TECHNICAL MEMORANDUM

Client:	City of Snohomish
Project:	On-Call Engineering Services
Project File:	SNH 119.019.01.101 Project Manager: Michele Campbell, PE
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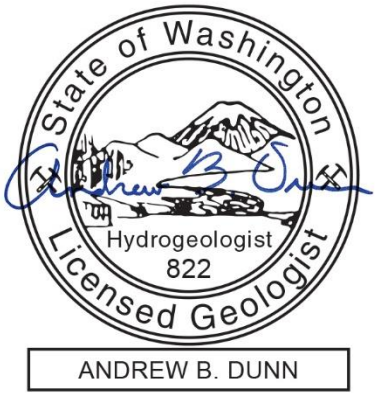
Subject:	Historic Water Use from the Pilchuck River
Date:	July 3, 2019



Signed: 07/03/2019

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Engineer In Responsible Charge

Signed: 07/03/2019

EXECUTIVE SUMMARY

This technical memorandum summarizes and estimates the maximum instantaneous rate and annual volume put to beneficial use under the City of Snohomish's (City) surface water claim S1-043282CL and surface water certificate S1-00500C. These surface water rights allow the City to divert water from the Pilchuck River for municipal water supply at the location of the existing Pilchuck River Dam in the SE ¼ NE ¼ Section 9, Township 29 North, Range 7 East W.M. on Snohomish County Tax Parcel No. 29070900100600, approximately 1/2 mile upstream of the Menzel Lake Road bridge.

Reports prepared by consulting engineering firms hired to assist the City with water system planning were obtained from the City archives and reviewed. Information also was obtained from documents prepared by the Snohomish Historical Society. Based on review of this information, it appears that the peak water use under the City's Pilchuck River water rights occurred in approximately 1960. In 1960, the City's dairies and food processors were still operating, the cost of water was relatively inexpensive, water conservation had not yet gained prominence, and the City's use of City of Everett (Everett) water was in its infancy.

Water use data was obtained from a variety of sources. All assumptions and extrapolations made to fill-in for missing data are documented in this technical memorandum.

The maximum instantaneous diversion rate from the Pilchuck River put to beneficial use was 5.72 cubic feet per second (cfs), which is equal to 3.7 million gallons per day (MGD). This diversion rate was controlled by the physical capacity of the gravity transmission main and matched the calculated peak demand of the water system.

The maximum annual volume diverted from the Pilchuck River is equal to 5.72 cfs continuously, which is equal to 4,141 afy. The maximum annual volume diverted from the Pilchuck River and put to beneficial use was calculated to be 2,113 acre-feet per year (afy).

The proposed breakdown of the actual beneficial use by water right is contained in **Table ES-1**.

Table ES-1. City of Snohomish Pilchuck River Water Right Actual Beneficial Use Summary

Water Right	Priority Date	Instantaneous Rate (cfs)		Annual Volume (afy)		Period of Use
		Document	Maximum Historic	Document	Maximum Historic	
S1-043282CL	1890	2.5	**2.17**	Not Specified	**803**	Year Round
S1-00500C	12/9/1931	5.0	**3.55**	3,000	**1,310**	Year Round
Total		7.5	**5.72**	3,000+	**2,113**	Year Round

For the Trust Water Rights Agreement, the combined rate and volume of water proposed to be placed in Trust for the primary and secondary reaches is shown in **Table ES-2**.

Table ES-2. City of Snohomish Trust Water Right Reaches

Reach	Reach Description	Instantaneous Rate (cfs)	Annual Volume (afy)
Primary	Pilchuck River Diversion Dam to Pilchuck River Mile 2	5.72	4,141
Secondary	Pilchuck River Mile 2 to Snohomish River and continuing to Puget Sound	5.72	2,113

INTRODUCTION

In 2016 the City decided to cease operation of its surface water diversion from the Pilchuck River and use Everett as its sole water source (**Appendix A**). Since the run-of-the-river dam and diversion works on the Pilchuck River are not currently needed by the City, the City is working with the Tulalip Tribes on a project to remove the dam from the Pilchuck River to improve access for salmonids to 37 miles of habitat within the Pilchuck River watershed above the dam.

Through this process, the City would like to preserve its municipal water rights in the Trust Water Rights Program (Trust) to protect them from claims of relinquishment and abandonment and to retain the ability to use them in the future.

After a meeting with the Washington State Department of Ecology (Ecology), the City was informed that it would need to document the actual historic beneficial use of water under the water rights, and only that beneficially used water, as long as it was within the water right limits, could be placed into Trust.

This technical memorandum was prepared to estimate the historic peak instantaneous rate and annual volume used under the City's water rights from the Pilchuck River diversion located in Section 9, Township 29 North, Range 7 East W.M. The information contained within will be provided to Ecology to assist with the processing of the Trust Water Rights Agreement.

This technical memorandum includes a number of attachments intended to allow the reader to review the water right record and view the relevant language within the reports referenced. Excerpts from the following references are included as appendices, while the full references are available upon request.

- **Appendix A** – City of Snohomish, Washington, June 21, 2016, *Resolution 1347*
- **Appendix B** – Surface Water Claim S1-043282CL
- **Appendix C** – Cancelled Permit 949
- **Appendix D** – Surface Water Certificate S1-00500C
- **Appendix E** – Metsker Maps, 1960, *Snohomish County, Washington*.
- **Appendix F** – Carey and Kramer Consulting Engineers, December 8, 1960, *Preliminary Plans and Recommendations Concerning Sanitary and Storm Sewers in the Maple Street Area*.
- **Appendix G** – Carey and Kramer Consulting Engineers, March 1961, *Preliminary Report on Existing Water Distribution System City of Snohomish*.
- **Appendix H** – Livingstone & Moore Consulting Engineers, October 1961, *Preliminary Report on Existing Water Source and Transmission Main for City of Snohomish*.
- **Appendix I** – Livingstone & Moore Consulting Engineers, August 1962, *Water Report for Snohomish, Washington Phase II – Potential Sources, Phase III – Summary & Recommendations*.
- **Appendix J** – Livingstone, Moore, and Wallace, Inc., September 26, 1967, Letter to the Department of Water Resources, *Subject: Surface Water Permits No's 949 and 1887*.
- **Appendix K** – Newspaper Article, no date, *Water decision in 1973*.
- **Appendix L** – Snohomish Historical Society, 1981, *River Reflections, Volume II*
- **Appendix M** – RH2 Engineering, Inc. (RH2), August 2011, *City of Snohomish Comprehensive Water System Plan*
- **Appendix N** – Stanwood Food Processor Water Rights

The reports from 1960 through 1967 were created by consulting engineers who were hired by the City at that time to assist with water and sewer system engineering and planning. They are believed to have been knowledgeable with the City's water system during this time period.

OVERVIEW OF WATER SYSTEM LAYOUT

The City of Snohomish Pilchuck River Diversion consists of a run-of-the-river concrete dam that is approximately 12 feet tall and 75 feet wide (**Appendix L**, page 43). The dam is located approximately 22 river miles upstream of the City. Water is diverted from the river at the dam and sent through a gravity transmission main to the City. The transmission main is approximately 15 miles long from the point of diversion to the City. Once reaching the City, the water enters a reservoir before entering the City's primary distribution system (**Figure 1**).

Historically, any water conveyed to the City, but beyond the demand at that time, would spill from the reservoirs and flow back into the lower Pilchuck River and/or the Snohomish River (**Appendix H**, pages 46 and 47). For this reason, more water than was beneficially used for municipal supply was consumptive to the Pilchuck River for the reach from the diversion point to the point of return.

WATER RIGHT DOCUMENT SUMMARY

This section describes the history of the water right documents that have been and are held by the City of Snohomish, associated with the Pilchuck River Dam and Diversion.

SURFACE WATER CLAIM S1-043282CL

Water Right Document Attributes

On October 15, 1973, Richard J. Thompson (City Attorney) filed a long form water right claim on behalf of the City. The claim was received by the Washington State Department of Ecology on October 17, 1973 and subsequently assigned tracking number S1-043282CL. The attributes on the claim form are shown in **Table 1,** and the document is contained in **Appendix B**.

Table 1. Water Right Claim S1-043282CL Attributes

Attributes	Existing
Name	City of Snohomish
Claimed Priority Date	1890
Instantaneous Rate Claimed	2.5 cfs
Annual Volume Claimed	None Specified
Purpose of Use	Municipal
Period of Use	Year round
Place of Use	Sections 7, 8, 9, 17, 18, 19 in Township 29 North, Range 7 East Sections 14, 15, 16, 20, 21, 22, 23, 24, 28, 29, 32 in Township 29 North, Range 6 East Sections 5, 7, 8, 9, 17, 18, 19 in Township 28 North, Range 6 East Sections 1, 12, 13, 14, 24 in Township 28 North, Range 5 East
Source	Pilchuck River NE ¼ Section 9, Township 29 North, Range 7 East W.M.

CANCELLED SURFACE WATER PERMIT 949

Water Right Document Attributes

On August 18, 1926, the City of Snohomish filed a water right application. That application requested to divert surface water from the Pilchuck River (Section 9, Township 29 North, Range 7 East W.M.) at 30 cfs for year-round power and municipal supply. The application was assigned number 1853. The power portion of the right was for the pumping of municipal water.

On March 5, 1927, a Findings of Fact and Decision was issued on the City's application. The document approved a total diversion of 30 cfs from the Pilchuck River for year-round power (21 cfs) and municipal (9 cfs) supply.

On August 2, 1927, a Permit was issued to the City of Snohomish. The permit authorized a total diversion of 30 cfs from the Pilchuck River for year round power and municipal supply. The permit was assigned number 949.

On December 5, 1967 the Permit was cancelled after being active but unutilized for 40 years.

Water right documents are contained in **Appendix C**.

SURFACE WATER CERTIFICATE S1-00500C

Water Right Document Attributes

On December 9, 1931, the City of Snohomish filed a water right application. That application requested to divert surface water from the Pilchuck River at 21 cfs for power (5 cfs) and additional municipal (16 cfs) supply. The application was assigned number 3571. The power to be produced was to operate the gates and lights at the dam and associated building.

On May 19, 1932, a Permit was issued to the City of Snohomish. The permit authorized a total diversion of 16 cfs from the Pilchuck River for year-round municipal use. The permit was assigned number 1887. The 5 cfs requested for power supply was considered to be covered under the existing permit 949, and that is why the permit was issued for less than requested in the application.

On October 15, 1973, Richard J. Thompson (City Attorney) signed a Proof of Appropriation form. On this form he attested to the City of Snohomish's diversion of 5 cfs for municipal water supply under this water right.

On February 28, 1974, a Certificate was issued to the City of Snohomish. The attributes of the certificate are shown in **Table 2,** and the document is contained in **Appendix D**.

Table 2. Surface Water Certificate S1-00500C Attributes

Attributes	Existing
Name	City of Snohomish
Priority Date	December 9, 1931
Instantaneous Rate	5 cfs
Annual Volume	3,000 afy
Purpose of Use	Municipal Supply
Period of Use	Year Round
Place of Use	Area served by the City of Snohomish
Source	Pilchuck River NE ¼ SE ¼ NE ¼ Section 9, Township 29 North, Range 7 East W.M.

WATER RIGHT DOCUMENT DISCUSSION

The claim, cancelled permit, and certificate all identify the same point of diversion from the Pilchuck River, in the NE ¼ Section 9, Township 29 North, Range 7 East W.M. This point of diversion is consistent with the location of the current Pilchuck River Dam and Diversion Works.

After decades of permit extensions, the State cancelled permit 949 on December 5, 1967, based on a lack of due diligence and demonstrated need. This cancellation seems reasonable as the existing claim and certificate appear to be more than adequate to cover the maximum historic beneficial use.

Currently, it appears that the claim and certificate are the only two active water rights held by the City.

The date of first use as identified by the City on the surface water claim appears to correlate with the original pumping plant diversion from the lower Pilchuck River. However, the legal description provided for the point of diversion is the same as the dam and gravity diversion. It is likely that the date of first use as identified on this claim should have been 1911 or 1912 to correspond to the first date of use of the gravity diversion, as opposed to 1890, which was the first date of use of the original pumping plant diversion from the lower Pilchuck River.

No annual volume limit is identified on the water right claim.

The proof of appropriation form under S1-00500C, and the water right claim form under S1-043282CL, were filled out on the same day, October 15, 1973, by the City attorney.

The reduction in instantaneous rate under S1-00500C from the 16 cfs authorized for municipal use down to 5 cfs was based on the proof of appropriation form filed by the City.

Diverting 5 cfs continuously, year round, is equal to an annual volume of 3,620 afy. Therefore, the 3,000 afy granted under the certificate is equal to diverting 5 cfs for an average of just under 20 hours every day of the year.

No separate water right documents were identified for the pumping plant diversion on the lower Pilchuck River.

WATER RIGHT DOCUMENT SUMMARY

The water rights held by the City for diversion from the Pilchuck River are summarized in **Table 3**.

Table 3. City of Snohomish Pilchuck River Water Rights Summary

Water Right	Priority Date	Instantaneous Rate (cfs) Additive	Annual Volume (afy) Additive	Period of Use
S1-043282CL	1890	2.5	Not Specified	Year Round
S1-00500C	12/9/1931	5.0	3,000	Year Round
Total		**7.5**	**3,000+**	**Year Round**

DETAILED PILCHUCK RIVER WATER SUPPLY HISTORY

This section documents the history of the Pilchuck River water supply as utilized by the City.

In 1891, the City voted for a $50,000 bond issue to construct a water system consisting of a pump station on the Pilchuck River at the northeast City limits and a 500,000-gallon reservoir (**Appendix H**, page 1; **Appendix L**, page 43). The property where the pump station was located is referred to as the DeSelle Property in the early 1960s (**Appendix I**, page 23). A 1960 Metsker Map of the area identified a property owned by Ms. Caroline Deselle in that location near the west quarter corner of Section 8, Township 28 North, Range 6 East W.M. (**Appendix E**).

In 1910, the lower Pilchuck River was deemed to be unacceptable as a source of drinking water due to the danger of it containing typhoid fever from upstream inhabitants that could lead to an epidemic (**Appendix L**, page 40).

In January 1911, the City voted to validate $110,000 in bonds to build a gravity water system from a point of diversion on the Pilchuck River located farther upstream from the City than the pump station that existed at the time (**Appendix L**, page 40). This gravity diversion location is the same as the current point of diversion identified on the water right claim and certificate.

On January 2, 1912, Pilchuck Dam No. 1 and the gravity pipeline first delivered water to the City. The 1912 gravity pipeline from the dam to the City consisted of a 12-inch-diameter, wire bound, wooden pipe with a capacity of 1.4 MGD (**Appendix H**, page 2), which is equivalent to an instantaneous rate of 2.17 cfs.

In 1922, the City decided to install a chlorine plant to purify the water (**Appendix L**, page 41).

In approximately 1926 or 1927, a back-up electric pumping plant was installed at the location of the original 1891 diversion point on the Pilchuck River to provide peaking water during the high demand period and as an emergency back-up supply to the gravity system in case of main breaks on the gravity transmission pipeline (**Appendix L**, page 42; **Appendix H**, page 2). The capacity of the electric pumping plant was 1.2 MGD (**Appendix H**, page 2), which is equivalent to an instantaneous rate of 1.86 cfs.

By 1931, the original 1912 gravity pipeline was reported to be in need of replacement (**Appendix L**, page 42).

Pilchuck Dam No. 2 was constructed in 1931 (**Appendix L**, page 43). This dam is the existing dam at the point of diversion.

The City was bonded in 1932 to replace the 1912 gravity pipeline with a larger wire bound, wooden pipe with a capacity of 3.2 to 3.3 MGD (**Appendix H**, page 2; **Appendix K**), which is equivalent to an instantaneous rate of 4.95 to 5.11 cfs. The pipeline included 24-inch cast iron pipe (210 feet), 18-inch-diameter creosoted, wire wound, wood pipe (23,426 feet), 16-inch-diameter creosoted, wire wound, wood pipe (21,603 feet), 16-inch-diameter untreated wire wound, wood pipe (15,932 feet), and 14-inch-diameter untreated wire wound, wood pipe (16,358 feet) that decreased in diameter as it approached the City, for a total length of 77,529 feet or 14.7 miles (**Appendix H**, page 2 and 5; **Appendix L**, page 43). The second gravity pipeline was constructed in 1934 (**Appendix L**, pages 43 and 44).

The 1934 gravity pipeline was reported to be designed with a capacity of 3.2 MGD (4.95 cfs). The actual flow into the reservoir at the end of the pipeline was checked in 1961 and found to be 3.7 MGD (**Appendix H**, page 23), which is equivalent to an instantaneous rate of 5.72 cfs.

In approximately 1952 or 1953, a 5-million-gallon reservoir was installed in the City (**Appendix H**, page 2; **Appendix L**, page 43). A connection to the City of Everett's water system pipeline was made in 1952 and consisted of an 8-inch-diameter pipe that was manually controlled and discharged directly into the City reservoir or could be used to directly serve the area north of the reservoir (**Appendix G**, page 3; **Appendix H**, page 6).

Starting in 1952, the City began to purchase water from the City of Everett as a backup and additional source of water for its Pilchuck River water supply (**Appendix I**, pages 10 and 11). **Figure 2** displays the amount of water purchased by month for the years of 1952 through 1961. From this chart it can be seen that the bulk of the Everett water was purchased during the summer months, when demands would have been the greatest. Everett water supply purchased during the wet weather season was likely necessary during periods of extreme turbidity in the Pilchuck River, or when the City was performing maintenance on the diversion or gravity transmission main (**Appendix H**, page 47).

In 1981, a filtration plant was added at the diversion site, and the 1932 gravity pipeline was replaced with a new gravity pipeline (**Appendix L**, page 44). The 1981 gravity pipeline was constructed of material other than wood, like the 1912 and 1932 gravity pipelines had been. The capacity of the filtration plant installed in 1981 was 1,500 gallons per minute (gpm), which became the limiting factor on the diversion of water after that time.

WATER SYSTEM OVER TIME

Table 4 documents the growth in population within the City limits and as served by the City's water system over time. Historically, the City's water system has served not only within the City limits, but also the surrounding area outside of the City limits (**Appendix M**, pages 3-6 and 3-7). Some of the gain in population over time is associated with expansion of the City limits and annexation of nearby areas, whereas some of the increase is associated with infill of the original City limits.

Table 4. City of Snohomish Water System Population Served Over Time

Year	City Population	Rural Population on Water System	Source
1890	1,995	Not Provided	http://www.ci.snohomish.wa.us/315/History-of-Snohomish
1895	3,000	Not Provided	http://www.ci.snohomish.wa.us/315/History-of-Snohomish
1930	2,688	Not Provided	**Appendix J**
1932	3,000	2,000	**Appendix D**
1940	2,794	Not Provided	**Appendix J**
1950	3,094	Not Provided	**Appendix J**
1960	3,894	Not Provided	**Appendix J**
1964	4,413	Not Provided	**Appendix J**
1967	4,700	Not Provided	**Appendix J**
1990	6,499	Not Provided	**Appendix M**
2003	8,640	549	**Appendix M**
2008	9,020	692	**Appendix M**

MAXIMUM WATER USE

Water rights consist of an instantaneous rate and an annual volume. The maximum water use under each attribute can be different and unrelated. For this reason, they will be looked at separately. Based on RH2's review of the information available, 1960 is estimated to be the peak use year.

ANNUAL VOLUME

The annual volume of water beneficially used under the City's water rights will be estimated. In this technical memorandum, estimates for dairy use, food processor use, and domestic use will be reviewed independently.

Dairy Use

Table 5 identifies the dairies provided water by the City and provides an estimate of their peak day water use from 1956 (**Appendix G**, page 6).

Table 5. 1956 Average Water Use for Dairies

Name	Daily Use (gallons per day)
Snohomish Dairy Association (Darigold)	212,000
Grand View Dairy	3,360
Dairy Total	***215,360***

Water use by dairies is consistent year round since the cows need to be milked and that milk needs to be processed year round. Therefore, the peak daily use numbers in **Table 5** are

considered to be the same as the year-round average day demand. The use of 215,360 gallons per day is equal to an annual volume of 241 afy.

No dairy water use data from 1960 could be identified in the historic documents. For this reason, it is assumed that the 1960 dairy water use is consistent with the 1956 dairy water use shown in **Table 5**.

Food Processor Use

The City was identified as providing water to five food processors around 1960. These food processors were involved in canning not only locally grown fruits and vegetables, but also meats and seafoods.

Table 6 identifies the food processors and provides an estimate of their peak day water use based on 1956 sewer information (**Appendix G**, page 6). As can be seen from **Table 6**, the Hershey Canning Company was using 77.5 percent of the total food processing water use in 1956.

Table 6. 1956 Food Processor Peak Day Demand

Name	Daily Use (gallons per day)	Percent of Total Food Processor Use
Wheeler	20,000	3.1%
Hershey Canning Company	500,000	77.5%
Ferguson Canning Company	6,000	1.0%
Evergreen Frozen Foods	102,000	15.8%
Van Valins	17,000	2.6%
Food Processor Total	***645,000***	

Historical information indicates that the food processors peak usage was during the summer canning season when local fruits and vegetables were readily available for cleaning, freezing, and canning. Therefore, it was assumed the use during these months represented continuous operation, and that the peak monthly use would be the same rate as the peak daily use.

The Evergreen Frozen Foods facility also reportedly piped all of its wash water across the Pilchuck River to fertilize and irrigate a large pasture (**Appendix L**, page 86).

During the peak water use month of the 1960 canning season, the Hershey Canning Company reportedly used 2,600,000 cubic feet of water (19,449,300 gallons). Assuming a 31-day month, this is equal to approximately 627,397 gallons per day (**Appendix F**, page 4). The 1960 peak usage is 125.5 percent of the Hershey Canning Company peak day from 1956 provided in **Table 6**. To update the peak daily use values for all of the food processors, assuming that each food processor used proportionately more water in 1960 than in 1956, each of the 1956 peak daily use values have been multiplied by 125.5 percent to better match the 1960 data from the Hershey Canning Company (**Table 7**).

Table 7. 1960 Food Processor Calculated Peak Day Demand

Name	1956 Peak Daily Use (gallons per day)	Multiplier	1960 Peak Daily Use (gallons per day)
Wheeler	20,000	125.5%	25,100
Hershey Canning Company	500,000	125.5%	627,500
Ferguson Canning Company	6,000	125.5%	7,530
Evergreen Frozen Foods	102,000	125.5%	128,010
Van Valins	17,000	125.5%	21,335
Food Processor Total	***645,000***		***809,475***

Historical reports of how the plants operated indicate that the peak use during the year was when the local fruits and vegetables were available for processing (**Appendix G**, page 4). The lowest use likely occurred during the winter months when there was less food being washed and canned.

There are references to a Hershey Well in a couple of the documents (**Appendix I**, pages 13-16; **Appendix L**, page 86), but no water right documents or well logs could be found to confirm when the well was constructed, if it was used for water supply, or how it was used for water supply for the plant. For this reason, RH2 infers that the well was not used in 1960 and that the plant relied on the City for its full water supply in that year.

Some water right documents for food processing plants in Stanwood, Washington were reviewed to help with determining an appropriate annual volume to assign. The water right documents reviewed were for GWC 498-D (Pictsweet Foods, Inc.) and G1-162555CL (Twin City Foods, Inc.) and are contained in **Appendix N**. Interestingly, the Hershey plant operation was eventually combined with the Twin City Foods plant in Stanwood when the Hershey plant shut down in the City (**Appendix L**, page 86). A summary of the attributes of the two water rights are contained in **Table 8**.

Table 8. Stanwood Area Food Processor Water Right Information

Water Right Number	Date of Information	Name	Instantaneous Rate (gpm)	Annual Volume (afy)	Period of Use
GWC 498-D	1948	Pictsweet Foods, Inc.	265	165	During canning season. 200 days a year, 18 hours a day
G1-162555CL	1974	Twin City Foods, Inc.	360	580	Continuously

The annual volume identified for the Twin City Foods, Inc., water right claim suggests that the instantaneous rate was pumped continuously over the entire year to produce the annual volume. The Pictsweet Foods, Inc., declaration indicated that it operated seasonally for 200 days a year, 18 hours a day. Based on these two alternatives, the Pictsweet Foods, Inc., operation more closely resembles the operation of the food processing plants in the City of Snohomish in 1960.

If 809,475 gallons per day is considered to be the peak use of the food processing industries, and they are assumed to operate similar to the Pictsweet Foods, Inc., facility from **Table 8** with an average of the full production for 200 days out of the year, the annual volume of water used for food processors within the City would have been equal to 161,895,000 gallons or 497 afy.

Domestic Use

Domestic use consists of water use within single domestic and multiple domestic dwellings (e.g., drinking, cooking, cleaning, and hygiene) and water used outside of the dwellings (e.g., garden irrigation, lawn watering, animal watering, cleaning, and car washing).

The City was given the title of "Garden City" for all its well-tended yards (**Appendix L**, page ix). This type of heritage suggests that landscaping, and the water use necessary to maintain Landscaping, has been important to the citizens of the City.

In 1961, the average daily redundant water demand was 125 gallons per day (gpd) per person in Western Washington (**Appendix G**, page 5). However, through measurements and estimates of consumption, the engineers identified the cost of water, quality of the water, and the absence of water flow meters as being a reason why domestic water users served by the City would use, on average, 125 percent more than normal consumption (**Appendix G**, page 5). For the City, this equals an average water use rate of 281 gpd per person (**Appendix G**, page 5).

Table 9 includes the domestic use calculation based on the per person average day demand calculated by others.

Table 9. 1960 Era Average Day Demand Domestic Water Use

Use Category	Gallons Per Day Per Person	People Connected to the Water System	Daily Use (gpd)
Domestic	281[1]	4,394[2]	1,234,714
Domestic Total			***1,234,714***

[1] From **Appendix G**, page 5.

[2] Assuming a 1960 City population of 3,894 and adding an estimated additional 500 people being served outside of the City limits (from **Table 4**), for an estimated total of 4,394 people served.

Domestic water use of 1,234,714 gpd is equal to an annual use of 1,383 afy.

Other Use

Estimates of water use for dairies, food processors, and domestic uses have been presented based on historic information found in reference documents and broken out by the consulting engineers. However, there were other water users being provided water by the City in 1960, including other businesses, such as restaurants, saloons, and the Seattle-Snohomish Mill, that were not explicitly broken out in these reports. Based on review of the water use data, and to be conservative, it is RH2's opinion that the other uses were likely wrapped up in the domestic use calculation, which could partially account for why the per person use is higher than "normal" for the time.

Summary of Annual Use

A summary of the annual volume by different use categories is contained in **Table 10**.

Table 10. 1960 Annual Water Use Estimate

Use Category	Annual Volume (afy)
Dairy	241
Food Processor	497
Domestic (including unspecified other uses)	1,383
City of Everett Purchase	- 8
Maximum Annual Use	**2,113**

The total use of 2,113 afy is approximately 10 percent less than the calculated demand in **Appendix H (**page 47), which is equal to 2,338 afy (2,087,500 gpd) and is shown as gallons per day. The values used in the calculation in the **Appendix H** report include the 50-percent growth factor on the industrial use, and consider the industrial use to be constant year round. To be conservative, RH2 did not include any growth factors in its industrial use calculations and assumed a more seasonal nature to the increased 1960 food processor use.

INSTANTANEOUS RATE

As shown in **Table 3**, the City's water right claim and certificate authorize up to a combined instantaneous rate of 7.5 cfs.

Confirmation of Water Available from the Source

Historic daily flow data from the United States Geological Survey (USGS) stream gage, Pilchuck River near Granite Falls, Washington (gage No. 12152500), was compared to the combined water right limit of 7.5 cfs. This stream gage was located approximately 4 miles downstream of the City's diversion point and likely represents a close approximation of what was available to divert. For the period of January 1950 through November 1957, the river always flowed higher than the combined water right limit (**Figure 3**). Unfortunately, that gage has been inactivate since November 1957; therefore, there is no flow data available for 1960 that could be used to directly compare with the diversion data contained in the engineering reports included in the references. However, the data available suggests that there was always sufficient flow in the river to divert up to the combined water right limit.

Transmission Main Capacity

The gravity transmission main has been identified in many of the reports as the limiting factor on how much water can be conveyed from the point of diversion into the City. **Table 11** identifies the range of flows calculated and measured over time.

Table 11. Pilchuck River Gravity Transmission Main Capacity

Transmission Main Year Constructed	Gravity Pipeline Capacity (MGD)	(cfs)	Years of Use
1912	1.4	2.17	1912 through 1933
1934	3.2 to 3.7	4.95 to 5.72	1934 through 1980
1981	3.4[1]	5.26[1]	1981 through present

[1] During the 1981 upgrades, the filter plant became the limiting factor with a maximum treatment capacity of 1,500 gpm, which is equivalent to 2.2 MGD and 3.34 cfs. More recently, the Washington State Department of Health imposed additional constraints on the maximum production from the treatment facility to preserve public health and safety (**Appendix M**, page 6-8).

This is the capacity as measured at the City, not the diversion point. Including transmission main leakage losses would increase the diversion rate from the river, but not the delivery to the City.

The maximum rate of water delivered from the Pilchuck River through the transmission main was likely the 3.7 MGD or 5.72 cfs measured in 1961 (**Appendix H**, page 23).

Peak Day Use Estimate

Understanding the capacity of the river and transmission main helps to understand the possible peak diversion rates; however, to understand the actual beneficial use of water, additional calculations are needed. These calculations will look at the peak water use by use category.

Dairy use is estimated to be constant year round. However, Carey and Kramer Consulting Engineers estimated that the peak operating time for dairies was 5 hours a day (**Appendix G**, page 6). A daily use of 215,360 gpd, spread over 5 hours per day, is equal to a peak demand of 718 gpm. It should be noted that this peak rate is less than indicated in **Appendix G** since RH2 used the identified existing use and did not apply the 50-percent growth factor as was done in **Appendix G**.

Food processing use is estimated to be highest during the canning season in the summer and to be a constant demand over the entire day (**Appendix G**, page 6). The peak day demand of 809,475 gpd is equal to 562 gpm. It should be noted that this peak rate is less than indicated in **Appendix G**, even though the peak day demand was adjusted to 1960 levels since RH2 used the identified existing use and did not apply the 50-percent growth factor as was done in **Appendix G**.

Domestic use peak hour demand was identified as 150 percent of the average day demand of 281 gallons per day per capita (**Appendix G**, page 5). The peak hour demand for domestic use is 422 gallons per day per person. For a population of 4,394, this is equal to an instantaneous rate of 1,288 gpm.

A summary of the instantaneous uses of water under each use category is contained in **Table 12**.

Table 12. 1960 Instantaneous Water Use Estimate

Use Category	Instantaneous Demand	
	(gpm)	(cfs)
Dairy	718	1.60
Food Processor	562	1.25
Domestic (including unspecified other uses)	1,288	2.87
Maximum Instantaneous Demand	***2,568***	***5.72***

The calculated peak instantaneous demand of 5.72 cfs matches the measured pipeline capacity in 1961. Therefore, the pipeline capacity appears to represent the maximum diversion rate under the water right claim and certificate.

The calculation that the peak instantaneous demand is very close to the pipeline capacity is supported by the statement that the Pilchuck River supply was sufficient on all but a few days during peak demand (**Appendix H**, page 46) and the fact that the City often had to purchase water from Everett in the summer months when demand outstripped the pipeline capacity (**Figure 2**).

WATER RIGHT HISTORIC USE ALLOCATION

Since the City has two water rights with different priority dates, this section will attempt to breakout the appropriate allocation of historic water use by water right (**Table 13**).

The pipeline capacity and instantaneous rate associated with the Pilchuck River Dam No. 1 and the 1912 pipeline are assumed to be associated with the water right claim. The remainder of the instantaneous rate associated with Pilchuck River Dam No. 2 and the 1932 pipeline leading to the peak use calculated in 1960 is assumed to be associated with the surface water certificate S1-00500C. No water use credit is given for water diverted from the pumping plant on the Pilchuck River, located near the City, since it is not documented under an active water right claim or certificate. The annual volume put to beneficial use has been broken down between the claim and certificate based on the proportion of instantaneous rate associated with each water right.

Table 13. City of Snohomish Pilchuck River Water Right Actual Use Summary

Water Right	Priority Date	Instantaneous Rate (cfs)		Annual Volume (afy)		Period of Use
		Document	Maximum Historic	Document	Maximum Historic	
S1-043282CL	1890	2.5	2.17	Not Specified	803	Year Round
S1-00500C	12/9/1931	5.0	3.55	3,000	1,310	Year Round
Total		**7.5**	**5.72**	**3,000+**	**2,113**	**Year Round**

This water system historically used a constant supply from the Pilchuck River to maintain reservoir levels and meet municipal demand. When the supply exceeded demand, water would

overflow from the reservoirs in the City (**Appendix H**, page 46). Assuming a continuous year-round diversion rate of 5.72 cfs, the annual volume diverted from the Pilchuck River would have been 4,141 afy. That instantaneous rate and annual volume was fully consumptive to the Pilchuck River from the point of diversion downstream to the location were the water reentered the Pilchuck River at Pilchuck River Mile 2. The water calculated and shown in **Table 13** to have been beneficially used for municipal water supply is a subset of the total volume diverted.

TRUST WATER RIGHT REACH DETERMINATION

For the Trust Water Rights Agreement, the combined rate and volume of water proposed to be placed in Trust for the primary and secondary reaches is shown in **Table 14**.

Table 14. City of Snohomish Trust Water Right Reaches

Reach	Reach Description	Instantaneous Rate (cfs)	Annual Volume (afy)
Primary	Pilchuck River Diversion Dam to Pilchuck River Mile 2	5.72	4,141
Secondary	Pilchuck River Mile 2 to Snohomish River and continuing to Puget Sound	5.72	2,113

The breakdown of the water proposed to be placed in Trust, by water right, is shown in **Table Nos. 15** and **16**.

Table 15. City of Snohomish Trust Water Right Breakout by Reach – S1-043282CL

Reach	Reach Description	Instantaneous Rate (cfs)	Annual Volume (afy)
Primary	Pilchuck River Diversion Dam to Pilchuck River Mile 2	2.17	1,571
Secondary	Pilchuck River Mile 2 to Snohomish River and continuing to Puget Sound	2.17	803

Table 16. City of Snohomish Trust Water Right Breakout by Reach – S1-00500C

Reach	Reach Description	Instantaneous Rate (cfs)	Annual Volume (afy)
Primary	Pilchuck River Diversion Dam to Pilchuck River Mile 2	3.55	2,570
Secondary	Pilchuck River Mile 2 to Snohomish River and continuing to Puget Sound	3.55	1,310

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Figures

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Figure 1
Pilchuck River Water System

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Legend

- City Limits
- UGA Boundary
- Retail Water Service Area
- Reservoir
- PRV
- Intertie
- Zone Valve

Water Main

- WTP Transmission Main

Pressure Zones

- 218 Zone
- 362 Zone
- 384 Zone
- 425 Zone
- 438 Zone
- 450 Zone
- NEPA Pallet
- WRIA

WRIA 5

WRIA 7

Pilchuck River Treatment Facility

Gravity Transmission Main

Pilchuck River Dam and Diversion

City of Snohomish

Bickford Ave. Intertie

King Charley's Intertie

Park Ave. Intertie

Terrace Ave. Intertie

NEPA Pallet Intertie

Bickford Ave. PRV (Inactive)

Reservoir No. 2 PRV

10th St. & Ave. A PRV

9th St. & Ave. A PRV

Historic Lower Pilchuck River Pumping Plant Location

Reservoir Overflow Returns to Pilchuck River

Lake Stevens

Snohomish River

Pilchuck River

Z:\BOTHELL\DATA\SNH\117-123\GIS\MAPS\FIGURE 1 HISTORIC USE MEMO.MXD BY: ADUNN PLOT DATE: JUN 7, 2019 COORDINATE SYSTEM: NAD 1983 HARN STATEPLANE WASHINGTON NORTH FIPS 4601 FEET

RH2 NORTH

1 inch = 3,333 feet

0 1,650 3,300 6,600 Feet

DRAWING IS FULL SCALE WHEN BAR MEASURES 2”

SNOHOMISH WASHINGTON

Figure 1
Pilchuck River Water System
City of Snohomish

Vicinity Map

Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors, and the GIS user community

This map is a graphic representation derived from the City of Snohomish Geographic Information System. It was designed and intended for City of Snohomish staff use only; it is not guaranteed to survey accuracy. This map is based on the best information available on the date shown on this map.

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Figure 2
City of Everett Water Purchased by the City of Snohomish, by Calendar Year

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Figure 2. City of Everett Water Purchased by the City of Snohomish, by Calendar Year

Year	Annual Volume (afy)
1952	16.3
1953	9.3
1954	0.0
1955	5.0
1956	24.4
1957	16.3
1958	10.1
1959	15.2
1960	8.2
1961	15.0

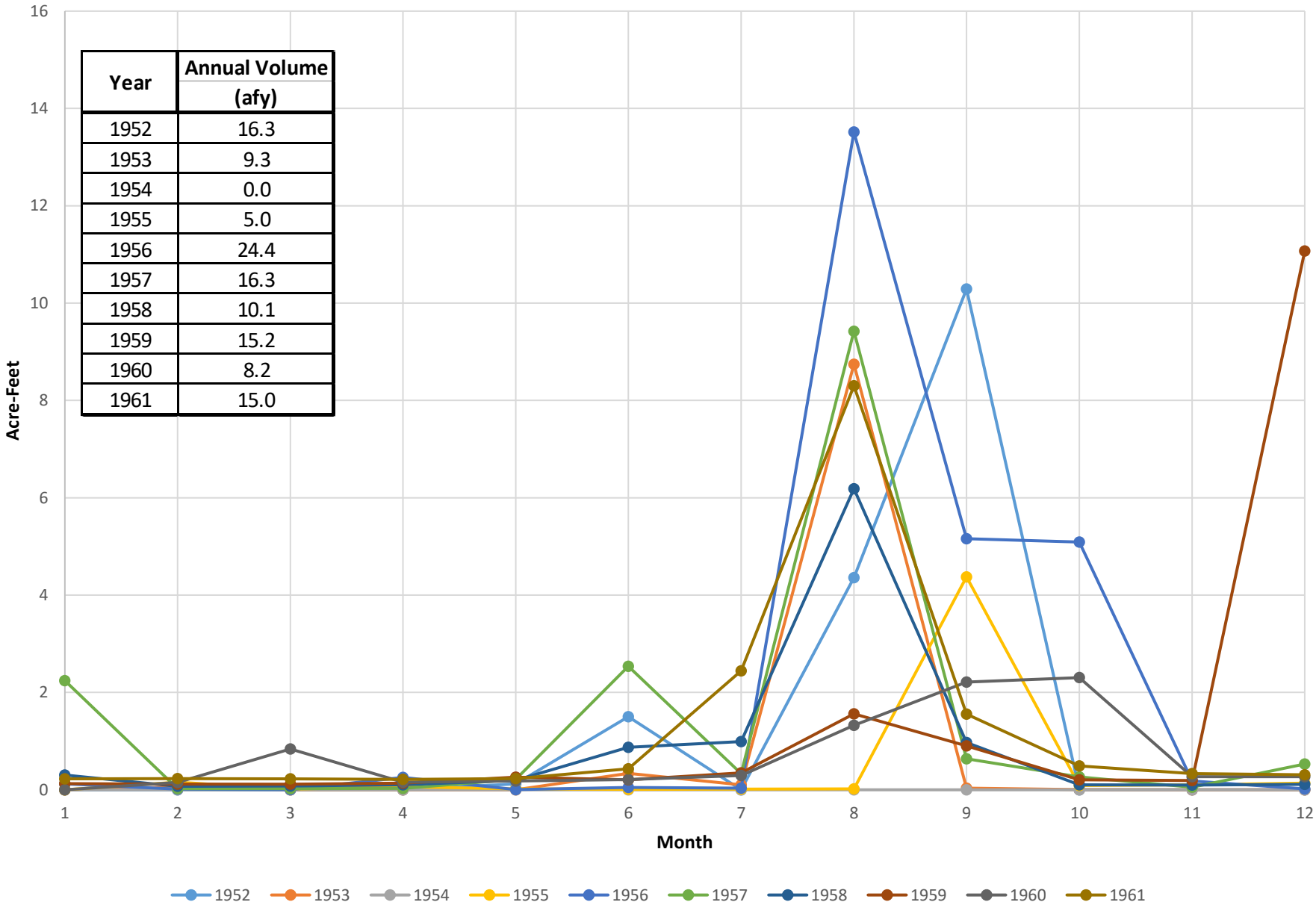

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Figure 3
Pilchuck River Near Granite Falls WA (USGS Gage 12152500) Daily Average Discharge Compared to Water Right Limit (see comments on PDF)

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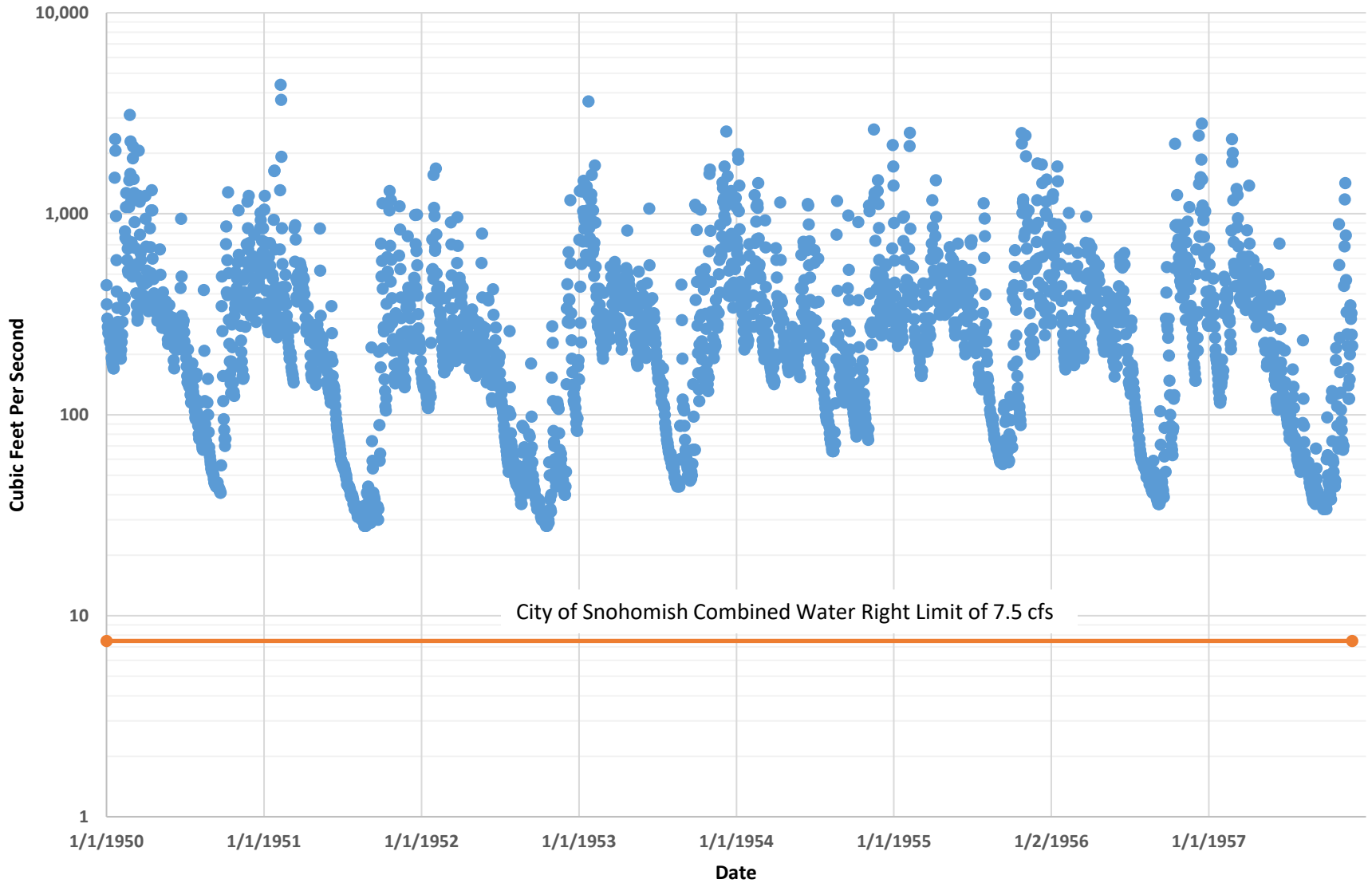
Figure 3. Pilchuck River near Granite Falls WA (USGS Gage 12152500) Daily Average Discharge Compared to Water Right Limit
January 1, 1950 through November 30, 1957



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Appendices

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Appendix A
City of Snohomish, Washington
June 21, 2016
Resolution 1347

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CITY OF SNOHOMISH
Snohomish, Washington

RESOLUTION 1347

A RESOLUTION OF THE CITY OF SNOHOMISH STATING A POLICY FOR THE FUTURE CLOSURE OF ITS WATER TREATMENT PLANT AND THE REMOVAL OF ITS WATER SUPPLY INTAKE AND DIVERSION DAM ON THE PILCHUCK RIVER CONDITIONED ON SEVERAL OUTCOMES INCLUDING THE INTENT TO PROTECT AND PRESERVE ITS WATER RIGHTS IN THE PILCHUCK RIVER SYSTEM

WHEREAS, the City of Snohomish (City) currently serves the northern half of the City with water purchased from the City of Everett (Everett) and supplied from Everett's No. 5 water transmission line running through the City north of Blackmans Lake; and

WHEREAS, the City supplies most of the southern half of the City with water supplied by the City's water treatment plant originally constructed in 1981, and located approximately 9 miles outside the City limits and outside the City's Urban Growth Area northeast of the City, just north of Lake Roesiger; and

WHEREAS, the City's supply for the treatment plant is provided through a diversion dam and water intake structure which was constructed beginning in 1932 on the Pilchuck River which is also several miles outside the City limits and the City's Urban Growth Boundary; and

WHEREAS, the City's water is conveyed through a 14.6 mile water transmission main originally constructed in 1912 and replaced in 1981. The main supplies a City reservoir located near the intersection of Pine Avenue and 13th Street; and

WHEREAS, the City's 14.6 mile water transmission main has a limited number of years of useful life and has the potential in the future to fail and cease to meet standards which could cause interruption of service and extraordinary costs to remedy; and

WHEREAS, the 14.6 mile water transmission main serves approximately 76 metered customers who are outside the City limits and outside of the City's Urban Growth boundary; and

WHEREAS, the City completed the *Water Treatment Plant and Water Supply Study* in May 2009 *(2009 Study)* which examined the City's existing Pilchuck River water treatment plant and alternative sources of water supply; and

WHEREAS, changes in projected population growth and cost assumptions have occurred since the 2009 Study was completed. Said changes may result in different cost projections for supply of water to customers. Some of the changes since the 2009 study include:

- The City of Everett's 2014 Amendment to the 2007 Water Comprehensive Plan which was approved by the State of Washington Department of Health on April 9, 2015. This amendment is to remain in effect until April 9, 2021;

- Despite improvements in water production and optimization at the City's water treatment plant over the last 7.5 years, the plant faces continued limits on total water production, especially during the winter months, due to the new Washington State Department of Health (DOH) regulations on filtered water turbidity; and

- Significant reduction of the City's population projections for 2025 (interpolated) and 2035 based on revised County planning targets for the 2015 to 2035 planning period; and

WHEREAS, the City Council deems it to be in the public interest to declare its policy and intent to protect and preserve its water rights in the Pilchuck River system to the greatest extent possible for current, near term, and long term water planning purposes and to forecast its plans for addressing the water treatment facilities and 14.7 mile water transmission pipeline; and

WHEREAS, the City Council held workshops on March 4, 2014, and November 4, 2014, regarding the City's water supply and water treatment options; and

WHEREAS, at the August 4, 2015, City Council meeting, the Council unanimously approved Resolution 1331 to explore other sources of water supply, including but not limited to City of Everett water, Snohomish County PUD water and ground water as alternatives to its Pilchuck River treatment plant source, and continue planning and take necessary steps to fully protect and preserve its water rights in the Pilchuck River, and to advance other related planning actions; and

WHEREAS, at the September 15, 2015, City Council meeting, the Council authorized the City Manager to enter into an agreement with FCS Group, Inc. for a Water Rate Update and Area Specific Charge Study; and

WHEREAS, on May 3, 2016, the City Council held a workshop to review the results on the water rate study and to consider the basic procedures for working with the Washington State Department of Ecology for "banking" of the City's water right;

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF SNOHOMISH, WASHINGTON AS FOLLOWS:

Section 1. City Customer Water Supply from the City of Everett.
The City of Snohomish will pursue measures that would result in a course of action to obtain all of its City water supply for customers within the City's Retail Water Service Area (both the north and southern zones) from the City of Everett.

Section 2. Transmission Main Customers.
The City will continue to explore options, including, but not necessarily limited to the decommissioning, rehabilitation, retrofitting, transfer, lease or sale of its existing 14.6 mile water transmission line which serves customers outside the City limits and outside the City's Urban Growth Area and which runs between its treatment plant and the City reservoirs. For the near-term, the City will pursue the action to supply the transmission main customers with water from Snohomish PUD and/or the City of Everett. Subject to available utility funding and budget restrictions, the City will endeavor to develop a program to reimburse a portion of the costs for

existing transmission main customers to directly connect at their cost to another water purveyor (typically Snohomish PUD) or to install private groundwater wells. The purpose and objective of a possible reimbursement program will be to remove all customers from the lower section of the transmission main in order to ultimately abandon this portion of the main before the end of its useful life.

Section 3. Treatment Facilities.
The City will pursue a course of action to decommission its existing intake, diversion dam and water treatment facilities. Subject to the additional actions set forth in Section 4 below, the objective will be to shut down operations at the water treatment plant and the withdrawal of water from the Pilchuck River in about 18 to 36 months. The intake and diversion dam removal schedule will be determined by environmental permitting constraints, the availability of federal and state grants, and additional funding by stakeholders.

Section 4. Additional Actions before Treatment Facilities Decommissioned.
The water treatment plant will not be decommissioned and the City will keep both the City of Snohomish and Everett sources of supply until the following are completed and approved to the satisfaction of the City Council:

1) **Meeting with Transmission Line Customers:** A notice and scheduling of a separate meeting with transmission line customers will be held in order to go over the details of the proposed plan and provide follow-up by City staff;

2) **Planning for Removal of the Existing Dam and Intake Structure on the Pilchuck River:** City staff will work with the Tribes, Washington Water Trust, State agencies and other stakeholders on a Memorandum of Understanding regarding financial grants, outside funding, payments or reimbursements to the City, and schedule for removal of the existing dam and intake structure. The objective is to facilitate, to the greatest extent possible, a significant amount of the decommissioning work to be paid for by federal and state grants, with local funds coming from non-profits, environmental groups, and other local and regional stakeholders who are interested in the Pilchuck River system;

3) **Water Right Banking Agreement:** Staff and legal counsel will work with the Washington State Department of Ecology on a draft water right banking agreement for Council review and consideration;

4) **Snohomish PUD Water Supply Agreement:** Staff and legal counsel will work with the Snohomish PUD on a wholesale supply agreement for supplying water to the transmission line customers and future conversion of some of the parcels to the PUD for direct service.

Section 5. Perfect and Protect the City's Water Rights.
Notwithstanding sections 1-4 above, the City will continue planning and taking necessary steps to fully protect and preserve its water rights in the Pilchuck River. Options include, but are not limited to, sale, lease or transfer to another agency or non-profit, trust water donation, transfer of the water intake and place of withdrawal downstream, or future expansion of the existing or a new plant.

Section 6. Coordination with Other Parties.
The City Council finds that examination of the foregoing matters, exploration of options and potential partners, and analysis of potential risk factors are complex and interrelated and will involve other parties. Accordingly, the Council directs staff to conduct outreach to other parties and stakeholders who could participate in building solutions to the City's long term water supply issues, including state agencies, cities, special purpose districts, Native American tribes, conservation and environmental similar organizations. The Council further directs staff to undertake the examination and exploration of the various alternatives and related considerations together so as to enable comprehensive review and analysis by the Council.

Section 7. Varying Cost of Service.
To the extent legally and financially feasible, the City's policy will be to promote a water supply to customers that is supported by rates and fees that reflect the varying cost of service and the need for future water utility improvements to the different areas served by the utility, both within and outside the City limits and outside the Urban Growth Area.

Section 8. Comprehensive Plans.
At the time of the next update to the City's Comprehensive Land Use Plan and Water Comprehensive Plan, this Resolution and any amendments thereto may be reviewed, revised and incorporated into and made a part thereof.

Section 9. Previous Resolutions Withdrawn.
All prior Resolutions or parts thereof which are inconsistent with this Resolution are hereby withdrawn and replaced by this Resolution.

PASSED by the City Council and **APPROVED** by the Mayor this 21 day of June, 2016.

CITY OF SNOHOMISH

By _____
Karen Guzak, Mayor

Attest:

By _____
Pat Adams, City Clerk

Approved as to form:

By _____
Grant K. Weed, City Attorney

Appendix B
Surface Water Claim – S1-043282CL

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STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
WATER RIGHT CLAIMS REGISTRATION

WATER RIGHT CLAIM

RECEIVED
DEPT. OF ECOLOGY
OCT 17 73 5491 0
CASH ___ OTHER ___ NONE /

1. NAME CITY OF SNOHOMISH

ADDRESS 1009 1st Street

Snohomish, Washington ZIP CODE 98290

2. SOURCE FROM WHICH THE RIGHT TO TAKE AND MAKE USE OF WATER IS CLAIMED: Surface
(SURFACE OR GROUND WATER)

W.R.I.A. 07
(LEAVE BLANK)

A. IF GROUND WATER, THE SOURCE IS ___

B. IF SURFACE WATER, THE SOURCE IS Pilchuck River

3. THE QUANTITIES OF WATER AND TIMES OF USE CLAIMED:

A. QUANTITY OF WATER CLAIMED 2.5 cfs. PRESENTLY USED 2.5 cfs.
(CUBIC FEET PER SECOND OR GALLONS PER MINUTE)

B. ANNUAL QUANTITY CLAIMED ___ PRESENTLY USED ___
(ACRE FEET PER YEAR)

C. IF FOR IRRIGATION, ACRES CLAIMED ___ PRESENTLY IRRIGATED ___

D. TIME(S) DURING EACH YEAR WHEN WATER IS USED: Continuous

4. DATE OF FIRST PUTTING WATER TO USE: MONTH ___ YEAR 1890

5. LOCATION OF THE POINT(S) OF DIVERSION/WITHDRAWAL: 1,976 FEET S20°15'45"W AND ___

FEET ___ FROM THE NE CORNER OF SECTION 9

BEING WITHIN NE 1/4 OF SECTION 9 T. 29 N., R. 7 (E[redacted].) W.M.

IF THIS IS WITHIN THE LIMITS OF A RECORDED PLATTED PROPERTY, LOT ___ BLOCK ___ OF

___
(GIVE NAME OF PLAT OR ADDITION)

6. LEGAL DESCRIPTION OF LANDS ON WHICH THE WATER IS USED:

Section 7,8,9,17,18,19 in Township 29 North, Range 7 East

Section 14,15,16,20,21,22,23,24,28,29,32 in Township 29 North, Range 6 East

Section 5,7,8,9,17,18,19 in Township 28 North, Range 6 East

Section 1,12,13,14,24 in Township 28 North, Range 5 East

COUNTY SNOHOMISH

7. PURPOSE(S) FOR WHICH WATER IS USED: Municipal

8. THE LEGAL DOCTRINE(S) UPON WHICH THE RIGHT OF CLAIM IS BASED: Appropriation

DO NOT USE THIS SPACE

THE FILING OF A STATEMENT OF CLAIM DOES NOT CONSTITUTE AN ADJUDICATION OF ANY CLAIM TO THE RIGHT TO USE OF WATERS AS BETWEEN THE WATER USE CLAIMANT AND THE STATE OR AS BETWEEN ONE OR MORE WATER USE CLAIMANTS AND ANOTHER OR OTHERS. THIS ACKNOWLEDGEMENT CONSTITUTES RECEIPT FOR THE FILING FEE.

DATE RETURNED THIS HAS BEEN ASSIGNED WATER RIGHT CLAIM REGISTRY NO.

[redacted]043282

John Biggs

DIRECTOR - DEPARTMENT OF ECOLOGY

I HEREBY SWEAR THAT THE ABOVE INFORMATION IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE AND BELIEF

X Richard J. Thompson, City Atty

DATE October 15, 1973

IF CLAIM FILED BY DESIGNATED REPRESENTATIVE, PRINT OR TYPE FULL NAME AND MAILING ADDRESS OF AGENT BELOW

Richard J. Thompson
City Attorney
108 Union Avenue
Snohomish, WA 98290

☐ ADDITIONAL INFORMATION RELATING TO WATER QUALITY AND/OR WELL CONSTRUCTION IS AVAILABLE

A FEE OF $[redacted] MUST ACCOMPANY THIS WATER RIGHT CLAIM

RETURN ALL THREE COPIES WITH CARBONS INTACT, ALONG WITH YOUR FEE TO DEPARTMENT OF ECOLOGY
WATER RIGHT CLAIMS REGISTRATION

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Appendix C
Cancelled Surface Water Permit 949

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10-1-67

PROGRESS SHEET

Name: City of Snohomish
Snohomish, Washington

Assigned to:
Date:

CANCELLED 12-5-67

APPLI. NO. 1853 PERMIT NO. 949 CERT. NO.

Appli. received Aug. 18, 1926 Initial Exam. fee received Aug. 18, 1926
Appli. returned for completion or correction _____ Received _____
Statement of add. exam. fee sent _____ Amount: _____
Additional examination fee received _____

Application amended _____
Application cancelled _____

O.K'd for publication by _____ Date _____
Notice of Water Right Application sent Aug. 21, 1926
Protests filed Puget Sound Power & Light, Oct. 16, 1926
Affidavit of Publication received and checked Sept. 16, 1926 (Oct. 9)
~~amended appl. mailed 3-13-67 Received + Checked~~

Report of Game: _____
Report of Fisheries _____

Temporary Permit issued _____ to _____

Examination made _____ by _____
O.K'd for Permit March 5, 1927 by R. K. Tiffany
Statement of filing and recording fee sent March 5, 1927 Amount $66.00
Filing and recording fee received July 27, 1927
Permit issued Aug. 2, 1927 No. 949

Notice of Beginning of Construction sent Ø Aug. 2, 1927
Time for " " extended to _____
Fee for ext. " $_____ to _____
Notice of " received _____

Notice of Completion of Construction sent _____
Time for " extended to Aug. 1, 1937, Jan. 1, 1944, Oct. 1, 1946
Notice filed _____

10-1-63
10-1-65
10-1-67
10-1-47
10-1-57
10-1-62

Notice of Complete Application of Water sent _____
Time for " " extended to _____
Notice filed _____

Proof of Appropriation sent _____; Filed _____
Statement of certificate fee sent _____ Received _____

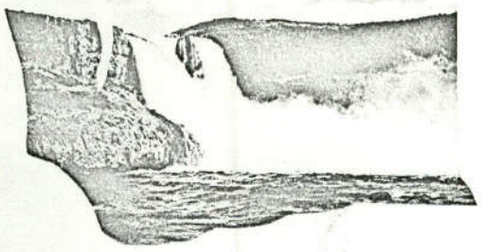
Final Certificate of Water Right Issued _____ NO. _____

O.K. Cancel
E.E.L
12-5-67

Washington State

DANIEL J. EVANS, GOVERNOR

H. MAURICE AHLQUIST, DIRECTOR



DEPARTMENT OF WATER RESOURCES

335 GENERAL ADMINISTRATION BUILDING
OLYMPIA 98501

PHONE 753-6186
AREA CODE 206

October 10, 1967

City of Snohomish
1009 First Street
Snohomish, Washington 98290

ATTENTION: Honorable Oscar J. Wirsching
Mayor

Dear Sir:

Re: Surface Water Permits Nos. 949 and 1887

Receipt is acknowledged of your letter dated October 4, 1967 in reference to the above-numbered permits. Please be advised the two-year extension under Surface Water Permit No. 1887 will be granted upon payment of the statutory extension fee of $10 made payable to the Department of Water Resources. Unfortunately, there are no provisions in the statutes for inclusion of your claim to vested right in the amount of 2.5 c.f.s., into subject permit.

In accordance with our discussions of recent date, Surface Water Permit No. 949 shall be cancelled on December 1, 1967.

Very truly yours,

DEPARTMENT OF WATER RESOURCES

EUGENE F. WALLACE
Division of Water Management

EFW:aj

This is to certify that I have examined the foregoing application and do hereby grant the same, subject to the following limitations and conditions. ~~If for irrigation this appropriation shall be subject to such reasonable rotation system as may be ordered by the State Supervisor of Hydraulics~~

This Permit is subject to all rights legally established by appropriation for beneficial use prior to August 18th, 1926. It is specifically subject to the rights of the Puget Sound Power & Light Company and may be enjoyed only when and to the extent that it does not interfere with diversion for beneficial use by that company.

The amount of water appropriated shall be limited to the amount which can be applied to beneficial use and not to exceed -------30---------- *cubic feet per second, or its equivalent in case of rotation.*

The priority date of this permit is August 18th, 1926.

Actual construction work shall begin on or before January 1st, 1928 *and shall thereafter be prosecuted with reasonable diligence and be completed on or before* Aug. 1st, 1930 Extended to 8-1-1937 Extended to 1-1-1944 Extended to 10-1-46 Extended to 10-1-47 Ext. to 10-1-5- Ext. 10-1-62 10-1-63 65, 10-1-67

Complete application of the water to the proposed use shall be made on or before Aug. 1st, 1931

Given under my hand and the seal of this office at Olympia, Washington, this 2 nd *day of* August, *19* 27.

Conditions Accepted:

Permittee.

R. K. Tiffany
State Supervisor of Hydraulics.

Application No. 1853

Permit No. 949

PERMIT

To Appropriate Public Waters of the State of Washington

Filed by City of Snohomish *County of* Snohomish

This instrument was first received in the office of the State Supervisor of Hydraulics, Olympia, Washington, on the 18th *day of* August, *19* 26., *at* 8:25 *o'clock* A. *M.*

Approved August 2nd., 1927

R. K. Tiffany
State Supervisor of Hydraulics.

Before your certificate of water right is issued it will be necessary for you to file with the State Supervisor of Hydraulics a copy of each of the following reports:

1st. Progress reports (in case temporary permit is issued).
2nd. Affidavit of publication of notice of water right application.
3rd. Notice of beginning of construction.
4th. Notice of prosecution of work with diligence.
5th. Notice of completion of construction.
6th. Notice of application of water to a beneficial use.
7th. Proof of appropriation of water.

Upon a satisfactory showing that the appropriation has been perfected as provided by statute the State Supervisor of Hydraulics will issue a water right certificate.

(Blanks will be furnished by the office of State Supervisor of Hydraulics.)

STATE OF WASHINGTON

DEPARTMENT OF CONSERVATION AND DEVELOPMENT

BEFORE R. K. TIFFANY, SUPERVISOR OF HYDRAULICS

IN THE MATTER OF APPLICATION NO. 1853)
of the CITY OF SNOHOMISH to appropriate)
the waters of PILCHUCK RIVER in Sno-)
homish County, Washington.)

FINDINGS OF FACT

The City of Snohomish, by its engineer, Willis T. Batcheller, on August 18, 1926, filed application to appropriate thirty (30) cubic feet per second of water from the Pilchuck River, of which approximately twenty-one (21) cubic feet per second was proposed to be used for power and nine (9) cubic feet per second for municipal water supply. The twenty-one cubic feet per second would be returned to the stream a short distance below the point of diversion in Section 9, Township 29 North, Range 7 East, which is above the diversion point of the power plant owned by the Puget Sound Power & Light Company.

The Puget Sound Power & Light Company, on October 16, 1926, filed protest against the issuance of permit to the City of Snohomish representing that this diversion or any diversion in excess of two and one-half ($2\frac{1}{2}$) cubic feet per second which is now enjoyed by the City of Snohomish, would be detrimental to the operation of its power plant and would prevent its operation for several months in each year.

The City of Snohomish, in an answer to the above-mentioned protest filed October 27, 1926, maintains that the plant of the Puget Sound Power & Light Company upon which its protest is based, is not operated and can not be economically operated as a unit of the company's system and represents that the taking of the additional water now desired by the City will in no way injure the protesting company.

The Supervisor has considered fully the application, protest and answer , and has made examination of the proposed appropriation, and as a result has arrived at the following

FINDINGS OF FACT AND DECISION

1. That there is public water available for appropriation from the stream.

2. That the Puget Sound Power & Light Company has a prior right of diversion of the amount heretofore actually appropriated for its Granite Falls power plant.

3. That the continued operation of the Granite Falls power plant is problematical and that the use of water as desired under the application of the City of Snohomish is probably a superior use to that of the Puget Sound Power & Light Company.

4. That permit will issue for appropriation of the water as requested by the City of Snohomish subject, however, to the prior rights of the Puget Sound Power & Light Company, and the diversion under the permit may be enjoyed only when it does not interfere with diversion for beneficial use by the Power Company.

Dated at Olympia, Washington, this 5th day of March, 1927.

R. H. Thomas

State Supervisor of Hydraulics

Form 10

STATE OF WASHINGTON
DEPARTMENT OF CONSERVATION AND DEVELOPMENT
Division of Hydraulics

Application No. 1853 *Permit No.* 949

APPLICATION FOR A PERMIT
To Appropriate Public Waters of the State of Washington

CANCELLED 12-5-67

I, CITY OF SNOHOMISH
(Name of applicant)

of SNOHOMISH, *County of* SNOHOMISH,
(Postoffice)

State of WASHINGTON, *do hereby make application for a permit to appropriate the following described public waters of the State of Washington subject to existing rights:*

If the applicant is a corporation, give date and place of incorporation 1890

1. *The source of the proposed appropriation is* Pilchuck River
(Name of stream)

tributary of Snohomish River (Allowed 21.0 c.f.s. for Power & 9.0 c.f.s. for Municipal Supply)

2. *The amount of water which the applicant intends to apply to beneficial use is* 30 - *cubic feet per second.*

3. *The use to to which the water is to be applied is* municipal water supply and power for pumping same
(Irrigation, power, mining, manufacturing, domestic supplies, etc.)

4. *Time during which water will be required each year* twelve months.

5. *The approximate point of diversion is located* S.20° - 15' - 45" W. of the N.E.
(Give distance and bearing to section corner)

Corner of Section 9, Township 29 N., R. 7 E.,W.M. 1976 feet

being within the N.E.¼ of S. E. ¼ of N. E. ¼ *of Sec.* 9, *Tp.* 29 N., *R.* 7 E. *W. M.,*
(Give smallest legal subdivision) (No. N. or S.) (No. E. or W.)

in the county of Snohomish

6. *The* pipe line *to be* 16 *miles in length, terminating*
(Main ditch, canal, or pipe line)

in the Sec. 9, 17, 18, 19 *of Sec.*, *Tp.* 29 N., *R.* 7 E. *W. M.,*
(Smallest legal subdivision) (No. N. or S.) (No. E. or W.)
and Sec. 24, 23, 14, 13, 22, 21, 29, 32, Tp. 29 N., R. 6 E. W.M.
the proposed location being shown on the accompanying map. and Sec. 5, 7, Tp. 28 N., R. 6 E. W.M.

7. *The name of the ditch, canal or other works is*
Snohomish gravity supply line No. 2

8. *(a) Estimated cost of development necessary to utilize fully the appropriation herein asked for*
$ 250,000.00

(b) Do you own the required right-of-way?

DESCRIPTION OF WORKS.

DIVERSION WORKS—

9. *(a) Height of diversion dam* 25 *feet; length on top* 120 *feet; length at bottom* 70 *feet; material to be used and character of construction*
cyclopean masonry, arch dam.
(Loose rock, concrete, masonry, rock and brush, timber crib, etc., wasteway over or around dam)

(b) Description of headgate iron gate in concrete setting
(Timber, concrete, etc.; number and size of openings)

*When storage works are contemplated a storage permit must be filed in addition to the above. These forms can be secured, together with instructions, by addressing the State Supervisor of Hydraulics, Olympia, Washington.

CANAL SYSTEM—

10. (a) *Give approximate dimensions at each point of canal where materially changed in size, stating miles from headgate. At headgate: Width on top (at water line)* ..... *feet; width on bottom* ..... *feet; depth of water* ..... *feet; grade* ..... *feet fall per one thousand feet.*

(b) *At* ..... *miles from headgate: Width on top (at water line)* ..... *feet; width on bottom* ..... *feet; depth of water* ..... *feet; grade* ..... *feet; depth of water* ..... *feet; grade* ..... *feet fall per one thousand feet.*

Initial pipe line
26,000-feet of 20- inch pipe, 20,000- feet of 18- inch pipe,
35,000-feet of 16 - inch pipe.

SUPPLY THE FOLLOWING INFORMATION ACCORDING TO USE PROPOSED:

IRRIGATION—

11. *The land to be irrigated has a total area of* ..... *acres, described as follows:* .....
(Give legal subdivision by section, township and range)

(If more space is required, attach separate sheet)

12. *Does the above described land border on the stream from which you desire to appropriate water?*

DUTY OF WATER—

Character of soil: Depth ....., *sandy* ....., *volcanic ash* ....., *loam* ....., *clay* ....., *etc.* .....; *Annual precipitation* ..... *inches; precipitation during growing season* ..... *inches; Depth of irrigation water required* .....
(Expressed in feet or inches)

POWER, MINING, MANUFACTURING, OR TRANSPORTATION PURPOSES— 12 H.p. (Amended 1-23-39)

13. (a) *Total amount of power to be developed* ~~60~~ *H. P.*
(Theoretical horsepower)

(b) *Total fall to be utilized* ~~25~~ 5 ft. (Amended 1-23-39. See letter) *feet.*
(Head)

(c) *The nature of the works by means of which the power is to be developed*
Hydraulic turbine direct connected to centrifugal pump

(d) *Such works to be located in* N. E. ¼ of S. E. ¼ of N. E. ¼ *of Sec.* 9,
(Legal subdivision)

Tp. 29 N. (No. N. or S.), *R.* 7 E. (No. E. or W.) *W. M.*

(e) *To what stream is the water to be returned* Pilchuck River

(f) *Locate point of return* at point of diversion below dam *Sec.* .....,

Tp. ..... (No. N. or S.), *R.* ..... (No. E. or W.) *W. M.*

(g) *The use to which power is to be applied is* for pumping municipal water supply

MUNICIPAL SUPPLY—

14. *To supply the city of* SNOHOMISH (Name),

Snohomish *County, having a present population of* 2,000 .

and an estimated population of 6,000 *in 19*50.

15. *Estimated present requirement* 2.5 second feet.

16. *Estimated future requirement* 15 second feet

17. *Construction work will begin on or before* July 1, 1927

18. *Construction work will be completed on or before* July 1, 1930 (For first unit)

Duplicate maps of the proposed ditch or other works, prepared in accordance with the rules of the State Supervisor of Hydraulics accompany this application.

CITY OF SNOHOMISH — E. H. LINCOLN, Mayor (Name of applicant)

C. H. BAKEMAN, Chairman Water Committee

By Willis T. Batcheller, Engineer

Signed in the presence of us as witnesses:

(1) J. Grant (Name), #1 W. Highland Drive (Address of witness)

(2) E. A. Olsen (Name), 929 Dexter Horton Bldg. (Address of witness)

Remarks:

STATE OF WASHINGTON, } ss.
COUNTY OF THURSTON. }

This is to certify that I have examined the foregoing application together with the accompanying maps and data, and return the same for correction or completion, as follows:

In order to retain its priority, this application must be returned to the State Supervisor of Hydraulics, with corrections, on or before , *19* .

WITNESS my hand this *day of* , *19* .

State Supervisor of Hydraulics.

Appendix D
Surface Water Certificate – S1-00500C

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STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

CERTIFICATE OF WATER RIGHT

[X] *Surface Water* (Issued in accordance with the provisions of Chapter 117, Laws of Washington for 1917, and amendments thereto, and the rules and regulations of the Department of Ecology.)

[ ] *Ground Water* (Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the Department of Ecology.)

CERTIFICATE NUMBER	PERMIT NUMBER	APPLICATION NUMBER	PRIORITY DATE
S1-00500C	1887	3571	December 9, 1931

NAME

CITY OF SNOHOMISH

ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
1009 1st Street	Snohomish	Washington	98290

This is to certify that the herein named applicant has made proof to the satisfaction of the Department of Ecology of a right to the use of the public waters of the State of Washington as herein defined, and under and specifically subject to the provisions contained in the Permit issued by the Department of Ecology, and that said right to the use of said waters has been perfected in accordance with the laws of the State of Washington, and is hereby confirmed by the Department of Ecology and entered of record as shown.

PUBLIC WATER TO BE APPROPRIATED

SOURCE

Pilchuck River

TRIBUTARY OF (IF SURFACE WATERS)

Snohomish River

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE-FEET PER YEAR
5.0 cubic feet per second		3000 acre-feet per year

QUANTITY, TYPE OF USE, PERIOD OF USE

Municipal Supply - continuous use

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION/WITHDRAWAL

1,976 feet south 20°15'45" west from northeast corner of Section 9 being within NE¼ of Section 9

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, (E. OR W.) W.M.	W.R.I.A.	COUNTY
NE¼SE¼NE¼	9	29	7E		Snohomish

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)

LEGAL DESCRIPTION OF PROPERTY WATER TO BE USED ON

Area served by the City of Snohomish.

Nothing in this certificate shall be construed as excusing the certificate holder from compliance with any applicable federal, state, or local statutes, ordinances, or regulations including those administered by local agencies under the Shoreline Management Act of 1971.

The entire opening of the diversion intake shall be tightly screened at all times with wire mesh having openings with dimensions not greater than 0.125 (1/8) inch. Water approach velocity to the screen shall be less than 1 foot per second and approaching 0.5 foot per second, as measured one foot in front of the screen.

The right to the use of the water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in RCW 90.03.380, 90.03.390, and 90.44.020.

This certificate of water right is specifically subject to relinquishment for nonuse of water as provided in RCW 90.14.180.

Given under my hand and the seal of this office at Olympia, Washington, this 28th *day of* February, *19* 74.

JOHN A. BIGGS, *Director*
Department of Ecology

by R. Jerry Collen
R. JERRY COLLEN, Assistant Director

ENGINEERING DATA
OK Hewitt

FOR COUNTY USE ONLY

S. F. No. 7355—OS.

Proof of Appropriation of Water

Application No. 3571 Permit No. 1887

1. Name of Permittee CITY OF SNOHOMISH
2. Postoffice address (include zip code) 1009 1st Street, Snohomish, Washington 98290
3. Actual source of appropriation 1,976 feet South 20°15'45"W from NE corner of Section 9 being within NE 1/4 of Section 9, T. 29 N. Range 7 E.W.M.
4. For what purpose or purposes is water used? Municipal
5. Give date of beginning of construction of hydraulic system: 1934
6. Give date of completion of construction of this work, including water distribution system 1935
7. Give date when water was completely applied to permitted use 1935
8. If used for irrigation:

   Give number of acres described in permit

   Give number of acres actually irrigated
9. If used for power: HP actually developed
10. LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS USED:

Sec. 7,8,9,17,18,19 in Township ~~29~~ North, Range 7 East
Section 14,15,16,20,21,~~22,23~~,24,28,29,32 in Township 29 North, Range 6 East
Section 5,7,8,9,~~17,18~~,19 in Township 28 North, Range 6 East
Section 1,~~12,~~13,14,24 in Township 28 North, Range 5 East

AREA SERVED BY THE City OF SNOHOMISH

11. If source is a well, is an access port or airline now installed?
12. During what months is water used? Continuously
13. Does map filed with your application show correctly the location of well(s) or point(s) of diversion for withdrawal of water, and area of land where water is used? Yes
14. If the dimensions, location, or type of hydraulic system and structure do not correspond to those described in your permit, state what changes have been made, giving dimensions, etc. Yes
15. Actual measured discharge or diversion of permanent system: 5 (gpm or cfs).

(Sign certification on reverse side)

OK FOR CERT, ISSUE FOR 5 CFS, 3000 A/F USE LEGAL ABOVE 2/13/74

STATE OF WASHINGTON,
County of SNOHOMISH } ss.

I, RICHARD J. THOMPSON, being first duly sworn, depose and say that I have read the above and foregoing proof of appropriation; that I know the contents thereof; and that the facts therein stated are true.

IN WITNESS WHEREOF, I have hereunto set my hand this 15th day of October, 1973.

Richard J. Thompson

Subscribed and sworn to before me this 15th day of October, 1973.

Edith E. Watson
Notary Public.
in and for the State of Washington,
residing at Snohomish.

PERMIT

This is to certify that I have examined the foregoing application and do hereby grant the same, subject to the following limitations and conditions: If for irrigation, this appropriation shall be subject to such reasonable rotation system as may be ordered by the State Supervisor of Hydraulics.

This permit is subject to all rights legally established by appropriation for beneficial use prior to August 18th, 1926. It is specifically subject to the rights of the Puget Sound Power and Light Company and may be enjoyed only when and to the extent that it does not interfere with diversion for beneficial use by that company.

The amount of water appropriated shall be limited to the amount which can be applied to beneficial use and not to exceed ------16.0------ *cubic feet per second, or its equivalent in case of rotation.*

The priority date of this permit is December 9th, 1931.

Actual construction work shall begin on or before May 15th, 1933

and shall thereafter be prosecuted with reasonable diligence and be completed on or before May 15th, 1937 Extended to 1-1-44 (same project as P.949) Ext. to 10-1-46, 10-1-63 10-1-67 10-1-70

Complete application of the water to the proposed use shall be made on or before May 15th, 1942

Given under my hand and the seal of this office at Olympia, Washington, this 19th *day of* May, *19* 32

Chas J Barthelet

State Supervisor of Hydraulics.

Application No. 3571

Permit No. 1887

PERMIT

To Appropriate Public Waters of the State of Washington

Filed by City of Snohomish.

County of Snohomish

This instrument was first received in the office of the State Supervisor of Hydraulics, Olympia, Washington, on the 9th *day of* December, *19* 31, *at* 1:30 *o'clock* P. *M.*

Approved May 19th, 1932

Recorded in Book No. 8 *of Permits, on Page* 1887.

CHAS. J. BARTHOLET

State Supervisor of Hydraulics.

JAY THOMAS, PUBLIC PRINTER

Before your certificate of water right is issued it will be necessary for you to file with the State Supervisor of Hydraulics a copy of each of the following reports:

1st. Progress reports (in case temporary permit is issued).
2nd. Affidavit of publication of notice of water right application.
3rd. Notice of beginning of construction.
4th. Notice of prosecution of work with diligence.
5th. Notice of completion of construction.
6th. Notice of application of water to a beneficial use.
7th. Proof of appropriation of water.

Upon a satisfactory showing that the appropriation has been perfected as provided by statute the State Supervisor of Hydraulics will issue a water right certificate.

(Blanks will be furnished by the office of State Supervisor of Hydraulics)

MUNICIPAL SUPPLY—

16. *To supply the city of* SNOHOMISH (Name), SNOHOMISH *County, having a present population of* 3000 *and an estimated population of* 6000 in city limits *in 19* 50. also now serving 2000 suburban population which is rapidly increasing

(*a*) *Estimated present requirement* 3 second feet 3 second feet

(*b*) *Estimated future requirement* 30 second feet

17. *Construction work will begin on or before* Dam is completed. Pipeline also under construction under a ten year plan

18. *Construction work will be completed on or before* 1942

Duplicate maps of the proposed ditch or other works, prepared in accordance with the rules of the State Supervisor of Hydraulics accompany this application.

City of Snohomish
(Name of applicant)

By C. J. Bakeman
Its Mayor.

Attest: E. Whittemore
City Clerk

Signed in the presence of us as witnesses:

(1) ..... (Name), Snohomish, Washington (Address of witness)

(2) ..... (Name), Snohomish, Washington (Address of witness)

Remarks: August 18th,1926, above applicant filed application for 21 c.f.s. for power and 9 c.f.s. for municipal supply. The 16 c.f.s hereby applied for is in addition to the 9 c.f.s. applied for Aug.8th,1926, for municipal supply. The 5 c.f.s herein applied for for power is sufficient for present needs and the 21 c.f.s. applied for by the former application will now not be used for power development. It is the purpose of the city ~~to~~ under new development plan to furnish water supply to suburban communities particularly along its gravity pipeline, which are being developed and settling very fast.

STATE OF WASHINGTON, } ss.
COUNTY OF THURSTON.

This is to certify that I have examined the foregoing application together with the accompanying maps and data, and return the same for correction or completion, as follows: .....

In order to retain its priority, this application must be returned to the State Supervisor of Hydraulics, with corrections, on or before ....., *19*.....

WITNESS my hand this .....*day of* ....., *19*.....

.....
State Supervisor of Hydraulics.

Form 10

STATE OF WASHINGTON
DEPARTMENT OF CONSERVATION AND DEVELOPMENT
Division of Hydraulics

RECEIVED DEC 9 1931 DIVISION OF HYDRAULICS

APPLICATION FOR A PERMIT
To Appropriate Public Waters of the State of Washington

Application No. 3571 *Permit No.* 1887

I, CITY OF SNOHOMISH (Name of applicant),

of SNOHOMISH (Postoffice), *County of* SNOHOMISH,

State of WASHINGTON, *do hereby make application for a permit to appropriate the following described public waters of the State of Washington subject to existing rights:*

If the applicant is a corporation, give date and place of incorporation 1890

1. *The source of the proposed appropriation is* Pilchuck River (Name of stream)
tributary of Snohomish River. (16.0 c.f.s. allowed)

2. *The amount of water which the applicant intends to apply to beneficial use is* 21 *cubic feet per second.* (5 c.f.s for power, and) 16 c.f.s. additional for municipal supply.

3. *The use to which the water is to be applied is* municipal water supply and (Irrigation, power, mining, manufacturing, domestic supplies, etc.)
power for operating gates and lighting

4. *Time during which water will be required each year* twelve months.

5. *The approximate point of diversion is located* S. 20° 15' 45" W. of the N.E. (Give distance and bearing to section corner)
corner of Section 9, Township 29 N., R. 7 E., W.M. 1976 feet,

being within the N.E.¼ of SE¼ of NE¼ (Give smallest legal subdivision) *of Sec.* 9, *Tp.* 29 N. *N., R.* 7 E. *W. M.,* (No. E. or W.)
in the county of Snohomish.

6. *The* pipe line (Main ditch, canal, or pipe line) *to be* 16 ~~ft.~~ or *miles in length, terminating in the* Sec. 9, 17, 18, 19 (Smallest legal subdivision) *of Sec.* , *Tp.* 29 *N. R.,* 7 E. *W. M.,*
and Sec. 24, 23, 14, 15, 22, 21, 29, 32 Tp. 29 N.R. 6 (No. E. or W.) E. W. M.
the proposed location being shown on the accompanying map. and Sec. 5, 7 Tp. 28 N., R. 6 E. W. M.

7. *The name of the ditch, canal or other works is*

8. *Estimated cost of development necessary to utilize fully the appropriation herein asked for*
$ 250 000.00

9. *Does the stream from which you wish to appropriate water flow through the tract of land on which the water is to be used?* Partly

10. *Do you own the required right-of-way for the proposed works?* Yes

DESCRIPTION OF WORKS.

DIVERSION WORKS—

11. (a) *Height of diversion dam* 18 *feet; length on top* 100 *feet; length at bottom* 70 *feet; material to be used and character of construction*
Concrete and steel
(Loose rock, concrete, masonry, rock and brush, timber crib, etc., wasteway over or around dam)

(b) *Description of headgate* 2 openings- one 24 inches for pipeline
(Timber, concrete, etc.; number and size of openings)
and one 3 X 4 feet for gate

When storage works are contemplated a storage permit must be filed in addition to the above. These forms can be secured, together with instructions, by addressing the State Supervisor of Hydraulics, Olympia, Washington.

CANAL SYSTEM—

12. (*a*) *Give approximate dimensions at each point of canal where materially changed in size, stating miles from headgate. At headgate: Width on top (at water line)*____ *feet; width on bottom*____ *feet; depth of water*____ *feet; grade*____ *feet fall per one thousand feet.*

(*b*) *At*____ *miles from headgate: Width on top (at water line)*____ *feet; width on bottom*____ *feet; depth of water*____ *feet; grade*____ *feet fall per one thousand feet.*

Initial pipe line
26,000 feet of 24-inch pipe, 20,000 feet of 18-inch pipe
35,000 feet of 16-inch pipe.

SUPPLY THE FOLLOWING INFORMATION ACCORDING TO USE PROPOSED:

IRRIGATION—

13. *The land to be irrigated has a total area of*____ *acres, described as follows:*____
(Give legal subdivision by section, township and range)

(If more space is required, attach separate sheet)

14. *Give the legal description of land when water is to be used for purposes other than irrigation, power and municipal supply*____ (Legal subdivisions) *Sec.*____, *Tp.*____ *N., Rge.*____ (E. or W.) *W. M.*

(*a*) *To what stream is water returned*____

(*b*) *Locate the point of return*____ (Smallest legal subdivision of section) *Sec.*____, *Tp.*____ *N., Rge.*____ (E. or W.) *W. M.*

POWER—

15. (*a*) *Total amount of power to be developed* 14 5 (Theoretical horsepower) *H. P.*

(*b*) *Total fall to be utilized* 25 (Head) *feet.*

(*c*) *The nature of the works by means of which the power is to be developed*____
Hydraulic turbine direct connected to generator

(*d*) *Such works to be located in* NE¼ of SE¼ of NE¼ (Legal subdivision) *of Sec.* 9, *Tp.* 29 *N., Rge.* 7 E. (No. E. or W.) *W. M.*

(*e*) *To what stream is the water to be returned* Pilchuck River

(*f*) *Locate point of return* at point of diversion below dam *Sec.*____, *Tp.* 29 *N., Rge.* 7 (No. E. or W.) E. *W. M.*

(*g*) *The use to which power is to be applied is* ~~for pumping municipal water sup-~~ for power to operate gates and light dam and building ply.

10-1-71
CC

PROGRESS SHEET

Name: City of Snohomish
Snohomish, Washington

Assigned to:

Date:

APPLI. NO. 3571 PERMIT NO. 1887 CERT. NO. S100500C

Appli. received 12-9-31 Initial Exam. fee received 12-9-31
Appli. returned for completion or correction _____ Received _____
Statement of add. exam. fee sent 12-11-31 Amount: 18.00
Additional examination fee received 12-17-31

Application amended _____
Application cancelled _____

O.K.'d for publication by C.J.B. Date 12-17-31
Notice of Water Right Application sent 1-7-32
Protests filed _____
Affidavit of Publication received and checked 2-8-32

Report of Game: Approved _____ Proviso _____ Protest _____
Report of Fish: Approved _____ Proviso _____ Protest _____

Temporary Permit issued _____ to _____

Examination made _____ by _____
Statement of filing and recording fee sent 3-14-32 Amount $32.00
Filing and recording fee received _____
O.K.'d for Permit C.J.B. by March 12, 1932
Permit issued 5-19-32 No. 1887

Notice of Beginning of Construction sent 5-24-32
Fee for Extension " " " $_____ to _____
Notice of Beginning " " received 10-33

Notice of Completion of Construction sent _____
Time for " extended to 5-15-34 (1-1-44same project as 949)10-1-46 10-1-57 10-1-62 10-1-63 10-1-65 10-1-67 10-1-68 10-1-69 10-1-70 10-1-71
Notice of " filed _____

Notice of Complete Application of Water sent _____
Time for " " extended to _____
Notice filed _____

Proof of Appropriation sent _____ Filed 2/7/74
Statement of Certificate fee sent _____ Received 2/7/74

Certificate of Water Right issued S100500C No. 2-28-74

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Appendix E
Metsker Maps
1960
Snohomish County

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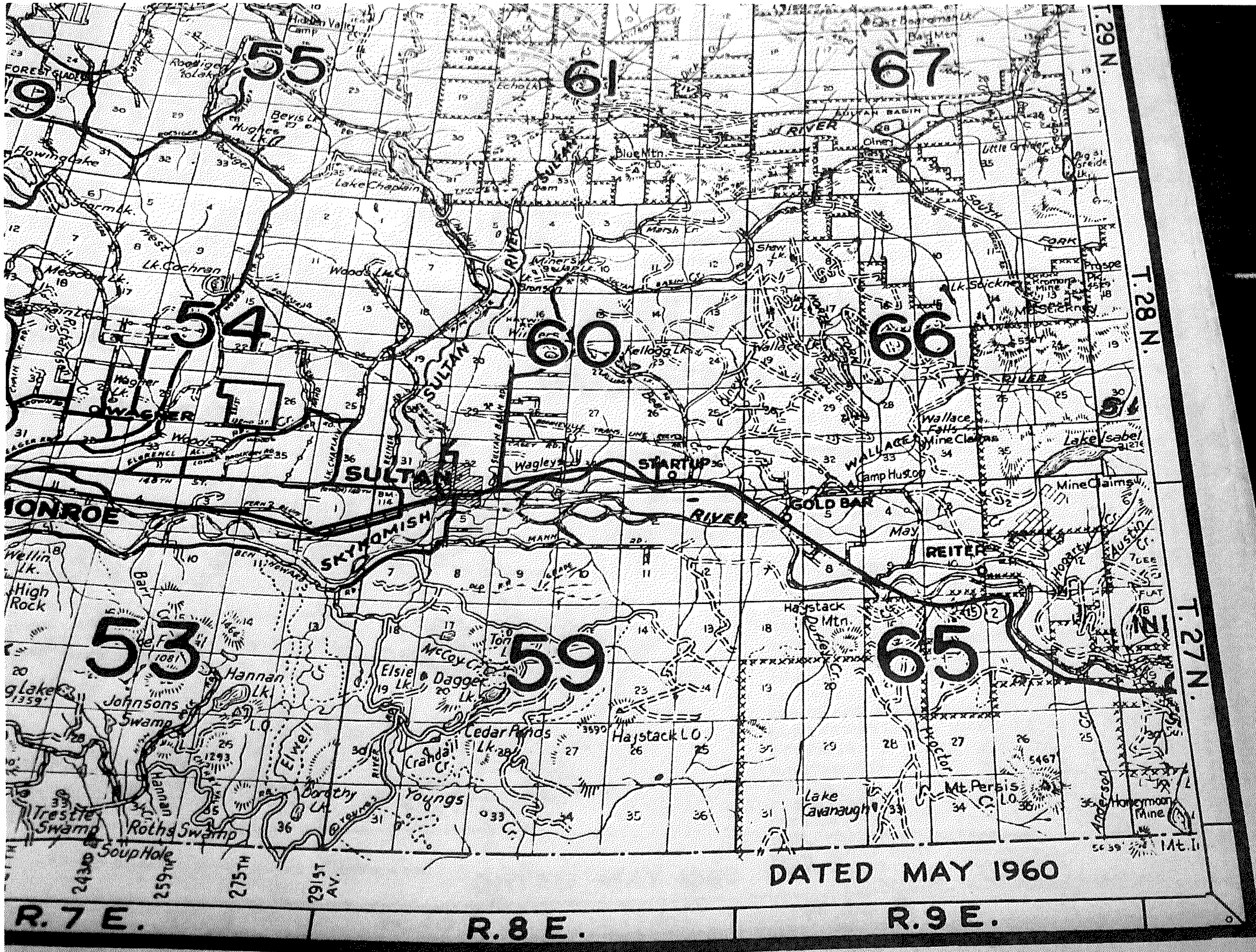

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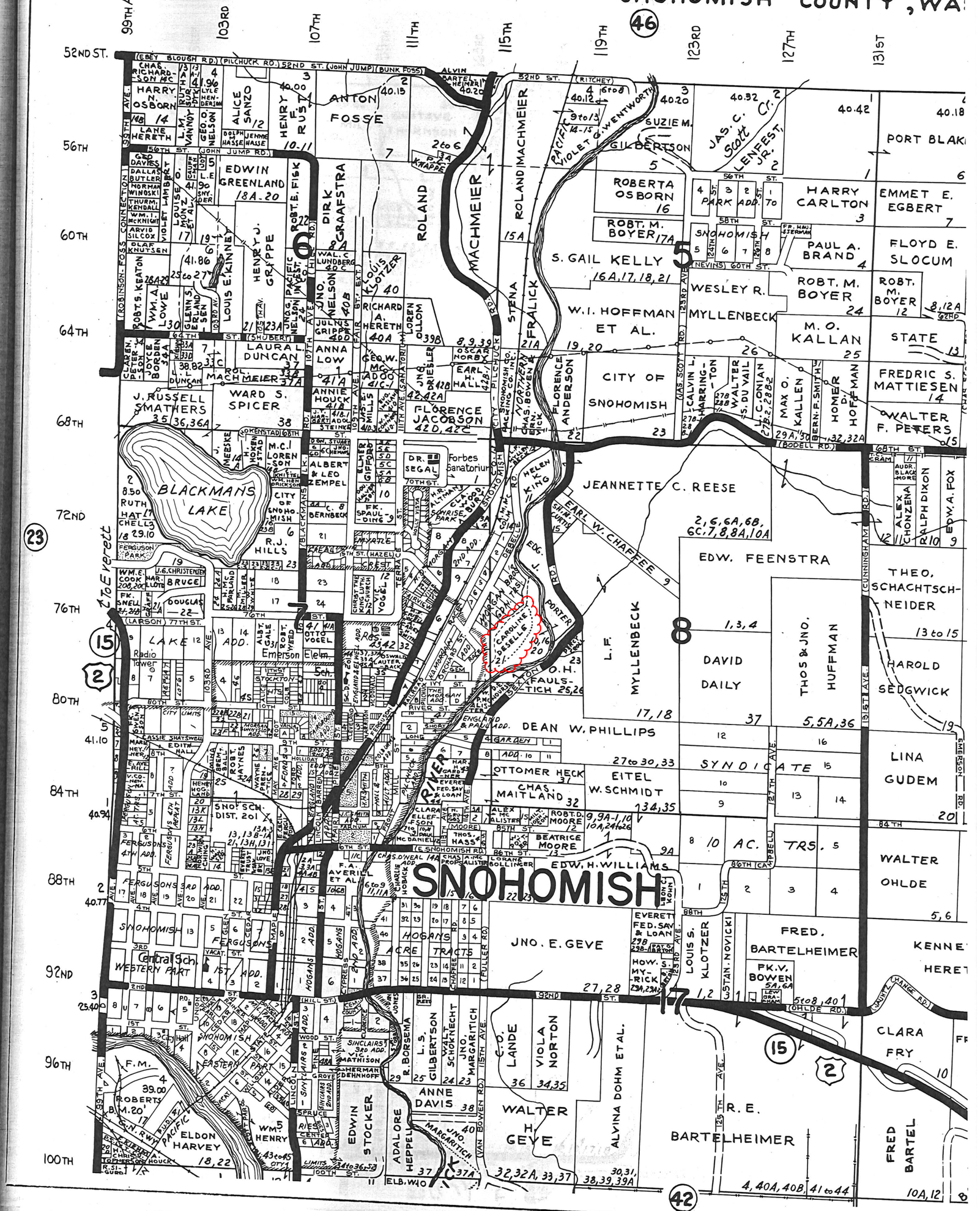
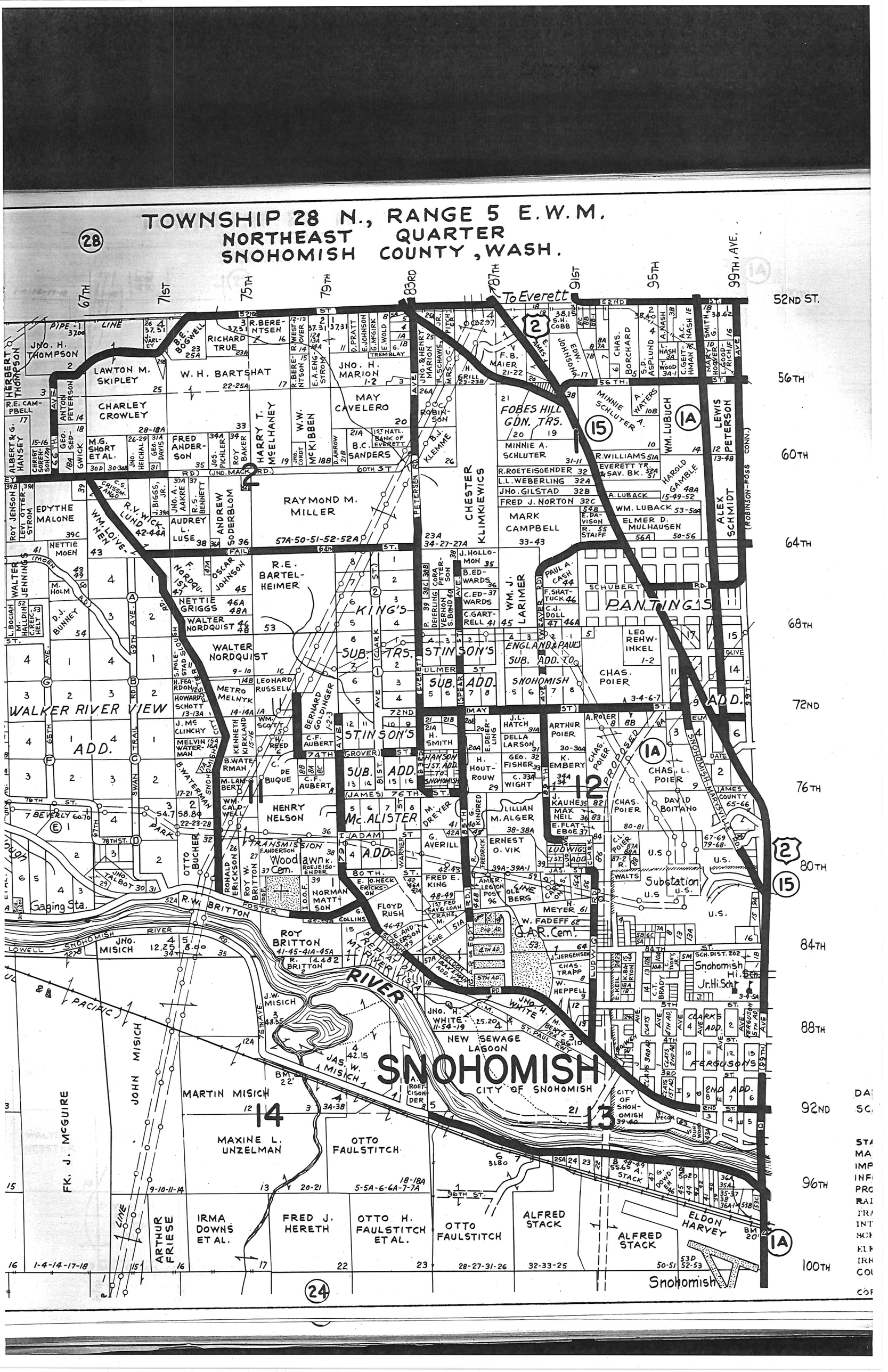
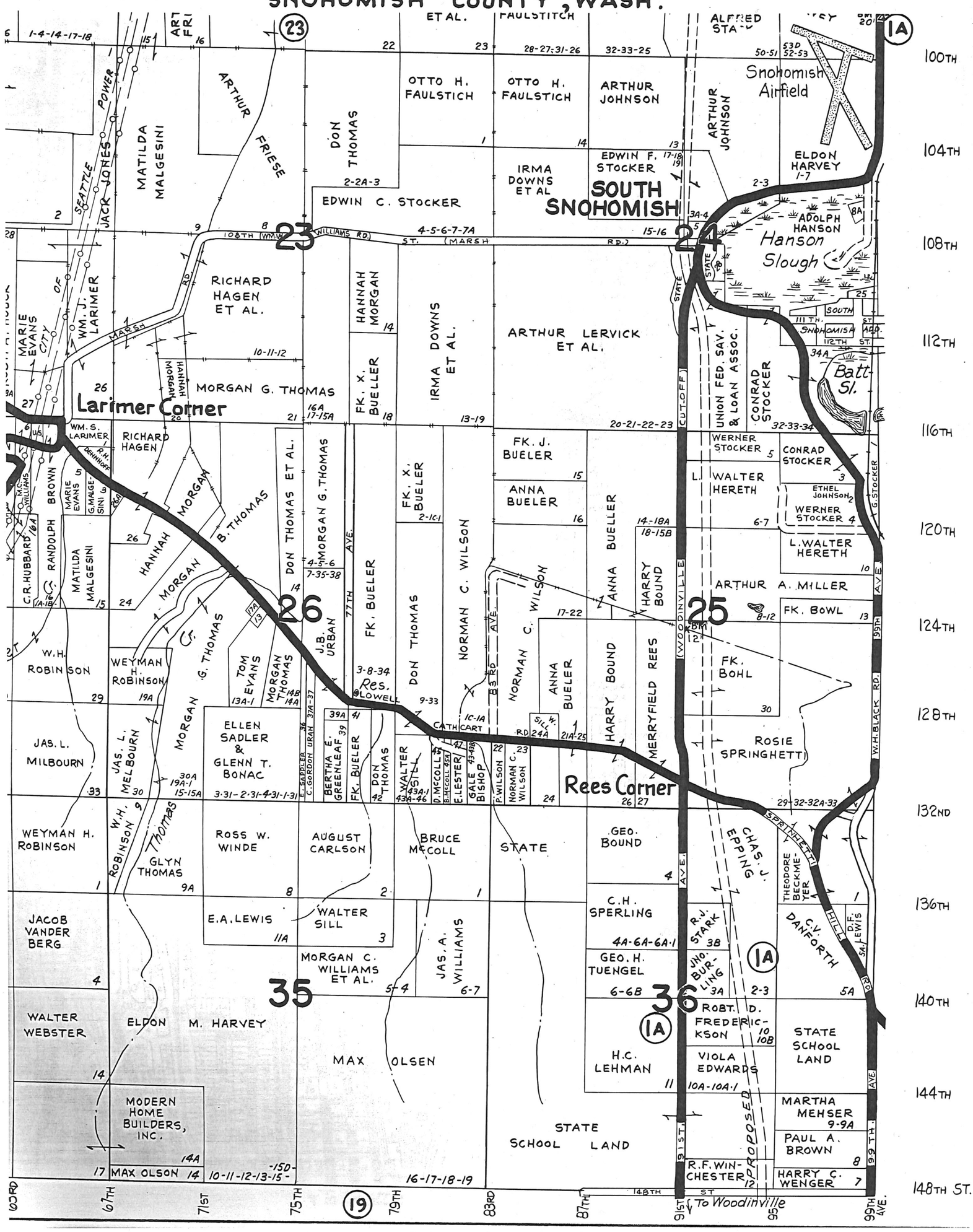
MONROE
SULTAN
STARTUP
GOLD BAR
REITER
SKYKOMISH
RIVER
Lake Chaplain
Hughes Lk.
Bevis Lk.
Lk. Cochran
Kellogg Lk.
Wallace Lk.
Blue Mtn. L.O.
Olney
Little Greider Lk.
Lk. Stickney
Mt. Stickney
Shaw Lk.
Marsh Cr.
Wallace Falls
Mine Claims
Camp Huston
Lake Isabel
Haystack Mtn.
Haystack L.O.
Elsie Lk.
Dagger Lk.
McCoy Cr.
Cedar Ponds Lk.
Crandall Cr.
Youngs
Dorothy Lk.
Elwell
Hannan Lk.
Johnsons Swamp
High Rock
Trestle Swamp
Roths Swamp
Soup Hole
Lake Cavanaugh
Mt. Persis L.O.
Honeymoon Mine
Anderson
Hoggarty
Austin Cr.
Wagleys
Wagner
Flowing Lake
Storm Lk.
Meadow Lk.
Rodiger Lake
T.29 N.
T.28 N.
T.27 N.
243RD
259TH
275TH
291ST AV.
DATED MAY 1960
R.7 E.
R.8 E.
R.9 E.

TOWNSHIP 28 N., RANGE 6 E
NORTHWEST QUARTER
SNOHOMISH COUNTY, WA



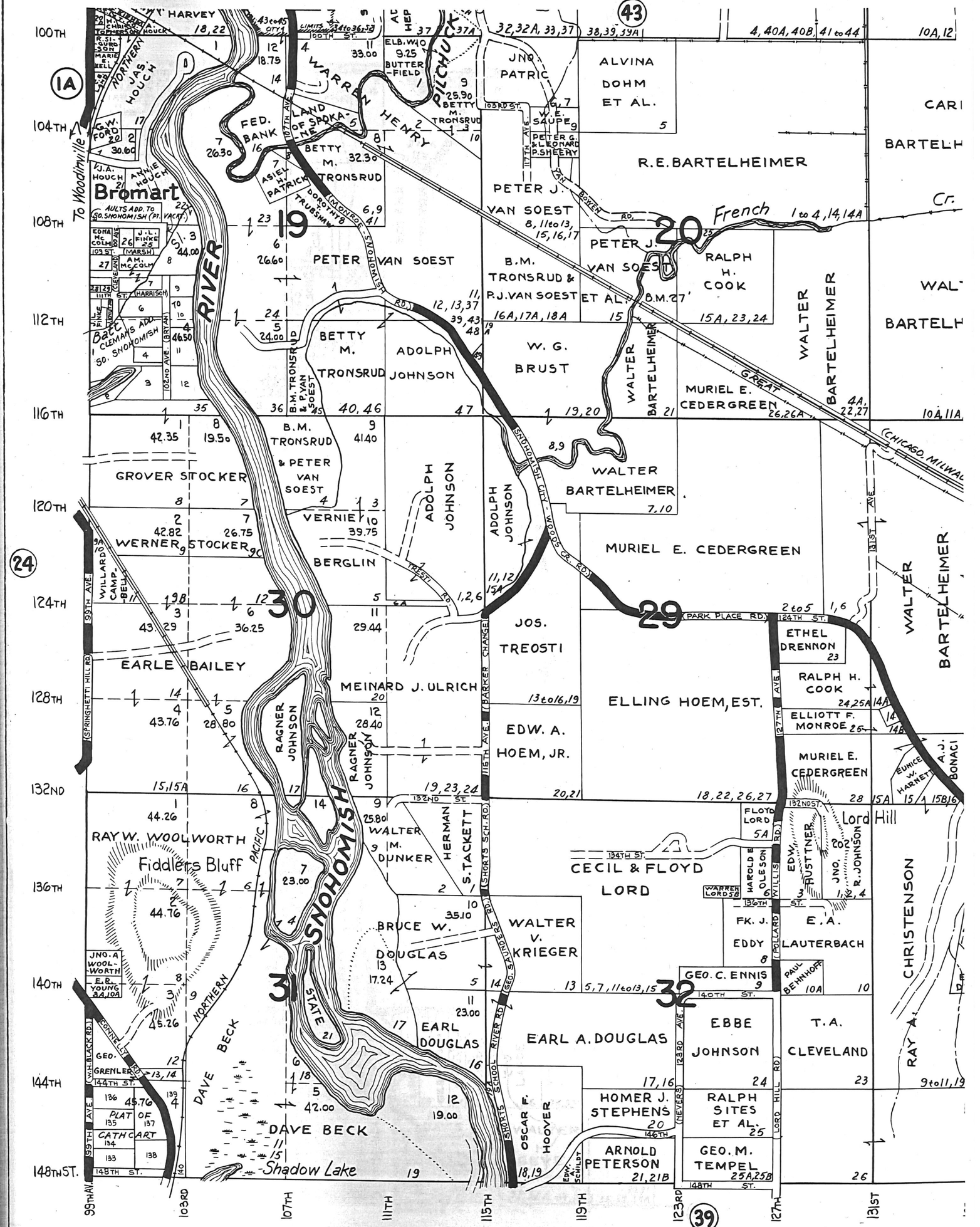

TOWNSHIP 28 N., RANGE 5 E.W.M.
NORTHEAST QUARTER
SNOHOMISH COUNTY, WASH.
28
To Everett
67TH
71ST
75TH
79TH
83RD
87TH
91ST
95TH
99TH AVE.
52ND ST.
56TH
60TH
64TH
68TH
72ND
76TH
80TH
84TH
88TH
92ND
96TH
100TH
JNO. H. THOMPSON
LAWTON M. SKIPLEY
W. H. BARTSHAT
CHARLEY CROWLEY
M.G. SHORT ET AL.
FRED ANDERSON
HARRY T. McELHANEY
W.W. McKIBBEN
JNO. H. MARION 1-2
MAY CAVELERO
B.C. SANDERS
1ST NATL. BANK OF EVERETT
B.J. KLEMME
C.C. ROBINSON
F.B. MAIER 21-22
FOBES HILL GDN. TRS.
MINNIE A. SCHLUTER
MINNIE SCHLUTER
A. WATERS
WM. LUBUCH
LEWIS PETERSON
ALEX SCHMIDT
(ROBINSON-FOSS CONN.)
HAROLD GAMBLE
R. WILLIAMS
EVERETT TR. & SAV. BK.
L.L. WEBERLING
JNO. GILSTAD
FRED J. NORTON
A. LUBACK
WM. LUBACK
ELMER D. MULHAUSEN
MARK CAMPBELL
CHESTER KLIMKIEWICS
RAYMOND M. MILLER
ANDREW SODERBLOM
AUDREY L. LUSE
EDYTHE MALONE
NETTIE MOEN
R.E. BARTELHEIMER
OSCAR JOHNSON
NETTIE GRIGGS
WALTER NORDQUIST
KING'S SUB. TRS.
STINSON'S SUB. ADD.
ENGLAND & PAUL'S SUB. ADD. TO SNOHOMISH
WM. J. LARIMER
PANTINGS
CHAS. POIER
LEO REHWINKEL 1-2
WALKER RIVER VIEW ADD.
METRO MELNYK
LEONARD RUSSELL
BERNARD GOLDINGER
STINSON'S SUB. ADD.
HANSON 1ST ADD. TO SNOHOMISH
H. SMITH
H. HOUTROUW
J.L. HATCH
DELLA LARSON
GEO. FISHER
C. WIGHT
ARTHUR POIER
K. EMBERY
J. KAUNE
MAX NEIL
E. FLATEBOE
CHAS. L. POIER
DAVID BOITANO
PROPOSED
HENRY NELSON
Mc. ALISTER
M. DREYER
G. AVERILL
ERNEST O. VIK
LILLIAN M. ALGER
FRED E. KING
FLOYD RUSH
NORMAN MATTSON
Woodlawn Cem.
TRANSMISSION
ROY W. BRITTON
ROY BRITTON
41-45-41A-45A
R. BRITTON
JNO. MISICH
J.W. MISICH
JAS. W. MISICH
MARTIN MISICH
JOHN MISICH
FK. J. McGUIRE
MAXINE L. UNZELMAN
OTTO FAULSTITCH
OTTO BUCHER
RONALD ERICKSON
SNOHOMISH RIVER
NEW SEWAGE LAGOON
SNOHOMISH
CITY OF SNOHOMISH
JNO. H. WHITE 11-54-19
JNO. H. WHITE
ST. PAUL RWY.
G.A.R. Cem.
W. FADEFF
Substation
U.S.
Snohomish Hi. Jr. Hi. Schr
SCH. DIST. 202
FERGUSONS
CLARKS ADD.
IRMA DOWNS ET AL.
FRED J. HERETH
OTTO H. FAULSTITCH ET AL.
OTTO FAULSTITCH
ALFRED STACK
ELDON HARVEY
ARTHUR FRIESE
Gaging Sta.
PACIFIC
LOWELL - SNOHOMISH RD.
R.W. BRITTON
FOSTER
PARK
SWAN TRAIL
69TH AVE
65TH AVE
PETERSEN RD.
SCHUBERT RD.
SNOHOMISH-MARYSVILLE RD.
1-4-14-17-18
9-10-11-14
20-21
5-5A-6-6A-7-7A
18-18A
28-27-31-26
32-33-25
50-51 53D 52-53
24

TOWNSHIP 28 N., RANGE 5 E.W.M.
SOUTHEAST QUARTER
SNOHOMISH COUNTY, WASH.



METSKER MAPS
[illegible] SOUTH 10TH ST TACOMA WASHINGTON
1030 THIRD AVE SEATTLE WASHINGTON

TOWNSHIP 28 N., RANGE 6 E
SOUTHWEST QUARTER
SNOHOMISH COUNTY, WAS



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Appendix F
Carey and Kramer Consulting Engineers
December 8, 1960
Preliminary Plans and Recommendations Concerning Sanitary and Storm Sewers in the Maple Street Area

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CAREY AND KRAMER
CONSULTING CIVIL & ELECTRICAL ENGINEERS
1917 FIRST AVENUE
SEATTLE 1, WASHINGTON
MUtual 2-2939

SEWERAGE SYSTEMS
SEWERAGE TREATMENT
WATER WORKS
ROADS

ELECTRIC POWER DEVELOPMENT
ELECTRIC TRANSMISSION LINES
VALUATIONS
INVESTIGATIONS

December 8, 1960

Honorable Mayor and City Council
City Hall
Snohomish, Washington

Gentlemen:

In accordance with our engineering contract dated Sept. 9, 1960 we transmit herewith five (5) bound copies of our preliminary plans and recommendations concerning sanitary and storm sewers in a section of the city which we have designated as the " Maple Street" area.

We have recommended, in the order deemed advisable for construction, eight (8) stages of improvement and the estimated cost thereof.

Stages 1 thru 4 are recommended for immediate construction Total estimated cost	$21,721.
Stages 5 thru 8 are recommended for future construction Total estimated cost	$33,787.
Total Estimated Cost Stages 1 thru 8	$55,508.

MAPLE STREET

STAGE #1

550' - 15" relief sewer line between Maple St. and Pump Station #2 via Rainier St.
Estimated cost ..... $ 4,856.

STAGE #2

Maple Street storm sewer, 1000'
- 18" pipe.
Estimated cost ..... $16,037.

STAGE #3

Install a manhole at Hershey Canning Co. connection to existing 10" sewer.
Estimated cost ..... $ 515.

PINE STREET

STAGE #4

Install a 15" overflow line between existing manholes at Pine and Wood. Pine St. sewer manhole would overflow into Cypress St. sewer manhole.
Estimated cost ..... $ 312.

STAGE #5 (Future)

550' - 12" storm sewer from Pine St. to a Pilchuck River outfall via Fourth St.
Estimated cost ..... $ 8,100.

STAGE #6 (Future)

600' - 15" storm sewer from Pine St. to a Pilchuck River outfall via Third St.
Estimated cost ..... $ 8,662.

MAPLE ST. (FUTURE)

STAGE #7 (Future)

500' - 18" storm sewer from Second St. to Third St. via Maple.
Estimated cost ..... $ 7,637.

STAGE #8

800' - 12" sanitary sewer from Third St. to Rainier St. via Maple St.
Estimated cost ..... $ 9,387.

You will note that the stages recommended for immediate construction are designed to alleviate the most critical problems which occur primarily on Maple Street.

We wish to take this opportunity to express our appreciation to the various city officials who aided us materially in the preparation of this report.

Respectfully submitted,

CAREY AND KRAMER

James W. Carey

James W. Carey

JWC/ab
Transmittal

CITY OF SNOHOMISH

MAPLE STREET AREA SEWERS

* * * *

CITY OF SNOHOMISH

MAPLE STREET AREA SEWERS

SUMMARY

a. "Maple Street" Area

This preliminary report on sewers in a section of the city which we have designated the "Maple Street" area, covers an area between 6th Street to the North and First Street to the South. The Easterly limit is the Pilchuck River with the Glen Creek or Blackman Lake overflow as a Westerly boundary.

b. Purpose of Study and Report

In the preparation of this report the primary purpose was to submit a plan which would recommend the steps required to eliminate the existing overloaded sewers in certain areas. In addition a step by step program has been outlined for future development of storm and sanitary sewers as expansion or growth of areas overload existing facilities.

c. Planning Commission

The future planning and anticipated growth for the City of Snohomish, and the "Maple St." area was discussed with Mr. Burdette Ferguson - Chairman of Snohomish Planning Commission.

The meetings with Mr. Ferguson indicated that future planning for Snohomish includes a site for a heavy industrial park on the South side of the Snohomish River. Approximate park area would be bounded by the River, Highway 1A, and the railroad tracks.

A light industrial area is planned for the area adjacent to the South boundary of the area under study in this report.

I. MAPLE STREET

a. Description of Existing Sewers

The existing sewers on Maple Street are combined storm and sanitary sewers varying in size from 6" - 10" and have a slope of approximately 3.5'/1000'. The existing system discharges into Pump Station #1 approximately 3200' from the collection area on Maple St.

The food processing industries located on Maple St. discharge into the sewers without the use of a manhole.

Storm inlets in most cases are connected to the sanitary sewer line.

b. System Deficiencies

At the present and in the past, residences and other structures with basements have been troubled by back-up from overloaded sewers.

The most frequent source of sewage back-up has been from rainstorms, with subsidence generally within the hour. As far as determinable, sewage back-up occurred twice during a dry weather period of the 1960 canning season. Water records indicate the Hershey Canning Co. used approximately 2,600,000 ft^3 water during a one month period in the 1960 canning season. 2,000,000 ft^3/Mo. was the previous apparent high month, of record.

A period of continuous food processing at Hershey Canning Co. combined with operations of the other food processing industries resulted in a temporary overloading of sewer lines. The resulting basement flooding occurred twice during a 24 hour period.

c. Future Maple St. Development or Expansion

At the present time there are three food processing plants that contribute an estimated 98% of all wastes flowing into the Maple Street line

Appendix G
Carey and Kramer Consulting Engineers
March 1961
Preliminary Report on Existing Water Distribution System City of Snohomish

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PRELIMINARY REPORT
on
EXISTING WATER DISTRIBUTION SYSTEM
CITY OF SNOHOMISH

March 1961

* * * * * * * * * *

Prepared By:
Carey and Kramer
Consulting Engineers
1917 First Avenue
Seattle, Wn.

SEWERAGE SYSTEMS
SEWAGE TREATMENT
WATER WORKS
ROADS

CAREY AND KRAMER
CONSULTING CIVIL & ELECTRICAL ENGINEERS
1917 FIRST AVENUE
SEATTLE 1, WASHINGTON
MUTUAL 2-2939

ELECTRIC POWER DEVELOPMENT
ELECTRIC TRANSMISSION LINES
VALUATIONS
INVESTIGATIONS

March 1, 1961

Honorable Mayor and City Council
City Hall
Snohomish, Washington

Gentlemen:

In accordance with our engineering contract dated August 1, 1960 we transmit herewith five (5) bound copies of our preliminary plans and recommendations concerning rehabilitation of certain low pressure areas in the existing distribution system.

We have recommended, in the order deemed advisable for construction, six (6) stages of improvement and the estimated cost thereof.

Stages 1 thru 4 are recommended for immediate construction
Total estimated cost ..... $ 44,058

Stages 5 and 6 are recommended for future construction
Total estimated cost ..... $ 17,835

The Total Estimated Cost for Stages 1 thru 6 ..... $ 61,893

STAGE #1

2600'-12" cast iron pipe from Tenth St. and Ferguson to Fifth St. and "A" Ave. via "A" Avenue.

Estimated cost ..... $ 29,188.

STAGE #2

1300'-8" cast iron pipe from Sixth to Seventh St. via "H" Avenue and Seventh St. from "H" to "J" Ave.

Estimated cost ..... $ 11,138.

STAGE #3

600'-6" cast iron pipe from "A" to "C" Avenue via Sixth St.

Estimated cost ..... $ 1,738.

STAGE #4

300' - 6" cast iron pipe from "A" to "B" Avenue via Seventh Street.

Estimated cost ..... $ 1,994.

STAGE #5 (future)

Pine St. from Larson Road to Tenth St.
1300' - 8" cast iron pipe.

Estimated cost ..... $ 15,056.

STAGE #6 (future)

Add 350' - 8" cast iron pipe on Fifth St. from Lincoln to Pine Streets.

Estimated cost ..... $ 2,779.

$ 61,893.

The first four stages that have been recommended for immediate construction are designed to alleviate the most critical problems of the low pressure areas surrounding 5th Street and "B" Avenue and 7th Street and "H" Avenue.

We wish to take this opportunity to express our appreciation to the various city officials and individuals who aided us materially in the preparation of this report.

Respectfully submitted,

CAREY AND KRAMER

James W. Carey

James W. Carey

JWC/ab
Transmittal

PRELIMINARY REPORT
on
EXISTING WATER DISTRIBUTION SYSTEM
CITY OF SNOHOMISH

TABLE OF CONTENTS

* * * * * *

PRELIMINARY REPORT
on
EXISTING WATER DISTRIBUTION SYSTEM
CITY OF SNOHOMISH

SUMMARY

(a) Purpose of Study and Report

The primary purpose of this report and analysis is to locate low pressure areas, determine corrective measures required, and recommend a construction program that is consistent with the overall water system requirements.

(b) Minimum acceptable conditions in low pressure areas

The minimum acceptable standard, as used in this preliminary study and report on the City of Snohomish water system is that set forth by the National Board of Fire Underwriters as follows:

1. With peak flow demands as established in section I(c), a fire flow of 500 gpm, a minimum residual pressure of 20 psi should be available in any low pressure area.

The recommended improvements to specified areas of the water system will meet the requirements stated above. However, it should be pointed out that these conditions are met with the assumption that water supply is ample and the remaining system is essentially as shown on our drawing of the existing water lines.

(c) Recommended Steps for Improvements and the Estimated Costs

STAGE #1

2600'-12" cast iron pipe from Tenth St. and Fergison to Fifth St. and "A" Ave. via "A" Avenue.

Estimated cost ..... $ 29,188.

STAGE #2

1300'-8" cast iron pipe from Sixth to Seventh St. via "H" Avenue and Seventh St. from "H" to "J" Ave.

Estimated cost ..... $ 11,138.

STAGE #3

600'-6" cast iron pipe from "A" to "C" Avenue via Sixth St.

Estimated cost ..... $ 1,738.

STAGE #4

300'-6" cast iron pipe from "A" to "B" Avenue via Seventh Street.

Estimated cost ..... $ 1,994.

STAGE #5 (future)

Pine St. from Larson Road to Tenth St. 1300'-8" cast iron pipe.

Estimated cost ..... $ 15,056.

STAGE #6(future)

Add 350'-8" cast iron pipe on Fifth St. from Lincoln to Pine Streets.

Estimated cost ..... $ 2,779.

$ 61,893.

I. SNOHOMISH WATER SYSTEM

(a) Supply

The Snohomish water supply is obtained from the Pilchuck River via approximately seventeen miles of water transmission line which connects to the reservoirs at the northeast corner of the city.

The three existing reservoirs were constructed about 1911, 1924 and 1952, with the newest oval reservoir having a capacity of 5 million gallons. The two older reservoirs have an estimated capacity of 3.5 million gallons.

An auxiliary water supply is provided by an 8" line from the Everett water supply that has mamual controls for discharging directly in the 5 million gallon reservoir.

(b) Distribution System

The main distribution system consists of 10" and 12" wood or cast iron pipes cross connected by 6" and 8" lines.

For discussion purposes the main 10" and 12" supply lines will be called the "D" Avenue or Maple Street line. Refer to Plate I for reference.

The "D" Avenue supply line starts at the southwest side of the large storage reservoir, and continues with approximately 400 L.F. of 10" cast iron pipe to Larson Road and Pine St. From Larson Road and Pine St. to the intersection of 5th St. and "D" Avenue the supply line consists of approximately 4000 L.F. of recently installed cast iron pipe and approximately 2700 L.F. of 10" wood stave pipe installed on the following route: From the reservoir west on Larson Road to Ferguson Park Road thence south on Ferguson Park Road to 10th St. thence west on 10th St. to Avenue "D" thence south on Avenue "D" to 5th St.

The 12" "Maple St." line leaves the reservoir area in a southeasterly direction approx. 700' to Maple Street. The 12" wood stave pipe continues in a

southerly direction for approx. 5900' to 2nd and Maple St. From the intersection of 2nd and Maple Sts. the line continues west 1000' on 2nd St. to Union, then south 600' to 1st and Union, then west approx. 1300' on 1st St. to "D" Avenue.

The 10" "D" Avenue main terminating at 5th and "D" is cross connected to the end of the 12" Maple St. main at 1st and "D" by approx. 2200' of 6" C.I. pipe on "D" Avenue between 1st and 5th St. A second cross connection is made by approx. 2300' - 8" C.I. pipe on 5th St. between Maple St. and "D" Avenue.

The complete physical layout of the water system is shown on Carey and Kramer drawing 601-01P. All the data shown on this drawing is approximate in nature and has been obtained from existing records, field inspections, and from information furnished by past and present personnel associated with the City of Snohomish.

(c) Water demand - industrial and domestic

(1) Domestic

As a basis for determining the deficiencies of the present system and the corrective steps that may be required a water demand has to be established.

The flow rate established will be comparable to a peak water demand that is apt to occur during the months of August and September of each year. The following items list the conditions that can contribute to the demand:

1. Extended dry period with lawn sprinkling and domestic requirements at a maximum.

2. Canneries, dairies and related industries that handle seasonal produce or products.

3. Minimum fire demand of 500 gpm.

To establish domestic water demands the areas served by the present water system will be considered fully developed, with approximately thirteen residences/block, four persons/house.

The following data indicates accepted practice for preliminary determination of water demand:

125 gpd/person - normal consumption

Factors affecting normal daily demand

	Standard	Snohomish*
Cost	+ 20%	+ 20
Pressure	± 10%	-
Quality	± 5%	+ 5
Absence of Meters	+ 20 to 100%	+ 100
Demand over Normal usage	=	125%

* (Based on measurements and estimates of consumption for Snohomish)

The Peak hourly demand ranges from approximately 150% to 220% of the average demand. For this study use 150%.

The average consumption/day/block based on 125 gpd/c, 125% use factor, 4 persons per house and 13 houses per block amounts to approximately 14,500 gallons or 10 gpm.

The peak demand based on 150% of average demand amounts to 15 gpm which is the residential demand used in the system analysis.

(2) Industrial

Reference: Snohomish Sewer Report 1956

	Peak GPD 1956
Snohomish Dairy Assoc.	212,000
Grand View Dairy	3,360
	215,360 + 50% growth factor
	323,000 gpd peak

Assuming peak operating time = 5 hr.

flow rate Q = 1076 gpm.

Use 1000 gpm as the max. water usage south of Snohomish River.

Wheeler	20,000
Hershey	500,000
Ferguson Cannery	6,000
Evergreen	102,000
Van Valins	17,000
	645,000 + 50% growth factor = 967,500 gpd.

Assuming 24 hour operation

Q = 671 gpm.

Use 700 gpm flow to Maple St. area canneries.

II. SYSTEM DEFICIENCIES

(a) Low Pressure Areas

There are four low pressure areas served by the City of Snohomish water department.

The four areas are as follows:

1. North of 10th Street and west of reservoirs

Static pressures available in this area are 30 psi and under. The amount of water available from the 12" main and 6" C.I. laterals is satisfactory for domestic or fire demand under pumper conditions. The location of the reservoir adjacent to this area would require an elevated storage tank to bring pressures up to a desirable range.

2. Area north of reservoir

The area north of the reservoir has an elevation greater than the reservoir and is not serviced by the city water supply. At the present time Everett water is used in this area. Under existing conditions it would take an elevated storage tank to provide service for this area.

3. 6th Street and "H" Avenue Area

Static pressures available in this area are approx. 35 psi. 6" line sizes are adequate for domestic demands but present a problem for fire demand. Residual pressures available under fire demand conditions are approx. 12 psi. The minimum desirable residual pressure is 20 psi.

4. "B" Avenue Area - 4th Street to 7th Street

Service to this area during peak water demand periods is very poor. Plate I shows only 110 gpm available to this area from the Maple Street main. Residual pressures are low, the majority of the area is served by 4" lines and fire protection would be virtually non-existent during peak demand periods. The peak demand periods could range from 8-12 hours/day during a canning season combined with dry weather.

(b) Residential Services

Additional difficulties in the low pressure areas of the city can be attributed to inadequate, or defective water service piping.

Mineral deposits that reduce pipe area, or inadequate size of service greatly reduce the flow even under satisfactory pressure and volume at the street mains.

Tests were made on two adjacent houses in a low pressure area. Both houses had 3/4" service piping, one with recently installed copper service, the other had 3/4" galv. iron pipe installed approx. 20 years ago.

The house with 20 year old 3/4" galv. iron service pipe had pressure drops of 20-22 psi as measured in the basement when the various household appliances were operating. When two exterior hose bibs were opened no measurable pressure was obtainable.

The adjacent house with a 3/4" copper service was tested under similar conditions, and had no more than 3-4 psi pressure drop under similar test conditions.

With approx. 35 psi pressure available at the street to either house it becomes apparent that the high pressure drops in the house with 3/4" galv. iron service are caused by reduction in the size of the service and riser piping. Peak water demand periods and a further reduction in the main pressure and flow available create a very serious and undesirable condition.

Replacement of inadequate service piping could in many cases make vast improvements in the quantity of water available to a residential consumer.

(c) Metering

The lack of metering for the majority of residential services tends to encourage waste of water. Although the supply of water available may not be a governing factor, delivery to the consumer via water mains is usually the limiting condition.

Using the assumed four persons per house, various water demands established in section I (c) are summarized below.

The costs shown are based on metered charges as established by amended water rates of 1956.

1. Normal Water Demand

125 gpd/person = 500 gpd/house = 2000 ft.^{3}/Mo.
= $4.10/Mo.

2. Normal demand + 20% increase in demand because of low rates

125(1.20) = 150 gpd/person = 600 gpd/house = 2400 ft.^{3}/Mo.
= $4.58/Mo.

3. Assumed demands

281 gpd/person = 1124 gpd/house = 4500 ft.^{3}/Mo.
= $6.95

The metering of residential areas would act as a deterrent against waste of water. The meters would not limit or restrict the water available to the consumer.

(d) Line extensions

There are several existing extensions to the water system that are undesirable from the standpoint of fire protection. Extensions are noted as follows:

1. Ludwig Road - served by Seventh St. line. This is an extension of a service from a line on Seventh St. See Section II (a)(3).

2. Larson Road - the 2" wood line is adequate for a minimum service with no excessive demands being made by the consumer. Fire protection is non-existent beyond the hydrant at Ferguson Park Road served by the 12" C.I. main.

3. Extension Northwest from Tenth St. and "D" Avenue is 4" wood. Here again service may be satisfactory for minimum conditions, but adequate fire protection is definitely not available.

Long runs of 4" and 6" mains on Lincoln and Pine Streets (Third St. to Seventh St.) exist without any cross connections. The small size of lines and long runs create a high pressure drop if demands such as fire draw are made. Cross connections should be made at least every second block or a maximum of 1000'. Existing lines on Pine and Lincoln are not cross connected for a distance of approx. 2000' in the area just discussed.

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Appendix H
Livingstone & Moore Consulting Engineers
October 1961
Preliminary Report on Existing Water Source and Transmission Main for City of Snohomish

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PRELIMINARY REPORT
on
EXISTING WATER
SOURCE AND TRANSMISSION MAIN
for
CITY OF SNOHOMISH

October 1961

****

Prepared by:

LIVINGSTONE & MOORE
Consulting Engineers
1915 First Avenue
Seattle 1, Wash.

LIVINGSTONE & MOORE
CONSULTING ENGINEERS
1915 - FIRST AVE. SEATTLE 1, WASH.
MA. 4-2623

October 9, 1961

Honorable Mayor and City Council
City of Snohomish
Snohomish, Washington

Gentlemen:

In accordance with our agreement dated June 6, 1961 we transmit herewith five copies of a Preliminary Report on Existing Water Source and Transmission Main for the City of Snohomish.

The study includes a detailed presentation of the valuation of the entire water system, both source and transmission facilities as well as the distribution system.

Eight separate plans for rehabilitation of the existing transmission main were investigated with estimates of cost of construction of each plan and cost of water delivered at the reservoir set forth for comparative purposes. A summary of these plans is presented on Page 50. of this report.

The study is confined to the existing system only and does not compare the cost of rehabilitating it with the cost of obtaining water elsewhere such as from the City of Everett or from deep wells in the City of Snohomish, which items together with recommendations will be covered at a later date.

We take this opportunity to thank Mayor Wirsching, members of the Council, members of the Water Committee, Roy Stroh, George Huff, Julius Peters, Water Superintendent Clarence Floyd and City Clerk Rose Christensen for their valuable assistance in the preparation of this report.

Respectfully submitted,

LIVINGSTONE & MOORE

Wm. B. Moore

WM. B. Moore

WBM/dm

PRELIMINARY REPORT
on
EXISTING WATER
SOURCE AND TRANSMISSION MAIN
for
CITY OF SNOHOMISH

TABLE OF CONTENTS

I. HISTORY

Several sources of information were explored in an attempt to compile major historical events in the growth of the Snohomish Water System. Records at the City Hall were searched, and pertinent information was obtained from research in the public library. The most complete historical information concerning the water system was provided by Mr. R. D. DeSelle of 1125 Orchard St., Snohomish, Washington. Part of this information is presented herewith, the various events being listed in chronological order of their occurrence.

The first water system was installed about 1884 and consisted of a hydraulic ram which pumped water from the gulch north of the Eagles Hall to a tank in the attic of a home which was located on the present library site.

In 1887 a water company was organized to provide a gravity supply of water from Blackman's Lake through two and a half miles of six inch wood pipe.

In 1888 the Village of Snohomish purchased its first fire hose cart.

In 1891 the Town voted for a $50,000.00 bond issue to construct a water system which consisted of a pump station on the Pilchuck River at the northeast Town limits and a 500,000 gallon reservoir above the Emerson School.

In 1912 the original Pilchuck dam and twelve inch gravity line were installed. The bond issue was for approximately $110,000.00. The twelve inch gravity line had a capacity of about 1.4 MGD.

In 1926 an auxiliary electric pumping plant with a capacity of 1.2 MGD. was installed at the old pump station on the Pilchuck River.

1932 to 1934 the present diversion dam was constructed at the same site as the original dam on the Pilchuck River. A wood pipe line composed of 14", 16" and 18" wood pipe with a capacity of 3.2 MGD. was installed. This system is the one which is the subject of this report.

The existing five million gallon storage reservoir was installed in 1952.

Since that time, most of the work on the water system has consisted of additionsand extensions to the distribution system.

III. EXISTING WATER SYSTEM

(a) Source of Supply

The Snohomish water supply is obtained by gravity flow from a point on the Pilchuck River located in the southeast quarter of the northeast quarter of Section 9, TWP 29 R 7 E. W. M.

(b) Headworks

The headworks located at the source of supply consist of a reinforced concrete dam, fish ladder and wood frame control house. The watershed area owned by the City of Snohomish consists of approximately twenty-five acres.

(c) Transmission Main

The transmission main consists of the following:

24" C. I. Pipe	210 ft.
18" creosoted wire wound wood pipe	23,426 "
16" creosoted wire wound wood pipe	21,603 "
16" untreated wire wound wood pipe	15,932 "
14" untreated wire wound wood pipe	16,358 "
Total amount	77,529

(d) Reservoirs

There are three reservoirs with a design capacity of (1) five million gallons, (2) one million gallons, (3) one-half million gallons, total storage six and one-half million gallons. These reservoirs are all constructed of structural concrete.

VIII. WATER SUPPLY AND TRANSMISSION MAIN REHABILITATION PLANS

Several plans for rehabilitation or renewal of the water source facilities and transmission main were investigated.

The plans ranged from a complete replacement of the existing main including the purchase of sufficient land to control the watershed to a repair and gradual replacement of the line by stages. All of the plans require the rehabilitation of the dam and headworks. This portion of the program is relatively inexpensive and consists of cleaning and painting the control houses, repairing the crest of the dam, and providing some means of removing the accumulation of rocks which settle against the up stream face of the dam.

Several methods of providing clarification of the water were investigated and are included in different plans.

There are many different combinations of improvement programs, but in this investigation six different plans were considered as being the most logical and feasible.

The six different plans are listed below and are followed by detailed descriptions, cost estimates and cost per million gallons of delivering water into Snohomish.

The existing pipe line was designed with a capacity of approximately 3.2 MGD. Flow into the reservoir was checked, and was found to be at the rate of 3.7 MGD. at that time, but for cost calculations the designed capacity of 3.2 MGD. was used. Steel pipe of the same size and length has a calculated capacity of approximately 3.4 MGD.

X. CONCLUSIONS

This study of the existing source of supply facilities and water transmission main has explored various methods of replacement, renewal or improvement of the system which uses the Pilchuck River as the source of supply. Other possible sources such as City of Everett water or deep wells within the City are not within the scope of this report.

Pilchuck River water is generally of good quality and requires no treatment other than chlorination. However, during high water periods the river becomes muddy, and the accumulation of silt in the system becomes a problem.

The quantity of water now being delivered by the gravity pipe line is about 3.2 MGD. This amount of water more than meets the requirements of the City on all but a few days during the operation of the food processing plants. Records of the over-flow indicate that there is an almost constant flow of water from the reservoirs back into the River. It is difficult to determine the actual water usage in the City because most of the residences are not metered. The average water consumption as estimated in Carey & Kramer Report on Existing Water Distribution System dated March, 1961, amounts to 280 GPD per capita for domestic use. This figure is about 2.8 times the normal per capita figure and is due largely to the absence of meters. The estimated water demand is set forth following:

Domestic Use - (4000 @ 280 gpd/c)	=	1,120,000 gal/day
Industrial Use -		967,500 gal/day
Total		2,087,500 gal/day

A rough check on this figure was obtained by deducting the measured overflow rate from the quantity of water entering the reservoir. However, the figures reflected flow rates at the actual time of measurement only and could not be considered representative.

Generally when it was necessary to obtain water from the Everett pipe line, demand was heavy, or a break had occurred in the transmission main.

For purposes of this study two different quantities of water were considered - (1) 3.4 MGD., which is the quantity which could be delivered by new steel pipe of the same size as the existing pipe, and (2) 6 MGD. which would require larger pipe.

If meters were installed throughout the City, waste of water would largely be eliminated, and 3.4 mg/day should be ample unless additional heavy water consuming industries moved into the City.

In the computation of cost of water per million gallons in all plans described in Section VIII a theoretical financial plan based on a 20 year term bond issue at 5% interest and a coverage factor of 1.4 was used. It should be pointed out that the coverage factor is money which actually belongs to the City and can be used for capital improvement but must be provided as a safety factor for the bond purchasers. Also, it is quite possible that a lower interest rate than 5% may be obtained

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Appendix I
Livingstone & Moore Consulting Engineers
August 1962
Water Report for Snohomish, Washington Phase II – Potential Sources, Phase III – Summary & Recommendations

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WATER REPORT
for
SNOHOMISH, WASHINGTON
PHASE II - POTENTIAL SOURCES
PHASE III - SUMMARY & RECOMMENDATIONS
AUGUST 1962

****

Prepared by:

LIVINGSTONE & MOORE
Consulting Engineers
1915 First Avenue
Seattle 1, Wash.

LIVINGSTONE & MOORE
CONSULTING ENGINEERS
1915 - FIRST AVE. SEATTLE 1, WASH.
MA. 4-2623

August 7, 1962

Honorable Mayor and City Council
City of Snohomish
Snohomish, Washington

Gentlemen:

We transmit herewith eight (8) copies of Water Report containing Phase II and Phase III of Preliminary Report on water source facilities for the City of Snohomish all in accordance with agreement dated Feb. 2, 1962.

Phase II of this report deals with potential sources of domestic water (other than the existing source). Additional potential sources which were investigated include 1. Connection with the City of Everett's transmission main. 2. Possible wells in or near the City of Snohomish. 3. Ranney wells along the river and 4. A water treatment plant and pump station along side the Pilchuck River.

Phase III of the report contains a summary of all investigations covered in Phase I and Phase II, including a comparison of cost of the various plans.

A study of the existing water rate structure at Snohomish is also made a part of Phase III. Water rates from several cities in the State are tabulated and compared with the Snohomish water rate. Recommendations concerning the water source and rate adjustments are set forth in Section C and D of the summary.

We take this opportunity to thank the Mayor, members of the City Council and Water Committee, the City Clerk and City Water Superintendent for their assistance in the preparation of this report.

Respectfully submitted,

LIVINGSTONE & MOORE

W. B. Moore

W. B. Moore

WBM:ml

COPY

WATER REPORT FOR SNOHOMISH, WASHINGTON

PHASE II INVESTIGATION OF ADDITIONAL SOURCES OF WATER

PHASE III SUMMARY & RECOMMENDATIONS

TABLE OF CONTENTS

SNOHOMISH

TABULATION OF WATER PURCHASED FROM THE CITY OF EVERETT BY MONTHS

Month	1952		1953		1954	
	100 cf.	Cost	100 cf.	Cost	100 cf.	Cost
Jan.	-	$75.00	-	$75.00	-	$75.00
Feb.		75.00	26	75.00	-	75.00
Mar.		75.00	-	75.00	-	75.00
Apr.		75.00	-	75.00	-	75.00
May	52	75.00	-	75.00	-	75.00
June	653	75.00	148	75.00	-	75.00
July	-	75.00	44	75.00	-	75.00
Aug.	1899	109.75	3810	75.00	-	75.00
Sept.	4482	211.70	14	75.00	-	75.00
Oct.		75.00	1	75.00	-	75.00
Nov.		75.00	-	75.00	-	75.00
Dec.		75.00	-	75.00	-	75.00
	7086	$1,071.45	4043	$900.00	-	$900.00

Month	1955		1956		1957	
	100 cf.	Cost	100 cf.	Cost	100 cf.	Cost
Jan.	-	$75.00	53	$75.00	976	76.05
Feb.	67	75.00	6	75.00	10	75.00
Mar.	5	75.00	1	75.00	11	75.00
Apr.	27	75.00	110	75.00	13	75.00
May	8	75.00	2	75.00	94	75.00
June	4	75.00	21	75.00	1106	84.70
July	7	75.00	15	75.00	146	75.00
Aug.	8	75.00	5887	330.70	4105	247.10
Sept.	1906	137.65	2247	157.30	278	75.00
Oct.	39	75.00	2218	155.60	114	75.00
Nov.	45	75.00	78	75.00	23	75.00
Dec.	59	75.00	9	75.00	230	75.00
	2175	$962.65	10,647	$1,318.60	7106	$1,082.85

Month	1958		1959		1960	
	100 cf.	Cost	100 cf.	Cost	100 cf.	Cost
Jan.	132	$75.00	56	75.00	-	75.00
Feb.	31	75.00	51	75.00	65	75.00
Mar.	34	75.00	50	75.00	366	75.00
Apr.	45	75.00	60	75.00	69	75.00
May	86	75.00	113	75.00	78	75.00
June	380	75.00	90	75.00	92	75.00
July	432	75.00	152	75.00	127	75.00
Aug.	2695	180.95	680	75.00	577	75.00
Sept.	422	75.00	393	75.00	964	75.25
Oct.	44	75.00	89	75.00	1004	77.95
Nov.	42	75.00	83	75.00	117	75.00
Dec.	48	75.00	4822	280.75	118	75.00
	4391	$1,005.95	6639	1,105.75	3577	903.20

Month	1961		1962	
	100 of.	Cost	100 of.	Cost
Jan.	97	75.00	128	75.00
Feb.	100	75.00	137	75.00
Mar.	97	75.00	254	75.00
Apr.	93	75.00	395	75.00
May	100	75.00	271	75.00
June	188	75.00	236	75.00
July	1064)	---		
Aug.	3616)	306.05		
Sept.	678	75.00		
Oct.	214	75.00		
Nov.	144	75.00		
Dec.	134	75.00		
	6525	$1056.05		

TABULATION OF WATER PURCHASED FROM THE CITY OF EVERETT BY YEARS

YEAR	PURCHASED WATER 100 cf
1952	7086
1953	4043
1954	00
1955	2175
1956	10647
1957	7106
1958	4391
1959	6639
1960	3577
1961	6525

This tabulation is presented in graphical form on the following page.

B. INVESTIGATION OF WELL SOURCES.

In many instances a well or series of wells is used as a source of municipal water supply. Investigation of well sources at Snohomish has been carried out rather extensively in the past without too much success. The U. S. Geological Survey has conducted a study of ground water sources in Snohomish County. That study generally indicates that the sub-surface soil near Snohomish is composed of Admiralty clay formation. This formation is predominantly of a clayey, silty nature and is considered a poor formation for water yield.

There are very few existing wells in or near Snohomish, most of which are small single family wells which yield small quantities of water.

One notable exception is the Hershey Well which was drilled alongside the Hershey Food Processing Plant. This Well is reported to yield about 450 GPM.

A chemical analysis of the water from the Hershey Well was made by a qualified laboratory. The results are tabulated herein.

The Hershey Well is 8" in diameter, 100 feet deep and was drilled through a sand and gravel strata. We were informed by the Well driller that no clay was encountered in the Well. Thirty feet of screen was installed at the bottom of the Well casing. The static water level is 50 feet below the surface and is drawn down to 60 feet when the Well is pumped at a rate of 450 gpm.

FOOD, CHEMICAL AND RESEARCH LABORATORIES INC.

• CONSULTATION AND RESEARCH
• PRODUCT DEVELOPMENT
• QUALITY CONTROL

Q.P. PENISTON, PRESIDENT
G. OTTO ORTH, JR., VICE-PRESIDENT
JOHN SPINELLI, SEC.-TREASURER

1201 N.E. 38TH STREET • SEATTLE 5, WASHINGTON • PHONE MELROSE 3-1110

Lab. No. 3443
June 25, 1962

Livingstone & Moore
1915 - 1st Avenue
Seattle 1, Washington

ANALYSIS OF WATER SAMPLE

Received June 22, one water sample identified as "Hershey Packing."

RESULTS

pH	6.6
Calcium	15.1 ppm
Magnesium	4.1 ppm
Total Hardness as $CaCO_3$	64.2 ppm
Iron	0.2 ppm
Manganese	0.15 ppm

FOOD, CHEMICAL AND RESEARCH LABORATORIES, INC.

John Spinelli

sk

The standards for drinking water requirements as established by the U. S. Public Health Service are set forth following:

PH - Should be as close to 7.0 as economically feasible, acid water (PH below 7) cause tuberculation. Water with a PH above 7.0 causes incrustation of pipes.

Magnesium - 125 PPM Max.

Total Hardness as CA CO3

PPM	Degree of Hardness
15	Extremely soft
45	Soft
90	Moderately soft
110	Moderately hard
130	Hard
170	Very hard

Iron and Manganese together 0.3 PPM Max.

The chemical analysis of the water sample from the Hershey Well indicates that the water is somewhat acid in nature but is within allowable limits for good domestic water as far as the chemical content is concerned. Water with a PH of 6.6 is considered quite acid and usually requires a PH correction by the addition of lime or soda ash.

The excavation at the site of the Frenchman Creek pumping station was investigated. The site is adjacent to the Snohomish River, and it has been necessary to install well points to control the water. It is estimated that the Contractor is pumping about 10,000 gpm to keep the water down in the excavation. The water undoubtedly comes from the River since the excavation is in permeable soil and is adjacent to and below the River level.

D. TREATMENT PLANT AND PUMP STATION

An additional source of water is the Pilchuck River in the City of Snohomish proper. A pump station and water treatment plant would be required if this source were employed. A long transmission main would not be needed so the maintenance and replacement cost attributable to such a transmission main would not be a factor in this case.

The most feasible location for a pump station and treatment plant appears to be near the original pump house located on the DeSelle property. A pump station using low head pumps could be installed to pump water from the Pilchuck River to a water treatment plant which would probably consist of a form of filtration, possible coagulation and settling. Chlorination would also be required. After treatment the water would be pumped by high head pumps to the City Reservoir.

The City of Snohomish already has water rights for 25 cfs for municipal water supply so that no additional water rights are required if the demand in the City is increased. There is also a filing for 12 cfs for power use by the City of Snohomish.

The total filing of water rights on the Pilchuck River is 45.38 cfs of which the City of Snohomish's 37 cfs (incl. 12 for power use) come from above Purdy Creek, and the 8.38 cfs are owned by others on the main stem of the River below Purdy Creek. The minimum flow of the Pilchuck River (34 cfs) is sufficient to provide over 6 MGD for the City of Snohomish.

A water treatment plant with a capacity of 6 MGD is estimated to cost about $700,000 including pump station and transmission main between the plant and reservoir.

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Appendix J
Livingstone, Moore, and Wallace, Inc.
1967
Letter to the Department of Water Resources

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LIVINGSTONE, MOORE AND WALLACE, INC.

1915 FIRST AVENUE - SEATTLE, WASHINGTON 98101 - MA. 4-2623
1923 BROADWAY - VANCOUVER, WASHINGTON 98663 - 693-4728

DAVID LIVINGSTONE
WM. BISPHAM MOORE
JOHN R. WALLACE, JR.
DAVID A. KENNEDY

September 26, 1967

Department of Water Resources
335 General Administration Building
Olympia, Washington 98501

SUBJECT: Surface Water Permits
No's 949 and 1887

ATTENTION: Eugene F. Wallace, Division of Water Management

Gentlemen:

The City of Snohomish believes that it is vital that it be allowed to retain both its surface water permits no. 949 and 1887.

While the immediate planning is to develop 6 mgd of Pilchuck River water for municipal use, the long range plan calls for the construction of a dam to provide 500 acre feet of storage and a new, larger capacity pipe line to utilize additional water covered under permit no. 1887.

Since the Boeing Company located in Snohomish County, the County and City of Snohomish have grown at a rapid rate. The City has issued 272 building permits since January 1, 1967. Of these, 17 are for new houses and 3 are for apartments of 13, 14 and 18 units each.

The population of Snohomish has been climbing steadily. The following tabulation indicates the population within the City limits for the past several years.

YEAR	POPULATION
1930	2688
1940	2794
1950	3094
1960	3894
1964	4413
1967	4700
PROJECTED	
1985	7000

The population forecast for the Snohomish Trade Area as set forth in the planning report for the Snohomish Central Business District dated November 1965 is tabulated below:

YEAR	POPULATION Primary Zone Including City
1960	6750
1965	8250
1975	11250
1985	14270

It is reported that the Snohomish Post Office serves a population of 20,000 at present.

In view of the expected and projected growth, the City Council believes that it would be short sighted and unwise to renew only permit number 949. It therefore, respectfully requests the renewal of both permits - number 949 and 1887.

Very truly yours,

LIVINGSTONE, MOORE and WALLACE, Inc.

By W. B. Moore
W. B. Moore

WBM:jw
cc: City of Snohomish

Appendix K
Newspaper Article
Undated
Water decision in 1973

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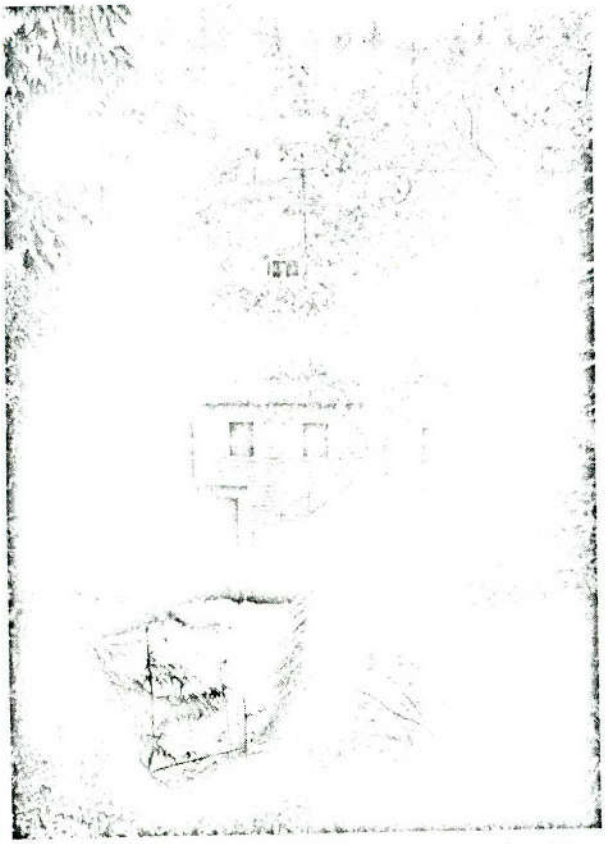
Water decision in 1973



In anticipation of a large crowd of interested citizens, the City Council has scheduled Tuesday's work session, devoted to the water source question, for the Snohomish High School auditorium beginning at 7:30 p.m.

The following article is a resume of the history of the city's water system, the attempts by past and present officials to get financing for an independent system and assorted data and information relating to the question.

The council has urged all citizens interested in the water problem to attend the meeting and to offer their "input" into the subject. They have also indicated it would be helpful if those who intend to speak on the subject would also provide the council with a written resume of their opinion which may be kept on file and referred to as the council proceeds to the decision which must be made.

By [illegible]nda Schuler

The Chinese have yet to announce whether 1973 is the Year of the Dog, Lion, Rabbit or Dragon . . .

In Snohomish—it is the Year of the Water Decision.

The latest development in the city's search for federal funding was announced at Tuesday's council meeting by City Manager Tory Tjersland.

The news is not good.

The status of the city's Farmers Home Administration 101 application is evidently subject to the same type of Puget Sound Governmental Conference review process as the 1968 application to HUD.

According to a conversation Tjersland had with Brian Beam, chief grantsman reviewer of the PSGC, "The PSGC staff was still waiting for the full file from FHA headquarters; that our application is subject to the A-95 review process; that it would have to be reviewed by the Environmental Committee of the Conference which doesn't meet again until the third week of January; that it would have to be voted upon by the full PSGC membership. At this writing (December 29) I have to assume we are going to be subjected to the same bottleneck that killed the 1968 HUD application for us. The horizon appears stormy at best."

The prospect of federal funding being granted for an independent water system for a municipality with 2339 water customers also grows dimmer with the Nixon administration's stated intention to cut federal spending by billions of dollars. According to January 1, 1973 edition of Newsweek, "HEW gets slashed and HUD gets clobbered."

And, in the meantime, the city waits for the official Wash-Use 1 report slated for publication in February. The report is the one ordered two years ago by the Snohomish County Planning Commission and is the report upon which the PSGC would consider regarding the city's 1968 application to HUD.

Glimpses of the input into the water resource report indicate the recommendations of a regional water system as opposed to independent water systems are anticipated.

It would be unrealistic for the city and the city's water customers not to face up to the fact that the chances for outside funding of an independent system are bleak. Whatever the decision is, an independent system or joining Everett's, the citizens are faced with the reality that local funding will probably pay the bill.

Such a source of financing is not without

(Continued on page 10)

(Continued from page 1)

precedent for the city of Snohomish.

History of the water system

". . . In 1884, a hydraulic ramp pumped water from a gulch north of Eagles Hall to a tank in the attic of Jackson's home at the present site of the library."

That was the city's first water sy[illegible] . . . How blessedly uncomplicated!

The residents of the Snohomish ar[illegible]n those days would never have believed that any part of this green, damp, portion of the "good earth" would ever be faced with a water source problem.

Certainly, the pioneers soon developed more sophisticated and convenient methods of delivery and distribution, but the complications now present make a mockery of the simple formula, H2O.

The chemist who determined the components wasn't concerned with the relationship between people (and more people), water and money (and more money). Obviously the ivory-tower based scientist had never heard of federal-funding agencies, applications, studies, studies and studies.

However, as the 20th century moves toward its last quarter the race is on to determine who gets his share of water—from where—at what price—and, the subsequent affect on the next guy. And, we all know about federal funding agencies, applications and studies, studies and studies.

"Since 1912 the city of Snohomish has had water rights (a statement discussed later in this article) on the Pilchuck River. At that time the city was bonded for $110,000 for a gravity line from below Purdy Creek on the Pilchuck, 16 miles from the city with a dam at an elevation of 463', a gravity line of 12", wire bound, wood pipes with a capacity of 1,400,000 gallons per day.

In 1932, the city was bonded for $100,000 to replace the gravity line with larger wire bound, wooden pipes with a capacity of 3,300,000 gallons per day.

For the most part, that 40 year old line is still in service.

Sort of.

1971's records show 70 breaks totaling $65,677 in labor, material and unmeasurable misery to the lines direct customers above Machias. In 1972 the breaks numbered 54 and the repair costs, approximately $50,000.

Of the city's 2339 customers, 110 are on the transmission line above Machias. Of the 2339 total, 823 are metered accounts; 1516 are flat fee customers. Of the 823, 89 are on the Everett line. At this writing there are 69 vacancies among the accounts.

Past efforts

The situation is critical. It isn't that city officials, past and present, plus interested citizens haven't tried to do something about it—they have.

More than six years ago, the November 24, 1966 edition of the Tribune reported, "Continued use of Pilchuck River water calls for an immediate investment of $615,000 and a long-range expenditure of three times that amount.

"Such is the calculated estimate of Livingstone, Moore and Wallace, Inc., (now Moore, Wallace and Kennedy) the city's consulting engineer. The estimate is based on the condition of the Snohomish water transmission system and the stiffening requirements of the State Health Department. The council voted unanimously to proceed with the program."

The figure $615,000 was the sum the city's financial advisors believed the city could raise through issuance of revenue bonds based on anticipated income to the water department. Working with that amount, the consulting engineering firm came up with the first phase of a three-part program designed to complete a third of the job of renovating the Snohomish water collection, treatment and transmission system.

"The first item needed is a water treatment or filtration plant. The engineers recommend construction of a plant at the dam site, 15 miles up river from Snohomish. The plant would filter three million gallons of water every 24 hours, (3 m.g.d.). This is approximately twice the amount of water now (1966) used in an average day. The plant would be expandable, allowing later expansion to a 6 g.p.d. capacity.

"Cost of a 3 m.g.d. water filtration plant is estimated to be $225,000. This leaves $405,000 for installation of a new transmission line."

"The $405,000 remaining will pay for the furnishing and installation of approximately 19,200 lineal feet of 24 inch and 7500 lineal feet of 20 inch pipe. This would allow the city to replace approximately one-third of the entire transmission line. The engineers report stated this amount of pipe would cover the installation essentially around both swamps."

The "swamps" referred to in the article are the two at the upper end of the line aggravating the line break problems. It was also reported "the completion of the other phases would raise the capacity of both the filter plant and transmission line would be raised to 6 m.g.d.—enough to service the needs of this community and its environs for decades to come."

The engineering of phase one was completed and paid for. With the completed engineering study in hand, the city applied for HUD funding in 1968.

The application got as far as the Puget Sound Governmental Conference, clearing house for HUD funds. Numerous efforts to break it loose failed. The last tie up being the water study ordered by the County Planning Commission. That is the Wash-Use I report.

Water rights status

In the meantime, in 1970 City Attorney Richard Thompson was directed to determine the exact status of the city's water rights on the Pilchuck.

Since 1970, due to legislative action, temporary water rights have been granted on a year-to-year basis by the State Department of Ecology. The state has announced that June 30, 1974 is the deadline for obtaining permanent water rights. Again, the city is caught in a vicious circle, the questions are—can Snohomish obtain permanent rights without funds to develop the system? Can Snohomish obtain funds to develop the system without having been granted permanent rights?

The State is aware of the engineering plans for the required filtration plant and new transmission line. But, plans are not enough.

According to research done by the city attorney's office, the city probably has appropriative rights on the Pilchuck River via the 1912 granting. But, the 1912 rights referred to 1,400,000 gallons per day. The city presently uses three times that amount.

The financial condition of the city and its ability to fund a water system will also be discussed at Tuesday's meeting.

Bob Yeasting of Foster and Marshall, a municipal financial consultant, will be present at the meeting to answer questions regarding the city's bonding capacity.

A November financial study from Phil Dexter, city financial officer stated, "The water department's operating profit for 1972 is estimated at $69,000, of which $31,000 is earmarked for retirement of existing bonds. Dexter predicts profits will decline to $51,000 in 1973; $26,500 in 1974 and the city will experience a loss of $1800 in 1975.

"Without a vote, the city can issue 1½ percent of its assessed valuation in general obligation bonds, or a total of $218,250.

"By a three-fifths vote of the people, the city can issue 5 percent of its assessed valuation, of $1,470,000, for general purposes; $1,575,000 for utility purposes; and $1,575,000 for park and open space purposes. These are maximums allowed under state statutes.

Another expense facing the city in regard to water is a September, 1970 ordinance which stated "Flat rates shall be converted to Schedule one or three on or before January 1, 1975 by the installation of meters." The price of converting to an all-metered system was listed in the November report as $191,875.

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Appendix L
Snohomish Historical Society
1981
River Reflections Volume II

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RIVER REFLECTIONS

VOL. II

Published by
Snohomish Historical Society
Snohomish, Washington 98290

Printed by
Snohomish Publishing Co., Inc.

Printed in U.S.A.

Preface

In the beginning of the 1900s, the City of Snohomish was nearly fifty years old. Land was cleared for farming and further expansion of the community. Gravel pathways and roads were slowly being oiled and paved, a better lighting system was being implemented, along with a much-needed, healthier water system. Diseases were a worrisome problem: tuberculosis, smallpox, measles, chicken-pox, diphtheria and mumps.

Modes of travel were ever changing, the railroad being very popular.

Social events in the community, along with the engagements and marriages were most often front page news. Names of offenders of the law, those claimed to be insane, drunk in public and disorderly, were duly noted in the paper also.

Snohomish was a bustling community and had been given the title of the "Garden City" for all its well-tended yards.

The citizens took pride in the education system and there was a strong feeling of community that prevailed.

NEWS FOR THE SPORTSMEN APPEARING IN THE OCTOBER 1924 PAPERS

Launch fight on predatory birds, October 18 huntsmen to get prizes from local dealers for shooting animals and all birds of prey

A predatory bird and animal contest will be sponsored by the Snohomish County Sportsmen Association between October 18 and 31. The contest will be in charge of Dean Ashton, president of the association, of Everett; Ray Gilberts, secretary of the association, of Everett; and Herb Halterman, game commissioner for this district.

The committee has arranged with the sporting goods dealers of the towns of the county to furnish prizes for the winners and to take charge of the points made by the contestants. The contest will be similar to the one held last spring, the point system being used.

The groups that will count will be of two kinds, birds and animals. The birds consist of crow, sharp shinned hawk, copper hawk, goshawk, horned owl, magpie, jays and kingfisher. The animals are weasel, bobcat, coyote, hunting house cat and cougar.

The points that each will count are as follows: crow 5, owl 5, hawk 5, jay 3, kingfisher 3, magpie 3, bobcat 25, coyote 25, cougar 50, weasel 5, hunting house cat 5. Evidence of the kill will be heads of the birds and tails of animals. This evidence is to be brought to each local dealer with whom the contestant is registered.

There are two reasons why this campaign is valuable to the public: First, from the farmer's standpoint, it means protection of the domestic stock. Second, from the sportsmen's point of view, it means more abundant supply of game. Vermin destroys more game than hunters shoot, according to statistics compiled by the Sportsmen Association.

The co-operation of the farmers is solicited to this extent: that they will allow the contestants to shoot the predatory birds and animals on their lands.

FROGS NOW CLASSED AS GAME ANIMALS

Ker splash, ker plunk! A little King County frog hopped off the old favorite log and a big new, "planted" frog hopped on.

The change in the situation was brought about by the planting of imported bull frogs in the lakes by the County Game Commissioner. According to data gathered in looking over the proposed recodified game laws in Game Commissioner Halterman's office, the frog is now known as a game animal under Section 2. He is to be protected by state legislation between the first day of December and the first day of July, subject to extension of time by the County Game Commissioner.

If such planting of the animal becomes extensive, people of Snohomish County will be able to bag their own and enjoy frog legs. If permitted to reach full growth, the frog will measure at least 18 inches from tip to tip, and weigh a pound and a half.

With the passing of the years, only local interest stories appeared concerning the sportsmen, and then not too often. On March 21, 1935 the following article appeared in the paper:

A new job holding prospects of good wages for hard-working trappers and hunters will be open after April 10th as a result of new bounty laws covering the State of Washington, announced C.E. Bennett, local game protector. The new ruling offers a payment of $25 for each cougar killed, $5 for each lynx or bobcat, and $1 for each coyote.

All of these animals are numerous in Snohomish County. The clever trapper or hunter can make good wages working for these bounties, and at the same time help rid the district of an increasing number of predators.

Jan. 1, 1925

NEAR $100,000 IN BUILDING IN 1924

Approximately $100,000 have been spent in buildings in Snohomish the past year. In the business section the most outstanding additions have been Brown's Theater and the Puget Sound Telephone Building.

Contractors state that eight new dwelling houses, averaging $3,500.00 apiece, have been constructed. These alone, not including the repair work and renovation of old dwellings, means $28,000 worth of improvements to the residence section of our city.

Water - Water

By Ione Gale

Water is the life line of a community. Without, one could not exist. The history of the Snohomish water system has had many challenges as the story unfolds.

July 12, 1910

STEPS TAKEN TO SECURE FOR SNOHOMISH MOUNTAIN WATER IN ABUNDANCE & PURE

Immediate steps will be taken to secure for the city of Snohomish a new water supply. For some weeks the city engineer and a squad of assistants have been scouting among the mountains searching for a good water supply. They found several mountain streams that could be harnessed and piped to the city, and at the same time insure the city of a supply of pure water without the danger of typhoid epidemic that the present water of the city carries with it.

January 27, 1911

It was decided by the election held Tuesday that Snohomish will change her present pumping for a gravity water system, and instead of using water from the Pilchuck where it runs through the City, the water will come from a point 15 miles above the city in the first reserve, above all settlements, pure, sparkling clean, etc.

The election was held for the purpose of validating bonds, $110,000 to be sold for the purpose of building the system as well as deciding whether we should change the system. The vote stood 371 for the adoption of engineer Green's plans and 18 against; 378 for the bonds and 14 against.

Mr. Green practically had the bonds disposed of be-

fore the election. It is believed that there will be no question but that Snohomish will have the new system installed before another year rolls around.

November 10, 1911 (Editorial)

PURE MOUNTAIN WATER NEXT WEEK

Snohomish people will be using mountain water next week if nothing happens to hinder the plans of the engineer. Everything necessary will be completed and the next thing will be to supply the water. The surplus will be run into the Pilchuck for the present. If any available use can be found for it in the future, the city will have plenty of power at their disposal.

Before the ending of next week, the City pipes will be in direct connection with the water of the Pilchuck 16 miles above the Emerson hill at the very foot of Mount Pilchuck. The greatest part of the water of the Pilchuck comes from the spring and seepings on the mountain side and fresher water cannot be found anywhere in the hills.

The construction crew have been working on the system for a little over four months and we are about to see the completion of the work and when we do we can brag of the best water system in the county and one of the best in the state. There will be no comparison. Everett, although planning on a system to connect with a mountain stream on the other side of Pilchuck Mountain, are at present using water from Woods Creek, a small stream on the Larimer Hill. Monroe is pumping from a well and Sultan is having a great amount of trouble with their system. The same troubles are being encountered by other cities and Snohomish is seeing the day when her troubles will be over.

When the pipes, that are guaranteed to last twenty-five years wear out, we will be ready for more troubles with the system for a water supply.

December 1, 1911

Water consumers of Snohomish will be compelled to wait for the completion of the new water system. Everything was in readiness when the rains came and the engineers were about to turn water on through the City and their plans were knocked in the head.

The first bridge above Machias was washed out and one of the bridges farther up the valley was twisted out of shape. About 700 feet of pipe was washed out near Machias.

January 2, 1912

WATER TURNED INTO CITY MAINS

This morning, with all glory, the water from the upper Pilchuck was turned into the mains over the city. All the works are complete. The gate has been removed to the city limits as ordered and the contracting company is about ready to send in their report to the City.

The following year one article appeared in the paper regarding the city's water, but it would be a number of years before this again happens.

WATER

The editor of the Monroe *Monitor-Transcript* wrote a letter to the former water superintendent of the Snohomish water system, Jack Boyle, for information into the water system here:

In his reply were the following tidbits:

"We charge $1.00 per month for each residence, toilet 25¢, bath 25¢ extra. When they pump by electricity it costs about $3.50 per month, cost 2½¢ per kilowatt. We pumped about 350,000 gallons daily."

A note after the ending of the letter:

At present Snohomish is using a gravity water system and most of the time it is being run at a loss. Something is radically wrong about it, for it stands to reason that the operating expenses should be a great deal less then by the old system of pumping. The water department needs a thorough overhauling and an investigation, to see if this state of affairs could not be improved.

(No further explanation of this charge or reply to the charges were ever furnished in the newspaper.)

July 7, 1922

A motion was carried that the City install a chlorine plant to purify the water and act as an automatic germ catcher for the water system at the City Council meeting. Problems with the water system appeared again in January 1925 as the following article states:

WATER MAINS PROBLEMS OF NEW COUNCIL

The new council, under the leadership of Mayor Lincoln, will be faced during the year with the big problem continually presenting itself, the water situation. The difficulty as it confronts the citizens now is, shall the improvements, the new reservoir, and the addition of another intake, be added by bonding the city or gradually from the profits from the water receipts?

At the present time the water department has placed enough money in deposit to care for the old bonds and as the income is between $23,000 and $24,000 each year the new improvements could be cared from this amount.

The new reservoir, as planned, will hold 1,000,000 gallons and will be placed above the old one and have the main entering into the top, rather than the bottom of the tank as the old one. The 500,000 gallon reservoir can then be used as a settling tank.

Other problems that will confront the new council, will be the paving of the old interurban crossing on Avenue D and the replacing of the bridge near the Eagles hall on First Street.

July 2, 1925

A water shortage, due to a break in the main water line and a discovery of sand in the pipeline where the break occurred came to the attention of the newspaper editor with a rather scathing editorial.

WATER SHORTAGE UNNECESSARY

Snohomish faced a water shortage last weekend which it should not be asked to endure. For two days, while workmen were cleaning out a part of the pipe and searching for a leak in another portion of the conduit, only a limited flow was present in the mains. To pre-

vent the peril of an absolute shortage, sprinkling was prohibited and the city's big new fire engine was taken to the openings in the main to pump water across to the break and to supply the citizens' needs as far as possible.

Thus a double menace presented itself: Snohomish was not only out of water during the most dangerous fire period that has been seen this summer, but it was forced to endure the added peril of having its main fire protection removed from the city limits for many hours. Had fire broken out the property affected would doubtless have suffered total destruction.

Snohomish citizens uncomplainingly pay a water rent which is amply high to assure for them a plentiful supply of good water every day of the year. Yet, despite this, each summer there is a water shortage when sprinkling must be limited and uses curtailed in other ways. This condition will be somewhat relieved when the new reservoir is in use, but it has no logical reason to exist at all. In a hopeful spurt of economy, the city council has neglected necessary repairs to the pipe line — hopeful that the weak parts would last another year or so. During the winter when the water is plentiful and its uses few, the pipe line is forgotten and the bad spots grow weaker. Then, when summer comes and the demands on the system are the greatest, the weakened spots give way and the citizens are subjected to a water shortage.

During the winter the water maintenance crews are doing little or nothing to the system. In the summer, they are busy night and day making emergency repairs. The condition should be exactly reversed — the winter should be spent searching for and making permanent repairs to eliminate the necessity for shortages and emergency repairs in the summer. Such repairs would cost money, it is true, but the people of Snohomish are paying for good water service. They should receive it.

July 28, 1927

PUMPING PLANT INSTALLED

Having been plagued for several summers with water shortages, the city installed a pumping plant next to the town on the Pilchuck River. The success of the pumping station brought forth this editorial comment.

Actual operation of the city's new pumping plant shows it to be a thoroughly efficient and capable addition to the city's water system. Thus far it has delivered more gallons of water per day than it had been estimated to be capable of, and the water itself has been tested by state health authorities and declared to be absolutely free of disease bearing germs.

That report is worth much to the City of Snohomish. For in these days of ever growing populations and increasing difficulty in securing adequate water supplies, the assurance of nearly three million gallons of pure water daily is an excellent advertisement.

The new auxiliary system was obtained at comparatively little expense, and best of all, it is so arranged that at a peak load, water can be had when the demand is the greatest, and during the remainder of the year when the demand is small, it can shut down and is but a nominal expense for upkeep.

January 2, 1928

GOOD WATER AID IN KEEPING OUT DISEASE

The excellence of the Snohomish water system is given large credit for the fact that no typhoid fever, dysentery or other disease in which the germs are waterborne, have occurred, by Health Officer Dr. E.A. Stafford, as presented to the City Council Tuesday.

July 4, 1929

Declared to be absolutely free from bacteria and harmful minerals, the water from the new artesian well, drilled by the city at a site shortly below the Avenue D bridge is satisfactory both for domestic and commercial purpose, city officials report.

A slight trace of chlorine was found in the water, and the element, due to its purifying effect, is said to be highly beneficial to the water for drinking purposes and in no way impairs its efficiency for commercial use.

Whether or not the stream at the well will be permanent will be determined during the next few months when the well will undergo a period of observation. Should it continue strong through the summer months, the probabilities are that three or four additional wells will be sunk in at winter to assure a plentiful supply for the city.

By 1931 it was evident that the water line supplying Snohomish with its water was wearing out. The articles accompanying the following headlines were detailed in what must be done, but were not that interesting to be quoted again. It will be apparent from reading the following headlines, of the discussions that took place among the city council members.

March 5: City considers buying water from Everett, replacing the 20 year old water line cause of problem.

March 12: Wide opposition to Everett water plan disclosed. Survey shows most citizens would retain present system.

March 26: Opinions vary about Everett water question.

But Mayor Bakeman says, "No Everett water even if it's free."

Over a year went by before this headline appeared:

July 21, 1932: $200,000 sought to replace city's old water line.

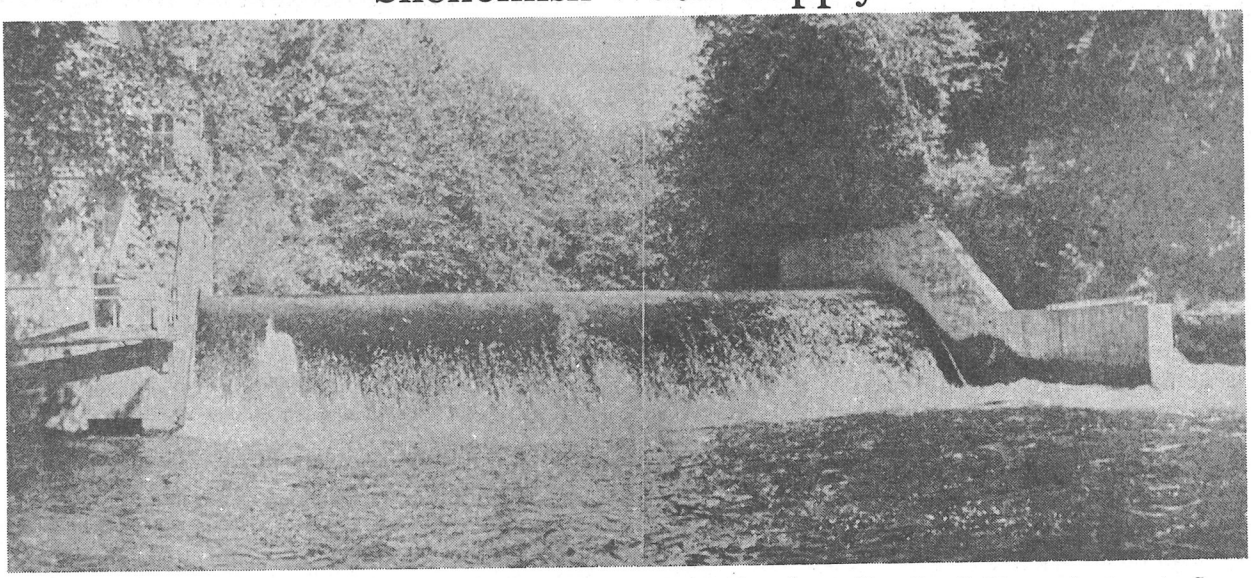
Something had to be done about the water system and in August 10, 1933 a bond issue was put forth to the citizens to vote on. The report of this vote stated the following:

97 PERCENT OF VOTERS ENDORSE BOND ISSUANCE

Federal authorization of a gift of $60,000 toward rebuilding the Snohomish water system and financial arrangements for the sale of municipal bonds approved by the citizens in Tuesday's election, were all that remained today to be cleared before actual work on the local unemployment relief project could be begun. The city's share of $100,000 of the total cost of $200,000 which was ap-

July 1, 1954

Snohomish Water Supply



As much as four million gallons of water are taken from the Pilchuck River daily at this dam to supply Snohomish water needs. This 75 foot concrete spillway is twelve feet high. It is located fifteen miles northeast of Snohomish above Granite Falls.

At the right of the dam, obstructed from view by the wall, is a fish ladder. To the left are buildings for the chlorinator and the shut-off control system. City Superintendent Ed Lysons and the caretaker, John McFarland, are standing on the walk over-looking the dam. Called the Pilchuck Dam Number 2, it was built in 1931 when C.H. Bakeman was Mayor. Being 200 feet higher than Snohomish, water feeds into the city by gravity. Pipelines decrease in size from 24 inches to 14 inches before they arrive at the three reservoirs on Emerson Hill.

Reservoir Number 1, built many years ago, holds 500,000 gallons. Number 2 Reservoir, twenty five years old, holds a million gallons. Number 3 reservoir, completed last year, and "holding up wonderfully", according to Lysons, holds five million gallons, so you can see that with plenty of water from the Pilchuck and an abundance of storage space, Snohomish will have few water problems for years to come.

The watershed covers 10 square miles, with the city owning 26 acres at the site of the dam and the watchman's house and the rest owned by Weyerhaeuser and Scott Paper Company. New industries in Snohomish, especially canneries, have more than doubled the water rents during the past twenty-five years to a point where they now exceed $50,000 annually. In case of a break in the water line, a man must drive to the dam to shut off the water.

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proved by the overwhelming majority of 841 to 27 while the state relief board has already promised $40,000 as its share toward the work.

The procurement of the Federal loan had to go through the mechanisms of government and it was not until January 4, 1934 that the grant was approved.

PIPELINE GRANT IS APPROVED
$147,000 FEDERAL MONEY
AVAILABLE FOR USE VERY SOON

Announcing the granting of $47,000 by the federal government, and the purchase of $100,000 of the city's bonds, the following telegram was received at 4:35 today from Washington, D.C., by Frank Nickerman, Snohomish councilman-at-large. It assures immediate start on the rebuilding of the city's 17-mile gravity flow pipe of the water system, and virtually means the end of unemployment here.

Washington, D.C.
January 4, 1934

To Frank Nickerman
Snohomish, Washington

Called on Ickes yesterday morning Snohomish project approved today. Loan and grant one forty-seven thousand. Recently P.W.A. officials informed me project not fully examined. Also approved Stillaguamish bridge eleven thousand, Snohomish roads eight thousand.

Monrad C. Wallgren

June 7, 1934

Will open bids for new pipe line on June 22

June 28, 1934

Acme Construction Company of Seattle was awarded the bid to clear the land, dig the ditch and lay the pipe from Pilchuck dam to the reservoir.

As much hand labor is to be used on the project as possible, workers will be paid at fifty cents an hours for common labor and will work thirty hours per week according to regulations stipulated by the federal government. Bona fide residents of Snohomish and com-

munity who are registered with the National Re-employment Survey will be given jobs. Veterans are to be given preference.

November 8, 1934

WATER TO BE TURNED ON IN NEW LINE TODAY

December 20, 1934

GOVERNOR MARTIN TO SPEAK AT WATER SYSTEM DEDICATION PROGRAM

Governor Clarence D. Martin, Lt. Governor Victor A. Meyers, Congressman Monrad C. Wallgren, city officials of Everett, Seattle, and numerous other northwest cities will be present at the dinner at St. John's Parish Hall tomorrow night when the city dedicates its new water system. The following week it was reported that 200 people attended the dedication.

Throughout the ensuing years there would be water shortages during the summer years, but it would be twenty years before a solution was reached and accomplished as is reported on July 15, 1953:

"A new five-million gallon reservoir was dedicated at ceremonies at the Emerson Hill. The cost to the city was $99,997.50. Mayor Tronsrud and City Superintendent Ed Lysons hailed the completed reservoir as an important link in solving Snohomish's perennial summer water shortage."

March, 1981

Old line replaced

After having served the community with its water for forty-seven years, the old wood transmission line is being replaced with a new line, and a filtration plant at the city's dam site.

In the past fifteen to twenty years the city government attempted many times to achieve funding to do this very project, but were turned down by all government agencies. Their reason: since the Snohomish water line crossed the City of Everett's water line it could not be funded, and that the City should connect to the Everett Water System.

Funding became available recently, and with a raise in the water rates, the replacement is being done.

July 2, 1925

NO, SIR! YA CAN'T SWIM IN NATURE'S GARB WHILE THE CONSTABLE'S AROUND

Upon the complaint of parties residing in the neighborhood of the water hole south of the Cascade Mill near the crossing of the Northern Pacific and the Great Northern railroads, Constable W.I. Price, Saturday afternoon arrested ten boys.

They were taken before William Kuehn, justice of the peace, charged with swimming in a public place without bathing suits. They were fined $1.00 but this was suspended. Constable Price announced that he will be on the lookout for boys swimming in this place, or elsewhere, without bathing suits and to promptly place any such under arrest.

July 16, 1925

STEVENS PASS OPENING BRINGS HEAVY TRAFFIC

Snohomish saw one of the busiest traffic days of the season last Saturday, when the combined traffic of those going to the summit for the Stevens Pass opening and the regular weekend tourist formed a steady procession along First Street. It is estimated 5,000 cars passed through the city on Saturday.

July 29, 1925

It was announced that the road to Machias would be opened. The existing road is a dirt road, but will be graveled shortly.

December 31, 1925

SNOQUALMIE PASS HOLDS DANGER FOR MOTORISTS

Winter parking of automobiles in Snoqualmie Pass should become unpopular, officials of the State Highway Department pointed out, when news came that five cars had been caught by the Christmas weekend snow storms. All that has been left of the autos, heretofore found imbedded in the snows of the passes when the road crews cleared away the snow in the spring, has been a mass of rusted, broken and twisted machinery which the road crews have tossed over the edge of the convenient bluff.

It is estimated that an average snowfall in Snoqualmie Pass will be packed down and solidified into ice ten feet by the time spring comes. The road crews that have cleared the pass have found that the mass of snow weighs 500 pounds to the square foot, which would mean that an automobile which spends the winter under the snows of Snoqualmie Pass would be buried under fifteen tons of snow-ice. No machine has yet stood up under such a load.

The sudden change of the weather at the pass this year bore out a highway department prediction that it is extremely dangerous to try to get through late in the season. Five feet of snow was reported having fallen in less than half a day. The road is not expected to reopen before May.

Oil fever hits

The saga of looking for oil near Snohomish was front page news during the years of 1925 and 1926, and again ten years later in 1936. Nearly twenty years later in 1955 another hunt for oil was news. Considerable expense was made in this pursuit. No mention was made as to what happened to the explorations, nor was any further information given after a request in the local paper was made while this book was being put together.

July 2, 1925

EXPECT OIL 'MOST ANYTIME' STATES HEAD OF SOL DUC OIL

The last of the cement used to lock the 12-inch casing in place at the 1,300 foot level in the Sol Duc oil well was poured Wednesday afternoon. The crew of the

preliminary studies were made in forming the District. A tentative plan for the hospital building was sent to the State Department of Health. Local support was given by both the Chamber of Commerce and the City Council. The September 8, 1949 issue of the *Tribune* stated in an article that the plans for a new hospital here could become a possibility if each home owner in town and surrounding area would be willing to pay 25¢ per month to finance the building and maintenance of the institution.

Supporters during this time found it difficult to wait for the legal red tape to unwind itself and allow them to go ahead with their plans. During this interim, another announcement came from the *Tribune* on June 22, 1950 with the headline, "Hospital expected to be re-opened in three weeks." Snohomish's 22 bed general hospital, renovated and fire proofed will be re-opened it was disclosed yesterday. S.P. Andrews and his wife, of Seattle, who have purchased the building, hope to be operating within that length of time. Work is underway now to prepare the building for use again after being closed for nearly a year. Foremost on the remodeling list is the installation of fire doors in compliance with safety regulations."

The formal opening in August saw a number of patients admitted, according to the *Tribune* news article on August 17, 1950. But the status of hospital was short-lived. Doctors were now used to the larger, newer facilities in nearby cities. The code and safety regulations to up-date the Snohomish Hospital building were difficult to meet and within a year the hospital became a nursing home. It served the public in this capacity until 1970. The doors were closed on the Mission of Mercy, but many residents and past patients have fond memories of their hospital.

The building was torn down in 1973 and the Central Feed Mill now owns the property.

January 6, 1938

As roads were slowly being improved, automobile traffic was on the upsurge and traffic accidents were on an increase. According to the Snohomish Police Chief O.D. Morse, in a newspaper report, 239 auto wrecks were reported at the police station for the year 1937, with 64 of those accidents in town.

July 14, 1938

Nine students of the high school biology department, accompanied by their instructor S.J. Smith, Mrs. Smith, and their son Lynwood, returned Sunday evening from a 3,157 mile trip to points of interest in the Rocky Mountain States and Canada. A study of wildlife and natural phenomena was combined with recreational features in the journey.

Students in the party were: Crete Hanson, Ben Beach, Don and John Duckering, Stanley Lord, Allen Greenleaf, Bob Poier, John Vaninetti, and Quention Stephens.

The trip was made in two cars and nightly stops at wayside camps. Most of the cooking was done by the party members. Cost of the journey was said to have been less than a cent a mile per person.

Editorial March 11, 1937

"Wailing Day" or day of income tax will be a nightmare for married couples earning $2,500 for the year or more, and for single people earning more than $1,000 for the year. Monday is the deadline in telling the government all about that money; where they got it, how they spent it, and why they spent it, and if there is anything left after they have made all the possible deductions, the government expects them to cough up with a portion of the balance.

Snohomish Condensed Milk Company later became Darigold Plant, 1908.

Snohomish Darigold Plant

By former employee, Stan Dubuque

In the early days of Snohomish, what butter the pioneers did not individually produce for themselves came from Iowa and later from California.

The first creamery in Snohomish County was started by a Mr. Alexander of Kent, on a site on the river west of the bridge and north of the Great Northern depot. He made an offer to establish a creamery provided that a site and a bonus was forthcoming. He would pay 85¢ per hundred-weight for the cream the farmers had been shipping to Seattle, via the Seattle, Lake Shore and Eastern railroad, where the price was 80¢. The proposition was accepted by Snohomish businessmen and a fund was raised to move one of Ferguson's idle buildings across the river.

Soon the creamery was receiving 150 gallons of milk a day which was one quarter of the capacity of the business. The quality was good and business increased, but still the results were unsuccessful and the plant was sold to a co-op at Stanwood and the equipment moved there in May 1895.

A creamery started in Monroe in early 1895 proved so successful that in April of 1896 manager Allen McMaster arranged to establish a branch in Snohomish. He contracted with Frank Friese for use of a portion

of his feed mill building at Fourth and Maple and for power.

H. McMaster began a cheese factory in a small way at Snohomish in 1895. He made a success where the creamery project had failed. During the first year he took milk but four months during the summer, receiving about 2500 pounds of milk per day. By November 1897 he was using 7000 pounds of milk daily and paying farmers about $1800 per month. He was quoted as saying that the farmers brought milk from as far as seven miles and, in some instances, over very rough roads. McMaster added buttermaking to his line in January 1897 and took prizes at the Tacoma and Yakima fairs.

Dairying and dairy products prospered in Snohomish and Snohomish County. After the turn of the century the Snohomish Condensed Milk Co. had a large thriving condensery on the south river bank west of the Avenue D bridge.

Milking was done by hand on most of the local dairy farms. Milk was cooled by running it over a water cooler and it was then caught in five or ten gallon galvanized cans. These cans were kept cool overnight in a cold water bath tank. After the morning milking, the cans would be loaded onto a wagon and hauled to the condensery where it would be weighed and samples taken for testing. From there the milk was run through a separator. The cream was held for butter and the skim milk would be condensed in a vacuum condenser. The Snohomish Condensery made their own brand of condensed milk, sealing it in tall and short cans.

In 1917, some pioneer farmers founded the Snohomish County Dairymen's Association. These men had the foresight to see the benefits of working together for a common good. "Darigold was its name — Quality was its motto." They secured the old Condensery building for their operation.

The Association was soon using trucks on regular routes picking up milk cans at the farms. Each farmer had a number which was marked on his cans and when these cans were emptied at the plant, they were immediately washed and scalded and made ready to be returned to the farmer.

The following is a story taken from the February 26, 1931 issue of the *Tribune:*

ICE CREAM NEW PRODUCT OF LOCAL PLANT

"Snohomish will become the home of Darigold Ice Cream, a new product of the Snohomish County Dairymen's Association, which is to be put on the market this spring.

Freezers and mixers are now being installed with production of the new product starting in March. Darigold Butter is already being manufactured at this plant.

This will make Snohomish the manufacturing point for all the butter and ice cream sold by the Association, leaving the condensing of milk and powdered milk for the Arlington plant.

The local products will be sold throughout the northwest."

BUTTER MAKING

The separated cream was pumped into huge steel tanks where it was heated and pasteurized and then allowed to slowly cool. The next day it was pumped into a long wooden churn which would rotate slowly, first one direction and then the other. The churn had a small glass window on one end where the butter-maker could watch for the cream to "break" into butter and buttermilk. After being drained, rinsed and seasoned, bulky chunks of butter would be dropped into parchment-lined molds and pounded to get the air pockets out. The filled molds were stored in a cooling room. Later they were brought out and cut into one quarter pound or one pound pieces. These were individually wrapped by hand in labeled parchment, and packed in 30 pound cartons.

Darigold sweet cream butter commanded a higher price on the market than some of its competitor's products, but on some occasions, a competitor would suddenly need more of his brand than he had on hand. An emergency call would be made to Darigold. They would stop the wrapping in Darigold wrappers and the same butter would receive the "Clover Leaf"" or other brand wrappers to be sold at the competitor's price.

THE CLEANUP

One of the most disliked jobs in the plant was the dismantling and scrubbing of the separator discs. The worker would strip to the waist and work in laundry tubs filled with hot detergent treated water, cleaning the endless stack of metal cones.

The plant floor was made of concrete and each operation was followed with a thorough hosing down. Occasionally in the cleanup process a hose would "accidentally flick up" and catch a surprised separator scrubber or another worker in the back with a stream of water. More than once a retaliating burst would erupt into a full fledged water fight with streams coming from all directions, and going into many places it shouldn't. This could show up the next day when it would take much longer for the churn to "break."

Another job to be avoided if at all possible was the cleaning of the condenser. This involved climbing down into the vat through a porthole, while it was still hot, and scrubbing the cooked-on milk from the many steam coils. All with very poor light.

CASEIN

In the late 1930s, many experiments were being made at the Snohomish plant trying to evolve an easier way to make casein from the by-products than the hand method then used. The buttermilk and some skim milk were caught in a huge wooden trough. When the tank was about ¾ full, steam was injected into the tank and the cooked milk would separate into a large, tough, floating layer of casein and its supporting body of whey. When the cooking was completed, the mess was allowed to cool just enough to keep from burning the crew, who stripping to the waist, gathered around and leaned over the tank to begin breaking or crumbling the casein layer into pea or marble size pieces. This had to be done quite rapidly since the layer got tougher as it cooled.

This operation was another job that would often provoke someone's foot to "slip" knocking his neighbor

off balance so that he splashed hot whey over himself. Bill Wright, the plant manager, was not averse to a little "horse play" between the workers and many times joined in. Among the plant workers at that time was Homer Hazen. Being slightly handicapped did not prevent him from enjoying perpetrating and receiving some of this horseplay. More than once Bill Wright would be caught on the wrong end of a hose, or Homer would be unceremoniously dumped into the whey.

The whey was drained from the casein and the curds rinsed thoroughly then spread on screen trays to dry. The dried casein was bagged and sold for glue, paint and other products.

In the early 1940s, a new wood and concrete block plant was built next to the old building and many procedural changes took place. Cooled thermal tank trucks picked up milk at the farms. The farmers also had their new refrigeration cooled holding tanks and milking machines.

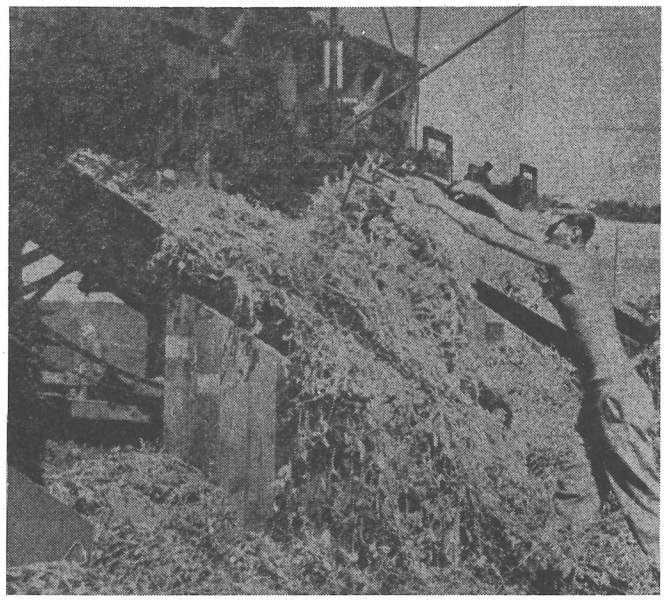
An item in the *Tribune* of November 10, 1949: "Shippers Association to be formed here by Snohomish dairymen. Motivated by a desire to keep control of milk prices on the farm level, Snohomish district dairymen overwhelmingly adopted a proposal to form a producers' association during a mass meeting held in Snohomish Tuesday night."

In 1954 the Darigold plant started producing cottage cheese from local milk.

In the early 1960s consolidation of plants took place within the Snohomish County Dairymen's Association and the Snohomish plant was closed. The old buildings were used by several different businesses in the following years until they were destroyed by a spectacular fire on June 12, 1979.

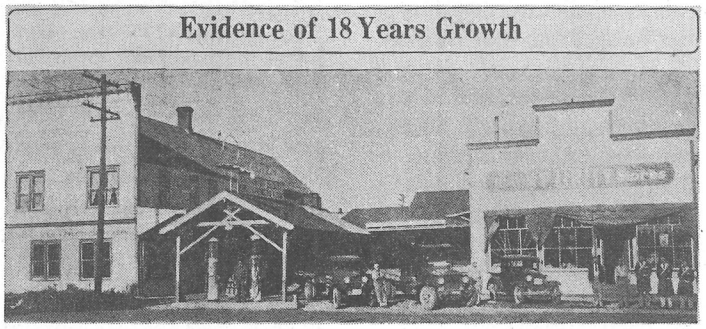
The buildings are now gone, but the lives of many farmers, laborers and businessmen in and around Snohomish were touched by this large community enterprise.

THE HARVEST



The harvest of local pea crops, to be processed by Evergreen Frozen Foods Co. of Snohomish.

The eight-acre berry farm owned by Mr. and Mrs. Vernon Haugen attracts students for summertime harvest.



Snohomish County Fruit Growers Association. Employees shows: left to right, Art Rowe, gas station manager; Claude Buckley and Otto Vogel, truck driver; Dana Cowell, manager; W.R. Easton, bookkeeper; Gifford Neil, Glen Buhr and Frank Schoknecht, grocery clerks.

Ferguson Canning Company

By Emory A. Ferguson

Cecil and Clara Ferguson founded Ferguson Canning Company in 1914, located at 525 Maple or East Street. One entered on East Street as there was no North Maple. Maple Street ended on Fifth Street.

The original cannery was a lean-to, consisting of three sides and was located about 40 feet east of the Ferguson home. It had a tarpaper roof, a dirt floor, one ten-horsepower steam boiler and one steam engine. The steam engine had a large fly wheel, and made a terrible noise when it was started and running — putt, putt, putt.

At this time there were no retorts or pressure cookers. The cans were cooked in a wooden box fitted with steam pipes. The boxes were about three feet long and two feet wide, standing on wooden legs. There were two of these and each box held about 50 cans.

At this time there were no cooking charts for process time and there was some spoilage. The food was either cooked too long or not long enough, so by trial and error cooking times were established.

Fish, clams and meat were cooked or processed in these wooden boxes, and by today's standards, this would not be possible. But it WAS done. I was there!

This cannery was called a custom cannery. Why, we were never sure. Besides sea foods, there were fruits, vegetables or anything people would bring in to be canned. They would come from miles around with their produce. There were three sizes of cans to choose from, the No.1 talls, No. 2 and No. 2½.

The sealing machine was a wonder for sure. One wondered if it made a good seal or crimped the lids on the cans to make a good seal. The tin cans were not made of tin. They should have been called tinned cans. The cans were formed of sheet steel and coated with tin.

The most popular types of fruits and vegetables brought in were: Marshall strawberries, Cuthbert raspberries, Kentucky Wonder string beans, Oregon Giants, Cranberry beans, Golden Bantam corn and CLAMS!

Clams would come in by the gunny sack full, three or four sacks at a time. Ferguson and Mr. Slater would go by boat from Snohomish, down the Snohomish River to Everett, across the Sound to Whidbey Island and bring back clams. Corn would come in by the sack and Cecil would pay about 50¢ per sack, holding ten dozen ears. He also raised a large garden and would can the produce for sale. No labels were used, just an ink stamp for ID was enough.

There was also a smoke house where the fish were smoked. This was a good item. The smoke house was made of cedar shakes. At this time fish were plentiful. One could get a good-sized salmon for 35¢. There was a large wooden table in front of the cannery where fish were cleaned, corn cut, fruit peeled and, oh boy! the flies! By sheer magic, no flies got into the cans.

E.C. Ferguson's bookkeeping system was plenty good at this time. It consisted of one pocket note book. The "paid out" part, income, if any, and the dates. I had the pleasure of seeing this book. It also kept track of the payroll, which consisted of two girls who were kept busy preparing the produce for the cans.

In 1920, the cannery prospered enough to build a much larger and up-to-date cannery. The new one had wooden floors, two rooms, and one toilet. One room was used as the processing room and one for storage. By this time we had lights, and knob and tube wiring. Conduit pipe was not in use yet. We did not have a retort or pressure cooker either. One addition we did have was a larger boiler. This I know because I had to cut wood for it. We purchased wood in four foot lengths. This was an upright boiler, and we still had the old steam engine. The wood had to be cut into 16-inch lengths.

About this time more changes were made. A cement floor was put into the processing room. I believe Art Stobb did this job. It seems that some inspectors started coming around.

Chili Con Carne

About this time Clara and Cecil Ferguson started to make chili con carne and chicken tamales. Now this meant more experimenting, how to make it, the right spices to use, the proper cooking time and what to call it. Besides chili, one had to have a brand name, and Ferg's Finer Foods came into being. It took some time to produce a product that would sell. Not too hot and not too mild.

Ferg's bought round steaks for chili meat and it took three of us to cut the meat in half-inch squares. This was done in the evenings and, believe me, there was a lot of cutting and cut fingers! The meat was fried in the house and the beans put to soak in the house. Next morning meat, beans, spices and tomatoes were added and the big moment came a day later when we opened a can to see how it tasted.

It was very bland, so next we tried more chili powder. Wow! too HOT! We had then to check to see if it was going to keep and this process was called "incubating". Yes, we lost a lot of chili before we reached the proper cooking time. Our whole family ate chili for some time rather than throw it away. Some of these samples tasted pretty bad, but we ate them. Eventually we came up with just the right blend and a good product. We sold it in Seattle to restaurants and, also, the chili was put into No. 10 cans which held about three quarts plus.

By special request from my dad, I learned a lot of things, mainly, how to prepare salmon for smoking, take out the back bones and ribs, and, of course, the insides, salt the fish for just so long, wash off the salt, start the fire in the smoke house to create a heavy smudge, how to repair steam and water pipes, cut and thread pipe, what a hand saw was for, to know the

difference between a cross cut and a rip saw. Many times I found out about electricity the hard way. Wow! One could get terrible shocks from this stuff and one learned to have respect for it, especially when the floor was wet, the walls were wet and you were wet.

Tamales

Many times I have been asked, "What is a tamale?" It is a tasty dish sometimes referred to as a hot tamale. As for ingredients, for starters, there is a wrapper of corn husks that come in 50 pound bundles, dry from California. Enough husks were soaked in water over night and then sorted as to size. Enough were overlapped to make a wrapper about 12" to 14". A mush of cornmeal was put down on the wrapper and flattened out to the size of a large pancake. On this was placed a scoop of hot tamale sauce and then chicken meat was added. This was all folded together to make a roll about the size of a bologna and the ends tied. One of these was placed into a can and sealed, and processed.

A bit later parchment paper was used in place of the corn husks. These tamales are now extinct, and one of the reasons is government regulations. Not enough chicken meat, make no more. Later we made a petite tamale, no wrappers, and it was formed in an eight-ounce can. These, too, are impossible to find as they are no longer made.

You bring it — we can it

We got rid of the old steam engine and replaced it with electric motors. One motor for the sealing machine, just press a button and the sealing machine really turned over. There were some drawbacks to this operation. We could only operate about four months out of the year on fruits, vegetables and meats. Some of the local people would bring in meat to can. At first the meat had to be cut into stew meat only, and then hamburgers were brought in all fried and stacked in a can. Then came roasts. The people would roast the meat at home and then cut it into the size to fit a No. 2½ can.

Then came canned stew. The customer would make the stew at home and bring it to the cannery for processing. My father would guarantee all of the canning he did. If the customer was not totally satisfied, his money was refunded, plus the cost of the materials used in canning.

More improvements

The cannery finally acquired a retort, commonly called a pressure cooker. This retort was made by the Snohomish Iron Works. We were really getting up to date — progress! The cover was heavy. One did not lift it off by hand. We purchased an endless chain hoist on an overhead trolley. The trolley was about twelve feet long. Now we were really cooking in more ways than one.

The retort was about 3½ feet high and approximately 30 inches in diameter. We also had about four iron crates made to fit inside the retort so now we were able to do more modern cooking. The time was cut in half. The cover of the retort had a steam gauge and a pop valve set for 10 pounds. Someone had to keep an eye on the steam boiler. This was one of the MUST items to watch, to be sure the boiler had the required amount of water. One could tell by the glass gauge on the side of the boiler. We had to also be sure the fire had not gone out and check if it was low or low on steam. If it was, there was a mad scramble to get the steam back up. There were some frightened people around if all systems were not GO. There were as yet no such things as automatic systems for boilers.

During this time we were operating under a free enterprise system. One was free to make his own mistakes or discover something new without interference from incompetent inspectors.

We acquired a 50 gallon copper kettle and a 75 gallon aluminum kettle. This meant more plumbing and no one knew how to hook it up, but it was accomplished through trial and error. Oh yes, we learned what steam traps were and what steam gauges were and just how much pressure these kettles would take. None blew up, but we did have a few near misses. It seemed like the more equipment we acquired, the more things there were to watch. There were steam pipes running here and there, and we did try to put them where one would not have to touch them. One could get a terrible burn from them for sure.

About October of each year the cannery closed down except for a few times when chili was made.

We soon discovered that it was easy enough to make something, but the next thing was to convince people to buy the product. We did have one thing in our favor. Ferg's had a good label. These were put on the cans by hand, and one had to learn how to "fan" labels, a process of taking about 20 labels and make them move end-ways about 3/8" and then spread glue on the exposed ends, a very slow process. One picked up the glued label, and wrapped it around the can. I can still do this type of labeling.

The next step was to take our products and visit the different restaurants and stores and convince them our chili and tamales were the best money could buy.

Somehow we acquired a Model T truck which was used to deliver the products in Seattle, and then in turn, bring back a load of cans purchased from the American Can Company.

My father

I shall never forget my father. He had one habit of walking around the cannery barefooted. My mother was always reminding him to put his shoes on. "What would people think. It surely was not very stylish", and on and on, but he would always reply that it was healthy to go barefooted. There was always water on the floor, and I guess he liked it this way. Well, he was the boss, so why not? More times than a few, hot water or steam would land on his foot, and he would move VERY quickly, but oddly enough, no cuss words. The remarks were usually, "Wow, that was hot!"

Many times he would stub his toe, and his remarks would go something like this, "Now THAT smarts!" Nothing stronger than, "Damn it," or "Guess I'm getting old." I heard my father swear just once and I am sure he was not aware that I was close by. He was replacing a burnt out light bulb and while feeling for the socket his finger got into the socket. Well, I cannot re-

member the exact words, but they were swear words all right. When he looked up and saw me, that was worse yet.

More progress

About 1930, we acquired a used semi-automatic sealing machine. This meant progress as one could seal cans faster, or about 20 cans per minute. Speed unheard of at this time, but the seal was positive. Once in a while something would go wrong and we would have to call a mechanic from American Can Company. This was causing trouble because we had cans to seal, and too, I had been elected to learn how to look after this machine. This looked like too much for me at the time, but I finally learned how to fix any breakdown. About once a month, Joe, the mechanic from American Can came by to check the seam and to see if I had kept it adjusted properly.

We were making more chili and tamalies now. Sales were improving, so we bought a used labeling machine and more people were hired as well. The custom canning business was growing each year.

In 1940, I was called into active service for World War II, and I returned home in October 1945. What happened at the cannery during these years, I am not too sure. A new processing room was built, a boiler room, an oil fired boiler and another automatic sealer. My brother, Burdette, took a very active part in the business now as manager and my sister, Madeline, set up an up-to-date bookkeeping system.

A few new products had been added to our list now, spaghetti, and tomato sauce in glass jars due to lack of cans, also spaghetti and meat balls. One of our goals was to operate the year around.

Burdette's name was shortened to BA and that stuck. He went out to drum up more business, Associated Grocers, Safeway, American Wholesale, Miller Produce and a number of independent dealers (Lee Wholesale of Everett was an especially good customer) and the Commission Co. of Seattle.

World's Fair specialty items

At the time of the World's Fair in Seattle, a new item was thought up by the Ferguson Canning Company. It was called "Puget Sound Air". This was a very popular item to be sure. The label was very unique, and passed all legal requirements, as did the contents. Another specialty item was canned water. The water was filtered, brought to a boiling point and sealed under a 30 pound vacuum pack.

Clam chowder and oyster stew

Another item we packed was clam chowder. At first we used butter clams, bacon, onions, potatoes and spices. We were so sure we had a GOOD clam chowder, the kind all on the west coast would call good chowder. When it hit the market we had all manner of complaints. It had a smoky flavor (caused by bacon), dark specks (black pepper), dark substances floating around (pieces of dark clams) and off color. Now this was too much for us. Don't people know what clam chowder is? First, we cut out the bacon, we used white pepper, no more local clams; all had to be imported from the east coast. Powdered milk was added in order to make the chowder white. Crescent Mfg. Co. helped us by coming up with spices to make this concoction taste LIKE clams. Nothing is too good for the public.

We processed oyster stew for Hilton's as well as oyster soup. This was a good item as we shipped it out by the carloads. We did not use our recipe. It was put together by the Hilton Company cooks.

Another item we canned under a private label was Ivar's Acres of Clams. We processed their private formula, oh very secret, clam chowder. Ivar sent his own chefs down from Seattle and they made it known that they wanted no advice. One of our girls made a mistake of telling one of the chefs how to use our automatic beater to make thickening, and she got told off in a hurry. They filled a ten gallon pot full to the top with flour, water and spices, then they started up the power beaters. You can picture what happened. Yep, the stuff flew in all directions, on the walls, on the floors, on the people. I never saw such a mess! The cooks were used to this and paid no attention to the mess as they didn't have to do the clean-up. They were too dignified to be called upon to do clean-up work.

One of those cooks got after me one day. It seems the big 200 gallon tank of their chowder would not come to a boil. I found the problem. It was a one-inch valve, so I told them I would have to shut it off while I installed a new valve. Well now, their head cook had a fit. He started making insulting remarks such as "What kind of a cannery is this? Just a two-bit cannery, nothing works. There should never be a break-down, and how long will it take to fix it?" I told him about half an hour. "That was way too slow," he said.

I started in, shut off the steam, found the closest union connection and disconnected it, then a short piece of pipe. Wow! This pipe was HOT and so was I. I was hoping this nurd would go away. Well, I got the old pipe out and then I heard, "Say, I thought you were the repairman, how come it takes so long to repair such a simple job?" I had an 18-inch Stilson wrench in my hand and I was ready to let him have it. I had never used language like this since I left the Army. He really left quickly wondering what in the world was the matter with me. I put in the new check valve and hooked it up and got the kettle cooking. I was so mad, I told my dad what had happened, expecting to get a scolding, but, surprise, he said, "Good for you. He had it coming and if he does anything like this again, we are going to tell him to go home." Boy! This young kid was a real smart aleck.

I was the maintenance man and did all wiring when needed, motors with remote controls, single phase, three phase, three way controls, run conduit, welding, keep the sealing machines going. You name it, I did it.

The folks had a super fine garden. One reason was that we buried the offal from chickens and fish in the garden. A big pit was dug about two feet deep by three feet across. The offal was dumped into the pit and covered with dirt. One thing I discovered was that one had better remember where the last bunch was buried, because once I stepped into a previous deposit, and oh brother, what a smell my shoes took on. They were

covered with partially decomposed garbage. We learned to place a stone where we put the last deposit. Come spring time we really had a grand garden spot.

Gourmet Chinese pheasants

Another item we canned was thousands of Chinese pheasants for Sam Martin on Whidbey Island. Many of them were canned whole, one pheasant to a can. These cans were lithographed cans. There was a picture of a pheasant on the outside. The can was about the size of a juice can. This was truly a delicacy which was shipped as far away as New York, San Francisco, really, all over the United States. They were sold retail for about $20.

We also made pheasant pate. Brandy was put into this item to add flavor and, of course, much of the brandy had to be tested for flavor before it ever found the pate can. The whole crew had to do the testing of the brandy. All in all we were a happy lot. Another pheasant item was pheasant broth with wild rice.

State inspectors

Getting back to the time when we had to have state inspectors present when we canned meat or anything containing meat or fish.

The inspectors were vets, you know, people who were qualified to take care of sick animals. The state sent people like this out to inspect a cannery. Now one of these inspectors admitted to me that he did not know what he was supposed to do or what he was to inspect.

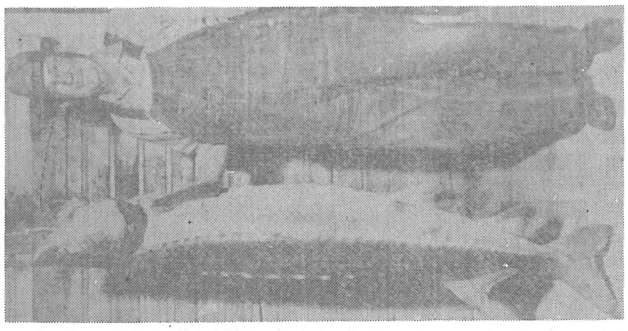
Boys and girls, this was just too much for me. The State of Washington sends a doctor out to inspect food. One of them told me that all he had ever inspected was turkey farms, and was not at all familiar with canning procedures. Another was a food inspector in the Army and he let me know he was in the quartermaster corps and held the rank of captain. He tried to impress on us that he knew what this food business was. It didn't take long for me to let him know I was in the Army also and that the cannery was not the Army. This did not go over so well. He let me know when I should talk and when I should shut up. It did not take too long before he was happy to talk to me as he didn't know what to look for. He found lots of faults, but it had nothing to do with sanitation or processing.

Another 90-day wonder did not believe that meat would shrink when it was cooked, and called us great story tellers, only worse. So he cooked some meat. We watched him weigh it before he cooked it, then watched the expression on his face when he weighed it after cooking. He had very little to say for sure. It was people like this who were sent to inspect the cannery, and we had to comply, no matter what they said. We had to prove how long we cooked meat or vegetables, what temperature, under what pressure, etc. Also what size steam pipes we used, even though they did not know how to tell the size of the pipes, nor one valve from another.

With all of the hard work and worry running a cannery, there were fun times also. There were many laughable situations that arose each day.

Sturgeon

One day while I was working in the office, a man came in and asked, "Do you can sturgeon here?" Well



Sturgeon similar to the eight-foot one brought in for canning.

now, this required a bit of thought, but I answered, "Sure do. Bring it in." I was sure some smart guy was about to give me a bad time. I would have given him the same answer if he had asked if we canned whale here. Well, I got a surprise. There lay an eight foot long sturgeon in all its glory. The fellow said he had just caught it in the Snohomish River.

We called the *Tribune* and the reporter came up and took pictures of it and of course got the story the fisherman had to tell. We then proceeded to clean it, cut it up, put it in cans and canned it. This was not really all that unusual and we have canned shrimp and crab meat when they were plentiful. Shrimp and crab came in by dishpans full. They required special handling and processing, but this was just part of the game of canning. Tuna also arrived for canning, some frozen, some fresh. This was in the good old days of free enterprise.

Gypsies

We used to be bothered by a group of fierce looking gypsies. The women were all dressed in long vivid-colored skirts and patchwork tops. The men wore trousers of the same loud colors and bright head bands. Their clothes had never seen a wash tub to be sure, but believe you me, they were a crafty lot. They did not believe in work and lived off what they could steal or talk folks out of. They were the con artists of that day. They visited the cannery many times. When someone sighted them coming the word went out, "here come the gypsies," so everything was fastened down and everyone kept their eyes open. They would go to my dad and ask to "Bless the till." My dad would back up against the till and not budge until they left the building. We were warned that we would suffer a fate worse than death and that we would have no more money if they did not bless the till.

One day they wanted to bless my wallet. I knew my billfold had no money in it so I handed it to her. She immediately opened it and when she found it empty, she threw the wallet down and said, "Son of a bitch, broke!" Some blessing I thought. The pocketbook has not been the same since.

Hoboes

Another thing I remember is how the hoboes would frequent the place for handouts. They were called "bums" because they wanted handouts, but were never willing to work for what they got. If asked to work they would say, "I'm sick and can't work." or "I have a bad back and can't lift." Excuses they had, but food, none.

No one was ever turned away. They were all given something to eat. That was one thing my dad never did, turn anybody down. They usually got a can of dried beans or a soup bone, if we had any. My dad figured if they were hungry enough, they would cook it. It didn't take long until the word went out that the cannery was a good place to go for a handout. They would come and ask for chili meat, plus the seasoning and beans. Now this was going a bit too far. Some got turned away when they would ask for specific items. Eventually the "bums" disappeared. Some got on welfare and a lot of them died. These fellows would put what they called "markers" at the edge of town. Some signs meant "good for handouts", "no good", "police", "beware", etc. The cannery was marked as an easy mark for handouts.

Now we had another class of hoboes. They would volunteer to work for something to eat. I got well acquainted with two of them. One was called Patty. Now Patty was a college graduate. Some people would dispute this, but I was told this by a man who knew Patty when he was a young man. Patty was happy to work and he was not lazy. He was always clean and clean shaven. He had a very soft voice. He seemed to like to work in the soil, weed the garden and flowers. He would rake the soil till no rocks showed. He really did a super job. He would prune the shrubbery, edge the flower beds, just anything a professional gardener would do. It was breezed around that Patty was the head man at the Hobo camp.

Sometimes he would not show up for work, but he would always send somebody to take his place. This was while he was recuperating from a large hangover. This was Patty's weakness, booze. Patty would always show up later to inspect the job the other hobo did. If it was not right, Patty made it right himself. Everything was treated like a guaranteed job. You could trust Patty. One could loan him up to $20, drunk or sober, and he would always pay it back within a week.

Stanley was another of this group. He was a good man and always clean and presentable and one who could be depended upon to do a good job.

Incorporation

The Ferguson Canning Company was incorporated about October of 1959. The officers were Cecil Ferguson, president; Clara Ferguson, vice president; Madeline Ferguson, secretary and treasurer; B.A. Ferguson, vice president; and Emory Ferguson, vice president. Clara Ferguson died in March of 1961 and Cecil Ferguson died in November of 1964. New officers were elected: Emory Ferguson, president; B.A. Ferguson, vice president; and Madeline Ferguson, secretary and treasurer.

Pork and beans

About this time, we came out with a new item, pork and beans. We had learned by now there were many problems when one tried to introduce a new product. No matter how hard one tried, at times nothing came out right. There were many discussions about selling the plant. There were just too many laws to deal with: federal and state laws, they never seemed to end. They never seemed to run out of rules and regulations. Would you believe there is a definition of what "chili" is? This is a federal definition and has to be complied with. All items put into a can have to be defined by federal law. One has to turn their recipes over to the fedeal government for approval as well as to the state. Of course, everything that goes into the recipe has to show on the label.

It does not take long to lose one's ideas about free enterprise. One was not free to make a product without the approval of the federal and state OKs.

Other items

B.A. Ferguson says to remember some of the other items we packed: party snacks for soldiers overseas. These were sent by wives, sweethearts, sisters and mothers. Somehow it caught on that things could be packed in No. 10 cans such as cookies, popcorn, or any of the goodies from home and they would arrive overseas in good condition. Now one item in particular that could be put into a No. 10 can was whiskey, a small bottle of the spirits, and then the space filled up with pop corn or whatever, and the can was labeled prunes or peaches or what have you. The cannery would put the lid on the can and charged 25 cents. You know, the whiskey could have been peaches at some point along the way, and after all, we didn't see what all was packed in those cans when they were brought in to the cannery for the lids to be placed on them. They would be shipped to Germany, France, Vietnam, and even some to Texas. I received one of these cans from my mother and the only problem was to find a can opener strong enough to open it. The GI type was not too good soooo, into the kitchen to share with the cook.

The cannery closed for good in 1970 and was sold in 1977 to a company called Trade-a-Blade. So ends an era.

Other businesses

Recollections by Emory A. Ferguson

There was a junk yard on Second and Maple on the southeast side. This was owned and operated by Charles Williams, a negro. He would buy your scrap iron for about one-half cent per pound. This was some place. Old bedsteads, bed springs, you name it, old Charley had it.

Another old place was Empfields Grocery Store. It was situated between Sixth and Seventh on Pine. This was a TRUE general store. Bread, butter, kerosene, flour, you name it, they had it. Old Mr. Empfield would never wash his hands after waiting on you. If one got coal oil, then the next person would get oil-flavored whatever to take home.

There was also another general store located on Mill Street. A Mr. Tift owned it. I can still see the old potato he used to plug up the kerosene can with.

These were the GOOD OLD DAYS? I wonder.

January 1917

Prohibition brought this headline to light: "State will be so dry that bull frogs can't learn to swim".

The berry business

By Emory Ferguson and Evelyn Lysons Strout

In the *Snohomish Tribune* of today (8/12/81), Jean Northrup referred to a *Tribune* article dated 1905 in which the county horticulturist, Mr. Littooy, suggested the small farmer who wished for additional income should think about planting strawberries, raspberries, and blackberries. D.F. Sexton, John Connelly, B.V. Egbert, Albert Prescott, J.J. Stevens and Frank Herman were among the early pioneers who listened to the suggestion.

The first crops were delivered to a receiving station in Everett. This source of income developed rather slowly, but Sexton refused to give up. About 1914, the Snohomish Fruit Growers Association was organized in a warehouse located between Second and Third Streets (where Safeway Store is). They first dealt in hay and grain, then expanded to groceries, a meat market and later added a gasoline bay. In the summer, they received berries and barreled them for the jam factories, hauling them to the Everett Cold Storage until delivered for further processing.

The Fruit Growers first sold common stock and later preferred stock to furnish monies for enlargement of the business. The original stock holders were Adolf Heck, George Stocker, M.C. Hazen, M.T. Hokenstad, and Dave DeSelle.

This big "family business" provided employment for many men and young people. Among those young people who received their training in a retail business were: Frank Schoknecht, Glenn Buhr, Lawrence Rowe, Claude Buckley and Otto Vogel, all of whom owned and operated businesses of their own.

The Fruit Growers prospered until chain stores came into being. This business was sold to Red Walters and John Lehman who soon liquidated. About 1926, John Schluter and daughter, Evelyn Lysons Strout, together with the Stewart farms at Monroe, began receiving soft fruits when the Fruit Growers expanded to accommodate their year-around business. Their receiving station was in what is now the Wheeler Cold Storage building. The first crops were delivered to the Everett Fruit Products and in later years were freighted to Ben Hershey's Rose Hill Cannery in Kirkland. Also, soft fruits were shipped easterly into Montana, in pony refrigerator boxes containing 36 cups of fruit, which required re-icing in Spokane.

Mr. Hershey then decided to move his cannery to Snohomish. The Depression came in 1931, and the market for soft fruits collapsed completely in 1932.

Frozen vegetables

By Emory Ferguson and Evelyn Lysons Strout

In 1932, Ben Hershey and Ed Hoem, pioneers in the vegetable freezing business, decided to try their hands at raising and processing peas for the frozen foods market. The first processing plant was located at the Ed Hoem farm on the Old Snohomish-Monroe road. The first pack amounted to 250 tons of frozen peas and they were stored at the American Ice in Everett.

All the equipment was more or less homemade from galvanized sheet metal, boards, planks, and much cussing to make things go. A make-shift boiler outside, fired with wood, furnished the steam for the cannery. The girls, who were forbidden to smoke in those days, tried to hide behind the smokestack while they stole a smoke.

Sixteen hours on a shift was common because everyone worked if he or she was lucky enough to be hired. These men were pioneers in this method of processing with the first carload of frozen peas shipped east in 1933.

The Hershey Frozen Foods then moved into Snohomish where a better and more adequate water supply was available. Hershey leased the hay and grain warehouses of the former Fruit Growers, located along the Northern Pacific railroad tracks between Second and Third Streets and east of Maple Street, converting them into an enlarged processing plant. He also added a prefabricated cold storage plant. Then the Fruit Growers buildings were incorporated into the plant in 1945.

With this expanded business, it was necessary to ask for an additional water supply in 1953. Because of the increase in the cost of water, an artesian well was dug during the Lervick ownership (this was capped when the new Safeway store was built on this location).

Financing for this Hershey expansion was furnished by Art Simons in 1933. The Hershey plant was later sold to Wes Eldridge who then sold it to Ole Lervick and sons Arne, Art and Magnar in 1959. The Lervicks later combined the Snohomish plant with their Twin City Foods at Stanwood. Thus Snohomish lost a major industry.

Evergreen Frozen Foods

Reuben Cedergreen and son, Clarice, came to Snohomish from Wenatchee and constructed a new plant to freeze peas, corn, etc. in 1945. Their plant was named Cedergreen Frozen Foods, and later was changed to Evergreen Frozen Foods, and was located on Pine Street south of Sixth Street and east of the Northern Pacific railroad tracks, and was in full operation for their first pea processing in 1946.

It was noted in the *Everett Herald* that both canneries had their peak season in 1956. Cedergreens piped all of their wash water across the Pilchuck River, thus fertilizing a large pasture which in turn yielded three cuttings of green cattle feed. Clarice retired from the food processing business in the late 1970s, and sold the plant to Dalgety Sea Foods.

Another who engaged in various canning processes was Fred Van Valin who packed strawberries and made delicious meat pies and tamales. His firm closed because his products were costing too much to compete with the products processed for chain store sales.

The Jacquelyn Farms are today receiving and processing berries in a portion of the Wheeler Cold Storage building.

— Evelyn Lysons Strout

Columbia Packing Company

Columbia Packing Company, circa 1940.

By Stan Dubuque

Sometime after World War I, a group of local men developed a stockholding enterprise in the form of a meat packing business named the Columbia Packing Company. It began as a slaughterhouse and expanded to include the processing of meat products. It was located west of Airport Way and between the river and the Great Northern railroad.

The following was taken from the July 22, 1921 *Snohomish Tribune:*

New Use For Ford

"The early risers of Snohomish were startled and amused Wednesday morning to see a flock of sheep being driven down First Street by Charles Holcomb of the Columbia Packing Company. The familiar bark of the shepherd dog was absent and in his stead Holcomb was using a Ford coupe, darting around the flock and punching up stragglers in a way that would make the shepherd dog envious. The Columbia Packing Company is certainly up to date."

Some of the stockholders had a dream that Snohomish would some day become the meat packing center of the west so the board of directors hired Robert Bruce Musser as plant manager. Musser was well qualified and had been in the meat business in the mid-west before going to Canada as manager of Burns Provisioners.

Musser picked his foremen and department heads from experienced packing house business acquaintances. Some from Barton Packing Company of Seattle.

The infant plant developed so slowly that some of the stockholders became dissatisfied with the lack of immediate dividends on their investment. Most of the profits were put back into expansion of the business.

In the years following World War I, most packing houses were still dry curing their hams and bacon. This system produced salty hams and bacon that had to be parboiled to freshen before baking or frying. Columbia Pack developed a mild sugar-brine cure to pickle the fresh hams and bacon. To insure an even distribution, the brine was pumped into the fresh ham by means of a long hollow needle. The hams and bacon were then placed into large curing vats, covered with liquid pickling mixture and moved into the pickle cellar.

After curing for a specific number of days, the vats were brought out to preparation room where the brine was drained off, the hams or bacon washed and covered with a warm rinse water for several hours.

The brand name of "Columbia Special" was stamped on the skin side of the ham or bacon with purple vegetable ink. The slabs of bacon were hung on a moveable smoked meat tree by means of a comb-like hanger with hooked teeth. The hams were stuffed into cheesecloth stockinettes and also hung on the arms of the smoke meat trees.

When the trees were hung full, they were run along a network of overhead trolley tracks into a steam-heated smokehouse and held at a medium temperature for several hours. An alderwood fire was built in the fire box of the smokehouse. A low temperature smoky fire was maintained throughout the several hours of the smoking period with the temperature being carefully watched.

Upon completion of the smoking period, the trees of hams and bacon were rolled along the tack into the smoked meat hanging room where they slowly cooled to room temperature and were ready to be sold.

All operations of the plant were scrutinized by rigid state inspection and with each product manufactured under formulas developed within the plant. The company soon built up an excellent reputation all

Custom canneries

Betty Kelley
Emory Ferguson
Evelyn Lysons Strout

In the early 1920s, Snohomish had two custom canneries, one of which was the Sunnybrook Canning Company. It was located on the bank of the Pilchuck River on the Old Monroe-Snohomish highway and was owned and operated by Percy Trubshaw and Gilbert Turner, brothers-in-law.

All of the planting, growing and harvesting was done by the two men together with the help of many boys and girls. During the off season, the men went to Whidbey Island to cut cedar bean poles and brought them to Snohomish by boat. In the August 18, 1931 *Everett Herald,* it noted this now-named Turner Cannery hired 100 people to help pick, hand snip, sort, cut and pack beans. It noted 12,000 cans per day were processed. Most of the pack was delivered to Schwabacher Bros., under the label brands of Happy Home and Reliance. It noted 250,000 cans were processed in one season.

In 1928 Gilbert Turner bought Percy's share of the firm, renamed it the G.N. Turner Canning Company, locating in what is now known as the Wheeler Cold Storage on Maple Street. Turner added the cold storage lockers to the plant. Fire destroyed the cannery in the mid 40s. Turner's Cannery also did custom canning, i.e. canning fruits and vegetables in cans before the freezer method became available.

over the state for their Columbia Special hams, bacon, pork sausage, weiners, bologna, etc.

In the early spring of 1932, I had been working in the office as assistant bookkeeper and office boy for two years. At that period of time wages were at a minimum. Some employees receiving a magnificent sum of $10 for six ten-hour days. I did slightly better, starting at $13.50 a week and gradually rose to $16.50. The first big moment of my life came when I told the boss I was getting married and asked for a raise. He took it under advisement and at last conceeded to authorize a raise to $18 a week. This sum, of course, did not allow for a car and barely let a second-hand bicycle become a part of our assets.

Gradually larger buildings were added. A new sausage kitchen, two new smokehouses and a smoked meat hanging room. The coolers were improved and an ammonia expansion system was used to cool circulating brine. This cold brine was sprayed through metal tubes in a manner to force cool air to circulate throughout each cooler. Two coolers were used to dressed beef and hogs and two for pickle cellars. The new sausage kitchen had three coolers of its own that were similarly cooled.

A number of times these ammonia lines leaked and the Snohomish firemen, wearing their masks, had to be called to shut the system down so that repairs could be made.

No part of the slaughtered hogs or cattle was wasted. The intestines of the hogs were washed, cleaned, salted down and later sold to casing companies in Seattle where they were cured, graded, and sorted to size and used for sausage casings.

Hides from cattle were scraped clean and salted down in stacks in the hide cellar to be sold to leather tanners in Seattle and Portland.

The rat hunt

Rats were plentiful in the hide cellar and the tankage drier room. After the day crew had gone home and before the sales force returned from their routes, quite often the sales manager and another man or two would go to the basement and turn on the lights. This would disturb the rats and they would lope around lazily finding a hiding place. The hunters would be armed with heavy duty brooms or shovels and quite often got their quarry.

I attended some of these sessions and at one time in particular I was armed with a flat nosed shovel. The hunting was especially good around the stack of hides. One large rat made his getaway attempt by running toward me. In the excitement I brought the shovel down like a hoe and to my disgust, the shovel nose hit a large puddle of slimy, rotten brine that had drained from the stack of hides. The ill smelling mess followed up the shovel and covered me from my shoes on up. I gagged my way to a nearby house and took a fully clothed shower. After walking home, I had to remove all my clothes outside before I could get into the house for a shower. Several items of clothing were discarded.

Another time the sales manager borrowed the plant .22 rifle and went down to hunt by himself. Whether or not he got any rats at this session I do not remember, but when he came back to the office the plant manager was there along with several other workers. The manager admonished the sales manager that he should not handle the gun so carelessly with others in the office. His answer that the gun wasn't loaded was left hanging in mid air as he shot a hole in the ceiling. No more rat hunting with a rifle. When the hides were sold, some were docked from top quality because of the bullet holes in them.

Employee benefits

On certain days each week, employees were allowed to purchase meat at wholesale prices providing all parts of a cut product were completely sold. At times for various reasons, pork loins would be boned out for sausage. In all instances of this kind, the tenderloin was saved. Wholesale price on tenderloin was 45¢ a pound. Even in a time period when hog hearts and pigs feet were 5¢ a pound and ham was 18¢ a pound wholesale, these tenders, weighing between six ounces and a pound and a quarter, provided many reasonable no-waste meals for our table.

One day a number of employees agreed to divide a frozen boiled ham. The ham was too hard to be cut with a knife, and holding it to be cut with a meat saw on a warm greasy cutting table proved too slippery. It being late in the day, time did not allow for thawing, so chopping with a cleaver was agreed upon. What a mistake! Dynamite would have been just as effective. After the explosion, pieces of all sizes were scattered throughout the sawdust on the cutting room floor. Even scraping, hosing and rinsing could not remove all of the wood from the ham. Later remarks from the purchasers likened the eating experience to picking bones from a fried trout.

Nothing wasted

Blood, bones, hair and all inedible waste and trim were dropped into one of the huge steam pressure cooking tanks and made into tallow and tankage. The tallow or fatty portion accruing from this vat was pumped off and stored in a tank with a capacity larger than a railroad tank car. The solid remainder of the cooking vat was dried, ground, and sold to fertilizer manufacturing companies.

The following was taken from the January 26, 1939 *Snohomish Tribune:*

SHIP 10,000 GALLONS GREASE TO CHICAGO

"Ten thousand gallons of inedible animal fat, filling a large railway tank car to capacity, was pumped from the large steel reservoir of the Columbia Packing Company of Snohomish Friday, and shipped via the Great Northern Railroad to Chicago.

"Like other familiar products from Snohomish, such as lumber, dairy cows and milk products, poultry and eggs, fruit and vegetables, this fatty waste from the butchering of animals at the local plant, forms an article of inter and intra-state, and even international trade. According to H.E. Kizer, manager, it may be transferred from Chicago to the Atlantic Gulf Ports for trans-shipment to Cuba, Europe, Asia, and other far-away points or be refined at its first destination to

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Appendix M
RH2 Engineering, Inc.
2011
City of Snohomish Comprehensive Water System Plan

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City of Snohomish Comprehensive Water System Plan

August 2011

Mayor
Karen Guzak

City Council
Melody Clemans,
Mayor Pro Tem
Lynn Schilaty
Derrick Burke
Greg Guedel
Tom Hamilton
Dean Randall

City Manager
Larry Bauman

Public Works Director
Tim Heydon, P.E.

City Engineer
Steve Schuller, P.E.

Project Engineer
Andrew Sics, P.E.

City of Snohomish
116 Union Avenue
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Prepared by:
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(425) 951-5394

Financial Subconsultant
FCS Group

Contact: Angie Sanchez Vimoche
(425) 867-1802 ext. 230

Certification

This Comprehensive Water System Plan for the City of Snohomish was prepared under the direction of the following registered professional engineers.

Richard H. Harbert, P.E.

8/19/11

Michele R. Campbell, P.E.

8/19/2011

City of Snohomish
Comprehensive Water System Plan
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City of Snohomish
Comprehensive Water System Plan
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Table 3-1
Population Trends and Projections within the City Limits

Year	Population
Historical	
1990	6,499
1991	6,601
1992	6,697
1993	6,988
1994	7,352
1995	7,609
1996	7,943
1997	8,016
1998	8,326
1999	8,376
2000	8,494
2001	8,565
2002	8,575
2003	8,640
2004	8,585
2005	8,700
2006	8,920
2007	8,970
2008	9,020
Projected	
2014 (+ 6 years)	10,254
2018 (+10 years)	11,169
2028 (+ 20 years)	13,830

NOTE: The historical and projected populations represent the population within the city limits.

The actual population served by the water system differs from the population that resides within the city limits. The northern portion of the city limits has numerous small water systems that obtain water service directly from the City of Everett. The City also provides water service to customers outside the city limits along the Water Treatment Plant Transmission Main and other outlying areas. The actual population served by the water system, shown in **Table 3-2**, is calculated in **Chapter 4** using the number of residential units served and the average household size.

Table 3-2
Water System Population Projections

Year	Population
Historical	
2003	9,189
2004	9,190
2005	9,303
2006	9,438
2007	9,537
2008	9,712
Projected	
2014 (+ 6 years)	10,774
2018 (+10 years)	11,759
2028 (+ 20 years)	14,624

These population projections, along with the historical per capita water use data presented in **Chapter 4**, form the basis for determining future water demands for the City's water system.

Table 6-3
Future Water Rights Evaluation

Description	Instantaneous Rights/ Maximum Day Demand (gpm)	Annual Rights/ Average Day Demand (acre-ft)	Annual Rights/ Average Day Demand (gpm)
Year 2014 Without Conservation			
Total Certificated Water Rights	2,244	3,000	1,859
Projected (2014) Water Demand	1,573	1,153	715
Surplus (or Deficient) Rights	***671***	***1,847***	***1,144***
Year 2028 Without Conservation			
Total Certificated Water Rights	2,244	3,000	1,859
Projected (2028) Water Demand	2,152	1,578	978
Surplus (or Deficient) Rights	***92***	***1,422***	***881***
Year 2014 With Conservation			
Total Certificated Water Rights	2,244	3,000	1,859
Projected (2014) Water Demand	1,561	1,145	710
Surplus (or Deficient) Rights	***683***	***1,855***	***1,149***
Year 2028 With Conservation			
Total Certificated Water Rights	2,244	3,000	1,859
Projected (2028) Water Demand	2,141	1,570	973
Surplus (or Deficient) Rights	***103***	***1,430***	***886***

Water Rights Planning

The City's supply facility does not currently have the capability to provide supply to the system at their maximum instantaneous water rights. Since June 2006, the City's water treatment plant has been operating under restrictions imposed by DOH as a result of a DOH sanitary survey and a Comprehensive Performance Evaluation performed by The Cadmus Group. The restrictions will remain in place until identified administrative, operational and capital improvement upgrades have been completed. One of the restrictions requires a certified operator be present when the water treatment plant is operating. The restriction limits the water treatment plant to operating only 8 hours per day at an average rate of 394 gpm.

Upgrades to the water treatment plant are currently being completed and include the addition of four filter-to-waste pumps and piping with motor actuated valves for each filtration cell; installation of new filter media and recoating the interior of each filtration cell; replacement of the generator's manual transfer switch with an automatic transfer switch; and the installation of new control panels and a programmable logic controller, which allows fully automated control of the water treatment plant. Most of these improvements are complete, while the remaining improvements were scheduled to be completed by January 2011. Once complete, the water treatment plant may be operated at 1,181 gpm, 24 hours per day. Thus, the facilities are not able to fully utilize their existing

water rights until the remaining improvements are complete. However, the City's facilities are sufficient to supply the water system through 2028 and likely beyond. The City will strive to use its existing water sources efficiently by continuing the current water use efficiency measures and implementing proposed measures, as outlined in the City's Water Use Efficiency Program, which is included in **Appendix F**.

WATER SUPPLY PLANNING

Existing Water Supply

The City's water system currently has normal supply interties with Everett along Transmission Line No. 5. The City's 345, 358, 368 and 418 Zones are currently supplied with water from Transmission Line No. 5. Water supply to the City's 218 Zone and customers along the Water Treatment Plant Transmission Main is currently provided by the Pilchuck River source.

Everett's raw water supply originates in the Spada Reservoir created by the Culmback Dam on the Sultan River, approximately 25 miles east of Everett. The raw water passes through the Snohomish County PUD Power House prior to entering the Chaplain Reservoir. The water from the reservoir is delivered to the Everett Water Filtration Plant prior to delivery to the City of Everett and several other water systems. As a regional water provider, Everett provides water to over 400,000 people in Snohomish County.

Water from the Pilchuck River is diverted by a 10-foot-tall diversion dam and flows by gravity to the water treatment plant where the water is treated via direct filtration methods. Treated water is conveyed to the City's distribution system 14 miles to the southwest through the Water Treatment Plant Transmission Main, which serves customers along the transmission main and fills Reservoirs No. 1 and 2. When an operator is not present at the water treatment plant, a 330,000 gallon storage tank supplies treated water to the customers along the Water Treatment Plant Transmission Main. Reservoirs No. 1 and 2 directly serve the 218 Zone. During periods of high demands or emergency conditions such as a fire event, water supply to the 218 Zone can be supplemented from the 9th Street and Avenue A and 10th Street and Avenue D pressure reducing valve (PRV) stations, or by opening a zone valve such that water from the 358 or 418 Zones supplies Reservoirs No. 1 and 2.

Long-term Water Supply

The City is currently evaluating phasing out the Pilchuck River source and supplying the distribution system entirely with water from Transmission Line No. 5. If the Pilchuck River source is phased out, water service to remote customers who are currently served off of the Water Treatment Plant Transmission Main will need to be maintained. The City is evaluating alternatives for service to these customers, including the feasibility of transferring the services to the Snohomish County Public Utility District No. 1.

DRINKING WATER REGULATIONS

Overview

The quality of drinking water in the United States is regulated by the Environmental Protection Agency (EPA). Under provisions of the Safe Drinking Water Act (SDWA), the EPA is allowed to

Appendix N
Stanwood Food Processor Water Rights

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S. F. No. 7362—1-47—1M. 14278.

CERTIFICATE RECORD NO. 1 PAGE NO. 498-D UNDER DECLARATION OF CLAIM NO. 606

STATE OF WASHINGTON, COUNTY OF Snohomish

Certificate of Ground Water Right

Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and the rules and regulations of the State Supervisor of Hydraulics thereunder.

THIS IS TO CERTIFY *That* PICTSWEET FOODS, INC.

of Mount Vernon, Washington *has filed*

in the office of the State Supervisor of Hydraulics of Washington Declaration of Claim No. 606

to withdraw ground waters of the State from a Pump Well,

located within SE¼ of NE¼ of SW¼ of Sec. 19, Twp. 32 N., Rge. 4 E.W.M.

(In unplatted portion of Farmers Addition to East Stanwood)

for the purpose of Industrial supply

The right to the use of said ground waters has been sustained and approved by the Supervisor of Hydraulics in accordance with Chapter 263, Laws of Washington for 1945, and is hereby entered of record in Volume 1 *of Ground Water Certificates at page* 498-D*; the right approved has a priority of* the year 1918*; the amount of water which the Declarant is entitled to withdraw for the aforesaid purpose is limited to the amount actually beneficially used and shall not exceed* 250 *gallons per minute;* 165 *acre-feet per year; and is appurtenant to the following described lands or place of use:*

Beginning at a point 193 feet North of the Southeast corner of NE¼ of SW¼ of Sec. 19, Twp. 32 N., Rge. 4 E.W.M., the point of beginning; thence South 77°01' West 29.3 feet; thence South 14°24' East 23.3 feet; thence North 75°43' East 23.5 feet; thence North 23.3 feet to the point of beginning.

The right to the use of the ground water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in Sections 6 and 7, Chapter 122, Laws of 1929.

WITNESS the seal and signature of the State Supervisor of Hydraulics affixed this 9th *day of* April, 1948

RODNEY BAKER
State Supervisor of Hydraulics.

By Chas. J. Bartholet
CHAS. J. BARTHOLET, Deputy

REPORT OF FINDINGS ON GROUND WATER Decl. 606

NAME Pictsweet Foods Inc.

TYPE OF WORKS: Pump Well Date of Examination 2-18-48

Dimensions: 140' x 48" Progress of Works completed

QUANTITY Claimed or Applied for: 250 g.p.m. 222 acre feet per year

LOCATION SE¼ of NE¼ of SW¼ of 19-32-4 E.W.M.

USE: industrial

Irrigation- acreage: Present Planned Feasible

Municipal: Population as of

Industrial:

Time Pump Will be Operated: during canning season

Other Water Rights of Applicant: none

Proximity to existing works, springs or streams:

Stanwood Water Company Well North 50'

Water Bearing Zone:

RECOMMENDATIONS

Approved for 250 g.p.m. 165 acre-feet per year, subject to existing water rights. (1 acre-foot = 325,850 gallons)

This well has been used for 200 days a year at 250 g.p.m. for 18 hours a day average use. This amounts to 165 acre-feet a year.

Signed this 19th day of March, 1948

FBR

FRED B. ROBERTS
Ground Water Geologist

S. F. No. 7349—12-45—3M. 10784.

A $5.00 examination fee should
~~A $2.00 recording fee should~~
accompany each declaration.

STATE OF WASHINGTON
DEPARTMENT OF CONSERVATION AND DEVELOPMENT
Division of Hydraulics

RECEIVED
FEB 20 1948
DIVISION OF HYDRAULICS

Declaration of Ground Water Claim

(Separate claims should be filed for each well, tunnel or infiltration trench)

Declaration No. 606 *Your well No.* ..... (If you have more than one)

I, PICTSWEET FOODS, INC. (Name of claimant)

of Mount Vernon, Wash. (Complete postoffice address)

do hereby make declaration of claim of vested right to ground water by use prior to June 7, 1945, and file the same with the State Supervisor of Hydraulics, in accordance with Section 9, Chapter 263, Laws of 1945 of the State of Washington, and request a Certificate of Ground Water Right thereunder.

1. SOURCE *from which water is withdrawn is* Pump Well (Flowing well, pump well, infiltration trench, or tunnel)

2. LOCATION *is:* East Stanwood, Washington (Approximate distance and direction from nearest city or town);

and is more particularly described as follows:

(a) 200 ~~sq.~~ ft. N. 30° W from SE¼ NE¼ SW¼ (Give distance and bearing to corner of section or other legal subdivision)

being within SE¼ NE¼ SW¼ (Smallest legal subdivision) *of Sec.* 19, *Twp.* 32 *N., Rge.* 4 E (E. or W.)

or (b) Within limits of recorded platted property, town or city: East Stanwood, Washington,

in Lot ....., *Block* ..... *of* Unplated portion of farmers addition to East Stanwood. (Name of plat or addition)

..... (If within city or town, give name) *County of* Snohomish *within* ..... (Leave blank) *area*

..... (Leave blank) *sub-area* ..... (Leave blank) *zone*

(c) The location of the well or other works is shown on the accompanying plat, or other adequate maps or drawings.

(d) The owner of property on which the works are constructed is:

PICTSWEET FOODS, INC. (Name) Mount Vernon, Washington (Post office address)

3. CONSTRUCTION WORK *was begun on* 1918 (Date); *was completed on* 1918 (Date)

and the ground water claimed was first used for the purposes set out below on 1918 (Date),

since which time the water has been used Intermittently (Continuously or intermittently)

from 1918 (Date) *to* 1948 (Date)

4. QUANTITY *of water claimed and used is* 250 *gallons per minute;* 165 222 *acre feet per year.*

Maximum number of days water is used each year:

For irrigation: ..... *days.*

For other purposes: 200 *days.*

5. PURPOSE OR PURPOSES *for which water is used* Industrial

..... (Domestic, irrigation, municipal, manufacturing, industrial, etc.)

5. *(Continued)*

(a) FOR MUNICIPAL SUPPLY: *To supply the city, town or community of*.....

in the county of....., *having a present population of*....., *and an estimated population of*.....*in 19*.....

(b) FOR IRRIGATION: *The land irrigated has a total area of*.....*acres, and water is used each year for this purpose from*.....(Date)*to*.....(Date)

(c) Legal description of property on which water is used for all purposes other than municipal supply:

BEG AT A PT 193' N OF SE COR NE¼ SW¼ THE TPB TH S 77°01 ' W 29.3' TH S 14°24' E 23.3' TH N 75°43' E 23.5' TH N 23.3' TO TPB

Sec 19 Twp 32 N Rg. 43 WM

6. DESCRIPTION OF WORKS:

(a) WELL: *Depth* 140 *feet. Diameter* 48 *inches or feet. Dug or drilled* Dug

Flowing or pump well Pump

IF PUMP WELL: *Type and size of pump is* Turbine

Type and size of motor or engine is 25 H. P.

Depth from ground surface to water level before pumping 40 *feet.*

After continuous operation for at least four hours, the measured discharge of pump is 250 *g.p.m., and the drawdown of water level is* 5 *feet.*

Date of test Summer 1947

IF FLOWING WELL: *Measured discharge*.....*g.p.m. on*.....(Date)

Shut-in pressure at ground surface.....*lbs. per sq. in. on*.....(Date)

Water is controlled by.....(Cap, valve, etc.)

CASING: *(Give diameter, commercial specifications and depth below ground surface of each casing size.)*

.....*inch diameter*.....*from*.....*to*.....*feet*

.....*inch diameter*.....*from*.....*to*.....*feet*

.....*inch diameter*.....*from*.....*to*.....*feet*

.....*inch diameter*.....*from*.....*to*.....*feet*

Describe and show depth of shoe, plug, adapter, liner or other details:

PERFORATED CASINGS OR SCREENS:

.....from.....to.....
(Number per foot and size of perforations, or describe screen)

.....from.....to.....

.....from.....to.....

.....from.....to.....

LOG OF WELL: *(Describe each stratum or formation clearly, indicate if water bearing, and give thickness and depth as indicated.)*

MATERIAL	Thickness (Feet)	Depth to Bottom (Feet)
Information Unknown		

(b) INFILTRATION TRENCH: *Covered or open*.....

Dimensions: Length.....*ft. Minimum depth*.....*ft. Maximum depth*.....*ft.*

Bottom width.....*ft. Discharge*.....*g.p.m. Date of test*.....

(c) TUNNEL: *Type of lining*.....

Dimensions: .....
(Length, course, and cross sectional size)

Position of water bearing stratum with reference to portal of tunnel.....

.....

Log of tunnel: (Preceding table for log of well may be used, if desired. Give footage from portal and character of materials, as pertinent.)

7. *Ownership of each existing well or other works for withdrawal of ground water within a radius of one-quarter mile and the distance and direction from well or other works being reported herein:*

(Name of owner)	(Direction)	(Distance)
Stanwood Water Co. Well	N	50 Ft.

(On accompanying plat or map show location of these existing wells or works.)

8. *Remarks:*

PICTSWEET FOODS, INC.

By H. O. Malsbury
(Signature of claimant)

H. O. Malsbury, Sec.-Treas.

STATE OF WASHINGTON,
COUNTY OF Skagit } ss.

I, the claimant named in the foregoing claim, being first duly sworn, depose and say that I have read the above and foregoing claim to ground water right; that I know the contents thereof; and that to the best of my knowledge, information and belief, the facts therein stated are true and correct.

H. O. Malsbury

Subscribed and sworn to before me this 19th *day of* February, 19 48

Evan Roberts

Notary Public in and for the State of Washington,

Residing at Mount Vernon, Washington

DIRECTIONS FOR PREPARING DECLARATIONS OF CLAIM

A $5.00 examination fee should accompany each declaration.

1. ~~$2.00 filing and recording fee should accompany each declaration~~

2. Write plainly in ink or use typewriter.

3. Read carefully all questions. Answer only those that apply to your project.

4. In answering Question 2, concerning location, give distance and direction of location of well or other construction works for withdrawal of water from nearest 40 acre corner or other legal subdivision, as

(a) "320 feet north and 1100 feet east from the southwest corner of SE¼ of SW¼ of Sec. 1, Twp. 13 N., Rge. 2 E. W. M.," or

"North 36° 20′ east 400 feet from the northeast corner of NW¼ of SW¼ of Sec. 33, Twp. 12 N., Rge. 3 W. W. M." or

(b) If within limits of incorporated town or city, or recorded plat:
"Lot 4, Block 6 of Churchill's Addition to City of Spokane."

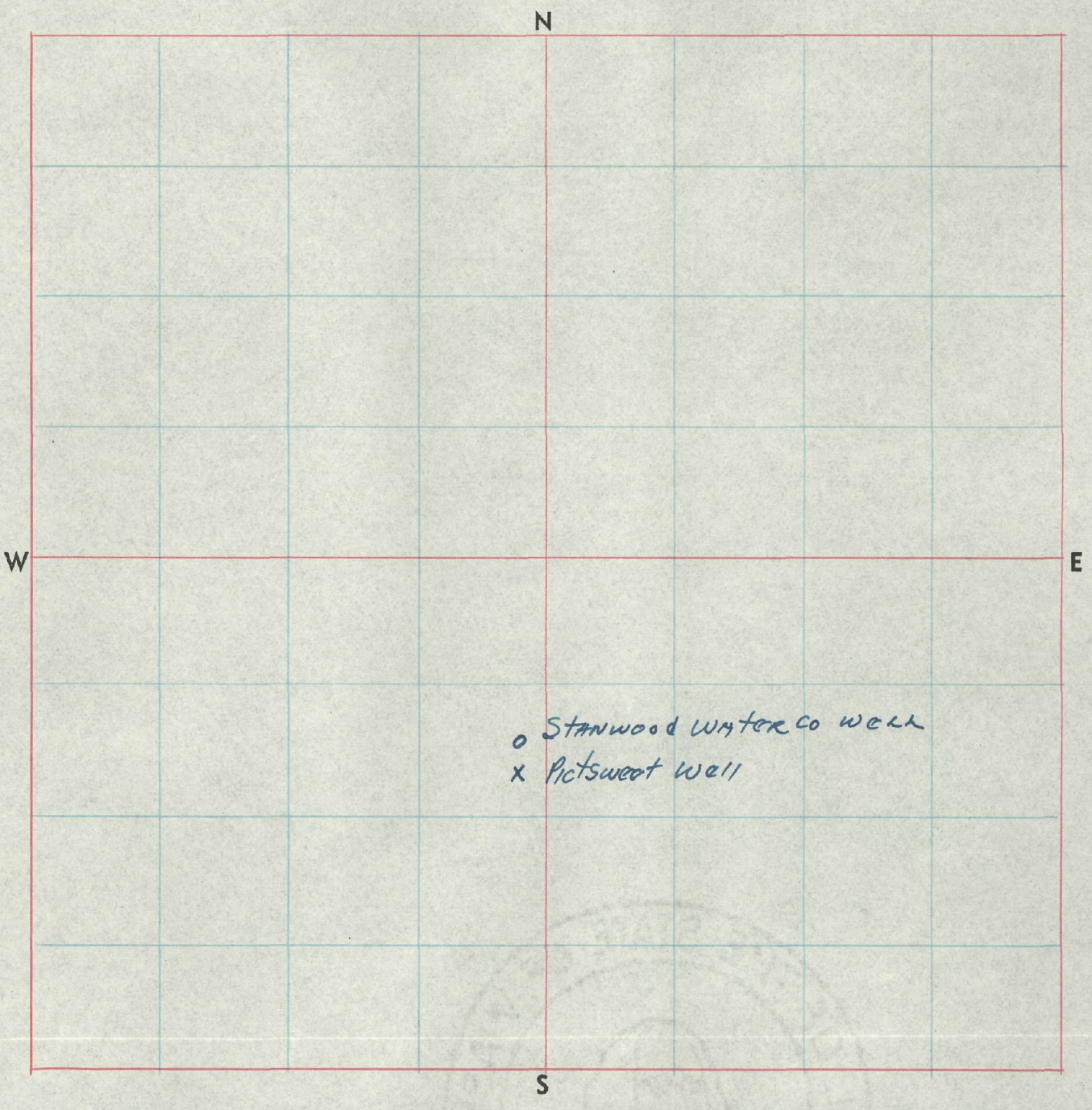
5. Maps, showing location of well or other works and place of use, must be made in triplicate (3) on the enclosed section plats. If for irrigation, show the approximate area irrigated. Show also location of other existing wells or other works for withdrawing ground water within a radius of one-quarter mile.

6. Sign declaration and affidavit on back of form.

S. F. No. 1854-A—3-46—6M. 11378.

SECTION PLAT

Sec. 19 Twp. 32 N. R. 4E



Show by a cross (X) the location of the well or other works covered by the application or declaration. Show by circle (O) the locations of other wells or works within a quarter of a mile. Also traveling directions from nearest town on main highway.

Scale: 1 inch = 800 feet.

606

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
WATER RIGHT CLAIMS REGISTRATION

WATER RIGHT CLAIM

RECEIVED
DEPARTMENT OF ECOLOGY
MAY 1074 099598
CASH___ OTHER / NONE___

1. NAME Twin City Foods, Inc.
ADDRESS P.O. Box 587
Stanwood, WA. ZIP CODE 98292

2. SOURCE FROM WHICH THE RIGHT TO TAKE AND MAKE USE OF WATER IS CLAIMED: Ground Water (SURFACE OR GROUND WATER) W.R.I.A. 05 (LEAVE BLANK)

A. IF GROUND WATER, THE SOURCE IS Wells (5) on plant site

B. IF SURFACE WATER, THE SOURCE IS -

3. THE QUANTITIES OF WATER AND TIMES OF USE CLAIMED:

A. QUANTITY OF WATER CLAIMED 920 GPM PRESENTLY USED 360 GPM (CUBIC FEET PER SECOND OR GALLONS PER MINUTE)

B. ANNUAL QUANTITY CLAIMED 1,483 Ac.-Ft./yr PRESENTLY USED 580 Ac.-Ft./yr (ACRE FEET PER YEAR)

C. IF FOR IRRIGATION, ACRES CLAIMED - PRESENTLY IRRIGATED -

D. TIME(S) DURING EACH YEAR WHEN WATER IS USED: Continuously

4. DATE OF FIRST PUTTING WATER TO USE: MONTH Unknown YEAR 1951

5. LOCATION OF THE POINT(S) OF DIVERSION/WITHDRAWAL: 1850± FEET East AND 1850± FEET South FROM THE North West CORNER OF SECTION 11

BEING WITHIN SE1/4 of NW1/4 OF SECTION 11, T. 31 N., R. 5E (E. or W.) W.M.

IF THIS IS WITHIN THE LIMITS OF A RECORDED PLATTED PROPERTY, LOT - BLOCK - OF

(GIVE NAME OF PLAT OR ADDITION)

6. LEGAL DESCRIPTION OF LANDS ON WHICH THE WATER IS USED: Beginning at the Northeast corner of the Southeast quarter (SE1/4) of the Northwest quarter (NW1/4) of Section 11, Township 31 North, Range 5, East W.M.; thence South 4 degrees 23' West along the East line of said subdivision 100.00 feet; thence north 88 degrees 12' West 402.9 feet; thence South 44 degrees 56' East 10.19 feet to the true point of beginning; Thence South 44 degrees 56' East 40.00 feet; thence South 32 degrees 23' West 269.3 feet; thence South 45 degrees 4' West 365.3 feet; thence in a straight line in a Northeasterly direction to the true point of beginning, situated in the County of Snohomish.

COUNTY Snohomish

7. PURPOSE(S) FOR WHICH WATER IS USED: Industrial: Food Proc. & Cold Storage

8. THE LEGAL DOCTRINE(S) UPON WHICH THE RIGHT OF CLAIM IS BASED: Appropriation

DO NOT USE THIS SPACE

THE FILING OF A STATEMENT OF CLAIM DOES NOT CONSTITUTE AN ADJUDICATION OF ANY CLAIM TO THE RIGHT TO USE OF WATERS AS BETWEEN THE WATER USE CLAIMANT AND THE STATE OR AS BETWEEN ONE OR MORE WATER USE CLAIMANTS AND ANOTHER OR OTHERS. THIS ACKNOWLEDGEMENT CONSTITUTES RECEIPT FOR THE FILING FEE.

DATE RETURNED THIS HAS BEEN ASSIGNED WATER RIGHT CLAIM REGISTRY NO.

JUN 6 75 162555

DIRECTOR - DEPARTMENT OF ECOLOGY [signature]

I HEREBY SWEAR THAT THE ABOVE INFORMATION IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

X Lee Handy

DATE 5/9/74

IF CLAIM FILED BY DESIGNATED REPRESENTATIVE, PRINT OR TYPE FULL NAME AND MAILING ADDRESS OF AGENT BELOW.

☐ ADDITIONAL INFORMATION RELATING TO WATER QUALITY AND/OR WELL CONSTRUCTION IS AVAILABLE

A FEE OF $2.00 MUST ACCOMPANY THIS WATER RIGHT CLAIM

ORIGINAL DWR

RETURN ALL THREE COPIES WITH CARBONS INTACT, ALONG WITH YOUR FEE TO:
DEPARTMENT OF ECOLOGY
WATER RIGHT CLAIMS REGISTRATION
P.O. BOX 829 OLYMPIA, WASHINGTON 98504