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GEOLOGICAL SURVEY

RECORDS OF WELLS ON RATHDRUM PRAIRIE,

BONNER AND KOOTENAI COUNTIES, NORTHERN IDAHO

By

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ILLUSTRATIONS

Figure 1. Index map of northern Idaho, showing area covered in this report.

Plate 1. Map showing locations of wells on Rathdrum Prairie, Bonner and Kootenai Counties, Idaho.

Records of Wells on Rathdrum Prairie, Bonner and Kootenai Counties, Northern Idaho

By

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INTRODUCTION

Location and Extent of Area

The region containing the water wells recorded herein lies in Tps. 50 to 54 N., Rs. 2 to 6 W., including about 20 square miles in Bonner County and about 250 square miles in Kootenai County, northern Idaho (Index Map, fig. 1). The area contains the Rathdrum Prairie and contiguous plains that extend from the Spokane River and Lake Coeur d'Alene on the south, northward to the southern part of Bonner County, and from the Washington boundary on the west eastward to Hayden and Pend Oreille Lakes.

Nature and Scope of Report

The well records were obtained during investigations in the Rathdrum Prairie of the relations of the water table to the channel conditions and regimen of the Spokane River between Coeur d'Alene Lake and the Washington Boundary and to underground percolation losses from Coeur d'Alene, Hayden, and Pend Oreille Lakes. Concurrently with the special ground-water investigations in Idaho, the United States Geological Survey is collecting records of discharge of the Spokane River and tributaries at 10 stations in eastern Washington above the mouth of the Little Spokane River, and at one station on the Spokane River at Post Falls, Idaho. Records from these stations will be summarized in a forthcoming report. The records of wells, without interpretative text, are presented here in order that the factual information may be immediately available to those concerned or interested.

For each well listed all available data other than the complete water-level record are given. Many wells in the area have been measured only one to three times. For these the complete water-level record is included. A few selected wells are measured periodically or are equipped with continuous recording gages. For these only a single representative water-level is given. A complete compilation of all water-level data will be included in a report that is now in preparation. A comprehensive report on the investigation will be prepared in the future.

History of Investigations

Investigations in the Rathdrum Prairie area were made as early as 1937 by A. M. Piper, of the Geological Survey, in conjunction with ground-water studies in the Spokane Valley, carried on in cooperation with the Washington State Department of Conservation and Development. From 1938 to the present water levels in a few wells in the area have been measured periodically by the Geological Survey. Also a few wells have been measured regularly for many years by the Washington Water Power Co. In 1943 further investigations in Rathdrum Prairie by Lyman Huff, of the Geological Survey, included geologic studies and remeasurement of the depth to water in many of the wells. Also in 1943 the U. S. Navy began regular weekly measurements of water-levels in several wells near Pend Oreille Lake in the Farragut Naval Training Center.

Beginning with the 1947 fiscal year, in response to needs of the U. S. Bureau of Reclamation for ground-water information in conjunction with the proposed Rathdrum Prairie Reclamation Project, work in the area by the Geological Survey has been on a continuing basis. The work includes the following phases:

1. Complete re-canvass and measurement of all existing wells in the area. The total number of wells canvassed is 150.

2. Enlargement of the observation-well network. Fifteen wells are being measured 4 to 52 times a year. Continuous recording gages are in operation in two additional wells. Two more recorders will be installed in 1950.

3. Releveling of all but a few isolated well sites. Leveling was controlled from U. S. Coast and Geodetic Survey bench marks, in accordance with Third-Order leveling standards. The altitudes of the land surface and of the well-measuring points at wells were accurately determined; altitude reference marks were selected or established near well sites in order to insure ready recovery of the measuring datum in case of future alteration or destruction of measuring points. Wells were located geographically by stadia traverse from section corners.

4. Areal reconnaissance of the physiographic and geologic settings of individual wells.

5. Collection of all available data on water levels and well logs.

Acknowledgments and Personnel

Topographic contour maps of a part of the area, and compilations of water-level data for eight wells on the former Farragut Naval Training Center, were made available to the Geological Survey by the U. S. Bureau

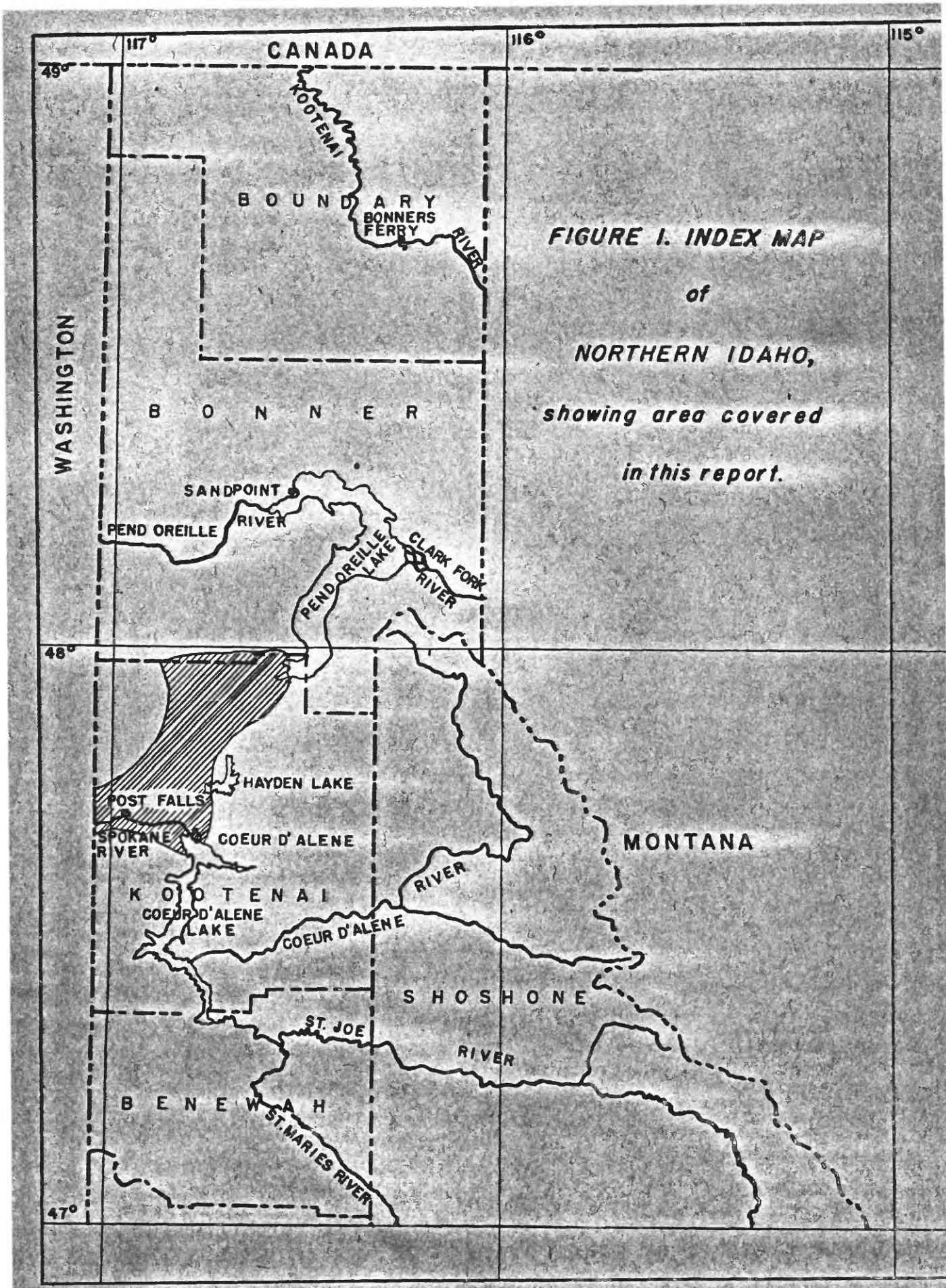

FIGURE 1. INDEX MAP of NORTHERN IDAHO, showing area covered in this report.

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of Reclamation. The Washington Water Power Company for many years has supplied the Geological Survey with records of water-level measurements made by company personnel. Inhabitants and drillers in the area have cooperated by permitting measurements of wells and by furnishing logs and other information.

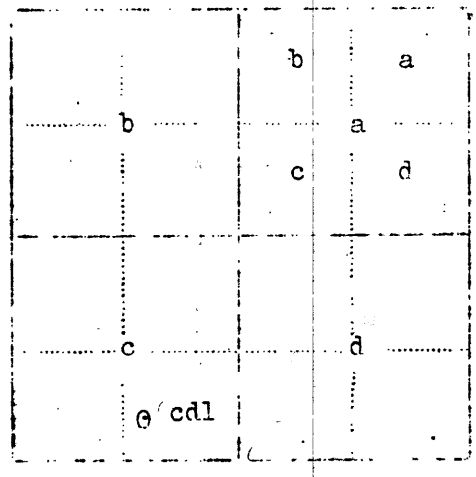
The recanvass and measurement of existing wells was made at various times since March 1947, by the authors, assisted by E. Shuter and R. W. Mower, chiefly in the summer of 1948. Leveling was done by S. W. Fader and R. J. Harding. The well-location map was compiled by R. S. Blair from Geological Survey topographic quadrangle sheets.

RECORDS OF WELLS

The following pages contain information about the location, ownership, uses, type, and depths of 150 wells, their reported or measured water levels, the pump capacities, the geologic settings and logs, and the altitude of the land surface at the well sites and of the water surface in the wells. The locations of wells are shown on the accompanying map (Pl. 1).

Well-Numbering System

Idaho well numbers indicate the location of wells within the official rectangular subdivisions of the public lands, with reference to the Boise base line and meridian. The first two segments of a number designate the township and range. The third segment gives the section number, followed by two letters and a numeral, which indicate the quarter-section, the 40-acre tract, and the serial number of the well within the tract; quarter-sections are lettered a, b, c and d in counterclockwise order, fromthe northeast quarter of each section, as in the diagram below. Within quarter-sections the 40-acre tracts are lettered in the same manner. Well 52N 4W-3cd1 is in the $SE\frac{1}{4}SW\frac{1}{4}$ sec. 3, T. 52 N., R. 4 W., and is the well first visited in that tract.



Conventions and Abbreviations

In order to conserve space and to avoid monotonous explanatory repetitions, certain conventions are followed in the well descriptions:

Altitude.-- All altitudes, unless otherwise noted, are the distances in feet above the United States Coast and Geodetic Survey mean sea-level datum of 1929 (revised), Pacific Northwest Adjustment of 1947.

Depth to water.-- Depths to water in wells are stated in feet below the land-surface datum at the well site. The statement, "Depth to water and altitude of water surface: Sept. 8, 1949, 255.9 (2,089.8)", means that on the indicated date the water level in the well was 255.9 feet below the land-surface datum at the well, and the water surface was at an altitude of 2,089.8 feet above mean sea-level datum of 1929 (revised), Pacific Northwest Adjustment of 1947.

Use of word, about.-- The qualifying word, about, preceding a well depth, depth to water, or other quantity (such as, "depth about 72 feet"), indicates that an owner's or driller's report of depth to water or depth of well could not be verified by direct measurement. In general, "about" is intended to mean "reported but not verified by measurement", or "not accurately measurable", or "not measurable". A few altitudes that were measured by a surveying aneroid barometer also are reported as "about".

Temperature.-- All temperatures given in the descriptions are in degrees Fahrenheit.

Quality of water.-- If water quality is directly stated, the Geological Survey has made chemical analyses of samples. If stated as a "reported" quality, chemical analyses were not made by the Geological Survey. Results of chemical analyses will be released in a future report.

Information omitted.-- Information that is omitted is not available or could not be obtained.

Abbreviations.-- A minimum number of abbreviations is used. N, S, W, and E have their common directional significance. "Gallons per minute" is abbreviated to gpm, and "horsepower" to HP. "Section", "Township" and "Range" are abbreviated in conventional form as sec., T., and R.

Observation wells.-- The term, observation well, is here loosely applied to all wells in the area in which the depth to water is periodically or regularly measured. In the following well records observation wells are distinguished by an asterisk (*) preceding the well number.

Land-surface datum.-- The Geological Survey reports water levels in wells in Idaho in terms of depth to water below the land-surface datum at the well site. At the time a measuring point is established for a well, the height of the measuring point above the general natural land surface at the site is measured. That surface is designated as the land-surface datum. Thereafter, the land surface may change through natural causes or by artificial excavation or fill, but the designated land-surface datum remains unchanged and water levels continue to be reported with reference to that datum.

Measuring point and reference mark.-- A measuring point is a well-defined fixed point over the well, such as the top of a casing or the base of a pump, from which measurements of the depth to water can be made conveniently. A reference mark is a mark affixed to a permanent object at or near the well. The altitude of the measuring point is determined with respect to the reference mark, permitting recovery of the datum for water-level measurements if the measuring point is disturbed or destroyed. Where practicable the reference marks also are tied in with bench marks of the Geological Survey or the U. S. Coast and Geodetic Survey. Thus, water levels can be related to the sea-level datum, and the measurement datum can be recovered even if both the measuring point and reference mark are disturbed or destroyed.

Wells in Bonner County

54N 4W-23bb1 (formerly 54/4W-23D1). NW¼NW¼ sec. 23. S. A. Manning (formerly owned by J. C. Natvig). Dug and drilled domestic well; depth about 72 feet. Original dug well was dry at depth of 55 feet; drilled from 55 to 72 feet; gasoline engine and lift pump. Situated on glacial drainage channel. Water reported hard. Principal aquifer, gravel. Altitude of land-surface datum, about 2,218 feet. Depth to water and altitude of water surface: 1941, about 57 (2,161).

54N 4W-27cb1 (formerly 54/4W-27M1). NW¼SW¼ sec. 27. Herb Finney (formerly owned by J. C. Natvig). Unused drilled well; depth, 404 feet on March 26, 1938, and 222 feet on Aug. 31, 1948; about 400 feet of 8-inch and 5 5/8-inch casing; open bottom. Situated in trench on outwash plain. Principal aquifer, gravel. Measuring point: top of 8-inch casing in pit; altitude, 2,426.4 feet (mean sea-level datum of 1929 revised); 5.0 feet below land-surface datum. Reference marks: (1) about 55 feet S. of well, in base of northeast side of 18-inch pine tree; a spike; altitude 2,431.7 feet; (2) same tree, in root on northeast side; a copper nail and washer; altitude, 2,431.1 feet. Depth to water and altitude of water surface: Aug. 31, 1948, 221.2 (2210.2).

54N 4W-35da1. NE¼SE¼ sec. 35. Cecil Rosenfelt. Stock well, drilled by owner in September 1946; depth, about 215 feet; 215 feet of 4-inch galvanized pipe casing; open bottom; gasoline engine and lift pump. Estimated yield, about 1 gpm. Reported drawdown about 10 feet, after pumping for 12 hours (i. e. well pumped out). Temperature 45°, March 15, 1947. Owner reports well was originally drilled to depth of 230 feet, but lower 15 feet of hole, which was in plastic clay, was allowed to fill in. Situated on high outwash terrace. Taps perched water in glacial outwash gravels. Principal aquifer, medium gravel from 195 to 215 feet. Measuring point: top of 4-inch casing, about level with land-surface datum. Depth to water: Sept. 16, 1947, about 205 feet.

Wells in Kootenai County

54N 2W-32cb1 (formerly 54/2W-32M1). NW¼SW¼ sec. 32; 2,230 feet north and 220 feet east of SW cor. sec. 32. W. F. Young. Dug well used for household, stock, garden, and small sawmill; depth, 21 feet; 36-inch hole with wooden cribbing to bottom; open end; 2½-HP gasoline engine and force pump. Situated on till plain. Water reported hard; temperature 42°, June 19, 1948. Log reported by owner: fine sand from surface to 10 feet; gravel and sand, with hardpan at base, from 10 to 19.5 feet; quicksand, principal source of water, from 19.5 to 21 feet. Taps local perched water in outwash. Measuring point: chiselled cross in concrete floor on south side of casing; altitude, 2,163.8 feet; 5.7 feet below land-surface datum. Depth to water and altitude of water surface: Oct. 16, 1941, 15.8 (2,153.7); June 19, 1948, 12.2 (2,157.3).

54N 2W-34cb1 (formerly 54/2W-34M1). NW¼SW¼ sec. 34. W. F. Young. Destroyed dug well; depth was about 80 feet; now caved in and completely filled. Location was on glacial moraine. Depth to water ranged between about 75 and 79 feet.

53N 4W-8dd1 (formerly 53/4W-8R1). SE¼SE¼ sec. 8. Destroyed mine shaft, dug by Oliver Zinkgraf about 1923; depth was about 525 feet. Location was on undulating till plain. According to local reports shaft was dug entirely in sand and gravel; a large boulder or bedrock was struck in the bottom; miners drilled for 5 feet in this rock and struck a porous zone that appeared to take in air. The shaft was then abandoned. Apparently water was not encountered. Altitude of land surface, about 2,595 feet. Altitude of bottom of hole, about 2,070 feet.

*53N 4W-24bb1 (formerly 53/4W-24D1; Washington Water Power Co. well 91). NW¼NW¼ sec. 24. C. T. Jurgens (formerly owned by J. C. Arnold). Stock and domestic well, dug by J. J. Satre; depth, 480 feet in 1938; 39-inch hole with timber cribbing; open end; 1-HP electric motor and force pump. Situated on terrace of outwash plain. Water moderately hard; temperature 44°, May 5, 1942. Measuring point: copper nail and washer on top of plank curb at north side of well; altitude, 2,488.5 feet (mean sea-level datum of 1929 corrected); about 2.0 feet above land-surface datum. Depth to water and altitude of water surface: Aug. 29, 1949, 452.1 (2,034.4).

53N 3W-9cd1 (formerly 53/3-9Q1; Washington Water Power Co. well 92). SE¼SW¼ sec. 9; 450 feet north and 2,900 feet west of SE cor. sec. 9. Village of Athol (formerly owned by Sam Yates). Dug public-supply well; water master reported two 8-inch casings, 2 feet apart,

placed in well and well back filled in spring 1949; depth originally 358 feet, but well may have been deepened to 380 feet; electrical turbine pump. Yield, about 65 gpm (= pump capacity ?). Situated on valley plain. Water moderately hard; temperature 44°, Nov. 4, 1949. Log obtained by Geological Survey from owner in 1938.

Description of material	Thickness (feet)	Depth (feet)
Earth and gravel	12	12
Gravel, pea-size	88	100
Boulders, small; no gravel	100	200
Boulders, gravel, and earth	115	315
Hardpan; cemented gravel	40	355
Sand, quartz; also sand, black	3	358

Measuring point: top of east one of two casings; altitude 2,384.1 feet; 0.3 foot above land-surface datum. Reference mark: chiselled cross in concrete floor at east edge of pump; altitude, 2,383.8 feet; about level with land surface. Depth to water and altitude of water surface: 1938, about 354 (about 2,030); Aug. 30, 1949, 338.0 (2,045.8).

53N 3W-15ab1 (formerly 53/3W-15A1). NW¼NE¼ sec. 15; 110 feet south and 3,550 feet east of the NW cor. sec. 15. D. R. Carsters (formerly owned by Walter Erwin Estate). Dug stock and domestic well; wooden cribbing; open end; 3-HP electric motor and force pump. Situated on outwash plain. Water reported hard. Measuring point: top of trap door at south edge; altitude, 2,442.2 feet; 4.9 feet below land-surface datum. Reference mark: chiselled cross in concrete floor, inside of well-house door; altitude, 2,448.1 feet; 1.0 foot above land-surface datum. Depth to water and altitude of water surface: Aug. 31, 1949, 364.5 (2,082.6).

53N 3W-25bc1 (formerly 53/3W-24E1). SW¼NW¼ sec. 25. P. C. Bohn. Dug stock and domestic well; depth, about 30 feet; 7-inch steel casing to bedrock at bottom; open bottom; hand-powered force pump. Situated on granite inlier in till plain. Water reported hard. Well reportedly dries up in summer. Principal aquifer, crevices reported in granite bedrock. Depth to water ranges from about 22 to 30 feet.

*53N 3W-31aa1 (formerly 53/3W-31H1). NW¼NE¼ sec. 31; 1,290 feet south and 310 feet west of NE cor. sec. 31. A. L. Famm (formerly owned by W. Swindler). Dug and drilled well, unused; depth, about 406 feet; 36-inch concrete casing to 367 feet; open 6-inch hole from

367 to 406 feet. Drilled in sand and gravel to depth of 367 feet; granite or related rock below. Situated on outwash plain. Principal aquifer, reported crevices in bedrock. Measuring point: top of concrete casing at west side; altitude, 2,384.3 feet; 0.9 foot above land-surface datum. Depth to water and altitude of water surface: Sept. 30, 1949, 351.8 (2,031.6).

53N 3W-32cb1 (formerly 53/3W-32M1). NW¼SW¼ sec. 32; 3,040 feet south, and 220 feet east of NW cor. sec. 32. Mrs. Murray Williams. Dug and drilled stock well, drilled by A. L. Washburn; depth, about 361 feet; dug hole back-filled around 6-inch steel casing; open bottom; gasoline engine and force pump. Situated in glacial drainage channel. Measuring point: top of casing at west side; altitude, 2,363.0 feet; 0.8 feet below land-surface datum. Depth to water not determined.

*53N 2W-3bc1 (Farragut Naval Training Center well 7). SW¼NW¼ sec. 3; 2,140 feet south and 80 feet east of NW cor. sec. 3. Idaho Department of Fish and Game (formerly owned by U. S. Navy). Domestic and fire-protection well, drilled by A. A. Durand and Son in 1943; depth, 331 feet; 331 feet of 18-inch steel casing, perforated from 266 to 326 feet; open bottom; 125 HP electric motor and 8-inch turbine pump; pump capacity, 750 gpm. Drawdown about 2 feet after pumping for several hours. Situated on till or outwash plain. Water somewhat hard; temperature 44°, May 1, 1949. Log, from drillers' original record, obtained by Geological Survey, October 18, 1948.

Description of material	Thickness (feet)	Depth (feet)
Gravel, medium; some lenses of sand	69	69
Boulder gravel	7	76
Gravel	11	87
Boulder gravel	8	95
Gravel, coarse	48	143
Boulder gravel	12	155
Gravel	35	190
Gravel, fine	7	197
Gravel	45	242
Gravel, coarse	19	261
Gravel and sand	9	270
Gravel	15	285
Gravel and sand	8	293
Sand, fine; water	9	302
Gravel; water	29	331

Casing perforated from 266 to 326; 20 holes per foot.
No pumping test made.

Principal aquifer, sand and gravel. Water levels influenced strongly by stage of nearby Lake Pend Oreille. Measuring point: pump base; altitude, 2,270.3 feet; 1.2 feet above land-surface datum. Reference mark: chiselled cross in concrete floor, 1 foot south of southwest corner of concrete pump base; altitude, 2,269.8 feet; 0.7 foot above land-surface datum. Depth to water and altitude of water surface: Aug. 30, 1950, 219 (2,050).

53N 2W-3cal (Farragut Naval Training Center well 8). NE¼SW¼ sec. 3; 2,080 feet north and 2,100 feet east of SW cor. sec. 3. Idaho Department of Fish and Game (formerly owned by U. S. Navy). Domestic and fire-protection well, drilled by A. A. Durand and Son in 1943; depth, about 322 feet; about 322 feet of 20- and 14-inch casing, perforated from 251 to 312 feet; open bottom; 125-HP electric motor and 8-inch turbine pump; pump capacity, about 750 gpm. Drawdown about 1 to 2 feet after pumping for several hours. Situated on till or outwash plain. Water moderately hard; temperature 45°, May 1, 1949. Log from drillers' original record, obtained by Geological Survey, Oct. 18, 1948.

Description of material	Thickness (feet)	Depth (feet)
Gravel	186	186
Boulders	10	196
Gravel	37	233
Sand	1	234
Gravel and sand	8	242
Gravel; some sand	11	253
Sand and gravel	3	256
Gravel, water-bearing	62	318
Cement gravel, water-tight	4	322

Set 20-inch casing from surface to 195 feet; 14-inch casing from 166 to 322 feet.
60 feet of perforations, 20 holes per foot, from 251 to 312 feet.

Principal aquifer, sand and gravel. Water level strongly influenced by stage of nearby Lake Pend Oreille. Measuring point: top of concrete pump base; altitude, 2,272.2 feet; 1.0 foot above land-surface datum. Reference mark: chiselled cross in top of concrete pump base, 1.0 foot southwest of pump; altitude 2,271.7 feet; 1.5 feet above land-surface datum. Depth to water and altitude of water surface: Aug. 31, 1948, about 228 (about 2,042).

53N 2W-3ddl (formerly 53/2W-2M1). SE¼SE¼ sec. 3; 1,100 feet north and 240 feet west of SE cor. sec. 3. Idaho Department of Fish and Game (formerly owned by U. S. Navy, Farragut Training Base; owned earlier by Harry Uldrich). Domestic well, drilled about 1941; depth 88 feet; 88 feet of 8-inch black-iron casing. Situated in till on bank of lake. Principal aquifer, moraine or till gravel. Water level influenced principally by stage of nearby Lake Pend Oreille. Measuring point: top of concrete floor at northwest side of casing; altitude, 2,097.5 feet; 4.3 feet below land-surface datum. Reference mark: chiselled cross in concrete floor, about 1 foot northwest of well; altitude, 2,097.5 feet; 4.3 feet below land-surface datum. Reference mark: chiselled cross in concrete floor, about 1 foot northwest of well; altitude, 2,097.5 feet; 4.3 feet below land-surface datum. Depth to water and altitude of water surface: Oct. 15, 1941, 57.8 (2,044.0); Nov. 4, 1949, 54.3 (2,047.5).

53N 2W-4aal (formerly 53/2W-4B1; Farragut Naval Training Center well 4). NE¼NE¼ sec. 4; 750 feet south and 1,200 feet west of NE cor. sec. 4. Idaho Department of Fish and Game (formerly owned by U. S. Navy). Domestic and fire-protection well, drilled by A. A. Durand and Son in 1942; depth, about 328 feet; about 320 feet of 20-inch and 16-inch casing, perforated from 240 to 320 feet; 8-foot steel drive shoe at lower end of casing; open bottom; 125-HP electric motor and 8-inch turbine pump, pump capacity about 750 gpm. Reported drawdown, 6 feet, after pumping for several hours. Situated on outwash plain. Log, from drillers' original record, obtained by Geological Survey, Oct. 18, 1948.

Description of material	Thickness (feet)	Depth (feet)
Gravel, mixed, coarse to fine, partly cemented	39	39
Gravel, partly cemented	17	56
Gravel, coarse, rounded to angular	88	144
Gravel, buckshot	70	214
Gravel, fine	27	241
Gravel, fine to coarse	14	255
Gravel, fine	73	328
Gravel, coarse, at bottom	—	328

20-inch casing from surface to 61 feet; 16-inch heavy-duty oil-well casing from surface to 320 feet; 8-foot drive shoe at bottom; casing perforated from 240 to 320 feet.

Principal aquifer, fine to coarse gravel from 240 to 320 feet. Water level strongly influenced by stage of nearby Lake Pend Oreille. Measuring point: top of 16-inch inner casing at west side; altitude,

2,268.8 feet; about level with land-surface datum. Reference mark: chiselled cross in top of concrete pump base at northwest corner; altitude, 2,269.2 feet; 0.9 foot above land-surface datum. Depth to water and altitude of water surface: Apr. 6, 1950, 220.1 (2,048.7).

53N 2W-5ad1 (formerly 53/2W-5H1; Farragut Naval Training Center well 3). SE¼NE¼ sec. 5; 2,150 feet south and 680 feet west of NE cor. sec. 5. Idaho Department of Fish and Game (formerly owned by U. S. Navy). Domestic and fire-protection well, drilled by A. A. Durand and Son in 1942; depth, about 361.6 feet; about 361 feet of 20-inch and 16-inch steel casing, perforated from 265 to 355 feet; open end; 125-HP electric motor and turbine pump, pump capacity, about 750 gpm. Drawdown, about 1 to 2 feet after pumping for several hours. Situated on outwash or till plain. Log, from drillers' original record, obtained by Geological Survey, October 18, 1948.

Description of material	Thickness (feet)	Depth (feet)
Gravel, coarse, heavy, with granite boulders	43	43
Gravel, coarse to fine, with interbedded yellow clay	19	62
Gravel, coarse, heavy	43	105
Sand and gravel, fine	33	138
Boulders, granite	4	142
Sand and gravel, fine; some clay	15	157
Gravel and fine sand, cemented	25	182
Gravel, coarse, heavy	9	191
Gravel, pure, coarse, heavy	14	205
Sand, hardpan; also gravel, coarse	8	213
Gravel and fine sand	10	223
Sand and gravel, cemented	6	229
Gravel and fine sand	14	243
Gravel and fine sand, cemented	11	254
Gravel, coarse, and fine sand	49	303
Gravel, coarse to fine	8	311
Gravel and sand, coarse	50.6	361.6

20-inch galvanized casing from surface to 6 feet: 16-inch heavy duty oil-well casing from surface to 335 feet; 6-foot 7-inch steel drive shoe at bottom. Casing perforated from 265 to 355. Well developed by pumping and surging for 32 hours. Test-pump yield was 800 gpm.

Principal aquifer, gravel (till or moraine). Water levels influenced strongly by stage of nearby Lake Pend Oreille. Measuring point: top of inner 16-inch casing; altitude, 2,290.4 feet; 0.4 foot above land-surface datum. Reference mark, chiselled cross in top of concrete pump

base at northwest corner; altitude. 2,290.8 feet above mean sea-level and 0.8 foot above land-surface datum. Depth to water and altitude of water surface: Apr. 6, 1950, 242.9 (2,047.1).

53N 2W-5ccl (formerly 53/2W-5N1). SW¼SW¼ sec. 5. Christian Homes Estate. Destroyed dug well; depth was about 357 feet. Situated on flat till plain. Depth to water was about 352.

53N 2W-5dbl (Farragut Naval Training Center well 6). NW¼SE¼ sec. 5; 2,020 feet north and 2,360 feet west of SE cor. sec. 5. Idaho Department of Fish and Game (formerly owned by U. S. Navy). Domestic and fire-protection well for naval base and technical college, drilled by A. A. Durand and Son in 1943; depth, 385 feet; 385 feet of 18-inch and 14-inch casing, perforated from 320 to 380 feet; open bottom; 125-HP electric motor and 8-inch electrical turbine pump (auxiliary Diesel engine for emergency use); pump capacity about 750 gpm. Has been test pumped at about 1,300 gpm. Drawdown, about 1 to 2 feet, after pumping for several hours at rate of about 750 gpm. Situated on outwash or till plain. Log, from drillers' original records, obtained by Geological Survey, Oct. 18, 1948.

Description of material	Thickness (feet)	Depth (feet)
Gravel and sand; boulders at top	45	45
Small boulders	3	48
Sand and gravel	9	57
Boulders and gravel	26	83
Gravel (pebbles 3 inches or less in diameter)	131	214
Sand and gravel	26	240
Cement gravel, hard, water-tight	82	322
Gravel, fine to medium, loose, heaving; water-bearing	63	385

18-inch casing from surface to 268 feet; 14-inch casing from 258 to 385 feet; casing perforated, 40 holes per foot, from 320 to 380 feet.
Installed pump with 8-inch column and 10-inch bowls, with 335 feet, of column. 225 feet of air line. Test-pumped about 1,300 gpm.

Principal aquifer, gravel from 322 to 385 feet. Water level strongly influenced by stage of nearby Lake Pend Oreille. Measuring point: top of steel pump base; altitude 2,326.2 feet; 1.6 feet above land-surface datum. Reference mark: chiselled cross in top of concrete pump base at northwest corner; altitude, 2,325.7 feet; 1.1 feet above land-surface datum. Depth to water and altitude of water surface: Aug. 31, 1948, about 277 (about 2,047.6).

53N 2W-8cc1 (formerly 53/2W-8N1; Farragut Naval Training Center well 5). SW¼SW¼ sec. 8; 510 feet north and 410 feet east of SW cor. sec. 8. Idaho Department of Fish and Game (formerly owned by U. S. Navy). Domestic supply and fire-protection well, drilled by Oliver Zinkgraf in 1943; depth probably about 440 feet; 16-inch casing to bottom; open bottom; 438 feet and 5 inches of air line for water-level measurements; 75-HP electric motor and turbine pump; capacity of pump, about 400 gpm. Situated on till plain. Water levels influenced strongly by stage of nearby Lake Pend Oreille. Measuring point: top of concrete pump base; altitude, 2,440.7 feet; 0.2 foot above land-surface datum. Reference mark: chiselled cross in top of concrete pump base at southwest corner; altitude, 2,440.7 feet; 0.2 foot above land-surface datum. Depth to water and altitude of water surface: Apr. 7, 1950, 393.8 (2,046.7).

*53N 2W-9aa1 (formerly 53/2W-9A1; Farragut Naval Training Center well 2). NE¼NE¼ sec. 9; 740 feet south and 750 feet west of NE cor. sec. 9. Idaho Department of Fish and Game (formerly owned by U. S. Navy). Domestic and fire-protection well, drilled by A. A. Durand and Son in 1942; depth, 351 feet; 345 feet of 16-inch steel casing, perforated from 280 to 345 feet; 6-foot steel drive shoe at bottom; open bottom; 125-HP electric motor and 8-inch turbine pump; pump capacity, about 750 gpm. Drawdown about 50 feet after long periods of pumping (also see tabulation of reported drawdown test below).

Date	Discharge (gpm)	Drawdown (feet)
Aug. 19	380	34.6
	500	39.3
Aug. 20	700	48
	550	32.8
	475	25.9

Situated on outwash or till plain. Log, from drillers' original records, obtained by Geological Survey, Oct. 18, 1948.

Description of material	Thickness (feet)	Depth (feet)
Topsoil and loose gravel, with large granite boulders	40	40
Gravel, cemented	47	87
Gravel, loose, coarse; also sand	142	229
Gravel and fine sand	49	278
Sand, very fine; also gravel	73	351

20-inch casing from surface to 61 feet; 16-inch heavy-duty oil-well casing from surface to 345 feet; 6-foot steel drive shoe at bottom; casing perforated from 280 to 345 feet.

Principal aquifer, fine gravel and sand. Water level influenced strongly by stage of nearby Lake Pend Oreille. Measuring point: top of casing cap; altitude, 2,291.1 feet; 0.4 foot below land-surface datum. Reference mark: chiselled cross in top of concrete pump base at northwest corner; altitude, 2,291.5 feet; 0.1 foot above land-surface datum. Depth to water and altitude of water surface: Aug. 30, 1950, 240.1 (2,051.4).

53N 2W-9bd1 (formerly 53/2S-9F1; Farragut Naval Training Center well 1). SE¼NW¼ sec. 9; 1,830 feet south and 2,100 feet east of NW cor. sec. 9. Idaho Department of Fish and Game (formerly owned by U. S. Navy). Domestic and fire-protection well, drilled by A. A. Durand and Son in 1942; depth, about 401 feet; about 395 feet of 16-inch and 14-inch steel casing, perforated from 320 to 395 feet; 6-foot drive shoe at lower end; open bottom; 150 HP electric motor and 8-inch turbine pump, pump capacity about 750 gpm. Drawdown about 8 feet after pumping for several hours. Situated on outwash or till plain. Log, from drillers' original record, obtained by Geological Survey, Oct. 18, 1948.

Description of material	Thickness (feet)	Depth (feet)
Gravel, large coarse	32	32
Gravel, coarse, with granite boulders	9	41
Gravel, coarse, rounded to angular	28	69
Gravel, fine	64	133
Granite rock [probably a large boulder]	11	144
Gravel, fine to coarse; also sand	23	167
Gravel, coarse, with granite boulders	44	211
Gravel, fine	15	226
Gravel, and fine sand	109	335
Gravel, coarse, heavy	17	352
Gravel and sand	49	401

20-inch casing from surface to 61 feet; 16-inch heavy-duty casing from surface to 295 feet; 14-inch casing from 295 feet to 395 feet; 6-foot drive shoe from 295 feet to 401 feet. Casing perforated from 320 to 395 feet.

Well was surged and developed for 30 hours.

Principal aquifer, fine to coarse gravel. Water level strongly influenced by stage of nearby Lake Pend Oreille. Measuring point: top of inner casing at west side; altitude, 2,341.2 feet; 0.6 foot above land-surface datum. Reference mark: chiselled cross in top of concrete pump base at southwest corner; altitude, 2,341.6 feet; 1.1 feet above land-surface datum. Depth to water and altitude of water surface: Apr. 10, 1950, 292.0 (2,048.6).

53N 2W-30bal. NE¼NW¼ sec. 30. S. H. Fouts. Abandoned dug mine shaft, used as domestic well; depth about 85 feet; no casing; electric motor and centrifugal pump. Formerly supplied about 70 families at Belmont with domestic water. Situated on foothill slope. Water reported hard. Derives water from crevice in granitoid rock under glacial outwash. Measuring point: top of wooden cover over well; altitude, about 2,478 feet (barometric measurement); about level with land-surface datum. Depth to water and altitude of water surface: June 19, 1948, 21.7 (about 2,456); Sept. 8, 1949, 28.4 (about 2,450).

52N 4W-2ccl (formerly 52/4W-2P1). SW¼SW¼ sec. 2; 500 feet north and 1,320 feet east of SW cor. sec. 2. Peoples Oil Co., (tenant: Glen E. Lentz). Abandoned hole, drilled about 1929 as an oil test; depth, about 1,742; 1,125 feet of 16-inch and 12½-inch steel casing; open bottom. Situated in glacial drainage channel. Log obtained from owner by Washington Water Power Company.

Description of material	Thickness (feet)	Depth (feet)
Gravel and boulders	234	234
Bedrock granite [basalt?] a/	46	280
Lime, gray	20	300
Beach rock	25	325
Lime, gray	10	335
Sand; water	10	345
Rock, hard	40	385
Shale, blue	2	387
Rock, hard	13	400
Sand; fresh water	5	405
Rock	95	500
Lime, gray	25	525
Shale, light	15	540
Rock, hard	10	550
Sand; water	2	552
Lime, light	23	575
Sand; water	25	600
Lime, hard, white	100	700
Shale, blue	10	710
Lime, gray	?	?
Not recorded	1,000 ±	1,742

a/ It is very unlikely that the drill actually encountered granite.

Measuring point: top of casing; altitude, 2,343.5 feet; 2.2 feet below land-surface datum. Depth to water and altitude of water surface: reported originally as about 325 (about 2,020.7); June 18, 1948, 254.0 (2,091.7); Sept. 8, 1949, 255.9 (2,089.8).

52N 4W-3dd1. SE¼SE¼ sec. 3; 130 feet north and 1,130 feet west of SE cor. sec. 3. Glen E. Lentz. Abandoned stock and domestic well, dug by owner; depth, 20 feet; 48-inch concrete tile casing throughout; open bottom. Located in bottom of glacial drainage channel. Water very soft; temperature, 44°, Nov. 4, 1949. Dug in gravel; "clay" at bottom of well. Taps local body of perched water. Measuring point: top of casing at north side; altitude, 2,324.6 feet; about 2.5 feet above land-surface datum. Depth to water and altitude of water surface: June 18, 1948, 5.7 (2,316.4); Sept. 8, 1949, 18.7 (2,303.4); Nov. 4, 1949, 17.8 (2,304.3).

52N 4W-3dd2. SE¼SE¼ sec. 3, 225 feet north and 1,130 feet west of SE cor. sec. 3. Glen E. Lentz. Stock and domestic well, dug by owner in Fall 1949; depth 20.7 feet; 21 feet of 16-inch concrete tile casing; open bottom; ½-HP electric motor and jet pump. Located in bottom of glacial drainage channel. Water reported soft in nearby well of same depth. Log reported by owner: clay topsoil from surface to 15 feet; gravel and boulders from 15 to 21 feet. Measuring point: top of casing at lower inside of lip, south side; altitude, about 2,324 feet; about 0.3 foot above land-surface datum. Depth to water and altitude of water surface: Nov. 4, 1949, 19.1 (about 2,302).

52N 4W-5dc1 (formerly 52/4W-5Q1). SW¼SE¼ sec. 5. Twinlow Resort (tenant: Robert Foot). Domestic well, dug in 1935 to depth of 347 feet; later drilled to depth of 365 feet by Oliver Zinkgraf; dug hole was about 48 inches in diameter, has now been back-filled around 6-inch casing; open bottom; 5 HP electric motor and force pump. Situated near shore of Fish Lake. Principal aquifer reported to be gravel at depth of 347 to 365 feet. The water level is apparently unrelated to the stage of nearby Fish Lake. Depth to water in original dug well: 1935, about 327.

52N 4W-9ab1 (formerly 52/4W-9B1). NW¼NE¼ sec. 9. Scarcello. Stock and domestic well, originally dug to 200 feet by owners, and drilled from 200 to 380 feet by Homer Washburn in 1920; 380 feet of 6-inch casing; back-filled around casing; open bottom; 5 HP electric motor and force pump. Situated in glacial drainage channel. Water somewhat hard; temperature 45°, Nov. 4, 1949. Reported dug and drilled entirely in coarse sand and gravel. Measuring point: tap hole in casing; altitude, about 2,365 feet (barometric measurement); 3.0 feet below land-surface datum. Reference point: top of 10-inch by 10-inch wooden timber, north of pump; altitude, about 2,368 feet (barometric measurement); about level with land-surface datum. Depth to water and elevations of water surface: 1920, about 350 (about 2,018); Sept. 8, 1949, 343.5 (about 2,025).

52N 4W-10aa1 (formerly 52/4W-10B1). NE¼NE¼ sec. 10; 20 feet south and 1,170 feet west of NE cor. sec. 10. E. M. Griffith. Stock and domestic well, dug; depth, 15 feet; open bottom; electric motor and lift pump. Taps local body of perched water. Situated in glacial drainage channel. Measuring point: bottom of pump base; altitude, 2,323.4 feet; 0.1 foot above land-surface datum. Reference mark: chiselled cross in concrete on east side of casing; altitude, 2,325.6 feet; 2.4 feet above land-surface datum. Depth to water and altitude of water surface: June 18, 1948, 8.5 (2,314.8); Sept. 8, 1949, 18.0 (2,305.3).

52N 4W-11cc1 (formerly 52/4W-11N1). SW¼SW¼ sec. 11; 780 feet north and 130 feet east of SW cor. sec. 11. Steve Kovatch (tenant: H. C. Bings). Stock and domestic well; originally dug by J. J. Satre to a reported depth of 324 feet, but caved in 1940; drilled out to a depth of 335 feet in October 1947 by Bear; 335 feet of 4-inch casing; open

bottom; 1-HP electric motor and force pump. Situated on rolling prairie. Reported dug and drilled entirely in sand and gravel. Principal aquifer, gravel. Measuring point: top of casing at southeast side; altitude, 2,321.6 feet; 3.3 feet below land-surface datum. Reference mark: chiselled cross in concrete floor, about 1 foot east of pump; altitude, 2,321.2 feet; 3.7 feet below land-surface datum. Depth to water and altitude of water surface: Sept. 8, 1949, 304.5 (2,020.4).

52N 4W-12cd1. SE¼SW¼ sec. 12; 710 feet north and 1,870 feet east of SW cor. sec. 12. Carsteen. Unused dug well; depth, 19.7 feet; hand-powered pitcher pump. Taps local body of perched water. Situated at mouth of ravine at edge of small pond. Measuring point: bottom of pump; altitude, 2,289.4 feet; 2.5 feet above land-surface datum. Depth to water and altitude of water surface: June 17, 1948, 1.9 (2,285.0); Sept. 8, 1949, 7.0 (2,279.9).

52N 4W-26ba1 (formerly 52/4W-26C1). NE¼NW¼ sec. 26; 260 feet south and 2,730 feet west of NE cor. sec. 26. Schmidt and Wilson. Dug stock well; depth, about 296 feet; 5-inch steel casing; windmill, 3-HP gasoline engine, and lift pump. Situated on outwash plain. Measuring point: top of wooden cover, north of pump; altitude, 2,262.0 feet; 0.9 foot above land-surface datum. Reference mark; chiselled cross in concrete floor, inside door of well house; altitude, 2,261.9 feet; 0.8 foot above land-surface datum. Depth to water and altitude of water surface: Aug. 31, 1949, about 244 (about 2,017.1).

52N 4W-28cc1. SW¼SW¼ sec. 28; 210 feet north and 150 feet east of SW cor. sec. 28. James McKim. Domestic well, drilled by A. P. Boone in July 1949; depth about 260 feet; about 260 feet of 6-inch casing; open bottom; electric motor and force pump. Situated on outwash plain. Water reported moderately hard. Driller reported entire hole drilled in gravel and boulders. Measuring point: top of casing; altitude, 2,235.1 feet; 4.4 feet below land-surface datum. Reference mark: chiselled cross in concrete floor south of pump; altitude, 2,234.9 feet; 4.6 feet below land-surface datum. Depth to water and altitude of water surface: July 1949, about 228 (about 2,212); Sept. 7, 1949, 220.4 (2,019.2).

52N 4W-31cb1. NW¼SW¼ sec. 31; 2,000 feet north and 1,300 feet east of SW cor. sec. 31. Village of Rathdrum, and Northern Pacific Railroad Co. Public supply well, drilled by A. A. Durand and Son in 1945; depth, about 268 feet; about 268 feet of 12- and 10-inch casing; 10-inch casing perforated from 180 to 200 feet; 8-inch perforated pipe liner extends from 208 to 268 feet; 40-HP electric motor and turbine pump. Well was originally equipped with 8-inch liner and 10-inch Johnson well screen; first pumped in April 1947, and failed to produce satisfactorily. The screen and liner were removed and perforations and lining were installed as noted above in January 1948. Well reportedly became plugged with sand in Nov. 1949. Yield, 255 gpm (capacity of pump);

drawdown about 5 feet, Feb. 3, 1948, after pumping for 48 hours at rate of about 220 gpm; drawdown about 6 feet after pumping for 2 additional hours at increased rate of about 255 gpm. Well is pumped from late July until following spring; at other times village supply is obtained from springs. Situated on outwash plain. Water hard. Log, from driller's original records, obtained by Geological Survey, Oct. 18, 1948.

Description of material	Thickness (feet)	Depth (feet)
Gravel	7	7
Boulders	2	9
Boulder gravel	7	16
Gravel, loose	9	25
Gravel	8	33
Boulders	7	40
Gravel	6	46
Gravel, loose	4	50
Gravel, loose, with boulders	32	82
Sand rock?	2	84
Boulder gravel	19	103
Gravel	60	163
Gravel or decomposed granite	17	180
Gravel, fine; water	17	197
Gravel, loose	8	205
Sand, cemented	5	210
Sand, cemented, and gravel	21	231
Rock; possibly decomposed granite	19	250
Granite, very hard a/	6	256
Rock, gray	8	264
Unrecorded	4	268 b/
12-inch casing from surface to 165 feet; 10-inch casing from 150 to 210 feet; 8-inch liner from 208 feet to Johnson well screen at bottom. c/		

a/ Drill may have struck bedrock either at this level or at top of overlying unit, at depth of 250 feet.

b/ Original log showed depth as 264 feet. When later measured the actual depth was found to be 268 feet.

c/ Original well did not perform satisfactorily and screen may have been too small. In January 1948 the screen was removed and 8-inch perforated pipe liner was installed from 210 feet to 268 feet; the 10-inch casing was perforated from 180 to 200 feet. The well was then test-pumped and yielded 365 gpm with a drawdown of 8 feet. This test, as reported in the driller's log, differs from the records in the files of the Village Clerk, as reported in text above.

Measuring point: top of pump foundation; altitude, 2,189.5 feet; 2.3 feet above land-surface datum. Reference mark: chiselled cross in concrete pump base southwest of pump; altitude, 2,189.5 feet; 2.3 feet above land surface. Depth to water and altitude of water surface: Feb. 3, 1948, about 182 (about 2,005); Sept. 7, 1949, 173.1 (2,014.0).

52N 4W-32ba1. NE¼NW¼ sec. 32; 220 feet south and 1,990 feet east of NW cor. sec. 32. William Singer. Stock and domestic well, drilled by A. P. Boone in February 1948; depth, about 246 feet; 246 feet of 6-inch casing; open bottom; 1½-HP electric motor and force pump. Situated on outwash plain. Water soft; temperature 47°, Nov. 4, 1949. Principal aquifer reported to be gravel from 220 to 246 feet. Measuring point: top of casing; altitude, 2,217.5 feet; 4.5 feet below land-surface datum. Reference mark: chiselled cross in concrete floor southwest of casing; altitude, 2,217.3 feet; 4.7 feet below land-surface datum. Depth to water and altitude of water surface: Feb. 1948, about 211 (about 2,011); Sept. 7, 1949, 204.3 (2,017 7).

52N 4W-32bc1 (formerly 52/4W-32E1). SW¼NW¼ sec. 32; 2,480 feet south and 310 feet east of NW cor. sec. 32. David Kater. Stock and domestic well, dug about 1920; depth, about 228 feet; 228 feet of 6-inch steel casing, with dug hole back-filled around casing; open bottom; 1 3/4-HP gasoline engine and force pump. Situated on outwash plain. Water reported soft. Principal aquifer, gravel. Reference mark: top of casing at south side; altitude, 2,211.5 feet; 5.8 feet below land-surface datum. Depth to water not determined.

52N 4W-34cc1 (formerly 52/4W-34N1). SW¼SW¼ sec. 34; 140 feet north and 270 feet east of SW cor. sec. 34. William Neustel. Stock and domestic well, drilled by William Gentry about 1907; depth, 293 feet (reported originally 303 feet); 6-inch casing to bottom; open bottom; 3-HP electric motor and force pump. Situated on outwash or till plain. Water reported hard. Principal aquifer, coarse gravel. Measuring point: tap hole in east side of casing; altitude, 2,303.4 feet; 8.2 feet below land-surface datum. Reference mark: chiselled cross in concrete floor south of well; altitude, 2,311.6 feet; about level with land-surface datum. Depth to water and altitude of water surface: July 21, 1942, 280.7 (2,030.8); Aug. 30, 1948, 280.3 (2,031.2); Sept. 8, 1949, 280.4 (2,031.1).

*52N 4W-35dc1 (formerly 52/4W-35Q1). SW¼SE¼ sec. 35; 190 feet north and 1,960 feet west of SE cor. sec. 35. J. H. Dye. Stock and domestic well, dug by J. J. Satre; depth, 306 feet; 6-inch steel casing to bottom, with dug hole back-filled around casing; open bottom; automobile engine and force pump. Situated on outwash or till plain. Water reported hard. Measuring point: ¼-inch tap hole in west side of casing; altitude, 2,302.2 feet; 12.0 feet below land surface. Reference mark: chiselled cross in concrete floor west of well; altitude, 2,314.2 feet; 0.2 foot above land-surface datum. Depth to water and altitude of water surface: Aug. 30, 1949, 296.4 (2,017.6).

52N 3W-6ad1. SE¼NE¼ sec. 6. H. C. Ramm. Stock well, dug; depth, 9.5 feet; 10- by 10-foot concrete curbing to bottom; open bottom; hand powered pitcher pump. Situated in a pothole or kettle that is reported to contain ponded water in the spring of the year. Taps local body of perched water. Measuring point: top of concrete curbing at southwest corner; altitude, about 2,315 feet (barometric measurement); 0.5 foot above land-surface datum. Depth to water and altitude of water surface: Sept. 8, 1949, 8.4 (about 2,306).

51N 6W-25da1 (formerly 51/6W-25J1). NE¼SE¼ sec. 25; 2,010 feet north and 40 feet west of SE cor. sec. 25. C. W. Beck. Stock and domestic well, dug; depth about 175 feet; 163.5 feet of 6-inch steel casing from 11.5 feet below surface to depth of 175.5 feet, with dug hole back-filled around casing; open bottom; 3-HP electric motor and force pump. Situated on outwash plain. Principal aquifer, outwash gravel. Measuring point: top of casing; altitude, 2,096.0 feet; 11.5 feet below land-surface datum. Reference mark: spike in east side of power pole, 12 feet east and 14 feet north of well; altitude 2,109.0 feet; 1.4 feet above land surface. Depth to water and altitude of water surface: May 28, 1948, 113.6 (1,989.0), Sept. 6, 1949, 118.0 (1,989.6).

51N 5W-19ac1. SW¼NE¼ sec. 19; 340 feet north and 450 feet east of center of sec. 9. Harry Just. Domestic well, drilled by George Wiedeman in 1947; depth, about 200 feet; 200 feet of 8-inch casing; open bottom; 2-HP electric motor and turbine pump. Situated on outwash terrace. Principal aquifer, outwash gravel. Measuring point: top of casing; altitude, 2,163.6 feet; 7.9 feet below land-surface datum. Reference point, chiselled cross in top of northwest corner of concrete curbing; altitude, 2,172.0 feet; 0.5 foot above land-surface datum. Depth to water and altitude of water surface: May 28, 1948, about 177 (about 1,995); Sept. 6, 1949, 182.9 (1,988.6).

51N 5W-19ac2. SW¼NE¼ sec. 19; 460 feet north and 1,020 feet east of center of sec. 19. C. J. Fritz. Stock and domestic well, dug and drilled; depth, about 227 feet; 227 feet of black-iron casing; open bottom; gasoline engine and force pump. Originally well was dug about 198 feet to water, though there was some perched water at about 165 feet. Well later went dry and caved in; drilled to present depth by Oliver Zinkgraf in 1946. Situated near brink of outwash terrace. Measuring point: ¼-inch tap hole in casing; altitude, 2,167.1 feet; 5.2 feet below land-surface datum. Reference mark: chiselled cross in top of concrete well curbing at east side, altitude, 2,172.6 feet; 0.3 foot above land-surface datum. Depth to water and altitude of water surface: Sept. 2, 1948, 175.7 (1,996.6); Sept. 6, 1949, 176.9 (1,995.4).

51N 5W-19ac3. SW¼NE¼ sec. 19; 630 feet north and 1,190 feet east of the center of sec. 19. H. W. Boyden. Domestic and stock well, drilled by A. P. Boone in 1948; depth, about 235 feet; 235 feet of 6-inch casing; open bottom; electric motor and force pump. Located near brink of outwash terrace. Water reported hard. Principal aquifer, outwash gravel. Reference mark: chiselled cross in top of concrete curbing at northwest corner; altitude, 2,173.7 feet; 0.1 foot above land-surface datum. Depth to water: Fall 1949, about 205.

51N 5W-19cd1 (formerly 51/5W-19P1). SE¼SW¼ sec. 19; 2,730 feet west and 580 feet north of SE cor. sec. 19. Northern Pacific Railroad Co. Railroad supply well, dug about 1906; depth, 181.5 feet; originally a 60-inch dug hole with wooden cribbing; reconstructed in 1941 by installing 12-inch casing from depth of 5 to 155 feet, with 10-inch inner casing from 5 to 181.5 feet; well was then back-filled around the casing; equipped with pressure gage and air line to 170 feet below land surface; 5-HP electric motor and turbine pump. Situated on outwash valley plain. Log, from blueprint of well, received Nov. 21, 1949 from the Northern Pacific Railroad Co.: gravel with large boulders from 0 to 181 feet; clay from 181.0 to 181.5 feet. Measuring point: top of concrete floor west of pump; altitude, 2,125.2 feet; about level with land-surface datum. Depth to water and altitude of water surface: April 7, 1949, 143.0 (1,982.2).

51N 5W-19cd2. SE¼SW¼ sec. 19. Domestic well, drilled; depth about 165 feet; 4-inch iron casing; open bottom; 1-HP electric motor and turbine pump. Located on outwash valley plain. Water reported very hard. Reference mark: top of wooden floor at west edge of trap door; altitude, 2,128.3 feet; 0.5 foot above land-surface datum. Depth to water and altitude of water surface: April 1948, about 157 (about 1,971).

51N 5W-20dd1. SE¼SE¼ sec. 20; 100 feet north and 280 feet west of SE cor. sec. 20. East Greenacre School District. Public school, domestic, and stock well (supplies school and three families). Originally dug about 165 feet; drilled in 1940 to about 185 feet; 185 feet of 6-inch casing with dug hole back-filled around casing; open bottom; ½-HP electric motor and force pump. Situated on valley plain. Measuring point: top of casing; altitude, 2,139.0 feet; 7.7 feet below land-surface datum. Reference mark: chiselled cross in top of curbing at southeast corner; altitude 2,146.7 feet; about level with land-surface datum. Depth to water and altitude of water surface: Fall 1940, about 160 (about 1,987); Aug. 26, 1948, 149.1 (1,997.6); Sept. 6, 1949, 148.8 (1,997.9).

51N 5W-21ab1. NW¼NE¼ sec. 21; 2,980 feet north and 1,350 feet west of SE cor. sec. 21. J. E. Clawson. Stock and domestic well, drilled; depth, 197 feet; 6-inch black-iron casing; open bottom; 2-HP electric motor and force pump. Situated on outwash plain. Water reported hard. Measuring point: top of casing; altitude, 2,153.4 feet; 5.9 feet below

land-surface datum. Reference mark: chiselled cross in top of foundation at northwest corner of building over well; altitude, 2,160.2 feet; 0.9 foot above land-surface datum. Depth to water and altitude of water surface: June 12, 1948, 159.7 (1,999.6); Sept. 6, 1949, 157.7 (2,001.6).

51N 5W-21acl. SW¼NE¼ sec. 21; 2,870 feet north and 2,500 feet west of SE cor. sec. 21. J. M. Bodine. Stock and domestic well, dug and drilled; depth, about 200 feet; 200 feet of 6-inch steel casing, with dug hole back-filled around casing; open bottom; ¼-HP electric motor and force pump. Situated on outwash plain. Principal aquifer, outwash gravel. Reference mark: chiselled cross in top of concrete curbing at southeast corner; altitude, 2,159.4 feet; 0.1 foot above land-surface datum. Depth to water and altitude of water surface: 1948, about 165 (about 1,994).

51N 5W-21bcl. SW¼NW¼ sec. 21; 2,600 feet south and 130 feet east of NW cor. sec. 21. Charles Driskell. Domestic well (supplies two families), drilled; depth, about 176 feet; 176 feet of 6-inch black-iron casing; open bottom; 1-HP electric motor and force pump. Situated on valley outwash plain. Water reported hard. Reference mark: spike in power pole, 20 feet south and 150 feet west of well; altitude, 2,137.8 feet; 1.5 feet above land-surface datum. Depth to water not determined.

51N 5W-21ccl (formerly 51/5W-21N1). SW¼SW¼ sec. 21; 30 feet north and 670 feet east of SW cor. sec. 21. A. L. Smith (formerly owned by Yager). Domestic well (supplies six families), dug in 1904; depth, 178 feet in 1941 (reported originally 200 feet); 4-inch steel casing with original 36-inch hole back-filled around casing; open bottom; ½-HP electric motor and force pump. Situated on outwash valley plain. Water reported hard. Measuring point: bottom of 3- by 10-inch box supporting pump; altitude, 2,146.9 feet; 7.9 feet below land-surface datum. Reference mark: chiselled cross in concrete curb at south side of well-pit cover; altitude, 2,154.8 feet; about level with land-surface datum. Depth to water and altitude of water surface: Nov. 24, 1941, 173.6 (1,981.2).

*51N 5W-21dal (formerly 51/5W-21J1). NE¼SE¼ sec. 21; 1,570 feet north and 120 feet west of the SE cor. sec. 21. Bob Bowen (formerly owned by L. L. Goodrich). Stock and domestic well (supplies two families), dug and drilled; depth, about 190 feet; 190 feet of 4¼-inch steel casing with dug hole back-filled around casing; open bottom; electric motor and force pump. Situated on outwash valley plain. Water moderately hard. Principal aquifer, outwash gravel. Measuring point: top of 4- by 4-inch wooden pipe clamp, north side; altitude, 2,153.9 feet; 5.6 feet below land-surface datum. Reference mark: chiselled cross in top of concrete well curbing, 1 foot west of northeast corner; altitude, 2,159.5 feet; about level with land-surface datum. Depth to water and altitude of water surface: Aug. 30, 1949, 157.3 (2,002,2).

51N 5W-24aal. NE¼NE¼ sec. 24; 430 feet south and 130 feet west of NE cor. sec. 24. Charles A. Thompson. Stock and domestic well, drilled by A. P. Boone; depth, about 285 feet; 285 feet of 6-inch black-iron casing; open bottom; 3-HP electric motor and force pump. Situated on outwash valley plain. Water reported hard. Reference mark: chiselled cross in concrete pump base east of pump; altitude, 2,241.1 feet; 5.9 feet below land-surface datum. Depth to water and altitude of water surface: June 1947, about 250 (about 1,997).

51N 5W-25bc1. SW¼NW¼ sec. 25, 3,420 feet north and 30 feet east of SW cor. sec. 25. P. H. Bolsei. Stock and domestic well, drilled by A. P. Boone in May 1948; depth 270 feet; 260 feet of 6-inch black-iron casing from depth of 5 to 265 feet; open bottom; 3-HP electric motor and force pump. Situated on outwash valley plain. Water reported soft. Log, from drillers' records, received by Geological Survey Nov. 6, 1949: topsoil from 0 to 3 feet; gravel and small boulders from 3 to 370 feet. Principal aquifer, outwash gravel. Water-level fluctuations strongly influenced by irrigation. Measuring point: top of casing; altitude, 2,224.3 feet; 5.0 feet below land-surface datum. Depth to water and altitude of water surface: Spring 1948, about 235 (about 2,094); Nov. 5, 1949, 224.3 (2,005.0).

51N 5W-27ac1 (formerly 51/5W-27G1). SW¼NE¼ sec. 27; 1,820 feet south and 3,060 feet east of NW cor. sec. 27. Harold Johnson (tenant: E. W. Pick; formerly owned by Cyrus Hart). Stock and domestic well, dug by J. J. Satre; depth 238 feet; 238 feet of 32-inch concrete tile casing; open bottom; windmill, ½-HP electric motor and force pump. Situated on side slope of outwash terrace. Principal aquifer, outwash gravel. Measuring point: chiselled cross in top of concrete well curbing at west side of well; altitude, 2,223.5 feet; 0.2 foot above land-surface datum. Depth to water and altitude of water surface: when dug, about 231 (about 1,992); May 27, 1948, 226.2 (1,997.1); Sept. 7, 1949, 220.3 (2,003.2).

51N 5W-28aal (formerly 51/5W-28A1). NE¼NE¼ sec. 28; 430 feet south and 160 feet west of NE cor. sec. 28. J. J. Satre. Stock and domestic well, dug by owner in March 1916; depth, about 176 feet; 32-inch hole with wooden cribbing throughout; sandpoint and screen driven below bottom of cribbing; 1-HP electric motor and force pump. Situated on flat outwash plain. Water reported hard. Principal aquifer, outwash gravel. Reference mark: chiselled cross in top of concrete curbing, 1 foot north of southeast corner of well curbing; altitude 2,150.6 feet; about level with land-surface datum. Depth to water and altitude of water surface: Fall 1946, about 162 (about 1,989). Owner reports range of water level fluctuations is about 20 feet.

51N 5W-28ab1. NW¼NE¼ sec. 28; 160 feet south and 3,160 feet east of NW cor. sec. 28. G. C. Fish. Stock and domestic well, dug to about 175 feet and drilled to about 195 feet; 195 feet of 4-inch black-iron

casing; open bottom; electric motor and force pump. Situated on outwash valley plain. Reference mark: chiselled cross in top of concrete curbing at south side; altitude, 2,154.8 feet; 1.0 foot above land-surface datum. Depth to water and altitude of water surface not determined.

*51N 5W-28ad1 (formerly 51/5W-28H1). SE¼NE¼ sec. 28; 1,840 feet south and 140 feet west of NE cor. sec. 28. J. O. Self (formerly owned by Iverson). Stock well, dug; depth, 163 feet; 163 feet of 4-inch black-iron casing with dug hole back-filled around casing; open bottom; hand power and force pump. Situated on flat outwash plain. Principal aquifer, outwash gravel. Measuring point: ½-inch hole near top of casing at north side; altitude, 2,144.0 feet; 0.3 foot above land-surface datum. Reference mark: spike in north side of power pole, 18 feet south and 115 feet east of well; altitude, 2,144.0 feet; 1.0 foot above land-surface datum. Depth to water and altitude of water surface: Aug. 30, 1949, 142.5 (2,001.2).

51N 5W-28ba1. NE¼NW¼ sec. 28; 160 feet south and 1,580 feet east of NW cor. sec. 28. L. C. McPherson. Stock and domestic well, drilled in 1945 by Oliver Zinkgraf; depth, about 196 feet; about 196 feet of 6-inch black-iron casing; open bottom; 1½-HP electric motor and turbine pump. Situated on valley outwash plain. Water reported very hard. Owner reports well drilled entirely in gravel and boulders. Reference point: top of flooring at south edge of door to well house; altitude, 2,153.7 feet; 1.0 foot above land-surface datum. Depth to water and altitude of water surface: 1945, about 166 (about 1,987).

51N 5W-28ba2. NE¼NW¼ sec. 28; 990 feet south and 2,610 feet east of NW cor. sec. 28. J. O. Self. Domestic well, drilled in Dec. 1947; depth, about 180 feet; about 180 feet of 6-inch black-iron casing; open bottom; ½-HP electric motor and force pump. Situated on edge of outwash terrace. Principal aquifer, outwash gravel. Reference mark: chiselled cross in top of concrete curbing at northeast corner of well pit; altitude, 2,144.9 feet; about level with land-surface datum. Depth to water and altitude of water surface: 1947, about 160 to 165 (about 1,985 to 1,980).

51N 5W-29aa1 (formerly 51/5W-29G1). NE¼NE¼ sec. 29, 1,180 feet south and 1,020 feet west of NE cor. sec. 29. W. M. Fisher. Stock and domestic well, dug; depth, about 180 feet; about 180 feet of 4-inch casing, dug hole back-filled around casing; open bottom; electric motor and force pump. Situated on outwash valley plain. Water reported hard. Principal aquifer, outwash gravel. Reference mark: top of concrete platform near south edge of pump; altitude, 2,139.3 feet; about level with land-surface datum. Depth to water and altitude of water surface: Fall 1941, about 165 (about 1,974).

51N 5W-29ac1. SW¼NE¼ sec. 29; 2,570 feet south and 1,350 feet west of NE cor. sec. 29. J. L. Hambly (formerly owned by Tom Reynolds). Stock and domestic well, drilled (a former dug well at this site caved in and a new well was drilled); depth, about 165 feet; about 165 feet of 6-inch black-iron casing; open bottom; electric motor and force pump. Situated on valley outwash plain. Principal aquifer, gravel. Measuring point: ¼-inch tap hole in north side of casing; altitude, 2,129.2 feet; 5.4 feet below land-surface datum. Reference mark: chiselled cross in top of concrete curbing at west side; altitude, 2,134.6 feet; about level with land-surface datum. Depth to water and altitude of water surface: Sept. 1, 1948, about 135 (about 2,000); Sept. 6, 1949, about 143 (about 1,992).

51N 5W-29ad1. SE¼NE¼ sec. 29; 2,560 feet south and 220 feet west of NE cor. sec. 29. D. J. Wagner. Stock and domestic well, drilled by A. P. Boone in 1947; depth, about 175 feet; about 168 feet of 6-inch black-iron casing from depth of 7 to 175 feet; open end; 1½-HP electric motor and force pump. Situated on outwash valley plain. Water reported hard. Principal aquifer, gravel. Reference mark: chiselled cross in top of concrete pump base near south edge of pump; altitude 2,136.4 feet; 7.0 feet below land-surface datum. Depth to water and altitude of water surface: Fall 1947, about 157 (about 1,986).

51N 5W-29ad2. SE¼NE¼ sec. 29; 1,670 feet south and 170 feet west of NE cor. sec. 29. M. S. Johnson. Stock and domestic well, drilled by A. P. Boone in February 1949; depth about 176 feet; about 167 feet of 6-inch black-iron casing from 9 to 176 feet; open bottom; 1½-HP electric motor and force pump. Situated on outwash valley plain. Driller reports well drilled entirely in gravel and boulders. Principal aquifer, gravel. Measuring point: top of casing at west side; altitude, 2,130.6 feet; 9.0 feet below land-surface datum. Reference mark: chiselled cross in top of concrete curbing in doorway to well house; altitude, 2,140.6 feet; 1.0 foot above land-surface datum. Depth to water and altitude of water surface: Feb. 1949, 145 (1,995); Sept. 6, 1949, 142.3 (1,997.3).

51N 5W-29ca1 (formerly 51/5W-29L1). NE¼SW¼ sec. 29; 2,740 feet south and 2,790 feet west of NE cor. sec. 29. P. W. Otterson. Stock and domestic well, dug to depth of about 148 feet and later drilled to total depth of about 200 feet; about 200 feet of 5-inch black-iron casing with 52-inch dug hole back-filled around casing; open bottom; 3/4-HP electric motor and force pump. Situated near edge of outwash terrace. Water reported moderately hard. Principal aquifer, fine sand and gravel. Reference mark: spike in north side of power pole, 8 feet west of well; altitude, 2,129.8 feet; 1.0 foot above land-surface datum. Depth to water and altitude of water surface: March 13, 1928, about 145 (about 1,984).

*51N 5W-31bc1 (formerly 51/5W-31E1). SW¼NW¼ sec. 31; 2,160 feet south and 100 feet east of NW cor. sec. 31. Peter Beck. Stock and domestic well, dug to about 140 feet; later drilled to total depth of about 156 feet; dug hole back-filled around casing; 1½-HP electric motor and force pump. Situated on outwash valley plain. Water moderately hard. Principal aquifer, coarse sand. Measuring point: top of casing, at west side; altitude, 2,101.5 feet; 3.9 feet below land-surface datum. Reference mark: spike in power pole west of house, 120 feet south and 65 feet west of well; altitude, 2,107.7 feet. Depth to water and altitude of water surface: Aug. 30, 1949, 117.9 (1,987.5).

51N 5W-32ad1. SE¼NE¼ sec. 32; 2,120 feet south and 120 feet west of NE cor. sec. 32. C. R. Reynolds. Domestic well, drilled; depth, about 160 feet; about 160 feet of 8-inch casing; ½-HP electric motor and force pump. Situated on valley outwash plain. Water reported hard. Reference mark: chiselled cross in concrete sidewalk, 15 feet southeast of well; altitude, 2,131.0 feet; about level with land surface. Depth to water not determined.

51N 5W-32bd1 (formerly 51/5W-32F1). SE¼NW¼ sec. 32; 2,530 feet south and 3,430 feet west of NE cor. sec. 32. Mrs. G. A. Ericson. Stock and domestic well; dug to depth of about 160 feet; later drilled to depth of 185 feet; 185 feet of 4-inch casing; 3-HP gasoline engine and force pump; reported yield, 3.3 gpm. Situated on outwash valley plain. Water reported hard. Principal aquifer, sand and gravel. Measuring point: top of wooden platform at north edge of pump; altitude, 2,140.8 feet; about level with land-surface datum. Reference mark: spike in northwest side of power pole 100 feet southeast of well; altitude, 2,142.9 feet; about 1.0 foot above land-surface datum. Depth to water and altitude of water surface: 1921, about 160 (about 1,981).

51N 5W-32cd1 (formerly 51/5W-32P1). SE¼SW¼ sec. 32; 220 feet north and 3,780 feet west of SE cor. sec. 32. Thomoson, Peterson, Neal and Timmons (formerly owned by Federal Land Bank). Stock and domestic well (supplies four families), drilled; depth, about 180 feet; 175 feet of 6-inch casing from depth of 5 to 180 feet; open bottom; 3/4-HP electric motor and force pump. Situated on valley outwash terrace. Water reported moderately hard. Water level probably influenced by local irrigation. Measuring point: top surface of concrete floor west of pump; altitude, 2,127.6; 0.3 foot above land-surface datum. Reference mark: chiselled cross in concrete floor of pump house west of pump; altitude, 2,127.6 feet; 0.3 foot above land-surface datum. Depth to water: Sept. 6, 1949, about 136 (about 1,991).

51N 5W-32cd2. SE¼SW¼ sec. 32; 4,660 feet south and 3,350 feet west of NE cor. sec. 32. McGuire Water Corporation. Public water supply well (supplies 42 families), drilled by A. L. Washburn; depth, about 158 feet; 7½-HP electric motor and turbine pump. Situated on outwash valley plain. Measuring point: top of pump base; altitude, 2,118.2 feet; 7.0

feet below land-surface datum. Reference mark: chiselled cross in top of concrete curbing east of well; altitude, 2,125.5 feet; 0.3 foot above land-surface datum. Depth to water and altitude of water surface: June 1947, about 118 (about 2,007).

51N 5W-32dal. NE¼SE¼ sec. 32; 1,350 feet north and 140 feet west of SE cor. sec. 32. Hite, Critzer and Rogers. Domestic well (supplies three families), dug in Fall 1901; depth, about 160 feet; about 160 feet of 6-inch steel casing, with dug hole back-filled around casing; open bottom; 3/4-HP electric motor and force pump. Situated on outwash valley plain. Water reported moderately hard. Principal aquifer, gravel. Water levels probably influenced by local irrigation. Reference mark: chiselled cross in concrete floor at north edge of pump; altitude, 2,118.6 feet; 7.5 feet below land-surface datum. Depth to water and altitude of water surface: Fall 1940, 132 (1,994).

51N 5W-32dd1 (formerly 51/5W-32R1). SE¼SE¼ sec. 32; 410 feet north and 1,190 feet west of SE cor. sec. 32. Ernest Brennecke (formerly owned by W. F. Brasher). Domestic well (supplies two families); dug to depth of about 170 feet but caved and filled to depth of about 160 feet; about 160 feet of 6-inch black-iron casing; 36-inch dug hole back-filled around casing; open bottom; 3/4-HP electric motor and force pump. Situated on outwash valley plain. Water reported soft. Principal aquifer, sand and gravel. Water levels probably influenced by local irrigation. Measuring point: land-surface datum at well site; altitude, 2,127.4 feet. Reference mark: top of sill (2- by 8-inch plank) in center of well-house door; altitude, 2,128.4 feet; 1.0 foot above concrete floor of well house, which is about level with land-surface datum. Depth to water and altitude of water surface: April 1942, about 141 (about 1,986).

51N 5W-33aal (formerly 51/5W-33A1). NE¼NE¼ sec. 33; 1,220 feet south and 240 feet west of NE cor. sec. 33. Earl Sears (formerly owned by C. M. Chase). Stock and domestic well, dug; depth 190.5 feet; about 190 feet of 4-inch black-iron casing; 36-inch dug hole back-filled around casing; open bottom; 3/4-HP electric motor and force pump. Situated in outwash channel. Water reported hard. Principal aquifer, sand and gravel (occasionally sand is pumped from well). Water level may be influenced somewhat by local irrigation. Reference mark: cross carved in wooden 2- by 6-inch ridge pole at southwest corner of well cover; altitude, 2,174.2 feet; 2.2 feet above land-surface datum. Depth to water and altitude of water surface: March 8, 1928, 186.6 (1,985.4).

*51N 5W-33bb1 (formerly 51/5W-33D1; Washington Water Power Co. well 58). NW¼NW¼ sec. 33; 550 feet south and 1,240 feet east of NW cor. sec. 33. Spokane International Railroad Co. Railroad well, dug; depth, about 174 feet; about 174 feet of 60-inch concrete casing; open bottom; electric motor and turbine pump. Situated on outwash valley plain. Principal aquifer, glacial outwash gravel. Water levels

probably influenced by local irrigation. Measuring point: brass nail, and washer (stamped "U.S.G.S.") in top of wooden well cover; altitude, 2,138.9 feet; 1.3 feet above land-surface datum. Reference mark: chiselled cross in top of concrete curbing under plank cover at north side; altitude, 2,138.6 feet; 1.0 foot above land-surface datum. Depth to water and altitude of water surface: Aug. 30, 1949, 140.6 (1,997.0).

51N 5W-33cd1. SE¼SW¼ sec. 33; 240 feet north and 1,450 feet east of SW cor. sec. 33. G. E. Boston. Stock and domestic well, drilled by Homer Washburn in Dec. 1927; depth, about 187 feet; about 187 feet of 6-inch black-iron casing; open bottom; 3-HP electric motor and force pump. Situated on valley outwash plain. Water reported moderately hard. Water levels probably influenced by local irrigation. Measuring point: top of casing; altitude, 2,143.0 feet; 4.2 feet below land-surface datum. Reference mark: chiselled cross in top of concrete curbing southeast of well; altitude, 2,147.6 feet; 0.4 foot above land-surface datum. Depth to water and altitude of water surface: Dec. 1927, about 170 (about 1,977); Aug. 26, 1948, 152.8 (1,994.4); Sept. 6, 1949, 149.9 (1,997.3).

51N 5W-34ab1. NW¼NE¼ sec. 34; 740 feet south and 2,740 feet east of the NW cor. sec. 34. Village of Post Falls. Public supply well, drilled by A. A. Durand and Son in July 1947; depth about 276 feet; 18 feet of 20-inch steel casing from depth of 4 to 22 feet; 118 feet of 18-inch steel casing from 1.0 foot above land surface to depth of about 117 feet; 166 feet of 14-inch steel casing from depth of 110 to 176 feet; 14-inch casing laps 7 feet into 18-inch casing with lead seal; casing perforated from depth of about 231 to 276 feet; open bottom; 250 feet of air line; 60-HP electric motor and turbine pump. Drawdown reported very small when well is pumped at rates up to 1,200 gpm. Situated on valley outwash plain. Log, from drillers' original record, obtained by Geological Survey Oct. 18, 1948.

Description of material	Thickness (feet)	Depth (feet)
Sand and gravel	15	15
Gravel	5	20
Gravel and small boulders	48	68
Boulders	4	72
Gravel and boulders	41	113
Boulders	14	127
Boulders and gravel	13	140
Boulders	5	145
Gravel with boulders	131	276

18 feet of 20-inch steel casing from 4 to 22 feet; 118 feet of 18-inch steel casing from 1 foot above land surface to 117 feet below; 166 feet of 14-inch steel casing from 110 to 276 feet; casing perforated from about 231 to 276 feet. Test pumped 1,200 gpm with no appreciable drawdown.

Principal aquifer, outwash gravel. Water levels probably influenced by local irrigation. Measuring point: center of altitude gage; altitude 2,218.8 feet; 1.8 feet above land-surface datum. Reference mark: chiselled cross in concrete floor at north edge of pump; altitude, 2,217.6 feet; 0.6 foot above land-surface datum. Depth to water and altitude of water surface: May 26, 1948, 212.2 (2,004.8); Sept. 7, 1949, 202.2 (2,014.8).

51N 5W-34ab2. NW¼NW¼ sec. 34; 1,240 feet south and 2,740 feet east of NW cor. sec. 34. Village of Post Falls. Public supply well, drilled by A. A. Durand and Son in Aug. 1947; depth 275 feet; 28 feet of 24-inch steel casing from land surface to depth of 28 feet; 241 feet of 18-inch steel casing from 1 foot above land surface to depth of 240 feet; 73 feet of 12.5-inch I.D. steel casing from depth of 205 to 278 feet; casing perforated, 20 holes per foot, from depth of 237 to 278 feet; open bottom; 60-HP electric motor and turbine pump. Drawdown reported very small when well is pumped at about 1,045 gpm. Situated on outwash plain. Log, from drillers' original record, obtained by Geological Survey Oct. 18, 1948.

Description of material	Thickness (feet)	Depth (feet)
Clay and gravel	15	15
Boulders	16	31
Boulders and coarse gravel	20	51
Boulders, heavy	11	62
Boulders and gravel	42	104
Boulders	21	125
Boulders and coarse gravel	21	146
Boulders	2	148
Boulders and gravel	23	171
Gravel	11	182
Boulders and gravel	22	204
Gravel	35	239
Boulders	2	241
Gravel	2	243
Boulders; drilled through large boulders	12	255
Boulders and gravel	19	274
Bailings	4	278

28 feet of 24-inch steel casing from 0 to 28 feet; 241 feet of 18-inch steel casing from 1.0 foot above land surface to 240 feet below; 73 feet of 12.5-inch I.D. steel casing from 205 to 278 feet; casing perforated, 20 holes per foot, from 237 to 278 feet. Test pumped 1,045 gpm with no appreciable drawdown.

Principal aquifer, outwash gravel. Water levels probably influenced by local irrigation. Measuring point: center of air gage; altitude, 2,218.0 feet; 3.0 feet above land-surface datum. Reference mark: chiselled cross in top of concrete pump base at north edge of pump; altitude, 2,216.4 feet; 1.4 feet above land-surface datum. Depth to water and altitude of water surface: Aug. 25, 1948, 212.6 (2,002.4).

51N 4W-2ba1 (formerly 51/4W-2C1). NE¼NW¼ sec. 2; 190 feet south and 3,930 feet west of NW cor. sec. 2. William Boekel. Stock and domestic well, drilled by Anderson in 1928; depth about 327 feet; about 327 feet of 6-inch steel casing (lower part perforated); open bottom; windmill and force pump. Situated on outwash plain. Principal aquifer, outwash gravel. Measuring point: top of casing; altitude 2,297.3 feet; 6.6 feet below land-surface datum. Depth to water not determined.

51N 4W-3bb1 (formerly 51/4W-3D1). NW¼NW¼ sec. 3; 890 feet south and 470 feet east of NW cor. sec. 3. H. M. Dieterich (formerly owned by Schuetz). Stock and domestic well, dug and drilled by Homer Washburn; depth, about 350 feet; about 350 feet of 6-inch and 4-inch black-iron

casing; windmill and force pump. Situated on outwash plain. Water hard; temperature 46°, Nov. 4, 1949. Principal aquifer, outwash gravel. Reference mark: chiselled cross in ¼-inch steel plate at southwest edge of casing; altitude, 2,295.1 feet; 7.6 feet below land-surface datum, and 0.8 foot above top of casing. Depth to water and altitude of water surface: Fall 1941, about 305 (about 1,998).

*51N 4W-7bc1 (formerly 51/4W-7E1). SW¼NW¼ sec. 7; 2,200 feet south and 500 feet east of NW cor. sec. 7. Skinner Estate. Unused drilled well; 5-inch steel casing; open bottom; lift pump. Situated on outwash valley plain. Measuring point: tap hole in east side of casing; altitude, 2,262.3 feet; 4.8 feet below land-surface datum. Depth to water and altitude of water surface: Aug. 30, 1949, 255.2 (2,011.9).

51N 4W-8aa1 (formerly 51/4W-8A1). NE¼NE¼ sec. 8, 180 feet south and 430 feet west of NE cor. sec. 8. Hassey (tenant: Pay Heimbigher). Stock and domestic well, drilled by Homer Washburn in 1915; depth about 310 feet; gasoline engine and force pump. Well reported drilled entirely in gravel. Measuring point: top of casing; altitude, 2,264.3 feet; 5.0 feet below land-surface datum. Reference mark: chiselled cross in concrete at east edge of pump; altitude, 2,264.3 feet; 5.0 feet below land-surface datum. Depth to water not determined.

51N 4W-8bb1 (formerly 51/4W-8D1). NW¼NW¼ sec. 8; 230 feet south and 450 feet east of NW cor. sec. 8. Edward Meyer (formerly owned by Henry Meyer). Stock and domestic well (supplies two families), drilled in June 1914; depth about 340 feet; about 340 feet of 6-inch black-iron casing; open bottom; windmill and force pump. Situated on rolling till plain. Well reported drilled entirely in gravel. Measuring point: tap hole in west side of casing; altitude, 2,282.8 feet; 6.8 feet below land-surface datum. Reference mark: chiselled cross in top of concrete curbing north of casing; altitude, 2,289.5 feet; 0.1 foot below land-surface datum. Depth to water and altitude of water surface: Sept. 1, 1948, about 276 (about 2,014); Sept. 7, 1949, about 265 (about 2,024).

*51N 4W-10cc1 (formerly 51/4W-10N1). SW¼SW¼ sec. 10; 1,040 feet north and 4,960 feet west of SE cor. sec. 10. Civil Aeronautics Administration. Unused well, drilled; 4-inch steel casing; open bottom; force pump. Situated on rolling outwash plain. Principal aquifer, outwash gravel. Water levels probably influenced by local irrigation. Measuring point: ½-inch tap hole in casing; altitude 2,280.0 feet; 8.0 feet below land-surface datum. Reference mark: chiselled cross in top of concrete curbing north of casing; altitude, 2,288.0 feet; about level with land-surface datum. Depth to water and altitude of water surface: Aug. 30, 1949, 273.5 (2,014.6).

51N 4W-10da1 (formerly 51/4W-10J1). NE¼SE¼ sec. 10. Civil Aeronautics Administration (formerly owned by Minnie Cassey). Destroyed stock and domestic well, drilled; depth about 365 feet; about 365

feet of 6-inch casing; formerly equipped with 3-HP gasoline engine and force pump. Location was on rolling till plain. Water reported hard. Depth to water not determined.

51N 4W-17bc1 (formerly 51/4W-17E1). SW¼NW¼ sec. 17; 2,020 feet south and 160 feet east of NW cor. sec. 17. Bill Bockel. Unused well, dug about 1905 by Tom Feely; later drilled and cased; 6-inch black-iron casing with back-fill around casing; open bottom; force pump. Situated on outwash valley plain. Measuring point: top of casing; altitude, 2,262.8 feet; 3.6 feet below land-surface datum. Depth to water and altitude of water surface: Nov. 27, 1941, dry at 273: June 11, 1948, 261.6 (2,004.9); Sept. 7, 1949, 254.1 (2,012.3).

51N 4W-17cb1 (formerly 51/4W-17M1). NW¼SW¼ sec. 17; 3,470 feet south and 210 feet east of NW cor. sec. 17. Alex Kulm (formerly owned by J. J. Feely). Stock and domestic well, dug to about 265 feet in 1900 by J. J. Satre; later drilled to present depth of 281 feet; about 281 feet of 7-inch steel casing; dug hole back-filled around casing; open bottom; electric motor and turbine pump. Situated on rolling till plain. Principal aquifer, outwash gravel. Water levels strongly influenced by local irrigation. Measuring point: ½-inch tap hole in east side of casing; altitude, 2,253.9 feet; 7.4 feet below land-surface datum. Depth to water and altitude of water surface: Aug. 30, 1949, 249.1 (2,012.2).

*51N 4W-18dc1 (formerly 51/4W-18Q1). SW¼SE¼ sec. 18; 150 feet north and 2,190 feet west of SE cor. sec. 18. Clarence Feely. Unused stock and domestic well, drilled; depth, about 285 feet; about 285 feet of 6-inch black-iron casing; open bottom; windmill and force pump. Situated on rolling till plain. Water reported hard. Principal aquifer, sand and gravel. Water levels strongly influenced by local irrigation. Measuring point: top of casing, altitude, 2,256.7 feet; 4.0 feet below land-surface datum. Depth to water and altitude of water surface: Sept. 7, 1949, 249.2 (2,011.5).

51N 4W-19dc1 (formerly 51/4W-19Q1). SW¼SE¼ sec. 19; 150 feet north and 2,830 feet east of SW cor. sec. 19. J. McKim (formerly owned by Clarence Feely). Stock and domestic well, dug by Robert Sweatnum; drilled to 267 feet by William Gentry; depth, about 267 feet; about 267 feet of 6-inch steel casing; dug hole back-filled around casing; open bottom; 5-HP electric motor and force pump. Situated on outwash gravel plain. Water reported hard. Principal aquifer, outwash gravel. Water levels strongly influenced by local irrigation. Measuring point: top of casing; altitude, 2,240.8 feet; 7.6 feet below land-surface datum. Reference mark: chiselled cross in concrete floor at southeast edge of pump; altitude, 2,241.5 feet; 6.9 feet below land-surface datum. Depth to water and altitude of water surface: Sept. 7, 1949, 237.6 (2,010.8).

51N 4W-25bc1. SW¼NW¼ sec. 25. Alfred Clementson. Stock and domestic well, drilled by Homer Washburn about 1913; depth, about 230 feet; about 230 feet of 6-inch black-iron casing; open bottom; 3-HP gasoline engine and force pump. Situated on outwash valley plain. Altitude of land surface at well site, 2,237 feet above mean sea-level datum of 1929 (revised). Depth to water not determined.

51N 4W-25cb1. NW¼SW¼ sec. 25; 3,090 feet south and 170 feet east of NW cor. sec. 25. Lawrence Waddell. Stock and domestic well, drilled; depth, about 231 feet; about 231 feet of 6-inch black-iron casing; open bottom; 2-HP electric motor and force pump. Situated on outwash valley plain. Principal aquifer, outwash gravel. Water levels probably influenced by local irrigation. Measuring point: top of casing; altitude, 2,233.9 feet; about level with land-surface datum. Depth to water and altitude of water surface: Spring 1948, about 192 (about 2,042).

*51N 4W-26ba1 (formerly 51/4W-26C1). NE¼NW¼ sec. 26; 150 feet south and 2,240 feet east of NW cor. sec. 26. Rudolph (formerly owned by Charles Anderson). Unused stock and domestic well, drilled; depth, 283 feet; cased; open bottom; gasoline engine and force pump. Situated on outwash plain. Principal aquifer, outwash gravel. Water levels strongly influenced by local irrigation. Measuring point: ½-inch tap hole in northwest side of pump base; altitude, 2,274.1 feet; 3.0 feet below land-surface datum. Depth to water and altitude of water surface: Aug. 30, 1949, 251.5 (2,025.6).

51N 4W-27dd1. SE¼SE¼ sec. 27; 1,140 feet north and 160 feet west of SE cor. sec. 27. Alex George. Stock and domestic well, drilled in 1945; depth about 275 feet; about 275 feet of 6-inch black-iron casing; open bottom; 3-HP electric motor and force pump. Situated on valley outwash plain. Water reported soft. Principal aquifer, outwash gravel. Water levels probably influenced by local irrigation. Measuring point: top of casing at north side; altitude, 2,271.6 feet; 1.0 foot above land-surface datum. Depth to water and altitude of water surface: Sept. 8, 1949, 245.0 (2,025.6). Well had been pumped for four hours immediately before measurement.

51N 4W-29ab1. NW¼NE¼ sec. 29; 70 feet south and 2,140 feet west of NE cor. sec. 29. Units Water Association. Domestic well (supplies five families), drilled by A. Holman in 1949; depth, about 295 feet; about 295 feet of 8-inch steel casing; open bottom; 10-HP electric motor and turbine pump. Situated on valley outwash plain. Principal aquifer, outwash gravel. Water levels probably influenced by local irrigation. Measuring point: bottom of hole cut in casing on north side; altitude, 2,250.5 feet; 1.2 feet above land-surface datum. Reference mark: top of 3/8-inch bolt in north side of power pole, 12 feet south and 10 feet east of well; altitude, 2,251.5 feet; 2.2 feet above land-surface datum. Depth to water and altitude of water surface: Sept. 7, 1949, 237.7 (2,011.6).

51N 4W-29dd1 (formerly 51/4W-29R1). SE¼SE¼ sec. 29; 130 feet north and 190 feet west of SE cor. sec. 29. Dr. George Hurd (formerly owned by Union Agency Land Co.). Stock and domestic well, drilled; depth, about 325 feet; 325 feet of 4-inch and 6-inch steel casing; open bottom; electric motor and force pump. Situated on valley outwash plain. Water reported soft. Principal aquifer, outwash gravel. Water levels probably influenced by seepage from nearby irrigation canal. Measuring point: top of casing at south side; altitude, 2,280.7 feet; about level with land-surface datum. Depth to water and elevation of water surface: Sept. 7, 1949, 268.6 (2,011.5).

51N 4W-30dc1 (formerly 51/4W-30Q1). SW¼SE¼ sec. 30; 310 feet north and 2,992 feet east of SW cor. sec. 30. Henderson (tenant: O. H. Boalser; formerly owned by Albert Knudson). Stock and domestic well, drilled; depth, about 300 feet; about 300 feet of 6-inch black-iron casing; open bottom; electric motor and force pump. Situated on outwash valley plain. Water reported hard. Principal aquifer, outwash gravel. Water levels probably influenced by local irrigation. Measuring point: top of casing; altitude, 2,226.1 feet; 6.0 feet below land-surface datum. Reference mark: chiselled cross in concrete curbing north of pump; altitude, 2,233.2 feet; 1.1 feet above land-surface datum. Depth to water not determined.

51N 4W-33cc1 (formerly 51/4W-33N1). SW¼SW¼ sec. 33; 580 feet north and 620 feet east of SW cor. sec. 33. George W. Armstrong (tenant: C. G. Stilmeyer; formerly owned by C. Clark). Stock and domestic well, drilled; depth, about 286 feet; about 286 feet of 6-inch black-iron casing; open bottom; electric motor and force pump. Situated on rolling till plain. Water reported moderately hard. Principal aquifer, sand and gravel. Reference mark: chiselled cross in concrete floor; altitude, 2,252.9 feet; 7.3 feet below land-surface datum. Depth to water not determined.

51N 4W-34ad1. SE¼NE¼ sec. 34; 2,940 feet north and 130 feet west of SE cor. sec. 34. William S. Abbs. Stock and domestic well, drilled by A. P. Boone in 1946; depth about 280 feet; 280 feet of 6-inch steel casing; open bottom; 2-HP electric motor and force pump. Situated on valley outwash plain. Water reported moderately hard. Measuring point: top of casing; altitude, 2,254.8 feet; 4.6 feet below land-surface datum. Depth to water and altitude of water surface: 1946, about 235 (about 2,024).

51N 4W-34da1 (formerly 51/4W-34H1). NE¼SE¼ sec. 34; 2,190 feet north and 140 feet west of SE cor. sec. 34. J. C. Hudson (formerly owned by LaVern Fetz). Stock and domestic well, drilled in 1910; depth, about 256 feet; 256 feet of 7-inch black-iron casing; open bottom; 5-HP electric motor and force pump. Situated on till plain. Water reported soft. Owner reports bottom of well is in bedrock. Principal aquifer, crevices in bedrock. Water levels may be influenced by local irrigation.

Measuring point: top of casing; altitude, 2,250.2 feet; 11.0 feet below land-surface datum. Depth to water and altitude of water surface: 1910, about 226 (about 2,035).

51N 4W-34dc1 (formerly 51/4W-34Q1). SW¼SE¼ sec. 34; 760 feet north and 3,140 feet east of SW cor. sec. 34. Albert Burtzoff. Stock and domestic well, drilled about 1903; depth, about 280 feet; 280 feet of 6-inch steel casing; 3-HP gasoline engine and force pump; reported yield about 4 gpm. Situated on till plain. Principal aquifer, coarse sand. Reference mark, chiselled cross in concrete pump base at east edge of pump; altitude, 2,251.4 feet; 5.6 feet below land-surface datum. Depth to water and altitude of water surface: Fall 1941, about 250 (about 2,007).

51N 4W-35cc1 (formerly 51/4W-35N1). SW¼SW¼ sec. 35; 300 feet north and 430 feet east of SW cor. sec. 35. Roscoe Fuller (formerly owned by William Fuller). Stock, irrigation (garden), and domestic well, drilled by William Gentry; depth, about 218 feet; about 206 feet of 6-inch steel casing from depth of about 3 to 209 feet; 10 feet of 5-inch steel casing from depth of 208 to 218 feet; open bottom; electric motor and force pump. Situated on glacial till plain. Principal aquifer, sand. Measuring point, ½-inch tap hole in casing; altitude, 2,216.9 feet; 3.0 feet below land-surface datum. Depth to water and altitude of water surface: July 22, 1942, 204.9 (2,015.0); June 15, 1948, 196.8 (2,023.1).

51N 3W-18ad1. SE¼NE¼ sec. 18. Cooper. Domestic well, drilled by A. P. Boone in Fall 1949; depth, about 80 feet; 6 feet of 6-inch black-iron casing; estimated yield, about ¼ gpm. Situated on bench above lake. Log, from drillers' record, obtained by Geological Survey Nov. 5, 1949: top soil 0 to 6 feet; basalt rock with few cracks, 6 to 80 feet. Principal aquifer, basalt(?). Depth to water: Nov. 5, 1949, 50.4.

50N 6W-1ca1. NE¼SW¼ sec. 1; 1,330 feet north and 3,380 feet west of SE cor. sec. 1. State Line Village. Public supply well, drilled by A. A. Durand and Son in Oct. 1948; depth, about 200 feet; 200 feet of 10-inch steel casing; perforated from depth of 126 to 190 feet; open bottom; electric motor and turbine pump; pump capacity, about 250 gpm. Drawdown reported small after pumping for several hours at rates of 500 to 600 gpm. Situated on outwash plain terrace. Log, from drillers' original record, obtained by Geological Survey Oct. 18, 1948.

Description of material	Thickness (feet)	Depth (feet)
Gravel; running sand in lower part; some water at 70 feet.	84	84
Boulders; water ran out of hole in boulder bed	20	104
Gravel and boulders	15	119
Gravel and sand	61	195
Sand	5	200

Sand filled hole to 172 feet below land surface after casing was installed. Test-pumped with bowls set at 150 feet. Drawdown was too small to register on air-gage, pumping 600 gpm; pumped considerable sand, but reportedly yielded no sand when pumping 500 gpm with bowls lowered to 155 feet.

Reference mark: chiselled cross in top of concrete pump base at south edge of pump; altitude, 2,100.6 feet; 0.6 foot above land-surface datum. Depth to water and altitude of water surface: Oct. 18, 1948, 120.5 (1,979.5); March 20, 1949, 120.4 (1,979.6).

50N 6W-12ad1. NE¼SE¼ sec. 12; 1,850 feet south and 540 feet west of NE cor. sec. 12. John Gribnau. Stock and domestic well, drilled by Bert Harbaugh in Spring 1945; depth, about 129 feet; about 129 feet of 6-inch black-iron casing; open bottom; electric motor and force pump. Situated on outwash terrace. Water reported moderately hard. Principal aquifer, sand and gravel. Measuring point: bottom of steel pump base at west side; altitude, about 2,052.5 feet; 5.5 feet below land-surface datum. Reference mark: chiselled cross in concrete pump base at northwest side of pump; altitude, about 2,052.3 feet; 5.7 feet below land-surface datum. Depth to water and altitude of water surface: April 12, 1950, 70.7 (1,987.3).

50N 6W-12ca1. NE¼SW¼ sec. 12; 1,380 feet north and 2,990 feet west of SE cor. sec. 12. J. O. Holland. Stock and domestic well, drilled by Bert Harbaugh in Summer 1946; depth, 132 feet; 130 feet of 6-inch galvanized iron casing; open bottom; electric motor and jet pump. Situated on outwash terrace. Principal aquifer, outwash gravel. Measuring point: top of casing; altitude, about 2,068.7 feet; 6.5 feet below land-surface datum. Reference mark; top of cinder block well curb at north side; altitude, about 2,075.7 feet. Depth to water and altitude of water surface: May 30, 1948, 87.3 (1,987.9).

50N 6W-12dbl (formerly 50/6W-12K1; Washington Water Power Co. well 43). NW¼SE¼ sec. 12; about 0.3 mile north of gravel road and about 0.33 mile east of State Line. J. O. Holland (formerly owned by F. P. Miles). Destroyed domestic well, dug; depth was about 111 feet. Depth to water: Aug. 18, 1930, 109.8.

50N 6W-12dcl. SW¼SE¼ sec. 12; 1,130 feet north and 2,250 feet west of SE cor. sec. 12. Barrett. Stock and domestic well, drilled by Bert Harbaugh in Summer 1946; depth, about 146 feet; about 146 feet of 6-inch black-iron casing; open bottom; electric motor and force pump. Situated on outwash terrace slope. Principal aquifer, outwash gravel. Measuring point: top of casing; altitude, about 2,085.1 feet; 5.7 feet below land-surface datum. Reference mark: chiselled cross in concrete floor 2 feet north of pump; altitude, about 2,085.1. Depth to water not determined.

50N 6W-13acl. SW¼NE¼ sec. 13; 1,820 feet south and 2,330 feet west of NE cor. sec. 13. M. G. Holland. Unused stock and domestic well, dug about 1900; depth, 55 feet; 55 feet of 18-inch tile casing; open bottom. Situated on outwash terrace slope. Principal aquifer, outwash gravel. Measuring point: top of concrete floor; altitude, about 2,112.2 feet; about level with land-surface datum. Depth to water and altitude of water surface: May 30, 1948, 33.8 (2,078.4).

50N 6W-13ac2. SW¼NE¼ sec. 13; 1,880 feet south and 2,240 feet west of NE cor. sec. 13. M. G. Holland. Stock and domestic well, dug about 1934; 6-inch black-iron casing; dug hole back-filled around casing; electric motor and jet pump. Situated in creek bottom. Water reported soft. Measuring point: top of wooden pump base; altitude, about 2,090.6 feet; 6.1 feet below land-surface datum. Reference mark: chiselled cross in concrete floor, about 1.5 feet south of pump; altitude, about 2,090.3 feet; 6.4 feet below land-surface datum. Depth to water and altitude of water surface: 1934, about 42 (about 2,055).

*50N 5W-1aal (formerly 50/5W-1A1; Washington Water Power Co. well 96). NE¼NE¼ sec. 1; 1,280 feet south and 390 feet west of NE cor. sec. 1. Post Falls Irrigation District. Public supply well, dug; depth, 231 feet; 30-inch concrete tile casing, open bottom; electric motor and turbine pump; pump capacity, about 40 gpm. Drawdown is reported to be small at pumping rate of 40 gpm, and recovery rate is reported to be rapid. Situated on edge of valley outwash plain. Water soft. Principal aquifer, outwash sand and gravel. Water levels probably influenced by local irrigation. Measuring point: top of eastern 4- by 10-inch I-beam at north edge of pump; altitude, 2,192.5 feet; about level with land-surface datum. Depth to water and altitude of water surface: Aug. 30, 1949, 180.6 (2,011.9).

50N 5W-3cal. NE¼SW¼ sec. 3; 3,850 feet south and 2,680 feet west of NE cor. sec. 3. Village of Post Falls. Unused public supply well, dug in 1938; depth, about 100 feet; about 100 feet of 10-inch black-iron casing; open bottom; 30-HP electric motor and turbine pump. Situated on river bank. Taps perched water in shallow gravels. Water levels strongly influenced by stage of nearby Spokane River. Measuring point: top of south I-beam over center of well; altitude, 2,134.2 feet; about level with land-surface datum. Depth to water and altitude of water surface: May 26, 1948, 19.7 (2,114.5); Sept. 7, 1949, 14.1 (2,120.1).

50N 5W-5bc1 (formerly 50/5W-5E1). SW¼NW¼ sec. 5; 2,390 feet south and 4,240 feet west of NE cor. sec. 5. Mrs. Nibager (tenant: T. Acres; formerly owned by T. R. Hopkins). Stock and domestic well, drilled; depth, about 160 feet; 160 feet of 6-inch black-iron casing; open bottom; ½-HP electric motor and force pump. Reportedly cannot be pumped dry. Situated on valley outwash plain. Water reported hard. Principal aquifer, sand and gravel. Water levels probably influenced by local irrigation. Reference mark: chiselled cross in concrete step at entrance to well house; altitude, 2,118.4 feet; 0.3 foot above land-surface datum. Depth to water and altitude of water surface: Spring 1948, about 140 (1,978).

50N 5W-5bd1 (formerly 50/5W-5L1). SE¼NW¼ sec. 5; 1,850 feet south and 2,790 feet west of NE cor. sec. 5. Charles and William Golob. Domestic well (supplies two families), drilled by George Weideman in 1940; depth, about 166 feet; 166 feet of 6-inch steel casing; open bottom; 3/4-HP electric motor and force pump. Situated on valley outwash plain. Water reported moderately hard. Log reported by owner: gravel and boulders to near bottom; coarse sand in lower part of hole. Principal aquifer, coarse sand. Water levels probably influenced by local irrigation. Reference mark: chiselled cross in concrete ledge east of pump in well pit; altitude, 2,114.0 feet; 3.8 feet below land-surface datum. Depth to water and altitude of water surface: Sept. 1940, about 140 (about 1,978).

50N 5W-5cal. NE¼SW¼ sec. 5; 3,000 feet south and 3,810 feet west of NE cor. sec. 5. R. C. Hodge. Domestic well, drilled by Homer Washburn in Dec. 1924; depth, about 156 feet; about 156 feet of 6-inch black-iron casing; open end; 1½-HP electric motor and force pump. Situated on valley outwash plain. Water reported hard. Principal aquifer, sand and gravel. Water levels probably influenced by local irrigation. Altitude of land surface at well site, 2,116.8 feet. Depth to water and altitude of water surface: July 1943, about 139 (about 1,978).

50N 5W-5ob1 (formerly 50/5W-5M2). NW¼SW¼ sec. 5; 3,280 feet south and 50 feet east of NW cor. sec. 5. C. T. Clark (formerly owned by Mrs. Lathrop). Destroyed domestic well, dug; depth was about 130 feet, with 130 feet of 36-inch wooden casing. Situated on valley outwash plain. Altitude of land surface, 2,104.5 feet. Depth to water and altitude of water surface: March 7, 1928, about 124 (about 1,980).

50N 5W-5cb2 (formerly 50/5W-5M1; Washington Water Power well 60). NW¼SW¼ sec. 5; 3,680 feet south and 110 feet east of NW cor. sec. 5. G. R. Anderson (formerly owned by R. J. Himes). Domestic well, dug to depth of about 121 feet in 1911. Well caved in and was drilled to depth of 119 feet by Bert Harbaugh in 1947; 119 feet of 6-inch black-iron casing; 24-inch dug hole back-filled around casing; open bottom. Situated on valley outwash plain. Water reported soft. Principal aquifer, outwash gravel. Water levels probably influenced by local irrigation. Measuring point: top of casing at west side; altitude, 2,087.4 feet; 5.0 feet below land-surface datum. Reference mark: chiselled cross in concrete floor, about 2 feet southwest of pump; altitude, 2,087.0 feet; 5.4 feet below land-surface datum. Depth to water and altitude of water surface: Aug. 25, 1948, 103.4 (1,989.0).

50N 5W-5cc1 (formerly 50/5W-5N1). SW¼SW¼ sec. 5. Destroyed stock and domestic well, dug; depth, 140 feet; 140 feet of 36-inch wooden casing; open bottom. Situated on valley outwash plain. Principal aquifer, outwash gravel. Tenant stated in 1928 that percolating water from nearby Spokane River runs into well at depth of 97 feet. Depth to water: March 7, 1928, 135.4.

50N 5W-5cc2 (formerly 50/5W-5N2). SW¼SW¼ sec. 5; 4,860 feet south and 4,000 feet west of NE cor. sec. 5. E. B. Clark (formerly owned by Carl Berg). Stock and domestic well (supplies two families), drilled about 1937; depth, about 158 feet; 158 feet of 6-inch black-iron casing; open bottom; ½-HP electric motor and force pump. Situated on river terrace. Water reported soft. Principal aquifer, gravel. Water (believed to be from nearby Spokane River) percolates into well constantly above static level. Measuring point: top of casing in pit; altitude, 2,109.6 feet; 6.5 feet below land-surface datum. Reference mark: chiselled cross in top of concrete curbing, near northeast corner of curbing at top of stairway; altitude, 2,116.1 feet; 0.1 foot above land-surface datum. Depth to water and altitude of water surface: May 31, 1948, 132.2 (1,983.8); Sept. 6, 1949, 126.2 (1,989.8).

50N 5W-5cd1 (formerly 50/5W-5P1). SE¼SW¼ sec. 5; 4,120 feet south and 3,640 feet west of NE cor. sec. 5. Paul F. Bretzer (formerly owned by Gus Nelson). Domestic well, dug and drilled (drilled part by Homer Washburn); depth about 157 feet; about 157 feet of 5-inch steel casing; 30-inch dug hole back-filled around casing; open bottom; 3/4-HP electric motor and force pump. Situated on valley outwash plain. Principal aquifer, gravel. Water levels probably influenced by irrigation. Measuring point: top of casing; altitude, 2,111.5 feet; 5.7 feet below land-surface datum. Reference mark: chiselled cross in top of concrete curbing at west side; altitude, 2,117.4 feet; 0.2 foot above land-surface datum. Depth to water and altitude of water surface: March 7, 1928, 136.7 (1,980.5); May 31, 1948, about 123 (about 1,994).

50N 5W-5da1. NE¼SE¼ sec. 5; 2,850 feet south and 1,390 feet west of NE cor. sec. 5. Clint S. Eggers. Domestic well (supplies two families), drilled in Fall 1947; depth about 200 feet; about 85 feet of 6-inch black-iron casing from surface to depth of 85 feet; open end; electric motor and force pump. Situated on valley outwash plain. Principal aquifer, bedrock. Log reported by owner: gravel from 0 to 85 feet; bedrock from 85 to 200 feet. Altitude of land surface at well site, 2,139.7 feet. Reference mark: spike in north side of power pole, 5 feet west of well; altitude, 2,141.1 feet; 1.4 feet above land-surface datum. Depth to water and altitude of water surface: Fall 1947, about 84 (about 2,056).

50N 5W-5dd1 (formerly 50/5W-5J1). SE¼SE¼ sec. 5; about 1,250 feet north, and about 520 feet west of SE cor. sec. 5. B. V. Graham (tenant; C. A. Teters). Irrigation well, dug by owner and tenant in 1906; depth, about 20 feet; 20 feet of 36-inch wooden casing; galvanized iron screen in bottom; electric motor and force pump. Situated on slope of river bank. Water reported moderately hard. Principal aquifer, gravel and sand. Water level apparently about level with surface of nearby Spokane River. Measuring point: top of wooden flooring; altitude, about 2,064 feet (barometric measurement); 2.0 feet above land-surface datum. Depth to water and altitude of water surface: Nov. 13, 1941, 7.1 (about 2,055); Sept. 2, 1949, 9.5 (about 2,052).

50N 5W-5db1. NW¼SE¼ sec. 5; 3,650 feet south and 2,330 feet west of NE cor. sec. 5. E. Filbey (tenant: J. Filbey). Stock and domestic well, drilled; depth, about 170 feet; 150 feet of 6-inch black-iron casing from depth of about 7 to 157 feet; open bottom; electric motor and force pump. Situated on valley outwash plain. Water reported moderately hard. Principal aquifer, gravel and sand. Water levels probably influenced by local irrigation. Measuring point: top of casing; altitude, 2,115.6 feet; 7.3 feet below land-surface datum. Reference mark: chiselled cross in top of concrete curbing west of pump; altitude, 2,123.5 feet; 0.6 foot above land-surface datum. Depth to water and altitude of water surface: Sept. 6, 1949, 127.7 (1,995.2).

50N 5W-7bb1. NW¼NW¼ sec. 7; 1,270 feet south and 680 feet east of NW cor. sec. 7. Lee Reynolds. Stock and domestic well, dug and drilled; 6-inch black-iron casing; dug hole back-filled around casing; open bottom; hand power and lift pump. Situated on valley outwash plain. Water reported moderately hard. Principal aquifer, outwash gravel. Water levels possibly influenced by stage of nearby Spokane River. Measuring point: top of planking at west edge of pump; altitude, 2,087.2 feet; 0.4 foot above land-surface datum. Reference mark: top of 3/4-inch pipe at west end of concrete watering trough; altitude, 2,086.7 feet; 0.9 foot above ground. Depth to water not determined.

50N 5W-7cal. NE¼SW¼ sec. 7. Hangen. Not leveled or surveyed. Stock and domestic well, drilled; 6-inch casing; open bottom; 3/4-HP electric motor and lift pump. Situated on outwash terrace slope. Depth to water not determined.

50N 5W-7dal. NE¼SE¼ sec. 7. W. F. Plonske. Domestic well, dug about 1910; depth, about 55 feet; about 55 feet of 24-inch tile casing; electric motor and jet pump. Located on valley side slope. Water reported moderately hard. Measuring point: top of manhole over concrete well pit. Depth to water: May 31, 1948, 31.8.

50N 5W-10abl. NW¼NE¼ sec. 10. Village of Post Falls (tenant: Wallin greenhouse). Industrial well, dug about 1912; depth, about 35 feet; about 35 feet of 36-inch brick casing; open bottom; electrically driven pump. Situated on river bank. Water reported soft. Altitude of water surface probably about the same as that of surface of nearby Spokane River. Measuring point: land surface at well site. Depth to water: Summer 1947: about 17.

50N 5W-10acl. SW¼NE¼ sec. 10. Ludwig. Domestic well, drilled by Homer Washburn in September 1947; depth, about 75 feet; 20 feet of 6-inch black-iron casing; open bottom. Situated on mountain slope. Log reported by owner: top soil from surface to 20 feet; bedrock from 20 to 75 feet. Principal aquifer, bedrock. Measuring point: top of casing, about level with land-surface datum. Depth to water: June 2, 1948, 66.9.

50N 4W-1bb1 (formerly 50/4W-1D1). NW¼NW¼ sec. 1; 1,000 feet south and 200 feet east of NW cor. sec. 1. Emma Carlson. Stock and domestic well (supplies three families), drilled by Homer Washburn in 1921; depth, about 254 feet; 254 feet of 6-inch steel casing; open bottom; electric motor and force pump. Situated on valley outwash plain. Water reported hard. Principal aquifer, sand and gravel. Measuring point: base of pump flange; altitude, 2,231.7 feet; 0.9 foot above land-surface datum. Altitude of land-surface datum at well site: 2,237.9 feet. Reference mark: chiselled cross in concrete pump base 2 feet southeast of pump; altitude, 2,231.0 feet; 0.2 foot above land-surface datum. Depth to water and altitude of water surface: Nov. 10, 1941, 191.6 (2,039.2).

50N 4W-1cc1 (formerly 50/4W-1N1). SW¼SW¼ sec. 1; 630 feet north and 600 feet east of SW cor. sec. 1. Pearl Bailey. Irrigation well (formerly domestic), drilled by Homer Washburn; depth about 326 feet; about 326 feet of 6-inch steel casing; open bottom; electric motor and force pump. Situated on glacial outwash plain. Log reported by owner: gravel from surface to 200 feet; clay from 200 to 203 feet; gravel from 203 to 326 feet. Principal aquifer, gravel. Reference mark: chiselled cross in concrete pump base at southwest edge of pump; altitude, 2,231.9 feet; 6.0 feet below land-surface datum. Depth to water and altitude of water surface: Fall 1941, about 175 (about 2,063).

50N 4W-3ccl. SW¼SW¼ sec. 3; 630 feet north and 160 feet east of SW cor. sec. 3. Tony Jensen. Domestic well, drilled by A. P. Boone in 1946; depth, about 215 feet; about 215 feet of 6-inch steel casing; open bottom; 2-HP electric motor and jet pump; yield, about 6 gpm. Situated on river terrace. Water reported hard. Log, from driller's original records, obtained by Geological Survey, Nov. 6, 1949.

Description of material	Thickness (feet)	Depth (feet)
Sand and gravel	141	141
Clay, green	72	213
Quicksand, green	2	215

Bailer brought up pieces of coal and fossils from unknown depth.

Principal aquifer, sand and gravel. Measuring point: top of casing; altitude, 2,187.7 feet; 0.2 foot above land-surface datum. Reference mark: chiselled cross in concrete pump base at south edge of pump; altitude, 2,187.5 feet; about level with land-surface datum. Depth to water and altitude of water surface: June 14, 1948, 128.3 (2,059.2); Sept. 8, 1949, 129.4 (2,058.1).

50N 4W-3cdl (formerly 50/4W-3P1). SE¼SW¼ sec. 3; 180 feet north and 2,690 feet west of SE cor. sec. 3. Elmer Tucker. Stock and domestic well, drilled by Oliver Zinkgraf in 1930; depth, about 193 feet; about 193 feet of 6-inch steel casing; open bottom; 5-HP electric motor and force pump; pump capacity, about 10 gpm. Situated on glacial drainage channel. Owner reported well drilled largely through gravel and boulders, with three intercalated clay beds. Principal aquifer, sand and gravel. Reference mark: chiselled cross in concrete pump base at west edge of pump; altitude, 2,161.2 feet; 9.6 feet below land-surface datum. Depth to water and altitude of water surface: April 1948, about 136 (about 2,035).

50N 4W-3dcl. SW¼SE¼ sec. 3; 160 feet north and 1,430 feet west of SE cor. sec. 3. A. M. Tate (formerly owned by A. P. Boone). Domestic well (supplies small motel), drilled by A. P. Boone in Nov. 1946; depth, about 165 feet; about 165 feet of 6-inch steel casing; open bottom; 1-HP electric motor and force pump; pump capacity, about 20 gpm; yield, about 5 gpm. Situated on glacial drainage channel. Driller's record indicates that well was drilled through deposits of sand, gravel, and small boulders. Measuring point and reference mark: chiselled cross in concrete pump base at east edge of pump; altitude, 2,169.1 feet above mean sea-level, and 4.8 feet below land-surface datum. Depth to water and altitude of water surface: Sept. 8, 1949, 120.5 (2,053.4).

50N 4W-3dd1 (formerly 50/4W-3R1). SE¼SE¼ sec. 3; 260 feet north and 440 feet west of SE cor. sec. 3. Otto Heisel. Domestic well, drilled by Homer Washburn; depth, about 203 feet; 203 feet of 5-5/8-inch black-iron casing; open bottom; 1-HP electric motor and force pump. Situated on glacial channel. Principal aquifer, sand and gravel. Reference mark: top of concrete pump base; altitude, 2,188.3 feet; 7.5 feet below land-surface datum. Depth to water and altitude of water surface: Fall 1934, about 140 (about 2,056).

50N 4W-3dd2. SE¼SE¼ sec. 3; 170 feet north and 960 feet west of SE cor. sec. 3. Showboat Theatre. Domestic well, drilled by A. P. Boone in 1949; depth, about 176 feet; about 176 feet of 6-inch black-iron casing; open bottom; electric motor and force pump. Situated on glacial outwash plain. Driller's record indicates that well was drilled in deposits of sand, gravel, and small boulders. Measuring point: ½-inch tap hole, in southeast side of casing; altitude, 2,183.9 feet; 4.4 feet below land-surface datum. Reference mark: chiselled cross in concrete pump base at southeast edge of pump; altitude, 2,183.6 feet; 4.7 feet below land-surface datum. Depth to water and altitude of water surface: Sept. 1, 1949, about 125 (about 2,063).

50N 4W-4cb1. NW¼SW¼ sec. 4; 1,550 feet north and 146 feet east of SW cor. sec. 4. Fleeming Grocery. Domestic well, drilled by A. P. Boone in April 1947; depth about 198 feet; 198 feet of 6-inch black-iron casing; open bottom; ½-HP electric motor and force pump. Situated on outwash slope. Water reported soft. Reference mark: chiselled cross in concrete pump base; altitude, 2,174.6 feet; 2.7 feet below land-surface datum. Depth to water and altitude of water surface: April 1947, about 168 (about 2,009).

50N 4W-4dd1 (formerly 50/4W-4Q1). SE¼SE¼ sec. 4; 470 feet north and 200 feet west of SE cor. sec. 4. J. A. Miller. Stock and domestic well, drilled about 1911; depth, about 200 feet; 200 feet of 6-inch steel casing; open bottom; 3-HP electric motor and jet pump. Situated on river terrace. Water reported soft. Principal aquifer, sand and clay. Reference mark: chiselled cross in concrete pump base; altitude, 2,179.3 feet; 5.3 feet below land-surface datum. Depth to water and altitude of water surface: Fall 1941, about 170 (about 2,015).

50N 4W-4dd2. SE¼SE¼ sec. 4; 600 feet north and 680 feet west of SE cor. sec. 4. R. J. Beitz. Stock, domestic and industrial well, drilled; depth, about 180 feet; 180 feet of 6-inch black-iron casing; open bottom; 2-HP electric motor and force pump. Situated on river terrace. Principal aquifer, sand. Measuring point: top of casing; altitude 2,182.0 feet; 0.3 foot above land-surface datum. Reference mark: chiselled cross in concrete pump base at southwest edge of pump; altitude, 2,181.9 feet; 0.2 foot above land-surface datum. Depth to water and altitude of water surface: June 17, 1948, 124.6 (2,057.1); Sept. 8, 1949, 126.2 (2,055.5).

50N 4W-5adl (formerly 50/4W-5H1). SE¼NE¼ sec. 5; 2,520 feet south and 220 feet west of NE cor. sec. 5. E. H. Hanson. Domestic well, drilled by Homer Washburn in Aug. 1926; depth, about 360 feet; 360 feet of 6-inch steel casing; open bottom; 4-HP gasoline engine and force pump. Owner reports 85 feet of drawdown after 30 minutes of pumping. Situated on edge of outwash terrace. Water reported soft. Log reported by owner: gravel from surface to about 240 feet; hard pan from about 240 to 245 feet; quicksand, thickness unknown; gravel and coarse sand to bottom. Measuring point: top of casing at south side; altitude, 2,243.5 feet; about level with land-surface datum. Reference mark: spike in power pole 32 feet south and 190 feet east of well; altitude, 2,244.0 feet. Depth to water and altitude of water surface: Sept. 7, 1949, 216.5 (2,027.0).

*50N 4W-5cdl. SE¼SW¼ sec. 5; 90 feet north and 3,180 feet west of SE cor. sec. 5. William Shockley. Domestic well, drilled by A. P. Boone in June 1947; depth, about 162 feet; 162 feet of 6-inch steel casing; open bottom; ½-HP electric motor and force pump. Situated on river terrace. Water very soft. Measuring point: top of casing; altitude, 2,140.5 feet; 6.2 feet below land-surface datum. Reference mark: chiselled cross in concrete floor southwest of pump; altitude, 2,140.0 feet; 6.7 feet below land-surface datum. Depth to water and altitude of water surface: Aug. 30, 1949, 113.8 (2,032.9).

50N 4W-5dal. NE¼SE¼ sec. 5; 1,730 feet north and 550 feet west of SE cor. sec. 5. Art Bevard. Domestic well, drilled by owner in April 1947; depth about 195 feet; 195 feet of 6-inch steel casing; open bottom; 2½-HP gasoline engine and force pump. Situated on river terrace slope. Water reported soft. Principal aquifer, gravel. Measuring point: top of casing; altitude, 2,179.5 feet; 2.3 feet below land-surface datum. Reference point: top of pipe elbow; altitude, 2,185.3; 2.5 feet above land-surface datum. Depth to water and altitude of water surface: June 22, 1948, 137.0 (2,044.8); Sept. 7, 1949, 155.7 (2,026.1).

50N 4W-6bdl (formerly 50/4W-6F1). SE¼NW¼ sec. 6. Ira Whalen. Destroyed domestic and irrigation well, dug by J. J. Satre in 1923; depth was about 211 feet; had 196 feet of 39-inch concrete casing from surface to 196 feet, 15 feet of 20-inch steel casing from 196 to 211 feet; had 1½-HP gasoline engine and force pump. Well covered over during construction of new paved highway. Location was on slope of outwash terrace. Principal aquifer was coarse sand from depth of 201 to 211 feet. Land-surface altitude at well site: about 2,193 feet above mean sea-level datum of 1929 (revised). Depth to water and altitude of water surface: Nov. 11, 1941, 196.8 (1,996).

50N 4W-6cal. NE¼SW¼ sec. 6. Frank Babick. Domestic well (supplies two families), drilled by A. P. Boone in April 1947; depth, about 250 feet; about 250 feet of 6-inch black-iron casing; open bottom; electric

motor. Situated on terrace slope. Principal aquifer, sand and gravel. Altitude of land surface at well site, 2,206 feet (barometric measurement). Depth to water and altitude of water surface: April 1947, about 210 (about 1,996).

50N 4W-6dbl. NW¼SE¼ sec. 6. Idaho State Fish and Game Commission. Domestic well, dug to about 265 feet and drilled to about 325 feet; about 325 feet of 6-inch steel casing; dug hole back-filled around casing; open bottom; 2-HP electric motor and jet pump. Situated on outwash terrace slope. Measuring point: bottom of pump base at top of casing; altitude, about 2,223 feet (barometric measurement); 3.6 feet below land-surface datum. Reference point: top of concrete floor in pump house; altitude, about 2,227 feet; 0.4 foot above land-surface datum. Depth to water and altitude of water surface: Sept. 7, 1949, 206.4 (about 2,020).

50N 4W-7bcl (formerly 50/4W-7E1). SW¼NW¼ sec. 7. Rock Springs Health Camp. Domestic well, drilled; depth, about 249 feet; 245 feet of 6-inch steel casing from depth of 4 to 249 feet; open bottom; electric motor and force pump. Situated on bank of river. Measuring point: top of 2- by 6-inch wooden floor joist of pump house; altitude, 2,157.2 feet; 0.7 foot above land-surface datum. Depth to water and altitude of water surface: Nov. 11, 1941, 130.7 (2,025.7); Sept. 3, 1949, 142.7 (2,013.8).

50N 4W-8abl. NW¼NE¼ sec. 8; 1,070 feet south and 1,310 feet west of NE cor. sec. 8. Buford Finch. Domestic well, drilled by A. P. Boone in July 1947; depth, about 144 feet; about 139 feet of 6-inch black-iron casing from depth of 5 to 144 feet; open bottom; electric motor and force pump. Situated on bank of river. Water reported soft. Measuring point: top of casing; altitude, 2,136.6 feet; 5.2 feet below land-surface datum. Reference mark: chiselled cross in top of concrete curbing at north side of well; altitude, 2,142.7 feet; 0.9 foot above land-surface datum. Depth to water and altitude of water surface: Sept. 7, 1949, 108.0 (2,033.8).

50N 4W-9bb1 (formerly 50/4W-9D1). NW¼NW¼ sec. 9; 340 feet south and 10 feet east of NW cor. sec. 9. The Ohio Match Co. Domestic well, drilled by Homer Washburn; depth, about 160 feet; 161 feet of 7-inch steel casing; open bottom; 3-HP electric motor and force pump. Camp superintendent reports negligible drawdown when well is pumped at 34 gpm. Situated on bank of river. Principal aquifer, gravel. Measuring point, top of casing; altitude, 2,144.2 feet; 1.1 feet above land-surface datum. Reference mark: spike in power pole 130 feet west and 245 feet north of well; altitude, 2,138.6 feet. Depth to water and altitude of water surface: Nov. 4, 1941, 129.6 (2,013.4); June 14, 1948, 124.8 (2,018.3) (pump operating); Sept. 7, 1949, 115.9 (2,027.2 (pump operating).

50N 4W-10aal (formerly 50/4W-10A1). NE¼NE¼ sec. 10; 260 feet south and 680 feet west of NE cor. sec. 10. Boulevard Club. Domestic well, drilled by Oliver Zinkgraf in July 1938; depth, about 178 feet; 178 feet of 5½-inch steel casing; part of casing perforated; 1½-HP electric motor and force pump. Situated on glacial outwash plain. Principal aquifer, coarse gravel. Measuring point: top of casing; altitude, 2,189.2 feet; 4.6 feet below land-surface datum. Reference mark: chiselled cross in concrete curbing north of pump; altitude, 2,193.8 feet; about level with land-surface datum. Depth to water and altitude of water surface: July 1938, about 160 (about 2,034).

50N 4W-11aal (formerly 50/4W-11A1). NE¼NE¼ sec. 11. H. A. Lund (formerly owned by Easley). Destroyed domestic well, drilled. Was situated on valley outwash plain. Altitude of land surface at well site, about 2,236 feet above mean sea-level datum of 1929 (revised). Depth to water and altitude of water surface: about 190 (about 2,046).

50N 4W-11bcl (formerly 50/4W-11E1). SW¼NW¼ sec. 11; 2,600 feet south and 1,160 feet east of NW cor. sec. 11. A. Bevard. Domestic well, driven by owner in Aug. 1939; depth, about 163 feet; 153 feet of 3-inch steel drive pipe, with 1¼-inch fall pipe to sand point driven 10 feet below bottom of casing; electric motor and force pump. Situated on river terrace. Water reported soft. Log reported by owner: coarse sand and pea gravel from surface to 35 feet; clay from 35 to 45 feet; coarse sand and pea gravel from 45 to 153 feet; lower 10 feet probably coarse sand. Measuring point: top of casing; altitude, 2.182.7 feet; 0.8 foot above land-surface datum. Reference point: north side of pump flange; altitude, 2,183.1 feet; 1.1 feet above land-surface datum; 0.3 foot above top of casing. Depth to water and altitude of water surface: Aug. 1939, about 133 (about 2,050).

*50N 4W-13adl (formerly 50/4W-13H1). SE¼NE¼ sec. 13; 1,640 feet south and 620 feet west of NE cor. sec. 13. Coeur d'Alene School District (formerly owned by Burr Harold). Unused well, dug; depth, 128 feet; 128 feet of 48-inch concrete casing; 12-HP gasoline engine and force pump. Situated on valley outwash plain. Measuring point: top of 6- by 6-inch timber over well; altitude, 2,179.4 feet; 0.8 foot below land-surface datum. Reference mark: chiselled cross in concrete pump base at west edge of pump; altitude, 2,178.8 feet; 1.4 feet below land-surface datum. Depth to water and altitude of water surface: Sept. 6, 1949, 112.9 (2,067.3).

*50N 4W-13ccl. SW¼SW¼ sec. 13; about 4,670 feet south and about 4,310 feet west of the NE cor. sec. 13. Coeur d'Alene Laundry. Unused well, dug to 90 feet; deepened by drilling to 112 feet by Homer Washburn in 1942; 86 feet of 36-inch concrete casing from depth of 6 to 92 feet; 106 feet of 8-inch black-iron casing from 6 to 112 feet; part of casing with 1/16-inch round perforations. Situated on slope of lake basin.

Measuring point: top of 8-inch casing; altitude, 2,137.0 feet; 6.4 feet below land-surface datum. Observation well; measurements by Geological Survey. Type A-35 automatic water-stage recorder installed Sept. 10, 1949. Depth to water and altitude of water surface: Aug. 30, 1949: 6[illegible].4 (2,077.0).

50N 4W-13cc2 (formerly 50/4W-13N1). SW¼SW¼ sec. 13; about 1,260 feet north and about 680 feet east of the SW cor. sec. 13. Fred Suter and Son. Destroyed well, believed to have been drilled by William Gentry; depth was about 95 feet; about 95 feet of 6-inch casing. Was situated on valley outwash plain. Depth to water: Oct. 27, 1932, about 75 feet.