City of Blaine

East Blaine Infrastructure Plan

October 2009

Prepared by:

City of Blaine

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Chapter 1 – Executive Summary

Key Principles 1.1

The East Blaine Subarea was annexed into the City in 1996. However, little development has progressed in the Subarea since annexation. This plan has been prepared to facilitate coordinated development and to provide a written guide for the phasing of public streets, water, wastewater, stormwater, and electrical infrastructure necessary for responsible development. The key principles that are expected to guide the development of infrastructure in East Blaine are as follows:

1. **Concentrate on developing the central utility corridor as the initial step:** Requiring the development of Mott's Hill Parkway utility corridor will facilitate the critical first development in the area.

2. **Phase improvements to spread costs over time:** Improvements should be phased where possible so as to not overburden and prevent early development.

3. **Focus early developer funding efforts:** The early developers in the Subarea should be primarily responsible for initial improvement of Mott's Hill Parkway and central core utilities. This follows the fundamental axiom that roads facilitate development.

4. **Focus later developer funding efforts:** The later developers in the Subarea should be responsible for improving the streets that link H Street and Canada View Drive with the Mott's Hill Parkway core.

5. **Use of Local Improvement Districts:** Underdeveloped areas may be improved by developer-initiated Local Improvement Districts (LIDs) in order to move forward with plan elements.

6. **Use of developer reimbursement (latecomer) agreements:** Increased capacity constructed by developers to provide for this plan will be eligible for latecomer agreements. The City may also elect in some instances to provide a credit in the amount of these improvements toward impact fees associated with the same utility which would otherwise be owed by a developer.

7. **Application to future development applications:** The plan will be used to guide the review of future development applications to make sure individual developers understand and coordinate development with the overall Subarea plan and that costs are appropriately borne by development.

Street Plan Fundamentals 1.2

Build Mott's Hill Parkway Early: Mott's Hill Parkway and the utilities collocated within the right-of-way should be constructed early to encourage development throughout the Subarea. A road through the core of East Blaine will support infrastructure and encourage new development. In addition, it will provide a continuous public road and trail system from D Street to Valley View Road. Mott's Hill Parkway will provide a parallel east-west collector to H Street.

Acquire Land for Mott's Hill Parkway (as required) : The full extension of Mott's Hill Parkway and the associated utilities may require the City to acquire right-of-way or utility easements prior to developer contributions to provide for connectivity.

Plan Focuses on Backbone vs. Neighborhood Infrastructure: The plan focuses on a backbone infrastructure network to extend basic water, wastewater, and streets through the Subarea. Smaller neighborhood streets not defined in this plan will fill in and provide local connections to the Subarea and tie-in to the backbone infrastructure network identified in this plan.

Water Plan Fundamentals 1.3

Existing 440 Pressure Zone Improvements: The Subarea generally west of Harvey Road is already served by the 440 Pressure Zone. With some modest improvements, the existing 440 Zone can provide for itself and provide an initial source for the 630 Zone. Some of these improvements are scheduled to be implemented by the City. Well No. 9 was brought on line in the summer of 2009, and a 12-inch main connector along Harvey Road is slated for construction in the near future

Proposed 630 Pressure Zone Improvements: The portion of the subarea that is adjacent to and east of Harvey Road will require a new pressure zone and major improvements to provide adequate service. Major improvements include 12-inch looped trunk lines, a new booster pump station, and a new reservoir.

Phased Water Improvements: In order to encourage development, the 630 Zone improvements are proposed to be spread out in phases with the progression of development in the 630 Zone. The water chapter of this plan outlines key water improvements and identifies milestones at which infrastructure must be in place.

Mott's Hill Parkway Trunk Line with H Street Trunk Loops: A 12-inch trunk line is to be constructed along the entire length of Mott's Hill Parkway from Harvey Road east to Valley View, as soon as practicable. As development progresses, the 630 Zone will include two 12-inch trunk line loops with an associated 12-inch line extension on H Street completing the loops.

Wastewater Plan Fundamentals 1.4

First Come, First Served Wastewater: Up to 80% of the existing infrastructure capacity shall be first come, first served to those making wastewater, water, and traffic fee payments.

Avoid Pump Stations: The use of pump stations shall be avoided where possible. There is excellent grade toward the City from the Subarea. Pump stations have long-term maintenance costs for the City, so the use of such facilities should be minimized.

Limited Use of Residential Pump Systems: Construct the wastewater system to minimize the need for public or privately owned lift stations, including individual property grinder pump stations. These systems may be necessary options when serving fewer than 10 residences or when needed to avoid having to construct extensive public sewer lines at a depth greater than 20 feet.

Three Wastewater Trunk Routes Instead of Two: Define wastewater trunk route conveyances that take into account proposed development phasing as well as topography. The ultimate wastewater buildout includes trunk lines down H Street, Mott's Hill Boulevard, and Canada View Road for a total of three east-west lines.

- **Build Mott's Hill Parkway Utilities Early:** Establish gravity wastewater service for the central core developments along Mott's Hill Parkway. Use the wastewater planning and subdivision layouts shown for the East Maple Ridge and Grandis Pond developments to provide service to the core of East Blaine along Mott's Hill Parkway.

- **Build H Street and Canada View Side Utilities Later:** Later gravity wastewater service to the north and south edge developments along H Street and Canada View is to be encouraged.

- **Service Areas vs. Basin Areas:** Delineate wastewater service areas that take into account proposed development phasing, potential LIDs, as well as topography.

Stormwater Plan Fundamentals 1.5

Private Stormwater Detention and Treatment: Stormwater detention and treatment is assumed to be provided on a project-specific basis, with all costs borne by the project developer. The City is willing to consider publicly maintained regional stormwater facilities as an option, should a logical opportunity present itself during Subarea development. The advantage of multiple smaller systems is the inherent redundancy provided by that approach and the ability for specific developments to move forward with predictability without the extensive coordination often required for more regional systems.

Electrical Plan Fundamentals 1.6

Transfer PSE Service to Blaine Service for Entire Subarea: The electrical service for most of the Subarea is currently provided by Puget Sound Energy (PSE). The City is currently working with PSE to transfer the area west of and adjacent to Harvey road as a first phase with the area to the east proposed to occur as those areas are developed. The City is working with PSE to finalize a Service Area Agreement with PSE that establishes the City Limits and UGA as Blaine electrical service areas and provides for the ultimate transfer of these lines to City of Blaine ownership.

Undergrounding of Power for Reliability: A large portion of the existing electrical network is above ground on old poles. These lines will be replaced as underground utilities as soon as practicable to support development of the Subarea. All new electrical infrastructure provided with new subdivision will be constructed underground as required by the Blaine Municipal Code.

Chapter 2 - Streets

Introduction 2.1

The cost of upgrading and expanding the roadway system in the East Blaine Subarea is another factor which has restricted development since its annexation in 1996. The cost of extending public roads throughout the East Blaine Subarea necessitates phasing to provide access to the regional network as development occurs. Conceptually, early developers focus on a central backbone parkway running providing public collector road and primary pedestrian facilities the length of East Blaine; from D Street in the west to Valley View Road in the east. This will provide previously unopened access to the Subarea for later development to fill in lateral neighborhood roads as service to the area expands. As street facilities are constructed or improved, wherever feasible, the East Blaine infrastructure Plan will follow the concepts and connectivity recommended in the Trails Plan.

This chapter describes existing street conditions, analyzes street improvement options, addresses modifications to existing streets, and recommends new street improvements as development in the Subarea moves forward.

Existing Street System 2.2

The existing major streets running through the Subarea are limited. **Map 2.1** on the following page shows the existing major streets in and around the Subarea. The following describes existing major streets in more detail.

H Street – 2.2.1:

Configuration: From SR 543 to Ludwick: 48 feet of paving (four lanes)
From Ludwick to Allan (2010): 42 feet of paving (three lanes)
From Allan to City Limits: 24 feet of paving, with 3-5 foot shoulders

H Street generally consists of rolling terrain and is classified as a major collector by both the City and Whatcom County. Upon annexation, H Street became the southern boundary of the Subarea and the street came under the City's jurisdiction. It extends from downtown Blaine at its western terminus past the City Limit to the east where it ultimately terminates at SR 539 (Guide Meridian). H Street provides a connection between the Pacific Highway international border crossing on State Route (SR) 543 and the Lynden-Aldergrove international border crossing on SR 539. In addition, H Street serves as a travel route for residents living in the county to the south and east of the Subarea wishing to access Blaine shopping and commercial areas and Interstate 5.

The primary land use along this corridor is rural residential; future development will change the residential nature to suburban/urban levels of service and density.

D/E Streets - 2.2.2:

Configuration: D Street: 24 feet of paving (11-foot lanes)

E Street: 20-22 feet of paving with two-foot shoulders

The D/E Street corridor provides east/west connectivity to the westernmost portion of the Subarea. D Street has an interchange with the SR 543 Truck Route on the west end of the East Blaine Subarea. The D/E Street corridor provides another east/west right-of-way that has the potential to connect undeveloped East Blaine areas to the remainder of the state highway system and the city center, as discussed later in this chapter.

Ludwick Avenue & Lincoln Park – 2.2.3:

Configuration: 40 feet of paving (two lanes), curb/gutter

Ludwick Avenue provides a short north/south commercial/industrial corridor and access to H Street from Boblett Street to the south. Ludwick Avenue is designated as a truck route and currently ends at the H Street intersection. To the north of Ludwick Avenue is Lincoln Park, which is public property and could be used for future extension of Ludwick Avenue north to connect to D Street.

Odell Road – 2.2.4:

Configuration: 38 feet of paving (three lanes), curb/gutter/five-foot sidewalk (west side)

Odell Road is a north-south collector street which forms a T intersection from the south with 'H' Street. Odell provides a major north/south corridor south of H Street. It has one 12-foot travel lane in each direction along with curb, gutter, and sidewalk along both sides of the road. Its approach to H Street is controlled by a stop sign and includes one left-turn and one right-turn lane. Because of grade and geometric issues at this intersection, Ludwick Avenue is the designated freight access to H Street, and intersection improvements may be warranted in the future.

Allan Street – 2.2.5:

Configuration: 22 feet of paving (10-foot lanes) and one-foot shoulders

Allan Street currently provides the only access between D/E Streets and H Street within the Blaine Subarea. It is a narrow roadway with minimal shoulders and primarily serves local residential traffic.

Jerome Street – 2.2.6: Jerome Street provides access to Canada View and 99th Street from the end of E Street, but only exists as a 29 foot right of way below the BPA transmission line between E and H Street. Because of this narrow right of way and the proximity of the transmission lines, it is unlikely to be improved in the future.

Harvey Road – 2.2.7:

Configuration: North Harvey Road: 16 feet of paving, one foot of shoulders

South Harvey Road: 20 feet of paving (10-foot lanes), three- to five-foot shoulders

North Harvey Road provides north-south local access approximately midway into the East Blaine Subarea. Unfortunately, North Harvey Road (City) is built to a substandard width and has a 350' offset with South Harvey Road (County) creating two stop-controlled offset T intersections which could pose a potential safety concern in the future. This may be corrected with reconstruction and realignment of the intersection.

Valley View Road – 2.2.8:

Configuration: 20 feet of paving, two-foot shoulders

Valley View Road is a county road providing a major north/south corridor for connectivity to the Subarea and major roads running south and beyond.

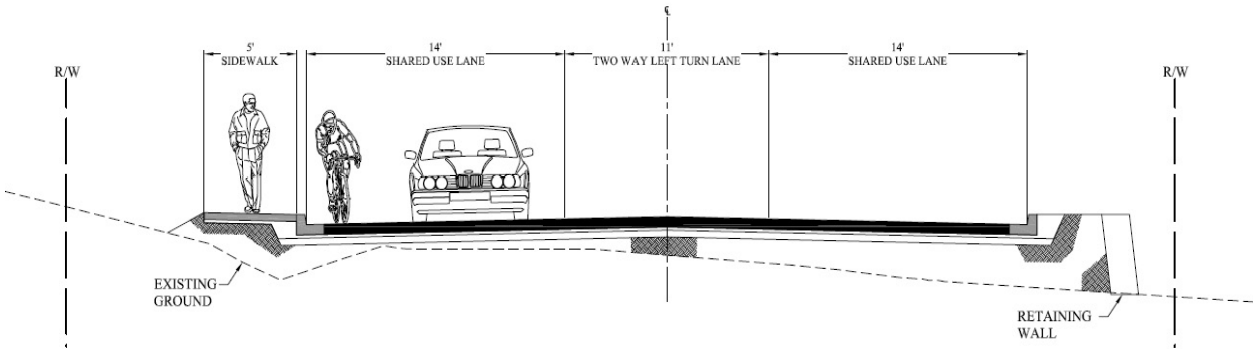
Map 2.1
Existing Major Streets in Subarea

Planned Improvements 2.3

The East Blaine Subarea street needs were developed from the City's Comprehensive Plan and related documents with the goal of utilizing existing residential connections to City systems with new road construction and existing street modifications. **Map 2.2** on the following page shows proposed streets in and around the Subarea. The following section discusses the analysis and defines an appropriate section for each of the existing and proposed roads:

H Street – Ludwick to North Harvey 2.3.1:

The original City concept for H Street to North Harvey was a four-lane arterial that would serve as the primary east/west corridor for traffic generated in the East Blaine Subarea as well as the County through traffic. The infrastructure plan establishes a central parkway running the entire length of the East Blaine Subarea that would become a parallel east/west corridor for traffic generated within it. This will reduce H Street to a three-lane roadway with a center left turn lane to provide safer access and pull-out refuge for this section of H Street up to North Harvey Road or beyond if it is determined that there is a need. The proposed road section is as follows:

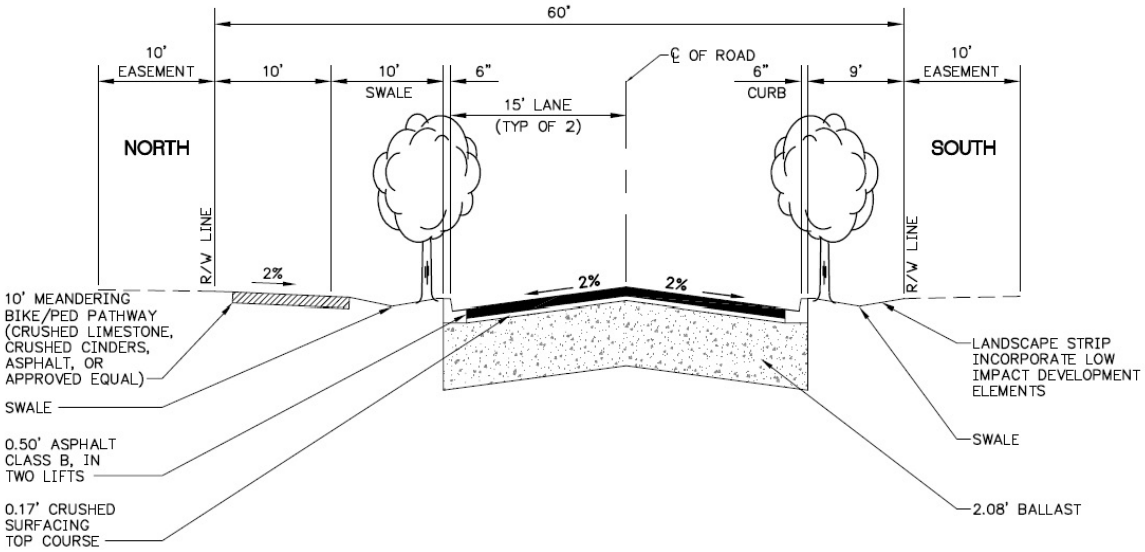


- **Configuration:** Two 14-foot lanes with an 11-foot center turn lane, five-foot minimum sidewalk on one side.
- **Right-of-way width:** 60 feet
- **Section Basis:** Projected ADT and heavy cross-slope constraints
- **Recommendations:** A vertical alignment should be designed immediately for this section of H Street in order to design the proposed wastewater extension. Utilize a reduced standard section as shown above.

  Under Blaine Municipal Code (BMC) 17.62.060 the right-of-way dedication for arterials is 80 feet. However, the majority of existing right-of-way along H Street is 60 feet wide or less and the existing cross grade makes a wide section very difficult without massive retaining walls. Therefore, a 60-foot right-of-way is proposed for H Street. In addition, 10-foot utility and grading easements are proposed for the less urban areas east of Vista Terrace Avenue. Projected ADT for H Street increases as it approaches downtown and the proposed road section varies accordingly as follows:

H Street – East of North Harvey 2.3.2:

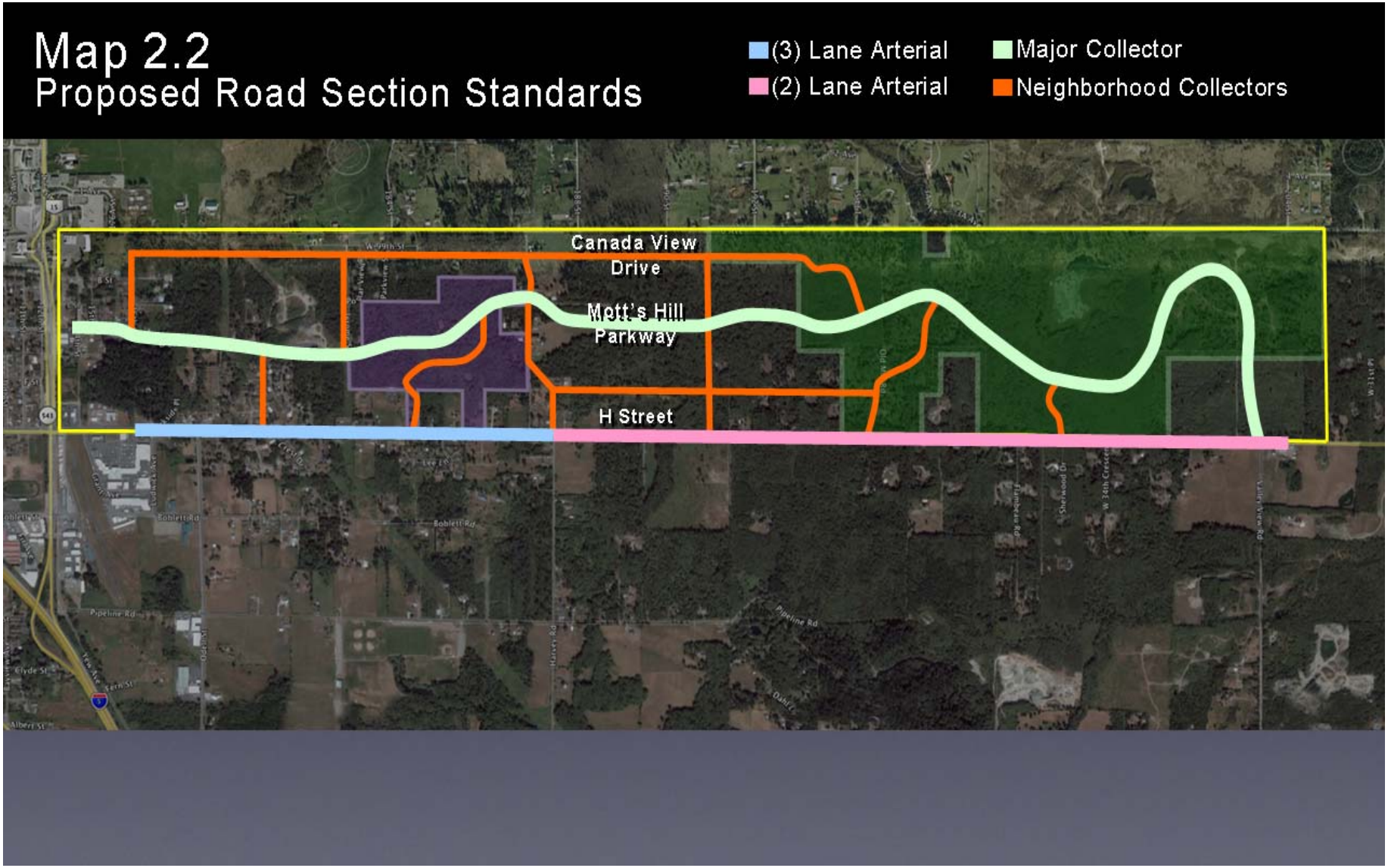
H Street east of North Harvey Road is more rural in character and is currently proposed to remain rural. New accesses to H Street will be generally restricted to local access streets at public intersections only. The proposed road section is as follows:



- **Configuration:** Two 12- to 15-foot lanes with curbs or shoulders as may be appropriate, sidewalk or separated shared path on at least one side, and street side swale/buffers.
- **Right-of-way width:** 60 feet plus 10-foot easements on both sides
- **Section Basis:** Based on projected ADT
- **Recommendations:** The 10-foot easement along the south side of H Street would provide for roadway drainage and heavy grade transitions. The 10-foot easement along the north side of H Street would provide for bioswales and street landscaping.

A vertical alignment should be designed as soon as possible for this section of H Street in order to correct or plan for geometric issues and anticipate design of a proposed wastewater extension. There is a sag vertical curve approximately 2,000 feet east of South Harvey Road. This sag limits sight distance and becomes the major factor in sanitary sewer design for an H Street sewer run. An estimated three- to five-foot fill section in this area would improve the wastewater cover as well as eliminate the sight distance problem, but would also be costly and difficult to construct.

Map 2.2
Proposed Road Section Standards



Mott's Hill Parkway – 2.3.3:
A secondary east/west street through the center of the East Blaine Subarea is needed for improved connectivity and capacity to support East Blaine as it develops. A secondary route eliminates reliance on a single corridor and provides additional traffic capacity needed to serve the area. There is some historic precedent for this area being called Mott's Hill. It has been proposed that this new east/west street be named Mott's Hill Parkway.

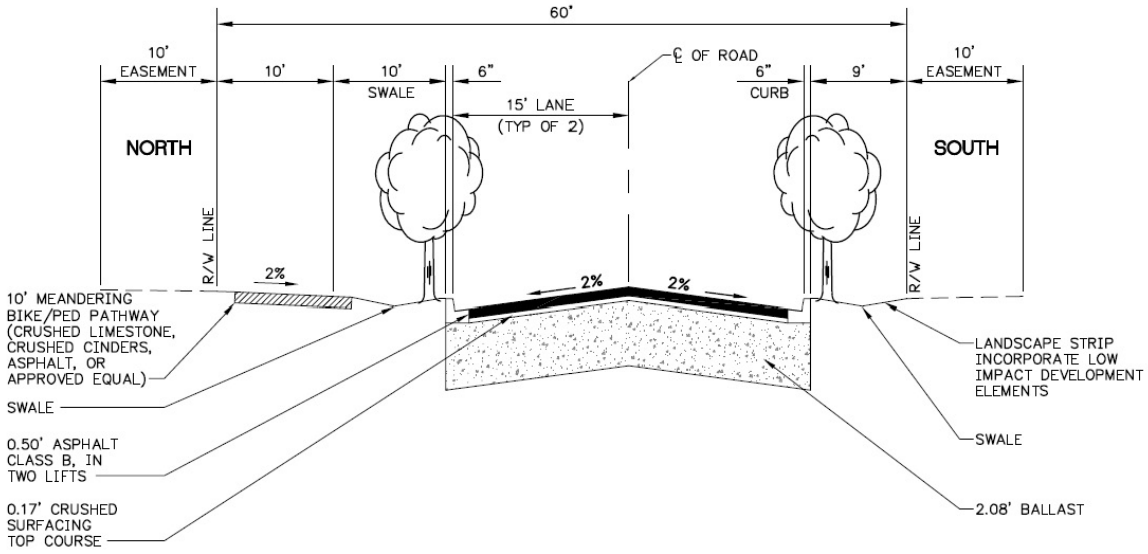
The Parkway is intended to provide a parallel route in and out of the subarea. The Parkway should have an open feel with design parameters as follows:

- Minimize stop- or signal-controlled access on the parkway
- Strictly minimize direct private driveway access to minimize traffic conflicts.
- Access by public and frontage road intersections only
- A separated and meandering 10-foot shared bike/pedestrian pathway will be installed on one side (preferably the north side) of the Parkway east of 16th, with a transition to sidewalks and shared use bike lanes on the already developed portion of D Street west of 16th Street.
- A narrow park like landscape strip with appropriately spaced street trees will be installed on the pathway side of the Parkway. Encourage the development of small "pocket parks" adjacent to the pathway.

Development of the horizontal alignment of the Parkway is proposed to progress generally as follows:

- Improvements would begin at the SR 543 Truck Route interchange at D Street.
- East on D Street to Allan Street with some realignment and widening in the vicinity of 16th Street to improve safety.
- Realign D Street with a curve to E Street and continue to Jerome Street.
- East from Jerome generally following the existing 12-inch water line easement to North Harvey Road.
- East from North Harvey on the City water reservoir (440' zone) property.
- East from the City property along the most expedient course agreeable to the abutting property owners generally midway between the border and H Street to the eastern edge of the Subarea.
- Turn south at the eastern end of the Subarea (within the Grandis Pond development) to connect to Valley View Road.

It is recommended that the "Mott's Hill Parkway" name begin east of 16th Street, even though improvements begin at the Truck Route (SR-543), to minimize address changes for existing residences.



- **Configuration:** Two 12- to 15-foot lanes with 10-foot separated bike/pedestrian path and street side swale/buffers.
- **Right-of-way width:** 60 feet plus 10-foot easements on both sides
- **Section Basis:** Based on projected ADT
- **Recommendations:** The 10-foot easement along the south side would provide for utilities, roadway drainage, and slope grading. The additional 10-foot easement along the north side would provide for a meandering path and street landscaping.

North Harvey Road Realignment, – 2.3.4:

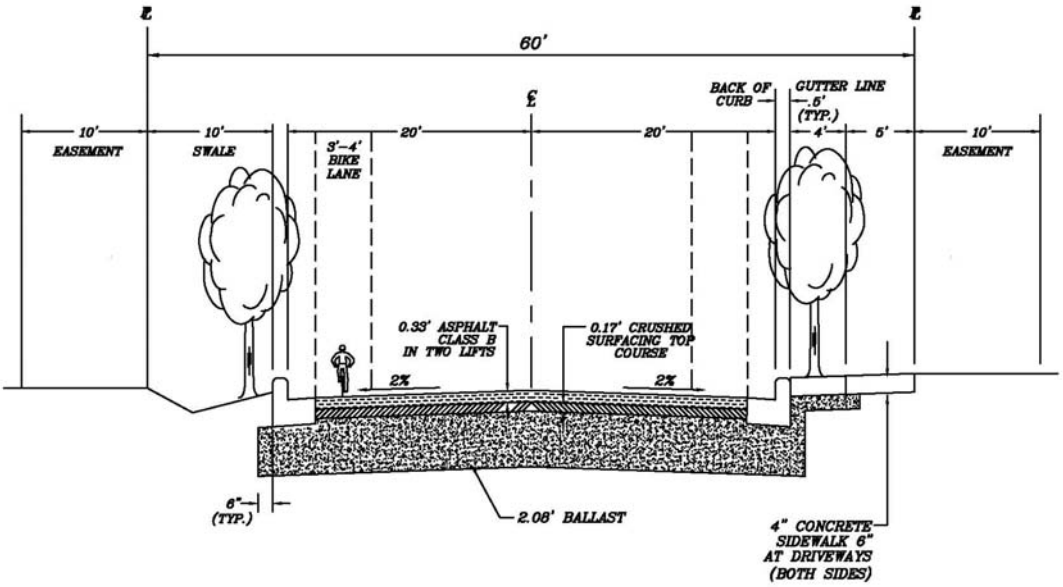
North Harvey Road realignment and widening would only be expected to be completed concurrent with redevelopment of the abutting parcels. Higher traffic volumes coupled with the inability to meet established safety standards could necessitate that one of more of these improvements be implemented sooner as a traffic hazard mitigation measure. The existing southern portion of North Harvey would likely be converted to a cul-de-sac to preserve access to properties.

Pictured is a conceptual view of how a realignment of the Harvey Road intersection might be configured in the future. However, it is recognized that the ultimate configuration would need to balance impacts to existing properties with the necessity of making improvements to provide adequate safety for motorists.

Future North/South Collectors – 2.3.5:

A handful of spaced minor collectors will run north/south between H Street and the Parkway to provide intermediate connectivity. The collectors typically have design parameters as follows:

- The north/south collectors will be limited in number to encourage use of the Parkway instead of H Street for east/west travel.
- Limited driveway access is allowed on these minor collectors.
- Minor collectors are typically controlled with stop signs on the H Street and Parkway ends.
- Where warranted, right turn pockets are required for all collectors that access both H Street and the Parkway.
- On-street parking may require additional width to provide for emergency vehicle access.
- A 10-foot easement will be required on each side of these access streets to provide room to construct a separated pedestrian/bicycle pathway, utility installation, and stormwater rain gardens.



- **Configuration:** Two 12- to 15-foot lanes with three- to five-foot bike lanes, sidewalk on at least one side, and street side swale/buffers.
- **Right-of-way width:** 60 feet plus 10-foot easements on both sides.
- **Section Basis:** Based on projected ADT
- **Recommendations:** The 10-foot easements along the street would provide for roadway drainage, heavy grade transitions, bioswales, street landscaping, and utilities. Pedestrian facilities would typically be provided on one side of the street.

Jerome Street Bike Corridor Extension – 2.3.6:

Jerome Avenue south to H Street is a Bonneville Power Administration (BPA) easement encumbered by major transmission lines. A public road is not likely possible on this alignment below the line; however it may be possible to establish a meandering bike/pedestrian pathway between H Street and the Parkway within this right of way.

Valley View Road Connection – 2.3.7:

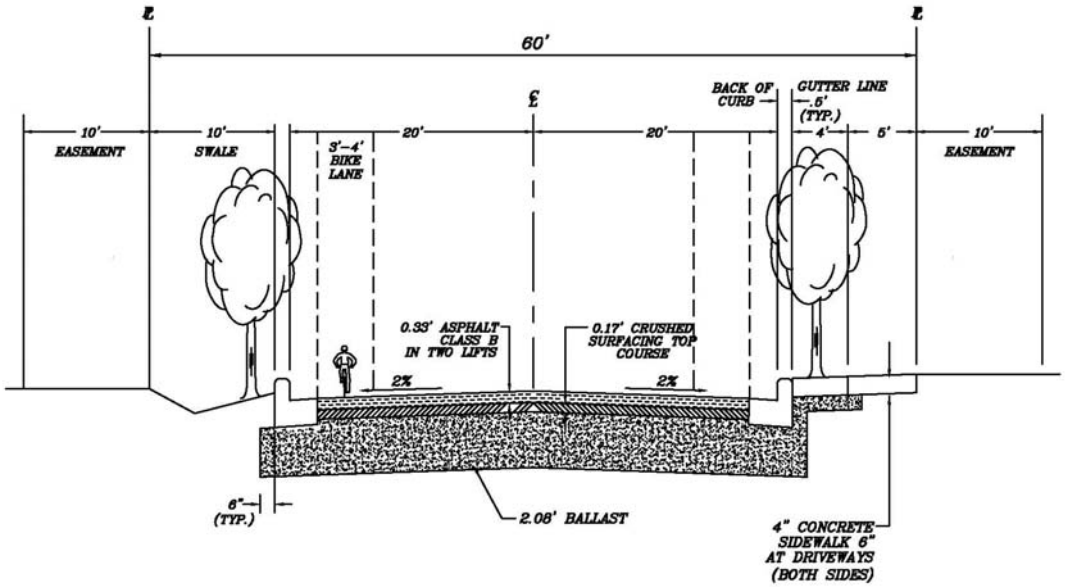
A Parkway connection to Valley View Road would complete a loop connection of Motts Hill Parkway and H Street. The proposed alignment would meet Valley View Road approximately 550 feet west of the eastern limit of the Subarea. This connection is considered critical to completing the Parkway.

Canada View Drive – 2.3.8:

Existing Canada View Drive forms the top of a T-intersection with Jerome Street and dead ends on both sides; providing local access only to a small area by the border. To better serve future parcels along the Canada/United States international boundary, a continuous Canada View Drive is proposed with an alignment as follows:

- Improvements would begin at the north end of 14th Street
- East on the existing Canada View Drive alignment to Jerome Street
- East from the existing Canada View Drive generally within 200' of the border all the way to the proposed Grandis Pond Development
- Southeast through the Grandis Pond Development to join Mott's Hill Parkway

It should be noted that Canada View Drive cannot continue west as the SR 543 truck border crossing inhibits this connection. Therefore, Canada View Drive is proposed to start at 14th Street and run east. This would provide a much needed utility, traffic, bike, and pedestrian corridor for the East Blaine Subarea along the border.



- **Configuration:** Two 12- to 15-foot lanes with three- to five-foot bike lanes, a sidewalk on at least one side, and street side swale/buffers.
- **Right-of-way width:** 60 feet plus 10-foot easements on both sides
- **Section Basis:** Based on projected ADT
- **Recommendations:** The 10-foot easements along the street would provide for roadway drainage, heavy grade transitions, bioswales, street landscaping, and utilities. Pedestrian facilities would typically be provided on one side of the street.

Private Alleys – 2.3.9:

Alleys provide a secondary access to lots and enable owners to park at the rear of their homes. In laying out a development, frontage street design can be influenced by its relationship with alleys. For example, if alleys are designed to accommodate guest parking, the width of frontage streets may be reduced.

The use of alleys can also influence structure design. It is expected that the master plan will include garage setbacks to minimize visual impact of garages on frontage streets. Alley access to garages could be one approach to achieve that objective.

Alleys that are expected to act as service corridors (e.g., garbage pickup, deliveries) must have a geometric design that will accommodate the typical service vehicle. Otherwise, the City's typical street geometry standards shall apply. The maximum length of an alley shall be 600 feet between connections to public streets. If an alley does not connect on two ends, the maximum length shall be 300 feet, with an approved fire truck turnaround at the closed end.

Alleys should not be located on external plat boundaries, but they may be adjacent to such boundary lines if appropriate landscaped buffers are provided.

Bikeway/Pedestrian Paths – 2.3.10:

Pathways for bicyclists and pedestrians follow a strategy to promote alternative methods of mobility which is consistent with the overall direction of the Trails Plan. The street sections shown in this plan illustrate how this is implemented within the Subarea. The sections illustrated show the location of pathways. The separated pathway along Mott's Hill Parkway acts as the unifying feature for neighborhood loops. Near the Canadian border, a neighborhood bike/pedestrian access corridor could be constructed to also facilitate the placement of infrastructure elements such as storm drainage structures, border security elements, and underground utilities. A series of north/south trending paths will create a circulation pattern for bicyclists and pedestrians that loops through and encircles neighborhoods, thus providing a variety of non-motorized recreational outlets for the residents. (Refer to Non-Motorized Transportation Plan)

On street Parking – 2.3.11:

Parking must be provided for both residents and guests. Parking requirements and configuration are outlined in Blaine Municipal Code Title 17.124.

Street Improvements Phasing 2.4

This plan focuses early developers' efforts on the phased construction of Mott's Hill Parkway as the central backbone parkway running the length of East Blaine from D Street in the west to Valley View Road in the east. This will open up the Subarea for later developers to fill in the lateral neighborhood roads for individual developments. Two main development proposals have incorporated this concept into their design efforts. The following section discusses phasing of street improvements given the central parkway plan:

East Maple Ridge Improvements – 2.4.1:

The East Maple Ridge developers or their successors will construct all internal plat roads and the offsite extension west to Allan Street, to include the realignment of E Street to match the end of D Street. East Maple Ridge has the option to fund offsite improvements under a special ***Assessment Reimbursement Account*** for underdeveloped properties as set forth under RCW 35.43.188.

Grandis Pond Improvements – 2.4.2:

The Grandis Pond developers or their successors will construct all internal plat roads and the offsite extension of the Mott's Hill Parkway west of North Harvey Road. Grandis Pond developers also have the option to fund offsite improvements under a special ***Assessment Reimbursement Account*** for underdeveloped properties as set forth under RCW 35.43.188.

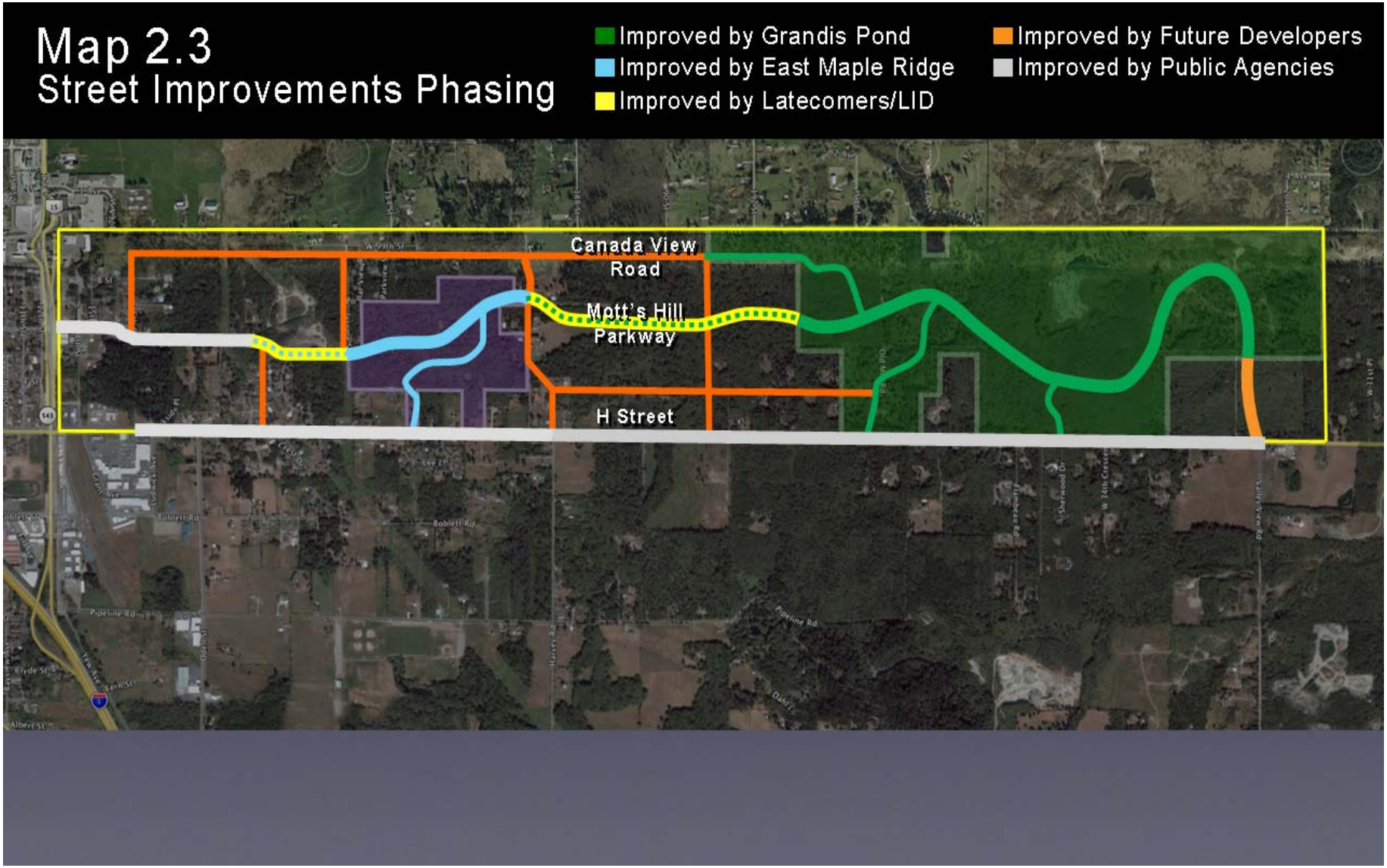
Public Improvements – 2.4.3:

The City of Blaine plans to construct H Street improvements in several phases over the 20-30 year buildout of the East Blaine Subarea. The first section of this series of improvements, from Ludwick Avenue to Allan Street, is slated for construction in 2010. In addition, the City plans to reconstruct D Street from 14th Street to Allan Street in order to accommodate future Parkway traffic volumes. The D Street work will likely occur in several phases over the 20- to 30-year buildout of the East Blaine Subarea. The City may accelerate construction of these streets by LID in order to accommodate rapid changes in these areas.

Future Development Improvements – 2.4.3:

Future developers will construct all their development fronting neighborhood collectors to fill in the backbone provided by Mott's Hill Parkway. The developer reimbursement process is available to these future developers.

Map 2.3
Street Improvements Phasing



Access Management Policy 2.5

During future development planning along H Street and Mott's Hill Parkway, the following polices should be used as a guide in the design of street elements:

H Street - Interlocal Agreement – 2.5.1: Properties along the south side of H Street that are under county jurisdiction should not be granted new access to H Street without a City of Blaine permit. This will require an amendment to the interlocal agreement between the City and County. The interlocal agreement with the County should contain requirements and restrictions similar to those for new development on the north side of H Street in the City Limits, including the following:

- Dedication of 10 feet of additional H Street right-of-way to the City along their frontage.
- Uncontrolled or direct access from parcels to H Street shall be avoided, and where possible, existing access eliminated in favor of indirect access through minor collectors. Current residents may retain their existing accesses, but revised access should be a primary objective in any application for improvement.
- All new controlled access to H Street shall be via collectors. New developments should be designed to limit the number of roads directly accessing H Street. To the extent possible, any new north and south roads will be aligned with one another to form controlled intersections.
- New south side accesses to H Street may be contingent on realigning access to neighboring properties and agreements to participate in future needed improvements to H Street.

County-Served Properties South of H Street – 2.5.2: Owners of unincorporated county property on the south of H Street benefit from the improvement of H Street. The Interlocal Agreement with the County should, if possible, include provisions for development occurring in this benefiting area to share in the costs of these improvements.

Mott's Hill Parkway – 2.5.3: Properties along the proposed Mott's Hill Parkway should include the following requirements for any new development access:

- 80 feet of right-of-way shall be dedicated to the City with extension through properties along the Mott's Hill Parkway alignment.
- Development shall be consistent with this plan.
- Uncontrolled or direct access from parcels to Mott's Hill Parkway shall be eliminated. Current residents may retain their existing accesses until application is made for improvement to their parcel(s).
- All new controlled access to Mott's Hill Parkway shall be via collectors and local streets.
- New accesses to Mott's Hill Parkway may be contingent on realigning access to neighboring properties and/or on agreements to participate in future needed improvements.
- All streets shall be dedicated to the City. Alleys may be private.

Chapter 3 – Water System

Purpose 3.1

Water supply for the Subarea will ultimately come from the City's existing and future source wells, and upgrades to the City's existing system in conjunction with construction of the proposed infrastructure. Estimated water demands of the Subarea are based upon calculations performed for previous studies and are as presented in the City's comprehensive planning documents. These estimated demands provide the basis for preliminary sizing of infrastructure that will meet the build out demands of the area. The rate of development within the Subarea will drive the initial configuration of some infrastructure components and the phasing of others.

Water Pressure Zones 3.2

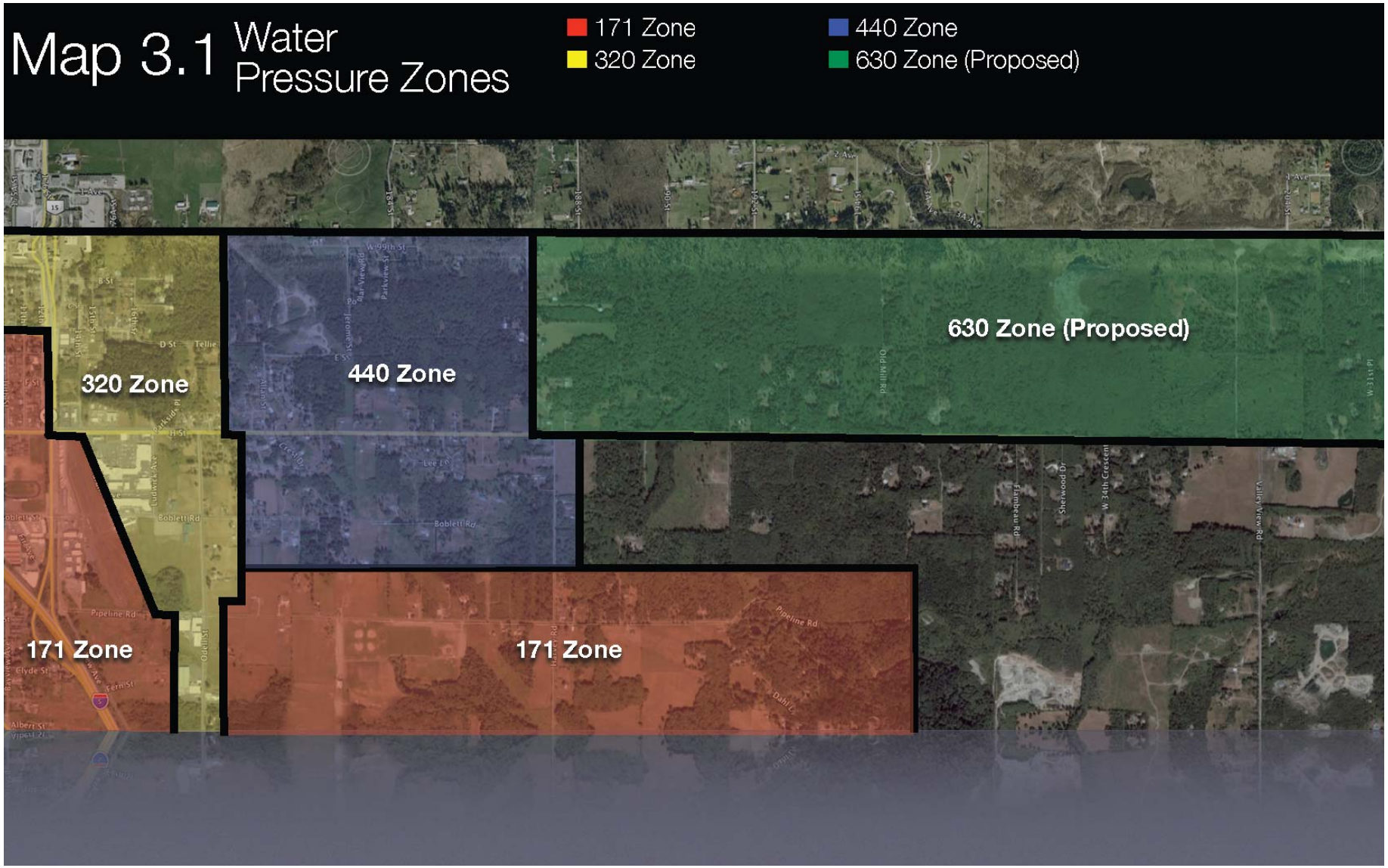
The elevation of the Subarea ranges from elevation 150 feet to 540 feet. The western half of the Subarea is served by the existing 171, 320, and 440 pressure zones. The majority of the Subarea east of North Harvey is not currently served with public water. This area is proposed to be served by a new 630 pressure zone. Map 3.1 on the following page shows the location of existing and proposed pressure zones.

Existing 171 Zone – 3.2.1: The well field located at the east end of Pipeline Road provides a majority of the City's water directly to the 171 zone. Zone 171 is the City's largest zone and serves the core of the urban area. An existing 1.3 million-gallon water tank in Lincoln Park has a high water line of 171 feet. This reservoir is the primary supply for the zone. The 171 Zone totaled **1990 service accounts** in 2006. Water from this zone is drawn and boosted through the 12th Street booster station (No. 1) and the Lincoln Park booster station (No. 3) to feed the 320 Zone.

Existing 320 Zone – 3.2.2: An existing 0.1 million-gallon water tank just west of Jerome Street on E Street has a high water line of 320 feet. This reservoir is the primary supply for the zone, which covers the Odell Road Corridor from Hughes Avenue north to the areas around the Truck Route (SR 543) border crossing facilities. The 320 Zone totaled **450 service accounts** in 2006. Water from this zone is drawn and boosted through the D Street booster station (No. 2) to feed the 440 Zone.

Existing 440 Zone – 3.2.3: An existing 1.25 million-gallon water tank near North Harvey Road has a high water line of 440 feet. This reservoir is the primary supply for the 440 zone. The 440 Zone covers the Boblett, E, and H Street areas east of the 320 zone to North Harvey Road. In addition, the zone can also supply a few of the properties just east of North Harvey Road at the southern and northern edges of the Subarea. The 440 Zone totaled **232 service accounts** in 2006.

Map 3.1 Water Pressure Zones



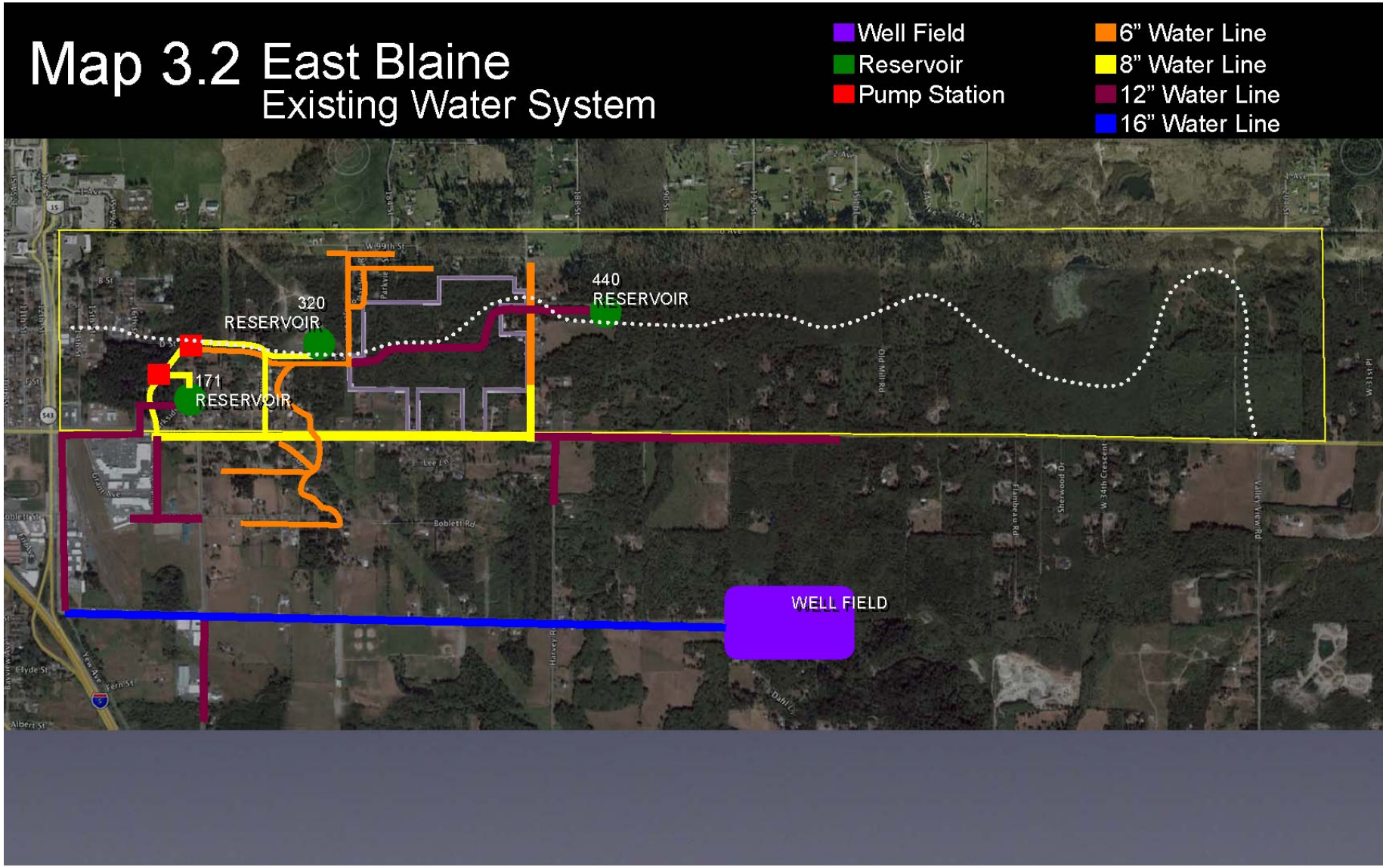
The existing 440 water pressure zone can provide 30 psi (DOH minimum) at the water meter service for customers up to an elevation of 355 feet, assuming that the low water elevation of the North Harvey Road Reservoir is held above an elevation of 425 feet. This pressure boundary is roughly at the high point of North Harvey Road. Therefore, North Harvey Road will be used to define the pressure zone boundary for the purposes of this report. In general, the 440 Zone is located west of North Harvey Road and the 630 Zone is located east of North Harvey Road.

Proposed 630 Zone – 3.2.4: Based on a review of the topography throughout the areas east of North Harvey Road, the optimum minimum hydraulic gradient elevation for service was set at 630 feet. Hence this zone shall be called the 630 pressure zone.

The proposed 630 water pressure zone east of North Harvey Road will provide a minimum service pressure of 30 psi for customers up to an elevation of 550 feet, assuming a minimum reservoir water level of approximately 630 feet. At this elevation setting, the system pressures along the lower western edge of the zone would be upwards of 120 psi and would need to be adjusted with pressure reducing valves (PRVs).

Initial development in this zone may be able to be served with booster pumps with a storage reservoir to be built in a later phase of development. A new storage tank is proposed for a high point located within the Grandis Pond development or the high point in the southeast corner of the Subarea. The ground elevation of the new tank would be roughly 540 feet with a tank approximately 98 to 111 feet tall, depending upon tank design and required storage volumes. These volumes will differ based on the City's selected operational parameters and sizing of the future downstream pump station. An alternative to one tall tank would be the construction of multiple shorter tanks at one of these locations; however, the amount of dead storage would greatly increase under this option, so it is not a recommended alternative.

Map 3.2 East Blaine
Existing Water System



Existing Water System 3.3

Map 3.2 on the following page shows the location of the existing water system that that will be utilized for Subarea connection to City water. The elements of the existing water system are described in more detail below.

Water Production – 3.3.1: The City's current source of water is 14 wells, including six that are located in the well field at the east end of Pipeline Road, two wells that are located inside Lincoln Park, and one along 12th Street.

Currently the City's total installed water production capacity can easily accommodate fall, winter, and springtime demands, but can only accommodate peak summertime water demand with voluntary user conservation. Total installed water production capacity (3.99 million gallons per day [Mgd]) is about 93% of the City's current total instantaneous water right (4.28 MGD). Therefore, the water demand that results from Subarea development will necessitate an increase in both installed water production capacity and water rights.

The City has pending applications filed with the Washington State Department of Ecology (WSDOE) for additional water rights. In 2008 the City entered into a contract with WSDOE under their Cost Reimbursement Program to have its water rights applications processed by a consultant. The City expects to see this process completed in early 2010. The City has recently drilled three new wells, one of which was put into production in 2009, increasing installed pumping capacity, and with new water rights, all three will be able to provide an additional 1500 gpm or 2.16 Mgd of production capacity.

The City is also constructing a water reclamation facility with the intention of providing reclaimed water to customers like Semiahmoo Golf Course for beneficial uses (irrigation and other uses) which do not require potable water. This will increase availability of existing water rights volume for other consumptive use.

The City currently provides, through rates, connection fees, and wholesale water charges, for equitable contribution toward the construction of new and replacement water production facilities by development within the City limits, and by wholesale water customers (Birch Bay Water and Sewer District and Bell Bay Jackson Water Association).

Booster Stations – 3.3.2: The booster stations that affect the Subarea plan are as follows:

- No. 1 at 12th Street – Draws from Zone 171 and pumps to Zone 320
- No. 2 north of Lincoln Park – Draws from Zone 320 and pumps to Zone 440
- No. 3 in Lincoln Park – Draws from Zone 171 and pumps to Zone 320

The above pressures zones are described in detail in Section 4.2.

E Street Reservoir – 3.3.3: The existing E Street reservoir located on the western edge of the Subarea is a 0.1 million-gallon tank that serves the City's 320 zone. According to recent planning documents, the E Street tank currently lacks sufficient storage volume to meet DOH requirements and thus relies upon "surplus" volume in the North Harvey Road tank to adequately supply the 320 zone. Previous water plans have recommended replacing the E Street tank with a larger tank (750,000 gallons), which would free up some capacity in the North Harvey Road tank. Based on the current size of the E Street reservoir and the information provided, it is presumed that this tank cannot serve any additional connections.

As demands increase within the Subarea, the amount and frequency of water being drawn from the E Street reservoir will increase. Upgrades to the facility to increase the capacity of this tank, as previously recommended, should be considered in order to reduce downstream pump cycles and to increase the available storage of other facilities. In addition, standby power must be added to this station to ensure reliability in meeting the demands of the upper zones.

North Harvey Road Reservoir – 3.3.4: Based on review of the required storage volumes as presented in the current comprehensive planning documents, the North Harvey Road tank appears to have adequate storage to meet the demands of the 440 zone. However, documentation suggests that any excess volumes in the tank will compensate for storage deficiencies of the lower zones. This plan does not attempt to verify the adequacy of previously documented storage volume requirements for these lower zone tanks.

Although the 440 zone is generally assumed to be adequate for future development, the existing distribution system is evaluated below to establish approximate conveyance capacity limitations and to determine the sizing and locations for new pipelines in order to fully integrate existing and proposed water systems. The following sections describe existing infrastructure components and recommended improvements required to meet the demands of Subarea development.

The North Harvey Road tank can also provide service back to the lower 320 zone through a pressure-reducing valve (PRV). According to the City's current comprehensive planning documents, the North Harvey Road tank maintains a storage surplus for the 320 zone due to current capacity limitations of the E Street tank.

H Street Water Main – 3.3.5: The existing distribution system along H Street consists of an eight-inch pipe running from the 320/440 zone PRV station to the intersection of the northern leg of North Harvey Road and H Street. At this point, the main becomes a 12-inch pipe that extends approximately 4,500 lineal feet (LF) to the east.

North Harvey Road Water Main – North of H Street – 3.3.6: The water line extending north along North Harvey Road from H Street is comprised of approximately 850 LF of eight-inch pipe, which then reduces to a six-inch pipe. The six-inch pipe extends northward an additional 2,300 LF. This pipeline is important for supplying service to and from the 440 zone and reservoir. Capacity along this route will need to be increased at some point in the future, should the 440 zone be drawn from to provide a water supply to a higher pressure zone above. Most likely a second 12-inch line will be installed to parallel this smaller line.

North Harvey Road Water Main – South of H Street – 3.3.7: The water line extending along North Harvey Road from H Street is currently served by a 12-inch line, which runs approximately 1,500 LF and terminates at a blow-off valve. This line is adequately sized for service in the area and can be extended southward to accommodate additional service requests. Should a direct connection to the 171 zone be made at the City's 16-inch line located in Pipeline Road, this 12-inch line could become a transmission main to the upper zone. However, this connection would result in extremely high pressure in this 12-inch main, so pressure reduction valves should be considered along this route.

D Street Pump Station to North Harvey Road Reservoir Water Main– 3.3.8:
An existing 12-inch diameter pipeline, approximately 5,300 LF in length, extends from the PRV at the E Street tank to the North Harvey Road tank. This 12-inch main is also connected to a six-inch main that runs approximately 2,800 LF from the D Street pump station to a connection just east of the E Street tank. This series of water mains is used to fill the North Harvey Road tank from the lower 320 zone. At this time, there are no connections on the 12-inch main; however, service to the East Maple Ridge development will come from this main. The 12-inch main is also being used to convey water back into the 320 zone from the North Harvey Road tank through the PRV station.

Should a new zone draw water from the 440 zone, the existing six-inch main will need to be upsized to a 12-inch line in order to accommodate the projected MDD required to meet fire flow demands. One alternative to upgrading this six-inch line is to make a connection to Zone 171 via North Harvey Road with a booster pump, and another is to activate Well No. 9 to provide a direct source for Zone 440. These options will be discussed further in this chapter.

D Street Booster Station – 3.3.9: The D Street booster station currently includes two 250-gpm pumps that feed the 440 zone from the 320 zone. At this time, the station is set as a lead/lag system with no need to run both pumps because current demands are low within the 440 zone. As development increases in the upper zones, the station will need to be upgraded as to pump size and telemetry in order to handle the increase in demands. This level of upgrade will ultimately depend on the location of the proposed upper zone booster station and the subsequent point or points of withdrawal from the existing system.

Should a booster station at the North Harvey Road tank site be installed to provide for a new pressure zone above the 440 Zone, the capacity of the D Street station will need to be increased. The enlargement will depend upon the size and capacity of the pumps selected for the upper zone booster station and the chosen operational levels of the North Harvey Road tank. In addition, to meet the requirements of DOH, the D Street station will ultimately need to supply the peak hour demand (PHD) of the 320 zone and the MDD of the 440 zone. Preliminary calculations of ultimate build out place the MDD of the 440 zone at 500 gpm.

If a new pressure zone booster station draws solely from the 440 zone, the D Street station will be the primary source of supply to the 440 and upper zones. Therefore the station will need to be upgraded not only to meet the projected demands, but also to provide redundancy and reliability. This station will need to meet the demands of both zones with the largest pump out of service and will also require standby power.

Should the proposed upper zone booster station be constructed to draw from the 16-inch via a North Harvey Road transmission main, the role of the D Street station will be significantly different. In this scenario, the station will eventually require an upgrade to meet the future demands of the 440 zone. However, the service demands for the upper zone may be limited to augmenting supply instead of service as primary source of supply.

Water Improvements Analysis by Zone 3.4

With some modest improvements, the existing 320 and 440 water pressure zones can already serve the area west of North Harvey Road. However, the area east of North Harvey Road will require major water improvements to create a new 630 water pressure zone. Construction of these improvements is anticipated to be developer-driven. Specifics of required improvements will be based on demands of proposed development. Some of these improvements are tied to critical service demand thresholds and will be required at specific milestones of currently proposed development. The following is a more detailed analysis of improvements anticipated to meet the requirements of growth in the East Blaine Subarea:

320 Pressure Zone Analysis – 3.4.1: The 320 water pressure zone may require reservoir improvements, telemetry improvements, and/or water trunk line upgrades in order to provide service to the zone and supply water to the upper zones. The location and size of these improvements is analyzed as follows:

E Street Reservoir: The E Street reservoir is a 100,000-gallon tank that serves the 320 zone and cannot meet the storage requirements for the existing demand. It relies on the North Harvey Road tank to augment the 320 zone supply. Previous studies have recommended that the E Street reservoir be replaced with a 750,000-gallon tank, and doing so would free up capacity in the North Harvey Road tank and reduce the associated downstream pump cycles. In addition, standby power must be added to the E Street facility.

D Street Booster Station: The D Street booster station currently houses two 250-gpm pumps to feed the 440 zone from the 320 zone. At a minimum, an upgrade will be required to meet future demands of the 440 zone and to be in compliance with Department of Health (DOH) requirements as discussed in Section 3.6.6. However, if a decision is made to supply the upper zone from the 440 zone, in part or in whole, the capacity of the booster station will need to be increased as dictated by the design of the upper zone facilities. If the upper zone relies entirely on the 440 zone for water supply, the D Street station must be redundant and reliable. It will need to meet the needs of the two zones with only one pump and will require standby power. In addition, adequate telemetry controls between the booster station and the North Harvey Road tank will be necessary to maintain operational levels in the tank. Design modifications for the D Street station should include visual mitigation for the increased size and provisions for access protection.

440 Pressure Zone Analysis – 3.4.2: The 440 water pressure zone will require water source improvements including well activation, water trunk line upgrades, and a direct connection to the 171 zone in order to provide service to the zone and supply water to the upper zone. The location and size of these improvements is analyzed as follows:

Water Trunk Lines – 3.4.2.1: The water trunk lines provide for the primary transmission of water. Trunk lines are 12 inches in diameter and should be looped to provide for maintenance, stable service, and improved fire flows.

North Harvey Road Connector: A 12-inch line along North Harvey Road from the existing 12-inch line end to Pipeline Road will be constructed. This will provide a loop to directly connect the 171 zone to the 440 zones. With the addition of a booster station and pressure reducing valves down North Harvey Road, this line could supply the 440 zone with enough water to provide for the full build out of the 630 zone above. Construction of the connector line is anticipated within the next few years. However, construction of a booster station line is likely to be phased with associated development needs.

North Harvey Road Pressure Reducing Valves – 3.4.2.2: The proposed 12-inch line on North Harvey Road south of H Street will have very high pressure once it is connected with the 440 and 171 zones. Main line pressure reduction and/or residential pressure reduction will be required to provide service to those in this area.

Distribution Mains Within 440 Zone – 3.4.2.3: New construction in the 440 zone shall meet the standards stated herein. Currently a small grid exists in the Caples' Addition area along the US/Canada border. This system is fed by a long run of six-inch line connected at Jerome Street and D Street. This six-inch line needs to be upsized to provide adequate fire flow, or else looped with the Caples' Addition with a larger-diameter pipe that can supplement flows to the area. The final choice will most likely be made when development is proposed for the area.

630 Pressure Zone Analysis – 3.4.3: The 630 Zone will require a new reservoir, booster station, pressure reducing valves, and a looped 12-inch water trunk line to provide the backbone water service for the area. The location and size of these improvements are analyzed as follows:

Water Supply - 3.4.3.1: Three options for water supply were considered for the 630 water pressure zone as follows:

A. **Connect to 440 Zone** – Install a booster station near the existing North Harvey Road reservoir to draw from the 440 Zone and boost to the 630 Zone.

B. **Connect to 171 Zone** – Extend a 12-inch connector water line on North Harvey Road and install a booster station at the Pipeline/North Harvey Road intersection to get water from the 171 Zone well field supply line.

C. **New Well(s)** – exercise existing water rights or transfer as necessary and install well(s) and booster station close to the proposed 630 Zone reservoir.

A combination of the three options was selected in the City's updated Comprehensive Water Plan. The City will activate Well No. 9 to supply water directly to the 440 zone, make the 12-inch direct connection to the 171 zone for the 440 zone, and then draw from the 440 zone to supply the 630 zone.

Thus the proposed 630 zone booster station will eventually be supplied by water pumped from Well No. 9 and from the 171 zone to the 440 zone via the 320 zone. Alternatively, a booster station which draws directly from the 171 zone could be installed. Analysis of the booster station location follows.

Booster Station Location and Size – 3.4.3.2: As described above, the location of the proposed booster station for the upper zone will determine where the connection or connections to the existing system will be made. A major factor in locating this station may be the availability of land on which to construct the station.

Currently, the City owns a large parcel of land at the North Harvey Road tank site. This would be a good location for the booster station and would allow for a fairly simple connection to the existing system. Alternatively, construction of a booster station close to the intersection of South Harvey Road and H Street also provides for a good connection point to the existing system. A third booster station option is construction of a station at the southern end of South Harvey Road close to Pipeline Road. This location allows the City to draw from the 171 zone as described above. A description of these booster pump station location options follows.

Option A: Booster Station at Harvey Road Reservoir: Locating the booster station at the Harvey Road tank would permit the City to utilize property already owned by the City. Construction of the station at this site and in close proximity to the tank would also allow a simple connection to the existing system. Water would be drawn from the tank and operation controls would ultimately be tied to float levels in the proposed upper zone tank. The site would require three phase power for operation of the pumps and, as described previously, the North Harvey Road tank would also require telemetry controls tied to the D Street booster station to maintain tank levels.

Distribution from the station would follow the proposed Mott's Hill Parkway (see map 3.3). A PRV station would be constructed in the vicinity of the pump station to provide separation of the 440 zone from the 630 zone. The separation point will also depend upon development of the nearby properties and routing of the line from the station.

The benefits of this location would include construction of the station on property already owned by the City and a simple connection to the existing system. The drawback may be the significant dependence upon the pumping facilities located in the lower zones.

Option B: Booster Pump Station at Intersection of South Harvey Road and H Street: Locating the station at the intersection of H Street and South Harvey Road provides an opportunity to separate the 440 zone and the upper zone. However, with this option, additional parallel mains extending north along North Harvey Road will also be required to serve the 630 zone customers. Operational controls for the booster pump station would ultimately be tied to float levels in the proposed upper zone reservoir, and the North Harvey Road tank would require telemetry controls tied to the D Street booster station to maintain tank levels.

The drawback of this option is that it would require the City to obtain land for the facilities and to pay the cost of improving the site, including installation of utilities such as power and a possible phone line for telemetry.

Option C: Booster Station at Intersection of South Harvey Road and Pipeline Road: Locating the booster station along the South Harvey Road close to Pipeline Road would allow direct connection to the City's 16-inch water main. Water would be drawn directly from the 171 zone which is currently serving the majority of the City's urban areas. Operational controls for the station would ultimately be tied to float levels in the proposed upper zone reservoir.

The distribution system to the upper zone would extend directly north along South Harvey Road to H Street. However, for this scenario, the City must acquire land for the station. In addition, the 12-inch main along South Harvey Road would need to be extended and connected to the 16-inch main, and the systems would require a PRV at the intersection of South Harvey Road and H Street.

The main benefit of this location is the connection to the 16-inch main, which eliminates dependency on the 320 and 440 zone booster stations. However, the operation of this station as described above would result in extremely high system pressure along South Harvey Road. Therefore, if this alternative is selected, the City must carefully consider all ramifications of operating this high-pressure system, including the need for individual PRVs at residences along South Harvey Road.

Booster Station Sizing: The ultimate sizing of the booster pumps and the station in which they will be placed depends upon how and where water will be supplied to the upper zone and, more importantly, the current and projected system demands at the time of design. Therefore, a more effective approach to pump sizing at this time is to discuss estimated demands of the 630 Zone and relative sizing of the pump station to meet these demands.

Preliminary build out estimates indicate that the ultimate PHD for the upper zone will be approximately 1,375 gpm, with 648 gpm MDD, and fire flow demands of 750 gpm. The fire flow requirement is not expected to change; however, the PHD and MDD will start at zero and build as development occurs. Although construction of the booster station is required immediately to provide service within the upper zone, construction of the storage reservoir is not. The decision as to when the reservoir will be constructed also plays into the design and sizing of the pump station. The logic related to this decision is further expanded below.

It is possible to initially construct the 630 zone as a closed system in which pumps provide all service pressure without a reservoir. Such a system includes a booster pump station that can supply the maximum fluctuating demands of the zone, maintain pressure within the zone, and provide the required fire flow. This type of station generally includes a smaller pump on a variable frequency drive (VFD) to meet the lower demands and a larger fire flow pump or pumps. All of the pumps would be needed at the time of station construction. Additional equipment needs would include hydropneumatic tanks to limit pump cycles during low demand periods.

The benefit of a closed system is the ability to postpone construction of an upper zone storage reservoir until a later date. This choice has the benefit of being less costly and is likely to work well with expected phasing of buildout of the Grandis Pond development from its western edge eastward and the planned location of the reservoir at the eastern edge of the Subarea.

Utilizing the planning figures presented in Section 3.3, a maximum pumping rate of 1,400 gpm would be required from this station. This figure represents provision of MDD and fire flows to the upper zone. The projected PHD is less than this value and thus would also be provided by pumping under normal operating conditions.

The smaller-demand pump and the hydropneumatic tanks should be sized according to the development schedule for the western portion of the Grandis Pond development or any other development within the upper zone. At the time of design, pumps would be sized to meet projected demands up to completion of the reservoir. Based on projected demands, the system design may include variable speed pumps or a staged pump system, which can vary pump combinations to meet changing demands.

Once the reservoir is constructed, the system would become an open system and the role of the station would be simply to supply water to the reservoir. At that time, the smaller-demand pump and the hydropneumatic air tanks would no longer be necessary.

The alternative to the closed system is an open system in which the storage reservoir and pump station are constructed at the same time. This would allow pumps to be added and phased into use as the area develops. It would also reduce the need to supply fire flows, because the reservoir would be sized to contain required fire flow storage. While this option is feasible, it requires immediate construction of the reservoir at the eastern edge of the Subarea, as well as construction of the 12-inch distribution pipe between the reservoir and the booster station.

Under the open-system scenario, the pump station would be designed to ultimately house all the equipment necessary to meet ultimate build out demands. Initially, two pumps would be installed to provide supply to the reservoir, thus providing redundancy and reliability. Additional pumps or upsized pumps would be added to the system as demands increased.

Reservoir Location and Size – 3.4.3.3: Regardless of the source of supply for the zone, a storage reservoir will ultimately be required to maintain service pressure and to supply demands within the upper zone. Whether constructed in conjunction with the booster station or at a later date, the proposed reservoir will provide gravity-fed supply and fire flow volumes to the entire upper zone and the majority of the Subarea. Service from this reservoir would be from elevation 540 feet to 353 feet. The recommended type of reservoir is a bolted or welded steel tank.

Based on conversations with the developer for Grandis Pond, it appears that the critical threshold for the construction of the reservoir occurs after approximately 20% of build out of their current development proposal. Construction will begin in the western portion of the

property and progress easterly; this development pattern may dictate when it is feasible to construct the reservoir.

In order to establish a single pressure zone east of the 440 zone, the required reservoir will be tall and will contain a large amount of dead storage. To maintain the optimum amount of buildable land, the low-water elevation of the tank would be set at 610 feet. This level equates to 70 feet of dead storage, and maintains the required minimum service pressure of 30 psi to areas in close proximity to the reservoir. Under fire flow conditions, approximately 46 feet of dead storage would maintain the required 30 psi. Setting this low "service pressure" water elevation at 610 feet accommodates construction on land with an elevation of 540 feet and lower as illustrated by the dark shading in Figure 3.6.

It is also possible to serve this zone with a shorter reservoir; however, this would require expansion of the non-buildable zone around the base of the tank or construction of an additional booster station, thus creating an additional pressure zone higher than the upper zone. The relationship between buildable land and water surface elevation is one-to-one; therefore, lowering the low-water elevation by one foot lowers the buildable land elevation by one foot. To illustrate, the lighter-shaded area in Figure 3.6 shows the ring of non-buildable land related to a reservoir low-water elevation of 590 feet.

The ultimate reservoir height and the water elevation above the low-water elevation will be determined during design. The height will be based on the reservoir diameter and required storage volumes for the zone. The required storage volumes rely, in turn, on projected zone demands, the size of the downstream booster station, and phasing of the pumps within that station. A reservoir capable of serving the entire area is not required immediately; however, since adding capacity to a reservoir is generally not feasible, the design of the reservoir should be based on the ultimate build out demands of the zone.

Based on the planning figures presented in Section 3.3, the size of the reservoir would range from a 35- to 50-foot diameter tank with heights between 98 and 111 feet. As described above, these variables relate to the capacity of pumps supplying the tank. Table 3.1 provides examples of tank sizes based on a low water elevation of 610 feet and a tank base elevation of 540 feet.

Table 3.1
Booster Station Pump Capacity
in Relation to Reservoir Size

Assumption: downstream booster pump station capacity = 800 gpm (fire flow volumes in reservoir)			
Required Storage (gallons)	*Estimated Reservoir Diameter (feet)*	*Estimated Reservoir Height (feet)*	*Dead Storage (gallons)*
494,850	45	111	549,373
494,850	50	103	678,238
Assumption: downstream booster pump station capacity = 1,500 gpm (fire flow volumes in reservoir)			
275,000	35	107.5	332,337
275,000	40	98.5	434,072

As illustrated in the table, the effect of increasing the capacity of the booster station relates directly to the reduction of the reservoir height and diameter. Building a higher capacity station may reduce initial construction costs; however, maintenance and life cycle costs of the booster station will increase.

Water Demand: For this plan, an average daily demand (ADD) of 180 gallons per day per DU has been used for preliminary sizing. Maximum daily demand (MDD) has been set at a ratio of 2.0, thus 360 gallons per day per DU. These figures represent conservative values based on figures presented in previous plans and a review of actual average residential usage within the City over the past four years. Assumed density for buildout is 3.27 units per acre.

Peak hour demands were calculated using the Department of Health (DOH) Equation 5-3 in the DOH *Water System Design Manual*, April 2001. Fire flow demands have been planned at 750 gallons per minute (gpm) for a duration of one hour. This figure is derived from documents associated with the most recent comprehensive planning.

Water Trunk Lines – 3.4.3.4: The water trunk lines provide for the primary transmission of water. The trunk lines should be 12 inches in diameter and should be looped to provide maintenance and stable service. The second critical development threshold requiring construction of these trunk line facilities occurs at approximately 50% of the development buildout for Grandis Pond. There are several 12-inch trunk lines that will need to be extended to provide service to the 630 zone as follows:

Mott's Hill Parkway Line: A 12-inch line along the entire length of Mott's Hill Parkway from North Harvey Road to Valley View will be constructed. This will provide the backbone for service through all the future development. In addition, it will connect the 630 booster station to the 630 Reservoir. Construction of this line is likely to be phased with associated development needs.

H Street Line Extension: Ultimately, a 12-inch line along H Street from the existing 12-inch line end to Valley View will be constructed. This will provide the backbone for service and a trunk line loop to provide for maintenance, stable service, and improved fire flows. Construction of this line is likely to be phased with associated development needs.

H Street to North Harvey Road Reservoir Connector: At some point the existing six-inch line from H Street to the North Harvey Road Reservoir will have to be upgraded with an additional parallel 12-inch line. This will complete the 12-inch trunk loop. Construction of this line is likely to be phased with associated development needs.

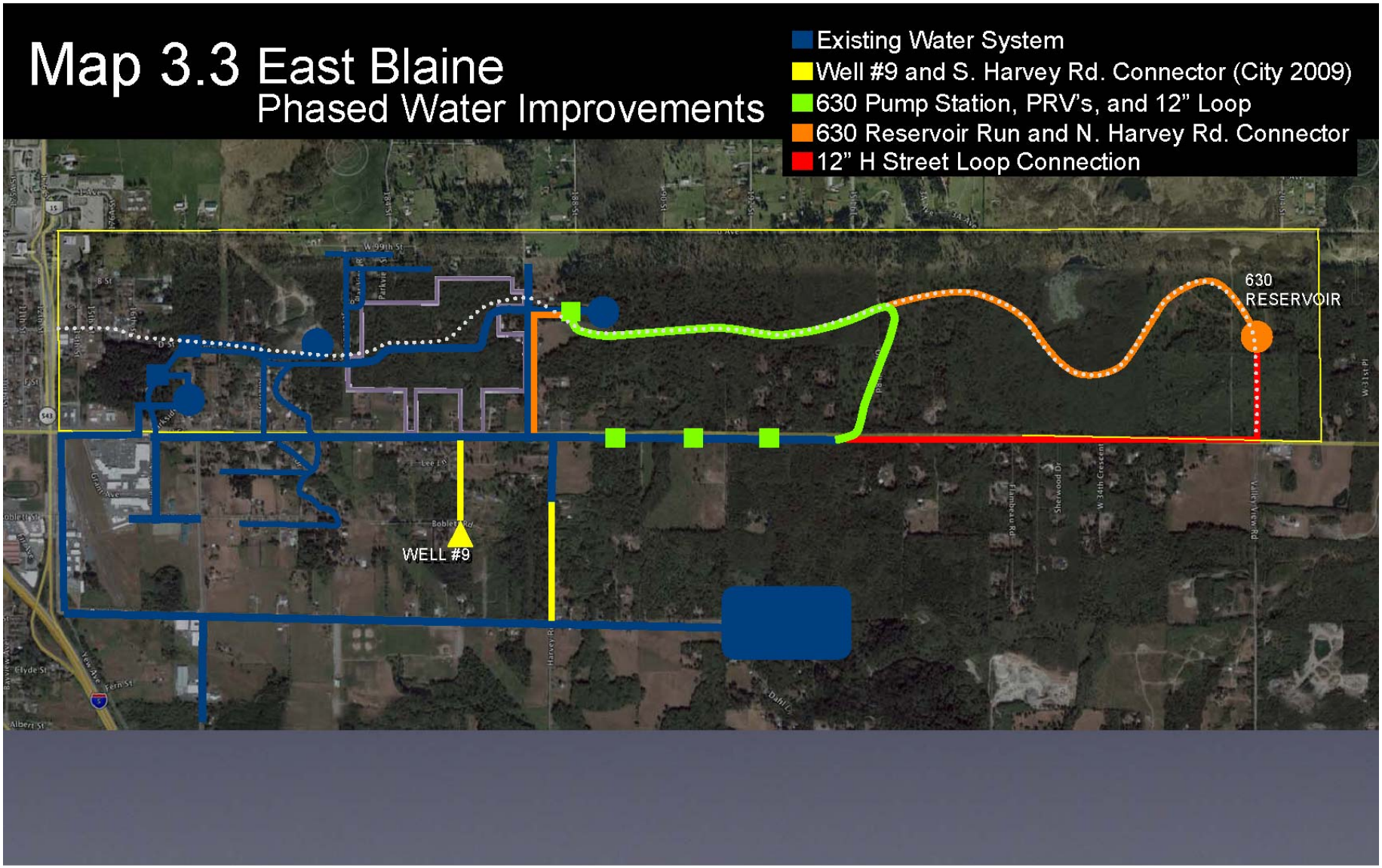
H Street Pressure Reducing Valves – 3.4.3.5: The existing 12-inch line on H Street east of North Harvey Road will have very high pressure once it is connected and looped with the proposed 630 zone. Main line pressure reduction and/or residential pressure reduction will be required to provide service to those in this area.

Zone 630 - Distribution Mains – 3.4.3.6: The water distribution system within the Grandis Pond and East Maple Ridge developments will be designed by the engineers working for each developer and will be reviewed by the City. Criteria for review will include the requirement for looped mains within the developments wherever feasible, construction of the backbone of the water system when located on the developers' property, and construction of connection points to facilitate service through to other parcels. As described above, construction of the backbone may entail the completion of an entire line or portions of oversized lines that will be connected to future developments.

The distribution mains and system looping to serve the remaining properties within the Subarea will be designed and constructed to fall within proposed roadways, extending the existing system, as required, to connect to proposed plats and improvements. The goal of this plan is to provide access (roads) and water service to every parcel of land. Thus, proposed roadway alignments must also consider the design of water and sewer mains. The design shall consider parcels fronting on the proposed roads. Systems shall be designed to create loops contained either entirely within a proposed plat or as regional loops that encompass multiple properties. The use of hydraulic modeling will be beneficial in analyzing and planning a system that promotes high flow rates and good water quality.

Ultimately, the water system of the Subarea will constitute a grid of lateral mains running east/west and connecting at roadways running north and south. Water mains within these north/south roadways will then be connected to other east/west-running mains and, ultimately, to the backbone of the system along H Street and Mott's Hill Parkway. Unlike sewer grades, the grade of the proposed roadways will not affect the construction of this grid system throughout the Subarea.

Map 3.3 East Blaine
Phased Water Improvements



Property and Easement Acquisition 3.5

Under this plan, property acquisition for construction of water system components is generally included in the property acquired for future roadways. As developments are proposed for review, the City will determine the appropriate amount and location of land required for the installation of roads and utilities. The dedication of rights-of-way or utility easements will need to address future utility connections on adjacent parcels.

Two specific components of the water system that are identified in this plan that will require land acquisition or dedication by development are the reservoir and, depending on the option selected, the booster station. The reservoir site will require that a parcel of land be dedicated to the City within the area currently identified as part of Grandis Pond. Based on the size and height of the reservoir, it is likely that an area immediately adjacent to the reservoir will need to delineated as a no-build zone (possibly used for recreation, green belt, or other amenity) due to limitations in supplying minimum water pressure that close to the tank. Construction of the upper zone booster station will require the acquisition of land if it is not sited on the City's North Harvey Road reservoir property.

Wellhead Protection Area 3.6

The entire Subarea falls within the Blaine Groundwater Management Area (GWMA) as defined in *Blaine Ground Water Management Program: Final Hydrogeologic Report*, September 2, 1992, Golder Associates, Inc. The GWMA roughly coincides with the Dakota Creek watershed. Except for the very western down slope portion of the Subarea, East Blaine falls within the *boundary upland* region of the GWMA, which provides the primary groundwater recharge for the watershed. The rate at which precipitation infiltrates into the underlying aquifers in the Subarea depends upon the soil types. The predominant soils in the Subarea fall into hydrologic groups A and B, which have a moderate to high infiltration rate. The groundwater travels both vertically and horizontally, replenishing numerous aquifers, many of which supply the City with its water, discharging as springs, and/or augmenting the Dakota Creek flow.

The City has conservatively designated a five-year wellhead protection area that encompasses the entire Subarea. Regulations restrict certain activities within such an area, including storage tank installation, pesticide storage and use, and hazardous/dangerous waste handling. In addition, best management practices should be developed to guide all property owners in ways to minimize contamination of the underlying aquifer.

Water Policy 3.7

The following polices should be used during development review process as a guide in the design of water supply elements.

- The water system shall meet DOH requirements.
- All design shall be sized and configured to accommodate ultimate build out as portrayed in this infrastructure plan.
- Participation by developers in the process of developing additional sources and increasing water rights is expected.

Water Improvements Funding 3.8

The funding for the water system improvements is by Phase as outlined in section 4.4 as detail as follows:

Phase I – City
Phase II – Developer Constructed with latecomers or ULID conversion as desired
Phase III – Developer Constructed with latecomers or ULID conversion as desired
Phase IV - Developer Constructed with latecomers or ULID conversion as desired

Resources 3.9

Wellhead Protection Program Guidance Document, Washington Department of Health, publication 331-018

Critical Aquifer Recharge Area Guidance, Washington Department of Ecology, publication 05-10-028

Grandis Pond PUD Application, Water Technical Memorandum, April 2007

Chapter 4 – Wastewater System

Purpose 4.1

Wastewater service for the Subarea will generally be gravity service with flows traveling west to the City's existing infrastructure. Estimated wastewater flows were based upon the projected new services associated with buildout of the Subarea as presented in the City's comprehensive planning documents. These estimated flows provide the basis for preliminary sizing of infrastructure to meet the build out demands of the Subarea.

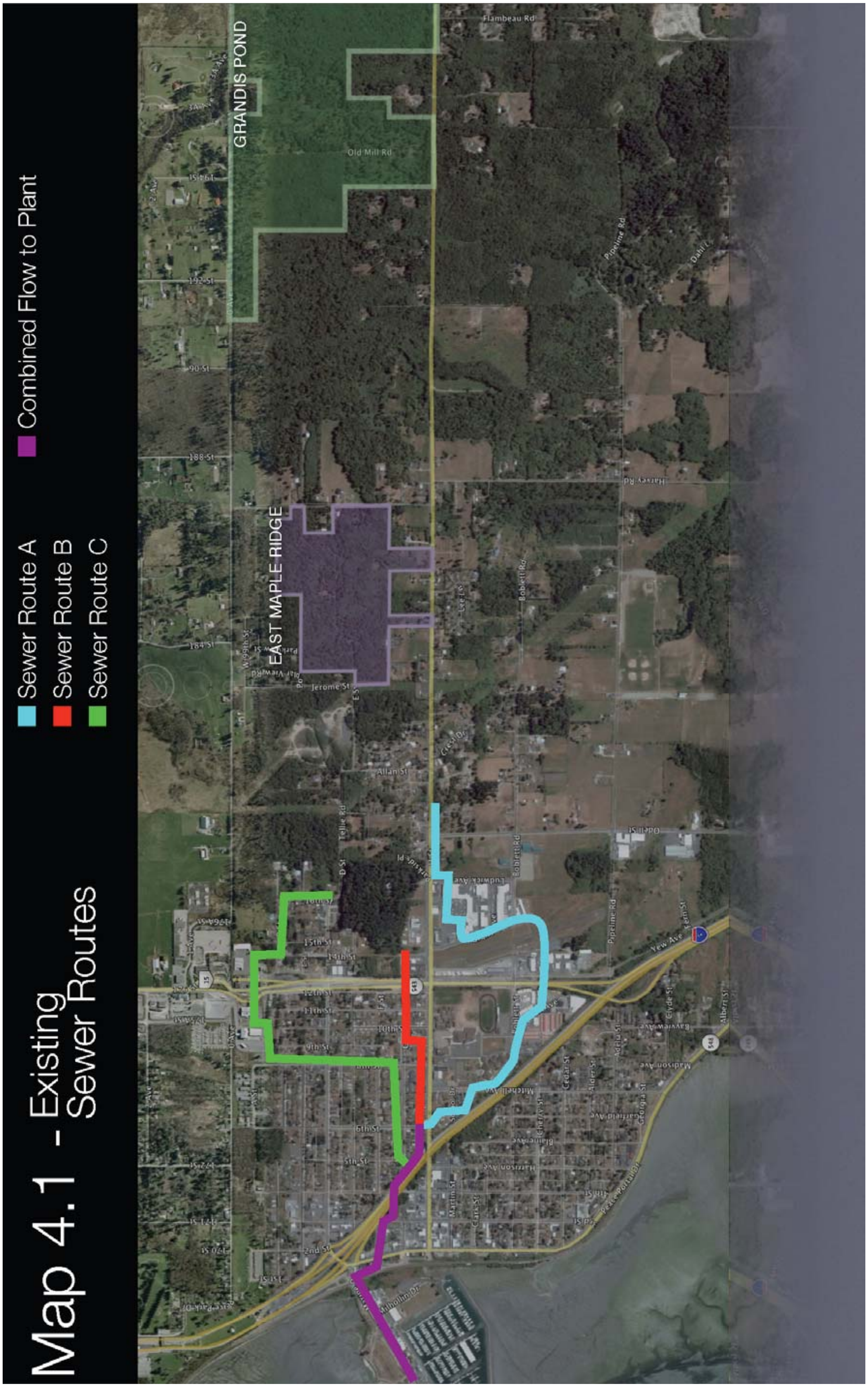
Existing Wastewater Conditions 4.2

There are no existing wastewater lines serving the majority of the Subarea. **Map 4.1** shows existing wastewater routes available at the westernmost edge of the Subarea that could be utilized/upgraded to convey wastewater to the treatment plant from the Subarea. The following text describes existing wastewater routes in more detail.

Route A – South Route – 4.2.1: This route is the closest to provide wastewater service for the Subarea. However, it has limited capacity. This route currently extends the furthest east into the Subarea. Existing piping flows west down H Street from Lincoln Lane to Ludwick Avenue. From this intersection, the wastewater route turns south along Ludwick and zigzags west and south to the approximate center of the old airport property, now referred to as the "Gateway Zone". Within the Gateway Zone, the wastewater route turns west to cross under SR-543 before turning northwest to zigzag roughly parallel to I-5, where it eventually joins another trunk main and crosses I-5 between F Street and G Street. Existing pipes along this route are typically eight-inch with a 10-inch pipe currently in service under the SR 543 Truck Route. However, but a second 12-inch pipe that is not currently in service was also installed with reconstruction of that roadway in 2007.

An engineered ***Sanitary Wastewater Technical Memorandum prepared by Michael J. Dispigno, PE of David Evans and Associates, Inc in December of 2008*** shows that with various segment improvements, this wastewater route has enough capacity to serve up to 750 units in the East Blaine Subarea. The modest improvements are detailed in the analysis portion of this chapter.

The excess capacity available on Route "A" will be available on a first-come first-serve basis. However, improvements on the route will be necessary as detailed in the analysis portion of this chapter. Even with the improvements, the capacity of Route "A" does not provide for full buildout of the East Blaine Subarea. Therefore, redirecting future flows to the shorter Route "B" is detailed in the analysis as well.


Map 4.1 - Existing Sewer Routes
Sewer Route A
Sewer Route B
Sewer Route C
Combined Flow to Plant
GRANDIS POND
EAST MAPLE RIDGE

Route B – Center Route – 4.2.2: This route is the shortest route to the treatment plant for the Subarea. It also has capacity issues, however, but not as great as those for Route A and it is the shorter route to improve and maintain. The route begins at the intersection of 14th and G Streets, flows west under the SR 543 Truck Route on G Street to 9th Street, and then shifts south to the alley between H Street and G Street. Eventually, the wastewater route is joined by the above-described Route A and below-described Route C, before the combined flows cross west under I-5 between F Street and G Street. The older existing pipes along this route are typically 8-inch and 10-inch. Some upgrades to capacity have already been made in anticipation of ultimately using this route to serve most of the Subarea. These include 15-inch wastewater piping installed under G Street from 10th Street to 9th Street, then south on G Street to mid-block, and 15-inch pipe under the SR 543 Truck Route installed during the reconstruction in 2008.

An engineered ***Sanitary Sewer Technical Memorandum prepared by Michael J. Dispigno, PE of David Evans and Associates, Inc in December of 2008*** shows that with additional improvements, wastewater Route B has enough capacity to serve up to 2000 units in the East Blaine Subarea. The improvements are detailed in the analysis portion of this chapter.

The City has analyzed a number of different alternatives for connecting the East Blaine Subarea to Route B. Initially the focus was on extending a wastewater trunk line down H Street and then North on 14th Street to the 15-inch wastewater crossing under the Truck Route.

Route C – North Route – 4.2.3: This route is the longest option to provide wastewater service for the Subarea. It also has capacity issues and the additional challenge of passing under the U.S. Pacific Highway Border Facilities. However, it could potentially be used to provide service to the north portions of the Subarea down a boundary road adjacent to the border. The north route begins at the 16th and B Street intersection, flows westward along A Street to 8th Street where it turns south. The route continues south to an alley between F and G Streets, then turns west to join the 10-inch trunk main carrying Routes A and B flows, then passes under I-5. An evaluation of the capacity of this wastewater route is required prior to the design of any system that would be connected to it.

Topography and Natural Basins – 4.2.4: The topography of the Subarea ranges from a low ground elevation of 150 feet to a high of 540 feet. The topography is dominated by a hilltop ridgeline running east to west roughly down the middle of the Subarea. The ridgeline generally grades downward toward the City. This provides a clear opportunity for gravity service for the majority of the Subarea.

It should be noted that there are some areas that will be difficult to provide gravity service including:

- **South East Corner:** The 40-acre area at the extreme southeast corner of the Subarea cannot be serviced by gravity and will require a full service duplex wastewater lift (pump) station.

- **H Street Pocket:** The 200-acre area east of Harvey Road and along H Street can be served by gravity. However, it will require a wastewater extension along H Street with depths in excess of 25 feet to provide gravity service. It would be easier and preferable to serve this area in conjunction with service to the East Blaine UGA (to the south) at some future date in conjunction with annexation of some or all of that UGA. Another alternative would be to install a full service duplex wastewater lift (pump) station in this area if all other options have been exercised to the satisfaction of the Public Works Director.

- **Development Phasing:** The topography generally provides for gravity service to most of the Subarea. The service areas and phasing contained in this report recognize both the topographic constraints and our current understanding of the areas with the greatest potential for early development.

Wastewater Analysis by Zone 4.3

The analysis included definition of wastewater service zones as well as analysis of existing infrastructure, proposed development, and likely phasing of development. For this analysis we assumed that the gross four lot per acre density within this Subarea would ultimately result in about 3.25 units per acre after critical areas are factored out.

Map 4.2 on the following page shows the wastewater service zones for the Subarea. These service zones represent large areas within the subarea that can be drained to one point. The zones have been numbered by expected development to anticipate issues such as cost and likelihood of development. If development occurs differently than what is expected today, other options may have to be explored. The following text describes the expected Wastewater Service Zones in more detail.

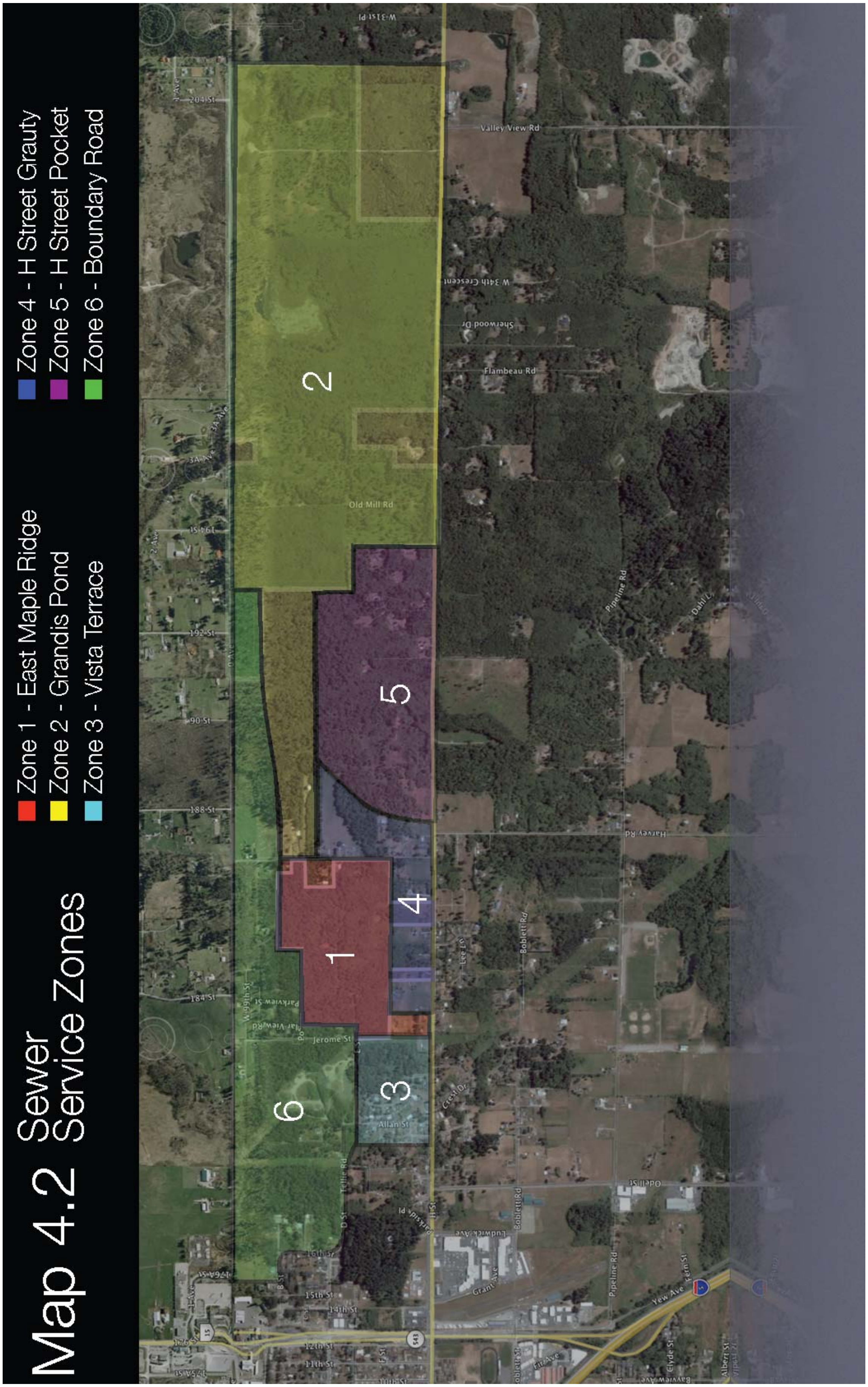
Zone 1 – East Maple Ridge – 4.3.1: The East Maple Ridge service zone includes approximately 89 acres of mostly undeveloped land. Should this zone fully develop, this area would generate around 300 new wastewater services. The East Maple Ridge service zone is most likely to be developed first, as the developer intends to extend the wastewater in the near future.

- Excess capacity in the south wastewater Route A would be available on a first come, first served basis to this zone. Some of the southeasterly lots within East Maple Ridge could use the excess capacity by connecting with a gravity wastewater line by running north along H Street and then north along Allan Street, or through the Vista Terrace development and then to the east.

The preferred wastewater extension to provide service to East Maple Ridge shall be as follows:

- Extend a 15-inch wastewater main from Route B through Lincoln Park to Mott's Hill Parkway on the western boundary at Jerome Street.

Extend a 15-inch wastewater main east to the intersection of North Harvey Road and Mott's Hill Parkway. This may take various east-west routes through the East Maple Ridge development as designed by their engineer with City approval. If the wastewater line route does not follow the route of Mott's Hill Parkway, the right-of-way/utility easement must be dedicated to the City upon PUD approval.


Map 4.2 Sewer Service Zones
Zone 1 - East Maple Ridge
Zone 2 - Grandis Pond
Zone 3 - Vista Terrace
Zone 4 - H Street Grauty
Zone 5 - H Street Pocket
Zone 6 - Boundary Road
1
2
3
4
5
6

Zone 2 – Grandis Pond – 4.3.2: The Grandis Pond service zone includes approximately 550 acres of mostly undeveloped land. Should this zone fully develop, it is projected that this area would generate approximately 1800 new wastewater services.

The Grandis Pond service zone is most likely to be developed sometime after the East Maple Ridge service zone and therefore anticipates that wastewater has already been extended to North Harvey Road along the Mott's Hill Parkway alignment. Alternatively, should East Maple Ridge not develop and extend wastewater first, Grandis Pond may be allowed to extend gravity wastewater along the Mott's Hill Parkway alignment (if dedicated) or along H Street (with its limited, first come, first served capacity) in the absence of a dedicated wastewater easement/right-of-way.

Requirements with Mott's Hill Parkway Wastewater Extension (East Maple Ridge Constructed):

- Extend a 12-inch wastewater main from the manhole at the intersection of North Harvey Road and Mott's Hill Parkway east along the Mott's Hill Parkway alignment to Grandis Pond.

Zone 3 – Vista Terrace – 4.3.3: The Vista Terrace service zone includes approximately 39 acres of partially developed land with 45 existing houses and 15.6 acres left to be developed. Since the existing houses are not yet on City wastewater, they should all be counted as new wastewater services. Should this zone fully develop, it is anticipated this area would generate a total of about 100 services.

Unless one of the other major developments has already extended wastewater service past this zone, the requirements for wastewater extension to provide service to properties in the Vista Terrace service zone are as follows:

- This zone can be most easily served through Route A by extending a PVC wastewater main from Lincoln Lane east along H Street to a new manhole at Allan Street.
- (Alternative) If the Mott's Hill Parkway wastewater trunk line has already been constructed, it is possible to serve most of this development from that direction.
- Construct an eight-inch PVC wastewater main within the development along Vista Terrace at sufficient depth to accommodate existing developed properties and extend the main along Allan Street to either the north or south from a manhole at the intersection of Allan and Vista to either H Street or Mott's Hill Parkway.
- Extend a PVC wastewater main from the intersection of Allan Street east along H Street to serve the remainder of the zone and also provide service to Zones 4 and 5.

Zone 4 – H Street Gravity – 4.3.4: The H Street gravity service zone includes approximately 69 acres of mostly underdeveloped land. Existing development is at lower density, and uses on-site septic systems. Should this zone fully develop, this area would generate around 230 new wastewater services.

The H Street gravity service zone can be served by gravity by extending a deep wastewater line up H Street. The cost of installing a deep pipeline along H Street, which is an active regional collector, will likely slow development until properties in Zone 5 also begin to develop. The requirements for wastewater extension to provide service to properties in the H Street gravity service zone shall be as follows:

- Extend a wastewater main from Lincoln Lane (private) along H Street of sufficient size, depth and grade of pipe for gravity service for Zones 2, 4, & 5.

Zone 5 – H Street Pocket – 4.3.5: The H Street pocket service zone includes approximately 161 acres of mostly undeveloped land. Should this zone fully develop, it could generate up to 530 new wastewater services.

Service to this zone is predicated on the extension of wastewater main along H Street, including some deep sections, so that this area can be served by gravity. The requirements for wastewater service to properties in the H Street gravity service zone are as follows:

- Extend a wastewater main from Lincoln Lane (private) along H Street of sufficient size, depth and grade of pipe for gravity service for Zones 2, 4, & 5.

- (Alternative) In lieu of the deep wastewater line, the Public Works Director may consider a 200-acre regional pump station to provide for the H Street pocket as a last resort. The Public Works Director reserves the authority to require the gravity option. It should be noted that the gravity option is the only option offered for H Street at this time.

Zone 6 – Canada View – 4.3.6: The H Street pocket service zone includes approximately 285 acres of partially developed land. Since the existing houses are not yet on City wastewater, they should all be counted as new wastewater services. Should this zone fully develop, it is projected that this area could generate as many as 950 new wastewater services. The Canada View service zone will likely take the longest to develop. The requirements for wastewater extension to provide service to properties in the Canada View service zone shall be as follows:

1. Dedicate right-of-way or utilities easement from the north end of 14th Street in what is an A Street alignment east to include the existing Canada View Drive segment on to North Harvey Road.

2. Extend an eight-inch PVC sewer main along the same utilities easement.

Wastewater Improvements Phasing 4.4

Phasing of the utility infrastructure has the benefit of reducing initial costs and spreading costs out over time. Phasing of wastewater infrastructure within the Subarea must be coordinated with construction of facilities within each service area that can convey flows to the existing wastewater system or to newly constructed portions of the system. When designing connections to the existing system and sizing facilities, all flows from the immediate wastewater basin as well as the wastewater basins upstream must be considered.

Map 4.3 on the following pages shows the proposed phasing of wastewater extensions through the Subarea. The proposed wastewater extension phasing corresponds to the same order as the Service Zone numbering. .

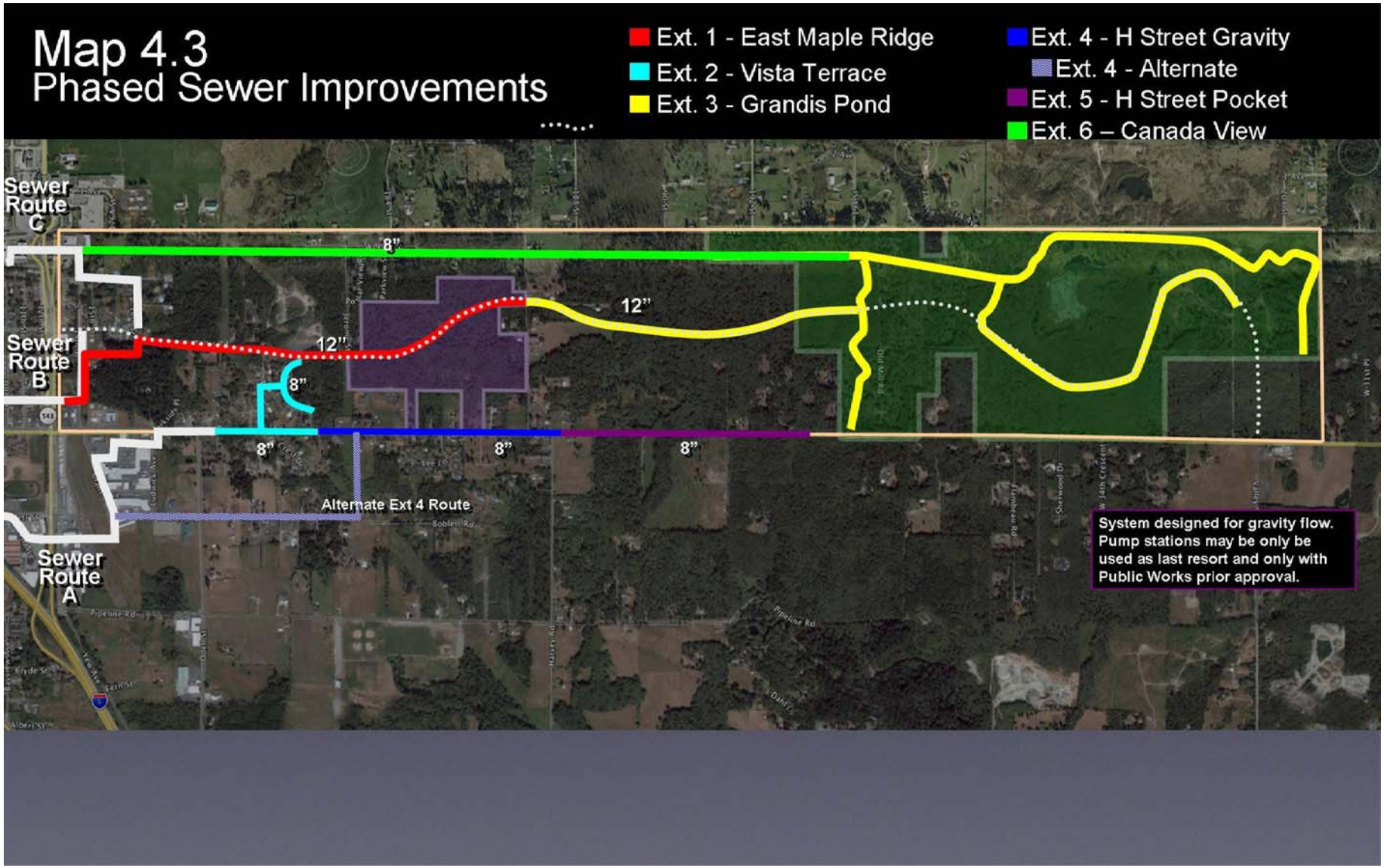
It should be noted that sizing and engineering details for the wastewater pipes were defined in the previous wastewater analysis Section 4.3.

References 4.5

1. *General Sewer Plan, City of Blaine, prepared by CH2Mhill, November 2005 revision*

2. *City of Blaine Sanitary Sewer GIS Mapping data for existing system*

3. *Sanitary Sewer Technical Memorandum – Supplemental Offsite Analysis, Grandis Pond PUD, prepared by David Evans and Associates, Inc., December 2008*


Map 4.3
Phased Sewer Improvements
Ext. 1 - East Maple Ridge
Ext. 2 - Vista Terrace
Ext. 3 - Grandis Pond
Ext. 4 - H Street Gravity
Ext. 4 - Alternate
Ext. 5 - H Street Pocket
Ext. 6 – Canada View
Sewer Route C
Sewer Route B
Sewer Route A
8”
12”
12”
8”
8”
8”
8”
Alternate Ext 4 Route
System designed for gravity flow. Pump stations may be only be used as last resort and only with Public Works prior approval.

Chapter 5 – Stormwater System

Purpose 5.1

Stormwater service for the Subarea will generally be by private treatment and detention within the source development. However, the City would support a regional stormwater treatment and detention facility within any of the 12 major basins of the East Blaine Subarea. If regional storm water solutions are determined to be desirable or necessary, regional detention basins will be designed and located at the most optimum site feasible. All new development will be required and subject to third party review to determine adequacy and design options to the greatest benefit to the City. In any case, stormwaters generated by developments shall remain within their historic major basin as defined by this plan.

Existing Stormwater System Conditions 5.2

The Subarea has few stormwater pipes and a handful of drainage courses. **Map 5.1** on the following page shows the 12 existing major stormwater basins for the East Blaine Subarea. A major basin represents a region that tends to drain to a single point or area. Typically the single point is a drainage course, pipe run, or culvert crossing. The following text describes the existing major stormwater basins in more detail.

East Blaine Basin 1 (BSN-1): This basin includes approximately **122.7 acres** of partially developed land with some public pipes and ditch lines. A split flow occurs at the Odell and H Street intersection for flows generated in the easternmost areas of this basin. Field observation indicates that the majority of small event flows continue straight down H Street, staying within the basin. This split flow condition should be addressed when H Street is improved in the future. Flow split aside, this major basin is drained to a single pipe outfall on the southeast corner of the H Street and SR 543 Truck Route intersection.

East Blaine Basin 2 (BSN-2): This basin includes approximately **117.2 acres** of partially developed land with some public pipes and ditch lines. This area is entirely drained to a single 18-inch pipe running north into Canada through the Truck Route (SR 543) border crossing.

East Blaine Basin 3 (BSN-3): This basin includes approximately **51.6 acres** of mostly undeveloped land with few public pipes and ditch lines. This area is entirely drained to a single drainage course running northwest out of the old Zappone gravel pit, north of E Street, into Canada.

East Blaine Basin 4 (BSN-4): This basin includes approximately **61.8 acres** of mostly undeveloped land with few public pipes and ditch lines. This area is entirely drained south to a single 12-inch RCP culvert crossing H Street just east of the Jerome Street right-of-way.

East Blaine Basin 5 (BSN-5): This basin includes approximately **95.2 acres** of partially developed land with some private pipes and ditch lines along 99th Street, which is a private road. Most of this area drainage runs overland into Canada and is collected by the Zero Avenue roadside ditch and conveyed west.

East Blaine Basin 6 (BSN-6): This basin includes approximately **44.2 acres** of mostly undeveloped land with few public pipes and ditch lines. This area is entirely drained to a single 24-inch CPP culvert crossing H Street south near Ronald Drive.

East Blaine Basin 7 (BSN-7): This basin includes approximately **36.8 acres** of mostly undeveloped land with few public pipes and ditch lines. This area is entirely drained to a single 18-inch HDPE culvert crossing H Street south near Harvey Road.

East Blaine Basin 8 (BSN-8): This basin includes approximately **154.4 acres** of mostly undeveloped land with few public pipes and ditch lines. This area is drained overland northwest into Canada.

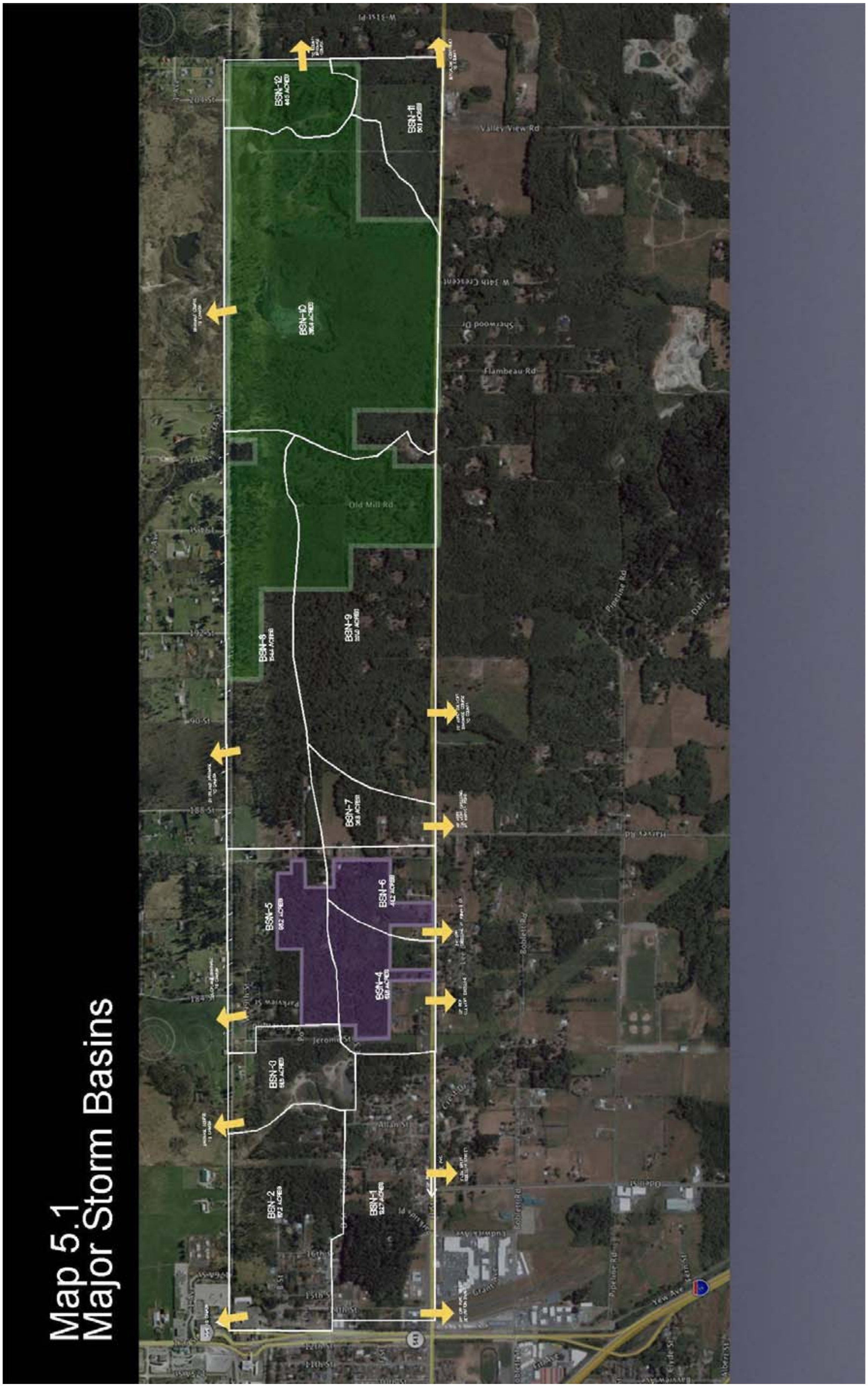
East Blaine Basin 9 (BSN-9): This basin includes approximately **231.0 acres** of mostly undeveloped land with few public pipes and ditch lines. This area is entirely drained south to a single 18-inch HDPE culvert crossing H Street toward the south.

East Blaine Basin 10 (BSN-10): This basin includes approximately **316.4 acres** of mostly undeveloped land with few public pipes and ditch lines. This area is entirely drained to a single drainage course running north into Canada.

East Blaine Basin 11 (BSN-11): This basin includes approximately **50.1 acres** of mostly undeveloped land with few public pipes and ditch lines. This area is entirely drained toward the east by the north side H Street ditch line.

East Blaine Basin 12 (BSN-12): This basin includes approximately **44.5 acres** of mostly undeveloped land with few public pipes and ditch lines. This area is entirely drained to a single drainage course running easterly.

Topography and Natural Basins: The topography of the Subarea ranges from a low ground elevation of 150 feet to a height of 540 feet. The Subarea topography is dominated by a hilltop ridgeline running east to west roughly down the middle of the East Blaine Subarea. The ridgeline generally slopes downward toward the City. The general layout of these basins are shown on **Map 5.1.**


Map 5.1
Major Storm Basins
BSN-12
BSN-11
BSN-10
BSN-9
BSN-8
BSN-7
BSN-6
BSN-5
BSN-4
BSN-3
BSN-2
BSN-1
Valley View Rd
Flambeau Rd
Old Mill Rd
Pipeline Rd

Proposed Stormwater Improvements 5.3

Most of the East Blaine Subarea has little or no storm drainage pipes or ditches. Small wooded streams and drainage courses are common throughout the subarea. The design and construction of future stormwater improvements must not overburden, reduce, or cause damage to these existing stormwater features. The following development practices are intended to preserve these natural drainage systems:

Department of Ecology Standards – 5.3.1: All stormwater improvements in the East Blaine Subarea shall meet standards as set forth by the edition of the Stormwater Management Manual for Western Washington currently adopted by the City of Blaine, and by the City of Blaine Development Standards. In the event of a conflict between standards, the higher standard shall be held.

Stormwater Must be Kept in Existing Basins – 5.3.2: This plan proposes to keep all stormwaters in their existing basins. Stormwater shall not be removed from one basin and redirected to another. It is understood that some redirection of basin stormwaters has already occurred with past development. Therefore, existing basins shall be as delineated by the City in March 2009, described in this report, and shown in Map 5.1.

Conveyance Systems – 5.3.3: Conveyance for new development shall pass a 25-year storm event within proposed storm structures. In addition, conveyance for new development must be designed so the 100-year storm event can pass without causing damage.

On-Site Detention and Treatment – 5.3.4: On-site detention and treatment is most likely for individual developments, as regional detention typically requires the involvement of many landowners. Thus individual landowners have to go it alone and provide smaller on-site facilities for each site. Regional facilities will likely require City involvement to coordinate.

Regional Detention and Treatment – 5.3.5: Regional detention for individual basins is a preferred method for detention and treatment of stormwater whenever feasible. Typically, the best site for a regional facility is at the pour point for the basin, where all of the stormwaters naturally flow already. Large regional facilities are an advantage for wildlife, as there is a larger area to attract and feed more species. In addition, regional facilities make sense for developers, as they concentrate stormwater facilities at one point, allowing unencumbered uplands areas to be used for development. These "pour points" or low area locations are shown on **Map 5.1** as indicated with an arrow leaving the basin.

References 5.4

1. *Stormwater Management Manual for Western Washington,* Department of Ecology, Current Edition
2. City of Blaine Development Standards, City of Blaine, Current Edition

Chapter 6 – Electrical System

Existing Electrical System 6.1

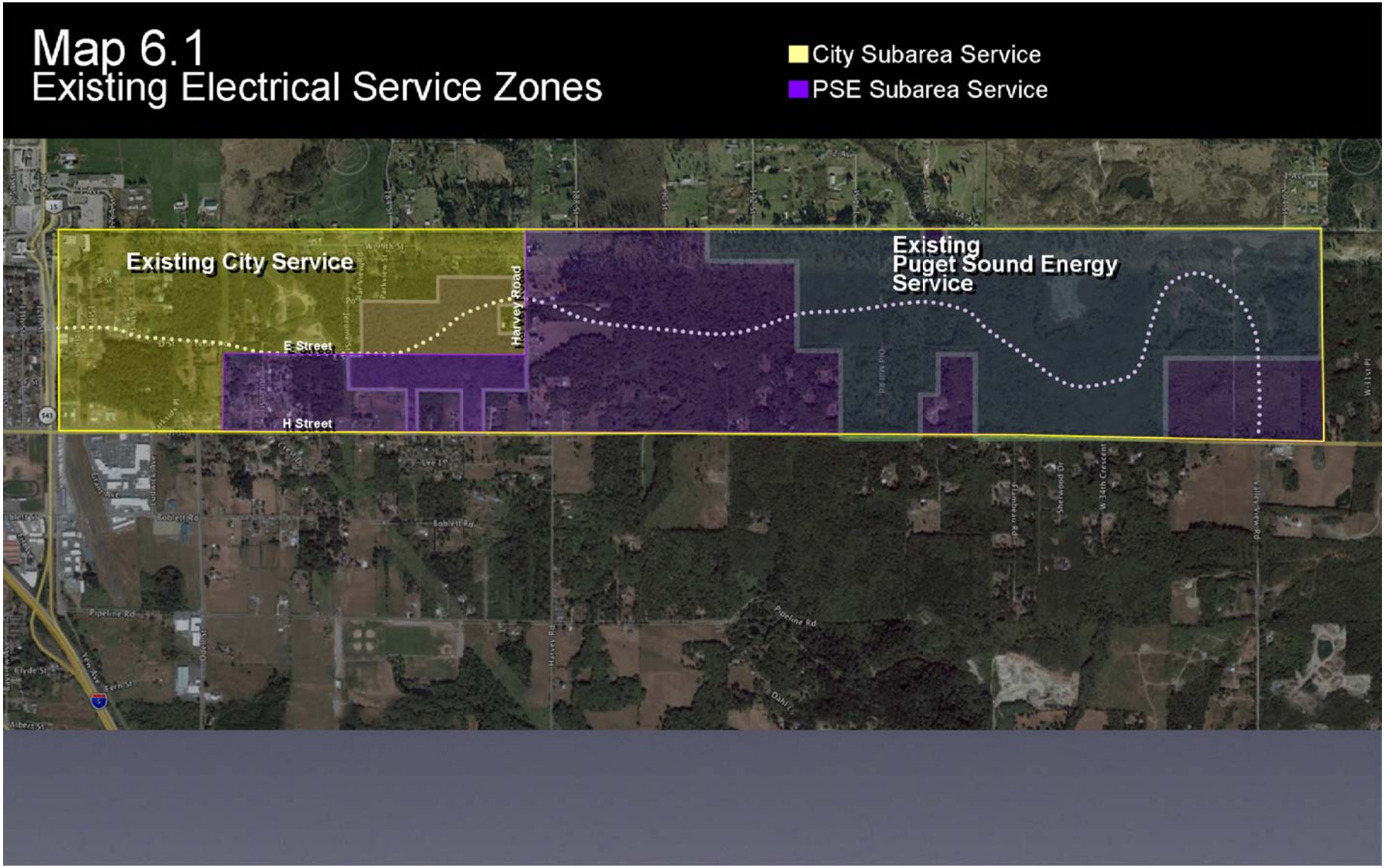
A large portion of the Subarea's electrical service is currently provided by Puget Sound Energy (PSE) on antiquated poles and overhead lines. Frequent outages are reported in these PSE-serviced areas. **Map 6.1** on the following page shows existing electrical service zones for the City and PSE. Long-term electrical service for the eastern portions of the Subarea will require line updates, line undergrounding, long extensions and replacement of various equipment and facilities.

Proposed Improvements Phasing 6.2

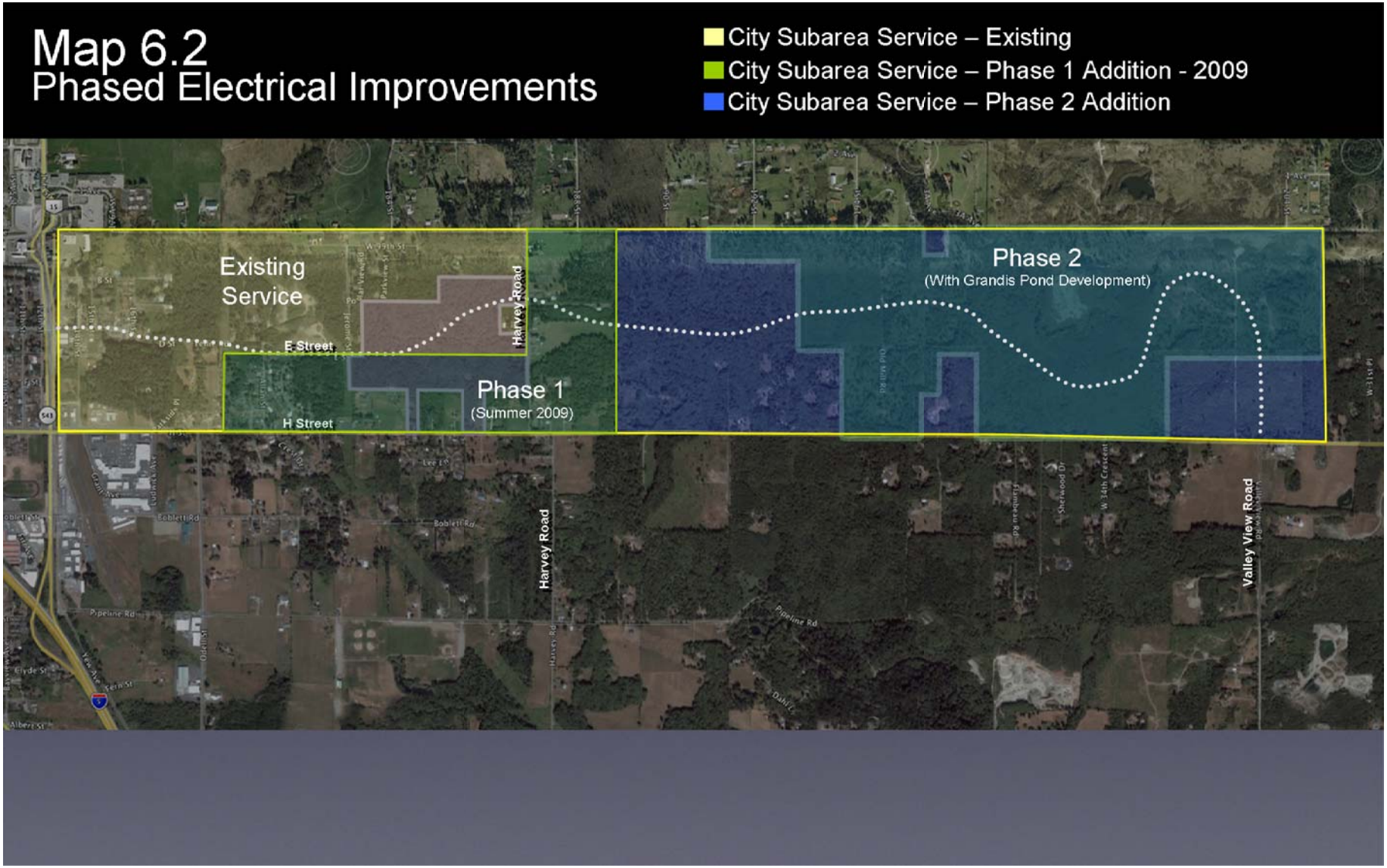
PSE has indicated that it would like to transfer the service of these areas to the City in order to avoid the cost of updating and maintaining their facilities in this area. The City is interested in expanding service into a large developing area for its electrical utility to grow.

The plan is to phase the transfer of lines from PSE in two phases as shown in **Map 6.2** on the following page. The first phase will transfer the PSE areas to the City west of North Harvey Road. . The second phase will transfer all of the remaining area within the East Blaine Subarea to the City prior to completion of first phase Grandis Pond development.

Map 6.1
Existing Electrical Service Zones



Map 6.2
Phased Electrical Improvements



Chapter 7 – Funding Strategy

Purpose 7.1

Development of the East Blaine Subarea as detailed in the Comprehensive Plan will require new and innovative ways to look at public infrastructure financing. Preceding chapters of this plan focused on backbone water, wastewater, storm, electrical, and road infrastructure throughout the Subarea. The intent of this chapter is to outline methods by which infrastructure will likely be financed and identify those parties responsible for infrastructure funding.

Funding Goals 7.2

In order to ensure that the infrastructure detailed in this plan is created and available in a timely manner, financing mechanisms will follow these general goal statements:

1. **The developer is responsible for providing infrastructure for the development:** Each property owner is responsible for the infrastructure costs within his development.
2. **Infrastructure extensions**: Service extensions (roads or utilities) required to provide service to an otherwise isolated development shall be the responsibility of the developer where the existing facility adequately serves current traffic or service demands. The City may participate in infrastructure improvements if there is an existing deficiency which is proposed to be addressed as part of an upgrade.
3. **Phase Improvements To Spread Costs Over Time:** Improvements should be phased in such a manner as to not overburden and stop early private development, but also to not inhibit other development within the Subarea.
4. **Focus Early Developer Funding Efforts:** Early developers in the Subarea should be responsible for the initial improvement of Mott's Hill Parkway and the utilities central core. Later development will participate through funding mechanisms such as latecomer agreements.
5. **Focus Later Developer Funding Efforts:** The later developers in the Subarea will be responsible for improving the H Street and Canada View Drive links around the Mott's Hill Parkway central utility core.
6. **Utilize the Local Improvement Districts (LID) Funding Mechanism:** Infrastructure shared by more than one development or property owner shall be the financial responsibility of those parties benefiting from that infrastructure.
7. **Utilize Latecomers Agreements:** Increased utility capacity constructed by developers to implement this plan will be eligible for latecomer / developer reimbursement agreements.
8. **Publicly Funded Improvements:** Certain infrastructure improvements with area-wide impacts (e.g. H Street) shall be the responsibility of the City, using local, state and federal funds. This may include the use of impact fees, matching funds, grants and other funding.

Funding Strategy 7.3

This Plan focuses on coordinating major infrastructure systems as a way to support area development. The funding strategy for water, wastewater, stormwater, electrical, and street improvements varies greatly. **Maps 7.1**, **7.2**, and **7.3** on the following pages outline general funding strategies for streets, water, and wastewater, and stormwater systems.

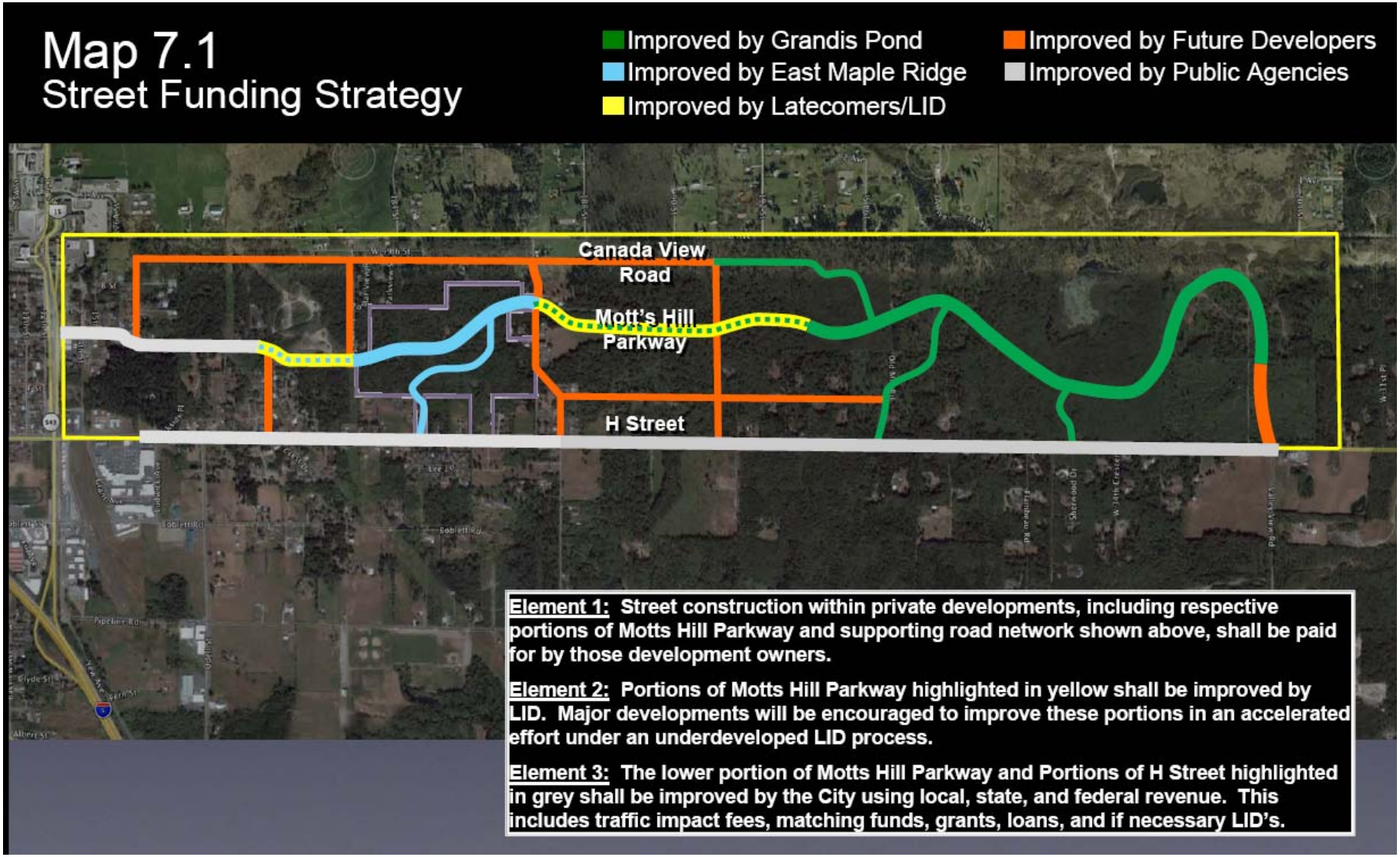
Stormwater Funding Strategy – 7.3.1:

- Stormwater detention and treatment are to be provided on a project-specific basis, with all costs borne by the property developer.
- Regional stormwater facilities are likely to be improved using LID agreements.

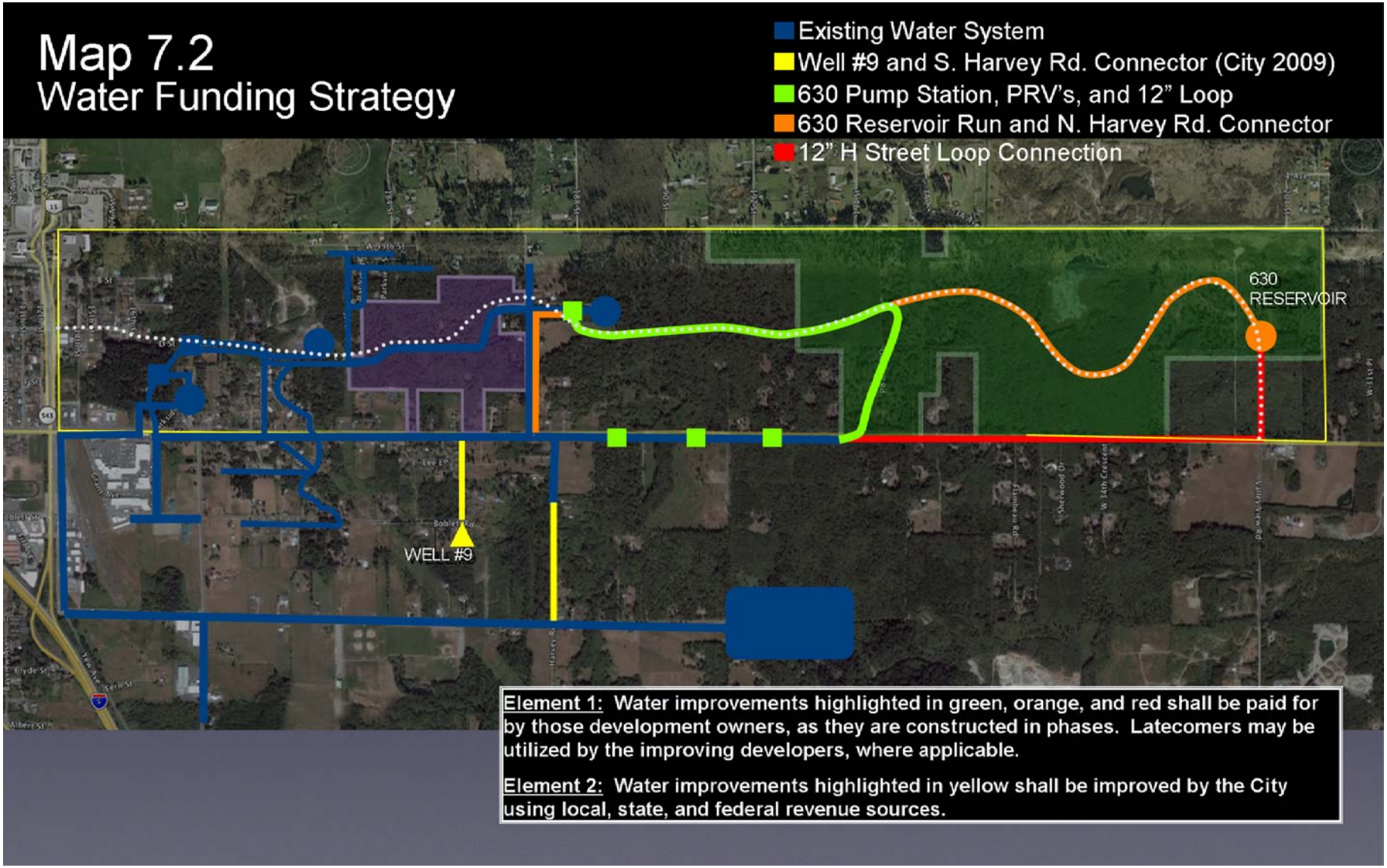
Electrical Funding Strategy – 7.3.2:

- Electrical transmission, distribution, and associated equipment within private developments shall be paid for by those developers.
- Electrical transmission, distribution, and associated equipment along the LID portions of Mott's Hill Parkway shall be paid for by the property owners in the associated LID.
- Electrical transmission, distribution, and associated equipment along the City portions of lower Mott's Hill Parkway and H Street may be eligible for City participation if current facilities are in need of an upgrade as provided in the City's Capital Improvement Program.

Map 7.1
Street Funding Strategy



Map 7.2
Water Funding Strategy



Appendix 8

East Maple Ridge Developer Agreement – 8.1

DEVELOPMENT AGREEMENT

THIS AMENDED DEVELOPMENT AGREEMENT (herein "Amended Development Agreement") is between the City of Blaine, a municipal corporation, (herein "City") and Douglas W. Connelly and Loise B. Connelly (herein "Connelly" or as "Developers"), amending the Original Development Agreement, approved by Ordinance No. 96-2228 ("Original Development Agreement"). Subject to the terms, conditions, and limitations herein, this Agreement is effective on the effective date of the City Ordinance approving this Amended Development Agreement (herein "Date of Agreement"), and the contemporaneous execution and recording of a agreement between Kathy and Ken Hertz and Ken and Sonja Schorr (herein "Blossom") and the City of Blaine, amending the Original Development Agreement, approved by Ordinance No. 96-2228.

RECITALS

1. The City has annexed approximately 1,182 acres known as the East Blaine Annexation (herein the "Annexation Area") and which is more particularly described in City of Blaine Ordinance Number 96-2224.

2. The Developers are owners of large development properties constituting approximately 89 acres within the Annexation Area. The real estate owned by the Developers is more particularly described on Exhibits "A", referred to herein as the "subject property" or as the "Development Property".

3. Developers are desirous of amending the Original Development Agreement approved by the City of Blaine by Ordinance Number 96-2228, and the City has negotiated certain changes with the Developer related thereto which would permit the Developers to plan and develop the Development Property in a comprehensive and predictable manner consistent with City goals.

4. RCW 36.70B.170-.210, authorizes the City and the Developers to enter into this Amended Development Agreement.

5. The provisions of this Amended Development Agreement are consistent with applicable development regulations adopted pursuant to Chapter 36.70A RCW.

6. Following public notice as required by law, a public hearing on whether to consider amendments to the Original Development Agreement was held on January 24, 2005

7. Following public notice as required by law, public hearings were held on February 28, 2005, March 14, 2005, and March 28, 2005 regarding the proposed amendments to the Original Development Agreement.

8. The City SEPA official issued a SEPA Determination of Non-Significance on February 16, 2005, which was published on February 18, 2005.

9. The Developers represent and warrant to the City of Blaine that they hold Fee Simple title to the property described in Exhibit "A".

NOW THEREFORE, the parties covenant and agree as follows:

INTRODUCTION

The Original Development Agreement was approved by the City by Ordinance No. 96-2228 was entered into by the predecessor's in title to the Developers, and a third party, Douglas and Louise Connelly. It is the desire of the parties to the Original Development Agreement that both Connelly and the Developers herein each have a separate agreement. The Original Development Agreement is amended in its entirety hereby.

1. **ZONING**. Subject to the limitations and exceptions set forth herein, the subject property shall be subject to, vested in and entitled to the Planned Residential rules and development regulations adopted by Ordinance Number 96-2229, and shall be considered a Major Development, under BMC 17.64. The City specifically reserves the

authority as allowed by RCW 36.70B.170 to impose new or different regulations to the extent required by a serious threat to public health and safety. Further, the Developer acknowledges that SEPA review was not performed for the Original Development Agreement, and that the SEPA done for this Amended Development Agreement was a non-project SEPA review. Subsequent development permit applications such as plat, or other applications will require and be subject to project based SEPA review.

2. **DEVELOPER'S OBLIGATIONS**. Developers agree as follows:

a. The Developers shall pay Four Thousand One Hundred and Twenty Five Dollars ($4,125.00) contemporaneously with the execution of this Amended Development Agreement. This fee shall be used by the City to partially fund the City developed Subarea Plan (also referred to herein as Master Plan) for the East Blaine Annexation area. Upon the payment of such fee the City shall release any bond, deed of trust or other surety that has been provided by the Developers or their predecessors in title.

b. A one-time mitigation fee will be collected from the building permit applicant at the time of each building permit approval to support police for a two-year period after construction until property taxes are collected to support these services. This mitigation fee will be based on the formulas and cost information from the February 9, 1995, FISCAL IMPACT ANALYSIS FOR EAST BLAINE ANNEXATION by Richard Trottier Associates, as updated, and may be replaced by a City-wide impact mitigation fee upon the adoption of an impact mitigation ordinance. The Developer's vested rights herein are limited such that any future impact fee ordinance shall be applicable to the Developers and the subject property.

c. To dedicate aquifer protection areas of sufficient size and location to protect the aquifer recharge function of this area, the exact size and location of these areas shall be determined prior to the approval of any subdivisions or Planned Unit Developments within the Annexation Area. Any aquifer recharge areas, wetlands and wildlife habitat

located on the subject property shall be required to be protected in accordance with provisions of Title 17 of the Blaine Municipal Code, and the City's critical areas ordinance as they exist as of the date of this Amended Development Agreement.

d. The Developers shall be responsible for the design, extension, development and expansion of the necessary utility infrastructure to support development of the subject property within Annexation Area, including without limitation, the extension of all sewer and water facilities, and road infrastructure to serve the subject property which may be sized to serve the whole Annexation Area if required by conditions of approval attached to the development or the applicable developer extension agreement. In this regard it is agreed that the Developer shall be required to design any required utility infrastructure to service Developer's property, sized to serve the whole Annexation Area. Further, the Developer shall be required to construct the utility infrastructure sized to serve the whole annexation area, where any component of such facilities are reasonably required by the City to serve the development in accordance with RCW 82.02.020, except as otherwise provided for in this Agreement. In the event that the City Public Works Director and the Developer, are not able to agree on whether any component of such facilities are reasonable required to serve development, then such shall be determined by the City Council in accordance with RCW 82.02.020. As part of the foregoing requirements, the Developer shall design the transportation and road infrastructure required to service Developer's property with sufficient capacity to serve the whole Annexation Area, and may construct transportation and road improvements in phases to serve the phases of the Developer's development. The Developer shall not be required to construct on-site infrastructure for properties other than the Developer's property. The Developer shall provide for the planning of the transportation system for the whole Annexation Area, and further shall be required to design and install those portions of the system same if required by the City Council upon demonstration that

such facilities are reasonably necessary as a direct result of the development of the property in phases corresponding to the off-site and on-site transportation impacts of each phase of development. In addition the following shall apply:

1) The Developers shall set forth a schedule of improvements for extension of and expansion of the necessary infrastructure to support the proposed development, all subject to approval by the City's Director of Public Works.

2) Each development application shall, at a minimum, include plans and specifications for all on-site utilities and street improvement. Stormwater management and treatment facilities shall be designed in compliance with currently adopted State of Washington Department of Ecology Stormwater Manual requirements in effect as of the date of this Amended Development Agreement. Street, water, sewer, electrical facilities improvements shall be designed in compliance with Blaine Municipal Code provisions applicable to Planned Residential zones, and SEPA mitigation conditions imposed on the proposed development as part of the project based SEPA review. In this regard, it is further agreed as follows:

i) All utility facilities and road improvements shall be designed by a professional engineer registered in the State of Washington. Design and installation of the improvements shall be the property owners' responsibility.

ii) Design for on-site and off-site infrastructure constructed and/or paid for by the Developer shall, in addition to the requirements above, shall also be subject to the applicable Departments of Health and Ecology regulations, American Public Works Association/Washington State Department of Transportation standard specifications, City of Blaine Municipal Code, and related professional construction standards in effect as of the date of this Amended Development Agreement.

iii) The Developer shall dedicate to the City the required off-site improvements as may be required by the conditions of approval attached to the development or applicable City of Blaine Public Facilities Construction Agreement together with the necessary easements to the City to provide for egress/ingress and maintenance and repair of the proposed improvements and public infrastructure. Drainage facilities shall either be dedicated to the City, subject to a maintenance agreement approved by the City, provision of necessary easements for maintenance and payment of the fee as required by the City, or retained by the Developer with a private maintenance guaranty in a form approved by the City as may be required by the conditions of approval attached to the development.

3) Prior to PUD or final plat approval, as determined by the City, the Developers shall construct or pay the identified shares of improvements or phased improvements as listed in the schedule of each design report approved by the City, all applicable fees to construct the required improvements or bond for 150% of the cost of improvements as may be permitted and/or required by applicable City of Blaine Codes.

4) The Developer shall provide on-site infrastructure to service the development of Developer's property. The Developer's responsibility shall include providing the design of the on-site and off-site infrastructure improvements required by the Development with a capacity to service the whole Annexation Area, as well as the Developer's property.

5) The Developer may request a latecomer agreement (aka a developer's reimbursement agreement under the Blaine Municipal Code) with the City of Blaine. The City agrees to approve a latecomer's agreement upon the request of the Developer in a form consistent with the applicable City ordinances and the terms and conditions of this Amended Development Agreement, provided that such facilities are

designed, installed and accepted by the City, and conveyed to the City after completion. Any future latecomer agreement will provide for collection and reimbursement of the pro rata share of design and installation costs from the owners of property who seek to develop their property in the future within the service area of the developer installed City owned utilities where such developments are to be connected to the applicable City system. Notwithstanding the forgoing, any existing single-family residences as of the date of this Amended Development Agreement shall not be subject to fees charged as part of a developer reimbursement or latecomer agreement except in those instances when they voluntarily seek to connect to such systems, but are not compelled by City Code or state law to connect to such system. "Existing single family residences" includes those properties where a complete building permit application for a single-family residence has been filed with the City prior to April 11, 2005.

6) Sewer lateral improvements: The Developer will construct sewer pipe lateral and main line stubs to City Standards that extend from the Developer-constructed main to the edge of the City right-of-way at locations approved by the City to serve abutting properties and future mainline extensions within the City limits only. The cost of installing stubs that will benefit future development is eligible for latecomer fees.

7) Notwithstanding any other provision of this Amended Development Agreement, following the completion of the City's Master Planning (also referred to herein as Subarea Planning) process for the Whole Annexation Area, and the City Council's adoption of said Master Plan, the City Public Works Director shall not require the Developer to provide detailed engineering design for that portion of the utility infrastructure that does not have any benefit to the Developer's property or development.

3. **CITY'S OBLIGATIONS**. City agrees as follows:

a. Subject to the terms, conditions and limitation in this Amended Development Agreement, to permit the Developers utilization of the Latecomer's Agreement in order to recoup their costs of developing required infrastructure.

b. To give reasonable consideration to the utilization of local improvement districts and/or utility local improvement districts as a vehicle to assist the Developers in the construction of the utility infrastructure required for the Annexation Area.

c. In the event that the Developer engages in reasonable efforts to seek to identify matching funds, state and federal grants that may provide additional funds to the City in the construction of sewer, roads, water services, open space, trails, parks and related infrastructure and/or plans related to such City owned infrastructure for the entire Annexation Area, the City agrees to reasonably cooperate with the Developer in making application for said funds, which may include sponsoring such requests where the action is consistent with existing City plans; provided however, nothing herein obligates the City to accept any such grant or funds, expend any funds, exercise it's power of eminent domain, or take any other action.

4. **TERM**. The term of this Amended Development Agreement is twenty (20) years from the Date of the Amended Development Agreement.

5. **CONDITIONS OF DEVELOPMENT FROM PROJECT APPROVALS**. Any conditions of approval of the development of Developer's shall bind and obligate the development of the property as if fully set forth herein.

6. ***RESERVED***.

7. **RESERVED POWERS**. City hereby reserves its authority to impose new or different regulations on the Annexation Area to the extent required by a serious threat to public health and safety.

8. **BINDING EFFECT**. After recording with the Whatcom County Auditor, this Amended Development Agreement shall be binding upon and inure to the benefit of the parties hereto and their respective successors.

9. **NOTICES**. All notices or demands to be given by each party to the other pursuant to this Amended Development Agreement shall be in writing and either personally delivered or deposited in the United States mail, postage prepaid, and addressed as follows:

City of Blaine
Attn: City Manager
344 H Street
Blaine, WA 98231

DEVELOPERS:

Doug and Louise Connelly
9070 Custer School Road
Custer, WA
98230

10. **ENTIRE AGREEMENT**. This Amended Development Agreement is a result of extended negotiations and series of proposals and counter-proposals. Each party has been represented by legal counsel. Each party agrees that this Amended Development Agreement constitutes the entire agreement between the parties with respect to subject matter hereof. This Agreement may be amended and modified by a subsequent written agreement following a public hearing as required by RCW 36.70B.170-.210.

11. **SEVERABILITY.** If any provision of this Agreement shall be deemed to be null and void or unenforceable by the action of a court of law, such provision shall be severable and not affect the balance of this Agreement, which shall remain in full force and effect.

12. **APPLICABLE LAW.** This Amended Development Agreement shall be construed, interpreted and enforced pursuant to the laws of the State of Washington and the

parties agree that the Superior Court of Whatcom County shall be the appropriate venue of any suit or proceeding brought with respect to this Agreement.

13. **RELATIONSHIP TO ORDINANCE AMENDING ORDINANCE 96-2224.** A material condition of this Amended Development Agreement that Ordinance 96-2224 is amended to eliminate the conditions of annexation prior to the City Council's approval of this Amended Development Agreement . If Ordinance No. 96-2224 is not amended or if such amendment is found to be void or otherwise without effect, then this Amended Development Agreement shall be void and the Original Development Agreement shall be revived without further action of the parties required.

DATED THIS 29 **DAY OF** April, **2005**

Doug Connelly
Doug Connelly

Louise Connelly
Louise Connelly

Grandis Pond Developer Agreement – 8.2

DEVELOPMENT AGREEMENT

THIS AMENDED DEVELOPMENT AGREEMENT (herein "Amended Development Agreement") is between the City of Blaine, a municipal corporation, (herein "City") and Ken Hertz and Kathy Hertz as to an undivided 75% interest and Kenneth B. Schorr and Sonja Schorr as to an undivided 25% interest) referred to (herein as "Developers"), amending the Original Development Agreement, approved by Ordinance No. 96-2228 ("Original Development Agreement"). Subject to the terms, conditions, and limitations herein, this Amended Development Agreement is effective upon the effective date the ordinance approving this Agreement by the City (herein "Date of Agreement"), and the contemporaneous execution and recording of a agreement between Douglas W. Connelly and Louise B. Connelly (herein "Connelly") and the City of Blaine, amending the Original Development Agreement, approved by Ordinance No. 96-2228.

RECITALS

1. The City has annexed approximately 1,182 acres known as the East Blaine Annexation (herein the "Annexation Area") and which is more particularly described in City of Blaine Ordinance Number 96-2224.

2. The Developers are owners of large development properties constituting approximately 450 acres within the Annexation Area. The real estate owned by the Developers is more particularly described on Exhibits "A", referred to herein as the "subject property" or as the "Development Property".

3. Developers are desirous of amending the Original Development Agreement approved by the City of Blaine by Ordinance Number 96-2228, and the City has negotiated certain changes with the Developer related thereto which would permit the Developers to

plan and develop the Development Property in a comprehensive and predictable manner consistent with City goals.

4. RCW 36.70B.170-.210, authorizes the City and the Developers to enter into this Amended Development Agreement.

5. The provisions of this Amended Development Agreement are consistent with applicable development regulations adopted pursuant to Chapter 36.70A RCW.

6. Following public notice as required by law, a public hearing on whether to consider amendments *to the* Original Development Agreement was held on January 24, 2005.

7. Following public notice as required by law, public hearings were held on February 28, 2005, March 14, 2005, and March 28, 2005 regarding the proposed amendments to the Original Development Agreement.

8. The City SEPA official issued a SEPA Determination of Non-Significance on February 16, 2005, which was published on February 18, 2005.

9. The Developers represent and warrant to the City of Blaine that they hold Fee Simple title to the property described in Exhibit "A".

NOW THEREFORE, the parties covenant and agree as follows:

INTRODUCTION

The Original Development Agreement was approved by the City by Ordinance No. 96-2228 was entered into by the predecessor's in title to the Developers, and a third party, Douglas and Louise Connelly. It is the desire of the parties to the Original Development Agreement that both Connelly and the Developers herein each have a separate agreement. The Original Development Agreement is amended in its entirety hereby.

1. **ZONING**. Subject to the limitations and exceptions set forth herein, the subject property shall be subject to, vested in and entitled to the Planned Residential rules and development regulations adopted by Ordinance Number 96-2229, and shall be considered a Major Development, under BMC 17.64. The City specifically reserves the authority as allowed by RCW 36.70B.170 to impose new or different regulations to the extent required by a serious threat to public health and safety. Further, the Developer acknowledges that SEPA review was not performed for the Original Development Agreement, and that the SEPA done for this Amended Development Agreement was a non-project SEPA review. Subsequent development permit applications such as plat, or other applications will require and be subject to project based SEPA review.

2. **DEVELOPER'S OBLIGATIONS**. Developers agree as follows:

a. The Developers shall pay $20,875.00 contemporaneously with the execution of this Amended Development Agreement. This fee shall be used by the City to partially fund the City developed Subarea Plan (also referred to herein as the Master Plan) for the East Blaine Annexation area. Upon the payment of such fee the City shall release any bond, deed of trust or other surety that has been provided by the Developers or their predecessors in title.

b. A one-time mitigation fee will be collected from the building permit applicant at the time of each building permit approval to support police for a two-year period after construction until property taxes are collected to support these services. This mitigation fee will be based on the formulas and cost information from the February 9, 1995, FISCAL IMPACT ANALYSIS FOR EAST BLAINE ANNEXATION by Richard Trottier Associates, as updated, and may be replaced by a City-wide impact mitigation fee upon the adoption of an impact mitigation ordinance. The Developer's vested rights herein are limited such that any future impact fee ordinance shall be applicable to the Developers and the subject property.

c. To dedicate aquifer protection areas of sufficient size and location to protect the aquifer recharge function of this area, the exact size and location of these areas shall be determined prior to the approval of any subdivisions or Planned Unit Developments within the Annexation Area. Any aquifer recharge areas, wetlands and wildlife habitat located on the subject property shall be required to be protected in accordance with provisions of Title 17 of the Blaine Municipal Code, and the City's critical areas ordinance as they exist as of the date of this Amended Development Agreement.

d. The Developers shall be responsible for the design, extension, development and expansion of the necessary utility infrastructure to support development of the subject property within Annexation Area, including without limitation, the extension of all sewer and water facilities, and road infrastructure to serve the subject property which may be sized to serve the whole Annexation Area if required by conditions of approval attached to the development or the applicable developer extension agreement. In this regard it is agreed that the Developer shall be required to design any required utility infrastructure to service Developer's property, sized to serve the whole Annexation Area. Further, the Developer shall be required to construct the utility infrastructure sized to serve the whole annexation area, where any component of such facilities are reasonably required by the City to serve the development in accordance with RCW 82.02.020, except as otherwise provided for in this Agreement. In the event that the City Public Works Director and the Developer, are not able to agree on whether any component of such facilities are reasonable required to serve development, then such shall be determined by the City Council in accordance with RCW 82.02.020. As part of the foregoing requirements, the Developer shall design the transportation and road infrastructure required to service Developer's property with sufficient capacity to serve the whole Annexation Area, and may construct transportation and road improvements in phases to serve the phases of the Developer's development. The

Developer shall not be required to construct on-site infrastructure for properties other than the Developer's property. The Developer shall provide for the planning of the transportation system for the whole Annexation Area, and further shall be required to design and install those portions of the system same if required by the City Council upon demonstration that such facilities are reasonably necessary as a direct result of the development of the property in phases corresponding to the off-site and on-site transportation impacts of each phase of development. In addition the following shall apply:

1) The Developers shall set forth a schedule of improvements for extension of and expansion of the necessary infrastructure to support the proposed development, all subject to approval by the City's Director of Public Works.

2) Each development application shall, at a minimum, include plans and specifications for all on-site utilities and street improvement. Stormwater management and treatment facilities shall be designed in compliance with currently adopted State of Washington Department of Ecology Stormwater Manual requirements in effect as of the date of this Amended Development Agreement. Street, water, sewer, electrical facilities improvements shall be designed in compliance with Blaine Municipal Code provisions applicable to Planned Residential zones, and SEPA mitigation conditions imposed on the proposed development as part of the project based SEPA review. In this regard, it is further agreed as follows:

i) All utility facilities and road improvements shall be designed by a professional engineer registered in the State of Washington. Design and installation of the improvements shall be the property owners' responsibility.

ii) Design for on-site and off-site infrastructure constructed and/or paid for by the Developer shall, in addition to the requirements above, shall also be subject to the applicable Departments of Health and Ecology regulations, American Public

Works Association/Washington State Department of Transportation standard specifications, City of Blaine Municipal Code, and related professional construction standards in effect as of the date of this Amended Development Agreement.

iii) The Developer shall dedicate to the City the required off-site improvements as may be required by the conditions of approval attached to the development or applicable City of Blaine Public Facilities Construction Agreement together with the necessary easements to the City to provide for egress/ingress and maintenance and repair of the proposed improvements and public infrastructure. Drainage facilities shall either be dedicated to the City, subject to a maintenance agreement approved by the City, provision of necessary easements for maintenance and payment of the fee as required by the City, or retained by the Developer with a private maintenance guaranty in a form approved by the City as may be required by the conditions of approval attached to the development.

3) Prior to PUD or final plat approval, as determined by the City, the Developers shall construct or pay the identified shares of improvements or phased improvements as listed in the schedule of each design report approved by the City, all applicable fees to construct the required improvements or bond for 150% of the cost of improvements as may be permitted and/or required by applicable City of Blaine Codes.

4) The Developer shall provide on-site infrastructure to service the development of Developer's property. The Developer's responsibility shall include providing the design of the on-site and off-site infrastructure improvements required by the Development with a capacity to service the whole Annexation Area, as well as the Developer's property.

5) The Developer may request a latecomer agreement (aka a developer's reimbursement agreement under the Blaine Municipal Code) with the City of

Blaine. The City agrees to approve a latecomer's agreement upon the request of the Developer in a form consistent with the applicable City ordinances and the terms and conditions of this Amended Development Agreement, provided that such facilities are designed, installed and accepted by the City, and conveyed to the City after completion. Any future latecomer agreement will provide for collection and reimbursement of the pro rata share of design and installation costs from the owners of property who seek to develop their property in the future within the service area of the developer installed City owned utilities where such developments are to be connected to the applicable City system. Notwithstanding the foregoing, any existing single-family residences as of the date of this Amended Development Agreement shall not be subject to fees charged as part of a developer reimbursement or latecomer agreement except in those instances when they voluntarily seek to connect to such systems, but are not compelled by City Code or state law to connect to such system. "Existing single family residences" includes those properties where a complete building permit application for a single-family residence has been filed with the City prior to April 11, 2005.

6) Sewer lateral improvements: The Developer will construct sewer pipe lateral and main line stubs to City Standards that extend from the Developer-constructed main to the edge of the City right-of-way at locations approved by the City to serve abutting properties and future mainline extensions within the City limits only. The cost of installing stubs that will benefit future development is eligible for latecomer fees.

7) Notwithstanding any other provision of this Amended Development Agreement, following the completion of the City's Master Planning (also referred to herein as Subarea Planning) process for the Whole Annexation Area, and the City Council's adoption of said Master Plan (also referred to herein as Subarea Plan), the City Public Works Director shall not require the Developer to provide detailed engineering design

for that portion of the utility infrastructure that does not have any benefit to the Developer's property or development.

3. **CITY'S OBLIGATIONS**. City agrees as follows:

a. Subject to the terms, conditions and limitation in this Amended Development Agreement, to permit the Developers utilization of the Latecomer's Agreement in order to recoup their costs of developing required infrastructure.

b. To give reasonable consideration to the utilization of local improvement districts and/or utility local improvement districts as a vehicle to assist the Developers in the construction of the utility infrastructure required for the Annexation Area.

c. In the event that the Developer engages in reasonable efforts to seek to identify matching funds, state and federal grants that may provide additional funds to the City in the construction of sewer, roads, water services, open space, trails, parks and related infrastructure and/or plans related to such City owned infrastructure for the entire Annexation Area, the City agrees to reasonably cooperate with the Developer in making application for said funds, which may include sponsoring such requests where the action is consistent with existing City plans; provided however, nothing herein obligates the City to accept any such grant or funds, expend any funds, exercise it's power of eminent domain, or take any other action.

4. **TERM**. The term of this Amended Development Agreement is twenty (20) years from the Date of the Amended Development Agreement.

5. **CONDITIONS OF DEVELOPMENT FROM PROJECT APPROVALS**. Any conditions of approval of the development of Developer's shall bind and obligate the development of the property as if fully set forth herein.

6. ***RESERVED***.

7. **RESERVED POWERS**. City hereby reserves its authority to impose new or different regulations on the Annexation Area to the extent required by a serious threat to public health and safety.

8. **BINDING EFFECT**. After recording with the Whatcom County Auditor, this Amended Development Agreement shall be binding upon and inure to the benefit of the parties hereto and their respective successors.

9. **NOTICES**. All notices or demands to be given by each party to the other pursuant to this Amended Development Agreement shall be in writing and either personally delivered or deposited in the United States mail, postage prepaid, and addressed as follows:

City of Blaine
Attn: City Manager
344 H Street
Blaine, WA 98231

DEVELOPERS:

Blossom Management Corp.
112 Ohio Street
Ste. 102
Bellingham, WA 98225

10. **ENTIRE AGREEMENT**. This Amended Development Agreement is a result of extended negotiations and series of proposals and counter-proposals. Each party has been represented by legal counsel. Each party agrees that this Amended Development Agreement constitutes the entire agreement between the parties with respect to subject matter hereof. This Agreement may be amended and modified by a subsequent written agreement following a public hearing as required by RCW 36.70B.170-.210.

11. **SEVERABILITY.** If any provision of this Agreement shall be deemed to be null and void or unenforceable by the action of a court of law, such provision shall be

severable and not affect the balance of this Agreement, which shall remain in full force and effect.

12. **APPLICABLE LAW.** This Amended Development Agreement shall be construed, interpreted and enforced pursuant to the laws of the State of Washington and the parties agree that the Superior Court of Whatcom County shall be the appropriate venue of any suit or proceeding brought with respect to this Agreement.

13. **RELATIONSHIP TO ORDINANCE AMENDING ORDINANCE 96-2224.** A material condition of this Amended Development Agreement that Ordinance 96-2224 is amended to eliminate the conditions of annexation prior to the City Council's approval of this Amended Development Agreement . If Ordinance No. 96-2224 is not amended or if such amendment is found to be void or otherwise without effect, then this Amended Development Agreement shall be void and the Original Development Agreement shall be revived without further action of the parties required.

DATED THIS 31st **DAY OF** May, **2005**

Ken Hertz

Kathy Hertz

Kenneth B. Schorr

Sonja Schorr

CITY OF BLAINE:

Gary R. Tomsic
City Manager

CITY OF BLAINE:

John Liebert
Mayor