Draft

Des Moines Creek
Flow Augmentation Plan

Seattle-Tacoma International Airport
Master Plan Update Improvements

Port of Seattle

Parametrix, Inc.
August 18, 1998

DRAFT

DES MOINES CREEK FLOW AUGMENTATION PLAN

SEATTLE-TACOMA INTERNATIONAL AIRPORT MASTER PLAN UPDATE IMPROVEMENTS

Prepared for

PORT OF SEATTLE
P.O. Box 69727
17801 Pacific Highway South
Seattle, Washington 98168-0727

Prepared by

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August 18, 1998
55-2912-01 (03)

TABLE OF CONTENTS

Figures and Tables

1.0 INTRODUCTION

1.1 PURPOSE AND BACKGROUND

This Des Moines Creek Flow Augmentation Plan describes the design, operation, and monitoring of a streamflow augmentation facility that will be constructed on Port of Seattle (Port) property at the Tyee Valley Golf Course near Seattle-Tacoma International Airport. The flow augmentation facility will supply up to 400 gpm (0.88 cfs) of water to Des Moines Creek from an existing groundwater well on Port property. Introduction of the cool well water to the stream should improve water quality and aquatic habitat during critical low flow periods in mid- to late summer.

The plan for providing flow augmentation to Des Moines Creek was originally proposed by King County as part of the 1997 Des Moines Creek Basin Plan to mitigate existing or potential cumulative impacts on Des Moines Creek baseflows. The Port subsequently incorporated the plan in Section 2.1 of ***Amended Wetland Mitigation Plan and Supporting Documents, July 15, 1998***, which was prepared in support of the Section 401 Water Quality Certification for the proposed Master Plan projects. On July 20, 1998 the State of Washington Department of Ecology (Ecology) issued ***Order 96-4-02325: Port of Seattle Master Plan Improvements*** (the Order) requiring the Port to issue an operations plan to Ecology describing how the flow augmentation will be implemented. This Plan was prepared in response to that Order.

King County is preparing feasibility and engineering studies to implement this and other adopted Basin Plan elements. This operations plan would be modified by King County as necessary to meet Basin Plan objectives.

1.2 OPERATIONAL CRITERIA

The water supply for the flow augmentation facility will come from an existing well located on Port property. Well water will be pumped to the stream at a location just below the confluence of the East Branch and West Branch of Des Moines Creek based on the following criteria:

- When the streamflow rate immediately below the confluence drops below 1.0 cfs; or
- When the water temperature at that location is above a temperature considered detrimental to existing uses (16° C in the Order).
- Flow augmentation will occur between May and October.

Stream monitoring data will be reviewed after the first full year of operation to determine the effectiveness of these operational criteria, and modifications will be made as appropriate (subject to Ecology approval).

To meet these objectives, a water supply of 400 gpm (0.88 cfs) is proposed. Streamflow monitoring data collected by King County during 1996 and 1997 reported a minimum flow in the stream during this period of approximately 0.3 cfs. Thus, a 400 gpm well capacity should be able to maintain the 1.0 cfs minimum flow. The 1996-97 monitoring data indicate that the pump would need to operate between two and six weeks annually to maintain the 1.0 cfs minimum flow.

Temperature monitoring data collected for the Basin Plan during 1996 showed that stream temperatures at South 200th Street exceeded 16° C on only a few days during the months of April, May; on several days in June; and almost daily during July and August (the reported data ended on September 6, 1996). High water temperatures did not necessarily correspond to low stream flow rates, but appear to be more influenced by warm air temperature. During the period April 1 to September 6, 1996 the water temperature exceeded 16° C a total of 120 days, or about 75% of the days. Since the stream temperature probably exceeded 16° C during many days in September and October, the well pump would have to be operated at least 120 days per year on average to meet a 16° C temperature criteria.

The amount of pumping needed for keeping stream temperatures at 16° C may require a significant volume of water from the aquifer, potentially exceeding the available water right. In addition, a large amount of pumping may not be justified if the benefit of flow augmentation for temperature control has only limited effectiveness downstream. As discussed below in Section 3.1, the monitoring plan includes testing during the first year of operation to determine the effects of various temperature settings between 16° and 19° C on downstream temperatures and the corresponding pumping requirements at those levels.

1.3 WATER RIGHTS

The flow augmentation project will require a new or modified water right obtained from Ecology for consumptive use of groundwater. Water for the project would be obtained from either the golf course well or a nearby inactive well (see Section 2.2). These wells were originally constructed by King County Water District 75 (now Highline Water District) for municipal water supply. In addition, another abandoned KCWD 75 well is located on Port property, and an abandoned well owned by the Port of Seattle is located in the vicinity of the terminal parking garage. The KCWD 75 wells were abandoned several decades ago when the district was connected to City of Seattle water.

A preliminary search of water rights records filed with Ecology provided information on existing water rights that are associated with wells located on Port property. This information is summarized in Table 1-1. Copies of the certificates and associated documents are contained in Appendix A. In addition to these certificates, the Port has also filed a water rights claim for groundwater used for irrigation at the Tyee Valley Golf Course. That claim, which has a priority date of 1967, claimed an irrigation use of 450 gpm and 244 ac-ft/yr from the former KCWD 75 water supply well. According to Highline Water District there is no formal agreement between the district and the Port for use of the well for irrigation.

Table 1-1. Water rights on Port of Seattle property

Well	Certificate Number	Water Right: Instant. Rate	Water Right: Annual Quantity	Status
Golf course	2369	400 gpm	560 ac-ft/yr	Constructed in 1949 by KCWD 75 for municipal water supply. Currently used for golf course irrigation.
Inactive well near golf course well	2191	750 gpm	600 ac-ft/yr	Constructed in 1953 by KCWD 75 for municipal water supply. Currently inactive. Well cap is visible on 3rd fairway.
Abandoned Port of Seattle well (under terminal parking garage)	5233	250 gpm	82 ac-ft/yr	Constructed in 1965 by Port of Seattle for irrigation and condenser water uses. Currently abandoned.
Abandoned well (under Runway 34R safety fill).	2376	350 gpm	560 ac-ft/yr	Constructed in 1954 by KCWD 75 for municipal water supply. In 1962 the water rights for this well were assigned to Port of Seattle. Currently abandoned.

It appears from these water rights documents that the Port has a total potential water right of 600 gpm from two abandoned wells (from certificates 5233 and 2376). The ownership status of the water rights from these two wells, as well as the other two KCWD 75 wells (whose land parcels were purchased during previous land acquisition programs), would have to be clarified by Ecology. Following this, documentation for transfer or change of water rights for the project will be provided to Ecology. It is anticipated that the water rights from one or more of these wells would be transferred to the Port for the flow augmentation project and assigned the "environmental quality" purpose of use designation.

2.0 PROPOSED DESIGN

A description of available wells, well modifications that are needed for the flow augmentation system, and the control system to operate the system is provided below. The flow augmentation system will be designed to be fully automated. It will also not interfere with the existing golf course irrigation system, which would operate on a different pumping schedule. A conceptual design plan of a flow augmentation system is shown on Figure 1.

2.1 EXISTING WELLS

Two wells having sufficient capacity for the project are located at the southern end of Tyee Valley Golf Course. The well presently being used to irrigate the golf course (Certificate No. 2369) is located at a pump house located just east of the 3rd fairway and north of South 200th Street. Based on the well log provided with the water right certificate, this well has a 12-inch casing extending from the surface to 245 feet, and an 8-inch casing from 245 feet to 545 feet. Well perforations (1/4" x 4") extend between the 72-foot and 160-foot depths, and between the 190-foot and 243-foot depths.

According to Roy Moore, the golf course manager, a previous pump test showed the golf course well has a capacity of 1,200 gpm with an eight-foot draw down (documentation of that test could not be located). The water level is apparently near the surface. The maximum production is reported to be 350 gpm, and is limited by the size of the irrigation system installed for the golf course. A turbine pump is installed in the well, and the header line from the pump is eight-inch diameter steel. The well casing appears to be in good condition.

The second well (Certificate No. 2191) is an inactive well located within the 3rd fairway. It was abandoned as a water supply well several decades ago, but apparently is still usable (it is reported to be artesian). The drilling log reported a pump test capacity of 750 gpm for this well, but no other information on the well was found. Since this well is located in the fairway, a pump house for the well would need to be constructed underground to avoid disrupting the golf course.

Based on available information, it appears likely that both wells have sufficient capacity to serve the flow augmentation system on Des Moines Creek. Further investigations should be conducted during the design phase to gather more information on these wells.

2.2 WELL UPGRAGES, CONVEYANCE SYSTEM, AND STREAM DISCHARGE

Two alternative designs are discussed below and shown on Figure 1. Selection of the preferred alternative would be made during the design phase after the condition of the existing wells is thoroughly investigated, the costs of upgrading the existing well versus installing new equipment at the inactive well are compared, and water rights permitting is addressed.

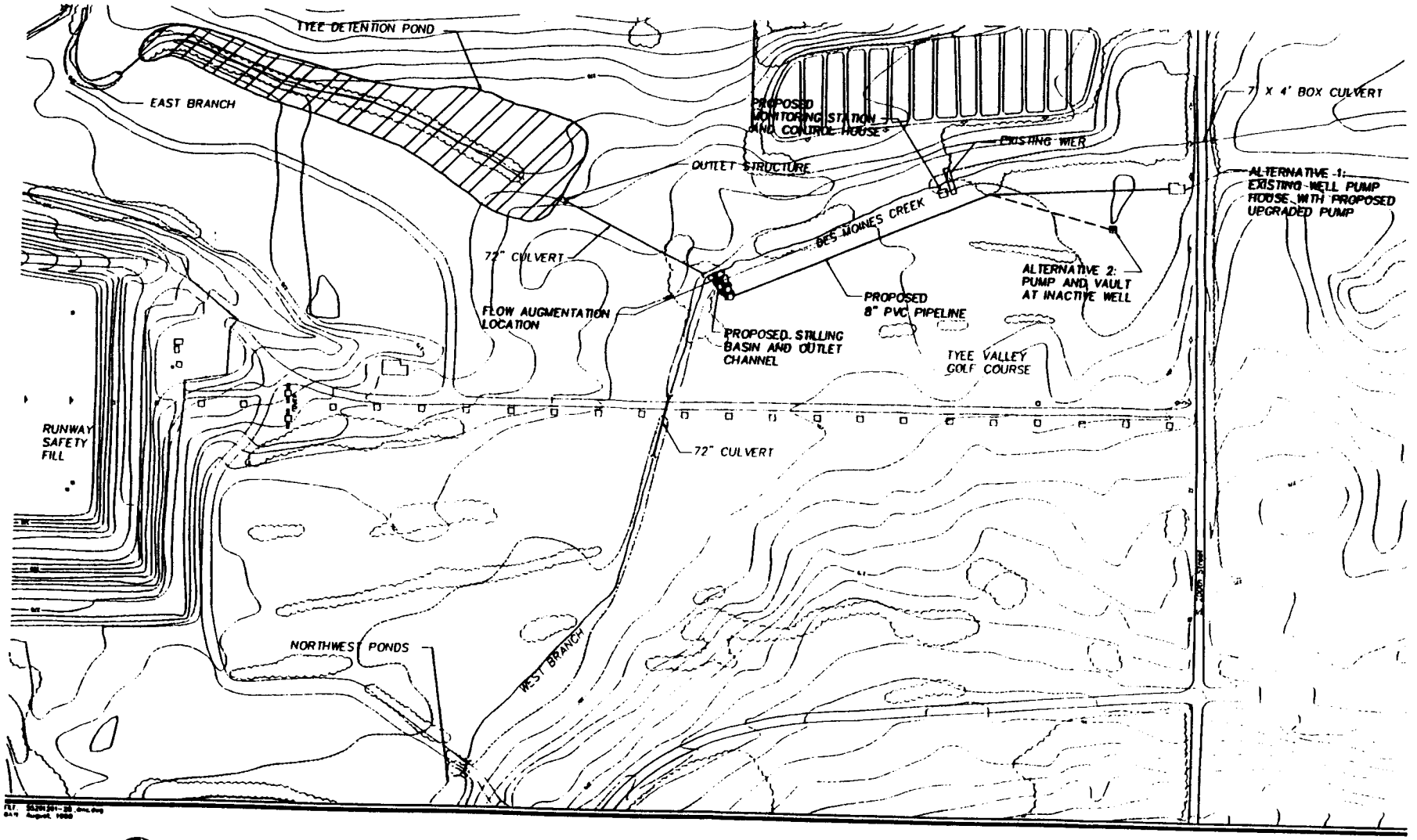


Figure 1
Conceptual design of Des Moines Creek flow augmentation

Alternative 1 would use the existing golf course well. Since the existing 350 gpm pump at that well is at capacity for the irrigation needs of the golf course, the pump, motor, electrical service, and control system would need to be upgraded. A pump with a flow capacity of 800-1,000 gallons per minute would be required. A turbine pump is recommended for this size and depth of inlet pipe. The pump house may also need remodeling to contain the new equipment.

Alternative 2 would use the inactive well located in the 3rd fairway. To reactivate the well, and not make the 3rd fairway unsuitable for golf, a vault would be installed over the well. Access to the underground vault would be through a small hatch of approximately two feet by four feet. A variable speed submersible pump with a minimum capacity of 400 gpm is recommended for this well. The variable speed pump would allow flexible operation of the flow augmentation system. The pump controls would be located in a new control house adjacent to the stream monitoring station. This house would also contain all the sensors, gauges and readouts for the monitoring station.

A new 8-inch PVC pipe would be installed between the pump house and the flow augmentation outlet. The pipe would be buried at least two feet below ground surface to protect the pipe from freezing and crushing. The outlet to Des Moines Creek would be located just below the confluence of the West Branch and East Branch. The outlet would consist of a manhole-type structure that acts as a stilling basin, followed by a 20-foot channel of small riprap or quarry spalls leading to the stream. Water cascading down the rock channel would aerate the groundwater before it enters the stream. The entry to the stream would be designed to prevent erosion of the existing channel.

2.3 FLOW AND TEMPERATURE MONITORING

Three concrete weirs were constructed along Des Moines Creek above South 200th Street during the 1960s to control erosion along this portion of the stream. Currently, King County operates a stream gauging station at the furthest upstream weir, which is located about midway between the confluence of the West and East Branches and South 200th Street. It is proposed that a monitoring station be located at that weir to measure stream stage and temperature, and possibly contain the pump control equipment. The rectangular weir would be modified by adding a V-notch plate or by installing a Parshall flume to achieve more accurate flow measurement at low flow. A trash rack would be installed to prevent debris from accumulating in the flow measurement section, and a stilling well would be constructed at the weir to contain the sensors.

An ultrasonic sensor will be used to continually monitor the stream depth at the weir. Using a streamflow rating curve that is established for the weir, the flow depth corresponding to a flow rate of 1.0 cfs will be determined and used by the well control system to set the pump variable speed rate for flow augmentation. A 4-20 ma signal from the level sensor will automatically adjust the variable speed pumping rate to maintain a 1.0 cfs minimum flow rate.

Temperature measurements would be made using a thermister probe at or near the stream gauge stilling well. As with the streamflow measurements, temperatures would be converted to a 4-20 ma signal. The pump controls would respond to the temperature readings in a manner similar to

that for the flow readings. When the water temperature is above the established temperature criteria, water would be pumped into the stream at a rate proportional to the temperature difference, up to a maximum of 400 gpm. When the stream temperature drops below established temperature criteria, the pump flow would be ramped down while maintaining a minimum flow rate of 1.0 cfs.

A data logger located at the monitoring station will record continuous (i.e., 15-minute interval) readings of stream stage, stream temperature, pumping rate, and pumping time. These data will constitute the permanent monitoring record of the flow augmentation system.

3.0 MONITORING AND MAINTENANCE

3.1 MONITORING PLAN

A monitoring plan will be implemented to collect streamflow and temperature data in Des Moines Creek. The objectives of the monitoring plan are to:

- Obtain streamflow measurements at the monitoring station to calibrate the flow gauging equipment.
- Obtain streamflow and temperature data at several locations above and below the flow augmentation point to evaluate the effectiveness of different pumping rates on streamflow levels, temperature control, and dissolved oxygen.
- Establish a permanent and continuous monitoring system to document groundwater pumping rates, the total annual quantity of water used, and compliance with Ecology's Order.

In addition, potential improvements to instream habitat due to increased low flows could be evaluated using the Instream Flow Incremental Methodology (IFIM) model developed for Des Moines Creek for the basin plan. This element of the monitoring plan will be conducted by King County as part of the continuing Des Moines Creek Basin Plan program.

A summary of specific monitoring activities is provided in Table 3-1. These elements of the monitoring plan will be further detailed in the Inspection and Maintenance Manual (Section 3.2).

Table 3-1. Monitoring plan

Activity	Methods and Locations	Period and Frequency
1. Monitoring station rating curve	Several point measurements of streamflow rate and stage at monitoring station weir.	Up to six measurements after weir modifications and gauging station installation.
2. First year monitoring and pump flow testing	Point measurements of temperature and dissolved oxygen at: • Confluence • South 200th Street • South 208th Street • Midway WWTP Continuous monitoring of flow and temperature at monitoring station, pumping rates and volume at pump station,	Up to 12 monitoring events to evaluate effectiveness of different temperature criteria (i.e., 16°, 17°, 18°, and 19° C) on stream water quality. To be conducted in mid summer when stream flow is above 1.0 cfs and weather is stable.
3. Permanent monitoring	Continuous monitoring of flow and temperature at monitoring station, pumping rates and volume at pump station.	Annually during May-October flow augmentation period.

3.2 INSPECTION AND MAINTENANCE MANUAL

Following construction of the flow augmentation facility, an inspection and maintenance manual will be prepared to provide guidance for Port of Seattle employees who will inspect and maintain the facility. The purpose of the manual is to ensure that the facility is inspected and maintained on a regular basis, and the facility remains functioning as designed. Similar manuals have been prepared for the Port's stormwater detention facilities, including nearby Tyee Pond.

The inspection and maintenance manual will include the following sections:

- Facility description and operation
- Site access
- Personnel and emergency contacts
- Inspection and maintenance procedures
- Inspection and maintenance schedule
- Inspection form and maintenance checklist
- Monitoring plan
- Monitoring station data downloading

Regular inspection of the facility will occur monthly between May and October of each year, and twice monthly during July and August. The facility will be shut down between November and April, when no flow augmentation is required and the pump and conveyance system are dewatered for the winter.

3.3 ANNUAL REPORT

An annual report documenting rates and volume of groundwater flow augmentation, streamflow rates and temperature at the monitoring station, and a summary of the operations during the year will be prepared at the conclusion of each season. The report will be issued the following January.

4.0 IMPLEMENTATION

4.1 SCHEDULE

An estimated schedule for implementing the proposed Des Moines Creek flow augmentation system is summarized in Table 4-1. Project startup and monitoring activities are contingent on obtaining a water right from Ecology. Project delay would occur if the water right cannot be secured by the planned startup date.

Table 4-1. Implementation schedule

Activity	Date	Comments
1.0 Design		
1.1 Flow augmentation plan	August 20, 1998	This document.
1.2 Preliminary design	February 1, 1999	Prepared by King County
1.3 Water Rights application	February 1, 1999	Prepared by King County
1.4 Final design	June 1, 1999	Prepared by King County
2.0 Construction		
2.1 Monitoring station	July 1999	Constructed by King County
2.2 Flow augmentation system	July-August, 1999	Constructed by King County
2.3 Calibration and testing	September, 1999	
2.4 Startup	May 1, 2000	Contingent on obtaining water rights
3.0 Monitoring		
3.1 Monitoring station rating curve	July-September, 1999	
3.2 First year monitoring	May-October, 2000	
3.3 Operational review	December, 2000	Review and possible revision of operational criteria
3.4 Start of permanent monitoring	May 1, 2000	Annual reports issued in January.

4.2 FUNDING OF MAINTENANCE AND OPERATIONS

Maintenance and operation of the Des Moines Creek flow augmentation facility will be funded by the Port of Seattle.

4.3 CONTINGENCY

Should the flow augmentation project not succeed, such as due to the inability to obtain a new water right from the wells described above, other options for flow augmentation will be pursued. This effort would be primarily directed at acquiring other water rights in the basin.

APPENDIX A

WATER RIGHTS CERTIFICATES

Certificate No. 2191

2191

S. P. No. 7201—5-53—5M. 54120.

CERTIFICATE RECORD NO. 5 PAGE NO. 2191-A

STATE OF WASHINGTON, COUNTY OF King

Certificate of Ground Water Right

Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the State Supervisor of Water Resources thereunder.

THIS IS TO CERTIFY That KING COUNTY WATER DISTRICT NO. 75

of Seattle, Washington, has made proof to the satisfaction of the State Supervisor of Water Resources of Washington, of a right to the use of the ground waters of a well located within the SE¼ of NW¼ of Sec. 4, Twp. 22 N., Rge. 4 E.W.M.

for the purpose of domestic supply for community under and subject to provisions contained in Ground Water Permit No. 3075 issued by the State Supervisor of Water Resources and that said right to the use of said ground waters has been perfected in accordance with the laws of Washington, and is hereby confirmed by the State Supervisor of Water Resources of Washington and entered of record in Volume 5 at page 2191-A; that the right hereby confirmed dates from May 14, 1953; that the quantity of ground water under the right hereby confirmed for the purposes aforesaid, is limited to an amount actually beneficially used for said purposes, and shall not exceed 750 gallons per minute; 600 acre-feet per year for domestic supply for community.

A description of the lands to which such ground water right is appurtenant, and the place where such water is put to beneficial use, is as follows:

Water District No. 75, King County, Washington.

The right to the use of the ground water aforesaid hereby confirmed is restricted to the lands or

AR 041744

SECTION PLAT

Sec. 4 Twp. 22 N. R. 4 E W M

N

W

S200TH ST

E

SH No. 1

5

Show by a cross (X) the location of the well or other works covered by the application. Show by circle (O) the locations of other wells or works within a quarter of a mile. Also indicate traveling directions from nearest town on main highway.

Scale: 1 inch = 800 feet.

3218

Certificate No. 2369

S. F. No. 7301—3-35—8M. 3038

CERTIFICATE RECORD No. 5 PAGE No. 2369-A

STATE OF WASHINGTON, COUNTY OF King

Certificate of Ground Water Right

Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the State Supervisor of Water Resources thereunder.

THIS IS TO CERTIFY That KING COUNTY WATER DISTRICT NO. 75 of Seattle, Washington, has made proof to the satisfaction of the State Supervisor of Water Resources of Washington, of a right to the use of the ground waters of a well located within the SW¼ of SE¼ of NW¼ of Sec. 4, Twp. 22 N., Rge. 4 E.W.M.

for the purpose of domestic supply under and subject to provisions contained in Ground Water Permit No. 1006 issued by the State Supervisor of Water Resources and that said right to the use of said ground waters has been perfected in accordance with the laws of Washington, and is hereby confirmed by the State Supervisor of Water Resources of Washington and entered of record in Volume 5 at page 2369-A; that the right hereby confirmed dates from February 9, 1949; that the quantity of ground water under the right hereby confirmed for the purposes aforesaid, is limited to an amount actually beneficially used for said purposes, and shall not exceed 400 gallons per minute; 560 acre-feet per year for domestic supply.

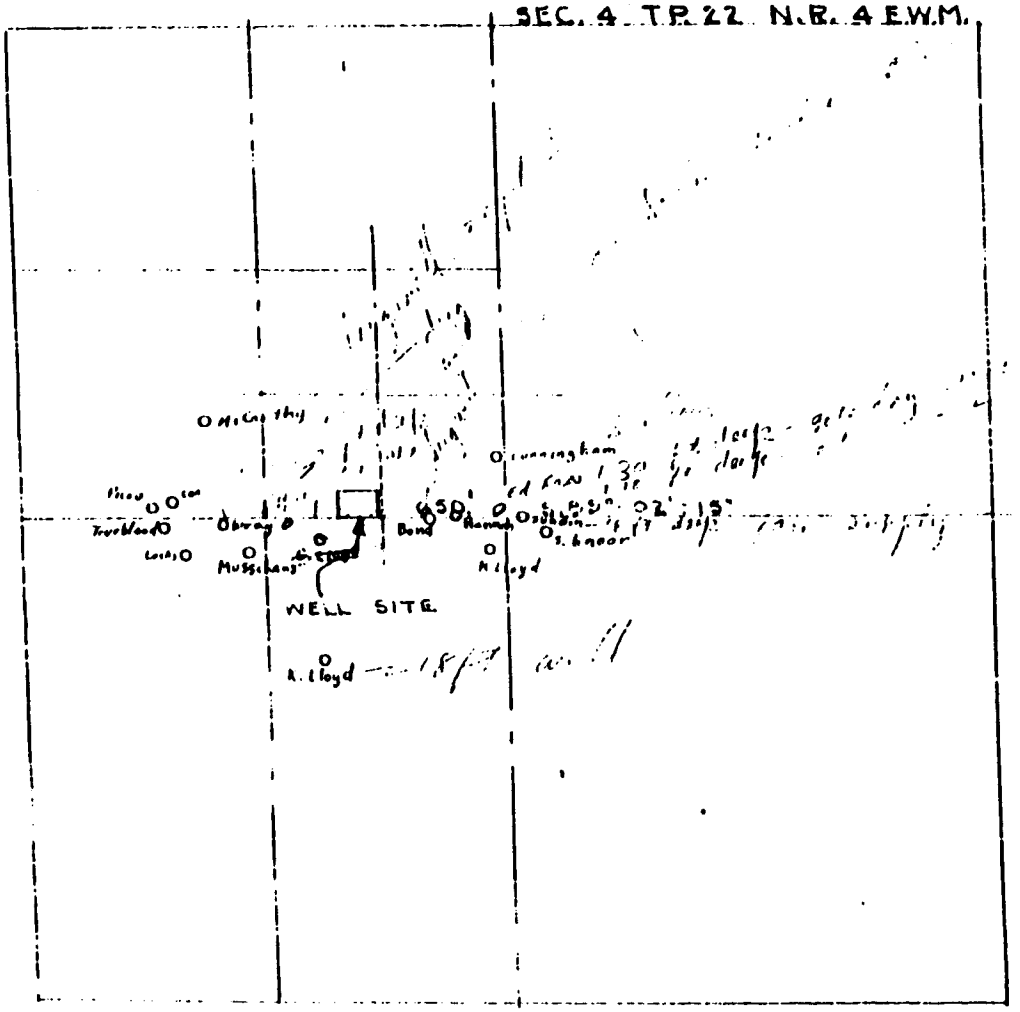
A description of the lands to which such ground water right is appurtenant, and the place where such water is put to beneficial use, is as follows:

King County Water District No. 75

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 Water Resources affixed this 18th day of October, 1955.

[signature]
State Supervisor of Water Resources.



GENERAL ENGINEERING COMPANY

BY _____

(1)

STATE OF WASHINGTON
DEPARTMENT OF CONSERVATION
AND DEVELOPMENT

WELL LOG

No. Appli. #1065
Permit #1006

Date November 22, 1949

Record by F. C. Yatt

Source well driller's record

Location: State of WASHINGTON

County King

Area

Map

S½ SE ¼ NW ¼ sec. 4 T. 22 N., R. 4 E. W.M.

Diagram of Section

Drilling Co. N. C. Janssen Drilling & Mfg. Co.

Address Seattle, Washington

Method of Drilling drilled Date November, 1949

Owner King County Water District #75

Address Midway, Washington

Land surface, datum ft. above / below

Color-Layer	Material	Thickness (feet)	Depth (feet)
	(Terminology literally but paraphrase as necessary, in parentheses. If material water-bearing, so state and record static level if reported. Give depths in feet below land-surface datum unless otherwise indicated. Correlate with stratigraphic column, if feasible. Following log of materials, list all casings, perforations, screens, etc.)		
	Sandy clay	10	10
	Brown sand	20	30
	Coarse gravel, dry	53	83
	Sand & gravel, water	67	150
	Sand & clay, wet	10	160
	Blue clay	30	190
	Clay, little gravel	20	210
	Sand & gravel, water	33	243
	Sand, clay, gravel	27	270
	Fine sand & clay	240	510
	Coarse sand, water	35	545
	Pump Test:		
	Dim: 545' x 18"		
	SWL: at ground level		
	Dd: 43' Yield: 150 g.p.m. (permit)		
	Casing: 12" standard steel from 0-245		

Turn up

Sheet of sheets

OVER

WELL LOG—Continued No. 22/1-9E

Consolidation	Material	Thickness (feet)	Depth (feet)
	Depth forward	———	
	8" standard steel from 845 to 545'		
	Shoe: 8" to 12" increaser & 12" pipe		
	total length 5'-6"-bottom at 545		
	Perfor: ¼" x 4" from 72 to 160'		
	" " " from 190 to 243'		
	sand cup screen from 511 to 541'		
	Pump: 12" deep well turbine		
	Motor: 60 h.p. Elec. motor - standby		
	gas engine		

S. F. No. 7[illegible]—12-54—30M. [illegible]

AR 041750

Certificate No. 2376

2376

S. P. No. 7[illegible]

CERTIFICATE RECORD No. 5 PAGE No. 2376-A

STATE OF WASHINGTON. COUNTY OF King

Certificate of Ground Water Right

Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the State Supervisor of Water Resources thereunder.

THIS IS TO CERTIFY That KING COUNTY WATER DISTRICT NO.75

of Seattle, Washington, has made proof to the satisfaction of the State Supervisor of Water Resources of Washington, of a right to the use of the ground waters of a well located within the NE¼ of NW¼ of Sec. 4, Twp. 22 N., Rge. 4 E.W.M.

for the purpose of domestic supply for community under and subject to provisions contained in Ground Water Permit No. 3757 issued by the State Supervisor of Water Resources and that said right to the use of said ground waters has been perfected in accordance with the laws of Washington, and is hereby confirmed by the State Supervisor of Water Resources of Washington and entered of record in Volume 5 at page 2376-A; that the right hereby confirmed dates from January 19, 1955; that the quantity of ground water under the right hereby confirmed for the purposes aforesaid, is limited to an amount actually beneficially used for said purposes, and shall not exceed 350 gallons per minute; 560 acre-feet per year for domestic supply / for community.

A description of the lands to which such ground water right is appurtenant, and the place where such water is put to beneficial use, is as follows:

King County Water District No. 75.

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 Water Resources affixed this 18th day of October, 19 55.

State Supervisor of Water Resources.

[illegible]

AR 041752

Seattle

SECTION PLAT

Sec. 4 Twp. 22 N. R. 4 E.W.M.

So. 142nd St.

N

W E

S

Show by a cross (X) the location of the well or other works covered by the application. Show by circle (O) the locations of other wells or works within a quarter of a mile. Also indicate traveling directions from nearest town on main highway.

Scale: 1 inch = 800 ft.

Check legal description as shown on 2nd plat obtained & determine which piece of land is correct above. 3843

Spelt Correctly

Ltr.

AR 041753

ASSIGNMENT OF WATER RIGHTS

Know all men by these presents that on this 14th day of December, 1962, KING COUNTY WATER DISTRICT NO. 75, a municipal corporation, located in the County of King, State of Washington, does hereby assign and transfer to PORT OF SEATTLE, a municipal corporation, all of its rights to withdraw ground waters from a well located within the

> Northeast 1/4 of the Northwest 1/4 of Section 4, Township 22 North, Range 4 East, W.M., not to exceed 350 gallons per minute, 560 acre feet per year under State certificate issued October 18, 1955, to King County Water District No. 75 by M.G. Walker, recorded under Auditor's File No. 4629222.

DATED the day and year first above written.

KING COUNTY WATER DISTRICT NO. 75

By _____
President

By _____
Secretary

STATE OF WASHINGTON)
) ss.
COUNTY OF KING)

On this 14th day of December, 1962 before me the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared Henry B. Lyle and W. L. Eaton, Jr. to me known to be the President and Secretary, respectively, of Water District No. 75, King County 19801-28th Ave. South, Seattle, Washington the corporation that executed the foregoing instrument, and acknowledged the said instrument to be the free and voluntary act and deed of said corporation, for the uses and purposes therein mentioned, and on oath stated that they are authorized to execute the said instrument and that the seal affixed is the corporate seal of said corporation.

Witness my hand and official seal hereto affixed the day and year first above written.

_____
Notary Public in and for the State

AR 041754

LAW OFFICES OF

BOGLE, BOGLE & GATES

14TH FLOOR NORTON BUILDING

SEATTLE 4

December 21, 1962

Supervisor, Water Resources
335 General Administration Building
Division of Water Resources
Department of Conservation
Olympia, Washington

RE: Filing Assignment of Water Rights.
Port of Seattle Re: SEA-TAC. FAA
Project No. 15.

Dear Sir:

Enclosed for filing is an original copy of an Assignment of Water Rights by the King County Water District No. 75 to the Port of Seattle.

Enclosed you will also find a check in the amount of $4.00 to cover the filing fee.

Very truly yours,

BOGLE, BOGLE & GATES

Bertram L. Metzger, Jr.

cc: Port of Seattle
Attn: Mr. Howard M. Burke
Port Commissioners (5)

C-2376-216

December 26, 1962

Bogle, Bogle & Gates
14th Floor Norton Building
Seattle 4, Washington

ATTENTION: Bertram L. Metzger, Jr.

Gentlemen:

Re: Ground Water Certificate No. 2376,
King County Water District No. 75

Receipt is acknowledged of your letter of December 21 containing a copy of an assignment transferring King County District's interest in said water right to the Port of Seattle, together with warrant in the amount of $4 to record the transfer.

Please be advised that Section 90.03.310 RCW authorizes the transfer of applications and permits only and once the appropriation has ripened into a certificate of water right, it becomes appurtenant to the property and title to the water right passes automatically with the title to the property. For that reason we would not be able to formally process the assignment and change ownership as shown on the certificate. However, we will place the copy of the assignment in file No. 2376 to show that the Port of Seattle now has title to the water right and any future correspondence will be directed to their attention.

Your warrant in the amount of $4 is returned herewith.

Very truly yours,

DEPARTMENT OF CONSERVATION
EARL COE, DIRECTOR

ROBERT H. RUSSELL, Asst. Supervisor
Division of Water Resources

RHR: jo
Enc.

AR 041756

Certificate No. 5233

S. F. No. 7381—1-64—3M 82380

CERTIFICATE RECORD No. 11 PAGE No. 5223-A

STATE OF WASHINGTON, COUNTY OF King

Certificate of Ground Water Right

Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the State Supervisor of Water Resources thereunder.

THIS IS TO CERTIFY That PORT OF SEATTLE COMMISSION

of Seattle, Washington, has made proof to the satisfaction of the State Supervisor of Water Resources of Washington, of a right to the use of the ground waters of a well located within NE¼ NW¼

Sec. 33 Twp. 23 N., R. 4 E. W.M.,

for the purpose of air conditioning, irrigation and emergency commercial and industrial use under and subject to provisions contained in Ground Water Permit No. 6682 issued by the State Supervisor of Water Resources and that said right to the use of said ground waters has been perfected in accordance with the laws of Washington, and is hereby confirmed by the State Supervisor of Water Resources of Washington and entered of record in Volume 11 at page 5223-A; that the right hereby confirmed dates from March 5, 1964; that the quantity of ground water under the right hereby confirmed for the purposes aforesaid, is limited to an amount actually beneficially used for said purposes, and shall not exceed 250 gallons per minute, 82 acre-feet per year, for the irrigation of 2 acres, for air conditioning and emergency commercial and industrial use.

Special provisions required by the Supervisor of Water Resources:

A description of the lands to which such ground water right is appurtenant:

Seattle-Tacoma International Airport, within T. 23 N., R. 4 E.W.M.

The right to the use of the ground waters hereby confirmed is restricted to the lands or

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