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September 9, 2015

Project No. 0624.04.06

Re: Northern State Campus—Utility Infrastructure and Stormwater Analysis

To Whom It May Concern:

On behalf of the City of Sedro-Woolley and the Port of Skagit, Maul Foster & Alongi, Inc. (MFA) has conducted an assessment of utilities including stormwater, water, sewer, power, and telecommunications to support the Planned Action Environmental Impact Statement (EIS) review of redevelopment alternatives for the Northern State Campus. The existing utility and stormwater management approach and the evaluation of potential mitigation strategies are discussed below.

EXISTING CONDITIONS

The 225-acre Northern State Campus is located northeast of the City of Sedro-Woolley and is bound on the north, east, and south sides by the Northern State Recreation Area and on the west by Fruitdale Road and residential property. The site is generally flat, with a gradual slope to the south. Hansen Creek, classified as a Type F fish-bearing stream, runs adjacent to the property boundaries on the north and east sides. Brickyard Creek, also a Type F fish-bearing stream, flows through the western and southern portions of the campus. The site, owned by the Washington State Department of Enterprise Services, comprises parcels P100632, P100646, P38607, P39356, and P38607 in sections 7, 8, 17, and 18 in township 35N, range 5E, W.M. The main campus is centrally located across these parcels. Research indicates that all utility lines on the Center are privately owned with the exception of potable water, which is owned at least partially by the Skagit Public Utility District (PUD).

Approximately the western third of the campus, along with areas north and south of the main campus, is undeveloped forestland. The developed area of the campus has large expanses of landscaped and open green areas. Existing impervious areas on the campus include approximately 575,000 square feet of building footprints, 35,000 square feet of impervious foundations remaining from demolished buildings, and 725,000 square feet of impervious surfacing (including roadways, parking lots, and sidewalks). In any development scenario besides no action, buildings not matching the historic character of the campus will be demolished, eliminating approximately 160,000 square feet of impervious areas. The campus is covered under Skagit County's National Pollutant Discharge Elimination System Western Washington Phase II Municipal Stormwater Permit.

STORMWATER

Storm Basins

Although the total campus site is approximately 225 acres, only the 120 acres immediately surrounding the developed areas of the campus are considered in this analysis. No previous provisions were made to accommodate the remaining undeveloped land, and for the purposes of this analysis it is assumed that it will remain undeveloped. The storm basins have been developed/modeled on those defined in the Northern State Multi-Service Center Utilities Master Plan Report by Skagit Surveyors & Engineers (Skagit Surveyors, 1998). Further analysis and studies of the storm basins will be required as the project progresses from planning to final design and permitting.

Basin A makes up the western portion of the main campus and includes the Wilkes, Valdez, Thompson, Coleman, and Trevennen buildings; Hub Theater; and part of the commissary. Drainage from the developed portion of this approximately 22.22-acre basin is collected and conveyed through catch basins and piping to a water-quality pond at the southern end of the basin. Flow from this pond is released to a ravine south of Thompson Drive and near the Department of Enterprise Services (DES) administrative buildings. This ravine also captures stormwater from other storm basins on site and eventually discharges to Brickyard Creek.

Basin B, at approximately 6.70 acres, is the most developed area of the campus and thus contains the highest ratio of impervious surfacing to basin area. Stormwater is captured and conveyed by catch basins and pipe, which drains to a main line pipe in Northern State Road. The main line conveys stormwater to a storm pond in the northeast corner of the site, with an outfall to Hansen Creek.

Basin C contains roughly 26.72 acres and covers the north central and eastern portions of the site. Buildings in Basin C include Smith, Gray, Fraser, the recreation building, the RSN building, and the Cascade Job Corps Center (CJCC) security and landscaping buildings. Stormwater in this basin is collected by catch basins and conveyed to a main line draining south, with an ultimate outfall at Hansen Creek.

Basin D is approximately 8.35 acres and is located in the south central region of the campus and includes the Douglas building. Historically, drainage from this basin has been discharged to the ravine near the DES buildings. It is unclear whether this system is still functioning or if other outlets have supplemented and/or replaced this discharge point. It is also possible that this basin has an outlet at the storm pond just west of the Douglas building or that drainage is being conveyed to the area at the southeast corner of the site with an outlet to Hansen Creek.

Basin E is directly south of the Douglas building and comprises approximately 16.59 acres, including the DES offices. This basin is drained into the nearby ravine, which in turn flows to Brickyard Creek.

Basin F is approximately 2.79 acres and serves the area around the National Guard Armory in the southwest corner of the site. Stormwater in this region is collected by catch basins and conveyed via 6- to 12-inch-diameter polyvinyl chloride (PVC) and corrugated metal pipe to a pond west of the armory. The utilities master plan report (Skagit Surveyors, 1998) states that the pond "is pumped into an irrigation field to the south," but the current status of this system is unknown.

Basins G and H are west of the CJCC administration building in the northwest corner of the site and are largely undeveloped. Runoff from these basins feeds Hansen Creek after being collected in a ditch near the CJCC landscaping building. Basin G is approximately 3.14 acres and Basin H is approximately 3.68 acres.

Basin I consists of approximately 31.53 acres along the northern and eastern edges of the developed campus. There is minimal development in this basin. Any storm runoff that is generated in this basin flows overland to Hansen Creek.

Existing Stormwater Infrastructure

Based on the limited documentation available, it appears that the storm system has been pieced together with repairs, replacements, and improvements through the years. While it seems fairly certain that upgrades and improvements have taken place in the two decades since the utility master plan report was written (Skagit Surveyors, 1998), lack of documentation has made it difficult to determine the extent of the improvements actually constructed. In their report, Skagit Surveyors estimated construction costs for the needed improvements as $1,285,179 for the storm sewer, $211,130 for water, and $760,921 for the sanitary sewer system, for a grand total of $2,257,230 of utility improvements (Skagit Surveyors, 1998). According to the Washington State Department of Enterprise Services 20-Year History of Capital Expenditures for the site, $2,434,427 of improvements to the storm sewer, water, and sanitary sewer systems were made from 1997 to 2011. While it has been confirmed that a few items from these improvements have not been constructed, based on these cost estimates it is plausible that most of the recommended improvements/upgrades were completed. However, further research via field verification or documentation such as as-builts of the utility systems would be required in order to verify this assumption. Overall, the existing stormwater infrastructure does not appear to have any flow controls in place and only 2 small water quality treatment ponds. Thus, only a small percentage of the overall site receives stormwater treatment before discharge to surrounding streams at this time. A broad overview of the storm system locations can be found in the attached Figure 1—Stormwater Management. Storm system improvements that were suggested by Skagit Surveyors (1998), and improvements likely made to the site, include the following:

- Phase I was to include improvements to Basin B and involved replacing the storm drainage system behind the CJCC administration building. As it is stated in the

utility master plan report that this phase was under construction at the time of the report (Skagit Surveyors, 1998), it is assumed that this phase was actually completed.

- Phase II included the replacement of the storm system for the CJCC dormitories (Wilkes, Valdez, Thompson, and Smith buildings), the Coleman building, Hub Road, and part of the kitchen. In addition, a water quality treatment pond was constructed near the southwest corner of the Denny building to treat stormwater before it drains to the ravine just south of Thompson Drive. A site visit conducted by MFA staff in March 2015 confirmed that this pond had been constructed. The improvements are all located in Basin A.
- Phase III consisted of improvements in Basins D and E, including the replacement of the outfalls to the ravine near Thompson Drive. This ravine eventually drains to Brickyard Creek.
- Phase IV was to replace the storm sewer infrastructure in Basin C, construct a water detention and quality control pond, and provide improvements to the existing Hansen Creek outlet. MFA's site visit revealed that the pond was never constructed. It is unclear whether the remaining improvements from this phase were constructed.
- Phase V consisted of storm improvements and pipe and structure replacements in Basin I. This included the replacement of an outfall at the VST building.
- Phase VI was to replace the storm main line in Northern State Road, including the tributary lines to the north of the road, and construction of a quality-control pond prior to the basin outfall discharging to Hansen Creek. The field visit conducted by MFA staff in March 2015 also confirmed that this pond was constructed. These improvements were in Basins B, C, and I.
- Phase VII included improvements to road ditches and culvert installations to the storm drainage system downstream of the Trevennen building, in Basin A.

The existing stormwater management system at the Center was designed to protect buildings and infrastructure by conveying runoff to nearby streams, and provides minimal water quality or quantity controls. Existing stormwater detention basins serve only approximately 26% of the roughly 120 acres of developed land within the Center. These basins primarily serve as quantity control for stormwater discharge.

Mitigation Strategies

Currently stormwater discharge is regulated under the City's NPDES Western Washington Phase II Municipal Stormwater Permit. The NPDES Phase II Municipal Stormwater Permit for Western Washington was issued by Ecology in January 2007 and went into effect in

February. A new five year permit has been issued and took effect on August 1, 2013 and expires July 31, 2018. The permit allows municipalities to discharge stormwater runoff from municipal drainage systems into the state's water bodies (i.e., streams, rivers, lakes, wetlands) as long as municipalities implement programs to protect water quality by reducing the discharge of "non-point source" pollutants to the "maximum extent practicable" through application of permit-specified best management practices. However, development for industrial activities on the site may be required to obtain an Industrial Stormwater General Permit (ISGP) from the Washington Department of Ecology. The ISGP is required for industrial facilities that have stormwater discharging to a surface waterbody or a storm sewer system that drains to a surface waterbody. It is triggered based solely on the industrial activity use proposed. The current ISGP became effective January 2nd, 2015 and will expire on December 31st, 2019. The SWMC, Chapters 13.36 Stormwater Management and 13.40 Stormwater Maintenance currently adopt the 2005 Ecology Stormwater Manual for Western Washington. The City's current permitting process includes site plan review and inspection of all proposed development sites. By December 31, 2016, the City is required to review, revise and make effective local development-related codes, rules, standards, or other enforceable documents to incorporate and require low-impact development (LID) principles.

Under Alternative 1, it is assumed that no additional development will occur. Stormwater management would continue to be limited to those presently existing, since there would be no regulatory requirements to upgrade the system. Stormwater runoff impacts that affect the streams on the Center would continue.

In both Alternative 2 and 3, with additional building permits, stormwater facilities would be constructed to treat and detain new pollution generating impervious areas and detain non-pollution generating impervious areas to meet predevelopment flows, as appropriate. Because of the limited stormwater infrastructure currently in place on the Center, it is expected that redevelopment will bring more of the developed area into a stormwater management system that meets higher performance standards than the existing facilities. With the larger area of development anticipated under Alternative 3, it is expected that the potential impacts from stormwater would be greater than in Alternative 2.

Further analysis will be necessary to determine the feasibility and effectiveness of localized facilities near the newly constructed impervious areas or whether a large regional facility would be better suited to the site. In either scenario, on-site stormwater infiltration will not be a plausible option because of the poorly draining clay soils throughout the site. Instead, stormwater will outlet to the ravine south of Thompson Drive, Brickyard Creek, or Hansen Creek. In any development alternative, the stormwater system will be designed to current regulations, including matching predeveloped release rates.

In the scenario of using small localized facilities spread throughout the site to treat new and redeveloped impervious areas, the underground infrastructure required, such as manholes and storm pipe, will be minimized. Facilities would include bioretention cells for treatment and aboveground detention ponds or underground vaults for areas that do not require treatment. The facilities would be incorporated to look like a part of the landscaping on the site, and thus would blend in with the overall historic feel of the site. Bioretention facilities are a low-impact development form of stormwater treatment that would be easily expandable should future development ever demand it. In the localized-facility approach, stormwater would outlet to one of the on-site streams (Hansen or Brickyard) or the ravine south of Thompson Drive, using the existing outfalls to the extent feasible.

The second layout option would be to construct a regional facility near the southern end of the site. Stormwater from across the site would be captured and conveyed to the regional facility through catch basins, manholes, and pipes for treatment and detention. This approach would require more disturbance for underground systems, but would reduce the overall maintenance of the storm system, as there would be only one facility to maintain. As the facility likely would be located away from the main campus, it would not interfere with the functionality and historic feel of the campus. A regional stormwater facility most likely would require a new outlet to one of the on-site streams.

Roof areas will not require treatment but will have to be detained to match predevelopment flows (pre-European forested condition). All other pollution generating impervious surfaces (parking lots, roadways, etc.) that are constructed or redeveloped will be treated by bioretention facilities. As Alternative 1 does not include any new construction or redevelopment no stormwater management facilities are being proposed with it. Alternative 2 is assumed to include approximately 520,000 square feet of new or redeveloped pollution generating surfaces and 600,000 square feet of building rooftops. This would require about 25,000 square feet of bioretention facilities and 170,000 square feet for an aboveground detention pond. Alternative 3 is assumed to include approximately 665,000 square feet of new or redeveloped pollution generating surfaces and approximately 1,000,000 square feet of building rooftops. This would require roughly 40,000 square feet of bioretention facilities and 200,000 square feet for an aboveground detention facility. General sizing of the detention pond and bioretention facilities is based on the 2012 Western Washington Hydrology Model. The general sizing calculations from this model may be found in the attachments to this report.

Since infiltration of stormwater would be difficult because of clay soils, rainwater harvesting for new buildings may be a viable possibility to reduce stormwater discharge from the site. Rainwater from building rooftops could be captured and reused in a variety of ways across the site, including landscape irrigation and as a source for the steam heat produced on site. Currently, the on-site power plant uses large amounts of water and has a significant utility bill each month. The possibility of capturing and reusing stormwater to power this plant would not

only reduce the water bill for the site significantly but also decrease the size of detention ponds required and reduce concerns about releasing stormwater to the surrounding streams from much larger impervious areas as the site is developed.

POTABLE WATER

Existing Water Infrastructure

Potable water is provided to NSC by the PUD. The PUD has over 31 million gallons of storage volume and provides 9 million gallons of water to approximately 65,000 people every day. The source of potable water for the campus is the Judy Reservoir Water Treatment Plant. The Judy Reservoir system obtains its water from four streams in the Cultus Mountain watershed (Gilligan Creek, Salmon Creek, Turner Creek and Mundt Creek). These streams eventually flow into the Skagit River. Instream Flows set by Rule under WAC 173-503 limit the diversion quantities available from each stream based on the month of the year. When the water measured on a downstream gauge does not meet these minimum flows, the PUD diverts water from its supplemental point of diversion on the Skagit River up to the maximum water right for each stream, as necessary. Based on information provided by the PUD, current water sources are sufficient to provide adequate supply and pressure to the Center year-round. Since the campus is located outside the municipal boundary, an additional premium is charged for potable water.

Water from the PUD is supplied to the site via a 12-inch-diameter ductile iron (class 50) pipe that enters the site near the intersection of Fruitdale Road and Northern State Road (see Figure 2 – Utilities). Within the Center the water line is reduced to an eight-inch diameter ductile iron pipe that loops through the site and provides potable water to the buildings. The main water line on the Center is owned by the PUD.

There is a 6-inch to 2-inch-diameter pressure-reducing valve (PRV) installed near the entrance of the campus, however, the pressure is actually regulated by another PRV located to the south at the corner of Portobello Avenue and Fruitdale Road. Although the water main is predominantly ductile iron pipe after the PRV, there are a variety of pipe sizes and materials throughout the campus, including isolated sections of PVC C-900, cast iron, and steel pipe. Water is provided to individual buildings through pipes in a variety of materials such as polyethylene, galvanized, and copper pipe ranging in size from 5/8-inch to 2-inch diameter.

There are 46 backflow-prevention assemblies in 13 sites on the campus. Two of these assemblies require repair at this time, but all others are current with their annual testing requirements. According to a recent Skagit PUD system map and customer service database, the Center has 22 fire hydrants, 15 meters, and 3 metered fire lines on site.

Over a five-year period, water use has averaged 94,235 cubic feet per month. Table 1 summarizes the current use for selected buildings.

Table 1
Typical Water Use (cf) for Selected Buildings 2010-2014

Date	Wilkes, Valdez, Thompson	Commissary, CJCC Trades, Cultural Center, Maintenance	CJCC Administration	CJCC Security, Landscape	Smith	Kitchen, Dining	Recreation Building
JAN	36,640	5,240	3,400	960	6,780	31,840	940
FEB	40,580	6,380	3,920	1,000	7,900	35,580	1,100
MAR	42,300	6,700	4,040	1,140	8,860	37,960	1,200
APR	40,080	6,080	4,460	1,140	9,260	36,620	1,100
MAY	39,880	6,380	4,080	1,460	9,700	38,480	1,040
JUN	35,320	5,520	3,560	1,520	9,620	35,420	1,140
JUL	23,360	3,220	2,460	2,480	6,460	33,800	1,280
AUG	38,400	5,960	3,900	3,460	9,820	45,060	1,440
SEPT	38,360	6,480	4,100	2,200	9,240	43,940	1,020
OCT	40,920	6,920	4,120	1,160	9,720	43,060	1,060
NOV	36,440	5,700	3,480	820	8,560	36,060	900
DEC	27,500	4,560	2,680	560	5,900	27,180	760
AVG/MO	**36,648**	**5,762**	**3,683**	**1,492**	**8,485**	**37,083**	**1,082**

Future Development

It is assumed that the current water system has capacity to serve future development; however, hydraulic modeling of future systems during fire flows is required by the city for all new development in order to determine if adequate fire protection can be supplied, or if pipe upgrades are needed. Premise isolation, or installation of a reduced pressure backflow assembly immediately after the metered water service or fire connection, will be required for any building permit applications, building improvements, remodels, new construction, change of use, or water service relocation/upsizing. As building metering is currently inconsistent, Skagit PUD also recommends individual metering of each building at the time of renovation or construction.

Forecasting for the typical water and sewer use demand has been developed for both the moderate-intensity and high-intensity development alternatives, based on proposed building uses and occupancy. As there is no additional construction beyond renovation of the existing buildings in Alternative 1 it is assumed that the water and sewer demand would remain the same for this alternative. Based on the proposed types and scales of uses, it is forecasted that Alternative 2 will generate demand for approximately 28,860 gallons per day (see Table 2). With a higher intensity of uses, it is estimated that Alternative 3 will generate demand for approximately 43,830 gallons per day (see Table 3). Table 2 summarizes these typical demands for Alternative 2, and Table 3 summarizes the typical demands predicted for Alternative 3.

After hydraulic modeling of the water system at full build-out for each alternative, including required fire flows, it will be determined what, if any, water pipes require replacement to serve the Center adequately. All new water mains will be looped and will comply with Skagit PUD standards.

Table 2
Water/Sewer Demand Forecasting for Alternative 2

Building Use	Estimated Peak Occupancy for Moderate Alternative	Typical Flow (gallons/unit/day)	Typical Use (gpd)
Hotel—Guests	58	50	2,900
Residential Extended Stay	82	40	3,280
Dormitories	175	40	7,000
Apartments	32	50	1,600
Miscellaneous Support	15	13	195
Restaurant	25	9	225
Museum	10	5	50
Library	20	5	100
Health Clinic	7	100	700
Interpretive Center	5	5	25
Assembly	200	3	600
Public Spaces/Trails	15	5	75
Assembly Areas, Labs, Workshops, Testing	150	13	1,950
Engineering, R&D, Admin, Management, Product Design, IT Support, Education, Admin/Faculty	570	13	7,410
Classrooms, Labs, Meeting Rooms	250	11	2,750
Total	**1,614**		**28,860**

NOTE:
gpd = gallons per day.

Table 3
Water/Sewer Demand Forecasting for Alternative 3

Building Use	Estimated Peak Occupancy for High Alternative	Typical Flow (gallons/unit/day)	Typical Usage (gpd)
Hotel—Guests	110	50	5,500
Residential Extended Stay	122	40	4,880
Dormitories	243	40	9,720
Apartments	57	50	2,850
Miscellaneous Support	15	13	195
Restaurant	50	9	450
Museum	10	5	50
Library	20	5	100
Health Clinic	7	100	700
Interpretive Center	5	5	25
Assembly	200	3	600
Public Spaces/Trails	30	5	150
Assembly Areas, Labs, Workshops, Testing	275	13	3,575
Engineering, R&D, Admin, Management, Product Design, IT Support, Education, Admin/Faculty	945	13	12,285
Classrooms, Labs, Meeting Rooms	250	11	2,750
Total	**2,339**		**43,830**
NOTE: gpd = gallons per day.			

SANITARY SEWER

Existing Conditions

The sanitary sewer purveyor is the City, with treatment provided by their wastewater treatment facility. The wastewater treatment facility currently operates at approximately 49 percent of capacity with an annual average discharge of 1.24 million gallons per day.

A City sewer main serves the Center with a pipe that runs through an easement across the county-owned Northern State Recreation Area; see Figure 2—Utilities. The sewer line enters the recreation area from a location east of Fruitdale Road, just north of McGarigle Road. From there the line travels northeasterly serving area customers. The line has a side sewer which extends northerly into the Center. In 2008, this side sewer line was updated with a new cured-in-place 15-inch diameter concrete sewer pipe.

Within the Center, a network of privately owned lines connect to the sewer system. The sewer lines radiate from the southern side sewer and serves individual buildings through a network of 4- to 12-inch-diameter PVC pipes and a 12-inch-diameter reinforced concrete pipe. The pipes flow to the southern end of the site where sewer usage for the entire site is determined from an existing sewer flow meter station. The flow station meter may no longer be operable. Internally, gravity sewers make up much of the on-site system, although some buildings may have pumps. Much of the original sewer system consisted of brick and mortar manholes, concrete pipe sewer main, and clay tile pipe sewer service lines. Improvements to the sewer system, including replacement of infrastructure and lining of existing pipes, have been completed sometime within the last 15 years to address issues with groundwater infiltration, however as-built drawings have not been available to confirm these changes. Sewer service to many of the unoccupied buildings has been decommissioned, and abandoned sewer infrastructure remains in place.

Future Development

As there have been issues with the sanitary sewer system from the CJCC cafeteria building, the City of Sedro-Woolley will require a grease removal system for this building. An examination of existing drawings and as-builts of the existing sanitary sewer system indicates that there is sufficient depth to continue serving the site as a gravity flow system. Since the late 1990s, significant improvements have been made to the existing main line system to correct issues with intrusion and infiltration and root intrusion, and to bring the overall system up to date with more modern design requirements. With these improvements being completed, it is anticipated that little work will need to be done to the sewer main. Connection of newly constructed buildings or replacement of sewer service lines to renovated buildings will be the majority of the sewer system improvements required to serve the Center for both the Moderate- and High-Intensity alternatives.

NATURAL GAS AND POWER

Existing Conditions

Cascade Natural Gas Company provides local gas service to the property from Fruitdale Road. A 2-inch natural gas line distributes gas as needed within the campus. A regional natural gas distribution line, owned by Williams NW traverses the northwest corner of the Center property within a 55 foot wide easement.

Electrical power is supplied to the Property by Puget Sound Energy via a 12,470 volt underground feeder line, which is reduced to 2,400 volts for distribution.

The power plant building on the property provides steam heating to most of the buildings on the Property. There are four gas-fired boilers at the plant. The central steam plant and distribution system are in good condition and have been well maintained. The condition of heating systems in the buildings varies.

Future Development

There appears to be sufficient natural gas and electrical capacity to support more intensive development on the Property. It is anticipated that the only development required for these utilities will be individual services to newly constructed buildings.

TELECOMMUNICATIONS

Existing Conditions

Frontier Communications currently has fiber and copper lines available to the site for telecommunications service. A 24 fiber cable and 300 pair copper line enter the site at the intersection of Fruitdale Road and Thompson Drive. It is assumed that most of the buildings that are currently occupied have a connection to some form of telecommunications for internet and telephone service.

Future Development

While the copper line is best suited for residential use and digital subscriber line internet up to 20 megabytes per second, the existing fiber line has capacity to serve new commercial and industrial buildings. However, a section of the fiber line near Sedro-Woolley will require upgrades in order to serve additional commercial customers. Connections to new and renovated buildings may be added as necessary. Frontier Communications has a few cabinets located southwest of the Denny building, near the stormwater detention pond, which gives them the ability to easily upgrade available speeds and equipment if necessary.

INTERNAL CIRCULATION

Existing Conditions

The west side of the Campus is accessed from Fruitdale Road via State Route 20 (SR 20). Fruitdale Road currently is the primary (and only) vehicle entrance to the campus. Fruitdale Road is classified as a minor collector at SR 20, transitioning to a local access road at Thompson Drive. Fruitdale Road is presently closed north of the campus entrance because of excessive settlement in the southbound lane. A traffic signal was recently installed at the intersection of Fruitdale Road and SR 20. According to the Skagit County 2003 Transportation System Plan, this segment of road typically receives around 220 cars per day. Internal circulation on the campus is provided by loops created by Northern State Road, Thompson Drive, and Hub Road. These internal loops are part of the original Olmsted landscape/site design. Historically, the Northern State Hospital was accessed from Helmick Road, and Fruitdale Road was a railroad line. A rail spur from present-day Fruitdale Road ran through the northwest corner of the campus, with a depot located behind the power plant.

Public transportation to the campus is provided by Skagit Transit via bus route 300. Service runs every 60 minutes on weekdays between 8 a.m. and 9 p.m. and on weekends between 9 a.m. and 6 p.m.

Pedestrian access to the facility is available both through trails in the adjacent Skagit County Northern State Recreation Area and through public rights of way to the west. Public access to the campus is currently restricted because of the security needs of current tenants.

Future Development

It is anticipated that improvements to the existing internal roads, along with construction of new internal roads, will be required in order to provide adequate access for the increased occupancy of the campus that would result from the changes proposed in Alternatives 2 and 3. The existing roads are narrow and most are in poor repair, with cracking and raveling asphalt. New roads will have to be constructed and existing roads improved to provide sufficient local access for truck traffic for industrial uses proposed in Alternatives 2 and 3, including thicker aggregate and pavement cross sections and wider roads.

Multiple options for a second access to the campus are also being considered. Although not triggered by level-of-service demands for any of the alternatives, a second entry point would provide better access for emergency responders and improve circulation for truck traffic serving the newly developed areas.

SUMMARY

If Alternative 1 is chosen as the preferred option, existing operations and potential future redevelopment of extant buildings need to follow code requirements and to obtain local government permits. No mitigation measures are needed beyond those requirements.

For Alternatives 2 and 3, water, sewer, natural gas, and telecommunications utility providers have each determined that they have adequate capacity in their systems to serve future development on the Center, so no regional mitigation measures are needed. Improvements to utility infrastructure on the campus itself may be needed to meet City code requirements for future development. Any site-specific improvements needed will be defined through the local permitting process, but are generally described below.

- Potable Water—Further hydraulic modeling will have to be conducted as part of the permitting process for specific building renovations or new construction to determine if the existing on-site piping infrastructure is adequate to serve water, including fire flows, for the Moderate- and High-Intensity Alternatives. Possible pipe upsizing of the current water systems, where found necessary, could be constructed in order to serve the increased loads. Since water metering is currently inconsistent, the PUD also recommends individual metering of each building at the time of renovation or

construction. It is expected that premise isolation, or installation of a reduced pressure backflow assembly immediately after the metered water service or fire connection will be required for any building permit applications, building improvements, remodels, new construction, change of use, or water service relocation/upsizing.

- Sewer System—As specific development projects are proposed, further hydraulic modeling will be necessary to determine if the existing on-site piping infrastructure is adequate or if improvements are needed.

Sincerely,

Maul Foster & Alongi, Inc.

Stacy Frost, PE
Senior Engineer

Kristi Unholz, PE
Project Engineer

Attachments: Limitations
References
Figures
Storm Basin Map
Stormwater Calculations

LIMITATIONS

The services undertaken in completing this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, express or implied, is made. These services were performed consistent with our agreement with our client. This report is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions and recommendations contained in this report apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, or the use of segregated portions of this report.

REFERENCES

Skagit Surveyors. 1998. Northern State multi-service center utilities master plan report. Skagit Surveyors & Engineers. December 21.

FIGURES

STORM BASIN MAP

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