August 3, 1983
2558A/hdm

INTRODUCED BY: _____

PROPOSED NO. 83-[illegible]

ORDINANCE NO. 6494

AN ORDINANCE amending the 1969 Comprehensive Water Supply Study and Plan for Pierce County and Vicinity and conditionally approving the City of Tacoma Pipeline No. 1 Flow Control System.

PREAMBLE:

On February 4, 1982 the Tacoma Department of Public Utilities filed a Declaration of Non-Significance for the proposed Pipeline No. 1 Flow Control System.

On March 2, 1983 the Tacoma Water Department completed its submittal of the plan for Pipeline No. 1 Flow Control System. As required by KCC 13.24, the Utilities Technical Review Committee reviewed the proposed plan and on March 23, 1983 recommended its conditional approval after making the following findings:

1. King County approved the 1969 Comprehensive Water Supply Study and Plan for Pierce County and Vicinity by KCC 13.24.110 in 1979. The Pipeline No. 1 Flow Control System was not a proposed project of the 1969 plan.

2. The proposed Flow Control System primarily involves the transfer of about 100 taps from Pipeline No. 1 to existing and new distribution lines; the construction of a 120,000 gallon tank near Cumberland, the addition of a small pump station and five individiual service pumps and minor modifications to Pipeline No. 1.

3. The approximately $1.2 million project will be completed without additional cost to existing Tacoma customers in King County.

4. The proposed Flow Control System would increase the quality and reliability of water service to the 200,000+ customers of Tacoma in King and Pierce Counties.

5. Implementation of the Flow Control System is desirable whether or not Tacoma's proposed Pipeline No. 5 project is constructed, and in now way constitutes approval or disapproval of the Pipeline No. 5 Project.

6. Tacoma presently serves about 120 houses in Veazie/Cumberland area. Tacoma is proposing to construct a new supply system for the customers consisting of pumping, storage and transmission. Approval of this system is permitted by KCC 13.24. However, the Utilities Technical Review Committee believes that the service area of this system should be clearly defined. Therefore, water service by Tacoma should be limited to the service area boundary shown on Exhibit 2 (attached). Additional services from Pipeline No. 1 should be permitted only within this service area.

7. The City of Enumclaw has agreed to extend its water supply service area to include a small number of services east of the City originally served from Pipeline No. 1 and is currently preparing a Comprehensive Water System Plan to accomplish that purpose.

BE IT ORDAINED BY THE COUNCIL OF KING COUNTY:

SECTION 1. The Tacoma Water Pipeline No. 1 Flow Control System (Exhibit 1, attached) is hereby approved as an amendment to A Comprehensive Water Supply Study and Plan for Pierce County and Vicinity; PROVIDED, additional service from Pipeline No. 1 shall be permitted only within the service area shown on Exhibit 2. This action shall not be construed to indicate approval or disapproval of the City of Tacoma's proposed Water System Plan.

INTRODUCED AND READ for the first time this 25th day of July, 1983.

PASSED this 8th day of August, 1983.

KING COUNTY COUNCIL
KING COUNTY, WASHINGTON

Chairman

ATTEST:

Clerk of the Council

APPROVED this 18th day of August, 1983.

King County Council

ORD NO 6494

EXHIBIT 1

CITY OF TACOMA
Department of Public Utilities
WATER DIVISION

# ENGINEERING REPORT

# PIPELINE NO. 1 FLOW CONTROL SYSTEM

# REQUIRED BY WAC 248-54-590

FEBRUARY, 1982
Revision 1

PAUL J. NOLAN
Director of Utilities

JOHN A. ROLLER
Superintendent, Water Division

UTILITIES ADMINISTRATION BUILDING
Tacoma, Washington 98411

CONTENTS

# ENGINEERING REPORT FOR PIPELINE NO. 1 FLOW CONTROL SYSTEM

## I INTRODUCTION

Section WAC 248-54-590 Of the Rules and Regulations of the State Board of Health Regarding Public Water Systems requires this engineering report. The intent of the requirement is to assure that engineering concepts and design criteria used in preparation of plans and specifications meet the intent of the rules and regulations. Also, sufficient information is desired to permit a thorough evaluation of proposals which are complex in nature or require engineering design beyond the detail provided by the Water System Comprehensive Plan (WAC 248-54-580), such as the design of water treatment facilities.

Prior to or concurrent with the preparation of detailed plans and specifications for new construction or improvements to the water system, the water purveyor must submit the engineering report for review and approval. The plans and specifications review requirements are covered by WAC 248-54-600.

The engineering report need not duplicate information already contained in an approved and current water system plan. The contents of this report follows the outline suggested in WAC 248-54-590.

## II PLANNING CONSIDERATIONS

### Background

This subsection is to include general background about the water system and community served, including present and future population.

The City of Tacoma's Department of Public Utilities is in the process of improving water quality and increasing water quantity available to its service area. Within the City, 158,000 people are presently served and outside the City, 49,000 people are served. The service population is growing at a rate of about 1.3% per year.

Water consumption has been increasing due to continued regionalization of water service, rising population, and industrial expansion. The water system's principal supply is the Green River, augmented by a local wells system and reservoir storage. The water system has been able to handle successfully two different seasonally recurring conditions. First, water supply, storage, and delivery facilities have been capable of meeting peak summer demand. Second, during winter and early spring months, when Green River water is most frequently turbid due to heavy rainfall or rapidly melting snow, sufficient auxiliary sources have been available.

The second Green River Diversion (Pipeline No. 5) Project is a long-range program designed to assure the City of ample water under these seasonal conditions. Phase I provided additional clear water supply during turbid water conditions in the Green River; Phase II is to provide an additional pipeline and storage and the capacity to meet base and peak demands.

Approximately seven miles upstream from the City's Green River Headworks, there is a large quantity of clear groundwater in the North Fork Valley. The original investigations indicated that during the turbid water season, the City would be able to pump more than 72 MGD for continuous periods of from 20 to 30 days from this aquifer. This source is expected to operate about 65 days per year on an intermittent basis.

The City proceeded with Phase I, the North Fork Wells Development, consisting of three major components. The first component involved drilling and equipping six production wells, with a combined design capacity exceeding 72 MGD. The second component was the construction of seven miles of wells collection pipeline, terminating in a new 10 MG reservoir. The third component was the construction of a water quality control station which houses necessary equipment. When turbidity occurs, the well water and river water are blended at the control station to reduce turbidity to acceptable limits.

Unfortunately, the City has found through operating experience that only about 36 MGD is available from the North Fork wells in the Fall during the first rains. Much of the well water is thought to travel through the aquifer from up-river recharge areas and it takes about one month from the first heavy rains for the well field to be able to produce 72 MGD. This is an unacceptable condition due to the State's rules on turbidity.

The water quality, quantity, and source and system reliability are affected by this condition because the City's Pipeline No. 1 from the Green River must now be operated at a constant rate of 72 MGD. If turbidity above 10 units occurs during the first Fall rains, the City may be forced to supply turbid water to Pipeline No. 1 if the wells can only provide 36 MGD. About 240 customers served along the pipeline consequently are served with water of unacceptable turbidity under these conditions.

## Existing and Future Water System

This subsection is to include a description of the existing water system and proposed future improvements.

The City's transmission main from the Green River, Pipeline No. 1, was originally constructed in 1912. The pipeline was designed as an unregulated transmission line, and was not specifically intended to provide water service to people along its route. Although most of the sections of original pipe had been replaced by the early 1950s, no modifications were made to change the original design philosophy. Over the years, the City has provided service to many of the people along the line. The water pressure available to these people is dependent on the local topography and the location of the customer's service along the pipe route. Some areas, such as along Buckley Boulevard, continually have pressures as low as 12 psi.

The City considers the flow control of Pipeline No. 1 to be an important water quality improvement to its system. Under present design conditions, the pipeline runs at 72 MGD continuously. Since the North Fork Wells may only provide about 36 MGD at times when the river is turbid, the City cannot guarantee non-turbid water to its cutomers along Pipeline No. 1. With the Pipeline No. 1 flow controls installed, the

City will be able to reduce the flow in the pipeline for water quality considerations, while still providing adequate pressure to services along the line. In this way, the City can provide clean water to all its customers. Also, when Pipeline No. 5 is completed, clean water will be available at all times in accordance with State turbidity requirements.

Improvement Schedule and Financial Arrangements

1. Construction of a system to allow Pipeline No. 1 flows to be regulated

This flow control system will enable the City to provide clean water to all its customers by temporarily reducing the flow in the pipeline when an adequate quantity of non-turbid water is not available. The project will cost an estimated $1,249,000, with $749,400 coming from the Water Division's current or bond funds and $499,600 hopefully being provided by a State grant. Estimated completion date is November 1, 1983.

Variances and Exemptions (WAC 248-54-800)

This subsection is to contain the necessary information where a variance or exemption is requested from Department of Social and Health Services regulations.

No variances or exceptions are requested.

Operations Program (WAC 248-54-610)

This subsection is to describe the operations program of the water system. Additional information can be found in the recently completed Tacoma Water System Plan.

The Water Superintendent is responsible for the management, operation, and quality control of the system. He is assisted by the Assistant Superintendent and Chief Water Plant Engineer, the Chief Electro-Mechanical Engineer, the Chief Sanitary Engineer, and the Chief Distribution Engineer. These individuals are certified Water Distribution Managers, Level III or IV. Many other individuals within the Water Division are certified.

The City of Tacoma has an Emergency Services Operations Plan, which includes a section on the Water Division. An Operations Center is manned 24 hours per day at Hood Street Reservoir in the City. The operator has a hierarchy compilation of emergency telephone numbers. When fires or other water system emergencies occur, the operator is notified by the proper authorities and takes appropriate action. The water system's major reservoir (McMillin) and the Headworks on the Green River have two or more resident operators available for duty 24 hours per day. An emergency crew is available for duty 24 hours per day. The emergency truck and other equipment are taken home by the emergency crew to avoid delays in case of emergencies. Many radio equipped cars and trucks are taken home each night to avoid delays in case of emergencies.

A large reserve supply of chemicals and other operating supplies are maintained by the Water Division. Over $800,000 in inventory is

provided. There are two major chlorine suppliers located in Tacoma and reserve supplies are available at all major treatment locations.

All major operating equipment is inspected on a regular basis to determine the need for maintenance. Most equipment is checked at least daily when it is operating. Equipment requiring preventive maintenance is either listed on a master schedule or tagged with a card listing the maintenance schedule.

Water quality is monitored in accordance with Department of Social and Health Services requirements. The Water Division operates an uncertified laboratory on the Green River for evaluating coliform bacteria. Distribution system coliform samples are analyzed by the City of Tacoma-Pierce County Health Department. Official samples from the Green River and samples from the new distribution mains are analyzed by a private certified laboratory. The Water Division has two certified cross connection control specialists who carry out a control program in accordance with Department of Social and Health Services requirements. Record keeping and analyses are accomplished in accordance with Department of Social and Health Services requirements.

## III ENGINEERING CONSIDERATIONS

### Design Criteria

This subsection describes the design criteria for the proposal, including water demand, water quality and water pressure.

In order to control turbidity through blending surface and groundwater, a modification to Pipeline No. 1 is required to regulate the quantity of water carried while maintaining sufficient service pressure to those customers served directly from the pipeline. Simply putting a valve at the downstream end would cause excessive pressure in the pipeline, undoubtedly causing failure of the line. Putting a valve at the upstream end would cause much of the pipeline to operate as a flume. This is not acceptable to customers along the line, many of whom would be out of water whenever the pipe was throttled.

Any modification must satisfy the following requirements:

1. Allow flow to be varied from a minimum of near zero MGD to the maximum of 72 MGD.

2. Not significantly reduce the present capacity of the line.

3. Not demand significantly increased maintenance or number of operating personnel.

4. Provide water at acceptable state-required pressure to all Pipeline No. 1 services.

5. Be fail-safe: Introduce no unacceptable risks to the pipeline or its operation.

6. Be acceptable to local residents.

Based on these criteria, a system has been developed which will allow the pipeline to be throttled, yet which will still provide for adequate service to customers along the pipeline route. The proposal will allow Pipeline 1 to be throttled by removing or modifying the pipeline's service connections. In this way, when the flow is regulated at the Headworks, service to on-line customers will not be impaired.

The system basically consists of the following components:

1. 15,000 feet of 6-inch D.I. pipe.
2. 9,700 feet of 12-inch D.I. pipe.
3. 12,300 feet of 16-inch D.I. pipe.
4. 91 feet of large diameter (52"-54") steel pipe.
5. Small pump station at Cumberland.
6. 120,000-gallon tank at Cumberland.
7. Transfer of 9 services to the City of Enumclaw's water distribution system.
8. Transfer of about 100 taps to existing and new distribution lines.
9. Add surge check valves and insulation to all air valves which will operate when the pipeline is throttled.
10. Install individual pumps on 5 services which would otherwise have inadequate pressure.

Under the proposed plan, flow in Pipeline 1 can be regulated anywhere in the range from about 72 MGD to near zero MGD. The only new moving parts in the system will be at the small pump station at Cumberland. This small pump, serving about 70 customers, will pump into a 120,000-gallon tank located near the pipeline. No special attention along the line will be required by operating personnel when Pipeline 1 must be throttled.

Description of the Major Components of the System

1. New 6-inch tap at H293+36, supplying a 120,000-gallon tank by pumping. The tank will be about 400 feet from the tap and will have a maximum water level at Elevation 940. The tank will feed 14,600 feet of 6-inch D.I. (to H435+20) with a minimum static pressure of 37 psi and a maximum of 78 psi static. Pressures are based on a full tank, and are measured at the customer's meter. Pressures would be 9 psi less if measured with the tank almost empty. The system will meet DSHS requirements. About 70 customers will be served by this system.

   This system will improve the pressure and insure the reliability of turbid free water to the customers. The 6-inch line will be immediately adjacent to the existing Pipeline No. 1 and regarded as an integral part of that Pipeline to serve existing customers. All future customers in this area will be required by Public Utility Board action, to form a Class 2 water system and comply with all DSHS and King County regulations.

2. Install 48' of 54" diameter steel pipe at Station E36. The new section of pipe will contain a fabricated upward vertical bend, which will enable Enumclaw's 12" tap to remain completely submerged at all flows.

3. New 16-inch D.I. line starting at Rainier Glen and running 12,300 feet to Mundy Loss Road. At Mundy Loss Road, the pipe would reduce to 12-inch and run 5,200 feet to Station E216, near Buckley. This will serve Buckley Blvd. from the distribution system at Rainier Glen. Minimum static pressure will be 29 psi on Buckley Blvd.

4. New 12" D.I. line, 3,200 feet, from E414+00 to E446+00, fed from the Shiloh Park distribution line which ends about 1,300 feet south of Pipeline 1 on Werron Road. The 12" pipe will be connected to the existing system by an additional 1,300 feet of new 12" pipe.

5. Install 43 feet of 52" diameter steel pipe at Station E513+30. The new section of pipe will contain a fabricated upward vertical bend, which will enable the pump stations at Rhododendron Park and 214th Street, and the proposed station at Rainier Glen, to operate at all flows.

6. Install individual pumps on five services which would otherwise not receive adequate pressure. It is proposed that the pumps would be furnished and installed by the City, and operated and maintained by the customers. Four of these services are in the vicinity of Station H120, while the fifth is at Station E565. Without the individual pumps, some of these customers would experience pressures less than 10 psi.

7. Tap relocations: The following taps need to be relocated as indicated.

   - H149+20 - A 2-inch tap which serves Gravity 237,742, and 751 must be relocated at H159+50, 1,030 feet downstream. The tap is in Hume pipe and would need to be done during a shutdown. This service is presently equipped with a pump. Relocating the tap will keep the service connection underwater at all times.

   - H204+40 - A 2-inch tap which serves Gravity 255 must be relocated at H219+00, 1,460 feet downstream. The tap, also in Hume pipe, would be done concurrently with the tap at H159+50. This service is presently equipped with a pump. Relocating the tap will keep the service connection underwater at all times.

   - Taps at H299+26, 300+62, 312+00 and 318+27 need to be transferred to the 6-inch D.I. line (see Item 1). These taps are in Cumberland.

   - Taps between H351+00 and H435+20 need to be transferred to the 6-inch D.I. line (see Item 1).

   - H448+34 - A 2" tap which serves Gravity 61 needs to be relocated on the 6-inch D.I. line, 1,310 feet upstream.

   - H519 - Transfer Gravity 40 to Enumclaw's 8-inch main which runs down SE 416th Street.

- o H575+71 and H581+63 - Three services, Gravity 104,635, and 644, should be transferred to Enumclaw's 8-inch main in SE 416th Street. This will involve running about 2,800 feet of small pipe along the right of way to make the connection. In cases like this it may be necessary for Tacoma to buy the water from Enumclaw at their main, then resell it to the customers at their existing meters. In this way, Tacoma will be responsible to maintain the 2,800 feet of pipe which will need to be laid in the Pipeline 1 right of way.

- o H608+67 - Transfer Gravity 36 to Enumclaw's 10-inch main in SE 432nd Street.

- o E107+92 and 108+12 - Transfer Gravity 125 and 29 to Enumclaw mains in 244th SE.

- o E110+20 - Transfer Gravity 209 to Enumclaw main in 244th SE.

- o E118+50 - Transfer Gravity 304 to Enumclaw's line in 244th SE.

- o Taps between E213+40 and E386+00 need to be transferred to the 12-inch and 16-inch D.I. line along Buckley Blvd. (see Item 3).

- o E389+62 - Gravity 242 must be transferred about 200 feet downstream to the 16-inch Rainier Glen distribution line.

- o E396+25 - Services for Gravity 436 and 633 need to be transferred about 450 feet upstream to the 16-inch Rainier Glen line.

- o Services between E413+00 and E447+50 must be transferred to a new 12-inch line (see Item 4).

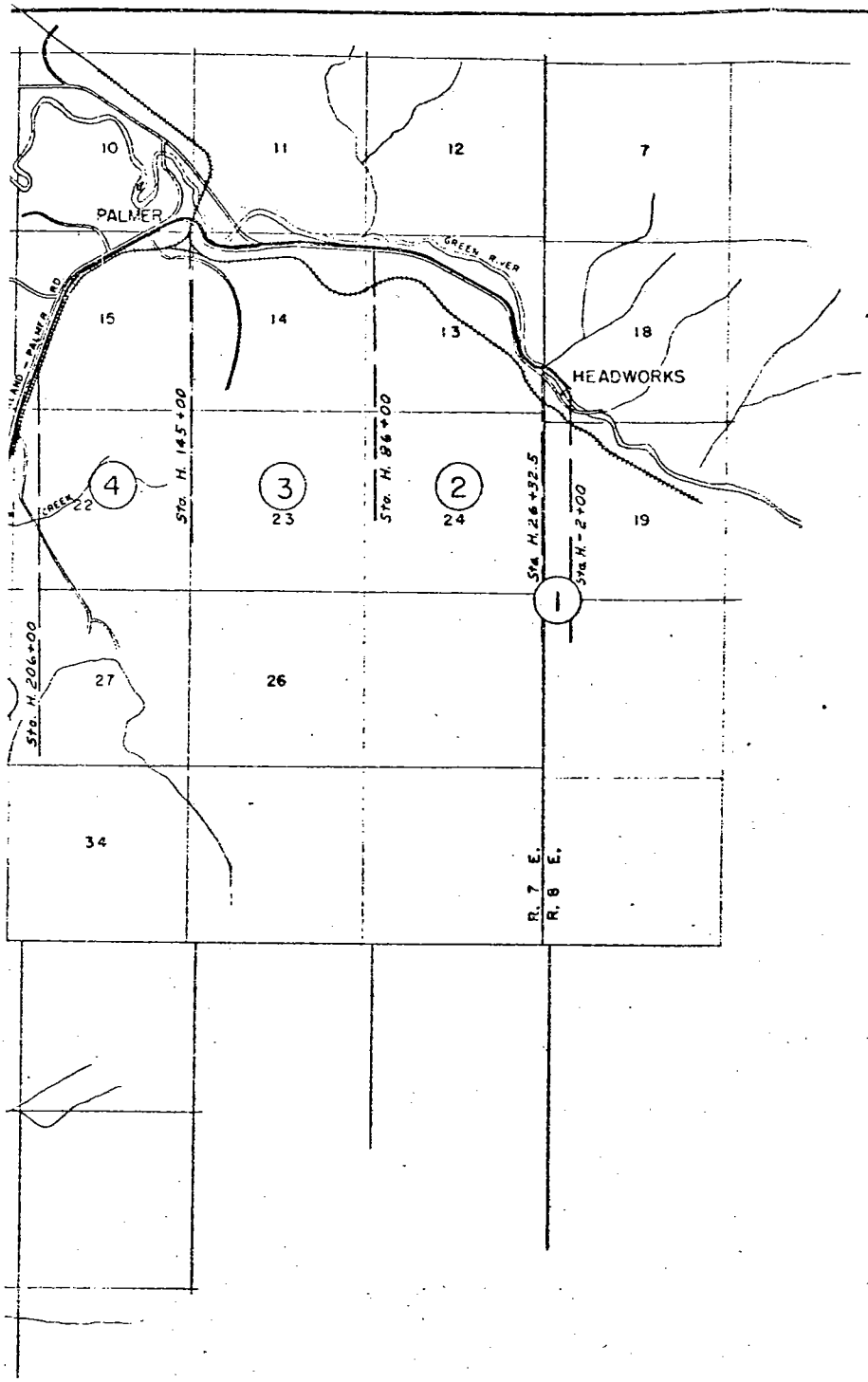
- o E450+83 - Services for Gravity 156 and 445 need to be transferred 480' upstream to the 12-inch line (see Item 4).

Incremental Construction Items

The proposal is ideally suited to incremental construction since it consists of several independent projects. The location of these incremental projects are shown on the following two pages. The proposed system could be constructed in the following segments:

A. Relocate miscellaneous taps which presently run dry or lose pressure when the flow in Pipeline 1 is reduced. One tap in Hume pipe needs to be relocated during a shutdown. Three services could be transferred to the proposed 8 and 16-inch Rainier Glen lines. The modifications to existing air valves could be made whenever convenient. Approximately 13 air valves are involved. Also, five pumps need to be installed on individual services. Estimated cost is $16,000 for these improvements.

B. Transfer customers to Enumclaw. All customers between H510 and E125 could be transferred as soon as the details and costs are worked out with Enumclaw and the customers. Estimated cost is $13,000.




Proposed Tacoma Lines

Existing Enumclaw Lines

(C) Incremental Construction Item

CITY OF TACOMA
DEPARTMENT OF PUBLIC UTILITIES
WATER DIVISION

GREEN RIVER GRAVITY PIPE LINE NO 1

FLOW CONTROL MODIFICATIONS

| NO. | REVISION | DATE | BY | APP'D. |
|---|---|---|---|---|
| | | | | |

REFERENCE

P/L 1 Flow Control 3-24-81 DNS
5-12-81
10-8-81
12-28-81

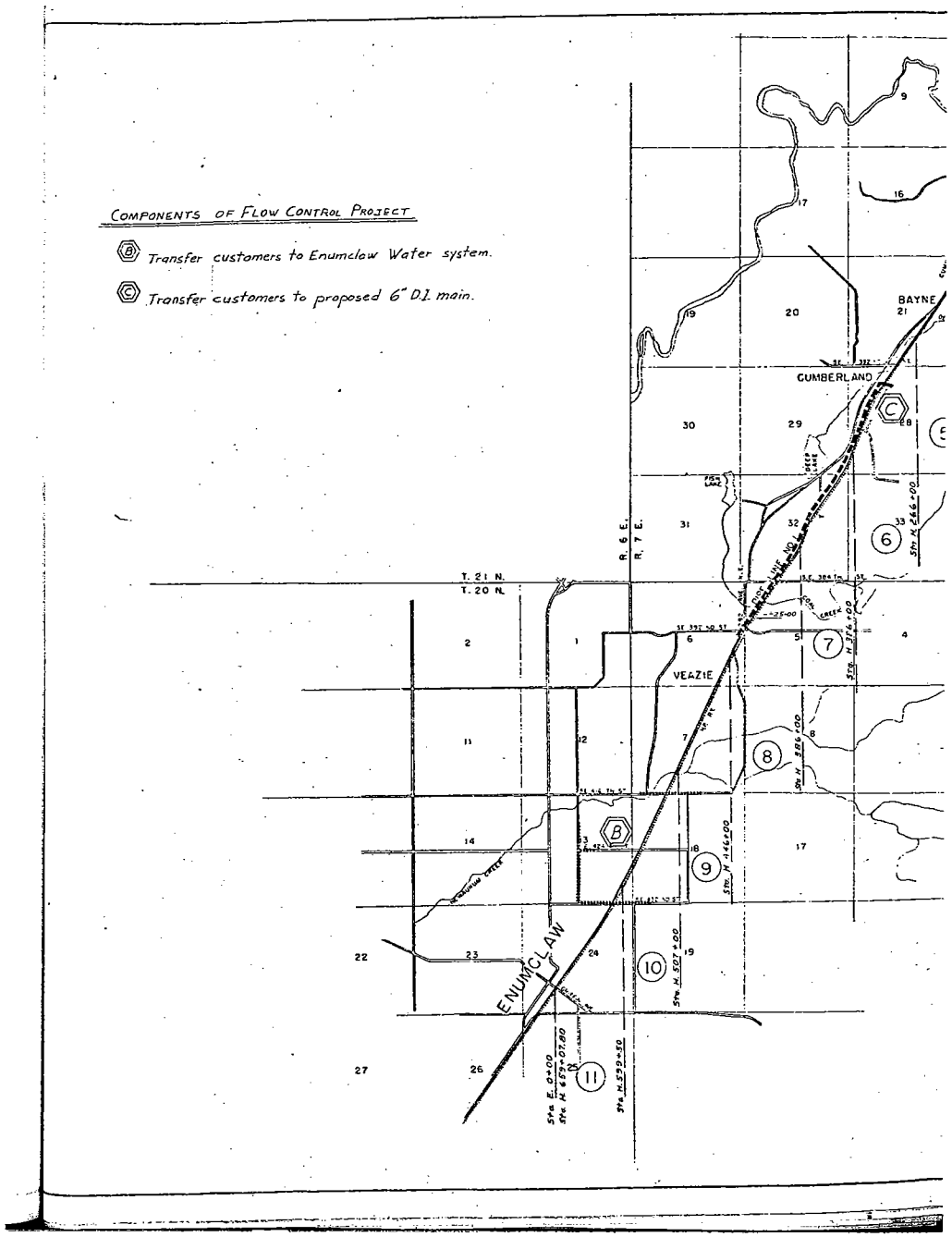
FIELD BOOK

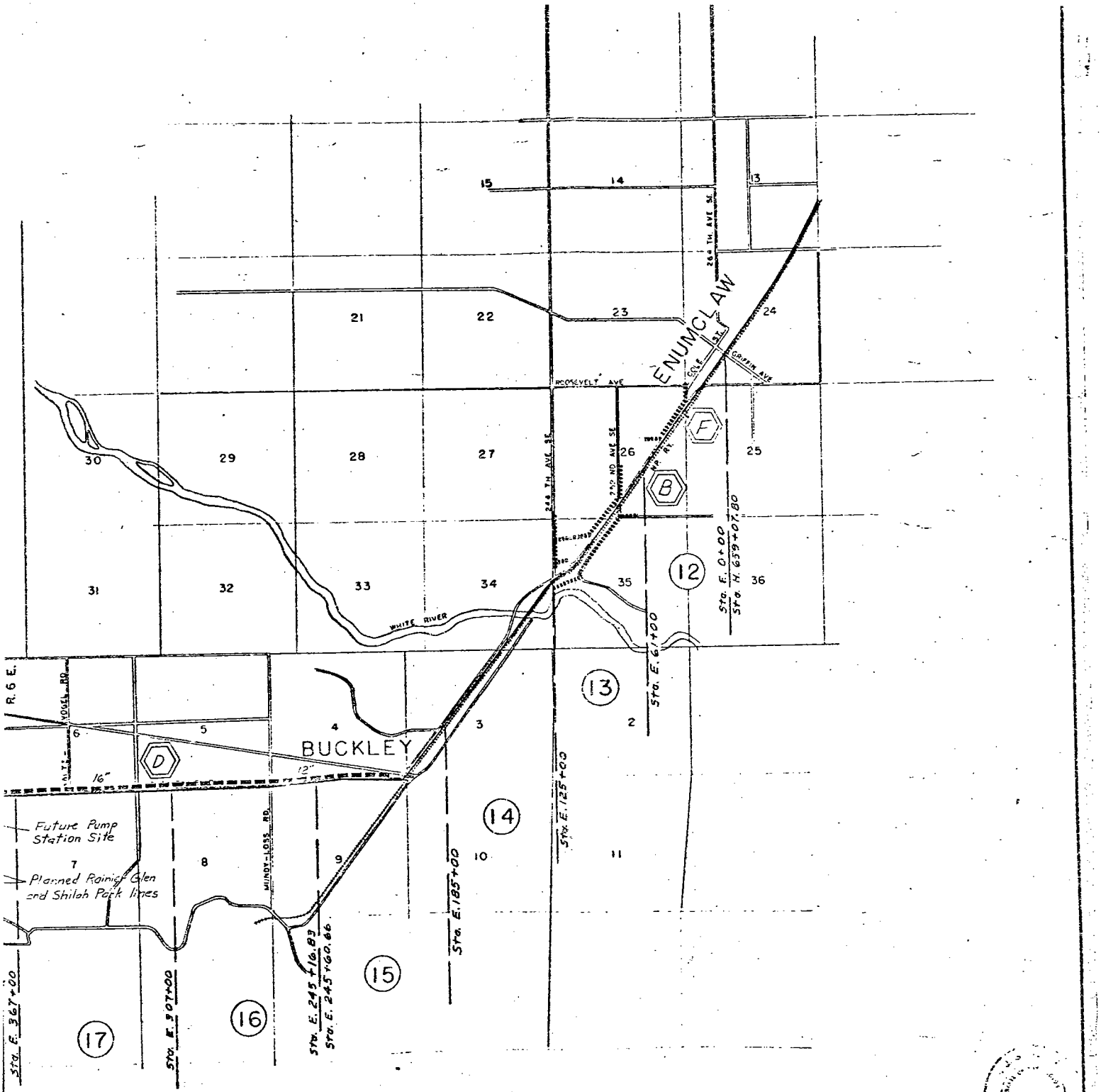
DATE
DESIGN
DRAWN
TRACED
CHECKED
W.O.

SCALE 2" = 1 MILE

DRAWING NO. 14-1

SHEET OF


COMPONENTS OF FLOW CONTROL PROJECT
Transfer customers to Enumclaw Water system.
Transfer customers to proposed 6" D.I. main.
BAYNE
CUMBERLAND
VEAZIE
ENUMCLAW
R. 6 E.
R. 7 E.
T. 21 N.
T. 20 N.
Sta. E. 0+00
Sta. H 669+07.80
Sta. H 599+50
Sta. H 507+00
Sta. H 446+00
Sta. H 386+00
Sta. H 266+00
Sta. H 25+00




Proposed Tacoma Lines

Existing Tacoma Lines

Existing Enumclaw Lines

(D) Incremental Construction Item

CITY OF TACOMA
DEPARTMENT OF PUBLIC UTILITIES
WATER DIVISION

GREEN RIVER GRAVITY PIPE LINE NO 1

FLOW CONTROL MODIFICATIONS

| NO. | REVISION | DATE | BY | APP'D. |
|---|---|---|---|---|
| | | | | |

REFERENCE

P/L 1 Flow Control 3-24-81 DNS
5-12-81
10-8-81

FIELD BOOK

DATE
DESIGN
DRAWN
TRACED
CHECKED
W.O.

SCALE 2"=1 MILE

DRAWING NO. 14-1A

SHEET OF

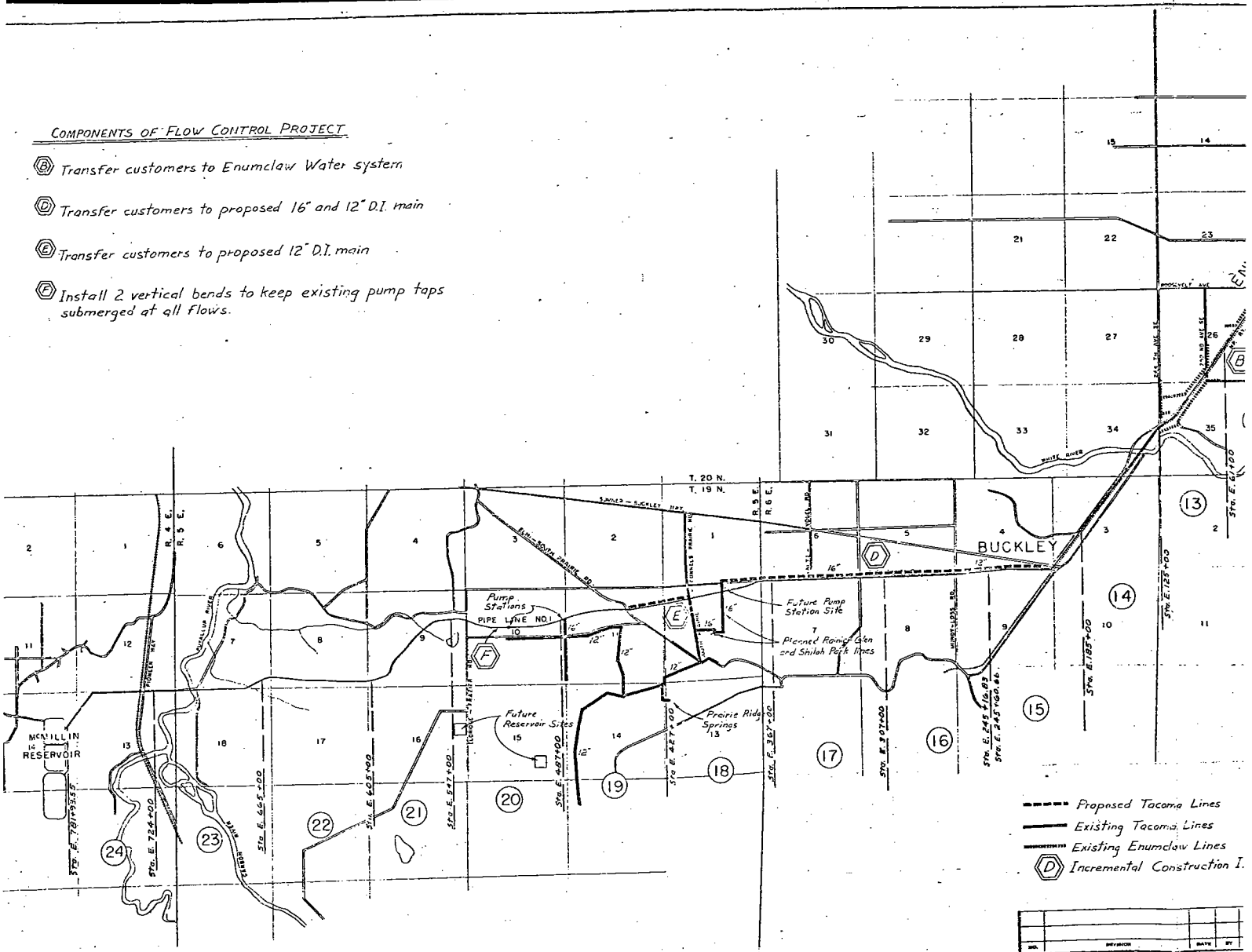
## COMPONENTS OF FLOW CONTROL PROJECT

(B) Transfer customers to Enumclaw Water system

(D) Transfer customers to proposed 16" and 12" D.I. main

(E) Transfer customers to proposed 12" D.I. main

(F) Install 2 vertical bends to keep existing pump taps submerged at all flows.




| NO. | REVISION | DATE | BY |
|---|---|---|---|
| | REFERENCE | | |
| | P/L 1 Flow Control | 3-24-81 | |
| | | 5-13-81 | |
| | | 10-8-81 | |
| | FIELD BOOK | | |

C. Install 15,000' of 6-inch D.I. as well as the 120,000-gallon tank and pump at Cumberland. Transfer about 70 customers to the new system. Estimated cost is $370,000.

D. Install 12,300 feet of 16-inch D.I. from Rainier Glen to Mundy Loss Road, and 5,200 feet of 12-inch D.I. to near Buckley. About 110 services would need to be transferred.

Estimated cost to install the entire 17,500 feet of pipe is $700,000.

E. Install 3,200 feet of 12-inch D.I., from the proposed line in Werron Road, west along the Pipeline 1 right of way, and 1,300 feet of 12" D.I. in Werron Road. Transfer about 45 customers. Estimated cost is $84,000.

F. Install two vertical bends in Pipeline No. 1. One bend would be installed just downstream of Enumclaw's tap at Station E35+60, and the other would be installed at Rhododendron Park, Station E513. Each bend would be fabricated from steel pipe, and would raise the grade of the pipe invert by about five feet. This modification would enable the large pump stations to continue operation with reduced flows in Pipeline 1. Estimated cost is $66,000.

All costs are in 1981 dollars. Shutdown costs for Pipeline No. 1 are not included.

Summary

Summary of construction increments:

| ITEM | COST | # OF CUSTOMERS | $ PER CUSTOMER |
|---|---|---|---|
| A | $ 16,000 | 12 | 1,300* |
| B | 13,000 | 9 | 1,400 |
| C | 370,000 | 67 | 5,500 |
| D | 700,000 | 110 | 6,400 |
| E | 84,000 | 45 | 1,900 |
| F | 66,000 | -- | ----- |
| TOTAL | $1,249,000 | | |

* All costs in Item A are not strictly related to individual customers.

Summary of Minimum Pressures:

Minimum static pressure for services in the Werron Road area will be 56 psi.

Minimum static pressure for services along Buckley Boulevard will be 29 psi.

Minimum static pressure for services in the Cumberland area will be 37 psi.

All other services will be transferred to an approved system, or will have individual pumps to provide sufficient pressure.

Although dynamic pressures will, of course, be lower than the static pressures, the proposed new mains are oversized with respect to the number of customers they will be serving, and pressure drops will not be significant under normal operating conditions. The proposed main in the Cumberland area will generally experience the greatest drop in pressure under heavy demands; however, the point on the line with the minimum static pressure is near the storage tank, and consequently will not experience large pressure fluctuations.

## Water Quality and Treatment

This subsection details water quality and water treatment considerations relevant to the proposal. Pipeline No. 1 water supply comes from the Green River near Palmer, and from the North Fork Well Field, located about 7 miles upstream of the City's Headworks near Palmer. Both sources are chlorinated in accordance with State Standards and meet the requirements of the Department of Social and Health Services.

The proposed flow controls will resolve turbidity problems as detailed in the preceding section.

## Available Alternatives

This subsection presents available alternatives to the proposal.

The following alternatives were studied:

1. Do nothing.

2. Install a system to enable the flow to be throttled, yet maintain adequate service to customers along the pipeline.

3. Install a filtration plant.

The first alternative was rejected for several reasons. The principal reason is that the problem of turbidity control is not solved. If the diversion can be reduced by throttling Pipeline No. 1, the turbidity can more easily be kept at acceptable levels. In addition, the ability to utilize the second diversion and Pipeline No. 5 would be severely limited if no modifications were made to Pipeline No. 1. There will be times when the second diversion will have to be shut down to maintain flows for protection of the instream resource. During those times, the ability to reduce the flow in Pipeline No. 1 would allow part of the water from the first diversion to be transmitted through Pipeline No. 5.

Several systems were investigated under the second available alternative. The use of valve stations was studied, as was the use of pressure sustaining standpipes. However, it was found that the most reliable and safest system would involve no major hydraulic alterations to Pipeline No. 1. Also, the use of on-line controls would not allow the City to serve all customers at DSHS acceptable pressures. Because of these reasons, it was apparent that the best solution would involve the installation of smaller, parallel lines, fed from existing distribution

systems where possible. In the Cumberland area, it would be necessary to install a new tank and pump to supply the proposed parallel water line. The estimated cost of this alternative is $1,249,000.

The high construction and operation costs of a filtration plant make the third alternative very unattractive. For example, a filtration plant with a capacity of 75 MGD would have, in 1980, cost an estimated $63.6 million, with an estimated $761,000 annually to operate. These figures do not include maintenance or debt service costs which would add substantially to the annual costs.

Water Right Status

This subsection presents water right information relevant to the proposal.

The City of Tacoma has a water right claim for the water it diverts from the Green River and water right certificates for its groundwater supplies. The City applied for and was issued water rights for its second diversion. This water right is currently being appealed through the Pollution Control Hearings Board. This proposal is not dependent on additional water rights.

## IV STATE ENVIRONMENTAL POLICY ACT CONSIDERATIONS (SEPA)

This section covers the SEPA considerations relevant to the proposal in accordance with the SEPA guidelines of the Department of Social and Health Services. A Declaration of Nonsignificance was prepared for the proposal. It is included as Exhibit "D".

## V SURFACE WATER SOURCE DEVELOPMENT

A surface source is not being developed in conjunction with this proposal.

## VI WELL OR SPRING SOURCE DEVELOPMENT

No wells or springs are being developed in conjunction with this proposal at this time.

DNS:EW

City of Tacoma

# Environmental (~~Proposed~~/Final) Declaration of (~~Significance~~/Non-Signficance) and Checklist

1. **Description of proposal:** Install ductile iron water mains parallel to Tacoma's Pipeline No. 1. Also construct a storage tank at Cumberland, and transfer services off of the Pipeline No. 1 transmission main. The modifications will enable Tacoma to regulate the flow in Pipeline No. 1 in order to maintain water quality without impairing the level of services to on-line customers.

2. **Proponent:** City of Tacoma, Dept. of Public Utilities, Water Division

   a. **Contact Person:** John A. Roller, Superintendent, Water Division

3. **City Action(s) requested:** Public Utility Board authorization to award construction contract.

4. **Location of Proposal:** Locations are along the Pipeline No. 1 right-of-way, between Cumberland and Veazie, and between Buckley and Rhododendron Park.

5. **Lead Agency:** City of Tacoma - Department of Public Utilities

   This Proposal has been determined to (~~have~~/not have) a significant adverse impact upon the environment. An EIS (~~is~~/is not) required under RCW 43.21C.030 (2) (c). This decision was made after review by the lead agency of a completed environmental checklist and other information on file with the lead agency.

6. **Responsible Official:** John A. Roller

   **Position/Title:** Superintendent

   **Department:** Dept. of Public Utilities, Water Division

   **Date:** February 4, 1982 **Signature:** John A. Roller

   **SEPA PIC File #** _____ **Department File #** _____

7. For Declarations of Significance only:

_____ Date of Expected Draft EIS Availability (determined by Responsible City Official)

_____ Date Entered in "EIS in Preparation Register" (determined by SEPA Information Center)*

To be completed by Responsible City Official:

a. Brief description and listing of those environmental impacts leading to such declaration:

_____

_____

_____

_____

b. Brief explanation of what measures, if any, could be taken to prevent or mitigate the environmental impacts of the proposal to such an extent that the lead agency would withdraw its declaration and issue a (proposed/final) declaration of non-significance: _____

_____

_____

_____

_____

_____

8. For Proposed Declarations of Non-Significance Only:

_____ Date Entered "Proposed Declaration of Non-Significance Register" (determined by SEPA Public Information Center)*

_____ Date comments to be received (15 days review period) (determined by SEPA Public Information Center)*

9. SEPA Public Information Center:
(For general government departments only)

( ) Approved as to form:

( ) Disapproved as to form

Reasons: _____ Signature of SEPA PIC Officer:

_____ _____

_____ Date: _____

*NOTE: When a determination date is to be established by the SEPA Public Information Center, the Responsible City Official will be so notified.

**CHECKLIST:**

Introduction: The State Environmental Policy Act of 1971, Chapter 43.21C, RCW, requires all state and local governmental agencies to consider environmental values both for their own actions and when licensing private proposals. The Act also requires that an EIS be prepared for all major actions significantly affecting the quality of the environment. The purpose of this checklist is to help the agencies involved determine whether or not a proposal is such a major action.

Please answer the following questions as completely as you can with the information presently available to you. Where explanations of your answers are required, or where you believe an explanation would be helpful to government decision makers, include your explanation in the space provided, or use additional pages if necessary. You should include references to any reports or studies of which you are aware and which are relevant to the answers you provide. Complete answers to these questions now will help all agencies involved with your proposal to undertake the required environmental review without unnecessary delay.

The following questions apply to your total proposal, not just to the license for which you are currently applying or the proposal for which approval is sought. Your answers should include the impacts which will be caused by your proposal when it is completed, even though completion may not occur until sometime in the future. This will allow all of the agencies which will be involved to complete their environmental review now, without duplicating paperwork in the future.

NOTE: This is a standard form being used by all state and local agencies in the State of Washington for various types of proposals. Many of the questions may not apply to your proposal. If a question does not apply, just answer it "no" and continue on to the next question.

## ENVIRONMENTAL CHECKLIST FORM

### I. BACKGROUND

1. Name of Proponent John A. Roller, Superintendent, Water Division
2. Address and Phone Number of Proponent:
   City of Tacoma, Water Division
   P. O. Box 11007
   Tacoma, WA 98411 593-8206
3. Date Checklist Submitted
4. Agency Requiring Checklist City of Tacoma - Department of Public Utilities
5. Name of Proposal, if applicable:
   Pipeline No. 1 Flow Control Modifications
6. Nature and Brief Description of the Proposal (including but not limited to its size, general design elements, and other factors that will give an accurate understanding of its scope and nature):
   The system will consist of 35,700 feet of 6" to 16" ductile iron pipe, parallelling Pipeline No. 1. A 120,000 gallon tank will be built at Cumberland. Most services directly connected to Pipeline No. 1 will be transferred to the new parallel pipes, or to other water purveyors in the area.

7. Location of Proposal (describe the physical setting of the proposal, as well as the extent of the land area affected by any environmental impacts, including any other information needed to give an accurate understanding of the environmental setting of the proposal):

The pipes will be parallel to Pipeline No. 1, and will run from Cumberland to Veazie, from Buckley to Rainier Glen, and from Werron Road to Elhi-South Prairie Road. The 120,000 gallon tank will be built near the base of the hill east of Cumberland. This area is predominantly rural.

8. Estimated Date for Completion of the Proposal:

November, 1983.

9. List of all Permits, Licenses or Government Approvals Required for the Proposal (federal, state and local--including rezones):

Tacoma Public Utility bond authorization, County Construction Permits, and water purveyor approval regarding transfer of services.

10. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain:

Installation of the parallel lines may tend to encourage additional development in the area. Any growth in the area will be governed by County land use planning.

11. Do you know of any plans by others which may affect the property covered by your proposal? If yes, explain:

12. Attach any other application form that has been completed regarding the proposal; if none has been completed, but is expected to be filed at some future date, describe the nature of such application form:

## II. ENVIRONMENTAL IMPACTS

(Explanations of all "yes" and "maybe" answers are required)

| | Yes | Maybe | No |
|---|---|---|---|
| (1) Earth. Will the proposal result in: | | | |
| (a) Unstable earth conditions or in changes in geologic substructures? | | | X |
| (b) Disruptions, displacements, compaction or overcovering of the soil? | X | | |
| (c) Change in topography or ground surface relief features? | X | | |
| (d) The destruction, covering or modification of any unique geologic or physical features? | | | X |

*(IF SPACE FOR EXPLANATION IS INADEQUATE, PLEASE ATTACH ADDITIONAL PAGES.)*

| | Yes | Maybe | No |
|---|---|---|---|
| (e) Any increase in wind or water erosion of soils, either on or off the site? | | | X |
| (f) Changes in deposition or erosion of beach sands, or changes in siltation, deposition or erosion which may modify the channel of a river or stream or the bed of the ocean or any bay, inlet or lake? | | | X |

Explanation: Soil will be disturbed during construction, but will generally be returned to its original contours. The tank site at Cumberland will be leveled in order to construct the tank.

(2) Air. Will the proposal result in:

| | Yes | Maybe | No |
|---|---|---|---|
| (a) Air emissions or deterioration of ambient air quality? | | X | |
| (b) The creation of objectionable odors? | | | X |
| (c) Alteration of air movement, moisture or temperature, or any change in climate, either locally or regionally? | | | X |

Explanation: Air quality may be temporarily affected by the actions of the construction contractor.

(3) Water. Will the proposal result in:

| | Yes | Maybe | No |
|---|---|---|---|
| (a) Changes in currents, or the course or direction of water movements, in either marine or fresh waters? | | | X |
| (b) Changes in absorption rates, drainage patterns, or the rate and amount of surface water runoff? | | | X |
| (c) Alterations to the course or flow of flood waters? | | | X |
| (d) Change in the amount of surface water in any water body? | | | X |
| (e) Discharge into surface waters, or in any alteration of surface water quality, including but not limited to temperature, dissolved oxygen or turbidity? | | | X |
| (f) Alteration of the direction or rate of flow of ground waters? | | | X |
| (g) Change in the quantity of ground waters, either through direct additions or withdrawals, or through interception of an aquifer by cuts or excavations | | | X |
| (h) Deterioration in ground water quality, either through direct injection, or through the seepage of leachate, phosphates, detergents, waterborne virus or bacteria, or other substances into the ground waters? | | | X |

*(IF SPACE FOR EXPLANATION IS INADEQUATE, PLEASE ATTACH ADDITIONAL PAGES.)*

| | Yes | Maybe | No |
|---|---|---|---|
| (i) Reduction in the amount of water otherwise available for public water supplies? | | | X |

Explanation: _____

(4) Flora. Will the proposal result in:

| | | | |
|---|---|---|---|
| (a) Change in the diversity of species, or numbers of any species of flora (including trees, shrubs, grass, crops, microflora and aquatic plants)? | | | X |
| (b) Reduction of the numbers of any unique, rare or endangered species of flora? | | | X |
| (c) Introduction of new species of flora into an area, or in a barrier to the normal replenishment of existing species? | | | X |
| (d) Reduction in acreage of any agricultural crop? | | | X |

Explanation: _____

(5) Fauna. Will the proposal result in:

| | | | |
|---|---|---|---|
| (a) Changes in the diversity of species, or numbers of any species of fauna (birds, land animals including reptiles, fish and shellfish, benthic organisms, insects or microfauna)? | | | X |
| (b) Reduction of the numbers of any unique, rare, or endangered species of fauna? | | | X |
| (c) Introduction of new species of fauna into an area, or result in a barrier to the migration or movement of fauna? | | | X |
| (d) Deterioration to existing fish or wildlife habitat? | | | X |

Explanation _____

*(IF SPACE FOR EXPLANATION IS INADEQUATE, PLEASE ATTACH ADDITIONAL PAGES.)*

| | Yes | Maybe | No |
|---|---|---|---|
| (6) Noise. Will the proposal increase existing noise levels? | | X | |

Explanation: Noise levels may temporarily increase during construction, due to the actions of the contractor.

| | | | |
|---|---|---|---|
| (7) Light and Glare. Will the proposal produce new light or glare? | | | X |

Explanation:

(8)

| | | | |
|---|---|---|---|
| Land Use. Will the proposal result in the alteration of the present or planned land use of an area? | X | | |

Explanation: The tank site will be permanently committed to its proposed use.

(9) Natural Resources. Will the proposal result in:

| | | | |
|---|---|---|---|
| (a) Increase in the rate of use of any natural resources? | | | X |
| (b) Depletion of any nonrenewable natural resource? | | | X |

Explanation:

| | | | |
|---|---|---|---|
| (10) Risk of Upset. Does the proposal involve a risk of an explosion or the release of hazardous substances (including, but not limited to, oil, pesticides, chemicals or radiation) in the event of an accident or upset conditions? | | X | |

Explanation: The tank (approximately 28 feet in diameter and about 26 feet high) will present the risk of minor localized flooding in the case of severe natural or other disaster.

| | Yes | Maybe | No |
|---|---|---|---|
| (11) Population. Will the proposal alter the location, distribution, density, or growth rate of the human population of an area? | | X | |

Explanation: Construction of the project may indirectly encourage some development in the area.

| | Yes | Maybe | No |
|---|---|---|---|
| (12) Housing. Will the proposal affect existing housing, or create a demand for additional housing? | | | X |

Explanation:

| | Yes | Maybe | No |
|---|---|---|---|
| (13) Transportation/Circulation. Will the proposal result in: | | | |
| (a) Generation of additional vehicular movement? | | | X |
| (b) Effects on existing parking facilities, or demand for new parking? | | | X |
| (c) Impact upon existing transportation systems? | | | X |
| (d) Alterations to present patterns of circulation or movement of people and/or goods? | | | X |
| (d) Alterations to waterborne, rail or air traffic? | | | X |
| (f) Increase in traffic hazards to motor vehicles, bicyclists or pedestrians? | | | X |

Explanation:

| | Yes | Maybe | No |
|---|---|---|---|
| (14) Public Services. Will the proposal have an effect upon, or result in a need for new or altered governmental services in any of the following areas: | | | |
| (a) Fire Protection? | | | X |
| (b) Police protection? | | | X |
| (c) Schools? | | | X |
| (d) Parks or other recreational facilities? | | | X |

*(IF SPACE FOR EXPLANATION IS INADEQUATE, PLEASE ATTACH ADDITIONAL PAGES.)*

| | Yes | Maybe | No |
|---|---|---|---|
| (e) Maintenance of public facilities, including roads? | | | X |
| (f) Other governmental services? | | | X |

Explanation: _____

(15) Energy. Will the proposal result in:

| | Yes | Maybe | No |
|---|---|---|---|
| (a) Use of substantial amounts of fuel or energy? | | | X |
| (b) Demand upon existing sources of energy, or require the development of new sources of energy? | | | X |

Explanation: _____

(16) Utilities. Will the proposal result in a need for new systems, or alterations to the following utilities:

| | Yes | Maybe | No |
|---|---|---|---|
| (a) Power or natural gas? | | | X |
| (b) Communication systems? | | | X |
| (c) Water? | X | | |
| (d) Sewer or septic tanks? | | | X |
| (e) Storm water drainage? | | | X |
| (f) Solid waste and disposal? | | | X |

Explanation: The existing transmission main will, in general, no longer also serve as a distribution main.

(17) Human Health. Will the proposal result in the creation of any health hazard or potential health hazard (excluding mental health)? ____ ____ X

Explanation: _____

*(IF SPACE FOR EXPLANATION IS INADEQUATE, PLEASE ATTACH ADDITIONAL PAGES.)*

| | Yes | Maybe | No |
|---|---|---|---|
| (18) Aesthetics. Will the proposal result in the obstruction of any scenic vista or view open to the public, or will the proposal result in the creation of an aesthetically offensive site open to public view? | | X | |

Explanation: The tank will be visible from some areas in Cumberland.

| | Yes | Maybe | No |
|---|---|---|---|
| (19) Recreation. Will the proposal result in an impact upon the quality or quantity of existing recreational opportunities? | | | X |

Explanation:

| | Yes | Maybe | No |
|---|---|---|---|
| (20) Archeological/Historical. Will the proposal result in an alteration of a significant archeological or historical site, structure, object or building? | | | X |

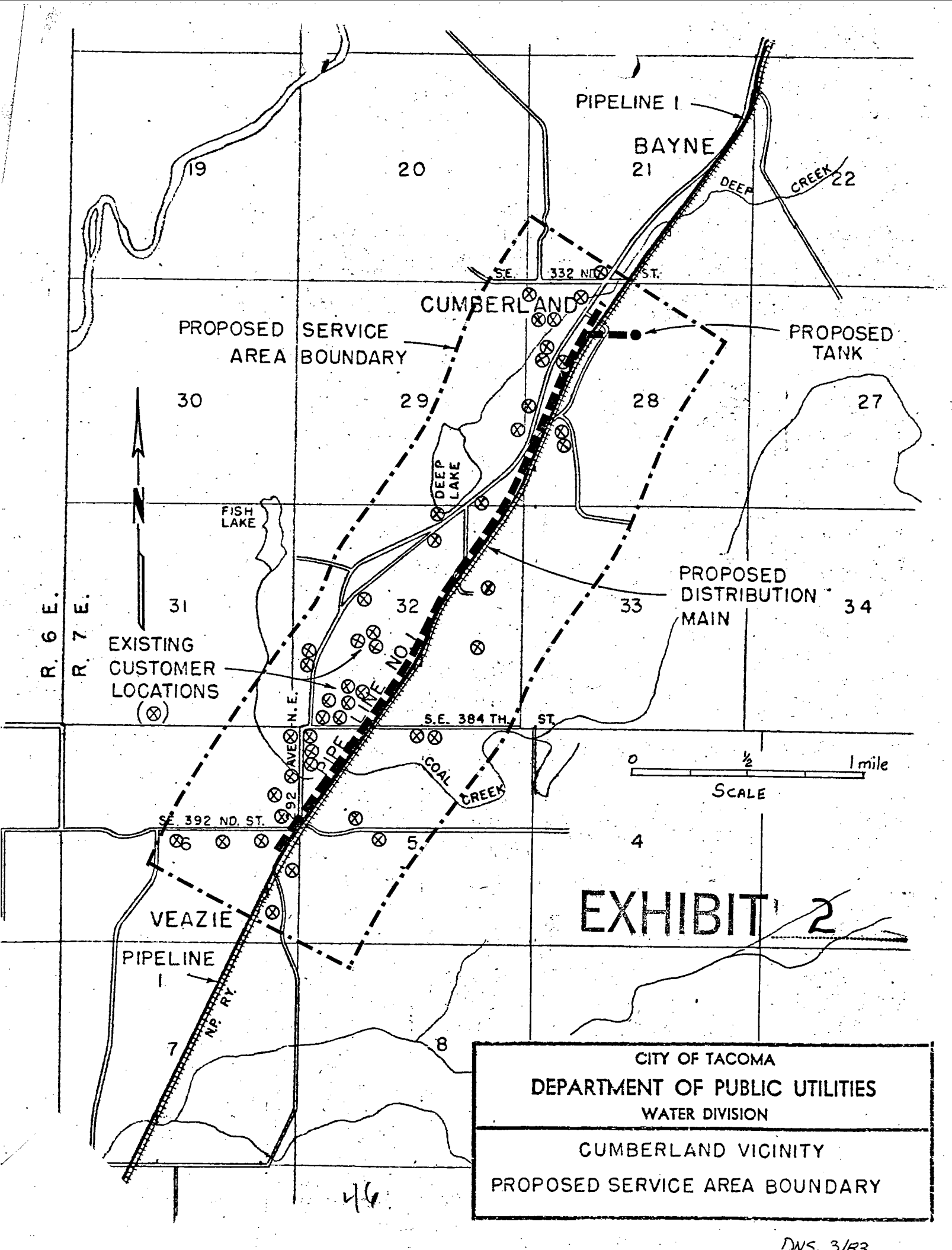
Explanation:

III. SIGNATURE

I, the undersigned, state that to the best of my knowledge the above information is true and complete. It is understood that the lead agency may withdraw any declaration of non-significance that it might issue in reliance upon this checklist should there by any willful misrepresentation or willful lack of full disclosure on my part.

Proponent: John A. Roller

JOHN A. ROLLER, SUPERINTENDENT, WATER DIVISION


PIPELINE 1
BAYNE
19
20
21
22
DEEP CREEK
S.E. 332 ND ST.
CUMBERLAND
PROPOSED SERVICE AREA BOUNDARY
PROPOSED TANK
30
29
28
27
DEEP LAKE
FISH LAKE
N
PROPOSED DISTRIBUTION MAIN
R. 6 E.
R. 7 E.
31
32
33
34
EXISTING CUSTOMER LOCATIONS (⊗)
PIPE LINE NO. 1
S.E. 384 TH ST.
92 AVE N.E.
COAL CREEK
0 ½ 1 mile
SCALE
S.E. 392 ND. ST.
6
5
4
EXHIBIT 2
VEAZIE
PIPELINE 1
NP. RY.
7
8
CITY OF TACOMA
DEPARTMENT OF PUBLIC UTILITIES
WATER DIVISION
CUMBERLAND VICINITY
PROPOSED SERVICE AREA BOUNDARY
46
DWS 3/83