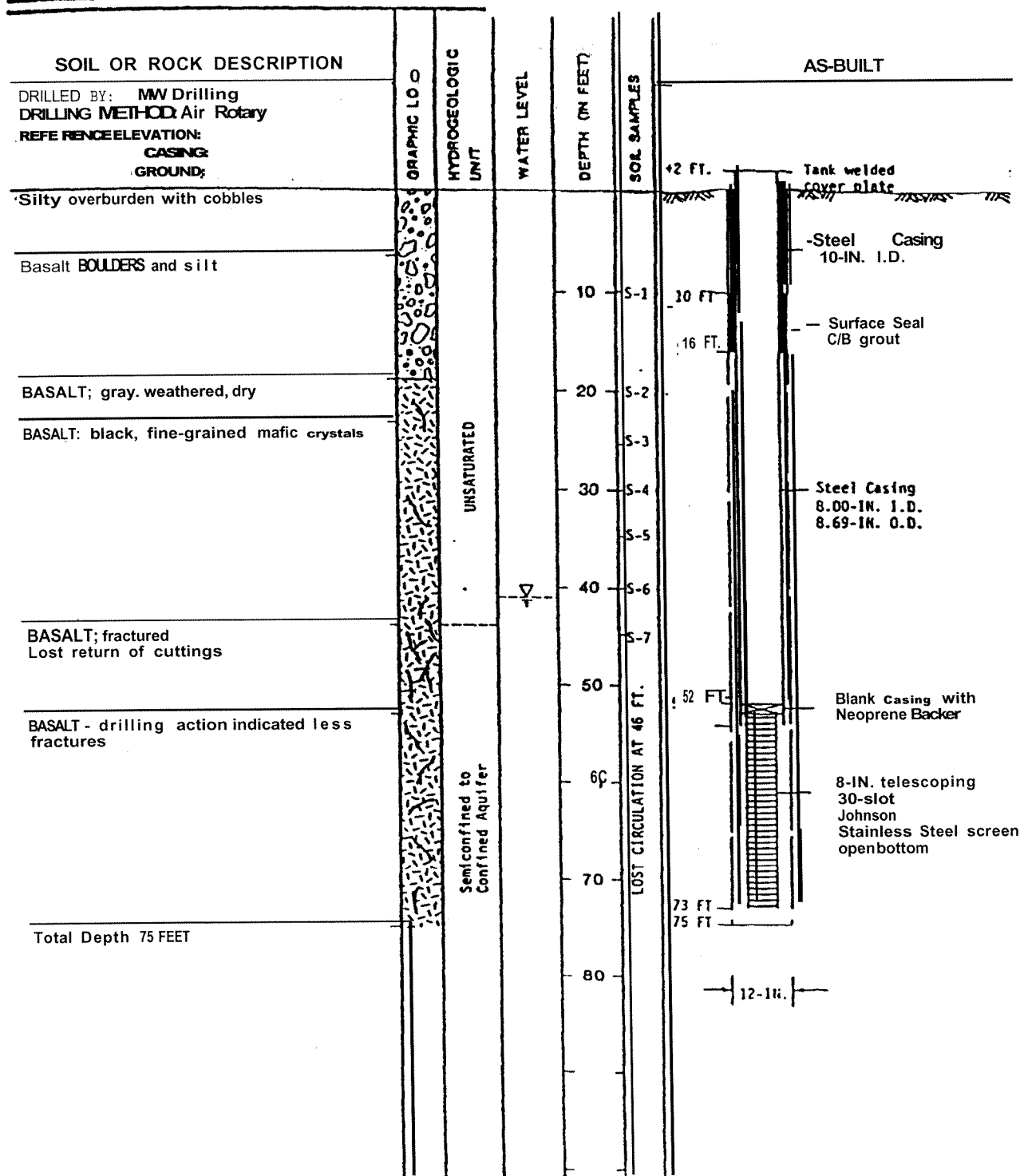




RITTENHOUSE-ZEMAN & ASSOCIATES, INC.
Geotechnical & Hydrogeological Consultants



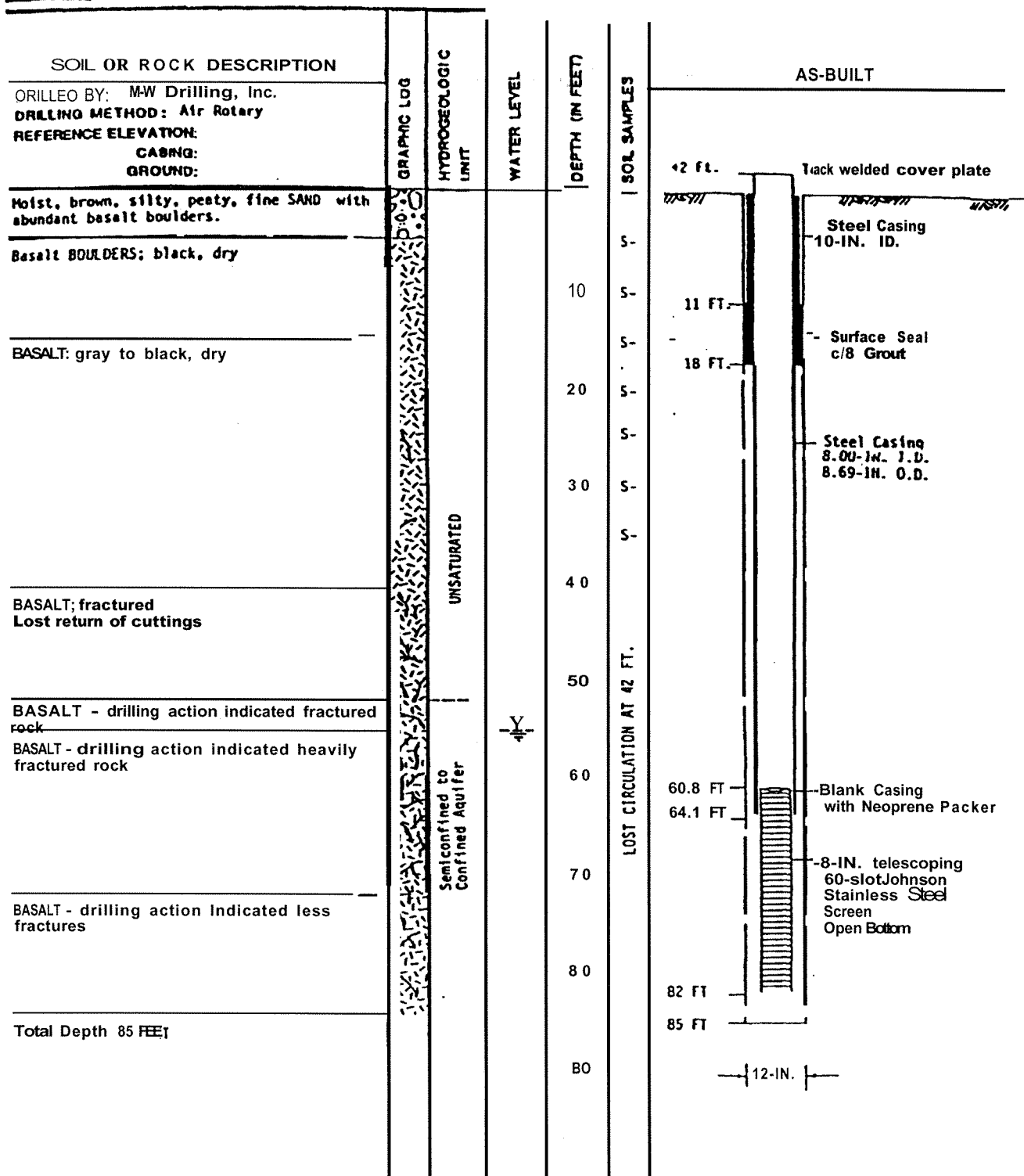
URS
Corporation
Anchorage Alaska

City of
St. Paul
Water Supply
Analysis Study

Well Fredreka | Boring Log & As-Builts



RITTENHOUSE-ZEMAN & ASSOCIATES, INC.
Geotechnical & Hydrogeological Consultants

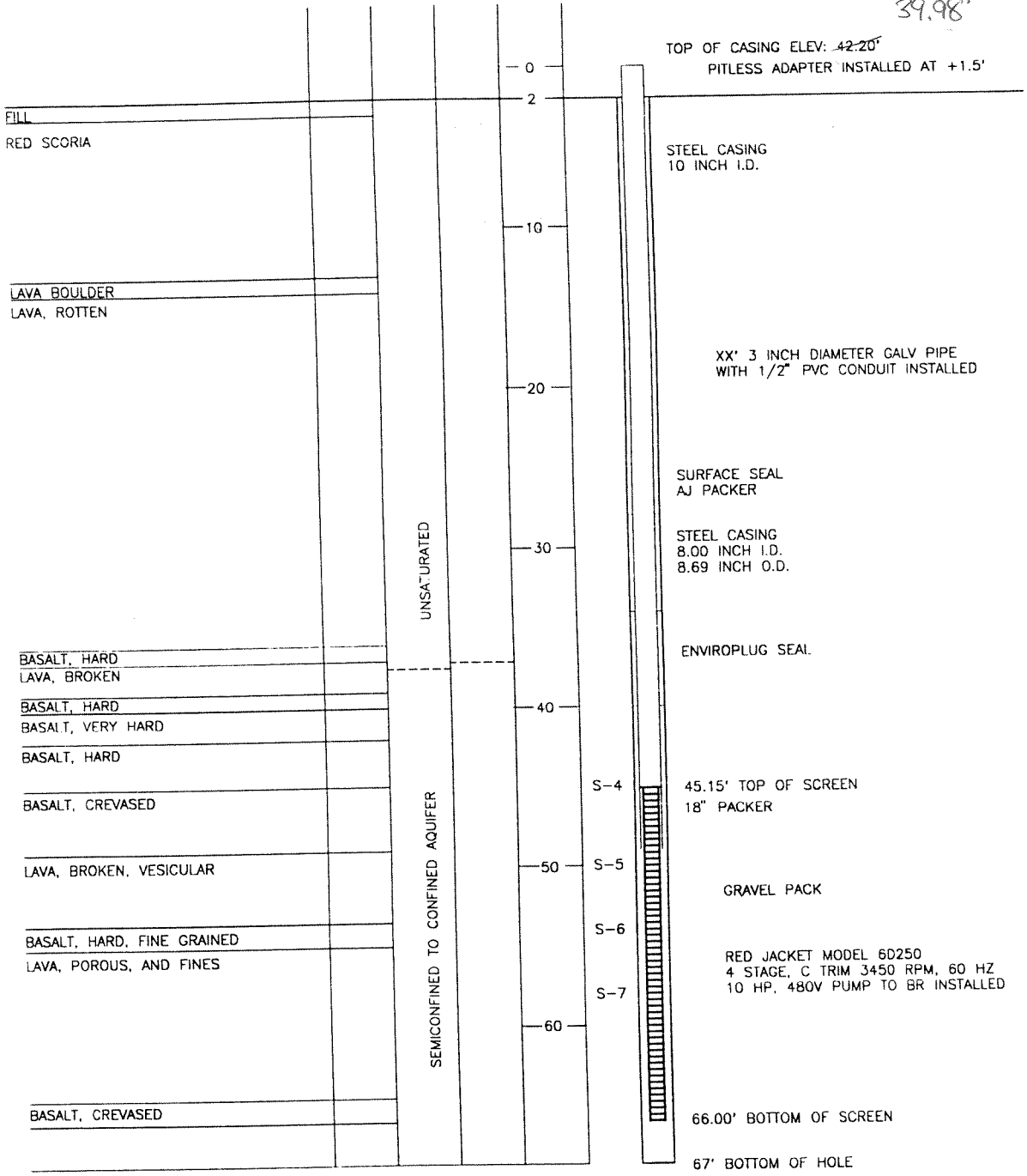


URS
Corporation
Anchorage Alaska

City of
St. Paul
Water Supply
Analysis Study

**Well Fredreka II Boring Log
& As-Built s**

39.98'



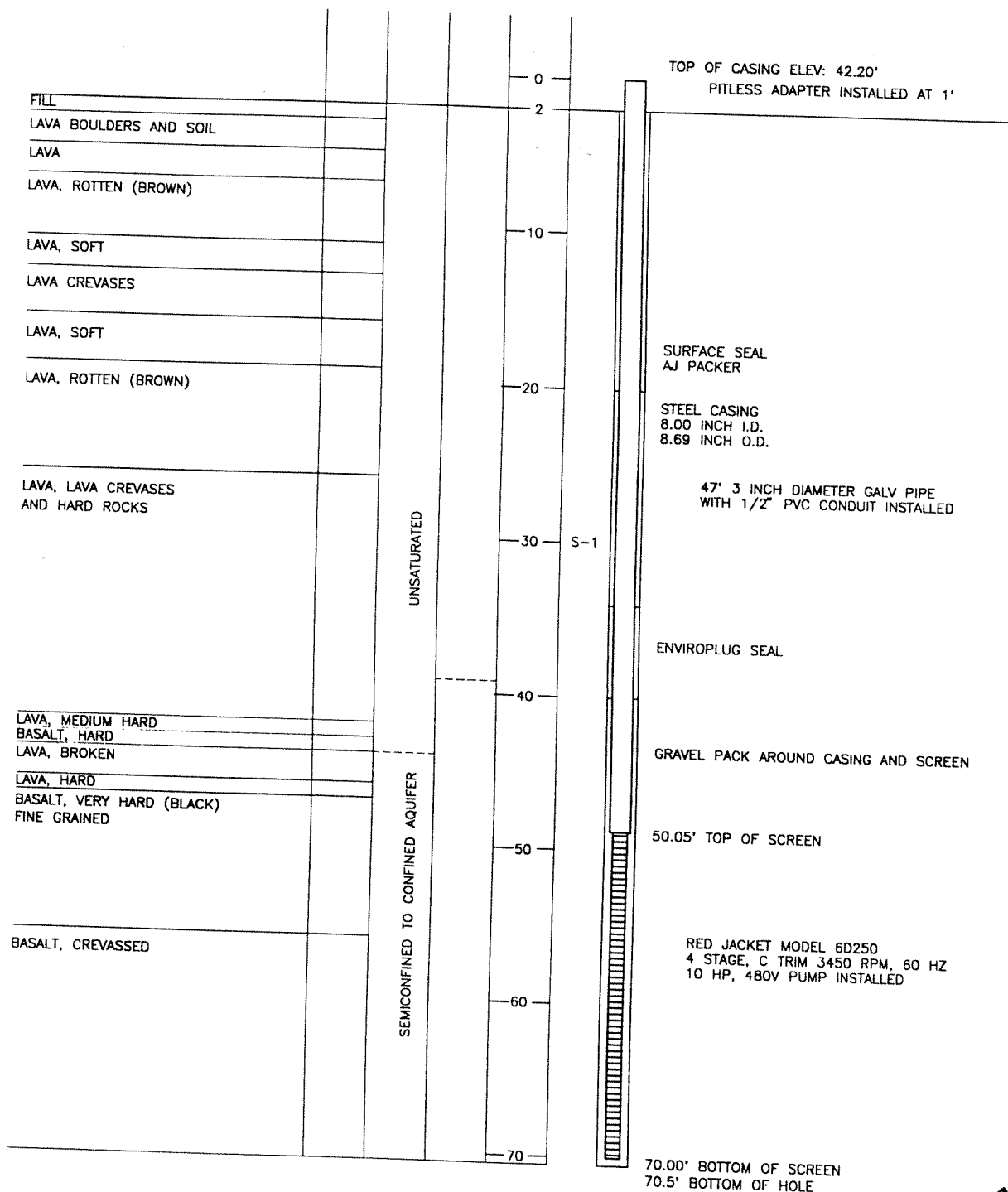
DRAFT

DATE: 3/11/94
DESIGNED: AK
DRAWN: DJR
CHECKED: MDD
SCALE: NTS
FILE: ABF3

polarconsult alaska, inc.
ENGINEERS • SURVEYORS • ENERGY CONSULTANTS
1503 WEST 33RD AVE., SUITE 310
ANCHORAGE, ALASKA 99503
PHONE (907) 258-2420
FAX (907) 258-2419

DRAWING
FREDREKA 3 AS-BUILT
PROJECT
ST. PAUL WATER AQUIFER

SHEET
1
OF



DRAFT

DATE: 3/11/94
DESIGNED: AK
DRAWN: DJR
CHECKED: MDD
SCALE: NTS
FILE: ABF4

polarconsult alaska, inc.

ENGINEERS • SURVEYORS • ENERGY CONSULTANTS

1503 WEST 33RD AVE., SUITE 310
ANCHORAGE, ALASKA 99503

PHONE (907) 258-2420
FAX (907) 258-2419

DRAWING

FREDREKA 4 AS-BUILT

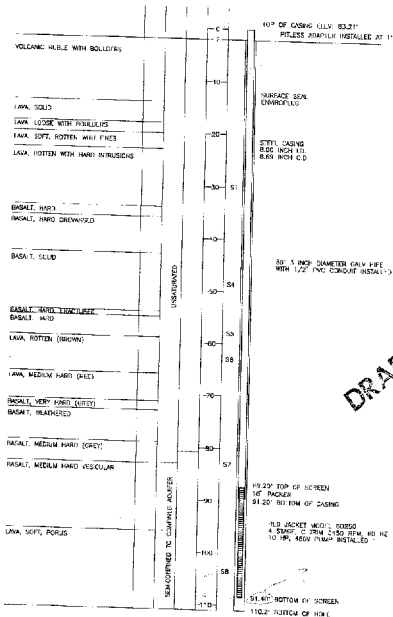
PROJECT

ST. PAUL WATER AQUIFER

SHEET

2

OF



DRAFT

DATE: 2/1/78
 DESIGNED: AC
 DRAWN: JLS
 CHECKED: JLS
 SCALE: 1"=20'
 FILE: 102

polarconsult alaska, inc.
 ENGINEERS • SURVEYORS • ENERGY CONSULTANTS
 1903 WEST 32ND AVE., SUITE 310
 ANCHORAGE, ALASKA 99503
 PHONE (907) 258-2420
 FAX (907) 258-2419

DRAWING
FREDREKA 5 AS-BUILT
 PROJECT
ST. PAUL WATER AQUIFER

SHEET
3
 OF

SOUTH WELL

SCALE 1" = 10'

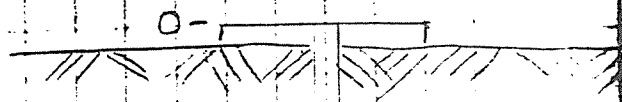
DEPTH OF WELL 90'-6"

6" CASING

WATER SURFACE -76'-10 1/2"

BOTTOM OF PUMP
(SCREEN) -86'-0 3/4"TURBINE BOWL TYPE
PUMPSUBMERGENCE
(APPROX.) 9'-0"INTAKE TO BOTTOM
OF WELL
(APPROX.) 4'-6"

SCREEN LOCATION N/A



1 - 6" CASING

2 —

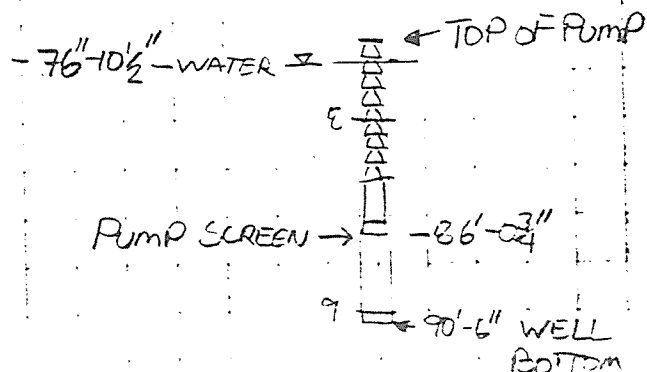
3 —

4 —

5 —

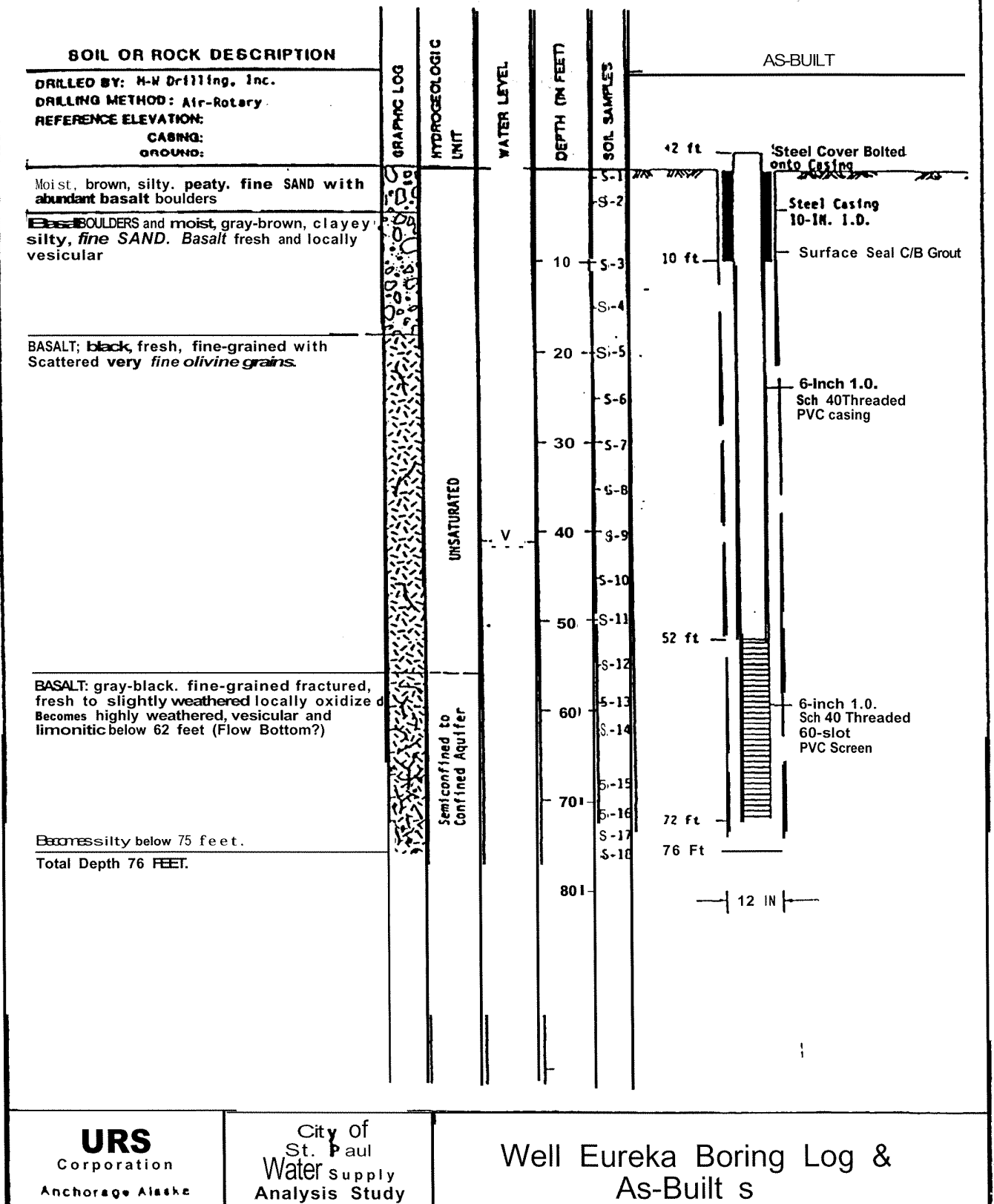
6 —

7 —





RITTENHOUSE-ZEMAN & ASSOCIATES, INC.
Geotechnical & Hydrogeological Consultants



URS
Corporation
Anchorage Alaska

City of
St. Paul
Water Supply
Analysis Study

Well Eureka Boring Log &
As-Built s

Water Supply

Recently three wells have been drilled for a water supply. These wells may be described as: Well No. 1, cased - 8 inch to 35 feet, total depth 79' 6"; Well No. 2, cased - 8 inch and 6 inch, to total depth of 40 feet; Well No. 3, cased - 8 inch to 51 feet, total depth 91 feet.

Well No. 1 did not prove satisfactory and has been abandoned. Well No. 2 apparently has a sufficient supply of water, however, the gasoline driven turbine pump is of insufficient capacity to provide an adequate supply of water to the reservoir some $2\frac{1}{2}$ miles distance from the well site. Well No. 3 was completed during my inspection of the area and in checking the pumping capacity of the unit it was found that the pump would fill a reservoir with approximately 175,000 gallons in $26\frac{1}{2}$ hours, establishing a pumping rate of 6,500 gallons per hour.

It is recommended that Well No. 2 be equipped with a gasoline driven turbine pump similar to that utilized by Well No. 3 in order that we may have a standby pumping unit in case of failure of Well No. 3. The writer is of the opinion that it will be necessary to construct at least one more 200,000 gallon concrete reservoir to replace the present wood reservoirs being utilized. Reservoir capacity requirements will again be recomputed when the over-all development plan for St. Paul begins to take concrete form. In any event, it is recommended that the old Cup and Saucer Lake water pumping facilities be cut off from the new water supply lines to prevent contamination of the new water supply. The only justification for maintaining the Cup and Saucer Lake pumping stations is that it would give some advantage in the case of high pumping capacity needs for fire fighting supply.

The writer was advised that during the winter months the inside of the new concrete water reservoirs were lined with approximately 32 inches of ice on the side walls. Variance in water levels prevented the forming of exceptionally thick ice on top. It is recommended that additional fill be placed on the outside of these concrete reservoirs in order to retard the forming of ice on the inner walls, as continued freezing of this nature will undoubtedly result in the deterioration of the concrete. Future reservoir construction should give consideration to placing the greater portion of the reservoir below the ground line.