CHEHALIS BASIN PARTNERSHIP

MUNICIPAL WATER SYSTEM

INCHOATE WATER RIGHTS

ANALYSIS PROJECT

September 25, 2006

This project was performed under Grant G0600329 from the Washington Department of Ecology to Grays Harbor County acting on behalf of the Chehalis Basin Partnership

The work was performed under contract to Grays Harbor County Department of Public Services

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I. INTRODUCTION AND PROJECT DESCRIPTION

This project has been conducted in response to the Chehalis Basin Partnership's (The Partnership) commitment to address municipal water supply issues as part of its Watershed Planning and Management Phase IV Implementation. Analysis of municipal water provider rights falls under Watershed Management Plan Action 3 of the Partnership's Detailed Implementation Plan. Action 3 states that the Partnership will, "address … municipal water rights by (1) estimating quantity of water represented by inchoate rights [held by Group A municipal water purveyors] and (2) clarifying how such rights can be reconciled with protecting instream flow needs and can be affected by water conservation programs." This objective is a required watershed plan element under state law.

Phase One of this project involved reviewing Water System Plans and Small Water System Programs submitted to the Washington State Department of Health by Group A public water systems[1] in the Chehalis Basin order to identify those rights that may be inchoate.

Phase Two consisted of identifying options to address how municipal water rights might be used to address instream flow needs.

[1] A Group A public water system is a system with fifteen or more residential service connections regardless of the number of people served; or a system serving an average of twenty-five or more people per day for sixty or more days within a calendar year, regardless of the number of service connections. Public water systems can be community or non-community systems. See WAC Chapter 246-290-020, Applicability, page 24ff.

II. PHASE ONE

Phase one consisted of a screening process to identify the largest Group A municipal water purveyors in the Basin and a more detailed examination of the situation of each major purveyor based on their Water System Plan and water rights data. The objective of this examination was to determine which municipal water rights might be considered inchoate.

This study applied the term “inchoate water rights” to mean those rights which are surplus to water demand as identified by the municipal water systems themselves through the water system planning process required by the Washington State Department of Health (DOH) under WAC 246-290[2].

The screening was performed using a data base of the Group A systems in the Chehalis Basin provided by DOH. Of the 180 Group A public water systems in the DOH data base, the project selected 108 systems for further examination. The screening process used five fields in the DOH data base to identify larger systems. The five fields and the thresholds used to identify the 108 larger systems are as follows:

Capacity: The number of gallons per minute that the system (or a particular source) is able to deliver. (selected systems with a value of >99)

Full Time Resident Population: The number of residents that are served by the system for more than 180 days per year. (selected systems with a value of >99)

Maximum Total Population: This is a value that reflects the population count that DOH uses for coliform sampling considering residents and others. (selected systems with a value of >99)

Total Connections: The current number of active connections – a connection remains in "active" status until it is physically removed from the system. (selected systems with a value of >99)

DOH Approved Service Connections: The number of connections that DOH has approved for the system. (selected systems with a value of >99)

Systems with 1000 or more connections must prepare and submit a Water System Plan (WSP) to DOH for approval. There are 10 such systems in the Chehalis Basin. They are: Aberdeen, Centralia, Chehalis, Elma, Grays Harbor County Water District No. 2 (Central Park), Hoquiam, Montesano, Ocean Shores, Tumwater, and Westport.

Systems with fewer than 1000 connections are required to prepare a Small Water System Management Program (SWSMP) but not to submit it to DOH; although SWSMPs are

[2] Group A Public Water Systems, Chapter 246-290 WAC.

submitted in some instances. Attachment A provides additional information on which entities must prepare and submit WSPs and SWSMPs.

A total of 38 of the 108 systems of interest in the Chehalis Basin have submitted either a WSP or a SWSMP. Attachment B indicates which of the 108 systems had submitted plans to DOH and which had not.

In order to determine which systems might hold rights that are inchoate/surplus, the project examined the water rights data for all systems on the list of large Group A systems that have submitted plans to DOH and also used water rights information from the Water Rights Application Tracking System (WRATS) provided by the Washington State Department of Ecology (DOE).

For each of the systems for which either WSP or SWSMP was available for review, this project prepared a data sheet which (in most cases) includes the following information:

- water right summary (for primary rights only, not supplementary rights[3])
- the beginning and ending years of the 20 year planning period
- the population, number of connections, or units served in the first and final years
- the average and maximum daily demand for the first and final years
- the surplus or deficit of instantaneous water rights (Qi) relative to the average and maximum daily demand in the first and final years
- the surplus or deficit of annual withdrawals relative to the annual limit on water withdrawals (Qa) in the first and final years
- comments on the plan covering adequacy of rights, uncertainties, special circumstances, etc.

In instances where a system does not have the potential to impact instream flows (e.g. Westport) or is primarily industrial/commercial (e.g. Transalta Generation) this project did not perform a complete surplus/deficit analysis and therefore the data sheets do not include all the elements listed above.

The data sheets for each system are included as Attachment C. Attachment C also provides information on the methodology used to produce the data on the providers. As part of this project, the Partnership offered each municipal water purveyor the opportunity to review their data sheet, verify the accuracy of the information, and identify any points of potential disagreement. Attachment D contains a sample transmittal letter and information on which systems responded to the Partnership's request for comment.

A table entitled "**ESTIMATE of Chehalis Basin Surplus (Deficit) municipal water rights**" appeared following Page 4. This table summarizes the planning, demographic, water needs, and water rights information[4] for each of the 38 municipal water purveyors

[3] DOE grants supplementary rights to allow a right holder to withdraw from a new location. Such rights do not increase the overall quantities which the right holder may withdraw.

[4] The methodology used to compile the information that appears in this table is the same as that used to create the data sheets for each system. This methodology is set forth at the beginning of Attachment C.

for which a data sheet was prepared and included in Attachment C. In cases where water system purveyors provided updated information in the course of their review of the data sheets, this updated information is included in the data sheets and is also reflected in this table.

The data in the table indicate that of the 32 purveyors for which a full or partial surplus/deficit analysis was performed 24 expect to have sufficient of annual rights to meet their needs at the end of the 20 year period covered by their plan, and one[5] does not have an annual quantity assigned. Another system[6] would have a slight deficit in rights relative to its annual demand; however, this system purchases approximately half of its water from another system, and therefore it is able to meet its demand without exceeding its rights. In summary, this analysis indicates that only 6 of the systems covered in this table are expected to have a deficit in annual rights at the end of their 20 year planning period.

[5] Satsop Development Park/Grays Harbor County PDA
[6] Newaukum Hill Water Association

25 September 2006

ESTIMATE of Chehalis Basin Surplus (Deficit) municipal water rights (primary rights only) -- Ranked by annual surplus in final planning year

Includes all CB Group A muniicpal water system providers that submitted Water System Plans or Small Water System Mangement Programs to DOH as of August 2006

System Name	Planning Period		Population		Water Right(s)		Demand Year 1		Demand Year 20		Year 1 -- Surplus (Deficit)				Year 20 -- Surplus (Deficit)			
	Year 1	Year 20	Year 1	Year 20	Qi GPM	Qa AcFt	Average Daily (GPD)	Maximum Daily (GPD)	Average Daily (GPD)	Maximum Daily (GPD)	Average Daily (GPD)	Maximum Daily (GPD)	Annual Qa (AcFt)	% Surplus in Qa	Average Daily Demand (GPD)	Maximum Daily Demand (GPD)	Annual Qa (AcFt)	% Surplus in Qa
ABERDEEN, CITY OF	2000	2020	16,390	18,199	87,529	58,420	3,790,000	6,350,000	4,150,000	6,980,000	122,252,428	119,692,428	54,175	93%	121,892,428	119,062,428	53,771	92%
HOQUIAM WATER DEPARTMENT	2000	2020	9,600	10,500	7,719	12,451	1,277,000	2,618,000	1,599,000	3,279,000	9,838,878	8,497,878	11,021	89%	9,516,878	7,836,878	10,660	86%
CHEHALIS WATER DEPARTMENT	2003	2023	7,870	19,419	13,159	8,736	2,190,000	3,730,000	3,320,000	5,280,000	16,758,960	15,218,960	6,283	72%	15,628,960	13,668,960	5,017	57%
CENTRALIA, CITY OF	2005	2025	11,523 ERU	25,251 ERU	10,033	9,141	2,244,000	4,398,000	5,412,000	8,190,000	12,203,520	10,049,520	6,627	73%	9,035,520	6,257,520	3,079	34%
PE ELL, TOWN OF	2005	2025	669	812	898	1,448	143,804	287,608	174,540	349,080	1,148,740	1,004,936	1,287	89%	1,118,004	943,464	1,252	86%
G. HARBOR CO WATER DIST #1 (Grayland)	2005	2025	645 ERU	787 ERU	625	745	161,250	322,500	196,750	393,500	738,750	577,500	564	76%	703,250	506,500	525	70%
THURSTON COUNTY GRAND MOUND	2005	2025	151 ERU	291 ERU	870	526	54,457	136,143	136,947	342,367	1,198,343	1,116,657	465	88%	1,115,853	910,433	373	71%
MONTESANO, CITY OF	2000	2020	3,575	4,993	4,400	1,160	599,720	1,199,440	709,500	1,419,000	5,736,280	5,136,560	488	42%	5,626,500	4,917,000	365	31%
BOISTFORT VALLEY	1998	2018	1,029 ERU	1,237 ERU	1,289	722	264,214	636,755	322,684	777,669	1,591,946	1,219,405	426	59%	1,533,476	1,078,491	361	50%
MCCLEARY, CITY OF	2000	2020	1,623	2,004	1,100	673	228,362	507,571	341,504	759,047	1,355,638	1,076,429	417	62%	1,242,496	824,953	290	43%
LOMA VISTA 369	2001	Build Out by 2007	66 Connections	69 Connections	330	216	--	--	24,840	49,680	--	--	--	--	450,360	425,520	188	87%
LEWIS CO WATER DISTRICT #2 (Onalaska)	1993	2013	532	811	222	260	61,600	135,500	94,000	260,000	257,976	184,076	191	73%	225,576	59,576	155	60%
BUCODA WATER DEPT	200	2020	628	768	500	157	49,018	111,270	59,904	135,936	670,982	608,730	102	65%	660,096	584,064	90	57%
SCOTT LAKE	2000	Build Out	1,258	1,550	1,026	343	189,750	379,500	233,310	466,620	1,287,690	1,097,940	130	38%	1,244,130	1,010,820	82	24%
LAKE LUCINDA COMMUNITY CLUB	2003/4	Build Out	98 Connections	127 Connections	200	94	28,874	75,484	37,418	97,821	259,126	212,516	62	66%	250,582	190,179	52	55%
CEDAR RIDGE ESTATES	1993	Build Out/2005-6	20 ERU	64 ERU	100	40	4,000	12,000	12,800	42,000	140,000	132,000	36	89%	131,200	102,000	26	64%
LAKE ARROWHEAD	2000	2020	87.4 ERU	350 ERU	570	200	39,013	95,000	156,230	280,000	781,787	725,800	156	78%	664,570	540,800	25	13%
LENETS MOBILE HOME ESTATES	1994	Build Out by 2005	27 ERU	50 ERU	100	24	6,156	18,468	11,400	34,200	137,844	125,532	17	71%	132,600	109,800	11	46%
ELMA COUNTRY CLUB	2000	Build Out	24 connections	26 connections	75	13	4,200	11,568	4,550	12,532	103,800	96,432	8	64%	103,450	95,468	8	61%
G. HARBOR CO WATER DIST #2 (Central Park)	2005	2025	3,896	4,946	1,250	672	467,500	925,700	593,500	1,175,100	1,332,500	874,300	148	22%	1,206,500	624,900	7	1%
TAHOMA MEADOWS	na	Build Out	na	40 connections	50	20	na	na	14,400	28,800	na	na	na	na	57,600	43,200	4	19%
BLACK LAKE ESTATES	2004	Build Out	110 ERU	125 ERU	177	50	37,400	67,870	42,500	77,125	217,480	187,010	8	16%	212,380	177,755	2	5%
MONTE VIEW WATER COMPANY (M.V. Estates)	2000	Buildout in 2005	68 ERU	69 ERU	15	18	14,933	29,866	15,916	37,901	6,667	(8,266)	1	7%	5,684	(16,301)	0.17	1%
ROCHESTER WATER ASSOCIATION	2004	2023	613 ERU	830 ERU	1,571	376	158,614	317,227	336,028	672,057	2,103,626	1,945,013	199	53%	1,926,212	1,590,183	0	na
NEWAUKUM HILL WATER ASSOCIATION	1996	Not stated in WSP	163 ERU	203 ERU	68	87	48,330	60,190	78,680	97,990	49,590	37,730	33	38%	19,240	(70)	(1)	na
FIELD OF DREAMS	na	Buildout by 2005	na	99 ERU	300	54	na	na	55,000	109,000	na	na	na	na	377,000	323,000	(8)	na
GREENWOOD MOBILE HOME PARK	1994	Build Out	64 ERU	118 ERU	100	12	16,000	51,200	29,500	94,400	128,000	92,800	(6)	na	114,500	49,600	(21)	na
OAKVILLE, CITY OF	2000	2020	770	1,049	800	94	140,000	280,000	179,625	359,250	1,012,000	872,000	(63)	na	972,375	792,750	(107)	na
NAPAVINE, CITY OF	2000	2020	1,028	2,754	315	168	128,000	243,000	267,000	507,000	325,600	210,600	25	15%	186,600	(53,400)	(131)	na
ELMA, CITY OF	1995	2015	3,248	4,987	1,000	672	970,000	2,425,000	768,000	1,920,000	470,000	(985,000)	(415)	na	672,000	(480,000)	(188)	na
TENINO, CITY OF	2005	2025	1,501	3,340	700	270	204,438	623,536	489,223	1,492,130	803,562	384,464	41	15%	518,777	(484,130)	(278)	na
SATSOP DEVELOPMENT PARK	2000	Build Out	143 ERU	2,491 ERU	1,000	Not addressed	32,981	49,472	509,970	764,955	1,407,019	1,390,528	na	na	930,030	675,045	na	na
BRIGGS NURSERY INC	Briggs Nursery has several rights, but their SWSMP indicates that their entire potable water need is being met by an exempt well.																	
COSMOPOLIS	Cosmopolis gets its water from Aberdeen																	
OCEAN SHORES WATER DEPT	Ocean Shores has a large right on the Humptulips which it has never developed. All other rights are "supplemental" righs for wells located closer to the users																	
TRANSALTA CENTRALIA GENERATION	Transalta is primarily an industrial facility																	
TUMWATER	Tumwater has rights in WRIA 13 and has applied for new groundwater rights in WRIA 23. At present all of the City's certified rights and withdrawals are in WRIA 13.																	
WESTPORT WATER DEPARTMENT	Westport has no rights would effect surface waters																	

III. PHASE TWO

Phase Two required the development of a list of options to address how surplus municipal water rights might be used to address instream flow needs. The Partnership has already made a significant effort to understand general issues pertaining to municipal water supply in its Municipal Water Supply issue Paper [7], and this document was an important beginning point for this project. Discussions with the Partnership's Steering and Technical Committee provided valuable direction. DOE's policy on mitigation for adverse impacts of water use was also a useful source of ideas [8]

It is obvious that from a stream flow perspective, the best thing that can happen with respect to surplus water rights (municipal or any other category of right) is that they remain unused -- that water simply not be withdrawn. This could happen in three ways, all of which are under the control of the holders of the rights. The three possibilities are: informal (rights are not used but remain on paper, i.e. not relinquished), by relinquishment, or by transferring surplus rights to a water right trust program.

The first of the three is most likely to occur in reality. The second is less likely -- there is no incentive for a right holder to relinquish rights; although in some instances right holders have agreed to do so in the context of obtaining other goods, such as agreement by the DOE to allow a change in the point of withdrawal or to grant a new right. The third is not likely at all, because at present there is no active water right trust program in the Chehalis Basin. Moreover, since inchoate municipal rights are not at risk of lapsing via lack of use, there is no reason for a municipal water purveyor to participate in a trust program if one existed.

There are theoretically some options for management of municipal (and other) rights that could benefit streamflows; although these do not necessarily involve inchoate rights but rather ways in which active rights are used or managed. A list of candidate options (not in priority order) and a brief discussion of each follows:

(1) Targeted water rights planning

(2) Water conservation planning

(3) Coordination between watershed planning/growth management planning

(4) Reviewing effectiveness of existing stream flow protections

(5) Water rights trust program

(6) Limit withdrawals by junior right holders/emergency conservation

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[7] Municipal Water Supply issue Paper, Chehalis Basin Watershed Management Plan, Supplemental Section IV – Issues/Recommendations (The recommendations contained in this issue paper are reproduced in Attachment E.)

[8] May 31, 2006 letter from Tom Loranger, Washington Department of Ecology to the "Chehalis Basin Planning Group," Subject: General Approaches to Mitigation in the Chehalis (This letter is reproduced in Attachment F)

(7) Shifting from surface to groundwater withdrawals

(8) Withdrawals from deep aquifers

(9) Hydraulic continuity study

(10) Improved coordination between Watershed Planning and Water System Planning

(1) Targeted water rights planning: The Partnership could identify stream segments (or groups of segments) that experience chronic low flows, set priorities among these, and develop water right related plans with specific strategies for each impaired segment or group of segments. It would be best to undertake such planning in areas where the Partnership could expect cooperation from a local partner, which could be governmental or a non-governmental organization (NGO). Some of the following paragraphs discuss actions that might appear in targeted water rights plans.

(2) Water conservation planning: Water conservation has excellent potential to benefit stream flows. There is a direct and immediate effect with respect to surface water withdrawals and in the zone of hydraulic continuity conservation by groundwater rights holders may also benefit streamflows. All Group A systems are required to have a water conservation program in their WSP or SWSMP. The quality of these and the effectiveness of their implementation may be expected to vary. The partnership could review the existing plans, identify and publicize good practices that could be shared, and assist communities to identify funding for conservation.

(3) Coordination between watershed planning/growth management planning: Recommendation 14 in the Municipal Water Supply issue Paper ("Connecting water supply planning to growth management or comprehensive planning") reads (in part) as follows: "Any area designated for urban or suburban development should have the ability to be served by some sort of municipal water system. There is currently no mechanism to ensure that this occurs ..." The Partnership could work with DOE, DOH, and counties (or cities) to develop a system to address water and development issues in a coordinated manner.

(4) Reviewing effectiveness of existing stream flow protections: Some rights in the Chehalis Basin are conditioned to protect stream flows. The Partnership could determine how well these conditions are working in fact. If they are issues of concern, the Partnership could work with the right holder and the DOE to make improvements.

(5) Water rights trust program: The Partnership could work with DOE and other partners to develop a water rights trust program *with incentives* that would cover the entire basin or specific parts. Such a program would offer only transitory benefits to streamflows unless transfers to the trust were permanent. Such a program would be futile unless it were accompanied by a DOE policy that assured that the retirement of rights did not result in new authorizations to withdraw water. The program must include tangible

incentives for right holders, because without such incentives there would be no reason for right holders to place rights into a permanent trust.

(6) Limit withdrawals by junior right holders/Emergency Conservation: The Department of Ecology has the authority to protect streamflows in the basin by limiting withdrawals by water rights with priority dates more recent than March 10, 1976, which is the priority date of regulatory instream flows. This was discussed in the Chehalis Basin Watershed Management Plan Instream Flow Issue Paper, Supplemental Section IV, pages IV-21-38. There are exceptions to this authority for domestic use. How this exception might impact municipal water systems is unknown. The Partnership could encourage DOE to exercise this authority; however, DOE is not known to have used it in the Chehalis Basin in the past and may be reluctant to do so. Even if this authority is not actually used, it could be one important basis underlying voluntary conservation in the basin during low flow periods. In other areas of the state and the country, voluntary water conservation by businesses and ordinary citizens has been very successful when the public has been called upon to conserve water and is provided with compelling reasons to do so. The Partnership could encourage the creation of a voluntary conservation program that would combine public information, public education, and a system of public notification in parts of the basin where low flow conditions justify extra efforts to conserve. Such efforts could be over and above the normal conservation programs that municipal purveyors are required to build into their system plans under DOH planning guidelines. This option follows from the Chehalis Basin Watershed Management Plan Water Quantity Issue Paper[9], which recommended that Ecology, "Increase enforcement of existing laws to support voluntary efforts. [10]" For this option to be effective, means would have to be identified to address concerns that conserving water would place a right in jeopardy of relinquishment.

(7) Shifting from surface to groundwater withdrawals: Changing surface water withdrawals to groundwater withdrawals can increase stream flows. Some municipal systems in the Basin have already abandoned surface water sources in favor of groundwater. Generally this has been driven by the costs of complying with the Surface Water Treatment Rule. There may be a few additional opportunities to make such changes, and the Partnership could identify and encourage them. This would require developing a list of systems using surface water and a review of stream flow data to determine if the withdrawals could contribute to low flows. Such information might be part of a targeted water right plan (see option (1) above). There would also have to be available well sites, funding to make the change, and knowledge of hydraulic continuity between surface and ground water. The last is needed to be sure that the cost and effort of shifting from surface to groundwater withdrawal would actually have the desired effect.

(8) Withdrawals from deep aquifers: Most municipal withdrawals are from groundwater. In instances where these withdrawals are from a groundwater layer that connects to surface water, such withdrawals could be expected to diminish stream flows.

[9] Supplemental Section IV, pages IV-3-20
[10] Page IV-19

Withdrawing from deeper aquifers could benefit stream flows; however to be sure that this was worth the investment, it would be necessary to understand the relationship between surface and the various groundwater layers. The costs of drilling deeper wells and increased pumping would also be issues.

(9) Hydraulic continuity study: Options (7) and (8) require knowledge of the continuity between surface water and groundwater. To implement these options, a study of hydraulic continuity must be conducted, either basin wide or in priority areas. This issue was addressed in the Chehalis Basin Watershed Management Plan[11].

(10) In addition to the options set forth above, streamflow protection very likely would benefit from improved coordination between Watershed Planning and Water System Planning. Some specific suggestions follow:

- Annual water system plan review: The Final Bill Report for HB 1338 states that: "DOH must annually compile lists of water system plans to be reviewed in the next year and consult with certain other state agencies to identify watersheds where further coordination between system planning and watershed planning is needed and must develop a work plan to accomplish that coordination." The Partnership could review and comment on the work plan and could request DOH to provide it with a copy of the annual list of Chehalis Basin plans. The Partnership could review the annual list and request coordination for any systems whose rights have the potential to affect stream segments with chronic low flows.

- Rights transfers: The Final Bill Report for HB 1338 indicates that inchoate municipal water rights can be transferred under certain circumstances. The Partnership could request that DOE notify them when such transfers are requested and afford them the opportunity to comment. The Partnership could use this opportunity to assure that transfers will not have an adverse impact on instream flows and that appropriate mitigation is required.

- Water rights review: The Memorandum of Understanding between DOH and DOE on water system plan review and rights applications provides that DOE will comment on the water rights self-assessment in all Water System Plans and Small Water System Plans that are submitted to DOH. The intent is that DOH will take advantage of DOE's expertise on water right issues and as a result approved plans will be authoritative documents with respect to the rights held by Group A water systems. The Partnership could request that it receive a copy of DOE comment letters on water system plans and that it be afforded the opportunity to comment on rights issues before plans are approved.

- Significant increases in municipal withdrawals: The Partnership could request that DOH and/or DOE afford the Partnership the opportunity to comment when a

[11] Supplemental Section IV, Hydraulic Continuity Issue Paper, pages IV-39-41.

system plan or other information indicates that a significant increase in withdrawals by a municipal water system is in the offing. If the rights in question are junior to instream flows the Partnership could advocate that the increased withdrawals be conditioned to require mitigation and that they be interruptible when regulatory flows are not met.

Resources:

Water Quantity Issue Paper, Chehalis Basin Watershed Management Plan Supplemental Section IV – Issues/Recommendations, pages IV-2-20

Instream Flow Issue Paper, Chehalis Basin Watershed Management Plan Supplemental Section IV – Issues/Recommendations, pages IV-21-38

Hydraulic Continuity Issue Paper, Chehalis Basin Watershed Management Plan Supplemental Section IV – Issues/Recommendations, pages IV-39-41.

Municipal Water Supply Issue Paper, Chehalis Basin Watershed Management Plan, Supplemental Section IV – Issues/Recommendations pages IV-43-51

The entire Chehalis Basin Partnership Watershed Management Plan, including the sections noted above can be accessed at the following web address:

http://www.co.grays-harbor.wa.us/info/pub_svcs/ChehalisBasin/Index.html

IV. ATTACHMENTS

A. WAC 246-290-100 Water system plan, page 41 and WAC 246-290-105 Small water system management program, page 45

B. List of the 108 larger Group A municipal water purveyors in the Chehalis Basin

C. Data sheets for the 38 large Group A municipal water purveyors which have submitted Water System Plans or Small Water System Management Program to the Washington Department of Health and a description of the methodology used to produce the data.

D. Sample of the transmittal letter that the Chehalis Basin Partnership used to provide data sheets to purveyors for verification and comment.

E. The Chehalis Basin Partnership Watershed Management Plan, Supplemental Section IV – Issues/Recommendations, Municipal Water Supply issue Paper. Note: Only the section of this issue paper entitled "What are some alternative actions to address the municipal water supply issue?" is included in this attachment.

F. May 31, 2006 letter from Tom Loranger, Washington Department of Ecology to the "Chehalis Basin Planning Group," Subject: General Approaches to Mitigation in the Chehalis"

ATTACHMENT A:

Language from WAC 246-290-100 Water System Plan and WAC 246-290-105 Small Water System Management Program. These excerpts from the WAC indicate which systems must prepare and submit plans to DOH.

WAC 246-290-100, Water System Plan

(1) The purpose of this section is to establish a uniform process for purveyors to:

(a) Demonstrate the system's operational, technical, managerial, and financial capability to achieve and maintain compliance with relevant local, state, and federal plans and regulations;
(b) Demonstrate how the system will address present and future needs in a manner consistent with other relevant plans and local, state, and federal laws, including applicable land use plans;
(c) Establish eligibility for funding under the drinking water state revolving fund (SRF).

(2) Purveyors of the following categories of community public water systems shall submit a water system plan for review and approval by the department:

(a) Systems having one thousand or more services;
(b) Systems required to develop water system plans under the Public Water System Coordination Act of 1977 (chapter 70.116 RCW);
(c) Any system experiencing problems related to planning, operation, and/or management as determined by the department;
(d) All new systems;
(e) Any expanding system; and
(f) Any system proposing to use the document submittal exception process in WAC 246-290-125.

WAC 246-290-105, Small Water System Management Program.

(1) The purpose of a small water system management program is to:

(a) Demonstrate the system's operational, technical, managerial, and financial capability to achieve and maintain compliance with all relevant local, state, and federal plans and regulations; and
(b) Establish eligibility for funding under the drinking water state revolving fund (SRF).

(2) All noncommunity and all community systems not required to complete a water system plan as described under WAC 246-290-100(2) shall develop and implement a small water system management program.

(3) The purveyor shall submit this program for review and approval to the department when:

(a) A new NTNC public water system is created; or
(b) An existing system has operational, technical, managerial, or financial problems, as determined by the department.

ATTACHMENT B:

The list that begins on the following page is the result of screening to identify the larger municipal water purveyors in the Chehalis Basin. The 108 systems on this list were selected from a list the 180 Group A systems in the Chehalis basin that was provided by the Washington State Department of Health (DOH). The screening process used 5 fields in the DOH data base to identify the larger systems:

Capacity: The number of gallons per minute that the system (or a particular source) is able to deliver. (systems with a value of >99 are included on the list)

Full Time Resident Population: The number of residents that are served by the system for more than 180 days per year. (systems with a value of >99 are included on the list)

Maximum Total Population: This is a value that reflects the population count that DOH uses for coliform sampling considering residents and others. (systems with a value of >99 are included on the list)

Total Connections: The current number of active connections – a connection remains in "active" status until it is physically removed from the system. (systems with a value of >99 are included on the list)

DOH Approved Service Connections: The number of connections that DOH has approved for the system. (systems with a value of >99 are included on the list)

The list indicates that 38 systems had submitted plans to the Washington Department of Health as of July 31, 2006. This project reviewed all 38 of those plans.

SYSTEM NAME	SYSTEM TYPE	STATUS
ABERDEEN, CITY OF	Community	Reviewed
AMERICAN HERITAGE CAMPGROUNDS	Transient Non-Community	No plan submitted
BAY CITY SAUSAGE COMPANY	Transient Non-Community	No plan submitted
BLACK LAKE BIBLE CAMP & CONF CTR	Community	No plan submitted
BLACK LAKE ESTATES	Community	Reviewed
BLACK LAKE GROCERY	Transient Non-Community	No plan submitted
BLACK LAKE WATER CO LLC	Transient Non-Community	No plan submitted
BOISTFORT VALLEY	Community	Reviewed
BRIGGS NURSERY INC	Non-Transient, Non-Community	Reviewed
BUCODA WATER DEPT	Community	Reviewed
CARRIAGE CLUB ESTATES	Community	No plan submitted
CEDAR CREEK CORRECTIONS CENTER	Community	No plan submitted
CEDAR RIDGE ESTATES	Community	Reviewed
CENTRALIA UTILITIES	Community	Reviewed
CHEHALIS WATER DEPARTMENT	Community	Reviewed
CHERRY BLOSSOM EST	Community	No plan submitted
COHO CAMPGROUND	Transient Non-Community	No plan submitted
COLUMBUS PARK	Community	No plan submitted
COSMOPLOIS -- gets water from Aberdeen	Community	Reviewed
COUNTRY ESTATES	Community	No plan submitted
D JS COUNTRY MARKET	Transient Non-Community	No plan submitted
DRY SORT DOMESTIC	Non-Transient, Non-Community	No plan submitted
EAGLE TRUCK PLAZA NO 71	Transient Non-Community	No plan submitted
ELMA COUNTRY CLUB	Transient Non-Community	Reviewed
ELMA REST AREA	Transient Non-Community	No plan submitted
ELMA, CITY OF	Community	Reviewed
EVERGREEN SHORES	Community	No plan submitted
EVERGREEN SPORTSMENS CLUB	Transient Non-Community	No plan submitted
FARM BOY DRIVE IN	Transient Non-Community	No plan submitted

SYSTEM NAME	SYSTEM TYPE	STATUS
FIELD OF DREAMS	Community	Reviewed
FIRST BAPTIST CHURCH OF TENINO	Non-Transient, Non-Community	No plan submitted
FOOD MART 01 380	Transient Non-Community	No plan submitted
FORESTVIEW SENIOR 55+ COMMUNITY	Community	No plan submitted
FRIENDS LANDING	Transient Non-Community	No plan submitted
GRANDVIEW VALLEY ESTATES	Community	No plan submitted
GRAYS HARBOR CO WATER DIST 1	Community	Reviewed
GRAYS HARBOR CO WATER DIST 2	Community	Reviewed
GREENWOOD MOBILE HOME PARK	Community	Reviewed
GUNDERSON WATER WORKS	Community	No plan submitted
HAMILTON, AL	Transient Non-Community	No plan submitted
HARRISON RV PARK	Transient Non-Community	No plan submitted
HIGHWAY 6 CHEVRON	Transient Non-Community	No plan submitted
HOQUIAM WATER DEPARTMENT	Community	Reviewed
LAKE ARROWHEAD	Community	Reviewed
LAKE LUCINDA COMMUNITY CLUB	Community	Reviewed
LAKELAND MANOR	Community	No plan submitted
LAKESIDE MOBILE PARK	Community	No plan submitted
LENETS MOBILE ESTATES	Community	Reviewed
LEWIS CO WATER DISTRICT #2	Community	Reviewed
LEWIS COUNTY SEVENTH DAY AD	Non-Transient, Non-Community	No plan submitted
LINCOLN CREEK LUMBER CO	Transient Non-Community	No plan submitted
LITTLEROCK ELEMENTARY	Non-Transient, Non-Community	No plan submitted
LOMA VISTA 369	Community	Reviewed
MALONE	Community	No plan submitted
MAPLE LANE SCHOOL	Community	No plan submitted
MARY M KNIGHT SCHOOL	Non-Transient, Non-Community	No plan submitted
MAYTOWN REST AREA	Transient Non-Community	No plan submitted
MCCLEARY, CITY OF	Community	Reviewed
MCDONALDS OF NAPAVINE	Transient Non-Community	No plan submitted

SYSTEM NAME	SYSTEM TYPE	STATUS
MEADOW WOOD COMMUNITY	Community	No plan submitted
MEADOWOOD DEVELOPMENT	Community	No plan submitted
MILLERSYLVANIA STATE PARK	Transient Non-Community	No plan submitted
MONTE VIEW ESTATES	Community	Reviewed
MONTESANO, CITY OF	Community	Reviewed
NAPAVINE, CITY OF	Community	Reviewed
NEW HARVEST ASSEMBLY OF GOD	Transient Non-Community	No plan submitted
NEWAUKUM HILL WATER ASSN	Community	Reviewed
OAKVILLE, CITY OF	Community	Reviewed
OCEAN SHORES WATER DEPT	Community	Reviewed
OCEAN SPRAY CRANBERRIES	Non-Transient, Non-Community	No plan submitted
OLYMPIA FORESTRY SCIENCES LAB	Non-Transient, Non-Community	No plan submitted
OUTBACK RV PARK	Transient Non-Community	No plan submitted
PACE-EDWARDS COMPANY	Non-Transient, Non-Community	No plan submitted
PARKWOOD MOBILE HOME ESTATES	Community	No plan submitted
PE ELL, TOWN OF	Community	Reviewed
PIT WATER CO 328	Community	No plan submitted
PRAIRIE VISTA	Community	No plan submitted
RAINBOW FALLS STATE PARK	Transient Non-Community	No plan submitted
RESTOVER TRUCK STOP	Transient Non-Community	No plan submitted
RITCHIE BROS AUCTION SITE	Transient Non-Community	No plan submitted
ROCHESTER	Community	Reviewed
ROCHESTER HIGH SCHOOL	Non-Transient, Non-Community	No plan submitted
RUSH ROAD CHEVRON	Transient Non-Community	No plan submitted
SATSOP DEVELOPMENT PARK	Non-Transient, Non-Community	Reviewed
SCATTER CREEK REST AREA	Transient Non-Community	No plan submitted
SCHAEFER COUNTY PARK	Transient Non-Community	No plan submitted
SCHAFER STATE PARK	Transient Non-Community	No plan submitted
SCOTT LAKE	Community	Reviewed
SKOOKUMCHUCK MAINTENANCE	Community	No plan submitted

SYSTEM NAME	SYSTEM TYPE	STATUS
STAR LAKE COMMUNITY CLUB	Community	No plan submitted
SUNSHINE	Transient Non-Community	No plan submitted
SYMONS FROZEN FOODS	Transient Non-Community	No plan submitted
TAHOMA MEADOWS	Community	Reviewed
TANGLEWOOD MOBILE HOME PARK	Community	No plan submitted
TENINO, CITY OF	Community	Reviewed
THEODORE HOSS SPORTS COMPLEX	Transient Non-Community	No plan submitted
THURSTON COUNTY GRAND MOUND	Community	Community
TRANSALTA CENTRALIA GENERATION	Non-Transient, Non-Community	Reviewed
TUMWATER -- rights are in WRIA 13	Community	Reviewed
VALLEY MEADOWS 240	Community	No plan submitted
VIEW RANCH ESTATES WATER ASSN	Community	No plan submitted
VILLA GROVE FOODLINER	Transient Non-Community	No plan submitted
WEST COAST OIL PACIFIC PRIDE	Transient Non-Community	No plan submitted
WESTPORT WATER DEPARTMENT	Community	Reviewed
WEYERHAEUSER FORESTRY NURSERY	Non-Transient, Non-Community	No plan submitted
WHISPERING WOODS HOME PARK	Community	No plan submitted
WILDWOOD MOBILE HOME PARK	Community	No plan submitted
WYNOOCHEE WILDWOOD PARK	Transient Non-Community	No plan submitted
YOUNGS	Transient Non-Community	No plan submitted

ATTACHMENT C:

The following pages contain data sheets for each of the large Group A municipal water purveyors which have submitted a Water System Plan (WSP) or a Small Water System Management Program to the Washington Department of Health (DOH).

The project examined the WSPs and SWSMPs in order to determine which systems held rights that might be inchoate. This study applied the term "inchoate water rights" to mean those rights which are surplus to the needs as identified in the WSP/SWMSP.

For each of the systems with a WSP/SWSMP this project prepared a data sheet which (in most cases) includes the following information:

- water rights and sources
- the beginning and ending years of the 20 year planning period covered by the plan
- the population served in the first and final years
- the average and maximum daily demand for the first and final years
- the surplus or deficit of instantaneous water rights (Qi) relative to the average and maximum daily demand in the first and final years
- the surplus or deficit of annual withdrawals relative to the annual limit on water withdrawals (Qa) in the first and final years
- comments on the plan covering such areas as conservation, claims, etc.

In instances where a system that does not have the potential to impact instream flows (e.g. Westport) or is primarily industrial/commercial (e.g. Transalta Generation) the data sheets do not include all the elements listed above.

The pages preceding the data sheets provide information on the methodology used to produce the data on the providers.

The Partnership provided each purveyor with a copy of their data sheet in order verify the accuracy of the information or identify any points of potential disagreement

NOTES on methodology:

Water Rights

If complete and unambiguous information was available in the Water System Plan (WSP) or Small Water System Program (SWSMP), the rights information was taken directly from the plan. In those instances where the plan is not clear or complete, this project did additional research using the WRATS data base or by contacting DOE staff.

Instantaneous quantities of rights (Qi) are stated in cubic feet per second (cfs) for surface water rights and gallons per minute (gpm) for groundwater rights. If a right holder has both surface and groundwater rights the total is stated in gpm in order to have a single unit to facilitate comparison. Conversion from cfs to gpm was based on 1 cfs = 448.8 gpm. Annual quantities of rights (Qa) are stated in acre Feet (AcFt).

If there was no annual cap indicated in the plan or in WRATS, the project computed Qa = Qi (in gpm) x 60 x 24 x 365.

Unless noted, the quantities of rights include only primary rights, not supplemental rights.

Water System Plan

The 20 year planning period is the period reported in the WSP or SWSMP. If the plan indicated that full buildout was expected to occur earlier than 20 years from the initial year of the plan, then the final year was simply reported as "Build Out."

The population is stated in numbers of people, equivalent residential units (ERU), or connections depending on the plan.

Average Daily Demand (ADD) and Maximum Daily Demand (MDD) are stated in gallons per day (GPD) and were taken directly from the plan in most cases.

In some instances the plans did not give an actual number for ADD or MDD but instead stated them in GPD per ERU or per connection or in gallons per minute. In those cases this project computed the number displayed. Conversion from gpm to gallons per day GPD was done by multiplying 1 gpm times 60 minutes times 24 hours (1 gpm x 60 x 24 = 1440 GDP)

In some instances the plan did not give an actual number for MDD but instead stated that MDD was some multiple of ADD. In those cases this project computed the number displayed based on the multiple stated in the plan. In cases where the plan did not address the relationship between ADD and MDD and provided a value for only one of those quantities, this project computed the other based on ADD = ½ MDD.

Excess (Deficit) analysis (or surplus/deficit analysis)

This is based on comparing the previously stated rights and demand information for the initial and final year of the 20 year planning period or at buildout.

When positive numbers are displayed they indicate that the quantities of primary rights that a right holder has are in excess of their ADD, MDD, or annual. Negative numbers (in parenthesis) indicate that demand is greater than rights held.

ADD and MDD are stated in gallons per day (GPD). Annual demand is expressed in acre Feet (AcFt). This project used 1 AcFt = 325,851 gallons as a conversion factor.

In interpreting the surplus/deficit, it is important to remember that the positive numbers represent the excess of rights over demand – rights that are not expected to be used. Therefore, positive numbers in the ADD column would be greater than positive numbers in the MDD column, and positive numbers in the first year of the planning period would be expected to be greater than positive numbers for the final year.

The last column "Qa -- % Surplus" is the percent of the annual right that is not used. For example, if a right holder had a right with Qa = 100 AcFt per year and was able to satisfy their demand by withdrawing only 10 AcFt per year, then the excess rights would equal 90 AcFt. 90/100 = .9 or 90%, so 90% would appear in the column headed "Qa -- % Surplus". If there is a deficit in the annual quantity of rights, the abbreviation "na" (not applicable) appears in this column.

Comments

Commends vary from case to case and may address methodology, any particular complexities or uncertainties, excess or deficit in demand vs. rights, etc.

CITY OF ABERDEEN

Water Rights:

Sources:

Aberdeen's rights include multiple surface water certificates and claims with points of withdrawal on Stewart Creek, Wishkah River, "C" Creek, Elliott Slough, Van Winkle Creek, and the Wynoochee River. The claim for emergency use on Steward Creek and the hydropower right on the Wynoochee are not included in the rights totals presented in the Aberdeen WSP water rights self-assessment (Table 5-1). The following instantaneous and annual totals are those presented in Table 5-1.

Qi: 195.03 cfs
Qa: 129,020 AcFt

The excess/deficit analysis on the following page subtracted the 70,600 AcFt of storage rights in the Wynoochee reservoir and in Lake Aberdeen from the totals presented in Table 5-1. The quantities used in this analysis are as follows:

Qi: 195.03 cfs
Qa: 58,420 AcFt

Water System Plan	Year 1	Year 20
Planning Period	2000	2020
Population	16,390	18,199
Average Daily Demand (GPD)	3,790,000	4,150,000
Maximum Daily Demand (GPD)	6,350,000	6,980,000

Excess or (Deficit) of Demand in Relation to Water Rights (not including the emergency withdrawal claim or the storage rights)			
Year 1			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
122,252,428	119,692,428	54,175	93%
Year 20			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
121,892,428	119,062,428	53,771	92%

- For Average Daily Demand, Maximum Daily Demand, and Qa a deficit in rights is indicated by a parentheses. Numbers not in parenthesis indicate a surplus of rights over demand.
- Figures for Average Daily Demand and Maximum Daily Demand surplus/deficit are Gallons per Day.
- Figures for Qa are Acre Feet.
- "Qa -- % Surplus" is the total Qa right minus the total quantity of water used in the year, divided by the total Qa right.

Comments:

The exact situation regarding Aberdeen's rights is complicated because their certificates and claims involve a mixture of emergency rights, hydropower rights, storage rights, water is used with little or no treatment for industrial purposes, rights transferred to the Grays Harbor Public Development Authority, and rights for withdrawals.

Notwithstanding details and complexities, it is clear that the city has ample rights to meet its needs. This summary does not break out the rights and needs by specific points of withdrawal. Such a detailed analysis could identify specific areas where the overall conclusion (that Aberdeen's rights are ample) might not apply.

Aberdeen rights on the Wynoochee require protection of instream flows. The plan describes this in the notes to Table 5-1 as follows: "The 25cfs during low flow periods is constrained by a complex set of minimum flow conditions on the water right."

BLACK LAKE ESTATES

Water Rights:

Sources: One groundwater right

Qi: 177 gpm
Qa: 50 AcFt

Water System Plan	Year 1	Year 20
Planning Period	2004	Build Out
Population	110 ERU	125 ERU
Average Daily Demand (GPD)	37,400	42,500
Maximum Daily Demand (GPD)	67,870	77,125

Excess or (Deficit) of Demand in Relation to Water Rights

Year 1			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
217,480	187,010	8	16%
Build Out			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
212,380	177,755	2	5%

- For Average Daily Demand, Maximum Daily Demand, and Qa a deficit in rights is indicated by a parentheses. Numbers not in parenthesis indicate a surplus of rights over demand.
- Figures for Average Daily Demand and Maximum Daily Demand surplus/deficit are Gallons per Day.
- Figures for Qa are Acre Feet.
- "Qa -- % Surplus" is the total Qa right minus the total quantity of water used in the year, divided by the total Qa right.

Comments:

Black Lake Estates has sufficient rights to meet the demand projected in its plan. At the time the plan was prepared, the system had 110 active and 15 pending connections. The plan projected build out to be 125 connections. The system is approved for a maximum of 131 connections.

BOISTFORT VALLEY WATER CORPORATION

Water Rights:

Sources: Boistfort Valley has 4 rights: two surface water rights on Stillman Creek and Little Mill Creek, an infiltration gallery near the Chehalis River, and a groundwater right (Johnson Well). The total quantities are as follows:

Qi: 1289 gpm
Qa: 722 AcFt

Water System Plan	Year 1	Year 20
Planning Period	1998	2018
Population	1029 ERU	1237 ERU
Average Daily Demand (GPD)	264,214	322,684
Maximum Daily Demand (GPD)	636,755	777,669

Note: ERU = equivalent residential unit. As defined in the Boistfort plan, 1 ERU is the average metered consumption per residential connection in 1997, which equals 203 GPD

Excess or (Deficit) of Demand in Relation to Water Rights			
Year 1			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
1,591,946	1,219,405	426	59%
Year 20			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
1,533,476	1,078,491	361	50%

- For Average Daily Demand, Maximum Daily Demand, and Qa a deficit in rights is indicated by a parentheses. Numbers not in parenthesis indicate a surplus of rights over demand.
- Figures for Average Daily Demand and Maximum Daily Demand surplus/deficit are Gallons per Day.
- Figures for Qa are Acre Feet.
- "Qa -- % Surplus" is the total Qa right minus the total quantity of water used in the year, divided by the total Qa right.

Comments:

The Boistfort Valley Water Corporation has sufficient rights to meet the 2018 demand projected in their plan. This is true even if the Johnson Well right is not included in the total. Boistfort did not include Johnson Well in its rights analysis in the plan because its productivity had declined significantly and its reliability as a future source of supply is in question. If Johnson well were to be abandoned, and the other surface water sources were to make up the slack, that could impact stream flows adversely.

BRIGGS NURSERY

Briggs Nursery has several rights, but their SWSMP indicates that their entire potable water need is being met by an exempt well.

BUCODA

Water Rights:

Sources: Bucoda has two rights to withdraw from the Skookumchuck and one right to withdraw groundwater. Currently the city uses only the groundwater right. The total quantity for all three rights is as follows:

Qi surface: 12.1 cfs
Qi groundwater: 500 gpm
Qa all rights: 157 AcFt

Water System Plan	Year 1	Year 20
Planning Period	2000	2020
Population	628	768
Average Daily Demand (GPD)	49,018	59,904
Maximum Daily Demand (GPD)	111,270	135,936

Excess or (Deficit) of Demand in Relation to Water Rights (all rights surface and groundwater)			
Year 1			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
8,490,873	8,428,621	102	65%
Year 20			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
8,479,987	8,403,955	90	57%

- For Average Daily Demand, Maximum Daily Demand, and Qa a deficit in rights is indicated by a parentheses. Numbers not in parenthesis indicate a surplus of rights over demand.
- Figures for Average Daily Demand and Maximum Daily Demand surplus/deficit are Gallons per Day.
- Figures for Qa are Acre Feet.
- "Qa -- % Surplus" is the total Qa right minus the total quantity of water used in the year, divided by the total Qa right.

Comments:

The year 20 data in the table above and in the excess/deficit analysis were provided by the City of Bucoda in September 2006. They indicate that population and water use are expected to grow at a somewhat more rapid rate than was projected in their 2000 plan. The City of Bucoda has rights

well in excess of the demand that the now project for 2020. The plan notes that their surface water rights in the Skookumchuck River may have lapsed because of five consecutive years of non-use. At present Bucoda uses only its groundwater right, and it could continue to meet its demand throughout the 20 year planning period without resorting to the use of its surface water right. This is demonstrated by the table below, which is an analysis of Bucoda's needs relative to its groundwater rights

Excess or (Deficit) of Demand in Relation to Water Rights (groundwater right only)			
Year 1			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
670,982	608,730	102	65%
Year 20			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
660,096	584,064	90	57%

- For Average Daily Demand, Maximum Daily Demand, and Qa a deficit in rights is indicated by a parentheses. Numbers not in parenthesis indicate a surplus of rights over demand.
- Figures for Average Daily Demand and Maximum Daily Demand surplus/deficit are Gallons per Day.
- Figures for Qa are Acre Feet.
- "Qa -- % Surplus" is the total Qa right minus the total quantity of water used in the year, divided by the total Qa right.

CEDAR RIDGE ESTATES

Water Rights:

Sources: One groundwater right (G2-28422):

Qi: 100 gpm
Qa: 40 AcFt

Water System Plan	Year 1	Year 20
Planning Period	1993	Build Out
Population	20 ERU	64 ERU
Average Daily Demand (GPD)	4,000	12,800
Maximum Daily Demand (GPD)	12,000	38,400

Excess or (Deficit) of Demand in Relation to Water Rights			
Year 1			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
140,000	132,000	36	89%
Build Out			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
131,200	105,600	26	64%

- For Average Daily Demand, Maximum Daily Demand, and Qa a deficit in rights is indicated by a parentheses. Numbers not in parenthesis indicate a surplus of rights over demand.
- Figures for Average Daily Demand and Maximum Daily Demand surplus/deficit are Gallons per Day.
- Figures for Qa are Acre Feet.
- "Qa -- % Surplus" is the total Qa right minus the total quantity of water used in the year, divided by the total Qa right.

Comments:

Cedar Ridge Estates was a new development in 1993 when its plan was prepared. The plan projected full build out to 64 connections in 1996. The system has sufficient rights to meet the demand projected in the plan. However, Vicki Lantau of Skyline Pump & Machine Co., Inc./ Pacific Water Systems emailed on August 25, 2006 indicating that for the period September,

2005 to August, 2006 the Average Daily Demand was 8600 GPD and the Maximum Daily Demand was 42, 000 GPD. Her email stated:

> Though this is only Year 13 for the Water System Plan, the Maximum Daily Demand projected for Year 20 has already been surpassed. This is a development of (aprox.) 5 acre lots with large areas of landscaping at most residences, so I would expect these numbers to increase as plants and yards mature.

The Excess/Deficit analysis based on the 2005/2006 demand information provided by Ms. Lantau is as follows:

Excess or (Deficit) of Demand in Relation to Water Rights			
2005/2006			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
131,200	102,000	26	64%

CITY OF CENTRALIA

Water Rights:

Centralia has several ground water rights, a surface water right on the North Fork of the Newaukum River, and two applications:

Groundwater rights (total):

Qi: 6700 gpm
Qa: 3808 AcFt

Newaukum surface water right:

Qi: 3333 gpm
Qa: 5333 AcFt

Total Rights:

Qi: 10033 gpm
Qa: 9141 AcFt

Water Right Applications (2):

Qi: 4700 gpm
Qa: None identified in WSP

Water System Plan	**Year 1**	**Year 20**
Planning Period	2005	2025
Population	11,523 ERU	25,251 ERU
Average Daily Demand (GPD)	2,244,000	5,412,000
Maximum Daily Demand (GPD)	4.398,000	8,190,000
ERU = equivalent residential unit. The plan indicates that 1 ERU = 212 GPD		

Excess or (Deficit) of Demand in Relation to Water Rights (applications not included)			
Year 1			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
12,203,520	10,049,520	6,627	73%
Year 20 (with conservation projected in WSP)			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
9,035,520	6,257,520	3,079	34%

- For Average Daily Demand, Maximum Daily Demand, and Qa a deficit in rights is indicated by a parentheses. Numbers not in parenthesis indicate a surplus of rights over demand.
- Figures for Average Daily Demand and Maximum Daily Demand surplus/deficit are Gallons per Day.
- Figures for Qa are Acre Feet.
- "Qa -- % Surplus" is the total Qa right minus the total quantity of water used in the year, divided by the total Qa right.
- 1 million gallons per day = 1120.3 Acre Feet

Comments:

The results of the Surplus/deficit analysis, which are set forth in the table above, indicate that Centralia has sufficient rights to meet the 2025 demand projected in its Water System Plan.

Centralia's plan includes a projection of the City's demand for water out to 2055. The City currently has sufficient rights to meet its average daily demand in 2055 but not its maximum daily demand or its annual demand.

If Ecology granted the two applications that Centralia has submitted (one for Qi=700 gpm and the other for Qi=4000 gpm.) the City would have sufficient rights to meet its 2055 maximum daily demand as well. To meet the annual demand projected for 2055, the applications would have to be approved with a Qa of just under 2500 AcFt.

CITY OF CHEHALIS

Water Rights:

Source:	NF Newaukum	
	Qi:	10 cfs
	Qa:	2240 AcFt
Source:	Chehalis River	
	Qi:	15 cfs
	Qa:	3630 AcFt
Source:	NF Newaukum	
	Qi:	4.32 cfs
	Qa:	3136 AcFt
All Rights:	Qi:	29.32 cfs
	Qa:	8736 AcFt

Water System Plan	Year 1	Year 20
Planning Period	2003	2023
Population	7,870	19,419
Average Daily Demand (GPD)	2,190,000	3,320,000
Maximum Daily Demand (GPD)	3,730,000	5,280,000

Excess or (Deficit) of Demand in Relation to Water Rights			
Year 1			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
16,758,960	15,218,960	6,283	72%
Year 20			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
15,628,960	13,668,960	5,017	57%

- For Average Daily Demand, Maximum Daily Demand, and Qa a deficit in rights is indicated by a parentheses. Numbers not in parenthesis indicate a surplus of rights over demand.
- Figures for Average Daily Demand and Maximum Daily Demand surplus/deficit are Gallons per Day.
- Figures for Qa are Acre Feet.
- "Qa -- % Surplus" is the total Qa right minus the total quantity of water used in the year, divided by the total Qa right.

Comments:

The City of Chehalis has sufficient water rights to meet the 2023 demand projected in its plan.

CITY OF COSMOPOLIS

Comments:

The City of Cosmopolis obtains its water from the City of Aberdeen. The City prepared a system plan in 1997 which indicated that Cosmopolis had obtained its water from Mill Creek until 1954. At that time, the City discontinued use of the Mill Creek source because of the cost of complying with the Surface Water Treatment Rule. The plan also indicated that the City formerly had ground water rights on the southeast side of town, but that these were not developed and as a result relinquished.

CITY OF ELMA

Water Rights:

Sources: 3 groundwater rights with the following total quantities:

Qi: 1000 gpm
Qa: 672 AcFt

Water System Plan	Year 1	Year 20
Planning Period	1995	2015
Population	3248	4987
Average Daily Demand (GPD)	970,000	768,000
Maximum Daily Demand (GPD)	2,425,000	1,920,000

Excess or (Deficit) of Demand in Relation to Water Rights

Year 1			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
470,000	(985,000)	(415)	Na
Year 20			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
672,000	(480,000)	(188)	Na

- For Average Daily Demand, Maximum Daily Demand, and Qa a deficit in rights is indicated by a parentheses. Numbers not in parenthesis indicate a surplus of rights over demand.
- Figures for Average Daily Demand and Maximum Daily Demand surplus/deficit are Gallons per Day.
- Figures for Qa are Acre Feet.
- "Qa -- % Surplus" is the total Qa right minus the total quantity of water used in the year, divided by the total Qa right.

Comments:

This was a difficult plan to interpret. Accordingly the analysis set forth in the preceding table may not reflect actual conditions because it suggests that the City of Elma is currently exceeding its instantaneous flow rights to meet its maximum day demand and its annual demand. The plan indicates that the city intends to reduce lost water significantly over the 20 year planning period. This would improve the situation but not completely resolve the excess of use over rights. The City has applied for an increase in their overall rights to a total of Qi =1500 gpm and Qa=1086 AcFt. If Ecology approves the requested increase the City will have a surplus of rights over the 2015 demand projected in its plan.

ELMA COUNTRY CLUB

Water Rights: Sources: One groundwater right (G2-22466 C):

Qi: 75 gpm
Qa: 13 AcFt

Water System Plan	Year 1	Year 20
Planning Period	2000	Build Out
Population	16 residential/ 8 non-residential	26 approved connections
Average Daily Demand (GPD)	4,200	4,550
Maximum Daily Demand (GPD)	11,568	12,532

Excess or (Deficit) of Demand in Relation to Water Rights			
Year 1			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
103,800	96,432	8	64%
Build Out			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
103,450	95,468	8	61%

- For Average Daily Demand, Maximum Daily Demand, and Qa a deficit in rights is indicated by a parentheses. Numbers not in parenthesis indicate a surplus of rights over demand.
- Figures for Average Daily Demand and Maximum Daily Demand surplus/deficit are Gallons per Day.
- Figures for Qa are Acre Feet.
- "Qa -- % Surplus" is the total Qa right minus the total quantity of water used in the year, divided by the total Qa right.

Comments:

The DOH Sentry online data system shows a resident population for this facility of 16 persons and a nonresident population of 8 persons (24 connections). It also shows a maximum of 26 connections. The plan does not have clear information in the average and maximum daily demand, but DOH handwritten notes n SWSMP indicate ADD = 175 GPD per connection and MDD = 482 GPD per connection. The surplus/deficit analysis assumes 24 connections in year one and 26 connections at build out. The system has sufficient rights to meet is current and projected demand.

FIELD OF DREAMS

Water Rights:

The plan indicated that water for this new development would come from two applications for ground water rights. An email from the Department of Ecology on 25 July indicated that superseding certificates for rights based on these applications have not been issued.

7235A	Qi:	215 gpm
	Qa:	1 AcFt Single family residential
		67 AF Irrigation
7235B	Qi:	85 gpm
	Qa:	53 AcFt Single family residential

Following the plan, this project used the following quantities for assessing the adequacy of the right to meet the residential water requirements:

Qi: 300 gpm
Qa: 54 AcFt

Water System Plan	Year 1	Year 20
Planning Period	2000	Build Out (2005)
Population	na	99 ERU
Average Daily Demand (GPD)	na	35,640
Maximum Daily Demand (GPD)	na	71,280
ERU= equivalent residential unit. The plan indicates that 1 ERU = 390 GPD		

Excess or (Deficit) of Demand in Relation to Water Rights			
Year 1			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
na	na	na	na
Build Out projected for 2005			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
396,360	360,720	14	26%

- For Average Daily Demand, Maximum Daily Demand, and Qa a deficit in rights is indicated by a parentheses. Numbers not in parenthesis indicate a surplus of rights over demand.
- Figures for Average Daily Demand and Maximum Daily Demand surplus/deficit are Gallons per Day.
- Figures for Qa are Acre Feet.
- "Qa -- % Surplus" is the total Qa right minus the total quantity of water used in the year, divided by the total Qa right.

Comments:

Field of Dreams was a new 99 lot single-family Planned Rural Residential Development in Thurston County when the plan was prepared in March 2000. The plan projected that all the lots would be completely built out by the fall of 2005 and at that time the population would be 250 to 350 people.

Based on the demand projections in the plan this system will have adequate rights if certificates are issued for the quantities that the two applications request.

A 11 September email from Reginald Hern of Northwest Water Systems, which is NWS is the Satellite Management Agency for Field of Dreams, stated that the project currently has 85 connections. Mr. Hern indicated the ADD and MDD buildout of 99 connections are projected to be 55,000 gpd and 109,000 gpd and that these figures are interpolations to full buildout based on source meter readings from the past 12 months.

Using this information, the excess/deficit table for the Field of Dreams system would be as follows:

Excess or (Deficit) of Demand in Relation to the Certified Rights			
Build Out = 99 Connections			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
377,000	323,000	(8)	na

- For Average Daily Demand, Maximum Daily Demand, and Qa a deficit in rights is indicated by a parentheses. Numbers not in parenthesis indicate a surplus of rights over demand.
- Figures for Average Daily Demand and Maximum Daily Demand surplus/deficit are Gallons per Day.
- Figures for Qa are Acre Feet.
- "Qa -- % Surplus" is the total Qa right minus the total quantity of water used in the year, divided by the total Qa right.

This indicates that with the higher projected use, Field of Dreams would exceed its annual Qa. Mr. Hern indicated that this may be addressed by transferring some of the irrigation Qa in Application 7235A.

GRAYS HARBOR WATER DISTRICT NO. 1 (Grayland)

Water Rights:

Sources: Two groundwater rights (G2-20216C and G2-24383C). Total quantities for the two withdrawal rights are as follows:

Qi: 625 gpm
Qa: 745 AcFt

Water System Plan	Year 1	Year 20
Planning Period	2005	2025
Population	645 ERU	787 ERU
Average Daily Demand (GPD)	161,250	196,750
Maximum Daily Demand (GPD)	322,500	393,500
ERU = equivalent residential unit. The plan indicates that 1 ERU = 250 GPD		

Excess or (Deficit) of Demand in Relation to Water Rights

Year 1			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
738,750	577,500	564	76%
Year 20			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
703,250	506,500	525	70%

- For Average Daily Demand, Maximum Daily Demand, and Qa a deficit in rights is indicated by a parentheses. Numbers not in parenthesis indicate a surplus of rights over demand.
- Figures for Average Daily Demand and Maximum Daily Demand surplus/deficit are Gallons per Day.
- Figures for Qa are Acre Feet.
- "Qa -- % Surplus" is the total Qa right minus the total quantity of water used in the year, divided by the total Qa right.

Comments:

Based on the information in its plan, Grays Harbor Water District No. 1 has sufficient rights to meet its current and future demand.

GRAYS HARBOR WATER DISTRICT NO. 2 (Central Park)

Water Rights:

Sources: Two groundwater rights (G2-24153C and G2-25929C). Total quantities for the two withdrawal rights are as follows:

Qi: 1250 gpm
Qa: 672 AcFt

Water System Plan	Year 1	Year 20
Planning Period	2005	2025
Population	3,896	4,946
Average Daily Demand (GPD)	467,500	593,500
Maximum Daily Demand (GPD)	925,700	1,175,100
ERU = equivalent residential unit. The plan indicates that 1 ERU = 250 GPD		

Excess or (Deficit) of Demand in Relation to Water Rights			
Year 1			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
1,332,500	874,300	148	22%
Year 20			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
1,206,500	624,900	7	1%

- For Average Daily Demand, Maximum Daily Demand, and Qa a deficit in rights is indicated by a parentheses. Numbers not in parenthesis indicate a surplus of rights over demand.
- Figures for Average Daily Demand and Maximum Daily Demand surplus/deficit are Gallons per Day.
- Figures for Qa are Acre Feet.
- "Qa -- % Surplus" is the total Qa right minus the total quantity of water used in the year, divided by the total Qa right.

Comments:

Based on the information in its plan, Grays Harbor Water District No. 2 has sufficient rights to meet its current and future demand; although the annual quantity surplus is projected to be very small at the end of the planning period. The plan includes data from the Department of Ecology ("Water Right Tracking System Department of Ecology WR Document List Sorted by Primary Party Report") that indicates that the District may have additional rights, but the plan only identifies the two rights noted above in its "Water Rights Self-Assessment."

GREENWOOD MOBILE HOME PARK

Water Rights: Sources: One groundwater right (G2-23981) for two wells:

Qi: 100 gpm
Qa: 11.75 AcFt

Water System Plan	Year 1	Year 20
Planning Period	1994	Build Out
Population	64 ERU	118 ERU
Average Daily Demand (GPD)	16,000	29,500
Maximum Daily Demand (GPD)	51,200	94,400
ERU= equivalent residential unit. The plan indicates that 1 ERU = 250 GPD		

Excess or (Deficit) of Demand in Relation to Water Rights			
Year 1			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
128,000	92,800	(6)	Na
Build Out projected for 2005			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
114,500	49,600	(21)	Na

- For Average Daily Demand, Maximum Daily Demand, and Qa a deficit in rights is indicated by a parentheses. Numbers not in parenthesis indicate a surplus of rights over demand.
- Figures for Average Daily Demand and Maximum Daily Demand surplus/deficit are Gallons per Day.
- Figures for Qa are Acre Feet.
- "Qa -- % Surplus" is the total Qa right minus the total quantity of water used in the year, divided by the total Qa right.

Comments:

When the plan for Greenwood Mobile Home Park was prepared in 1994 there were 64 mobile homes and an estimated population of 160 persons. The plan projected that the system would add an additional 54 connections in the near future. The analysis shows a significant deficiency in annual quantities with 64 and 118 connections. The water right is held in the name of Bryan Kolb, and the plan stated that the system had applied for additional rights but did not state the quantities requested in the application. A July 25, 2006 email from the Department of Ecology stated that they had not received a change application to add quantities to the existing right. In a phone conversation on 30 August 2006 Mike Lang, who is the owner of the park, indicated that he thought that he had sufficient rights to meet the park's needs.

CITY OF HOQUIAM

Water Rights:

Sources: Two surface water rights on Davis Creek and the Hoquiam River, a storage right for 12 AcFt in the Davis Creek Impoundment, and a claim on the Little Hoquiam River that was not being used at the time the plan was written. The claim is for Qi=6 cfs and Qa=1925 AcFt. Total quantities for the two certified withdrawal rights are as follows:

Qi: 7,719 gpm
Qa: 12,451 AcFt (based on continuous withdrawal at the authorized Qi)

Water System Plan	Year 1	Year 20
Planning Period	2000	2020
Population	9600	10,500
Average Daily Demand (GPD)	1,277,000	1,599,000
Maximum Daily Demand (GPD)	2,618,000	3,279,000

Excess or (Deficit) of Demand in Relation to Water Rights			
Year 1			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
9,838,878	8,497,878	11,021	89%
Year 20			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
9,516,878	7,836,878	10,660	86%

- For Average Daily Demand, Maximum Daily Demand, and Qa a deficit in rights is indicated by a parentheses. Numbers not in parenthesis indicate a surplus of rights over demand.
- Figures for Average Daily Demand and Maximum Daily Demand surplus/deficit are Gallons per Day.
- Figures for Qa are Acre Feet.
- "Qa -- % Surplus" is the total Qa right minus the total quantity of water used in the year, divided by the total Qa right.

Comments:

The City of Hoquiam has sufficient rights to meet the demand projected for 2020 in its plan.

LAKE ARROWHEAD COMMUNITY CLUB

Water Rights:

Source: Permit for 2 Wells
Qi: 570 gpm
Qa: 200 AcFt

Water System Plan	Year 1	Year 20
Planning Period	2000	2020
Population	88 ERU	350 ERU
Average Daily Demand (GPD)	39,013	156,230
Maximum Daily Demand (GPD)	95,000	280,000
ERU = equivalent residential unit. The plan indicates that in the Lake Arrowhead service area there are an average of 2-.3 persons per residential connection		

Excess or (Deficit) of Demand in Relation to Water Rights			
Year 1			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
781,787	725,800	156	78%
Year 20			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
664,570	540,800	25	13%

- For Average Daily Demand, Maximum Daily Demand, and Qa a deficit in rights is indicated by a parentheses. Numbers not in parenthesis indicate a surplus of rights over demand.
- Figures for Average Daily Demand and Maximum Daily Demand surplus/deficit are Gallons per Day.
- Figures for Qa are Acre Feet.
- "Qa -- % Surplus" is the total Qa right minus the total quantity of water used in the year, divided by the total Qa right.

Comments:

Lake Arrowhead Community Club has sufficient water rights to meet the future needs that it identified in its plan.

LAKE LUCINDA COMMUNITY CLUB

Water Rights:

Sources: One right to withdraw groundwater

Qi: 200 gpm
Qa: 94 AcFt

Water System Plan	Year 1	Year 20
Planning Period	2004	Build Out
Population	98 Connections	127 Connections
Average Daily Demand (GPD)	28,874	37,418
Maximum Daily Demand (GPD)	75,484	97,821

Excess or (Deficit) of Demand in Relation to Water Rights			
Year 1			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
259,126	212,516	62	66%
Build Out			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
250,582	190,179	52	55%

- For Average Daily Demand, Maximum Daily Demand, and Qa a deficit in rights is indicated by a parentheses. Numbers not in parenthesis indicate a surplus of rights over demand.
- Figures for Average Daily Demand and Maximum Daily Demand surplus/deficit are Gallons per Day.
- Figures for Qa are Acre Feet.
- "Qa -- % Surplus" is the total Qa right minus the total quantity of water used in the year, divided by the total Qa right.

Comments:

Lake Lucinda has sufficient rights to meet the demand projected for full build out to 127 connections. The plan noted that there were opportunities for water conservation, but the plan did not quantify potential conservation.

LENETS MOBILE HOME ESTATES

Water Rights:

Sources: One groundwater right (G2-01025 C) for two wells:

Qi: 100 gpm
Qa: 23.5 AcFt

Water System Plan	Year 1	Year 20
Planning Period	1994	Build Out (2005)
Population	27 ERU	50 ERU
Average Daily Demand (GPD)	6,156	11,400
Maximum Daily Demand (GPD)	18,468	34,200
ERU= equivalent residential unit. The plan indicates that 1 ERU = 250 GPD		

Excess or (Deficit) of Demand in Relation to Water Rights			
Year 1			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
137,844	125,532	17	71%
Build Out projected for 2005			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
132,600	109,800	11	46%

- For Average Daily Demand, Maximum Daily Demand, and Qa a deficit in rights is indicated by a parentheses. Numbers not in parenthesis indicate a surplus of rights over demand.
- Figures for Average Daily Demand and Maximum Daily Demand surplus/deficit are Gallons per Day.
- Figures for Qa are Acre Feet.
- "Qa -- % Surplus" is the total Qa right minus the total quantity of water used in the year, divided by the total Qa right.

Comments:

This system has sufficient rights to cover its needs as indicated in the plan.

LEWIS COUNTY WATER DISTRICT #2, ONALASKA

Water Rights:

Sources: The information on rights in the plan is very general. WRATS indicates that the District has one surface water right to withdraw from an unnamed spring, 2 groundwater rights, and a groundwater permit. Total quantities are as follows:

Qi: 222 gpm
Qa: 260 AcFt

Water System Plan	Year 1	Year 20
Planning Period	1993	2013
Population	532	811
Average Daily Demand (GPD)	61,600	94,000
Maximum Daily Demand (GPD)	135,500	260,500

Excess or (Deficit) of Demand in Relation to Water Rights			
Year 1			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
257,976	184,076	191	73%
Year 20			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
225,576	59,576	155	60%

- For Average Daily Demand, Maximum Daily Demand, and Qa a deficit in rights is indicated by a parentheses. Numbers not in parenthesis indicate a surplus of rights over demand.
- Figures for Average Daily Demand and Maximum Daily Demand surplus/deficit are Gallons per Day.
- Figures for Qa are Acre Feet.
- "Qa -- % Surplus" is the total Qa right minus the total quantity of water used in the year, divided by the total Qa right.

Comments:

Onalaska has sufficient rights to meet the demand projected for 2013 in its plan.

LOMA VISTA WATER SYSTEM

Water Rights:

Sources: The system has a permit for one right (two wells). Total quantities are as follows:

Qi: 330 gpm
Qa: 215.5 AcFt

Water System Plan	Year 1	Year 20
Planning Period	2002	Build out expected by 2007
Population	66 connections	69 connections
Average Daily Demand (GPD)	Approximately = Build Out	24,840
Maximum Daily Demand (GPD)	Approximately = Build Out	49,680

Excess or (Deficit) of Demand in Relation to Water Rights			
Year 1			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
Approximately = Build Out			
Build Out projected for 2007			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
450,360	425,520	188	87%

- For Average Daily Demand, Maximum Daily Demand, and Qa a deficit in rights is indicated by a parentheses. Numbers not in parenthesis indicate a surplus of rights over demand.
- Figures for Average Daily Demand and Maximum Daily Demand surplus/deficit are Gallons per Day.
- Figures for Qa are Acre Feet.
- "Qa -- % Surplus" is the total Qa right minus the total quantity of water used in the year, divided by the total Qa right.

Comments:

The Loma Vista Water System is owned and operated by Thurston County PUD. In a telephone conversation Ms. Herta Ingram, Acting General Manger of the Thurston County PUD indicated that the system is currently at build our of 69 connections. The system has sufficient rights to meet its demand.

CITY OF McCLEARY

Water Rights:

Sources: plan indicates three groundwater permits. Total quantities are as follows:

Qi: 1100 gpm
Qa: 673 AcFt

Water System Plan	Year 1	Year 20
Planning Period	2000	2020
Population	1623	2004
Average Daily Demand (GPD)	228,362	341,504
Maximum Daily Demand (GPD)	507,571	759,047

Excess or (Deficit) of Demand in Relation to Water Rights			
Year 1			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
1,355,638	1,076,429	417	62%
Year 20			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
1,242,496	824,953	290	43%

- For Average Daily Demand, Maximum Daily Demand, and Qa a deficit in rights is indicated by a parentheses. Numbers not in parenthesis indicate a surplus of rights over demand.
- Figures for Average Daily Demand and Maximum Daily Demand surplus/deficit are Gallons per Day.
- Figures for Qa are Acre Feet.
- "Qa -- % Surplus" is the total Qa right minus the total quantity of water used in the year, divided by the total Qa right.

Comments:

The City of McCleary has sufficient rights to meet the demand projected for 2020 in its plan.

CITY OF MONTESANO

Water Rights:

Sources: Four groundwater rights. Total quantities for primary rights are as follows:

Qi: 4400 gpm
Qa: 1160 AcFt

Water System Plan	Year 1	Year 20
Planning Period	2000	2020
Population	3575	4993
Average Daily Demand (GPD)	599,720	709,500
Maximum Daily Demand (GPD)	1,199,440	1,419,000

Excess or (Deficit) of Demand in Relation to Water Rights

Year 1			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
5,736,280	5,136,560	488	42%
Year 20			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
5,626,500	4,917,000	365	31%

- For Average Daily Demand, Maximum Daily Demand, and Qa a deficit in rights is indicated by a parentheses. Numbers not in parenthesis indicate a surplus of rights over demand.
- Figures for Average Daily Demand and Maximum Daily Demand surplus/deficit are Gallons per Day.
- Figures for Qa are Acre Feet.
- "Qa -- % Surplus" is the total Qa right minus the total quantity of water used in the year, divided by the total Qa right.

Comments:

The City of Montesano has sufficient rights to meet the demand projected for 2020 in its plan.

MONTE VIEW WATER COMPANY (aka Monte View Estates)

Water Rights:

The plan, which was submitted in January 2000, indicated two groundwater permits with the following total quantities in primary rights: Qi = 60 gpm, Qa = 96 AcFt. An email from the Department of Ecology indicated that the quantities were adjusted when the final certificates were issued to reflect the quantities that the system was using. As a result, the total primary quantities for the two certified rights are:

Qi: 15 gpm
Qa: 18 AcFt

Water System Plan	Year 1	Year 20
Planning Period	2000	Build Out
Population	68 ERU	71 ERU
Average Daily Demand (GPD)	14,933	15,589
Maximum Daily Demand (GPD)	29,866	31,178
ERU= equivalent residential unit. The plan indicates that 1 ERU = 220 to 233 GPD		

Excess or (Deficit) of Demand in Relation to the Certified Rights			
Year 1			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
6,667	(8,266)	1	7%
Build Out			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
6,008	(9,584)	1	3%

- For Average Daily Demand, Maximum Daily Demand, and Qa a deficit in rights is indicated by a parentheses. Numbers not in parenthesis indicate a surplus of rights over demand.
- Figures for Average Daily Demand and Maximum Daily Demand surplus/deficit are Gallons per Day.
- Figures for Qa are Acre Feet.
- "Qa -- % Surplus" is the total Qa right minus the total quantity of water used in the year, divided by the total Qa right.

Comments:

The preceding analysis is based on the plan that the Monte View Water Company submitted to the Department of Health in January 2000. It indicates that the instantaneous water rights held by

the system are adequate to meet average daily demand and barely to meet annual demand. They are not adequate to meet the maximum daily demand projected in the plan.

Bruce Davis, Water Manager of the Monte View Water Company, provided additional information in an August 30, 2006 email. Mr. Davis stated that Monte View Estates was now at 69 units and did not plan to add more. He also stated that the system installed a source meter in September 2002 and provided the following use information (in cubic feet of water) for the years 2003 – 2006:

- 2003, Yearly usage, 814,500. Daily Average, 2,231.5. High, 6,000 on July 27th.
- 2004,Yearly usage-823,400, daily averge-2,255.9, high- 5,200 on August 2nd.
- 2005, Yearly usage-691,600, daily averge-1894.8, high- 4,000 on August 6th.
- 2006 thru 8-31, Usage-480,300, daily averge-1976.5, high- 3,900 on July 6th.

Based on a maximum of 69 units and average usage for the years 2003 – 2005 the revised tables for the Monte View system is as follows:

Source Bruce Davis Email	**Year 2003 -- 2005**
Year	2005 = Build Out
Population	69 ERU
Average Daily Demand (average 2003 – 2005)	15,916 GPD
Maximum Daily Demand (average 2003 – 2005)	37,901 GPD
Annual Demand (average 2003 – 2005)	17.82 AcFt

Excess or (Deficit) of Demand in Relation to the Certified Rights			
Build Out = 2005			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
5,684	(16,301)	0.17	1%

- For Average Daily Demand, Maximum Daily Demand, and Qa a deficit in rights is indicated by a parentheses. Numbers not in parenthesis indicate a surplus of rights over demand.
- Figures for Average Daily Demand and Maximum Daily Demand surplus/deficit are Gallons per Day.
- Figures for Qa are Acre Feet.
- "Qa -- % Surplus" is the total Qa right minus the total quantity of water used in the year, divided by the total Qa right.

The additional data provided by Mr. Davis does not substantially change the conclusions from the analysis of data in the 2000 plan; although the deficit in Maximum Daily Demand is greater.

CITY OF NAPAVINE

Water Rights:

Sources: Two groundwater rights. Total quantities for the two withdrawal rights are as follows:

Qi: 315 gpm
Qa: 168 AcFt

Water System Plan	Year 1	Year 20
Planning Period	2000	2020
Population	1028	2754
Average Daily Demand (GPD)	128,000	267,000
Maximum Daily Demand	243,000	507,000

Excess or (Deficit) of Demand in Relation to Water Rights			
Year 1			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
325,600	210,600	25	15%
Year 20			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
186,600	(53,400)	(131)	na

- For Average Daily Demand, Maximum Daily Demand, and Qa a deficit in rights is indicated by a parentheses. Numbers not in parenthesis indicate a surplus of rights over demand.
- Figures for Average Daily Demand and Maximum Daily Demand surplus/deficit are Gallons per Day.
- Figures for Qa are Acre Feet.
- "Qa -- % Surplus" is the total Qa right minus the total quantity of water used in the year, divided by the total Qa right.

Comments:

The City of Napavine needs to acquire additional rights above those they presently possess to meet their projected demand. Their plan indicates that conservation will buy the city some time, but will not eliminate the need to acquire new rights.

WRATS shows that the city has submitted three applications for groundwater rights for a total Qi=1190 gpm, Qa=432 AcFt. The priority dates for the rights requested in the three applications are all more recent than the priority date of Chehalis Basin instream flow rights. So if any or all of the requested rights were approved they should not pose any threat to meeting the needs for human and non-human uses of surface water (assuming adequate enforcement).

I checked with Ecology and learned one application is being prepared on a cost reimbursement basis and a consulting firm is working on it. This application is for Qi=500 gpm. No Qa is listed in the application. Ecology will assign a Qa at a later stage in the process if they approve the application. Ecology indicated that if they approve this application for a new right that Napavine might withdraw the other two "change applications."

If Ecology approved the additional Qi=500 gpm that would meet the city's instantaneous flow needs as identified in the plan. The plan indicates that Napavine would need an additional 131 AcFt to cover their 2020 needs, and this analysis agrees with that conclusion.

NEWAUKUM HILL WATER ASSOCIATION

Water Rights:

Sources: Two groundwater rights. Total quantities for the two withdrawal rights are as follows:

Qi: 68 gpm
Qa: 87 AcFt

Water System Plan	Year 1	Year 20
Planning Period	1996	Not stated
Population	163 active connections	203 connections
Average Daily Demand (GPD)	48,330	78,680
Maximum Daily Demand (GPD)	60,190	97,990

Excess or (Deficit) of Demand in Relation to Water Rights

Year 1

Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
49,590	37,730	33	38%

Year 20

Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
19,240	(70)	(1)	na

- For Average Daily Demand, Maximum Daily Demand, and Qa a deficit in rights is indicated by a parentheses. Numbers not in parenthesis indicate a surplus of rights over demand.
- Figures for Average Daily Demand and Maximum Daily Demand surplus/deficit are Gallons per Day.
- Figures for Qa are Acre Feet.
- "Qa -- % Surplus" is the total Qa right minus the total quantity of water used in the year, divided by the total Qa right.

Comments:

Based on the information in its plan, the Newaukum Hill Water Association has sufficient rights to meet its current demand. This would not be the case if the system served the maximum of 203 connections indicated in its plan and used only its own rights – see surplus/deficit analysis above. However, the system does not depend entirely on its own rights. The Newaukum Hill plan states that the system purchases approximately half of its water from the City of Chehalis – about 24,000 gallons per day on average. As long this continues the system should be well able to meet its current and future demand without exceeding its rights.

CITY OF OAKVILLE

Water Rights:

Source(s): 2 Wells

Qi: 800 gpm
Qa: 94 AcFt

The Qa includes 20 AcFt noted in the water system plan and additional 4 AcFt that Dan Thompson from the City indicated was added in June 2006.

Water Right Application (not included in Surplus/deficit analysis in table below):

Source(s): Well
Qi: 500 gpm
Qa: 100 AcFt

Water System Plan	Year 1	Year 20
Planning Period	2000	2020
Population	770	1049
Average Daily Demand (GPD)	140,000	179,625
Maximum Daily Demand (GPD)	280,000	359,250

Excess or (Deficit) of Demand in Relation to Water Rights			
Year 1			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
1,012,000	872,000	(63)	na
Year 20			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
972,375	792,750	(107)	na

- For Average Daily Demand, Maximum Daily Demand, and Qa a deficit in rights is indicated by a parentheses. Numbers not in parenthesis indicate a surplus of rights over demand.
- Figures for Average Daily Demand and Maximum Daily Demand surplus/deficit are Gallons per Day.
- Figures for Qa are Acre Feet.
- "Qa -- % Surplus" is the total Qa right minus the total quantity of water used in the year, divided by the total Qa right.

Comments:

The City of Oakville has sufficient instantaneous flow rights to meet the demand projected for 2020 in its plan. This is not true, however, for its annual demand. If the Department of Ecology approves Oakville's application for an additional 500 gpm and 100 AcFt and Oakville institutes conservation measures successfully they will have sufficient water to meet the annual demand projected for 2020.

CITY OF OCEAN SHORES

Rights:

Source: Humptulips

Qi: 20 cfs

Qa: 1440 AcFt

Various wells – all in the vicinity of the Ocean Shores service area.

Comments:

The large Ocean Shores right on the Humptulips would be sufficient to meet the needs that the city projected in its plan. However, the City has never developed the infrastructure to withdraw, treat, and transport water from the Humptulips. Instead, the city has been seeking supplemental groundwater rights which are close to the population served. By so doing, the city avoids the costs of transporting water from the Humptulips and the costs of complying with the Surface Water Treatment Rule. It does not appear that the City actually plans to withdraw water from the Humptulips.

One of the mitigation approaches that Ecology recommends for the issuance of new groundwater rights is the retirement of existing surface water rights. Assuming that the science supported additional ground water withdrawals in the area where Ocean Shores has located wells, this could mean that Ecology could make the (now) supplemental well rights primary, issue new primary groundwater rights if needed, and retire the Humptulips surface water right.

TOWN OF PE ELL

Water Rights:

Pe Ell currently holds one primary right on Lester Creek. Quantities are as follows:

Qi: 2.0 cfs
Qa: No limit

Water System Plan	Year 1	Year 20
Planning Period	2005	2025
Population	699	812
Average Daily Demand (GPD)	143,804	287,608
Maximum Daily Demand (GPD)	174,540	349,080

Excess or (Deficit) of Demand in Relation to Water Rights

Year 1

Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
1,148,740	1,004,936	1,287	89%

Year 20

Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
1,118,004	943,464	1,252	86%

- For Average Daily Demand, Maximum Daily Demand, and Qa a deficit in rights is indicated by a parentheses. Numbers not in parenthesis indicate a surplus of rights over demand.
- Figures for Average Daily Demand and Maximum Daily Demand surplus/deficit are Gallons Per Day.
- Figures for Qa are Acre Feet.
- "Qa -- % Surplus" is the total Qa right minus the total quantity of water used in the year, divided by the total Qa right.

Comments:

According to data in its plan, Pe Ell has a large surplus of rights. The town has used Lester Creek as a water source for over 100 years. It has no minimum instream flow. The creek flows are low in the summer, but the plan indicates that they never fall below the 500 gpm capability of the intake.

In 1988, Pe Ell applied for an additional point of withdrawal on the Chehalis which would be supplemental to the Lester Creek right. The application was for Qi = 0.5 cfs. Ecology granted the town a permit to develop the Chehalis source. The permit included conditions providing that

the Lester Creek right would be used only from November through April and that Pe Ell relinquish two rights that they had used historically but were no longer being used by the town (Mahaffey Creek and Crim Creek). The permit also provided an annual withdrawal cap of 144 acre-feet from both sources. This annual quantity was less than the Town had historically used from the Lester Creek source.

Pe Ell never perfected the Chehalis River water right and subsequent to the issuance of the Chehalis permit, the town determined that it would prefer to continue using the Lester Creek source year round because the source has, "…higher water quality, gravity flow which means reduced cost, and the previous concern for drying up Lester Creek is now minimized because with the replacement of the wood stave transmission main."

In 1999, the Town met with Ecology to discuss the status of this permit and the annual quantity limitation within in it. Ecology agreed that the annual quantity listed in the permit was in error and that if the Town wished to use Lester Creek year round, they should withdraw the Chehalis River permit and file a new application for the Chehalis River. In 2000, the Town requested that Ecology withdraw the Chehalis permit and submitted a revised application for the Chehalis River as a supplemental point of withdrawal while allowing year round use of the Lester Creek source. The town is still willing to relinquish the Mahaffey Creek and Crim Creek rights.

ROCHESTER WATER ASSOCIATION

Water Rights:

Sources: The Rochester Water Association serves the communities of Rochester, Grandview Valley, Prairie Vista, and Sunsetvue. The plan indicates that the communities hold 8 primary groundwater rights. Total quantities of these rights are as follows:

Qi: 1571 gpm
Qa: 376.4 AcFt

Water System Plan	Year 1	Year 20
Planning Period	2003	2023
Population	613 ERU	830 ERU
Average Daily Demand (GPD)	158,614	336,028
Maximum Daily Demand (GPD)	317,227	672,057
ERU = equivalent residential unit		

Excess or (Deficit) of Demand in Relation to Water Rights			
Year 1			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
2,103,626	1,945,013	199	53%
Year 20			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
1,926,212	1,590,183	0	na

- For Average Daily Demand, Maximum Daily Demand, and Qa a deficit in rights is indicated by a parentheses. Numbers not in parenthesis indicate a surplus of rights over demand.
- Figures for Average Daily Demand and Maximum Daily Demand surplus/deficit are Gallons per Day.
- Figures for Qa are Acre Feet.
- "Qa -- % Surplus" is the total Qa right minus the total quantity of water used in the year, divided by the total Qa right.

Comments:

The rights, MDD, ADD and annual demand data were calculated based on Table 3 "Existing Water Rights Status" and the accompanying unnumbered table entitled "Water Rights Self Assessment Form." The ADD was established by dividing the annual demand stated in these tables in acre feet by 365 and converting to gallons per minute. MDD was calculated using MDD = ADD x 2.0 as indicated in the plan. This analysis indicates that the system has sufficient rights to meet its projected demand in 2003, but has no surplus rights once the demand that the city projects for 2023 is met.

SATSOP DEVELOPMENT PARK

Water Rights:

The Satsop Development Park is operated by the Grays Harbor Public Development Authority (PDA). The PDA submitted a water system plan to the Department of Health (DOH) in 2001. The plan explained that as an energy facility the Satsop Development Park had previously operated under "authorizations" to withdraw water rather than rights. The Park had two authorizations: (1) 300 gpm from wells off of Keys Road (near the confluence of the Chehalis and Satsop rivers), and (2) 9.5 cfs from Ranney wells. The plan noted no annual quantity for either authorization.

The 1996 legislation that transferred the property to the PDA required DOE to identify 20 cfs for the facility. This came in the form of 20 cfs of City of Aberdeen rights on the Wynoochee, which the City agreed to transfer to Ranney Wells. At the time that the plan was submitted, the facility was seeking to convert a portion of the Ranney Wells 20 cfs to the Keys Road site and convert it to a groundwater right. The plan estimated that it would need 1000 gpm from this site to meet its expected future demand for potable water.

The water system plan that the PDA submitted to DOH only stated the quantity that the Park expected to need for potable water. In addition, the Park will need water to meet the industrial needs of its industrial customers. Because the industrial needs were not quantified, the following tables address only the PDA's potable water needs and only consider the 1000 gpm that the facility hopes to withdraw from the Keys Road wells.

Water System Plan (potable water)	**Year 1**	**Year 20**
Planning Period	2000	Build Out
Population	143 ERU	2491 ERU
Average Daily Demand (GPD)	32,981	509,970
Maximum Daily Demand (GPD)	49,472	764,955

Excess or (Deficit) of Demand based on the WSP			
Year 1			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
1,407,019	1,390,528	na	Na
Build Out			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
930,030	675,045	na	Na

- For Average Daily Demand, Maximum Daily Demand, and Qa a deficit in rights is indicated by a parentheses. Numbers not in parenthesis indicate a surplus of rights over demand.
- Figures for Average Daily Demand and Maximum Daily Demand surplus/deficit are Gallons per Day.
- Figures for Qa are Acre Feet.
- "Qa -- % Surplus" is the total Qa right minus the total quantity of water used in the year, divided by the total Qa right.

Comments:

Per the discussion above, the surplus/deficit analysis in the preceding table assumes that the facility successfully gains a right to withdraw groundwater at 1000 gpm from the Keys Road wells. This will provide significantly more water than the facility needs to meet its current and projected demand for potable water. No annual quantity for this source was discussed in the plan, so this portion of the analysis was not performed.

In an email and a telephone conversation, Mr. Stan Ratcliff, who is the Director of Services for the PDA, indicated that the PDA has commitments to its industrial customers which would require more than 9.5 cfs from the Ranney Wells site. Mr. Ratcliff also provided the information that the return flows from the Park to the Chehalis River are upstream of the points of withdrawal.

SCOTT LAKE MAINTENANCE CORPORATION

Water Rights:

Sources: The Scott Lake system has three primary rights to withdraw groundwater. The quantities of each right and the total quantities are as set forth below. According to WRATS the first right is held by Scott Lake Maintenance and the other two by the Scott Lake Development Company. In telephone conversation, Mike Willet, Executive Secretary, Lake Maintenance indicated that the Development Company Rights have been conveyed to Scott Lake Maintenance.

G2-26811:	Qi:	786	gpm
	Qa:	196	AcFt
G2-06391	Qi:	120	gpm
	Qa:	51	AcFt
G2-00018:	Qi:	120	gpm
	Qa:	96	AcFt
Total:	Qi:	1026	gpm
	Qa:	343	AcFt

Water System Plan	Year 1	Year 20
Planning Period	2000	Build Out
Population	1258	1550
Average Daily Demand (GPD)	189,750	233,310
Maximum Daily Demand (GPD)	379,500	466,620

Excess or (Deficit) of Demand in Relation to Water Rights			
Year 1			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
1,287,690	1,097,940	130	38%
Build Out			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
1,244,130	1,010,820	82	24%

- For Average Daily Demand, Maximum Daily Demand, and Qa a deficit in rights is indicated by a parentheses. Numbers not in parenthesis indicate a surplus of rights over demand.
- Figures for Average Daily Demand and Maximum Daily Demand surplus/deficit are Gallons per Day.
- Figures for Qa are Acre Feet.
- "Qa -- % Surplus" is the total Qa right minus the total quantity of water used in the year, divided by the total Qa right.

Comments:

The Scott Lake plan indicates that average water use over the 5 years prior to preparation of its plan was 330 Gallons per Day (GPD) per Connection and that use in the year prior to the plan was only 230 GPD. Both are low relative to the "Ecology standard rate of 450 GPD." The plan also indicates that the system "currently exceeds the amount of annual water use as permitted by the water right issued by the Department of Ecology (P15)."

Based on 330 GDP per connection, it appears that Scott Lake currently has a surplus of rights and will continue to have a surplus at full build out.

TAHOMA MEADOWS

Water Rights: Sources: One groundwater right (G2-22514A):

Qi: 50 gpm
Qa: 20 AcFt

Water System Plan	Year 1	Year 20
Planning Period	1998	Build Out
Population	na	40 connections
Average Daily Demand (GPD)	na	14,400
Maximum Daily Demand (GPD)	na	28,800

Excess or (Deficit) of Demand in Relation to Water Rights			
Year 1			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
na	na	na	na
Build Out projected for 2005			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
57,600	43,200	4	19%

- For Average Daily Demand, Maximum Daily Demand, and Qa a deficit in rights is indicated by a parentheses. Numbers not in parenthesis indicate a surplus of rights over demand.
- Figures for Average Daily Demand and Maximum Daily Demand surplus/deficit are Gallons per Day.
- Figures for Qa are Acre Feet.
- "Qa -- % Surplus" is the total Qa right minus the total quantity of water used in the year, divided by the total Qa right.

Comments:

At the time the Tahoma Meadows plan was prepared there was no system in place. The plan indicated that the development will have 40 lots and an estimated population of 128 people.

The annual demand that results from multiplying the average daily demand by 365 days is equal to approximately 5.25 MGY. This is significantly more than the approximately 0.88 MGY stated in the plan (page 11). The surplus/deficit analysis reflected in the table above used the larger number -- 5.25 MGY. Even with this -- the system would have sufficient water rights to meet its demand.

A September 18, 2006 email from Steve Harrington, General Manager of H&R Waterworks, which manages the Tachoma Meadows System, provides additional information – see page 63

From: "Steve Harrington" <SteveH@thewaterco.net>
To: <leedaneker@comcast.net>, "Jim Campbell" <JimC@thewaterco.net>
Cc: "Jim Campbell" <JimC@thewaterco.net>
Subject: RE: Tahoma Mewdows water rights and demand
Date: Monday, September 18, 2006 9:23:42 AM

Lee

We have reviewed your information. First a few points that were not include in the original WSP you reviewed. The Tahoma Meadows water system is adjacent to several Group B systems that we also own in the area. In our current umbrella WSP which we are presently developing, the retail service area for these rights will expand and all rights will be placed in use as allowed under the Muni Law.

Second, we are not yet at "buildout" under the above scenario using these water rights.

So in essence, from the company's point of reference, there are no surplus rights.

If you have any questions, please email me.

Stephen L. Harrington
General Manager
H & R Waterworks, Inc.
DOH Satellite Management Agency License #123
Water Distribution Manager 3, License #7904
Office: 360-357-3277
Fax: 360-357-3758
Cell Phone: 360-239-2694

CITY OF TENINO

Water Rights: 2 groundwater rights with the following total quantities:

Qi: 700 gpm
Qa: 270 AcFt

Water System Plan	Year 1	Year 20
Planning Period	1995	2015
Population	1501	1728
Average Daily Demand (GPD)	189,000	218,000
Maximum Daily Demand (GPD)	576,000	663,840

Excess or (Deficit) of Demand in Relation to Water Rights			
Year 1			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
819,000	432,000	58	22%
Year 20			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
790,000	344,160	26	10%

- For Average Daily Demand, Maximum Daily Demand, and Qa a deficit in rights is indicated by a parentheses. Numbers not in parenthesis indicate a surplus of rights over demand.
- Figures for Average Daily Demand and Maximum Daily Demand surplus/deficit are Gallons per Day.
- Figures for Qa are Acre Feet.
- "Qa -- % Surplus" is the total Qa right minus the total quantity of water used in the year, divided by the total Qa right.

Comments:

Based on its 1995 plan, the City of Tenino has sufficient rights to meet the demand projected for 2015 in its plan. However, in an email dated August 30, 2006, Dan Carnrite, Senior Planner for the City, indicated the City is about to submit an updated plan to DOH that will indicate that the City needs to acquire additional rights much sooner than was suggested by the data in their 1995 plan. Information provided by Mr. Carnrite is as follows:

PREPARED BY: DAN CARNRITE, SENIOR PLANNER, CITY OF TENINO
August 30, 2006.

Water System Plan	Year 1	Year 20
Planning Period	2005	2025
Population	1501	3340

Tenino Water Right Capacity Summary				
YEAR	*INSTANTANEOUS Demand, Qi (gpm)	Instantaneous Surplus/(Deficit) (gpm)	Annual Demand, Qa (acre-ft/year)	Annual Surplus/(Deficit) (acre-ft/year)
Current	700	0	229	41
6-Year	700	0	299	(29)
20-Year	1,000	(300)	548	(278)
*Based on projections of nominal well capacity				

Gibbs & Olson, Inc. prepared a City of Tenino Water Right Evaluation (Draft) in August, 2006, The report, although draft, does state that Tenino does not have adequate instantaneous or annual quantity for the 20-year planning period. Specifically, the report states that the current annual quantity is projected to be adequate through 2009 and the instantaneous quantity should be adequate through 2019. The projected short term annual quantity deficit is a significant concern. Acquisition of additional water rights is typically time intensive. Based on Water System Plan projections, the City needs to acquire additional water right annual quantity by 2009. Additional instantaneous quantity is not needed until about ten years later.

The TRPC population forecast to 2026 is 3,340 residents if development of sewer system occurs. The Waste Water Treatment Facility is in the design phase, with the sewer system planned to be operational in late spring of 2008.

The City is currently assessing various implementation options to obtain additional water rights and should have a planned response by City Council later this year (2006).

****

Using the information provided by Mr. Carnrite and an MDD/ADD ration of 3.05 per the 1997 plan, the excess/deficit table for the Tenino system would be as follows:

Excess or (Deficit) of Demand in Relation to Water Rights			
2005			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
803,562	384,464	41	15%
2025			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
518,777	(484,130)	(278)	na

- For Average Daily Demand, Maximum Daily Demand, and Qa a deficit in rights is indicated by a parentheses. Numbers not in parenthesis indicate a surplus of rights over demand.
- Figures for Average Daily Demand and Maximum Daily Demand surplus/deficit are Gallons per Day.
- Figures for Qa are Acre Feet.
- "Qa -- % Surplus" is the total Qa right minus the total quantity of water used in the year, divided by the total Qa right.

THRUSTON COUNTY WATER SYSTEM/GRAND MOUND SERVICE AREA

Water Rights: Primary rights consist of a permit (G2-28572) to withdraw groundwater:

Qi: 870 gpm
Qa: 526.4 AcFt

Water System Plan	Year 1	Year 20
Planning Period	2005	2025
Population	151 ERU	291 ERU
Average Daily Demand (GPD)	54,457	136,947
Maximum Daily Demand (GPD)	136,143	342,367

Excess or (Deficit) of Demand in Relation to Water Rights

Year 1			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
1,198,343	1,116,657	465	88%
Year 20			
Avg. Daily Demand	Max. Daily Demand	Annual Qa	Qa -- % Surplus
1,115,853	910,433	373	71%

- For Average Daily Demand, Maximum Daily Demand, and Qa a deficit in rights is indicated by a parentheses. Numbers not in parenthesis indicate a surplus of rights over demand.
- Figures for Average Daily Demand and Maximum Daily Demand surplus/deficit are Gallons per Day.
- Figures for Qa are Acre Feet.
- "Qa -- % Surplus" is the total Qa right minus the total quantity of water used in the year, divided by the total Qa right.

Comments:

The service area will be developed in a mixture of industrial, commercial, and residential development. The rights, MDD, ADD and annual demand data were taken from Table 4-1 "Existing Water Right(s) Status" and 4-2 "Forecasted Water Right(s) status. The ADD was established by dividing the annual demand by 365 and converting to gallons per minute. MDD was calculated using MDD = ADD x 2.5 as indicated in the plan. This analysis indicates that the system has sufficient rights to meet its projected demand in 2025.

Scott Clark, Utility Planner for the Thurston County Department of Water and Waste Management reviewed the data in the preceding tables and emailed on August 16, 2006 indicating that the data was an accurate representation of what was included in the plan prepared in 2005 but that because of unexpected growth in the Grand Mound service area the projections have not proven to be accurate. Mr. Clark's email explains the current situation as follows:

> To project future demands shown in the plan, staff used growth projections produced by the Thornton Regional Planning Council (TRPC). TRPC's growth projections are based on historic trends. However, it is my opinion that Grand Mound's Water System will need to seek additional water rights within the next 24-36 months due to the explosive growth being experienced in the Grand Mound Water System Service Area. In the last twelve months, twelve subdivisions, one large apartment complex and several commercials enterprises have applied for service from the Grand Mound Water System. Additionally, the Chehalis Tribe has indicated that they plan to connect the Great Wolf Resort to the Grand Mound System. At this time, the utility has committed 600 of its 1000 ERUs. If the Chehalis Tribe connects, the utility may commit another 200-400 ERUs. The worst case scenario - which is likely, is that Grand Mound will reach its limiting factor for its existing water rights in the next 36 months. Consequently, the surpluses shown in the letter are probably grossly inaccurate and should not be used to reconcile water for instream flows. In the next water plan revision, the county will explore more aggressive water conservation programs that will assist the Chehalis Basin Partnership in meeting the holistic water needs of the Chehalis Basin. Please call or e-mail if you need additional information.
>
> Scott Clark, Utility Planner
> Thurston County's Department of Water and Waste Management
> Engineering Services and Capital Planning Management
> 921 Lakeridge Drive SW
> Bldg. 4, Room 100
> Olympia, WA 98502
> Phone: (360) 357-2491, ext. 6807
> FAX: (360) 754-4682

TRANSALTA CENTRALIA GENERATION LLC

Water Rights:

Information provided by the Department of Ecology indicates that TransAlta has a certified right and a permit to withdraw water from the Skookumchuck. Quantities are as follows:

Certificate (R2-19988 – per DOE email):

Reservoir Certificate in the amount of 51,500 acre-feet per year.

Permit (S2-19990 – per WRATS and DOE email):

Qi = 80 cfs
Qa = 39,100 AcFt

Comments:

TransAlta Centralia Generation LLC (coal fired steam electric generation), TransAlta Centralia Mining LLC (coal mining), and the Big Hanford Project (natural gas electric power generation) filed a Small Water System Management Program covering all three facilities.

The facility has a potable water system to provide water for workers and visitors.

Because of the industrial nature of the facility the SWSMP does not lend itself to the type of surplus/deficit rights analysis that this project performed for other systems.

CITY OF TUMWATER

The City has rights in WRIA 13 and has applied for new groundwater rights in WRIA 23 within the City of Tumwater's Urban Growth Area.

At present all of the City's certified rights and withdrawals are in WRIA 13.

The applications for new groundwater rights in WRIA 23 are for municipal instantaneous and annual quantities. The Partnership may choose to review the City's water right applications during the appropriate comment period. Additionally, the Partnership may choose to request more information from the City or the Washington State Department of Ecology on the relationship between hydraulic continuity and stream flow that may be available relating to the specific transfer.

In an email Dan Smith, who is the Water Resources Program Manager for the City of Tumwater, stated, "the City studies the groundwater situation for every proposed withdrawal - examining impacts on surface waters, wetlands, and other groundwater rights. If potential impacts exist, the City seeks to find alternatives to lessen the effect City withdrawals have on the environment and/or private water supplies."

CITY OF WESTPORT

Rights:

Various wells – all in the vicinity of the City of Westport service area.

Comments:

No potential impact on surface waters included in the Chehalis Basin Plan as long as the existing wells are the city's source of supply.

ATTACHMENT D:

The following pages contain a sample of the transmittal letter that the Chehalis Basin Partnership used to provide data sheets to purveyors for verification and comment.

August 8, 2006

___SYSTEM NAME___

___SYSTEM ADDRESS___

Dear ___SYSTEM NAME___ Water System Operator:

I am writing you on behalf of the Chehalis Basin Partnership (the Partnership), which is the watershed planning entity for the Chehalis Basin under RCW 90.82.040. The Partnership is contacting you to request that you review the enclosed summary information pertaining to ___SYSTEM NAME___'s water rights and water demand and provide us your comments. We request the favor of your response by Friday, August 25, 2006. In the paragraphs that follow, I will explain the sources of the enclosed information, why the Partnership has compiled it, and why we are requesting your help to verify its accuracy.

The Partnership completed the Watershed Management Plan for the Chehalis Basin and submitted it to the Department of Ecology. We are now in the process of developing a Detailed Implementation Plan (DIP). The Chehalis Basin Watershed Management Plan, May 28, 2004, Action 3 describes an implementation action that is required under state law. Action 3 specifies that the Partnership will, "address …municipal water rights by (1) estimating quantity of water represented by inchoate rights [held by municipal water purveyors] and (2) clarifying how such rights can be reconciled with protecting instream flow needs and can be affected by water conservation programs."

Although state law requires that all watershed planning entities address the issues encompassed by Action 3, we wish to assure you that the Partnership has neither the authority nor the desire to take or reallocate your water rights. We are fully committed to a voluntary approach to water management in the Chehalis Basin, and in that context, we are merely trying to develop an accurate understanding of municipal rights. It is our hope that with such an understanding, we can work with you and other municipal water purveyors to identify voluntary steps that may be taken to benefit instream flows.

The enclosed is a summary data sheet for ___SYSTEM NAME___ was prepared for the Steering and Technical Committee (STC) of the Partnership. This data sheet represents the best efforts of our contractor to estimate your water rights relative to your future needs. This data sheet was developed using information in the plan for your water system that ___SYSTEM NAME___ prepared and submitted to the Washington Department of Health (DOH) the water rights and information available from the Washington Department of Ecology (DOE).

It is an important priority for the Partnership to work cooperatively with municipal water providers in the basin. In that spirit, we request that you review the enclosed data sheet to verify its accuracy and to identify any corrections or changes that you believe are needed. We feel that it is essential that this information be as accurate as possible because the report from this project will be publicly available. We recognize that the enclosed data sheet includes limited information that may not do full justice to the complexity of your water rights and needs. Accordingly, we encourage you to provide any additional contextual information that will help us to understand your particular situation.

The Partnership will use information that you provide solely for the purpose of assuring that municipal water rights in the Chehalis Basin are portrayed accurately in the final report of this project. If your comments indicate that there are corrections needed to any of the source information held by either DOH or DOE, it remains the responsibility of those agencies and/or ___SYSTEM NAME___ to initiate such corrections.

We would appreciate it if you would provide your comments, corrections, etc. directly to our contractor Mr. Lee Daneker, who prepared the enclosed summary sheet. You can contact Mr. Daneker by email at <leedaneker@comcast.net> or by telephone at (206) 324-5572. We have enclosed "Notes to right holder summary data sheets" which explains the methods used in preparing the data sheets. If you have any additional questions about the methodology or if you have questions about any of the information in the enclosed data sheet or how it was derived, we encourage you to contact Mr. Daneker, who will be pleased to address your questions.

The Partnership looks forward to receiving your comments on the data sheet by Friday, August 25, 2006 and continuing to work with you as we strive to meet our mission to promote effective, economical, and equitable management of the water in the Chehalis basin. If you have any general questions or concerns regarding this or any other aspect of the Chehalis Basin Watershed Management Plan, please feel free to contact me.

Very truly yours,

Lee Napier
Project Manager for the Chehalis Basin Partnership

Enclosures

cc: Lee Daneker
Karen Klocke, DOH
Tom Loranger, DOE

ATTACHMENT E:

Municipal Water Supply Issue Paper, Chehalis Basin Watershed Management Plan, Supplemental Section IV – Issues/Recommendations

Note: Only the section of this issue paper entitled "What are some alternative actions to address the municipal water supply issue?" is reproduced in this attachment.

What are some alternative actions to address the municipal water supply issue?

1. **Adjudication/streamlined adjudication.** (See the Water Quantity Core Issues Paper.) An adjudication could be a forum to examine all water rights, including municipal water supply water rights, to determine the extent of their validity. If unneeded water rights exist, such as for builtout community water systems, these water rights could be compelled to be relinquished through an adjudication process.

2. **Transfer of surface water rights to ground water rights.** (See the Water Quantity Core Issues Paper.) This alternative could be utilized to lessen the impact of water withdrawals on instream flows. The North Fork Newaukum River is an example where both the Cities of Chehalis and Centralia hold surface water rights for large withdrawals.

3. **Implementation of a water master program.** (See the Water Quantity Core Issues Paper.) This local program could help facilitate daily water needs between water users, including municipal suppliers.

4. **Use of interruptible water rights for a portion of water supply.** Under this alternative, municipal suppliers could be requested to discontinue use of the interruptible portion of a water right during drought years or low flow periods. This would result in customers needing to cut back on water use for ornamental landscaping and other discretionary uses.

5. **Water conservation programs.** (See the Water Conservation and the Water Quantity Core Issues Papers.) The requirements for municipal water conservation programs will become more stringent under HB 1338. This includes both conservation on the part of the users and fixing water losses within the withdrawal and distribution system.

6. **Water rights trust program.** (See the Water Quantity Core Issues Paper.) A statewide water rights trust program exists but has not been used very much, largely because of a lack of perceived benefit. A water rights trust program could be used to dedicate an unneeded portion of municipal water rights to instream flows or as a water rights banking system to facilitate water rights marketing between entities.

7. **Integration of the use of reclaimed water.** (See the Water Quantity Core Issues Paper.) Reclaimed water (treated wastewater of high enough quality to be used for many non-human-contact purposes) plays a small, but increasing role in water resources in Washington State. Most communities, like the City of Chehalis, have constructed water reclamation facilities as a means to dispose of wastewater. A few have also found opportunities to use the reclaimed water as part of their municipal supply. Use of reclaimed water could be an opportunity to serve additional water needs without withdrawing additional water. However, there are also concerns that this use could actually increase consumptive water use because the treated wastewater would have otherwise been returned to the river or stream system. Currently, communities are not

given any sort of credit on their water rights for using reclaimed water. Clearly this is an area of policy and infrastructure development that is very dynamic.

8. **Relinquishment of unused, unneeded water rights.** Water rights analysis would likely reveal many water rights, and portions of water rights, that could be relinquished. Relinquishment of these water rights would help reconcile the quantity of water used versus the higher quantity of water appropriated through water rights. However relinquishment is almost always viewed as a taking of property to the entity who holds the right.

9. **Addressing requirements of Phase 4 Watershed Planning Related to Municipal Water Rights.** New legislation in 2003 (HB 1338) identifies specific requirements that must be addressed during Phase 4 Detailed Implementation Plan development related to municipal water rights:

> ***" The timelines and interim milestones in a detailed implementation plan . . . must address the planned future use of existing water rights for municipal water supply purposes . . . that are inchoate, including how these rights will be used to meet the projected future needs identified in the watershed plan, and how the use of these rights will be addressed when implementing instream flow strategies identified in the watershed plan. (HB 1338)*** LD emphasis

10. **Encouraging a return of water to the rivers and streams.** (See also the Instream Flow Issue Paper.) Encouraging the return of water to the rivers and streams to benefit instream flow needs should be pursued whenever possible. This could be done initially through small dedications of unneeded water rights to instream flows, hopefully leading to larger dedications. These dedications could be promoted as mitigation for approval of new water rights or water right changes.

11. **Implementation of water storage projects to serve municipal water supply needs without impacting instream flows.** The Multipurpose Water Storage Assessment, conducted as part of this Watershed Plan, identified several viable options for further evaluation. These include incorporating water supply needs into the design for the proposed modification of Skookumchuck Dam and aquifer storage and recovery in the Newaukum area.

12. **Watershed mitigation.** (See the Water Quantity Core Issues Paper.) Watershed mitigation, or doing a project to create environmental benefit elsewhere in the watershed could be part of resolving the municipal water supply situation.

13. **Regional water supply or coordinated water system planning.** It could be very beneficial for the communities, particularly in the Centralia/Chehalis and Aberdeen/ Hoquiam areas, to convene a regional planning group to facilitate regional water supply planning.

14. **Connecting water supply planning to growth management or comprehensive planning.** Any area designated for urban or suburban development should have the ability to be served by some sort of municipal water system. There is currently no mechanism to ensure that this occurs, since water rights are administered by Ecology, Water System Plans are approved by the DOH, and land use planning is adopted at the local (county or city) level. Changes to regulatory procedures should be implemented to connect these three functions***. The new legislation (HB 1338) takes a first step by designating DOH and Water System Plans as the prevailing agency and document in designating/approving water system service areas, number of connections, etc. This does not entirely solve the problem, however, because there is still no strong link to ensure the presence and validity of water rights for lands designated for urban/suburban development at the local level.*** LD emphasis

ATTACHMENT F:

May 31, 2006 letter from Tom Loranger, Washington Department of Ecology to the "Chehalis Basin Planning Group," Subject: General Approaches to Mitigation in the Chehalis"

May 31, 2006

To: Chehalis Basin Planning Group

From: Tom Loranger

General Approaches to Mitigation in the Chehalis

Washington water law allows applicants for water rights permits to include mitigation plans as part of their proposal to offset any potential adverse effects for their proposed water use. Mitigation plans may also be the result of settlement discussions around permit applications.

A compendium of mitigation measures used in water rights permitting was completed in April 2003 by Ecology.

As demonstrated by these examples Ecology has accepted a variety of approaches to mitigate for impacts from new water rights. For some it is too early to tell how successful the approaches are.

Here are the general categories of approaches that have been used around the state that may be suitable for use in the Chehalis Basin depending on the nature of the proposal and individual local conditions.

- Proponent uses on-site ponds to store surface water and release to augment low flow periods.
- Proponent retires it's currently owned surface water rights or shallow groundwater wells to mitigate for impacts on new deeper well withdrawal locations.
- Proponent purchases and relinquishes water rights.
- Proponent leases water rights to mitigate for surface water impacts.
- Proponent withdraws water for peaking demand from neighboring watershed with water available.
- Proponent augments surface water flow with water pumped from deep underlying aquifer.
- Proponent uses reclaimed water to recharge aquifer to compensate for surface water impacts.

Mitigation approaches are varied as the condition they are designed to protect. Typically the applicant develops the mitigation in consultation with Ecology and WDFW. The starting point for our evaluation of mitigation approaches is replace surface water depletions in a manner that fully accounts for how they are impacted. At times we can modify the water for water provisions in time and place depending on the administrative stream status and local conditions.

In many cases a few of these mitigation approaches are used are in concert for a single mitigation project.