August 10, 1992
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INTRODUCED BY KENT PULLEN

PROPOSED NO. 92-648

ORDINANCE NO. 10594

AN ORDINANCE approving the Cumberland Water Cooperative Comprehensive Plan.

PREAMBLE:
K.C.C. 13.24 requires approval of comprehensive plans for water purveyors as a prerequisite to the granting of right-of-way franchises and approval of right-of-way construction permits.

The Cumberland Water Cooperative Comprehensive Plan was approved by vote of the general membership of the Cumberland Cooperative Water Society on March 5, 1992.

On April 8, 1992 the King County Utilities Technical Review Committee met to consider the plan and finding it consistent with K.C.C. 13.24 recommended approval.

A determination of nonsignificance was issued on August 4, 1992 by the King County Planning and Community Development Division as lead agency in accordance with the State Environmental Policy Act.

BE IT ORDAINED BY THE COUNCIL OF KING COUNTY:

SECTION 1. The Cumberland Water Cooperative Comprehensive Plan, attached as Exhibit A, is hereby approved with no conditions.

INTRODUCED AND READ for the first time this 8th day of September, 1992.

PASSED this 12th day of October, 19__.

KING COUNTY COUNCIL
KING COUNTY, WASHINGTON

Audrey Grugen
Chair

ATTEST:

Gerald A. Peterson
Clerk of the Council

APPROVED this 23rd day of October, 1992.

Tim Hill
King County Executive

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Exhibit A

Cumberland Water Co-OP

Comprehensive Plan

A. Narrative Report

1. A Short History of The Purveyor.

The Cumberland Water Co-Op owns and maintains a water system which was originally constructed in 1918. Since that time there has been some replacement and system extensions, however the Co-Op has been limited to 53 connections for many years. The system water pressure and flows are currently substandard with frequent line breaks. In 1990 the Co-Op applied for and received a Community Development Block Grant (CDBG) from King County for $125,000.00 to improve the water system. This plan addresses the needs of the Cumberland system, the alternatives available to the Co-Op and the costs of these alternatives, including recommendations for a replacement water system.

King County owns and maintains the right-of-way throughout the Cumberland Co-Op. All construction within the right-of-way will require a permit from the King County Real Property Division which will, in turn, require a franchise. The Co-Op does not currently have a franchise with the County and the County has indicated that the Co-Op is in County violation without the franchise. If the Co-Op does not take immediate steps toward obtaining a franchise the County may impose fines on the Co-Op. Prior to obtaining a franchise, the Co-Op must first have a legally adopted comprehensive plan.

2. Not applicable

3. Population

a. Population Projection: the Cumberland Water Co-Op currently serves a population of 147 people. Because the Co-Op cannot expand significantly beyond its existing 53 hookups because of zoning constraints, the service area population can increase or decrease only by changes in the average number of persons per household. For purposes of this comprehensive plan, the service area population is expected to remain stable.

b. Source: Enumclaw Community Plan, King County (Proposed 1989).

4. A Description of Water Sources

The Cumberland Water Co-Op's water source comes from the Green River via the City of Tacoma's Green River Pipeline. The water is pumped from the pipeline at Cumberland by a Tacoma owned duplex pumping station having a 360 gpm capacity, through a six inch ductile iron main to a steel storage reservoir with a capacity of 120,000 gallons. The reservoir is also owned by the City of Tacoma. From the reservoir water flows by gravity through a 12 inch ductile iron discharge line. The 12 inch gravity line runs to the south and also feeds 800 lineal feet (lf) of 4 inch ductile iron water line running northerly to a 2 inch City of Tacoma water meter. It is at this point that the system becomes the property of the Cumberland Water Co-Op. The City of Tacoma adds fluoride and chlorine to the water at the headworks of the Green River Pipeline, approximately 5-1/2 miles from Cumberland. The storage reservoir at Cumberland provides adequate contact time, thus satisfying requirements of the Safe Drinking Water Act. The City of Tacoma anticipates adding lime or equivalent to the water sometime prior to 1994 to lower the pH. The Green River is considered moderately corrosive. By buffering with lime, the water from this source will be much less corrosive for house plumbing to meet the Safe Drinking Water Act requirements.

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5. Justification of storage and distribution facilities

The City of Tacoma-owned 120,000 gallon storage reservoir serves 73 water connections to the south in addition to Cumberland's 53 connections. Fire flow at 500 gallons per minute (gpm is also required for each system. Maximum instantaneous demand (MID) for the 73 non-cumberland water service connections is 126 gallons per minute (gpm). MID for Cumberland's 53 water connections is 105 gpm. The sum of the MID and fire flow values for each system is 1,232 gpm, which when divided into the 120,000 gallon storage capacity of the reservoir yields 97 minutes of reserve flow. State statute requires at least 30 minutes.

6. For Systems Utilizing Surface Supplies, with Disinfection Only

Not Applicable.

Explanation: For purposes of this comprehensive plan, Cumberland's water source is not a "surface supply." As explained in #4 above, Cumberland's water comes from Tacoma's Green River Pipeline (Pipeline #1). While the Green River at Tacoma's pipeline intake is a "surface supply," it does not fall under the domain of the Cumberland Water Co-Op. The City of Tacoma relies upon an Aggressive Watershed Management Plan and a comprehensive monitoring program to protect water quality and public health while minimizing water treatment. Volume II of the City of Tacoma Comprehensive Water Plan outlines the Comprehensive Watershed Management and Water Treatment Plan.

7. Fireflow Planning Criteria

The existing system has three fire hydrants to the southeast of town where the Cumberland fire trucks can pump water through up to 1200 lineal feet of fire hose to reach the majority of Co-Op homes. Using this length of hose creates a large loss of pressure from the truck to the end of the hose and also takes valuable time to setup a fire fighting arrangement. The system will be upgraded to serve the entire Co-Op and to deliver the needed flow and pressure to evenly dispersed points throughout the system.

Hydraulic calculations in the appendix show that the proposed Cumberland system meets the R.C.W. requirement for water systems, each proposed hydrant in the system will have over the R.C.W. requirement of 20 psi pressure during a condition where the storage tank is full, domestic use is at the maximum instantaneous demand (M.I.D.) and 500 gpm is being taken from the fire hydrant. Each home will also have over the R.C.W. requirement of 30 psi pressure, when domestic use is at the M.I.D. condition. The calculations also show that the existing storage tank can supply three times the R.C.W. requirement of 30 minutes of water during a condition of domestic M.I.D. and 500 gpm fire flow.

8. Not applicable.

9. Not applicable.

10.

a. Time Schedule for Improvements

Specific time requirements, exclusive of permit requirements previously discussed, are provided as follows:

Description	Time
Plans and Specifications	April - May 1992
Bid Procedure	June 1992
Construction	July - Sept. 1992

b. Projection of Anticipated Needs

The Co-Op has a number of water system deficiencies which must be addressed immediately. First and foremost the system must be able to provide safe domestic water needs to its customers at a functional pressure. The existing Co-Op owned system does not do this and strong evidence shows that it should be entirely replaced with the possible exception of 400 lf of 4 inch PVC which was replaced in about 1980. The seventy year age of the water system suggests leaks, corrosion and partly clogged piping. Customer reports of minimal pressure, minimal flows and of winter line freezing also support the theory of a dying system. Cumberland's water usage during an average month is approximately 125,000 cubic feet according to meter records. This reading is about 25 to 50% higher than what would be expected for a 53 hook up system, suggesting a water loss due to line leaks throughout the system.

The Co-Op Water System should function with minimum maintenance requirements. The system is small and does not have the ability to hire steady maintenance personnel making maintenance piecemeal and disruptive to the system. Replacing the existing piping should do a great deal to reduce line breaks and subsequent maintenance requirements. Any valves added to the system would also reduce service interruptions during repairs.

Lastly the system needs a means of controlling service to a member who is not paying water bills. At this time there is no way to easily shut-off service to a non-paying member, although this is a problem for only a small percentage of the members. The standard in today's water systems is a meter and valve for each service line so that each member can be billed for the amount of water actually used. These meters will often reduce water consumption but are costly, require maintenance and must be read and recorded from time to time. The Cumberland Co-Op may choose to add a locking valve to each service but not to add individual meters.

A waterline replacement project will need to be designed to meet requirements of all the reviewing agencies. The requirements which will have the greatest effect on the design of the project are the state fire flow requirements of 500 gpm to each hydrant. Preliminary hydraulic calculations (See Appendix) indicate that a 6 inch minimum diameter waterline is needed to deliver the required 500 gpm fire flow. The existing system cannot deliver 500 gpm to the Co-Op system and is deficient in the following areas:

- The existing Tacoma owned meter must have a 6 inch automatic bypass to deliver the required 500 gpm fire flow during a fire fighting situation. A new meter, vault and automatic bypass valve will be required to deliver the 500 gpm flow.
- The existing Tacoma owned system must have a 6 inch minimum line up to the Co-Op owned system. All 4 inch waterline will need to be replaced with 6 inch line up to the point of the Co-Op owned system.
- The existing Cumberland system will need to be replaced with a minimum 6 inch diameter line up to each fire hydrant.
- Three fire hydrants will need to be added to meet the State requirement of 900 lineal feet maximum hydrant spacing.

It should be noted that two of the above deficiencies are in the existing Tacoma owned system; the existing 4 inch line to the meter and also the 2 inch meter itself cannot convey the state required 500 gpm fire flow to the Cumberland System. Preliminary phone conversations indicate that Tacoma may be planning on increasing the storage capacity of the reservoir to allow shutdown and repair of the Tacoma Transmission Main. It appears that added storage would be of little benefit to the Cumberland Water Co-Op and the money to increase storage would be a larger benefit to Cumberland if spent on a new meter and replacement of some 4 inch line with 6 inch line. The City of Tacoma should be informed of Cumberland's plans and system deficiencies in hopes that Tacoma will consider participation in the project cost.

The proposed replacement project includes replacement of the waterlines up to each home owner's property line but not to the home owner's house. These service lines could be a large source of system leaking and

pressure loss and should be replaced if possible. King County Community Development has additional funds available to low income families for construction of these service lines. Preliminary communication indicates that about half of the 53 Co-Op members would be eligible for these funds. The remaining Co-Op members will have to pay for these service lines on their own if they choose to have them constructed. A recommended method of doing this is to have the Contractor give a price to install service lines as an optional bid item. The home owners who must pay for these lines would know the bid price and then could choose whether or not to have the service line installed. Costs for this work have not been included in the cost estimate for the project since they are not work items which the Co-Op will have to fund.

The proposed waterline project includes replacement of Tacoma's 4 inch pipe with new 6 inch pipe from the existing 12 inch line to 354th Street where a new water meter would be placed. The new 6 inch line would run westerly from the new meter and cross Veazie-Cumberland Road at 354th Street. The stream crossing would occur at 312th Way S.E. and 6 inch line would be constructed up to each new hydrant. The existing 4 inch line along Veazie-Cumberland Road and the 4 inch ductile iron Tacoma line would be tied into the new system and re-used. A new 2 1/2 inch line would complete the system beyond all hydrants. The proposed project would reduce cost by re-using some existing 4 inch line. Crossing the stream at 312th Street should be less complicated, less disruption to traffic, and easier to construct than crossing over the stream at Veazie-Cumberland Road. Relocation of the meter would require an easement from the appropriate land owner.

Estimated project costs are shown in the appendix. The estimated total of $247,000.00 includes construction, sales tax, engineering costs and a contingency which is 10% of the construction cost. The contingency is meant to cover unforeseen conditions including variations between the cost estimate and actual bid values and conditions which may arise during construction.

c. Not applicable

11.

a. Proposed construction Schedule

Same as "Schedule For Improvements," #10, part A.

b. Financing Plans

The Cumberland Water Co-Op currently collects a flat fee of $12.00 per month from each of 53 Co-Op members regardless of the amount of water used. The fees collected are used mainly to pay the City of Tacoma for water. Maintenance, bookkeeping and general organization are completed by volunteer help from various Co-Op members. These volunteers have kept the cost of water in 1990 to about $0.45/100 cubic feet of water used which is only three cents ($0.03) per 100 cubic feet above the Tacoma charge and amounts to about $7.50 a month per customer. At the current rate of expenditures to income, the Co-Op can save approximately $2,500.00 per year towards maintenance and/or capital improvements. At this rate it will take years to save enough to make any serious capital improvements or replacement to the existing system. The Co-Op currently has a cash reserve of $6,800.00.

Income and expenditures are summarized as follows:

INCOME: 50 paying members X $12.00/month X 12 months/year = $7,200.00/year

Expenditures:

$ 4,400.00 (1990) for Tacoma Water

$ 100.00 Estimate for maintenance supplies

$ 100.00	To Puget Power
$ 4,600.00	(1990)

Net Income is $2,600/year ($7,200 - $4,600 = $2,600).

The proposed Cumberland Waterline Replacement Project has more than one source of funding available, the largest source being from King County Community Development ($125,000.00). The remaining cost of the proposed project will have to be funded by other sources. The Co-Op rates and charges must be maintained at an adequate level to ensure that future operation, maintenance and repair funds are available.

Co-Op membership is restricted to 53 connections. Since they are not able to add customers, revenue from connection charges and added rate payers is not an option for the Co-Op.

The best source of funds for small water purveyors such as the Cumberland Co-Op is state and federal programs. The only known program which may be available to the Co-Op is the Farmer's Home Administration Loans. The Public Works Trust Fund provides low interest loans but only to public utility districts and Cumberland does not qualify. The Department of Health was also contacted but 1991 funds are exhausted and grants are used only for water quality or drought problems. Farmer's Home Administration also has grants for low income area's but the Co-Op does not meet the FmHA definition of "low income".

The most probable source of funding for the Co-Op waterline Replacement Project is a FmHA loan. The Co-Op would need a loan from FmHA in the amount of about $118,000.00 as shown below:

Estimated Project Cost	$	247,000.00
Grant From King Co. CD	$	125,000.00
Co-Op Reserves (59% of $6,800.00 in reserve)	$	4,000.00
Project Remainder	$	118,000.00

For estimation purposes we will assume an interest rate of 7% over a 40 year loan life. A rule of thumb for this loan would be an additional $1.18/month to each Co-Op member for each $10,000.00 borrowed. Therefore, to borrow $118,000.00 each member would need to pay an additional $13.92 per month [($118,000/$10,000) X $1.18 = $13.92] for a total bill of approximately $26.00/month ($14.00 + $12.00). This bill is an extremely high monthly rate for water and may not be feasible for the Co-Op. It may be possible to reduce the Project in some areas to save costs. It should also be noted that many home owners will reduce insurance costs by having a fire protection system throughout the Co-Op.

12. Neighboring Purveyor Issues:

None

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13. Not Applicable

14. Not Applicable

15. Consistency with County Plans and Policies

According to state law, water systems outside a Critical Water Supply Service Area (CWSSA) must comply with the nearest Coordinated Water Service Plan (CWSP) The Cumberland Water Co-Op does not operate within a CWSSA. The nearest CWSP, the South King County CWSP, requires that all purveyors have a water conservation program. Cumberland meets this requirement because it is bound by the water conservation program requirements of its wholesale supplier, the City of Tacoma.

King County's Enumclaw Community Plan lists six policies (EN 63 through EN 68) which address water supply. The Cumbreland Water Co-Op is in compliance with all six policies.

16. Reason for Service Area Request

No changes to the Cumberland Water Co-op service area are being requested.

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CUMBERLAND WATER CO-OP WATER CONSERVATION PLAN
April 1992

The 53 customer hookups of the Cumberland Water Co-Op are among some 200 water customers who receive water directly off The City of Tacoma's Pipeline No. 1. This major transmission line carries between 68 and 72 million gallons of water per day from the Green River to the McMillian reservoir. Even though this provides an unlimited supply of water for the Cumberland Co-Op, water conservation is still a priority for its members.

The Cumberland Water Co-Op Comprehensive Plan and this Water Conservation Plan are consistent with the South King County Coordinated Water System Plan (CWSP), which is the nearest CWSP to Cumberland. The South King County CWSP, as ratified by the King County Council, requires small water systems to achieve a four percent minimum total reduction in water use by 1995 and an eight percent total reduction by 2000 (Ord. 9461 Section 1, part c). Cumberland will achieve a 35% total reduction by 1995 through a combination of immediate system repairs and long term conservation.

WATERLINE REPLACEMENT PROJECT - WATER USE REDUCTION GOAL: 25%

The Co-Op will reduce its average monthly water use by at least 25% over its average 1990 monthly use by replacing its water lines and making other upgrades to its water system. This work will be completed by the fall of 1992. In a typical month, the Co-Op uses approximately 125,000 cubic feet of water. This is between 25% and 50% higher than would normally be expected for a system of this size. Leaking pipes, many of which are original wood stave, are to blame for this unusually high consumption.

LONG TERM CONSERVATION PROGRAM

As a wholesale water customer of the City of Tacoma, the Cumberland Water Co-Op is bound by the Tacoma Water Division Water Conservation Plan (January 1991). The Co-Op is adapting provisions of the plan that are feasible for a member-operated Co-Op. **Total savings of 10% will be achieved through this voluntary conservation program by December 1995. Specific conservation stategies and goals are outlined below.**

SELF-CLOSING HOSE NOZZLES - WATER USE REDUCTION GOAL: 1%

Co-Op members will be encouraged to use self-closing hose nozzles for car washing and other uses of garden hoses where only intermittent water is needed. **Brochures will be distributed to all Co-Op member homes annually, beginning in the spring of 1993. Water use will be reduced by 1% of the Co-Op's 1990 monthly average by the fall of 1994.**

LOW FLOW FAUCET AERATORS - WATER USE REDUCTION GOAL: 1%

Co-Op members will be encouraged to install faucet aerators in kitchen and bathroom sinks where there are none now. The American Water Works Association estimates that each unit saves

half a gallon per person per day. **Brochures will be distributed to all Co-Op member homes annually, beginning in the fall of 1992. Water use will be reduced by 1% of the Co-Op's 1990 monthly average by the fall of 1994.**

LOW FLOW SHOWER HEAD RETROFITS - WATER USE REDUCTION GOAL: 2%

Co-Op members will be encouraged to replace old shower heads with efficient low flow shower heads The American Water Works Association conservatively estimates that each unit saves 1.5 gallons per minute when in use. **Brochures will be distributed to all Co-Op member homes annually, beginning in the fall of 1992. Water use will be reduced by 2% of the Co-Op's 1990 monthly average by the fall of 1994.**

TOILET TANK DAMS AND DISPLACEMENT DEVICES - WATER USE REDUCTION GOAL: 5%

Co-Op members will receive information about toilet dams and displacement devices and will be encouraged to install them. Toilet tank dams prevent a portion of tank water from being used for flushing. Displacement devices, such as upright containers that hold tank water, but don't release it during a flush, accomplish the same thing. Displacement devices, if not properly placed in the toilet tank or if made of the wrong material, may interfere with tank mechanisms.

Brochures will be distributed to all Co-Op member homes annually, beginning in the fall of 1992. Water use will be reduced by 5% of the Co-Op's 1990 monthly average by the end of 1995.

HOT WATER LINE INSULATION - WATER USE REDUCTION GOAL: 1%

Co-Op members will receive information about hot water line insulation and will be encouraged to insulate pipes where they are accessible. Insulated hot water lines reduce the waiting time between when the tap is turned on and when hot water comes out the faucet. The American Water Works Association has reported savings of 4.7 gallons per day per household when hot water lines have been insulated.

Brochures will be given out annually, beginning in the fall of 1992. Water use will be reduced by 1% of the Co-Op's 1990 monthly average by the end of 1995.

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CUMBERLAND WATER CO-OP
COMPREHENSIVE PLAN - PART B

REQUIRED MAPS

1. Existing and proposed mains and fire hydrants, corporate boundaries, and service area. (This satisfies UTRC checklist map requirements, 1, 8, and 11.)

2. Critical elevations and pressure zones, storage and pumping facilities. (This satisfies UTRC map requirements 2 and 3.)

3. USGS Vicinity Map. (This satisfies UTRC map requirement 5.)

4. Existing Zoning. (This satisfies UTRC map requirement 7.)

5. Community planning area. (This satisfies UTRC map requirement 9.)

(UTRC checklist maps that are not applicable are #'s 4, 6, 10, 12, and 13.)

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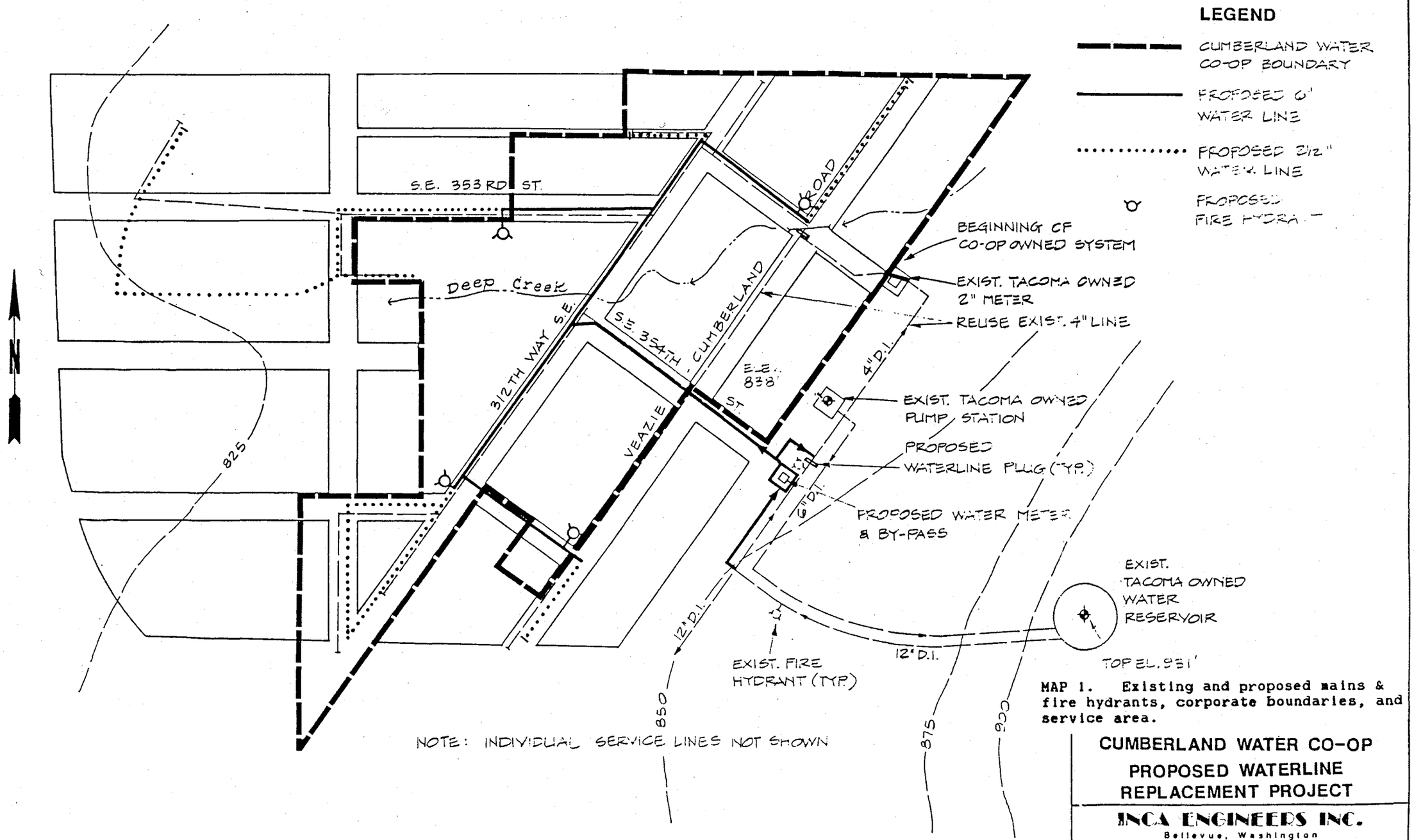


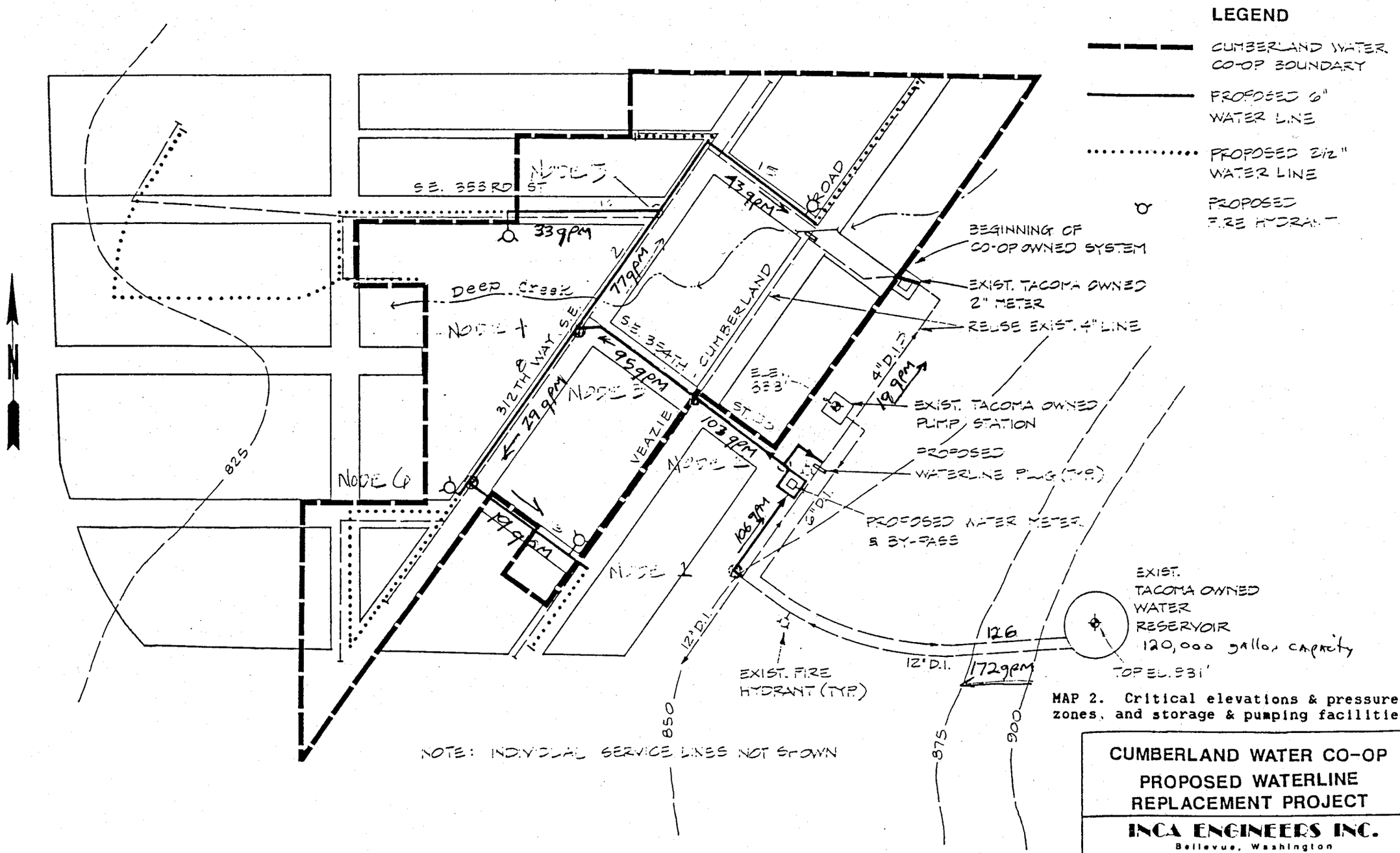
MAP 1. Existing and proposed mains & fire hydrants, corporate boundaries, and service area.

CUMBERLAND WATER CO-OP
PROPOSED WATERLINE REPLACEMENT PROJECT

INCA ENGINEERS INC.
Bellevue, Washington

Job No	Drawn By VK	Appr'd By	Sheet
1" = 200'	Checked By RC	Date 7/91	

10594

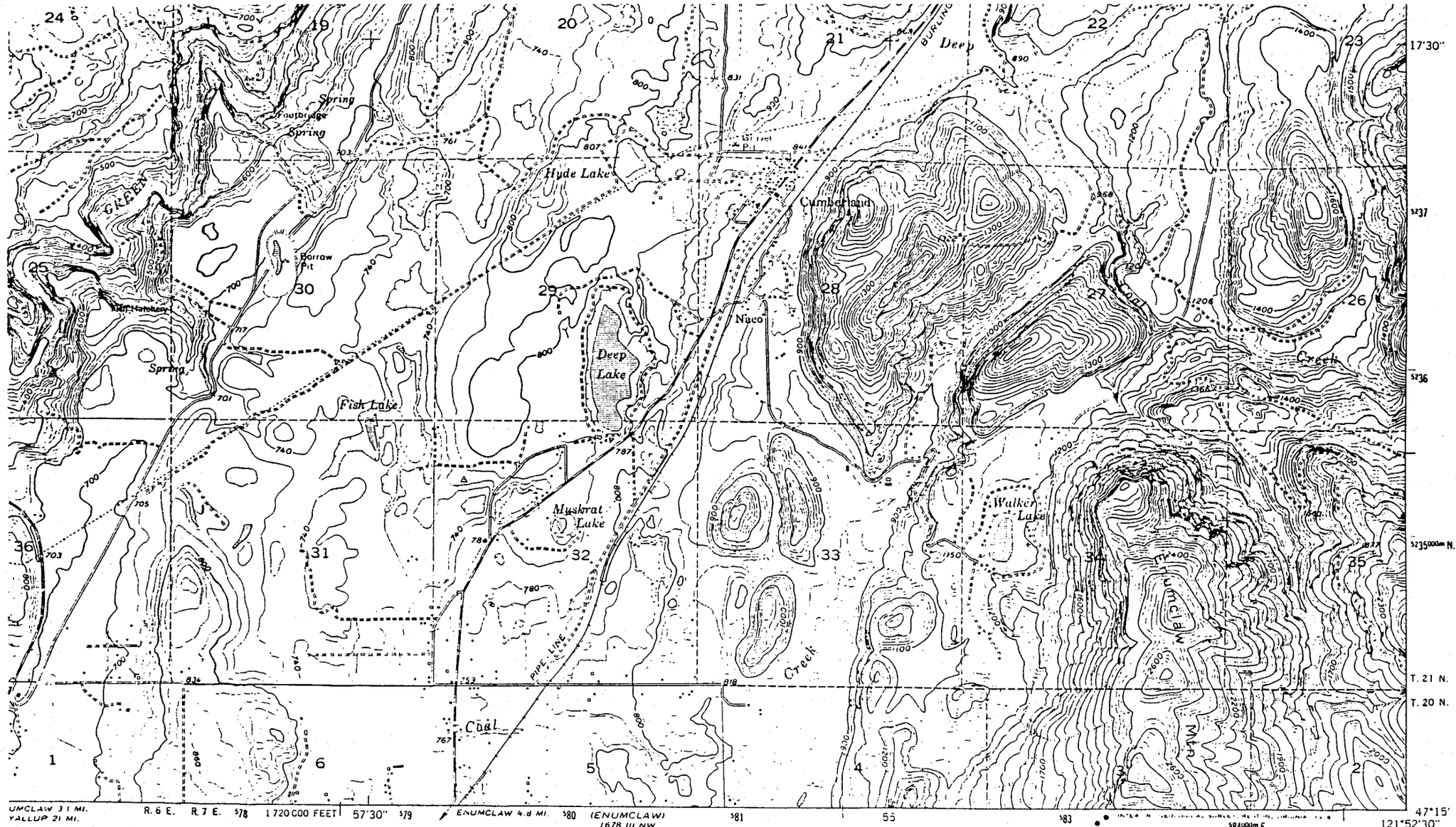


MAP 2. Critical elevations & pressure zones, and storage & pumping facilities.

CUMBERLAND WATER CO-OP
PROPOSED WATERLINE REPLACEMENT PROJECT

INCA ENGINEERS INC.
Bellevue, Washington

Job No	Drawn By VK	Appr'd By	Sheet
Scale 1"=200'	Checked By DC	Date 7/91	



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21½° 382 MILS

UTM GRID AND 1973 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET

ROAD CLASSIFICATION

Medium duty — — — Light duty =

Unimproved dirt - - - -

State Route

WASHINGTON

QUADRANGLE LOCATION

MAP 3. USGS Vicinity Map.

CUMBERLAND, WASH.

N4715—W12152.5/7.5

1953

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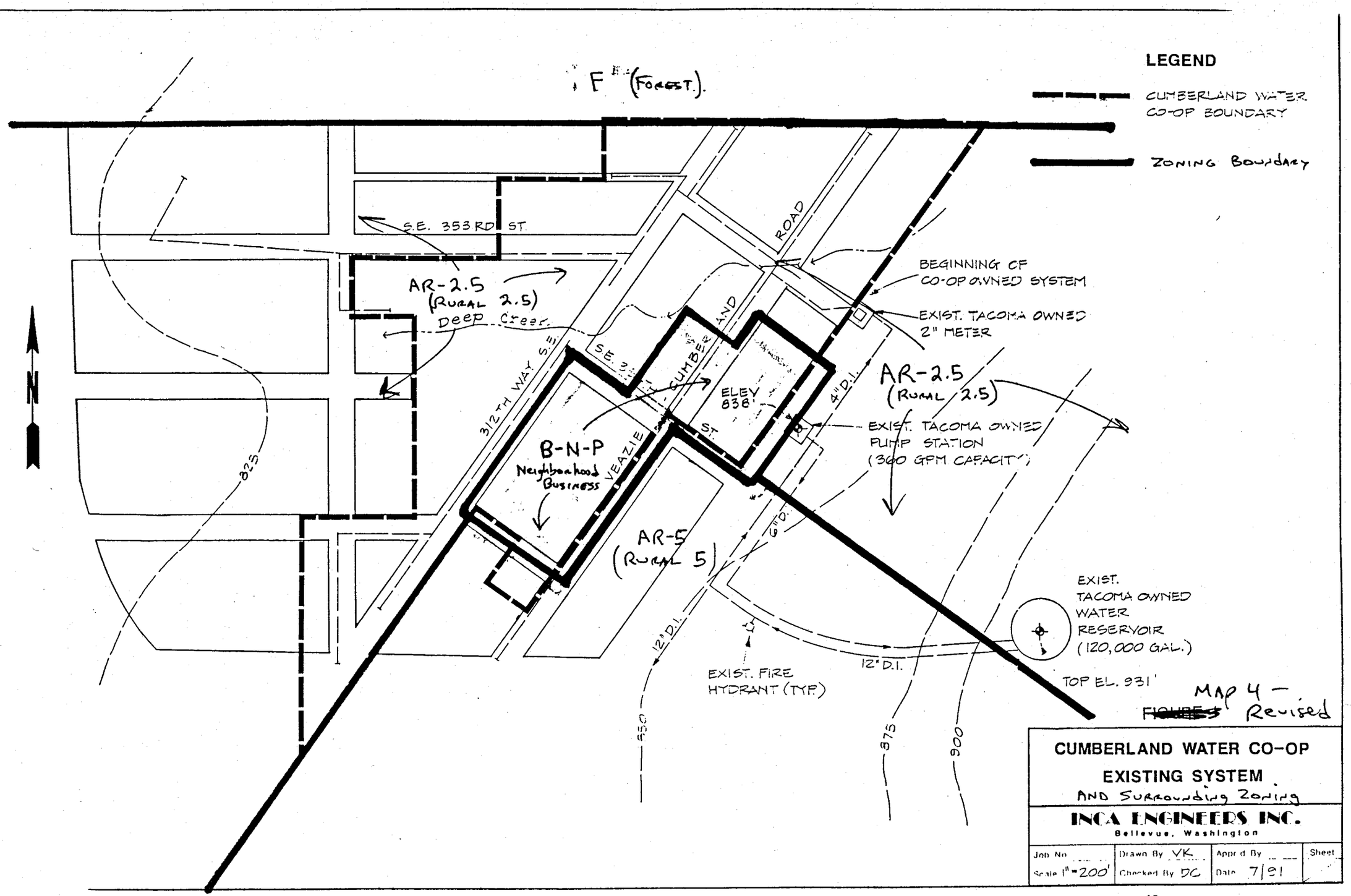

MAP 4 — Revised

~~FIGURE 3~~

CUMBERLAND WATER CO-OP

EXISTING SYSTEM

AND SURROUNDING ZONING

INCA ENGINEERS INC.

Bellevue, Washington

Job No	Drawn By VK	Appr'd By	Sheet
Scale 1" = 200'	Checked By DC	Date 7/91	