GEOLOGICAL SURVEY CIRCULAR 187

EVALUATION OF STREAMFLOW RECORDS IN ROGUE RIVER BASIN, OREGON

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ABSTRACT

This report presents data which are, in general, supplementary to those the surface-water investigations made in the past by the U. S. Geological Survey. Those have been essentially investigations of the operation of the many gaging stations on the Rogue River and tributaries.

The data presented were obtained from a detailed field investigation of the various factors resulting from man-made structures that influence the quantity or regimen of the flow at the gaging stations. These factors include diversions from the stream, bypass channels carrying water around the gaging stations, return flow from irrigation or other projects, storage and release of flood waters, and other similar factors. Where feasible, the location, size, effect upon the streamflow, periods of use, method of operation, and similar information are given. The information is divided into sections corresponding to areas determined by the location of gaging stations. An index of streamflow records is included.

A section dealing with the adequacy of available water-resources data and containing location and period of record also is included. This information is given in general terms only, and is portrayed mainly by maps and graphs.

INTRODUCTION

Purpose and Scope

Studies of the water supply for a project utilizing surface water are based primarily on streamflow data obtained by operating gaging stations. Project design requires an estimate of the probable future water supply that reasonably may be expected during the life of the project. This can be achieved only through a study of records of past streamflow or other hydrologic events. Records covering a period of many years are necessary to evaluate adequately the effect of vagaries of the weather and to determine the safe yield during drought periods. If during the period of operation of a gaging station, the man-made structures have altered the normal regimen of the stream or utilized consumptively a portion of the water supply, the effects of these changes must be considered in analyzing the data to determine the possible future supply.

River discharge determined by gaging stations represents, in each instance, the actual discharge at that particular point. In a basin where natural runoff prevails, these records depict the surface-water yield of the basin at that point. Such records are of great value to the hydrologist or designing engineer, as they are a direct measure of the yield of the drainage basin. When upstream water use diverts and depletes the water supply, the discharge records no longer serve as a measure of the yield of the basin unless appropriate adjustments are made. If the point of proposed diversion or future use is remote from the gaging station, it is even more important to have complete knowledge of these factors.

The primary purpose of this report is to evaluate each streamflow record in terms of the factors that influence or alter the flow of the Yakima River and tributaries at the gaging-station locations. Such factors include diversions, bypass channels carrying water around the gaging stations, consumptive use, regulation by storage, and other factors that alter the natural regimen of the stream or the discharge record obtained at the gaging station.

The scope of this report is confined to indexing facts and material needed for the quantitative evaluation of the surface-water resources. Emphasis is on the factors influencing the runoff regimen and the gaging-station records without attempting a quantitative determination of their effect. For example, diversions are identified by name, location, approximate size, time of occurrence, purpose, and sources of information concerning their use. These data are basic to quantitative water-supply studies and to the evaluation of the water resources of the basin. One of the more important items of this information is the reference to the sources of data.

In addition to presenting information for the evaluation of factors influencing basin yield, some attention is given to evaluating the adequacy of the streamflow records, themselves, in time and distribution. This includes: bar graph picturing the length and distribution of discharge records, maps showing areal distribution of stations and the relative length of records, table showing stream-depletion data, and table of reservoir storage potentials.

Acknowledgments

Data presented in this report were collected from many sources, including publications and files of the U. S. Geological Survey, the Oregon State Engineer, and U. S. Bureau of Reclamation. The assistance of Clinton A. Smith, watermaster of Jackson County, and Tom R. Pearce,

watermaster of Josephine County, in furnishing much of the data used in this report is greatly appreciated. Valuable information was furnished also by Harry Olsen, engineer for The California-Oregon Power Co.

This report was prepared under the immediate supervision of E. G. Bailey, hydraulic engineer, U. S. Geological Survey, Tacoma, Wash., K. N. Phillips, district engineer, Surface Water Branch, Portland, Oregon, and C. C. McDonald, staff engineer, Technical Coordination Branch, Tacoma, Wash., provided valuable technical assistance.

PHYSICAL FEATURES OF THE BASIN

The Rogue River drains an area of 5,080 sq mi, practically all of which lies in southwestern Oregon. It begins at an elevation of about 5,000 ft on the western slope of the Cascade Range, cuts through the Klamath Mountains, and discharges into the Pacific Ocean. The basin is bordered by Umpqua Mountains on the north, the Cascade Range on the east, the Siskiyou Range on the south, and the Coast Range on the west. Topographic features divide the basin into three physically distinct areas. These are referred to in the following discussion as the eastern, the central, and the western areas.

The eastern area lies upstream from the vicinity of Trail Creek, a tributary 142 miles from the mouth of the Rogue River. This part of the basin is rugged and, in general, heavily forested, with little arable land. The Rogue River and its tributaries, draining the Cascade Mountains west of Crater Lake, flow in steep, narrow canyons cut in lava rocks of Tertiary and Quaternary age. These deposits were derived from Mount Mazama, the volcano from which Crater Lake was formed. Numerous eruptions of basalt from vents on the slopes of Mount Mazama coursed down the Rogue Valley at one time and accumulated to depths of about 200 ft. Remnants of the lava fill now form high flat-topped benches along the river. After the Rogue River had carved out a valley in the intracanyon lava and had reached approximately its present stage, a gigantic mud flow consisting almost entirely of ash and pumice boulders came down the valley during one of the eruptions of Mount Mazama and flowed downstream many miles from its source. (U. S. Geological Survey, 1932, Contributions to the hydrology of the United States, Water-Supply Paper 638-B, p. 43.) There is some absorption of rain and melting snow water by the pumice deposits and fractured and fissured lava flows to retard the runoff and sustain the flow of the Rogue River during the summer.

Below Trail the valley of the main stream widens as it enters the central area of the basin. Most of the arable lands of the basin are located in this segment in a series of widely separated mountain flanked valleys. These valleys support the chief towns of the basin, Medord, Ashland, and Grants Pass. The farm lands lie below the 2,200-ft elevation and comprise many irregular-shaped areas which are as much as 46,000 acres in size. Approximately 14 miles below Trail Creek, the Rogue River enters a broad alluvial plain--the largest body of agricultural land within the basin. This plain, about 60 sq mi in area, is located at the merging of Little Butte Creek, Bear Creek, and Rogue River valleys. The lower point of this plain is near Raygold, where the river enters a shallow canyon with bench lands at scattered intervals on either side. The high, forested area on the northern part of the basin between the agricultural areas of Medford and Grants Pass is drained by Evans Creek, which has made a small, fertile valley above its confluence with the Rogue River. Around Grants Pass is a highly developed area in a large valley of the Rogue River. Below Grants Pass, Grave Creek and Jumposs Creek enter from the north and drain the undulating lands of the Merlin area.

The southern part of the central segment of the basin is drained by the Applegate and Illinois Rivers, which have their source in the Siskiyou Mountains. The Applegate River has a steep gradient except for a few miles in its lower reaches before it enters the Rogue River. The valley is narrow but fertile and highly developed. The Illinois River drains the southwestern part of the basin. The Illinois River basin is divided into two general areas of dissimilar topographic characteristics. The upper valley is broad and fertile and only partly developed. Below this valley the Illinois River flows northwestward in a deep and rocky canyon through the Coast Range and enters the Rogue River about 25 miles from its mouth.

West of the central area the Rogue River traverses the Coast Range and enters the Pacific Ocean at Gold Beach. Along most of this course the river flows in a deep and rugged canyon, accessible only by river boat and trail. Of the three diversions of the basin, the western or downstream area (except for a small coastal fringe) merits most the appellation of wilderness area.

Temperature and precipitation within the basin generally are influenced directly by air masses moving inland in an easterly direction from the Pacific Ocean. Orographic influences, differences in altitude, and distance from the Pacific Ocean all cause marked variations in climatic conditions. The average annual precipitation ranges from 85 in. at Illahe in the Klamath Mountains to about 18 in. at Medford, the center of the largest block of arable land. In portions of the drainage basin near Crater Lake, the average annual precipitation is 60 in. During cyclic climatic variations there is as little as 11 in. of precipitation annually on the valley floors and as much as 110 in. near the coast. Variations in seasonal precipitation necessitate irrigation of farm lands to produce maximum crop yields; rainfall is moderate to heavy during the winter and extremely light during the growing season. Snowfall ranges from a trace at Gold Beach to more than 200 in. in the high mountains; at high elevations only the snow remains on the ground for protracted periods.

UTILIZATION OF WATER IN THE BASIN

The economy of the Rogue River basin is based on utilization of its varied natural resources: water, timber, agricultural land, minerals, scenery, and fish. The water resources have been utilized extensively for power development and irrigation. Six private hydroelectric power plants and one municipal hydroelectric plant with a combined capacity of 58,000 kva operate within the basin. These plants generated 357,700,000 kwhr during 1946.

Turbines of the Grants Pass irrigation district at Savage Rapids dam develop 1,620 hp for direct drive pumps during the irrigation season. Data on the operation of each of these plants are included in the syllabus of this report. Irrigation in the basin is entirely by non-Federal enterprise. The area now supplied with water aggregates 64,250 net irrigated acres as illustrated by figure 1. Of this total, 41,905 acres are supplied by organized irrigation enterprises, and the remaining 22,345 acres receive water from small individually or cooperatively operated ditches. Comparative figures of areas irrigated in former years, as reported by the U. S. Census Bureau, are as follows: 1939, 64,944 acres; 1929, 58,960 acres; 1919, 38,569 acres.

In addition to power and irrigation the waters of the Rogue and its tributaries are used for mining, fisheries, industrial plants, municipal supply, and domestic purposes. Placer mining in the basin has decreased markedly in recent years. Fisheries of the State Game Commission are located on several tributaries of the Rogue, and fishing in the area has gained widespread prominence. The present major industry of the basin is timber products, which has caused a great increase in population since 1940. However, the largest industrial use of water probably is by food-processing plants, which utilize municipal water facilities. The water supplies and sewage wasteways of the basin's major communities are listed in table 1.

The early development of irrigation may be illustrated by a brief history of the settlement of the basin. Aside from recorded and unrecorded travels by explorers, adventurers, and men employed by the Federal Government to appraise the virgin area, there was no settlement until the decade 1840-50, long after lands along the Willamette and Columbia Rivers had been settled. By 1846 the Applegate party established a tortuous route leading from the Williamette through the Umpqua Valley and into the Rogue River valley. A few emigrants settled in the fertile region during the following years, but it was not until the gold strikes at Jacksonville in 1851 and in the Illinois Valley in 1852 that settlement was accelerated and development shifted from a pastoral to an agricultural economy. The early priority dates of the water rights on the tributary streams of the Rogue River indicate that the importance of water was recognized at an early date. Priorities of the earliest water rights adjudicated by the courts were for Hill Creek, a tributary of Emigrant Creek, in 1851; East Fork Illinois River, in 1853; Little Applegate River, in 1854; North Fork Little Butte Creek, in 1856; and Applegate River, in 1858.

Table 1.--Municipal water supplies and wasteways in Rogue River basin

[*Data obtained from Census of Water and Sewage Works, 1949, U. S. Public Health Service. Figures of discharge do not agree with those reported by other sources]

Community	Population 1940	Water		Sewage	
		Source of water supply	Average flow (cfs)	Average flow (cfs)	Discharge to
Medford	11,281	Big Butte Springs	17	6.2	Bear Creek
Grants Pass	6,028	Rogue River	---	1.8	Rogue River
Ashland	4,744	Ashland Creek	*4.6	.9	Bear Creek
Central Point	906	Big Butte Springs (Medford pipeline).	*.1	---	Bear Creek
Jacksonville	761	Jackson Creek and spring.	---	No community system	
Gold Hill	536	Rogue River	---	.08	Rogue River
Phoenix	432	Tunnel and deep wells	*.08	No community system	
Rogue River	383	Shallow wells	*.03	Do.	
Talent	381	Shallow wells	---	Do.	
Butte Falls	339	Springs tributary to Ginger Creek.	---	Do.	
Eagle Point	243	Big Butte Springs (Medford pipeline).	*.02	Do.	

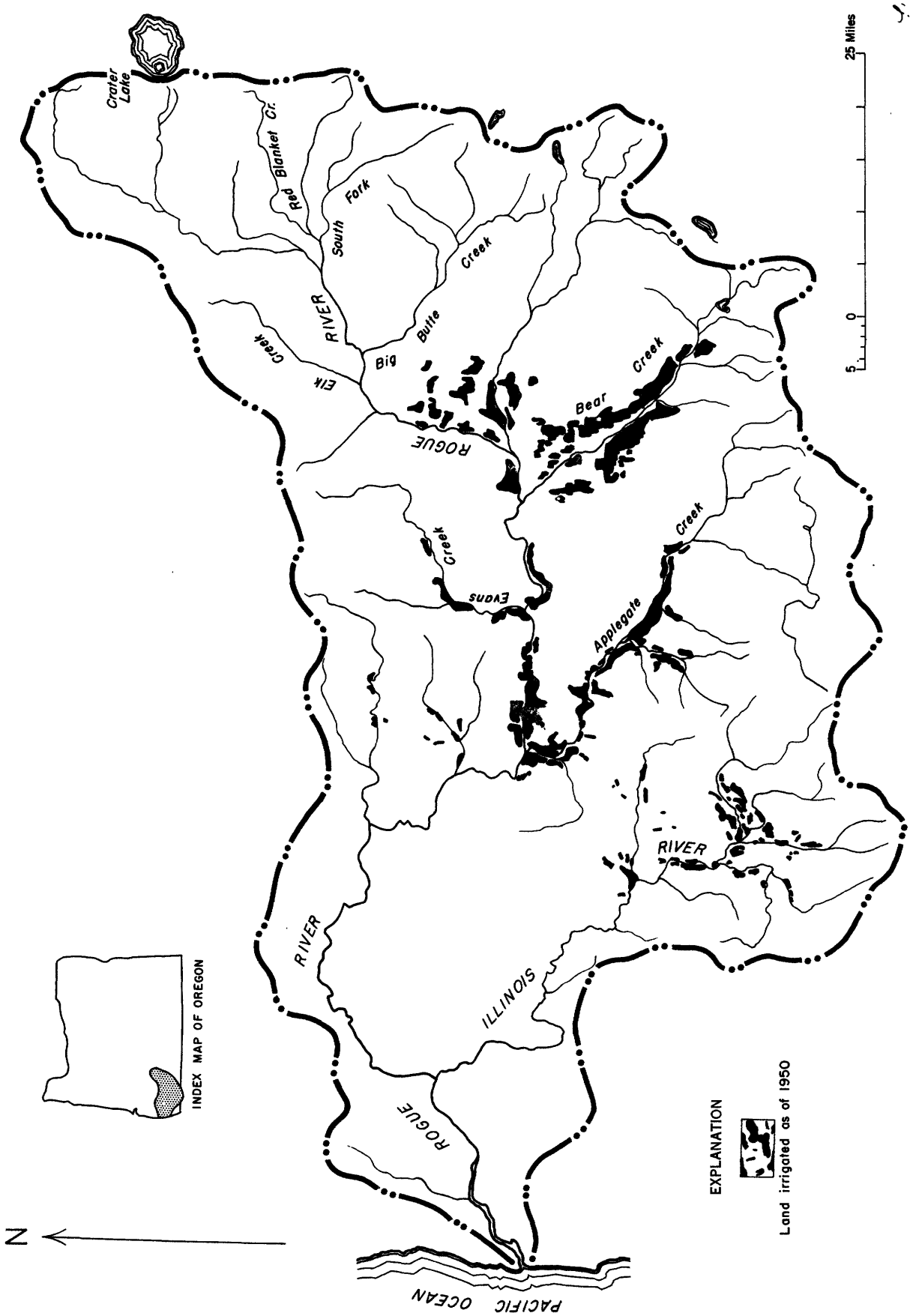


Figure 1.--Map showing irrigated areas in Rogue River basin.

The pattern of irrigation development in the Rogue River basin is largely one of small or moderate-sized facilities and organizations. For many years the lack of capital necessary for construction of costly diversion dams and large canals limited irrigation diversions to the use of summer runoff from the small tributary streams. By 1898 agricultural development and capital accumulation led to the organization of the Fish Lake Ditch Co. This company made its first water delivery in 1902 by diverting from Little Butte Creek and by utilizing a small amount of storage at Fish Lake. After passing through several reorganizations, the Fish Lake Ditch Co. was expanded into what is now the Rogue River valley irrigation district.

Passage of the Oregon Irrigation District Law in 1917 patterned the formation of the several organized irrigation districts in the basin. A discussion of the individual irrigation districts and associations follows:

The Medford and Rogue River valley irrigation districts are in lower Bear Creek valley. The Medford irrigation district has 8,400 acres, and the Rogue River valley irrigation district has 4,800 acres under irrigation. Each operates as a separate district, although they jointly use the same reservoir and canal facilities. The principal irrigation works operated by the two districts are Fourmile Lake and Fish Lake reservoirs and interbasin diversions. Both districts also intercept water from Bear Creek by means of feeder canals. The principal land use in these districts is for fruit and dairy farming, chiefly in small units.

Talent irrigation district, the largest development in the basin, comprises 10,400 acres of irrigated land in upper Bear Creek valley, surrounding the towns of Ashland and Talent. The district receives water from storage at Hyatt Prairie and Emigrant Gap reservoirs, by canal diversions from Bear, McDonald, Greely, Wagner, and Neil Creeks, and other minor diversions. Canals distribute the water along both sides of Bear Creek valley. Irrigated lands in this district are chiefly in small surburban-home acreages and fruit and dairy farms. A large percentage of the farms contains less than five acres.

Eagle Point irrigation district irrigates 5,590 acres of land in lower Little Butte Creek valley and northward between Little Butte Creek and Rogue River. The district obtains water from the unregulated flow of Big Butte Creek through a main canal diversion near Butte Falls. Irrigated lands of Eagle Point district are used primarily for pasture and seed crop production. Cattle raising and dairy farming predominate, although seed crops are important.

Table Rock Ditch Co. serves 1,400 acres of land on the north side of the Rogue River below the mouth of Little Butte Creek. The water supply is diverted by gravity from Rogue River, and the available flow is always ample for irrigation requirements under existing water rights. Irrigated lands are used principally for dairy, fruit, and stock farms.

Gold Hill irrigation district includes a narrow strip of 1,000 acres of irrigable lands bordering Rogue River on the south side, between the towns of Gold Hill and Rogue River. The district water supply is diverted by gravity from Rogue River, about 2 miles upstream from Gold Hill. Gold Hill district lands comprise irrigated pasture, small orchards, and gardens.

Grants Pass irrigation district provides water for 8,980 acres of land surrounding the town of Grants Pass. Water supplies are derived from the natural flow of Rogue River at Savage Rapids. A gravity canal and direct-lift pumps divert water from Savage Rapids dam, about 5 miles upstream from Grants Pass. The distribution system uses several electric relift pumps, but lifts from the river to the highline canals on both sides of the river are accomplished by direct hydraulic pumping. In late summer during dry years the flow is not adequate to supply irrigation requirements and operate both turbines simultaneously; consequently, it is sometimes necessary to alternate the operation of the canals and pumps. This restricted operation never has damaged crops seriously. About 70 percent of the irrigated area in the district is devoted to pasture and to ladino clover, which is grown for hay and seed. The remaining area is utilized chiefly for hops and bulbs on small acreages.

Fort Vannoy irrigation district lies immediately downstream from Grants Pass irrigation district and on the north side of the Rogue River. The 800 acres of the district are cultivated intensively and are irrigated by pumping water directly from the Rogue River, with a lift of 23 ft, about 5 miles west of Grants Pass. The available flow at the place of diversion always has been ample for requirements of the district. A number of small dairy farms are in the district. Hops, bulbs, and other specialties are the principal crops.

WATER-RESOURCES DATA FOR ROGUE RIVER BASIN

Streamflow Records

Collection of streamflow data at gaging stations in the Rogue River basin began in 1905, when a station was established near Tolo. The station, designated Rogue River at Raygold near Central Point, is still in operation today. That same year the office of Oregon State Engineer was created, and since then, the work of stream gaging has been done cooperatively by the State Engineer and the Geological Survey.

Reports on surface-water supply in the Rogue River basin, published by the Geological Survey from 1899 to 1950, are on the following page.

In addition to records published in reports of the Geological Survey, some discharge records in Oregon also have been published in State reports. Records for 17 of the stations on streams in the Rogue River basin have been published only in State bulletins, and records at many of the Geological Survey stations have been supplemented by those obtained by the State at the same stations. The table at the top of the following page contains a list of reports issued by the office of Oregon State Engineer.

Period	Report
1914-24	Bull. 7, Water Resources of the State of Oreg.
1924-30	Bull. 8, Water Resources of the State of Oreg.
1930-36	Bull. 9, Water Resources of the State of Oreg.
1936-41	Bull. 10, Water Resources of the State of Oreg.

On plate 1 are shown the locations of gaging stations which have been established by the Geological Survey on natural streams in the basin. The period of record at each of the stations is shown graphically in table 2. Numbers opposite the station name refer to numbers on the map. Many miscellaneous discharge measurements have been made in the basin, but these are not indexed in this report.

Surface-water supply in the years mentioned

Year	Water-Supply Paper	Year	Water-Supply Paper	Year	Water-Supply Paper	Year	Water-Supply Paper	Year	Water-Supply Paper
1899 a/	38	1910	292	1921	534	1931	724	1941	934
1900 b/	51	1911	312	1922	554	1932	739	1942	964
1901	66,75	1912	332-C	1923	574	1933	754	1943	984
1902	85	1913	362-C	1924	594	1934	769	1944	1014
1903	100	1914	394	1925	614	1935	794	1945	1044
1904	135	1915	414	1926	634	1936	814	1946	1064
1905	177,178	1916	444	1927	654	1937	834	1947	1094
1906	214	1917	464	1928	674	1938	864	1948	1124
1907-8	252	1918	484	1929	694	1939	884	1949	1154
1909	272	1919-20	514	1930	709	1940	904	1950	1184

a/ Rating tables and index to Water-Supply Papers 35-39 contained in Water-Supply Paper 39. Monthly discharge for 1899 in 21st Annual Report, part 4.
b/ Rating tables and index to Water-Supply Papers 47-52 contained in Water-Supply Paper 52. Monthly discharge for 1900 in 22d Annual Report, part 4.

Storage Reservoirs

There are two major reservoirs and several minor reservoirs in the Rogue River basin. These are listed in table 3 with location, capacity, and other pertinent data given. Records of contents for Fish Lake and Emigrant Gap reservoirs have been published by the Geological Survey.

Storage in the basin is supplemented by water carried in two canals from Klamath River basin. The flow in these canals consists of water released from Fourmile Lake and Hyatt Prairie reservoirs. Records of contents of the two reservoirs, and discharge records of Cascade and Keene Creek Canals, are available in water-supply papers of the Geological Survey.

Adequacy of Data

Streamflow records of the Rogue River basin have been obtained at many different locations over various periods of time. Collection of data cooperatively and individually since the early 1900's has been by the Geological Survey, State of Oregon, U. S. Bureau of Reclamation, and private organizations. A picture of the network of gaging stations in the basin and the length of record at each station is shown in figure 2.

Discharge records are available for many streams in the central and eastern parts of the basin, but there have been no records of any appreciable duration in the western area. No gaging stations have been maintained below Kerby on the Illinois River or below Grants Pass on the Rogue River, except for the record of Rogue River near Galice for only 7 months in 1906. The lack of streamflow data for this area may be ascribed to the rugged terrain, which makes much of the country inaccessible by road, to the absence of potential irrigation developments, and to the proximity of the area to the Pacific Ocean, where the rivers' flow is wasted.

Most of the gaging stations in the basin have been operated for periods of less than 10 yr. Many were intended primarily to provide data for the design and operation of irrigation projects. As these projects were completed and a method of operation established, the stations were discontinued. A few stations provide a measure of the natural yield over a period of many years. An example is Rogue River above Prospect, above which there has been practically no consumptive use of water. The relative size of the basin's surface runoff is indicated by the average discharge for the following stations during the 10 yr period October 1, 1939, to September 30, 1949, the longest period of concurrent records available at this time.

Station	Average discharge (cfs)
Applegate River near Wilderville	639
Rogue River at Grants Pass	2,953
Illinois River at Kerby	1,137

A summary of the status of each gaging station record in the basin with respect to the natural yield at that point is shown in table 4.

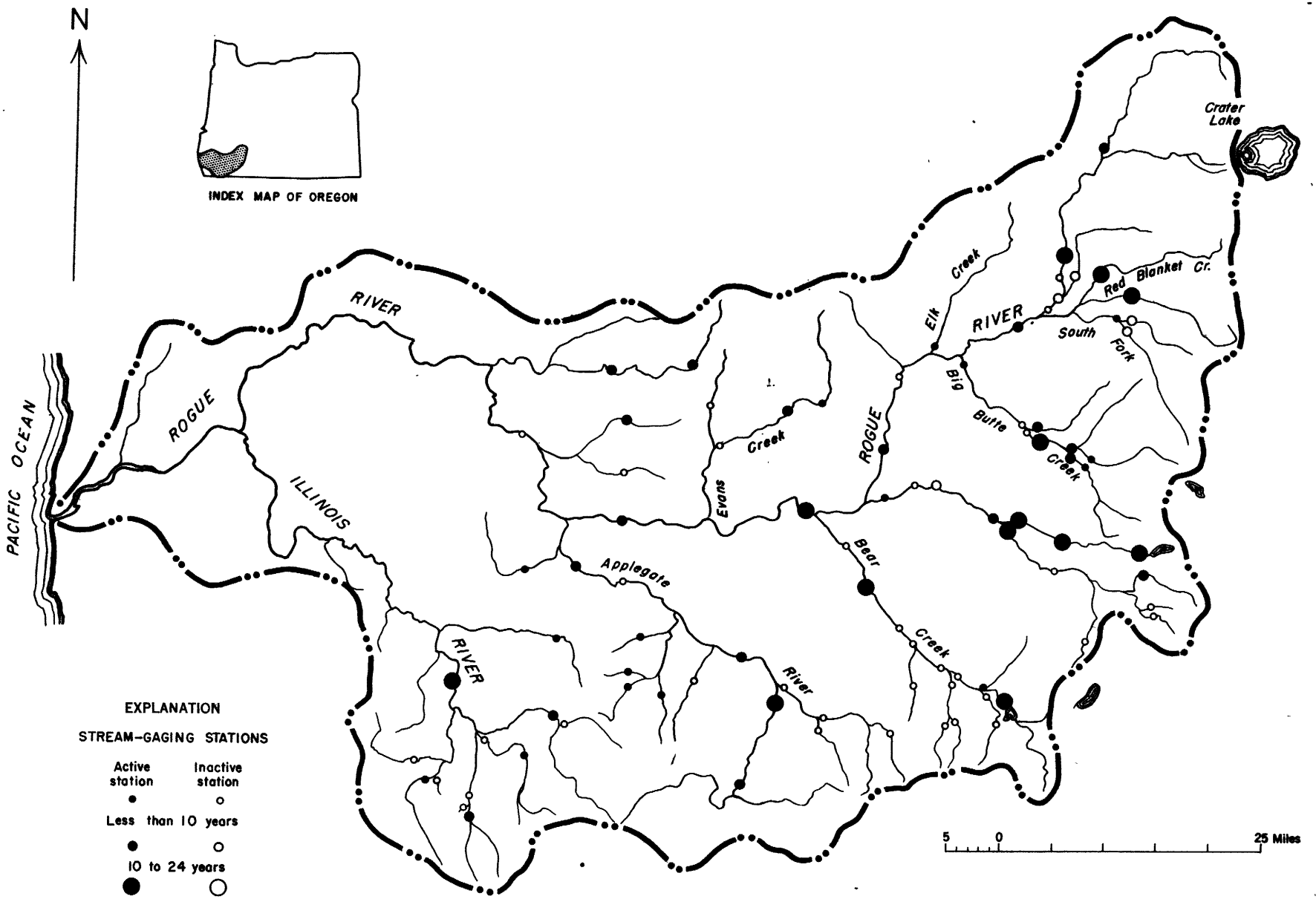
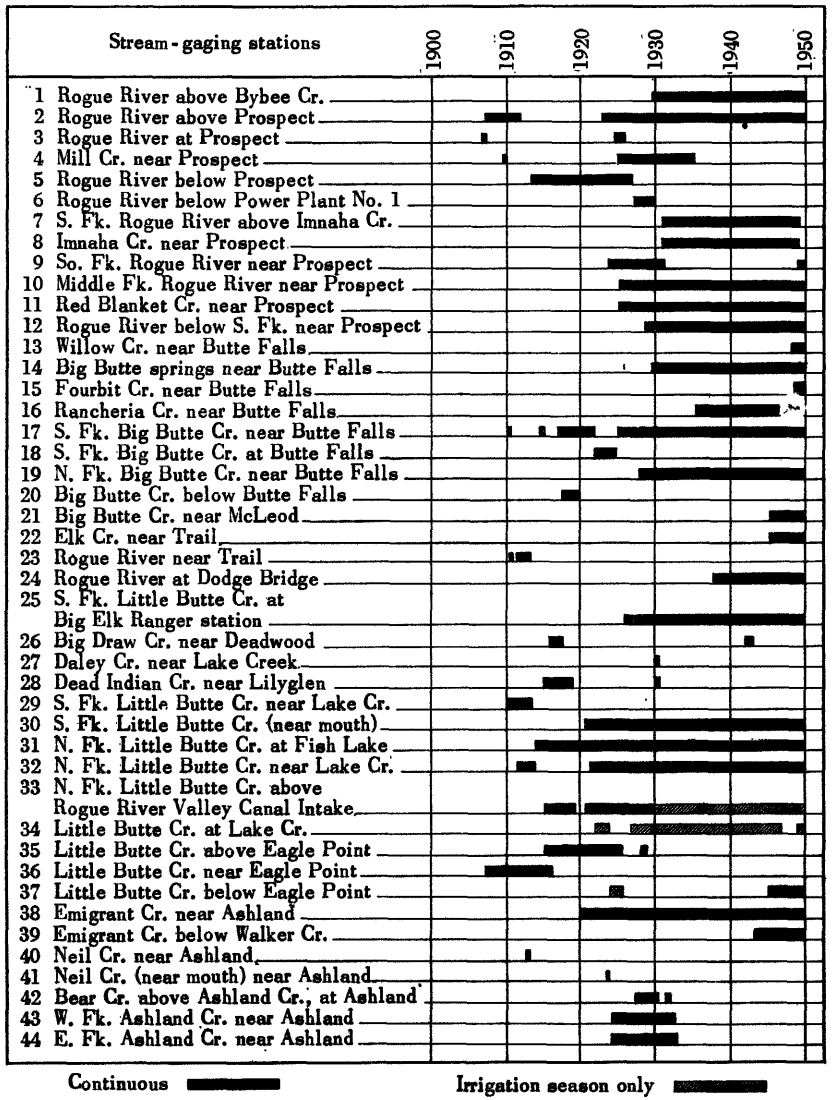


Figure 2.--Map showing location and duration of streamflow records.



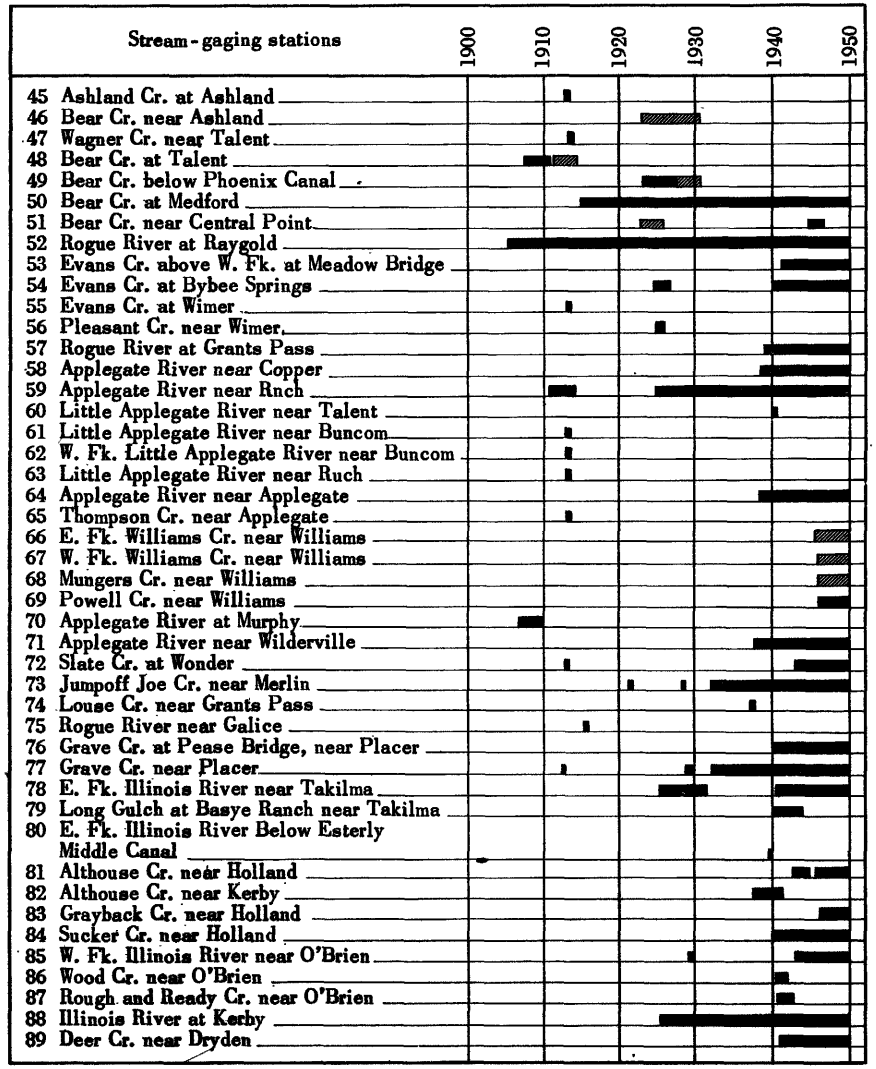


Table 2.--Index of streamflow records in Rogue River basin

Table 3.--Storage reservoirs in Rogue River basin

Name	Location	Usable capacity acre-ft	Date storage began	Purpose	Remarks
Fish Lake	Lat 42°23', long. 122°21', in the SW¼ sec. 3, T. 37 S., R. 4 E., on North Fork Little Butte Cr. 14 miles east of Lake Creek post office.	7,527	Nov. 1915	Irrigation	Reservoir formed by rock-faced earth dam, completed in fall of 1915. Elev. of spillway, 4,826 ft. Water used jointly by Medford and Rogue River valley irrigation districts. Records of contents available in reports of Geol. Survey from Dec. 1915 to Sept. 1950.
Emigrant Gap	Lat 42°10', long. 122°36', in the SE¼ sec. 20, T. 39 S., R. 2 E., on Emigrant Creek, 6 miles southeast of Ashland.	8,342	Dec. 1924	----do----	Reservoir formed by concrete arch dam, completed in 1924. Elevation of spillway, 2,173.5 ft. Used by Talent irrigation district. Records of contents available in reports of Geol. Survey from Dec. 1924 to Sept. 1950.
Walker (or Rader).	NE¼ sec. 29, T. 39 S., R. 1 E., on Ashland Cr. 3 miles south of Ashland.	800	1928	Power, and Ashland municipal supply.	Dam completed in 1928. Shown on Geol. Survey map as Walker Reservoir, but known locally as Rader Reservoir. No known records of contents available.
Medford City	In Medford, SE¼ sec. 20, T. 37 S., R. 1 W.	About 37; prior to 1946 about 12.	1909	Municipal	Receives about 18 cfs from Big Butte Springs. Prior to 1927, received about 7 cfs from North Fork Little Butte Creek. Records of contents available from Medford Water Bureau.
Squaw Lake	Sec. 2, T. 41 S., R. 3 W., on Squaw Creek, 6 miles east of Copper.	Several hundred.	1876 (water-right)	Irrigation	Small dam increases storage in Squaw Lake, used for irrigation along Squaw Creek. No known records of contents available.
Fourmile Lake	Lat 42°27', long. 122°14', in the NW¼ sec. 9, T. 36 S., R. 5 E.	13,330 (Can be increased to 18,100 by flashboards.)	1922	----do----	Reservoir formed on natural lake by rock-faced earth dam. Elev. of spillway, 6,000 ft. Water carried by transmountain diversion from Klamath River basin to Rogue River basin for use on lands near Medford. Records of contents available in reports of Geol. Survey, June 1923 to Sept. 1930, and June 1932 to Sept. 1950.
Hyatt Prairie	Lat 42°10', long. 122°28' in sec. 16, T. 39 S., R. 3 E. on Keene Creek, 20 miles east of Ashland.	16,180	1922	----do----	Reservoir formed by rock-faced earth dam. Elev. of spillway, 5,016 ft. Water carried by transmountain diversion from Klamath River basin to Rogue River basin for use on lands near Ashland and Talent. Record of contents available in reports of Geol. Survey, Dec. 1922 to Sept. 1950.

Table 4.--Streamflow records in relation to natural yield
[For details of regulation, diversion, and other exceptions to natural yield see station descriptions beginning on page 13]

No.	Gaging station	Upstream regulation and depletion
1	Rogue River above Bybee Creek	None of consequence.
2	Rogue River above Prospect	Do.
3	Rogue River at Prospect	Do.
4	Mill Creek near Prospect	Three small diversions; no regulation.
5	Rogue River below Prospect	Diversion for power plant bypasses station.
6	Rogue River below Power Plant no. 1	Minor regulation by power plants; no diversion of consequence.
7	South Fork Rogue River above Imnaha Creek near Prospect.	None of consequence.
8	Imnaha Creek near Prospect	Do.
9	South Fork Rogue River near Prospect	Do.
10	Middle Fork Rogue River near Prospect	Do.
11	Red Blanket Creek near Prospect	One diversion bypasses station.
12	Rogue River below South Fork near Prospect.	Power plant regulation; flow essentially natural yield.
13	Willow Creek near Butte Falls	Two small diversions.
14	Big Butte Springs near Butte Falls	Large diversion bypasses station.
15	Fourbit Creek near Butte Falls	Two small diversions.
16	Rancheria Creek near Butte Falls	Several small diversions.
17	South Fork Big Butte Creek near Butte Falls.	Several diversions; one bypass channel.
18	South Fork Big Butte Creek at Big Butte Falls.	Several diversions; one large bypass channel.
19	North Fork Big Butte Creek near Butte Falls.	Two small diversions.
20	Big Butte Creek below Butte Falls	Several small diversions.
21	Big Butte Creek near McLeod	Numerous diversions; two bypass channels.
22	Elk Creek near Trail	Small diversions; one ditch bypassing station.
23	Rogue River near Trail	Numerous small diversions.
24	Rogue River at Dodge Bridge	Numerous small diversions; two bypass channels.
25	South Fork Little Butte Creek at Big Elk ranger station.	None of consequence.
26	Big Draw Creek near Deadwood	Do.
27	Daley Creek near Lake Creek	Do.
28	Dead Indian Creek near Lilyglen	Do.
29	South Fork Little Butte Creek near Lake Creek.	Some small diversions.
30	South Fork Little Butte Creek near mouth.	Several small diversions.
31	North Fork Little Butte Creek at Fish Lake.	Regulation by Fish Lake reservoir; importation of water from Klamath River basin.

Table 4.--Streamflow records in relation to natural yield--Continued

No.	Gaging station	Upstream regulation and depletion
32	North Fork Little Butte Creek near Lake Creek.	Regulation by Fish Lake reservoir; water imported from Klamath River basin; a few diversions.
33	North Fork Little Butte Creek above Rogue River valley canal,	Regulation by Fish Lake reservoir; water imported from Klamath River basin; a few diversions and several bypass channels.
34	Little Butte Creek at Lake Creek	Regulation by Fish Lake reservoir; water imported from Klamath River basin; one large and numerous small diversions. Bypass channels.
35	Little Butte Creek above Eagle Point	Do.
36	Little Butte Creek near Eagle Point	Do.
37	Little Butte Creek below Eagle Point	Do.
38	Emigrant Creek near Ashland	Regulation by Emigrant Gap reservoir; water imported from Klamath River basin; several diversions. Bypass channels.
39	Emigrant Creek below Walker Creek	Do.
40	Neil Creek near Ashland	Two small diversions.
41	Neil Creek near Ashland (near mouth)	Several small diversions.
42	Bear Creek above Ashland Creek at Ashland,	Flow affected by storage in Emigrant Gap reservoir; importation of water from Klamath River basin, and diversions.
43	West Fork Ashland Creek near Ashland	None of consequence.
44	East Fork Ashland Creek near Ashland	Do.
45	Ashland Creek at Ashland	Regulation by city of Ashland reservoir; one large and one small diversions and two bypass channels.
46	Bear Creek near Ashland	Regulation by storage reservoirs; water imported from Klamath River basin; many diversions and bypass channels.
47	Wagner Creek near Talent	Probably no diversion during period of record.
48	Bear Creek at Talent	Many diversions.
49	Bear Creek below Phoenix Canal	Many diversions and bypass channels; water imported from Klamath River basin; regulation by reservoirs.
50	Bear Creek at Medford	Do.
51	Bear Creek near Central Point	Do.
52	Rogue River at Raygold	Many diversions; water imported from Klamath River basin and depleted upstream; minor regulation.
53	Evans Creek near Bybee Springs	Three small diversions.
54	Evans Creek at Bybee Springs	Several small diversions.
55	Evans Creek at Wimer	Numerous small diversions; one bypass channel.
56	Pleasant Creek near Wimer	Several small diversions; one bypass channel.
57	Rogue River at Grants Pass	Many diversions, three bypass channels; minor regulation by reservoirs.
58	Applegate River near Copper	Three diversions, two bypass channels; minor regulation by small reservoir.
59	Applegate River near Ruch	Several diversions; one bypass channel.

Table 4.--Streamflow records in relation to natural yield--Continued

No.	Gaging station	Upstream regulation and depletion
60	Little Applegate River near Talent	One large diversion to canal bypassing station.
61	East Fork Little Applegate River near Buncom.	Two small diversions to ditches bypassing station.
62	West Fork Little Applegate River near Buncom.	Do.
63	Little Applegate River near Ruch	Several diversions; one bypass channel.
64	Applegate River near Applegate	Numerous diversions and bypass channels.
65	Thompson Creek near Applegate	Several small diversions; two bypass channels.
66	East Fork Williams Creek near Williams	Several small diversions; one bypass channel.
67	West Fork Williams Creek near Williams	One small diversion to bypass channel.
68	Mungers Creek near Williams	None of consequence.
69	Powell Creek near Williams	Do.
70	Applegate River at Murphy	Many major and minor diversions; one bypass channel.
71	Applegate River near Wilderville	Do.
72	Slate Creek at Wonder	Several small diversions.
73	Jumpoff Joe Creek near Merlin	Several small diversions; one bypass channel.
74	Louse Creek near Grants Pass	None of consequence.
75	Rogue River near Galice	Many minor diversions.
76	Grave Creek at Pease Bridge near Placer	One large diversion.
77	Grave Creek near Placer	One large and several small diversions.
78	East Fork Illinois River near Takilma	Two large diversions to bypass channels.
79	Long Gulch near Takilma	Two minor diversions to bypass channels.
80	East Fork Illinois River below Easterly Middle Canal.	Several large and small diversions, bypass channels.
81	Althouse Creek near Holland	Flow essentially the natural yield, some diversion for mining.
82	Althouse Creek near Kerby	Three small diversions.
83	Grayback Creek near Holland	One small diversion to bypass channel.
84	Sucker Creek near Holland	Do.
85	West Fork Illinois River near O'Brien	Two small diversions; one bypass channel.
86	Wood Creek near O'Brien	Several minor diversions.
87	Rough and Ready Creek near O'Brien	None of consequence.
88	Illinois River at Kerby	Many large and small diversions; two small ditches bypass station.
89	Deer Creek near Dryden	Flow essentially the natural yield of drainage area above this point.

SYLLABUS OF GAGING-STATION RECORDS

Explanation of Data

The data presented in the following pages apply to the physical and hydrologic setting at and above the gaging stations. Location, records available, and bypass channels refer to the gaging station and the records of discharge at that site. Data on diversions, return flow, and utilization refer to the area between that gaging station and the next gaging station upstream. Drainage area refers to all above the station site.

Gaging stations on the stream are presented in downstream order from headwater to mouth, with stations on tributaries to that stream being inserted in the order in which the tributaries enter that stream. Diversions and return flows are listed in the same downstream order. The relative rank of the tributaries is indicated in the table of contents by indention.

The "location" paragraph shows the location of the gaging station with respect to latitude and longitude or to land subdivisions, as well as with respect to the nearest town or prominent feature of the stream.

"Drainage area" refers to the entire drainage area above the gaging station. Where this information is not available the paragraph has been omitted.

"Records available" indicates the periods for which discharge records are known to be available. Unless the source of such information is shown, the records for those years are published in Geological Survey water-supply papers. Records shown to be available in reports of the State Engineer are published in State bulletins entitled "Water resources of the State of Oregon"; the latest bulletin available at this time is the one for the period 1936-41, Bulletin 10.

"Bypass channels" are artificial conduits which carry water past the station. The flow in these channels is usually not included in station records. However, for certain stations the flow of a canal may have been added to that of the stream at the gaging station to give the total surface flow at that site. In many instances when a canal is reported as bypassing the gage, a portion of the water originally diverted has been used upstream or lost through seepage, and a lesser amount actually bypasses the station.

"Diversion," as used in this report, is water removed from the stream by artificial means such as a ditch or pump. Locations of diversions refer to the head gate or point of diversion. Although some of the large canals and ditches have a continuous water-stage recorder, or a staff gage read by an observer, the accurate flow of most ditches is not known. The approximate normal flow diverted has been shown, if such information is available; watermasters have been cooperative in furnishing data for the diversions with which they are familiar. In most cases, however, it has been necessary to refer to the water right for an indication of the amount of water taken from a stream. Often the extent of diversion permitted by a water right is less than the flow actually diverted during periods of ample runoff, and greater than the flow available during late summer months. The priority of the water right, where shown, is given as an indication of the earliest recorded use of the diversion. Water used for irrigation is usually diverted only during the irrigation season, generally from April through September. During the remainder of the year there may be little or no water taken from the stream unless a ditch is used for purposes other than irrigation.

"Return flow" is any surface water returning to the stream within the area indicated. Location of wasteways, approximate discharge, and source of the flow have been included where known. Data in this report are confined to surface conditions, and no estimates are included of water returning through seepage or subsurface flow.

"Storage and regulation" refer to reservoirs and other structures within the area indicated that affect the normal regimen of streamflow. Regulation is considered to be the alternate storage and release of water; withdrawals by diversions are not included. Regulation at the station may also be caused by structures in areas above upstream gaging stations, but such regulation is mentioned only in the records of the gaging station immediately below the structure.

"Utilization" is the use of water in the area indicated, regardless of the source of supply. Changes in utilization from the beginning of the period of record to the present are given if known.

Gaging Station Records

1.--Rogue River above Bybee Creek, Oreg.

Location.--Water-stage recorder, lat 42°56', long. 122°26', in the NE¼ sec. 26, T. 30 S., R. 3 E., 700 ft upstream from Bybee Creek and 2 miles northeast of Union Creek. Altitude of gage, 3,465 ft (from river-profile map).

Drainage area.--155 sq mi.

Records available.--January 1930 to September 1950.

Bypass channels.--None.

Diversions.--None.

Return flow.--None.

Storage and regulation.--None.

Utilization.--None.

2.--Rogue River above Prospect, Oreg.

Location.--Water-stage recorder, lat 42°47', long. 122°30', in the NE¼ sec. 19, T. 32 S., R. 3 E., 1½ miles upstream from intake of diversion of The California-Oregon Power Co., 2 miles northwest of Prospect, and 3 miles upstream from Mill Creek. Altitude of gage, 2,620 ft (from river-profile map).

Drainage area.--332 sq mi.

Records available.--July 1907 to February 1912 (incomplete), October 1923 to September 1950.

Bypass channels.--None.

(The information that follows applies only to the drainage area between this station and the next station upstream.)

Diversions.-- According to an oral report by Clinton Smith, Jackson County watermaster, Larson ditch diverts from Larson Creek in the S½NE¼ sec. 7, T. 32 S., R. 3 E. Water right permits diversion of 1.6 cfs, priority 1903. (Jackson County Circuit Court, 1909 Rogue River Decree, p. 44.) No discharge records available. Water used during irrigation season.

Return flow.--No known return surface flow.

Storage and regulation.--None.

Utilization.--About 80 acres irrigated by Larson ditch.

3.--Rogue River at Prospect, Oreg.

Location.--Water-stage recorder in the SW¼ sec. 29, T. 32 S., R. 3 E., at site of proposed diversion dam of new Prospect power development, downstream from Schoolmarm Creek, 1,000 ft upstream from intake of California-Oregon Power Co.'s flume, half a mile northwest of Prospect, and 1½ miles downstream from station designated as above Prospect.

Records available.--July to October 1907; July 1925 to September 1926.

Bypass channels.--None.

(The information that follows applies only to the drainage area between this station and the next station upstream.)

Diversions.--None.

Return flow.--None.

Storage and regulation.--None.

Utilization.--None.

4.--Mill Creek near Prospect, Oreg.

Location.--Staff gage, lat 42°45'10", long. 122°28'40", in the SE¼ sec. 29, T. 32 S., R. 3 E., at power canal crossing one-third of a mile northeast of Prospect. Zero of gage is about 2,587 ft above mean sea level.

Drainage area.--32 sq mi.

Records available.--August to October 1910. May 1925 to September 1935.

Bypass channels.--

1. Nye ditch, which is used for irrigation below Prospect, bypasses station. Station records do not include flow of ditch.

2. Prospect ditch, used at town of Prospect, bypasses station. Records do not include flow.

Diversions.--No discharge records of the following diversions known to be available.

1. Clinton Smith, Jackson County Watermaster, says that Moore (or Mill Creek Ranch) ditch diverts from Mill Creek in the SW¼ sec. 33, T. 31 S., R. 3 E. Water right permits diversion of 0.5 cfs, priority 1901, (according to Rogue River decree, Jackson County Circuit Court, p. 6, 1909).

2. Nelson Nye ditch diverts from Mill Creek in SW¼SE¼ sec. 9, T. 32 S., R. 3 E. (Rogue River Decree, Jackson County Circuit Court, p. 6, 1909.) Water right permits the diversion of 4.68 cfs, priority 1930. (Water-right permits of Oregon State Engineer.) Water used principally during irrigation season.

3. Prospect ditch diverts in sec. 28, T. 32 S., R. 3 E., about one-fourth mile above gage used since April 29, 1932, and one-fourth mile below gage used prior to April 29, 1932. Noted as diverting "1 or 2 cfs to supply water for domestic purposes at Prospect" in records for 1932-35.

Return flow.--No known surface return flow.

Storage and regulation.--None.

Utilization.--Above station, about 25 acres irrigated by Moore Ditch. Water used for irrigation, domestic and stock purposes from Nelson Nye ditch, mainly below Prospect.

5.--Rogue River below Prospect, Oreg.

Location.--Staff gage in the NW¼ sec. 6, T. 33 S., R. 3 E., at Prospect power plant of California-Oregon Power Co., 1 mile downstream from mouth of Mill Creek and 2 miles below Prospect.

Records available.--August 1913 to September 1927.

Bypass channels.--Records do not include flow in California-Oregon Power Co.'s flume which bypasses station. See "diversions" paragraph. Nye ditch, which diverts water from Mill Creek after 1930 for irrigation of land below station, was apparently not in existence during period of record.

(The information that follows applies only to the drainage area between this station and the next stations upstream.)

Diversions.--

1. Main power canal, completed in November 1931, diverts from South and Middle Forks Rogue River and from Red Blanket Creek, and discharges into the Rogue River above diversion dam in the SW¼ sec. 29. Water is used to supplement flow of Rogue River at the point of diversion for power plants nos. 1, 2 and 4. Records available in reports of Geological Survey from November 1931 to September 1950. Mean discharge for 16 yr, 266 cfs.

2. The California-Oregon Power Co.'s flume, first put into operation January 1912, diverted water from Rogue River in the NW¼SW¼

sec. 29, T. 32 S., R. 3 E., and delivered it to the power plant in the NW¼ sec. 6, T. 33 S., R. 3 E., where a head of about 500 ft was obtained. Discharge records from August 1913 to November 1927 available in reports of Geological Survey. Mean discharge for water year 1925-26 was 179 cfs. Flume replaced November 26, 1927 by a concrete canal. Records have not been published since old flume was abandoned, but measurements of discharge in the new canal have been made indicating flows up to 1,010 cfs.

3. Mill flume diverted from Mill Creek in the NW¼NE¼ sec. 32, T. 32 S., R. 3 E. Used until about 1931. Water right permits the diversion of 30 cfs, priority 1880. (Rogue River decree, Jackson County Circuit Court, p. 6.) No discharge records available.

Return flow.--Mill flume returned water to Mill Creek at place of use, in the NE¼NW¼ sec. 32, T. 32 S., R. 3 E. (Rogue River Decree, Jackson County Circuit Court, Medford, p. 6), prior to 1931.

Storage and regulation.--Slight regulation by intake of Power Co.'s flume.

Utilization.--Water from Mill flume used at the Mill Creek power plant, at Prospect, for sawing lumber. Less than 30 hp was used. (Water-power resources of the Rogue River drainage basin, Oregon, Geol. Survey Water-Supply Paper 638-B, p. 71, 1932.)

6.--Rogue River below Prospect power plant no. 1, Oreg.

Location.--Water-stage recorder in the NW¼ sec. 6, T. 33 S., R. 3 E., 300 ft below tailrace of Prospect power plant of the California-Oregon Power Co., 1 mile below Mill Creek and 2 miles southwest of Prospect.

Records available.--October 1927 to September 1930. Discharge at station designated "Rogue River below Prospect" may be combined with discharge at station on Power Co.'s flume to obtain equivalent record from August 1913 to September 1927.

Bypass channels.--None.

(The information that follows applies only to the drainage area between this station and the next station upstream.)

Diversions.--None.

Return flow.--Tailrace of Prospect power plant no. 1 (used since 1912) is 300 ft upstream. Tailrace of plant no. 2 (used since 1928) is 750 ft upstream. Discharge records of the California-Oregon Power Co.'s flume are available in reports of Geological Survey from 1915 to 1927.

Storage and regulation.--Flow regulated by pondage at diversion dam and forebay of Prospect Power Plant.

Utilization.--The California-Oregon Power Co.'s plant no. 1 commenced operating in January 1912. A low dam diverted water into a wooden flume for use at the plant which has a nameplate installed capacity of 3,760 kw. (Report by letter from the California-Oregon Power Co.) In 1927 the original dam and flume were replaced with the present dam about 300 ft farther upstream and a concrete lined canal, thus gaining an additional 100 ft of head. The canal is 6,840 ft long. It leads to a small forebay from which two 3,100 ft pipelines lead to a surge tank at the edge of the canyon. (Water-power resources of the Rogue River drainage basin, Oregon, Geol. Survey Water-Supply Paper 638-B, p. 68.) Plant no. 2, located about 450 ft upstream from plant no. 1, commenced using water from this tank in 1928. The capacity of plant no. 2 is 32,000 kw. Plant no. 4 which commenced operating in 1944, utilizes water from the same forebay as plant no. 2. It has a capacity of 1,000 kw. Water from the tailrace of this plant at the edge of the canyon is now used to operate plant no. 1, near the river. (Report by letter from the California-Oregon Power Co.)

7.--South Fork Rogue River above Imnaha Creek, near Prospect, Oreg.

Location.--Water-stage recorder, lat 42°42', long. 122°23', in the NE¼ sec. 18, T. 33 S., R. 4 E., 300 yd upstream from Imnaha Creek, 400 yd upstream from South Fork diversion dam, and 6 miles southeast of Prospect.

Drainage area.--52 sq mi.

Records available.--October 1931 to September 1949.

Bypass channels.--None.

Diversions.--None.

Return flow.--None.

Storage and regulation.--None.

Utilization.--None.

8.--Imnaha Creek near Prospect, Oreg.

Location.--Staff gage, lat 42°42', long. 122°23', in the NE¼ sec. 18, T. 33 S., R. 4 E., 400 yd upstream from mouth and 6 miles southeast of Prospect.

Drainage area.--26 sq mi.

Records available.--September 1931 to September 1949.

Bypass channels.--None.

Diversions.--None.

Return flow.--None.

Storage and regulation.--None.

Utilization.--None.

9.--South Fork Rogue River near Prospect, Oreg.

Location.--Water-stage recorder in the SW¼ sec. 7, T. 33 S., R. 4 E., one-quarter of a mile below mouth of Imnaha Creek and 6 miles southeast of Prospect.

Drainage area.--79 sq mi.

Records available.--April 1924 to September 1931, October 1949 to September 1950.

Bypass channels.--Records for this station since October 1949 include the flow of South Fork power canal, which bypasses station.

(The information that follows applies only to the drainage area between this station and the next stations upstream.)

Diversions.--South Fork power canal diverts just above station and 200 ft below mouth of Immaha Creek, since March 1932, for use at California-Oregon Power Co. plant no. 3 located in the W½ sec. 1, T. 33 S., R. 3 E. Records available in Geological Survey water-supply papers from 1932 to 1950. Average discharge for 16 yr, 106 cfs.

Return flow.--None.

Storage and regulation.--None.

Utilization.--None.

10.--Middle Fork Rogue River near Prospect, Oreg.

Location.--Water-stage recorder, lat 42°44', long. 122°24', in the NE¼ sec. 1, T. 33 S., R. 3 E., 1,000 ft downstream from diversion dam and intake of Middle Fork power canal and 4½ miles southeast of Prospect. Datum of gage is 2,617 ft above mean sea level (levels by The California-Oregon Power Co.).

Drainage area.--57 sq mi.

Records available.--May 1925 to September 1950.

Bypass channels.--Records include flow of Middle Fork power canal which bypasses station.

Diversions.--Since November 1931, Middle Fork power canal near Prospect has diverted water 1,000 ft upstream. Designed capacity of canal is 150 cfs. Discharge records since November 1931 available in Geological Survey water-supply papers. Water is discharged into main power canal to supplement flow of the Rogue River above Prospect diversion dam.

Return flow.--None.

Storage and regulation.--Low flow in river regulated since November 19, 1931, by head gates at diversion dam of power canal; practically no storage above diversion dam.

Utilization.--None.

11.--Red Blanket Creek near Prospect, Oreg.

Location.--Water-stage recorder, lat 42°47', long. 122°26', in the NE¼ sec. 23, T. 32 S., R. 3 E., 3 miles northeast of Prospect. Prior to October 1928 in the NE¼ sec. 34, T. 32 S., R. 3 E.

Drainage area.--40 sq mi.

Records available.--May 1925 to September 1950.

Bypass channels.--Records do not include flow in Mooney ditch which bypasses station.

Diversions.--

1. Clinton Smith, Jackson County Watermaster, says that Mooney (Red Blanket) ditch diverts in the NW¼NE¼ sec. 23, T. 32 S., R. 3 E., 1,000 ft above gage used after October 1928. Water right permits diversion of 4.8 cfs, priority 1889 (according to Rogue River Decree, Jackson County Circuit Court, p. 6, and permits issued by Oregon State Engineer).

Measurements in 1929, 1930 and 1931 indicate that 8 to 10 cfs may be diverted around station during irrigation season; ditch dry in winter months. No known discharge records available.

2. Red Blanket power canal, completed in October 1931, diverts in the SW¼SE¼ sec. 27, T. 32 S., R. 3 E. Diversion dam is below present station, but above site of station operated prior to October 1928. Record of flow in canal 200 yd below intake available in reports of Geological Survey from November 1931 to September 1950. Average discharge for 17 yr, 68.7 cfs; maximum daily discharge, 106 cfs. Water is discharged into main power canal to supplement flow of Rogue River above Prospect diversion dam.

Return flow.--No known surface return flow.

Storage and regulation.--None.

Utilization.--None above the present station. Mooney ditch irrigates about 321 acres near Prospect (according to Rogue River Decree, Jackson County Circuit Court, p. 6, and permits issued by Oregon State Engineer).

12.--Rogue River below South Fork Rogue River, near Prospect, Oreg.

Location.--Water-stage recorder, lat 42°42', long. 122°36', in the NW¼ sec. 16, T. 33 S., R. 2 E., at bridge 6 miles southwest of Prospect. Altitude of gage, 1,708 ft (from river-profile map).

Drainage area.--643 sq mi.

Records available.--April 1929 to September 1950.

Bypass channels.--None.

(The information that follows applies only to the drainage area between this station and the next stations upstream.)

Diversions.--No discharge records of the following diversions are known to be available.

1. Geppert ditch diverts from Geppert Creek in the SE¼SE¼ sec. 26 T. 33 S., R. 3 E. (Rogue River Adjudication Survey Oregon State Engineer, 1936.) Water right permits diversion of 2.0 cfs, priority 1906. (Rogue River Decree, Jackson County Circuit Court, p. 45, 1909.)

2. Bechdolt ditch diverts from Parsnip Creek in the NW¼SE¼ sec. 2, T. 34 S., R. 3 E. (Oral report, Clinton Smith, Jackson County Watermaster.) Water right permits diversion of 1.0 cfs, priority 1926. (Water-right permits issued by Oregon State Engineer.)

3. Daley ditch diverts from Daley Creek in the NE¼SW¼ sec. 35, T. 33 S., R. 3 E. (Oral report, Clinton Smith, Jackson County Watermaster.) Water right permits diversion of 0.89 cfs, priority 1919. (Water-right permits issued by Oregon State Engineer.)

Return flow.--Water from South Fork power canal, used since March 1932 at California-Oregon Power Co.'s plant no. 3 in the W½ sec. 1, T. 33 S., R. 3 E., may be wasted into Middle Fork Rogue River at that point or mingled with flow of main power canal. No records of waste flow are known to be available. Comparison of records of flow in main power canal with records of flow in feeder canals would indicate the amount of water wasted into Middle Fork.

Storage and regulation.--None, except as noted for stations upstream.

Utilization.--Approximately 100 acres irrigated by Geppert ditch, (Rogue River Decree, Jackson County Circuit Court, p. 45, 1909.) About 70 acres irrigated by Daley ditch before 1943, when Medford Corp. commenced using water for log pond. Approximately 100 acres irrigated from Bechdolt ditch. (Water-right permits issued by Oregon State Engineer.) Power plant no. 3 with a nameplate installed capacity of 7,200 kw, commenced operating in March 1932.

13.--Willow Creek (head of Big Butte Creek) near Butte Falls, Oreg.
(Operated by Oregon State Engineer)

Location.--Sec. 28, T. 35 S., R. 3 E., about 1½ miles above confluence with Big Butte Springs.

Records available.--1948 to September 1950, in files of State Engineer.

Bypass channels.--None.

Diversions.--No discharge records of the following diversions are known to be available.

1. Alvin Bieberstedt ditch diverts in the NW¼SW¼ sec. 2, T. 36 S., R. 3 E. The water right permits the diversion of 0.53 cfs, priority 1909. (Water-right permit, Oregon State Engineer.)

2. Pennington ditch diverts in the SE¼NW¼ sec. 34, T. 35 S., R. 3 E. The water right permits diversion of 0.5 cfs, priority 1924. (Water-right permit, Oregon State Engineer.)

Return flow.--Small flow from Thos. Stanley ditch on Fourbit Creek may reach Willow Creek above Pennington diversion.

Storage and regulation.--None.

Utilization.--Bieberstedt ditch used for irrigation; water proposed to be used as a supplemental supply for city of Medford development on Willow Creek. About 40 acres irrigated by Pennington ditch. (Water-right permit, Oregon State Engineer.)

14.--Big Butte Springs near Butte Falls, Oreg.
(Operated by Oregon State Engineer)

Location.--Water-stage recorder, in sec. 17, T. 35 S., R. 3 E., half a mile west of Medford water reserve and 6 miles east of Butte Falls.

Records available.--July 1930 to September 1950, in files of Oregon State Engineer.

Bypass channels.--Records for this station do not include flow of Medford aqueduct, which has a capacity of 17 cfs and carries water to reservoir in Medford.

(The information that follows applies only to the drainage area between this station and the next station upstream.)

Diversions.--

1. H. L. Heryford ditch diverts near gage on Willow Creek in the SE¼NW¼ sec. 28, T. 35 S., R. 3 E. The water right permits the diversion of 1.63 cfs, priority 1920. (Water-right permit, Oregon State Engineer.) No known discharge records available.

2. City of Medford aqueduct diverts about 17 cfs in the SE¼NE¼ sec. 20, T. 35 S., R. 3 E. Water supplied from Big Butte Springs since 1927. (City of Medford Water Commission.)

Return flow.--No known surface return flow.

Storage and regulation.--None.

Utilization.--About 130 acres irrigated by Heryford ditch.

15.--Fourbit Creek near Butte Falls, Oreg.
(Operated by Oregon State Engineer)

Location.--SW¼SW¼ sec. 23, T. 35 S., R. 3 E., 2 miles above confluence with Rancheria Creek.

Records available.--1948 to September 1950, in files of Oregon State Engineer.

Bypass channels.--None.

Diversions.--

1. John F. Down ditch diverts in the NE¼ NW¼ sec. 25, T. 35 S., R. 3 E. The water right permits diversion of 1.0 cfs, priority 1920. (Water-right permit, Oregon State Engineer.) No known discharge records available.

2. Thomas Stanley ditch diverts in the NW¼ SW¼ sec. 25, T. 35 S., R. 3 E. The water right permits diversion of 1.83 cfs, priority 1917. (Water-right permit, Oregon State Engineer.) No known discharge records available.

Return flow.--No known surface return flow.

Storage and regulation.--None.

Utilization.--Down ditch used for irrigation of 93 acres. Stanley ditch used for irrigation and domestic purposes; water proposed to be used as supplemental supply for city of Medford. (Water-right permit, Oregon State Engineer.)

16.--Rancheria Creek near Butte Falls (near Lake Creek), Oreg.
(Operated by Oregon State Engineer)

Location.--Staff gage in the SE¼ sec. 17, T. 35 S., R. 3 E., 4 miles east of Butte Falls and 10 miles northeast of Lake Creek.

Records available.--May 1935 to September 1950, in files of State Engineer.

Bypass channels.--None.

(The information that follows applies only to the drainage area between this station and the next station upstream.)

Diversions.--

1. Oliver M. Goss ditch diverts from Titanic Creek in the SW¼ sec. 19, T. 34 S., R. 4 E. The water right permits diversion of 0.48 cfs, priority 1914. (Water-right permit, Oregon State Engineer.) No known discharge records available.

2. Beal ditch diverts in the NE¼ sec. 10, T. 35 S., R. 3 E. The water right permits diversion of 2.45 cfs. priority 1885. (Rogue River Decree, Jackson County Circuit Court, p. 4, 1909.) No known discharge records available.

3. Holm ditch diverts from Fourbit Creek in the SE¼SE¼ sec. 16, T. 35 S., R. 3 E. The water right permits diversion of 0.36 cfs, priority 1923. (Water-right permit, Oregon State Engineer.) No known discharge records available.

Return flow.--None.

Storage and regulation.--None.

Utilization.--Beal ditch irrigates about 147 acres. (Rogue River Decree, Jackson County Circuit Court, p. 4, 1909.) Goss ditch used for irrigation and domestic purposes. Holm ditch irrigates about 29 acres. (Water-right permit, Oregon State Engineer.)

17.--South Fork Big Butte Creek (continuation of Willow Creek) near Butte Falls, Oreg.

Location.--Water-stage recorder, lat 42°32', long. 122°33', in the SW¼ sec. 11, T. 35 S., R. 2 E., just downstream from Ginger Creek and 1 mile east of Butte Falls. Former site at highway bridge upstream from Ginger Creek in the SE¼ sec. 11, T. 35 S., R. 2 E.

Drainage area.--131 sq mi.

Records available.--September 1910 to October 1911, August to October 1915, and October 1917 to September 1922, March 1925 to September 1950.

Bypass channels.--Records for this station do not include flow of Medford pipeline used since 1927. About 18 cfs is diverted from Big Butte Springs at the head of South Fork to the city of Medford in Bear Creek basin. Records from October 1917 to September 1922 do not include flow of Game Commission fish hatchery canal, which bypasses station during that period. Records do not include flow of Butte Falls municipal water supply from Ginger Creek above station location used since March 1925 (population of Butte Falls in 1940, 339).

(The information that follows applies only to the drainage area between this station and the next station upstream.)

Diversions.--No discharge records of the following diversions are known to be available.

1. Doubleday ditch diverts in the NW¼NW¼ sec. 18, T. 35 S., R. 3 E. Water right permits diversion of 0.25 cfs, priority 1910. (Water-right permits, Oregon State Engineer.)

2. Game Commission fish hatchery diverts about one mile above station, returning all of flow diverted to Ginger Creek. From October 1917 to September 1922 canal diverted about 4 cfs around station. Subsequent measurements indicate that the same amount has been diverted since 1922, although a water right of 1923 permits diversion of 15.5 cfs.

3. Town of Butte Falls diverts from Ginger Creek in sec. 14, T. 35 S., R. 2 E., to a reservoir in sec. 10. Water right permits diversion of 1.5 cfs, priority 1911. (Water-right permits, Oregon State Engineer.)

Return flow.--Game Commission fish hatchery returns flow to South Fork through Ginger Creek (above station location used since March 1925).

Storage and regulation.--None.

Utilization.--About 20 acres irrigated by Doubleday ditch. (Water-right permits, Oregon State Engineer.) Oregon Game Commission uses water at fish hatchery for propagation of fish. The town of Butte Falls uses water from Ginger Creek for domestic purposes, and the Pacific and Eastern Railway (Medford Logging Co.) uses a small amount of water from the same source for servicing the railroad. (Rogue River Decree, Jackson County Circuit Court, p. 3, 1909.) Dates of use given under "diversion" above.

18.--South Fork Big Butte Creek at Butte Falls, Oreg.

Location.--Water-stage recorder in the NE¼ sec. 10, T. 35 S., R. 2 E., one-quarter of a mile north of Butte Falls, one-quarter of a mile downstream from falls of Creek, and 1 mile upstream from mouth of North Fork.

Records available.--August 1922 to March 1925.

Bypass channels.--Daily records do not include flow of the Eagle Point irrigation district canal which bypasses station, but a table

of combined monthly discharge is included in water-supply paper for 1924.

(The information that follows applies only to the drainage area between this station and the next stations upstream.)

Diversions.--

1. Butte Falls Lumber Co. diversion at place of use in the SE¼NE¼ sec. 10, T. 35 S., R. 2 E. has not been used since about 1926. (Geological Survey Water-Supply Paper 638-B, p. 71.) Water right permitted diversion of 125 cfs, priority 1904. (Rogue River Decree, Jackson County Circuit Court, 1909.) No known discharge records available.

2. Eagle Point irrigation district canal, completed in the spring of 1924, diverts in the NE¼ sec. 10, T. 35 S., R. 2 E., for the irrigation of lands near Eagle Point. About 1,750 acres below this station were irrigated in 1925. Discharge record available in files of State Engineer from April 1924 to September 1950, and in report of Geological Survey from April 1924 to September 1928.

Return flow.--Butte Falls Lumber Co. returned flow near place of use.

Storage and regulation.--Flow fluctuated occasionally for short periods owing to manipulation of Butte Falls Lumber Co. dam at crest of falls, one-quarter of a mile above station. Practically no effect in 1925.

Utilization.--The Butte Falls Lumber Co. used a flume about 500 ft long to obtain a head of 49 ft. The water was used to drive a leffel wheel rated at 500 hp and a McCormick wheel rated at 250 hp. The power was used for sawing lumber. (Geological Survey Water-Supply Paper 638-B, p. 71.) No irrigation above station.

19.--North Fork Big Butte Creek near Butte Falls, Oreg. (Operated by Oregon State Engineer)

Location.--Station gage in the SW¼ sec. 2, T. 35 S., R. 2 E., 75 ft upstream from Fredenberg road bridge, and 1 mile north of Butte Falls.

Records available.--September 1928 to September 1950, in files of State Engineer.

Bypass channels.--None.

Diversions.--No discharge records of the following diversions are known to be available.

1. Fredenburg ditch diverts from North Fork Big Butte Creek in the SW¼SE¼ sec. 32, T. 34 S., R. 3 E., and from Eighty-acre Creek in the NE¼NW¼ sec. 6, T. 35 S., R. 3 E. The water right permits diversion of 1.6 cfs from North Fork Big Butte Creek, and 0.6 cfs from Eighty-acre Creek. Priority, 1920. (Water-right permits, State Engineer.)

2. Dingee ditch diverts in the SE¼NW¼ sec. 1, T. 35 S., R. 2 E. Water right permits diversion of 0.5 cfs, priority 1924. (Water-right permits, State Engineer.)

Return flow.--No known surface return flow.

Storage and regulation.--None.

Utilization.--At present about 129 acres are irrigated by Fredenburg ditch, and 40 acres irrigated by Dingee ditch. Irrigation probably dates from time of issue of water rights. See diversions, above.

20.--Big Butte Creek below Butte Falls, Oreg.

Location.--Water-stage recorder in sec. 3, T. 35 S., R. 2 E., just downstream from confluence of North and South Forks and 1 mile below town of Butte Falls.

Records available.--June 1918 to September 1920.

Bypass channels.--None during period of record. Eagle Point irrigation district canal commenced diverting from South Fork Big Butte Creek April 29, 1924; water bypasses the site of this station. Medford pipeline began diverting from Big Butte Springs in 1927; water bypasses the site of this station.

(The information that follows applies only to the drainage area between this station and the next stations upstream.)

Diversions.--None.

Return flow.--No known surface return flow.

Storage and regulation.--None, except as noted for station upstream.

Utilization.--None.

21.--Big Butte Creek near McLeod, Oreg.

Location.--Staff gage, lat 42°39', long. 122° 41', in the NW¼ sec. 3, T. 34 S., R. 1 E., at bridge on county road 1 mile upstream from mouth and 1 mile south of McLeod. Datum of gage is 1,526.48 ft above mean sea level, datum of 1929, supplementary adjustment of 1947.

Drainage area.--249 sq mi.

Records available.--October 1945 to September 1950.

Bypass channels.--Records for this station do not include flow of Medford pipeline from Big Butte Springs, or the Eagle Point irrigation district canal from Big Butte Creek below Butte Falls. Discharge record of Eagle Point irrigation district canal available in files of the State Engineer.

(The information that follows applies only to the drainage area between this station and the next stations upstream.)

Diversions.--No discharge records of the following diversions are known to be available.

1. Wakefield ditch diverts from Clark Creek in the NE¼ sec. 8, T. 34 S., R. 2 E. The water right permits diversion of 2.55 cfs for irrigation, priority 1899. (Rogue River Decree, Jackson County Circuit Court, p. 44, 1909.)

2. Conley ditch diverts from Clark Creek in the SE¼NE¼ sec. 8, T. 34 S., R. 2 E. The water right permits diversion of 1.04 cfs, priority 1923. (Water-right permits, Oregon State Engineer.)

3. Luke Ryan ditch diverts from Big Butte Creek in the SE¼SE¼ sec. 3, T. 34 S., R. 1 E. Water right permits diversion of 1.13 cfs, priority 1913. (Water-right permits, Oregon State Engineer.

4. Oregon State Game Commission fish hatchery diverts from Big Butte Creek in sec. 3, T. 34 S., R. 1 E.

Return flow.--Water from fish hatchery returns to creek about 500 ft above station.

Storage and regulation.--Slight regulation by fish hatchery 200 yd above station.

Utilization.--About 115 acres irrigated by Wakefield ditch, formerly (prior to period of record at this station) used to develop 20 hp under 75 ft head). (Rogue River Decree, Jackson County Circuit Court, p. 44, 1909.) About 84 acres irrigated by Conley ditch. (Water-right permits, Oregon State Engineer.) Water used at Game Commission fish hatchery for propagation of fish.

22.--Elk Creek near Trail, Oreg.

Location.--Water-stage recorder, lat 42°40', long. 122°45', in the SE¼ sec. 30, T. 33 S., R. 1 E., 0.7 mile upstream from mouth and 3½ miles northeast of Trail. Datum of gage is 1,468.70 ft above mean sea level, datum of 1929, supplementary adjustment of 1947.

Drainage area.--133 sq mi.

Records available.--November 1945 to September 1950.

Bypass channels.--Records for this station do not include flow in Johnson Brothers ditch which bypasses station.

Diversions.--No discharge records of the following diversions are known to be available. (Location of points of diversion reported by Clinton Smith, Jackson County Watermaster and U. S. Geol. Survey.)

1. Sturgis and Pearce ditch diverts in the NW¼ sec. 24, T. 32 S., R. 1 E. Water right permits diversion of 0.5 cfs, priority 1904. (Rogue River Decree of the Jackson County Circuit Court, p. 4, 1909.)

2. Trusty ditch diverts in the SE¼NE¼ sec. 23, T. 32 S., R. 1 E. Water right permits diversion of 0.4 cfs, priority 1903. (Rogue River Decree of the Jackson County Circuit Court, p. 4, 1909.)

3. Hall ditch diverts in the NE¼ sec. 33, T. 32 S., R. 1 E. Water-right permits diversion of 0.5 cfs, priority 1920. (Permits issued by Oregon State Engineer.)

4. Sandoz (Holmes Bros.) ditch diverts in the NW¼ sec. 4, T. 33 S., R. 1 E. Water right permits diversion of 0.7 cfs, priority 1890. (Rogue River Decree of the Jackson County Circuit Court, p. 4, 1909.)

5. Pence ditch diverts in the SE¼ sec. 8, T. 33 S., R. 1 E. Water right permits diversion of 1.1 cfs, priority 1901. (Rogue River Decree of the Jackson County Circuit Court, p. 4, 1909.)

6. Johnson Bros. ditch diverts in the SW¼ sec. 20, T. 33 S., R. 1 E. Water right permits diversion of 2.7 cfs, priority 1894. (Rogue River Decree of the Jackson County Circuit Court, p. 4, 1909.)

Return flow.--No known surface return flow. Probably some seepage from irrigation.

Storage and regulation.--None.

Utilization.--At present about 18 acres irrigated by Sturgis & Pearce ditch, 16 acres by Trusty ditch, 41 acres by Hall ditch, 28 acres by Sandoz (Holmes Bros.) ditch, 25 acres by Pence ditch, and 106 acres (mostly below station) by Johnson Bros. ditch. Irrigation probably began about the time water rights were granted. See "diversion" paragraph above.

23.--Rogue River near Trail, Oreg.

Location.--Staff gage in the SW¼ sec. 10, T. 34 S., R. 1 W., 1½ miles downstream from Trail post office, 3 miles downstream from Elk Creek, and 12 miles upstream from Little Butte Creek.

Records available.--August 1911 to February 1913, December 1910 to March 1911 at point 1½ miles upstream.

Bypass channels.--Allen ditch bypassed gaging station during period December 1910 to March 1911 when gage was located 1½ miles upstream at Trail. Station records do not include flow diverted. Water has been diverted from the Big Butte Creek basin by the Medford aqueduct since 1927, and by the Eagle Point irrigation district canal since 1924. The Medford aqueduct carries about 14 cfs from Big Butte Springs to the City of Medford in Bear Creek basin. The Eagle Point irrigation district canal carries water from Butte Falls for irrigation principally in Little Butte Creek basin. Records of discharge available in reports of Geological Survey.

(The information that follows applies only to the drainage area between this station and the next stations upstream.)

Diversions.--Seven diversions above station known to have been active at times, under authorization of decreed rights, to the extent of 13.7 cfs. (See table 5.) No discharge records of water diverted are known to be available. Several small diversions above station for minor irrigation and domestic use have not been listed because of their inconsequential flow and lack of data.

Return flow.--No known return surface flow.

Storage and regulation.--None, except as noted for stations upstream.

Utilization.--Water is used for irrigation, as noted in table 5. All land irrigated by the diversions listed is located above the gaging station, except as noted for Allen ditch.

Table 5.--Diversions in Rogue River basin, above Rogue River near Trail, Oreg.
[Diversions in this table are those located between this station and the next stations upstream, Elk Creek near Trail, Big Butte Creek near McLeod, and Rogue River below South Fork Rogue River, near Prospect]

Name	Point of diversion 1/	Date of establ.	Water right 2/ (cfs)	Purpose	Remarks
Richardson ditch.	NE¼NW¼ sec. 21, T. 33 S., R. 2 E.	1898	1.1	Irrigation	Diverts from springs tributary to Tie Creek, for irrigation of 53 acres.
Ditsworth Center Creek ditch.	NW¼SE¼ sec. 20, T. 33 S., R. 2 E.	1890	.8	----do----	Diverts from Center Creek, for irrigation of 40 acres.
McAndrew ditch.	SE¼ sec. 30, T. 33 S., R. 2 E.	1875	1.6	----do----	Diverts from Rumbley Creek, for irrigation of 80 acres.
Gordon ditch	NW¼NW¼ sec. 20, T. 33 S., R. 2 E.	1893	5	----do----	Diverts from Rogue River, for irrigation of 244 acres.
Manning ditch	NW¼NE¼ sec. 14, T. 33 S., R. 1 E.	1887	2	----do----	Diverts from Lost Creek, for irrigation of 100 acres.
Enyart or Whelpley ditch.	NE¼ sec. 34, T. 33 S., R. 1 E.	1880	2.2	----do----	Diverts from Rogue River, for irrigation of 110 acres.
Allen ditch	NW¼ sec. 2, T. 34 S., R. 1 W.	1906	1	----do----	Abandoned in 1940. Previously diverted from Rogue River for irrigation of 49 acres.

1/. Rogue River Adjudication Survey, Office of State Engineer, 1939; and oral report by Clinton Smith, Jackson County Watermaster.
2/. Rogue River Decree of Jackson County Circuit Court, 1909.

Irrigation in the entire drainage basin of the Rogue River above Trail has always been on a comparatively small scale, owing to the mountainous character of the basin. Since 1912, the California-Oregon Power Co. has used water nonconsumptively for power developments near Prospect.

24.--Rogue River at Dodge Bridge, near Eagle Point, Oreg.

Location.--Water-stage recorder, lat 42°32', long. 122°50', in the SE¼ sec. 17, T. 35 S., R. 1 W., at Dodge Bridge, 0.6 mile downstream from Reese Creek and 4½ miles northwest of Eagle Point. Datum of gage is 1,273.66 ft above mean sea level, datum of 1929.

Drainage area.--1,210 sq mi.

Records available.--October 1938 to September 1950.

Bypass channels.--Records for this station do not include flow of Eagle Point irrigation district canal from South Fork Big Butte Creek, or Medford pipeline from Big Butte Springs, both of which bypass station.

(The information that follows applies only to the drainage area between this station and the next stations upstream.)

Diversions.--No discharge records of the following diversions are known to be available.

1. Cottrell ditch diverts from Rogue River in the SE¼ sec. 16, T. 34 S., R. 1 W., water right permits diversion of 1.26 cfs, priority 1917. (Permits issued by State Engineer.)

2. Veghte and Bergman ditch diverts from Rogue River in the NW¼SW¼ sec. 28, T. 34 S., R. 1 W. (Rogue River Adjudication Survey, State Engineer 1939.) Water right permits diversion of 6.8 cfs priority 1901. (Rogue River Decree of Jackson County Circuit, 1909.) Usually about 0.6 cfs is diverted. (Oral report, Clinton Smith, Jackson County Watermaster.)

3. Bellows ditch diverts from Rogue River in the SE¼NE¼ sec. 5, T. 35 S., R. 1 W. (Rogue River Adjudication Survey, State Engineer 1939.) Water right permits diversion of 1.25 cfs, priority 1892. (Rogue River Decree of Jackson County Circuit Court, 1909.)

4. Nichols and Co. ditch diverts from Rogue River in the SW¼NW¼ sec. 16, T. 35 S., R. 1 W. (Rogue River Adjudication Survey, State Engineer 1939.) Water right permits diversion of 12.4 cfs, priority 1898. (Rogue River Decree of Jackson County Circuit Court, 1909.) Usually about 9.7 cfs is diverted. (Oral report, Clinton Smith, Jackson County Watermaster.)

Return flow.--No known surface return flow.

Storage and regulation.--None.

Utilization.--Water from Cottrell ditch used to irrigate land near Long Branch Creek. (Permits issued by State Engineer.) About 393 acres were originally to be irrigated by Veghte and Bergman ditch, and 495 acres to

be irrigated by Nichols and Co. ditch, but amount of water diverted would indicate that smaller parcels of land are under irrigation. About 50 acres irrigated by Bellows ditch. (Rogue River Decree of Jackson County Circuit Court, 1909.) There has been no significant change in utilization of water during period of record at this station.

25.--South Fork Little Butte Creek (head of Little Butte Creek) at Big Elk ranger station, Oregon

Location.--Water-stage recorder in the NW¼ sec. 21, T. 37 S., R. 4 E., 1 mile south of Big Elk Ranger station and 15 miles southeast of Lake Creek.

Records available.--October 1931 to September 1950 in files of State Engineer. October 1926 to September 1931 (incomplete) in reports of Geological Survey.

Bypass channels.--None.

Diversions.--None.

Return flow.--None.

Storage and regulation.--None.

Utilization.--None.

26.--Big Draw Creek near Deadwood, Oreg. (Published as South Fork Little Butte Creek in water-supply papers for 1917 and 1918)

Location.--Water-stage recorder in sec. 9, T. 38 S., R. 4 E., 1½ miles east of Deadwood, 4 miles east of Lilyglen, and 21 miles east of Ashland.

Records available.--Fragmentary records, November 1916 to May 1918 in reports of Geological Survey, 1942 to 1943 in files of Oregon State Engineer, at site 1 mile downstream, designated Big Draw Creek near Ashland.

Bypass channels.--None.

Diversions.--None.

Return flow.--None.

Storage and regulation.--None.

Utilization.--None.

27.--Daley Creek near Lake Creek, Oreg. (Operated by Oregon State Engineer)

Location.--Water-stage recorder in sec. 2, T. 38 S., R. 4 E., about 18 miles southeast of Lake Creek (the location of this station, as reported by the State Engineer, appears doubtful on the basis of maps published by the Geological Survey, Bureau of Reclamation, Forest Service, and Jackson County Engineer.)

Records available.--October 1930 to April 1931.

Bypass channels.--None.

Diversions.--None.

Return flow.--None.

Storage and regulation.--None.

Utilization.--None.

28.--Dead Indian Creek near Lilyglen, Oreg. (Operated by Oregon State Engineer)

Location.--Staff gage in the SW¼ sec. 22, T. 38 S., R. 3 E., 1 mile west of Lilyglen, and 17 miles east of Ashland. Recorder used in 1919 at site one-quarter of a mile downstream.

Records available.--February 1916 to June 1919, in reports of Geological Survey, October 1930 to 1931 (incomplete) in reports of Oregon State Engineer.

Bypass channels.--None.

Diversions.--None.

Return flow.--None.

Storage and regulation.--None.

Utilization.--None.

29.--South Fork Little Butte Creek near Lake Creek, Oreg.

Location.--Staff gage in sec. 11, T. 37 S., R. 2 E., at county bridge, 5 miles upstream from Lake Creek post office and junction of North and South Forks of Little Butte Creek.

Records available.--November 1910 to April 1913.

Bypass channels.--None.

(The information that follows applies only to the drainage area between this station and the next stations upstream.)

Diversions.--Several small ditches above station for irrigation. Only information available is approximate locations.

1. Russ Moore ditch diverts near the NW¼ sec. 16, T. 37 S., R. 3 E. (Oral report, Marion Smith, Jackson County Assistant Watermaster.)

2. Hutchins ditch diverts near the NE¼ sec. 13, T. 37 S., R. 2 E. (Oral report, Marion Smith, Jackson County Assistant Watermaster.)

3. Wilhoyt ditch diverts near the NW¼ sec. 13, T. 37 S., R. 2 E. (Oral report, Marion Smith, Jackson County Assistant Watermaster.)

Return flow.--No known surface return flow.

Storage and regulation.--None.

Utilization.--Some irrigation by small ditches, which were probably used during the period of record at this station. There has been no significant change in the utilization of water since station was discontinued.

30.--South Fork Little Butte Creek near Lake Creek, Oreg.

Location.--Water-stage recorder, lat 42°25', long. 122°36', in the SE¼ sec. 29, T. 36 S., R. 2 E., one-quarter of a mile upstream from intake of Rogue River valley canal and 1½ miles southeast of Lake Creek post office.

Drainage area.--138 sq mi.

Records available.--April 1921 to September 1950.

Bypass channels.--None.

(The information that follows applies only to the drainage area between this station and the next stations upstream.)

Diversions.--Several small diversions above station for irrigation. Requirements of priorities on the South Fork above this station (including area above station operated 1910-13) call for total diversion of 9.5 cfs. (Office of State Engineer, Water Resources Department.) Only other information available is approximate locations of 3 ditches:

1. Ragsdale or Wyant ditch diverts at sawmill near the SW¼ sec. 3, T. 37 S., R. 2 E. (Oral report, Marion Smith, Jackson County Assistant Watermaster.)

2. Tunn ditch diverts near the SE¼ sec. 33, T. 36 S., R. 2 E., for irrigation on north side of Creek. (Oral report, Marion Smith, Jackson County Assistant Watermaster.)

3. Henry Peck ditch diverts near the SE¼ sec. 33, T. 36 S., R. 2 E., for irrigation on south side of creek. (Oral report, Marion Smith, Jackson County Assistant Watermaster.)

Return flow.--No known surface return flow.

Storage and regulation.--None.

Utilization.--About 504 acres consisting of small tracts, irrigated in entire basin above this station, most of which is between this station and next upstream station (no. 29). No significant change in utilization of water during period of record.

31.--North Fork Little Butte Creek at Fish Lake near Lake Creek, Oreg.

Location.--Water-stage recorder, lat 42°23', long. 122°21', in the S½ sec. 4, T. 37 S., R. 4 E., half a mile downstream from outlet of Fish Lake and 14 miles east of Lake Creek post office.

Drainage area.--18 sq mi.

Records available.--October 1914 to September 1950.

Bypass channels.--None.

Diversions.--Cascade Canal diverts from Fourmile Lake in Klamath River basin and discharges into lava bed 1½ miles above Fish Lake. Diversion began August 1923; records available from August 1923 to September 1950 in files of State Engineer, and from June 1924 to September 1950 in water-supply papers, part 11.)

Return flow.--None.

Storage and regulation.--Fish Lake reservoir has stored water for irrigation by Medford irrigation district since winter of 1915-16. (See table 3.) Record is available in Geological Survey water-supply papers.

Utilization.--None.

32.--North Fork Little Butte Creek (above Medford intake) near Lake Creek, Oreg.

Location.--Water-stage recorder, lat 42°24', long. 122°32', in the SW¼ sec. 25, T. 36 S., R. 2 E., a quarter of a mile upstream from point of diversion of Hanley south canal and 4½ miles east of Lake Creek post office. Datum of gage is 2,125.01 ft above mean sea level, datum of 1929.

Drainage area.--38 sq mi.

Records available.--September 1911 to March 1913, May 1922 to September 1928 (incomplete), and October 1931 to September 1950 in reports of Geological Survey. September 1911 to March 1913 and May 1922 to September 1941. in reports of State Engineer.

Bypass channels.--None.

(The information that follows applies only to the drainage area between this station and the next station upstream.)

Diversions.--

1. George Frye ditch diverts less than 1 cfs near the NE¼ sec. 4, T. 37 S., R. 3 E. No known discharge records available.

2. Nygren ditch diverts about 1.75 cfs in the SE¼ sec. 32, T. 36 S., R. 3 E. (Oral report, Clinton Smith, Jackson County Watermaster.) No known discharge records available.

Return flow.--No surface flow.

Storage and regulation.--None, except as noted for station upstream.

Utilization.--About 116 acres irrigated by small ditches (Office of State Engineer, Water Resources Department), principally by the two diversions listed above. There has been no significant change in the utilization of water during period of record at this station.

Remarks.--A considerable portion of the natural flow of this stream is derived from Cold Springs near Fish Lake, which flows into North Fork Little Butte Creek in sec. 4, T. 37 S., R. 4 E. A number of measurements have been made of the springs, indicating a minimum discharge of about 8 cfs (October 16, 1924) and an average flow of about 12 cfs.

33.--North Fork Little Butte Creek above Rogue River valley canal intake, near Lake Creek, Oreg.

Location.--Water-stage recorder in the NW¼ sec. 21, T. 36 S., R. 2 E., one-eighth of a mile upstream from intake of Rogue River valley canal and 1 mile east of Lake Creek.

Drainage area.--52 sq mi.

Records available.--April 1916 to September 1919 (incomplete), and April 1921 to September 1931 in reports of the Geological Survey. Irrigation seasons 1932 to 1950 and winter 1936-37 in files of the State Engineer.

Bypass channels.--Records for this station do not include flow in Hanley north canal, Hanley south canal, and the Chapman-Coel-Daley ditch, which bypass the station. Records prior to 1927 do not include the flow in Medford pipeline which carried about 7 cfs to the city of Medford in Bear Creek basin.

(The information that follows applies only to the drainage area between this station and the next station upstream.)

Diversions.--Six diversions have been in use above this station during the period of record, as listed in table 6. An approximate normal flow of 28 cfs has been diverted in previous years. No discharge records are known to be available except for the Hanley north and south canals.

Return flow.--Tailrace from small power plant (about 5 kw) on Hanley north canal above canal gage returns flow to creek in the NE¼SE¼ sec. 26.

Storage and regulation.--No storage except as noted for station upstream. Small power plant on Hanley north canal has practically no effect on discharge at this station.

Utilization.--Water used at head of Hanley north canal to operate small power plant (about 5 kw). The source of water used for city of Medford Municipal supply was above this station from 1909 to 1927 (see table 6); all the other ditches in table 6 are used for irrigation. There has been no significant change in the use of water for irrigation during period of record.

Table 6.--Diversions in Little Butte Creek basin, above North Fork Little Butte Creek above Rogue River valley canal intake

[Diversions in this table are those located between this station the next station upstream, North Fork Little Butte Creek above Medford intake near Lake Creek]

Name	Point of diversion	Date of establ.	Approx. normal flow (cfs)	Purpose	Remarks
City of Medford pipeline.	SW¼SW¼ sec. 25, T. 36 S., R. 2 E.	1909	7.0	City water supply.	Used until 1925 to supply city reservoir and possibly a few years after 1927 for local irrigation.
Hanley North Canal	NE¼SE¼ sec. 26, T. 36 S., R. 2 E.	1881	10.4	Irrigation near Long Branch (about 595 acres).	Monthly record available from June 1923 to Sept. 1950 in files of State Engineer and Apr. 1929 to Sept. 1950 in reports of Geol. Survey.
Hanley South Canal	SE¼SE¼ sec. 26, T. 36 S., R. 2 E.	1884	6.0	Irrigation near South Fork (about 390 acres).	Monthly record available from June 1923 to Sept. 1950 in files of State Engineer and Apr. 1929 to Sept. 1950 in reports of Geol. Survey.
Farlow ditch	NE¼SW¼ sec. 22, T. 36 S., R. 2 E.	1903	.65	Irrigation	
Chapman-Coel-Daley ditch.	NW¼SW¼ sec. 22, T. 36 S., R. 2 E.	1884	3.25	Irrigation near Lake Creek.	
Chapman ditch	SE¼ sec. 21, T. 36 S., R. 2 E.	-	less than 1.0	Irrigation	Ditch destroyed about 1940.

34.--Little Butte Creek at Lake Creek, Oreg. (Operated by Oregon State Engineer)

Location.--Staff gage in the SE¼ sec. 19, T. 36 S., R. 2 E., about half a mile downstream from junction of North and South Forks at Lake Creek.

Records available.--Irrigation seasons 1922-24, 1927-47, and 1949-50, in files of State Engineer.

Bypass channels.--Records for this station do not include flow in the Rogue River valley canal, the Chapman-Coel-Daley ditch, and the Meyer and Klingle ditch, which bypass the station. Records for 1922-24 do not include flow in Medford pipeline from North Fork, which carried 7 cfs to city of Medford from 1909 to 1927.

(The information that follows applies only to the drainage area between this station and the next stations upstream.)

Diversions.--

1. Rogue River valley canal diverts from North Fork in the SE¼NE¼ sec. 20, T. 36 S., R. 2 E. Canal is used below station for irrigation of about 13,200 acres (Bureau of Reclamation report of 1950) chiefly in Bear Creek basin on both sides of that creek below Phoenix. Records for the period 1914 to 1916, at a point just below intake, published in reports of Geological Survey. Records for irrigation seasons 1913 to 1917 and 1921 to 1950 available in files of State Engineer. Records for the period 1929 to 1950, at a point below junction with Rogue River valley (feeder) canal, published in reports of Geological Survey, and records for the period 1922 to 1950 available in files of State Engineer.

2. Rogue River valley (feeder) canal diverts from South Fork in the SE¼SE¼ sec. 29, T. 36 S., R. 2 E. Discharge record for irrigation seasons 1922 to 1950, at a point just below intake of the feeder canal, available in files of State Engineer.

3. Daley ditch diverts about 5 cfs from North Fork in the SE¼NE¼ sec. 20, T. 36 S., R. 2 E., just above intake of Rogue River valley canal, priority 1871. (Oral report, Marion Smith, Jackson County Assistant Watermaster.) No known discharge records available.

4. Meyer and Klingle ditch diverts about 2 cfs in the SW¼SW¼ sec. 20, T. 36 S., R. 2 E., 150 ft below forks of creek, for irrigation of 106 acres below station, priority 1872. (Oral report, Marion Smith, Jackson County Assistant Watermaster.) No known discharge records available.

Return flow.--Probably some return flow from Daley ditch when it is used to develop power. No known surface return flow from irrigation.

Storage and regulation.--None, except as noted for stations upstream.

Utilization.--Water from Rogue River valley canal is used below station. Land irrigated above station by Chapman-Coel-Daley ditch and Daley ditch. Most of land irrigated by Meyer and Klingle ditch is below station. Daley ditch is used, probably only in winter, to develop small amount of power.

35.--Little Butte Creek above Eagle Point, Oreg.

Location.--Staff gage in the NW¼ sec. 5, T. 36 S., R. 1 E., at Bieberstedt ranch, 1 mile upstream from intake of Eagle Point canal and 3 miles east of Eagle Point. Prior to February 1920, at site half a mile downstream.

Drainage area.--277 sq mi.

Records available.--April 1916 to September 1926 in reports of Geological Survey. Monthly record October 1928 to June 1929 in reports of Oregon State Engineer.

Bypass channels.--Records for this station do not include flow in Medford pipeline, used from 1909 to 1927 to carry about 7 cfs from North Fork Little Butte Creek to city of Medford in Bear Creek basin. Records do not include flow in Rogue River valley canal. The old portion of that canal, below the diversion point of the Medford irrigation district canal, is known as the Hopkins Canal. Records of Hopkins Canal (discharge records during irrigation seasons available in files of State Engineer from 1913 to 1950, and in reports of Geol. Survey for 1913, 1915-19, and 1921-28) and Medford irrigation district canal (discharge records during irrigation seasons availabe in files of State Engineer from 1922 to 1950, and in reports of Geol. Survey from 1922 to 1928) at Bradshaw Drop show about the quantity carried past station. Records for this station do not include flow in Bieberstedt dtich.

(The information that follows applies only to the drainage area between this station and the next station upstream.)

Diversions.--Eight ditches divert in this area, as listed in table 7. Normally a total of about 16 cfs is diverted for irrigation. No known discharge records available, except occasional measurements by watermaster.

Return flow.--No known surface return flow. Seepage from land irrigated by Rogue River valley canal above Bradshaw Drop will reach Little Butte Creek above this station.

Storage and regulation.--None, except as noted for stations upstream.

Utilization.--In 1926, about 300 acres were irrigated by Rogue River valley canal above Bradshaw Drop. Land irrigated by smaller ditches as listed in table 7. There has been no significant change in area of land irrigated above this station during period of record.

36.--Little Butte Creek near Eagle Point, Oreg.

Location.--Staff gage in the SE¼ sec. 35 T. 35 S., R. 1 W., at H. B. Tronson's fruit ranch, 1½ miles upstream from Eagle Point.

Drainage area.--336 sq mi.

Table 7.--Diversions in Little Butte Creek basin, above Little Butte Creek above Eagle Point
[Diversions in this table are those located between this station and the next station upstream, Little Butte Creek at Lake Creek]

Name	Point of diversion	Date of establ.	Approx. normal flow (cfs)	Purpose	Remarks
Nygren-Daniels ditch	SW¼NW¼ sec. 19, T. 36 S., R. 2 E.	1912	1.06	Irrigation	Irrigates about 85 acres.
Nichols ditch	On Salt Creek, 3 miles above confluence with Little Butte Creek.	Prior to 1916	1.6	----do----	Flow in creek is usually insufficient to supply ditch after July.
Charley-Bradshaw ditch.	NE¼SW¼ sec. 13, T. 36 S., R. 1 E.	Prior to 1916	3.25	----do----	---
Monia-Hessler ditch	SE¼SW¼ sec. 11, T. 36 S., R. 1 E.	1884	1.33	----do----	Irrigates about 53 acres.
Henry Brown ditch	SE¼SW¼ sec. 11, T. 36 S., R. 1 E.	1863	3.67	----do----	---
Brownsboro ditch	SW¼SW¼ sec. 3, T. 36 S., R. 1 E.	1908	1.4	----do----	Irrigates about 60 acres.
Tucker-Bieberstedt ditch.	NE¼SW¼ sec. 4, T. 36 S., R. 1 E.	1875	2.0	----do----	Used mostly above station.
Bieberstedt ditch	SE¼NW¼ sec. 5, T. 36 S., R. 1 E.	Prior to 1916	1.5	----do----	Bypasses station.

Records available.--July 1907 to April 1916.

Bypass channels.--Records for this station do not include flow in Medford pipeline from North Fork, used from 1909 to 1927 to supply about 7 cfs to Medford city reservoir in Bear Creek basin. Records do not include flow in Rogue River valley canal. In reports of Geological Survey, this canal was first noted as bypassing station in 1907. Records of Hopkins Canal and Medford irrigation district canal at Bradshaw Drop show about the quantity carried in the Rogue River valley canal past this station. Records do not include flow in Eagle Point canal. In reports of Geological Survey, this canal was first noted as bypassing station in 1915.

(The information that follows applies only to the drainage area between this station and the next station upstream.)

Diversions.--Eagle Point canal diverts in the SW¼SE¼ sec. 31, T. 35 S., R. 1 E., first noted in records of Geological Survey in 1915 (5.9 cfs was measured in canal August 1915, and 11.5 cfs on September 19, 1915). Discharge records available in reports of Geological Survey from 1920 to 1950.

Return flow.--No known surface return flow.

Storage and regulation.--None, except as noted for stations upstream.

Utilization.--Land irrigated above station since 1924 by Eagle Point irrigation district canal from South Fork Big Butte Creek. This canal was reported in 1926 to irrigate a total of about 1,750 acres, most of the land lying within this area. Some land is irrigated by Eagle Point canal. The number of acres irrigated above this station is not known. The canal was in use during period of record.

37.--Little Butte Creek below Eagle Point, Oreg.

Location.--Staff gage lat 42°27'45", long. 122°48'45", in the SW¼ sec. 3, T. 36 S., R. 1 W., 300 ft upstream from State Route 62, 1 mile southwest of Eagle Point, and 3½ miles upstream from mouth.

Records available.--May 1924 to September 1926 (irrigation seasons), October 1945 to September 1950.

Bypass channels.--Records for this station do not include flow in Medford pipeline from North Fork, used from 1909 to 1927 to supply about 7 cfs to reservoir in city of Medford. Records do not include flow in Rogue River valley canal. Records of Hopkins Canal and Medford irrigation district canal at Bradshaw Drop show about the quantity carried past station. Records do not include flow in Young and Britt ditch, which bypasses station.

(The information that follows applies only to the drainage area between this station and the next station upstream.)

Diversions.--No discharge records of the following diversions are known to be available except occasional measurements by the watermaster.

1. Fryer ditch diverts about 2.5 cfs in the SW¼ sec. 35, T. 35 S., R. 1 W.

2. Young and Britt ditch diverts in the SW¼SW¼ sec. 3, T. 36 S., R. 1 W., 100 ft above gage. (Oral report, Jackson County assistant watermaster.) Water right permits diversion of 2.37 cfs, priority 1899. Used for irrigation of about 107 acres below station.

Return flow.--This station was established partly to determine the amount of return or waste water from the Eagle Point canal diversions and partly to show any accretions which may be due to drainage from the Eagle Point irrigation district lands. No information available concerning magnitude of surface return flow from these canals.

Storage and regulation.--None, except as noted for stations upstream.

Utilization.--Land irrigated by Eagle Point irrigation district canal from South Fork Big Butte Creek, and by Eagle Point canal from Little Butte Creek. In April 1926 a gage was established and measurements up to 17.5 cfs were made on the Eagle Point irrigation district canal near Nichols Drop, where water in this canal from South Fork Big Butte Creek enters the Little Butte Creek basin. Records have occasionally been kept at that point by the Eagle Point irrigation district (no records known to have been published). About 97 acres irrigated by Fryer ditch.

38.--Emigrant Creek (head of Bear Creek) near Ashland, Oreg.

Location.--Water-stage recorder lat 42°10', long. 122°36', sec. 20, T. 39 S., R. 2 E., 500 ft downstream from Emigrant Gap Reservoir dam and 6 miles southeast of Ashland.

Records available.--January 1920 to September 1950.

Bypass channels.--Records for this station do not include flow in Ashland lateral (water principally from Klamath River basin) which has bypassed station since May, 1925. Records do not include flow in east lateral, which has bypassed station since April, 1923.

Diversions.--

1. Keene Creek canal diverts water from Klamath River basin, below Hyatt Prairie reservoir, into Sampson Creek. The canal is about 1½ miles long and discharges water just below the divide in the NW¼ sec. 29, T. 39 S., R. 3 E. Discharge record of the canal available in Geological Survey water-supply papers, part 11, June 1923 to September 1949.

2. Ashland lateral of Talent irrigation district diverts from Sampson Creek in the NW¼SW¼ sec. 26, T. 39 S., R. 2 E. Discharge record available in Geological Survey water-supply papers from May 1925 to September 1950. Ashland lateral was reported in 1925 to irrigate 800 acres lying on west side of Emigrant Creek (below station) near Ashland and to deliver to city of Ashland under contract water sufficient to irrigate 600 acres.

3. Caldwell ditch diverts from Emigrant Creek in the SW¼SW¼ sec. 1, T. 40 S., R. 2 E. (Oral report, Clinton Smith, Jackson County Watermaster.) Water right permits diversion of 1.34 cfs, priority 1864. (Rogue River Decree, Jackson County Circuit Court, p. 8, 1909.) No known discharge records available.

4. Barron ditch diverts from Hill Creek in the NW¼NW¼ sec. 9, T. 40 S., R. 2 E. (Oral report, Clinton Smith, Jackson County Watermaster.) Water right permits diversion of 0.7 cfs priority 1851. (Rogue River Decree, Jackson County Circuit Court, p. 8, 1909.) No known discharge records available.

5. East lateral of Talent irrigation district diverts from Emigrant Gap reservoir at dam in the SE¼ sec. 20, T. 39 S., R. 2 E. In 1923, diverted from Emigrant Creek half a mile above proposed dam. East lateral was reported in 1925 to irrigate about 3,000 acres (below station) lying along east side of Bear Creek valley and extending to a point nearly opposite Medford. Records available during irrigation seasons from April 1923 to September 1950 in Geological Survey water-supply papers.

Return flow.--Water from Ashland lateral has been wasted into Hill Creek at times during spring runoff.

Storage and regulation.--Emigrant Gap reservoir formed by a concrete arch dam, completed in 1924 by Talent irrigation district. (See table 3.) Record of storage available in Geological Survey water-supply papers from December 1924 to September 1950.

Utilization.--About 103 acres irrigated by Caldwell ditch and 54 acres by Barron ditch. (Rogue River Decree, Jackson County Circuit Court, p. 8, 1909.) The natural flow of streams above this point is insufficient to support extensive irrigation during late summer. Water diverted into this area and water stored at Emigrant Gap reservoir is used below station.

39.--Emigrant Creek below Walker Creek, near Ashland, Oreg.

Location.--Water-stage recorder, lat 42°12', long. 122°39', in the NE¼SW¼ sec. 12, T. 39 S., R. 1 E., 200 ft downstream from Walker Creek and 2 miles east of Ashland. Prior to March 5, 1947, recorder at site 160 ft upstream. Datum of gage is 1,866.3 ft above mean sea level (surveys by Bureau of Reclamation).

Records available.--October 1945 to September 1950 in reports of Geological Survey. October 1943 to September 1945 in files of State Engineer.

Bypass channels.--Records for this station do not include flow in east lateral or flow in Ashland lateral of Talent irrigation district both of which bypass this station. Records available in Geological Survey water-supply papers.

(The information that follows applies only to the drainage area between this station and the next station upstream.)

Diversions.--No discharge records of the following diversions are known to be available.

1. Taylor ditch diverts in the NW¼NW¼ sec. 20, T. 39 S., R. 2 E. (Oral report, Clinton Smith, Jackson County Watermaster.) Water right permits diversion of 0.6 cfs, priority 1883. (Rogue River Decree, Jackson County Circuit Court, pp. 7-8, 1909.)

2. Murphy ditches divert from Walker Creek in the NE¼ sec. 6 and from Cove Creek in the NE¼ sec. 7, T. 39 S., R. 2 E. Water rights permit diversion of 1.7 cfs, but these streams do not provide that much water in summer months, usually go dry by August. (Oral report, Clinton Smith, Jackson County Watermaster.)

3. Owen-Smith-Neil ditch diverts from Walker Creek in the SW¼ sec. 6, T. 39 S., R. 2 E. (Oral report, Clinton Smith, Jackson County Watermaster.) Water right permits diversion of 0.8 cfs, priority 1880.

Return flow.--No known surface return flow.

Storage and regulation.--None, except as noted for station upstream

Utilization.--About 46 acres irrigated by Taylor ditch, 127 acres by Murphy ditches, and 60 acres by Owen-Smith-Neil ditch. The amount of land irrigated above station by the Talent irrigation district is unknown. There has been no significant change in the utilization of water during period of record at this station.

40.--Neil Creek near Ashland, Oreg.

Location.--In sec. 31, T. 39 S., R. 2 E., at footbridge at box factory of Ashland Mfg. Co., about 8 miles southeast of Ashland.

Drainage area.--Approximately 8 sq mi.

Records available.--June to November, 1913.

Bypass channels.--Flow of two ditches, George Dunn and Upper Kincaid, bypass station. Daily records for this station do not include flow in these ditches, but monthly discharge is adjusted for George Dunn ditch.

Diversions.--

1. George Dunn ditch diverts in the SW¼NE¼ sec. 31, T. 39 S., R. 2 E. This is assumed to be the same as Houck-Dunn-Homes ditch, which has a decreed right to divert 2.0 cfs (priority 1852) for irrigation of 465 acres below station. (Rogue River Decree of Jackson County Circuit Court, p. 10,1909.) Discharge record from June 30 to October 31, 1913 available in Geological Survey Water-Supply Paper 362.

2. Upper Kincaid ditch diverts in the SW¼NW¼ sec. 31, about one-eighth of a mile above Dunn ditch. The water right permits diversion of 0.4 cfs (priority 1872) for irrigation of 32 acres below station. (Rogue River Decree of Jackson County Circuit Court, p. 10, 1909.) Usually water is relinquished to prior water rights downstream in summer months. (Oral report, Clinton Smith, Jackson County Watermaster.)

Return flow.--No known surface return flow.

Storage and regulation.--None.

Utilization.--Substantially no irrigation above station. Small amounts of water used for irrigation early in the season, but is relinquished to prior rights downstream when flow is low.

41.--Neil Creek (near mouth) near Ashland, Oreg.

Location.--Water-stage recorder in the SW¼ sec. 12, T. 39 S., R. 1 E., 100 ft upstream from bridge on Dead Indian road and 3 miles east of Ashland.

Records available.--January to April, 1924.

Bypass channels.--Records for this station do not include flow in Wells-Walker-True ditch, which bypasses station.

(The information that follows applies only to the drainage area between this station and the next station upstream.)

Diversions.--

1. The Talent irrigation district diverts water from Neil Creek to supplement flow of Ashland lateral (from Sampson Creek) in the SW¼ sec. 30, T. 39 S., R. 2 E., during periods of ample runoff. Discharge record of the feeder canal has been kept at times by the Talent irrigation district.

2. Hill ditch diverts in the SW¼SW¼ sec. 30, T. 39 S., R. 2 E. (Oral report, Clinton Smith, Jackson County Watermaster.) Water right permits diversion of 2.7 cfs, priority 1854. (Rogue River Decree of Jackson County Circuit Court, p. 10, 1909.) No known records of discharge.

3. Wells-Walker-True ditch diverts in the NE¼NE¼ sec. 24, T. 39 S., R. 1 E. (Oral report, Clinton Smith, Jackson County Watermaster.) Water right permits diversion of 2.7 cfs, priority 1854. (Rogue River Decree of Jackson County Circuit Court, p. 10, 1909.) No known records of discharge.

4. Clayton ditch diverts from Clayton Creek in the NW¼ sec. 36, T. 39 S., R. 1 E. (Oral report, Clinton Smith, Jackson County Watermaster.) Water right permits diversion of 3.88 cfs, priority 1864. (Rogue River Decree of Jackson County Circuit Court, p. 10, 1909.) Usually insufficient water available for diversion after July 15. No known records of discharge.

Return flow.--No known surface return flow.

Storage and regulation.--None.

Utilization.--Land irrigated above station by Ashland lateral from Sampson Creek. The number of acres under irrigation in this area is unknown. About 216 acres irrigated by Hill ditch and 306 acres by Clayton ditch in this area. (Rogue River Decree of Jackson County Circuit Court, p. 10, 1909.) A small amount of land is irrigated by Wells-Walker-True ditch. Water diverted to this ditch is for irrigation of about 214 acres, but most of land irrigated lies below station. There has been no significant change in the utilization of water since 1924.

42.--Bear Creek above Ashland Creek, at Ashland, Oreg. (Operated by Oregon State Engineer)

Location.--Water-stage recorder in sec. 4, T. 39 S., R. 1 E., about 100 yd above Talent lateral intake and half a mile north of Ashland.

Records available.--April 1928 to September 1931 and July-August 1932 in files of Oregon State Engineer.

Bypass channels.--Two canals, East lateral and Ashland lateral of Talent irrigation district, bypass station. Records for station do not include flow of canals. Records of discharge of these canals available in Geological Survey water-supply papers.

(The information that follows applies only to the drainage area between this station and the next station upstream.)

Diversions.--None.

Return flow.--No known surface return flow.

Storage and regulation.--None, except as noted for stations upstream.

Utilization.--Bear Creek is not utilized for any appreciable amount of irrigation in this area. Nearly all the land served by Ashland lateral and a small part of the land served by East lateral lie above the station. These laterals utilize the water stored by Hyatt Prairie and Emigrant Gap reservoirs. No substantial change in area irrigated between 1928 and the present.

43.--West Fork Ashland Creek (head of Ashland Creek) near Ashland, Oreg.

Location.--Water-stage recorder in the NE¼ sec. 32, T. 39 S., R. 1 E., ¾ of a mile upstream from confluence with East Fork and 4 miles south of Ashland.

Drainage area.--9.4 sq mi.

Records available.--September 1924 to January 1933.

Bypass channels.--None.

Diversions.--None.

Return flow.--None.

Storage and regulation.--None.

Utilization.--None.

44.--East Fork Ashland Creek near Ashland, Oreg.

Location.--Water-stage recorder in the NW¼ sec. 28, T. 39 S., R. 1 E., ¼ mile upstream from confluence with West Fork, 100 yd above diversion for power plant, and 3½ miles south of Ashland.

Drainage area.--7.8 sq mi.

Records available.--September 1924 to June 1933

Bypass channels.--None.

Diversions.--None.

Return flow.--None.

Storage and regulation.--None.

Utilization.--None.

45.--Ashland Creek at Ashland, Oreg.

Location.--Staff gage in the SW¼ sec. 4, T. 39 S., R. 1 E., at a bridge about 100 ft upstream from the planing mill at Ashland.

Records available.--July to November, 1913.

Bypass channels.--Helman ditch and Ashland municipal water-supply bypass station. Station records do not include flow.

(The information that follows applies only to the drainage area between this station and the next stations upstream.)

Diversions.--

1. Ashland municipal power plant diverts from Ashland Creek. Prior to 1928, water was diverted from the East and West Forks of that creek. A new dam was constructed in 1928 (U. S. Geol. Survey Water-Supply Paper 638-B, p. 71) at the confluence of those forks in the NE¼NE¼ sec. 29, T. 39 S., R. 1 E., forming the 800 acre-ft Walker (or Rader) Reservoir. An 1854 water right permits diversion of 29 cfs (Rogue River Decree of Jackson County Circuit Court, p.11, 1909), and a 1927 water right permits diversion of 15 cfs. (Permits issued by

Oregon State Engineer.) No known records available.

2. Ashland municipal water supply diverted in the SW¼NW¼ sec. 16, T. 39 S., R. 1 E. A treatment plant was put into operation about a mile upstream in 1949, at which time, it is assumed, this diversion was discontinued. Public Health Service reports output of plant is 3.0 mgd or 4.65 cfs. No known records available.

3. Helman ditch diverts in the NW¼NW¼ sec. 9. T. 39 S., R. 1 E., about 30 ft below Main Street bridge (oral report, Clinton Smith, Jackson County Watermaster). Water right permits diversion of 1.36 cfs, priority 1858. (Rogue River Decree of Jackson County Circuit Court, p. 11, 1909.) No known records available.

Return flow.--Ashland power plant returns water at place of use in the NW¼ sec. 21, T. 39 S., R. 1 E.

Storage and regulation.--Walker (or Rader) Reservoir, capacity 800 acre-ft, commenced storage in 1928. City of Ashland lower reservoir, in the NW¼ sec. 16, affected the discharge during period of record at this station.

Utilization.--The Ashland power plant in the NW¼ sec. 21 consists of an impulse turbine rated at 600 hp, direct-connected to a 300-kw generator. The effective head is 420 ft. (U. S. Geol. Survey Water-Supply Paper 638-B, p. 71.) It is assumed that this plant was not in existence during period of record, since no mention of it has been found in files or reports of Geological Survey for 1913. Ashland municipal water supply is obtained from plant in the NW¼ sec. 21; formerly from lower reservoir in the NW¼ sec. 16, T. 39 S., R. 1 E. Population of Ashland in 1940, 4,744; in 1950, 7,702.

46.--Bear Creek near Ashland, Oreg.

Location.--Water-stage recorder in sec. 31, T. 38 S., R. 1 E., 300 yd downstream from mouth of Butler Creek and 3 miles northwest of Ashland.

Records available.--Irrigation seasons from April 1923 to September 1928 in reports of Geological Survey. Irrigation seasons 1928 to 1931 in reports of Oregon State Engineer.

Bypass channels.--East lateral, from Emigrant Gap reservoir, bypasses station on east side of creek. Part of flow in East lateral bypasses station on west side through the west lateral. Talent lateral also bypasses station, part of the water being carried by the lower East lateral. Station records do not include the flow in these canals.

(The information that follows applies only to the drainage area between this station and the next stations upstream.)

Diversions.--

1. Talent lateral of the Talent irrigation district diverts in the SE¼SW¼ sec. 33, T. 38 S., R. 1 E. Discharge records available in Geological Survey water-supply papers from May 1920 to September 1950; monthly records only after April 1929.

2. Smith-Myer-Roper ditch diverts from Ashland Creek in the SW¼SW¼ sec. 4, T. 39 S., R. 1 E. (Oral report, Clinton Smith, Watermaster Jackson County.) The water right permits diversion of 1.92 cfs, priority 1864. (Rogue River Decree, Jackson County Circuit Court, 1909.) No known discharge records available.

Return flow.--No known surface return flow.

Storage and regulation.--None, except as noted for stations upstream.

Utilization.--Land irrigated above station by the Talent irrigation district. Number of acres irrigated in this particular area by the East lateral and the Ashland lateral is not known. Nearly all of land irrigated by Talent lateral lies below station, near Talent and Medford. About 141 acres irrigated by Smith-Myer-Roper ditch, and 75 acres irrigated by Helman ditch from Ashland Creek. (Rogue River Decree, Jackson County Circuit Court, 1909.) More extensive irrigation by Talent irrigation district was made possible by construction of Emigrant Gap and Hyatt Prairie reservoirs, but there has been no substantial change in use of water for irrigation in the past 20 yr.

47.--Wagner Creek near Talent, Oreg.

Location.--Staff gage in the SW¼SE¼ sec. 2, T. 39 S., R. 1 W., about 200 ft upstream from county highway bridge and about 3½ miles upstream from Talent.

Drainage area.--11 sq mi.

Records available.--July to October, 1913.

Bypass channels.--Frederick lateral and upper West lateral bypass station site but were not in existence during period of gaging station operation.

Diversions.--Frederick lateral and upper West lateral of the Talent irrigation district divert in the NE¼ sec. 11, T. 39 S., R. 1 W. Since the district system was planned for completion in 1923, it is assumed that these laterals were first used that year. The designed capacity of Frederick lateral at diversion is 10 cfs. (Information from Talent Irrigation District.) No known discharge records available.

Return flow.--McDonald Creek Canal has discharged water to head of Wagner Creek, in the NE¼ sec. 34, T. 39 S., R. 1 W., from the Applegate River basin since April 1923. Records available in reports of Geological Survey from April 1923 to September 1928, and in files of State Engineer from April 1929 to September 1950.

Storage and regulation.--None.

Utilization.--None.

48.--Bear Creek at Talent, Oreg.

Location.--Staff gage in sec. 23, T. 38 S., R. 1 W., at highway bridge half a mile northeast of Talent and half a mile downstream from Wagner Creek.

Drainage area.--226 sq mi.

Records available.--July 1907 to August 1911, April to November 1912, June to October 1913, and May to November 1914.

Bypass channels.--East lateral, West lateral, and Talent lateral of the Talent irrigation district bypass site of this station after period of record.

(The information that follows applies only to the drainage area between this station and the next stations upstream.)

Diversions.--No discharge records of the following diversions are known to be available.

1. East and West Lynch ditches divert from Wagner Creek in the NE¼SW¼ sec. 2, T. 38 S., R. 1 W. Water diverted alternately to East and West ditches during irrigation season until August. (Oral report, Clinton Smith, Jackson County Watermaster.) Water right permits diversion of 10 cfs, priority 1861. (Rogue River Decree of Jackson County Circuit Court, 1909.)

2. Beeson-Robinson ditch diverts in the NW¼NW¼ sec. 35, T. 38 S., R. 1 W. (Oral report, Clinton Smith, Jackson County Watermaster.) Water right permits diversion of 2.13 cfs, priority 1854. (Rogue River Decree of Jackson County Circuit Court, 1909.)

3. Wagner-Thornton ditch diverts in the SW¼SW¼ sec. 26, T. 38 S., R. 1 W. (Oral report, Clinton Smith, Jackson County Watermaster.) Water right permits diversion of 1.05 cfs, priority 1852. (Rogue River Decree of Jackson County Circuit Court, 1909.)

Return flow.--No known surface return flow.

Storage and regulation.--None, except as noted for stations upstream.

Utilization.--Land irrigated by Talent irrigation district after 1920. The number of acres irrigated in this particular area is not known. About 370 acres are irrigated by Beeson-Robinson ditch, and 69 acres by Wagner-Thornton ditch. These two ditches were probably in use during period of record.

49.--Bear Creek below Phoenix Canal, near Talent, Oreg.

Location.--Water-stage recorder in the NW¼ sec. 23, T. 38 S., R. 1 W., 500 ft downstream from intake of Phoenix Canal and 1 mile north of Talent.

Records available.--May 1923 to September 1928 (incomplete) in reports of Geological Survey. Monthly record during irrigation seasons, 1928 to 1931 in reports of State Engineer.

Bypass channels.--Phoenix canal of Medford irrigation district, and Talent lateral, East lateral, and West lateral of Talent irrigation district bypass this station. Station records do not include flow of canals.

(The information that follows applies only to the drainage area between this station and the next station upstream.)

Diversions.--Phoenix canal of the Medford irrigation district diverts in the SE¼NW¼ sec. 23, T. 38 S., R. 1 W., for irrigation below station in vicinity of Phoenix, Jacksonville and Central Point. Records available during irrigation seasons 1916 to 1950 in reports of Geological Survey. In 1907 it was noted by hydrographer that about 10 cfs was being diverted about 500 ft below station at Talent no. 48; water was said to be used for power and irrigation.

Return flow.--No known surface return flow.

Storage and regulation.--None, except as noted for stations upstream.

Utilization.--Land irrigated by Talent irrigation district. The number of acres under each of the Talent lateral, East lateral, and West lateral in this particular area is not known. The district was under development during early period of record, but there has probably been little change in use of water for irrigation during the past 20 yr.

50.--Bear Creek at Medford, Oreg.

Location.--Water-stage recorder, lat 42°19', long. 122°52', in the NW¼ sec. 30, T. 37 S., R. 1 W., just upstream from Main Street bridge in Medford. Prior to December 21, 1947, at site 40 ft upstream at same datum. Datum of gage is 1,343.47 ft above mean sea level, datum of 1929.

Drainage area.--279 sq mi.

Records available.--March 1915 to September 1950 (incomplete prior to April 1927).

Bypass channels.--Talent lateral and Phoenix canal bypass this station. Station records do not include flow of canals. Records near intakes of these canals available in reports of Geological Survey, Talent lateral since 1920 and Phoenix canal since 1916.

(The information that follows applies only to the drainage area between this station and the next station upstream.)

Diversions.--None.

Return flow.--No known surface return flow.

Storage and regulation.--None, except as noted for stations upstream.

Utilization.--Land irrigated by Talent irrigation district and Medford irrigation district. Flow in Phoenix canal is supplemented by Medford irrigation district canal from Little Butte Creek. The number of acres under irrigation in this particular area is not determined. The greatest development of water utilization took place prior to 1924; there has been little change in use of water for irrigation during the past 20 yr.

51.--Bear Creek near Central Point, Oreg.

Location.--Staff gage, lat 42°24', long. 122°55', in the SE¼ sec. 34, T. 36 S., R. 2 W., at county road bridge, 1.3 miles north of Central Point and 4½ miles upstream from mouth. Prior to July 1926 at site 1 mile upstream.

Records available.--October 1945 to April 1947 in reports of Geological Survey. March 1923 to July 1926 (irrigation seasons only) in reports of State Engineer.

Bypass channels.--Hopkins Canal, which carries water from Little Butte Creek and Bear Creek, and Phoenix canal bypass this station. Station records do not include flow.

(The information that follows applies only to the drainage area between this station and the next station upstream.)

Diversions.--Bear Creek canal, constructed in 1920 by Rogue River Valley Canal Co., diverts in the SW¼SW¼ sec. 19, T. 37 S., R. 1 W. Discharge record available in 1921 and 1924 to 1950 in files of State Engineer. Monthly records from 1929 to 1931 and 1933 to 1950 in reports of Geological Survey. Water is discharged into Hopkins Canal to supplement flow from Little Butte Creek.

Return flow.--In winter months, city of Medford returns surplus water from Big Butte Springs, about 6 cfs from reservoir in the SE¼ sec. 20, T. 37 S., R. 1 W., to Bear Creek at a point about 2 miles below station at Medford. City of Medford sewage system discharges to Bear Creek. Public Health Service in 1949 reported average flow is 4.0 mgd (or 6.2 cfs).

Storage and regulation.--None, except as noted for stations upstream.

Utilization.--Irrigation chiefly by Rogue River valley irrigation district. The number of acres under irrigation in this particular area is not determined. The greatest development of water utilization took place prior to 1930. Water used for Medford municipal supply has been obtained from sources other than Bear Creek since 1909.

52.--Rogue River at Raygold, near Central Point, Oreg.

Location.--Water-stage recorder, lat 42°26', long. 122°59', in sec. 18, T. 36 S., R. 2 W., at Raygold, just downstream from dam and powerhouse of the California-Oregon Power Co., half a mile downstream from Bear Creek, and 6 miles northwest of Central Point. Datum of gage is 1,121.78 ft above mean sea level, datum of 1929.

Drainage area.--2,020 sq mi.

Records available.--August 1905 to September 1950.

Bypass channels.--None.

(The information that follows applies only to the drainage area between this station and the next stations upstream.)

Diversions.--No discharge records of the following diversions are known to be available.

1. C. J. Haas ditch diverts in the NW¼ sec. 29, T. 35 S., R. 1 W. (Oral report, Clinton Smith, Jackson County Watermaster.) Water right permits diversion of 7.4 cfs, priority 1930. (Permits issued by Oregon State Engineer).

2. Table Rock ditch diverts in the NE¼NW¼ sec. 6, T. 36 S., R. 1 W. (Rogue River Adjudication Survey by State Engineer, 1935.) Water right permits diversion of 36.2 cfs, priority 1888 (Rogue River decree of Jackson County Circuit Court, 1909). Since 1941, quantity of water diverted has been reduced to about 20 cfs, some water being carried all year. (Oral report, Clinton Smith, Jackson County, Watermaster.)

3. Mayfield ditch diverts in the NW¼SW¼ sec. 15, T. 36 S., R. 2 W. (Oral report, Clinton Smith, Jackson County Watermaster.) Water rights permit diversion of 2.9 cfs, priority 1914 and 1925. (Permits issued by Oregon State Engineer.)

4. City of Jacksonville diverts from Jackson Creek at the city reservoir in the SW¼SE¼ sec. 25, T. 37 S., R. 3 E. Water right permits diversion of 2.0 cfs, priority 1910.

5. California-Oregon Power Co. diverts in the SW¼ sec. 18, T. 36 S., R. 2 W., for use at Raygold power plant, established prior to period of record at this station. Water right permits diversion of 1,060 cfs June to August, and 1,560 cfs September to May.

Return flow.--Water from Raygold power plant returned to Rogue River at place of use, just above station.

Storage and regulation.--Regulation by Raygold dam just above station and city of Jacksonville reservoir on Jackson Creek, capacity 75 acre-ft.

Utilization.--About 596 acres irrigated by Haas ditch, and 237 acres irrigated by Mayfield ditch. (Permits issued by Oregon State Engineer.) Bureau of Reclamation reports 1,400 acres irrigated by Table Rock ditch in 1950. During the early period of record at this station, facilities for irrigation were under development and the amount of land being irrigated was progressively increasing. During the past 20 yr, however, there has been little change in the utilization of water for irrigation. Water from Jacksonville reservoir used for municipal water supply; population of Jacksonville in 1940, 761; in 1950, 1183. Raygold dam is about 20 ft high, 420 ft long. The hydraulic machinery consists of two turbines rated at 1,000 hp each, and two smaller wheels rated at 375 hp each, or a total of 2,750 hp. This power drives three generators with a total of 1,950 kva. (U. S. Geol. Survey Water-Supply Paper 638-B, p. 69.)

53.--Evans Creek above West Fork at Meadows Bridge (near Bybee Springs) Oreg.

(Operated by Oregon State Engineer)

Location.--Staff gage, lat 42°36', long. 122°58', in the SW¼ sec. 20, T. 34 S., R. 2 W.

Drainage area.--33.7 sq mi.

Records available.--October 1941 to September 1950 in files of Oregon State Engineer.

Bypass channels.--None.

Diversions.--No discharge records of the following diversions are known to be available.

1. Dinkens ditch diverts in the SE¼ NE¼ sec. 33, T. 33 S., R. 2 W. (Oral report, Clinton Smith, Jackson County Watermaster.) Water right permits diversion of 0.4 cfs, priority 1907. (Rogue River Decree of Jackson County Circuit Court, p. 18, 1909.)

2. Sisemore ditch diverts in the NW¼ sec. 4, T. 34 S., R. 2 W. (Oral report, Clinton Smith, Jackson County Watermaster.) Water right permits diversion of 0.9 cfs, priority 1887. (Rogue River Decree of Jackson County Circuit Court, p. 18, 1909.)

3. Mayfield ditch diverts in the SW¼ sec. 9, T. 34 S., R. 2 W. (Oral report, Clinton Smith, Jackson County Watermaster.) Water right permits diversion of 1.88 cfs, priority 1888. (Rogue River Decree of Jackson County Circuit Court, p. 18, 1909.)

Return flow.--No known surface return flow.

Storage and regulation.--None.

Utilization.--About 25 acres irrigated by Dinkens ditch, 54 acres by Sisemore ditch, and 124 acres by Mayfield ditch. There has been no significant change in the utilization of water during period of record at this station.

54.--Evans Creek at Bybee Springs, near Rogue River, Oreg.

Location.--Staff gage in the NE¼ sec. 34, T. 34 S., R. 3 W., 3 miles below junction of East and West Forks of Evans Creek, and 14 miles northeast of Rogue River post office

Drainage area.--114 sq mi.

Records available.--October 1925 to October 1927 in reports of Geological Survey. April 1940 to September 1950 in files of Oregon State Engineer.

Bypass channels.--Silvers ditch bypasses this station. Flow not included in station records.

(The information that follows applies only to the drainage area between this station and the next station upstream.)

Diversions.--

1. Bybee ditch diverts in the NE¼ sec. 19, T. 34 S., R. 2 W. at Canyon dam site. (Adjudication Survey by Oregon State Engineer.) Water rights permit diversion of 0.65 cfs from East Fork Evans Creek (priority 1892), and 0.65 cfs from Sprignett Creek (priority 1871). (Rogue River Decree, Jackson County Circuit Court, p. 16, 1909.) 2.86 cfs was measured in the ditch by the Watermaster, July 20, 1939.

2. Silvers (or Sivers) ditch diverts in the SW¼ sec. 26, T. 34 S., R. 3 W. (Adjudication Survey by Oregon State Engineer.) Water rights permit diversion of 1.12 cfs (priority 1898). (Rogue River Decree, Jackson County Circuit Court, p. 16, 1909.)

Return flow.--No known surface return flow.

Storage and regulation.--None.

Utilization.--About 77 acres irrigated by Bybee ditch. Some irrigation by Silvers ditch, but most of the land lies below station.

55.--Evans Creek at Wimer, Oreg.

Location.--In the SE¼ sec. 10. T. 35 S., R. 4 W., about 40 ft downstream from highway bridge at Wimer and about 9 miles upstream from Woodville.

Records available.--July to November 1913.

Bypass channels.--Seeley ditch bypasses station. Records of daily discharge of station do not include flow, but a table of combined monthly discharge has been included in water-supply paper for 1913.

(The information that follows applies only to the drainage area between this station and the next station upstream.)

Diversions.--Five ditches divert a total average flow of 10.9 cfs as listed on table 8. Smaller ditches of inconsequential flow have not been listed.

Return flow.--No known surface return flow.

Storage and regulation.--None.

Utilization.--About 600 acres irrigated in this area, principally by the ditches listed in table 8. These ditches were probably in use during period of record. There has been no substantial change in the use of water for irrigation since 1913.

Table 8.--Diversions in Evans Creek basin, above Evans Creek at Wimer, Oreg.
[Diversions in this table are those located between this station and the next station upstream, Evans Creek at Bybee Springs near Wimer, Oreg.]

Name	Point of diversion 1/	Date of establ. 2/	Approx. normal flow 2/ cfs	Purpose	Remarks
Carter ditch	SE¼SW¼ sec. 34, T. 34 S., R. 3 W.	1893	1.8	Irrigation	Irrigates about 96 acres.
Jesse Neathamer ditch.	SE¼NW¼ sec. 5, T. 35 S., R. 3 W.	1899	.65	----do----	Irrigates about 39 acres.
Williams and Whalen ditch.	SE¼SE¼ sec. 6, T. 35 S., R. 3 W.	1896	3.93	----do----	Irrigates about 222 acres; 8.0 cfs measured in ditch July, 1939.
Fielder or Hillis ditch.	NW¼NW¼ sec. 7, T. 35 S., R. 3 S.	1881	1.49	----do----	Irrigates about 89 acres.
Vroman or Seeley ditch.	SE¼NE¼ sec. 11, T. 35 S., R. 4 W.	1902	3.0	----do----	Irrigates about 379 acres, mostly below station. Water right permits diversion of 6.32 cfs, but record kept in 1913, 250 ft above highway bridge at Wimer, shows a maximum diversion of 3.6 cfs.

1/ Rogue River Adjudication Survey, State Engineer, 1936.
2/ Rogue River Decree, Jackson County Circuit Court, p. 45, 1909.

56.--Pleasant Creek near Rogue River, Oreg.

Location.--Staff gage in sec. 28, T. 34 S., R. 4 W., at Owens Bridge, 1½ miles upstream from mouth of Ditch Creek, 3.2 miles northwest of former post office at Wimer, and 9 miles north of Rogue River.

Records available.--November 1925 to June 1927.

Bypass channels.--Records for this station do not include flow in lower Wakeman ditch. Hydrographers reported flow of about 0.7 cfs bypassing gage. Apparently ditch was not used for mining operations during period 1925-27.

Diversions.--

1. Several water rights have been decreed for mining purposes above station, but little information is available concerning their usage, except that they are probably no longer being used for mining. These rights permitted diversion only during winter months by the Leason ditch, Highline ditch, Collins ditch, and others.

2. Upper Wakeman ditch diverts from Fry Gulch in the SE¼SE¼ sec. 15, T. 34 S., R. 4 W. (Oral report, Clinton Smith, Jackson County Watermaster.) The water right permits the diversion of 20 cfs for mining from November to June (priority 1860). (Rogue River Decree, Jackson County Circuit Court, p. 17, 1909.) About 2 cfs is diverted for irrigation.

3. Lower Wakeman ditch diverts in the SE¼SW¼ sec. 22, T. 34 S., R. 4 W. (Oral report, Clinton Smith, Jackson County Watermaster.) About 1 cfs is diverted for irrigation of 56 acres lying below station. The water right permits the diversion of 12.5 cfs for mining from November to June (priority 1875). (Rogue River Decree, Jackson County Circuit Court, p. 17, 1909.)

Return flow.--Water used for placer mining is returned directly to stream.

Storage and regulation.--None.

Utilization.--Water used for mining, but extent of use has been diminishing in recent years. Upper Wakeman ditch used for irrigation of small tract of land and several smaller ditches not listed in Diversions paragraph carry negligible flow for irrigation of small tracts.

57.--Rogue River at Grants Pass, Oreg.

Location.--Water-stage recorder, lat 42°26', long. 123°19', in the NW¼ sec. 20, T. 36 S., R. 5 W., at filter plant 0.6 mile east of Pacific Highway bridge at Grants Pass. Datum of gage is 888.28 ft above mean sea level, datum of 1929.

Drainage area.--2,420 sq mi.

Records available.--January 1939 to September 1950.

Bypass channels.--South Highline and Gravity canals bypass this station at Grants Pass Station records do not include flow. Records do not include the water pumped to city of Grants Pass at the filter plant.

(The information that follows applies only to the drainage area between this station and the next stations upstream.)

Diversions.--Thirteen canals and ditches, with water rights permitting a total diversion of about 446 cfs, are located in this area (see table 9). Numerous water rights have been decreed for mining purposes on Kane,

Galls, Sardine, Foots, Birdseye, Wards, Evans, and Savage Creeks. These water rights permitted diversion only from November to June, and water was returned directly to stream. Dredging operations during World War I mined out many of these streams, and little use has been made of mining ditches since that time. (Oral report, Clinton Smith, Jackson County Watermaster.) No discharge records of the diversions listed are known to be available except as noted in table 9.

Return flow.--Gold Hill power plant returns flow to Rogue River at place of use in the NW¼SE¼ sec. 15, T. 36 S., R. 3 W., about half a mile below diversion. (Water-power resources of the Rogue River drainage basin Oregon, water-supply paper 638-B, 1932.)

Storage and regulation.--By Savage Rapids dam, where a head of 28 ft is developed. Sixteen radial gates, each capable of passing 3,000 cfs, are provided to carry the floods. With a maximum flood of 100,000 cfs, the pond would rise about 5 ft with all the gates open. (Water-power resources of the Rogue River drainage basin, Oregon, Water-Supply Paper 638-b, 1932.)

Utilization.--Gold Hill Irrigation District water right is for irrigation of 1,365 acres. U. S. Bureau of Reclamation reports 1,000 acres irrigated by the district in 1950.

The 1899 water right of Oregon Water and Power Co. was for development of 750 hp. In 1923 this diversion was reported to be used by the city of Gold Hill to develop about 20 hp for pumping water to the town. (Water-power resources of the Rogue River drainage basin, Oregon Water-Supply Paper 638-B, 1932.) Pacific Portland Cement Co. was reported in 1941 to be using the diversion for mining operations, and in June 1945 this company completed a hydroelectric plant below the diversion with two generating units of 750 kw each. In October 1950 a third unit of similar capacity was installed, and the diversion of 1,422 cfs is now utilized in developing 2,250 kw. A relatively small amount of the energy is used for the benefit of the city of Gold Hill, and the balance is used for the operation of the Pacific Portland cement mill at Gold Hill. (Pacific Portland Cement Co., San Francisco 6, Calif.)

About 70 acres are irrigated by James U. Smith ditch, 208 acres by the Del Rio irrigation system, and 394 acres by the Old Mill ditch. U. S. Bureau of Reclamation reports 8,980 acres irrigated by Grants Pass irrigation district (some of the land irrigated lies below this station). Two turbines at Savage Rapids dam, each rated at 900 hp, are directly connected to pumps that deliver water to Tokay Canal and Evans Creek lateral 150 ft above the river on the north side, and to South highline canal and Savage lateral 90 ft above the river on the south side. In addition to these lifts the system included Gravity Canal with a capacity of about 150 cfs. (Water-power resources of the Rogue River drainage basin, Oregon, Water-Supply Paper 638-B. 1932.) In late summer it is sometimes necessary to alternate the operation of the canals and pumps. Water from the filter plant at this station is used to supply the city of Grants Pass. Population of Grants Pass in 1940, 6,028; in 1950, 7,980.

58.--Applegate River near Copper, Oreg.

Location.--Water-stage recorder, lat 42°03', long. 123°07', in the SE¼ sec. 25, T. 40 S., R. 4 W., a quarter of a mile downstream from French Gulch, 1½ miles downstream from Squaw Creek, and 3 miles northeast of Copper store. Datum of gage is 1,759.66 ft above mean sea level, datum of 1929.

Drainage area.--220 sq mi.

Records available.--December 1938 to September 1950.

Bypass channels.--Water diverted by Thompson Creek Irrigation Association ditch bypasses this station. Grand Applegate ditch, carrying about 3.3 cfs during irrigation season, also bypasses the station. Flow of these ditches not included in station records.

Diversions.--

1. Thompson Creek Irrigation Association ditch diverts water from tributaries of Carberry Creek, Sturgis Fork in the NW¼ sec. 14, and O'Brien Creek in the NW¼ sec. 12, T. 40 S., R. 5 W. (Adjudication Survey, Oregon State Engineer, 1935), and discharges it into upper reaches of Thompson Creek. About 21 cfs is diverted for mining use during winter and 8 cfs for irrigation of 842 acres in Thompson Creek Basin during irrigation season. No known discharge records available.

A total of about 11 cfs is used for irrigation above this station. The two ditches listed below account for about 9 cfs, and other small ditches, not listed, divert inconsequential flow.

2. Thurman and Collins ditch diverts about 3.2 cfs from Squaw Creek in the SE¼ NW¼ sec. 6, T. 41 S., R. 3 W. No known records available.

3. Grand Applegate ditch diverts from Carberry Creek in the NW¼NE¼ sec. 10, T. 41 S., R. 4 W. (Adjudication Survey, Oregon State Engineer, 1935.) Mining right of 1878 permitted diversion of 40 cfs, not used for many years. About 6 cfs is normally diverted for irrigation of 305 acres, some of the land lying below the station. (Oral report, Clinton Smith, Jackson County Watermaster.) No known records available.

Return flow.--No known surface return flow.

Storage and regulation.--Several hundred acre-ft is normally stored each winter in Squaw Lake (sec. 2, T. 41 S., R. 3 W.) for irrigation along Squaw Creek the following summer, priority 1876 (see table 3).

Utilization.--A total of 482 acres irrigated above station, about 93 acres by Thurman and Collins ditch, some by Grand Applegate ditch, and some by smaller ditches not listed. There has been no substantial change in use of water for irrigation during period of record.

Table 9.--Diversions in Rogue River basin, above Rogue River at Grants Pass, Oreg.
[Diversions in this table are those located between this station and the next stations upstream, Pleasant Creek near Wimer, Evans Creek at Wimer, and Rogue River at Raygold]

Name	Point of diversion 1/	Date of establ. 2/	Water right cfs	Purpose	Remarks
Gold Hill irrigation district canal.	SW¼SE¼ sec. 10, T. 36 S., R. 3 W.	1916	17.1	Irrigation	
Gold Hill power canal (formerly Oregon Water & Power Co.).	N½NW¼ sec. 15, T. 36 S., R. 3 W.	1899	1,422	Power	Used since 1941 by Pacific Portland Cement Co., who may have a record of discharge used by their plant.
Dusenbury (or Dusenberry) ditch.	Left Fork; SE¼ SW¼ sec. 29; Right Fork SE¼ NW¼ sec. 28; T. 35 S., R. 3 W.	1874	1.25	Irrigation	Diverts from Left and Right Forks of Sardine Creek.
James U. Smith ditch.	SW¼NW¼ sec. 33, T. 35 S., R. 3 W.	1859	1.17	----do----	Diverts from Right Fork Sardine Creek.
Del Rio irrigation system.	NE¼SW¼ sec. 26, T. 36 S., R. 4 W.	1928	2.5	----do----	
Williams ditch	NW¼NW¼ sec. 29, T. 34 S., R. 4 W.	After 1909	2.2	----do----	Diverts from Ditch Creek. Approx. normal flow, 2 cfs.
Old Mill ditch	NE¼NW¼ sec. 4, T. 36 S., R. 4 W.	1902	6.57	----do----	Diverts from Evans Creek.
Savage Rapids dam, Grants Pass irrigation district: Tokay Canal Evans Creek lateral South High Line Canal Savage lateral Gravity Canal	Line between SE¼ sec. 24, T. 36 S., R. 5 W., and SW¼ sec. 19, T. 36 S., R. 4 W.	1920	30 3/ 10 3/ 50 3/ 3 3/ 90 3/	----do----	Records during irrigation season available in files of Oregon State Engineer, May 1925 to September 1950.
Grants Pass filter plant.	NW¼ sec. 20, T. 36 S., R. 5 W.	1888	12.5	City water	Approximate normal flow, 3.0 cfs.

1/ Adjudication Survey by State Engineer, 1937, and oral report by Clinton Smith, Jackson County Watermaster.
2/ Rogue River Decree of Jackson County Circuit Court, 1909, and permits issued by State Engineer.
3/ Approximate normal flow during irrigation season. Date on water permits not available.

59.--Applegate River near Ruch (Buncom), Oreg.

Location.--Water-stage recorder, lat 42°11', long. 123°03', in sec. 15, T. 39 S., R. 3 W., at Cameron bridge, 1½ miles upstream from Little Applegate River and 4½ miles south of Ruch. Datum of gage is 1,475.09 ft above mean sea level, datum of 1929 (levels by Corps of Engineers).

Drainage area.--297 sq mi.

Records available.--June 1911 to September 1914, September 1925 to September 1950.

Bypass channels.--Records for this station do not include part of flow in Cameron (Comstock) ditch, which bypasses station. A table of combined monthly discharge is included in water-supply papers for 1911 to 1914.

(The information that follows applies only to the drainage area between this station and the next station upstream.)

Diversions.--

1. Cameron (Comstock) ditch diverts in the SW¼ sec. 5, T. 40 S., R. 3 W. Water rights permit diversion of 19.3 cfs for mining in winter and 9.5 cfs for irrigation. (Oral report, Clinton Smith, Jackson County Watermaster.) Discharge record of the flow past this station available in Geological Survey water-supply papers, June 1911 to September 1914. Maximum discharge observed during period of record, 10.5 cfs; 14 cfs measured in the ditch July 17, 1939.

2. Swayne ditch diverts in the SE¼NW¼ sec. 5, T. 40 S., R. 3 W. Water right permits diversion of 17 cfs, priority 1892; 10.6 cfs measured July 17, 1939. (Oral report, Clinton Smith, Jackson County Watermaster.) No known discharge records available, except occasional measurements by watermaster.

Return flow.--A part of the water from Cameron (or Comstock) ditch used for mining is returned to river above station.

Storage and regulation.--None.

Utilization.--Water diverted to Cameron (Comstock) ditch is used in winter for mining. About 444 acres irrigated by this ditch, some of the land lying below station. About 186 acres irrigated by Swayne ditch. There has been no substantial change in use of water for irrigation during period of record at this station.

60.--Little Applegate River near Talent, Oreg. (Operated by Oregon State Engineer)

Location.--Water-stage recorder in the NW¼NE¼ sec. 4, T. 40 S., R. 1 W., about 2,000 ft below mouth of Greeley Creek and 9 miles south of Talent.

Records available.--September 1940 to September 1941, in files of State Engineer.

Bypass channels.--McDonald Creek canal diverts water from Applegate River basin to Bear Creek basin, bypassing station. Station records do not include flow.

Diversions.--

1. McDonald Creek canal diverts from McDonald Creek, practically on line between the SE¼ sec. 10 and the SW¼ sec. 11, T. 40 S., R. 1 W. Water is discharged into head of Wagner Creek in the Bear Creek drainage basin for irrigation near Talent. Discharge record available in reports of Geological Survey from April 1923 to July 1928, and in files of State Engineer from April 1923 to September 1950.

2. U. S. Bureau of Reclamation reports water is also diverted from Greeley Creek into McDonald Creek canal in sec. 3, T. 40 S., R. 1 W. No record of this diversion is available, but flow is included in the records for McDonald Creek canal near Talent.

Return flow.--None.

Storage and regulation.--None.

Utilization.--None.

61.--Little Applegate River near Buncom, Oreg.

Location.--Staff gage in sec. 29, T. 39 S., R. 2 W., about 100 ft upstream from West Fork and 2 miles upstream from Buncom.

Records available.--May to November 1913 (published as East Fork).

Bypass channels.--Sterling ditch and Gallagher ditch bypass this station. Station records do not include flow in ditches. Since about 1923, water has been diverted during spring runoff from a tributary near the head of this creek to Bear Creek basin, bypassing the site of this station.

(The information that follows applies only to the drainage area between this station and the next station upstream.)

Diversions.--

1. Sterling ditch diverts in the NW¼NE¼ sec. 31, T. 39 S., R. 1 W. Water right permits diversion of 46 cfs for mining, priority 1877. (Rogue River Decree, Jackson County Circuit Court, 1909.) Less than 20 cfs is normally diverted in winter for mining until April 15th, when flow is cut to about 4 cfs for irrigation. (Oral report, Clinton Smith, Jackson County Watermaster.)

2. Gallagher ditch diverts in the NE¼ sec. 28, T. 39 S., R. 2 W., priority 1872. Normal flow during irrigation season is about 2.9 cfs and maximum flow 3.7 cfs. (Oral report, Clinton Smith, Jackson County Watermaster.) Used for irrigation of about 170 acres, mostly below station.

Return flow.--No known surface return flow. If water is used for mining in this area, it is returned to stream at place of use.

Storage and regulation.--None.

Utilization.--A small amount of the land irrigated by Sterling and Gallagher ditches lies above station. It is likely that both ditches were used in 1913. Since that time, water has been used to a slightly greater extent for irrigation, and less for mining purposes.

62.--West Fork Little Applegate River near Buncom, Oreg.

Location.--Staff gage in sec. 29, T. 39 S., R. 2 W., about 200 ft upstream from junction with East Fork and 2 miles upstream from Buncom.

Records available.--May to November 1913.

Bypass channels.--Daily records for this station do not include flow in Spicer ditch, which bypasses station, but monthly records are also presented, which include the flow in that ditch. Records do not include flow in Rily Phillips ditch, which also bypasses station.

Diversions.--

1. Rily Phillips ditch diverts in the NW¼ NE¼ sec. 32, T. 39 S., R. 2 W. The water right permits the diversion of 0.75 cfs for irrigation of 30 acres at Crump Ranch, just below station (according to Clinton Smith, Jackson County Watermaster).

2. Spicer ditch diverts in the SE¼NE¼ sec. 29, T. 39 S., R. 2 W., about 50 ft above station, priority 1907. Discharge record available in Geological Survey water-supply paper for period June 18 to November 15, 1913. Maximum discharge during period of record, 2.2 cfs; average about 1 cfs during irrigation season.

Return flow.--No known surface return flow.

Storage and regulation.--None.

Utilization.--None.

63.--Little Applegate River near Ruch, Oreg.

Location.--Staff gage in the NW¼NE¼ sec. 10, T. 39 S., R. 3 W., at highway bridge 2 miles above Ruch.

Records available.--May to November 1913.

Bypass channels.--Records for this station do not include flow in Farmers ditch, which bypasses station. Since about 1923, water has been diverted during spring runoff from the head of this creek to Bear Creek basin, bypassing the site of this station.

(The information that follows applies only to the drainage area between this station and the next stations upstream.)

Diversions.--No discharge records of the following diversions are known to be available, except for occasional measurements by the watermaster:

1. Gin Lin ditch diverts in the NW¼NE¼ sec. 29, T. 39 S., R. 2 W. (Adjudication Survey by State Engineer, 1935), priority 1857. Normal flow during irrigation season is about 3 cfs, 6.7 cfs measured June 26, 1939, and 4.0 cfs June 30, 1939. (Oral report, Clinton Smith, Jackson County Watermaster.)

2. Upper and lower Phillips ditch diverts in sec. 29 near Gin Lin diversion, priority 1866. Normal flow during irrigation season is about 3 cfs. (Oral report, Clinton Smith, Jackson County Watermaster.)

3. Buck and Jones ditch diverts in the NW¼SE¼ sec. 13, T. 39 S., R. 3 W. (Adjudication Survey by State Engineer, 1935), priority 1885. Normal flow is about 2.7 cfs. (Oral report, Clinton Smith, Jackson County Watermaster.)

4. Farmers ditch diverts in the NE¼NE¼ sec. 14, T. 39 S., R. 3 W. (Adjudication Survey by State Engineer, 1935.) Water right permits diversion of 11.6 cfs. This ditch has prior rights (1857) to 7.76 cfs, which is usually the total flow in the river during late summer. Capacity about 14.6 cfs (measured June 26, 1939). (Oral report, Clinton Smith, Jackson County Watermaster.)

Return flow.--Water in Sterling ditch, used for mining, is returned to Sterling Creek near place of use.

Storage and regulation.--None.

Utilization.--Sterling Mines in 1909 were located in Sterling Creek in secs. 4, 8, 9, 16, 17, and 19, T. 39 S., R. 2 W. and in secs. 27, 28, and 33, T. 38 S., R. 2 W. (Rogue River Decree of Jackson County Circuit Court, p. 30, 1909.) An undetermined number of acres in this area are irrigated by Sterling, Gallagher, Spicer, and Rily Phillips ditches. About 115 acres irrigated by Gin Lin ditch, and 132 acres by upper and lower Phillips ditch. Farmers ditch irrigates 406 acres, much of the land lying below this station.

64.--Applegate River near Applegate, Oreg.

Location.--Water-stage recorder, lat 42°14', long. 123°08', in the NE¼ sec. 26, T. 38 S., R. 4 W., 0.9 mile downstream from Keeler Creek and 2 miles southeast of Applegate. Datum of gage is 1,285.33 ft above mean sea level, datum of 1929.

Drainage area.--480 sq mi.

Records available.--October 1938 to September 1950.

Bypass channels.--Several canals or ditches bypass this station; New Berryman, Fowler-Offenbacher, and Kubli ditches, McDonald Creek canal, and Thompson Creek Irrigation Association ditch. Flow of canals and ditches is not included in station records. McDonald Creek canal carries about 10 cfs for several months each year and discharges into Bear Creek basin (see diversions, Little Applegate River near Talent, no. 60). Thompson Creek Irrigation Association ditch carries about 21 cfs for mining or 8 cfs for irrigation, discharging into Thompson Creek basin (see diversions, Applegate River near Copper, no 58).

(The information that follows applies only to the drainage area between this station and the next stations upstream.)

Diversions.--Five principal ditches are located in this area, diverting a total normal flow of 30.8 cfs (see table 10).

Return flow.--No known surface return flow.

Storage and regulation.--None.

Utilization.--Several hundred acres are irrigated in this area, as noted in table 10. About 4,000 acres are irrigated in the entire Applegate River basin above this station. There has been no substantial change in the use of water for irrigation during period of record.

65.--Thompson Creek near Applegate, Oreg.

Location.--Staff gage in the NW¼ sec. 8, T. 39 S., R. 4 W., about 4½ miles upstream from Applegate.

Records available.--May to November, 1913.

Bypass channels.--Records for this station do not include flow in Elmore and Louden ditches, which bypass station.

Diversions.--Five principal ditches are located above station, as listed in table 11. These ditches were probably used during period of record. No discharge records are known to be available.

Return flow.--Water is discharged to the head of Thompson Creek by the Thompson Creek Irrigation Association ditch (see diversions, Applegate River near Copper, no. 58). Water used for mining is returned directly to stream.

Storage and regulation.--None.

Utilization.--Water used to some extent for mining above station, probably on a larger scale in 1909 than at present. About 842 acres are irrigated above and below this station by Thompson Creek Irrigation Association. It is not known which of the ditches in table 11 are used by the association, or how much of the 842 acres irrigated by the association is located above station. No known change in the use of water for irrigation since period of record.

Table 10.--Diversions in Applegate River basin, above Applegate River near Applegate, Oreg.
[Diversions in this table are those located between this station and the next station upstream, Applegate River near Ruch]

Name	Point of diversion 1/	Date of Establ.	Approx. normal flow 2/ (cfs)	Purpose	Remarks
Goodwill ditch	NE¼NW¼ sec. 33, T. 38 S., R. 3 W.	Prior to 1909	1.86	Irrigation	Irrigates about 84 acres above station.
Fowler-Offenbacher ditch,	SE¼SW¼ sec. 28, T. 38 S., R. 3 W.	---do---	5.22	----do----	Irrigates about 190 acres, mostly above station.
O'Brien-Offenbacher ditch,	SW¼NW¼ sec. 28, T. 38 S., R. 3 W.	---do---	6.97	----do----	Irrigates about 243 acres above station.
Fowler-Keeler or Kubli ditch,	SW¼NE¼ sec. 29, T. 38 S., R. 3 W.	---do---	4.3	----do----	Irrigates about 245 acres above and below station.
New Berryman ditch	NE¼NW¼ sec. 25, T. 38 S., R. 4 W.	---do---	13.6	----do----	Irrigates about 680 acres below station.

1/ Adjudication Survey, State Engineer, 1935.
2/ C. A. Smith, Jackson County Watermaster.

Table 11.--Diversions in Thompson Creek basin, above Thompson Creek near Applegate, Oreg.

Name	Point of diversion 1/	Date of establ. 2/	Water right (cfs)	Purpose	Remarks
Bingham ditch	SW¼SE¼ sec. 25, T. 39 S., R. 5 W.	Prior to 1913	-	Irrigation, domestic and stock	Information not available.
Houston ditch	NW¼NE¼ sec. 25, T. 39 S., R. 5 W.	1882	0.52	----do----	Irrigates about 36 acres above James Rock ditch.
James Rock ditch	SE¼SW¼ sec. 19, T. 39 S., R. 4 W.	1901	.8	----do----	Diverts from Ninemile Creek and receives flow from Houston ditch. Irrigates about 55 acres.
Elmore ditch	SW¼NE¼ sec. 7, T. 39 S., R. 4 W.	1905	1.03	----do----	Irrigates about 72 acres below station.
Louden ditch	SW¼NW¼ sec. 8, T. 39 S., R. 4 W.	1878	-	----do----	Irrigates land below station. Complete information not available.

1/ Rogue River Adjudication Survey, Oregon State Engineer 1935.
2/ Rogue River Decree, Jackson County Circuit Court, p. 33, 1909.

66.--East Fork Williams Creek near Williams, Oreg.

Location.--Staff gage, lat 42°11', long. 123° 16', in the NW¼ sec. 14, T. 39 S., R. 5 W., a quarter of a mile downstream from Rocky Creek (also known as Rock Creek and Clapboard Gulch) and 4 miles south of Williams.

Drainage area.--11.8 sq mi.

Records available.--August 1946 to September 1950 (irrigation seasons only).

Bypass channels.--Eastside canal bypasses station. Records of discharge at station do not include flow in canal, but a table of combined monthly discharge is included in water-supply papers.

Diversions.--

1. McCune-Hicks ditch diverts from Rocky Creek in the SE¼ sec. 15, T. 39 S., R. 5 W. Water right permits diversion of 2.25 cfs, priority 1915. (Oral report, Tom Pearce, Josephine County Watermaster.) No known records available.

2. Lower Layton ditch previously diverted in the NE¼NW¼ sec. 23, T. 39 S., R. 5 W. (Adjudication Survey by State Engineer, 1935.) Ditch is washed out and has not been used during period of record. (Oral report, Tom Pearce, Josephine County Watermaster.) Water right permitted diversion of 12 cfs, priority 1860. (Rogue River Decree of Jackson County Circuit Court, p. 27, 1909.) No known records available.

3. Eastside canal diverts in the SE¼NW¼ sec. 14, T. 39 S., R. 5 W. (Adjudication Survey by State Engineer, 1935), priority 1915. Monthly discharge record available with records for this station in Geological Survey water-supply papers. Maximum observed discharge, 8.7 cfs.

Return flow.--No known surface return flow.

Storage and regulation.--None.

Utilization.--Unknown number of acres irrigated by McCune-Hicks ditch and other very small ditches. Lower Layton ditch was used for mining at some time prior to period of record at this station. There has been no substantial change in utilization of water above station during period of record.

67.--West Fork Williams Creek near Williams, Oreg.

Location.--Staff gage, lat 42°11', long. 123° 20', in NW¼ sec. 18, T. 39 S., R. 5 W., three-quarters of a mile upstream from Lone Creek and 5½ miles southwest of Williams.

Drainage area.--12.8 sq mi.

Records available.--August 1946 to September 1950 (irrigation seasons only).

Bypass channels.--Stephens or Large ditch bypasses station. Station records do not include flow.

Diversions.--Stephens or Large ditch diverts in the SW¼NW¼ sec. 18, T. 39 S., R. 5 W. (Adjudication Survey by State Engineer, 1935), for irrigation of 60 acres on W. W. Large farm below station. Water right permits diversion of 0.94 cfs, priority 1879. (Rogue River Decree of Jackson County Circuit Court, p. 27, 1909.) Several measurements have been made of discharge bypassing station, up to 2.47 cfs (June 1949).

Return flow.--No known surface return flow.

Storage and regulation.--None.

Utilization.--None.

68.--Mungers Creek near Williams, Oreg.

Location.--Staff gage, lat 42°13', long. 123° 20', in the NW¼ sec. 6, T. 39 S., R. 5 W., 75 ft downstream from Swamp Creek and 4 miles southwest of Williams.

Drainage area.--6.8 sq mi.

Records available.--August 1946 to September 1950 (irrigation seasons only).

Bypass channels.--None.

Diversions.--None

Return flow.--None.

Storage and regulation.--None.

Utilization.--None.

69.--Powell Creek near Williams, Oreg.

Location.--Water-stage recorder, lat 42°16', long. 123°18', near center of sec. 16, T. 38 S., R. 5 W., one-tenth mile upstream from Blodgett ditch intake and 2 miles northwest of Williams.

Drainage area.--8.6 sq mi.

Records available.--September 1946 to September 1950.

Bypass channels.--None.

Diversions.--None.

Return flow.--None.

Storage and regulation.--None.

Utilization.--None.

70.--Applegate River at Murphy, Oreg.

Location.--Staff gage in the NW¼NE¼ sec. 19, T. 37 S., R. 5 W., 250 ft below county highway bridge at Murphy, and 8 miles upstream from mouth.

Records available.--July 1907 to September 1910 (gage heights only for 1909 and 1910).

Drainage area.--662 sq mi (revised).

Bypass channels.--Flow in Northside ditch bypassing this station is not included in station records. Since 1923, McDonald Creek canal has diverted and discharged into Bear Creek basin about 10 cfs during spring runoff, bypassing the site of this station (see diversions, Little Applegate River near Talent, no. 60).

(The information that follows applies only to the drainage area between this station and the next stations upstream.)

Diversions.--Seventeen principal diversions are located in this area, as listed in table 12. These diversions were probably in use during period of record. No discharge records are known to be available, except occasional measurements by the watermaster.

Return flow.--No known surface return flow.

Storage and regulation.--None.

Utilization.--Extensive irrigation development in this area. The number of acres under irrigation has not been determined, owing to lack of information concerning the division of lands under ditches which bypass one or more gaging stations. However, it is roughly estimated that from 3,000 to 4,000 acres are irrigated. There has been little development of the utilization of water in this area since 1907.

Table 12.--Diversions in Applegate River basin, above Applegate River at Murphy, Oreg.
[Diversions in this table are those located between this station and the next stations upstream, Powell Creek, Mungers Creek, and East and West Forks Williams Creek near Williams, Thompson Creek and Applegate River near Applegate]

Name	Point of diversion 1/	Date of establ. 2/	Water right (cfs)	Purpose	Remarks 3/
Weintrout ditch	SE¼SW¼ sec. 5, T. 39 S., R. 4 W.	1863	1.03	Irrigation	Diverts from Thompson Creek. Irrigates about 72 acres.
Hinkle ditch	NW¼NE¼ sec. 5, T 39 S., R. 4 W.	1872	.65	----do----	Diverts from Thompson Creek. Irrigates about 45 acres.
Cook ditch	NE¼ sec. 21 and the NW¼ sec. 22, T. 38 S., R. 4 W.	Prior to 1907	6.3	----do----	Diverts from Applegate River. Irrigates about 332 acres.
Bridge Point ditch	SW¼SE¼ sec. 17, T. 38 S., R. 4 W.	---do---	13.0	----do----	Diverts from Applegate River. Irrigates about 652 acres (24.3 cfs measured July 1939).
Northside ditch	SW¼ sec. 6, T. 38 S., R. 4 W.	1899	11.0	----do----	Diverts from Applegate River. In 1945 Murphy Electric Irrigation Co. commenced pumping about 6 cfs to ditch in the SE¼NW¼ sec. 21, T. 37 S., R. 5 W. It is assumed that since then about 5 cfs has been diverted at dam. About 569 acres irrigated by ditch, some of the land lying below this station.
Laurel Hill ditch	SW¼NE¼ sec. 1, T. 38 S., R. 5 W.	1892	9.1	----do----	Diverts from Applegate River. Irrigates about 456 acres (11.9 cfs measured July 1939).
Bryan and Vinyard, or Davidson ditch,	SW¼SE¼ sec. 7, T. 39 S., R. 5 W.	1872	1.3	----do----	Diverts from West Fork Williams Creek. Irrigates about 78 acres.
Hoxie ditch	NW¼NW¼ sec. 8, T. 39 S., R. 5 W.	1880	2.6	----do----	Diverts from West Fork Williams Creek.
Baltimore ditch	SE¼SE¼ sec. 5, T. 39 S., R. 5 W.	1858	3.25	----do----	Diverts from West Fork Williams Creek. Irrigates about 195 acres.
Boat ditch	SE¼SE¼ sec. 5, T. 39 S., R. 5 W.	1900	.67	----do----	Diverts from West Fork Williams Creek. Irrigates about 40 acres.
Gibson and McGee ditch,	NW¼SE¼ sec. 6, T. 39 S., R. 5 W.	1877	1.8	----do----	Diverts from Mungers Creek. Irrigates about 102 acres.
Stites or Varner ditch,	SW¼NE¼ sec. 5, T. 39 S., R. 5 W.	1862	1.84	----do----	Diverts from Mungers Creek. Irrigates about 110 acres.
Chapman ditch	NE¼SE¼ sec. 4, T. 39 S., R. 5 W.	1875	.79	----do----	Diverts from West Fork Williams Creek. Irrigates about 47 acres.
Blodgett ditch	NE¼SW¼ sec. 16, T. 38 S., R. 5 W.	1860	2.57	----do----	Diverts from Powell Creek. Irrigates about 205 acres.
Messinger ditch	SW¼NE¼ sec. 15, T. 38 S., R 5 W.	1867	2.0	----do----	Diverts from Powell Creek. Irrigates about 120 acres.
Watts and Topping ditch,	SW¼SW¼ sec. 12, T. 38 S., R. 5 W.	1858	4.4	----do----	Diverts from Williams Creek. Irrigates about 150 acres.
Swinden and Bunch ditch,	SE¼NW¼ sec. 35, T. 37 S., R. 5 W.	1903	6.2	----do----	This divertion washed out in 1948. Since 1946 about 3.4 cfs has been pumped to lower portion of ditch in the NE¼ sec. 20, T. 37 S., R. 5 W.

1/ Rogue River Adjudication Survey, State Engineer, 1955.
2/ Rogue River Decree, Jackson County Circuit Court, 1909
3/ Oral report, Watermasters of Jackson and Josephine Counties.

71.--Applegate River near Wilderville, Oreg.

Location.--Staff gage, lat 42°21', long. 123° 24', in the W½ sec. 15, T. 37 S., R. 6 W., 900 ft downstream from Jackson Creek and 4 miles southeast of Wilderville. Datum of gage is 949.54 ft above mean sea level, datum of 1929 (levels by Corps of Engineers).

Drainage area.--694 sq mi (revised).

Records available.--October 1938 to September 1950.

Bypass channels.--Records do not include flow in Wilderville ditch, which bypasses station. Less than 1 cfs may be carried around station by weatherbee ditch on Jackson Creek, seldom used.ed.

(The information that follows applies only to the drainage area between this station and the next station upstream.)

Diversions.--

1. Murphy ditch diverts in the NW¼NE¼ sec. 19, T. 37 S., R. 5 W. (Adjudication Survey by State Engineer, 1935.) Water right permits diversion of 10.4 cfs, priority 1902. Capacity of ditch is about 20 cfs. (Oral report, Tom Pearce, Josephine County Watermaster.)

2. Wilderville ditch previously diverted about 16 cfs just below Jackson Creek in the NW¼SW¼ sec. 15, T. 37 S., R. 6 W., priority 1899. (Oral report, Tom Pearce, Josephine County Watermaster.) Dam washed out and has not been replaced since 1932, when a pump with capacity of about 13 cfs was installed at same location. About 11 cfs is pumped to ditch during irrigation season, and overflow from the river as much as 26 cfs is likely to enter the ditch during spring runoff.

Return flow.--No known surface return flow.

Storage and regulation.--None.

Utilization.--In 1909 about 458 acres were irrigated by Murphy Ditch Co. (Rogue River Decree, Jackson County Circuit Court, 1909.) In 1950 Bureau of Reclamation reported 535 acres irrigated by this company. Unknown number of acres irrigated in this area by North Side ditch. There has been no substantial change in utilization of water during period of record.

72.--Slate Creek at Wonder, Oreg.

Location.--Water-stage recorder, lat 42°22', long. 123°31', in the SW¼ sec. 10, T. 37 S., R. 7 W., half a mile upstream from Elliott Creek and 0.4 mile east of Wonder. Datum of gage is 1,035.1 ft above mean sea level (Bureau of Reclamation bench mark).

Drainage area.--30.9 sq mi.

Records available.--July to November 1913, October 1945 to September 1950 in reports of Geological Survey. October 1943 to September 1945 in files of State Engineer.

Bypass channels.--Prior to November 1946, a flume may have carried small amount of water around station during spring runoff from small unnamed tributary just above gage. By November 1946 station had been moved about 600 ft upstream from original gage, which was 500 ft below this flume.

Diversions.--Several small diversions for irrigation above station, mainly on Ramsey Creek. Locations are uncertain and flow diverted is inconsequential. Fenner ditch diverts about 0.3 cfs from Slate Creek in the NW¼ sec. 18, T. 37 S., R. 7 W., priority 1903. (Oral report, Tom Pearce, Josephine County Watermaster.)

Return flow.--No known surface return flow.

Storage and regulation.--None.

Utilization.--Small amounts of water used for irrigation and domestic purposes above station. No substantial change in use of water for irrigation during period of record.

73.--Jumpoff Joe Creek near Merlin, Oreg.

Location.--Staff gage in the SW¼ sec. 32, T. 34 S., R. 5 W., near Winona schoolhouse, about 7 miles northeast of Merlin; prior to March 1929 at site one mile downstream.

Drainage area.--32 sq mi.

Records available.--December 1921 to September 1922 in reports of Geological Survey. March to September 1929, and April 1932 to September 1950 in files of State Engineer.

Bypass channels.--Records after March 1929 do not include flow in Gorham ditch, which bypasses station.

Diversions.--No discharge records of the following diversions are known to be available.

1. Howland and Cook ditch diverts in the SE¼ sec. 36, T. 34 S., R. 5 W. Water right permits diversion of 15 cfs for mining from October to June, priority 1897. (Oral report, Tom Pearce, Josephine County Watermaster.)

2. Steel ditch diverts about 1 cfs in the SE¼NE¼ sec. 4, T. 35 S., R. 5 W., priority 1871. Mining right to divert 12.5 cfs has not been used in recent years. (Oral report, Tom Pearce, Josephine County Watermaster.)

3. Brown (or Pollock) ditch diverts about 0.4 cfs in the NE¼ sec. 5, T. 35 S., R. 5 W., priority 1872. (Oral report, Tom Pearce, Josephine County Watermaster.)

4. Gorham ditch diverts from Jack Creek in the SE¼ sec. 29, T. 34 S., R. 5 W. Water right permits diversion of 2.22 cfs (Rogue River Decree, Jackson County Circuit Court, p. 35, 1909) for irrigation of 155 acres below station, priority 1860, but Jack Creek usually does not provide that much water after July. (Oral report, Tom Pearce, Josephine County Watermaster.)

Return flow.--Water used for mining above station is returned directly to stream. Howland and Cook ditch returns flow about a quarter of a mile below diversion.

Storage and regulation.--None.

Utilization.--Water used for mining above station. About 54 acres irrigated by Steel ditch and 25 acres by Brown (or Pollock) ditch.

74.--Louse Creek near Grants Pass, Oreg. (Operated by Oregon State Engineer)

Location.--Staff gage in sec. 29, T. 35 S., R. 5 W., 5 miles north of Grants Pass.

Records available.--August 1937 to September 1938.

Bypass channels.--None.

Diversions.--No diversions for irrigation.

Return flow.--Any water used for mining is returned directly to stream.

Storage and regulation.--None.

Utilization.--Some water may be used during winter for mining. The Columbia, Ida, and Red Jack mines are shown on U. S. Forest Service map as being located above this station. Information not available concerning water used for mining purposes in this area, but, in general, placer mining in the Rogue River basin has been practically discontinued during recent years.

75.--Rogue River near Galice, Oreg.

Location.--Staff gage in sec. 9, T. 35 S., R. 7 W., at the ferry on Merlin-Galice road.

Records available.--June to December, 1906 (monthly figures only).

Bypass channels.--None.

(The information that follows applies only to the drainage area between this station and the next stations upstream.)

Diversions.--

1. Fort Vannoy irrigation district pumps water from Rogue River about 5 miles west of Grants Pass in the SW¼ sec. 14, T. 36 S., R. 6 W. Water right permits diversion of 20 cfs, priority 1921. (Oral report, Tom Pearce, Josephine County Watermaster.)

2. Jess ditch diverts from Applegate River in the SW¼NE¼ sec. 8, T. 37 S., R. 6 W. (Adjudication Survey by State Engineer.) Water right permits diversion of 4.32 cfs, priority 1897. (Oral report, Tom Pearce, Josephine County Watermaster.)

3. Miller ditch diverts 11.4 cfs from Applegate River. Dam in the NE¼NW¼ sec. 6, T. 37 S., R. 6 W. (Adjudication Survey by State Engineer), has been abandoned, and since 1948, water has been pumped from river to ditch in the NE¼ sec. 30. (Oral report, Tom Pearce, Josephine County Watermaster.)

4. Red Bluff ditch diverts from Applegate River in the NE¼SW¼ sec. 31, T. 36 S., R. 6 W. (Adjudication Survey by State Engineer.) Water right permits diversion of 8.2 cfs, priority 1900. (Oral report, Tom Pearce, Josephine County Watermaster.)

Return flow.--No known surface return flow.

Storage and regulation.--None, except as noted for stations upstream.

Utilization.--During period of record, water was used in this area more extensively for mining purposes than it has been since 1906. Bureau of Reclamation reported 800 acres irrigated by Fort Vannoy irrigation district in 1950. The Grants Pass irrigation district also irrigates some land below Grants Pass; the number of acres irrigated in this particular area has not been determined. The lands serviced by these two districts were probably not under irrigation in 1906, since the districts were not organized at that time. There has been little change in utilization for irrigation by smaller private enterprises since period of record.

76.--Grave Creek at Pease Bridge near Placer, Oreg.

Location.--Water-stage recorder, lat 42°39', long. 123°12', in the NW¼SW¼ sec. 5, T. 34 S., R. 4 W., at bridge 5½ miles northeast of Placer. Datum of gage is 2,384.1 ft above mean sea level, datum of 1929.

Drainage area.--22 sq mi.

Records available.--October 1945 to September 1950 in reports of Geological Survey, September 1940 to September 1945 in files of State Engineer.

Bypass channels.--Records prior to about 1945 do not include flow in Columbia upper ditch, which bypassed station for short periods prior to 1945.

Diversions.--Prior to 1945, Columbia upper ditch diverted in the SE¼SE¼ sec. 29, T. 33 S., R. 4 W. Water right of 1893 permitted diversion of 50 cfs October 1 to June 1 for placer mining on Columbia Mines properties on Tom East Creek and other tributaries below this station. (Rogue River Decree of Jackson County Circuit Court, p. 37, 1909.) Record of discharge for the SW¼SW¼ sec. 32, T. 33 S., R. 4 W. available in files of State Engineer from November 6, 1940 to September 30, 1941. Maximum observed discharge, 19.7 cfs. Ditch has not been used since about 1945; county foreclosed in 1949. (Oral report, Tom Pearce, Josephine County Watermaster.)

Return flow.--No known surface return flow.

Storage and regulation.--None.

Utilization.--None.

77.--Grave Creek near Placer, Oreg.

Location.--Staff gage in the NW¼SW¼ sec. 7, T 34 S., R. 5 W., about 13 miles north of Grants Pass. From April 18, 1932 to

January 6, 1941 in the NE¼SE¼ sec. 12, T. 34 S., R. 6 W., about 700 ft downstream from present location. From February 22, 1929, to April 18, 1932, at Placer in sec. 8, T. 32 S., R. 5 W. Prior to February 22, 1929 in sec. 7, T. 34 S., R. 5 W., about 1 mile below Placer.

Drainage area.--48 sq mi.

Records available.--July to November 1913 in Geological Survey report. February to September 1929, April to September 1930, and April 1932 to September 1950 in files of State Engineer.

Bypass channels.--Records do not include flow in Columbia lower ditch, which bypasses station. In 1929 and 1930 the flow bypassing station was that in Columbia lower ditch above Tom East Creek, and in 1913 and 1932 to 1950 the flow bypassing station was that in ditch below Tom East Creek.

(The information that follows applies only to the drainage area between this station and the next station upstream.)

Diversions.--

1. Columbia lower ditch diverts in the SE¼NW¼ sec. 10, T. 34 S., R. 5 W. (Riddle quadrangle, Geol. Survey topographic map.) Water right of 1895 permitted diversion of 85 cfs October 1 to June 1 for placer mining on Columbia Mines properties. (Rogue River Decree of Jackson County Circuit Court, p. 37, 1909.) Maximum capacity of ditch is about 50 cfs, has been used very little since 1937 (oral report, Tom Pearce, Josephine County Watermaster), 14.2 cfs measured about 1 mile below intake March 1941.

2. Browning ditch diverts in sec. 9, T. 34 S., R. 5 W. Water right permits diversion of 1.2 cfs, priority 1870.

Two other small irrigations ditches were noted by hydrographer in 1932, locations uncertain and flow inconsequential.

Return flow.--Columbia lower ditch occasionally has wasted flow into Tom East Creek above station. Water used for mining is returned directly to streams near place of use.

Storage and regulation.--None.

Utilization.--Prior to about 1940, water used for placer mining by Columbia Mines Co. Some small tracts of land irrigated by minor ditches, including about 70 acres irrigated below Browning ditch.

78.--East Fork Illinois River (head of Illinois River) near Takilma, Oreg.

Location.--Staff gage, lat 42°01', long. 123° 38', in the SE¼ sec. 10, T. 41 S., R. 8 W., 500 ft upstream from county road bridge, a quarter of a mile upstream from Long Gulch, and 3 miles south of Takilma. Datum of gage is 1,746.6 ft above mean sea level (surveys by Bureau of Reclamation).

Drainage area.--42.6 sq mi.

Records available.--October 1945 to September 1950 in reports of Geological Survey. April 1926 to April 1932 and November 1940 to September 1945 in files of State Engineer.

Bypass channels.--Records for this station do not include flow in Osgood Canal or Esterly upper canal, which bypassed station during winter prior to 1942.

Diversions.--

1. Osgood Canal diverts in the SE¼ sec. 9, T. 48 N., R. 5 E., Humboldt meridian, California. Water right permits diversion of 40 cfs for mining use, priority 1880. Discharge record available in files of State Engineer above Long Gulch from April 1926 to June 1927 and January 1930 to April 1932; below Long Gulch from October 1940 to September 1943. Canal has not been used since 1942 due to high maintenance cost. Prior to 1942 diverted only during winter. (Oral report, Tom Pearce, Josephine County Watermaster.)

2. Esterly upper canal diverts in the SE¼ sec. 4, T. 48 N., R. 5 E., Humboldt meridian, California. Water right permits diversion of 33 cfs for mining use, priority 1853. Discharge record above Long Gulch available in files of State Engineer from April 1926 to April 1932. Canal has not been used since about 1942 due to high maintenance cost. Prior to 1942 diverted only during winter. (Oral report, Tom Pearce, Josephine County Watermaster.)

Return flow.--None.

Storage and regulation.--None.

Utilization.--None.

79.--Long Gulch at Basye Ranch, near Takilma, Oreg. (Operated by Oregon State Engineer)

Location.--Staff gage in the NW¼SE¼ sec. 10, T. 41 S., R. 8 W., about 400 ft northwest of Basye house and 2 miles south of Takilma.

Records available.--November 1940 to September 1944.

Bypass channels.--Records do not include flow which may have been discharged to Esterly upper canal prior to 1942. Basye ditch carries a very small amount of water around station.

Diversions.--

1. Esterly upper canal may have diverted some water from Long Gulch prior to 1942 in winter during periods of heavy runoff. (Oral report, Tom Pearce, Josephine County Watermaster.) This water was probably mingled with flow in canal from East Fork Illinois River to be used below station.

2. Basye ditch diverts a small amount of water for use at Basye Ranch. Flow carried in a 2 in. pipe. (Oral report, Tom Pearce, Josephine County Watermaster.)

Return flow.--Osgood Canal occasionally wasted some water from East Fork Illinois River into Long Gulch prior to 1942. (Oral report, Tom Pearce, Josephine County Watermaster.)

Storage and regulation.--None.

Utilization.--None.

80.--East Fork Illinois River below Esterly middle canal, near Takilma, Oreg. (Operated by Oregon State Engineer)

Location.--Staff gage in the NW¼SE¼ sec. 10, T. 41 S., R. 8 W., about 100 ft below intake of Esterly middle canal and 6 miles south of Takilma.

Records available.--June to October 1940.

Bypass channels.--Charles Owen ditch and Esterly middle canal bypass station. Prior to 1942 Osgood ditch and Esterly upper canal also bypassed station during periods of heavy runoff. Station records do not include flow in ditches and canals.

(The information that follows applies only to the drainage area between this station and the next stations upstream.)

Diversions.--

1. Charles Owen ditch diverts in the SE¼ sec. 10, just above Esterly middle canal intake. About 0.5 cfs is diverted for irrigation below this station. Priority of water right, 1924. (Oral report, Tom Pearce, Josephine County Watermaster.)

2. Esterly middle canal diverts in the SE¼ sec. 10, T. 41 S., R. 8 W., 300 ft below Long Gulch. Discharge record near intake available in files of State Engineer from April 1926 to December 1929, and June to November 1940. Record of Waldo lateral (from this canal) in the SE¼NW¼ sec. 27, T. 40 S., R. 8 W., available in files of State Engineer from December 1940 to June 1941.

Return flow.--None.

Storage and regulation.--None.

Utilization.--None.

81.--Althouse Creek near Holland, Oreg.

Location.--Water-stage recorder, lat 42°06', long. 123°32', in the SE¼ sec. 9, T. 40 S., R. 7 W., half a mile upstream from Carter Gulch and 2 miles southeast of Holland.

Drainage area.--23.8 sq mi.

Records available.--October 1946 to September 1950 in reports of Geological Survey. October 1945 to September 1946 at site 1½ miles upstream; records not equivalent. October 1943 to July 1944 at site a quarter of a mile downstream, and August 1944 to January 1945 at site 400 ft downstream in files of State Engineer (fragmentary).

Bypass channels.--A mining ditch may have diverted water around the gage used from October 1943 to July 1944. No information available concerning flow in that ditch.

Diversions.--There are no diversions for irrigation above station. Water diverted for mining operations during winter months; no information available concerning location and size of mining ditches.

Return flow.--Water used for placer mining is returned directly to stream.

Storage and regulation.--Slight regulation by mining operations.

Utilization.--Water used for mining operations above this station. No substantial change in utilization during period of record.

82.--Althouse Creek near Kerby, Oreg. (Operated by Oregon State Engineer)

Location.--Staff gage in the NW¼NE¼ sec. 2, T. 40 S., R. 8 W., on county road bridge, a quarter of a mile southwest of Bridgeview and 5 miles south of Kerby.

Records available.--July 1938 to December 1941.

Bypass channels.--Small ditch at Bridgeview not listed below may have carried slight amount of water past gage. No information available concerning flow of this ditch.

(The information that follows applies only to the drainage area between this station and the next station upstream.)

Diversions.--No discharge records of the following diversions are known to be available.

1. Beech and Platter ditch diverts in the NE¼ sec. 9, T. 40 S., R. 7 W. Water right of 1858 permits diversion of 4 cfs for mining or 3 cfs for irrigation. (Oral report, Tom Pearce, Josephine County Watermaster.)

2. Sowell and Payne ditch diverts in the NW¼SW¼ sec. 8, T 40 S., R. 7 W. Water right permits diversion of 1.26 cfs, priority 1876. (Oral report, Tom Pearce, Josephine County Watermaster.)

3. Houck and George ditch diverts in the SE¼SE¼ sec. 7, T. 40 S., R. 7 W. Water right permits diversion of 3.72 cfs, priority 1856. (Oral report, Tom Pearce, Josephine County Watermaster.)

Return flow.--Water from Beech and Platter ditch used for mining is returned to stream at place of use.

Storage and regulation.--None.

Utilization.--The number of acres under irrigation in this area is not determined. Water used for irrigation is delivered by the three ditches listed under Diversions. Water from Beech and Platter ditch is occasionally used for mining, but not during irrigation season.

83.--Grayback Creek near Holland, Oreg.

Location.--Water-stage recorder, lat 42°08', long. 123°27', in the NW¼ sec. 31, T. 39 S., R. 6 W., 600 ft upstream from mouth and 4½ miles northeast of Holland.

Drainage area.--24.1 sq mi.

Records available.--September 1946 to September 1950.

Bypass channels.--Water in Grayback canal is diverted around station all year. Daily records for this station do not include flow in canal, but a table of combined runoff is included in water-supply papers.

Diversions.--Grayback canal diverts flow three fourths of a mile upstream from station, in the SW¼SW¼ sec. 29, T. 39 S., R. 6 W., for irrigation downstream from station. Monthly discharge record available in reports of Geological Survey for September 1946 to September 1950. Maximum discharge recorded at canal gage, 7.0 cfs.

Return flow.--None.

Storage and regulation.--None.

Utilization.--None. Drainage area lies within the Oregon Caves Game Refuge.

84.--Sucker Creek near Holland, Oreg.

Location.--Staff gage, lat 42°09', long. 123° 28', in the NE¼ sec. 25, T. 39 S., R. 7 W., 1 mile downstream from Grayback Creek and 4.3 miles northeast of Holland. Datum of gage is 1,777.84 ft above mean sea level, datum of 1929 (Bureau of Reclamation bench mark).

Drainage area.--76 sq mi.

Records available.--October 1945 to September 1950 in reports of Geological Survey. April 1940 to August 1941 at site half a mile upstream, and September 1941 to September 1945 in files of State Engineer.

Bypass channels.--Grayback canal may carry small amount of water around this station during irrigation season. Flow not included in station records.

(The information that follows applies only to the drainage area between this station and the next station upstream.)

Diversions.--No significant diversions for irrigation in this area. Water is diverted occasionally for mining purposes; no information available concerning mining ditches.

Return flow.--Water used for mining is returned directly to stream. Flow in Grayback canal is returned to Sucker Creek above station when water is not being used for irrigation.

Storage and regulation.--None.

Utilization.--Water used for placer mining during winter months. Small tracts of land irrigated, principally by water from Grayback canal.

85.--West Fork Illinois River near O'Brien, Oreg.

Location.--Staff gage, lat 42°04', long, 123° 43', in the NW¼ sec. 25, T. 40 S., R. 9 W., 800 ft upstream from bridge on U. S. No.199 and half a mile southwest of O'Brien. Datum of gage is 1,404.37 ft above mean sea level, datum of 1929.

Drainage area.--46.6 sq mi.

Records available.--October 1945 to September 1950 in reports of Geological Survey. February to November 1930, and February 1943 to September 1945 in files of State Engineer.

Bypass channels.--King ditch may have bypassed gage used in 1930; no mention of diversion by hydrographers at that time. O'Brien ditch bypasses gage used since November 1946, but no flow has been noted at point opposite station.

Diversions.--

1. King ditch diverts in the SW¼SW¼ sec. 26, T. 40 S., R. 9 W., about a quarter of a mile upstream from station gage used in 1930, 50 ft downstream from gage used February 1943 to October 1946, and 1½ miles upstream from gage used since November 1946. Water right of 1940 permits diversion of 2 cfs. (Oral report, Tom Pearce, Josephine County Watermaster.)

2. O'Brien ditch diverts in the NW¼ sec. 25, T. 40 S., R. 9 W. Water right permits diversion of 2.69 cfs, priority 1876. (Oral report, Tom Pearce, Josephine County Watermaster.) No indication of this ditch having been used in recent years.

Return flow.--Possibly a small amount of water in Rough and Ready ditch from creek of same name will find its way to West Fork Illinois River above this station. Flow in King ditch is returned to river above gage used since November 1946.

Storage and regulation.--None.

Utilization.--Water from King ditch used for a fish pond and domestic use at Lone Mountain Resort. No other known utilization above station.

86.--Wood Creek near O'Brien, Oreg. (Operated by Oregon State Engineer)

Location.--Staff gage in the SE¼ sec. 19, T. 40 S., R. 8 W., downstream from Fry Gulch, about 1 mile east of O'Brien.

Records available.--December 1940 to 1942 in files of State Engineer.

Bypass channels.--None.

Diversions.--A few small ditches carry a total of about 1.5 cfs above station. (Oral report, Tom Pearce, Josephine County Watermaster.)

Return flow.--Osgood canal and Esterly upper canal from East Fork Illinois River returned flow to Fry Gulch at Waldo Mine prior to 1942. Possibly some return flow from Waldo lateral of Esterly middle canal also. Records of these canals available in files of of State Engineer.

Storage and regulation.--None.

Utilization.--Small amount of water used for irrigation. A mine at the head of Fry Gulch, tributary to Wood Creek, used water diverted from East Fork Illinois River prior to 1942. It is uncertain whether water was used at the mine during period of record at this station.

87.--Rough and Ready Creek near O'Brien, Oreg. (Operated by Oregon State Engineer)

Location.--Water-stage recorder in the SE¼NE¼ sec. 15, T. 40 S., R. 9 W., on forest road about 3 miles west of O'Brien.

Records available.--September 1940 to 1943 in files of State Engineer.

Bypass channels.--None.

Diversions.--None.

Return flow.--None.

Storage and regulation.--None.

Utilization.--None.

88.--Illinois River at Kerby, Oreg.

Location.--Water-stage recorder, lat 42°13', long. 123°39', in the NW¼ sec. 4, T. 39 S., R. 8 W., 1 mile northwest of Kerby. Datum of gage is 1,215.24 ft above mean sea level, datum of 1929, supplemental adjustment of 1947.

Drainage area.--367 sq mi.

Records available.--March 1926 to September 1950.

Bypass channels.--Records for this station do not include flow in Twohy ditch and a small flow in Kerby ditch, which bypass station.

Drainage area between Illinois River at Kerby and next stations upstream

Diversions.--Sixteen principal ditches are located in this area, as listed in table 13

Return flow.--Water used by Esterly middle and lower canals has been returned to East Fork Illinois River below Takilma. No known surface return flow from irrigation ditches.

Storage and regulation.--None.

Utilization.--Water used extensively in this area for irrigation, principally from the ditches listed in table 13. The number of acres irrigated in this area has not been determined, but comprises the larger part of land irrigated in the entire Illinois River basin, which is reported by Bureau of Reclamation to be about 5,550 acres. In recent years very little water has been used for mining purposes.

Table 13.--Diversions in Rogue River basin, above Illinois River at Kerby

[Diversions in this table are those located between this station and the next stations upstream, Rough and Ready Creek, Wood Creek, and West Fork Illinois River near O'Brien, Sucker Creek near Holland, Althouse Creek near Kerby, and East Fork Illinois River below Esterly middle canal near Takilma]

Name	Point of diversion 1/	Date of establ. 2/	Approx. normal flow (cfs)	Purpose	Remarks
Wimer ditch	NE¼ sec. 34, T. 40 S., R. 8 W.	Prior to 1926	-	-	Diverts from East Fork Illinois River; not used since about 1940.
Esterly lower canal	SW¼NW¼ sec. 26, T. 40 S., R. 8 W.	---do---	30	Mining	Discharge record available in files of State Engineer Oct. 1927 to Jan. 1930. Maximum discharge during period of record, 126 cfs. Used very little since 1940.
Seyferth ditch	NW¼ sec. 23, T. 39 S., R. 7 W.	1868	6.86	Irrigation	Diverts from Sucker Creek.
Holland ditch	NW¼SE¼ sec. 22, T. 39 S., R. 7 W.	1856	4.84	----do----	Do.
Wells and Barrett ditch	SE¼ sec. 21, T. 39 S., R. 7 W.	1873	4.66	----do----	Do.
Fattig and Leonard ditch	NE¼SE¼ sec. 29, T. 39 S., R. 7 W.	1865	3.21	----do----	Do.
White and Brown ditch	NW¼SE¼ sec. 29, T. 39 S., R. 7 W.	1858	9.57	----do----	Do.
Redland ditch	SW¼SE¼ sec. 29, T. 39 S., R. 7 W.	1893	2.37	----do----	Do.

Table 13.--Diversions in Rogue River basin, above Illinois River at Kerby--Continued

Name	Point of diversion 1/	Date of establ. 2/	Approx. normal flow (cfs)	Purpose	Remarks
Babcock and Watts ditch.	SW¼SE¼ sec. 29, T. 39 S., R. 7 W.	1872	2.72	Irrigation	Diverts from Sucker Creek.
Fulk and Bunch ditch	NE¼NE¼ sec. 31, T. 39 S., R. 7 W.	1857	2.98	----do----	Do.
Hunt ditch	NE¼SW¼ sec. 35, T. 39 S., R. 8 W.	1919	2.0	----do----	Diverts from East Fork Illinois River.
Kerby ditch	SW¼NW¼ sec. 27, T. 39 S., R. 8 W.	1887	11	----do----	Diverts from East Fork, extends to Reeves Creek. Record of discharge 1 mile below intake from May 1928 to Sept. 1929 available in files of State Engineer. Maximum discharge during period of record, 12 cfs.
Rough and Ready ditch	SW¼NW¼ sec. 14, T. 40 S., R. 9 W.	-	2.0	----do----	Diverts from Rough and Ready Creek.
Wing and Ferren ditch	NE¼SW¼ sec. 14, T. 40 S., R. 9 W.	1899	2.0	----do----	Do.
Seat ditch	NW¼NE¼ sec. 13, T. 40 S., R. 9 W.	1902	4.0	----do----	Diverts from Rough and Ready Creek. Has not been used in recent years.
Twohy ditch	NW¼SE¼ sec. 17, T. 39 S., R. 8 W.	1875	2.64	----do----	Part of the water diverted is used below this station.

1/ Oral report, Tom Pearce, Josephine County Watermaster.
2/ Priority of Water Right.

89.--Deer Creek near Dryden, Oreg.

Location.--Water-stage recorder, lat 42°16', long. 123°27', near center of sec. 18, T. 38 S., R. 6 W., 500 ft downstream from confluence of North and South Forks and 5 miles east of Dryden. Datum of gage is 1,650.10 ft above mean sea level (surveys by Bureau of Reclamation).

Drainage area.--23 sq mi.

Records available.--October 1945 to September 1950 in reports of Geological Survey. November 1941 to September 1945 in files of State Engineer.

Bypass channels.--None.

Diversions.--A small ditch three-fourths of a mile above station diverts negligible amount of water for irrigation.

Return flow.--No known surface return flow.

Storage and regulation.--None.

Utilization.--Small tract of land irrigated by ditch three-fourths of a mile above station.

INT.-DUP. SEC., WASH., D.C. 24055

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

CIRCULAR 187 PLATE 1

MAP SHOWING LOCATION OF GAGING STATIONS IN THE ROGUE RIVER BASIN