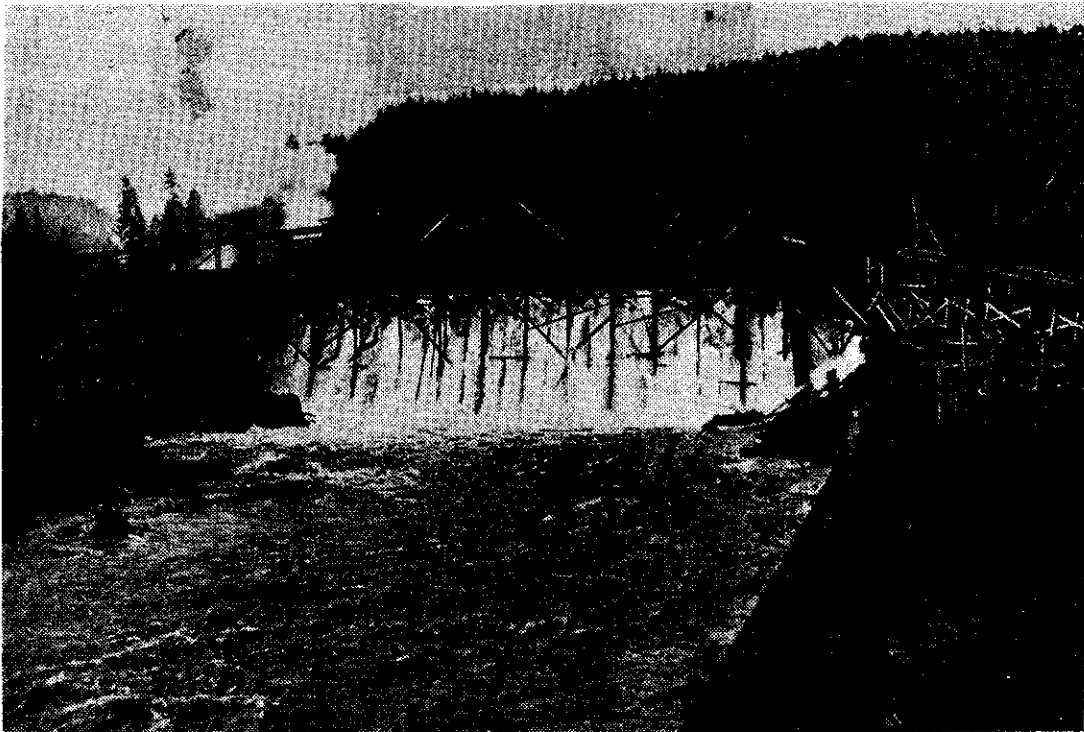


Tualatin River Flow Management Technical Committee



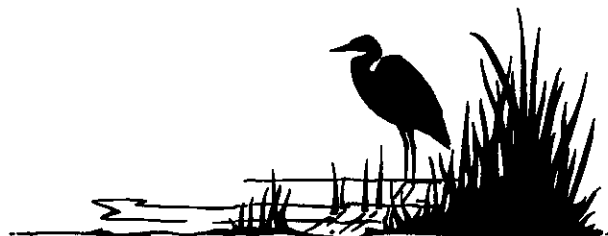
1998 Annual Report

Prepared by



TUALATIN RIVER FLOW MANAGEMENT TECHNICAL COMMITTEE

1998 ANNUAL REPORT



**Prepared By:
Unified Sewerage Agency
Planning Division
In Cooperation with the Oregon Water Resources Department
Watermaster District 18**

Cover Photograph: Lovegren Lumber Company Dam at Cherry Grove, 1913

TUALATIN RIVER FLOW MANAGEMENT TECHNICAL COMMITTEE

1998 ANNUAL REPORT

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TUALATIN RIVER FLOW MANAGEMENT TECHNICAL COMMITTEE

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ORGANIZATION

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EXECUTIVE SUMMARY

This is the eleventh year for this report, which was developed to review the coordination of the major water users in the Tualatin River Basin. The committee was named the Tualatin River Flow Management Technical Committee. The members include Unified Sewerage Agency (USA), Tualatin Valley Irrigation District (TVID), Joint Water Commission (JWC), Lake Oswego Corporation (LOC), and the Oregon Water Resources Department (OWRD). This report is to give a review of the committees' activities during 1998.

The committee provides a mechanism for the coordination and management of the Tualatin River. The members of the committee are technical staff with detailed knowledge of the specific characteristics of the flow in the Tualatin River. An expanding on-going flow monitoring system has provided valuable information for management of stored water and natural flow availability in the basin. Since the issue of water quality has come to the forefront, the monitoring system has been an excellent example of inter-agency coordination.

The committee meets monthly year-around to review flow and reservoir supply conditions. The attached hydrographs show the differences between 1997 and 1998 (See Appendix A).

The summer had wet months of May through July and streamflows for the main Tualatin and tributaries remained above average. The summer months had higher than average precipitation during May and June. May recorded 4.56 inches which is 213% of normal and June recorded 0.96 inches, which is 63% of normal at Scoggins Dam. The summer was drier than 1997 with below average rainfall in June, July August and September. Important to mention is the fact that August had no measurable rainfall at Scoggins Dam. Rains began in October and recorded 4.51 inches of rain, which is 130% of normal. The contract holders of stored water from Scoggins Reservoir started releases later and stopped early than last year.

Even in 1998 the 1996 flood event and subsequent events have caused the members of the committee to assume another role within the Tualatin Watershed. The role of providing flow information during flooding events. This record storm event occurred due to unique conditions and caused flows reached all time record levels at several stations. Other events occurred that demonstrated the need to continue information sharing and coordination. Another major issue that will likely impact the management of the Tualatin River is the Endangered Species Act (ESA) listings of Steelhead and Spring Chinook by the National Marine Fisheries Service (NMFS). These listing will influence decisions by the committee participants. The listing decision was issued in early March 1999.

BACKGROUND

The Tualatin River Basin comprises an area of 712 square miles situated in the Northwest corner of Oregon and is a subbasin of the Willamette River. The headwaters are in the Coast Range and flow in a generally easterly direction to the confluence with the Willamette River. The basin lies almost entirely in Washington County. The Tualatin River is 83 miles long and has a very flat gradient for most of its length.

The mountain reach (River Mile 85 - 58) is steep with an average gradient of 80 feet per mile. At RM 78 water released from Barney Reservoir (which is on the Middle Fork of the North Fork of the Trask River) enters the Tualatin River via an aqueduct over a low Coast Range divide. Barney Reservoir (capacity 4,040 acre-feet) stores water for the Cities of Hillsboro and Forest Grove. Water is released during the summer low-flow season to supplement shortages in natural flow. At RM 73.2 water is diverted by the City of Hillsboro at the Cherry Grove Intake, for municipal and industrial purposes.

River Mile (RM) 60 is the confluence of the Tualatin and Scoggins Creek. In the early 1970's the Bureau of Reclamation built an earthen dam on Scoggins Creek. The reservoir has an active storage capacity of 53,640 acre-feet. Scoggins Reservoir (Henry Hagg Lake) is a multipurpose facility with contracted water for irrigation, municipal and industrial, and water quality uses. Recreation is a major activity during the summer months on the reservoir. During the winter it serves as a flood control structure.

Near RM 5 on Scoggins Creek, the Tualatin Valley Irrigation District (TVID) operates the Patton Valley Pump Station. This pump station can divert water via a low-pressure pipeline into the upper Tualatin River above the city of Gaston. The water is released at two outlets, one at RM 63.2 and the other at RM 64. This water is used to serve irrigators in the Wapato Improvement District (Onion Lake) and TVID users upstream of the Scoggins confluence.

The meander reach (RM 58 - 33) has an average gradient of 2.8 feet per mile. The Springhill Pumping Plant (SHPP), the largest diversion facility on the river is located at RM 56.3. The Tualatin Valley Irrigation District (TVID) and the Joint Water Commission (JWC) jointly operate this pump plant. Both TVID and JWC have natural flow water rights that are used in the early part of the season and release contracted stored water from Scoggins Reservoir to augment declined natural flow in the summer.

Tualatin Valley Irrigation District (TVID) is the agricultural water service agency, which serves approximately 20,000 acres of irrigated cropland. They have a pumping capacity of approximately 140 cubic feet per second (CFS) or 90 million gallons per day (MGD) at the SHPP. The TVID pumps into a pressure pipeline irrigation system that serves about 10,000 acres of irrigated cropland. The remaining 10,000 acres are served directly from the Tualatin River.

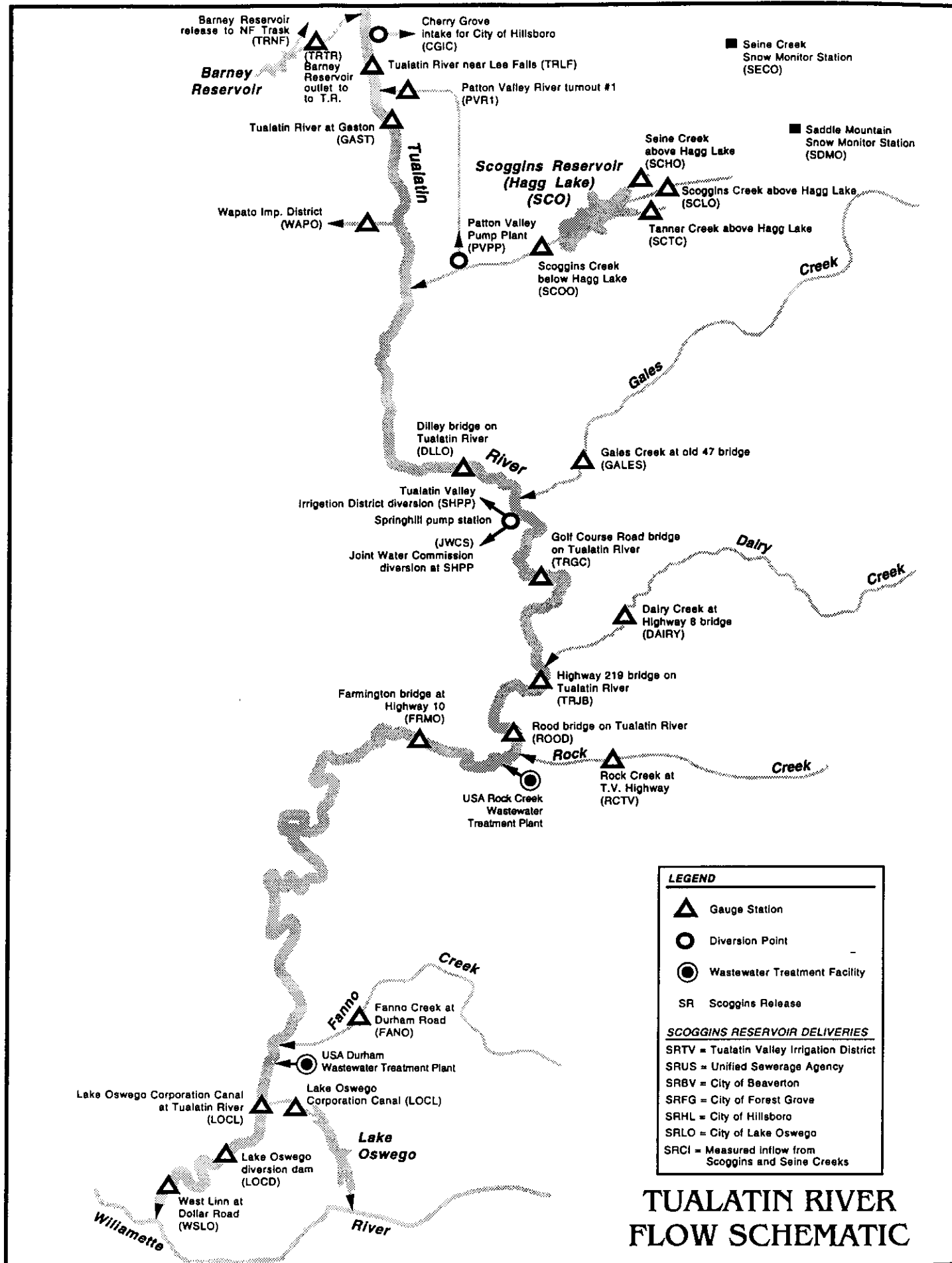
The JWC serves as the municipal water purveyor for the cities of Hillsboro and parts of Beaverton and Forest Grove. Their SHPP capacity is approximately 45 CFS (30 MGD).

The Unified Sewerage Agency (USA) provides sanitary and stormwater services to the urban areas of Washington County. The USA has two major wastewater treatment plants that have permits to discharge water during the summer into the Tualatin River. During the months of May to October, the Rock Creek facility discharges at RM 38.1 and the second facility, Durham discharges at RM 9.4. Each has an average release of 23 CFS (15 MGD). The USA also releases storage water from Scoggins Reservoir for flow augmentation during the seasonal low flow periods. The goal is to maintain 150 CFS (100 MGD) at the Tualatin River at Farmington Road Bridge Gage (RM 33.3).

The reservoir reach (RM 33 - 3.4) has an estimated gradient of 0.05 feet per mile. This reach winds through the basin with a very slow travel time. The reach has several deep pools and is very different in appearance than the upper reaches. The Lake Oswego Corporation (LOC) through the Lake Oswego Canal diverts a portion of the Tualatin flow at RM 6.7. A headwork structure regulates the flow into this mile long canal that feeds into Lake Oswego. The water is used to generate power below the dam at the East End of Lake Oswego. The Lake Oswego Corporation has a natural flow water right with a priority date of 1906 for 57.5 cfs and 500 acre-feet of contracted stored water for consumptive uses from Hagg Lake. At RM 3.4, a combination diversion dam/fish ladder structure is used during low flow periods to elevate the Tualatin River enough to divert the flow at the canal. During most of year, the river elevation is adequate to allow diversion of the LOC water right; however, in the summer flashboards are installed to increase the water level. This dam raises the Tualatin 2-3 feet and affects the water surface elevation for about 25 river miles. The slow movement of the water causes this reach to act much like a lake.

The riffle reach (RM 3.4 - 0) has an average gradient of 10 feet per mile. The Tualatin flows through a short reservoir section and drops into a narrow gorge in the City of West Linn to the Willamette River. The mouth of the Tualatin is just upstream from the Willamette River Falls at Oregon City.

Rainfall in the Tualatin Basin ranges from 110 inches on the eastern slopes of the Coast Range to 37 inches in the southeastern area of the drainage basin. The amount of stream flow from snow is minimal. The peak months for rainfall are November through February while the driest months are normally June through October. The peak streamflow month is usually February, and the lowest streamflow month is August.



INFORMATION AND DATA COLLECTION SYSTEM

The Tualatin River Flow Management Technical Committee meet monthly from February through November. The meetings focus mainly on the review of the hydrographs and current status of the reservoirs. A variety of other water issues and problems are discussed. Each member updates the committee on any changes that could impact the flow management of the Tualatin. Minutes are recorded and reviewed at the next meeting.

A coordinated information system was developed to provide flow information to all members of the committee. Because use or release of water by any one of the entities can impact the other users, coordination of flow information is an important aspect of the committee's work. The data is collected by field staffs of the cooperating entities or from the Corps of Engineers via telemetry. A system of gaging stations, precipitation and other flow monitoring equipment has been developed during the past several years to monitor the flows on the Tualatin and the major tributaries. Significant releases and diversions are also monitored. The data collected is relayed to the local Watermaster office on a weekly basis. The data is downloaded from the Watermaster's office to USA's mainframe computer. Hydrographs (Appendix A) which show the previous year and current year's data, were developed to identify and address problems related to the flow. Rainfall is shown as total weekly accumulation and three stations are currently being graphed.

A second set of hydrographs (Appendix B) was developed to show the available natural flow at various points on the mainstem of the Tualatin. These graphs depict the volume of natural flow by taking the measured flow and subtracting the storage flow. The storage flow is calculated on the releases from Scoggins (Hagg Lake) and Trask (Barney) Reservoirs. An evaporation loss factor reduces the storage flow and is based on an estimated loss of 0.25 percent of the flow per river mile. The main purpose for calculation of the natural flow is to determine when natural flow is no longer adequate in various river reaches. The key point in the analysis of the graphs is to detect when the available natural flow is below zero. When the natural flow graphs show flows less than zero, the reach does not have adequate water to serve all users and regulation is needed. Regulation is handled by the local Watermaster office and is done on a priority basis as required by Oregon Water Law.

1998 ENTITIES REPORTS

UNIFIED SEWERAGE AGENCY by Carlo Spani

Unified Sewerage Agency's (USA) 1998 flow management season was the shortest on record at 87 days. This was the result of wet spring weather combined with the flow augmentation from Barney Reservoir. During the 1998 season all of the Tualatin River flow targets were met or exceeded.

On May 8, 1998, USA requested permission from the Bureau of Reclamation (BOR) to vary from the stipulated release schedule and instead, release water based on maintaining a target river flow at the Farmington gage. USA also requested that the BOR again consider allowing USA the option to purchase 3,000 to 6,000 acre-ft. of additional storage water. On July 17, 1998, the BOR approved the variance from the proscribed release schedule and said it would evaluate the possibility of a sale of additional water to USA later in the release season.

The 1998 USA release from Hagg Lake began on August 12, 1998. The late Hagg lake release date was due, in part, to the release for water quality of 30 CFS from Barney Reservoir. This 30 CFS release was a portion of a total 68 CFS diversion from Barney Reservoir water to the Tualatin River that took place from mid July through the end of August.

The 1998 target river flows were 120 CFS on a monthly average basis for the months of June and July. The August through mid September target was 150 CFS. From mid September through the end of the release season the target flow range was 200 CFS up to 250 CFS. The end of the release season occurs when the Farmington flow is consistently above 500 CFS.

Flows at the Dilley gage approached and occasionally exceeded 250 CFS during the 1998 release season. As the needs of the Scoggins Dam contractors increase over the next few years, the limited through-put capacity of this reach in the Tualatin River may become an issue that will need to be addressed

Consistent rainfall during the first week of November 1998 allowed USA to halt its release effective November 7, 1998. The total USA release season lasted 87 days and used 75% of USA's total water allocation.

Table A.
Water Released from Scoggins Reservoir
for Water Quality (Acre-ft.)

	<u>Max. Available</u>	<u>1998 Available</u>	<u>Consumption</u>
Storage	12,618	12,618	9,535
Natural Flow Credit	4,282	0	0
Purchased Water	3,000	0	0
			----- 9,535 *

* Release Season – August 12, 1998 to November 7, 1998 (87 Days)

Table B.
1998 River Flow Data Summary
(Cubic Feet per Second)

<u>Month</u>	<u>Farmington Daily Min/Max</u>	<u>Farmington 7DMA** Min/Max</u>	<u>Farmington Monthly Average</u>	<u>USA Release Monthly Average</u>
June	244/817	266/594	394	0
July	169/286	185/337	213	0
August	145/220	154/212	174	20
September	152/345	165/255	199	68
October	164/421	190/323	246	53
November	235/574	219/365	* 365	* 74
Minimum	145	154		
Maximum	817	594		
Average			*222	*55

* Data limited to release period (August 12 –November 7)

**7DMA = 7 Day Moving Average

TUALATIN VALLEY IRRIGATION DISTRICT by Wally Otto

The Tualatin Valley Irrigation District (TVID) supplies irrigation water to about 17,000 acres of land in Washington County. Two delivery systems are used to provide water service to the patrons, the river system and the pipeline system. The river system involves patrons withdrawing their water directly from the Tualatin River and several of its tributaries. This water is diverted for agricultural uses and each pump is monitored by District personnel at a metering station located immediately above the pumping facility. The second and largest system is the pressurized pipeline. Water is diverted from the Tualatin River at the Springhill Pump Plant located at river mile 56.1. Up to nine pumps are used to lift the water to a 600,000-gallon storage tank located on nearby Fernhill. From this location, most all water is delivered by gravity to the West toward Gaston and back to highway 6, to the North to Banks and the North Plains area and to the East to highway 219. This system provides up to 150 psi to each customer depending on the elevation of the specific turnout. TVID has a contract for water storage behind Scoggins Dam with the United States Bureau of Reclamation. This water is used to augment flows in the Tualatin River when the natural flow in the river is no longer adequate to meet the District's demand. Some years the stored water has been needed as early as the first week of May and other years have been wet providing adequate supplies from the river until early July. In 1998, storage water was released from Scoggins Dam for TVID beginning on June 18 and continued until Oct 31, 1998. The irrigation season is May through September with provision made so that individual irrigators can extend beginning in April and lasting through October if needed. The total amount delivered from storage for the District was 14,756 acre-feet for the 1998 irrigation season.

TVID is also in the process of certifying its water rights or "Final Proof" of the 17,000 acres it serves. The Oregon Water Resources Department completed the field survey in 1996 and TVID has since developed a Geographic Information System (GIS). This system will be crucial for individual water right holders to verify the accuracy of their lands receiving water. The process will take 3 – 4 years to complete. The GIS will also be very important tool for the District and its patrons to use each Spring as they identify on the ortho (aerial) photos all lands each irrigator plans to apply water to that year. Identification of the specific lands receiving water is required annually by the Oregon Water Resources Department.

The Irrigation District under contract with the United State Bureau of Reclamation operates and maintains Scoggins Dam. All operations have been routine in nature during the 1998 season with the usual flood control in winter and delivery of water to all Contractors during the Summer as listed in Table C.

The total amount of precipitation received during the water year at Scoggins Dam was 71.48" or 142% of normal. Significant flood events occurred in November, January and again in February. During these periods, the Dam provided flood control relief on the Scoggins and Tualatin river systems. All water from the Scoggins watershed, except the minimum discharge required was held and released after each event had subsided on the Tualatin river in the Dilley area.

A new office was completed at the Dam during 1998 along with a computer system upgrade. In addition, a building housing an upgraded emergency stand-by generator was constructed. The stand-by unit has been installed and is currently being connected and prepared for operation. All equipment is Y2K compliant and Project operating systems have been tested and are operable if electrical power is available.

Table C - 1998 Scoggin Reservoir - Hagg Lake Deliveries

Storage Water Contractors	Volumes Used (Acre-ft)
Tualatin Valley Irrigation Dist.	14,756
Unified Sewerage Agency	9,407
Lake Oswego Corp.	499
City of Hillsboro	4,522
City of Forest Grove	818
City of Beaverton	3,719
Other Contracts	878
Total	34,599

TABLE D – Water Year Precipitation (October – September)

Precipitation Amounts (inches) for 1998 Water Year at Scoggins Dam			
October 1997	8.57	May	4.56
November	9.32	June	0.96
December	4.41	July	0.24
January 1998	14.18	August	0.0
February	9.08	September 1998	0.91
March	6.26		
April	2.31	Total	60.8

TABLE E -- 1998 Scoggin Dam Annual Precipitation Data (January – December)

1998 Precipitation at Scoggin Dam					
Month	Precip – Inches	Percentage of Normal	Month	Precip. – Inches	Percentage of Normal
January	14.18	191%	July	0.24	44%
February	9.08	157%	August	0	0%
March	6.26	115%	September	0.91	52%
April	2.31	63%	October	4.51	130%
May	4.56	213%	November	15.2	191%
June	0.96	63%	December	13.27	143%
			Total	71.48	142%

HILLSBORO-FOREST GROVE-BEAVERTON-TUALATIN VALLEY WATER DISTRICT - JOINT WATER COMMISSION by Karl Borg

The Joint Water Commission supplies drinking water to the Cities of Hillsboro, Forest Grove, and Beaverton, as well as Tualatin Valley Water District. We all are aware of the growth these areas have experienced. This growth can also be witnessed by the increases in our water plant production. Our average daily flow for 1997 was 19.8 million gallons per day. The average daily flow for 1998 increased to 23 million gallons per day.

The Barney reservoir expansion project is winding down. The project manager continues to determine both the timing and quantity of our releases from Barney reservoir. We started out the season at a higher than normal elevation and ended at an elevation that was higher than the past couple of years. The season was marked for us by an unusually intensive drawn down from late July to late August. This drawdown was for one of the sub-contractors.

Scoggins reservoir releases were generally lower this year primarily due to the intense drawdown of Barney during the warmest part of the summer.

We have continued to use a Portland State student in the Limnology program, Migel Flores, to help gather water quality data at both Scoggins and Barney Reservoirs.

We would like to extend our thanks to all the Flow Management Committee members for all their efforts and support.

Table F
1998 Scoggins Dam releases for the Joint Water Commission
(Acre-Feet)

<u>Month</u>	<u>Beaverton</u>	<u>Hillsboro</u>	<u>Forest Grove</u>	<u>Total</u>
June	137	333	48	518
July	631	781	179	1,591
August	609	714	252	1,575
September	1317	2091	262	3,670
October	811	603	77	1,491
November	214	0	0	214
Total	3,719	4,522	818	9,059

Table G
1998 Barney Reservoir releases for the Joint Barney Commission
(Acre-Feet)

<u>Month</u>	<u>Beaverton</u>	<u>Hillsboro</u>	<u>Forest Grove</u>	<u>TVWD</u>	<u>USA</u>	<u>Total</u>
June	283	0	0	231	0	514
July	675	794	75	552	1213	3309
August	742	996	0	614	1566	3918
September	0	0	0	327	0	327
October	0	0	0	188	0	188
Total	1700	1790	75	1912	2779	8256

LAKE OSWEGO CORPORATION by Bob Storer

The Lake Oswego Corporation (LOC), a nonprofit corporation owns and operates the lake. The LOC was formed in 1942 when the Oregon Iron and Steel Company, then owner of the Lake, deeded to the LOC the bed of the lake and the rim around the lake with restrictions. Water quality improvement is one of the top priorities for the Lake Oswego Corporation (LOC). One of the keys for improving lake water quality is to reduce the pollutant loads that enter the lake. The two largest phosphorus loading sources to the lake are the Tualatin River generally from May 1 through October 15 and stormwater runoff from the Lake Oswego drainage basin generally from October 1 through May. The following information about Oswego Lake and its watershed was obtained from data collected during 1998 and a report produced by LOC's 1998 summer graduate intern, Ms. Kate Wolf.

Introduction

Lake and Watershed Characteristics

Oswego Lake is 400 acres in size and approximately 3-miles in length. The surface area of the lake is 1,630,220 m² and the volume is 12,716,800m³. The maximum depth is 16.7m and the mean depth is 7.8m.

Lake Oswego is a private reservoir located 8 miles south of Portland. The lake has three main basins and two human-made canals. The LOC owns and operates three dams (diversion, headgate, and main dam) and a hydroelectric power generation plant. There are two distinct watersheds that feed the lake. The "natural" drainage basin located within the City of Lake Oswego is 19.4 km² and is highly urbanized. The Tualatin River drainage basin is 1,842 km², and is composed primarily of agricultural and forests lands with increasing urban areas.

Inflows and Water Characteristics

Water flows into the lake from the Tualatin River via the headgate and a 1.5-mile main canal from a computer operated telemetry system. The LOC has one of the oldest water rights on the Tualatin River.

The flows in the main canal have been voluntarily reduced during the past couple of years due to fishery and water quality concerns. The headgate is currently operated from around May 1 through October 15.

During the summer months, panels in the diversion dam on the Tualatin River are raised to allow for withdrawals during the low flow period. The LOC began a flow-monitoring program during the spring of 1998 for development of a Tualatin River stage/headgate opening-discharge relationship and operational curve.

Water also flows into the lake from the 60 storm drains, creeks, and other drainage basins located within the City of Lake Oswego. Many of these "small" drainage basins produce significant runoff volumes during the wet season.

Water outflows from the lake via evaporation and is discharged out of the lake via the LOC's penstock and powerhouse. When an emergency exists or the powerhouse and penstock is down for repairs, water can be discharged through the dam via the sluice gate or by removing stop logs.

Lake & Watershed Water Quality

During 1998, LOC's summer graduate student intern performed a nonpoint pollution study on Springbrook Cr. Springbrook Cr. is the largest inflow to the lake other than the Tualatin River via the main canal.

Springbrook Creek

The water quality of Springbrook Creek is degraded due to excessive stormwater runoff, in-stream erosion, and nonpoint source pollution. Kate Wolf's report was prepared to assess nonpoint pollution and sediment sources in Springbrook Creek and to recommend stormwater treatment facility types and locations. Ten recommendations from her report includes: 1) implementation of construction best management practices; 2) enforcement of erosion prevention and sediment control measures; 3) development of a public awareness program; 4) riparian zone enhancement; 5) culvert outfall stabilization; 6) in-stream erosion prevention and streambank stabilization; 7) design and construction of stormwater retention/detention (R/D) facilities; 8) design and construction of phosphorus reduction facilities (PRFs); 9) water quality/quantity monitoring programs; and 10) sewage inspections and capital improvement programs.

Stormwater Monitoring

Beginning in October 1998 the LOC initiated a stormwater runoff water quality monitoring program. This program consists of monitoring 17 of the largest inflows to the lake during storm runoff events. From October 1998 through January 1999, seven storms were sampled. Additional storm runoff events will be targeted through the spring of 1999. Variables that are measured generally include nutrients, solids, and flow. The city of Lake Oswego is cooperating with the LOC with partial funding of this program. Initial results reveal extremely poor water quality conditions with high concentrations of both solids and nutrients in most all sampled inflows.

Lake Oswego

Lake Oswego is considered a eutrophic waterbody based on high levels of phosphorus and chlorophyll *a*, and low clarity. The two shallower basins (West Bay and Lakewood Bay) are much more productive than the main lake. These two smaller basins do not stratify like the main lake. Lake Oswego is a water quality limited waterbody with pH levels and chlorophyll *a* concentrations that typically do not meet the state water quality standards.

Phytoplankton blooms are becoming more frequent and severe. During 1998, blue-green algae dominated the phytoplankton community very early in the growing season. By May 1998, they comprised 75% of the phytoplankton population. This was consistent throughout the season with only the species of blue-green algae that would change and become dominant from one sampling session to the next.

In July 1998, *Microcystis aeruginosa*, a blue-green algae was observed on the surface in several areas throughout the lake. Some blue-green algae, or cyanobacteria produce toxins or poisons. Eventually the toxins break down and are destroyed naturally. Ingesting the algae while they are still poisonous can cause serious illness. Signs of a toxic bloom may include: 1) large numbers of dead fish, waterfowl or other animals; 2) sudden unexplained sickness or death of a cat or dog, especially if it has algae on its mouth, legs or feet; and 3) a skin rash on humans after being in the water.

The Microcystin toxins are produced and contained inside the Microcystis cells, and are released into the water when the cells die and disintegrate. Also, since cells are very small, they can be ingested along with the water. There are two types of toxins produced by strains of blue-green algae: 1) neurotoxins affect the nervous and respiratory systems; and 2) hepato-toxins affect the liver.

The heaviest scum layer areas were initially observed in Lakewood Bay. On July 3 four dead adult Canadian geese were found in Lakewood Bay. Analysis of goose livers at a local hospital found no toxicity. Scum and raw water samples were tested weekly for toxicity. A water quality alert flyer was sent to all LOC shareholders and easement members. Although toxins were detected in the samples, they were not considered to be at high levels, and the Oregon State Department of Health did not issue any formal public health advisories.

Management

The LOC continues to collect hydrologic and water quality data to better understand the lake and its watershed. Future management objectives include:

- Construct water and nutrient budgets for the lake.
- Develop an updated mass balance model.
- Assess nutrient loads from the canal and apply political pressure on the City and other regulatory agencies for compliance with their NPDES permit and TMDL requirements.
- Work with the City to place a higher priority on and implement stormwater management controls within the Springbrook and Lost Dog Creek basins and other priority problem areas.
- Work with the City to reduce the hydraulic overloads and resulting sewage overflows, and
- Expand educational programs to all lake and watershed residents

OREGON WATER RESOURCES DEPARTMENT by Darrell C. Hedin, Tualatin Basin Watermaster

Flow management activities conducted by the Tualatin Basin Watermaster's office included the monitoring of stream flows and the regulation of water withdrawals. A gaging network provides information on water availability and is the framework for regulatory actions on water use. This information is vital to making decisions and coordinating releases from Scoggins and Barney Reservoirs. Staffing to operate the system of gages is a cooperative funding effort by the agencies with contracted water in Scoggins Reservoir. **Table J** lists the Tualatin River gaging stations that supplied the information for this report.

The Tualatin Basin WRIP (Water Right Information Program) is used to locate legal water users when regulatory actions on water use are necessary. WRIP development continued with the addition of Scoggins Creek and McKay Creek drainage basins. All surface water rights in these basins are now entered in a relational database.

Information includes water rights by individual tax lot, by priority date, and diversion points by river mile. The database allows the generation of a report of water right holders for any reach of the stream by priority date. Water users can be targeted for informational mailings or regulatory actions related to their area. Work continues on adding tributaries to this database during the off season.

Gaging stations provide supply information and the WRIP database provides demand information. By knowing both supply and demand, it is easier to decide who is entitled to natural flow, thereby protecting senior out-of-stream and instream water rights. **Table H** summarizes 1998 regulatory activity.

The stream temperature monitoring program that began in 1997 was expanded to include a total of 17 sites in 1998. The sites range from the headwaters of the Tualatin River above Barney Reservoir outfall at river mile 78.25 to the Tualatin River at West Linn, river mile 1.75. Readings were taken at 30 minute intervals during the period May 13 to October 20. The data and associated graphs are included in **Appendix E**.

TABLE H
1998 OWRD Tualatin Basin Surface Water Regulation Summary

<u>DATE</u>	<u>STREAM REGULATED</u>	<u>PRIORITY DATE</u>
JUNE 18	Tualatin River and tributaries above Dairy Creek	2/1/63
JULY 31	Tualatin River and tributaries below Dairy Creek	10/8/76
AUGUST 19	Tualatin River and tributaries above Scoggins Creek	1/1/40
SEPTEMBER 2	Tualatin River and tribs between Dairy and Scoggins	5/9/39
SEPTEMBER 4	Tualatin River and tribs above Scoggins Creek	8/15/30
SEPTEMBER 30	Tualatin River Basin	End of Season Notices

Table J
Tualatin Basin 1998 Streamflow Gages

Stream	Stream Mile	Type
Beaverton Creek @ 216th	1.2	Staff
Beaverton Creek @ 170th	5.0	Staff
Bronson Creek @ Bronson Rd	2.1	Recording
Bronson Creek @ West Union	3.1	Staff
Bronson Creek @ Saltzman Rd	5.1	Recording
Cedar Mill Creek @ Jenkins Rd	2.2	Staff
Chicken Creek @ Scholls/Sherwood	2.3	Staff
*Dairy Creek at Hwy 8	2.1	Recording
EF Dairy Creek at Dairy Cr Rd	12.5	Staff
WF Dairy Creek @ Banks	7.7	Staff
WF Dairy Creek @ Evers Rd	1.9	Staff
Dawson Creek @ Brookwood Rd	0.7	Recording
Dawson Creek @ Shute Rd	2.2	Staff
Fanno Creek @ Durham Road	1.2	Recording
Fanno Creek @ Tuckerwood	7.3	Staff
Fanno Creek @ Scholls Ferry nr Allen	9.4	Staff
Fanno Creek @ 56th	12.6	Recording-USGS
*Gales Creek @ Hwy 47	2.4	Recording
Gales Creek @ Clapshaw Rd	12.4	Staff
Hall Creek @ 107th	0.7	Staff
Hedges Creek Wetlands (elevation only)		Recording
Johnson Creek @ Davis Rd	1.3	Staff
McKay Creek @ Hornecker Rd	2.2	Staff
McKay Creek @ Northrup Rd	15.3	Staff
EF McKay Creek @ Dixie Mtn Rd	0.6	Staff
Oswego Canal (from Tualatin R)	6.7	Recording
Rock Creek @ Hwy 8	1.2	Recording
Rock Creek @ Quatama Rd	4.9	Staff
Sain Creek ab Scoggins Res	1.6	Recording
*Scoggins Creek abv Scoggins Res	8.0	Recording
*Scoggins Creek blw Scoggins Res	4.8	Recording-USGS
Summer Creek @ Fowler School	0.2	Staff
Tanner Creek abv Scoggins Res	1.6	Staff
Tualatin River blw Lee Falls	70.5	Staff
*Tualatin River @ Gaston	63.9	Recording
*Tualatin River @ Dilley	58.8	Recording-USGS
*Tualatin River @ Golf Course Rd	51.5	Recording
Tualatin River @ Hwy 219	44.4	Staff
*Tualatin River @ Rood Bdg	38.4	Recording
*Tualatin River @ Farmington	33.3	Recording
Tualatin River @ Elsner	16.2	Staff
*Tualatin River @ Tualatin (elevation only)	8.1	Recording
*Tualatin River @ West Linn	1.8	Recording-USGS
Wapato Canal (from Tualatin R)	61.9	Staff
• Telemetry		

WATER QUALITY INFORMATION SUMMARY -UNIFIED SEWERAGE AGENCY (USA)

By Jan Miller

STATUS OF TUALATIN RIVER -- WATER QUALITY RELATIVE TO THE TOTAL MAXIMUM DAILY LOAD (TMDL) for PHOSPHORUS

Point Source Waste Load Allocations (WLA) & Nonpoint Source Load Allocations (LA)

In 1988, a total phosphorus TMDL was established for point and nonpoint sources in the Tualatin Basin. Since 1989, the wastewater treatment plants have been upgraded and a surface water management plan adopted. The point sources met their WLA on schedule. The nonpoint sources are not meeting LA. The compliance schedule for the nonpoint sources has been extended to May 1, 2000. Tables on the following pages describe the conditions in the Tualatin Basin relative to the TMDL. All calculations were done as specified in the TMDL documents or the specific water quality standard using data from the USA monitoring program unless otherwise noted.

The first table on Status of the Tualatin River - Total Phosphorus TMDL shows the monthly median total phosphorus for the sites that have assigned TMDL criteria or are required monitoring sites. Very few of the sites met their TMDL criteria.

The second table shows the three-month stratified mean for chlorophyll *a* at the required monitoring sites.

When chlorophyll *a* is above the 15 µg/L guidance level in rivers, studies must be conducted to determine if the guidance level is being exceeded due to anthropogenic factors and if the beneficial uses of the river are being impaired by the high algal concentrations. High levels of algae have a negative impact on the beneficial use of aesthetic quality. High levels of algal production can result in low dissolved oxygen (DO) levels and high pH levels. These both impact the beneficial use of resident fish and aquatic life. Total phosphorus was identified as an anthropogenic cause of the high levels of chlorophyll *a* in the Tualatin River.

The third table shows the results of the continuous (DO) monitor that the U.S. Geological Survey (USGS) maintains at the Lake Oswego diversion dam at river mile 3.4. Dissolved oxygen is a primary indicator of water quality. Traditionally, DO was measured during sample collection. This single value does not give a complete picture of the conditions that the aquatic organisms are exposed to during the day. Dissolved oxygen can change dramatically over the course of a day during an algal bloom. Continuous DO readings provide a better indication of the health of the river. Values drop below the criteria for various reasons. Oxygen levels can drop due to high ammonia levels, due to the decomposition of algae when they die, when the algae are washed out due to high flows, or due to temperature changes that cause the slow-moving stratified sections of the river to "turn over". When the river "turns over", water from the bottom of the river, where there is high sediment oxygen demand (and therefore very low DO), mixes with the upper layers of water causing significantly lower DO levels. Before July 1996, the criterion for DO was 6.0 mg/L. The current criterion for DO for cool water streams has the following three components: greater than 6.5 mg/L based on a 30-day mean, greater than 5.0 mg/L based on a seven (7)-day minimum, greater than 4.0 mg/L based on a daily minimum.

The third table also shows the results of another primary indicator of water quality, pH. The pH criterion for the Tualatin River is 6.5 to 8.5. During algal blooms, the pH goes up during the day (as a result of the chemical reactions that take place during photosynthesis), then drops back to neutral during the night. The daylight pH increases can cause the criterion to be exceeded.

The values that do not meet a given criterion or guidance level are shaded on all three tables.

Status of the Tualatin River - Point Source Waste Load Allocations & Non Point Source Load Allocations - Total Phosphorus shows the various phosphorus inputs to the Tualatin River in terms of waste load allocation (WLA) for point sources and proposed load allocation (LA) for nonpoint sources.

The first table shows the point source discharges compared to their WLA. These two point sources are the two USA summer-discharging wastewater treatment plants, Rock Creek treatment plant (river mile 38.1) and Durham treatment plant (river mile 9.6). The allowed total phosphorus load is tied to the river flow at the Farmington gauge (river mile 33.3) and the treatment plant flow. USA has stored water in Hagg Lake that it releases to improve water quality in the Tualatin River. USA's goal is to release this water to maintain between 120 and 150 CFS at the Farmington gauge until late summer. From mid September until November 30 the goal is between 150 and 200 CFS. The stored water in Barney Reservoir was available for release in the summer of 1998. To help the Joint Water Commission lower the reservoir for maintenance, USA's stored water and the Joint Water Commission's water quality allocation were released at a rate of 30 CFS from July 13 to August 29, 1998. The treatment plants met their WLA by releasing fewer pounds of total phosphorus than is allowed by their WLA.

The second table shows the tributary loads compared to the proposed nonpoint source LA. With the exception of Scoggins Creek (Hagg Lake Reservoir is the source water), the tributaries rarely meet the proposed LA.

The values, where the WLA or the proposed LA is not met, are shaded on both tables.

STATUS OF THE TUALATIN RIVER - TOTAL PHOSPHORUS TMDL

1998	TOTAL PHOSPHORUS	mg/L	MONTHLY MEDIAN	(Compliance or Required Monitoring Site)					
	RIVER MILE	TMDL	SAMPLES/MONTH	MAY	JUNE	JULY	AUG	SEPT	OCT
<u>TUALATIN RIVER</u>									
CHERRY GROVE	71.5	0.02	2	0.013	0.013	0.013	0.013	0.013	0.013
DILLEY	61.2	0.04	2	0.049	0.022	0.020	0.021	0.019	0.022
GOLF COURSE	52.8	0.045	2	0.061	0.052	0.037	0.033	0.031	0.024
ROOD ROAD	39.1	0.05	2	0.103	0.077	0.053	0.059	0.054	0.071
FARMINGTON	33.3	0.07	1	0.089	0.101	0.079	0.091	0.066	0.108
SCHOLLS	27.1	0.07	2	0.141	0.109	0.104	0.098	0.087	0.106
ELSNER	16.5	0.07	5	0.101	0.097	0.081	0.081	0.084	0.082
BOONES FERRY	8.7	0.07	2	0.106	0.120	0.103	0.099	0.081	0.092
STAFFORD	5.4	0.07	5	0.108	0.104	0.108	0.077	0.082	0.090
<u>TRIBUTARIES</u>									
SCOGGINS CREEK	60	0.06	2	0.013	0.044	0.013	0.021	0.013	0.013
GALES CREEK	56.8	0.045	2	0.047	0.035	0.031	0.054	0.039	0.038
DAIRY CREEK	44.7	0.045	2	0.133	0.094	0.100	0.102	0.123	0.111
MCKAY CREEK	44.7	0.045	2	0.033	0.051	0.047	0.100	0.123	0.100
ROCK CREEK	38.1	0.07	2	0.190	0.117	0.205	0.201	0.211	0.155
CHICKEN CREEK	15.5	0.07	2	0.095	0.085	0.111	0.121	0.120	0.107
FANNO CREEK	9.3	0.07	2	0.125	0.112	0.134	0.141	0.155	0.136

1998 CHLOROPHYLL α ug/L	Three Month Stratified Mean	(Excluding May and June)	(Required Monitoring Sites)					
	RIVER MILE	WQ GUIDANCE	MAY	MAY-JUNE	MAY-JULY	JUNE-AUG	JULY-SEP	AUG-OCT
<u>TUALATIN RIVER</u>								
ROOD ROAD	39.1	15	5.0	4.7	4.4	3.9	3.7	4.0
FARMINGTON	33.3	15	5.5	4.6	3.9	4.1	3.9	4.5
SCHOLLS	27.1	15	4.4	5.0	5.2	6.7	5.9	5.7
ELSNER	16.5	15	5.3	8.4	13.2	17.7	17.3	12.8
BOONES FERRY	8.7	15	6.9	9.8	15.0	20.3	20.2	14.2
STAFFORD	5.4	15	6.2	9.0	18.8	24.5	24.6	16.6
<u>TRIBUTARIES</u>								
DAIRY CREEK	44.7	15	5.6	5.2	5.2	3.7	4.1	4.1
ROCK CREEK	38.1	15	3.7	3.0	2.4	1.5	1.2	1.2
CHICKEN CREEK	15.5	15	1.5	1.4	1.6	1.3	1.3	1.0
FANNO CREEK	9.3	15	5.3	5.0	3.1	2.8	2.4	2.4

Tributaries are sampled near their confluence with the Tualatin River.

River mile indicates where on the Tualatin River a tributary intersects.

"Less than" values are used in the calculations at half their value (0.5 times the detection limit).

1998	USGS CONTINUOUS MONITOR	(River Mile 3.4)	HOURLY READINGS					
			MAY	JUN	JUL	AUG	SEP	OCT
DISSOLVED OXYGEN mg/L (Number of days criterion not met)			0	0	0	0	0	0
30-Day floating average of the daily DO mean < 6.5 mg/L			0	0	0	0	0	0
7-Day floating average of the daily minimum DO < 5.0 mg/L			0	0	0	0	0	0
Daily minimum DO < 4.0 mg/L			0	0	0	0	0	0
pH								
Percent of time greater than 8.5			0	0	0	0	0	0
Percent of time less than 6.5			0	0	0	0	0	0

Shading indicates that a criterion or guidance level was not met.

**STATUS OF THE TUALATIN RIVER
POINT-SOURCE WASTELOAD ALLOCATION & NONPOINT SOURCE LOAD ALLOCATION
TOTAL PHOSPHOROUS**

1998	TREATMENT PLANT	WASTELOAD ALLOCATION (WLA)							
SITE	INFO	STAT.	UNITS	MAY	JUNE	JULY	AUG	SEPT	OCT
FARMINGTON	FLOW	MEAN	CFS	764	395	214	175	199	243
FARMINGTON GOAL	FLOW	MEAN	CFS	120	120	120	150	200	200
USA RELEASE* FROM HAGG LAKE	FLOW	MEAN	CFS	0	0	0	20	66	54
	FLOW	TOTAL	AC-FT	0	0	0	1200	4021	3293
	FLOW	YTD	AC-FT	0	0	0	1200	5221	8514
USA RELEASE* FROM BARNEY RESERVOIR	FLOW	MEAN	CFS	0	0	17	30	0	0
	FLOW	TOTAL	AC-FT	0	0	1129	1723	0	0
	FLOW	YTD	AC-FT	0	0	1129	2852	2852	2852
DURHAM EFFLUENT	FLOW	MEAN	MGD	24.05	19.69	17.21	16.78	17.35	19.06
	T-PO4-P	MEDIAN	mg/L	0.02	0.04	0.05	0.06	0.05	0.04
	T-PO4-P	WLA	lbs.	18.00	16.00	13.00	12.00	12.00	14.00
	T-PO4-P	MEDIAN	lbs.	4.73	6.25	7.64	8.01	7.08	5.39
ROCK CREEK EFFLUENT	FLOW	MEAN	MGD	27.76	24.75	22.32	21.98	22.49	22.46
	T-PO4-P	MEDIAN	mg/L	0.04	0.06	0.04	0.05	0.07	0.07
	T-PO4-P	WLA	lbs.	40.00	40.00	30.00	23.00	25.00	30.00
	T-PO4-P	MEDIAN	lbs.	8.83	11.94	7.37	8.87	15.06	13.80

Based on daily values.

*USA RELEASE from Hagg Lake for flow augmentation (total available from storage is 12,618 Acre Feet).

*USA RELEASE from Barney Reservoir for flow augmentation (total available from storage after 1998 is 1728 Acre Feet).

*Surplus water in 1998 releases were the result of Joint Water Commission allocations for water quality.

1998	TRIBUTARY LOADS RELATIVE TO PROPOSED LOAD ALLOCATIONS (LA)								
SITE	INFO	STAT.	UNITS	MAY	JUNE	JULY	AUG	SEPT	OCT
SCOGGINS CREEK	FLOW	MEAN	CFS	59.0	15.0	111.0	135.0	181.5	88.5
	T-PO4-P	LA	lbs.	10.8	5.4	21.6	21.6	32.3	10.8
	T-PO4-P	MEDIAN	lbs.	4.0	3.6	7.5	15.0	12.2	6.0
GALES CREEK	FLOW	MEAN	CFS	87.5	81.0	31.5	14.1	12.0	19.6
	T-PO4-P	LA	lbs.	12.1	12.1	6.1	2.4	2.4	2.4
	T-PO4-P	MEDIAN	lbs.	28.5	16.3	5.2	3.3	2.5	4.0
DAIRY CREEK	FLOW	MEAN	CFS	234.5	261.0	73.2	31.3	20.3	42.0
	T-PO4-P	LA	lbs.	24.3	24.3	12.1	6.1	2.4	6.1
	T-PO4-P	MEDIAN	lbs.	154.0	116.5	39.0	17.0	14.1	25.1
ROCK CREEK	FLOW	MEAN	CFS	114.0	46.3	19.1	12.9	11.1	16.3
	T-PO4-P	LA	lbs.	9.4	9.4	3.8	3.8	3.8	3.8
	T-PO4-P	MEDIAN	lbs.	124.1	36.5	20.7	14.2	13.3	13.7
FANNO CREEK	FLOW	MEAN	CFS	44.8	20.3	9.3	10.1	18.2	15.8
	T-PO4-P	LA	lbs.	9.4	3.8	1.9	3.8	3.8	3.8
	T-PO4-P	MEDIAN	lbs.	33.5	12.1	6.7	6.5	15.3	11.8

Based on weekly samples.

Below detection limit values are used in the calculations at half their value (0.5 times the detection limit).

Shading indicates the WLA (NPDES Permit) or proposed LA (TMDL 22M-02-004 Schl A #2) was not met.

STATUS OF THE TUALATIN RIVER WATER QUALITY RELATIVE TO THE TOTAL MAXIMUM DAILY LOAD (TMDL) for AMMONIA

Point Source Waste Load Allocations (WLA) & Nonpoint Source Load Allocations (LA)

In 1988 the ammonia TMDL was established for point sources in the Tualatin Basin. The wastewater treatment plants were upgraded between 1988 and 1994. The Tualatin Basin currently meets the ammonia TMDL. Tables on the following pages describe the conditions in the Tualatin Basin relative to the ammonia TMDL. All calculations were done as specified in the TMDL document or the specific water quality standard using data from the USA monitoring program unless otherwise specified.

The first table on Status of the Tualatin River - Ammonia TMDL shows the monthly median ammonia for the sites that have assigned TMDL criteria or are required monitoring sites. Most of the sites meet their TMDL criterion most of the time. USA can be granted a variance that allows the two smaller treatment plants, Forest Grove (river mile 56.7) and Hillsboro (river mile 44), to discharge to the Tualatin River until the flow at Farmington, river mile 33.3, drops below 250 CFS. Both plants stopped discharging to the river on June 17, 1998. This is the likely cause of the high values in May and June at Golf Course and Rood Road. The high flow and cool weather during this time period minimize the risk of low dissolved oxygen levels or toxicity problems.

The second table shows the dissolved oxygen (DO) levels relative to the new criteria of 6.5 mg/L. Grab samples were collected twice a month at all the sites except the Tualatin River at Elsnor and Stafford. After August 17th the frequency at these two sites increased to twice a week. This is a critical period for the river and frequent adjustments to stored water in Hagg Lake may be necessary depending on river conditions. For this evaluation, the extra samples taken after August 17, 1998 are not included in the data set. Dissolved oxygen is a primary indicator of water quality conditions in terms of aquatic life. Before July 1996, the criterion for DO was 6.0 mg/L. The new DO criterion has the following three components:

Cool Water Aquatic Resources

Criteria	Statistic	Description
6.5 mg/L	30-Day Mean	The minimum value of the 30-consecutive-day floating mean must not go below 6.5 mg/L. Daily means are calculated and used to determine compliance.
5.0 mg/L	7-Day Minimum	The seven-day floating average of the daily minimum concentration must not fall below 5.0 mg/L.
4.0 mg/L	Minimum	The minimum recorded concentration must not fall below 4.0 mg/L at any time.

The third table shows the results of the continuous monitor, that USGS maintains at Neal's property (river mile 24.5) and at the Lake Oswego diversion dam (river mile 3.4), relative to the three components of the DO criteria. Because this data is collected continuously (recorded on an hourly basis), it is a much better representation of the DO levels in the river.

The fourth table shows the time periods and locations of chronic ammonia toxicity. To determine toxicity, the ammonia level, pH, and temperature must be considered together. Ammonia concentrations are considered detrimental if the four (4) consecutive day average ammonia concentration exceeds chronic

ammonia levels.

The values that do not meet a given criterion are shaded on the first, third and fourth tables. The values on the second table are not highlighted because there were few samples for analysis and dissolved oxygen measures can vary significantly.

The page titled, Status of the Tualatin River - Ammonia Point Source Waste Load Allocations & Non Point Source Load Allocations – Ammonia, shows the various inputs to the Tualatin River in terms of waste load allocation (WLA) and load allocation (LA).

The first table shows the point source discharges compared to their WLA. The two point sources are the two USA summer-discharging wastewater treatment plants, Rock Creek treatment plant (river mile 31.8) and Durham treatment plant (river mile 9.6). The allowed ammonia load is linked to both the river flow at the Farmington gauge and the treatment plant flow. USA has stored water in Hagg Lake, that it uses to increase the flow in the Tualatin River. The stored water in Barney Reservoir was available for release in the summer of 1998. To help the Joint Water Commission lower the reservoir for maintenance, USA's stored water and the Joint Water Commission's water quality allocation were released at a rate of 30 CFS from July 13 to August 29, 1998. The treatment plants met their point source WLA by releasing significantly fewer pounds of ammonia than are allowed by their WLA.

The second table shows the tributary loads compared to the proposed nonpoint source LA. The ammonia tributary load allocations are based on the Tualatin River flow at Farmington (river mile 33.3). The tributaries consistently meet their TMDL criteria. For the most part, the tributaries meet the proposed LA. When they do not meet the proposed LA, it is generally due to high flows.

The values, where the WLA or the proposed LA is not met, are shaded on both tables.

STATUS OF THE TUALATIN RIVER - AMMONIA TMDL

1998	AMMONIA	mg/L	MONTHLY MEDIAN	(Compliance or Required Monitoring Site)					
	RIVER MILE	TMDL	SAMPLES/MONTH	MAY	JUNE	JULY	AUG	SEPT	OCT
<u>TUALATIN RIVER</u>									
CHERRY GROVE	71.5	0.03	2	0.01	0.01	0.01	0.01	0.01	0.01
DILLEY	61.2	0.03	2	0.02	0.01	0.01	0.01	0.01	0.02
GOLF COURSE	52.8	0.04	2	0.02	0.10	0.01	0.01	0.01	0.01
ROOD ROAD	39.1	0.05	2	0.10	0.10	0.02	0.02	0.02	0.01
FARMINGTON	33.3	1.00	1	0.11	0.09	0.02	0.02	0.02	0.02
SCHOLLS	27.1	0.85	2	0.09	0.07	0.03	0.02	0.03	0.02
ELSNER	16.5	0.85	5	0.08	0.03	0.02	0.01	0.02	0.03
BOONES FERRY	8.7	0.85	2	0.13	0.04	0.03	0.07	0.03	0.08
STAFFORD	5.4	0.85	5	0.10	0.02	0.02	0.04	0.04	0.04
<u>TRIBUTARIES</u>									
SCOGGINS CREEK	60	0.03	2	0.01	0.01	0.01	0.01	0.01	0.01
GALES CREEK	56.8	0.04	2	0.01	0.02	0.02	0.03	0.02	0.01
DAIRY CREEK	44.7	0.04	2	0.04	0.02	0.02	0.03	0.03	0.02
MCKAY CREEK	44.7	0.04	2	0.02	0.02	0.03	0.03	0.04	0.01
ROCK CREEK	38.1	0.10	2	0.05	0.03	0.04	0.04	0.04	0.03
CHICKEN CREEK	15.5	0.10	2	0.04	0.03	0.04	0.04	0.04	0.04
FANNO CREEK (DHM)	9.3	0.10	4	0.06	0.04	0.04	0.06	0.06	0.05

1998 Percent of days when the Dissolved Oxygen Criteria of 6.5 mg/L was not achieved
(*Mean of 10 foot integration)

	RIVER MILE	WQS COOL	SAMPLES/MONTH	MAY	JUNE	JULY	AUG	SEPT	OCT
<u>TUALATIN RIVER</u>									
ROOD ROAD	39.1	6.5	2	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
FARMINGTON	33.3	6.5	1	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
*SCHOLLS	27.1	6.5	2	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
*ELSNER	16.5	6.5	2	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
*BOONES FERRY	8.7	6.5	2	0.0%	0.0%	0.0%	0.0%	50.0%	0.0%
*STAFFORD	5.4	6.5	2	0.0%	0.0%	0.0%	0.0%	50.0%	0.0%
<u>TRIBUTARIES</u>									
DAIRY CREEK	44.7	6.5	2	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
ROCK CREEK	38.1	6.5	2	0.0%	0.0%	0.0%	66.6%	0.0%	0.0%
CHICKEN CREEK	15.5	6.5	2	0.0%	0.0%	50.0%	33.3%	0.0%	0.0%
FANNO CREEK	9.3	6.5	2	0.0%	0.0%	0.0%	33.3%	100.0%	0.0%

Tributaries are sampled near their confluence with the Tualatin River.
River mile indicates where on the Tualatin River a tributary intersects.

1998 USGS CONTINUOUS MONITOR
HOURLY READINGS

DISSOLVED OXYGEN mg/L (Number of days criterion not met)	MAY	JUN	JUL	AUG	SEP	OCT
NEALS PROPERTY (RIVER MILE 24.6)						
30-Day floating average of the daily DO mean < 6.5 mg/L	0	0	0	0	0	0
7-Day floating average of the daily minimum DO < 5.0 mg/L	0	0	0	0	0	0
Daily minimum DO < 4.0 mg/l	0	0	0	0	0	0
LAKE OSWEGO DIVERSION DAM (RIVER MILE 3.4)						
30-Day floating average of the daily DO mean < 6.5 mg/L	0	0	0	0	0	0
7-Day floating average of the daily minimum DO < 5.0 mg/L	0	0	0	0	0	0
Daily minimum DO < 4.0 mg/l	0	0	0	0	0	0
CHRONIC AMMONIA TOXICITY	MAY	JUNE	JULY	AUG	SEPT	OCT
SITE (VIOLATION = DURATION OF 4 DAYS OR GREATER)	0	0	0	0	0	0

Shading indicates that a criterion was not met.

**STATUS OF THE TUALATIN RIVER
POINT-SOURCE WASTELOAD ALLOCATION & NONPOINT SOURCE LOAD ALLOCATION
AMMONIA**

1998	TREATMENT PLANT	WASTELOAD ALLOCATION (WLA)			Relative to Farmington flow and treatment plant flow					
SITE	INFO	STAT.	UNITS	MAY	JUNE	JULY	AUG	SEPT	OCT	
FARMINGTON	FLOW	MEAN	CFS	764	395	214	175	199	243	
FARMINGTON GOAL	FLOW	MEAN	CFS	120	120	120	150	200	200	
USA RELEASE* FROM HAGG LAKE	FLOW	MEAN	CFS	0	0	0	20	66	54	
	FLOW	TOTAL	AC-FT	0	0	0	1200	4021	3293	
	FLOW	YTD	AC-FT	0	0	0	1200	5221	8514	
USA RELEASE* FROM BARNEY RESERVOIR	FLOW	MEAN	CFS	0	0	17	30	0	0	
	FLOW	TOTAL	AC-FT	0	0	1129	1723	0	0	
	FLOW	YTD	AC-FT	0	0	1129	2852	2852	2852	
DURHAM EFFLUENT	FLOW	MEAN	MGD	24.05	19.69	17.21	16.78	17.35	19.06	
	NH3-N	MEDIAN	mg/L	1.93	0.20	0.07	0.74	0.06	0.16	
	NH3-N	WLA	lbs.	454.00	433.00	412.00	373.00	373.00	433.00	
	NH3-N	MEDIAN	lbs.	356.43	31.57	10.00	104.34	7.30	24.66	
ROCK CREEK EFFLUENT	FLOW	MEAN	MGD	27.76	24.75	22.32	21.98	22.49	22.46	
	NH3-N	MEDIAN	mg/L	0.02	0.02	0.02	0.01	0.01	0.02	
	NH3-N	WLA	lbs.	1042.00	1042.00	1042.00	783.00	783.00	1042.00	
	NH3-N	MEDIAN	lbs.	4.93	4.16	3.38	1.84	2.09	4.11	

Based on daily values.

*USA RELEASE from Hagg Lake for flow augmentation (total available from storage is 12,618 Acre Feet).

*USA RELEASE from Barney Reservoir for flow augmentation (total available from storage after 1998 is 1728 Acre Feet).

*Surplus water in 1998 releases were the result of Joint Water Commission allocations for water quality.

1998	TRIBUTARY LOADS RELATIVE TO PROPOSED LOAD ALLOCATIONS (LA)			Relative to Farmington flow					
SITE	INFO	STAT.	UNITS	MAY	JUNE	JULY	AUG	SEPT	OCT
TUALATIN RIVER	FLOW	MEAN	CFS	377.0	227.0	188.5	149.0	126.5	220.5
AT ROOD ROAD	NH3-N	LA	lbs.	65.0	65.0	40.0	20.0	20.0	40.0
	NH3-N	MEDIAN	lbs.	258.2	321.8	19.9	12.2	13.6	10.9
ROCK CREEK	FLOW	MEAN	CFS	114.0	46.3	19.1	12.9	11.1	16.3
	NH3-N	LA	lbs.	16.0	16.0	11.0	8.0	8.0	11.0
	NH3-N	MEDIAN	lbs.	26.6	8.9	3.6	2.8	2.5	2.4
CHICKEN CREEK	FLOW	MEAN	CFS	13.1	17.3	4.0	2.3	4.3	9.4
	NH3-N	LA	lbs.	6.0	6.0	4.0	3.0	3.0	4.0
	NH3-N	MEDIAN	lbs.	3.0	3.2	0.9	0.5	0.9	1.8
FANNO CREEK	FLOW	MEAN	CFS	44.8	20.3	9.3	10.1	18.2	15.8
	NH3-N	LA	lbs.	9.0	9.0	6.0	5.0	5.0	6.0
	NH3-N	MEDIAN	lbs.	19.5	3.5	2.2	3.0	4.7	4.1

Based on weekly samples.

Below detection limit values are used in the calculations at half their value (0.5 times the detection limit).

Shading indicates the WLA (NPDES Permit) or proposed LA (TMDL 22M-01-004 Sch I A #2) was not met.

River Response

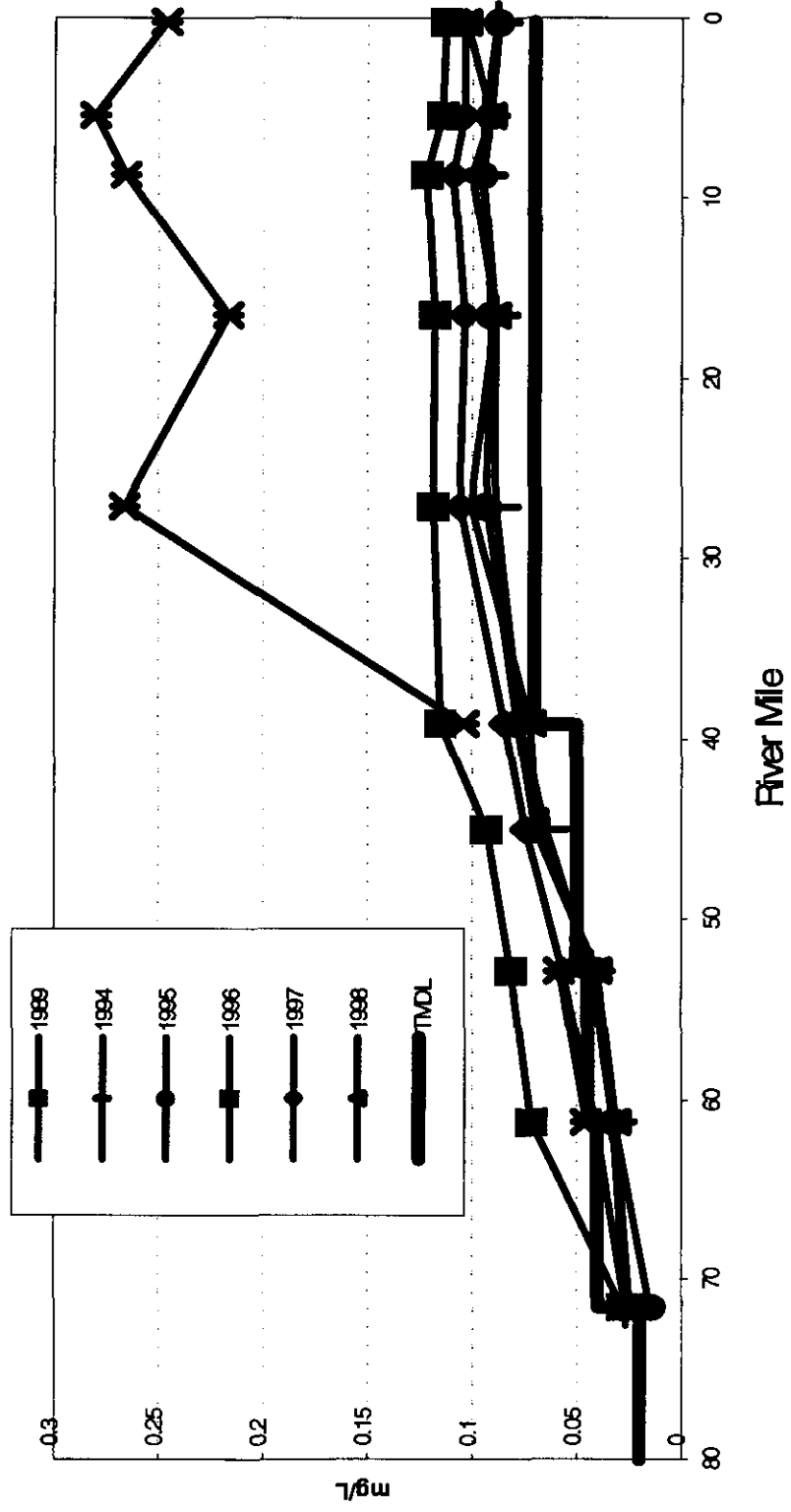
The following three graphs illustrate spatial and temporal trends in water quality. The mean value between May and October was used for each data point. Each graph has the river mile along the Tualatin River on the x-axis going from the upper watershed on the left to the mouth on the right. On Graph 1 - "Total Phosphorus" and Graph 2 - "Ammonia", the bold line shows the Total Maximum Daily Load (TMDL) at that river mile. The Rock Creek Wastewater Treatment Plant is at river mile 38. The Durham Wastewater Treatment Plant is at river mile 9. The bold line on Graph 3 - "Chlorophyll *a*" shows the Oregon chlorophyll *a* guidance level for rivers.

Graph 1 - "Tualatin River Mean Concentration of Total Phosphorus" illustrates the reductions in total phosphorus that have occurred since 1989 downstream of river mile 40. These total phosphorus decreases result from lower phosphorus loads coming from the wastewater treatment plants which are in compliance with their waste load allocations. In 1996, there were higher levels of total phosphorus from river mile 60 to the mouth than 1994 and 1995. These higher levels may be a result of the February 1996 storms that resulted in extensive flooding in the basin. The 1997 levels were lower than 1996 and the 1998 levels are approximately the same as 1994 and 1995.

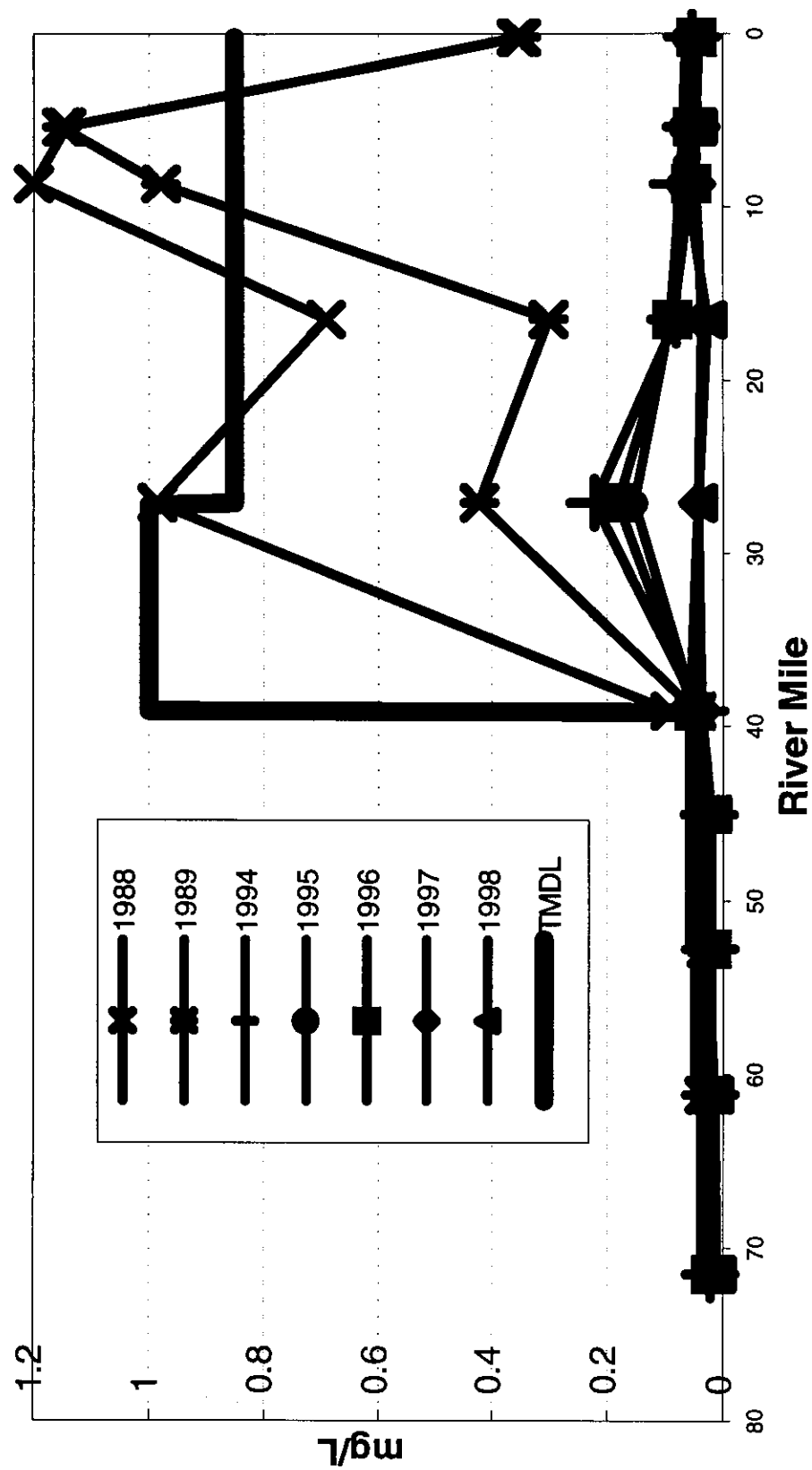
Graph 2- "Tualatin River Mean Concentration of Ammonia" shows the dramatic reductions in ammonia that have occurred since 1988. Because the Rock Creek Wastewater Plant had already reduced ammonia discharges in 1989 when the TMDL was established, it was necessary to go back to 1988 to see the true ammonia reductions that have occurred. The wastewater treatment plants are in compliance with their waste load allocations. The Tualatin River currently meets the TMDL for ammonia. Even though the Tualatin River is comfortably meeting the ammonia TMDL, the Rock Creek Wastewater Treatment Plant was upgraded again to reduce ammonia discharges. The 1994, 1995, and 1996 levels increased due to the higher flows associated with population growth and transfers of flow to Rock Creek from the two wastewater treatment plants (Forest Grove and Hillsboro) that do not discharge to the Tualatin River during the summer months. The Rock Creek facility increased its nitrification capacity in 1997, and again in 1998. As a result, the 1997 and 1998 ammonia levels recorded in the river downstream of the Rock Creek wastewater treatment plant show the lowest mean levels since 1988.

Graph 3- "Tualatin River Mean Concentration of Chlorophyll *a*" shows the mean level by year. There are many factors that affect algal production. It would take further data evaluation to determine why concentrations were similar to those found in 1996. Flow levels were similar to 1996, but turbidity was much lower than 1996. Flow and turbidity were similar to 1997 when chlorophyll *a* was significantly higher. The actual chlorophyll *a* guidance level is calculated using a three-month moving average.

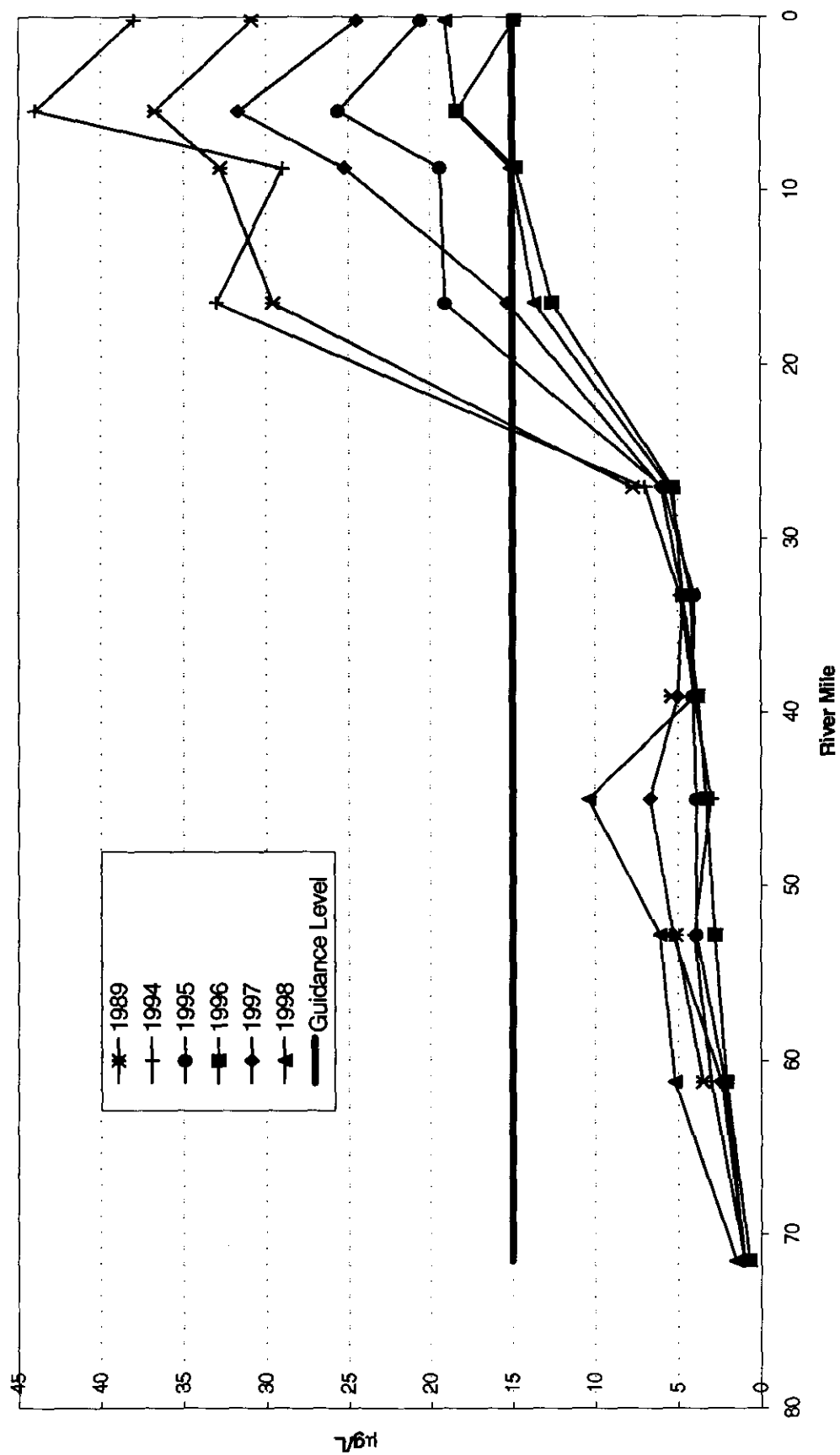
Graph 1- Tualatin River
Mean Concentration of Total Phosphorus
May to October



Graph 2- Tualatin River
Mean Concentration of Ammonia
May to October



Graph 3- Tualatin River
Mean Concentration of Chlorophyll a (corrected)
May to October



REPORT SUMMARY

The Tualatin River Flow Management Technical Committee is and will continue to be an important part of the water resources management activities in the Tualatin Basin. The information system and monitoring network will need telemetry and equipment improvements to enhance current information and improve reservoir release efficiencies. Additional stations may need to be established where data gaps are found.

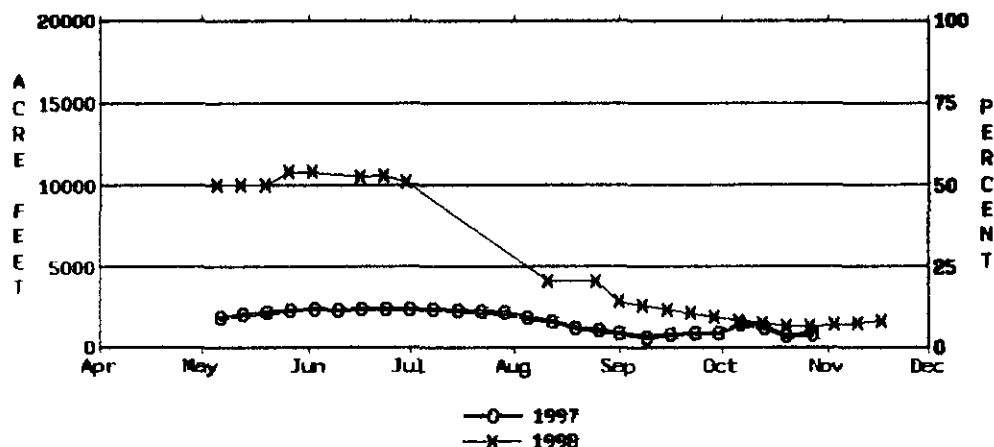
The committee has provided the vehicle for coordination and awareness of impacts caused by each entities operation. In 1998, the committee worked towards improvement of the monitoring system. The coordination continues to provide a unique opportunity for partnerships in water management and show the importance of a watershed basis approach. Data collected will provide decision-makers with some of the key information needed to make those difficult choices when there are conflicts on water management issues.

H:\My Documents\Flow Management Comm\1998 FM Committee Report 2.9.99.doc

Hydropgraphs for Flow Monitoring Sites

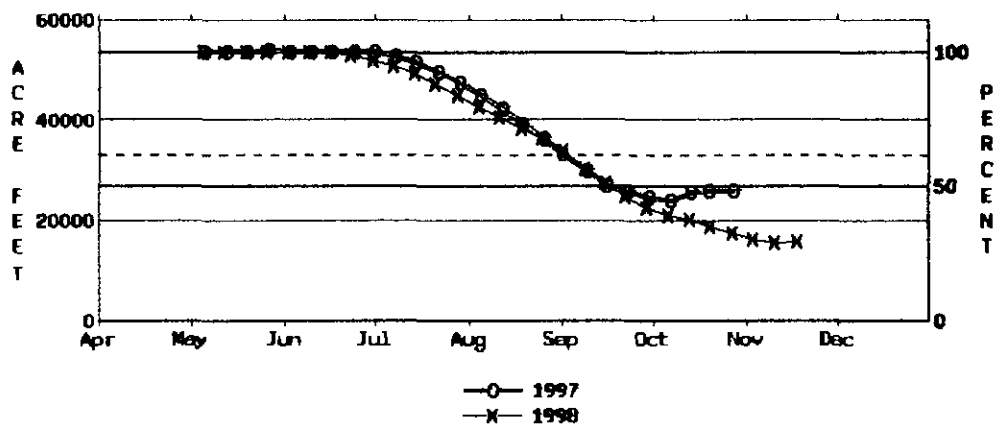
Appendix A

TRASK (BARNEY RESERVOIR CONTENT) (TBRC)



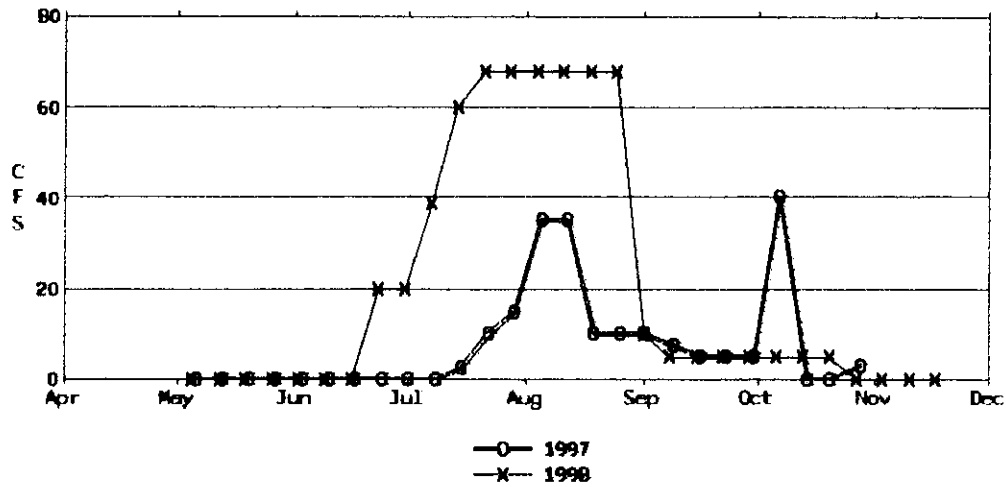
MAXIMUM POOL = 20000 AF AT 1640.5 FEET
 MINIMUM POOL = 0.0 AF AT 1555.0 FEET

SCOGGIN RESERVOIR STORAGE CONTENT (SCO)

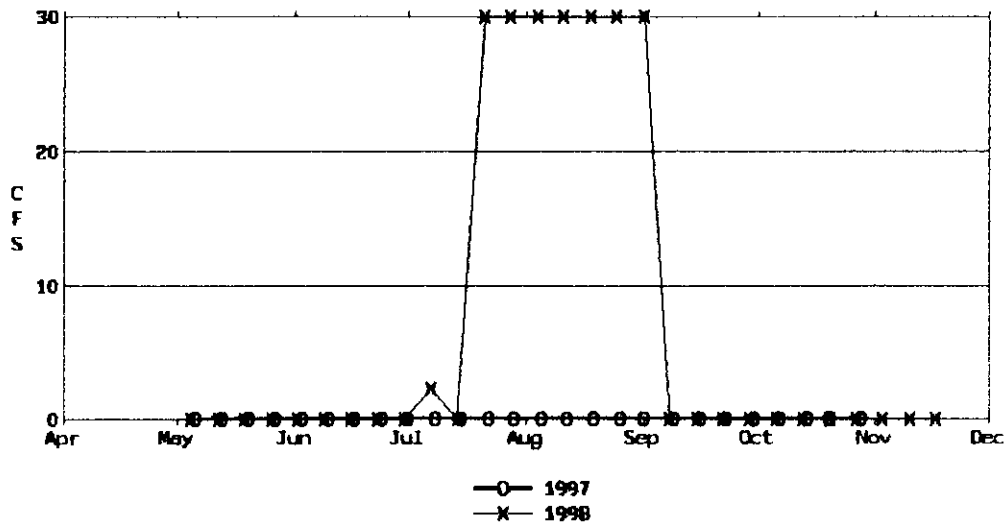


MAXIMUM POOL = 58638 AF AT 303.50 FEET (MAY 1)
 MINIMUM POOL = 88040 AF AT 288.50 FEET (NOV 1)
 ACTIVE CAPACITY = 0 AF AT 295.8 FEET

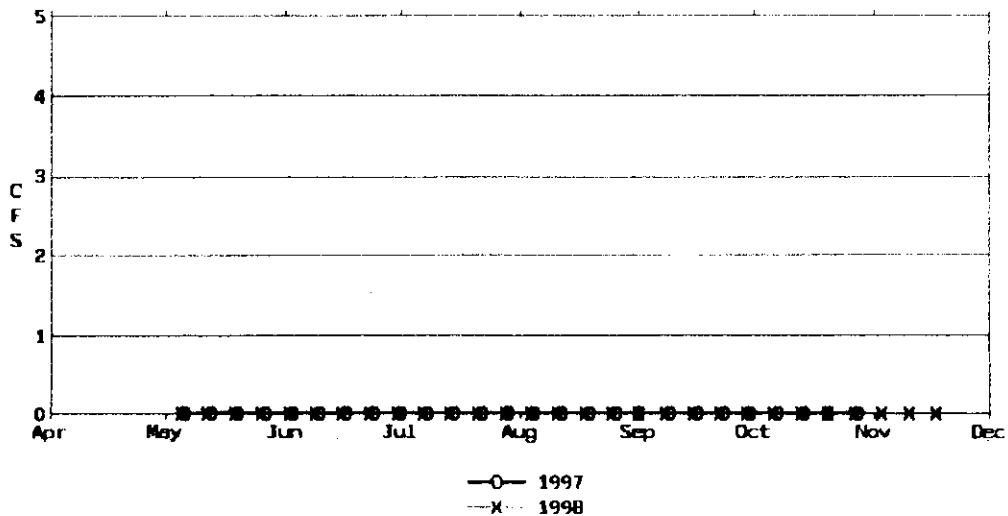
TRASK RELEASE TO TUALATIN RIVER (TRTR) RM 78.00



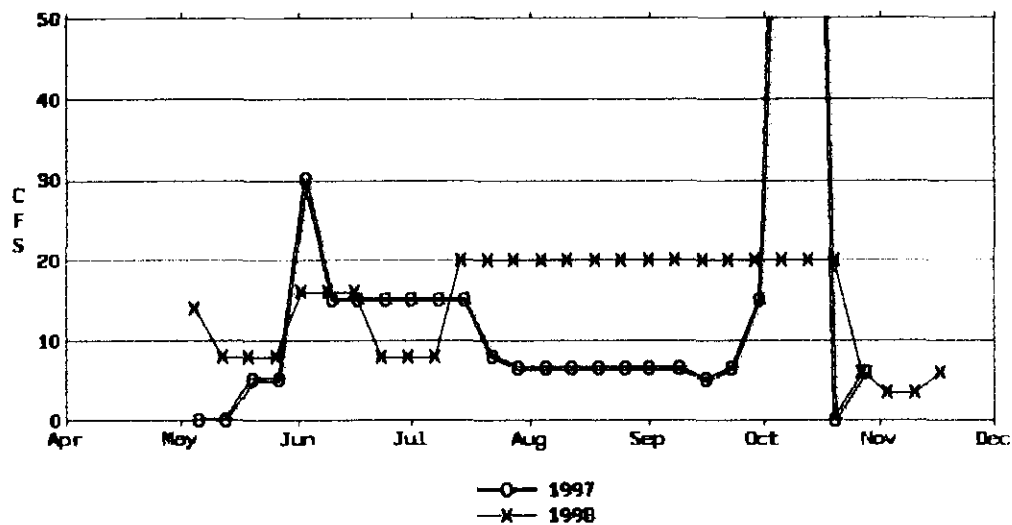
TRASK RELEASE FOR WATER QUALITY (TRWQ)



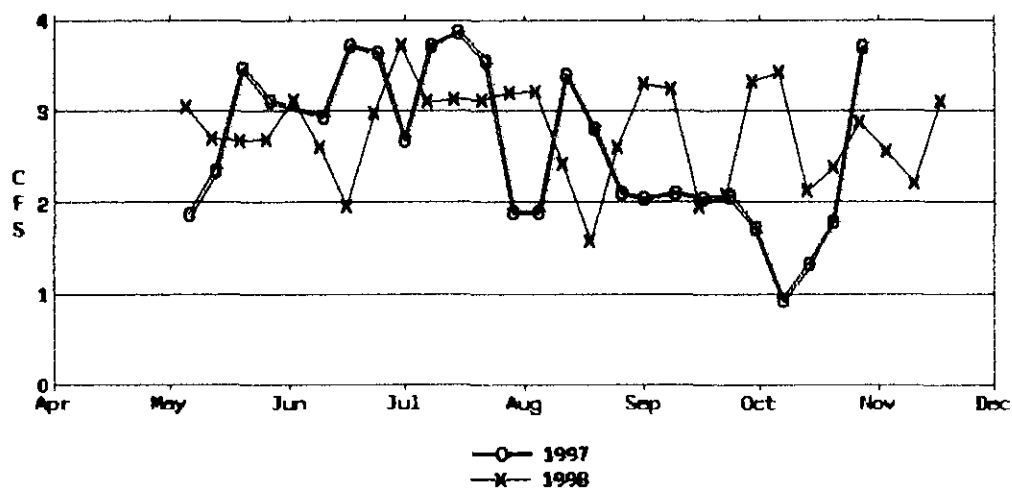
TRASK RELEASE FOR EXCHANGE (TRES)



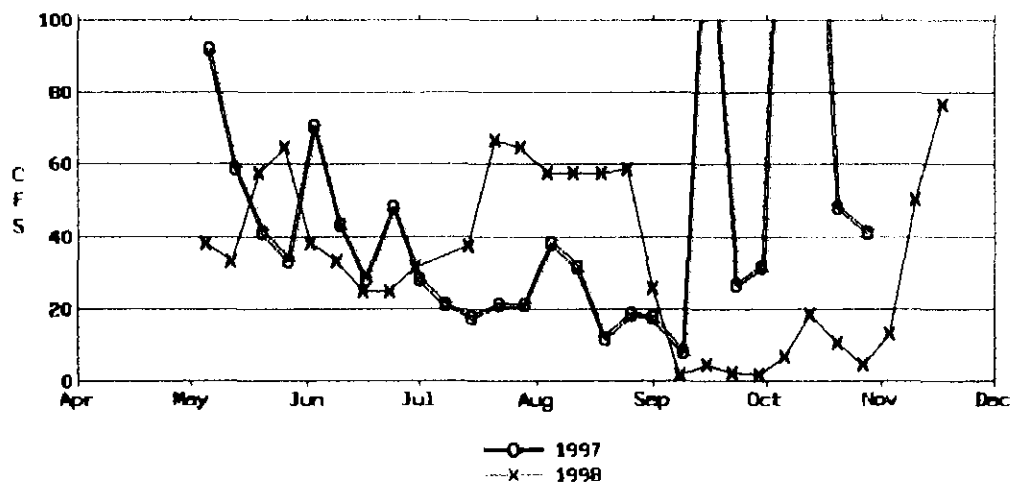
TRASK RELEASE TO NF TRASK RIVER (TRNF)



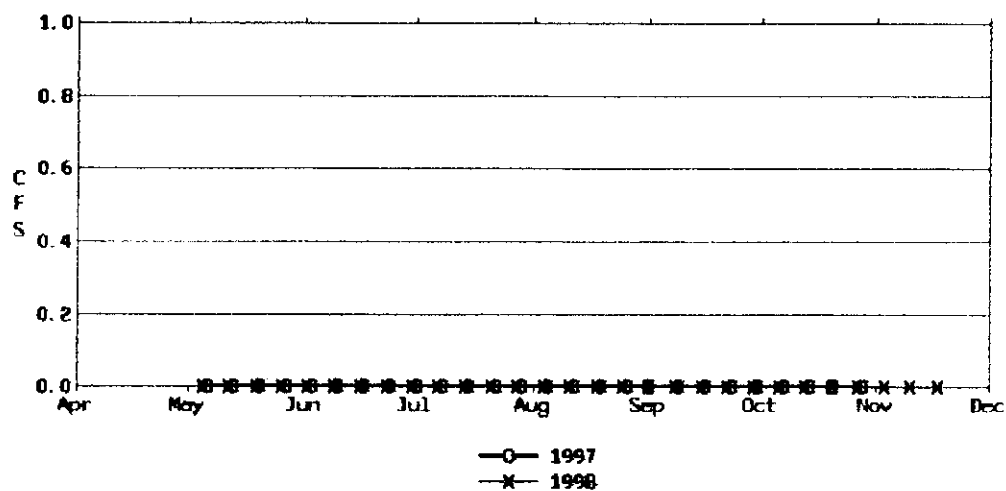
CHERRY GROVE INTAKE - HILLSBORO (CGIC) RM 73.30



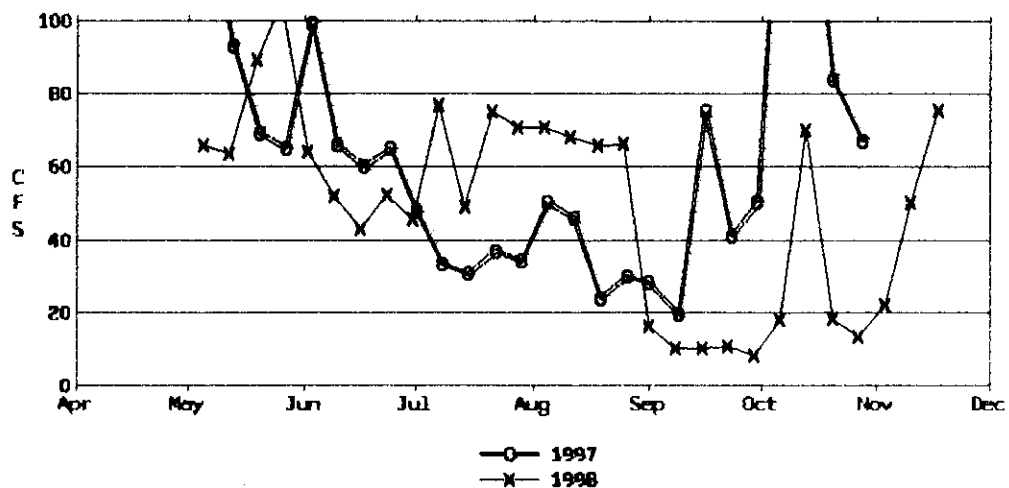
TUALATIN RIVER BELOW LEE FALLS (TRLF) RM 70.70



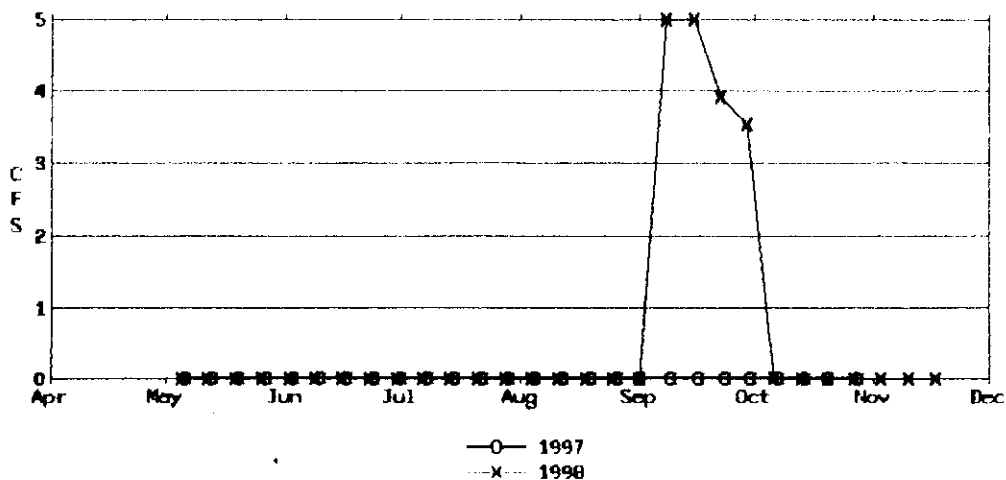
TVID - PATTON VALLEY RIV. TURNOUT #2 (PVR2) **RM 64.26**



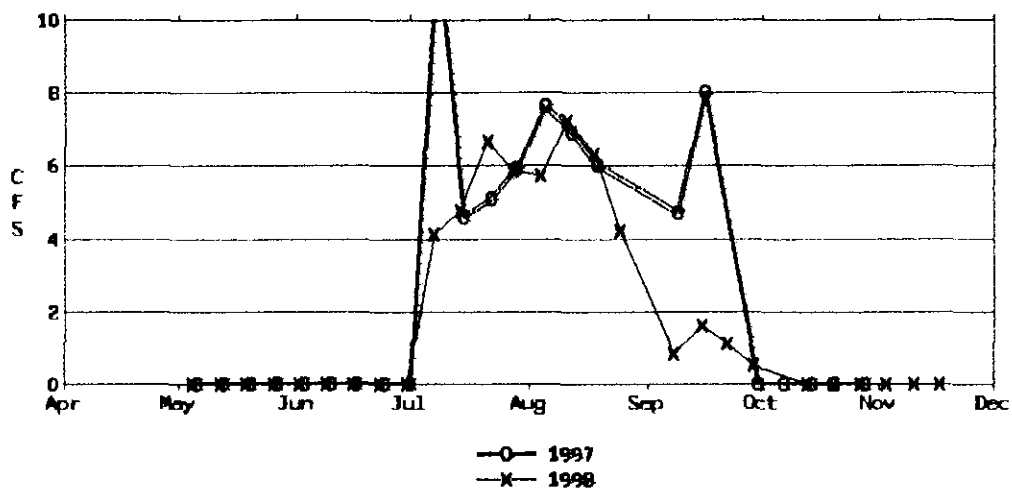
TUALATIN RIVER ABOVE GASTON (GAST) **RM 63.87**



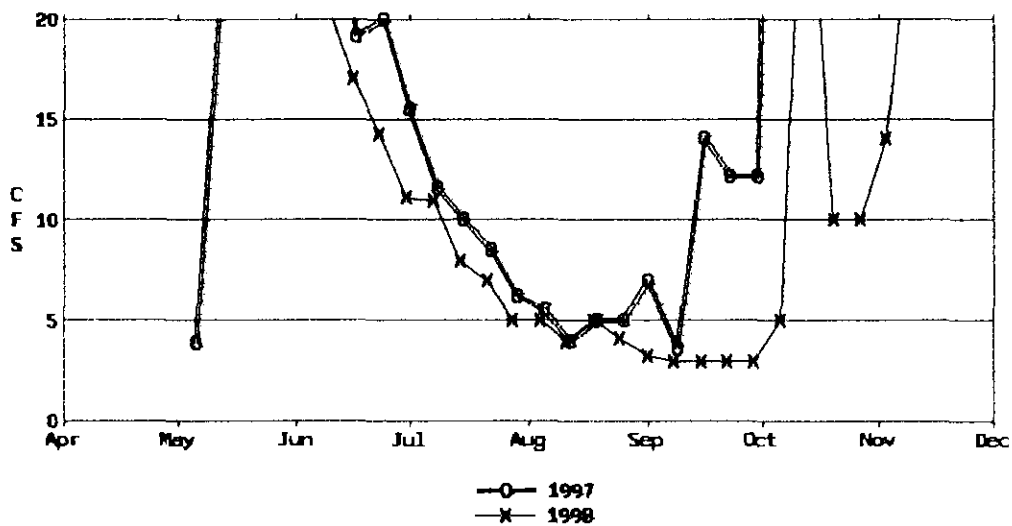
TVID - PATTON VALLEY RIV. TURNOUT #1 (PVR1) **RM 63.13**



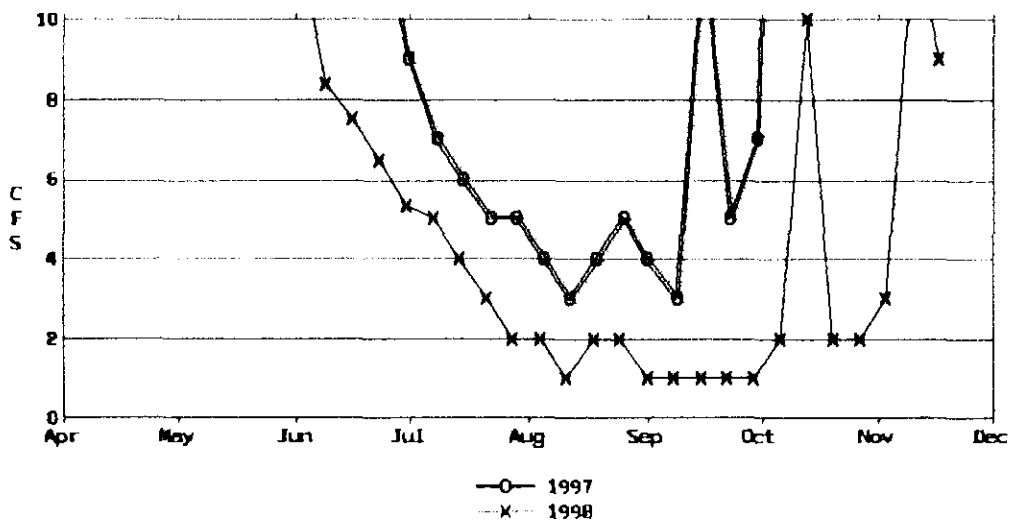
WAPATO CANAL DIVERSION (WAP0) RM 62.00



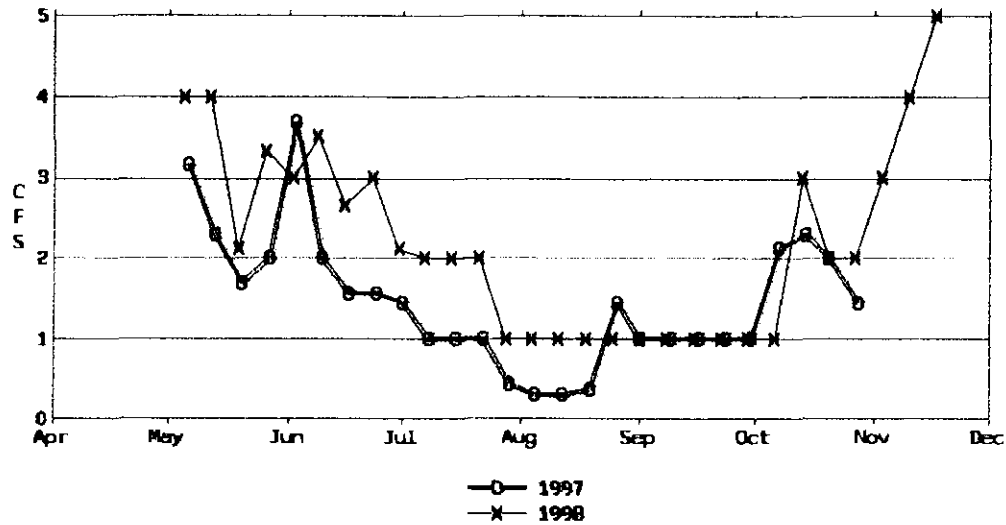
SCOGGIN CREEK ABOVE HAGG LAKE (SCLO)



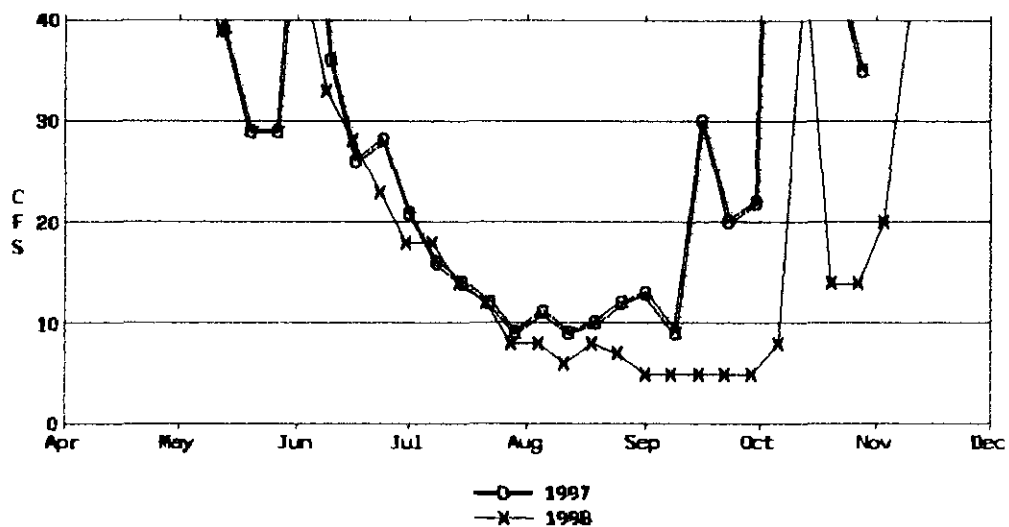
SAIN CREEK ABOVE HAGG LAKE (SCH0)



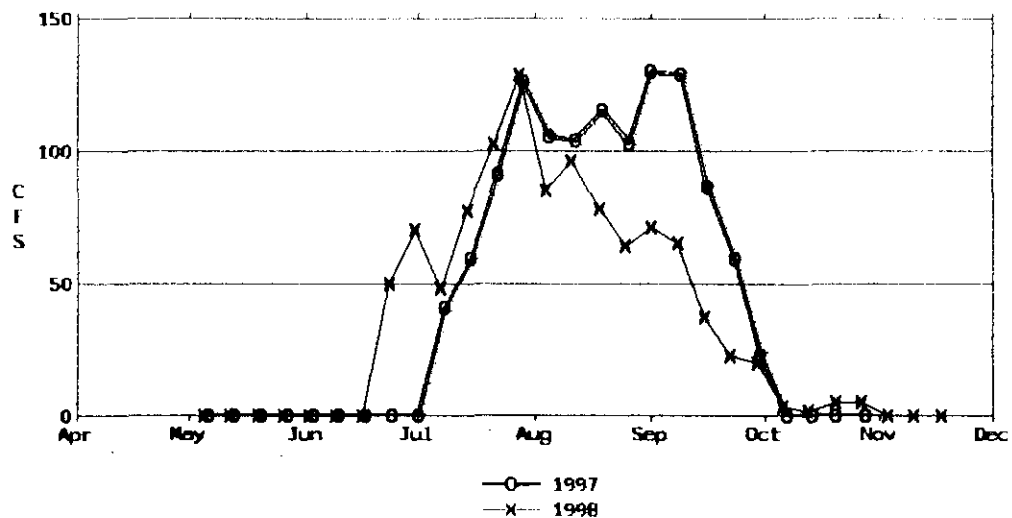
TANNER CREEK ABOVE HAGG LAKE (TANO)



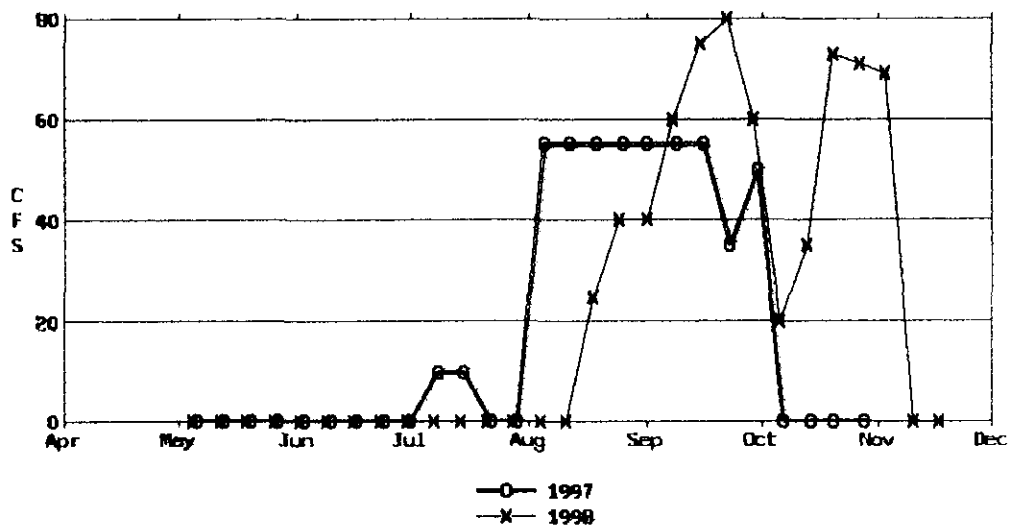
SCOGGINS RESERVOIR COMP. INFLOW (SRCI)



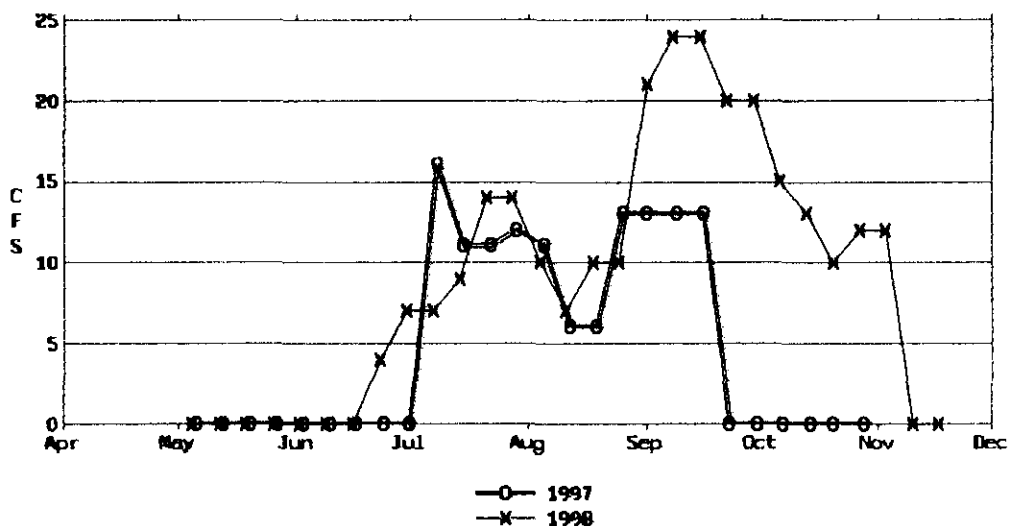
TVID RELEASE FROM SCOGGIN RES. (SRTV)



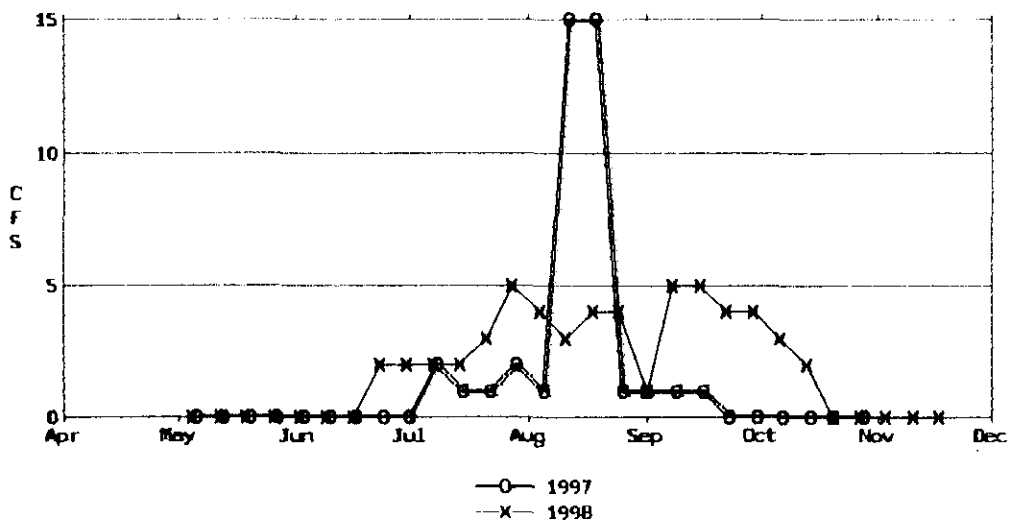
USA RELEASE FROM SCOGGIN RES. (SRUS)



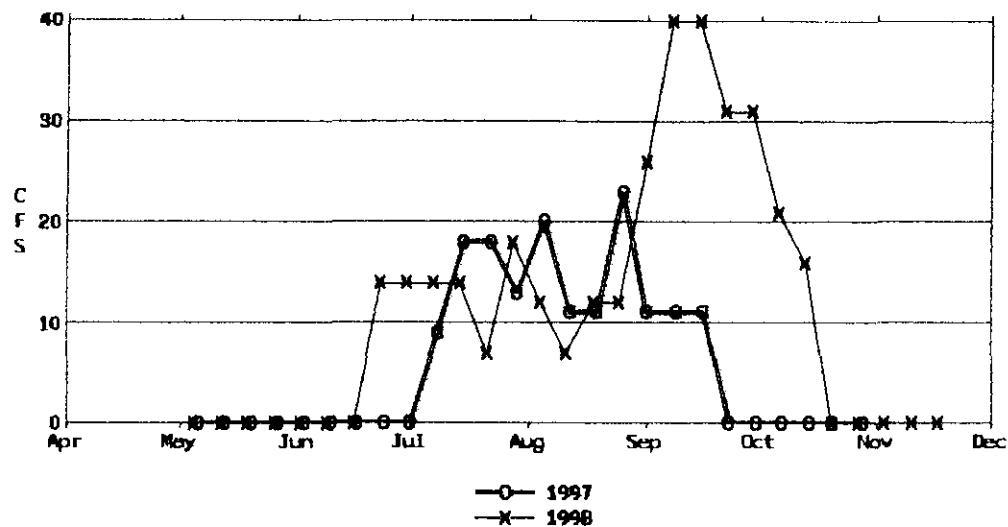
BEAVERTON RELEASE FROM SCOGGIN RES. (SRBV)



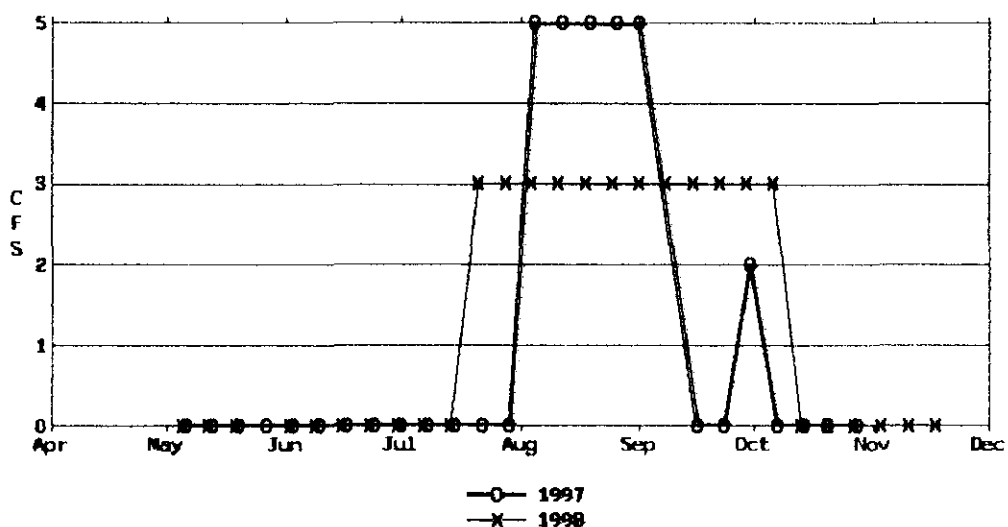
FOREST GROVE RELEASE FROM SCOGG. RES. (SRFG)



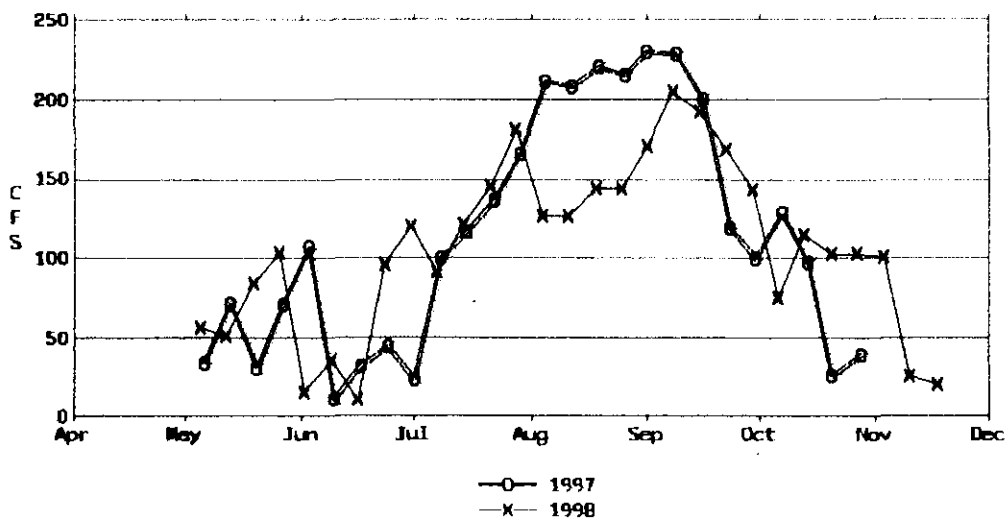
HILLSBORO RELEASE FROM SCOGGIN RES. (SRHL)



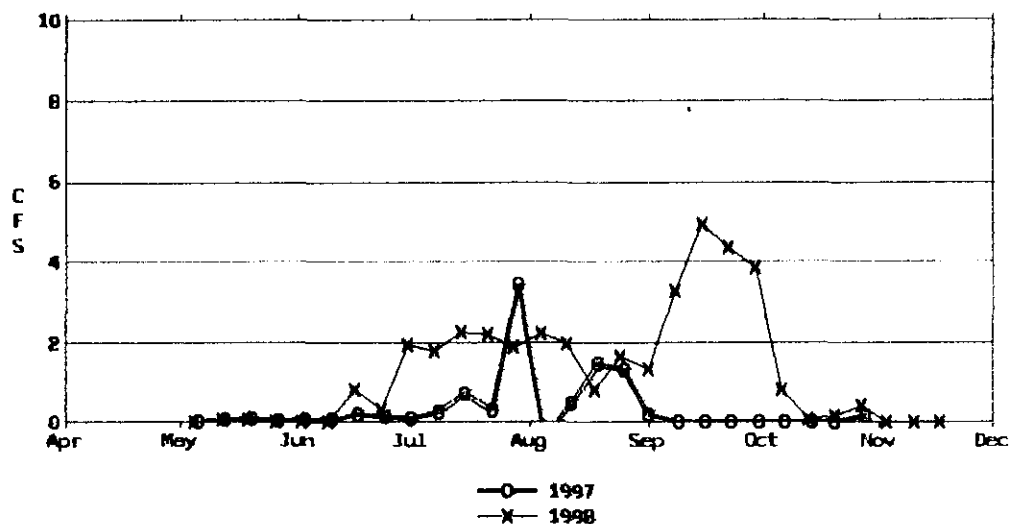
LOC RELEASE FROM SCOGGIN RES. (SRLO)



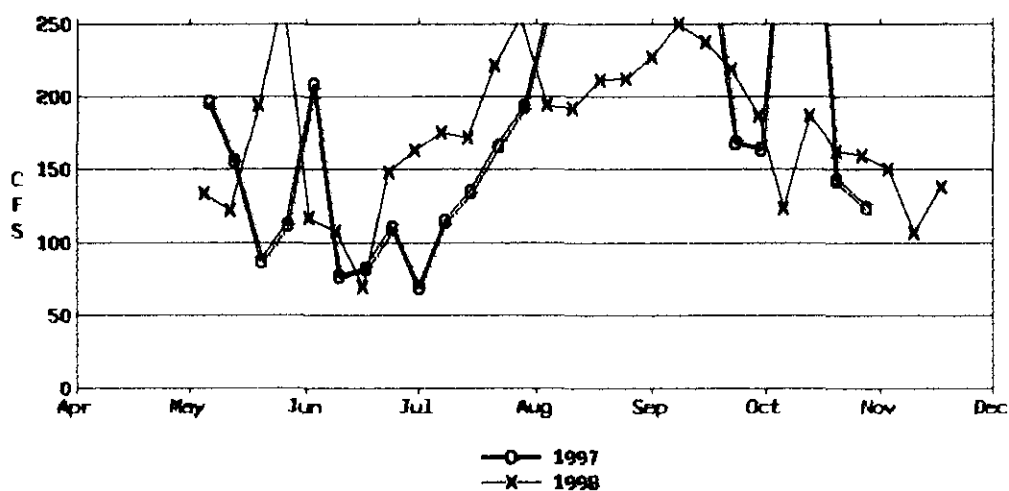
SCOGGIN CR. BELOW HAGG LAKE (RELEASE) (SC00)



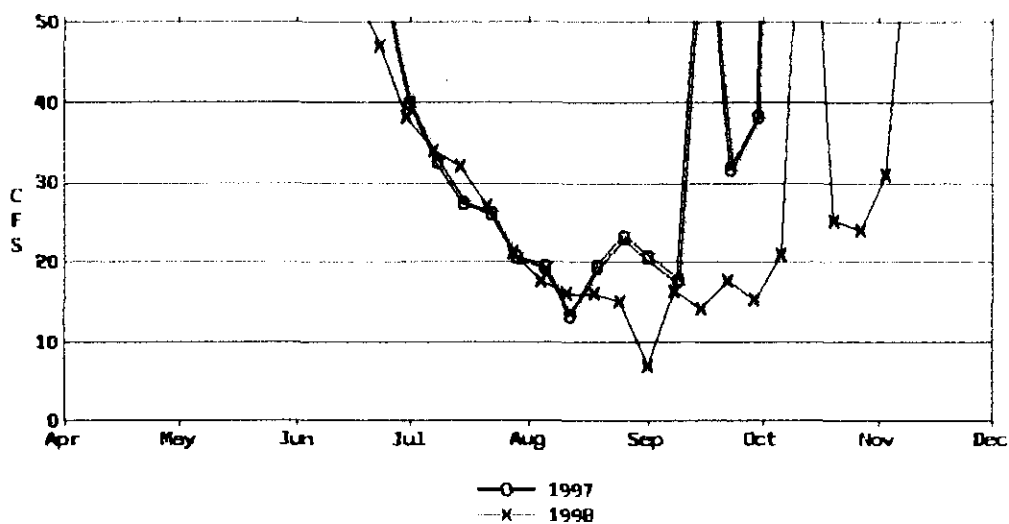
TVID - PATT. VALLEY PUMP PLANT DIV. (PVPP)



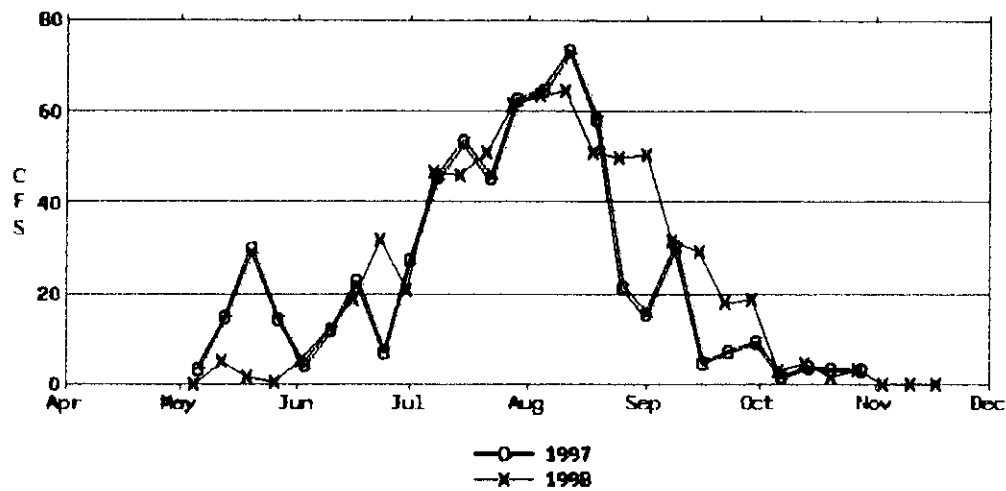
TUALATIN RIV. AT DILLEY BR. (DLLO) RM 58.82



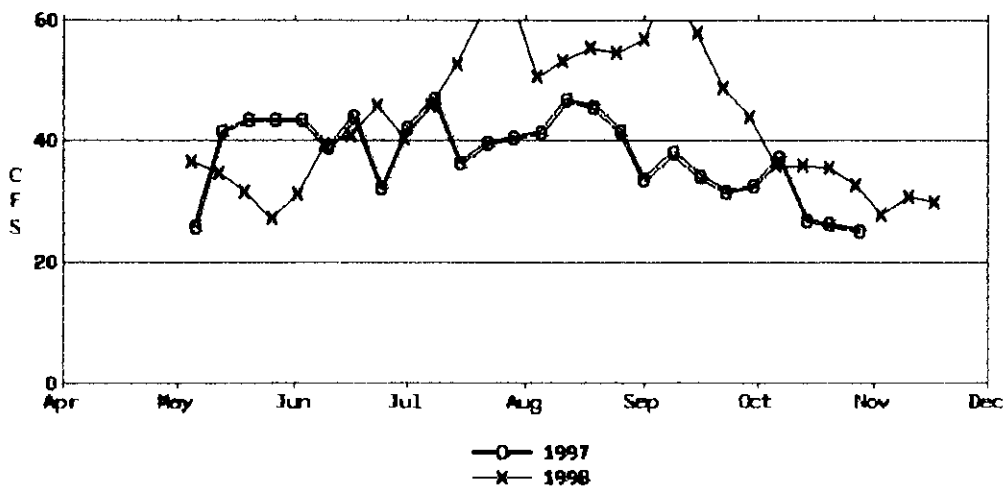
GALES CR. ON OLD HWY 47 BRIDGE (GALES)



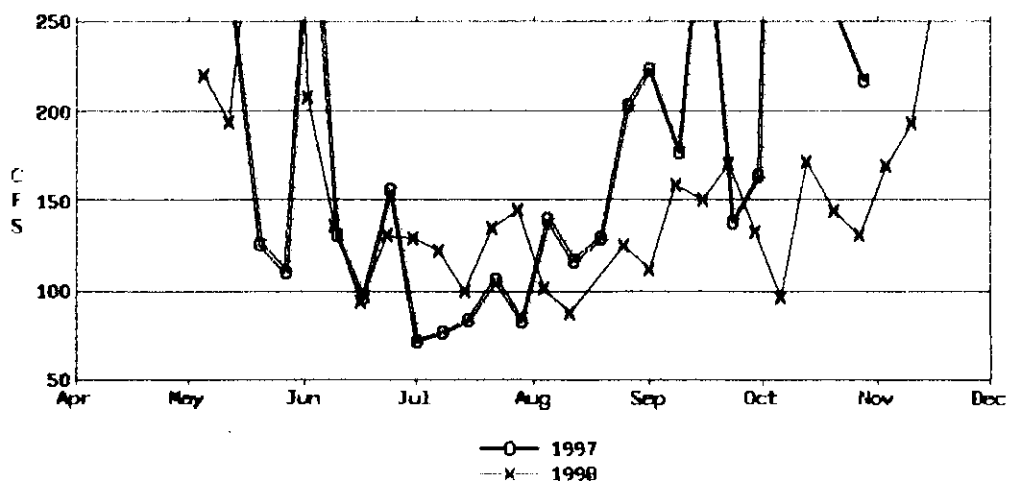
TVID - SPRINGHILL PUMP PLANT DIV. (SHPP)
RM 56.10



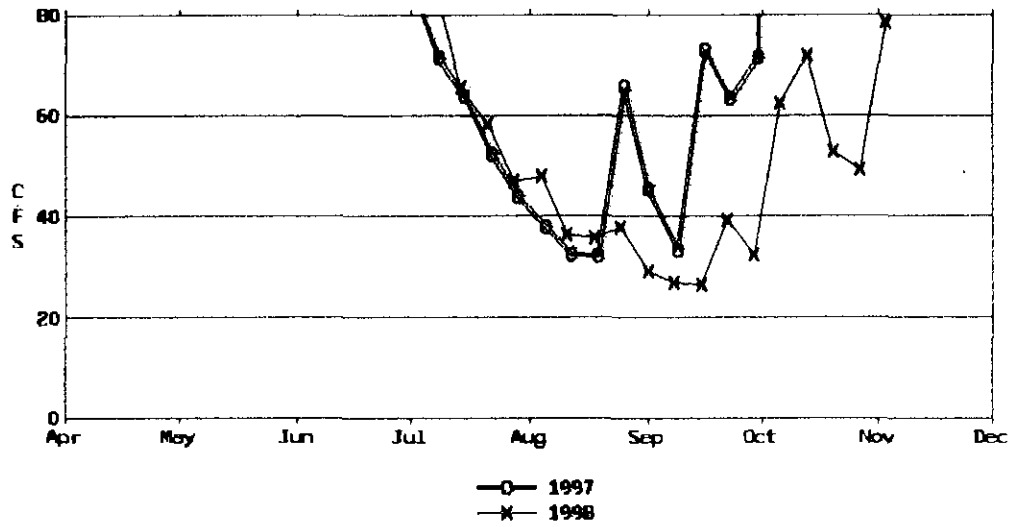
JOINT WATER DIVERSION AT SHPP PLANT (JWCS)
RM 56.10



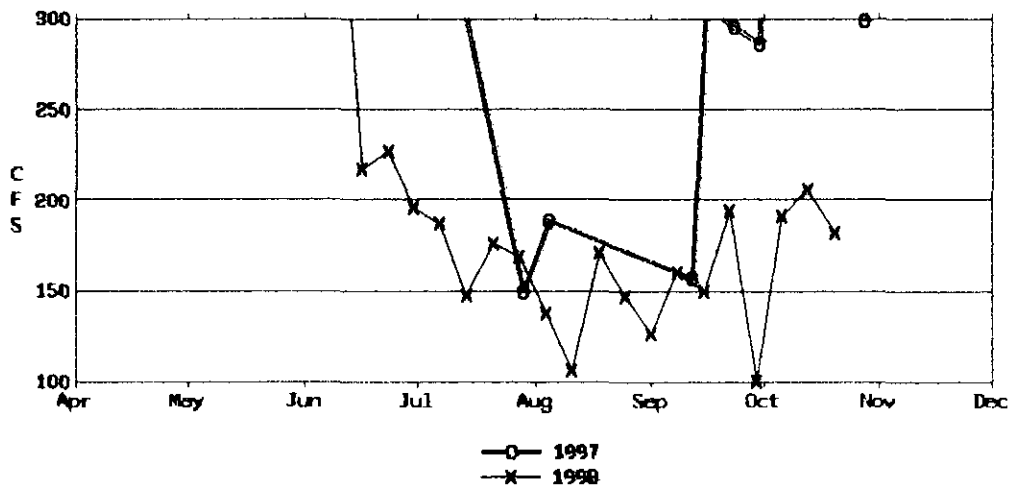
TUALATIN RIV. AT GOLF COURSE RD. (TRGC)
RM 51.54



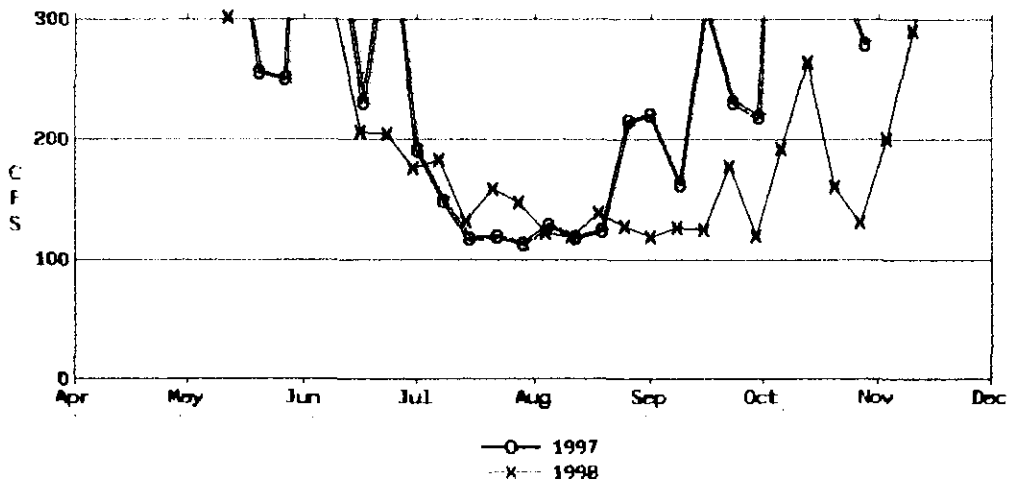
DAIRY CREEK AT HWY 8 BRIDGE (DAIRY)



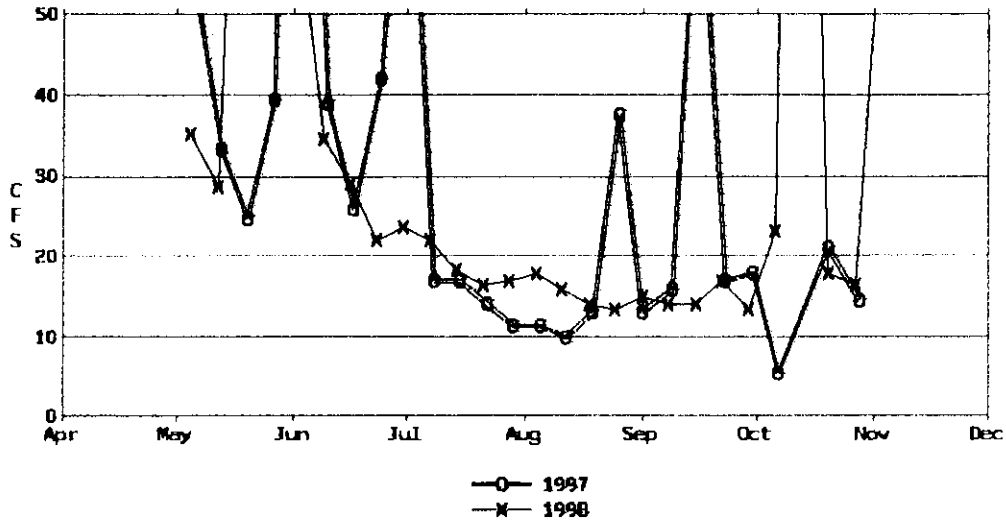
TUALATIN RIV. AT HWY 219 BRIDGE (TRJB) RM 44.40



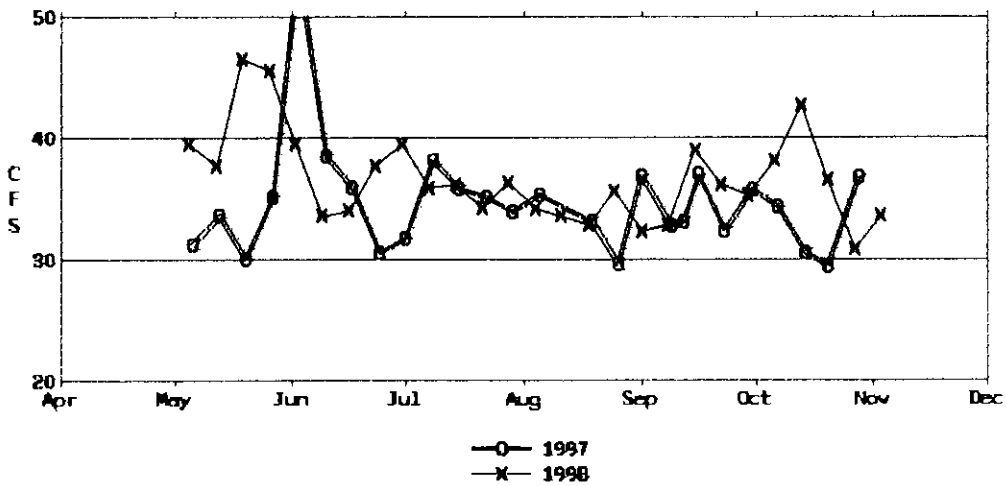
TUALATIN RIV. AT ROOD RD. BRIDGE (ROOD) RM 38.44



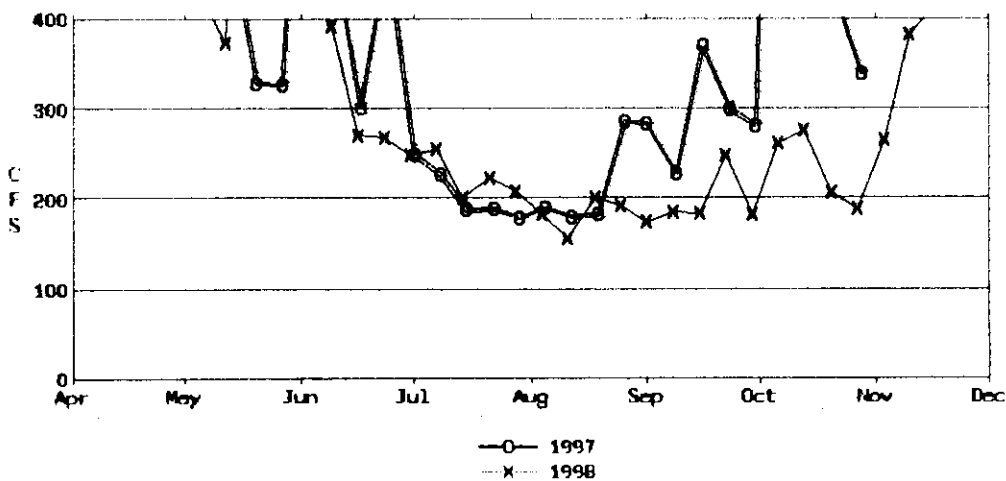
ROCK CREEK AT TV HWY (RCTV)



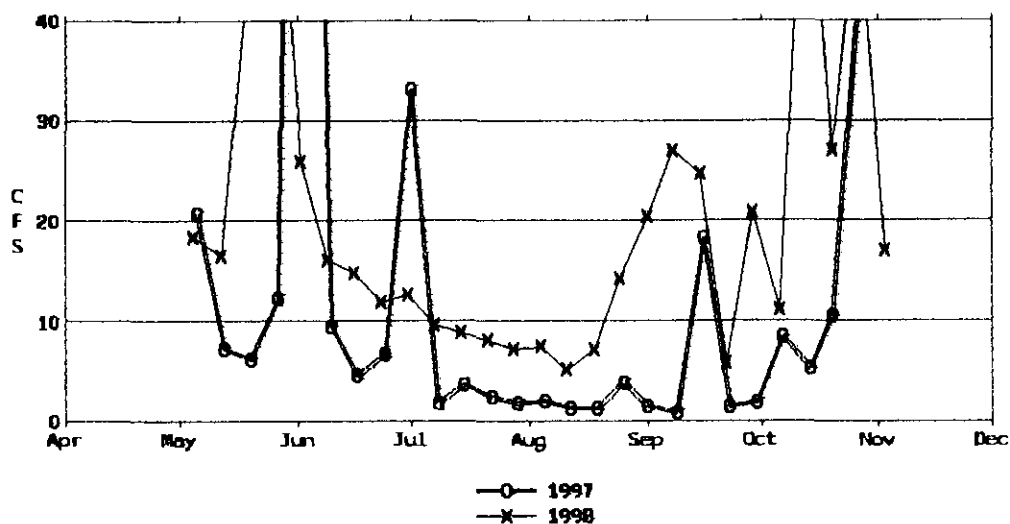
USA ROCK CREEK WWTP DISCHARGE (USARC) RM 38.08



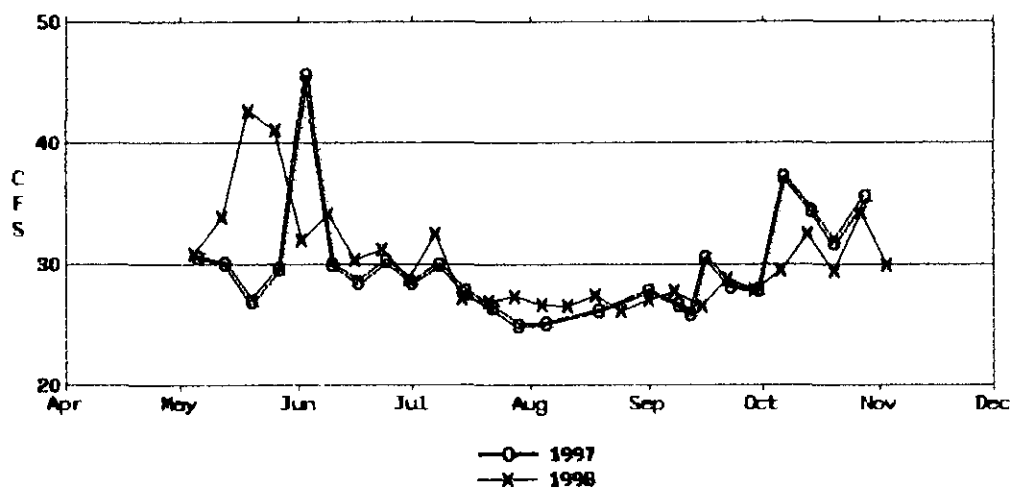
TUALATIN R. AT FARMINGTON RD. BRIDGE (FRMO) RM 33.30



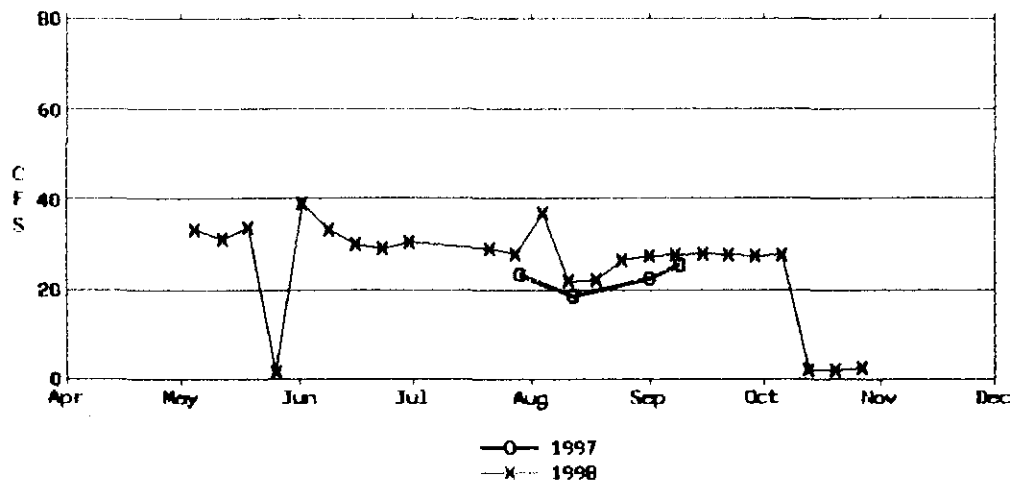
FANNO CREEK AT DURHAM RD. BRIDGE (FANO)



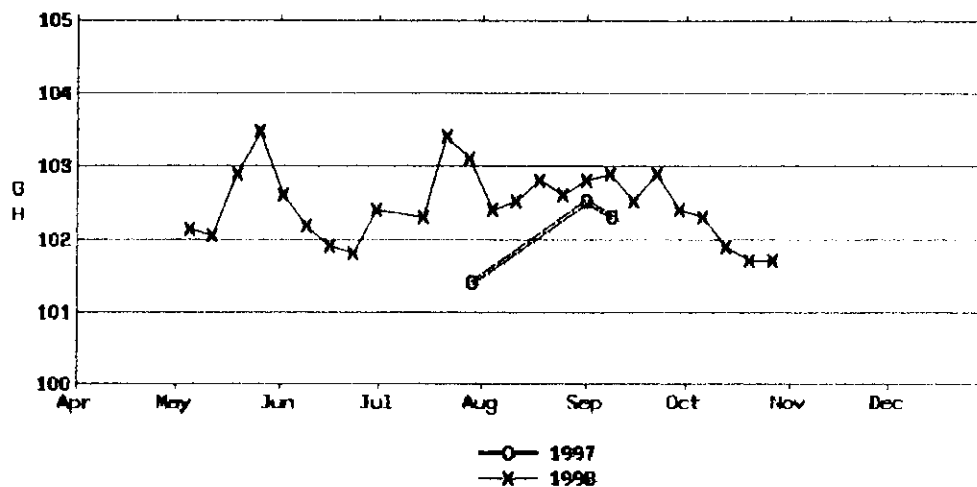
USA DURHAM WWTP DISCHARGE (USADH) RM 9.33



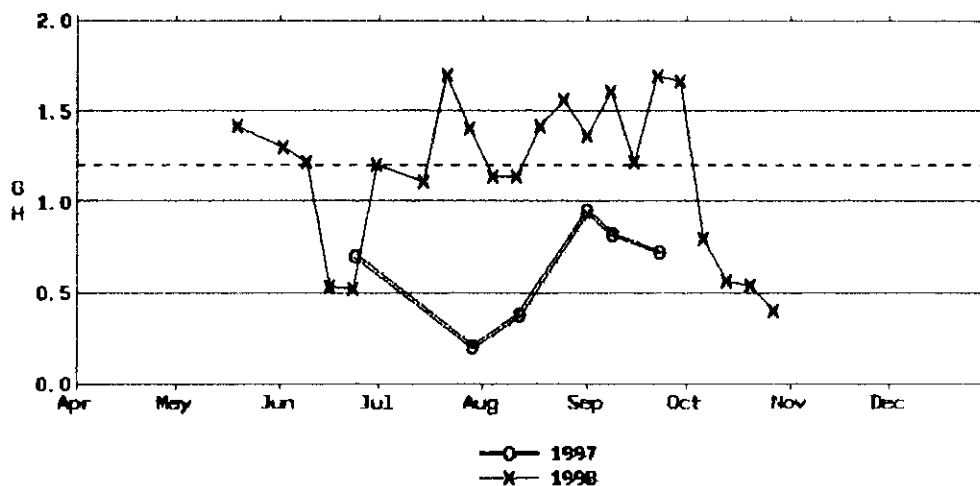
LAKE OSWEGO CORP. CANAL DIVERSION (LOCL) RM 6.70



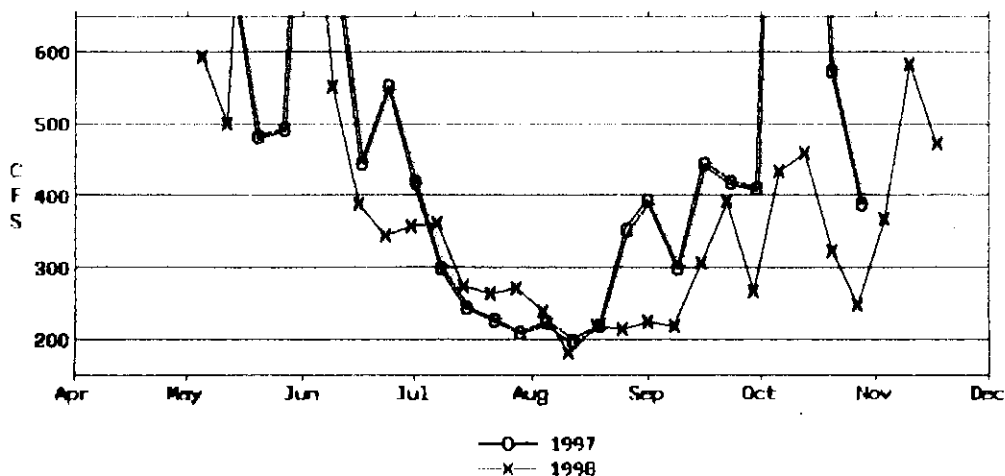
TUALATIN RIV. AT LOC CANAL (LOCS) RM 6.70



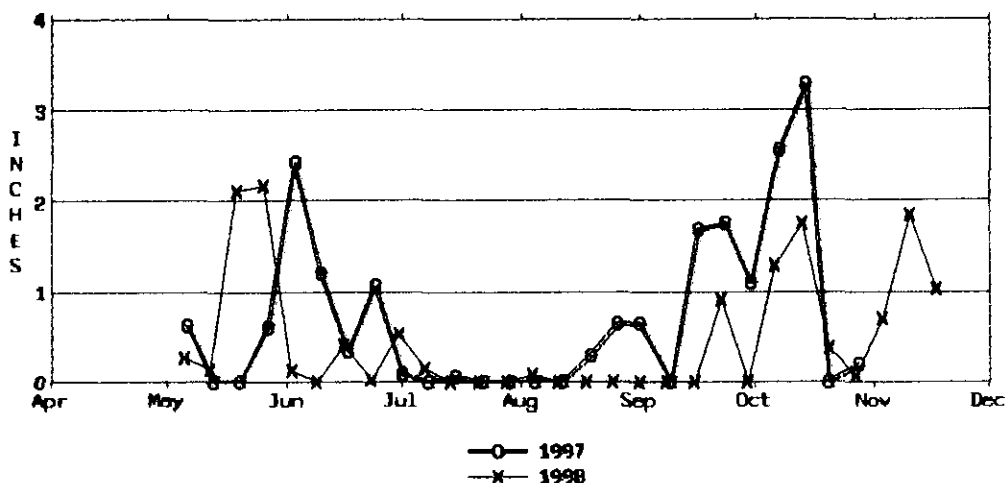
TUALATIN RIV. AT LOC DAM (LOCD) RM 3.45



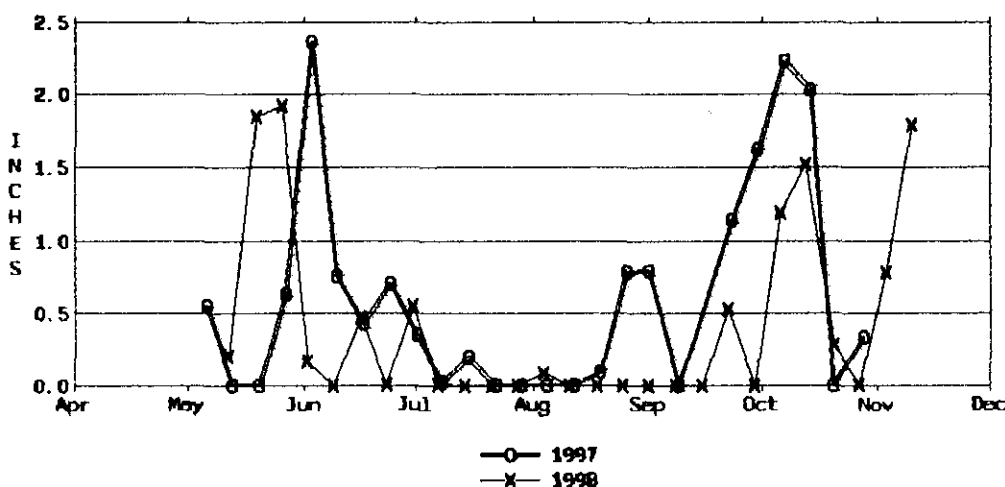
TUALATIN RIV. AT WEST LINN (WSLO) RM 1.75



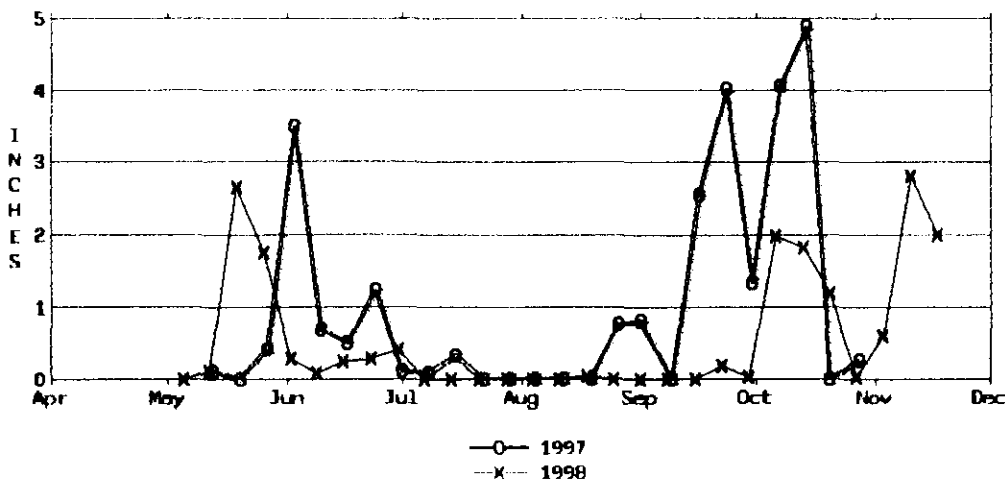
SCOGGIN RESERVOIR STATION (SCOP) **PREVIOUS 7 DAYS ACCUMULATED PRECIPITATION**



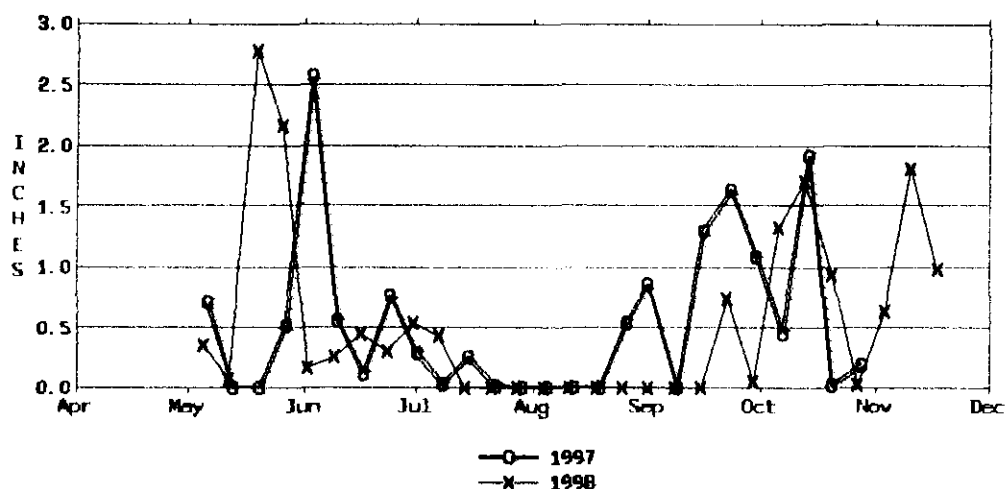
FOREST GROVE STATION (FGOP) **PREVIOUS 7 DAYS ACCUMULATED PRECIPITATION**



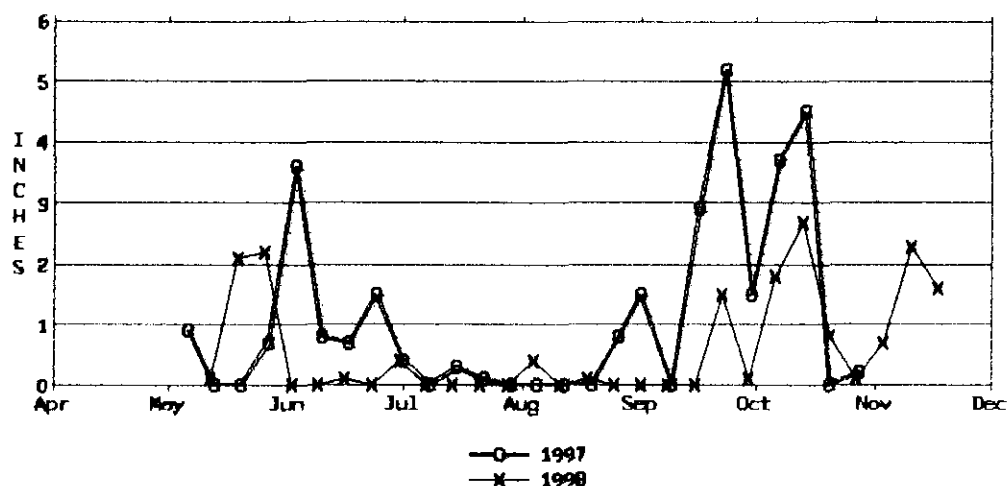
HAINES FALLS STATION (HFOP) **PREVIOUS 7 DAYS ACCUMULATED PRECIPITATION**



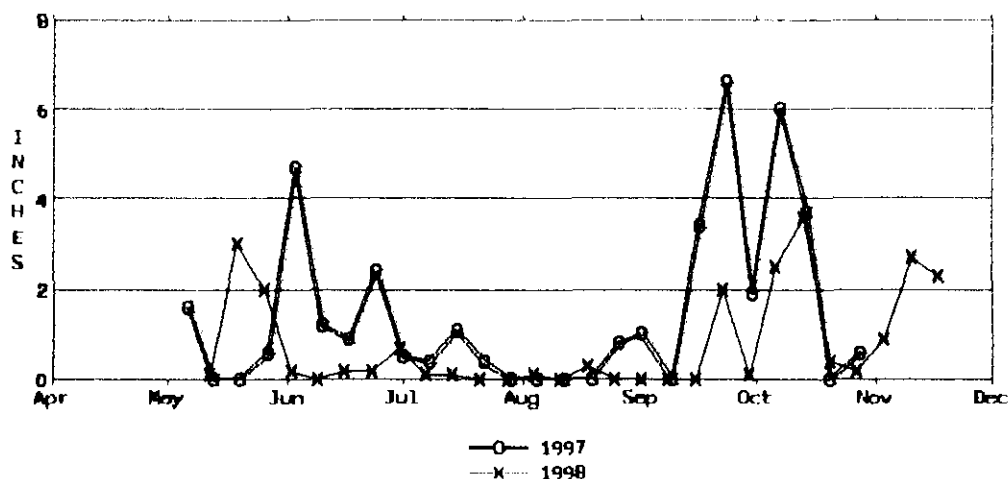
JOINT WATER PLANT STATION (JWOP) PREVIOUS 7 DAYS ACCUMULATED PRECIPITATION



SAIN CREEK STATION (SECO) PREVIOUS 7 DAYS ACCUMULATED PRECIPITATION



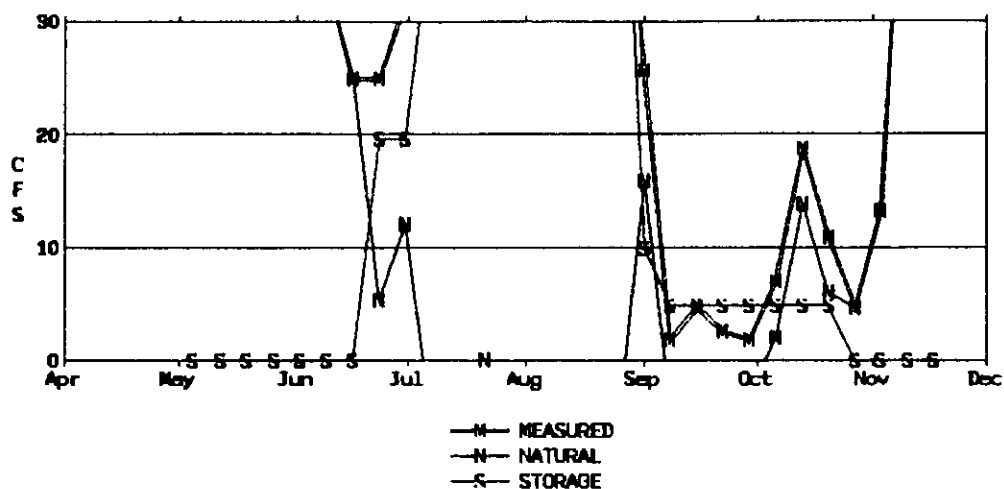
SADDLE MOUNTAIN STATION (SDMO) PREVIOUS 7 DAYS ACCUMULATED PRECIPITATION



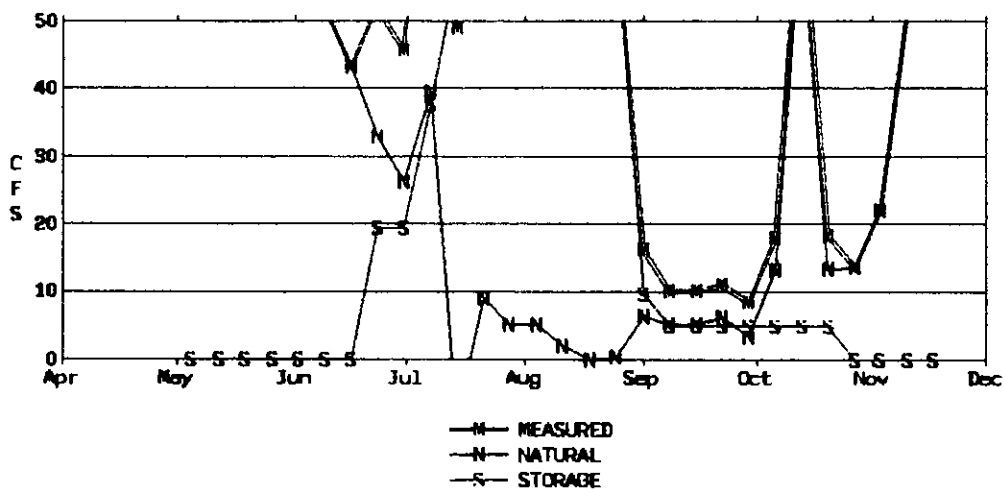
**Hydrographs for Natural Flow
Determination and Data Tables**

Appendix B

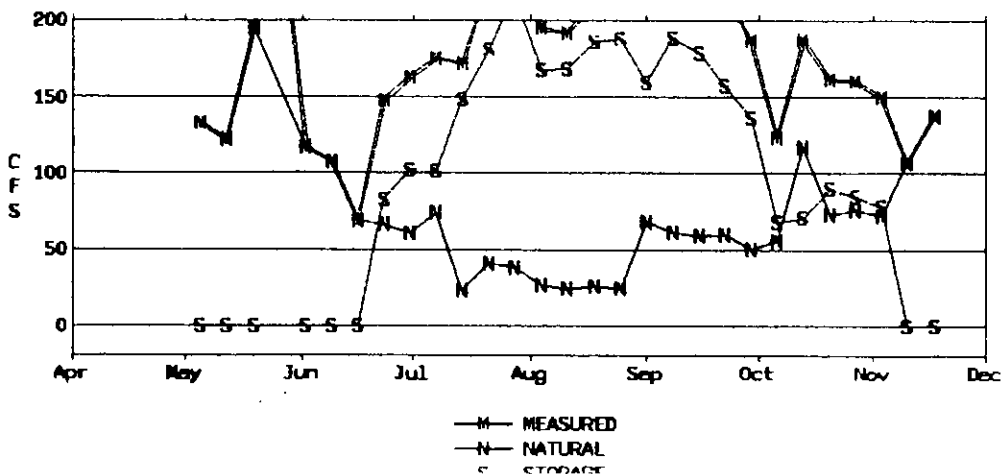
NATURAL FLOW AT LEE FALLS ON TUALATIN RIVER (NFTRLF) RM 70.70



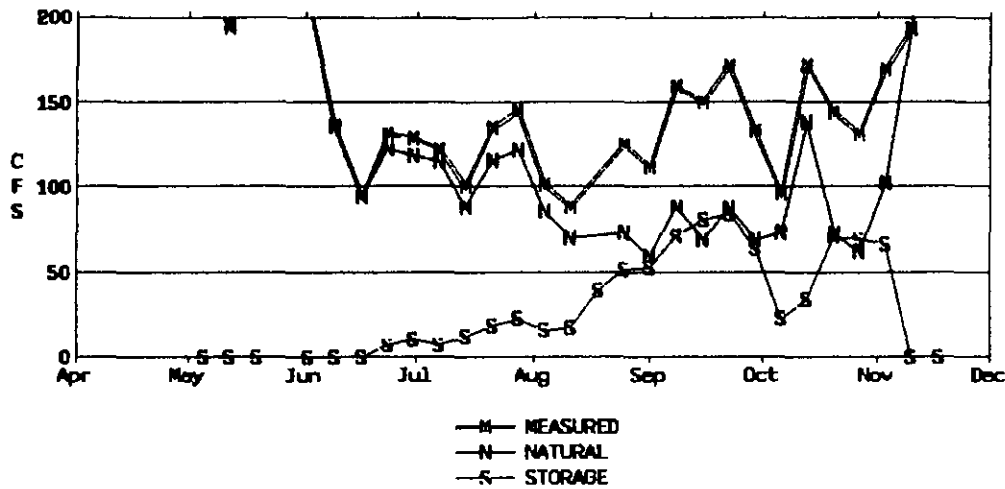
NATURAL FLOW AT GASTON GAUGE ON TUALATIN RIVER (NFGAST) RM 63.87



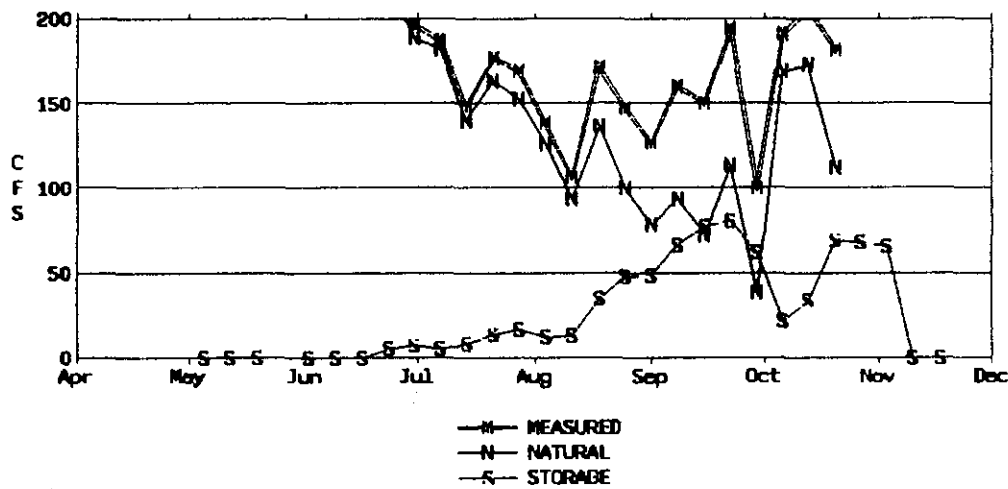
NATURAL FLOW AT DILLEY GAUGE ON TUALATIN RIVER (NFDLLO) RM 58.82



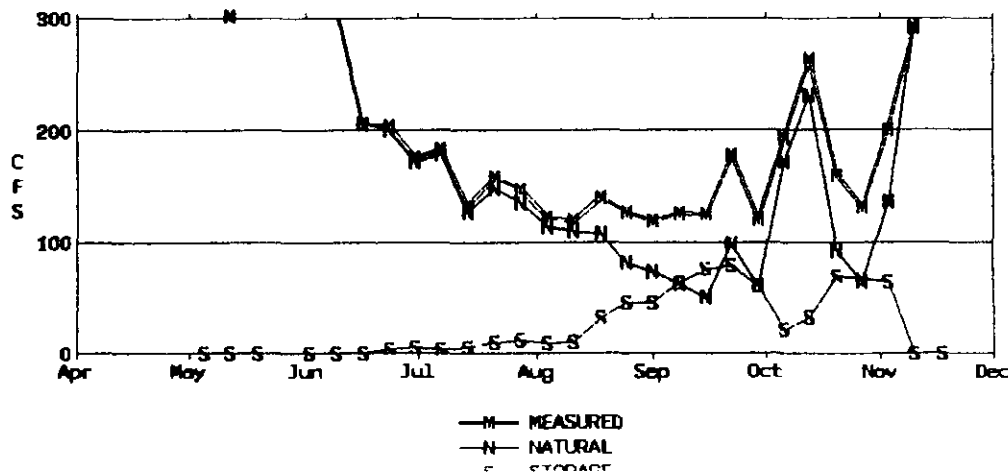
NATURAL FLOW AT GOLF COURSE BRIDGE GAUGE ON TUALATIN RIVER (NFTRGC) RM 51.54



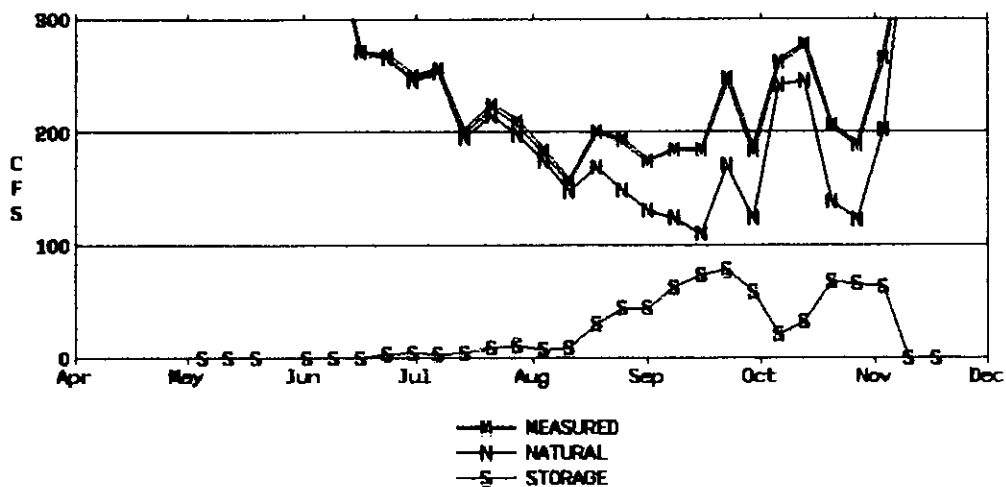
NATURAL FLOW AT HWY 219 BRIDGE GAUGE ON TUALATIN RIVER (NFTRJB) RM 44.40



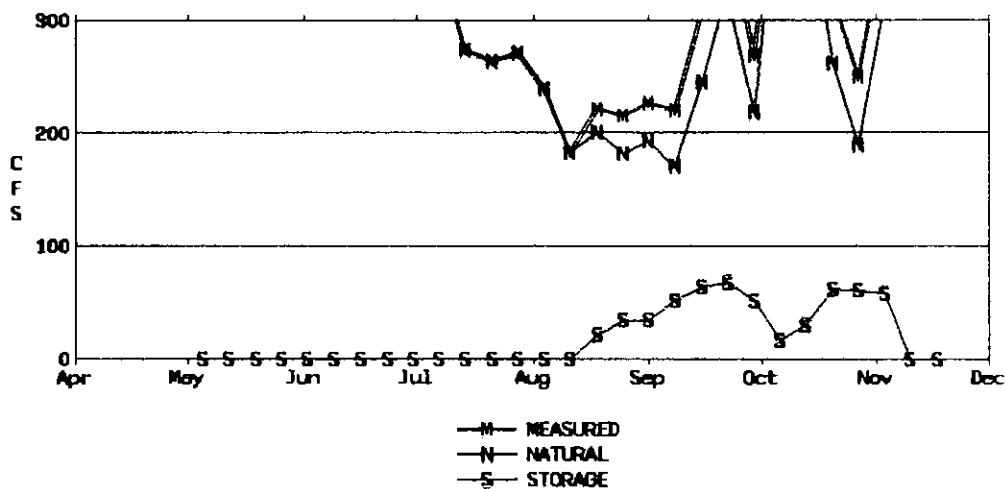
NATURAL FLOW AT ROOD BRIDGE RD. ON TUALATIN RIVER (NFROOD) RM 38.44



NATURAL FLOW AT FARMINGTON RD. BRIDGE ON TUALATIN RIVER (NFFRMO) RM 33.30



NATURAL FLOW AT WEST LINN ON TUALATIN RIVER (NFWSLO) RM 1.75



NATURAL FLOW
AT WEST LINN ON TUALATIN RIVER

	NFWSLO	WSLO	STORAGE	SRUS	LOSS (16%)
05-MAY-98	594.00	594	0.00	0	0.00
12-MAY-98	501.00	501	0.00	0	0.00
19-MAY-98	1163.00	1163	0.00	0	0.00
26-MAY-98	1628.00	1628	0.00	0	0.00
02-JUN-98	1000.00	1000	0.00	0	0.00
09-JUN-98	552.00	552	0.00	0	0.00
16-JUN-98	388.00	388	0.00	0	0.00
23-JUN-98	344.00	344	0.00	0	0.00
30-JUN-98	359.00	359	0.00	0	0.00
07-JUL-98	363.00	363	0.00	0	0.00
14-JUL-98	274.00	274	0.00	0	0.00
21-JUL-98	264.00	264	0.00	0	0.00
28-JUL-98	271.00	271	0.00	0	0.00
04-AUG-98	239.00	239	0.00	0	0.00
11-AUG-98	182.00	182	0.00	0	0.00
18-AUG-98	200.00	221	21.00	25	4.00
25-AUG-98	181.40	215	33.60	40	6.40
01-SEP-98	192.40	226	33.60	40	6.40
08-SEP-98	169.60	220	50.40	60	9.60
15-SEP-98	245.00	308	63.00	75	12.00
22-SEP-98	324.80	392	67.20	80	12.80
29-SEP-98	217.60	268	50.40	60	9.60
06-OCT-98	417.20	434	16.80	20	3.20
13-OCT-98	430.60	460	29.40	35	5.60
20-OCT-98	261.68	323	61.32	73	11.68
27-OCT-98	189.36	249	59.64	71	11.36
03-NOV-98	309.04	367	57.96	69	11.04
10-NOV-98	584.00	584	0.00	0	0.00
17-NOV-98	472.00	472	0.00	0	0.00

NFWSLO = WSLO - STORAGE
 WHERE STORAGE = SRUS - LOSS
 WHERE LOSS = SRUS * .16

NATURAL FLOW
AT FARMINGTON RD. BRIDGE ON T.R.

	NFFRMO	FRMO	STORAGE	SRUS	SRLO	SRTV	LOSS (8.0%)
05-MAY-98	427.0000	427	0.0000	0	0	0	0.0000
12-MAY-98	374.0000	374	0.0000	0	0	0	0.0000
19-MAY-98	830.0000	830	0.0000	0	0	0	0.0000
26-MAY-98		1323		0		0	
02-JUN-98	722.0000	722	0.0000	0	0	0	0.0000
09-JUN-98	392.0000	392	0.0000	0	0	0	0.0000
16-JUN-98	271.0000	271	0.0000	0	0	0	0.0000
23-JUN-98	264.7800	268	3.2200	0	0	50	0.2800
30-JUN-98	244.4920	249	4.5080	0	0	70	0.3920
07-JUL-98	252.9088	256	3.0912	0	0	48	0.2688
14-JUL-98	195.0412	200	4.9588	0	0	77	0.4312
21-JUL-98	213.6068	223	9.3932	0	3	103	0.8168
28-JUL-98	196.9324	208	11.0676	0	3	129	0.9624
04-AUG-98	174.7660	183	8.2340	0	3	85	0.7160
11-AUG-98	147.0576	156	8.9424	0	3	96	0.7776
18-AUG-98	169.2168	200	30.7832	25	3	78	2.6768
25-AUG-98	148.3184	192	43.6816	40	3	64	3.7984
01-SEP-98	129.8676	174	44.1324	40	3	71	3.8376
08-SEP-98	122.8540	185	62.1460	60	3	65	5.4040
15-SEP-98	109.8572	184	74.1428	75	3	37	6.4472
22-SEP-98	170.1588	248	77.8412	80	3	23	6.7688
29-SEP-98	123.7520	183	59.2480	60	3	20	5.1520
06-OCT-98	240.5824	262	21.4176	20	3	4	1.8624
13-OCT-98	244.6712	277	32.3288	35	0	2	2.8112
20-OCT-98	138.5180	206	67.4820	73	0	5	5.8680
27-OCT-98	122.3580	188	65.6420	71	0	5	5.7080
03-NOV-98	201.5200	265	63.4800	69	0	0	5.5200
10-NOV-98	382.0000	382	0.0000	0	0	0	0.0000
17-NOV-98	415.0000	415	0.0000	0	0	0	0.0000

NFFRMO = FRMO - STORAGE

WHERE STORAGE = SRUS + SRLO + (SRTV * .07) - LOSS

WHERE LOSS = (SRUS + SRLO + (SRTV * .07)) * .080

NATURAL FLOW
AT ROOD BRIDGE RD. ON T.R.

	NFROOD	ROOD	STORAGE	SRUS	SRLO	SRTV	LOSS (6.6%)
05-MAY-98	338.00000	338.0	0.00000	0	0	0	0.00000
12-MAY-98	301.00000	301.0	0.00000	0	0	0	0.00000
19-MAY-98	645.00000	645.0	0.00000	0	0	0	0.00000
26-MAY-98		1111.0		0		0	
02-JUN-98	584.00000	584.0	0.00000	0	0	0	0.00000
09-JUN-98	315.00000	315.0	0.00000	0	0	0	0.00000
16-JUN-98	206.00000	206.0	0.00000	0	0	0	0.00000
23-JUN-98	200.26400	204.0	3.73600	0	0	50	0.26400
30-JUN-98	170.76960	176.0	5.23040	0	0	70	0.36960
07-JUL-98	179.41344	183.0	3.58656	0	0	48	0.25344
14-JUL-98	126.24656	132.0	5.75344	0	0	77	0.40656
21-JUL-98	148.50184	159.0	10.49816	0	3	103	0.74184
28-JUL-98	134.55912	147.0	12.44088	0	3	129	0.87912
04-AUG-98	112.84680	122.0	9.15320	0	3	85	0.64680
11-AUG-98	109.32488	119.3	9.97512	0	3	96	0.70488
18-AUG-98	107.01984	139.0	31.98016	25	3	78	2.25984
25-AUG-98	82.05592	127.0	44.94408	40	3	64	3.17592
01-SEP-98	73.53288	119.0	45.46712	40	3	71	3.21288
08-SEP-98	62.30120	126.0	63.69880	60	3	65	4.50120
15-SEP-98	49.38336	125.0	75.61664	75	3	37	5.34336
22-SEP-98	98.75944	178.0	79.24056	80	3	23	5.59944
29-SEP-98	59.66360	120.0	60.33640	60	3	20	4.26360
06-OCT-98	171.21912	193.0	21.78088	20	3	4	1.53912
13-OCT-98	231.16056	264.0	32.83944	35	0	2	2.32056
20-OCT-98	91.44440	160.0	68.55560	73	0	5	4.84440
27-OCT-98	64.31240	131.0	66.68760	71	0	5	4.71240
03-NOV-98	135.55400	200.0	64.44600	69	0	0	4.55400
10-NOV-98	291.00000	291.0	0.00000	0	0	0	0.00000
17-NOV-98	354.00000	354.0	0.00000	0	0	0	0.00000

NFROOD = ROOD - STORAGE

WHERE STORAGE = SRUS + SRLO + (SRTV * .08) - LOSS

WHERE LOSS = (SRUS + SRLO + (SRTV * .08)) * .066

NATURAL FLOW
AT HWY 219 BRIDGE GAUGE ON T.R.

	NFTRJB	TRJB	STORAGE	SRUS	SRTV	SRLO	LOSS (5.2%)
05-MAY-98			0.00000	0	0	0	0.00000
12-MAY-98			0.00000	0	0	0	0.00000
19-MAY-98	731.00000	731.0	0.00000	0	0	0	0.00000
26-MAY-98				0	0		
02-JUN-98	686.00000	686.0	0.00000	0	0	0	0.00000
09-JUN-98			0.00000	0	0	0	0.00000
16-JUN-98	217.00000	217.0	0.00000	0	0	0	0.00000
23-JUN-98	221.78600	227.0	5.21400	0	50	0	0.28600
30-JUN-98	188.70040	196.0	7.29960	0	70	0	0.40040
07-JUL-98	181.99456	187.0	5.00544	0	48	0	0.27456
14-JUL-98	139.97044	148.0	8.02956	0	77	0	0.44044
21-JUL-98	162.91516	176.5	13.58484	0	103	3	0.74516
28-JUL-98	152.70388	169.0	16.29612	0	129	3	0.89388
04-AUG-98	126.29220	138.0	11.70780	0	85	3	0.64220
11-AUG-98	93.74512	106.6	12.85488	0	96	3	0.70512
18-AUG-98	136.32216	171.0	34.67784	25	78	3	1.90216
25-AUG-98	99.56208	147.0	47.43792	40	64	3	2.60208
01-SEP-98	78.83212	127.0	48.16788	40	71	3	2.64212
08-SEP-98	93.49780	160.0	66.50220	60	65	3	3.64780
15-SEP-98	72.19764	150.0	77.80236	75	37	3	4.26764
22-SEP-98	112.91756	194.0	81.08244	80	23	3	4.44756
29-SEP-98	38.59040	100.4	61.80960	60	20	3	3.39040
06-OCT-98	168.77888	191.0	22.22112	20	4	3	1.21888
13-OCT-98	172.61144	206.0	33.38856	35	2	0	1.83144
20-OCT-98	112.27460	182.0	69.72540	73	5	0	3.82460
27-OCT-98			67.82940	71	5	0	3.72060
03-NOV-98			65.41200	69	0	0	3.58800
10-NOV-98			0.00000	0	0	0	0.00000
17-NOV-98			0.00000	0	0	0	0.00000

NFTRJB = TRJB - STORAGE

WHERE STORAGE = (SRUS + (SRTV * .11) + SRLO) - LOSS

WHERE LOSS = (SRUS + (SRTV * .11) + SRLO) * .052

NATURAL FLOW
AT GOLF COURSE BRIDGE GAUGE ON T.R.

	NFTRGC	TRGC	STORAGE	SRUS	SRTV	SRLO	LOSS (3.4%)
05-MAY-98	220.00000	220.0	0.00000	0	0	0	0.00000
12-MAY-98	194.00000	194.0	0.00000	0	0	0	0.00000
19-MAY-98	335.00000	335.0	0.00000	0	0	0	0.00000
26-MAY-98		521.0		0	0		
02-JUN-98	208.20000	208.2	0.00000	0	0	0	0.00000
09-JUN-98	136.00000	136.0	0.00000	0	0	0	0.00000
16-JUN-98	94.30000	94.3	0.00000	0	0	0	0.00000
23-JUN-98	123.27200	131.0	7.72800	0	50	0	0.27200
30-JUN-98	118.18080	129.0	10.81920	0	70	0	0.38080
07-JUL-98	114.58112	122.0	7.41888	0	48	0	0.26112
14-JUL-98	88.09888	100.0	11.90112	0	77	0	0.41888
21-JUL-98	116.18232	135.0	18.81768	0	103	3	0.66232
28-JUL-98	122.16376	145.0	22.83624	0	129	3	0.80376
04-AUG-98	84.96440	101.0	16.03560	0	85	3	0.56440
11-AUG-98	70.26424	88.0	17.73576	0	96	3	0.62424
18-AUG-98			39.10368	25	78	3	1.37632
25-AUG-98	73.57016	125.0	51.42984	40	64	3	1.81016
01-SEP-98	59.48824	112.0	52.51176	40	71	3	1.84824
08-SEP-98	88.09560	159.0	70.90440	60	65	3	2.49560
15-SEP-98	68.93328	150.0	81.06672	75	37	3	2.85328
22-SEP-98	87.26712	171.0	83.73288	80	23	3	2.94712
29-SEP-98	69.05080	133.0	63.94920	60	20	3	2.25080
06-OCT-98	73.16376	96.0	22.83624	20	4	3	0.80376
13-OCT-98	137.88088	172.0	34.11912	35	2	0	1.20088
20-OCT-98	72.70920	144.0	71.29080	73	5	0	2.50920
27-OCT-98	61.64120	131.0	69.35880	71	5	0	2.44120
03-NOV-98	102.34600	169.0	66.65400	69	0	0	2.34600
10-NOV-98	193.00000	193.0	0.00000	0	0	0	0.00000
17-NOV-98	277.00000	277.0	0.00000	0	0	0	0.00000

NFTRGC = TRGC - STORAGE

WHERE STORAGE = (SRUS + (SRTV * .16) + SRLO) - LOSS

WHERE LOSS = (SRUS + (SRTV * .16) + SRLO) * .034

NATURAL FLOW
AT DILLEY GAUGE ON TUALATIN RIVER

	NFDLLO	DLLO	STORAGE	TRTR	SRUS	SRTV	SRHL	SRFG	SRLO	SRBV
-MAY-98	133.0000	133	0.0000	0.0	0	0	0	0	0	0
12-MAY-98	122.0000	122	0.0000	0.0	0	0	0	0	0	0
19-MAY-98	194.0000	194	0.0000	0.0	0	0	0	0	0	0
26-MAY-98		269		0.0	0	0	0	0		0
02-JUN-98	117.0000	117	0.0000	0.0	0	0	0	0	0	0
09-JUN-98	108.0000	108	0.0000	0.0	0	0	0	0	0	0
16-JUN-98	69.0000	69	0.0000	0.0	0	0	0	0	0	0
23-JUN-98	65.9750	148	82.0250	20.0	0	50	14	2	0	4
30-JUN-98	60.7100	163	102.2900	20.0	0	70	14	2	0	7
07-JUL-98	73.7715	175	101.2285	38.7	0	48	14	2	0	7
14-JUL-98	23.1005	172	148.8995	60.0	0	77	14	2	0	9
21-JUL-98	40.8695	222	181.1305	68.0	0	103	7	3	3	14
28-JUL-98	37.7435	254	216.2565	68.0	0	129	18	5	3	14
04-AUG-98	26.5725	194	167.4275	68.0	0	85	12	4	3	10
11-AUG-98	23.7040	192	168.2960	68.0	0	96	7	3	3	7
18-AUG-98	25.5270	211	185.4730	68.0	25	78	12	4	3	10
25-AUG-98	24.2110	212	187.7890	68.0	40	64	12	4	3	10
01-SEP-98	67.8715	227	159.1285	10.0	40	71	26	1	3	21
08-SEP-98	61.3425	250	188.6575	5.0	60	65	40	5	3	24
15-SEP-98	59.1855	238	178.8145	5.0	75	37	40	5	3	24
22-SEP-98	60.0295	218	157.9705	5.0	80	23	31	4	3	20
29-SEP-98	50.9350	187	136.0650	5.0	60	20	31	4	3	20
06-OCT-98	55.8710	124	68.1290	5.0	20	4	21	3	3	15
13-OCT-98	116.7480	187	70.2520	5.0	35	2	16	2	0	13
20-OCT-98	72.7375	162	89.2625	5.0	73	5	0	0	0	10
27-OCT-98	75.5625	160	84.4375	0.0	71	5	0	0	0	12
03-NOV-98	71.8350	150	78.1650	0.0	69	0	0	0	0	12
10-NOV-98	107.0000	107	0.0000	0.0	0	0	0	0	0	0
17-NOV-98	138.0000	138	0.0000	0.0	0	0	0	0	0	0

NFDLLO = DLLO - STORAGE

WHERE STORAGE = (TRTR + SRUS + (SRTV*.90) + SRHL + SRFG + SRLO + SRBV) - LOSS

WHERE LOSS = (TRTR + SRUS + (SRTV*.90) + SRHL + SRFG + SRLO + SRBV) * .035

NATURAL FLOW
AT DILLEY GAUGE ON TUALATIN RIVER

LOSS (3.5%)

05-MAY-98	0.0000
12-MAY-98	0.0000
19-MAY-98	0.0000
26-MAY-98	
02-JUN-98	0.0000
09-JUN-98	0.0000
16-JUN-98	0.0000
23-JUN-98	2.9750
30-JUN-98	3.7100
07-JUL-98	3.6715
14-JUL-98	5.4005
21-JUL-98	6.5695
28-JUL-98	7.8435
04-AUG-98	6.0725
11-AUG-98	6.1040
18-AUG-98	6.7270
25-AUG-98	6.8110
01-SEP-98	5.7715
08-SEP-98	6.8425
15-SEP-98	6.4855
22-SEP-98	5.7295
29-SEP-98	4.9350
06-OCT-98	2.4710
13-OCT-98	2.5480
20-OCT-98	3.2375
27-OCT-98	3.0625
03-NOV-98	2.8350
10-NOV-98	0.0000
17-NOV-98	0.0000

NFDLLO = DLLO - STORAGE

WHERE STORAGE = (TRTR + SRUS + (SRTV*.90) + SRHL + SRFG + SRLO + SRBV) - LOSS
WHERE LOSS = (TRTR + SRUS + (SRTV*.90) + SRHL + SRFG + SRLO + SRBV) * .035

NATURAL FLOW
AT GASTON GAUGE ON TUALATIN RIVER

	NFGAST	GAST	STORAGE	TRTR	LOSS (3%)	PVR2
05-MAY-98	66.000	66.00	0.000	0.0	0.000	0
12-MAY-98	63.500	63.50	0.000	0.0	0.000	0
19-MAY-98	89.000	89.00	0.000	0.0	0.000	0
26-MAY-98	105.000	105.00	0.000	0.0	0.000	0
02-JUN-98	64.200	64.20	0.000	0.0	0.000	0
09-JUN-98	52.000	52.00	0.000	0.0	0.000	0
16-JUN-98	43.300	43.30	0.000	0.0	0.000	0
23-JUN-98	32.800	52.20	19.400	20.0	0.600	0
30-JUN-98	26.300	45.70	19.400	20.0	0.600	0
07-JUL-98	39.461	77.00	37.539	38.7	1.161	0
14-JUL-98	-9.200	49.00	58.200	60.0	1.800	0
21-JUL-98	9.040	75.00	65.960	68.0	2.040	0
28-JUL-98	5.040	71.00	65.960	68.0	2.040	0
04-AUG-98	5.040	71.00	65.960	68.0	2.040	0
11-AUG-98	2.040	68.00	65.960	68.0	2.040	0
18-AUG-98	0.040	66.00	65.960	68.0	2.040	0
25-AUG-98	0.440	66.40	65.960	68.0	2.040	0
01-SEP-98	6.500	16.20	9.700	10.0	0.300	0
08-SEP-98	5.150	10.00	4.850	5.0	0.150	0
15-SEP-98	5.150	10.00	4.850	5.0	0.150	0
22-SEP-98	6.150	11.00	4.850	5.0	0.150	0
29-SEP-98	3.390	8.24	4.850	5.0	0.150	0
06-OCT-98	13.150	18.00	4.850	5.0	0.150	0
13-OCT-98	65.150	70.00	4.850	5.0	0.150	0
20-OCT-98	13.450	18.30	4.850	5.0	0.150	0
27-OCT-98	13.500	13.50	0.000	0.0	0.000	0
03-NOV-98	22.000	22.00	0.000	0.0	0.000	0
10-NOV-98	50.200	50.20	0.000	0.0	0.000	0
17-NOV-98	75.600	75.60	0.000	0.0	0.000	0

NFGAST = GAST - STORAGE

WHERE STORAGE = (TRTR - LOSS) + PVR2

WHERE LOSS = TRTR * .03

NATURAL FLOW
AT LEE FALLS ON TUALATIN RIVER

	NFTRLF	TRLF	STORAGE	TRTR	LOSS (2%)
05-MAY-98	38.10	38.10	0.000	0.0	0.000
12-MAY-98	33.50	33.50	0.000	0.0	0.000
19-MAY-98	57.60	57.60	0.000	0.0	0.000
26-MAY-98	64.50	64.50	0.000	0.0	0.000
02-JUN-98	38.10	38.10	0.000	0.0	0.000
09-JUN-98	33.50	33.50	0.000	0.0	0.000
16-JUN-98	24.90	24.90	0.000	0.0	0.000
23-JUN-98	5.30	24.90	19.600	20.0	0.400
30-JUN-98	12.00	31.60	19.600	20.0	0.400
07-JUL-98			37.926	38.7	0.774
14-JUL-98	-21.70	37.10	58.800	60.0	1.200
21-JUL-98	0.16	66.80	66.640	68.0	1.360
28-JUL-98	-2.14	64.50	66.640	68.0	1.360
04-AUG-98	-9.04	57.60	66.640	68.0	1.360
11-AUG-98	-9.04	57.60	66.640	68.0	1.360
18-AUG-98	-9.04	57.60	66.640	68.0	1.360
25-AUG-98	-7.94	58.70	66.640	68.0	1.360
01-SEP-98	15.90	25.70	9.800	10.0	0.200
08-SEP-98	-3.06	1.84	4.900	5.0	0.100
15-SEP-98	-0.31	4.59	4.900	5.0	0.100
22-SEP-98	-2.27	2.63	4.900	5.0	0.100
29-SEP-98	-3.06	1.84	4.900	5.0	0.100
06-OCT-98	2.05	6.95	4.900	5.0	0.100
13-OCT-98	13.80	18.70	4.900	5.0	0.100
20-OCT-98	6.00	10.90	4.900	5.0	0.100
27-OCT-98	4.59	4.59	0.000	0.0	0.000
03-NOV-98	13.20	13.20	0.000	0.0	0.000
10-NOV-98	50.10	50.10	0.000	0.0	0.000
17-NOV-98	76.60	76.60	0.000	0.0	0.000

NFTRLF = TRLF - STORAGE
 WHERE STORAGE = TRTR - LOSS
 WHERE LOSS = TRTR * .02

NATURAL FLOW
AT ROOD BRIDGE RD. ON T.R.

	NFROOD	ROOD	STORAGE	SRUS	SRLO	SRTV	LOSS (6.6%)
-MAY-98	338.00000	338.0	0.00000	0	0	0	0.00000
12-MAY-98	301.00000	301.0	0.00000	0	0	0	0.00000
19-MAY-98	645.00000	645.0	0.00000	0	0	0	0.00000
26-MAY-98		1111.0		0		0	
02-JUN-98	584.00000	584.0	0.00000	0	0	0	0.00000
09-JUN-98	315.00000	315.0	0.00000	0	0	0	0.00000
16-JUN-98	206.00000	206.0	0.00000	0	0	0	0.00000
23-JUN-98	200.26400	204.0	3.73600	0	0	50	0.26400
30-JUN-98	170.76960	176.0	5.23040	0	0	70	0.36960
07-JUL-98	179.41344	183.0	3.58656	0	0	48	0.25344
14-JUL-98	126.24656	132.0	5.75344	0	0	77	0.40656
21-JUL-98	148.50184	159.0	10.49816	0	3	103	0.74184
28-JUL-98	134.55912	147.0	12.44088	0	3	129	0.87912
04-AUG-98	112.84680	122.0	9.15320	0	3	85	0.64680
11-AUG-98	109.32488	119.3	9.97512	0	3	96	0.70488
18-AUG-98	107.01984	139.0	31.98016	25	3	78	2.25984
25-AUG-98	82.05592	127.0	44.94408	40	3	64	3.17592
01-SEP-98	73.53288	119.0	45.46712	40	3	71	3.21288
08-SEP-98	62.30120	126.0	63.69880	60	3	65	4.50120
15-SEP-98	49.38336	125.0	75.61664	75	3	37	5.34336
22-SEP-98	98.75944	178.0	79.24056	80	3	23	5.59944
29-SEP-98	59.66360	120.0	60.33640	60	3	20	4.26360
06-OCT-98	171.21912	193.0	21.78088	20	3	4	1.53912
13-OCT-98	231.16056	264.0	32.83944	35	0	2	2.32056
20-OCT-98	91.44440	160.0	68.55560	73	0	5	4.84440

NFROOD = ROOD - STORAGE

ERE STORAGE = SRUS + SRLO + (SRTV * .08) - LOSS

WHERE LOSS = (SRUS + SRLO + (SRTV * .08)) * .066

NATURAL FLOW
AT WEST LINN ON TUALATIN RIVER

	NFWSLO	WSLO	STORAGE	SRUS	LOSS (16%)
-MAY-98	594.00	594	0.00	0	0.00
12-MAY-98	501.00	501	0.00	0	0.00
19-MAY-98	1163.00	1163	0.00	0	0.00
26-MAY-98	1628.00	1628	0.00	0	0.00
02-JUN-98	1000.00	1000	0.00	0	0.00
09-JUN-98	552.00	552	0.00	0	0.00
16-JUN-98	388.00	388	0.00	0	0.00
23-JUN-98	344.00	344	0.00	0	0.00
30-JUN-98	359.00	359	0.00	0	0.00
07-JUL-98	363.00	363	0.00	0	0.00
14-JUL-98	274.00	274	0.00	0	0.00
21-JUL-98	264.00	264	0.00	0	0.00
28-JUL-98	271.00	271	0.00	0	0.00
04-AUG-98	239.00	239	0.00	0	0.00
11-AUG-98	182.00	182	0.00	0	0.00
18-AUG-98	200.00	221	21.00	25	4.00
25-AUG-98	181.40	215	33.60	40	6.40
01-SEP-98	192.40	226	33.60	40	6.40
08-SEP-98	169.60	220	50.40	60	9.60
15-SEP-98	245.00	308	63.00	75	12.00
22-SEP-98	324.80	392	67.20	80	12.80
29-SEP-98	217.60	268	50.40	60	9.60
06-OCT-98	417.20	434	16.80	20	3.20
13-OCT-98	430.60	460	29.40	35	5.60
20-OCT-98	261.68	323	61.32	73	11.68

NFWSLO = WSLO - STORAGE
 PRE STORAGE = SRUS - LOSS
 WHERE LOSS = SRUS * .16

NATURAL FLOW
AT FARMINGTON RD. BRIDGE ON T.R.

	NFFRMO	FRMO	STORAGE	SRUS	SRLO	SRTV	LOSS (8.0%)
-MAY-98	427.0000	427	0.0000	0	0	0	0.0000
12-MAY-98	374.0000	374	0.0000	0	0	0	0.0000
19-MAY-98	830.0000	830	0.0000	0	0	0	0.0000
26-MAY-98		1323		0		0	
02-JUN-98	722.0000	722	0.0000	0	0	0	0.0000
09-JUN-98	392.0000	392	0.0000	0	0	0	0.0000
16-JUN-98	271.0000	271	0.0000	0	0	0	0.0000
23-JUN-98	264.7800	268	3.2200	0	0	50	0.2800
30-JUN-98	244.4920	249	4.5080	0	0	70	0.3920
07-JUL-98	252.9088	256	3.0912	0	0	48	0.2688
14-JUL-98	195.0412	200	4.9588	0	0	77	0.4312
21-JUL-98	213.6068	223	9.3932	0	3	103	0.8168
28-JUL-98	196.9324	208	11.0676	0	3	129	0.9624
04-AUG-98	174.7660	183	8.2340	0	3	85	0.7160
11-AUG-98	147.0576	156	8.9424	0	3	96	0.7776
18-AUG-98	169.2168	200	30.7832	25	3	78	2.6768
25-AUG-98	148.3184	192	43.6816	40	3	64	3.7984
01-SEP-98	129.8676	174	44.1324	40	3	71	3.8376
08-SEP-98	122.8540	185	62.1460	60	3	65	5.4040
15-SEP-98	109.8572	184	74.1428	75	3	37	6.4472
22-SEP-98	170.1588	248	77.8412	80	3	23	6.7688
29-SEP-98	123.7520	183	59.2480	60	3	20	5.1520
06-OCT-98	240.5824	262	21.4176	20	3	4	1.8624
13-OCT-98	244.6712	277	32.3288	35	0	2	2.8112
20-OCT-98	138.5180	206	67.4820	73	0	5	5.8680

NFFRMO = FRMO - STORAGE

PRE STORAGE = SRUS + SRLO + (SRTV * .07) - LOSS

WHERE LOSS = (SRUS + SRLO + (SRTV * .07)) * .080

**Scoggins Dam
Reservoir Operations**

Appendix C

SCOGGINS DAM - RESERVOIR OPERATIONS For the Month of January 1998

File: 198

INFLOW				HENRY HAGG LAKE				TUALATIN RIVER						WEATHER		WATER DELIVERIES								
SCHO	SCLO	TANO	TOTAL	W.S.	STOR	CHNG	CHNG	COMP	GASO	DILLO	GOLF	ROOD	FRMO	WSLO	PREC	TEMP	TVID	USA	LO	HLS	FG	BVR	OTH	
DAY	CFS	CFS	CFS	FT	AF	AF	AF	REL	CFS	CFS	CFS	CFS	CFS	CFS	INCH	F	CFS	CFS	CFS	CFS	CFS	CFS	CFS	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(20)	(21)	(22)	(23)	(24)	(25)	(26)
1	40	59	8	107	283.96	33469	0	0	100	199	514	903	1381	1627	1928	0.30	45							
2	50	92	8	150	284.22	33714	245	124	100	278	543	944	1386	1621	1980	0.51	49							
3	53	78	8	139	283.93	33441	-273	-138	264	232	624	940	1459	1704	1971	0.00	44							
4	69	90	10	169	283.80	33318	-123	-62	252	268	650	986	1499	1765	2095	0.59	39							
5	130	171	18	319	283.94	33450	132	67	258	470	818	1175	1743	2013	2336	1.24	43							
6	137	308	23	468	284.84	34302	852	430	85	726	1312	1635	2282	2666	3161	0.74	44							
7	142	451	17	610	286.11	35609	1307	659	11	923	1640	2196	2611	3522	3795	0.50	45							
8	108	308	14	430	287.12	36486	877	442	11	548	1215	2263	2817	3250	3910	0.00	49							
9	88	225	13	326	287.87	37214	728	367	12	379	877	2218	2948	3391	3980	0.00	42							
10	69	175	12	256	288.04	37380	166	84	209	351	881	1833	3005	3447	3945	0.02	38							
11	75	191	11	277	288.25	37585	205	103	213	467	873	1650	3021	3517	4483	0.25	36							
12	68	146	11	225	288.44	37771	186	94	211	365	973	1604	3053	3571	4301	1.51	35							
13	95	233	15	343	288.42	37752	-19	-10	323	574	1095	1579	2996	3532	4655	0.95	33							
14	303	567	62	932	289.58	38904	1152	581	15	596	1805	2119	3320	3884	5272	1.13	47							
15	282	652	27	961	292.08	41400	2496	1258	13	1551	2546	3702	4115	4453	5830	0.65	48							
16	188	506	23	717	293.62	42972	1572	793	14	807	2037	4007	5684	5079	6096	0.41	49							
17	317	849	25	1191	295.64	45068	2096	1057	14	1071	2276	4239	8015	8874	9469	0.11	52							
18	199	592	18	809	297.47	47005	1937	977	15	982	2276	4239	8306	9517	9036	0.42	48							
19	156	485	16	637	298.81	48445	1440	726	15	741	1822	3740	8306	9517	9036	0.42	48							
20	128	374	14	516	299.80	49522	1077	543	15	660	1479	3223	7579	8894	9653	0.13	46							
21	113	294	12	419	300.60	50399	877	442	16	458	1131	2786	6705	7647	9396	0.05	45							
22	116	366	11	493	300.79	50609	210	106	325	431	509	1343	2436	5820	8167	0.30	44							
23	137	423	18	557	300.60	50399	-210	-106	630	524	769	1891	5313	5820	8167	0.91	47							
24	207	520	23	750	300.90	50730	331	167	499	666	871	2000	5194	5625	7667	0.75	49							
25	191	524	25	740	301.36	51239	509	257	532	1038	2257	3476	5617	5736	7569	0.65	47							
26	193	511	23	727	301.50	51395	156	79	668	1015	2361	3883	6201	6054	7423	0.66	50							
27	130	397	17	544	301.35	51228	-167	-84	657	704	2154	3576	6449	6560	7375	0.00	51							
28	110	294	13	417	300.75	50565	-863	-334	800	466	2037	3234	6219	6471	7472	0.04	50							
29	102	237	12	351	300.00	49746	-819	-413	776	363	1839	2965	5718	5961	7440	0.13	54							
30	83	195	10	288	299.16	48825	-921	-464	746	282	1658	2703	5698	5608	7183	0.12	52							
31	70	135	9	214	297.96	47530	-1295	-653	922	303	1536	2425	5273	5213	6787	0.00	54							
TOT																14.18								
CFS	4149	10428	526	15103			7089	8721	15810	20386	46858	77546	138811	150455	180259	MAX	54	43	0	0	0	0	0	0
AF	8230	20684	1043	29857			14061	14061	17298	31359	40436	92546	153812	275332	357544	MIN	33	24	0	0	0	0	0	0

191%

RESERVOIR STORAGE STATUS: January 31, 1998 Time: 0800 hrs

Water storage elevation +/- to fill curve: 10.88
Water storage in acre ft +/- to fill curve: 11078
Percentage of full reservoir: 88.6%

Water Year Snodel Summary

Saddle Mt: 68.6"pc
Seine Ck: 51.2"pc
O'swc

Minimum required discharges:
Dec - Sept: 10 cfs
Oct-Nov: 20 cfs

RESERVOIR DELIVERY STATUS (ACRE FEET):

TVD
USA
LO
HLSBO
FG
BVTN
OTHER

USED REMAINING

SCOGGINS DAM - RESERVOIR OPERATIONS For the Month of February 1998

File: 298

INFLOW				HENRY HAGG LAKE								TUALATIN RIVER						WEATHER			WATER DELIVERIES							
DAY	SCHO	SCLO	TANO	TOTAL	W.S.	STOR	CHNG	CHNG	STOR	REL	COMP	GASO	DLLO	GOLF	ROOD	FRMO	WSLO	PREC	TEMP	TVID	USA	LO	HLS	FG	BVR	OTH		
	CFS	CFS	CFS	CFS	FT	AF	AF	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	INCH	F	CFS	CFS	CFS	CFS	CFS	CFS	CFS		
(1)	(2)	(3)	(4)		(5)	(6)	(7)	(8)	(9)	(10)		(11)	(12)	(13)	(14)	(15)	(18)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	
1	66	140	8	214	296.74	46225	-1305	-658	886	230	264	1465	2276	4842	4827	6307	0.00	59	40									
2	80	132	7	199	295.55	44874	-1251	-831	826	195	246	1330	2128	4384	4511	5860	0.27	47	36									
3	58	124	7	187	294.08	43456	-1518	-785	1013	248	234	1386	1992	3981	4202	5405	0.20	50	40									
4	51	108	7	168	292.58	41888	-1588	-791	994	203	209	1358	1863	3665	3907	4933	0.05	51	40									
5	53	106	7	166	291.04	40351	-1537	-775	997	222	204	1313	1899	3406	3635	4558	0.28	56	40									
6	81	136	11	240	288.47	38785	-1566	-790	981	191	275	1406	1897	3238	3457	4422	0.87	53	43									
7	69	143	10	222	288.21	38528	-256	-129	392	263	311	1136	2058	3269	3464	4266	0.11	57	37									
8	86	135	11	234	288.89	38213	-316	-159	385	206	267	984	1807	3174	3379	4122	0.18	47	37									
9	75	171	10	256	288.72	38046	-167	-84	365	281	355	980	1679	3091	3305	3892	0.42	48	38									
10	78	155	8	239	288.18	38478	433	218	51	269	310	692	1552	2934	3166	3818	0.10	45	36									
11	81	185	9	275	288.67	38984	505	255	51	306	368	679	1396	2901	3138	3980	0.48	48	38									
12	106	222	10	338	280.17	39480	486	250	100	350	501	755	1382	2829	3089	3818	0.46	50	40									
13	153	461	16	630	291.12	40431	951	479	101	580	976	1202	1857	3007	3245	4062	0.83	55	38									
14	121	369	14	504	292.10	41420	989	489	37	536	849	1218	2358	3145	3355	4075	0.30	52	41									
15	97	278	12	385	292.88	42214	794	400	50	450	509	1015	2435	3302	3469	4158	0.19	50	40									
16	92	263	11	366	293.49	42480	266	134	50	184	434	859	2100	3442	3569	4205	0.10	50	36									
17	84	195	9	288	294.05	43405	925	486	50	516	381	789	1774	3458	3598	4253	0.16	51	38									
18	83	188	7	278	294.24	43611	206	104	192	296	341	821	1552	3349	3525	4253	0.29	52	41									
19	107	245	9	381	294.80	44192	581	293	73	366	486	780	1589	3305	3500	4361	0.63	49	43									
20	95	217	9	321	294.99	44389	197	99	274	373	408	1047	1617	3256	3461	4241	0.10	51	43									
21	179	461	15	855	295.62	45047	658	332	162	494	1088	1420	2019	3463	3672	4985	1.52	48	41									
22	153	391	11	555	296.90	46394	1347	679	16	695	857	1772	2892	4120	4202	5365	0.64	45	37									
23	125	284	9	446	297.85	47412	1018	513	16	529	825	1433	2938	4550	4409	5379	0.02	46	31									
24	121	156	7	284	298.60	48218	806	406	16	422	468	1074	2625	4778	4548	5486	0.00	53	32									
25	102	177	8	287	298.98	48808	390	197	154	351	389	990	2196	4694	4569	5542	0.21	51	32									
26	79	137	8	224	299.09	48749	141	71	215	286	323	900	1894	4404	4440	5486	0.06	48	33									
27	89	118	8	193	298.75	48381	-388	-188	392	206	278	945	1679	3980	4202	5259	0.00	42	30									
28	85	140	10	235	298.67	48294	-87	-44	308	284	NA	925	1577	3736	3947	5075	0.65	52	32									
29				NA						NA	NA																	
30				NA						NA	NA																	
31				NA						NA	NA																	
TOT																		9.08										
CFS	2617	5835	268	8720			764	9129	9514	12151	30842	54911	101681	105791	131664			MAX	59	43	0	0	0	0	0	0		
AF	5191	11574	532	17296				764	18107	18871	24102	60778	108916	201684	209836	261156			MIN	42	30	0	0	0	0	0		

RESERVOIR STORAGE
STATUS: February 28, 1998
Time: 0800 hrs

RESERVOIR DELIVERY
STATUS (ACRE FEET):

USED REMAINING

TVID
USA
LO
HLSBO
FG
BVTN
OTHER

Water Year Snotel Summary

Saddle Mt: 82.1"pc
Seine Ck: 62.7"pc
3" swc

Minimum required discharges:
Dec - Sept: 10 cfs
Oct-Nov: 20 cfs

Water storage elevation +/- to fill curve: 0.44
Water storage in acre ft +/- to fill curve: 488
Percentage of full reservoir: 90.0%

SCOGGINS DAM - RESERVOIR OPERATIONS For the Month of March 1998

File: 398

DAY	INFLOW				HENRY HAGG LAKE				TUALATIN RIVER						WEATHER			WATER DELIVERIES													
	SCHO		TANO		TOTAL	W.S. ELEV FT	STOR CONT AF	CHNG STOR AF	CHNG STOR CFS	REL CFS	COMP INFLW CFS	GASO CFS	DLLO CFS	GOLF CFS	ROOD CFS	FRMO CFS	WSLO CFS	PREC INCH	TEMP MAX F	TVID CFS	USA CFS	LO CFS	HLS CFS	FG CFS	BVR CFS	OTH CFS					
	CFS	(1)	CFS	(2)																							CFS	(3)	CFS	(4)	CFS
1	95	165	13	273	48294	298.74	48370	76	38	272	310	495	890	1554	3609	3818	5011	0.32	50	41											
2	102	202	16	320	298.91	48554	184	93	273	366	366	535	1101	1658	3519	3738	4809	0.37	51	38											
3	97	188	15	300	299.04	48895	141	71	276	347	347	436	1081	1863	3551	3744	4758	0.51	49	33											
4	85	161	12	258	299.16	48825	130	68	274	340	340	401	1065	1840	3580	3764	4785	0.00	44	28											
5	78	140	11	229	299.11	48770	-55	-28	313	285	285	339	990	1857	3551	3737	4631	0.05	48	31											
6	69	118	10	197	298.88	48521	-249	-128	360	234	234	288	949	1708	3450	3655	4507	0.00	53	29											
7	64	102	9	175	298.76	48391	-130	-88	268	202	202	251	811	1554	3313	3515	4313	0.00	53	29											
8	68	104	8	180	298.71	48337	-54	-27	268	241	241	262	752	1393	3145	3353	4146	0.40	49	29											
9	86	104	8	178	298.58	48197	-140	-71	267	196	196	271	733	1307	2866	3214	3988	0.40	48	33											
10	69	118	8	195	298.48	48100	-97	-49	268	219	219	338	758	1254	2724	3002	3882	0.12	51	37											
11	69	121	8	198	298.54	48154	54	27	208	233	233	314	731	1245	2581	2841	3482	0.31	48	35											
12	65	116	8	189	298.65	48272	118	59	169	228	228	282	673	1186	2390	2675	3258	0.02	63	47											
13	70	132	11	213	298.82	48456	184	93	170	263	263	318	671	1169	2271	2550	3089	0.55	58	46											
14	64	114	10	188	298.87	48510	54	27	182	219	219	267	671	1145	2168	2419	2913	0.00	62	43											
15	56	102	9	167	298.89	48532	22	11	192	203	203	235	637	1099	2038	2289	2753	0.00	62	41											
16	51	92	9	152	298.87	48510	-22	-11	192	161	161	210	605	1038	1891	2151	2598	0.04	58	41											
17	48	84	8	140	299.08	48738	228	115	54	169	169	186	451	918	1734	1992	2437	0.00	58	32											
18	43	76	8	127	299.27	48944	206	104	47	151	151	170	393	792	1502	1771	2202	0.00	58	32											
19	39	70	7	116	298.47	49162	218	110	19	128	128	157	332	705	1295	1554	1845	0.00	63	39											
20	37	65	7	109	298.68	49391	229	115	18	133	133	147	297	655	1129	1384	1744	0.00	68	43											
21	35	61	7	103	299.83	49555	164	83	18	101	101	137	273	604	1066	1254	1569	0.46	70	44											
22	70	126	15	211	300.28	50047	492	248	19	267	267	281	405	783	1258	1460	2033	1.33	53	48											
23	113	143	21	234	300.55	50344	297	150	110	260	260	247	519	945	1855	2040	2381	0.81	59	46											
24	81	162	19	262	300.97	50807	463	233	145	378	378	372	749	1254	2222	2492	3078	0.10	59	45											
25	67	131	12	210	301.11	50962	155	78	176	254	254	290	760	1356	2371	2637	3235	0.08	55	41											
26	61	118	12	191	301.12	50973	11	6	225	231	231	242	723	1330	2390	2850	3214	0.16	58	44											
27	53	102	12	167	301.08	50907	-66	-33	249	216	216	250	708	1258	2367	2618	3141	0.08	53	36											
28	49	92	10	151	300.92	50752	-155	-78	249	171	171	222	679	1180	2312	2554	3068	0.00	49	32											
29	45	74	6	127	300.77	50567	-165	-83	249	166	166	196	641	1095	2179	2428	2813	0.00	54	30											
30	40	77	7	124	300.57	50366	-221	-111	248	137	137	177	598	1000	1975	2240	2714	0.00	62	36											
31	39	77	7	123	300.66	50485	99	50	115	165	165	179	479	890	1782	2046	2540	0.35	50	33											
TOT																		6.26													
CFS	1988	3537	325	5850				1095	5901	6996		8498	21125	37747	74163	81583	100923		70	48	0	0	0	0	0	0	0	0	0	0	0
AF	3943	7016	845	11603				2171	2171	11705	13876	16856	41901	74871	147102	161820	200181		44	29	0	0	0	0	0	0	0	0	0	0	0

RESERVOIR STORAGE
STATUS: March 31, 1998
Time: 0800 hrs

RESERVOIR DELIVERY
STATUS (ACRE FEET):

USED REMAINING

TVID
USA
LO
HLSBO
FG
BVTN
OTHER

Water Year Snapshot Summary

Saddle Mt. 93.6"pc
Seine Ck. 71.6"pc
0.6"swc
0 swc

Water storage elevation +/- to fill curve: -0.98
Water storage in acre ft +/- to fill curve: -1060
Percentage of full reservoir: 94.1%

Minimum required discharges:
Dec - Sept: 10 cfs
Oct-Nov: 20 cfs

SCOGGINS DAM - RESERVOIR OPERATIONS

For the Month of April 1998

File: 498

INFLOW				HENRY HAGG LAKE								TUALATIN RIVER						WEATHER			WATER DELIVERIES														
DAY	SCHO		SCLO	TANO	TOTAL	INFL	CFS	(4)	(5)	W.S.	STOR	CONT	AF	CHNG	STOR	CHNG	REL	CFS	(9)	(10)	GASO	DLLO	GOLF	ROOD	FRMO	WSLO	PREC	TEMP	TVID	USA	LO	HLS	FG	BVR	OTH
	CFS	(1)																																	
1	36	68	7	111	50465	133	87	61	128	154	383	768	1586	1853	2309	0.02	53	33																	
2	35	64	6	105	50598	209	105	14	119	147	309	661	1318	1596	2033	0.03	56	37																	
3	34	61	6	101	51006	189	100	14	114	137	280	545	1112	1385	1760	0.05	55	34																	
4	33	59	5	97	51239	233	117	14	131	137	278	595	1055	1270	1608	0.24	55	37																	
5	32	57	6	95	51417	178	90	14	104	128	253	552	1001	1201	1500	0.05	56	37																	
6	32	54	6	92	51595	157	79	14	104	126	239	522	913	1116	1419	0.00	55	37																	
7	29	53	6	88	51752	178	79	14	93	125	229	507	856	1040	1332	0.05	57	38																	
8	28	50	6	84	51918	168	84	14	98	117	218	477	805	981	1280	0.00	55	32																	
9	27	48	6	81	52063	145	73	14	87	112	209	462	761	928	1180	0.01	56	34																	
10	31	55	6	92	52264	201	101	15	116	129	227	454	747	895	1176	0.50	55	41																	
11	36	65	6	107	52455	191	96	54	150	151	305	585	871	1040	1236	0.59	51	42																	
12	35	64	6	105	52589	134	68	54	122	146	306	598	1010	1190	1361	0.07	55	40																	
13	32	59	6	97	52735	146	74	54	128	145	301	585	964	1162	1419	0.00	53	34																	
14	31	59	6	96	52741	6	3	103	108	137	339	600	907	1091	1361	0.04	55	36																	
15	29	55	6	90	52845	-96	-48	100	94	125	319	580	887	1062	1318	0.26	56	34																	
16	27	53	6	86	52834	-11	63	53	116	118	252	504	806	884	1246	0.00	59	35																	
17	26	50	6	82	52758	56	28	54	82	111	235	529	740	888	1156	0.00	62	41																	
18	24	46	5	75	52814	67	34	54	88	107	223	448	692	830	1083	0.02	59	37																	
19	23	45	5	73	52881	68	34	55	89	102	212	414	642	778	1018	0.00	61	37																	
20	22	42	5	69	52949	34	17	55	72	98	189	400	615	736	955	0.00	70	39																	
21	21	40	5	66	52983	34	17	55	72	98	189	400	615	736	955	0.00	70	39																	
22	20	39	4	63	53081	98	49	30	79	94	174	356	573	693	923	0.00	74	49																	
23	18	38	4	60	53152	71	36	31	67	93	166	335	532	643	893	0.16	73	50																	
24	19	39	5	63	53253	101	51	35	86	92	169	360	569	676	875	0.18	54	39																	
25	18	37	4	59	53276	23	12	35	47	87	155	334	546	654	899	0.00	59	38																	
26	17	35	4	56	53310	34	17	36	53	84	152	315	503	604	845	0.00	58	38																	
27	17	34	4	55	53400	90	45	36	61	82	146	296	480	561	776	0.00	68	40																	
28	16	33	4	53	53491	91	46	33	79	80	140	270	434	529	731	0.00	78	47																	
29	15	32	4	51	53525	34	17	33	50	78	136	245	405	499	688	0.00	82	50																	
30	15	32	4	51	53558	33	17	23	40	74	122	232	382	475	651	0.00	85	53																	
31				NA					NA																										
TOT																			2.31																
CFS	778	1468	159	2403		3093	3093	1265	2824	3449	7050	14147	23591	28409	36339	MAX	85	53			0	0	0	0	0	0	0	0	0	0	0	0	0	13	
AF	1543	2908	315	4766				2509	5602	6841	13984	28061	46793	56349	72078	MIN	51	32			0	0	0	0	0	0	0	0	0	0	0	0	0	26	

RESERVOIR STORAGE
STATUS: April 30, 1998
Time: 0800 hrs

Water storage elevation +/- to fill curve:
Water storage in acre ft +/- to fill curve:
Percentage of full reservoir:

-0.02
-37
98.8%

RESERVOIR DELIVERY
STATUS (ACRE FEET):

USED REMAINING

TVID
USA
LO
HLSBO
FG
BVTN
OTHER

Minimum required discharges:
Dec-Sept: 10 cfs
Sept-Oct: 20 cfs

Saotel Summary

SDMO: 0 swc, 91.8" water year precip
SECO: 0 swc, 74.1" water year precip

63% average

SCOGGINS DAM - RESERVOIR OPERATIONS For the Month of May 1998

File: 598

DAY	INFLOW				HENRY HAGG LAKE						TUALATIN RIVER						WEATHER		WATER DELIVERIES							
	SCHO SCLO TANO TOTAL INFLW				W.S. ELEV FT	STOR CONT	CHNG STOR	CHNG STOR	REL CFS	COMP INFLW	GASO CFS	DLLO CFS	GOLF CFS	ROOD CFS	FRMO CFS	WSLO CFS	PREC INCH	TEMP MAX F	TVD CFS	USA CFS	LO CFS	HLS CFS	FG CFS	BVR CFS	OTH CFS	
	CFS	CFS	CFS	CFS																						
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	
1	14	31	4	49	303.47	53558	46	23	11	34	72	112	204	363	452	605	0.00	88	54						2	
2	13	30	4	47	303.53	53604	68	34	11	45	70	115	202	363	456	816	0.00	84	54						2	
3	13	28	4	45	303.59	53740	68	34	10	44	89	112	218	360	478	731	0.27	69	54						2	
4	14	27	4	45	303.57	53740	0	0	37	37	67	128	220	367	478	731	0.00	66	50						3	
5	14	26	4	44	303.56	53708	-34	-17	56	39	66	132	220	341	420	646	0.00	70	52						3	
6	13	27	4	44	303.55	53694	-12	-6	51	45	84	122	218	329	406	594	0.00	66	50						3	
7	13	25	4	42	303.54	53683	-11	-6	52	46	82	117	193	308	388	578	0.00	71	50						3	
8	12	25	4	41	303.53	53672	-11	-6	52	46	61	119	168	300	378	541	0.05	67	49						3	
9	12	25	4	41	303.53	53672	0	0	52	52	80	120	207	305	379	562	0.08	57	43						3	
10	12	24	4	40	303.53	53672	0	0	51	51	59	122	200	310	387	557	0.00	54	43						2	
11	12	23	4	39	303.51	53649	-23	-12	51	39	58	122	201	309	379	562	0.00	53	46						2	
12	12	23	4	39	303.49	53628	-23	-12	44	32	51	122	194	301	374	502	0.01	57	48						2	
13	13	26	4	43	303.47	53604	-22	-11	96	85	66	166	278	401	459	699	0.55	53	47						2	
14	13	25	4	42	303.42	53547	-57	-29	69	40	62	110	255	497	578	793	0.22	53	44						2	
15	18	36	4	60	303.48	53592	45	23	16	39	89	130	214	440	552	851	0.28	55	41						2	
16	15	32	4	51	303.48	53615	23	12	62	74	83	166	284	433	523	710	0.21	55	44						2	
17	27	49	5	81	303.55	53694	79	40	62	102	104	202	311	540	670	1083	0.79	50	45						2	
18	17	37	4	58	303.60	53751	57	29	62	91	97	166	370	648	996	1163	0.04	60	45						2	
19	15	34	4	53	303.54	53683	-68	-34	64	50	89	196	335	645	828	1163	0.03	65	49						2	
20	18	37	5	60	303.59	53740	57	29	62	91	84	170	311	634	770	1204	0.47	60	49						2	
21	34	73	11	118	303.61	53762	22	11	132	143	131	368	536	943	1114	1744	0.90	55	48						2	
22	24	55	7	86	303.54	53683	-79	-40	133	93	127	331	656	1332	1554	1928	0.00	62	41						2	
23	22	48	6	78	303.53	53672	-11	-6	103	97	115	285	537	1176	1449	1948	0.00	58	45						2	
24	21	46	6	73	303.52	53660	-12	-6	103	97	108	287	477	948	1167	1736	0.15	62	52						2	
25	24	53	5	82	303.51	53649	-11	-6	103	97	109	294	554	940	1160	1727	0.24	59	45						2	
26	21	48	5	72	303.45	53591	-68	-34	103	69	105	273	521	1111	1323	1695	0.16	58	42						2	
27	19	43	5	67	303.43	53558	-23	-12	81	69	99	218	455	1015	1247	1612	0.00	60	41						2	
28	18	41	5	64	303.42	53547	-11	-6	72	66	94	206	417	674	1083	1447	0.00	61	42						2	
29	18	38	4	58	303.39	53518	-29	-15	72	57	77	190	353	757	973	1275	0.03	71	54						2	
30	15	36	4	55	303.40	53525	7	4	51	55	76	170	334	801	971	1282	0.10	56	50						2	
31	14	35	3	52	303.40	53528	3	2	51	53	72	159	302	815	995	1253	0.00	64	47						2	
TOT																	4.56									
CFS	518	1108	143	1787			-15	1895	1980		2546	5578	9953	19146	23503	32771	MAX	88	54	0	0	0	0	0	0	60
AF	1027	2194	284	3505			-30	3957	3927		5050	11064	19742	37976	46818	85001	MIN	50	41	0	0	0	0	0	0	119

RESERVOIR STORAGE STATUS: May 31, 1998 Time: 0800 hrs

SNOTEL SUMMARY

SDMO: 103.1" PRECIP
SECO: 79.3" PRECIP

Water storage elevation +/- to fill curve: -0.10
Water storage in acre ft +/- to fill curve: -112
Percentage of full reservoir: 99.5%

RESERVOIR DELIVERY STATUS (ACRE FEET):

USED REMAINING

TMD
USA
LO
HLSBO
FG
BVTN
OTHER

145

Minimum required discharges:
Dec - Sept: 10 cfs
Oct-Nov: 20 cfs

SCOGGINS DAM - RESERVOIR OPERATIONS

Revised For the Month of June 1998

File: 698

DAY	INFLOW				HENRY HAGG LAKE				TUALATIN RIVER					WEATHER			WATER DELIVERIES								
	SCHO		SCLO	TANO TOTAL	W.S.	STOR	CHNG	CHNG	COMP	GASO	DILLO	GOLF	ROOD	FRMO	WSLO	PREC	TEMP	TVID	USA	LO	HLS	FG	BVR	OTH	
	CFS	CFS	CFS	INFLCFS	FT	AF	AF	STOR	REL	CFS	CFS	CFS	CFS	CFS	CFS	INCH	MAX		CFS	CFS	CFS	CFS	CFS	CFS	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)
1	12	32	4	48	53525	11	6	51	57	67	148	270	676	841	1136	0.00	79	47						2	
2	12	31	4	47	53536	34	17	15	32	64	117	214	584	722	1000	0.00	75	51						2	
3	11	30	4	45	53592	22	11	14	25	62	111	207	507	620	875	0.00	69	49						2	
4	11	28	4	43	53694	102	51	14	65	80	114	197	452	554	776	0.00	75	50						2	
5	11	25	4	40	53800	57	29	30	59	59	129	221	423	513	721	0.00	68	51						2	
6	10	24	4	38	53834	53751	-88	34	53	57	137	220	407	488	678	0.00	72	50						2	
7	10	22	4	36	53883	53683	0	0	53	54	136	200	382	485	625	0.00	80	50						2	
8	9	21	4	34	53852	53860	-23	12	53	52	125	170	348	429	601	0.00	76	51						2	
9	8	21	4	33	53850	53860	0	0	36	52	108	136	315	392	552	0.00	75	54						2	
10	11	25	3	39	53830	53840	-20	10	36	55	115	132	305	373	557	0.38	75	54						2	
11	10	20	3	33	53837	53804	-36	18	36	52	114	172	429	493	605	0.02	70	46						2	
12	8	19	3	30	53837	53604	0	0	21	49	91	142	355	448	635	0.00	72	50						2	
13	8	18	3	29	53837	53604	0	0	11	46	75	117	297	368	557	0.00	78	50						2	
14	8	17	3	28	53837	53604	0	0	11	45	74	107	251	316	478	0.00	73	46						2	
15	8	17	3	28	53838	53615	11	6	11	42	71	104	227	291	418	0.00	74	46						2	
16	8	17	3	28	53830	53840	25	13	10	43	69	94	206	271	388	0.00	70	48						2	
17	7	16	2	25	53831	53849	9	5	10	41	74	93	198	258	359	0.00	71	49						2	
18	7	16	2	25	53839	53626	-23	12	30	41	89	87	183	246	344	0.00	75	47						2	
19	7	16	3	26	53839	53513	-113	57	91	58	142	131	179	234	332	0.03	65	46	43	0	14	2	4	2	
20	7	15	3	25	53829	53400	-113	57	91	56	149	142	229	279	332	0.00	71	48	44	0	14	2	4	2	
21	6	14	3	23	53813	53219	-181	91	90	55	147	139	229	285	384	0.00	81	48	45	0	14	2	4	2	
22	7	16	3	26	53801	53084	-135	88	90	52	148	135	212	274	351	0.00	88	53	42	0	14	2	4	2	
23	6	14	3	23	53804	52893	-191	96	95	52	142	131	204	268	344	0.00	74	53	50	0	14	2	4	2	
24	8	16	3	27	53827	52747	-146	74	98	53	147	145	219	270	328	0.28	73	52	48	0	14	2	7	2	
25	7	15	3	25	53820	52623	-124	83	98	56	157	184	339	401	445	0.08	68	50	48	0	14	2	7	2	
26	7	15	3	25	53805	52511	-112	56	78	57	135	160	367	451	569	0.17	60	49	28	0	14	2	7	2	
27	6	14	2	22	53839	52387	-124	83	78	52	132	150	315	397	578	0.00	67	48	31	0	14	2	7	2	
28	6	12	2	20	53828	52264	-123	62	78	50	128	131	259	327	482	0.00	74	48	33	0	14	2	7	2	
29	6	12	2	20	53818	52152	-112	56	78	48	128	127	218	285	401	0.00	85	50	33	0	14	2	7	2	
30	5	11	2	18	53818	51829	-223	112	113	46	163	129	178	249	359	0.00	87	52	70	0	14	2	7	2	
31				NA					NA																
TOT																0.96									
CFS	247	569	93	909			-805	1573	768	1578	3613	4567	9489	11808	16210	MAX	87	54	513	0	168	24	69	30	
AF	480	1129	184	1803		-1596	-1596	3120	1524	3130	7166	9059	18821	23421	32153	MIN	60	46	1018	0	333	48	137	60	

RESERVOIR STORAGE
STATUS: June 30, 1998
Time: 0800 hrs

RESERVOIR DELIVERY
STATUS (ACRE FEET):

USED
1018

REMAINING

SNOTEL WATER YEAR TOTAL

Water storage elevation +/- to fill curve:
Water storage in acre ft +/- to fill curve:
Percentage of full reservoir:

SDMO: 104.8" PC
SECO: 80.1" PC

TVID
USA
LO
HLSBO
FG
BVTN
OTHER

12618
500
4667
4452
3863
710

333
48
137
205

SCOGGINS DAM - RESERVOIR OPERATIONS

For the Month of July 1998

File: 798

INFLOW				HENRY HAGG LAKE						TUALATIN RIVER						WEATHER			WATER DELIVERIES									
DAY	CFS	SCLO	TANO	INFL	W.S. ELEV FT	STOR CONT AF	CHNG STOR AF	CHNG STOR CFS	REL CFS	COMP INFL CFS	GASO CFS	DLLO CFS	GOLF CFS	ROOD CFS	FRMO CFS	WSLO CFS	PREC INCH	TEMP MAX F	TVID	USA CFS	LO CFS	HLS CFS	FG CFS	BVR	OTH CFS			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)		
1	5	12	2	19	301.77	51929	-234	-118	120	2	46	164	151	183	245	292	0.13	74	54	76	0	0	14	2	7	2		
2	5	12	2	19	301.63	51539	-156	-79	101	22	47	148	136	199	281	313	0.00	66	52	57	0	0	14	2	7	2		
3	5	12	2	19	301.48	51372	-167	-84	91	7	77	156	110	174	245	321	0.00	77	57	47	0	0	14	2	7	2		
4	5	12	2	19	301.33	51206	-166	-84	91	7	79	168	152	178	232	302	0.00	66	54	47	0	0	14	2	7	2		
5	5	12	2	19	301.23	51095	-111	-56	91	35	80	171	186	214	269	306	0.02	66	57	47	0	0	14	2	7	2		
6	5	11	2	18	301.08	50929	-166	-84	91	7	78	166	165	220	284	328	0.00	77	58	48	0	0	14	2	7	2		
7	5	11	2	18	300.92	50752	-177	-89	91	2	77	163	122	175	256	324	0.00	85	58	48	0	0	14	2	7	2		
8	5	10	2	17	300.74	50553	-199	-100	110	10	43	156	132	153	216	289	0.00	81	53	68	0	0	14	2	9	2		
9	4	10	2	16	300.55	50344	-209	-105	117	12	41	153	94	140	224	271	0.00	85	58	74	0	0	14	2	9	2		
10	4	9	2	15	300.32	50091	-253	-128	120	-8	40	153	95	129	193	245	0.00	86	54	78	0	0	14	2	9	2		
11	4	8	2	14	300.12	49872	-219	-110	120	10	38	150	110	133	189	239	0.00	74	55	79	0	0	14	2	9	2		
12	4	9	2	15	299.89	49620	-252	-127	119	-8	48	156	98	144	200	230	0.00	72	55	77	0	0	14	2	9	2		
13	4	8	2	14	299.69	49402	-218	-110	119	9	46	158	120	143	199	233	0.00	75	54	77	0	0	14	2	9	2		
14	4	8	2	14	299.48	49173	-229	-115	118	3	49	172	100	132	200	274	0.00	79	56	77	0	0	14	2	9	2		
15	4	8	2	14	299.32	48999	-174	-88	95	7	50	146	78	123	181	271	0.00	75	58	79	0	0	0	0	0	2		
16	3	8	2	13	299.12	48781	-218	-110	108	-2	50	166	74	121	171	258	0.00	82	57	93	0	0	0	0	0	2		
17	3	7	2	12	298.87	48510	-271	-137	146	9	46	193	104	120	168	167	0.00	94	56	107	0	0	7	3	14	3		
18	3	7	2	12	298.61	48229	-281	-142	146	4	76	219	114	121	175	187	0.00	91	58	107	0	0	7	3	14	3		
19	3	7	2	12	298.32	47917	-312	-157	146	-11	75	223	150	134	174	242	0.00	84	59	107	0	0	7	3	14	3		
20	3	7	2	12	298.04	47616	-301	-152	146	-6	76	226	162	161	216	245	0.00	78	55	107	0	0	7	3	14	3		
21	3	7	2	12	297.78	47337	-279	-141	145	4	75	223	135	159	223	264	0.00	87	55	103	0	3	7	3	14	3		
22	3	8	1	10	297.50	47037	-300	-151	145	-6	74	221	129	134	202	271	0.00	94	60	105	0	3	7	3	14	3		
23	3	8	1	10	297.16	46675	-362	-183	182	-1	73	258	147	124	188	292	0.00	95	55	129	0	3	18	5	14	3		
24	3	6	1	9	296.82	46310	-365	-184	182	-2	72	258	151	140	195	255	0.00	87	53	128	0	3	18	5	14	3		
25	2	6	1	8	296.47	45940	-370	-187	182	-5	72	259	172	183	201	252	0.00	83	55	129	0	3	18	5	14	4		
26	2	5	1	8	296.09	45540	-400	-202	181	-21	72	259	169	161	216	255	0.00	89	57	129	0	3	18	5	14	4		
27	2	5	1	8	295.76	45194	-346	-174	181	7	72	260	166	162	218	264	0.00	100	63	129	0	3	18	5	14	4		
28	2	5	1	8	295.40	44817	-377	-190	181	-9	71	250	164	135	194	281	0.00	108	68	129	0	3	18	5	14	4		
29	2	5	1	8	295.04	44441	-376	-190	181	-9	71	250	164	135	194	281	0.00	102	67	129	0	3	18	5	14	4		
30	2	5	1	8	294.72	44119	-322	-162	160	-2	71	231	143	142	200	281	0.00	84	58	108	0	3	18	5	14	4		
31	3	6	1	10	294.47	43849	-270	-136	140	4	74	212	163	168	213	271	0.09	74	58	97	0	3	12	4	10	4		
TOT																	0.24											
CFS	110	251	52	413			-4074	4146	72		1959	6084	4156	4740	6542	8254	MAX	108	67	2814	0	33	394	90	318	84		
AF	218	498	103	819			-8080	-8080	8224	143	3886	12068	8243	9402	12978	16372	MIN	68	52	5582	0	65	781	179	631	167		

STATUS: July 31, 1998 Time: 0800 hrs

SNOTEL WATER YEAR TOTAL
SDMO: 104.8" PC
SECO: 80.1" PC

Water storage elevation +/- to fill curve: -9.03
Water storage in acre ft +/- to fill curve: -9791
Percentage of full reservoir: 81.7%

STATUS (ACRE FEET):
TVID USA LO
HLSBO FG BVTN OTHER
Used 6800 0 85 1114 227 768 435
Remaining 12818 435 3888 4273 3232 480

Minimum required discharges:
Dec - Sept: 10 cfs
Oct-Nov: 20 cfs

File: 898

	USED
TVID	12049
USA	1200
LO	249
HLSBO	1828
FG	479
BVTN	1377
OTHER	681

Current as of 8/31

Current as of 8/31

File: 998

RESERVOIR STORAGE		Spooled Summary		RESERVOIR DELIVERY		USED		REMAINING	
STATUS: September 30, 1998		1998 Water year		TVID		14425		7397	
Time: 0800 hrs				USA		5221			
		SDMO: 108.0" pc		LO		428		72	
		SECO: 81.8" pc		HLSBO		3919		1081	
Water storage elevation +/- to fill curve: -32.33				FG		741		3759	
Water storage in acre +/- to fill curve: -31452				BVTN		2694		1306	
Percentage of full reservoir: 41.4%				OTHER		840		75	

Minimum required discharges:

Dec-Sept: 10 cfs

Sept-Oct: 20 cfs

SCOGGINS DAM - RESERVOIR OPERATIONS

For the Month of October 1998

File: 1098

HENRY HAGG LAKE										TUALATIN RIVER						WEATHER		WATER DELIVERIES																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
INFLOW					CHNG					COMPT					GASO		DLLO		GOLF		ROOD		FRMO		WSLO		PREC		TEMP		TVID		USA		LO		HLS		FG		BVR		OTH																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
DAY	CFS	CFS	CFS	TANO	W.S.	STOR	CHNG	CHNG	STOR	REL	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	INCH	INCH	F	F	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	C

RESERVOIR STORAGE
STATUS: October 31, 1998
Time: 0800 hrs

RESERVOIR DELIVERY
STATUS (ACRE FEET):
Current as of 10/31

REMAINING

USED	14756
TVID	8514
LO	499
HLSBO	4522
FG	816
BVTN	3505
OTHER	878

SDMO: 7.5" precip
SECO: 5.4" precip

Water storage elevation +/- to fill curve:
Water storage in acre ft +/- to fill curve:
Percentage of full reservoir:

-39.47
-37045
30.9%

Minimum required discharges:
Dec - Sept: 10 cfs
Oct-Nov: 20 cfs

SCOGGINS DAM - RESERVOIR OPERATIONS For the Month of November 1998

File: 1193

DAY	INFLOW					HENRY HAGG LAKE					TUALATIN RIVER					WEATHER			WATER DELIVERIES							
	SCHO	SCLO	TANO	TOTAL	INFO	W.S.	STOR	CHNG	CHNG	COMP	GASO	DLLO	GOLF	ROOD	FRMO	WSLO	PREC	TEMP	TVID	CFS	USA	LO	HLS	FG	BVR	OTH
	CFS	CFS	CFS	CFS	CFS	FT	CONT	AF	AF	REL	CFS	CFS	CFS	CFS	CFS	CFS	INCH	MAX								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)
1	3	12	3	18	283.75	16595	-200	-101	101	0	19	147	137	183	234	308	0.12	49	38	0	71	0	0	0	12	0
2	4	15	3	22	283.47	16395	-208	-104	101	-3	20	148	152	194	245	344	0.15	54	48	0	67	0	0	0	12	0
3	3	14	3	20	283.27	16189	-147	-74	101	27	22	150	189	200	265	367	0.07	54	44	0	69	0	0	0	12	0
4	5	25	4	34	283.05	15881	-161	-81	101	20	43	180	172	208	262	380	0.40	51	46	0	89	0	0	0	12	0
5	10	30	4	44	282.91	15778	-103	-52	101	49	61	188	279	384	365	701	0.57	55	42	0	89	0	0	0	12	0
6	10	30	4	44	282.77	15878	-102	-51	77	26	66	175	285	466	569	733	0.21	54	42	0	85	0	0	0	12	0
7	10	31	3	44	282.72	15840	-38	-18	39	21	66	137	229	461	562	764	0.16	54	42	0	0	0	0	0	12	0
8	9	35	4	48	282.69	15818	-22	-11	39	28	75	149	228	427	534	754	0.25	48	42	0	0	0	0	0	12	0
9	7	28	3	38	282.62	15567	-51	-28	38	13	59	128	233	389	485	665	0.00	49	40	0	0	0	0	0	12	0
10	12	28	4	42	282.67	15803	38	18	28	44	50	107	193	291	382	579	0.26	47	38	0	0	0	0	0	0	0
11	11	33	4	48	282.71	15633	30	15	20	35	73	140	228	288	339	534	0.23	49	45	0	0	0	0	0	0	0
12	8	29	4	41	282.78	15889	38	18	20	38	80	116	208	285	334	477	0.00	53	45	0	0	0	0	0	0	0
13	7	27	4	38	282.79	15891	22	11	20	31	51	103	157	239	305	449	0.07	50	41	0	0	0	0	0	0	0
14	8	25	4	35	282.82	15705	14	7	20	27	46	100	146	212	284	409	0.04	52	44	0	0	0	0	0	0	0
15	17	43	7	67	282.89	15764	59	30	20	50	62	98	143	201	258	422	0.85	57	49	0	0	0	0	0	0	0
16	12	48	6	58	282.95	15807	43	22	20	42	97	160	313	249	305	468	0.03	63	46	0	0	0	0	0	0	0
17	9	39	5	53	282.99	15837	30	15	21	38	78	138	282	354	415	472	0.00	50	40	0	0	0	0	0	0	0
18	6	34	5	47	283.04	15873	38	18	21	39	68	123	238	328	410	584	0.12	57	40	0	0	0	0	0	0	0
19	7	32	4	43	283.08	15888	15	8	21	29	56	114	213	301	383	405	0.10	55	38	0	0	0	0	0	0	0
20	45	129	12	166	283.27	18042	154	78	23	101	113	149	205	277	349	574	1.15	48	40	0	0	0	0	0	0	0
21	99	423	25	547	285.05	17367	1325	688	23	891	1032	848	1255	1166	1174	1404	2.01	54	47	0	0	0	0	0	0	0
22	81	318	17	416	286.47	18448	1081	545	23	568	659	938	1673	1940	2352	2550	0.87	51	45	0	0	0	0	0	0	0
23	80	245	12	338	287.47	19223	775	391	24	415	423	799	1940	2530	2843	3460	0.65	50	44	0	0	0	0	0	0	0
24	108	322	17	447	288.59	20105	882	445	24	469	857	793	2018	2812	3181	4027	0.83	49	40	0	0	0	0	0	0	0
25	385	1075	51	1491	270.80	21970	1885	940	27	987	2313	1237	2276	3181	3525	4806	2.18	51	35	0	0	0	0	0	0	0
26	225	849	30	1204	275.55	25878	3908	1889	28	1895	2570	3438	5098	4376	4521	7088	2.45	53	44	0	0	0	0	0	0	0
27	150	432	28	810	277.52	27594	1718	868	26	892	987	2137	4938	6604	7006	8475	0.18	43	37	0	0	0	0	0	0	0
28	110	229	22	361	278.68	28824	1030	519	26	545	519	1293	3087	10110	10090	7327	0.04	51	32	0	0	0	0	0	0	0
29	95	191	20	306	278.43	29286	682	334	27	361	452	807	2918	7741	8874	8884	0.83	38	34	0	0	0	0	0	0	0
30	97	208	20	323	280.28	30073	787	397	26	NA	453	941	2500	6702	7478	9144	0.76	44	38	0	0	0	0	0	0	0
TOT																	15.20									
CFS	1613	5075	332	7020			6795	1185	7980		11228	15857	31885	53142	58309	65152	MAX	63	49	0	450	0	0	0	108	0
AF	3199	10068	859	13924			13478	13478	2350	15829	22267	31452	63244	105407	115856	129229	MIN	38	32	0	893	0	0	0	214	0

RESERVOIR STORAGE
STATUS: November 30, 1998
Time: 0800 hrs

Water storage elevation +/- to fill curve:
-3.21
Water storage in acre ft +/- to fill curve:
-2987
Percentage of full reservoir:
56.1%

SNOTEL SUMMARY

SDMO: 32.8" pc & 1.3" snow water
SECO: 25.3" pc & 0" snow water

RESERVOIR DELIVERY STATUS (ACRE FEET): Current as of 11/30

USED	REMAINING
TVID 14756	TVID 9407
USA 9407	USA 499
LO 499	LO 4522
HLSBO 4522	HLSBO 478
FG 818	FG 3682
BVTN 3719	BVTN 281
OTHER 878	OTHER

SCOGGINS DAM - RESERVOIR OPERATIONS For the Month of December 1998

File: 1298

DAY	INFLOW				HENRY HAGG LAKE										TUALATIN RIVER						WEATHER			WATER DELIVERIES									
	SCHO		SCLO	TANO	TOTAL INFLW	W.S. ELEV FT	STOR AF	CHNG AF	CHNG CFS	STOR CFS	CHNG CFS	REL CFS	COMP INFLW	GASO CFS	DILLO CFS	GOLF CFS	ROOD CFS	FRMO CFS	WSLO CFS	PREC INCH	TEMP MAX F	TVID CFS	USA (20)	LO (21)	HLS (22)	FG (23)	BVR (24)	OTH CFS					
	CFS	CFS	CFS	CFS																									CFS	CFS	CFS	CFS	CFS
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)								
1	113	271	20	404	281.28	30978	903	455	28	483	822	1154	2486	6481	6928	9108	0.59	44	39														
2	312	923	44	1279	284.02	33525	2549	1285	29	1314	2528	2562	2982	6889	7247	9288	2.14	49	40														
3	165	482	26	683	286.22	35818	2093	1055	30	1085	1178	2175	4825	7561	7980	8736	0.44	48	35														
4	130	308	20	458	287.54	38893	1275	643	30	673	708	1454	3518	6103	9231	8649	0.04	43	32														
5	118	206	18	342	288.39	37722	829	418	30	448	471	1018	3072	7645	8529	8948	0.00	44	32														
6	114	158	17	289	289.16	38479	757	382	31	413	409	846	2811	6735	7298	8824	0.81	39	32														
7	108	152	16	276	289.73	39043	564	284	31	315	345	722	2237	8054	6082	8187	0.12	43	37														
8	108	191	19	318	290.53	39840	797	402	33	435	501	757	2128	5604	5608	7717	0.80	42	32														
9	92	155	17	284	290.85	40160	320	161	209	370	368	902	2171	5206	5204	6993	0.05	42	35														
10	80	129	16	225	291.05	40361	201	101	207	308	323	815	2171	4900	4884	6429	0.00	45	35														
11	108	171	17	296	291.09	40401	40	20	318	338	405	857	1831	4610	4603	6096	0.58	47	38														
12	130	451	18	599	291.84	41157	756	381	293	874	908	1414	2255	4423	4435	5918	0.95	50	45														
13	156	802	20	778	293.41	42756	1599	808	24	830	1365	1495	2757	4466	4430	5859	0.67	59	50														
14	166	385	19	570	294.66	44046	1290	850	24	674	803	1454	3082	4871	4584	5685	0.05	52	37														
15	102	241	17	380	295.55	44974	928	468	24	429	533	1018	2170	4954	4684	5656	0.00	47	34														
16	84	181	15	280	295.75	45183	209	105	24	182	399	987	2421	4954	4684	5656	0.00	44	33														
17	71	142	13	226	295.35	44785	-418	-211	524	313	265	1118	2103	4802	4535	5599	0.00	50	33														
18	61	114	11	186	294.57	43953	-812	-409	625	216	217	1139	1960	4165	4282	5379	0.03	43	31														
19	56	94	8	158	293.63	42962	-971	-480	649	159	234	1132	1863	3842	3987	5023	0.00	44	29														
20	48	82	6	136	292.67	42000	-982	-485	603	108	200	1044	1734	3524	3694	4618	0.00	37	18														
21	41	73	5	119	291.68	40998	-1002	-505	565	60	177	941	1564	3238	3398	4217	0.00	28	13														
22	NA	67	NA	67	290.30	39610	-1388	-700	781	81	164	948	1422	3238	3105	3818	0.07	23	11														
23	62	62	62	62	288.67	37997	-1613	-813	822	9	154	1118	1418	2939	2807	3417	0.00	27	12														
24	61	61	61	61	287.21	36573	-1424	-718	822	104	145	1226	1412	2712	2538	3089	0.15	25	15														
25	64	64	64	64	286.23	35728	-845	-428	545	119	291	1123	1688	2683	2547	2954	0.70	37	23														
26	208	208	208	208	286.42	35810	82	41	219	260	734	1150	1409	2547	2417	2954	0.81	45	35														
27	245	245	245	245	286.49	35878	68	34	109	143	467	980	1766	2802	2843	3141	0.49	42	35														
28	1000	1000	1000	1000	291.05	40361	4483	2260	23	2283	2960	3670	3007	4468	3987	6156	2.35	48	39														
29	802	802	802	802	293.72	42051	1690	852	25	877	2371	3220	5058	5004	4717	6724	1.01	47	45														
30	612	612	612	612	296.08	45508	3457	1743	25	1788	1687	2852	4545	7859	7715	7010	0.24	47	43														
31	436	436	436	436	297.55	47091	1583	798	25	823	1077	2120	3885	7979	8972	8167	0.18	47	39														
TOT																	13.27																
CFS	2363	9086	362	11821			8580	7727	16307	23069	43569	77412	155121	157690	190091		MAX	59	50														
AF	4687	18042	718	23447			17018	17018	15327	32345	45757	88459	153547	307683	312778	377045		MIN	23	11													

RESERVOIR STORAGE
STATUS: December 31, 1998
Time: 0800 hrs

Water storage elevation +/- to fill curve:
Water storage in acre ft +/- to fill curve:
Percentage of full reservoir:

14.05
14051
87.8%

SNOTEL SUMMARY

12/31/98
SDMO: 62.2" pc, 0 sw & 0 Sno depth
SECO: 48.4" pc & 0 sw

RESERVOIR DELIVERY STATUS (ACRE FEET): Year end totals for WY 1998

RESERVOIR DELIVERY	USED	REMAINING
TVID	14756	3211
USA	9407	1
LO	499	478
HLSBO	4522	3682
FG	818	281
BVTN	3719	
OTHER	878	

Minimum required discharges:
Dec - Sept: 10 cfs
Oct-Nov: 20 cfs

Barney Reservoir Operations

Appendix D

BARNEY RESERVOIR OPERATIONS																
For The Month of Dec-98																
Day	Surface Elevation	Storage Acre Feet	Rel. to Trask cfs	Rel. to Total Rel. cfs	Hills. cfs	A.F. MGD	F.G. cfs	A.F. MGD	Beav. cfs	A.F. MGD	TVWD cfs	A.F. MGD	USA cfs	A.F. MGD		
1	1597.80	5800.00	4.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2			4.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3			4.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4			4.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5			4.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6			4.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	1603.00	6800.00	4.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8			4.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9			4.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10			4.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11			4.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12			4.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13			4.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	1611.00	9300.00	4.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15			4.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16			4.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17			4.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	1613.00	9900.00	16.00	0.00	16.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19			16.00	0.00	16.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20			16.00	0.00	16.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	1613.50	10000.00	26.00	0.00	26.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22			26.00	0.00	26.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23			26.00	0.00	26.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	1613.80	10000.00	36.00	0.00	36.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25			36.00	0.00	36.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26			36.00	0.00	36.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27			36.00	0.00	36.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	1618.80	11250.00	46.00	0.00	46.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29			46.00	0.00	46.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30			46.00	0.00	46.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	1622.25	12600	56.00	0.00	56.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals					532.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					1998	904.20	1789.98	583.35	38.00	75.23	24.52	859.00	1700.50	554.19	966.00	1912.32
															1403.80	2779.00
															905.68	

BARNEY RESERVOIR OPERATIONS																					
For The Month of														Nov-98							
		Storage		Rel. to		Total		River level													
Day	Surface Elevation	Acres	Feet	Trask	cfs	Rel.	cfs	Bridge	Hills.	A.F.	MGD	F.G.	A.F.	MGD	Beav.	A.F.	MGD	TVWD.	A.F.	MGD	USA
1				6.00	0.00	6.00				0	0	0	0	0	0	0	0	0	0	0	
2	1572.60	1390.00		3.50	0.00	3.50				0	0	0	0	0	0	0	0	0	0	0	
3				3.50	0.00	3.50				0	0	0	0	0	0	0	0	0	0	0	
4				3.50	0.00	3.50				0	0	0	0	0	0	0	0	0	0	0	
5				3.50	0.00	3.50				0	0	0	0	0	0	0	0	0	0	0	
6				3.50	0.00	3.50				0	0	0	0	0	0	0	0	0	0	0	
7				3.50	0.00	3.50				0	0	0	0	0	0	0	0	0	0	0	
8				3.50	0.00	3.50				0	0	0	0	0	0	0	0	0	0	0	
9	1573.50	1600.00		3.50	0.00	3.50				0	0	0	0	0	0	0	0	0	0	0	
10				3.50	0.00	3.50				0	0	0	0	0	0	0	0	0	0	0	
11				3.50	0.00	3.50				0	0	0	0	0	0	0	0	0	0	0	
12				3.50	0.00	3.50				0	0	0	0	0	0	0	0	0	0	0	
13	1575.20	1692.00		6.00	0.00	6.00				0	0	0	0	0	0	0	0	0	0	0	
14				6.00	0.00	6.00				0	0	0	0	0	0	0	0	0	0	0	
15				6.00	0.00	6.00				0	0	0	0	0	0	0	0	0	0	0	
16				6.00	0.00	6.00				0	0	0	0	0	0	0	0	0	0	0	
17				6.00	0.00	6.00				0	0	0	0	0	0	0	0	0	0	0	
18				6.00	0.00	6.00				0	0	0	0	0	0	0	0	0	0	0	
19				6.00	0.00	6.00				0	0	0	0	0	0	0	0	0	0	0	
20				6.00	0.00	6.00				0	0	0	0	0	0	0	0	0	0	0	
21				6.00	0.00	6.00				0	0	0	0	0	0	0	0	0	0	0	
22				6.00	0.00	6.00				0	0	0	0	0	0	0	0	0	0	0	
23				6.00	0.00	6.00				0	0	0	0	0	0	0	0	0	0	0	
24				6.00	0.00	6.00				0	0	0	0	0	0	0	0	0	0	0	
25				6.00	0.00	6.00				0	0	0	0	0	0	0	0	0	0	0	
26				6.00	0.00	6.00				0	0	0	0	0	0	0	0	0	0	0	
27				6.00	0.00	6.00				0	0	0	0	0	0	0	0	0	0	0	
28				6.00	0.00	6.00				0	0	0	0	0	0	0	0	0	0	0	
29				6.00	0.00	6.00				0	0	0	0	0	0	0	0	0	0	0	
30				6.00	0.00	6.00				0	0	0	0	0	0	0	0	0	0	0	
Totals						152.50		Totals		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
								1998		904.20	1789.98	583.35	38.00	75.23	24.52	859.00	1700.50	554.19	966.00	1912.32	623.23
																				1403.80	
																				2779.00	
																				905.68	

BARNEY RESERVOIR OPERATIONS																
For The Month of Oct-98																
Day	Surface Elevation	Storage Acre Feet	Rel. to Task cfs	Rel. to Total Rel. cfs	Rel. cfs	Hills. cfs	A.F.	MGD	F.G. cfs	A.F.	MGD	Beav. cfs	A.F.	MGD	TWWD cfs	USA cfs
1	1574.50	1700.00	20.00	5.00	25.00	0.00	0	0	0	0	0	0	0	0	5.00	9.89815 3.2258
2			20.00	5.00	25.00	0.00	0	0	0	0	0	0	0	0	5.00	9.89815 3.2258
3			20.00	5.00	25.00	0.00	0	0	0	0	0	0	0	0	5.00	9.89815 3.2258
4			20.00	5.00	25.00	0.00	0	0	0	0	0	0	0	0	5.00	9.89815 3.2258
5			20.00	5.00	25.00	0.00	0	0	0	0	0	0	0	0	5.00	9.89815 3.2258
6			20.00	5.00	25.00	0.00	0	0	0	0	0	0	0	0	5.00	9.89815 3.2258
7			20.00	5.00	25.00	0.00	0	0	0	0	0	0	0	0	5.00	9.89815 3.2258
8			20.00	5.00	25.00	0.00	0	0	0	0	0	0	0	0	5.00	9.89815 3.2258
9	1573.50	1700.00	20.00	5.00	25.00	0.00	0	0	0	0	0	0	0	0	5.00	9.89815 3.2258
10			20.00	5.00	25.00	0.00	0	0	0	0	0	0	0	0	5.00	9.89815 3.2258
11			20.00	5.00	25.00	0.00	0	0	0	0	0	0	0	0	5.00	9.89815 3.2258
12			20.00	5.00	25.00	0.00	0	0	0	0	0	0	0	0	5.00	9.89815 3.2258
13			20.00	5.00	25.00	0.00	0	0	0	0	0	0	0	0	5.00	9.89815 3.2258
14			20.00	5.00	25.00	0.00	0	0	0	0	0	0	0	0	5.00	9.89815 3.2258
15			20.00	5.00	25.00	0.00	0	0	0	0	0	0	0	0	5.00	9.89815 3.2258
16			20.00	5.00	25.00	0.00	0	0	0	0	0	0	0	0	5.00	9.89815 3.2258
17			20.00	5.00	25.00	0.00	0	0	0	0	0	0	0	0	5.00	9.89815 3.2258
18			20.00	5.00	25.00	0.00	0	0	0	0	0	0	0	0	5.00	9.89815 3.2258
19	1571.90	1335.00	6.00	0.00	6.00	0.00	0	0	0	0	0	0	0	0	0.00	0
20			6.00	0.00	6.00	0.00	0	0	0	0	0	0	0	0	0.00	0
21			6.00	0.00	6.00	0.00	0	0	0	0	0	0	0	0	0.00	0
22			6.00	0.00	6.00	0.00	0	0	0	0	0	0	0	0	0.00	0
23			6.00	0.00	6.00	0.00	0	0	0	0	0	0	0	0	0.00	0
24			6.00	0.00	6.00	0.00	0	0	0	0	0	0	0	0	0.00	0
25			6.00	0.00	6.00	0.00	0	0	0	0	0	0	0	0	0.00	0
26			6.00	0.00	6.00	0.00	0	0	0	0	0	0	0	0	0.00	0
27			6.00	0.00	6.00	0.00	0	0	0	0	0	0	0	0	0.00	0
28			6.00	0.00	6.00	0.00	0	0	0	0	0	0	0	0	0.00	0
29			6.00	0.00	6.00	0.00	0	0	0	0	0	0	0	0	0.00	0
30			6.00	0.00	6.00	0.00	0	0	0	0	0	0	0	0	0.00	0
31			6.00	0.00	6.00	0.00	0	0	0	0	0	0	0	0	0.00	0
Totals					483.00	904.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.00	188.06
							1789.98	583.35	38.00	75.23	24.52	859.00	1700.50	554.19	966.00	1912.32
						1998										2779.00
																905.88

BARNEY RESERVOIR OPERATIONS													
For The Month of													
Sep-98													
River level													
Day	Surface Elevation	Storage Acres	Rel. to Task cfs	Rel. to Tual. cfs	Hills. cfs	F.G. MGD	F.G. cfs	A.F. MGD	Beav. MGD	Beav. cfs	A.F. MGD	TWWD MGD	USA cfs
1			20.00	10.00	30.00	0.00	0.00	0.00	0.00	0.00	0.00	19.7963	6.4516
2			20.00	10.00	30.00	0.00	0.00	0.00	0.00	0.00	0.00	19.7963	6.4516
3	1582.00		20.00	5.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	19.7963	6.4516
4			20.00	5.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	9.89815	3.2258
5			20.00	5.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	9.89815	3.2258
6			20.00	5.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	9.89815	3.2258
7			20.00	5.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	9.89815	3.2258
8			20.00	5.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	9.89815	3.2258
9			20.00	5.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	9.89815	3.2258
10			20.00	5.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	9.89815	3.2258
11	1580.15	2000.00	20.00	5.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	9.89815	3.2258
12			20.00	5.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	9.89815	3.2258
13			20.00	5.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	9.89815	3.2258
14			20.00	5.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	9.89815	3.2258
15			20.00	5.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	9.89815	3.2258
16			20.00	5.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	9.89815	3.2258
17			20.00	5.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	9.89815	3.2258
18	1578.30	1800.00	20.00	5.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	9.89815	3.2258
19			20.00	5.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	9.89815	3.2258
20			20.00	5.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	9.89815	3.2258
21			20.00	5.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	9.89815	3.2258
22			20.00	5.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	9.89815	3.2258
23			20.00	5.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	9.89815	3.2258
24			20.00	5.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	9.89815	3.2258
25	1576.60	1700.00	20.00	5.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	9.89815	3.2258
26			20.00	5.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	9.89815	3.2258
27			20.00	5.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	9.89815	3.2258
28			20.00	5.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	9.89815	3.2258
29			20.00	5.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	9.89815	3.2258
30			20.00	5.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	9.89815	3.2258
Totals						904.20	1789.98	583.35	38.00	75.23	24.52	859.00	1700.50
												165.00	326.64
												1724.26	561.94
												1403.80	2779.00
												905.68	

		BARNEY RESERVOIR OPERATIONS																						
		For The Month of															Aug-98							
		River level																						
		Surface	Storage	Rel. to	Rel. to	Total	Raines	Hills.	A.F.	MGD	cfs	F.G.	A.F.	MGD	cfs	Beav.								
Day	Elevation	Acres	Feet	Task	cfs	Rel. cfs	Bridge																	
1				20.00	68.00	88.00		16.70	33.06	10.77	0.00	0	0	12.00	23.7556	7.7419	10.00	19.7963	6.4516	29.30	58.0031	18.903		
2				20.00	68.00	88.00		16.70	33.06	10.77	0.00	0	0	12.00	23.7556	7.7419	10.00	19.7963	6.4516	29.30	58.0031	18.903		
3				20.00	68.00	88.00		16.70	33.06	10.77	0.00	0	0	12.00	23.7556	7.7419	10.00	19.7963	6.4516	29.30	58.0031	18.903		
4				20.00	68.00	88.00		16.70	33.06	10.77	0.00	0	0	12.00	23.7556	7.7419	10.00	19.7963	6.4516	29.30	58.0031	18.903		
5				20.00	68.00	88.00		16.70	33.06	10.77	0.00	0	0	12.00	23.7556	7.7419	10.00	19.7963	6.4516	29.30	58.0031	18.903		
6				20.00	68.00	88.00		16.70	33.06	10.77	0.00	0	0	12.00	23.7556	7.7419	10.00	19.7963	6.4516	29.30	58.0031	18.903		
7	1590.00	4000.00		20.00	68.00	88.00		16.70	33.06	10.77	0.00	0	0	12.00	23.7556	7.7419	10.00	19.7963	6.4516	29.30	58.0031	18.903		
8				20.00	68.00	88.00		16.70	33.06	10.77	0.00	0	0	12.00	23.7556	7.7419	10.00	19.7963	6.4516	29.30	58.0031	18.903		
9				20.00	68.00	88.00		16.70	33.06	10.77	0.00	0	0	12.00	23.7556	7.7419	10.00	19.7963	6.4516	29.30	58.0031	18.903		
10				20.00	68.00	88.00		16.70	33.06	10.77	0.00	0	0	12.00	23.7556	7.7419	10.00	19.7963	6.4516	29.30	58.0031	18.903		
11	1596.15			20.00	68.00	88.00		16.70	33.06	10.77	0.00	0	0	12.00	23.7556	7.7419	10.00	19.7963	6.4516	29.30	58.0031	18.903		
12				20.00	68.00	88.00		16.70	33.06	10.77	0.00	0	0	12.00	23.7556	7.7419	10.00	19.7963	6.4516	29.30	58.0031	18.903		
13				20.00	68.00	88.00		16.70	33.06	10.77	0.00	0	0	12.00	23.7556	7.7419	10.00	19.7963	6.4516	29.30	58.0031	18.903		
14	1594.80	5900.00		20.00	68.00	88.00		16.70	33.06	10.77	0.00	0	0	12.00	23.7556	7.7419	10.00	19.7963	6.4516	29.30	58.0031	18.903		
15				20.00	68.00	88.00		16.70	33.06	10.77	0.00	0	0	12.00	23.7556	7.7419	10.00	19.7963	6.4516	29.30	58.0031	18.903		
16				20.00	68.00	88.00		16.70	33.06	10.77	0.00	0	0	12.00	23.7556	7.7419	10.00	19.7963	6.4516	29.30	58.0031	18.903		
17				20.00	68.00	88.00		16.70	33.06	10.77	0.00	0	0	12.00	23.7556	7.7419	10.00	19.7963	6.4516	29.30	58.0031	18.903		
18				20.00	68.00	88.00		16.70	33.06	10.77	0.00	0	0	12.00	23.7556	7.7419	10.00	19.7963	6.4516	29.30	58.0031	18.903		
19				20.00	68.00	88.00		16.70	33.06	10.77	0.00	0	0	12.00	23.7556	7.7419	10.00	19.7963	6.4516	29.30	58.0031	18.903		
20				20.00	68.00	88.00		16.70	33.06	10.77	0.00	0	0	12.00	23.7556	7.7419	10.00	19.7963	6.4516	29.30	58.0031	18.903		
21	1590.15	4100.00		20.00	68.00	88.00		16.70	33.06	10.77	0.00	0	0	12.00	23.7556	7.7419	10.00	19.7963	6.4516	29.30	58.0031	18.903		
22				20.00	68.00	88.00		16.70	33.06	10.77	0.00	0	0	12.00	23.7556	7.7419	10.00	19.7963	6.4516	29.30	58.0031	18.903		
23				20.00	68.00	88.00		16.70	33.06	10.77	0.00	0	0	12.00	23.7556	7.7419	10.00	19.7963	6.4516	29.30	58.0031	18.903		
24				20.00	68.00	88.00		16.70	33.06	10.77	0.00	0	0	12.00	23.7556	7.7419	10.00	19.7963	6.4516	29.30	58.0031	18.903		
25				20.00	68.00	88.00		16.70	33.06	10.77	0.00	0	0	12.00	23.7556	7.7419	10.00	19.7963	6.4516	29.30	58.0031	18.903		
26				20.00	68.00	88.00		16.70	33.06	10.77	0.00	0	0	12.00	23.7556	7.7419	10.00	19.7963	6.4516	29.30	58.0031	18.903		
27				20.00	68.00	88.00		16.70	33.06	10.77	0.00	0	0	12.00	23.7556	7.7419	10.00	19.7963	6.4516	29.30	58.0031	18.903		
28	1594.85	2800.00		20.00	35.00	55.00		13.00	25.735	8.387	0.00	0	0	12.00	23.7552	7.7419	10.00	19.7963	6.4516	29.30	58.0031	18.903		
29				20.00	35.00	55.00		13.00	25.735	8.387	0.00	0	0	13.00	25.7352	8.3871	10.00	19.7963	6.4516	29.30	58.0031	18.903		
30				20.00	35.00	55.00		13.00	25.735	8.387	0.00	0	0	13.00	25.7352	8.3871	10.00	19.7963	6.4516	29.30	58.0031	18.903		
31	1583.20	2500.00		20.00	35.00	55.00		13.00	25.735	8.387	0.00	0	0	13.00	25.7352	8.3871	10.00	19.7963	6.4516	29.30	58.0031	18.903		
						2596.00		Totals	904.90	998	324.45	0.00	0	0.00	375.00	742	241.94	310.00	614	200	791.10	1566	510	
Totals								1998	904.20	1790	583.35	38.00	75	24.52	859.00	1701	554.19	706.00	1396	455	1403.80	2779	906	

		BARNET RESERVOIR OPERATIONS																
		For The Month of																
		River level																
		Raines																
Day	Surface Elevation	Storage Acre Feet	Rel. to Trask cfs	Rel. to Total cfs	Bridge Rel. cfs	Hills. cfs	A.F.	MGD	F.G.	MGD	Beav. cfs	A.F.	MGD	TVWD cfs	MGD	USA cfs	MGD	
1			8.00	20.00	28.00	0.00	0	0	0.00	0	0	0	0	0	0	17.8167	5.8065	
2	1613.80	9950.00	8.00	40.00	48.00	12.00	23.756	7.742	0.00	0	0	0	0	0	0	17.8167	5.8065	
3			8.00	40.00	48.00	12.00	23.756	7.742	0.00	0	0	0	0	0	0	17.8167	5.8065	
4			8.00	40.00	48.00	12.00	23.756	7.742	0.00	0	0	0	0	0	0	17.8167	5.8065	
5			8.00	40.00	48.00	12.00	23.756	7.742	0.00	0	0	0	0	0	0	17.8167	5.8065	
6			8.00	40.00	48.00	12.00	23.756	7.742	0.00	0	0	0	0	0	0	17.8167	5.8065	
7	1612.30	9500.00	8.00	20.00	28.00	0.00	0	0	0.00	0	0	0	0	0	0	17.8167	5.8065	
8			8.00	20.00	28.00	0.00	0	0	0.00	0	0	0	0	0	0	17.8167	5.8065	
9			8.00	20.00	28.00	0.00	0	0	0.00	0	0	0	0	0	0	17.8167	5.8065	
10			8.00	20.00	28.00	0.00	0	0	0.00	0	0	0	0	0	0	17.8167	5.8065	
11			8.00	40.00	48.00	12.00	23.756	7.742	0.00	0	0	0	0	0	0	17.8167	5.8065	
12			8.00	40.00	48.00	12.00	23.756	7.742	0.00	0	0	0	0	0	0	17.8167	5.8065	
13	1611.20		20.00	60.00	80.00	16.70	33.06	10.77	2.00	3.959	1.29	3.959	1.29	3.959	1.29	42.1661	13.742	
14			20.00	60.00	80.00	16.70	33.06	10.77	2.00	3.959	1.29	3.959	1.29	3.959	1.29	42.1661	13.742	
15			20.00	60.00	80.00	16.70	33.06	10.77	2.00	3.959	1.29	3.959	1.29	3.959	1.29	42.1661	13.742	
16			20.00	60.00	80.00	16.70	33.06	10.77	2.00	3.959	1.29	3.959	1.29	3.959	1.29	42.1661	13.742	
17	1610.20	9000.00	20.00	68.00	88.00	16.70	33.06	10.77	2.00	3.959	1.29	3.959	1.29	3.959	1.29	58.0031	18.903	
18			20.00	68.00	88.00	16.70	33.06	10.77	2.00	3.959	1.29	3.959	1.29	3.959	1.29	58.0031	18.903	
19			20.00	68.00	88.00	16.70	33.06	10.77	2.00	3.959	1.29	3.959	1.29	3.959	1.29	58.0031	18.903	
20			20.00	68.00	88.00	16.70	33.06	10.77	2.00	3.959	1.29	3.959	1.29	3.959	1.29	58.0031	18.903	
21			20.00	68.00	88.00	16.70	33.06	10.77	2.00	3.959	1.29	3.959	1.29	3.959	1.29	58.0031	18.903	
22			20.00	68.00	88.00	16.70	33.06	10.77	2.00	3.959	1.29	3.959	1.29	3.959	1.29	58.0031	18.903	
23	1607.30		20.00	68.00	88.00	16.70	33.06	10.77	2.00	3.959	1.29	3.959	1.29	3.959	1.29	58.0031	18.903	
24			20.00	68.00	88.00	16.70	33.06	10.77	2.00	3.959	1.29	3.959	1.29	3.959	1.29	58.0031	18.903	
25			20.00	68.00	88.00	16.70	33.06	10.77	2.00	3.959	1.29	3.959	1.29	3.959	1.29	58.0031	18.903	
26			20.00	68.00	88.00	16.70	33.06	10.77	2.00	3.959	1.29	3.959	1.29	3.959	1.29	58.0031	18.903	
27			20.00	68.00	88.00	16.70	33.06	10.77	2.00	3.959	1.29	3.959	1.29	3.959	1.29	58.0031	18.903	
28			20.00	68.00	88.00	16.70	33.06	10.77	2.00	3.959	1.29	3.959	1.29	3.959	1.29	58.0031	18.903	
29			20.00	68.00	88.00	16.70	33.06	10.77	2.00	3.959	1.29	3.959	1.29	3.959	1.29	58.0031	18.903	
30			20.00	68.00	88.00	16.70	33.06	10.77	2.00	3.959	1.29	3.959	1.29	3.959	1.29	58.0031	18.903	
31	1603.00		20.00	68.00	88.00	16.70	33.06	10.77	2.00	3.959	1.29	3.959	1.29	3.959	1.29	58.0031	18.903	
Totals					2116.00	Totals	401.30	794	258.90	38.00	75	24.52	341.00	675	220.00	279.00	552	180
						1998	401.30	794	258.90	38.00	75	24.52	484.00	958	312.26	396.00	784	255
																612.70	1213	395.29

BALDWIN RESERVOIR OPERATIONS													
For The Month of Jun-98													
Day	Surface Elevation	Storage Acre Feet	Rel. to Task cfs	Rel. to Total Rel. cfs	Rel. level	Hills. cfs	A.F.	MGD	F.Q. cfs	MGD	A.F.	MGD	Beav. cfs
1	1615.90	10800.00	16.00	0.00	16.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	1615.90	10800.00	16.00	0.00	16.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3			16.00	0.00	16.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4			16.00	0.00	16.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	1615.90	10800.00	16.00	0.00	16.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6			16.00	0.00	16.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7			16.00	0.00	16.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	1615.70	10800.00	16.00	0.00	16.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9			16.00	0.00	16.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10			16.00	0.00	16.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11			16.00	0.00	16.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	1615.50	10500.00	12.00	0.00	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13			12.00	0.00	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14			12.00	0.00	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15			12.00	0.00	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16			12.00	0.00	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17			12.00	0.00	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	1615.40	10600.00	8.00	20.00	28.00	0.00	0.00	0.00	0.00	0.00	21.7759	7.0968	11.00
19	1615.30	10600.00	8.00	20.00	28.00	0.00	0.00	0.00	0.00	0.00	21.7759	7.0968	11.00
20			8.00	20.00	28.00	0.00	0.00	0.00	0.00	0.00	21.7759	7.0968	11.00
21			8.00	20.00	28.00	0.00	0.00	0.00	0.00	0.00	21.7759	7.0968	11.00
22			8.00	20.00	28.00	0.00	0.00	0.00	0.00	0.00	21.7759	7.0968	11.00
23			8.00	20.00	28.00	0.00	0.00	0.00	0.00	0.00	21.7759	7.0968	11.00
24			8.00	20.00	28.00	0.00	0.00	0.00	0.00	0.00	21.7759	7.0968	11.00
25			8.00	20.00	28.00	0.00	0.00	0.00	0.00	0.00	21.7759	7.0968	11.00
26	1614.60	10200.00	8.00	20.00	28.00	0.00	0.00	0.00	0.00	0.00	21.7759	7.0968	11.00
27			8.00	20.00	28.00	0.00	0.00	0.00	0.00	0.00	21.7759	7.0968	11.00
28			8.00	20.00	28.00	0.00	0.00	0.00	0.00	0.00	21.7759	7.0968	11.00
29			8.00	20.00	28.00	0.00	0.00	0.00	0.00	0.00	21.7759	7.0968	11.00
30			8.00	20.00	28.00	0.00	0.00	0.00	0.00	0.00	21.7759	7.0968	11.00
Totals					612.00		0.00	0.00	0.00	0.00	283.09	92.26	143.00
						1998	0.00	0.00	0.00	0.00	231.62	75.48	0.00

BARNEY RESERVOIR OPERATIONS													
For The Month of May-98													
Day	Surface Elevation	Storage Acre Feet	Rel. to Task cfs	Rel. to Tual. cfs	Total Rel. cfs	Rainfall Bridge	Hills. cfs	A.F.	MGD	F.G. cfs	A.F.	MGD	Beav. cfs
1	1614.00	10000.00	14.00	0.00	14.00		0.00	0	0.00	0	0.00	0	0.00
2			14.00	0.00	14.00		0.00	0	0.00	0	0.00	0	0.00
3			14.00	0.00	14.00		0.00	0	0.00	0	0.00	0	0.00
4			14.00	0.00	14.00		0.00	0	0.00	0	0.00	0	0.00
5	1614.00	10000.00	8.00	0.00	8.00		0.00	0	0.00	0	0.00	0	0.00
6			8.00	0.00	8.00		0.00	0	0.00	0	0.00	0	0.00
7			8.00	0.00	8.00		0.00	0	0.00	0	0.00	0	0.00
8	1614.10	10000.00	8.00	0.00	8.00		0.00	0	0.00	0	0.00	0	0.00
9			8.00	0.00	8.00		0.00	0	0.00	0	0.00	0	0.00
10			8.00	0.00	8.00		0.00	0	0.00	0	0.00	0	0.00
11			8.00	0.00	8.00		0.00	0	0.00	0	0.00	0	0.00
12			8.00	0.00	8.00		0.00	0	0.00	0	0.00	0	0.00
13			8.00	0.00	8.00		0.00	0	0.00	0	0.00	0	0.00
14			8.00	0.00	8.00		0.00	0	0.00	0	0.00	0	0.00
15	1614.60	10000.00	8.00	0.00	8.00		0.00	0	0.00	0	0.00	0	0.00
16			8.00	0.00	8.00		0.00	0	0.00	0	0.00	0	0.00
17			8.00	0.00	8.00		0.00	0	0.00	0	0.00	0	0.00
18	1614.90	10000.00	8.00	0.00	8.00		0.00	0	0.00	0	0.00	0	0.00
19			8.00	0.00	8.00		0.00	0	0.00	0	0.00	0	0.00
20			8.00	0.00	8.00		0.00	0	0.00	0	0.00	0	0.00
21			8.00	0.00	8.00		0.00	0	0.00	0	0.00	0	0.00
22	1615.50	10000.00	8.00	0.00	8.00		0.00	0	0.00	0	0.00	0	0.00
23			8.00	0.00	8.00		0.00	0	0.00	0	0.00	0	0.00
24			8.00	0.00	8.00		0.00	0	0.00	0	0.00	0	0.00
25			8.00	0.00	8.00		0.00	0	0.00	0	0.00	0	0.00
26	1615.80	10700.00	16.00	0.00	16.00		0.00	0	0.00	0	0.00	0	0.00
27			16.00	0.00	16.00		0.00	0	0.00	0	0.00	0	0.00
28			16.00	0.00	16.00		0.00	0	0.00	0	0.00	0	0.00
29	1615.90	10800.00	16.00	0.00	16.00		0.00	0	0.00	0	0.00	0	0.00
30			16.00	0.00	16.00		0.00	0	0.00	0	0.00	0	0.00
31			16.00	0.00	16.00		0.00	0	0.00	0	0.00	0	0.00
Totals					320.00	Totals 1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00

BARNEY RESERVOIR OPERATIONS														
For The Month of														
Apr-98														
Day	Surface Elevation	Storage	Rel. to Task	Rel. to Total	Rel. cfs	Rel. cfs	Hills.	A.F.	MGD	F.G.	A.F.	MGD	Beav.	TWWD
1			40.00	0.00	40.00		0.00	0	0	0	0	0	0	0
2			40.00	0.00	40.00		0.00	0	0	0	0	0	0	0
3	1614.00	10000.00	40.00	0.00	40.00		0.00	0	0	0	0	0	0	0
4			40.00	0.00	40.00		0.00	0	0	0	0	0	0	0
5			40.00	0.00	40.00		0.00	0	0	0	0	0	0	0
6			40.00	0.00	40.00		0.00	0	0	0	0	0	0	0
7	1613.70	9800.00	30.00	0.00	30.00		0.00	0	0	0	0	0	0	0
8			30.00	0.00	30.00		0.00	0	0	0	0	0	0	0
9			30.00	0.00	30.00		0.00	0	0	0	0	0	0	0
10	1613.60	9800.00	30.00	0.00	30.00		0.00	0	0	0	0	0	0	0
11			30.00	0.00	30.00		0.00	0	0	0	0	0	0	0
12			30.00	0.00	30.00		0.00	0	0	0	0	0	0	0
13	1613.70	9800.00	30.00	0.00	30.00		0.00	0	0	0	0	0	0	0
14			20.00	0.00	20.00		0.00	0	0	0	0	0	0	0
15			20.00	0.00	20.00		0.00	0	0	0	0	0	0	0
16			20.00	0.00	20.00		0.00	0	0	0	0	0	0	0
17	1613.60	9800.00	20.00	0.00	20.00		0.00	0	0	0	0	0	0	0
18			20.00	0.00	20.00		0.00	0	0	0	0	0	0	0
19			20.00	0.00	20.00		0.00	0	0	0	0	0	0	0
20			20.00	0.00	20.00		0.00	0	0	0	0	0	0	0
21	1613.80	9900.00	20.00	0.00	20.00		0.00	0	0	0	0	0	0	0
22			20.00	0.00	20.00		0.00	0	0	0	0	0	0	0
23	1613.80	9900.00	20.00	0.00	20.00		0.00	0	0	0	0	0	0	0
24			20.00	0.00	20.00		0.00	0	0	0	0	0	0	0
25			20.00	0.00	20.00		0.00	0	0	0	0	0	0	0
26			20.00	0.00	20.00		0.00	0	0	0	0	0	0	0
27			20.00	0.00	20.00		0.00	0	0	0	0	0	0	0
28	1613.80	9900.00	14.00	0.00	14.00		0.00	0	0	0	0	0	0	0
29			14.00	0.00	14.00		0.00	0	0	0	0	0	0	0
30			14.00	0.00	14.00		0.00	0	0	0	0	0	0	0
Totals					772.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1998														

BARNEY RESERVOIR OPERATIONS														
For The Month of Mar-98														
River level														
Day	Surface Elevation	Storage Acre Feet	Rel. to Task cfs	Rel. to Total Rel. cfs	Hills. cfs	A.F.	MGD	F.G. cfs	A.F.	MGD	Beav. cfs	A.F.	MGD	TVWD cfs
1			50.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2			50.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	1612.50	9000.00	60.00	0.00	60.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4			60.00	0.00	60.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5			60.00	0.00	60.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	1612.70	9200.00	75.00	0.00	75.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7			75.00	0.00	75.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8			75.00	0.00	75.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9			75.00	0.00	75.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	1612.20	9000.00	75.00	0.00	75.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11			75.00	0.00	75.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	1612.00	9000.00	50.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13			50.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14			50.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15			50.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16			50.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	1612.10	9000.00	25.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18			25.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19			25.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	1612.40	9600.00	25.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21			25.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22			25.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23			25.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	1613.70	9800.00	25.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25			25.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	1614.30	10200.00	40.00	0.00	40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27			40.00	0.00	40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28			40.00	0.00	40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29			40.00	0.00	40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30			40.00	0.00	40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	1614.30	10200.00	40.00	0.00	40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals					1445.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

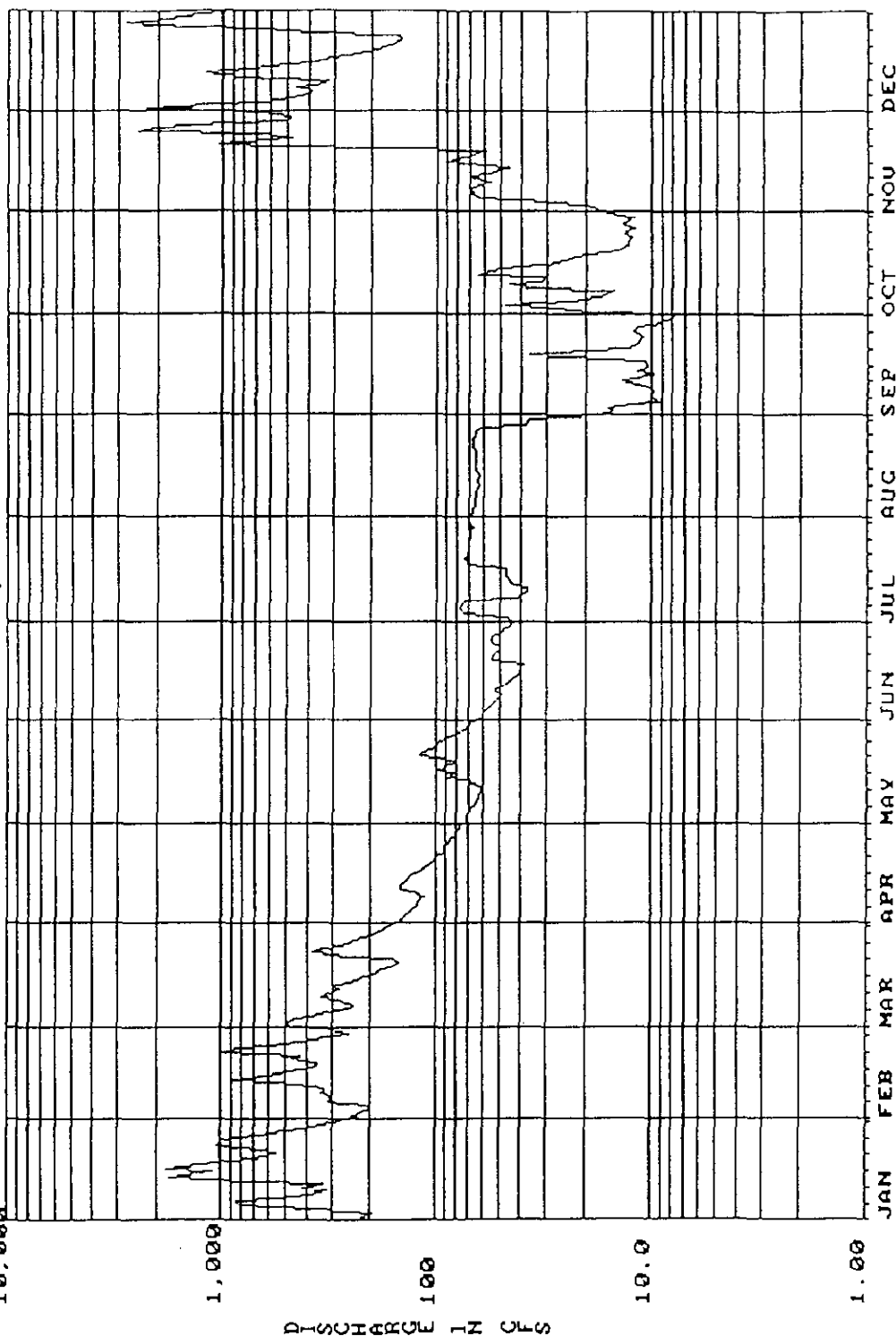
BARNEY RESERVOIR OPERATIONS														
For The Month of Feb-98														
Day	Surface Elevation	Storage	Rel. to Trask	Rel. to Tual	Total	Rel. cfs	Bridge	Hills	A.F.	MGD	F.G.	Beav.	MGD	A.F.
1	1603.70		25.00	0.00	25.00	25.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	1603.70		25.00	0.00	25.00	25.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	1602.50		25.00	0.00	25.00	25.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
4			25.00	0.00	25.00	25.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	1602.10		25.00	0.00	25.00	25.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	1602.10		25.00	0.00	25.00	25.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
7			25.00	0.00	25.00	25.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
8			25.00	0.00	25.00	25.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
9			25.00	0.00	25.00	25.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
10			25.00	0.00	25.00	25.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
11			25.00	0.00	25.00	25.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
12			25.00	0.00	25.00	25.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	1604.10	7500.00	25.00	0.00	25.00	25.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
14			25.00	0.00	25.00	25.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
15			25.00	0.00	25.00	25.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
16			25.00	0.00	25.00	25.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
17			25.00	0.00	25.00	25.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
18			25.00	0.00	25.00	25.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
19			25.00	0.00	25.00	25.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	1607.50	8000.00	25.00	0.00	25.00	25.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
21			25.00	0.00	25.00	25.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
22			25.00	0.00	25.00	25.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
23			25.00	0.00	25.00	25.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
24			25.00	0.00	25.00	25.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
25			25.00	0.00	25.00	25.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
26			25.00	0.00	25.00	25.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
27			25.00	0.00	25.00	25.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	1611.50	9000.00	50.00	0.00	50.00	50.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals						725.00	Totals	0.00	0.00	0.00	0.00	0.00	0.00	0.00
							1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00

BARNEY RESERVOIR OPERATIONS														
For The Month of Jan-98														
River level														
Day	Surface Elevation	Storage Acre Feet	Rel. to Trask cfs	Rel. to Total Rel. cfs	Rel. cfs	Hills. cfs	A.F.	MGD	F.G. cfs	Beav. cfs	MGD	A.F.	TVWD cfs	MGD
1	1577.30		30.00	0.00	30.00	0.00	0	0	0	0	0	0	0	0
2			30.00	0.00	30.00	0.00	0	0	0	0	0	0	0	0
3			30.00	0.00	30.00	0.00	0	0	0	0	0	0	0	0
4			30.00	0.00	30.00	0.00	0	0	0	0	0	0	0	0
5	1579.75		30.00	0.00	30.00	0.00	0	0	0	0	0	0	0	0
6			30.00	0.00	30.00	0.00	0	0	0	0	0	0	0	0
7	1583.50		30.00	0.00	30.00	0.00	0	0	0	0	0	0	0	0
8	1584.60		30.00	0.00	30.00	0.00	0	0	0	0	0	0	0	0
9	1585.50		30.00	0.00	30.00	0.00	0	0	0	0	0	0	0	0
10			30.00	0.00	30.00	0.00	0	0	0	0	0	0	0	0
11			30.00	0.00	30.00	0.00	0	0	0	0	0	0	0	0
12			30.00	0.00	30.00	0.00	0	0	0	0	0	0	0	0
13			30.00	0.00	30.00	0.00	0	0	0	0	0	0	0	0
14	1593.60	4800.00	30.00	0.00	30.00	0.00	0	0	0	0	0	0	0	0
15			100.00	0.00	100.00	0.00	0	0	0	0	0	0	0	0
16			100.00	0.00	100.00	0.00	0	0	0	0	0	0	0	0
17			100.00	0.00	100.00	0.00	0	0	0	0	0	0	0	0
18			100.00	0.00	100.00	0.00	0	0	0	0	0	0	0	0
19			100.00	0.00	100.00	0.00	0	0	0	0	0	0	0	0
20			100.00	0.00	100.00	0.00	0	0	0	0	0	0	0	0
21			100.00	0.00	100.00	0.00	0	0	0	0	0	0	0	0
22	1602.20	6500.00	100.00	0.00	100.00	0.00	0	0	0	0	0	0	0	0
23			100.00	0.00	100.00	0.00	0	0	0	0	0	0	0	0
24			100.00	0.00	100.00	0.00	0	0	0	0	0	0	0	0
25			100.00	0.00	100.00	0.00	0	0	0	0	0	0	0	0
26			100.00	0.00	100.00	0.00	0	0	0	0	0	0	0	0
27			100.00	0.00	100.00	0.00	0	0	0	0	0	0	0	0
28	1604.50		100.00	0.00	100.00	0.00	0	0	0	0	0	0	0	0
29	1604.00	7400.00	100.00	0.00	100.00	0.00	0	0	0	0	0	0	0	0
30	1603.80		25.00	0.00	25.00	0.00	0	0	0	0	0	0	0	0
31			25.00	0.00	25.00	0.00	0	0	0	0	0	0	0	0
Totals					1970.00	Totals	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
						1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Stream Gage Records

Appendix E

10,000 14202500 Tualatin River Near Gaston, OR 1998



STREAMFLOW IS COMPILED FROM MEAN DAILY DISCHARGES
IN (CFS) CUBIC FEET PER SECOND

OREGON WATER RESOURCES DEPARTMENT
14202500 Tualatin River Near Gaston, OR

Latitude: 452611 Longitude: 1231007 River Mile: 63.87
Drainage Area: 48.5 Gage Datum: 170.00
USGS #: 14202500

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1998

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	202	266	477	153	74	64	44	70	18	7.9	17	855
2	224	241	500	145	72	61	46	69	15	19	19	2,270
3	198	227	448	141	72	60	74	67	16	27	21	1,100
4	250	206	381	138	71	58	76	67	12	46	42	656
5	547	207	322	130	69	56	76	67	9.3	23	61	478
6	834	318	278	127	67	54	75	66	10	18	68	395
7	845	305	246	123	65	52	73	66	10	16	67	387
8	549	314	262	118	64	50	42	66	9.9	15	69	458
9	395	346	295	115	64	50	39	66	10	37	56	367
10	318	335	342	128	63	53	37	64	12	46	60	317
11	420	375	310	149	62	50	38	63	14	32	70	607
12	334	567	285	147	61	47	45	64	12	31	57	1,020
13	706	877	306	142	69	45	44	64	9.8	65	50	1,210
14	1,780	618	260	138	69	43	47	63	12	46	56	749
15	1,440	491	234	132	90	41	47	66	11	41	72	505
16	1,100	418	217	124	81	41	47	66	11	31	91	382
17	1,840	361	194	117	99	40	46	66	11	26	74	312
18	1,240	358	176	111	93	40	72	65	24	24	65	264
19	927	471	162	107	84	55	72	66	37	20	59	225
20	705	427	151	103	83	54	73	65	20	16	542	191
21	564	985	158	99	122	53	72	65	13	14	1,050	171
22	555	848	258	95	119	51	71	68	12	13	629	159
23	796	590	374	93	108	51	70	67	12	13	480	149
24	1,050	438	367	92	100	53	70	68	11	12	665	151
25	1,010	364	282	89	100	54	70	67	11	13	2,510	388
26	962	301	256	86	95	55	70	66	12	13	2,140	664
27	674	257	245	83	88	50	69	66	12	12	901	1,450
28	506	313	217	81	81	48	68	62	9.9	14	502	2,830
29	409	-----	190	79	75	46	68	38	8.7	13	496	2,270
30	350	-----	172	77	73	44	69	37	8.1	12	560	1,560
31	297	-----	168	-----	68	-----	70	36	-----	14	-----	991
TOTAL	22,027	11,824	8,533	3,462	2,501	1,519	1,880	1,956	393.7	739.9	11,539	23,531
MEAN	711	422	275	115	80.7	50.6	60.6	63.1	13.1	23.9	385	759
MAX	1,840	985	500	153	122	64	76	70	37	65	2,510	2,830
MIN	198	206	151	77	61	40	37	36	8.1	7.9	17	149
AC-FT	43,690	23,450	16,930	6,870	4,960	3,010	3,730	3,880	781	1,470	22,890	46,670
YEAR 1998	TOTAL	89,905.6	MEAN	246	MAX	2,830	MIN	7.9	AC-FT	178,300		

* Incomplete Record
Max on 12/28 @ 0045: GH 18.99 = 3,770 cfs
Min on 9/30 @ 2345: GH 3.24 = 7.6 cfs
Source Agency: Tualatin Basin Watermaster

UNITED STATES DEPARTMENT OF THE INTERIOR - GEOLOGICAL SURVEY - OREGON DISTRICT INSTALLATION 02/28/1999

STATION NUMBER 14202980 SCOGGINS CREEK BL HENRY HAGG LK NR GASTON, OREG. STREAM SOURCE AGENCY USGS
LATITUDE 452810 LONGITUDE 1231156 DRAINAGE AREA 38.80 DATUM 187.48 STATE 41 COUNTY 067

PROVISIONAL DATA - SUBJECT TO REVISION

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 1998

DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	100	842	274	31	11	28	109	140	179	144	104	42
2	211	932	274	14	11	15	95	140	184	125	104	42
3	251	1010	276	14	28	15	92	133	199	115	103	42
4	253	1000	295	14	46	25	92	133	214	115	103	42
5	175	983	335	14	54	46	91	137	213	98	93	42
6	9.5	610	339	15	51	54	91	137	212	80	62	43
7	11	365	268	15	56	54	102	130	212	78	48	43
8	11	365	268	15	52	44	114	128	208	81	48	151
9	135	177	268	15	52	37	120	127	202	90	45	213
10	209	50	231	36	52	37	120	127	201	90	36	261
11	211	80	186	54	53	27	120	136	200	90	36	323
12	274	100	170	54	74	15	120	143	200	97	35	122
13	170	60	184	87	97	11	120	149	199	106	35	38
14	14	48	193	130	16	11	104	184	199	107	35	38
15	13	49	193	120	40	11	101	174	198	107	36	167
16	14	49	115	72	83	11	133	174	202	106	36	387
17	14	130	55	54	82	18	147	183	205	106	37	584
18	14	135	32	54	73	66	147	145	201	106	37	655
19	15	186	19	54	70	91	147	145	192	106	37	641
20	15	238	19	54	65	91	146	149	191	106	38	596
21	212	65	19	40	165	91	146	155	183	106	38	722
22	501	16	63	31	104	93	159	155	168	106	38	893
23	621	15	131	34	104	98	183	155	161	106	39	844
24	401	96	161	36	104	98	183	149	161	106	39	679
25	668	202	211	36	104	86	183	149	156	105	42	467
26	666	325	239	37	93	79	182	154	151	105	41	65
27	752	356	250	35	73	78	182	154	150	105	41	96
28	800	273	249	33	72	78	181	162	150	105	41	30
29	770	---	249	29	59	99	169	171	150	105	41	31
30	880	---	167	12	51	121	149	170	149	104	41	30
31	908	---	86	---	51	---	141	175	---	104	---	57
TOTAL	9298.5	8737	5819	1239	2026	1628	4169	4623	5588	3208	1511	8386
MEAN	300	312	186	41.3	65.4	54.3	134	149	186	103	50.4	271
MAX	908	1010	339	130	165	121	183	175	214	144	104	893
MIN	9.5	15	19	12	11	11	91	127	149	76	35	30
AC-FT	18440	17330	11540	2480	4020	3230	8270	9170	11080	6360	3000	16630

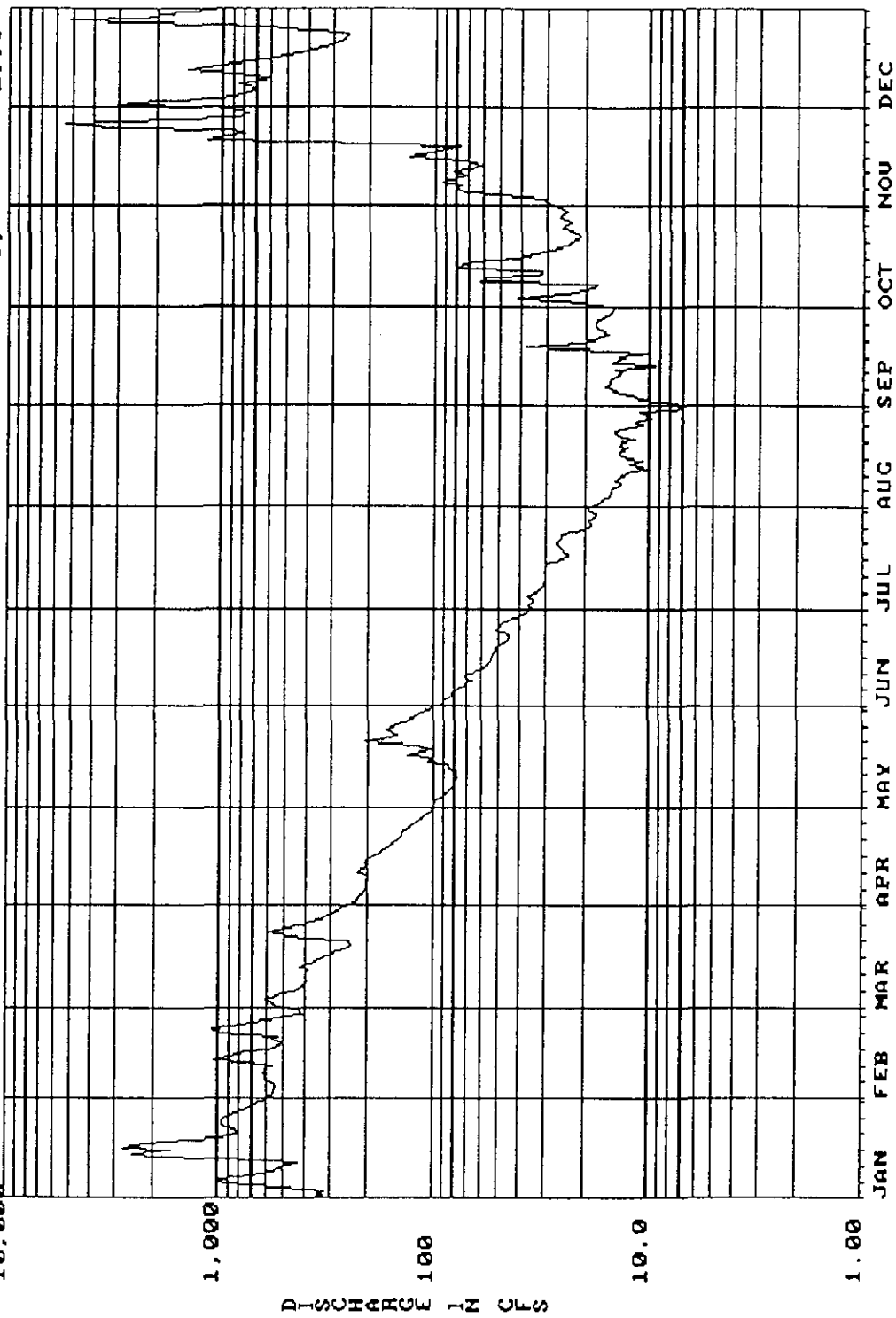
CAL YR 1998 TOTAL 56232.5

AC-FT 111500

MEAN 154 MAX 1010 MIN 9.5

AC-FT 402400

10.000 14204530 Gales Creek @ Old Highway 47 near Forest Grove, OR 1998



STREAMFLOW IS COMPILED FROM MEAN DAILY DISCHARGES
IN (CFS) CUBIC FEET PER SECOND

OREGON WATER RESOURCES DEPARTMENT
14204530 Gales Creek @ Old Highway 47 near Forest Grove, OR

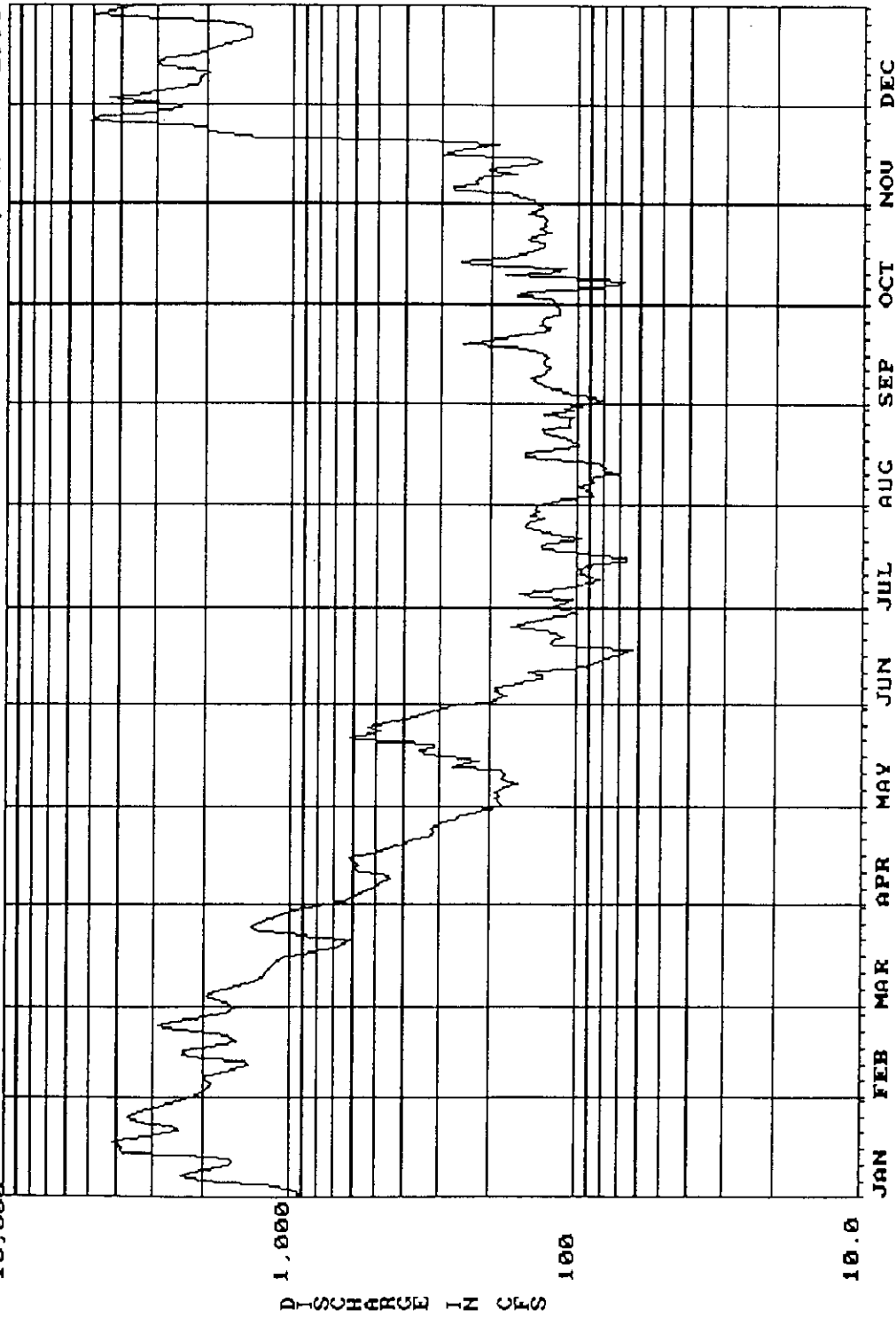
Latitude: 453039 Longitude: 1230652 Stream Mile 2.36
Drainage Area: Gage Datum: 154.73
USGS #: 14204530

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1998

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	293	603	504	249	99	98	35	20	6.9	15	29	1,120
2	350	581	576	234	101	92	37	18	8.9	19	32	3,160
3	323	566	610	228	96	89	35	17	11	26	31	1,970
4	395	557	569	221	93	85	36	16	12	42	49	1,040
5	671	549	514	212	89	82	36	15	14	25	72	806
6	933	592	459	208	87	78	33	15	15	21	78	724
7	1,020	620	410	207	82	73	32	14	16	19	76	703
8	805	622	410	207	81	69	32	14	16	18	94	848
9	635	626	391	207	81	66	31	14	16	62	77	728
10	516	621	403	204	80	72	31	14	14	57	72	619
11	520	568	397	226	78	66	31	13	14	34	83	735
12	432	715	381	216	79	63	31	12	14	33	69	1,140
13	589	1,060	424	204	86	57	30	10	9.6	81	62	1,450
14	1,900	910	383	212	87	56	31	12	15	74	64	1,020
15	2,490	733	358	202	107	54	30	11	14	55	95	774
16	1,660	604	332	189	101	54	26	13	14	41	135	617
17	2,770	521	304	179	135	52	25	14	10	34	107	512
18	2,140	503	280	171	114	51	25	14	24	31	88	442
19	1,340	579	259	163	104	51	26	13	38	27	78	386
20	962	540	242	156	120	49	27	14	21	25	442	338
21	812	1,010	249	149	214	46	27	14	18	24	1,200	301
22	800	1,080	406	145	178	45	27	12	17	22	942	278
23	874	874	531	142	152	45	26	14	16	22	792	259
24	960	710	598	138	157	51	26	14	17	23	905	259
25	972	594	487	130	170	50	20	14	18	26	3,280	400
26	940	489	422	125	157	48	19	11	18	25	5,480	626
27	868	406	379	119	141	46	19	12	18	24	1,660	1,180
28	792	426	340	114	131	42	19	10	17	27	847	5,150
29	733	-----	305	109	121	39	18	10	15	26	765	2,410
30	682	-----	281	104	115	37	18	11	15	25	823	1,900
31	631	-----	276	-----	105	-----	19	7.8	-----	25	-----	1,120
TOTAL	29,808	18,259	12,480	5,370	3,541	1,806	858	412.8	472.4	1,008	18,527	33,015
MEAN	962	652	403	179	114	60.2	27.7	13.3	15.7	32.5	618	1,065
MAX	2,770	1,080	610	249	214	98	37	20	38	81	5,480	5,150
MIN	293	406	242	104	78	37	18	7.8	6.9	15	29	259
AC-FT	59,120	36,220	24,750	10,650	7,020	3,580	1,700	819	937	2,000	36,750	65,490
YEAR 1998	TOTAL	125,557.2	MEAN	344	MAX	5,480	MIN	6.9	AC-FT	249,000		

* Incomplete Record
Max on 11/26 @ 00:45: GH 17.99 = 9,810 cfs
Min on 09/01 @ 22:45: GH .56 = 5.4 cfs
Source Agency: Tualatin Basin Watermaster

10,000 4204800 Tualatin River at Golf Course Road nr Cornelius, OR 1998



STREAMFLOW IS COMPILED FROM MEAN DAILY DISCHARGES
IN (CFS) CUBIC FEET PER SECOND

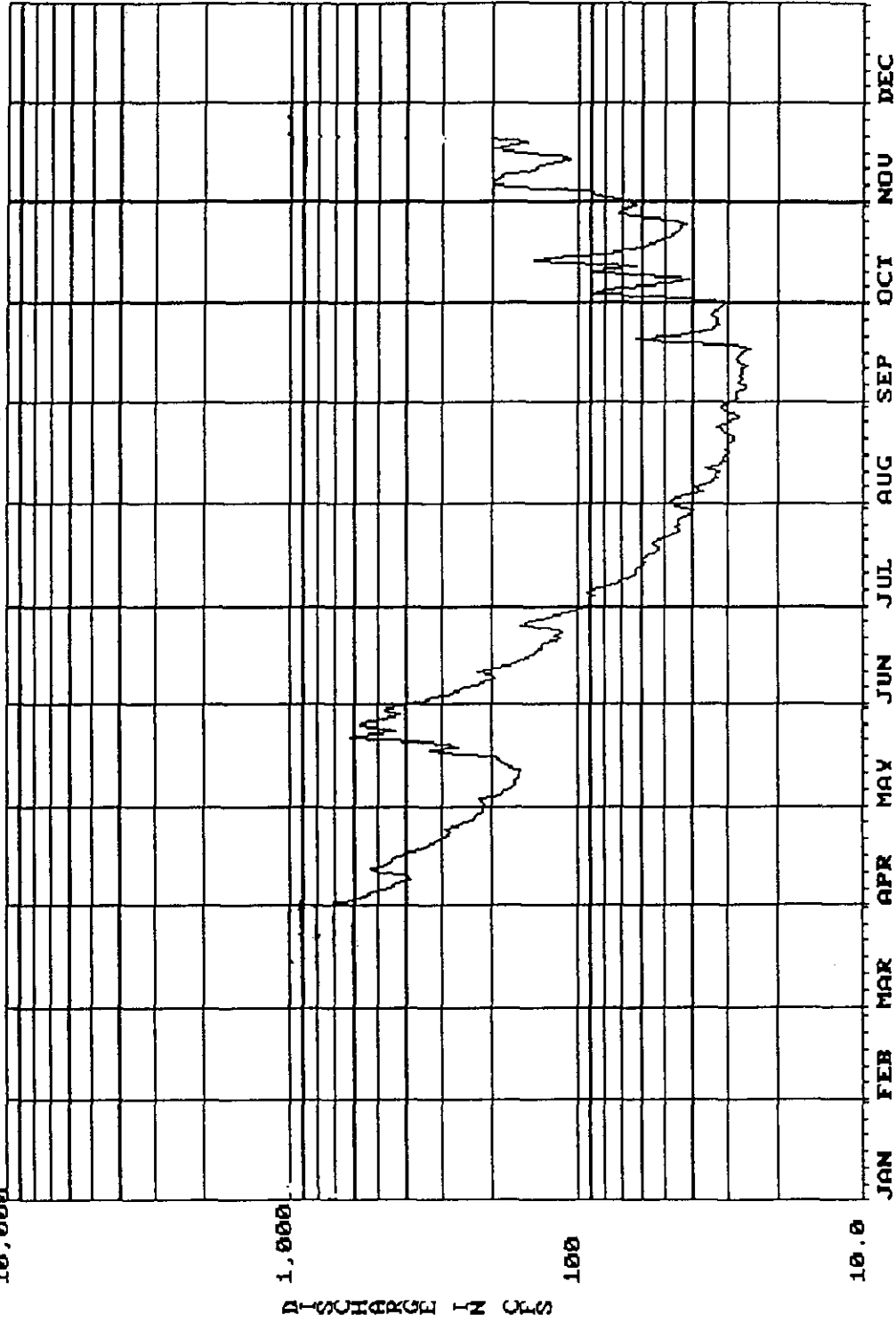
OREGON WATER RESOURCES DEPARTMENT
 14204800 Tualatin River at Golf Course Road nr Cornelius, OR
 Longitude: 453008 Latitude: 1230318 River Mile: 51.54
 Drainage Area: Gage Datum:
 USGS #: 14204800

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1998

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	897	2,260	1,560	763	180	252	127	136	91	120	142	2,530
2	935	2,100	1,700	656	186	201	114	130	83	123	143	3,450
3	941	1,990	1,890	608	190	185	104	112	88	126	160	4,440
4	1,010	1,960	1,940	584	185	175	144	88	113	165	177	3,630
5	1,230	1,890	1,840	546	192	191	158	90	110	148	271	2,990
6	1,740	1,940	1,690	517	183	191	130	96	132	88	274	2,540
7	2,240	2,020	1,530	497	178	171	104	98	133	73	224	2,200
8	2,390	1,780	1,380	469	159	148	99	89	143	70	231	2,130
9	2,150	1,670	1,300	449	181	132	84	90	146	85	211	2,160
10	1,800	1,520	1,260	469	182	133	84	88	131	181	166	2,060
11	1,640	1,390	1,240	577	178	149	97	72	128	129	204	1,950
12	1,590	1,440	1,190	597	183	114	97	83	126	111	185	2,310
13	1,630	1,970	1,170	578	268	92	99	80	133	187	141	2,810
14	2,290	2,370	1,140	598	242	87	86	87	132	254	136	3,050
15	3,830	2,330	1,090	626	220	78	67	125	128	181	151	2,780
16	3,910	2,050	1,030	567	279	74	67	154	129	167	297	2,350
17	3,830	1,740	898	488	343	67	86	155	143	150	264	2,070
18	4,150	1,550	782	453	352	64	107	133	171	140	220	1,940
19	3,650	1,580	699	424	316	118	134	99	251	131	192	1,840
20	3,140	1,650	649	394	315	125	135	99	210	132	367	1,700
21	2,710	2,140	620	373	581	118	109	107	186	151	1,300	1,530
22	2,430	2,760	830	328	633	112	97	114	152	144	1,750	1,420
23	2,570	2,900	1,030	316	525	119	120	130	132	126	1,990	1,410
24	3,070	2,550	1,280	322	485	147	130	135	125	138	2,040	1,400
25	3,520	2,150	1,360	308	537	172	152	106	136	130	2,480	1,430
26	3,690	1,860	1,320	289	506	146	153	108	134	132	5,170	1,690
27	3,520	1,670	1,250	268	433	134	144	108	130	131	4,700	1,890
28	3,190	1,570	1,170	247	395	117	129	105	118	135	3,500	3,900
29	2,920	-----	1,090	226	339	99	147	132	117	151	2,840	4,960
30	2,650	-----	996	208	318	107	138	104	117	136	2,490	6,410
31	2,410	-----	879	-----	286	-----	141	111	-----	135	-----	3,730
TOTAL	77,673	54,800	37,803	13,745	9,550	4,018	3,583	3,364	4,068	4,270	32,416	78,700
MEAN	2,506	1,957	1,219	458	308	134	116	109	136	138	1,081	2,539
MAX	4,150	2,900	1,940	763	633	252	158	155	251	254	5,170	4,960
MIN	897	1,390	620	208	159	64	67	72	83	70	136	1,400
AC-FT	154,100	108,700	74,980	27,260	18,940	7,970	7,110	6,670	8,070	8,470	64,300	156,100
YEAR 1998	TOTAL	323,990	MEAN	888	MAX	5,170	MIN	64	AC-FT	642,600		

* Incomplete Record
 Max on 11/26 @ 15:45: GH 25.56 = 5970 cfs
 Min on 7/15 @ 20:15: GH 5.18 = 46 cfs
 Source Agency: Tualatin Basin Watermaster

10,000 4206200 Dairy Creek at Hwy 8 near Hillsboro, OR 1998



STREAMFLOW IS COMPILED FROM MEAN DAILY DISCHARGES
IN (CFS) CUBIC FEET PER SECOND

OREGON WATER RESOURCES DEPARTMENT
14206200 Dairy Creek at Hwy 8 near Hillsboro, OR

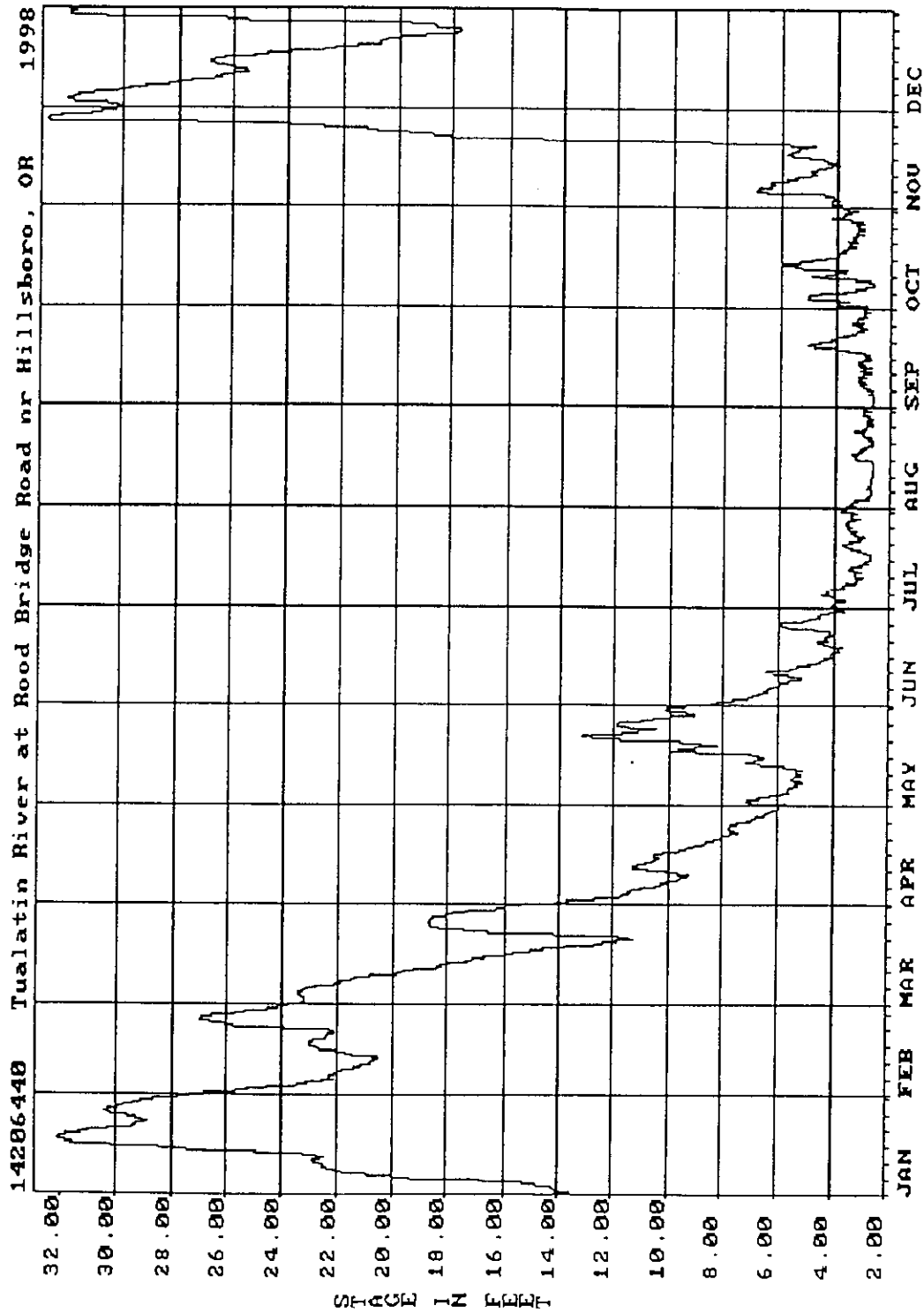
Latitude: 453112 Longitude: 1230034 Stream Mile: 2.1

USGS #: 14206200 Gage Datum: 117.71

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1998

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1				778	207	400	94	48	30	32	67	
2				662	216	358	93	49	28	35	79	
3				586	224	322	92	46	29	57	87	
4				561	197	293	89	42	28	90	92	
5				524	185	270	95	37	27	81	135	
6				479	178	246	90	40	26	60	202	
7				447	171	224	80	36	28	49	201	
8				417	169	208	74	34	27	42	192	
9				393	168	195	70	33	27	47	179	
10				407	161	201	66	34	27	88	149	
11				500	161	227	63	32	27	91	138	
12				533	160	196	64	36	26	64	134	
13				488	176	175	62	33	28	85	119	
14				460	183	161	59	31	28	144	107	
15				451	189	152	61	31	27	106	118	
16				427	196	144	59	30	27	79		
17				389	259	141	55	30	25	68		
18				362	330	134	53	31	28	60		
19				343	265	133	53	30	49	55		
20				324	283	130	56	29	64	53		
21				309	478	115	53	29	46	49		
22				291	623	121	50	29	40	47		
23				285	519	114	46	30	35	46		
24				291	443	127	45	33	32	44		
25				270	518	158	46	32	33	43		
26				248	577	147	45	30	33	47		
27				235	543	131	45	28	34	57		
28				226	476	120	42	28	34	73		
29				221	423	109	41	29	32	71		
30				214	480	99	40	32	32	67		
31					462		43	32		63		
TOTAL				12,121	9,620	5,551	1,924	1,044	957	1,993		
MEAN				404	310	185	62.1	33.7	31.9	64.3		
MAX				778	623	400	95	49	64	144		
MIN				214	160	99	40	28	25	32		
AC-FT				24,040	19,080	11,010	3,820	2,070	1,900	3,950		

* Incomplete Record Flow computed from 4/1 through 11/15
Period of Record Max: 4/1/2000 12.10= 834 cfs
Period of Record Min: 9/17/2000 1.36= 23.5cfs
Source Agency: Tualatin Basin Watermaster



STREAMFLOW IS COMPILED FROM MEAN DAILY DISCHARGES
IN (CFS) CUBIC FEET PER SECOND

OREGON WATER RESOURCES DEPARTMENT
14206440 Tualatin River at Rood Bridge Road nr Hillsboro, OR

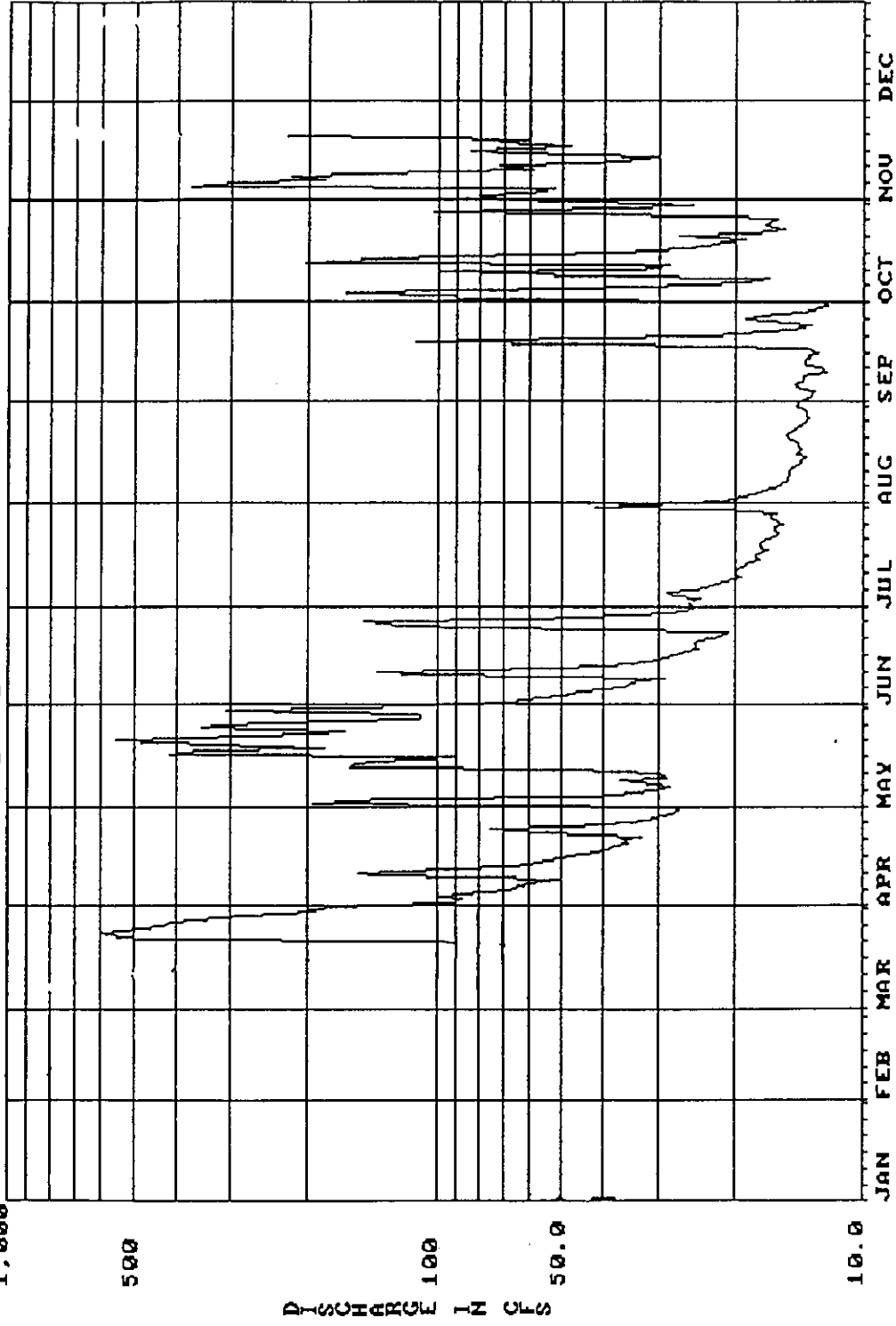
Latitude: 452925 Longitude: 1225701 River Mile: 38.34
Drainage Area: 105.16
USGS #: 14206440 Gage Datum:

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1998

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	1,380	4,230	3,210	1,510	368	673	202	166	120	127	188	6,230
2	1,420	3,860	3,170	1,280	442	578	206	158	118	179	208	6,620
3	1,480	3,530	3,190	1,110	464	507	183	151	117	196	207	7,730
4	1,560	3,260	3,210	1,060	379	458	193	126	118	282	216	8,040
5	1,860	3,050	3,180	993	349	435	229	120	120	259	386	7,290
6	2,340	2,960	3,100	919	341	414	228	121	122	187	474	6,390
7	2,650	2,950	2,970	864	322	389	186	120	128	130	438	5,560
8	2,850	2,880	2,830	812	313	354	168	120	132	119	422	4,950
9	2,970	2,810	2,700	768	324	319	149	119	135	119	367	4,530
10	3,020	2,690	2,510	789	319	343	136	119	134	225	296	4,220
11	3,070	2,660	2,380	929	320	424	141	119	127	237	276	3,940
12	3,050	2,630	2,240	1,020	321	355	144	118	127	186	271	3,780
13	3,050	2,780	2,130	966	430	290	153	118	129	242	206	3,870
14	3,480	2,900	2,030	919	496	254	137	118	135	374	206	4,110
15	4,320	3,030	1,910	914	447	237	126	119	130	334	222	4,200
16	5,990	3,120	1,790	890	452	217	121	136	125	241	281	4,050
17	7,560	3,110	1,640	807	660	208	122	152	130	206	358	3,730
18	8,210	3,030	1,440	736	819	193	126	141	156	188	336	3,390
19	8,260	2,990	1,260	692	656	204	149	129	252	175	305	3,100
20	7,580	2,950	1,130	648	688	244	169	119	281	162	367	2,850
21	6,610	3,250	1,050	617	1,030	231	163	120	223	162	1,330	2,660
22	5,770	3,790	1,370	574	1,290	226	139	121	181	159	2,080	2,610
23	5,320	4,090	1,830	549	1,120	217	132	126	157	149	2,410	2,370
24	5,300	4,240	2,150	576	939	254	147	140	136	141	2,630	2,150
25	5,730	4,130	2,250	543	1,020	351	157	131	134	139	2,990	2,100
26	6,260	3,870	2,260	501	1,110	376	166	121	148	140	4,260	2,220
27	6,450	3,540	2,230	469	1,000	309	169	121	143	140	8,140	2,430
28	6,170	3,310	2,160	440	866	259	152	120	139	198	8,530	3,590
29	5,680	-----	2,040	412	760	227	149	121	130	190	7,400	5,920
30	5,150	-----	1,860	392	838	192	152	128	127	168	6,500	7,970
31	4,640	-----	1,690	-----	798	-----	173	125	-----	166	-----	7,860
TOTAL	139,180	91,640	68,910	23,699	19,681	9,738	4,967	3,963	4,354	5,958	52,336	140,460
MEAN	4,490	3,273	2,223	790	635	325	160	128	145	192	1,745	4,531
MAX	8,260	4,240	3,210	1,510	1,290	673	229	166	281	374	8,530	8,040
MIN	1,380	2,630	1,050	392	313	192	121	118	117	119	188	2,100
AC-FT	276,100	181,800	136,700	47,010	39,040	19,320	9,850	7,860	8,640	11,820	103,800	278,600
YEAR 1998	TOTAL	564,886	MEAN	1,548	MAX	8,530	MIN	117	AC-FT	1,120,000		

* Incomplete Record
Max on 11/27 @ 19:15: GH 32.79 = 9020 cfs
Min on 9/3 @ 03:45: GH 2.64 = 117 cfs
Source Agency: Tualatin Basin Watermaster

1.00014206450 Rock Creek @ Highway 8 1998



STREAMFLOW IS COMPILED FROM MEAN DAILY DISCHARGES
IN (CFS) CUBIC FEET PER SECOND

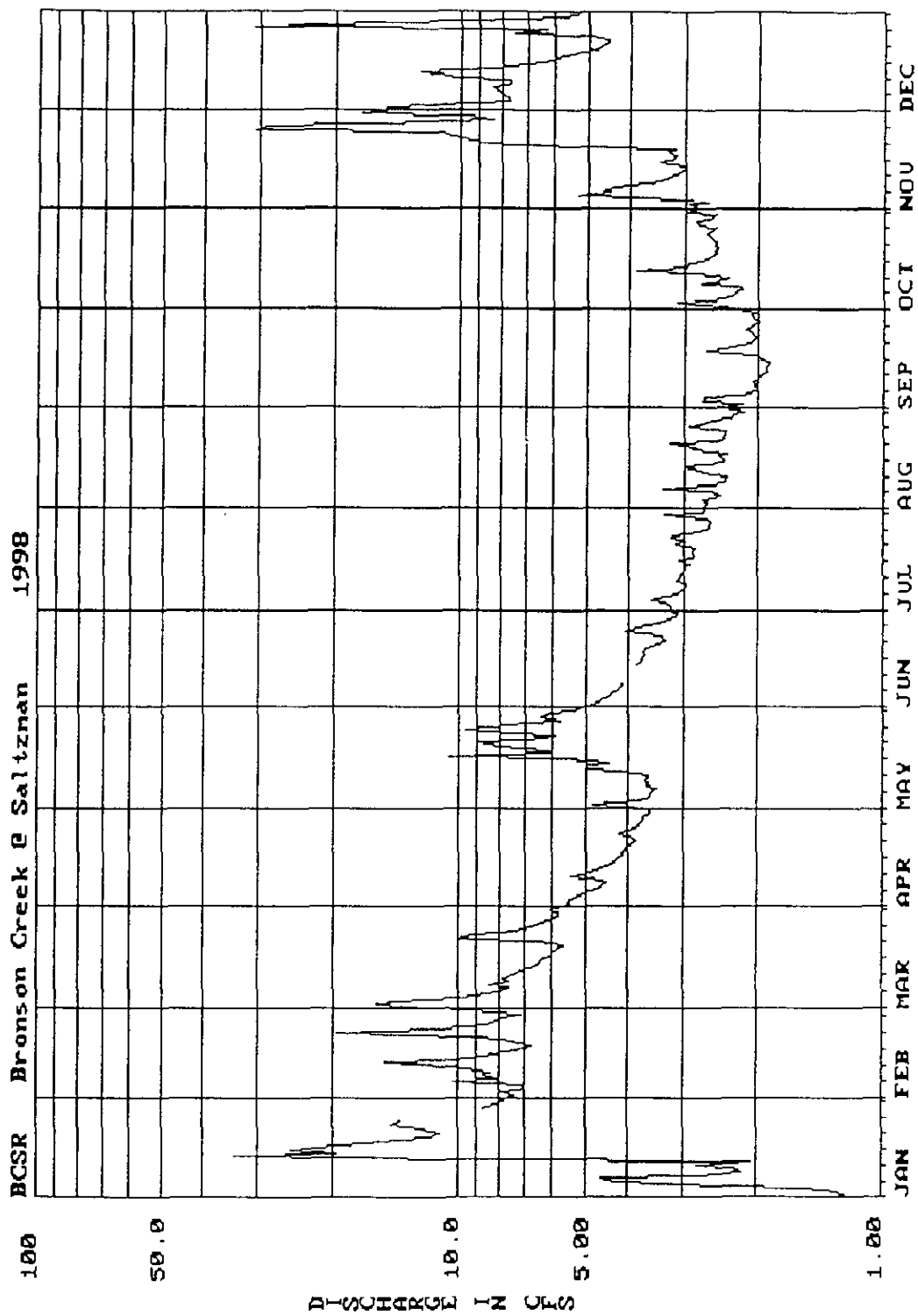
OREGON WATER RESOURCES DEPARTMENT
 14206450 Rock Creek @ Highway 8
 Latitude: 453009 Longitude: 1225648 Stream Mile: 1.3
 Drainage Area: 74.0 square miles Gage Datum:

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1998

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1				142	26	90	24	26	14	12	72	
2				92	194	68	26	21	14	88	81	
3				88	127	57	24	19	13	94	61	
4				99	43	51	27	18	13	162	53	
5				77	34	46	29	17	14	48	378	
6				67	31	36	25	16	15	24	291	
7				64	28	36	23	16	14	19	185	
8				56	30	33	22	15	14	17	218	
9				51	37	29	20	15	14	43	96	
10				138	29	109	19	15	12	100	60	
11				153	30	138	20	15	13	34	72	
12				95	48	53	20	15	14	28	42	
13				65	160	39	19	14	14	204	33	
14				58	154	32	18	14	13	139	30	
15				50	139	29	18	14	13	60	67	
16				49	91	27	18	14	13	37	85	
17				42	418	26	17	14	13	26	48	
18			92	40	355	24	17	14	41	23	72	
19			77	38	184	25	18	14	112	21	62	
20			69	35	331	25	17	14	46	19	223	
21			107	36	561	23	17	15	23	27		
22			483	33	375	21	16	15	17	18		
23			585	56	195	21	16	15	15	15		
24			596	75	163	80	16	14	13	17		
25			491	48	351	122	16	14	15	16		
26			432	35	317	147	15	14	19	16		
27			411	32	169	60	16	13	16	22		
28			361	29	110	35	16	14	14	102		
29			279	28	110	28	16	14	13	60		
30			192	27	306	25	21	14	12	25		
31			199	-----	153	-----	42	14	-----	31		
TOTAL			1,898	5,299	1,535	628	476	586	1,547			
MEAN			63.3	171	51.2	20.3	15.4	19.5	49.9			
MAX			153	561	147	42	26	112	204			
MIN			27	26	21	15	13	12	12			
AC-FT			3,760	10,510	3,040	1,250	944	1,160	3,070			

YEAR 1998

* Incomplete Record Period of Record: 3/18 through 11/20
 Period of Record Max on 3/24 @ 01:00: GH 6.29 = 625cfs
 Period of Record Min on 10/1 @ 15:00: GH 0.35 = 11 cfs
 Source Agency: Tualatin Basin Watermaster



STREAMFLOW IS COMPILED FROM MEAN DAILY DISCHARGES
IN (CFS) CUBIC FEET PER SECOND

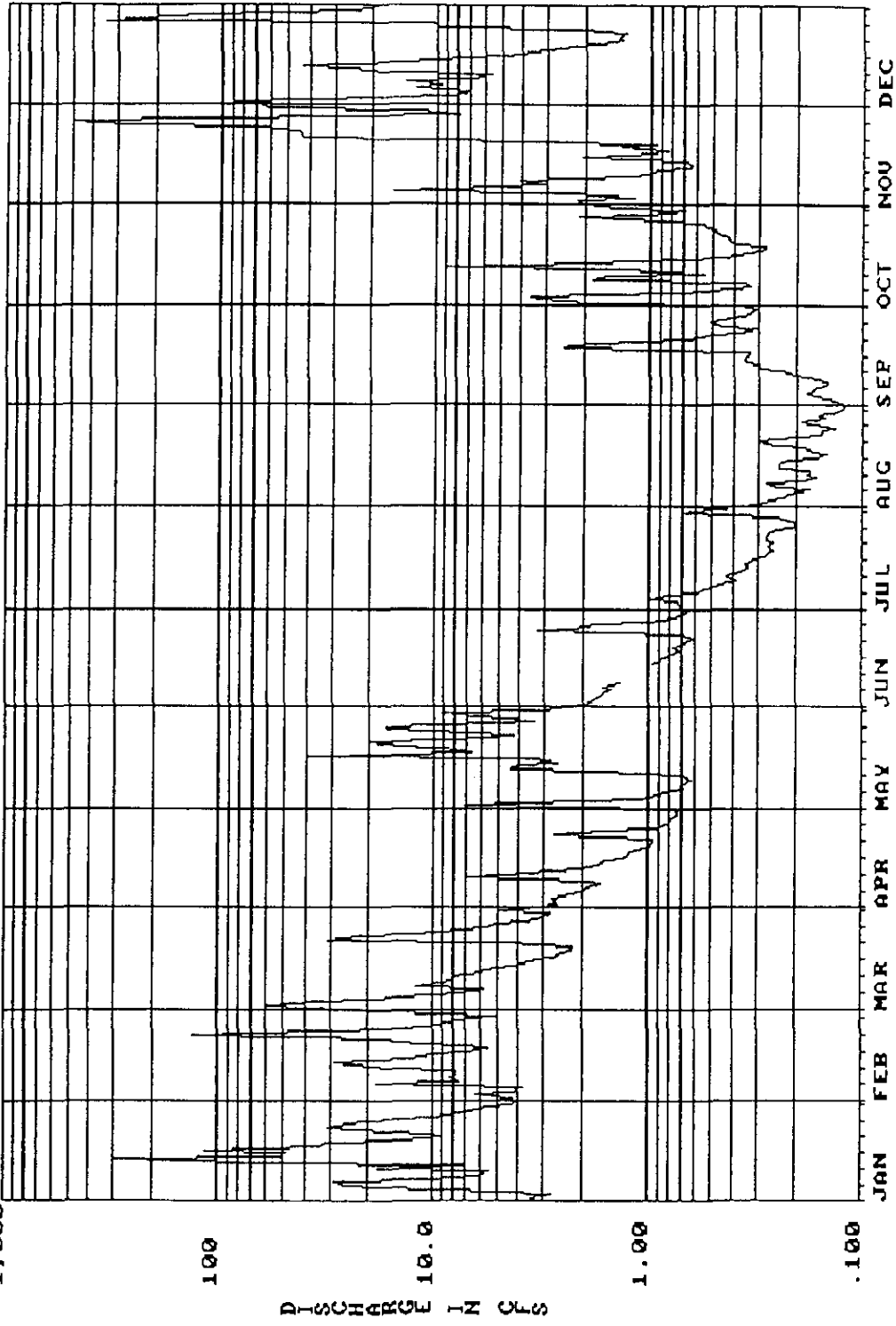
OREGON WATER RESOURCES DEPARTMENT
BCSR
Bronson Creek @ Saltzman
Latitude: 453318 Longitude: 1224825 Stream Mile: 5.1

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1998

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	1.3	7.8	12	5.7	3.5	5.1	3.2	2.7	2.4	2.3	2.8	14
2	1.2	7.4	16	5.5	4.9	4.8	3.2	2.7	2.2	2.4	2.9	15
3	1.4	7.9	12	5.5	3.8	4.7	3.3	2.7	2.7	3.1	2.7	9.1
4	1.6	7.1	9.9	5.3	3.6	4.6	3.6	2.7	2.7	2.6	3.8	7.7
5	3.3	7.0	8.7	5.2	3.6	4.4	3.3	2.4	2.2	2.3	5.3	7.7
6	4.3	10	8.0	5.0	3.6	4.2	3.1	2.6	2.0	2.3	4.5	8.1
7	4.7	8.0	7.6	4.7	3.5	4.2	3.0	3.4	2.0	2.2	4.6	8.2
8	2.8	8.8	8.5	4.6	3.7	4.2	3.0	2.6	2.0	2.2	4.0	8.4
9	2.2	8.4	7.6	4.6	3.6		3.0	2.4	2.0	2.7	3.4	7.8
10	2.3	9.8	7.8	5.4	3.7		3.1	2.4	2.0	2.4	3.4	7.6
11	2.8	10	7.4	5.2	3.7		3.1	2.4	1.9	2.3	3.2	10
12	2.0	15	7.1	4.8	4.1		3.0	2.7	1.9	2.8	3.1	11
13	9.7	10	6.8	4.6	5.0		3.0	2.7	1.9	3.9	3.0	13
14	34	8.7	6.6	4.4	5.1	3.8	3.0	3.0	1.9	3.0	3.0	8.3
15	20	7.8	6.5	4.3	4.5	3.8	2.9	2.4	1.9	2.9	3.4	7.1
16	25	7.3	6.3	4.2	5.6	3.8	3.1	2.4	2.0	2.7	3.2	6.4
17	22	6.7	6.1	4.2	11	3.7	2.8	2.5	2.0	2.6	3.2	6.0
18	17	7.3	6.0	4.1	6.1	3.7	2.8	2.4	2.7	2.6	3.3	5.7
19	14	7.9	5.9	4.1	6.2	3.7	2.9	2.9	2.4	2.5	3.2	5.4
20	12	9.3	5.7	4.0	8.0	3.6	2.8	2.8	2.2	2.5	7.3	4.8
21	11	20	6.5	3.9	9.1	3.3	3.1	3.3	2.1	2.5	8.9	4.7
22	12	12	10	3.9	6.9	3.3	3.0	2.4	2.0	2.5	10	4.6
23	13	9.3	9.3	4.2	6.0	3.4	3.2	2.4	2.0	2.6	11	4.6
24	15	8.3	7.9	4.0	7.6	4.1	3.1	2.4	2.1	2.7	11	5.0
25	14	8.2	7.0	3.9	9.7	4.0	2.8	2.4	2.1	2.6	31	7.5
26		7.5	6.7	3.8	8.3	3.7	2.6	2.9	2.1	2.5	29	6.4
27		7.1	6.4	3.8	6.9	3.4	2.6	2.7	2.0	2.8	11	31
28		9.5	6.1	3.7	5.8	3.3	2.6	2.6	2.0	2.9	8.4	15
29	8.8	-----	5.9	3.7	6.5	3.1	2.7	2.3	2.1	2.6	9.7	9.5
30	8.2	-----	5.9	3.6	6.1	3.1	3.3	2.3	2.0	2.5	17	5.7
31	7.9	-----	6.1	-----	5.4	-----	2.7	2.1	-----	3.0	-----	5.3
TOTAL	273.5	254.1	240.3	133.9	175.1	97.0	92.9	80.6	63.5	81.5	220.3	270.6
MEAN	9.77	9.08	7.75	4.46	5.65	3.88	3.00	2.60	2.12	2.63	7.34	8.73
MAX	34	20	16	5.7	11	5.1	3.6	3.4	2.7	3.9	31	31
MIN	1.2	6.7	5.7	3.6	3.5	3.1	2.6	2.1	1.9	2.2	2.7	4.6
AC-FT	542	504	477	266	347	192	184	160	126	162	437	537
YEAR 1998	TOTAL*	1,983.3	MEAN	5.56	MAX	34	MIN	1.2	AC-FT	3,930		

* Incomplete Record
Max on 01/14 @ 12:45- GH 4.27 = 147 cfs
Min on 01/01 @ 00:00- GH 1.93 = 1.1 cfs
Source Agency: Tualatin Basin Watermaster

1,000 BCBR Bronson Creek @ Bronson Road 1998



STREAMFLOW IS COMPILED FROM MEAN DAILY DISCHARGES
IN (CFS) CUBIC FEET PER SECOND

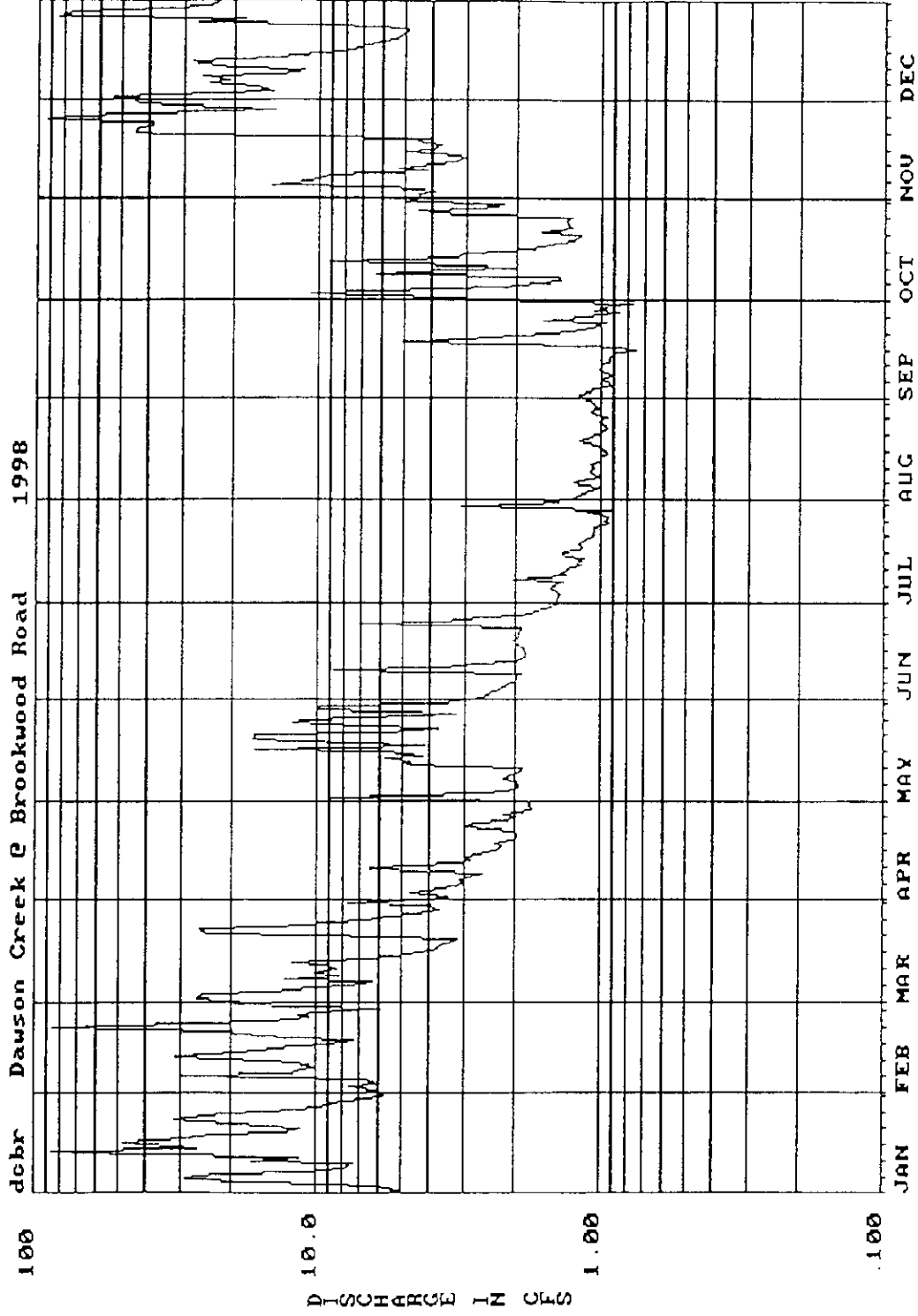
OREGON WATER RESOURCES DEPARTMENT
BCBR
Bronson Creek @ Bronson Road

Latitude: 453218 Longitude: 1225115 Stream Mile: 2.1

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1998

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	3.2	4.1	26	3.2	.77	2.4	.70	.37	.12	.38	2.0	69
2	3.5	4.4	59	2.7	7.2	2.0	.73	.30	.13	1.9	2.2	90
3	2.8	6.3	34	2.8	2.0	1.8	.73	.27	.15	3.3	1.2	18
4	4.8	4.2	20	2.8	1.1	1.7	.98	.24	.18	3.6	2.5	8.2
5	18	3.8	10	2.3	.90	1.6	.81	.22	.18	.75	16	7.0
6	26	18	7.3	2.1	.84	1.5	.60	.18	.16	.39	5.1	13
7	29	7.5	5.8	1.9	.69	1.6	.54	.25	.15	.33	3.1	9.6
8	10	8.4	12	1.7	.71	1.3	.49	.28	.15	.35	4.1	14
9	6.0	7.9	9.2	1.9	.65		.42	.19	.16	1.9	1.2	6.9
10	5.5	7.9	8.3	6.8	.63		.39	.16	.21	1.6	1.0	5.6
11	18	16	8.0	4.7	.69		.43	.18	.24	.55	.95	18
12	7.3	24	5.9	2.8	1.7		.37	.17	.30	1.4	.64	26
13	70	29	5.6	2.1	4.4		.35	.24	.30	8.8	.64	44
14	298	13	4.3	1.7	4.0	.96	.34	.25	.34	1.9	.67	15
15	52	10	3.8	1.6	2.7	.89	.35	.23	.35	.70	2.1	7.2
16	49	7.0	3.3	1.3	3.4	.85	.31	.16	.35	.45	1.2	4.8
17	116	5.7	2.7	1.2	39	.79	.28	.15	.34	.34	.84	3.6
18	34	7.3	2.5	1.2	6.7	.72	.27	.17	2.5	.29	1.4	3.0
19	32	16	2.3	1.1	7.1	.77	.26	.19	2.5	.29	.94	2.4
20	14	16	2.3	.99	15	.71	.27	.25	1.1	.40	12	1.7
21	9.2	131	4.6	.98	20	.66	.26	.31	.65	.41	43	1.4
22	10	35	31	.98	8.0	.62	.28	.25	.51	.42	44	1.4
23	23	14	22	2.7	4.3	.71	.28	.16	.36	.48	45	1.3
24	31	9.1	13	1.6	6.7	3.3	.27	.15	.32	.49	67	2.1
25	25	8.9	7.2	.95	16	2.2	.26	.14	.45	.54	279	10
26	21	6.6	5.8	.83	17	1.8	.22	.17	.51	.56	502	11
27	10	5.2	5.0	.81	5.2	.99	.20	.20	.41	.87	27	353
28	7.5	16	3.7	.76	3.4	.79	.23	.15	.36	2.2	8.0	166
29	6.9	-----	3.1	.74	6.3	.71	.25	.16	.32	1.0	12	127
30	5.5	-----	2.9	.73	9.2	.65	.67	.13	.30	.69	62	24
31	4.3	-----	4.9	-----	3.1	-----	.63	.13	-----	1.4	-----	19
TOTAL	952.5	442.3	335.5	57.97	199.38	32.02	13.17	6.41	14.10	38.68	1,148.78	1,083.2
MEAN	30.7	15.8	10.8	1.93	6.43	1.28	.42	.21	.47	1.25	38.3	34.9
MAX	298	131	59	6.8	39	3.3	.98	.37	2.5	8.8	502	353
MIN	2.8	3.8	2.3	.73	.63	.20	.62	.13	.12	.29	.64	1.3
AC-FT	1,890	877	665	115	395	64	26	13	28	77	2,280	2,150
YEAR 1998	TOTAL*	4,324.01	MEAN	12.0	MAX	502	MIN	.12	AC-FT	8,580		

* Incomplete Record
Period of Record Max on 12/27 @ 19:45- GH 5.63 = 1550 cfs
Period of Record Min on 09/01 @ 04:30- GH 1.57 = .11 cfs
Source Agency: Tualatin Basin Watermaster



STREAMFLOW IS COMPILED FROM MEAN DAILY DISCHARGES
IN (CFS) CUBIC FEET PER SECOND

OREGON WATER RESOURCES DEPARTMENT
dcbr Dawson Creek @ Brookwood Road

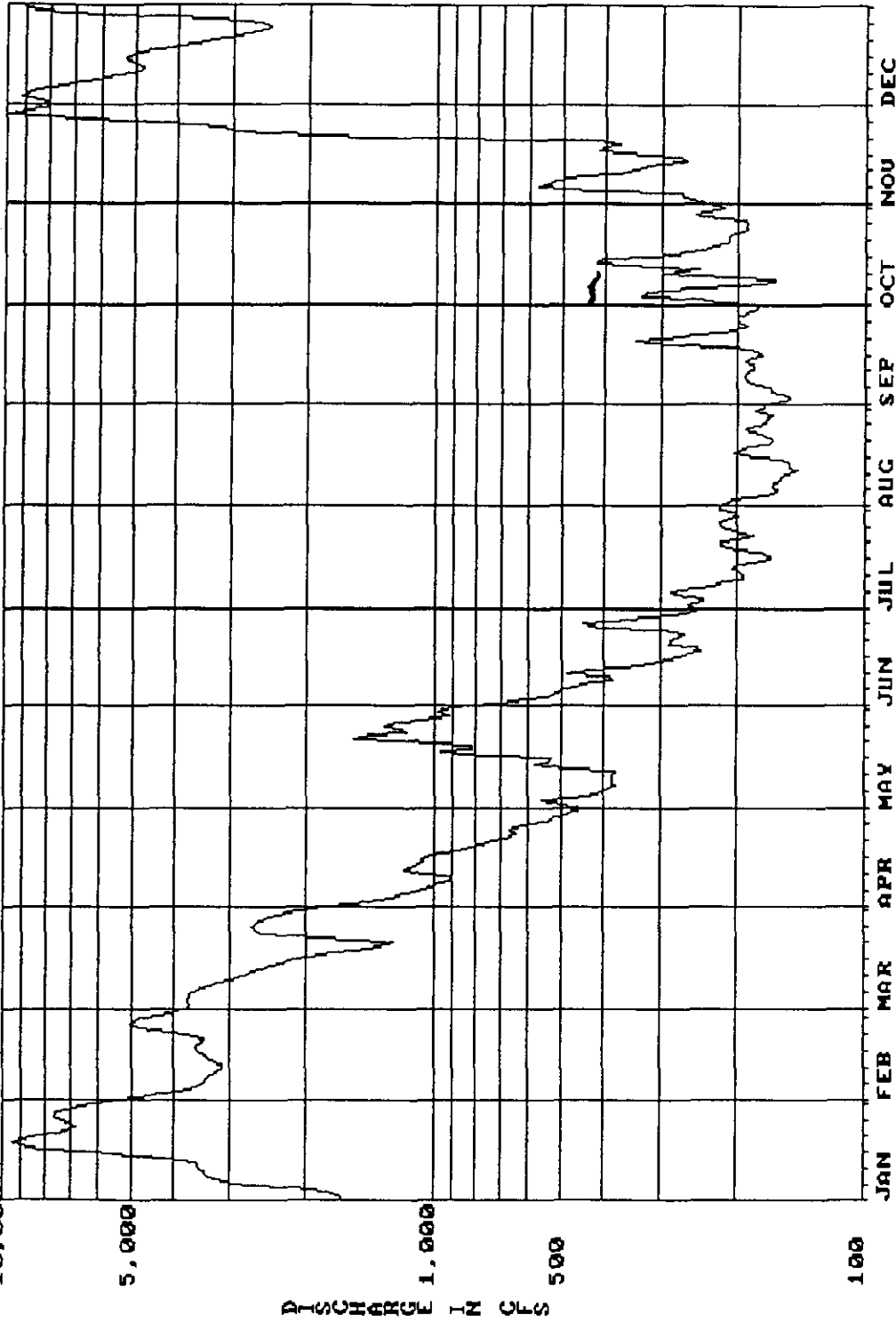
Latitude: 453129 Longitude: 1225600 Stream Mile: 0.7
Drainage Area: Gage Datum:

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1998

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	5.9	5.8	16	4.2	1.8	2.9	1.5	1.3	1.2	2.7	4.4	47
2	5.1	6.4	26	3.5	9.0	2.6	1.4	1.2	1.2	3.5	4.6	54
3	6.2	7.7	25	4.7	2.6	2.5	1.4	1.2	1.1	11	3.9	23
4	9.2	6.1	14	4.1	2.2	2.4	1.4	1.1	1.1	6.2	5.8	15
5	29	6.7	10	3.3	2.0	2.2	1.5	1.0	.92	2.3	15	17
6	29	30	7.7	3.0	2.0	2.0	1.5	1.2	.95	1.7	11	25
7	22	12	6.4	3.1	2.0	2.0	1.4	1.2	.99	1.4	10	21
8	11	12	13	2.7	2.2	2.0	2.1	1.0	.93	1.4	9.2	26
9	8.0	10	8.4	2.6	2.1	1.9	1.3	1.1	.96	6.3	4.2	14
10	7.5	12	10	6.5	2.0	8.8	1.4	1.1	1.0	3.4	5.3	11
11	17	15	8.6	6.5	1.9	3.7	1.3	1.1	1.0	2.0	4.0	20
12	12	31	9.3	3.2	4.9	2.7	1.2	1.1	.94	4.9	3.3	26
13	45	24	12	2.9	4.7	2.0	1.2	1.0	.95	9.3	3.1	28
14	87	16	6.7	3.0	5.8	1.9	1.1	1.0	.93	3.2	3.2	14
15	27	12	5.3	2.5	4.2	1.9	1.4	.96	.89	3.1	5.0	10
16	39	8.9	4.4	2.3	5.7	1.9	1.4	.97	.76	2.2	4.0	8.3
17	48	7.5	3.8	2.2	17	1.9	1.2	1.0	1.1	1.6	3.7	7.2
18	28	13	3.7	2.2	4.2	2.0	1.2	1.0	5.1	1.5	4.5	6.7
19	23	19	3.5	2.1	7.6	2.1	1.2	1.2	3.0	1.3	4.1	6.0
20	13	21	3.2	2.0	17	2.0	1.1	1.1	2.0	1.2	34	5.4
21	11	86	10	2.0	17	2.0	1.1	1.0	1.5	1.2	45	5.2
22	15	28	24	2.0	5.9	1.9	1.1	.99	1.2	1.6	44	5.1
23	26	15	26	3.0	3.8	1.9	1.1	.96	1.1	1.3	39	5.0
24	32	11	14	2.8	7.0	7.2	1.1	.99	.98	1.3	39	8.8
25	25	12	8.8	2.1	12	3.7	.94	1.0	1.6	1.3	94	27
26	21	8.1	6.7	2.0	11	2.6	.97	.97	1.2	1.3	78	18
27	12	6.0	5.7	2.2	4.5	1.9	.95	1.0	.87	3.2	24	85
28	8.8	19	4.5	1.8	3.2	1.7	1.1	1.1	1.1	4.6	14	74
29	8.9	-----	3.7	1.8	10	1.6	.91	1.0	.95	2.7	31	50
30	6.8	-----	4.0	1.8	9.8	1.4	3.1	1.1	.78	2.2	44	24
31	5.7	-----	7.8	-----	3.7	-----	1.7	1.1	-----	5.1	-----	23
TOTAL	644.1	461.2	312.2	88.2	188.8	77.3	41.27	33.04	38.30	96.0	594.3	709.7
MEAN	20.8	16.5	10.1	2.94	6.09	2.58	1.33	1.07	1.28	3.10	19.8	22.9
MAX	87	86	26	6.5	17	8.8	3.1	1.3	5.1	11	94	85
MIN	5.1	5.8	3.2	1.8	1.8	1.4	.91	.96	.76	1.2	3.1	5.0
AC-FT	1,280	915	619	175	374	153	82	66	76	190	1,180	1,410
YEAR 1998	TOTAL	3,284.41	MEAN	9.00	MAX	94	MIN	.76	AC-FT	6,510		

* Incomplete Record
Period of Record Max on 12/27 @ 20:45: GH 5.78 = 193 cfs
Period of Record Min on 9/30 @ 04:15: GH 0.85 = 0.64 cfs
Source Agency: Tualatin Basin Watermaster

10.000 14206500 Tualatin River at Farmington, Oregon 1998



STREAMFLOW IS COMPILED FROM MEAN DAILY DISCHARGES
IN (CFS) CUBIC FEET PER SECOND

OREGON WATER RESOURCES DEPARTMENT
14206500 Tualatin River at Farmington, Oregon

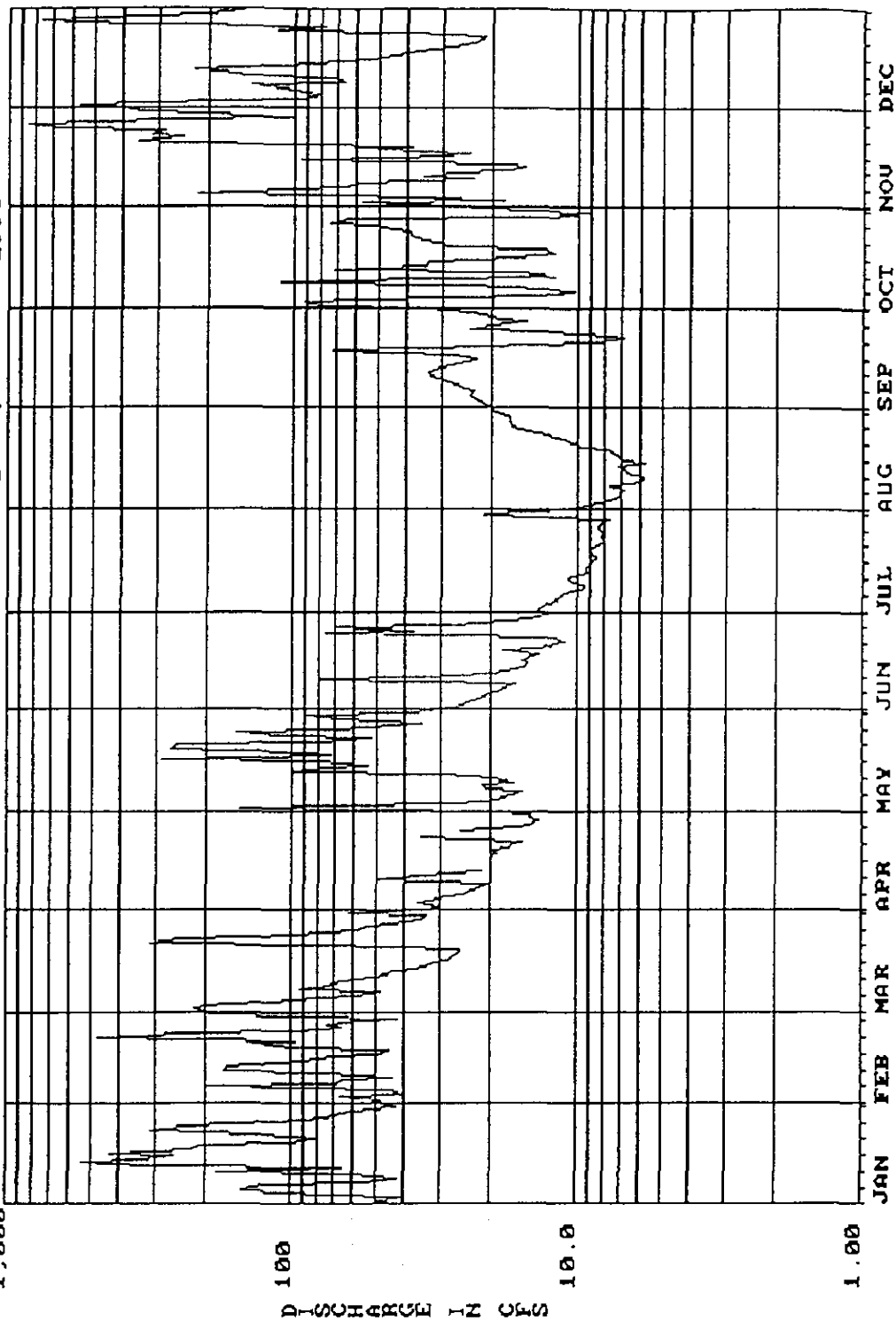
Latitude: 452650 Longitude: 1225658 River Mile: 33.3
Drainage Area: 568 Square Miles Gage Datum= 100.42

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1998

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	1,630	5,470	3,800	1,810	445	826	249	220	171	178	237	7,910
2	1,650	4,890	3,750	1,550	508	707	260	212	157	222	257	8,110
3	1,710	4,320	3,750	1,350	565	615	241	204	150	248	266	8,740
4	1,800	3,880	3,770	1,260	472	553	240	182	156	331	268	9,330
5	2,130	3,590	3,730	1,190	423	516	275	164	167	326	426	8,810
6	2,720	3,470	3,630	1,100	409	492	283	162	167	257	576	8,030
7	3,080	3,450	3,490	1,030	390	464	249	166	180	193	550	7,320
8	3,270	3,370	3,330	971	379	427	225	164	187	163	522	6,710
9	3,390	3,280	3,180	916	387	387	214	158	191	164	462	6,120
10	3,450	3,150	2,970	921	387	394	193	158	191	253	379	5,580
11	3,530	3,130	2,810	1,070	384	492	193	153	183	296	343	5,130
12	3,550	3,100	2,650	1,180	383	438	199	145	182	246	334	4,830
13	3,590	3,260	2,530	1,150	488	363	204	151	183	312	304	4,880
14	4,110	3,370	2,400	1,090	585	316	197	150	192	422	265	5,140
15	5,020	3,490	2,270	1,070	549	291	181	156	184	412	272	5,340
16	6,310	3,570	2,130	1,050	533	270	168	180	175	312	327	5,300
17	8,160	3,590	1,960	967	743	258	167	201	179	264	417	4,970
18	9,210	3,520	1,740	879	975	244	177	199	202	240	411	4,480
19	9,490	3,490	1,530	823	818	245	198	186	292	227	378	4,000
20	9,010	3,450	1,370	771	820	287	219	168	344	211	423	3,660
21	8,210	3,800	1,260	730	1,210	284	220	165	293	209	1,430	3,360
22	7,500	4,460	1,580	683	1,550	274	199	167	247	210	2,440	3,060
23	7,020	4,850	2,130	646	1,410	266	184	175	218	200	2,900	2,760
24	6,840	5,090	2,520	673	1,170	297	197	190	196	190	3,220	2,510
25	7,040	5,080	2,640	646	1,200	407	206	188	188	190	3,720	2,440
26	7,430	4,790	2,640	595	1,320	449	217	171	200	188	5,250	2,570
27	7,680	4,330	2,610	555	1,230	386	219	170	200	191	8,420	2,820
28	7,570	3,970	2,530	522	1,060	321	208	170	196	239	9,950	4,160
29	-----	-----	2,400	493	930	282	199	165	186	250	9,010	5,980
30	6,690	-----	2,200	470	986	248	202	181	179	224	8,570	2,440
31	6,090	-----	2,020	-----	971	-----	220	174	-----	213	-----	9,160
TOTAL	166,070	109,210	81,320	28,161	23,680	11,799	6,603	5,395	5,936	7,581	61,957	171,780
MEAN	5,357	3,900	2,623	939	764	393	213	174	198	245	2,065	5,541
MAX	9,490	5,470	3,800	1,810	1,550	826	283	220	344	422	9,950	9,330
MIN	1,630	3,100	1,260	470	379	244	167	145	150	163	237	2,440
AC-FT	329,400	216,600	161,300	55,860	46,970	23,400	13,100	10,700	11,770	15,040	122,900	340,700
YEAR 1998	TOTAL	679,492	MEAN	1,862	MAX	9,950	MIN	145	AC-FT	1,348,000		

* Incomplete Record
Max on 11/28 @ 04:45: GH 32.32= 10,200 cfs
Min on 8/12 @ 09:30: GH 4.18= 139 cfs
Source Agency: Tualatin Basin Watermaster

1.00014206950 Fanno Creek at Durham Road nr Tigard, OR 1998



STREAMFLOW IS COMPILED FROM MEAN DAILY DISCHARGES
IN (CFS) CUBIC FEET PER SECOND

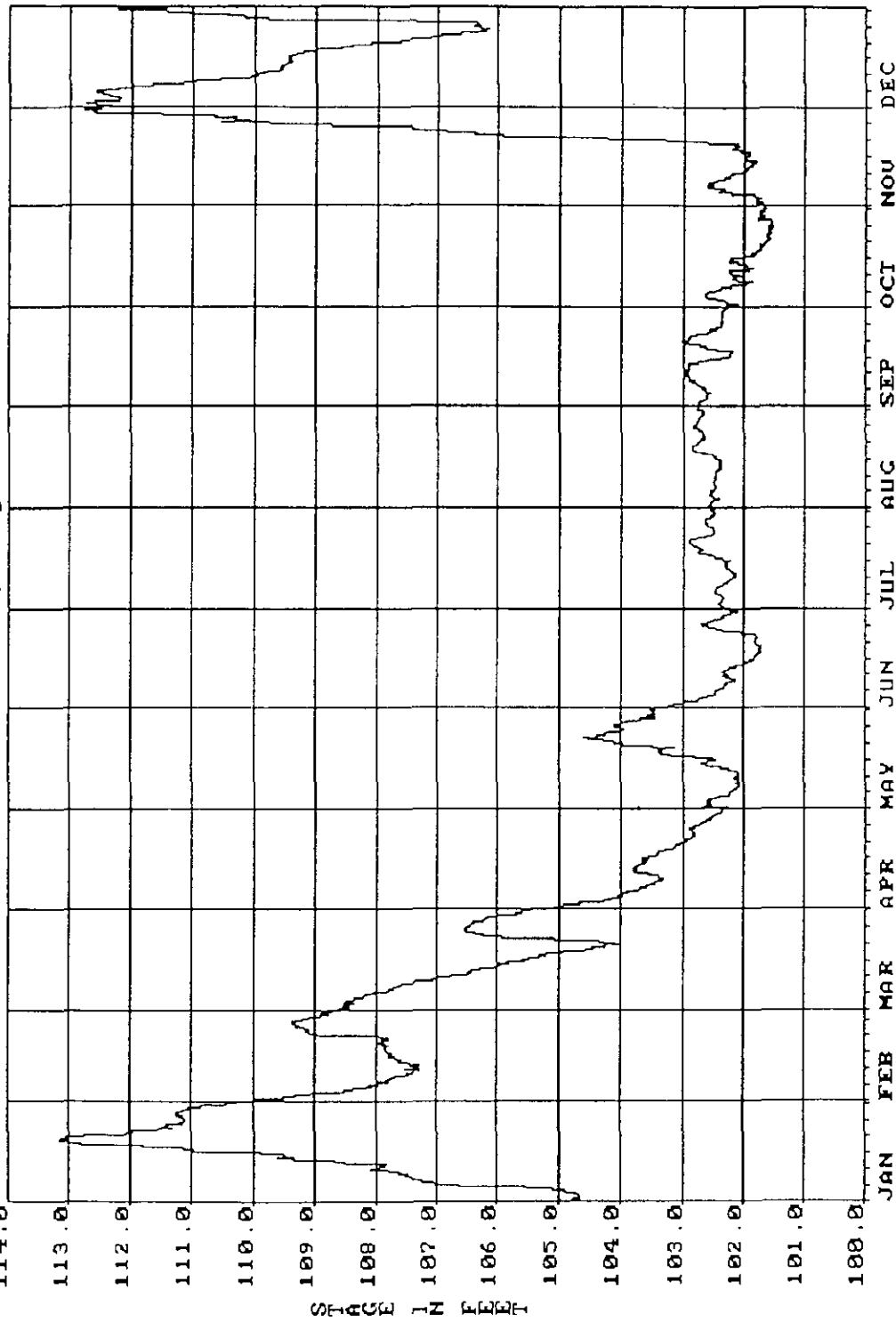
OREGON WATER RESOURCES DEPARTMENT
 14206950 Fanno Creek at Durham Road nr Tigard, OR
 Latitude: 452413 Longitude: 1224513 Stream Mile: 1.2
 Drainage Area: 31.5 square miles Gage Datum: 126.86
 USGS #: 14206950

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1998

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	51	48	199	35	19	31	14	11	20	35	28	404
2	48	49	221	30	155	27	14	10	21	82	58	564
3	40	67	166	36	28	24	12	8.5	22	93	18	184
4	74	41	119	33	20	23	12	7.7	24	58	74	92
5	150	44	81	28	18	21	12	7.2	24	14	220	82
6	149	200	58	25	17	19	11	7.2	23	10	104	100
7	122	70	49	23	16	19	11	7.0	25	13	67	110
8	56	65	94	21	21	17	9.8	7.8	27	25	59	144
9	42	44	72	20	21	17	9.5	6.5	28	111	24	67
10	62	75	73	50	17	80	10	5.8	31	36	35	72
11	182	173	58	43	20	36	11	5.9	33	12	28	150
12	66	169	46	28	29	20	9.5	6.9	34	16	17	178
13	320	139	48	22	100	18	9.2	6.7	30	73	15	227
14	552	90	37	26	76	15	9.4	7.3	28	35	18	111
15	338	71	34	17	54	15	9.1	5.8	24	34	96	68
16	259	49	32	17	81	16	9.1	7.1	23	22	43	53
17	432	45	28	20	288	14	8.7	7.3	27	14	24	45
18	222	96	27	19	74	14	8.6	7.3	73	12	52	40
19	210	137	26	20	91	18	9.0	7.8	33	13	38	34
20	100	97	25	17	271	13	9.1	9.6	14	29	255	28
21	82	480	78	17	250	12	8.6	10	8.7	31	355	24
22	95	237	313	16	81	11	8.2	11	6.9	35	247	22
23	198	96	247	35	53	12	8.1	12	7.7	39	317	21
24	313	67	138	26	110	77	8.3	14	13	39	287	39
25	235	75	75	26	156	38	8.2	15	24	46	661	115
26	157	56	57	16	69	71	8.4	17	20	51	853	79
27	90	42	54	15	44	27	8.5	17	15	75	269	383
28	69	194	45	14	35	18	8.2	17	19	64	102	778
29	68	-----	36	15	69	15	7.8	17	21	13	199	496
30	53	-----	33	15	91	13	22	18	24	9.1	342	206
31	43	-----	63	-----	37	-----	21	20	-----	15	-----	155
TOTAL	4,878	3,016	2,632	639	2,411	751	325.3	318.4	723.3	1,154.1	4,905	5,071
MEAN	157	108	84.9	24.6	77.8	25.0	10.5	10.3	24.1	37.2	164	164
MAX	552	480	313	50	288	80	22	20	73	111	853	778
MIN	40	41	25	14	16	11	7.8	5.8	6.9	9.1	15	21
AC-FT	9,680	5,980	5,220	1,270	4,780	1,490	645	632	1,430	2,290	9,730	10,060
YEAR 1998	TOTAL*	26,824.1	MEAN	74.3	MAX	853	MIN	5.8	AC-FT	53,210		

* Incomplete Record
 Max on 11/26 @ 0200: GH 11.30 = 1,160 cfs
 Min on 08/11 @ 0045: GH 1.64 = 4.6 cfs
 Source Agency: Tualatin Basin Watermaster

114.0 14206960 Tualatin River @ Tualatin, Oregon 1998



STAGE IS COMPILED FROM MEAN DAILY ELEVATION
IN FEET ABOVE SEA LEVEL

OREGON WATER RESOURCES DEPARTMENT
14206960 TUALATIN RIVER AT TUALATIN, OR

1998

Latitude: 452315		Longitude: 1224540					River Mile: 8.9					DAILY MEAN ELEVATION										
Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec										
1	104.70	110.05	108.62	105.15	102.32	103.28	102.31	102.57	102.77	102.22	101.69	112.54										
2	104.70	109.58	108.51	104.73	102.62	103.03	102.38	102.56	102.72	102.24	101.80	112.68										
3	104.74	109.11	108.43	104.34	102.59	102.80	102.39	102.52	102.64	102.42	101.78	112.29										
4	104.93	108.60	108.38	104.09	102.46	102.62	102.35	102.48	102.59	102.61	101.85	112.36										
5	105.49	108.15	108.24	103.93	102.29	102.50	102.38	102.55	102.61	102.61	102.37	112.57										
6	106.57	108.06	108.07	103.79	102.20	102.43	102.48	102.51	102.67	102.48	102.52	112.32										
7	107.22	107.85	107.85	103.64	102.14	102.35	102.47	102.49	102.75	102.26	102.54	111.77										
8	107.37	107.70	107.67	103.52	102.10	102.28	102.37	102.50	102.83	102.03	102.48	111.28										
9	107.49	107.51	107.42	103.41	102.11	102.19	102.28	102.50	102.90	102.04	102.32	110.64										
10	107.62	107.34	107.11	103.40	102.11	102.25	102.20	102.48	102.95	102.08	102.20	110.14										
11	107.99	107.46	106.81	103.54	102.11	102.32	102.16	102.47	102.95	102.19	102.05	109.84										
12	107.89	107.42	106.54	103.76	102.13	102.32	102.19	102.44	102.93	102.06	101.95	109.61										
13	108.33	107.60	106.32	103.80	102.38	102.16	102.24	102.41	102.92	101.93	101.90	109.56										
14	109.15	107.68	106.09	103.69	102.59	102.01	102.31	102.40	102.82	102.07	101.83	109.43										
15	109.54	107.77	105.87	103.63	102.61	101.90	102.30	102.40	102.44	102.21	101.92	109.42										
16	109.86	107.83	105.63	103.61	102.56	101.85	102.32	102.45	102.27	102.07	101.93	109.44										
17	110.89	107.87	105.36	103.48	103.16	101.80	102.56	102.64	102.20	101.86	102.00	109.33										
18	111.70	107.88	105.02	103.31	103.33	101.76	102.73	102.81	102.37	101.77	102.16	109.06										
19	112.74	107.94	104.64	103.19	103.33	101.74	102.73	102.86	102.70	101.72	102.13	108.65										
20	113.14	107.84	104.31	103.09	103.47	101.77	102.80	102.82	102.93	101.66	102.53	108.18										
21	112.85	108.75	104.15	102.98	104.12	101.82	102.90	102.73	102.97	101.60	104.02	107.70										
22	112.22	109.09	104.89	102.90	104.49	101.80	102.89	102.69	102.80	101.60	105.72	107.19										
23	111.71	109.16	105.70	102.86	104.46	101.84	102.66	102.69	102.62	101.59	106.80	106.70										
24	111.44	109.27	106.37	102.86	104.13	102.23	102.53	102.74	102.47	101.59	107.40	106.31										
25	111.25	109.33	106.52	102.85	104.07	102.43	102.52	102.81	102.41	101.57	108.49	106.26										
26	111.14	109.22	106.49	102.74	104.11	102.67	102.57	102.81	102.38	101.56	110.31	106.34										
27	111.17	108.94	106.40	102.63	104.05	102.62	102.64	102.76	102.38	101.59	110.27	107.17										
28	111.25	108.81	106.26	102.55	103.77	102.41	102.65	102.73	102.38	101.70	111.30	109.78										
29	111.18	-----	106.05	102.46	103.56	102.25	102.57	102.69	102.36	101.72	112.43	110.39										
30	110.91	-----	105.76	102.39	103.54	102.18	102.49	102.70	102.32	101.69	112.71	110.94										
31	110.50	-----	105.50	-----	103.48	-----	102.53	102.76	-----	101.65	-----	112.08										
MEAN	109.28	108.35	106.48	103.41	103.04	102.25	102.48	102.61	102.64	101.95	104.38	109.74										
MAX	113.19	110.28	108.77	105.34	104.60	103.42	102.94	102.88	103.03	102.65	112.83	112.79										
MIN	104.63	107.29	104.07	102.35	102.07	101.72	102.13	102.38	102.17	101.52	101.64	106.15										

Max instantaneous recorded: 01/20 @ 1230 - 113.19

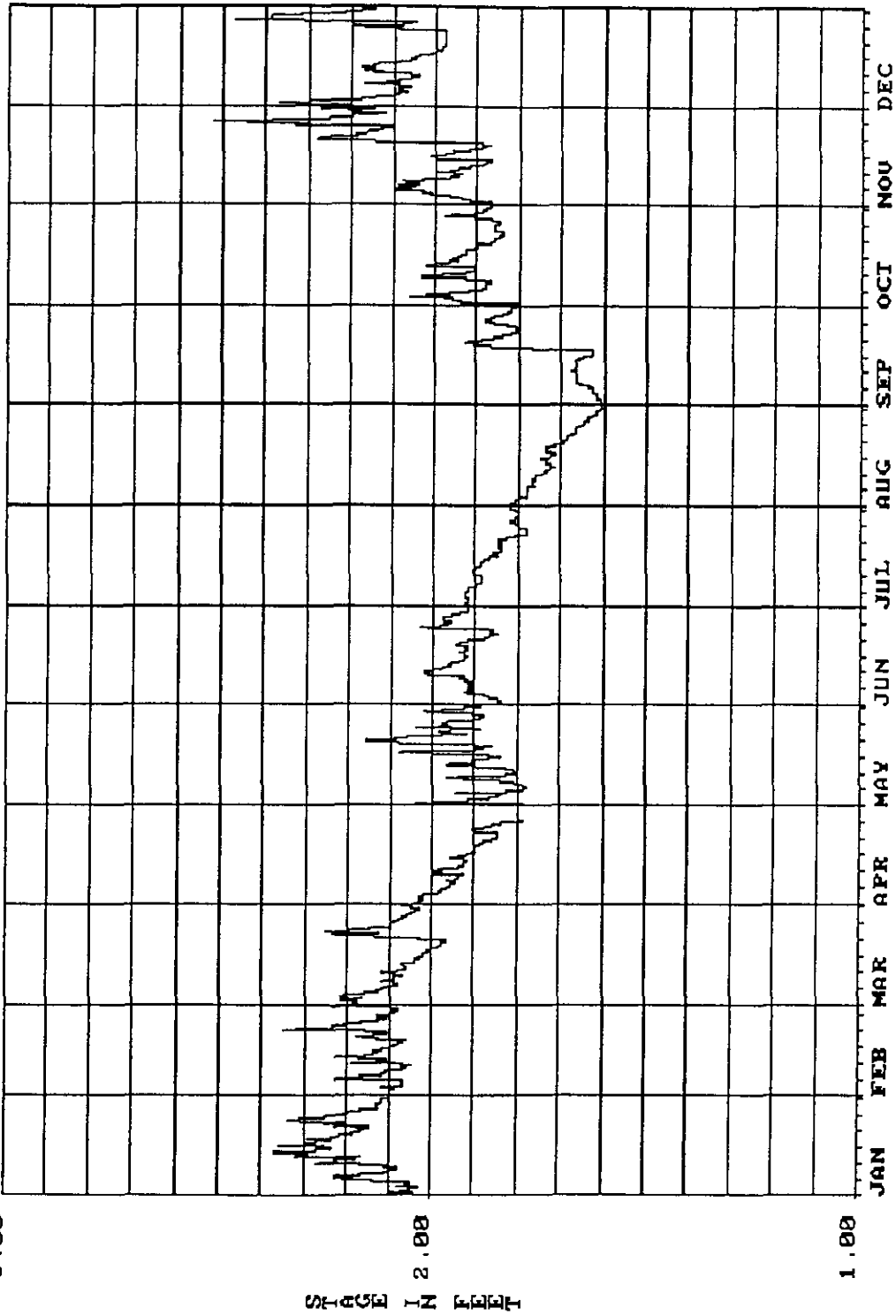
Min instantaneous recorded: 10/27 @ 0615 - 101.52

Elevation only recording station owned by the City of Tualatin

Source Agency: Tualatin Basin Watermaster

* Partial Day

3.00 HCTS Hedges Creek @ Tualatin-Sherwood Road 1998



STAGE IS COMPILED FROM MEAN DAILY ELEVATION

OREGON WATER RESOURCES DEPARTMENT

1998

HEDGES CREEK WETLAND NEAR TUALATIN, OR

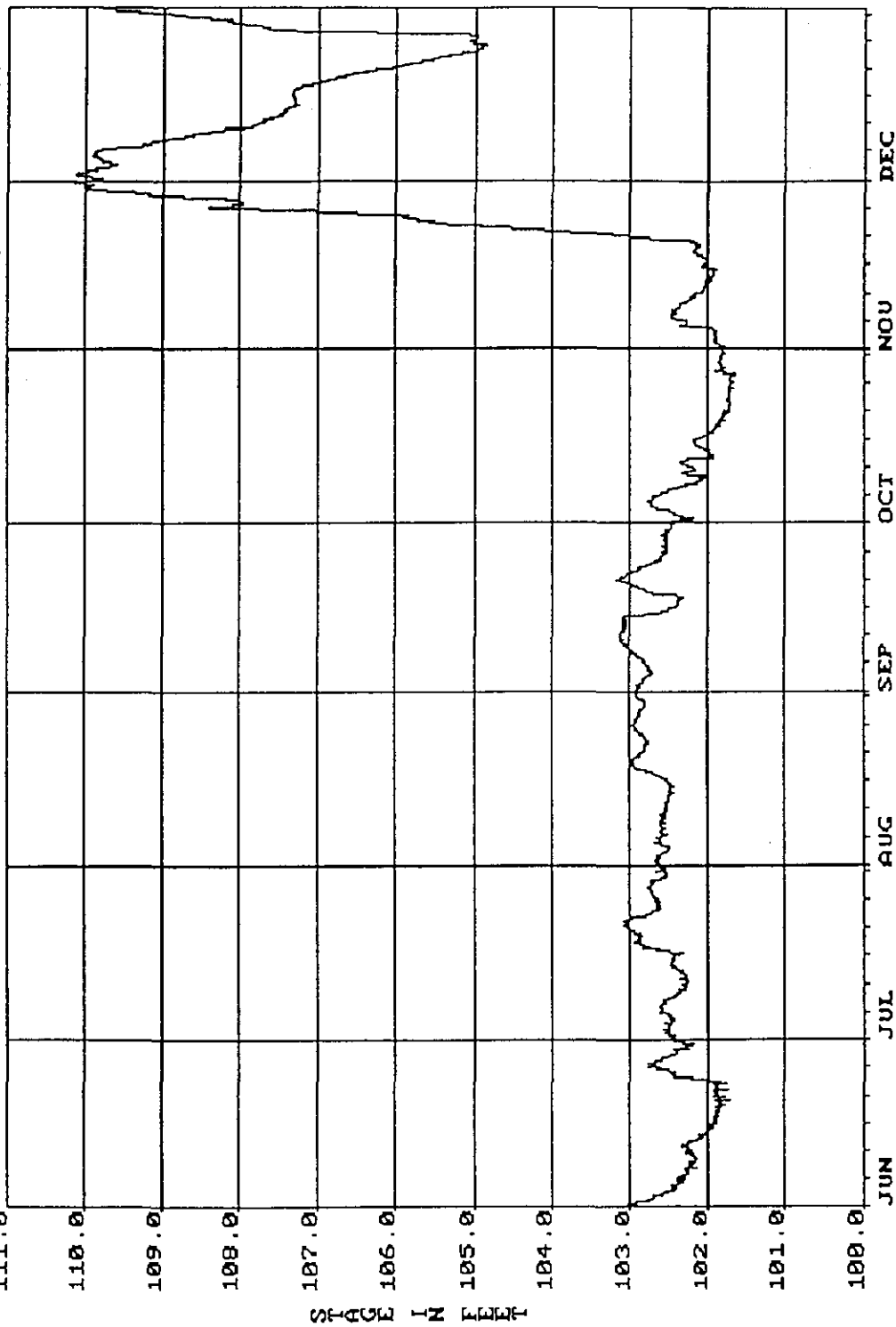
Day	Latitude:					Longitude:												Dec
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov							
1	2.03	2.10	2.20	2.04	1.80	1.86	1.92	1.82	1.61	1.81	1.87	2.25						
2	2.08	2.10	2.20	2.02	1.98	1.85	1.93	1.81	1.62	1.91	1.92	2.32						
3	2.04	2.11	2.20	2.02	1.88	1.87	1.92	1.81	1.62	1.98	1.96	2.20						
4	2.07	2.08	2.18	2.00	1.87	1.91	1.93	1.79	1.63	2.03	2.00	2.11						
5	2.12	2.07	2.14	1.97	1.86	1.92	1.93	1.78	1.63	1.93	2.07	2.08						
6	2.20	2.19	2.11	1.97	1.79	1.91	1.92	1.78	1.64	1.89	2.08	2.08						
7	2.19	2.13	2.09	1.96	1.79	1.91	1.90	1.77	1.66	1.88	2.05	2.09						
8	2.12	2.10	2.11	1.96	1.84	1.92	1.90	1.77	1.67	1.87	2.05	2.13						
9	2.09	2.07	2.09	1.94	1.93	1.93	1.89	1.77	1.67	1.93	1.98	2.06						
10	2.11	2.07	2.09	1.98	1.86	1.99	1.89	1.76	1.67	2.00	1.96	2.04						
11	2.24	2.15	2.09	1.98	1.81	2.00	1.90	1.75	1.67	1.93	1.98	2.11						
12	2.19	2.16	2.06	1.95	1.83	1.97	1.91	1.73	1.67	1.91	1.93	2.15						
13	2.29	2.18	2.07	1.93	1.95	1.96	1.90	1.73	1.67	2.00	1.89	2.16						
14	2.33	2.13	2.04	1.92	1.91	1.94	1.89	1.74	1.67	1.98	1.87	2.10						
15	2.28	2.12	2.04	1.94	1.88	1.93	1.88	1.75	1.65	1.95	1.96	2.06						
16	2.26	2.09	2.02	1.91	1.87	1.93	1.87	1.74	1.64	1.94	1.99	2.04						
17	2.32	2.07	2.01	1.90	2.05	1.93	1.85	1.73	1.63	1.93	1.93	2.02						
18	2.26	2.11	1.99	1.90	1.92	1.92	1.84	1.74	1.72	1.92	1.89	1.99						
19	2.25	2.16	1.98	1.89	1.89	1.94	1.85	1.73	1.90	1.90	1.89	1.99						
20	2.20	2.13	1.97	1.87	2.03	1.93	1.84	1.70	1.92	1.87	2.12	1.98						
21	2.17	2.31	2.03	1.85	2.11	1.89	1.85	1.70	1.86	1.86	2.26	1.98						
22	2.17	2.25	2.19	1.85	2.00	1.86	1.83	1.69	1.82	1.85	2.20	1.98						
23	2.23	2.18	2.19	1.88	1.95	1.87	1.79	1.68	1.81	1.84	2.15	1.98						
24	2.27	2.13	2.15	1.88	1.93	1.95	1.78	1.67	1.81	1.85	2.13	2.00						
25	2.26	2.12	2.11	1.85	2.01	2.00	1.79	1.66	1.83	1.86	2.27	2.15						
26	2.23	2.10	2.09	1.81	1.97	1.97	1.81	1.65	1.88	1.85	2.43	2.11						
27	2.18	2.09	2.08	1.80	1.92	1.97	1.82	1.65	1.87	1.87	2.27	2.23						
28	2.14	2.20	2.06	1.80	1.89	1.96	1.81	1.64	1.85	1.96	2.15	2.41						
29	2.13	-----	2.05	1.80	1.91	1.93	1.81	1.63	1.83	1.92	2.17	2.34						
30	2.12	-----	2.04	1.80	1.99	1.92	1.80	1.61	1.82	1.89	2.23	2.24						
31	2.11	-----	2.06	-----	1.90	-----	1.82	1.61	-----	1.87	-----	2.15						
MEAN	2.18	2.13	2.09	1.91	1.91	1.93	1.86	1.72	1.73	1.91	2.06	2.11						
MAX	2.37	2.35	2.25	2.05	2.16	2.03	1.93	1.82	1.93	2.06	2.52	2.48						
MIN	1.98	2.05	1.97	1.79	1.78	1.84	1.78	1.60	1.61	1.80	1.87	1.98						

Max instantaneous recorded: 11/26 @ 02:00 - 2.52
 Min instantaneous recorded: 08/30 @ 18:15 - 1.60
 Elevation only recording station

Source Agency: Tualatin Basin Watermaster

* Partial Day

111.0 14206990 Tualatin River at Oswego Canal nr Lake Oswego, OR 1998



STAGE IS COMPILED FROM MEAN DAILY ELEVATION
IN FEET ABOVE SEA LEVEL

OREGON WATER RESOURCES DEPARTMENT
14206990 TUALATIN RIVER AT OSWEGO CANAL NEAR LAKE OSWEGO, OR

1998

Latitude: 452257 Longitude: 1224312 River Mile: 6.7

DAILY MEAN ELEVATION

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
1						103.01	102.46	102.64	102.91	102.37	101.82	109.98
2						102.77	102.52	102.64	102.86	102.37	101.91	110.05
3						102.59	102.52	102.60	102.77	102.55	101.90	109.70
4						102.47	102.48	102.55	102.73	102.73	101.95	109.73
5						102.39	102.51	102.64	102.75	102.70	102.32	109.90
6						102.35	102.59	102.60	102.81	102.58	102.41	109.74
7						102.26	102.59	102.59	102.89	102.37	102.44	109.28
8						102.24	102.49	102.61	102.99	102.16	102.40	108.90
9						102.18	102.39	102.59	103.06	102.18	102.29	108.37
10						102.21	102.31	102.57	103.12	102.21	102.19	107.96
11						102.26	102.28	102.55	103.13	102.29	102.10	107.73
12						102.26	102.31	102.53	103.10	102.14	102.03	107.52
13						102.15	102.38	102.50	103.09	101.99	101.98	107.46
14						102.04	102.46	102.49	102.97	102.07	101.93	107.34
15						101.97	102.45	102.50	102.59	102.18	101.99	107.34
16						101.93	102.45	102.56	102.44	102.09	102.02	107.36
17						101.90	102.70	102.74	102.38	101.95	102.06	107.28
18						101.88	102.88	102.92	102.55	101.88	102.17	107.07
19						101.86	102.88	102.97	102.86	101.84	102.14	106.76
20						101.88	102.96	102.93	103.08	101.79	102.44	106.39
21						101.90	103.05	102.84	103.12	101.74	103.45	106.04
22						101.89	103.03	102.79	102.97	101.73	104.64	105.67
23						101.95	102.78	102.79	102.79	101.73	105.42	105.29
24						102.32	102.65	102.86	102.66	101.74	105.87	104.98
25						102.50	102.65	102.93	102.59	101.72	106.71	104.94
26						102.71	102.68	102.95	102.55	101.72	108.20	105.00
27						102.67	102.73	102.90	102.55	101.74	108.10	105.64
28						102.49	102.73	102.87	102.55	101.84	108.88	107.68
29						102.34	102.65	102.82	102.53	101.85	109.81	108.12
30						102.29	102.57	102.83	102.49	101.84	110.06	108.52
31							102.61	102.90		101.81		109.42
MEAN												
MAX						102.26	102.60	102.72	102.80	102.06	103.79	107.65
MIN						103.17	103.09	103.00	103.19	102.75	110.18	110.14
						101.72	102.25	102.45	102.33	101.66	101.79	104.85

Max instantaneous recorded: 11/30 @ 12:30 - 110.18'

Min instantaneous recorded: 10/27 @ 06:15 - 101.66'

Elevation only recording station owned by the City of Tualatin

Source Agency: Tualatin Basin Watermaster

* Partial Day

UNITED STATES DEPARTMENT OF THE INTERIOR - GEOLOGICAL SURVEY - OREGON DISTRICT INSTALLATION 02/26/1999

STATION NUMBER 14207500 TUALATIN RIVER AT WEST LINN, OREG. STREAM SOURCE AGENCY USGS

LATITUDE 452103 LONGITUDE 1224030 DRAINAGE AREA 706.00 DATUM 85.61 STATE 41 COUNTY 005

PROVISIONAL DATA - SUBJECT TO REVISION

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 1998

DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	1970	6250	4980	2230	563	1200	343	286	218	278	322	9010
2	1980	5760	4870	1950	730	1060	364	281	211	329	383	9210
3	2000	5350	4810	1690	729	928	365	272	199	392	377	8710
4	2110	4890	4760	1520	671	835	349	226	189	466	411	8710
5	2470	4500	4620	1420	588	772	357	207	189	461	681	8950
6	3270	4420	4480	1350	547	737	383	201	194	419	753	8700
7	3800	4250	4290	1260	524	691	372	197	202	345	774	8090
8	3920	4120	4130	1190	506	663	340	199	215	274	745	7600
9	4000	3970	3940	1130	514	616	313	196	226	309	665	8910
10	4110	3830	3680	1120	510	641	289	194	233	353	600	6390
11	4430	3830	3440	1190	511	686	276	192	236	394	533	6110
12	4320	3890	3230	1310	515	690	269	190	232	436	481	5890
13	4770	4050	3060	1350	655	609	279	185	230	463	451	5830
14	5510	4110	2880	1290	771	529	292	182	297	521	412	5680
15	5890	4180	2720	1250	798	476	287	180	297	598	452	5650
16	6170	4220	2550	1240	771	448	220	186	253	535	474	5660
17	7250	4260	2370	1170	1130	419	179	208	230	428	497	5570
18	8040	4270	2150	1080	1240	398	211	232	260	376	579	5320
19	9180	4330	1890	1020	1260	388	250	239	339	346	560	---
20	9630	4250	1670	961	1340	394	260	234	396	318	775	---
21	9300	5070	1560	897	1740	423	276	221	419	290	1620	---
22	8800	5370	2050	855	1960	411	293	214	380	284	2720	---
23	8040	5410	2590	838	1950	376	294	212	332	262	3530	3400
24	7750	5490	3100	833	1730	444	265	219	295	275	4010	3090
25	7540	5550	3220	835	1700	529	260	227	277	265	4940	3040
26	7400	5460	3190	761	1700	635	267	228	268	261	6800	3100
27	7400	5210	3120	720	1670	616	276	221	267	273	6590	3790
28	7480	5100	3020	677	1490	527	281	216	263	336	7580	6200
29	7410	---	2860	634	1360	454	279	211	258	340	8940	6720
30	7130	---	2650	603	1350	378	274	209	249	330	9230	7200
31	6720	---	2470	---	1310	---	280	216	---	309	---	8350
TOTAL	179570	131510	100330	34394	32833	17979	9043	6681	7854	11276	66785	172890
MEAN	5793	4697	3236	1146	1059	599	292	216	262	364	2226	737
MAX	9630	6250	4960	2230	1960	1200	383	286	419	598	9230	9210
MIN	1970	3830	1560	603	506	376	179	180	189	261	322	3040
AC-FT	356200	260900	199000	68220	65120	35660	17940	13250	15590	22370	132500	342907

CAL YR 1998* TOTAL 771135

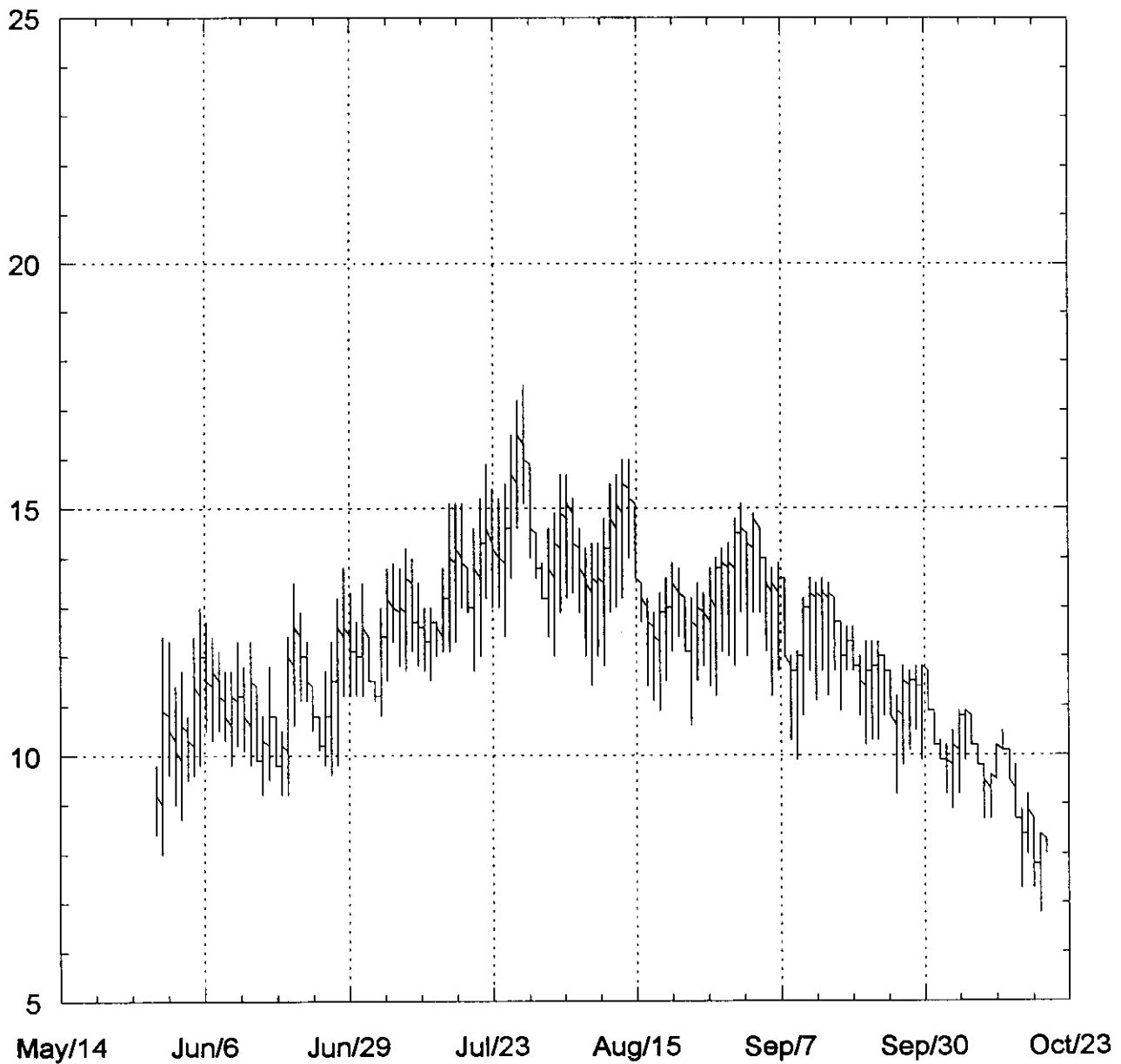
*MISSING DATA

MEAN 1719 MAX 9630 MIN 179 AC-FT 1529647

Stream Temperature Records

Appendix F

**Tualatin River above Barney Outfall
Station# 14202480
River Mile 78.2
1998**



Temperature-Degrees Celsius
Source Agency-Tualatin Basin Watermaster

C2:N89

Period of Record: 5/30 through 10/20
 MAX, 17.5 July 28 MIN, 6.8 Oct 19

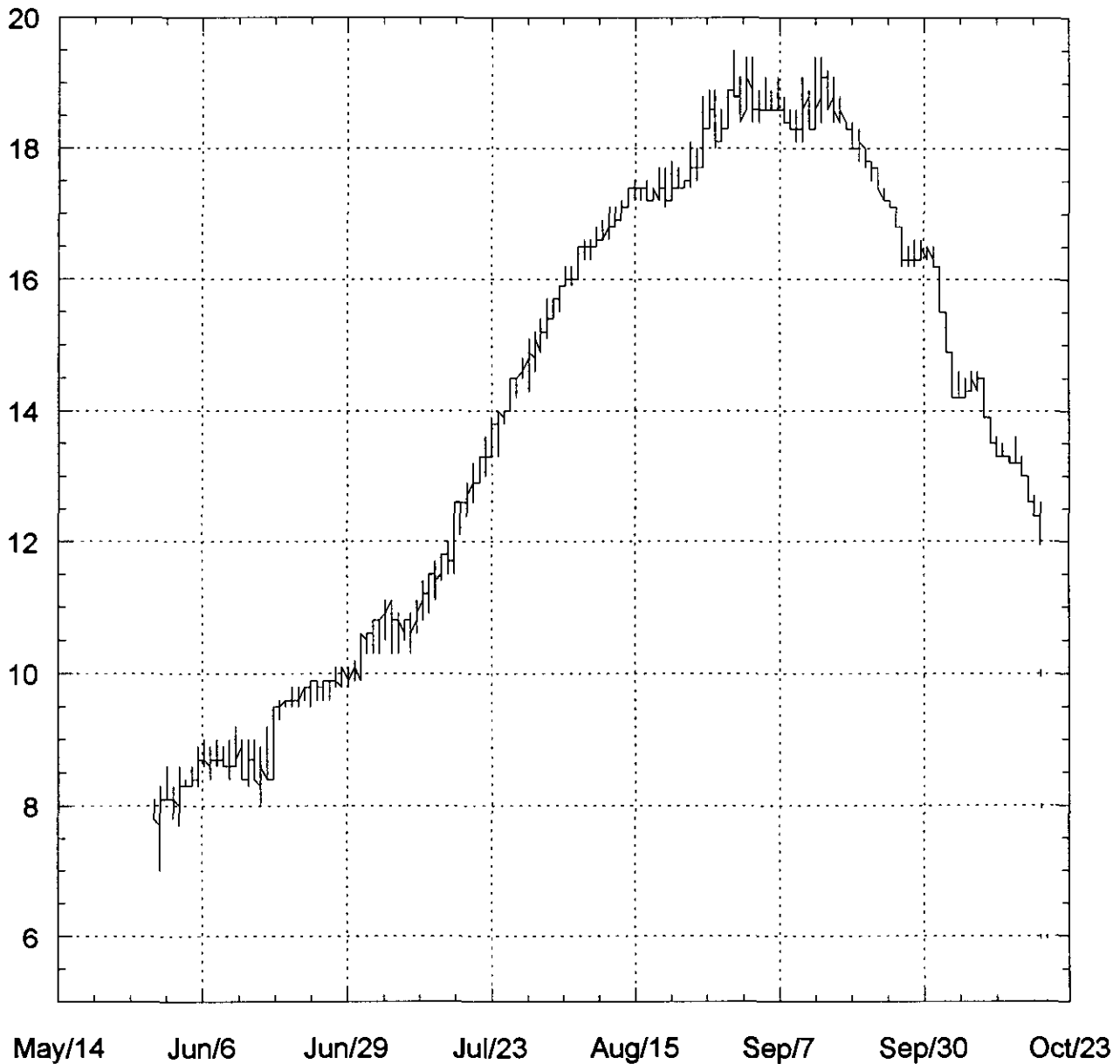
Source Agency: Tualatin Basin Watermaster

TEMPERATURE, WATER (DEG. C), MAY TO OCTOBER 1998

Day	Max	May Min	Mean	Max	June Min	Mean	Max	July Min	Mean
1				12.3	9.6	10.7	12.7	11.2	11.9
2				11.4	9.0	10.1	13.5	12.4	12.2
3				11.7	8.7	10.1	12.4	11.5	11.8
4				10.8	9.5	10.1	11.5	11.1	11.3
5				12.4	9.6	10.8	13.0	10.8	11.8
6				13.0	9.8	11.3	13.8	11.5	12.6
7				12.7	10.5	11.5	13.9	12.3	13.0
8				12.4	10.3	11.3	13.8	11.8	12.8
9				12.1	10.5	11.2	14.2	11.7	12.9
10				11.7	10.3	10.9	14.0	12.1	13.0
11				11.7	9.8	10.7	135.0	11.8	12.5
12				12.3	10.2	11.2	13.0	11.7	12.3
13				11.8	10.1	10.9	13.0	11.5	12.2
14				12.3	9.8	10.8	12.7	12.0	12.4
15				11.4	9.9	10.7	13.8	12.1	12.8
16				10.8	9.2	10.0	15.1	12.1	13.4
17				11.8	9.5	10.6	15.1	12.3	13.7
18				10.8	9.8	10.1	15.1	13.0	13.9
19				10.5	9.2	9.8	13.8	12.9	13.3
20				12.4	9.2	10.6	14.6	11.7	13.1
21				13.5	10.6	11.9	15.2	12.0	13.5
22				12.9	11.1	12.0	15.9	13.2	14.3
23				12.3	11.1	11.6	15.4	13.0	14.1
24				11.4	10.5	11.0	15.2	13.0	13.9
25				10.8	10.1	10.3	15.5	12.4	13.9
26				11.7	9.8	10.6	16.5	13.6	14.9
27				12.3	9.6	10.8	17.2	14.6	15.8
28				13.2	9.8	11.5	17.5	15.1	16.1
29				13.8	11.2	12.4	15.9	14.0	15.0
30	9.8	8.4	9.1	13.3	11.2	12.2	14.5	13.6	13.9
31	12.4	8.0	9.8				13.9	13.2	13.5
Month	12.4	8.0	9.5	13.8	8.7	10.9	17.5	10.8	13.3

Day	Max	August Min	Mean	Max	September Min	Mean	Max	October Min	Mean
1	14.6	12.4	13.4	15.1	12.9	14.0	11.7	10.9	11.2
2	14.9	12.0	13.4	14.5	12.0	13.4	10.9	10.2	10.6
3	15.7	12.9	14.2	14.9	12.9	13.9	10.3	9.9	10.1
4	15.7	13.2	14.4	14.6	12.9	13.8	10.2	9.2	9.7
5	15.2	13.3	14.3	14.0	12.1	13.2	10.5	8.9	9.7
6	14.6	12.9	13.7	13.8	11.2	12.6	10.9	9.2	10.0
7	14.2	12.0	13.1	13.9	11.7	12.8	10.9	9.9	10.5
8	14.3	11.4	12.8	13.6	12.0	12.5	10.8	10.2	10.5
9	14.3	12.0	13.1	12.0	10.3	11.2	10.2	9.8	10.1
10	14.8	11.8	13.2	12.1	9.9	11.1	9.8	8.7	9.2
11	15.5	12.9	14.1	13.2	10.8	11.9	9.6	8.7	9.2
12	15.7	13.0	14.3	13.6	11.7	12.7	10.2	9.5	9.8
13	16.0	13.2	14.5	13.5	11.1	12.3	10.5	10.1	10.2
14	16.0	14.0	15.0	13.6	11.7	12.7	10.1	9.5	9.7
15	15.1	13.6	14.1	13.5	11.2	12.4	9.8	8.7	9.2
16	13.5	12.7	13.2	13.2	11.7	12.5	8.9	7.3	8.1
17	13.2	11.4	12.4	12.7	10.9	11.8	9.2	8.0	8.5
18	12.9	11.1	12.0	12.6	11.7	12.1	8.7	7.3	8.1
19	13.3	10.9	12.1	12.6	11.7	12.1	8.4	6.8	7.6
20	13.6	11.5	12.5	12.0	10.8	11.4	8.3	8.0	8.1
21	13.9	12.1	13.0	12.3	10.2	11.1			
22	13.8	12.4	13.1	12.3	10.3	11.3			
23	13.2	12.1	12.5	12.3	10.3	11.3			
24	13.2	10.6	11.9	12.0	10.8	11.3			
25	13.5	11.5	12.4	11.7	10.8	11.4			
26	13.3	11.8	12.6	11.2	9.2	10.3			
27	13.8	11.4	12.6	11.8	9.8	10.7			
28	14.0	11.2	12.6	11.7	10.1	10.9			
29	14.2	12.1	13.2	11.8	10.5	11.2			
30	14.3	12.0	13.2	11.8	9.9	10.9			
31	14.8	11.8	13.3						
Month	16.0	10.6	13.2	15.1	9.2	12.0			

**Barney Reservoir Outfall
Station# 14202470
1998**



Temperature-Degrees Celsius
Source Agency-Tualatin River Watermaster

C2:N89

Period of Record: 5/30 through 10/20
 MAX, 19.5 Aug 31 MIN, 5.9 Oct 19

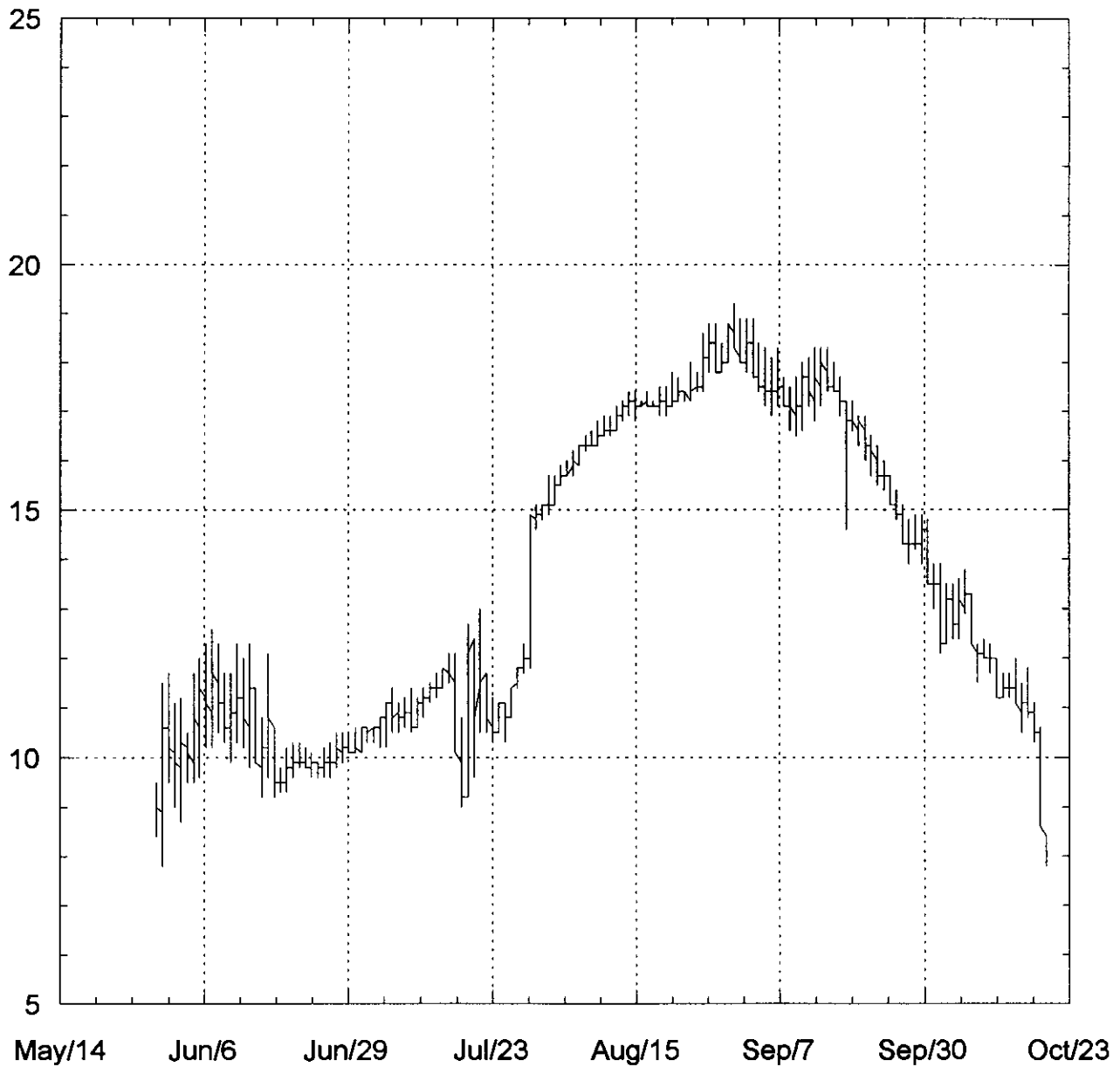
Source Agency: Tualatin Basin Watermaster

TEMPERATURE, WATER (DEG. C), MAY TO OCTOBER 1998

Day	Max	May Min	Mean	Max	June Min	Mean	Max	July Min	Mean
1				8.6	8.1	8.3	10.2	9.9	10.1
2				8.3	7.8	8.1	10.6	9.9	10.2
3				8.6	7.7	8.2	10.6	10.3	10.4
4				8.4	8.3	8.3	10.8	10.3	10.5
5				8.6	8.3	8.4	10.8	10.3	10.6
6				8.9	8.3	8.6	11.1	10.5	10.8
7				9.0	8.6	8.8	11.1	10.3	10.8
8				8.9	8.4	8.7	10.9	10.3	10.6
9				9.0	8.6	8.8	10.8	10.5	10.6
10				8.9	8.6	8.7	10.9	10.3	10.7
11				9.0	8.4	8.7	11.1	10.6	10.8
12				9.2	8.6	8.9	11.4	10.8	11.1
13				9.0	8.4	8.7	11.5	10.9	11.2
14				9.0	8.3	8.7	11.7	11.1	11.4
15				9.0	8.4	8.7	11.8	11.4	11.6
16				8.9	8.0	8.6	12.0	11.5	11.7
17				9.2	8.4	8.7	12.6	11.5	12.0
18				9.5	8.4	8.8	12.6	12.1	12.3
19				9.6	9.3	9.5	12.9	12.4	12.6
20				9.6	9.5	9.6	13.2	12.6	12.8
21				9.8	9.5	9.6	13.3	12.9	13.1
22				9.8	9.5	9.6	13.6	13.0	13.3
23				9.8	9.6	9.7	13.9	13.3	13.6
24				9.9	9.5	9.7	14.0	13.3	13.8
25				9.9	9.6	9.8	14.0	13.8	13.9
26				9.9	9.6	9.8	14.5	14.0	14.2
27				9.9	9.6	9.8	14.5	14.2	14.4
28				10.1	9.8	9.9	14.8	14.5	14.5
29				10.1	9.8	9.9	15.1	14.3	14.8
30	8.1	7.8	7.9	10.1	9.8	10.0	15.2	14.6	15.0
31	8.3	7.0	7.8				15.4	14.9	15.1
Month	8.3	7.0	7.9	10.1	7.7	9.1	15.4	9.9	12.2

Day	Max	August Min	Mean	Max	September Min	Mean	Max	October Min	Mean
1	15.7	15.1	15.4	19.1	18.4	18.7	16.5	16.3	16.5
2	15.7	15.4	15.5	19.4	18.6	19.0	16.5	16.2	16.4
3	15.9	15.5	15.7	19.4	18.4	19.0	16.2	15.5	15.9
4	16.2	15.9	16.0	18.9	18.4	18.7	15.5	14.9	15.3
5	16.2	15.9	16.1	19.1	18.6	18.7	14.9	14.2	14.4
6	16.5	16.0	16.3	18.9	18.6	18.7	14.6	14.2	14.3
7	16.6	16.3	16.4	19.1	18.6	18.7	14.5	14.2	14.3
8	16.6	16.3	16.5	18.8	18.4	18.6	14.6	14.3	14.4
9	16.8	16.5	16.6	18.6	18.3	18.4	14.6	14.3	14.5
10	16.9	16.6	16.7	18.6	18.1	18.3	14.5	13.9	14.2
11	17.1	16.6	16.9	19.1	18.1	18.5	13.9	13.5	13.8
12	17.1	16.8	17.0	18.9	18.3	18.5	13.6	13.3	13.5
13	17.2	16.9	17.1	19.4	18.3	18.7	13.5	13.3	13.4
14	17.4	17.1	17.2	19.4	18.4	18.9	13.3	13.2	13.3
15	17.5	17.2	17.4	19.2	18.6	19.0	13.6	13.2	13.3
16	17.4	17.2	17.4	19.1	18.4	18.7	13.3	13.0	13.1
17	17.5	17.2	17.4	18.8	18.4	18.5	13.0	12.6	12.9
18	17.4	17.2	17.4	18.4	18.3	18.3	12.7	12.4	12.6
19	17.7	17.2	17.4	18.4	18.0	18.2	12.6	5.9	10.3
20	17.7	17.1	17.4	18.3	17.8	18.0	6.8	4.6	5.4
21	17.8	17.2	17.5	18.0	17.7	17.8			
22	17.7	17.4	17.5	17.8	17.5	17.7			
23	17.5	17.4	17.5	17.7	17.4	17.5			
24	18.1	17.4	17.7	17.4	17.2	17.2			
25	18.0	17.5	17.7	17.2	17.1	17.2			
26	18.8	17.7	18.2	17.1	16.8	16.9			
27	18.9	18.3	18.5	16.8	16.2	16.5			
28	18.9	18.0	18.5	16.5	16.2	16.3			
29	18.6	18.1	18.3	16.6	16.2	16.3			
30	18.9	18.3	18.6	16.6	16.3	16.4			
31	19.5	18.8	18.9						
Month	19.5	15.1	17.2	19.4	16.2	18.1			

**Tualatin River below Barney Outfall
Station #14202460
Rivermile 77.8
1998**



Temperature-Degrees Celsius
Source Agency-Tualatin Basin Watermaster

C2:N89

Period of Record: 5/30 through 10/20
 MAX, 19.2 Aug 31 MIN, 7.8 May 31

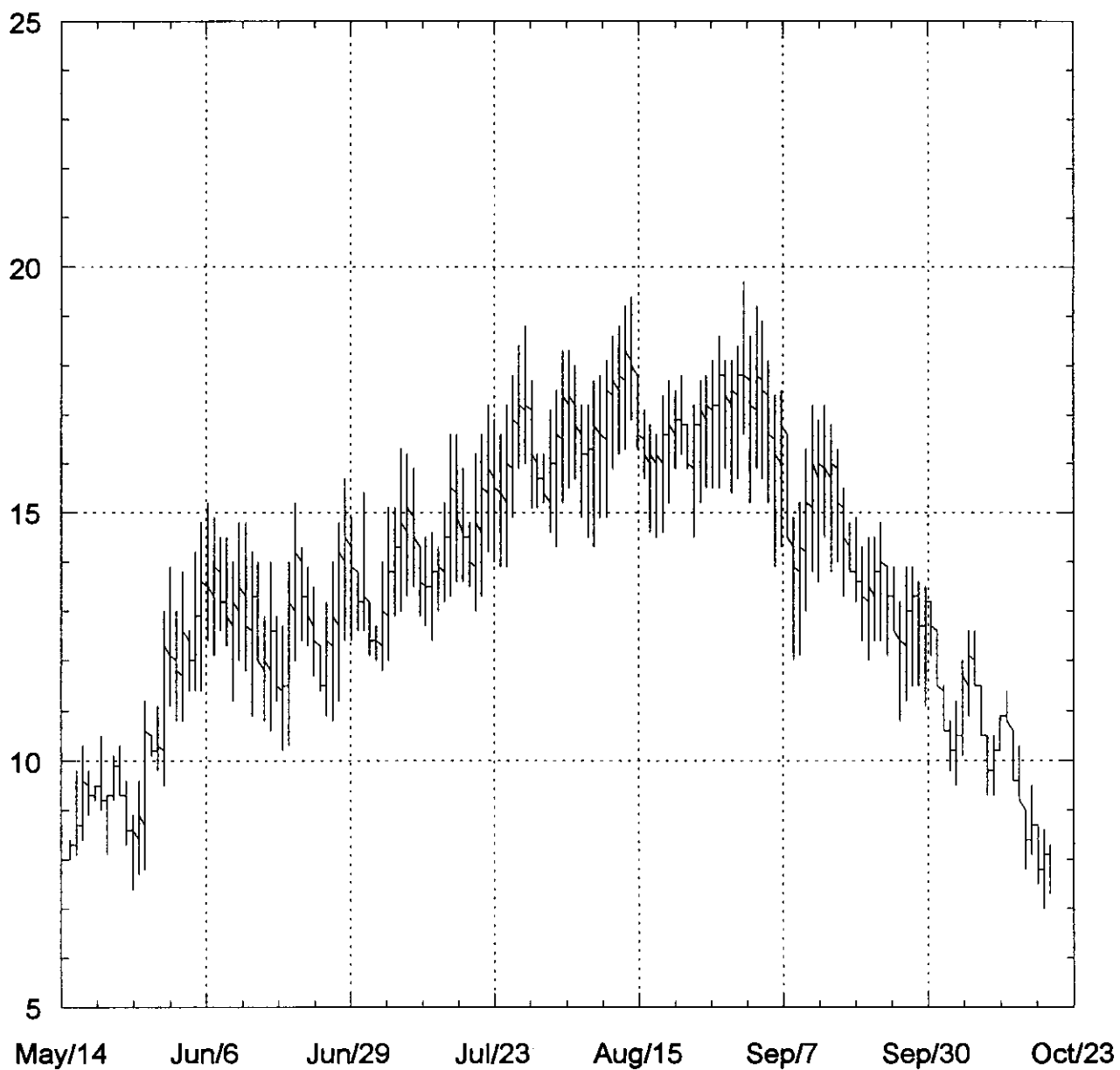
Source Agency: Tualatin Basin Watermaster

TEMPERATURE, WATER (DEG. C), MAY TO OCTOBER 1998

Day	Max	May Min	Mean	Max	June Min	Mean	Max	July Min	Mean
1				11.7	9.5	10.4	10.6	10.1	10.2
2				11.1	9.5	9.9	10.6	10.1	10.3
3				11.2	8.7	9.9	10.6	10.3	10.4
4				10.5	9.5	10.0	10.6	10.3	10.5
5				11.7	9.5	10.4	10.8	10.2	10.6
6				12.0	9.6	10.8	11.1	10.2	10.8
7				12.3	10.2	11.1	11.4	10.5	10.9
8				12.6	10.2	11.2	11.1	10.5	10.8
9				12.3	10.5	11.3	11.2	10.6	10.9
10				11.7	10.3	10.9	11.4	10.5	10.9
11				11.7	9.9	10.8	11.2	10.6	11.0
12				12.3	10.3	11.2	11.4	10.8	11.1
13				12.0	10.2	11.0	11.5	11.1	11.3
14				12.3	9.8	10.9	11.7	11.2	11.4
15				11.4	9.9	10.7	11.8	11.4	11.6
16				10.8	9.2	10.0	12.1	11.5	11.7
17				12.1	9.6	10.7	12.1	10.1	11.4
18				10.6	9.2	9.9	10.8	9.0	9.9
19				9.8	9.3	9.6	12.7	9.2	10.4
20				10.2	9.3	9.7	12.4	9.6	10.7
21				10.3	9.6	9.9	13.0	10.5	11.6
22				10.3	9.6	9.9	11.7	10.5	11.1
23				10.2	9.8	9.9	11.2	10.3	10.7
24				10.1	9.6	9.9	11.1	10.5	10.8
25				9.9	9.6	9.8	11.1	10.3	10.7
26				10.2	9.6	9.9	11.4	10.8	11.2
27				10.3	9.6	10.0	11.8	11.4	11.6
28				10.5	9.8	10.1	12.3	11.7	11.9
29				10.5	9.9	10.2	14.9	11.8	12.8
30	9.5	8.4	9.0	10.5	10.1	10.2	15.1	14.6	14.9
31	11.5	7.8	9.6				15.1	14.8	15
Month	11.5	7.8	9.3	12.6	8.7	10.3	15.1	9.0	11.3

Day	Max	August Min	Mean	Max	September Min	Mean	Max	October Min	Mean
1	15.7	14.9	15.3	18.9	18.0	18.2	14.8	13.5	14.5
2	15.7	15.1	15.4	18.9	17.8	18.4	13.9	13.0	13.5
3	15.9	15.5	15.6	18.9	17.7	18.4	13.9	12.1	13.0
4	16.0	15.7	15.9	18.4	17.4	17.8	13.5	12.3	12.9
5	16.2	15.7	15.9	18.3	17.1	17.6	13.5	12.4	12.9
6	16.3	15.9	16.2	18.1	16.9	17.5	13.6	12.4	12.9
7	16.5	16.2	16.3	18.3	17.1	17.6	13.8	12.9	13.3
8	16.6	16.3	16.4	17.7	17.1	17.4	13.3	12.3	13.1
9	16.8	16.3	16.5	17.5	16.6	17.1	12.3	11.5	12.0
10	16.9	16.5	16.6	17.7	16.5	17.1	12.4	12.0	12.1
11	16.9	16.5	16.8	18.0	16.6	17.4	12.3	11.7	11.9
12	17.1	16.6	16.9	18.1	16.6	17.6	12.0	11.2	11.7
13	17.2	16.8	17.0	18.3	16.8	17.5	11.7	11.2	11.4
14	17.4	16.9	17.1	18.3	17.1	17.8	11.7	11.2	11.4
15	17.4	16.8	17.2	18.3	17.4	17.8	12.0	11.1	11.5
16	17.2	17.1	17.1	18.0	17.4	17.6	11.5	10.5	11.0
17	17.4	17.1	17.2	17.7	16.9	17.3	11.8	10.8	11.2
18	17.2	17.1	17.1	17.2	14.6	16.4	11.1	10.3	10.7
19	17.5	16.9	17.2	17.2	16.6	16.8	10.6	8.6	9.6
20	17.5	16.9	17.2	16.9	16.3	16.7	8.4	7.8	8.1
21	17.8	17.1	17.3	16.9	16.0	16.5			
22	17.7	17.2	17.4	16.5	15.7	16.1			
23	17.4	17.2	17.3	16.3	15.5	15.9			
24	18.0	17.2	17.5	16.0	15.4	15.6			
25	17.8	17.4	17.5	15.7	15.1	15.5			
26	18.6	17.4	17.9	15.4	14.8	15.1			
27	18.8	17.8	18.3	15.1	14.3	14.7			
28	18.8	17.8	18.2	14.8	13.9	14.3			
29	18.4	17.8	18.1	14.9	14.2	14.5			
30	18.8	18.0	18.3	14.9	13.9	14.4			
31	19.2	18.3	18.6						
Month	19.2	14.9	17.0	18.9	13.9	16.8			

**Tualatin River below Lee Falls
Station #14202450
River Mile 70.7
1998**



Temperature - Degrees Celsius
Source Agency - Tualatin Basin Watermaster

Period of Record: 5/16 through 10/20

Source Agency: Tualatin Basin Watermaster

MAX, 20 Sept 1

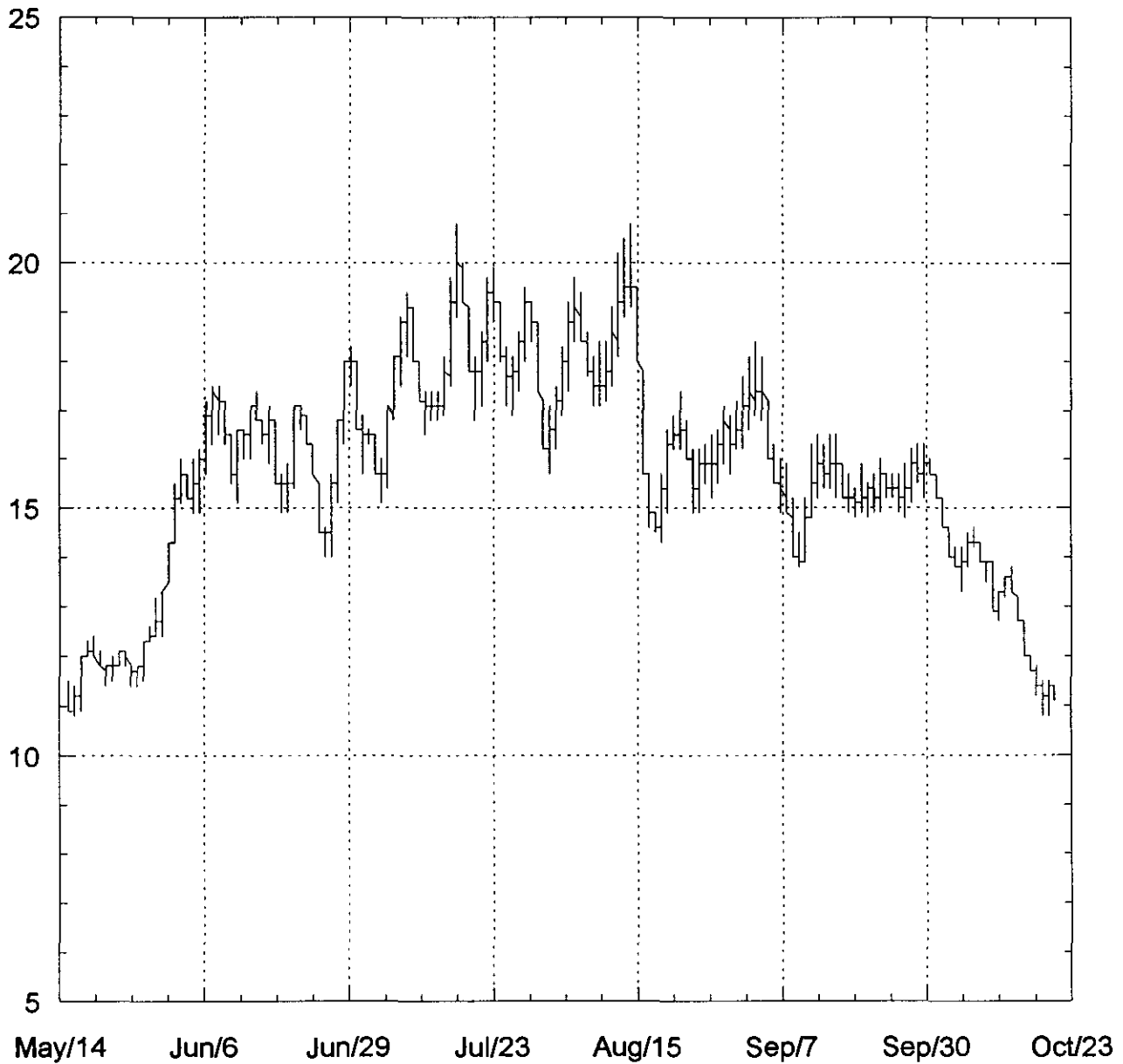
MIN, 7.00 Oct. 19

TEMPERATURE, WATER (DEG. C), MAY TO OCTOBER 1998

Day	Max	May Min	Mean	Max	June Min	Mean	Max	July Min	Mean
1				13.9	11.1	12.4	13.8	12.6	13.0
2				13.0	10.8	11.8	15.4	12.6	13.7
3				13.8	10.8	12.2	13.2	12.1	12.6
4				12.6	11.4	11.9	12.7	12.0	12.3
5				14.2	11.4	12.6	14.0	11.8	12.9
6				14.8	11.4	13.1	15.1	12.0	13.4
7				15.2	12.4	13.7	15.1	12.9	13.8
8				14.9	12.1	13.4	16.3	13.0	14.6
9				14.5	12.6	13.4	16.2	13.3	14.8
10				14.5	12.3	13.2	15.9	13.5	14.6
11				14.0	11.2	12.6	14.3	12.9	13.5
12				14.8	12.0	13.3	14.5	12.7	13.5
13				14.8	11.8	13.3	14.6	12.4	13.6
14				14.2	10.9	12.6	14.3	13.0	13.7
15				14.0	12.0	12.9	15.2	13.2	14.2
16	8.4	8.0	8.2	12.9	10.8	11.9	16.6	13.3	15.0
17	9.8	8.1	8.8	14.0	10.6	12.3	16.6	13.6	15.1
18	10.3	8.4	9.2	12.9	11.2	12.0	15.9	13.6	14.6
19	9.8	8.9	9.2	12.7	10.2	11.4	14.8	13.5	14.1
20	9.5	9.2	9.4	14.0	10.3	12.2	16.2	13.0	14.5
21	10.5	9.0	9.6	15.2	12.0	13.6	16.6	13.3	14.9
22	9.3	8.1	8.9	14.3	12.4	13.4	17.2	14.2	15.6
23	10.1	9.2	9.6	13.9	12.3	13.0	16.9	14.0	15.4
24	10.3	9.3	9.8	13.5	11.7	12.5	16.6	13.9	15.2
25	9.6	8.3	8.9	12.3	11.4	11.8	17.2	13.9	15.5
26	8.9	7.4	8.2	13.2	10.9	12.0	17.8	14.9	16.3
27	9.6	7.7	8.7	14.0	10.8	12.5	18.4	15.9	17.0
28	11.2	7.8	9.5	14.8	11.2	13.1	18.8	16.0	17.3
29	10.5	10.1	10.3	15.7	12.4	14.1	17.7	15.1	16.4
30	11.1	9.8	10.4	14.9	12.4	13.7	16.2	15.1	15.5
31	13.0	9.5	11.2				16.2	15.2	15.6
Month	13.0	7.4	9.4	15.7	10.2	12.7	18.8	11.8	14.6

Day	Max	August Min	Mean	Max	September Min	Mean	Max	October Min	Mean
1	17.1	14.6	15.7	19.7	16.6	18.1	13.2	12.1	12.8
2	17.5	14.3	16.0	18.6	15.2	17.0	12.6	11.5	12.0
3	18.3	15.2	16.8	19.2	15.9	17.5	11.5	10.6	11.1
4	18.3	15.5	17.0	18.9	15.7	17.4	10.8	9.8	10.4
5	18.0	15.7	16.9	18.1	15.2	16.8	11.2	9.5	10.4
6	17.2	14.9	16.2	17.4	13.9	15.8	12.0	10.1	11.0
7	17.2	14.5	15.8	17.5	14.3	16.1	12.6	10.9	11.7
8	17.7	14.3	16.0	16.6	14.5	15.6	12.6	11.5	12.1
9	17.8	14.9	16.4	14.9	12.0	13.7	11.5	10.5	11.0
10	18.1	14.9	16.6	15.2	12.1	13.7	10.5	9.3	9.9
11	18.6	15.9	17.3	16.3	13.0	14.7	10.5	9.3	9.8
12	18.8	16.2	17.5	17.2	13.8	15.5	10.9	10.2	10.6
13	19.2	16.3	17.7	16.9	13.6	15.4	11.4	10.8	11.0
14	19.4	16.9	18.2	17.2	14.5	15.9	10.6	9.6	10.3
15	17.8	16.3	17.0	16.8	13.8	15.4	10.3	9.2	9.7
16	17.1	15.7	16.4	16.3	14.0	15.3	9.0	7.8	8.6
17	16.8	14.6	15.8	15.5	13.3	14.6	9.5	8.1	8.7
18	16.6	14.5	15.7	14.8	13.8	13.1	8.7	7.5	8.2
19	17.4	14.6	16.1	14.9	13.2	13.9	8.6	7.0	7.9
20	17.7	15.2	16.5	14.3	12.4	13.4	8.3	7.3	7.6
21	17.5	15.9	16.7	14.5	12.0	13.3			
22	17.8	16.2	16.9	14.5	12.4	13.4			
23	16.8	15.9	16.4	14.8	12.4	13.7			
24	17.2	14.5	15.9	13.9	12.1	13.1			
25	17.7	15.2	16.6	13.9	12.6	13.3			
26	17.8	15.5	16.7	13.2	10.8	12.1			
27	18.1	15.5	16.9	13.9	11.2	12.6			
28	18.6	15.5	17.1	13.9	11.5	12.9			
29	18.1	15.9	17.2	13.6	11.5	12.7			
30	18.1	15.4	17.0	13.5	11.1	12.4			
31	18.4	15.7	17.2						
Month	19.4	14.3	16.7	19.7	10.8	14.6			

Tualatin River near Gaston, OR
Station# 14202500
River Mile 63.9
1998



Temperature-Degrees Celsius
Source Agency-Tualatin Basin Watermaster

Period of Record: 5/16 through 10/20
 MAX, 22.4 July 28 MIN, 7.8 Oct. 18

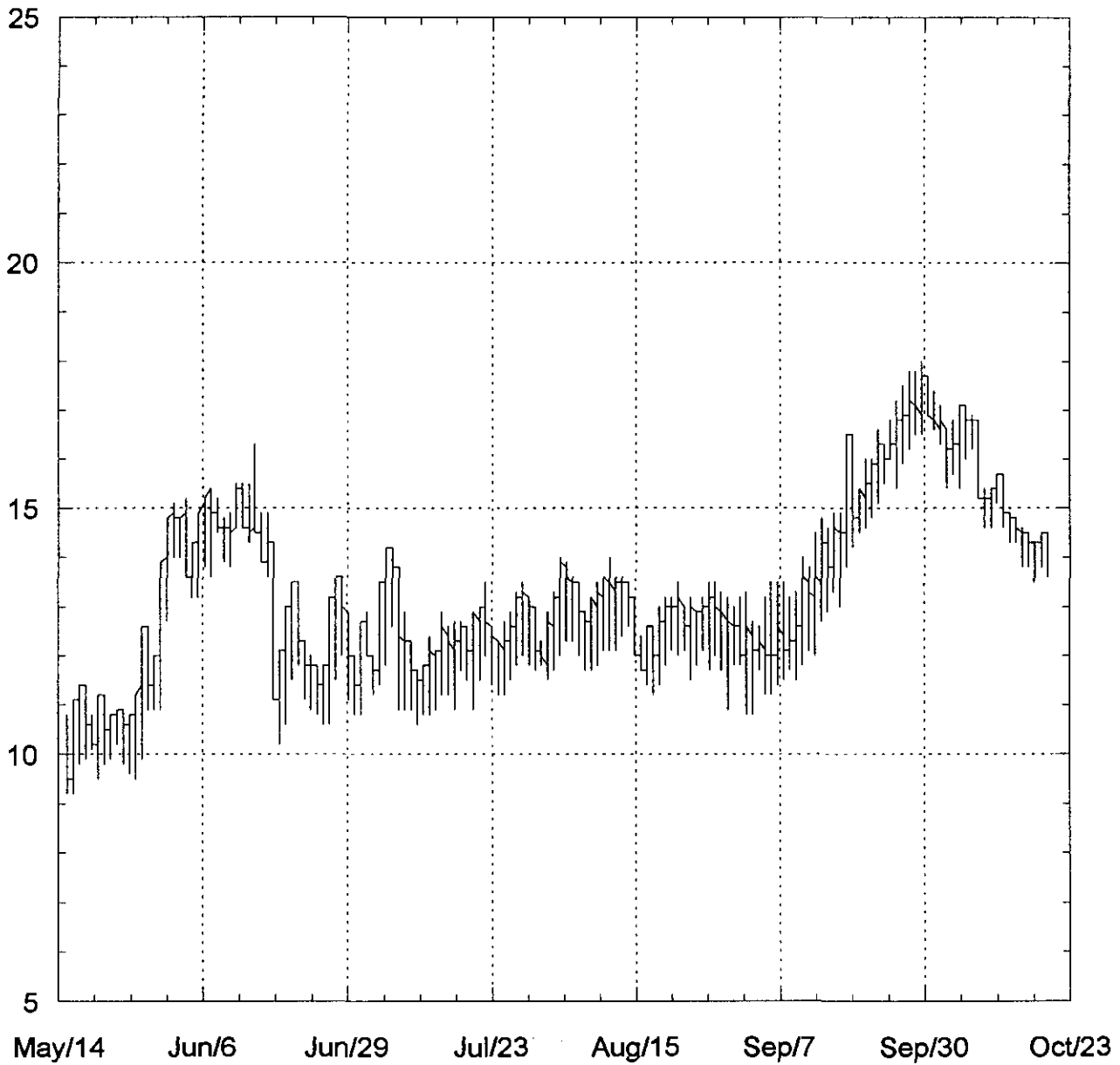
Source Agency: Tualatin Basin Watermaster

TEMPERATURE, WATER (DEG. C), MAY TO OCTOBER 1998

Day	Max	May Min	Mean	Max	June Min	Mean	Max	July Min	Mean
1				17.2	12.3	14.6	17.2	14.8	15.6
2				16.2	12.7	14.3	18.8	14.0	16.1
3				16.9	12.1	14.5	18.0	13.9	14.9
4				15.9	12.7	13.8	13.9	13.2	13.6
5				17.1	12.6	14.5	17.4	13.0	14.7
6				18.0	13.0	15.5	18.4	13.3	15.7
7				18.8	14.0	16.4	17.8	14.3	16.3
8				17.8	14.2	16.1	19.9	14.5	17.0
9				17.2	14.2	15.8	20.0	16.0	18.1
10				17.7	14.0	15.7	19.2	15.9	17.4
11				17.2	13.2	15.2	18.1	15.7	16.8
12				18.4	13.6	16.0	17.8	14.5	16.1
13				18.1	14.0	16.2	18.4	14.3	16.4
14				17.8	13.5	15.7	17.2	14.9	16.1
15				17.4	14.9	16.3	18.6	14.9	16.5
16	9.8	8.7	9.2	16.2	13.5	14.9	20.5	15.4	17.8
17	11.8	8.7	10.0	17.2	12.7	14.9	21.0	16.0	18.7
18	12.9	9.0	10.7	16.3	13.3	14.4	19.9	15.2	17.3
19	11.7	9.9	10.6	15.5	12.0	13.7	18.1	15.4	16.6
20	10.9	9.9	10.3	17.5	11.8	14.6	19.1	13.9	16.4
21	12.3	9.9	10.7	18.8	13.6	16.3	19.5	14.8	17.1
22	10.8	9.0	10.0	17.8	13.6	16.1	20.5	15.7	18.1
23	11.7	9.8	10.6	16.5	13.9	15.2	20.0	15.9	18.0
24	11.7	10.5	11.0	16.2	13.6	14.8	19.4	15.4	17.5
25	11.5	9.5	10.4	14.8	13.2	13.6	20.2	15.2	17.6
26	10.9	8.7	9.9	14.5	12.3	13.4	21.0	16.5	18.6
27	12.0	8.4	10.0	17.7	12.4	14.8	22.1	17.5	19.7
28	13.9	8.7	11.2	18.8	13.2	16.0	22.4	17.8	20.1
29	13.0	11.1	11.7	19.9	14.5	17.2	21.3	17.4	19.1
30	13.0	10.6	11.7	18.9	15.1	16.7	19.5	16.5	17.4
31	16.0	10.3	13				17.4	16.2	16.7
Month	16.0	8.4	10.7	19.9	11.8	15.2	22.4	13.0	17.0

Day	Max	August Min	Mean	Max	September Min	Mean	Max	October Min	Mean
1	19.4	15.5	17.2	21.6	17.8	19.7	15.4	13.9	14.4
2	20.0	15.4	17.7	21.4	18.1	19.8	14.3	12.7	13.3
3	21.0	16.2	18.5	21.8	18.6	20.1	13.0	12.0	12.6
4	21.0	16.9	19.0	21.6	18.4	20.0	12.4	10.9	11.4
5	21.0	17.1	19.1	21.8	18.0	19.7	12.4	10.1	11.3
6	19.9	16.2	18.1	21.0	17.1	18.9	13.2	10.9	12.0
7	19.1	15.2	17.2	21.0	17.1	18.8	13.8	12.4	13.0
8	19.4	15.2	17.3	19.5	18.0	18.6	14.2	13.2	13.6
9	19.9	16.0	17.9	18.1	14.9	16.6	13.6	11.8	12.7
10	20.2	15.9	18.1	17.8	14.2	15.9	11.7	10.6	11.1
11	21.1	16.9	18.9	18.8	15.1	16.8	11.4	9.9	10.6
12	21.3	17.1	19.2	19.9	16.3	17.9	11.7	10.9	11.3
13	21.8	17.4	19.5	19.9	16.0	17.8	13.0	11.5	12.1
14	21.8	18.0	19.9	20.0	16.5	18.1	12.1	10.6	11.4
15	20.8	17.5	18.5	20.0	16.3	18.0	11.2	9.9	10.5
16	18.1	16.5	17.3	19.5	16.5	17.9	10.5	8.4	9.4
17	18.1	14.8	16.5	18.0	15.7	16.9	9.8	8.4	9.2
18	17.1	14.6	15.9	17.1	15.2	16.1	9.5	7.8	8.9
19	18.9	14.8	16.7	16.6	14.3	15.3	9.6	7.8	8.8
20	19.4	15.7	17.5	16.2	14.0	15.0	9.2	8.4	8.8
21	19.4	166.6	17.9	17.1	13.9	15.4			
22	19.5	16.6	18.0	16.5	14.3	15.4			
23	18.4	16.5	17.2	16.9	13.6	15.2			
24	18.4	14.6	16.5	15.9	14.2	15.0			
25	18.9	15.2	17.0	15.5	14.3	14.8			
26	18.3	15.9	17.1	15.5	12.4	13.9			
27	19.2	15.7	17.4	16.2	13.0	14.5			
28	19.5	16.0	17.7	16.5	13.5	14.8			
29	20.0	16.6	18.4	16.5	13.5	14.8			
30	19.9	16.5	18.3	16.3	13.2	14.6			
31	20.5	16.8	18.7						
Month	21.8	14.6	17.9	21.8	12.4	16.9			

Tualatin River at Dilley, Or
Station# 14203500
River Mile 58.8
1998



Temperature-Degrees Celsius
Source Agency-Tualatin Basin Watermaster

14203500

Tualatin River at Dilley, OR

1998

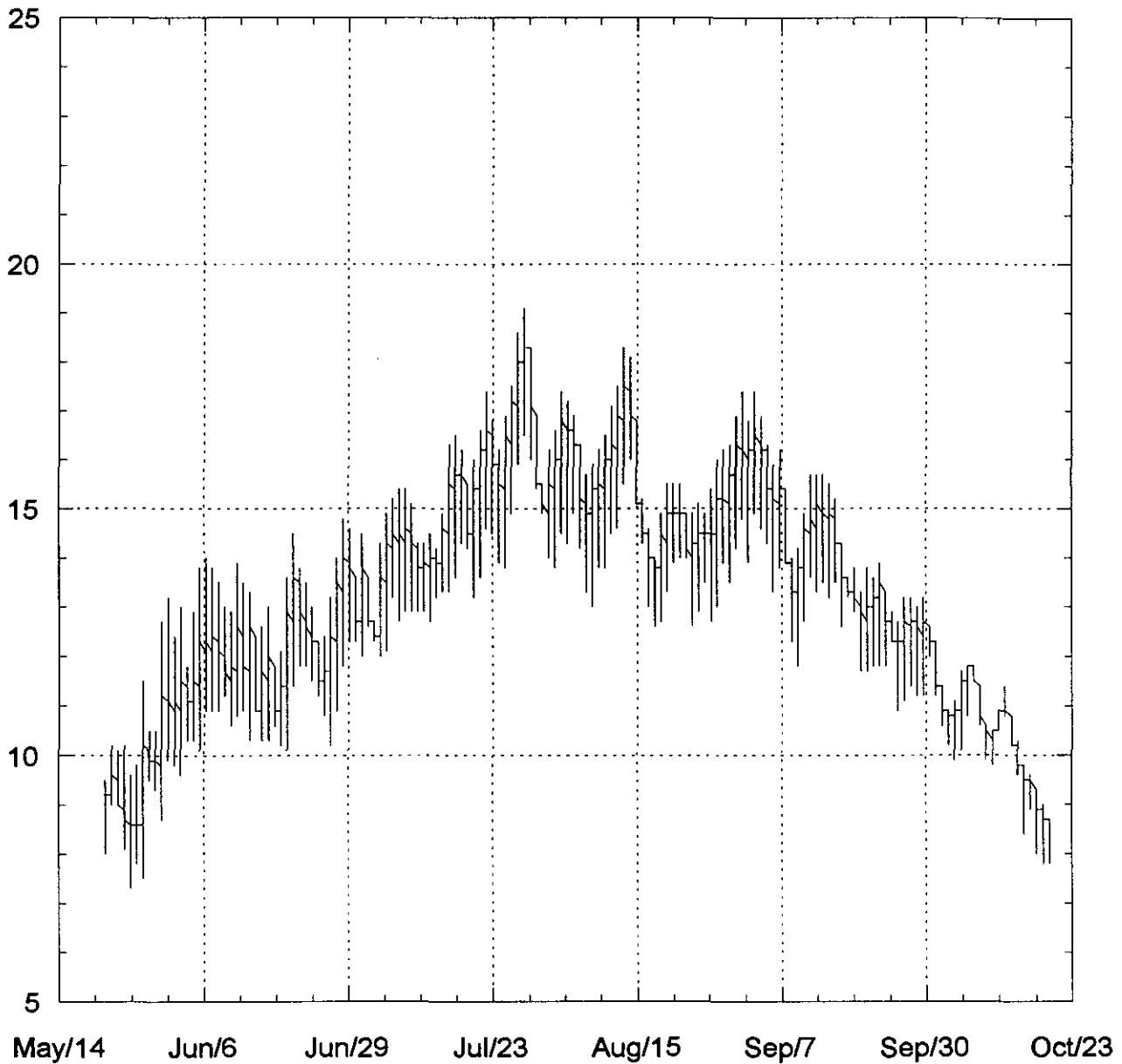
Period of Record: 5/16 through 10/20
 MAX, 18.0 Sept 30 MIN, 9.2 May 16

Source Agency: Tualatin Basin Watermaster

TEMPERATURE, WATER (DEG. C), MAY TO OCTOBER 1998

Day	Max	May Min	Mean	Max	June Min	Mean	Max	July Min	Mean
1				14.8	12.7	13.8	12.0	10.8	11.2
2				15.1	14.0	14.6	12.7	10.8	11.6
3				14.8	14.0	14.4	12.9	12.0	12.4
4				15.2	13.6	14.6	12.0	11.2	11.6
5				14.3	13.2	13.7	13.5	11.4	12.1
6				14.9	13.2	14.1	14.2	11.8	12.9
7				15.2	14.6	13.8	14.2	12.6	13.4
8				15.4	13.6	14.5	13.8	10.9	12.2
9				15.2	14.5	14.8	12.9	10.9	11.9
10				14.8	13.9	14.3	12.3	10.9	11.5
11				14.9	13.8	14.3	11.7	10.6	11.2
12				15.5	14.6	15.1	11.8	10.8	11.2
13				15.5	14.6	15.2	12.4	10.8	11.6
14				15.5	14.3	14.8	12.1	10.9	11.6
15				16.3	14.5	15.2	12.9	11.2	12.0
16	10.8	9.2	9.6	14.9	13.9	14.4	12.6	11.2	12.0
17	11.1	9.2	9.9	14.9	13.6	14.2	12.7	10.9	11.8
18	11.4	9.8	10.6	14.3	11.1	12.9	12.7	11.7	12.2
19	11.4	9.9	10.5	12.1	10.2	11.0	12.6	11.5	12.1
20	10.8	10.1	10.3	13.0	10.6	11.7	12.9	10.9	11.9
21	11.2	9.5	10.1	13.5	11.5	12.5	13.0	11.5	12.3
22	11.2	9.8	10.4	13.5	11.8	12.4	13.5	12.0	12.6
23	10.8	9.9	10.3	12.3	11.1	11.6	12.6	11.4	12.1
24	10.9	10.2	10.6	12.0	10.9	11.4	12.3	11.2	11.8
25	10.9	9.8	10.3	11.8	10.8	11.2	12.7	11.2	11.9
26	10.8	9.6	10.2	11.8	10.6	11.3	12.9	11.5	12.2
27	11.2	9.5	10.2	13.2	10.6	11.8	13.3	11.8	12.5
28	12.6	9.9	11	13.6	11.5	12.6	13.5	12.0	12.7
29	12.6	10.9	11.5	13.6	12.0	12.9	13.2	11.8	12.5
30	12.0	10.9	11.3	12.9	11.1	11.7	13.0	11.7	12.2
31	13.9	10.9	12.1				12.3	11.8	11.9
Month	13.9	9.2	10.6	16.3	10.2	13.4	14.2	10.6	12.0
Day	Max	August Min	Mean	Max	September Min	Mean	Max	October Min	Mean
1	12.9	11.5	12.1	13.2	11.8	12.4	17.7	16.9	17.3
2	13.3	11.7	12.5	13.3	10.8	12.0	17.4	16.6	17.0
3	14.0	12.0	12.8	12.7	10.8	12.0	17.7	16.3	16.7
4	13.9	12.3	13.2	12.6	11.7	12.1	16.6	15.4	15.9
5	13.6	12.3	13.0	13.2	11.2	12.2	16.8	15.7	16.2
6	13.5	12.0	12.8	13.5	11.2	12.2	17.1	16.3	16.7
7	12.9	11.7	12.3	13.5	11.4	12.4	17.1	16.0	16.5
8	13.2	11.7	12.4	13.5	11.5	12.4	16.9	16.2	16.5
9	13.5	11.8	12.7	13.2	11.7	12.4	16.8	15.2	16.1
10	13.6	12.1	12.8	13.3	11.5	12.6	15.4	14.6	15.0
11	14.0	12.1	13.1	14.0	11.8	13.0	15.4	14.6	15.0
12	13.6	12.1	13.0	13.8	12.1	13.1	15.7	15.1	15.3
13	13.6	12.4	13.1	14.5	12.0	13.5	15.7	14.6	15.0
14	13.5	12.6	13.0	14.8	12.7	13.6	14.9	14.3	14.6
15	13.2	12.0	12.4	14.6	12.9	13.7	14.8	14.3	14.6
16	12.4	11.7	12.0	14.9	13.3	14.0	14.6	13.8	14.2
17	12.6	11.4	11.9	14.9	13.0	14.1	14.5	13.8	14.2
18	12.6	11.2	11.9	16.5	13.8	14.6	14.3	13.5	14.0
19	13.0	11.4	12.1	16.5	14.2	14.9	14.5	13.8	14.1
20	13.2	11.8	12.5	15.4	14.5	14.8	14.5	13.6	13.9
21	13.2	12.1	12.6	16.0	14.6	15.2			
22	13.5	12.0	12.8	16.0	14.8	15.5			
23	13.0	12.1	12.5	16.6	15.1	15.8			
24	13.2	11.5	12.3	16.3	15.5	15.9			
25	12.9	11.8	12.5	16.8	16.0	16.3			
26	13.2	12.1	12.6	17.2	15.4	16.4			
27	13.5	11.7	12.5	17.5	15.9	16.7			
28	13.5	12.0	12.8	17.8	16.2	17.0			
29	13.3	11.7	12.4	17.8	16.5	17.1			
30	13.2	10.9	12.4	18.0	16.5	17.1			
31	13.0	11.8	12.4						
Month	14.0	10.9	12.6	18.0	10.8	14.2			

Gales Creek near Glenwood, OR
Station# 14204550
Stream Mile 19.9
1998



Temperature-Degrees Celsius
Source Agency-Tualatin Basin Watermaster

C2:N89

Period of Record: 5/22 through 10/20
 MAX, 19.1 July 28 MIN, 7.3 May 26

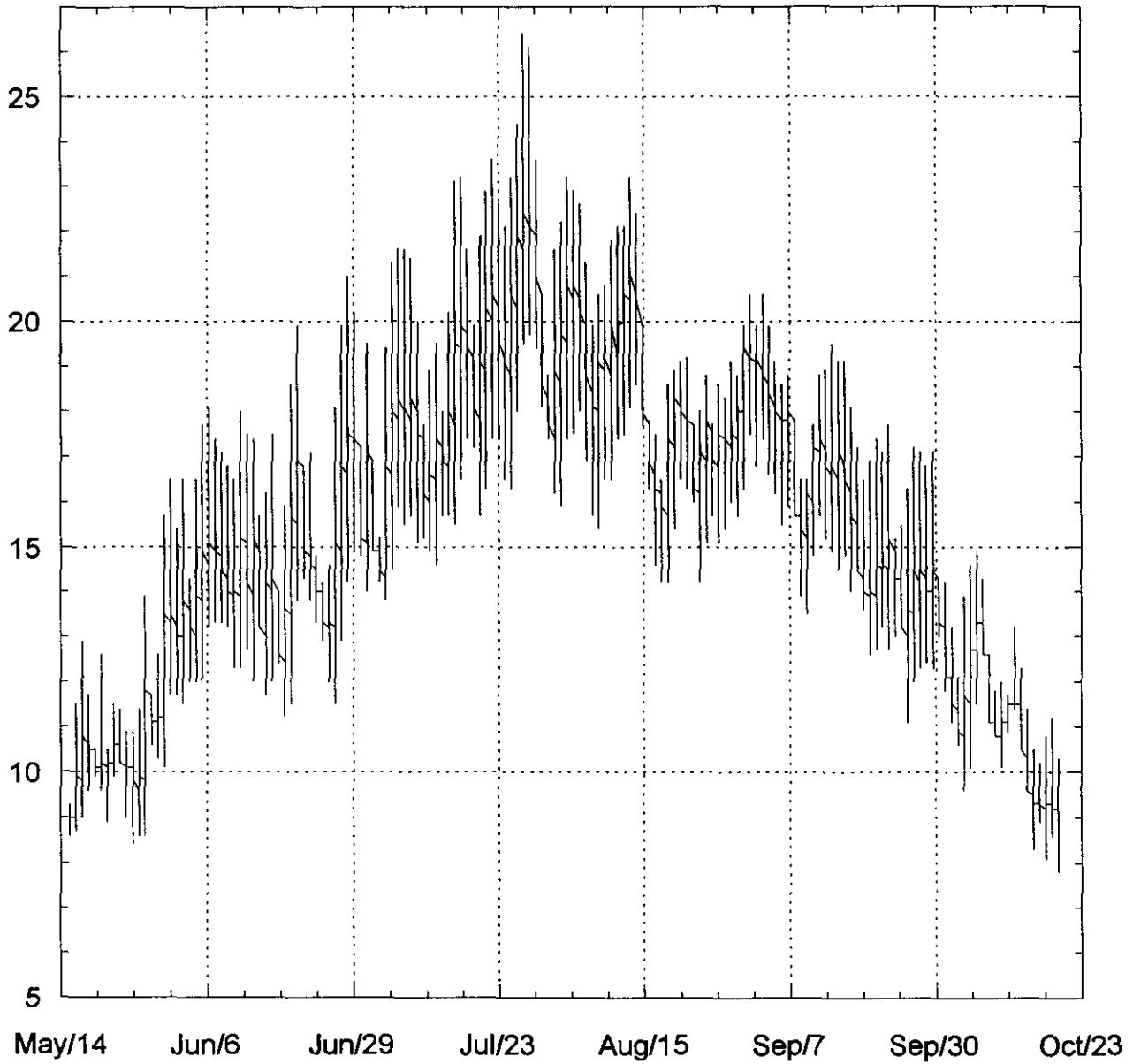
Source Agency: Tualatin Basin Watermaster

TEMPERATURE, WATER (DEG. C), MAY TO OCTOBER 1998

Day	Max	May Min	Mean	Max	June Min	Mean	Max	July Min	Mean
1				13.2	9.9	11.3	13.6	12.3	12.7
2				12.4	9.8	10.9	14.5	12.0	13.1
3				13.0	9.6	11.3	13.6	12.6	12.9
4				11.8	10.3	11.0	12.7	12.3	12.5
5				12.9	10.3	11.4	14.3	12.0	13.0
6				13.8	10.1	11.8	14.9	12.1	13.5
7				14.0	10.9	12.4	15.2	13.2	14.1
8				13.8	10.9	12.1	15.4	12.7	14.1
9				13.5	10.9	12.2	15.4	12.9	14.1
10				13.0	11.2	12.0	15.1	12.9	14.0
11				12.9	10.9	11.7	14.3	12.9	13.6
12				13.9	10.8	12.2	14.3	12.9	13.6
13				13.5	10.9	12.2	14.5	12.7	13.6
14				13.3	10.3	11.8	14.2	13.2	13.7
15				12.4	10.9	11.8	14.9	13.3	14.0
16				12.6	10.3	11.3	16.3	13.3	14.8
17				13.0	10.3	11.6	16.5	13.6	15.0
18				11.8	10.6	11.1	16.2	14.3	15.2
19				12.1	10.2	11.2	15.5	14.2	14.7
20				13.6	10.1	11.7	16.0	13.2	14.6
21				14.5	11.4	12.9	16.6	13.6	15.2
22	9.5	8.0	8.8	13.8	11.8	12.9	17.4	14.6	15.9
23	10.2	9.0	9.4	13.5	11.8	12.5	16.8	14.5	15.7
24	10.1	9.0	9.4	13.0	11.5	12.2	16.2	13.9	15.2
25	10.2	8.1	9.0	12.3	11.2	11.6	16.9	13.8	15.3
26	9.6	7.3	8.5	12.4	10.8	11.5	17.5	14.9	16.3
27	9.8	7.8	8.7	13.2	10.2	11.6	18.6	15.9	17.2
28	11.5	7.5	9.4	14.0	10.9	12.5	19.1	16.5	17.8
29	10.5	9.5	9.9	14.8	11.8	13.3	18.3	16.0	17.0
30	10.5	9.3	9.9	14.6	12.3	13.4	16.9	15.4	15.8
31	12.7	8.7	10.6				15.5	14.9	15.2
Month	12.7	7.3	9.4	14.8	9.6	11.9	19.1	12.0	14.6

Day	Max	August Min	Mean	Max	September Min	Mean	Max	October Min	Mean
1	16.2	14.0	15.0	17.4	14.8	16.0	12.6	12.0	12.4
2	16.6	13.8	15.2	16.8	13.9	15.4	12.3	11.2	11.7
3	17.4	14.5	15.9	17.4	14.9	16.0	11.4	10.6	11.1
4	17.2	14.3	15.9	16.9	14.6	15.8	10.9	10.2	10.5
5	16.9	14.9	16.1	16.3	14.3	15.4	11.1	9.9	10.5
6	16.3	14.2	15.4	15.9	13.3	14.6	11.7	10.1	10.8
7	15.7	13.3	14.6	16.2	13.8	14.9	11.8	10.8	11.4
8	15.9	13.0	14.5	15.4	13.9	14.4	11.8	11.5	11.7
9	16.2	13.8	15.0	14.0	12.3	13.3	11.4	10.6	10.9
10	16.5	13.8	15.2	14.2	11.8	13.0	10.6	9.9	10.3
11	17.1	14.5	15.8	14.9	12.7	13.8	10.5	9.8	10.2
12	17.5	14.6	16.1	15.7	13.6	14.6	10.9	10.5	10.7
13	18.3	15.5	16.8	15.7	13.5	14.4	11.4	10.8	11.0
14	18.1	16.0	17.1	15.7	13.5	14.6	10.8	10.2	10.5
15	16.8	15.1	15.8	15.5	13.2	14.4	10.3	9.6	10.0
16	15.2	14.3	14.8	15.2	13.5	14.3	9.8	8.4	9.2
17	14.6	13.0	13.9	14.3	12.6	13.5	9.6	8.9	9.3
18	14.0	12.6	13.5	13.6	13.2	13.4	9.3	8.0	8.7
19	14.9	12.7	13.8	13.8	12.9	13.2	9.0	7.8	8.5
20	15.5	13.3	14.3	13.3	11.7	12.5	8.7	7.8	8.2
21	15.5	13.9	14.7	13.8	11.7	12.7			
22	15.5	14.0	14.7	13.6	11.8	12.7			
23	14.9	14.0	14.4	13.9	11.8	12.9			
24	14.9	12.6	13.7	13.3	11.8	12.5			
25	15.1	12.9	14.0	12.9	12.3	12.7			
26	14.9	13.5	14.1	12.7	10.9	11.9			
27	15.4	12.7	14.0	13.2	11.1	12.1			
28	16.0	13.0	14.4	13.2	11.4	12.3			
29	16.2	13.9	15.0	13.0	11.2	12.2			
30	16.3	13.5	14.9	13.2	11.2	12.2			
31	16.9	14.2	15.5						
Month	18.3	12.6	15.0	17.4	10.9	13.7			

**Gales Creek at Clapshaw Hill Road
Station# 14204540
Stream Mile 12.4
1998**



Temperature-Degrees Celsius
Source Agency- Tualatin Basin Watermaster

C2:N89

Period of Record: 5/30 through 10/20
 MAX, 26.4 July 27 MIN, 8.1 Oct. 18

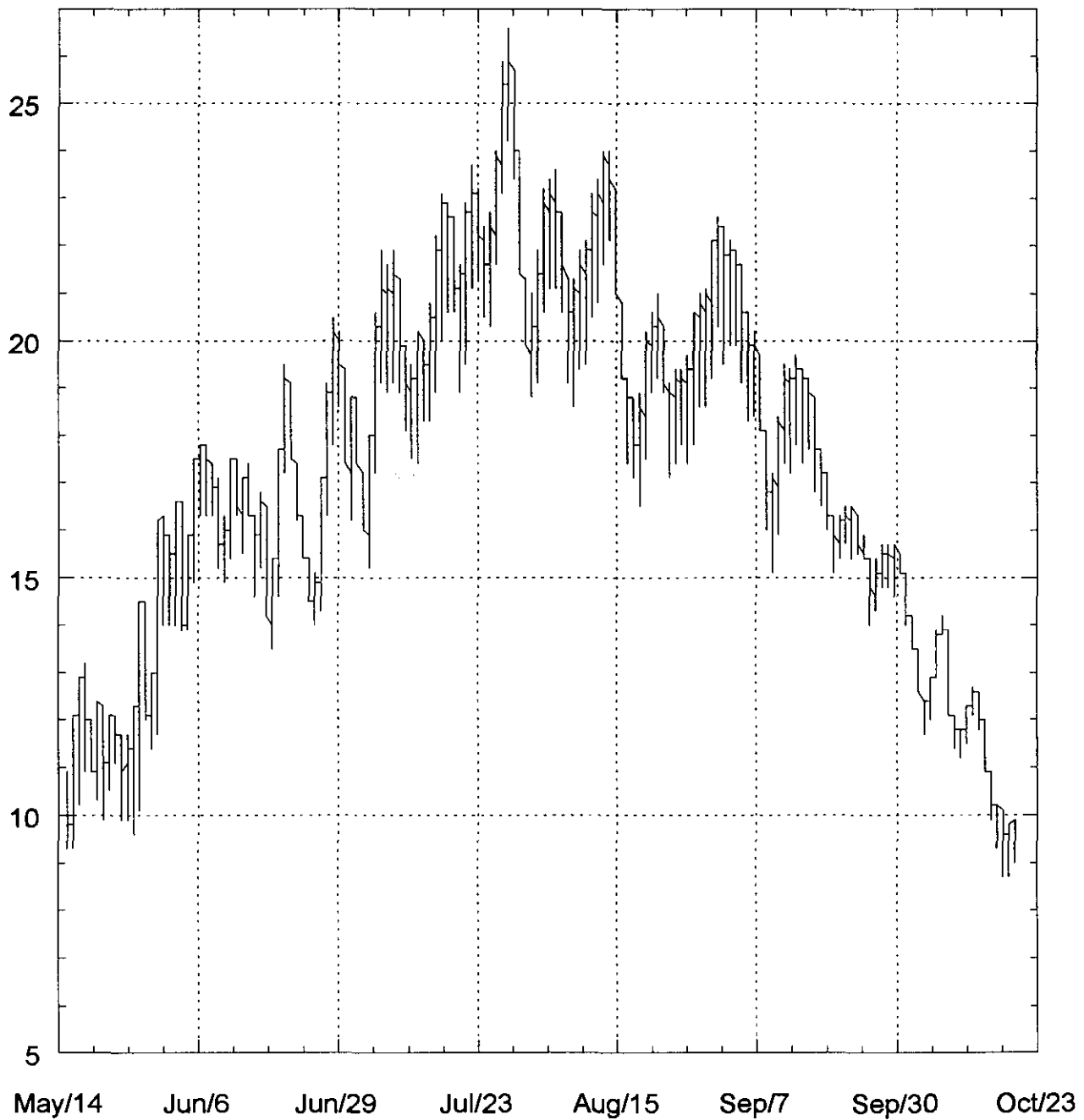
Source Agency: Tualatin Basin Watermaster

TEMPERATURE, WATER (DEG. C), MAY TO OCTOBER 1998

Day	Max	May Min	Mean	Max	June Min	Mean	Max	July Min	Mean
1				16.5	11.7	13.7	17.2	14.8	15.7
2				15.4	11.7	13.3	19.5	14.0	16.5
3				16.5	11.5	13.7	16.9	14.9	15.6
4				14.3	12.0	13.1	15.2	14.2	14.6
5				16.5	12.0	13.8	19.4	13.8	16.1
6				17.7	12.0	14.7	21.3	14.5	17.6
7				18.1	13.2	15.3	21.6	15.9	18.5
8				17.4	13.3	15.0	21.6	15.5	18.3
9				17.1	13.3	14.9	21.4	15.7	18.4
10				16.8	13.2	14.6	20.0	15.1	17.4
11				16.5	12.3	14.2	17.7	15.2	16.5
12				18.0	12.3	14.9	18.9	14.9	16.6
13				17.5	12.7	15.0	19.5	14.6	16.9
14				17.4	12.0	14.6	18.0	15.7	16.9
15				15.7	13.2	14.6	20.2	15.7	17.6
16				13.2	11.7	13.8	23.1	15.5	19.0
17				17.5	12.0	14.5	23.2	16.5	19.8
18				14.0	12.4	13.1	21.6	17.4	19.3
19				15.9	11.2	13.4	19.9	17.2	18.5
20				18.6	11.5	14.8	2.9	15.7	18.7
21				19.9	13.8	16.6	22.9	16.3	19.6
22				16.8	14.3	15.6	23.6	17.4	20.5
23				17.1	13.8	14.9	22.6	17.4	20.1
24				14.8	13.3	14.0	22.1	16.5	19.3
25				14.2	12.9	13.5	23.2	16.3	19.7
26				14.6	12.0	13.3	24.4	18.0	21.1
27				18.1	11.5	14.6	26.4	19.5	22.7
28				19.9	12.9	16.1	26.1	19.7	22.8
29				21.0	14.2	17.3	23.6	19.4	21.5
30	12.6	10.3	11.4	20.2	14.9	17.2	20.6	18.1	19.0
31	15.7	10.1	12.6				18.8	17.4	18
Month	15.7	10.1	10.5	21.0	11.2	14.6	26.4	13.8	18.5

Day	Max	August Min	Mean	Max	September Min	Mean	Max	October Min	Mean
1	21.6	16.2	18.7	20.6	17.5	19.4	14.3	13.0	13.7
2	22.2	15.9	19.2	19.9	16.8	18.8	14.2	11.8	12.9
3	23.2	17.4	20.4	20.6	17.4	19.2	13.2	11.1	11.9
4	22.9	17.5	20.4	19.9	16.6	18.5	12.1	10.6	11.2
5	22.6	18.0	20.5	19.1	16.2	17.8	13.9	9.6	11.6
6	21.3	16.9	19.3	18.6	15.5	17.5	14.6	10.1	12.3
7	19.9	15.7	18.2	18.8	15.9	17.6	14.9	11.5	13.1
8	20.6	15.4	18.4	17.8	15.7	16.8	14.3	12.6	13.3
9	20.8	16.5	18.9	16.5	13.9	15.5	12.6	11.1	11.6
10	21.8	16.5	19.2	16.5	13.5	15.3	11.8	10.8	11.1
11	22.1	17.4	19.9	17.7	14.8	16.5	12.0	10.1	10.9
12	22.1	17.5	20.2	18.8	15.7	17.4	11.7	10.9	11.3
13	23.2	18.1	20.8	18.9	15.2	17.1	13.2	11.4	12.0
14	22.4	18.6	20.7	19.5	14.9	17.2	12.3	10.5	11.3
15	19.9	17.7	18.5	19.1	14.5	16.9	11.4	9.6	10.5
16	17.8	16.3	17.1	19.1	14.8	16.9	10.5	8.3	9.4
17	17.5	14.6	16.3	18.1	14.0	16.2	10.2	8.9	9.5
18	16.5	14.2	15.5	17.2	14.5	15.3	10.8	8.1	9.4
19	18.6	14.2	16.4	16.5	13.6	14.8	11.2	8.6	9.6
20	18.9	15.4	17.4	16.9	12.6	14.4	10.3	7.8	8.7
21	19.1	16.5	17.8	17.4	12.7	15.0			
22	19.2	16.3	17.9	17.1	13.2	14.9			
23	17.7	16.0	16.8	17.7	12.7	15.2			
24	18.0	14.2	16.3	15.2	13.0	14.3			
25	18.8	15.1	17.1	15.5	13.2	14.5			
26	17.7	15.7	16.9	16.3	11.1	13.6			
27	18.6	15.1	17.1	17.2	12.0	14.5			
28	18.3	15.4	17.2	17.1	12.3	14.7			
29	19.1	16.0	17.6	16.8	12.4	14.5			
30	18.8	15.7	17.6	17.1	12.3	14.6			
31	19.9	16.3	18.3						
Month	23.2	14.2	18.3	20.6	11.1	16.2			

Gales Creek at Hwy 47 near Forest Grove, Or
Station# 14204530
Stream Mile 2.4
1998



Temperature-Degrees Celsius
Source Agency-Tualatin Basin Watermaster

Period of Record: 5/16 through 10/20
 MAX, 24.0 July 26 MIN, 8.7 Oct. 18

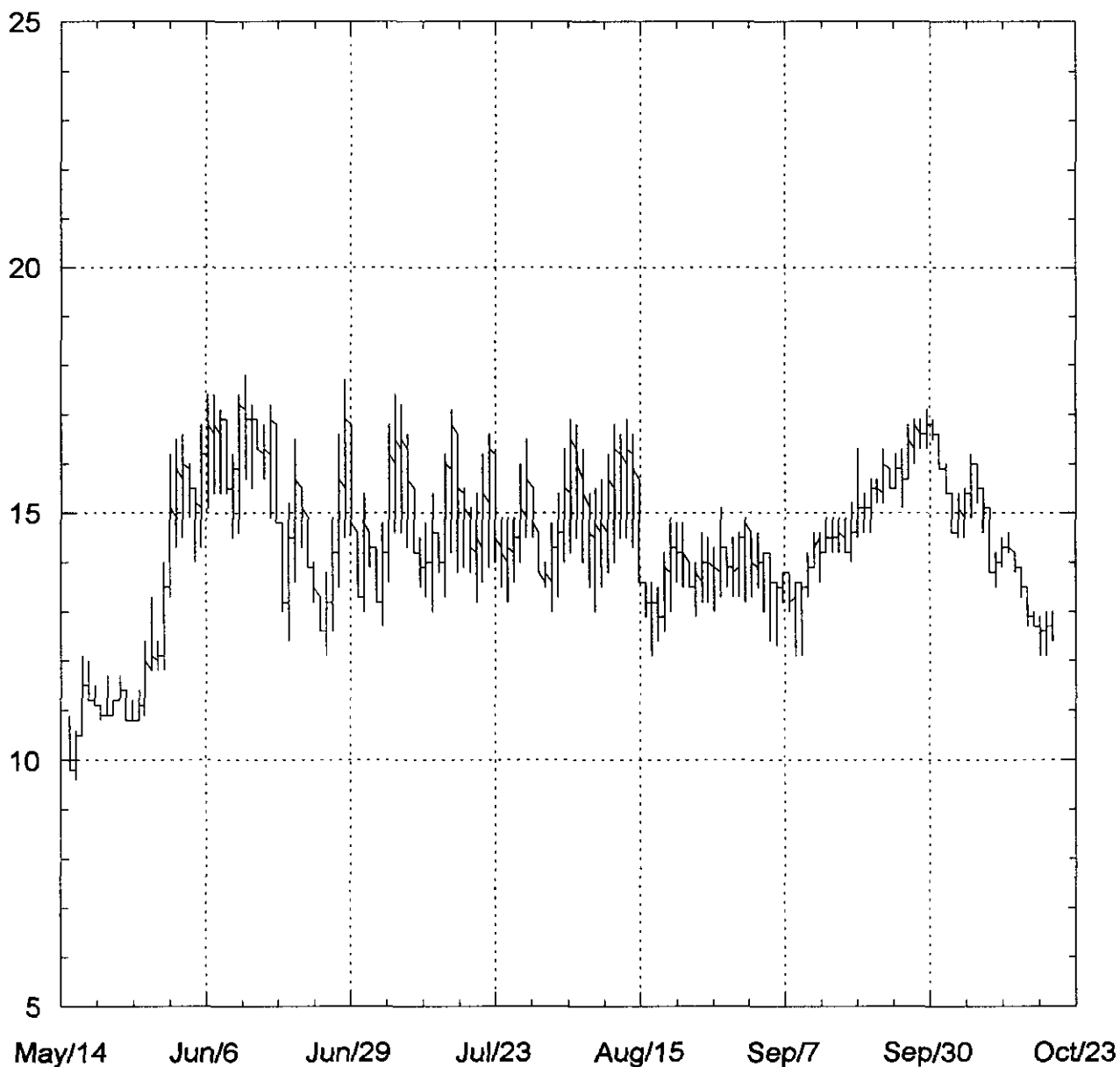
Source Agency: Tualatin Basin Watermaster

TEMPERATURE, WATER (DEG. C), MAY TO OCTOBER 1998

Day	Max	May Min	Mean	Max	June Min	Mean	Max	July Min	Mean
1				16.3	14.0	15.3	19.4	17.4	18.2
2				15.9	14.0	15.0	18.8	16.2	17.4
3				16.6	14.0	15.2	18.8	17.4	18.2
4				16.6	13.9	15.0	17.2	16.0	16.4
5				15.9	13.9	14.5	18.0	15.2	16.4
6				17.5	14.9	16.0	20.6	17.2	18.8
7				17.8	16.3	17.2	21.9	19.1	20.4
8				17.8	16.3	17.1	21.6	18.9	20.4
9				17.4	16.3	16.9	21.9	19.1	20.6
10				17.1	15.2	16.0	21.3	18.9	19.8
11				16.3	14.9	15.7	19.9	18.1	18.9
12				17.5	15.4	16.3	19.5	17.5	18.5
13				17.5	16.3	16.9	20.2	17.4	18.8
14				17.1	15.5	16.3	20.0	18.3	19.2
15				17.4	16.3	17.0	20.8	18.3	19.4
16	11.1	9.3	9.9	16.3	14.6	15.6	22.2	18.9	20.4
17	12.1	9.3	10.3	16.8	15.2	15.9	23.1	20.0	21.6
18	12.9	10.2	11.5	16.5	14.2	15.4	22.9	20.6	22.0
19	13.2	10.9	11.8	15.4	13.5	14.3	22.6	20.6	21.3
20	12.0	10.9	11.3	17.7	14.6	15.9	21.6	18.9	20.4
21	12.4	10.3	11.0	19.5	17.2	18.3	22.9	19.5	21.2
22	12.3	9.9	10.8	19.1	17.5	18.2	23.7	21.1	22.4
23	12.1	10.5	11.1	17.4	16.2	16.6	23.2	21.3	22.4
24	12.1	11.1	11.6	16.3	15.4	15.7	22.4	20.5	21.5
25	11.7	9.9	10.6	15.4	14.5	14.9	22.7	20.3	21.5
26	11.7	9.9	10.7	15.1	14.0	14.5	24.0	21.6	22.7
27	12.3	9.6	10.8	17.1	14.3	15.5	25.9	23.1	24.3
28	14.5	10.1	11.7	19.1	16.3	17.6	26.6	24.2	25.3
29	14.5	12.0	12.7	20.5	17.8	19.1	25.7	23.4	24.4
30	13.0	11.4	12.0	20.2	18.6	19.3	24.0	21.4	22.3
31	16.2	11.7	13.3				21.3	19.9	20.5
Month	16.2	9.3	11.3	20.5	13.5	16.2	26.6	15.2	20.5

Day	Max	August Min	Mean	Max	September Min	Mean	Max	October Min	Mean
1	21.0	18.8	19.7	22.6	20.3	21.4	15.5	15.1	15.2
2	21.9	19.1	20.4	22.4	19.5	21.0	15.1	14.0	14.4
3	23.2	20.6	21.8	22.1	19.9	21.1	14.2	13.5	13.7
4	23.4	21.1	22.3	21.9	19.9	20.9	13.5	12.6	12.8
5	23.6	21.1	22.3	21.6	19.1	20.4	12.4	11.7	12.1
6	22.7	20.6	21.5	20.6	18.3	19.4	12.9	12.0	12.4
7	21.3	19.1	20.2	20.2	18.4	19.3	13.9	12.9	13.4
8	21.3	18.6	19.9	19.7	18.1	18.7	14.2	13.8	13.9
9	21.9	19.4	20.5	18.1	16.0	16.9	13.9	12.1	13.4
10	22.1	19.5	20.8	17.2	15.1	16.1	12.1	11.4	11.7
11	23.1	20.5	21.7	18.4	15.9	17.0	11.8	11.2	11.5
12	23.4	20.8	22.1	19.5	17.4	18.3	12.3	11.5	11.8
13	24.0	21.6	22.7	19.4	17.2	18.3	12.7	12.1	12.4
14	24.0	22.1	23.1	19.7	17.8	18.7	12.6	11.8	12.2
15	23.2	21.0	21.6	19.4	17.4	18.5	12.0	10.9	11.4
16	20.8	19.2	19.7	19.2	17.1	18.5	10.9	9.9	10.3
17	19.2	17.4	18.4	18.8	16.8	17.6	10.2	9.3	9.8
18	18.8	17.1	17.7	17.7	16.5	17.0	10.1	8.7	9.4
19	18.9	16.5	17.6	17.2	16.0	16.4	9.8	8.7	9.4
20	20.2	17.5	18.6	15.6	16.3	15.1	9.9	9.0	9.5
21	20.6	18.9	19.7	16.3	15.4	15.8			
22	21.0	19.2	20.0	16.5	15.7	16.1			
23	20.3	18.9	19.3	16.5	15.4	15.9			
24	19.1	17.1	18.2	16.3	15.5	15.8			
25	19.4	17.4	18.3	15.9	15.4	15.6			
26	19.4	17.8	18.6	15.4	14.0	14.6			
27	19.7	17.4	18.5	15.4	14.3	14.8			
28	20.6	17.8	19.1	15.7	14.8	15.1			
29	21.0	18.6	19.8	15.7	14.8	15.2			
30	21.1	18.6	19.9	15.7	14.6	15.1			
31	22.1	19.2	20.5						
Month	24.0	16.5	20.5	22.6	14.0	17.5			

**Tualatin River at Golf Course Road Bridge near Cornelius, Or
Station# 14204800
River Mile 51.5
1998**



Temperature-Degrees Celsius
Source Agency-Tualatin Basin Watermaster

Period of Record: 5/16 through 10/20
 MAX, 17.8 June 13 MIN, 9.6 May 17

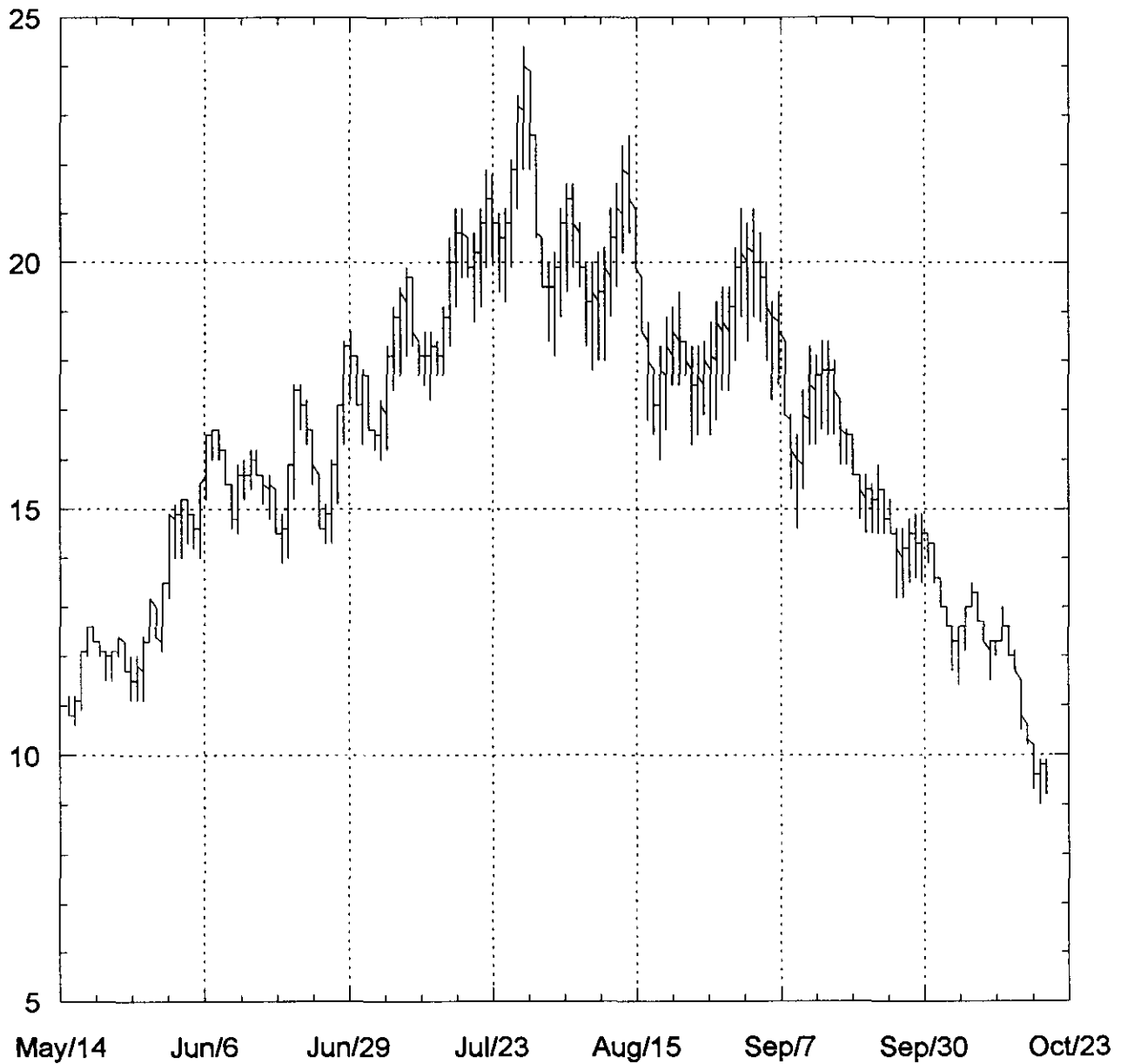
Source Agency: Tualatin Basin Watermaster

TEMPERATURE, WATER (DEG. C), MAY TO OCTOBER 1998

Day	Max	May Min	Mean	Max	June Min	Mean	Max	July Min	Mean
1				16.2	13.3	14.6	14.6	13.3	13.8
2				16.5	14.3	15.2	15.4	13.0	14.0
3				16.6	14.5	15.5	14.6	13.9	14.3
4				16.0	14.9	15.4	14.3	13.2	13.6
5				15.5	14.0	14.8	14.8	12.7	13.5
6				16.8	14.3	15.4	16.8	13.6	15.0
7				17.4	15.1	16.1	17.4	14.6	15.9
8				17.4	15.4	16.3	17.2	14.6	15.9
9				17.1	15.4	16.3	16.6	14.3	15.4
10				16.9	15.4	15.9	15.5	14.2	14.5
11				16.2	14.5	15.2	14.5	13.5	13.9
12				17.4	14.6	15.9	14.8	13.3	13.9
13				17.8	15.7	16.7	15.4	13.0	14.1
14				17.2	15.5	16.4	14.6	13.8	14.2
15				16.9	16.3	16.6	16.2	13.3	14.6
16	11.1	9.8	10.5	16.8	15.7	16.2	17.1	14.2	15.7
17	10.6	9.6	10.1	17.2	14.9	16.0	16.6	13.8	15.3
18	12.1	10.5	11.4	16.8	14.8	15.5	15.5	13.9	14.7
19	12.0	11.2	11.7	14.8	13.7	13.0	15.1	13.8	14.4
20	11.5	11.1	11.3	15.2	12.4	13.7	15.4	13.2	14.2
21	11.1	10.8	10.8	16.5	13.6	14.9	16.2	13.6	14.7
22	11.7	10.9	11.2	15.5	14.3	15.0	16.6	13.9	15.2
23	11.2	10.9	11.1	14.9	13.9	14.2	16.2	14.0	14.8
24	11.7	11.2	11.5	14.0	13.2	13.6	14.9	13.5	14.1
25	11.4	10.8	11.1	13.3	12.6	13.0	14.9	13.2	14.0
26	11.2	10.8	11.0	13.8	12.1	12.8	14.9	13.6	14.2
27	11.4	10.8	11.0	14.9	12.6	13.6	16.0	13.6	14.7
28	12.4	10.9	11.7	16.6	13.5	14.8	16.5	14.5	15.3
29	13.3	11.8	12.6	17.7	14.5	15.9	15.5	14.5	14.9
30	12.4	11.8	12.1	16.8	14.6	15.3	14.6	13.8	14.2
31	14.0	11.8	12.8				14	13.5	13.7
Month	14.0	9.6	11.4	17.8	12.1	15.2	17.4	12.7	14.5

Day	Max	August Min	Mean	Max	September Min	Mean	Max	October Min	Mean
1	14.8	13.0	13.8	14.9	13.2	14.2	16.9	16.5	16.7
2	15.4	13.3	14.3	14.6	13.3	13.8	16.6	15.9	16.2
3	16.3	14.0	15.0	14.6	13.5	14.0	16.0	15.4	15.8
4	16.9	14.2	15.5	14.2	13.0	13.7	15.4	14.6	15.2
5	16.8	14.5	15.6	14.2	12.4	13.5	15.4	14.5	14.8
6	16.3	14.0	15.1	13.6	12.3	13.2	15.5	14.5	15.0
7	15.4	13.5	14.4	13.8	13.2	13.5	16.2	14.9	15.5
8	15.5	13.0	14.3	13.8	13.0	13.5	16.0	15.2	15.6
9	15.7	13.5	14.5	13.6	12.1	13.0	15.5	14.6	15.1
10	16.2	13.8	14.8	13.6	12.1	13.0	15.1	13.8	14.1
11	16.8	14.0	15.4	14.2	13.3	13.7	14.2	13.5	13.8
12	16.6	14.5	15.5	14.6	13.9	14.2	14.5	13.9	14.1
13	16.9	14.5	15.6	14.6	13.6	14.1	14.6	14.2	14.4
14	16.6	14.3	15.5	14.9	14.2	14.5	14.2	13.8	14.0
15	15.7	13.6	14.3	14.9	14.2	14.5	13.9	13.3	13.6
16	13.6	12.9	13.2	14.9	14.2	14.5	13.5	12.7	13.0
17	13.6	12.1	12.9	14.9	14.2	14.5	13.0	12.7	12.8
18	13.5	12.4	13.0	15.2	14.0	14.6	12.9	12.1	12.5
19	14.2	12.6	13.2	16.3	14.5	15.3	13.0	12.1	12.6
20	14.9	13.0	13.9	15.4	14.6	14.9	13.0	12.4	12.6
21	14.8	13.6	14.2	15.7	14.6	15.2			
22	14.8	13.5	14.4	15.7	15.2	15.5			
23	14.0	13.5	13.8	16.3	15.2	15.7			
24	14.0	12.9	13.4	15.9	15.5	15.7			
25	14.6	13.2	13.8	16.2	15.5	15.9			
26	14.5	13.2	13.8	16.3	15.1	15.7			
27	14.3	13.0	13.7	16.8	15.7	16.2			
28	15.1	13.3	14.1	16.9	16.0	16.4			
29	14.3	13.5	13.9	16.9	16.3	16.6			
30	14.5	13.3	13.8	17.1	16.3	16.7			
31	14.6	13.3	14.0						
Month	16.9	12.1	14.3	17.1	12.1	14.7			

Dairy Creek at Hwy 8 near Hillsboro, Or
Station# 14206200
Stream Mile 2.1
1998



Temperature-Degrees Celsius
Source Agency-Tualatin Basin Watermaster

Period of Record: 5/16 through 10/20
 MAX, 24.4 July 28 MIN, 9.0 Oct. 19

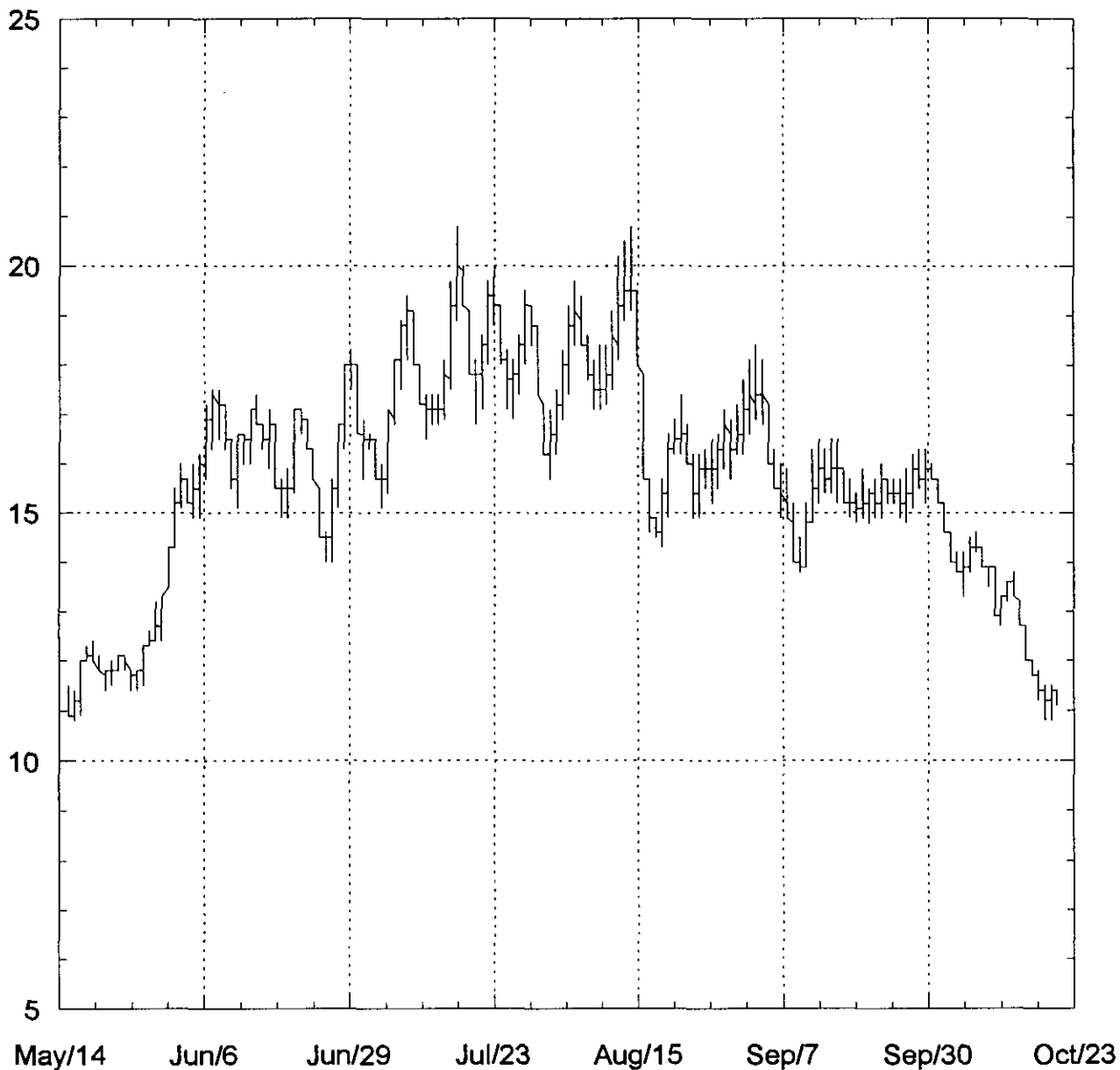
Source Agency: Tualatin Basin Watermaster

TEMPERATURE, WATER (DEG. C), MAY TO OCTOBER 1998

Day	Max	May Min	Mean	Max	June Min	Mean	Max	July Min	Mean
1				14.9	13.2	13.8	18.1	17.1	17.4
2				15.1	14.0	14.5	17.8	16.3	17.1
3				15.2	14.0	14.6	17.7	16.6	17.0
4				15.2	14.3	14.6	16.6	16.4	16.2
5				14.9	14.2	14.5	17.2	16.0	16.6
6				15.5	14.0	14.7	18.3	16.2	17.2
7				16.5	15.2	15.7	19.1	17.4	18.2
8				16.6	16.0	16.3	19.5	17.7	18.7
9				16.6	16.0	16.4	19.9	18.1	19.1
10				16.2	15.5	15.8	19.7	18.3	18.7
11				15.5	14.6	14.9	18.4	17.7	18.1
12				15.9	14.5	14.9	18.6	17.5	18.0
13				16.0	15.2	15.6	18.6	17.2	17.9
14				16.2	15.4	15.7	18.4	17.7	18.1
15				16.2	15.7	15.9	19.1	17.7	18.4
16	11.4	10.8	10.9	15.7	15.1	15.4	20.5	18.3	19.3
17	11.2	10.6	10.9	15.7	14.8	15.2	21.1	19.1	20.1
18	12.1	10.9	11.4	15.4	14.5	14.9	21.1	19.7	20.4
19	12.6	12.0	12.2	14.9	13.9	14.4	20.5	19.7	20.1
20	12.6	12.3	12.4	15.9	14.0	14.9	20.6	18.8	19.7
21	12.3	12.0	12.1	17.5	15.2	16.4	21.1	19.1	20.1
22	12.1	11.5	11.8	17.5	16.6	17.1	21.9	19.9	20.9
23	12.1	11.5	11.8	17.2	16.3	16.8	21.8	20.0	20.9
24	12.4	12.0	12.2	16.6	15.5	16.0	21	19.4	20.3
25	12.3	11.7	11.9	15.7	14.6	15.2	21.1	19.2	20.2
26	12.0	11.1	11.5	15.1	14.3	14.7	22.1	19.9	21.0
27	12.0	11.1	11.5	16.0	14.3	15.1	23.4	21.1	22.2
28	12.4	11.1	11.7	17.1	15.1	16.1	24.4	21.9	23.1
29	13.2	12.3	12.5	18.4	16.3	17.3	23.9	21.9	22.7
30	13.0	12.4	12.7	18.6	17.2	17.9	22.6	20.5	21.2
31	13.5	12.1	12.7				20.5	19.5	20
Month	13.5	10.6	11.9	18.6	13.2	15.5	24.4	16.0	19.3

Day	Max	August Min	Mean	Max	September Min	Mean	Max	October Min	Mean
1	20.0	18.4	19.3	21.1	18.9	20.0	14.5	13.9	14.2
2	20.2	18.1	19.2	20.8	18.4	19.6	14.3	13.5	13.8
3	21.1	18.9	20.0	21.1	18.9	20.0	13.6	13.0	13.3
4	21.6	19.4	20.5	20.6	18.8	19.7	13.0	12.6	12.8
5	21.6	19.9	20.8	20.0	18.0	19.1	12.6	11.7	12.1
6	20.8	19.5	20.2	19.2	17.2	18.4	12.6	11.4	12.0
7	20.0	18.3	19.3	19.4	17.5	18.5	13.0	12.1	12.6
8	20.0	17.8	18.9	18.4	16.9	17.6	13.5	13.0	13.2
9	20.2	18.0	19.2	16.9	15.4	16.3	13.3	12.7	12.9
10	20.3	18.0	19.3	16.5	14.6	15.6	12.7	12.3	12.4
11	21.1	18.9	20.0	17.4	15.4	16.3	12.3	11.5	11.9
12	21.6	19.5	20.5	18.3	16.3	17.2	12.3	12.0	12.1
13	22.4	20.2	21.3	18.1	16.3	17.2	13.0	12.3	12.6
14	22.6	20.6	21.6	18.4	16.6	17.6	12.6	12.0	12.2
15	21.1	19.9	20.4	18.4	16.5	17.5	12.1	11.7	11.8
16	19.7	18.6	19.1	18.0	16.5	17.3	11.5	10.5	10.8
17	18.8	16.8	17.9	17.2	15.9	16.6	10.6	10.2	10.4
18	17.8	16.5	17.2	16.6	15.9	16.3	10.2	9.7	9.3
19	18.3	16.0	17.1	16.5	15.7	16.0	9.9	9.0	9.5
20	18.9	16.6	17.8	15.7	14.8	15.3	9.9	9.2	9.5
21	19.1	17.5	18.3	15.7	14.5	15.1	9.9	9.2	9.5
22	19.4	17.5	18.4	15.5	14.5	15.1			
23	18.4	17.7	18.1	15.9	14.5	15.1			
24	18.3	16.3	17.3	15.4	14.5	14.8			
25	18.3	16.5	17.4	15.2	14.5	14.8			
26	18.4	16.9	17.6	14.6	13.2	14.0			
27	18.8	16.5	17.6	14.6	13.2	14.0			
28	19.2	16.8	18.0	14.8	13.5	14.2			
29	19.5	17.4	18.5	14.9	13.6	14.3			
30	19.5	17.4	18.5	14.9	13.5	14.3			
31	20.3	18.0	19.1						
Month	22.6	16.0	19.0	21.1	13.2	16.6			

Tualatin River at Rood Bridge near Hillsboro, OR
Station# 14206440
River Mile 38.4
1998



Temperature-Degrees Celsius
Source Agency-Tualatin Basin Watermaster

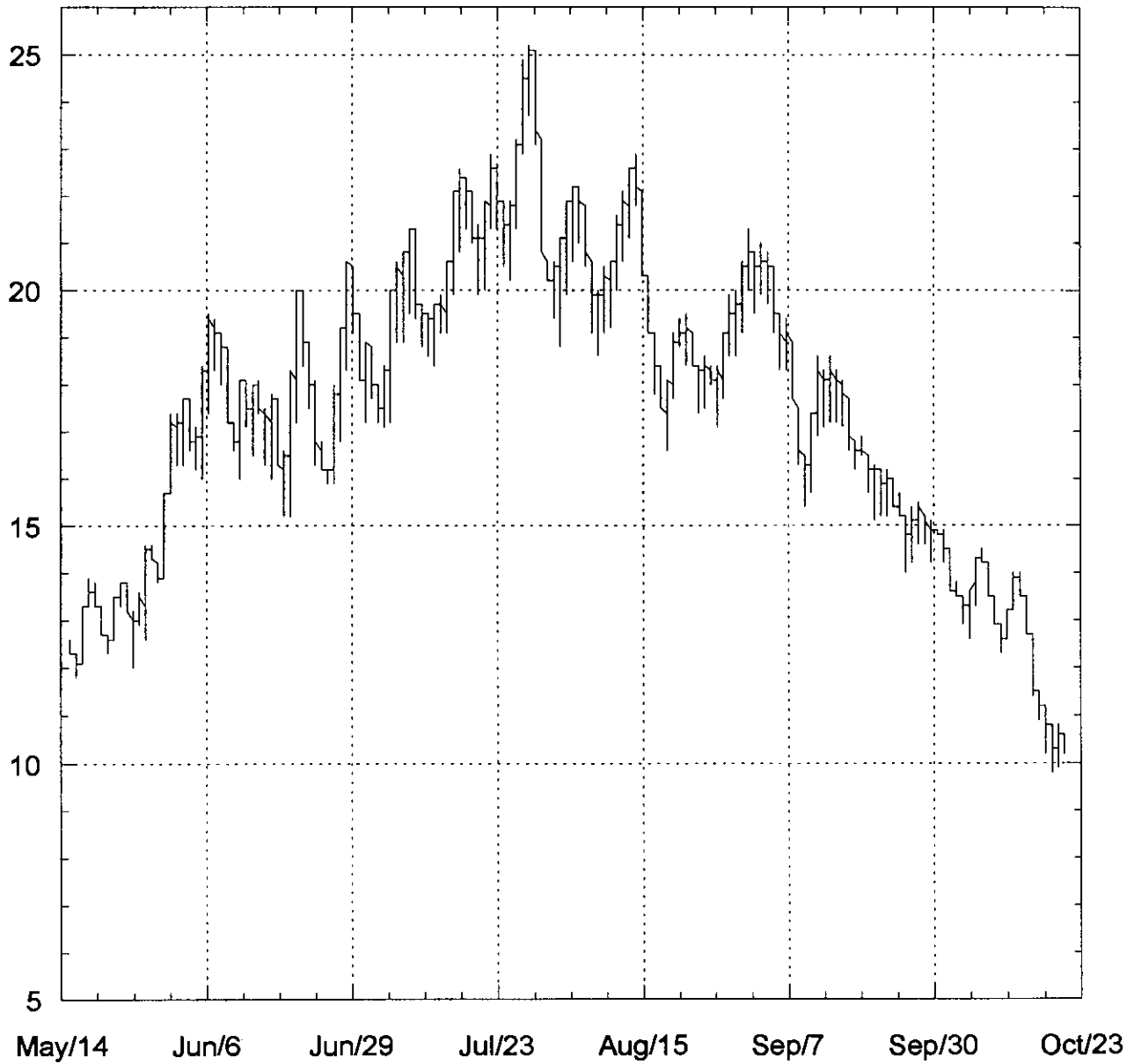
Period of Record: 5/16 through 10/21
 MAX, 20.8 July 17 MIN, 10.8 May 17

Source Agency: Tualatin Basin Watermaster

TEMPERATURE, WATER (DEG. C), MAY TO OCTOBER 1998

Day	May			June			July		
	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
1				14.3	13.5	13.9	18.0	16.6	17.3
2				15.5	14.3	15.0	16.9	15.7	16.3
3				16.0	15.1	15.5	16.6	16.3	16.4
4				15.7	15.2	15.5	16.5	15.7	16.0
5				16.0	14.9	15.4	16.0	15.1	15.6
6				16.2	14.9	15.5	17.1	15.4	16.2
7				17.2	15.7	16.4	18.1	16.8	17.3
8				17.5	16.3	16.9	18.9	17.5	18.3
9				17.5	16.5	17.0	19.4	18.1	18.8
10				17.2	16.3	16.6	19.1	18.0	18.5
11				16.5	15.5	15.9	18.0	17.2	17.5
12				16.6	15.1	15.8	17.4	16.5	17.0
13				16.6	16.0	16.4	17.4	16.8	17.0
14				17.1	16.0	16.6	17.4	16.8	17.1
15				17.4	16.8	17.1	18.1	16.9	17.4
16	11.5	10.9	11.4	16.8	16.3	16.6	19.7	17.5	18.5
17	11.4	10.8	11.0	17.1	15.9	16.5	20.8	18.9	19.7
18	12.0	10.9	11.3	16.8	15.5	16.2	20.0	19.2	19.6
19	12.3	12.0	12.2	15.7	14.9	15.4	19.1	17.8	18.5
20	12.4	12.0	12.2	15.9	14.9	15.4	18.1	16.8	17.6
21	12.1	11.8	11.9	17.1	15.4	16.2	18.6	17.1	17.8
22	11.8	11.4	11.5	17.1	16.6	16.9	19.7	18.0	18.8
23	12.0	11.5	11.8	16.9	16.3	16.6	19.9	18.8	19.3
24	12.1	11.8	11.9	16.3	15.7	16.0	19.2	18.0	18.6
25	12.1	11.8	12.0	15.5	14.5	14.9	18.3	17.1	17.7
26	11.8	11.4	11.6	14.6	14.0	14.3	18.1	16.9	17.6
27	11.8	11.4	11.6	15.7	14.0	14.8	18.6	17.4	18.0
28	12.3	11.5	11.9	16.8	15.1	15.9	19.5	18.0	18.7
29	12.6	12.3	12.4	18.0	16.3	17.1	19.2	18.4	18.9
30	13.2	12.4	12.9	18.3	17.5	17.8	18.8	17.4	17.8
31	12.8	13.3	12.4				17.2	16.2	16.7
Month	13.3	10.8	11.9	18.3	13.5	16.0	20.8	15.1	17.8
Day	August			September			October		
	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
1	17.1	15.7	16.3	17.7	16.2	16.9	16.0	15.7	15.9
2	17.5	16.2	16.8	18.1	16.6	17.2	15.7	15.2	15.4
3	18.3	16.9	17.5	18.4	16.9	17.5	15.2	14.6	15.0
4	19.2	17.4	18.2	18.1	16.8	17.4	14.6	14.0	14.3
5	19.7	18.4	19.0	17.2	16.0	16.6	14.2	13.8	13.9
6	19.4	18.4	18.9	16.3	15.5	15.8	14.2	13.3	13.7
7	18.9	17.7	18.1	16.0	14.9	15.5	14.5	13.8	14.1
8	18.1	17.1	17.6	15.9	14.9	15.3	14.6	14.2	14.4
9	18.4	17.1	17.7	15.2	14.0	14.6	14.3	13.9	14.2
10	18.4	17.2	17.7	14.5	13.8	14.0	13.9	13.5	13.8
11	19.1	17.5	18.2	15.2	13.9	14.5	13.9	12.9	13.2
12	20.2	18.1	19.0	16.3	14.8	15.4	13.3	12.7	13.0
13	20.5	18.9	19.5	16.5	15.2	15.8	13.6	13.2	13.4
14	20.8	19.1	19.8	16.3	15.4	15.7	13.8	13.3	13.6
15	19.5	18.0	18.9	16.5	15.4	15.8	13.2	12.7	13.0
16	17.8	15.7	16.8	16.5	15.2	15.8	12.7	12.0	12.3
17	15.7	14.6	15.1	15.9	15.2	15.4	12.0	11.7	11.9
18	14.9	14.5	14.8	15.7	14.9	15.2	11.8	11.2	11.5
19	15.7	14.3	14.9	15.4	14.8	15.2	11.5	10.8	11.1
20	16.6	14.9	15.8	15.9	14.9	15.3	11.5	10.8	11.2
21	16.9	16.2	16.5	15.5	14.8	15.2	11.4	11.1	11.3
22	17.4	16.2	16.7	15.7	14.9	15.2			
23	16.8	16.0	16.3	16.0	14.9	15.4			
24	16.2	14.9	15.5	15.7	15.2	15.4			
25	16.2	14.9	15.5	15.7	15.2	15.4			
26	16.3	15.5	15.8	15.7	14.9	15.2			
27	16.5	15.2	15.9	15.9	14.8	15.2			
28	16.6	15.5	16.0	16.2	15.1	15.6			
29	17.1	15.9	16.4	16.3	15.5	15.8			
30	16.9	15.7	16.4	16.3	15.2	15.8			
31	17.2	16.2	16.6						
Month	20.8	14.3	17.0	18.4	13.8	15.6			

Rock Creek at Hwy 8 at Hillsboro, OR
Station# 14206450
Stream Mile 1.3
1998



Temperature-Degrees Celsius
Source Agency-Tualatin Basin Watermaster

Period of Record: 5/16 through 10/21
 MAX, 25.2 July 28 MIN, 9.8 Oct 19

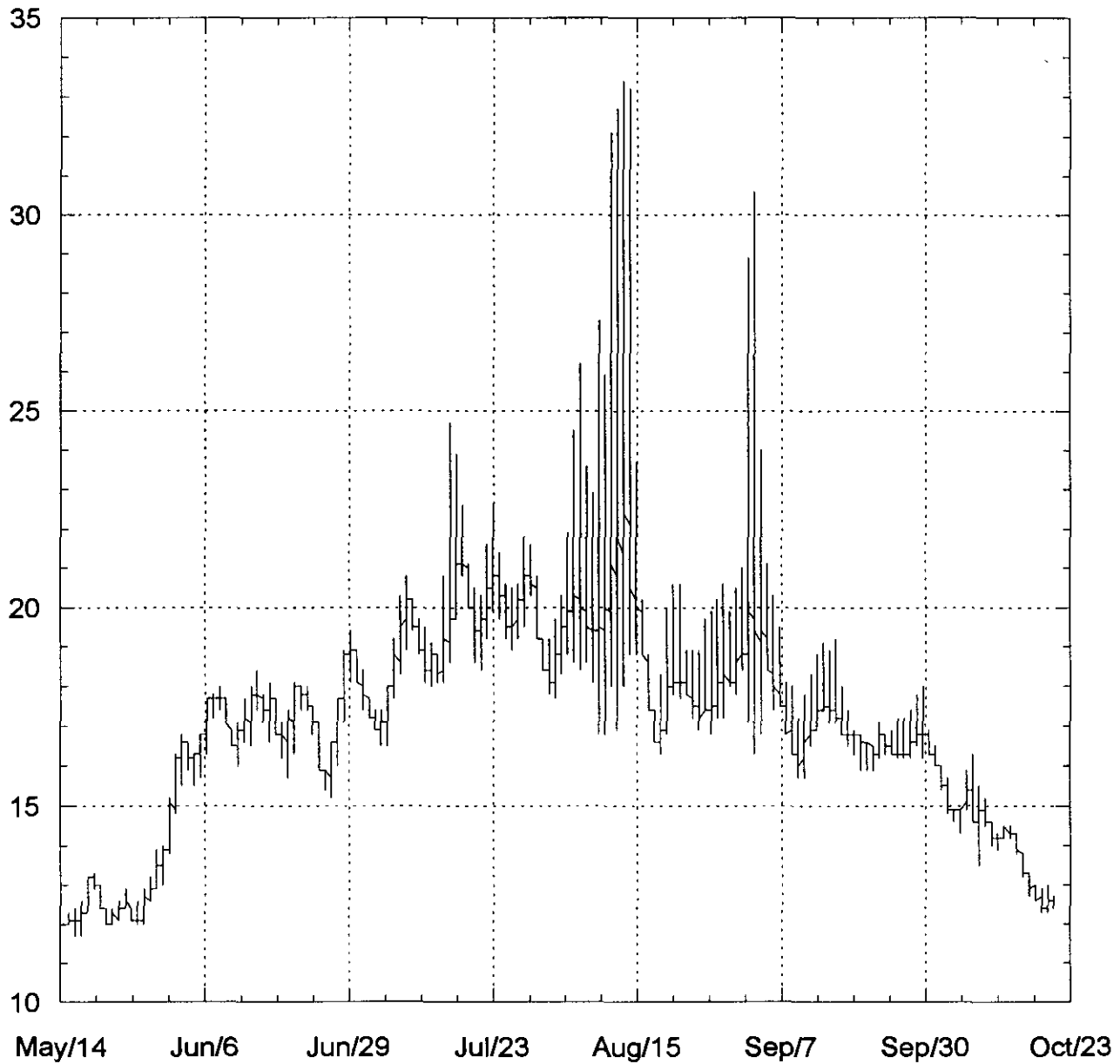
Source Agency: Tualatin Basin Watermaster

TEMPERATURE, WATER (DEG. C), MAY TO OCTOBER 1998

Day	Max	May Min	Mean	Max	June Min	Mean	Max	July Min	Mean
1				17.4	15.7	16.4	19.5	18.1	18.5
2				17.4	16.3	16.9	18.9	17.2	18.0
3				17.7	16.3	17.0	18.8	17.7	18.1
4				17.7	16.6	16.9	18.0	17.2	17.5
5				17.1	16.2	16.6	18.4	17.1	17.6
6				18.4	16.0	17.0	20.0	17.2	18.5
7				19.5	17.4	18.3	20.6	18.9	19.8
8				19.4	18.3	18.8	20.8	18.9	19.9
9				19.1	18.0	18.5	21.3	19.5	20.5
10				18.8	17.2	17.7	21.3	19.4	20.2
11				17.2	16.6	16.9	19.7	18.8	19.3
12				18.1	16.0	16.9	19.5	18.6	19.2
13				18.1	17.1	17.5	19.7	18.4	19.1
14				18.0	16.5	17.2	19.9	19.1	19.5
15				18.1	17.4	17.7	20.6	19.1	19.8
16	12.6	12.3	12.4	17.5	16.3	17.0	22.1	19.9	21.0
17	12.3	11.8	12.0	17.8	16.0	16.9	22.6	20.8	21.8
18	13.3	12.1	12.6	17.7	16.3	16.8	22.4	21.3	22.0
19	13.9	13.3	13.6	16.6	15.2	15.9	22.1	21.0	21.4
20	13.8	13.3	13.5	18.3	15.2	16.5	21.4	19.9	20.7
21	13.3	12.7	12.9	20.0	17.2	18.4	21.9	20.0	21.1
22	12.7	12.3	12.5	20.0	18.4	19.0	22.9	21.3	22.1
23	13.5	12.6	13.1	18.9	17.5	18.0	22.7	21.3	22.1
24	13.8	13.3	13.6	18.1	16.3	17.0	21.9	20.5	21.3
25	13.8	13.2	13.3	16.8	16.2	16.6	21.9	20.2	21.1
26	13.2	12.0	12.7	16.2	15.9	16.0	23.2	21.3	22.1
27	13.6	12.9	13.2	18.0	15.9	16.7	24.9	22.9	23.7
28	14.6	12.6	13.5	19.2	16.8	17.8	25.2	23.7	24.5
29	14.6	14.3	14.6	20.6	18.3	19.4	25.1	23.1	23.8
30	14.2	13.8	13.9	20.5	19.1	19.6	23.2	20.8	21.9
31	15.7	13.9	14.6				20.6	20.2	20.4
Month	15.7	11.8	13.3	20.6	15.2	17.4	25.2	17.1	20.5

Day	Max	August Min	Mean	Max	September Min	Mean	Max	October Min	Mean
1	20.6	19.4	20.0	21.3	20.0	20.6	14.9	14.8	14.9
2	21.1	18.8	20.0	20.8	19.5	20.2	14.9	14.2	14.6
3	21.9	19.9	21.0	21.0	19.9	20.4	14.5	13.6	13.9
4	22.2	20.6	21.6	20.8	19.7	20.3	13.8	13.5	13.6
5	22.2	21.0	21.8	20.5	19.1	19.7	13.5	12.9	13.2
6	21.8	20.5	21.2	19.5	18.3	18.9	13.6	12.6	13.1
7	20.6	19.1	19.9	19.4	18.3	18.8	14.3	13.3	13.8
8	20.0	18.6	19.4	18.9	17.7	18.3	14.5	14.2	14.4
9	20.5	19.1	19.9	17.5	16.3	16.8	14.2	13.5	13.8
10	20.6	19.2	20.0	16.5	15.4	16.0	13.5	12.9	13.2
11	21.6	20.0	20.8	17.4	15.7	16.5	12.9	12.3	12.5
12	22.1	20.6	21.4	18.6	16.9	17.6	13.2	12.6	12.8
13	22.6	21.1	21.9	18.3	17.1	17.7	14.0	13.2	13.7
14	22.9	21.8	22.4	18.6	17.2	17.9	14.0	13.5	13.9
15	22.1	20.3	21.3	18.3	17.2	17.8	13.5	12.7	13.1
16	20.3	19.1	19.5	18.1	17.1	17.6	12.7	11.4	11.8
17	19.1	17.8	18.4	17.7	16.6	17.1	11.5	10.9	11.2
18	18.4	17.5	17.8	16.8	16.2	16.5	11.2	10.2	10.7
19	18.1	16.6	17.4	16.9	16.5	16.7	10.8	9.8	10.2
20	19.1	17.7	18.3	16.5	15.7	16.1	10.8	9.9	10.4
21	19.4	18.8	19.0	16.3	15.1	15.8	10.6	10.2	10.4
22	19.5	19.0	18.4	16.2	15.2	15.8			
23	19.1	18.4	18.8	16.2	15.2	15.8			
24	18.4	17.4	18.0	16.0	15.4	15.6			
25	18.6	17.5	18.1	15.7	15.2	15.4			
26	18.4	18.0	18.2	15.2	14.0	14.7			
27	18.4	17.1	17.8	15.4	14.2	14.8			
28	19.1	17.7	18.3	15.5	14.6	15.1			
29	19.9	18.6	19.2	15.2	14.6	15.0			
30	20.0	18.6	19.3	15.1	14.2	14.7			
31	20.6	19.1	19.8						
Month	22.9	16.6	19.7	21.3	14.0	17.1			

Tualatin River at Farmington, OR
Station# 14206500
River Mile 33.3
1998



Temperature-Degrees Celsius
Source Agency-Tualatin Basin Watermaster

Period of Record: 5/16 through 10/21
 MAX, 28.9 Sept 2 MIN, 11.7 May 17

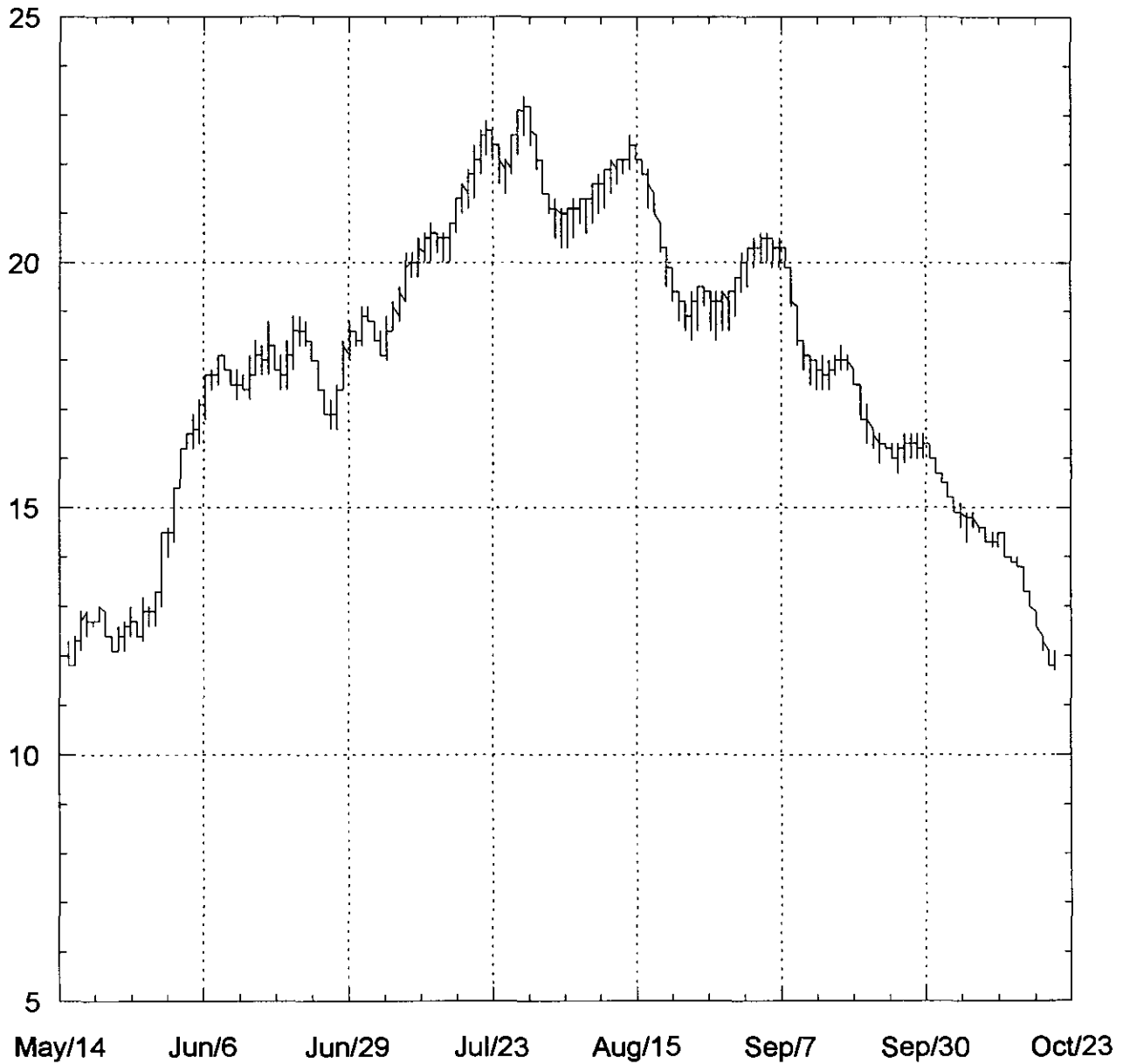
Source Agency: Tualatin Basin Watermaster

TEMPERATURE, WATER (DEG. C), MAY TO OCTOBER 1998

Day	Max	May Min	Mean	Max	June Min	Mean	Max	July Min	Mean
1				15.2	13.8	14.4	18.9	18.1	18.4
2				16.3	14.8	15.4	18.4	17.4	17.8
3				16.8	15.5	16.1	17.7	17.2	17.4
4				16.6	15.9	16.2	17.4	16.9	17.2
5				16.3	15.5	16.0	17.4	16.5	16.9
6				16.8	15.7	16.3	18.0	16.5	17.2
7				17.7	16.3	16.9	19.2	17.7	18.2
8				17.8	17.2	17.5	20.3	18.3	19.1
9				18.0	17.4	17.7	20.8	18.9	19.8
10				17.7	17.1	17.4	20.2	19.4	19.7
11				16.9	16.5	16.7	19.7	18.8	19.2
12				17.1	16.0	16.5	19.5	18.1	18.6
13				17.7	16.6	17.0	19.1	18.0	18.5
14				18.0	16.5	17.2	18.8	18.1	18.4
15				18.4	17.4	17.8	20.8	18.1	19.0
16	12.3	12.0	12.1	17.8	17.1	17.4	24.7	18.6	20.6
17	12.4	11.7	12.0	18.1	16.6	17.3	23.9	18.6	21.2
18	12.6	11.7	12.1	17.7	16.8	17.2	22.6	20.8	21.4
19	13.2	12.3	12.7	17.1	16.2	16.6	21.1	20.0	20.6
20	13.3	12.9	13.0	17.4	15.7	16.6	20.5	18.6	19.5
21	13.0	12.4	12.7	18.1	16.3	17.2	20.3	18.4	19.3
22	12.4	12.0	12.1	18.0	17.4	17.8	21.6	19.2	20.1
23	12.4	12.0	12.2	18.0	17.4	17.6	22.6	19.9	20.8
24	12.6	12.1	12.4	17.5	16.8	17.0	21.4	19.7	20.5
25	12.9	12.4	12.6	17.1	15.9	16.3	20.6	19.2	19.8
26	12.4	12.1	12.2	15.9	15.4	15.6	20.5	18.9	19.5
27	12.6	12.0	12.2	16.6	15.2	15.8	20.6	19.2	19.9
28	12.9	12.0	12.4	17.7	16.0	16.8	21.8	19.5	20.4
29	13.2	12.6	12.9	18.9	17.1	18.0	21.6	20.3	20.7
30	13.9	12.9	13.4	19.4	18.1	18.7	20.8	19.2	19.9
31	14.0	13.0	13.5				19.2	18.4	18.9
Month	14.0	11.7	12.5	19.4	13.8	16.8	24.7	16.5	19.3

Day	Max	August Min	Mean	Max	September Min	Mean	Max	October Min	Mean
1	19.2	17.8	18.3	21.0	18.4	19.2	16.9	16.3	16.7
2	19.7	17.7	18.4	28.9	17.1	21.1	16.5	16.0	16.3
3	20.3	18.3	19.1	30.6	16.3	21.1	16.0	15.4	15.7
4	21.9	18.8	20.0	24.0	16.8	19.8	15.7	15.1	14.8
5	24.5	18.6	20.8	21.1	18.4	19.3	14.9	14.6	14.8
6	26.2	18.4	21.1	20.3	17.4	18.4	14.9	14.3	14.7
7	23.6	18.4	21.1	19.5	17.5	18.0	15.9	14.9	15.3
8	22.9	18.1	20.0	18.1	16.8	17.5	16.3	14.6	15.4
9	27.3	16.8	20.2	18.0	16.3	16.9	15.5	13.5	14.6
10	25.9	16.8	20.2	17.2	15.7	16.3	15.2	14.5	14.9
11	32.1	18.0	22.6	17.8	15.7	16.5	14.6	14.0	14.2
12	32.7	16.9	22.5	18.3	16.5	17.1	14.3	13.9	14.1
13	33.4	18.0	23.5	18.8	16.9	17.5	14.5	14.2	14.4
14	33.2	18.8	23.3	19.1	17.4	17.8	14.5	14.2	14.3
15	23.7	18.8	20.5	18.9	17.1	17.6	14.0	14.3	13.8
16	20.2	18.8	19.6	19.2	17.1	17.7	13.8	13.2	13.5
17	18.8	17.4	17.9	18.0	16.8	17.1	13.3	12.7	12.9
18	17.4	16.6	17.0	17.4	16.5	16.8	13.0	12.6	12.9
19	18.3	16.3	16.9	16.9	16.3	16.7	12.9	12.3	12.6
20	20.0	16.8	17.9	16.8	15.9	16.3	13.0	12.3	12.5
21	20.6	17.8	18.6	16.6	15.9	16.3	12.7	12.4	12.6
22	20.6	17.7	18.7	16.5	15.9	16.3			
23	18.9	17.8	18.3	17.1	16.2	16.5			
24	18.9	17.2	17.8	16.8	16.3	16.6			
25	18.9	16.9	17.6	16.9	16.3	16.6			
26	19.7	17.4	17.9	17.2	16.2	16.5			
27	19.9	16.8	17.8	17.2	16.2	16.5			
28	20.2	17.2	18.2	17.4	16.2	16.6			
29	20.6	17.2	18.5	17.8	16.5	16.9			
30	19.9	18.0	18.5	18.0	16.2	16.9			
31	20.5	17.8	18.6						
Month	33.4	16.3	19.4	30.6	15.7	17.5			

Tualatin River at Elsner Road near Sherwood, OR
Station# 14206600
River Mile 16.2
1998



Temperature-Degrees Celsius
Source Agency-Tualatin Basin Watermaster

Period of Record: 5/16 through 10/21
 MAX, 23.4 July 28 MIN, 11.8 May 16

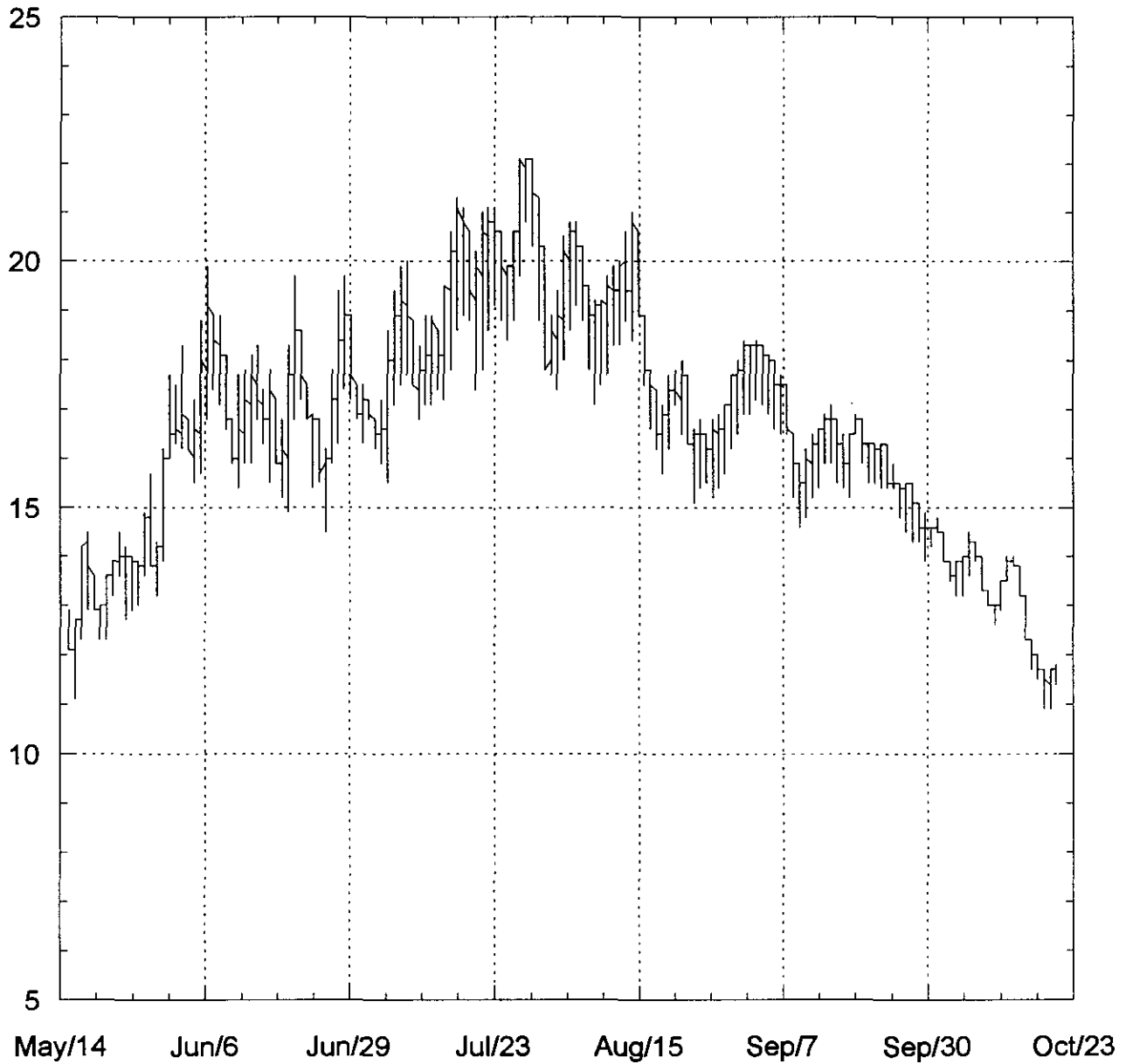
Source Agency: Tualatin Basin Watermaster

TEMPERATURE, WATER (DEG. C), MAY TO OCTOBER 1998

Day	Max	May Min	Mean	Max	June Min	Mean	Max	July Min	Mean
1				14.6	14.0	14.3	18.6	18.3	18.4
2				15.4	14.3	14.8	19.1	18.3	18.6
3				16.2	15.4	15.7	19.1	18.8	18.9
4				16.5	16.2	16.4	18.8	18.4	18.6
5				16.9	16.2	16.5	18.6	18.1	18.3
6				17.2	16.3	16.7	18.9	18.0	18.3
7				17.7	16.8	17.2	19.2	18.6	18.8
8				17.8	17.4	17.6	19.5	18.8	19.0
9				18.1	17.5	17.8	20.2	19.2	19.5
10				18.1	17.8	18.0	20.2	19.7	19.9
11				17.8	17.5	17.7	20.5	19.7	20.0
12				17.8	17.2	17.5	20.6	20.0	20.2
13				17.7	17.4	17.5	20.8	20.0	20.3
14				18.1	17.2	17.6	20.6	20.2	20.4
15				18.4	17.7	18.0	20.6	20.0	20.3
16	12.3	11.8	12.0	18.3	17.7	18.0	20.8	20.0	20.3
17	12.4	11.8	12.0	18.8	17.7	18.1	21.3	20.6	20.8
18	12.9	12.1	12.5	18.3	17.8	18.1	21.6	21.0	21.1
19	12.9	12.4	12.6	18.1	17.4	17.7	21.9	21.1	21.4
20	12.7	12.6	12.6	18.4	17.4	17.8	22.4	21.3	21.7
21	13.0	12.7	12.9	18.9	17.8	18.3	22.7	21.8	22.1
22	12.9	12.4	12.6	18.9	18.3	18.5	22.9	22.2	22.5
23	12.4	12.1	12.2	18.8	18.3	18.5	22.7	22.1	22.3
24	12.6	12.1	12.4	18.4	18.0	18.1	22.4	21.6	21.9
25	12.7	12.1	12.4	18.0	17.4	17.7	22.1	21.4	21.7
26	13.0	12.4	12.8	17.4	16.9	17.2	22.6	21.8	22.1
27	12.7	12.4	12.6	17.2	16.6	16.9	23.1	22.2	22.6
28	13.2	12.3	12.6	17.5	16.6	17.0	23.4	22.6	22.9
29	13.0	12.6	12.8	18.4	17.4	17.8	23.2	22.4	22.6
30	13.3	12.6	12.9	18.8	18.0	18.3	22.6	21.9	22.1
31	14.5	13.0	13.7				22.1	21.4	21.7
Month	14.5	11.8	12.6	18.9	14.0	17.4	23.4	18.0	20.6

Day	Max	August Min	Mean	Max	September Min	Mean	Max	October Min	Mean
1	21.4	21.0	21.2	20.2	19.4	19.6	16.3	16.0	16.2
2	21.3	20.5	20.8	20.3	19.5	19.9	16.0	15.7	16.0
3	21.1	20.3	20.7	20.5	19.9	20.0	15.7	15.5	15.7
4	21.1	20.3	20.6	20.6	20.0	20.1	15.5	15.2	15.4
5	21.3	20.5	20.8	20.6	20.0	20.2	15.2	14.9	15.1
6	21.3	20.8	21.0	20.5	19.9	20.2	15.1	14.6	14.8
7	21.3	20.6	20.9	20.5	19.9	20.1	14.9	14.3	14.7
8	21.6	20.8	21.1	20.3	19.9	20.1	14.9	14.6	14.8
9	21.8	21.0	21.3	19.9	19.1	19.4	14.6	14.5	14.6
10	21.9	21.1	21.5	19.1	18.3	18.6	14.6	14.3	14.5
11	22.1	21.4	21.6	18.4	17.8	18.1	14.5	14.2	14.3
12	22.1	21.6	21.8	18.1	17.5	17.8	14.5	14.2	14.3
13	22.1	21.8	21.9	18.0	17.4	17.7	14.5	14.0	14.1
14	22.6	21.9	22.1	18.1	17.4	17.7	14.0	13.9	14.0
15	22.4	22.1	22.2	18.0	17.4	17.7	14.0	13.8	13.9
16	22.1	21.8	21.9	18.1	17.7	17.9	13.8	13.3	13.6
17	21.9	21.1	21.5	18.3	17.8	18.0	13.3	13.0	13.2
18	21.4	21.0	21.2	18.1	17.8	17.9	12.9	12.6	12.7
19	20.8	20.2	20.4	17.8	17.5	17.7	12.4	12.1	12.3
20	20.3	19.5	19.8	17.5	16.8	17.2	12.1	11.8	11.9
21	19.9	19.2	19.5	17.1	16.3	16.7	12.1	11.7	11.8
22	19.4	18.8	19.0	16.6	16.2	16.4			
23	19.2	18.6	18.9	16.5	15.9	16.2			
24	19.4	18.4	18.8	16.3	16.2	16.3			
25	19.5	18.6	19.0	16.3	16.0	16.2			
26	19.5	19.1	19.3	16.3	15.7	16.0			
27	19.4	18.6	19.0	16.5	15.9	16.2			
28	19.4	18.4	18.8	16.5	16.0	16.3			
29	19.4	18.6	18.9	16.5	16.0	16.3			
30	19.4	18.6	19.0	16.5	16.0	16.2			
31	19.7	18.9	19.2						
Month	22.6	18.4	20.4	20.6	15.7	18.0			

Fanno Creek at Durham Road near Tigard, OR
Station# 14206950
Stream Mile 1.2
1998



Temperature-Degrees Celsius
Source Agency-Tualatin Basin Watermaster

Period of Record: 5/16 through 10/21
 MAX, 22.1 July 27 MIN, 10.9 Oct. 19

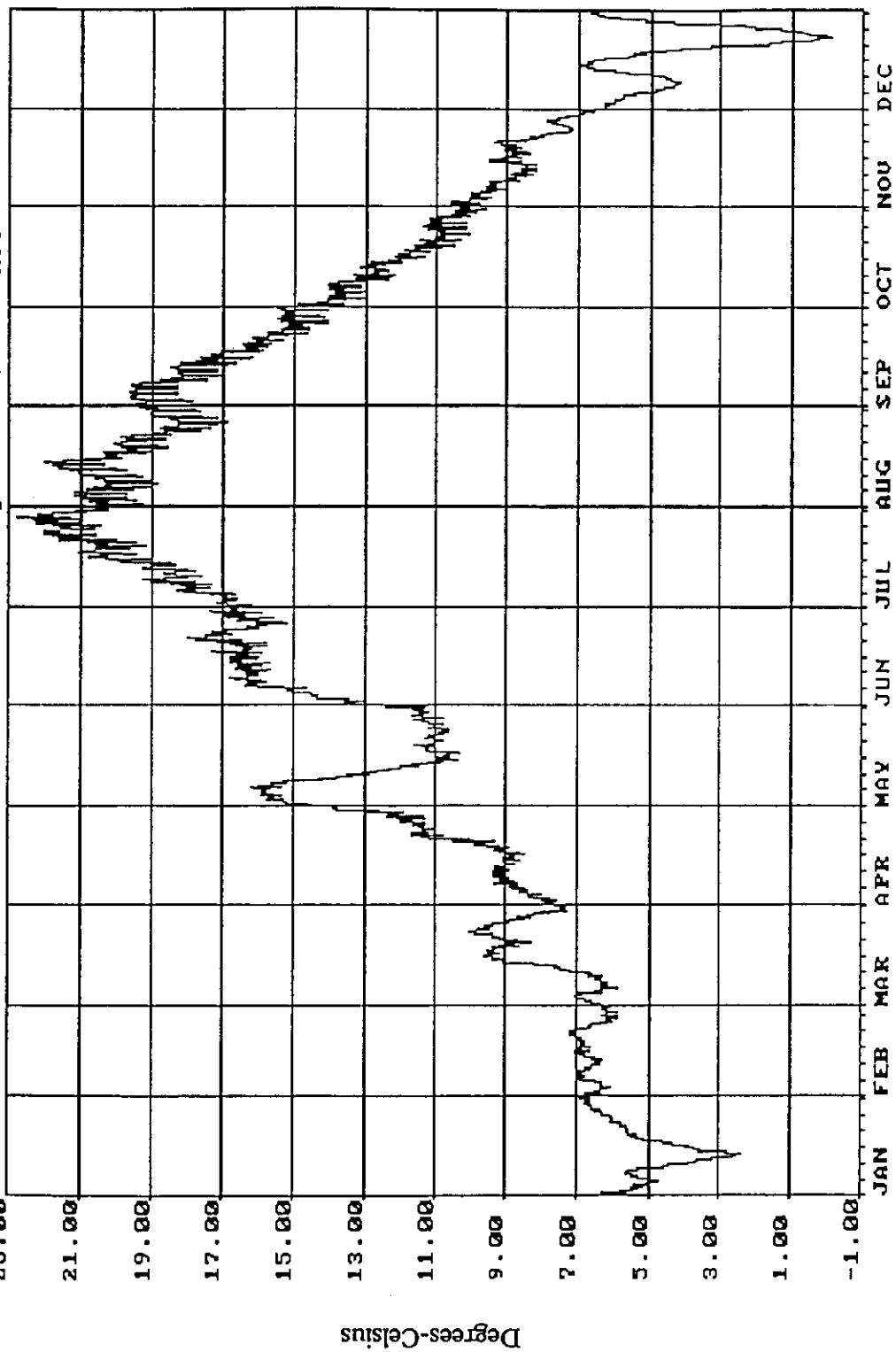
Source Agency: Tualatin Basin Watermaster

TEMPERATURE, WATER (DBG. C), MAY TO OCTOBER 1998

Day	Max	May Min	Mean	Max	June Min	Mean	Max	July Min	Mean
1				17.7	16.0	16.8	17.5	16.8	17.1
2				17.5	16.3	16.9	17.5	16.3	16.9
3				18.3	16.2	17.0	17.2	16.8	17.0
4				16.8	16.2	16.6	16.8	16.2	16.6
5				17.2	15.5	16.3	17.2	15.9	16.5
6				18.8	15.7	17.1	18.6	15.5	17.0
7				19.9	16.8	18.3	19.4	17.1	18.1
8				18.9	17.4	18.3	19.9	17.5	18.6
9				18.9	17.1	18.0	20.0	17.7	18.8
10				18.1	16.6	17.0	18.8	17.5	17.9
11				16.8	15.9	16.2	18.3	16.8	17.5
12				17.7	15.4	16.4	18.9	17.1	17.8
13				17.8	15.9	16.7	18.9	17.1	18.0
14				18.1	15.9	17.0	18.6	17.4	18.1
15				18.3	16.8	17.5	19.5	17.2	18.4
16	12.9	12.1	12.5	17.4	16.3	16.9	20.6	17.8	19.2
17	12.7	11.1	11.7	17.8	15.5	16.7	21.3	18.6	19.9
18	14.2	12.3	13.1	17.2	15.9	16.4	21.1	18.9	20.0
19	14.5	12.9	13.8	16.8	15.2	15.9	20.6	18.8	19.5
20	13.6	12.9	13.2	18.3	14.9	16.5	20.2	17.4	18.9
21	13.0	12.3	12.7	19.7	16.8	18.0	21.0	17.8	19.4
22	13.6	12.3	12.8	18.6	17.2	17.8	21.1	18.6	20.0
23	13.9	13.2	13.5	17.5	16.8	17.0	21.1	19.1	20.1
24	14.5	13.6	14.0	16.9	15.4	16.3	20.6	18.8	19.5
25	14.2	12.7	13.4	16.8	15.5	15.9	19.9	18.4	19.2
26	14.0	12.9	13.5	16.2	14.5	15.3	20.6	18.8	19.6
27	13.9	13.0	13.7	17.8	15.9	16.8	22.1	19.7	20.7
28	14.9	13.6	14.3	19.4	16.3	17.7	22.1	20.8	21.5
29	15.7	13.8	14.7	19.7	17.4	18.5	22.1	20.3	21.1
30	14.3	13.2	13.7	18.9	17.2	17.7	21.3	18.8	20.1
31	16.2	13.9	15				20.3	17.8	19.2
Month	16.2	11.1	13.5	19.9	14.5	17.0	22.1	15.5	18.8

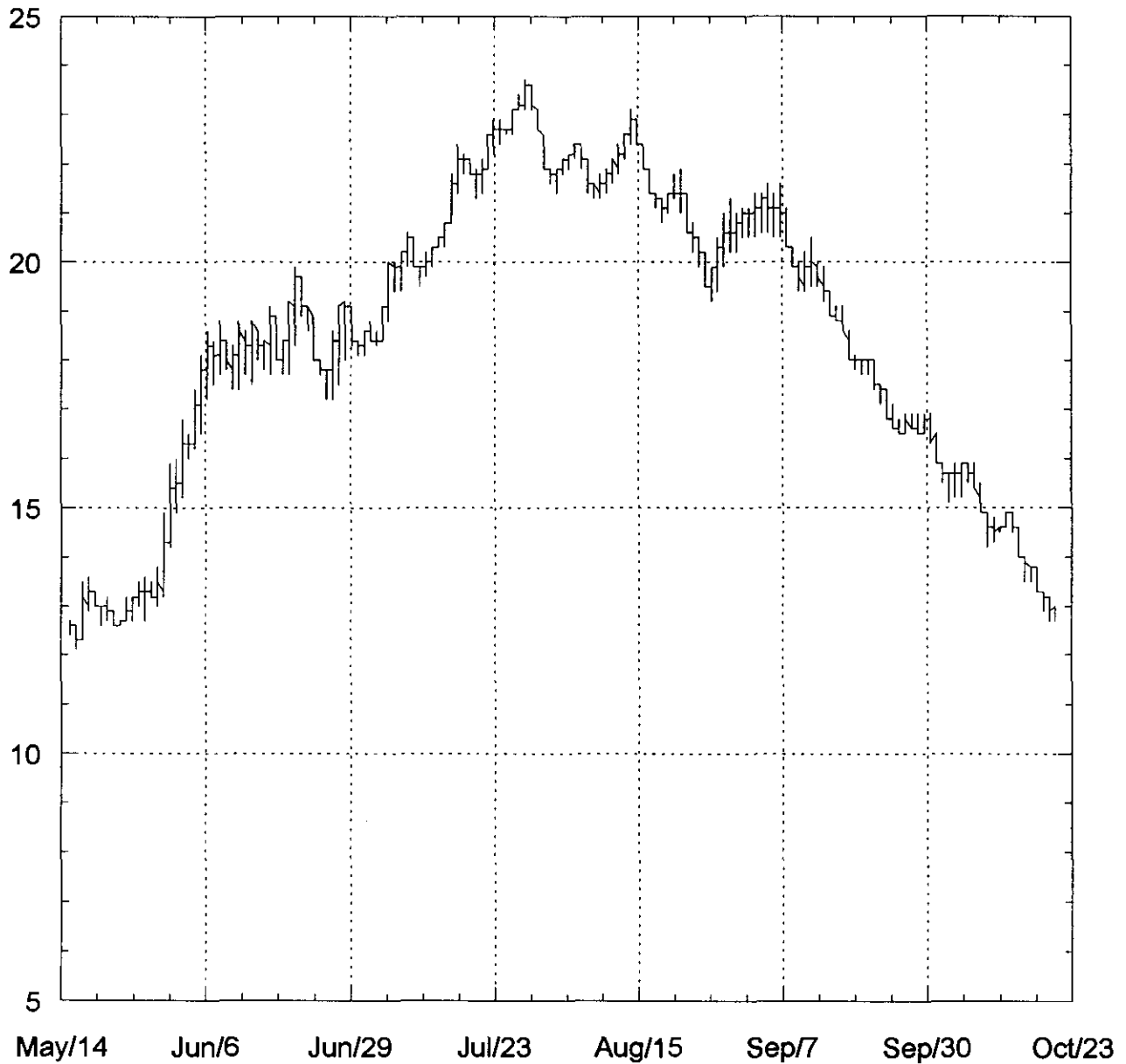
Day	Max	August Min	Mean	Max	September Min	Mean	Max	October Min	Mean
1	18.9	17.7	18.2	18.4	16.9	17.7	14.6	14.2	14.3
2	19.4	17.4	18.4	18.3	16.9	17.8	14.8	14.5	14.6
3	20.5	18.0	19.2	18.4	17.2	18.0	14.5	13.9	14.0
4	20.8	18.6	19.8	18.3	17.1	17.8	13.9	13.5	13.7
5	20.8	19.1	20.0	18.1	16.9	17.6	13.9	13.2	13.5
6	20.3	18.8	19.5	18.0	16.6	17.3	14.0	13.2	13.6
7	19.5	17.8	18.7	17.7	16.5	17.2	14.5	13.6	14.0
8	19.2	17.1	18.3	17.5	16.5	16.8	14.3	13.9	14.1
9	19.2	17.5	18.6	16.5	15.2	15.9	14.0	13.3	13.6
10	19.7	17.7	18.8	15.9	14.6	15.3	13.3	13.0	13.1
11	19.9	18.3	19.1	16.2	14.8	15.5	13.0	12.6	12.8
12	20.0	18.3	19.2	16.5	15.2	15.9	13.5	12.6	13.0
13	20.6	18.8	19.7	16.6	15.4	16.1	14.0	13.5	13.7
14	21.0	18.4	19.8	16.9	15.9	16.5	14.0	13.8	13.9
15	20.6	18.9	19.4	17.1	15.9	16.5	13.8	13.2	13.4
16	18.9	17.5	18.0	16.8	15.5	16.2	13.2	12.3	12.6
17	17.8	16.6	17.3	16.5	15.4	15.9	12.3	11.7	11.9
18	17.4	16.2	16.7	16.5	15.2	15.8	12.0	11.5	11.7
19	17.1	15.7	16.5	16.9	16.5	16.6	11.7	10.9	11.3
20	17.7	16.2	17.0	16.8	15.9	16.2	11.7	10.9	11.3
21	17.8	17.1	17.3	16.3	15.5	16.0	11.8	11.4	11.5
22	18.0	16.5	17.2	16.3	15.5	15.9			
23	17.7	16.3	16.7	16.3	15.4	15.9			
24	16.6	15.1	16.0	16.3	15.4	15.7			
25	16.8	15.4	16.2	15.9	15.4	15.6			
26	16.5	15.5	16.0	15.5	14.8	15.2			
27	16.8	15.2	16.0	15.5	14.5	15.1			
28	16.9	15.4	16.3	15.5	14.3	14.9			
29	17.1	15.7	16.5	15.1	14.3	14.6			
30	17.7	16.2	17.0	14.9	13.9	14.4			
31	18.0	16.5	17.3						
Month	21.0	15.1	17.9	18.4	13.9	16.2			

Tualatin River @ Tualatin (temperature) 1998



COMPILED FROM DAILY MEAN TEMPERATURE
IN DEGREES CELSIUS

Tualatin River at Oswego Canal near Lake Oswego, OR
Station# 14206990
River Mile 6.7
1998



Temperature-Degrees Celsius
Source Agency-Tualatin Basin Watermaster

OREGON WATER RESOURCES DEPARTMENT

Daily Mean Temperature

Tualatin River @ Tualatin, Oregon
Station # 14206960

Day	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC				
1	6.17	6.70	6.36	7.70	14.2	13.0	16.5	20.1	18.8	14.7	10.1	6.39
2	5.80	6.46	6.77	7.83	15.0	13.4	16.6	20.0	18.8	14.2	10.2	6.27
3	5.38	6.30	6.98	8.11	15.5	14.0	16.8	20.3	19.0	13.8	9.87	6.04
4	5.32	6.29	6.93	8.29	15.7	14.4	16.8	20.5	19.2	13.5	9.84	5.83
5	4.92	6.43	6.44	8.64	15.8	14.9	17.1	20.5	19.1	13.6	9.66	5.53
6	5.02	6.78	6.19	8.72	15.9	15.4	17.5	20.3	19.1	13.6	9.37	5.00
7	5.45	6.93	6.19	8.95	15.7	15.9	17.8	19.8	19.0	13.7	9.39	4.71
8	5.62	6.89	6.37	9.02	15.3	16.0	18.0	19.8	18.7	13.7	9.29	4.43
9	5.34	6.75	6.46	9.12	14.3	16.3	18.5	19.9	18.1	13.2	8.92	4.25
10	4.70	6.53	6.58	9.19	13.5	16.2	18.2	20.1	17.8	12.8	8.61	4.40
11	4.01	6.46	7.05	9.08	13.0	16.1	18.1	20.4	17.9	12.6	8.58	4.87
12	3.28	6.48	7.47	9.05	12.3	16.2	18.3	20.7	17.9	12.7	8.44	5.55
13	2.67	6.72	8.01	8.95	11.6	16.3	18.7	21.0	17.7	12.9	8.42	6.42
14	2.71	6.97	8.93	8.91	11.0	16.3	18.9	21.2	17.4	12.7	8.55	6.90
15	3.44	6.92	9.22	8.92	10.7	16.4	19.3	20.8	17.1	12.2	9.01	6.78
16	3.93	6.85	9.50	8.77	10.8	16.4	19.9	20.2	16.9	11.9	8.90	6.34
17	4.29	6.89	9.36	8.96	10.5	16.6	20.3	19.9	16.7	11.7	8.71	5.74
18	5.05	6.90	9.18	9.26	10.9	16.4	20.4	19.5	16.3	11.5	8.80	5.27
19	5.33	7.04	8.94	9.59	11.3	16.3	20.1	19.4	16.1	11.3	8.91	4.61
20	5.52	7.12	8.83	10.0	11.2	16.6	20.0	19.6	16.0	11.0	9.08	3.46
21	5.66	7.03	9.01	10.7	11.0	17.2	20.3	19.5	15.8	11.0	8.63	1.96
22	5.71	6.76	9.35	11.3	11.1	17.3	20.9	19.4	15.5	10.8	8.24	0.64
23	5.84	6.31	9.71	11.4	10.9	17.1	21.2	18.9	15.3	10.5	7.88	0.15
24	5.96	6.12	9.64	11.3	10.8	16.4	21.3	18.4	15.1	10.5	7.3	0.46
25	6.06	6.10	9.58	11.5	11.0	16.1	21.1	18.1	14.9	10.7	7.31	1.19
26	6.26	6.11	9.04	11.7	11.1	15.7	21.3	17.7	14.8	10.8	7.67	1.91
27	6.38	6.13	8.66	11.7	11.4	16.0	21.6	17.8	14.9	10.8	7.81	2.87
28	6.55	6.17	8.35	11.9	11.3	16.3	21.8	18.1	14.9	10.8	7.39	4.30
29	6.66	-----	7.94	12.5	11.5	16.6	21.8	18.5	14.9	10.4	7.04	5.72
30	6.78	-----	7.48	13.3	11.4	16.6	21.2	18.6	15.0	10.2	6.67	6.23
31	6.77	-----	7.54	-----	12.0	-----	20.5	18.6	-----	10.0	-----	6.65
MEAN	5.24	6.61	8.00	9.81	12.5	15.9	19.4	19.6	17.0	12.1	8.62	4.54
MAX	6.78	7.12	9.71	13.3	15.9	17.3	21.8	21.2	19.2	14.7	10.2	6.90
MIN	2.67	6.10	6.19	7.70	10.5	13.0	16.5	17.7	14.8	10.0	6.67	0.15

Max recorded temperature: 0728 @ 17:15-22.8
Min recorded temperature: 1223 @ 07:30-0.10

Temperature-Degrees Celsius
Source Agency-Tualatin Basin Watermaster

Period of Record: 5/16 through 10/21
 MAX, 25.7 July 28 MIN, 12.1 May 18

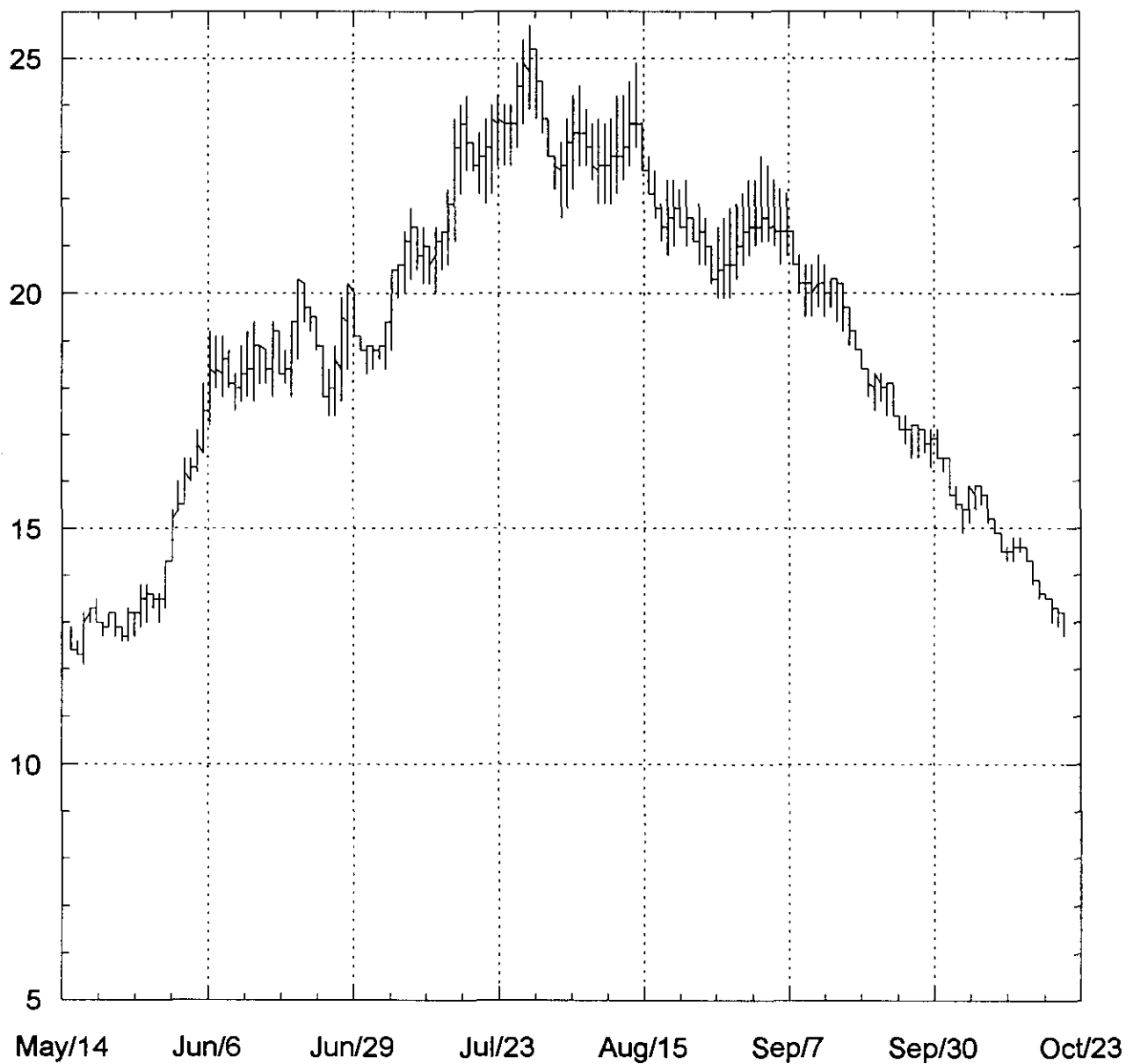
Source Agency: Tualatin Basin Watermaster

TEMPERATURE, WATER (DEG. C), MAY TO OCTOBER 1998

Day	Max	May Min	Mean	Max	June Min	Mean	Max	July Min	Mean
1				15.4	14.3	14.8	19.1	18.8	18.9
2				16.0	15.4	15.6	18.9	18.3	18.5
3				16.5	15.5	15.9	18.9	18.4	18.6
4				16.5	16.0	16.3	18.9	18.6	18.7
5				17.1	16.2	16.5	19.4	18.4	18.8
6				18.1	16.6	17.3	20.5	18.8	19.5
7				19.2	17.2	18.1	20.6	19.9	20.2
8				19.1	18.0	18.4	21.3	20.0	20.5
9				19.1	17.8	18.4	21.8	20.3	20.9
10				18.8	18.0	18.4	21.4	20.5	20.8
11				18.3	17.5	17.9	21.4	20.2	20.7
12				18.9	17.7	18.2	21.0	20.2	20.6
13				19.2	17.8	18.4	21.4	20.0	20.7
14				19.4	17.7	18.4	21.3	20.5	21.0
15				18.9	18.1	18.5	22.2	20.6	21.3
16	12.9	12.4	12.7	18.8	18.1	18.4	23.7	21.1	22.2
17	12.6	12.3	12.4	19.4	17.8	18.5	24.0	22.1	23.0
18	13.2	12.1	12.6	19.2	18.3	18.4	24.2	22.6	23.2
19	13.3	13.0	13.2	18.8	18.1	18.4	23.2	22.6	22.9
20	13.5	13.0	13.3	19.4	17.8	18.4	23.4	22.1	22.7
21	13.0	12.7	12.8	20.3	18.6	19.3	23.7	21.9	22.8
22	13.2	12.9	13.0	20.2	19.4	19.6	24.0	22.1	23.1
23	13.2	12.7	13.0	19.7	19.2	19.4	24.2	22.7	23.4
24	12.9	12.6	12.7	19.5	18.8	19.0	24.0	22.7	23.3
25	13.3	12.6	12.9	18.9	17.8	18.3	24.0	22.7	23.3
26	13.2	12.7	13.0	18.4	17.4	17.8	24.9	23.1	23.8
27	13.8	12.9	13.3	18.9	17.4	18.0	25.4	23.6	24.4
28	13.8	13.0	13.4	19.9	17.7	18.6	25.7	23.9	24.7
29	13.6	13.3	13.4	20.2	18.4	19.2	25.2	23.7	24.3
30	13.6	13.0	13.3	20.0	19.1	19.3	24.5	23.4	23.8
31	14.3	13.3	13.8				23.7	22.9	23.2
Month	14.3	12.1	13.1	20.3	14.3	18.1	25.7	18.3	21.7

Day	Max	August Min	Mean	Max	September Min	Mean	Max	October Min	Mean
1	22.9	22.2	22.6	22.4	20.8	21.4	17.1	16.5	16.7
2	23.2	21.6	22.4	22.4	21.0	21.4	16.5	16.2	16.4
3	23.7	21.8	22.7	22.9	21.1	21.6	16.5	15.7	16.1
4	24.2	22.2	23.2	22.7	21.1	21.5	15.9	15.4	15.6
5	24.4	22.7	23.4	22.4	21.0	21.4	15.5	14.9	15.2
6	23.9	22.7	23.2	22.2	20.6	21.2	15.9	15.1	15.4
7	23.6	22.4	22.9	22.1	20.8	21.2	15.9	15.4	15.6
8	23.7	21.9	22.6	21.3	20.6	21.0	15.9	15.5	15.7
9	23.6	21.9	22.7	20.8	20.0	20.3	15.7	15.1	15.3
10	23.7	21.9	22.6	20.6	19.5	20.0	15.2	14.9	15.0
11	24.2	22.1	22.9	20.6	19.5	19.9	14.9	14.5	14.6
12	24.2	22.4	23.0	20.8	19.7	20.0	14.6	14.3	14.4
13	24.5	22.7	23.3	20.6	19.5	19.9	14.8	14.3	14.6
14	24.9	23.1	23.6	20.3	19.7	20.0	14.8	14.5	14.7
15	23.6	22.6	23.1	20.3	19.4	19.8	14.6	14.3	14.5
16	22.9	22.1	22.5	20.2	19.2	19.7	14.3	13.8	14.0
17	22.6	21.6	21.9	19.7	18.9	19.3	13.9	13.5	13.6
18	21.9	21.1	21.5	19.2	18.8	18.9	13.6	13.5	13.5
19	22.4	20.8	21.4	18.8	18.4	18.5	13.5	13.0	13.3
20	22.4	21.0	21.6	18.4	17.8	18.0	13.3	12.9	13.1
21	22.2	21.4	21.6	18.3	17.5	17.9	13.2	12.7	12.9
22	22.4	21.0	21.5	18.3	17.7	17.9			
23	21.6	21.1	21.4	18.1	17.4	17.8			
24	21.9	20.6	21.1	18.1	17.4	17.5			
25	21.6	20.6	21.0	17.4	17.1	17.2			
26	21.0	20.2	20.5	17.4	16.8	17.0			
27	21.4	19.9	20.3	17.2	16.5	16.9			
28	21.6	19.9	20.5	17.2	16.5	16.9			
29	21.8	19.9	20.5	17.1	16.6	16.8			
30	21.9	20.3	20.8	17.1	16.3	16.7			
31	22.1	20.6	21.1						
Month	24.9	19.9	22.0	22.9	16.3	19.3			

**Tualatin River at West Linn, OR
Station #14207500
River Mile 1.8
1998**



Temperature-Degrees Celsius
Source Agency-Tualatin Basin Watermaster

Period of Record: 5/16 through 10/21
 MAX, 23.7 July 28 MIN, 12.1 May 17

Source Agency: Tualatin Basin Watermaster

TEMPERATURE, WATER (DEG. C), MAY TO OCTOBER 1998

Day	Max	May Min	Mean	Max	June Min	Mean	Max	July Min	Mean
1				15.9	14.2	14.9	18.4	18.1	18.2
2				16.0	14.9	15.4	18.6	18.1	18.2
3				16.8	15.2	15.8	18.8	18.4	18.5
4				16.5	16.0	16.2	18.6	18.3	18.4
5				17.4	16.2	16.7	19.1	18.3	18.6
6				18.1	16.5	16.7	20.0	18.8	19.3
7				18.6	17.2	17.9	20.0	19.4	19.7
8				18.4	17.5	18.0	20.2	19.4	19.8
9				18.8	17.7	18.2	20.6	19.9	20.1
10				18.4	17.8	18.0	20.5	19.9	20.2
11				18.3	17.4	17.8	19.9	19.5	19.7
12				18.8	17.4	18.1	20.2	19.7	19.9
13				18.6	17.7	18.1	20.3	19.9	20.0
14				18.8	17.5	18.1	20.5	20.3	20.3
15				18.6	18.0	18.3	20.8	20.3	20.4
16	12.7	12.4	12.6	18.4	17.8	18.1	21.8	20.8	21.2
17	12.6	12.1	12.3	19.1	17.7	18.3	22.4	21.4	21.7
18	13.5	12.3	12.7	18.9	18.0	18.3	22.2	21.8	22.0
19	13.6	12.9	13.2	18.4	17.7	18.0	22.1	21.8	21.9
20	13.3	13.0	13.1	19.2	17.7	18.4	21.9	21.3	21.5
21	13.0	12.6	12.8	19.9	18.3	19.1	22.1	21.4	21.7
22	13.2	12.7	13.0	19.7	18.9	19.2	22.6	21.9	22.2
23	12.9	12.6	12.8	19.1	18.6	18.9	22.9	22.2	22.5
24	12.7	12.6	12.6	18.9	18.0	18.4	22.9	22.4	22.6
25	13.2	12.7	12.9	18.0	17.7	17.8	22.7	22.6	22.7
26	13.2	12.7	12.9	17.8	17.2	17.6	23.1	22.6	22.7
27	13.5	13.0	13.2	18.6	17.2	17.8	23.4	23.1	23.2
28	13.6	12.7	13.2	19.1	17.5	18.3	23.7	23.1	23.3
29	13.5	13.2	13.4	19.2	18.0	18.6	23.6	23.1	23.3
30	13.8	13.0	13.3	19.1	18.3	18.6	23.1	22.7	22.9
31	14.9	13.2	13.9				22.6	21.9	22.3
Month	14.9	12.1	13.0	19.9	14.2	17.8	23.7	18.1	20.9
Day	Max	August Min	Mean	Max	September Min	Mean	Max	October Min	Mean
1	21.9	21.6	21.8	21.1	20.5	20.8	16.9	16.3	16.7
2	21.9	21.4	21.6	21.1	20.5	20.8	16.5	15.9	16.2
3	22.1	21.8	21.9	21.4	20.5	20.9	15.9	15.5	15.7
4	22.2	21.9	22.0	21.4	20.6	21.0	15.7	15.1	15.4
5	22.4	22.1	22.2	21.6	20.6	21.1	15.9	15.2	15.5
6	22.4	21.9	22.1	21.4	20.5	20.9	15.9	15.2	15.5
7	22.1	21.4	21.7	21.6	20.5	20.9	15.9	15.5	15.7
8	21.6	21.3	21.4	21.1	20.3	20.8	15.9	15.4	15.6
9	21.8	21.3	21.5	20.3	19.9	20.0	15.5	14.9	15.2
10	21.9	21.4	21.6	20.0	19.4	19.6	14.9	14.2	14.5
11	22.1	21.6	21.8	20.2	19.4	19.7	14.8	14.3	14.5
12	22.4	21.8	22.0	20.5	19.5	19.9	14.6	14.5	14.6
13	22.6	22.1	22.2	20.0	19.5	19.8	14.9	14.6	14.7
14	23.1	22.4	22.7	19.9	19.2	19.5	14.9	14.5	14.7
15	22.9	22.4	22.6	19.4	18.9	19.1	14.6	14.0	14.3
16	22.4	21.9	22.0	19.1	18.8	19.0	14.0	13.5	13.8
17	21.9	21.4	21.5	19.1	18.6	18.8	13.8	13.5	13.6
18	21.4	21.1	21.3	18.6	18.0	18.4	13.8	13.3	13.5
19	21.3	20.8	21.0	18.1	17.8	18.0	13.3	12.9	13.2
20	21.4	21.0	21.2	18.0	17.7	17.9	13.2	12.7	13.0
21	21.8	21.3	21.4	18.0	17.7	17.9	13.0	12.7	12.9
22	21.9	21.0	21.4	18.0	17.4	17.6			
23	21.4	20.6	21.1	17.5	17.1	17.3			
24	20.8	20.2	20.4	17.4	16.8	17.1			
25	20.5	19.9	20.2	17.1	16.6	16.9			
26	20.2	19.5	19.9	16.8	16.5	16.6			
27	19.9	19.2	19.5	16.9	16.5	16.8			
28	20.5	19.4	19.9	16.9	16.6	16.8			
29	21.0	19.9	20.3	16.9	16.5	16.8			
30	21.3	21.0	20.5	16.9	16.5	16.7			
31	21.0	20.2	20.6						
Month	23.1	19.2	21.3	21.6	16.5	18.9			

Tualatin River
River Mile Index

Appendix G

	TUALATIN RIVER		
	RIVER MILE INDEX		
	-211400300		
Mile	Description	Drainage Area	Elevation
		square miles	feet - 0.00 gage datum
0.00	Mouth of Tualatin River at Willamette River River Mile 28.5 (LB Willamette)	712	
0.20	Weiss Bridge- Petes Mtn Rd.		
1.60	Fields Creek (RB-02114003000010)		
1.69	State Hwy 212 Bridge (Fields Bridge)		
1.75	West Linn Stream Gage Station - LB (USGS #14207500)	706	85.61
2.40	Tate Creek (LB-02114003000020)		
3.45	Lake Oswego Corp. Diversion Dam		
4.25	Interstate 205 Bridge		
4.56	Wilson Creek (LB-02114003000080)		
5.34	Boat Launch -LB		
5.36	Shipley Creek (LB-02114003000100)		
5.38	Shipley Bridge- Stafford Rd. (NWS Wire Weight Gage)		
5.62	Pecan Creek (LB-02114003000120)		
6.02	Athey Creek (RB-02114003000123)		
6.70	Saum Creek (RB-02114003000130)		
6.70	Oswego Canal Diversion (LB; River Elevation Recording Gage #14206990, Headgate, and Canal Recording Gage #14207000)		
7.36	Boat Launch - LB (Dogwood Drive)		
7.67	Browns Ferry Park Canoe Launch - RB		
7.83	Clackamas/Washington Counties Line (Underground Cable Crossing Sign)		
8.18	Interstate 5 Bridge		

8.60	Boones Ferry Road Bridge		
8.64	Hedges Creek (RB-02114003000150)		
8.90	Tualatin Park Boat Launch (RB)		
8.91	Southern Pacific RR Bridge		
	Tualatin River at Tualatin Elevation Recording Station (#14206970) - RB		
9.32	Fanno Creek (LB-02114003000180)	26.8	
	(Index available)		
9.33	Durham Treatment Plant Outfall (LB)		
9.34	Oregon Electric RR Bridge		
9.80	Cook Park Boat Launch (LB)		
11.50	US Hwy. 99W Bridge (Pacific Highway)		
	Canoe Launch - LB (access from southeast of bridge)		
12.68	Overhead BPA Transmission Line; Vancouver-Eugene		
12.80	Rivermeade Boat Launch (Private) - LB		
15.20	Rock Creek-South (RB-02114003000250)	13.7	
15.50	Chicken Creek (RB-02114003000270)		
16.09	Chicken Creek Drainage Ditch (RB)		
16.22	Shamberg Bridge (Elsner Road)		
	Rated Staff Gage for Stream Flow - RB		
21.12	Overhead BPA Transmission Line; Big Eddy-Keeler		
26.90	State Hwy. 210 bridge (Scholls)		
28.20	McFee Creek (RB-02114003000310)		
30.76	Unnamed Stream (LB-02114003000320) (Jacktown)		
31.62	Burris Creek (RB-02114003000330)		
31.92	Christensen Creek (RB-02114003000350)		
33.30	Harris Bridge (State Highway 208)		
	Farmington Recording Stream Gage (#14206500) - LB	568	100.42
35.68	Butternut Creek (LB-02114003000380)		
37.38	Gordon Creek (LB-02114003000400)		

38.08	Rock Creek Treatment Plant Outfall (LB)		
38.09	Rock Creek (LB-02114003000420)	74.6	
	Beaverton Creek (LB-02114003000420060)	36	
38.44	Rood Bridge Small Watercraft Launch - LB		
	Rood Bridge Road Bridge		
	Recording Stream Gage (#14206440) - LB		105.16
40.44	Davis Creek (RB-02114003000430)		
41.64	Minter Bridge Road Bridge		
43.88	Jackson Slough (LB)		
	Jackson Bottom Wetlands		
	Hillsboro Treatment Plant Effluent Outfall (LB)		
44.40	State Highway 219 Bridge		
	Rated Staff Gage for Stream Flow - RB		
44.73	Dairy Creek (LB-02114003000480) - index available	226	
	Mckay Creek (LB-02114003000480020) - index available	63.4	
	East Fork Dairy Creek (02114003000480080) - index available		
	West Fork Dairy Creek (02114003000480090) - index available		
51.54	Golf Course Road Bridge		
	Golf Course Recording Stream Gage (#14204800) - RB		
53.74	LaFollett Road (Bridge removed)		
55.24	Forest Grove Treatment Plant Outfall		
	Fern Hill Wetlands		
55.32	Fernhill Road Bridge		
56.10	Springhill Pump Plant Intake		
56.80	Gales Creek (LB-02114003000560) - index available	78.6	
57.38	Carpenter Creek (LB-02114003000580)		
57.84	Dilley Creek (LB-02114003000600)		
58.04	Johnson Creek (LB-02114003000602)		
58.82	Springhill Road Bridge		
	Tualatin River at Dilley Stream Gage (LB)	125	147.57
	(USGS 14-2035.00)		
59.02	O'Neil Creek (LB-02114003000620)		
60.00	Scoggins Creek (LB-02114003000640) - index available		

60.80	Wapato Creek (RB-02114003000670)		
	Wapato Creek Improvement District Return Flow		
62.00	Wapato Improvement District Headgate (RB)		
62.24	Southern Pacific RR Bridge		
62.25	State Highway 47 Bridge (Gaston)		
62.30	Bates Road Bridge		
62.80	Black Jack Creek (LB-02114003000700)		
62.90	Overhead BPA Transmission Line; Forest Grove-McMinnville		
63.13	TVID Patten Valley Pump Station Outfall #1		
63.87	Tualatin River at Gaston Recording Stream Gage (14202500) - RB	48.5	
64.26	TVID Patten Valley Pump Station Outfall #2		
65.34	Williams Canyon (RB-02114003000730)		
65.90	Mt. Richmond Road Bridge		
67.30	Hering Creek (LB-02114003000760)		
67.83	South Road Bridge (Cherry Grove)		
68.44	Roaring Creek (RB-02114003000790)□		
69.42	Little Lee Falls		
70.70	Raines Bridge- Tualatin River below Lee Falls Rated Staff Gage for Stream Flow (LB)		
71.07	Lee Falls		
73.28	Haines Falls		
73.30	City of Hillsboro Haines Falls Intake - LB		
74.00	Lee Creek (LB-02114003000860)		
74.05	Patten Creek (RB-02114003000870)		
75.70	Sunday Creek (LB-02114003000900)		
76.60	Maple Creek (LB-02114003000940)		
76.95	Ki-A-Cut Falls		

78.00	Barney Reservoir Aqueduct Outfall (RB)		
79.3+	Headwaters of Tualatin River		
	River Miles based on OWRD GIS Database overlay on Washington County		
	Assessor Maps		
	Prepared by: Tualatin Basin Watermaster - October 1997		
	111 NE Lincoln, 220L MS 49		
	Hillsboro, OR 97124		