Surface Area	sq ft	29,740	92,950	12,350	7,310
Biofiltration Swale					
Longitudinal Slope	percent	2%	2%	N/A	N/A
Side Slopes	H:1V	4	4	N/A	N/A
Bottom Width	foot	10	10	N/A	N/A
Depth (including freeboard for capacity check)	foot	1.4	1.6	N/A	N/A
Top Width at Freeboard	foot	21	23		
Stormfilter™ and Vortsentry™ Treatment Systems					
Stormfilter Cartridges[h]	number	413	413	N/A	N/A
Vortsentry[i]	diameter	12	12	N/A	N/A

[a] Excludes Kitsap Way Basin since improvements to Kitsap Way are not included.

[b] Values reflect routing 2.933 acres from Basin SE to Basin 3 and 3.967 acres remaining in Basin SE.

[c] Pervious area modeled as till soils.

[d] From WWHM2. Adjusted for 15-minute time series.

[e] cfs = cubic foot per second.

[f] gpm = gallons per minute.

[g] sq ft = square foot

[h] Based on 7.5 gpm / cartridge per Ecology.

[i] Based on 35 gpm / sq ft per Ecology.

3.2 FLOW CONTROL

Without mitigation, increases in peak flow rates and volumes are anticipated for all three TDAs. The drainage design reflects the following mitigation for each TDA:

- *Oyster Bay:* To mitigate for the increases in peak flow rates in the project area, a new pipe crossing will be constructed near the intersection of Kitsap Way and Oyster Bay Avenue. In addition, the existing 18-inch storm drain west of Oyster Bay Avenue may need to be increased. Also, the existing outfall will need to be replaced with a new discharge structure constructed at Oyster Bay. The outfall is discussed further below. Flow rates for the pipe crossings were calculated using the Santa Barbara Urban Hydrograph (SBUH) methodology in accordance with City criteria. Calculations are included in Appendix D. To provide the greatest project flexibility, the pipe crossings were sized based on all five basins. However, subsequent to the pipe crossing sizing calculations, only the Kitsap Way Basin, Basin 2, Basin 3, and a portion of Basin SE within the project area will be routed to the new pipe crossing. The pipe crossing includes the portion of Basin 3 that is outside the project area and for off-site Basin 4 as delineated in the October 2004 Stormwater Technical Information Report (AHBL). The pipe crossing calculations do not include any existing or future upstream flow control. Table 3-2 summarizes the design for the new pipe crossings. The 36-inch storm drain would be located at the intersection of Kitsap Way and Oyster Bay Avenue. The 24-inch storm drain would replace the existing 18-inch storm drain. The need for replacing the existing 18-inch storm drain will be reviewed further in future design phases. Replacing the existing 18-inch storm drain is contingent on how the 36-inch storm drain is constructed in the Firs II project, the developmental coverage, and how much of Basins OBC and SE are routed to the crossing.

Table 3-2. Summary of Kitsap Way Storm Drain Crossing

Basin	Impervious Area (ac)	Pervious Area (ac)	Total (ac)
Kitsap Way Basin	2.62	0.00	2.62
Basin 2	27.96	9.02	36.98
Basin 3[a]	30.80	13.20	44.00
Basin OBC	4.16	0.46	4.62
Basin SE	5.75	1.15	6.90
Off-Site Basin 4 (east of Oyster Bay Avenue)	9.50	9.50	19.00
Total	**80.78**	**33.34**	**114.12**
SBUH Parameters			
Pervious CN	83		
Pervious Time of Concentration (minutes)	34.6		
Impervious CN	98		
Impervious Time of Concentration (minutes)	9.5		
100-year 24-hour design event precipitation (inches)	5.5		
100-year 24-hour design flow rate (cfs)	128		
Pipe Size			
Diameter (inches)	36	24	
Slope (percent)	2.21	0.70	
Full flow capacity (cfs)[b]	108	20	

[a] For on-site area west of Oyster Bay Avenue and off-site portion of Basin 3 east of Oyster Bay Avenue.

[b] Based on Manning's n = 0.012.

- *Ostrich Bay Creek:* To mitigate for the increase in flow rates in Basin OBC, flow control is proposed. The flow control facility has been sized in accordance with the City's DCS Division 4 and Ecology's WWHM2 software. Flow control calculations are included in Appendix E. Table 3-3 summarizes the flow control sizing for Basin OBC.

Table 3-3. Summary of Ostrich Bay Creek Flow Control

Description	Unit	Basin OBC
Basin Location	N/A	Northwest Project Area
Basin Area	acre	4.62
Existing Area Modeled as Forest[a]	acre	4.62
Post-project Impervious Area	acre	4.16
Post-project Pervious Cover[b]	acre	0.46
On-line Design Water Quality Volume	acre-foot	0.88
Detention Facility[c]		
Bottom Area	square foot	40,000
Design Depth	foot	5
Side Slopes	H:1V	3
Top Area	square foot	52,620
Detention Volume	acre-foot	4.11

a Based on Bremerton Municipal Code 15.04.042(c)(6).
b Pervious area modeled as till soils.
c From WWHM2 for 50 percent of the 2-year through 50-year event flow control.

- *Sinclair Inlet:* Under existing conditions, Basin SE contains approximately 3.304- and 3.596-acres of impervious and pervious area, respectively. To avoid potential impacts to the WSDOT drainage system, the amount of post-project area that will remain in Basin SE will be limited to approximately 3.967 acres. At 83 percent impervious cover, this will allow approximately 3.304 acres of impervious surface to remain in Basin SE which is similar to existing conditions. Basin SE under post-project conditions will retain approximately 0.663 acres of pervious area. The remaining 2.933 acres will be routed to Basin 3 and to the new Kitsap Way storm drain crossing and Oyster Bay discharge structures. If portions of Basin SE are not routed to Basin 3, flow control will be needed for the on-site areas that discharge to the WSDOT drainage system.

3.3 OUTFALLS

The Westpark Redevelopment Project will impact the outfall into Oyster Bay at Oyster Bay Avenue due to increases in flow rates. Impacts to the outfall at Weslon Place are not anticipated since the on-site area will be rerouted to the outfall at Oyster Bay Road. To mitigate impacts from increases in flow rates to the outlet into Ostrich Bay Creek and Ostrich Bay, on-site flow control is proposed in Basin OBC. To mitigate for impacts into the WSDOT drainage system and Sinclair Inlet, routing a portion of Basin SE to Basin 3 is proposed.

To mitigate for the increase in flow rates through the existing outfall at Oyster Bay Road, the function of the existing outfall pipe will be replaced (see Appendix F). Based on information provided by the City, sediment accumulation has impacted the capacity of the existing outfall. Also, maintenance of the existing outfall is limited due to access constraints. To improve the maintainability of an outfall system and to provide additional capacity, a baffled outlet is currently proposed. The new baffled outlet is proposed near the shoreline rather than constructing a new outfall pipe parallel to the existing outfall. A baffled outlet is proposed rather than a new outfall pipe parallel to or replacing the existing outfall pipe based on the following:

- discharging at the existing outfall location below Mean Low Water is not required since the existing outfall may have formerly been a sanitary or combined sewer outfall;
- constructing a new outfall parallel to the existing outfall would likely have habitat impacts that would require mitigation;
- constructing a new outfall pipe parallel to or replacing the existing outfall may impact existing sanitary sewer lines in the project vicinity;
- constructing a new outfall pipe parallel to or replacing the existing outfall would require easements that extend into the bay; and,
- constructing a new outfall pipe parallel to or replacing the existing outfall would repeat the same maintainability limitations.

The baffled outlet functions to reduce discharge velocities by dissipating energy of the flows from the storm drain pipe against a concrete baffle plate inside the structure. Also, there is the potential for a permanent pool of water to form in the invert of the structure. The riprap at the structure outlet functions to reduce the erosion potential at the discharge location. The rock-lined channel from the structure to the Mean Low Water elevation is proposed to represent a more natural, stream-like discharge into the bay. Rounded cobbles are proposed to be mixed with the light loose rock in the rock-lined channel to reduce the amount of jagged edges that could impact fish species.

A discharge structure in lieu of a new storm drain outfall has been coordinated with WDFW and will be reflected in the Joint Aquatic Resources Permit Application (JARPA). Due to limited space and existing utilities, it is not possible to locate the baffled outlet upstream of the shoreline without property acquisition, clearing of land, and/or utility relocations. It is anticipated that the discharge point of the baffled outlet will be constructed along the shoreline.

The existing storm drain piping will need to be modified to accommodate the new baffled outlet. The location of existing sewer lines will need to be confirmed in the field prior to construction.

Design of the baffled outlet has been in accordance with the United States Department of the Interior Bureau of Reclamation's *Design of Small Canal Structures.*.

Table 3-4 summarizes the design of the baffled outlet. The flow rates are based on stormwater flows from the project area and off-site areas as shown in the 2004 Stormwater Technical Information Report (AHBL).

Table 3-4. Summary of Oyster Bay Outfall Baffled Outlet

Basin	Impervious Area (ac)	Pervious Area (ac)	Total (ac)
Kitsap Way Basin	2.62	0.00	2.62
Basin 2	10.18	27.36	37.54
Basin 3[a]	30.80	13.20	44.00
Basin OBC	3.79	1.62	5.41
Basin SE	4.83	2.07	6.90
Off-site Basin 1 (north portion of Kitsap Way)	0.40	0.00	0.40
Off-site Basin 4 (east of Oyster Bay Avenue)	9.50	9.50	19.00
Off-site Basin 5 (north portion of Kitsap Way)	0.48	0.00	0.48
Off-site Basin 6 (north portion of Kitsap Way)	0.46	0.00	0.46
Off-site Basin 7 (east of Oyster Bay Avenue)	16.60	13.60	30.20
Total	**79.66**	**67.35**	**147.01**
SBUH Parameters			
Pervious CN	85		
Pervious Time of Concentration (minutes)	34.6		
Impervious CN	98		
Impervious Time of Concentration (minutes)	15.1		
100-year 24-hour Design Event Precipitation (inches)	5.5		
100-year 24-hour Design Flow Rate (cfs)	129		
Baffled Outlet	**#1**		
Number of Structures	1		
Design Velocity under Baffle (feet per second, Q/A)	4		
Exterior width (foot)	14.67		
Exterior length (foot)	18.83		
Inlet Pipe Invert Elevation (foot)	6.5 (NAVD88)		
Structure Inside Invert Elevation (foot)	4.42 (NAVD88)		
Structure Discharge Elevation (foot)	8.34 (MHW)		

[a] For on-site area west of Oyster Bay Avenue and off-site portion of Basin 3 east of Oyster Bay Avenue.

4. CONVEYANCE SYSTEM ANALYSIS AND DESIGN

The preliminary conveyance system design has been prepared based on the standards listed below. The standards are listed in primary order of use. The City DCS refers to the KCSWDM in several instances. Consequently, some of the design is based on criteria in the KCSWDM.

Conveyance system components are included for the main roadways within the project area. Storm drain systems proposed within alleys allow for drainage of the alleys as well as potentially reduce the length of storm drain pipe. Some alleys are relatively long with relatively flat slopes. The conveyance system layout assumes that alleys have a V-section or a low point along one edge with inlets located along the low point of the section.

The layout of the conveyance system is based on routing stormwater to the stormwater BMPs as shown on the plans. The layout of the conveyance system will need to be adjusted in future design phases if the number and/or location of the stormwater BMPs change.

Conveyance system calculations are included in Appendix G. The conceptual conveyance system layout is included in Appendix H.

4.1 STANDARDS

The design standards used for this project included:

- *City of Bremerton Design and Construction Standards* (DCS) – Division 4, Storm Drainage.
- *King County Surface Water Design Manual* (KCSWDM).
- *Kitsap County's Stormwater Management Ordinance and Design Manual* (SMODM).

4.2 DESIGN EVENT

The design event was based upon a 25-year frequency design event; however, overtopping from the 100-year design event shall preclude creating or aggravating a severe flooding problem (DCS 4-50; KCSWDM 1.2.4.1). Therefore, the 100-year design event was used for the pipe sizing.

4.3 DESIGN METHODOLOGY

The design methodology used was the Rational or SBUH methodology for basins exceeding 10 acres (DCS 4-50; KCSWDM 3.2). The SBUH methodology was selected for consistency with Kitsap County's SMODM Section 7.3.2 since the City's DCS does not contain the parameters necessary for the Rational method. For consistency throughout the project area, SBUH methodology was used for all basins regardless of basin size.

4.4 MATERIALS

Pipe materials, culvert materials, and drainage structure materials will be specified in future design phases as the site design proceeds. The current drainage layout is based on Manning's "n" value of 0.013, which is typically used for concrete pipe.

4.5 CONNECTIONS

Storm drains are connected from catch basin to catch basin (DCS 4-50.11(6); KCSWDM Section 4.2.1.1).

4.6 PROFILES

Profiles, depths of cover, and the need for downsizing of pipes will be determined during future design phases as the site design proceeds.

4.7 VELOCITY

The velocity used for this design was 2 feet per second minimum full-flow (DCS 4-50.11(2).

4.8 PIPE DIAMETER

A 12-inch-minimum pipe diameter was used in the right-of-way (KCSWDM 4.2.1.1; Kitsap County's SMODM 7.7.6).

4.9 STRUCTURE SPACING

The following structure spacing was used in the design:

- A 300-foot-maximum distance between structures (DCS 4-50.12(1).
- Through-curb inlets proposed at sags (SMODM 7.8).
- A 150-foot spacing for road slopes less than 1 percent (SMODM 7.8).
- A 200-foot spacing for road slopes between 1 and 3 percent (SMODM 7.8).
- A 300-foot spacing for road slopes exceeding 3 percent (SMODM 7.8).
- For this project, inlet spacing may be more frequent than the spacing indicated above due to storm drain connections from side streets or alleys and curves.

4.10 SBUH METHODOLOGY

The following items were included in the SBUH methodology:

- Precipitation of 5.5 inches of rainfall for a 100-year, 24-hour design event (SMODM Figure 5-6).
- Soil Types and Hydrologic Soil Group (HSG): C (see Table 4-1 below).
- CN = 81, Young second growth or brush (SMODM Table 5-2).
- CN = 86, Open spaces, grass cover on >/= 75 percent of area (SMODM Table 5-2).
- CN = 83, Mix of pervious cover (SMODM Table 5-2).
- CN = 98, Impervious surfaces (SMODM Table 5-2).
- ns = 0.011, Smooth surfaces (SMODM Table 5-3).
- ns = 0.15, Short prairie grass and lawns (SMODM Table 5-3).
- ns = 0.40, Woods or forest with light underbrush (SMODM Table 5-3).

- ks = 5, Brushy ground with some trees (SMODM Table 5-3).
- ks = 11, Short grass, pasture, and lawns (SMODM Table 5-3).
- ks = 27, Paved and gravel areas (SMODM Table 5-3).

Table 4-1. Soil Types[a]

Soil #	Description	Hydrologic Soil Group
1	Alderwood very gravelly sandy loam, 0 to 6 percent slopes	C[b]
3	Alderwood very gravelly sandy loam, 15 to 30 percent slopes	C
10[c]	Dystric Xerothents, 45 to 70 percent slopes	A+C+D[d]
63	Urban land - Alderwood complex, 0 to 8 percent slopes	N/A[e]

a Based on USDA SCS Soil Survey of Kitsap County Area, Washington, 1980.

b C = Moderately high runoff potential; typically modeled as Till soils in WWHM2.

c Soil #10 not listed in TR 55 Appendix A HSG based on soil unit description which includes Indianola, Kitsap, Kapowsin, Harstine, and Poulsbo soils.

d A = Low runoff potential; typically modeled as Outwash soils in WWHM2; D = High runoff potential; typically modeled as Till soils in WWHM2; and A+C+D = Combination of HSG A, C, and D soils (modeled as Till soils in WWHM2 due to the prominence of HSG C and D soils).

e N/A = Not classified due to past disturbance of the soil layers; modeled as Till soils in WWHM2 due to the compaction that typically occurs for disturbed urban lands.

5. SPECIAL REPORTS AND STUDIES

Portions or all of the project area have been included in the following documents prepared by others:

- Stormwater Technical Information Report, October 2004. AHBL.
- Westpark Subarea Plan, final submittal scheduled for October 2006. Huckle-Weinman.
- Westpark Redevelopment EIS, draft submittal scheduled for December 2006. Huckle-Weinman.

6. OTHER PERMITS

Permits that may be applicable are identified as follows:

- Clearing and Grading.
- Right-of-Way Use.
- Washington State Department of Ecology Notice of Intent Application Form, Construction Stormwater General Permit.
- Hydraulic Project Approval (HPA) due to construction within the MHM of Oyster Bay.
- U.S. Army Corps of Engineers (USACE) due to construction of the new stilling basins and removal of the existing outfall.

The HPA and USACE permits will be acquired through the JARPA. The JARPA will be published separately from this TIR.

7. EROSION AND SEDIMENT CONTROL ANALYSIS AND DESIGN

Erosion and Sediment Control (ESC) Best Management Practices (BMPs) will be determined in future design phases as the project proceeds. ESC BMPs are contingent upon construction phasing, construction timing, and the type of development within a specific area. The following ESC BMPs will likely be required:

- Construction of silt fences at clearing and grubbing limits.
- Construction of high visibility plastic fencing around sensitive areas which are to remain undisturbed.
- Installation of storm drain inlet protection at the proposed and existing catch basins.
- Installation of outlet protection for storm drain discharges.
- Temporary and permanent cover measures.
- Temporary stormwater by-pass systems.
- Temporary sediment traps or ponds.
- Stabilized construction entrances at staging areas.
- Dust control.
- Wet season requirements.
- ESC BMP maintenance and identification of the ESC Supervisor.
- Removal of ESC BMPs after construction completion and regrading/stabilization of accumulated sediment.

Because of the high development density of the project, it may not be possible to retain sufficient area to construct typical temporary sediment traps or ponds. If that is the case, the following special ESC measures may be required:

- Chitosan-enhanced filtration, such as provided by Natural Site Solutions.
- Electrocoagulation, such as provided by Water Tectonics, Inc.

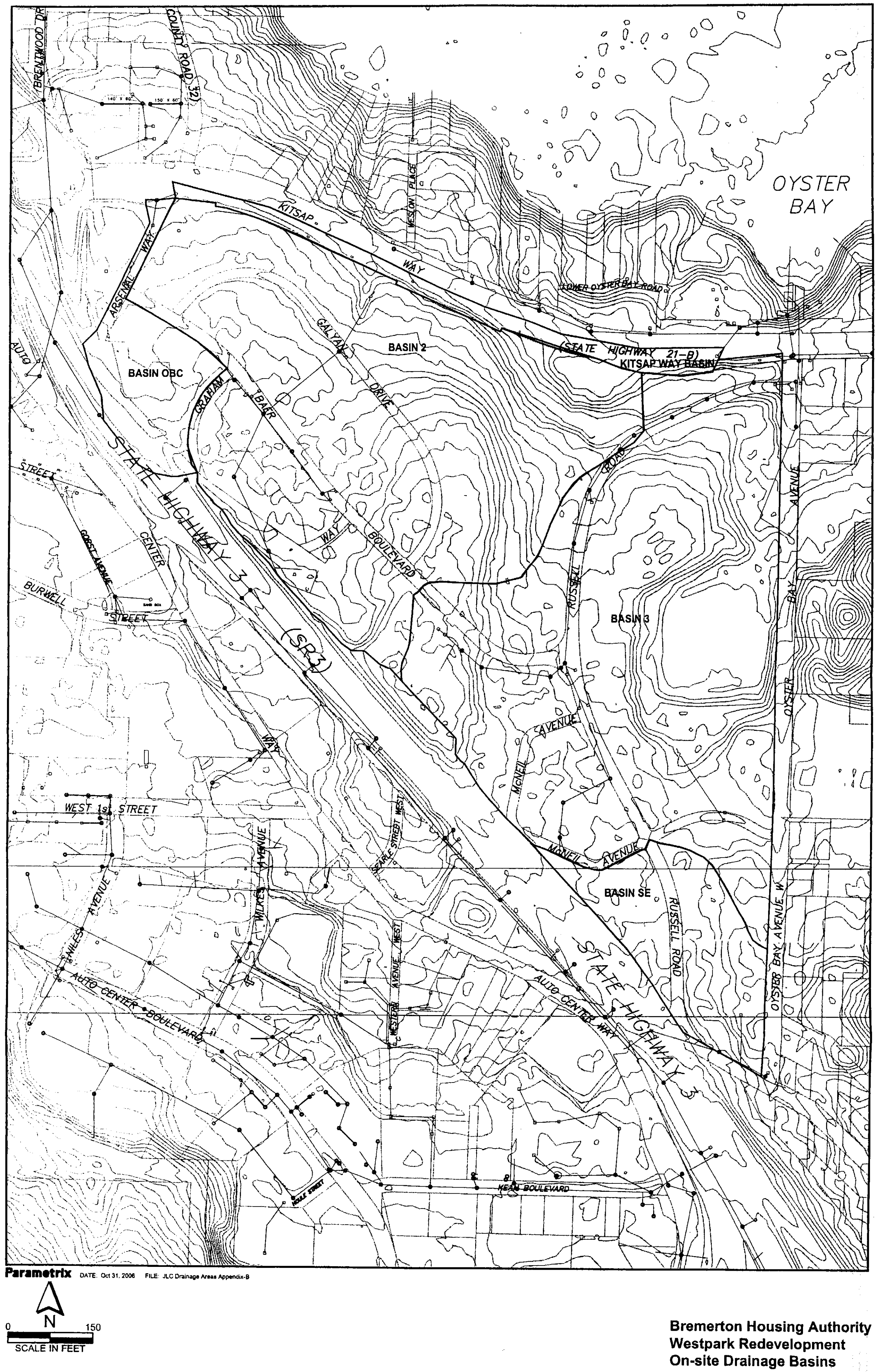
8. OPERATIONS AND MAINTENANCE MANUAL

Proper operation and maintenance (O&M are required for the conveyance, flow control, and water quality treatment BMPs to function as intended. Responsibility for O&M will need to be determined but may be performed by BHA or the City's Public Works staff. O&M requirements will need to be determined during future design phases based on the final storm system design. The type and frequency of maintenance will depend upon actual pollutant and sedimentation loading. O&M will likely be required for the following stormwater elements:

- Water quality treatment BMPs, such as biofiltration swales, wet ponds, and/or underground wet vaults.
- Flow control BMPs, such as detention ponds and flow control structures.
- Catch basins for the conveyance system.
- Debris barriers/trash racks.
- Riprap pads for energy dissipation at storm drain discharges.
- Enclosed drainage systems.
- Baffled outlet at the discharge into Oyster Bay.

APPENDIX A

Basin Area Map



Bremerton Housing Authority
Westpark Redevelopment
On-site Drainage Basins

APPENDIX C

Water Quality Treatment Calculations

WESTERN WASHINGTON HYDROLOGY MODEL V2
PROJECT REPORT

Project Name: Basin 2
Site Address: Westpark Redevelopment
City : Bremerton
Report Date : 10/31/2006
Gage : Quilcene
Data Start : 1948
Data End : 1999
(adjusted) **Precip Scale:** 0.80

WATER QUALITY

WATER QUALITY CALCULATIONS FOR ALL BASINS SUBJECT TO CHANGE IN FUTURE DESIGN PHASES.

PREDEVELOPED LAND USE

Basin : Basin 2
Flows To : Point of Compliance
GroundWater: No

Land Use	Acres
TILL FOREST:	4.453
TILL GRASS:	4.572
IMPERVIOUS:	27.955

DEVELOPED LAND USE

RCHRES (POND) INFORMATION

ANALYSIS RESULTS

Flow Frequency Return Periods for Predeveloped

Return Period	Flow(cfs)
2 year	10.007115
5 year	12.443815
10 year	14.146485
25 year	16.402874
50 year	18.162511
100 year	19.991726

Flow Frequency Return Periods for Developed Unmitigated

Return Period	Flow(cfs)
2 year	10.007115
5 year	12.443815
10 year	14.146485
25 year	16.402874
50 year	18.162511
100 year	19.991726

Flow Frequency Return Periods for Developed Mitigated

Return Period	Flow(cfs)
2 year	0
5 year	0
10 year	0
25 year	0
50 year	0
100 year	0

Yearly Peaks for Predeveloped and Developed-Mitigated

Year	Predeveloped	Developed

949	18.634	0.000
1950	9.952	0.000
1951	11.516	0.000
1952	10.106	0.000
953	9.471	0.000
1954	11.114	0.000
1955	12.868	0.000
956	24.231	0.000
957	11.918	0.000
1958	11.200	0.000
1959	11.097	0.000
1960	7.718	0.000
961	9.881	0.000
1962	10.407	0.000
1963	9.400	0.000
1964	8.413	0.000
1965	6.548	0.000
1966	15.852	0.000
1967	9.777	0.000
1968	9.332	0.000
1969	8.952	0.000
1970	9.011	0.000
1971	12.335	0.000
1972	10.533	0.000
1973	8.825	0.000
1974	12.092	0.000
1975	12.104	0.000
1976	10.835	0.000
1977	7.235	0.000
1978	10.304	0.000
1979	9.305	0.000
1980	10.792	0.000
1981	7.783	0.000
1982	10.375	0.000
1983	13.842	0.000
1984	6.950	0.000
1985	10.910	0.000
1986	8.836	0.000
1987	9.943	0.000
1988	8.582	0.000
1989	6.712	0.000
1990	9.116	0.000
1991	11.389	0.000
1992	8.620	0.000
1993	7.535	0.000
1994	12.514	0.000
1995	9.048	0.000
1996	10.800	0.000
1997	10.195	0.000
1998	9.594	0.000
1999	14.974	0.000

Ranked Yearly Peaks for Predeveloped and Developed-Mitigated

Rank	Predeveloped	Developed
1	18.6340	0.0000
2	15.8518	0.0000
3	14.9736	0.0000
4	13.8420	0.0000
5	12.8677	0.0000
6	12.5135	0.0000
7	12.3350	0.0000
8	12.1037	0.0000
9	12.0918	0.0000
10	11.9182	0.0000
11	11.5164	0.0000
12	11.3892	0.0000
13	11.2000	0.0000
14	11.1139	0.0000
15	11.0970	0.0000
16	10.9099	0.0000
17	10.8353	0.0000

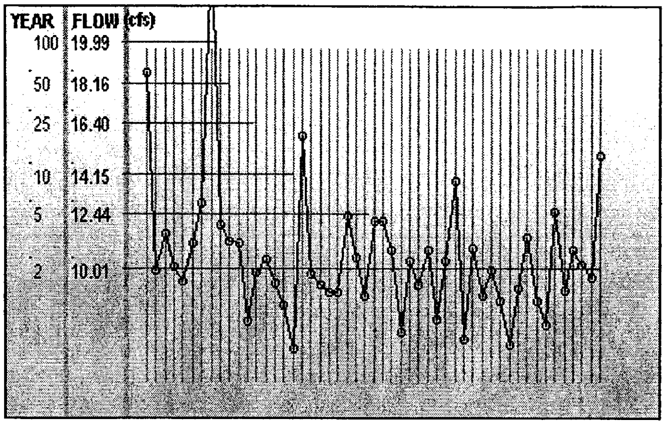
8	10.8002	0.0000
19	10.7918	0.0000
20	10.5331	0.0000
21	10.4067	0.0000
2	10.3749	0.0000
23	10.3040	0.0000
24	10.1948	0.0000
5	10.1055	0.0000
6	9.9518	0.0000
27	9.9435	0.0000
28	9.8807	0.0000
29	9.7767	0.0000
0	9.5943	0.0000
31	9.4709	0.0000
32	9.3997	0.0000
33	9.3318	0.0000
4	9.3054	0.0000
35	9.1158	0.0000
36	9.0480	0.0000
37	9.0111	0.0000
38	8.9520	0.0000
39	8.8355	0.0000
40	8.8250	0.0000
41	8.6204	0.0000
42	8.5818	0.0000
43	8.4129	0.0000
44	7.7827	0.0000
45	7.7175	0.0000
46	7.5352	0.0000
47	7.2346	0.0000
48	6.9504	0.0000
49	6.7120	0.0000
50	6.5477	0.0000

1/2 2 year to 50 year

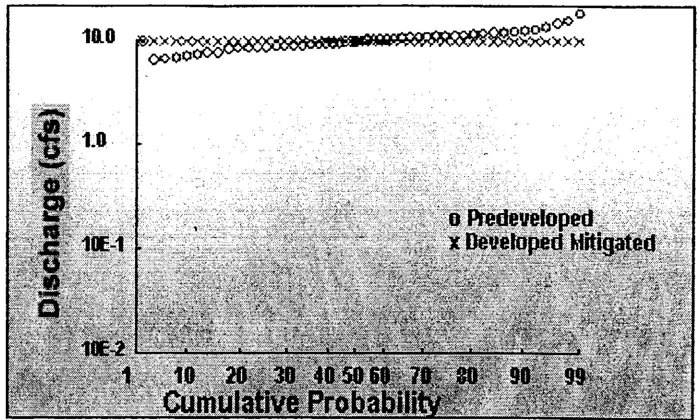
Flow(CFS)	Predev	Final	Percentage	Pass/Fail
5.0036	1632	0	.0	Pass
5.1365	1497	0	.0	Pass
5.2694	1359	0	.0	Pass
5.4023	1238	0	.0	Pass
5.5352	1150	0	.0	Pass
5.6682	1045	0	.0	Pass
5.8011	974	0	.0	Pass
5.9340	901	0	.0	Pass
6.0669	845	0	.0	Pass
6.1998	774	0	.0	Pass
6.3327	707	0	.0	Pass
6.4657	651	0	.0	Pass
6.5986	600	0	.0	Pass
6.7315	547	0	.0	Pass
6.8644	490	0	.0	Pass
6.9973	442	0	.0	Pass
7.1303	394	0	.0	Pass
7.2632	353	0	.0	Pass
7.3961	314	0	.0	Pass
7.5290	290	0	.0	Pass
7.6619	266	0	.0	Pass
7.7949	245	0	.0	Pass
7.9278	225	0	.0	Pass
8.0607	211	0	.0	Pass
8.1936	198	0	.0	Pass
8.3265	191	0	.0	Pass
8.4594	184	0	.0	Pass
8.5924	166	0	.0	Pass
8.7253	159	0	.0	Pass
8.8582	144	0	.0	Pass
8.9911	132	0	.0	Pass
9.1240	120	0	.0	Pass
9.2570	113	0	.0	Pass
9.3899	99	0	.0	Pass
9.5228	91	0	.0	Pass

9.6557	85	0	.0	Pass
9.7886	75	0	.0	Pass
9.9216	70	0	.0	Pass
10.0545	62	0	.0	Pass
10.1874	58	0	.0	Pass
10.3203	51	0	.0	Pass
10.4532	48	0	.0	Pass
10.5861	45	0	.0	Pass
10.7191	42	0	.0	Pass
10.8520	36	0	.0	Pass
10.9849	34	0	.0	Pass
11.1178	32	0	.0	Pass
11.2507	30	0	.0	Pass
11.3837	30	0	.0	Pass
11.5166	26	0	.0	Pass
11.6495	23	0	.0	Pass
11.7824	22	0	.0	Pass
11.9153	21	0	.0	Pass
12.0482	18	0	.0	Pass
12.1812	15	0	.0	Pass
12.3141	13	0	.0	Pass
12.4470	12	0	.0	Pass
12.5799	10	0	.0	Pass
12.7128	10	0	.0	Pass
12.8458	10	0	.0	Pass
12.9787	8	0	.0	Pass
13.1116	6	0	.0	Pass
13.2445	6	0	.0	Pass
13.3774	6	0	.0	Pass
13.5104	6	0	.0	Pass
13.6433	6	0	.0	Pass
13.7762	5	0	.0	Pass
13.9091	4	0	.0	Pass
14.0420	4	0	.0	Pass
14.1749	4	0	.0	Pass
14.3079	4	0	.0	Pass
14.4408	4	0	.0	Pass
14.5737	4	0	.0	Pass
14.7066	4	0	.0	Pass
14.8395	4	0	.0	Pass
14.9725	4	0	.0	Pass
15.1054	3	0	.0	Pass
15.2383	3	0	.0	Pass
15.3712	3	0	.0	Pass
15.5041	3	0	.0	Pass
15.6371	3	0	.0	Pass
15.7700	3	0	.0	Pass
15.9029	2	0	.0	Pass
16.0358	2	0	.0	Pass
16.1687	2	0	.0	Pass
16.3016	2	0	.0	Pass
16.4346	2	0	.0	Pass
16.5675	2	0	.0	Pass
16.7004	2	0	.0	Pass
16.8333	2	0	.0	Pass
16.9662	2	0	.0	Pass
17.0992	2	0	.0	Pass
17.2321	2	0	.0	Pass
17.3650	2	0	.0	Pass
17.4979	2	0	.0	Pass
17.6308	2	0	.0	Pass
17.7638	2	0	.0	Pass
17.8967	2	0	.0	Pass
18.0296	2	0	.0	Pass
18.1625	2	0	.0	Pass

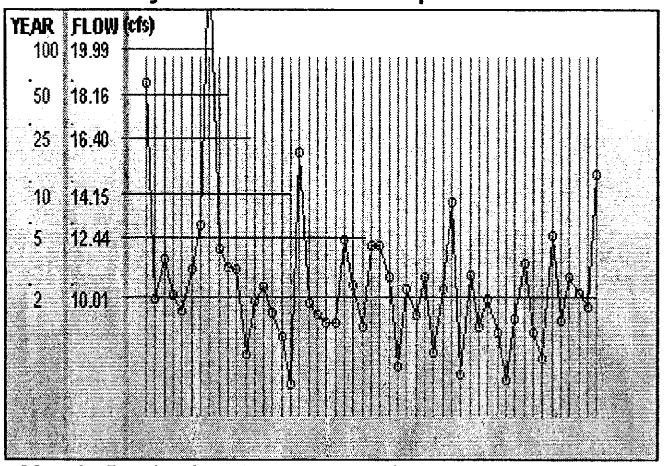
Water Quality BMP Flow and Volume.
On-line facility volume: 6.246 acre-feet
On-line facility target flow: 6.0394 **cfs.**
Adjusted for 15 min: 6.6329 **cfs.**
Off-line facility target flow: 3.5468 **cfs.**
Adjusted for 15 min: 3.8954 **cfs.**



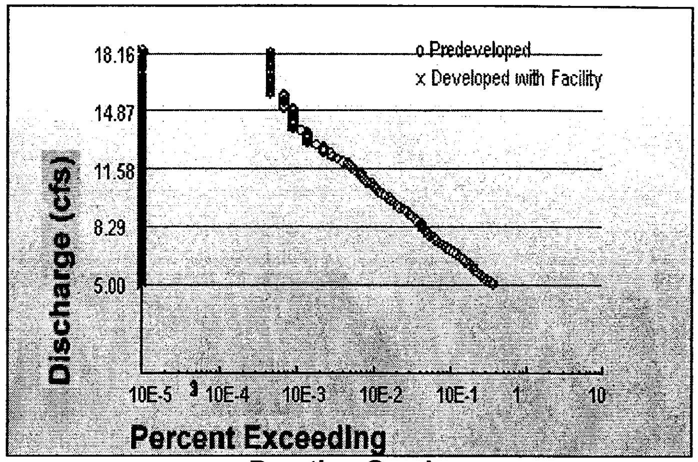
Yearly Peaks for Predeveloped



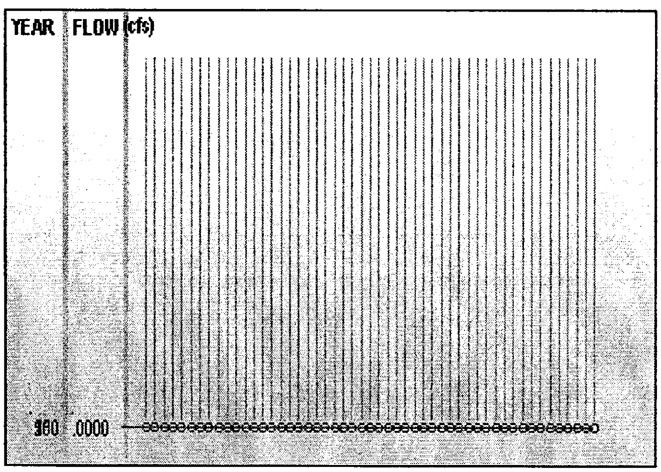
Flow Frequency Chart



Yearly Peaks for developed W/O Pond



Duration Graph



Yearly Peaks for Developed W/Pond

WESTERN WASHINGTON HYDROLOGY MODEL V2
PROJECT REPORT

Project Name: Basin3 ←

WATER QUALITY

Site Address: Westpark Redevelopment
City : Bremerton
Report Date : 10/31/2006
Gage : Quilcene
Data Start : 1948
Data End : 1999
(adjusted) **Precip Scale:** 0.80

PREDEVELOPED LAND USE

Basin : Basin 3
Flows To : Point of Compliance
GroundWater: No

Land Use	Acres	
TILL GRASS:	9.271	← INCL. 0.490 AC FROM BASIN 56
IMPERVIOUS:	28.045	← INCL. 2.443 AC FROM BASIN 56

DEVELOPED LAND USE

RCHRES (POND) INFORMATION

ANALYSIS RESULTS

Flow Frequency Return Periods for Predeveloped

Return Period	Flow(cfs)
2 year	10.408835
5 year	13.029206
10 year	14.869713
25 year	17.319038
50 year	19.236333
100 year	21.235424

Flow Frequency Return Periods for Developed Unmitigated

Return Period	Flow(cfs)
2 year	10.408835
5 year	13.029206
10 year	14.869713
25 year	17.319038
50 year	19.236333
100 year	21.235424

Flow Frequency Return Periods for Developed Mitigated

Return Period	Flow(cfs)
2 year	0
5 year	0
10 year	0
25 year	0
50 year	0
100 year	0

Yearly Peaks for Predeveloped and Developed-Mitigated

Year	Predeveloped	Developed
1949	19.779	0.000

1950	10.301	0.000
1951	11.965	0.000
1952	10.541	0.000
1953	9.821	0.000
1954	11.648	0.000
1955	13.514	0.000
1956	25.770	0.000
1957	12.149	0.000
1958	11.899	0.000
1959	11.580	0.000
1960	7.968	0.000
1961	10.468	0.000
1962	10.830	0.000
1963	9.773	0.000
1964	8.792	0.000
1965	6.720	0.000
1966	17.007	0.000
1967	10.187	0.000
1968	9.705	0.000
1969	9.253	0.000
1970	9.316	0.000
1971	12.947	0.000
1972	11.033	0.000
1973	9.145	0.000
1974	12.609	0.000
1975	12.602	0.000
1976	11.289	0.000
1977	7.450	0.000
1978	10.725	0.000
1979	9.608	0.000
1980	11.273	0.000
1981	8.061	0.000
1982	10.745	0.000
1983	14.438	0.000
1984	7.131	0.000
1985	11.322	0.000
1986	9.145	0.000
1987	10.384	0.000
1988	8.899	0.000
1989	6.874	0.000
1990	9.397	0.000
1991	11.879	0.000
1992	8.976	0.000
1993	7.740	0.000
1994	13.068	0.000
1995	9.399	0.000
1996	11.238	0.000
1997	10.573	0.000
1998	9.962	0.000
1999	15.768	0.000

Ranked Yearly Peaks for Predeveloped and Developed-Mitigated

Rank	**Predeveloped**	**Developed**
1	19.7788	0.0000
2	17.0070	0.0000
3	15.7684	0.0000
4	14.4378	0.0000
5	13.5141	0.0000
6	13.0678	0.0000
7	12.9472	0.0000
8	12.6089	0.0000
9	12.6016	0.0000
10	12.1489	0.0000
11	11.9650	0.0000
12	11.8993	0.0000
13	11.8787	0.0000
14	11.6476	0.0000
15	11.5802	0.0000
16	11.3224	0.0000
17	11.2889	0.0000
18	11.2728	0.0000

19	11.2376	0.0000
20	11.0328	0.0000
21	10.8295	0.0000
22	10.7446	0.0000
23	10.7253	0.0000
24	10.5730	0.0000
25	10.5409	0.0000
26	10.4680	0.0000
27	10.3843	0.0000
28	10.3005	0.0000
29	10.1872	0.0000
30	9.9625	0.0000
31	9.8213	0.0000
32	9.7732	0.0000
33	9.7054	0.0000
34	9.6084	0.0000
35	9.3990	0.0000
36	9.3974	0.0000
37	9.3161	0.0000
38	9.2527	0.0000
39	9.1453	0.0000
40	9.1446	0.0000
41	8.9764	0.0000
42	8.8985	0.0000
43	8.7924	0.0000
44	8.0610	0.0000
45	7.9678	0.0000
46	7.7398	0.0000
47	7.4499	0.0000
48	7.1314	0.0000
49	6.8743	0.0000
50	6.7201	0.0000

1/2 2 year to 50 year

Flow(CFS)	**Predev**	**Final**	**Percentage**	**Pass/Fail**
5.2044	1541	0	.0	Pass
5.3462	1404	0	.0	Pass
5.4879	1256	0	.0	Pass
5.6296	1164	0	.0	Pass
5.7714	1064	0	.0	Pass
5.9131	973	0	.0	Pass
6.0548	912	0	.0	Pass
6.1966	851	0	.0	Pass
6.3383	777	0	.0	Pass
6.4800	713	0	.0	Pass
6.6218	651	0	.0	Pass
6.7635	602	0	.0	Pass
6.9053	545	0	.0	Pass
7.0470	494	0	.0	Pass
7.1887	445	0	.0	Pass
7.3305	394	0	.0	Pass
7.4722	350	0	.0	Pass
7.6139	315	0	.0	Pass
7.7557	287	0	.0	Pass
7.8974	263	0	.0	Pass
8.0391	241	0	.0	Pass
8.1809	221	0	.0	Pass
8.3226	209	0	.0	Pass
8.4644	198	0	.0	Pass
8.6061	190	0	.0	Pass
8.7478	184	0	.0	Pass
8.8896	167	0	.0	Pass
9.0313	155	0	.0	Pass
9.1730	144	0	.0	Pass
9.3148	130	0	.0	Pass
9.4565	119	0	.0	Pass
9.5982	110	0	.0	Pass
9.7400	99	0	.0	Pass
9.8817	93	0	.0	Pass
10.0235	84	0	.0	Pass
10.1652	76	0	.0	Pass

0.3069	72	0	.0	Pass
10.4487	64	0	.0	Pass
10.5904	56	0	.0	Pass
10.7321	51	0	.0	Pass
0.8739	49	0	.0	Pass
11.0156	47	0	.0	Pass
11.1574	42	0	.0	Pass
1.2991	35	0	.0	Pass
11.4408	33	0	.0	Pass
11.5826	33	0	.0	Pass
11.7243	31	0	.0	Pass
11.8660	31	0	.0	Pass
12.0078	25	0	.0	Pass
12.1495	24	0	.0	Pass
12.2912	21	0	.0	Pass
12.4330	21	0	.0	Pass
12.5747	18	0	.0	Pass
12.7165	16	0	.0	Pass
12.8582	13	0	.0	Pass
12.9999	12	0	.0	Pass
13.1417	11	0	.0	Pass
13.2834	10	0	.0	Pass
13.4251	10	0	.0	Pass
13.5669	8	0	.0	Pass
13.7086	7	0	.0	Pass
13.8503	6	0	.0	Pass
13.9921	6	0	.0	Pass
14.1338	6	0	.0	Pass
14.2756	6	0	.0	Pass
14.4173	6	0	.0	Pass
14.5590	4	0	.0	Pass
14.7008	4	0	.0	Pass
14.8425	4	0	.0	Pass
14.9842	4	0	.0	Pass
15.1260	4	0	.0	Pass
15.2677	4	0	.0	Pass
15.4094	4	0	.0	Pass
15.5512	4	0	.0	Pass
15.6929	4	0	.0	Pass
15.8347	3	0	.0	Pass
15.9764	3	0	.0	Pass
16.1181	3	0	.0	Pass
16.2599	3	0	.0	Pass
16.4016	3	0	.0	Pass
16.5433	3	0	.0	Pass
16.6851	3	0	.0	Pass
16.8268	3	0	.0	Pass
16.9685	3	0	.0	Pass
17.1103	2	0	.0	Pass
17.2520	2	0	.0	Pass
17.3938	2	0	.0	Pass
17.5355	2	0	.0	Pass
17.6772	2	0	.0	Pass
17.8190	2	0	.0	Pass
17.9607	2	0	.0	Pass
18.1024	2	0	.0	Pass
18.2442	2	0	.0	Pass
18.3859	2	0	.0	Pass
18.5277	2	0	.0	Pass
18.6694	2	0	.0	Pass
18.8111	2	0	.0	Pass
18.9529	2	0	.0	Pass
19.0946	2	0	.0	Pass
19.2363	2	0	.0	Pass

Water Quality BMP Flow and Volume.
On-line facility volume: 6.3825 acre-feet
On-line facility target flow: 6.1484 **cfs.**
Adjusted for 15 min: 6.7492 **cfs.**
Off-line facility target flow: 3.6089 **cfs.**
Adjusted for 15 min: 3.9615 **cfs.**
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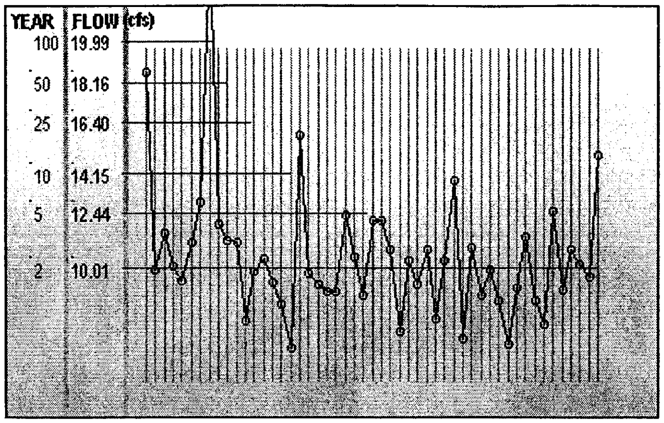
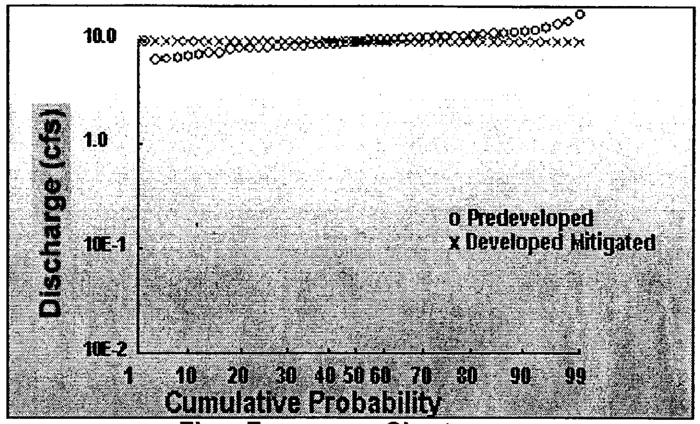
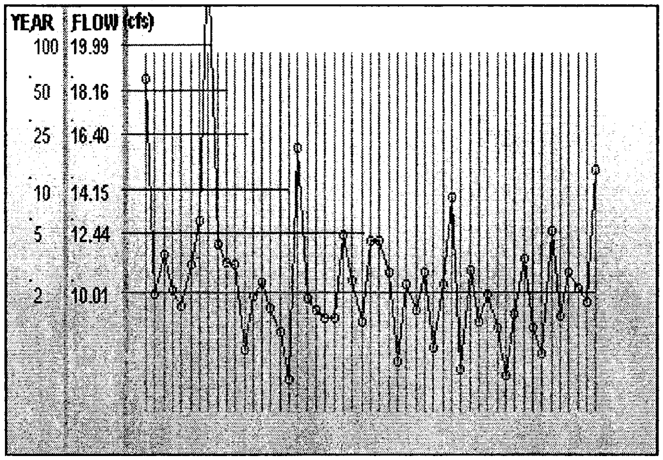


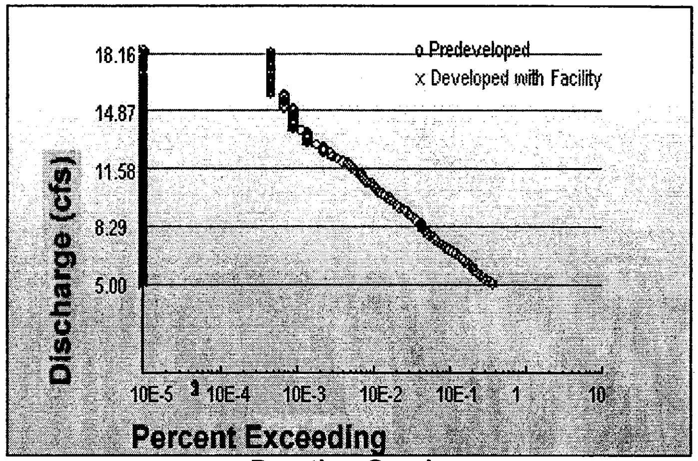
Yearly Peaks for Predeveloped



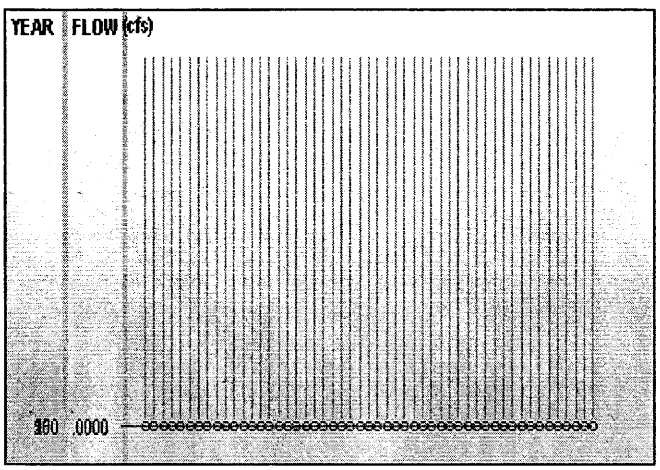
Flow Frequency Chart



Yearly Peaks for developed W/O Pond



Duration Graph



Yearly Peaks for Developed W/Pond

WESTERN WASHINGTON HYDROLOGY MODEL V2
PROJECT REPORT

WATER QUALITY

roject Name: Basin SE
Site Address: Basin SE
City : Bremerton
eport Date : 10/31/2006
Jage : Quilcene
Data Start : 1948
Data End : 1999
(adjusted) Precip Scale: 0.80

PREDEVELOPED LAND USE

Basin : Basin SE
Flows To : Point of Compliance
GroundWater: No

Land Use	Acres
TILL GRASS:	0.663
IMPERVIOUS:	3.304

FOR PORTION OF BASIN SE REMAINING IN BASIN SE.

DEVELOPED LAND USE

RCHRES (POND) INFORMATION

ANALYSIS RESULTS

Flow Frequency Return Periods for Predeveloped

Return Period	Flow(cfs)
2 year	1.174086
5 year	1.458572
10 year	1.65721
25 year	1.920286
50 year	2.125333
100 year	2.338395

Flow Frequency Return Periods for Developed Unmitigated

Return Period	Flow(cfs)
2 year	1.174086
5 year	1.458572
10 year	1.65721
25 year	1.920286
50 year	2.125333
100 year	2.338395

Flow Frequency Return Periods for Developed Mitigated

Return Period	Flow(cfs)
2 year	1.337731
5 year	1.562279
10 year	1.705879
25 year	1.883533
50 year	2.013955
100 year	2.143259

Yearly Peaks for Predeveloped and Developed-Mitigated

Year	Predeveloped	Developed
1949	2.177	1.799

1950	1.168	1.266
1951	1.360	1.401
1952	1.192	1.450
1953	1.101	1.252
1954	1.305	1.399
1955	1.512	1.741
1956	2.808	1.264
1957	1.411	1.261
1958	1.317	1.390
1959	1.280	1.717
1960	0.902	1.358
1961	1.157	1.169
1962	1.220	1.456
1963	1.104	1.394
1964	1.000	1.232
1965	0.770	0.809
1966	1.852	1.254
1967	1.140	1.557
1968	1.088	1.300
1969	1.058	1.215
1970	1.049	1.482
1971	1.442	1.515
1972	1.238	1.346
1973	1.026	1.234
1974	1.429	1.215
1975	1.426	1.436
1976	1.266	1.509
1977	0.842	1.057
1978	1.220	1.271
1979	1.102	1.325
1980	1.271	1.301
1981	0.907	1.182
1982	1.221	1.214
1983	1.624	2.550
1984	0.815	1.006
1985	1.295	1.315
1986	1.032	1.340
1987	1.164	1.314
1988	1.017	1.384
1989	0.788	1.041
1990	1.078	1.206
1991	1.337	1.688
1992	1.026	1.323
1993	0.880	1.180
1994	1.452	1.893
1995	1.054	1.424
1996	1.262	1.354
1997	1.208	1.247
1998	1.124	1.369
1999	1.746	1.720

Ranked Yearly Peaks for Predeveloped and Developed-Mitigated

Rank	**Predeveloped**	**Developed**
1	2.1770	1.8926
2	1.8521	1.7994
3	1.7458	1.7407
4	1.6244	1.7199
5	1.5117	1.7171
6	1.4521	1.6877
7	1.4415	1.5570
8	1.4293	1.5146
9	1.4256	1.5093
10	1.4115	1.4818
11	1.3599	1.4560
12	1.3368	1.4495
13	1.3175	1.4362
14	1.3051	1.4237
15	1.2954	1.4013
16	1.2802	1.3987
17	1.2713	1.3943
18	1.2659	1.3903

19	1.2616	1.3843
20	1.2378	1.3692
21	1.2211	1.3583
22	1.2202	1.3542
23	1.2197	1.3464
24	1.2080	1.3404
25	1.1920	1.3250
26	1.1677	1.3234
27	1.1636	1.3145
28	1.1573	1.3135
29	1.1402	1.3007
30	1.1236	1.3002
31	1.1040	1.2710
32	1.1021	1.2659
33	1.1010	1.2642
34	1.0876	1.2611
35	1.0777	1.2543
36	1.0584	1.2520
37	1.0537	1.2470
38	1.0489	1.2340
39	1.0323	1.2320
40	1.0257	1.2155
41	1.0256	1.2146
42	1.0168	1.2136
43	1.0000	1.2064
44	0.9074	1.1820
45	0.9020	1.1804
46	0.8802	1.1690
47	0.8422	1.0567
48	0.8148	1.0413
49	0.7876	1.0056
50	0.7700	0.8086

1/2 2 year to 50 year

Flow(CFS)	Predev	Final	Percentage	Pass/Fail
1.1741	63	64	101.0	Pass
1.1837	61	56	91.0	Pass
1.1933	59	53	89.0	Pass
1.2029	56	52	92.0	Pass
1.2125	53	51	96.0	Pass
1.2221	47	48	102.0	Pass
1.2317	47	45	95.0	Pass
1.2413	45	41	91.0	Pass
1.2510	42	37	88.0	Pass
1.2606	41	30	73.0	Pass
1.2702	37	22	59.0	Pass
1.2798	36	18	50.0	Pass
1.2894	35	17	48.0	Pass
1.2990	32	14	43.0	Pass
1.3086	31	13	41.0	Pass
1.3182	30	12	40.0	Pass
1.3278	30	11	36.0	Pass
1.3374	29	11	37.0	Pass
1.3470	26	11	42.0	Pass
1.3566	25	11	44.0	Pass
1.3663	22	11	50.0	Pass
1.3759	22	10	45.0	Pass
1.3855	22	9	40.0	Pass
1.3951	20	9	45.0	Pass
1.4047	20	8	40.0	Pass
1.4143	19	8	42.0	Pass
1.4239	17	8	47.0	Pass
1.4335	15	8	53.0	Pass
1.4431	13	7	53.0	Pass
1.4527	12	7	58.0	Pass
1.4623	11	7	63.0	Pass
1.4720	10	7	70.0	Pass
1.4816	10	7	70.0	Pass
1.4912	10	7	70.0	Pass
1.5008	10	7	70.0	Pass
1.5104	10	6	60.0	Pass

.5200	8	6	75.0	Pass
1.5296	8	6	75.0	Pass
1.5392	6	6	100.0	Pass
.5488	6	6	100.0	Pass
.5584	6	6	100.0	Pass
1.5680	6	6	100.0	Pass
1.5776	6	5	83.0	Pass
.5873	6	5	83.0	Pass
.5969	6	5	83.0	Pass
1.6065	5	4	80.0	Pass
1.6161	5	4	80.0	Pass
.6257	4	4	100.0	Pass
.6353	4	4	100.0	Pass
1.6449	4	3	75.0	Pass
1.6545	4	2	50.0	Pass
.6641	4	2	50.0	Pass
.6737	4	2	50.0	Pass
1.6833	4	2	50.0	Pass
1.6929	4	2	50.0	Pass
1.7026	4	2	50.0	Pass
1.7122	4	2	50.0	Pass
1.7218	4	2	50.0	Pass
1.7314	4	2	50.0	Pass
1.7410	4	1	25.0	Pass
1.7506	3	1	33.0	Pass
1.7602	3	1	33.0	Pass
1.7698	3	1	33.0	Pass
1.7794	3	0	.0	Pass
1.7890	3	0	.0	Pass
1.7986	3	0	.0	Pass
1.8083	3	0	.0	Pass
1.8179	3	0	.0	Pass
1.8275	3	0	.0	Pass
1.8371	3	0	.0	Pass
1.8467	3	0	.0	Pass
1.8563	2	0	.0	Pass
1.8659	2	0	.0	Pass
1.8755	2	0	.0	Pass
1.8851	2	0	.0	Pass
1.8947	2	0	.0	Pass
1.9043	2	0	.0	Pass
1.9139	2	0	.0	Pass
1.9236	2	0	.0	Pass
1.9332	2	0	.0	Pass
1.9428	2	0	.0	Pass
1.9524	2	0	.0	Pass
1.9620	2	0	.0	Pass
1.9716	2	0	.0	Pass
1.9812	2	0	.0	Pass
1.9908	2	0	.0	Pass
2.0004	2	0	.0	Pass
2.0100	2	0	.0	Pass
2.0196	2	0	.0	Pass
2.0292	2	0	.0	Pass
2.0389	2	0	.0	Pass
2.0485	2	0	.0	Pass
2.0581	2	0	.0	Pass
2.0677	2	0	.0	Pass
2.0773	2	0	.0	Pass
2.0869	2	0	.0	Pass
2.0965	2	0	.0	Pass
2.1061	2	0	.0	Pass
2.1157	2	0	.0	Pass
2.1253	2	0	.0	Pass

Water Quality BMP Flow and Volume.
On-line facility volume: 0.7201 acre-feet
On-line facility target flow: 0.713 **cfs.**
Adjusted for 15 min: 0.7903 **cfs.**
Off-line facility target flow: 0.418 **cfs.**
Adjusted for 15 min: 0.4633 **cfs.**

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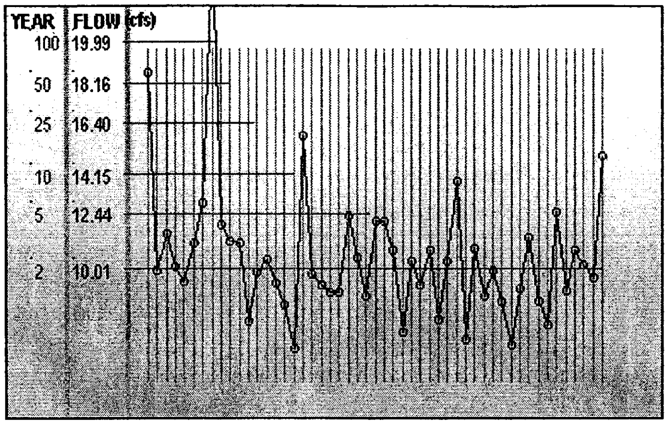
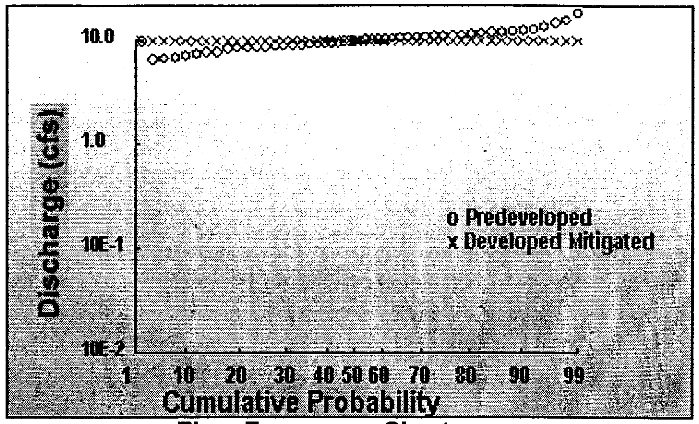
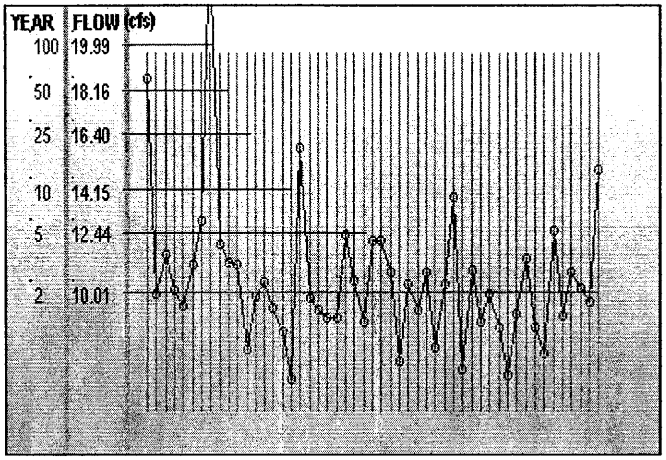


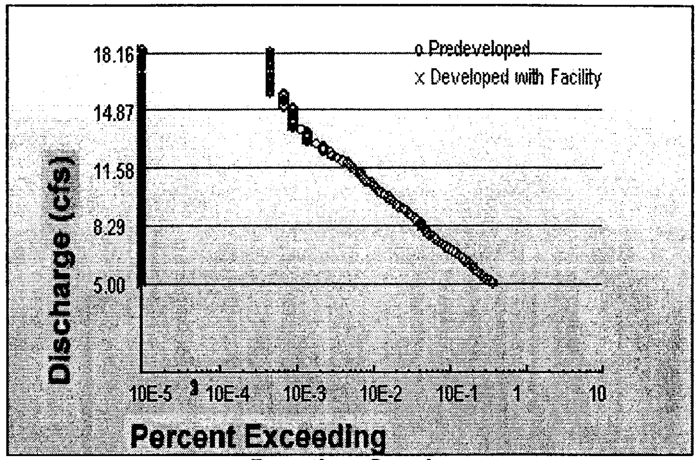
Yearly Peaks for Predeveloped



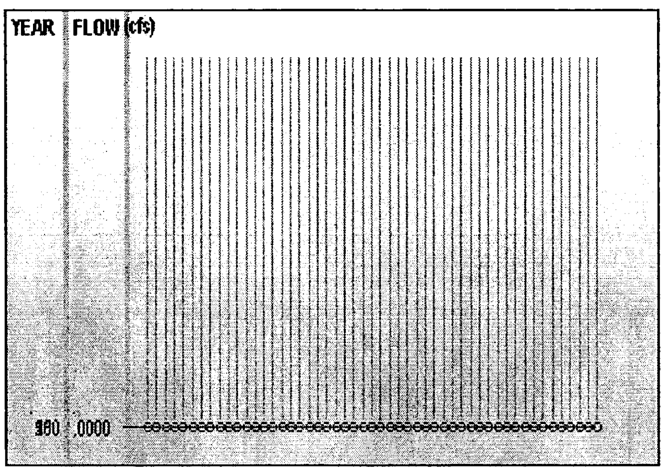
Flow Frequency Chart



Yearly Peaks for developed W/O Pond



Duration Graph



Yearly Peaks for Developed W/Pond

WESTERN WASHINGTON HYDROLOGY MODEL V2
PROJECT REPORT

Project Name: SE All

FOR ALL OF BASIN SE WITH OPTIONAL FLOW CONTROL

Site Address: Basin SE
City : Bremerton
Report Date : 10/31/2006
Gage : Quilcene
Data Start : 1948
Data End : 1999
(adjusted) **Precip Scale:** 0.80

PREDEVELOPED LAND USE

Basin : Basin SE
Flows To : Point of Compliance
GroundWater: No

Land Use	Acres
TILL GRASS:	3.45
IMPERVIOUS:	3.45

DEVELOPED LAND USE
Basin : Basin SE
Flows To : Pond 2
GroundWater: No

Land Use	Acres
TILL GRASS:	1.153
IMPERVIOUS:	5.747

RCHRES (POND) INFORMATION
Pond Name: Pond 2
Pond Type: Trapezoidal Pond
Pond Flows to : Point of Compliance
Pond Rain / Evap is activated.
Dimensions
Depth: 4ft.
Bottom Length: 102.69ft.
Bottom Width : 102.69ft.
Side slope 1: 3 To 1
Side slope 2: 3 To 1
Side slope 3: 3 To 1
Side slope 4: 3 To 1
Volume at Riser Head: 0.861 acre-ft.
Discharge Structure
Riser Height: 3 ft.
Riser Diameter: 18 in.
Orifice 1 Diameter: 4.54 in. **Elevation:** 0 ft.
Orifice 2 Diameter: 5.9 in. **Elevation:** 2.001 ft.
Orifice 3 Diameter: 3.53 in. **Elevation:** 2.25 ft.

Pond Hydraulic Table

Stage(ft)	Area(acr)	Volume(acr-ft)	Dschrg(cfs)	Infilt(cfs)
0.000	0.242	0.000	0.000	0.000
0.044	0.243	0.011	0.114	0.000
0.089	0.245	0.022	0.161	0.000

.133	0.246	0.033	0.198	0.000
0.178	0.247	0.043	0.228	0.000
0.222	0.248	0.054	0.255	0.000
.267	0.250	0.066	0.280	0.000
0.311	0.251	0.077	0.302	0.000
0.356	0.252	0.088	0.323	0.000
0.400	0.254	0.099	0.342	0.000
0.444	0.255	0.110	0.361	0.000
0.489	0.256	0.122	0.379	0.000
0.533	0.257	0.133	0.395	0.000
0.578	0.259	0.145	0.411	0.000
0.622	0.260	0.156	0.427	0.000
0.667	0.261	0.168	0.442	0.000
0.711	0.263	0.179	0.456	0.000
0.756	0.264	0.191	0.471	0.000
0.800	0.265	0.203	0.484	0.000
0.844	0.267	0.215	0.497	0.000
0.889	0.268	0.227	0.510	0.000
0.933	0.269	0.238	0.523	0.000
0.978	0.271	0.250	0.535	0.000
1.022	0.272	0.263	0.547	0.000
1.067	0.273	0.275	0.559	0.000
1.111	0.275	0.287	0.571	0.000
1.156	0.276	0.299	0.582	0.000
1.200	0.277	0.311	0.593	0.000
1.244	0.279	0.324	0.604	0.000
1.289	0.280	0.336	0.615	0.000
1.333	0.281	0.349	0.625	0.000
1.378	0.283	0.361	0.635	0.000
1.422	0.284	0.374	0.646	0.000
1.467	0.285	0.386	0.656	0.000
1.511	0.287	0.399	0.665	0.000
1.556	0.288	0.412	0.675	0.000
1.600	0.289	0.425	0.685	0.000
1.644	0.291	0.438	0.694	0.000
1.689	0.292	0.451	0.704	0.000
1.733	0.294	0.464	0.713	0.000
1.778	0.295	0.477	0.722	0.000
1.822	0.296	0.490	0.731	0.000
1.867	0.298	0.503	0.740	0.000
1.911	0.299	0.516	0.748	0.000
1.956	0.301	0.530	0.757	0.000
2.000	0.302	0.543	0.766	0.000
2.044	0.303	0.556	0.965	0.000
2.089	0.305	0.570	1.053	0.000
2.133	0.306	0.583	1.123	0.000
2.178	0.308	0.597	1.183	0.000
2.222	0.309	0.611	1.237	0.000
2.267	0.310	0.625	1.328	0.000
2.311	0.312	0.638	1.413	0.000
2.356	0.313	0.652	1.482	0.000
2.400	0.315	0.666	1.543	0.000
2.444	0.316	0.680	1.599	0.000
2.489	0.318	0.694	1.653	0.000
2.533	0.319	0.709	1.703	0.000
2.578	0.321	0.723	1.751	0.000
2.622	0.322	0.737	1.797	0.000
2.667	0.323	0.751	1.841	0.000
2.711	0.325	0.766	1.884	0.000
2.756	0.326	0.780	1.925	0.000
2.800	0.328	0.795	1.966	0.000
2.844	0.329	0.809	2.005	0.000
2.889	0.331	0.824	2.043	0.000
2.933	0.332	0.839	2.080	0.000
2.978	0.334	0.854	2.117	0.000
3.022	0.335	0.868	2.201	0.000
3.067	0.337	0.883	2.439	0.000
3.111	0.338	0.898	2.763	0.000
3.156	0.340	0.913	3.152	0.000
3.200	0.341	0.929	3.595	0.000
3.244	0.343	0.944	4.086	0.000
3.289	0.344	0.959	4.621	0.000

3.333	0.346	0.974	5.196	0.000
3.378	0.347	0.990	5.807	0.000
3.422	0.349	1.005	6.454	0.000
3.467	0.350	1.021	7.133	0.000
3.511	0.352	1.036	7.843	0.000
3.556	0.353	1.052	8.584	0.000
3.600	0.355	1.068	9.353	0.000
3.644	0.356	1.083	10.15	0.000
3.689	0.358	1.099	10.97	0.000
3.733	0.359	1.115	11.82	0.000
3.778	0.361	1.131	12.70	0.000
3.822	0.362	1.147	13.59	0.000
3.867	0.364	1.163	14.52	0.000
3.911	0.365	1.180	15.46	0.000
3.956	0.367	1.196	16.43	0.000
4.000	0.368	1.212	17.42	0.000

ANALYSIS RESULTS

Flow Frequency Return Periods for Predeveloped

Return Period	Flow(cfs)
2 year	1.553282
5 year	2.008765
10 year	2.336944
25 year	2.782834
50 year	3.138402
100 year	3.514662

Flow Frequency Return Periods for Developed Unmitigated

Return Period	Flow(cfs)
2 year	2.298451
5 year	2.814184
10 year	3.170216
25 year	3.637407
50 year	3.998546
100 year	4.371337

Flow Frequency Return Periods for Developed Mitigated

Return Period	Flow(cfs)
2 year	1.113869
5 year	1.506159
10 year	1.763462
25 year	2.086456
50 year	2.325918
100 year	2.564703

Yearly Peaks for Predeveloped and Developed-Mitigated

Year	Predeveloped	Developed
1949	3.237	2.005
1950	1.553	0.712
1951	1.767	1.580
1952	1.554	1.198
1953	1.500	0.944
1954	1.782	1.314
1955	2.082	1.829
1956	4.371	0.721
1957	1.590	1.167
1958	1.906	1.207
1959	1.865	1.884
1960	1.170	1.251
1961	1.686	1.053
1962	1.621	1.375
1963	1.448	1.263
1964	1.266	0.745
1965	0.937	0.516
1966	2.890	0.758

1967	1.566	1.554
1968	1.484	1.133
1969	1.340	1.096
1970	1.399	1.531
1971	2.031	1.288
1972	1.680	1.224
1973	1.396	1.173
1974	1.941	1.084
1975	1.855	1.197
1976	1.722	1.338
1977	1.100	0.709
1978	1.545	0.921
1979	1.334	1.228
1980	1.681	1.025
1981	1.211	0.697
1982	1.552	0.700
1983	2.173	2.666
1984	1.007	0.609
1985	1.589	0.718
1986	1.359	1.116
1987	1.589	0.888
1988	1.279	1.304
1989	0.959	0.610
1990	1.306	0.736
1991	1.786	1.724
1992	1.285	1.204
1993	1.115	0.698
1994	2.065	2.171
1995	1.436	1.311
1996	1.707	1.224
1997	1.493	1.191
1998	1.486	1.173
1999	2.526	1.724

Ranked Yearly Peaks for Predeveloped and Developed-Mitigated

Rank	**Predeveloped**	**Developed**
1	3.2368	2.1713
2	2.8897	2.0052
3	2.5258	1.8843
4	2.1734	1.8292
5	2.0818	1.7244
6	2.0649	1.7238
7	2.0305	1.5798
8	1.9406	1.5540
9	1.9058	1.5312
10	1.8651	1.3754
11	1.8554	1.3385
12	1.7864	1.3137
13	1.7824	1.3110
14	1.7673	1.3037
15	1.7221	1.2875
16	1.7068	1.2628
17	1.6856	1.2511
18	1.6810	1.2277
19	1.6796	1.2240
20	1.6209	1.2237
21	1.5899	1.2067
22	1.5892	1.2039
23	1.5887	1.1979
24	1.5656	1.1968
25	1.5544	1.1909
26	1.5532	1.1732
27	1.5519	1.1726
28	1.5450	1.1674
29	1.5003	1.1331
30	1.4930	1.1160
31	1.4855	1.0961
32	1.4844	1.0837
33	1.4477	1.0530
34	1.4356	1.0252
35	1.3986	0.9438

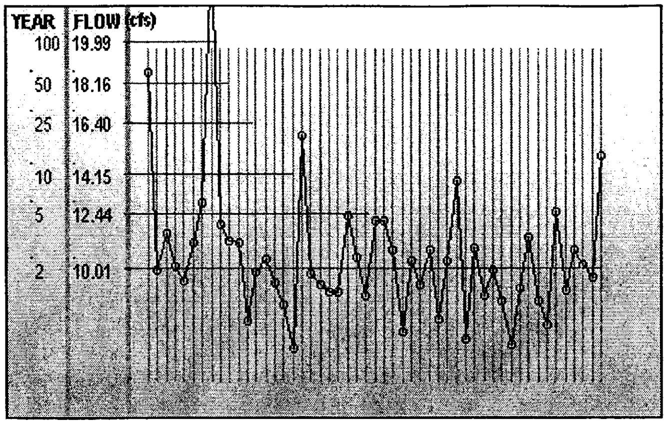
6	1.3958	0.9208
37	1.3591	0.8876
38	1.3404	0.7579
9	1.3338	0.7449
0	1.3056	0.7364
41	1.2855	0.7208
42	1.2794	0.7177
3	1.2658	0.7119
4	1.2112	0.7094
45	1.1697	0.7004
46	1.1149	0.6985
7	1.1001	0.6972
8	1.0068	0.6105
49	0.9588	0.6092
50	0.9369	0.5156

1/2 2 year to 50 year

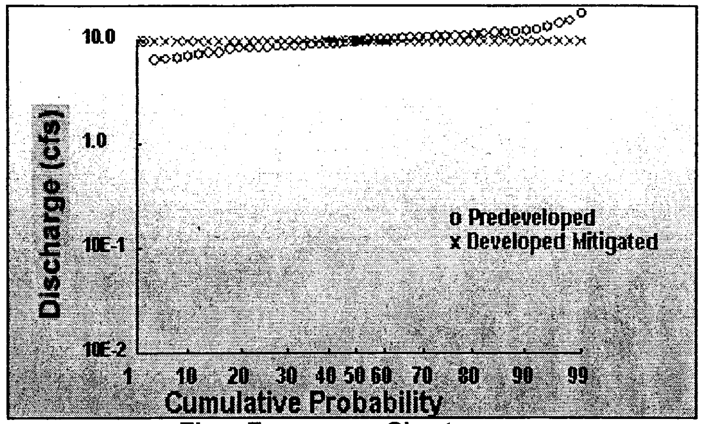
Flow(CFS)	Predev	Final	Percentage	Pass/Fail
.5533	66	48	72.0	Pass
1.5693	61	45	73.0	Pass
1.5853	61	43	70.0	Pass
.6013	54	42	77.0	Pass
.6173	54	40	74.0	Pass
1.6333	51	37	72.0	Pass
1.6493	48	34	70.0	Pass
1.6654	45	30	66.0	Pass
1.6814	44	29	65.0	Pass
1.6974	40	28	70.0	Pass
1.7134	36	27	75.0	Pass
1.7294	33	23	69.0	Pass
1.7454	32	23	71.0	Pass
1.7614	31	22	70.0	Pass
1.7774	29	21	72.0	Pass
1.7935	27	20	74.0	Pass
1.8095	27	20	74.0	Pass
1.8255	26	19	73.0	Pass
1.8415	23	18	78.0	Pass
1.8575	21	17	80.0	Pass
1.8735	19	17	89.0	Pass
1.8895	18	14	77.0	Pass
1.9055	18	14	77.0	Pass
1.9215	17	14	82.0	Pass
1.9376	16	14	87.0	Pass
1.9536	14	13	92.0	Pass
1.9696	13	12	92.0	Pass
1.9856	13	12	92.0	Pass
2.0016	12	11	91.0	Pass
2.0176	12	10	83.0	Pass
2.0336	11	10	90.0	Pass
2.0496	11	10	90.0	Pass
2.0656	10	8	80.0	Pass
2.0817	10	7	70.0	Pass
2.0977	8	7	87.0	Pass
2.1137	8	7	87.0	Pass
2.1297	8	7	87.0	Pass
2.1457	7	7	100.0	Pass
2.1617	7	7	100.0	Pass
2.1777	6	6	100.0	Pass
2.1937	6	6	100.0	Pass
2.2097	6	5	83.0	Pass
2.2258	5	5	100.0	Pass
2.2418	5	5	100.0	Pass
2.2578	5	5	100.0	Pass
2.2738	5	4	80.0	Pass
2.2898	4	3	75.0	Pass
2.3058	4	3	75.0	Pass
2.3218	4	3	75.0	Pass
2.3378	4	2	50.0	Pass
2.3538	4	2	50.0	Pass
2.3699	4	2	50.0	Pass
2.3859	4	2	50.0	Pass

2.4019	4	2	50.0	Pass
2.4179	4	2	50.0	Pass
2.4339	4	2	50.0	Pass
2.4499	4	2	50.0	Pass
2.4659	4	2	50.0	Pass
2.4819	4	2	50.0	Pass
2.4979	4	2	50.0	Pass
2.5140	4	2	50.0	Pass
2.5300	3	2	66.0	Pass
2.5460	3	1	33.0	Pass
2.5620	3	1	33.0	Pass
2.5780	3	1	33.0	Pass
2.5940	3	1	33.0	Pass
2.6100	3	1	33.0	Pass
2.6260	3	1	33.0	Pass
2.6421	3	1	33.0	Pass
2.6581	3	1	33.0	Pass
2.6741	3	0	.0	Pass
2.6901	3	0	.0	Pass
2.7061	3	0	.0	Pass
2.7221	3	0	.0	Pass
2.7381	3	0	.0	Pass
2.7541	3	0	.0	Pass
2.7701	3	0	.0	Pass
2.7862	3	0	.0	Pass
2.8022	3	0	.0	Pass
2.8182	3	0	.0	Pass
2.8342	3	0	.0	Pass
2.8502	3	0	.0	Pass
2.8662	3	0	.0	Pass
2.8822	3	0	.0	Pass
2.8982	2	0	.0	Pass
2.9142	2	0	.0	Pass
2.9303	2	0	.0	Pass
2.9463	2	0	.0	Pass
2.9623	2	0	.0	Pass
2.9783	2	0	.0	Pass
2.9943	2	0	.0	Pass
3.0103	2	0	.0	Pass
3.0263	2	0	.0	Pass
3.0423	2	0	.0	Pass
3.0583	2	0	.0	Pass
3.0744	2	0	.0	Pass
3.0904	2	0	.0	Pass
3.1064	2	0	.0	Pass
3.1224	2	0	.0	Pass
3.1384	2	0	.0	Pass

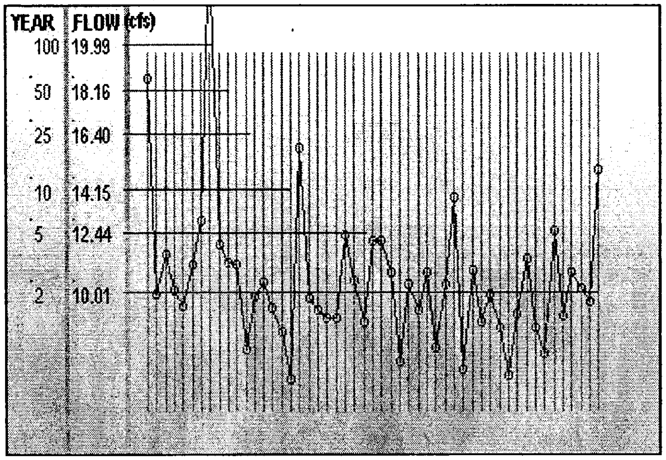
Water Quality BMP Flow and Volume.
On-line facility volume: 0.9809 acre-feet
On-line facility target flow: 0.841 **cfs.**
Adjusted for 15 min: 0.8957 **cfs.**
Off-line facility target flow: 0.4828 **cfs.**
Adjusted for 15 min: 0.5142 **cfs.**



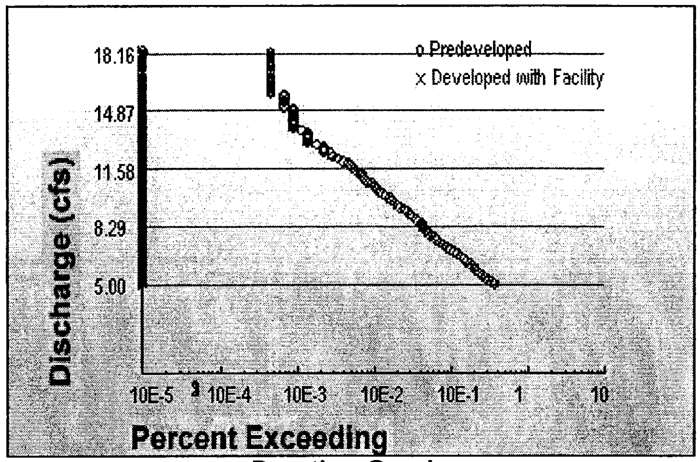
Yearly Peaks for Predeveloped



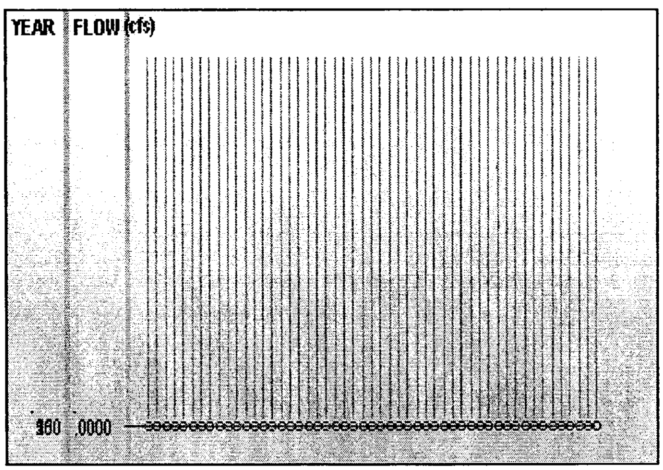
Flow Frequency Chart



Yearly Peaks for developed W/O Pond



Duration Graph



Yearly Peaks for Developed W/Pond

BASIC WATER QUALITY TREATMENT;
WET POND OPTION

BREMERTON HOUSING AUTHORITY
Westpark Redevelopment
Preliminary Sizing for Combined Wet Pond and Flow Control Facility

	SE	OBC	Basin 2	Basin 3	
	For 3.967 ac remaining in Basin SE			Includes 2.933 ac from Basin SE	Comment
Total Volume, ac ft	0.7201	0.8788	6.246	6.3825	WWHM2, hourly time series, on-line facility
Total Volume, cu ft	31,368	38,281	272,076	278,022	
h, ft	4	4	8	4	Depth in Cell 1
Access Road					
Slope	7	7	7	7	
Length, ft	28	28	56	28	
Width, ft	15	15	15	15	
Area, sq ft	420	420	840	420	
Volume, cu ft	840	840	3,360	840	(h/2) * Area
Left Side Fill Slope	3	3	3	3	
Projection, ft	12	12	24	12	
Hypotenuse	30.46	30.46	60.93	30.46	
Area, sq ft	168	168	672	168	
Volume, cu ft	336	336	2688	336	(h/2) * Area
Right Side Fill Slope	3	3	3	3	
Projection, ft	12	12	24	12	
Hypotenuse	30.46	30.46	60.93	30.46	
Area, sq ft	168	168	672	168	
Volume, cu ft	336	336	2688	336	(h/2) * Area
Total Access Road Vol., cu ft	1,512	1,512	8,736	1,512	
Cell 1					
Cell 1 %	35%	35%	35%	35%	
Cell 1 Required, cu ft	12,491	14,910	103,963	98,820	Includes volume lost from access road fill
L:W	3	3	3	3	
Side Slopes	3	3	3	3	
Bottom Width, ft	23.76	26.79	48.84	82.57	Goal Seek
Bottom Length, ft	71.29	80.38	146.51	247.71	
Bottom Area, sq ft	1,694	2,153	7,155	20,454	
Top Width, ft	47.76	50.79	96.84	106.57	
Top Length, ft	95.29	104.38	194.51	271.71	
Top Area, sq ft	4,551	5,302	18,836	28,956	
Cell 1 Provided, cu ft	12,491	14,910	103,963	98,820	
Cell 2					
Cell 2 Required, cu ft	17,365	21,858	159,377	177,690	
h, ft	3	2	7	2	
L:W	3	3	3	3	
Side Slopes	3	3	3	3	
Bottom Width, ft	37.72	56.29	72.55	168.07	Goal Seek
Bottom Length, ft	113.16	168.87	217.66	504.20	
Bottom Area, sq ft	4,268	9,506	15,792	84,739	
Top Width, ft	55.72	68.29	114.55	180.07	
Top Length, ft	131.16	180.87	259.66	516.20	
Top Area, sq ft	7,308	12,352	29,745	92,951	
Cell 2 Provided, cu ft	17,365	21,858	159,377	177,690	
Interior Berm					
Depth below Design Depth, ft	1	1	1	1	
Height for Cell 1	3	3	7	3	
Side slope	2	2	2	2	
Slope length, ft	6	6	14	6	
Top Width, ft	5	5	5	5	Minimum
Height for Cell 2	2	1	6	1	
Side Slope	2	2	2	2	
Slope length, ft	4	2	12	2	
Berm Bottom Length, ft	15	13	31	13	
Total Overall Bottom Length, ft	199	262	395	765	
Total Overall Top Length, ft	226	285	454	788	
Detention					
Bottom Area, sq ft		17,654			Top WQ surface area
Bottom Length, ft		285			
Bottom Width, ft		62			
Required Bottom Area, sq ft		39,740			WWHM2
Depth incl. freeboard, ft		5			WWHM2
Slope		3			
Top Length, ft		315			
Top Width, ft		92			

WESTPARK REDEVELOPMENT
Biofiltration Swale Alternative for Basins 2 and 3

Variable	Reference	Basin 2 Typ. design	Basin 2 Alt. design for residence time	Basin 3 Typ. design	Basin 3 Alt. design for residence time	Units	Comment	Equation
Treatment design								
Q-6-month		6.63	6.63	6.75	6.75	cfs	WWHM2 On-line WQ design rate	
Upstream IE		TBD	TBD	TBD	TBD			
Downstream IE		TBD	TBD	TBD	TBD			
Length		TBD	TBD	TBD	TBD			
s		0.0200	0.02	0.0200	0.02	ft/ft	0.005 typ. minimum longitudinal slope	
Average Grass Height		2 - 6	2 - 6	2 - 6	2 - 6	in	For Low degree of retardance	
ybio-inches		4	4	4	4	in	Design water depth for infrequent mowing	
ybio-feet		.33	.33	.33	.33	ft	"	ybio-inches / 12
n		0.24	.24	0.24	.24		Manning's coefficient for infrequent mowing	
Swale Shape		Trapezoidal	Trapezoidal	Trapezoidal	Trapezoidal			
Z		4	4	4	4		Side slopes; 4H:1V maximum	
b		116.90	10.00	119.04	10.00	ft	Bottom width	[(2.5*Q*n) / (1.49*y^1.67*s^0.5)] - [Z*y]
T		120	12.67	122	12.67	ft	Top width	b + (2 * y * Z)
Abio		39	3.78	40	3.78	sq ft	Area	(b * y) + (Z * y^2)
P-2yr		N/A	N/A	N/A	N/A			
P-design		N/A	N/A	N/A	N/A			
k		N/A	N/A	N/A	N/A			
V		0.17	1.76	0.17	1.79	fps	Velocity, 1 max for minimum swale length	Q / A
t		9	10.08	9	10.09	minutes	Hydraulic residence time, 9 min. minimum	
L		90.84	1062	90.84	1081	ft	Calculated minimum swale length	V * t * 60
Bioswale bottom area		10,619	10,619	10,814	10,814	sq ft		L * b
Stability Check								
Q-100yr			19.99		21.23	cfs	WWHM2 * 1.091 to adjust to 15-minute time step	
Coverage			Fair		Fair		Assumed coverage for first swale event	
Average grass height			<2		<2	in	Assumed grass height for first swale event; Very Low degree of retardance	
n			0.038		0.036		Manning's coefficient. Adjust so that VR-appx varies so that VR-act / VR-appx = 0.95 to 1.05	Iterative input from Volume V Figure 9.7
Vmax			3		3	fps	Maximum allowable velocity	
VR-appx.			1.00		1.10	sq ft / sec	Input from chart	Iterative input from Volume V Figure 9.7
R			0.33		0.37	ft	Hydraulic radius, first approximation	VR-appx. / Vmax
VR-act			0.89		1.10			(1.49 / n) * Rappx^1.6667 * s^0.5
VR-act / VR-appx			0.89		1.00		0.95 to 1.05	
ystability			0.44		0.39	ft	Depth; use Goal Seek so that Rcalc = R from above	
Rcalc			0.38		0.34	ft	Calculated hydraulic radius	[(b * y) + (Z * y^2)] / [b + 2 * y * SQRT(Z^2 + 1)]
Rcalc^0.6667			0.52		0.49			
Vcalc			2.89		2.85	fps	Velocity	(1.49 / n) * R^0.6667 * s^0.5
Vcalc * Rcalc			1.51		1.39	fps		
Vcalc ≤ 3 fps?			Yes		Yes			
Astability			5.13		4.49	sq ft	Area	(b * y) + (Z * y^2)
Astability ≤ Abio?			No		No			
ybio or ystability			0.44		0.39	ft	Use deeper	
Depth		1.0-ft freeboard for Qcap	1.44	1.2-ft freeboard for Qcap	1.59	ft	Greater of ybio or ystability + freeboard	
Final Check								
Q100			19.99		21.23	cfs	WWHM2 * 1.091 to adjust to 15-minute time step	
n			0.24		0.24		Manning's coefficient	
b			10.00		10.00	ft	Bottom width	
Depth			1.44		1.59	ft	Greater of ybio or ystability + freeboard	
Z			4		4		Side slopes	
R			1.04		1.12	ft	Calculated hydraulic radius	[(b * y) + (Z * y^2)] / [b + 2 * y * SQRT(Z^2 + 1)]
A			22.62		25.98	sq ft	Area	(b * y) + (Z * y^2)
Qcap			20.32		24.67	cfs	Flow capacity	1.49 * A * R^0.6667 * s^0.5 / n
Qcap > Q-100yr?			Yes		Yes			
Top Width			21.49		22.71			

BASIC WATER QUALITY TREATMENT; BIOFILTRATION SWALES

BASIC WATER QUALITY TREATMENT: STORMFILTER OPTION

WESTPARK REDEVELOPMENT

Stormfilter Unit Sizing

# of Cartridges Based on Flow Rates:

Basin	15-minute WQ flow rate, on-line facility cfs(1)	gpm	# of Cartridges(2) 7.5 gpm	# of Series Vaults 59 cartridges / series Two ea. 8'x16' vaults
2	6.63	2,976	396.77	7
3	6.75	3,030	403.95	7

Notes:
(1) From WWHM2.
(2) 7.5 gpm / cartridge based on Ecology criteria for using a continuous simulation model.

# of Cartridges Based on Mass Loading:

	Basin 2	Basin 3	
P, in	50	50	Mean annual rainfall
C	0.76	0.74	Composite runoff coefficient
A, ac	36.980	37.316	Area
%Capture	0.9	0.9	
Vt, cf	4,566,455	4,538,752	P * C * A * (43,560 / 12) * %Capture
EMC, mg / l	100	100	Event Mean Concentration
M, lbs	28,490	28,317	V * EMC * 28.3 * 1E-6 * 2.2046
Epre	0.5	0.5	Pretreatment removal efficiency
Mpre	14,245	14,159	M * Epre
Mpass1	14,245	14,159	M - Mpre
Efilter	0.65	0.65	Filter Efficiency
Mfilter	9,259	9,203	Mpass 1 * Efilter
Removal rate, lbs/cart.	22.5	22.5	For 15.0 gpm / filtration rate
# of cartridges	411.53	409.03	Mfilter / Removal rate
Vortechs Model, dia.	VS120; 12-ft	VS120; 12-ft	Per Ecology General Use Designation

APPENDIX D

Kitsap Way Crossing Calculations

Updated Area Calculations for Kitsap Way Crossing
The following is ONLY for the Kitsap Way Crossing and does NOT include all areas contributing to the Outfall into Oyster Bay

CALCULATIONS SUBJECT TO CHANGE IN FUTURE DESIGN PHASES.

AREAS PER *STORMWATER TECHNICAL INFORMATION REPORT*, AHBL; OCTOBER 2004

Contributing Basin	Total Area[1] AC	Comments	Pervious AC	Impervious AC
Basin 4	19	Includes a modified CN to account for detention; remove detention consideration for updated calculations.	9.5	9.5
Basin 3	44	Does not include detention	13.2	30.8
Basin 2	24.1	Includes 1.1 AC for Kitsap Way; deduct for updated calcs to track separately	23	1.1
Sub-total	87.1			
Deduct Kitsap Way	-1.1			
Total	86.00			

% Impervious Cover: **70%**

AREAS PER AUTOCAD FILE		ADDL Area		AHBL Area		Total Revised Area		
BASIN 2		Pervious	Impervious	Pervious	Impervious	Pervious	Impervious	Total
ADDL West Area Basin 2	14.54	4.36	10.18	23	0	27.36	10.18	
OFF-SITE to Basin 2	5.41	1.62	3.79	0	0	1.62	3.79	
KITSAP WAY	2.62	0.00	2.62	0	0	0.00	2.62	
Sub-total	22.57					28.99	16.59	45.57
BASIN 3								
ADDL South Area	6.9	2.07	4.83	13.2	30.8	15.27	35.63	
Sub-total	6.9					15.27	35.63	50.90
BASIN 4								
ADDL Area	0	0.00	0.00	9.5	9.5	9.50	9.50	
Sub-total	0					9.50	9.50	19.00
TOTAL	29.47					**53.76**	**61.72**	**115.47**
AHBL Area	86							
TOTAL	**115.47**							

WESTPARK REDEVELOPMENT
Kitsap Way Storm Drain Crossing

Source	Pipe Diameter, inches	Pipe Slope, %	Qfull, cfs	Q25, cfs	Qfull > Q25?	Q100, cfs	Qfull > Q100?
AHBL October 2004 stormwater report	30	3.68%	86		Yes		Yes
Parametrix July 2006 updated calculations	30	2.21%	62	83	No	105	No
	36	2.21%	100	83	Yes	105	No
	36	2.60%	108	83	Yes	105	Yes
	36	3.68%	128	83	Yes	105	Yes
	42	2.21%	150	83	Yes	105	Yes

Notes:
(1) Qfull based on Manning's n value = 0.013.
(2) Q25 and Q100 based on SBUH calculations in StormShed.
(3) 30" pipe at 3.68% per AHBL report, Appendix D.
30" pipe at 2.21% per AHBL drawing brem-fs1:\CAD\5301-Bremerton Housing Authority\237-5301-002 Westpark Redevelopment\From\AHBL\6-8-06\Joy Westpark-2.tif

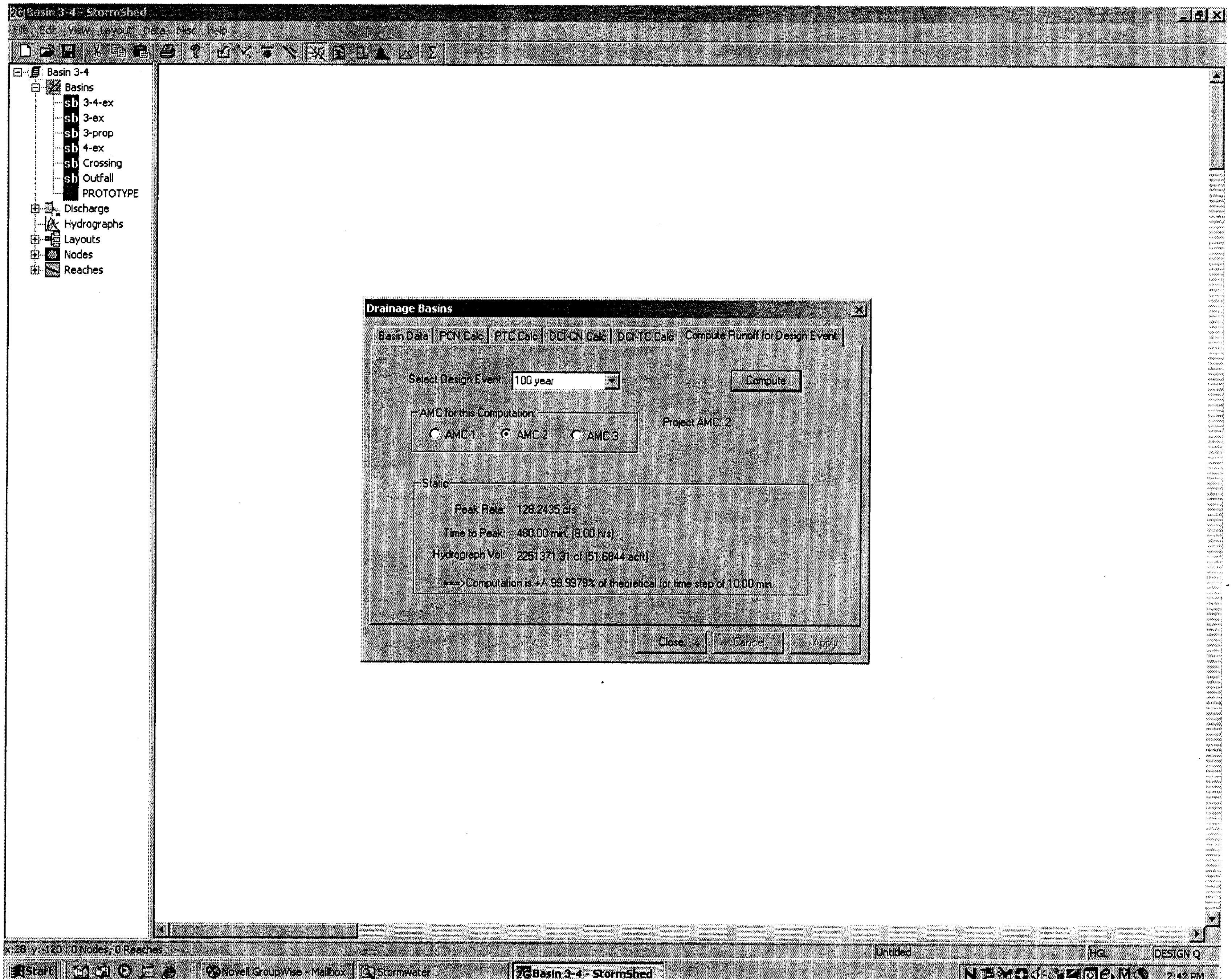
WESTPARK REDEVELOPMENT
Full Flow Pipe Capacity for pipe crossing under Kitsap Way

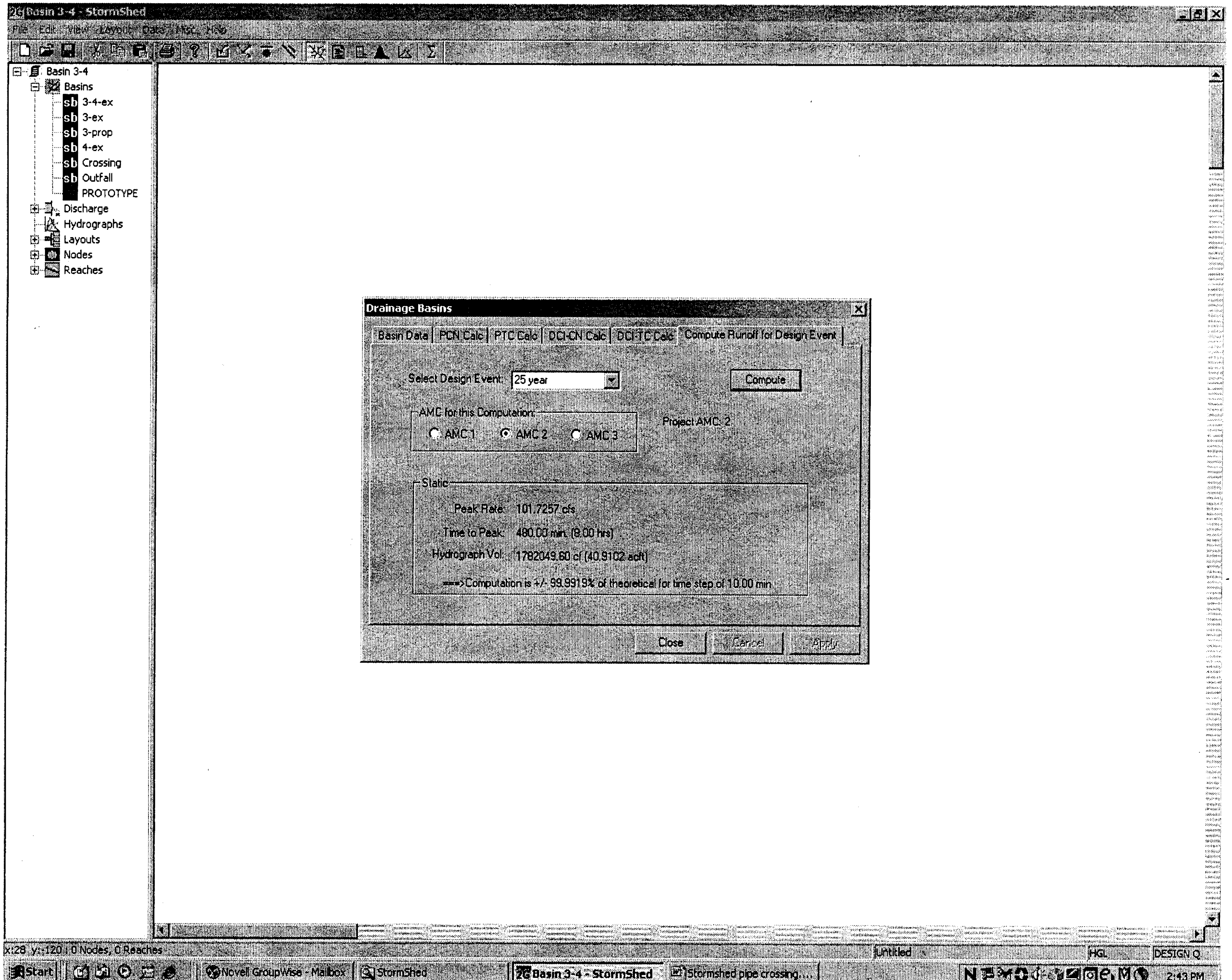
	See Note 1				See Note 2	
D, in	12	12	24	24	24	30
D, ft	1	1	2	2	2	2.5
Pipe material	Concrete	CMP	Concrete	CMP	Concrete	CPEP
n	0.013	0.024	0.013	0.024	0.013	0.012
Upstream IE	48.27	48.27	48.27	48.27	53	53
Downstream IE	12.07	12.07	12.07	12.07	50.2	50.2
Length	152	152	152	152	76	76
Slope, ft/ft	0.2382	0.2382	0.2382	0.2382	0.0368	0.0368
Qfull, cfs	17	9	111	60	44	86

Notes

(1) Calulations include both 12" and 24" due to discrepancy in TIFF file.
Pipe material assumed.
Inverts and lengths based on TIFF file.

(2) Calculations include both 24" and 30" in case the existing pipe under Kitsap Way is similar in slope to proposed 30". Existing pipe assumed to be 24".
Manning's n value, inverts and length for 30" pipe from October 2004 *Stormwater Technical Information Report* (AHBL).


Basin 3-4 - StormShed
File Edit View Layout Data Misc Help
Basin 3-4
Basins
3-4-ex
3-ex
3-prop
4-ex
Crossing
Outfall
PROTOTYPE
Discharge
Hydrographs
Layouts
Nodes
Reaches
Drainage Basins
Basin Data
PCN Calc
PTC Calc
DCI-CN Calc
DCI-TC Calc
Compute Runoff for Design Event
Select Design Event: 100 year
Compute
AMC for this Computation:
AMC 1
AMC 2
AMC 3
Project AMC: 2
Static
Peak Rate: 128.2435 cfs
Time to Peak: 480.00 min (8.00 hrs)
Hydrograph Vol: 2251371.31 cf (51.6844 acft)
===>Computation is +/- 99.9979% of theoretical for time step of 10.00 min
Close
Cancel
Apply
x:28 y:-120 : 0 Nodes, 0 Reaches
Untitled
HGL
DESIGN Q
Start
Novell GroupWise - Mailbox
Stormwater
Basin 3-4 - StormShed
2:42 PM



Basin 3-4 - StormShed
File Edit View Layout Data Misc Help
Basin 3-4
Basins
sb 3-4-ex
sb 3-ex
sb 3-prop
sb 4-ex
sb Crossing
sb Outfall
PROTOTYPE
Discharge
Hydrographs
Layouts
Nodes
Reaches
Drainage Basins
Basin Data | PCN Calc | PTC Calc | DCI-CN Calc | DCI-TC Calc | Compute Runoff for Design Event
Select Design Event: 25 year
Compute
AMC for this Computation
AMC 1
AMC 2
AMC 3
Project AMC: 2
Static
Peak Rate: 101.7257 cfs
Time to Peak: 480.00 min. (8.00 hrs)
Hydrograph Vol: 1782049.60 cf (40.9102 acft)
===>Computation is +/- 99.9919% of theoretical for time step of 10.00 min
Close
Cancel
Apply
x:28 y:-120 | 0 Nodes, 0 Reaches
Untitled
HGL
DESIGN Q
Start
Novell GroupWise - Mailbox
StormShed
Basin 3-4 - StormShed
Stormshed pipe crossing....
2:43 PM

APPENDIX E

Flow Control Calculations

WESTERN WASHINGTON HYDROLOGY MODEL V2
PROJECT REPORT

FLOW CONTROL AND WATER QUALITY.

SUBJECT TO CHANGE IN FUTURE DESIGN PHASES.

Project Name: OBC
Site Address: Westpark Redevelopment
City : Bremerton
Report Date : 10/25/2006
Gage : Quilcene
Data Start : 1948
Data End : 1999
(adjusted) **Precip Scale:** 0.80

PREDEVELOPED LAND USE

Basin : Basin OBC
Flows To : Point of Compliance
GroundWater: No

Land Use	Acres
TILL FOREST:	4.617

DEVELOPED LAND USE
Basin : Basin OBC
Flows To : Pond 1
GroundWater: No

Land Use	Acres
TILL GRASS:	0.462
IMPERVIOUS:	4.155

RCHRES (POND) INFORMATION
Pond Name: Pond 1
Pond Type: Trapezoidal Pond
Pond Flows to : Point of Compliance
Pond Rain / Evap is activated.
Dimensions
Depth: 5ft.
Bottom Length: 199.35ft.
Bottom Width : 199.35ft.
Side slope 1: 3 To 1
Side slope 2: 3 To 1
Side slope 3: 3 To 1
Side slope 4: 3 To 1
Volume at Riser Head: 4.106 acre-ft.
Discharge Structure

Riser Height: 4 ft.
Riser Diameter: 18 in.
Orifice 1 Diameter: 1.81 in. **Elevation:** 0 ft.
Orifice 2 Diameter: 2.44 in. **Elevation:** 3.068 ft.
Orifice 3 Diameter: 1.47 in. **Elevation:** 3.4 ft.

Pond Hydraulic Table

Stage(ft)	Area(acr)	Volume(acr-ft)	Dschrg(cfs)	Infilt(cfs)
0.000	0.912	0.000	0.000	0.000
0.056	0.915	0.051	0.020	0.000
0.111	0.918	0.102	0.029	0.000
0.167	0.921	0.153	0.035	0.000
0.222	0.925	0.204	0.041	0.000
0.278	0.928	0.256	0.045	0.000
0.333	0.931	0.307	0.050	0.000
0.389	0.934	0.359	0.054	0.000
0.444	0.937	0.411	0.057	0.000
0.500	0.940	0.463	0.061	0.000
0.556	0.943	0.515	0.064	0.000
0.611	0.946	0.568	0.067	0.000
0.667	0.949	0.620	0.070	0.000
0.722	0.952	0.673	0.073	0.000
0.778	0.956	0.726	0.076	0.000
0.833	0.959	0.779	0.079	0.000
0.889	0.962	0.833	0.081	0.000
0.944	0.965	0.886	0.084	0.000
1.000	0.968	0.940	0.086	0.000
1.056	0.971	0.994	0.088	0.000
1.111	0.974	1.048	0.091	0.000
1.167	0.978	1.102	0.093	0.000
1.222	0.981	1.157	0.095	0.000
1.278	0.984	1.211	0.097	0.000
1.333	0.987	1.266	0.099	0.000
1.389	0.990	1.321	0.101	0.000
1.444	0.993	1.376	0.103	0.000
1.500	0.997	1.431	0.105	0.000
1.556	1.000	1.487	0.107	0.000
1.611	1.003	1.542	0.109	0.000
1.667	1.006	1.598	0.111	0.000
1.722	1.009	1.654	0.113	0.000
1.778	1.013	1.710	0.115	0.000
1.833	1.016	1.767	0.117	0.000
1.889	1.019	1.823	0.118	0.000
1.944	1.022	1.880	0.120	0.000
2.000	1.025	1.937	0.122	0.000
2.056	1.029	1.994	0.123	0.000
2.111	1.032	2.051	0.125	0.000
2.167	1.035	2.108	0.127	0.000
2.222	1.038	2.166	0.128	0.000
2.278	1.042	2.224	0.130	0.000
2.333	1.045	2.282	0.131	0.000
2.389	1.048	2.340	0.133	0.000
2.444	1.051	2.398	0.135	0.000
2.500	1.055	2.457	0.136	0.000
2.556	1.058	2.515	0.138	0.000
2.611	1.061	2.574	0.139	0.000
2.667	1.065	2.633	0.141	0.000

2.722	1.068	2.693	0.142	0.000
2.778	1.071	2.752	0.143	0.000
2.833	1.075	2.812	0.145	0.000
2.889	1.078	2.871	0.146	0.000
2.944	1.081	2.931	0.148	0.000
3.000	1.085	2.992	0.149	0.000
3.056	1.088	3.052	0.150	0.000
3.111	1.091	3.112	0.184	0.000
3.167	1.095	3.173	0.202	0.000
3.222	1.098	3.234	0.216	0.000
3.278	1.101	3.295	0.227	0.000
3.333	1.105	3.356	0.238	0.000
3.389	1.108	3.418	0.247	0.000
3.444	1.111	3.479	0.268	0.000
3.500	1.115	3.541	0.282	0.000
3.556	1.118	3.603	0.294	0.000
3.611	1.121	3.666	0.305	0.000
3.667	1.125	3.728	0.315	0.000
3.722	1.128	3.790	0.325	0.000
3.778	1.132	3.853	0.334	0.000
3.833	1.135	3.916	0.343	0.000
3.889	1.138	3.979	0.351	0.000
3.944	1.142	4.043	0.359	0.000
4.000	1.145	4.106	0.367	0.000
4.056	1.149	4.170	0.566	0.000
4.111	1.152	4.234	0.923	0.000
4.167	1.155	4.298	1.383	0.000
4.222	1.159	4.362	1.927	0.000
4.278	1.162	4.427	2.542	0.000
4.333	1.166	4.491	3.221	0.000
4.389	1.169	4.556	3.959	0.000
4.444	1.173	4.621	4.751	0.000
4.500	1.176	4.687	5.594	0.000
4.556	1.180	4.752	6.485	0.000
4.611	1.183	4.818	7.420	0.000
4.667	1.187	4.883	8.399	0.000
4.722	1.190	4.949	9.420	0.000
4.778	1.194	5.016	10.48	0.000
4.833	1.197	5.082	11.58	0.000
4.889	1.201	5.149	12.71	0.000
4.944	1.204	5.215	13.88	0.000
5.000	1.208	5.282	15.09	0.000

ANALYSIS RESULTS

Flow Frequency Return Periods for Predeveloped

Return Period	Flow(cfs)
2 year	0.269774
5 year	0.389548
10 year	0.457963
25 year	0.532715
50 year	0.580908
100 year	0.623564

Flow Frequency Return Periods for Developed Unmitigated

Return Period	Flow(cfs)
2 year	1.437002
5 year	1.77461
10 year	2.009245
25 year	2.318823
50 year	2.5593
100 year	2.808504

Flow Frequency Return Periods for Developed Mitigated

Return Period	Flow(cfs)
2 year	0.139075
5 year	0.203198
10 year	0.253993
25 year	0.328584
50 year	0.392325
100 year	0.463611

Yearly Peaks for Predeveloped and Developed-Mitigated

Year	Predeveloped	Developed
1949	0.565	0.129
1950	0.206	0.105
1951	0.282	0.127
1952	0.169	0.111
1953	0.283	0.217
1954	0.363	0.261
1955	0.273	0.091
1956	1.011	0.285
1957	0.289	0.132
1958	0.244	0.125
1959	0.462	0.327
1960	0.322	0.127
1961	0.261	0.123
1962	0.222	0.111
1963	0.249	0.135
1964	0.180	0.107
1965	0.123	0.105
1966	0.532	0.121
1967	0.337	0.347
1968	0.284	0.197
1969	0.245	0.115
1970	0.252	0.137
1971	0.327	0.125
1972	0.311	0.121
1973	0.274	0.127
1974	0.387	0.291
1975	0.227	0.095
1976	0.306	0.123
1977	0.187	0.116
1978	0.229	0.115
1979	0.284	0.129
1980	0.200	0.126
1981	0.199	0.109
1982	0.136	0.097
1983	0.288	0.217
1984	0.119	0.106

1985	0.038	0.079
1986	0.309	0.131
1987	0.248	0.129
1988	0.162	0.114
1989	0.129	0.100
1990	0.115	0.111
1991	0.274	0.129
1992	0.381	0.347
1993	0.173	0.081
1994	0.429	0.311
1995	0.303	0.137
1996	0.323	0.291
1997	0.241	0.124
1998	0.293	0.298
1999	0.494	0.346

Ranked Yearly Peaks for Predeveloped and Developed-Mitigated

Rank	**Predeveloped**	**Developed**
1	0.5653	0.3471
2	0.5322	0.3461
3	0.4936	0.3271
4	0.4621	0.3111
5	0.4286	0.2980
6	0.3868	0.2911
7	0.3806	0.2908
8	0.3626	0.2845
9	0.3367	0.2607
10	0.3271	0.2175
11	0.3234	0.2170
12	0.3218	0.1972
13	0.3111	0.1374
14	0.3094	0.1365
15	0.3056	0.1347
16	0.3030	0.1316
17	0.2926	0.1310
18	0.2892	0.1293
19	0.2882	0.1291
20	0.2840	0.1287
21	0.2837	0.1285
22	0.2826	0.1267
23	0.2822	0.1267
24	0.2741	0.1267
25	0.2741	0.1260
26	0.2733	0.1253
27	0.2608	0.1246
28	0.2520	0.1243
29	0.2493	0.1227
30	0.2482	0.1227
31	0.2449	0.1215
32	0.2440	0.1208
33	0.2411	0.1161
34	0.2291	0.1152
35	0.2274	0.1146
36	0.2215	0.1138
37	0.2065	0.1111
38	0.1999	0.1108

39	0.1991	0.1108
40	0.1872	0.1094
41	0.1795	0.1073
42	0.1726	0.1058
43	0.1687	0.1054
44	0.1616	0.1047
45	0.1357	0.1002
46	0.1286	0.0975
47	0.1230	0.0947
48	0.1194	0.0909
49	0.1150	0.0806
50	0.0380	0.0794

1/2 2 year to 50 year

Flow(CFS)	**Predev**	**Final**	**Percentage**	**Pass/Fail**
0.1349	5101	4940	96.0	Pass
0.1394	4698	3437	73.0	Pass
0.1439	4382	2474	56.0	Pass
0.1484	4060	1437	35.0	Pass
0.1529	3825	1093	28.0	Pass
0.1574	3513	1058	30.0	Pass
0.1619	3276	1040	31.0	Pass
0.1664	3006	1019	33.0	Pass
0.1709	2806	1001	35.0	Pass
0.1754	2565	984	38.0	Pass
0.1799	2391	966	40.0	Pass
0.1844	2207	949	42.0	Pass
0.1890	2068	934	45.0	Pass
0.1935	1912	906	47.0	Pass
0.1980	1778	883	49.0	Pass
0.2025	1611	852	52.0	Pass
0.2070	1498	822	54.0	Pass
0.2115	1372	788	57.0	Pass
0.2160	1269	762	60.0	Pass
0.2205	1150	722	62.0	Pass
0.2250	1082	684	63.0	Pass
0.2295	998	643	64.0	Pass
0.2340	917	611	66.0	Pass
0.2385	841	583	69.0	Pass
0.2430	763	540	70.0	Pass
0.2475	713	509	71.0	Pass
0.2520	640	489	76.0	Pass
0.2565	586	469	80.0	Pass
0.2610	526	452	85.0	Pass
0.2655	482	437	90.0	Pass
0.2700	437	414	94.0	Pass
0.2746	399	380	95.0	Pass
0.2791	353	346	98.0	Pass
0.2836	318	313	98.0	Pass
0.2881	288	292	101.0	Pass
0.2926	263	274	104.0	Pass
0.2971	241	244	101.0	Pass
0.3016	224	213	95.0	Pass
0.3061	200	176	88.0	Pass
0.3106	182	159	87.0	Pass
0.3151	168	145	86.0	Pass

0.3196	160	127	79.0	Pass
0.3241	150	109	72.0	Pass
0.3286	140	99	70.0	Pass
0.3331	137	81	59.0	Pass
0.3376	128	74	57.0	Pass
0.3421	123	62	50.0	Pass
0.3466	118	55	46.0	Pass
0.3511	112	44	39.0	Pass
0.3556	108	33	30.0	Pass
0.3602	101	20	19.0	Pass
0.3647	96	8	8.0	Pass
0.3692	87	6	6.0	Pass
0.3737	82	6	7.0	Pass
0.3782	73	6	8.0	Pass
0.3827	67	6	8.0	Pass
0.3872	58	5	8.0	Pass
0.3917	51	5	9.0	Pass
0.3962	48	5	10.0	Pass
0.4007	45	5	11.0	Pass
0.4052	40	5	12.0	Pass
0.4097	37	5	13.0	Pass
0.4142	34	5	14.0	Pass
0.4187	30	4	13.0	Pass
0.4232	29	4	13.0	Pass
0.4277	26	4	15.0	Pass
0.4322	24	4	16.0	Pass
0.4367	24	4	16.0	Pass
0.4412	21	4	19.0	Pass
0.4458	20	3	15.0	Pass
0.4503	18	3	16.0	Pass
0.4548	16	3	18.0	Pass
0.4593	12	3	25.0	Pass
0.4638	11	3	27.0	Pass
0.4683	9	3	33.0	Pass
0.4728	8	3	37.0	Pass
0.4773	8	3	37.0	Pass
0.4818	5	3	60.0	Pass
0.4863	4	3	75.0	Pass
0.4908	4	3	75.0	Pass
0.4953	3	3	100.0	Pass
0.4998	3	3	100.0	Pass
0.5043	3	3	100.0	Pass
0.5088	3	3	100.0	Pass
0.5133	3	3	100.0	Pass
0.5178	3	2	66.0	Pass
0.5223	3	2	66.0	Pass
0.5268	3	2	66.0	Pass
0.5314	3	1	33.0	Pass
0.5359	2	1	50.0	Pass
0.5404	2	1	50.0	Pass
0.5449	2	1	50.0	Pass
0.5494	2	1	50.0	Pass
0.5539	2	1	50.0	Pass
0.5584	2	1	50.0	Pass
0.5629	2	1	50.0	Pass
0.5674	1	0	.0	Pass

0.5719	1	0	.0	Pass
0.5764	1	0	.0	Pass
0.5809	1	0	.0	Pass

Water Quality BMP Flow and Volume.
On-line facility volume: 0.8788 acre-feet
On-line facility target flow: 0.8865 **cfs.**
Adjusted for 15 min: 0.9903 **cfs.**
Off-line facility target flow: 0.5238 **cfs.**
Adjusted for 15 min: 0.5851 **cfs.**

APPENDIX F

Oyster Bay Outfall Calculations

WESTPARK REDEVELOPMENT
Baffled Outlet

Upstream Elevation = Manhole Rim Elevation	ft	22.27	At junction of existing 18", existing 30" and proposed 48" storm drain
Downstream Elevation	ft	8.34	Mean High Water (MHW), NAVD88
Head	ft	13.93	Head to be dissipated
V = sqrt (2gH)	fps	29.95	Theoretical velocity in baffle structure
Vmax	fps	50	
V<Vmax?		Yes, OK	
Pipe Diameter	ft	4.00	
Pipe Area	sq ft	12.57	
Q	cfs	129	
Pipe Velocity	fps	10.27	48" SD SELECTED BASED ON BAFFLED OUTLET CRITERIA. A 36" ϕ SD MAY BE CONSIDERED IN FUTURE PHASES-
Pipe Velocity < 12?		Yes, OK	
A = Q/V	sq ft	4.31	Area of jet
d = sqrt(A)	ft	2.08	Assumes square jet
F = V / sqrt(gd)		3.66	Froude number
W/d ratio from graph		6	
W/d > 3?		Yes, OK	
W = (W/d) * d	ft	12.45	
L = (4/3) * W	ft	16.60	
f = (1/6) * W	ft	2.08	
e = (1/12) * W	ft	1.04	
H = (3/4) * W	ft	9.34	
a = (1/2) * W	ft	6.23	
b = (3/8) * W	ft	4.67	
c = (1/2) * W	ft	6.23	
Tailwater Check 1 = (b/2) + f	ft	4.41	
Tailwater Check 2 = Maximum = b + f	ft	6.74	
Approximate Ground Elevation	ft	12.5	At manhole 3 * D upstream of baffled outlet
Pipe Cover	ft	2	
Pipe invert elevation	ft	6.50	
Baffle Structure Invert Elevation	ft	4.42	Pipe invert - f
Inside Top Elevation	ft	13.76	Baffle structure invert elevation + H
Height of baffle structure above adjacent ground		1.26	
Tailwater Check 1 Elevation		8.83	Baffle structure invert elevation + (b/2) + f
MHW < Tailwater Check 1 Elevation?		Yes, OK	
Tailwater Check 2 Elevation		11.17	Baffle structure invert elevation + b + f
MWH < Tailwater Check 2 Elevation?		Yes, OK	
f/2		1.04	For notch dimensions
f/3		0.69	For notch dimensions
f/4		0.52	For notch dimensions
Length of Riprap		12.45	Baffle width
Rock diameter = W/20	ft	0.62	
Approx. Volume = (3.1417 * D^3) / 6	cu ft	0.13	
Approx. Weight = 2.4 * 62.4 * Approx. Volume	lb	18.92	
Rock Depth = W/6	ft	2.08	
Area under baffle = W * f	sq ft	25.84	
Velocity under baffle = Q / A	fps	4.99	

DESIGN BASED ON U.S. DEPT. OF INTERIOR BUREAU OF RECLAMATION, DESIGN OF SMALL CANAL STRUCTURES, P. 308 FF.

WESTPARK REDEVELOPMENT
Bouyancy Calculations for Baffled Outlet
Based on Department of Interior - Bureau of Reclamation Type 9 baffled outlet, 103-D-1348

MHHW Elevation	9.22	ft
Inside Bottom Elevation of Structure	4.42	ft
Bottom Slab Thickness	10	in
	0.83	ft
Outside Bottom Elevation of Structure	3.59	ft
Total Depth	5.63	ft
Inside Length	18	ft
Wall thickness	10	in
	0.83	ft
Total Length	18.83	
Inside Width	13	ft
Wall Thickness, two walls	20	in
	1.67	ft
Total Width	14.67	
Total Structure Volume Below MHHW	1,556.05	cu ft
Water Density	62.4	pound / cu ft
Weight of Water Displaced	97,098	pounds
Concrete Volume	29.6	cu yd
Volume	799.20	cu ft
Concrete Density	150.0	pound / cu ft
Concrete Weight	119,880	pounds
Concrete Weight > Displaced Water Weight?	**Yes, OK**	

APPENDIX G

Conveyance System Calculations

BREMERTON HOUSING AUTHORITY
Westpark Redevelopment
Roadway slopes for conveyance system design

SUBJECT TO CHANGE IN FUTURE DESIGN PHASES.

	PIPE CAPACITY			APPROX. ALLOWABLE DRAINAGE AREA	
Pipe Diameter, in	12	18	24		
Pipe Diameter, ft	1.00	1.50	2.00	1.0682	4.356
Area, sq ft	0.7854	1.7672	3.1417	cfs/ac	acres
Hydraulic Radius, ft, 0.25*D	0.25	0.375	0.5		per sq in
Manning's "n"	0.013	0.013	0.013		(1" = 100 ft)

Road	Upstream Station	Downstream Station	Slope ft/ft	Inlet Spacing	Capacity cfs (12)	Capacity cfs (18)	Capacity cfs (24)	12-inch Diameter Pipe ac	12-inch sq in	18-inch Diameter Pipe ac	18-inch sq in	24-inch Diameter Pipe ac	24-inch sq in
Baer Blvd	29+08	23+25	0.0369	300	6.86	20.23	43.57	6.42	1.47	18.94	4.35	40.79	9.36
	23+25	18+50	0.0290	200	6.08	17.94	38.63	5.70	1.31	16.79	3.85	36.16	8.30
	18+50	12+50	0.0312	300	6.31	18.60	40.07	5.91	1.36	17.42	4.00	37.51	8.61
	12+50	End	0.0514	300	8.10	23.88	51.43	7.58	1.74	22.35	5.13	48.14	11.05
	29+08	32+00	0.0537	300	8.28	24.41	52.57	7.75	1.78	22.85	5.25	49.21	11.30
	32+00	36+75	0.0343	300	6.62	19.51	42.01	6.19	1.42	18.26	4.19	39.33	9.03
	36+75	End	0.0100	200	3.57	10.53	22.68	3.34	0.77	9.86	2.26	21.24	4.87
McNeal	11+50	End	0.0085	150	3.29	9.71	20.91	3.08	0.71	9.09	2.09	19.58	4.49
	11+50	15+75	0.0173	200	4.70	13.85	29.84	4.40	1.01	12.97	2.98	27.93	6.41
	End	15+75	0.0055	150	2.65	7.81	16.82	2.48	0.57	7.31	1.68	15.75	3.62
Gaylyn	End	13+00	0.0193	200	4.96	14.63	31.51	4.65	1.07	13.70	3.14	29.50	6.77
	13+00	16+50	0.0699	300	9.44	27.85	59.97	8.84	2.03	26.07	5.98	56.14	12.89
	16+50	End	0.0204	200	5.10	15.04	32.40	4.78	1.10	14.08	3.23	30.33	6.96
Russell Rd	End	15+16	0.0724	300	9.61	28.34	61.04	9.00	2.07	26.53	6.09	57.14	13.12
	26+08	21+00	0.0259	200	5.75	16.95	36.51	5.38	1.24	15.87	3.64	34.17	7.85
	21+00	15+16	0.0102	200	3.61	10.64	22.91	3.38	0.78	9.96	2.29	21.45	4.92
	26+08	30+75	0.0375	300	6.92	20.40	43.93	6.48	1.49	19.09	4.38	41.12	9.44
	30+75	32+75	0.0755	300	9.82	28.94	62.33	9.19	2.11	27.09	6.22	58.35	13.40
	32+75	38+00	0.0600	300	8.75	25.80	55.56	8.19	1.88	24.15	5.54	52.02	11.94
Paradise	End	End	0.0774	300	9.94	29.30	63.11	9.30	2.14	27.43	6.30	59.08	13.56
Street 1	End	14+95	0.0093	150	3.45	10.16	21.88	3.23	0.74	9.51	2.18	20.48	4.70
	14+95	13+00	0.0287	200	6.05	17.84	38.43	5.67	1.30	16.70	3.83	35.97	8.26
	13+00	10+57	0.0142	200	4.26	12.55	27.03	3.99	0.91	11.75	2.70	25.30	5.81
	End	10+57	0.0200	200	5.05	14.90	32.08	4.73	1.09	13.94	3.20	30.03	6.89
Street 2	End	13+25	0.0341	300	6.60	19.45	41.89	6.18	1.42	18.21	4.18	39.21	9.00
	End	13+25	0.0200	200	5.05	14.90	32.08	4.73	1.09	13.94	3.20	30.03	6.89
Street 3	End	12+60	0.0143	200	4.27	12.60	27.13	4.00	0.92	11.79	2.71	25.39	5.83
	12+60	13+86	0.0296	200	6.15	18.12	39.03	5.75	1.32	16.96	3.89	36.53	8.39
	End	13+86	0.0200	200	5.05	14.90	32.08	4.73	1.09	13.94	3.20	30.03	6.89
Street 4	End	15+30	0.0372	300	6.89	20.31	43.75	6.45	1.48	19.02	4.37	40.96	9.40
	End	15+30	0.0200	200	5.05	14.90	32.08	4.73	1.09	13.94	3.20	30.03	6.89
Street 5	End	15+64	0.0144	200	4.29	12.64	27.22	4.01	0.92	11.83	2.72	25.48	5.85
	15+64	End	0.0273	200	5.90	17.40	37.48	5.53	1.27	16.29	3.74	35.09	8.05
Street 6	End	12+95	0.0420	300	7.32	21.59	46.49	6.85	1.57	20.21	4.64	43.52	9.99
	12+95	19+00	0.0193	200	4.96	14.63	31.51	4.65	1.07	13.70	3.14	29.50	6.77
	End	19+00	0.0200	200	5.05	14.90	32.08	4.73	1.09	13.94	3.20	30.03	6.89
Street 7	End	End	0.0339	300	6.58	19.39	41.76	6.16	1.41	18.15	4.17	39.10	8.98
Street 8	End	11+20	0.0200	200	5.05	14.90	32.08	4.73	1.09	13.94	3.20	30.03	6.89
	End	11+20	0.0200	200	5.05	14.90	32.08	4.73	1.09	13.94	3.20	30.03	6.89
Street 9	End	End	0.0477	300	7.80	23.00	49.54	7.30	1.68	21.53	4.94	46.38	10.65
Street 10	End	End	0.0331	300	6.50	19.16	41.27	6.08	1.40	17.94	4.12	38.63	8.87

Notes:
1. Based on road profiles in
brem-fs1:\CAD\5301-Bremerton Housing Authority\Westpark Redevelopment\Master Planning\XBR5301-MP-DE-PROFILE.dwg
2. Inlet spacing based on:

Road slope < 1%:	150-ft
1% < Road Slope < 3%:	200-ft
Road slope > 3%:	300-ft

237-5301-002 (01/02)
Conveyance Design.xls \ Pipe Slopes

Prepared September 2006

BREMERTON HOUSING AUTHORITY
Westpark Redevelopment
Flow estimates for Basin 2

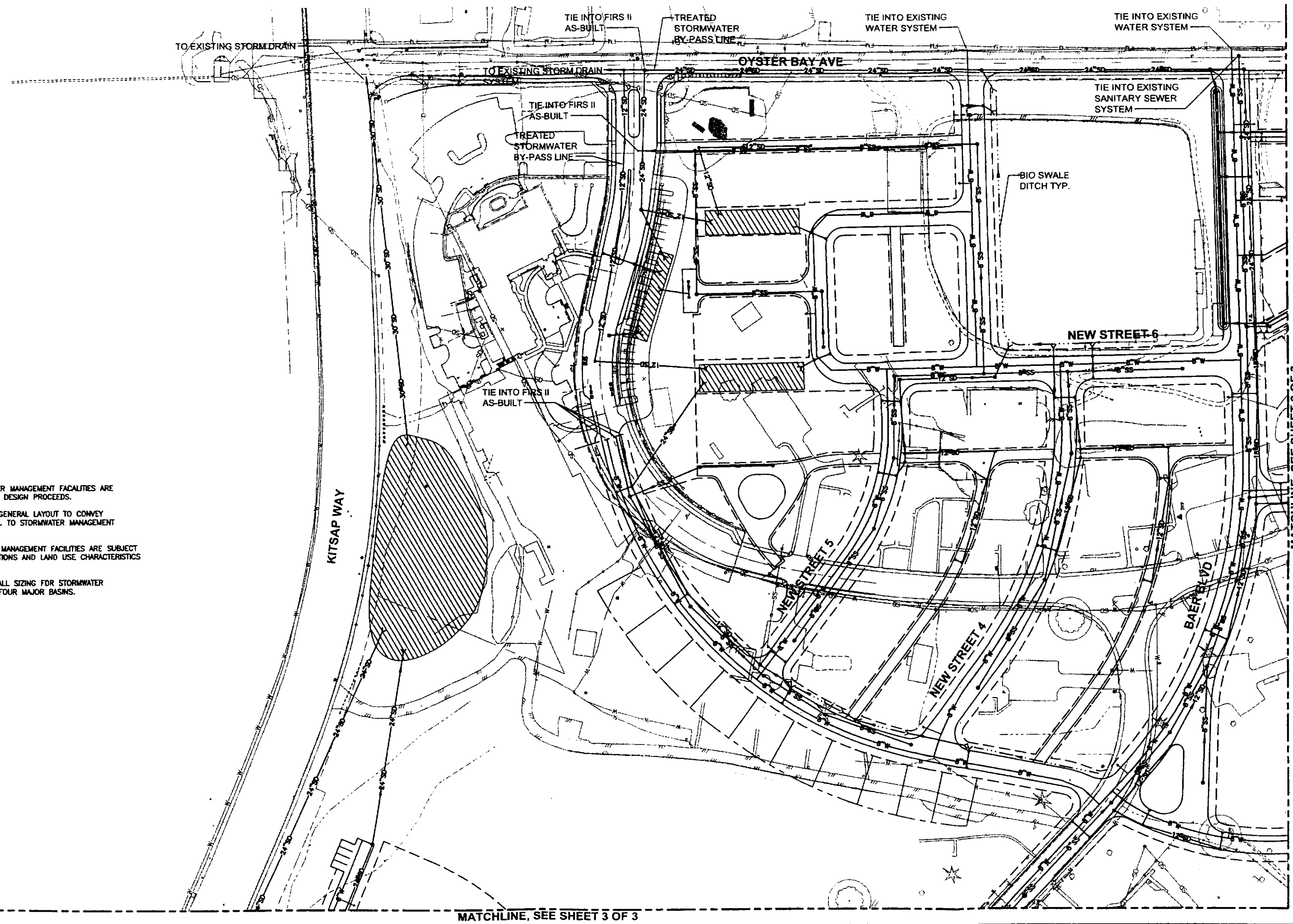
Sub-basin	L	W	Area, ac	Sub-basin	Cumulative Area ac	Q100 at 1.0682 cfs / acre cfs	
1	220	210	1.061	1	1.061	1.13	
2	220	180	0.909	1+2	1.970	2.10	
3	215	225	1.111	1+2+3	3.080	3.29	
4	205	220	1.035	1+2+3+4	4.116	4.40	
5	130	140	0.418	5	0.418	0.45	
6	110	160	0.404	5+6	0.822	0.88	
7	155	145	0.516	5+6+7	1.338	1.43	
8	300	145	0.999	5+6+7+8	2.336	2.50	
9	120	130	0.358	9	0.358	0.38	
10	140	230	0.739	9+10	1.097	1.17	
11	170	160	0.624	11	0.624	0.67	
12	165	130	0.492	9 through 12	2.214	2.37	
13	35	270	0.217	9 through 13	2.431	2.60	
14	265	130	0.791	9 through 14	3.222	3.44	
15	190	170	0.742	9 through 15	3.963	4.23	
16	260	150	0.895	9 through 16	4.859	5.19	
20	120	210	0.579	20	0.579	0.62	
21	230	450	2.376	21	2.376	2.54	
22	140	120	0.386	20+21+22	3.340	3.57	
23	110	180	0.455	23	0.455	0.49	
24	170	140	0.546	23+24	1.001	1.07	
25	100	100	0.230	23+24+25	1.230	1.31	
26	95	110	0.240	N/A	N/A	N/A	
27	35	250	0.201	20 through 27	5.011	5.35	
28	145	135	0.449	20 through 28	5.461	5.83	
29	120	210	0.579	N/A	N/A	N/A	
30	120	160	0.441	30	0.441	0.47	
31	150	230	0.792	30+31	1.233	1.32	
32	220	90	0.455	32	0.455	0.49	
33	180	205	0.847	32+33	1.302	1.39	
34	190	300	1.309	30 through 34	3.843	4.11	
35	105	155	0.374	20 through 35	10.256	10.96	18" ϕ
36	200	105	0.482	N/A	N/A	N/A	
37	170	80	0.312	20 through 37	11.050	11.80	
38	120	245	0.675	20 through 38	11.725	12.52	18" ϕ
39	130	175	0.522	20 through 39	12.247	13.08	
40	60	290	0.399	40	0.399	0.43	
41	170	220	0.859	20 through 41	13.506	14.43	18" ϕ
42	130	210	0.627	20 through 42	14.132	15.10	

BREMERTON HOUSING AUTHORITY
Westpark Redevelopment
Flow estimates for Basin 3

Sub-basin	L	W	Area, ac	Sub-basin	Cumulative Area ac	Q100 at 1.0682 cfs / acre cfs	
1	100	280	0.643	1	0.643	0.69	
6	250	320	1.837	1+6	2.479	2.65	
2	250	350	2.009	2	2.009	2.15	
3	350	130	1.045	2+3	3.053	3.26	
4	400	160	1.469	2+3+4	4.522	4.83	
7	230	190	1.003	2+3+4+7	5.526	5.90	
8	270	110	0.682	2+3+4+7+8	6.208	6.63	
5	230	270	1.426	1 though 8	10.112	10.80	
10	370	270	2.293	10	2.293	2.45	
9	180	290	1.198	9	1.198	1.28	
				9+10	3.492	3.73	
11	210	230	1.109	1 through 11	14.713	15.72	
13	320	180	1.322	13	1.322	1.41	
14	320	250	1.837	13+14	3.159	3.37	
15	210	250	1.205	13 through 15	4.364	4.66	
16	260	90	0.537	1 through 16	19.614	20.95	— 24" ϕ
17	180	250	1.033	17	1.033	1.10	
18	180	140	0.579	17+18	1.612	1.72	
19	200	240	1.102	19	1.102	1.18	
20	150	230	0.792	17 through 20	3.506	3.74	
21	130	160	0.478	**1 through 21**	$\boxed{23.597}$	25.21	— 24" ϕ
30	320	100	0.735	30	0.735	0.78	
31	270	90	0.558	30+31	1.292	1.38	
32	190	150	0.654	32	0.654	0.70	
33	260	160	0.955	32+33	1.609	1.72	
34	120	150	0.413	30+31+32+33+34	3.315	3.54	
35	130	240	0.716	1 through 21 + 30 through 35	27.629	29.51	— 24" ϕ
36	100	240	0.551	1 through 21 + 30 through 36	28.180	30.10	— 24" ϕ
37	260	100	0.597	37	0.597 ~~37.000~~	~~30.52~~ 0.64 cfs	
38	130	100	0.298	37+38	0.895	0.96	
39	200	150	0.689	37+38+39	1.584	1.69	
40	240	140	0.771	1 through 21 + 30 through 40	30.535	32.62	— 24" ϕ
41	110	270	0.682	1 through 21 + 30 through 41	31.217	33.35	— 24"
42	280	350	2.250	N/A	N/A	N/A	
43	130	180	0.537	42+43	2.787	2.98	
44	210	100	0.482	1 through 21 + 30 through 44	34.486	36.84	— 36" ϕ
45	240	170	0.937	N/A	N/A	N/A	
50	125	270	0.775	50	0.775	0.83	
51	165	100	0.379	50+51	1.154	1.23	
52	300	135	0.930	50+51+52	2.083	2.23	
53	290	150	0.999	50+51+52+53	3.082	3.29	
54	335	130	1.000	50+51+52+53+54	4.082	4.36	
55	120	130	0.358	50+51+52+53+54+55	4.440	4.74	
56	150	185	0.637	50+51+52+53+54+55+56	5.077	5.42	
				1 through 21 + 30 through 45 + 50 through 56	40.499	43.26	— 36" ϕ
57	110	270	0.682	57	0.682	0.73	
58	300	170	1.171	1 through 21 + 30 through 45 + 50 through 58	42.352	45.24	— 36" ϕ
59	180	125	0.517	1 through 21 + 30 through 45 + 50 through 59	42.868	45.79	— 36" ϕ

APPENDIX H

Drainage System Layout



NOTES:

1. THE CONVEYANCE SYSTEM AND STORMWATER MANAGEMENT FACILITIES ARE CONCEPTUAL AND SUBJECT TO CHANGE AS DESIGN PROCEEDS.

2. THE CONVEYANCE SYSTEM REFLECTS THE GENERAL LAYOUT TO CONVEY STORMWATER FROM BASINS 2, 3, OBC AND SE. TO STORMWATER MANAGEMENT FACILITIES WITHIN THE RESPECTIVE BASINS.

3. THE LOCATION AND SIZE OF STORMWATER MANAGEMENT FACILITIES ARE SUBJECT TO CHANGE BASED ON FUTURE DESIGN CONDITIONS AND LAND USE CHARACTERISTICS TRIBUTARY TO EACH FACILITY.

4. SEE THE STORMWATER REPORT FOR OVERALL SIZING FOR STORMWATER MANAGEMENT FACILITIES WITHIN EACH OF THE FOUR MAJOR BASINS.

LEGEND:

- CATCH BASIN
- MANHOLE OR CATCH BASIN TYPE 2
- FLOW DIRECTION
- WATER LINES
- SANITARY SEWER LINES
- STORMWATER LINES
- TREATED STORM WATER LINES
- STORMWATER TREATMENT FACILITIES
- BIOSWALES
- CONVEYANCE SWALES

SCALE IN FEET
0 60 120

WESTPARK REDEVELOPMENT
SCHEMATIC UTILITY DESIGN
NOVEMBER 1, 2006
SHEET 1 OF 3

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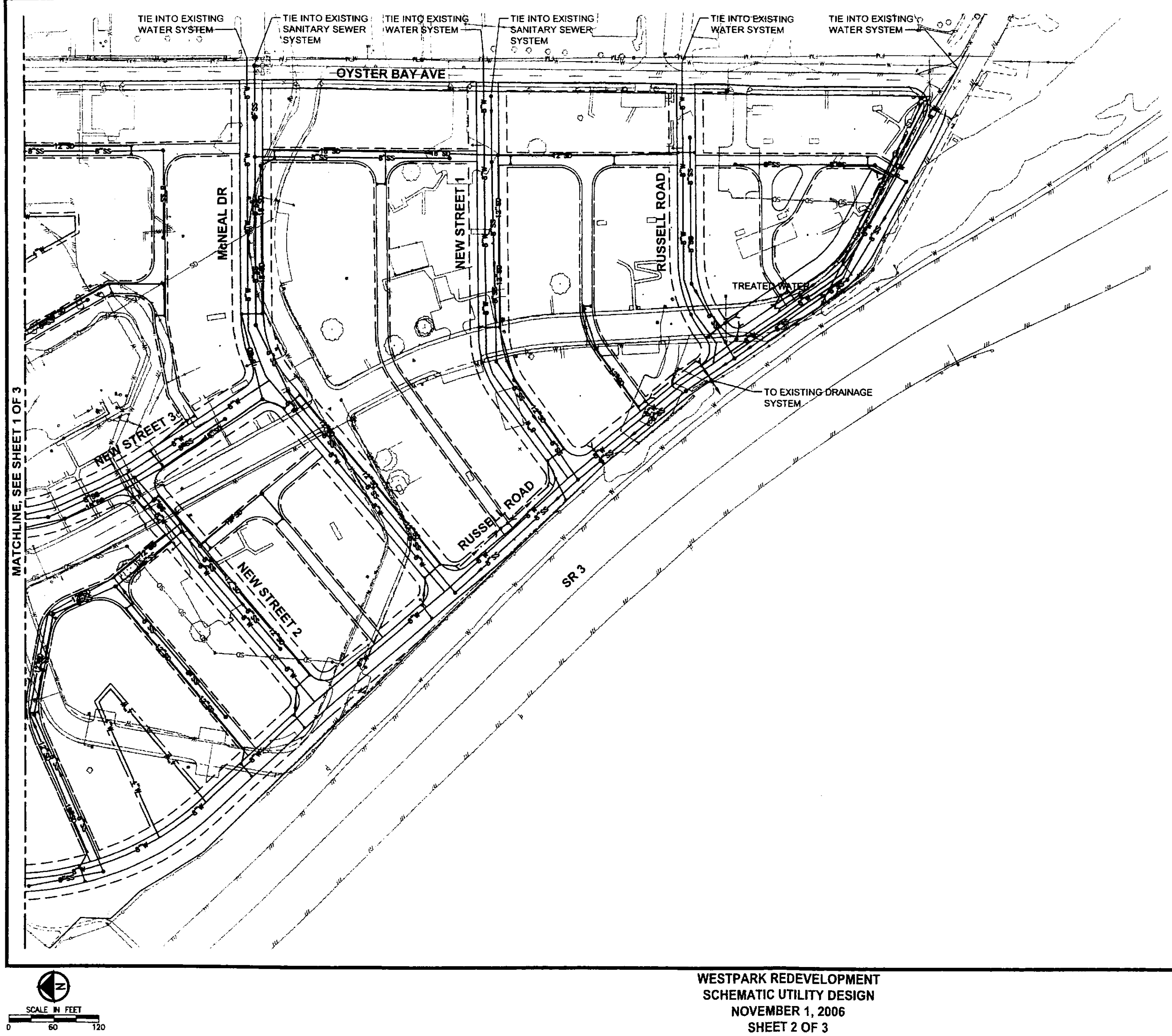

NOTES:

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WESTPARK REDEVELOPMENT
SCHEMATIC UTILITY DESIGN
NOVEMBER 1, 2006
SHEET 2 OF 3

Parametrix
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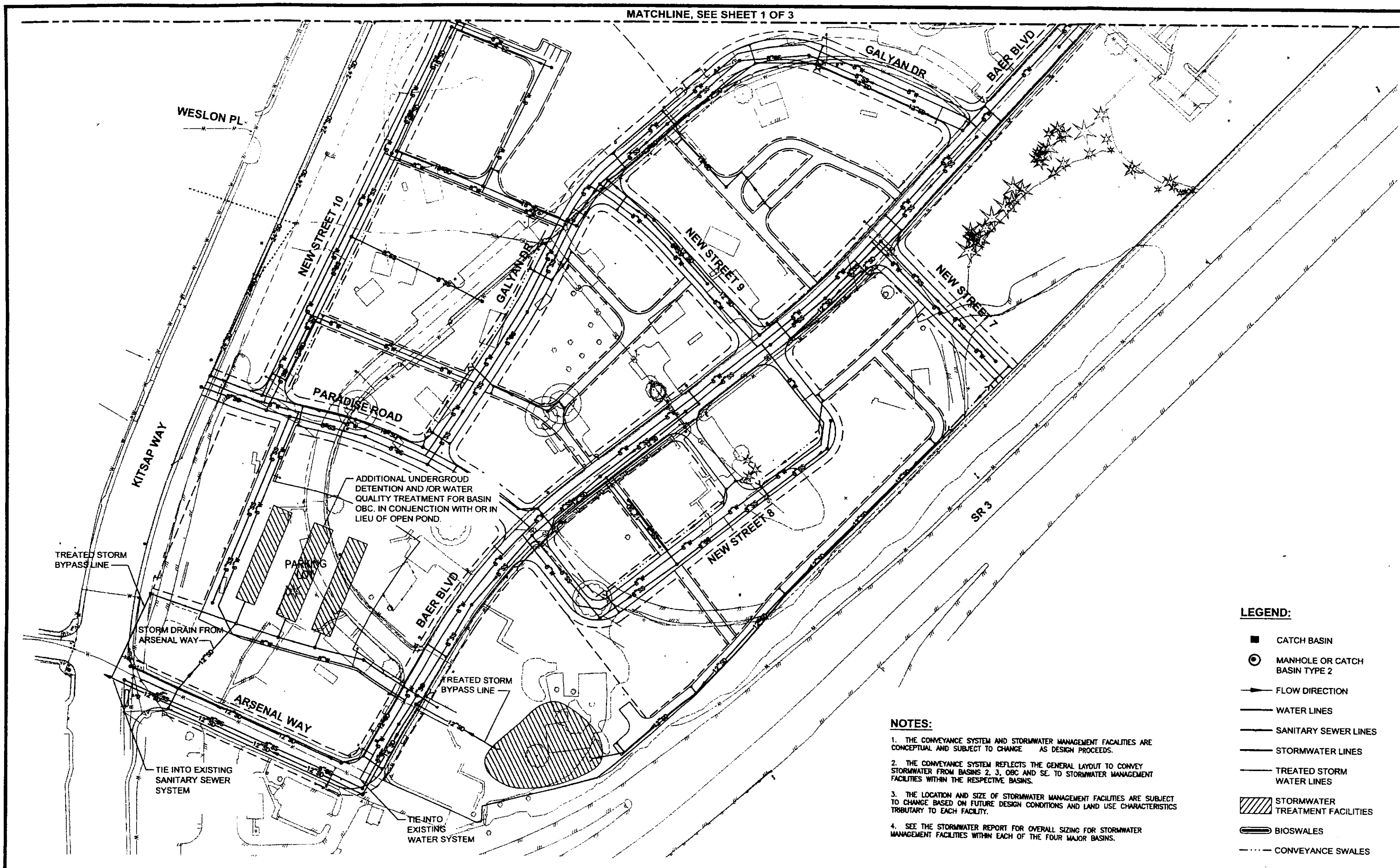

NOTES:

1. THE CONVEYANCE SYSTEM AND STORMWATER MANAGEMENT FACALITIES ARE CONCEPTUAL AND SUBJECT TO CHANGE AS DESIGN PROCEEDS.

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LEGEND:

- CATCH BASIN
- MANHOLE OR CATCH BASIN TYPE 2
- FLOW DIRECTION
- WATER LINES
- SANITARY SEWER LINES
- STORMWATER LINES
- TREATED STORM WATER LINES
- STORMWATER TREATMENT FACILITIES
- BIOSWALES
- CONVEYANCE SWALES

WESTPARK REDEVELOPMENT
SCHEMATIC UTILITY DESIGN
NOVEMBER 1, 2006
SHEET 3 OF 3

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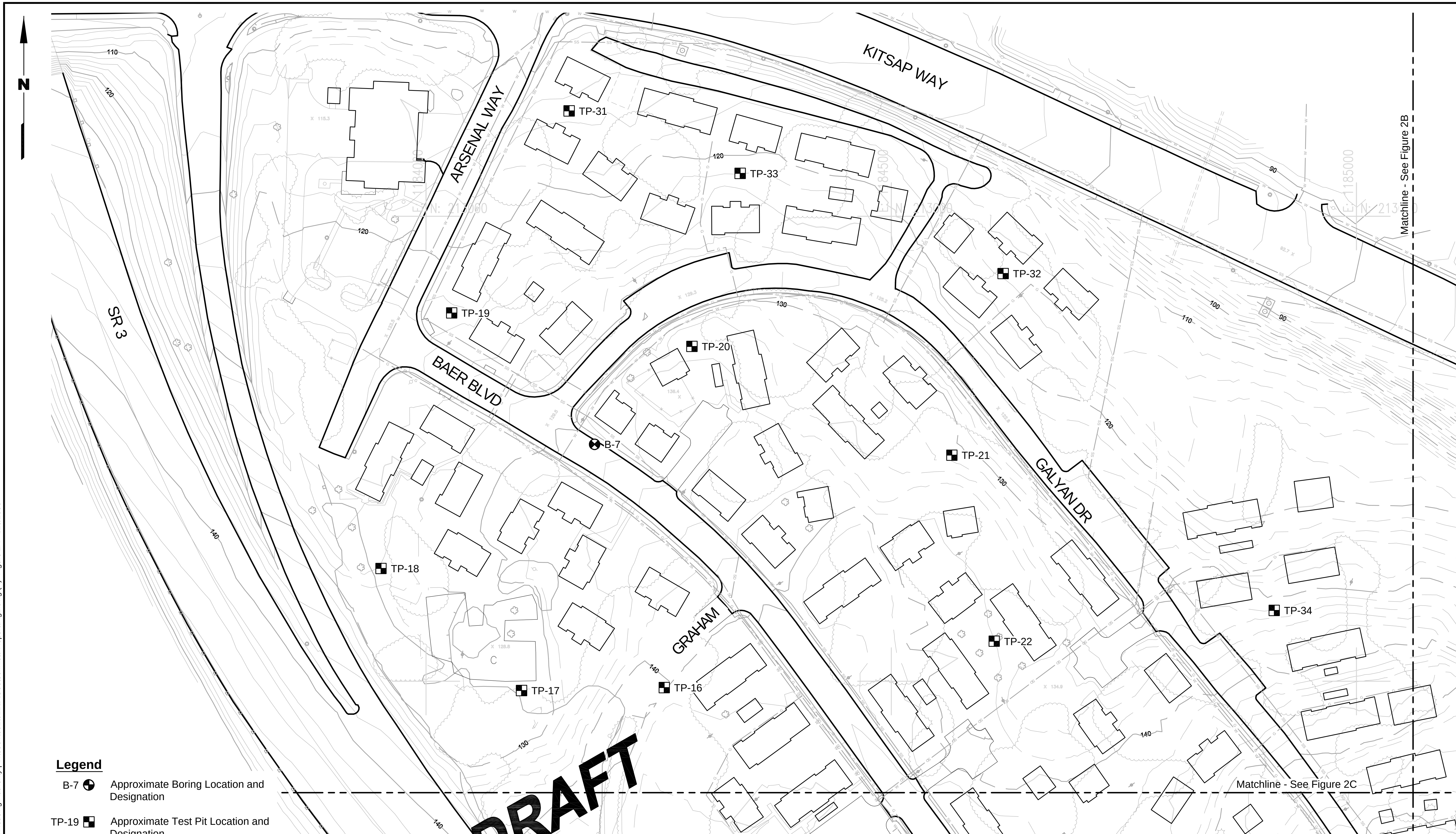
B. EARTH



Legend

B-7 Approximate Boring Location and Designation

TP-19 Approximate Test Pit Location and Designation

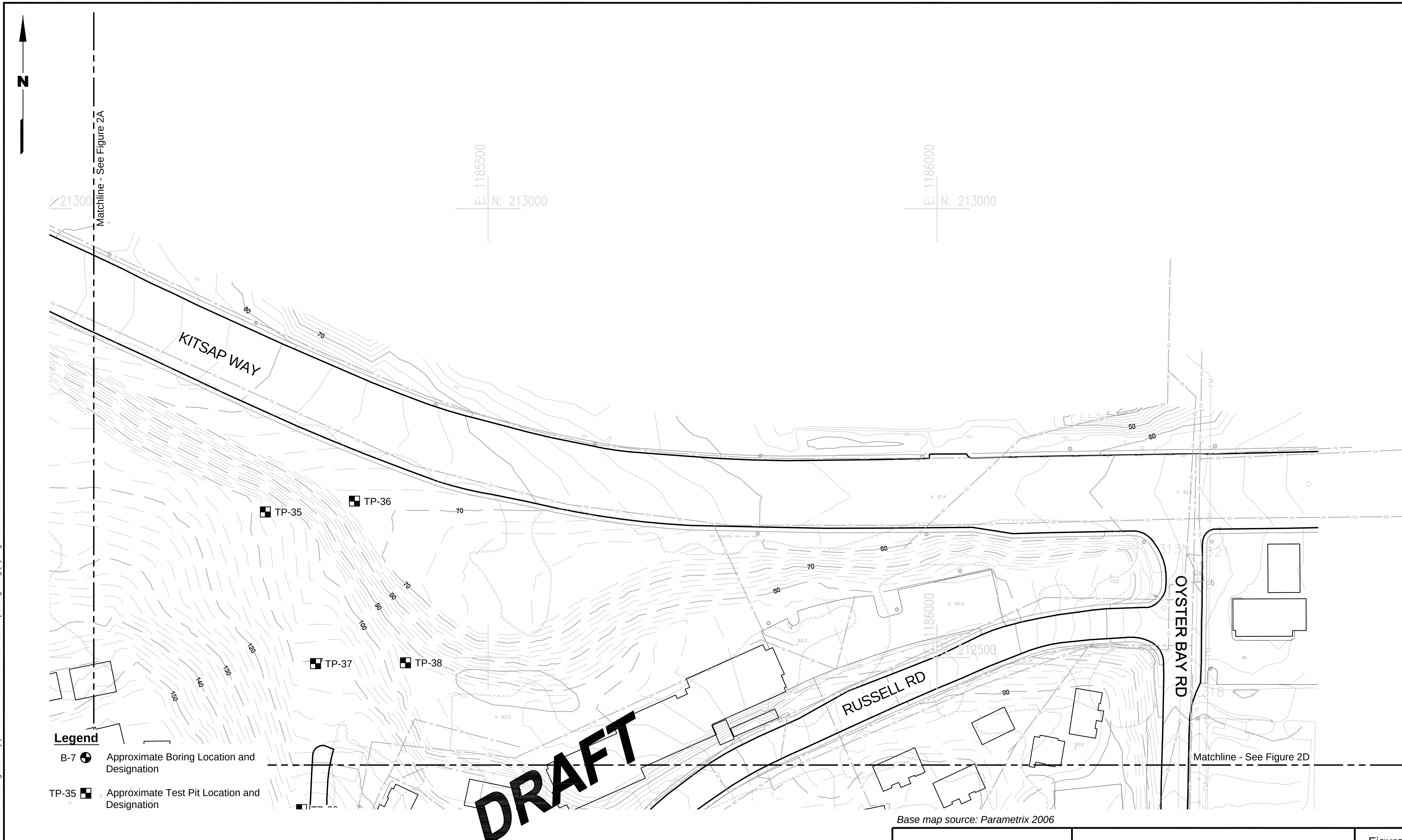
Base map source: Parametrix 2006

0 100 200
Scale in Feet

Bremerton Housing Authority | V:\0964\001\011\D\Geotechnical Report\Fig2.dwg (A) "Figure 2A" 4/26/2006

Landau Associates

Westpark Redevelopment Bremerton, Washington	Site and Exploration Plan	Figure 2A

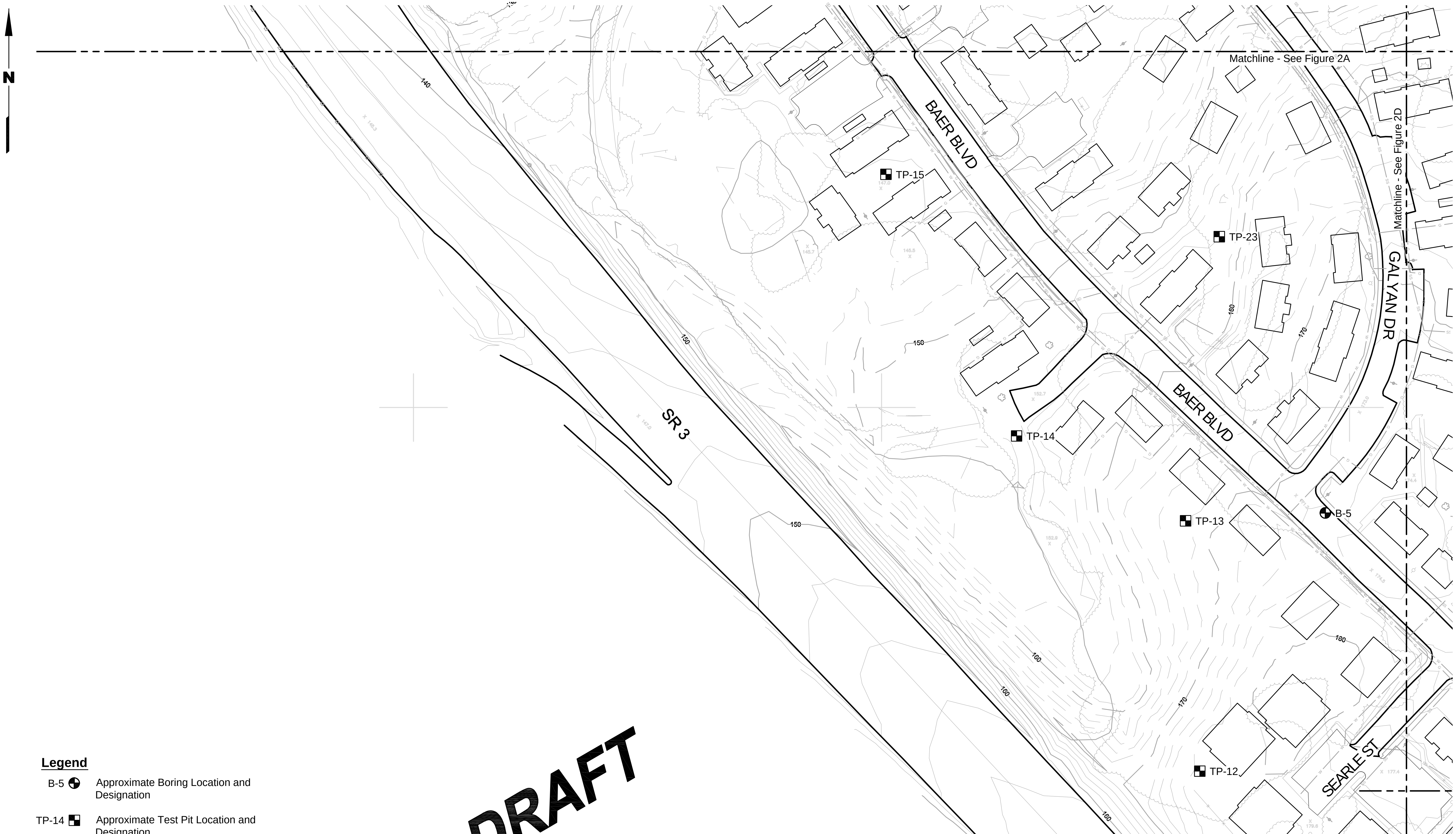


Base map source: Parametrix 2006

Bremerton Housing Authority | V:\0964\001\011\D\Geotechnical Report\Fig2.dwg (A) "Figure 2B" 4/26/2006

LANDAU ASSOCIATES

Westpark Redevelopment Bremerton, Washington	**Site and Exploration Plan**	Figure 2B



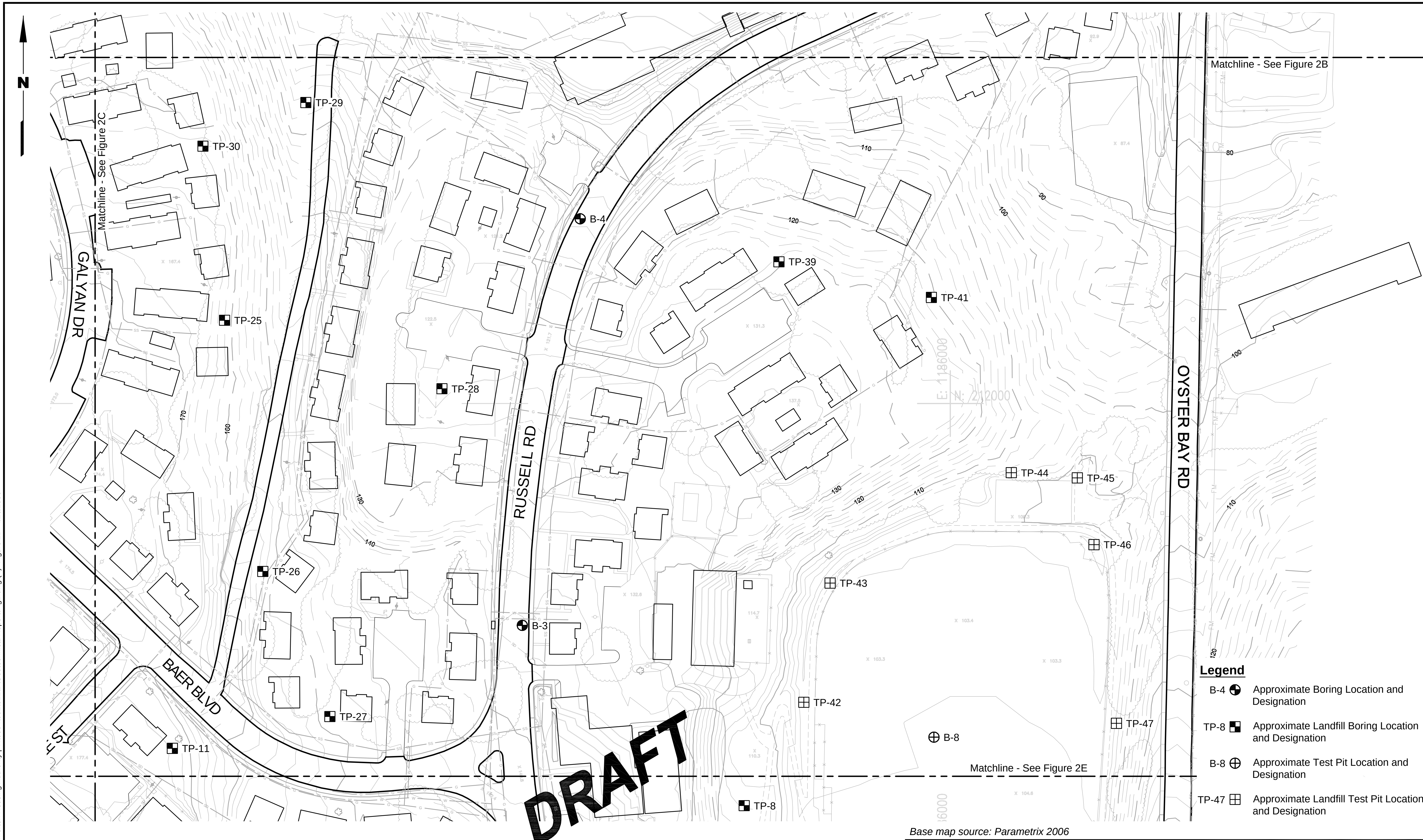
Base map source: Parametrix 2006

Westpark Redevelopment
Bremerton, Washington

Site and Exploration Plan

Figure
2C

LANDAU ASSOCIATES



Base map source: Parametrix 2006

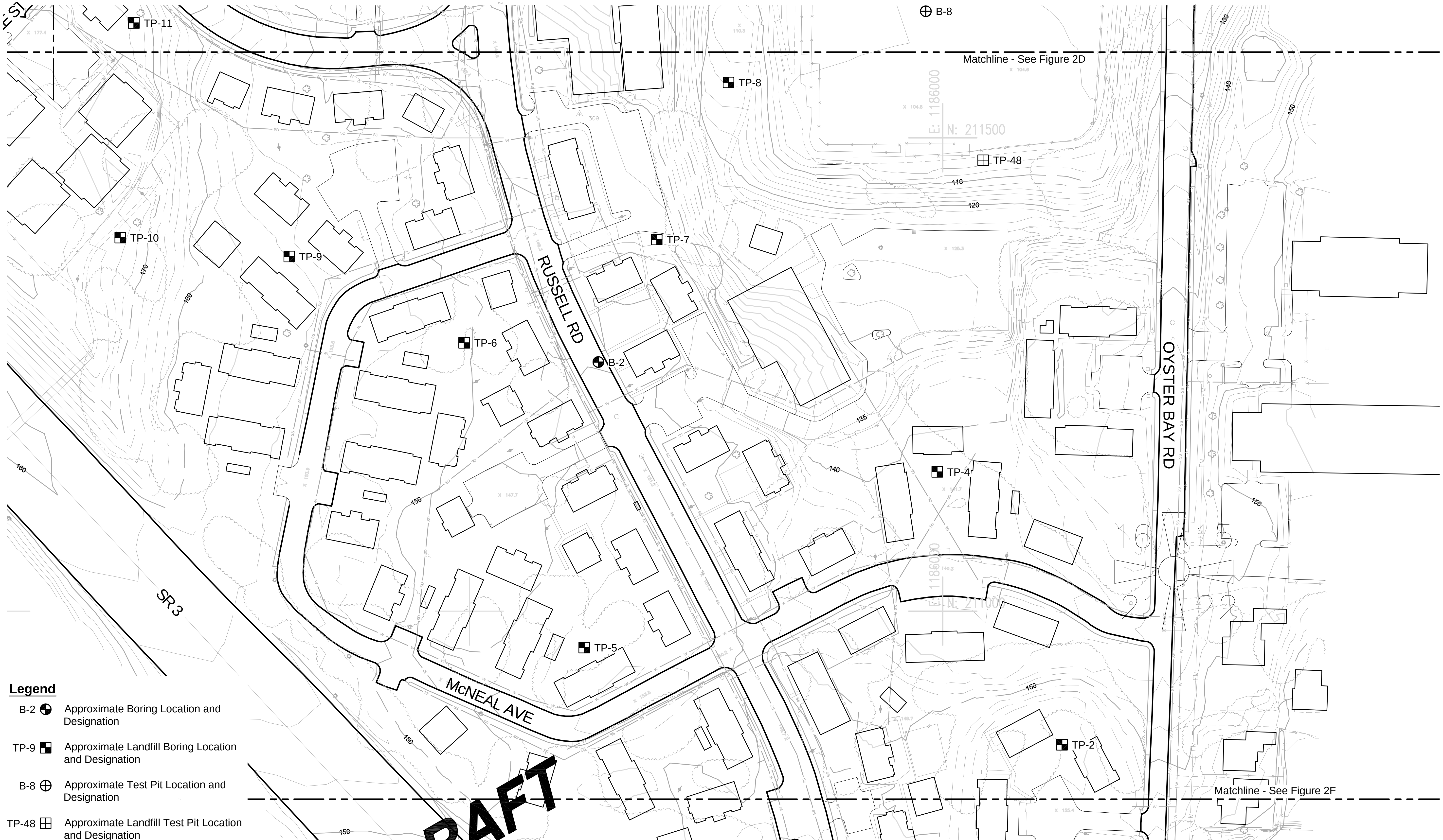
Bremerton Housing Authority | V:\0964\001\011\D\Geotechnical Report\Fig2.dwg (A) "Figure 2D" 4/26/2006

LANDAU ASSOCIATES

Westpark Redevelopment
Bremerton, Washington

Site and Exploration Plan

Figure
2D



Legend

B-2 Approximate Boring Location and Designation

TP-9 Approximate Landfill Boring Location and Designation

B-8 Approximate Test Pit Location and Designation

TP-48 Approximate Landfill Test Pit Location and Designation

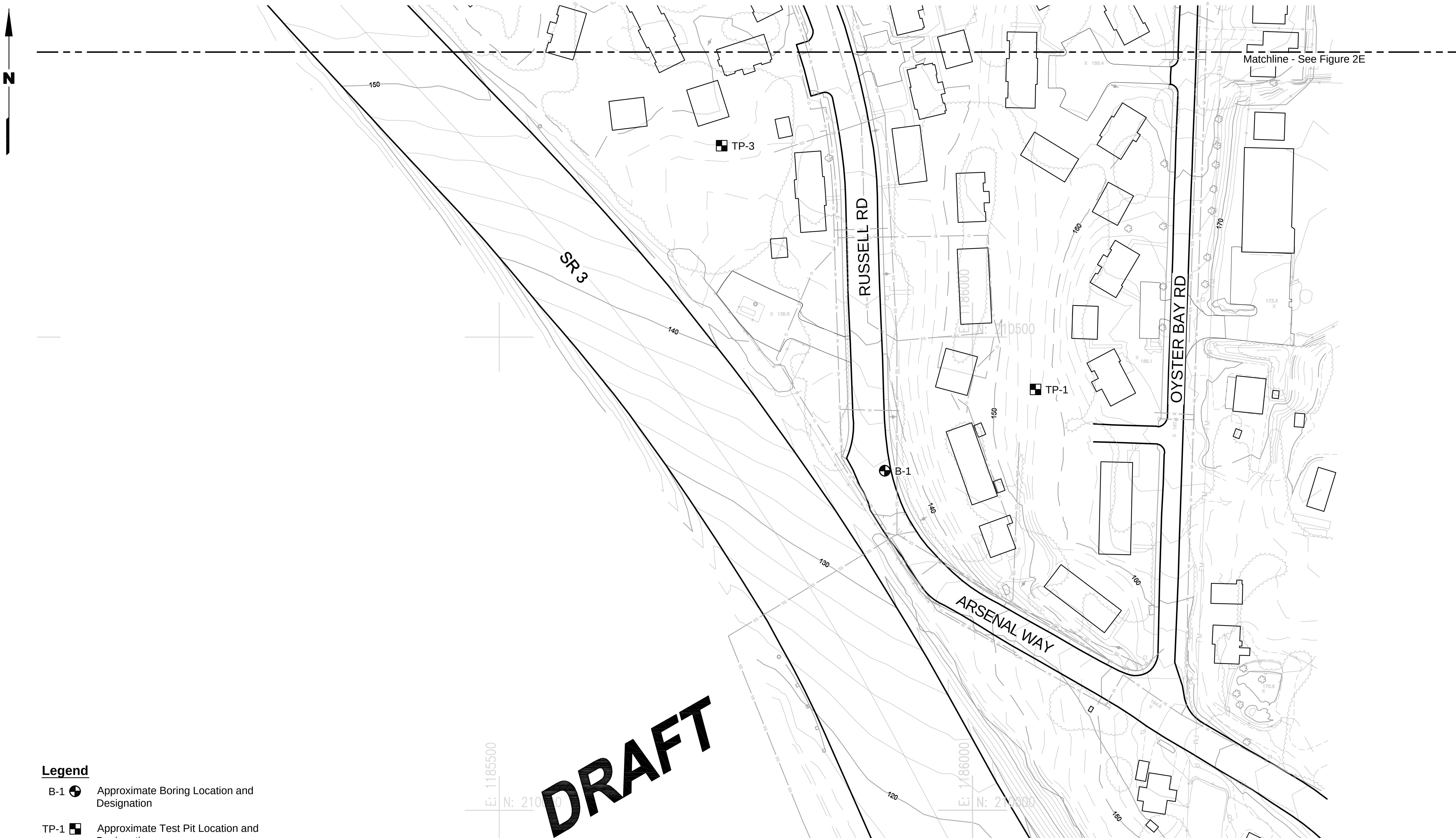
Bremerton Housing Authority | V:\0964\001\011\D\Geotechnical Report\Fig2.dwg (A) "Figure 2E" 4/26/2006

LANDAU ASSOCIATES

Westpark Redevelopment
Bremerton, Washington

Site and Exploration Plan

Figure
2E



Legend

B-1 Approximate Boring Location and Designation

TP-1 Approximate Test Pit Location and Designation

Base map source: Parametrix 2006

0 100 200
Scale in Feet

Landau Associates

Westpark Redevelopment
Bremerton, Washington

Site and Exploration Plan

Figure
2F

NOT FOR PRODUCTION Bremerton Housing Authority | V:\0964\001\011\D\Geotechnical Report\Fig2.dwg (A) "Figure 2F" 4/26/2006

C. PLANTS & ANIMALS

Plants & Animals

1. Inventory & Methodology

The plant communities on the Westpark site were initially inventoried, classified, and described through a review of existing federal, state, and local mappings, aerial photograph interpretation, and field surveys. Present land-use patterns at the site and on surrounding lands were noted from available aerial photographs and direct observations in the field.

On November 16, 2005, Raedeke Associates, Inc. personnel documented, described, and classified vegetation communities and recorded wildlife use of the project site. The Braun-Blanquet cover-abundance scale (Table A.1) and a plotless sampling technique (Mueller-Dombois and Ellenberg 1974) to objectively describe plant species composition and relative abundance in homogeneous vegetation cover types were used. Data collected using these methods is contained in Appendix . General habitat conditions and the presence and character of special habitat features were also noted. Scientific nomenclature of all plant species identified follows that of Hitchcock and Cronquist (1976), as updated by Pojar and MacKinnon (1994), and Cooke (1997).

See Appendix __ for a list of scientific and common names of plants and animals. Raedeke Associates, Inc. staff investigated the project area for wetlands according to the U.S. Army Corps of Engineers (COE) Wetlands Delineation Manual (Environmental Laboratory 1987), as revised in the Washington State Wetlands Identification and Delineation Manual published by the Washington Department of Ecology (WDOE 1997). This methodology is required by state law for all local jurisdictions, including the City of Bremerton.

The analysts collected and analyzed background information available for the site prior to the on-site investigation, including maps and information from the U.S. Fish and Wildlife Service National Wetland Inventory (USFWS NWI 1987), U.S.D.A. Soil Conservation Service (SCS) Soil Survey (McMurphy 1980), and the Washington Department of Natural Resources (WDNR 2005) Forest Practices Base Map. Aerial photographs were also reviewed to assist in defining existing plant communities, drainage patterns, and land use.

Animal use of the site was investigated through direct field observations and through compilation of information about the site provided by local agencies and published sources. Information about the site was also extrapolated from our research and management experience in the Puget Sound lowlands.

Thus, field observations were augmented by information on species-habitat preferences in order to evaluate the likelihood of the occurrence of additional wildlife species. A general wildlife-habitat table for habitat types found on the Westpark site was developed based on King County (1987) Wildlife Habitat Profile (Appendix xx). The habitat cover classification system in that reference is broadly applicable to the Puget Sound lowlands and encompasses the cover types found on the Westpark property. No distinct classification system is available specifically for Kitsap County. We consulted additional information for wildlife-habitat relationships (Johnson and O'Neil 2001) and for specific animal groups, including Hunn (1982), Penland (1984), Smith et al. (1997), and Wahl and Paulson (1994) for birds, Guenther and Kucera (1978) and Johnson and Cassidy (1997) for mammals, and Brown et al. (1995), Dvornich et al. (1997), Leonard et al. (1993), and Nussbaum et al. (1983) for reptiles and amphibians.

During field investigation on November 16, 2005, animal sign was documented while describing plant communities and habitats. Information regarding habitat use and activities of wildlife species observed was also recorded. Such information included concentrations of animals and special habitat features such as large trees, snags (standing dead or partially dead trees), or large downed logs.

The Washington Natural Heritage Program was contacted in November 2005 for any documented information on the likelihood of occurrence of endangered, threatened, or sensitive plant species on the project site or vicinity. We then consulted species accounts and descriptions of the Washington Natural Heritage Program (1997), Hitchcock and Cronquist (1976), and Pojar and MacKinnon (1994) for information on plant species of special concern (i.e., threatened, endangered, or sensitive) that might be found in the project area. During our field surveys, we searched for the presence of any of these species suspected to occur on the project site or vicinity.

IInformation from Washington Department of Fish and Wildlife (WDFW 2005b) was also reviewed for documented information on the likelihood of occurrence of Priority Species and Habitats (PHS) on the project area and vicinity from their PHS/HRTG database. State priority species are defined as those fish and wildlife species “requiring protective measures and/or management guidelines to ensure their perpetuation” (WDFW 1999). State priority habitats are defined as habitat types “with unique or significant value to many species” (WDFW 1999).

In addition, lists maintained by the USFWS (2005) and the WDFW (1999, as updated in 2005b) were consulted for information on the occurrence and habitat relationships of wildlife species of special concern that might use the site during at least some part of the year. Species accounts (including citations above) and management recommendations (e.g., Rodrick and Milner 1991, Larsen 1997, Larsen et al. 2004) were consulted to determine habitat preference of such species and to evaluate the likelihood of their occurrences on the project site. During our field investigations, we then searched for the presence of these species, or signs thereof, that may be likely to occur on the site.

Table A.1. Key to Braun-Blanquet cover-abundance scale.

Braun-Blanquet Code	Definition	Cover Class Range (%)	Cover Class Mid-Point (%)
5	Any number, with cover more than 3/4 of the reference area	75-100	87.5
4	Any number, with cover between 1/2 and 3/4 of the reference area	50-75	62.5
3	Any number, with cover between 1/4 and 1/2 of the reference area	25-50	37.5
2	Any number, with cover between 1/20 and 1/4 of the reference area	5-25	15.0
1	Numerous, but less than 1/20 cover, or scattered, with cover up to 1/20	< 5	2.5
+	Few, with little cover	< 5	2.5
r	Solitary, with little cover	< 5	2.5

Table A.2. Scientific and common names of plants with assigned Wetland Indicator Status (WIS) (Reed 1988, 1993) and Braun-Blanquet cover-abundance value (Table A.1). Scientific names from Hitchcock and Cronquist (1976), Pojar and MacKinnon (1994), and Cooke (1997).

			Cover Type						
Scientific Name	**Common Name**	**WIS[1]**	**Fc**	**Fc**	**Fc**	**Fc**	**Fc**	**Fd**	**Fc**
TREES									
Acer macrophyllum	Big-leaf maple	FACU	2		1	2	4		
Alnus rubra	Red alder	FAC	1					3	
Arbutus menziesii[@]	Pacific madrone	UPL[@]				1			1
Pseudotsuga menziesii	Douglas fir	FACU	2		4	4	3		4
Prunus spp.	Ornamental cherry	--	1						
Thuja plicata	Western red cedar	FAC	2						2
Tsuga heterophylla	Western hemlock	FACU-				2			
SHRUBS									
Acer macrophyllum (s)	Big-leaf maple	FACU	2						
Alnus rubra (s)	Red alder	FAC	2						
Cornus nuttallii (s) [@]	Pacific dogwood	UPL[@]			1				
Corylus cornuta (s)	Hazelnut	FACU		1	1	2			1
Gaultheria shallon	Salal	FACU	1			2			1
Hedera helix[@]	English ivy	UPL[@]	4	2	4	2	3		3
Holodiscus discolor[@]	Oceanspray	UPL[@]				1			
Ilex aquifolium[@]	English holly	UPL[@]	1			1			1
Mahonia nervosa[@]	Cascade Oregongrape	UPL[@]	2						
Oemleria cerasiformis	Indian plum	FACU				1			
Prunus spp.	Ornamental cherry	--			1				2
Rhamnus purshiana (s)	Cascara	FAC-				1			
Rubus discolor	Himalayan blackberry	FACU	2	1	3		3	4	3
Rubus laciniatus	Evergreen	FACU+					2		

	blackberry								
Rubus ursinus	Pacific blackberry	FACU			2				

Table A.2. Continued.

Scientific Name	**Common Name**	**WIS[1]**							
Salix lucida (s)	Pacific willow	FACW+						2	
Sorbus spp.*(s)#*	Mountain ash	---							+
Vaccinium ovatum[@]	Evergreen huckleberry	UPL[@]	2			3			2
HERBS / FORBS									
Bidens cernua	Nodding beggar-ticks	FACW+		1				1	
Geranium robertianum[@]	Herb Robert	UPL[@]		1					
Geum macrophyllum	Largeleaved avens	FACW-						1	
Polystichum munitum	Sword fern	FACU	1	1		1	2	1	1
Pteridium aquilinum	Bracken-fern	FACU			1	1			
Ranunculus repens	Creeping buttercup	FACW		1					
Vinca spp.	Periwinkle	UPL[@]					4		

[1] = The following codes are used:
(s) = Sapling
= Genera with species having a wide range of WIS ratings, not included in our vegetation plot calculations.
[@] = Those species not listed by Reed (1988, 1993) are rated UPL by default (Federal Interagency Committee for Wetland Delineation 1989). These species were included in our vegetation plot calculations.

[2] = WIS ratings with a minus symbol are considered "drier," while the plus symbol indicates "wetter" species. Plants not identified to species are shown with the WIS range for the species common to this region

Table A.3. Endangered, threatened and sensitive vascular plants of Kitsap County, Washington, as of December 2006. (Source: http://www.dnr.wa.gov/nhp/refdesk/lists/plantsxco/kitsap.html).

Scientific Name	**Common Name**	**Status** **State**	**Federal**
Abronia umbellata spp. acutalata	Pink sandverbena	X	SC
Boschniakia hookeri	Vancouver ground-cone	R1	
Hydrocotyle ranunculoides	Floating water pennywort	S	
Lycopodiella inundata	Bog clubmoss	S	
Oxalis suksdorfii	Western yellow oxalis	T	
Puccinellia nutkaensis	Alaska alkigrass	S	
Utricularia gibba	Humped bladderwort	R1	
Woodwardia fimbriata	Chain-fern	S	

Status Codes:

State: E = Endangered
T = Threatened
S = Sensitive
X = Possibly extinct or extirpated from Washington
R1 = Review group 1. Of potential concern but needs more field work to assign another rank.

Federal (USFWS): SC = Species of Concern
T = Threatened

Table A.4. Wildlife species detected (D) on and/or potentially occurring (P) on the Westpark property, from the King County (1987) Wildlife Habitat Profile.

		S/A[1]	Status[2]	19C	24A	24B	30B
AMPHIBIANS							
Northwestern Salamander	*Ambystoma gracile*				P	P	
Long-toed Salamander	*Ambystoma macrodactylum*				P	P	
Pacific Giant Salamander	*Dicamptodon tenebrosus*				P	P	
Roughskin Newt	*Taricha granulosa*				P	P	
Ensatina	*Ensatina eschscholtzii*				P	P	
Western Redback Salamander	*Plethodon vehiculum*				P	P	
Western Toad	*Bufo boreas*		FCo/Sc		P	P	
Pacific Treefrog	*Pseudacris regilla*				P	P	
Red-legged Frog	*Rana aurora*				P	P	
REPTILES							
Northern Alligator Lizard	*Elgaria coerulea*				P	P	
Rubber Boa	*Charina bottae*				P	P	
Common Garter Snake	*Thamnophis sirtalis*				P	P	P
Western Terrestrial Garter Snake	*Thamnophis elegans*				P	P	
Northwestern Garter Snake	*Thamnophis ordinoides*				P	P	P
BIRDS							
Canada Goose	*Branta canadensis*	R/C		P			
Mallard	*Anas platyrhynchos*	R/C		P			P
Eurasian Wigeon	*Anas penelope*	W/U		P			
American Wigeon	*Anas americana*	W/C		P			
Sharp-shinned Hawk	*Accipiter striatus*	R/U			D	P	P
Cooper's Hawk	*Accipiter cooperii*	R/U			P	P	
Red-tailed Hawk	*Buteo jamaicensis*	R/U			P	P	
Merlin	*Falco columbarius*	W/U	Sc		P		P
Ruffed Grouse	*Bonasa umbellus*	R/C			P	P	
California Quail (I)	*Callipepla californica*	R/U					P
Killdeer	*Charadrius vociferus*	R/C					P
Greater Yellowlegs	*Tringa melanoleuca*	M/C		P			
Mew Gull	*Larus canus*	W/C		P			

Table A.4. Continued.

		S/A[1]	Status[2]	19C	24A	24B	30B
BIRDS (Continued)							
Ring-billed Gull	*Larus delawarensis*	W/C		P			
Glaucous-winged Gull	*Larus glaucescens*	R/C		D			P
Rock Dove (I)	*Columba livia*	R/C		P			P
Band-tailed Pigeon	*Columba fasciata*	R/U	Sg			P	P
Common Barn-Owl	*Tyto alba*	R/U			P	P	
Western Screech-Owl	*Otus kennicottii*	R/U				P	
Great Horned Owl	*Bubo virginianus*	R/C			P	P	
Northern Pygmy-Owl	*Glaucidium gnoma*	R/C			P		
Barred Owl	*Strix varia*	R/U			P	P	
Northern Saw-whet Owl	*Aegolius acadicus*	R/C			P	P	
Rufous Hummingbird	*Selasphorus rufus*	S/C			P	P	P
Red-breasted Sapsucker	*Sphyrapicus ruber*	S/C			P	P	
Downy Woodpecker	*Picoides pubescens*	R/C			P	P	
Hairy Woodpecker	*Picoides villosus*	R/C			P		
Northern Flicker	*Colaptes auratus*	R/C		P	D	P	P
Pileated Woodpecker	*Dryocopus pileatus*	R/U	Sc		P	P	
Olive-sided Flycatcher	*Contopus cooperi*	S/C	FCo		P		
Western Wood-Pewee	*Contopus sordidulus*	S/U			P	P	
Willow Flycatcher	*Empidonax traillii*	S/C				P	
Hammond's Flycatcher	*Empidonax hammondii*	S/U				P	
Pacific Slope Flycatcher	*Empidonax difficilis*	S/C			P	P	
Steller's Jay	*Cyanocitta stelleri*	R/C			P	D	P
American/Northwestern Crow	*Corvus brachyrhynchos*	R/C		P	D	D	P
Black-capped Chickadee	*Poecile atricapillus*	R/C				P	P
Chestnut-backed Chickadee	*Poecile rufescens*	R/C			D		
Bushtit	*Psaltriparus minimus*	R/C			D	P	P
Red-breasted Nuthatch	*Sitta canadensis*	R/C			P		
Brown Creeper	*Certhia americana*	R/C			P	P	
Bewick's Wren	*Thryomanes bewickii*	R/C				P	P
Winter Wren	*Troglodytes troglodytes*	R/C			D		
Golden-crowned Kinglet	*Regulus satrapa*	R/C			D	P	
Ruby-crowned Kinglet	*Regulus calendula*	W/C			P	D	P

Table A.4. Continued.

		S/A[1]	Status[2]	19C	24A	24B	30B
BIRDS (Continued)							
Townsend's Solitaire	*Myadestes townsendi*	W/U			P		
Swainson's Thrush	*Catharus ustulatus*	S/C			P	P	
Hermit Thrush	*Catharus guttatus*	M/C			P		
American Robin	*Turdus migratorius*	R/C		P	D	P	P
Varied Thrush	*Ixoreus naevius*	W/C			P	P	P
Bohemian Waxwing	*Bombycilla garrulus*	W/U			P		P
Cedar Waxwing	*Bombycilla cedrorum*	S/C				P	P
European Starling (I)	*Sturnus vulgaris*	R/U		P		D	P
Solitary Vireo	*Vireo cassini*	S/C			P	P	
Hutton's Vireo	*Vireo huttoni*	R/C			P	P	
Warbling Vireo	*Vireo gilvus*	S/U			P	P	
Red-eyed Vireo	*Vireo olivaceus*	S/C				P	
Orange-crowned Warbler	*Vermivora celata*	S/C				P	
Yellow Warbler	*Dendroica petechia*	S/C				P	
Yellow-rumped Warbler	*Dendroica coronata*	M/C			P	P	P
Black-throated Gray Warbler	*Dendroica nigrescens*	S/C			P	P	
Townsend's Warbler	*Dendroica townsendi*	S/C			P		
MacGillivray's Warbler	*Oporornis tolmiei*	S/C			P	P	
Wilson's Warbler	*Wilsonia pusilla*	S/C				P	P
Western Tanager	*Piranga ludoviciana*	S/C			P	P	
Black-headed Grosbeak	*Pheucticus melanocephalus*	S/C				P	P
Evening Grosbeak	*Coccothraustes vespertinus*	R/C			P	P	P
Spotted Towhee	*Pipilo maculatus*	R/C				D	P
Fox Sparrow	*Passerella iliaca*	R/C				P	P
Song Sparrow	*Melospiza melodia*	R/C			D	D	P
Golden-crowned Sparrow	*Zonotrichia atricapilla*	W/C				D	P
White-crowned Sparrow	*Zonotrichia leucophrys*	R/C					P
Dark-eyed Junco	*Junco hyemalis*	R/C			D	D	P
Brewer's Blackbird	*Euphagus cyanocephalus*	R/C					P
Brown-headed Cowbird	*Molothrus ater*	S/C			P	P	P
Purple Finch	*Carpodacus purpureus*	R/C			P	P	
House Finch	*Carpodacus mexicanus*	R/C				P	P

Table A.4. Continued.

		S/A[1]	Status[2]	19C	24A	24B	30B
BIRDS (Continued)							
Red Crossbill	*Loxia curvirostra*	R/C			P		
Pine Siskin	*Carduelis pinus*	R/C			P	P	P
American Goldfinch	*Carduelis tristis*	S/C				P	P
House Sparrow (I)	*Passer domesticus*	R/C		P			P
MAMMALS							
Common Opossum (I)	*Didelphis virginiana*				P	P	
Trowbridge Shrew	*Sorex trowbridgii*				P		
Dusky Shrew	*Sorex monticolus*				P	P	
Shrew-mole	*Neurotrichus gibbsii*				P	P	P
Townsend's Mole	*Scapanus townsendii*			P		P	P
Coast Mole	*Scapanus orarius*			P	P	P	P
Snowshoe Hare	*Lepus americanus*				P	P	
Eastern Cottontail (I)	*Sylvilagus floridanus*					P	
Aplodontia (Mountain Beaver)	*Aplodontia rufa*					P	
Townsend's Chipmunk	*Tamias townsendii*				P	P	
Eastern Gray Squirrel (I)	*Sciurus carolinensis*			P			P
Douglas' Squirrel	*Tamiasciurus douglasii*				P		
Northern Flying Squirrel	*Glaucomys sabrinus*				P	P	
Deer Mouse	*Peromyscus maniculatus*				P	P	P
Bushy-tailed Woodrat	*Neotoma cinerea*				P	P	
Western Red-backed Vole	*Clethrionomys californicus*	R/C			P		
Creeping Vole (Oregon)	*Microtuus oregoni*				P	P	
Norway Rat (I)	*Rattus norvegicus*						P
Black Rat (I)	*Rattus rattus*						P
House Mouse (I)	*Mus musculus*						P
Porcupine	*Erethizon dorsatum*					P	
Black Bear	*Ursus americanus*				P	P	
Raccoon	*Procyon lotor*				P	P	P
Ermine (short-tailed weasel)	*Mustela erminea*				P	P	
Long-tailed Weasel	*Mustela frenata*				P	P	
Striped Skunk	*Mephitis mephitis*				P	P	P
Coyote	*Canis latrans*				P	P	P

Table A.4. Continued.

		S/A[1]	Status[2]	19C	24A	24B	30B
MAMMALS (Continued)							
Red Fox	*Vulpes vulpes*				P	P	
Bobcat	*Lynx rufus*				P	P	
Elk	*Cervus elaphus*		Sg		P	P	
Columbian Black-Tailed Deer (Mule Deer)	*Odocoileus hemionus*		Sg		P	P	
TOTAL NUMBER OF SPECIES[5]				17	83	92	50

E = species expected to occur in the habitat indicated, during part or all of annual cycle.

D = species detected in the habitat indicated.

I = species introduced to the state of Washington.

[1] S/A = Seasonality/Abundance. Seasonality: F – fall, M – migrating, R – resident, S – summer, W – winter. Abundance: C – common, R – rare, U – uncommon.

[2] Status = FCo – Federal species of concern, Fc – Federal candidate, Fe – Federal endangered, Fm – Federal monitor, Ft – Federal threatened, Sc – State candidate, Sg – State game, Sm – State monitor, St – State threatened, Se – State endangered.

[3] Habitats: 19C – lowland and mountain grass/forb, mowed, stable
24A – second-growth lowland forest, coniferous
24B – second-growth lowland forest, deciduous
30B – urban/suburban, moderately vegetated.

[4] Forages aerially over many habitats.

[5] Excludes aerial foragers indicated by [4].

D. FISHERIES

Fisheries & Aquatic Species Descriptions

Chinook Salmon

Chinook salmon are found along the Pacific Coast from the Ventura River in southern California to Point Hope, Alaska (Wydoski and Whitney 1979). In Washington, chinook salmon spawn in streams in the Columbia River, Puget Sound, and coastal drainages (Wydoski and Whitney 1979).

Naturally spawning females guard redds for up to three weeks before dying; males attempt to fertilize other redds before dying (U.S. Federal Register, 9 March 1998). Chinook salmon eggs hatch after 90 to 150 days, depending on water temperature (Wydoski and Whitney 1979). Juvenile Puget Sound fall chinook typically rear fresh water for several months during the January through July period before migrating to sea. Out migration occurs primarily during the months of April, May, and June. Juvenile fall (ocean-type) chinook salmon use estuaries extensively to feed before starting their long-distance oceanic migrations, exhibiting longer residence times in estuaries than do other anadromous salmonids (Healey 1982).

The following overview (Table 1) of the habitat requirements for chinook salmon have been derived primarily from *Habitat Requirements of Anadromous Salmonids* (Reiser and Bjornn 1979), and *Habitat Suitability Index Models and Instream Flow Suitability Curves: Chinook Salmon* (Raleigh et al. 1986).

Table 1
CHINOOK HABITAT REQUIREMENTS

Parameter	Metric Units	English Units
Upstream Migration of Adults		
Temperature Range	10.6-19 ^{o}C	51-67 ^{o}F
Minimum Depth	0.24 meters	9.5 inches
Maximum Velocity	2.44 meters/sec	8.0 feet/sec
Spawning and Incubation		
Temperature Range		
spawning	5.6-13.9^{o}C	42-57^{o}F
incubation	5.0-14.4^{o}C	41-58^{o}F
Minimum Depth	0.24 meters	9.5 inches
Velocity Range	30-91 cm/sec	1-3 feet/sec
Substrate (Gravel) Size Range	1.3-10.2 cm	0.5 - 4 inches
Minimum Dissolved Oxygen	5 mg/l	
Average Redd Area	5.1 square meters	55 square feet

Coho Salmon

Coho salmon are found along the Pacific Coast from Monterey Bay in central California to Point Hope, Alaska (Wydoski and Whitney 1979). In Washington, coho salmon spawn in streams in the Columbia River, Puget Sound, and coastal drainages (Wydoski and Whitney 1979). Adults spawn in late fall and early winter. Coho salmon eggs hatch after 45 to 60 days, depending on water temperature (Wydoski and Whitney 1979).

Coho juveniles typically rear in fresh water for one year (Groot and Margolis 1991). While in fresh water, juveniles utilize virtually all accessible reaches of their natal stream systems for rearing, including lakes, seasonally wetted areas, off-channel ponds, sloughs, swamps, and their tributaries (Pollard et al. 1997; Bryant et al. 1996; Hartman and Brown 1987; Cederholm and Scarlett 1981; Skeesick 1970). Some physical characteristics of habitat typically selected by coho fry and parr include depths greater than 8 centimeters, low current velocity, and availability of cover (Fransen et al. 1993; Fausch 1993; Shirvell 1990; Bugert et al. 1991). Juvenile coho typically begin migrating to sea as smolts during their second spring, with peak downstream migration typically occurring from April through mid-May.

The following overview (Table 2) of the habitat requirements for coho salmon has been derived primarily from *Habitat Requirements of Anadromous Salmonids* (Reiser and Bjornn 1979), and *Habitat Suitability Index Models and Instream Flow Suitability Curves: Coho Salmon* (McMahon 1983).

Table 2
COHO HABITAT REQUIREMENTS

Parameter	Metric Units	English Units
Upstream Migration of Adults		
Temperature Range	7.2-15.6 °C	45-60 °F
Minimum Depth	0.18 meters	7 inches
Maximum Velocity	2.44 meters/sec	8.0 feet/sec
Spawning and Incubation		
Temperature Range		
spawning	4.4-9.4 °C	40-49 °F
incubation	4.4-13.3 °C	40-56 °F
Minimum Depth	0.18 meters	7 inches
Velocity Range	30-91 cm/sec	1-3 feet/sec
Substrate (Gravel) Size Range	1.3-10.2 cm	0.5-4 inches
Minimum Dissolved Oxygen	5 mg/l	
Average Redd Area	2.8 square meters	30 square feet

Chum Salmon (description from local references and USACE 2002, Appendix B – Species Descriptions)

Chum salmon have the largest range of natural geographic and spawning distribution of all the Pacific salmon species (Bakkala 1970). Historically, in North America, chum salmon occurred from Monterey, California to the Arctic coast of Alaska and east to the Mackenzie River, which flows into the Beaufort Sea. Present spawning populations are found as far south as Tillamook Bay on the northern Oregon coast (Johnson et al. 1997).

Chum salmon spawn in streams and rivers of various sizes, and the fry migrate to sea soon after emergence. They spend more of their life history in estuaries and marine waters than the other Pacific salmon species with the exception of ocean-type (fall) chinook salmon. Chum salmon spawning runs can be grouped into three seasonal runs; summer, fall and winter.

Chum salmon primarily spawn in the lower reaches of rivers and in shallower, lower gradient, lower velocity streams and side channels, extending from just above tidal influence up to 100 km of the ocean (Salo 1991; Johnson et al. 1997). Some chum salmon may also spawn in intertidal areas, with the presence of upwelling groundwater potentially being a preferred spawning location (Johnson et al. 1997). They typically show little persistence in successfully passing falls or blockages, though there are some exceptions. In some low-gradient systems such as the Yukon River in Alaska or the Amur River in the Russian Federation, chums have been documented to migrate up to 2,500 km inland (Johnson et al. 1997).

Fry typically emerge from the gravel at night and immediately migrate downstream to estuarine waters (Salo 1991), although, in some populations, fry may spend a few days to several weeks in the stream and then move downstream to the ocean (Salo 1991; Johnson et al. 1997). Fry outmigration may take only a few hours or days where spawning sites are close to the mouths of rivers (Johnson et al. 1997). In Washington, Oregon and British Columbia, migration to the estuary occurs from February through May with earlier migrations occurring to the south (Johnson et al. 1997). Chum and pink salmon do not have the clearly defined smolt stages that occur in other salmonids, however they are capable of adapting to seawater as fry, soon after emergence from the gravel (Johnson et al. 1997).

Like fall chinook salmon, juvenile chum salmon use estuaries extensively to feed before starting their long-distance oceanic migrations (Healey 1982).

Cutthroat Trout (description from USACE 2002, Appendix B – Species Descriptions)

Coastal cutthroat trout occur along the coast of North America from Humboldt Bay, California to Prince William Sound, Alaska. This subspecies occurs inland to the crest of the Cascade Mountain Range in Washington and Oregon, and to the crest of the Coast Range in British Columbia and Alaska (Trotter 1989).

There are three basic life history forms that occur amongst the various coastal cutthroat trout populations, including an anadromous form, a potamodromous form that includes both stream-dwelling and lake dwelling populations, and a non-migratory form that resides in small streams and headwater tributaries (Trotter 1989).

The anadromous life history form of coastal cutthroat trout spawn in low or gentle gradient areas of the mainstem or tributaries of small to moderate size streams systems (Trotter 1989). Spawning periods extend from December through May with peak spawning periods in February in Washington, Oregon and southern British Columbia (Trotter 1989). Emergence from the gravel can occur from March through June, with a peak occurring around mid April (Trotter 1989). After emergence, cutthroat trout need nursery and rearing habitat with protective cover and low velocity water (Behnke 1992).

These habitats occur along stream margins, side channels, small tributaries and spring seeps.

Anadromous coastal cutthroat trout have been documented to smolt and migrate to sea from age 1 to age 6 (Giger 1972; Lowery 1975), with the majority smolting and migrating at age 2, 3, or 4 (Trotter 1989). In Washington and Oregon, seaward migration peaks in mid-May (Trotter 1989). Anadromous coastal cutthroat trout spend two to five months in bays, estuaries, and along the coast before returning to the rivers as the winter months approach (Behnke 1992). Anadromous coastal cutthroat trout may complete this seaward migration pattern twice before they return to the river to spawn (Trotter 1989). They feed on crustaceans and fish when in salt water and on the drifting larvae of aquatic insects or other fish species when in fresh (Behnke 1992).

Resident non-migratory coastal cutthroat trout populate small headwater streams and exhibit only limited instream movement (Trotter 1989). These fish are small, not reaching a length greater that 150 to 200mm (6-8 inches), and their life span is shorter, typically living until three to four years in age (Wyatt 1959). Resident coastal cutthroat trout mature at age two to three (June 1981; Nicholas 1978).

After emergence from the gravel, young fish move to channel margins, side channels, and slow water areas (Moore and Gregory 1988). At the end of the summer, they move to feeding stations in pools (Moore and Gregory 1988). In winter, they may move downstream to more secure winter habitats. Wyatt (1959) reported that only 3 percent of the population ever moved more than 200 m from their emergence area. In the spring, when water temperatures reach 5 to 6^{o}C, mature resident non-migratory coastal cutthroat trout move back into spawning areas. Resident life history forms primarily feed at the head of pools on drift prey (Wilzbach and Hall 1985).

Steelhead Trout (description from USACE 2002, Appendix B – Species Descriptions)

Steelhead trout (*Oncorhynchus mykiss*) are found from central California to the Bering Sea and Bristol Bay coastal streams of Alaska. Most streams of any size in the Puget Sound region have populations of steelhead trout (Pauley et al. 1986).

In Washington coastal populations, total age at maturity is typically four years; two years in freshwater and two years in the ocean.

Steelhead have two basic reproductive ecotypes, based on the state of their sexual maturity at river entry and the durations of the spawning migration (Burgner et al. 1992). These reproductive ecotypes are 1) stream maturing or summer steelhead, or 2) ocean maturing or winter steelhead (Busby et al. 1996). Some basins have both summer and winter steelhead present, however in the project area only East Kitsap winter steelhead are present. Where they both occur, they are often separated by a seasonal hydrologic barrier such as a waterfall (Busby et al. 1996). It appears summer steelhead occur where habitat is not fully used by winter steelhead, and summer steelhead spawn further upstream than winter steelhead (Withler 1966; Roelofs 1983; Behnke 1992).

Summer steelhead enter fresh water from May to October in a sexually immature state, migrate upstream during the spring and summer, and hold in areas of protected cover such as deep pools, undercut banks, overhanging vegetation or large woody debris or boulder structures until they become sexually mature. These summer steelhead do not spawn until the following spring (Pauley et al. 1986), so they hold over the fall and winter in freshwater.

Winter steelhead enter their home stream in various stages of sexual maturation from November to April (Pauley et al. 1986). Winter steelhead are the more widespread of the two reproductive types.

After hatching and emergence, steelhead move to deeper parts of the stream, establish territories and diet changes from microscopic aquatic organisms to larger organisms such as isopods, amphipods and aquatic and terrestrial insects, primarily associated with the stream bottom (Wydoski and Whitney 1979). During rearing, streamside vegetation and submerged cover (logs, rocks, and aquatic vegetation) are important. Cover provides food, temperature stability, protection from predators, and densities of juvenile steelhead are highest in areas containing instream cover (Narver 1976; Reiser and Bjornn 1979; Johnson 1985). Juvenile steelhead remain in fresh water for one to four years before smoltification and subsequent migration to sea. Steelhead typically remain in the ocean for two to three years, but may occasionally remain for four years prior to their first spawning migration (Shapolov and Taft 1954).

Bull Trout

Several thorough reviews of bull trout literature were surveyed in preparation for this species description. Rather than repeat their work here, the following is a summary of the salient points from those reviews cited collectively, with information from other sources cited separately. The collective citation for the bulk of this description follows: Brown (1992), Rieman and McIntyre (1993), and Sanborn et al. (1998).

The historical range of bull trout extended from the McCloud River in California to the Yukon River in Alaska, west of the Continental Divide within the contiguous United States except in tributaries of the Saskatchewan River, but east of the Continental Divide in the Saskatchewan and Mackenzie River systems in Canada. In Washington, bull trout occur within the Columbia River system, in most rivers of Puget Sound, and in coastal rivers from Grays Harbor north (U.S. Federal Register, 1 November 1999).

Several life history forms of bull trout occur, and all may be present within the same population. Fish exhibiting the resident life history strategy are non-migratory, spending their entire lives within their spawning stream. Migratory life history strategies include fluvial, adfluvial, and anadromous. Migratory bull trout reside as adults and subadults in larger rivers (fluvial), lakes or reservoirs (adfluvial), or marine waters (anadromous), and spawn and rear as juveniles in headwater tributaries. Anadromous forms are common in Puget Sound drainages from the Snohomish River north (Kraemer in prep.).

The majority of bull trout spawning occurs between late August and early November. Spawning migrations occur during the summer, but may start as early as April in some systems (Ratliff et al. 1996). In river systems of north Puget Sound, spawners typically arrive in holding areas near spawning grounds from several weeks, to up to four months before spawning (Kraemer in prep.). Characteristics of holding areas are: depth of at least one meter; cover in the form of turbulent water, undercut banks, woody debris, or overhanging vegetation; and cool temperatures, often provided by groundwater input. Spawning typically does not commence until stream temperatures drop to 8°C. In the

North Puget Sound region, "the downstream limit of successful spawning is always upstream of the winter snow line (that elevation at which snow is present on the ground for much of the winter)" (WDFW 1999). Bull trout spawning habitat typically consists of gravel/cobble substrates (Kraemer in prep.). Once sexually mature, resident, fluvial, and anadromous bull trout in north Puget Sound spawn annually (Kraemer in prep.). Following spawning, adult bull trout move downstream quickly, remaining in deep pools in larger rivers, or in lakes for the winter. Spawned-out bull trout have been observed in November feeding on loose eggs in salmon spawning grounds (Kraemer in prep.).

Successful egg incubation for bull trout requires temperatures less than 5°C (WDFW 1999), with maximum survival between 2 and 4°C. Incubation usually takes from 100 to 145 days, depending on temperature. Both juvenile and adult bull trout are rarely found in streams with summer temperatures that exceed 15°C, though cold groundwater seeps can occasionally provide temperature refuges that allow bull trout to inhabit the warmer streams. Fry are closely associated with the substrate while foraging, and rely on interstitial spaces for cover. Bull trout juveniles show a preference for low-velocity habitat; fry are often found in backwater areas, stream margins, and side channels, while larger juveniles occupy pools. Juveniles disperse widely from the spawning area, and should be expected even in tributaries that do not support spawning unless access is obstructed by a passage barrier. Juveniles that adopt a migratory life history strategy usually move downstream to a mainstem river, lake, or ocean following two or three years of rearing in headwater streams. The timing of this migration varies between and within systems, and is not confined to spring. The non-spawning movements of adults are generally associated with thermal requirements, either seeking warmer water in winter (non-coastal populations) or colder water in summer.

Anadromous bull trout spend two to three years in fresh water before migrating in the spring to the estuary or nearshore marine environment (Kraemer in prep.). While in the marine environment, they feed on smaller fish such as surf smelt (*Hypomesus pretious*), Pacific herring (*Clupea harengus pallasi*), Pacific sand lance (*Ammodytes hexapterus*), and pink (*O. gorbuscha*) and chum (*O. keta*) salmon fry, closely following the distribution of the prey fish (Kraemer in prep.). Subadults usually spend two summers in the marine environment before they mature, separated by a return to fresh water to overwinter, and immature and non-spawning adult fish migrate upstream with the spawners in late summer (Kraemer in prep.).

River Lamprey

The river lamprey is found in coastal streams from northern California to southeastern Alaska. In Washington, this species is expected to occur in most major rivers. These fish are anadromous and are parasitic on other fishes, including salmonids. They spawn in sandy and gravelly riffle areas, similar to salmonids, but on a smaller scale, since they are snake-like in shape and typically only 12 inches long at maturity. They spawn in the spring. After hatching, their young spend an extended period buried in the silt and sand of stream eddies where, blind and toothless, they feed on algae and microbes. Their eyes and teeth become functional when they reach a length exceeding approximately 4.6 inches, after which they migrate to sea to feed, grow, and mature (Wydoski and Whitney 1979).

Pacific Lamprey

The Pacific lamprey is found in coastal streams from southern California to the Gulf of Alaska. In Washington, it is found in most coastal rivers. Like the river lamprey, they are anadromous, their adults are parasitic on other fishes, and their larval juveniles are filter feeders which grow in the silty substrates of stream eddies and backwaters. Also like the river lamprey, they spawn in gravelly riffle areas in the spring. Pacific lampreys are larger, however, and may reach a length of 30 inches and weigh up to 1 pound. Like Pacific salmon, they die after spawning. Larval juveniles may spend up to six years in fresh water before migrating to sea (Wydoski and Whitney 1979).

Sand Lance (description from Washington Department of Ecology website, http://www.ecy.wa. gov/programs/sea/pugetsound/species/sandlance.html.)

The sand lance (*Ammodytes hexapterus),* also known locally as the "candlefish," is an ecologically important forage fish throughout Puget Sound, providing food for young salmon. Approximately a third of the food eaten in the nearshore waters by juvenile salmon consists of sand lance, and juvenile chinook salmon depend on sand lance for 60 percent of their diet. Minke whales, other marine mammals, and many species of seabirds also prey on sand lance.

Sand lance spawning typically occurs at high tide in shallow water on sandy or gravelly beaches. On many gravel beaches, the eggs of winter-spawning surf smelt stocks and sand lance may be found incubating together in the same sediments. At the moment of spawning, sand lance eggs often take on a coat of attached sand grains making them nearly invisible, which may explain why sand lance spawning activity went unnoticed on Puget Sound beaches until recently. After hatching, larval sand lances enter the plankton, and are common in many bays and inlets in Puget Sound during the late winter and spring. Juvenile sand lances rear in nearshore waters along Puget Sound during the summer.

Because sand lance spawn in the intertidal zone of the Puget Sound shoreline, local spawning populations are vulnerable to shoreline development. Construction of bulkheads and other shoreline armoring can bury the upper intertidal zone. Bulkheads and other armoring may also damage spawning habitat by causing increased erosion and interruption of sediment transport. The spawning habitat of sand lance is considered a "marine habitat of special concern" in the Washington Administrative Code (WAC) Hydraulic Code Rules. In cases where no satisfactory redesign or mitigation is possible, a Hydraulic Permit may be denied.

Surf Smelt (description from Washington Department of Ecology website, http://www.ecy.wa. gov/programs/sea/pugetsound/species/smelt.html.)

Surf smelt (*Hypomesus pretiosus*) are a schooling fish found in shallow nearshore waters along Puget Sound. Adult surf smelt feed on plankton and in turn become food for seabirds, marine mammals, and a variety of fishes including salmon. Surf smelt spawn in the upper intertidal zones of mixed sand and gravel beaches, generally within a few feet of the high tide line. Spawning takes place year round on beaches along Whidbey Island, Camano Island, Semiahmoo Bay, Cherry Point, Fidalgo Bay, Sinclair Inlet, the San Juan Islands, and the outer coast of the Olympic peninsula. Fall and winter spawning occurs along Liberty Bay, Port Orchard, Quartermaster Harbor, southern Hood Canal, and southern Puget Sound. Summer spawning occurs along the Strait of Juan de Fuca.

Over 200 miles of surf smelt spawning beaches are known to exist along Puget Sound. Surf smelt spawning beaches are often located at the heads of bays or inlets shaded by trees and bluffs. Shade moderates beach surface temperatures and helps summer-spawned eggs survive to hatching. Many sand and gravel beaches have yet to be surveyed for evidence of surf smelt spawning activity. Ripening surf smelt move in close to the water's edge at high tide for spawn deposition. Adhesive eggs about 1 millimeter in diameter are laid on the surface of the beach. Subsequent wave action covers the eggs with beach sediments. Larval surf smelt enter the nearshore plankton after hatching. Juvenile surf smelt linger and feed in shallow waters throughout Puget Sound. The majority of spawning surf smelt are two years of age, with some males maturing at one year of age. Although surf smelt do not die after spawning, very few survive to be three or four years old. Surf smelt show great annual predictability in spawning sites and seasons, but the degree to which they "home" back to their beaches of their birth is unknown.

All known surf smelt spawning sites have been given enhanced "no net loss" protection in the application of Washington Administrative Code (WAC) "Hydraulic Code Rules."

Geoduck (description from Washington DNR web site http://www.wa.gov/dnr/htdocs/adm/comm/fs02-136.htm)

The geoduck (*Panopea abrupta*) is the largest bivalve in North America, and one of the world's largest clams, averaging about 2 pounds but ranging up to 14. Geoducks are found along the Pacific Coast from California to Alaska, and harvested primarily in the inland waters of Washington, British Columbia, and Alaska. They reach maturity at between three and five years of age, but the oldest known geoducks are more than 165 years old. They live at and below the low tide line, dug into the bottom sediments (sand, mud, and gravel) for protection, since they are generally too large to fit into their shells at maturity.

Geoducks have been harvested commercially since 1970, from depths between 18 and 70 feet, managed closely by the Washington Departments of Fish and Wildlife and Natural Resources. The shoreward harvest boundary is generally deep enough to protect sensitive nearshore habitats, such as eelgrass beds and forage fish spawning areas. According to WDFW estimates, the total geoduck biomass in Washington State could be as high as 674 million pounds. Beds to be harvested are selected by DNR from those that have been designated as harvestable by WDFW, and certified by The Department of Health. Many otherwise pristine areas cannot be harvested because of non-point pollution that seeps into the waters from such sources as septic systems, roads, and storm drains. Thus, a real and potential impact of on-shore development is a reduction in the areas certifiable for commercial geoduck harvest, as well as any reduction in productivity as a result of decreased water quality.

E. TRANSPORTATION

APPENDIX A.1

Alternative 1 Trip Generation Calculations

Trip Credit Calculations

Weekday Daily

	Net New	Existing	Composition	Credits	Total	% In	% Out	In	Out
Residential	4077	3190	85%	2712	1366	50%	50%	683	683
Commercial	3333	3190	15%	479	2855	50%	50%	1427	1427
TOTAL	**7410**			**3190**	**4220**			**2110**	**2110**

PM Peak

	Net New	Existing	Composition	Credits	Total	% In	% Out	In	Out
Residential	379	319	85%	271	108	66%	34%	71	37
Commercial	264	319	15%	48	216	48%	52%	104	112
TOTAL	**643**			**319**	**324**			**175**	**149**

Weekday Daily Trip Generation Calculations

PROPOSED LAND USE	VARIABLE		ITE LU code	Trip Equation	Trips	% In	% Out	Gross Trips Total	Gross Trips In	Gross Trips Out	Internal Trips Total	Internal Trips In	Internal Trips Out	External Trips Total	External Trips In	External Trips Out	Pass-By % of Ext.	Pass-By Total	Pass-By In	Pass-By Out	New Total	New In	New Out
Single Family Detached	97	DU	210	Ln(T)=0.92Ln(X)+2.71	1011	50%	50%	1011	506	505	0	0	0	1011	506	505	0%	0	0	0	1011	506	505
Apartment	110	DU	220	T=6.01(X)+150.35	811	50%	50%	811	406	405	0	0	0	811	406	405	0%	0	0	0	811	406	405
Condo/Townhome	552	DU	230	Ln(T)=0.85Ln(X)+2.55	2742	50%	50%	2742	1371	1371	0	0	0	2742	1371	1371	0%	0	0	0	2742	1371	1371
Total Residential	759	DU			4564	50%	50%	4564	2283	2281	487	268	219	4077	2015	2062	0%	0	0	0	4077	2015	2062
Shopping Center	60.0	SF	820	LN(T)=0.65LN(X)+5.83	4872	50%	50%	4872	2436	2436	487	219	268	4385	2217	2168	24%	1052	532	520	3333	1685	1648
Total Site Traffic					9436	50%	50%	9436	4719	4717	974	487	487	8462	4232	4230	12%	1052	532	520	7410	3700	3710
Existing Site Traffic					3190	50%	50%	3190	1595	1595	0	0	0	3190	1595	1595	0%	0	0	0	3190	1595	1595
Net Traffic Increase					6246	50%	50%	6246	3124	3122	974	487	487	5272	2637	2635	24%	1052	532	520	**4220**	**2105**	**2115**
from Proposed Build-Out Scenario			from ITE *Trip Generation* report					Variable x Gross Trip Rate & In & Out %									from ITE *Trip Generation Handbook*				Remainder		

Weekday PM Peak Hour Trip Generation Calculations

							Gross Trips			Internal Trips			External Trips			Pass-By				Net New		
PROPOSED LAND USE	VARIABLE		ITE LU code	Trip Equation	% In	% Out	Total	In	Out	Total	In	Out	Total	In	Out	% of Ext.	Total	In	Out	Total	In	Out
Single Family Detached	97	DU	210	Ln(T)=0.90Ln(X)+0.53	63%	37%	104	66	38	0	0	0	104	66	38	0%	0	0	0	104	66	38
Apartment	110	DU	220	T=0.55(X)+17.65	65%	35%	78	51	27	0	0	0	78	51	27	0%	0	0	0	78	51	27
Condo/Townhome	552	DU	230	Ln(T)=0.82Ln(X)+0.32	67%	33%	244	163	81	0	0	0	244	163	81	0%	0	0	0	244	163	81
Total Residential	759	DU			66%	34%	426	280	146	47	28	19	379	252	127	0%	0	0	0	379	252	127
Shopping Center	60.0	SF	820	Ln(T)=0.66Ln(X)+3.40	48%	52%	447	215	232	47	19	28	400	196	204	34%	136	67	69	264	129	135
Total Site Traffic					57%	43%	873	495	378	94	47	47	779	448	331	17%	136	67	69	643	381	262
Existing Site Traffic					65%	35%	319	206	113	0	0	0	319	206	113	0%	0	0	0	319	206	113
Net Traffic Increase					52%	48%	554	289	265	94	47	47	460	242	218	34%	136	67	69	**324**	**175**	**149**
from Proposed Build-Out Scenario			from ITE *Trip Generation* report				Variable x Gross Trip Rate & In & Out %									from ITE *Trip Generation Handbook*				Remainder		

NOTE: Existing site traffic based on 2006 intersection turning movement counts

NOTE: Trip credits for existing traffic is assumed to be 85% residential and 15% other. Subracting 85% of 319 existing trips would result in a net difference of + 108 residential trips. This amount is similar to the number of trips that would be generated by the net difference in residences (displace 582, add 759 = + 177 DU; 177 DU would generate ~ 96 trips using LU 230 regression). During the assignment process, net new trips were assumed to be comprised of 108 residential trips and 216 commercial (324 net new).

Multi-Use Development
Internal Capture Summary

Analyst: P.Chen
Date: 6/16/2006

Project: Westpark
Time Period: ADT

Land Use A: Residential (combined SFR, MFR, and condo/townhome)
ITE LU Code: 210, 220, 230
Size: 759 Dwelling Units (DU)
Classified as: RESIDENTIAL, "A"

Trips	Total	Internal	External
Enter	2283	268	2015
Exit	2281	219	2062
Total	4564	487	4077
%	100%	11%	89%

Land Use B: Commercial/Retail
ITE LU Code: 820
Size: 60,000 sf
Classified as: COMMERCIAL "B"

Trips	Total	Internal	External
Enter	2436	219	2217
Exit	2436	268	2168
Total	4872	487	4385
%	100%	10%	90%

Land Use C: N/A
ITE LU Code: N/A
Size: N/A
Classified as: N/A

Trips	Total	Internal	External
Enter		0	0
Exit		0	0
Total	0	0	0
%	#DIV/0!	0.0%	0.0%

Note: Enter table approaching from the left and right.

Unconstrained Capture from Origin				Internal	Unconstrained Capture to Destination			
Origin	Exiting	Demand		**Balanced**	Demand		Entering	**Destination**
Land Use	Trips	from/to %	Trips	**Trips**	Trips	to/from %	Trips	Land Use
N/A	0	0.0%	0	**0**	0	0.0%	2283	RESIDENTIAL, "A"
COMMERCIAL "B"	2436	11.0%	268	**268**	753	33.0%		Land Use A
RESIDENTIAL, "A"	2281.45	38.0%	867	**219**	219	9.0%	2436	COMMERCIAL "B"
N/A	0	0.0%	0	**0**	0	0.0%		Land Use B
COMMERCIAL "B"	2436	0.0%	0	**0**	0	0.0%	0	N/A
RESIDENTIAL, "A"	2281.45	0.0%	0	**0**	0	0.0%		Land Use C

Net External Trips for Multi-Use Development				
	LU A	LU B	LU C	TOTAL
Enter	2015	2217	0	4232
Exit	2062	2168	0	4230.45
Total	4077	4385	0	8462.45
Single-Use Trip Gen. Est.	4564	4872	0	9436.45

INTERNAL CAPTURE
10%

Multi-Use Development
Internal Capture Summary

Analyst: P.Chen
Date: 6/16/2006

Project: Westpark
Time Period: PM Peak Period

Land Use A: Residential (combined SFR, MFR, and condo/townhome)
ITE LU Code: 210, 220, 230
Size: 759 Dwelling Units (DU)
Classified as: RESIDENTIAL, "A"

Trips	Total	Internal	External
Enter	280	28	252
Exit	146	19	127
Total	426	47	379
%	100%	11%	89%

Land Use B: Commercial/Retail
ITE LU Code: 820
Size: 60,000 sf
Classified as: COMMERCIAL "B"

Trips	Total	Internal	External
Enter	215	19	196
Exit	232	28	204
Total	447	47	400
%	100%	11%	89%

Land Use C: N/A
ITE LU Code: N/A
Size: N/A
Classified as: N/A

Trips	Total	Internal	External
Enter	0	0	0
Exit	0	0	0
Total	0	0	0
%	#DIV/0!	#DIV/0!	#DIV/0!

Note: Enter table approaching from the left and right.

Unconstrained Capture from Origin				**Internal Balanced Trips**	**Unconstrained Capture to Destination**			
Origin Land Use	Exiting Trips	Demand from/to %	Demand Trips		Demand Trips	Demand to/from %	Entering Trips	**Destination** Land Use
N/A	0	0.0%	0	**0**	0	0.0%	280	RESIDENTIAL, "A"
COMMERCIAL "B"	232	12.0%	28	**28**	87	31.0%		Land Use A
RESIDENTIAL, "A"	146	53.0%	77	**19**	19	9.0%	215	COMMERCIAL "B"
N/A	0	0.0%	0	**0**	0	0.0%		Land Use B
COMMERCIAL "B"	232	0.0%	0	**0**	0	0.0%	0	N/A
RESIDENTIAL, "A"	146	0.0%	0	**0**	0	0.0%		Land Use C

Net External Trips for Multi-Use Development	LU A	LU B	LU C	TOTAL
Enter	252	196	0	448
Exit	127	204	0	331
Total	379	400	0	779
Single-Use Trip Gen. Est.	426	447	0	873

INTERNAL CAPTURE
11%

APPENDIX A.2

Alternative 2 Trip Generation Calculations

Trip Credit Calculations

Weekday Daily

	Net New	Existing	Composition	Credits	Total	% In	% Out	In	Out
Residential	3751	3190	85%	2712	1040	50%	50%	520	520
Commercial	5564	3190	15%	479	5086	50%	50%	2543	2543
TOTAL	**9315**			**3190**	**6125**			**3063**	**3063**

PM Peak

	Net New	Existing	Composition	Credits	Total	% In	% Out	In	Out
Residential	347	319	85%	271	76	66%	34%	50	26
Commercial	444	319	15%	48	396	48%	52%	190	206
TOTAL	**791**			**319**	**472**			**240**	**232**

Weekday Daily Trip Generation Calculations

PROPOSED LAND USE	VARIABLE		ITE LU code	Trip Equation	Trips	% In	% Out	Gross Trips Total	Gross Trips In	Gross Trips Out	Internal Trips Total	Internal Trips In	Internal Trips Out	External Trips Total	External Trips In	External Trips Out	Pass-By % of Ext.	Pass-By Total	Pass-By In	Pass-By Out	New Total	New In	New Out
Single Family Detached	97	DU	210	Ln(T)=0.92Ln(X)+2.71	1011	50%	50%	1011	506	505	0	0	0	1011	506	505	0%	0	0	0	1011	506	505
Apartment	110	DU	220	T=6.01(X)+150.35	811	50%	50%	811	406	405	0	0	0	811	406	405	0%	0	0	0	811	406	405
Condo/Townhome	552	DU	230	Ln(T)=0.85Ln(X)+2.55	2742	50%	50%	2742	1371	1371	0	0	0	2742	1371	1371	0%	0	0	0	2742	1371	1371
Total Residential	759	DU			4564	50%	50%	4564	2283	2281	813	447	366	3751	1836	1915	0%	0	0	0	3751	1836	1915
Shopping Center	132.0	SF	820	LN(T)=0.65LN(X)+5.83	8134	50%	50%	8134	4067	4067	813	366	447	7321	3701	3620	24%	1757	888	869	5564	2813	2751
Total Site Traffic					12698	50%	50%	12698	6350	6348	1626	813	813	11072	5537	5535	16%	1757	888	869	9315	4649	4666
Existing Site Traffic					3190	50%	50%	3190	1595	1595	0	0	0	3190	1595	1595	0%	0	0	0	3190	1595	1595
Net Traffic Increase					9508	50%	50%	9508	4755	4753	1626	813	813	7882	3942	3940	24%	1757	888	869	**6125**	**3054**	**3071**
from Proposed Build-Out Scenario			from ITE *Trip Generation* report					Variable x Gross Trip Rate & In & Out %									from ITE *Trip Generation Handbook*				Remainder		

Weekday PM Peak Hour Trip Generation Calculations

PROPOSED LAND USE	VARIABLE		ITE LU code	Trip Equation	Trips	% In	% Out	Gross Trips Total	Gross Trips In	Gross Trips Out	Internal Trips Total	Internal Trips In	Internal Trips Out	External Trips Total	External Trips In	External Trips Out	Pass-By % of Ext.	Pass-By Total	Pass-By In	Pass-By Out	Net New Total	Net New In	Net New Out
Single Family Detached	97	DU	210	Ln(T)=0.90Ln(X)+0.53	104	63%	37%	104	66	38	0	0	0	104	66	38	0%	0	0	0	104	66	38
Apartment	110	DU	220	T=0.55(X)+17.65	78	65%	35%	78	51	27	0	0	0	78	51	27	0%	0	0	0	78	51	27
Condo/Townhome	552	DU	230	Ln(T)=0.82Ln(X)+0.32	244	67%	33%	244	163	81	0	0	0	244	163	81	0%	0	0	0	244	163	81
Total Residential	759	DU			426	66%	34%	426	280	146	79	47	32	347	233	114	0%	0	0	0	347	233	114
Shopping Center	132.0	SF	820	Ln(T)=0.66Ln(X)+3.40	752	48%	52%	752	361	391	79	32	47	673	329	344	34%	229	112	117	444	217	227
Total Site Traffic					1178	54%	46%	1178	641	537	158	79	79	1020	562	458	22%	229	112	117	791	450	341
Existing Site Traffic					319	66%	34%	319	210	109	0	0	0	319	210	109	0%	0	0	0	319	210	109
Net Traffic Increase					859	50%	50%	859	431	428	158	79	79	701	352	349	34%	229	112	117	**472**	**240**	**232**
from Proposed Build-Out Scenario			from ITE *Trip Generation* report					Variable x Gross Trip Rate & In & Out %									from ITE *Trip Generation Handbook*				Remainder		

NOTE: Existing site traffic based on 2006 intersection turning movement counts

NOTE: Trip credits for existing traffic is assumed to be 85% residential and 15% other. Subracting 85% of 319 existing trips would result in a net difference of + 76 residential trips. This amount is similar to the number of trips that would be generated by the net difference in residences (displace 582, add 759 = + 177 DU; 177 DU would generate ~ 96 trips using LU 230 regression). During the assignment process, net new trips were assumed to be comprised of 76 residential trips and 396 commercial (472 net new).

Multi-Use Development
Internal Capture Summary

Analyst: P.Chen
Date: 6/16/2006

Project: Westpark
Time Period: ADT

Land Use A: Residential (combined SFR, MFR, and condo/townhome)
ITE LU Code: 210, 220, 230
Size: 759 Dwelling Units (DU)
Classified as: RESIDENTIAL, "A"

Trips	Total	Internal	External
Enter	2283	447	1836
Exit	2281	366	1915
Total	4564	813	3751
%	100%	18%	82%

Land Use B: Commercial/Retail
ITE LU Code: 820
Size: 132,000 sf
Classified as: COMMERCIAL "B"

Trips	Total	Internal	External
Enter	4067	366	3701
Exit	4067	447	3620
Total	8134	813	7321
%	100%	10%	90%

Land Use C: N/A
ITE LU Code: N/A
Size: N/A
Classified as: N/A

Trips	Total	Internal	External
Enter		0	0
Exit		0	0
Total	0	0	0
%	#DIV/0!	0.0%	0.0%

Note: Enter table approaching from the left and right.

Unconstrained Capture from Origin				Internal	Unconstrained Capture to Destination			
Origin	Exiting	Demand		**Balanced**	Demand		Entering	**Destination**
Land Use	Trips	from/to %	Trips	**Trips**	Trips	to/from %	Trips	Land Use
N/A	0	0.0%	0	**0**	0	0.0%	2283	RESIDENTIAL, "A"
COMMERCIAL "B"	4067	11.0%	447	**447**	753	33.0%		Land Use A
RESIDENTIAL, "A"	2281.45	38.0%	867	**366**	366	9.0%	4067	COMMERCIAL "B"
N/A	0	0.0%	0	**0**	0	0.0%		Land Use B
COMMERCIAL "B"	4067	0.0%	0	**0**	0	0.0%	0	N/A
RESIDENTIAL, "A"	2281.45	0.0%	0	**0**	0	0.0%		Land Use C

Net External Trips for Multi-Use Development				
	LU A	LU B	LU C	TOTAL
Enter	1836	3701	0	5537
Exit	1915	3620	0	5535.45
Total	3751	7321	0	11072.45
Single-Use Trip Gen. Est.	4564	8134	0	12698.45

INTERNAL CAPTURE
13%

Multi-Use Development
Internal Capture Summary

Analyst: P.Chen
Date: 6/16/2006

Project: Westpark
Time Period: PM Peak Period

Land Use A: Residential (combined SFR, MFR, and condo/townhome)
ITE LU Code: 210, 220, 230
Size: 759 Dwelling Units (DU)
Classified as: RESIDENTIAL, "A"

Trips	Total	Internal	External
Enter	280	47	233
Exit	146	32	114
Total	426	79	347
%	100%	19%	81%

Land Use B: Commercial/Retail
ITE LU Code: 820
Size: 132,000 sf
Classified as: COMMERCIAL "B"

Trips	Total	Internal	External
Enter	361	32	329
Exit	391	47	344
Total	752	79	673
%	100%	11%	89%

Land Use C: N/A
ITE LU Code: N/A
Size: N/A
Classified as: N/A

Trips	Total	Internal	External
Enter	0	0	0
Exit	0	0	0
Total	0	0	0
%	#DIV/0!	#DIV/0!	#DIV/0!

Note: Enter table approaching from the left and right.

Unconstrained Capture from Origin				**Internal**	**Unconstrained Capture to Destination**			
Origin	Exiting	Demand		**Balanced**	Demand		Entering	**Destination**
Land Use	Trips	from/to %	Trips	**Trips**	Trips	to/from %	Trips	Land Use
N/A	0	0.0%	0	**0**	0	0.0%	280	RESIDENTIAL, "A"
COMMERCIAL "B"	391	12.0%	47	**47**	87	31.0%		Land Use A
RESIDENTIAL, "A"	146	53.0%	77	**32**	32	9.0%	361	COMMERCIAL "B"
N/A	0	0.0%	0	**0**	0	0.0%		Land Use B
COMMERCIAL "B"	391	0.0%	0	**0**	0	0.0%	0	N/A
RESIDENTIAL, "A"	146	0.0%	0	**0**	0	0.0%		Land Use C

Net External Trips for Multi-Use Development				
	LU A	LU B	LU C	TOTAL
Enter	233	329	0	562
Exit	114	344	0	458
Total	347	673	0	1020
Single-Use Trip Gen. Est.	426	752	0	1178

INTERNAL CAPTURE

13%

APPENDIX B.1

Existing Conditions Synchro LOS Sheets

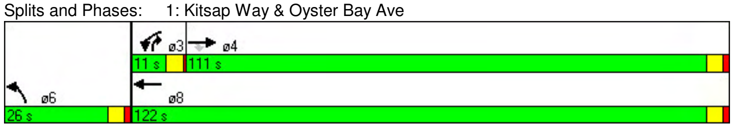
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	10	9
Grade (%)	0%			-3%	-1%	
Storage Length (ft)		70	115		0	50
Storage Lanes		1	1		1	1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Turning Speed (mph)		9	15		15	9
Satd. Flow (prot)	3067	1425	1585	3065	1411	1208
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3067	1272	1566	3065	1411	1208
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		17				136
Link Speed (mph)	30			30	25	
Link Distance (ft)	1365			1341	350	
Travel Time (s)	31.0			30.5	9.5	
Volume (vph)	1369	36	72	1561	47	102
Confl. Peds. (#/hr)		18	18			1
Peak Hour Factor	0.97	0.97	0.95	0.95	0.75	0.75
Heavy Vehicles (%)	2%	2%	4%	4%	8%	8%
Bus Blockages (#/hr)	2	0	0	0	0	2
Lane Group Flow (vph)	1411	37	76	1643	63	136
Turn Type		Perm	Prot			Over
Protected Phases	4		3	8	6	3
Permitted Phases		4				
Detector Phases	4	4	3	8	6	3
Minimum Initial (s)	6.0	6.0	4.0	6.0	6.0	4.0
Minimum Split (s)	20.0	20.0	8.0	22.0	26.0	8.0
Total Split (s)	111.0	111.0	11.0	122.0	26.0	11.0
Total Split (%)	75.0%	75.0%	7.4%	82.4%	17.6%	7.4%
Maximum Green (s)	106.0	106.0	7.0	117.0	21.0	7.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	0.5	1.5	1.5	0.5
Lead/Lag	Lag	Lag	Lead			Lead
Lead-Lag Optimize?	Yes	Yes	Yes			Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	6.0	6.0	0.0	6.0	6.0	0.0
Time To Reduce (s)	20.0	20.0	0.0	20.0	20.0	0.0
Recall Mode	C-Max	C-Max	None	C-Max	None	None
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	8.0	8.0		10.0	14.0	
Pedestrian Calls (#/hr)	18	18		18	1	
Act Effct Green (s)	112.0	112.0	12.7	129.6	13.5	12.7
Actuated g/C Ratio	0.76	0.76	0.09	0.88	0.09	0.09
v/c Ratio	0.61	0.04	0.56	0.61	0.49	0.60
Control Delay	17.2	6.7	82.2	4.8	75.0	21.0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.2	6.7	82.2	4.8	75.0	21.0
LOS	B	A	F	A	E	C
Approach Delay	16.9			8.2	38.1	
Approach LOS	B			A	D	
90th %ile Green (s)	106.0	106.0	7.0	117.0	21.0	7.0
90th %ile Term Code	Coord	Coord	Max	Coord	Ped	Max
70th %ile Green (s)	106.0	106.0	14.1	124.1	13.9	14.1
70th %ile Term Code	Coord	Coord	Max	Coord	Gap	Max
50th %ile Green (s)	107.1	107.1	15.2	126.3	11.7	15.2
50th %ile Term Code	Coord	Coord	Gap	Coord	Gap	Gap
30th %ile Green (s)	110.1	110.1	14.3	128.4	9.6	14.3
30th %ile Term Code	Coord	Coord	Gap	Coord	Gap	Gap
10th %ile Green (s)	126.0	126.0	13.0	143.0	0.0	13.0
10th %ile Term Code	Coord	Coord	Gap	Coord	Skip	Gap
Queue Length 50th (ft)	450	9	74	218	59	0
Queue Length 95th (ft)	675	m23	m#149	213	85	36
Internal Link Dist (ft)	1285			1261	270	
Turn Bay Length (ft)		70	115			50
Base Capacity (vph)	2322	967	136	2683	210	228
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.61	0.04	0.56	0.61	0.30	0.60

Intersection Summary

Area Type: CBD
Cycle Length: 148
Actuated Cycle Length: 148
Offset: 108 (73%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.61
Intersection Signal Delay: 13.7 Intersection LOS: B
Intersection Capacity Utilization 61.9% ICU Level of Service B
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Kitsap Way & Oyster Bay Ave



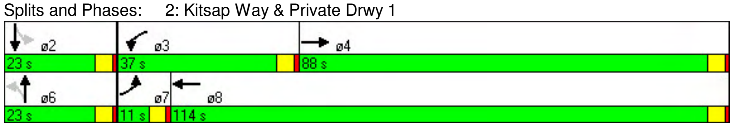
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	13	12	11	12	13	13	12	12	16	12
Grade (%)		1%			-4%			-4%			0%	
Storage Length (ft)	125		125	75		0	110		0	0		0
Storage Lanes	1		1	1		0	1		0	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	1585	3051	1465	1624	3137	0	1679	1504	0	0	1750	0
Flt Permitted	0.950			0.950			0.787				0.256	
Satd. Flow (perm)	1583	3051	1432	1618	3137	0	1391	1504	0	0	463	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			26		1			291			2	
Link Speed (mph)		30			30			35			15	
Link Distance (ft)		1341			1326			1021			212	
Travel Time (s)		30.5			30.1			19.9			9.6	
Volume (vph)	3	1319	126	227	1578	7	82	2	256	11	4	1
Confl. Peds. (#/hr)	2		5	5		2						
Confl. Bikes (#/hr)			1			5						
Peak Hour Factor	0.97	0.97	0.97	0.89	0.89	0.89	0.88	0.88	0.88	0.57	0.57	0.57
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	6%	6%	6%
Bus Blockages (#/hr)	0	2	0	0	0	0	0	0	2	2	0	0
Lane Group Flow (vph)	3	1360	130	255	1781	0	93	293	0	0	28	0
Turn Type	Prot		Free	Prot			Perm			Perm		
Protected Phases	7	4		3	8			6			2	
Permitted Phases			Free				6			2		
Detector Phases	7	4		3	8		6	6		2	2	
Minimum Initial (s)	5.0	8.0		8.0	8.0		8.0	8.0		6.0	6.0	
Minimum Split (s)	9.5	19.5		12.5	19.5		12.5	12.5		22.5	22.5	
Total Split (s)	11.0	88.0	0.0	37.0	114.0	0.0	23.0	23.0	0.0	23.0	23.0	0.0
Total Split (%)	7.4%	59.5%	0.0%	25.0%	77.0%	0.0%	15.5%	15.5%	0.0%	15.5%	15.5%	0.0%
Maximum Green (s)	6.5	83.5		32.5	109.5		18.5	18.5		18.5	18.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Time To Reduce (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)		7.0			7.0		6.0	6.0		7.0	7.0	
Flash Dont Walk (s)		8.0			8.0		0.0	0.0		11.0	11.0	
Pedestrian Calls (#/hr)		0			0		0	0		0	0	
Act Effct Green (s)	6.4	93.3	148.0	27.7	122.8		15.0	15.0			15.0	
Actuated g/C Ratio	0.04	0.63	1.00	0.19	0.83		0.10	0.10			0.10	
v/c Ratio	0.04	0.71	0.09	0.84	0.68		0.66	0.71			0.57	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	57.3	11.5	0.1	38.1	18.8		85.1	16.4			100.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	
Total Delay	57.3	11.5	0.1	38.1	18.8		85.1	16.4			100.8	
LOS	E	B	A	D	B		F	B			F	
Approach Delay		10.6			21.2			32.9			100.8	
Approach LOS		B			C			C			F	
90th %ile Green (s)	6.5	83.5		32.5	109.5		18.5	18.5		18.5	18.5	
90th %ile Term Code	Max	Coord		Max	Coord		Max	Max		Max	Max	
70th %ile Green (s)	0.0	84.2		32.3	121.0		18.0	18.0		18.0	18.0	
70th %ile Term Code	Skip	Coord		Gap	Coord		Hold	Hold		Gap	Gap	
50th %ile Green (s)	0.0	93.0		26.6	124.1		14.9	14.9		14.9	14.9	
50th %ile Term Code	Skip	Coord		Gap	Coord		Gap	Gap		Hold	Hold	
30th %ile Green (s)	0.0	97.1		25.0	126.6		12.4	12.4		12.4	12.4	
30th %ile Term Code	Skip	Coord		Gap	Coord		Gap	Gap		Hold	Hold	
10th %ile Green (s)	0.0	106.2		19.6	130.3		8.7	8.7		8.7	8.7	
10th %ile Term Code	Skip	Coord		Gap	Coord		Gap	Gap		Hold	Hold	
Queue Length 50th (ft)	3	173	0	220	663		88	2			24	
Queue Length 95th (ft)	m4	174	0	m205	m607		144	86			35	
Internal Link Dist (ft)		1261			1246			941			132	
Turn Bay Length (ft)	125		125	75			110					
Base Capacity (vph)	75	1923	1432	362	2603		179	447			61	
Starvation Cap Reductn	0	0	0	0	0		0	0			0	
Spillback Cap Reductn	0	0	0	0	0		0	0			0	
Storage Cap Reductn	0	0	0	0	0		0	0			0	
Reduced v/c Ratio	0.04	0.71	0.09	0.70	0.68		0.52	0.66			0.46	

Intersection Summary

Area Type: CBD
Cycle Length: 148
Actuated Cycle Length: 148
Offset: 118 (80%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.84
Intersection Signal Delay: 18.9 Intersection LOS: B
Intersection Capacity Utilization 82.2% ICU Level of Service E
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Kitsap Way & Private Drwy 1



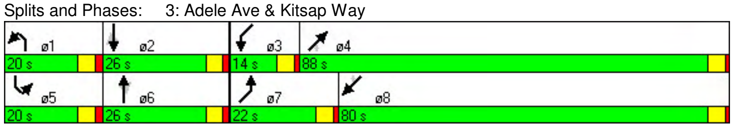
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	16	10	12	12	10	11	12	12	10	10
Storage Length (ft)	0		0	45		45	150		115	110		175
Storage Lanes	1		1	1		1	1		1	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	40	50	40	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	1580	1676	1602	1489	1693	1428	1486	3067	1425	1593	2961	1330
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1574	1676	1543	1468	1693	1405	1486	3067	1391	1592	2961	1330
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			166			73			29			60
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		548			510			1326			859	
Travel Time (s)		10.7			9.9			30.1			19.5	
Volume (vph)	103	31	141	85	45	68	193	1270	61	60	1565	123
Confl. Peds. (#/hr)	2		7	7		2			1	1		
Confl. Bikes (#/hr)			7									
Peak Hour Factor	0.85	0.85	0.85	0.93	0.93	0.93	0.94	0.94	0.94	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	2	0	2	2	0	2	0	2	0	0	2	0
Lane Group Flow (vph)	121	36	166	91	48	73	205	1351	65	67	1739	137
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6			2			4			8
Detector Phases	1	6	6	5	2	2	7	4	4	3	8	8
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	11.0	26.0	26.0	11.0	26.0	26.0	10.5	23.5	23.5	10.5	23.5	23.5
Total Split (s)	20.0	26.0	26.0	20.0	26.0	26.0	22.0	88.0	88.0	14.0	80.0	80.0
Total Split (%)	13.5%	17.6%	17.6%	13.5%	17.6%	17.6%	14.9%	59.5%	59.5%	9.5%	54.1%	54.1%
Maximum Green (s)	15.0	21.0	21.0	15.0	21.0	21.0	17.5	83.5	83.5	9.5	75.5	75.5
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.0	1.0	1.0	1.0	1.0	1.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	5.0	3.0	3.0	4.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Time To Reduce (s)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Recall Mode	None	None	None	None	None	None	Max	C-Max	C-Max	Max	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		14.0	14.0		14.0	14.0		12.0	12.0		12.0	12.0
Pedestrian Calls (#/hr)		9	9		9	9		1	1		0	0
Act Effct Green (s)	15.0	12.2	12.2	14.8	12.0	12.0	29.0	84.0	84.0	21.0	76.0	76.0
Actuated g/C Ratio	0.10	0.08	0.08	0.10	0.08	0.08	0.20	0.57	0.57	0.14	0.51	0.51
v/c Ratio	0.76	0.26	0.59	0.61	0.35	0.40	0.70	0.78	0.08	0.30	1.14	0.19
Control Delay	92.4	65.9	17.1	81.2	69.1	18.6	81.3	13.2	3.4	63.7	106.9	11.4

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	92.4	65.9	17.1	81.2	69.1	18.6	81.3	13.2	3.4	63.7	106.9	11.4
LOS	F	E	B	F	E	B	F	B	A	E	F	B
Approach Delay		50.7			56.9			21.4			98.7	
Approach LOS		D			E			C			F	
90th %ile Green (s)	15.0	21.0	21.0	15.0	21.0	21.0	17.5	83.5	83.5	9.5	75.5	75.5
90th %ile Term Code	Max	Ped	Ped	Max	Ped	Ped	MaxR	Coord	Coord	MaxR	Coord	Coord
70th %ile Green (s)	15.0	10.9	10.9	15.0	10.9	10.9	27.6	83.5	83.5	19.6	75.5	75.5
70th %ile Term Code	Max	Hold	Hold	Max	Gap	Gap	MaxR	Coord	Coord	MaxR	Coord	Coord
50th %ile Green (s)	15.0	9.4	9.4	15.0	9.4	9.4	29.1	83.5	83.5	21.1	75.5	75.5
50th %ile Term Code	Max	Hold	Hold	Max	Gap	Gap	MaxR	Coord	Coord	MaxR	Coord	Coord
30th %ile Green (s)	14.4	8.6	8.6	13.7	7.9	7.9	31.2	83.5	83.5	23.2	75.5	75.5
30th %ile Term Code	Gap	Hold	Hold	Gap	Gap	Gap	MaxR	Coord	Coord	MaxR	Coord	Coord
10th %ile Green (s)	10.5	6.1	6.1	10.4	6.0	6.0	37.0	83.5	83.5	29.0	75.5	75.5
10th %ile Term Code	Gap	Hold	Hold	Gap	Min	Min	MaxR	Coord	Coord	MaxR	Coord	Coord
Queue Length 50th (ft)	115	34	0	85	45	0	192	251	0	59	~1030	37
Queue Length 95th (ft)	#187	63	56	147	83	48	#404	170	m5	#132	#1167	78
Internal Link Dist (ft)		468			430			1246			779	
Turn Bay Length (ft)				45		45	150		115	110		175
Base Capacity (vph)	171	249	371	161	252	271	291	1741	802	226	1521	712
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.14	0.45	0.57	0.19	0.27	0.70	0.78	0.08	0.30	1.14	0.19

Intersection Summary

Area Type: CBD
Cycle Length: 148
Actuated Cycle Length: 148
Offset: 0 (0%), Referenced to phase 4:NET and 8:SWT, Start of Green, Master Intersection
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.14
Intersection Signal Delay: 62.2 Intersection LOS: E
Intersection Capacity Utilization 83.9% ICU Level of Service E
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Adele Ave & Kitsap Way



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	8	12	12	8	12
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	0	1795	0	0	1793	0	0	1520	0	0	1489	0
Flt Permitted		0.960			0.979			0.997			0.997	
Satd. Flow (perm)	0	1795	0	0	1793	0	0	1520	0	0	1489	0
Link Speed (mph)		20			15			25			25	
Link Distance (ft)		1297			282			1349			350	
Travel Time (s)		44.2			12.8			36.8			9.5	
Volume (vph)	78	3	11	7	5	4	4	68	0	6	49	53
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	8%	8%	8%	3%	3%	3%
Lane Group Flow (vph)	0	109	0	0	19	0	0	85	0	0	127	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 23.7% ICU Level of Service A
Analysis Period (min) 15

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	78	3	11	7	5	4	4	68	0	6	49	53
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	92	4	13	8	6	5	5	80	0	7	58	62
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)											350	
pX, platoon unblocked												
vC, conflicting volume	200	192	89	207	224	80	120			80		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	200	192	89	207	224	80	120			80		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	88	99	99	99	99	100	100			100		
cM capacity (veh/h)	750	701	975	737	673	986	1431			1512		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	108	19	85	127
Volume Left	92	8	5	7
Volume Right	13	5	0	62
cSH	769	763	1431	1512
Volume to Capacity	0.14	0.02	0.00	0.00
Queue Length 95th (ft)	12	2	0	0
Control Delay (s)	10.4	9.8	0.4	0.4
Lane LOS	B	A	A	A
Approach Delay (s)	10.4	9.8	0.4	0.4
Approach LOS	B	A		

Intersection Summary

Average Delay	4.2		
Intersection Capacity Utilization	23.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	12	12	12	12	12	12	8	12	12	8	12
Grade (%)		0%			0%			-1%			0%	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	0	1786	0	0	1709	0	0	1519	0	0	1500	0
Flt Permitted		0.959			0.972			0.995			0.998	
Satd. Flow (perm)	0	1786	0	0	1709	0	0	1519	0	0	1500	0
Link Speed (mph)		20			15			25			25	
Link Distance (ft)		467			299			863			1349	
Travel Time (s)		15.9			13.6			23.5			36.8	
Volume (vph)	24	0	4	6	0	4	3	32	0	3	30	26
Confl. Peds. (#/hr)							2					2
Confl. Bikes (#/hr)			1									
Peak Hour Factor	0.69	0.69	0.69	0.83	0.83	0.83	0.84	0.84	0.84	0.86	0.86	0.86
Heavy Vehicles (%)	0%	2%	0%	2%	2%	2%	8%	8%	2%	2%	3%	3%
Bus Blockages (#/hr)	1	0	0	0	0	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	41	0	0	12	0	0	42	0	0	68	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 14.6% ICU Level of Service A

Analysis Period (min) 15

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			-1%			0%	
Volume (veh/h)	24	0	4	6	0	4	3	32	0	3	30	26
Peak Hour Factor	0.69	0.69	0.69	0.83	0.83	0.83	0.84	0.84	0.84	0.86	0.86	0.86
Hourly flow rate (vph)	35	0	6	7	0	5	4	38	0	3	35	30
Pedestrians		2										
Lane Width (ft)		12.0										
Walking Speed (ft/s)		4.0										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	109	104	52	108	119	38	67			38		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	109	104	52	108	119	38	67			38		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	96	100	99	99	100	100	100			100		
cM capacity (veh/h)	865	781	1020	862	766	1034	1494			1572		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	41	12	42	69
Volume Left	35	7	4	3
Volume Right	6	5	0	30
cSH	884	923	1494	1572
Volume to Capacity	0.05	0.01	0.00	0.00
Queue Length 95th (ft)	4	1	0	0
Control Delay (s)	9.3	9.0	0.7	0.4
Lane LOS	A	A	A	A
Approach Delay (s)	9.3	9.0	0.7	0.4
Approach LOS	A	A		

Intersection Summary			
Average Delay	3.3		
Intersection Capacity Utilization	14.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	8	12
Grade (%)		4%	-1%		-5%	
Turning Speed (mph)	15			9	15	9
Satd. Flow (prot)	0	1733	1592	0	1478	0
Flt Permitted		0.996			0.954	
Satd. Flow (perm)	0	1733	1592	0	1478	0
Link Speed (mph)		20	25		25	
Link Distance (ft)		248	299		863	
Travel Time (s)		8.5	8.2		23.5	
Volume (vph)	2	21	20	33	43	2
Confl. Peds. (#/hr)	1			1	2	
Peak Hour Factor	0.66	0.66	0.93	0.93	0.90	0.90
Heavy Vehicles (%)	7%	7%	10%	10%	8%	8%
Bus Blockages (#/hr)	1	0	0	1	1	1
Lane Group Flow (vph)	0	35	57	0	50	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 13.7% ICU Level of Service A
Analysis Period (min) 15

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		4%	-1%		-5%	
Volume (veh/h)	2	21	20	33	43	2
Peak Hour Factor	0.66	0.66	0.93	0.93	0.90	0.90
Hourly flow rate (vph)	3	32	22	35	48	2
Pedestrians			2		1	
Lane Width (ft)			12.0		8.0	
Walking Speed (ft/s)			4.0		4.0	
Percent Blockage			0		0	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	58				80	40
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	58				80	40
tC, single (s)	4.2				6.5	6.3
tC, 2 stage (s)						
tF (s)	2.3				3.6	3.4
p0 queue free %	100				95	100
cM capacity (veh/h)	1514				904	1014

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	35	57	50
Volume Left	3	0	48
Volume Right	0	35	2
cSH	1514	1700	908
Volume to Capacity	0.00	0.03	0.06
Queue Length 95th (ft)	0	0	4
Control Delay (s)	0.7	0.0	9.2
Lane LOS	A		A
Approach Delay (s)	0.7	0.0	9.2
Approach LOS			A

Intersection Summary

Average Delay	3.4		
Intersection Capacity Utilization	13.7%	ICU Level of Service	A
Analysis Period (min)	15		

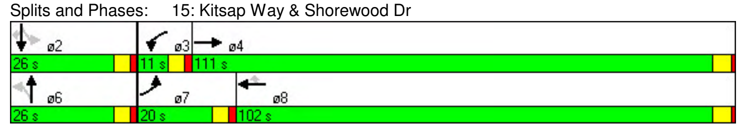
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	16	12	11	10	11	10	10	12	14	9
Grade (%)		1%			0%			-5%			2%	
Storage Length (ft)	150		75	225		100	60		0	0		50
Storage Lanes	1		1	1		1	1		0	0		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	1569	3022	1591	1577	3049	1317	1504	1259	0	0	1689	1270
Flt Permitted	0.950			0.950			0.597				0.720	
Satd. Flow (perm)	1569	3022	1556	1571	3049	1317	945	1259	0	0	1217	1270
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			2			43		18				106
Link Speed (mph)		30			30			20			25	
Link Distance (ft)		394			844			418			541	
Travel Time (s)		9.0			19.2			14.3			14.8	
Volume (vph)	95	1300	13	15	1471	92	16	2	14	69	3	89
Confl. Peds. (#/hr)			5	5					23	23		
Confl. Bikes (#/hr)									3			
Peak Hour Factor	0.98	0.98	0.98	0.93	0.93	0.93	0.78	0.78	0.78	0.75	0.75	0.75
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	7%	7%	7%	2%	2%	2%
Bus Blockages (#/hr)	0	2	0	0	0	0	0	0	2	2	0	0
Lane Group Flow (vph)	97	1327	13	16	1582	99	21	21	0	0	96	119
Turn Type	Prot		Free	Prot		Perm	Perm			Perm		Perm
Protected Phases	7	4		3	8			6			2	
Permitted Phases			Free			8	6			2		2
Detector Phases	7	4		3	8	8	6	6		2	2	2
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	11.0	20.0		11.0	20.0	20.0	26.0	26.0		11.0	11.0	11.0
Total Split (s)	20.0	111.0	0.0	11.0	102.0	102.0	26.0	26.0	0.0	26.0	26.0	26.0
Total Split (%)	13.5%	75.0%	0.0%	7.4%	68.9%	68.9%	17.6%	17.6%	0.0%	17.6%	17.6%	17.6%
Maximum Green (s)	15.0	106.0		6.0	97.0	97.0	21.0	21.0		21.0	21.0	21.0
Yellow Time (s)	3.5	4.0		3.5	4.0	4.0	3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.5	1.0		1.5	1.0	1.0	1.5	1.5		1.5	1.5	1.5
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.5		3.0	3.5	3.5	3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Time To Reduce (s)	20.0	20.0		20.0	20.0	20.0	20.0	20.0		20.0	20.0	20.0
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None		None	None	None
Walk Time (s)		7.0			7.0	7.0	7.0	7.0				
Flash Dont Walk (s)		8.0			8.0	8.0	14.0	14.0				
Pedestrian Calls (#/hr)		5			5	5	23	23				
Act Effct Green (s)	14.0	117.4	148.0	7.0	103.8	103.8	18.2	18.2			18.2	18.2
Actuated g/C Ratio	0.09	0.79	1.00	0.05	0.70	0.70	0.12	0.12			0.12	0.12
v/c Ratio	0.66	0.55	0.01	0.21	0.74	0.11	0.18	0.12			0.64	0.48

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	84.8	7.9	0.0	81.2	25.0	5.4	59.7	25.7			80.2	19.4
Queue Delay	0.0	3.2	0.0	0.0	0.1	0.0	0.0	0.0			0.0	0.0
Total Delay	84.8	11.1	0.0	81.2	25.1	5.4	59.7	25.7			80.2	19.4
LOS	F	B	A	F	C	A	E	C			F	B
Approach Delay		16.0			24.5			42.7			46.6	
Approach LOS		B			C			D			D	
90th %ile Green (s)	15.0	106.0		6.0	97.0	97.0	21.0	21.0		21.0	21.0	21.0
90th %ile Term Code	Max	Coord		Max	Coord	Coord	Ped	Ped		Max	Max	Max
70th %ile Green (s)	15.0	106.0		6.0	97.0	97.0	21.0	21.0		21.0	21.0	21.0
70th %ile Term Code	Max	Coord		Max	Coord	Coord	Ped	Ped		Hold	Hold	Hold
50th %ile Green (s)	14.4	117.0		0.0	97.6	97.6	21.0	21.0		21.0	21.0	21.0
50th %ile Term Code	Gap	Coord		Skip	Coord	Coord	Ped	Ped		Hold	Hold	Hold
30th %ile Green (s)	11.9	124.3		0.0	107.4	107.4	13.7	13.7		13.7	13.7	13.7
30th %ile Term Code	Gap	Coord		Skip	Coord	Coord	Hold	Hold		Gap	Gap	Gap
10th %ile Green (s)	8.6	128.7		0.0	115.1	115.1	9.3	9.3		9.3	9.3	9.3
10th %ile Term Code	Gap	Coord		Skip	Coord	Coord	Hold	Hold		Gap	Gap	Gap
Queue Length 50th (ft)	91	207	0	15	752	28	18	3			87	11
Queue Length 95th (ft)	155	361	0	m24	842	m24	39	23			122	43
Internal Link Dist (ft)		314			764			338			461	
Turn Bay Length (ft)	150		75	225		100	60					50
Base Capacity (vph)	170	2397	1556	75	2139	937	140	202			181	279
Starvation Cap Reductn	0	940	0	0	0	0	0	0			0	0
Spillback Cap Reductn	0	0	0	0	57	0	1	0			0	2
Storage Cap Reductn	0	0	0	0	0	0	0	0			0	0
Reduced v/c Ratio	0.57	0.91	0.01	0.21	0.76	0.11	0.15	0.10			0.53	0.43

Intersection Summary

Area Type: CBD
Cycle Length: 148
Actuated Cycle Length: 148
Offset: 30 (20%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.74
Intersection Signal Delay: 22.5 Intersection LOS: C
Intersection Capacity Utilization 74.0% ICU Level of Service D
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 15: Kitsap Way & Shorewood Dr

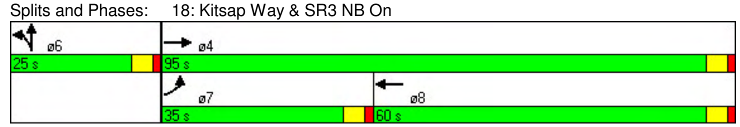


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	11	12	12	12	12	12	12
Grade (%)		0%			-1%			-1%			0%	
Storage Length (ft)	115		0	0		0	0		115	0		0
Storage Lanes	1		0	0		1	0		1	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50			50	50	50	50	50			
Trailing Detector (ft)	0	0			0	0	0	0	0			
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	1577	3049	0	0	3035	1358	0	1578	1405	0	0	0
Flt Permitted	0.950							0.955				
Satd. Flow (perm)	1571	3049	0	0	3035	1328	0	1578	1405	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						648			141			
Link Speed (mph)		30			30			35			50	
Link Distance (ft)		404			394			895			1104	
Travel Time (s)		9.2			9.0			17.4			15.1	
Volume (vph)	136	1289	0	0	785	812	39	3	124	0	0	0
Confl. Peds. (#/hr)	4					4						
Peak Hour Factor	0.97	0.97	0.92	0.92	0.91	0.91	0.88	0.88	0.88	0.92	0.92	0.92
Heavy Vehicles (%)	3%	3%	2%	2%	4%	4%	4%	4%	4%	2%	2%	2%
Lane Group Flow (vph)	140	1329	0	0	863	892	0	47	141	0	0	0
Turn Type	Prot					Free	Split		Free			
Protected Phases	7	4			8		6	6				
Permitted Phases						Free			Free			
Detector Phases	7	4			8		6	6				
Minimum Initial (s)	6.0	6.0			6.0		6.0	6.0				
Minimum Split (s)	11.0	20.0			24.0		11.0	11.0				
Total Split (s)	35.0	95.0	0.0	0.0	60.0	0.0	25.0	25.0	0.0	0.0	0.0	0.0
Total Split (%)	29.2%	79.2%	0.0%	0.0%	50.0%	0.0%	20.8%	20.8%	0.0%	0.0%	0.0%	0.0%
Maximum Green (s)	30.0	90.0			55.0		20.0	20.0				
Yellow Time (s)	3.5	3.5			3.5		3.5	3.5				
All-Red Time (s)	1.5	1.5			1.5		1.5	1.5				
Lead/Lag	Lead				Lag							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0				
Minimum Gap (s)	3.0	3.0			3.0		3.0	3.0				
Time Before Reduce (s)	6.0	6.0			6.0		6.0	6.0				
Time To Reduce (s)	20.0	20.0			20.0		20.0	20.0				
Recall Mode	None	C-Max			C-Max		None	None				
Walk Time (s)		7.0			7.0							
Flash Dont Walk (s)		8.0			12.0							
Pedestrian Calls (#/hr)		4			4							
Act Effct Green (s)	16.3	105.1			84.0	120.0		9.9	120.0			
Actuated g/C Ratio	0.14	0.88			0.70	1.00		0.08	1.00			
v/c Ratio	0.65	0.50			0.41	0.67		0.36	0.10			
Control Delay	62.8	3.0			9.7	2.7		59.0	0.1			
Queue Delay	0.0	1.0			0.8	0.0		0.0	0.0			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	62.8	4.1			10.5	2.7		59.0	0.1			
LOS	E	A			B	A		E	A			
Approach Delay		9.7			6.5			14.8				
Approach LOS		A			A			B				
90th %ile Green (s)	21.5	97.7			71.2		12.3	12.3				
90th %ile Term Code	Gap	Coord			Coord		Gap	Gap				
70th %ile Green (s)	17.7	99.8			77.1		10.2	10.2				
70th %ile Term Code	Gap	Coord			Coord		Gap	Gap				
50th %ile Green (s)	15.2	101.2			81.0		8.8	8.8				
50th %ile Term Code	Gap	Coord			Coord		Gap	Gap				
30th %ile Green (s)	12.8	102.7			84.9		7.3	7.3				
30th %ile Term Code	Gap	Coord			Coord		Gap	Gap				
10th %ile Green (s)	9.3	115.0			100.7		0.0	0.0				
10th %ile Term Code	Gap	Coord			Coord		Skip	Skip				
Queue Length 50th (ft)	104	101			141	0		35	0			
Queue Length 95th (ft)	164	163			233	0		72	0			
Internal Link Dist (ft)		324			314			815			1024	
Turn Bay Length (ft)	115								115			
Base Capacity (vph)	407	2670			2124	1328		276	1405			
Starvation Cap Reductn	0	993			884	0		0	0			
Spillback Cap Reductn	0	107			0	0		0	52			
Storage Cap Reductn	0	0			0	0		0	0			
Reduced v/c Ratio	0.34	0.79			0.70	0.67		0.17	0.10			

Intersection Summary
Area Type: CBD
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 74 (62%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 50
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.67
Intersection Signal Delay: 8.3 Intersection LOS: A
Intersection Capacity Utilization 51.3% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 18: Kitsap Way & SR3 NB On



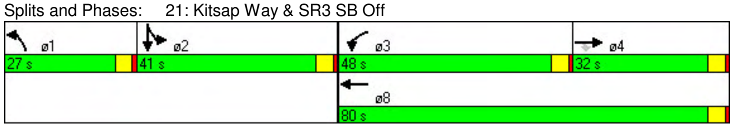
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	12	12	16	12	12
Grade (%)		0%			-1%			1%			-1%	
Storage Length (ft)	0		240	150		0	0		165	0		250
Storage Lanes	0		1	2		0	1		1	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)		50	50	50	50		50		50	50	50	50
Trailing Detector (ft)		0	0	0	0		0		0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	0	3020	1392	3045	3035	0	1539	0	1377	1723	1551	1432
Flt Permitted				0.950			0.950			0.950	0.969	
Satd. Flow (perm)	0	3020	1392	3045	3035	0	1538	0	1360	1716	1547	1414
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			203						366			5
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		681			404			1026			976	
Travel Time (s)		15.5			9.2			20.0			19.0	
Volume (vph)	0	370	183	323	499	0	51	0	337	723	155	7
Confl. Peds. (#/hr)							1		2	2		1
Confl. Bikes (#/hr)									1			1
Peak Hour Factor	0.92	0.90	0.90	0.93	0.93	0.92	0.92	0.92	0.92	0.93	0.93	0.93
Heavy Vehicles (%)	2%	4%	4%	4%	4%	2%	5%	2%	5%	2%	2%	2%
Bus Blockages (#/hr)	0	0	1	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	411	203	347	537	0	55	0	366	490	454	8
Turn Type			Perm	Prot			Prot		Free	Split		Free
Protected Phases		4		3	8		1			2	2	
Permitted Phases			4						Free			Free
Detector Phases		4	4	3	8		1			2	2	
Minimum Initial (s)		6.0	6.0	3.0	6.0		3.0			3.0	3.0	
Minimum Split (s)		19.5	19.5	7.5	19.5		7.5			25.5	25.5	
Total Split (s)	0.0	32.0	32.0	48.0	80.0	0.0	27.0	0.0	0.0	41.0	41.0	0.0
Total Split (%)	0.0%	21.6%	21.6%	32.4%	54.1%	0.0%	18.2%	0.0%	0.0%	27.7%	27.7%	0.0%
Maximum Green (s)		27.5	27.5	43.5	75.5		22.5			36.5	36.5	
Yellow Time (s)		3.5	3.5	3.5	3.5		3.5			3.5	3.5	
All-Red Time (s)		1.0	1.0	1.0	1.0		1.0			1.0	1.0	
Lead/Lag		Lag	Lag	Lead			Lead			Lag	Lag	
Lead-Lag Optimize?		Yes	Yes	Yes			Yes			Yes	Yes	
Vehicle Extension (s)		3.5	3.5	4.0	3.5		3.5			3.5	3.5	
Minimum Gap (s)		3.0	3.0	3.0	3.0		3.0			3.0	3.0	
Time Before Reduce (s)		6.0	6.0	6.0	6.0		6.0			6.0	6.0	
Time To Reduce (s)		20.0	20.0	20.0	20.0		20.0			20.0	20.0	
Recall Mode		C-Max	C-Max	None	C-Max		Min			Ped	Ped	
Walk Time (s)		7.0	7.0	0.0	7.0					7.0	7.0	
Flash Dont Walk (s)		8.0	8.0	0.0	8.0					14.0	14.0	
Pedestrian Calls (#/hr)		0	0	0	0					0	0	
Act Effct Green (s)		49.7	49.7	22.3	76.0		11.5		148.0	48.5	48.5	148.0
Actuated g/C Ratio		0.34	0.34	0.15	0.51		0.08		1.00	0.33	0.33	1.00
v/c Ratio		0.40	0.34	0.76	0.34		0.46		0.27	0.87	0.89	0.01

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay		40.0	6.3	71.0	22.1		76.8		0.5	63.7	68.5	0.0
Queue Delay		0.0	0.0	0.0	1.4		0.0		0.0	2.2	3.5	0.0
Total Delay		40.0	6.3	71.0	23.5		76.8		0.5	66.0	71.9	0.0
LOS		D	A	E	C		E		A	E	E	A
Approach Delay		28.9			42.1						68.3	
Approach LOS		C			D						E	
90th %ile Green (s)		43.7	43.7	27.3	75.5		15.3			43.7	43.7	
90th %ile Term Code		Coord	Coord	Gap	Coord		Gap			Max	Max	
70th %ile Green (s)		47.0	47.0	24.0	75.5		12.7			46.3	46.3	
70th %ile Term Code		Coord	Coord	Gap	Coord		Gap			Max	Max	
50th %ile Green (s)		49.3	49.3	21.7	75.5		10.9			48.1	48.1	
50th %ile Term Code		Coord	Coord	Gap	Coord		Gap			Max	Max	
30th %ile Green (s)		51.5	51.5	19.5	75.5		9.2			49.8	49.8	
30th %ile Term Code		Coord	Coord	Gap	Coord		Gap			Max	Max	
10th %ile Green (s)		54.7	54.7	16.3	75.5		6.7			52.3	52.3	
10th %ile Term Code		Coord	Coord	Gap	Coord		Gap			Max	Max	
Queue Length 50th (ft)		160	0	168	157		52		0	467	438	0
Queue Length 95th (ft)		223	61	214	201		98		0	#728	#700	0
Internal Link Dist (ft)		601			324			946			896	
Turn Bay Length (ft)			240	150					165			250
Base Capacity (vph)		1015	603	905	1559		239		1360	565	508	1414
Starvation Cap Reductn		0	0	0	786		0		0	0	0	0
Spillback Cap Reductn		0	0	0	0		0		25	23	21	0
Storage Cap Reductn		0	0	0	0		0		0	0	0	0
Reduced v/c Ratio		0.40	0.34	0.38	0.69		0.23		0.27	0.90	0.93	0.01

Intersection Summary

Area Type: CBD
Cycle Length: 148
Actuated Cycle Length: 148
Offset: 77 (52%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 43.3 Intersection LOS: D
Intersection Capacity Utilization 65.7% ICU Level of Service C
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 21: Kitsap Way & SR3 SB Off



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	11	15	15
Grade (%)		-1%	1%		12%	
Storage Length (ft)	0			110	0	0
Storage Lanes	1			1	1	0
Turning Speed (mph)	15			9	15	9
Satd. Flow (prot)	1601	3095	3064	1371	1605	0
Flt Permitted	0.950				0.977	
Satd. Flow (perm)	1601	3095	3064	1371	1605	0
Link Speed (mph)		30	30		20	
Link Distance (ft)		844	1365		305	
Travel Time (s)		19.2	31.0		10.4	
Volume (vph)	6	1415	1606	4	20	22
Peak Hour Factor	0.92	0.92	0.93	0.93	0.38	0.38
Heavy Vehicles (%)	2%	2%	2%	2%	0%	0%
Lane Group Flow (vph)	7	1538	1727	4	111	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: CBD
Control Type: Unsignalized
Intersection Capacity Utilization 59.3% ICU Level of Service B
Analysis Period (min) 15

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		-1%	1%		12%	
Volume (veh/h)	6	1415	1606	4	20	22
Peak Hour Factor	0.92	0.92	0.93	0.93	0.38	0.38
Hourly flow rate (vph)	7	1538	1727	4	53	58
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					TWLTL	
Median storage veh)					0	
Upstream signal (ft)		844				
pX, platoon unblocked					0.83	
vC, conflicting volume	1731				2509	863
vC1, stage 1 conf vol					1727	
vC2, stage 2 conf vol					782	
vCu, unblocked vol	1731				2614	863
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	98				27	81
cM capacity (veh/h)	360				72	301

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	7	769	769	863	863	4	111
Volume Left	7	0	0	0	0	0	53
Volume Right	0	0	0	0	0	4	58
cSH	360	1700	1700	1700	1700	1700	120
Volume to Capacity	0.02	0.45	0.45	0.51	0.51	0.00	0.92
Queue Length 95th (ft)	1	0	0	0	0	0	146
Control Delay (s)	15.2	0.0	0.0	0.0	0.0	0.0	129.5
Lane LOS	C						F
Approach Delay (s)	0.1			0.0			129.5
Approach LOS							F

Intersection Summary

Average Delay	4.3		
Intersection Capacity Utilization	59.3%	ICU Level of Service	B
Analysis Period (min)	15		

APPENDIX B.2

2010 Without Project Synchro LOS Sheets

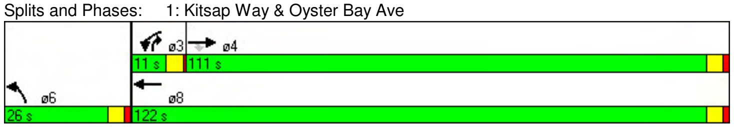
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	10	9
Grade (%)	0%			-3%	-1%	
Storage Length (ft)		70	115		0	50
Storage Lanes		1	1		1	1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Turning Speed (mph)		9	15		15	9
Satd. Flow (prot)	3067	1425	1585	3065	1411	1208
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3067	1272	1568	3065	1411	1208
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		17				145
Link Speed (mph)	35			35	25	
Link Distance (ft)	1365			1341	350	
Travel Time (s)	26.6			26.1	9.5	
Volume (vph)	1464	39	77	1670	50	109
Confl. Peds. (#/hr)		18	18			1
Peak Hour Factor	0.97	0.97	0.95	0.95	0.75	0.75
Heavy Vehicles (%)	2%	2%	4%	4%	8%	8%
Bus Blockages (#/hr)	2	0	0	0	0	2
Lane Group Flow (vph)	1509	40	81	1758	67	145
Turn Type		Perm	Prot			Over
Protected Phases	4		3	8	6	3
Permitted Phases		4				
Detector Phases	4	4	3	8	6	3
Minimum Initial (s)	6.0	6.0	4.0	6.0	6.0	4.0
Minimum Split (s)	20.0	20.0	8.0	22.0	26.0	8.0
Total Split (s)	111.0	111.0	11.0	122.0	26.0	11.0
Total Split (%)	75.0%	75.0%	7.4%	82.4%	17.6%	7.4%
Maximum Green (s)	106.0	106.0	7.0	117.0	21.0	7.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	0.5	1.5	1.5	0.5
Lead/Lag	Lag	Lag	Lead			Lead
Lead-Lag Optimize?	Yes	Yes	Yes			Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	6.0	6.0	0.0	6.0	6.0	0.0
Time To Reduce (s)	20.0	20.0	0.0	20.0	20.0	0.0
Recall Mode	C-Max	C-Max	None	C-Max	None	None
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	8.0	8.0		10.0	14.0	
Pedestrian Calls (#/hr)	18	18		18	1	
Act Effct Green (s)	111.0	111.0	13.5	129.3	13.8	13.5
Actuated g/C Ratio	0.75	0.75	0.09	0.87	0.09	0.09
v/c Ratio	0.66	0.04	0.56	0.66	0.51	0.60
Control Delay	19.0	7.4	82.3	4.0	75.8	20.2

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.0	7.4	82.3	4.0	75.8	20.2
LOS	B	A	F	A	E	C
Approach Delay	18.7			7.4	37.8	
Approach LOS	B			A	D	
90th %ile Green (s)	106.0	106.0	7.0	117.0	21.0	7.0
90th %ile Term Code	Coord	Coord	Max	Coord	Ped	Max
70th %ile Green (s)	106.0	106.0	13.7	123.7	14.3	13.7
70th %ile Term Code	Coord	Coord	Max	Coord	Gap	Max
50th %ile Green (s)	106.0	106.0	15.9	125.9	12.1	15.9
50th %ile Term Code	Coord	Coord	Max	Coord	Gap	Max
30th %ile Green (s)	108.5	108.5	15.5	128.0	10.0	15.5
30th %ile Term Code	Coord	Coord	Gap	Coord	Gap	Gap
10th %ile Green (s)	123.6	123.6	15.4	143.0	0.0	15.4
10th %ile Term Code	Coord	Coord	Gap	Coord	Skip	Gap
Queue Length 50th (ft)	458	8	81	179	63	0
Queue Length 95th (ft)	776	m24	m#151	175	90	36
Internal Link Dist (ft)	1285			1261	270	
Turn Bay Length (ft)		70	115			50
Base Capacity (vph)	2300	958	145	2678	210	242
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.04	0.56	0.66	0.32	0.60

Intersection Summary

Area Type: CBD
Cycle Length: 148
Actuated Cycle Length: 148
Offset: 108 (73%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.66
Intersection Signal Delay: 14.1 Intersection LOS: B
Intersection Capacity Utilization 65.1% ICU Level of Service C
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Kitsap Way & Oyster Bay Ave



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	13	12	11	12	13	13	12	12	16	12
Grade (%)		1%			-4%			-4%			0%	
Storage Length (ft)	125		125	75		0	110		0	0		0
Storage Lanes	1		1	1		0	1		0	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	1585	3051	1465	1624	3137	0	1679	1504	0	0	1750	0
Flt Permitted	0.950			0.950			0.780				0.234	
Satd. Flow (perm)	1584	3051	1432	1619	3137	0	1378	1504	0	0	424	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			26		1			299			2	
Link Speed (mph)		35			35			35			15	
Link Distance (ft)		1341			1326			1021			212	
Travel Time (s)		26.1			25.8			19.9			9.6	
Volume (vph)	3	1411	135	243	1688	7	88	2	274	12	4	1
Confl. Peds. (#/hr)	2		5	5		2						
Confl. Bikes (#/hr)			1			5						
Peak Hour Factor	0.97	0.97	0.97	0.89	0.89	0.89	0.88	0.88	0.88	0.57	0.57	0.57
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	6%	6%	6%
Bus Blockages (#/hr)	0	2	0	0	0	0	0	0	2	2	0	0
Lane Group Flow (vph)	3	1455	139	273	1905	0	100	313	0	0	30	0
Turn Type	Prot		Free	Prot			Perm			Perm		
Protected Phases	7	4		3	8			6			2	
Permitted Phases			Free				6			2		
Detector Phases	7	4		3	8		6	6		2	2	
Minimum Initial (s)	5.0	8.0		8.0	8.0		8.0	8.0		6.0	6.0	
Minimum Split (s)	9.5	19.5		12.5	19.5		12.5	12.5		22.5	22.5	
Total Split (s)	11.0	88.0	0.0	37.0	114.0	0.0	23.0	23.0	0.0	23.0	23.0	0.0
Total Split (%)	7.4%	59.5%	0.0%	25.0%	77.0%	0.0%	15.5%	15.5%	0.0%	15.5%	15.5%	0.0%
Maximum Green (s)	6.5	83.5		32.5	109.5		18.5	18.5		18.5	18.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Time To Reduce (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)		7.0			7.0		6.0	6.0		7.0	7.0	
Flash Dont Walk (s)		8.0			8.0		0.0	0.0		11.0	11.0	
Pedestrian Calls (#/hr)		0			0		0	0		0	0	
Act Effct Green (s)	6.4	91.6	148.0	28.8	122.3		15.5	15.5			15.5	
Actuated g/C Ratio	0.04	0.62	1.00	0.19	0.83		0.10	0.10			0.10	
v/c Ratio	0.04	0.77	0.10	0.86	0.73		0.69	0.73			0.65	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	62.0	13.4	0.1	38.9	20.5		87.3	18.6			113.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	
Total Delay	62.0	13.4	0.1	38.9	20.5		87.3	18.6			113.7	
LOS	E	B	A	D	C		F	B			F	
Approach Delay		12.3			22.8			35.3			113.7	
Approach LOS		B			C			D			F	
90th %ile Green (s)	6.5	83.5		32.5	109.5		18.5	18.5		18.5	18.5	
90th %ile Term Code	Max	Coord		Max	Coord		Max	Max		Max	Max	
70th %ile Green (s)	0.0	83.5		32.5	120.5		18.5	18.5		18.5	18.5	
70th %ile Term Code	Skip	Coord		Max	Coord		Max	Max		Max	Max	
50th %ile Green (s)	0.0	88.4		30.3	123.2		15.8	15.8		15.8	15.8	
50th %ile Term Code	Skip	Coord		Gap	Coord		Gap	Gap		Hold	Hold	
30th %ile Green (s)	0.0	96.3		25.1	125.9		13.1	13.1		13.1	13.1	
30th %ile Term Code	Skip	Coord		Gap	Coord		Gap	Gap		Hold	Hold	
10th %ile Green (s)	0.0	104.0		21.3	129.8		9.2	9.2		9.2	9.2	
10th %ile Term Code	Skip	Coord		Gap	Coord		Gap	Gap		Hold	Hold	
Queue Length 50th (ft)	3	213	0	251	681		94	12			26	
Queue Length 95th (ft)	m4	203	m0	m217	m571		154	103			38	
Internal Link Dist (ft)		1261			1246			941			132	
Turn Bay Length (ft)	125		125	75			110					
Base Capacity (vph)	75	1889	1432	362	2592		177	454			56	
Starvation Cap Reductn	0	0	0	0	0		0	0			0	
Spillback Cap Reductn	0	0	0	0	0		0	0			0	
Storage Cap Reductn	0	0	0	0	0		0	0			0	
Reduced v/c Ratio	0.04	0.77	0.10	0.75	0.73		0.56	0.69			0.54	

Intersection Summary

Area Type: CBD
Cycle Length: 148
Actuated Cycle Length: 148
Offset: 118 (80%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 20.7 Intersection LOS: C
Intersection Capacity Utilization 87.3% ICU Level of Service E
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Kitsap Way & Private Drwy 1

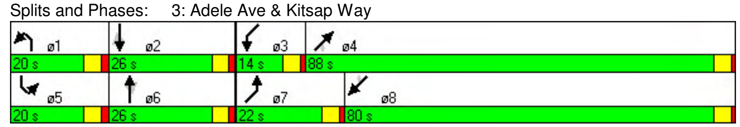
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	16	10	12	12	10	11	12	12	10	10
Storage Length (ft)	0		0	45		45	150		115	110		175
Storage Lanes	1		1	1		1	1		1	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	40	50	40	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	1580	1676	1602	1489	1693	1428	1486	3067	1425	1593	2961	1330
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1574	1676	1543	1468	1693	1405	1486	3067	1391	1592	2961	1330
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			176			78			29			60
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		548			510			1326			859	
Travel Time (s)		10.7			9.9			25.8			16.7	
Volume (vph)	110	33	151	91	48	73	206	1359	65	64	1674	132
Confl. Peds. (#/hr)	2		7	7		2			1	1		
Confl. Bikes (#/hr)			7									
Peak Hour Factor	0.85	0.85	0.85	0.93	0.93	0.93	0.94	0.94	0.94	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	2	0	2	2	0	2	0	2	0	0	2	0
Lane Group Flow (vph)	129	39	178	98	52	78	219	1446	69	71	1860	147
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6			2			4			8
Detector Phases	1	6	6	5	2	2	7	4	4	3	8	8
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	11.0	26.0	26.0	11.0	26.0	26.0	10.5	23.5	23.5	10.5	23.5	23.5
Total Split (s)	20.0	26.0	26.0	20.0	26.0	26.0	22.0	88.0	88.0	14.0	80.0	80.0
Total Split (%)	13.5%	17.6%	17.6%	13.5%	17.6%	17.6%	14.9%	59.5%	59.5%	9.5%	54.1%	54.1%
Maximum Green (s)	15.0	21.0	21.0	15.0	21.0	21.0	17.5	83.5	83.5	9.5	75.5	75.5
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.0	1.0	1.0	1.0	1.0	1.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	5.0	3.0	3.0	4.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Time To Reduce (s)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Recall Mode	None	None	None	None	None	None	Max	C-Max	C-Max	Max	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		14.0	14.0		14.0	14.0		12.0	12.0		12.0	12.0
Pedestrian Calls (#/hr)		9	9		9	9		1	1		0	0
Act Effct Green (s)	15.3	12.5	12.5	15.0	12.2	12.2	28.5	84.0	84.0	20.5	76.0	76.0
Actuated g/C Ratio	0.10	0.08	0.08	0.10	0.08	0.08	0.19	0.57	0.57	0.14	0.51	0.51
v/c Ratio	0.79	0.28	0.61	0.65	0.37	0.41	0.77	0.83	0.09	0.32	1.22	0.21
Control Delay	96.0	66.2	17.6	83.8	69.7	18.4	86.5	12.8	2.0	64.3	139.4	12.1

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	96.0	66.2	17.6	83.8	69.7	18.4	86.5	12.8	2.0	64.3	139.4	12.1
LOS	F	E	B	F	E	B	F	B	A	E	F	B
Approach Delay		52.3			58.2			21.7			127.9	
Approach LOS		D			E			C			F	
90th %ile Green (s)	15.0	21.0	21.0	15.0	21.0	21.0	17.5	83.5	83.5	9.5	75.5	75.5
90th %ile Term Code	Max	Ped	Ped	Max	Ped	Ped	MaxR	Coord	Coord	MaxR	Coord	Coord
70th %ile Green (s)	15.0	11.3	11.3	15.0	11.3	11.3	27.2	83.5	83.5	19.2	75.5	75.5
70th %ile Term Code	Max	Hold	Hold	Max	Gap	Gap	MaxR	Coord	Coord	MaxR	Coord	Coord
50th %ile Green (s)	15.0	9.7	9.7	15.0	9.7	9.7	28.8	83.5	83.5	20.8	75.5	75.5
50th %ile Term Code	Max	Hold	Hold	Max	Gap	Gap	MaxR	Coord	Coord	MaxR	Coord	Coord
30th %ile Green (s)	15.0	8.9	8.9	14.3	8.2	8.2	30.3	83.5	83.5	22.3	75.5	75.5
30th %ile Term Code	Max	Hold	Hold	Gap	Gap	Gap	MaxR	Coord	Coord	MaxR	Coord	Coord
10th %ile Green (s)	11.3	6.5	6.5	10.8	6.0	6.0	36.2	83.5	83.5	28.2	75.5	75.5
10th %ile Term Code	Gap	Hold	Hold	Gap	Min	Min	MaxR	Coord	Coord	MaxR	Coord	Coord
Queue Length 50th (ft)	123	36	2	92	49	0	208	243	1	62	~1157	43
Queue Length 95th (ft)	#205	67	58	157	89	50	m#404	231	m4	#142	#1293	86
Internal Link Dist (ft)		468			430			1246			779	
Turn Bay Length (ft)				45		45	150		115	110		175
Base Capacity (vph)	171	249	379	161	252	275	286	1741	802	221	1521	712
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.16	0.47	0.61	0.21	0.28	0.77	0.83	0.09	0.32	1.22	0.21

Intersection Summary

Area Type: CBD
Cycle Length: 148
Actuated Cycle Length: 148
Offset: 0 (0%), Referenced to phase 4:NET and 8:SWT, Start of Green, Master Intersection
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.22
Intersection Signal Delay: 76.3 Intersection LOS: E
Intersection Capacity Utilization 88.4% ICU Level of Service E
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Adele Ave & Kitsap Way



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	8	12	12	8	12
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	0	1793	0	0	1793	0	0	1520	0	0	1487	0
Flt Permitted		0.959			0.979			0.997			0.997	
Satd. Flow (perm)	0	1793	0	0	1793	0	0	1520	0	0	1487	0
Link Speed (mph)		20			15			25			25	
Link Distance (ft)		1297			282			1349			350	
Travel Time (s)		44.2			12.8			36.8			9.5	
Volume (vph)	83	3	12	7	5	4	4	73	0	6	52	57
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	8%	8%	8%	3%	3%	3%
Lane Group Flow (vph)	0	116	0	0	19	0	0	91	0	0	135	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 24.8% ICU Level of Service A

Analysis Period (min) 15

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	83	3	12	7	5	4	4	73	0	6	52	57
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	98	4	14	8	6	5	5	86	0	7	61	67
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)											350	
pX, platoon unblocked												
vC, conflicting volume	212	204	95	220	238	86	128			86		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	212	204	95	220	238	86	128			86		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	87	99	99	99	99	100	100			100		
cM capacity (veh/h)	736	690	968	722	661	978	1421			1504		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	115	19	91	135
Volume Left	98	8	5	7
Volume Right	14	5	0	67
cSH	757	750	1421	1504
Volume to Capacity	0.15	0.03	0.00	0.00
Queue Length 95th (ft)	13	2	0	0
Control Delay (s)	10.6	9.9	0.4	0.4
Lane LOS	B	A	A	A
Approach Delay (s)	10.6	9.9	0.4	0.4
Approach LOS	B	A		

Intersection Summary

Average Delay	4.2		
Intersection Capacity Utilization	24.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	12	12	12	12	12	12	8	12	12	8	12
Grade (%)		0%			0%			-1%			0%	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	0	1789	0	0	1709	0	0	1519	0	0	1499	0
Flt Permitted		0.959			0.972			0.995			0.998	
Satd. Flow (perm)	0	1789	0	0	1709	0	0	1519	0	0	1499	0
Link Speed (mph)		20			15			25			25	
Link Distance (ft)		467			299			863			1349	
Travel Time (s)		15.9			13.6			23.5			36.8	
Volume (vph)	26	0	4	6	0	4	3	34	0	3	32	28
Confl. Peds. (#/hr)							2					2
Confl. Bikes (#/hr)			1									
Peak Hour Factor	0.69	0.69	0.69	0.83	0.83	0.83	0.84	0.84	0.84	0.86	0.86	0.86
Heavy Vehicles (%)	0%	2%	0%	2%	2%	2%	8%	8%	2%	2%	3%	3%
Bus Blockages (#/hr)	1	0	0	0	0	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	44	0	0	12	0	0	44	0	0	73	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 14.9% ICU Level of Service A

Analysis Period (min) 15

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			-1%			0%	
Volume (veh/h)	26	0	4	6	0	4	3	34	0	3	32	28
Peak Hour Factor	0.69	0.69	0.69	0.83	0.83	0.83	0.84	0.84	0.84	0.86	0.86	0.86
Hourly flow rate (vph)	38	0	6	7	0	5	4	40	0	3	37	33
Pedestrians		2										
Lane Width (ft)		12.0										
Walking Speed (ft/s)		4.0										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	115	110	55	114	126	40	72			40		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	115	110	55	114	126	40	72			40		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	96	100	99	99	100	100	100			100		
cM capacity (veh/h)	857	775	1015	854	759	1031	1489			1569		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	43	12	44	73
Volume Left	38	7	4	3
Volume Right	6	5	0	33
cSH	875	917	1489	1569
Volume to Capacity	0.05	0.01	0.00	0.00
Queue Length 95th (ft)	4	1	0	0
Control Delay (s)	9.3	9.0	0.6	0.4
Lane LOS	A	A	A	A
Approach Delay (s)	9.3	9.0	0.6	0.4
Approach LOS	A	A		

Intersection Summary			
Average Delay	3.3		
Intersection Capacity Utilization	14.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	8	12
Grade (%)		4%	-1%		-5%	
Turning Speed (mph)	15			9	15	9
Satd. Flow (prot)	0	1733	1590	0	1478	0
Flt Permitted		0.996			0.954	
Satd. Flow (perm)	0	1733	1590	0	1478	0
Link Speed (mph)		20	25		25	
Link Distance (ft)		248	299		863	
Travel Time (s)		8.5	8.2		23.5	
Volume (vph)	2	22	21	35	46	2
Confl. Peds. (#/hr)	1			1	2	
Peak Hour Factor	0.66	0.66	0.93	0.93	0.90	0.90
Heavy Vehicles (%)	7%	7%	10%	10%	8%	8%
Bus Blockages (#/hr)	1	0	0	1	1	1
Lane Group Flow (vph)	0	36	61	0	53	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 13.7% ICU Level of Service A
Analysis Period (min) 15

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		4%	-1%		-5%	
Volume (veh/h)	2	22	21	35	46	2
Peak Hour Factor	0.66	0.66	0.93	0.93	0.90	0.90
Hourly flow rate (vph)	3	33	23	38	51	2
Pedestrians			2		1	
Lane Width (ft)			12.0		8.0	
Walking Speed (ft/s)			4.0		4.0	
Percent Blockage			0		0	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	61				84	42
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	61				84	42
tC, single (s)	4.2				6.5	6.3
tC, 2 stage (s)						
tF (s)	2.3				3.6	3.4
p0 queue free %	100				94	100
cM capacity (veh/h)	1510				900	1011

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	36	60	53
Volume Left	3	0	51
Volume Right	0	38	2
cSH	1510	1700	904
Volume to Capacity	0.00	0.04	0.06
Queue Length 95th (ft)	0	0	5
Control Delay (s)	0.6	0.0	9.2
Lane LOS	A		A
Approach Delay (s)	0.6	0.0	9.2
Approach LOS			A

Intersection Summary

Average Delay	3.4		
Intersection Capacity Utilization	13.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	16	12	11	10	11	10	10	12	14	9
Grade (%)		1%			0%			-5%			2%	
Storage Length (ft)	150		75	225		100	60		0	0		50
Storage Lanes	1		1	1		1	1		0	0		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	1569	3022	1591	1577	3049	1317	1504	1257	0	0	1689	1270
Flt Permitted	0.950			0.950			0.576				0.718	
Satd. Flow (perm)	1569	3022	1556	1572	3049	1317	912	1257	0	0	1213	1270
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			2			42		19				106
Link Speed (mph)		35			35			20			25	
Link Distance (ft)		394			844			418			541	
Travel Time (s)		7.7			16.4			14.3			14.8	
Volume (vph)	102	1391	14	16	1574	98	17	2	15	74	3	95
Confl. Peds. (#/hr)			5	5					23	23		
Confl. Bikes (#/hr)									3			
Peak Hour Factor	0.98	0.98	0.98	0.93	0.93	0.93	0.78	0.78	0.78	0.75	0.75	0.75
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	7%	7%	7%	2%	2%	2%
Bus Blockages (#/hr)	0	2	0	0	0	0	0	0	2	2	0	0
Lane Group Flow (vph)	104	1419	14	17	1692	105	22	22	0	0	103	127
Turn Type	Prot		Free	Prot		Perm	Perm			Perm		Perm
Protected Phases	7	4		3	8			6			2	
Permitted Phases			Free			8	6			2		2
Detector Phases	7	4		3	8	8	6	6		2	2	2
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	11.0	20.0		11.0	20.0	20.0	26.0	26.0		11.0	11.0	11.0
Total Split (s)	20.0	111.0	0.0	11.0	102.0	102.0	26.0	26.0	0.0	26.0	26.0	26.0
Total Split (%)	13.5%	75.0%	0.0%	7.4%	68.9%	68.9%	17.6%	17.6%	0.0%	17.6%	17.6%	17.6%
Maximum Green (s)	15.0	106.0		6.0	97.0	97.0	21.0	21.0		21.0	21.0	21.0
Yellow Time (s)	3.5	4.0		3.5	4.0	4.0	3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.5	1.0		1.5	1.0	1.0	1.5	1.5		1.5	1.5	1.5
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.5		3.0	3.5	3.5	3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Time To Reduce (s)	20.0	20.0		20.0	20.0	20.0	20.0	20.0		20.0	20.0	20.0
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None		None	None	None
Walk Time (s)		7.0			7.0	7.0	7.0	7.0				
Flash Dont Walk (s)		8.0			8.0	8.0	14.0	14.0				
Pedestrian Calls (#/hr)		5			5	5	23	23				
Act Effct Green (s)	14.3	117.1	148.0	7.0	103.2	103.2	18.5	18.5			18.5	18.5
Actuated g/C Ratio	0.10	0.79	1.00	0.05	0.70	0.70	0.12	0.12			0.12	0.12
v/c Ratio	0.68	0.59	0.01	0.23	0.80	0.11	0.19	0.13			0.68	0.51

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	86.8	8.6	0.0	79.1	29.0	7.2	60.1	25.2			83.4	21.7
Queue Delay	0.0	4.6	0.0	0.0	0.2	0.0	0.0	0.0			0.0	0.1
Total Delay	86.8	13.2	0.0	79.1	29.2	7.2	60.1	25.2			83.4	21.8
LOS	F	B	A	E	C	A	E	C			F	C
Approach Delay		18.1			28.4			42.6			49.4	
Approach LOS		B			C			D			D	
90th %ile Green (s)	15.0	106.0		6.0	97.0	97.0	21.0	21.0		21.0	21.0	21.0
90th %ile Term Code	Max	Coord		Max	Coord	Coord	Ped	Ped		Max	Max	Max
70th %ile Green (s)	15.0	106.0		6.0	97.0	97.0	21.0	21.0		21.0	21.0	21.0
70th %ile Term Code	Max	Coord		Max	Coord	Coord	Ped	Ped		Hold	Hold	Hold
50th %ile Green (s)	15.0	117.0		0.0	97.0	97.0	21.0	21.0		21.0	21.0	21.0
50th %ile Term Code	Max	Coord		Skip	Coord	Coord	Ped	Ped		Hold	Hold	Hold
30th %ile Green (s)	12.5	123.5		0.0	106.0	106.0	14.5	14.5		14.5	14.5	14.5
30th %ile Term Code	Gap	Coord		Skip	Coord	Coord	Hold	Hold		Gap	Gap	Gap
10th %ile Green (s)	9.1	128.1		0.0	114.0	114.0	9.9	9.9		9.9	9.9	9.9
10th %ile Term Code	Gap	Coord		Skip	Coord	Coord	Hold	Hold		Gap	Gap	Gap
Queue Length 50th (ft)	97	235	0	15	735	36	19	3			94	18
Queue Length 95th (ft)	165	408	0	m26	912	m36	41	24			131	51
Internal Link Dist (ft)		314			764			338			461	
Turn Bay Length (ft)	150		75	225		100	60					50
Base Capacity (vph)	170	2391	1556	75	2126	931	136	203			180	279
Starvation Cap Reductn	0	886	0	0	0	0	0	0			0	0
Spillback Cap Reductn	0	0	0	0	73	0	2	0			0	5
Storage Cap Reductn	0	0	0	0	0	0	0	0			0	0
Reduced v/c Ratio	0.61	0.94	0.01	0.23	0.82	0.11	0.16	0.11			0.57	0.46

Intersection Summary

Area Type: CBD

Cycle Length: 148

Actuated Cycle Length: 148

Offset: 30 (20%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

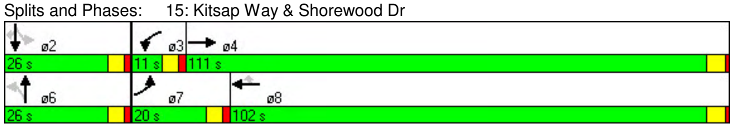
Intersection Signal Delay: 25.5 Intersection LOS: C

Intersection Capacity Utilization 77.6% ICU Level of Service D

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 15: Kitsap Way & Shorewood Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	11	12	12	12	12	12	12
Grade (%)		0%			-1%			-1%			0%	
Storage Length (ft)	115		0	0		0	0		115	0		0
Storage Lanes	1		0	0		1	0		1	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50			50	50	50	50	50			
Trailing Detector (ft)	0	0			0	0	0	0	0			
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	1577	3049	0	0	3035	1358	0	1578	1405	0	0	0
Flt Permitted	0.950							0.955				
Satd. Flow (perm)	1572	3049	0	0	3035	1328	0	1578	1405	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						648			151			
Link Speed (mph)		35			35			35			50	
Link Distance (ft)		404			394			895			1104	
Travel Time (s)		7.9			7.7			17.4			15.1	
Volume (vph)	145	1379	0	0	840	869	42	3	133	0	0	0
Confl. Peds. (#/hr)	4					4						
Peak Hour Factor	0.97	0.97	0.92	0.92	0.91	0.91	0.88	0.88	0.88	0.92	0.92	0.92
Heavy Vehicles (%)	3%	3%	2%	2%	4%	4%	4%	4%	4%	2%	2%	2%
Lane Group Flow (vph)	149	1422	0	0	923	955	0	51	151	0	0	0
Turn Type	Prot					Free	Split		Free			
Protected Phases	7	4			8		6	6				
Permitted Phases						Free			Free			
Detector Phases	7	4			8		6	6				
Minimum Initial (s)	6.0	6.0			6.0		6.0	6.0				
Minimum Split (s)	11.0	20.0			24.0		11.0	11.0				
Total Split (s)	35.0	95.0	0.0	0.0	60.0	0.0	25.0	25.0	0.0	0.0	0.0	0.0
Total Split (%)	29.2%	79.2%	0.0%	0.0%	50.0%	0.0%	20.8%	20.8%	0.0%	0.0%	0.0%	0.0%
Maximum Green (s)	30.0	90.0			55.0		20.0	20.0				
Yellow Time (s)	3.5	3.5			3.5		3.5	3.5				
All-Red Time (s)	1.5	1.5			1.5		1.5	1.5				
Lead/Lag	Lead				Lag							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0				
Minimum Gap (s)	3.0	3.0			3.0		3.0	3.0				
Time Before Reduce (s)	6.0	6.0			6.0		6.0	6.0				
Time To Reduce (s)	20.0	20.0			20.0		20.0	20.0				
Recall Mode	None	C-Max			C-Max		None	None				
Walk Time (s)		7.0			7.0							
Flash Dont Walk (s)		8.0			12.0							
Pedestrian Calls (#/hr)		4			4							
Act Effct Green (s)	17.0	104.8			83.0	120.0		10.2	120.0			
Actuated g/C Ratio	0.14	0.87			0.69	1.00		0.08	1.00			
v/c Ratio	0.67	0.53			0.44	0.72		0.38	0.11			
Control Delay	62.8	3.4			10.5	3.4		59.2	0.2			
Queue Delay	0.0	1.2			1.0	0.0		0.0	0.0			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	62.8	4.6			11.5	3.4		59.2	0.2			
LOS	E	A			B	A		E	A			
Approach Delay		10.1			7.4			15.1				
Approach LOS		B			A			B				
90th %ile Green (s)	22.4	97.3			69.9		12.7	12.7				
90th %ile Term Code	Gap	Coord			Coord		Gap	Gap				
70th %ile Green (s)	18.5	99.4			75.9		10.6	10.6				
70th %ile Term Code	Gap	Coord			Coord		Gap	Gap				
50th %ile Green (s)	15.9	100.9			80.0		9.1	9.1				
50th %ile Term Code	Gap	Coord			Coord		Gap	Gap				
30th %ile Green (s)	13.3	102.4			84.1		7.6	7.6				
30th %ile Term Code	Gap	Coord			Coord		Gap	Gap				
10th %ile Green (s)	9.7	115.0			100.3		0.0	0.0				
10th %ile Term Code	Gap	Coord			Coord		Skip	Skip				
Queue Length 50th (ft)	111	118			160	0		38	0			
Queue Length 95th (ft)	172	190			263	0		75	0			
Internal Link Dist (ft)		324			314			815			1024	
Turn Bay Length (ft)	115								115			
Base Capacity (vph)	407	2663			2100	1328		276	1405			
Starvation Cap Reductn	0	930			839	0		0	0			
Spillback Cap Reductn	0	138			0	0		8	68			
Storage Cap Reductn	0	0			0	0		0	0			
Reduced v/c Ratio	0.37	0.82			0.73	0.72		0.19	0.11			

Intersection Summary

Area Type: CBD

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 74 (62%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 50

Control Type: Actuated-Coordinated

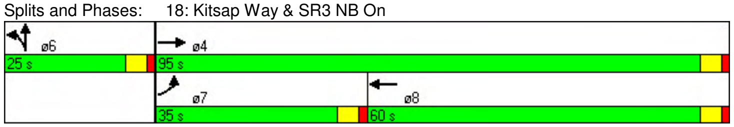
Maximum v/c Ratio: 0.72

Intersection Signal Delay: 9.0 Intersection LOS: A

Intersection Capacity Utilization 54.0% ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 18: Kitsap Way & SR3 NB On



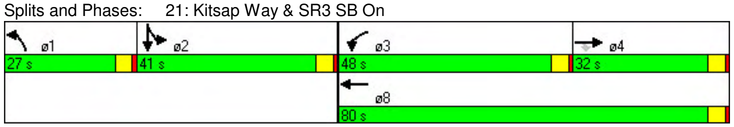
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	12	12	16	12	12
Grade (%)		0%			-1%			1%			-1%	
Storage Length (ft)	0		240	150		0	0		165	0		250
Storage Lanes	0		1	2		0	1		1	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)		50	50	50	50		50		50	50	50	50
Trailing Detector (ft)		0	0	0	0		0		0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	0	3020	1392	3045	3035	0	1539	0	1377	1723	1551	1432
Flt Permitted				0.950			0.950			0.950	0.969	
Satd. Flow (perm)	0	3020	1392	3045	3035	0	1538	0	1360	1716	1547	1414
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			218						392			4
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		681			404			1026			976	
Travel Time (s)		13.3			7.9			20.0			19.0	
Volume (vph)	0	396	196	346	534	0	55	0	361	773	166	7
Confl. Peds. (#/hr)							1		2	2		1
Confl. Bikes (#/hr)									1			1
Peak Hour Factor	0.92	0.90	0.90	0.93	0.93	0.92	0.92	0.92	0.92	0.93	0.93	0.93
Heavy Vehicles (%)	2%	4%	4%	4%	4%	2%	5%	2%	5%	2%	2%	2%
Bus Blockages (#/hr)	0	0	1	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	440	218	372	574	0	60	0	392	523	486	8
Turn Type			Perm	Prot			Prot		Free	Split		Free
Protected Phases		4		3	8		1			2	2	
Permitted Phases			4						Free			Free
Detector Phases		4	4	3	8		1			2	2	
Minimum Initial (s)		6.0	6.0	3.0	6.0		3.0			3.0	3.0	
Minimum Split (s)		19.5	19.5	7.5	19.5		7.5			25.5	25.5	
Total Split (s)	0.0	32.0	32.0	48.0	80.0	0.0	27.0	0.0	0.0	41.0	41.0	0.0
Total Split (%)	0.0%	21.6%	21.6%	32.4%	54.1%	0.0%	18.2%	0.0%	0.0%	27.7%	27.7%	0.0%
Maximum Green (s)		27.5	27.5	43.5	75.5		22.5			36.5	36.5	
Yellow Time (s)		3.5	3.5	3.5	3.5		3.5			3.5	3.5	
All-Red Time (s)		1.0	1.0	1.0	1.0		1.0			1.0	1.0	
Lead/Lag		Lag	Lag	Lead			Lead			Lag	Lag	
Lead-Lag Optimize?		Yes	Yes	Yes			Yes			Yes	Yes	
Vehicle Extension (s)		3.5	3.5	4.0	3.5		3.5			3.5	3.5	
Minimum Gap (s)		3.0	3.0	3.0	3.0		3.0			3.0	3.0	
Time Before Reduce (s)		6.0	6.0	6.0	6.0		6.0			6.0	6.0	
Time To Reduce (s)		20.0	20.0	20.0	20.0		20.0			20.0	20.0	
Recall Mode		C-Max	C-Max	None	C-Max		Min			Ped	Ped	
Walk Time (s)		7.0	7.0	0.0	7.0					7.0	7.0	
Flash Dont Walk (s)		8.0	8.0	0.0	8.0					14.0	14.0	
Pedestrian Calls (#/hr)		0	0	0	0					0	0	
Act Effct Green (s)		48.5	48.5	23.5	76.0		11.9		148.0	48.1	48.1	148.0
Actuated g/C Ratio		0.33	0.33	0.16	0.51		0.08		1.00	0.32	0.32	1.00
v/c Ratio		0.44	0.36	0.77	0.37		0.48		0.29	0.93	0.96	0.01

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay		41.7	6.4	70.5	22.5		77.2		0.5	73.4	81.1	0.0
Queue Delay		0.0	0.0	0.0	1.6		0.0		0.0	7.2	10.7	0.0
Total Delay		41.7	6.4	70.5	24.1		77.2		0.5	80.6	91.7	0.0
LOS		D	A	E	C		E		A	F	F	A
Approach Delay		30.0			42.4						85.3	
Approach LOS		C			D						F	
90th %ile Green (s)		42.2	42.2	28.8	75.5		16.0			43.0	43.0	
90th %ile Term Code		Coord	Coord	Gap	Coord		Gap			Max	Max	
70th %ile Green (s)		45.7	45.7	25.3	75.5		13.2			45.8	45.8	
70th %ile Term Code		Coord	Coord	Gap	Coord		Gap			Max	Max	
50th %ile Green (s)		48.1	48.1	22.9	75.5		11.4			47.6	47.6	
50th %ile Term Code		Coord	Coord	Gap	Coord		Gap			Max	Max	
30th %ile Green (s)		50.5	50.5	20.5	75.5		9.5			49.5	49.5	
30th %ile Term Code		Coord	Coord	Gap	Coord		Gap			Max	Max	
10th %ile Green (s)		53.7	53.7	17.3	75.5		6.9			52.1	52.1	
10th %ile Term Code		Coord	Coord	Gap	Coord		Gap			Max	Max	
Queue Length 50th (ft)		175	0	179	170		56		0	515	486	0
Queue Length 95th (ft)		243	64	227	216		104		0	#810	#781	0
Internal Link Dist (ft)		601			324			946			896	
Turn Bay Length (ft)			240	150					165			250
Base Capacity (vph)		991	603	905	1559		239		1360	560	504	1414
Starvation Cap Reductn		0	0	0	773		0		0	0	0	0
Spillback Cap Reductn		1	0	0	0		0		34	27	24	0
Storage Cap Reductn		0	0	0	0		0		0	0	0	0
Reduced v/c Ratio		0.44	0.36	0.41	0.73		0.25		0.30	0.98	1.01	0.01

Intersection Summary

Area Type: CBD
Cycle Length: 148
Actuated Cycle Length: 148
Offset: 77 (52%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.96
Intersection Signal Delay: 49.3 Intersection LOS: D
Intersection Capacity Utilization 69.1% ICU Level of Service C
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 21: Kitsap Way & SR3 SB On



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	11	15	15
Grade (%)		-1%	1%		12%	
Storage Length (ft)	0			110	0	0
Storage Lanes	1			1	1	0
Turning Speed (mph)	15			9	15	9
Satd. Flow (prot)	1601	3095	3064	1371	1603	0
Flt Permitted	0.950				0.977	
Satd. Flow (perm)	1601	3095	3064	1371	1603	0
Link Speed (mph)		35	35		20	
Link Distance (ft)		844	1365		305	
Travel Time (s)		16.4	26.6		10.4	
Volume (vph)	6	1514	1718	4	21	24
Peak Hour Factor	0.92	0.92	0.93	0.93	0.38	0.38
Heavy Vehicles (%)	2%	2%	2%	2%	0%	0%
Lane Group Flow (vph)	7	1646	1847	4	118	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: CBD

Control Type: Unsignalized

Intersection Capacity Utilization 62.8% ICU Level of Service B

Analysis Period (min) 15

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		-1%	1%		12%	
Volume (veh/h)	6	1514	1718	4	21	24
Peak Hour Factor	0.92	0.92	0.93	0.93	0.38	0.38
Hourly flow rate (vph)	7	1646	1847	4	55	63
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					TWLTL	
Median storage veh)					0	
Upstream signal (ft)		844				
pX, platoon unblocked					0.80	
vC, conflicting volume	1852				2683	924
vC1, stage 1 conf vol					1847	
vC2, stage 2 conf vol					836	
vCu, unblocked vol	1852				2854	924
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	98				12	77
cM capacity (veh/h)	323				63	275

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	7	823	823	924	924	4	118
Volume Left	7	0	0	0	0	0	55
Volume Right	0	0	0	0	0	4	63
cSH	323	1700	1700	1700	1700	1700	106
Volume to Capacity	0.02	0.48	0.48	0.54	0.54	0.00	1.11
Queue Length 95th (ft)	2	0	0	0	0	0	187
Control Delay (s)	16.4	0.0	0.0	0.0	0.0	0.0	197.1
Lane LOS	C						F
Approach Delay (s)	0.1			0.0			197.1
Approach LOS							F

Intersection Summary			
Average Delay	6.5		
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		

APPENDIX B.3

2010 Alternative 1 Synchro LOS Sheets

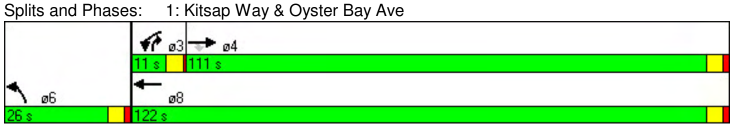
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	10	9
Grade (%)	0%			-3%	-1%	
Storage Length (ft)		70	115		0	50
Storage Lanes		1	1		1	1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Turning Speed (mph)		9	15		15	9
Satd. Flow (prot)	3067	1425	1585	3065	1411	1208
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3067	1272	1570	3065	1411	1208
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		26				135
Link Speed (mph)	35			35	25	
Link Distance (ft)	1383			1341	350	
Travel Time (s)	26.9			26.1	9.5	
Volume (vph)	1532	62	85	1732	56	101
Confl. Peds. (#/hr)		18	18			1
Peak Hour Factor	0.97	0.97	0.95	0.95	0.75	0.75
Heavy Vehicles (%)	2%	2%	4%	4%	8%	8%
Bus Blockages (#/hr)	2	0	0	0	0	2
Lane Group Flow (vph)	1579	64	89	1823	75	135
Turn Type		Perm	Prot			Over
Protected Phases	4		3	8	6	3
Permitted Phases		4				
Detector Phases	4	4	3	8	6	3
Minimum Initial (s)	6.0	6.0	4.0	6.0	6.0	4.0
Minimum Split (s)	20.0	20.0	8.0	22.0	26.0	8.0
Total Split (s)	111.0	111.0	11.0	122.0	26.0	11.0
Total Split (%)	75.0%	75.0%	7.4%	82.4%	17.6%	7.4%
Maximum Green (s)	106.0	106.0	7.0	117.0	21.0	7.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	0.5	1.5	1.5	0.5
Lead/Lag	Lag	Lag	Lead			Lead
Lead-Lag Optimize?	Yes	Yes	Yes			Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	6.0	6.0	0.0	6.0	6.0	0.0
Time To Reduce (s)	20.0	20.0	0.0	20.0	20.0	0.0
Recall Mode	C-Max	C-Max	None	C-Max	None	None
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	8.0	8.0		10.0	14.0	
Pedestrian Calls (#/hr)	18	18		18	1	
Act Effct Green (s)	107.3	107.3	14.2	125.5	14.5	14.2
Actuated g/C Ratio	0.72	0.72	0.10	0.85	0.10	0.10
v/c Ratio	0.71	0.07	0.59	0.70	0.54	0.57
Control Delay	27.3	8.0	82.1	4.6	76.9	19.5

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.3	8.0	82.1	4.6	76.9	19.5
LOS	C	A	F	A	E	B
Approach Delay	26.6			8.2	40.0	
Approach LOS	C			A	D	
90th %ile Green (s)	106.0	106.0	7.0	117.0	21.0	7.0
90th %ile Term Code	Coord	Coord	Max	Coord	Ped	Max
70th %ile Green (s)	106.0	106.0	12.8	122.8	15.2	12.8
70th %ile Term Code	Coord	Coord	Max	Coord	Gap	Max
50th %ile Green (s)	106.0	106.0	15.0	125.0	13.0	15.0
50th %ile Term Code	Coord	Coord	Max	Coord	Gap	Max
30th %ile Green (s)	106.0	106.0	17.3	127.3	10.7	17.3
30th %ile Term Code	Coord	Coord	Max	Coord	Gap	Max
10th %ile Green (s)	107.6	107.6	19.0	130.6	7.4	19.0
10th %ile Term Code	Coord	Coord	Gap	Coord	Gap	Gap
Queue Length 50th (ft)	703	22	90	179	70	0
Queue Length 95th (ft)	800	m34	m#163	175	98	36
Internal Link Dist (ft)	1303			1261	270	
Turn Bay Length (ft)		70	115			50
Base Capacity (vph)	2224	930	152	2600	210	238
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.07	0.59	0.70	0.36	0.57

Intersection Summary

Area Type: CBD
Cycle Length: 148
Actuated Cycle Length: 148
Offset: 108 (73%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.71
Intersection Signal Delay: 18.0 Intersection LOS: B
Intersection Capacity Utilization 67.7% ICU Level of Service C
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Kitsap Way & Oyster Bay Ave



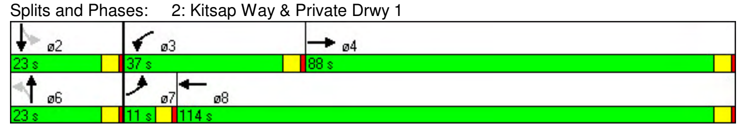
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	13	12	11	12	13	13	12	12	16	12
Grade (%)		1%			-4%			-4%			0%	
Storage Length (ft)	125		125	75		0	110		0	0		0
Storage Lanes	1		1	1		0	1		0	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	1585	3051	1465	1624	3137	0	1679	1504	0	0	1750	0
Flt Permitted	0.950			0.950			0.780				0.234	
Satd. Flow (perm)	1584	3051	1432	1620	3137	0	1378	1504	0	0	424	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			25		1			295			2	
Link Speed (mph)		35			35			35			15	
Link Distance (ft)		1341			1326			1021			212	
Travel Time (s)		26.1			25.8			19.9			9.6	
Volume (vph)	3	1471	135	243	1758	7	88	2	274	12	4	1
Confl. Peds. (#/hr)	2		5	5		2						
Confl. Bikes (#/hr)			1			5						
Peak Hour Factor	0.97	0.97	0.97	0.89	0.89	0.89	0.88	0.88	0.88	0.57	0.57	0.57
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	6%	6%	6%
Bus Blockages (#/hr)	0	2	0	0	0	0	0	0	2	2	0	0
Lane Group Flow (vph)	3	1516	139	273	1983	0	100	313	0	0	30	0
Turn Type	Prot		Free	Prot			Perm			Perm		
Protected Phases	7	4		3	8			6			2	
Permitted Phases			Free				6			2		
Detector Phases	7	4		3	8		6	6		2	2	
Minimum Initial (s)	5.0	8.0		8.0	8.0		8.0	8.0		6.0	6.0	
Minimum Split (s)	9.5	19.5		12.5	19.5		12.5	12.5		22.5	22.5	
Total Split (s)	11.0	88.0	0.0	37.0	114.0	0.0	23.0	23.0	0.0	23.0	23.0	0.0
Total Split (%)	7.4%	59.5%	0.0%	25.0%	77.0%	0.0%	15.5%	15.5%	0.0%	15.5%	15.5%	0.0%
Maximum Green (s)	6.5	83.5		32.5	109.5		18.5	18.5		18.5	18.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Time To Reduce (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)		7.0			7.0		6.0	6.0		7.0	7.0	
Flash Dont Walk (s)		8.0			8.0		0.0	0.0		11.0	11.0	
Pedestrian Calls (#/hr)		0			0		0	0		0	0	
Act Effct Green (s)	6.4	91.6	148.0	28.8	122.3		15.5	15.5			15.5	
Actuated g/C Ratio	0.04	0.62	1.00	0.19	0.83		0.10	0.10			0.10	
v/c Ratio	0.04	0.80	0.10	0.86	0.77		0.69	0.74			0.65	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	58.0	11.7	0.1	39.2	22.3		87.3	19.6			113.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	
Total Delay	58.0	11.7	0.1	39.2	22.3		87.3	19.6			113.7	
LOS	E	B	A	D	C		F	B			F	
Approach Delay		10.8			24.3			36.0			113.7	
Approach LOS		B			C			D			F	
90th %ile Green (s)	6.5	83.5		32.5	109.5		18.5	18.5		18.5	18.5	
90th %ile Term Code	Max	Coord		Max	Coord		Max	Max		Max	Max	
70th %ile Green (s)	0.0	83.5		32.5	120.5		18.5	18.5		18.5	18.5	
70th %ile Term Code	Skip	Coord		Max	Coord		Max	Max		Max	Max	
50th %ile Green (s)	0.0	88.4		30.3	123.2		15.8	15.8		15.8	15.8	
50th %ile Term Code	Skip	Coord		Gap	Coord		Gap	Gap		Hold	Hold	
30th %ile Green (s)	0.0	96.3		25.1	125.9		13.1	13.1		13.1	13.1	
30th %ile Term Code	Skip	Coord		Gap	Coord		Gap	Gap		Hold	Hold	
10th %ile Green (s)	0.0	104.0		21.3	129.8		9.2	9.2		9.2	9.2	
10th %ile Term Code	Skip	Coord		Gap	Coord		Gap	Gap		Hold	Hold	
Queue Length 50th (ft)	3	122	0	251	724		94	16			26	
Queue Length 95th (ft)	m4	236	m0	m211	m581		154	108			38	
Internal Link Dist (ft)		1261			1246			941			132	
Turn Bay Length (ft)	125		125	75			110					
Base Capacity (vph)	75	1889	1432	362	2592		177	450			56	
Starvation Cap Reductn	0	0	0	0	0		0	0			0	
Spillback Cap Reductn	0	0	0	0	0		0	0			0	
Storage Cap Reductn	0	0	0	0	0		0	0			0	
Reduced v/c Ratio	0.04	0.80	0.10	0.75	0.77		0.56	0.70			0.54	

Intersection Summary

Area Type: CBD
Cycle Length: 148
Actuated Cycle Length: 148
Offset: 118 (80%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 20.9 Intersection LOS: C
Intersection Capacity Utilization 89.1% ICU Level of Service E
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Kitsap Way & Private Drwy 1



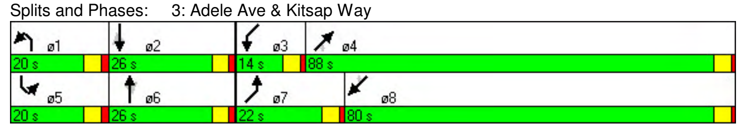
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	16	10	12	12	10	11	12	12	10	10
Storage Length (ft)	0		0	45		45	150		115	110		175
Storage Lanes	1		1	1		1	1		1	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	40	50	40	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	1580	1676	1602	1489	1693	1428	1486	3067	1425	1593	2961	1330
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1574	1676	1543	1468	1693	1405	1486	3067	1391	1592	2961	1330
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			173			88			31			58
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		548			510			1326			859	
Travel Time (s)		10.7			9.9			25.8			16.7	
Volume (vph)	119	33	151	91	48	82	214	1404	73	64	1726	132
Confl. Peds. (#/hr)	2		7	7		2			1	1		
Confl. Bikes (#/hr)			7									
Peak Hour Factor	0.85	0.85	0.85	0.93	0.93	0.93	0.94	0.94	0.94	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	2	0	2	2	0	2	0	2	0	0	2	0
Lane Group Flow (vph)	140	39	178	98	52	88	228	1494	78	71	1918	147
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6			2			4			8
Detector Phases	1	6	6	5	2	2	7	4	4	3	8	8
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	11.0	26.0	26.0	11.0	26.0	26.0	10.5	23.5	23.5	10.5	23.5	23.5
Total Split (s)	20.0	26.0	26.0	20.0	26.0	26.0	22.0	88.0	88.0	14.0	80.0	80.0
Total Split (%)	13.5%	17.6%	17.6%	13.5%	17.6%	17.6%	14.9%	59.5%	59.5%	9.5%	54.1%	54.1%
Maximum Green (s)	15.0	21.0	21.0	15.0	21.0	21.0	17.5	83.5	83.5	9.5	75.5	75.5
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.0	1.0	1.0	1.0	1.0	1.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	5.0	3.0	3.0	4.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Time To Reduce (s)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Recall Mode	None	None	None	None	None	None	Max	C-Max	C-Max	Max	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		14.0	14.0		14.0	14.0		12.0	12.0		12.0	12.0
Pedestrian Calls (#/hr)		9	9		9	9		1	1		0	0
Act Effct Green (s)	15.5	12.8	12.8	15.0	12.2	12.2	28.2	84.0	84.0	20.2	76.0	76.0
Actuated g/C Ratio	0.10	0.09	0.09	0.10	0.08	0.08	0.19	0.57	0.57	0.14	0.51	0.51
v/c Ratio	0.84	0.27	0.61	0.65	0.37	0.45	0.81	0.86	0.10	0.33	1.26	0.21
Control Delay	102.6	65.9	18.2	83.8	69.7	18.2	87.5	11.4	2.1	64.5	155.4	12.4

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	102.6	65.9	18.2	83.8	69.7	18.2	87.5	11.4	2.1	64.5	155.4	12.4
LOS	F	E	B	F	E	B	F	B	A	E	F	B
Approach Delay		56.5			56.5			20.7			142.5	
Approach LOS		E			E			C			F	
90th %ile Green (s)	15.0	21.0	21.0	15.0	21.0	21.0	17.5	83.5	83.5	9.5	75.5	75.5
90th %ile Term Code	Max	Ped	Ped	Max	Ped	Ped	MaxR	Coord	Coord	MaxR	Coord	Coord
70th %ile Green (s)	15.0	11.3	11.3	15.0	11.3	11.3	27.2	83.5	83.5	19.2	75.5	75.5
70th %ile Term Code	Max	Hold	Hold	Max	Gap	Gap	MaxR	Coord	Coord	MaxR	Coord	Coord
50th %ile Green (s)	15.0	9.7	9.7	15.0	9.7	9.7	28.8	83.5	83.5	20.8	75.5	75.5
50th %ile Term Code	Max	Hold	Hold	Max	Gap	Gap	MaxR	Coord	Coord	MaxR	Coord	Coord
30th %ile Green (s)	15.0	8.9	8.9	14.3	8.2	8.2	30.3	83.5	83.5	22.3	75.5	75.5
30th %ile Term Code	Max	Hold	Hold	Gap	Gap	Gap	MaxR	Coord	Coord	MaxR	Coord	Coord
10th %ile Green (s)	12.7	7.9	7.9	10.8	6.0	6.0	34.8	83.5	83.5	26.8	75.5	75.5
10th %ile Term Code	Gap	Hold	Hold	Gap	Min	Min	MaxR	Coord	Coord	MaxR	Coord	Coord
Queue Length 50th (ft)	134	36	5	92	49	0	217	205	1	62	~1218	44
Queue Length 95th (ft)	#231	67	61	157	89	52	m#407	260	m4	#142	#1353	87
Internal Link Dist (ft)		468			430			1246			779	
Turn Bay Length (ft)				45		45	150		115	110		175
Base Capacity (vph)	171	249	377	161	252	284	283	1741	803	218	1521	711
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.82	0.16	0.47	0.61	0.21	0.31	0.81	0.86	0.10	0.33	1.26	0.21

Intersection Summary

Area Type: CBD
Cycle Length: 148
Actuated Cycle Length: 148
Offset: 0 (0%), Referenced to phase 4:NET and 8:SWT, Start of Green, Master Intersection
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.26
Intersection Signal Delay: 82.8 Intersection LOS: F
Intersection Capacity Utilization 90.9% ICU Level of Service E
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Adele Ave & Kitsap Way



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	8	12	12	8	12
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	0	1786	0	0	1793	0	0	1522	0	0	1532	0
Flt Permitted		0.963			0.979			0.998			0.998	
Satd. Flow (perm)	0	1786	0	0	1793	0	0	1522	0	0	1532	0
Link Speed (mph)		20			15			25			25	
Link Distance (ft)		1297			282			666			350	
Travel Time (s)		44.2			12.8			18.2			9.5	
Volume (vph)	51	3	12	7	5	4	5	102	0	6	96	43
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	8%	8%	8%	3%	3%	3%
Lane Group Flow (vph)	0	78	0	0	19	0	0	126	0	0	171	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 22.8% ICU Level of Service A

Analysis Period (min) 15

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	51	3	12	7	5	4	5	102	0	6	96	43
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	60	4	14	8	6	5	6	120	0	7	113	51
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)											350	
pX, platoon unblocked												
vC, conflicting volume	292	284	138	300	309	120	164			120		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	292	284	138	300	309	120	164			120		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	91	99	98	99	99	99	100			100		
cM capacity (veh/h)	652	623	915	639	603	937	1379			1462		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	78	19	126	171
Volume Left	60	8	6	7
Volume Right	14	5	0	51
cSH	686	680	1379	1462
Volume to Capacity	0.11	0.03	0.00	0.00
Queue Length 95th (ft)	10	2	0	0
Control Delay (s)	10.9	10.4	0.4	0.3
Lane LOS	B	B	A	A
Approach Delay (s)	10.9	10.4	0.4	0.3
Approach LOS	B	B		

Intersection Summary			
Average Delay	2.9		
Intersection Capacity Utilization	22.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	12	12	12	12	12	12	8	12	12	8	12
Grade (%)		0%			0%			-1%			0%	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	0	1789	0	0	1709	0	0	1522	0	0	1519	0
Flt Permitted		0.958			0.972			0.997			0.999	
Satd. Flow (perm)	0	1789	0	0	1709	0	0	1522	0	0	1519	0
Link Speed (mph)		20			15			25			25	
Link Distance (ft)		467			299			197			683	
Travel Time (s)		15.9			13.6			5.4			18.6	
Volume (vph)	29	0	4	6	0	4	4	56	0	3	58	34
Confl. Peds. (#/hr)							2					2
Confl. Bikes (#/hr)			1									
Peak Hour Factor	0.69	0.69	0.69	0.83	0.83	0.83	0.84	0.84	0.84	0.86	0.86	0.86
Heavy Vehicles (%)	0%	2%	0%	2%	2%	2%	8%	8%	2%	2%	3%	3%
Bus Blockages (#/hr)	1	0	0	0	0	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	48	0	0	12	0	0	72	0	0	110	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 16.5% ICU Level of Service A
Analysis Period (min) 15

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			-1%			0%	
Volume (veh/h)	29	0	4	6	0	4	4	56	0	3	58	34
Peak Hour Factor	0.69	0.69	0.69	0.83	0.83	0.83	0.84	0.84	0.84	0.86	0.86	0.86
Hourly flow rate (vph)	42	0	6	7	0	5	5	67	0	3	67	40
Pedestrians		2										
Lane Width (ft)		12.0										
Walking Speed (ft/s)		4.0										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	177	172	89	176	192	67	109			67		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	177	172	89	176	192	67	109			67		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	95	100	99	99	100	100	100			100		
cM capacity (veh/h)	780	716	973	777	698	997	1442			1535		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	48	12	71	110
Volume Left	42	7	5	3
Volume Right	6	5	0	40
cSH	799	852	1442	1535
Volume to Capacity	0.06	0.01	0.00	0.00
Queue Length 95th (ft)	5	1	0	0
Control Delay (s)	9.8	9.3	0.5	0.2
Lane LOS	A	A	A	A
Approach Delay (s)	9.8	9.3	0.5	0.2
Approach LOS	A	A		

Intersection Summary

Average Delay	2.7		
Intersection Capacity Utilization	16.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	8	12
Grade (%)		4%	-1%		-5%	
Turning Speed (mph)	15			9	15	9
Satd. Flow (prot)	0	1726	1569	0	1472	0
Flt Permitted		0.992			0.956	
Satd. Flow (perm)	0	1726	1569	0	1472	0
Link Speed (mph)		20	25		25	
Link Distance (ft)		248	299		376	
Travel Time (s)		8.5	8.2		10.3	
Volume (vph)	4	22	21	52	61	5
Confl. Peds. (#/hr)	1			1	2	
Peak Hour Factor	0.66	0.66	0.93	0.93	0.90	0.90
Heavy Vehicles (%)	7%	7%	10%	10%	8%	8%
Bus Blockages (#/hr)	1	0	0	1	1	1
Lane Group Flow (vph)	0	39	79	0	74	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 15.0% ICU Level of Service A

Analysis Period (min) 15

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		4%	-1%		-5%	
Volume (veh/h)	4	22	21	52	61	5
Peak Hour Factor	0.66	0.66	0.93	0.93	0.90	0.90
Hourly flow rate (vph)	6	33	23	56	68	6
Pedestrians			2		1	
Lane Width (ft)			12.0		8.0	
Walking Speed (ft/s)			4.0		4.0	
Percent Blockage			0		0	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	79				99	52
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	79				99	52
tC, single (s)	4.2				6.5	6.3
tC, 2 stage (s)						
tF (s)	2.3				3.6	3.4
p0 queue free %	100				92	99
cM capacity (veh/h)	1487				880	999

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	39	78	73
Volume Left	6	0	68
Volume Right	0	56	6
cSH	1487	1700	888
Volume to Capacity	0.00	0.05	0.08
Queue Length 95th (ft)	0	0	7
Control Delay (s)	1.2	0.0	9.4
Lane LOS	A		A
Approach Delay (s)	1.2	0.0	9.4
Approach LOS			A

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	15.0%	ICU Level of Service	A
Analysis Period (min)	15		

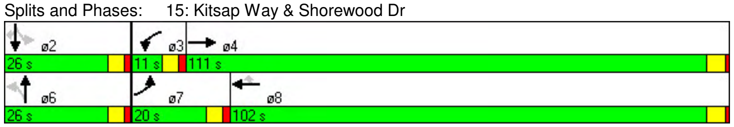
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	16	12	11	10	11	10	10	12	14	9
Grade (%)		1%			0%			-5%			2%	
Storage Length (ft)	150		75	225		100	60		0	0		50
Storage Lanes	1		1	1		1	1		0	0		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	1569	3022	1591	1577	3049	1317	1504	1235	0	0	1689	1270
Flt Permitted	0.950			0.950			0.576				0.698	
Satd. Flow (perm)	1569	3022	1556	1572	3049	1317	912	1235	0	0	1182	1270
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			8			44		46				106
Link Speed (mph)		35			35			20			25	
Link Distance (ft)		394			443			418			541	
Travel Time (s)		7.7			8.6			14.3			14.8	
Volume (vph)	102	1433	60	128	1532	98	134	2	36	74	3	95
Confl. Peds. (#/hr)			5	5					23	23		
Confl. Bikes (#/hr)									3			
Peak Hour Factor	0.98	0.98	0.98	0.93	0.93	0.93	0.78	0.78	0.78	0.75	0.75	0.75
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	7%	7%	7%	2%	2%	2%
Bus Blockages (#/hr)	0	2	0	0	0	0	0	0	2	2	0	0
Lane Group Flow (vph)	104	1462	61	138	1647	105	172	49	0	0	103	127
Turn Type	Prot		Free	Prot		Perm	Perm			Perm		Perm
Protected Phases	7	4		3	8			6			2	
Permitted Phases			Free			8	6			2		2
Detector Phases	7	4		3	8	8	6	6		2	2	2
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	11.0	20.0		11.0	20.0	20.0	26.0	26.0		11.0	11.0	11.0
Total Split (s)	20.0	111.0	0.0	11.0	102.0	102.0	26.0	26.0	0.0	26.0	26.0	26.0
Total Split (%)	13.5%	75.0%	0.0%	7.4%	68.9%	68.9%	17.6%	17.6%	0.0%	17.6%	17.6%	17.6%
Maximum Green (s)	15.0	106.0		6.0	97.0	97.0	21.0	21.0		21.0	21.0	21.0
Yellow Time (s)	3.5	4.0		3.5	4.0	4.0	3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.5	1.0		1.5	1.0	1.0	1.5	1.5		1.5	1.5	1.5
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.5		3.0	3.5	3.5	3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Time To Reduce (s)	20.0	20.0		20.0	20.0	20.0	20.0	20.0		20.0	20.0	20.0
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None		None	None	None
Walk Time (s)		7.0			7.0	7.0	7.0	7.0				
Flash Dont Walk (s)		8.0			8.0	8.0	14.0	14.0				
Pedestrian Calls (#/hr)		5			5	5	23	23				
Act Effct Green (s)	14.3	107.0	148.0	7.0	99.7	99.7	22.0	22.0			22.0	22.0
Actuated g/C Ratio	0.10	0.72	1.00	0.05	0.67	0.67	0.15	0.15			0.15	0.15
v/c Ratio	0.68	0.67	0.04	1.84	0.80	0.12	1.26	0.22			0.59	0.46

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	86.8	12.9	0.1	449.3	30.7	7.2	213.7	18.3			73.3	19.9
Queue Delay	0.0	25.9	0.0	0.0	0.2	0.0	8.0	0.0			0.0	0.1
Total Delay	86.8	38.8	0.1	449.3	31.0	7.2	221.8	18.3			73.3	20.0
LOS	F	D	A	F	C	A	F	B			E	C
Approach Delay		40.5			60.2			176.7			43.9	
Approach LOS		D			E			F			D	
90th %ile Green (s)	15.0	106.0		6.0	97.0	97.0	21.0	21.0		21.0	21.0	21.0
90th %ile Term Code	Max	Coord		Max	Coord	Coord	Max	Max		Max	Max	Max
70th %ile Green (s)	15.0	106.0		6.0	97.0	97.0	21.0	21.0		21.0	21.0	21.0
70th %ile Term Code	Max	Coord		Max	Coord	Coord	Max	Max		Max	Max	Max
50th %ile Green (s)	15.0	106.0		6.0	97.0	97.0	21.0	21.0		21.0	21.0	21.0
50th %ile Term Code	Max	Coord		Max	Coord	Coord	Max	Max		Hold	Hold	Hold
30th %ile Green (s)	12.5	106.0		6.0	99.5	99.5	21.0	21.0		21.0	21.0	21.0
30th %ile Term Code	Gap	Coord		Max	Coord	Coord	Max	Max		Hold	Hold	Hold
10th %ile Green (s)	9.1	106.0		6.0	102.9	102.9	21.0	21.0		21.0	21.0	21.0
10th %ile Term Code	Gap	Coord		Max	Coord	Coord	Max	Max		Hold	Hold	Hold
Queue Length 50th (ft)	97	362	0	~202	717	35	~209	3			94	18
Queue Length 95th (ft)	165	432	0	m#324	820	m29	#299	32			131	51
Internal Link Dist (ft)		314			363			338			461	
Turn Bay Length (ft)	150		75	225		100	60					50
Base Capacity (vph)	170	2185	1556	75	2053	901	136	223			176	279
Starvation Cap Reductn	0	784	0	0	0	0	0	0			0	0
Spillback Cap Reductn	0	0	0	0	64	0	2	0			0	6
Storage Cap Reductn	0	0	0	0	0	0	0	0			0	0
Reduced v/c Ratio	0.61	1.04	0.04	1.84	0.83	0.12	1.28	0.22			0.59	0.47

Intersection Summary

Area Type: CBD
Cycle Length: 148
Actuated Cycle Length: 148
Offset: 30 (20%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.84
Intersection Signal Delay: 57.6 Intersection LOS: E
Intersection Capacity Utilization 79.6% ICU Level of Service D
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 15: Kitsap Way & Shorewood Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	11	12	12	12	12	12	12
Grade (%)		0%			-1%			-1%			0%	
Storage Length (ft)	115		0	0		0	0		115	0		0
Storage Lanes	1		0	0		1	0		1	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50			50	50	50	50	50			
Trailing Detector (ft)	0	0			0	0	0	0	0			
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	1577	3049	0	0	3035	1358	0	1578	1405	0	0	0
Flt Permitted	0.950							0.955				
Satd. Flow (perm)	1572	3049	0	0	3035	1328	0	1578	1405	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						648			182			
Link Speed (mph)		35			35			35			50	
Link Distance (ft)		404			394			895			1104	
Travel Time (s)		7.9			7.7			17.4			15.1	
Volume (vph)	145	1440	0	0	877	906	42	3	160	0	0	0
Confl. Peds. (#/hr)	4					4						
Peak Hour Factor	0.97	0.97	0.92	0.92	0.91	0.91	0.88	0.88	0.88	0.92	0.92	0.92
Heavy Vehicles (%)	3%	3%	2%	2%	4%	4%	4%	4%	4%	2%	2%	2%
Lane Group Flow (vph)	149	1485	0	0	964	996	0	51	182	0	0	0
Turn Type	Prot					Free	Split		Free			
Protected Phases	7	4			8		6	6				
Permitted Phases						Free			Free			
Detector Phases	7	4			8		6	6				
Minimum Initial (s)	6.0	6.0			6.0		6.0	6.0				
Minimum Split (s)	11.0	20.0			24.0		11.0	11.0				
Total Split (s)	35.0	95.0	0.0	0.0	60.0	0.0	25.0	25.0	0.0	0.0	0.0	0.0
Total Split (%)	29.2%	79.2%	0.0%	0.0%	50.0%	0.0%	20.8%	20.8%	0.0%	0.0%	0.0%	0.0%
Maximum Green (s)	30.0	90.0			55.0		20.0	20.0				
Yellow Time (s)	3.5	3.5			3.5		3.5	3.5				
All-Red Time (s)	1.5	1.5			1.5		1.5	1.5				
Lead/Lag	Lead				Lag							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0				
Minimum Gap (s)	3.0	3.0			3.0		3.0	3.0				
Time Before Reduce (s)	6.0	6.0			6.0		6.0	6.0				
Time To Reduce (s)	20.0	20.0			20.0		20.0	20.0				
Recall Mode	None	C-Max			C-Max		None	None				
Walk Time (s)		7.0			7.0							
Flash Dont Walk (s)		8.0			12.0							
Pedestrian Calls (#/hr)		4			4							
Act Effct Green (s)	17.0	104.8			83.0	120.0		10.2	120.0			
Actuated g/C Ratio	0.14	0.87			0.69	1.00		0.08	1.00			
v/c Ratio	0.67	0.56			0.46	0.75		0.38	0.13			
Control Delay	62.8	3.6			10.8	3.9		59.2	0.2			
Queue Delay	0.0	1.3			1.1	0.0		0.0	0.0			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	62.8	4.9			11.9	3.9		59.2	0.2			
LOS	E	A			B	A		E	A			
Approach Delay		10.2			7.8			13.1				
Approach LOS		B			A			B				
90th %ile Green (s)	22.4	97.3			69.9		12.7	12.7				
90th %ile Term Code	Gap	Coord			Coord		Gap	Gap				
70th %ile Green (s)	18.5	99.4			75.9		10.6	10.6				
70th %ile Term Code	Gap	Coord			Coord		Gap	Gap				
50th %ile Green (s)	15.9	100.9			80.0		9.1	9.1				
50th %ile Term Code	Gap	Coord			Coord		Gap	Gap				
30th %ile Green (s)	13.3	102.4			84.1		7.6	7.6				
30th %ile Term Code	Gap	Coord			Coord		Gap	Gap				
10th %ile Green (s)	9.7	115.0			100.3		0.0	0.0				
10th %ile Term Code	Gap	Coord			Coord		Skip	Skip				
Queue Length 50th (ft)	111	128			170	0		38	0			
Queue Length 95th (ft)	172	206			280	0		75	0			
Internal Link Dist (ft)		324			314			815			1024	
Turn Bay Length (ft)	115								115			
Base Capacity (vph)	407	2663			2100	1328		276	1405			
Starvation Cap Reductn	0	891			822	0		0	0			
Spillback Cap Reductn	0	262			1	0		11	130			
Storage Cap Reductn	0	0			0	0		0	0			
Reduced v/c Ratio	0.37	0.84			0.75	0.75		0.19	0.14			

Intersection Summary

Area Type: CBD

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 74 (62%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 50

Control Type: Actuated-Coordinated

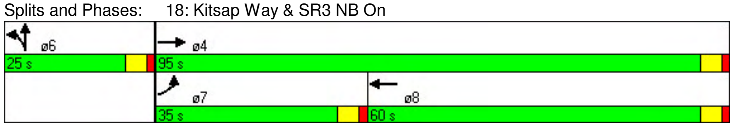
Maximum v/c Ratio: 0.75

Intersection Signal Delay: 9.1 Intersection LOS: A

Intersection Capacity Utilization 55.9% ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 18: Kitsap Way & SR3 NB On



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	12	12	16	12	12
Grade (%)		0%			-1%			1%			-1%	
Storage Length (ft)	0		240	150		0	0		165	0		250
Storage Lanes	0		1	2		0	1		1	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)		50	50	50	50		50		50	50	50	50
Trailing Detector (ft)		0	0	0	0		0		0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	0	3020	1392	3045	3035	0	1539	0	1377	1723	1551	1432
Flt Permitted				0.950			0.950			0.950	0.969	
Satd. Flow (perm)	0	3020	1392	3045	3035	0	1538	0	1360	1716	1547	1414
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			218						392			4
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		681			404			1026			976	
Travel Time (s)		13.3			7.9			20.0			19.0	
Volume (vph)	0	413	196	369	549	0	55	0	361	817	166	7
Confl. Peds. (#/hr)							1		2	2		1
Confl. Bikes (#/hr)									1			1
Peak Hour Factor	0.92	0.90	0.90	0.93	0.93	0.92	0.92	0.92	0.92	0.93	0.93	0.93
Heavy Vehicles (%)	2%	4%	4%	4%	4%	2%	5%	2%	5%	2%	2%	2%
Bus Blockages (#/hr)	0	0	1	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	459	218	397	590	0	60	0	392	548	508	8
Turn Type			Perm	Prot			Prot		Free	Split		Free
Protected Phases		4		3	8		1			2	2	
Permitted Phases			4						Free			Free
Detector Phases		4	4	3	8		1			2	2	
Minimum Initial (s)		6.0	6.0	3.0	6.0		3.0			3.0	3.0	
Minimum Split (s)		19.5	19.5	7.5	19.5		7.5			25.5	25.5	
Total Split (s)	0.0	32.0	32.0	48.0	80.0	0.0	27.0	0.0	0.0	41.0	41.0	0.0
Total Split (%)	0.0%	21.6%	21.6%	32.4%	54.1%	0.0%	18.2%	0.0%	0.0%	27.7%	27.7%	0.0%
Maximum Green (s)		27.5	27.5	43.5	75.5		22.5			36.5	36.5	
Yellow Time (s)		3.5	3.5	3.5	3.5		3.5			3.5	3.5	
All-Red Time (s)		1.0	1.0	1.0	1.0		1.0			1.0	1.0	
Lead/Lag		Lag	Lag	Lead			Lead			Lag	Lag	
Lead-Lag Optimize?		Yes	Yes	Yes			Yes			Yes	Yes	
Vehicle Extension (s)		3.5	3.5	4.0	3.5		3.5			3.5	3.5	
Minimum Gap (s)		3.0	3.0	3.0	3.0		3.0			3.0	3.0	
Time Before Reduce (s)		6.0	6.0	6.0	6.0		6.0			6.0	6.0	
Time To Reduce (s)		20.0	20.0	20.0	20.0		20.0			20.0	20.0	
Recall Mode		C-Max	C-Max	None	C-Max		Min			Ped	Ped	
Walk Time (s)		7.0	7.0	0.0	7.0					7.0	7.0	
Flash Dont Walk (s)		8.0	8.0	0.0	8.0					14.0	14.0	
Pedestrian Calls (#/hr)		0	0	0	0					0	0	
Act Effct Green (s)		47.4	47.4	24.6	76.0		11.9		148.0	48.1	48.1	148.0
Actuated g/C Ratio		0.32	0.32	0.17	0.51		0.08		1.00	0.32	0.32	1.00
v/c Ratio		0.48	0.37	0.78	0.38		0.48		0.29	0.98	1.01	0.01

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay		43.2	6.6	70.1	22.6		77.2		0.5	82.3	91.2	0.0
Queue Delay		0.0	0.0	0.0	1.8		0.0		0.0	15.0	18.2	0.0
Total Delay		43.2	6.6	70.1	24.4		77.2		0.5	97.3	109.4	0.0
LOS		D	A	E	C		E		A	F	F	A
Approach Delay		31.4			42.8						102.3	
Approach LOS		C			D						F	
90th %ile Green (s)		40.8	40.8	30.2	75.5		16.0			43.0	43.0	
90th %ile Term Code		Coord	Coord	Gap	Coord		Gap			Max	Max	
70th %ile Green (s)		44.4	44.4	26.6	75.5		13.2			45.8	45.8	
70th %ile Term Code		Coord	Coord	Gap	Coord		Gap			Max	Max	
50th %ile Green (s)		46.9	46.9	24.1	75.5		11.4			47.6	47.6	
50th %ile Term Code		Coord	Coord	Gap	Coord		Gap			Max	Max	
30th %ile Green (s)		49.4	49.4	21.6	75.5		9.5			49.5	49.5	
30th %ile Term Code		Coord	Coord	Gap	Coord		Gap			Max	Max	
10th %ile Green (s)		52.8	52.8	18.2	75.5		6.9			52.1	52.1	
10th %ile Term Code		Coord	Coord	Gap	Coord		Gap			Max	Max	
Queue Length 50th (ft)		187	0	191	176		56		0	551	~525	0
Queue Length 95th (ft)		258	66	240	223		104		0	#865	#829	0
Internal Link Dist (ft)		601			324			946			896	
Turn Bay Length (ft)			240	150					165			250
Base Capacity (vph)		966	594	905	1559		239		1360	560	504	1414
Starvation Cap Reductn		0	0	0	768		0		0	0	0	0
Spillback Cap Reductn		8	0	0	0		0		40	31	27	0
Storage Cap Reductn		0	0	0	0		0		0	0	0	0
Reduced v/c Ratio		0.48	0.37	0.44	0.75		0.25		0.30	1.04	1.06	0.01

Intersection Summary

Area Type: CBD

Cycle Length: 148

Actuated Cycle Length: 148

Offset: 77 (52%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.01

Intersection Signal Delay: 55.7 Intersection LOS: E

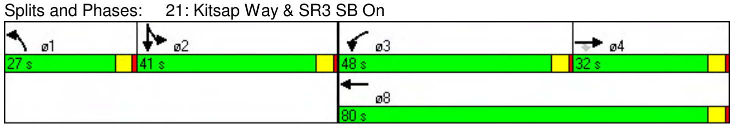
Intersection Capacity Utilization 71.7% ICU Level of Service C

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 21: Kitsap Way & SR3 SB On



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	12	12
Grade (%)	-1%			1%	0%	
Storage Length (ft)		0	150		0	0
Storage Lanes		0	0		0	1
Turning Speed (mph)		9	15		15	9
Satd. Flow (prot)	3076	0	0	3064	0	1450
Flt Permitted						
Satd. Flow (perm)	3076	0	0	3064	0	1450
Link Speed (mph)	35			35	20	
Link Distance (ft)	443			397	371	
Travel Time (s)	8.6			7.7	12.6	
Volume (vph)	1527	63	0	1808	0	92
Peak Hour Factor	0.92	0.92	0.93	0.93	0.92	0.92
Lane Group Flow (vph)	1728	0	0	1944	0	100
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: CBD

Control Type: Unsignalized

Intersection Capacity Utilization 62.1% ICU Level of Service B

Analysis Period (min) 15

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	-1%			1%	0%	
Volume (veh/h)	1527	63	0	1808	0	92
Peak Hour Factor	0.92	0.92	0.93	0.93	0.92	0.92
Hourly flow rate (vph)	1660	68	0	1944	0	100
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)	443					
pX, platoon unblocked			0.74		0.74	0.74
vC, conflicting volume			1728		2666	864
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1633		2899	467
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	75
cM capacity (veh/h)			291		9	402

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	1107	622	972	972	100
Volume Left	0	0	0	0	0
Volume Right	0	68	0	0	100
cSH	1700	1700	1700	1700	402
Volume to Capacity	0.65	0.37	0.57	0.57	0.25
Queue Length 95th (ft)	0	0	0	0	24
Control Delay (s)	0.0	0.0	0.0	0.0	16.9
Lane LOS					C
Approach Delay (s)	0.0		0.0		16.9
Approach LOS					C

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	62.1%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Turning Speed (mph)	15	9	15			9
Satd. Flow (prot)	1701	0	0	1720	1695	0
Flt Permitted	0.957					
Satd. Flow (perm)	1701	0	0	1720	1695	0
Link Speed (mph)	15			25	25	
Link Distance (ft)	362			683	666	
Travel Time (s)	16.5			18.6	18.2	
Volume (vph)	7	1	1	100	104	13
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	5%	5%	10%	10%	10%	10%
Bus Blockages (#/hr)	1	1	0	1	1	0
Lane Group Flow (vph)	10	0	0	134	156	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 16.3% ICU Level of Service A

Analysis Period (min) 15

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	7	1	1	100	104	13
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	9	1	1	133	139	17
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)					1016	
pX, platoon unblocked						
vC, conflicting volume	283	147	156			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	283	147	156			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	99	100	100			
cM capacity (veh/h)	700	892	1377			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	11	135	156
Volume Left	9	1	0
Volume Right	1	0	17
cSH	719	1377	1700
Volume to Capacity	0.01	0.00	0.09
Queue Length 95th (ft)	1	0	0
Control Delay (s)	10.1	0.1	0.0
Lane LOS	B	A	
Approach Delay (s)	10.1	0.1	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	16.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%			-1%	-5%	
Turning Speed (mph)	15	9	15			9
Satd. Flow (prot)	1712	0	0	1729	1755	0
Flt Permitted	0.950					
Satd. Flow (perm)	1712	0	0	1729	1755	0
Link Speed (mph)	15			25	25	
Link Distance (ft)	248			290	197	
Travel Time (s)	11.3			7.9	5.4	
Volume (vph)	2	0	0	61	72	3
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	5%	5%	10%	10%	10%	10%
Bus Blockages (#/hr)	1	1	0	1	1	0
Lane Group Flow (vph)	3	0	0	81	100	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 14.0% ICU Level of Service A

Analysis Period (min) 15

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			-1%	-5%	
Volume (veh/h)	2	0	0	61	72	3
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	3	0	0	81	96	4
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	179	98	100			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	179	98	100			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	100	100	100			
cM capacity (veh/h)	803	950	1444			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	3	81	100
Volume Left	3	0	0
Volume Right	0	0	4
cSH	803	1444	1700
Volume to Capacity	0.00	0.00	0.06
Queue Length 95th (ft)	0	0	0
Control Delay (s)	9.5	0.0	0.0
Lane LOS	A		
Approach Delay (s)	9.5	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	14.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%			-1%	-5%	
Turning Speed (mph)	15	9	15			9
Satd. Flow (prot)	1712	0	0	1727	1744	0
Flt Permitted	0.950			0.999		
Satd. Flow (perm)	1712	0	0	1727	1744	0
Link Speed (mph)	15			25	25	
Link Distance (ft)	238			376	290	
Travel Time (s)	10.8			10.3	7.9	
Volume (vph)	3	0	1	58	65	6
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	5%	5%	10%	10%	10%	10%
Bus Blockages (#/hr)	1	1	0	1	1	0
Lane Group Flow (vph)	4	0	0	78	95	0
Sign Control	Stop			Free	Free	

Intersection Summary
Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 13.9% ICU Level of Service A
Analysis Period (min) 15

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			-1%	-5%	
Volume (veh/h)	3	0	1	58	65	6
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	4	0	1	77	87	8
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	171	91	95			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	171	91	95			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	100	100	100			
cM capacity (veh/h)	812	959	1450			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	4	79	95
Volume Left	4	1	0
Volume Right	0	0	8
cSH	812	1450	1700
Volume to Capacity	0.00	0.00	0.06
Queue Length 95th (ft)	0	0	0
Control Delay (s)	9.5	0.1	0.0
Lane LOS	A	A	
Approach Delay (s)	9.5	0.1	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	13.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	12	12	12
Grade (%)		0%	1%		0%	
Turning Speed (mph)	15			9	15	9
Satd. Flow (prot)	1770	3421	3404	1575	1723	0
Flt Permitted	0.950				0.977	
Satd. Flow (perm)	1770	3421	3404	1575	1723	0
Link Speed (mph)		35	35		20	
Link Distance (ft)		397	1383		319	
Travel Time (s)		7.7	26.9		10.9	
Volume (vph)	6	1605	1786	4	21	24
Peak Hour Factor	0.92	0.92	0.93	0.93	0.38	0.38
Heavy Vehicles (%)	2%	2%	2%	2%	0%	0%
Lane Group Flow (vph)	7	1745	1920	4	118	0
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 59.4%	ICU Level of Service B
Analysis Period (min) 15	

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	1%		0%	
Volume (veh/h)	6	1605	1786	4	21	24
Peak Hour Factor	0.92	0.92	0.93	0.93	0.38	0.38
Hourly flow rate (vph)	7	1745	1920	4	55	63
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					TWLTL	
Median storage veh)					0	
Upstream signal (ft)		840				
pX, platoon unblocked					0.75	
vC, conflicting volume	1925				2806	960
vC1, stage 1 conf vol					1920	
vC2, stage 2 conf vol					885	
vCu, unblocked vol	1925				3075	960
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	98				4	76
cM capacity (veh/h)	303				58	260

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	7	872	872	960	960	4	118
Volume Left	7	0	0	0	0	0	55
Volume Right	0	0	0	0	0	4	63
cSH	303	1700	1700	1700	1700	1700	99
Volume to Capacity	0.02	0.51	0.51	0.56	0.56	0.00	1.20
Queue Length 95th (ft)	2	0	0	0	0	0	200
Control Delay (s)	17.1	0.0	0.0	0.0	0.0	0.0	233.9
Lane LOS	C						F
Approach Delay (s)	0.1			0.0			233.9
Approach LOS							F

Intersection Summary			
Average Delay	7.3		
Intersection Capacity Utilization	59.4%	ICU Level of Service	B
Analysis Period (min)	15		

APPENDIX B.4

2010 Alternative 2 Synchro LOS Sheets

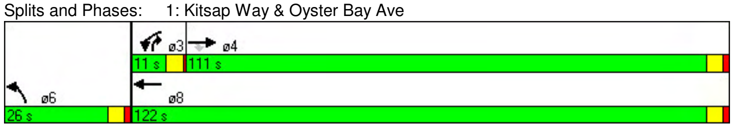
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	10	9
Grade (%)	0%			-3%	-1%	
Storage Length (ft)		70	115		0	50
Storage Lanes		1	1		1	1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Turning Speed (mph)		9	15		15	9
Satd. Flow (prot)	3067	1425	1585	3065	1411	1208
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3067	1272	1570	3065	1411	1208
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		27				124
Link Speed (mph)	35			35	25	
Link Distance (ft)	1377			1341	350	
Travel Time (s)	26.8			26.1	9.5	
Volume (vph)	1533	65	80	1763	61	98
Confl. Peds. (#/hr)		18	18			1
Peak Hour Factor	0.97	0.97	0.95	0.95	0.75	0.75
Heavy Vehicles (%)	2%	2%	4%	4%	8%	8%
Bus Blockages (#/hr)	2	0	0	0	0	2
Lane Group Flow (vph)	1580	67	84	1856	81	131
Turn Type		Perm	Prot			Over
Protected Phases	4		3	8	6	3
Permitted Phases		4				
Detector Phases	4	4	3	8	6	3
Minimum Initial (s)	6.0	6.0	4.0	6.0	6.0	4.0
Minimum Split (s)	20.0	20.0	8.0	22.0	26.0	8.0
Total Split (s)	111.0	111.0	11.0	122.0	26.0	11.0
Total Split (%)	75.0%	75.0%	7.4%	82.4%	17.6%	7.4%
Maximum Green (s)	106.0	106.0	7.0	117.0	21.0	7.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	0.5	1.5	1.5	0.5
Lead/Lag	Lag	Lag	Lead			Lead
Lead-Lag Optimize?	Yes	Yes	Yes			Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	6.0	6.0	0.0	6.0	6.0	0.0
Time To Reduce (s)	20.0	20.0	0.0	20.0	20.0	0.0
Recall Mode	C-Max	C-Max	None	C-Max	None	None
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	8.0	8.0		10.0	14.0	
Pedestrian Calls (#/hr)	18	18		18	1	
Act Effct Green (s)	107.8	107.8	13.2	125.1	14.9	13.2
Actuated g/C Ratio	0.73	0.73	0.09	0.85	0.10	0.09
v/c Ratio	0.71	0.07	0.59	0.72	0.57	0.59
Control Delay	26.3	7.9	83.7	4.7	77.8	23.5

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.3	7.9	83.7	4.7	77.8	23.5
LOS	C	A	F	A	E	C
Approach Delay	25.6			8.1	44.3	
Approach LOS	C			A	D	
90th %ile Green (s)	106.0	106.0	7.0	117.0	21.0	7.0
90th %ile Term Code	Coord	Coord	Max	Coord	Ped	Max
70th %ile Green (s)	106.0	106.0	12.0	122.0	16.0	12.0
70th %ile Term Code	Coord	Coord	Max	Coord	Gap	Max
50th %ile Green (s)	106.0	106.0	14.4	124.4	13.6	14.4
50th %ile Term Code	Coord	Coord	Max	Coord	Gap	Max
30th %ile Green (s)	106.6	106.6	16.2	126.8	11.2	16.2
30th %ile Term Code	Coord	Coord	Gap	Coord	Gap	Gap
10th %ile Green (s)	109.6	109.6	16.6	130.2	7.8	16.6
10th %ile Term Code	Coord	Coord	Gap	Coord	Gap	Gap
Queue Length 50th (ft)	693	23	85	180	76	6
Queue Length 95th (ft)	790	m35	m#147	175	105	43
Internal Link Dist (ft)	1297			1261	270	
Turn Bay Length (ft)		70	115			50
Base Capacity (vph)	2235	934	142	2590	210	221
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.07	0.59	0.72	0.39	0.59

Intersection Summary

Area Type: CBD
Cycle Length: 148
Actuated Cycle Length: 148
Offset: 108 (73%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.72
Intersection Signal Delay: 17.7 Intersection LOS: B
Intersection Capacity Utilization 67.4% ICU Level of Service C
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Kitsap Way & Oyster Bay Ave



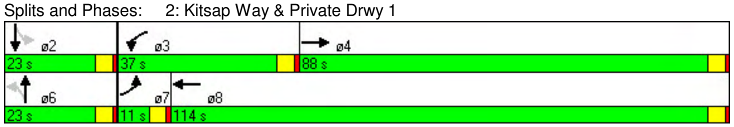
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	13	12	11	12	13	13	12	12	16	12
Grade (%)		1%			-4%			-4%			0%	
Storage Length (ft)	125		125	75		0	110		0	0		0
Storage Lanes	1		1	1		0	1		0	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	1585	3051	1465	1624	3137	0	1679	1504	0	0	1750	0
Flt Permitted	0.950			0.950			0.780				0.234	
Satd. Flow (perm)	1584	3051	1432	1620	3137	0	1378	1504	0	0	424	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			25		1			294			2	
Link Speed (mph)		35			35			35			15	
Link Distance (ft)		1341			1326			1021			212	
Travel Time (s)		26.1			25.8			19.9			9.6	
Volume (vph)	3	1503	135	243	1784	7	88	2	274	12	4	1
Confl. Peds. (#/hr)	2		5	5		2						
Confl. Bikes (#/hr)			1			5						
Peak Hour Factor	0.97	0.97	0.97	0.89	0.89	0.89	0.88	0.88	0.88	0.57	0.57	0.57
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	6%	6%	6%
Bus Blockages (#/hr)	0	2	0	0	0	0	0	0	2	2	0	0
Lane Group Flow (vph)	3	1549	139	273	2012	0	100	313	0	0	30	0
Turn Type	Prot		Free	Prot			Perm			Perm		
Protected Phases	7	4		3	8			6			2	
Permitted Phases			Free				6			2		
Detector Phases	7	4		3	8		6	6		2	2	
Minimum Initial (s)	5.0	8.0		8.0	8.0		8.0	8.0		6.0	6.0	
Minimum Split (s)	9.5	19.5		12.5	19.5		12.5	12.5		22.5	22.5	
Total Split (s)	11.0	88.0	0.0	37.0	114.0	0.0	23.0	23.0	0.0	23.0	23.0	0.0
Total Split (%)	7.4%	59.5%	0.0%	25.0%	77.0%	0.0%	15.5%	15.5%	0.0%	15.5%	15.5%	0.0%
Maximum Green (s)	6.5	83.5		32.5	109.5		18.5	18.5		18.5	18.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Time To Reduce (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)		7.0			7.0		6.0	6.0		7.0	7.0	
Flash Dont Walk (s)		8.0			8.0		0.0	0.0		11.0	11.0	
Pedestrian Calls (#/hr)		0			0		0	0		0	0	
Act Effct Green (s)	6.4	91.7	148.0	28.8	122.3		15.5	15.5			15.5	
Actuated g/C Ratio	0.04	0.62	1.00	0.19	0.83		0.10	0.10			0.10	
v/c Ratio	0.04	0.82	0.10	0.86	0.78		0.69	0.74			0.65	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	58.3	12.2	0.1	39.3	22.9		87.3	19.8			113.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	
Total Delay	58.3	12.2	0.1	39.3	22.9		87.3	19.8			113.7	
LOS	E	B	A	D	C		F	B			F	
Approach Delay		11.3			24.9			36.1			113.7	
Approach LOS		B			C			D			F	
90th %ile Green (s)	6.5	83.5		32.5	109.5		18.5	18.5		18.5	18.5	
90th %ile Term Code	Max	Coord		Max	Coord		Max	Max		Max	Max	
70th %ile Green (s)	0.0	83.5		32.5	120.5		18.5	18.5		18.5	18.5	
70th %ile Term Code	Skip	Coord		Max	Coord		Max	Max		Max	Max	
50th %ile Green (s)	0.0	88.4		30.3	123.2		15.8	15.8		15.8	15.8	
50th %ile Term Code	Skip	Coord		Gap	Coord		Gap	Gap		Hold	Hold	
30th %ile Green (s)	0.0	96.3		25.1	125.9		13.1	13.1		13.1	13.1	
30th %ile Term Code	Skip	Coord		Gap	Coord		Gap	Gap		Hold	Hold	
10th %ile Green (s)	0.0	104.1		21.2	129.8		9.2	9.2		9.2	9.2	
10th %ile Term Code	Skip	Coord		Gap	Coord		Gap	Gap		Hold	Hold	
Queue Length 50th (ft)	3	131	0	251	740		94	17			26	
Queue Length 95th (ft)	m4	240	m0	m208	m584		154	109			38	
Internal Link Dist (ft)		1261			1246			941			132	
Turn Bay Length (ft)	125		125	75			110					
Base Capacity (vph)	75	1890	1432	362	2592		177	449			56	
Starvation Cap Reductn	0	0	0	0	0		0	0			0	
Spillback Cap Reductn	0	0	0	0	0		0	0			0	
Storage Cap Reductn	0	0	0	0	0		0	0			0	
Reduced v/c Ratio	0.04	0.82	0.10	0.75	0.78		0.56	0.70			0.54	

Intersection Summary

Area Type: CBD
Cycle Length: 148
Actuated Cycle Length: 148
Offset: 118 (80%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 21.3 Intersection LOS: C
Intersection Capacity Utilization 90.1% ICU Level of Service E
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Kitsap Way & Private Drwy 1



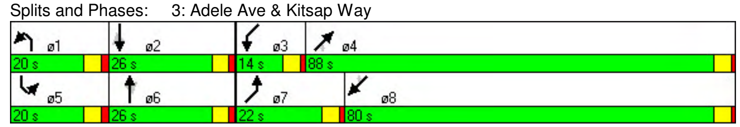
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	16	10	12	12	10	11	12	12	10	10
Storage Length (ft)	0		0	45		45	150		115	110		175
Storage Lanes	1		1	1		1	1		1	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	40	50	40	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	1580	1676	1602	1489	1693	1428	1486	3067	1425	1593	2961	1330
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1574	1676	1543	1468	1693	1405	1486	3067	1391	1592	2961	1330
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			171			92			32			58
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		548			510			1326			859	
Travel Time (s)		10.7			9.9			25.8			16.7	
Volume (vph)	123	33	151	91	48	86	217	1429	76	64	1746	132
Confl. Peds. (#/hr)	2		7	7		2			1	1		
Confl. Bikes (#/hr)			7									
Peak Hour Factor	0.85	0.85	0.85	0.93	0.93	0.93	0.94	0.94	0.94	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	2	0	2	2	0	2	0	2	0	0	2	0
Lane Group Flow (vph)	145	39	178	98	52	92	231	1520	81	71	1940	147
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6			2			4			8
Detector Phases	1	6	6	5	2	2	7	4	4	3	8	8
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	11.0	26.0	26.0	11.0	26.0	26.0	10.5	23.5	23.5	10.5	23.5	23.5
Total Split (s)	20.0	26.0	26.0	20.0	26.0	26.0	22.0	88.0	88.0	14.0	80.0	80.0
Total Split (%)	13.5%	17.6%	17.6%	13.5%	17.6%	17.6%	14.9%	59.5%	59.5%	9.5%	54.1%	54.1%
Maximum Green (s)	15.0	21.0	21.0	15.0	21.0	21.0	17.5	83.5	83.5	9.5	75.5	75.5
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.0	1.0	1.0	1.0	1.0	1.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	5.0	3.0	3.0	4.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Time To Reduce (s)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Recall Mode	None	None	None	None	None	None	Max	C-Max	C-Max	Max	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		14.0	14.0		14.0	14.0		12.0	12.0		12.0	12.0
Pedestrian Calls (#/hr)		9	9		9	9		1	1		0	0
Act Effct Green (s)	15.7	12.9	12.9	15.0	12.2	12.2	28.1	84.0	84.0	20.1	76.0	76.0
Actuated g/C Ratio	0.11	0.09	0.09	0.10	0.08	0.08	0.19	0.57	0.57	0.14	0.51	0.51
v/c Ratio	0.86	0.27	0.61	0.65	0.37	0.46	0.82	0.87	0.10	0.33	1.28	0.21
Control Delay	105.7	65.8	18.7	83.8	69.7	18.3	88.7	11.9	2.0	64.6	161.5	12.4

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	105.7	65.8	18.7	83.8	69.7	18.3	88.7	11.9	2.0	64.6	161.5	12.4
LOS	F	E	B	F	E	B	F	B	A	E	F	B
Approach Delay		58.6			55.9			21.1			148.2	
Approach LOS		E			E			C			F	
90th %ile Green (s)	15.0	21.0	21.0	15.0	21.0	21.0	17.5	83.5	83.5	9.5	75.5	75.5
90th %ile Term Code	Max	Ped	Ped	Max	Ped	Ped	MaxR	Coord	Coord	MaxR	Coord	Coord
70th %ile Green (s)	15.0	11.3	11.3	15.0	11.3	11.3	27.2	83.5	83.5	19.2	75.5	75.5
70th %ile Term Code	Max	Hold	Hold	Max	Gap	Gap	MaxR	Coord	Coord	MaxR	Coord	Coord
50th %ile Green (s)	15.0	9.7	9.7	15.0	9.7	9.7	28.8	83.5	83.5	20.8	75.5	75.5
50th %ile Term Code	Max	Hold	Hold	Max	Gap	Gap	MaxR	Coord	Coord	MaxR	Coord	Coord
30th %ile Green (s)	15.0	8.9	8.9	14.3	8.2	8.2	30.3	83.5	83.5	22.3	75.5	75.5
30th %ile Term Code	Max	Hold	Hold	Gap	Gap	Gap	MaxR	Coord	Coord	MaxR	Coord	Coord
10th %ile Green (s)	13.4	8.6	8.6	10.8	6.0	6.0	34.1	83.5	83.5	26.1	75.5	75.5
10th %ile Term Code	Gap	Hold	Hold	Gap	Min	Min	MaxR	Coord	Coord	MaxR	Coord	Coord
Queue Length 50th (ft)	140	36	6	92	49	0	221	208	1	62	~1242	44
Queue Length 95th (ft)	#243	67	63	157	89	53	m#402	274	m4	#142	#1375	87
Internal Link Dist (ft)		468			430			1246			779	
Turn Bay Length (ft)				45		45	150		115	110		175
Base Capacity (vph)	171	249	375	161	252	287	282	1741	803	216	1521	711
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.85	0.16	0.47	0.61	0.21	0.32	0.82	0.87	0.10	0.33	1.28	0.21

Intersection Summary

Area Type: CBD
Cycle Length: 148
Actuated Cycle Length: 148
Offset: 0 (0%), Referenced to phase 4:NET and 8:SWT, Start of Green, Master Intersection
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.28
Intersection Signal Delay: 85.6 Intersection LOS: F
Intersection Capacity Utilization 91.9% ICU Level of Service F
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Adele Ave & Kitsap Way



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	8	12	12	8	12
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	0	1784	0	0	1793	0	0	1522	0	0	1533	0
Flt Permitted		0.963			0.979			0.998			0.998	
Satd. Flow (perm)	0	1784	0	0	1793	0	0	1522	0	0	1533	0
Link Speed (mph)		20			15			25			25	
Link Distance (ft)		1297			282			666			350	
Travel Time (s)		44.2			12.8			18.2			9.5	
Volume (vph)	50	3	12	7	5	4	5	106	0	6	97	42
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	8%	8%	8%	3%	3%	3%
Lane Group Flow (vph)	0	77	0	0	19	0	0	131	0	0	170	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary		
Area Type:	Other	
Control Type: Unsignalized		
Intersection Capacity Utilization 22.7%		ICU Level of Service A
Analysis Period (min) 15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	50	3	12	7	5	4	5	106	0	6	97	42
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	59	4	14	8	6	5	6	125	0	7	114	49
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)											350	
pX, platoon unblocked												
vC, conflicting volume	297	289	139	305	314	125	164			125		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	297	289	139	305	314	125	164			125		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	91	99	98	99	99	99	100			100		
cM capacity (veh/h)	646	618	915	634	599	931	1379			1456		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	76	19	131	171
Volume Left	59	8	6	7
Volume Right	14	5	0	49
cSH	682	676	1379	1456
Volume to Capacity	0.11	0.03	0.00	0.00
Queue Length 95th (ft)	9	2	0	0
Control Delay (s)	10.9	10.5	0.4	0.3
Lane LOS	B	B	A	A
Approach Delay (s)	10.9	10.5	0.4	0.3
Approach LOS	B	B		

Intersection Summary			
Average Delay	2.9		
Intersection Capacity Utilization	22.7%	ICU Level of Service	A
Analysis Period (min)	15		

2010 With Project - Alternative 2 - RIRO
10: McNeal Ave & Oyster Bay Ave

10/17/2006

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	12	12	12	12	12	12	8	12	12	8	12
Grade (%)		0%			0%			-1%			0%	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	0	1789	0	0	1709	0	0	1522	0	0	1526	0
Flt Permitted		0.958			0.972			0.997			0.999	
Satd. Flow (perm)	0	1789	0	0	1709	0	0	1522	0	0	1526	0
Link Speed (mph)		20			15			25			25	
Link Distance (ft)		467			299			197			683	
Travel Time (s)		15.9			13.6			5.4			18.6	
Volume (vph)	28	0	4	6	0	4	4	61	0	3	64	33
Confl. Peds. (#/hr)							2					2
Confl. Bikes (#/hr)			1									
Peak Hour Factor	0.69	0.69	0.69	0.83	0.83	0.83	0.84	0.84	0.84	0.86	0.86	0.86
Heavy Vehicles (%)	0%	2%	0%	2%	2%	2%	8%	8%	2%	2%	3%	3%
Bus Blockages (#/hr)	1	0	0	0	0	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	47	0	0	12	0	0	78	0	0	115	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 16.8%	ICU Level of Service A
Analysis Period (min) 15	

2010 With Project - Alternative 2 - RIRO
10: McNeal Ave & Oyster Bay Ave

10/17/2006

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			-1%			0%	
Volume (veh/h)	28	0	4	6	0	4	4	61	0	3	64	33
Peak Hour Factor	0.69	0.69	0.69	0.83	0.83	0.83	0.84	0.84	0.84	0.86	0.86	0.86
Hourly flow rate (vph)	41	0	6	7	0	5	5	73	0	3	74	38
Pedestrians		2										
Lane Width (ft)		12.0										
Walking Speed (ft/s)		4.0										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	190	185	96	189	204	73	115			73		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	190	185	96	189	204	73	115			73		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	95	100	99	99	100	100	100			100		
cM capacity (veh/h)	766	704	965	763	687	989	1435			1527		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	46	12	77	116
Volume Left	41	7	5	3
Volume Right	6	5	0	38
cSH	786	840	1435	1527
Volume to Capacity	0.06	0.01	0.00	0.00
Queue Length 95th (ft)	5	1	0	0
Control Delay (s)	9.9	9.3	0.5	0.2
Lane LOS	A	A	A	A
Approach Delay (s)	9.9	9.3	0.5	0.2
Approach LOS	A	A		

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	16.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	8	12
Grade (%)		4%	-1%		-5%	
Turning Speed (mph)	15			9	15	9
Satd. Flow (prot)	0	1728	1564	0	1476	0
Flt Permitted		0.993			0.955	
Satd. Flow (perm)	0	1728	1564	0	1476	0
Link Speed (mph)		20	25		25	
Link Distance (ft)		248	299		376	
Travel Time (s)		8.5	8.2		10.3	
Volume (vph)	3	22	21	59	69	4
Confl. Peds. (#/hr)	1			1	2	
Peak Hour Factor	0.66	0.66	0.93	0.93	0.90	0.90
Heavy Vehicles (%)	7%	7%	10%	10%	8%	8%
Bus Blockages (#/hr)	1	0	0	1	1	1
Lane Group Flow (vph)	0	38	86	0	81	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 15.8% ICU Level of Service A
Analysis Period (min) 15

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		4%	-1%		-5%	
Volume (veh/h)	3	22	21	59	69	4
Peak Hour Factor	0.66	0.66	0.93	0.93	0.90	0.90
Hourly flow rate (vph)	5	33	23	63	77	4
Pedestrians			2		1	
Lane Width (ft)			12.0		8.0	
Walking Speed (ft/s)			4.0		4.0	
Percent Blockage			0		0	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	87				100	55
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	87				100	55
tC, single (s)	4.2				6.5	6.3
tC, 2 stage (s)						
tF (s)	2.3				3.6	3.4
p0 queue free %	100				91	100
cM capacity (veh/h)	1477				880	994

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	38	86	81
Volume Left	5	0	77
Volume Right	0	63	4
cSH	1477	1700	886
Volume to Capacity	0.00	0.05	0.09
Queue Length 95th (ft)	0	0	8
Control Delay (s)	0.9	0.0	9.5
Lane LOS	A		A
Approach Delay (s)	0.9	0.0	9.5
Approach LOS			A

Intersection Summary

Average Delay	3.9		
Intersection Capacity Utilization	15.8%	ICU Level of Service	A
Analysis Period (min)	15		

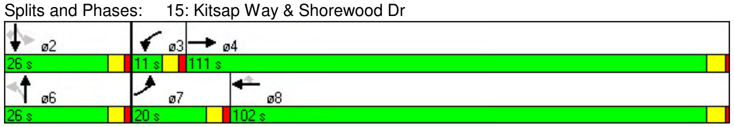
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	16	12	11	10	11	10	10	12	14	9
Grade (%)		1%			0%			-5%			2%	
Storage Length (ft)	150		75	225		100	60		0	0		50
Storage Lanes	1		1	1		1	1		0	0		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	1569	3022	1591	1577	3049	1317	1504	1229	0	0	1689	1270
Flt Permitted	0.950			0.950			0.576				0.634	
Satd. Flow (perm)	1569	3022	1556	1572	3049	1317	912	1229	0	0	1077	1270
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			12			44		72				106
Link Speed (mph)		35			35			20			25	
Link Distance (ft)		394			447			418			541	
Travel Time (s)		7.7			8.7			14.3			14.8	
Volume (vph)	102	1435	92	191	1503	98	206	2	56	74	3	95
Confl. Peds. (#/hr)			5	5					23	23		
Confl. Bikes (#/hr)									3			
Peak Hour Factor	0.98	0.98	0.98	0.93	0.93	0.93	0.78	0.78	0.78	0.75	0.75	0.75
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	7%	7%	7%	2%	2%	2%
Bus Blockages (#/hr)	0	2	0	0	0	0	0	0	2	2	0	0
Lane Group Flow (vph)	104	1464	94	205	1616	105	264	75	0	0	103	127
Turn Type	Prot		Free	Prot		Perm	Perm			Perm		Perm
Protected Phases	7	4		3	8			6			2	
Permitted Phases			Free			8	6			2		2
Detector Phases	7	4		3	8	8	6	6		2	2	2
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	11.0	20.0		11.0	20.0	20.0	26.0	26.0		11.0	11.0	11.0
Total Split (s)	20.0	111.0	0.0	11.0	102.0	102.0	26.0	26.0	0.0	26.0	26.0	26.0
Total Split (%)	13.5%	75.0%	0.0%	7.4%	68.9%	68.9%	17.6%	17.6%	0.0%	17.6%	17.6%	17.6%
Maximum Green (s)	15.0	106.0		6.0	97.0	97.0	21.0	21.0		21.0	21.0	21.0
Yellow Time (s)	3.5	4.0		3.5	4.0	4.0	3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.5	1.0		1.5	1.0	1.0	1.5	1.5		1.5	1.5	1.5
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.5		3.0	3.5	3.5	3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Time To Reduce (s)	20.0	20.0		20.0	20.0	20.0	20.0	20.0		20.0	20.0	20.0
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None		None	None	None
Walk Time (s)		7.0			7.0	7.0	7.0	7.0				
Flash Dont Walk (s)		8.0			8.0	8.0	14.0	14.0				
Pedestrian Calls (#/hr)		5			5	5	23	23				
Act Effct Green (s)	14.3	107.0	148.0	7.0	99.7	99.7	22.0	22.0			22.0	22.0
Actuated g/C Ratio	0.10	0.72	1.00	0.05	0.67	0.67	0.15	0.15			0.15	0.15
v/c Ratio	0.68	0.67	0.06	2.73	0.79	0.12	1.94	0.31			0.64	0.46

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	86.8	12.9	0.1	830.2	29.3	6.9	481.0	16.1			78.6	19.9
Queue Delay	0.0	25.9	0.0	0.0	0.2	0.0	13.0	0.0			0.0	0.1
Total Delay	86.8	38.8	0.1	830.2	29.5	6.9	494.0	16.1			78.6	20.0
LOS	F	D	A	F	C	A	F	B			E	C
Approach Delay		39.6			113.5			388.3			46.3	
Approach LOS		D			F			F			D	
90th %ile Green (s)	15.0	106.0		6.0	97.0	97.0	21.0	21.0		21.0	21.0	21.0
90th %ile Term Code	Max	Coord		Max	Coord	Coord	Max	Max		Max	Max	Max
70th %ile Green (s)	15.0	106.0		6.0	97.0	97.0	21.0	21.0		21.0	21.0	21.0
70th %ile Term Code	Max	Coord		Max	Coord	Coord	Max	Max		Max	Max	Max
50th %ile Green (s)	15.0	106.0		6.0	97.0	97.0	21.0	21.0		21.0	21.0	21.0
50th %ile Term Code	Max	Coord		Max	Coord	Coord	Max	Max		Hold	Hold	Hold
30th %ile Green (s)	12.5	106.0		6.0	99.5	99.5	21.0	21.0		21.0	21.0	21.0
30th %ile Term Code	Gap	Coord		Max	Coord	Coord	Max	Max		Hold	Hold	Hold
10th %ile Green (s)	9.1	106.0		6.0	102.9	102.9	21.0	21.0		21.0	21.0	21.0
10th %ile Term Code	Gap	Coord		Max	Coord	Coord	Max	Max		Hold	Hold	Hold
Queue Length 50th (ft)	97	363	0	~337	703	34	~393	3			95	18
Queue Length 95th (ft)	165	433	0	m#501	784	m28	#483	35			133	51
Internal Link Dist (ft)		314			367			338			461	
Turn Bay Length (ft)	150		75	225		100	60					50
Base Capacity (vph)	170	2185	1556	75	2053	901	136	244			160	279
Starvation Cap Reductn	0	782	0	0	0	0	0	0			0	0
Spillback Cap Reductn	0	0	0	0	59	0	2	0			0	6
Storage Cap Reductn	0	0	0	0	0	0	0	0			0	0
Reduced v/c Ratio	0.61	1.04	0.06	2.73	0.81	0.12	1.97	0.31			0.64	0.47

Intersection Summary

Area Type: CBD
Cycle Length: 148
Actuated Cycle Length: 148
Offset: 30 (20%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 2.73
Intersection Signal Delay: 102.6 Intersection LOS: F
Intersection Capacity Utilization 85.2% ICU Level of Service E
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 15: Kitsap Way & Shorewood Dr



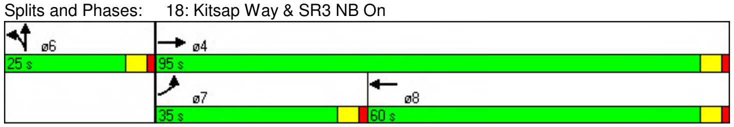
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	11	12	12	12	12	12	12
Grade (%)		0%			-1%			-1%			0%	
Storage Length (ft)	115		0	0		0	0		115	0		0
Storage Lanes	1		0	0		1	0		1	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50			50	50	50	50	50			
Trailing Detector (ft)	0	0			0	0	0	0	0			
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	1577	3049	0	0	3035	1358	0	1578	1405	0	0	0
Flt Permitted	0.950							0.955				
Satd. Flow (perm)	1572	3049	0	0	3035	1328	0	1578	1405	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						649			193			
Link Speed (mph)		35			35			35			50	
Link Distance (ft)		404			394			895			1104	
Travel Time (s)		7.9			7.7			17.4			15.1	
Volume (vph)	145	1464	0	0	898	928	42	3	170	0	0	0
Confl. Peds. (#/hr)	4					4						
Peak Hour Factor	0.97	0.97	0.92	0.92	0.91	0.91	0.88	0.88	0.88	0.92	0.92	0.92
Heavy Vehicles (%)	3%	3%	2%	2%	4%	4%	4%	4%	4%	2%	2%	2%
Lane Group Flow (vph)	149	1509	0	0	987	1020	0	51	193	0	0	0
Turn Type	Prot					Free	Split		Free			
Protected Phases	7	4			8		6	6				
Permitted Phases						Free			Free			
Detector Phases	7	4			8		6	6				
Minimum Initial (s)	6.0	6.0			6.0		6.0	6.0				
Minimum Split (s)	11.0	20.0			24.0		11.0	11.0				
Total Split (s)	35.0	95.0	0.0	0.0	60.0	0.0	25.0	25.0	0.0	0.0	0.0	0.0
Total Split (%)	29.2%	79.2%	0.0%	0.0%	50.0%	0.0%	20.8%	20.8%	0.0%	0.0%	0.0%	0.0%
Maximum Green (s)	30.0	90.0			55.0		20.0	20.0				
Yellow Time (s)	3.5	3.5			3.5		3.5	3.5				
All-Red Time (s)	1.5	1.5			1.5		1.5	1.5				
Lead/Lag	Lead				Lag							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0				
Minimum Gap (s)	3.0	3.0			3.0		3.0	3.0				
Time Before Reduce (s)	6.0	6.0			6.0		6.0	6.0				
Time To Reduce (s)	20.0	20.0			20.0		20.0	20.0				
Recall Mode	None	C-Max			C-Max		None	None				
Walk Time (s)		7.0			7.0							
Flash Dont Walk (s)		8.0			12.0							
Pedestrian Calls (#/hr)		4			4							
Act Effct Green (s)	17.0	104.8			83.0	120.0		10.2	120.0			
Actuated g/C Ratio	0.14	0.87			0.69	1.00		0.08	1.00			
v/c Ratio	0.67	0.57			0.47	0.77		0.38	0.14			
Control Delay	62.8	3.7			10.9	4.3		59.2	0.2			
Queue Delay	0.0	1.3			1.1	0.0		0.0	0.0			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	62.8	5.0			12.1	4.3		59.2	0.2			
LOS	E	A			B	A		E	A			
Approach Delay		10.2			8.1			12.6				
Approach LOS		B			A			B				
90th %ile Green (s)	22.4	97.3			69.9		12.7	12.7				
90th %ile Term Code	Gap	Coord			Coord		Gap	Gap				
70th %ile Green (s)	18.5	99.4			75.9		10.6	10.6				
70th %ile Term Code	Gap	Coord			Coord		Gap	Gap				
50th %ile Green (s)	15.9	100.9			80.0		9.1	9.1				
50th %ile Term Code	Gap	Coord			Coord		Gap	Gap				
30th %ile Green (s)	13.3	102.4			84.1		7.6	7.6				
30th %ile Term Code	Gap	Coord			Coord		Gap	Gap				
10th %ile Green (s)	9.7	115.0			100.3		0.0	0.0				
10th %ile Term Code	Gap	Coord			Coord		Skip	Skip				
Queue Length 50th (ft)	111	132			176	0		38	0			
Queue Length 95th (ft)	172	213			288	0		75	0			
Internal Link Dist (ft)		324			314			815			1024	
Turn Bay Length (ft)	115								115			
Base Capacity (vph)	407	2663			2100	1328		276	1405			
Starvation Cap Reductn	0	875			812	0		0	0			
Spillback Cap Reductn	0	263			4	0		11	131			
Storage Cap Reductn	0	0			0	0		0	0			
Reduced v/c Ratio	0.37	0.84			0.77	0.77		0.19	0.15			

Intersection Summary

Area Type: CBD
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 74 (62%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 55
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.77
Intersection Signal Delay: 9.3 Intersection LOS: A
Intersection Capacity Utilization 56.6% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 18: Kitsap Way & SR3 NB On



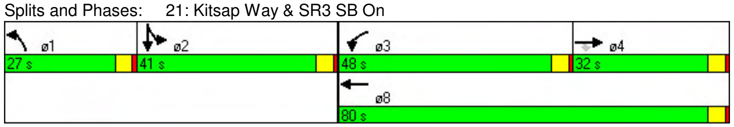
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	12	12	16	12	12
Grade (%)		0%			-1%			1%			-1%	
Storage Length (ft)	0		240	150		0	0		165	0		250
Storage Lanes	0		1	2		0	1		1	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)		50	50	50	50		50		50	50	50	50
Trailing Detector (ft)		0	0	0	0		0		0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	0	3020	1392	3045	3035	0	1539	0	1377	1723	1549	1432
Flt Permitted				0.950			0.950			0.950	0.968	
Satd. Flow (perm)	0	3020	1392	3045	3035	0	1538	0	1360	1716	1545	1414
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			218						392			4
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		681			404			1026			976	
Travel Time (s)		13.3			7.9			20.0			19.0	
Volume (vph)	0	420	196	381	558	0	55	0	361	834	166	7
Confl. Peds. (#/hr)							1		2	2		1
Confl. Bikes (#/hr)									1			1
Peak Hour Factor	0.92	0.90	0.90	0.93	0.93	0.92	0.92	0.92	0.92	0.93	0.93	0.93
Heavy Vehicles (%)	2%	4%	4%	4%	4%	2%	5%	2%	5%	2%	2%	2%
Bus Blockages (#/hr)	0	0	1	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	467	218	410	600	0	60	0	392	558	517	8
Turn Type			Perm	Prot			Prot		Free	Split		Free
Protected Phases		4		3	8		1			2	2	
Permitted Phases			4						Free			Free
Detector Phases		4	4	3	8		1			2	2	
Minimum Initial (s)		6.0	6.0	3.0	6.0		3.0			3.0	3.0	
Minimum Split (s)		19.5	19.5	7.5	19.5		7.5			25.5	25.5	
Total Split (s)	0.0	32.0	32.0	48.0	80.0	0.0	27.0	0.0	0.0	41.0	41.0	0.0
Total Split (%)	0.0%	21.6%	21.6%	32.4%	54.1%	0.0%	18.2%	0.0%	0.0%	27.7%	27.7%	0.0%
Maximum Green (s)		27.5	27.5	43.5	75.5		22.5			36.5	36.5	
Yellow Time (s)		3.5	3.5	3.5	3.5		3.5			3.5	3.5	
All-Red Time (s)		1.0	1.0	1.0	1.0		1.0			1.0	1.0	
Lead/Lag		Lag	Lag	Lead			Lead			Lag	Lag	
Lead-Lag Optimize?		Yes	Yes	Yes			Yes			Yes	Yes	
Vehicle Extension (s)		3.5	3.5	4.0	3.5		3.5			3.5	3.5	
Minimum Gap (s)		3.0	3.0	3.0	3.0		3.0			3.0	3.0	
Time Before Reduce (s)		6.0	6.0	6.0	6.0		6.0			6.0	6.0	
Time To Reduce (s)		20.0	20.0	20.0	20.0		20.0			20.0	20.0	
Recall Mode		C-Max	C-Max	None	C-Max		Min			Ped	Ped	
Walk Time (s)		7.0	7.0	0.0	7.0					7.0	7.0	
Flash Dont Walk (s)		8.0	8.0	0.0	8.0					14.0	14.0	
Pedestrian Calls (#/hr)		0	0	0	0					0	0	
Act Effct Green (s)		46.8	46.8	25.2	76.0		11.9		148.0	48.1	48.1	148.0
Actuated g/C Ratio		0.32	0.32	0.17	0.51		0.08		1.00	0.32	0.32	1.00
v/c Ratio		0.49	0.37	0.79	0.38		0.48		0.29	1.00	1.03	0.01

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay		44.0	6.7	70.0	22.7		77.2		0.5	86.6	95.5	0.0
Queue Delay		0.0	0.0	0.0	1.8		0.0		0.0	17.6	21.3	0.0
Total Delay		44.0	6.7	70.0	24.6		77.2		0.5	104.1	116.9	0.0
LOS		D	A	E	C		E		A	F	F	A
Approach Delay		32.1			43.0						109.5	
Approach LOS		C			D						F	
90th %ile Green (s)		40.1	40.1	30.9	75.5		16.0			43.0	43.0	
90th %ile Term Code		Coord	Coord	Gap	Coord		Gap			Max	Max	
70th %ile Green (s)		43.8	43.8	27.2	75.5		13.2			45.8	45.8	
70th %ile Term Code		Coord	Coord	Gap	Coord		Gap			Max	Max	
50th %ile Green (s)		46.3	46.3	24.7	75.5		11.4			47.6	47.6	
50th %ile Term Code		Coord	Coord	Gap	Coord		Gap			Max	Max	
30th %ile Green (s)		48.8	48.8	22.2	75.5		9.5			49.5	49.5	
30th %ile Term Code		Coord	Coord	Gap	Coord		Gap			Max	Max	
10th %ile Green (s)		52.3	52.3	18.7	75.5		6.9			52.1	52.1	
10th %ile Term Code		Coord	Coord	Gap	Coord		Gap			Max	Max	
Queue Length 50th (ft)		192	0	198	180		56		0	566	~558	0
Queue Length 95th (ft)		265	66	246	227		104		0	#888	#849	0
Internal Link Dist (ft)		601			324			946			896	
Turn Bay Length (ft)			240	150					165			250
Base Capacity (vph)		954	589	905	1559		239		1360	560	503	1414
Starvation Cap Reductn		0	0	17	764		0		0	0	0	0
Spillback Cap Reductn		10	0	0	0		0		42	31	28	0
Storage Cap Reductn		0	0	0	0		0		0	0	0	0
Reduced v/c Ratio		0.49	0.37	0.46	0.75		0.25		0.30	1.05	1.09	0.01

Intersection Summary

Area Type: CBD
Cycle Length: 148
Actuated Cycle Length: 148
Offset: 77 (52%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.03
Intersection Signal Delay: 58.5 Intersection LOS: E
Intersection Capacity Utilization 72.8% ICU Level of Service C
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 21: Kitsap Way & SR3 SB On



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	12	12
Grade (%)	-1%			1%	0%	
Storage Length (ft)		0	150		0	0
Storage Lanes		0	0		0	1
Turning Speed (mph)		9	15		15	9
Satd. Flow (prot)	3067	0	0	3064	0	1450
Flt Permitted						
Satd. Flow (perm)	3067	0	0	3064	0	1450
Link Speed (mph)	35			35	20	
Link Distance (ft)	447			395	393	
Travel Time (s)	8.7			7.7	13.4	
Volume (vph)	1518	93	0	1844	0	140
Peak Hour Factor	0.92	0.92	0.93	0.93	0.92	0.92
Lane Group Flow (vph)	1751	0	0	1983	0	152
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: CBD
Control Type: Unsignalized
Intersection Capacity Utilization 66.2% ICU Level of Service C
Analysis Period (min) 15

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	-1%			1%	0%	
Volume (veh/h)	1518	93	0	1844	0	140
Peak Hour Factor	0.92	0.92	0.93	0.93	0.92	0.92
Hourly flow rate (vph)	1650	101	0	1983	0	152
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)	447					
pX, platoon unblocked			0.74		0.74	0.74
vC, conflicting volume			1751		2692	876
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1664		2935	481
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	61
cM capacity (veh/h)			283		9	393

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	1100	651	991	991	152
Volume Left	0	0	0	0	0
Volume Right	0	101	0	0	152
cSH	1700	1700	1700	1700	393
Volume to Capacity	0.65	0.38	0.58	0.58	0.39
Queue Length 95th (ft)	0	0	0	0	45
Control Delay (s)	0.0	0.0	0.0	0.0	19.8
Lane LOS					C
Approach Delay (s)	0.0		0.0		19.8
Approach LOS					C

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	66.2%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		0%	1%		0%	
Turning Speed (mph)	15			9	15	9
Satd. Flow (prot)	1593	3185	3169	1418	1550	0
Flt Permitted	0.950				0.977	
Satd. Flow (perm)	1593	3185	3169	1418	1550	0
Link Speed (mph)		35	35		20	
Link Distance (ft)		395	1377		375	
Travel Time (s)		7.7	26.8		12.8	
Volume (vph)	6	1643	1822	4	21	24
Peak Hour Factor	0.92	0.92	0.92	0.92	0.38	0.38
Heavy Vehicles (%)	2%	2%	2%	2%	0%	0%
Lane Group Flow (vph)	7	1786	1980	4	118	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: CBD
Control Type: Unsignalized
Intersection Capacity Utilization 66.0% ICU Level of Service C
Analysis Period (min) 15

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	1%		0%	
Volume (veh/h)	6	1643	1822	4	21	24
Peak Hour Factor	0.92	0.92	0.92	0.92	0.38	0.38
Hourly flow rate (vph)	7	1786	1980	4	55	63
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					TWLTL	
Median storage veh)					0	
Upstream signal (ft)		842				
pX, platoon unblocked					0.75	
vC, conflicting volume	1985				2886	990
vC1, stage 1 conf vol					1980	
vC2, stage 2 conf vol					906	
vCu, unblocked vol	1985				3178	990
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	98				0	75
cM capacity (veh/h)	287				54	249

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	7	893	893	990	990	4	118
Volume Left	7	0	0	0	0	0	55
Volume Right	0	0	0	0	0	4	63
cSH	287	1700	1700	1700	1700	1700	92
Volume to Capacity	0.02	0.53	0.53	0.58	0.58	0.00	1.28
Queue Length 95th (ft)	2	0	0	0	0	0	212
Control Delay (s)	17.8	0.0	0.0	0.0	0.0	0.0	270.4
Lane LOS	C						F
Approach Delay (s)	0.1			0.0			270.4
Approach LOS							F

Intersection Summary			
Average Delay	8.2		
Intersection Capacity Utilization	66.0%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Turning Speed (mph)	15	9	15			9
Satd. Flow (prot)	1697	0	0	1720	1703	0
Flt Permitted	0.958					
Satd. Flow (perm)	1697	0	0	1720	1703	0
Link Speed (mph)	15			25	25	
Link Distance (ft)	362			683	666	
Travel Time (s)	16.5			18.6	18.2	
Volume (vph)	5	1	1	105	108	9
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	5%	5%	10%	10%	10%	10%
Bus Blockages (#/hr)	1	1	0	1	1	0
Lane Group Flow (vph)	8	0	0	141	156	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 16.3% ICU Level of Service A

Analysis Period (min) 15

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	5	1	1	105	108	9
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	7	1	1	140	144	12
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)					1016	
pX, platoon unblocked						
vC, conflicting volume	293	150	156			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	293	150	156			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	99	100	100			
cM capacity (veh/h)	691	889	1377			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	8	141	156
Volume Left	7	1	0
Volume Right	1	0	12
cSH	718	1377	1700
Volume to Capacity	0.01	0.00	0.09
Queue Length 95th (ft)	1	0	0
Control Delay (s)	10.1	0.1	0.0
Lane LOS	B	A	
Approach Delay (s)	10.1	0.1	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	16.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%			-1%	-5%	
Turning Speed (mph)	15	9	15			9
Satd. Flow (prot)	1712	0	0	1729	1756	0
Flt Permitted	0.950					
Satd. Flow (perm)	1712	0	0	1729	1756	0
Link Speed (mph)	15			25	25	
Link Distance (ft)	248			290	197	
Travel Time (s)	11.3			7.9	5.4	
Volume (vph)	1	0	0	67	78	2
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	5%	5%	10%	10%	10%	10%
Bus Blockages (#/hr)	1	1	0	1	1	0
Lane Group Flow (vph)	1	0	0	89	107	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 14.2% ICU Level of Service A

Analysis Period (min) 15

33: New Drwy 2 & Oyster Bay Ave

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			-1%	-5%	
Volume (veh/h)	1	0	0	67	78	2
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	1	0	0	89	104	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	195	105	107			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	195	105	107			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	100	100	100			
cM capacity (veh/h)	787	941	1436			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	1	89	107
Volume Left	1	0	0
Volume Right	0	0	3
cSH	787	1436	1700
Volume to Capacity	0.00	0.00	0.06
Queue Length 95th (ft)	0	0	0
Control Delay (s)	9.6	0.0	0.0
Lane LOS	A		
Approach Delay (s)	9.6	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	14.2%	ICU Level of Service	A
Analysis Period (min)	15		

35: New Drwy 3 & Oyster Bay Ave

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%			-1%	-5%	
Turning Speed (mph)	15	9	15			9
Satd. Flow (prot)	1712	0	0	1727	1748	0
Flt Permitted	0.950			0.999		
Satd. Flow (perm)	1712	0	0	1727	1748	0
Link Speed (mph)	15			25	25	
Link Distance (ft)	238			376	290	
Travel Time (s)	10.8			10.3	7.9	
Volume (vph)	2	0	1	64	73	5
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	5%	5%	10%	10%	10%	10%
Bus Blockages (#/hr)	1	1	0	1	1	0
Lane Group Flow (vph)	3	0	0	86	104	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 14.2% ICU Level of Service A

Analysis Period (min) 15

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			-1%	-5%	
Volume (veh/h)	2	0	1	64	73	5
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	3	0	1	85	97	7
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	189	101	104			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	189	101	104			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	100	100	100			
cM capacity (veh/h)	793	947	1439			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	3	87	104
Volume Left	3	1	0
Volume Right	0	0	7
cSH	793	1439	1700
Volume to Capacity	0.00	0.00	0.06
Queue Length 95th (ft)	0	0	0
Control Delay (s)	9.6	0.1	0.0
Lane LOS	A	A	
Approach Delay (s)	9.6	0.1	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	14.2%	ICU Level of Service	A
Analysis Period (min)	15		

APPENDIX C.1

Existing Conditions Synchro LOS Sheets (Optimized Network)

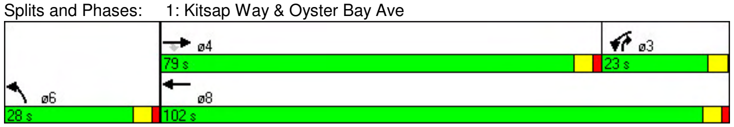
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	10	9
Grade (%)	0%			-3%	-1%	
Storage Length (ft)		70	115		0	50
Storage Lanes		1	1		1	1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Turning Speed (mph)		9	15		15	9
Satd. Flow (prot)	3067	1425	1585	3065	1411	1208
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3067	1288	1568	3065	1411	1208
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		12				136
Link Speed (mph)	30			30	25	
Link Distance (ft)	1365			1341	350	
Travel Time (s)	31.0			30.5	9.5	
Volume (vph)	1369	36	72	1561	47	102
Confl. Peds. (#/hr)		18	18			1
Peak Hour Factor	0.97	0.97	0.95	0.95	0.75	0.75
Heavy Vehicles (%)	2%	2%	4%	4%	8%	8%
Bus Blockages (#/hr)	2	0	0	0	0	2
Lane Group Flow (vph)	1411	37	76	1643	63	136
Turn Type		Perm	Prot			Over
Protected Phases	4		3	8	6	3
Permitted Phases		4				
Detector Phases	4	4	3	8	6	3
Minimum Initial (s)	6.0	6.0	4.0	6.0	6.0	4.0
Minimum Split (s)	20.0	20.0	8.0	22.0	26.0	8.0
Total Split (s)	79.0	79.0	23.0	102.0	28.0	23.0
Total Split (%)	60.8%	60.8%	17.7%	78.5%	21.5%	17.7%
Maximum Green (s)	74.0	74.0	19.0	97.0	23.0	19.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	0.5	1.5	1.5	0.5
Lead/Lag	Lead	Lead	Lag			Lag
Lead-Lag Optimize?	Yes	Yes	Yes			Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	6.0	6.0	0.0	6.0	6.0	0.0
Time To Reduce (s)	20.0	20.0	0.0	20.0	20.0	0.0
Recall Mode	C-Max	C-Max	None	C-Max	None	None
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	8.0	8.0		10.0	14.0	
Pedestrian Calls (#/hr)	18	18		18	1	
Act Effct Green (s)	88.3	88.3	19.0	112.1	12.9	19.0
Actuated g/C Ratio	0.68	0.68	0.15	0.86	0.10	0.15
v/c Ratio	0.68	0.04	0.33	0.62	0.45	0.46
Control Delay	7.6	1.5	48.1	6.2	63.5	13.5

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.6	1.5	48.1	6.2	63.5	13.5
LOS	A	A	D	A	E	B
Approach Delay	7.4			8.0	29.3	
Approach LOS	A			A	C	
90th %ile Green (s)	76.0	76.0	19.0	99.0	21.0	19.0
90th %ile Term Code	Coord	Coord	Hold	Coord	Ped	Hold
70th %ile Green (s)	84.2	84.2	19.0	107.2	12.8	19.0
70th %ile Term Code	Coord	Coord	Hold	Coord	Gap	Hold
50th %ile Green (s)	86.1	86.1	19.0	109.1	10.9	19.0
50th %ile Term Code	Coord	Coord	Hold	Coord	Gap	Hold
30th %ile Green (s)	88.1	88.1	19.0	111.1	8.9	19.0
30th %ile Term Code	Coord	Coord	Hold	Coord	Gap	Hold
10th %ile Green (s)	102.0	102.0	19.0	125.0	0.0	19.0
10th %ile Term Code	Coord	Coord	Hold	Coord	Skip	Hold
Queue Length 50th (ft)	116	0	53	246	51	0
Queue Length 95th (ft)	459	m7	m80	313	76	32
Internal Link Dist (ft)	1285			1261	270	
Turn Bay Length (ft)		70	115			50
Base Capacity (vph)	2083	879	232	2643	260	293
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.04	0.33	0.62	0.24	0.46

Intersection Summary

Area Type: CBD
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 118 (91%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.68
Intersection Signal Delay: 9.0 Intersection LOS: A
Intersection Capacity Utilization 61.9% ICU Level of Service B
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Kitsap Way & Oyster Bay Ave



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	13	12	11	12	13	13	12	12	16	12
Grade (%)		1%			-4%			-4%			0%	
Storage Length (ft)	125		125	75		0	110		0	0		0
Storage Lanes	1		1	1		0	1		0	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	1585	3051	1465	1624	3137	0	1679	1504	0	0	1750	0
Flt Permitted	0.950			0.950			0.799				0.305	
Satd. Flow (perm)	1584	3051	1432	1619	3137	0	1412	1504	0	0	552	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			30		1			291			2	
Link Speed (mph)		30			30			35			15	
Link Distance (ft)		1341			1326			1021			212	
Travel Time (s)		30.5			30.1			19.9			9.6	
Volume (vph)	3	1319	126	227	1578	7	82	2	256	11	4	1
Confl. Peds. (#/hr)	2		5	5		2						
Confl. Bikes (#/hr)			1			5						
Peak Hour Factor	0.97	0.97	0.97	0.89	0.89	0.89	0.88	0.88	0.88	0.57	0.57	0.57
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	6%	6%	6%
Bus Blockages (#/hr)	0	2	0	0	0	0	0	0	2	2	0	0
Lane Group Flow (vph)	3	1360	130	255	1781	0	93	293	0	0	28	0
Turn Type	Prot		Free	Prot			Perm			Perm		
Protected Phases	7	4		3	8			6			2	
Permitted Phases			Free				6			2		
Detector Phases	7	4		3	8		6	6		2	2	
Minimum Initial (s)	5.0	8.0		8.0	8.0		8.0	8.0		6.0	6.0	
Minimum Split (s)	9.5	19.5		12.5	19.5		12.5	12.5		22.5	22.5	
Total Split (s)	9.5	74.5	0.0	33.0	98.0	0.0	22.5	22.5	0.0	22.5	22.5	0.0
Total Split (%)	7.3%	57.3%	0.0%	25.4%	75.4%	0.0%	17.3%	17.3%	0.0%	17.3%	17.3%	0.0%
Maximum Green (s)	5.0	70.0		28.5	93.5		18.0	18.0		18.0	18.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lead/Lag	Lead	Lead		Lag	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Time To Reduce (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)		7.0			7.0		6.0	6.0		7.0	7.0	
Flash Dont Walk (s)		8.0			8.0		0.0	0.0		11.0	11.0	
Pedestrian Calls (#/hr)		0			0		0	0		0	0	
Act Effct Green (s)	6.1	75.1	130.0	29.0	106.2		13.9	13.9			13.9	
Actuated g/C Ratio	0.05	0.58	1.00	0.22	0.82		0.11	0.11			0.11	
v/c Ratio	0.04	0.77	0.09	0.70	0.69		0.62	0.70			0.46	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	61.3	19.8	0.1	32.9	3.3		72.2	15.2			74.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	
Total Delay	61.3	19.8	0.1	32.9	3.3		72.2	15.2			74.1	
LOS	E	B	A	C	A		E	B			E	
Approach Delay		18.2			7.0			29.0			74.1	
Approach LOS		B			A			C			E	
90th %ile Green (s)	5.0	70.0		28.5	93.5		18.0	18.0		18.0	18.0	
90th %ile Term Code	Max	Coord		Max	Coord		Max	Max		Max	Max	
70th %ile Green (s)	0.0	71.9		28.5	104.9		16.1	16.1		16.1	16.1	
70th %ile Term Code	Skip	Coord		Max	Coord		Gap	Gap		Hold	Hold	
50th %ile Green (s)	0.0	74.3		28.5	107.3		13.7	13.7		13.7	13.7	
50th %ile Term Code	Skip	Coord		Hold	Coord		Gap	Gap		Hold	Hold	
30th %ile Green (s)	0.0	76.8		28.5	109.8		11.2	11.2		11.2	11.2	
30th %ile Term Code	Skip	Coord		Hold	Coord		Gap	Gap		Hold	Hold	
10th %ile Green (s)	0.0	80.0		28.5	113.0		8.0	8.0		8.0	8.0	
10th %ile Term Code	Skip	Coord		Hold	Coord		Min	Min		Hold	Hold	
Queue Length 50th (ft)	3	223	0	186	14		76	2			21	
Queue Length 95th (ft)	m4	384	m0	m182	m80		128	80			32	
Internal Link Dist (ft)		1261			1246			941			132	
Turn Bay Length (ft)	125		125	75			110					
Base Capacity (vph)	74	1762	1432	362	2563		201	464			80	
Starvation Cap Reductn	0	0	0	0	0		0	0			0	
Spillback Cap Reductn	0	0	0	0	0		0	0			0	
Storage Cap Reductn	0	0	0	0	0		0	0			0	
Reduced v/c Ratio	0.04	0.77	0.09	0.70	0.69		0.46	0.63			0.35	

Intersection Summary

Area Type: CBD
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 120 (92%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.77
Intersection Signal Delay: 13.9 Intersection LOS: B
Intersection Capacity Utilization 82.2% ICU Level of Service E
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Kitsap Way & Private Drwy 1

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	16	10	12	12	10	11	12	12	10	10
Storage Length (ft)	0		0	45		45	150		115	110		175
Storage Lanes	1		1	1		1	1		1	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	40	50	40	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	1580	1676	1602	1489	1693	1428	1486	3067	1425	1593	2961	1330
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1574	1676	1549	1471	1693	1405	1486	3067	1392	1592	2961	1330
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			152			73			33			68
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		548			510			1326			859	
Travel Time (s)		10.7			9.9			30.1			19.5	
Volume (vph)	103	31	141	85	45	68	193	1270	61	60	1565	123
Confl. Peds. (#/hr)	2		7	7		2			1	1		
Confl. Bikes (#/hr)			7									
Peak Hour Factor	0.85	0.85	0.85	0.93	0.93	0.93	0.94	0.94	0.94	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	2	0	2	2	0	2	0	2	0	0	2	0
Lane Group Flow (vph)	121	36	166	91	48	73	205	1351	65	67	1739	137
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6			2			4			8
Detector Phases	1	6	6	5	2	2	7	4	4	3	8	8
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	11.0	26.0	26.0	11.0	26.0	26.0	10.5	23.5	23.5	10.5	23.5	23.5
Total Split (s)	13.0	27.0	27.0	12.0	26.0	26.0	20.0	78.7	78.7	12.3	71.0	71.0
Total Split (%)	10.0%	20.8%	20.8%	9.2%	20.0%	20.0%	15.4%	60.5%	60.5%	9.5%	54.6%	54.6%
Maximum Green (s)	8.0	22.0	22.0	7.0	21.0	21.0	15.5	74.2	74.2	7.8	66.5	66.5
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.0	1.0	1.0	1.0	1.0	1.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	5.0	3.0	3.0	4.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Time To Reduce (s)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Recall Mode	None	None	None	None	None	None	Max	C-Max	C-Max	Max	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		14.0	14.0		14.0	14.0		12.0	12.0		12.0	12.0
Pedestrian Calls (#/hr)		9	9		9	9		1	1		0	0
Act Effct Green (s)	11.0	12.5	12.5	8.0	11.7	11.7	16.0	74.7	74.7	18.8	77.5	77.5
Actuated g/C Ratio	0.08	0.10	0.10	0.06	0.09	0.09	0.12	0.57	0.57	0.14	0.60	0.60
v/c Ratio	0.91	0.22	0.58	0.99	0.31	0.38	1.12	0.77	0.08	0.29	0.99	0.17
Control Delay	115.5	54.8	18.3	151.4	58.5	16.6	126.9	8.2	1.4	56.1	44.6	7.4

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	115.5	54.8	18.3	151.4	58.5	16.6	126.9	8.2	1.4	56.1	44.6	7.4
LOS	F	D	B	F	E	B	F	A	A	E	D	A
Approach Delay		58.8			83.9			23.0			42.4	
Approach LOS		E			F			C			D	
90th %ile Green (s)	8.0	22.0	22.0	7.0	21.0	21.0	15.5	74.2	74.2	7.8	66.5	66.5
90th %ile Term Code	Max	Hold	Hold	Max	Ped	Ped	MaxR	Coord	Coord	MaxR	Coord	Coord
70th %ile Green (s)	8.0	11.3	11.3	7.0	10.3	10.3	15.5	74.2	74.2	18.5	77.2	77.2
70th %ile Term Code	Max	Hold	Hold	Max	Gap	Gap	MaxR	Coord	Coord	MaxR	Coord	Coord
50th %ile Green (s)	8.0	9.9	9.9	7.0	8.9	8.9	15.5	74.2	74.2	19.9	78.6	78.6
50th %ile Term Code	Max	Hold	Hold	Max	Gap	Gap	MaxR	Coord	Coord	MaxR	Coord	Coord
30th %ile Green (s)	8.0	8.5	8.5	7.0	7.5	7.5	15.5	74.2	74.2	21.3	80.0	80.0
30th %ile Term Code	Max	Hold	Hold	Max	Gap	Gap	MaxR	Coord	Coord	MaxR	Coord	Coord
10th %ile Green (s)	18.0	6.0	6.0	7.0	0.0	0.0	15.5	74.2	74.2	23.8	82.5	82.5
10th %ile Term Code	Hold	Min	Min	Max	Skip	Skip	MaxR	Coord	Coord	MaxR	Coord	Coord
Queue Length 50th (ft)	~116	29	11	78	39	0	~195	83	0	50	692	23
Queue Length 95th (ft)	#226	55	62	#195	73	44	m#311	135	m1	#128	#1038	66
Internal Link Dist (ft)		468			430			1246			779	
Turn Bay Length (ft)				45		45	150		115	110		175
Base Capacity (vph)	133	297	399	92	287	298	183	1762	814	230	1764	820
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.91	0.12	0.42	0.99	0.17	0.24	1.12	0.77	0.08	0.29	0.99	0.17

Intersection Summary

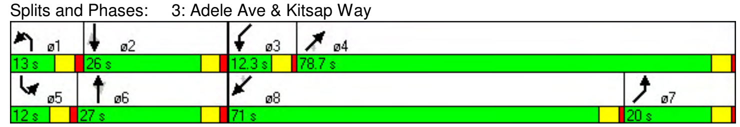
Area Type: CBD
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 0 (0%), Referenced to phase 4:NET and 8:SWT, Start of Green, Master Intersection
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.12
Intersection Signal Delay: 38.2 Intersection LOS: D
Intersection Capacity Utilization 83.9% ICU Level of Service E
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Adele Ave & Kitsap Way



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	8	12	12	8	12
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	0	1795	0	0	1793	0	0	1520	0	0	1489	0
Flt Permitted		0.960			0.979			0.997			0.997	
Satd. Flow (perm)	0	1795	0	0	1793	0	0	1520	0	0	1489	0
Link Speed (mph)		20			15			25			25	
Link Distance (ft)		1297			282			1349			350	
Travel Time (s)		44.2			12.8			36.8			9.5	
Volume (vph)	78	3	11	7	5	4	4	68	0	6	49	53
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	8%	8%	8%	3%	3%	3%
Lane Group Flow (vph)	0	109	0	0	19	0	0	85	0	0	127	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 23.7% ICU Level of Service A

Analysis Period (min) 15

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	78	3	11	7	5	4	4	68	0	6	49	53
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	92	4	13	8	6	5	5	80	0	7	58	62
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)											350	
pX, platoon unblocked												
vC, conflicting volume	200	192	89	207	224	80	120			80		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	200	192	89	207	224	80	120			80		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	88	99	99	99	99	100	100			100		
cM capacity (veh/h)	750	701	975	737	673	986	1431			1512		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	108	19	85	127
Volume Left	92	8	5	7
Volume Right	13	5	0	62
cSH	769	763	1431	1512
Volume to Capacity	0.14	0.02	0.00	0.00
Queue Length 95th (ft)	12	2	0	0
Control Delay (s)	10.4	9.8	0.4	0.4
Lane LOS	B	A	A	A
Approach Delay (s)	10.4	9.8	0.4	0.4
Approach LOS	B	A		

Intersection Summary

Average Delay	4.2		
Intersection Capacity Utilization	23.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	12	12	12	12	12	12	8	12	12	8	12
Grade (%)		0%			0%			-1%			0%	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	0	1786	0	0	1709	0	0	1519	0	0	1500	0
Flt Permitted		0.959			0.972			0.995			0.998	
Satd. Flow (perm)	0	1786	0	0	1709	0	0	1519	0	0	1500	0
Link Speed (mph)		20			15			25			25	
Link Distance (ft)		467			299			863			1349	
Travel Time (s)		15.9			13.6			23.5			36.8	
Volume (vph)	24	0	4	6	0	4	3	32	0	3	30	26
Confl. Peds. (#/hr)							2					2
Confl. Bikes (#/hr)			1									
Peak Hour Factor	0.69	0.69	0.69	0.83	0.83	0.83	0.84	0.84	0.84	0.86	0.86	0.86
Heavy Vehicles (%)	0%	2%	0%	2%	2%	2%	8%	8%	2%	2%	3%	3%
Bus Blockages (#/hr)	1	0	0	0	0	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	41	0	0	12	0	0	42	0	0	68	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 14.6%	ICU Level of Service A
Analysis Period (min) 15	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			-1%			0%	
Volume (veh/h)	24	0	4	6	0	4	3	32	0	3	30	26
Peak Hour Factor	0.69	0.69	0.69	0.83	0.83	0.83	0.84	0.84	0.84	0.86	0.86	0.86
Hourly flow rate (vph)	35	0	6	7	0	5	4	38	0	3	35	30
Pedestrians		2										
Lane Width (ft)		12.0										
Walking Speed (ft/s)		4.0										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	109	104	52	108	119	38	67			38		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	109	104	52	108	119	38	67			38		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	96	100	99	99	100	100	100			100		
cM capacity (veh/h)	865	781	1020	862	766	1034	1494			1572		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	41	12	42	69
Volume Left	35	7	4	3
Volume Right	6	5	0	30
cSH	884	923	1494	1572
Volume to Capacity	0.05	0.01	0.00	0.00
Queue Length 95th (ft)	4	1	0	0
Control Delay (s)	9.3	9.0	0.7	0.4
Lane LOS	A	A	A	A
Approach Delay (s)	9.3	9.0	0.7	0.4
Approach LOS	A	A		

Intersection Summary			
Average Delay	3.3		
Intersection Capacity Utilization	14.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	8	12
Grade (%)		4%	-1%		-5%	
Turning Speed (mph)	15			9	15	9
Satd. Flow (prot)	0	1733	1592	0	1478	0
Flt Permitted		0.996			0.954	
Satd. Flow (perm)	0	1733	1592	0	1478	0
Link Speed (mph)		20	25		25	
Link Distance (ft)		248	299		863	
Travel Time (s)		8.5	8.2		23.5	
Volume (vph)	2	21	20	33	43	2
Confl. Peds. (#/hr)	1			1	2	
Peak Hour Factor	0.66	0.66	0.93	0.93	0.90	0.90
Heavy Vehicles (%)	7%	7%	10%	10%	8%	8%
Bus Blockages (#/hr)	1	0	0	1	1	1
Lane Group Flow (vph)	0	35	57	0	50	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 13.7% ICU Level of Service A
Analysis Period (min) 15

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		4%	-1%		-5%	
Volume (veh/h)	2	21	20	33	43	2
Peak Hour Factor	0.66	0.66	0.93	0.93	0.90	0.90
Hourly flow rate (vph)	3	32	22	35	48	2
Pedestrians			2		1	
Lane Width (ft)			12.0		8.0	
Walking Speed (ft/s)			4.0		4.0	
Percent Blockage			0		0	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	58				80	40
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	58				80	40
tC, single (s)	4.2				6.5	6.3
tC, 2 stage (s)						
tF (s)	2.3				3.6	3.4
p0 queue free %	100				95	100
cM capacity (veh/h)	1514				904	1014

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	35	57	50
Volume Left	3	0	48
Volume Right	0	35	2
cSH	1514	1700	908
Volume to Capacity	0.00	0.03	0.06
Queue Length 95th (ft)	0	0	4
Control Delay (s)	0.7	0.0	9.2
Lane LOS	A		A
Approach Delay (s)	0.7	0.0	9.2
Approach LOS			A

Intersection Summary

Average Delay	3.4		
Intersection Capacity Utilization	13.7%	ICU Level of Service	A
Analysis Period (min)	15		

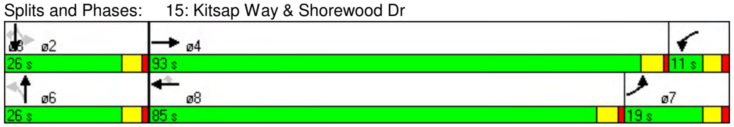
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	16	12	11	10	11	10	10	12	14	9
Grade (%)		1%			0%			-5%			2%	
Storage Length (ft)	150		75	225		100	60		0	0		50
Storage Lanes	1		1	1		1	1		0	0		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	1569	3022	1591	1577	3049	1317	1504	1266	0	0	1689	1270
Flt Permitted	0.950			0.950			0.629				0.720	
Satd. Flow (perm)	1569	3022	1556	1572	3049	1317	996	1266	0	0	1224	1270
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			2			44		18				119
Link Speed (mph)		30			30			20			25	
Link Distance (ft)		394			844			418			541	
Travel Time (s)		9.0			19.2			14.3			14.8	
Volume (vph)	95	1300	13	15	1471	92	16	2	14	69	3	89
Confl. Peds. (#/hr)			5	5					23	23		
Confl. Bikes (#/hr)									3			
Peak Hour Factor	0.98	0.98	0.98	0.93	0.93	0.93	0.78	0.78	0.78	0.75	0.75	0.75
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	7%	7%	7%	2%	2%	2%
Bus Blockages (#/hr)	0	2	0	0	0	0	0	0	2	2	0	0
Lane Group Flow (vph)	97	1327	13	16	1582	99	21	21	0	0	96	119
Turn Type	Prot		Free	Prot		Perm	Perm			Perm		Perm
Protected Phases	7	4		3	8			6			2	
Permitted Phases			Free			8	6			2		2
Detector Phases	7	4		3	8	8	6	6		2	2	2
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	11.0	20.0		11.0	20.0	20.0	26.0	26.0		11.0	11.0	11.0
Total Split (s)	19.0	93.0	0.0	11.0	85.0	85.0	26.0	26.0	0.0	26.0	26.0	26.0
Total Split (%)	14.6%	71.5%	0.0%	8.5%	65.4%	65.4%	20.0%	20.0%	0.0%	20.0%	20.0%	20.0%
Maximum Green (s)	14.0	88.0		6.0	80.0	80.0	21.0	21.0		21.0	21.0	21.0
Yellow Time (s)	3.5	4.0		3.5	4.0	4.0	3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.5	1.0		1.5	1.0	1.0	1.5	1.5		1.5	1.5	1.5
Lead/Lag	Lag	Lead		Lag	Lead	Lead						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.5		3.0	3.5	3.5	3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Time To Reduce (s)	20.0	20.0		20.0	20.0	20.0	20.0	20.0		20.0	20.0	20.0
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None		None	None	None
Walk Time (s)		7.0			7.0	7.0	7.0	7.0				
Flash Dont Walk (s)		8.0			8.0	8.0	14.0	14.0				
Pedestrian Calls (#/hr)		5			5	5	23	23				
Act Effct Green (s)	13.1	99.8	130.0	7.0	87.1	87.1	17.8	17.8			17.8	17.8
Actuated g/C Ratio	0.10	0.77	1.00	0.05	0.67	0.67	0.14	0.14			0.14	0.14
v/c Ratio	0.61	0.57	0.01	0.19	0.77	0.11	0.15	0.11			0.57	0.43

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	65.4	2.3	0.0	67.1	13.6	3.2	49.6	22.3			65.0	13.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay	65.4	2.3	0.0	67.1	13.6	3.2	49.6	22.3			65.0	13.1
LOS	E	A	A	E	B	A	D	C			E	B
Approach Delay		6.6			13.5			35.9			36.3	
Approach LOS		A			B			D			D	
90th %ile Green (s)	14.0	88.0		6.0	80.0	80.0	21.0	21.0		21.0	21.0	21.0
90th %ile Term Code	Max	Coord		Max	Coord	Coord	Ped	Ped		Max	Max	Max
70th %ile Green (s)	14.0	88.0		6.0	80.0	80.0	21.0	21.0		21.0	21.0	21.0
70th %ile Term Code	Max	Coord		Max	Coord	Coord	Ped	Ped		Hold	Hold	Hold
50th %ile Green (s)	13.4	99.0		0.0	80.6	80.6	21.0	21.0		21.0	21.0	21.0
50th %ile Term Code	Gap	Coord		Skip	Coord	Coord	Ped	Ped		Hold	Hold	Hold
30th %ile Green (s)	11.2	107.6		0.0	91.4	91.4	12.4	12.4		12.4	12.4	12.4
30th %ile Term Code	Gap	Coord		Skip	Coord	Coord	Hold	Hold		Gap	Gap	Gap
10th %ile Green (s)	8.0	111.6		0.0	98.6	98.6	8.4	8.4		8.4	8.4	8.4
10th %ile Term Code	Gap	Coord		Skip	Coord	Coord	Hold	Hold		Gap	Gap	Gap
Queue Length 50th (ft)	84	31	0	14	348	18	15	2			74	0
Queue Length 95th (ft)	146	56	m0	m24	494	m21	36	22			108	30
Internal Link Dist (ft)		314			764			338			461	
Turn Bay Length (ft)	150		75	225		100	60					50
Base Capacity (vph)	181	2321	1556	85	2043	897	169	229			207	314
Starvation Cap Reductn	0	17	0	0	0	0	0	0			0	0
Spillback Cap Reductn	0	0	0	0	3	0	0	0			0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0			0	0
Reduced v/c Ratio	0.54	0.58	0.01	0.19	0.78	0.11	0.12	0.09			0.46	0.38

Intersection Summary

Area Type: CBD
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 55 (42%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.77
Intersection Signal Delay: 12.3 Intersection LOS: B
Intersection Capacity Utilization 74.0% ICU Level of Service D
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 15: Kitsap Way & Shorewood Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	11	12	12	12	12	12	12
Grade (%)		0%			-1%			-1%			0%	
Storage Length (ft)	115		0	0		0	0		115	0		0
Storage Lanes	1		0	0		1	0		1	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50			50	50	50	50	50			
Trailing Detector (ft)	0	0			0	0	0	0	0			
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	1577	3049	0	0	3035	1358	0	1578	1405	0	0	0
Flt Permitted	0.950							0.955				
Satd. Flow (perm)	1571	3049	0	0	3035	1328	0	1578	1405	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						598			141			
Link Speed (mph)		30			30			35			50	
Link Distance (ft)		404			394			895			1104	
Travel Time (s)		9.2			9.0			17.4			15.1	
Volume (vph)	136	1289	0	0	785	812	39	3	124	0	0	0
Confl. Peds. (#/hr)	4					4						
Peak Hour Factor	0.97	0.97	0.92	0.92	0.91	0.91	0.88	0.88	0.88	0.92	0.92	0.92
Heavy Vehicles (%)	3%	3%	2%	2%	4%	4%	4%	4%	4%	2%	2%	2%
Lane Group Flow (vph)	140	1329	0	0	863	892	0	47	141	0	0	0
Turn Type	Prot					Free	Split		Free			
Protected Phases	7	4			8		6	6				
Permitted Phases						Free			Free			
Detector Phases	7	4			8		6	6				
Minimum Initial (s)	6.0	6.0			6.0		6.0	6.0				
Minimum Split (s)	11.0	20.0			24.0		11.0	11.0				
Total Split (s)	38.0	102.0	0.0	0.0	64.0	0.0	28.0	28.0	0.0	0.0	0.0	0.0
Total Split (%)	29.2%	78.5%	0.0%	0.0%	49.2%	0.0%	21.5%	21.5%	0.0%	0.0%	0.0%	0.0%
Maximum Green (s)	33.0	97.0			59.0		23.0	23.0				
Yellow Time (s)	3.5	3.5			3.5		3.5	3.5				
All-Red Time (s)	1.5	1.5			1.5		1.5	1.5				
Lead/Lag	Lead				Lag							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0				
Minimum Gap (s)	3.0	3.0			3.0		3.0	3.0				
Time Before Reduce (s)	6.0	6.0			6.0		6.0	6.0				
Time To Reduce (s)	20.0	20.0			20.0		20.0	20.0				
Recall Mode	None	C-Max			C-Max		None	None				
Walk Time (s)		7.0			7.0							
Flash Dont Walk (s)		8.0			12.0							
Pedestrian Calls (#/hr)		4			4							
Act Effct Green (s)	17.7	114.9			92.3	130.0		10.1	130.0			
Actuated g/C Ratio	0.14	0.88			0.71	1.00		0.08	1.00			
v/c Ratio	0.65	0.49			0.40	0.67		0.38	0.10			
Control Delay	71.0	1.2			5.3	6.8		65.0	0.1			
Queue Delay	0.0	0.3			0.7	0.0		0.0	0.0			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	71.0	1.5			6.0	6.8		65.0	0.1			
LOS	E	A			A	A		E	A			
Approach Delay		8.1			6.4			16.4				
Approach LOS		A			A			B				
90th %ile Green (s)	23.8	107.4			78.6		12.6	12.6				
90th %ile Term Code	Gap	Coord			Coord		Gap	Gap				
70th %ile Green (s)	20.0	109.5			84.5		10.5	10.5				
70th %ile Term Code	Gap	Coord			Coord		Gap	Gap				
50th %ile Green (s)	17.2	111.0			88.8		9.0	9.0				
50th %ile Term Code	Gap	Coord			Coord		Gap	Gap				
30th %ile Green (s)	14.4	112.4			93.0		7.6	7.6				
30th %ile Term Code	Gap	Coord			Coord		Gap	Gap				
10th %ile Green (s)	8.2	125.0			111.8		0.0	0.0				
10th %ile Term Code	Gap	Coord			Coord		Skip	Skip				
Queue Length 50th (ft)	97	15			84	133		38	0			
Queue Length 95th (ft)	m133	22			217	295		76	0			
Internal Link Dist (ft)		324			314			815			1024	
Turn Bay Length (ft)	115								115			
Base Capacity (vph)	412	2694			2156	1328		291	1405			
Starvation Cap Reductn	0	635			871	0		0	0			
Spillback Cap Reductn	0	0			0	0		0	0			
Storage Cap Reductn	0	0			0	0		0	0			
Reduced v/c Ratio	0.34	0.65			0.67	0.67		0.16	0.10			

Intersection Summary

Area Type: CBD

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 104 (80%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.67

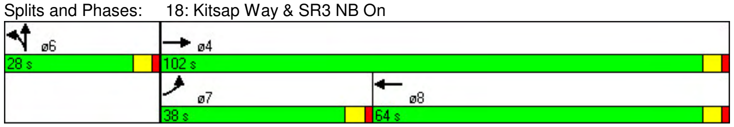
Intersection Signal Delay: 7.7 Intersection LOS: A

Intersection Capacity Utilization 51.3% ICU Level of Service A

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 18: Kitsap Way & SR3 NB On



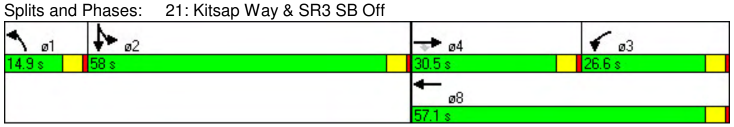
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	12	12	16	12	12
Grade (%)		0%			-1%			1%			-1%	
Storage Length (ft)	0		240	150		0	0		165	0		250
Storage Lanes	0		1	2		0	1		1	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)		50	50	50	50		50		50	50	50	50
Trailing Detector (ft)		0	0	0	0		0		0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	0	3020	1392	3045	3035	0	1539	0	1377	1723	1551	1432
Flt Permitted				0.950			0.950			0.950	0.969	
Satd. Flow (perm)	0	3020	1392	3045	3035	0	1538	0	1360	1717	1547	1414
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			203						366			5
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		681			404			1026			976	
Travel Time (s)		15.5			9.2			20.0			19.0	
Volume (vph)	0	370	183	323	499	0	51	0	337	723	155	7
Confl. Peds. (#/hr)							1		2	2		1
Confl. Bikes (#/hr)									1			1
Peak Hour Factor	0.92	0.90	0.90	0.93	0.93	0.92	0.92	0.92	0.92	0.93	0.93	0.93
Heavy Vehicles (%)	2%	4%	4%	4%	4%	2%	5%	2%	5%	2%	2%	2%
Bus Blockages (#/hr)	0	0	1	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	411	203	347	537	0	55	0	366	489	455	8
Turn Type			Perm	Prot			Prot		Free	Split		Free
Protected Phases		4		3	8		1			2	2	
Permitted Phases			4						Free			Free
Detector Phases		4	4	3	8		1			2	2	
Minimum Initial (s)		6.0	6.0	3.0	6.0		3.0			3.0	3.0	
Minimum Split (s)		19.5	19.5	7.5	19.5		7.5			25.5	25.5	
Total Split (s)	0.0	30.5	30.5	26.6	57.1	0.0	14.9	0.0	0.0	58.0	58.0	0.0
Total Split (%)	0.0%	23.5%	23.5%	20.5%	43.9%	0.0%	11.5%	0.0%	0.0%	44.6%	44.6%	0.0%
Maximum Green (s)		26.0	26.0	22.1	52.6		10.4			53.5	53.5	
Yellow Time (s)		3.5	3.5	3.5	3.5		3.5			3.5	3.5	
All-Red Time (s)		1.0	1.0	1.0	1.0		1.0			1.0	1.0	
Lead/Lag		Lead	Lead	Lag			Lead			Lag	Lag	
Lead-Lag Optimize?		Yes	Yes	Yes			Yes			Yes	Yes	
Vehicle Extension (s)		3.5	3.5	4.0	3.5		3.5			3.5	3.5	
Minimum Gap (s)		3.0	3.0	3.0	3.0		3.0			3.0	3.0	
Time Before Reduce (s)		6.0	6.0	6.0	6.0		6.0			6.0	6.0	
Time To Reduce (s)		20.0	20.0	20.0	20.0		20.0			20.0	20.0	
Recall Mode		C-Max	C-Max	None	C-Max		Min			Ped	Ped	
Walk Time (s)		7.0	7.0	0.0	7.0					7.0	7.0	
Flash Dont Walk (s)		8.0	8.0	0.0	8.0					14.0	14.0	
Pedestrian Calls (#/hr)		0	0	0	0					0	0	
Act Effct Green (s)		38.4	38.4	22.6	65.0		9.8		130.0	43.3	43.3	130.0
Actuated g/C Ratio		0.30	0.30	0.17	0.50		0.08		1.00	0.33	0.33	1.00
v/c Ratio		0.46	0.37	0.66	0.35		0.47		0.27	0.85	0.88	0.01

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay		41.9	7.6	39.1	5.7		71.0		0.5	54.3	59.2	0.0
Queue Delay		0.0	0.0	0.0	0.2		0.0		0.0	0.0	0.0	0.0
Total Delay		41.9	7.6	39.1	5.9		71.0		0.5	54.3	59.2	0.0
LOS		D	A	D	A		E		A	D	E	A
Approach Delay		30.6			18.9						56.2	
Approach LOS		C			B						E	
90th %ile Green (s)		26.0	26.0	22.1	52.6		10.4			53.5	53.5	
90th %ile Term Code		Coord	Coord	Max	Coord		Max			Max	Max	
70th %ile Green (s)		30.1	30.1	22.1	56.7		10.4			49.4	49.4	
70th %ile Term Code		Coord	Coord	Max	Coord		Max			Gap	Gap	
50th %ile Green (s)		36.1	36.1	22.1	62.7		10.4			43.4	43.4	
50th %ile Term Code		Coord	Coord	Hold	Coord		Max			Gap	Gap	
30th %ile Green (s)		43.7	43.7	22.1	70.3		8.8			37.4	37.4	
30th %ile Term Code		Coord	Coord	Hold	Coord		Gap			Gap	Gap	
10th %ile Green (s)		53.4	53.4	22.1	80.0		6.4			30.1	30.1	
10th %ile Term Code		Coord	Coord	Hold	Coord		Gap			Gap	Gap	
Queue Length 50th (ft)		152	0	144	62		45		0	400	377	0
Queue Length 95th (ft)		227	66	190	68		90		0	486	468	0
Internal Link Dist (ft)		601			324			946			896	
Turn Bay Length (ft)			240	150					165			250
Base Capacity (vph)		891	554	529	1516		129		1360	716	644	1414
Starvation Cap Reductn		0	0	0	357		0		0	0	0	0
Spillback Cap Reductn		0	0	0	0		0		0	0	0	0
Storage Cap Reductn		0	0	0	0		0		0	0	0	0
Reduced v/c Ratio		0.46	0.37	0.66	0.46		0.43		0.27	0.68	0.71	0.01

Intersection Summary

Area Type: CBD
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 101 (78%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 32.4 Intersection LOS: C
Intersection Capacity Utilization 65.7% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 21: Kitsap Way & SR3 SB Off



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	11	15	15
Grade (%)		-1%	1%		12%	
Storage Length (ft)	0			110	0	0
Storage Lanes	1			1	1	0
Turning Speed (mph)	15			9	15	9
Satd. Flow (prot)	1601	3095	3064	1371	1605	0
Flt Permitted	0.950				0.977	
Satd. Flow (perm)	1601	3095	3064	1371	1605	0
Link Speed (mph)		30	30		20	
Link Distance (ft)		844	1365		305	
Travel Time (s)		19.2	31.0		10.4	
Volume (vph)	6	1415	1606	4	20	22
Peak Hour Factor	0.92	0.92	0.93	0.93	0.38	0.38
Heavy Vehicles (%)	2%	2%	2%	2%	0%	0%
Lane Group Flow (vph)	7	1538	1727	4	111	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: CBD
Control Type: Unsignalized
Intersection Capacity Utilization 59.3% ICU Level of Service B
Analysis Period (min) 15

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		-1%	1%		12%	
Volume (veh/h)	6	1415	1606	4	20	22
Peak Hour Factor	0.92	0.92	0.93	0.93	0.38	0.38
Hourly flow rate (vph)	7	1538	1727	4	53	58
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					TWLTL	
Median storage veh)					0	
Upstream signal (ft)		844				
pX, platoon unblocked					0.81	
vC, conflicting volume	1731				2509	863
vC1, stage 1 conf vol					1727	
vC2, stage 2 conf vol					782	
vCu, unblocked vol	1731				2630	863
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	98				27	81
cM capacity (veh/h)	360				72	301

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	7	769	769	863	863	4	111
Volume Left	7	0	0	0	0	0	53
Volume Right	0	0	0	0	0	4	58
cSH	360	1700	1700	1700	1700	1700	120
Volume to Capacity	0.02	0.45	0.45	0.51	0.51	0.00	0.92
Queue Length 95th (ft)	1	0	0	0	0	0	146
Control Delay (s)	15.2	0.0	0.0	0.0	0.0	0.0	129.3
Lane LOS	C						F
Approach Delay (s)	0.1			0.0			129.3
Approach LOS							F

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	59.3%	ICU Level of Service	B
Analysis Period (min)	15		

APPENDIX C.2

2010 Without Project Synchro LOS Sheets (Optimized Network)

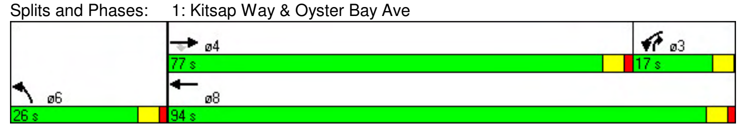
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	10	9
Grade (%)	0%			-3%	-1%	
Storage Length (ft)		70	115		0	50
Storage Lanes		1	1		1	1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Turning Speed (mph)		9	15		15	9
Satd. Flow (prot)	3067	1425	1585	3065	1411	1208
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3067	1296	1571	3065	1411	1208
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		15				145
Link Speed (mph)	35			35	25	
Link Distance (ft)	1365			1341	350	
Travel Time (s)	26.6			26.1	9.5	
Volume (vph)	1464	39	77	1670	50	109
Confl. Peds. (#/hr)		18	18			1
Peak Hour Factor	0.97	0.97	0.95	0.95	0.75	0.75
Heavy Vehicles (%)	2%	2%	4%	4%	8%	8%
Bus Blockages (#/hr)	2	0	0	0	0	2
Lane Group Flow (vph)	1509	40	81	1758	67	145
Turn Type		Perm	Prot			Over
Protected Phases	4		3	8	6	3
Permitted Phases		4				
Detector Phases	4	4	3	8	6	3
Minimum Initial (s)	6.0	6.0	4.0	6.0	6.0	4.0
Minimum Split (s)	20.0	20.0	8.0	22.0	26.0	8.0
Total Split (s)	77.0	77.0	17.0	94.0	26.0	17.0
Total Split (%)	64.2%	64.2%	14.2%	78.3%	21.7%	14.2%
Maximum Green (s)	72.0	72.0	13.0	89.0	21.0	13.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	0.5	1.5	1.5	0.5
Lead/Lag	Lead	Lead	Lag			Lag
Lead-Lag Optimize?	Yes	Yes	Yes			Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	6.0	6.0	0.0	6.0	6.0	0.0
Time To Reduce (s)	20.0	20.0	0.0	20.0	20.0	0.0
Recall Mode	C-Max	C-Max	None	C-Max	None	None
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	8.0	8.0		10.0	14.0	
Pedestrian Calls (#/hr)	18	18		18	1	
Act Effct Green (s)	84.3	84.3	13.0	102.1	12.9	13.0
Actuated g/C Ratio	0.70	0.70	0.11	0.85	0.11	0.11
v/c Ratio	0.70	0.04	0.47	0.67	0.44	0.56
Control Delay	7.9	1.5	52.3	6.7	57.6	16.8

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.9	1.5	52.3	6.7	57.6	16.8
LOS	A	A	D	A	E	B
Approach Delay	7.7			8.7	29.7	
Approach LOS	A			A	C	
90th %ile Green (s)	72.0	72.0	13.0	89.0	21.0	13.0
90th %ile Term Code	Coord	Coord	Max	Coord	Ped	Max
70th %ile Green (s)	80.3	80.3	13.0	97.3	12.7	13.0
70th %ile Term Code	Coord	Coord	Max	Coord	Gap	Max
50th %ile Green (s)	82.2	82.2	13.0	99.2	10.8	13.0
50th %ile Term Code	Coord	Coord	Hold	Coord	Gap	Hold
30th %ile Green (s)	84.2	84.2	13.0	101.2	8.8	13.0
30th %ile Term Code	Coord	Coord	Hold	Coord	Gap	Hold
10th %ile Green (s)	98.0	98.0	13.0	115.0	0.0	13.0
10th %ile Term Code	Coord	Coord	Hold	Coord	Skip	Hold
Queue Length 50th (ft)	181	0	56	282	50	0
Queue Length 95th (ft)	498	m2	m79	301	73	33
Internal Link Dist (ft)	1285			1261	270	
Turn Bay Length (ft)		70	115			50
Base Capacity (vph)	2156	915	172	2609	259	260
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.04	0.47	0.67	0.26	0.56

Intersection Summary

Area Type: CBD
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 103 (86%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.70
Intersection Signal Delay: 9.5 Intersection LOS: A
Intersection Capacity Utilization 65.1% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Kitsap Way & Oyster Bay Ave



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	13	12	11	12	13	13	12	12	16	12
Grade (%)		1%			-4%			-4%			0%	
Storage Length (ft)	125		125	75		0	110		0	0		0
Storage Lanes	1		1	1		0	1		0	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	1585	3051	1465	1624	3137	0	1679	1504	0	0	1750	0
Flt Permitted	0.950			0.950			0.798				0.311	
Satd. Flow (perm)	1584	3051	1432	1620	3137	0	1410	1504	0	0	563	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			33		1			311			2	
Link Speed (mph)		35			35			35			15	
Link Distance (ft)		1341			1326			1021			212	
Travel Time (s)		26.1			25.8			19.9			9.6	
Volume (vph)	3	1411	135	243	1688	7	88	2	274	12	4	1
Confl. Peds. (#/hr)	2		5	5		2						
Confl. Bikes (#/hr)			1			5						
Peak Hour Factor	0.97	0.97	0.97	0.89	0.89	0.89	0.88	0.88	0.88	0.57	0.57	0.57
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	6%	6%	6%
Bus Blockages (#/hr)	0	2	0	0	0	0	0	0	2	2	0	0
Lane Group Flow (vph)	3	1455	139	273	1905	0	100	313	0	0	30	0
Turn Type	Prot		Free	Prot			Perm			Perm		
Protected Phases	7	4		3	8			6			2	
Permitted Phases			Free				6			2		
Detector Phases	7	4		3	8		6	6		2	2	
Minimum Initial (s)	5.0	8.0		8.0	8.0		8.0	8.0		6.0	6.0	
Minimum Split (s)	9.5	19.5		12.5	19.5		12.5	12.5		22.5	22.5	
Total Split (s)	9.5	68.3	0.0	29.2	88.0	0.0	22.5	22.5	0.0	22.5	22.5	0.0
Total Split (%)	7.9%	56.9%	0.0%	24.3%	73.3%	0.0%	18.8%	18.8%	0.0%	18.8%	18.8%	0.0%
Maximum Green (s)	5.0	63.8		24.7	83.5		18.0	18.0		18.0	18.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lead/Lag	Lead	Lead		Lag	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Time To Reduce (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)		7.0			7.0		6.0	6.0		7.0	7.0	
Flash Dont Walk (s)		8.0			8.0		0.0	0.0		11.0	11.0	
Pedestrian Calls (#/hr)		0			0		0	0		0	0	
Act Effct Green (s)	6.1	68.9	120.0	25.2	96.2		13.9	13.9			13.9	
Actuated g/C Ratio	0.05	0.57	1.00	0.21	0.80		0.12	0.12			0.12	
v/c Ratio	0.04	0.83	0.10	0.80	0.76		0.61	0.70			0.45	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	60.7	20.0	0.1	33.0	4.4		65.9	14.2			66.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	
Total Delay	60.7	20.0	0.1	33.0	4.4		65.9	14.2			66.6	
LOS	E	B	A	C	A		E	B			E	
Approach Delay		18.3			8.0			26.7			66.6	
Approach LOS		B			A			C			E	
90th %ile Green (s)	5.0	63.8		24.7	83.5		18.0	18.0		18.0	18.0	
90th %ile Term Code	Max	Coord		Max	Coord		Max	Max		Max	Max	
70th %ile Green (s)	0.0	65.8		24.7	95.0		16.0	16.0		16.0	16.0	
70th %ile Term Code	Skip	Coord		Max	Coord		Gap	Gap		Hold	Hold	
50th %ile Green (s)	0.0	68.2		24.7	97.4		13.6	13.6		13.6	13.6	
50th %ile Term Code	Skip	Coord		Max	Coord		Gap	Gap		Hold	Hold	
30th %ile Green (s)	0.0	70.6		24.7	99.8		11.2	11.2		11.2	11.2	
30th %ile Term Code	Skip	Coord		Hold	Coord		Gap	Gap		Hold	Hold	
10th %ile Green (s)	0.0	73.8		24.7	103.0		8.0	8.0		8.0	8.0	
10th %ile Term Code	Skip	Coord		Hold	Coord		Min	Min		Hold	Hold	
Queue Length 50th (ft)	2	212	0	187	10		75	1			20	
Queue Length 95th (ft)	m3	366	m0	m170	m86		126	78			31	
Internal Link Dist (ft)		1261			1246			941			132	
Turn Bay Length (ft)	125		125	75			110					
Base Capacity (vph)	80	1753	1432	341	2516		217	495			88	
Starvation Cap Reductn	0	0	0	0	0		0	0			0	
Spillback Cap Reductn	0	0	0	0	0		0	0			0	
Storage Cap Reductn	0	0	0	0	0		0	0			0	
Reduced v/c Ratio	0.04	0.83	0.10	0.80	0.76		0.46	0.63			0.34	

Intersection Summary

Area Type: CBD
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 110 (92%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 14.2 Intersection LOS: B
Intersection Capacity Utilization 87.3% ICU Level of Service E
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Kitsap Way & Private Drwy 1

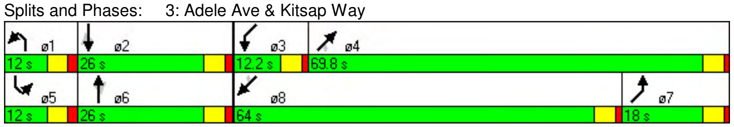
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	16	10	12	12	10	11	12	12	10	10
Storage Length (ft)	0		0	45		45	150		115	110		175
Storage Lanes	1		1	1		1	1		1	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	40	50	40	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	1580	1676	1602	1489	1693	1428	1486	3067	1425	1593	2961	1330
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1575	1676	1551	1472	1693	1406	1486	3067	1392	1592	2961	1330
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			151			78			34			72
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		548			510			1326			859	
Travel Time (s)		10.7			9.9			25.8			16.7	
Volume (vph)	110	33	151	91	48	73	206	1359	65	64	1674	132
Confl. Peds. (#/hr)	2		7	7		2			1	1		
Confl. Bikes (#/hr)			7									
Peak Hour Factor	0.85	0.85	0.85	0.93	0.93	0.93	0.94	0.94	0.94	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	2	0	2	2	0	2	0	2	0	0	2	0
Lane Group Flow (vph)	129	39	178	98	52	78	219	1446	69	71	1860	147
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6			2			4			8
Detector Phases	1	6	6	5	2	2	7	4	4	3	8	8
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	11.0	26.0	26.0	11.0	26.0	26.0	10.5	23.5	23.5	10.5	23.5	23.5
Total Split (s)	12.0	26.0	26.0	12.0	26.0	26.0	18.0	69.8	69.8	12.2	64.0	64.0
Total Split (%)	10.0%	21.7%	21.7%	10.0%	21.7%	21.7%	15.0%	58.2%	58.2%	10.2%	53.3%	53.3%
Maximum Green (s)	7.0	21.0	21.0	7.0	21.0	21.0	13.5	65.3	65.3	7.7	59.5	59.5
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.0	1.0	1.0	1.0	1.0	1.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	5.0	3.0	3.0	4.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Time To Reduce (s)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Recall Mode	None	None	None	None	None	None	Max	C-Max	C-Max	Max	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		14.0	14.0		14.0	14.0		12.0	12.0		12.0	12.0
Pedestrian Calls (#/hr)		9	9		9	9		1	1		0	0
Act Effct Green (s)	10.2	11.8	11.8	8.0	11.8	11.8	14.0	65.8	65.8	18.4	70.2	70.2
Actuated g/C Ratio	0.08	0.10	0.10	0.07	0.10	0.10	0.12	0.55	0.55	0.15	0.58	0.58
v/c Ratio	0.96	0.24	0.62	0.99	0.31	0.37	1.27	0.86	0.09	0.29	1.07	0.18
Control Delay	124.5	50.8	20.7	144.2	52.9	14.9	176.1	11.0	1.2	51.4	70.2	7.5

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	124.5	50.8	20.7	144.2	52.9	14.9	176.1	11.0	1.2	51.4	70.2	7.5
LOS	F	D	C	F	D	B	F	B	A	D	E	A
Approach Delay		62.8			79.1			31.5			65.1	
Approach LOS		E			E			C			E	
90th %ile Green (s)	7.0	21.0	21.0	7.0	21.0	21.0	13.5	65.3	65.3	7.7	59.5	59.5
90th %ile Term Code	Max	Ped	Ped	Max	Ped	Ped	MaxR	Coord	Coord	MaxR	Coord	Coord
70th %ile Green (s)	7.0	10.7	10.7	7.0	10.7	10.7	13.5	65.3	65.3	18.0	69.8	69.8
70th %ile Term Code	Max	Gap	Gap	Max	Hold	Hold	MaxR	Coord	Coord	MaxR	Coord	Coord
50th %ile Green (s)	7.0	8.9	8.9	7.0	8.9	8.9	13.5	65.3	65.3	19.8	71.6	71.6
50th %ile Term Code	Max	Hold	Hold	Max	Gap	Gap	MaxR	Coord	Coord	MaxR	Coord	Coord
30th %ile Green (s)	7.0	7.5	7.5	7.0	7.5	7.5	13.5	65.3	65.3	21.2	73.0	73.0
30th %ile Term Code	Max	Hold	Hold	Max	Gap	Gap	MaxR	Coord	Coord	MaxR	Coord	Coord
10th %ile Green (s)	18.0	6.0	6.0	7.0	0.0	0.0	13.5	65.3	65.3	22.7	74.5	74.5
10th %ile Term Code	Hold	Min	Min	Max	Skip	Skip	MaxR	Coord	Coord	MaxR	Coord	Coord
Queue Length 50th (ft)	~123	29	20	77	39	0	~212	77	0	48	~823	23
Queue Length 95th (ft)	#231	54	70	#191	72	43	m#299	130	m1	#125	#1088	68
Internal Link Dist (ft)		468			430			1246			779	
Turn Bay Length (ft)				45		45	150		115	110		175
Base Capacity (vph)	134	307	408	99	310	321	173	1682	779	244	1732	808
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.96	0.13	0.44	0.99	0.17	0.24	1.27	0.86	0.09	0.29	1.07	0.18

Intersection Summary

Area Type: CBD
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 4:NET and 8:SWT, Start of Green, Master Intersection
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.27
Intersection Signal Delay: 52.4 Intersection LOS: D
Intersection Capacity Utilization 88.4% ICU Level of Service E
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Adele Ave & Kitsap Way



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	8	12	12	8	12
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	0	1793	0	0	1793	0	0	1520	0	0	1487	0
Flt Permitted		0.959			0.979			0.997			0.997	
Satd. Flow (perm)	0	1793	0	0	1793	0	0	1520	0	0	1487	0
Link Speed (mph)		20			15			25			25	
Link Distance (ft)		1297			282			1349			350	
Travel Time (s)		44.2			12.8			36.8			9.5	
Volume (vph)	83	3	12	7	5	4	4	73	0	6	52	57
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	8%	8%	8%	3%	3%	3%
Lane Group Flow (vph)	0	116	0	0	19	0	0	91	0	0	135	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary		
Area Type:	Other	
Control Type: Unsignalized		
Intersection Capacity Utilization 24.8%		ICU Level of Service A
Analysis Period (min) 15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	83	3	12	7	5	4	4	73	0	6	52	57
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	98	4	14	8	6	5	5	86	0	7	61	67
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)											350	
pX, platoon unblocked												
vC, conflicting volume	212	204	95	220	238	86	128			86		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	212	204	95	220	238	86	128			86		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	87	99	99	99	99	100	100			100		
cM capacity (veh/h)	736	690	968	722	661	978	1421			1504		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	115	19	91	135
Volume Left	98	8	5	7
Volume Right	14	5	0	67
cSH	757	750	1421	1504
Volume to Capacity	0.15	0.03	0.00	0.00
Queue Length 95th (ft)	13	2	0	0
Control Delay (s)	10.6	9.9	0.4	0.4
Lane LOS	B	A	A	A
Approach Delay (s)	10.6	9.9	0.4	0.4
Approach LOS	B	A		

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	24.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	12	12	12	12	12	12	8	12	12	8	12
Grade (%)		0%			0%			-1%			0%	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	0	1789	0	0	1709	0	0	1519	0	0	1499	0
Flt Permitted		0.959			0.972			0.995			0.998	
Satd. Flow (perm)	0	1789	0	0	1709	0	0	1519	0	0	1499	0
Link Speed (mph)		20			15			25			25	
Link Distance (ft)		467			299			863			1349	
Travel Time (s)		15.9			13.6			23.5			36.8	
Volume (vph)	26	0	4	6	0	4	3	34	0	3	32	28
Confl. Peds. (#/hr)							2					2
Confl. Bikes (#/hr)			1									
Peak Hour Factor	0.69	0.69	0.69	0.83	0.83	0.83	0.84	0.84	0.84	0.86	0.86	0.86
Heavy Vehicles (%)	0%	2%	0%	2%	2%	2%	8%	8%	2%	2%	3%	3%
Bus Blockages (#/hr)	1	0	0	0	0	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	44	0	0	12	0	0	44	0	0	73	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 14.9% ICU Level of Service A
Analysis Period (min) 15

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			-1%			0%	
Volume (veh/h)	26	0	4	6	0	4	3	34	0	3	32	28
Peak Hour Factor	0.69	0.69	0.69	0.83	0.83	0.83	0.84	0.84	0.84	0.86	0.86	0.86
Hourly flow rate (vph)	38	0	6	7	0	5	4	40	0	3	37	33
Pedestrians		2										
Lane Width (ft)		12.0										
Walking Speed (ft/s)		4.0										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	115	110	55	114	126	40	72			40		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	115	110	55	114	126	40	72			40		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	96	100	99	99	100	100	100			100		
cM capacity (veh/h)	857	775	1015	854	759	1031	1489			1569		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	43	12	44	73
Volume Left	38	7	4	3
Volume Right	6	5	0	33
cSH	875	917	1489	1569
Volume to Capacity	0.05	0.01	0.00	0.00
Queue Length 95th (ft)	4	1	0	0
Control Delay (s)	9.3	9.0	0.6	0.4
Lane LOS	A	A	A	A
Approach Delay (s)	9.3	9.0	0.6	0.4
Approach LOS	A	A		

Intersection Summary			
Average Delay	3.3		
Intersection Capacity Utilization	14.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	8	12
Grade (%)		4%	-1%		-5%	
Turning Speed (mph)	15			9	15	9
Satd. Flow (prot)	0	1733	1590	0	1478	0
Flt Permitted		0.996			0.954	
Satd. Flow (perm)	0	1733	1590	0	1478	0
Link Speed (mph)		20	25		25	
Link Distance (ft)		248	299		863	
Travel Time (s)		8.5	8.2		23.5	
Volume (vph)	2	22	21	35	46	2
Confl. Peds. (#/hr)	1			1	2	
Peak Hour Factor	0.66	0.66	0.93	0.93	0.90	0.90
Heavy Vehicles (%)	7%	7%	10%	10%	8%	8%
Bus Blockages (#/hr)	1	0	0	1	1	1
Lane Group Flow (vph)	0	36	61	0	53	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 13.7% ICU Level of Service A

Analysis Period (min) 15

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		4%	-1%		-5%	
Volume (veh/h)	2	22	21	35	46	2
Peak Hour Factor	0.66	0.66	0.93	0.93	0.90	0.90
Hourly flow rate (vph)	3	33	23	38	51	2
Pedestrians			2		1	
Lane Width (ft)			12.0		8.0	
Walking Speed (ft/s)			4.0		4.0	
Percent Blockage			0		0	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	61				84	42
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	61				84	42
tC, single (s)	4.2				6.5	6.3
tC, 2 stage (s)						
tF (s)	2.3				3.6	3.4
p0 queue free %	100				94	100
cM capacity (veh/h)	1510				900	1011

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	36	60	53
Volume Left	3	0	51
Volume Right	0	38	2
cSH	1510	1700	904
Volume to Capacity	0.00	0.04	0.06
Queue Length 95th (ft)	0	0	5
Control Delay (s)	0.6	0.0	9.2
Lane LOS	A		A
Approach Delay (s)	0.6	0.0	9.2
Approach LOS			A

Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	13.7%	ICU Level of Service	A
Analysis Period (min)	15		

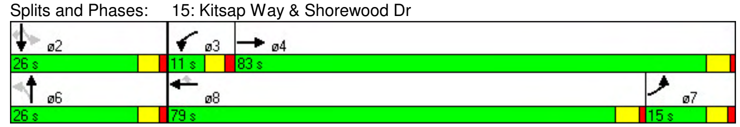
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	16	12	11	10	11	10	10	12	14	9
Grade (%)		1%			0%			-5%			2%	
Storage Length (ft)	150		75	225		100	60		0	0		50
Storage Lanes	1		1	1		1	1		0	0		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	1569	3022	1591	1577	3049	1317	1504	1268	0	0	1689	1270
Flt Permitted	0.950			0.950			0.629				0.718	
Satd. Flow (perm)	1569	3022	1556	1573	3049	1317	996	1268	0	0	1224	1270
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			2			47		19				127
Link Speed (mph)		35			35			20			25	
Link Distance (ft)		394			844			418			541	
Travel Time (s)		7.7			16.4			14.3			14.8	
Volume (vph)	102	1391	14	16	1574	98	17	2	15	74	3	95
Confl. Peds. (#/hr)			5	5					23	23		
Confl. Bikes (#/hr)									3			
Peak Hour Factor	0.98	0.98	0.98	0.93	0.93	0.93	0.78	0.78	0.78	0.75	0.75	0.75
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	7%	7%	7%	2%	2%	2%
Bus Blockages (#/hr)	0	2	0	0	0	0	0	0	2	2	0	0
Lane Group Flow (vph)	104	1419	14	17	1692	105	22	22	0	0	103	127
Turn Type	Prot		Free	Prot		Perm	Perm			Perm		Perm
Protected Phases	7	4		3	8			6			2	
Permitted Phases			Free			8	6			2		2
Detector Phases	7	4		3	8	8	6	6		2	2	2
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	11.0	20.0		11.0	20.0	20.0	26.0	26.0		11.0	11.0	11.0
Total Split (s)	15.0	83.0	0.0	11.0	79.0	79.0	26.0	26.0	0.0	26.0	26.0	26.0
Total Split (%)	12.5%	69.2%	0.0%	9.2%	65.8%	65.8%	21.7%	21.7%	0.0%	21.7%	21.7%	21.7%
Maximum Green (s)	10.0	78.0		6.0	74.0	74.0	21.0	21.0		21.0	21.0	21.0
Yellow Time (s)	3.5	4.0		3.5	4.0	4.0	3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.5	1.0		1.5	1.0	1.0	1.5	1.5		1.5	1.5	1.5
Lead/Lag	Lag	Lag		Lead	Lead	Lead						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.5		3.0	3.5	3.5	3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Time To Reduce (s)	20.0	20.0		20.0	20.0	20.0	20.0	20.0		20.0	20.0	20.0
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None		None	None	None
Walk Time (s)		7.0			7.0	7.0	7.0	7.0				
Flash Dont Walk (s)		8.0			8.0	8.0	14.0	14.0				
Pedestrian Calls (#/hr)		5			5	5	23	23				
Act Effct Green (s)	11.0	89.9	120.0	7.0	79.3	79.3	17.7	17.7			17.7	17.7
Actuated g/C Ratio	0.09	0.75	1.00	0.06	0.66	0.66	0.15	0.15			0.15	0.15
v/c Ratio	0.72	0.63	0.01	0.18	0.84	0.12	0.15	0.11			0.57	0.43

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	67.2	3.0	0.0	56.0	14.6	2.5	44.4	19.6			58.9	11.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay	67.2	3.0	0.0	56.0	14.6	2.5	44.4	19.6			58.9	11.9
LOS	E	A	A	E	B	A	D	B			E	B
Approach Delay		7.3			14.3			32.0			33.0	
Approach LOS		A			B			C			C	
90th %ile Green (s)	10.0	78.0		6.0	74.0	74.0	21.0	21.0		21.0	21.0	21.0
90th %ile Term Code	Max	Coord		Max	Coord	Coord	Ped	Ped		Max	Max	Max
70th %ile Green (s)	10.0	78.0		6.0	74.0	74.0	21.0	21.0		21.0	21.0	21.0
70th %ile Term Code	Max	Coord		Max	Coord	Coord	Ped	Ped		Hold	Hold	Hold
50th %ile Green (s)	10.0	89.0		0.0	74.0	74.0	21.0	21.0		21.0	21.0	21.0
50th %ile Term Code	Max	Coord		Skip	Coord	Coord	Ped	Ped		Hold	Hold	Hold
30th %ile Green (s)	10.0	97.7		0.0	82.7	82.7	12.3	12.3		12.3	12.3	12.3
30th %ile Term Code	Max	Coord		Skip	Coord	Coord	Hold	Hold		Gap	Gap	Gap
10th %ile Green (s)	10.0	101.7		0.0	86.7	86.7	8.3	8.3		8.3	8.3	8.3
10th %ile Term Code	Hold	Coord		Skip	Coord	Coord	Hold	Hold		Gap	Gap	Gap
Queue Length 50th (ft)	83	46	0	13	356	19	14	2			72	0
Queue Length 95th (ft)	#169	77	m0	m19	492	m13	34	20			106	30
Internal Link Dist (ft)		314			764			338			461	
Turn Bay Length (ft)	150		75	225		100	60					50
Base Capacity (vph)	144	2263	1556	92	2015	886	183	248			224	337
Starvation Cap Reductn	0	9	0	0	0	0	0	0			0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0			0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0			0	0
Reduced v/c Ratio	0.72	0.63	0.01	0.18	0.84	0.12	0.12	0.09			0.46	0.38

Intersection Summary

Area Type: CBD
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 52 (43%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.84
Intersection Signal Delay: 12.7 Intersection LOS: B
Intersection Capacity Utilization 77.6% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 15: Kitsap Way & Shorewood Dr



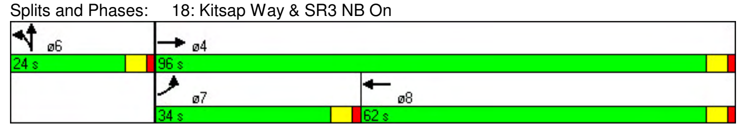
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	11	12	12	12	12	12	12
Grade (%)		0%			-1%			-1%			0%	
Storage Length (ft)	115		0	0		0	0		115	0		0
Storage Lanes	1		0	0		1	0		1	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50			50	50	50	50	50			
Trailing Detector (ft)	0	0			0	0	0	0	0			
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	1577	3049	0	0	3035	1358	0	1578	1405	0	0	0
Flt Permitted	0.950							0.955				
Satd. Flow (perm)	1572	3049	0	0	3035	1328	0	1578	1405	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						648			151			
Link Speed (mph)		35			35			35			50	
Link Distance (ft)		404			394			895			1104	
Travel Time (s)		7.9			7.7			17.4			15.1	
Volume (vph)	145	1379	0	0	840	869	42	3	133	0	0	0
Confl. Peds. (#/hr)	4					4						
Peak Hour Factor	0.97	0.97	0.92	0.92	0.91	0.91	0.88	0.88	0.88	0.92	0.92	0.92
Heavy Vehicles (%)	3%	3%	2%	2%	4%	4%	4%	4%	4%	2%	2%	2%
Lane Group Flow (vph)	149	1422	0	0	923	955	0	51	151	0	0	0
Turn Type	Prot					Free	Split		Free			
Protected Phases	7	4			8		6	6				
Permitted Phases						Free			Free			
Detector Phases	7	4			8		6	6				
Minimum Initial (s)	6.0	6.0			6.0		6.0	6.0				
Minimum Split (s)	11.0	20.0			24.0		11.0	11.0				
Total Split (s)	34.0	96.0	0.0	0.0	62.0	0.0	24.0	24.0	0.0	0.0	0.0	0.0
Total Split (%)	28.3%	80.0%	0.0%	0.0%	51.7%	0.0%	20.0%	20.0%	0.0%	0.0%	0.0%	0.0%
Maximum Green (s)	29.0	91.0			57.0		19.0	19.0				
Yellow Time (s)	3.5	3.5			3.5		3.5	3.5				
All-Red Time (s)	1.5	1.5			1.5		1.5	1.5				
Lead/Lag	Lead				Lag							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0				
Minimum Gap (s)	3.0	3.0			3.0		3.0	3.0				
Time Before Reduce (s)	6.0	6.0			6.0		6.0	6.0				
Time To Reduce (s)	20.0	20.0			20.0		20.0	20.0				
Recall Mode	None	C-Max			C-Max		None	None				
Walk Time (s)		7.0			7.0							
Flash Dont Walk (s)		8.0			12.0							
Pedestrian Calls (#/hr)		4			4							
Act Effct Green (s)	17.0	104.8			83.0	120.0		10.2	120.0			
Actuated g/C Ratio	0.14	0.87			0.69	1.00		0.08	1.00			
v/c Ratio	0.67	0.53			0.44	0.72		0.38	0.11			
Control Delay	74.7	1.0			1.5	8.2		59.1	0.2			
Queue Delay	0.0	0.0			0.4	0.0		0.0	0.0			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	74.7	1.0			1.9	8.2		59.1	0.2			
LOS	E	A			A	A		E	A			
Approach Delay		8.0			5.1			15.0				
Approach LOS		A			A			B				
90th %ile Green (s)	21.8	97.2			70.4		12.8	12.8				
90th %ile Term Code	Gap	Coord			Coord		Gap	Gap				
70th %ile Green (s)	18.4	99.4			76.0		10.6	10.6				
70th %ile Term Code	Gap	Coord			Coord		Gap	Gap				
50th %ile Green (s)	16.0	100.9			79.9		9.1	9.1				
50th %ile Term Code	Gap	Coord			Coord		Gap	Gap				
30th %ile Green (s)	13.6	102.4			83.8		7.6	7.6				
30th %ile Term Code	Gap	Coord			Coord		Gap	Gap				
10th %ile Green (s)	10.1	115.0			99.9		0.0	0.0				
10th %ile Term Code	Gap	Coord			Coord		Skip	Skip				
Queue Length 50th (ft)	121	17			14	388		38	0			
Queue Length 95th (ft)	m159	26			34	241		75	0			
Internal Link Dist (ft)		324			314			815			1024	
Turn Bay Length (ft)	115								115			
Base Capacity (vph)	394	2662			2099	1328		263	1405			
Starvation Cap Reductn	0	148			599	0		0	0			
Spillback Cap Reductn	0	6			0	0		0	2			
Storage Cap Reductn	0	0			0	0		0	0			
Reduced v/c Ratio	0.38	0.57			0.62	0.72		0.19	0.11			

Intersection Summary

Area Type: CBD
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 66 (55%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 50
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.72
Intersection Signal Delay: 6.9 Intersection LOS: A
Intersection Capacity Utilization 54.0% ICU Level of Service A
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 18: Kitsap Way & SR3 NB On



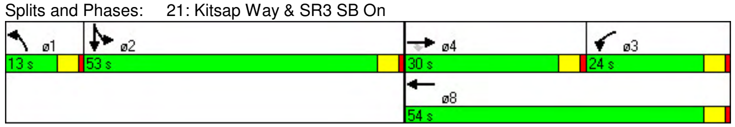
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	12	12	16	12	12
Grade (%)		0%			-1%			1%			-1%	
Storage Length (ft)	0		240	150		0	0		165	0		250
Storage Lanes	0		1	2		0	1		1	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)		50	50	50	50		50		50	50	50	50
Trailing Detector (ft)		0	0	0	0		0		0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	0	3020	1392	3045	3035	0	1539	0	1377	1723	1551	1432
Flt Permitted				0.950			0.950			0.950	0.969	
Satd. Flow (perm)	0	3020	1392	3045	3035	0	1538	0	1360	1717	1548	1414
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			218						352			5
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		681			404			1026			976	
Travel Time (s)		13.3			7.9			20.0			19.0	
Volume (vph)	0	396	196	346	534	0	55	0	361	773	166	7
Confl. Peds. (#/hr)							1		2	2		1
Confl. Bikes (#/hr)									1			1
Peak Hour Factor	0.92	0.90	0.90	0.93	0.93	0.92	0.92	0.92	0.92	0.93	0.93	0.93
Heavy Vehicles (%)	2%	4%	4%	4%	4%	2%	5%	2%	5%	2%	2%	2%
Bus Blockages (#/hr)	0	0	1	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	440	218	372	574	0	60	0	392	523	486	8
Turn Type			Perm	Prot			Prot		Free	Split		Free
Protected Phases		4		3	8		1			2	2	
Permitted Phases			4						Free			Free
Detector Phases		4	4	3	8		1			2	2	
Minimum Initial (s)		6.0	6.0	3.0	6.0		3.0			3.0	3.0	
Minimum Split (s)		19.5	19.5	7.5	19.5		7.5			25.5	25.5	
Total Split (s)	0.0	30.0	30.0	24.0	54.0	0.0	13.0	0.0	0.0	53.0	53.0	0.0
Total Split (%)	0.0%	25.0%	25.0%	20.0%	45.0%	0.0%	10.8%	0.0%	0.0%	44.2%	44.2%	0.0%
Maximum Green (s)		25.5	25.5	19.5	49.5		8.5			48.5	48.5	
Yellow Time (s)		3.5	3.5	3.5	3.5		3.5			3.5	3.5	
All-Red Time (s)		1.0	1.0	1.0	1.0		1.0			1.0	1.0	
Lead/Lag		Lead	Lead	Lag			Lead			Lag	Lag	
Lead-Lag Optimize?		Yes	Yes	Yes			Yes			Yes	Yes	
Vehicle Extension (s)		3.5	3.5	4.0	3.5		3.5			3.5	3.5	
Minimum Gap (s)		3.0	3.0	3.0	3.0		3.0			3.0	3.0	
Time Before Reduce (s)		6.0	6.0	6.0	6.0		6.0			6.0	6.0	
Time To Reduce (s)		20.0	20.0	20.0	20.0		20.0			20.0	20.0	
Recall Mode		C-Max	C-Max	None	C-Max		Min			Ped	Ped	
Walk Time (s)		7.0	7.0	0.0	7.0					7.0	7.0	
Flash Dont Walk (s)		8.0	8.0	0.0	8.0					14.0	14.0	
Pedestrian Calls (#/hr)		0	0	0	0					0	0	
Act Effct Green (s)		33.1	33.1	20.0	57.1		8.6		120.0	42.3	42.3	120.0
Actuated g/C Ratio		0.28	0.28	0.17	0.48		0.07		1.00	0.35	0.35	1.00
v/c Ratio		0.53	0.40	0.73	0.40		0.55		0.29	0.86	0.89	0.01

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay		41.4	7.5	48.0	13.3		72.5		0.5	50.4	55.3	0.0
Queue Delay		0.0	0.0	0.0	0.4		0.0		0.0	0.0	0.0	0.0
Total Delay		41.4	7.5	48.0	13.6		72.5		0.5	50.4	55.3	0.0
LOS		D	A	D	B		E		A	D	E	A
Approach Delay		30.2			27.1						52.3	
Approach LOS		C			C						D	
90th %ile Green (s)		25.5	25.5	19.5	49.5		8.5			48.5	48.5	
90th %ile Term Code		Coord	Coord	Max	Coord		Max			Max	Max	
70th %ile Green (s)		25.5	25.5	19.5	49.5		8.5			48.5	48.5	
70th %ile Term Code		Coord	Coord	Max	Coord		Max			Max	Max	
50th %ile Green (s)		30.5	30.5	19.5	54.5		8.5			43.5	43.5	
50th %ile Term Code		Coord	Coord	Max	Coord		Max			Gap	Gap	
30th %ile Green (s)		35.7	35.7	19.5	59.7		8.5			38.3	38.3	
30th %ile Term Code		Coord	Coord	Hold	Coord		Max			Gap	Gap	
10th %ile Green (s)		46.0	46.0	19.5	70.0		6.4			30.1	30.1	
10th %ile Term Code		Coord	Coord	Hold	Coord		Gap			Gap	Gap	
Queue Length 50th (ft)		156	0	148	131		46		0	384	362	0
Queue Length 95th (ft)		223	66	203	193		#94		0	503	487	0
Internal Link Dist (ft)		601			324			946			896	
Turn Bay Length (ft)			240	150					165			250
Base Capacity (vph)		834	542	508	1445		115		1360	704	633	1414
Starvation Cap Reductn		0	0	0	383		0		0	0	0	0
Spillback Cap Reductn		0	0	0	0		0		0	0	0	0
Storage Cap Reductn		0	0	0	0		0		0	0	0	0
Reduced v/c Ratio		0.53	0.40	0.73	0.54		0.52		0.29	0.74	0.77	0.01

Intersection Summary

Area Type: CBD
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 91 (76%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 33.6 Intersection LOS: C
Intersection Capacity Utilization 69.1% ICU Level of Service C
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 21: Kitsap Way & SR3 SB On



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	11	15	15
Grade (%)		-1%	1%		12%	
Storage Length (ft)	0			110	0	0
Storage Lanes	1			1	1	0
Turning Speed (mph)	15			9	15	9
Satd. Flow (prot)	1601	3095	3064	1371	1603	0
Flt Permitted	0.950				0.977	
Satd. Flow (perm)	1601	3095	3064	1371	1603	0
Link Speed (mph)		35	35		20	
Link Distance (ft)		844	1365		305	
Travel Time (s)		16.4	26.6		10.4	
Volume (vph)	6	1514	1718	4	21	24
Peak Hour Factor	0.92	0.92	0.93	0.93	0.38	0.38
Heavy Vehicles (%)	2%	2%	2%	2%	0%	0%
Lane Group Flow (vph)	7	1646	1847	4	118	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: CBD

Control Type: Unsignalized

Intersection Capacity Utilization 62.8% ICU Level of Service B

Analysis Period (min) 15

2010 Without Project (Optimized)
26: Kitsap Way & Weslon Pl 10/17/2006

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		-1%	1%		12%	
Volume (veh/h)	6	1514	1718	4	21	24
Peak Hour Factor	0.92	0.92	0.93	0.93	0.38	0.38
Hourly flow rate (vph)	7	1646	1847	4	55	63
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					TWLTL	
Median storage veh)					0	
Upstream signal (ft)		844				
pX, platoon unblocked					0.76	
vC, conflicting volume	1852				2683	924
vC1, stage 1 conf vol					1847	
vC2, stage 2 conf vol					836	
vCu, unblocked vol	1852				2899	924
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	98				12	77
cM capacity (veh/h)	323				63	275

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	7	823	823	924	924	4	118
Volume Left	7	0	0	0	0	0	55
Volume Right	0	0	0	0	0	4	63
cSH	323	1700	1700	1700	1700	1700	107
Volume to Capacity	0.02	0.48	0.48	0.54	0.54	0.00	1.11
Queue Length 95th (ft)	2	0	0	0	0	0	186
Control Delay (s)	16.4	0.0	0.0	0.0	0.0	0.0	196.2
Lane LOS	C						F
Approach Delay (s)	0.1			0.0			196.2
Approach LOS							F

Intersection Summary			
Average Delay	6.4		
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		

APPENDIX C.3

2010 Alternative 1 Synchro LOS Sheets (Optimized Network)

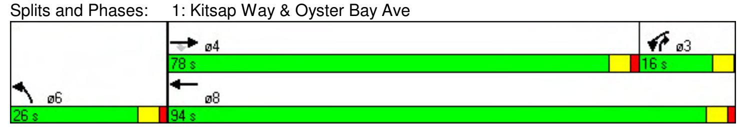
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	10	9
Grade (%)	0%			-3%	-1%	
Storage Length (ft)		70	115		0	50
Storage Lanes		1	1		1	1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Turning Speed (mph)		9	15		15	9
Satd. Flow (prot)	3067	1425	1585	3065	1411	1208
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3067	1296	1573	3065	1411	1208
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		23				135
Link Speed (mph)	35			35	25	
Link Distance (ft)	1383			1341	350	
Travel Time (s)	26.9			26.1	9.5	
Volume (vph)	1532	62	85	1732	56	101
Confl. Peds. (#/hr)		18	18			1
Peak Hour Factor	0.97	0.97	0.95	0.95	0.75	0.75
Heavy Vehicles (%)	2%	2%	4%	4%	8%	8%
Bus Blockages (#/hr)	2	0	0	0	0	2
Lane Group Flow (vph)	1579	64	89	1823	75	135
Turn Type		Perm	Prot			Over
Protected Phases	4		3	8	6	3
Permitted Phases		4				
Detector Phases	4	4	3	8	6	3
Minimum Initial (s)	6.0	6.0	4.0	6.0	6.0	4.0
Minimum Split (s)	20.0	20.0	8.0	22.0	26.0	8.0
Total Split (s)	78.0	78.0	16.0	94.0	26.0	16.0
Total Split (%)	65.0%	65.0%	13.3%	78.3%	21.7%	13.3%
Maximum Green (s)	73.0	73.0	12.0	89.0	21.0	12.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	0.5	1.5	1.5	0.5
Lead/Lag	Lead	Lead	Lag			Lag
Lead-Lag Optimize?	Yes	Yes	Yes			Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	6.0	6.0	0.0	6.0	6.0	0.0
Time To Reduce (s)	20.0	20.0	0.0	20.0	20.0	0.0
Recall Mode	C-Max	C-Max	None	C-Max	None	None
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	8.0	8.0		10.0	14.0	
Pedestrian Calls (#/hr)	18	18		18	1	
Act Effct Green (s)	84.9	84.9	12.0	101.7	13.3	12.0
Actuated g/C Ratio	0.71	0.71	0.10	0.85	0.11	0.10
v/c Ratio	0.73	0.07	0.56	0.70	0.48	0.56
Control Delay	5.4	1.4	64.4	10.5	58.7	17.8

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.4	1.4	64.4	10.5	58.7	17.8
LOS	A	A	E	B	E	B
Approach Delay	5.3			13.0	32.4	
Approach LOS	A			B	C	
90th %ile Green (s)	73.0	73.0	12.0	89.0	21.0	12.0
90th %ile Term Code	Coord	Coord	Max	Coord	Ped	Max
70th %ile Green (s)	80.5	80.5	12.0	96.5	13.5	12.0
70th %ile Term Code	Coord	Coord	Max	Coord	Gap	Max
50th %ile Green (s)	82.6	82.6	12.0	98.6	11.4	12.0
50th %ile Term Code	Coord	Coord	Hold	Coord	Gap	Hold
30th %ile Green (s)	84.6	84.6	12.0	100.6	9.4	12.0
30th %ile Term Code	Coord	Coord	Hold	Coord	Gap	Hold
10th %ile Green (s)	99.0	99.0	12.0	115.0	0.0	12.0
10th %ile Term Code	Coord	Coord	Hold	Coord	Skip	Hold
Queue Length 50th (ft)	74	1	63	477	56	0
Queue Length 95th (ft)	100	m2	m84	497	80	33
Internal Link Dist (ft)	1303			1261	270	
Turn Bay Length (ft)		70	115			50
Base Capacity (vph)	2171	924	159	2599	259	242
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.73	0.07	0.56	0.70	0.29	0.56

Intersection Summary

Area Type: CBD
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 84 (70%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.73
Intersection Signal Delay: 10.7 Intersection LOS: B
Intersection Capacity Utilization 67.7% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Kitsap Way & Oyster Bay Ave



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	13	12	11	12	13	13	12	12	16	12
Grade (%)		1%			-4%			-4%			0%	
Storage Length (ft)	125		125	75		0	110		0	0		0
Storage Lanes	1		1	1		0	1		0	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	1585	3051	1465	1624	3137	0	1679	1504	0	0	1750	0
Flt Permitted	0.950			0.950			0.798				0.311	
Satd. Flow (perm)	1584	3051	1432	1621	3137	0	1410	1504	0	0	563	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			31		1			311			2	
Link Speed (mph)		35			35			35			15	
Link Distance (ft)		1341			1326			1021			212	
Travel Time (s)		26.1			25.8			19.9			9.6	
Volume (vph)	3	1471	135	243	1758	7	88	2	274	12	4	1
Confl. Peds. (#/hr)	2		5	5		2						
Confl. Bikes (#/hr)			1			5						
Peak Hour Factor	0.97	0.97	0.97	0.89	0.89	0.89	0.88	0.88	0.88	0.57	0.57	0.57
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	6%	6%	6%
Bus Blockages (#/hr)	0	2	0	0	0	0	0	0	2	2	0	0
Lane Group Flow (vph)	3	1516	139	273	1983	0	100	313	0	0	30	0
Turn Type	Prot		Free	Prot			Perm			Perm		
Protected Phases	7	4		3	8			6			2	
Permitted Phases			Free				6			2		
Detector Phases	7	4		3	8		6	6		2	2	
Minimum Initial (s)	5.0	8.0		8.0	8.0		8.0	8.0		6.0	6.0	
Minimum Split (s)	9.5	19.5		12.5	19.5		12.5	12.5		22.5	22.5	
Total Split (s)	9.5	69.5	0.0	28.0	88.0	0.0	22.5	22.5	0.0	22.5	22.5	0.0
Total Split (%)	7.9%	57.9%	0.0%	23.3%	73.3%	0.0%	18.8%	18.8%	0.0%	18.8%	18.8%	0.0%
Maximum Green (s)	5.0	65.0		23.5	83.5		18.0	18.0		18.0	18.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lead/Lag	Lead	Lead		Lag	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Time To Reduce (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)		7.0			7.0		6.0	6.0		7.0	7.0	
Flash Dont Walk (s)		8.0			8.0		0.0	0.0		11.0	11.0	
Pedestrian Calls (#/hr)		0			0		0	0		0	0	
Act Effct Green (s)	6.1	70.1	120.0	24.0	96.2		13.9	13.9			13.9	
Actuated g/C Ratio	0.05	0.58	1.00	0.20	0.80		0.12	0.12			0.12	
v/c Ratio	0.04	0.85	0.10	0.84	0.79		0.61	0.70			0.45	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	73.7	13.5	0.1	31.2	5.4		65.9	14.2			66.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	
Total Delay	73.7	13.5	0.1	31.2	5.4		65.9	14.2			66.6	
LOS	E	B	A	C	A		E	B			E	
Approach Delay		12.5			8.5			26.7			66.6	
Approach LOS		B			A			C			E	
90th %ile Green (s)	5.0	65.0		23.5	83.5		18.0	18.0		18.0	18.0	
90th %ile Term Code	Max	Coord		Max	Coord		Max	Max		Max	Max	
70th %ile Green (s)	0.0	67.0		23.5	95.0		16.0	16.0		16.0	16.0	
70th %ile Term Code	Skip	Coord		Max	Coord		Gap	Gap		Hold	Hold	
50th %ile Green (s)	0.0	69.4		23.5	97.4		13.6	13.6		13.6	13.6	
50th %ile Term Code	Skip	Coord		Max	Coord		Gap	Gap		Hold	Hold	
30th %ile Green (s)	0.0	71.8		23.5	99.8		11.2	11.2		11.2	11.2	
30th %ile Term Code	Skip	Coord		Hold	Coord		Gap	Gap		Hold	Hold	
10th %ile Green (s)	0.0	75.0		23.5	103.0		8.0	8.0		8.0	8.0	
10th %ile Term Code	Skip	Coord		Hold	Coord		Min	Min		Hold	Hold	
Queue Length 50th (ft)	2	92	0	190	13		75	1			20	
Queue Length 95th (ft)	m3	#397	m0	m166	m109		126	78			31	
Internal Link Dist (ft)		1261			1246			941			132	
Turn Bay Length (ft)	125		125	75			110					
Base Capacity (vph)	80	1783	1432	325	2516		217	495			88	
Starvation Cap Reductn	0	0	0	0	0		0	0			0	
Spillback Cap Reductn	0	0	0	0	0		0	0			0	
Storage Cap Reductn	0	0	0	0	0		0	0			0	
Reduced v/c Ratio	0.04	0.85	0.10	0.84	0.79		0.46	0.63			0.34	

Intersection Summary

Area Type: CBD
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 110 (92%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.85
Intersection Signal Delay: 12.1 Intersection LOS: B
Intersection Capacity Utilization 89.1% ICU Level of Service E
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Kitsap Way & Private Drwy 1

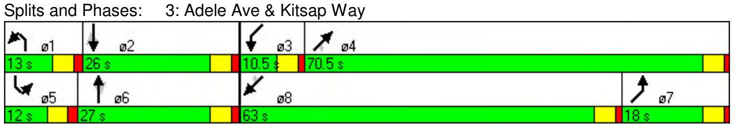
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	16	10	12	12	10	11	12	12	10	10
Storage Length (ft)	0		0	45		45	150		115	110		175
Storage Lanes	1		1	1		1	1		1	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	40	50	40	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	1580	1676	1602	1489	1693	1428	1486	3067	1425	1593	2961	1330
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1575	1676	1551	1472	1693	1406	1486	3067	1392	1592	2961	1330
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			126			88			37			69
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		548			510			1326			859	
Travel Time (s)		10.7			9.9			25.8			16.7	
Volume (vph)	119	33	151	91	48	82	214	1404	73	64	1726	132
Confl. Peds. (#/hr)	2		7	7		2			1	1		
Confl. Bikes (#/hr)			7									
Peak Hour Factor	0.85	0.85	0.85	0.93	0.93	0.93	0.94	0.94	0.94	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	2	0	2	2	0	2	0	2	0	0	2	0
Lane Group Flow (vph)	140	39	178	98	52	88	228	1494	78	71	1918	147
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6			2			4			8
Detector Phases	1	6	6	5	2	2	7	4	4	3	8	8
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	11.0	26.0	26.0	11.0	26.0	26.0	10.5	23.5	23.5	10.5	23.5	23.5
Total Split (s)	13.0	27.0	27.0	12.0	26.0	26.0	18.0	70.5	70.5	10.5	63.0	63.0
Total Split (%)	10.8%	22.5%	22.5%	10.0%	21.7%	21.7%	15.0%	58.8%	58.8%	8.8%	52.5%	52.5%
Maximum Green (s)	8.0	22.0	22.0	7.0	21.0	21.0	13.5	66.0	66.0	6.0	58.5	58.5
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.0	1.0	1.0	1.0	1.0	1.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	5.0	3.0	3.0	4.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Time To Reduce (s)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Recall Mode	None	None	None	None	None	None	Max	C-Max	C-Max	Max	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		14.0	14.0		14.0	14.0		12.0	12.0		12.0	12.0
Pedestrian Calls (#/hr)		9	9		9	9		1	1		0	0
Act Effct Green (s)	11.0	12.8	12.8	8.0	12.0	12.0	14.0	66.5	66.5	16.7	69.2	69.2
Actuated g/C Ratio	0.09	0.11	0.11	0.07	0.10	0.10	0.12	0.55	0.55	0.14	0.58	0.58
v/c Ratio	0.97	0.22	0.64	0.99	0.31	0.40	1.32	0.88	0.10	0.32	1.12	0.18
Control Delay	121.4	49.1	26.9	144.2	52.5	14.7	196.1	11.9	1.3	53.8	89.9	8.0

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	121.4	49.1	26.9	144.2	52.5	14.7	196.1	11.9	1.3	53.8	89.9	8.0
LOS	F	D	C	F	D	B	F	B	A	D	F	A
Approach Delay		66.4			76.3			34.7			83.0	
Approach LOS		E			E			C			F	
90th %ile Green (s)	8.0	22.0	22.0	7.0	21.0	21.0	13.5	66.0	66.0	6.0	58.5	58.5
90th %ile Term Code	Max	Hold	Hold	Max	Ped	Ped	MaxR	Coord	Coord	MaxR	Coord	Coord
70th %ile Green (s)	8.0	12.6	12.6	7.0	11.6	11.6	13.5	66.0	66.0	15.4	67.9	67.9
70th %ile Term Code	Max	Gap	Gap	Max	Hold	Hold	MaxR	Coord	Coord	MaxR	Coord	Coord
50th %ile Green (s)	8.0	9.9	9.9	7.0	8.9	8.9	13.5	66.0	66.0	18.1	70.6	70.6
50th %ile Term Code	Max	Hold	Hold	Max	Gap	Gap	MaxR	Coord	Coord	MaxR	Coord	Coord
30th %ile Green (s)	8.0	8.5	8.5	7.0	7.5	7.5	13.5	66.0	66.0	19.5	72.0	72.0
30th %ile Term Code	Max	Hold	Hold	Max	Gap	Gap	MaxR	Coord	Coord	MaxR	Coord	Coord
10th %ile Green (s)	18.0	6.0	6.0	7.0	0.0	0.0	13.5	66.0	66.0	22.0	74.5	74.5
10th %ile Term Code	Hold	Min	Min	Max	Skip	Skip	MaxR	Coord	Coord	MaxR	Coord	Coord
Queue Length 50th (ft)	~130	29	39	77	39	0	~225	85	0	49	~883	25
Queue Length 95th (ft)	#243	54	90	#191	72	46	m#307	134	m1	#143	#1148	71
Internal Link Dist (ft)		468			430			1246			779	
Turn Bay Length (ft)				45		45	150		115	110		175
Base Capacity (vph)	145	321	399	99	310	330	173	1700	788	222	1708	796
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.97	0.12	0.45	0.99	0.17	0.27	1.32	0.88	0.10	0.32	1.12	0.18

Intersection Summary

Area Type: CBD
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 4:NET and 8:SWT, Start of Green, Master Intersection
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.32
Intersection Signal Delay: 62.2 Intersection LOS: E
Intersection Capacity Utilization 90.9% ICU Level of Service E
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Adele Ave & Kitsap Way



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	8	12	12	8	12
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	0	1786	0	0	1793	0	0	1522	0	0	1532	0
Flt Permitted		0.963			0.979			0.998			0.998	
Satd. Flow (perm)	0	1786	0	0	1793	0	0	1522	0	0	1532	0
Link Speed (mph)		20			15			25			25	
Link Distance (ft)		1297			282			666			350	
Travel Time (s)		44.2			12.8			18.2			9.5	
Volume (vph)	51	3	12	7	5	4	5	102	0	6	96	43
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	8%	8%	8%	3%	3%	3%
Lane Group Flow (vph)	0	78	0	0	19	0	0	126	0	0	171	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 22.8%	ICU Level of Service A
Analysis Period (min) 15	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	51	3	12	7	5	4	5	102	0	6	96	43
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	60	4	14	8	6	5	6	120	0	7	113	51
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)											350	
pX, platoon unblocked												
vC, conflicting volume	292	284	138	300	309	120	164			120		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	292	284	138	300	309	120	164			120		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	91	99	98	99	99	99	100			100		
cM capacity (veh/h)	652	623	915	639	603	937	1379			1462		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	78	19	126	171
Volume Left	60	8	6	7
Volume Right	14	5	0	51
cSH	686	680	1379	1462
Volume to Capacity	0.11	0.03	0.00	0.00
Queue Length 95th (ft)	10	2	0	0
Control Delay (s)	10.9	10.4	0.4	0.3
Lane LOS	B	B	A	A
Approach Delay (s)	10.9	10.4	0.4	0.3
Approach LOS	B	B		

Intersection Summary			
Average Delay	2.9		
Intersection Capacity Utilization	22.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	12	12	12	12	12	12	8	12	12	8	12
Grade (%)		0%			0%			-1%			0%	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	0	1789	0	0	1709	0	0	1522	0	0	1519	0
Flt Permitted		0.958			0.972			0.997			0.999	
Satd. Flow (perm)	0	1789	0	0	1709	0	0	1522	0	0	1519	0
Link Speed (mph)		20			15			25			25	
Link Distance (ft)		467			299			197			683	
Travel Time (s)		15.9			13.6			5.4			18.6	
Volume (vph)	29	0	4	6	0	4	4	56	0	3	58	34
Confl. Peds. (#/hr)							2					2
Confl. Bikes (#/hr)			1									
Peak Hour Factor	0.69	0.69	0.69	0.83	0.83	0.83	0.84	0.84	0.84	0.86	0.86	0.86
Heavy Vehicles (%)	0%	2%	0%	2%	2%	2%	8%	8%	2%	2%	3%	3%
Bus Blockages (#/hr)	1	0	0	0	0	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	48	0	0	12	0	0	72	0	0	110	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary
Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 16.5% ICU Level of Service A
Analysis Period (min) 15

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			-1%			0%	
Volume (veh/h)	29	0	4	6	0	4	4	56	0	3	58	34
Peak Hour Factor	0.69	0.69	0.69	0.83	0.83	0.83	0.84	0.84	0.84	0.86	0.86	0.86
Hourly flow rate (vph)	42	0	6	7	0	5	5	67	0	3	67	40
Pedestrians		2										
Lane Width (ft)		12.0										
Walking Speed (ft/s)		4.0										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	177	172	89	176	192	67	109			67		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	177	172	89	176	192	67	109			67		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	95	100	99	99	100	100	100			100		
cM capacity (veh/h)	780	716	973	777	698	997	1442			1535		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	48	12	71	110
Volume Left	42	7	5	3
Volume Right	6	5	0	40
cSH	799	852	1442	1535
Volume to Capacity	0.06	0.01	0.00	0.00
Queue Length 95th (ft)	5	1	0	0
Control Delay (s)	9.8	9.3	0.5	0.2
Lane LOS	A	A	A	A
Approach Delay (s)	9.8	9.3	0.5	0.2
Approach LOS	A	A		

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	16.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	8	12
Grade (%)		4%	-1%		-5%	
Turning Speed (mph)	15			9	15	9
Satd. Flow (prot)	0	1726	1569	0	1472	0
Flt Permitted		0.992			0.956	
Satd. Flow (perm)	0	1726	1569	0	1472	0
Link Speed (mph)		20	25		25	
Link Distance (ft)		248	299		376	
Travel Time (s)		8.5	8.2		10.3	
Volume (vph)	4	22	21	52	61	5
Confl. Peds. (#/hr)	1			1	2	
Peak Hour Factor	0.66	0.66	0.93	0.93	0.90	0.90
Heavy Vehicles (%)	7%	7%	10%	10%	8%	8%
Bus Blockages (#/hr)	1	0	0	1	1	1
Lane Group Flow (vph)	0	39	79	0	74	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 15.0% ICU Level of Service A

Analysis Period (min) 15

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		4%	-1%		-5%	
Volume (veh/h)	4	22	21	52	61	5
Peak Hour Factor	0.66	0.66	0.93	0.93	0.90	0.90
Hourly flow rate (vph)	6	33	23	56	68	6
Pedestrians			2		1	
Lane Width (ft)			12.0		8.0	
Walking Speed (ft/s)			4.0		4.0	
Percent Blockage			0		0	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	79				99	52
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	79				99	52
tC, single (s)	4.2				6.5	6.3
tC, 2 stage (s)						
tF (s)	2.3				3.6	3.4
p0 queue free %	100				92	99
cM capacity (veh/h)	1487				880	999

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	39	78	73
Volume Left	6	0	68
Volume Right	0	56	6
cSH	1487	1700	888
Volume to Capacity	0.00	0.05	0.08
Queue Length 95th (ft)	0	0	7
Control Delay (s)	1.2	0.0	9.4
Lane LOS	A		A
Approach Delay (s)	1.2	0.0	9.4
Approach LOS			A

Intersection Summary

Average Delay	3.9		
Intersection Capacity Utilization	15.0%	ICU Level of Service	A
Analysis Period (min)	15		

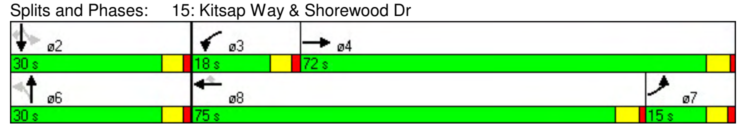
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	16	12	11	10	11	10	10	12	14	9
Grade (%)		1%			0%			-5%			2%	
Storage Length (ft)	150		75	225		100	60		0	0		50
Storage Lanes	1		1	1		1	1		0	0		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	1569	3022	1591	1577	3049	1317	1504	1247	0	0	1689	1270
Flt Permitted	0.950			0.950			0.645				0.699	
Satd. Flow (perm)	1569	3022	1556	1573	3049	1317	1021	1247	0	0	1194	1270
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			10			44		46				127
Link Speed (mph)		35			35			20			25	
Link Distance (ft)		394			443			418			541	
Travel Time (s)		7.7			8.6			14.3			14.8	
Volume (vph)	102	1433	60	128	1532	98	134	2	36	74	3	95
Confl. Peds. (#/hr)			5	5					23	23		
Confl. Bikes (#/hr)									3			
Peak Hour Factor	0.98	0.98	0.98	0.93	0.93	0.93	0.78	0.78	0.78	0.75	0.75	0.75
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	7%	7%	7%	2%	2%	2%
Bus Blockages (#/hr)	0	2	0	0	0	0	0	0	2	2	0	0
Lane Group Flow (vph)	104	1462	61	138	1647	105	172	49	0	0	103	127
Turn Type	Prot		Free	Prot		Perm	Perm			Perm		Perm
Protected Phases	7	4		3	8			6			2	
Permitted Phases			Free			8	6			2		2
Detector Phases	7	4		3	8	8	6	6		2	2	2
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	11.0	20.0		11.0	20.0	20.0	26.0	26.0		11.0	11.0	11.0
Total Split (s)	15.0	72.0	0.0	18.0	75.0	75.0	30.0	30.0	0.0	30.0	30.0	30.0
Total Split (%)	12.5%	60.0%	0.0%	15.0%	62.5%	62.5%	25.0%	25.0%	0.0%	25.0%	25.0%	25.0%
Maximum Green (s)	10.0	67.0		13.0	70.0	70.0	25.0	25.0		25.0	25.0	25.0
Yellow Time (s)	3.5	4.0		3.5	4.0	4.0	3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.5	1.0		1.5	1.0	1.0	1.5	1.5		1.5	1.5	1.5
Lead/Lag	Lag	Lag		Lead	Lead	Lead						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.5		3.0	3.5	3.5	3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Time To Reduce (s)	20.0	20.0		20.0	20.0	20.0	20.0	20.0		20.0	20.0	20.0
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None		None	None	None
Walk Time (s)		7.0			7.0	7.0	7.0	7.0				
Flash Dont Walk (s)		8.0			8.0	8.0	14.0	14.0				
Pedestrian Calls (#/hr)		5			5	5	23	23				
Act Effct Green (s)	11.0	70.9	120.0	13.7	73.6	73.6	23.4	23.4			23.4	23.4
Actuated g/C Ratio	0.09	0.59	1.00	0.11	0.61	0.61	0.20	0.20			0.20	0.20
v/c Ratio	0.72	0.82	0.04	0.77	0.88	0.13	0.86	0.17			0.44	0.36

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	66.9	13.7	0.0	66.4	23.4	3.5	83.0	13.5			48.1	9.7
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay	66.9	13.8	0.0	66.4	23.4	3.5	83.0	13.5			48.1	9.7
LOS	E	B	A	E	C	A	F	B			D	A
Approach Delay		16.6			25.4			67.6			26.9	
Approach LOS		B			C			E			C	
90th %ile Green (s)	10.0	67.0		13.0	70.0	70.0	25.0	25.0		25.0	25.0	25.0
90th %ile Term Code	Max	Coord		Max	Coord	Coord	Max	Max		Hold	Hold	Hold
70th %ile Green (s)	10.0	67.0		13.0	70.0	70.0	25.0	25.0		25.0	25.0	25.0
70th %ile Term Code	Max	Coord		Max	Coord	Coord	Max	Max		Hold	Hold	Hold
50th %ile Green (s)	10.0	67.0		13.0	70.0	70.0	25.0	25.0		25.0	25.0	25.0
50th %ile Term Code	Max	Coord		Max	Coord	Coord	Max	Max		Hold	Hold	Hold
30th %ile Green (s)	10.0	69.4		14.0	73.4	73.4	21.6	21.6		21.6	21.6	21.6
30th %ile Term Code	Max	Coord		Gap	Coord	Coord	Gap	Gap		Hold	Hold	Hold
10th %ile Green (s)	10.0	79.1		10.4	79.5	79.5	15.5	15.5		15.5	15.5	15.5
10th %ile Term Code	Hold	Coord		Gap	Coord	Coord	Gap	Gap		Hold	Hold	Hold
Queue Length 50th (ft)	83	422	0	98	514	21	126	2			69	0
Queue Length 95th (ft)	#167	476	m0	m#171	#601	m17	#186	26			102	29
Internal Link Dist (ft)		314			363			338			461	
Turn Bay Length (ft)	150		75	225		100	60					50
Base Capacity (vph)	144	1785	1556	187	1869	824	221	306			259	375
Starvation Cap Reductn	0	16	0	0	0	0	0	0			0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0			0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0			0	0
Reduced v/c Ratio	0.72	0.83	0.04	0.74	0.88	0.13	0.78	0.16			0.40	0.34

Intersection Summary

Area Type: CBD
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 44 (37%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 24.2 Intersection LOS: C
Intersection Capacity Utilization 79.6% ICU Level of Service D
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 15: Kitsap Way & Shorewood Dr



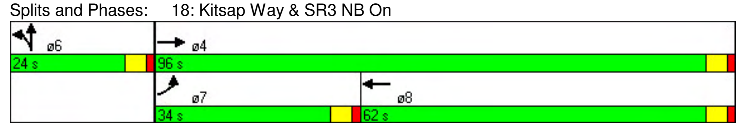
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	11	12	12	12	12	12	12
Grade (%)		0%			-1%			-1%			0%	
Storage Length (ft)	115		0	0		0	0		115	0		0
Storage Lanes	1		0	0		1	0		1	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50			50	50	50	50	50			
Trailing Detector (ft)	0	0			0	0	0	0	0			
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	1577	3049	0	0	3035	1358	0	1578	1405	0	0	0
Flt Permitted	0.950							0.955				
Satd. Flow (perm)	1572	3049	0	0	3035	1328	0	1578	1405	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						648			182			
Link Speed (mph)		35			35			35			50	
Link Distance (ft)		404			394			895			1104	
Travel Time (s)		7.9			7.7			17.4			15.1	
Volume (vph)	145	1440	0	0	877	906	42	3	160	0	0	0
Confl. Peds. (#/hr)	4					4						
Peak Hour Factor	0.97	0.97	0.92	0.92	0.91	0.91	0.88	0.88	0.88	0.92	0.92	0.92
Heavy Vehicles (%)	3%	3%	2%	2%	4%	4%	4%	4%	4%	2%	2%	2%
Lane Group Flow (vph)	149	1485	0	0	964	996	0	51	182	0	0	0
Turn Type	Prot					Free	Split		Free			
Protected Phases	7	4			8		6	6				
Permitted Phases						Free			Free			
Detector Phases	7	4			8		6	6				
Minimum Initial (s)	6.0	6.0			6.0		6.0	6.0				
Minimum Split (s)	11.0	20.0			24.0		11.0	11.0				
Total Split (s)	34.0	96.0	0.0	0.0	62.0	0.0	24.0	24.0	0.0	0.0	0.0	0.0
Total Split (%)	28.3%	80.0%	0.0%	0.0%	51.7%	0.0%	20.0%	20.0%	0.0%	0.0%	0.0%	0.0%
Maximum Green (s)	29.0	91.0			57.0		19.0	19.0				
Yellow Time (s)	3.5	3.5			3.5		3.5	3.5				
All-Red Time (s)	1.5	1.5			1.5		1.5	1.5				
Lead/Lag	Lead				Lag							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0				
Minimum Gap (s)	3.0	3.0			3.0		3.0	3.0				
Time Before Reduce (s)	6.0	6.0			6.0		6.0	6.0				
Time To Reduce (s)	20.0	20.0			20.0		20.0	20.0				
Recall Mode	None	C-Max			C-Max		None	None				
Walk Time (s)		7.0			7.0							
Flash Dont Walk (s)		8.0			12.0							
Pedestrian Calls (#/hr)		4			4							
Act Effct Green (s)	16.9	104.8			83.1	120.0		10.2	120.0			
Actuated g/C Ratio	0.14	0.87			0.69	1.00		0.08	1.00			
v/c Ratio	0.67	0.56			0.46	0.75		0.38	0.13			
Control Delay	74.5	1.0			2.2	8.2		59.1	0.2			
Queue Delay	0.0	0.1			0.4	0.0		0.0	0.0			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	74.5	1.2			2.7	8.2		59.1	0.2			
LOS	E	A			A	A		E	A			
Approach Delay		7.8			5.5			13.1				
Approach LOS		A			A			B				
90th %ile Green (s)	21.6	97.2			70.6		12.8	12.8				
90th %ile Term Code	Gap	Coord			Coord		Gap	Gap				
70th %ile Green (s)	18.3	99.4			76.1		10.6	10.6				
70th %ile Term Code	Gap	Coord			Coord		Gap	Gap				
50th %ile Green (s)	15.9	100.9			80.0		9.1	9.1				
50th %ile Term Code	Gap	Coord			Coord		Gap	Gap				
30th %ile Green (s)	13.5	102.4			83.9		7.6	7.6				
30th %ile Term Code	Gap	Coord			Coord		Gap	Gap				
10th %ile Green (s)	10.0	115.0			100.0		0.0	0.0				
10th %ile Term Code	Gap	Coord			Coord		Skip	Skip				
Queue Length 50th (ft)	121	18			42	303		38	0			
Queue Length 95th (ft)	m157	26			m63	m172		75	0			
Internal Link Dist (ft)		324			314			815			1024	
Turn Bay Length (ft)	115								115			
Base Capacity (vph)	394	2662			2102	1328		263	1405			
Starvation Cap Reductn	0	134			608	0		0	0			
Spillback Cap Reductn	0	318			0	0		0	146			
Storage Cap Reductn	0	0			0	0		0	0			
Reduced v/c Ratio	0.38	0.63			0.65	0.75		0.19	0.14			

Intersection Summary

Area Type: CBD
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 47 (39%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 50
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.75
Intersection Signal Delay: 6.9 Intersection LOS: A
Intersection Capacity Utilization 55.9% ICU Level of Service B
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 18: Kitsap Way & SR3 NB On



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	12	12	16	12	12
Grade (%)		0%			-1%			1%			-1%	
Storage Length (ft)	0		240	150		0	0		165	0		250
Storage Lanes	0		1	2		0	1		1	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)		50	50	50	50		50		50	50	50	50
Trailing Detector (ft)		0	0	0	0		0		0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	0	3020	1392	3045	3035	0	1539	0	1377	1723	1551	1432
Flt Permitted				0.950			0.950			0.950	0.969	
Satd. Flow (perm)	0	3020	1392	3045	3035	0	1538	0	1360	1717	1548	1414
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			218						337			5
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		681			404			1026			976	
Travel Time (s)		13.3			7.9			20.0			19.0	
Volume (vph)	0	413	196	369	549	0	55	0	361	817	166	7
Confl. Peds. (#/hr)							1		2	2		1
Confl. Bikes (#/hr)									1			1
Peak Hour Factor	0.92	0.90	0.90	0.93	0.93	0.92	0.92	0.92	0.92	0.93	0.93	0.93
Heavy Vehicles (%)	2%	4%	4%	4%	4%	2%	5%	2%	5%	2%	2%	2%
Bus Blockages (#/hr)	0	0	1	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	459	218	397	590	0	60	0	392	547	509	8
Turn Type			Perm	Prot			Prot		Free	Split		Free
Protected Phases		4		3	8		1			2	2	
Permitted Phases			4						Free			Free
Detector Phases		4	4	3	8		1			2	2	
Minimum Initial (s)		6.0	6.0	3.0	6.0		3.0			3.0	3.0	
Minimum Split (s)		19.5	19.5	7.5	19.5		7.5			25.5	25.5	
Total Split (s)	0.0	30.0	30.0	24.0	54.0	0.0	12.0	0.0	0.0	54.0	54.0	0.0
Total Split (%)	0.0%	25.0%	25.0%	20.0%	45.0%	0.0%	10.0%	0.0%	0.0%	45.0%	45.0%	0.0%
Maximum Green (s)		25.5	25.5	19.5	49.5		7.5			49.5	49.5	
Yellow Time (s)		3.5	3.5	3.5	3.5		3.5			3.5	3.5	
All-Red Time (s)		1.0	1.0	1.0	1.0		1.0			1.0	1.0	
Lead/Lag		Lead	Lead	Lag			Lead			Lag	Lag	
Lead-Lag Optimize?		Yes	Yes	Yes			Yes			Yes	Yes	
Vehicle Extension (s)		3.5	3.5	4.0	3.5		3.5			3.5	3.5	
Minimum Gap (s)		3.0	3.0	3.0	3.0		3.0			3.0	3.0	
Time Before Reduce (s)		6.0	6.0	6.0	6.0		6.0			6.0	6.0	
Time To Reduce (s)		20.0	20.0	20.0	20.0		20.0			20.0	20.0	
Recall Mode		C-Max	C-Max	None	C-Max		Min			Ped	Ped	
Walk Time (s)		7.0	7.0	0.0	7.0					7.0	7.0	
Flash Dont Walk (s)		8.0	8.0	0.0	8.0					14.0	14.0	
Pedestrian Calls (#/hr)		0	0	0	0					0	0	
Act Effct Green (s)		32.2	32.2	20.0	56.2		7.8		120.0	44.0	44.0	120.0
Actuated g/C Ratio		0.27	0.27	0.17	0.47		0.06		1.00	0.37	0.37	1.00
v/c Ratio		0.57	0.41	0.78	0.41		0.59		0.29	0.87	0.90	0.01

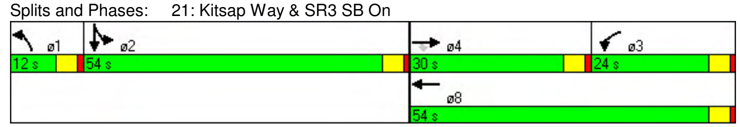
2010 With Project - Alternative 1 - RIRO (Optimized)
21: Kitsap Way & SR3 SB On 10/17/2006

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay		42.8	7.6	50.4	13.7		78.7		0.5	49.6	54.7	0.0
Queue Delay		0.0	0.0	0.0	0.4		0.0		0.0	0.0	0.0	0.0
Total Delay		42.8	7.6	50.4	14.0		78.7		0.5	49.6	54.7	0.0
LOS		D	A	D	B		E		A	D	D	A
Approach Delay		31.5			28.7						51.7	
Approach LOS		C			C						D	
90th %ile Green (s)		25.5	25.5	19.5	49.5		7.5			49.5	49.5	
90th %ile Term Code		Coord	Coord	Max	Coord		Max			Max	Max	
70th %ile Green (s)		25.5	25.5	19.5	49.5		7.5			49.5	49.5	
70th %ile Term Code		Coord	Coord	Max	Coord		Max			Max	Max	
50th %ile Green (s)		28.7	28.7	19.5	52.7		7.5			46.3	46.3	
50th %ile Term Code		Coord	Coord	Max	Coord		Max			Gap	Gap	
30th %ile Green (s)		34.8	34.8	19.5	58.8		7.5			40.2	40.2	
30th %ile Term Code		Coord	Coord	Max	Coord		Max			Gap	Gap	
10th %ile Green (s)		44.0	44.0	19.5	68.0		6.6			31.9	31.9	
10th %ile Term Code		Coord	Coord	Hold	Coord		Gap			Gap	Gap	
Queue Length 50th (ft)		167	0	160	143		46		0	393	372	0
Queue Length 95th (ft)		234	66	#222	204		#106		0	528	511	0
Internal Link Dist (ft)		601			324			946			896	
Turn Bay Length (ft)			240	150					165			250
Base Capacity (vph)		810	533	508	1422		103		1360	718	646	1414
Starvation Cap Reductn		0	0	0	366		0		0	0	0	0
Spillback Cap Reductn		0	0	0	0		0		0	0	0	0
Storage Cap Reductn		0	0	0	0		0		0	0	0	0
Reduced v/c Ratio		0.57	0.41	0.78	0.56		0.58		0.29	0.76	0.79	0.01

Intersection Summary

Area Type: CBD
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 72 (60%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 34.4 Intersection LOS: C
Intersection Capacity Utilization 71.7% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 21: Kitsap Way & SR3 SB On



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	12	12
Grade (%)	-1%			1%	0%	
Storage Length (ft)		0	150		0	0
Storage Lanes		0	0		0	1
Turning Speed (mph)		9	15		15	9
Satd. Flow (prot)	3076	0	0	3064	0	1450
Flt Permitted						
Satd. Flow (perm)	3076	0	0	3064	0	1450
Link Speed (mph)	35			35	20	
Link Distance (ft)	443			397	371	
Travel Time (s)	8.6			7.7	12.6	
Volume (vph)	1527	63	0	1808	0	92
Peak Hour Factor	0.92	0.92	0.93	0.93	0.92	0.92
Lane Group Flow (vph)	1728	0	0	1944	0	100
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: CBD

Control Type: Unsignalized

Intersection Capacity Utilization 62.1% ICU Level of Service B

Analysis Period (min) 15

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	-1%			1%	0%	
Volume (veh/h)	1527	63	0	1808	0	92
Peak Hour Factor	0.92	0.92	0.93	0.93	0.92	0.92
Hourly flow rate (vph)	1660	68	0	1944	0	100
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)	443					
pX, platoon unblocked			0.62		0.62	0.62
vC, conflicting volume			1728		2666	864
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1560		3079	159
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	81
cM capacity (veh/h)			259		6	529

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	1107	622	972	972	100
Volume Left	0	0	0	0	0
Volume Right	0	68	0	0	100
cSH	1700	1700	1700	1700	529
Volume to Capacity	0.65	0.37	0.57	0.57	0.19
Queue Length 95th (ft)	0	0	0	0	17
Control Delay (s)	0.0	0.0	0.0	0.0	13.4
Lane LOS					B
Approach Delay (s)	0.0		0.0		13.4
Approach LOS					B

Intersection Summary

Average Delay 0.4

Intersection Capacity Utilization 62.1% ICU Level of Service B

Analysis Period (min) 15

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Turning Speed (mph)	15	9	15			9
Satd. Flow (prot)	1701	0	0	1720	1695	0
Flt Permitted	0.957					
Satd. Flow (perm)	1701	0	0	1720	1695	0
Link Speed (mph)	15			25	25	
Link Distance (ft)	362			683	666	
Travel Time (s)	16.5			18.6	18.2	
Volume (vph)	7	1	1	100	104	13
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	5%	5%	10%	10%	10%	10%
Bus Blockages (#/hr)	1	1	0	1	1	0
Lane Group Flow (vph)	10	0	0	134	156	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 16.3% ICU Level of Service A
Analysis Period (min) 15

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	7	1	1	100	104	13
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	9	1	1	133	139	17
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)					1016	
pX, platoon unblocked						
vC, conflicting volume	283	147	156			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	283	147	156			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	99	100	100			
cM capacity (veh/h)	700	892	1377			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	11	135	156
Volume Left	9	1	0
Volume Right	1	0	17
cSH	719	1377	1700
Volume to Capacity	0.01	0.00	0.09
Queue Length 95th (ft)	1	0	0
Control Delay (s)	10.1	0.1	0.0
Lane LOS	B	A	
Approach Delay (s)	10.1	0.1	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	16.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%			-1%	-5%	
Turning Speed (mph)	15	9	15			9
Satd. Flow (prot)	1712	0	0	1729	1755	0
Flt Permitted	0.950					
Satd. Flow (perm)	1712	0	0	1729	1755	0
Link Speed (mph)	15			25	25	
Link Distance (ft)	248			290	197	
Travel Time (s)	11.3			7.9	5.4	
Volume (vph)	2	0	0	61	72	3
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	5%	5%	10%	10%	10%	10%
Bus Blockages (#/hr)	1	1	0	1	1	0
Lane Group Flow (vph)	3	0	0	81	100	0
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type: Other	
Control Type: Unsignalized	
Intersection Capacity Utilization 14.0%	ICU Level of Service A
Analysis Period (min) 15	

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			-1%	-5%	
Volume (veh/h)	2	0	0	61	72	3
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	3	0	0	81	96	4
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	179	98	100			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	179	98	100			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	100	100	100			
cM capacity (veh/h)	803	950	1444			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	3	81	100
Volume Left	3	0	0
Volume Right	0	0	4
cSH	803	1444	1700
Volume to Capacity	0.00	0.00	0.06
Queue Length 95th (ft)	0	0	0
Control Delay (s)	9.5	0.0	0.0
Lane LOS	A		
Approach Delay (s)	9.5	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	14.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%			-1%	-5%	
Turning Speed (mph)	15	9	15			9
Satd. Flow (prot)	1712	0	0	1727	1744	0
Flt Permitted	0.950			0.999		
Satd. Flow (perm)	1712	0	0	1727	1744	0
Link Speed (mph)	15			25	25	
Link Distance (ft)	238			376	290	
Travel Time (s)	10.8			10.3	7.9	
Volume (vph)	3	0	1	58	65	6
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	5%	5%	10%	10%	10%	10%
Bus Blockages (#/hr)	1	1	0	1	1	0
Lane Group Flow (vph)	4	0	0	78	95	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 13.9% ICU Level of Service A

Analysis Period (min) 15

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			-1%	-5%	
Volume (veh/h)	3	0	1	58	65	6
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	4	0	1	77	87	8
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	171	91	95			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	171	91	95			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	100	100	100			
cM capacity (veh/h)	812	959	1450			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	4	79	95
Volume Left	4	1	0
Volume Right	0	0	8
cSH	812	1450	1700
Volume to Capacity	0.00	0.00	0.06
Queue Length 95th (ft)	0	0	0
Control Delay (s)	9.5	0.1	0.0
Lane LOS	A	A	
Approach Delay (s)	9.5	0.1	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	13.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	12	12	12
Grade (%)		0%	1%		0%	
Turning Speed (mph)	15			9	15	9
Satd. Flow (prot)	1770	3421	3404	1575	1723	0
Flt Permitted	0.950				0.977	
Satd. Flow (perm)	1770	3421	3404	1575	1723	0
Link Speed (mph)		35	35		20	
Link Distance (ft)		397	1383		319	
Travel Time (s)		7.7	26.9		10.9	
Volume (vph)	6	1605	1786	4	21	24
Peak Hour Factor	0.92	0.92	0.93	0.93	0.38	0.38
Heavy Vehicles (%)	2%	2%	2%	2%	0%	0%
Lane Group Flow (vph)	7	1745	1920	4	118	0
Sign Control		Free	Free		Stop	

Intersection Summary
Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 59.4% ICU Level of Service B
Analysis Period (min) 15

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	1%		0%	
Volume (veh/h)	6	1605	1786	4	21	24
Peak Hour Factor	0.92	0.92	0.93	0.93	0.38	0.38
Hourly flow rate (vph)	7	1745	1920	4	55	63
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					TWLTL	
Median storage veh)					0	
Upstream signal (ft)		840				
pX, platoon unblocked					0.63	
vC, conflicting volume	1925				2806	960
vC1, stage 1 conf vol					1920	
vC2, stage 2 conf vol					885	
vCu, unblocked vol	1925				3283	960
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	98				6	76
cM capacity (veh/h)	303				59	260

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	7	872	872	960	960	4	118
Volume Left	7	0	0	0	0	0	55
Volume Right	0	0	0	0	0	4	63
cSH	303	1700	1700	1700	1700	1700	100
Volume to Capacity	0.02	0.51	0.51	0.56	0.56	0.00	1.18
Queue Length 95th (ft)	2	0	0	0	0	0	198
Control Delay (s)	17.1	0.0	0.0	0.0	0.0	0.0	227.1
Lane LOS	C						F
Approach Delay (s)	0.1			0.0			227.1
Approach LOS							F

Intersection Summary			
Average Delay	7.1		
Intersection Capacity Utilization	59.4%	ICU Level of Service	B
Analysis Period (min)	15		

APPENDIX C.4

2010 Alternative 2 Synchro LOS Sheets (Optimized Network)

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	10	9
Grade (%)	0%			-3%	-1%	
Storage Length (ft)		70	115		0	50
Storage Lanes		1	1		1	1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Turning Speed (mph)		9	15		15	9
Satd. Flow (prot)	3067	1425	1585	3065	1411	1208
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3067	1288	1572	3065	1411	1208
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		23				131
Link Speed (mph)	35			35	25	
Link Distance (ft)	1377			1341	350	
Travel Time (s)	26.8			26.1	9.5	
Volume (vph)	1533	65	80	1763	61	98
Confl. Peds. (#/hr)		18	18			1
Peak Hour Factor	0.97	0.97	0.95	0.95	0.75	0.75
Heavy Vehicles (%)	2%	2%	4%	4%	8%	8%
Bus Blockages (#/hr)	2	0	0	0	0	2
Lane Group Flow (vph)	1580	67	84	1856	81	131
Turn Type		Perm	Prot			Over
Protected Phases	4		3	8	6	3
Permitted Phases		4				
Detector Phases	4	4	3	8	6	3
Minimum Initial (s)	6.0	6.0	4.0	6.0	6.0	4.0
Minimum Split (s)	20.0	20.0	8.0	22.0	26.0	8.0
Total Split (s)	86.0	86.0	18.0	104.0	26.0	18.0
Total Split (%)	66.2%	66.2%	13.8%	80.0%	20.0%	13.8%
Maximum Green (s)	81.0	81.0	14.0	99.0	21.0	14.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	0.5	1.5	1.5	0.5
Lead/Lag	Lag	Lag	Lead			Lead
Lead-Lag Optimize?	Yes	Yes	Yes			Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	6.0	6.0	0.0	6.0	6.0	0.0
Time To Reduce (s)	20.0	20.0	0.0	20.0	20.0	0.0
Recall Mode	C-Max	C-Max	None	C-Max	None	None
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	8.0	8.0		10.0	14.0	
Pedestrian Calls (#/hr)	18	18		18	1	
Act Effct Green (s)	94.8	94.8	11.4	111.1	14.0	11.4
Actuated g/C Ratio	0.73	0.73	0.09	0.85	0.11	0.09
v/c Ratio	0.71	0.07	0.60	0.71	0.53	0.58
Control Delay	4.4	1.5	71.8	7.6	66.1	19.6

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.4	1.5	71.8	7.6	66.1	19.6
LOS	A	A	E	A	E	B
Approach Delay	4.3			10.4	37.4	
Approach LOS	A			B	D	
90th %ile Green (s)	81.0	81.0	14.0	99.0	21.0	14.0
90th %ile Term Code	Coord	Coord	Max	Coord	Ped	Max
70th %ile Green (s)	87.1	87.1	14.1	105.2	14.8	14.1
70th %ile Term Code	Coord	Coord	Gap	Coord	Gap	Gap
50th %ile Green (s)	91.5	91.5	12.0	107.5	12.5	12.0
50th %ile Term Code	Coord	Coord	Gap	Coord	Gap	Gap
30th %ile Green (s)	95.8	95.8	9.9	109.7	10.3	9.9
30th %ile Term Code	Coord	Coord	Gap	Coord	Gap	Gap
10th %ile Green (s)	113.8	113.8	7.2	125.0	0.0	7.2
10th %ile Term Code	Coord	Coord	Gap	Coord	Skip	Gap
Queue Length 50th (ft)	105	1	66	31	66	0
Queue Length 95th (ft)	m143	m4	m85	835	92	33
Internal Link Dist (ft)	1297			1261	270	
Turn Bay Length (ft)		70	115			50
Base Capacity (vph)	2237	946	171	2619	239	247
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.07	0.49	0.71	0.34	0.53

Intersection Summary

Area Type: CBD

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 72 (55%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 9.3 Intersection LOS: A

Intersection Capacity Utilization 67.4% ICU Level of Service C

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Kitsap Way & Oyster Bay Ave

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	13	12	11	12	13	13	12	12	16	12
Grade (%)		1%			-4%			-4%			0%	
Storage Length (ft)	125		125	75		0	110		0	0		0
Storage Lanes	1		1	1		0	1		0	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	1585	3051	1465	1624	3137	0	1679	1504	0	0	1750	0
Flt Permitted	0.950			0.950			0.791				0.256	
Satd. Flow (perm)	1584	3051	1432	1620	3137	0	1398	1504	0	0	464	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			28		1			311			2	
Link Speed (mph)		35			35			35			15	
Link Distance (ft)		1341			1326			1021			212	
Travel Time (s)		26.1			25.8			19.9			9.6	
Volume (vph)	3	1503	135	243	1784	7	88	2	274	12	4	1
Confl. Peds. (#/hr)	2		5	5		2						
Confl. Bikes (#/hr)			1			5						
Peak Hour Factor	0.97	0.97	0.97	0.89	0.89	0.89	0.88	0.88	0.88	0.57	0.57	0.57
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	6%	6%	6%
Bus Blockages (#/hr)	0	2	0	0	0	0	0	0	2	2	0	0
Lane Group Flow (vph)	3	1549	139	273	2012	0	100	313	0	0	30	0
Turn Type	Prot		Free	Prot			Perm			Perm		
Protected Phases	7	4		3	8			6			2	
Permitted Phases			Free				6			2		
Detector Phases	7	4		3	8		6	6		2	2	
Minimum Initial (s)	5.0	8.0		8.0	8.0		8.0	8.0		6.0	6.0	
Minimum Split (s)	9.5	19.5		12.5	19.5		12.5	12.5		22.5	22.5	
Total Split (s)	9.5	76.4	0.0	31.1	98.0	0.0	22.5	22.5	0.0	22.5	22.5	0.0
Total Split (%)	7.3%	58.8%	0.0%	23.9%	75.4%	0.0%	17.3%	17.3%	0.0%	17.3%	17.3%	0.0%
Maximum Green (s)	5.0	71.9		26.6	93.5		18.0	18.0		18.0	18.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lead/Lag	Lead	Lead		Lag	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Time To Reduce (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)		7.0			7.0		6.0	6.0		7.0	7.0	
Flash Dont Walk (s)		8.0			8.0		0.0	0.0		11.0	11.0	
Pedestrian Calls (#/hr)		0			0		0	0		0	0	
Act Effct Green (s)	6.0	76.5	130.0	27.1	105.7		14.4	14.4			14.4	
Actuated g/C Ratio	0.05	0.59	1.00	0.21	0.81		0.11	0.11			0.11	
v/c Ratio	0.04	0.86	0.10	0.81	0.79		0.65	0.71			0.57	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	74.0	9.9	0.1	37.0	7.9		73.6	14.9			88.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	
Total Delay	74.0	9.9	0.1	37.0	7.9		73.6	14.9			88.4	
LOS	E	A	A	D	A		E	B			F	
Approach Delay		9.2			11.3			29.1			88.4	
Approach LOS		A			B			C			F	
90th %ile Green (s)	5.0	71.9		26.6	93.5		18.0	18.0		18.0	18.0	
90th %ile Term Code	Max	Coord		Max	Coord		Max	Max		Max	Max	
70th %ile Green (s)	0.0	72.7		26.6	103.8		17.2	17.2		17.2	17.2	
70th %ile Term Code	Skip	Coord		Max	Coord		Hold	Hold		Gap	Gap	
50th %ile Green (s)	0.0	75.6		26.6	106.7		14.3	14.3		14.3	14.3	
50th %ile Term Code	Skip	Coord		Max	Coord		Gap	Gap		Hold	Hold	
30th %ile Green (s)	0.0	78.1		26.6	109.2		11.8	11.8		11.8	11.8	
30th %ile Term Code	Skip	Coord		Hold	Coord		Gap	Gap		Hold	Hold	
10th %ile Green (s)	0.0	81.6		26.6	112.7		8.3	8.3		8.3	8.3	
10th %ile Term Code	Skip	Coord		Hold	Coord		Gap	Gap		Hold	Hold	
Queue Length 50th (ft)	2	151	0	204	130		82	2			23	
Queue Length 95th (ft)	m3	#343	m0	m176	m204		137	82			34	
Internal Link Dist (ft)		1261			1246			941			132	
Turn Bay Length (ft)	125		125	75			110					
Base Capacity (vph)	73	1795	1432	339	2550		199	481			68	
Starvation Cap Reductn	0	0	0	0	0		0	0			0	
Spillback Cap Reductn	0	0	0	0	0		0	0			0	
Storage Cap Reductn	0	0	0	0	0		0	0			0	
Reduced v/c Ratio	0.04	0.86	0.10	0.81	0.79		0.50	0.65			0.44	

Intersection Summary

Area Type: CBD
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 117 (90%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 12.7 Intersection LOS: B
Intersection Capacity Utilization 90.1% ICU Level of Service E
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Kitsap Way & Private Drwy 1

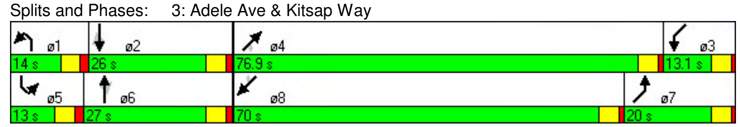
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	16	10	12	12	10	11	12	12	10	10
Storage Length (ft)	0		0	45		45	150		115	110		175
Storage Lanes	1		1	1		1	1		1	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	40	50	40	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	1580	1676	1602	1489	1693	1428	1486	3067	1425	1593	2961	1330
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1574	1676	1549	1471	1693	1405	1486	3067	1392	1592	2961	1330
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			149			92			36			65
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		548			510			1326			859	
Travel Time (s)		10.7			9.9			25.8			16.7	
Volume (vph)	123	33	151	91	48	86	217	1429	76	64	1746	132
Confl. Peds. (#/hr)	2		7	7		2			1	1		
Confl. Bikes (#/hr)			7									
Peak Hour Factor	0.85	0.85	0.85	0.93	0.93	0.93	0.94	0.94	0.94	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	2	0	2	2	0	2	0	2	0	0	2	0
Lane Group Flow (vph)	145	39	178	98	52	92	231	1520	81	71	1940	147
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6			2			4			8
Detector Phases	1	6	6	5	2	2	7	4	4	3	8	8
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	11.0	26.0	26.0	11.0	26.0	26.0	10.5	23.5	23.5	10.5	23.5	23.5
Total Split (s)	14.0	27.0	27.0	13.0	26.0	26.0	20.0	76.9	76.9	13.1	70.0	70.0
Total Split (%)	10.8%	20.8%	20.8%	10.0%	20.0%	20.0%	15.4%	59.2%	59.2%	10.1%	53.8%	53.8%
Maximum Green (s)	9.0	22.0	22.0	8.0	21.0	21.0	15.5	72.4	72.4	8.6	65.5	65.5
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.0	1.0	1.0	1.0	1.0	1.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lag	Lead	Lead	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	5.0	3.0	3.0	4.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Time To Reduce (s)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Recall Mode	None	None	None	None	None	None	Max	C-Max	C-Max	Max	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		14.0	14.0		14.0	14.0		12.0	12.0		12.0	12.0
Pedestrian Calls (#/hr)		9	9		9	9		1	1		0	0
Act Effct Green (s)	10.0	12.9	12.9	9.0	11.9	11.9	16.0	83.0	83.0	9.1	76.1	76.1
Actuated g/C Ratio	0.08	0.10	0.10	0.07	0.09	0.09	0.12	0.64	0.64	0.07	0.59	0.59
v/c Ratio	1.19	0.23	0.62	0.95	0.34	0.43	1.26	0.78	0.09	0.63	1.12	0.18
Control Delay	191.1	54.9	21.9	136.2	59.0	16.1	177.8	5.8	0.5	83.7	89.3	8.4

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	191.1	54.9	21.9	136.2	59.0	16.1	177.8	5.8	0.5	83.7	89.3	8.4
LOS	F	D	C	F	E	B	F	A	A	F	F	A
Approach Delay		93.3			74.0			27.3			83.6	
Approach LOS		F			E			C			F	
90th %ile Green (s)	9.0	22.0	22.0	8.0	21.0	21.0	15.5	72.4	72.4	8.6	65.5	65.5
90th %ile Term Code	Max	Hold	Hold	Max	Ped	Ped	MaxR	Coord	Coord	MaxR	Coord	Coord
70th %ile Green (s)	9.0	11.6	11.6	8.0	10.6	10.6	15.5	82.8	82.8	8.6	75.9	75.9
70th %ile Term Code	Max	Hold	Hold	Max	Gap	Gap	MaxR	Coord	Coord	MaxR	Coord	Coord
50th %ile Green (s)	9.0	10.2	10.2	8.0	9.2	9.2	15.5	84.2	84.2	8.6	77.3	77.3
50th %ile Term Code	Max	Hold	Hold	Max	Gap	Gap	MaxR	Coord	Coord	MaxR	Coord	Coord
30th %ile Green (s)	9.0	8.7	8.7	8.0	7.7	7.7	15.5	85.7	85.7	8.6	78.8	78.8
30th %ile Term Code	Max	Hold	Hold	Max	Gap	Gap	MaxR	Coord	Coord	MaxR	Coord	Coord
10th %ile Green (s)	9.0	7.0	7.0	8.0	6.0	6.0	15.5	87.4	87.4	8.6	80.5	80.5
10th %ile Term Code	Max	Hold	Hold	Max	Min	Min	MaxR	Coord	Coord	MaxR	Coord	Coord
Queue Length 50th (ft)	~148	31	23	84	42	0	~251	61	1	59	~971	28
Queue Length 95th (ft)	#265	58	76	#200	78	49	m#335	191	m1	#130	#1232	75
Internal Link Dist (ft)		468			430			1246			779	
Turn Bay Length (ft)				45		45	150		115	110		175
Base Capacity (vph)	122	297	397	103	287	314	183	1958	902	112	1733	805
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.19	0.13	0.45	0.95	0.18	0.29	1.26	0.78	0.09	0.63	1.12	0.18

Intersection Summary

Area Type: CBD
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 0 (0%), Referenced to phase 4:NET and 8:SWT, Start of Green, Master Intersection
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.26
Intersection Signal Delay: 61.4 Intersection LOS: E
Intersection Capacity Utilization 91.9% ICU Level of Service F
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Adele Ave & Kitsap Way



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	8	12	12	8	12
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	0	1784	0	0	1793	0	0	1522	0	0	1533	0
Flt Permitted		0.963			0.979			0.998			0.998	
Satd. Flow (perm)	0	1784	0	0	1793	0	0	1522	0	0	1533	0
Link Speed (mph)		20			15			25			25	
Link Distance (ft)		1297			282			666			350	
Travel Time (s)		44.2			12.8			18.2			9.5	
Volume (vph)	50	3	12	7	5	4	5	106	0	6	97	42
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	8%	8%	8%	3%	3%	3%
Lane Group Flow (vph)	0	77	0	0	19	0	0	131	0	0	170	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 22.7% ICU Level of Service A
Analysis Period (min) 15

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	50	3	12	7	5	4	5	106	0	6	97	42
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	59	4	14	8	6	5	6	125	0	7	114	49
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)											350	
pX, platoon unblocked												
vC, conflicting volume	297	289	139	305	314	125	164			125		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	297	289	139	305	314	125	164			125		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	91	99	98	99	99	99	100			100		
cM capacity (veh/h)	646	618	915	634	599	931	1379			1456		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	76	19	131	171
Volume Left	59	8	6	7
Volume Right	14	5	0	49
cSH	682	676	1379	1456
Volume to Capacity	0.11	0.03	0.00	0.00
Queue Length 95th (ft)	9	2	0	0
Control Delay (s)	10.9	10.5	0.4	0.3
Lane LOS	B	B	A	A
Approach Delay (s)	10.9	10.5	0.4	0.3
Approach LOS	B	B		

Intersection Summary			
Average Delay	2.9		
Intersection Capacity Utilization	22.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	12	12	12	12	12	12	8	12	12	8	12
Grade (%)		0%			0%			-1%			0%	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	0	1789	0	0	1709	0	0	1522	0	0	1526	0
Flt Permitted		0.958			0.972			0.997			0.999	
Satd. Flow (perm)	0	1789	0	0	1709	0	0	1522	0	0	1526	0
Link Speed (mph)		20			15			25			25	
Link Distance (ft)		467			299			197			683	
Travel Time (s)		15.9			13.6			5.4			18.6	
Volume (vph)	28	0	4	6	0	4	4	61	0	3	64	33
Confl. Peds. (#/hr)							2					2
Confl. Bikes (#/hr)			1									
Peak Hour Factor	0.69	0.69	0.69	0.83	0.83	0.83	0.84	0.84	0.84	0.86	0.86	0.86
Heavy Vehicles (%)	0%	2%	0%	2%	2%	2%	8%	8%	2%	2%	3%	3%
Bus Blockages (#/hr)	1	0	0	0	0	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	47	0	0	12	0	0	78	0	0	115	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 16.8% ICU Level of Service A
Analysis Period (min) 15

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			-1%			0%	
Volume (veh/h)	28	0	4	6	0	4	4	61	0	3	64	33
Peak Hour Factor	0.69	0.69	0.69	0.83	0.83	0.83	0.84	0.84	0.84	0.86	0.86	0.86
Hourly flow rate (vph)	41	0	6	7	0	5	5	73	0	3	74	38
Pedestrians		2										
Lane Width (ft)		12.0										
Walking Speed (ft/s)		4.0										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	190	185	96	189	204	73	115			73		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	190	185	96	189	204	73	115			73		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	95	100	99	99	100	100	100			100		
cM capacity (veh/h)	766	704	965	763	687	989	1435			1527		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	46	12	77	116
Volume Left	41	7	5	3
Volume Right	6	5	0	38
cSH	786	840	1435	1527
Volume to Capacity	0.06	0.01	0.00	0.00
Queue Length 95th (ft)	5	1	0	0
Control Delay (s)	9.9	9.3	0.5	0.2
Lane LOS	A	A	A	A
Approach Delay (s)	9.9	9.3	0.5	0.2
Approach LOS	A	A		

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	16.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	8	12
Grade (%)		4%	-1%		-5%	
Turning Speed (mph)	15			9	15	9
Satd. Flow (prot)	0	1728	1564	0	1476	0
Flt Permitted		0.993			0.955	
Satd. Flow (perm)	0	1728	1564	0	1476	0
Link Speed (mph)		20	25		25	
Link Distance (ft)		248	299		376	
Travel Time (s)		8.5	8.2		10.3	
Volume (vph)	3	22	21	59	69	4
Confl. Peds. (#/hr)	1			1	2	
Peak Hour Factor	0.66	0.66	0.93	0.93	0.90	0.90
Heavy Vehicles (%)	7%	7%	10%	10%	8%	8%
Bus Blockages (#/hr)	1	0	0	1	1	1
Lane Group Flow (vph)	0	38	86	0	81	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 15.8% ICU Level of Service A

Analysis Period (min) 15

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		4%	-1%		-5%	
Volume (veh/h)	3	22	21	59	69	4
Peak Hour Factor	0.66	0.66	0.93	0.93	0.90	0.90
Hourly flow rate (vph)	5	33	23	63	77	4
Pedestrians			2		1	
Lane Width (ft)			12.0		8.0	
Walking Speed (ft/s)			4.0		4.0	
Percent Blockage			0		0	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	87				100	55
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	87				100	55
tC, single (s)	4.2				6.5	6.3
tC, 2 stage (s)						
tF (s)	2.3				3.6	3.4
p0 queue free %	100				91	100
cM capacity (veh/h)	1477				880	994

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	38	86	81
Volume Left	5	0	77
Volume Right	0	63	4
cSH	1477	1700	886
Volume to Capacity	0.00	0.05	0.09
Queue Length 95th (ft)	0	0	8
Control Delay (s)	0.9	0.0	9.5
Lane LOS	A		A
Approach Delay (s)	0.9	0.0	9.5
Approach LOS			A

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	15.8%	ICU Level of Service	A
Analysis Period (min)	15		

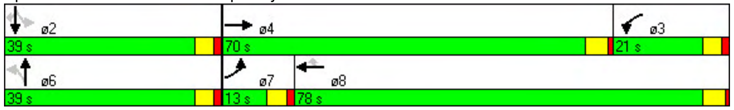
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	16	12	11	10	11	10	10	12	14	9
Grade (%)		1%			0%			-5%			2%	
Storage Length (ft)	150		75	225		100	60		0	0		50
Storage Lanes	1		1	1		1	1		0	0		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	1569	3022	1591	1577	3049	1317	1504	1238	0	0	1689	1270
Flt Permitted	0.950			0.950			0.656				0.689	
Satd. Flow (perm)	1569	3022	1556	1573	3049	1317	1039	1238	0	0	1175	1270
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			14			40		72				127
Link Speed (mph)		35			35			20			25	
Link Distance (ft)		394			447			418			541	
Travel Time (s)		7.7			8.7			14.3			14.8	
Volume (vph)	102	1435	92	191	1503	98	206	2	56	74	3	95
Confl. Peds. (#/hr)			5	5					23	23		
Confl. Bikes (#/hr)									3			
Peak Hour Factor	0.98	0.98	0.98	0.93	0.93	0.93	0.78	0.78	0.78	0.75	0.75	0.75
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	7%	7%	7%	2%	2%	2%
Bus Blockages (#/hr)	0	2	0	0	0	0	0	0	2	2	0	0
Lane Group Flow (vph)	104	1464	94	205	1616	105	264	75	0	0	103	127
Turn Type	Prot		Free	Prot		Perm	Perm			Perm		Perm
Protected Phases	7	4		3	8			6			2	
Permitted Phases			Free			8	6			2		2
Detector Phases	7	4		3	8	8	6	6		2	2	2
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	11.0	20.0		11.0	20.0	20.0	26.0	26.0		11.0	11.0	11.0
Total Split (s)	13.0	70.0	0.0	21.0	78.0	78.0	39.0	39.0	0.0	39.0	39.0	39.0
Total Split (%)	10.0%	53.8%	0.0%	16.2%	60.0%	60.0%	30.0%	30.0%	0.0%	30.0%	30.0%	30.0%
Maximum Green (s)	8.0	65.0		16.0	73.0	73.0	34.0	34.0		34.0	34.0	34.0
Yellow Time (s)	3.5	4.0		3.5	4.0	4.0	3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.5	1.0		1.5	1.0	1.0	1.5	1.5		1.5	1.5	1.5
Lead/Lag	Lead	Lead		Lag	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.5		3.0	3.5	3.5	3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Time To Reduce (s)	20.0	20.0		20.0	20.0	20.0	20.0	20.0		20.0	20.0	20.0
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None		None	None	None
Walk Time (s)		7.0			7.0	7.0	7.0	7.0				
Flash Dont Walk (s)		8.0			8.0	8.0	14.0	14.0				
Pedestrian Calls (#/hr)		5			5	5	23	23				
Act Effct Green (s)	9.7	66.7	130.0	17.0	74.0	74.0	34.3	34.3			34.3	34.3
Actuated g/C Ratio	0.07	0.51	1.00	0.13	0.57	0.57	0.26	0.26			0.26	0.26
v/c Ratio	0.88	0.94	0.06	1.00	0.93	0.14	0.96	0.20			0.33	0.30

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	118.6	30.0	0.1	104.3	29.5	9.3	93.1	9.9			41.9	7.9
Queue Delay	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay	118.6	31.3	0.1	104.3	29.5	9.3	93.1	9.9			41.9	7.9
LOS	F	C	A	F	C	A	F	A			D	A
Approach Delay		35.0			36.3			74.7			23.2	
Approach LOS		D			D			E			C	
90th %ile Green (s)	8.0	65.0		16.0	73.0	73.0	34.0	34.0		34.0	34.0	34.0
90th %ile Term Code	Max	Coord		Max	Coord	Coord	Max	Max		Hold	Hold	Hold
70th %ile Green (s)	8.0	65.0		16.0	73.0	73.0	34.0	34.0		34.0	34.0	34.0
70th %ile Term Code	Max	Coord		Max	Coord	Coord	Max	Max		Hold	Hold	Hold
50th %ile Green (s)	8.0	65.0		16.0	73.0	73.0	34.0	34.0		34.0	34.0	34.0
50th %ile Term Code	Max	Coord		Max	Coord	Coord	Max	Max		Hold	Hold	Hold
30th %ile Green (s)	8.0	65.0		16.0	73.0	73.0	34.0	34.0		34.0	34.0	34.0
30th %ile Term Code	Max	Coord		Max	Coord	Coord	Max	Max		Hold	Hold	Hold
10th %ile Green (s)	11.6	68.6		16.0	73.0	73.0	30.4	30.4		30.4	30.4	30.4
10th %ile Term Code	Max	Coord		Max	Coord	Coord	Gap	Gap		Hold	Hold	Hold
Queue Length 50th (ft)	85	490	0	170	347	11	219	2			70	0
Queue Length 95th (ft)	#207	#772	0	m#328	#728	m48	#308	29			101	27
Internal Link Dist (ft)		314			367			338			461	
Turn Bay Length (ft)	150		75	225		100	60					50
Base Capacity (vph)	118	1551	1556	206	1736	767	280	386			316	435
Starvation Cap Reductn	0	25	0	0	0	0	0	0			0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0			0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0			0	0
Reduced v/c Ratio	0.88	0.96	0.06	1.00	0.93	0.14	0.94	0.19			0.33	0.29

Intersection Summary

Area Type: CBD
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 61 (47%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.00
Intersection Signal Delay: 38.2 Intersection LOS: D
Intersection Capacity Utilization 85.2% ICU Level of Service E
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 15: Kitsap Way & Shorewood Dr



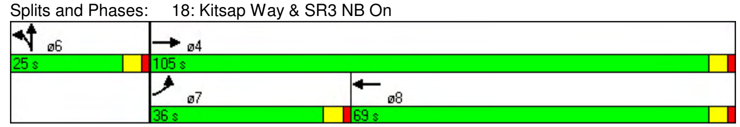
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	11	12	12	12	12	12	12
Grade (%)		0%			-1%			-1%			0%	
Storage Length (ft)	115		0	0		0	0		115	0		0
Storage Lanes	1		0	0		1	0		1	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50			50	50	50	50	50			
Trailing Detector (ft)	0	0			0	0	0	0	0			
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	1577	3049	0	0	3035	1358	0	1578	1405	0	0	0
Flt Permitted	0.950							0.955				
Satd. Flow (perm)	1572	3049	0	0	3035	1328	0	1578	1405	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						599			193			
Link Speed (mph)		35			35			35			50	
Link Distance (ft)		404			394			895			1104	
Travel Time (s)		7.9			7.7			17.4			15.1	
Volume (vph)	145	1464	0	0	898	928	42	3	170	0	0	0
Confl. Peds. (#/hr)	4					4						
Peak Hour Factor	0.97	0.97	0.92	0.92	0.91	0.91	0.88	0.88	0.88	0.92	0.92	0.92
Heavy Vehicles (%)	3%	3%	2%	2%	4%	4%	4%	4%	4%	2%	2%	2%
Lane Group Flow (vph)	149	1509	0	0	987	1020	0	51	193	0	0	0
Turn Type	Prot					Free	Split		Free			
Protected Phases	7	4			8		6	6				
Permitted Phases						Free			Free			
Detector Phases	7	4			8		6	6				
Minimum Initial (s)	6.0	6.0			6.0		6.0	6.0				
Minimum Split (s)	11.0	20.0			24.0		11.0	11.0				
Total Split (s)	36.0	105.0	0.0	0.0	69.0	0.0	25.0	25.0	0.0	0.0	0.0	0.0
Total Split (%)	27.7%	80.8%	0.0%	0.0%	53.1%	0.0%	19.2%	19.2%	0.0%	0.0%	0.0%	0.0%
Maximum Green (s)	31.0	100.0			64.0		20.0	20.0				
Yellow Time (s)	3.5	3.5			3.5		3.5	3.5				
All-Red Time (s)	1.5	1.5			1.5		1.5	1.5				
Lead/Lag	Lead				Lag							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0				
Minimum Gap (s)	3.0	3.0			3.0		3.0	3.0				
Time Before Reduce (s)	6.0	6.0			6.0		6.0	6.0				
Time To Reduce (s)	20.0	20.0			20.0		20.0	20.0				
Recall Mode	None	C-Max			C-Max		None	None				
Walk Time (s)		7.0			7.0							
Flash Dont Walk (s)		8.0			12.0							
Pedestrian Calls (#/hr)		4			4							
Act Effct Green (s)	18.0	114.5			91.8	130.0		10.5	130.0			
Actuated g/C Ratio	0.14	0.88			0.71	1.00		0.08	1.00			
v/c Ratio	0.68	0.56			0.46	0.77		0.40	0.14			
Control Delay	74.1	1.2			4.4	8.9		65.2	0.2			
Queue Delay	0.0	0.3			0.5	0.0		0.0	0.0			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	74.1	1.6			4.9	8.9		65.2	0.2			
LOS	E	A			A	A		E	A			
Approach Delay		8.1			7.0			13.8				
Approach LOS		A			A			B				
90th %ile Green (s)	22.0	106.8			79.8		13.2	13.2				
90th %ile Term Code	Gap	Coord			Coord		Gap	Gap				
70th %ile Green (s)	20.6	109.0			83.4		11.0	11.0				
70th %ile Term Code	Gap	Coord			Coord		Gap	Gap				
50th %ile Green (s)	17.8	110.6			87.8		9.4	9.4				
50th %ile Term Code	Gap	Coord			Coord		Gap	Gap				
30th %ile Green (s)	15.0	112.2			92.2		7.8	7.8				
30th %ile Term Code	Gap	Coord			Coord		Gap	Gap				
10th %ile Green (s)	9.4	125.0			110.6		0.0	0.0				
10th %ile Term Code	Gap	Coord			Coord		Skip	Skip				
Queue Length 50th (ft)	106	17			71	337		42	0			
Queue Length 95th (ft)	m148	25			m85	m346		81	0			
Internal Link Dist (ft)		324			314			815			1024	
Turn Bay Length (ft)	115								115			
Base Capacity (vph)	388	2686			2142	1328		255	1405			
Starvation Cap Reductn	0	551			673	0		0	0			
Spillback Cap Reductn	0	356			0	0		0	164			
Storage Cap Reductn	0	0			0	0		0	0			
Reduced v/c Ratio	0.38	0.71			0.67	0.77		0.20	0.16			

Intersection Summary

Area Type: CBD
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 79 (61%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 55
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.77
Intersection Signal Delay: 7.9 Intersection LOS: A
Intersection Capacity Utilization 56.6% ICU Level of Service B
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 18: Kitsap Way & SR3 NB On



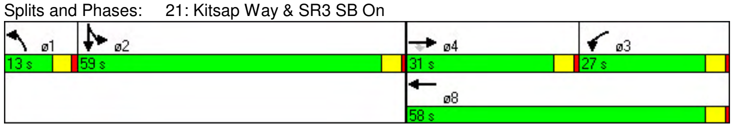
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	12	12	16	12	12
Grade (%)		0%			-1%			1%			-1%	
Storage Length (ft)	0		240	150		0	0		165	0		250
Storage Lanes	0		1	2		0	1		1	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)		50	50	50	50		50		50	50	50	50
Trailing Detector (ft)		0	0	0	0		0		0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Satd. Flow (prot)	0	3020	1392	3045	3035	0	1539	0	1377	1723	1549	1432
Flt Permitted				0.950			0.950			0.950	0.968	
Satd. Flow (perm)	0	3020	1392	3045	3035	0	1538	0	1360	1717	1546	1414
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			218						346			5
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		681			404			1026			976	
Travel Time (s)		13.3			7.9			20.0			19.0	
Volume (vph)	0	420	196	381	558	0	55	0	361	834	166	7
Confl. Peds. (#/hr)							1		2	2		1
Confl. Bikes (#/hr)									1			1
Peak Hour Factor	0.92	0.90	0.90	0.93	0.93	0.92	0.92	0.92	0.92	0.93	0.93	0.93
Heavy Vehicles (%)	2%	4%	4%	4%	4%	2%	5%	2%	5%	2%	2%	2%
Bus Blockages (#/hr)	0	0	1	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	467	218	410	600	0	60	0	392	557	518	8
Turn Type			Perm	Prot			Prot		Free	Split		Free
Protected Phases		4		3	8		1			2	2	
Permitted Phases			4						Free			Free
Detector Phases		4	4	3	8		1			2	2	
Minimum Initial (s)		6.0	6.0	3.0	6.0		3.0			3.0	3.0	
Minimum Split (s)		19.5	19.5	7.5	19.5		7.5			25.5	25.5	
Total Split (s)	0.0	31.0	31.0	27.0	58.0	0.0	13.0	0.0	0.0	59.0	59.0	0.0
Total Split (%)	0.0%	23.8%	23.8%	20.8%	44.6%	0.0%	10.0%	0.0%	0.0%	45.4%	45.4%	0.0%
Maximum Green (s)		26.5	26.5	22.5	53.5		8.5			54.5	54.5	
Yellow Time (s)		3.5	3.5	3.5	3.5		3.5			3.5	3.5	
All-Red Time (s)		1.0	1.0	1.0	1.0		1.0			1.0	1.0	
Lead/Lag		Lead	Lead	Lag			Lead			Lag	Lag	
Lead-Lag Optimize?		Yes	Yes	Yes			Yes			Yes	Yes	
Vehicle Extension (s)		3.5	3.5	4.0	3.5		3.5			3.5	3.5	
Minimum Gap (s)		3.0	3.0	3.0	3.0		3.0			3.0	3.0	
Time Before Reduce (s)		6.0	6.0	6.0	6.0		6.0			6.0	6.0	
Time To Reduce (s)		20.0	20.0	20.0	20.0		20.0			20.0	20.0	
Recall Mode		C-Max	C-Max	None	C-Max		Min			Ped	Ped	
Walk Time (s)		7.0	7.0	0.0	7.0					7.0	7.0	
Flash Dont Walk (s)		8.0	8.0	0.0	8.0					14.0	14.0	
Pedestrian Calls (#/hr)		0	0	0	0					0	0	
Act Effct Green (s)		34.3	34.3	23.0	61.3		8.6		130.0	48.0	48.0	130.0
Actuated g/C Ratio		0.26	0.26	0.18	0.47		0.07		1.00	0.37	0.37	1.00
v/c Ratio		0.59	0.41	0.76	0.42		0.58		0.29	0.87	0.91	0.01

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay		47.1	8.1	46.5	14.6		81.5		0.5	53.1	58.6	0.0
Queue Delay		0.0	0.0	0.0	0.2		0.0		0.0	0.0	0.0	0.0
Total Delay		47.1	8.1	46.5	14.8		81.5		0.5	53.1	58.6	0.0
LOS		D	A	D	B		F		A	D	E	A
Approach Delay		34.7			27.7						55.3	
Approach LOS		C			C						E	
90th %ile Green (s)		26.5	26.5	22.5	53.5		8.5			54.5	54.5	
90th %ile Term Code		Coord	Coord	Max	Coord		Max			Max	Max	
70th %ile Green (s)		26.5	26.5	22.5	53.5		8.5			54.5	54.5	
70th %ile Term Code		Coord	Coord	Max	Coord		Max			Max	Max	
50th %ile Green (s)		30.9	30.9	22.5	57.9		8.5			50.1	50.1	
50th %ile Term Code		Coord	Coord	Max	Coord		Max			Gap	Gap	
30th %ile Green (s)		37.3	37.3	22.5	64.3		8.5			43.7	43.7	
30th %ile Term Code		Coord	Coord	Hold	Coord		Max			Gap	Gap	
10th %ile Green (s)		47.9	47.9	22.5	74.9		6.7			34.9	34.9	
10th %ile Term Code		Coord	Coord	Hold	Coord		Gap			Gap	Gap	
Queue Length 50th (ft)		186	0	162	108		50		0	442	417	0
Queue Length 95th (ft)		259	69	222	187		#106		0	573	555	0
Internal Link Dist (ft)		601			324			946			896	
Turn Bay Length (ft)			240	150					165			250
Base Capacity (vph)		797	528	539	1432		107		1360	729	655	1414
Starvation Cap Reductn		0	0	0	286		0		0	0	0	0
Spillback Cap Reductn		0	0	0	0		0		0	0	0	0
Storage Cap Reductn		0	0	0	0		0		0	0	0	0
Reduced v/c Ratio		0.59	0.41	0.76	0.52		0.56		0.29	0.76	0.79	0.01

Intersection Summary

Area Type: CBD
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 85 (65%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.91
Intersection Signal Delay: 36.1 Intersection LOS: D
Intersection Capacity Utilization 72.8% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 21: Kitsap Way & SR3 SB On



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	12	12
Grade (%)	-1%			1%	0%	
Storage Length (ft)		0	150		0	0
Storage Lanes		0	0		0	1
Turning Speed (mph)		9	15		15	9
Satd. Flow (prot)	3067	0	0	3064	0	1450
Flt Permitted						
Satd. Flow (perm)	3067	0	0	3064	0	1450
Link Speed (mph)	35			35	20	
Link Distance (ft)	447			395	393	
Travel Time (s)	8.7			7.7	13.4	
Volume (vph)	1518	93	0	1844	0	140
Peak Hour Factor	0.92	0.92	0.93	0.93	0.92	0.92
Lane Group Flow (vph)	1751	0	0	1983	0	152
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: CBD

Control Type: Unsignalized

Intersection Capacity Utilization 66.2% ICU Level of Service C

Analysis Period (min) 15

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	-1%			1%	0%	
Volume (veh/h)	1518	93	0	1844	0	140
Peak Hour Factor	0.92	0.92	0.93	0.93	0.92	0.92
Hourly flow rate (vph)	1650	101	0	1983	0	152
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)	447					
pX, platoon unblocked			0.54		0.54	0.54
vC, conflicting volume			1751		2692	876
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1542		3275	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	74
cM capacity (veh/h)			232		4	589

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	1100	651	991	991	152
Volume Left	0	0	0	0	0
Volume Right	0	101	0	0	152
cSH	1700	1700	1700	1700	589
Volume to Capacity	0.65	0.38	0.58	0.58	0.26
Queue Length 95th (ft)	0	0	0	0	26
Control Delay (s)	0.0	0.0	0.0	0.0	13.2
Lane LOS					B
Approach Delay (s)	0.0		0.0		13.2
Approach LOS					B

Intersection Summary

Average Delay	0.5		
Intersection Capacity Utilization	66.2%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		0%	1%		0%	
Turning Speed (mph)	15			9	15	9
Satd. Flow (prot)	1593	3185	3169	1418	1550	0
Flt Permitted	0.950				0.977	
Satd. Flow (perm)	1593	3185	3169	1418	1550	0
Link Speed (mph)		35	35		20	
Link Distance (ft)		395	1377		375	
Travel Time (s)		7.7	26.8		12.8	
Volume (vph)	6	1643	1822	4	21	24
Peak Hour Factor	0.92	0.92	0.92	0.92	0.38	0.38
Heavy Vehicles (%)	2%	2%	2%	2%	0%	0%
Lane Group Flow (vph)	7	1786	1980	4	118	0
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	CBD
Control Type: Unsignalized	
Intersection Capacity Utilization 66.0%	ICU Level of Service C
Analysis Period (min) 15	

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	1%		0%	
Volume (veh/h)	6	1643	1822	4	21	24
Peak Hour Factor	0.92	0.92	0.92	0.92	0.38	0.38
Hourly flow rate (vph)	7	1786	1980	4	55	63
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					TWLTL	
Median storage veh)					0	
Upstream signal (ft)		842				
pX, platoon unblocked					0.56	
vC, conflicting volume	1985				2886	990
vC1, stage 1 conf vol					1980	
vC2, stage 2 conf vol					906	
vCu, unblocked vol	1985				3591	990
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	98				0	75
cM capacity (veh/h)	287				55	249

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	7	893	893	990	990	4	118
Volume Left	7	0	0	0	0	0	55
Volume Right	0	0	0	0	0	4	63
cSH	287	1700	1700	1700	1700	1700	95
Volume to Capacity	0.02	0.53	0.53	0.58	0.58	0.00	1.25
Queue Length 95th (ft)	2	0	0	0	0	0	208
Control Delay (s)	17.8	0.0	0.0	0.0	0.0	0.0	255.8
Lane LOS	C						F
Approach Delay (s)	0.1			0.0			255.8
Approach LOS							F

Intersection Summary			
Average Delay	7.8		
Intersection Capacity Utilization	66.0%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Turning Speed (mph)	15	9	15			9
Satd. Flow (prot)	1697	0	0	1720	1703	0
Flt Permitted	0.958					
Satd. Flow (perm)	1697	0	0	1720	1703	0
Link Speed (mph)	15			25	25	
Link Distance (ft)	362			683	666	
Travel Time (s)	16.5			18.6	18.2	
Volume (vph)	5	1	1	105	108	9
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	5%	5%	10%	10%	10%	10%
Bus Blockages (#/hr)	1	1	0	1	1	0
Lane Group Flow (vph)	8	0	0	141	156	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 16.3% ICU Level of Service A

Analysis Period (min) 15

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	5	1	1	105	108	9
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	7	1	1	140	144	12
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)					1016	
pX, platoon unblocked						
vC, conflicting volume	293	150	156			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	293	150	156			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	99	100	100			
cM capacity (veh/h)	691	889	1377			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	8	141	156
Volume Left	7	1	0
Volume Right	1	0	12
cSH	718	1377	1700
Volume to Capacity	0.01	0.00	0.09
Queue Length 95th (ft)	1	0	0
Control Delay (s)	10.1	0.1	0.0
Lane LOS	B	A	
Approach Delay (s)	10.1	0.1	0.0
Approach LOS	B		

Intersection Summary

Average Delay	0.3		
Intersection Capacity Utilization	16.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%			-1%	-5%	
Turning Speed (mph)	15	9	15			9
Satd. Flow (prot)	1712	0	0	1729	1756	0
Flt Permitted	0.950					
Satd. Flow (perm)	1712	0	0	1729	1756	0
Link Speed (mph)	15			25	25	
Link Distance (ft)	248			290	197	
Travel Time (s)	11.3			7.9	5.4	
Volume (vph)	1	0	0	67	78	2
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	5%	5%	10%	10%	10%	10%
Bus Blockages (#/hr)	1	1	0	1	1	0
Lane Group Flow (vph)	1	0	0	89	107	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 14.2% ICU Level of Service A
Analysis Period (min) 15

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			-1%	-5%	
Volume (veh/h)	1	0	0	67	78	2
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	1	0	0	89	104	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	195	105	107			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	195	105	107			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	100	100	100			
cM capacity (veh/h)	787	941	1436			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	1	89	107
Volume Left	1	0	0
Volume Right	0	0	3
cSH	787	1436	1700
Volume to Capacity	0.00	0.00	0.06
Queue Length 95th (ft)	0	0	0
Control Delay (s)	9.6	0.0	0.0
Lane LOS	A		
Approach Delay (s)	9.6	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	14.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%			-1%	-5%	
Turning Speed (mph)	15	9	15			9
Satd. Flow (prot)	1712	0	0	1727	1748	0
Flt Permitted	0.950			0.999		
Satd. Flow (perm)	1712	0	0	1727	1748	0
Link Speed (mph)	15			25	25	
Link Distance (ft)	238			376	290	
Travel Time (s)	10.8			10.3	7.9	
Volume (vph)	2	0	1	64	73	5
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	5%	5%	10%	10%	10%	10%
Bus Blockages (#/hr)	1	1	0	1	1	0
Lane Group Flow (vph)	3	0	0	86	104	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 14.2% ICU Level of Service A
Analysis Period (min) 15

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			-1%	-5%	
Volume (veh/h)	2	0	1	64	73	5
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	3	0	1	85	97	7
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	189	101	104			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	189	101	104			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	100	100	100			
cM capacity (veh/h)	793	947	1439			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	3	87	104
Volume Left	3	1	0
Volume Right	0	0	7
cSH	793	1439	1700
Volume to Capacity	0.00	0.00	0.06
Queue Length 95th (ft)	0	0	0
Control Delay (s)	9.6	0.1	0.0
Lane LOS	A	A	
Approach Delay (s)	9.6	0.1	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	14.2%	ICU Level of Service	A
Analysis Period (min)	15		

F. AESTHETICS


718 SQ FT.
OFFICE
ASE SPACE
VAILABLE
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