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***1099** SIX-PACKS FOR SUBDIVISIONS: THE CUMULATIVE EFFECTS OF WASHINGTON'S DOMESTIC WELL EXEMPTION

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This Article examines the exempt well provision in the Ground Water Code for the State of Washington and the cumulative effects its current application has on resource management, public health, and instream flows. Mr. Caldwell explains the Ground Water Code framework and the exempt well statute, and attempts to quantify current use of the exempt well provision. Mr. Caldwell then explores the impact of exempt wells on Washington's water system and discusses recent executive and judicial opinions on the subject. Mr. Caldwell concludes by offering measures for the Washington legislature to consider in order to mitigate the detrimental effects of exempt well usage.

***1100** I. Introduction

> Do not let your chances like sunbeams pass you by
> For you never miss the water till the well runs dry.
> --Rowland Howard (1876)

Under Washington State water law, groundwater cannot be withdrawn from any aquifer unless a permit is first obtained from the Department of Ecology. [FN1] However, the law exempts withdrawals of up to 5000 gallons per day from permitting requirements for stockwatering, domestic

purposes, watering a lawn or noncommercial garden up to one-half acre in area, or industrial uses. [FN2] Generally, these "exempt wells" are considered small uses having no significant impact on groundwater quantity and quality. The cumulative impact of Washington's exempt wells, however, is anything but small.

Hundreds of thousands of exempt wells currently exist in Washington, with thousands of new wells being constructed each year. [FN3] These wells affect resource management because the amounts of water withdrawn are unquantified and, due to their unregulated nature, create untold effects on streamflows that are hydraulically connected to groundwater aquifers. Exempt wells affect public health when the water sources from which they draw are contaminated by nitrate concentrations, [FN4] seawater, [FN5] or agricultural pesticides and herbicides. [FN6] Additionally, public health officials ***1101** have identified numerous problems stemming from improper exempt well maintenance. [FN7]

State agencies, local governments, and private parties lack understanding concerning the proper interpretation and scope of the exempt well statute. [FN8] This led to a proliferation of exempt wells in recent years. Land developers have seized the exemption as a tool to circumvent statutory provisions requiring a permit from the Department of Ecology prior to withdrawal of groundwater. [FN9] Thousands of residences that rely on exempt wells as the only source of water are being constructed. [FN10] This Article explores the cumulative effects of Washington exempt well proliferation on resource management, public health, and instream flows, and demonstrates that those effects are far from de minimis.

Part II explains the exempt well statute and attempts to quantify the extent of Washington's ubiquitous exempt wells. Part III explores the impacts of exempt wells on resource management, instream flows, and public health. Part IV discusses current case law from the state Pollution Control Hearings Board and a recent Attorney General's opinion on the subject. [FN11] Part V offers measures for legislative consideration to mitigate the cumulative effects of exempt wells on resource management, public health, and instream flows.

II. Quantification of the Exempt Well Problem

A. The Exempt Well Statute

In 1945 the Washington Legislature enacted Chapter 90.44 of the Revised Code of Washington as a supplement to Chapter 90.03, the Water Code, for the purpose of "extending the application of such surface water statutes to the appropriation and beneficial use of ground waters within ***1102** the state." [FN12] This act created Washington's Ground Water Code. [FN13] Prior to 1945, use of groundwater was unregulated. Recognizing that withdrawals of groundwater could impact surface water flows, the legislature declared that the Ground Water Code was not to affect surface water rights. [FN14] A central element of the Ground Water Code is its legislative declaration that all groundwater belongs to the public and is subject to appropriation for beneficial uses. [FN15] Essentially, the legislature made the use of groundwater subject to the same rules that apply to surface waters and further integrated the two by making surface water uses superior to subsequent appropriations of groundwater.

Like surface water withdrawals, [FN16] groundwater withdrawals are prohibited unless enumerated procedures are followed and a permit is issued by the Department of Ecology. [FN17] The Ground Water Code requires that groundwater applicants comply with procedures established in the Surface Water Code. [FN18] An application must be filed, [FN19] a public notice published in a newspaper of general circulation in the county where the withdrawal is to be made, [FN20] and the Department of Ecology must investigate the application. Only if it finds that there is "water available for appropriation for a beneficial use, and the . . . application will not impair existing rights or be detrimental to the public welfare" may the Department of Ecology issue a permit for the use of public groundwater. [FN21] Thus, ***1103** both the Ground Water and Surface Water Codes have identical requirements for new appropriations of water: unless a permit is obtained from the Department of Ecology, no use of the public's water is allowed. [FN22] There is one exemption from this permit requirement; however, it is found only in the Ground Water Code.

RCW 90.44.050 is Washington's exempt well statute. In allowing for enumerated small withdrawals, it states:

> After June 6, 1945, no withdrawal of public ground waters of the state shall be begun . . . unless an application to appropriate such waters has been made to the department and a permit has been granted by it as herein provided: Except, however, that any withdrawal of public ground waters for stockwatering purposes, or for the watering of a lawn

or of a noncommercial garden not exceeding one-half acre in area, or for single or group domestic uses in an amount not exceeding five thousand gallons a day, or for an industrial purpose in an amount not exceeding five thousand gallons a day, is and shall be exempt from the provisions of this section, but, to the extent that it is regularly used beneficially, shall be entitled to a right equal to that established by a permit issued under the provisions of this chapter . . . . [FN23]

The exempt well statute provides a means by which landowners may access water for domestic purposes, including small-scale irrigation and industrial purposes, without complying with regular procedures. The exemption saves the appropriator of small withdrawals the trouble and expense of applying for a permit where the impact of the withdrawal is slight, and saves the state the trouble and expense of processing applications for small withdrawals that would have little effect on water availability. [FN24] As the Attorney General stated, "the Legislature recognized that very small withdrawals were unlikely to have a significant impact on the water system or to affect the outcome of disputes, and thus could be safely exempted from the permit requirement." [FN25]

A key to understanding the exempt well statute is to focus on what the small withdrawals are exempt from and what they are not. Small withdrawals are exempt only from the requirements that an application be made and a permit received from the Department of Ecology prior to withdrawal of public groundwater. [FN26] Small withdrawals are not exempt from any of the other substantive provisions of the Ground Water Code. For example, although small withdrawals are exempt from the requirements to obtain a permit, they cannot affect surface water rights, [FN27] cannot be used without economical beneficial use, [FN28] and they are subject to the same system of priorities as all other appropriators, that is, where the first right is the better right. [FN29] In sum, although exempt domestic users are not subject ***1104** to procedural requirements to obtain water right permits, they are subject to the substantive provisions of the water code that regulate water allocation. [FN30]

The exempt well statute includes two provisos that further narrow the scope of the exemption. The first proviso recognizes the need to quantify the amount of water withdrawn by exempt well users. [FN31] Because the state needs reliable information quantifying water withdrawn from the state's aquifers to manage water resources, the legislature authorized the agency to obtain that information. [FN32] The Department of Ecology is thus authorized to "require the person or agency making any such small withdrawal to furnish information as to the means for and the quantity of that withdrawal." [FN33] However, the Department of Ecology has never exercised this authority even though the cumulative effect of thousands of exempt wells continues to be adverse to groundwater resources, streamflows, and public health.

The second proviso recognizes that parties making exempt withdrawals may, at their own option, file applications or declarations, [FN34] and obtain permits and certificates "in the same manner and under the same requirements as is in this chapter provided in the case of withdrawals in excess of five thousand gallons a day." [FN35] While the statute exempts small withdrawals from the requirement to obtain a permit and entitles those users to "a right equal to that established by a permit," [FN36] if such users elect to obtain a permit or file declarations for vested rights they are subject to the substantive and procedural requirements of the water code. [FN37] Thus, when an exempt well user files an application for a permit, the Department of Ecology must follow the same procedures and apply the same substantive law that governs all water right applications.

The Ground Water Code requires applicants desiring permits for appropriation of groundwater to comply with the statutory procedures of the Surface Water Code. [FN38] Those statutes define the protocol that must be followed to obtain an appropriation of water and the procedures the Department of Ecology must follow either to approve or reject such an ***1105** application. [FN39] Additionally, the statutes explain the procedures that an appropriator must follow to obtain a water right certificate. [FN40]

Because the exempt well statute generally allows unregulated use of water, the exact number of exempt wells currently in use is unknown. [FN41] What is known is that the construction of exempt wells has proliferated in the past few years; the amount of water currently being withdrawn from the state's aquifers is significant; and with projected population increases, the reliance on exempt wells has the potential to impair existing streamflows and cause a public health and groundwater management crisis.

B. The Number of Exempt Wells

According to the Washington Department of Health,

"[a]s of August 1995 there were an estimated 404,000 single family domestic wells, serving approximately one million people" in Washington. [FN42] This figure contrasts with that of the National Ground Water Association, which, relying on 1990 U.S. Census data, estimates the total number of household groundwater wells in Washington at 263,523, serving 666,713 persons. [FN43] This disparity illustrates the extent of the Department of Ecology's inability to accurately gauge the effects of exempt wells on the state's groundwater resources. The exemption allows property owners to drill wells without first obtaining a permit. Because the Department of Ecology does not require submission of reports from exempt water users, the amount of water withdrawn from public groundwaters is unquantified. This lack of quantification hinders the agency's ability to protect instream flows, water, users who have a prior right to water, and the public interest in conserving water resources.

In 1993, the Department of Ecology began tracking the number of exempt wells by compiling the information contained in "start cards," the construction notification that well drillers must submit to the Department of Ecology before a well is constructed. [FN44] Based on these start cards, between July 1993 and July 1996, the Department of Ecology reported that 23,934 exempt wells were drilled in the state. [FN45]

***1106** C. Current Use of Exempt Well Statute

Although the 1945 legislature intended the exempt well statute to provide for small withdrawals, [FN46] that is no longer the primary use of the exemption. Land developers have seized upon the exemption and are using it to supply water for residential subdivisions. Instead of filing applications with the Department of Ecology and obtaining permits for public water systems, developers use the provision's "single or group domestic" allowance to drill multiple exempt wells to serve these subdivisions. A development comprising numerous lots can obtain its water supply by drilling a well on each individual lot rather than obtaining a water right from the Department of Ecology and creating a public water system. Another practice is to create "six packs," in which the developer uses numerous exempt wells to create Group B water systems. [FN47] A developer creates exempt well Group B systems by drilling a single exempt well to supply water to six residences (or three residences on the east side of the Cascade Mountains); thus the term "six-pack." For simplicity, this Article refers to all Group B exempt well public water systems as six-packs. Additionally, some developers, after creating independent exempt well Group B water systems, will interconnect those systems to create "multiple exempt" systems. Developers view these multiple six-pack water systems as a legal exception to the state's regulatory framework for water right permits. However, the Attorney General views them as contrary to the law requiring public water systems to obtain water right permits. [FN48]

D. The Amount of Water from Exempt Wells

Under the exempt well statute, each well owner is entitled to withdraw up to 5000 gallons per day for household use or irrigation of a lawn or noncommercial garden up to one-half acre in size. However, quantification of actual withdrawals is impossible because the Department of Ecology does not require exempt users to report quantities of withdrawals as they are currently authorized to do under the Water Code. [FN49] An accurate estimate of the total quantity of exempt withdrawals is difficult without actual measurement due to complexity and numerous variables that must be considered when determining individual water demand, including: climatic influences such as evaporation, evapotranspiration, temperature, ***1107** precipitation, and wind; socioeconomic influences; degree of recreational or seasonal uses; service water pressures; extent of metering; pricing schedules; historic water uses for the development for the area; land use and zoning capacity; condition of the distribution system including leakage rates and corrosion problems; and conservation practices. [FN50]

Total water usage by a domestic water system is a combination of internal residential demand (e.g., cooking, bathing, drinking) and uses that are external to the household (e.g., garden and lawn irrigation, washing vehicles, stockwatering). [FN51] When sizing public water supply systems, the Department of Health separates internal water usage from external usage, because external usage is highly dependent upon the variable factors enumerated above and is further influenced by average annual precipitation levels and lot size. [FN52] Based upon a 1993-1994 survey of representative Washington utilities, the Department of Health found that average annual residential demand seldom drops below 200 gallons per day per residential unit. [FN53]

Attempts to quantify exempt well water usage must also consider internal versus external usage. It is

reasonable to assume that the internal residential water usage of exempt well owners is similar to that of public water supply customers--a minimum of 200 gallons per day (gpd) per residential unit. However, because exempt well external water use is dependent upon additional variables such as lot size and annual precipitation, quantification of external water use is difficult. For example, the Department of Health acknowledges the seasonal variations through its sizing guidelines for public water supplies. The agency requires a minimum production capability of 800 gallons per residential connection per day for areas west of the Cascades, and 1500 gallons per day for equivalent residential connections east of the Cascades. [FN54]

Department of Health data indicate a total of 404,000 exempt wells in Washington, but do not differentiate between the eastern or western regions of the state. [FN55] However, Department of Ecology data that are available for a limited period between July 1993 and July 1996, report that 10,774 exempt wells were constructed in regions east of the Cascades and 13,160 wells were constructed in regions west of the Cascades. [FN56] Using the western Washington sizing requirement of 800 gpd/residential unit, an extremely conservative estimate of minimum annual withdrawal by exempt wells is 360,000 acre-feet per year. [FN57] New exempt wells are being constructed***1108** at a rate of 8500 per year. [FN58] Using the Department of Ecology's regional exempt well totals and the Health Department residential water capacity requirements, calculation reveals that a total of 7600 acre-feet of new water is withdrawn annually from the state's groundwater by exempt wells.

III. Impacts of Exempt Wells on Resource Management, Instream Flows, and Public Health

In recent years, Washington State has witnessed increased dependence on exempt wells as a source of water supply for land development projects. Although the impact of one exempt well may seem de minimis, [FN59] hundreds of thousands of exempt wells have significant cumulative effects on water resource management, groundwater supplies, instream flows, and the public health.

A. Effect on Resource Management

Careful administration of the waters of the state is important among the Department of Ecology's duties. [FN60] To fulfill this duty, the Department of Ecology must inventory water resources to quantify the total amount of water available, [FN61] determine the amounts of water that should be dedicated to instream flows, administer water allocated among the various users, [FN62] and determine if further amounts of water are available for appropriation. [FN63]

One of the principal tools of water resource management that the Department of Ecology should use to make these determinations is a water budget, in which the amount of water available in a water resource inventory area (WRIA) is balanced against the amount of water withdrawn. [FN64] As the following simple example shows, this quantification process is crucial to proper administration.

Assume a WRIA has ten acre-feet of water available from both surface and groundwater sources combined. Assume also that five acre-feet of this water are required to maintain crucial instream flows, and that four acre-feet have been allocated to existing water users. Under this hypothetical ***1109** situation, the Department of Ecology could properly determine that one acre-foot is available for additional withdrawals. If the Department of Ecology issued water right permits for that one acre-foot, the water budget would be in balance with ten acre-feet available and ten acre-feet allocated. However, if the Department of Ecology allocated three additional acre-feet to be withdrawn, the budget would be out of balance because more water would be allocated than was available.

The proliferation of exempt wells causes statewide imbalance in water budgets. As unquantified uses, these wells reduce the total amount of water available in the WRIA without the state's knowledge or control--water leaves the aquifer without being calculated as a component of the water budget. Although the exempt well statute authorizes the Department of Ecology to require reporting of water quantities withdrawn by exempt wells, it has yet to exercise that authority. The agency has begun using a water budget approach in recent years, but the lack of exempt well usage data has made these efforts ineffective. Therefore, water budgets for WRIAs are inaccurate. As each additional exempt well is drilled, the water budget falls farther out of balance, and water quantities dedicated to aquifer recharge, instream flows, and other water uses become impaired. [FN65]

B. Effect on Instream Flows

The intent of the legislature when creating the exempt well provision in Washington's water code in 1945 was to save the appropriator the trouble and expense of applying for a permit, and the state the trouble and expense of processing applications for "small withdrawals" that have little impact on the total water supply available. [FN66] Although the legislature believed that very small withdrawals were unlikely to have a significant effect on the water system, [FN67] the cumulative impact of thousands of new wells being drilled in the state each year is anything but de minimis, [FN68] and the exemption has provided a huge loophole that contributes to depletion of instream flows when those streams are in hydraulic continuity with groundwater.

The relationship between groundwater and surface water sources is affected by groundwater pumping, which may either intercept water otherwise available to recharge a stream or capture water from the stream itself. Hundreds or thousands of small wells in aquifers that are hydraulically ***1110** connected to streams can have a cumulative effect on streamflows equal to or greater than large withdrawals. [FN69]

As stated earlier, the potential impact on the state's groundwater caused by 8500 new exempt wells each year amounts to over 7600 acre-feet per year. When combined with the potential use by existing exempt wells of at least 360,000 acre-feet per year, there can be little doubt that exempt wells cause significant adverse impacts on instream flows. The Town of Quilcene, for example, in the flood plain of the Quilcene River, has more than 1000 residents relying on more than 440 exempt wells as a source of water supply. [FN70] The water pumped by these exempt wells is in hydraulic continuity with the Quilcene River, which is on Washington's 303(d) list for impaired streamflows. [FN71] In addition, numerous undeveloped ***1111** lots are entitled to use exempt wells. [FN72] The entire Dungeness-Quilcene Rivers region of Klallam and Jefferson Counties currently supports over 5200 exempt wells, most of which are hydraulically continuous with these rivers and thus contribute to impairment of streamflows. [FN73]

In eastern Washington's Spokane County, on the Little Spokane River, the Department of Ecology established instream flows in 1976 for those reaches between the headwaters and the confluence with the Spokane River. [FN74] Since 1976, there has been a significant increase in the frequency of base flows below the minimum regulatory requirements, with base flows below minimum now averaging fifty-three days per year. [FN75] Minimum base flows set at Elk, Washington were not met in 1987, 1988, and 1989. [FN76] In addition to these already discouraging numbers, during the period from 1993 to 1996, more exempt wells were drilled in Spokane County than any other county in the state, totaling more than 2100 in all. [FN77] A watershed assessment conducted by the Department of Ecology in 1995 confirmed the hydraulic continuity between ground and surface water in the watershed, concluding that a large portion (if not most) of the groundwater allocated since 1975 directly affected surface water flows. [FN78] The construction of exempt wells in aquifers that are in hydraulic continuity with flow impaired surface waters will directly result in further depletion of surface water flows.

The Chambers-Clover and Puyallup-White watersheds of Pierce County, in the central Puget Sound region, include areas where substantial evidence of hydraulic continuity between groundwater and surface water exists. [FN79] Within these watersheds, the Department of Ecology reports that 1420 exempt wells were drilled during the period from 1993 to 1996. [FN80] A review of additional WRIAs within the Puget Sound Basin reveals similar ***1112** evidence of hydraulic continuity between groundwater and surface water, and correspondingly high numbers of exempt wells drilled during the reporting period. It can safely be stated that, almost without exception, hydraulic continuity exists between all surface water and groundwater sources within the Puget Sound Basin. [FN81] Although deeper aquifers discharge to marine waters, exempt wells typically are not constructed in deep aquifers because of the expense of drilling and pumping. Department of Ecology records reveal that 7084 exempt wells were drilled within the basin during the period from 1993 to 1996. [FN82] In fact, exempt wells continue to be used as a source of water supply in areas that have been fully or partially closed to new consumptive appropriations. [FN83]

This data only samples probable impacts of exempt wells on instream flows within the state. The cumulative effect of the thousands of new wells coming on line each year, together with the recognition that the impact of these wells may occur over time as wells capture water from streams, [FN84] suggests that the problem will worsen as population increases continue to rely on exempt wells for water. [FN85] The ultimate impact of this proliferation is the reduction of instream flows.

***1113** C. Effect on Public Health

Another aspect of the proliferation of exempt wells concerns public health. Studies conducted by the U.S. Geological Survey [FN86] and the Department of Ecology, [FN87] coupled with data from local governmental agencies, show that exempt wells are contaminated by withdrawal of water from contaminated aquifers. In regions of Washington with a high percentage of urban and/or agricultural land use, aquifers may be contaminated or face potential contamination from nitrification of groundwater. [FN88] Seawater intrusion, caused by groundwater pumping by numerous exempt wells, is contaminating aquifers in coastal regions of Washington. [FN89] Inadequate water system management and poor wellhead protection have contaminated aquifers in other regions. Department of Health authorities have documented cases in some areas where domestic wells have contributed to contamination of aquifers. [FN90] In all of these cases, the proliferation of exempt wells has either caused or greatly exacerbated the public health problem.

1. Nitrification of Groundwater

Nitrification of groundwater occurs when concentrations of nitrates move from the surface to underlying aquifers. Nitrate concentrations are caused by human activities such as crop fertilization and on-site sewage disposal. [FN91] Nitrogen fertilizers applied to fields, carried to the underlying aquifers by percolating irrigation water, are the primary source of nitrate in shallow groundwater. [FN92]

In the Central Columbia Plateau, as is the case in many other agricultural areas of the state, irrigated agriculture is associated with high nitrate concentrations and high frequency of contaminated groundwater. [FN93] In the Puget Sound Basin, as is the case with many other urban areas of the state, increased nitrate concentrations are associated with both agricultural and urban land uses. [FN94] Nitrate concentrations in urban areas derive from septic system effluent and fertilizers applied to lawns. [FN95]

***1114** High levels of nitrate in groundwater can adversely impact public health by causing a fatal blood disorder called methemoglobinemia, or "blue baby disease." [FN96] Methemoglobinemia can affect anyone, but children under six months of age are particularly vulnerable. Although not confirmed, some studies have suggested a possible link between nitrates and both cancer and birth defects. [FN97] Due to the potential health risk attributed to drinking water with high nitrate concentrations, the U.S. Environmental Protection Agency determined that nitrate levels in drinking water must not exceed ten milligrams per liter. [FN98]

Nitrate may be the most ubiquitous groundwater contaminant in the world. [FN99] Land use has the greatest effect on nitrate concentrations because nitrates (often from fertilizers) migrate from the surface to underlying aquifers. Thus, nitrate concentrations generally are greater at shallow depths. [FN100]

The Central Columbia Plateau and Puget Sound Basin are two regions currently experiencing high concentrations of nitrates or areas of groundwater vulnerability due to high nitrate concentrations. [FN101] For example, in 1995 the Quincy-Pasco subunit of the Central Columbia Plateau, including Moses Lake, reported that twenty-nine percent of domestic and public supply wells had nitrate concentrations exceeding the EPA maximum contaminant level (MCL) for nitrates. [FN102] In Douglas County, thirty percent of domestic and public supply wells exceeded the MCL. [FN103] In the Puget ***1115** Sound Basin, the U.S. Geological Survey's National Water-Quality Assessment Program identified numerous areas--generally associated with high agricultural activity or population centers dependent upon domestic onsite sewage disposal--that are particularly vulnerable to nitrate contamination. [FN104] Areas of particular vulnerability are the Lower Nooksack River near Bellingham, Mount Vernon, Arlington, Bothell, Bellevue, the Tacoma region, and Olympia-Lacey. [FN105]

The U.S. Geological Survey also reports a relationship between well depth and the potential for a contaminated water supply. [FN106] These studies show a higher probability of nitrate concentrations in groundwater withdrawn from fifteen meter wells than from seventy meter wells, [FN107] indicating a higher probability of nitrate concentrations in shallow aquifers. These shallow aquifers most typically supply water to exempt wells. [FN108]

Because exempt wells are restricted to 5000 gallons per day and deep wells are not necessary to develop this quantity of water, exempt wells are generally drilled into the shallow depths of upper aquifers, where nitrates are most heavily concentrated. [FN109] Thus, in aquifers where concentrations of nitrates are elevated, exempt wells have a higher

probability of adverse effects on public health. [FN110]

***1116** 2. Seawater Intrusion

Seawater intrusion in coastal regions is a common problem in Washington state. [FN111] Intrusion occurs when the hydraulic head of fresh groundwater that is in hydraulic continuity with the sea is reduced relative to that of seawater. [FN112] This reduction in hydraulic head is usually caused by human activity, specifically, well pumping: [FN113]

Under natural conditions the altitude of the water table, or potentiometric surface, in a coastal aquifer is higher than sea level and it decreases toward the coast; the movement of fresh groundwater along this gradient is seaward. When the freshwater gradient is decreased or reversed, such as by the pumping of nearshore wells, the seaward flow of freshwater is decreased, and the front of seawater (the zone of diffusion) begins to move landward. In situations where artesian (confined) aquifers extend seaward and are in contact with the sea only at considerable distance from the coast, the aquifers could undergo intrusion undetected; many years could elapse before the appearance of seawater in coastal areas.

The freshwater-seawater relationships described above also apply beneath islands. An island well that withdraws water at a rate sufficient to lower the water table disturbs the natural freshwater-seawater equilibrium. If the hydraulic head is lowered sufficiently, seawater rises as a cone and moves toward the well. [FN114]

When seawater intrudes into an aquifer, wells withdrawing from it become contaminated with high chloride concentrations. Excessive chloride in drinking water causes unpalatable taste, physiological effects, [FN115] corrosion of pipes and pumping equipment, and increased cost of water treatment. [FN116] Controlling seawater that has intruded into freshwater aquifers is expensive and difficult--and in some cases, impossible. [FN117]

***1117** In a survey of seawater intrusion into coastal aquifers, the U.S. Geological Survey reported that many counties in the Puget Sound and coastal regions of western Washington--including Clallam, Jefferson, Pierce, Thurston, and Whatcom--suffer from areas of localized but severe intrusion. [FN118] Additionally, the report showed that areas with rapid groundwater development and already-detected intrusion are likely to experience increased intrusion in the future. [FN119] The Geological Survey has also determined that Island and San Juan Counties, which are comprised of islands in the Puget Sound, "are being affected by saline-water intrusion, which is expected to worsen with continued groundwater use. Increased chloride concentrations, some in excess of 500 milligrams per liter, have been detected in water from 10 to 15 percent of the nearly 300 wells sampled. . . ." [FN120] Saline-water intrusion also occurs on other major islands. [FN121] Marrowstone Island, also within the Puget Sound near Port Townsend, for example, was recently the subject of an intensive study by the Department of Ecology to assess the extent of seawater intrusion. [FN122] That study determined that 24% of the wells sampled had chloride concentrations in excess of the MCL of 250 mg/l, and 46% of those wells had concentrations in excess of the chloride concentration threshold of 100 mg/l, indicating seawater intrusion. [FN123]

Exempt wells both affect and are affected by seawater intrusion. Because seawater intrusion in coastal areas is caused by wells that pump groundwater in hydraulic contact with seawater, a proliferation of exempt wells in areas already experiencing seawater intrusion will exacerbate the intrusion. The proliferation of exempt wells in aquifers that are not yet contaminated by seawater can increase the probability of future intrusion. Population increases along coastal areas will increase demand for the development of fresh water sources--demand that, if current trends continue, will be met in large part by exempt wells, again exacerbating intrusion problems.

3. Pesticides in Groundwater

In 1996, the U.S. Geological Survey reported on pesticides in public supply wells and groundwater of the Central Columbia Plateau. The reports disclosed concentrations of pesticides in 45% of the 138 public supply wells sampled in the study. Additionally, the report revealed the presence of agricultural pesticides in sixty-eight percent of forty wells ***1118** tested in the groundwater of the Quincy and Pasco Basins. [FN124] A striking finding in this series of studies is the disclosure of disproportionate effects on exempt wells (similar to that disclosed in the nitrification studies). That finding shows that shallow wells are more likely to contain pesticides than deep wells: [FN125]

Shallow wells are generally more susceptible than deeper wells to contamination by chemicals applied at the land surface, mainly because of the short distance between the land surface and the well. Therefore, there is less opportunity for the chemicals

to break down by natural means, adsorb to minerals and organic matter in the ground, or be diluted by uncontaminated water from canals and other sources. The shallowest wells in this study had the highest number and rate of pesticide detections; however, the effect of well depth is not very pronounced because the study focused exclusively on shallow groundwater. [FN126]

The report concluded that 63% of wells less than 125 feet deep contained pesticides. [FN127] It is these shallow aquifers that exempt wells rely upon for a source of water supply, and it is these aquifers that have the highest potential to cause impacts to public health if exempt well use continues to grow.

4. Lack of Professional Maintenance

Another public health problem that arises from the use of exempt wells stems from the lack of professional maintenance. This problem affects both individual domestic wells and Group B water systems. For example, a Thurston County Environmental Health Division official stated that of the 756 Group B public water systems in Thurston County, approximately 50% are not properly maintained. [FN128] The following are specific examples of problems with Group B exempt well water systems. An exempt well providing water to six residences tested positive for fecal coliform subsequent to an investigation of illness among tenants. Investigation by Health Department officials disclosed the removal of water treatment equipment that had been required to correct water quality problems associated with a shallow well. The fecal coliform was reported to have been caused by a cat falling into the well. [FN129] The Perry Creek Water System had a maximum contaminant level violation after testing showed the presence ***1119** of fecal coliform. [FN130] Owners of the Null Water System constructed a barn within the 100-foot well head protection zone. [FN131] Two separate Group B water systems were approved for service of five residential units each, without requiring a water right permit. Later the systems were interconnected, and two additional residences were added for a total of twelve residential units. The operation and maintenance agreement was not updated to reflect additional units, a water right permit was not obtained, and a hydraulic analysis was not completed to demonstrate adequate pressures and flows necessary for the additional units. [FN132]

Health officials from other counties agree that the lack of professional management of exempt wells poses a threat to public health: an Environmental Health Specialist in Island County stated that "[t]he proliferation of exempt wells results in the establishment of potable water supplies that are not subject to professional management and operations. Small water systems and individual well owners generally lack the knowledge and professional expertise to analyze quality and quantity issues as they arise." [FN133]

King County Department of Health officials explain that long-term management problems associated with exempt well usage develop when individual wells begin to mine aquifers and well levels decline in volume or run dry. [FN134] Individual equipment replacement costs and maintenance upkeep become too expensive for the owners. Additionally, the proliferation of exempt wells increases the chances of aquifer contamination: [FN135]

There are more avenues for contaminants to enter the aquifers from the increased number of holes punched into the ground within a community. This makes the underground resource more vulnerable to surface activities within a community which could degrade or contaminate the groundwater. It also makes it more difficult from a public health perspective to protect all those individual point sources from contamination or depletion. In practice, it is usually the shallower drilled individual wells that must to (sic) deepen their wells first when an aquifer begins to show signs of decline in water levels from over pumpage. [FN136]

The North Snohomish County Water Utility Coordinating Committee likewise expressed its concern about the impact of exempt wells within development proposals:

***1120** Public health protection will be compromised by the six pack method. The method will result in construction of multiple wells and water systems within a development instead of a single system supplied by a consolidated source of supply. Experience has shown that as more wells are drilled in an area, natural barriers to surface contamination of the aquifer are compromised which increase the risk of groundwater contamination. Further, low yield, exempt wells are typically drilled to a shallower depth, hence these sources are characteristically more susceptible to surface contaminants and seasonal reductions in service. Finally, small independent water systems have long been acknowledged as the source of the highest percentage of water quality and sampling violations. [FN137]

David Clark, the former director of the Drinking

Water Division, State Department of Health, in a response to Mr. Hancock, acknowledged the problems related to public health. "We share your concern that the acceptance of this approach (using Group B exempt wells for development purposes) will continue to create problems related to public health, customer service, reliability and water resource protection." [FN138] Mr. Clark fatalistically noted that "[w] hile most individuals and organizations familiar with the 'small systems issue' share this view, the state as a whole has been unable to resolve these concerns." [FN139]

In its response to Mr. Hancock, the Department of Ecology recognized its inability to control the now apparent threat to public health:

We concur that we should be discouraging the proliferation of these small systems. . . . As you know, this is a state wide issue that may not be resolved at the state level without legislative code changes. . . . We also agree that based on our basin assessment when we determine water is not available in a basin, a request for a new water system exempt from requiring a water right, should be denied by the county. . . . Unless the county has the ability to deny these exempt systems, this looks like another grouping of exempt systems. This is not good water management--not what the developer wanted, nor what anyone else wanted but a way to work the system. [FN140]

Local governmental entities acknowledge that exempt wells create problems related to public health, and they look to state agencies for assistance to resolve these problems. State agencies deny the authority to act. Meanwhile, exempt wells, six-packs, multiple six-packs, and exempt well-water systems continue to proliferate with continuing threats to resource management, groundwater supplies, instream flows, and the public health.

***1121** IV. Case Law, Attorney General's Opinion, and Regulations Relating To Exempt Wells

A. Case Law Defining the Exempt Well Statute

Although it has existed for more than fifty years, Washington courts have yet to interpret the exempt well statute. The Pollution Control Hearings Board (PCHB), [FN141] however, has construed the exemption in considering water right appeals in three recent cases.

In 1992, in Green v. Department of Ecology, [FN142] applicants applied for and were denied water right permits for groundwater within the Duck Lake Ground Water Management Area in Okanogan County. This water management area is officially overappropriated, and groundwater mining is occurring as consumptive use of water exceeds nature's ability to replace it. [FN143] PCHB ruled that the Department of Ecology was correct in denying the applications because there was no public groundwater available for the applicants' proposed uses, [FN144] but concluded that the applicants were still entitled to one 5000- gallon-per-day appropriation under the statutory well exemption. [FN145] Further, the Board interpreted the statute to entitle the appellants to receive permits and certificates memorializing their exempt well entitlement if they applied specifically for an exempt well permit. [FN146]

On a motion by the Department of Ecology for clarification, PCHB later explained its curious interpretation of the statute to mean that the Department of Ecology did not have the discretion to deny a permit for an exemption granted by statute. [FN147] Although the Department of Ecology argued that the statute confers both the right and the responsibility to apply the four statutory tests for a water right (i.e., water availability, impairment, beneficial use, and public welfare), [FN148] PCHB interpreted the statute to provide an absolute right to exempt right holders, requiring the Department of Ecology to provide written evidence of that right. [FN149] An additional noteworthy holding in the Green case was PCHB's rejection of the Greens' argument that they were entitled to multiple exemptions based upon filing successive applications or transferring property and water rights to another party. [FN150] PCHB concluded that the statute did not allow multiplication of the exemption, and therefore, the Greens were entitled to only one 5000-gallon-per-day withdrawal. [FN151]

***1122** PCHB addressed the issueof transferability of domestic water rights in the 1995 case of Knight v. Ecology. [FN152] The case involved an application by a developer to transfer irrigation, stockwatering, and domestic water rights from several water sources, including an exempt well, to facilitate a recreational development known as the Wilson Ranch near the confluence of Early Winters Creek and the Methow River. PCHB held that a domestic water right cannot be transferred, regardless of perfection. [FN153] Holding that exempt uses are illusory for transfer purposes, the Board rationalized that changing the place of use of domestic permits would accomplish nothing more than transferring a use without

affecting the water rights appurtenant to the existing place of use. [FN154] In other words, the right to an exempt withdrawal would not be expunged on the original property following the transfer. The statute contains no preconditions to the exercise of the exemption other than the limitations on quantity. [FN155] Domestic users can establish their exemption by drilling a well, withdrawing water, and using it beneficially. In simple terms, if landowner A transfers his exemption to landowner B, the exempt well statute would give land owner A the right to develop a new exemption, and thus, the original exemption really is not transferred. [FN156]

In 1996, in Schrum v. Ecology, [FN157] PCHB again addressed the domestic use exemption in a case involving issues strikingly similar to Green. The Department of Ecology denied Schrum a permit to take water for multiple domestic supply from an existing well that was hydraulically connected to Clover Creek in Pierce County. Schrum's well lies within the Chamber-Clover Water Resource Inventory Area, which is closed to further surface water appropriations. [FN158] The Department of Ecology has a statutory duty to consider the interrelationship of surface and groundwater before issuing permits and to deny permits where hydraulic continuity exists between the groundwater and closed surface waters. [FN159] While the Board affirmed the Department of Ecology's denial of Schrum's application for water due to its potential impact on instream flows, it noted in dicta that ***1123** Schrum could circumvent its decision by submitting an application to the Department of Ecology for an exempt well serving multiple domestic purposes. [FN160] The Board then declared that the statutory exemption "allows users to apply for a permit and requires The Department of Ecology to issue such permits where the applicant establishes that the exemption fully applies." [FN161]

PCHB's opinions in Green and Schrum indicate that when the Department of Ecology is presented with an application for an exemption it has no discretion to deny that application. This result conflicts with the Department of Ecology's statutory obligation to administer the state's ground and surface water in a manner that protects senior water users and instream flows. [FN162] When called upon to issue a right to use the public's water, the Department of Ecology must protect senior water rights, instream flows, and the public interest by determining not only that water is available, but also that the proposed use is beneficial, that it will not impair existing rights to the water, and that the use will not be detrimental to the public welfare. [FN163] PCHB's rulings that the Department of Ecology must ignore the cumulative effect of thousands ofexempt wells despite harms to these vital interests, appear to ignore the requirements of the Water Code. Notwithstanding these decisions, the exempt well statute requires individual users to follow the substantive and procedural provisions of the water code if they choose to apply for a permit. [FN164]

While Green and Schrum appear to be inconsistent with the water code, PCHB's holding in Knight, relative to the nontransferability of exempt rights, is laudable. The holding by PCHB that exempt rights cannot be transferred helps define the nature of the water right obtained through an exempt withdrawal. The exemption is a right equal to that established by a permit; a permit is an inchoate right, [FN165] one that comes into being "while the application of the water in question to a beneficial use is being prosecuted with reasonable diligence." [FN166] The Water Code contains provisions protecting inchoate rights to use and divert water. [FN167] Thus, as long as it is being used, an exempt withdrawal remains protected by the water code yet cannot be transferred to another property.

Substantial questions remain unanswered concerning the scope of the domestic well exemption. In Green, PCHB essentially assigned the Department of Ecology a perfunctory duty to issue domestic permits memorializing any domestic use. [FN168] The water code assigns the Department of ***1124** Ecology a higher duty--to protect Washington's precious water resources. The Water Code allows the Department of Ecology to issue a permit only if the four tests of beneficial use, nonimpairment, water availability, and public interest are met. The PCHB ruling in Green leaves unanswered the question how the Department of Ecology should proceed when an exempt user requests a memorializing permit and any number of the four tests cannot be met. PCHB seems to say, ignore them.

Schrum is a dichotomy. [FN169] On one hand, PCHB properly held that the Department of Ecology must deny permits, even for multiple domestic purposes, whenever withdrawals from groundwater threaten to impair hydraulically connected waters. On the other hand, PCHB went out of its way to point out, in spite of its own holding affirming potential impairment to streamflows, that the Department of Ecology would be compelled to issue a permit for any use that falls within the 5000-gallon-per-day exemption. The intent of PCHB's recommendation may have been to encourage use of the exemption, but the effect is to harm streamflows and undermine

the Water Code by encouraging its circumvention. [FN170]

Because of the lack of legislative history and court decisions, state agencies, local governments, and private individuals have been increasingly uncertain about the extent to which exempt wells may be used as a source of water supply. In response to a request from the Directors of Ecology and Health, the Attorney General attempted to answer some of those questions in an advisory opinion issued in October 1997. [FN171]

B. Attorney General's Opinion on Exempt Wells

After observing the tendency of land developers to construct multiple small public water systems utilizing the groundwater exemption, and as a result of inconsistent interpretations of the exemption by the Departments of Ecology and Health, local government, and private parties, the Attorney General was asked to address the exemption in a formal advising opinion. [FN172] The questions posed to the Attorney General concerned the meaning of the exemption, whether the Department of Ecology could be compelled to issue permits for exempt uses, and the limits on the quantities of water allowed to be withdrawn under the exemption. [FN173] The opinion, released in October 1997, also addressed the use of exempt wells for subdivision development, interties of exempt well Group B water systems, and procedural and substantive questions relating to the issuance and transfer of exempt wells. [FN174]

***1125** 1. Exempt Well Subdivisions

Land developers wishing to subdivide tracts of land into multiple residential parcels have contributed substantially to the proliferation of exempt wells by using the exemption to supply water to residential developments. One practice involves drilling an exempt well on each individual lot rather than constructing a single public water supply system. [FN175] Developers also service six residences from a single well, known as a six-pack, or intertie multiple six-packs to create a multiwell public water system. All of these situations are termed exempt well subdivisions. [FN176] In each case, each individual well pumps no more than 5000 gallons of water per day. Cumulatively, however, the total amount of water withdrawn from the aquifer to serve the subdivision obviously will significantly exceed 5000 gallons per day.

In reviewing the legality of these practices, the Attorney General's opinion adopted an integrated view of the Water Code. The opinion stated that the purpose of the Water Code is to provide a complete system for the regulation and distribution of the state's water, and that the purpose of the exempt well provision is to provide an expedient method to allow small withdrawals that are "unlikely to have a significant impact on the water system or to affect the outcome of disputes and thus could be safely exempted from the permit requirement." [FN177] The opinion further stated:

> [W]e cannot conclude that the Legislature intended . . . to allow the property owner to escape the permitting requirement merely by slicing the water needs of the development into small pieces with each piece requiring only an "exempt" withdrawal. If the property owner drilled a single large well to supply the whole development, the withdrawal would clearly not be exempt. Applying the permit requirement should not turn on an artificial choice of drilling several holes in the ground rather than one, where the withdrawal is for a single purpose. [FN178]

The opinion analogized the exempt well subdivision development practices to the case law developed under the State Environmental Policy Act, [FN179] which requires government agencies to consider the cumulative ***1126** effects of a project as a whole and forbids a major project from being broken into smaller parts to escape full environmental review. [FN180] The opinion concluded:

> [W]here water is withdrawn by a property owner for a single housing development, within a reasonable short period of time, a single withdrawal occurs for the purpose of RCW 90.44.050 and determining whether the withdrawal requires a water rights permit, no matter how many individual wells or other withdrawal mechanisms are employed. [FN181]

The Attorney General's opinion thus determined that the current practice of multiple six-pack and exempt well subdivision developments does not qualify for an exemption under the Water Code. Developers must obtain first a water right permit from the Department of Ecology before making any groundwater withdrawals. [FN182]

Another current development scheme is to interconnect several exempt wells that have been constructed independently and at different times. The purpose is to allow exchange or delivery of water between systems. When used in the context of exempt wells, this practice effectively circumvents

the Water Code by exceeding the 5000-gallon-per-day limit on withdrawals under the exemption.

The Attorney General concluded that the statutes do not allow an "intertie" or interconnection of exempt withdrawals. [FN183] In order to qualify as an intertie under the Water Code, [FN184] the system must first qualify as a public water system [FN185] and must have an existing water right permit or certificate. [FN186] To be eligible for transfer via intertie, the exempt withdrawal must first be codified by permit. Alternatively, the exempt withdrawal could consolidate the exempt right with an existing public water system under the terms and conditions of the 1997 Consolidation Act. [FN187] Thus, according to the Attorney General, the statutory exemption does not confer authority to interconnect multiple exempt withdrawals. [FN188]

***1127** 2. Questions Relating to Issuance of Permits and Transfer of Exempt Wells

The Departments of Ecology and Health are increasingly confronted with development and irrigation proposals based upon the use of the exempt well statute. [FN189] In March 1997, these agencies formally requested that the Attorney General interpret the statement in the Water Code that a use established under the exemption, if regularly used beneficially, "shall be entitled to a right equal to that established by a permit issued under the provisions of this chapter." [FN190] Specifically, the agencies asked whether the Department of Ecology is required to issue a permit for exempt uses when requested; the Department of Ecology must issue a certificate to a party who believes they have established a right under the exemption; and an exempt right, once established, can be transferred. [FN191]

The Attorney General concluded that when a property owner applies for a permit for a small withdrawal meeting the terms of the exempt well statute, the applicant is entitled to a water right only on the same basis as other parties who apply for permits (in other words, those parties making nonexempt withdrawals). [FN192] The opinion noted that the statute requires the Department of Ecology to find the following: 1) water is available for appropriation; 2) the proposed use is for a beneficial purpose; 3) the proposed use will not impair existing rights; and 4) it will not be detrimental to the public welfare. [FN193] Thus, although exempt withdrawals have a right equal to a permit and are not subject to the four tests, once a permit is sought, the Department of Ecology must apply the same statutory tests as required before granting nonexempt requests for water rights.

The question that begs an answer is why a person would apply for a permit for a domestic right when that use is exempt from the Water Code's permit requirement. The reasonableness of any decision to apply for such a permit seems questionable because the statutory procedures to obtain a permit for groundwater domestic purposes are substantial, and if the four tests of the Water Code are not met, the Department of Ecology cannot issue a permit. Two reasons for seeking such a permit stand out. First, an individual may want to document their right to the exempt withdrawal. This may become important when property is transferred to a new owner and verification of the domestic right is a condition of the transfer. This condition would most likely occur in a Water Resource Inventory Area (WRIA) where the Department of Ecology has restricted new exempt wells. Second, a party may want a water right that is transferable. This scenario may also develop where the Department of Ecology restricts exempt withdrawals.

As to whether the Department of Ecology could be compelled to issue a certificate for exempt withdrawals, the Attorney General concluded ***1128** that the statute does not require such action. [FN194] The opinion concluded that the Department of Ecology is required only to issue certificates to holders of a permit "upon a showing to the department that construction has been completed in compliance with the terms of any permit issued under the provisions of this chapter." [FN195] Because parties making exempt withdrawals have not been issued permits, the provisions of the Water Code that relate to the issuance of certificates do not apply. [FN196]

The Attorney General also reviewed the statutory provisions governing issuance of certificates to parties claiming vested rights for exempt withdrawals. [FN197] The opinion concluded that this statute applies only to those rights perfected within three years after June 6, 1945; uses perfected after that time are not automatically entitled to a certificate. [FN198]

In answering the question whether rights under an exempt withdrawal may be transferred to other land, to a different point of diversion, or to a new purpose, the Attorney General referred to statutes governing the amendment (or transfer) of permits and certificates for groundwater rights. [FN199] The

opinion concluded that the legislature intended the statute to apply only to the "holder of a valid permit or certificate of groundwater right." [FN200] Because an exempt withdrawal is a right equal to that established by a permit, but is not itself a "valid permit or certificate," the provisions of the Water Code applicable to the amendment (or transfer) of permits and certificates do not apply to exempt wells. [FN201]

The Attorney General also recognized that processing a request for transfer of an exemption would be a meaningless process: "[b]ecause the original withdrawal was exempt from permitting, there is no obvious way to prevent its continued use after the 'change' is processed." [FN202] In other words, if an exempt withdrawal is transferred to another parcel of land, another exempt right could rise to take the place of the right transferred; thus the transfer would become a meaningless act. This opinion is consistent with PCHB's decision in the Knight case and with the exempt well statute.

An example where the transfer of an exempt right would not be a meaningless act would be in a case where the Department of Ecology prohibited new exempt withdrawals. In that situation, transfer of an exempt withdrawal would not be meaningless because the right to make exempt withdrawals would be limited, and a new exempt withdrawal would be allowed only if an existing exempt right was transferred from a property that already had an exempt right; then the property from which the exemption ***1129** was transferred would, by operation of regulations prohibiting new exempt withdrawals, forfeit its right to an exempt withdrawal.

In sum, the Attorney General concluded: exempt withdrawals have a water right on the same basis as nonexempt withdrawals; the permitting process forexempt withdrawals is subject to the same substantive and procedural requirements as other permits; there is no statutory provision for issuance of a certificate for exempt withdrawals unless a permit is first granted within the statutory framework; and the statutory transfer procedure does not apply to exempt withdrawals. [FN203]

The Attorney General's opinion recognized that the Water Code establishes a comprehensive approach to water management and allocation and that the exempt withdrawal provision must be considered within the context of the Water Code. For example, the opinion recognizes that if a group of wells is drilled by the same entity at or about the same time, in the same area, for the same purpose or project, and exceeds a total withdrawal of 5000 gallons per day, that project constitutes a single withdrawal and must comply with permitting provisions of the Water Code. [FN204]

The Attorney General's opinion also recognizes that small water systems, which are individually exempt from the permit requirements but which are later interconnected, are illegal unless they first obtain a permit under the appropriate statutory provision. [FN205] If a party making an exempt withdrawal chooses to apply for a nonexempt permit, the opinion states that the statutory provisions relating to appropriation procedures govern that application. [FN206] If a party wishes to transfer an exempt right, the opinion recognizes that the Water Code's provisions relating to amendments of permits apply and, because no permit has been issued, there can be no transfer. [FN207]

It becomes obvious after reviewing the Attorney General's opinion that determining the extent of the exempt well provision requires examining the entire Water Code's statutory framework. Focusing on the exempt well statute without placing it in the context of the entire Water Code within which it operates is akin to examining a single tree to try to explain the content of a forest.

The Attorney General's opinion conflicts with the holding of PCHB in both Green and Schrum. The Attorney General opines that the permitting process for exempt withdrawals is subject to the same Water Code requirements as any other water right application under which the Department of Ecology must apply the four tests prior to issuing a water right permit. [FN208] In contrast, PCHB held that the Department of Ecology perfunctorily ***1130** issues permits for domestic exempt use. [FN209] Proper resolution of the issue should focus on the objectives of the Water Code: to protect public health and instream flows and rationally manage the resource. If exempt wells can impact these objectives, the Attorney General has the better argument, as an integrated view of the exemption written within the Water Code assures protection of those interests.

3. The Attorney General's Opinion and Growth Planning

The Attorney General's opinion does not, of course, bind judicial interpretations of the exempt well statute. It is, however, given considerable weight by courts, [FN210] and it controls administrative activities in the Departments of Ecology and Health. The Attorney General's opinion also has significant

effects on local government activities [FN211] and can influence local governments to deny permits to developers based on lack of compliance with the Water Code. [FN212] An understanding of the effect of the Attorney General's opinion requires a description of the interaction between the state's land use and water supply statutes.

The Growth Management Act of 1990 (GMA) is a statewide planning law requiring counties with large growth projections to designate land use in a manner that reduces sprawl and protects natural resources. [FN213] The Act covers farmland, forests, and "critical areas" such as riparian and aquifer recharge zones. [FN214] These goals are accomplished, in part, by designations of "urban growth areas," which in turn require local government to develop infrastructure for growth including roads, utilities, and schools. [FN215] Although local building permit authorities must eventually make a determination of water adequacy for new projects, the GMA contains no provisions to ensure adequate water supply. [FN216]

This statutory omission contributes to a water supply vacuum into which the statutory well exemption has neatly expanded. A number of urban growth areas are designated for which there is inadequate water supply, leading to building moratoria and general frustration on the part of planning authorities. [FN217] In some areas, exempt wells continue to supply ***1131** water for growth, notwithstanding conflicts with municipal water supply and public health objectives. [FN218]

As described in Part I above, local authorities have routinely approved proposals for residential subdivisions, for which water supply is based on the use of multiple exempt wells. These subdivisions can be located either inside or outside of urban growth boundaries. The Department of Health is responsible for approving public water supply plans for these projects based upon their design and public health specifications. [FN219] If, however, the local building authorities issue a certification of water adequacy for the project, the Department of Health makes no further inquiry regarding the validity of water rights for the project. [FN220] Because the Department of Ecology has no duties under the GMA and lacks permitting authority for exempt wells, [FN221] that agency is "out of the loop" with respect to subdivision water supply proposals.

It was this problem in particular--the fact that the Departments of Ecology and Health were both out of the loop with respect to water for development projects--that caused the departments to seek an interpretation of the statutory exemption from the Attorney General. Thus, the Attorney General's opinion not only will affect the administration of the Water Code, but will influence growth planning and public water supply activities. Not surprisingly, local governments and developers are concerned about the constraints on growth caused by the Attorney General's interpretation of the statute. [FN222]

4. Responses to the Attorney General's Opinion

Subsequent to the issuance of the Attorney General's opinion, the Departments of Ecology and Health formulated comments based on implications of the opinion. [FN223] The Building Industry Association, Drilling and Ground Water Association, and Association of Realtors issued a memorandum encouraging attorneys for local governments to ignore the implications of the opinion. [FN224] In addition, the Attorney General's opinion ***1132** generated dissent from a delegation of legislators who wrote a letter to the Attorney General critical of her opinion. [FN225]

a. Departments of Ecology and Health Comments on the Implications of the Attorney General's Opinion

Gregg Gruenfelder of the Department of Health and Keith Phillips from the Department of Ecology stated in a letter to an attorney representing the Chelan-Douglas Health District that the agencies intended to use the Attorney General's opinion as a guide to resolving development issues based upon the domestic well exemption. They explained:

> [They] have no plans to take unilateral action to enforce against any existing nonexpanding developments for lack of adequate water rights for the water currently being used if that use is in conflict with the interpretation of the AGO. If existing developments come to [their] attention in the normal course of business, [they] will inform the water system owner of the legal interpretation, and will . . . assist in finding a solution on a case by case basis. . . .
>
> For developments that are . . . in the "pipeline" (with pending application), [they] have formed a working group . . . to develop an approach that [they] can collectively implement. The developments that are in the "pipeline" are those that have received some form of preliminary approval from the local government prior to the issuance of the AGO.

The Department of Health will require evidence of a water right permit when application is made for review and approval of a submittal or submittals that are all part of the same project when the total water use will exceed 5,000 gallons per day.

The Department of Ecology will consider whether a development is all or part of a project requiring total water use exceeding 5,000 gallons per day. Ecology's review will include analyzing any documents received by local governments as part of the local governments SEPA process for application for plat approval.

If the development is a "project" a water permit will be required prior to construction of the wells if the total amount to be withdrawn exceeds 5,000 gallons per day. . . . [They considered] "Project" to include the development described in the application for the plat approval, which the local government will be reviewing to determine whether there is an adequate potable water supply. . . . [FN226]

b. Building Industry Association, Drilling and Ground Water Association, and Association of Realtors Memorandum

If anyone's ox has been gored by the Attorney General's opinion, the Building Industries, Well Drillers, and Realtors believe theirs has. These commercial interest groups believe that their interests are harmed when multiple lot developments are required to comply with the Water Code's permit requirements. [FN227] The groups issued a joint memorandum urging attorneys representing counties and health districts to decline to follow the ***1133** Attorney General's opinion. The recommendation is based upon an interpretation of the exempt well statute that places multiple lot developments within the exemption. [FN228] Additionally, the memorandum argued the following: 1) exempt wells are very safe and highly regulated, and they use a minuscule fraction of the water used in the state; and 2) the drilling of exempt wells is actually decreasing. [FN229]

c. Letter to Attorney General from a Group of Legislators Concerning Her Opinion

A group of Washington legislators took exception to the Attorney General's opinion on exempt wells and sent a letter informing her of their interpretation of the intent of the exemption statute. [FN230] This interpretation repeated several of the commercial interest group arguments cited above, but added that the issuance of the opinion "resulted in a de facto Building Moratorium in many rural areas of [Washington] state." [FN231] The members added that the domestic well exemption serves the legislative intent to relieve citizens of the burden of the impossibility of obtaining water rights. [FN232]

The approach outlined by Gruenfelder and Phillips will enable the Department of Ecology to consider water resource management, public health, and instream flows when confronted with developments based upon use of the domestic well exemption. Water resource management will be considered because water is to be allocated for development only if the Department of Ecology finds that the four tests of the Water Code are met (water availability, beneficial use, nonimpairment, and public interest). Public health will be protected because the Departments of Health and Ecology can consider water quality issues such as nitrification, seawater intrusion, and pesticides in groundwater when making water allocation decisions. Instream flows will also be protected because the Department of Ecology will determine the extent of hydraulic conductivity between ground and surface water before real estate developments are allowed permits for withdrawal of public groundwater.

***1134** V. Recommendations

Because of the increased dependence on exempt wells in Washington, the legislature and Departments of Ecology and Health should consider the following measures to mitigate the cumulative effects of exempt wells on resource management, public health, and instream flows. The Department of Ecology should be given direct authority to close groundwater basins to future exempt well construction in order to protect instream flows. To date, the Department of Ecology has restricted the construction of exempt wells only through the use of well drilling regulations. [FN233] As discussed above in Part III, withdrawal of groundwater from aquifers that are in hydraulic continuity with surface flows is equivalent to a direct withdrawal of water from those streams. In their recent work on stream and aquifer interactions, Professors Glennon and Maddock recognize this problem and recommend that:

most importantly, the states should restrict or ban domestic wells drilled near rivers or streams, unless the well would otherwise qualify for a permit under the state's water law rules. It is not sound policy to

address the problem of large capacity groundwater wells interfering with surface water flow and at the same time exempt small capacity wells which, cumulatively, may have an equally dramatic effect. The exemption of small domestic wells is a loophole of significant proportion that the states need to eliminate. [FN234]

The legislature should recognize the scientific fact of stream and aquifer interactions and that withdrawal of groundwater by exempt wells in hydraulic continuity with surface waters will affect instream flows. The legislature should require the Department of Ecology to determine when instream flows will be impaired by exempt withdrawals under the Water Code and, when impairment is found, to close groundwater basins to exempt withdrawals.

Public health issues relative to water quality must be considered by the Department of Ecology when deciding to close groundwater basins. The presence of seawater, nitrates, and pesticides in groundwater have a direct effect upon public health. [FN235] If groundwater basins contain these contaminants, local health departments should be required to report those conditions to the Department of Health. The Department of Health, in turn, should then investigate the extent of the contamination and coordinate with the Department of Ecology and local health departments to close contaminated groundwater basins to exempt withdrawals.

***1135** Currently, exempt wells are ignored when the Department of Ecology conducts groundwater assessments, largely because the exact number and extent of the withdrawals by exempt users are unknown. As discussed in Part II, the cumulative effect of the multitude of exempt withdrawals is significant. When the Department of Ecology conducts basin assessments to determine base flows for streams and water availability for new appropriations, the legislature should require the Department of Ecology to consider and quantify the water consumed by exempt withdrawals. In addition, the legislature should direct the Department of Ecology to include within the well drilling regulations of the Washington Administrative Code a requirement that all domestic wells be equipped with totalizing water meters. [FN236] This provision would enable the Department of Ecology to accurately determine water quantities withdrawn and would aid the agency in conducting basin assessments and water budgets.

Washington's exempt well statute contains a provision authorizing the Department of Ecology to require exempt users to report quantities of water withdrawn under the exemption. [FN237] This authority is unexercised by the Department of Ecology. Because reliance on exempt wells most likely will increase, not only should the Department of Ecology immediately begin collecting data on the numbers of exempt wells in the state, but it should require those users to install water meters and report their annual usage to the Department of Ecology. The legislature should direct the Department of Ecology to require reports of all exempt withdrawals.

The legislature should reduce the quantity of the statutory exemption from 5000 gallons per day for residential uses to an amount consistent with reasonable residential use. As described in Part II, the Department of Health has determined the minimum production capability requirement for public water supply systems to be 800 gallons per day west of the Cascades and 1500 gallons per day east of the Cascades. [FN238] At a minimum, the exempt well statute should be amended by the legislature to adopt these quantities for residential purposes. If water is necessary for any other purpose or beyond those amounts, a permit must be obtained. Finally, the legislature should allocate sufficient funds to the Departments of Ecology and Health to effect these recommendations.

VI. Conclusion

The cumulative impact of Washington's exempt wells has a major adverse effect on water resource management in the state. What was intended by the legislature in 1945 as a means for households far from public water supplies to obtain access to domestic water supply, has now become a major loophole in the law facilitating rampant development of residential subdivisions in or near urban growth areas. Thousands of new wells are being added yearly to the state's unquantified multitude of existing exempt wells, cumulatively withdrawing unquantified hundreds of ***1136** thousands of acre-feet of water annually from groundwater aquifers. The effects on surface water flows caused by these wells include impairment to both senior water users and the ecological integrity of streams.

Exempt wells also threaten public health because they rely on shallow aquifers that are vulnerable to nitrification, seawater intrusion, and pesticide and herbicide contamination. Public health officials recognize that exempt wells are generally poorly maintained; examples of mismanagement are rife. Although there is substantial confusion among state

and local government agencies over the interpretation of the exempt well statute, the recent Attorney General's opinion clarified the exemption and has appropriately limited the extent of its application. [FN239] Substantial challenges exist in managing water resources in Washington; managing the cumulative effect of exempt wells is one of the most significant of those challenges.

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[FN1]. Wash. Rev. Code § 90.44.050 (1998).

[FN2]. Id.

[FN3]. See Washington State Interagency Ground Water Comm., Ground Water in Washington State, Pub. No. WQ-96-07 (1997) [hereinafter Groundwater in Washington]; National Ground Water Association, U.S. Water Wells in Place by End Use (1996); and Washington State Department of Ecology, Number of Exempt Wells by County and Year (1996) [hereinafter Exempt Wells by County and Year].

[FN4]. See Washington Dep't of Health, Nitrates in Drinking Water: Position Paper (1997) [hereinafter Nitrates in Drinking Water].

[FN5]. See N.P. Dion & S.S. Sumioka, Washington Dep't of Ecology, Seawater Intrusion Into Coastal Aquifers in Washington, 1978 (1984) [hereinafter Seawater Intrusion].

[FN6]. See Sarah J. Ryker & Joseph L. Jones, U.S. Geological Survey, Open File Rep. No. 95-445, Nitrate Concentrations in Groundwater of the Central Columbia Plateau (1995); Sarah J. Ryker & Alex K. Williamson, U.S. Geological Survey Fact Sheet No. 205-96, Pesticides in Public Supply Wells of the Central Columbia Plateau (1996); A.J. Tesoriero & Frank D. Voss, Predicting the Probability of Elevated Nitrate Concentrations in the Puget Sound Basin: Implications for Aquifer Susceptibility and Vulnerability, 35 Groundwater 1029 (1997); Alex K. Williamson et al., U.S. Geological Survey, Circular No. 1144, Water Quality in the Central Columbia Plateau, Washington and Idaho 1992- 95 (1998) [hereinafter Central Columbia Plateau].

[FN7]. See King County Dep't of Health, King County Exempt Well Creation Information (1996) (stating that equipment and maintenance upkeep on individual wells can become too expensive for the operator).

[FN8]. Letter from Tom Fitzsimmons, Director, Washington Department of Ecology, and Bruce Miyahara, Secretary, Washington Department of Health, to Christine O. Gregoire, Washington Attorney General (Mar. 10, 1997) (on file with author).

[FN9]. Id.

[FN10]. See Thurston County, Washington Public Health & Social Serv. Dep't, Evaluation of Water System Proposals in Thurston County, Exempt vs. Non-Exempt Water Supplies, 1990 Through August 1996 (1996) (showing 1203 proposed lots using exempt wells).

[FN11]. Because no court cases define the exemption and because of confusion surrounding the applicabilityof the exempt well statute, the Attorney General recently issued an opinion to guide agency action. 6 Op. Att'y Gen. 1 (1997).

[FN12]. Wash. Rev. Code § 90.44.050 (1998).

[FN13]. Exempt wells are not unique to Washington. Most western states have some form of statutory exemption from permitting requirements for domestic uses of water. Most of those states set limits on the extent of the exemption by restricting quantities of water that can be withdrawn and uses to which the exempt withdrawal can be put. Washington's exempt well statute is not remarkable as compared to other states in this regard. What is remarkable is that more

exempt wells are being constructed in Washington each year than in any other western state, and that outside of the state of California, Washington has the highest number of exempt wells in the west. Ariz. Rev. Stat. Ann. § 45-454(A) (West 1994); Cal. Water Code § 1228 (West 1998); Idaho Code § 42-111 (1994 & Supp. 1997); Mont. Code Ann. § 85-2-306 (1997); Nev. Rev. Stat. § 534.180 (1997); Or. Rev. Stat. § 537.545(1) (1997); Utah Code Ann. § 73-3-5.6(1) (1998); Wyo. Stat. Ann. § 42-3-919 (Michie 1997).

[FN14]. The Washington statute states the following:
The rights to appropriate surface waters of the state and the rights acquired by the appropriation and use of surface waters shall not be affected or impaired by any of the provisions of this supplementary chapter and, to the extent any underground water is part of or tributary to the source of any surface water stream or lake, or that the withdrawal of groundwater may affect the flow of any spring, water course, lake, or other body of surface water, the right of an appropriator and owner of surface water shall be superior to any subsequent right hereby authorized to be acquired in or to groundwater.
Wash. Rev. Code § 90.44.030 (1998).

[FN15]. Id. § 90.44.040 (1998).

[FN16]. "Subject to existing rights all waters within the state belong to the public, and any right thereto, or use thereof, shall be hereafter acquired only by appropriation for a beneficial use and in the manner provided and not otherwise..." Id. § 90.03.010 (1998).

[FN17]. Id. § 90.44.050.

[FN18]. Id. § 90.44.060.

[FN19]. Id. § 90.03.260.

[FN20]. Id. § 90.03.280.

[FN21]. Id. § 90.03.290.

[FN22]. See id. § 90.44.070 (prohibiting groundwater mining).

[FN23]. Id. § 90.44.050.

[FN24]. 6 Op. Att'y Gen. 6 (1997).

[FN25]. Id.

[FN26]. Wash. Rev. Code § 90.44.050 (1998).

[FN27]. Id. § 90.44.030.

[FN28]. Id. § 90.44.110.

[FN29]. Id. § 90.44.130.

[FN30]. Id. § 90.44.050.

[FN31]. Id.

[FN32]. Id. A practical method of requiring such information is to require the installation of a totalizing water meter and regular reporting of quantities of water withdrawn.

[FN33]. Id.

[FN34]. Id. § § 90.44.050, 90.44.090. A declaration is a statement that defines the extent of the water used prior to the legislative enactment of regulations proscribing the use of water without first obtaining a permit. If the Department of Ecology sustains the declaration, it has the effect of a permit issued by the agency.

[FN35]. Id. § 90.44.050 (emphasis added).

[FN36]. Id.

[FN37]. Id.

[FN38]. Id. § 90.44.060.

[FN39]. Id. § § 90.03.250-90.03.340.

[FN40]. Id. § 90.03.330. A water right certificate is issued by the Department of Ecology after the applicant has complied with all the terms of the permit. It is an indication by the Department of Ecology that the right has been perfected.

[FN41]. The exempt well statute allows the Department of Ecology to "require the person or agency making any such small withdrawal to furnish information as to the means for and the quantity of that withdrawal." Id. § 90.44.050. However, other than requiring well construction notification under Wash. Admin. Code § 173-160-055 (1997), the Department of Ecology does not require compliance with that provision.

[FN42]. Groundwater in Washington, supra note 3, at 2.

[FN43]. National Ground Water Ass'n, Ground Water

Industry Market Back- grounder 1 (1996).

[FN44]. See Wash. Admin. Code § 173-160-055 (1997) (discussing start cards, including notification of well location and purpose). See also Washington Dep't of Ecology, Form ECY 040-21 (Rev. 9/96).

[FN45]. Exempt Wells by County and Year, supra note 3, at 1.

[FN46]. Wash. Rev. Code § 90.44.050 (1998).

[FN47]. Group B public water systems are governed by regulations of the Washington Department of Health. Wash. Admin. Code § 246-291 (1997). These regulations allow the use of an exempt well as a source of water supply as long as no permit is required from the Department of Ecology. Id. § 246-291-100. Washington Dep't of Health, Sizing Guidelines for Public Water Supplies (1993) [[[hereinafter Sizing Guidelines]. The Department of Health requires a residential capacity of 800 gallons per day per residential unit in western Washington and 1500 gallons per day in eastern Washington. Id. at 7. Based on the statutory limit of 5000 gallons per day from an exempt well, the Department of Health regulations allow six residential units per exempt well in western Washington and three residential units per exempt well in eastern Washington.

[FN48]. 6 Op. Att'y Gen. 7 (1997).

[FN49]. Wash. Rev. Code § 90.44.050 (1998).

[FN50]. Washington Dep't of Health, Water Demand Requirements, 7-1 to 7-2 (Draft 1996).

[FN51]. Id. at 7-4.

[FN52]. Id. at 7-2, 7-4.

[FN53]. Washington Dep't of Health, Background and Development of Rainfall vs. Residential Water Demand Relationship, at G6-G7 (Draft 1996).

[FN54]. Sizing Guidelines, supra note 47, at 7.

[FN55]. Id.

[FN56]. Exempt Wells by County and Year, supra note 3, at 1.

[FN57]. An acre-foot is the amount of water necessary to cover one acre (43,560 square feet) with one foot of water. An acre-foot is equivalent to 325,851 gallons.

[FN58]. Exempt Wells By County and Year, supra note 3, at 1.

[FN59]. Each well is limited to a withdrawal of no more than 5000 gallons per day, or a total of 1.8 million gallons annually.

[FN60]. See Wash. Rev. Code § § 43.21A.064, 90.54.030 (1998) (naming Dep't of Ecology responsible for supervising Washington public waters; requiring the Dep't of Ecology to be informed about all phases of water and related resources of Washington).

[FN61]. The state is divided into 62 administrative regions known as water resource inventory areas (WRIAs). Wash. Admin. Code § 173-500-040 (1997).

[FN62]. Wash. Rev. Code § § 90.54.010-90.54.920 (1998).

[FN63]. Wash. Admin. Code § 173-500-010 (1997).

[FN64]. As sufficient data are obtained for each WRIA to enable the Department of Ecology to formulate a water resource planning and management program for each area, the agency must establish regulations for the beneficial use of public waters. To date, the Department of Ecology has established regulations for only a limited number of the existing WRIAs. Wash. Admin. Code § § 173-500-040 to 173-500-060 (1997).

[FN65]. The difficulty in achieving a balanced water budget is exacerbated by a lack of data on quantities of water currently withdrawn from the water system. This not only includes a lack of data on exempt wells, but the legislature has contributed to the confusion by continuing to reopen the claims registry, which allowed an additional 165,000 unquantified claims to water use throughout the state. Without complete data on all current water uses, it is impossible for the Department of Ecology to determine how much water is actually being used.

[FN66]. 6 Op. Att'y Gen. 1 (1997).

[FN67]. Id.

[FN68]. Robert Jerome Glennon & Thomas Maddock, III, The Concept of Capture: The Hydrology and Law of Stream/Aquifer Interactions, 43 Rocky Mtn. Min. L. Inst. 22-1, 22-46, 22-47 (1997).

[FN69]. "Hydraulic continuity refers to the hydraulic connection and dynamic interactions between groundwater and surface water. An aquifer is in hydraulic continuity with lakes, streams, rivers, or other surface-water bodies whenever it is discharging to, or being recharged by, surface water." Declaration of Linton Wildrick, Appeals From Water Rights Decisions of the Wash. Dep't of Ecology, Pollution Control Hearing Bd. (Wash. June 13, 1996).

Groundwater discharges into a water body, such as a stream, where the water table reaches the level of the surface, or where it is higher than the level of the stream. Groundwater is recharged by a water body, such as a stream, whenever the water body is above the water table and the bed of the stream is permeable. These dynamic interactions between ground and surface waters are governed by a hydrogeologic principle, known as Darcy's Law, which states that when an aquifer is hydraulically connected to a stream, the flow into or out of the stream at any given point is proportional to the difference between the stream stage elevation and the water table elevation. R. Allen Freeze & John A. Cherry, Groundwater 15-18 (1979); Glennon & Maddock, supra note 68, at 22-5 to 22-13.

Prior to the development of groundwater wells, a groundwater system exists in a state of equilibrium. Glennon & Maddock, supra note 68, at 22-10. Water discharge from an aquifer to gaining water bodies, evapotranspiration, and adjacent aquifers roughly equals the recharge into the aquifer from adjacent aquifers and losing water bodies. Id. Groundwater pumping imposes new relationships between surface water bodies and the groundwater aquifers. When groundwater is pumped from a well, it must be replaced from the surrounding groundwater supply. A well can affect the flow of a stream through a concept called "capture," by intercepting groundwater which otherwise would percolate into the stream or by lowering the water table to a point where the groundwater no longer recharges the stream. Peter N. Davis, Wells and Streams: Relationships at Law, 37 Mo. L. Rev. 189, 197 (1972). For an explanation of the effect of those relationships, we turn again to Darcy's Law.

The relationships derived from Darcy's Law show that the effects of ground- water withdrawals on a nearby stream arise gradually and that if the well is some distance from the stream many years elapse before the effects of the withdrawal are fully reflected in the stream-flows. The relationships show, however, that ultimately the annual stream-flow is reduced by an amount equal to the annual ground-water appropriation. The relationships also show that once a ground-water appropriation is made, and continued for a period of time, the effects on surface water flows are not terminated at the time that the ground-water appropriation is terminated but continue, gradually diminishing, for many years after the ground-water appropriation is ended. Albuquerque v. Reynolds, 379 P.2d 73, 81 (N.M. 1963).

[FN70]. Jamestown S'Klallam Tribe, The DQ Plan: The Dungeness-Quilcene Water Resources Management Plan 3.19 (June 30, 1996) [hereinafter DQ Plan].

[FN71]. The federal Clean Water Act requires each state to identify those waters within its boundaries for which the pollution limits of the Clean Water Act are not stringent enough to implement any water quality standard applicable to such waters. The state is required to establish a priority ranking of those polluted waters within its boundaries. This ranking is referred to as the 303(d) list. 33 U.S.C. § § 1251-1376 (1994).

[FN72]. Telephone Interview with David Christensen, Water Resource Specialist, Jefferson County Health and Human Services (Aug. 6, 1997).

[FN73]. DQ Plan, supra note 70, at 3.19.

[FN74]. Washington Dep't of Ecology, Open-File Technical Rep. 95-15, Initial Watershed Assessment, Water Resource Inventory Area 55, Little Spokane River Watershed 19 (May 1995) [hereinafter Little Spokane River Watershed]. Instream flows are established to protect fisheries, wildlife, recreation, and other public values associated with the state's perennial rivers. Wash. Rev. Code § 90.54.020(3)(a) (1998).

[FN75]. The Department of Ecology's draft initial watershed assessment for water resource inventory area 55 shows the stream flow of the Little Spokane River at Dartford, Washington, and tabulates the number of days flows are below instream flow requirements. Little Spokane River Watershed, supra note 74, at 19.

[FN76]. Id.

[FN77]. Exempt Wells by County and Year, supra note 3, at 1.

[FN78]. Little Spokane River Watershed, supra note 74, at 20.

[FN79]. Washington Dep't of Ecology, Open-File

Technical Rep. 95-08, Draft Initial Watershed Assessment, Water Resource Inventory Area 10, Puyallup-White Watershed 14 (1995); Washington Dep't of Ecology, Open-File Rep. 95-09, Draft Initial Watershed Assessment, Water Resource Inventory Area 12, Chambers-Clover Creek Watershed 16 (1995).

[FN80]. Exempt Wells by County and Year, supra note 3, at 1.

[FN81]. See Washington Dep't of Ecology, Open-File Technical Rep. 95-06, Draft Initial Watershed Assessment, Water Resources Inventory Area 7, Snohomish River Watershed 36-38 (1995); Washington Dep't of Ecology, Open-File Technical Rep. 95-07, Draft Initial Watershed Assessment, Water Resources Inventory Area 8, Cedar-Sammamish Watershed 16-17 (1995); Washington Dep't of Ecology, Open- File Rep. 95-01, Draft Initial Watershed Assessment, Water Resource Inventory Area 9, Green Duwamish Watershed 7-8 (1995); Washington Dep't of Ecology, Open- File Technical Rep. 95-10, Draft Initial Watershed Assessment, Water Resources Inventory Area 13, Deschutes River Watershed 31-32 (1995).

[FN82]. Exempt Wells by County and Year, supra note 3, at 1.

[FN83]. The following water resource inventory areas (WRIAs) have been fully or partially closed to new consumptive appropriations: WRIA 1, Nooksack, Wash. Admin. Code § 173-501-040 (1997); WRIA 7, Snohomish, Id. § § 173-507- 020 to 173-507-040; WRIA 8, Cedar-Sammamish, Id. § § 173-508-030 to 173-508-060; WRIA 9, Green-Duwamish, Id. § § 173-509-030 to 173-509-040; WRIA 10, Puyallup River Basin, Id. § § 173-510-030 to 173-510-060; WRIA 11, Nisqually River Basin, Id. § § 173-511-030 to 173-511-060; WRIA 12, Chambers-Clovers, Id. § § 173-512- 030 to 173-512-040; WRIA 13, Deschutes River Basin, Id. § § 173-513-030 to 173- 513-060; WRIA 14, Kennedy-Goldsborough, Id. § § 173-514-030 to 173-514-050; WRIA 15, Kitsap, Id. § § 173-515-030 to 173-515-060; WRIA 22, 23, Chehalis River Basin, Id. § § 173-522-020 to 173-522-050; WRIA 31 and portions of 32, 33, 36 & 37, John Day-McNeary Pools Reach of Columbia River, Id. § § 173-531A-030 to 173-531A-050; WRIA 32, Walla Walla River Basin, Id. § § 173-532-030 to 173-532-070; WRIA 45, Wenatchee River Basin, Id. § § 173-545-030 to 173-545-060; WRIA 48, Methow River Basin, Id. § § 173-548-020 to 173-548-060; WRIA 49, Okanogan, Id. § § 173-549-020 to 173-549-070; WRIA 55, Little Spokane River Basin, § § 173-555- 030 to 173-555-060; WRIA 59, Colville River Basin, Id. § § 173-559-030 to 173- 559-060.

[FN84]. See Glennon & Maddock, supra note 68, at 22-11.

[FN85]. Counties with high numbers of exempt wells also are predicted to have substantial population increases. For example, Spokane County, in which 2153 exempt wells were constructed between 1993 and 1996, is projected to have a 27.4% increase in population between 1995 and 2015; Grant County, which also reports high numbers of exempt wells, is projected to experience a 39.2ncrease in population between 1995 and 2015; Clark County, with 1355 exempt wells constructed in the 1993 through 1996 reporting period, is projected to have a 37.8% population increase in the 1995 to 2015 period; Thurston and Pierce Counties, with 1623 and 1420 exempt wells constructed respectively, is projected to experience 56.2% and 30.8% increases in respective populations in the reporting period. See Exempt Wells By County and Year, supra note 3; Forecasting Div., Washington Office of Fin. Management, 1995 Growth Management Act County Population Projection Assumptions (1996).

[FN86]. Tesoriero & Voss, supra note 6; Ryker & Jones, supra note 6.

[FN87]. Kirk A. Sinclair & Robert S. Garrigues, Wash. Dep't of Ecology, Water Supply Bull. No. 59,Geology, Water Resources, and Seawater Intrusion Assessment of Marrowstone Island Jefferson County, Washington (1994); Seawater Intrusion, supra note 5, at 2.

[FN88]. See Tesoriero & Voss, supra note 6, at 1033.

[FN89]. See Seawater Intrusion, supra note 5, at 2.

[FN90]. See Central Columbia Plateau, supra note 6, at 2.

[FN91]. Tesoriero & Voss, supra note 6, at 1029.

[FN92]. Ryker & Jones, supra note 6, at 1; Central Columbia Plateau, supra note 6, at 7.

[FN93]. Central Columbia Plateau, supra note 6, at 7.

[FN94]. Tesoriero & Voss, supra note 6, at 1033.

[FN95]. Id.

[FN96]. Methemoglobinemia is a condition that renders the hemoglobin in an individual's red blood cells less capable of transporting oxygen from the lungs to the rest of the body. The result is an anemic condition where the skin tone of affected individuals turns a dusky or blue hue. In addition to causing gastrointestinal symptoms, the condition can be fatal if left untreated.

Based upon national data, even short-term consumption of water with nitrate levels above the maximum contaminant level can cause methemoglobinemia in infants less than one year of age. At greatest risk are infants younger than three months. As the infant matures, its blood changes over from fetal hemoglobin to adult hemoglobin. As the infant reaches six months of age, most of the hemoglobin is adult hemoglobin. Susceptibility decreases then and the symptoms disappear. Any damage caused by anemia in the early months of life may not be detectable for several years.

Labored breathing, low blood pressure, below average weight gain, failure to meet developmental milestones, and respiratory exhaustion are additional findings in young infants. Methemoglobinemia is difficult to diagnose and is easily mistaken for other "normal" early infant illnesses involving fatigue, diarrhea, lassitude, or failure to thrive. Often the illness may be misdiagnosed unless death occurs and the condition is detected during autopsy, if a blood sample is taken, or the dusky or bluish skin color is observed by a parent or health care provider aware of the potential for methemoglobinemia caused by drinking water.
Nitrates in Drinking Water, supra note 4, at 2.

[FN97]. Ryker & Jones, supra note 6, at 3.

[FN98]. Nitrates in Drinking Water, supra note 4, at 1.

[FN99]. Tesoriero & Voss, supra note 6, at 1029.

[FN100]. Nitrates in Drinking Water, supra note 4, at 1.

[FN101]. Ryker & Jones, supra note 6, at 1; M.L. Erwin & Anthony J. Tesoriero, Predicting Ground-Water Vulnerability to Nitrate in the Puget Sound Basin 1 (1997).

[FN102]. Ryker & Jones, supra note 6, at 1.

[FN103]. Id. The U.S. Geological Survey studied nitrate concentrations in the groundwater of the Central Columbia Plateau.

[FN104]. As a part of the National Water-Quality Assessment Program, the U.S. Geological Survey predicted groundwater vulnerability to nitrate in the Puget Sound.

[FN105]. Erwin & Tesoriero, supra note 101, at 1; Nitrates in Drinking Water, supra note 4, at 1 (stating that portions of Adams, Benton, Clark, Franklin, Grant, King, Thurston, and Watcom Counties have nitrate concentrations in groundwater that exceed 10 mg/l).

[FN106]. Ryker & Jones supra note 6, at 3; Tesoriero & Voss, supra note 6, at 1035. Where irrigation has recharged groundwater, such as in the Quincy- Pasco subunit of the Central Columbia Plateau, nitrates move primarily into shallow groundwater. See Ryker & Jones, supra note 6, at 3.

[FN107]. See Tesoriero & Voss, supra note 6, at 1034-35.

[FN108]. Nitrates in Drinking Water, supra note 4, at 1.

[FN109]. The U.S. Geological Survey reported that "26% of wells less than 300 feet deep have nitrate concentrations exceeding the EPA MCL ... [o]nly 8% of wells deeper than 300 feet have nitrate concentrations exceeding the MCL." Ryker & Jones, supra note 6, at 3.

[FN110]. See Tesoriero & Voss, supra note 6, at 1035 (stating that "shallow wells with coarse-grained glacial surficial deposits are the most susceptible to elevated nitrate concentration both because they tend to receive water with short flow paths, and because these parts of the aquifer system are more likely to have toxic water").

The Washington Department of Health recommends that health officials should consider requiring private water systems that exceed 5 mg/l of nitrate to be connected to existing or future public water systems, and recognizes that state guidelines already recommend that water treatment systems be installed if nitrate concentrations exceed the MCL of 10 mg/l. Nitrates in Drinking Water, supra note 4, at 4. The Washington Department of Health states as follows:

Owners or developers of private domestic water systems with nitrate levels at or above 10 mg/l should be required to treat water or provide alternate drinking water supplies if they serve vulnerable persons.... These owners or developers also should be required to inform future owners or consumers of the potential hazards associated with elevated nitrate

concentrations.... Id.

[FN111]. Sinclair & Garrigues, supra note 87, at viii.

[FN112]. Id. at 50; Seawater Intrusion, supra note 5, at 7.

[FN113]. Seawater Intrusion, supra note 5, at 7. When groundwater is pumped from coastal aquifers, fresh water that normally would discharge to the sea is intercepted, thereby disrupting the equilibrium that existed prior to the start of pumping. With reduced fresh water discharge, the zone of diffusion migrates inland until equilibrium is re-established. This incremental shifting of the interface, in response to groundwater development, is called passive seawater intrusion. With passive intrusion, the seaward-sloping hydraulic gradient is maintained, despite the reduction in natural aquifer discharge. Passive intrusion is a common consequence of water-supply development in coastal aquifers, and with time, can cause wide-spread degradation of water quality.

During advanced stages of groundwater development, groundwater quality may be degraded by both passive and active seawater intrusion. Active intrusion occurs when the volume of groundwater withdrawn from an aquifer is sufficient to cause a reversal of seaward sloping hydraulic gradient. Fresh water on the seaward side of pumping wells flows from the zone of diffusion toward the area of groundwater withdrawal. Active intrusion occurs much more rapidly than passive intrusion and may have more severe consequences for the well or wells that caused it. Sinclair & Garrigues, supra note 87, at 50.

[FN114]. Seawater Intrusion, supra note 5, at 7.

[FN115]. The U.S. Environmental Protection Agency considers chloride a secondary contaminant at concentrations greater than 250 mg/l. Id. at 9.

[FN116]. Id. at 2.

[FN117]. Id.

[FN118]. Id. at 12.

[FN119]. Id.

[FN120]. U.S. Geological Surv. Water Resources Investigations, No. 83- 4019, Occurrence, Quality and Use of Groundwater in Orcas, San Juan, Lopez, and Shaw Islands, San Juan County, Washington (1983).

[FN121]. Island County Health Department, Department of Health, State of Washington, Salt Water Intrusion Policy for Public Water Systems 1 (1989).

[FN122]. Sinclair & Garrigues, supra note 87, at 1.

[FN123]. Id. at 69.

[FN124]. Lonna M. Roberts & Joseph L. Jones, U.S. Geological Survey Fact Sheet, No.171-96, Pesticides Found in Groundwater Below Orchards in the Quincy and Pasco Basins (1996) [hereinafter Roberts & Jones 171-96]; see also Lonna M. Roberts & Joseph L. Jones, U.S. Geological Survey, Fact Sheet No. 240- 95, Agricultural Pesticides Found in Groundwater of the Quincy and Pasco Basins (1996) (finding contamination in 69% of 49 samples) [hereinafter Roberts & Jones 240-95].

[FN125]. Roberts & Jones 171-96, supra note 124.

[FN126]. Id.

[FN127]. Ryker & Williamson, supra note 6.

[FN128]. Telephone Interview with Philip J. Brinker, Thurston County Public Health and Social Services Department (Aug. 12, 1997).

[FN129]. Letter from Philip J. Brinker, Thurston County Public Health and Social Services Department, to Al Jarshaw 1 (July 17, 1997) (on file with author).

[FN130]. Letter from Philip J. Brinker, Thurston County Public Health and Social Services Department, to Gill Hall 1 (July 18, 1997) (on file with author).

[FN131]. Letter from Philip J. Brinker, Thurston County Public Health and Social Services Department, to Jim Krieger 1 (Apr. 7, 1994) (on file with author).

[FN132]. Letter from Philip J. Brinker, Thurston County Health and Social Services Department, to Ronald J. Pollock 1 (Dec. 24, 1996) (on file with author).

[FN133]. Memorandum from Keith Higman, Environmental Health Specialist, Island County, to Joye Emmens, Environmental Health Director 2 (Dec. 19, 1996) (on file with author).

[FN134]. King County, Exempt Well Creation

Information 6 (1996) (unpublished manuscript, on file with author).

[FN135]. Id.

[FN136]. Id.

[FN137]. Letter from Cas Hancock, North Snohomish County WUCC, to Washington Department of Ecology and Washington Department of Health 1 (Jan. 22, 1996) (on file with author).

[FN138]. Letter from David Clark, Director, State of Washington, Department of Health, Division of Drinking Water, to Cas Hancock, North Snohomish County WUCC 1-2 (June 11, 1996) (on file with author).

[FN139]. Id.

[FN140]. Letter from Gary E. Hanson, Section Supervisor, Shorelands and Water Resources Program, State of Washington, Department of Ecology, to Cas Hancock, North Snohomish County WUCC 1 (June 6, 1996) (on file with author).

[FN141]. PCHB is an administrative appeals board that hears appeals from Ecology's decisions on permits and enforcement actions. Wash. Rev. Code § 43.21B (1998).

[FN142]. PCHB No. 91-139, at 3 (1992).

[FN143]. Id.

[FN144]. Id. at 8.

[FN145]. Id. at 9.

[FN146]. Id. at 9-10.

[FN147]. Green v. Department of Ecology, PCHB Nos. 91-139, 91-141, 91- 149, at 3 (1993).

[FN148]. Id. at 2; see also Wash. Rev. Code § 90.03.290 (1998).

[FN149]. Green, PCHB No. 91-139, at 3.

[FN150]. Green, PCHB Nos. 91-139, 91-141, 91-149, at 8-9 (1993).

[FN151]. Id. at 9.

[FN152]. PCHB Nos. 94-61, 94-77, 94-80 (1995).

[FN153]. Knight v. Ecology, PCHB No. 96-39, at 14 (1995).

[FN154]. Id.

[FN155]. Wash. Rev. Code § 90.44.050 (1998).

[FN156]. Effective July 27, 1997, the legislature amended the Water Code to allow consolidation of rights for exempt wells. Wash. Rev. Code § 90.44.105 (1998). The statute applies to the issuance of amendments to permits or certificates of groundwater rights where the holder of a valid right to withdraw water proposes to consolidate that right with an exempt well right. The statute sets forth several conditions to restrict any proposed consolidation, including the following: 1) the exempt well and the permitted well must tap the same aquifers; 2) the use of the exempt well must be discontinued upon approval of the consolidation by Ecology; 3) legally enforceable agreements must be entered to prohibit the construction of another exempt well to serve the area previously served by the exempt well that are binding upon subsequent owners of the land; 4) the exempt well must be properly decommissioned; and 5) other existing rights, including ground and surface water rights and minimum stream flows adopted by regulation must not be impaired. Id.

[FN157]. PCHB No. 96-36 (1996).

[FN158]. See Wash. Admin. Code § § 173-512-030, 173-512-050 (1997).

[FN159]. Schrum, PCHB No. 96-36, at 7.

[FN160]. Id. at 13-14.

[FN161]. Id. (emphasis added).

[FN162]. Wash. Rev. Code § § 90.03.010, 90.44.030 (1998).

[FN163]. Id. § 90.03.290.

[FN164]. Id. § 90.44.050.

[FN165]. Hutchins defined an inchoate right as "an incomplete right in good standing, that comes into being at the taking of the first step provided by law for acquisition of an appropriative right. It remains in good standing so long as the requirements of law are fulfilled." 1 Hutchins, Water Right Laws in the Nineteen Western States 337 (1971).

[FN166]. Wash. Rev. Code § 90.03.450 (1998).

[FN167]. Id.

[FN168]. Green v. Department of Ecology, PCHB No. 91-139 (1992).

[FN169]. Schrum, PCHB No. 96-36, at 1, 13-14.

[FN170]. Id.

[FN171]. Letter from Tom Fitzsimmons, Director, Washington Department of Ecology and Bruce Miyahara, Secretary, Washington Department of Health, to Christine Gregoire, Attorney General at 1-2 (Mar. 10, 1997) (on file with author).

[FN172]. Id.

[FN173]. Id.

[FN174]. 6 Op. Att'y Gen. 1 (1997).

[FN175]. For example, the number of lots proposed using exempt wells in Thurston County increased from 14 lots in 1992 to 714 lots in 1996. Thurston County, Exempt Well Briefing Information, at 1 (1996). The Bremerton-Kitsap County Health Department estimates that between 1990 and 1996, 3456 exempt well subdivision lots were created. Letter from Don Miles, Environmental Health Director, Bremerton-Kitsap County Health District to Joye Emmens, Environmental Health Director, Island County Health Department (Oct. 28, 1996) (on file with author).

[FN176]. For example, Thurston County subdivision applications for Prairie Green Subdivision proposed 459 lots to be served by 60 exempt wells, Lemon Hill Subdivision proposed 239 lots to be served by 40 exempt wells, and Lake Place Subdivision proposed 24 lots served by 24 exempt wells. Letter from Phil Brinker, Thurston County Public Health and Social Services Department to Robert Caldwell, Center for Environmental Law and Policy tbl. (June 16, 1997) (on file with author).

[FN177]. 6 Op. Att'y Gen. 5-6 (Wash. 1997).

[FN178]. Id. at 6-7.

[FN179]. Wash. Rev. Code § § 43.21C.010-43.21C.914 (1998).

[FN180]. 6 Op. Att'y Gen. 7 n.6 (1997).

[FN181]. Id. at 7.

[FN182]. Id.

[FN183]. Interties are interconnections between public water systems permitting exchange or delivery of water between those systems for other than emergency supply purposes, where such exchange or delivery is within established instantaneous and annual withdrawal rates specified in the public water systems' existing water right, and which result in better management of public water supply consistent with existing rights and obligations. Interties include interconnections between public water systems permitting exchange or delivery of water to serve as primary or secondary sources of supply, but do not include development of new sources of supply to meet future demand.

[FN184]. Wash. Rev. Code § 90.03.383(2)(a) (1998).

[FN185]. Id. § 70.119A.020(4).

[FN186]. 6 Op. Att'y. Gen. 8-9 (1997).

[FN187]. Id. at 9.

[FN188]. Id. at 8.

[FN189]. Letter from Tom Fitzsimmons to Christine Gregoire, supra note 171, at 1.

[FN190]. Id. at 1-2.

[FN191]. Id. at 2.

[FN192]. 6 Op. Att'y Gen. 10 (1997).

[FN193]. Id. at 11.

[FN194]. Id. at 12; see also Wash. Rev. Code § 90.44.080 (1998).

[FN195]. 6 Op. Att'y Gen. 12 (1997).

[FN196]. Id.; see also Wash. Rev. Code § 90.44.080 (1998).

[FN197]. Wash. Rev. Code § 90.44.090 (1998).

[FN198]. Id.

[FN199]. Id. § 90.44.100.

[FN200]. 6 Op. Att'y Gen. 13, n.12 (1997) (citing

1997 Wash. Laws ch. 316 § 1).

[FN201]. Id. at 10-12.

[FN202]. Id. at 13.

[FN203]. Id.

[FN204]. Wash. Rev. Code § § 90.44.050-.060, 90.03.250-.340 (1998); 6 Op. Att'y Gen. 4-7 (1997).

[FN205]. 6 Op. Att'y Gen. 8-10 (1997); see also Wash. Rev. Code § § 90.03.383, 90.44.100 (1998) (providing statutory procedures for interties and amendment of permits).

[FN206]. 6 Op. Att'y Gen. 10 (1997); see also Wash. Rev. Code § § 90.44.060, 90.03.290 (1998) (providing the statutory procedures and laws governing withdrawal and appropriation).

[FN207]. 6 Op. Att'y Gen. 13 (1997); see also Wash. Rev. Code § § 90.44.100, 90.03.380 (1998) (providing statutory procedures for amendment of water rights and transfers).

[FN208]. 6 Op. Att'y Gen. 10 (1997).

[FN209]. See Green v. Department of Ecology, PCHB Nos. 91-139, 91-141, 91-149, at 9 (1992); Schrum v. Department of Ecology, PCHB Nos. 96-36, at 13 (1996).

[FN210]. Everett Concrete Prods., Inc. v. Department of Labor & Industry, 109 Wash. 2d 819, 828 (1988) (citing Bellevue Fire Fighters, Local 1604 v. Bellevue, 100 Wash. 2d 748, 751 n.1 (1984)).

[FN211]. See Yakima County Planning Dep't, Yakima County Subdivision Administrator Findings and Preliminary Decision: Consideration of a Preliminary Application by Reed Pell for Three Contiguous Short Plats to Create a Total of Twelve Lots 1 (1997) (on file with author) (stating Planning Department's consideration of Dep't of Ecology's change in position due to Attorney General's opinion).

[FN212]. Wash. Rev. Code § 19.27.097 (1998); 17 Op. Att'y Gen. (Wash. 1992).

[FN213]. Wash. Rev. Code § § 36.70A.020, 36.70A.040 (1998)

[FN214]. Id.

[FN215]. Id. § 36.70A 030(15).

[FN216]. Id. § 19.27.097.

[FN217]. Letter from Members of Washington State Legislature to Christine Gregoire, Washington Attorney General (Mar. 4, 1998) (on file with author) [[[hereinafter Members' Letter].

[FN218]. Letter from Gary E. Hanson, Section Superintendent, Shorelands and Water Resources Program, to Cas Hancock (June 28, 1996).

[FN219]. Wash. Admin. Code § 246-291-001 (1997).

[FN220]. Wash. Rev. Code § 19.27.097 (1998); Wash. Admin. Code § § 246- 291-001 to 246-291-370 (1997).

[FN221]. Wash. Rev. Code § 90.44.050 (1998).

[FN222]. See Letter from Gregg Gruenfelder, Director, Division of Drinking Water, Department of Health and Keith Phillips, Program Manager Water Resources Program, Department of Ecology, to Charles Zimmerman (Apr. 22, 1998) (on file with author) [hereinafter Comment Letter]; Memorandum from Greg Overstreet, General Counsel, Building Industry Association of Washington, Mike Matson, Washington State Drilling and Ground Water Association, and John Woodring, Attorney at Law (Representing Washington Association of Realtors), to Attorneys Representing Counties and Health Districts (Mar. 23, 1998) (on file with author) [hereinafter Memorandum].

[FN223]. Comment Letter, supra note 222.

[FN224]. Memorandum, supra note 222.

[FN225]. Members' Letter, supra note 217.

[FN226]. Comment Letter, supra note 222, at 1-2.

[FN227]. 6 Op. Att'y Gen. 7 (1997).

[FN228]. Memorandum, supra note 222, at 15-21.

[FN229]. Id. at 6.

[FN230]. Members' Letter, supra note 217, at 2.

[FN231]. Id. at 1.

[FN232]. Id. At the request of the Attorney General,

the Solicitor General responded to the Members' Letter. The Solicitor noted that the legislators disagreed with the Attorney General's statement of legislative intent, but stated that legislative intent is determined contemporaneous with the passage of legislation and that later statements of legislators cannot construe the intent of an earlier legislature. The solicitor also pointed out primary flaws in both the commercial interests group's and the members' legal analysis. Finally, the Solicitor noted that the legislature possesses the authority (with enough votes) to amend the statutory exemption to conform with their interpretation. Letter from Narda Pierce, Solicitor General of Washington, to Members of Washington Legislature 1-3 (Apr. 1, 1998) (on file with author).

[FN233]. Wash. Rev. Code § 18.104.040(4)(g) (1998) (allowing the Department of Ecology to adopt rules to limit "well construction in areas identified by the department as requiring intensive control of withdrawals in the interest of sound management of the ground water resource"); Wash. Admin. Code § 173-160-040 (1997) (prohibiting construction of wells "for any purpose in subbasins closed in the Methow water resources regulation, including those exempt from permitting under [Wash. Rev. Code § 90.44.050 (1998)], unless written approval has been obtained from [the Department of Ecology] prior to beginning well construction").

[FN234]. Glennon & Maddock, supra note 68, at 22-55 to 22-56.

[FN235]. See supra Part III.C.

[FN236]. Wash. Admin. Code § 173-160 (1997).

[FN237]. Wash. Rev. Code § 90.44.050 (1998).

[FN238]. See Sizing Guidelines, supra note 47, at 7.

[FN239]. See supra Part IV.B.