Facilities 15-Year Master Plan

Skagit Valley College
Where Learning Comes to Life

MITHŪN

December 2020
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Washington State Board of Community and Technical Colleges

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Figure 1. Existing Mount Vernon Campus - Vicinity Map

Background

Purpose

The Skagit Valley College Mount Vernon Campus Facilities Master Plan functions as both an internal college planning tool as well as a tool for external communications with local community and state stakeholders. As such, this document is intended to serve as the formal Master Plan Update for the City of Mount Vernon for formal adoption to serve current and future building entitlements over the next fifteen years. Similarly, the State Board of Community and Technical Colleges (SBCTC) requires facilities master plan updates to establish the development and funding priorities.

Physical Context

Skagit Valley College's Mount Vernon Campus encompasses 96 acres and 30 buildings. It is near downtown and about 1.5 miles east of Interstate 5. The campus is located in a transition zone between urban and suburban developments to the south and west and residential areas to the north and east. Dense trees along the north campus boundary provide a buffer to residential neighborhood, while city streets define the west and south edges. The eastern section of campus is adjacent to mostly undeveloped land owned by Skagit County.

Land Use & Zoning

The City's Comprehensive Plan designation of the Mount Vernon campus is Community College (CC), and the site is zone Public (P). The P zone permits institutional uses such as schools, colleges, government centers, churches and community or neighborhood parks. Any future development within this zone must meet the specific requirements outlined in the City of Mount Vernon Municipal Code chapter 17.30 "Public".

Lot coverage and percentage of impervious surfaces vary by project and will comply with specific requirements outlined in the municipal code. Reference the Drainage Report for further information.

For the P zone, setbacks are a minimum of 25 feet from LaVenture Road and East College Way, and a minimum of 10 feet from North 30th Street. There are no side or rear yard setbacks unless the building is adjacent to a residential zone with no intervening street or alley. This condition only occurs at the site for the proposed child care center on the west side of North LaVenture Road. Here a 20' setback is required from the western property line. An access easement is along the north edge of the parcel for this project, requiring a 10' setback. A Type-1 planted screening zone is also required along these edges.

The maximum height limit in the P zone is 50 feet and four stories, which none of the proposed projects will exceed. Reference Figure 8 for the proposed size of each building.

No change to the current use of the site as a college campus is proposed. It serves a variety of occupancy groups across multiple buildings including but not limited to Business, Education, and Assembly, for academic and support purposes.

Parking Requirements

In the P zone, the minimum number of off-street parking spaces is determined by the Hearing Examiner per Chapter 17.84 of the municipal code. There are not specified ratios of building area or FTEs to required parking spaces. Instead, the required number is computed by completing a demand study. Reference the "Parking Assessment" attachment for analysis of how projected enrollment will impact parking needs. The "Vehicle Access and Parking" section in this report outlines existing and proposed parking quantities.

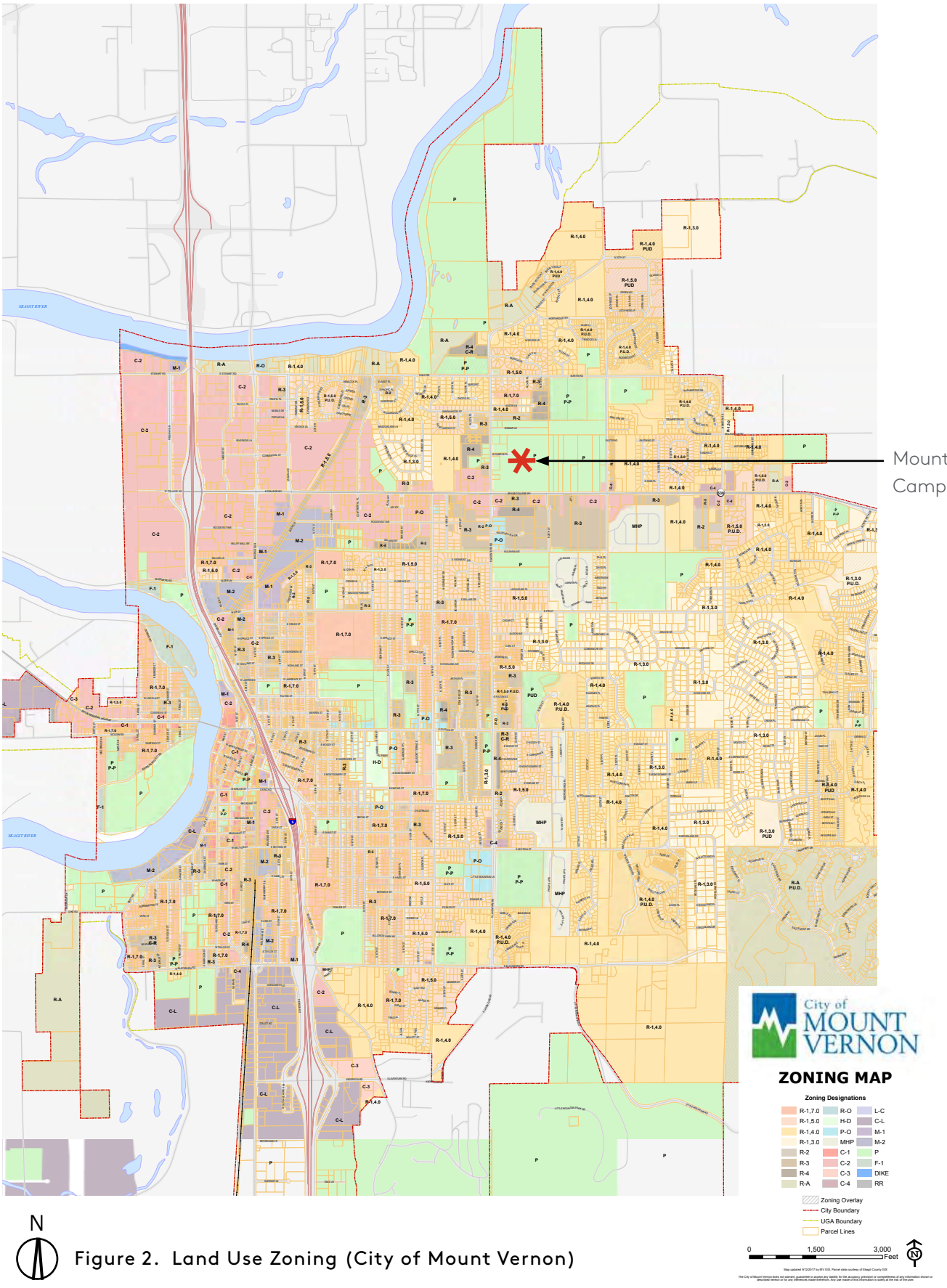


Figure 2. Land Use Zoning (City of Mount Vernon)

Enrollment

Prior to 2020 and the shift to remote learning due to the Coronavirus disease and pandemic (COVID-19), the college experienced declining enrollment trends and they project this trend to continue. Once in-person classes resume on campus, the college anticipates a higher rate of online classes being offered as compared with pre-COVID-19 times.

In the 2018-2019 academic year, enrollment at Skagit Valley College, as reported by the Washington State Board for Community & Technical Colleges (SBCTC), was 4,243 full-time equivalent students (FTEs). The total headcount enrollment at SVC was 9,134. According to the Skagit Valley College graduation report from 2014-2015 to 2018-2019, the College has seen a decrease in the number of credentials awarded in the past six years with an average decrease of 3% per year. In academic year 2018-2019, the number of credentials awarded were down by 7% from the previous year (see Figure 2).

Campus Organization

The campus is generally divided in three zones: the academic and student center core, the professional/technical programs and the athletic fields. In addition to these zones, Campus View Village provides housing for international students and student athletes at the north edge of campus.

The academic and student center core is where the campus began. The six initial buildings and quad have remained the heart of campus in spite of growth outward and replacement of some of the original buildings. Buildings for general classrooms, science labs, computer labs, visual arts, student services and the library are connected by paved pedestrian paths. Lewis Hall was completed in 2014 and Angst Hall was completed in 2009. Both buildings were replacement projects for original campus buildings.

The professional/technical programs are generally located just north of the campus core and are bounded

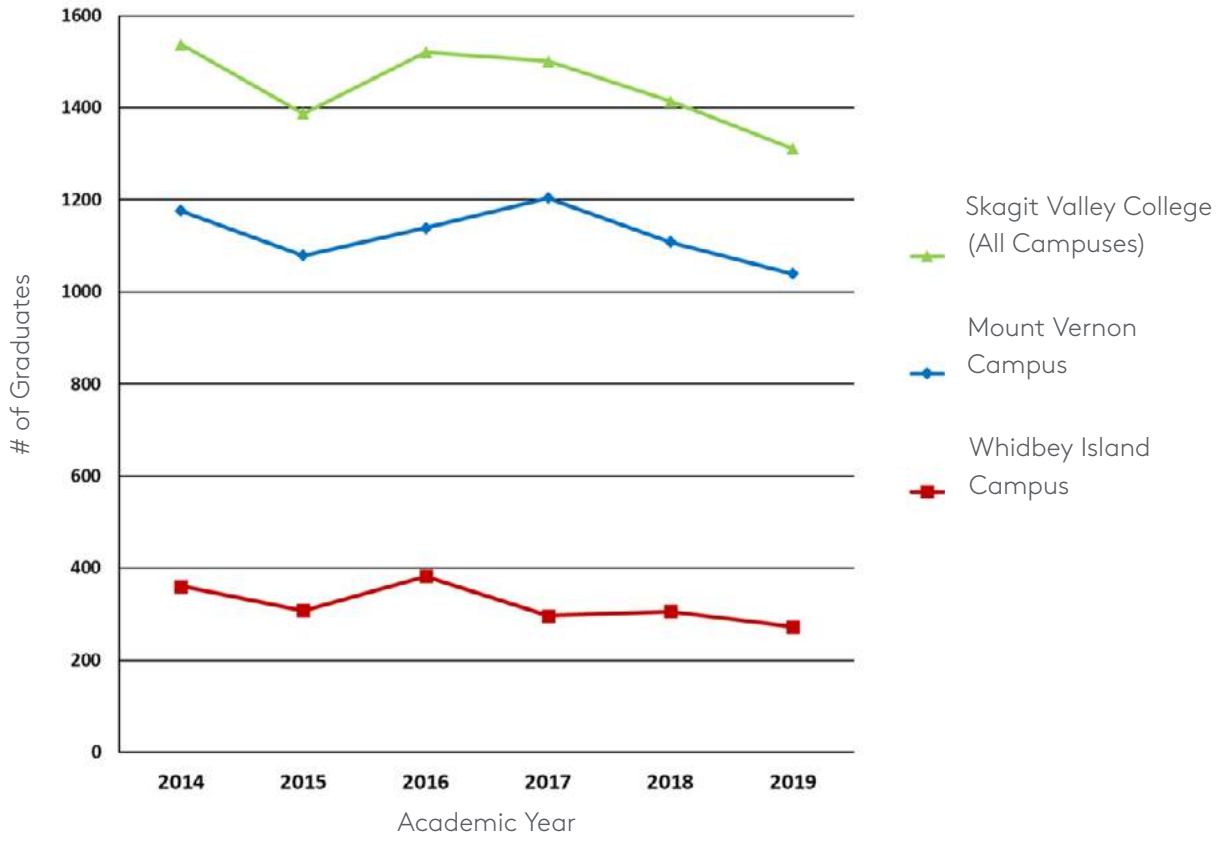


Figure 3. Graduates per Academic Year

by student housing to the north and athletic fields to the east. Buildings are primarily for automotive technology, vocational and diesel trades, and fire training programs. Also in this area are maintenance and storage structures. A large vehicle test track is associated with the automotive technology and diesel trades programs. This area is characterized by buildings encompassed by asphalt.

Athletic fields are located in the northeast corner of campus. These facilities include shared county and college baseball fields, tennis courts and a soccer field. Just to the west of the tennis courts is a field house used for baseball practice and other sports.

Community facilities, which include McIntyre Hall Performing Arts Center, The Northwest Career Technical Academy (NCTA), The Child and Family Learning Center and Campus View Village are located on the west and north edges of the campus. These facilities are typically non-profit institutions located on land leased out by the College. McIntyre Hall Performing Arts Center is located off East College Way, near the main entry. McIntyre Hall holds a diverse menu of arts and entertainment and is home to many local community organizations including the Skagit Symphony, Northwest Ballet Theater, Theater Arts Guild, Youth Symphony, among many others. These types of facilities bring people from the community to the campus and establish it as a community amenity.

Existing Building Conditions

All campus buildings are reviewed by the State through the Facility Condition Survey (FCS). Buildings are rated on a scale of less than 5 years to greater than 35 years of projected lifespan (see Figures 6 & 7). Buildings with a lower FCS score have fewer deficiencies and are in better condition. Many of the older buildings on the Mount Vernon Campus have been renovated and are regarded in satisfactory condition, but some are noted as having 5-15 years of remaining life. The master plan addresses the replacement or renovation of these buildings.

N Figure 4. Campus Zones

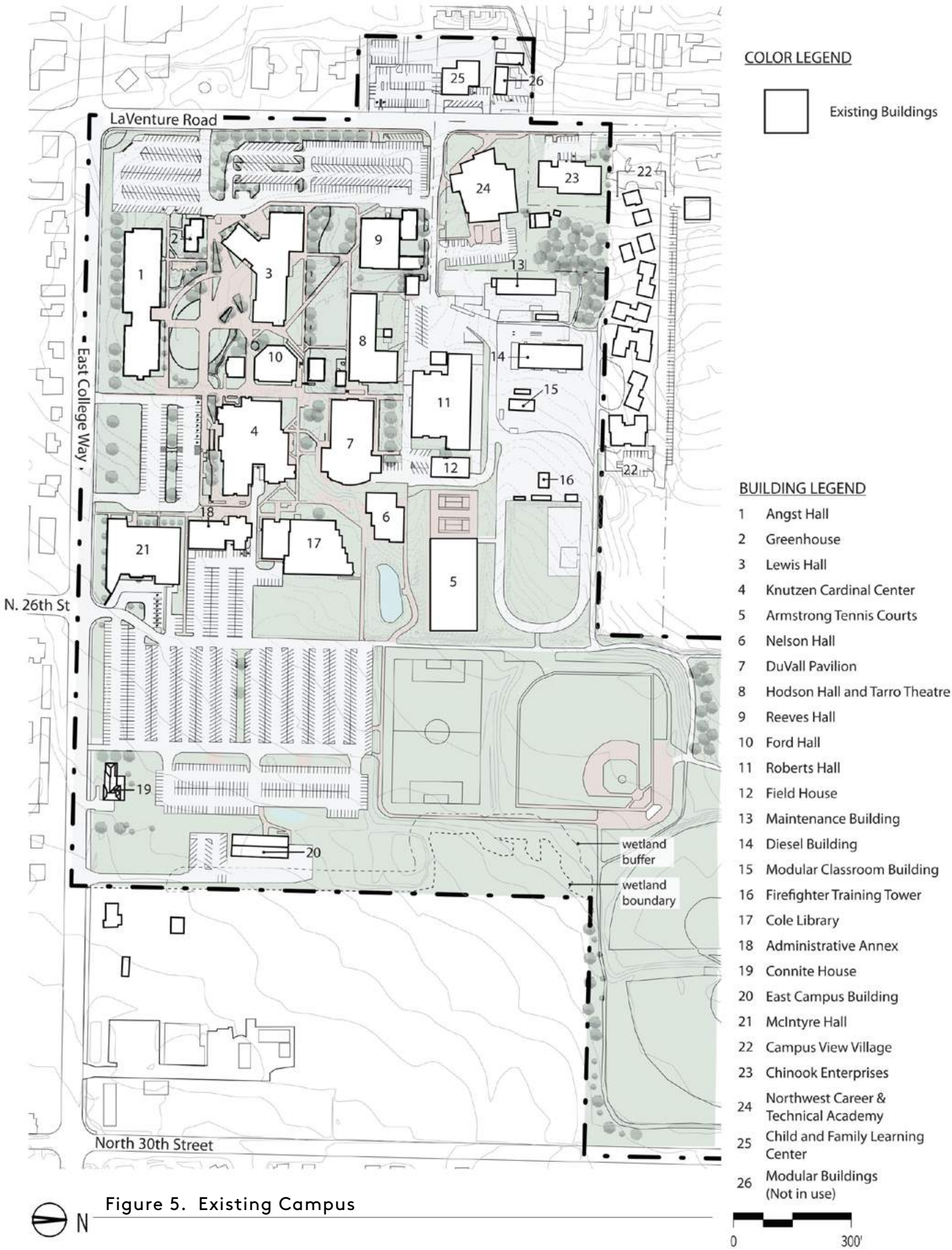


Figure 5. Existing Campus

Figure 6. Facility Conditions Table

Building	Year Built	Remodel	Existing SF	FCS Score	Remaining Life	Notes
Boiler	1959		1,443	251	> 15 yrs	Equipment is in good condition and easily controlled Average building construction
Maintenance Building	1976		4,800	453	5-15 yrs	Roof leaks and significant deterioration is evident HVAC equipment is deteriorated
Knutzen Cardinal Center	1959	2008	27,558	215	> 15 yrs	Building systems in good condition Some roof repair on the two small wings of the building are necessary
Administration Annex	1986	2008	16,519	212	> 15 yrs	No sprinklers, illuminated exit signs or emergency lights
Hodson Hall	1959	2009	31,312	244	> 15 yrs	
DuVall Pavilion	1956	2001	27,252	304	5-15 yrs	West wall has indications of water intrusion and moisture damage
Field House	1995		4,900	268	> 15 yrs	No fire alarm or sprinklers, no heat
Ford Hall	1988		23,600	340	5-15 yrs	Moderate building deterioration No sprinklers, illuminated exit signs or emergency lights
Angst Hall	2009		67,942	146	> 15 yrs	LEED platinum building
Lewis Hall	2014		72,858	146	> 15 yrs	
Cole Library	1963	1995	26,730	338	5-15 yrs	Roof membrane has minor to moderate deterioration Leaks at north window Poor insulation
Fire Training Tower	1998		5,100	140	> 15 yrs	Minor system deterioration
Roberts Hall	1971		33,281	336	5-15 yrs	Poor insulation HVAC and electrical service only partially support space
Fire Station	1973		2,400	447	5-15 yrs	Moderate building system deterioration
Nelson Hall	1996		13,055	230	> 15 yrs	No sprinklers, illuminated exit signs or emergency lights Wood frame and concrete structure
Reeves Hall	1959	2013	21,970	403	5-15 yrs	No sprinklers, illuminated exit signs or emergency lights
Child & Family Learning Center	1986		4,792	303	> 15 yrs	Minor building system deterioration
Greenhouse	2010		2,628	196	> 15 yrs	
Modular Classroom Building	1982		10,900	296	> 15 yrs	No sprinklers, illuminated exit signs or emergency lights Exterior and interior wall surfaces show random deterioration and wear
Modular Classroom Building	1995		1,792	597	< 5 yrs	Temporary construction General deterioration is evident
East Campus Building	1984		10,250	357	5-15 yrs	Moderate building system deterioration
Modular Building	1993		1,782	N/A	< 5 yrs	Recently acquired - not scored Not in use, badly deteriorated

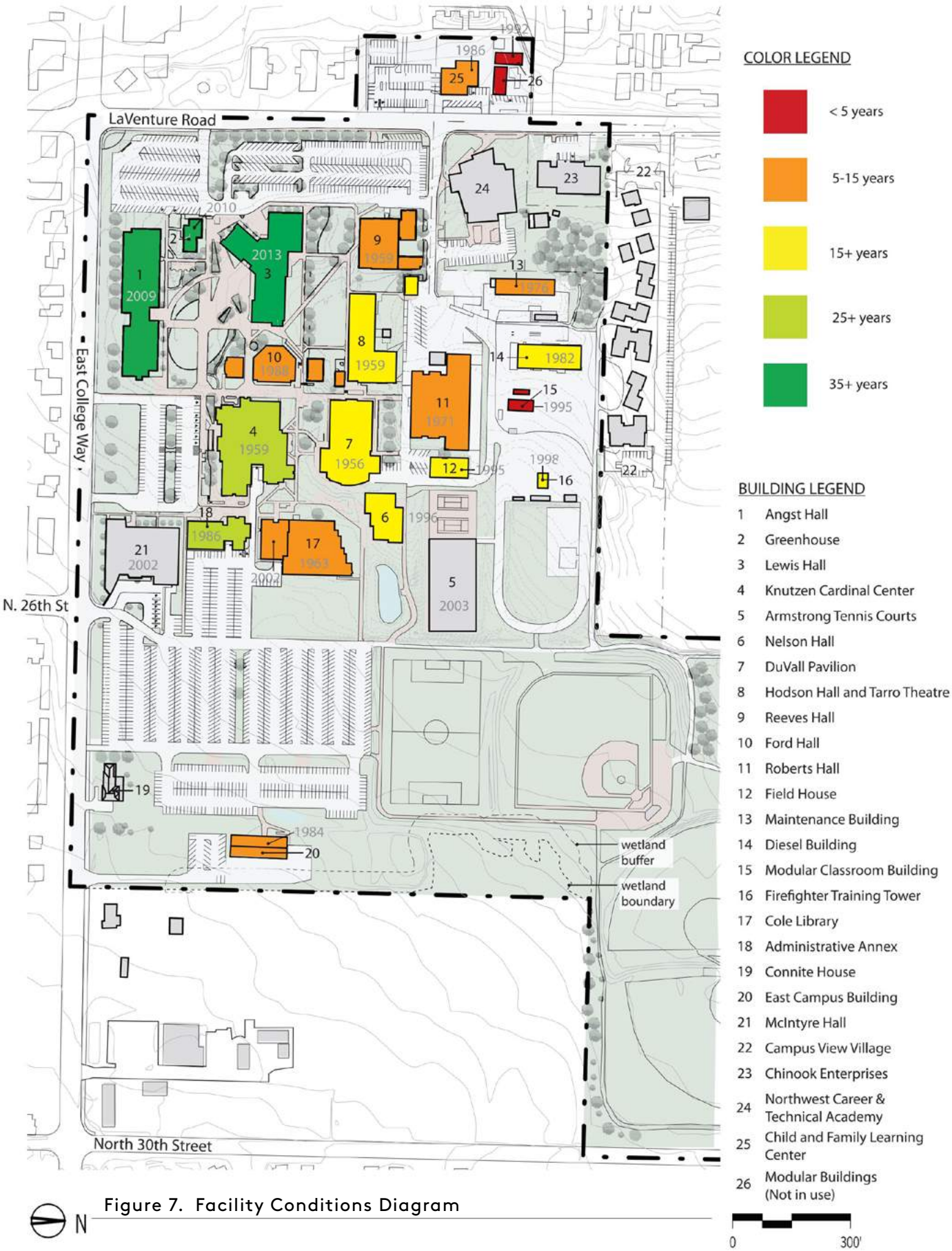


Figure 7. Facility Conditions Diagram

15-Year Development Plan

Facilities

The 15-year Development Plan, Figure 9, reflects capital requests that respond to the anticipated needs of SVC and to the funding criteria of the State Board of Community and Technical Colleges (SBCTC).

Renovation of Roberts Hall (B) and replacement of the Diesel Building are prescribed as a way to address both the aging buildings and the trades programs' growth. The Diesel Building would be replaced with a new 55,000 GSF Trades Building (C). The demand for these trades programs is growing rapidly, and there is a demonstrated need for additional classroom spaces, student collaboration spaces and technical program areas.

A consolidation project is proposed for Ford Hall and Cole Library. These buildings would be replaced with a 56,300 GSF Multipurpose Classroom and Library Building (A). By constructing a new facility, the College would be able to address existing buildings which are rated as having 5-15 years of remaining useful life while adding increased functionality and student amenity space.

The last grouping of projects proposed is on the east side of campus near the athletic fields. An open air 24,700 SF Pickleball Pavilion (F) is planned to be constructed south of the soccer field. A 5,000 SF Field Support Facility (G) is proposed to support the ball fields with restrooms, locker rooms, offices and concessions. In addition, practice and training facilities currently in the existing field house would be replaced in this new facility. Locating the new field house adjacent to the fields would allow for direct coaches' supervision and ideal alignment with future growth of athletic amenities in this area.

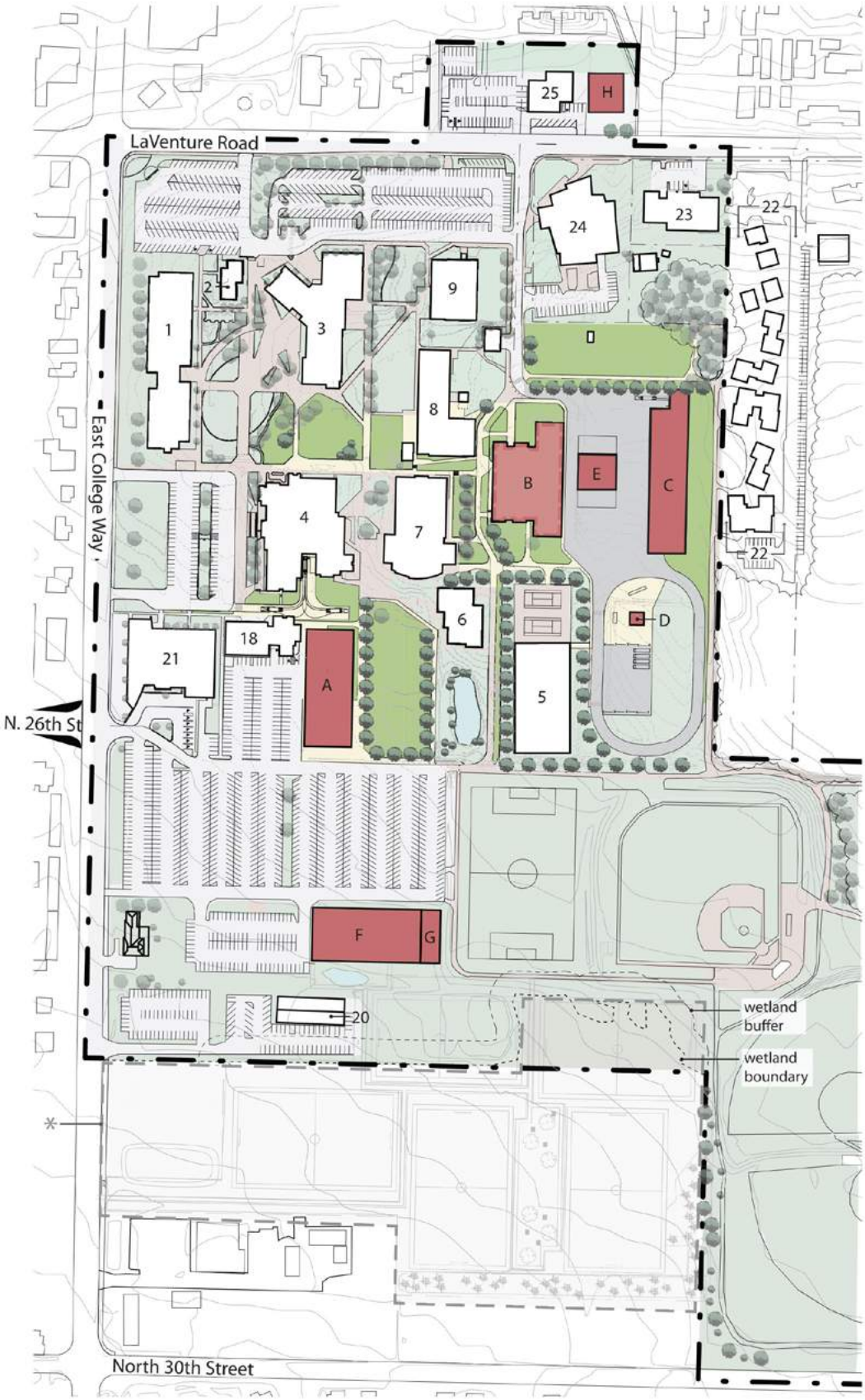
Bordering the college's property to the east is an undeveloped area owned by Skagit County that is currently designated as a category IV wetland. Skagit County Parks and Recreation is currently working with the city and Corp of Engineers to develop the area into soccer fields and pervious pathways. The plan includes a combination off-site mitigation and a small area of on-site wetland preservation and enhancement. SEPA and drainage requirements for this project are being handled through the design process of the ball fields by the Parks department. The county and Skagit Valley College have an interlocal agreement for shared use of the east end of the college property to extend the fields into the area owned by the college.

Finally, a 4,150 GSF child care center (E) with potential for future expansion is proposed adjacent to the existing Child and Family Learning Center (CFLC) west of the main campus along N LaVenture Road. The recent property acquisition north of the CFLC allows the college to increase access to affordable, convenient and high quality child care for SVC students, while creating a singular identity of early learning facilities serving the college's students attending college, the Early Childhood Education program, as well as the broader community.

NORTH CAMPUS IMPROVEMENTS

Figure 8. Project Priorities

0-10 Year	
Academic Core Zone	Child Care Center *4,150 SF New Building*
Athletic Fields Zone	Pickleball Pavilion *24,700 SF New Building*
Professional/ Technical Zone	Fire Station *6,300 SF New Building*
Academic Core Zone	Library and Classroom Building *56,300 SF New Building*
10-15 Year	
Professional/ Technical Zone	Roberts Hall *Renovation of Existing 33,281 SF Building*
Professional/ Technical Zone	Trades Building *55,000 SF New Building*
Professional/ Technical Zone	Fire Fighting Training Tower *Relocation of Existing 5,100 SF Structure*
Athletic Fields Zone	Field Support Facility *5,000 SF New Building/Expansion*



COLOR LEGEND

- Existing Buildings
- New Construction
- Renovation
- Site Improvements

EXISTING BUILDING LEGEND

1	Angst Hall
2	Greenhouse
3	Lewis Hall
4	Knutzen Cardinal Center
5	Armstrong Tennis Courts
6	Nelson Hall
7	DuVall Pavilion
8	Hodson Hall and Tarro Theatre
9	Reeves Hall
18	Administrative Annex
20	East Campus Building
21	McIntyre Hall
22	Campus View Village
23	Chinook Enterprises
24	Northwest Career & Technical Academy
25	Child and Family Learning Center

NEW CONSTRUCTION / RENOVATION LEGEND

A	Library
B	Roberts Hall
C	Trades Building
D	Firefighter Training Tower
E	Fire Station
F	Pickleball Pavilion
G	Field Support Facility
H	Child Care Center

* Skagit Playfields (Skagit County Parks and Recreation)

N

0 300'

Figure 9. 15-Year Development Plan

The following site improvements, as depicted in Figure 10, are proposed as part of the Trade buildings renovation and replacement project. These improvements may have to be phased depending on funding.

North Pedestrian / Emergency Access Pathway (4)

Envisioned for the 15-year phase of the master plan, this pathway in the north campus provides direct pedestrian and fire access between the east and west portions of campus. It is similar in concept to the emergency access that is part of the plaza between Lewis and Angst Halls. It can be used for service and fire access link between the eastern and western portions of campus and also serves as pedestrian circulation.

The pathway is proposed as a 20 foot wide roadway, with 12 feet of width dedicated to pedestrian hardscape and the remaining 8 feet would be a grass-pave system capable of supporting a fire truck. Grass-pave is a subsurface reinforcement system that allows for vehicles to drive or park on grass without causing rutting, mud or root zone compaction. This pathway would provide a formal front door to the renovated Roberts Hall, and becomes part of the link to future athletic facilities to the east and expanded housing to the North

Pedestrian Link To Student Housing (3)

Vehicular circulation needs to be separated from pedestrian circulation around Roberts Hall and to the north to Campus View Housing. The expanse of asphalt in this area of campus creates a conflict between pedestrian and vehicular circulation. The demolition of the Diesel and Maintenance buildings and consolidation into a new building that will share a service yard with Roberts Hall. This demolition will allow for a large reduction in the amount of asphalt that characterizes the north part of the campus. A dedicated pedestrian path that will serve the Campus View Village housing to the north of campus is part of the site improvements associated with the trades buildings.

Trades Building Plan

Figure 10 shows the following site and facility features of north campus of the 15-year Development Plan:

B. Renovate Roberts Hall (33,000 SF)

C. New 55,000 GSF Trades Building, two-story building with upper floor for classrooms and faculty offices, ground floor for Diesel and Maintenance.

D. Relocated Fire Fighter Training Tower

E. New Fire Station

1. Shared service yard wide enough for use by Roberts Hall and Trades Building programs

2. Reconfigured auto test track

3. Dedicated pedestrian path to Campus View Village and landscape buffer to housing at the North

4. North pedestrian and emergency access pathway connecting the east and west portions of campus

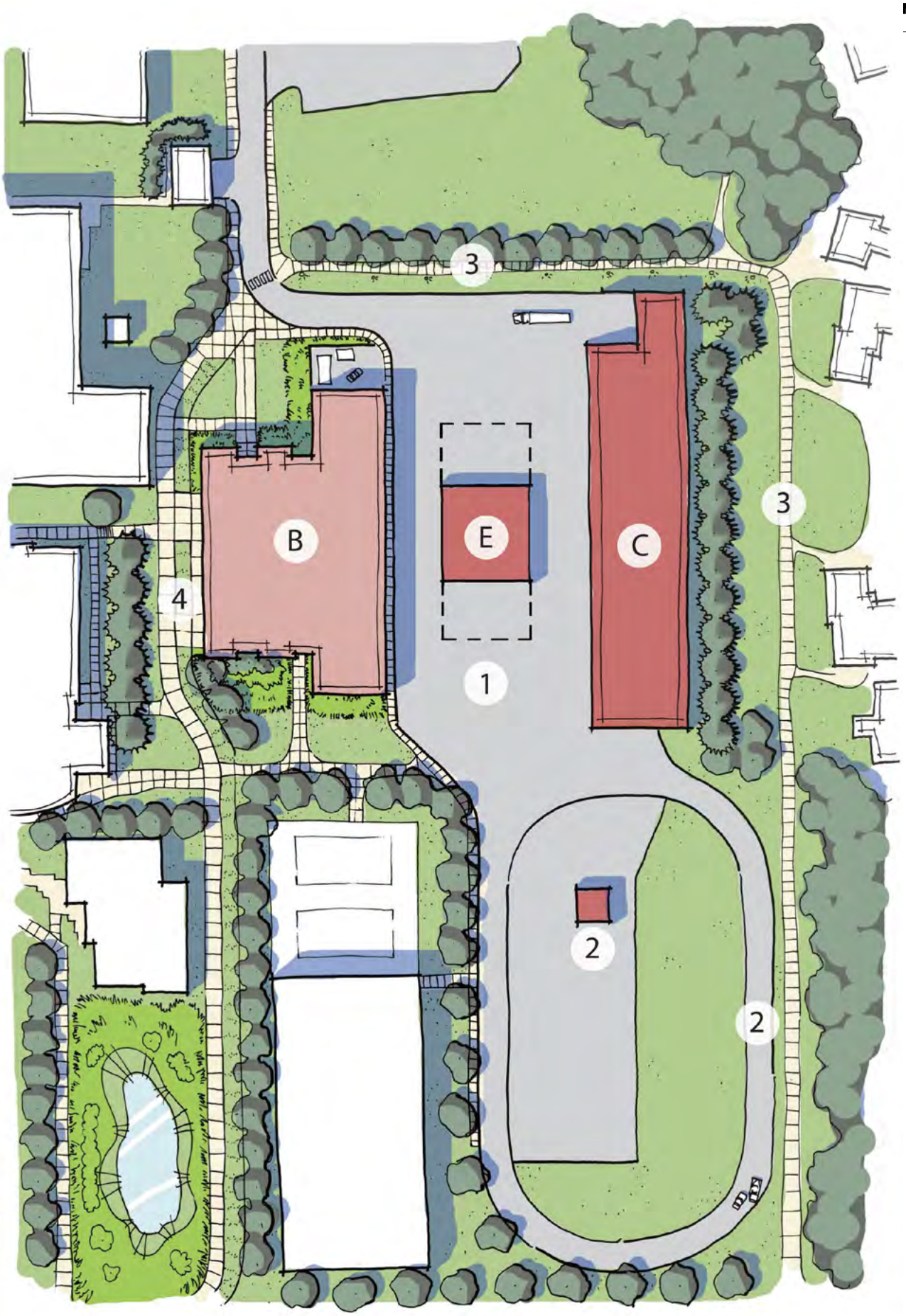


Figure 10. North Campus Facilities and Site Improvements

EAST CAMPUS IMPROVEMENTS

Site improvements, as shown in Figure 11, are proposed as part of the Library Classroom Building replacement project.

East Campus Entry (3)

The campus entry is a critical part of the student and visitor experience because most of the parking that serves the campus is located east of the campus. The existing parking at the eastern lots totals 903 stalls, which will be maintained. The new Library/Classroom building (A) and corresponding site improvements will serve as a new entrance to campus from the east.

Pedestrian Promenades (1)

The pedestrian promenade continues the broad pathways in the Tollefson Plaza, extending the central promenade to the east to connect the eastern parking lot to the campus. The southern promenade has a hardscape walkway for pedestrian use, and a wider grass-pave portion to provide service and fire department access. The existing parking spaces south of the Knutzen Campus Center sidewalk would be removed to create an enlarged sidewalk.

Pickleball Pavilion (F)

An open air 24,700 SF Pickleball Pavilion (F) is planned south of the athletic fields. A 5,000 SF Field Support Facility (G) addition will support the pavilion ball fields with restrooms, locker rooms, offices, training area and concessions. It will be constructed over an existing parking lot. The displaced stalls will be replaced within the same area of campus as shown in Figure 17.

East Campus Building Plans

Figure 11 shows the following site and facility features of the east campus:

A. Library/Classroom building

1. Extension of southern and central pedestrian promenades

2. Consolidated service and loading access to culinary and library loading docks

3. Existing eastern parking lot

F. Pickleball Pavilion

G. Field Support Facility

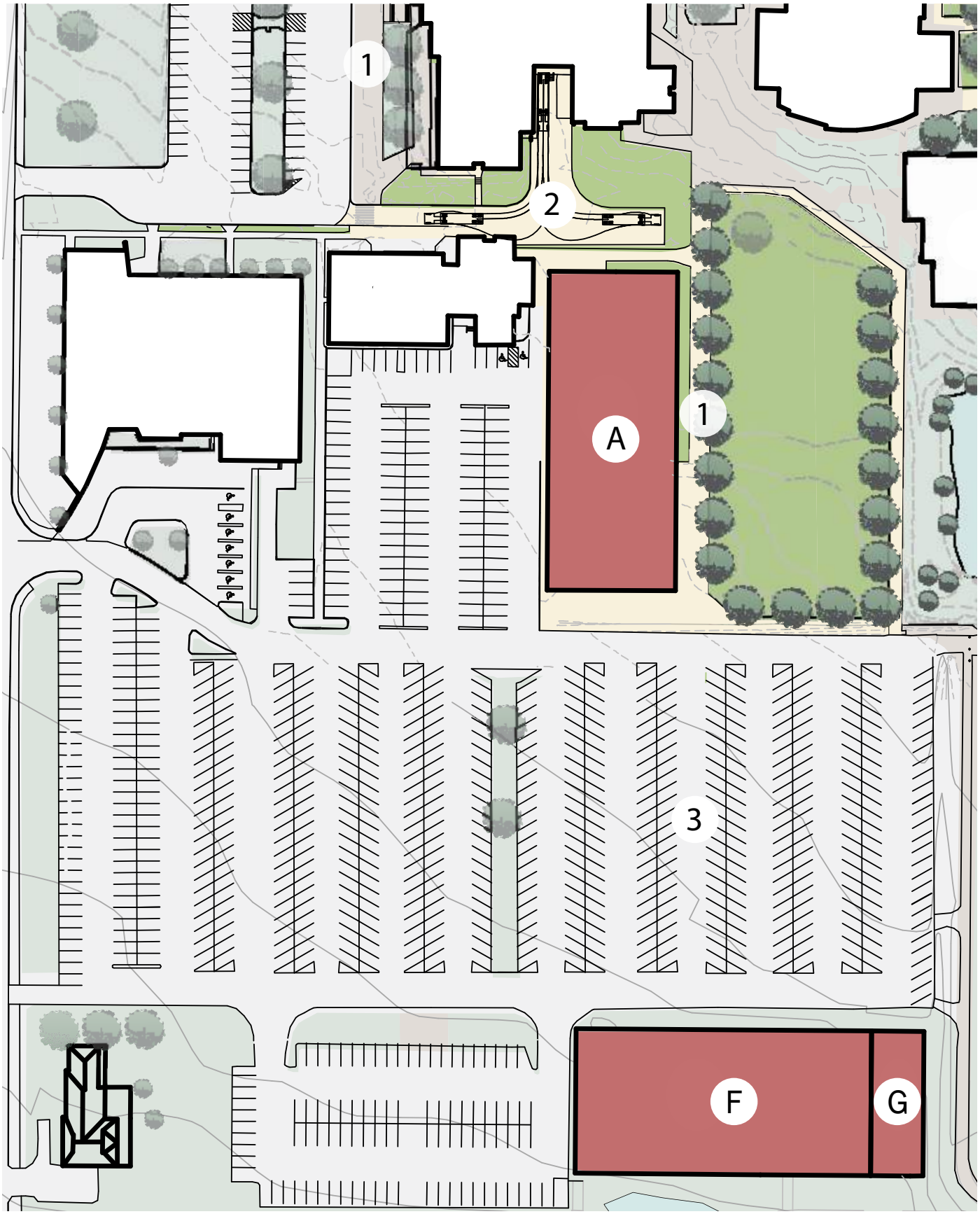


Figure 11. East Campus Facilities and Site Improvements

CHILD CARE CENTER

A one-story 4,150 GSF child care center (E) is proposed adjacent to the existing Child and Family Learning Center (CFLC) west of the main campus along North LaVenture Road (see Figure 12). The siting of the building would optimize access, security and solar orientation and aim to share resources such as entry, drop off/pick up and outdoor learning environments with the CFLC. Classrooms will open directly to the outdoor play area and there is an option for future expansion of up to two classrooms to the west of the proposed footprint.

The child care center is proposed in the location of existing modular buildings that are not in use and will be demolished. The existing southern parking lot will remain with site work concentrated on the north end of the property to connect the entries and play areas of the two child care centers.

Parking for the child care facility has been closely considered as this development is anticipated to begin construction in 2021. There is an existing quantity of 68 stalls across four parcels adjacent to North LaVenture Road. The stalls north and east of the CFLC will be re-striped to serve as a one-way drop-off area and the stalls on the southern lots will remain, resulting in a total parking count of 65 stalls. Based on a ratio of one drop-of stall per ten children, eight drop-off spaces are anticipated to be needed for the CFLC and proposed child care center combined. The existing CFLC has twelve full time employees and up to ten staff will be added in the new child care center, requiring a total of 22 staff parking spaces near the buildings. A future expansion of two classrooms would require an additional four staff and up to four child drop-off spaces. The 65 total stalls on the site will more than sufficiently accommodate these needs. A parking agreement will be written to authorize shared parking and access across these college-owned parcels, or the college will pursue merging the parcels. Access to the site is only available off of North LaVenture Road - the fire station access road will remain clear.

Materials

The architectural style and building material palette varies across campus. Buildings on the north side of campus tend to have a more utilitarian style with cladding similar to industrial buildings including metal panel, corrugated metal, concrete and CMU. There are also a few modular buildings which are slated for removal. The use of these materials and the large amount of paving contribute to the feeling that the north side of campus is a back door, service zone.

Buildings at the campus core are characterized by brick, metal panel, stucco, glass and some limited use of corrugated metal. Detached, exposed steel

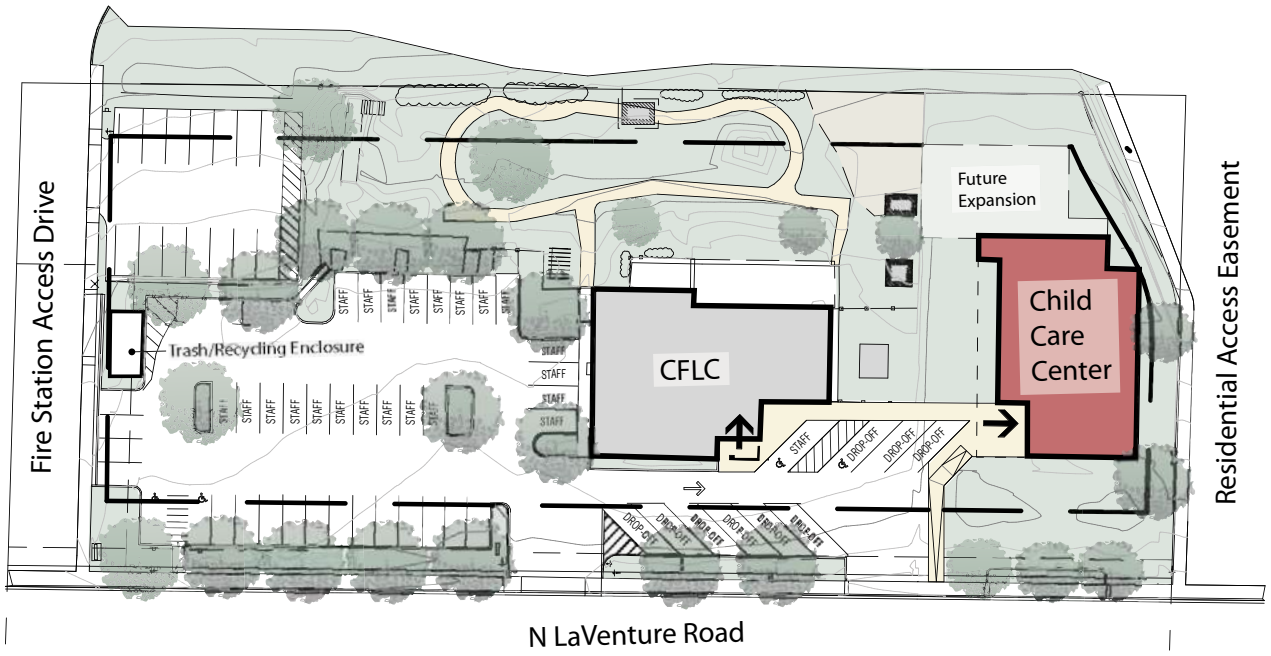


Figure 12. 15-year Development Plan - Child Care Location

and concrete structural elements are expressed on some older buildings, either defining entries or as sun screening elements. Brick color varies across the campus. The recent trend has been to unify the campus with a darker red brown brick color used at Angst and Lewis Halls and the Knutzen Cardinal Center renovation. In general, campus buildings' exterior envelopes are in good condition with some noted exceptions of minor deterioration and moisture damage.

Vehicle Access and Parking

Existing Conditions

Vehicular access to campus is located of East College Way with the main entry drop-off loop located 750 feet east of LaVenture Road. The main parking lot is located further to the east. A secondary campus drop-off and large parking area is located on LaVenture Road, 200 feet north of East College Way. A service entrance of LaVenture Road also allows access to the technical professional programs buildings and test track.

Left turns from East College Way to the main entry and the largest parking lot are uncontrolled. SVC's current parking supply consists of 1424 stalls which includes parking for students, staff, handicap parking, carpool, electric charging stations and other emergency, security or facilities dedicated spaces. The most expansive parking lot is located east of the core campus buildings and provides the bulk of the student parking. It is shared with community parking for the performing arts center and the athletic fields. Additional parking is provided on the west edge of campus. There is no internal campus link between these two major parking areas. The current supply is adequate to serve demand but at peak times drivers sometimes have to search between the two disconnected lots for a space. Some students feel that parking is far from classes.

Figure 13 shows the campus vehicular circulation. There are no cross-campus vehicular connections. Emergency vehicle access is also limited, but has been improved with the completion of Lewis Hall. Fire and emergency access was added to the south, from the west parking lot and continuing east to Knutzen Cardinal Center. Emergency access does not extend east of the Knutzen Cardinal Center, so the continuity of the east-west link is missing. Limited fire and emergency vehicle access is also available at the north section of campus. Emergency vehicle access is provided from the service entrance to the south side of Roberts Hall and does not continue further to the east.

Needs Analysis

Reconfiguration of parking will be required with campus growth and could provide the opportunity for clarification of vehicle access. Further improvement to emergency vehicle access is needed.

Based on analysis of current and projected enrollment, the proposed quantity of parking stalls will adequately support the peak demand of students and faculty on campus. If on-campus enrollment increases, transportation management strategies can be implemented. Reference the attached "Parking Assessment" for further information.

The proposed Skagit County Parks and Recreation playfields will share parking with the college. It is expected to have little impact on College use as the fields are used only after 6:00 pm on weekdays and on weekends, which is opposite of the peak college use times.

The Pickleball Pavilion's peak use times are in the mornings (8:00-11:00 am) and evenings (4:00 to 8:00 pm) with a weekend or evening tournament one or twice per year. The parking demand for both regular use and the occasional tournament can be accommodated by the College's east parking areas. Special events will be coordinated with McIntyre Hall and the athletic fields to control the parking load.

Proposed Master Planning Strategies

- Continue fire and emergency access to the east side of campus
- Organize new buildings with a mind towards establishing campus front door, service and emergency vehicle access and continuity of circulation
- Include sustainable design elements such as pervious paving, landscaping and trees to minimize heat island effect and introduce sustainable stormwater management elements
- Consider additional shared use parking with community facilities on the east side of campus

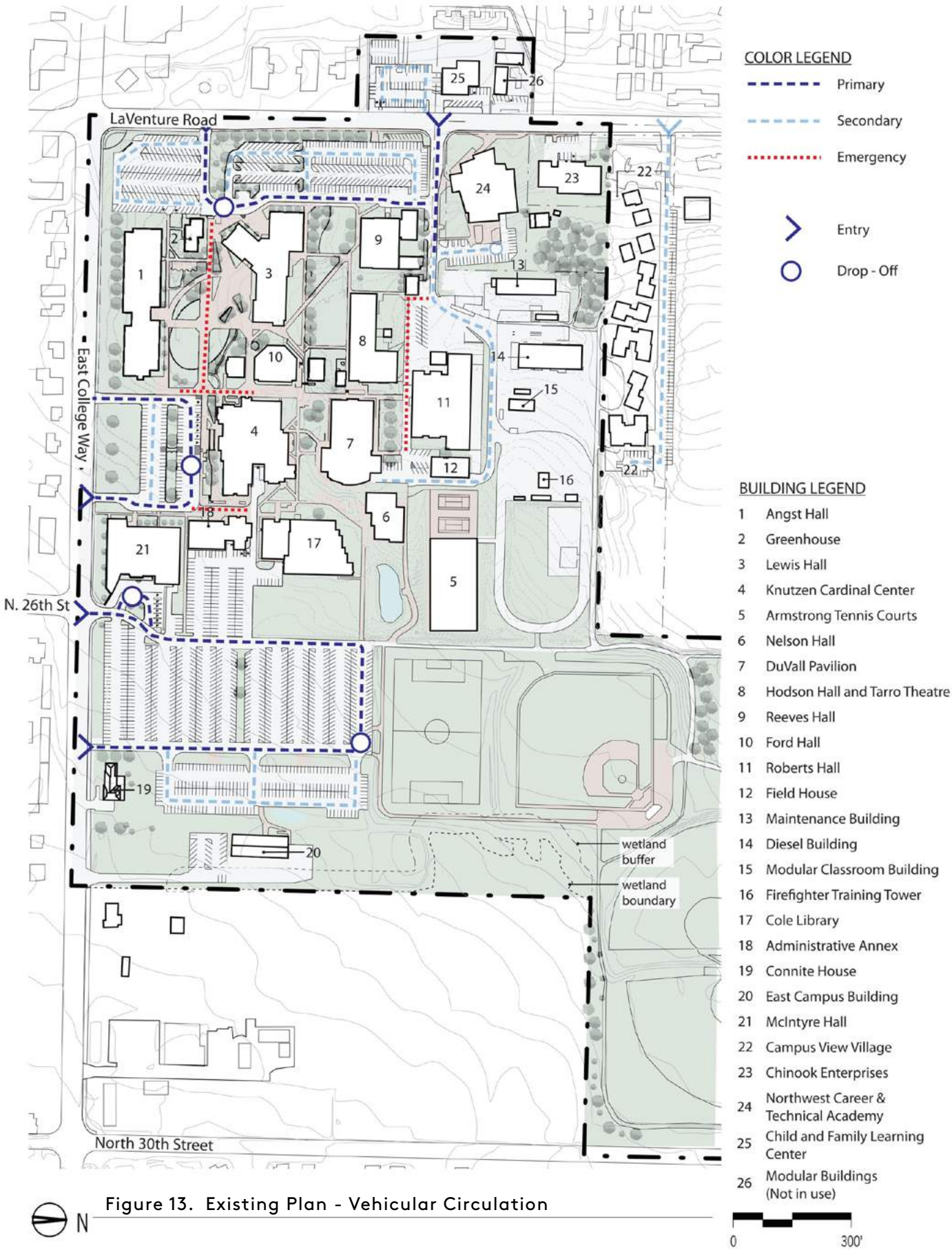


Figure 13. Existing Plan - Vehicular Circulation

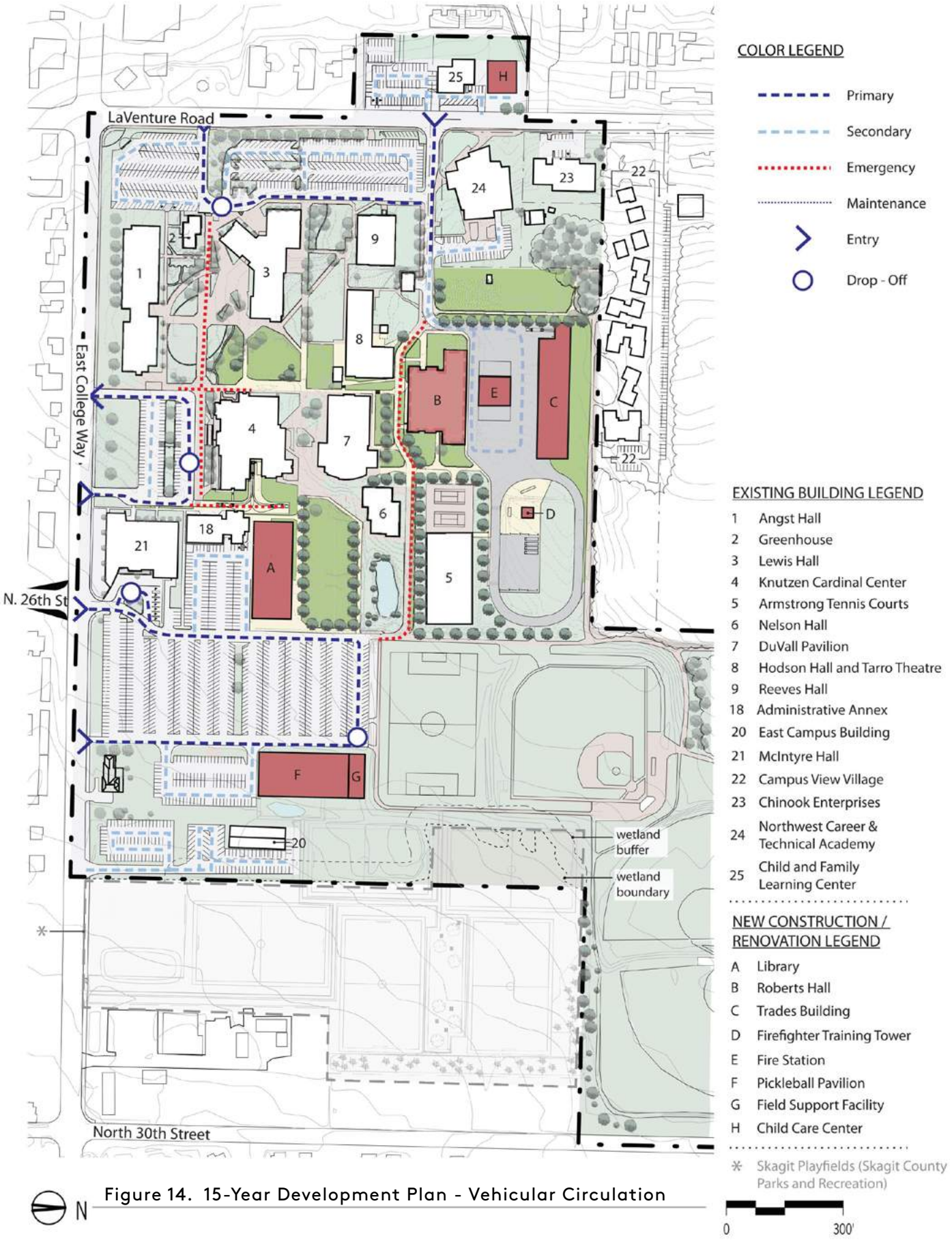
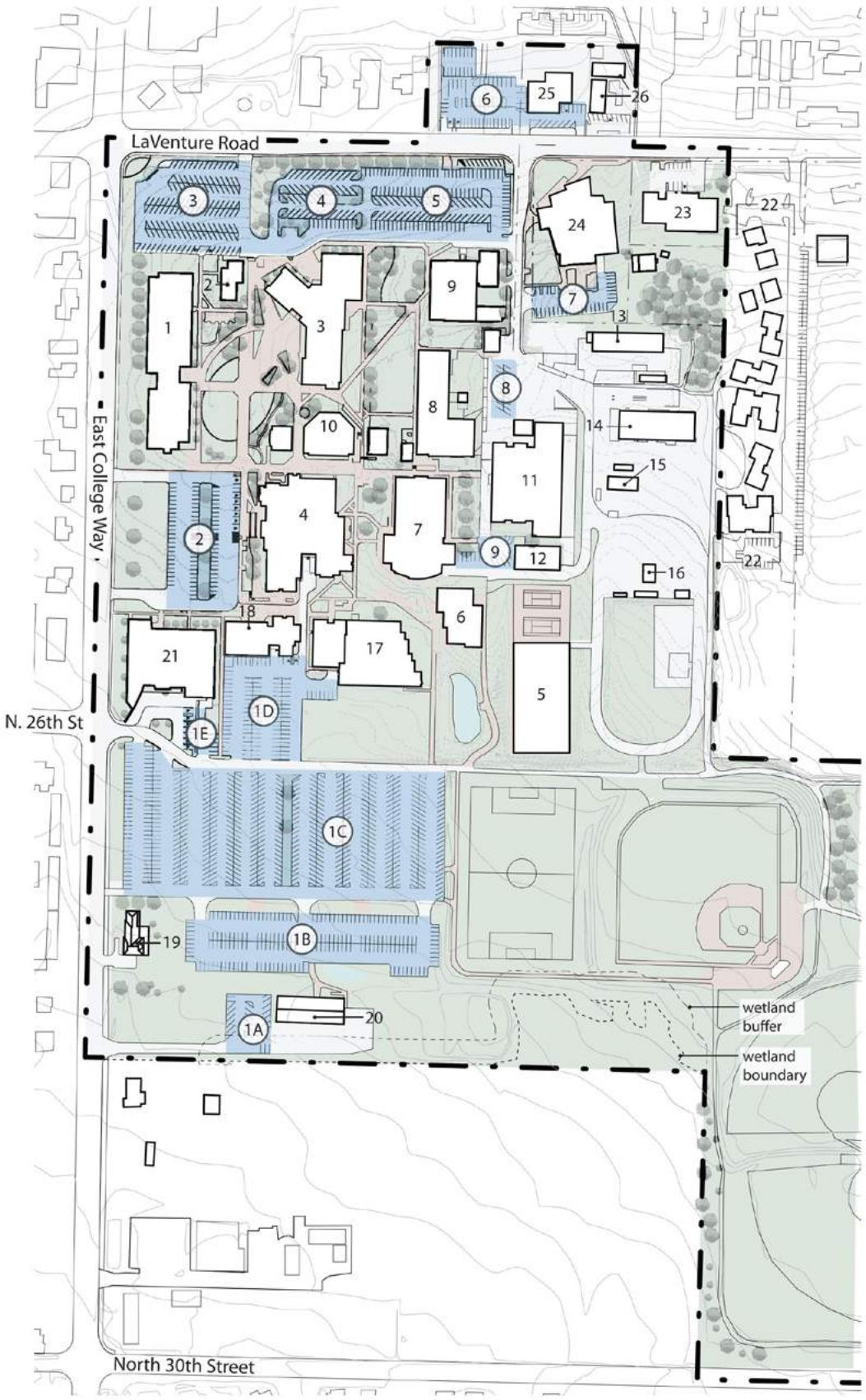


Figure 14. 15-Year Development Plan - Vehicular Circulation



COLOR LEGEND

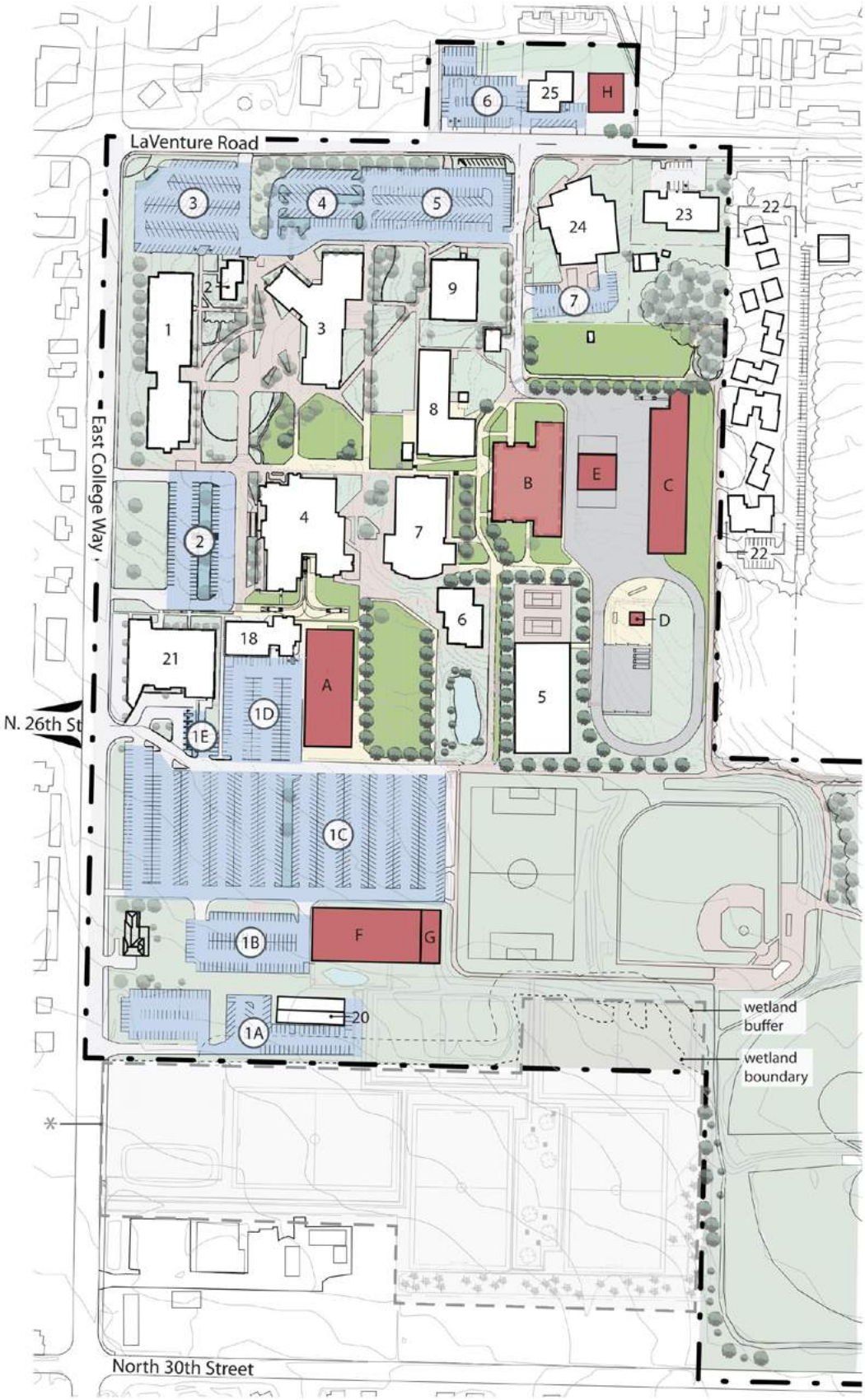
- (1A) East Campus Bldg Lot — 20 Stalls
- (1B) East Parking Lot — 176 Stalls
- (1C) Main East Lot — 584 Regular, 2 HC
- (1D) Behind Annex/Library — 111 Stalls
- (1E) McIntyre Hall Lot — 10 Stalls
- (2) Campus Center Lot — 81 Stalls
- (3) Angst Lot — 115 Stalls
- (4) Lewis Lot — 54 Stalls
- (5) West of Reeves Lot — 137 Stalls
- (6) Laventure Road Lots — 68 Stalls
- (7) NCTA Lot — 15 Stalls
- (8) North of Hodson Lot — 36 Stalls
- (9) Gym Lot — 15 Stalls

1424 Total Stalls

BUILDING LEGEND

1 Angst Hall
2 Greenhouse
3 Lewis Hall
4 Knutzen Cardinal Center
5 Armstrong Tennis Courts
6 Nelson Hall
7 DuVall Pavilion
8 Hodson Hall and Tarro Theatre
9 Reeves Hall
10 Ford Hall
11 Roberts Hall
12 Field House
13 Maintenance Building
14 Diesel Building
15 Modular Classroom Building
16 Firefighter Training Tower
17 Cole Library
18 Administrative Annex
19 Connite House
20 East Campus Building
21 McIntyre Hall
22 Campus View Village
23 Chinook Enterprises
24 Northwest Career & Technical Academy
25 Child and Family Learning Center
26 Modular Buildings (Not in use)

Figure 15. Existing Plan - Parking



COLOR LEGEND

- 1A East Campus Bldg Lot — 114 Stalls
- 1B East Parking Lot — 89 Stalls
- 1C Main East Lot — 586 Stalls
- 1D Behind Annex/Library — 104 Stalls
- 1E McIntyre Hall Lot — 10 Stalls
- 2 Campus Center Lot — 74 Stalls
- 3 Angst Lot — 115 Stalls
- 4 Lewis Lot — 54 Stalls
- 5 West of Reeves Lot — 137 Stalls
- 6 Laventure Road Lots — 65 Stalls
- 7 NCTA Lot — 15 Stalls

1363 Total Stalls

EXISTING BUILDING LEGEND

1	Angst Hall
2	Greenhouse
3	Lewis Hall
4	Knutzen Cardinal Center
5	Armstrong Tennis Courts
6	Nelson Hall
7	DuVall Pavilion
8	Hodson Hall and Tarro Theatre
9	Reeves Hall
18	Administrative Annex
20	East Campus Building
21	McIntyre Hall
22	Campus View Village
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24	Northwest Career & Technical Academy
25	Child and Family Learning Center

NEW CONSTRUCTION / RENOVATION LEGEND

A	Library
B	Roberts Hall
C	Trades Building
D	Firefighter Training Tower
E	Fire Station
F	Pickleball Pavilion
G	Field Support Facility
H	Child Care Center

* Skagit Playfields (Skagit County Parks and Recreation)

Figure 16. 15-Year Development Plan - Parking

Figure 17. Parking Quantities

Existing												
LOT DESIGNATION	**REG.**	**HANDICAP**	**CARPOOL**	**STAFF**	**VISITOR**	**VISITOR 15 MIN**	**EMERG. ONLY**	**FEV**	**ELEC CHARGE**	**SECURITY ONLY**	**MAIL ONLY**	**TOTAL**
Behind Annex/ Library		10	14	85				2				**111**
McIntyre Hall	5	5										**10**
Main East Lot	584	2										**586**
East Parking Lot	176	0										**176**
East Campus Bldg	20	0		0								**20**
Campus Center	0	7		46	2	5	1					**81**
Angst Lot	85	2		26				2				**115**
West of Reeves	111	4		22								**137**
NCTA Lot		2		13								**15**
North of Hodson	7	2		25						2		**36**
Gym Lot		2		12							1	**15**
CFLC	11	1										**12**
Upper LaVenture	40	2										**42**
Lower LaVenture	14											**14**
Lewis Lot		3	3	22	19			4	3			**54**
SUBTOTAL	1059	43	17	251	41	5	1	8	3	2	1	**1424**

Proposed												
LOT DESIGNATION	**REG.**	**HANDICAP**	**CARPOOL**	**STAFF**	**VISITOR**	**VISITOR 15 MIN**	**EMERG. ONLY**	**FEV**	**ELEC CHARGE***	**SECURITY ONLY**	**MAIL ONLY**	**TOTAL**
Behind Annex/ Library		10	14	78				2				**104**
McIntyre Hall	5	5										**10**
Main East Lot	584	2										**586**
East Parking Lot	89											**89**
East Campus Bldg	104	2		8								**114**
Campus Center		7		38	23	5	1					**74**
Angst Lot	85	2		26				2				**115**
West of Reeves	85	4	10	38								**137**
NCTA Lot		2		13								**15**
North of Hodson												**0**
Gym Lot												**0**
CFLC/SVC ELC	7	2										**9**
Upper LaVenture	18	2		22								**42**
Lower LaVenture	14											**14**
New Lewis Lot		3	3	22	19			4	3			**54**
SUBTOTAL	991	41	27	245	42	5	1	8	3	0	0	**1363**
NET CHANGE												**-61**

*Per WAC 51-50-0427 Section 429.1-429.2, electric charging stations will be added to existing lots as needed for new Group B occupancy buildings. The quantity and location will be determined during the design of each project.

Pedestrian Circulation

Existing Conditions

The Mount Vernon Campus is an easily walkable campus with a dense core of buildings at the center and parking pushed to edges. Figure 18 shows a diagram of pedestrian circulation on campus. The campus, while not completely flat, has a soft topographic rise from the southeast to northwest and is negotiated with ramps and stairs. While it is typical for students to walk across campus and from building to building between classes, wayfinding can be confusing for visitors or new students.

A principal north-south circulation route through campus connects the main entry drop-off loop, continues past Ford Hall and the Knutzen Cardinal Center, and ends at Roberts Hall. Hodson Hall, Duvall Pavilion, Ford Hall and Knutzen Cardinal Center are closely clustered along either side of this path making it feel narrow and constricted.

A secondary north-south route runs along the east side of Knutzen Cardinal Center and the west side of McIntyre Hall and the Administration Annex. The pedestrian path is disrupted by the service entry and loading dock for Knutzen. Past the service zone the circulation path begins again and continues north to Nelson Hall. A diagonal path between Nelson and the Library provides views out to the athletic fields and the foothills of the Cascade Mountains beyond.

At the professional technical programs buildings at the north section of campus, the pedestrian network breaks down. This area is characterized by large areas of asphalt and dedicated vehicular circulation zones.

Needs Analysis

Pedestrian access, circulation and wayfinding can be improved throughout campus. The ability to navigate by clear visual connections is needed and would lend to greater continuity through campus. It is also important to introduce consistent signage and wayfinding so users can gain easier access to the site and efficiently locate their destination.

Universal design is a school of thought that advocates accommodation of as many people as possible, rather than just the most common type of person. Routes that are technically ADA compliant may meet the law but fail to welcome students and staff who are physically handicapped. A truly inclusive campus experience accommodates everyone together. Access to ADA ramps is sometimes obscured, making the best way to one's destination unclear. Consideration should be given to the physical and visual incorporation of ramps with other pathways.

Pedestrian circulation needs to be separated from vehicular circulation at the professional technical programs area at the north end of campus. Additionally, pedestrian access from the east parking lot should be better defined as a major campus entry. The large quantity of parking stalls naturally lends to emphasizing this approach to campus.

Proposed Master Planning Strategies

— Develop pedestrian circulation to improve wayfinding and serve as organizational elements for the campus

— Improve clarity of east-west and north-south pedestrian circulation with emphasis on a few major routes defined as promenades

— Emphasize a main entry collegiate experience that connects to the greater pedestrian network

— Separate pedestrian circulation from vehicular circulation

— Provide ADA pathways throughout campus and integrate ramps with the landscape and pedestrian pathways

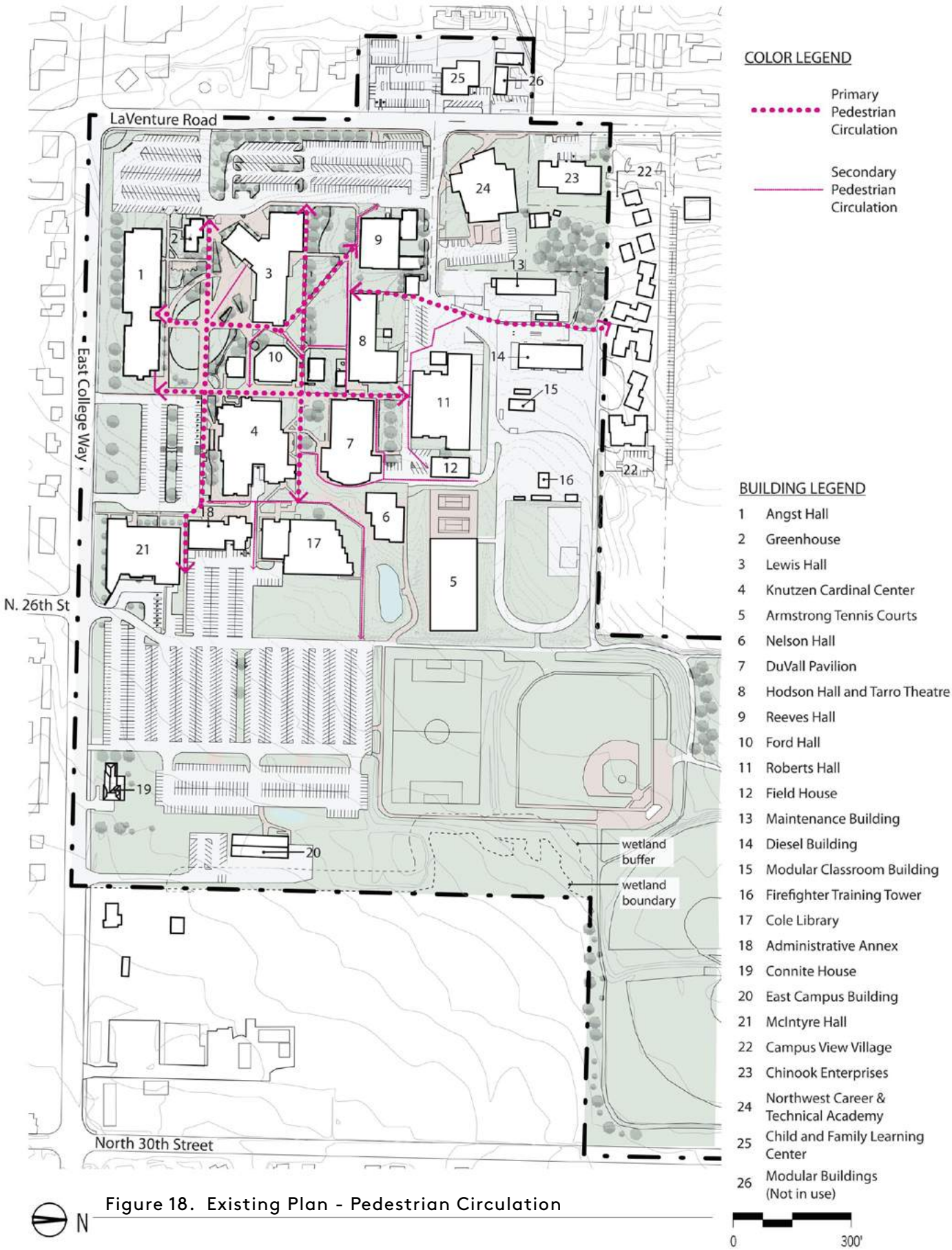
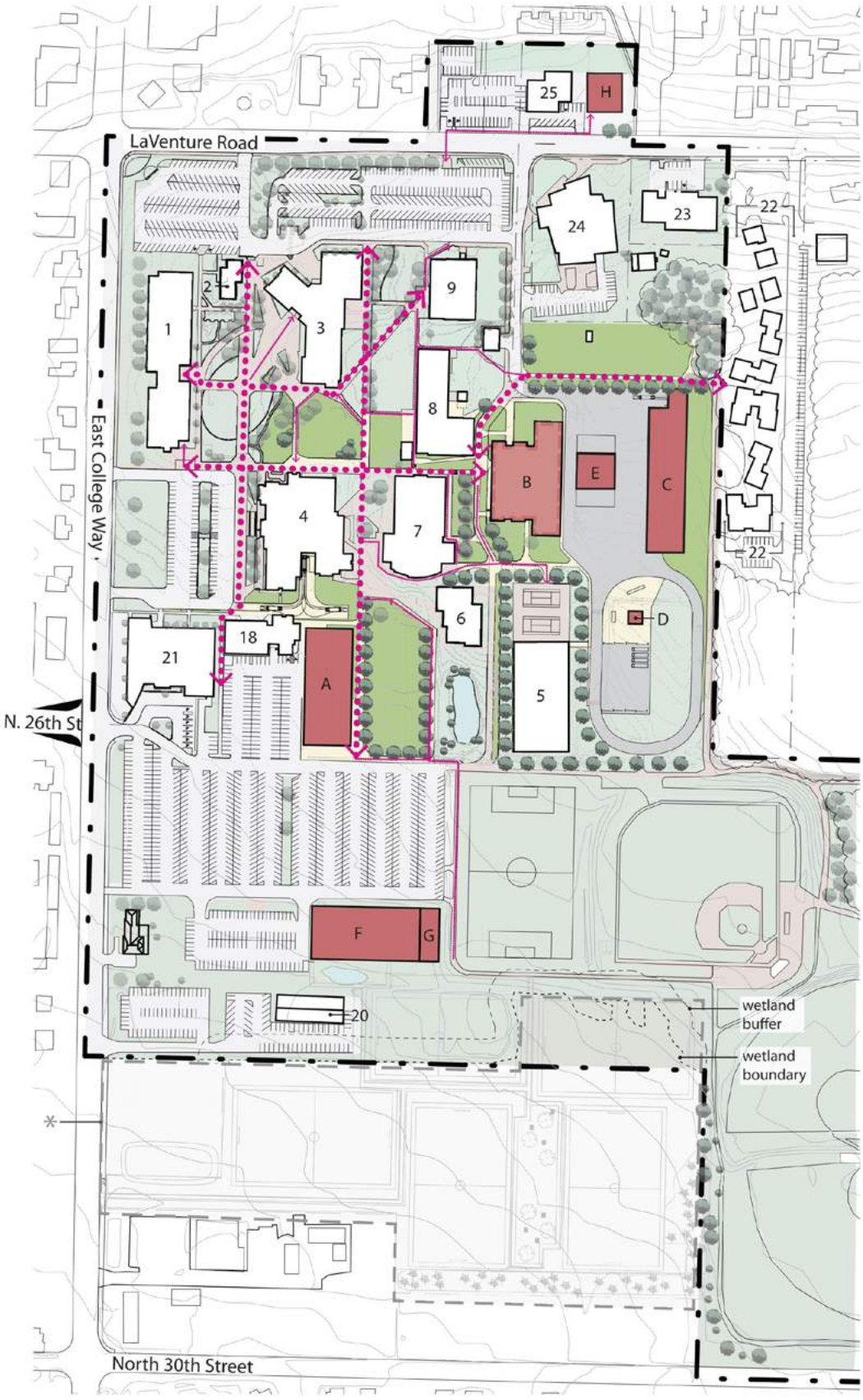


Figure 18. Existing Plan - Pedestrian Circulation



COLOR LEGEND

- Primary Pedestrian Circulation
- Secondary Pedestrian Circulation

EXISTING BUILDING LEGEND

1 Angst Hall
2 Greenhouse
3 Lewis Hall
4 Knutzen Cardinal Center
5 Armstrong Tennis Courts
6 Nelson Hall
7 DuVall Pavilion
8 Hodson Hall and Tarro Theatre
9 Reeves Hall
18 Administrative Annex
20 East Campus Building
21 McIntyre Hall
22 Campus View Village
23 Chinook Enterprises
24 Northwest Career & Technical Academy
25 Child and Family Learning Center

NEW CONSTRUCTION / RENOVATION LEGEND

A Library
B Roberts Hall
C Trades Building
D Firefighter Training Tower
E Fire Station
F Pickleball Pavilion
G Field Support Facility
H Child Care Center

* Skagit Playfields (Skagit County Parks and Recreation)

Figure 19. 15-Year Development Plan - Pedestrian Circulation

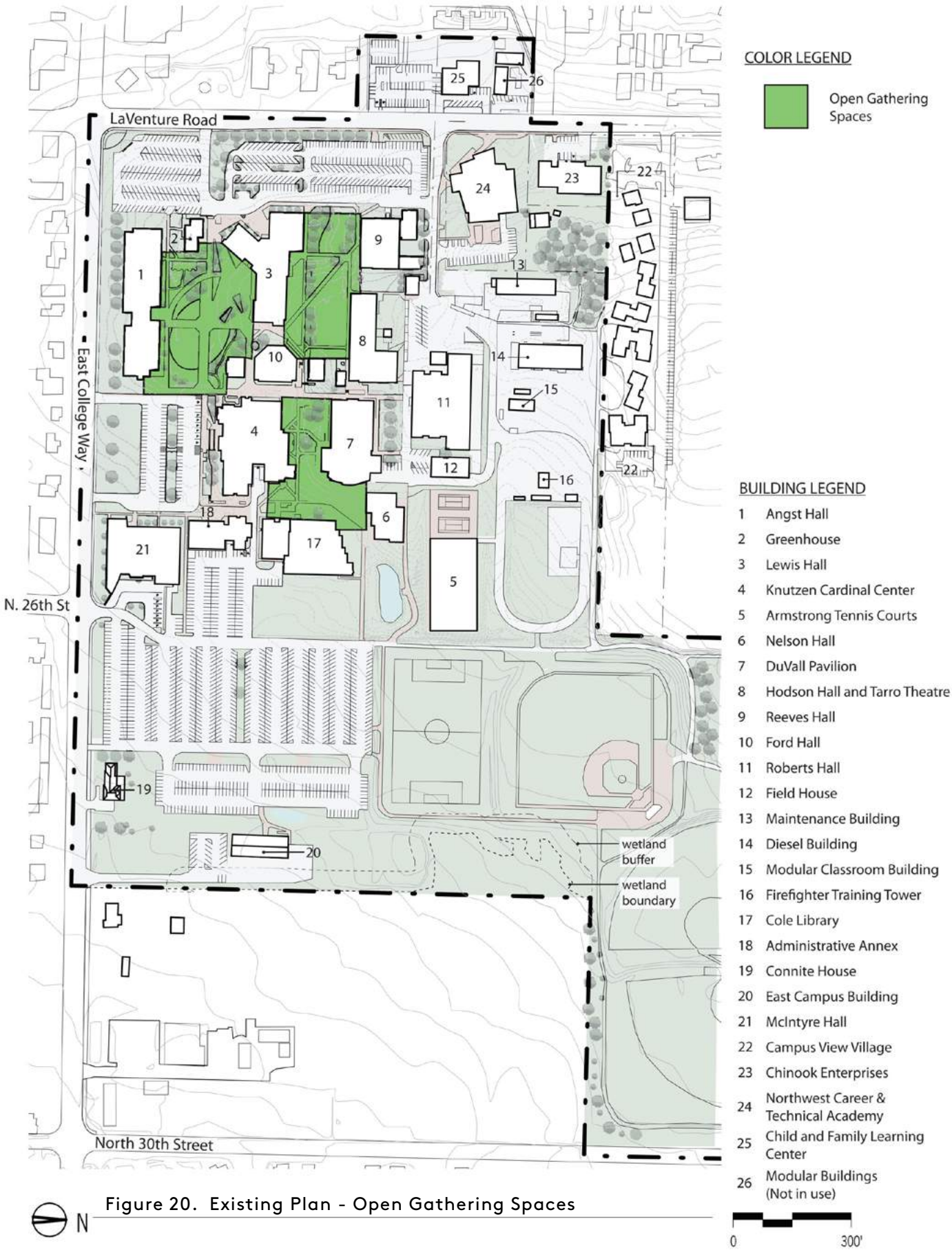
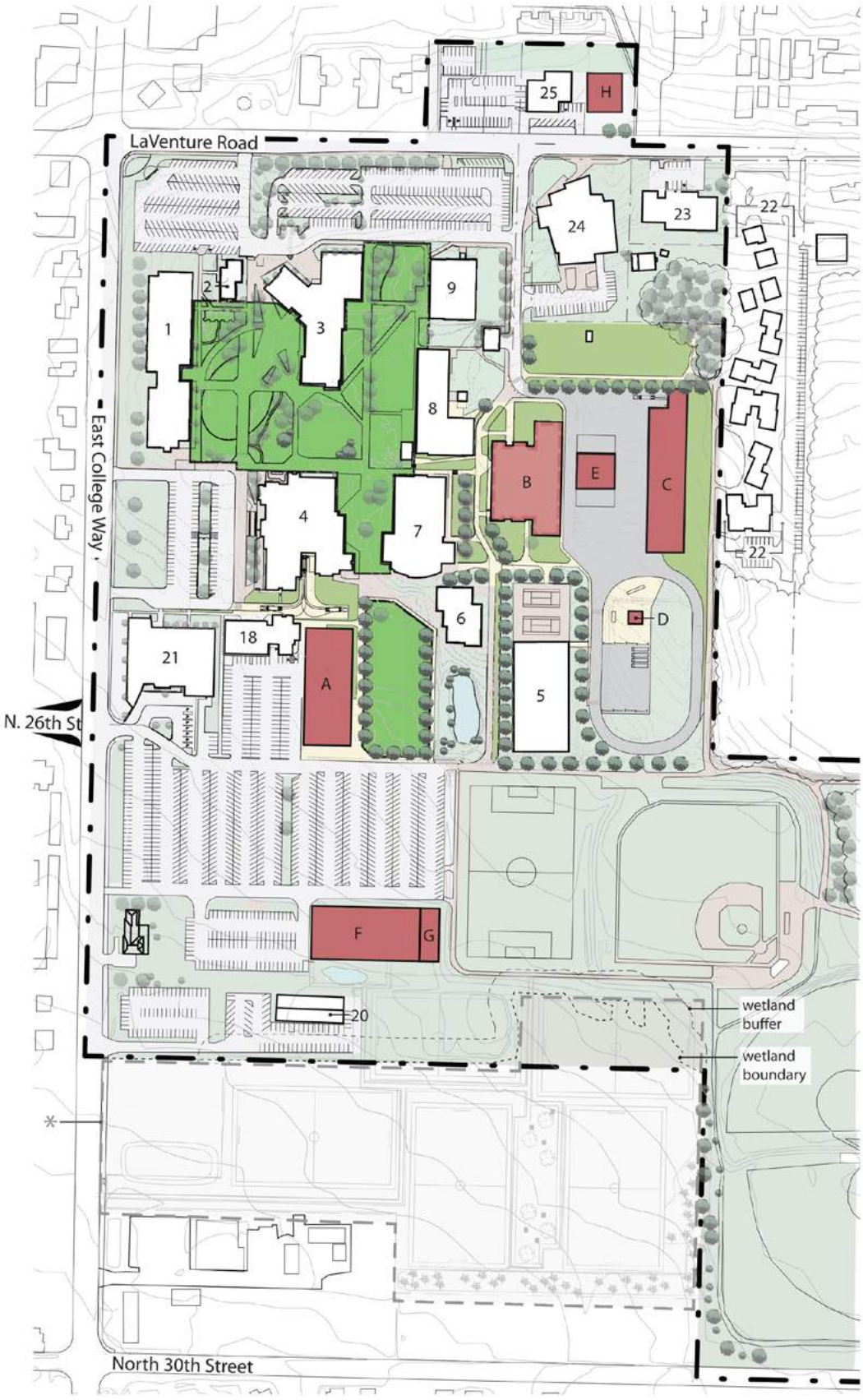


Figure 20. Existing Plan - Open Gathering Spaces



COLOR LEGEND

Open Gathering Spaces

EXISTING BUILDING LEGEND

1	Angst Hall
2	Greenhouse
3	Lewis Hall
4	Knutzen Cardinal Center
5	Armstrong Tennis Courts
6	Nelson Hall
7	DuVall Pavilion
8	Hodson Hall and Tarro Theatre
9	Reeves Hall
18	Administrative Annex
20	East Campus Building
21	McIntyre Hall
22	Campus View Village
23	Chinook Enterprises
24	Northwest Career & Technical Academy
25	Child and Family Learning Center

NEW CONSTRUCTION / RENOVATION LEGEND

A	Library
B	Roberts Hall
C	Trades Building
D	Firefighter Training Tower
E	Fire Station
F	Pickleball Pavilion
G	Field Support Facility
H	Child Care Center

* Skagit Playfields (Skagit County Parks and Recreation)

N

0 300'

Figure 21. 15-Year Development Plan - Open Gathering Spaces

Landscape

Existing Conditions

Currently, the campus does not take full advantage of its location and is disconnected from its context. Connections to the surrounding community are lost due to the fact that much of the site's perimeter is taken up by parking. This also affects perceptions of the College where the first impression is of parking.

In general, the current landscape maintenance keeps plantings low enough to allow for clear site lines and eliminates potential hiding places. Planting beds are kept near building entrances and shrubs up against building walls. Much of the campus landscape is characterized by open, manicured lawns with some mature trees. A row of old growth Giant Sequoias (Sequoia Dendron gigantism) are located north of the DuVall Pavilion. These provide a lush canopy and should be preserved and maintained.

Needs Analysis

An emphasis should be placed on native plants and local materials to tie the campus to its surroundings and give it a clear sense of place. The opening of campus view corridors to the mountains should be maintained as a way to create a place that is distinctively Mount Vernon.

Continuity of plantings and materials is needed to tie together the campus setting, creating a signature campus-wide identity. Buildings currently differ in style and era. A consistent landscape with cohesive furnishings, paving and planting would unite disparate elements into a cohesive whole.

A building entry plaza has been added at the main entry of each building. This will help users find the correct entry point and create a transitional space between inside and out. Individual plazas may respond to the architecture and purpose of each individual building, but will still maintain cohesion with the rest of the site through a combination of the standard materials, site furnishings, and plants. Each entry plaza will use pavers and benches to create an outdoor room affiliated with the building. The seating will be sufficient to accommodate individuals or small groups. Reference the "Design Kit" for further detail.

Screening of the parking areas along East College Way and definition of the campus entry is needed. Providing a tree-lined vehicular drive to the parking lot would add to the collegiate feel.

Although the College meets the city's requirements for overall percentage of campus that is landscaped, improvements are needed to frontage and parking lots. These will be undertaken by major building projects that have the budget to do so. Reference Figure 23 for the conceptual areas of where improvements will occur and 22 for the project in which they will be addressed.

Figure 22. Frontage and Parking Lot Landscape Improvements

Project	Landscape Improvement
Trades Building (C)	Laventure Road Frontage Parking Lot 5 Improvements
Library (A)	East College Way Frontage Parking Lot 1C Improvements
Pickleball (F)	Parking Lot 1B Improvements
Parking Lot 1A Expansion	Parking Lot will be landscaped per MVMC requirements

Proposed Master Planning Strategies

- Screen parking with the use of low shrubs around the perimeter of campus
- Use feature plantings to mark vehicular access points with taller plantings set back to maintain safe sightlines for drivers and pedestrians
- As new buildings are added, consider how building entry plazas can be designed to create a transitional space between inside and out
- Connect the site to its cultural context through the use of native plants and local material. Reference the "Plant List" for further detail.

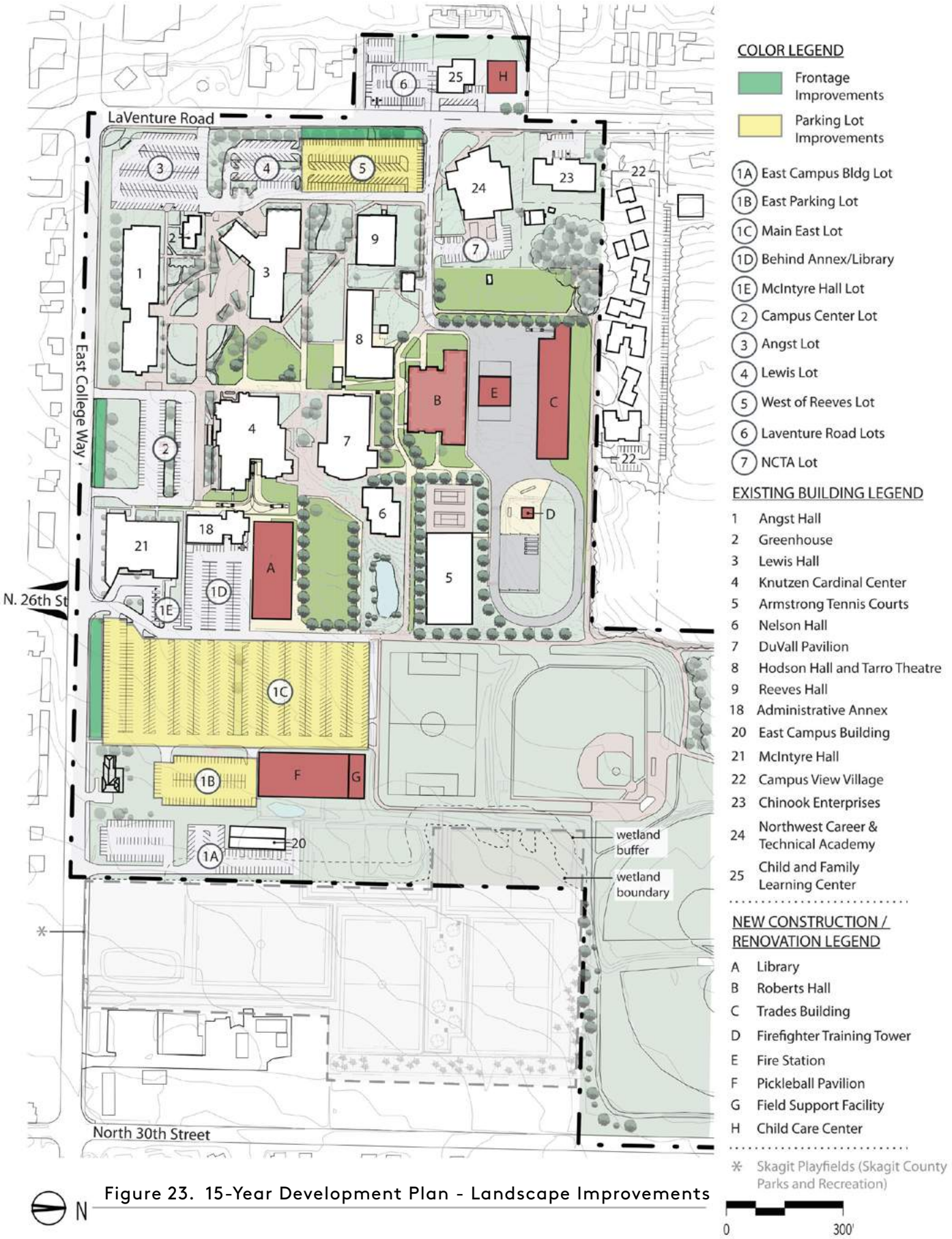


Figure 23. 15-Year Development Plan - Landscape Improvements

Infrastructure

Civil

Existing

Utility Tunnel

The campus has a utility tunnel that connects many buildings throughout campus (see Figure 24). Constructed with the original campus buildings, the 6-feet high by 8-feet wide tunnel network has been expanded over time with subsequent projects. The Campus is generally heated by steam that is distributed across the campus via the tunnels from the Boiler Building. The buildings not served by the tunnel system steam are the Maintenance Building, Diesel Building, Fire Fighter Training Tower, Field House, Administrative Annex, McIntyre Hall, East Campus Building, Child and Family Learning Center and the Greenhouse. The utility tunnel also provides pathways for power and IT infrastructure.

Water

Campus water services are provided by Skagit PUD and all on-site water mains are privately owned by the College. Separate water system loops are provided on campus for fire protection services, domestic water, and irrigation. The fire loop generally consists of 10-inch diameter pipe and provides adequate fire flow.

Storm Drainage

The campus storm drainage system consists of an underground piped conveyance system, catch basins and direct piped collection of roof runoff. A topographic ridge splits the campus into two drainage sub basins west and east. Connections of this onsite private system to the public system occur east and west of the topographic ridge at the northwest, southwest and southeast areas of the campus to LaVenture Road and College Way.

Stormwater detention flow control and water quality treatment is required by city code for new construction projects. Due to the spread out funding and timing of the projects, each project will generally support its own stormwater needs. However, if the timing allows, some facilities can be combined to improve the efficiency. Large surface ponds, raingardens, or similar facilities for water quality and flow control strategically placed on campus would allow projects to be constructed without providing fully independent drainage systems. Reference the Drainage Report for further information.

Sanitary Sewer

The campus sanitary sewer service is provided by the City of Mount Vernon. The main connection to the City sewer system is at the southwest corner of campus to a manhole in the intersection of LaVenture and College Way. The sewer discharge for McIntyre Hall is to the south to a connection in College Way.

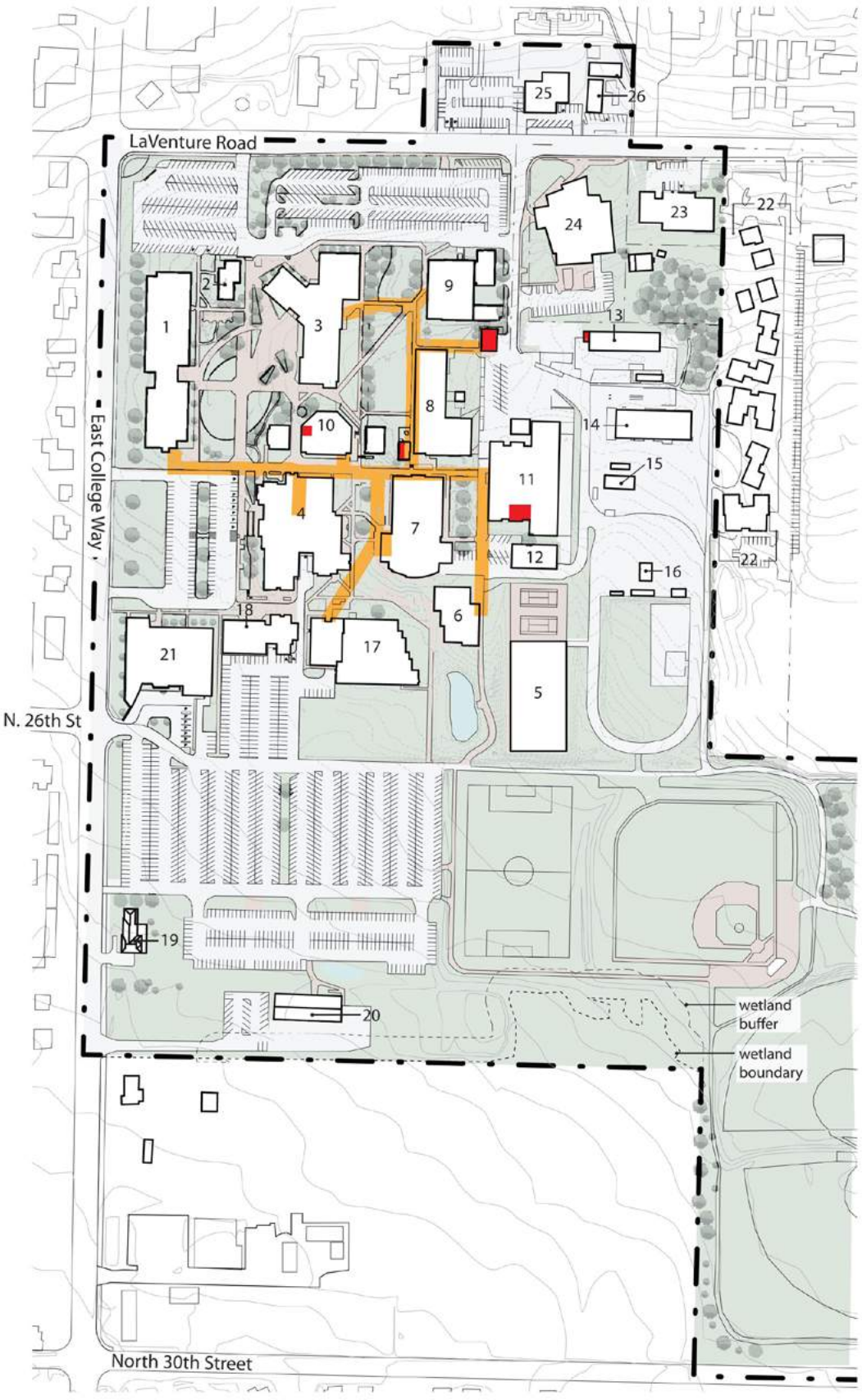
Needs Analysis

The utility tunnel should be extended where feasible to new buildings. Extensions would allow the campus steam, power, and telecommunications systems to serve new construction. While water capacity should remain sufficient during the 15-year plan, future fire flow studies may be needed to ensure adequate pressure and flow is available to serve as demands increase when buildings without fire protection systems are replaced.

A comprehensive approach to stormwater management for the campus would reduce the need for localized and independent underground chamber systems. Development on the east side of campus near the ball fields should be served by a stormwater facility closer to those developments. A sewer main extension from College Way to serve that portion of campus would be required. It should be sized to accommodate future growth.

Proposed Master Planning Strategies

- Extend utility tunnel
- Verify that adequate fire flow for future growth on the main campus can be provided
- Provide large surface and underground detention ponds for water quality and flow control that could be used for future projects.
- The City has stated that they support low-impact development strategies and emerging technologies, which means it may be possible to develop rainwater gardens instead of surface detention ponds



COLOR LEGEND

- Fixed Infrastructure
- Utility Tunnel

BUILDING LEGEND

1 Angst Hall
2 Greenhouse
3 Lewis Hall
4 Knutzen Cardinal Center
5 Armstrong Tennis Courts
6 Nelson Hall
7 DuVall Pavilion
8 Hodson Hall and Tarro Theatre
9 Reeves Hall
10 Ford Hall
11 Roberts Hall
12 Field House
13 Maintenance Building
14 Diesel Building
15 Modular Classroom Building
16 Firefighter Training Tower
17 Cole Library
18 Administrative Annex
19 Connite House
20 East Campus Building
21 McIntyre Hall
22 Campus View Village
23 Chinook Enterprises
24 Northwest Career & Technical Academy
25 Child and Family Learning Center
26 Modular Buildings (Not in use)

Figure 24. Existing Plan - Infrastructure

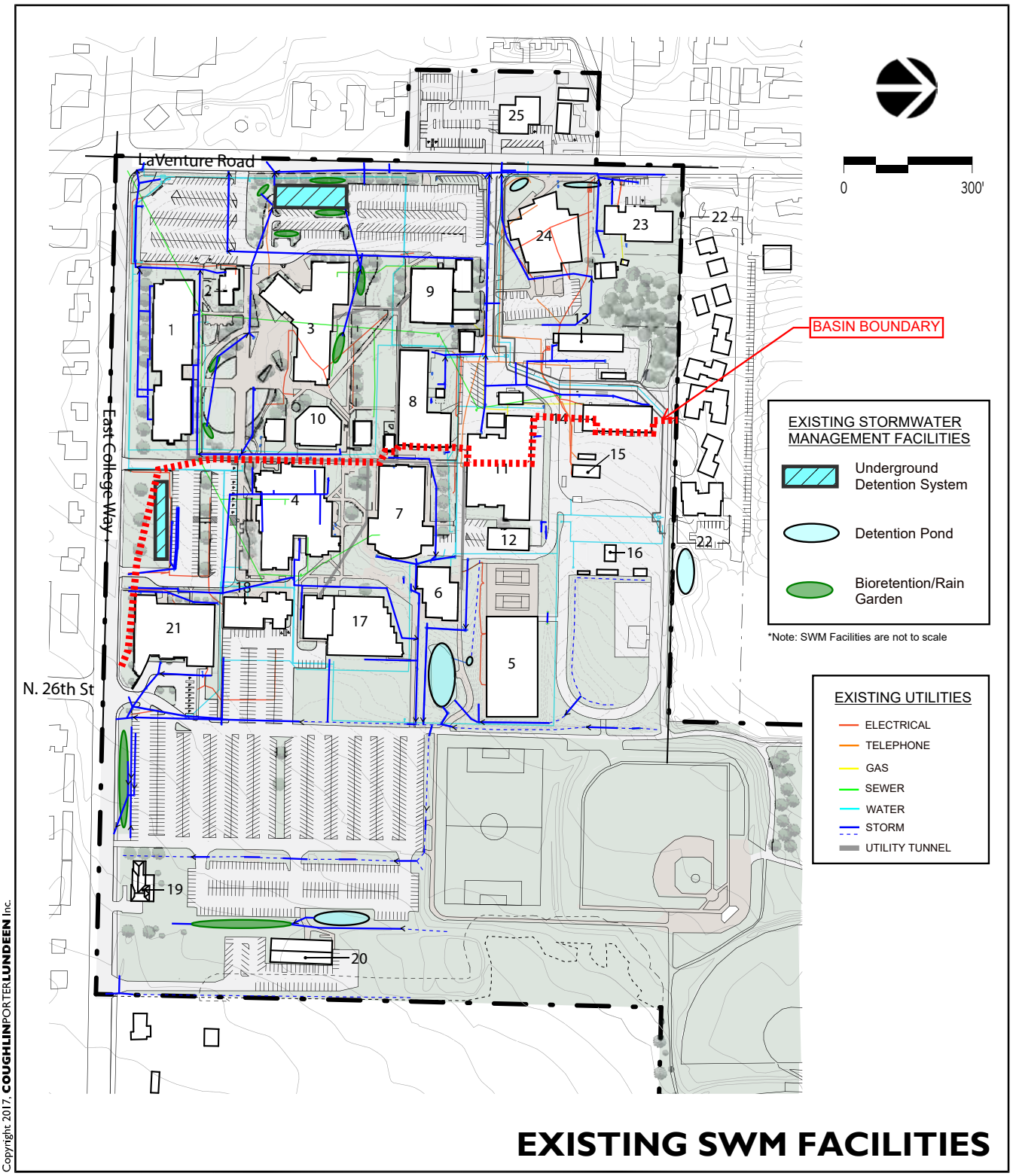


Figure 25. Existing Plan - Utilities

Electrical

Existing

The electrical service for the Mount Vernon Campus enters from the PSE utility feed on LaVenture Road north of the Northwest Career and Technical Academy. There are two primary distribution points to the campus. Switchgear #2 is located in an outdoor enclosure south of the Maintenance building. Switchgear #3 is located in a free-standing structure just south of Hodson Hall that also contains toilet rooms. These two switchgear locations distribute power to most of the campus buildings via the utility tunnel or in underground feeders in ducts. The existing electrical power has the capacity to accommodate the 15-year Development Plan. Figure 25 depicts locations of fixed infrastructure such as the switchgear and central boiler (east of Reeves Hall). An Alertus Mass Notification system was installed in 2019.

Needs Analysis

While the power for the 15-year Development Plan is adequate, providing a second point of electrical service entry into the campus would provide redundancy in power service. As the campus grows a campus fire alarm network should be considered. Such a network would provide more reliability, operational flexibility, and maintenance consistency. The campus currently has an under-utilized clock system which needs to be better utilized in the future.

Other electrical infrastructure needs:

- Standardized site lighting for safety and maintenance. Currently, site lighting is provided by a variety of lamp types and controlled at individual buildings
- A networked fire alarm system

Proposed Master Planning Solutions

- Preserve the locations of Switchgear #2 and #3 in the 15-year Development Plan as these provide distribution of power to the campus
- Consider adding a second utility primary power service from the east or south side of campus, as well as a new primary power switchgear to provide a level of redundancy to the campus utility system. The redundant power supply would allow offloading some of the building services from the heavily utilized Primary Switchgear #2 in the middle of campus
- Provide campus wide-system for fire alarm
- Incorporate electrical systems that are low-maintenance and consider standardizing systems for fire alarm, lighting controls, etc, to reduce impact on maintenance and operations.

COUGHLINPORTERLUNDEEN
STRUCTURAL CIVIL SEISMIC ENGINEERING

ENGINEERING REPORT

Drainage Report

Skagit Valley College
Mount Vernon Campus Master Plan
2405 E College Way, Mt Vernon, WA
November 30, 2020

PREPARED FOR:
Skagit Valley College
2405 East College Way
Mount Vernon, WA 98273-5899

PREPARED THROUGH:
Mithun
Pier 56, 1201 Alaskan Way
Suite 200
Seattle, WA 98101

PREPARED BY:
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Drainage Report

Mithun
Coughlin Porter Lundeen
Project No. C200027-02
November 30, 2020

TABLE OF CONTENTS

I. PROJECT OVERVIEW

SCOPE

This Drainage Report accompanies the 2020 Master Plan Update for the Skagit Valley College Mount Vernon Campus (SVC). This report provides a conceptual analysis of the drainage systems necessary to control stormwater runoff quantity and quality for campus developments planned in the next fifteen years. The analysis is based on the requirements of the Washington State Department of Ecology 2012 Stormwater Management Manual for Western Washington, as Amended in December 2014, and adopted by the City of Mount Vernon through Chapter 13.33 of the Mount Vernon Municipal Code (the Stormwater Management Manual). The City plans to adopt the 2019 Stormwater Management Manual on or before June 30, 2022. As the majority of the projects contained in the 15-year Master Plan may be permitted after the adoption of the 2019 Manual, its provisions are followed when more stringent than the current Manual.

The description of the projects planned for the next fifteen years was provided by Mithun, the architectural firm preparing the Master Plan update, and is shown in ***Figure 6, Appendix A***. The projects include the following:

- Consolidating Ford Hall and the Cole Library, into a new Library Building (Project A)
- Renovation of Roberts Hall (Project B)
- Replacement of the Diesel Building with a Trades Building (Project C)
- Relocation of the Fire Fighter Training Tower (Project D)
- Construction of a Fire Station (Project E)
- Construction of a Pickleball Pavilion (Project F)
- Construction of a Field Support Facility with restrooms, locker rooms, offices, and concessions to support the ball fields and replace the existing field house uses (Project G)
- Construction of a Child Care Center (Project H)

Each of these projects will also include the necessary site, stormwater management, and utility development to support the facilities. A fully engineered analysis and design of the stormwater management facilities for each individual project will be prepared at the time of the project proposal. The current analysis provides guidance to the SVC for order-of-magnitude costs and locations of future stormwater systems, as well as demonstrates to the City of Mount Vernon that the Master Plan projects can accommodate required stormwater management facilities.

This analysis updates the “Skagit Valley College – Master Plan Drainage Report” prepared by Leonard, Boudinot & Skodje, Inc. and dated April 5, 2002 (2002 Report), although the current analysis is limited to only those areas on the SVC campus impacted by planned facilities The 2002 Report provided an analysis of the entire campus and should be referred to for areas outside of those impacted by the current 15-year Master Plan.

GENERAL DESCRIPTION

The SVC is located at 2405 East College Way in the City of Mount Vernon, Washington. It is generally bounded by North Laventure Road on the west, and College Way on the south, although the proposed Child Care Center is located to the west of Laventure Road. Athletic fields in the northeast corner of the campus extend north to Martin Road and east to North 30th Street. Refer to ***Figure 1 in Appendix A*** for the Vicinity Map.

The campus is situated on approximately 106 acres located near the crest of a ridge between the Skagit River and Barney Lake at elevations of 80 to 85 feet. The topography is generally flat, sloping down to the southwest and southeast at average slopes between 1% and 3%. The campus drains to two basins, the Kulshan Creek Basin to the west and the Trumpeter Creek Basin to the east as shown on the City of Mount Vernon “Streams, Drainage Basins, and Potential Wetlands” Map (***Figure 3, Appendix A***). This same map shows potential wetlands on the east and north edges of the main campus. Further review of campus drainage plans indicates that the boundary between the drainage basins on the campus is further east than shown on the City map. The approximate boundary is shown in ***Figure 4, Appendix A***.

The underlying soils consist mainly of Bow gravelly loam and Skipopa silt loam, according to the NRCS Web Soil Survey (see ***Figure 2, Appendix A***). According to the NRCS, these soils are “somewhat poorly drained” with Ksat between 0.00 to 0.20 inches/hour. Geotechnical analyses prepared for Lewis Hall and the Childcare Center also found soils consisting of clays, silts, and glacial tills with low permeability. From a stormwater management standpoint, the campus soils do not present opportunities for infiltration of surface runoff.

EXISTING CONDITIONS

SVC is a developed campus consisting of classroom buildings, vehicular access and parking, athletic fields, and landscape areas. As shown in ***Figure 5 in Appendix A***, the core campus is in the southwest quadrant of the site with parking to the east and west and athletic facilities to the northeast. The campus is served by utilities including water, steam, sewer, gas, power, and telecom.

Existing stormwater management facilities include conveyance systems, flow control facilities, flow control Best Management Practices (BMPs), and water quality facilities. These are shown in ***Figure 7, Appendix A***.

PROPOSED CONDITIONS

Over the 15-year time span of this Master Plan, eight projects are planned. Please refer to ***Figure 6 in Appendix A*** for the locations of the proposed projects. Three of the projects are located wholly in the Trumpeter Creek Basin, one is located wholly in the Kulshan Creek basin, and four projects will impact both basins.

At the time of permitting, each project will provide a fully engineered drainage analysis and design conforming to the City of Mount Vernon drainage requirements for flow control, water quality, and conveyance. The proposed Child Care Center is currently in the design and permitting phase. This report provides a conceptual analysis of the drainage requirements for each of the remaining seven proposed projects. A conceptual plan showing feasible flow control systems for the proposed projects is presented in ***Figure 9, Appendix A***. A summary of the key results is presented below.

Project A: Library		
	Kulshan Creek Basin	**Trumpeter Creek Basin**
Project Area	0.79 acres	2.53 acres
Existing Uses	Ford Hall	Cole Library
Assumed New/Replaced Impervious Surface	0.16 acres	1.22 acres
Flow Control Facility	N/A	Pond
Discussion: The existing Ford Hall is in Kulshan Creek Basin. It will be demolished and replaced with landscape and approximately 6,700 square feet of hardscape. This is less than the 10,000 square foot threshold triggering flow control facilities.		

Project B: Roberts Hall		
	Kulshan Creek Basin	**Trumpeter Creek Basin**
Project Area	0.90 acres	0.94 acres
Existing Uses	Roberts Hall, Parking	Roberts Hall, Parking
Assumed New/Replaced Impervious Surface	0.54 acres	0.63 acres
Flow Control Facility	Vault	Vault
Discussion: Roberts Hall to be renovated in the same location. The analysis assumes that the proposed improvements will replace at least 5,000 sf of impervious surface and exceed 50% of the assessed value, thus triggering stormwater management.		

Projects C & D: Trades Building & Fire Fighter Training Tower		
	Kulshan Creek Basin	**Trumpeter Creek Basin**
Project Area	2.05 acres	2.45 acres
Existing Uses	Maintenance Building, Parking	Diesel Building, Modular Classroom, Parking
Assumed New/Replaced Impervious Surface	0.81 acres	1.65 acres
Flow Control Facility	Pond	6' Diameter Tanks
Discussion: Projects C and D are planned to occur simultaneously, thus the analysis combines them into one project. According to SVC, the intention is to preserve as much of the existing track and hardscape south of the Training Tower as possible, utilizing maintenance overlays as necessary.		

Project E: Fire Station	
	Trumpeter Creek Basin
Project Area	0.64 acres
Existing Uses	Parking
Assumed New/Replaced Impervious Surface	0.64 acres
Flow Control Facility	Vault

Projects F & G: Pickleball Pavilion & Field Support Facility	
	Trumpeter Creek Basin
Project Area	1.56 acres
Existing Uses	Landscape and parking
Assumed New/Replaced Impervious Surface	1.44 acres
Flow Control Facility	Underground Chambers (Stormtech or equivalent)
Discussion: The assumptions for master planning purposes include: 1) Project F will provide stormwater management for Project G, which will be constructed at a later date but as an expansion of the Pavilion; 2) Replacement parking will be provided to the south of the Pavilion; 3) The existing detention pond was designed and permitted under old flow control standards and will not serve the proposed project. A detailed analysis may show that the existing pond can be expanded to accommodate a portion of the new/replaced impervious surface.	

Project H: Child Care Center (information from current design team)	
	Kulshan Creek Basin
Project Area	0.42 acres
Existing Uses	Modular structures (unused) and parking area
Assumed New/Replaced Impervious Surface	0.20 acres
Flow Control Facility	N/A
Discussion: This project is currently in design. The amount new and replaced impervious surfaces and pollution-generating impervious surfaces are below the thresholds for flow control and water quality facilities. The project is separated from the rest of the campus by Laventure Road.	

II. MINIMUM REQUIREMENTS

In accordance with the Stormwater Management Manual, projects may be subject to nine minimum requirements. The threshold for triggering all nine minimum requirements differs for projects defined as "new development" versus "redevelopment". Redevelopment projects are defined by the MVMC as those that contain 35% or more of existing hard surface coverage. Each of the project sites in the 15-year Master Plan meets the definition of a redevelopment project and so the minimum requirements are determined by the *Flow Chart for Determining Requirements for Redevelopment*, of the Stormwater Management Manual (see ***Figure 11 in Appendix A***). Per the flow chart, each project is subject to all nine requirements.

The requirements are summarized, below. Each of the projects proposed in the 15-year Master Plan will address these requirements in detail at the time of design and permitting. This analysis will focus on requirements 5, 6, and 7 as these are the requirements with the greatest impact on project costs and area.

MR1 - PREPARATION OF STORM WATER SITE PLANS

Engineered stormwater plans and reports are required detailing the analysis, sizes, and locations of the flow control, water quality, and conveyance systems.

MR2 - CONSTRUCTION STORM WATER POLLUTION PREVENTION PLAN

A plan to prevent stormwater pollution during construction is required for each project. This plan will provide erosion control methods such as limiting disturbed area, soil cover measures, and silt fencing. In addition, control of surface water runoff during construction will be required.

MR3 - SOURCE CONTROL OF POLLUTION

Source control such as covered garbage facilities and oil control will be required to be investigated and implemented where warranted.

MR4 - PRESERVATION OF NATURAL DRAINAGE SYSTEM AND OUTFALLS

Stormwater runoff shall continue to discharge from the campus property at or near the current locations along Laventure Road and College Avenue.

MR5 - ON-SITE STORM WATER MANAGEMENT

On-site stormwater management meeting the requirements of "List #2" of the Stormwater Management Manual will be required for each of the proposed projects. Site soils are non-infiltrative so methods that rely heavily on infiltration will not be suitable. Further analysis of this requirement is provided in Section IV of this report.

MR6 - RUNOFF TREATMENT

Projects that exceed the 5,000 square foot threshold for new and replaced pollution-generating impervious surfaces will provide stormwater runoff treatment to the Enhanced standard. A range of water quality facilities are available to meet the standard. Further analysis of this requirement is provided in Section IV of this report.

MR7 - FLOW CONTROL

Flow control is triggered for projects at the following thresholds:

- Total effective impervious surface is 10,000 square feet or more in a threshold discharge area, or
- ¾ acres or more of vegetation converted to lawn or landscape, or
- The 100-year flow frequency from a threshold discharge area is increased by 0.15 cfs through impervious surfaces and converted vegetation, compared to the existing condition.

The conceptual analyses performed for the Master Plan assumes that all the projects except the Child Care Center (Project H) will trigger flow control. The Child Care Center is contained within its own threshold discharge area and the design results in less than 10,000 square feet of new and/or replaced impervious area.

Taken on its own, the Field Support Facility (Project G) would also be exempt from providing flow control. However, as an addition to the Pickleball Pavilion (Project F), this analysis assumes that the flow control requirements will be applied to both projects.

Flow control facilities such as underground detention chambers, pipes, and vaults, and above ground detention ponds may be used. Further analysis of this requirement is provided in Section IV of this report.

MR8 - WETLAND PROTECTION

A wetland exists on the east side of the SVC campus, within the Trumpeter Creek drainage basin. Project F is adjacent to the buffer of this wetland, but will not impact the buffer or the wetland. At the time of writing, Skagit County Parks is proposing to develop playfields by filling 4.26 acres of this wetland adjacent to the SVC campus, there by eliminating the wetland and buffer on the campus.

MR9 - OPERATION AND MAINTENANCE

Operations and maintenance of the stormwater management facilities will be provided by facilities staff at SVC. Project designers will provide an operation and maintenance manual to the SVC to assist in proper maintenance of the facilities.

III. OFF-SITE ANALYSIS

UPSTREAM ANALYSIS

Stormwater runoff from approximately four wooded acres north of the test track drains to the campus. Runoff from other upstream properties is intercepted by conveyance systems in Austin Lane and Martin Road.

DOWNSTREAM ANALYSIS

The SVC campus drains to two basins, Kulshan Creek Basin to the west and the Trumpeter Creek Basin to the east as shown on the City of Mount Vernon "Streams, Drainage Basins, and Potential Wetlands" Map (***Figure 3, Appendix A***).

Kulshan Creek Basin:
The west portion of the core campus along with the future Child Care Center has several piped outlets to the City storm system in both N. Laventure Road and E. College Way. This system conveys runoff to the west in E. College Way to discharge to Kulshan Creek approximately ½ mile from the southwest corner of the campus.

Trumpeter Creek Basin:
The east portion of the core campus discharges to the City storm system in E. College Way at several points. The City system conveys runoff to the east in E. College Way to discharge to a branch of Trumpeter Creek over ½ mile from the southeast corner of the campus.

A map of the City drainage basins showing the two conveyance routes is provided in ***Figure 10, Appendix A***.

DESCRIPTION OF EXISTING OR POTENTIAL PROBLEMS

City of Mount Vernon Staff knew of no existing or potential problems in the City's conveyance system in the area of SVC. A site visit revealed no problems at the visible outfalls from the campus into the City system. As the campus redevelops, new construction will manage stormwater to current standards, thus providing additional flow control and water quality treatment beyond what currently exists.

IV. FLOW CONTROL AND TREATMENT FACILITY ANALYSIS AND DESIGN

PERFORMANCE STANDARDS

The performance standards applied to the stormwater management systems for the proposed projects are provided in the Stormwater Management Manual and include the following:

- Flow control facilities:
  - All projects, except H: Match developed discharge durations to historic conditions durations for the range of pre-developed discharge rates from 50% of the 2-year peak flow up to the full 50-year peak flow. The historic condition to be matched shall be forested.
  - Project H: According to the current project design team, the Childcare Center falls below the threshold for providing a flow control facility because it proposes less than 10,000 sf of new plus replaced hard surfaces.
- Water Quality facilities: Enhanced standard (all projects except H) and Oil Control (projects C, D, and E).
- On-site Stormwater Management: List #2 in accordance with Section I-2.5.5 and Volume V of the Stormwater Management Manual

HYDROLOGIC CONDITIONS & FLOW CONTROL MODELING

To model the hydrologic conditions and estimate flow control storage volume requirements, MGSFlood Version 4, a continuous-modeling software, was used. Existing site conditions were modeled as forested. New and replaced impervious areas were modeled as "Impervious Surfaces" and new and replaced landscaped areas were modeled as "Till Grass". ***Figure 8 in Appendix A*** shows the proposed surface areas for each project.

Because of the conceptual nature of the Master Plan analysis, steps were taken to ensure that the storage volumes generated by the model were conservative. Those steps included: over-estimating the amount of impervious surface, not fully optimizing the facilities, and rounding the resultant volumes up to the nearest 1,000 cubic foot. Also, on-site stormwater management practices, such as raingardens, can reduce the volume of storage facilities but were not considered. Finally, separate facilities were modeled for each project within each basin, instead of designing regional facilities serving several projects within a basin. Because several of the projects will impact relatively small areas (one acre or less), their flow control systems are relatively inefficient. Should construction timing be such that one facility could serve two or more small projects, the resulting facility will be smaller than the two individual ones combined. Potential efficiencies are presented in ***Section VI, Recommendations and Conclusions.***

Several types of storage facilities were analyzed for each project. Factors such as outlet elevations, land availability, cost, and existing utilities were considered. The SVC expressed a preference for open detention ponds where feasible. For the conceptual analysis, ponds were designed for Projects A and C. Vaults were designed for Projects B and E, and an array of detention tanks were designed for Project C/D. For Projects F/G, an underground chamber system, such as that used for the Lewis Hall project is shown. As projects move into design and development, other types of facilities may be chosen.

Facility design was constrained by the depths of the points of connection. In several cases, the existing campus conveyance system may need to be replaced with a deeper/flatter system for a distance from the outlet of the proposed flow control facility. At this level of analysis and with the information available, we conservatively estimated the downstream connection point for each facility. Actual points of connection will likely vary somewhat during project design.

Conceptual flow control systems for each project are shown in ***Figure 9, Appendix A*** and the results from the computer modeling are presented in ***Appendix B*** and summarized, below:

Project A: Library			
Basin: Kulshan Creek			
Existing Areas (modeled as forest)		34,200 sf	0.79 acres
Developed Areas	PGIS	0 sf	0 acres
	NPGIS	6,700 sf	0.16 acres
	Pervious	27,500 sf	0.63 acres
Flow Control Storage Volume Required		N/A (<10,000 sf impervious)	
Basin: Trumpeter Creek			
Existing Areas (modeled as forest)		110,400 sf	2.53 acres
Developed Areas	PGIS	8,300 sf	0.19 acres
	NPGIS	45,000 sf	1.03 acres
	Pervious	57,100 sf	1.31 acres
Flow Control Storage Volume Required		36,000 cf	

Project B: Roberts Hall			
Basin: Kulshan Creek			
Existing Areas (modeled as forest)		39,200 sf	0.90 acres
Developed Areas	PGIS	2,000 sf	0.05 acres
	NPGIS	21,400 sf	0.49 acres
	Pervious	15,900 sf	0.36 acres
Flow Control Storage Volume Required		22,000 cf	
Basin: Trumpeter Creek			
Existing Areas (modeled as forest)		41,000 sf	0.94 acres
Developed Areas	PGIS	0 sf	0 acres
	NPGIS	27,500 sf	0.63 acres
	Pervious	13,500 sf	0.31 acres
Flow Control Storage Volume Required		26,000 cf	

Projects C & D: Trades Building & Fire Fighter Training Tower			
Basin: Kulshan Creek			
Existing Areas (modeled as forest)		89,300 sf	2.05 acres
Developed Areas	PGIS	20,600 sf	0.47 acres
	NPGIS	14,900 sf	0.34 acres
	Pervious	53,800 sf	1.24 acres
Flow Control Storage Volume Required		31,000 cf	
Basin: Trumpeter Creek			
Existing Areas (modeled as forest)		106,700 sf	2.45 acres
Developed Areas	PGIS	52,700 sf	1.21 acres
	NPGIS	19,000 sf	0.44 acres
	Pervious	35,000 sf	0.80 acres
Flow Control Storage Volume Required		55,000 cf	

Project E: Fire Station			
Basin: Trumpeter Creek			
Existing Areas (modeled as forest)		28,000 sf	0.64 acres
Developed Areas	PGIS	21,500 sf	0.50 acres
	NPGIS	6,500 sf	0.14 acres
	Pervious	0 sf	0 acres
Flow Control Storage Volume Required		31,000 cf	

Projects F & G: Pickleball Pavilion & Field Support Facility			
Basin: Trumpeter Creek			
Existing Areas (modeled as forest)		67,800 sf	1.56 acres
Developed Areas	PGIS	20,700 sf	0.48 acres
	NPGIS	41,900 sf	0.96 acres
	Pervious	5,200 sf	0.12 acres
Flow Control Storage Volume Required		53,000 cf	

RUNOFF TREATMENT SYSTEMS

Projects A, C, D, E, and F will trigger runoff treatment since they will create pollution-generating impervious surface (pgis) greater than the 5,000 square foot area threshold. Project C will trigger Oil Control treatment since it is a vehicle repair site. Project D and E may trigger Oil Control treatment depending upon the number of heavy vehicles parked and/or the presence of a fueling station. Several oil/water separators and manufactured devices are available to meet this requirement. When the projects are in design and more detail is known, an appropriate oil control device can be chosen.

A variety of systems are also available to meet the Enhanced treatment standard. The *Runoff Treatment BMP Selection Flow Chart presented* as ***Figures 12a and 12b, Appendix A***, lists potential systems. Some of the systems are more compatible with the soils, topography, and programming needs of SVC than others. For instance, the Large Sand Filter requires 4 feet of head drop to function. Since the campus is relatively flat, this BMP is unlikely to be feasible for any of the proposed projects. Table 1, below, provides a matrix of systems deemed feasible at this level of analysis for each project. During Project design, adjustments to the layout of the pgis may result in other systems being feasible.

Table 1: Feasible Runoff Treatment BMPs per Project

PROJECT	A-T		C-K		C-T		D		E		F	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Large Sand Filter[1]		√		√		√		√		√		√
SW Treatment Wetland[2]	√		√			√	√			√		√
CAVFS	√		√			√	√			√		√
Bioretention	√		√			√	√			√		√
Media Filter Drain	√		√			√	√			√		√
Manufactured Treatment Device[3]	√		√		√		√		√		√	
2-Facility Treatment Train[4]		√		√		√		√		√		√

[1] Sand Filters require more elevation difference between inlet and outlet than available on the SVC campus.

[2] Stormwater Treatment Wetlands require landscape area downstream of project pgis. This method may conceivably work in conjunction with the stormwater pond for Projects A and C.

[3] Several devices including Modular Wetland Systems, Filterras, and StormFilter Vaults have been developed to meet the Enhanced standard in a compact area with minimal elevation difference.

[4] 2-Facility treatment trains are land- and elevation-intensive and are unlikely to fit on the SVC campus.

ON-SITE STORMWATER MANAGEMENT

Because the site soils are not suitable for infiltration and the campus is fully developed, it is infeasible to meet the Low Impact Development Performance Standard. Therefore, the Master Plan analysis assumes that the individual projects will opt to meet the requirements contained in “List #2”. At the level of the Master Plan analysis, the following BMPs are likely to be implemented:

- BMP T5.13 – Soil Quality and Depth will be implemented for each project.
- BMP T7.30 – Bioretention may be implemented in a limited fashion with underdrains for each project.
- BMP T5.10B, T5.11, and T5.12 – Dispersion is unlikely to be feasible for any of the projects due to lack of downstream vegetated flowpaths.
- BMP 5.10C – Perforated Stub-out connections should be evaluated for each project where pervious area is adjacent to buildings. This BMP may not be feasible for Projects D or E because of the amount of impervious area surrounding the buildings.

The following table provides the List #2 BMPs and their feasibility for each project.

Table 2: Feasible List #2 BMPs per Project

PROJECT	A		B		C		D		E		F		G		H	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
T5.13 Soil Quality & Depth	√		√		√		√		√		√		√		√	
T5.30 Full Dispersion		√		√		√		√		√		√		√		√
T5.10 Downspout Full Infiltration		√		√		√		√		√		√		√		√
T7.30 Bioretention[1]		√		√		√		√		√		√		√	√	
T5.10b Downspout Dispersion		√		√		√		√		√		√	√			√
T5.10c Perforated Stub-Out Connections[2]	√		√		√			√		√	√		√		√	
T5.15 Permeable Pavements[3]		√		√		√		√		√		√		√		√
T5.12 Sheet Flow Dispersion		√		√		√		√		√		√	√			√
T5.11 Concentrated Flow Dispersion		√		√		√		√		√		√	√			√

[1]Bioretention may be considered infeasible to meet M.R. #5 On-Site Stormwater Management for all the projects because the hydraulic conductivity of the soil may be less than 0.30 inches per hour. Geotechnical analysis of soils in the area of each project is needed to confirm. Bioretention may still be used to meet M.R. #6 Runoff Treatment if it has an underdrain and may provide some flow control benefits.

[2] Perforated Stub-out connections should not be used under impervious surfaces or in areas with high ground-water table.

[3] Permeable pavements: Similar to Bioretention, may be infeasible to meet M.R. #5 because the hydraulic conductivity of the soil may be less than 0.30 inches per hour.

V. CONVEYANCE SYSTEM ANALYSIS AND DESIGN

New conveyance systems will be required to contain and convey stormwater away from developed areas and to water quality and flow control systems prior to discharge to the City stormwater system. The general location of existing outfalls to the City system will be maintained. The conveyance systems are expected to be comprised of catch basins, area drains, pipes, swales, and ditches. The layout and size of the systems will depend upon the specific design of each future project. Analysis and design of conveyance systems is beyond the scope of the current Master Planning effort.

VI. RECOMMENDATIONS AND CONCLUSION

RECOMMENDATIONS

This Master Plan analysis reveals several ways to make the stormwater management systems more efficient as SVC moves forward with projects scheduled for the next 15 years:

- Combine flow control systems where possible. This will provide greater efficiency since volumes for small basins become artificially inflated because of required minimum orifice sizes. For instance, depending upon funding and construction schedules, the following systems could be combined:
    - Vault B-K and Pond C-K: This requires demolition of existing Maintenance Building parking prior to renovation of Roberts Hall (Building B).
    - Vault B-T and Pond A-T: Runoff from the east portion of the Roberts Hall project could be conveyed to the landscape area east of the new library and added to the detention facility required for Project A.
    - Vault E-T and C/D-T: By impacting an area within the limits of the proposed Trades Building (Project C), the vault for Project E could be changed to a tank array that could be added to with Project C/D.
    - Vault E-T and Vault B-T: If Roberts Hall and the Fire Station were to be constructed at or near the same time, the separate vaults could be combined for a single, more efficient vault.

- Determine if the existing East Pond can be expanded to provide detention for the Pickleball Pavilion in Project F. The replaced parking area would still require a separate, but smaller, detention facility.

- Run new conveyance systems as flat and deep as possible to allow for deeper flow control systems upstream.

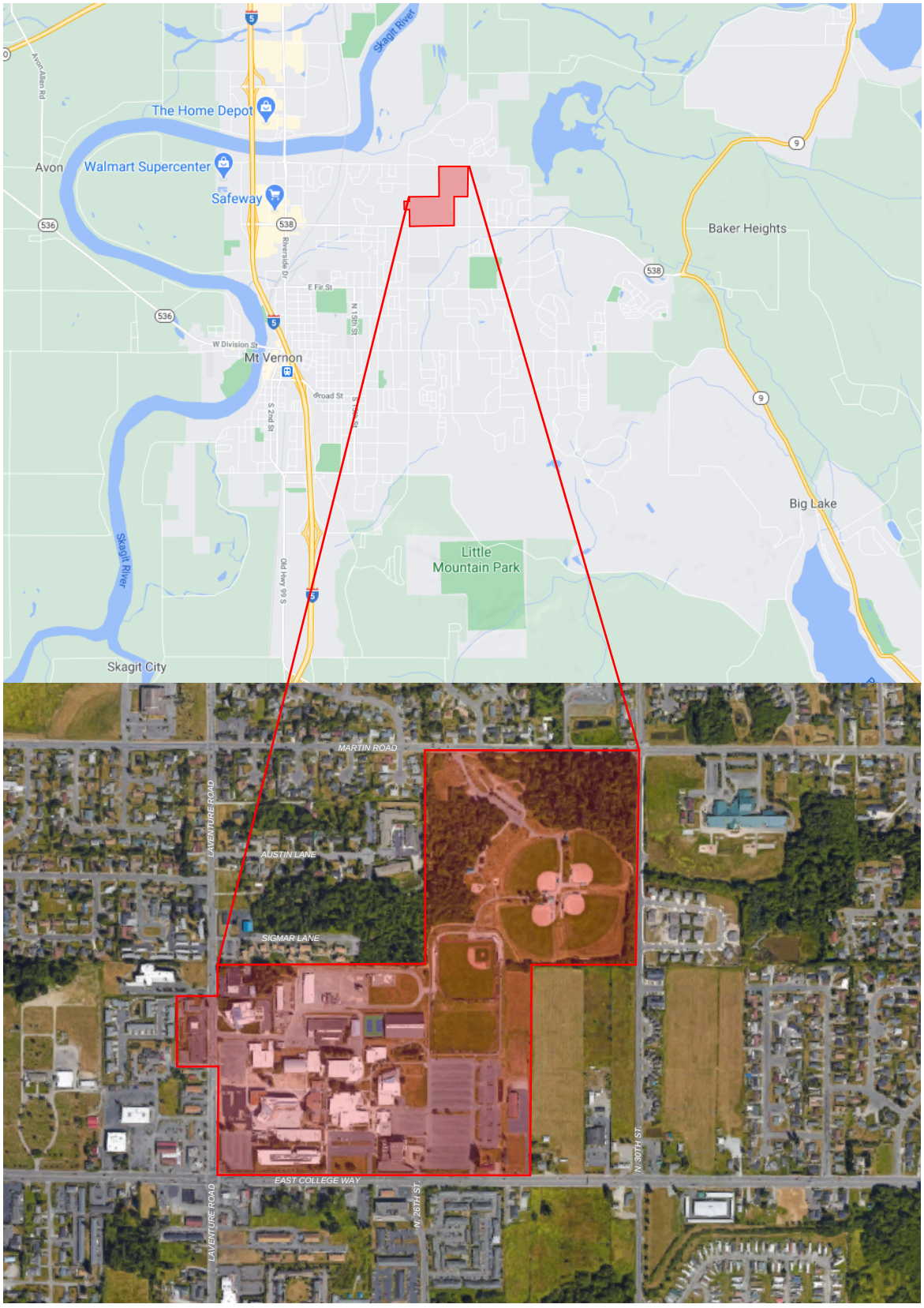
CONCLUSIONS

The Skagit Valley College 15-Year Master Plan for the Mount Vernon Campus addresses the replacement or renovation of facilities on campus that have limited remaining life. This report demonstrates that the planned projects can meet current stormwater management standards and provides guidance for space requirements and cost modelling (by others). As the project designs develop, efficiencies in the campus stormwater management system may be realized.

APPENDIX A - FIGURES

Figure 1 – Vicinity Map
Figure 2 – NRCS Soil Survey
Figure 3 – Streams, Drainage Basins, and Potential Wetlands Map
Figure 4 – Drainage Basins
Figure 5 – Existing Buildings
Figure 6 – 15-Year Proposed Projects
Figure 7 – Existing Stormwater Facilities
Figure 8 – Individual Proposed Project Basins
Figure 9 – Proposed Stormwater Facilities
Figure 10 – Off-Site Analysis
Figure 11 – Flow Chart for Determining Requirements for Redevelopment
Figures 12a and 12b – Runoff Treatment BMP Selection Flow Chart

NTS



VICINITY MAP

FIGURE 1

Project: SVC (Mount Vernon Campus) Master Plan

Project No: C200027-02 Date: 2020-11-09

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Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
10	Bellingham silt loam	0.0	0.0%
16	Bow gravelly loam, 0 to 3 percent slopes	7.5	8.0%
17	Bow gravelly loam, 3 to 8 percent slopes	41.2	43.8%
67	Hoogdal silt loam, 8 to 15 percent slopes	7.5	8.0%
124	Skipopa silt loam, 0 to 3 percent slopes	37.7	40.1%
Totals for Area of Interest		**93.9**	**100.0%**

Map Scale: 1:6,760 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 100 200 400 600

Feet: 0 300 600 1200 1800

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

NRCS SOIL SURVEY

FIGURE 2

Project: SVC (Mount Vernon Campus) Master Plan

Project No: C200027-02 Date: 2020-11-09

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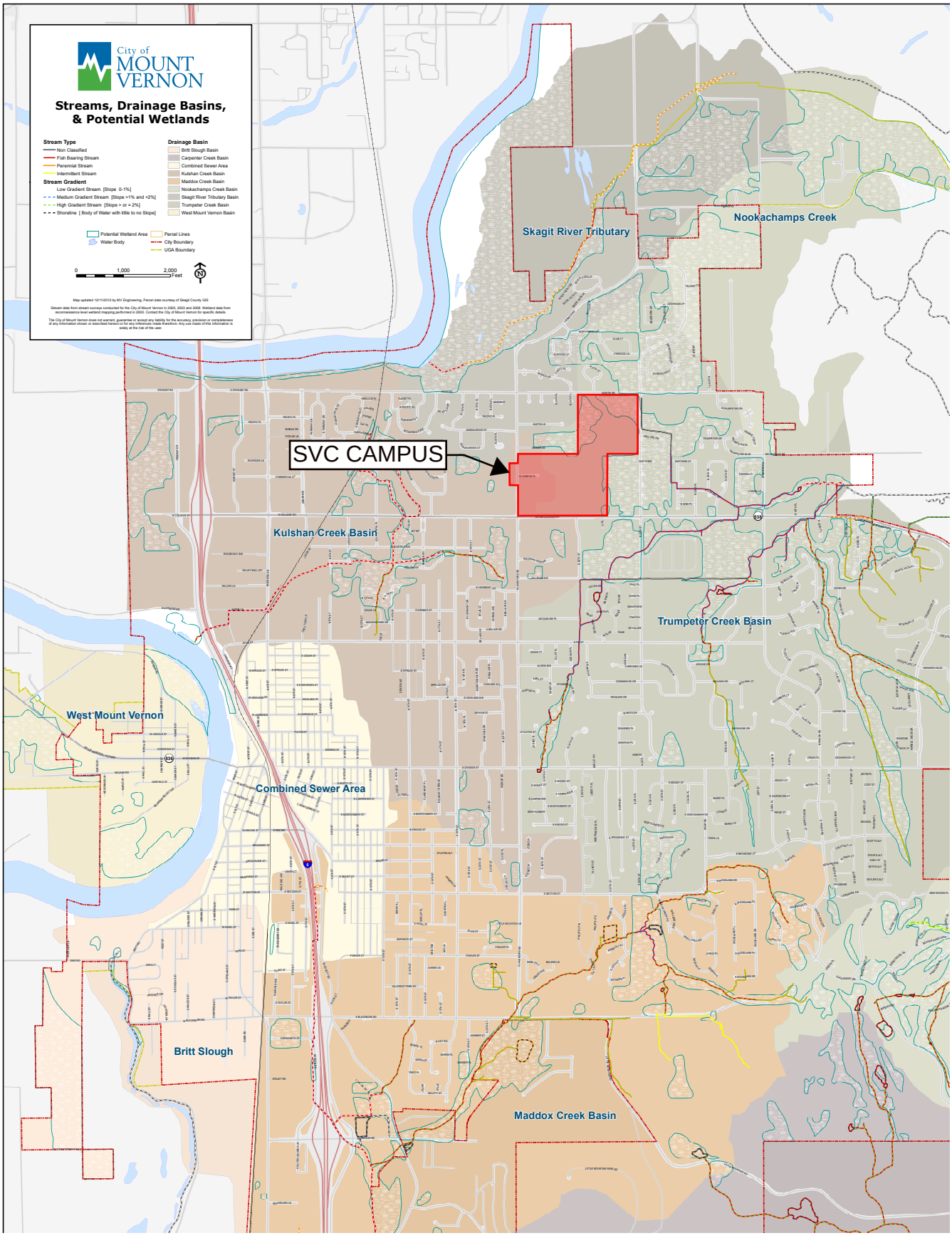

Project: SVC (Mount Vernon Campus) Master Plan

CITY OF MOUNT VERNON DRAINAGE BASINS

Project No: C200027-02

Date: 2020-11-09

FIGURE 3

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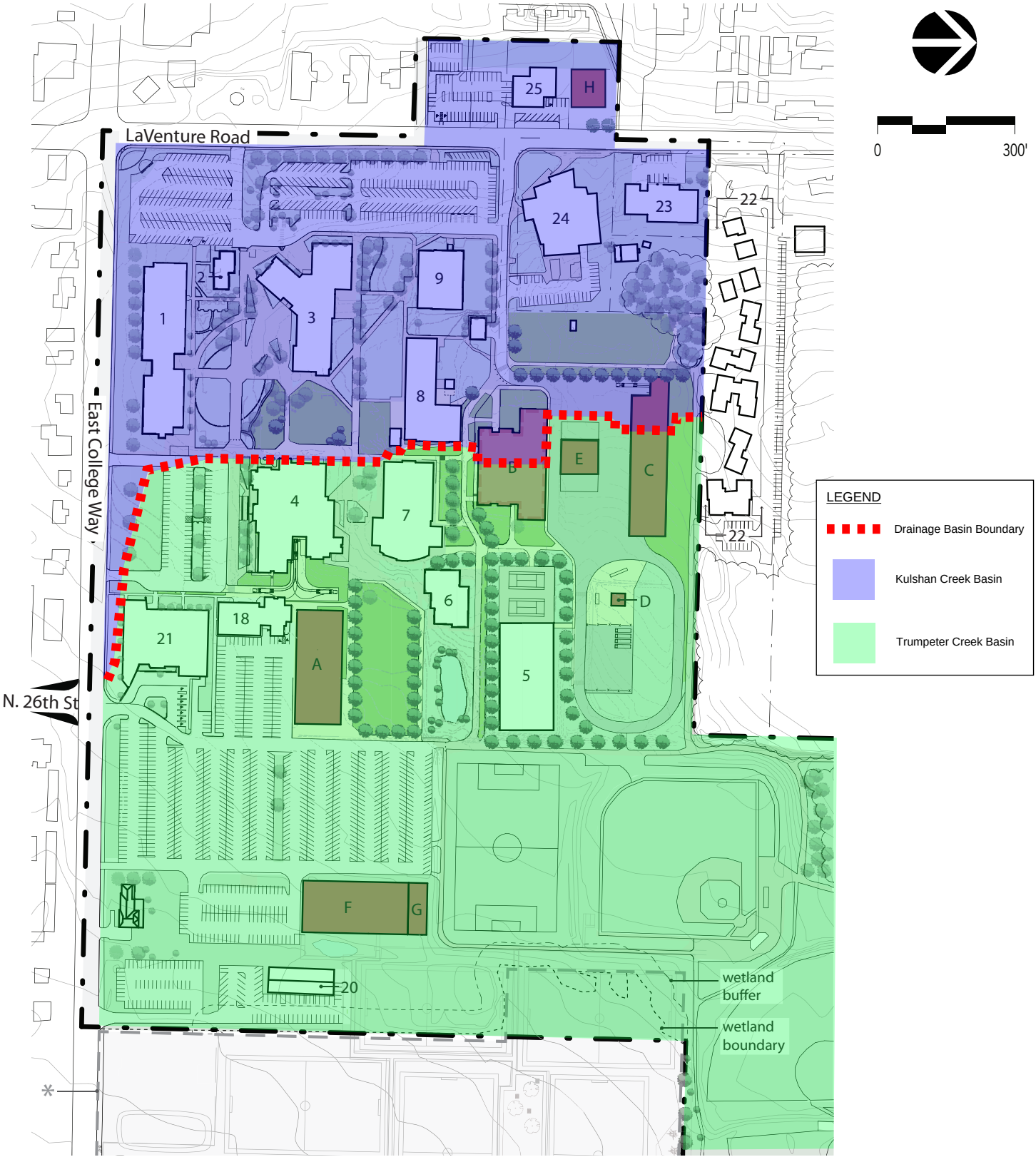

DRAINAGE BASINS

FIGURE 4

Project: SVC (Mount Vernon Campus) Master Plan

Project No: C200027-02 Date: 2020-11-30

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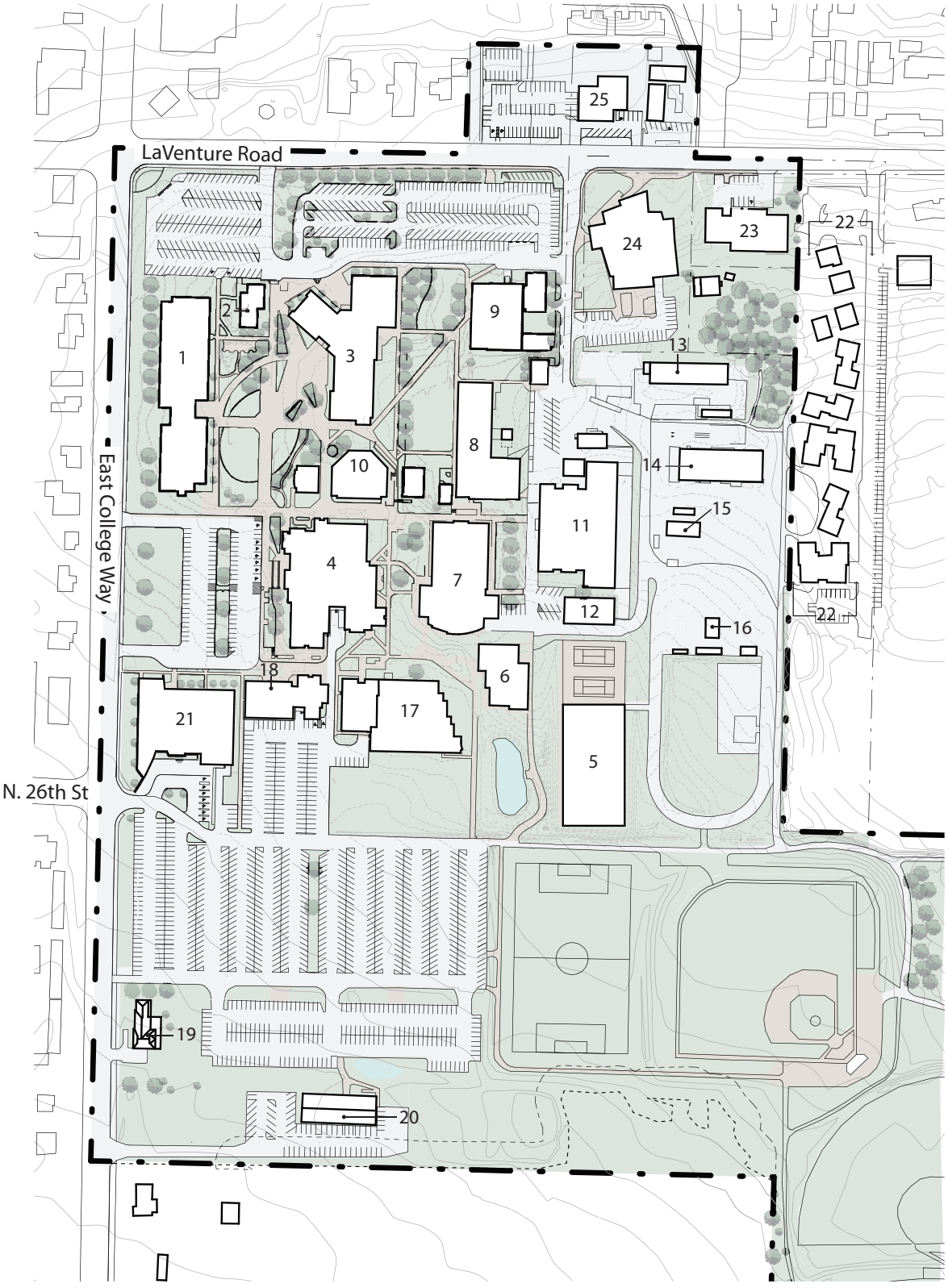

0 300'

BUILDING LEGEND

1	Angst Hall
2	Greenhouse
3	Lewis Hall
4	Knutzen Cardinal Center
5	Armstrong Tennis Courts
6	Nelson Hall
7	DuVall Pavilion
8	Hodson Hall and Tarro Theatre
9	Reeves Hall
10	Ford Hall
11	Roberts Hall
12	Field House
13	Maintenance Building
14	Diesel Building
15	Modular Classroom Building
16	Firefighter Training Tower
17	Cole Library
18	Administrative Annex
19	Connite House
20	East Campus Building
21	McIntyre Hall
22	Campus View Village
23	Chinook Enterprises
24	Northwest Career & Technical Academy
25	Child and Family Learning Center

EXISTING BUILDINGS

FIGURE 5

Project: SVC (Mount Vernon Campus) Master Plan

Project No: C200027-02 Date: 2020-11-09

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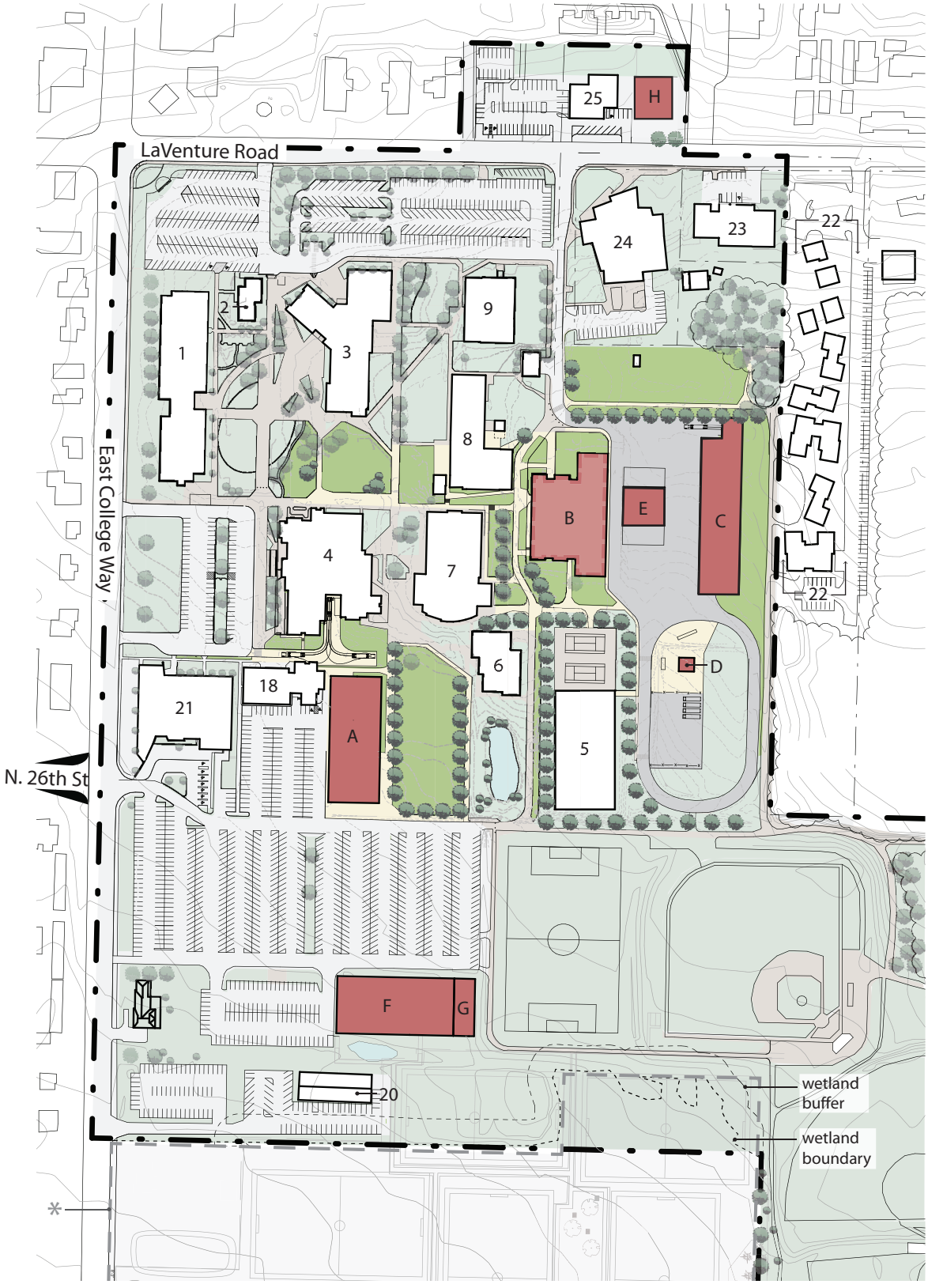

0 300'

COLOR LEGEND

- Existing Buildings
- New Construction
- Renovation

EXISTING BUILDING LEGEND

1	Angst Hall
2	Greenhouse
3	Lewis Hall
4	Knutzen Cardinal Center
5	Armstrong Tennis Courts
6	Nelson Hall
7	DuVall Pavilion
8	Hodson Hall and Tarro Theatre
9	Reeves Hall
18	Administrative Annex
20	East Campus Building
21	McIntyre Hall
22	Campus View Village
23	Chinook Enterprises
24	Northwest Career & Technical Academy
25	Child and Family Learning Center

NEW CONSTRUCTION / RENOVATION LEGEND

A	Library
B	Roberts Hall
C	Trades Building
D	Firefighter Training Tower
E	Fire Station
F	Pickleball Pavilion
G	Field Support Facility
H	Child Care Center

* Skagit Playfields (Skagit County Parks and Recreation)

PROPOSED BUILDINGS

FIGURE 6

Project: SVC (Mount Vernon Campus) Master Plan

Project No: C200027-02 Date: 2020-11-30

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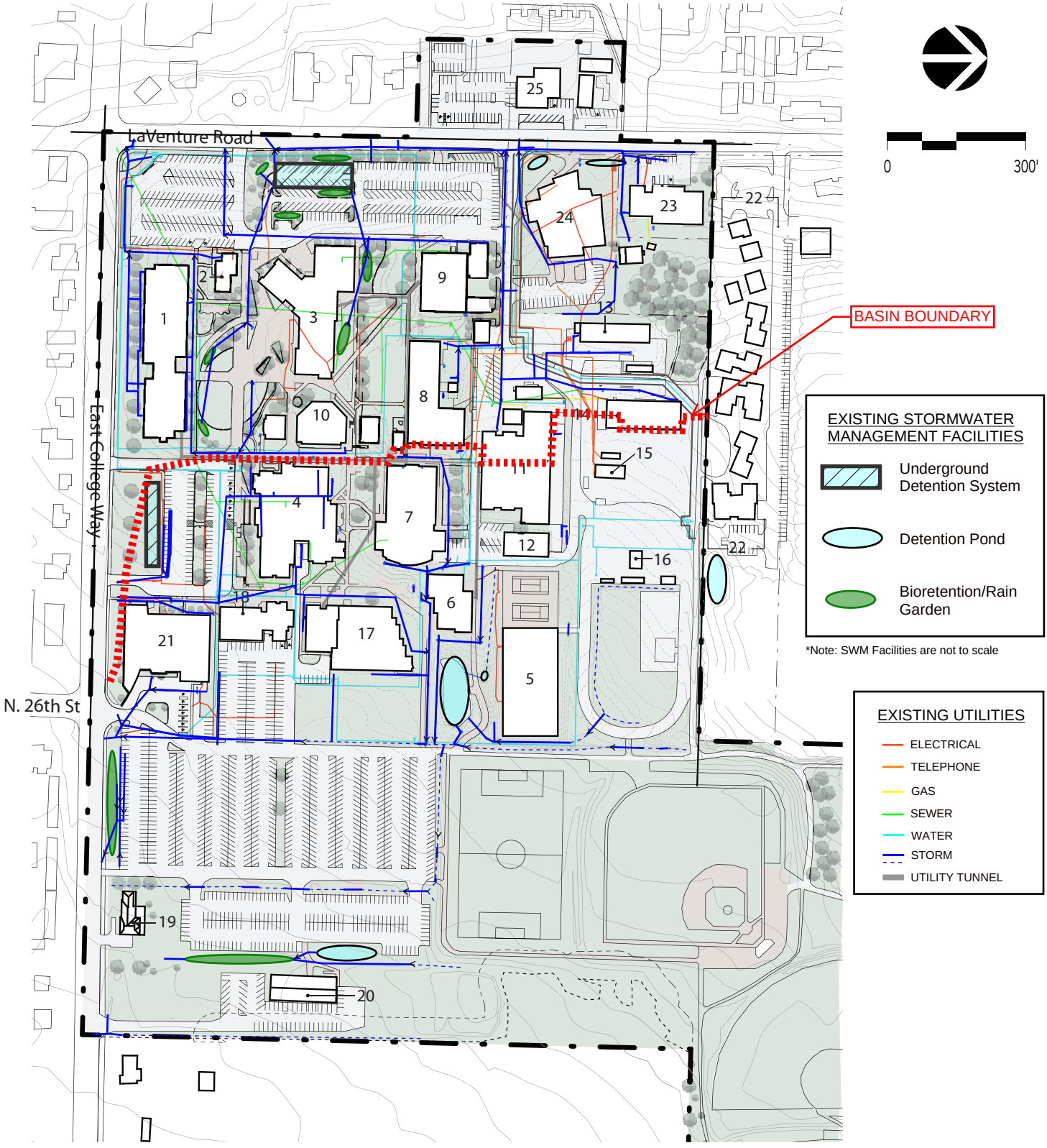

EXISTING SWM FACILITIES

FIGURE 7

Project: SVC (Mount Vernon Campus) Master Plan

Project No: C200027-02 Date: 2020-11-09

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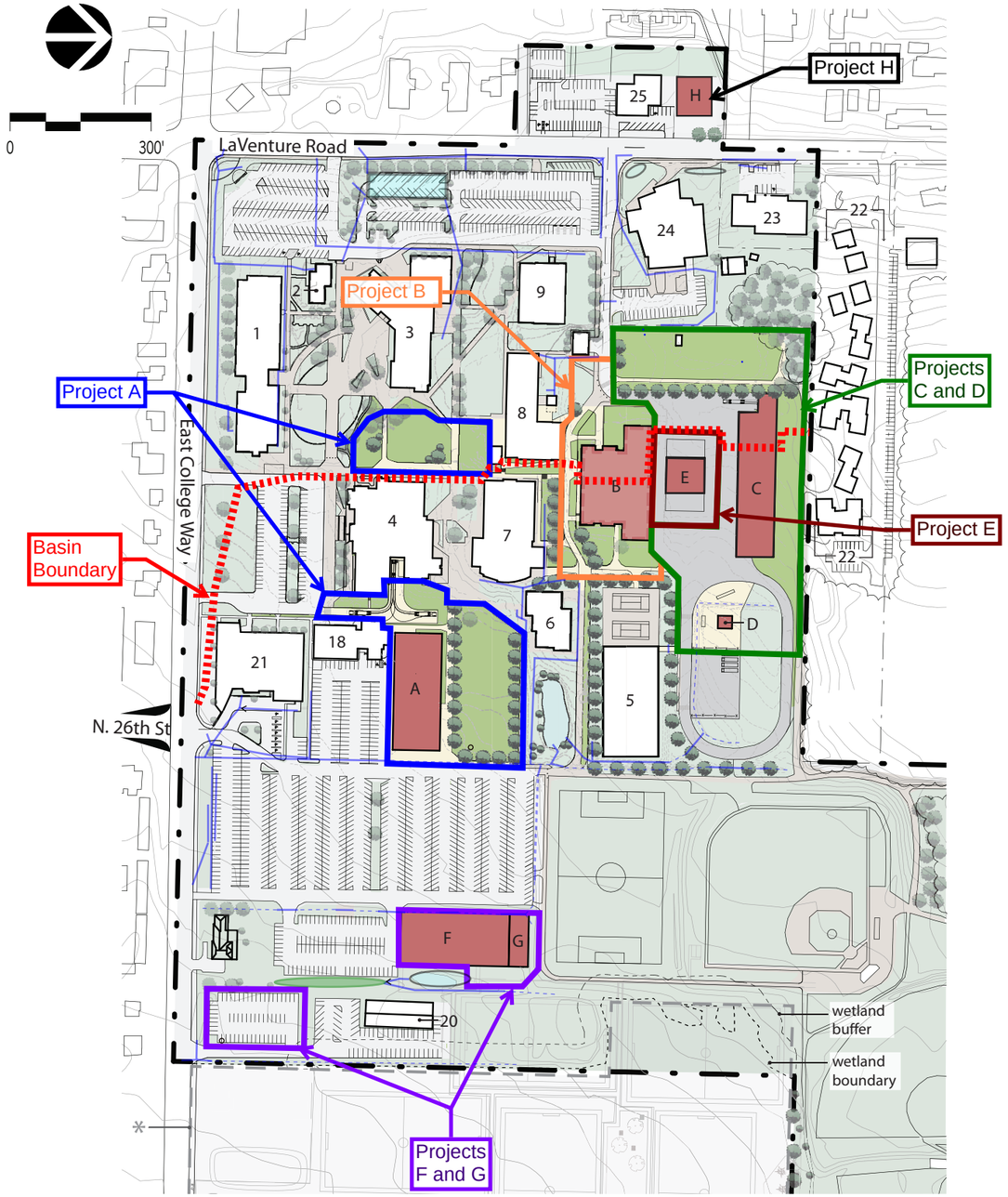

Project A: Library			
Basin: Kulshan Creek			
Existing Areas (modeled as forest)		34,200 sf	0.79 acres
Developed Areas	PGIS	0 sf	0 acres
	NPGIS	6,700 sf	0.16 acres
	Pervious	27,500 sf	0.63 acres
Basin: Trumpeter Creek			
Existing Areas (modeled as forest)		110,400 sf	2.53 acres
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	Pervious	57,100 sf	1.31 acres

Project B: Roberts Hall			
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Developed Areas	PGIS	2,000 sf	0.05 acres
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	Pervious	15,900 sf	0.36 acres
Basin: Trumpeter Creek			
Existing Areas (modeled as forest)		41,000 sf	0.94 acres
Developed Areas	PGIS	0 sf	0 acres
	NPGIS	27,500 sf	0.63 acres
	Pervious	13,500 sf	0.31 acres

Projects C & D: Trades Building & Fire Fighter Training Tower			
Basin: Kulshan Creek			
Existing Areas (modeled as forest)		89,300 sf	2.05 acres
Developed Areas	PGIS	20,600 sf	0.47 acres
	NPGIS	14,900 sf	0.34 acres
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Basin: Trumpeter Creek			
Existing Areas (modeled as forest)		106,700 sf	2.45 acres
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	NPGIS	19,000 sf	0.44 acres
	Pervious	35,000 sf	0.80 acres

Project E: Fire Station			
Basin: Trumpeter Creek			
Existing Areas (modeled as forest)		28,000 sf	0.64 acres
Developed Areas	PGIS	21,500 sf	0.50 acres
	NPGIS	6,500 sf	0.14 acres
	Pervious	0 sf	0 acres

Projects F & G: Pickleball Pavilion & Field Support Facility			
Basin: Trumpeter Creek			
Existing Areas (modeled as forest)		67,800 sf	1.56 acres
Developed Areas	PGIS	20,700 sf	0.48 acres
	NPGIS	41,900 sf	0.96 acres
	Pervious	5,200 sf	0.12 acres

Project H: Child Care Center (information from current design team)	
	Kulshan Creek Basin
Project Area	0.42 acres
Existing Uses	Modular structures (unused) and parking area
Assumed New/Replaced Impervious Surface	0.20 acres
Flow Control Facility	N/A
Discussion: This project is currently in design. The amount new and replaced impervious surfaces and pollution-generating impervious surfaces are below the thresholds for flow control and water quality facilities. The project is separated from the rest of the campus by Laventure Road.	

INDIVIDUAL PROJECT BASINS

FIGURE 8

Project: SVC (Mount Vernon Campus) Master Plan

Project No: C200027-02 Date: 2020-11-30

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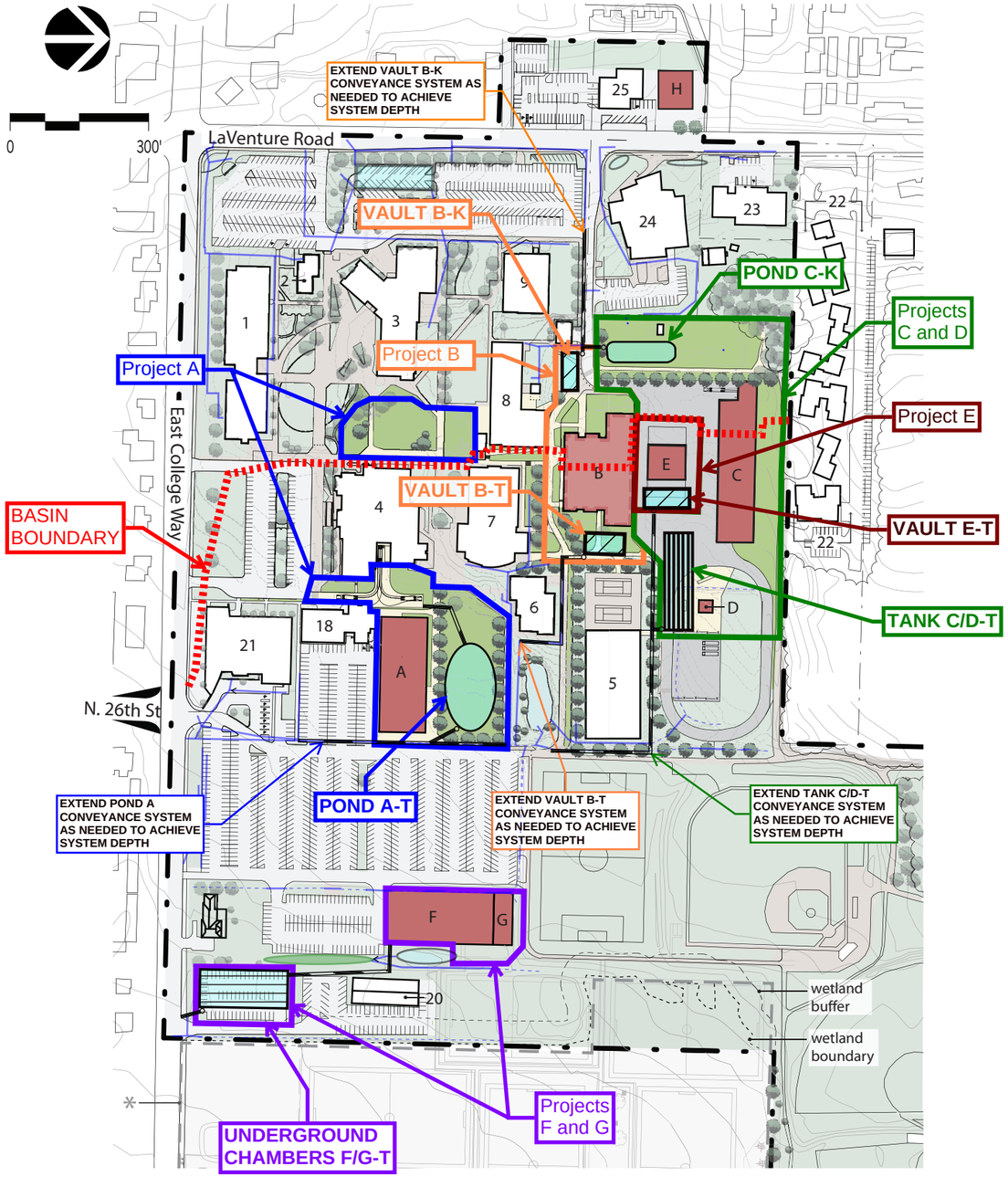

LEGEND

- DETENTION POND
- DETENTION VAULT
- DETENTION TANKS
- BASIN BOUNDARY
- STORMWATER PIPE

NOTE:

K = KULSHAN CREEK BASIN

T = TRUMPETER CREEK BASIN

DWS = DESIGN WATER SURFACE

POND A-T:
STORAGE VOLUME = 36,000 CF
DEPTH AT DWS = 4 FT
AREA AT DWS = 11,500 SF
FREEBOARD = 1 FT

VAULT B-K:
STORAGE VOLUME = 22,000 CF
DEPTH AT DWS = 6 FT
AREA AT DWS = 3,700
FREEBOARD = 6 IN

VAULT B-T:
STORAGE VOLUME = 26,000 CF
DEPTH AT DWS = 6 FT
AREA AT DWS = 4,350 SF
FREEBOARD = 6 IN

POND C-K:
VOLUME REQUIRED = 31,000 CF
DEPTH AT DWS = 4 FT
TOP AREA = 10,100 SF
FREEBOARD = 1 FT

TANK C/D-T:
STORAGE VOLUME = 55,000 CF
TANK DIAMETER = 7'
TANK FIELD AREA = 205' L x 67' W

VAULT E-T:
STORAGE VOLUME = 31,000 CF
DEPTH AT DWS = 6 FT
AREA AT DWS = 5,170 SF
FREEBOARD = 6 IN

UNDERGROUND CHAMBERS F/G-T:
STORAGE VOLUME = 53,000 CF
DEPTH AT DWS = 4.75 FT
AREA AT DWS = 15,500 SF

PROPOSED STORMWATER FACILITIES

FIGURE 9

Project: SVC (Mount Vernon Campus) Master Plan

Project No: C200027-02 Date: 2020-11-30

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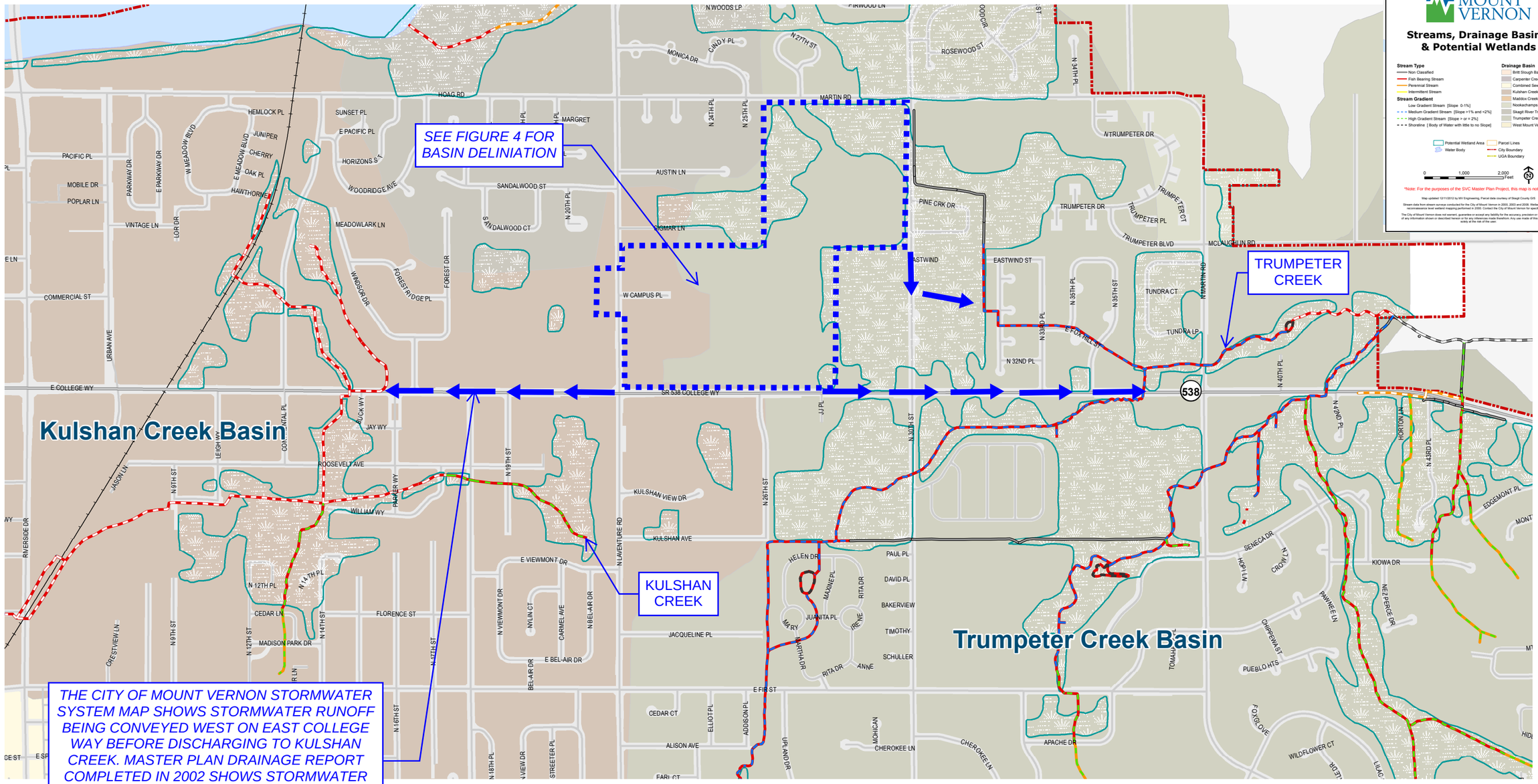

OFF-SITE ANALYSIS

FIGURE 10

Project: SVC (Mount Vernon Campus) Master Plan

Project No: C200027-02 Date: 2020-11-09

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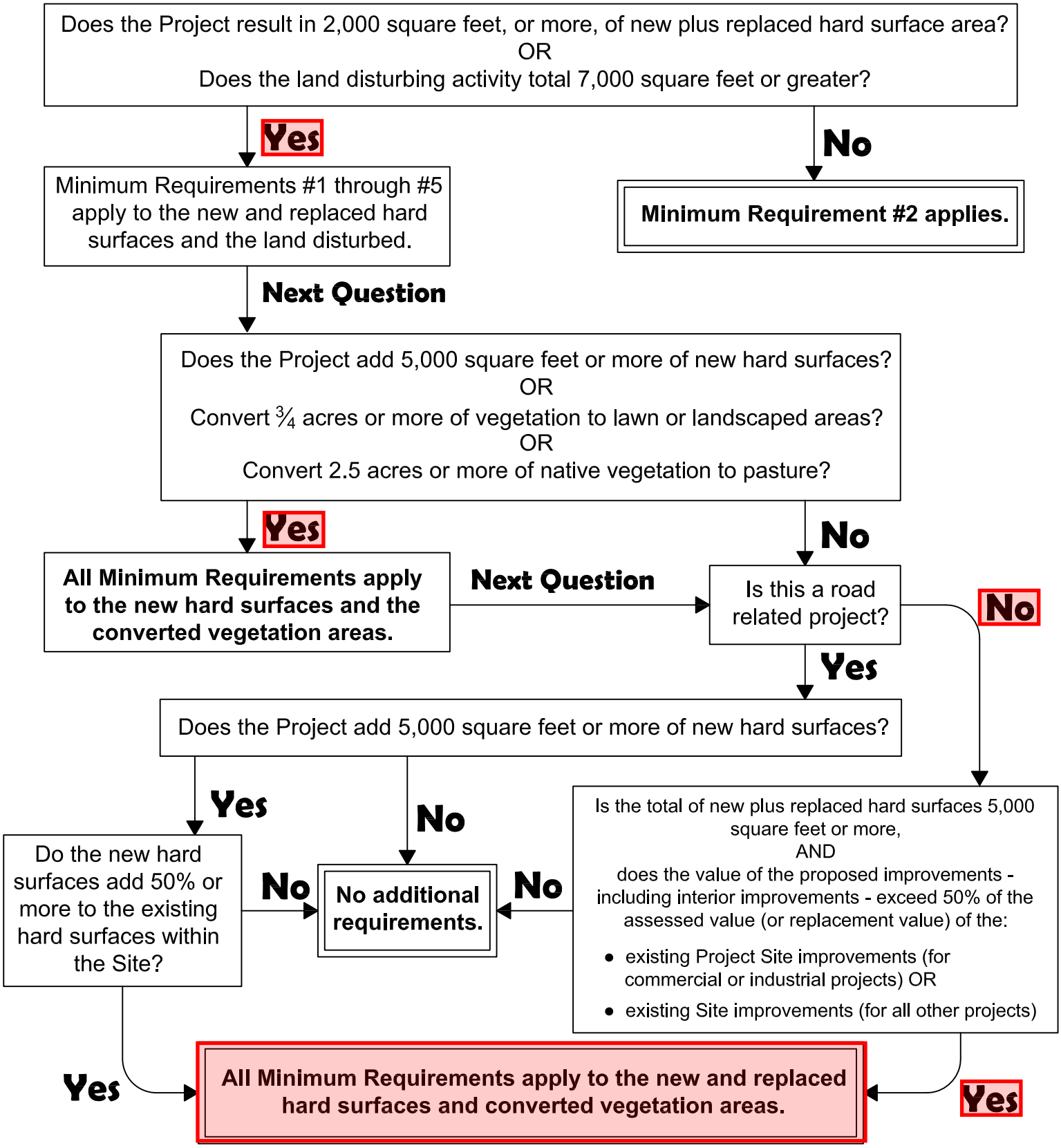
www.cplinc.com



DEPARTMENT OF ECOLOGY
State of Washington

Flow Chart for Determining Requirements for Redevelopment

PROJECTS A, B, C, D, E, F, G, H

Revised March 2019

FIGURE 11

PROJECTS A, F

Step 1: Determine the receiving waters and pollutants of concern based on off-site analysis

Step 2: Determine if an Oil Control BMP is required

Yes

Select an Oil Control BMP
- API Separator
- CP Separator
- Linear Sand Filter
- Manufactured Treatment Device

No

Step 3: Determine if it is practicable to provide Runoff Treatment by infiltrating into the native soil

Yes

Select a Pretreatment BMP (if not already provided, e.g. permeable pavement or bioretention)
- Presettling Basin
- Any Basic Treatment BMP
- Manufactured Treatment Device
- A Detention BMP designed to meet Flow Control requirements

Apply Infiltration
- Infiltration Basin
- Infiltration Trench
- Bioretention
- Permeable Pavement

****Runoff Treatment BMP Selection Complete****

No

Step 4: Determine if a Phosphorus Treatment BMP is Required

Yes

Select a Phosphorus Treatment BMP
- Large Sand Filter
- Large Wetpond
- Manufactured Treatment Device
- Two Facility Treatment Train

Determine if an Enhanced Treatment BMP is required

No

****Runoff Treatment BMP Selection Complete****

Yes

Is the selected Phosphorus Treatment BMP also listed as an Enhanced Treatment BMP?

No

Yes

****Runoff Treatment BMP Selection Complete****

No

Step 5: Determine if an Enhanced Treatment BMP is Required

Yes

Select an Enhanced Treatment BMP
- Large Sand Filter
- Stormwater Treatment Wetland
- CAVFS
- Bioretention
- Media Filter Drain
- Manufactured Treatment Device
- Two Facility Treatment Train

****Runoff Treatment BMP Selection Complete****

No

Step 6: Select a Basic Treatment BMP

- Sand Filters
- Media Filter Drain
- Biofiltration Swales
- Filter Strips
- Wetponds/Wetvaults
- Stormwater Treatment Wetlands
- Combined Detention/Wetpool Facilities
- Bioretention
- Manufactured Treatment Devices

****Runoff Treatment BMP Selection Complete****

Note: This flow chart does not include all Runoff Treatment BMP options. Review the text in this section for all options for each Runoff Treatment Performance Goal.

DEPARTMENT OF ECOLOGY
State of Washington

Runoff Treatment BMP Selection Flow Chart

Revised January 2019

FIGURE 12a

PROJECTS C, D, E

Step 1: Determine the receiving waters and pollutants of concern based on off-site analysis

Step 2: Determine if an Oil Control BMP is required

Yes

Select an Oil Control BMP
- API Separator
- CP Separator
- Linear Sand Filter
- Manufactured Treatment Device

No

Step 3: Determine if it is practicable to provide Runoff Treatment by infiltrating into the native soil

Yes

Select a Pretreatment BMP (if not already provided, e.g. permeable pavement or bioretention)
- Presettling Basin
- Any Basic Treatment BMP
- Manufactured Treatment Device
- A Detention BMP designed to meet Flow Control requirements

Apply Infiltration
- Infiltration Basin
- Infiltration Trench
- Bioretention
- Permeable Pavement

****Runoff Treatment BMP Selection Complete****

No

Step 4: Determine if a Phosphorus Treatment BMP is Required

Yes

Select a Phosphorus Treatment BMP
- Large Sand Filter
- Large Wetpond
- Manufactured Treatment Device
- Two Facility Treatment Train

Determine if an Enhanced Treatment BMP is required

No

****Runoff Treatment BMP Selection Complete****

Yes

Is the selected Phosphorus Treatment BMP also listed as an Enhanced Treatment BMP?

No

Yes

****Runoff Treatment BMP Selection Complete****

No

Step 5: Determine if an Enhanced Treatment BMP is Required

Yes

Select an Enhanced Treatment BMP
- Large Sand Filter
- Stormwater Treatment Wetland
- CAVFS
- Bioretention
- Media Filter Drain
- Manufactured Treatment Device
- Two Facility Treatment Train

****Runoff Treatment BMP Selection Complete****

No

Step 6: Select a Basic Treatment BMP

- Sand Filters
- Media Filter Drain
- Biofiltration Swales
- Filter Strips
- Wetponds/Wetvaults
- Stormwater Treatment Wetlands
- Combined Detention/Wetpool Facilities
- Bioretention
- Manufactured Treatment Devices

****Runoff Treatment BMP Selection Complete****

Note: This flow chart does not include all Runoff Treatment BMP options. Review the text in this section for all options for each Runoff Treatment Performance Goal.

DEPARTMENT OF ECOLOGY
State of Washington

Runoff Treatment BMP Selection Flow Chart

Revised January 2019

FIGURE 12b

APPENDIX B – COMPUTER MODELING

Flow Control Calculations

MGS FLOOD
PROJECT REPORT

Program Version: MGSFlood 4.46
Program License Number: 200610002
Project Simulation Performed on: 11/02/2020 11:14 AM
Report Generation Date: 11/02/2020 11:14 AM

Input File Name: Trumpeter Creek Basin_Project A.fld
Project Name: Skagit Valley College
Analysis Title: Master Plan - Trumpeter Creek Basin
Comments: Project A-T
KRS 2020-10-01
LDG 2020-10-29

PRECIPITATION INPUT

Computational Time Step (Minutes): 15

Extended Precipitation Time Series Selected
Climatic Region Number: 13

Full Period of Record Available used for Routing
Precipitation Station : 96003205 Puget East 32 in_5min 10/01/1939-10/01/2097
Evaporation Station : 961032 Puget East 32 in MAP
Evaporation Scale Factor : 0.750

HSPF Parameter Region Number: 1
HSPF Parameter Region Name : USGS Default

********** Default HSPF Parameters Used (Not Modified by User) **********

********** WATERSHED DEFINITION **********

Predevelopment/Post Development Tributary Area Summary

		Predeveloped	Post Developed
Total Subbasin Area (acres)	2.530	2.530	
Area of Links that Include Precip/Evap (acres)	0.000	0.000	
Total (acres)	2.530	2.530	

----------SCENARIO: PREDEVELOPED
Number of Subbasins: 1

---------- Subbasin : Project A ----------
-------Area (Acres) --------
Till Forest 2.530

Subbasin Total 2.530

----------SCENARIO: POSTDEVELOPED
Number of Subbasins: 1

---------- Subbasin : Project A ----------

	-------Area (Acres) --------
Till Grass	1.310
Impervious	1.220
Subbasin Total	2.530

********** **LINK DATA** **********

----------SCENARIO: PREDEVELOPED
Number of Links: 1

Link Name: Trumpeter Creek
Link Type: Copy
Downstream Link: None

********** **LINK DATA** **********

----------SCENARIO: POSTDEVELOPED
Number of Links: 2

Link Name: Trumpeter Creek
Link Type: Copy
Downstream Link: None

Link Name: Pond 1
Link Type: Structure
Downstream Link Name: Trumpeter Creek

Prismatic Pond Option Used

Pond Floor Elevation (ft)	:	100.00	
Riser Crest Elevation (ft)	:	104.00	
Max Pond Elevation (ft)	:	104.50	
Storage Depth (ft)	:	4.00	
Pond Bottom Length (ft)	:	114.1	
Pond Bottom Width (ft)	:	57.1	
Pond Side Slopes (ft/ft)	:	L1= 3.00 L2= 3.00 W1= 3.00 W2= 3.00	
Bottom Area (sq-ft)	:	6510.	
Area at Riser Crest El (sq-ft)	:	11,194.	Round up to 11,500 sf
(acres)	:	0.257	
Volume at Riser Crest (cu-ft)	:	35,025.	Round up to 36,000 cf

	(ac-ft)	:	0.804
Area at Max Elevation	(sq-ft)	:	11861.
	(acres)	:	0.272
Vol at Max Elevation	(cu-ft)	:	40,788.
	(ac-ft)	:	0.936

Massmann Infiltration Option Used
Hydraulic Conductivity (in/hr) : 0.00
Depth to Water Table (ft) : 100.00
Bio-Fouling Potential : Low
Maintenance : Average or Better

Riser Geometry
Riser Structure Type : Circular
Riser Diameter (in) : 18.00
Common Length (ft) : 0.025
Riser Crest Elevation : 104.00 ft

Hydraulic Structure Geometry

Number of Devices: 2

---Device Number 1 ---
Device Type : Circular Orifice
Control Elevation (ft) : 100.00
Diameter (in) : 0.57
Orientation : Horizontal
Elbow : No

--- Device Number 2 ---
Device Type : Vertical Rectangular Orifice
Control Elevation (ft) : 102.93
Length (in) : 0.30
Height (in) : 12.82
Orientation : Vertical
Elbow : No

**********FLOOD FREQUENCY AND DURATION STATISTICS**********

----------SCENARIO: PREDEVELOPED
Number of Subbasins: 1
Number of Links: 1

----------SCENARIO: POSTDEVELOPED
Number of Subbasins: 1
Number of Links: 2

********** Link: Pond 1 ********** Link WSEL Stats
WSEL Frequency Data(ft)
(Recurrence Interval Computed Using Gringorten Plotting Position)
Tr (yrs) WSEL Peak (ft)
==========

1.05-Year	101.333
1.11-Year	101.473
1.25-Year	101.725
2.00-Year	102.386
3.33-Year	102.834
5-Year	103.141
10-Year	103.543
25-Year	103.799
50-Year	103.833
100-Year	103.913

*************Groundwater Recharge Summary ***************

Recharge is computed as input to Perlnd Groundwater Plus Infiltration in Structures

Total Predeveloped Recharge During Simulation

Model Element		Recharge Amount (ac-ft)
Subbasin: Project A		327.024
Link:	Trumpeter Creek	0.000
Total:		327.024

Total Post Developed Recharge During Simulation

Model Element		Recharge Amount (ac-ft)
Subbasin: Project A		135.843
Link:	Trumpeter Creek	Not Applicable
Link:	Pond 1	0.000
Total:		135.843

Total Predevelopment Recharge is Greater than Post Developed
Average Recharge Per Year, (Number of Years= 158)
Predeveloped: 2.070 ac-ft/year, Post Developed: 0.860 ac-ft/year

*************Water Quality Facility Data ***************

----------SCENARIO: PREDEVELOPED

Number of Links: 1

********** Link: Trumpeter Creek **********

Infiltration/Filtration Statistics----------
Inflow Volume (ac-ft): 102.43
Inflow Volume Including PPT-Evap (ac-ft): 102.43
Total Runoff Infiltrated (ac-ft): 0.00, 0.00%
Total Runoff Filtered (ac-ft): 0.00, 0.00%
Primary Outflow To Downstream System (ac-ft): 102.43
Secondary Outflow To Downstream System (ac-ft): 0.00
Percent Treated (Infiltrated+Filtered)/Total Volume: 0.00%

----------SCENARIO: POSTDEVELOPED

Number of Links: 2

********** Link: Pond 1 **********

Basic Wet Pond Volume (91% Exceedance): 5607. cu-ft
Computed Large Wet Pond Volume, 1.5*Basic Volume: 8411. cu-ft

Infiltration/Filtration Statistics----------
Inflow Volume (ac-ft): 571.24
Inflow Volume Including PPT-Evap (ac-ft): 571.24
Total Runoff Infiltrated (ac-ft): 0.00, 0.00%
Total Runoff Filtered (ac-ft): 0.00, 0.00%
Primary Outflow To Downstream System (ac-ft): 571.09
Secondary Outflow To Downstream System (ac-ft): 0.00
Percent Treated (Infiltrated+Filtered)/Total Volume: 0.00%

**********Compliance Point Results **********

Scenario Predeveloped Compliance Link: Trumpeter Creek
Scenario Postdeveloped Compliance Link: Pond 1

*** Point of Compliance Flow Frequency Data ***
Recurrence Interval Computed Using Gringorten Plotting Position

Predevelopment Runoff		Postdevelopment Runoff	
Tr (Years)	Discharge (cfs)	Tr (Years)	Discharge (cfs)
2-Year	2.997E-02	2-Year	1.322E-02
5-Year	5.054E-02	5-Year	2.148E-02
10-Year	7.851E-02	10-Year	4.753E-02
25-Year	9.427E-02	25-Year	6.969E-02
50-Year	0.118	50-Year	7.292E-02
100-Year	0.134	100-Year	8.073E-02
200-Year	0.165	200-Year	9.097E-02

** Record too Short to Compute Peak Discharge for These Recurrence Intervals

**** Flow Duration Performance ****

Excursion at Predeveloped 50%Q2 (Must be Less Than or Equal to 0%):	-26.1%	PASS
Maximum Excursion from 50%Q2 to Q2 (Must be Less Than or Equal to 0%):	-26.1%	PASS
Maximum Excursion from Q2 to Q50 (Must be less than 10%):	-14.3%	PASS
Percent Excursion from Q2 to Q50 (Must be less than 50%):	0.0%	PASS

MEETS ALL FLOW DURATION DESIGN CRITERIA: PASS

MGS FLOOD
PROJECT REPORT

Program Version: MGSFlood 4.46
Program License Number: 200610002
Project Simulation Performed on: 11/03/2020 1:45 PM
Report Generation Date: 11/03/2020 1:45 PM

Input File Name: Kulshan Creek Basin.fld
Project Name: Skagit Valley College
Analysis Title: Master Plan - Kulshan Creek Basin
Comments: Project B-K
LDG 2020-11-03
KRS 2020-09-24

PRECIPITATION INPUT

Computational Time Step (Minutes): 15

Extended Precipitation Time Series Selected
Climatic Region Number: 13

Full Period of Record Available used for Routing
Precipitation Station : 96003205 Puget East 32 in_5min 10/01/1939-10/01/2097
Evaporation Station : 961032 Puget East 32 in MAP
Evaporation Scale Factor : 0.750

HSPF Parameter Region Number: 1
HSPF Parameter Region Name : USGS Default

********** Default HSPF Parameters Used (Not Modified by User) **********

********** WATERSHED DEFINITION **********

Predevelopment/Post Development Tributary Area Summary

		Predeveloped	Post Developed
Total Subbasin Area (acres)	0.900	0.900	
Area of Links that Include Precip/Evap (acres)	0.000	0.000	
Total (acres)	0.900	0.900	

----------SCENARIO: PREDEVELOPED
Number of Subbasins: 1

---------- Subbasin : Project B-K ----------

	-------Area (Acres) --------
Till Forest	0.900

Subbasin Total 0.900

----------SCENARIO: POSTDEVELOPED
Number of Subbasins: 1

---------- Subbasin : Project B-K ----------

	-------Area (Acres) --------
Till Grass	0.360
Impervious	0.540
Subbasin Total	0.900

********** **LINK DATA** **********

----------SCENARIO: PREDEVELOPED
Number of Links: 1

Link Name: Kulshan Creek
Link Type: Copy
Downstream Link: None

********** **LINK DATA** **********

----------SCENARIO: POSTDEVELOPED
Number of Links: 2

Link Name: VAULT B-K
Link Type: Structure
Downstream Link Name: Kulshan Creek

Prismatic Pond Option Used

Pond Floor Elevation (ft)	: 100.00		
Riser Crest Elevation (ft)		: 106.00	
Max Pond Elevation (ft)	: 106.50		
Storage Depth (ft)	: 6.00		
Pond Bottom Length (ft)	: 110.0		
Pond Bottom Width (ft)	: 32.0		
Pond Side Slopes (ft/ft)	: L1= 0.00	L2= 0.00 W1= 0.00 W2= 0.00	
Bottom Area (sq-ft)	: 3520.		
Area at Riser Crest El (sq-ft)	: 3,520.	Round up to 3,700 sf	
(acres)	: 0.081		
Volume at Riser Crest (cu-ft)	: 21,120.	Round up to 22,000 cf	
(ac-ft)	: 0.485		
Area at Max Elevation (sq-ft)	: 3520.		
(acres)	: 0.081		
Vol at Max Elevation (cu-ft)	: 22,880.		
(ac-ft)	: 0.525		

Massmann Infiltration Option Used
Hydraulic Conductivity (in/hr) : 0.00
Depth to Water Table (ft) : 100.00
Bio-Fouling Potential : Low
Maintenance : Average or Better

Riser Geometry
Riser Structure Type : Circular
Riser Diameter (in) : 18.00
Common Length (ft) : 0.010
Riser Crest Elevation : 106.00 ft

Hydraulic Structure Geometry

Number of Devices: 3

--- Device Number 1 ---
Device Type : Horizontal Rectangular Orifice
Control Elevation (ft) : 100.00
Length (in) : 0.30
Height (in) : 0.25
Orientation : Horizontal
Elbow : No

--- Device Number 2 ---
Device Type : Vertical Rectangular Orifice
Control Elevation (ft) : 104.00
Length (in) : 0.30
Height (in) : 1.65
Orientation : Vertical
Elbow : No

--- Device Number 3 ---
Device Type : Rectangular Weir that Intersects the Riser Top
Invert Elevation (ft) : 105.25
Length (ft) : 0.600

Link Name: Kulshan Creek
Link Type: Copy
Downstream Link: None

**************************FLOOD FREQUENCY AND DURATION STATISTICS*********************

----------SCENARIO: PREDEVELOPED
Number of Subbasins: 1
Number of Links: 1

----------SCENARIO: POSTDEVELOPED
Number of Subbasins: 1
Number of Links: 2

********** Link: VAULT B-K ********** Link WSEL Stats

WSEL Frequency Data(ft)
(Recurrence Interval Computed Using Gringorten Plotting Position)

Tr (yrs)	WSEL Peak (ft)
1.05-Year	101.438
1.11-Year	101.640
1.25-Year	101.974
2.00-Year	102.828
3.33-Year	103.392
5-Year	103.914
10-Year	104.340
25-Year	104.821
50-Year	105.053
100-Year	105.236

*************Groundwater Recharge Summary ***************

Recharge is computed as input to Perlnd Groundwater Plus Infiltration in Structures

Total Predeveloped Recharge During Simulation

Model Element		Recharge Amount (ac-ft)
Subbasin: Project B-K		116.333
Link:	Kulshan Creek	0.000
Total:		116.333

Total Post Developed Recharge During Simulation

Model Element		Recharge Amount (ac-ft)
Subbasin: Project B-K		37.331
Link:	VAULT B-K	0.000
Link:	Kulshan Creek	Not Applicable
Total:		37.331

Total Predevelopment Recharge is Greater than Post Developed
Average Recharge Per Year, (Number of Years= 158)
Predeveloped: 0.736 ac-ft/year, Post Developed: 0.236 ac-ft/year

*************Water Quality Facility Data ***************

----------SCENARIO: PREDEVELOPED

Number of Links: 1

********** Link: Kulshan Creek **********

Infiltration/Filtration Statistics----------
Inflow Volume (ac-ft): 36.44
Inflow Volume Including PPT-Evap (ac-ft): 36.44
Total Runoff Infiltrated (ac-ft): 0.00, 0.00%

Total Runoff Filtered (ac-ft): 0.00, 0.00%
Primary Outflow To Downstream System (ac-ft): 36.44
Secondary Outflow To Downstream System (ac-ft): 0.00
Percent Treated (Infiltrated+Filtered)/Total Volume: 0.00%

----------SCENARIO: POSTDEVELOPED

Number of Links: 2

********** Link: VAULT B-K **********

Basic Wet Pond Volume (91% Exceedance): 2280. cu-ft
Computed Large Wet Pond Volume, 1.5*Basic Volume: 3421. cu-ft

Infiltration/Filtration Statistics----------
Inflow Volume (ac-ft): 226.74
Inflow Volume Including PPT-Evap (ac-ft): 226.74
Total Runoff Infiltrated (ac-ft): 0.00, 0.00%
Total Runoff Filtered (ac-ft): 0.00, 0.00%
Primary Outflow To Downstream System (ac-ft): 226.66
Secondary Outflow To Downstream System (ac-ft): 0.00
Percent Treated (Infiltrated+Filtered)/Total Volume: 0.00%

*************Compliance Point Results **************

Scenario Predeveloped Compliance Link: Kulshan Creek
Scenario Postdeveloped Compliance Link: VAULT B-K

***** Point of Compliance Flow Frequency Data *****
Recurrence Interval Computed Using Gringorten Plotting Position

Predevelopment Runoff		Postdevelopment Runoff	
Tr (Years)	Discharge (cfs)	Tr (Years)	Discharge (cfs)
2-Year	1.066E-02	2-Year	4.285E-03
5-Year	1.798E-02	5-Year	5.041E-03
10-Year	2.793E-02	10-Year	1.360E-02
25-Year	3.353E-02	25-Year	1.943E-02
50-Year	4.196E-02	50-Year	2.157E-02
100-Year	4.763E-02	100-Year	2.309E-02
200-Year	5.858E-02	200-Year	3.286E-02

** Record too Short to Compute Peak Discharge for These Recurrence Intervals

****** Flow Duration Performance ******

Excursion at Predeveloped 50%Q2 (Must be Less Than or Equal to 0%):	-62.3%	PASS
Maximum Excursion from 50%Q2 to Q2 (Must be Less Than or Equal to 0%):	-18.8%	PASS
Maximum Excursion from Q2 to Q50 (Must be less than 10%):	-16.1%	PASS
Percent Excursion from Q2 to Q50 (Must be less than 50%):	0.0%	PASS

MEETS ALL FLOW DURATION DESIGN CRITERIA: PASS

MGS FLOOD
PROJECT REPORT

Program Version: MGSFlood 4.46
Program License Number: 200610002
Project Simulation Performed on: 11/03/2020 10:13 AM
Report Generation Date: 11/03/2020 10:13 AM

Input File Name: Trumpeter Creek Basin_Project B.fld
Project Name: Skagit Valley College
Analysis Title: Master Plan - Trumpeter Creek Basin
Comments: Project B-T
LDG 2020-11-03

PRECIPITATION INPUT

Computational Time Step (Minutes): 15

Extended Precipitation Time Series Selected
Climatic Region Number: 13

Full Period of Record Available used for Routing
Precipitation Station : 96003205 Puget East 32 in_5min 10/01/1939-10/01/2097
Evaporation Station : 961032 Puget East 32 in MAP
Evaporation Scale Factor : 0.750

HSPF Parameter Region Number: 1
HSPF Parameter Region Name : USGS Default

********** Default HSPF Parameters Used (Not Modified by User) **********

********** WATERSHED DEFINITION **********

Predevelopment/Post Development Tributary Area Summary

		Predeveloped	Post Developed
Total Subbasin Area (acres)	0.940	0.940	
Area of Links that Include Precip/Evap (acres)	0.000	0.000	
Total (acres)	0.940	0.940	

----------SCENARIO: PREDEVELOPED
Number of Subbasins: 1

---------- Subbasin : Project B-T ----------

	-------Area (Acres) --------
Till Forest	0.940
Subbasin Total	0.940

----------SCENARIO: POSTDEVELOPED
Number of Subbasins: 1

---------- Subbasin : Project B-T ----------

	-------Area (Acres) --------
Till Grass	0.310
Impervious	0.630
Subbasin Total	0.940

********** **LINK DATA** **********

----------SCENARIO: PREDEVELOPED
Number of Links: 1

Link Name: Trumpeter Creek
Link Type: Copy
Downstream Link: None

********** **LINK DATA** **********

----------SCENARIO: POSTDEVELOPED
Number of Links: 2

Link Name: Trumpeter Creek
Link Type: Copy
Downstream Link: None

Link Name: VAULT B-T
Link Type: Structure
Downstream Link Name: Trumpeter Creek

Prismatic Pond Option Used

Pond Floor Elevation (ft)	:	100.00	
Riser Crest Elevation (ft)	:	106.00	
Max Pond Elevation (ft)	:	107.00	
Storage Depth (ft)	:	6.00	
Pond Bottom Length (ft)	:	95.0	
Pond Bottom Width (ft)	:	45.0	
Pond Side Slopes (ft/ft)	:	L1= 0.00 L2= 0.00 W1= 0.00 W2= 0.00	
Bottom Area (sq-ft)	:	4275.	
Area at Riser Crest El (sq-ft)	:	4,275.	Round up to 4,350 sf
(acres)	:	0.098	
Volume at Riser Crest (cu-ft)	:	25,650.	Round up to 26,000 cf
(ac-ft)	:	0.589	

Area at Max Elevation (sq-ft) : 4275.
(acres) : 0.098
Vol at Max Elevation (cu-ft) : 29,925.
(ac-ft) : 0.687

Massmann Infiltration Option Used
Hydraulic Conductivity (in/hr) : 0.00
Depth to Water Table (ft) : 100.00
Bio-Fouling Potential : Low
Maintenance : Average or Better

Riser Geometry
Riser Structure Type : Circular
Riser Diameter (in) : 18.00
Common Length (ft) : 0.010
Riser Crest Elevation : 106.00 ft

Hydraulic Structure Geometry

Number of Devices: 3

--- Device Number 1 ---
Device Type : Horizontal Rectangular Orifice
Control Elevation (ft) : 100.00
Length (in) : 0.25
Height (in) : 0.25
Orientation : Horizontal
Elbow : No

--- Device Number 2 ---
Device Type : Vertical Rectangular Orifice
Control Elevation (ft) : 104.50
Length (in) : 0.40
Height (in) : 1.00
Orientation : Vertical
Elbow : No

--- Device Number 3 ---
Device Type : Rectangular Weir that Intersects the Riser Top
Invert Elevation (ft) : 105.50
Length (ft) : 0.020

**************************FLOOD FREQUENCY AND DURATION STATISTICS*********************

----------SCENARIO: PREDEVELOPED
Number of Subbasins: 1
Number of Links: 1

----------SCENARIO: POSTDEVELOPED
Number of Subbasins: 1
Number of Links: 2

********** Link: VAULT B-T ********** Link WSEL

Stats
WSEL Frequency Data(ft)
(Recurrence Interval Computed Using Gringorten Plotting Position)

Tr (yrs)	WSEL Peak (ft)
1.05-Year	101.613
1.11-Year	102.006
1.25-Year	102.432
2.00-Year	103.404
3.33-Year	104.250
5-Year	104.686
10-Year	104.968
25-Year	105.535
50-Year	105.718
100-Year	105.913

*************Groundwater Recharge Summary **************
Recharge is computed as input to Perlnd Groundwater Plus Infiltration in Structures

Total Predeveloped Recharge During Simulation

Model Element		Recharge Amount (ac-ft)
Subbasin: Project B-T		121.503
Link:	Trumpeter Creek	0.000
Total:		121.503

Total Post Developed Recharge During Simulation

Model Element		Recharge Amount (ac-ft)
Subbasin: Project B-T		32.146
Link:	Trumpeter Creek	Not Applicable
Link:	VAULT B-T	0.000
Total:		32.146

Total Predevelopment Recharge is Greater than Post Developed
Average Recharge Per Year, (Number of Years= 158)
Predeveloped: 0.769 ac-ft/year, Post Developed: 0.203 ac-ft/year

*************Water Quality Facility Data ***************

----------SCENARIO: PREDEVELOPED

Number of Links: 1

********** Link: Trumpeter Creek **********

Infiltration/Filtration Statistics----------
Inflow Volume (ac-ft): 38.06
Inflow Volume Including PPT-Evap (ac-ft): 38.06
Total Runoff Infiltrated (ac-ft): 0.00, 0.00%
Total Runoff Filtered (ac-ft): 0.00, 0.00%

Primary Outflow To Downstream System (ac-ft): 38.06
Secondary Outflow To Downstream System (ac-ft): 0.00
Percent Treated (Infiltrated+Filtered)/Total Volume: 0.00%

----------SCENARIO: POSTDEVELOPED

Number of Links: 2

********** Link: VAULT B-T **********

Basic Wet Pond Volume (91% Exceedance): 2584. cu-ft
Computed Large Wet Pond Volume, 1.5*Basic Volume: 3876. cu-ft

Infiltration/Filtration Statistics----------
Inflow Volume (ac-ft): 251.47
Inflow Volume Including PPT-Evap (ac-ft): 251.47
Total Runoff Infiltrated (ac-ft): 0.00, 0.00%
Total Runoff Filtered (ac-ft): 0.00, 0.00%
Primary Outflow To Downstream System (ac-ft): 251.35
Secondary Outflow To Downstream System (ac-ft): 0.00
Percent Treated (Infiltrated+Filtered)/Total Volume: 0.00%

************Compliance Point Results ***************

Scenario Predeveloped Compliance Link: Trumpeter Creek
Scenario Postdeveloped Compliance Link: VAULT B-T

***** Point of Compliance Flow Frequency Data *****
Recurrence Interval Computed Using Gringorten Plotting Position

Predevelopment Runoff		Postdevelopment Runoff	
Tr (Years)	Discharge (cfs)	Tr (Years)	Discharge (cfs)
2-Year	1.114E-02	2-Year	3.917E-03
5-Year	1.878E-02	5-Year	9.396E-03
10-Year	2.917E-02	10-Year	1.315E-02
25-Year	3.502E-02	25-Year	1.840E-02
50-Year	4.382E-02	50-Year	2.483E-02
100-Year	4.975E-02	100-Year	3.445E-02
200-Year	6.118E-02	200-Year	3.781E-02

** Record too Short to Compute Peak Discharge for These Recurrence Intervals

****** Flow Duration Performance ******

Excursion at Predeveloped 50%Q2 (Must be Less Than or Equal to 0%):	-37.5%	PASS
Maximum Excursion from 50%Q2 to Q2 (Must be Less Than or Equal to 0%):	-0.5%	PASS
Maximum Excursion from Q2 to Q50 (Must be less than 10%):	-2.6%	PASS
Percent Excursion from Q2 to Q50 (Must be less than 50%):	0.0%	PASS

MEETS ALL FLOW DURATION DESIGN CRITERIA: PASS

MGS FLOOD
PROJECT REPORT

Program Version: MGSFlood 4.46
Program License Number: 200610002
Project Simulation Performed on: 11/04/2020 11:35 AM
Report Generation Date: 11/04/2020 11:35 AM

Input File Name: Trumpeter Creek Basin_Project C.fld
Project Name: Skagit Valley College
Analysis Title: Master Plan - Trumpeter Creek Basin
Comments: Project C/D - T: Trades and Fire Tower
LDG 2020-11-04
KRS 2020-09-24

PRECIPITATION INPUT

Computational Time Step (Minutes): 15

Extended Precipitation Time Series Selected
Climatic Region Number: 13

Full Period of Record Available used for Routing
Precipitation Station : 96003205 Puget East 32 in_5min 10/01/1939-10/01/2097
Evaporation Station : 961032 Puget East 32 in MAP
Evaporation Scale Factor : 0.750

HSPF Parameter Region Number: 1
HSPF Parameter Region Name : USGS Default

********** Default HSPF Parameters Used (Not Modified by User) **********

********** WATERSHED DEFINITION **********

Predevelopment/Post Development Tributary Area Summary

		Predeveloped	Post Developed
Total Subbasin Area (acres)	2.450	2.450	
Area of Links that Include Precip/Evap (acres)	0.000	0.000	
Total (acres)	2.450	2.450	

----------SCENARIO: PREDEVELOPED
Number of Subbasins: 1

---------- Subbasin : Project C/D-T ----------
-------Area (Acres) --------
Till Forest 2.450

Subbasin Total 2.450

----------SCENARIO: POSTDEVELOPED
Number of Subbasins: 1

---------- Subbasin : Project C/D-T ----------

	-------Area (Acres) --------
Till Grass	0.800
Impervious	1.650
Subbasin Total	2.450

********** **LINK DATA** **********

----------SCENARIO: PREDEVELOPED
Number of Links: 1

Link Name: Trumpeter Creek
Link Type: Copy
Downstream Link: None

********** **LINK DATA** **********

----------SCENARIO: POSTDEVELOPED
Number of Links: 2

Link Name: Trumpeter Creek
Link Type: Copy
Downstream Link: None

Link Name: Pond 1
Link Type: Structure
Downstream Link Name: Trumpeter Creek

Prismatic Pond Option Used
Pond Floor Elevation (ft) : 100.00
Riser Crest Elevation (ft) : 106.00
Max Pond Elevation (ft) : 106.50
Storage Depth (ft) : 6.00
Pond Bottom Length (ft) : 130.0
Pond Bottom Width (ft) : 70.0
Pond Side Slopes (ft/ft) : L1= 0.00 L2= 0.00 W1= 0.00 W2= 0.00
Bottom Area (sq-ft) : 9100.
Area at Riser Crest El (sq-ft) : 9,100.
(acres) : 0.209
Volume at Riser Crest (cu-ft) : 54,600.

Round up to 55,000 cf
Convert Volume to 7' diameter tanks
see "TANK LAYOUT EXHIBIT"
following

	(ac-ft)	:	1.253
Area at Max Elevation	(sq-ft)	:	9100.
	(acres)	:	0.209
Vol at Max Elevation	(cu-ft)	:	59,150.
	(ac-ft)	:	1.358

Massmann Infiltration Option Used
Hydraulic Conductivity (in/hr) : 0.00
Depth to Water Table (ft) : 100.00
Bio-Fouling Potential : Low
Maintenance : Average or Better

Riser Geometry
Riser Structure Type : Circular
Riser Diameter (in) : 18.00
Common Length (ft) : 0.010
Riser Crest Elevation : 106.00 ft

Hydraulic Structure Geometry

Number of Devices: 2

---Device Number 1 ---
Device Type : Circular Orifice
Control Elevation (ft) : 100.00
Diameter (in) : 0.50
Orientation : Horizontal
Elbow : No

--- Device Number 2 ---
Device Type : Vertical Rectangular Orifice
Control Elevation (ft) : 104.60
Length (in) : 0.25
Height (in) : 15.00
Orientation : Vertical
Elbow : No

**********FLOOD FREQUENCY AND DURATION STATISTICS**********

----------SCENARIO: PREDEVELOPED
Number of Subbasins: 1
Number of Links: 1

----------SCENARIO: POSTDEVELOPED
Number of Subbasins: 1
Number of Links: 2

********** Link: Pond 1 ********** Link WSEL Stats
WSEL Frequency Data(ft)
(Recurrence Interval Computed Using Gringorten Plotting Position)

Tr (yrs)	WSEL Peak (ft)
==========	==========

1.05-Year	101.662
1.11-Year	101.910
1.25-Year	102.288
2.00-Year	103.249
3.33-Year	103.879
5-Year	104.444
10-Year	105.040
25-Year	105.592
50-Year	105.783
100-Year	105.805

*************Groundwater Recharge Summary ***************

Recharge is computed as input to Perlnd Groundwater Plus Infiltration in Structures

Total Predeveloped Recharge During Simulation

Model Element		Recharge Amount (ac-ft)
Subbasin: Project C/D-T		316.683
Link:	Trumpeter Creek	0.000
Total:		316.683

Total Post Developed Recharge During Simulation

Model Element		Recharge Amount (ac-ft)
Subbasin: Project C/D-T		82.957
Link:	Trumpeter Creek	Not Applicable
Link:	Pond 1	0.000
Total:		82.957

Total Predevelopment Recharge is Greater than Post Developed
Average Recharge Per Year, (Number of Years= 158)
Predeveloped: 2.004 ac-ft/year, Post Developed: 0.525 ac-ft/year

*************Water Quality Facility Data ***************

----------SCENARIO: PREDEVELOPED

Number of Links: 1

********** Link: Trumpeter Creek **********

Infiltration/Filtration Statistics----------
Inflow Volume (ac-ft): 99.19
Inflow Volume Including PPT-Evap (ac-ft): 99.19
Total Runoff Infiltrated (ac-ft): 0.00, 0.00%
Total Runoff Filtered (ac-ft): 0.00, 0.00%
Primary Outflow To Downstream System (ac-ft): 99.19
Secondary Outflow To Downstream System (ac-ft): 0.00
Percent Treated (Infiltrated+Filtered)/Total Volume: 0.00%

----------SCENARIO: POSTDEVELOPED

Number of Links: 2

********** Link: Pond 1 **********

Basic Wet Pond Volume (91% Exceedance): 6758. cu-ft
Computed Large Wet Pond Volume, 1.5*Basic Volume: 10137. cu-ft

Infiltration/Filtration Statistics----------
Inflow Volume (ac-ft): 657.21
Inflow Volume Including PPT-Evap (ac-ft): 657.21
Total Runoff Infiltrated (ac-ft): 0.00, 0.00%
Total Runoff Filtered (ac-ft): 0.00, 0.00%
Primary Outflow To Downstream System (ac-ft): 656.97
Secondary Outflow To Downstream System (ac-ft): 0.00
Percent Treated (Infiltrated+Filtered)/Total Volume: 0.00%

**********Compliance Point Results **********

Scenario Predeveloped Compliance Link: Trumpeter Creek
Scenario Postdeveloped Compliance Link: Pond 1

*** Point of Compliance Flow Frequency Data ***
Recurrence Interval Computed Using Gringorten Plotting Position

Predevelopment Runoff		Postdevelopment Runoff	
Tr (Years)	Discharge (cfs)	Tr (Years)	Discharge (cfs)
2-Year	2.902E-02	2-Year	1.202E-02
5-Year	4.895E-02	5-Year	1.406E-02
10-Year	7.603E-02	10-Year	3.118E-02
25-Year	9.129E-02	25-Year	7.068E-02
50-Year	0.114	50-Year	8.751E-02
100-Year	0.130	100-Year	8.953E-02
200-Year	0.159	200-Year	0.100

** Record too Short to Compute Peak Discharge for These Recurrence Intervals

**** Flow Duration Performance ****

Excursion at Predeveloped 50%Q2 (Must be Less Than or Equal to 0%):	-44.4%	PASS
Maximum Excursion from 50%Q2 to Q2 (Must be Less Than or Equal to 0%):	-44.4%	PASS
Maximum Excursion from Q2 to Q50 (Must be less than 10%):	7.9%	PASS
Percent Excursion from Q2 to Q50 (Must be less than 50%):	7.1%	PASS

MEETS ALL FLOW DURATION DESIGN CRITERIA: PASS

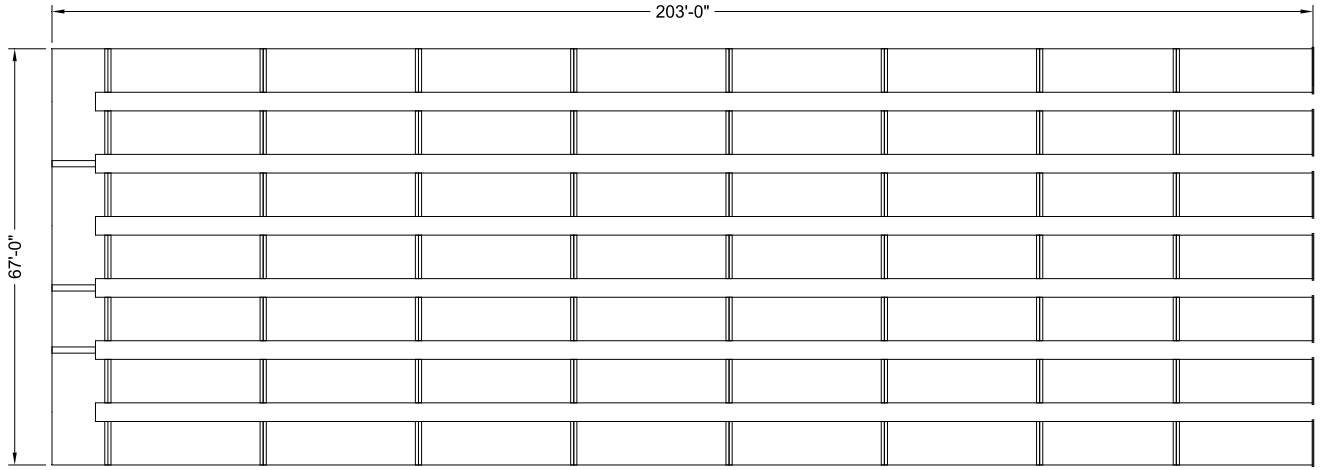
PROJECT SUMMARY

CALCULATION DETAILS
- LOADING = HS20 & HS25
- APPROX. LINEAR FOOTAGE = 1,439 lf.

STORAGE SUMMARY
- STORAGE VOLUME REQUIRED = N/A
- PIPE STORAGE VOLUME = 55,379 cf.
- BACKFILL STORAGE VOLUME = 0 cf.
- TOTAL STORAGE PROVIDED = 55,379 cf.

PIPE DETAILS
- DIAMETER = 84 IN.
- CORRUGATION = 5x1
- GAGE = 16
- COATING = ALT2
- WALL TYPE = Solid
- BARRELL SPACING = 36 IN.

BACKFILL DETAILS
- WIDTH AT ENDS = 12 IN.
- ABOVE PIPE = 0 IN.
- WIDTH AT SIDES = 12 IN.
- BELOW PIPE = 0 IN.



ASSEMBLY
SCALE: 1" = 20'

NOTE:
THESE DRAWINGS ARE FOR CONCEPTUAL PURPOSES AND DO NOT REFLECT ANY LOCAL PREFERENCES OR REGULATIONS. PLEASE CONTACT YOUR LOCAL CONTECH REP FOR MODIFICATIONS.

NOTES

- ALL RISER AND STUB DIMENSIONS ARE TO CENTERLINE. ALL ELEVATIONS, DIMENSIONS, AND LOCATIONS OF RISERS AND INLETS, SHALL BE VERIFIED BY THE ENGINEER OF RECORD PRIOR TO RELEASING FOR FABRICATION.
- ALL FITTINGS AND REINFORCEMENT COMPLY WITH ASTM A998.
- ALL RISERS AND STUBS ARE 2⅔" x ½" CORRUGATION AND 16 GAGE UNLESS OTHERWISE NOTED.
- RISERS TO BE FIELD TRIMMED TO GRADE.
- QUANTITY OF PIPE SHOWN DOES NOT PROVIDE EXTRA PIPE FOR CONNECTING THE SYSTEM TO EXISTING PIPE OR DRAINAGE STRUCTURES. OUR SYSTEM AS DETAILED PROVIDES NOMINAL INLET AND/OR OUTLET PIPE STUB FOR CONNECTION TO EXISTING DRAINAGE FACILITIES. IF ADDITIONAL PIPE IS NEEDED IT IS THE RESPONSIBILITY OF THE CONTRACTOR.
- BAND TYPE TO BE DETERMINED UPON FINAL DESIGN.
- THE PROJECT SUMMARY IS REFLECTIVE OF THE DYODS DESIGN, QUANTITIES ARE APPROX. AND SHOULD BE VERIFIED UPON FINAL DESIGN AND APPROVAL. FOR EXAMPLE, TOTAL EXCAVATION DOES NOT CONSIDER ALL VARIABLES SUCH AS SHORING AND ONLY ACCOUNTS FOR MATERIAL WITHIN THE ESTIMATED EXCAVATION FOOTPRINT.

MARK	DATE	REVISION DESCRIPTION	BY

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

CONTECH CMP DETENTION SYSTEMS
CONTECH DYODS DRAWING

SVC PROJECT C/D - T

Seattle, WA
DETENTION SYSTEM

PROJECT No.:	SEQ. No.:	DATE:
2031	3011	11/4/2020
DESIGNED: DYO	DRAWN: DYO	
CHECKED: DYO	APPROVED: DYO	
SHEET NO.: D1		

C:\EXPORTS\TEMPLATES\2MP_V2.DWG 10/18/2019 10:02 AM

MGS FLOOD
PROJECT REPORT

Program Version: MGSFlood 4.46
Program License Number: 200610002
Project Simulation Performed on: 10/30/2020 11:17 AM
Report Generation Date: 10/30/2020 11:22 AM

Input File Name: Kulshan Creek Basin.fld
Project Name: Skagit Valley College
Analysis Title: Master Plan - Kulshan Creek Basin
Comments: Project C - K
LDG 2020-10-30
KRS 2020-09-24

PRECIPITATION INPUT

Computational Time Step (Minutes): 15

Extended Precipitation Time Series Selected
Climatic Region Number: 13

Full Period of Record Available used for Routing
Precipitation Station : 96003205 Puget East 32 in_5min 10/01/1939-10/01/2097
Evaporation Station : 961032 Puget East 32 in MAP
Evaporation Scale Factor : 0.750

HSPF Parameter Region Number: 1
HSPF Parameter Region Name : USGS Default

********** Default HSPF Parameters Used (Not Modified by User) **********

********** WATERSHED DEFINITION **********

Predevelopment/Post Development Tributary Area Summary

		Predeveloped	Post Developed
Total Subbasin Area (acres)	2.050	2.050	
Area of Links that Include Precip/Evap (acres)	0.000	0.000	
Total (acres)	2.050	2.050	

----------SCENARIO: PREDEVELOPED
Number of Subbasins: 1

---------- Subbasin : Project C-1 ----------
-------Area (Acres) --------
Till Forest 2.050

Subbasin Total 2.050

----------SCENARIO: POSTDEVELOPED
Number of Subbasins: 1

---------- Subbasin : Project C-1 ----------

	-------Area (Acres) --------
Till Grass	1.240
Impervious	0.810
Subbasin Total	2.050

********** **LINK DATA** **********

----------SCENARIO: PREDEVELOPED
Number of Links: 1

Link Name: Kulshan Creek
Link Type: Copy
Downstream Link: None

********** **LINK DATA** **********

----------SCENARIO: POSTDEVELOPED
Number of Links: 2

Link Name: Pond 1
Link Type: Structure
Downstream Link Name: Kulshan Creek

Prismatic Pond Option Used

Pond Floor Elevation (ft)	: 100.00		
Riser Crest Elevation (ft)		: 104.00	
Max Pond Elevation (ft)	: 104.50		
Storage Depth (ft)	: 4.00		
Pond Bottom Length (ft)	: 112.0		
Pond Bottom Width (ft)	: 50.0		
Pond Side Slopes (ft/ft)	: L1= 3.00	L2= 3.00 W1= 3.00 W2= 3.00	
Bottom Area (sq-ft)	: 5600.		
Area at Riser Crest El (sq-ft)	: 10,064.	Round up to 10,100 sf	
(acres)	: 0.231		
Volume at Riser Crest (cu-ft)	: 30,944.	Round up to 31,000 cf	
(ac-ft)	: 0.710		
Area at Max Elevation (sq-ft)	: 10703.		
(acres)	: 0.246		
Vol at Max Elevation (cu-ft)	: 36,135.		
(ac-ft)	: 0.830		

Massmann Infiltration Option Used
Hydraulic Conductivity (in/hr) : 0.00
Depth to Water Table (ft) : 100.00
Bio-Fouling Potential : Low
Maintenance : Average or Better

Riser Geometry
Riser Structure Type : Circular
Riser Diameter (in) : 18.00
Common Length (ft) : 0.020
Riser Crest Elevation : 104.00 ft

Hydraulic Structure Geometry

Number of Devices: 3

---Device Number 1 ---
Device Type : Circular Orifice
Control Elevation (ft) : 100.00
Diameter (in) : 0.51
Orientation : Horizontal
Elbow : No

---Device Number 2 ---
Device Type : Circular Orifice
Control Elevation (ft) : 103.25
Diameter (in) : 0.50
Orientation : Vertical
Elbow : No

--- Device Number 3 ---
Device Type : V Notch Weir that Intersects the Riser Top
Invert Elevation (ft) : 103.85
Notch Angle (degrees) : 0.3

Link Name: Kulshan Creek
Link Type: Copy
Downstream Link: None

**************************FLOOD FREQUENCY AND DURATION STATISTICS*********************

----------SCENARIO: PREDEVELOPED
Number of Subbasins: 1
Number of Links: 1

----------SCENARIO: POSTDEVELOPED
Number of Subbasins: 1
Number of Links: 2

********** Link: Pond 1 ********** Link WSEL Stats

WSEL Frequency Data(ft)
(Recurrence Interval Computed Using Gringorten Plotting Position)

Tr (yrs)	WSEL Peak (ft)
1.05-Year	101.154
1.11-Year	101.247
1.25-Year	101.512
2.00-Year	102.115
3.33-Year	102.513
5-Year	102.876
10-Year	103.523
25-Year	103.959
50-Year	104.009
100-Year	104.023

************Groundwater Recharge Summary **************

Recharge is computed as input to Perlnd Groundwater Plus Infiltration in Structures

Total Predeveloped Recharge During Simulation

Model Element		Recharge Amount (ac-ft)
Subbasin: Project C-1		264.980
Link:	Kulshan Creek	0.000
Total:		264.980

Total Post Developed Recharge During Simulation

Model Element		Recharge Amount (ac-ft)
Subbasin: Project C-1		128.584
Link:	Pond 1	0.000
Link:	Kulshan Creek	Not Applicable
Total:		128.584

Total Predevelopment Recharge is Greater than Post Developed
Average Recharge Per Year, (Number of Years= 158)
Predeveloped: 1.677 ac-ft/year, Post Developed: 0.814 ac-ft/year

************Water Quality Facility Data **************

----------SCENARIO: PREDEVELOPED

Number of Links: 1

********** Link: Kulshan Creek **********

Infiltration/Filtration Statistics----------
Inflow Volume (ac-ft): 83.00
Inflow Volume Including PPT-Evap (ac-ft): 83.00
Total Runoff Infiltrated (ac-ft): 0.00, 0.00%
Total Runoff Filtered (ac-ft): 0.00, 0.00%
Primary Outflow To Downstream System (ac-ft): 83.00

Secondary Outflow To Downstream System (ac-ft): 0.00
Percent Treated (Infiltrated+Filtered)/Total Volume: 0.00%

----------SCENARIO: POSTDEVELOPED

Number of Links: 2

********** Link: Pond 1 **********

Basic Wet Pond Volume (91% Exceedance): 4098. cu-ft
Computed Large Wet Pond Volume, 1.5*Basic Volume: 6147. cu-ft

Infiltration/Filtration Statistics----------
Inflow Volume (ac-ft): 423.22
Inflow Volume Including PPT-Evap (ac-ft): 423.22
Total Runoff Infiltrated (ac-ft): 0.00, 0.00%
Total Runoff Filtered (ac-ft): 0.00, 0.00%
Primary Outflow To Downstream System (ac-ft): 423.12
Secondary Outflow To Downstream System (ac-ft): 0.00
Percent Treated (Infiltrated+Filtered)/Total Volume: 0.00%

*************Compliance Point Results **************

Scenario Predeveloped Compliance Link: Kulshan Creek
Scenario Postdeveloped Compliance Link: Pond 1

***** Point of Compliance Flow Frequency Data *****
Recurrence Interval Computed Using Gringorten Plotting Position

Predevelopment Runoff		Postdevelopment Runoff	
Tr (Years)	Discharge (cfs)	Tr (Years)	Discharge (cfs)
2-Year	2.428E-02	2-Year	1.009E-02
5-Year	4.095E-02	5-Year	1.177E-02
10-Year	6.362E-02	10-Year	1.637E-02
25-Year	7.638E-02	25-Year	1.937E-02
50-Year	9.557E-02	50-Year	4.021E-02
100-Year	0.108	100-Year	7.633E-02
200-Year	0.133	200-Year	8.774E-02

** Record too Short to Compute Peak Discharge for These Recurrence Intervals

****** Flow Duration Performance ******

Excursion at Predeveloped 50%Q2 (Must be Less Than or Equal to 0%):	-42.1%	PASS
Maximum Excursion from 50%Q2 to Q2 (Must be Less Than or Equal to 0%):	-42.1%	PASS
Maximum Excursion from Q2 to Q50 (Must be less than 10%):	-46.2%	PASS
Percent Excursion from Q2 to Q50 (Must be less than 50%):	0.0%	PASS

MEETS ALL FLOW DURATION DESIGN CRITERIA: PASS

MGS FLOOD
PROJECT REPORT

Program Version: MGSFlood 4.46
Program License Number: 200610002
Project Simulation Performed on: 11/03/2020 11:54 AM
Report Generation Date: 11/03/2020 11:55 AM

Input File Name: Trumpeter Creek Basin_Project E.fld
Project Name: Skagit Valley College
Analysis Title: Master Plan - Trumpeter Creek Basin
Comments: Project E-T Fire Station
LDG 2020-11-03

PRECIPITATION INPUT

Computational Time Step (Minutes): 15

Extended Precipitation Time Series Selected
Climatic Region Number: 13

Full Period of Record Available used for Routing
Precipitation Station : 96003205 Puget East 32 in_5min 10/01/1939-10/01/2097
Evaporation Station : 961032 Puget East 32 in MAP
Evaporation Scale Factor : 0.750

HSPF Parameter Region Number: 1
HSPF Parameter Region Name : USGS Default

********** Default HSPF Parameters Used (Not Modified by User) **********

********** WATERSHED DEFINITION **********

Predevelopment/Post Development Tributary Area Summary

		Predeveloped	Post Developed
Total Subbasin Area (acres)	0.640	0.640	
Area of Links that Include Precip/Evap (acres)	0.000	0.000	
Total (acres)	0.640	0.640	

----------SCENARIO: PREDEVELOPED
Number of Subbasins: 1

---------- Subbasin : Project E-T ----------

	-------Area (Acres) --------
Till Forest	0.640
Subbasin Total	0.640

----------SCENARIO: POSTDEVELOPED
Number of Subbasins: 1

---------- Subbasin : Project E-T ----------
-------Area (Acres) --------
Impervious 0.640

Subbasin Total 0.640

********** **LINK DATA** **********

----------SCENARIO: PREDEVELOPED
Number of Links: 1

Link Name: Trumpeter Creek
Link Type: Copy
Downstream Link: None

********** **LINK DATA** **********

----------SCENARIO: POSTDEVELOPED
Number of Links: 2

Link Name: Trumpeter Creek
Link Type: Copy
Downstream Link: None

Link Name: POND E-T
Link Type: Structure
Downstream Link Name: Trumpeter Creek

Prismatic Pond Option Used
Pond Floor Elevation (ft) : 100.00
Riser Crest Elevation (ft) : 106.00
Max Pond Elevation (ft) : 106.50
Storage Depth (ft) : 6.00
Pond Bottom Length (ft) : 102.0
Pond Bottom Width (ft) : 50.0
Pond Side Slopes (ft/ft) : L1= 0.00 L2= 0.00 W1= 0.00 W2= 0.00
Bottom Area (sq-ft) : 5100.
Area at Riser Crest El (sq-ft) : 5,100. Round up to 5,170 sf
(acres) : 0.117
Volume at Riser Crest (cu-ft) : 30,600. Round up to 31,000 cf
(ac-ft) : 0.702
Area at Max Elevation (sq-ft) : 5100.

(acres) : 0.117
Vol at Max Elevation (cu-ft) : 33,150.
(ac-ft) : 0.761

Massmann Infiltration Option Used
Hydraulic Conductivity (in/hr) : 0.00
Depth to Water Table (ft) : 100.00
Bio-Fouling Potential : Low
Maintenance : Average or Better

Riser Geometry
Riser Structure Type : Circular
Riser Diameter (in) : 18.00
Common Length (ft) : 0.000
Riser Crest Elevation : 106.00 ft

Hydraulic Structure Geometry

Number of Devices: 3

--- Device Number 1 ---
Device Type : Vertical Rectangular Orifice
Control Elevation (ft) : 100.00
Length (in) : 0.25
Height (in) : 0.25
Orientation : Vertical
Elbow : No

--- Device Number 2 ---
Device Type : Vertical Rectangular Orifice
Control Elevation (ft) : 104.00
Length (in) : 0.60
Height (in) : 1.00
Orientation : Vertical
Elbow : No

--- Device Number 3 ---
Device Type : V Notch Weir that Intersects the Riser Top
Invert Elevation (ft) : 104.60
Notch Angle (degrees) : 80.0

**********FLOOD FREQUENCY AND DURATION STATISTICS**********

----------SCENARIO: PREDEVELOPED
Number of Subbasins: 1
Number of Links: 1

----------SCENARIO: POSTDEVELOPED
Number of Subbasins: 1
Number of Links: 2

********** Link: POND E-T ********** Link WSEL Stats

WSEL Frequency Data(ft)
(Recurrence Interval Computed Using Gringorten Plotting Position)

Tr (yrs)	WSEL Peak (ft)
1.05-Year	101.353
1.11-Year	101.572
1.25-Year	101.869
2.00-Year	102.564
3.33-Year	103.090
5-Year	103.464
10-Year	103.810
25-Year	104.449
50-Year	104.542
100-Year	104.675

************Groundwater Recharge Summary **************

Recharge is computed as input to Perlnd Groundwater Plus Infiltration in Structures

Total Predeveloped Recharge During Simulation

Model Element		Recharge Amount (ac-ft)
Subbasin: Project E-T		82.725
Link:	Trumpeter Creek	0.000
Total:		82.725

Total Post Developed Recharge During Simulation

Model Element		Recharge Amount (ac-ft)
Subbasin: Project E-T		0.000
Link:	Trumpeter Creek	Not Applicable
Link:	POND E-T	0.000
Total:		0.000

Total Predevelopment Recharge is Greater than Post Developed
Average Recharge Per Year, (Number of Years= 158)
Predeveloped: 0.524 ac-ft/year, Post Developed: 0.000 ac-ft/year

************Water Quality Facility Data **************

----------SCENARIO: PREDEVELOPED

Number of Links: 1

********** Link: Trumpeter Creek **********

Infiltration/Filtration Statistics----------
Inflow Volume (ac-ft): 25.91
Inflow Volume Including PPT-Evap (ac-ft): 25.91
Total Runoff Infiltrated (ac-ft): 0.00, 0.00%
Total Runoff Filtered (ac-ft): 0.00, 0.00%
Primary Outflow To Downstream System (ac-ft): 25.91

Secondary Outflow To Downstream System (ac-ft): 0.00
Percent Treated (Infiltrated+Filtered)/Total Volume: 0.00%

----------SCENARIO: POSTDEVELOPED

Number of Links: 2

********** Link: POND E-T **********

Basic Wet Pond Volume (91% Exceedance): 2376. cu-ft
Computed Large Wet Pond Volume, 1.5*Basic Volume: 3564. cu-ft

Infiltration/Filtration Statistics----------
Inflow Volume (ac-ft): 218.08
Inflow Volume Including PPT-Evap (ac-ft): 218.08
Total Runoff Infiltrated (ac-ft): 0.00, 0.00%
Total Runoff Filtered (ac-ft): 0.00, 0.00%
Primary Outflow To Downstream System (ac-ft): 217.94
Secondary Outflow To Downstream System (ac-ft): 0.00
Percent Treated (Infiltrated+Filtered)/Total Volume: 0.00%

**********Compliance Point Results **********

Scenario Predeveloped Compliance Link: Trumpeter Creek
Scenario Postdeveloped Compliance Link: POND E-T

*** Point of Compliance Flow Frequency Data ***
Recurrence Interval Computed Using Gringorten Plotting Position

Predevelopment Runoff		Postdevelopment Runoff	
Tr (Years)	Discharge (cfs)	Tr (Years)	Discharge (cfs)
2-Year	7.581E-03	2-Year	3.223E-03
5-Year	1.279E-02	5-Year	3.749E-03
10-Year	1.986E-02	10-Year	3.932E-03
25-Year	2.385E-02	25-Year	1.661E-02
50-Year	2.984E-02	50-Year	1.885E-02
100-Year	3.387E-02	100-Year	2.327E-02
200-Year	4.166E-02	200-Year	2.595E-02

** Record too Short to Compute Peak Discharge for These Recurrence Intervals

**** Flow Duration Performance ****

Excursion at Predeveloped 50%Q2 (Must be Less Than or Equal to 0%):	-3.0%	PASS
Maximum Excursion from 50%Q2 to Q2 (Must be Less Than or Equal to 0%):	-3.0%	PASS
Maximum Excursion from Q2 to Q50 (Must be less than 10%):	0.0%	PASS
Percent Excursion from Q2 to Q50 (Must be less than 50%):	0.0%	PASS

MEETS ALL FLOW DURATION DESIGN CRITERIA: PASS

MGS FLOOD
PROJECT REPORT

Program Version: MGSFlood 4.46
Program License Number: 200610002
Project Simulation Performed on: 10/30/2020 8:44 AM
Report Generation Date: 10/30/2020 8:45 AM

Input File Name: Trumpeter Creek Basin_Project F, G.fld
Project Name: Skagit Valley College
Analysis Title: Master Plan - Trumpeter Creek Basin
Comments: Project F/G -T
LDG 2020-10-30

PRECIPITATION INPUT

Computational Time Step (Minutes): 15

Extended Precipitation Time Series Selected
Climatic Region Number: 13

Full Period of Record Available used for Routing
Precipitation Station : 96003205 Puget East 32 in_5min 10/01/1939-10/01/2097
Evaporation Station : 961032 Puget East 32 in MAP
Evaporation Scale Factor : 0.750

HSPF Parameter Region Number: 1
HSPF Parameter Region Name : USGS Default

********** Default HSPF Parameters Used (Not Modified by User) **********

********** WATERSHED DEFINITION **********

Predevelopment/Post Development Tributary Area Summary

		Predeveloped	Post Developed
Total Subbasin Area (acres)	1.560	1.560	
Area of Links that Include Precip/Evap (acres)	0.000	0.000	
Total (acres)	1.560	1.560	

----------SCENARIO: PREDEVELOPED
Number of Subbasins: 1

---------- Subbasin : Project F/G ----------

	-------Area (Acres) --------
Till Forest	1.560
Subbasin Total	1.560

----------SCENARIO: POSTDEVELOPED
Number of Subbasins: 1

---------- Subbasin : Project F/G ----------

	-------Area (Acres) --------
Till Grass	0.120
Impervious	1.440
Subbasin Total	1.560

********** **LINK DATA** **********

----------SCENARIO: PREDEVELOPED
Number of Links: 1

Link Name: Trumpeter Creek
Link Type: Copy
Downstream Link: None

********** **LINK DATA** **********

----------SCENARIO: POSTDEVELOPED
Number of Links: 2

Link Name: Trumpeter Creek
Link Type: Copy
Downstream Link: None

Link Name: Pond 1
Link Type: Structure
Downstream Link Name: Trumpeter Creek

Prismatic Pond Option Used

Pond Floor Elevation (ft)	:	100.00
Riser Crest Elevation (ft)	:	103.25
Max Pond Elevation (ft)	:	103.75
Storage Depth (ft)	:	3.25
Pond Bottom Length (ft)	:	164.2
Pond Bottom Width (ft)	:	82.1
Pond Side Slopes (ft/ft)	:	L1= 3.00 L2= 3.00 W1= 3.00 W2= 3.00
Bottom Area (sq-ft)	:	13486.
Area at Riser Crest El (sq-ft)	:	18,670. Round up to 19,020 sf
(acres)	:	0.429
Volume at Riser Crest (cu-ft)	:	52,048. Round up to 53,000 sf
(ac-ft)	:	1.195

Area at Max Elevation (sq-ft) : 19535.
(acres) : 0.448
Vol at Max Elevation (cu-ft) : 61,598.
(ac-ft) : 1.414

Massmann Infiltration Option Used
Hydraulic Conductivity (in/hr) : 0.00
Depth to Water Table (ft) : 100.00
Bio-Fouling Potential : Low
Maintenance : Average or Better

Riser Geometry
Riser Structure Type : Circular
Riser Diameter (in) : 18.00
Common Length (ft) : 0.035
Riser Crest Elevation : 103.25 ft

Hydraulic Structure Geometry

Number of Devices: 2

---Device Number 1 ---
Device Type : Circular Orifice
Control Elevation (ft) : 100.00
Diameter (in) : 0.46
Orientation : Horizontal
Elbow : No

--- Device Number 2 ---
Device Type : Vertical Rectangular Orifice
Control Elevation (ft) : 102.47
Length (in) : 0.42
Height (in) : 9.32
Orientation : Vertical
Elbow : No

**********FLOOD FREQUENCY AND DURATION STATISTICS**********

----------SCENARIO: PREDEVELOPED
Number of Subbasins: 1
Number of Links: 1

----------SCENARIO: POSTDEVELOPED
Number of Subbasins: 1
Number of Links: 2

********** Link: Pond 1 ********** Link WSEL Stats
WSEL Frequency Data(ft)
(Recurrence Interval Computed Using Gringorten Plotting Position)

Tr (yrs)	WSEL Peak (ft)
1.05-Year	100.999

1.11-Year	101.181
1.25-Year	101.364
2.00-Year	101.857
3.33-Year	102.237
5-Year	102.473
10-Year	102.687
25-Year	102.962
50-Year	103.063
100-Year	103.091

************Groundwater Recharge Summary **************

Recharge is computed as input to Perlnd Groundwater Plus Infiltration in Structures

Total Predeveloped Recharge During Simulation

Model Element		Recharge Amount (ac-ft)
Subbasin: Project F/G		201.643
Link:	Trumpeter Creek	0.000
Total:		201.643

Total Post Developed Recharge During Simulation

Model Element		Recharge Amount (ac-ft)
Subbasin: Project F/G		12.444
Link:	Trumpeter Creek	Not Applicable
Link:	Pond 1	0.000
Total:		12.444

Total Predevelopment Recharge is Greater than Post Developed
Average Recharge Per Year, (Number of Years= 158)
Predeveloped: 1.276 ac-ft/year, Post Developed: 0.079 ac-ft/year

************Water Quality Facility Data **************

----------SCENARIO: PREDEVELOPED

Number of Links: 1

********** Link: Trumpeter Creek **********

Infiltration/Filtration Statistics----------
Inflow Volume (ac-ft): 63.16
Inflow Volume Including PPT-Evap (ac-ft): 63.16
Total Runoff Infiltrated (ac-ft): 0.00, 0.00%
Total Runoff Filtered (ac-ft): 0.00, 0.00%
Primary Outflow To Downstream System (ac-ft): 63.16
Secondary Outflow To Downstream System (ac-ft): 0.00
Percent Treated (Infiltrated+Filtered)/Total Volume: 0.00%

----------SCENARIO: POSTDEVELOPED

Number of Links: 2

********** Link: Pond 1 **********

Basic Wet Pond Volume (91% Exceedance): 5457. cu-ft
Computed Large Wet Pond Volume, 1.5*Basic Volume: 8186. cu-ft

Infiltration/Filtration Statistics----------
Inflow Volume (ac-ft): 504.92
Inflow Volume Including PPT-Evap (ac-ft): 504.92
Total Runoff Infiltrated (ac-ft): 0.00, 0.00%
Total Runoff Filtered (ac-ft): 0.00, 0.00%
Primary Outflow To Downstream System (ac-ft): 504.67
Secondary Outflow To Downstream System (ac-ft): 0.00
Percent Treated (Infiltrated+Filtered)/Total Volume: 0.00%

**********Compliance Point Results **********

Scenario Predeveloped Compliance Link: Trumpeter Creek
Scenario Postdeveloped Compliance Link: Pond 1

*** Point of Compliance Flow Frequency Data ***
Recurrence Interval Computed Using Gringorten Plotting Position

Predevelopment Runoff		Postdevelopment Runoff	
Tr (Years)	Discharge (cfs)	Tr (Years)	Discharge (cfs)
2-Year	1.848E-02	2-Year	7.717E-03
5-Year	3.117E-02	5-Year	8.904E-03
10-Year	4.841E-02	10-Year	1.793E-02
25-Year	5.813E-02	25-Year	4.080E-02
50-Year	7.273E-02	50-Year	5.129E-02
100-Year	8.256E-02	100-Year	5.435E-02
200-Year	0.102	200-Year	6.223E-02

** Record too Short to Compute Peak Discharge for These Recurrence Intervals

**** Flow Duration Performance ****

Excursion at Predeveloped 50%Q2 (Must be Less Than or Equal to 0%):	-30.5%	PASS
Maximum Excursion from 50%Q2 to Q2 (Must be Less Than or Equal to 0%):	-30.5%	PASS
Maximum Excursion from Q2 to Q50 (Must be less than 10%):	3.9%	PASS
Percent Excursion from Q2 to Q50 (Must be less than 50%):	1.0%	PASS

MEETS ALL FLOW DURATION DESIGN CRITERIA: PASS

User Inputs

Chamber Model:	MC-3500
Outlet Control Structure:	Yes
Project Name:	SVC Project F
Engineer:	Laura Grignon
Project Location:	Washington
Measurement Type:	Imperial
Required Storage Volume:	53000 cubic ft.
Stone Porosity:	40%
Stone Foundation Depth:	9 in.
Stone Above Chambers:	12 in.
Average Cover Over Chambers:	18 in.
Design Constraint Dimensions:	(100 ft. x 190 ft.)

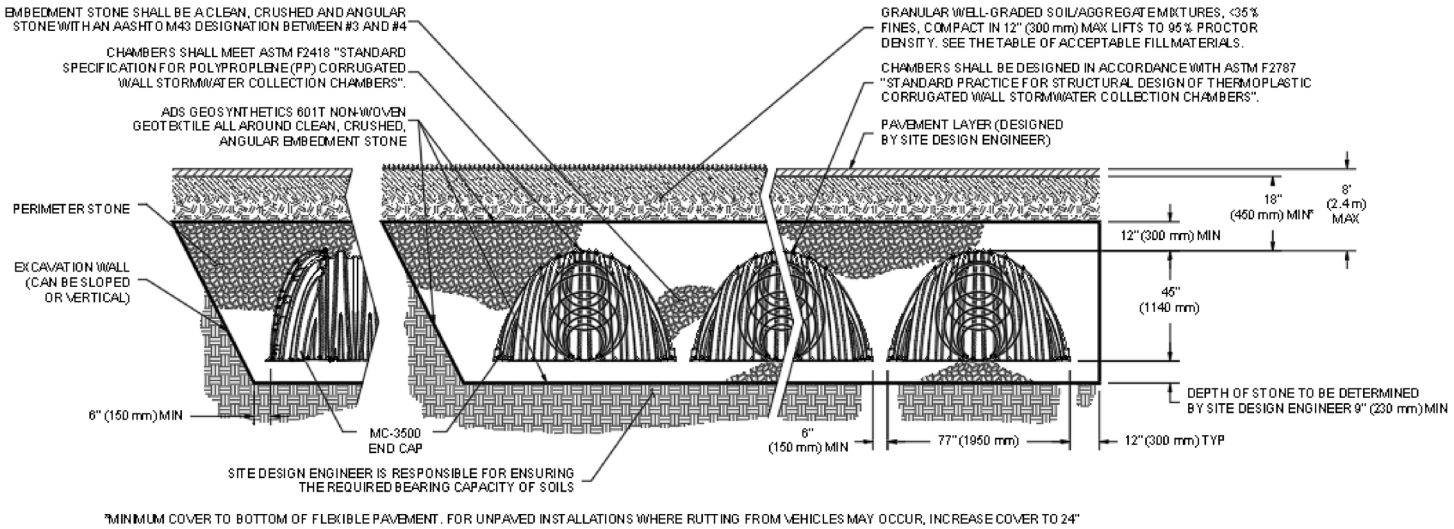
Results

System Volume and Bed Size

Installed Storage Volume:	53294.62 cubic ft.
Storage Volume Per Chamber:	109.90 cubic ft.
Number Of Chambers Required:	288
Number Of End Caps Required:	24
Chamber Rows:	12
Maximum Length:	186.72 ft.
Maximum Width:	85.10 ft.
Approx. Bed Size Required:	15495.15 square ft.

System Components

Amount Of Stone Required:	1970.91 cubic yards
Volume Of Excavation (Not Including Fill):	3156.42 cubic yards



TECHNICAL MEMORANDUM

Project: Skagit Valley College - Mount Vernon Campus
15-Year Master Plan Update

Subject: Parking Assessment - Revised

Date: April 5, 2021

Authors: Michelle M. Brown, Senior Transportation Engineer
Marni C. Heffron, P.E., P.T.O.E., Principal

1. Executive Summary

This Parking Assessment was prepared to support the Skagit Valley College's (SVC) 15-Year Master Plan Update for its Mount Vernon campus. Figure 1shows the SVC campus and adjacent roadways.

The 15-Year Master Plan Update describes potential projects to replace or renovate aging buildings, provide support facilities for existing programs at the college, and improve pedestrian and other amenities on the campus grounds. One of the initial projects to be developed under this plan is the college's proposed new Child Care Center, which is planned to be located adjacent to the existing Child and Family Learning Center along the west side of N LaVenture Road. A new Pickleball Pavilion project is also planned. In addition, the Master Plan Update incorporates Skagit County Parks and Recreation's plans to install new Skagit Play Fields east of, and including a portion of the college campus. With completion of all planned projects in the 15-Year Master Plan Update, on-campus parking is expected to decrease by about 60 parking spaces compared to existing conditions. Parking demand would increase due to future increases in overall college enrollment as well as changes in activity due to the childcare, Pickleball Pavilion, and fields projects.

Typically, a parking assessment would collect existing parking demand data and use that to estimate future parking needs. However, the COVID-19 pandemic suspended most in-person learning and programs at SVC. In addition, part of the main campus parking lot has been used as a COVID-19 testing site. Therefore, this parking assessment was completed using parking demand rates developed from detailed Everett Community College (EvCC) studies. These rates were then applied to conservative student enrollment forecasts prepared by SVC. Parking demand associated with the childcare and new fields were added to the overall campus demand.

The analysis presented herein determined that SVC would have adequate on-site parking to accommodate forecast demand associated with student enrollment growth plus the many projects planned in the 15-Year Master Plan Update. Parking demand could actually be lower than forecast herein due to advancements and acceptance of on-line learning created by the COVID-19 pandemic. Even so, it is recommended that SVC continue several parking-management measures that are now in effect to reduce employee and student travel, and related parking demand. SVC should continue to monitor parking conditions at the campus, and if demand exceeds 95% of the parking supply in the future, enact additional parking management measures to reduce demand below this threshold. A Draft Transportation Management Plan has been prepared that details existing and potential future parking management measures.

N

NTS

Source: Google Earth, Imagery Date 7/15/2018
SVC boundary estimated.

Skagit Valley College
Parking Assessment

Figure 1
Campus Location

heffron transportation inc

12.09.2020

2. Existing Conditions

SVC has surface parking lots throughout the campus, most of which are concentrated on the external edges. The larges parking lots are located on the east side of the campus, with access from East College Way. The next largest concentration of parking is the west campus lots that are accessed from N LaVenture Road. Internal roads do not allow vehicles to connect between the east and west lots; however, pedestrian circulation is provided. There is a small section of the campus that extends west of N LaVenture Road where the existing Child and Family Learning Center and a small parking lot is located. On-street parking is not provided along either of these the campus frontage streets. The existing campus parking map prepared for the 15-Year Master Plan is provided as Attachment A.[1]

2.1. Parking Management Measures

All SVC students are provided a campus parking sticker with their tuition payment. Student parking rules are enforced from 7:00 A.M. to 4:00 P.M. on weekdays. Carpool parking permits are provided for vehicles that have two or more passengers. Students are also offered partially subsidized transit passes to encourage transit usage. Skagit Transit has a bus stop located on campus. No other parking management efforts have been needed to ensure the on-campus parking supply accommodates the school parking demand.

The SVC campus parking can be used by the general public after 6:00 P.M. on weekdays, and all day on weekends. SVC and Skagit County Parks and Recreation have an interlocal agreement to share the east portion of the college property, the existing Dream Field baseball field, soccer field, and the softball fields. The softball fields are served by a small parking lot (65 spaces) that are accessed from Martin Road.

2.2. Parking Supply

Parking supply (number of parking spaces) were compiled for all on-campus parking lots, excluding the spaces near the softball fields (see Attachment A). The existing campus has 1,424 on-campus parking spaces. These spaces are for students, staff, and visitors, and include carpool spaces, electric charging stations, handicap spaces, and emergency and security spaces.

2.3. Parking Demand

Parking demand (the number of parked vehicles) could not be surveyed on campus since the COVID-19 pandemic suspended most in-person classes and campus activities. Instead, parking demand rates developed for Everett Community College (EvCC) sere used. These rates were based on detailed parking demand surveys performed in fall 2017[2] and fall 2019[3] to support the permitting for two new buildings on the EvCC campus. The studies determined that peak parking demand occurs mid-week during the 10:00 A.M. and 11:00 A.M. hours, and that peak parking demand is significantly lower during the afternoon and evening. The peak parking demand rate in fall 2017 was 0.31 vehicles per student (based on EvCC headcount), and the fall 2019 peak parking demand rate was 0.32 vehicles per student. The rates account for students, staff, and visitors. The EvCC parking rates are higher than the 0.20 vehicles per student rate published in Institute of Transportation Engineer's (ITE) *Parking Generation*[4] for Junior/Community College (Land Use 540). ITE did document that peak parking for this land use occurs during the 10:00 A.M. and 11:00 A.M. hours, similar to the EvCC findings.

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1 Skagit Valley College, Facilities 15-Year Master Plan, Washington State Board of Community and Technical Colleges, (Mithun, December 2020, Revised April 2021). Figure 15. Existing Plan - Parking.

2 WSU Everett (Permit #B1504-007 - Building Address: 915 N Broadway), Fall 2017 Full Campus Parking Study Documentation, (Heffron Transportation, Inc. February 8, 2018).

3 Everett Community College - LRC, Everett (Building Address: 1001 N Broadway), Fall 2019 Full Campus Parking Study, (Heffron Transportation, Inc. February 6, 2020).

4 ITE, *Parking Generation,* 5th Edition, January 2019.

The SVC Mount Vernon campus headcount for fall, winter and spring quarters has ranged between about 3,450 and 3,760 students over the past four years (pre-COVID-19).[5] Applying EvCC's peak parking rate of 0.32 vehicles per student to the highest level of enrollment, SVC's peak parking demand is estimated to be about 1,200 vehicles. These vehicles would utilize 84% of the existing on-site parking supply. The parking demand and utilization rate is comparable to parking activity observed on aerial photos available from Google Maps and Google Earth that showed a peak demand of about 85%.

Although off-site parking could occur, SVC has received no complaints from nearby businesses or residents indicating SVC staff or students are parking on property other than the SVC campus. This analysis and anecdotal information indicate the on-campus parking supply has historically accommodated the estimated peak parking demand.

It should be noted that residents and guests of nearby multi-family complexes frequently use the eastern SVC parking lots. Campus parking-enforcement continues to discourage this unauthorized use of on-campus lots.[6]

After 6:00 P.M. on weekdays and on weekends, the SVC campus parking is shared with the community to support the SVC's McIntyre Hall Performing Arts Center and athletic fields. The SVC parking supply adequately accommodates the parking demand for these uses.

3. 15-Year Development Plan

The 15-Year Master Plan Update describes potential projects to replace aging buildings, add support facilities for existing programs, and improve amenities and grounds. The 15-Year Development Plan map is provided as Attachment B.[7] Key elements of the plan that could affect parking include:

- A new Child Care Center,
- Roberts Hall renovation,
- a new Trades Building to replace the Diesel Building,
- a new Library/Multipurpose Classroom building to replace Ford Hall and Cole Library,
- a new Fire Station and relocation of the Fire Fighter Training Tower,
- a new Pickleball Pavilion and Field Support Facility, and
- new pedestrian and emergency vehicle pathways on campus.

In addition to the on-campus improvements, Skagit County Parks and Recreation plans to install new Skagit Play Fields and pervious pathways east of, and including a portion of, the college campus. Phase 1 of the Skagit Play Fields site plan is provided as Attachment C.[8]

The 15-Year Development Plan for Parking is provided as Attachment D.[9] With completion of all projects contemplated by the plan, SVC is expected to have 1,363 on-campus parking spaces, which is 61 fewer spaces than existing.

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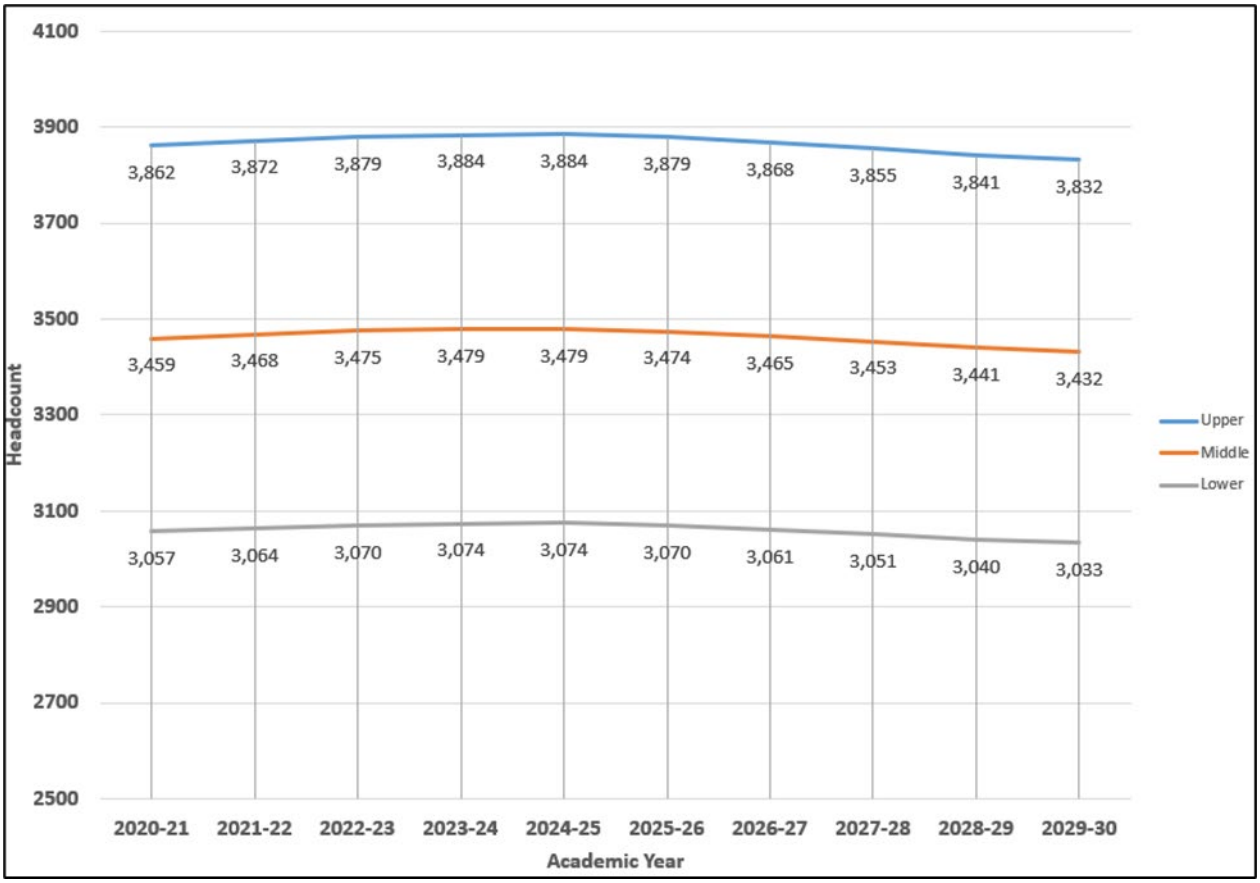
5 Email communications from Skagit Valley College, October to December 2020.
6 SVC staff communication, October - December 2020.
7 Skagit Valley College, Facilities 15-Year Master Plan, Washington State Board of Community and Technical Colleges, (Mithun, December 2020, Revised April 2021). Figure 9. 15-Year Development Plan.
8 Skagit Fields Proposed Site Plan, (November 5, 2020).
9 Skagit Valley College, Facilities 15-Year Master Plan, Washington State Board of Community and Technical Colleges, (Mithun, December 2020, Revised April 2021). Figure 16. 15-Year Development Plan - Parking.

3.1. Future Headcount Projections

SVC prepared quarterly headcount projections for the Mount Vernon-campus through the 2029-2030 school year.[10] The headcount projections for each year—with low, mid, and high estimates—account for Skagit County annual population estimates and population projections from the U.S. Census Bureau. The highest headcount of 3,880 students is expected to occur in spring quarter of the 2023-2024 and 2024-2025 school years. Figure 2 shows the spring quarter headcount forecasts for the next 10 years. It is noted that these projections do not reflect the likely effects of the COVID-19 pandemic, which are expected to increase remote and on-line learning opportunities compared to pre-COVID-19 conditions. Prior to COVID-19, about 10 to 20% of the enrolled students used distance learning options. Post COVID-19, it is expected that 30% of the student enrollment may utilize distance learning options with a hybrid of in-person and on-line programs.[11] The expected increase in distance learning would reduce the number of students on campus, particularly during the peak times (weekday mornings) compared to recent conditions. However, to evaluate a conservative condition, the unadjusted peak spring headcount projections were applied in the next section to estimate future peak parking demand estimates.

Figure 2. SVC Spring Quarter Headcount Projections



Source: Skagit Valley College, October 2020.

[10] SVC forecasts provided October 2020.
[11] SVC projections based on programing efforts and continued registration increases in these options. December 2020.

3.2. Campus Parking Demand

Using the conservative parking demand rate presented previously—0.32 vehicles per student—and the peak headcount projection of 3,884 students at the Mount Vernon campus, the peak parking demand is estimated at 1,243 vehicles. This peak would occur during the mid-morning hours, and is expected to utilize about 91% of the planned on-site parking supply (1,363 spaces). About 120 parking spaces would remain vacant on campus during peak times. Therefore, the 15-Year Master Plan Update parking supply would accommodate the estimated parking demand.

After 6:00 P.M. on weekdays and on weekends, the SVC campus parking lots would continue to be shared with the community to support the SVC's McIntyre Hall Performing Arts Center and athletic fields. It is recommended that scheduling of very large events in McIntyre Hall be coordinated with large events at the new Pickleball Pavilion and Skagit Fields to ensure adequate parking can be accommodated for each event.

3.3. Child Care Center Parking

The new child care center is one the first projects proposed under the 15-Year Master Plan Update. It would be located next to the existing Child and Family Learning Center on the west side of N LaVenture Road. The Child Care Center is planned at 4,150 square feet (sf), with potential for future expansion, and would replace unused modular buildings on the site. This facility would allow the college to increase affordable, convenient, and high-quality child care for SVC students and the community, while enhancing the Early Childhood Education program. Combined, the Child and Family Learning Center and Child Care Center will provide capacity for about 80 children and 22 staff. The potential future expansion of two additional classrooms could provide for another 40 children and four additional staff, for a total of 120 children and 26 staff.

There are 68 parking spaces on the existing Child and Family Learning Center site. With the new Child Care Center project, it will have 65 spaces and a revised on-site layout to accommodate a one-way drop-off/pick-up area with eight drop-off/pick-up spaces initially, with the potential to add four more.

Parking demand was estimated using ITE's *Parking Generation* for Day Care Center (LUC 565). The peak parking demand is estimated at 29 vehicles. The 12 drop-off/pick-up spaces and 29 reserved staff spaces would leave 24 spaces available for visitors or other uses. The proposed 65 spaces allocated to the Child and Family Learning Center and proposed Child Care Center (including the potential future expansion) would accommodate the expected peak parking demand. It is recommended that the drop-off/pick-up spaces be signed for 15-minute use to allow for quick turn-over during peak times.

It was noted, this demand of 29 vehicles should be added to the estimated campus peak parking demand of 1,243 vehicles. The total campus peak parking demand of 1,272 vehicles would still leave about 90 vacant parking spaces available on campus, and accommodate the estimated peak demand.

3.4. Pickleball Pavilion Parking

The new 10-court covered Pickleball Pavilion is planned on the east side of the campus. The project is a joint venture between SVC and a private-public entity. A *Management Agreement*[12] spells out how access to the facility will be managed among local community members, SVC's college community, and Mount Vernon Pickleball Club (MVPC) members. The proposal could also include re-striping portions of existing parking lots 1A, 1B, and 1C to provide additional on-campus parking spaces.

[12] *Draft Management Agreement between Skagit Valley College and Skagit Valley College Foundation - RE: Skagit Valley College Pickleball Pavilion*, March 2021.

Parking demand was estimated using rates in *Parking Generation.*[13] This manual provides weekday afternoon (1:00 to 6:00 P.M.) peak parking demand rates for a Racquet/Tennis Club (Land Use Code [LUC] 491) and a Saturday peak parking demand rate for Tennis Courts (LUC 490). Based on the operations plan in the *Management Agreement*, 70% of the courts would be designated to Mount Vernon Pickleball Club (MVPC) users in the morning (8:00 to 11:00 A.M.) and evenings (4:00 to 8:00 P.M.) each day. The remaining courts would be prioritized for SVC students and staff, and those users would likely park on campus with or without the Pickleball Pavilion. Some users would carpool, take transit, bike, or walk to the facility, which would not generate parking demand. Finally, court times would be scheduled and managed to reduce the overlap between users. Therefore, the ITE parking rates were reduced by 25% to account for users already on campus, use of alternative modes of travel, and court scheduling management that would reduce parking demand associated with the facility. The estimated peak parking demand for both the weekday morning and afternoon/evening uses of the facility is 33 vehicles. The SVC east parking areas could accommodate this additional morning and afternoon parking demand.

Parking generation for the occasional weekend and/or evening tournament (which are planned to occur once or twice per year) would likely generate a higher peak parking demand compared to average weekday conditions. As a conservative estimate, the weekday peak parking rate in *Parking Generation* for a Racquet/Tennis Club was increased by 50% to account for the longer parking durations for each court. It is estimated that the very occasional tournament could generate a peak parking demand of up to 65 vehicles.

The SVC east parking areas would adequately accommodate the parking demand for both the weekday morning and evening use of the Pickleball Pavilion. As recommended in the *Management Agreement* established for the Pickleball Pavilion, tournaments and/or other special events would be coordinated with the schedules for both McIntyre Hall and the athletic fields so events do not coincide. Schedule coordination and other parking management measures are detailed in the SVC *Transportation Management Plan (TMP)* prepared for the 15-Year Master Plan Update.

3.5. Skagit County Fields Parking

Skagit County Parks and Recreation is proposing to install five soccer/play fields east of, and on a portion of SVC property. Parking for these fields would be accommodated by the SVC east parking lots that have more than 900 parking spaces. The shared parking agreement between SVC and Skagit County Parks and Recreation is expected to be maintained and continue throughout plans of the 15-Year Master Plan Update.

Peak parking demand for these fields would occur on weekday evenings and on weekends when community use of the fields would be highest. ITE's *Parking Generation* for a Soccer Complex (LUC 488), indicates the highest parking generation rate of 62.29 vehicles per soccer field, occurs on a Sunday between 8:00 A.M. and 12:00 P.M. Using this rate, peak parking demand for these fields would be 314 vehicles. The field's peak parking demand would not conflict with the peak parking demand of SVC, which occurs mid-to-late morning on weekdays. The nearby SVC east parking lot supply would adequately accommodate the parking demand for these fields. Scheduling should be coordinated with events at the McIntyre Hall and the Pickleball Pavilion to ensure overlap of large events do not occur.

4. Conclusion

SVC would have adequate on-site parking to accommodate forecast demand associated with student enrollment growth plus the many projects planned in the 15-Year Master Plan Update. Together, the various projects are anticipated to reduce on-site parking supply from 1,424 spaces today to 1,363 spaces in the future, a net reduction of 61 spaces.

[13] Institute of Transportation Engineers, *Parking Generation,* 5th Edition, January 2019.

Parking demand could increase due to enrollment growth at the campus and with the addition of the child care center, Pickleball Pavilion, and new Skagit County Parks and Recreation fields. At peak enrollment levels, expected in the spring quarter of 2024 and 2025, the peak parking demand is expected to utilize up to 96% of the on-site parking. Actual parking demand may be lower than forecast due to advancements and acceptance of on-line learning created by the COVID-19 pandemic. Potential re-striping of the existing parking lots associated with the proposed new Pickleball Pavilion would increase the parking supply and then lower the parking utilization percentage. Even so, it is recommended that SVC continue with the parking management measures that are now in effect to reduce employee and student travel and related parking demand. SVC should continue to monitor parking conditions at the campus, and if demand exceeds 95% of the parking supply in the future, enact additional parking management measures to reduce demand below this threshold. The 95% utilization threshold is not anticipated until enrollment exceeds 3,880 students and the Child Care Center and the Pickleball Pavilion are at capacity.

In addition, parking specifically proposed for the Child and Family Learning Center and new Child Care Center (including future expansion) would accommodate the estimated peak parking demand for these uses on the west side of campus. The SVC eastern parking lot supply would accommodate the estimated parking demand for the Pickleball Pavilion and Skagit Parks and Recreation's proposed Phase 1 of the Skagit Fields project, along with continuing to support the McIntyre Hall Performing Arts Center. Scheduling and coordination of large events for these uses are recommended to ensure adequate parking can be accommodated.

5. Recommendations

Based on the parking assessment completed for the Skagit Valley College 15-Year Master Plan Update, there are a few recommendations as listed below.

A. Continue the existing programs that reduce parking demand and manage on-site parking. These programs are detailed in the Draft Transportation Management Plan (see Attachment E).

B. If and when student enrollment exceeds 3,880 students during any quarter, monitor on-site parking demand and utilization. If parking utilization exceeds 95%, then consider additional parking management measures to reduce demand. Potential additional measures are detailed in the Draft Transportation Management Plan (see Attachment E). The 95% utilization target is recommended since peak parking occurs for only a few hours during the mid-morning hours. Utilization levels above this range could contribute to driver frustration and increased vehicle circulation or travel between parking lots. If monitoring concludes the Pickleball Pavilion parking demand is not being accommodated or its demand is contributing to the campus parking demand approaching 95% utilization, then the following measures could be implemented:

    1) Increase times between schedule court time-sessions to reduce potential parking overlap between sessions.

    2) Designate 33 Pickleball Pavilion parking spaces near the new facility.

    3) Add on-site parking through parking lot restriping.

C. Sign the drop-off/pick-up spaces at the new Child Care Center with a 15-minute time restriction. This signage will encourage turn-over for these spaces, and ensure that they are available for drop-off/pick-up activity.

D. Continue shared parking agreement with Skagit Parks and Recreation.

E. Coordinate event schedules among Pickleball Pavilion, Skagit Parks, SVC athletics, and McIntyre Hall to avoid or limit overlapping large events. If large events do overlap, implement additional parking management measures as detailed in the *Transportation Management Plan* (see Attachment E).

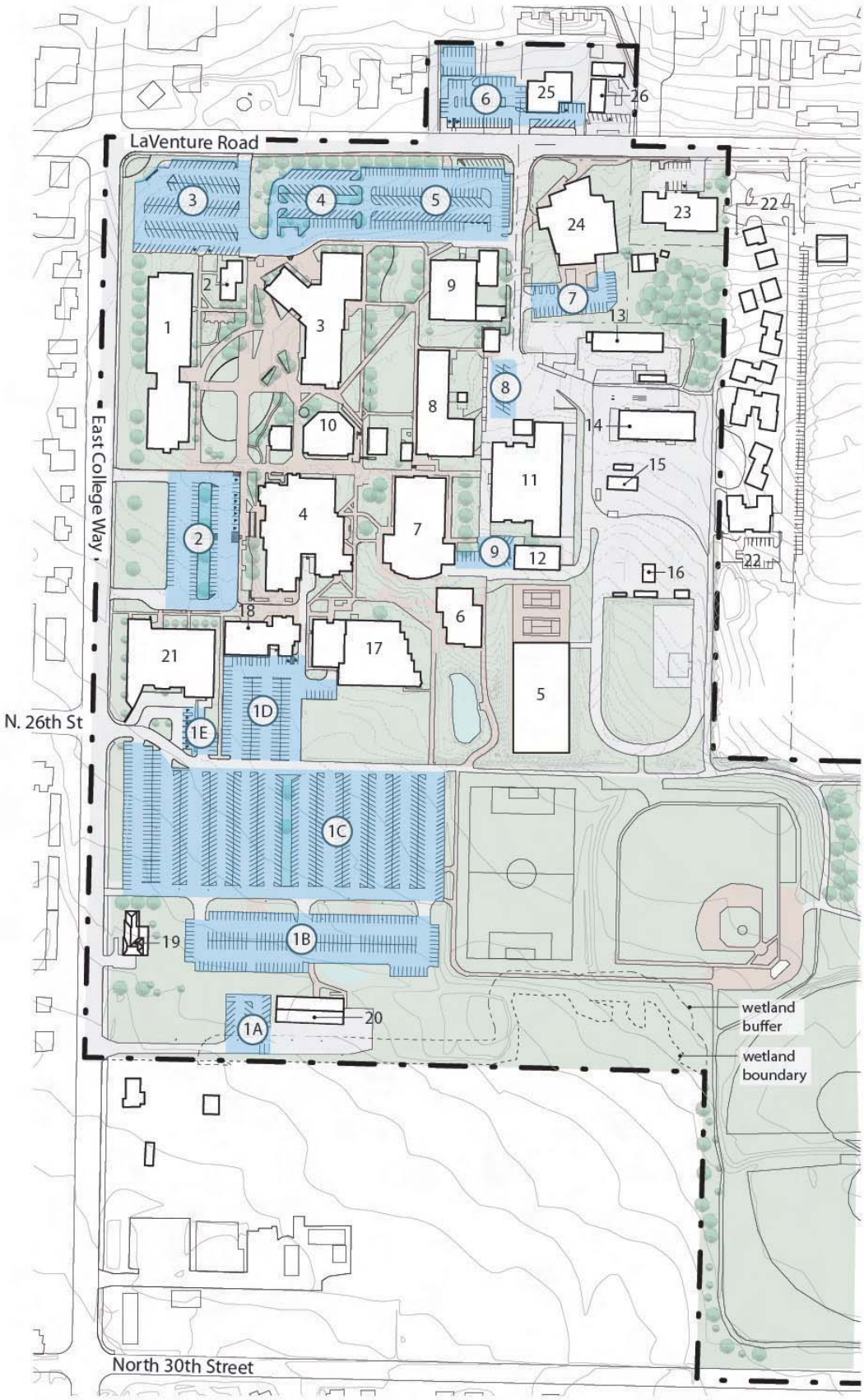
Attachments:

Attachment A - 15-Year Master Plan Update - Existing Plan - Parking
Attachment B - 15-Year Master Plan Update - Development Plan
Attachment C - Skagit Parks & Recreation - Skagit Play Fields Proposed Site Plan
Attachment D - 15-Year Master Plan Update - Development Plan - Parking
Attachment E - SVC - Transportation Management Plan - Draft

SVC-MV Master Plan Update-Parking Rev 4-2021.docx

ATTACHMENT A

15-Year Master Plan Update
Existing Plan - Parking



COLOR LEGEND

- 1A East Campus Bldg Lot — 20 Stalls
- 1B East Parking Lot — 176 Stalls
- 1C Main East Lot — 584 Regular, 2 HC
- 1D Behind Annex/Library — 111 Stalls
- 1E McIntyre Hall Lot — 10 Stalls
- 2 Campus Center Lot — 81 Stalls
- 3 Angst Lot — 115 Stalls
- 4 Lewis Lot — 54 Stalls
- 5 West of Reeves Lot — 137 Stalls
- 6 Laventure Road Lots — 68 Stalls
- 7 NCTA Lot — 15 Stalls
- 8 North of Hodson Lot — 36 Stalls
- 9 Gym Lot — 15 Stalls

1424 Total Stalls

BUILDING LEGEND

1	Angst Hall
2	Greenhouse
3	Lewis Hall
4	Knutzen Cardinal Center
5	Armstrong Tennis Courts
6	Nelson Hall
7	DuVall Pavilion
8	Hodson Hall and Tarro Theatre
9	Reeves Hall
10	Ford Hall
11	Roberts Hall
12	Field House
13	Maintenance Building
14	Diesel Building
15	Modular Classroom Building
16	Firefighter Training Tower
17	Cole Library
18	Administrative Annex
19	Connite House
20	East Campus Building
21	McIntyre Hall
22	Campus View Village
23	Chinook Enterprises
24	Northwest Career & Technical Academy
25	Child and Family Learning Center
26	Modular Buildings (Not in use)

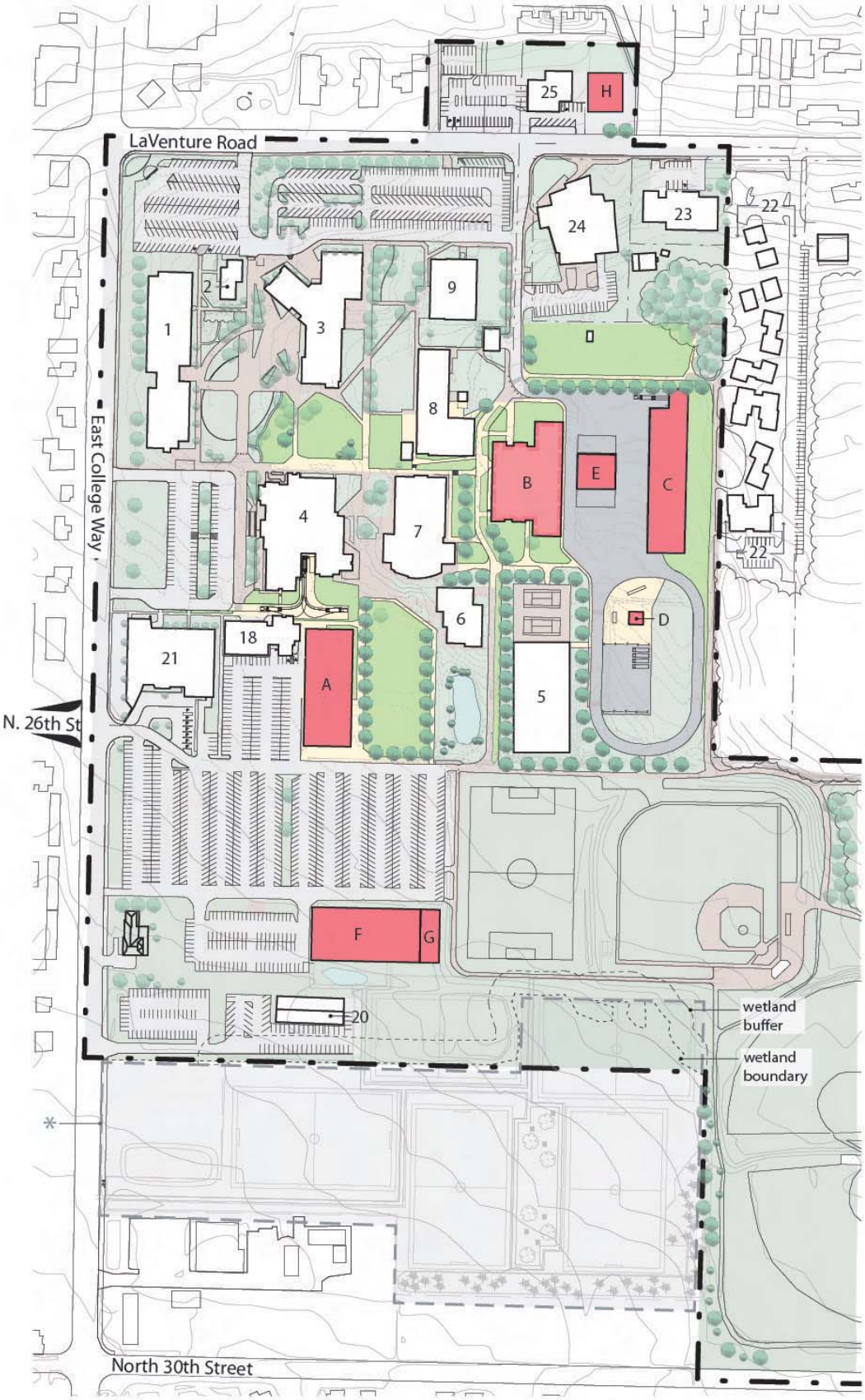
N

0 300'

Figure 15. Existing Plan - Parking

ATTACHMENT B

15-Year Master Plan Update
Development Plan



COLOR LEGEND

- Existing Buildings
- New Construction
- Renovation
- Site Improvements

EXISTING BUILDING LEGEND

1	Angst Hall
2	Greenhouse
3	Lewis Hall
4	Knutzen Cardinal Center
5	Armstrong Tennis Courts
6	Nelson Hall
7	DuVall Pavilion
8	Hodson Hall and Tarro Theatre
9	Reeves Hall
18	Administrative Annex
20	East Campus Building
21	McIntyre Hall
22	Campus View Village
23	Chinook Enterprises
24	Northwest Career & Technical Academy
25	Child and Family Learning Center

NEW CONSTRUCTION / RENOVATION LEGEND

A	Library
B	Roberts Hall
C	Trades Building
D	Firefighter Training Tower
E	Fire Station
F	Pickleball Pavilion
G	Field Support Facility
H	Child Care Center

* Skagit Playfields (Skagit County Parks and Recreation)

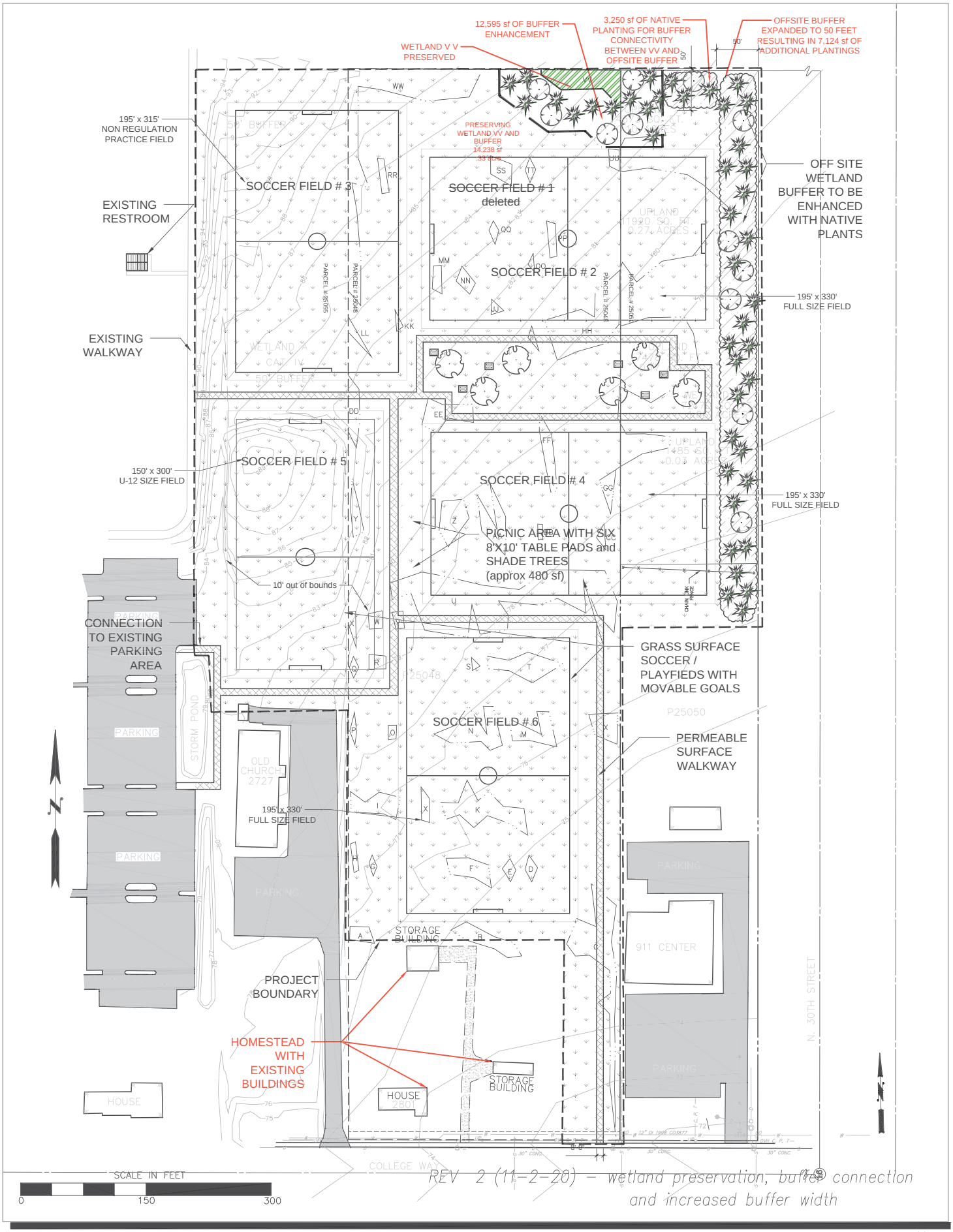
N

0 300'

Figure 9. 15-Year Development Plan

ATTACHMENT C

Skagit Parks & Recreation
Skagit Fields Proposed Site Plan



REV 2 (11-2-20) – wetland preservation, buffer connection and increased buffer width

PROPOSED SITE PLAN

Skagit Fields

Purpose: Wetland Fill; 184,908 sf (4.24 ac)
In: Abutting Wetlands to unnamed trib to Trumpeter Creek
At: Mount Vernon, WA, Skagit County

APPLICANT: SKAGIT COUNTY AND SKAGIT VALLEY COLLEGE
Datum: WA State Plane Coordinates, NGVD 29
Adjacent Property Owners: Skagit Valley College, Apostolic Assembly of Faith

REFERENCE NUMBER:
NWS-2016-85
NWS-2007-1119

Nov 5, 2020

ATTACHMENT D

15-Year Master Plan Update
Development Plan - Parking

COLOR LEGEND

- 1A East Campus Bldg Lot — 114 Stalls
- 1B East Parking Lot — 89 Stalls
- 1C Main East Lot — 586 Stalls
- 1D Behind Annex/Library — 104 Stalls
- 1E McIntyre Hall Lot — 10 Stalls
- 2 Campus Center Lot — 74 Stalls
- 3 Angst Lot — 115 Stalls
- 4 Lewis Lot — 54 Stalls
- 5 West of Reeves Lot — 137 Stalls
- 6 Laventure Road Lots — 65 Stalls
- 7 NCTA Lot — 15 Stalls

1363 Total Stalls

EXISTING BUILDING LEGEND

1	Angst Hall
2	Greenhouse
3	Lewis Hall
4	Knutzen Cardinal Center
5	Armstrong Tennis Courts
6	Nelson Hall
7	DuVall Pavilion
8	Hodson Hall and Tarro Theatre
9	Reeves Hall
18	Administrative Annex
20	East Campus Building
21	McIntyre Hall
22	Campus View Village
23	Chinook Enterprises
24	Northwest Career & Technical Academy
25	Child and Family Learning Center

NEW CONSTRUCTION / RENOVATION LEGEND

A	Library
B	Roberts Hall
C	Trades Building
D	Firefighter Training Tower
E	Fire Station
F	Pickleball Pavilion
G	Field Support Facility
H	Child Care Center

* Skagit Playfields (Skagit County Parks and Recreation)

N

0 300'

Figure 16. 15-Year Development Plan - Parking

ATTACHMENT E

SVC Transportation Management Plan (TMP) - Draft

Transportation Management Plan (TMP) - DRAFT

Skagit Valley College 15-Year Master Plan Update
2405 E College Way, Mt Vernon, WA

1. Background

The Skagit Valley College (SVC) 15-Year Master Plan Update identifies planned improvements to on-campus buildings and grounds. Together, the various projects are anticipated to reduce on-site parking supply from 1,424 spaces today to 1,363 spaces in the future, a net reduction of 61 spaces. Parking demand could increase due to enrollment growth at the campus and with the addition of the child care center, Pickleball Pavilion, and new Skagit County Parks and Recreation fields. The Parking Assessment prepared for the 15-Year Master Plan Update determined that at peak enrollment levels, expected in the spring quarter of 2024 and 2025, the peak parking demand could utilize up to 96% of the on-site parking during the mid-morning hours, based on the 15-year planned on-site parking count. Actual parking demand may be lower than forecast due to advancements and acceptance of on-line learning created by the COVID-19 pandemic, and actual on-site supply could be higher, depending on individual campus projects. Even so, it is recommended that SVC continue its existing programs that helps reduce vehicle trips and associated parking demand. These programs are listed in Section 2 below.

SVC should continue to monitor parking conditions at the campus, and if demand exceeds 95% of the parking supply in the future, enact additional parking management measures to reduce demand below this threshold. The 95% utilization threshold is not anticipated until enrollment exceeds 3,880 students with the future planned on-site parking supply. Potential additional measures are described in Section 3 below.

2. Existing Strategies that will be Continued

SVC has provided the following services and programs that help reduce trips and manage on-campus parking. These will be continued with the 15-Year Master Plan Update.

1) Parking Stickers

   All SVC students are provided a campus parking sticker with their tuition payment. Student parking rules are enforced from 7:00 A.M. to 4:00 P.M. on weekdays. The stickers allow enforcement personnel to identify and reduce parking by unauthorized vehicles.

2) Preferential Carpool Parking

   SVC provides carpool parking spaces in preferential locations on campus to encourage carpool commuting by employees and students. Carpool parking stickers are required to park in these spaces for vehicles with two or more passengers. Regular spaces could be re-striped to increase the number of carpool spaces, to encourage more users.

3) Pedestrian Improvements

   SVC has pedestrian amenities throughout its campus. The 15-Year Master Plan Update incorporates additional pedestrian accesses, circulation, wayfinding, and connections to existing student housing. These improvements will be constructed with related on-campus development projects.

4) Bicycle Amenities

   SVC provides on-site bicycle parking for both employees and students. On-site showers and lockers are available on campus for employees and students who bike (or walk) to campus.

5) On-site Transit Stops

   SVC provides curb-site load/unload on campus to accommodate Skagit Transit.

6) On-site Childcare

   SVC provides on-site childcare facilities for employees and students. A new Child Care Center will be constructed to increase the on-site childcare capacity.

7) On-Campus Parking Enforcement

   SVC provides on-campus parking enforcement to ensure authorized vehicles are parking in appropriate locations, and unauthorized vehicles are removed.

3. Future Actions, If Needed

If and when enrollment at SVC exceeds 3,880 students, additional monitoring and management strategies may be needed to further reduce parking demand.

8) Monitoring

   Perform annual parking demand surveys on campus during peak attendance time periods. If parking utilization exceeds 95% during any hour of the day, determine additional measures that may need to be implemented to reduce demand to below the 95% utilization threshold.

9) Potential Additional Measures

   - Class schedule adjustments - The peak parking demand occurs mid-late morning on weekdays when the majority of classes are scheduled simultaneously. Shifting some classes/programs to later in the day could effectively reduce the peak parking demand.
   - On-line Classes - SVC offers on-line classes to reduce trips made to campus and reduce parking demand. An increase in on-line class options and distance learning programs can further reduce trips and parking demand.
   - Traveler Information – Provide travel information on the SVC website, including pages and links for transit, carpool and parking information, and programs for its employees, students, and visitors.
   - Ride-Match Program – Implement program to assist students and employees find others who live in similar areas and have similar school schedules that could carpool to campus.
   - Transit incentive for employees – Offer transit incentive to employees to reduce parking demand.
   - Parking fees – Parking on campus is currently free. Charging for parking could entice some who drive to shift to an alternative mode of travel. Carpool parking fees could be offered at a reduced rate. Any parking charges should be set at a rate that would not shift parking to nearby streets or businesses.

- Construct additional parking spaces on campus - If other incentives are not successful to reduce the campus parking demand, a feasibility analysis should be completed to install additional parking spaces if necessary. The existing grass area along East College Way could be used to expand the Campus Center Lot. This would add parking south of the Knutzen Cardinal Center, east of Angst Hall, and west of McIntyre Hall. Restriping of existing lots may also increase parking supply.

4. Special Events Coordination

With the addition of the proposed new SVC Pickleball Pavilion and Skagit Parks and Recreation's Skagit Fields project, coordination efforts are recommended to ensure adequate parking can be accommodated within the SVC campus for these facilities, the athletic facilities, and the SVC McIntyre Hall for special events. The following tiered measures could be utilized:

1) Avoid or Limit Overlapping Schedules for Large Events

   - Once each quarter, the schedule for the SVC McIntyre Hall and athletic facilities would be available to the coordinators/schedulers for the Pickleball Pavilion, and Skagit Parks and Recreation for the Skagit Fields.
   - Large events for the Skagit Fields and the Pickleball Pavilion should be scheduled on days on days/evenings when main events at McIntyre Hall are not likely to exceed 75% occupancy of the 650-person theatre capacity. This would include opening night/weekends for marque shows for example.

2) Physical Management

   - If events do coincide, then signage and physical barriers, such as cones and temporary fencing could be installed to easily direct drivers to parking areas dedicated for each event.
   - Prior to events, on-site parking information could be provided to each facility coordinator to post on respective websites and/or electronically relay information as needed to event goers.

3) Staff Management

   - For very large events where expected parking demand could exceed 90% of the 900 parking spaces on the east side of the SVC campus, then in addition to the Physical Management efforts described above, parking lot staff could also be utilized. Staff would manage on-site parking, and direct traffic flow into and out of the designated parking areas for each event facility. Depending on the types of event, this level of parking demand could occur with cumulative attendance that ranges from about 1,000 to 2,250 people.

Landscape

Existing Conditions

Currently, the campus does not take full advantage of its location and is disconnected from its context. Connections to the surrounding community are lost due to the fact that much of the site's perimeter is taken up by parking. This also affects perceptions of the College where the first impression is of parking.

In general, the current landscape maintenance keeps plantings low enough to allow for clear site lines and eliminates potential hiding places. Planting beds are kept near building entrances and shrubs up against building walls. Much of the campus landscape is characterized by open, manicured lawns with some mature trees. A row of old growth Giant Sequoias (Sequoia Dendron gigantism) are located north of the DuVall Pavilion. These provide a lush canopy and should be preserved and maintained.

Needs Analysis

An emphasis should be placed on native plants and local materials to tie the campus to its surroundings and give it a clear sense of place. The opening of campus view corridors to the mountains should be maintained as a way to create a place that is distinctively Mount Vernon.

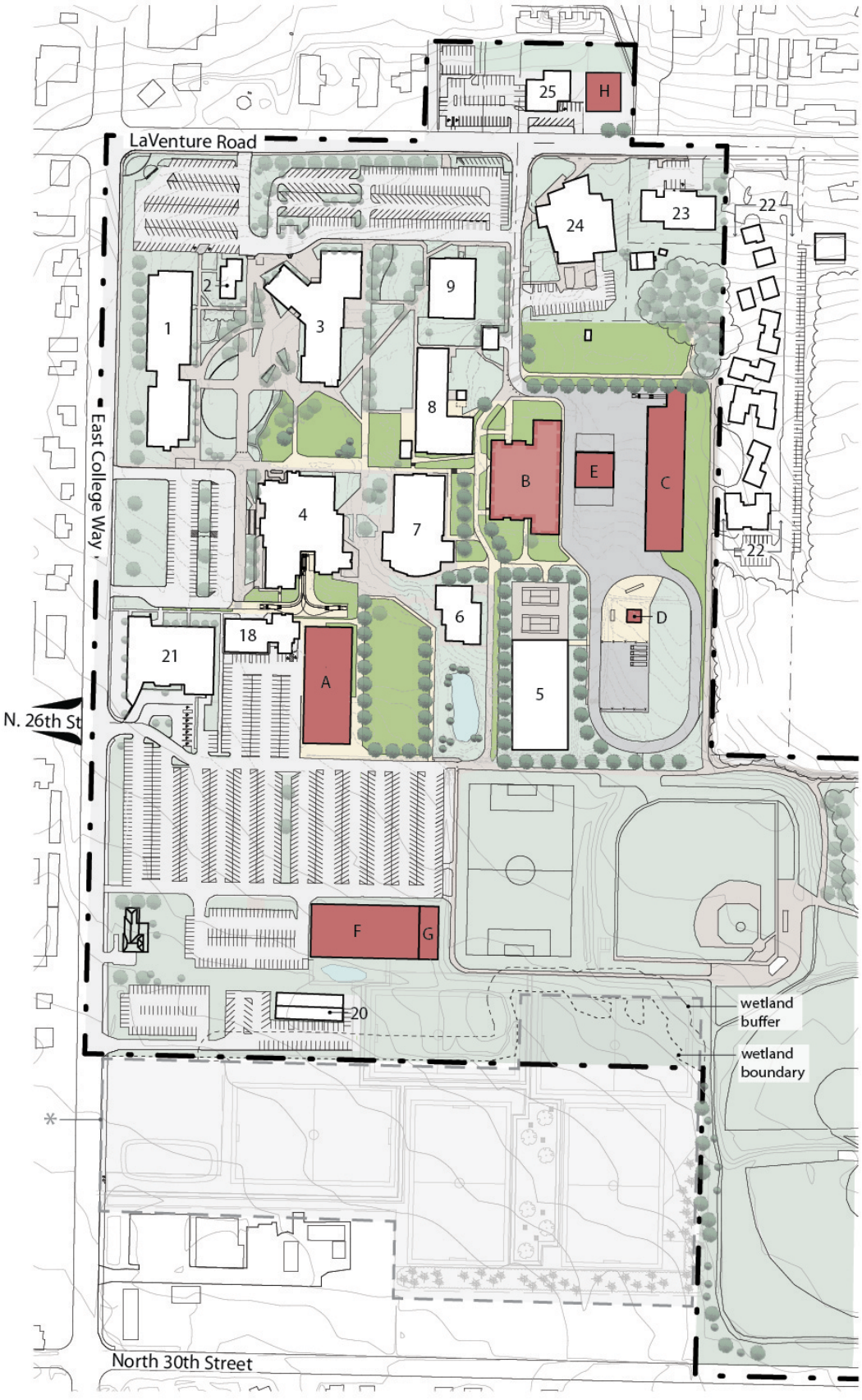
Continuity of plantings and materials is needed to tie together the campus setting, creating a signature campus-wide identity. Buildings currently differ in style and era. A consistent landscape with cohesive furnishings, paving and planting would unite disparate elements into a cohesive whole.

A building entry plaza has been added at the main entry of each building. This will help users find the correct entry point and create a transitional space between inside and out. Individual plazas may respond to the architecture and purpose of each individual building, but will still maintain cohesion with the rest of the site through a combination of the standard materials, site furnishings, and plants. Each entry plaza will use pavers and benches to create an outdoor room affiliated with the building. The seating will be sufficient to accommodate individuals or small groups. Reference the "Design Kit" for further detail.

Screening of the parking areas along East College Way and definition of the campus entry is needed. Providing a tree-lined vehicular drive to the parking lot would add to the collegiate feel.

Proposed Master Planning Strategies

- Screen parking with the use of low shrubs around the perimeter of campus
- Use feature plantings to mark vehicular access points with taller plantings set back to maintain safe sightlines for drivers and pedestrians
- As new buildings are added, consider how building entry plazas can be designed to create a transitional space between inside and out
- Connect the site to its cultural context through the use of native plants and local material. Reference the "Plant List" for further detail.



COLOR LEGEND

- Existing Buildings
- New Construction
- Renovation
- Site Improvements

EXISTING BUILDING LEGEND

1	Angst Hall
2	Greenhouse
3	Lewis Hall
4	Knutzen Cardinal Center
5	Armstrong Tennis Courts
6	Nelson Hall
7	DuVall Pavilion
8	Hodson Hall and Tarro Theatre
9	Reeves Hall
18	Administrative Annex
20	East Campus Building
21	McIntyre Hall
22	Campus View Village
23	Chinook Enterprises
24	Northwest Career & Technical Academy
25	Child and Family Learning Center

NEW CONSTRUCTION / RENOVATION LEGEND

A	Library
B	Roberts Hall
C	Trades Building
D	Firefighter Training Tower
E	Fire Station
F	Pickleball Pavilion
G	Field Support Facility
H	Child Care Center

* Skagit Playfields (Skagit County Parks and Recreation)

N

0 300'

Figure 9. 15-Year Development Plan

Mt Vernon Subdivided Plant Lists

Parking Windbreak Trees

Adapted (non-native):

Trees

Botanic Name	Common Name	Min. Spacing	Notes
Acer platanoides 'Columnare'	Columnar Norway Maple	10' o.c.	50'X15', Columnar
Fagus sylvatica 'Dawyck'	Dawyck Beech	15' o.c.	50'X25', Columnar
Populus tremuloides 'Erecta'	Sweedish Aspen	7' o.c.	40'X10', Columnar

Parking Island Trees

Adapted (non-native):

Trees

Botanic Name	Common Name	Mature Size	Notes
Gleditsia triacanthos var. inermis	Thronless Honeylocust	50'X50'	6' min. branching ht.
Tilia cordata 'Corzam'	Chancole Linden	35'X20'	6' min. branching ht.
Ulmus 'Frontier'	Frontier Elm	15' wide	6' min. branching ht.
Ulmus 'Homested'	Homested Elm	60'X40'	6' min. branching ht.
Ulmus Parviflora 'Emer I'	Athena Classic Elm	30'X35'	6' min. branching ht.
Zelkova serrata 'Greenvase'	Greenvase Zelkova	45'X40'	6' min. branching ht.
Zelkova serrata 'Village Green'	Village Green Zelkova	45'X40'	6' min. branching ht.

Formal Areas

Native:

Trees

Botanic Name	Common Name	Mature Size	Notes
Betula nigra ' Heritage'	Heritage River Birch	40'X40'	4' min. branching ht.
Chamaecyparis nootkatensis	Yellow Cedar	60'X30'	branching to ground
Cornus 'Eddie's White Wonder'	Eddie's White Wonder Dogwood	20'X15'	5' min. branching ht.
Quercus garryana	Western White Oak	60'X60'	5' min. branching ht.
Thuja plicata	Western Red Cedar	120'X60'	branching to ground
Tsuga mertensiana	Mountain Hemlock	30'X15'	branching to ground

Shrubs and Groundcovers

Botanic Name	Common Name	Spacing	Notes
Amelanchier alnifolia	Serviceberry	10'	
Arctostaphylos uva-ursi	Kinnikinnick	12"	
Gaultheria shallon	Salal	18"	
Mahonia compacta	Compact Oregon Grape	3'	
Mahonia nervosa	Dwarf Oregon Grape	2'	
Myrica californica	California Bayberry	6'	
Pachistima myrsinites	Oregon Box	24"	
Pachistima canbyi	Canby Paxistima	24"	
Physocarpus capitatus	Pacific Nine-bark	6'	
Ribes sanguineum	Red-flowering Currant	5'	
Rhododendron macrophyllum	Pacific Rhododendron	5'	
Spiraea betulifolia	Shiny-leaf Spiraea	3'	

Perennials and Ferns

Botanic Name	Common Name	Spacing	Notes
Anthyrium filix-femina	Lady Fern	24"	
Camassia quomash	Camas	9"	
Fragaria chiloensis	Beach Strawberry	12"	
Iris tenax	Oregon Iris	12"	
Juncus effusus	Soft Rush	30"	
Maianthemum dilatatum	False Lily of the Valley	12"	shade
Oxalis oregana	Oregon Oxalis	12"	shade
Similacina racemosa	False Solomon's Seal	24"	shade
Tolmiea menziesii	Youth-on-age	18"	shade

Vancouveria hexandra	Inside Out Flower	18"	

Adapted (non-native):

Trees

Botanic Name	Common Name	Mature Size	Notes
Acer X freemanii	Freeman Maple	40'X30'	5' min. branching ht.
Acer grandidentatum 'Schmidt'	Rocky Mt. Glow Maple	25'X20'	Columnar
Acer griseum	Paperbark Maple	30'X20'	4' min. branching ht.
Acer platanoides 'Columnare'	Columnar Norway Maple	50'X15'	5' min. branching ht.
Acer rubrum 'Scarsen'	Scarlet Sentinel Maple	40'X25'	5' min. branching ht.
Acer saccharum ' Commemoration'	Commemoration Sugar Maple	50'X35'	5' min. branching ht.
Acer saccharum 'Green Mountain'	Green Mountan Sugar Maple	50'X35'	5' min. branching ht.
Acer saccharum 'Legacy'	Legacy Sugar Maple	50'X35'	5' min. branching ht.
Aesculus x carnea 'Briotii'	Red Horsechestnut	30'X35'	5' min. branching ht.
Amelanchier x grandifolora 'Autumn Brilliance'	Autumn Brilliance Serviceberry	20'X15'	
Carpinus caroliniana	Musclewood	25'X20'	5' min. branching ht.
Carpinus japonica	Japanese Hornbeam	20'X25'	5' min. branching ht.
Cornus controversa 'June Snow'	Giant Dogwood	30'X20'	5' min. branching ht.
Cornus kousa 'Chinensis'	Kousa Dogwood	20'X20'	5' min. branching ht.
Davidia involucrata	Dove Tree	40'X30'	5' min. branching ht.
Fagus sylvatica straight species	Silver Beech	50'X40'	5' min. branching ht.
Fagus sylvatica 'Dawyck'	Dawyck Beech	50'X25'	3' min. branching ht.
Magnolia denudata	Yulan Magnolia	40'X40'	5' min. branching ht.
Metasequoia glyptostroboides	Dawn Redwood	50'X25'	branching to ground
Parrotia persica	Persian Parrotia	30'X20'	4' min. branching ht.
Populus tremuloides 'Erecta'	Sweedish Aspen	40'X10'	branching to ground
Prunus x yedoensis 'Akebono'	Akebono Flowering Cherry	25'X25'	5' min. branching ht.
Quercus coccinea	Scarlet Oak	60'X40'	6' min. branching ht.
Quercus frainetto	Italian Oak	40X30'	6' min. branching ht.
Quercus rubra	Red Oak	60'X45'	6' min. branching ht.
Sequoiadendron giganteum	Giant Sequoya		branching to ground
Sophora japonica 'Regent'	Japanese Pagodatree	40'	5' min. branching ht.
Sorbus aucuparia 'Michred'	Cardinal Royal Mountain Ash	35'X20'	5' min. branching ht.
Styrax japonica	Japanese Nowbell	25'X25'	3' min. branching ht.
Taxodium distichum 'Mickelson'	Shawnee Brave Bald Cypress	20'	5' min. branching ht.
Taxodium distichum straight species	Bald Cypress	55'X35'	5' min. branching ht.
Ulmus 'Frontier'	Frontier Elm	15'	6' min. branching ht.
Ulmus 'Homested'	Homested Elm	60'X40'	6' min. branching ht.
Ulmus Parviflora 'Emer I'	Athena Classic Elm	30'X35'	6' min. branching ht.
Zelkova serrata 'Greenvase'	Greenvase Zelkova	45'X40'	6' min. branching ht.
Zelkova serrata 'Village Green'	Village Green Zelkova	45'X40'	6' min. branching ht.

Shrubs and Groundcovers

Botanic Name	Common Name	Spacing	Notes
Abelia x grandiflora 'Rose Creek'	Rose Creek Abelia	42"	
Buxus microphyll a 'Compacta'	Little-leaf Boxwood	24"	
Choisya ternata	Mexican Mock-orange	5'	
Cornus sericea 'Islanti'	Istanti Red Osier Dogwood	4'	
Cornus sericea 'kelseyii'	Dwarf Red Twig Dogwood	3'	
Cotoneaster dammeri	Bearberry Cotoneaster	2'	
Hydrangea quercifolia 'Pee-Wee'	Dwarf Oakleaf Hydrangea	3'	
Ilex crenata 'Compacta'	Japanese Holly	3'	
Lonicera pileata	Box-leaf Honeysuckle	30"	
Pachysandra terminalis	Japanese Spurge	12"	
Pieris japonica	Andromeda	5'	
Potentilla fruiticosa	Sinquifoil	4'	
Prunus laurocerasus 'Mt Vernon'	Mt Vernon Laurel	3'	
Rosa rugosa	Rugosa Rose	3'	
Rhododendron 'PJM Princess Susan'	Compact PJM Rhododendron	4'	
Sarcococca hookeriana var. humilis	Sweet Box	2'	
Spirea japonica 'Little Princess'	Little Princess Japanese Spirea	30"	
Spirea japonica 'Magic Carpet'	Magic Carpet Japanese Spirea	30"	
Viburnum acerifolium 'Nana'	Nana Cranberrybush Viburnum	30"	

Viburnum davidii	David Viburnum	4'	
Viburnum trilobum 'Compactum'	Dwarf Cranberrybush Viburnum	30"	

Perennials, grasses, and Ferns

Botanic Name	Common Name	Spacing	Notes
Epimedium X rubrum	Barrenwort	18"	
Euphorbia amygdaloides robbiae	Mrs Robb's Bonnet	12"	
Geranium macrorrhizum	Bigroot Cranesbill	18"	
Hakonechloa macra	Japanese Forest Grass	30"	
Hemerocallis	Daylily	24"	
Heuchera sp.	Coral Bells	12"	
Iris "Pacific Coast Hybrids"	Pacific Coast Hybrid Iris	12"	
Liriope sp.	Lily Turf	18"	
Miscanthus sinensis 'Yakushima'	Dwarf Maiden Grass	36"	
Oxalis ssp	Wood Sorrel	18"	
Pennisetum alopecuroides 'Hameln'	Dwarf Fountain Grass	36"	
Penstemon sp	Beardtongue	18"	
Sedum X 'Autumn Joy'	Autumn Joy Sedum	18"	

Rain Garden/Wetland

Adapted (non-native):

Trees

Botanic Name	Common Name	Spacing	Notes
Betula nigra ' Heritage'	Heritage River Birch	20'	
Salix hookeriana	Hooker's Willow	15'	

Shrubs and Groundcovers

Botanic Name	Common Name	Spacing	Notes
Cornus sericea 'Isanti'	Dwarf Redtwig dogwood	4'	
Gaultheria shallon	Salal	18"	
Spiraea douglassii	Hardhack	4'	

Perennials, grasses, and Ferns

Botanic Name	Common Name	Spacing	Notes
Caltha palustris	Bog Marigold	12"	
Carex kelloggii	Sedge	18"	
Iris versicolor	Blue Flag Iris	18"	
Juncus effusus	Common Rush	18"	
Mimulus ringens	Monkeyflower	18"	

1) Design Kit

a) Furnishings

Standardization of furnishings can lend a cohesive air to the campus and simplify maintenance, repair and replacement. While individual spaces may have their own themes and styles that dictate a variation in furnishings, use at least some of the standard design elements, and use standard furnishings in interstitial spaces.

i) Seating

Hudson Bench from Forms+Surfaces

Model: Various companies sell products in this style, though some research may be required to find the right piece for a given application. For example, for a wooden seat on a seat wall, the new plaza at Mt Vernon used the "Sonoma" bench, available from Landscape Forms Inc.,(Tim Gish, (800) 430-6206 ext 1319). For a stand-alone bench, they used "Hudson" from Forms+Surfaces, (Mike Benz, (425) 996-6192). Columbia Cascade, a company close enough to achieve MRc5, regional materials, also has a similar model.
Finish: Natural weathering wood
Mounting: Varies
LEED Credits: MRc4- Recycled Content, MRc5- Regional Materials, MRc6- Rapidly Renewable Materials, MRc7- Certified Wood

ii) Bicycle Rack

Key Bicycle Rack

Model: "Key" Bicycle Rack from Landscape Forms Inc., (Tim Gish, 800-430-6206 ext 1319) , or approved equal.

Constructed of high density polyurethane plastic molded over galvanized ASTM A513 carbon steel tubing. Base is cast aluminum.

Finish color: red.

Mounting: Embedded.

Recycled material content: minimum 43%.
LEED Credits: MRc4- Recycled Content, SSc4.2- Bicycle Storage and Changing Rooms

iii) Bicycle Shelter

Van-Gard Bicycle Shelter

Model: Van-Gard, 9' deep, length varies, with black or accent color powder coat steel structure by Duo-Gard, Tel: (734)207-9700. Install shelter per manufacturer's instructions. Provide shop drawings.

iv) Waste Receptacles

Model: Cascadia, CCT series, Steel Trash Receptacle Manufactured by Creative Pipe, Inc. 1-800-644-8467 (manufacturer within 500 mi) or approved equivalent.

Features: Side-opening. Optional canopy for exposed locations.

Finish Color: grey or black

LEED Credits: MRc4- Recycled Content, MRc5 Regional Materials

v) Bollards

(1) Ornamental Bollards

These bollards separate vehicular traffic from pedestrian walkways in high-profile areas. They may be removable in locations where certain vehicular traffic will need to be admitted periodically.

Specification: 6" round bollard with slightly domed top
Model: Creative Pipe CBR-6-DT or approved equivalent
Finish: stainless steel or gray or black powder coat to match other site furniture.
6" schedule 40 pipe with slightly domed top, as pictured from Creative Pipe, Inc. (manufacturer within 500 mi) or equivalent.

Removable model: CBR-6-RE-DT

LEED Credits: MRc4- Recycled Content, MRc5 Regional Materials

(2) Utilitarian Bollards

These bollards protect structures in service areas or low-profile areas, like loading docks and maintenance areas, garbage enclosures, etc.
Specification: 6" steel pipe bollard, cast into the ground and filled with concrete, provide domed top, and paint with yellow reflective paint.

Round Bollard with Slightly Domed Top

vi) Lighting

(1) On Standards

(a) Pedestrian Scale:

Model: Kim Lighting Architype Small, standard type 5, with tamper-resistant latch. Previous installations have been Metal Halide. Consider the LED version for power conservation and cost savings.

finish: Light Grey

(b) Parking Lot Scale:

Model: Kim Lighting Architype Large, Standard Type 3, with tamper-resistant latch. Previous installations have been Metal Halide. Consider the LED version for power conservation and cost savings.

Finish: Light Grey

(2) Lit Bollards

Bega 8657 LED

Model: Bega 8657 LED, http://www.bega-us.com/productdetail.aspx?groupid=264&itemid=5913&familyid=21

Finish: Grey

LEED Credits: SSc8.1- Light Pollution Reduction, EAc1- optimize energy performance

b) Planting

i) Species Selection

The included plant list is a starting point. It is possible that, through trial and error, a few plants on the list may prove unsuitable. It is likely that staff and project designers will have other favorite species that have performed well on campus. Consult with campus maintenance staff and resources at the end of this document to evaluate plant lists for specific projects. Select additional species and evaluate current species using the following plant selection criteria.

(1) Mt Vernon Campus has opportunities for connection with the surrounding agricultural context through planting selection. Rows of trees reminiscent of wind rows shelter pedestrian corridors through the parking lot. Repetition of this feature or other regional plant materials or practices are an opportunity to acknowledge the valley's agricultural heritage.

(2) Select pest-resistant species to minimize application of pesticides or herbicides.

(3) Use native and adapted species. Native plantings evolved to withstand Skagit County's wet winters and dry summers and are therefore generally good choices. Some species have proved adaptable to local conditions because they are versatile or evolved under similar conditions. These may also be good selections.

(4) Keep plantings low and trees trimmed up high to maintain sightlines for CPTED.

(5) In order to prevent pests or diseases of a specific tree species taking out a whole group of plantings, mix plant species and don't create vast stands or only use one species of street tree for more than a block.

ii) Planting- Best Practices

(1) Maintain 3"-6" depth of mulch pulled away from the base of plantings in shrub and perennial beds, and a 3' dia. ring of mulch around the base of trees, min. Trees may benefit from mulching from their trunks to as far out as their driplines to reduce competition between turfgrass and surface roots. This mulched bed may be a good place for less competitive plantings.

(2) Soil in new planting beds should be tested and recommendations for amendments followed when preparing new beds for planting. These recommendations should be based on the type of planting intended. For example, woody plantings have different requirements from herbaceous, and some plants do better and are more competitive in nutrient- poor soils.

(3) Mt Vernon plantings should be placed to preserve views of the mountains.

LEED credits: SSc2-Brownfield Redevelopment, SSc5.2- Protect or restore Habitat, SSc6.x Stormwater Quantity and Quality, SSc7.1 Heat Island Effect, WEc1 Water-Efficient Landscaping, MRc5 Regional Materials

c) Irrigation

i) Equipment

(1) Drip Irrigation
'Drip irrigation' applies water directly into the soil reduces evaporation related loss of irrigation water. This can save between 5% and 20+% of the applied water. Drip systems generally cost between 10% and 20% more to install than pop-ups sprinkler systems so there must be a calculation which demonstrates that this extra cost is justified by the benefits—environmental and financial-- of water use reduction.

(2) Drip irrigation problem solving
Model: "CV" dripper line by Netafim

(3) Drip irrigation is a relatively new technology. Many maintenance teams prefer traditional sprinkler systems which have been developed and are relatively standard. Earlier styles of dripper line required that it be placed on top of soil and mulch, leading to degradation by sun, maintenance damage, and vandalism. When installation requirements were not followed and pipe was installed below the surface the emitters became clogged, reducing the usefulness of the dripper line. New "CV" dripper line by Netafim has an improved emitter with a check valve which allows for burial of the pipe, thus eliminating this serious draw back. Though technology has overcome many problems, maintenance teams may still be reluctant to adopt drip, and it is not appropriate in certain settings. The following may help the designer address some of the most common problems and concerns.

(a) Locating Leaks:
One complaint is that a drip system does not allow maintenance staff to conveniently verify the operation of the drip zones; if a zone or portion of a zone stops functioning, the only way it is known is if the plants become stressed or die.

(i) Action items:

1. Monitor moisture levels, either by hand or with a moisture sensor
2. Install an emitter at the end of the zone to indicate system function.

(b) Emitter clogs
Another complaint is that the small size of the water emitting ports makes drip systems vulnerable to clogging.

(i) Action items:

1. Install pre-filtering or screening to remove water-borne particles.

(c) New planting failure
The tighter soils of plant root balls absorb water more slowly. Until roots grow beyond the root balls, they are at a serious risk of drying out.

(i) Action Items:

1. Supplement with temporary sprinkler irrigation systems until new plantings are established

(d) Surface line breakage
Because of the placement of the drip lines near the surface, they are vulnerable to exposure and weathering, vandalism, or damage from bed maintenance.

(i) Action items:

1. Do not use drip irrigation in high-traffic areas, beds that are often disturbed or replanted, like annual beds, or steep or erosion-prone areas.
2. Make maintenance staff aware of location of lines.
3. Integrating drip systems at a facility
4. Trial run
Evaluate and gain experience with drip irrigation by establishing a trial bed before implementing it on a larger scale.
5. Involve staff in the decision to use drip irrigation. Their needs, suggestions, cooperation, and problem-solving will be a major factor in the success of this new technology.

(4) Sprinklers and Rotators
For use in shrub beds, ground covers, planting beds and smaller lawns.

Model: Hunter MP Rotator or similar. Hunter MP Rotators are recommended in all lawn areas and in shrub beds. The multi-trajectory rotating streams apply water at a slower application rate and in a more even distribution than traditional spray heads. Increased efficiency results in up to 30% water reduction compared to traditional spray nozzles. Other brands are developing similar products and may also be acceptable.

(a) All sprinklers and rotors shall be part of a pop-up assembly. They shall pop up 4 inches in lawn areas and 6”-12” in planting beds, depending on the height of the planting.

(b) All connections to rotors and sprinklers shall be to the bottom port of the pop-up body.

(c) All sprinklers and rotors shall be connected to lateral pipe with pre-manufacture triple action schedule 40 or 80 swing joint assemblies.

(5) Rotors
For use in larger lawns and athletic fields. Rotors are less efficient and require separate zones for each head type. Where possible, use rotators instead.

Model: HUNTER I-40 or similar

ii) Installation Standards
When materials and equipment are well installed they provide superior performance and do so for a longer period of time and with less repairs and adjustments needed. These are savings that represent the sustainable practices. The following presents recommendations for detailing and specifying which will achieve these types of sustainability benefits.

(1) Backfill Materials

- Irrigation trench backfill should only use clean sand and soil. There should be no stone, gravel, and debris allowed in backfill material. Such materials damages pipe during the backfilling operations and over time will cause holes to be worn through pipe walls. Such pipe damage leads to wasting of water. Fixing such damage requires significant time and money.
- Where soils are rocky, pipes should be set on a 3 inch deep layer of clean sand or soil. This will protect the pipe from being damaged by the in-situ stone.

(2) Mainline, Lateral, and Sleeve Pipe

- All lateral and mainline pipes shall be schedule 40 PVC.
- Sleeves shall be schedule 80 PVC
- Sleeves shall be provided for all pipe and wire passing below paving and curbs and below or through walls. The sleeve shall be sized to allow for free and unhindered passage of pipe and wire and shall have an inside diameter at least 2 inches greater that the outside diameter of all pipe within.
- Sleeves shall extend at least 12 inches beyond the edge or face of pavements, curbs, and walls passing under.
- 1 1/2” size surveyors “Mag” nails shall be provide in the top of pavements and curbs and in the face of walls, 2” above finish grade. These sleeve marking nails shall be set directly above and centered on the sleeve below. Sleeves ends shall remain exposed or be exposed to allow the Owner to view the installation and approve location.

(3) Pipe Depth and Position

- All pipes should be installed with at least 18” and no more than 24” of cover.
- Pipes set at a common depth, with at least 3” of horizontal separation, also improves maintenance efficiency by allowing individual pipes to be located, exposed, and repaired without damaging and having to dig under other pipes. This reduces the time required to make a repair and reduces the chances of damaging another pipe during the repair operation.
- Pipe shall remain exposed until after inspection by Owner to assure compliant installation.

(4) Control Valve Assemblies

- Union fittings should be provided on both sides of the control valve and a manual shut off valve (ball valve) should be provided on the up-stream side of each valve.
- Only one control valve shall be installed in each valve box. Valve boxes shall be the rectangular type, standard size or jumbo sized as needed to fit the entire assembly within the box

- There shall be 1/2”-1” size round river pebble at least 10” deep below the entire area of each valve box. This stone shall be clean and free of dirt and debris. The valve shall be set on top of this layer of stone
- Valve boxes shall be set on brick or concrete pavers to prevent vertical deflection under load
- Pipe passing through the ends of valve boxes shall have at least 2” of clearance on the sides and 3” above, between the outside of the pipe and the valve box edges
- Each valve shall have a plastic label affixed indicating the zone number and controller designation on both sides. The zone number must match the number of the station in the controller which operates that control valve
- The top of the valve shall be set 6” below the top of the valve box lid
- The valve shall be set above the level of the pipes connecting at both ends and shall be brought up to this level with symmetrical nipples and elbows.

(5) Isolation Valves

- Brass, line size, ball type manual valves, with unions on both sides shall be installed on mainlines at all branches in mainlines, as needed to isolate mainline loops into at least two sections, and at no more than 500 feet on center (max
- Isolation valves shall be accessed via a standard rectangular valve box (standard or jumbo size as needed) with extensions as needed

(6) Drain Valves

- Manual drain valves shall be provided as needed to allow for gravity drainage of all mainlines and lateral lines. (There shall be no presumption that irrigation lines will be clear by ‘blowing out’. Complete drainage must be achieved by gravity flow to the manual drain valves.)
- Provide a manual drain valve at all low points on mainline and laterals. Additionally a drain valve shall be provided just up-stream of each control valve and at one end of mainline piping passing through sleeves.
- Manual drain valves shall be connected to the bottom of piping being drained and the entire drain line and valve outlet shall be at least 2 inches below that level and be sloping positively to the drain outlet.
- Manual drain valves shall be 3/4 inch size brass gate valves pointed down into a 3 foot deep, 12 inch diameter round pebble-filled sump.
- 10” round valve box with schedule 40 PVC pipe shall be provided over and for access to the drain valves. There shall be at least 3 inches clear between piping to the valve and the edge of the access pipe and box. The bottom of the access assembly shall be set upon (3) 4x8 bricks.

(7) Quick Couplers

- 3/4” brass quick coupler shall be provided at a spacing of no more than 150 feet on center along mainline.

- The quick couplers shall be connected to the mainline with triple action pre-manufactured schedule 80 PVC swing valve assemblies.
- Quick couplers shall be installed in a 10” diameter valve box with (3) 4x8 bricks supporting the valve box base. Piping to the coupler shall have at least 3” of clearance above and 2” on all sides from the edge of the valve box wall penetration.
- The quick coupler shall be attached to a #4 rebar with (2) stainless steel screw adjustable ban clamps. The rebar shall extend up to 1/2” below the bottom of the coupler lid and be driven at least 24 inches into firm sub-grade soils
- The top of the quick coupler shall be set no more than 4 inches below the top of the valve box.
- The quick coupler shall be situated within the box as needed to allow for unimpeded connection.

iii) Strategies for Sustainability

(1) Provide central monitoring and control of irrigation systems to allow for efficient and timely adjustment, automatic shutting down of areas when breaks occur, and collection of data for easy review of water use;

(2) Provide in-ground moisture sensors to determine the moisture content of soils in the root zones to better understand how and when to apply water;

(3) Select or supplement control stations with weather data features that automatically adjust watering to account for future precipitation.

(4) Allow secondary lawn areas to go dormant during the summer months. Summer is a time when few students will be on campus and when water demand is highest. For safety purposes, sports fields should be irrigated as needed to maintain a soft playing surface.

(5) Maintenance best management practices include the following:

(a) Mow with lightweight mulching mowers,

(b) Aerate,

(c) Top dress, and over-seed lawn

(d) Water deeply but infrequently to promote deeper root development, helping trees grow deeper, more stable roots, and lawns grow deeper roots that take advantage of environmental water and build up less thatch.

iv) Staff Training and Collaboration

(1) Provide staff with training and educational resources to keep up on relevant science and technology, especially when introducing new irrigation strategies.

(2) Consult maintenance staff when considering irrigation strategies. Take advantage of local knowledge and recognize staff capabilities and maintenance budget constraints.

v) Water Harvesting

Water harvesting reduces potable water applied to the landscape and purchased from utilities by collecting rainwater from roofs and impermeable surfaces, such as parking lots and plazas, and storing it for later use in irrigation. Unfortunately, Rain water harvesting for irrigation in the Pacific Northwest requires huge volumes of storage to compensate for the seasonality of rain and irrigation. The Mt. Vernon campus receives, on average, 33 inches of rainfall per year. With this amount of rainfall, water harvesting may be a feasible option, given sufficient storage. Storage options can take the form of an open reservoir such as a pond, or an underground storage facility. Underground storage and related pumping and piping can cost in the range of $0.50-$1.00 per gallon of water stored.

Perhaps a more feasible option is harvesting greywater--discarded building water produced by sinks and showers--for irrigation. A smaller volume of storage would be required, where greater was constantly replenished. In a campus setting, however, we have the same problem; more grey water is produced during the school year when less irrigation is required anyway.

Unless municipal water costs are extremely high, the costs of installing and maintaining water storage facilities rarely make economic sense. Water harvesting must be seen by the institutions as integral to their sustainability culture, its value based on ecology and the environment, rather than finances.

LEED Credits: WEc1-Water-Efficient Landscaping

vi) Design

<u>Zoning</u>

Subdivide areas to be irrigated by planting type and microclimate, that is, slope, sun exposure, and wind exposure, or any other factors that may affect water use. Further divide areas that require more water than the school water pressure can support. These subdivided areas are zones. Each zone operates on its own valve.

d) Paving

Abbotsford Saturna Tan

Wausau Tile EP-40, SRI=33.3

Wasau Tile EG-20, SRI=33.p

i) Pavers:

Size: 24”X24” square

Color: Tan

Finish: Exposed aggregate.

Use: Incorperate pavers in plazas and at site boundaries.

Model: Abbotsford Saturna HydraPressed Slabs have some precedence on site, as they were used at Mt Vernon Community College’s Lewis Hall, in Tan. Please note, this product meets **LEED MRc5 Regional Materials**, but not **SSc7 Heat Island Prevention**. Consider a project’s LEED credit list and a site’s microclimate when deciding whether to use this product. Tan 24”X24” pavers are available from many other companies as well. For instance, very similar products with lower SRI values are available from Wausau Tile. Wausau’s EG-20, a tan exposed granite tile, qualifies for **credit SSc7**. Wausau’s EP-40, a tan EcoPremeir paver, contains shells and post-industrial porcelain qualifies for **SSc7 Heat Island Reduction** and contributes to **MRc4, recycled content**.

When considering an alternative product, consider whether the proposed pavers will clash with adjacent existing paving.

ii) Concrete:

(1) Walkways: Grey Concrete with a broom finish perpendicular to the direction of travel. Primary walkways- 10’ wide. Secondary walkways- 8’ wide.

(2) Plazas: Sand-blasted grey concrete.

LEED Strategies: **SSc7.1 Heat Island Prevention-Non-roof**: establish a maintenance plan to power-wash the walks every two years to maintain an SRI of at least 29.

e) A mow strip, that is, a buffer around obstacles in the lawn and along buildings, will simplify mowing, minimize edging and trimming, and reduce accidents and wear on equipment. Mow strips can be concrete, pavers, asphalt or even mulch that is renewed regularly, anything that simplifies the outline of obstacles and creates a simplified outline.

STATE ENVIRONMENTAL POLICY ACT (SEPA)
ENVIRONMENTAL CHECKLIST

GENERAL INFORMATION & INSTRUCTIONS:

Applicant's need to download the SEPA Instructions found on the City's Permit Portal before trying to complete this document. The SEPA Instructions outline the items the Applicant will need to have completed before trying to complete this checklist.

The City and others use this checklist to help determine whether the environmental impacts of your proposal are significant. This information is also helpful to determine if available avoidance, minimization or compensatory mitigation measures will address the probable significant impacts or if an environmental impact statement will be prepared to further analyze the proposal.

This environmental checklist asks you to describe information about your proposal. Each question is required to be answered accurately and carefully. You may need to consult with an agency specialist or private consultant for some questions. You may use "not applicable" or "does not apply" **only** when you can explain why it does not apply and not when the answer is unknown. You may also attach or incorporate by reference additional studies reports. Complete and accurate answers to these questions will help to avoid delays with the SEPA process as well as later in the decision-making process.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects.

As allowed under State law the City has adjusted the format of this template to ensure Applicant's are providing all of the information needed to complete the SEPA process.

NON-PROJECT PROPOSALS:

For nonproject proposals (such as Rezones, Comprehensive Plan Amendments, and Code Amendments), complete the applicable parts of sections A and B plus the SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS (part D). Please completely answer all questions that apply and note that the words "project," "applicant," and "property or site" should be read as "proposal," "proponent," and "affected geographic area," respectively.

FORMAT & SUBMITTAL OF THIS DOCUMENT:

After filling out this document Applicant's need to save it as a PDF to a hard drive with the name SEPA Checklist. This is important because this document will need to be uploaded into the City's Permit Portal as a Native PDF – not a scanned copy.

If you have questions about what is required please download the SEPA Checklist Instructions off of our Permit Portal, call our department, or email one of our Permit Technicians at: 360-336-62314 or PermitTech@mountvernonwa.gov

A. BACKGROUND [HELP]

1. Name of proposed project, if applicable:

Skagit Valley College Master Plan

2. Name of applicant:

Skagit Valley College

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

2405 E College Way
Mount Vernon, WA 98273
Contact: Tim Wheeler, Director of Facilities and Operations
(360) 416-7751

4. Date checklist prepared:

December 2020

5. Agency requesting checklist:

City of Mount Vernon

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

The projects within the master plan are spread over the next 15 years. A few are scheduled to begin immediately while others are anticipated within a 10-15 year timeline.

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

No

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

Skagit Valley College 15-Year Master Plan document, November 2020
Skagit Valley College Master Plan Drainage Report, November 2020
Skagit Valley College Master Plan Transportation Study

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

Building permit submittal review for the child care center will occur concurrently with the master plan.

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

Building permits, fill and grade permits, site plan approvals, master plan approval and right-of-way and utility permits from the City of Mount Vernon from each project.

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)

The Skagit Valley College Master Plan Update 15-Year Development Plan addresses the replacement or renovation of buildings on the Mount Vernon campus that have limited remaining life. This includes the following projects:

- Renovation of Roberts Hall (33,281 GSF)
- Replacement of the Diesel Building with a 55,000 GSF Trades Building
- Consolidating Ford Hall, the Cole Library, and the Administration Annex into a 56,300 GSF Multipurpose Classroom and Library Building
- Construction of the 6,300 GSF Fire Station
- Relocation of the 5,100 GSF Fire Fighter Training Tower
- Construction of a 4,150 GSF Child Care Center
- Construction of a 24,700 GSF Pickleball Pavilion
- Construction of a 5,000 GSF Field Support Facility with restrooms, locker rooms, offices and concessions to support the ball fields and replace the existing field house uses.

New and redeveloped infrastructure such as utilities, parking lots, and landscaping will be constructed or modified to support these facilities and the college's planning goals.

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

Skagit Valley College's Mount Vernon Campus encompasses 96 acres and 30 buildings. It is not far from downtown and about 1.5 miles east of Interstate 5 within the northwest quarter of Section 16, Township 34 North, Range 4 East, W.M. The campus is located in a transition zone between urban and suburban developments to the south and west and residential areas to the north and east. Dense trees along the north campus boundary provide a buffer to residential neighborhood, while city streets define the west and south edges.
College address: 2405 E College Way, Mount Vernon, WA

Reference the Master Plan document for a vicinity map.

Parcels: P25895, P25896, P25682, P25685, P101588, P25063, P24958, P24951, P24954, P24949, P24962, P25059, P25057, P25040, P25055, P25052, P25012, P25010, P25008, P25006

B. ENVIRONMENTAL ELEMENTS [HELP]

1. EARTH [HELP]

a. General description of the site:

Check One:

- ☐ Flat
- ☒ Rolling
- ☐ Hilly
- ☐ Steep Slopes
- ☐ Mountainous
- ☐ Other – explain 'other' here:

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

The site generally slopes from north to south and ranges between one and eight percent. The average slope is three percent.

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

The primary soils are Bow gravelly loam and Skipopoa silt.

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

None known.

e. Answer the questions and complete the table below to describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill.

Will filling, excavation and/or grading occur as part of the project: ☒ Yes ☐ No

List the total cubic yards of fill proposed: 1,000 cubic yards

List the total cubic yards of excavation proposed: 8,000 cubic yards

List the total cubic yards of grading proposed: 24,000 cubic yards

List the area (in s.f.) that will be disturbed with filling, excavation and/or grading: 516,600 SF

List the location fill material be imported from:

Fill materials will be obtained from approved sources, likely within Skagit County.

Describe the purpose and type of filling, excavation and/or grading that is proposed:

Some fill, excavation, and grading will be required for building foundtations, parking lots, and walkways, and stormwater facilities.

Provide other details regarding the filling, excavation and/or grading below:
The design of each project will first attempt to balance cut and fill volumes within the project. If this proves infeasible, then export or import will occur.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.
Erosion typical of construction activities could happen during construction. Full Erosion and Sediment Control (ESC) plans, including turbidity and pH monitoring, will be developed and implemented as part of the permitting process for each project.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?
Approximately 50% of the campus will be covered with pavement or buildings upon completion of the 15-year Development Plan.

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

Best Management Practices from the current Departemnet of Ecology's Stormwater Manual will be implemented to educe and control erosion and other impacts.

2. AIR [HELP]

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

Dust and exhaust from construction equipment during construction.

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

None known

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

Contractor is responsible for controlling dust during construction.

3. WATER [HELP]

a. Surface Water: [help]

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

Wetlands are present to the east of the college property. No college development is proposed within this area. The Skagit County Parks & Recreation proposal is being evaluated as a separate project.

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

A parking lot and the corner of the Field Support Facility may be within 200 feet of the wetlands to the east of campus. Buffers and special permitting requirements will be observed in the development of these projects.

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

None anticipated.

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

No

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

No. The Flood map for this site is number 5301580001B, effective on 01/03/1985. The site is in Zone C (minimal flood hazard).

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

No

b. Ground Water: [help]

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

No

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

None

c. Water runoff (including stormwater):

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

The source of runoff is stormwater due ot precipitation. Site runoff drains to the Kushan and Trumpeter Creek systems. Stormwater from the west side of campus is conveyed west on East College Way before discharging to Kulshan Creek. The north and east areas of campus flow along N 30th St and East College Way to Trumpeter Creek. See attached drainage report for further detail.

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

Some waste materials not filtered out of the water quality devices on site could enter surface waters. Types of materials would likely be sediment or oil products from vehicles or chemical materials from vegetation control.

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

No

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

Each project has been evaluated in the attached drainage report. Each project will develop and implement a comprehensive drainage system to control and detain surface water runoff during project permitting and construction. There will be no impacts to drainage patterns.

4. PLANTS [HELP]

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

☒ deciduous tree: alder, maple, aspen, other

☒ evergreen tree: fir, cedar, pine, other
☒ shrubs
☒ grass
☐ pasture
☐ crop or grain
☐ orchards, vineyards or other permanent crops.
☒ wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other
☐ water plants: water lily, eelgrass, milfoil, other
☐ other types of vegetation – list here:

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

Vegetation within areas of improvement will be removed or altered.

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

None known

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

Lanscape planning strategies:

- Screen parking with the use of low shrubs around the perimeter of campus
- Use feature plantings to mark vehicular access points with taller plantings set back to maintain safe sightlines for drivers and pedestrians
- As new buildings are added, consider how building entry plazas can be designed to create a transitional space between inside and out
- Connect the site to its cultural context through the use of native plants and local material

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

None known.

5. ANIMALS [HELP]

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

Examples include:

birds: hawk, heron, eagle, songbirds, other:
mammals: deer, bear, elk, beaver, other:
fish: bass, salmon, trout, herring, shellfish, other _____

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

None known

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

The site is part of the Pacific Flyway. There are no known nesting or resting habitats on the site for migrating birds.

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

None

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

None known

6. ENERGY AND NATURAL RESOURCES [HELP]

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

The utility tunnel should be extended where feasible to new buildings. Extensions would allow the campus steam, power, and telecommunications systems to serve new construction.

While the power for the 15-year Development Plan is adequate, providing a second point of electrical service entry into the campus would provide redundancy in power service. As the campus grows a campus fire alarm network should be considered. Such a network would provide more reliability, operational flexibility, and maintenance consistency. The campus currently has an under-utilized clock system which needs to be better utilized in the future.

Proposed Electrical Master Planning Solutions:

- Preserve the locations of Switchgear #2 and #3 in the 15-year Development Plan as these provide distribution of power to the campus
- Consider adding a second utility primary power service from the east or south side of campus, as well as a new primary power switchgear to provide a level of redundancy to the campus utility system. The redundant power supply would allow offloading some of the building services from the heavily utilized Primary Switchgear #2 in the middle of campus
- Provide campus wide-system for fire alarm
- Incorporate electrical systems that are low-maintenance and consider standardizing systems for fire alarm, lighting controls, etc, to reduce impact on maintenance and operations.

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

No known projects

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

Expansion of the utility tunnel will help the overall campus efficiency. Energy conservation features will be incorporated where possible into new and remodeled buildings. Energy usage is monitored by the college. Energy saving devices used on campus include occupancy sensors tied to lighting, etc.

7. ENVIRONMENTAL HEALTH [HELP]

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

1) Describe any known or possible contamination at the site from present or past uses.
None known.

2) Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity.
None known.

3) Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project.
Existing college science labs include some toxic chemicals integrated into the curriculum and the maintenance daprtment keeps chemicals for cleaning and landscape maintenance. Lab chemicals are carefully stored and cataloged and comply with building code requirements.

4) Describe special emergency services that might be required.

None anticipated

5) Proposed measures to reduce or control environmental health hazards, if any:
Lab chemicals are carefully stored and cataloged and comply with building code requirements.
College employees are trained in propoer safety and use procedures of chemicals used on site.

b. Noise

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

There is regular traffic noise along E College Way and N Laventure Road. The north end of campus may produce some of its own operational noise from Diesel and Maintenance programs. There is a Mount Vernon fire station on the west side of N Laventure Road, which has some siren noise audible to the child care centers.

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

Short-term construction noise during each project can be expected during daytime hours. The north end of campus may produce some of its own operational noise from Diesel and Maintenance programs and there will be general noise from buses and people visiting campus. However, these are all previously existing noises that are not expected to increase.

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

Construction will be limited to daytime hours to minimize neighborhood disturbance.

8. LAND AND SHORELINE USE [HELP]

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

The current use of the property is a community college. Residential uses exist to the north, south, and west of the site, which will not be affected by the college's master plan. Businesses such as gas stations, convenience stores, and fast food restaurants border the southwest corner of the site.

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

Not that is known.

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

No

c. Describe any structures on the site.

The campus includes 30 buildings used for various college programs. Reference the existing campus plan in the Master Plan document for further detail.

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

Unused modular buildings, the Cole Library, Ford Hall, the Maintenance Building and the Diesel Building will be demolished over the course of the 15-year plan. The Fire Training Tower will be relocated.

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

The campus is designated as P-Public with a P-P overlay zone at the playfields on the northeast end of the site.

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

The bulk of campus is designated as "Churches, Community College, Schools (P)" and the northern area including the playfields is designated as "Community Park, Neighborhood Park (P)"

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

N/A

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

Currently the eastern border of the site is considered a Type IV wetland.

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

There are approximately 4,300 full time equivalent students and 160 faculty.

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

None

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

None

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

The Master Plan has been submitted to the City of Mount Vernon to ensure the proposed projects are compatable with land uses and future plans.

m. Proposed measures to reduce or control impacts to agricultural and forest lands of long-term commercial significance, if any:

None

9. HOUSING [HELP]

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

None

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

None

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

None

10. AESTHETICS [HELP]

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

Both the Trades Building and Library and Classrooms Building are proposed to be two stories.

Materials: The architectural style and building material palette vary across campus. Buildings on the north side of campus tend to have a more utilitarian style with cladding similar to industrial buildings including metal panel, corrugated metal, concrete and CMU.
Buildings at the campus core are characterized by brick, metal panel, stucco, glass and some limited use of corrugated metal. Detached, exposed steel and concrete structural elements are expressed on some older buildings, either defining entries or as sun screening elements. Brick color tends to vary across the campus. The recent trend has been to unify the campus with a darker red brown brick color used at Angst and Lewis Halls and the Knutzen Cardinal Center renovation.

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

None

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

None. All projects are aimed to improve the aesthetics of campus.

11. LIGHT AND GLARE [HELP]

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

Minor glare can occur off of reflective surfaces such as windows during sunny days. Walkway and parking lot lighting for safety will be visible at night.

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

No safety hazards or interference with views is anticipated.

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

None

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

Security lighting will be kept to the minimum amount necessary to meeting safety and functionality needs.

12. RECREATION [HELP]

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

The campus includes an existing gymnasium, tennis courts, and ball fields.

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

No

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

A pickleball court and small support facility is proposed as part of the Master Plan, enhancing recreation opportunities.

13. HISTORIC AND CULTURAL PRESERVATION [HELP]

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

None known

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

None known

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

None

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

None known

14. TRANSPORTATION [HELP]

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

Primary access to the site is off of E College Way. Additional access points to the main campus and the entry to the child care centers are off of N Laventure Road. See maps in Master Plan document.

b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop? Information on public transit is available from Skagit Transit, click HERE to be directed to their website.

Skagit Transit buses serve the campus with stops on N Laventure Road and immediately in front of the Cardinal Center.

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

The project proposed eliminating 61 stalls over the course of the master plan development.

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

(Note to Applicant's from the City: the answer to this question is generally found in the Traffic Concurrency completed by the City for a project. Most projects need to have their Traffic Concurrency completed before an Applicant can answer this question)

None expected. Pending traffic concurrency to confirm.

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

No

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

(Note to Applicant's from the City: the answer to this question is generally found in the Traffic Concurrency completed by the City for a project. Most projects need to have their Traffic Concurrency completed before an Applicant can answer this question)

Pending traffic concurrency

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

No

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

Reference the college's pending traffic management plan

15. PUBLIC SERVICES [HELP]

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

The existing need for public services will remain about the same.

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

The college will pay impact fees as assessed with each project by the city.

16. UTILITIES [HELP]

a. Check the box indicating utilities currently available at the site:

- ☒ electricity
- ☒ natural gas
- ☒ water
- ☒ refuse service
- ☒ telephone
- ☒ sanitary sewer
- ☐ septic system
- ☒ other – explain 'other' here: fiber optic lines

c. Complete the table below to describe the utilities that are proposed for the project, the utility providing the service,and the general construction activities on the site or in the immediate vicinity which might be needed.

TYPE OF UTILITY	PROPOSED	SERVICE PROVIDER	SIZE (in Dia. or Ac-ft)	LINEAR FEET
Sanitary Sewer	☒ Yes ☐ No	Privately-owned pipe connecting to City of Mount Vernon system	8"	TBD during design
Stormsewer Conveyance Lines	☒ Yes ☐ No	Privately-owned pipe connecting to City of Mount Vernon system	8", 12", 18"	TBD during design
Stromwater Treatment Facilities	☒ Yes ☐ No	Privately-owned facilities connecting to City of Mount Vernon system	NA	NA
Stormwater Pond/Vault	☒ Yes ☐ No	Privately-owned facilities connecting to City of Mount Vernon system	254,000 cf or 5.8 Ac-ft	NA

Potable Water	☒ Yes ☐ No	Skagit PUD	6”, 8”, 12”	TBD during design
Fiber	☐ Yes ☐ No		NA	NA
Electricity	☒ Yes ☐ No	Puget Sound Energy	NA	NA
Natural Gas	☒ Yes ☐ No	Cascade Natural Gas	NA	NA
Cable	☐ Yes ☐ No		NA	NA
Other – List Here:	☐ Yes ☐ No			
Other – List Here:	☐ Yes ☐ No			

Describe the general construction activities on the site or in the immediate vicinity necessary to install/construct the above listed utilities:

Trenching to connect to existing utility lines on the site will be necessary for underground utilities on each project site. Reference the Drainage Report for stormwater pond and vault locations.

C. SIGNATURE** [HELP]

By typing my name below: 1) I am attesting to the fact that the above answers are true and complete to the best of my knowledge; 2) I understand that the lead agency is relying on them to make its decision; and 3) Under penalty of perjury I swar that all information provided or referenced within this document is true and correct.

Ed Jaramillo

Type Your Name Here**

**Your Signature on the Master Land Use Application Form satisifies the requirement to sign this document.

Vice President, Skagit Valley College

Position and Agency/Organization Name

12/22/20

Date Submitted