WHATCOM COUNTY
PLANNING & DEVELOPMENT SERVICES
2nd SUPPLEMENTAL STAFF REPORT

I. BACKGROUND INFORMATION

File # CMP2008-00009

File Name: Amendments to the Lummi Island Subarea Plan

Applicant: Whatcom County Planning & Development Services

Summary of Request: Supplemental amendments to the Lummi Island Subarea Plan of the Comprehensive Plan to reflect information from the December 31, 2006 Groundwater Study conducted by Aspect Consulting and the Western Washington Growth Management Hearings Board Final Decision and Order.

II. ANALYSIS OF THE PROPOSED SUPPLEMENTAL AMENDMENTS

Pursuant to WCC 20.10.080, the County must find that the following criteria are satisfied in order to approve the proposed amendment.

That the amendment conforms to the requirements of GMA, is internally consistent with the Comprehensive Plan, is consistent with the County-Wide Planning Policies and is consistent with any interlocal planning agreements.

Comment: The Western Washington Growth Management Hearings Board's Final Decision and Order for Case No. 05-0013 determined that the maximum density allowed outside the Urban Growth Areas (UGAs) and limited areas of more intensive rural development (LAMIRDs) shall be one dwelling unity per five acres.

To be in compliance with the order and for consistency with the Comprehensive Plan and the County-Wide Planning Policies the maximum density for the Rural Residential Island zone distict must be amended to not exceed one dwelling unit per five acres.

Staff is not aware of any inconsistencies between existing interlocal agreements and the subject proposal.

That further studies made or accepted by the department of planning and development services and planning commission indicate a need for the amendment or that changed conditions indicate a need for the amendment.

Comment: The findings from The hydrogeologic investigation completed by Aspect Consulting on December 31, 2006 and the December 31, 2006 *Conceptual Methodology*

for Evaluating Groundwater Withdrawal Proposals on North Lummi Island by Aspect Consulting provide additional information with regard to groundwater protection.

That the public interest will be served by approving the amendment. In determining whether the public interest will be served, factors including but not limited to the following shall be considered:

The anticipated effect upon the rate or distribution of population growth, employment growth, development, and conversion of land as envisioned in the Comprehensive Plan.

Comment: The proposed text amendments would reduce the maximum density from one dwelling unit per three acres to one dwelling unit per five acres. This is consistent with the Western Washington Growth Management Hearings Board's Final Decision and Order for Case No. 05-0013.

The anticipated effect upon the ability of the County and/or other service providers, such as cities, schools, water and/or sewer purveyors, fire districts, and others as applicable, to provide adequate services and public facilities including transportation facilities.

Comment: There is no evidence in the record that the proposal will adversely impact service providers.

The suitability of the site to provide on-site wells and/or on-site sewage disposal, if applicable.

Comment: The subject proposal is a Subarea plan modification and text amendment. Therefore, this criterion is not applicable.

Anticipated impact upon critical areas.

Comment: The subject proposal includes a text amendment to provide protection to the aquifer system of North Lummi Island. Any proposed developments would be required to comply with the proposed regulations.

Anticipated impact upon designated agricultural, forest and mineral resource lands.

Comment: The supplemental subject amendment would not apply to designated agriculture or forest resource lands.

That the amendment does not include nor facilitate illegal spot zoning.

According to the Official Whatcom County Zoning Ordinance:

"Illegal spot zoning" means a zoning action by which a smaller area is singled out of a larger area or district and specially zoned for a use classification totally different from, and inconsistent with, the classification of surrounding land and not in accordance with the Comprehensive Plan. Spot zoning is zoning for private gain designed to favor or benefit a particular individual or group and not the welfare of the community as a whole (WCC 20.97.186).

In 1997, the Washington Supreme Court, in the case of *Citizens for Mount Vernon v. The City of Mount Vernon* (133 Wn.2d 861) indicated ". . . Spot zoning is a zoning action by which a smaller area is singled out of a larger area or district and specially zoned for a use classification totally different from, and inconsistent with, the classification of surrounding land and not in accordance with the comprehensive plan . . ." The Court, quoting professor Richard L. Settle, went on to say:

The vice of 'spot zoning' is not the differential regulation of adjacent land but the lack of public interest justification for such discrimination. Where differential zoning merely accommodates some private interest and bears no rational relationship to promoting legitimate public interest, it is 'arbitrary and capricious' and hence 'spot zoning.'

The proposed text amendments are applicable to rather large areas (they are legislative in nature, rather than quasi-judicial), and are not intended to facilitate private gain. Rather, they are intended to serve the public interest by ensuring efficient use of existing UGAs, thereby minimizing future expansions of these UGAs into surrounding lands.

III. PROPOSED FINDINGS OF FACT AND REASONS FOR ACTION

1. On November 21, 2003 a staff report was issued for Lummi Island proposed plan to the planning commission (file number CMP2003-00011).
2. On November 24, 2003 the Deputy SEPA Official issued a SEPA Determination of Nonsignificance (SEP03-00208).
3. On December 4, 2003 a supplemental staff report was issued.
4. On December 4, 2003 the Planning Commission held a public meeting to review the plan, receive public testimony, and propose amendments.
5. On January 22, 2004 the Planning Commission held a public meeting to review the plan, receive public testimony, and propose amendments.
6. On January 29, 2004 the Planning Commission held a public meeting to review the plan, receive public testimony, and propose amendments.
7. On February 20, 2004 Staff issued the *Lummi Island Subarea Summary of Options and Recommendations*.
8. On February 26, 2004 the Planning Commission held a public meeting to review the February 20, 2004 Summary of Options and Recommendations and moved to forward the plan to the County Council as amended.
9. On March 23, 2004 the County Council introduces ordinance for review and adoption of the Draft plan.

10. On May 12, 2004 the Deputy SEPA Official withdraws the DNS based on the requirement for new information on groundwater protection.
11. On May 12, 2004 Sylvia Goodwin, Planning Division Manager issued a memorandum to the County Council informing them the plan must be tabled until the Groundwater Study is complete.
12. On October 26, 2005 Aspect Consulting began the Groundwater Study.
13. On December 31, 2006 Aspect Consulting completed the Groundwater Investigation and proposed a methodology for aquifer protection.
14. Pursuant to RCW 36.70.590 legal notice for a public hearing was published in the Bellingham Herald on _____

15 A new Determination of Non-Significance was issued under the State Environmental Policy Act (SEPA) on _____.

16 The stated goals of the Lummi Island Subarea Plan are:

- Natural Resource Sustainability (e.g., protection of water supply, water quality and environmentally sensitive areas)
- Preservation of Island Rural Character (e.g., density of development, protection of open space, etc.)
- Protection of Property Rights (e.g., fairness in applying new rules that impact the ability of property owners to achieve economic gain from their property and their investment in land).

17. LIPC held 26 monthly meetings scheduled throughout 2002 and 2003, terminating on November 10, 2003, the public was invited. Whatcom County Planning and Development Services held two educational Land Use Meetings in June 2002, and sponsored a Land Use Attorney Public Meeting in August 2003. Mark Personius, the Planning Consultant, participated in three Public Community Meetings to obtain input on the Draft Plan and answer questions. Whatcom County Planning and Development Services and Aspect Consulting conducted a public workshop to introduce and answer questions regarding the groundwater study on January 28, 2006. A public meeting was held on December 7, 2006 to announce the findings of the groundwater study.

18. The Plan is consistent with the County Comprehensive Plan, the County-wide Planning Policies and Growth Management Act (GMA) planning goals regarding Citizen Participation, Environment, Open Space and Recreation, and Historic Preservation.

19. The proposed Subarea Plan goals and policies increase the ability to provide services and facilities that can benefit the public health, safety and welfare of the residents and property owners of Lummi Island through transportation, recreational, and water quality goals etc.

20. The 1979 Subarea Plan was predicated on the conservative assumption that the island's groundwater aquifer could support a net carrying capacity of

approximately 2,380 persons—not including those residents dependent upon surface water supplies (i.e., Scenic Estates). The surface water supply serving the south end of the island, is estimated to be able to support a maximum potential of 1,000 persons. Essentially the 2,380 capacity estimate applies to the flatter terrain groundwater-dependent north end of the island (the Rural Residential Island zone) while the mountainous southern end of the island (the Rural Forestry zone) is dependent upon surface water supplies (lakes and impoundments). In total, the previous plan estimated a total island-wide population potential at buildout of approximately 3,400 persons.

21. The island has a resident population of 822 and a potential peak seasonal population almost double that according to the 2000 US Census.

22. Increased rates of dry wells, arsenic contamination and chloride levels have been documented by the Whatcom County Environmental Health Department *(P. Chudek, personal communication, August 2003).* The December 31, 2006 *Conceptual Methodology for Evaluating Groundwater Withdrawal Proposals on North Lummi Island* by Aspect Consulting provides a methodology for protection of the aquifer system.

23. Most of the north island remains rural with a settlement pattern of one unit per three or five acres, however, there are some areas that have already developed at suburban rather then rural character. These include higher density developments approved prior to the advent of the Growth Management Act such as the Beach Club Condominiums, Scenic Estates, Lane Spit, and Isle Aire. In other areas shorelines have been densely developed on old small non-conforming lots—often less than an acre.

24. The ferry capacity and level of service are important growth variables that could significantly encourage or retard future growth. Currently the LOS established for the Lummi Island ferry service does not meet the adopted level of service of 513 trips/capita. Therefore, no further subdivisions of land may be approved on Lummi Island until the ferry is upgraded or the LOS is revised. However, short plats and building permits are exempt from the concurrency requirements and these activities have continued on the island in spite of the ferry LOS.

25. Both the *Lummi Island Planning Survey* and the small group discussions of alternative growth management strategies indicated support for increased protection of unique components of the built and natural environment that constitute the island's rural character, including open fields and woods, hedgerows, farm buildings and old homesteads, open vistas, groundwater recharge areas and environmentally sensitive areas and undeveloped shorelines. Clustering was supported by a majority of respondents on the *Planning Survey*—most notably *"if the reserve tract is legally guaranteed never to be developed"*.

26. The additional policies recommended regarding development of a Lummi Island Water Management Plan, update of the County Critical Area Ordinance policies

on aquifer recharge area protection, and revision of the Lummi Island Aquifer Recharge Area map will help protect groundwater quality and quantity on the island.

27. The recommended policies and tables regarding lot consolidation will reduce density in three subdivisions with existing substandard lots where two or more lots are in common ownership.

28. The adoption of the revised zone text for the Rural Residential Island zoning district, will reduce the density on most of the unplatted RRI zoned land to one dwelling unit per 5 acres.

IV. PROPOSED CONCLUSION

The subject amendment is consistent with the approval criteria of WCC 20.10.080 and serves the public interest. It will not create an undue burden under section 1.11 of the County Charter.

V. RECOMMENDATION

Staff recommends approval of the proposed amendments, as shown below.

Changes to the February 2004 Draft Subarea Plan

Page 7, first paragraph

Note that discussion of a new ferry is specifically excluded here. ~~and will be addressed under a separate Whatcom County Public Works Department process – although ferry capacity is an important variable to sustainable growth on the island.~~ On April 15, 2008 the Whatcom County Council decided to not pursue a new ferry at this time. Ferry service will be limited to the capabilities of the current ferry to provide that service.

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Groundwater Resources

Groundwater recharge areas were originally established in the 1979 Plan based on hydrogeologic studies in the late 1970's (see *Water Resources of Northern Lummi Island* (Robinson & Noble, Inc, 1978). Lower densities were assigned to recharge areas as a means to protect the groundwater quality and quantity. There has been a significant increase in the number of private wells since 1979. ~~However, there has been no~~

~~analysis of groundwater levels or recharge potential since 1979~~ (Figure 12).

There has been more recent analysis of groundwater quality indicating increasing rates of dry wells *(V. Armfield, personal communication, August 2003)* as well as arsenic contamination and saltwater intrusion in island wells *(P. Chudek, Whatcom Co. Environmental Health, August 2003)*. Whatcom County Environmental Health Department has enacted more stringent standards for arsenic treatment in new wells. ~~Current groundwater quality research is being conducted by Western Washington University and Whatcom County is pursuing grants to fund new groundwater studies.~~

Public Water Associations serve more than two connections and withdraw significantly more groundwater per well than individual systems but are also subject to higher water treatment standards. Group A systems have 15 or more connections or serve 25 or more persons per day. Group B systems have 3-15 connections and serve less than 25 people per day (Figure 13).

In 1979, there were seven (7) "Public" Water Associations (Group A and Group B systems). In 2002, there were twenty-six (26) "Public" Water Associations (Group A and Group B systems). The island experienced an almost four-fold increase in the number of high capacity wells pumping groundwater out of the aquifer in the last twenty years.

Groundwater Aquifers and Best Available Science

The original groundwater carrying capacity estimates for the island were developed during hydro-geologic studies conducted in the late 1970s by Dr. Ronald Schmidt of the consulting firm Robinson & Noble. The estimates are contained in the report *The Water Resources of Northern Lummi Island* (1978) and reflect certain assumptions regarding best available science at the time. Lacking comprehensive data, Schmidt himself noted in his study that some of his assumptions regarding the island's water budget were preliminary and should be reevaluated when more comprehensive data became available. Some have noted that Schmidt's estimates of groundwater carrying capacity, for example, do not take into account the effect of drought conditions, and may, in fact, overestimate groundwater carrying capacity. Recent review of Schmidt's 1978 study by geologists from Western Washington University also cast doubt as to the veracity of the conclusions reached regarding designation of aquifer recharge areas and groundwater capacity and recharge rates. A recent analysis of the methodology utilized by Schmidt in his 1978 study was conducted by William Sullivan (WWU) in a report entitled *Overview Lummi Island Groundwater Study* (2003). Sullivan writes:

"Unfortunately, Schmidt was unable to identify hydrostratigraphy, delineate aquifers, or provide reliable static water levels. It appears that Schmidt used a topographic map to estimate well-head and aquifer surface elevations, introducing large errors into his aquifer surface map. [His] mapping of aquifer recharge zones is generalized because he used only data from his aquifer surface map. The water budget conducted by Schmidt is based only on climatic data. Soils, geologic, and land cover data that could be

> used to better quantify [evapotranspiration], infiltration and runoff were not available."

It is also interesting to note that the aquifer recharge areas identified by Schmidt in the 1979 subarea plan—that came to form the basis for the 5 acre/3 acre recharge/non-recharge area split zoning on the northern part of the island—are inconsistent with the critical aquifer recharge areas (CARAs) mapped on the island utilizing the criteria established in the Whatcom County Critical Areas Ordinance (CAO). See Figure 14. According to the CAO, designated CARAs may comprise a much larger percentage of the north island than the aquifer recharge areas identified under the 1979 subarea plan.

~~No more recent studies are available to determine the current condition or carrying capacity of the groundwater aquifer on the island.~~ Some data pertaining to groundwater quality is available from a ~~more recent~~ report entitled *Lummi Island Groundwater Study* (1994) prepared by the Whatcom County Environmental Health Department and the Washington State Department of Ecology. That report indicates an increasing presence of chlorides (at levels in excess of 100mg/l) in some shoreline wells (from seawater intrusion) and naturally-occurring arsenic levels in some wells scattered across the north part of the island. However the 1994 study made no effort to quantify a water budget for the island or aquifer capacity or recharge rates. Analysis by Dr. Schmidt of 1978 well surveys found only one well on the island with high chloride levels at that time.
A similar survey conducted by Whatcom County Environmental Health in 2003 found seventeen (17) wells subject to serious saltwater intrusion.

Further development on the northern half of Lummi Island will result in a declining water supply. Both local residents and the Whatcom County Environmental Health Department have documented increasing numbers of dry and low-producing wells *(personal communication, V. Armfield and P. Chudek, August, 2003).* With increased development comes the addition of new impervious surfaces including roads, driveways, and roofs that replace the vital vegetative cover that helps retain the rainwater for infiltration and aquifer recharge and holds the soil in place. There are also threats to groundwater quality that must be addressed. The ground water is recharged by precipitation and surface water seeping directly into the ground. Contamination of ground water including improper use of pesticides can be a major threat to potable water sources. Septic tanks that are not properly maintained can also contribute to major degradation of ground water quality.

Increased demands on the current water source from development and well pumping are also likely to contribute to increased levels of saltwater intrusion. Seawater intrusion is the movement of seawater into fresh water aquifers. The causes of seawater intrusion are known to be from a decrease in ground water levels. The ground water level can be lowered from reduced precipitation or less ground water recharge due to removal of natural groundcover and more intense development. For example, development projects that include impervious surfaces, such as paved driveways and

roads; prevent rainwater from draining directly through the soil into the aquifer. Water generated from impervious surfaces is usually collected in a drainage "ditch" and may discharge directly into the saltwater without having a chance to be fully absorbed on the land. Activities, which can cause a lowering of the groundwater level, include a reduction in the amount of fresh water recharge and pumping and withdraw rates that exceed the rate of recharge. Areas closer to saltwater sources, such as shorelines, are at higher risk. Pumping a well or wells can also cause a local decline in the ground water level in the immediate vicinity of the pumped well and may cause local seawater intrusion or affect the quality of the water at nearby well sites.

Freshwater is a finite resource on Lummi Island. Rainfall—which averages 32" per year—is the only source of water supply for the island. Total rainfall can vary widely across the island, however, and drought years can exacerbate water supply problems. Alternative public water supply sources such as a pipeline from the mainland or a regional seawater desalination plant are not presently feasible. The lack of a reliable and thorough understanding and estimate of current groundwater conditions on the island, the indications of increasing groundwater quality degradation, and the inconsistency between aquifer recharge areas identified on the island under the 1979 plan and in the more recent CAO suggests that a conservative approach be taken to allocating future land use ~~until a more thorough groundwater evaluation can be completed.~~

On May 12, 2004 the Deputy SEPA Official required a groundwater study to mitigate the impacts of new wells, specifically for seawater intrusion and arsenic concentrations. Whatcom County hired Aspect Consulting (including William Sullivan) to perform the investigation and make a recommendation as to a methodology for protection of the Lummi Island aquifer system. On December 31, 2006 Aspect Consulting concluded the groundwater study for North Lummi Island. As stated in the Executive Summary:

> "The purpose of the Lummi Island Groundwater Study is to develop standards and policies for island groundwater development that are protective of the groundwater resource, natural environment, and human health. This memorandum summarizes conceptually a set of requirements the County can consider implementing to achieve this objective. The methodology stems from a hydrogeologic investigation of Lummi Island (Aspect Consulting, 2006b) and is based on an antidegradation standard for the aquifer. Table 1 summarizes the conceptual methodology for evaluating groundwater withdrawal proposals."

The December 31, 2006 *Conceptual Methodology for Evaluating Groundwater Withdrawal Proposals on North Lummi Island* by Aspect Consulting is attached as Appendix C. The hydrogeologic investigation completed by Aspect Consulting on December 31, 2006 is attached as Appendix D.

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~~The 2002 CIP also notes preparation of this Subarea Plan and preparation of a specific Ferry Plan are needed to address ferry-related issues. This Subarea Plan will address planned land use on the island~~

~~and a 20-year Ferry Plan will be completed – following adoption of this Subaea Plan – to address long-range ferry service to the island. The *Lummi Island Ferry 20 Year Plan – Phase 1 Charrette Report* (2001) has already been completed and assesses the current needs for ferry service. The *Phase 1 Charrette Report* made five key findings regarding ferry service:~~

~~1. The current vehicle capacity is near overload;~~
~~2. Community involvement in the ferry planning process is essential to its success;~~
~~3. The Whatcom Chief (originally built in 1961) will need to be replaced due to age at some time in the future, with planning for this taking place within the 20-year time frame of the Ferry Plan;~~
~~4. There is a 3-5 year lead-time required for new vessel procurement; and~~
~~5. Timeframe, requirements and political climate for possible federal funding should be considered.~~

~~The new Ferry Plan is expected to address many of the issues affecting ferry service on the island, including:~~

- ~~Ridership forecasts;~~
- ~~Transportation demand management strategies to reduce vehicle trip demand;~~
- ~~Coordination with the Lummi Nation on parking and operational issues;~~
- ~~Ferry operational strategies;~~
- ~~Vessel and terminal infrastructure requirements; and~~
  ~~Financing mechanisms and fare structures.~~

On April 15, 2008 the Whatcom County Council decided to not pursue a new ferry at this time. Ferry service will be limited to the capabilities of the current ferry to provide that service.

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Preferred Plan Policies & Implementation Measures
Land Use Implementation Measures
IMMEDIATE

1.1 ~~Maintain the existing zoning.~~ Amend the RR-I District zoning regulations and other regulations, as applicable, to establish one unit per five acres as the minimum density throughout the RR-I zone.

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Shorelines and Critical Areas Implementation Measures
IMMEDIATE

2.4 Amend the Whatcom County Critical Areas Ordinance to implement the recommendations of the December 31, 2006 Aspect Consulting: *Conceptual Methodology for Evaluating Groundwater Withdrawal Proposals on North Lummi Island.*

~~2.4 Acquire funding for and complete a more definitive Groundwater Aquifer Study and Groundwater Management Plan for the island to more accurately determine groundwater capacities and recharge rates, current and projected water use and withdrawal rates for residential, commercial and agricultural uses, and recommend measures to protect groundwater quality and avoid aquifer contamination.~~

~~2.5 Coordinate with the Whatcom County Environmental Health Department to monitor key existing public and voluntary participating private groundwater wells for levels of arsenic contamination and seawater intrusion as a means to establish a baseline of existing groundwater quality conditions on island.~~

~~2.6 The County should initiate a data collection program for all existing public and voluntary participating private wells to collect data on well locations, elevations, use, depth, and size as well as water quantity yield, and water quality.~~

~~2.6A Adopt prudent measures needed necessary to protect groundwater quality.~~

~~2.6B Adopt a Water Management Plan consisting of Best Available Science (BAS) water retention practices, developed and sponsored by the Whatcom County Water Resources Department.~~

Title 20 Amendments

20.34.250 Maximum density, minimum lot size and width.

20.34.251 Minimum lot size and maximum density.

Maximum density shall not exceed one dwelling unit per five acres.

~~For the purpose of creating new building lots within the Rural Residential-Island District, several land use densities are herein provided. Permitted densities vary according to location. The minimum lot size requirements for new construction vary according to the method of subdivision design. Minimum lot sizes shall be consistent withe the provision of WCC 20.34.252. Densities shall be computed as follows:~~

~~(1) Ground Water Recharge Areas. Within ground water recharge areas specified on the Lummi Island Comprehensive Plan Map, density shall not exceed one dwelling unit per five acres.~~

~~(2) Outside Ground Water Recharge Areas. Outside ground water recharge areas density shall not exceed one dwelling unit per three acres.~~

~~(3) Mixed Properties. Where a parcel is situated partially within and partially outside of a ground water recharge area (GRA), density or building sites may be transferred from the portion of the parcel within the GRA to the portion outside thereof. For the purpose of computing the maximum number of building sites in the density transfer provision, contiguous and noncontiguous parcels in one ownership may be treated as one parcel.~~

~~The maximum density for the entire parcel shall not exceed one dwelling unit per three acres. When building sites are transferred from within the GRA to a portion of the parcel outside the GRA, the density outside the GRA may be increased to one dwelling unit per 1.5 acres; however, the density for the portion of the parcel within~~

~~the GRA shall not exceed one dwelling unit per five acres. Because of these density provisions for the portions of the parcel inside and outside the GRA, an overall density of one dwelling unit per three acres may not be attainable in certain cases.~~

~~For example, a 40-acre parcel with 31 acres within ground water recharge areas and nine acres outside ground water recharge areas has a maximum density without using density transfer of six dwelling units on the portion within the ground water recharge areas and three dwelling units on the portion outside the ground water recharge areas. If the density transfer option is used, the overall maximum density increases to one dwelling unit per three acres or a total of 13 dwelling units. However, the additional four units may be transferred to the portion outside the ground water recharge areas only up to the maximum density or one dwelling unit per 1.5 acres. In this case, six dwelling units still would be inside ground water recharge areas, and on the remaining nine acres the maximum number of units would be six. Thus, the total allowed building sites would be 12 instead of 13. (Ord. 96-056 Att. A § F2, 1996).~~

20.34.252 Maximum density and minimum lot size.

District	Gross Density	Minimum Lot Size Conventional Cluster		Min. Reserve Area (Cluster Subdivisions)
~~RR-I: outside recharge areas~~	~~1 dwelling unit/3 acres*~~	~~3 acres~~	~~**~~	~~30%~~
RR-I: ~~within recharge areas~~	1 dwelling unit/5 acres*	5 acres	**	55%
~~* Except when density transfer is used as provided in WCC 20.34.251(3).~~				
** The lot size that satisfies the Bellingham-Whatcom County health department requirement for water and sewage services.				

20.34.253 Minimum lot width and depth.

District	Width at Street Line Conventional Cluster		Width at Bldg. Line	Minimum Mean Depth
~~RR-I: outside recharge areas sewer or water~~	~~200'~~	~~70'~~	~~80'~~	~~100'~~
RR-I: ~~within recharge areas~~	300'	70'	80'	100'

(Ord. 86-29, 1986; Ord. 84-38, 1984; Ord. 82-58, 1982).

Title 16.16 additions

16.16.540 Areas within the Rural Residential District of Lummi Island

16.16.541 Minimum Well Spacing for all new wells

Wells shall have a minimum of 200 feet distance between a new well and an existing operating well.

16.16.542 In addition to the minimum well spacing, the following measures are required for Public Water System Wells and Wells Pumping Greater than 250 gallons per day

Includes "public water system" wells as defined under Whatcom County Drinking Water Regulations and non-domestic use wells pumping greater than 250 gpd. Public water system is defined under Whatcom County Chapter 24.11 as any water system providing piped water for consumption, excluding a system serving only one single-family residence and any system with four or fewer connections serving only residences on the same farm.

(1) Chloride Monitoring and Testing

(a) Monitoring**:** Well owners shall collect and have water samples analyzed for chloride concentration twice annually, in April and August and submitted to the Whatcom County Health Department.

(b) Chloride Determinations for New Wells or Increased Pumping of Existing Wells: Applications for new wells or for greater than 20 percent increase in groundwater withdrawals in an existing well require a minimum 24-hour-duration pumping test at 100 percent of the proposed average daily demand, at the end of which a water sample will be collected for analysis of chloride concentration. Subdivisions using individual wells are required to test wells simultaneously, or alternatively have a licensed hydrogeologist evaluate well interference and water quality changes. Subdivision wells shall remain accessible for future testing in the event of subdivision expansion.

(c) Restrictions on New Wells or Increased Pumping of Existing Wells: New wells cannot be permitted, and greater than 20 percent increases in pumping cannot be permitted if chloride concentrations measured at the end of the test specified in (b) above are greater than 100 mg/L. For systems expanding 20 percent or less within one year, the highest chloride determination within the past year in (a) above cannot be greater than 100 mg/L.

(d) Limit on Water Use by Existing Wells: Increases (0-20 percent) in water use will not be permitted if either semi-annual analysis in the previous 12-month period indicates greater than 100 mg/L chloride concentration. If the semi-annual chloride determinations have not been submitted as required, then the pump testing requirement of (b) above shall apply.

(2) Arsenic Monitoring and Testing in the unconsolidated aquifer

(a) The following monitoring and testing is required unless the well is determined not to be located in the unconsolidated sandstone aquifer. A Washington State licensed Hydrogeologist must make the determination in a submitted report .

(b) Arsenic Determinations for New Wells or Increased Pumping of Existing Wells: Applications for new wells or for greater than 20 percent increase

in groundwater withdrawals in an existing well require a minimum 24-hour-duration pumping test at 100 percent of the proposed average daily demand, at the end of which a water sample will be collected for analysis of arsenic concentration.

(c) Restrictions on New Wells or Increased Pumping of Existing Wells: New wells cannot be permitted, and greater than 20 percent increases in pumping cannot be permitted if arsenic concentrations measured at the end of the test specified in (b) above are greater than 10 µg/L.

(d) Limit on Water Use by Existing Wells: Increases (0-20 percent) in water use will not be permitted if the most recent arsenic determination indicated greater than 10 µg/L arsenic concentration. If no arsenic concentration has been determined in the past 3 years, the pumping test requirement in (b) above shall apply. Systems expanding more than 20 percent in a 3-year period must retest for arsenic.