Fall 2009

Squalicum lofts: a LEED ND project

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Squalicum Lofts

A LEED ND Project

Courtesy of RMC Architects

Huxley College of the Environment
Western Washington University
Environmental Impact Assessment Class, Fall 2009
Jenny Blythe, Cameron Plommer, Craig Corliss, Sam Ripley, Michelle Agne

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COLLEGE OF THE ENVIRONMENT

Environmental Impact Assessment
Huxley College of the Environment

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Cameron Plommer

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Jenny Blythe

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Sam Ripley

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Michelle Agne

Date 12/08/09

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Letter to Citizens

Dear Concerned Citizens,

This letter is in regards to the Squalicum Lofts development that is currently under construction in the 900 block of Squalicum Parkway.

The following report represents a class project that was carried out by students of Western Washington University, Huxley College of the Environment. It has not been undertaken at the request of any persons representing local governments or private individuals, nor does it necessarily represent the opinion or position of individuals from government or the private sector.

Our Environmental Impact Assessment group has used the Leadership in Energy and Environmental Design Neighborhood Development pilot (LEED ND) as a system for evaluating the Squalicum Lofts development. The purpose of LEED ND certification is to recognize a developer for integrating sensible use of existing services and environmentally sustainable architectural practices into the framework of existing neighborhoods.

Sincerely,

Cameron Plommer
Jenny Blythe
Craig Corliss
Michelle Agne
Sam Ripley

Fact Sheet

Title
Squalicum Lofts - Light Industrial

Description of project
The project consists of four buildings comprised of storage units with attached commercial office space and parking on 7.56 acres. The proposed buildings will be steel construction and will be oriented east west. The entire development will include 99,460 square feet of building excluding mezzanines.

Location of site
905 Squalicum Way, Bellingham, WA.

Project Team
Michelle Agne
Jenny Blythe
Craig Corliss
Cameron Plommer
Sam Ripley

Proposers
Applicant: Jeff Vander Yacht, P.E.
Owner: Michael Allsop (Squalicum Lofts, LLC)

Lead Agency
Abel Consulting
Western Washington University

Distribution List
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Whatcom County Planning and Development

Steve Sundin
Planner II
City of Bellingham

Issue Date
December 9, 2009

Executive Summary

The Site:

The Squalicum Lofts development is currently under construction in the 900 block of Squalicum Parkway, in the Columbia neighborhood of Bellingham, Washington.

The property is located within the Bellingham city limits and is zoned Industrial. The Squalicum Lofts project is being constructed on an approximately 7-acre parcel of land and adjacent properties include single family residential homes to the west of the site and Squalicum Creek Park to the north. The homes adjacent to the site are located approximately 40-feet above the site on a bluff and lie within the Columbia Neighborhood. The park is on the same building elevation and is planned to include three playing fields.

The project manager, Mike Allsop, originally designed a live/play/work development for this site that would have met the prerequisites and credits within LEED ND. In order for that project to be realized the site would have needed to be rezoned as mix-use to accommodate the residential component. However, there was opposition from the surrounding neighbors who preferred that the lot remain zoned for industrial use only, thus the project was redesigned to be purely retail, warehouse, and office space.

The City of Bellingham purchased a parcel of land that surrounds the site to the north and east for the development of Squalicum Creek Park, which is currently under construction. Squalicum Creek is located adjacent to Squalicum Parkway, and crosses under Squalicum Parkway at the front of the site.

Currently two of the four proposed buildings are under construction. Building A is 13,200 square feet while the larger Building B is 45,000 square feet. The two additional structures, Building C and Building D, will be located behind Buildings A and B at a future date. Building C will be 45,000 square feet and Building D will be 22,000 square feet. The primary use for these buildings will be retail, storage and warehouse space. Building B will house the offices of Allsop Incorporated.

LEED-ND:

Leadership in Energy and Environmental Design for Neighborhood Development (LEED-ND) is a rating system created by the U.S. Green Building Council, the Congress for the New Urbanism, and the Natural Resources Defense Council. LEED-ND integrates principles of smart growth, new urbanism, and green building into a national set of standards for neighborhood location and design. The LEED-ND certification provides independent, third-party verification that a development meets high levels of sustainable and environmentally responsible development with regards to location, design, and construction of the development.

The rating system is made up of three categories, each of which consists of prerequisites that must be met, and credits that are optional. Though each credit is optional, a minimum number of credits must be met in order for the project to be LEED-ND certified. Additional credits lead to higher levels of certification.

Although the Squalicum development will not be able to achieve LEED for Neighborhood Development standards, we have provided recommendations for how the buildings and site could be improved to receive LEED-ND certification. There are, however, some stipulations of LEED-ND which will not be achievable due to physical constraints of the site itself or due to the prior condition of the site. Beyond these major limiting factors, making any steps toward LEED-ND certification, even if not achieved, will still add to Squalicum Lofts' positive aesthetics, low impact, and community cohesiveness. The alternatives suggested are assessed using one key assumption: the zoning will be changed to residential in the future. Currently the site does not qualify to meet several credits based on its current zoning of light industrial. If zoning is changed in the future, the project will be able to get points for many more credits and meet higher certification levels. The gold certification we calculated through alternatives is based on potential residential zoning changes.

Decision Matrix

	Points Earned		
	Proposed Project	**Alternative**	**Points Possible**
Neighborhood Pattern & Design Percentage of Points: 38%	1	22	39
Green Building & Technology Percentage of Points: 29%	3	24	31
Smart Location & Linkage Percentage of Points: 28%	11	14	30
Innovation & Design Process Percentage of Points: 5%	0	1	6
Total	15	61	106

Certification Levels
Certified: 40-49 points
Silver: 50-59 points
Gold: 60-79 points
Platinum: 80-106 points

Proposed Project: Standards Not Met
Alternative: Meets LEED ND Gold Certification

LEED POINTS SUMMARY

Smart Location and Linkage	**Points Earned**
Prerequisite 1 Smart Location	Pass
Prerequisite 2 Proximity to Water and Wastewater Infrastructure	Pass
Prerequisite 3 Imperiled Species and Ecological Communities	Pass
Prerequisite 4 Wetland and Water Body Conservation	Pass
Prerequisite 5 Agricultural Land Conservation	Pass
Prerequisite 6 Floodplain Avoidance	Pass
Credit 1 Brownfield Redevelopment	0 of 2
Credit 2 High Priority Brownfield Redevelopment	0 of 1
Credit 3 Preferred Locations	7 of 10
Credit 4 Reduced Automobile Dependence	2 of 8
Credit 5 Bicycle Network	1 of 1
Credit 6 Housing and Jobs Proximity	0 of 3
Credit 7 School Proximity	0 of 1
Credit 8 Steep Slope Protection	0 of 1
Credit 9 Site Design for Habitat or Wetlands Conservation	1 of 1
Credit 10 Restoration of Habitat of Wetlands	0 of 1
Credit 11 Conservation Management of Habitat of Wetlands	0 of 1
Total	**11 of 30**

Neighborhood Pattern and Design	
Prerequisite 1 Open Community	Fail
Prerequisite 2 Compact Development	Fail
Credit 1 Compact Development	0 of 7
Credit 2 Diversity of Uses	0 of 4
Credit 3 Diversity of Housing Types	0 of 3
Credit 4 Affordable Rental Housing	0 of 2
Credit 5 Affordable For-Sale Housing	0 of 2
Credit 6 Reduced Parking Footprint	0 of 2
Credit 7 Walkable Streets	0 of 8
Credit 8 Street Network	0 of 2
Credit 9 Transit Facilities	0 of 1
Credit 10 Transportation Demand Management	0 of 2
Credit 11 Access to Surrounding Vicinity	0 of 1
Credit 12 Access to Public Spaces	0 of 1
Credit 13 Access to Active Public Spaces	1 of 1
Credit 14 Universal Accessibility	0 of 1
Credit 15 Community Outreach and Involvement	0 of 1
Credit 16 Local Food Production	0 of 1
Total	**1 of 39**

Green Construction and Technology	Pass
Prerequisite 1 Construction Activity Pollution Prevention	3 of 3
Credit 1 Certified Green Buildings	0 of 3
Credit 2 Energy Efficiency in Buildings	0 of 3
Credit 3 Reduced Water Use	0 of 2
Credit 4 Building Reuse and Adaptive Reuse	0 of 1
Credit 5 Reuse of Historic Buildings	0 of 1
Credit 6 Minimize Site Disturbance Through Site Design	0 of 1
Credit 7 Minimize Site Disturbance During Construction	0 of 1
Credit 8 Contaminant Reduction in Brownfield Remediation	0 of 5
Credit 9 Stormwater Management	0 of 1
Credit 10 Heat Island Reduction	0 of 1
Credit 11 Solar Orientation	0 of 1
Credit 12 On-Site Energy Generation	0 of 1
Credit 13 On-Site Renewable Energy Sources	0 of 1
Credit 14 District Heating and Cooling	0 of 1
Credit 15 Infrastructure Energy Efficiency	0 of 1
Credit 16 Wastewater Management	0 of 1
Credit 17 Recycled Content in Infrastructure	0 of 1
Credit 18 Construction Waste Management	0 of 1
Credit 19 Comprehensive Waste Management	0 of 1
Credit 20 Light Pollution Reduction	**3 of 31**
Total	
Innovation and Design Process	
Credit 1 Innovation in Design	0 of 5
Credit 2 LEED Accredited Professional	0 of 1
Total	**0 of 6**
Total Points	**15 of 106**

LEED POINTS SUMMARY WITH ALTERNATIVES

Smart Location and Linkage	**Points Earned**
Prerequisite 1 Smart Location	Pass
Prerequisite 2 Proximity to Water and Wastewater Infrastructure	Pass
Prerequisite 3 Imperiled Species and Ecological Communities	Pass
Prerequisite 4 Wetland and Water Body Conservation	Pass
Prerequisite 5 Agricultural Land Conservation	Pass
Prerequisite 6 Floodplain Avoidance	Pass
Credit 1 Brownfield Redevelopment	0 of 2
Credit 2 High Priority Brownfield Redevelopment	0 of 1
Credit 3 Preferred Locations	7 of 10
Credit 4 Reduced Automobile Dependence	2 of 8
Credit 5 Bicycle Network	1 of 1
Credit 6 Housing and Jobs Proximity	0 of 1
Credit 7 School Proximity	1 of 1
Credit 8 Steep Slope Protection	0 of 1
Credit 9 Site Design for Habitat or Wetlands Conservation	1 of 1
Credit 10 Restoration of Habitat or Wetlands	1 of 1
Credit 11 Conservation Management of Habitat of Wetlands	1 of 1
Total	**14 of 30**

Neighborhood Pattern and Design	
Prerequisite 1 Open Community	Pass
Prerequisite 2 Compact Development	Pass
Credit 1 Compact Development	1 of 7
Credit 2 Diversity of Uses	2 of 4
Credit 3 Diversity of Housing Types	1 of 3
Credit 4 Affordable Rental Housing	2 of 2
Credit 5 Affordable For-Sale Housing	2 of 2
Credit 6 Reduced Parking Footprint	2 of 2
Credit 7 Walkable Streets	4 of 8
Credit 8 Street Network	2 of 2
Credit 9 Transit Facilities	1 of 1
Credit 10 Transportation Demand Management	1 of 2
Credit 11 Access to Surrounding Vicinity	1 of 1
Credit 12 Access to Public Spaces	1 of 1
Credit 13 Access to Active Public Spaces	1 of 1
Credit 14 Universal Accessibility	0 of 1
Credit 15 Community Outreach and Involvement	0 of 1
Credit 16 Local Food Production	1 of 1
Total	**22 of 39**

Green Construction and Technology	
Prerequisite 1 Construction Activity Pollution Prevention	Pass
Credit 1 Certified Green Buildings	3 of 3
Credit 2 Energy Efficiency in Buildings	1 of 3
Credit 3 Reduced Water Use	3 of 3
Credit 4 Building Reuse and Adaptive Reuse	0 of 2
Credit 5 Reuse of Historic Buildings	0 of 1
Credit 6 Minimize Site Disturbance Through Site Design	1 of 1
Credit 7 Minimize Site Disturbance During Construction	1 of 1
Credit 8 Contaminant Reduction in Brownfield Remediation	0 of 1
Credit 9 Stormwater Management	5 of 5
Credit 10 Heat Island Reduction	1 of 1
Credit 11 Solar Orientation	0 of 1
Credit 12 On-Site Energy Generation	1 of 1
Credit 13 On-Site Renewable Energy Sources	1 of 1
Credit 14 District Heating and Cooling	1 of 1
Credit 15 Infrastructure Energy Efficiency	1 of 1
Credit 16 Wastewater Management	1 of 1
Credit 17 Recycled Content in Infrastructure	1 of 1
Credit 18 Construction Waste Management	1 of 1
Credit 19 Comprehensive Waste Management	1 of 1
Credit 20 Light Pollution Reduction	1 of 1
Total	**24 of 31**
Innovation and Design Process	
Credit 1 Innovation in Design	0 of 5
Credit 2 LEED Accredited Professional	1 of 1
Total	**1 of 6**
Total Points with Alternatives	**61 of 106**

Smart Location & Linkage

Image: www.bellinghamherald.com/255/story/1115941.html

SLL Prerequisite 1: Smart Location

Points Possible: Required
Points Met: Pass
Alternative: N/A

Intent
Encourage development within and near existing communities or public transportation infrastructure. Reduce vehicle trips and miles traveled and support walking as a transportation choice.

Requirements
Locate the project near existing or planned adequate transit service so that at least 50% of dwelling units and business entrances within the project are within ¼ mile walk distance of bus or streetcar stops or within ½ mile walk distance of bus rapid transit stops, light or heavy passenger rail stations and ferry terminals. In the case of planned service, show that the relevant transit agency has committed in a legally binding warrant that adequate transit service will be provided at or before the beginning of the transit agency's first service year after 50% of the dwelling units and/or businesses within the project are occupied and has identified all funding necessary to do so.

Prerequisite Met
The project is located near existing adequate transit service**.** More than 50% of the business entrances within the project are within ¼ mile walk distance of the Cordata Maplewood and Hospital route bus stops provided through the existing trail system and the planned service road. See Map 1 in Appendix A.

Alternative
The prerequisite has been met, no alternative action is required.

SLL Prerequisite 2: Proximity to Water and Wastewater Infrastructure

Points Possible: Required
Points Met: Pass
Alternative: N/A

Intent
Encourage new development within and near existing communities in order to reduce multiple environmental impacts caused by sprawl. Conserve natural and financial resources required for construction and maintenance of infrastructure.

Requirements
Locate the project on a site served by existing water and wastewater infrastructure. Replacement or other on-location improvements to existing infrastructure are considered existing for the purpose of meeting this prerequisite.

Prerequisite Met
The project is located on a site that is served by existing water and wastewater infrastructure with plans for the construction of minimal additional infrastructure serving the site. See Map 2 in Appendix A.

Alternative
The prerequisite has been met, no alternative action is required.

SLL Prerequisite 3: Imperiled Species and Ecological Communities

Points Possible: Required
Points Met: Pass
Alternative: N/A

Intent
Protect imperiled species and ecological communities.

Requirements
Check with the state Natural Heritage Program, and any local wildlife agencies to determine if species listed under the federal Endangered Species Act, the state's endangered species act, or species or ecological communities classified by NatureServe as G1 (critically imperiled) or G2 (imperiled), have been found on the site or have a high likelihood of occurring on the site due to the presence of suitable habitat and nearby occurrences. If no such species have been found or have a high likelihood of being present, the prerequisite is achieved. If any such species have been found or have a high likelihood of being present, the project must comply with an approved Habitat Conservation Plan (HCP) under the Endangered Species Act for each identified species or ecological community;

Prerequisite Met
There are no imperiled species or communities within the influence of this previously developed site.

Alternative
The prerequisite has been met, no alternative action is required.

SLL Prerequisite 4: Wetland and Water Body Conservation

Points Possible: Required
Points Met: Pass
Alternative: N/A

Intent
Conserve water quality, natural hydrology and habitat and preserve biodiversity through conservation of water bodies or wetlands.

Requirements
Locate the project on a site that includes no wetlands, water bodies, or land within 100 feet of these areas;

Minor development within the buffer may be undertaken in order to enhance appreciation for wetlands and water bodies. Such development may only include minor path-ways, limited pruning and tree removal for safety, habitat management activities, educational structures not exceeding 200 square feet, and small clearings for picnic tables, benches, and non-motorized recreational water crafts.

Prerequisite Met
The building buffer does not overlap wetlands, according to City of Bellingham wetlands inventory. There is a small pond located on the southeast corner of the site. However, the pond is not a natural water body, but rather an artifact of anthropogenic actions on the site during its previous use as an industrial site.

Alternative
The prerequisite has been met, no alternative action is required.

SLL Prerequisite 5: Agricultural Land Conservation

Points Possible: Required
Points Met: Pass
Alternative: Pass

Intent
Preserve irreplaceable agricultural resources by protecting prime and unique farmland and forest lands from development.

Requirements
Locate the project such that the site contains no more than 25% prime soils, unique soils, or soils of state significance as identified in a state Natural Resources Conservation Service soil survey;

Prerequisite Met
Soils are not of agricultural value. This site has previously been used as a sand and gravel mine. The native sands and gravels have been removed from the site above the seasonal high water table. The site has since been filled with various types fill soils.

Alternative
Although the site already satisfies SLL Prerequisite 5 by not directly impacting valuable agricultural soil, further action could be taken to purchase a Transfer of Development Rights (TDR) for productive agricultural land. The purpose of TDR is to withhold development rights for farmlands, maintaining its function as agricultural. “Property owners in the sending areas who do not develop their properties to the full extent permitted by law may sell their unused property rights to property owners in receiving areas” (Levy, 2006). The conservation of farmland and forestland is essential because they are both exhaustible resources. Studies have found that not taking these resources into account when estimating the value of a development will lead to an overestimate of its value (Harris, 2006).

SLL Prerequisite 6: Floodplain Avoidance

Points Possible: Required
Points Met: Pass
Alternative: N/A

Intent
Protect life and property, promote open space and habitat conservation, and enhance water quality and natural hydrological systems.

Requirements
Locate the project on an infill site or a previously developed site and follow the National Flood Insurance Program (NFIP) requirements for developing any portions of the site that lie within the 100-year floodplain as defined and mapped by the Federal Emergency Management Agency (FEMA) or state or local floodplain management entity, whichever has been done most recently.

Prerequisite Met
Two portions in southeast corner of this previously developed site lie within the 100-year floodplain, according to a FEMA Flood Insurance Rate Map. However, the structural and civil permits denote the ways in which the project will comply with NFIP requirements for building in a floodplain in Whatcom County as defined in Whatcom County Code 17.16.010 through 17.16.140. This includes methods for anchoring the buildings and stormwater management plans. Additionally, no buildings are proposed to be built on the portion of the site that is within the 100-year floodplain. See Map 3 in Appendix A.

Alternative
The prerequisite has been met, no alternative action is required.

SLL Credit 1: Brownfield Redevelopment

Points Possible: 2
Points Met: 0
Alternative: N/A

Intent
Encourage the reuse of land by developing sites where development is complicated by environmental contamination, reducing pressure on undeveloped land.

Requirements
Locate project on a site, part or all of which is documented as contaminated (by means of an ASTM E1903-97 Phase II Environmental Site Assessment or a local Voluntary Cleanup Program) OR on a site defined as a Brownfield by a local, state or federal government agency; AND Remediate site contamination such that the controlling public authority approves the protective measures and/or clean-up as effective, safe, and appropriate for the future use of the site.

Credit Not Met
The site is not registered on the Washington State Department of Ecology inventory of Brownfield locations.

Alternative
No alternative is possible without relocation of the project to a listed Brownfield site.

SLL Credit 2: High Priority Brownfield Redevelopment

Points Possible: 1
Points Met: 0
Alternative: N/A

Intent
Encourage the cleanup of contaminated Brownfield sites in areas targeted for redevelopment.

Requirements
Earn SLL Credit 1: Brownfield Redevelopment, using a site that is in one of the following areas:
• Federal Empowerment Zone
• Federal Enterprise Community
• Federal Renewal Community
• Communities with Official Recognition (OR) from the Department of Justice for their Weed and Seed Strategy
• Qualified Low-Income Communities (LICs) as defined by the New Markets Tax Credit (NMTC) Program of the U.S. Department of the Treasury - Community Development Financial Institutions Fund (CDIF).

Credit Not Met
The site does not qualify for SLL Credit 1, and therefore is not eligible for review as a High Priority site.

Alternative
No alternative is possible without relocation of the project to a listed Brownfield site.

SLL Credit 3: Preferred Locations

Points Possible: 10
Points Met: 7
Alternative: N/A

Intent
Encourage development within existing communities and developed places to reduce multiple environmental harms associated with sprawl. Reduce development pressure beyond the limits of existing development. Conserve natural and financial resources required for construction and maintenance of infrastructure.

Requirements
Locate the project in one of the following locations that also earn at least one point for street grid density according to the calculation in List 1.1 of Appendix C.

AND

Calculate the street grid density (in street centerline miles per square mile) within a 1 mile radius from the perimeter of the site boundary. Points are added to the above points according to the street grid density found in List 1.2 of Appendix C

Credit Met
This credit has been met because it is an infill site that is also a previously developed site. Historic air photos show buildings previously on this industrial site as seen in Photographs 1 and 2 of Appendix A. And the site has 48.5 mi (256045.3 feet) centerline miles within 1 mile of the site boundary that is a street grid density of 14.3 centerline miles per square mile. (48.5 mi / 3.4 sq. mi.)

Alternative
This credit has been met; no alternative action is needed as site improvement cannot significantly increase street grid density of the three mile buffer. The development that this credit refers to includes residential development as well as industrial but as mentioned in the executive summary, the neighboring community opposed further residential growth. According to Cinyabuguma et al (2009), this kind of anti-growth behavior is due in part to the issue of who pays the cost of infill development. Current residents are inconvenienced if their neighborhood is selected as an urban growth area. Reducing urban sprawl is a benefit to everyone but problems will arise if only a small group of people are paying for those benefits.

SLL Credit 4: Reduced Automobile Dependence

Points Possible: 8
Points Met: 2
Alternative: N/A

Intent
Encourage development in locations that exhibit superior performance in providing transportation choices or otherwise reducing motor vehicle use.

Requirements
Locate project on a site with transit service of 20 or more easily accessible transit rides per weekday. The number of points available for increasing transit service is indicated in the table below. The total number of rides available during weekdays is defined as the number of buses or streetcars stopping within a ¼ mile walk distance of at least 50% of the project's dwellings and business entrances, and the number of bus rapid transit buses, light rail trains, heavy passenger rail, and ferries stopping within a ½ mile walk distance of at least 50% of the project's dwellings and business entrances.

Credit Met
Upon completion of the access road on the northeast side of the property, the project will be located such that at least 50% of the business entrances are within 1/4 mile walk distance of Whatcom Transit Authority bus stops. At the corner of Patton and Maryland there are two bus stops for the Maplewood (#3) and Hospital (#4) routes. On weekdays these buses offer a total of 24 transit rides daily. See Map 1 in Appendix A and Table 1 in Appendix B.

Alternative
This credit has been met, no alternative action is needed. More points would be possible if there were more frequent stops made by Whatcom Transit Authority buses but this is outside of the influence of the project. This would aid in the success of the project as “good public transit appears a major factor strengthening the pedestrian realm … as well as commitments to bicycles” thus bringing in more business (Beatley, 2003).

SLL Credit 5: Bicycle Network

Points Possible: 1
Points Met: 1
Alternative: N/A

Intent
To promote bicycling and transportation efficiency.

Requirements
Design or locate the project such that 50% of the dwelling units and business entrances are within 3 miles of at least four or more of the diverse uses in List 2 in Appendix C using an existing biking network and/or a biking network that will be completed as part of the project (3 mile distance is measured along the biking network, not as a straight radius); "Biking and walking are quite economical, costing much less than the auto and public transport, both in direct user costs and public infrastructure costs. Some might add that pedestrians enhance the liveliness of urban environments" (Pucher, 2000).

AND

For any non-residential buildings and multifamily residential buildings that are part of the project, provide bicycle parking spaces or storage for a capacity of no less than 15% of the off-street parking space capacity provided for cars for those buildings.

Credit Met
The section of Squalicum Parkway that runs in front of the project site contains bike lanes that give access to Squalicum Creek Park and the Bay to Baker trail system. Heading west on the Bay to Baker trail and connecting to Marine Drive heading northwest, gives access to three diverse uses as shown in List 2 of Appendix C. These include the Marine Drive Market, the North Shore Church and a Whatcom County Fire Station. Leaving from the project site and heading east on the bike lanes of Squalicum Parkway, past Squalicum Creek Park, allows access to the Cornwall Park trail system and a fourth diverse use, Parkview Elementary School. The site plan for the project shows 118 parking spaces and 35 spaces for bicycles, fulfilling the requirement for bicycle storage capacity. See Maps 5 and 6 in Appendix A.

Alternative
This credit has been met, no alternative action is needed.

SLL Credit 6: Housing and Jobs Proximity

Points Possible: 3
Points Met: 0
Alternative: N/A

Intent
Encourage balanced communities with a diversity of uses and employment opportunities. Reduce energy consumption and pollution from motor vehicles by providing opportunities for shorter vehicle trips and/or use of alternative modes of transportation.

Requirements
Include a non-residential component equaling at least 25% of the project's total building square footage, and locate on an infill site whose center is within a ½ mile walk distance of an existing and operational rail transit stop, and within a ½ mile walk distance of a number of existing dwelling units equal to or greater than 50% of the number of new jobs created as part of the project.

Credit Not Met
The project does not meet this credit because the project is not ½ mile walk distance from an existing operational rail transit stop.

Alternative
An alternative for this credit is not feasible because the in order to meet the credit, a new rail transit stop would have to be constructed within ½ mile from the site.

SLL Credit 7: School Proximity

Points Possible: 1
Points Met: 0
Alternative: 1

Intent
Promote public health through physical activity by facilitating walking to school. Promote community interaction and engagement.

Requirements
Include a residential component in the project that constitutes at least 25% of the project's total building square footage; and locate or design the project so that at least 50% of the project's dwelling units are within ½ mile walk distance of an existing or planned school.

Credit Not Met
The project does not meet this credit because the project does not include a residential component.

Alternative
This credit could be met through an alternative if the site was rezoned for residential use. If at least 25% of the buildings' square footage would be used as residential dwelling units, this credit would be achieved as the project is currently located within ½ mile of the Madrona School, as shown in Map 4 in Appendix A.

SLL Credit 8: Steep Slope Protection

Points Possible: 1
Points Met: 0
Alternative: N/A

Intent
Minimize erosion to protect habitat and reduce stress on natural water systems by preserving steep slopes in a natural, vegetated state.

Requirements
On portions of project sites with pre-project slopes greater than 15% that are not previously developed:

• do not disturb slopes greater than 40% and do not disturb portions of the project site within 50 feet of the top of the slope, and 75 feet from the toe of the slope;

• limit development to no more than 40% of slopes between 25%-40%, and to no more than 60% of slopes between 15%-25%.
• locate development such that the percentage of the development footprint that is on pre-project slopes less than 15% is greater than the percentage of buildable land that has pre-project slopes less than 15%.

Those portions of project sites with slopes up to 20 feet in elevation (toe to top) that are more than 30 feet in any direction from another slope greater than 15% are exempt from the requirements, although more restrictive local regulations may apply.

Credit Not Met
The site footprint exceeds the required setbacks for this credit.

Alternative
Without relocating the development further back from the slope, compliance with this credit is not possible. Mitigating steps such as planting deep-rooted ground cover on the slope will help to increase stability, (Schwab, 2007) and retaining walls are already planned, however neither of these options meet the requirements of the LEED credit. Any mitigation would still be recommended, as it would reduce the chance of soil loss in the future (Mileti, 1999; Barnes, 2005).

SLL Credit 9: Site Design for Habitat or Wetland Conservation

Points possible: 1
Points met: 1
Alternative: N/A

Intent
Conserve native wildlife habitat, wetlands and water bodies.

Requirements
If the project is located on a previously developed site, use native plants for 90% of vegetation, and use no invasive plants on any part of the site;

Credit Met
The site is previously developed according to the developer and historic air photographs, as seen in Photographs 1 and 2 of Appendix A. Non-native plants compose less than 2% of vegetation on the site and no invasive species will be used according to the plant list given in the project's landscape permit, shown as List 3 in Appendix C.

Alternative
This credit has been met, no alternative action is needed.

SLL Credit 10: Restoration of Habitat or Wetlands

Points possible: 1
Points met: 0
Alternative: 1

Intent
Restore wildlife habitat and wetlands that have been harmed by previous human activities.

Requirements
Using only native plants, restore native habitat or pre-development water bodies or wetlands on the project site in an area equal to or greater than 10% of the development footprint and remove any invasive species on the site. Protect such areas from development in perpetuity by donating or selling the land or a conservation easement on the land to an accredited land trust or relevant public agency. These "restoration efforts [would] add to the livability, ecological health, and overall sustainability of the urban region" (Wheeler, 1998).

Credit Not Met
There is a small pond on the site, which is planned for restoration with native plants, shown in List 3 in Appendix C. However, there is no indication that the land or a conservation easement on the land will be sold or donated to an accredited land trust or relevant public agency.

Alternative
Restore the pond and surrounding area equaling at least 10% of the development footprint as a palustrine persistent emergent wetland by adding herbaceous wetland plants such as rushes (*Juncus spp.*) and sedges (*Carex spp.*) to the current landscape plan (Cowardin, 1979). Developing this pond as a wetland could provide numerous values to the site, such as creation of habitat for migratory birds, flood mitigation, aquifer recharge, and even increased water quality (Mitsch, 2007). The service of flood mitigation would be especially useful at this particular site given that a portion of it is located in a floodplain. The restored area would then be donated to an accredited land trust such as the Nature Conservancy.

SLL Credit 11: Conservation Management of Habitat or Wetlands

Points possible: 1
Points met: 0
Alternative: 1

Intent
Conserve native wildlife habitat, wetlands and water bodies.

Requirements
Create a long-term (at least 10-year) management plan for any on-site wetlands, water bodies and their buffers and a guaranteed funding source for management. Involve at least one person from a natural resources agency, a natural resources consulting firm, or an academic ecologist in writing the management plan and conducting or evaluating the ongoing management. The plan should include biological objectives consistent with wetland and water body conservation, and it should identify a)

procedures, including personnel to carry them out, for maintaining the conservation areas; and b) estimated implementation costs and funding sources.

Credit Not Met

There are no known wetlands or habitat on this site. There is a small pond located in the southeast corner of the site, but there is no long-term management plan in place for its conservation.

Alternative

The restored area would be converted to a wetland ecosystem and be donated to an accredited land trust such as the Nature Conservancy. The landowner and the agency would then work together to create a long-term management plan for at least ten years. The plan would include measures to meet standard recommendations of prominent wetland consultants including attention to hydrology of the site, maintenance as a self-sustaining, persistent system, consideration of its effects on the entire watershed including nearby upland and deepwater habitat, and the capability for monitoring of the wetland throughout the course of its management program (Lewis et al., 1995).

Neighborhood Pattern & Design

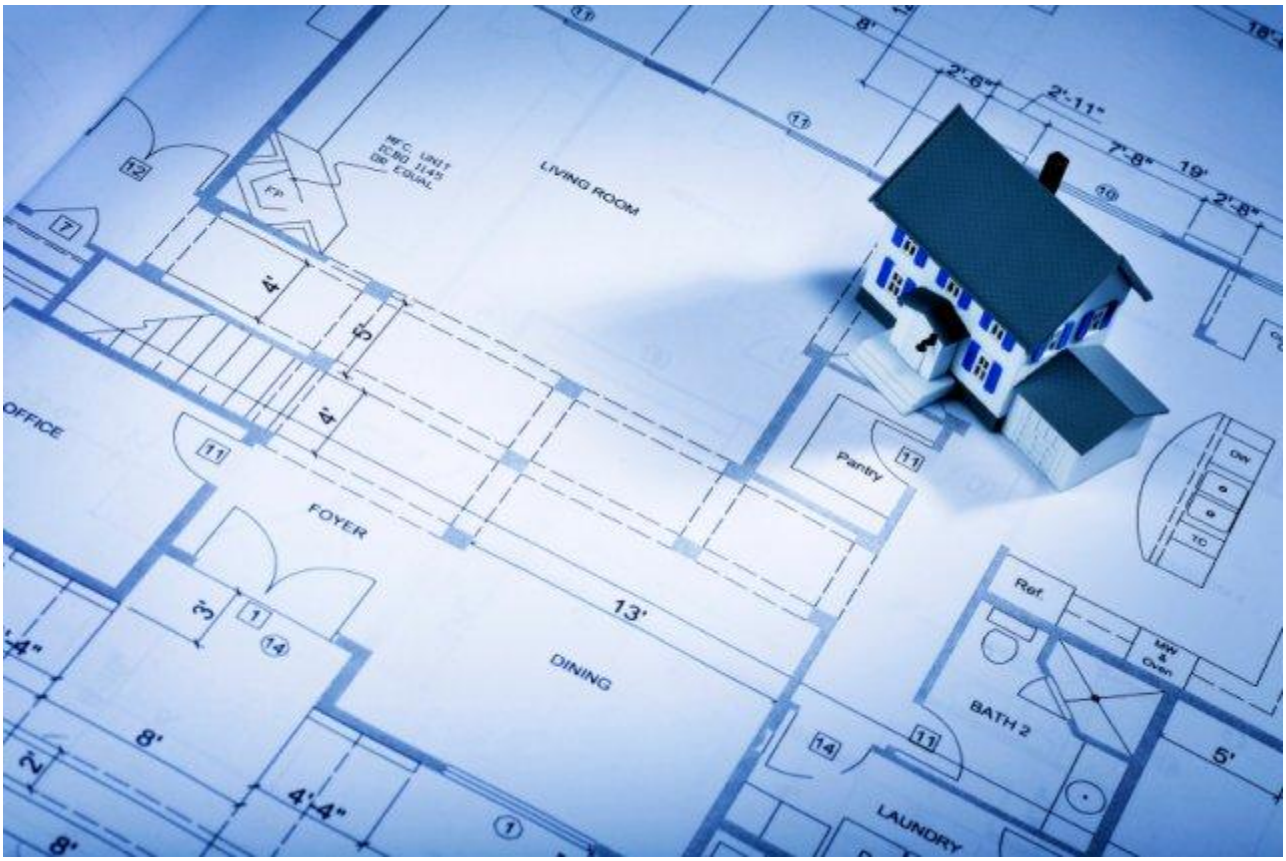

Image: http://www.muirfieldhomes.net/images/blueprints.jpg

NPD Prerequisite 1: Open Community

Points Possible: Required
Points Met: Fail
Alternative: Pass

Intent
Promote communities that are physically connected to each other. Foster community and connectedness beyond the development.

Requirements
Designate all streets and sidewalks that are built as part of the project or serving the project directly as available for general public use and not gated. Gated areas and enclaves are NOT considered available for public use, with the exception of education and health care campuses where gates are used for security purposes.

Prerequisite Not Met
According to the current site plan all trails that are built as part of the project or serving the project directly are available for general public use and not gated. However, the main street access and the sidewalks within the site is planned to be gated to the community along with the emergency access road thus failing the credit.

Alternative
Designate all streets and sidewalks that are built as part of the project or serving the project directly as available for general public use and not gated.

NPD Prerequisite 2: Compact Development

Points Possible: Required
Points Met: Fail
Alternative: Pass

Intent
Conserve land. Promote livability, transportation efficiency, and walkability.

Requirements
Build any residential components of the project at an average density of seven or more dwelling units per acre of buildable land available for residential uses;

AND

Build any non-residential components of the project at an average density of 0.50 FAR or greater per acre of buildable land available for non-residential uses.

If the project location is serviced by a transit agency which has specified minimum service densities that are greater than the densities required by this prerequisite, then the project must meet the transit agency's minimum service densities instead.

The specified average density must be achieved by the point in the project's construction at which 50% of dwelling units are built, or within five years of the date that the first building is occupied, whichever is longer.

Prerequisite Not Met
Part one of the requirements is not applicable. Part two of the requirements is not achieved. The lot is 333,234 square feet and the buildings are a total of 99,460 square feet, resulting in a floor area ratio of 0.30. The residential component is highly important feature as "The district must have a sufficient dense concentration of people, for whatever purpose they may be there. This includes people there because of residence" (Jacobs 1961).

Alternative
Each of the four buildings is currently made up of two levels. The buildings would need to be redesigned to include two additional levels on Buildings B and C, as shown in Map 5 in Appendix A. The additional levels would measure at the same square footage as the main floor of that building. This would result in an increase of 69,495 square feet for a project total of 168,955 square feet and a floor area ratio of .51. "The importance of high population and employment densities for transit operations has been recognized for decades" (National Research Council, 2001); as such adding additional floors that include residential units would be beneficial to the project.

NPD Credit 1: Compact Development

Points Possible: 7
Points Met: 0
Alternative: 1

Intent
Conserve land. Promote community livability, transportation efficiency, and walkability.

Requirements
Design and build the project to achieve the densities shown in Table 2 of Appendix B

The specified density must be achieved by the point in the project's construction at which 50% of dwelling units are built, or within five years of the date that the first building is occupied, whichever is longer.

Credit Not Met
The minimum requirement of a 0.75 floor area ratio is not met.

Alternative
Similar to Prerequisite 2 in this section, the buildings would need to be redesigned in order to include additional levels. In order to meet the minimum requirement of 0.75 FAR, the project would need to be increased by 150,466 square feet. Redesigning the buildings such that each one has an additional two levels that measure at the same square footage as the main levels would result in a project increase of 191,918 square feet, as shown in Map 5 in Appendix A. The project would then total 291,378 square feet and have a floor area ratio of 0.87. The project would receive one additional point.

NPD Credit 2: Diversity of Uses

Points Possible: 4
Points Met: 0
Alternative: 2

Intent
Promote community livability, transportation efficiency, and walkability.

Requirements
Include a residential component in the project that constitutes at least 25% of the project's total building square footage; and design or locate the project such that at least 50% of the dwelling units are within ½ mile walk distance of at least two (1 point), four (2 points), seven (3 points) or ten (4 points) of the diverse uses defined in List 2 in Appendix C. Uses may either be in nearby areas or be built within the development. Verify that a pedestrian can reach the uses via routes that do not necessitate crossing any streets that have speed limits of greater than 25 miles per hour, unless those crossings have vehicle traffic controls such as signals and stop signs with crosswalks.

Credit Not Met
There are no residential components currently in this project. There is an intent to place dwelling units above the retail, wholesale, and shop space and is labeled as space that can be "condo'd".

Alternative
To promote diverse uses "the district, and indeed as many of its internal parts as possible, must serve more than one primary function; preferably more than two. These must insure the presence of people who go outdoors on different schedules and are in the place for different purposes, but who are able to use many facilities in common." (Jacobs 1961). Thus the site will include a residential component that constitutes at least 25% of the project's total building square footage. After completing this action the credit will be passed as the current building entrances are within a half mile walking distance of 4 diverse uses gaining 2 points. The diverse uses within a half mile walking distance are: Squalicum Park, Bellingham Technical College Library, Madrona School, and Immanuel Bible Church.

NPD Credit 3: Diversity of Housing Types

Points Possible: 3
Points Met: 0
Alternative: 1

Intent
To enable citizens from a wide range of economic levels and age groups to live within a community.

Requirements
Include a sufficient variety of housing sizes and types in the project such that the total variety of housing within the project, or within a ¼ mile of the center of the project, achieves at least 0.5 according to the following calculation, which is based on the Simpson Diversity Index using the housing categories below.

The Simpson Diversity Index score is calculated with the following equation:
Score = $1- \Sigma (n/N)^2$
where n = the total number of dwellings in a single category, and
N = the total number of dwellings in all categories.

Score on the Simpson Diversity Index	Points Earned
≥0.5 and >0.6	1
≥0.6 and >0.7	2
≥0.7	3

Housing categories are defined for the purposes of this calculation in LEED for Neighborhood Development as given in List 5 in Appendix C.

Credit Not Met
There are no residential components currently in this project, and there are no plans indicating that potential future dwelling units on this site will include a diversity of housing types.

Alternative
The development would be rezoned to include residential units in Buildings B and C in the levels added in the redesign. Four of the housing types given in List 5 in Appendix C could possibly be represented in the units (multifamily dwelling with four stories or fewer - small and large, and live/work unit - small and large). 94 new residential units could be built in this space at an average of 23.5 units for each dwelling type (23 live/work - small, 23 live/work - large, 24 multifamily dwellings with four stories or fewer - small, and 24 multifamily dwellings with four stories or fewer - large). According to the calculation given above, the Simpson Diversity Index for this alternative would be 0.53, earning one point for this credit. This is additionally compliant with the requirement of at least 53 dwelling units (7 dwelling units per acre of buildable land) in a residential development as stated in NPD Prerequisite 2.

NPD Credit 4: Affordable Rental Housing

Points Possible: 2
Points Met: 0
Alternative: 2

Intent
To enable citizens from a wide range of economic levels and age groups to live within a community.

Requirements
Include a proportion of rental units priced for households earning below area median income such that at least 15% of total rental units are priced for households up to 50% of area median income and an additional 15% of total rental units are priced for households at up to 80% of area median income and units are maintained at affordable levels for a minimum of fifteen years. “One of the main purposes of cities and towns is to create decent places for people to live, and if these do not exist or are not affordable, the urban system is bound to suffer” (Wheeler, 1998).

Credit Not Met
There are no residential components currently in this project. There are no plans currently to include affordable rental housing in future dwelling units above the retail, wholesale, and shop space.

Alternative
94 new dwelling units would be built in the development in the redesign. If about half of them were rental properties, in order to meet this credit, 7 of the units would be priced for households with an annual income of up to $32200, and 7 of the units would be priced for households with an income of up to $51520, as shown in Table 3 in Appendix B. Here the median income in Bellingham, WA for 2009 is $64400 (HUD, 2009).

NPD Credit 5: Affordable For-Sale Housing

Points Possible: 2
Points Met: 0
Alternative: 2

Intent
To enable citizens from a wide range of economic levels and age groups to live within a community.

Requirements
Include a proportion of for-sale housing affordable to households at or slightly above the area median income such that at least 10% of for-sale housing is priced for households up to 80% of the area median income and an additional 10% of for-sale housing is priced for households at up to 120% of the area median income.

Credit Not Met
There are no residential components currently in this project. There are no plans currently to include affordable for-sale housing in future dwelling units above the retail, wholesale, and shop space.

Alternative
94 new dwelling units would be built in the development in the redesign. If about half of them were for-sale properties, in order to meet this credit, 10% (5) of the units would be priced for households with an annual income of up to $51520, and 10% (5) of the units would be priced for households with an income of up to $77280. The median income in Bellingham, WA for 2009 is $64400 (HUD, 2009). Affordable housing is defined by the Area Median Income (AMI) Standard as 30% or less of a household's monthly income being spent on housing costs. Additionally, the mortgages on the specified units would need to be such that households at 80% and 120% could be eligible for them.

NPD Credit 6: Reduced Parking Footprint

Points Possible: 2
Points Met: 0
Alternative: 2

Intent
Design parking to increase the pedestrian orientation of projects and to minimize the adverse environmental effects of parking facilities.

Requirements
For any non-residential buildings and multifamily residential buildings that are part of the project, locate all off-street surface parking lots at the side or rear of buildings, leaving building frontages and streetscapes free of surface parking lots;

AND

Use no more than 20% of the total development footprint area for surface parking facilities, with no individual surface parking lot larger than 2 acres. For the purposes of this credit, surface parking facilities include ground-level garages unless they are under or over space intended for human occupancy. Underground or multi-story parking facilities can be used to provide additional capacity, and on-street parking spaces are exempt from this limitation;

AND

For any non-residential buildings and multifamily residential buildings that are part of the project, provide bicycle and/or carpool parking spaces equivalent to 10% of the total automobile parking for each non-residential and multifamily building on the site. Signage indicating carpool parking spots should be provided, and bicycle parking should be within 200 yards of the entrance to the building that it services. The 10% carpool/bicycle space requirement can be met with any combination of bicycle and carpool parking.

Credit Not Met
The sites surface parking facilities are within the 20% development footprint maximum requirement. However, all the non-residential buildings within the project locate their off street parking along the frontages of buildings A and B. Building A has a majority of the parking to the side between the building and the street, thus not meeting the streetscape and building frontage requirements. And the site plans show that 118 bicycle and handicap parking spots will be installed. There is no evidence that carpool parking spaces will be installed or provided.

Alternative
Arrange the buildings it that the site allows for parking to be placed in the rear of the building or create an underground garage for the site parking, leaving the frontages and streetscapes free of surface parking.

NPD Credit 7: Walkable Streets

Points Possible: 8
Points Met: 0
Alternative: 4

Intent
Provide appealing and comfortable pedestrian street environments in order to promote pedestrian activity. Promote public health though increased physical activity.

Requirements
Design and build the project such that all of the following requirements found in List 4 in Appendix C are achieved.

Credit Not Met
A. Building fronts face parking and the rear of other buildings. Building A is the only building that faces a public space, but, has parking between disqualifying it from this credit.
B. The buildings planned on this site do not comply with the minimum building-height-to-street-width proportions of 1:3, the planned ratio is 1:1.
C. Sidewalks are not continuous on the site. However, there is trail/path connectivity.
F-P. Additional points are not awarded as the base credit has not been met.

Alternative
"The charter of streets and pedestrian networks affects both pedestrian activity and the quality of life in these neighborhoods… Buildings are linked to streets via parking lots and driveway; sidewalk systems are fragmented; pedestrian routes are indirect. As a result, most walking in these places is limited to short trips to and from parked cars" thus the following actions should be taken (Hess, 1997).
A. Arrange the buildings it that the site allows for parking to be placed in the rear of the building or create an underground garage for the site parking, leaving the frontages and streetscapes free of surface parking.
B. As the buildings will be redesigned to increase residential density the building height to street width proportions of 1:3 will be met. There are no streets currently bordering the project site or planned adjacent buildings.
C. Redesign the sidewalks throughout the sight to border both sides of the street at a minimum of 4 feet. And provide connections to all footpaths from sidewalks for connectivity off the site.
Through these actions, four points can be achieved.

NPD Credit 8: Street Network

Points Possible: 2
Points Met: 0
Alterative: 2

Intent
Encourage the design of projects that incorporate high levels of internal connectivity and the location of projects in existing communities in order to conserve land, promote multimodal transportation and promote public health through increased physical activity.

Requirements
If new cul-de-sacs are created as part of the project, include a pedestrian or bicycle through-connection in at least 50% of any new cul-de-sacs. If topographical conditions prohibit such connections, these are not included in the calculation.

AND

For projects 7 acres or larger:
Design the project such that the project's average street grid density falls within one of the ranges listed in the table below.

Street Densities

Street grid density (centerline miles/sq.mi.)	Points Earned
20 – 29	1
>30	2

Credit Not Met
The site does not have any cul-de-sacs, however, it only has one main entrance to the site with a emergency access that is gated minimizing connectivity. The street grid density of the 7.56 acre site is approximately 49.1(centerline miles/sq. mi. (.58/0.0118125))

Alternative
This credit could be met if the current emergency access road is opened to traffic, auto and bike. The topography of the site does not allow for any other street connections to the adjoining neighborhood.

NPD Credit 9: Transit Facilities

Points Possible: 1
Points Met: 0
Alternative: 1

Intent
Encourage transit use and reduce driving by creating safe and comfortable transit facilities.

Requirements
Provide covered and at least partially enclosed shelters, adequate to buffer wind and rain, with at least one bench at each transit stop within the project boundaries. Shelters shall be illuminated to five average maintained footcandles (light levels may be reduced after hours). Existing external lighting can contribute to this level, but any new lighting shall meet light pollution requirements in GCT Credit 20, and designed to not directly illuminate any windows of residential properties. Provide kiosks, bulletin boards, and/or signs devoted to providing local transit information as part of the project, including basic schedule and route information at each transit stop that borders or falls within the project.

Credit Not Met
The project does not meet this credit. There is no transit stop located within the boundaries of the project, as shown in Map 1 of Appendix A.

Alternative
The project could meet this credit by following these actions: build at least one partially enclosed transit stop within the project and a description of the facility; kiosks providing local transit information and a description of the kiosk. A new bus route would also have to be added to service the roads surrounding the project.

NPD Credit 10: Transportation Demand Management

Points Possible: 2
Points Met: 0
Alternative: 1

Intent
Reduce energy consumption and pollution from motor vehicles by encouraging use of public transit.

Requirements
Provide transit passes valid for at least one year, subsidized to be half of regular price or cheaper, to each resident and employee locating within the project during the first three years of project occupancy (or longer). Publicize the fact that subsidized transit passes are available to the eligible residents and employees.

Credit Not Met
Currently there is not enough information to evaluate the project's eligibility for this credit.

Alternative
The project could meet the requirements of this credit by doing the following: providing Whatcom Transit Authority annual passes to employees for three years at half the original price of $250.00; publicizing and distributing passes through business owners; providing a written commitment to provide passes. A cost-benefit analysis would be useful to determine whether meeting this credit is beneficial to the developer. The cost in this case is the money used to pay for employee bus passes. The benefit is using the fact they the developer is subsidizing employee bus passes to attract tenants. In this sense the bus passes are a marketing tool. The developer is also comparing short and long run gains when deciding whether to meet this credit (Tietenberg, 2008). In this case the developer is forgoing the short run gain of not paying for passes. The developer instead uses the bus passes to attract tenants to their property, which is a long-run process.

NPD Credit 11: Access to Surrounding Vicinity

Points Possible: 1
Points Met: 0
Alternative: 1

Intent
Provide direct and safe connections, for pedestrians and bicyclists as well as drivers, to local destinations and neighborhood centers. Promote public health by facilitating walking and bicycling.

Requirements
Design and build projects such that there is at least one through street at the project boundary every 800 feet, or at existing abutting street intervals, whichever distance is smaller. This does not apply to connections that cannot physically be made; e.g. wetlands, rivers, railroads, extreme topography, natural gas lines, pipeline easements, highways, expressways and other limited-access roads.

Credit Not Met
When the access road is complete it will allow access to Lafayette and Maryland, however that street will be gated and so the project is not eligible for this credit. The west side of the site is exempt from eligibility requirements due to the extreme topography.

Alternative
Removing the two gates on the access road would produce a through street and allow the project to meet the requirements of this credit.

NPD Credit 12: Access to Public Spaces

Points Possible: 1
Points Met: 0
Alternative: 1

Intent
To provide a variety of open spaces close to work and home to encourage walking, physical activity and time spent outdoors.

Requirements
Locate and/or design project so that a park, green plaza or square at least 1/6 acre in area, and at least 150’ in width, lies within 1/6 mile walk distance of the 90% of the dwelling units and business entrances in the project. Parks less than 1 acre must also have a proportion no narrower than 1 unit of width to 4 units of length;

AND

For projects larger than 7 acres only, locate and/or design the project so that taken together all of the parks in the project shall average at least 1/2 acre in size.

Credit Not Met
There are small green spaces on the east end of each of the four buildings but none of them measure 150' in width.

Alternative
The space behind Building A is large enough that it could be used as a green space that would measure at least 150' in width and at least 1/6 acre in area. Because the project site is greater than 7 acres, an additional green space would need to be added on the west side of Building C. This, combined with the existing green spaces on the eastern sides of Building B, C and D would equal the required 1/2 acre. Any vehicles that would travel along the west side of Building C could be diverted to the access road along the east side of the property. However, adding a green space behind Building A would make the loading docks there inaccessible and it is unlikely that the project manager would find that the benefits of the added green space outweigh the cost of losing the option of using Building A as warehouse space. The project manager could determine his tenants’ preferences by conducting a contingent valuation survey that would reveal how much extra they are willing to pay, if anything, to have green spaces provided for themselves and their clients (Tietenberg, 2006).

NPD Credit 13: Access to Active Public Spaces

Points Possible: 1
Points Met: 1
Alternative: N/A

Intent
To provide a variety of open spaces close to work and home to encourage walking, physical activity and time spent outdoors.

Requirements
Locate and/or design the project so that an active open space facility (e.g., general playfields, soccer, baseball, basketball and other sports fields) of at least 1 acre lies within ½ mile walk distance of 90% of the dwelling units and business entrances in the project;

Credit Met
Squalicum Lofts is adjacent to Squalicum Creek Park. The park contains one baseball field, with plans for three more, is greater than 1 acre in size and lies within ½ mile walk distance of 90% of the business entrances within the project. See Map 5 in Appendix A.

Alternative
This credit has been met, no alternative action is needed.

NPD Credit 14: Universal Accessibility

Points Possible: 1
Points Met: 0
Alternative: N/A

Intent
Enable the widest spectrum of people, regardless of age or ability, to more easily participate in their community life by increasing the proportion of areas that are usable by people of diverse abilities.

Requirements
For each residential unit type developed, design 20% of each type to comply with the accessible design provisions of the Fair Housing Amendments Act and Section 504 of the Rehabilitation Act, as applicable. Separate residential unit types include: single-family, duplex, triplex, multi-unit row or townhouses, and mixed-use buildings that include residential units.

Credit Not Met
This project is not applicable for this credit because it includes only non-residential components.

Alternative
There is no applicable alternative for this credit because if zoning was changed to residential the homes would only be condos in mixed-use buildings.

NPD Credit 15: Community Outreach and Involvement

Points Possible: 1
Points Met: 0
Alternative: N/A

Intent
To encourage community participation in the project design and planning and involve the people who live in a community in deciding how it should be improved or how it should change over time.

Requirements
Meet with immediate neighbors and local public officials to solicit input on the proposed project during the pre-conceptual design phase, host an open community meeting during conceptual design phase to solicit input on the proposed project, modify the project design as a direct result of community input, or if modifications are not made, explain why community input did not generate design improvements, work directly with community associations and/or other social networks of the community to advertise public meetings and generate comments on project design, establish ongoing means for communication between the developer and the community throughout the design, construction, and in cases where the developer maintains control of part or the entire project, post-construction.

Credit Not Met
Currently there is not enough information to evaluate the project's eligibility for this credit.

Alternative
This credit requires the developer to consult the surrounding neighborhood in the pre-design phase. It is not known whether this collaboration has taken place. Thus there are no applicable alternatives.

NPD Credit 16: Local Food Production

Points Possible: 1
Points Met: 0
Alternative: 1

Intent
Promote community-based and local food production to minimize the environmental impacts from transporting food long distances and increase direct access to fresh foods.

Requirements
Establish CC&Rs or other forms of deed restrictions that do not prohibit areas for growing produce, including greenhouses, on any portion or area of residential front yards, rear yards, side yards, balconies, patios or rooftops. Greenhouses, but not gardens, may be prohibited in front yard areas that face the street.

AND

Dedicate permanent and viable growing space and/or related facilities (such as greenhouses) within the project, or purchase shares in a Community Supported Agriculture (CSA) program located within 150 miles of the project site for at least 80% of the households within the project for two years.

Shares must be delivered to within ¼ mile of the project on a regular schedule, which shall not be less than twice per month at least four months of the year, or locate the project such that the center is within ¼ mile of an established farmer's market that has been operating for at least two years, with at least three producer vendors, and that operates at least once a week for at least 5 months of the year.

Credit Not Met
The site has no plans for dedication of area for viable growing space and related facilities, is not planned to be involved in a CSA program, and is not located within ¼ mile of an established farmer's market.

Alternative
Develop CC&Rs that establish that areas for growing produce are not prohibited on the site. Additionally, purchase shares in a CSA program for at least 80% of the households on the site for at least two years. There are many CSA programs in Whatcom County that deliver near the site, which could be voted on by inhabitants as the program the community participates in.

Green Construction & Technology

http://allgreen.com/site/images/stories/green_fuzzy_house.jpg

GCT Prerequisite 1: Construction Activity Pollution Prevention

Points Possible: Required
Points Met: Pass
Alternative: N/A

Intent
Reduce pollution from construction activities by controlling soil erosion, waterway sedimentation and airborne dust generation.

Requirements
Create and implement an Erosion and Sedimentation Control (ESC) Plan for all construction activities associated with the project. The ESC Plan shall list the Best Management Practices (BMPs) employed and describe how the BMPs accomplish the following objectives:
• Prevent loss of soil during construction by stormwater runoff and/or wind erosion, including protecting topsoil by stockpiling for reuse.
• Prevent sedimentation of any impacted stormwater conveyance systems or receiving streams.
• Prevent polluting the air with dust and particulate matter.
The BMPs shall be selected from the 2003 EPA Construction General Permit (CGP) OR local erosion and sedimentation control standards and codes, whichever is more stringent.

Prerequisite met
The Squalicum Lofts Stormwater Report indicates the areas where sedimentation and erosion control will be necessary during construction. The BMPs for the project are outlined in section 6.2 of the report and were obtained from guidelines in the Washington State Department of Ecology Manual Volume 2. The BMPs include means to control flow rates, install sediment controls, stabilize soils, protect slopes, and control pollutants. Also included in the report is a statement that BMPs will be inspected weekly during construction and that the ESC plan will be updated as future buildings are permitted on the site. Additionally, if the BMPs for the project are not working as intended or the ESC plan is found to not prevent erosion and sedimentation, as indicated by high levels of turbidity in stormwater, the ESC must be modified. High levels of turbidity cause light and heat absorption which limit photosynthesis in deep waters and raise water temperature, over load of particulates that harm filter feeders, and deposition of silt into fish reproduction areas (Homann, 2008).

Alternative
This prerequisite has been met, no alternative action is needed.

GCT Credit 1: LEED Certified Green Buildings

Points Possible: 3
Points Met: 3
Alternative: N/A

Intent
Encourage the design and construction of buildings to utilize green building practices.

Requirements
For Projects with 5 or fewer habitable buildings:
Design, construct, or retrofit one building as part of the project to be certified under one of the following LEED building rating systems: LEED for New Construction, LEED for Existing Buildings, LEED for Homes, LEED for Core & Shell, LEED for Schools, or any Application Guides of these rating systems (1 point). Additional points (no more than 3 total) may be earned for each additional certified building that is part of the project.

Credit Met
This project is planned for four LEED silver structures.

Alternative
This credit has been met, no alternative action is needed.

GCT Credit 2: Energy Efficiency in Buildings

Points Possible: 3
Points Met: 0
Alternative: 1

Intent
Encourage the design and construction of energy efficient buildings to reduce air, water, and land pollution and environmental impacts from energy production and consumption.

Requirements
Design and construct at least 90% of all buildings in the project such that they meet one of the following requirements: Demonstrate a minimum 10% improvement in the proposed building performance rating compared to the baseline building performance rating per ASHRAE/ IESNA Standard 90.1-2004 (without addenda) by a whole building project simulation using the Building performance Rating Method .

Credit Not Met
The project is planned to meet this credit. Currently there is not enough information to evaluate the project's eligibility for this credit.

Alternative
To earn one point under this credit the project would need 90% of buildings show 10% improvement in the proposed building performance rating compared to the baseline building performance rating. Since the building specifications are not known and two buildings are finished it would be implausible to propose a suitable alternative. A short discussion on energy efficiency may be useful to determine the energy savings of this credit. Raising the energy efficiency of buildings is a way to reduce energy usage. But this can allow result in a rebound effect: by lowering the per unit price of energy, economic theory predicts a rise in demand and consumption. Thus because a building uses less energy one may not feel that they need to conserve leading to a small decrease rather than large decrease in energy saved (Greening, 2008).

GCT Credit 3: Reduced Water Use

Points Possible: 3
Points Met: 0
Alternative: 3

Intent
Minimize water use in buildings and for landscape irrigation to reduce the impact to natural water resources and reduce the burden on municipal water supply and wastewater systems.

Requirements
Indoor:
Design and construct at least 90% of all buildings in the project such that they meet the following requirements according to the appropriate category

For 1 point, employ strategies that in aggregate use 20% less water than the water use baseline calculated for the building (not including irrigation) after meeting the Energy Policy Act of 1992 fixture performance requirements. Calculations are based on estimated occupant usage and shall include only the following fixtures (as applicable to the building): water closets, urinals, lavatory faucets, showers, and kitchen faucets. For 2 points, employ an aggregate standard of 30% for all measures.

Outdoor:
For irrigation of landscaping, use only captured rainwater, recycled wastewater, recycled greywater, or water treated and conveyed by a public agency specifically for non-potable uses.

Credit Not Met
Currently there is not enough information to evaluate the project's eligibility for this credit.

Alternative
Design and construct at least 90% of all buildings in the project such that they employ an aggregate standard of 30% for all measures. Reductions in water usage would help to alleviate maintenance costs over the long term, as well as reducing the total storm water output for the site (USGS 2003).

GCT Credit 4: Building Reuse and Adaptive Reuse

Points Possible: 2
Points Met: 0
Alternative: N/A

Intent
Extend the life cycle of existing building stock, conserve resources, reduce waste, and reduce environmental impacts of new buildings as they relate to materials manufacturing and transport.

Requirements
Incorporate into the project the reuse of one building that maintains at least 50% (based on surface area) of the existing building structure (including structural floor and roof decking) and envelope (including exterior skin and framing, and excluding window assemblies and non-structural roofing

material). Hazardous materials that are remediated as a part of the project scope shall be excluded from the calculation of the percentage maintained.

Credit Not Met
No existing buildings were used in the construction of this project.

Alternative
There are no reasonable actions that can be taken in order to fulfill the requirements of this credit.

GCT Credit 5: Reuse of Historic Buildings

Points Possible: 1
Points Met: 0
Alternative: N/A

Intent
Encourage use of historic buildings in a manner that preserves their historic materials and character.

Requirements
Incorporate into the project one or more buildings that have been:
• designated, listed, or identified by a local government as a historic or contributing structure in a locally designated historic district pursuant to a local preservation ordinance;
OR
• designated, listed, or identified as a historic or contributing structure in a historic district under a state historic register or on the National Register of Historic Places;
AND
Rehabilitate the building(s) in accordance with local or federal standards for rehabilitation, and:
• obtain confirmation from the municipality, and/or the local historic preservation commission that the plan(s) for rehabilitation meet the local standards for an historic rehabilitation,
OR
• obtain confirmation from a State Historic Preservation Office or the National Park Service that the rehabilitation satisfies the Secretary of the Interior's "Standards for Rehabilitation."

Credit Not Met
No historic buildings or structures are located on this site.

Alternative
No alternative action is possible without relocation of project to a site containing existing historic buildings.

GCT Credit 6: Minimize Site Disturbance Through Site Design

Points possible: 1
Points met: 0
Alternative: 1

Intent
Preserve existing tree canopy, native vegetation and pervious surfaces while encouraging high density, smart growth communities.

Requirements
Locate the development footprint on areas that are 100% previously developed and for which the zone of construction impact is 100% previously developed.

Credit Not Met
Though the site footprint is located on a site that is 100% previously developed, information on the extent of the zone of construction impact is not currently available, so this credit cannot be met. If this is impossible, protect a certain percentage of the land based on the residential density of the project: 10% for a project with 21 or more residential dwelling units per acre, 15% for a project with 15 to 21 residential dwelling units per acre, and 20% for a project with fewer than 15 residential dwelling units per acre.

Alternative
The conservation easement including the restored wetland and surrounding area (equal to 10% of the total site area) would be protected from development in perpetuity, meeting part of the requirement. However, under the alternative plan including a residential rezone, the residential density is a maximum of less than 13 dwelling units per acre, making the project ineligible for this credit if the development extends beyond a previously developed site. However, because the site is previously developed, the project is eligible for this credit if the zone of construction impact can be limited to the area that has previously been developed under more stringent BMPs.

GCT Credit 7: Minimize Site Disturbance During Construction

Points possible: 1
Points met: 0
Alternative: 1

Intent
Conserve existing natural areas and protect trees to provide habitat and promote biodiversity.

Requirements
Locate the development footprint on areas that are 100% previously developed and for which the zone of construction impact is 100% previously developed. If there are portions of the site that are not previously developed, identify limits of disturbance through the creation of construction impact zones; and limit all site disturbance to 40 feet beyond the building perimeter; 10 feet beyond surface walkways, patios, surface parking and utilities less than 12 inches in diameter; 15 feet beyond primary roadway curbs and main utility branch trenches; and 25 feet beyond constructed areas with permeable surfaces

(such as pervious paving areas, stormwater detention facilities and playing fields) that require additional staging areas in order to limit compaction in the constructed area.

Credit Not Met
Although the development footprint is located on a previously developed area, there is no information regarding the extent of the zone of construction impact and whether it will impact previously undeveloped areas.

Alternative
Create a construction impact plan that limits impact to specified zones around each type of structure or surface on any parts of the site that are previously undeveloped. Due to the location of the site on a previously developed lot, this should be relatively little of the total area; only slight adjustments of the BMPs previously used in the project would be necessary in order to achieve this credit.

GCT Credit 8: Contaminant Reduction in Brownfield Remediation

Points Possible: 1
Points Met: 0
Alternative: N/A

Intent
Encourage Brownfield cleanup methods that reduce contaminant volume or toxicity and thereby minimize long-term remediation or monitoring burdens.

Requirements
Earn SLL Credit 1: Contaminated Brownfield Redevelopment;

AND

Use cleanup method(s) for 100% of the remediation that treat, reduce or eliminate the volume or toxicity of contaminated material found on the site. Cleanup methods which include only capping or translocation of contaminated material to an off-site location will not achieve this credit.

Credit Not Met
This site is not registered on the Washington State Department of Ecology inventory of Brownfield locations.

Alternative
No alternative is possible without relocation of the project to a listed Brownfield site.

GCT Credit 9: Stormwater Management
Points Possible: 5
Points Met: 0
Alternative: 5

Intent
Reduce adverse impacts on water resources by mimicking the natural hydrology of the region on the project site, including groundwater recharge. Reduce pollutant loadings from stormwater discharges,

reduce peak flow rates to minimize stream channel erosion, and maintain or restore chemical, physical, and biological integrity of downstream waterways.

Requirements
Implement a comprehensive stormwater management plan for the project that infiltrates, reuses, or evapotranspirates the below-specified amount of rainfall from the project's development footprint and other areas that have been graded so as to be effectively impervious.

Points Achievable	Semi-arid Watersheds (between 20"-40" rain/year
1	0.45"
2	0.9"
3	1.35"
4	1.8"
5	2.25"

Notes: a) The stormwater management plan should identify practices to be employed, such as permeable pavements, rainwater harvesting systems or green roofs. b) For the purposes of the calculations in this credit, the development footprint will include typically impervious surfaces included in the definition of "development footprint," such as roofs and pavements, even though the surfaces may be made pervious as part of the stormwater management plan.

Credit Not Met
Currently there is not enough information to evaluate the project's eligibility for this credit.

Alternative
Adding green roofs, more permeable pavements, rain gardens, in varying levels to achieve a maximum point award of 5, for a successful capture and infiltration of 2.25" of rain. One possibility to increase infiltration would be to use the nearby pond as a rain garden. Properly designed rain gardens (also called bioswales) can help to purify contaminants from runoff, and infiltrate water at a more regular rate into the ground supply. (Asleson et. al. 2009) In general, reductions in impervious surfaces will have positive benefits on the local stormwater regime (Booth 2002). It is essential that steps be taken to preserve the quality of our water resources, particularly our drinking water supply. Water supplies are considered critical natural capital, meaning they are a resource for which no good substitutes exist (Harris, 2006).

GCT Credit 10: Heat Island Reduction

Points Possible: 1
Points Met: 0
Alternative: 1

Intent
Reduce heat islands to minimize impact on microclimate and human and wildlife habitat.

Requirements
Provide any combination of the following strategies for 50% of the non-roof impervious site landscape (including roads, sidewalks, courtyards, parking lots, and driveways):
• Shade (within five years of occupancy)
• Paving materials with a Solar Reflectance Index (SRI) of at least 29
• Open grid pavement system
Use roofing materials that have a Solar Reflectance Index (SRI) equal to or greater than the values in the table below for a minimum of 75% of the roof surface of all buildings within the project; or install a "green" (vegetated) roof for at least 50% of the roof area of all buildings within the project. Combinations of SRI compliant and vegetated roof can be used provided that they collectively cover 75% of the roof area of all buildings.

Credit Not Met
Currently there is not enough information to evaluate the project's eligibility for this credit.

Alternative
This site has plans for pervious pavement to cover portions of this project, but not the 50% requirement for this credit. An alternative approach would be to use pervious pavement for the entire project or at least 50%. However, pervious pavement may not be an appropriate option due to the fact that the area will need to be able to accommodate heavy vehicles. Another approach would be to use paving materials with a SRI of 29 or greater. When considering any of these options the economic trade-offs should be taken into account (Browning 2008). The trade-off in this situation is between using more expensive pervious pavement versus not using it and potentially saving money. The benefit of using the pervious pavement is twofold: the pavement will help the area drain faster under storm conditions and there is potential that neighborhood groups and environmental groups will praise their efforts to be green and environmentally aware. Part of the value in making LEED designed projects is the marketing aspect. LEED projects have a niche market of environmentally conscious tenants and can be capitalized on by promoting the green aspects of a project (RFF, 2008).

GCT Credit 11: Solar Orientation

Points Possible: 1
Points Met: 0
Alternative: N/A

Intent
Achieve enhanced energy efficiency by creating the optimum conditions for the use of passive and active solar strategies.

Requirements
Design and orient 75% or more of the project's buildings such that one axis of each building is at least 1.5 times longer than the other, and such that the longer axis is within 15 degrees of the geographical east/west axis. The length to width ratio shall be applied only to the length of walls enclosing conditioned spaces; walls enclosing unconditioned spaces such as garages, arcades, or porches cannot contribute to credit achievement. South-facing vertical surfaces of buildings counting towards credit achievement must not be more than 25% shaded at time of initial occupancy (measured at noon on December 21st).

Credit Not Met
The project does not meet the requirements.

Alternative
There is no applicable alternative because major changes in the buildings that have been built would be necessary to complete this credit.

GCT Credit 12: On-Site Energy Generation

Points Possible: 1
Points Met: 0
Alternative: 1

Intent
Reduce air, water, and land pollution from energy consumption and production by increasing the efficiency of the power delivery system. Increase the reliability of power.

Requirements
Develop on-site energy generation system(s) with peak electrical generating capacity of at least 5% of the project's specified electrical service load.

Credit Not Met
Currently there is not enough information to evaluate the project's eligibility for this credit.

Alternative
The project could meet this credit by achieving the following: 5% of the project's total energy coming from on-site generation; a written commitment to meeting the requirements. One potential option for on-site energy generation is a combined-cycle natural gas burning plant. The economic viability of this credit can be framed in terms of savings made from generating power on site, rather than purchasing power from a utility. For this credit to make economic sense the cost of generating one's own power must be less than what a utility charges. An economic analysis would be helpful to determine the economic viability. One critical step would be to estimate the present value of savings created from generating on site power. Then one would need to estimate the present value of buying utility power (Pierce, 1996). The lowest number determines whether this credit is worth completing.

GCT Credit 13: On-Site Renewable Energy Sources

Points Possible: 1
Points Met: 0
Alternative: 1

Intent
Encourage on-site renewable energy self-supply in order to reduce environmental and economic impacts associated with fossil fuel energy use.

Requirements
Design and incorporate the use of shared on-site nonpolluting renewable energy generation technologies such as solar, wind, geothermal, small scale/micro hydroelectric, and biomass with peak electrical generating capacity of at least 5% of the project's specified electrical service load.

Credit Not Met
Currently there is not enough information to evaluate the project's eligibility for this credit.

Alternative
The project could meet this credit by achieving the following: incorporating renewable energy technologies such as solar, wind, or biomass so that 5% of the projects energy comes from these technologies; a written commitment to meet the requirements would also be included. Interest rates are important to determine the economic viability of this credit. Economic theory predicts that projects involving renewable energy or any investment, where capital is being rented, projects will be done when the interest rate is relatively low (Mankiw, 2006). Thus this credit will more likely to be taken on when interest rates are low and thus the cost is low.

GCT Credit 14: District Heating & Cooling

Points Possible: 1
Points Met: 0
Alternative: 1

Intent
Reduce air, water, and land pollution resulting from energy consumption in buildings by employing energy efficient district technologies.

Requirements
Design and incorporate into the project a district heating and/or cooling system for space conditioning of all buildings in the project (at least 2 buildings total) such that at least 80% of the project total square footage is connected, and at least 80% of the project total peak heating or cooling load is connected. The efficiency of each component of the system which is regulated by ASHRAE / IESNA 90.1-2004 must have an overall efficiency performance at least 10% better than specified by the ASHRAE 90.1- 2004 Prescriptive Requirements.

Credit Not Met
Currently there is not enough information to evaluate the project's eligibility for this credit.

Alternative
The project could be eligible to meet this credit if it included a district heating system for all buildings, such that 80% of the project's total square footage is connected and 80% of the project total peak heating load is connected. A heating rather than cooling system make more sense consider this regions climate. The efficiency guidelines must also be followed. If the project does not already include a district heating system the viability of installing a district heating system would need to be assessed. Often people will have the incentive to make these changes because they will lead to lower utility bills in the future. However when the purchaser of the appliance or system is not the end user, they are more likely to choose the inefficient, inexpensive option. This is referred to as "misplaced incentives"; when the purchaser is not the user (Peirce, 1996).

GCT Credit 15: Infrastructure Energy Efficiency

Points Possible: 1
Points Met: 0
Alternative: 1

Intent
Reduce air, water, and land pollution from energy consumption.

Requirements
Design or purchase any traffic lights, street lights, water and wastewater pumps and treatment systems that are included as part of the project to achieve a 15% annual energy reduction beyond an estimated baseline energy use for this infrastructure. If any traffic lights are installed as part of the project, use light emitting diode (LED) technology.

Credit Not Met
The proposed project is not planned to meet the credit requirements.

Alternative
The project could meet this credit if infrastructure such as traffic lights, street lights, water and wastewater pumps and treatment systems achieve a 15% annual energy reduction from an estimated baseline. A written commitment to meet the requirements would also be included.

GCT Credit 16: Wastewater Management

Points Possible: 1
Points Met: 0
Alternative: 1

Intent
Reduce pollution from wastewater and encourage water reuse.

Requirements
Design and construct the project to divert at least 50% of the wastewater generated by the project, and reuse wastewater to replace the use of potable water. Provide for on-site wastewater treatment to a quality defined by state and local regulations for the proposed reuse. 50% of the wastewater is calculated by determining the total wastewater flow using conventional design practices in gallons per day and demonstrating that 50% of that volume enters an alternative, on-site process.

Credit Not Met
Currently there is not enough information to evaluate the project's eligibility for this credit.

Alternative
Greywater recycling systems would allow for the project to capture and reuse a high portion of water, and reduce the amount of potable water used for non-human consumptive purposes. Greywater comprises between 50 and 80% of residential water consumption and can be reused in activities such as gardening, car washing, and toilet flushing (Jamrah et al 2008). The addition of greywater recapture and

infiltration into rain gardens would also help satisfy the requirements of GCT Credit 9: Stormwater Management.

GCT Credit 17: Recycled Content in Infrastructure

Points Possible: 1
Points Met: 0
Alternative: 1

Intent
Use recycled materials to reduce the environmental impact of extraction and processing of virgin materials.

Requirements
Use the indicated recycled materials in all the following applications, if present in the project.

For roadways, parking lots, sidewalks, and curbs (above-ground structured parking and underground parking are exempt from this requirement):

Any aggregate base and aggregate subbase shall be at least 90% by volume recycled aggregate materials such as crushed Portland cement concrete and asphalt concrete.

Any asphalt base shall be a minimum 15% by volume recycled asphalt pavement.

Any asphalt concrete pavement shall be a minimum 15% by volume recycled asphalt pavement, or be a minimum 75% by volume rubberized asphalt concrete from crumb rubber from scrap tires (crumb rubber modifier), or include a minimum of 5% (of total weight) of pre-consumer or post-consumer asphalt roofing shingles.

Any Portland cement concrete pavement shall contain recycled mineral admixtures (such as coal fly ash, ground granulated blast furnace slag, rice hull ash, silica fume, or other pozzolanic industrial byproduct) to reduce by at least 25% the concrete mix's typical Portland cement content, and a minimum of 10% by volume reclaimed concrete material aggregate.

Piping made of Portland cement concrete shall contain recycled mineral admixtures (such as coal fly ash, ground granulated blast furnace slag, rice hull ash, silica fume, or other pozzolanic industrial byproduct) to reduce by at least 25% the concrete mix's typical Portland cement content.

Credit Not Met
Currently there is not enough information to evaluate the project's eligibility for this credit.

Alternative
The project would need to be designed such that the aggregate base and subbase are at least 90% recycled aggregate materials, any asphalt base is at least 15% recycled content, and any asphalt concrete pavement is at least 15% recycled asphalt pavement. Also, any Portland cement concrete pavement and any piping made from Portland cement concrete needs to contain at least 25% recycled mineral admixtures and 10% reclaimed concrete material aggregate. Studies have shown that recycled

material can be used even in structural materials, and that a substitution of up to 25% recycled coarse aggregate does not affect the shear capacity of beams (Etxeberria, et al 2007).

GCT Credit 18: Construction Waste Management

Points Possible: 1
Points Met: 0
Alternative: 1

Intent
Divert construction and demolition debris from disposal in landfills and incinerators. Redirect recyclable recovered resources back to the manufacturing process. Redirect reusable materials to appropriate sites.

Requirements
Recycle and/or salvage at least 50% of non-hazardous construction and demolition debris. Develop and implement a construction waste management plan that, at a minimum, identifies the materials to be diverted from disposal and whether the materials will be stored on-site or commingled. Excavated soil and land-clearing debris do not contribute to this credit. Calculations can be done by weight or volume, but must be consistent throughout.

Credit Not Met
Currently there is not enough information to evaluate the project's eligibility of this credit. However, the buildings are prefabricated steel structures. Mass-produced buildings exhibit economies of scale, meaning that the average cost of their production falls as their output increases. This occurs in part because the production process is fine-tuned, sections of the building are a uniform size and there are fewer wasted materials. The result is that prefabricated buildings produce less waste in the manufacturing process, meaning less construction waste gets diverted to a landfill (Katz, et al 1998).

Alternative
This building is primarily made of steel and as mentioned above it is likely that there was little waste involved in its construction but it is still possible for at least 50% of the construction debris, such as steel, to be recycled or salvaged. The manufacturer of the building, Garco Building Systems, would likely be the one to develop the waste management plan and identify the materials that were kept out of the landfill.

GCT Credit 19: Comprehensive Waste Management

Points Possible: 1
Points Met: 0
Alternative: 1

Intent
Reduce the waste hauled to and disposed of in landfills. Promote proper disposal of office and household hazardous waste streams.

Requirements
Meet at least two of the following three requirements and publicize the availability and benefits of the drop-off point(s), station(s), or services:
1) Include at least one drop-off point as part of the project available to all project occupants for office or household potentially hazardous wastes such as paints, solvents, oil, batteries; OR locate project in a local government jurisdiction that provides services for collecting these materials. If a plan for post-collection disposal or use does not exist, establish one.

2) Include at least one recycling or reuse station as part of the project available to all project occupants dedicated to the separation, collection, and storage of materials for recycling including, at a minimum, paper, corrugated cardboard, glass, plastics and metals; OR locate project in a local government jurisdiction that provides recycling services for these materials. If a plan for post-collection use does not exist, establish one.

3) Include at least one compost station as part of the project available to all project occupants dedicated to the collection and composting of food wastes; OR locate project in a local government jurisdiction that provides services for composting materials. If a plan for post collection use does not exist, establish one.

Credit Not Met
Currently there is not enough information to evaluate the project's eligibility for this credit.

Alternative
Adding any 2 out of 3 services chosen from house-hold hazardous materials pickup, composting, and separated recycling will make the project eligible for this credit. House-hold hazardous materials include substances such as bleach and many cleaning supplies, which may be in use, rendering pickup service a valuable portion of the credit, even if recycling and compost have already been added.

GCT Credit 20: Light Pollution Reduction

Points Possible: 1
Points Met: 0
Alternative: 1

Intent
Minimize light trespass from site, reduce sky-glow to increase night sky access, improve nighttime visibility through glare reduction, and reduce development impact on nocturnal environments.

Requirements
For exterior lighting in shared portions of the project, only light areas as required for safety and comfort. Do not exceed 80% of the lighting power densities for exterior areas and 50% for building facades and landscape features as defined in ASHRAE/IESNA Standard 90.1-2004, Exterior Lighting Section, without addenda; AND Stipulate CC&Rs or other binding documents that require continued adherence to the standard of LZ3 — Medium (Commercial/Industrial, High-Density Residential) Design exterior lighting so that all site and building mounted luminaires produce a maximum initial illuminance value no greater than 0.20 horizontal and vertical footcandles at the site boundary and no greater than 0.01 horizontal footcandles 15 feet beyond the site. Document that no more than 5% of the total initial designed fixture lumens are emitted at an angle of 90 degrees or higher from nadir (straight down). For

site boundaries that abut public rights-of-way, light trespass requirements may be met relative to the curb line instead of the site boundary.

Credit Not Met
Despite the reduced luminance of the site as shown in Map 8 in Appendix A, the site's lighting exceeds luminance standards.

Alternative
Reducing the luminance to a value lower than 0.20 footcandles at the sites boundary, and 0.01 15 feet beyond the site, with no more than 5% of the fixtures emitting light at an angle of 90 degrees or higher. Reduction of lighting to LEED ND standards would allow for a more seamless feeling of "night" around the site, beneficial to nocturnal ecosystem activity. (Fedune, 1995)

Innovation & Design Process

http://susty.com/bluegreen-alliance-organization-green-jobs/

ID Credit 1: Innovation and Exemplary Performance

Points Possible: 5
Points Met: 0
Alternative: N/A

Intent
To provide projects the opportunity to be awarded points for exceptional performance above the requirements set by the LEED for Neighborhood Development Rating System and/or innovative performance in green building, smart growth, or new urbanist categories not specifically addressed by the LEED for Neighborhood Development Rating System.

Requirements
While working with the guidance of a LEED accredited professional, identify in writing the intent of the proposed innovation credit, the proposed requirement for compliance, the proposed submittals to demonstrate compliance, and the design approach and strategies that might be used to meet the requirements.

Credit Not Met
The project does not plan on meeting any of the requirements

Alternative
Based on current actions taken by the developer, it is unlikely that steps above and beyond standard LEED ND prerequisites and credits can plausibly be taken, even with a large redesign of the project. Additionally, recommendations to meet this credit cannot be made without the assistance of a LEED accredited professional.

ID Credit 2: LEED Accredited Professional

Points Possible: 1
Points Met: 0
Alternative: 1

Intent
To support and encourage the planning and design integration required by a LEED for Neighborhood Development green neighborhood project and to streamline the application and certification process.

Requirements
At least one principal member of the project design team shall be a LEED Accredited Professional, a professional who is credentialed with regard to smart growth as determined by the Natural Resources Defense Council in consultation with Smart Growth America, or a professional who is credentialed with regard to new urbanism as determined by the Congress for the New Urbanism.

Credit Not Met
The project does not intend on meeting this credit.

Alternative
For the building redesign, hire at least one LEED Accredited Professional for the project design team in order to meet this credit.

Summary of Findings

The Squalicum Lofts project only meets seven of the nine prerequisites. The Open Community Prerequisite that was not met is easily remedied through the removal of the two gates. However, the only alternative to the Compact Development Prerequisite is a complete redesign of the existing buildings. Squalicum Lofts could potentially achieve LEED ND Gold certification but only through the following suggested alternatives:

- Convert on-site pond and surrounding area into a wetland
- Donate restored pond area to an accredited land trust
- Designate all roads within the project for public use
- Redesign the project to include a residential component that would include a diversity of housing types, including affordable rental and for-sale units
- Limit the zone of construction impact to the area immediately near the site
- Create construction impact zones that limit the site disturbance
- Use pervious pavement to cover at least 50% of the projects impervious areas
- Reduce the luminance of lighting systems
- Include a district heating system for all buildings
- Install water efficient fixtures
- Create an underground parking garage or relocate parking to the rear of the buildings
- Add green roofs, greywater recycling systems and rain gardens for rainwater capture
- Use recycled aggregate materials in pavement and concrete structures
- Recycle at least 50% of the excess steel used in the manufacturing process
- Add 2 recycling or waste management services
- Receive 5% of energy from on-site or on-site renewable sources such as solar or wind

Based on the amount of necessary changes and the need to redesign the buildings to meet the Compact Development Prerequisite, Squalicum Lofts, in its current state, is not a potential candidate for LEED ND certification.

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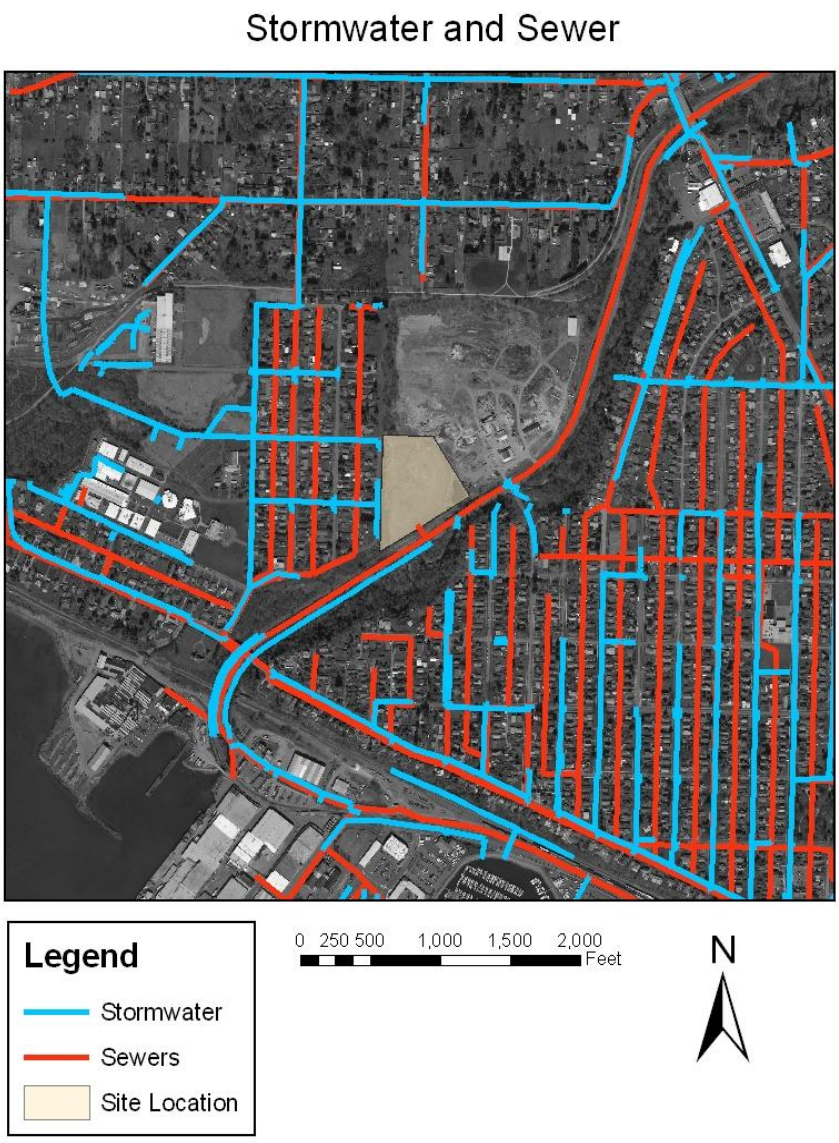
APPENDIX A: Maps & Aerial Photographs

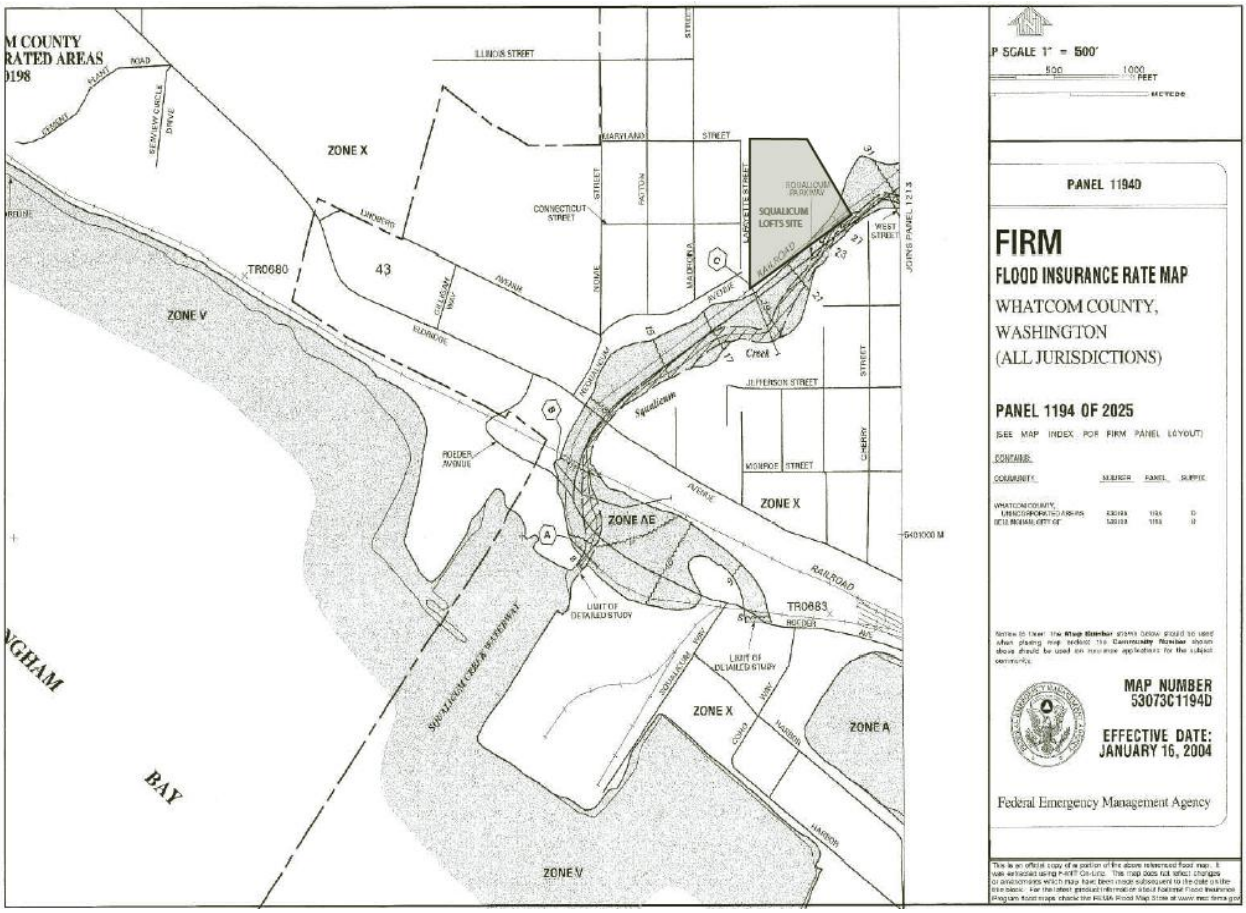
Map 1

Map 2

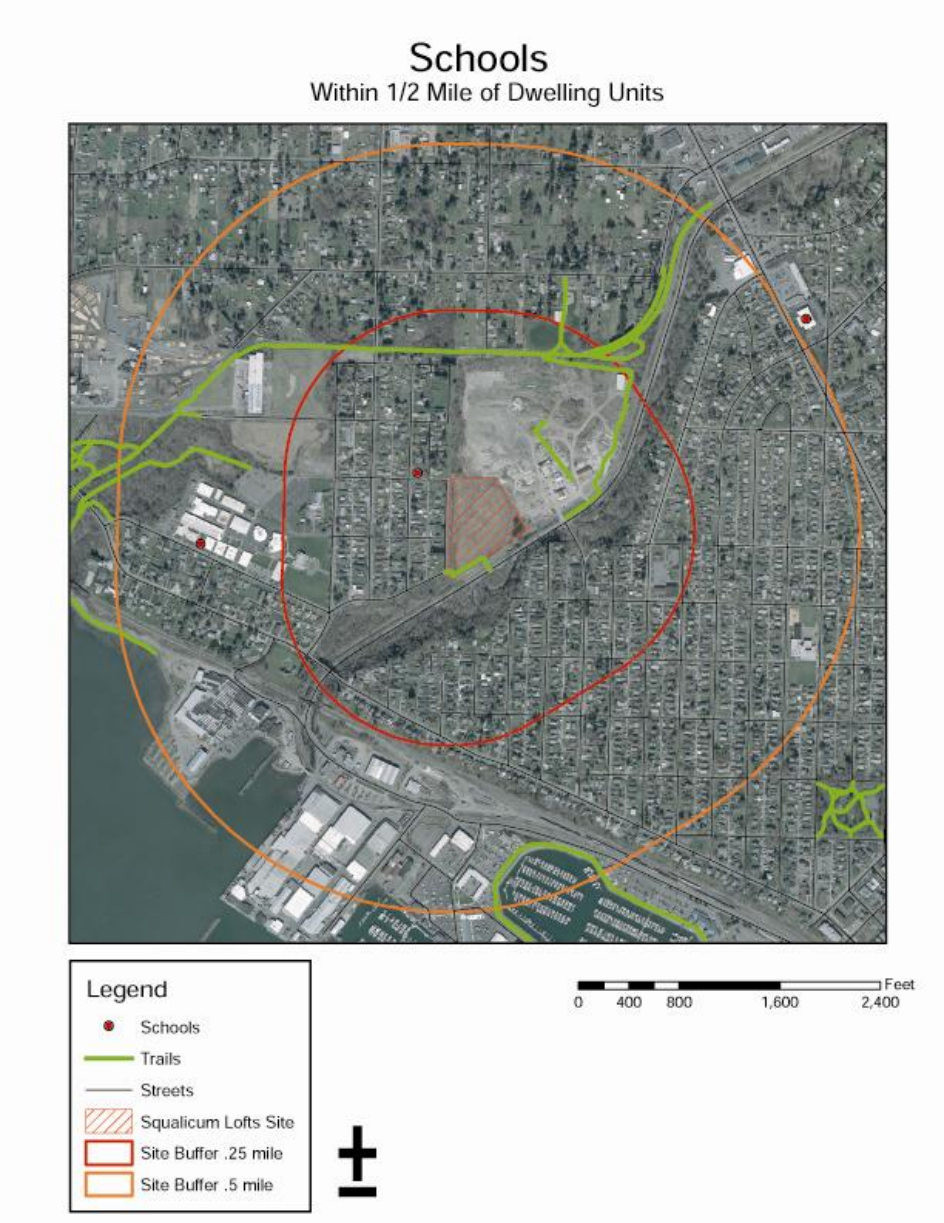

Stormwater and Sewer
Legend
Stormwater
Sewers
Site Location
0 250 500 1,000 1,500 2,000
Feet
N

Map 3

FEMA 100-year Floodplain Map

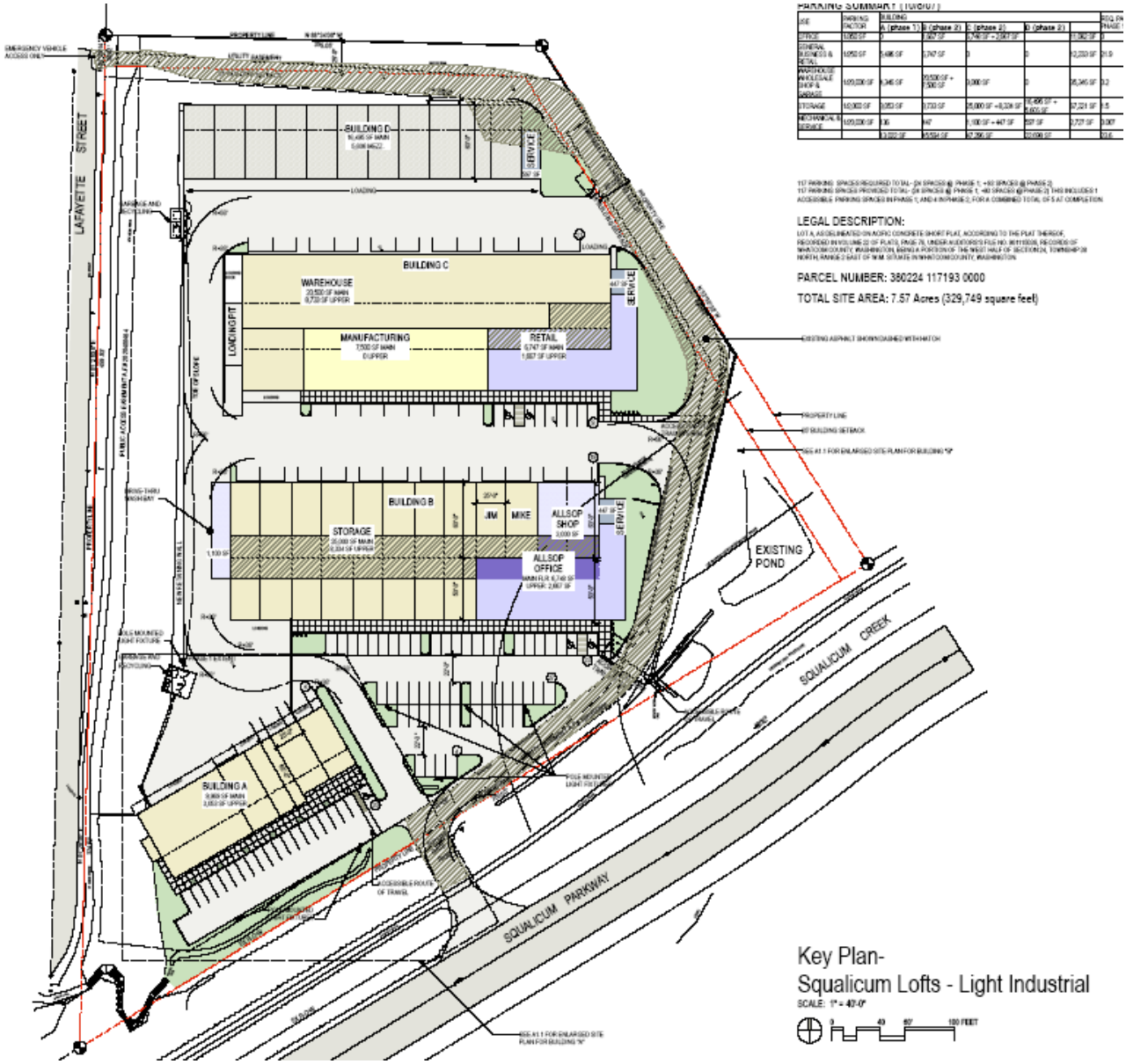


Map 4


Schools
Within 1/2 Mile of Dwelling Units
Legend
Schools
Trails
Streets
Squalicum Lofts Site
Site Buffer .25 mile
Site Buffer .5 mile
0
400
800
1,600
2,400
Feet

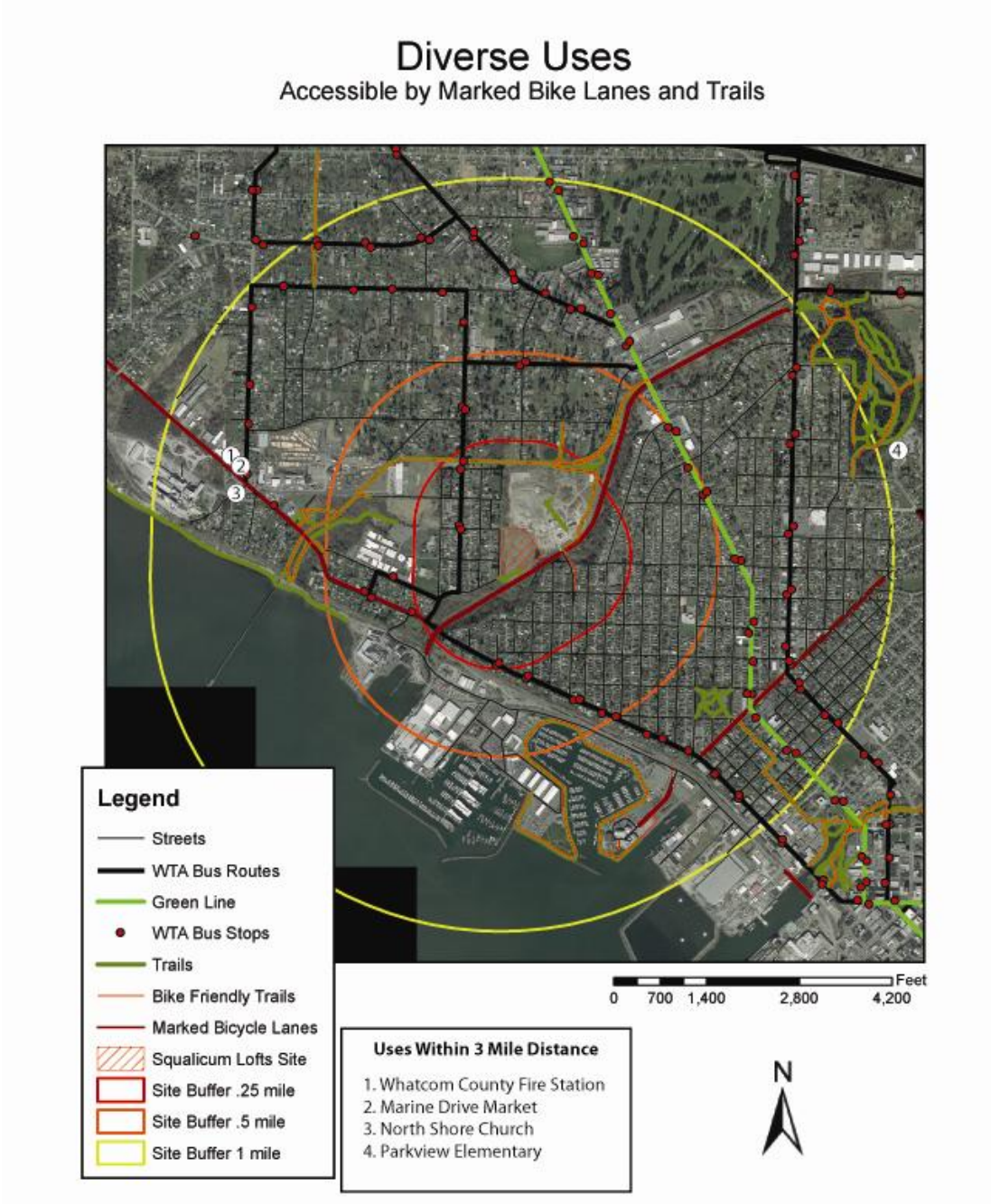
Map 5

Site Map



Note: Zigzag lines in front of entrances at Buildings A,B and C represent bicycle parking
Site plan courtesy of RMC Architects

Map 6


Diverse Uses
Accessible by Marked Bike Lanes and Trails
Legend
Streets
WTA Bus Routes
Green Line
WTA Bus Stops
Trails
Bike Friendly Trails
Marked Bicycle Lanes
Squalicum Lofts Site
Site Buffer .25 mile
Site Buffer .5 mile
Site Buffer 1 mile
0 700 1,400 2,800 4,200
Feet
Uses Within 3 Mile Distance
1. Whatcom County Fire Station
2. Marine Drive Market
3. North Shore Church
4. Parkview Elementary
N

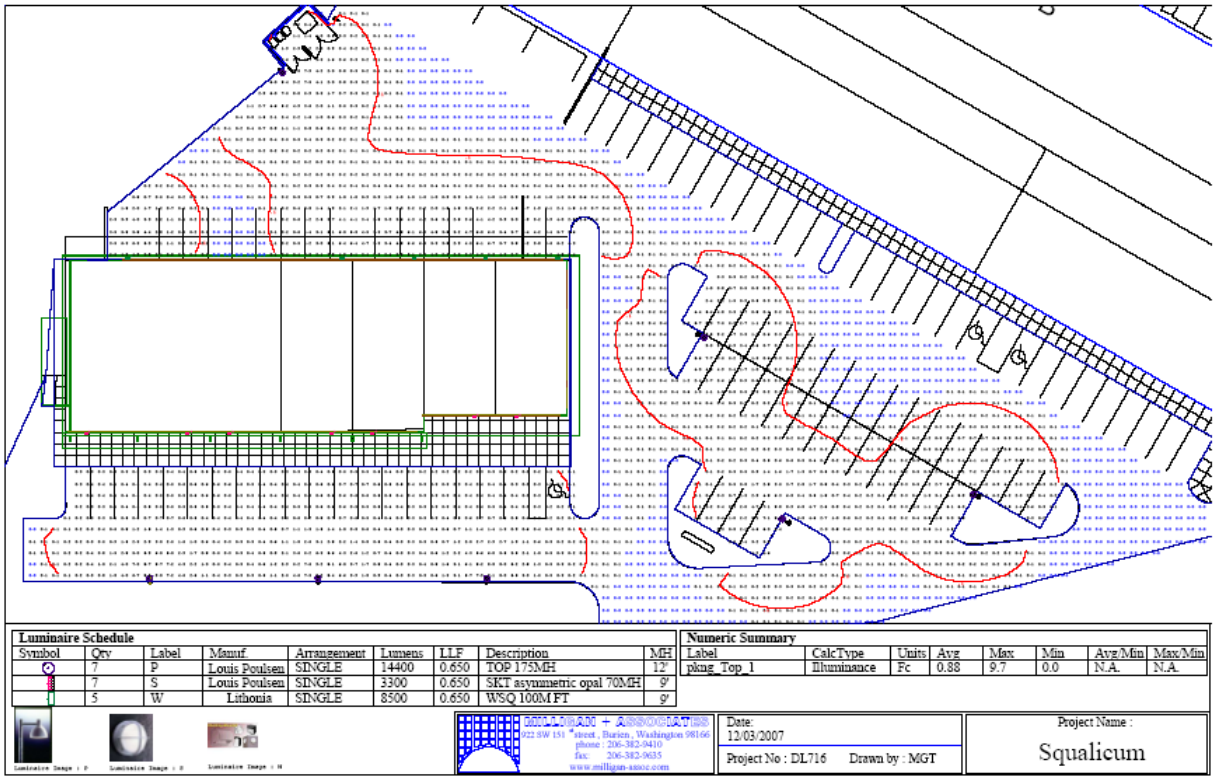
Map 7

Squalicum Creek Park & Site Plan

Rendering courtesy of City of Bellingham and J.A. Brennan and Associates

Map 8

Lighting Schematic



Luminaire Schedule

Symbol	Qty	Label	Manuf.	Arrangement	Lumens	LLF	Description	MH
	7	P	Louis Poulsen	SINGLE	14400	0.650	TOP 175MH	12'
	7	S	Louis Poulsen	SINGLE	3300	0.650	SKT asymmetric opal 70MH	9'
	5	W	Lithonia	SINGLE	8500	0.650	WSQ 100M FT	9'

Numeric Summary

Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
pkng_Top_1	Illuminance	Fc	0.88	9.7	0.0	N.A.	N.A.

Date: 12/03/2007

Project No : DL716 Drawn by : MGT

Project Name : Squalicum

Courtesy of RMC Architects

Photograph 1

1950

Courtesy of City of Bellingham

Photograph 2

1963

Courtesy of City of Bellingham

APPENDIX B: Tables

Table 1

Whatcom Transit Authority Bus Schedules

ROUTE 3 MAPLEWOOD/CORDATA
Weekdays
Arrives at Patton & Maryland
7:18
8:18
9:18
10:18
11:18
12:18
1:18
2:18
3:18
4:18
5:18
6:18

ROUTE 4 HOSPITAL/CORDATA
Weekdays
Arrive at Patton & Maryland
7:23
8:23
9:23
10:23
11:23
12:23
1:23
2:23
3:23
4:23
5:23
6:23

Table 2

Floor Area Densities

Residential Density (DU/acre)	Non-residential Density (FAR)	Points Available
10 to 20	.075 to 1.0	1
>20 and ≥30	>1.0 and ≥1.5	2
>30 and ≥40	>1.5 and ≥2.0	3
>40 and ≥50	>2.0 and ≥2.5	4
>50 and ≥60	>2.5 and ≥3.0	5
>60 and ≥70	>3.0 and ≥3.5	6
>70	>3.5	7

Table 3

Monthly rental rates for households at 50% and 80% of the median annual income for Bellingham, WA for five property types.

Property type	Price for 50% of the Median Income	Price for 80% of the Median Income
Studio	$595	$774
1-Bedroom	$658	$855
2-Bedroom	$824	$1071
3-Bedroom	$1204	$1565
4-Bedroom	$1422	$1849

Source: 50th Percentile Rent Estimates, United States Department of Housing and Urban Development, 2009.

APPENDIX C: Lists

List 1.1

Street Grid Densities

- An infill site that is also a previously developed site (6 points)
- An infill site that is not a previously developed site (4 points)
- An adjacent site that is also a previously developed site (3 points).
- A previously developed site that is not an adjacent or infill site (2 points)
- An adjacent site that is not a previously developed site (1 point)

List 1.2

Street Grid Densities

- 40 centerline miles per square mile or greater (4 points)
- 30-39 centerline miles per square mile (3 points)
- 20-29 centerline miles per square mile (2 points)
- 10-19 centerline miles per square mile (1 point)

No points are available under this credit for sites that are not either 1) an adjacent site, 2) an infill site, or 3) a previously developed site.

List 2

Diverse Uses

Bank
Child care facility (licensed)
Community/civic center
Convenience store
Hair care
Hardware store
Health club or outdoor recreation facility
Laundry/dry cleaner
Library
Medical/dental office
Pharmacy (stand-alone)
Place of worship
Police/fire station
Post office
Restaurant
School
Senior care facility
Supermarket
Theater

List 3

Landscaping Permit Plant List
***Plant species* (number to be planted)**

North
Carpinus caroliniana (7)
Pseudotsuga menziesii (5)
Tsuga heterophylla (3)
Amelanchier alnifolia (9)
Cornus sericea (6)
Euonymus japonicas (11)
Festuca idahoensis (82)
Philadelphus lewisii (9)
Ribes sanguineum (7)
Spiraea densiflora (75)
Arctostaphylos uva-ursi (932)

South
Carpinus caroliniana (9)
Fraxinus latifolia (6)
Acer griseum (11)
Cornus sericea (5)
Euonymus japonicas (332)
Festuca idahoensis (180)
Philadelphus lewisii (6)
Ribes sanguineus (33)
Spiraea densiflora (65)
Symphoricarpos albus (22)
Arctostaphylos uva-ursi (119)

List 4

NPD Credit 7: Walkable Streets

a. A principal functional entry of each building has a front façade that faces a public space such as a street, square, park, paseo, or plaza.
b. A minimum of 30% of all street frontages located within the project, if any, are planned for development that complies with the minimum building-height-to-street-width proportions of 1:3; and where building sites are planned along streets bordering the project, a minimum of 15% of the total street frontage of such sites contains (or is dedicated to) development that will produce a building-height-to-street-width proportion of 1:3. Street frontages are to be measured in linear feet.
c. Continuous sidewalks or equivalent provisions for walking are provided along both sides of all streets within the project. New sidewalks must be at least 4 feet wide. Equivalent provisions for walking include woonerfs and footpaths.
d. All streets along exclusively residential blocks within the project, whether new or existing, are designed for a maximum speed of 20 mph.
e. All streets along non-residential or mixed use blocks within the project, whether new or existing, are designed for a maximum speed of 25 mph.

If the above measures are achieved, the project may earn additional points as follows: 1 point for designing and building the project such that any three measures on the list below are accomplished (up to 4 additional points):
f. The front façades of at least 80% of all buildings are no more than 25 feet from front property line.
g. The front facades of at least 50% of all buildings are no more than 18 feet from the front property line.
h. The front facades of at least 50% of mixed-use and non-residential buildings are contiguous to the sidewalk.
i. Functional building entries occur every 75 feet, on average, along non-residential or mixed use blocks.
j. All ground-level non-residential interior spaces that face a public space have transparent glass on at least 33% of the ground-level façade.
k. No blank (without doors or windows) walls longer than 50 feet occur along sidewalks. Walls with public art installations such as murals may be exempted.
l. Any ground-level storefront windows must be kept open and visible (unshuttered) at night, and this must be stipulated to future owners in CC& Rs or other binding documents.
m. On-street parking is provided on 70% of both sides of all new streets. The percentage of on-street parking shall be measured by comparing the length of street designated for parking to the total length of the curb around the perimeter of each block, including curb cuts, driveways, and intersection radii.
n. Street trees occur between the vehicle travel way and sidewalk at intervals of no greater than 40 feet;
o. At least 50% of ground-floor dwelling units have an elevated finished floor no less than 24 inches above the sidewalk grade.
p. In non-residential or mixed use projects, 50% or more of the total number of office buildings include ground floor retail; and all businesses and/or other community services on the ground floor are accessible directly from sidewalks along a public space such as a street, square, or plaza.
q. Trees or other structures provide shade within five years of project occupancy over at least half the length of sidewalks included within or contiguous to the project. The estimated crown diameter (the width of the shade if the sun is directly above the tree) is used to calculate the shaded area.

List 5

NPD Credit 3: Diversity of Housing Types

(1) Detached residential large - (greater than 1200 sq. ft.)
(2) Detached residential small - (less than 1200 sq. ft.)
(3) Duplex or townhouse - large (greater than 1200 sq. ft.)
(4) Duplex or townhouse - small (less than 1200 sq. ft.)
(5) Multifamily dwelling in a building with no elevator - large (greater than 750 sq. ft.)
(6) Multifamily dwelling in a building with no elevator - small (less than 750 sq. ft.)
(7) Multifamily dwelling in a building with elevator four stories or fewer - large (greater than 750 sq. ft.)
(8) Multifamily dwelling in a building with elevator four stories or fewer - small (less than 750 sq. ft.)
(9) Multifamily dwelling in a building with elevator more than four stories and fewer than nine stories - large (greater than 750 sq. ft.)
(10) Multifamily dwelling in a building with more than four stories and fewer than nine stories – small (less than 750 sq. ft.)
(11) Multifamily dwelling in a building with elevator nine stories or more - large (greater than 750 sq. ft.)
(12) Multifamily dwelling in a building with nine stories or more - small (less than 750 sq. ft.)
(13) Live/work large (greater than 1200 sq. ft.)

(14) Live/work small (less than 1200 sq. ft.)
(15) Accessory Unit – large (greater than 1200 sq. ft.)
(16) Accessory Unit – small (less than 1200 sq. ft.)
Townhouse and live/work units may be ground related and/or within a multifamily or mixed-use building.
Double counting is prohibited. Each dwelling may be classified in only one category.

APPENDIX D

LEED-ND Glossary (from Pilot Version: LEED ND Rating System)

Adapted (or introduced) Plants – Plants that reliably grow well in a given habitat with minimal attention from humans in the form of winter protection, pest protection, water irrigation, or fertilization once root systems are established in the soil. Adapted plants are low maintenance but not invasive.

Adaptive reuse – Conversion of an existing building that is functionally obsolete for its designed purpose to an updated purpose.

Adequate transit service – During weekday peak periods, at least four buses (including bus rapid transit), streetcars or light rail trains per hour OR at least 5 heavy passenger rail or ferries per weekday peak period.

Adjacent site – A site having at least 25% of its perimeter bordering land that has been previously developed. For the puposes of this definition, a street or roadway does not constitute previously developed land. Any fraction of the perimeter that borders waterfront will be excluded from the calculation.

Area median income – The median, or middle, income of a county as defined and available from the U.S. Department of Housing and Urban Development.

Biking network – A continuous network consisting of one or more of the following: bicycle lanes or trails at least 5 feet wide or roads designed for a speed of 10 miles per hour or slower.

Block – Land bounded by the project boundary, dedicated transportation or utility rights-of-way, waterfront, and/or comparable land division features.

Brownfield – Real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminate. (U.S. EPA)

Buildable land – The portion of the site where construction can occur. When used in density calculations, the calculation for buildable land excludes: public streets and other public rights of way, and land excluded from development by law or other prerequisites of LEED for Neighborhood Development.

Buildout – The time at which all habitable buildings on the project are complete and ready for occupancy.

Class I Bikeway - Class I bikeways are defined as bicycle or multi-use facilities that are completely separate from the vehicular right-of-way. The standard Class I bikeway has pavement that is 8 feet wide however the exact design requirements for Class I bikeways differ from jurisdiction to jurisdiction.

Community Supported Agriculture (CSA) – A farm operation for which a community of individuals who pledge support so that the farmland becomes, either legally or informally, the community's farm. The growers and consumers provide mutual support, sharing the risks and benefits of food production. Consumers receive portions of the farm's harvest throughout the growing season.

Covenants, Conditions and Restrictions (CC&Rs) – Limitations that may be placed on a property and its use, and which are made a condition of holding title or lease.

Density – Density is the amount of building structures constructed on the project site, measured for residential buildings as dwelling units per acre of buildable land available for residential uses, and for non-residential buildings as the floor area ratio per acre of buildable land area available for nonresidential uses.

Development footprint – The total land area of a project site covered by buildings, streets, parking areas, and other typically impermeable surfaces constructed as part of the project.

Floor Area Ratio (FAR) – The measure of the density of non-residential land use. It is the total nonresidential building floor area divided by the total buildable land area available for non-residential uses. For example, on a site with 10,000 square feet of buildable land area, an FAR of 1.0 would be 10,000 square feet of built building floor area. On the same site, an FAR of 1.5 would be 15,000 square feet of built floor area; an FAR of 2.0 would be 20,000 built square feet and an FAR of 0.5 would be 5,000 built square feet.

Functional entry – An entryway that is designed to be used by pedestrians and is open during regular business hours. This does not include any door that is exclusively designated as an emergency exit, or a garage door that is not designed as an entrance for pedestrians.

Greywater – Untreated household waste water which has not come into contact with toilet waste. Greywater includes used water from bathtubs, showers, bathroom wash basins, and water from clothes-washer and laundry tubs. It shall not include waste water from kitchen sinks or dishwashers. Some states and local authorities allow kitchen sink wastewater to be included in greywater. Project teams should comply with greywater definitions as established by the authority having jurisdiction in their areas. (Uniform Plumbing Code)

Habitable building – A structure that is intended for living, working, or other types of occupancy. Habitable structures do not include buildings such as garages and pump stations.

HERS Index – A scoring system established by the Residential Energy Services Network (RESNET) in which a home built to the specifications of the HERS Reference Home (based on the 2006 International Energy Conservation Code) scores a HERS Index of 100, while a net zero energy home scores a HERS Index of 0. The lower a home's HERS Index, the more energy efficient it is in comparison to the HERS Reference Home.

Infill site – A site having at least 75% of its perimeter bordering sites that have been previously developed. For the puposes of this definition, a street or roadway does not constitute previously developed land. Any fraction of the perimeter that borders waterfront will be excluded from the calculation.

IECC – International Energy Conservation Code

Invasive Plants – Plants that may be either indigenous or non-indigenous species or strains that are

characteristically adaptable, aggressive, have a high reproductive capacity and tend to overrun the ecosystems in which they inhabit.

Native (or indigenous) Plants – Plants that have adapted to a given area during a defined time period and are not invasive. In America, the term often refers to plants growing in a region prior to the time of settlement by people of European descent.

Neighborhood – An area of dwellings and/or work places and their immediate environment that residents and/or employees identify with in terms of social and economic attitudes, lifestyles, and institutions.

Post-consumer – Generated by households or by commercial, industrial and institutional facilities in their role as end-users of a product, which can no longer be used for its intended purpose.

Pre-consumer – Diverted from the waste stream during the manufacturing process. It does not include the reutilization of materials such as rework, regrind or scrap generated in a process and capable of being reclaimed within the same process that generated it.

Pre-development – Before any development occurred on the site. Pre-development conditions describe the natural conditions of the site prior to any human alteration, i.e. development of roads, buildings, etc.

Previously developed – Having pre-existing paving, construction, or altered landscapes. This does not apply to altered landscapes resulting from current agricultural use, forestry use, or use as preserved natural area.

Previously developed site – A site consisting of at least 75% previously developed land.

Pre-project – Before the project was initiated, but not necessarily before any development or disturbance took place on the site. Pre-project conditions describe site conditions as the current developer or project applicant found them.

Prime soils – Soils with chemical, hydrographic and topological properties that make them especially suited to the production of crops. The Natural Resources Conservation Agency is responsible for identifying prime soils, and they make detailed soil surveys and maps available for every county in the United States. All of the NRCS data are available for download to GIS mapping programs.

Project – The land and construction that constitutes the basis for LEED for Neighborhood Development application.

Project boundary – The outermost property line of the project. Projects located on publicly-owned campuses that do not have internal property lines shall delineate a sphere of influence line to be used in place of “property line.” The phrase ‘project site’ is equivalent to the land inside the project boundary.

School – An institution for the academic instruction of children or adults, technical trade school, arts school, college, or university.

Shared portions of the project – Areas of the project that are publicly-owned, such as streets and parks,

and land and facilities that are held under common ownership by entities such as a condominium association, land trust, or privately owned corporations.

Street grid density – The density of the street network as measured in centerline miles per square mile. Areas that shall be excluded from the calculation are water bodies, parks, recreational facilities, public campus facilities (such as universities), areas preserved from development because of local, state, or federal law, land preserved from development from the prerequisites of LEED for Neighborhood Development, land that cannot be developed due to a unique topographic or geologic condition (such as steep slopes).

Toe of the slope – Where there is a distinct break between a 40% slope and lesser slopes.

Unique soils – Soils with chemical, hydrographic and topological properties that make them especially suited to specific crops. The Natural Resources Conservation Agency is responsible for identifying unique soils, and they make detailed soil surveys and maps available for every county in the United States. All of the NRCS data are available for download to GIS mapping programs.

Walk distance – The distance that a pedestrian must travel between destinations without obstruction, in a safe and comfortable environment such as on sidewalks, footpaths or other pedestrian facilities.

Water bodies – The surface water of a stream, creek, river, lake, estuary, bay, or ocean.

Weekday peak periods –Weekdays between 5:30 a.m. to 10:30 a.m. and 3:30 p.m. to 8:30 p.m. The period of time during the weekday commute when traffic congestion is the greatest.

Wetlands – Areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include "swamps, marshes, bogs, and similar areas." http://www.wetlands.com/regs/tlpge02e.htm (1987 Army Corps of Engineers Manual)

Vehicle Miles Traveled (VMT) – The number of miles traveled by motor vehicles in a specified period of time, such as a day or a year, by a number of motorists in absolute or per capita terms.

Woonerf – A Dutch word that means “street for living.” In practice, it is common space shared by pedestrians, bicyclists, and low-speed motor vehicles. They are usually streets raised to the same grade as curbs and sidewalks. Vehicles are slowed by placing trees, planters, parking areas, and other obstacles in the street, so that motorists travel at walking speed.

APPENDIX E

Site photographs
Courtesy of Jenny Blythe