City of
Stayton
OREGON

KELLER
ASSOCIATES

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WATER MANAGEMENT & CONSERVATION

P L A N

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CHAPTER 1.0 – Executive Summary

1.1 GENERAL SYSTEM DESCRIPTION

The City of Stayton is a community with a population of approximately 7,300 people (2003) located about 15 minutes southeast of Salem. Its city limits encompass about 1,770 acres including residential, industrial, commercial and public facilities. Although 86% of the accounts are residential and only 10% are business, residential water demand accounts for 32% and business water demands account for 48%. The business water demand is dominated by Norpac Foods Inc. which accounts for 42% of the total annual water demand. Other water consumers include the wastewater treatment plant (WWTP), schools, churches, multi-family facilities.

The City of Stayton has 46.59 cfs of surface water rights off the North Santiam River and 5.67 cfs of groundwater rights. Of these water rights, 23.27 cfs can be used year round; 3.99 cfs can be used from May through September, and 25 cfs can be used only from October through April.

1.2 PURPOSE

Oregon Administrative Rule 690-315 and 690-086 triggered the need to prepare a Water Management and Conservation Plan (WMCP). The WMCP has also been completed in conjunction with the update of the City's water master plan. This is the first WMCP Stayton has submitted to the Oregon Water Resources Department (WRD).

1.3 PROPOSED PROGRESS REPORT AND UPDATE SCHEDULE

In order to meet state rules, the City intends to submit a progress report on or before September of 2009 (five years) to discuss goals, benchmarks, and its water system and consumption. It is anticipated that existing City water rights, will satisfy 20-year demands. As a result, the City does not expect to submit an updated WMCP until 10 years have expired (in 2014).

1.4 SUMMARY OF DATA SOURCES

The data presented throughout the WMCP, which includes consumption and production data, billing records, and conservation and curtailment programs, were collected and developed in conjunction with City staff.

Historic populations were retrieved from US Census data. City population estimates from 2001 to 2004 were approximated using Stayton building permit information. Growth projections are based on a continued growth of 3.35%.

1.5 INPUT DURING PLAN DEVELOPMENT

Also key to the development and success of the WMCP were members of a Technical Review Committee comprised of Tom Etzel (water supervisor), Mike Faught (public works director), Ed Sigurdson (city engineer), Don Albert (wastewater supervisor), and Allan Drawson (city technician). A draft of the WMCP will be submitted to Marion County for review with a request for comments. A final version of the WMCP will be presented to City Council for their approval.

1.6 DOCUMENT ORGANIZATION

The document was developed in a sequence that is consistent with the Division 86 rules. Chapter 2 contains a municipal supplier description including existing demographics and service area, water right summary, water use summary, and water facilities inventory. Chapter 3 discusses current and planned conservation measures and goals. Chapter 4 outlines the City's water curtailment program. Chapter 5 discusses the City's ability to meet the 20-year projected water demands.

CHAPTER 2.0 – Municipal Supplier Description

2.1 SERVICE AREA

The City of Stayton currently serves about 7,300 (2003) residents located inside the service area illustrated in Figure 1. Existing water customers include single-residence homes, apartments, mobile home parks, assisted living centers, irrigation accounts, churches, schools, commercial users, and industrial water consumers. The industrial user, Norpac Foods Inc., is the largest water consumer and accounts for approximately 42 percent of the annual water consumption.

2.1.1 Historical Stayton Populations

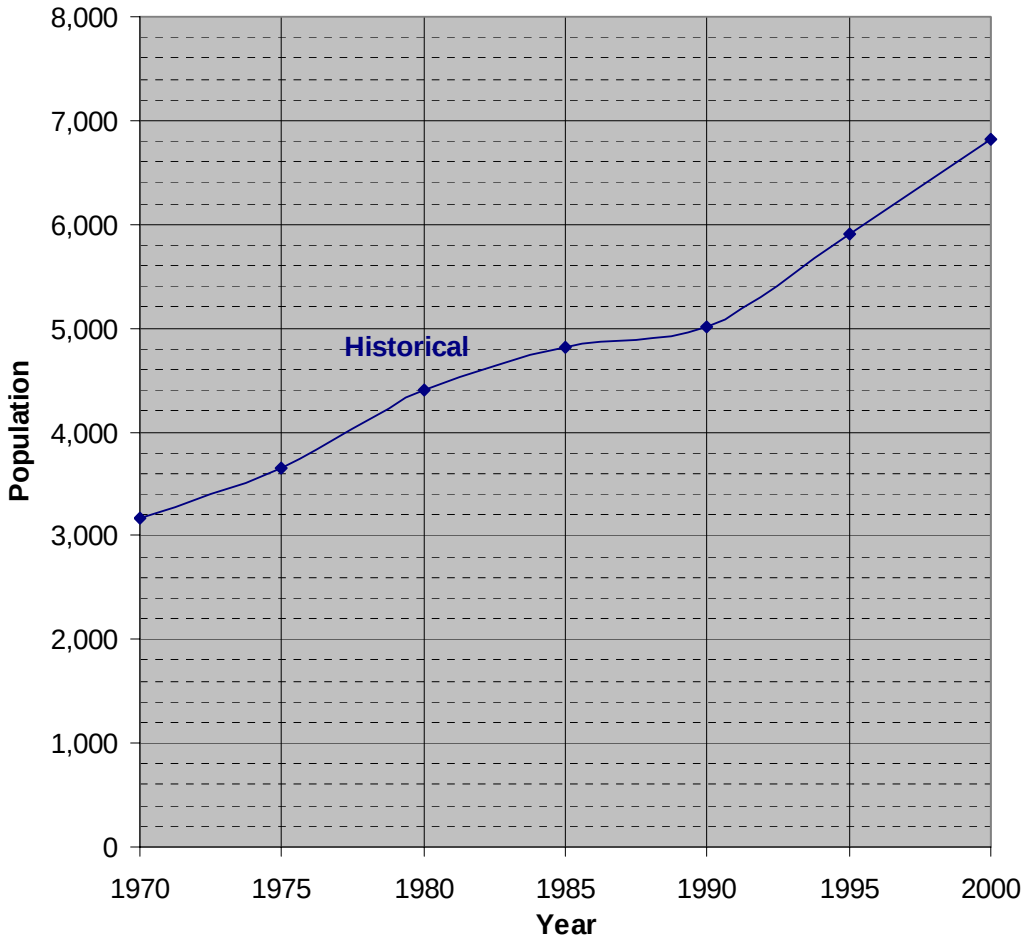
The estimated 2003 population for the City of Stayton is 7,300. Historical population in the City of Stayton and in Marion County retrieved from census data is shown in the following table.

Table 2.1
Stayton and Marion County Historical Population

Year	Office of Economic Analysis, State of Oregon and US Census—Marion Co.	Stayton Population Census Data	Marion County Growth Rate	Stayton % of Marion County	Stayton Annual Growth Rate
1970	151,309	3,170		2.10%	
1975	171,700	3,650	2.56%	2.13%	**2.86%**
1980	204,692	4,396	3.58%	2.15%	**3.79%**
1985	213,019	4,815	0.80%	2.26%	**1.84%**
1990	228,483	5,011	1.41%	2.19%	**0.80%**
1995	260,600	5,907	2.34%	2.27%	**3.34%**
2000	284,834	6,816	1.06%	2.39%	**2.90%**

As can be seen from the preceding table, the annual growth rate in Stayton declined between 1980 and 1990 and then rose sharply after 1990. The growth rate in Stayton has generally been higher than Marion County. Chart 2.1 illustrates historical population trends.

Chart 2.1
City of Stayton Historical Population



2.1.2 Existing Land Use

The City of Stayton includes lands designated as commercial, commercial retail, industrial, industrial agriculture, industrial commercial, light industrial, interchange development, low density residential, medium-high density residential, and public/semi-public zoning inside the city limits. Figure 2 in the Appendix graphically reflects the land use distribution adopted by the cities. The table below summarizes the breakdown in acreage for each land use type.

Table 2.2
Existing Land Use Inside Stayton City Limits Summary

Stayton		
Land Use	**Acres**	**% of Total**
Commercial	104	6%
Commercial Retail	47	3%
Industrial Agriculture	60	3%
Industrial Commercial	17	1%
Light Industrial	320	18%
Low Density Res.	709	40%
Medium-High Density Res.	273	15%
Public and Semi-Public	238	13%
Total Acreage	**1,768**	

2.2 SUMMARY OF EXISTING WATER SOURCES

The City currently holds 46.59 cfs of surface water rights from the North Santiam River and 5.67 cfs of groundwater rights. This includes 25 cfs under Permit 52447, which may only be exercised in the winter months (October thru April). Steven P. Applegate Consulting summarizes the City's year-round water right to be at least 23.27 cubic feet per second (cfs) which includes a recently acquired 10 cfs water right. This equates to 10,444 gpm or 15.04 MGD, which is 2.5 times greater than the current peak day demand of the City. A comprehensive review of the City's water rights and their current status is included in the Appendix.

Table 2.3
City of Stayton Water Rights Summary

Appl	Permit	Cert.	Source	Q (cfs)	POD	Prior.	Remarks
T-5883		**80346**	**N. Santiam**	**2.78+**	**Power Canal**	**1909**	**779.5 AF annual limit**
T-5884		**80347**	**N. Santiam**	**0.82+**	**Salem Ditch ***	**1911**	**230.6 AF annual limit**
T-5885		**80348**	**N. Santiam**	**0.39+**	**Power Canal**	**1909**	**78.5 AF annual limit**
T-8771		**80349**	**N. Santiam**	**0.6~**	**Power Canal**	**1907**	**No annual limit**
T-9192	**12033**		**N. Santiam**	**10~**	**Salem Ditch**	**1923**	**Comp. Date – 10/2011**
39297	**29266**	**57094**	**N. Santiam**	**7~**	**Power Canal**	**1963**	
71584	**52447**		**N. Santiam**	**25#**	**Power Canal**	**1991**	**Extension pending to 2060**
		Subtotal-Surface Water		**46.59**			
GR-145	**Gr-139**		**Inf. Trench**	**2.67~**	**NWNE Sec 15**	**1930**	**Groundwater adjudication**
G-270	**G-173**	**24587**	**Well 2**	**3~**	**NENE Sec 15**	**1956**	
		Subtotal-Groundwater		**5.67**			
	TOTAL WATER RIGHTS			**52.26**			

***** Salem Ditch and Stayton Power Canal assume in the record to be the same point of diversion-1800 feet South and 2830 feet East from the West ¼ Corner Section 11.
+ May through September only 3.99 cfs;
~ Year around use-23.27 cfs;
# October through April only-25 cfs;

All water rights have a designated municipal use. A comparison of the water right summarized in Table 2.3 and the seasonal water demand in Table 2.4 illustrates the estimated diversions under each water right. A majority of the wet weather water demands can be supplied by water from Certificate 57094 which is supplemented with groundwater from Certificate 24587 during periods when surface water is turbid and more difficult to treat at the water treatment plant. Dry weather water demands can be all supplied by water from Certificate 57094. Additional peak day water demands can be supplied by water from Certificate 80346. The projected 20 year peak day demand of 16.01 cfs summarized in Table 5.3 can all be supplied by water from developed water rights including water from Certificate 57094, 12033, 80349, 80348, 80347, 80346, Gr-139, and 24587.

The City's only undeveloped water right is for water granted under Permit 52447. Although this water right may not be necessary for demands in the next 20 years, the City will develop this water right sometime beyond the 20 year planning horizon to meet future water demands.

The main water source for the City is the N. Santiam River via the Power Canal. The Power Canal is fed from the North Channel of the Santiam River via a diversion structure that is situated approximately 1 mile east of the water treatment plant site. The City's use of the Power Canal is made possible through an interagency agreement with the Santiam Water Control District, which includes an annual use fee.

In addition to the Power Canal, the Water Treatment Plant (WTP) operates shallow infiltration wells that are located adjacent to and between the canal and the North Santiam River. The wells supply supplemental water during peak demand and high turbidity events. The water levels in the wells are reported to fluctuate with the levels of the river, as would be expected with a shallow well source that is significantly influenced by the river.

With the help of the Oregon Department of Fish and Wildlife, the Oregon Natural Heritage Information Center, and the Oregon Department of Agriculture, the Streamflow-dependent species listed by a state or federal agency in the North Santiam River were identified and are summarized below. The list below also includes those species identified by the City of Salem as part of their water management and conservation plan. The two cities' diversions are within a couple miles of each other. A list of those species identified as candidate species and species of concern is included in the Appendix.

<u>Fish</u>

- Spring Chinook Salmon
- Winter Steelhead

- Oregon Chub
- Pacific Lamprey

Wildlife

- Bald Eagles
- Western Pond Turtle
- Fender's Blue Butterfly
- Red-legged Frog

Plants

- Golden Indian Paintbrush
- Willamette Daisy
- Howellia
- Bradshaw's Lomatium
- Lincaid's Lupine
- Nelson's Checker-mallow
- White-topped Aster

It should be noted that the City has cooperated with the Santiam Water Control District in taking steps to minimize any negative impacts to sensitive, endangered, and threatened fish species by constructing a fish screen upstream of the water diversion and downstream from the water treatment plant on the Power Canal in order to isolate the plant from any fish species. The Oregon Department of Fish and Wildlife and NOAA Fisheries did review the construction plans and were involved in the construction methodology used for the fish screens. The US Fish and Wildlife also approved the biological opinion completed for the fish screen project.

The North Santiam River is listed as water quality limited with a water quality parameter of temperature. The details of the water quality listing have been included in the Appendix for reference. The City's water source is the North Santiam River and therefore is not in a critical groundwater area. The City does operate some shallow alluvial aquifer wells that are geographically located in limited groundwater areas, but are not from the aquifer of concern.

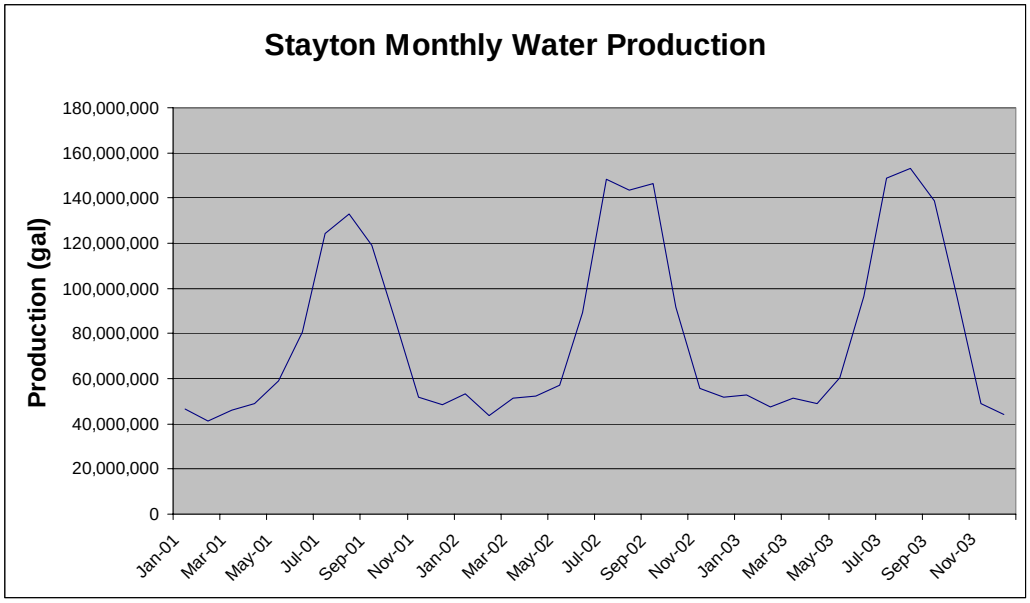
2.3 SUMMARY OF RECENT WATER USE

Water production data obtained from the WTP were used to summarize the current water production for the City. Historic water production from the Stayton WTP is summarized in Table 2.4.

Table 2.4
Stayton WTP Water Production

	Historical Water Production				
	2001 (MGD)	**2002 (MGD)**	**2003 (MGD)**	**2001-03 Average (MGD)**	**2001-03 Average (cfs)**
Average Day	2.42	2.70	2.71	2.61	4.04
Peak Day	5.19	6.08	6.65	5.97	9.24
Dry Weather (May-Oct)	3.26	3.68	3.77	3.57	5.53
Wet Weather (Nov-Apr)	1.56	1.70	1.63	1.63	2.52

Chart 2.2
Stayton Monthly Water Plant Production (2001-2003)

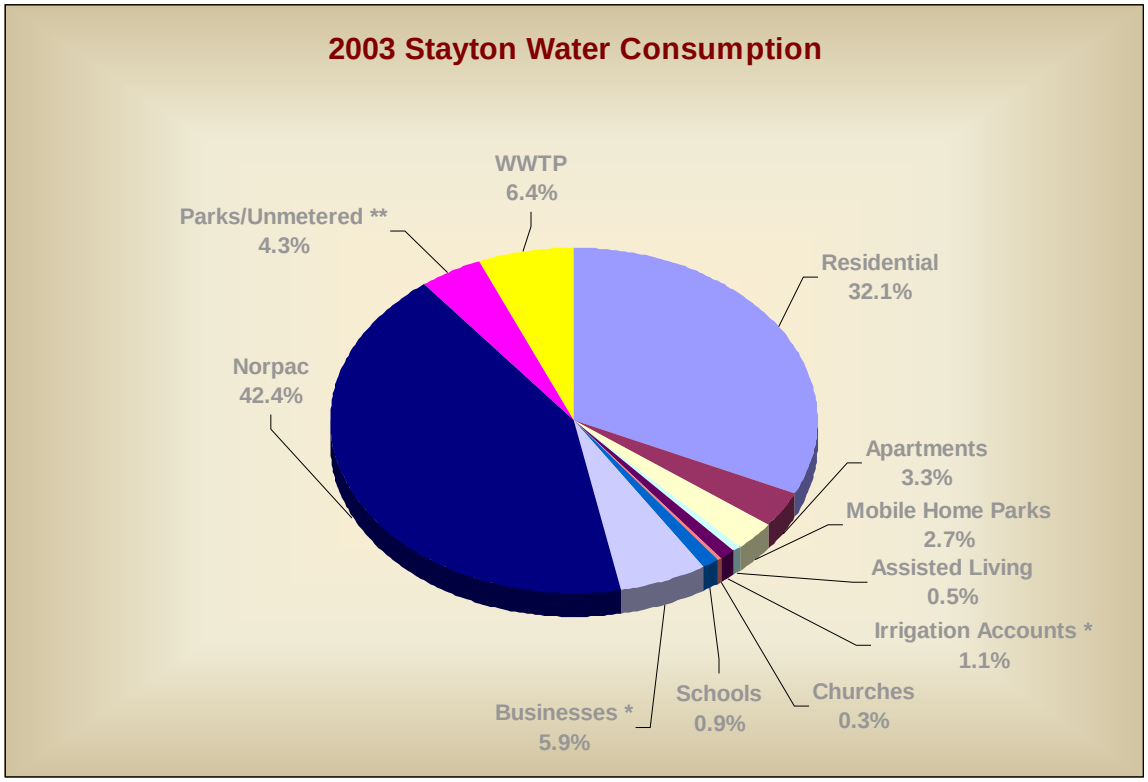


As illustrated in Chart 2.2, peak month flows correspond to the summer months of June through September during which time average flows more than double. This peak in production is generally a result of irrigation and a peak in summer use from the City's largest water consumer, Norpac Foods Inc. Industries. The processing of beans and corn creates a peak in Norpac Food's water demand during the months of July through October.

2.4 SUMMARY OF WATER CUSTOMERS

The City provides water to a variety of users. The general customer categories and their percentage of water use are illustrated in Chart 2.3.

Chart 2.3
Water Use Statistics for 2003



The "Residential" category includes both rental and owner occupied single-family residences and accounts for 32% of the water use for the City. Norpac Foods Inc. accounts for 42% of the total water consumption for the City. The "Parks/Unmetered" category includes the water used by the library, city hall, theatre, community center, cemetery, water plant, public works building, the pool, and the city parks. The Wastewater Treatment Plant (WWTP) uses approximately 6.4% of the total water provided.

Table 2.5 summarizes the demand for each category in gallons per capita per day. The severity of the system water loss is apparent by comparing the residential demand and the water loss. On an average day, the same amount of water used by the entire residential sector is lost from the system. The non-residential water demand stays fairly constant on a seasonal basis, averaging out to be about 46 gpcd. Norpac uses the largest percentage of water in comparison to the other categories.

Table 2.5
Water Use Statistics

Yearly Statistics	Existing Demands (MGD)	Existing Demands Per Capita				
		Total System [1] (gpcd)	Residential Only (gpcd)	Non-Residential (gpcd) [2]	Norpac (gpcd)	Water Loss (gpcd)
Average Day	2.71	371	106	46	114	106
Peak Day	6.50	890	N/A	N/A	N/A	N/A
Dry Weather (May-Oct)	3.75	514	147	56	197	113
Wet Weather (Nov-Apr)	1.65	226	64	35	29	97

Notes:

(1) Existing system includes residential and non-residential demands. Future demands from the existing system users are assumed to remain constant.

(2) Non-residential flow per capita per day excludes Norpac Demand.

2.5 FACILITIES DESCRIPTION

2.5.1 Source/Treatment

The City of Stayton operates a surface water treatment plant (WTP), which is currently rated for 6 million gallons per day (MGD). Treatment is accomplished through slow sand filtration and chemical addition to stabilize and disinfect the water. The City of Stayton currently draws their raw water from three sources: the N. Santiam River and two Ranney-type shallow ground water collectors.

The Power Canal is fed from the North Channel of the Santiam River via a diversion structure that is situated approximately 1 mile east of the WTP site. The ground water collectors include three shallow infilitration wells that are located between the Power Canal and the North Santiam River.

2.5.2 Transmission/Distribution

The City's water distribution system is composed of a network of pipes that total more than 44 miles and range from 1 to 24 inches in diameter. The water booster stations and transmission lines provide water service to pressure zones which are isolated by closed valves and pressure-reducing valves. Table 2.6 illustrates the length of pipe and percent of total for each pipe size.

Table 2.6
Water Distribution Pipe Size Summary

Pipe Size (in)	Total Length (ft)	% of Total
<= 2	28,537	12%
3	3,825	2%
4	28,227	12%
6	56,377	24%
8	39,524	17%
10	26,589	11%
12	26,664	11%
14	713	0.3%
16	9,213	4%
18	3,696	2%
20	8,977	4%
24	522	0.2%

The water distribution system is composed of various pipe materials as shown in Table 2.7.

Table 2.7
Water Distribution Pipe Material Summary

Pipe Type	Total Length (ft)	% of Total
Asbestos Cement	85,928	37%
Cast Iron	1,404	1%
Ductile Iron	72,146	31%
Galvanized Iron	10,320	4%
PVC	15,818	7%
Steel	47,076	20%

2.5.3 Finish Storage

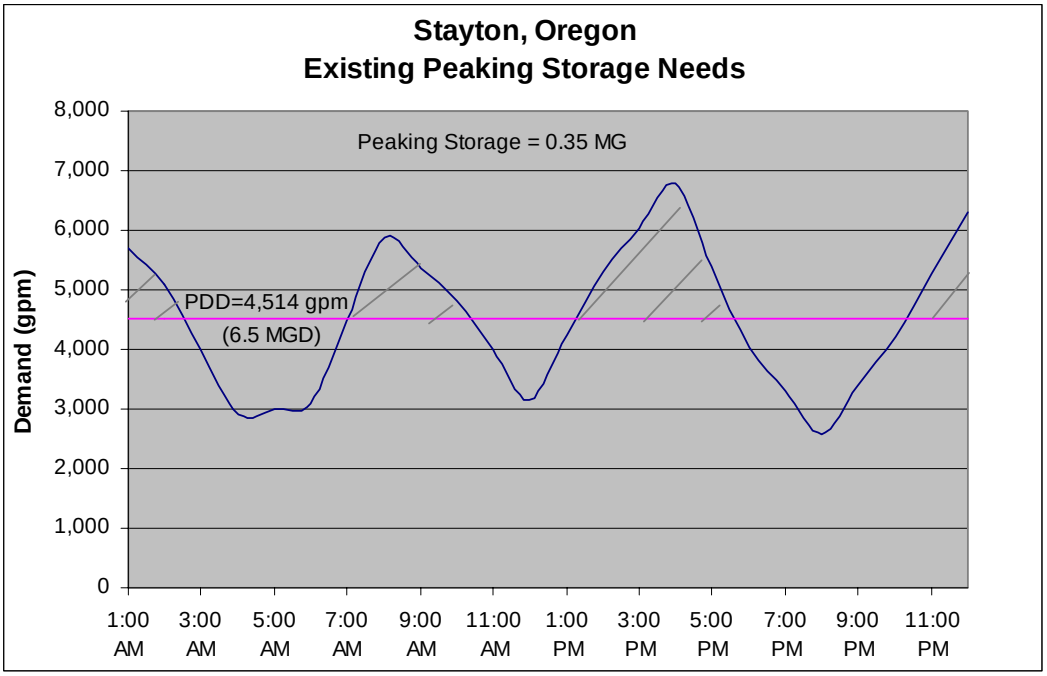
The City has a total of 6.9 million gallons of water storage in four storage facilities summarized in Table 2.8.

Table 2.8
Existing City Water Storage

Schedule M Reservoir	1.0	MG
Pine Street Reservoir	5.0	MG
WTP Reservoir	0.5	MG
Regis Reservoir	0.4	MG
Total Storage	**6.9**	**MG**

Storage is designed to provide both operational (daily peaking demand) and fire protection demand. The fire protection storage as stipulated by the International Fire Code was calculated by assuming a four-hour fire event with a demand of 4500 GPM. These assumptions correlate to fire storage of 1.08 MGD. The peaking storage is developed based on a local demand pattern which represents the variation in hourly demand. The demand pattern below was generated based on 24-hour monitoring data gathered on August 22, 2003. The peaks in the water demand occur at 8:00 am, 4:00 pm, and 12:00 am. The 8:00 am and 4:00 pm peak correspond to demands associated with preparation and returning from school and work. The 12:00 am peak likely corresponds to night time irrigation.

Chart 2.4
Existing Peaking Storage Needs



Based on the data and the assumptions outlined above, a comparison between the recommended and existing storage now, 2015, 2025, and at build-out is presented in Table 2.9.

Table 2.9
Estimated Water Storage (MG)

	2003 (MG)	2015 (MG)	2025 (MG)	Buildout (MG)
Peaking Storage [1]	0.35	0.44	0.56	0.67
Operational Storage	1.04	1.04	1.04	1.04
Fire Storage [3]	1.08	1.08	1.08	1.08
Minimum Recommended Storage	**2.47**	**2.56**	**2.68**	**2.79**
Emergency Storage (optional) [4]	2.70	3.45	4.33	5.21
Recommended Storage Volume	**5.17**	**6.01**	**7.01**	**8.00**
Less Existing Storage	*6.90*	*6.90*	6.90	6.90
Storage Need	**0.00**	**0.00**	**0.11**	**1.10**

Notes:

1. Assumed Peaking Storage using observed 24-hour demand pattern (8/22/2003) and assumes constant production equal to the peak day demand (PDD).
2. Assumed approximately 15% of existing storage to allow for volumn between "On" and "off" set points.
3. Assumed a 4-hr 4500 gpm fire event for the fire storage.
4. Assumed an average day demand for the emergency storage.

2.6 INTERCONNECTIONS

An 18-inch pipeline connects Stayton's Schedule "M" booster station and the 54-inch transmission line that feeds the City of Salem. Flow from Salem to Stayton must pass through a double check valve. Typical pressure in the Salem pipeline is approximately 23 psi. The check valves can be manually opened to allow flow from Stayton to Salem in the event of an emergency. Although the system was designed to provide emergency flow to Stayton, emergency flow has occurred in both directions in the past. Salem's SCADA system continuously monitors Chlorine and turbidity on the Salem's side of the intertie.

Salem has agreed to sell drinking water to Stayton at the rate of $0.35 per 100 cubic feet ($0.4679 per 1000 gallons), and Stayton has agreed to sell drinking water to Salem at the rate of $0.4346 per 100 cubic feet ($0.581 per 1000 gallons). The Mutual Water Agreement has been included as a reference.

2.7 SYSTEM EFFICIENCY

Table 2.8 compares reported water production data to consumption data. Water consumption for unmetered users such as the City Parks was approximated and included in the water consumption data reported below. The difference between water production and water consumption represents the amount of system water loss. Based on this data, water

losses account for 24 to 33% of all water leaving the water treatment plant. Factors that could contribute to system water loss include:

- Inaccurate water meters. Generally, water meters underestimate flows as they age. Based on discussions with water meter manufacturers, a residential water meter in a treated surface water system (generally soft, non-corrosive water) should accurately meter for 15-20 years. Based on housing records from census data, approximately 1,546 meters (58%) could be older than 25 years old and have likely been in operation beyond their period of accuracy.

- Leaky pipelines and services. The structural integrity of water pipelines and services naturally degrades over time. Root penetration, improper installation procedures, and other factors can also create leaks which result in system water loss. Pipes constructed with certain materials, including steel and asbestos cement, are generally more susceptible to leaks. Fifty-seven percent (57%) of the water lines in the Stayton water system are steel or asbestos cement. One extreme example of a leaky pipeline section is the two-block section of steel pipe located on Burnett Street near the public pool. Thirteen separate spot repairs have been made on this section of pipeline within the last several years. Another example of a leaky pipeline section is the 6-inch steel water line on Elwood Street.

- Unaccounted water use. Since water loss represents the difference between the water produced and the water consumed, water consumption that is not metered increases the water loss. Occasionally, cities use water for city purposes like street cleaning, public buildings, pools, fire protection, and line flushing that is not metered. Keller Associates has accounted for known unmetered water uses like the public pool, public buildings, parks, cemetery, WWTP, and WTP in the water balance calculations presented above. However, there are likely other unmetered water uses that add to the water loss, such as street cleaning, line flushing, and others. Keller Associates recommends that all water uses be metered where possible, regardless of whether or not they are invoiced.

Division 86 in the Oregon Administrative Rules requires any water supplier with water loss greater than 10% to establish a leak detection program. Division 86 further requires a leak repair or line replacement program for water suppliers with water loss greater than 15%. **Given the City's system loss, Stayton is required to establish both a leak detection and a leak repair program which is described in Chapter 3.**

Table 2.10
System Water Loss Summary

	2001	2002	2003
Water Consumption (gals)	616,612,508	685,393,053	774,859,053
Water Production (gals)	883,414,920	984,453,840	987,805,020
System Losses (%)	**30.2%**	**30.4%**	**21.6%**

CHAPTER 3.0 – Conservation Element

This chapter contains a proposed conservation plan that satisfies the requirements outlined in the new Division 86 rules and is practical for the City of Stayton. The new rules define "conservation as eliminating waste or otherwise improving efficiency in the use of water while satisfying beneficial uses by modifying the technology or method for diverting, transporting, applying or recovering the water; by changing management or water use; or by implementing other measures." Stayton's conservation plan focuses on "improving efficiency" by reducing water system losses. The sequence of the remainder of this chapter will mirror the sequence of the requirements outlined in Division 86 rules.

3.1 WATER USE AND MEASUREMENT PROGRAMS

A formal water management and conservation plan for the City of Stayton has not previously been submitted to the Oregon Water Resources Department (WRD). The City of Stayton water reporting program does conform to the measurement standards outlined in the OAR Chapter 690.

3.2 CONSERVATION MEASURES

Many water conservation measures exist, some of which include water reuse, retrofits on inefficient water devices, rate structures, public education, leak detection, and water system audits. The new requirements outlined by the Water Resources Department (WRD) identify the consideration of some conservation measures as mandatory for all water suppliers submitting a water management and conservation plan (WMCP). There is another set of conservation measures identified as "Additional Conservation Measures" which must be considered by only the large water suppliers and some medium-sized users. The section below will address all the conservation measures mandatory for the City of Stayton under Division 86 Rules.

3.2.1 Full Metering of Systems

Division 86 requires that water suppliers that are not fully metered implement a plan to become fully metered in the next five years. A full metered system meters all sources and consumers.

Sources

The sources that must be metered in Stayton include the intake for the WTP, the two infiltration wells, and the interconnection with the Salem water distribution. Currently, both infiltration wells include a meter that is read daily during operating hours. The 50-hp pump is

fitted with a water meter installed in 1995 and considered accurate by city staff. The 75-hp pump is fitted with a water meter that is old and has questionable accuracy. There is also a water meter on the interconnection with the City of Salem.

The discharge of the WTP is metered, but the intake is not currently metered. The City of Stayton has commissioned Keller Associates to complete a water master plan which is approximately 75% complete. Based on water measurement comparisons and a water balance, it has been determined that the meter from the WTP to the distribution system under-measures water production by an average of 8% every year. As a result, the City plans to replace or repair the existing water meter to improve metering accuracy. The City currently has plans to install a meter on the intake.

Consumers

All city water consumers, excluding those listed below, are metered and billed monthly. Most of the consumers are fitted with a ¾" meter. The authorized consumers that are not metered every month fall into two categories: consumers without meters and consumers with meters that are not read.

Consumers without meters:

- City parks
- WTP
- Cemetery
- City Shops
- Fire hydrant @ Fire Station

Consumers with meter that are not read:

- Public Works Building
- City Hall
- Theatre
- WWTP
- Library
- Police Department
- Pool
- Community Center

The City plans to install water meters on the consumers without meters within the next five years. The City intends to read all water connections including those listed above monthly regardless of whether they are invoiced. This information will be important in performing future water audits.

3.2.2 Meter Testing and Maintenance Program

The City currently has a program to replace 40 water meters per year. According to City staff this program has been in place for the last five years. Additionally, Norpac Food's water meters are

checked annually. A history of housing development in Stayton is presented in Table 3.1 which was developed from 2000 Census Data. A general correlation exists between the age of the homes and the water meters.

Table 3.1
History of Housing Development in Stayton

	1970	1980	1990	2000
Total Housing Units	938	1,546	1,867	2,668
Additional Housing Units / Meters	-	608	321	801
Estimated Additional Water Meters	35%	23%	12%	30%

Assuming that the housing units are served by the original water meters, 35% of the water meters are at least 35 years old, 23% are between 25 and 35 years old, 12% are between 15 and 25 years old, and 30% are less than 15 years old. Manufacturers recommend that residential water meters be replaced every 15-20 years. In order to replace the City's water meters every 20 years, the City of Stayton plans to replace approximately 160 water meters every year.

A water meter testing program can provide direction and priority for the meter replacement program. Old meters will be tested for accuracy. An alert meter reader should be able to spot an under-registering meter by a quick comparison with past readings. The accuracy versus location of the meters will be tracked in order to determine if a correlation between location and accuracy can be drawn. Those areas with meters that consistently test poorly should be targeted for meter replacement. A set of representative meters in an area can be tested every 5 years to track meter accuracy in an area.

3.2.3 Annual Water Audit

A comparison between the water produced and consumed over the past three years is illustrated in Table 2.7. The large water loss evident over the past couple years is likely due to meter inaccuracy, leakage in customer service lines and city lines, and authorized uses that are not billed, including main line flushing, fire fighting, fire flow tests, and others.

The City is currently planning to replace both the intake and finish water flow meters at the WTP. These improvements along with an active meter testing and replacement program, will ensure that future water audits will be accurate.

3.2.4 Leak Detection/Repair Program

The new state regulations require any water suppliers that have a system loss greater than 10% to implement a leak detection program. Regulations further stipulate that any water supplier with a system loss greater than 15% must implement a leak repair or line replacement program to reduce system loss. The City of Stayton falls into both these categories with an average system loss of 29% over the last three years.

The City has discussed performing leak detection on all ductile iron and steel pipes (see Figure 4 in the Appendix). The City intends to conduct a comprehensive leak detection study within the next five years. Those areas determined to contain the most leaks should be targeted first.

A water line replacement program should be implemented in order to maintain the integrity of the water distribution system. The asbestos cement and steel lines have historically been most problematic, and thus should be targeted first.

Based on a detailed analysis of the length of each pipe type and size, the City will work towards establishing an annual pipeline replacement budget. Over the next 20+ years, this will allows the City to replace all of the steel, cast iron, and galvanized iron pipes, and approximately 25% of the asbestos cement water lines. In order to minimize road repair inconvenience and expense, pipeline replacement should be coordinated with street improvements.

3.2.5 Rate Structure Based on Quantity of Water Metered

Current water rate structure for the City of Stayton satisfies state requirements. The City's water rate structure is composed of a base water rate plus a uniform consumption charge. The base water rate is dependent on both the size of the meter and the type of use. For example, the base water rate is typically more for consumers with larger meter sizes. The base water rate is also generally more for industrial and commercial consumers than for residential consumers. This system allows the City to charge those customers with a greater potential for water consumption.

In addition to the base water rate charge, the City has employed a consumption-based charge which encourages responsible water consumption. This type of rate structure also provides the City an economic tool to encourage water conservation by raising the consumption-based charge during periods of water shortage. The City's water rate structure is included in the Appendix for reference.

The City intends to review the rate structure and pursue a rate policy that will encourage water conservation.

3.2.6 Public Education Program

To increase public awareness of water conservation, the City plans to include conservation actions and City conservation programs in the Consumer Confidence Report which is distributed to all water customers. Additionally, the City has proposed distributing a water conservation flyer at the annual Summer Fest and Color Bridge Festivals in July and September respectively. Water conservation flyers are also available to the public at city buildings including City Hall and the Public Works Administration Building. The City also plans to include water conservation statements on the water bill distributed to customers every month.

3.3 SUMMARY OF 5-YEAR BENCHMARKS

Table 3.2
Summary of Conservation Goals

Planned Programs	Start Date	Frequency
Meter Installation	Jan. 2005	Meter all connections within 5 years
Meter testing	Jan. 2006	Test 200 ± annually
Meter replacement	Jan. 2006	Replace 160 meters every year (Compete replacement in 20 years)
Water audit	Jan. 2006	Annually
Leak detection	Jan. 2006	Every 5 to 10 years until water loss is below 15%
Leak repair	Jan. 2006	Annual Pipe Replacement Program
Public education	Jan. 2006	Annually

CHAPTER 4.0 – Water Curtailment Plan

New state regulations require water suppliers to prepare a water curtailment plan. A curtailment plan will enable suppliers to cope with short-term emergency water shortages by reducing water demands and locating alternative water sources. In addition, water suppliers should establish policies that will enable the supplier to initiate and enforce the water curtailment plan. Division 86 requires that a water curtailment plan, at a minimum, include the following four elements.

- A 10-year assessment of water supply deficiencies and capacity limitations
- Three stages of alert
- Situations which trigger each stage of alert
- A list of curtailment actions for each stage of alert

The City's primary source of water originates from the North Santiam River. Because this source is surface water, it is more susceptible to seasonal fluctuations, turbidity problems, and contamination. The water system is susceptible to mechanical and electrical failures at the WTP or in the distribution system. In addition, all water systems are at the mercy of natural disasters.

4.1 ASSESSMENT OF WATER SUPPLY

The City currently has some resources to alleviate impacts of water shortages. One resource is 6.9 million gallons of water storage in four reservoirs, which include the Schedule "M", Regis, Pine Street, and WTP reservoirs. Another resource is the interconnection to Salem's water system which, may provide water in emergency situations due to plant failure.

According to City staff, Stayton has not experienced water supply deficiencies in the last 10-15 years. The City was able to successfully cope with two situations that could have potentially limited the City's ability to satisfy water demands. The flood of 1996 created very high turbidity in the Power Canal which made the surface water unusable for a short period of time. However, during the high-turbidity period, demands were met with the shallow infiltration well system. Also, the Stayton WTP was shut down for a week during the summer because the filter beds were contaminated. However, the City was able to satisfy water demands during that week with the water intertie with Salem, Oregon.

The City of Stayton has adequate water rights and capacity at the WTP to meet present water demands. In order to meet future demands as growth occurs, additional improvements will be required at the WTP to insure adequate supply and redundancy. These improvements will be completed according to the City's Water Master Plan which is being updated concurrently with this document.

4.2 CURTAILMENT PLAN

The City's curtailment plan is composed of three stages: Mild, Moderate, and Critical. The trigger, goal, and implementation measures for each stage of the proposed curtailment plan are outlined in Table 4.1. Implementation of the City's curtailment plan will be coordinated through and under the direction of the public works director.

Table 4.1
City of Stayton's Proposed Water Curtailment Plan

Stage	Trigger	Goal	Implementation Measures
Mild	Determination made by the public works director that a potential for a water shortage exists	Public awareness and 5% reduction in consumption	• Activate Curtailment Plan • Public Education (via flyer distribution, media, city water bill, city website) • Voluntary irrigation schedule based on house numbers
Moderate	Determination made by the public works director that water shortage exists	10% reduction in consumption	• Continue with "Mild" stage measures except where noted below • Transition of irrigation schedule from *voluntary* to **mandatory** • Eliminate line flushing and City parks irrigation • Request businesses reduce consumption by 10%
Critical	Determination made by the public works director that there is a critical water supply shortage that threatens the City's ability to deliver water supplies	15% reduction in consumption	• Continue with "Moderate" stage measures except where noted below • Restrict use of water in pools • Restrict outdoor irrigation with city water • Ban washing vehicles with city water • Encourage a reduction in industrial water usage
Emergency	Water plant failure resulting in loss of production capacity	50% reduction in consumption	• Prohibit all irrigation • Impose industrial restrictions

CHAPTER 5.0 – Municipal Supply Element

5.1 SERVICE AREA

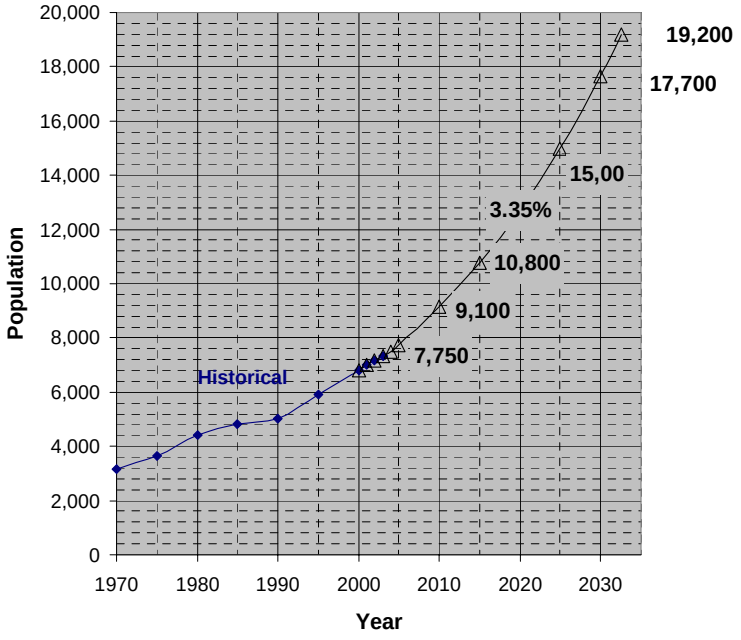
The City of Stayton currently serves about 7,300 (2003) people located inside the service area illustrated by the city limits in Figure 2. Water users include single-residence homes, apartments, mobile home parks, assisted living centers, irrigation accounts, churches, schools, commercial users, and industrial water consumers. The industrial user, Norpac Foods Inc., is the largest water consumer and accounts for approximately 42 percent of the annual water consumption.

5.1.1 Stayton Population Projection

The estimated 2003 population for the City of Stayton is 7,300. City population estimates from 2001 to 2004 were approximated using Stayton building permit information. Growth projections are based on a continued growth of 3.35%.

Build-out of the study area (UGB) using a growth rate of 3.35% will occur sometime around 2032.These estimates are represented in Chart 5.1 below.

Chart 5.1
City of Stayton Population Projections



5.1.2 Future Land Use

The assumed future land use map and the urban growth boundary (UGB) for the City of Stayton are illustrated in Figure 3 in the Appendix. This land use map was developed with input from the City Staff. A corridor of light industrial use is expected in the vicinity of the west urban growth boundary of Stayton. Most of the remaining growth area is designated as low density residential with medium-high density residential areas scattered throughout.

The development densities for residential areas illustrated in Table 5.1 were developed as targets for future residential development based on consultation with City planners.

Table 5.1
Household and Residential Densities

Low Density Residential (EDUs/ac)	Med-High Density Residential (EDUs/ac)	Household Size (people/EDU)
3.5	6	2.7

5.2 DEMAND FORECAST

Division 86 regulations require that a water demand forecast be conducted for 10 and 20-year needs. Water demands were calculated by adding the existing water usage recorded at the WTP and future demands projected for currently undeveloped land inside the Stayton study area.

In an effort to project future water demands, the existing water usage was categorized into residential, non-residential, Norpac Foods Inc., and water loss. The non-residential category includes commercial, industry excluding Norpac Foods Inc., WWTP consumption, and public water demand. For comparative purposes, the demand for each of these categories was averaged over the Stayton population so demands could be compared and projected on a per capita basis. Table 5.2 summarizes the demand for each category in gallons per capita per day. The severity of the system water loss is apparent by comparing the residential demand and the water loss. On an average day, the same amount of water used by the entire residential sector is lost from the system. The non-residential water demand stays fairly constant on a seasonal basis, averaging out to be about 46 gpcd. Norpac Foods Inc. uses the largest percentage of water.

Table 5.2
Existing Flow Summary

Yearly Statistics	Existing Demands (MGD)	Existing Demands Per Capita				
		Existing System [1] (gpcd)	Residential (gpcd)	Non-Residential (gpcd) [2]	Norpac Foods (gpcd)	Water Loss (gpcd)
Average Day	2.71	371	106	46	114	106
Peak Day	6.50	890	N/A	N/A	N/A	N/A
Dry Weather (May-Oct)	3.75	514	147	56	197	113
Wet Weather (Nov-Apr)	1.65	226	64	35	29	97

Notes:

(1) Existing system includes residential and non-residential demands. Future demands from the existing system users are assumed to remain constant.

(2) Non-residential flow per capita per day excludes Norpac Foods Inc. Demand.

Future demands were generated by adding the existing demands to the additional water demand created by development. The demands assumed for new development (presented in Table 5.3) were calculated by adding the existing demand, 45 gpcd for new non-residential demand, 50 gpcd for industrial water use, and 5% assumed water loss. The average day demand for new development is based on 210 gpcd (106 gpcd residential + 45 commercial/public + 50 industrial + 5% water loss).

It is assumed that the City will pursue leak detection, pipe replacement, and meter replacement and testing programs to reduce the current water loss. Future projections assume existing demands remain constant for existing development. This provides for some conservatism in future projections if the City is successful in detecting and removing mainline leaks. The projected demands for 2015, 2025, and build-out, summarized in Table 5.3, reflect 3.35% growth rate estimates.

Table 5.3
Water Demand Projections

Yearly Statistics	Evaluation Flows in MGD				
	New Development (gpcd) (3)	Existing Demands (MGD) (2)	2015 Flow (MGD)	2025 Flow (MGD)	Build-out Flow (MGD)
Stayton Population (1)	N/A	7,300	10,800	15,000	19,200
Average Day	210	2.71	3.45	4.33	5.20
Peak Day (4)	500	6.50	8.25	10.35	12.44
Dry Weather (May-Oct)	270	3.75	4.70	5.83	6.96
Wet Weather (Nov-Apr)	160	1.65	2.21	2.88	3.55

Notes:

(1) Population projections assume a 3.35% growth rate.

(2) Existing system includes residential and non-residential demands. Future demands from the existing system users are assumed to remain constant.

(3) New development includes residential and non-residential flows plus 5% water loss (which is substantially less than observed in the existing system). Some additional industrial demand (50 gpcd) but not to the magnitude of Norpac Foods Inc., was also assumed. Actual future demands will be a function of the type of future industry that locates within Stayton.

(4) In determining peak day demand for new development, a peak day factor (peak day divided by average day) of 2.4 was used. This is consistent with the existing peak day factor (890/371 = 2.4).

The projected 2025 peak day demand of 10.35 MGD is 93% of the existing summer water right of 11.16 MGD. When the Stayton urban growth boundary is at build-out, peak day demands are projected to be about 12.44 MGD, which exceeds the existing 11.16 MGD summer water right. However, Stayton is in the process of acquiring an additional 10 cfs (6.5 MGD) of year-round water rights which will satisfy build-out peak day demands.

The existing treatment capacity is the limiting factor for growth. Additional treatment capacity will be required to meet projected 2015 and 2025 demands.

5.3 ADDITIONAL REQUIREMENTS

A copy of this document was sent to those entities listed below that could be impacted by actions and policies proposed herein. Comments received from these entities in response to this document are included in the Appendix.

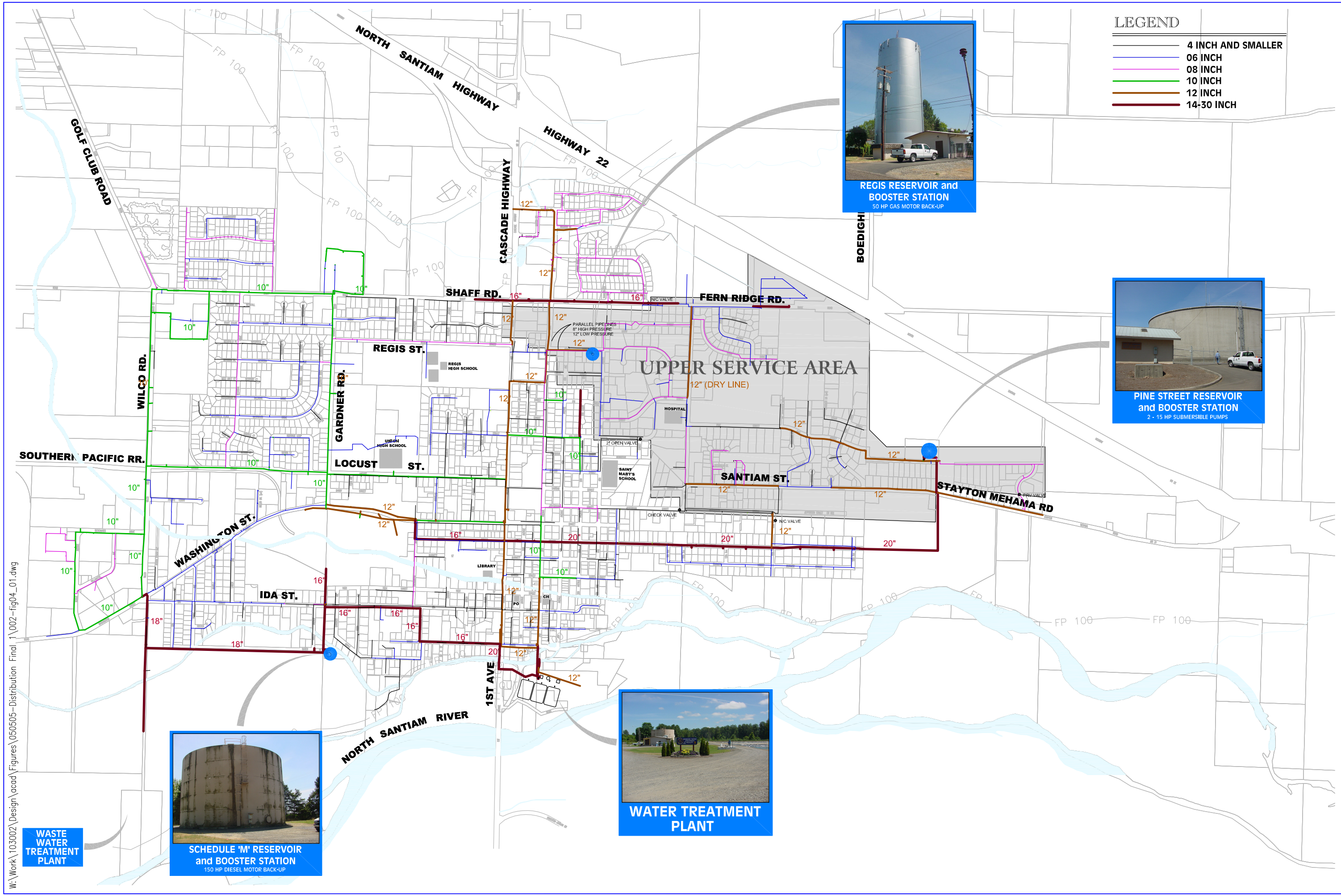
- City of Salem
- Santiam Water Control District

In order to meet state rules, the City intends to submit a progress report on or before September of 2009 (five years) to discuss goals, benchmarks, and its water system and consumption. It is anticipated that

existing City water rights, will satisfy 20-year demands. As a result, the City does not expect to submit an updated WMCP until 10 years have expired (in 2014). The update will include a status report on benchmarks proposed in this report. The update will also reestablish both existing and future supply and demand requirements and population trends.

WATER MANAGEMENT & CONSERVATION

Appendix A



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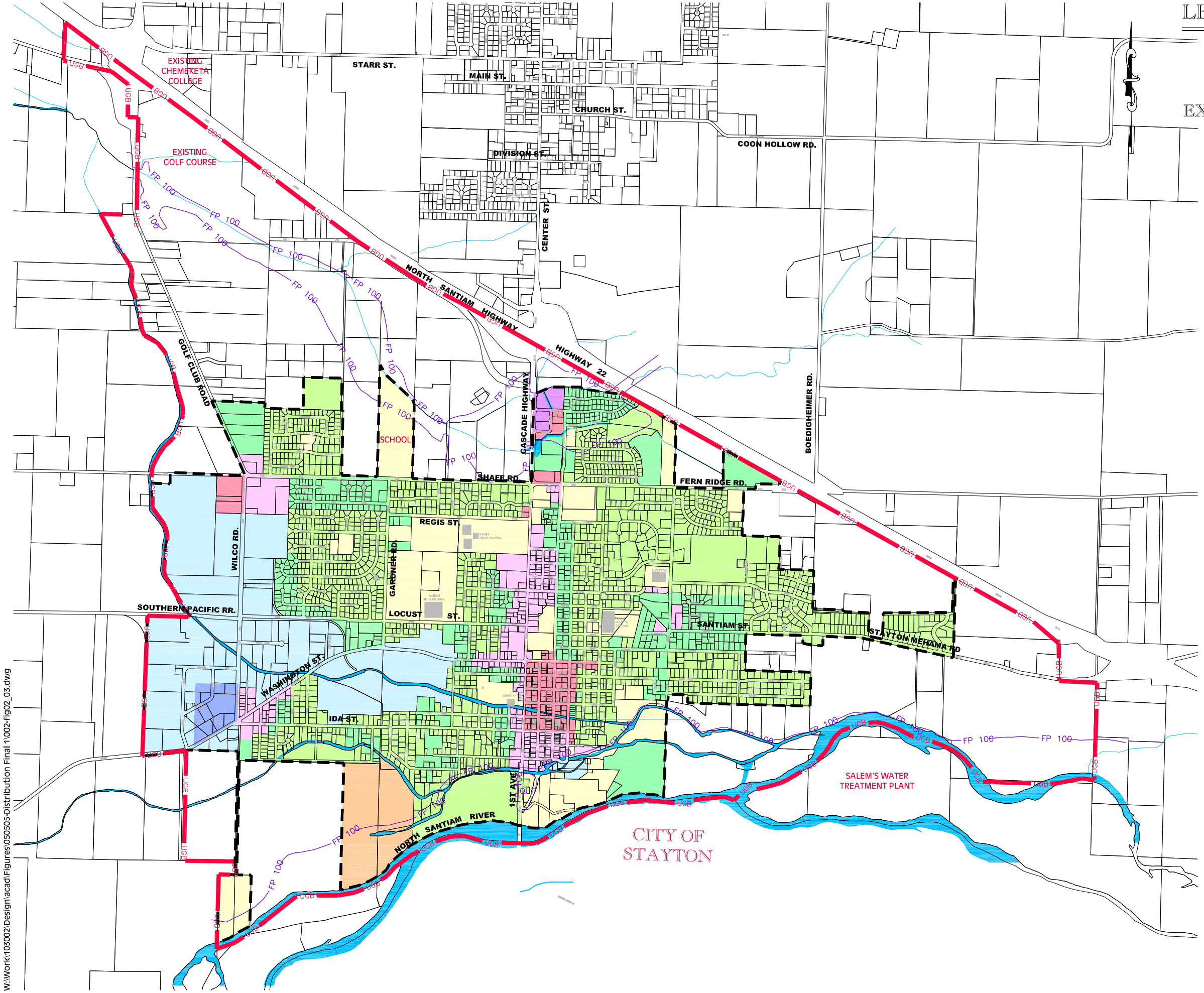
002-fig04_01.dwg

KELLER ASSOCIATES

Water Management and Conservation Plan

Existing Distribution System

FIGURE 1



LEGEND

- CITY LIMITS
- UGB — URBAN GROWTH BOUNDARY

EXISTING ZONING

- COMMERCIAL GENERAL ZONING
- COMMERCIAL RETAIL ZONING
- INDUSTRIAL AGRICULTURE ZONING
- INDUSTRIAL COMMERCIAL ZONING
- LIGHT INDUSTRIAL ZONING
- INTERCHANGE DEVELOPMENT ZONING
- LOW DENSITY RESIDENTIAL ZONING
- MEDIUM & HIGH DENSITY RESIDENTIAL
- PUBLIC AND SEMI-PUBLIC ZONING

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KELLER ASSOCIATES

Water Management and Conservation Plan

Existing Land Use

FIGURE 2

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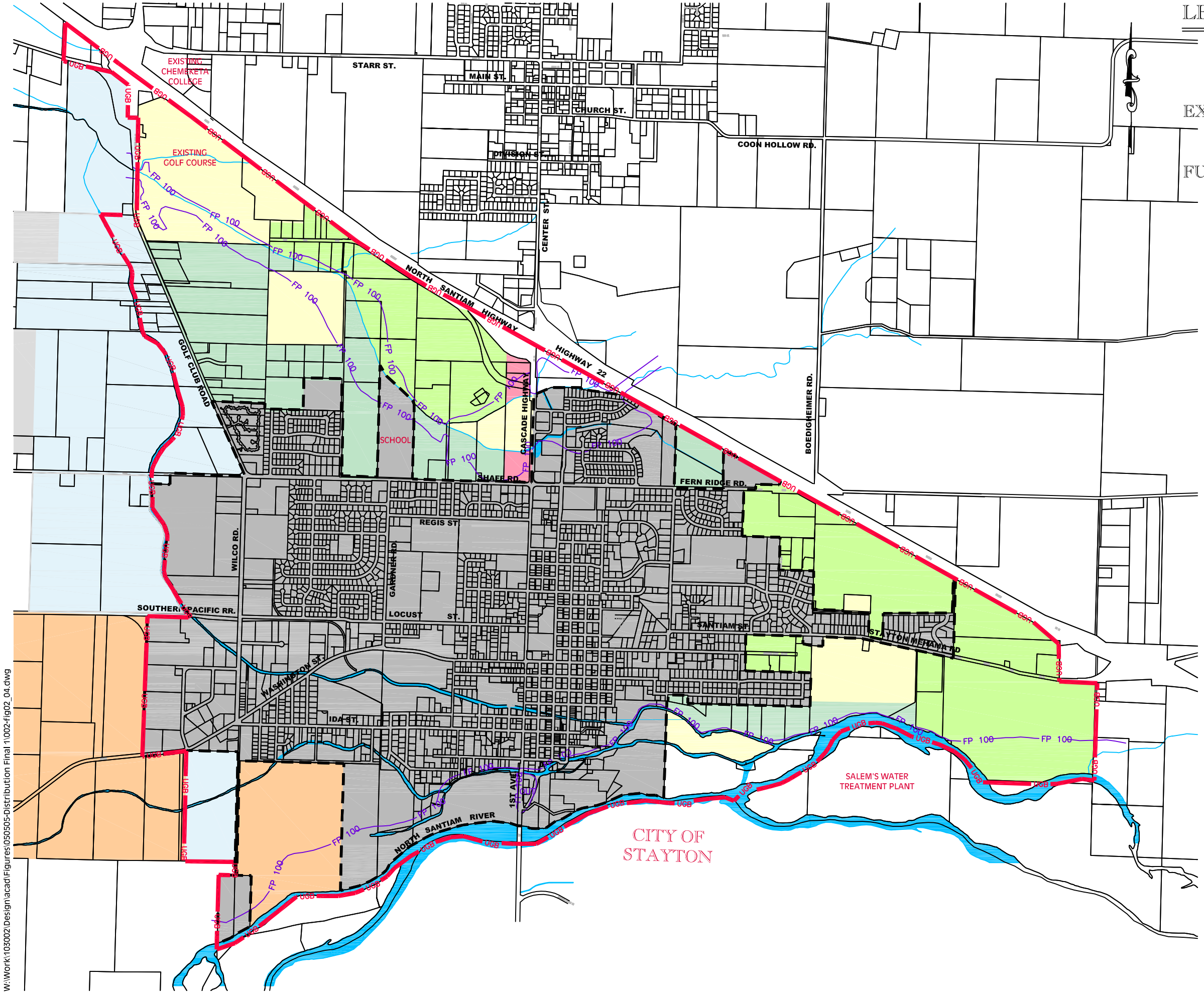

LEGEND

- CITY LIMITS
- UGB — URBAN GROWTH BOUNDARY

EXISTING ZONING

- EXISTING ZONING (SEE FIGURE 1 FOR LAND USE)

FUTURE ZONING

- COMMERCIAL ZONING
- COMMERCIAL RETAIL ZONING
- INDUSTRIAL AGRICULTURE ZONING
- INDUSTRIAL COMMERCIAL ZONING
- LIGHT INDUSTRIAL ZONING
- INTERCHANGE DEVELOPMENT ZONING
- LOW DENSITY RESIDENTIAL ZONING
- MEDIUM TO HIGH DENSITY RESIDENTIAL
- PUBLIC AND SEMI-PUBLIC ZONING

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KELLER ASSOCIATES

Water Management and Conservation Plan

Future Land Use

FIGURE 3

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Water Quality Limited Streams Database

The following records match your search criteria. Select a **Record ID** to view details of the waterbody:

Record ID	Waterbody Name	Sub-Basin	River Mile	Parameter	Season	List Date	Listing Status
8854	North Santiam River	NORTH SANTIAM	0 to 10	Temperature	Summer	2002	303(d) List
8856	North Santiam River	NORTH SANTIAM	0 to 10	Temperature	September 1 - June 30	2002	303(d) List
8857	North Santiam River	NORTH SANTIAM	10 to 26.5	Temperature	September 15 - June 30	2002	303(d) List

There are 3 records in the table.

Download CSV file: Client630.csv

For additional information, please contact Karla Urbanowicz at (503) 229-6099.

DEQ Online is the official Web site for the Oregon Department of Environmental Quality.
If you have questions or comments, please contact us.

Table 4. Listed, Candidate, and Species of Concern and the Determination of Effect from the Biological Assessment for Expansion, Operation and Maintenance of the Geren Island WTF

Common name	Scientific name	Federal status[1]	Jurisdiction
Oregon chub	*Oregonichthys crameri*	Endangered	USFWS
Winter steelhead	*Oncorhynchus mykiss*	Threatened	NOAA[2]
Spring chinook salmon	*Oncorhynchus tshawytscha*	Threatened	NOAA[2]
Bald eagle	*Haliaeetus leucocephalus*	Threatened	USFWS
Fender's blue butterfly	*Icaricia icarioides fenderi*	Endangered	USFWS[3]
Golden Indian paintbrush	*Castilleja laevisecta*	Threatened	USFWS[2]
Willamette daisy	*Erigeron decumbens* var. *decumbens*	Endangered	USFWS[2]
Howellia	*Howellia aquatilis*	Threatened	USFWS
Bradshaw's lomatium	*Lomatium bradshawii*	Endangered	USFWS
Kincaid's lupine	*Lupinus sulphureus* var. *kincaidii*	Threatened	USFWS[2]
Nelson's checker-mallow	*Sidalcea nelsoniana*	Threatened	USFWS
Candidate Species			
Yellow-billed cuckoo	*Coccyzus americanus*	Candidate	USFWS[3]
Oregon spotted frog	*Rana pretiosa*	Candidate	USFWS[2]
Taylor's checkerspot	*Euphydras editha taylori*	Candidate	USFWS[3]
Streaked horned lark	*Eremophila alpestris strigata*	Candidate	USFWS[3]
Pacific lamprey	*Lampetra tridentata*	Sp. of Concern	USFWS
Northern red-legged frog	*Rana aurora aurora*	Sp. of Concern	USFWS
Foothill yellow-legged frog	*Rana boylii*	Sp. of Concern	USFWS
Northwestern pond turtle	*Clemmys marmorata marmorata*	Sp. of Concern	USFWS
Little willow flycatcher	*Empidonax traillii brewsteri*	Sp. of Concern	USFWS
Band-tailed pigeon	*Columba fasciata*	Sp. of Concern	USFWS[3]
Olive-sided flycatcher	*Contopus cooperi (=borealis)*	Sp. of Concern	USFWS[3]
Yellow-breasted chat	*Icteria virens*	Sp. of Concern	USFWS[3]
Acorn woodpecker	*Melanerpes formicivarus*	Sp. of Concern	USFWS[3]
Oregon vesper sparrow	*Pooecetes gramineus affinis*	Sp. of Concern	USFWS[3]
Purple martin	*Progne subis*	Sp. of Concern	USFWS[3]
Silver-haired bat	*Lasionycteris noctivagans*	Sp. of Concern	USFWS[3]
Long-eared myotis	*Myotis evotis*	Sp. Of Concern	USFWS
Fringed myotis	*Myotis thysanodes*	Sp. Of Concern	USFWS
Long-legged myotis	*Myotis volans*	Sp. Of Concern	USFWS
Yuma myotis	*Myotis yumanensis*	Sp. Of Concern	USFWS
Pacific western big-eared bat	*Plecotus townsendii townsendii*	Sp. Of Concern	USFWS
Camas pocket gopher	*Thomomys bulbivorus*	Sp. of Concern	USFWS[3]
Oregon giant earthworm	*Megascolides macelfreshi*	Sp. of Concern	USFWS
White top aster	*Aster curtus*	Sp. of Concern	USFWS
Peacock larkspur	*Delphinium pavonaceum*	Sp. of Concern	USFWS

[1] Federal Status

Endangered: Species that are in danger of becoming extinct within the foreseeable future throughout all or a significant portion of their range.

Threatened: Species that are likely to become endangered within the foreseeable future.

Candidate: Species considered for threatened or endangered listing, but not yet the subject of a proposed rule

Species of Concern: Species that are currently under review for listing.

Shaggy horkelia	*Horkelia congesta* spp. *Congesta*	Sp. of Concern	USFWS
Thin-leaved peavine	*Lathyrus holochlorus*	Sp. of Concern	USFWS[3]

[1] Federal Status

Endangered: Species that are in danger of becoming extinct within the foreseeable future throughout all or a significant portion of their range.

Threatened: Species that are likely to become endangered within the foreseeable future.

Candidate: Species considered for threatened or endangered listing, but not yet the subject of a proposed rule

Species of Concern: Species that are currently under review for listing.

[2] Status changed since preparation of the Biological Assessment
Source: AAI and SPCA 1996

[3] Status change since 1996 Source: USFWS, October 2003

ENCLOSURE A

FEDERALLY LISTED AND PROPOSED ENDANGERED AND THREATENED SPECIES, CANDIDATE SPECIES AND SPECIES OF CONCERN THAT MAY OCCUR WITHIN THE AREA OF THE CITY OF SALEM WATER MANAGEMENT PLAN PROJECT 1-7-03-SP-0684

LISTED SPECIES[1/]

Birds		
Bald eagle[2/]	*Haliaeetus leucocephalus*	T
Fish		
Steelhead (Upper Willamette River)[3/]	*Oncorhynchus mykiss*	**T
Chinook salmon (Upper Willamette River)[4/]	*Oncorhynchus tshawytscha*	**T
Oregon chub	*Oregonichthys crameri*	E
Invertebrates		
Fender's blue butterfly[5/]	*Icaricia icarioides fenderi*	E
Plants		
Golden Indian paintbrush[6/]	*Castilleja levisecta*	T
Willamette daisy[3/]	*Erigeron decumbens* var. *decumbens*	E
Howellia	*Howellia aquatilis*	T
Bradshaw's lomatium	*Lomatium bradshawii*	E
Kincaid's lupine[5/]	*Lupinus sulphureus* var. *kincaidii*	T
Nelson's checker-mallow	*Sidalcea nelsoniana*	T

PROPOSED SPECIES

None

CANDIDATE SPECIES[7/]

Birds	
Yellow-billed cuckoo[8/]	*Coccyzus americanus*
Streaked horned lark	*Eremophila alpestris strigata*
Amphibians and Reptiles	
Oregon spotted frog	*Rana pretiosa*
Invertebrates	
Taylor's checkerspot	*Euphydryas editha taylori*

SPECIES OF CONCERN

Mammals	
Pacific western big-eared bat	*Corynorhinus (=Plecotus) townsendii townsendii*
Silver-haired bat	*Lasionycteris noctivagans*
Long-eared myotis (bat)	*Myotis evotis*
Fringed myotis (bat)	*Myotis thysanodes*

Long-legged myotis (bat)	*Myotis volans*
Yuma myotis (bat)	*Myotis yumanensis*
Camas pocket gopher	*Thomomys bulbivorus*
Birds	
Band-tailed pigeon	*Columba fasciata*
Olive-sided flycatcher	*Contopus cooperi (=borealis)*
Yellow-breasted chat	*Icteria virens*
Acorn woodpecker	*Melanerpes formicivorus*
Oregon vesper sparrow	*Pooecetes gramineus affinis*
Purple martin	*Progne subis*
Amphibians and Reptiles	
Northwestern pond turtle	*Emus (=Clemmys) marmorata marmorata*
Northern red-legged frog	*Rana aurora aurora*
Foothill yellow-legged frog	*Rana boylii*
Fish	
Pacific lamprey	*Lampetra tridentata*
Coastal cutthroat trout (Upper Willamette)	*Oncorhynchus clarki clarki*
Invertebrates	
Oregon giant earthworm	*Driloleirus (=Megascolides) macelfreshi*
Plants	
White top aster	*Aster curtus*
Peacock larkspur	*Delphinium pavonaceum*
Shaggy horkelia	*Horkelia congesta* ssp. *congesta*
Thin-leaved peavine	*Lathyrus holochlorus*

(E) - Listed Endangered *(T) - Listed Threatened* *(CH) - Critical Habitat has been designated for this species*
(PE) - Proposed Endangered *(PT) - Proposed Threatened* *(PCH) - Critical Habitat has been proposed for this species*
(S) - Suspected *(D) - Documented*

Species of Concern - Taxa whose conservation status is of concern to the Service (many previously known as Category 2 candidates), but for which further information is still needed.

(CF) - Candidate: National Marine Fisheries Service designation for any species being considered by the Secretary for listing for endangered or threatened species, but not yet the subject of a proposed rule.

*** Consultation with National Marine Fisheries Service may be required.*

[1] U. S. Department of Interior, Fish and Wildlife Service. October 31, 2000, Endangered and Threatened Wildlife and Plants, 50 CFR 17.11 and 17.12
[2] Federal Register Vol. 60, No. 133, July 12, 1995 - Final Rule - Bald Eagle
[3] Federal Register Vol. 64, No. 57, March 25, 1999, Final Rule - Middle Columbia and Upper Willamette River Steelhead
[4] Federal Register Vol. 64, No. 56, March 24, 1999, Final Rule - West Coast Chinook Salmon
[5] Federal Register Vol. 65, No. 16, January 25, 2000, Final Rule-Erigeron decumbens var. decumbens, Lupinus sulphureus ssp. kincaidii and Fender's blue butterfly
[6] Federal Register Vol. 62, No. 112, June 11, 1997, Final Rule-Castilleja levisecta
[7] Federal Register Vol. 67, No. 114, June 13, 2002, Notice of Review - Candidate or Proposed Animals and Plants
[8] Federal Register Vol. 66, No. 143, July 25, 2001, 12-Month Finding for a Petition To List the Yellow-billed Cuckoo

OREGON NATURAL HERITAGE INFORMATION CENTER

Institute for Natural Resources

OREGON STATE UNIVERSITY
1322 SE Morrison Street
Portland, Oregon 97214-2423

August 25, 2004

Justin R. Walker
Keller Associates, Inc.
131 SW 5th Avenue, Suite A
Meridian, ID 83642

Dear Mr. Walker:

Thank you for requesting information from the Oregon Natural Heritage Information Center (ORNHIC). We have conducted a data system search for rare, threatened and endangered plant and animal records for your Stayton Water Management and Conservation Plan Project in Township 9 South, Range 1 West, Sections 11 and 13, W.M.

Twenty-five (25) records were noted within a two-mile radius of your project and are included on the enclosed computer printout. A key to the fields is also included.

Please remember that the lack of rare element information from a given area does not mean that there are no significant elements there, only that there is no information known to us from the site. To assure that there are no important elements present, you should inventory the site, at the appropriate season.

This data is confidential and for the specific purposes of your project and is **not to be distributed**.

If you need additional information or have any questions, please do not hesitate to contact me.

Sincerely,

Cliff Alton
Conservation Information Assistant

encl.: invoice (H-082404-CWA4)
computer printout and data key

OREGON NATURAL HERITAGE INFORMATION CENTER

Institute for Natural Resources

OREGON STATE UNIVERSITY
1322 SE Morrison Street
Portland, Oregon 97214-2423

Invoice Number: H-082404-CWA4
Index: RNR105

INVOICE

TO: Keller Associates, Inc.
131 SW 5th Avenue, Suite A
Meridian, ID 83642

ATTN: Accounts Payable

DATE: August 25, 2004

RE: Data system search for rare, threatened and endangered plants and animals in the vicinity of Township 9 South, Range 1 West, Sections 11 and 13, W.M. Requested by Justin R. Walker for the Stayton Water Management and Conservation Plan Project.

For services and products:

Computer records (25 @ $0.50/record)	$ 12.50
Computer fee (flat rate)	$ 20.00
Staff time (0.75 hours @ $50.00/hour)	$ 37.50
TOTAL DUE:	**$ 70.00**

Please make checks payable to: **Oregon Natural Heritage Information Center**

Please include invoice number at top of page with payment.

Terms: **Net 30**

Scientific Name: ***Rana aurora aurora***
Common Name: **Northern red-legged frog**
Federal Status: SOC GRANK: G4T4 NHP List: 4 Category: Vertebrate Animal
State Status: SV/SU SRANK: S3S4 HP Track: N ELCODE: AAABH01021
EO ID: 19241 First Obs: 1996-04-07 Last Obs: 1996-04-07 Confirmed:
Directions: GEREN ISLAND (STAYTON ISLAND). POND EXCAVATED IN 1979 TO OBSERVE GROUND WATER LEVELS. EAST OF SLOW SAND FILTERS IN AREA TO BE EXCAVATED FOR MORE SAND FILTERS. ALSO SMALL FORESTED WETLAND JUST EAST OF THE SLOW SAND FILTER COMPLEX.

County Name	Ecoregion	Source Feature [Uncertainty Type (Distance)]
Marion	WV	Polygon [Areal - Delimited (8 m)]

Town-Range	Sec	Note	QuadCode	QuadName	Watershed
009S001W	13		44122-G7	Stayton	1709000506 - NORTH SANTIAM RIVER, LOWER

Owner Name/Type	Owner Comments	Managed Area Name
CITY; COUNTY	CITY OF SALEM, MARION COUNTY	

EO Type: Minimum Elev.(m): 143 Annual Observations
EO Data: 1996: POND - 2 EGG MASSES HATCHING WITH SEVERAL ADULTS. FORESTED WETLAND SITE - 1 ADULT ONLY, NO EGGS.
EO Comments: ARTIFICIAL POND AND SMALL FORESTED WETLAND. ROUGH SKINNED NEWT, NORTHWESTERN SALAMANDER EGGS AND GARTER SNAKE IN POND.
Protection:
Management: LOTS OF BULLFROGS AT POND AND WETLAND.
General: OBSERVER: PRISCILLA STANFORD

Scientific Name: ***Rana pretiosa***
Common Name: **Oregon spotted frog**
Federal Status: C GRANK: G2 NHP List: 1 Category: Vertebrate Animal
State Status: SC SRANK: S2 HP Track: Y ELCODE: AAABH01180
EO ID: 5019 First Obs: 1937-10-13 Last Obs: 1937-10-13 Confirmed:
Directions: AUMSVILLE, ALONG MILL CREEK

County Name	Ecoregion	Source Feature [Uncertainty Type (Distance)]
Marion	WV	Point [Areal - Estimated (8050 m)]

Town-Range	Sec	Note	QuadCode	QuadName	Watershed
008S002W	36		44122-G7	Stayton	1709000506 - NORTH SANTIAM RIVER, LOWER 1709000701 - MILL CREEK 1709000907 - SILVER CREEK

Owner Name/Type	Owner Comments	Managed Area Name

EO Type: Minimum Elev.(m): 107 Annual Observations
EO Data: 1937: ONE ADULT FEMALE COLLECTED
EO Comments: LOW, EMERGENT MARSH
Protection:
Management:
General: COLLECTOR: H.S. FITCH MVZ#25288

Scientific Name: ***Haliaeetus leucocephalus***
Common Name: **Bald eagle**
Federal Status: LT GRANK: G4 NHP List: 4 Category: Vertebrate Animal
State Status: LT SRANK: S4B,S4N HP Track: Y ELCODE: ABNKC10010
EO ID: 26095 First Obs: 2003 Last Obs: 2003 Confirmed:
Directions: S. of Stayton, along the North Santiam River.

County Name	Ecoregion	Source Feature [Uncertainty Type (Distance)]
Marion	WV	Point [Areal - Estimated (50 m)]

Town-Range	Sec	Note	QuadCode	QuadName	Watershed
009S001W	16		44122-G7	Stayton	1709000506 - NORTH SANTIAM RIVER, LOWER

Owner Name/Type	Owner Comments	Managed Area Name

EO Type: Minimum Elev.(m): Annual Observations
EO Data: See annual observations.
• 2003 - 1 downy nestling

EO Comments:
Protection:
Management:
General: Isaacs and Anthony nest 1128.

Scientific Name: ***Eremophila alpestris strigata***
Common Name: **Streaked horned lark**
Federal Status: C GRANK: G5T2 NHP List: 1 Category: Vertebrate Animal
State Status: SC SRANK: S2B HP Track: Y ELCODE: ABPAT0201L
EO ID: 1181 First Obs: 1999-05-19 Last Obs: 1999-05-19 Confirmed:
Directions: APPROX. 1.5 MI SE OF KINGSTON.

County Name	Ecoregion	Source Feature [Uncertainty Type (Distance)]
Linn	WV	Point [Areal - Estimated (200 m)]

Town-Range	Sec	Note	QuadCode	QuadName	Watershed
009S001W	26		44122-G7	Stayton	1709000506 - NORTH SANTIAM RIVER, LOWER

Owner Name/Type	Owner Comments	Managed Area Name
PRIVATE		

EO Type: Minimum Elev.(m): 183 Annual Observations
EO Data: 1999: 1 BIRD OBSERVED.
EO Comments:
Protection:
Management:
General:

Scientific Name: ***Progne subis***
Common Name: **Purple martin**
Federal Status: SOC GRANK: G5 NHP List: 2 Category: Vertebrate Animal
State Status: SC SRANK: S2B HP Track: Y ELCODE: ABPAU01010
EO ID: 20254 First Obs: 1998-07-23 Last Obs: 1998-07-23 Confirmed:
Directions: FROM STAYTON TAKE KINGSTON-JORDAN RD. CROSS THE RIVER AND RAILROAD TRACKS. TURN LEFT ON KINGSTON-LYONS RD, AND GO 1.5 MI. TURN LEFT AT THE SIGN "BIRDHAVEN", GO UP THE GREAVEL LANE. THE NESTBOXES ARE NEAR THE GARDENS AND DOWN BELOW THE HOUSE IN THE MOWN F

County Name	Ecoregion	Source Feature [Uncertainty Type (Distance)]
Linn	WV	Point [Areal - Estimated (50 m)]

Town-Range	Sec	Note	QuadCode	QuadName	Watershed
009S001E	18		44122-G6	Stout Mountain	1709000506 - NORTH SANTIAM RIVER, LOWER

Owner Name/Type	Owner Comments	Managed Area Name
PRIVATE	FARM	

EO Type: Minimum Elev.(m): 226 Annual Observations
EO Data: 1998: 15 PAIRS NESTING IN BOXES.
EO Comments:
Protection:
Management:
General:

Scientific Name: ***Pooecetes gramineus affinis***
Common Name: **Oregon vesper sparrow**
Federal Status: SOC GRANK: G5T3 NHP List: 2 Category: Vertebrate Animal
State Status: SC SRANK: S2B,S2N HP Track: Y ELCODE: ABPBX95011
EO ID: 13494 First Obs: 1999-05-26 Last Obs: 1999-05-26 Confirmed:
Directions: SW of Wisner Cemetery.

County Name	Ecoregion	Source Feature [Uncertainty Type (Distance)]
Linn	WV	Point [Areal - Estimated (50 m)]

Town-Range	Sec	Note	QuadCode	QuadName	Watershed
009S001W	26		44122-G7	Stayton	1709000506 - NORTH SANTIAM RIVER, LOWER

Owner Name/Type	Owner Comments	Managed Area Name
PRIVATE		

EO Type: Minimum Elev.(m): 168 Annual Observations
EO Data: 1999: 1 bird observed.

EO Comments:
Protection:
Management:
General:

Scientific Name: ***Pooecetes gramineus affinis***
Common Name: **Oregon vesper sparrow**
Federal Status: SOC GRANK: G5T3 NHP List: 2 Category: Vertebrate Animal
State Status: SC SRANK: S2B,S2N HP Track: Y ELCODE: ABPBX95011
EO ID: 26250 First Obs: 1999-07-02 Last Obs: 1999-07-02 Confirmed:
Directions: Approx. 1mi SE of Kingston.

County Name	Ecoregion	Source Feature [Uncertainty Type (Distance)]
Linn	WV	Point [Areal - Estimated (50 m)]

Town-Range	Sec	Note	QuadCode	QuadName	Watershed
009S001W	24		44122-G7	Stayton	1709000506 - NORTH SANTIAM RIVER, LOWER

Owner Name/Type: Private
Owner Comments:
Managed Area Name:
EO Type: Minimum Elev.(m): 198 Annual Observations
EO Data: 1999: 1 male singing.
EO Comments:
Protection:
Management:
General:

Scientific Name: ***Ammodramus savannarum***
Common Name: **Grasshopper sparrow**
Federal Status: GRANK: G5 NHP List: 2 Category: Vertebrate Animal
State Status: SV/SP SRANK: S2B HP Track: Y ELCODE: ABPBXA0020
EO ID: 12542 First Obs: 1999-06-09 Last Obs: 1999-06-23 Confirmed:
Directions: APPROX. 1 MI SE OF STAYTON ISLAND.

County Name	Ecoregion	Source Feature [Uncertainty Type (Distance)]
Linn	WV	Point [Areal - Estimated (50 m)]

Town-Range	Sec	Note	QuadCode	QuadName	Watershed
009S001W	24		44122-G6	Stout Mountain	1709000506 - NORTH SANTIAM RIVER, LOWER

Owner Name/Type: PRIVATE
Owner Comments:
Managed Area Name:
EO Type: Minimum Elev.(m): 213 Annual Observations
EO Data: 1999: 1 MALE SINGING.
EO Comments:
Protection:
Management:
General:

Scientific Name: ***Oncorhynchus tshawytscha pop. 23***
Common Name: **Chinook salmon (Upper Willamette River ESU, spring run)**
Federal Status: LT GRANK: G5T2Q NHP List: 1 Category: Vertebrate Animal
State Status: SRANK: S2 HP Track: Y ELCODE: AFCHA02052
EO ID: 94 First Obs: Last Obs: 1999-PRE Confirmed:
Directions: MILL CREEK & TRIBUTARIES

County Name	Ecoregion	Source Feature [Uncertainty Type (Distance)]
Marion		Data currently not available.

Town-Range	Sec	Note	QuadCode	QuadName	Watershed
			44122-G7	Stayton	17090007 - Middle Willamette
			44122-G8	Turner	
			44122-H8	Salem East	
			44123-H1	Salem West	

Owner Name/Type
Owner Comments
Managed Area Name

EO Type: REARING & MIGRATION - fish Minimum Elev.(m): Annual Observations
EO Data: SPRING RUN; ODFW DISTRIBUTION MAPS USED TO CREATE THE 1:24,000 COVERAGE.
EO Comments:
Protection:
Management:
General: DISTRIBUTION INFORMATION USED IN THIS EOR WAS DERIVED FROM ODFW GEOGRAPHIC RESOURCES DATA PRODUCED AND DISTRIBUTED IN 2001. UNLESS SPECIFIC DATA EXISTS IN THE DATA FIELD, THE INFORMATION PRESENTED IN THIS EOR REPRESENTS THE "BEST PROFESSIONAL JUDGMENT" BY ODFW'S DISTRICT FISHERIES BIOLOGIST; THE PRESENCE OF CHINOOK IN DESCRIBED AREAS SHOULD BE CONSIDERED UNDOCUMENTED BUT AS HAVING A POTENTIAL OF BEING PRESENT.

Scientific Name: ***Oncorhynchus tshawytscha pop. 23***
Common Name: **Chinook salmon (Upper Willamette River ESU, spring run)**
Federal Status: LT GRANK: G5T2Q NHP List: 1 Category: Vertebrate Animal
State Status: SRANK: S2 HP Track: Y ELCODE: AFCHA02052
EO ID: 5008 First Obs: Last Obs: 1999-PRE Confirmed:
Directions: VALENTINE CREEK

County Name	Ecoregion	Source Feature [Uncertainty Type (Distance)]
Marion		Data currently not available.

Town-Range	Sec	Note	QuadCode	QuadName	Watershed
			44122-G6	Stout Mountain	1709000506 - NORTH SANTIAM RIVER, LOWER

Owner Name/Type	Owner Comments	Managed Area Name

EO Type: REARING & MIGRATION - fish Minimum Elev.(m): Annual Observations
EO Data: SPRING RUN; ODFW DISTRIBUTION MAPS USED TO CREATE THE 1:24,000 COVERAGE.
EO Comments:
Protection:
Management:
General: DISTRIBUTION INFORMATION USED IN THIS EOR WAS DERIVED FROM ODFW GEOGRAPHIC RESOURCES DATA PRODUCED AND DISTRIBUTED IN 2001. UNLESS SPECIFIC DATA EXISTS IN THE DATA FIELD, THE INFORMATION PRESENTED IN THIS EOR REPRESENTS THE "BEST PROFESSIONAL JUDGMENT" BY ODFW'S DISTRICT FISHERIES BIOLOGIST; THE PRESENCE OF CHINOOK IN DESCRIBED AREAS SHOULD BE CONSIDERED UNDOCUMENTED BUT AS HAVING A POTENTIAL OF BEING PRESENT.

Scientific Name: ***Oncorhynchus tshawytscha pop. 23***
Common Name: **Chinook salmon (Upper Willamette River ESU, spring run)**
Federal Status: LT GRANK: G5T2Q NHP List: 1 Category: Vertebrate Animal
State Status: SRANK: S2 HP Track: Y ELCODE: AFCHA02052
EO ID: 18370 First Obs: Last Obs: 1999-PRE Confirmed:
Directions: SANTIAM RIVER & TRIBUTARIES

County Name	Ecoregion	Source Feature [Uncertainty Type (Distance)]
Linn Marion		Data currently not available.

Town-Range	Sec	Note	QuadCode	QuadName	Watershed
			44122-F3	Lawhead Creek	17090005 - North Santiam
			44122-F4	Mill City South	
			44122-F8	Crabtree	
			44122-G3	Elkhorn	
			44122-G4	Mill City North	
			44122-G5	Lyons	
			44122-G6	Stout Mountain	
			44122-G7	Stayton	
			44122-G8	Turner	
			44123-F1	Albany	

Owner Name/Type	Owner Comments	Managed Area Name

EO Type: SPAWNING & REARING - fish Minimum Elev.(m): Annual Observations
EO Data: SPRING RUN. ODFW DISTRIBUTION MAPS USED TO CREATE THE 1:24,000 COVERAGE. ODFW SALMONID DISTRIBUTION DOCUMENTATION 1998: NORTH SANTIAM RIVER, LITTLE NORTH SANTIAM RIVER. 1997: NORTH SANTIAM RIVER. 1952: NORTH SANTIAM RIVER.
EO Comments:
Protection:
Management:
General: DOCUMENTATION INFORMATION USED IN THIS EOR WAS DERIVED FROM THE ODFW SALMONID DISTRIBUTION DOCUMENTATION DIGITAL DATABASE DISTRIBUTED IN 2001. DISTRIBUTION INFORMATION USED IN THIS EOR WAS DERIVED FROM ODFW GEOGRAPHIC RESOURCES DATA PRODUCED AND DISTRIBUTED IN 2001. UNLESS SPECIFIC DATA EXISTS IN THE DATA FIELD, THE INFORMATION PRESENTED IN THIS EOR REPRESENTS THE "BEST PROFESSIONAL JUDGMENT" BY ODFW'S DISTRICT FISHERIES BIOLOGIST; THE PRESENCE OF CHINOOK IN DESCRIBED AREAS SHOULD BE CONSIDERED UNDOCUMENTED BUT AS HAVING A POTENTIAL OF BEING PRESENT.

Scientific Name: ***Oncorhynchus mykiss pop. 33***
Common Name: **Steelhead (Upper Willamette River ESU, winter run)**
Federal Status: LT GRANK: G5T2Q NHP List: 1 Category: Vertebrate Animal
State Status: SC SRANK: S2 HP Track: Y ELCODE: AFCHA02138
EO ID: 1134 First Obs: Last Obs: 1999-PRE Confirmed:
Directions: NORTH SANTIAM RIVER & TRIBUTARIES

County Name	Ecoregion	Source Feature [Uncertainty Type (Distance)]
Linn		Data currently not available.
Marion		

Town-Range	Sec	Note	QuadCode	QuadName	Watershed
			44122-F3	Lawhead Creek	17090005 - North Santiam
			44122-F4	Mill City South	
			44122-F8	Crabtree	
			44122-G2	Battle Ax	
			44122-G3	Elkhorn	
			44122-G4	Mill City North	
			44122-G5	Lyons	
			44122-G6	Stout Mountain	
			44122-G7	Stayton	
			44122-G8	Turner	
			44123-F1	Albany	

Owner Name/Type	Owner Comments	Managed Area Name

EO Type: SPAWNING & REARING - fish Minimum Elev.(m): Annual Observations
EO Data: WINTER RUN; ODFW DISTRIBUTION MAPS USED TO CREATE THE 1:24,000 COVERAGE.
EO Comments:
Protection:
Management:
General: DISTRIBUTION INFORMATION USED IN THIS EOR WAS DERIVED FROM ODFW GEOGRAPHIC RESOURCES DATA PRODUCED AND DISTRIBUTED IN 2001. UNLESS SPECIFIC DATA EXISTS IN THE DATA FIELD, THE INFORMATION PRESENTED IN THIS EOR REPRESENTS THE "BEST PROFESSIONAL JUDGMENT" BY ODFW'S DISTRICT FISHERIES BIOLOGIST; THE PRESENCE OF STEELHEAD IN DESCRIBED AREAS SHOULD BE CONSIDERED UNDOCUMENTED BUT AS HAVING A POTENTIAL OF BEING PRESENT.

Scientific Name: ***Oncorhynchus mykiss pop. 33***
Common Name: **Steelhead (Upper Willamette River ESU, winter run)**
Federal Status: LT GRANK: G5T2Q NHP List: 1 Category: Vertebrate Animal
State Status: SC SRANK: S2 HP Track: Y ELCODE: AFCHA02138
EO ID: 4118 First Obs: Last Obs: 1999-PRE Confirmed:
Directions: ALDER CREEK

County Name	Ecoregion	Source Feature [Uncertainty Type (Distance)]
Marion		Data currently not available.

Town-Range	Sec	Note	QuadCode	QuadName	Watershed
			44122-G6	Stout Mountain	1709000506 - NORTH SANTIAM RIVER, LOWER

Owner Name/Type | Owner Comments | Managed Area Name

EO Type: MIGRATION - fish Minimum Elev.(m): Annual Observations
EO Data: WINTER RUN; ODFW DISTRIBUTION MAPS USED TO CREATE THE 1:24,000 COVERAGE.
EO Comments:
Protection:
Management:
General: DISTRIBUTION INFORMATION USED IN THIS EOR WAS DERIVED FROM ODFW GEOGRAPHIC RESOURCES DATA PRODUCED AND DISTRIBUTED IN 2001. UNLESS SPECIFIC DATA EXISTS IN THE DATA FIELD, THE INFORMATION PRESENTED IN THIS EOR REPRESENTS THE "BEST PROFESSIONAL JUDGMENT" BY ODFW'S DISTRICT FISHERIES BIOLOGIST; THE PRESENCE OF STEELHEAD IN DESCRIBED AREAS SHOULD BE CONSIDERED UNDOCUMENTED BUT AS HAVING A POTENTIAL OF BEING PRESENT.

Scientific Name: ***Oncorhynchus mykiss pop. 33***
Common Name: **Steelhead (Upper Willamette River ESU, winter run)**
Federal Status: LT GRANK: G5T2Q NHP List: 1 Category: Vertebrate Animal
State Status: SC SRANK: S2 HP Track: Y ELCODE: AFCHA02138
EO ID: 9461 First Obs: Last Obs: 1999-PRE Confirmed:
Directions: ALDER CREEK

County Name: Marion
Ecoregion:
Source Feature [Uncertainty Type (Distance)]: Data currently not available.

Town-Range | Sec | Note
QuadCode: 44122-G6 QuadName: Stout Mountain
Watershed: 1709000506 - NORTH SANTIAM RIVER, LOWER

Owner Name/Type | Owner Comments | Managed Area Name

EO Type: REARING & MIGRATION - fish Minimum Elev.(m): Annual Observations
EO Data: WINTER RUN; ODFW DISTRIBUTION MAPS USED TO CREATE THE 1:24,000 COVERAGE.
EO Comments:
Protection:
Management:
General: DISTRIBUTION INFORMATION USED IN THIS EOR WAS DERIVED FROM ODFW GEOGRAPHIC RESOURCES DATA PRODUCED AND DISTRIBUTED IN 2001. UNLESS SPECIFIC DATA EXISTS IN THE DATA FIELD, THE INFORMATION PRESENTED IN THIS EOR REPRESENTS THE "BEST PROFESSIONAL JUDGMENT" BY ODFW'S DISTRICT FISHERIES BIOLOGIST; THE PRESENCE OF STEELHEAD IN DESCRIBED AREAS SHOULD BE CONSIDERED UNDOCUMENTED BUT AS HAVING A POTENTIAL OF BEING PRESENT.

Scientific Name: ***Oncorhynchus mykiss pop. 33***
Common Name: **Steelhead (Upper Willamette River ESU, winter run)**
Federal Status: LT GRANK: G5T2Q NHP List: 1 Category: Vertebrate Animal
State Status: SC SRANK: S2 HP Track: Y ELCODE: AFCHA02138
EO ID: 16605 First Obs: Last Obs: 1999-PRE Confirmed:
Directions: VALENTINE CREEK

County Name: Marion
Ecoregion:
Source Feature [Uncertainty Type (Distance)]: Data currently not available.

Town-Range | Sec | Note
QuadCode: 44122-G6 QuadName: Stout Mountain
QuadCode: 44122-G7 QuadName: Stayton
Watershed: 1709000506 - NORTH SANTIAM RIVER, LOWER

Owner Name/Type | Owner Comments | Managed Area Name

EO Type: REARING & MIGRATION - fish Minimum Elev.(m): Annual Observations
EO Data: WINTER RUN; ODFW DISTRIBUTION MAPS USED TO CREATE THE 1:24,000 COVERAGE.
EO Comments:
Protection:
Management:

General: DISTRIBUTION INFORMATION USED IN THIS EOR WAS DERIVED FROM ODFW GEOGRAPHIC RESOURCES DATA PRODUCED AND DISTRIBUTED IN 2001. UNLESS SPECIFIC DATA EXISTS IN THE DATA FIELD, THE INFORMATION PRESENTED IN THIS EOR REPRESENTS THE "BEST PROFESSIONAL JUDGMENT" BY ODFW'S DISTRICT FISHERIES BIOLOGIST; THE PRESENCE OF STEELHEAD IN DESCRIBED AREAS SHOULD BE CONSIDERED UNDOCUMENTED BUT AS HAVING A POTENTIAL OF BEING PRESENT.

Scientific Name: ***Oncorhynchus mykiss pop. 33***
Common Name: **Steelhead (Upper Willamette River ESU, winter run)**
Federal Status: LT GRANK: G5T2Q NHP List: 1 Category: Vertebrate Animal
State Status: SC SRANK: S2 HP Track: Y ELCODE: AFCHA02138
EO ID: 19279 First Obs: Last Obs: 1999-PRE Confirmed:
Directions: MILL CREEK & TRIBUTARIES

County Name	Ecoregion	Source Feature [Uncertainty Type (Distance)]
Marion		Data currently not available.

Town-Range	Sec	Note	QuadCode	QuadName	Watershed
			44122-G7	Stayton	17090007 - Middle Willamette
			44122-G8	Turner	
			44122-H8	Salem East	
			44123-H1	Salem West	

Owner Name/Type	Owner Comments	Managed Area Name

EO Type: SPAWNING & REARING - fish Minimum Elev.(m): Annual Observations
EO Data: WINTER RUN; ODFW DISTRIBUTION MAPS USED TO CREATE THE 1:24,000 COVERAGE.
EO Comments:
Protection:
Management:
General: DISTRIBUTION INFORMATION USED IN THIS EOR WAS DERIVED FROM ODFW GEOGRAPHIC RESOURCES DATA PRODUCED AND DISTRIBUTED IN 2001. UNLESS SPECIFIC DATA EXISTS IN THE DATA FIELD, THE INFORMATION PRESENTED IN THIS EOR REPRESENTS THE "BEST PROFESSIONAL JUDGMENT" BY ODFW'S DISTRICT FISHERIES BIOLOGIST; THE PRESENCE OF STEELHEAD IN DESCRIBED AREAS SHOULD BE CONSIDERED UNDOCUMENTED BUT AS HAVING A POTENTIAL OF BEING PRESENT.

Scientific Name: ***Oregonichthys crameri***
Common Name: **Oregon chub**
Federal Status: LE GRANK: G2 NHP List: 1 Category: Vertebrate Animal
State Status: SC SRANK: S2 HP Track: Y ELCODE: AFCJB56010
EO ID: 18585 First Obs: 1996-05-20 Last Obs: 2003-07-31 Confirmed:
Directions: Sensitive Data - contact ORNHIC for more information

County Name	Ecoregion	Source Feature [Uncertainty Type (Distance)]
Marion	WV	Point [Areal - Estimated (100 m)] Point [Areal - Estimated (100 m)] Polygon [Negligible (8 m)]

Town-Range	Sec	Note	QuadCode	QuadName	Watershed
009S001W	15		44122-G6	Stout Mountain	1709000506 - NORTH SANTIAM RIVER, LOWER
009S001W	10		44122-G7	Stayton	
009S001W	11				
009S001W	13				

Owner Name/Type	Owner Comments	Managed Area Name
CITY	CITY OF SALEM OWNS MOST OF THE ISLAND ALTHOUGH A FEW PRIVATE INHOLDINGS EXIST.	

EO Type: YEAR-ROUND - fish Minimum Elev.(m): Annual Observations
EO Data: See annual observations.

- 2003 - 1845 chub captured/estimated
- 2002 - 747 chub captured/estimated
- 2001 - 782 chub captured/estimated
- 2000 - 359 chub captured/estimated
- 1999 - 894 chub captured/estimated
- 1998 - 1836 chub captured/estimated
- 1997 - 9737 chub captured/estimated
- 1996 - 12792 chub captured/estimated

EO Comments: Red-legged frog adults and eggs observed at site. Also tadpole, juvenile and adult bullfrogs and largemouth bass found.
Protection:
Management:
General: GEREN ISLAND IS THE SITE OF SALEM'S WATER SUPPLY AND FILTRATION PLANT. CHUBS WERE COLLECTED FROM A NUMBER OF SITES WITHIN A NETWORK OF CANALS, SLOUGHS AND PONDS CONNECTED WITH THE WATER TREATMENT PLANT. THE CITY HAS REQUESTED AN EXPANSION OF THE PLANT AND THE PROJECT IS CURRENTLY GOING THROUGH A BIOLOGICAL ASSESSMENT TO DETERMINE POTENTIAL IMPACTS TO CHUBS AND WETLANDS. PRELIMINARY DISCUSSIONS INDICATE THAT AN EASEMENT WILL BE GRANTED AND A RESERVE SET UP FOR THE LARGEST POND ON THE ISLAND (NORTH POND). Scheerer site #441, 442, 443, 444, 446, 447, 449, 574 and 612.

Scientific Name: ***Emys marmorata marmorata***
Common Name: **Northwestern pond turtle**
Federal Status: SOC GRANK: G3G4T3T4 NHP List: 2 Category: Vertebrate Animal
State Status: SC SRANK: S2 HP Track: Y ELCODE: ARAAD02031
EO ID: 2418 First Obs: 1997-06-09 Last Obs: 1999 Confirmed:
Directions: PIONEER PARK SLOUGH; OFF OF THE NORTH SANTIAM RIVER SOUTH OF STAYTON, NEAR THE STAYTON PARK TRAIL.

County Name	Ecoregion	Source Feature [Uncertainty Type (Distance)]
Marion	WV	Polygon [Negligible (8 m)]

Town-Range	Sec	Note	QuadCode	QuadName	Watershed
009S001W	11		44122-G7	Stayton	1709000506 - NORTH SANTIAM RIVER, LOWER
009S001W	10				

Owner Name/Type Owner Comments Managed Area Name

EO Type: Minimum Elev.(m): 140 Annual Observations
EO Data: 1999: 6 adults observed basking. 1997: 1 turtle.
EO Comments:
Protection:
Management:
General: REPORTED BY PAUL SCHEERER, ODFW.

Scientific Name: ***Emys marmorata marmorata***
Common Name: **Northwestern pond turtle**
Federal Status: SOC GRANK: G3G4T3T4 NHP List: 2 Category: Vertebrate Animal
State Status: SC SRANK: S2 HP Track: Y ELCODE: ARAAD02031
EO ID: 25544 First Obs: Last Obs: 1999 Confirmed:
Directions: Valentine Cr. @ 16253 Old Mehama Road SE; E. of Stayton

County Name	Ecoregion	Source Feature [Uncertainty Type (Distance)]
Marion	WV	Point [Areal - Estimated (50 m)]

Town-Range	Sec	Note	QuadCode	QuadName	Watershed
009S001E	08		44122-G6	Stout Mountain	1709000506 - NORTH SANTIAM RIVER, LOWER

Owner Name/Type Owner Comments Managed Area Name

EO Type: Minimum Elev.(m): 162 Annual Observations
EO Data: 1999: exact date not specified, 1 adult turtle observed basking.
EO Comments:
Protection:
Management:
General:

Scientific Name: ***Lomatium bradshawii***
Common Name: **Bradshaw's lomatium**
Federal Status: LE GRANK: G2 NHP List: 1 Category: Vascular Plant
State Status: LE SRANK: S2 HP Track: Y ELCODE: PDAPI1B030
EO ID: 22909 First Obs: 1988 Last Obs: 1988-07-26 Confirmed:
Directions: BETWEEN KINGSTON & LYONS. TAKE KINGSTON-LYONS RD. TOWARDS LYONS, FOR 1.6 MI. TO SHARP RIGHT TURN. SIGHT IS STRAIGHT AHEAD. PLANTS ARE IN SEASONAL CREEK BED.

County Name	Ecoregion	Source Feature [Uncertainty Type (Distance)]
Linn	WV	Polygon [Areal - Delimited (8 m)]

Town-Range	Sec	Note	QuadCode	QuadName	Watershed
009S001E	19		44122-G6	Stout Mountain	1709000506 - NORTH SANTIAM RIVER, LOWER

Owner Name/Type	Owner Comments	Managed Area Name
PRIVATE		KINGSTON PRAIRIE PRESERVE

EO Type: Minimum Elev.(m): 229

Annual Observations
- 1988 - 1000

EO Data: ABOUT 1000 PLANTS CONCENTRATED IN A 3-4 ACRE PATCH ALONG THE SEASONAL CREEK DRAINAGE. POPULATION FRUITING & FLOWERING WELL, IN SPITE OF VERY LIMITED HABITAT.

EO Comments: SHALLOW SOILED, BASALT CREEK BED & VERNAL POOLS. DOMINATED BY MIMGUT, DESCAE, ALOGEN, CAREX, JUNCUS & ELEOCHARIS, ALLIUM SP., POASCR & DANCAL. SURROUNDED BY FESRUB PRAIRIE.

Protection: NEEDS TNC PROTECTION ASAP!

Management:

General: GRAZING IS AN IMMEDIATE THREAT, AS IS FARMING. AREA WILL BE DEVELOPED SHORTLY (RECENTLY SUBDIVIDED)

Scientific Name: ***Erigeron decumbens var. decumbens***

Common Name: **Willamette Valley daisy**

Federal Status: LE	GRANK: G4T1	NHP List: 1	Category: Vascular Plant
State Status: LE	SRANK: S1	HP Track: Y	ELCODE: PDAST3M133

EO ID: 11171 First Obs: 1988 Last Obs: 1988-07-26 Confirmed:

Directions: BETWEEN KINGSTON & LYONS. TAKE KINGSTON-LYONS ROAD TOWARDS LYONS FOR 1.6 MILES TO SHARP RIGHT HAND TURN. SITE IS STRAIGHT AHEAD. PLANTS ARE ALSO ON E SIDE OF RD, 0.1 MI. FURTHER.

County Name	Ecoregion	Source Feature [Uncertainty Type (Distance)]
Linn	WV	Polygon [Areal - Delimited (8 m)] Polygon [Areal - Delimited (8 m)] Polygon [Areal - Delimited (8 m)]

Town-Range	Sec	Note	QuadCode	QuadName	Watershed
009S001E	19		44122-G6	Stout Mountain	1709000506 - NORTH SANTIAM RIVER, LOWER
009S001E	24				

Owner Name/Type	Owner Comments	Managed Area Name
PRIVATE		KINGSTON PRAIRIE PRESERVE

EO Type: Minimum Elev.(m): 229

Annual Observations
- 1988 - 200 PLANTS

EO Data: ABOUT 200 PLANTS, 150 ON E. SIDE OF ROAD AND 50 ON W. SIDE OF RD. (AT THE SOUTH END OF SITE). PLANTS SCATTERED IN DRIER AREAS OF SITE. LARGE & ROBUST.

EO Comments: RED FESCUE PRAIRIE DOMINATED BY FESRUB, AGREXA, AGRTEN & PANCAL WITH AGRDAS, FESIDA, FESARU, ANTODA AND MANY NATIVE FORBS. ALLUVIAL SILTY SOIL, SHALLOW IN SPOTS.

Protection: NEEDS TNC ACQUISITION TO PREVENT DEVELOPMENT.

Management:

General: ALVERSON COLLECTION, OSC. 1988.

Scientific Name: ***Aster curtus***

Common Name: **White-topped aster**

Federal Status: SOC	GRANK: G3	NHP List: 1	Category: Vascular Plant
State Status: LT	SRANK: S2	HP Track: Y	ELCODE: PDASTEF010

EO ID: 7265 First Obs: 1990 Last Obs: 1990-07-22 Confirmed:

Directions: KINGSTON PRAIRIE, ALONG N. FENCELINE OF FRICHTL PROPERTY DUE EAST OF 90 DEGREE CURVE, 4 PATCHES SCATTERED AT EDGE OF PARCEL AND IN THE RIGHT-OF-WAY ACROSS THE FENCE

County Name	Ecoregion	Source Feature [Uncertainty Type (Distance)]
Linn	WV	Point [Areal - Estimated (50 m)]

Town-Range	Sec	Note	QuadCode	QuadName	Watershed
009S001E	19		44122-G6	Stout Mountain	1709000506 - NORTH SANTIAM RIVER, LOWER

Owner Name/Type	Owner Comments	Managed Area Name
PRIVATE	RUBY FRICHTL	KINGSTON PRAIRIE PRESERVE

EO Type: Minimum Elev.(m): 229 Annual Observations
EO Data: AN ESTIMATED 75 RAMETS WERE OBSERVED IN 4 DIFFERENT PATCHES; ADDITIONAL COLONIES MAY OCCUR IN THE AREA. IN <1 ACRE
• 1990 - 75 RAMETS
EO Comments: REMNANT OF FESTUCA RUBRA/IDAHOENSIS PRAIRIE, WITH POTENTILLA GRACILIS, SIDALCEA CAMPESTRIS, ASTER HALLII, SOLIDAGO CANADENSIS. FENCE ROW AND R.O.W. MAY HAVE PROVIDED PROTECTION FROM GRAZING.
Protection:
Management: CYTISUS SCOPARIUS IS COLONIZING THE SITE
General:

Scientific Name: ***Lathyrus holochlorus***
Common Name: **Thin-leaved peavine**
Federal Status: SOC GRANK: G2 NHP List: 1 Category: Vascular Plant
State Status: SRANK: S2 HP Track: Y ELCODE: PDFAB250B0
EO ID: 5269 First Obs: 1988-05-15 Last Obs: 1988-05-15 Confirmed:
Directions: WISNER CEMETERY. I MI S OF KINGSTON. POP ACROSS RD FROM CEMETARY.

County Name	Ecoregion	Source Feature [Uncertainty Type (Distance)]
Linn	WV	Point [Areal - Estimated (50 m)]

Town-Range	Sec	Note	QuadCode	QuadName	Watershed
009S001W	23		44122-G7	Stayton	1709000506 - NORTH SANTIAM RIVER, LOWER

Owner Name/Type Owner Comments Managed Area Name

EO Type: Minimum Elev.(m): 177 Annual Observations
EO Data: [NO EODATA GIVEN]
EO Comments: NEKIA SILTY CLAY LOAM (CLASS III).
Protection:
Management:
General: 1990 REPORT FOR LOCATING NATIVE GRASSLAND REMNANTS IN THE MID-WILLAMETTE VALLEY BY EDWARD ALVERSON.

Scientific Name: ***Cimicifuga elata***
Common Name: **Tall bugbane**
Federal Status: GRANK: G3 NHP List: 1 Category: Vascular Plant
State Status: C SRANK: S3 HP Track: Y ELCODE: PDRAN07030
EO ID: 2751 First Obs: 1998-06-30 Last Obs: 1998-06-30 Confirmed:
Directions: S OF BEAR BRANCH.

County Name	Ecoregion	Source Feature [Uncertainty Type (Distance)]
Linn	WV	Point [Areal - Estimated (50 m)]

Town-Range	Sec	Note	QuadCode	QuadName	Watershed
009S001W	25		44122-G7	Stayton	1709000506 - NORTH SANTIAM RIVER, LOWER

Owner Name/Type	Owner Comments	Managed Area Name
COUNTY	LINN COUNTY RIGHT OF WAY	

EO Type: Minimum Elev.(m): 244 Annual Observations
EO Data: ONE PLANT; IN BUD.
• 1998 - 1 PLANT
EO Comments: PLANT GROWING IN A BRUSHY R/W AREA ALONG COUNTY RD, KINGSTON JORDAN RD; PSME OVERSTORY; MID SLOPE; FILTERED LIGHT; MOIST; ASSOC SPECIES: PSME, POMU.
Protection:
Management:
General: 1998 BLM PLANT SIGHTING REPORT; TERRY FENNELL REPORTER.

Scientific Name: ***Delphinium oreganum***
Common Name: **Willamette Valley larkspur**
Federal Status: SOC GRANK: G1Q NHP List: 1 Category: Vascular Plant
State Status: C SRANK: S1 HP Track: Y ELCODE: PDRAN0B220
EO ID: 16633 First Obs: 1989 Last Obs: 2000-06-28 Confirmed:
Directions: KINGSTON PRAIRIE. FROM STAYTON DRIVE S ON FIRST STREET WHICH CROSSES THE N SANTIAM RIVER AND BECOMES STAYTON-SCIO ROAD. ~1/4 MI AFTER CROSSING THE RIVER, TURN LEFT (E) ON KINGSTON-JORDAN DR. GO ~1 MI, JUST PAST A RAILROAD CROSSING, TURN LEFT ON LINGSTON-

County Name	Ecoregion	Source Feature [Uncertainty Type (Distance)]
Linn	WV	Polygon [Areal - Delimited (8 m)]

Town-Range	Sec	Note	QuadCode	QuadName	Watershed
009S001E	19		44122-G6	Stout Mountain	1709000506 - NORTH SANTIAM RIVER, LOWER

Owner Name/Type	Owner Comments	Managed Area Name
PRIVATE	THE NATURE CONSERVANCY, OREGON FIELD OFFICE. THIS TRACT HAS BEEN IN TNC OWNERSHIP SINCE 1996.	KINGSTON PRAIRIE PRESERVE

EO Type: Minimum Elev.(m): 229 Annual Observations

EO Data: ~1280 FLOWERING PLANTS, IN 12 SEPARATE PATCHES OVER AN AREA OF ~20 ACRES.

EO Comments: MODERATE QUALITY UPLAND PRAIRIE THAT ALSO SUPPORTS A GOOD POP OF ERDED. ASSOC WITH: FESTUCA ROEMERI, FESTUCA RUBRA, AGROSTIS CAPILLARIS, FESTUCA ARUNDINACEA, ERIOPHYLLUM LANATUM, SIDALCEA CAMPESTRIS, BRODIAEA HYACINTHINA, ACHILLEA MILLEFOLIUM, ASTER HALLII, PRUNELLA VULGARIS VAR LANCEOLATA.

Protection: POP EXTENDS TO THE N OFF NATURE CONSERVANCY LAND ONTO THE ROW OF A PRIVATE DRIVE.

Management: SCOTS BROOM PATCHES WERE REMOVED IN 1997/1998 WITH ANNUAL FOLLOW-UP SINCE THEN.

General: 2000 PLANT SIGHTING REPORT, ED ALVERSON REPORTER. MAY BE ONE OF THE BEST PROTECTED SITES FOR THIS SPECIES. TENDS TO OCCUR IN AREAS OF DEEPER SOILS. NEED TO SURVEY OTHER TNC TRACTS FOR THIS SPECIES.

25 records total

Key to Oregon Natural Heritage Information Center Data

Field Name	Description
Scientific Name	The scientific name of the species.
Common Name	The common name of the species.
Category	Value that indicates the broad biological category for each species.
ELCODE	Unique Heritage Program code for identifying this element. 1st and 2nd byte (PD=Plant dict, PM=Plant monocot, PG=Plant gymnosperm, PP=Plant pteridophyte, AA=amphibian, AB=bird, AF=fish, AM=mammal, AR=reptile, I=invertebrate. 3rd-5th byte (family abbreviation). 6th-7th (genus code). 8th-9th (species). 10th (tie breaker).
Federal Status	US Fish and Wildlife Service or National Marine Fisheries Service status. **LE**=listed endangered, **LT**=listed threatened, **PE** or **PT**=proposed endangered or threatened, **C**=candidate for listing with enough information available for listing, **SOC**=species of concern, **-PD**=proposed delisting, **-NL**=not listed (in part of the range).
State Status	For animals, Oregon Department of Fish and Wildlife status; **LE**=listed endangered, **PE**=proposed endangered, **PT**=proposed threatened, **SC** or **C**=sensitive-critical, **SV** or **V**=sensitive-vulnerable, **SP** or **P**=sensitive-peripheral, **SU** or **U**=sensitive-undetermined status. For plants, Oregon Department of Agriculture status; **LE**=listed endangered, **LT**=listed threatened, **C**=candidate.
GRANK/SRANK	ORNHIC participates in an international system for ranking rare, threatened and endangered species throughout the world. The system was developed by The Nature Conservancy and is now maintained by NatureServe in cooperation with Heritage Programs or Conservation Data Centers (CDCs) in all 50 states, in 4 Canadian provinces, and in 13 Latin American countries. The ranking is a 1-5 scale, primarily based on the number of known occurrences, but also including threats, sensitivity, area occupied, and other biological factors. In this book, the ranks occupy two lines. The top line is the Global Rank and begins with a "G". If the taxon has a trinomial (a subspecies, variety or recognized race), this is followed by a "T" rank indicator. A "Q" at the end of this line indicates the taxon has taxonomic questions. The second line is the State Rank and begins with the letter "S". The ranks are summarized as follows: **1** = Critically imperiled because of extreme rarity or because it is somehow especially vulnerable to extinction or extirpation, typically with 5 or fewer occurrences; **2** = Imperiled because of rarity or because other factors demonstrably make it very vulnerable to extinction (extirpation), typically with 6-20 occurrences; **3** = Rare, uncommon or threatened, but not immediately imperiled, typically with 21-100 occurrences; **4** = Not rare and apparently secure, but with cause for long-term concern, usually with more than 100 occurrences; **5** = Demonstrably widespread, abundant, and secure; **H** = Historical Occurrence, formerly part of the native biota with the implied expectation that it may be rediscovered; **X** = Presumed extirpated or extinct; **U** = Unknown rank; **?** = Not yet ranked, or assigned rank is uncertain.
NHP list	All rare species in Oregon are assigned a list number of 1, 2, 3 or 4, where **1**=threatened or endangered throughout range, **2**=threatened or endangered in Oregon but more common elsewhere, **3**=Review List (more information is needed), **4**=Watch List (currently stable). A null value indicates the species is not currently on our rare species list.
HP Track	We currently obtain and computerize locational information for only those elements marked with **Y**(es). Those species marked with **N**(o) or **W**(atch) have incomplete data because we do not actively track them at this time.
EO ID	Unique identifier for the Element Occurrence (EO).
First_obs	First reported sighting date for this occurrence in the form YYYY-MM-DD.
Last_obs	Last reported sighting date, usually in the form YYYY-MM-DD.
Confirmed	Indication of whether taxonomic identification of the Element represented by this occurrence has been confirmed by a reliable individual. Blank=unknown, assumed to be correctly identified. Y=Yes, confident identification. ?=identification questions.
Directions	Site name and/or directions to site.
County	County name(s) in which EO is mapped.
Ecoregion	Physiographic Province in which EO is mapped: **CR**=Coast Range, **WV**=Willamette Valley, **KM**=Klamath Mountains, **WC**=West slope and crest of the Cascades, **EC**=East slope of the Cascades, **BM**=Ochoco, Blue and Wallowa Mts., **BR**=Basin and Range, **CB**=Columbia Basin, **SP**=Snake River Plains.

Key to Oregon Natural Heritage Information Center Data

Field Name	Description
Source Feature	A Source Feature is the initial translation of a discrete unit of observation data as a spatial feature. Creation of a Source Feature requires an interpretive process. The likely location and extent of an observation is determined through consideration of the amount and direction of any variability between the recorded and actual locations of the observation data. In most cases, the Source Feature is delineated to encompass locational uncertainty. A Source Feature can be a point, line, or polygon. The type of Source Feature developed depends on both the preceding conceptual feature type and the locational uncertainty associated with the feature.
Uncertainty Type (Distance)	The recorded location of an observation of an Element may vary from its true location due to many factors, including the level of expertise of the data collector, differences in survey techniques and equipment used, and the amount and type of information obtained. This inaccuracy is characterized as locational uncertainty, and is assessed for Source Feature(s) based on the uncertainty associated with the underlying information on the location of the observation. Four categories of locational uncertainty have been identified, as follows: Negligible uncertainty is less than or equal to 6.25 meters in any dimension. Source Features with negligible uncertainty are based on a comprehensive field survey with high quality mapping and a high degree of certainty. Linear uncertainty is greater than 6.25 meters, and varies along an axis (e.g., a path, stream, ridgeline). The true location of an observation with linear uncertainty may be visualized as effectively sliding along a line that delineates the uncertainty. Areal delimited uncertainty is greater than 6.25 meters, and varies in more than one dimension. The true location of an observation can be visualized as floating within an area with a boundary that can be specifically delimited. Boundaries can be defined using roads, bodies of water, etc. Areal estimated uncertainty is greater than 6.25 meters, and varies in more than one dimension. A boundary cannot be specifically delimited based on the observation information, i.e., the actual extent is unknown. The true location of the observation can be visualized as floating within an area for which boundaries cannot be specifically delimited. Source Features with areal estimated uncertainty require that the user specify an estimated uncertainty distance to be used for buffering the feature to incorporate the locational uncertainty.
Town-Range, Sec, and Note	United States rectangular land survey (also known as the Public Land Survey System) legal township, range, and section descriptions that best define the location of the Element Occurrence. Township first (4 bytes), range second (4 bytes). For example: 004S029E = Township 4S, Range 29E. All locations are with reference to the Willamette Meridian. Fractional ranges or townships are indicated in the Note field.
Quadcode	USGS code for the USGS topographic quadrangle map(s) where the record is mapped.
Quadname	Name of the USGS topographic quadrangle map(s) where the record is mapped.
Watershed	Watershed(s), identified according to the U.S. Geological Survey (USGS) Hydrologic Unit Map 10-digit code, within which the Element Occurrence is located.
Owner Name/Type and Comments	Federal, State, Private, etc.
Managed Area Name	BLM District, USFS Forest, Private Preserve
EO Type	For animals, type of occurrence, eg. roost, nest, spawning, etc.
EO Data	Species and population biology - numbers, age, nesting success, vigor, phenology, disease, pollinators, etc.
EO Comments	Habitat information, e.g. aspect, slope, soils, associated species, community type, etc.
Minimum Elevation	Minimum elevation of the area covered by the range of the taxon, in meters. -339 or blank=not determined.
Annual Observation	Summary of yearly observation.
Protection	Comments on protectibility and threats.
Management	Comments on how the site is managed.
General	Miscellaneous comments.

Mutual Water Agreement

This Agreement is made and entered into this 9th day of April, 2001, by and between the City of Salem, Oregon, an Oregon municipal corporation ("City of Salem"), and the City of Stayton, Oregon, an Oregon municipal corporation ("City of Stayton").

WHEREAS, City of Salem is the owner and operator of a community water system that supplies safe drinking water to customers in the Salem area, whose primary water source is from surface water withdrawn from the North Santiam River at Geren Island;

WHEREAS, City of Stayton is the owner and operator of a community water system that supplies safe drinking water to customers in the Stayton area, whose primary water source is from surface water withdrawn from the North Santiam River downstream from Geren Island;

WHEREAS, both Cities have community water systems that meet all current requirements of the Oregon Health Division for safe drinking water supplied to customers;

WHEREAS, both Cities have an adequate safe drinking water supply to serve their respective communities under normal conditions, peak season conditions, and most emergency situations;

WHEREAS, both Cities have a desire to further develop their emergency sources of safe drinking water supply with the capability to handle emergency conditions resulting from an unusual calamity such as a flood, storm, earthquake, drought, civil disorder, volcanic eruption, an accidental spill of hazardous material, or other occurrence which disrupts water service or can endanger the quality of the water produced by a water system;

WHEREAS, both Cities have a desire to occasionally provide surplus safe drinking water to one another and to occasionally use surplus safe drinking water from one another;

WHEREAS, both Cities have entered into previous water agreements with one another dated June 3, 1957, February 10, 1971, and August 27, 1999;

WHEREAS, both Cities are currently in the process of negotiating a separate agreement for construction of a transmission water conduit.

NOW, THEREFORE, in consideration of the covenants and agreements hereinafter set forth to be kept and performed by the parties hereto, it is mutually agreed as follows:

City of Salem Agrees:

1) To sell safe drinking water to the City of Stayton during emergency conditions (See Section 9);

2) To sell surplus safe drinking water to the City of Stayton (See Section 10);

3) To sell safe drinking water to the City of Stayton at the rate of $0.35 per 100 cubic feet ($0.4679 per 1,000 gallons). This includes emergency safe drinking water or surplus safe drinking water;

4) To limit future annual rate increases in the sale of safe drinking water to Stayton by an amount not to exceed the year end percentage change for the month ending in June in the Consumer Price Index for the West, as published by the Department of Labor, Bureau of Labor Statistics, for all urban consumers;

City of Stayton Agrees:

5) To sell safe drinking water to the City of Salem during emergency conditions (See Section 9);

6) To sell surplus safe drinking water to the City of Salem (See Section 10);

7) To sell safe drinking water under either emergency conditions or surplus safe drinking water to the City of Salem at the commodity rate charged other Stayton customers, which is $0.581 per 1000 gallons ($0.4346 per 100 cubic feet);

8) To limit future annual rate increases in the sale of safe drinking water to Salem by an amount not to exceed the year end percentage change for the month ending in June in the Consumer Price Index for the West, as published by the Department of Labor, Bureau of Labor Statistics, for all urban consumers;

Both Cities Agree:

9) To provide safe drinking water to one another for emergency conditions. When emergency safe drinking water is required by either City, the requesting City shall contact the other City to ensure safe drinking water is available. Only Stayton's City Administrator or Salem's Public Works Director, or their designee, of the City receiving the request is authorized to determine whether safe drinking water is available for the emergency condition. Once the availability of safe drinking water has been determined, representatives of each City shall coordinate the operations of appropriate valves, measuring devices, and auxiliary systems;

10) To provide surplus safe drinking water to one another. When surplus safe drinking water is required by either City, the requesting City shall contact the other City to ensure surplus safe drinking water is available. Only Stayton's City Administrator or Salem's Public Works Director, or their designee, of the City receiving the request is authorized to determine whether surplus safe drinking water is available. Once the availability of surplus safe drinking water has been determined, representatives of each City shall coordinate the operations of appropriate valves, measuring devices, and auxiliary systems;

11) To acknowledge and understand that the supply of emergency safe drinking water or surplus safe drinking water may be limited at times and seasons to specific locations if required to meet Safe Drinking Water Act standards of the Oregon Health Division. Additional treatment such as corrosion control and additional chlorine contact time may be required;

12) To jointly conserve safe drinking water during a regional water shortage, that may be caused by either a drought, a flood, or other regional emergency condition by following each Cities' individual water curtailment program. Conserving safe drinking water will maximize its availability to both communities, and subject to Section 9, water will be provided to each community during a water shortage on a per capita basis;

13) To support the other City's legal purchase, sale, lease, or maintenance of water rights by not contesting these actions; including, but not limited to, water right transfers, changing or modifying a water right permit, processing a water right time extension, filing proof of completions, and perfecting water rights;

14) To maintain an active water system backflow prevention program in their own respective water systems in accordance with Oregon Statutes for the life of this agreement;

15) For purposes of this Agreement "Safe Drinking Water" shall have the same definition as found in OAR 333-061-0020 (122).

16) This Agreement supercedes the Emergency Water Agreement between the parties dated August 27, 1999; the Agreement between the parties dated February 10, 1971; and paragraph 11 of the Agreement between the parties dated June 3, 1957. All other provisions of the 1957 Agreement shall remain in full force and effect.

17) This Agreement shall be effective simultaneously upon execution of the "Agreement for Construction of a Transmission Water Conduit," in substantially the same form as Exhibit A hereto.

18) This Water Agreement can be terminated with or without cause by either City by giving the other 180 calendar days' written notice.

19) Should a dispute arise over any of the items contained in this agreement, both Cities agree to participate in non binding mediation or non binding arbitration proceedings endeavoring to resolve the issue in dispute. The mediator or arbitrator shall be mutually agreed upon by both Cities.

City of Salem, Oregon

By: Robert A Wells
City Manager, Pro Tem

City of Stayton, Oregon

By: Gary Abrams
Mayor 3/20/01

ATTEST: C M Childs
City Administrator

Approved as to form:

David A. Rhodes
City Attorney

Exhibit A—Agreement for Construction of a Transmission Water Conduit

Steven P. Applegate Consulting
5528 Murray Street SE
Salem, OR 97306
Voice/Fax (503)362-4040

March 28, 2005

Mr. Mike Faught
Public Works Director
City of Stayton
362 North 3rd Avenue
Stayton, OR 97383

REFERENCE: City of Stayton Water Rights

Dear Mr. Faught :

This is an update to my May 30, 2002, June 18, 2003 and August 23, 2004 reports. This report is to update the status of all water rights now held by the City of Stayton (City). It reflects all of the changes and clarifications we have been able to develop to date.

The table below lists all of the rights the City currently holds, their significant data and current status. Copies of the relevant documents that define these rights in the official record at the WRD were sent to you with my last report, and you recently received a copy of the final order approving Transfer 9192.

City of Stayton Water Rights

Appl'	Permit	Cert.	Source	Use	Q(cfs)	POD	Priority	Remarks
T-5883		80346	N. Santiam	Mun	2.78+	Power Canal	1909	779.5 AF annual limit
T-5884		80347	N. Santiam	Mun	0.82+	Salem Ditch*	1911	230.6 AF annual limit
T-5885		80348	N. Santiam	Mun	0.39+	Power Canal	1909	78.5 AF annual limit
T-8871		80349	N. Santiam	Mun	0.6~	Power Canal	1907	No annual limit
T-9192	12033		N. Santiam	Mun	10~	Salem Ditch	1923	Comp. Date- Oct. 2011
39297	29266	57094	N. Santiam	Mun	7~	Power Canal	1963	
71584	52447		N. Santiam	Mun	25#	Power Canal	1991	Extension pending to 2060
		Subtotal-Surface Wtr			46.59			
GR-145	Gr-139		Inf. Trench	Mun	2.67~	NWNE Sec15	1930	Groundwater adjudication
G-270	G-173	24587	Well 2	Mun	3~	NENE Sec 15	1956	
		Subtotal-Groundwtr			5.67			
		Total			52.26 cfs			

**- Salem Ditch and Stayton Power Canal assumed in the record to be the same point- 1800 feet South and 2830 feet East from the West 1/4 Corner Section 11.*

+-May through September only-3.99cfs; ~Year around use-23.27cfs (includes 17.6 cfs from the

river & 5.67 cfs from groundwater); #- October through April only-25cfs.
The water rights allow for the total use of up to 46.59 cfs (about 30 MGD) from surface water and 5.67 cfs (3.6 MGD) from groundwater. However, as noted on the table and further described below, many of the rights have season of use limitations. The individual rights are further described below.

Surface Water Rights-
The City holds seven surface water rights that allow for use of up to 46.59 cfs (16,429 GPM) from the North Santiam River. Priority dates range from 1907 to 1991. All but two of these are final rights evidenced by certificates that total 11.59 cfs..

Two of the rights from the river are "inchoate," or incomplete. Proof has not been made by the City to allow a final water right to be issued. These rights are the 10 cfs under Transfer 9192 and the 25 cfs under Permit 52447. See below for further discussion of these two rights.

Certificates 80346, 80347 & 80348- Transfers 5883, 5884 5885 were obtained by the City in 1986 through changes in character of use of irrigation rights previously held by the Santiam Water Control District and its patrons to municipal use by the City. The three certificates combined allow up to 3.99 cfs. These are some of the City's oldest rights. Because these water rights were initially for irrigation purposes, their exercise is limited to within the legal irrigation season, from May 1 to September 30. In addition, the three rights carry an annual aggregate volume limit of 1088.6 acre-feet, which was the original limit on the irrigation rights prior to the transfers.

Certificate 80349 -Transfer 8871 provided for a change of a 1907 right for 0.6 cfs for manufacturing use to municipal use by the City. It is the oldest right held by the City. Exercise of the right is allowed year around and there is no annual volume limit.

Certificate 57094 - This is a 1963 right from the river for 7.0 cfs (4.4 MGD). The use is allowed year around and there are no special conditions or volume limits.

Transfer 9291 - The most recent addition, as you know, is Transfer 9192, which was approved by the Oregon Water Resources Department (WRD) on November 1, 2004, conferring to the City a right for 10 cfs from the City of Salem's rights from the North Santiam River. The date of priority of this right is 1923. This is a year around use from the North Santiam River, and greatly improves Stayton's position from a water rights perspective. This addition raises the City's rights from the river to a total of 46.59 cfs, with 17.6 cfs being allowed year around. Under the terms of the transfer approval order, this right must be fully in use by October 1, 2010. Obviously, the City will need to apply for an extension of that time limit on or about the 2010 date.

Permit 52447- This is the most recent (1991), and the largest (25 cfs) of the City's rights. In 1999, the City applied for an extension of the October 1, 1999, completion date for the permit.

The request is to extend the required completion to the year 2060. That request is still pending. We recently submitted an updated extension request to conform with WRD's newly adopted rules for municipal extensions. Much of the justification for the extension is dependent upon information now being developed as part of the Master Plan/Management Plan process. We have asked WRD to hold further processing of the extension request until about July 2005, when we expect to have that detailed information available.

The most significant aspect of this permit is that use is allowed only from October through April. This was based upon a finding of limited water availability from natural flow when the permit was issued in 1996. Given that condition, this right may be of limited value to the City, especially given the quantities of water under the other rights that are available year around and during the summer months.

Permit 52447 also contains a condition that required the City to submit a Water Management & Conservation Plan (WMCP) within two years after the permit was issued, which would have been by July 8, 1998. As of this date, development of a Master Plan is under way. We will need to ensure that this plan is constructed to include all of the required elements of a WMCP to satisfy the requirements of WRD.

Groundwater Rights-

Groundwater Registration (GR) #139- This is simply a claim in the statewide groundwater adjudication for uses that began prior to the 1955 Groundwater Act. The City's claim is for 2.67 cfs (1199 GPM) from an "infiltration trench" for municipal use. The claim is for a 1930 priority date, the date the development was allegedly constructed. This will remain in claim status until such time as the State (WRD) conducts a full survey and analysis of the use under all of the claims and submits their findings to the courts. The State still has about ½ of the state to complete this process for surface water, so it does not seem likely it will occur in most of our lifetimes. It is possible they could choose to initiate this process in small geographic areas if significant disputes were to arise relative to the claims, but this is not likely. The only caution is that the claim, its validity to be determined when the adjudication does occur, must remain in relatively continuous use, without significant (five years?) lapses. I do not know the status of use from this well. If the City is not using this well, but is using another well which develops the same groundwater supply, it is advisable to notify WRD of that fact. The information will be placed in the file and the validity of the claim ultimately will be decided by the courts. There are no guarantees.

Permit G-173 is a certificated (C.24587) right for 3.0 cfs (1,347 GPM) from "Stayton Municipal Well #2." I did not attempt to retrieve specific information about this well, but presumably, if a well log exists, it would be readily available. Since this right is certificated, there is nothing the City need do to maintain it. The certificate protects the right from forfeiture. No further use is required.

Recommendations

As described above there are a few items needing attention from the City relative to their existing water rights.

1. Permit 52447- Once a Water Management & Conservation Plan is ultimately submitted to and approved by WRD and the pending extension application is approved, this permit will be in good status. As discussed above, the Master Plan currently in progress must be developed with the state's requirements for WMCP's firmly in mind.

2. GR-139 - If this source continues to be used, nothing is needed. If not, consideration should be given to protection of the claim. Further discussion is needed to determine how to proceed.

3. Undeveloped Water- Since the City holds rights to a significant amount of water that is not yet developed, options may exist for marketing some of it to other municipal entities in the area, or forming some type of water authority. Water marketing transactions are becoming more common around the state, and can be done either on a lease or permanent basis. The commodity has a significant monetary value. I have some data on this activity in Oregon if you care to see it.

4. The date of October 2010 under Transfer 9192 must be kept firmly in mind, knowing that an extension of that time limit will be necessary. It is also possible that legislative actions relative to municipal rights under permit or transfer orders may change the nature or need for future action.

I hope this provides the analysis you need. Please feel free to contact me if you have questions or if I can be of further assistance.

Respectfully Submitted,

Steven P. Applegate
Steven P. Applegate Consulting

cc: Justin Walker, Keller Associates

Stayton H2O Rate Structure

Water July 2003

Commodity Rate = .654 Per Thousand

Old Rates	Rates	Description	Base Rates	Details	
-101	1	3/4" Class 1	13.50	3/4" Resident	+ Bus. under 3000
-102	2	1" Class 1	19.40	1"-1 Resident	
-104	3	1 ½" Class 1	29.15	1 ½" Resident	
-105	4	2" Class 1	40.85	2" Resident	
-151	5	3/4" Class X	13.50	3/4" Resident	1-3 Units
-152	6	3/4" Class Y	22.45	3/4" Resident	4-15 Units
-162	7	1" Class Y	28.35	1" Resident	4-15 Units
-163	8	1" Class Z	93.30	1" Resident	16-34 Units
-172	9	1 ½" Class Y	38.10	1 ½" Resident	4-15 Units
-173	10	1 ½" Class Z	103.05	1 ½" Resident	16-34 Units
-183	11	2" Class Z	114.75	2" Resident	35 Plus Units
-201	12	3/4" Class 2	22.45	3/4" Business	3086-12345 Sq Ft
-202	13	1" Class 2	28.35	1" Business	3086-12345 Sq Ft
-204	14	1 ½" Class 2	38.10	1 ½" Business	3086-12345 Sq Ft
-205	15	2" Class 2	49.80	2" Business	3086-12345 Sq Ft
-301	16	3/4" Class3	87.40	3/4"	
-302	17	1" Class 3	93.30	1"	
-304	18	1 ½"Class 3	103.05	1 ½"	
-305	19	2" Class3	114.75	2"	
-306	20	3" Class 3	142.15	3"	
-308	21	6" Class 3	278.95	6'	
-309	22	2" Class 3	219.95	2"	
-350	23	3/4" No Fire	10.65	3/4" No Fire	Irrigation
-351	24	1" No Fire	16.55	1" No Fire	Irrigation
-352	25	1 1/4" No Fire	21.40	1 1/4" No Fire	Irrigation
-353	26	1 ½" No Fire	26.30	1 ½" No Fire	Irrigation
-354	27	2" No Fire	38.00	2" No Fire	Irrigation
-355	28	3" No Fire	65.40	3" No Fire	Irrigation
-358	29	8" No Fire	319.50	8" No Fire	Irrigation
-360	30	10" No Fire	456.35	10" No Fire	Irrigation
-401	31	3/4" Class 4	192.60	3/4" Industrial	
-402	32	1" Class 4	198.50	1" Industrial	
-404	33	1 ½" Class 4	208.25	1 ½" Industrial	
-405	34	2" Class 4	219.95	2" Industrial	
-406	35	3" Class 4	247.35	3" Industrial	
-453	36	Fire Line	8.10	3" Fire Line	
-454	37	Fire Line	9.15	4" Fire Line	
-460	38	Fire Line	17.75	6" Fire Line	
-468	39	8" Fire Line	28.95	8" Fire Line	
-475	40	Fire Line	0.00		
-497	41	Flat Rate	0.00	Flat Rate	
-499	42	No Water Service	0.00	No Water Service	
-501	43	3/4" Class 5	366.05	3/4"	
-502	44	1 ½" Class 5	381.70	1 ½"	
-505	45	2 " Class 5	393.40	2"	
-506	46	3 " Class 5	420.80	3"	
-508	47	6" Class 5	557.60	6"	
-510	48	10" Class 5	811.75	10"	
-598	49	Duplex on Same Meter	27.00		
-599	50	Reg. Use of fire	0.00		
-651	51	Residential 5 Units	0.00		
-999	52	City Facility	0.00	City Of Stayton	
	53	3/4" Theater/City Hall	0	Shared meter	

07/03/02

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