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**GEOPHYSICAL LOGS FROM WATER WELLS IN THE YAKIMA
AREA, WASHINGTON**

By
John H. Biggane

Work Performed Under Contract No. AC07-79ET27014

Washington State University
Pullman, Washington

Technical Information Center
Office of Scientific and Technical Information
United States Department of Energy

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STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES
BRIAN J. BOYLE, Commissioner of Public Lands
JAMES A. STEARNS, Department Supervisor

DIVISION OF GEOLOGY AND EARTH RESOURCES
Raymond Lasmanis, State Geologist

GEOPHYSICAL LOGS FROM WATER WELLS IN THE
YAKIMA AREA, WASHINGTON

by

John H. Biggane
Washington State University
College of Engineering
Geological Engineering Section
Pullman, WA 99164

DOE/ET/27014--T15

DE84 012506

Logs include: Natural gamma, gamma gamma, neutron neutron,
neutron gamma, caliper, fluid temperature, fluid resistivity,
wall resistivity, spontaneous potential, and flow meter.

This report accompanies: Biggane, J. H., 1981, The low-
temperature geothermal resource of the Yakima region - a
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Earth Resources Open-File Report 81-7.

Washington Department of Natural Resources
Division of Geology and Earth Resources
Olympia, WA 98504

Open-File Report 83-2
1983

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AC07-79ET27014

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TABLE OF CONTENTS

<u>Well Name</u>	<u>Location</u>	<u>Depth Logged</u>	<u>Page</u>
Bill Evans	10N/23E-36A1	1316 Ft.	1
F. Johnson	11N/20E-01M1	1505	2
B. Lynch	11N/20E-01R1	1151	3
Charles Peters	11N/20E-06A1	605	4
Soost Brothers	11N/20E-13R1	1085	5
Ted Dahl	11N/21E-06L1	1200	6
T. E. Dahl	11N/21E-06Q1	1288	7
Pat Clyde	11N/21E-16C1	884	8
Ramsier	11N/21E-16P1	1248	9
Pete Hanrahan	11N/21E-20M1	624	10
Jerry Sandlin No. 2	11N/21E-22G2	1815	11
Slagg, L.	11N/21E-34C1	584	12
Harry Gay	11N/21E-36K1	709	13
Bill Evans	11N/22E-26R1	1532	14
R. Kershaw	11N/22E-28A1	1140	15
Rowe Farms	11N/22E-29N1	1442	16
Shelton, C. L.	12N/16E-12N1	883	17
White, Hiram	12N/16E-15E1	587	18
Meyer, Charles	12N/16E-18A1	356	19
Gilbert, Craig	12N/17E-07E1	631	20
Bates, K. P.	12N/17E-07M1	661	21
Stan Stepniewski	12N/19E-27H1	550	22
Sunnyside Dam	12N/19E-28J1	300	23
S. Charron	12N/20E-13Q1	1235	24
Wilbur Logan	12N/20E-27N1	1297	25
Marvin Estes	12N/20E-34N1	900	26
M. Estes	12N/20E-34N2	1409	27
Cheyne Road (DNR)	12N/20E-36P1	1338	28
Simon Martinez	12N/21E-17L1	1563	29
D. Martinez	12N/21E-20O1	475	30
P. Griswald	12N/21E-20P1	1031	31
Marley Orchards	12N/22E-21R1	887	32

TABLE OF CONTENTS (Cont.)

<u>Well Name</u>	<u>Location</u>	<u>Depth Logged</u>	<u>Page</u>
S. Changala	12N/22E-29B1	1411 Ft.	33
Blackrock No. 1 (DNR)	12N/23E-16J1	1151	34
Taggares Ranches	12N/23E-19A1	758	35
DOE C-6	13N/17E-28B1	562	36
Hull Ranches, Inc.	13N/18E-31P1	1160	37
J. C. Riebe	13N/20E-18N1	960	38
Sundquist	13N/20E-19N1	832	39
Reginald Yergen	13N/20E-30A1	949	40
Bruce Coombs No. 2	13N/20E-33M1	1464	41
Martinez, D., No. 2	13N/21E-34H1	1022	42
Keller Fruit No. 2	14N/16E-13K1	489	43
Keller Fruit No. 1	14N/16E-24K1	870	44
Frank Majnarich	14N/17E-15N1	515	45
Bruce Allen	14N/17E-26G1	1002	46
Zuetenhorst	14N/17E-27A1	528	47
Hargrave, Hugh	14N/17E-35H1	950	48
W. Zirkle	14N/18E-20G1	1069	49
Roche Fruit Co.	14N/19E-16N1	880	50

WASHINGTON STATE
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GEOLOGICAL ENGINEERING SECTION
WELL LOG PROCESSING SYSTEM

NAME OF WELL: STILL EVANS
DATE LOGGED: 85/25/77
STATE: WASHINGTON
COUNTY: FRANKLIN
LOCATION: 10N/23E-36A1
SURFACE ELEVATION: 1220
TOTAL DEPTH LOGGED: 1315
DEPTH TO SPIDER LEVEL: 583
CASING & LINERS:
C 390-13 478-578-10
SP, NATG, CO, NN, NN, AND NATG ARE
COMBINED FROM FIRST AND SECOND LOGGINGS

LEGEND
LOG TITLES
GR - GAMMA RAY COUNT
NG - NEUTRON LOG
NN - NEUTRON LOG
NATG - NEUTRON LOG
CALP - CALIPER LOG
FT - FORMATION TEMPERATURE
FR - FORMATION RESISTIVITY
WRES - WIRELINE RESISTANCE
SP - SPONTANEOUS POTENTIAL
WATER LEVEL
NOTES SCALE WILL CHANGE WITH WATER LEVEL

10N/23E-36A1

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GEOLOGICAL ENGINEERING SECTION
WELL LOG PROCESSING SYSTEM

NAME OF WELL F. JOHNSON
DATE LOGGED 05/24/77
STATE WASHINGTON
COUNTY YAKIMA
LOCATION 11N42NE-01W1
SURFACE ELEVATION 1180
TOTAL DEPTH LOGGED 1505
DEPTH TO WATER LEVEL 5
CASING & LINERS
0- 4152# 0- 68616
LOGGING SPEED WAS GREATER THAN
NORMAL ABOVE 680 FT

LEGEND

LOG TITLES

WATG - NATURAL GROUND
CG - CEMENT CEMENT
W - WATER FROM
NG - NEUTRAL GROUND
PT - PLOT TEST FOR POTENTIAL
PR - PORE POSITIVITY
CALP - CALIPER
SP - SPAN AND/OR POTENTIAL
WAS - WALL POSITIVITY
FATB - FLOW TEST
SMIC - SMOG

SCALIC (LOG-LOG) INCREASES
POROSITY (W-LOG) INCREASES
WATER LEVEL

NOTE: SCALE MAY CHANGE ABOVE WATER LEVEL

11N/20E - 01M1

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GEOLOGICAL ENGINEERING SECTION
WELL LOG PROCESSING SYSTEM

NAME OF WELL B. LYNCH
DATE LOGGED 05/08/77
STATE WASHINGTON
COUNTY YAKIMA
LOCATION 11N/20E-01R1
SURFACE ELEVATION 1150
TOTAL DEPTH LOGGED 1151
DEPTH TO WATER LEVEL 270
CASING & LINERS
0- 300-12 300- 775-10

LEGEND
LOG TITLES
WTC - WATER TEMPERATURE
GC - GRAIN COUNT
SG - SLOPE GRAIN
NG - NEUTRON GRAIN
FR - FLUID RESISTIVITY
SP - SPONTANEOUS POTENTIAL
WTS - WELL RESISTIVITY
WTR - FLUID RESISTIVITY
WTC - SLOPE
DENSITY LOG (LOG) INCREASES →
POROSITY (NM-LOG) INCREASES ←
WATER LEVEL - - - - -
NOTE: SCALE MAY CHANGE ABOVE WATER LEVEL.

11N/20E-01R1
11N/20E-01R1

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GEOLOGICAL ENGINEERING SECTION
WELL LOG PROCESSING SYSTEM

NAME OF WELL: SOOST BROTHERS
DATE LOGGED: 05/16/77
STATE: WASHINGTON
COUNTY: YAKIMA
LOCATION: LINCOLN-13R1
SURFACE ELEVATION: 1005
TOTAL DEPTH LOGGED: 1005
DEPTH TO WATER LEVEL: 128
CASING & LINERS: 4" 105-108 4" 545-116 545-1178-12
APPROX. 120 FT OF FILL IN
BOTTOM OF WELL.

LEGEND
LOG TITLES
60 - GAMMA RAY
143 - DENSITY
475 - NEUTRON
1901 - NEUTRON
1466 - NEUTRON
2400 - NEUTRON
142 - NEUTRON
140 - NEUTRON
563 - NEUTRON
20 - NEUTRON
34 - NEUTRON
121 - NEUTRON
19.4 - NEUTRON
3.0 - NEUTRON
28.4 - NEUTRON
335 - NEUTRON
637 - NEUTRON
2409 - NEUTRON
-1321 - NEUTRON
531 - NEUTRON
452 - NEUTRON

GEOPHYSICAL LOG LOGS IN METERS
GEOPHYSICAL LOG LOGS IN FEET
WATER LEVEL
WATER LEVEL NOT SHOWN ABOVE WATER LEVEL

LIN. 13R1
110/20E-13R1

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WELL LOG PROCESSING SYSTEM

NAME OF WELL: TED OPA
DATE LOGGED: 28/31/77
STATE: WASHINGTON
COUNTY: YAKIMA
LOCATION: 11N/21E-06L1
SURFACE ELEVATION: 1210
TOTAL DEPTH LOGGED: 1220
DEPTH TO WATER LEVEL: 291
CASING & LINERS:

LEGEND
LOG TITLES
GO - NATURAL LOG
NG - GRAB LOG
NN - NATURAL LOG
NATG - NATURAL LOG
FMTR - FLUID RESISTIVITY
SLP - SPONTANEOUS POTENTIAL
FT - FLUID RESISTIVITY
FR - FLUID RESISTIVITY
SIC - SLIC

DENSITY (KG/CC) INCREASES
POROSITY (NA LOG) INCREASES
WATER LEVEL
NOTE: SCALE MAY CHANGE ABOVE WATER LEVEL

11N/21E-06L1

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WELL LOG PROCESSING SYSTEM

NAME OF WELL T. E. DALL
DATE LOGGED 8/11/79
STATE WASHINGTON
COUNTY YAKIMA
LOCATION 11N/21E-06Q1
SURFACE ELEVATION 1238
TOTAL DEPTH LOGGED 1200
DEPTH TO WATER LEVEL 523
CASING & LINERS
8" 700-12 700-100-10

LEGEND
LOG TITLES
GR - GAMMA RAY
AG - APPARENT GAMMA
NATG - NATURAL GAMMA
CALP - CASING LOG
FT - FORMATION TIME
FR - FORMATION RESISTIVITY
WRES - WIRELINE RESISTIVITY
SP - SPONTANEOUS POTENTIAL
DENSITY - LOG-LOG INCREASES
POROSITY - LOG-LOG INCREASES
WATER LEVEL
NOTE: SCALE MAY CHANGE ABOVE WATER LEVEL

11N/21E-06Q1

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 WELL LOG PROCESSING SYSTEM

NAME OF WELL: RANSIER
 DATE LOGGED: 03/23/88
 STATE: WASHINGTON
 COUNTY: YAKIMA
 LOCATION: N/21E-16P1
 SURFACE ELEVATION: 1275
 TOTAL DEPTH LOGGED: 1246
 DEPTH TO WATER LEVEL: 411
 CASING & LINERS: 8- 780-15 865- 945-14 1122-1281-18

LEGEND
 LOG TITLES:
 GG - GAMMA RAY
 NG - NEUTRON LOG
 NN - NEUTRON POROSITY
 NRTG - NEUTRON LOG
 CALP - CALIPER
 FT - FORMATION FACTOR
 FR - RESISTIVITY
 WRES - WELLBORE RESISTIVITY
 SP - SPONTANEOUS POTENTIAL

DENSITY (LOG-LOG) INCREASES →
 POROSITY (NN-LOG) INCREASES ←
 WATER LEVEL: - - - - -

NOTE: SCALE MAY CHANGE ABOVE WATER LEVEL.

11N/21E-16P1

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WELL LOG PROCESSING SYSTEM

NAME OF WELL	PETE HAYWARD
DATE LOGGED	04/21/77
STATE	WASHINGTON
COUNTY	YAKIMA
LOCATION	11W/21E-20N1
SURFACE ELEVATION	1100
TOTAL DEPTH LOGGED	E24
DEPTH TO WATER LEVEL	214
CASING & LINERS*	
0- 575=12 560- 600= 0	

LEGEND

LOG TITLES

DATE	---	DAY, MONTH, YEAR
CL	---	CLIMATE ZONE
IND	---	INDUSTRY OR TRADE
REG	---	REGION OR COUNTRY
PT	---	PLANT NATURE
PO	---	POSSIBILITY
TEMP	---	TEMPERATURE
SP	---	SUBSTRATE OR POTENTIAL
WATER	---	WATER QUALITY
WATER	---	WATER QUANTITY
WATER	---	WATER TYPE
WATER	---	WATER USE

DENSITY (LOG-LOG): INCREASES

POSSIBILITY (1/MY-LOG): INCREASES

WATER LEVEL

NOTE: SCALE MAY CHANGE BEHIND WATER LEVEL

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WELL LOG PROCESSING SYSTEM

NAME OF WELL JERRY SANDLIN #2
DATE LOGGED 07/17/88
STATE WASHINGTON
COUNTY YAKIMA
LOCATION 11N/21E-22G2
SURFACE ELEVATION 1275
TOTAL DEPTH LOGGED 1815
DEPTH TO WATER LEVEL 399
CASING & LINERS 8-1120-12

LEGEND
LOG TITLES
GR - GRAPHS
SC - SLOPE CORRECTION
NM - NEUTRON MEASUREMENT
SG - SLOPE CORRECTION
PT - PORE TEMPERATURE
PA - PORE PRESSURE
CALP - CALIPER
SP - SPONTANEOUS POTENTIAL
RES - RESISTIVITY
SIL - SILICA
SIC - SONIC
DENSITY (GG-LOG) INCREASES
POROSITY (NN-LOG) INCREASES
WATER LEVEL
NOTE: SCALE MAY CHANGE ABOVE WATER LEVEL

11N/21E - 22G2

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GEOLOGICAL ENGINEERING SECTION
WELL LOG PROCESSING SYSTEM

NAME OF WELL SLAGG, L.
DATE LOGGED 8/24/77
STATE WASHINGTON
COUNTY YAKIMA
LOCATION 11N/21E-34C1
SURFACE ELEVATION 1000
TOTAL DEPTH LOGGED 584
DEPTH TO WATER LEVEL 116
CASING & LINERS
Ø 589-14
WELL FINISHED 4/22/77
DRILLED TO 773 FT.

LEGEND
LOG TITLES
MG - MAGNETIC SURVEY
CG - CEMENT LOG
ME - MECHANICAL LOG
NE - NEUTRON SURVEY
FT - FLUID TEMPERATURE
FR - FLUID RESISTIVITY
CALP - CALIPER
SP - SPALL INDEX POTENTIAL
WPE - WALL RESISTIVITY
EPR - EPR METER
SHE - SHEAR

DENSITY (CG-LOG) INCREASES →
POROSITY (MN-LOG) INCREASES ←
WATER LEVEL - - - - -

NOTE: SCALE MAY CHANGE ABOVE WATER LEVEL

11N/21E-34C1

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GEOSCIENCE ENGINEERING DIVISION
WELL LOG PROCESSING SYSTEM

NAME OF WELL: HARRY DAY
DATE LOGGED: 2/11/78
STATE: WASHINGTON
COUNTY: GRAYS
LOCATION: 10N/2 E 36K1
SURFACE ELEVATION: 990
TOTAL DEPTH LOGGED: 72'
DEPTH TO WATER LEVEL: 124'
CASING & LINERS:
2" 400-14 400' 5" 8-12 510' 7000' 6

LEGEND
LOG TITLES
MG - MEAN GAMMA
GR - GRAMMA
NE - NEUTRON LOG
NR - NEUTRON LOG
FR - RESISTIVITY
CALP - CALIBRATION
POT - POTENTIAL
WAT - WATER LEVEL
DATE - DATE
SNC - SONG

DENSITY (GG-LOG) INCREASES
POROSITY (NN-LOG) INCREASES
WATER LEVEL
WATER SCALE MAY CHANGE ABOVE WATER LEVEL

11N/21E - 36K1

WASHINGTON STATE
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GEOLOGICAL ENGINEERING SECTION
WELL LOG PROCESSING SYSTEM

NAME OF WELL: BILL EVANS
DATE LOGGED: 08/27/79
STATE: WASHINGTON
COUNTY: YAKIMA
LOCATION: 11N/22E-26R1
SURFACE ELEVATION: 1290
TOTAL DEPTH LOGGED: 1532
DEPTH TO WATER LEVEL: 689
CASING & LINERS:
Ø = 620=15

LEGEND
LOG TITLES
GC - GAMMA RAY
NG - NEUTRON LOG
NN - NEUTRON LOG
NATG - NEUTRON LOG
FMTR - FLUID RESISTIVITY
CALP - CALIPER LOG
FT - FLUID TEMPERATURE
FR - FLUID RESISTIVITY
WRES - WATER RESISTIVITY
SP - SPONTANEOUS POTENTIAL
NOTE: SCALE MAY CHANGE ABOVE WATER LEVEL

11N/22E-26R1

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GEOLOGICAL ENGINEERING SECTION
WELL LOG PROCESSING SYSTEM

NAME OF WELL: ROME FARMS
DATE LOGGED: 10/15/79
STATE: WASHINGTON
COUNTY: YAKIMA
LOCATION: 11N/22E-29N1
SURFACE ELEVATION: 1132
TOTAL DEPTH LOGGED: 1442
DEPTH TO WATER LEVEL: 366
CASING & LINERS: 8- 191=18 203- 478=14 548- 958=18
PREVIOUS LOGGINGS: 4/22/77, 8/23/79.

LEGEND
LOG TITLES
GG - GRAMMEL GROUNDWATER
NG - NORTHERN GROUNDWATER
NN - NORTHERN NORTHERN
NATG - NORTHERN NATURAL GAS
FHTR - FINE GRAINED TUFF
CALP - CALIFORNIA LITHOLOGY
FT - FINE TUFF
FR - FINE GRAINED
WRES - WATER RESISTANCE
SP - SPALLS
DENSITY (GG-LOG) INCREASES
POROSITY (NN-LOG) INCREASES
WATER LEVEL
NOTE: SCALE WPT CHANGE ABOVE WATER LEVEL

11N/22E-29N1
11N/22E - 29N1

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GEOLOGICAL ENGINEERING SECTION
WELL LOG PROCESSING SYSTEM

NAME OF WELL: SHELTON, C.L.
DATE LOGGED: 05/06/73
STATE: WASHINGTON
COUNTY: YAKIMA
LOCATION: 12N/16E-12N1
SURFACE ELEVATION: 1800
TOTAL DEPTH LOGGED: 863
DEPTH TO WATER LEVEL: 250
CASING & LINERS: 8" 100-12

LEGEND
LOG TITLES
GG - GRAY GRANITE
NG - NATURAL GAS
NN - NATURAL GAS
NATG - NATURAL GAS
FATR - FINE TEXTURED
CALP - CALP
FT - FINE TEXTURED
WRES - WRES
SP - SP

DENSITY (GG-LOG) INCREASES
POROSITY (NN-LOG) INCREASES
WATER LEVEL
NOTE: SCALE MAY CHANGE ABOVE WATER LEVEL

12N/16E-12N1

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GEOLOGICAL ENGINEERING SECTION
WELL LOG PROCESSING SYSTEM

NAME OF WELL	WHITE, MIAMI
DATE LOGGED	11/01/77
STATE	WASHINGTON
COUNTY	YAKIMA
LOCATION	12N/16E-15E1
SURFACE ELEVATION	1886
TOTAL DEPTH LOGGED	587
DEPTH TO WATER LEVEL	138
CASING & LINERS	

LEGEND

LOG TITLES

- DATE - DATE LOGGED
- GG - GAMMA LOG
- NG - NEUTRON LOG
- NN - NEUTRON LOG
- NATG - NATURAL GAMMA LOG
- CALP - CALIPER LOG
- FT - FLUID TEMPERATURE
- FR - FLUID RESISTIVITY
- WRES - WATER RESISTIVITY
- SP - SPONTANEOUS POTENTIAL
- WRES - WATER RESISTIVITY
- WRES - WATER RESISTIVITY
- WRES - WATER RESISTIVITY

DENSITY (LOG-LOG) INCREASES →

PERMEABILITY (LOG-LOG) INCREASES ←

WATER LEVEL - - - - -

NOTE: SCALE MAY CHANGE ABOVE WATER LEVEL

12N/16E-15E1

WASHINGTON STATE UNIVERSITY
COLLEGE OF ENGINEERING
GEOLOGICAL ENGINEERING SECTION
WELL LOG PROCESSING SYSTEM

NAME OF WELL: MEYER, CHARLES
DATE LOGGED: 06/08/73
STATE: WASHINGTON
COUNTY: YAKIMA
LOCATION: 12N/16E-18A1
SURFACE ELEVATION: 2140
TOTAL DEPTH LOGGED: 356
DEPTH TO WATER LEVEL: 2
CASING & LINERS:

LEGEND
LOG TITLES
GG - GEOPHYSICAL CORRELATION
NG - NEUTRON LOG
NN - NEUTRON LOG
NATC - NEUTRON LOG
FMTR - FLUID LOG
CALP - CALIPER LOG
FT - FLUID LOG
WRES - WELL RESISTIVITY
SP - SONIC LOG
DENSITY (GG-LOG) INCREASES
POROSITY (NN-LOG) INCREASES
WATER LEVEL
NOTE: SCALE MAY CHANGE ABOVE WATER LEVEL

12 N/16 E-18 A1

WASHINGTON STATE
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GEOLOGICAL ENGINEERING SECTION
WELL LOG PROCESSING SYSTEM

NAME OF WELL GILBERT, CRAIG
DATE LOGGED 12/84/74
STATE WASHINGTON
COUNTY YAKIMA
LOCATION 12N/17E-07E1
SURFACE ELEVATION 1784
TOTAL DEPTH LOGGED 631
DEPTH TO WATER LEVEL 64
CASING & LINERS
508-10
WELL CONTAINED OIL

LEGEND

LOG TITLES

GG - GRAININESS
NG - NEUTRON
NN - NEUTRON
NATG - NEUTRON
CALP - CALIPER
FT - FORMATION
FR - FRACTURE
WRES - WIRELINE
SP - SPONTANEOUS POTENTIAL

DENSITY (OG-LOG) INCREASES
POROSITY (NA-LOG) INCREASES
WATER LEVEL

NOTE: SCALE MAY CHANGE ABOVE WATER LEVEL

12N/17E-07E1

WASHINGTON STATE
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GEOLOGICAL ENGINEERING SECTION
WELL LOG PROCESSING SYSTEM

NAME OF WELL: BATES, K.P.
DATE LOGGED: 8/3/80/77
STATE: WASHINGTON
COUNTY: YAKIMA
LOCATION: 12N/17E-07M1
SURFACE ELEVATION: 1520
TOTAL DEPTH LOGGED: 661
DEPTH TO WATER LEVEL: 140
CRISING & L: 1:ERS
B- 33-12 245- 205- 8
WATC LOG FROM FIRST LOGGING - 12/5/74

LEGEND
LOG TITLES
NATG - NATURAL GRADIENT
CALP - CALIBRATION LOG
FT - FLUID TEMPERATURE
FR - FLUID RESISTIVITY
WRES - WATER RESISTIVITY
SP - SPONTANEOUS POTENTIAL
P - POROSITY
D - DENSITY
W - WATER LEVEL
NOTE: SCALE MAY CHANGE ABOVE WATER LEVEL.

DENSITY (LOG-LOG) INCREASES
POROSITY (100-LOG) INCREASES
WATER LEVEL

12N/17E - 07M1

WASHINGTON STATE
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GEOLOGICAL ENGINEERING SECTION
WELL LOG PROCESSING SYSTEM

NAME OF WELL STAN STEPIENSKI
DATE LOGGED 8/3/84/77
STATE WASHINGTON
COUNTY YAKIMA
LOCATION 12N/19E-27H1
SURFACE ELEVATION 1128
TOTAL DEPTH LOGGED 558
DEPTH TO WATER LEVEL 295
CASING & LINERS
8-278-10 200-300-8 873-973-8
TOTAL DRILLED DEPTH IS 1133 FT.

LEGEND
LOG TITLES
NR -- NEUTRON LOG
GG -- GAMMA LOG
NN -- NEUTRON POROSITY
NR -- NEUTRON LOG
FT -- FLUID DENSITY
FR -- FORMATION RESISTIVITY
SP -- SPONTANEOUS POTENTIAL
SL -- SONIC LOG
DENSITY (GG-LOG) INCREASES →
POROSITY (NN-LOG) INCREASES ←
WATER LEVEL ----
NOTE: SCALE MAY CHANGE ABOVE WATER LEVEL

12N/19E-27H1

WASHINGTON STATE
UNIVERSITY
COLLEGE OF ENGINEERING
GEOLOGICAL ENGINEERING SECTION
WELL LOG PROCESSING SYSTEM

NAME OF WELL: SUNNYSIDE DAM
DATE LOGGED: 01/18/78
STATE: WASHINGTON
COUNTY: YAKIMA
LOCATION: 12N/19E-28J1
SURFACE ELEVATION: 928
TOTAL DEPTH LOGGED: 308
DEPTH TO WATER LEVEL: 29
CASING & LINERS: 8" 130# 8

LEGEND
LOG TITLES
GG - GAMMA RAY
NN - NEUTRON POROSITY
CALP - CALIPER
FT - FORMATION TRANSMITTANCE
FR - FORMATION RESISTIVITY
WRES - WELL RESISTIVITY
SP - SPONTANEOUS POTENTIAL
SWP - WELL RESISTIVITY
FATH - FLUX METER
SWP - SWP

DENSITY (GG-LOG) INCREASES →
POROSITY (NN-LOG) INCREASES ←
WATER LEVEL - - - - -
NOTE: SCALE MAY CHANGE ABOVE WATER LEVEL.

12N/19E-28J1

WASHINGTON STATE
UNIVERSITY
COLLEGE OF ENGINEERING
GEOLOGICAL ENGINEERING SECTION
WELL LOG PROCESSING SYSTEM

NAME OF WELL S CHARRON
DATE LOGGED 10/31/77
STATE WASHINGTON
COUNTY TACOMA
LOCATION 12N/20E-13Q1
SURFACE ELEVATION 1320
TOTAL DEPTH LOGGED 1235
DEPTH TO WATER LEVEL 169
CASING & LINERS
500-16 500-052-10

LEGEND
LOG TITLES
GR - GAMMA RAY
NG - NEUTRON LOG
NN - NEUTRON NEUTRON
NATG - NATURAL GAMMA TOTAL
CRIP - CEMENTATION RATIO INDEX
FT - FORMATION TIME
FR - FORMATION RESISTIVITY
MRES - MICRO RESISTIVITY
SP - SPONTANEOUS POTENTIAL
WATER LEVEL
NOTE: SCALE 10% CHANGE ABOVE WATER LEVEL

12N/20E-13Q1

NAME OF WELL	WILBUR LOGAN
DATE LOGGED	02/10/73
STATE	WASHINGTON
COUNTY	YAKIMA
LOCATION	12N/20E-27N1
SURFACE ELEVATION	1260
TOTAL DEPTH LOGGED	1297
DEPTH TO WATER LEVEL	215
CASING & LINERS*	
0- 790=10	

WATG	-	NATURAL GAMMA
CG	-	GAMMA GAMMA
HN	-	NEUTRON NEUTRON
NG	-	NEUTRON GAMMA
FT	-	FLUID TEMPERATURE
FR	-	FLUID RESISTIVITY
CRUP	-	CRAUTER
SP	-	SPIRITUAL POTENTIAL
WRES	-	WELL RESISTIVITY
FMTR	-	FLOW METER
SONIC	-	SONIC

DENSITY (GG-LOG) INCREASES ———
 POROSITY (NM-LOG) INCREASES ← ———
 WATER LEVEL - - - - -

NOTE: SCALE MAY CHANGE ABOVE WATER LEVEL

12N/20E-27N1

12N/20E - 27NI

WASHINGTON STATE
UNIVERSITY
COLLEGE OF ENGINEERING
GEOLOGICAL ENGINEERING SECTION
WELL LOG PROCESSING SYSTEM

NAME OF WELL MARVIN ESTEE
DATE LOGGED 09/22/77
STATE WASHINGTON
COUNTY YAKIMA
LOCATION 12N/20E-34N1
SURFACE ELEVATION 1160
TOTAL DEPTH LOGGED 900
DEPTH TO WATER LEVEL 100
CASING & LINERS:
107-28 167- 528-16 720- 869- 0

LEGEND
LOG TITLES
NG - NEUTRON GAMMA
NN - NEUTRON NEUTRON
NATG - NEUTRON ATTENUATION TIME GAMMA
FT - FORMATION TIME
FR - FORMATION RESISTANCE
CALP - CASING LOG
SP - SPONTANEOUS POTENTIAL
WTR - WATER RESISTIVITY
FTR - FLUID RESISTIVITY
SNTC - SONIC
DENSITY (GG-LOG) INCREASES
POROSITY (NN-LOG) INCREASES
WATER LEVEL
NOTE: SCALE MAY CHANGE ABOVE WATER LEVEL

12N/20E - 34N1

WASHINGTON STATE
UNIVERSITY
COLLEGE OF ENGINEERING
GEOLOGICAL ENGINEERING SECTION
WELL LOG PROCESSING SYSTEM

NAME OF WELL: M. ESTES
DATE LOGGED: 03/21/78
STATE: WASHINGTON
COUNTY: YAKIMA
LOCATION: 12N-20E-34N2
SURFACE ELEVATION: 1150
TOTAL DEPTH LOGGED: 1429
DEPTH TO WATER LEVEL: 166
CASING & LINERS:
2" 187-18 187-524-16 490-640-12
720-083-8

LEGEND
LOG TYPES

GR: GAMMA RAY
R: RESISTIVITY
NN: NEUTRON LOG
NATG: NATURAL GAMMA
CALP: CALIBRATION
FR: FRACTURE
WRES: WATER RESISTIVITY
SP: SPONTANEOUS POTENTIAL

12N/20E-34N2

WASHINGTON STATE UNIVERSITY

COLLEGE OF ENGINEERING

GEOLOGICAL ENGINEERING SECTION
WELL LOG PROCESSING SYSTEM

NAME OF WELL CHEYNE ROAD (10NR)
DATE LOGGED 03/25/88
STATE WASHINGTON
COUNTY YAKIMA
LOCALITY 12N/20E-36P1
SURFACE ELEVATION 1248
TOTAL DEPTH LOGGED 1350
DEPTH TO WATER LEVEL 356
CASING & LINERS
415-14 415-665-16 665-738-14

LEGEND
LOG TITLES
GR - GAMMA RAY
SI - SONIC
DT - DENSITY
NG - NEUTRON
NN - NEUTRON
NATG - NEUTRON
CALP - CALIPER
FT - FORMATION TEMPERATURE
FR - FRACTURE
WRES - WIRELINE RESISTANCE
SP - SPONTANEOUS POTENTIAL
POT - PORE PRESSURE
RES - RESISTIVITY
SMT - SLOPE
SMT - SLOPE
DENSITY (GR-LOG) INCREASES
POROSITY (NN-LOG) INCREASES
WATER LEVEL
NOTE: SCALE MAY VARY ABOVE WATER LEVEL

12N/20E-36 P1

WASHINGTON STATE
UNIVERSITY
COLLEGE OF ENGINEERING
GEOLOGICAL ENGINEERING SECTION
WELL LOG PROCESSING SYSTEM

NAME OF WELL: SIMON MARTINEZ
DATE LOGGED: 05/31/78
STATE: WASHINGTON
COUNTY: YAKIMA
LOCATION: 12N/21E-17L1
SURFACE ELEVATION: 1588
TOTAL DEPTH LOGGED: 1563
DEPTH TO WATER LEVEL: 6
CASING & LINERS: 8" 23-28 4" 000-16 705-1563+12
CASING IS PERFORATED BELOW 961 FT

LEGEND
LOG TITLES
DATE: DATE LOGGED
GG: GEOPHYSICAL LOG
NC: NEUTRON LOG
NN: NEUTRON LOG
FT: FLUID TEMPERATURE
NATG: NATURAL GAMMA
WRES: WIRE RESISTIVITY
SP: SPONTANEOUS POTENTIAL
RES: RESISTIVITY
DENS: DENSITY
NOTE: SCALE WILL CHANGE ABOVE WATER LEVEL

DENSITY (GG-LOG) INCREASES →
RESISTIVITY (NN-LOG) INCREASES ←
WATER LEVEL: - - - - -

12N/21E-17L1
12N/21E - 17 L1

WASHINGTON STATE
UNIVERSITY
COLLEGE OF ENGINEERING
GEOLOGICAL ENGINEERING SECTION
WELL LOG PROCESSING SYSTEM

NAME OF WELL: O. MARTINEZ
DATE LOGGED: 01/19/75
STATE: WASHINGTON
COUNTY: YAKIMA
LOCATION: 12N/21E-2001
SURFACE ELEVATION: 1448
TOTAL DEPTH LOGGED: 475
DEPTH TO WATER LEVEL: 255
CASING & LINERS:
435-12

LEGEND
LOG TITLES
GG - Gamma Ray
NG - Neutron Porosity
NN - Neutron Log
NRTG - Neutron Log
FT - Fluid Temperature
FR - Fluid Resistivity
SP - Spontaneous Potential
CALP - Caliper
WRES - Well Resistivity
PRES - Fluid Resistivity
SOLC - Sonic
DENSITY (GG-LOG) INCREASES
POROSITY (NN-LOG) INCREASES
WATER LEVEL
NOTE: SCALE MAY CHANGE FROM WATER LEVEL

12N/21E-2001

WASHINGTON STATE
UNIVERSITY
COLLEGE OF ENGINEERING
GEOLOGICAL ENGINEERING SECTION
WELL LOG PROCESSING SYSTEM

NAME OF WELL P. GRISWOLD
DATE LOGGED 02/13/72
STATE WASHINGTON
COUNTY TROTT
LOCATION 12N/21E-20P1
SURFACE ELEVATION 1420
TOTAL DEPTH LOGGED 1031
DEPTH TO WATER LEVEL 196
CASING & LINERS:
B- 490-12 490-020-10 020-040-0

LEGEND
LOG TITLES
GG - GRISWOLD
NG - NORTH GARDEN
NN - NORTH NORTON
PP - PULLEY
SS - SOUTHERN
TT - TITUS
UU - ULLMAN
VV - VANDERBILT
WW - WILSON
XX - WILSON
YY - WILSON
ZZ - WILSON

DENSITY (GG-LOG) INCREASES
POROSITY (NN-LOG) INCREASES
WATER LEVEL

NOTE: SCALE MAY CHANGE ABOVE WATER LEVEL.

12N/21E-20P1

12N/21E-20P1

12N/22E-21R1

WASHINGTON STATE
UNIVERSITY
COLLEGE OF ENGINEERING
GEOLOGICAL ENGINEERING SECTION
WELL LOG PROCESSING SYSTEM

NAME OF WELL S. CHANGOLA
DATE LOGGED 02/14/77
STATE WASHINGTON
COUNTY YAKIMA
LOCATION 12N/22E-29B1
SURFACE ELEVATION 1700
TOTAL DEPTH LOGGED 1411
DEPTH TO WATER LEVEL 252
CASING & LINERS
Ø 402=16 305-515=12 505-730=10

SECOND LOGGING

LEGEND

- LOG TITLES
- GG - GRAMM-GROSS
 - NG - NEUTRON LOG
 - NN - NEUTRON LOG
 - NATG - NATURAL GAMMA
 - CRLP - CALIPER
 - FT - FLUID TEMPERATURE
 - FR - FLUID RESISTIVITY
 - WRES - WATER RESISTIVITY
 - SP - SPONTANEOUS POTENTIAL
 - FL - FLUID LOG
 - DMC - DENSITY

DENSITY (GG-LOG) INCREASES →
POROSITY (NN-LOG) INCREASES ←
WATER LEVEL -----

NOTE: SCALE MAY CHANGE ABOVE WATER LEVEL

12N/22E-29B1

WASHINGTON STATE
UNIVERSITY
COLLEGE OF ENGINEERING
GEOLOGICAL ENGINEERING SECTION
WELL LOG PROCESSING SYSTEM

NAME OF WELL BLACKROCK #1 (DNV)
DATE LOGGED 09/13/88
STATE WASHINGTON
COUNTY YAKIMA
LOCATION 12N/23E-16J1
SURFACE ELEVATION 1400
TOTAL DEPTH LOGGED 1151
DEPTH TO WATER LEVEL 457
CASING & LINERS
0- 90-18 90- 683-16

LEGEND
LOG TITLES
GR - GRAPHER
SP - SPONTANEOUS POTENTIAL
FT - FORMATION THICKNESS
FR - FORMATION RESISTIVITY
FMR - FORMATION MICRORESISTIVITY
WRES - WIRELINE RESISTIVITY
NATG - NEUTRON POROSITY
CALP - CALIPER
WATER LEVEL
NOTE: SCALE MAY CHANGE ABOVE WATER LEVEL

12N/23E-16J1

12N/23E-16J1

12N/23E-19A1

WASHINGTON STATE
UNIVERSITY
COLLEGE OF ENGINEERING
GEOLOGICAL ENGINEERING SECTION
WELL LOG PROCESSING SYSTEM

NAME OF WELL DOE C-6
DATE LOGGED 8/2/22/78
STATE WASHINGTON
COUNTY YAKIMA
LOCATION 13N/17E-28B1
SURFACE ELEVATION 1578
TOTAL DEPTH LOGGED 562
DEPTH TO WATER LEVEL 96
CASING & LINERS

LEGEND
LOG TITLES
GR - GRAY SCALE
GG - GAMMA RAY
NM - NEUTRON MODERATOR
NG - NEUTRON GAMMA
RF - FLUID RESISTIVITY
FI - FLUID RESISTIVITY
CALP - CALIPER
SP - SPONTANEOUS POTENTIAL
WEL - WELL RESISTIVITY
FMS - FLUID METER
SNC - SONIC

DENSITY (GG-LOG) INCREASES
POROSITY (NM-LOG) INCREASES
WATER LEVEL
NOTE: SCALE MAY CHANGE ABOVE WATER LEVEL

13N/17E - 28B1

WASHINGTON STATE
UNIVERSITY
COLLEGE OF ENGINEERING
GEOLOGICAL ENGINEERING SECTION
WELL LOG PROCESSING SYSTEM

NAME OF WELL: MULL RANCHES INC.
DATE LOGGED: 23/12/88
STATE: WASHINGTON
COUNTY: YAKIMA
LOCATION: 13N/18E-31P1
SURFACE ELEVATION: 1350
TOTAL DEPTH LOGGED: 1160
DEPTH TO WATER LEVEL: 90
CASING & LINERS:

HOLE FILLED WITH MUD.

LEGEND

LOG TITLES

- GR - GRAMM
- NG - NEUTRON
- NN - NEUTRON
- NATG - NEUTRON
- CALP - CALIPER
- WRES - WIRELINE
- SP - SPONTANEOUS POTENTIAL

DENSITY (LOG-LOG) INCREASES →
POROSITY (NN-LOG) INCREASES ←
WATER LEVEL: - - - - -

NOTE: SCALE 100' CHANGE ABOVE WATER LEVEL.

13N/18E-31P1

13N/18E-31P1

WASHINGTON STATE
UNIVERSITY
COLLEGE OF ENGINEERING
GEOLOGICAL ENGINEERING SECTION
WELL LOG PROCESSING SYSTEM

NAME OF WELL J. C. RIEBE
DATE LOGGED 08/05/78
STATE WASHINGTON
COUNTY SPOKANE
LOCATION 13N/20E-18N1
SURFACE ELEVATION 1700
TOTAL DEPTH LOGGED 960
DEPTH TO WATER LEVEL 569
CASING & LIFTERS:
0-18-14 0-485-10 793-897-0
CASING PERFORMED FROM 475-485, 857-897
DRILLED TO 1203 FT AFTER 6/8/78

LEGEND

LOG TITLES

- GG - GRAY GRASS
- NG - NATURAL GAS
- NN - NATURAL GAS
- NATG - NATURAL GAS
- FMTR - FINE MEDIUM TUFF
- CALP - CALP
- FT - FINE TUFF
- FR - FINE TUFF
- WRES - WRES
- SP - SP

DENSITY (GG-LOG) INCREASES →
POROSITY (NN-LOG) INCREASES ←
WATER LEVEL - - - - -

NOTE: SCALE MAY VARY ABOVE WATER LEVEL

13N/20E - 18N1

13N/20E-19N1

WASHINGTON STATE
UNIVERSITY
COLLEGE OF ENGINEERING
GEOLOGICAL ENGINEERING SECTION
WELL LOG PROCESSING SYSTEM

NAME OF WELL BRUCE COOMBS #2
DATE LOGGED 8/3/11/88
STATE WASHINGTON
COUNTY YAKIMA
LOCATION 13N/20E-33M1
SURFACE ELEVATION 1345
TOTAL DEPTH LOGGED 1454
DEPTH TO WATER LEVEL 173
CASING & LINERS
8" 492' 0" 765-1170" 6"

LEGEND

LOG TITLES

GG - GAMMA RAY
NG - NEUTRON LOG
NN - NEUTRON LOG
NATG - NATURAL GAMMA
FI - FLUORESCENCE
FMTR - FORMATION RESISTIVITY
CALP - CALIBRATION LOG
FT - FORMATION TEMPERATURE
FR - FORMATION RESISTIVITY
WRES - WALL RESISTIVITY
SP - SONIC

DENSITY (GG-LOG) INCREASES →
POROSITY (NN-LOG) INCREASES ←
WATER LEVEL ---

NOTE: SCALE MAY CHANGE ABOVE WATER LEVEL

13N/20E-33M1

13N/20E-33M1

WASHINGTON STATE
UNIVERSITY
COLLEGE OF ENGINEERING
GEOLOGICAL ENGINEERING SECTION
WELL LOG PROCESSING SYSTEM

NAME OF WELL MARTINEZ, D. #2
DATE LOGGED 02/16/77
STATE WASHINGTON
COUNTY YAKIMA
LOCATION 13N/21E-34H1
SURFACE ELEVATION 2328
TOTAL DEPTH LOGGED 1822
DEPTH TO WATER LEVEL 766
CASING & LINERS
24-24 # 493-14 432-683-12
DRILLING COMPLETED 10/28/71

LEGEND
LOG TITLES
GC - GAMMA RAY COUNT
NG - NEUTRON LOG
NN - NEUTRON LOG
NATG - NEUTRON ABSORPTION
CALP - CALIPER
FT - FORMATION TIME
FR - FORMATION RESISTIVITY
WRES - WATER RESISTIVITY
SP - SPONTANEOUS POTENTIAL
DENS - DENSITY LOG
POROS - POROSITY LOG
WATER LEVEL - WATER LEVEL
NOTE: SCALE MAY CHANGE ABOVE WATER LEVEL

13N/21E-34H1

WASHINGTON STATE
UNIVERSITY
COLLEGE OF ENGINEERING
GEOLOGICAL ENGINEERING DEPARTMENT
WELL LOGGING SYSTEM

NAME OF WELL: WELL IN FRONT OF
DATE LOGGED: 2/14/77
STATE: WASHINGTON
COUNTY: SNOHOMISH
LOCATION: LANSING 191
SURFACE ELEVATION: 2218
TOTAL DEPTH LOGGED: 483
DEPTH TO WATER LEVEL: 105
CASING: 8" 20# E

LEGEND

LOG TITLES

GR - GRAMMA RAY
NG - NEUTRON
NATG - NATURAL GAMMA
CALP - CALIPER
FR - FORMATION RESISTIVITY
SP - SPONTANEOUS POTENTIAL
WEL - WELL LOG
WAT - WATER LEVEL

DENSITY LOG LOG IN INCHES →

POROSITY LOG LOG IN INCHES ←

WATER LEVEL

NOTE: SCALE FOR SPONGE ABOVE WATER LEVEL

14N/16E-13K1

WASHINGTON STATE
UNIVERSITY
COLLEGE OF ENGINEERING
GEOLOGICAL ENGINEERING SECTION
WELL LOG PROCESSING SYSTEM

NAME OF WELL FRANK HANFRIED
DATE LOGGED 05/27/77
STATE WASHINGTON
COUNTY YAKIMA
LOCATION 14N/17E-15N1
SURFACE ELEVATION 1955
TOTAL DEPTH LOGGED 515
DEPTH TO WATER LEVEL 392
CASING & LINERS
06-10

LEGEND

LOG TITLES

GR --- GRADIENT
NG --- NEUTRON LOG
NN --- NEUTRON LOG
NRTG --- NEUTRON LOG
CRLP --- CALIPER LOG
FT --- FLOW LOG
FR --- FLOW LOG
WRES --- WATER RESISTIVITY
SP --- SPONTANEOUS POTENTIAL
WRES --- WATER RESISTIVITY
SP --- SPONTANEOUS POTENTIAL
WRES --- WATER RESISTIVITY
SP --- SPONTANEOUS POTENTIAL

DENSITY (G/CC) INCREASES ———→
POROSITY (IN-LOG) INCREASES ———→
WATER LEVEL ———→
NOTE: SCALE 10% CHANGE ABOVE WATER LEVEL

14N/17E - 15N1

WASHINGTON STATE
UNIVERSITY
COLLEGE OF ENGINEERING
GEOLOGICAL ENGINEERING SECTION
WELL LOG PROCESSING SYSTEM

NAME OF WELL: BRUCE ALLEN
DATE LOGGED: 10/31/79
STATE: WASHINGTON
COUNTY: TAPAH
LOCATION: 14N/17E-26G1
SURFACE ELEVATION: 1740
TOTAL DEPTH LOGGED: 1002
DEPTH TO WATER LEVEL: 210
CASING & LINERS: 2- 130-16 8- 560-12 404- 921- 8

LEGEND
LOG TITLES
GO - GRAIN ORIENTATION
NG - GRAIN NODALITY
NN - GRAIN NODALITY
NATG - GRAIN NODALITY
FATH - GRAIN NODALITY
CHLP - GRAIN NODALITY
FT - GRAIN NODALITY
FR - GRAIN NODALITY
WRES - GRAIN NODALITY
SP - GRAIN NODALITY

DENSITY LOG LOG INCREASES
POSSIBILITY LOG LOG INCREASES
WATER LEVEL
NOTE: SCALE MAY CHANGE ABOVE WATER LEVEL

14N/17E - 26 G1

WASHINGTON STATE UNIVERSITY
COLLEGE OF ENGINEERING
GEOLOGICAL ENGINEERING SECTION
WELL LOG PROCESSING SYSTEM

NAME OF WELL: 7.1.1E/MORST
DATE LOGGED: 05/01/77
STATE: WASHINGTON
COUNTY: TRL/HR
LOCATION: 14N/17E-27A1
SURFACE ELEVATION: 1300
TOTAL DEPTH LOGGED: 529
DEPTH TO WATER LEVEL: 337
CASING & LINERS: 8" 28" A

LEGEND
LOG TITLES
DENSITY (LOG LOG) INCREASES
POROSITY (LOG LOG) INCREASES
WATER LEVEL
WATER LEVEL
NOTE: SCALE WILL CHANGE ABOVE WATER LEVEL.

14N/17E-27A1

WASHINGTON STATE
UNIVERSITY
COLLEGE OF ENGINEERING
GEOLOGICAL ENGINEERING SECTION
WELL LOG PROCESSING SYSTEM

NAME OF WELL HARBORE, HIGH
DATE LOGGED 24/25/78
STATE WASHINGTON
COUNTY YAKIMA
LOCATION 14N/17E-35H1
SURFACE ELEVATION 1750
TOTAL DEPTH LOGGED 350
DEPTH TO WATER LEVEL 348
CASING & LINERS
B-550-6
CEMENT AND BENTONITE SURFACE
SEAL TO 600 FT.

LEGEND

LOG TITLES

GR - GAMMA RAY
NG - NATURAL GAMMA
NN - NEUTRON POROSITY
NL - NEUTRON LOG
D - DENSITY
R - RESISTIVITY
SP - SLOPE
CP - CEMENT POROSITY
WTR - WATER LEVEL
SND - SOUND

DENSITY LOG LOG INCREASES →
POROSITY LOG LOG INCREASES ←
WATER LEVEL - - - - -

NOTE: SCALE MAY CHANGE ABOVE WATER LEVEL

14N/17E - 35 H1

WASHINGTON STATE
UNIVERSITY
COLLEGE OF ENGINEERING
GEOLOGICAL ENGINEERING SECTION
WELL LOG PROCESSING SYSTEM

NAME OF WELL W. ZIRKLE
DATE LOGGED 8/11/77
STATE WASHINGTON
COUNTY FRANKLIN
LOCATION 14N/18E-20G1
SURFACE ELEVATION 1620
TOTAL DEPTH LOGGED 1069
DEPTH TO WATER LEVEL 243
CASING & LINERS
P 738-12
CORRECTED TO 738 FT. 28 TO 50 DAYS PRIOR
TO LOGGING.

LEGEND

LOG TITLES

- CG - CALIPER
- NG - NEUTRON LOG
- NN - NEUTRON LOG
- NATG - NATURAL GAMMA RAY
- CALP - CALIPER
- FT - FORMATION TEMPERATURE
- FR - FORMATION RESISTIVITY
- WRES - WATER RESISTIVITY
- SF - SONIC

DENSITY LOG LOG INCREASES
POROSITY LOG LOG INCREASES
WATER LEVEL
NOTE: SCALE CHANGES ABOVE WATER LEVEL

14N/18E-20G1

[illegible]

14N/19E - 16N1