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REPORT ON THE HYDROGEOLOGIC CONDITIONS

OF SCOTT VALLEY

SISKIYOU COUNTY, CALIFORNIA

NOVEMBER 1975

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PREFACE

The Scott River water rights adjudication was initiated in 1970 by petition to the State Water Resources Control Board from the Scott Valley Irrigation District. Preliminary investigation determined that the flow of the Scott River was so closely connected to the underlying ground water that any effective adjudication of water rights would have to include both rights to divert surface flow and to pump interconnected ground water. Since the adjudication statutes in effect at the time were limited to determining surface rights only, special legislation was required if the Scott River water rights were to be properly determined. Such legislation was adopted in 1971 and are now set forth as Water Code Section 2500.5 which reads as follows:

2500.5 "(a) As used in this chapter with respect to the Scott River in Siskiyou County, 'stream system' includes ground water supplies which are interconnected with the Scott River, but does not include any other underground water supply. (b) The Legislature finds and declares that by reason of the geology and hydrology of the Scott River, it is necessary to include interconnected ground waters in any determination of the rights to the water of the Scott River as a foundation for a fair and effective judgment of such rights, and that it is necessary that the provisions of this section apply to the Scott River only. (c) If this section is for any reason held to be unconstitutional, such decision shall not affect the validity of the remaining portions of this chapter, or of any proceedings thereunder, but shall affect only the validity of the proceedings with respect to such interconnected ground water supplies."

The Board is required by Section 2500.5 to determine which ground waters are interconnected with the Scott River and as a corollary must also determine which ground waters are not interconnected with the Scott River.

This report and the accompanying plates present the Board's staff determination of interconnected ground water and delineates the surface area overlying such ground water. The area of interconnected ground water represents the surface projection overlying the ground water reservoir from which pumping could tend to cause a reduction in Scott River flow before the end of the current irrigation season. This area corresponds with the highly permeable floodplain deposits beneath and adjacent to the river. Excluded are all other valley alluvial material of significantly lower permeability.

The report also discusses relationships between surface flow of Scott River and ground water pumping and recharge characteristics of importance in reaching an equitable determination of interrelated ground water and surface water rights.

It should be stressed that the lack of available data preclude precise delineation between interconnected ground water and other ground water. In fact, a precise demarcation could really never be drawn because of the broad transition zones between ground water obviously not interconnected and ground water freely and completely interconnected. The demarcation lines drawn in this report should be viewed in this light and accepted as the most probable location of such a line.

TABLE OF CONTENTS

	Page
Preface	ii
Table of Contents	iv
INTRODUCTION	1
Scope of Study	2
Area of Study	2
Identification of Water Wells	2
GEOLOGY	3
Drainage Features	3
Geologic Setting	4
Geologic Units	5
Abrams and Salmon Schists (Stuart Fork Formation)	6
Chanchellula Formation (Gazelle and Duzel Formations)	6
Greenstone (Greenstone-Chert Assemblage)	7
Serpentine	7
Granodiorite	7
Older Alluvium	8
Younger Alluvium	8
HYDROLOGY	15
Groundwater Occurrence	15
Groundwater Recharge, Movements, and Discharge	16
Groundwater Level Fluctuations	17
Groundwater Storage Capacity	18

PLATES

(Bound in the back)

INTRODUCTION

The groundwater* supply of Scott Valley complements surface water flows that are or can be diverted for agricultural, municipal or domestic purposes. In general, waterbearing strata of the Scott Valley Groundwater Basin are in hydraulic continuity with the local perennial, intermittent and ephemeral stream systems.

Seasonally, when groundwater extraction may exceed replenishment (by direct infiltration of precipitation and/or surface runoff) along local stream reaches, reversal of groundwater gradients may affect surface runoff and may possibly adversely affect prior rights to the surface waters. Excessive groundwater pumpage can lead to a surface water supply loss to downstream water users.

In recognition of the interrelationship between surface and groundwater in Scott Valley, the State Water Resources Control Board has evaluated readily available data concerning the geologic framework of the basin within which subsurface water is recharged, stored, and transmitted. An evaluation of groundwater occurrence is necessary to better understand the over-all hydrologic factors related to the water rights adjudication in the Scott River Valley.

Based principally on these data, it is estimated that there is a plentiful amount of groundwater in storage along the Scott River upstream from Fort Jones. As part of a basin management plan, this groundwater could be used for irrigation of all usable land and to sustain desired downstream river flows during the dry seasons.

* Technical terms used in this report are defined in the "Glossary of Geology" which was published by the American Geological Institute in 1972.

SCOPE OF STUDY

This study has entailed the collection and review of existing or published geologic, hydrologic, and water quality data. A minimal amount of field work involved a reconnaissance-level survey of the aerial geology and location of groundwater wells for which drillers' logs (lithologs) were available. In the hydrogeologic assessment of this watershed, of special value has been the United State Geological Survey (USGS) Water Supply Paper (WSP) 1462 which was published in 1958 and is entitled, "Geology and Groundwater Features of Scott Valley, Siskiyou County, California". That report appropriately depicts and describes the geology of the area. Except for minor modifications, that information has been used in this statutory adjudication. The hydrogeologic data presented in the USGS report have been updated by the use of lithologs and hydrologic information obtained by various data-collection agencies since about 1958.

During the evaluation and interpretation of the basic (geologic and hydrologic) technical data preliminary geologic cross-sections were drawn. Concurrently, the hydrologic data collected (during the Spring 1972 thru Spring 1974 period) by the Divison of Water Rights was used to better understand the hydrogeologic regimen of the valley.

AREA OF STUDY

Scott Valley consists primarily of a relatively narrow alluvial floodplain that is about 28 miles long and varies from about one-half to four miles wide. It is in west central Siskiyou County approximately 30 miles south of the Oregon state line and 15 miles southwest of the City of Yreka. The valley is bordered by the Scott Bar Mountains on the north and northwest, by the Salmon Mountains on the west and southwest, by the Scott Mountains on the south and southeast, and by a northerly extension of the Scott Mountains-Trinity Mountains trend on the east.

The elevation of this intermountain valley floor varies from about 3,100 feet (above mean sea level) in the upstream area near the community of Callahan to about 2,700 feet near the downstream extremity. The valley floor extends over a gross area of approximately 100 square miles. In 1958*, the land irrigated by surface diversions was less than 32,000 acres.

Identification of Water Wells

For convenience in establishing an identification system for pertinent data gathered from water wells, numbers have been assigned according to their

* Department of Water Resources Bulletin No. 94-5, "Land and Water Use in Shasta-Scott Valleys Hydrographic Unit, Volume 1: Text, July 1965".

location in the rectangular system for the subdivision of public land. For example, in the State well number 43N/9W-24F1, that portion of the number preceding the slash indicates the Township (43N), that portion of the number between the slash and the hyphen is the Range (9W), the number between the hyphen and the letter indicates the Section (24), and the letter indicates the 40-acre tract within the section as shown below.

D	C	B	A
E	F	G	H
M	L	K	J
N	P	Q	R

Within each 40-acre tract, some wells have been numbered serially (by the Department of Water Resources) as indicated by the final digit. Thus, well number 43N/9W-24F1 is the first well to be listed in tract "F" of Section 24, Range 9 West, Township 43 North.

In this report, all wells are referenced to the Mount Diablo Base and Meridian.

GEOLOGY

A thorough understanding of the subsurface geology must be established to ascertain the relationship between streamflow and underflow.

Scott River surface and subsurface flows are the principal water supply within the watershed. For this reason, the waterbearing materials underlying the Scott River floodplain were most intensely studied. Generally, other portions of the watershed have minimal subsurface data available.

DRAINAGE FEATURES

The watershed tributary to the adjudicated area drains approximately 650 square miles*. Headwaters of the Scott River form in the Scott Mountains to the southeast (East Fork Scott River) and to the south (South Fork Scott River) where mean annual precipitation is in the range of 40 to 50 inches. These forks merge at Callahan to form the main stem of the river which flows northerly for about 20 miles to the community of Fort Jones. Downstream from Fort Jones, the river flows west-northwesterly and skirts the northern

* Soil Conservation Service, U. S. Department of Agriculture, "Inventory and Evaluation of the Natural Resources, Scott River Watershed, Siskiyou County, California, May 1972".

portions of Chaparral and Quartz Hills before exiting the valley near Meamber Gulch. The Scott River flows into the Klamath River about 20 miles further downstream.

Mean annual precipitation ranging from 40 to 70 inches within the Salmon Mountains is reflected by numerous perennial streamflows that exist along the western slopes of the watershed. In terms of this water rights adjudication, the most significant inflows to the valley develop within the Kidder, Patterson (west), Etna and French Creek tributaries. Except for streams in the vicinity of the French and Etna Creek drainages, the others provide intermittent runoff to Kidder Creek within the valley floor. These flows combine along the northeastern portion of Chaparral Hill and discharge into the river near Fort Jones. Oro Fino Creek flow supplied by diversion from Kidder Creek is similarly intermittent between Chaparral and Quartz Hills before merging with the Scott River.

Moffett Creek is a major intermittent tributary to the Scott River that drains the eastern portion of the watershed where mean annual precipitation approximates 30 inches. This streamflow merges with the seasonal runoff from the McAdam Creek drainage where mean annual precipitation is in excess of 30 inches. The merged Moffett-McAdam Creek waters flow southwesterly for about two miles before discharging to the Scott River near Fort Jones.

Where mean annual precipitation is less than 30 inches, ephemeral flows develop within the gulches that drain the eastern foothills bordering the floodplain. These include streamflow within McConaughy and Hamlin Gulches which are the most areally extensive.

West of McAdam Creek, mean annual precipitation is more than 40 inches within Indian, Rattlesnake, Patterson (north), and Meamber Creek drainages where perennial streamflows prevail at the higher mountain elevations. However, those flows are insufficient to sustain continuous surface runoff into the alluvial valley of the Scott River.

Perennial inflow from Quartz Valley to the Scott River by the Shackleford Creek drainage system has been previously adjudicated. Therefore, the downstream terminus for the study has been arbitrarily selected to be in the vicinity of Meamber Bridge which is about one-third mile upstream from the confluence of Shackleford Creek and the Scott River.

GEOLOGIC SETTING

Data suggest that the present elongated shape of Scott Valley was controlled primarily by folding, faulting, and uplifting related to mountain building. The northwest-southeast trending fault along the western margin of the valley (see Plate 1) indicates that displacement may have continued through Cretaceous time. Additionally, the surficial geology and limited litholog information indicate possible downwarping and significant downcutting of bedrock occurred prior to accumulation of the Quaternary deposits that constitute the Scott Valley Groundwater Basin.

It is generally known that during early Pleistocene time, base levels probably were a few hundred feet higher than at present. Thereafter, conditions became such that Pleistocene older alluvium was deposited throughout the valley. Concurrent with this sediment accumulation, it can be reasoned that bedrock movement related to faulting continued in Scott Valley.

Possibly during middle and late Pleistocene time, a recurrence of significant uplift and deformation changed base levels which caused extensive denudation of the older alluvium. Available lithologs suggest that stream entrenchment removed these Pleistocene materials along the main course of the Scott River. Remnants of the older alluvium can be observed along the margins of the valley as shown on Plate 1.

Accumulation of recent alluvial fan deposits and stream channel and floodplain deposits marks another change in base levels. However, incision of the Scott River into the floodplain deposits suggests that uplift since Pleistocene time continues.

GEOLOGIC UNITS

As shown on Plate 1, there are several rock and sediment types within the watershed. In addition to the groundwater-bearing deposits, only the most prominent nonwaterbearing bedrock units will be discussed. Based on a relative oldest to youngest age sequence, and in accordance with USGS WSP 1462, these are the: (1) pre-Silurian Chancellula (Sc), (3) Devonian undifferentiated greenstone (Dg), (4) Jurassic serpentine (Js), (5) Jurassic or Cretaceous granodiorite (KJg), and (6) Quaternary older (Qol) and younger (Qf and Qsp) alluvium.

The Quaternary alluvium, which ranges from Pleistocene to Recent in age, is the major source of groundwater in the valley. Furthermore, data indicate that the stream channel deposits are in direct hydraulic continuity with Scott River flows. If groundwater extractions at wells solely penetrating these channel deposits were to be maintained for prolonged periods in excess of subsurface recharge conditions, then it is conceivable that streamflow could be adversely diminished seasonally.

Even though there is a considerable amount of available data such as lithologs, over-all geologic control is inadequate to appropriately differentiate or delineate the physical and hydraulic characteristics of all the various groundwater-bearing materials. However, the following includes a description of those Quaternary materials such as old alluvial fan and terrace deposits, young alluvial fan deposits, and stream channel and floodplain deposits using available data.

Abrams and Salmon Schists (Stuart Fork Formation)

The oldest rock unit within the study area consists of the eastward dipping Abrams Mica Schist and the Salmon Hornblende Schist. These schists are also deemed to be representative in more recent work by the USGS* of the blue-schist facies metamorphic rocks of the Stuart Fork Formation. WSP 1462 describes the Abrams as a thick series of metasedimentary rocks that is dominantly a quartz-mica schist and unconformably overlain by the metavolcanic Salmon hornblende schist. In contrast, the Stuart Fork formation is noted to be composed predominantly of phyllitic quartzite in the Fort Jones area. This formation comprises a portion of the mountain area from northeast of the Moffett-McAdam Creek confluence southwesterly through the Fort Jones area, forms Chaparral Hill, and several knolls or hillocks along the western margin of the valley. Furthermore, it extends further south through the foothill vicinity of the community of Etna to about the French Creek watershed.

Although the Abrams-Salmon Schists are shown in WSP 1462 to occur along the east side of valley from the area of Hamlin Gulch to Shell Gulch, the USGS Journal of Research paper shows that area to be Paleozoic micaceous marble and amphibolite. Nevertheless, the Abrams-Salmon Schists constitute bedrock that underlies the alluvial valley area along that southwesterly trend from the McAdam-Moffett Creeks merge area to the vicinity of Etna. This rock unit is estimated to be several thousand feet thick within Scott Valley.

Although infiltration and percolation of precipitation may occur through joints, fractures, and weathered portions of this formation, the amounts of water that can be stored and transmitted are too limited to supply wells. For this reason, these schists are considered to be nonwater bearing.

Chanchellula Formation (Gazelle and Duzel Formations)

The Chanchellula formation unconformably overlies the Abrams-Salmon Schists to the east of Scott Valley. This formation, which is known as the Ordovician and Silurian Gazelle and Duzel formations further to the east, is described to be in excess of 5,000 feet and to consist of chert, quartzite, sandstone, slate, shale, chlorite-sericite schist, and limestone beds that dip eastward. These sedimentary and metamorphic rocks extend from within the Moffett Creek headwaters area south-southwesterly along the eastern watershed slopes of Scott Valley to the vicinity of Callahan. Beneath the valley alluvium, this formation extends from McConaughy Gulch to Callahan.

Chanchellula materials are nonwater bearing because they are generally of very low permeability or too impervious to provide adequate amounts of water to wells. However, it is probable that precipitation and runoff that

* United States Geological Survey. "Blueschist Metamorphism in the Yreka-Fort Jones Area, Klamath Mountains, California". Journal of Research, Volume 1, No. 1, pp. 53-61, January-February 1973.

infiltrates into the subsurface can be transmitted through joint and fracture systems to supply springs and/or emanate to partially supply surface flow or underflow of intermittent or perennial streams.

Greenstone (Greenstone-Chert Assemblage)

Greenstone, also known as the Paleozoic and Triassic (?) Greenstone-Chert Assemblage, is metamorphosed rock of volcanic origin that is known to contain sedimentary interbeds of chert, argillite, and limestone. The pale grayish green to dark green greenstone is several thousand feet thick and the sedimentary beds vary in thickness from a few to several hundred feet.

Generally, this rock unit forms part of the mountain and foothill area north of the Scott River from the McAdam Creek drainage westerly to Meamber Gulch. Extending to the south, the greenstone forms Quartz Hill and the toe area of the Salmon Mountains from about Kidder Creek southeasterly for approximately four miles to Patterson (west) Creek. This is the probable bedrock unit underlying most of valley alluvium northwest of Chaparral Hill.

The greenstone is considered to be nonwater-bearing although it probably transmits water through fractures and other openings to supply springs and/or local streamflows.

Serpentine

Dark greenish-gray to light gray serpentine is an intrusive rock that solidified from a magma within the host Abrams-Salmon Schists. It is exposed along a two to three mile band from northeast of Moffett Creek southwesterly to Hamlin Gulch. From there, it continues along the eastern margin of the valley to the vicinity of McConaughy Gulch where it underlies the Scott River. The serpentine is known to be exposed west of the river to as far south as Callahan.

Although the serpentine is strongly jointed and fractured, this nonwater-bearing unit weathers easily to fill rock openings with a fine-grained low permeability materials. These materials preclude significant infiltration and/or percolation of precipitation.

Granodiorite

Granodiorite, another rock that solidified from a magma, is light gray and medium- to coarse-grained. It intruded the Abrams-Salmon Schists and, possibly, the greenstone in the vicinity of Etna from about Crystal Creek south to the French Creek drainage. Granodiorite rocks are known to be exposed further to the south within this mountain portion of the Scott River watershed.

This rock unit probably transmits minimal amounts of water to springs and/or streams through fracture openings. However, this material is essentially impervious and nonwaterbearing.

Older Alluvium

The oldest sediments that comprise part of the Scott Valley alluvial fill may have been deposited during early Pleistocene time. WSP 1462 designates these as the older alluvium that is found along the valley margins. These are alluvial fan and terrace deposit remnants that consist primarily of sand and silty clay with boulders. However, older alluvium is not considered to be an important groundwater source or aquifer due to their limited areal extent and topographic position above prevailing water table elevations.

There are no known wells that have been drilled and constructed within areas where older alluvium is exposed on the surface. For this reason, knowledge concerning the hydraulic characteristics of these materials is nonexistent.

WSP 1462 shows older alluvium occurrence at several relatively small isolated patches. These are: (1) a terrace remnant in Oro Fino Valley (SE $\frac{1}{4}$ of Section 18); (2) an alluvial fan near Etna (SE $\frac{1}{4}$ of Section 29 and NE $\frac{1}{4}$ of Section 32) that is considered to attain a maximum thickness in excess of 100 feet; (3) two terrace remnants west of the river in the SE $\frac{1}{4}$ of Section 1 near Sugar Creek and the other which extends from Sugar Creek southeasterly to Wildcat Creek (NW $\frac{1}{4}$ of Section 17) and; (4) four elongated terrace remnants (east of the river) that extend from about Messner Gulch (NW $\frac{1}{4}$ of Section 6) southeasterly to the NE $\frac{1}{4}$ of Section 17 near Callahan.

Younger Alluvium

The younger alluvium, deposited in Recent geologic time, is also discussed herein as described in WSP 1462. Except for the older alluvium remnants, the younger alluvium constitutes the sediment fill of Scott Valley.

Surficially and/or topographically, these younger sediments have been categorized (by the USGS) as alluvial fan and stream channel-floodplain deposits. The alluvial fan sediments are chiefly sandy clay with boulders that were deposited by lateral tributaries along certain valley margins and that are able to supply groundwater to wells in amounts suitable only for domestic and stock purposes. Stream channel-floodplain sediments are primarily sand and gravel with clay deposited by the Scott River and the major tributaries. These deposits are known to yield the largest amounts of groundwater to wells.

Although there is a significant number of well lithologs, the available subsurface geologic control is insufficient to accurately distinguish at depth between the two types of younger alluvium on the attached geologic cross-sections (Plates 2A-E).

In accordance with the physiography of Scott Valley, it would be reasonable to assume that the maximum younger alluvium thicknesses exist approximately beneath the present course of the river. However, WSP 1462 indicates that the deepest known well was drilled to a depth of more than 400 feet at the site of a destroyed well in the vicinity of 42N/9W-9G*. At that site "nonwaterbearing" (as noted in the litholog) Quaternary sediments were not fully penetrated through to underlying bedrock. Since 1958 when WSP 1462 was published, available lithologs indicate that no other drilled wells had approached that depth within Scott Valley. However, in August 1973, well 43N/9W-10M was drilled to a depth of about 220 feet approximately one-half mile east-southeast of the well -9G site. The younger alluvium was not fully penetrated at that site, but the litholog suggests that the local subsurface sediments are predominantly alluvial fan deposits that may be interbedded with floodplain deposits.

Well 43N/9W-24L, located near the mouth of Hamlin Gulch, was deepened from 119 to 250 feet in October 1974. The sediment sequence penetrated varied from brown sand to brown cemented gravel (lower Pleistocene?) before entering bedrock (broken serpentine) at a depth of 210 feet. Nearby well 43N/9W-24F1, completed in March 1953 at approximately the same ground surface elevation, was similarly drilled through about a 201-foot alluvial thickness before penetrating bedrock.

The only other area that is known to be underlain by sediments that are more than 200 feet thick is near the mouth of Rattlesnake Creek in the vicinity of well 44N/9W-28N. This well, which was completed in July 1955, encountered bedrock at depth of approximately 218 feet after penetrating a sediment interval consisting of gravel and clay.

Geologic sections were drawn where litholog information was available. These sections also show the relative thickness of the younger alluvial sediments at various parts of the valley. In the absence of strategically located lithologs, it is readily apparent that the complex discontinuity of clays, sands and gravels does not allow for accurate lateral correlation between wells. However, where log control is available, the stream channel sands and gravels appear to be virtually devoid of interlayered low permeability fine-grained clays. In those areas, these coarse-grained deposits are in direct hydraulic continuity with river flows. These sands and gravels are the principal groundwater supply source for irrigation, domestic and livestock uses.

Based on limited specific capacity data, it is estimated that permeability values of the river channel deposits is in the range of 1,000 gallons per day per square foot (gpd/ft²).

* See pages 2-3 for well location description and well designation.

Sediments along the western margin of the valley is primarily alluvial fan material deposited by the series of streams that discharge from the foothills of the Salmon Mountains. This alluvial fan deposit area is continuous from the Kidder and Oro Fino Creeks drainage on the north to Etna Creek on the south. Generally, this deposition has been in the form boulder and cobble accumulations near the fanheads that gradually diminish and grade to fine-grained sand, silt and clay along the valleyward fan extremities. There, the fan deposits are interfingered with the westernmost floodplain deposits of the Scott River. In the vicinity of Patterson Creek (west), the lithologs (see Plate 2A) suggest that the fan-floodplain transition zone is east of well 42N/9W-10M and west of wells -10K1 and -10Q1. Clay is the predominant sediment within the upper 120 feet at well -10M, while the corresponding interval at the latter two wells consists primarily of sand and gravel. Furthermore, the 16-foot thick gravel below the 126-foot depth at well -10M appears to contain groundwater that is confined or artesian. Under artesian conditions, long-term groundwater extractions at this well would not adversely diminish the flows in the river.

To the south from Section 42N/9W-10, the alluvial fan-floodplain deposits transition zone probably approximates the alignment of the Abrams-Salmon Schist hillocks northeast of Etna as shown on Plate 1. The predominant sands and gravels at wells 43N/9W-23F1, -26C2, -26L1, and -35D, indicate that the eastern edge of the fine-grained alluvial fan deposits is west of Island Road in the middle of Scott Valley. Also, near-surface groundwater within fine-grained sediments that extend from west of the north-south alignment of Patterson (west) and Kidder Creeks indicate that the western margin of the floodplain deposits in hydraulic continuity with the river is as shown on the Plate 1. Lithologs for wells 43N/9W-11N and -14N north of Serpa Lane show that the stream channel floodplain deposits of the Scott River coincide with the northeastern edge of Chaparral Hill.

Sediments penetrated at two exploratory holes along Oro Fino Creek at 43N/9W-4D and -5G (see Plate 2D) indicate that subsurface materials between Chaparral and Quartz Hills are comprised chiefly of low permeability clay with relatively lesser quantities of gravel and sand. The near-surface groundwater saturated conditions are similar to those that occur in the fan extremities of Patterson (west) and Kidder Creeks. Therefore, in this report, the surficial alluvium in the Oro Fino Creek area is considered to be fan deposits to as far north as the present course of the Scott River where it is 138 feet thick.

Subsurface data concerning the alluvial fill along the eastern margin of the valley is scarce. Hamlin Gulch, which is the largest tributary, has a 92-foot thick interval of sediment overlying bedrock in the vicinity of well 43N/8W-17G (see Plate 2E). This well is about four miles from the Scott River. The penetrated materials were logged as sand and gravel with clay interlayers primarily within the 60- to 88-foot depth interval. Downslope from well -17G and near the mouth of Hamlin Gulch, the litholog for well

43N/9W-24F1 shows a significant clay layer increase that is essentially uniformly interspersed with the sand and gravel to the bedrock depth of 205 feet. The lateral clay content increase in the sediments between the two wells suggests that the Hamlin Gulch alluvium is a subdued fan deposit type to as far west as the schist bedrock knoll along East Side Road. Furthermore, at well -24F1, the gravel layers below the uppermost 40-foot thick clay interval suggests that artesian conditions exist locally that are governed by recharge from the upslope area of Hamlin Gulch. Therefore, because of the surficial clay occurrence and the existing artesian conditions, pumpage at well -24F1 would not induce percolation of surface flow from the river into the stream channel deposits.

The litholog for nearby well 43N/9W-24F2 shows interlayered clays and gravels through the entire sediment interval. This suggests that the transition to floodplain alluvium is immediately to the west of well -24F1. North of well -24F1, the easternmost extent of the stream channel-floodplain deposits would appear to be along an alignment between the aforementioned bedrock knoll and another adjacent to the river in the vicinity 43N/9W-14B. South of well -24F1, the litholog data for wells 43N/9W-24L and -25C (see Plate 2A) indicate that the penetrated alluvial materials are not the highly permeable stream channel-floodplain deposits.

In the Hurds Gulch area, the lack of producing wells suggests that the eastern extent of the stream channel-floodplain deposits would be west of East Side Road. At well 43N/8W-30K, 107 feet of sediments were penetrated before reaching bedrock. The description of the interlayered clays and gravels indicates that there are cemented sediments (Goal?) below a depth of about 35 feet. Data also indicate that these cemented sediments are of low permeability and could be correlative with those encountered at previously mentioned well 43N/9W-25C.

In the vicinity of the 34-foot deep irrigation (manifold) well 43N/9W-35Q and 79-foot deep irrigation well 42N/9W-2G1 (see Plate 2A), gravels, sands, and clays were encountered. These suggest that the stream channel floodplain deposits to be between these wells at the bedrock outcrop skirted by East Side Road.

No lithologs are available for the Shell Gulch area. The lack of wells suggests that subsurface sediment conditions probably approximate those in the vicinity of Hurds Gulch.

In the Heartstrand Gulch area stream channel-floodplain deposits extend to in excess of one-half mile east of the present course of the Scott River in accordance with the litholog for irrigation well 42N/9W-23J (see Plate 2A). At this well, there is a surficial 6-foot clay layer that is underlain by a sequence of sand and gravel to a depth about 76 feet. Below that 76-foot depth, there is an interval of interlayered sand and gravel to a total depth of 110 feet. Perforated casing data and groundwater production at this well suggest that the sands and gravels are highly permeable. Therefore, these could be attributable to stream channel and/or floodplain deposition.

Upstream from Horne Lane to McConaughy Gulch, the eastern extent of the stream channel deposits would appear to be approximately midway between the present course of the river and the exposed bedrock. The lack of irrigation wells in McConaughy Gulch suggests that the permeability of those sediments is too low to produce appreciable amounts of groundwater.

West of the river and upstream from Horne Lane, available litholog data similarly indicate that the occurrence of waterbearing deposits approximates the halfway distance to the exposed bedrock. At irrigation well 41N/9W-2E (see Plate 2A), the sediments consist primarily of sand and gravel with relatively thin clay interlayers to a depth of 94 feet. However, at irrigation well 41N/9W-11F (see Plate 2A) which is within 1,000 feet west of the present river channel, cemented gravel (Qoal?) was encountered at a 12-foot depth below a surficial layer of boulders. The cemented gravel was found to be interbedded principally with clays to bedrock at a depth of 127 feet. Based on specific capacity data, the permeability of these materials are estimated to be less than 300 gpd/ft² which is not representative of the more permeable stream channel deposits. Therefore, it would not be expected that long-term pumpage at this well would induce detectable streamflow losses or adversely influence underflow in this area.

The 12-foot boulder depth penetrated at well 4N/9W-11F is significant because it has been reported in WSP 1462 that river gravels within Section 1, T40N, R9W were found to be only 12 feet thick.

Lithologs for three unlocated wells drilled within Section 24, T41N, R9W, show that as much as 65 feet of sediments, consisting principally of sand, silt and cobbles, were penetrated before encountering bedrock. However, estimates based on specific capacity data obtained at those wells indicate that the permeability values for sediments ranges between 100 and 300 gpd/ft². It is then evident that the hydraulic characteristics of the local alluvium would not allow the extraction of large volumes of groundwater to significantly affect underflow of the river in the immediate area.

In view of the foregoing, it can be reasoned that groundwater pumpage cannot detectably reduce river flows upstream from Section 11, T41N, R9W, and possibly along the remainder of the river canyon to as far north as the vicinity of Horne Lane.

Well tests results obtained by drillers suggest that groundwater withdrawals from the floodplain-stream channel deposits, in the vicinity of Fort Jones, induce Moffett Creek streamflow infiltration. These sediments are unconfined and are at least 75 feet thick at community well 43N/9W-2B. Long-term intense pumpage at this well probably could diminish the duration of the seasonal flows within the nearby reach of Moffett Creek.

Upstream from well -2B, the litholog for well 44N/9W-36G shows that gravel is 20 to 32 feet thick. Although this gravel is overlain by a 20-foot thick sequence of clay and gravel, the driller's tests suggest that groundwater extractions at this well could conceivably affect the seasonal intermittent flows of the local stream system.

East of the confluence with McAdam Creek, groundwater extractions from the stream channel deposits would similarly affect the seasonal Moffett Creek flows. At irrigation wells 44N/8W-30P, -30R, and -33B (see Plate 2C), groundwater in the sands and gravels would be in hydraulic continuity with local streamflow despite the local occurrence of interlayered clays. However, the restricted physical extent of these deposits does not allow for the storage or transmission of large quantities of groundwater. Also, there is an apparent decrease in the permeability of the alluvial deposits eastward of McAdam Creek. Specific capacity data obtained at well 44N/8W-33B suggest that the permeability of the locally 55-foot thick stream channel deposit to be in the range of 250 gpd/ft².

Domestic well 44N/8W-29M and irrigation well 44N/8W-33M have lithologs that indicate the thickness of alluvial fan deposits along Moffett Creek to be as much as 85 feet thick. These sediments evidently contain a greater percentage of fine-grained materials than the stream channel deposits. Consequently, it is reasonable to assume that these fan deposits are less permeable than the Moffett Creek channel deposits upgradient from the confluence with McAdam Creek.

Litholog information within the McAdam Creek drainage is very limited and no specific capacity tests have been conducted to estimate the hydraulic characteristics of the alluvial deposits. Depth to bedrock is 65 feet at domestic well 44N/9W-24P which is adjacent to the creek. At this well, the sediments are predominantly clay and gravel. Similar clay and gravel or sand and clay to a depth of 68 feet was penetrated at domestic well 44N/9W-25G. Domestic well 44N/9W-12 (unlocated) also was drilled through brown clay and rock to a depth of about 35 feet where bedrock was encountered.

In view of the foregoing lithologic information and permeability estimates, there is no evidence which suggest that groundwater extractions upstream from the confluence of Moffett and McAdam Creeks could adversely affect seasonal surface runoff. However, downstream from this confluence, it is evident that intense pumpage could probably cause a more frequent diminution of Moffett Creek stream runoff and/or underflow to the Scott River.

Downstream from Fort Jones the subsurface configuration of the stream channel-floodplain deposits is not fully known. Irrigation well 43N/9W-2M evidently produces from the gravel encountered from 12 to 57 feet in depth. The estimated permeability value of about 500 gpd/ft², which is considerably lower than those for the stream channel-floodplain deposits in upstream areas suggests an increase in fine-grained material content within the gravel shown on the litholog. However, despite the surficial and potentially confining 12-foot thick clay, the gravel would be in hydraulic continuity with stream channel-floodplain deposits that transmit river underflow. Also, even though drilling at this well was terminated within clay and gravel at a 60-foot depth, it appears that the maximum sediment thickness would be approximately 150 feet in the immediate vicinity. Except for domestic wells 44N/10W-35B and irrigation well -27G near the downstream extremity of the valley, there are no other wells west of Fort Jones that have lithologs showing the character and thickness of the stream channel and floodplain

deposits. Approximately 52 feet of sediments, consisting primarily of fine gravel and sand, were penetrated at well -35B. The bedrock depth at well -27G is 34 feet and the overlying sediments that were penetrated consist predominantly of gravel with relatively thin clay interlayers.

The remaining wells with lithologs in this northwestern portion of the valley are those located along Scott River Road. From east to west, noteworthy are wells 44/9W-28R, -28N, -29E, and -30J. One hundred feet of alluvium at Indian Creek was penetrated at irrigation well -28R without encountering bedrock. Extracted groundwater is from sand and gravel that has an estimated permeability of about 800 gpd/ft². Even though these sediments probably extend downslope toward the more permeable stream channel deposits, the relative topographic location and depth of this well suggests that local pumpage would be primarily intercepting Indian Creek underflow and would not directly affect Scott River flow.

Well -28N, located at the mouth of Rattlesnake Creek is the deepest known well in the valley that has a litholog. Its total drilled depth into bedrock is 243 feet of which the upper 218 feet are alluvial materials. The sediments are comprised mainly of gravel with some sand and clay interlayers. Two cemented gravel (Qoal?) layers (35 feet and 40 feet thick, respectively) indicate that the estimated permeability 175 gpd/ft² is representative primarily of those materials below the 30-foot depth. Although this "test" well had not been in use through late 1974, anticipated long-term extractions in this area would be supplied principally from water that develops within Rattlesnake Creek watershed. Pumpage at this well cannot directly cause inducement of river flow infiltration.

During the drilling of irrigation wells -29E and -30J, the materials penetrated were similar to those at well -28N. The respective drilled depths were 112 and 147 feet. At well -30J, bedrock was reached at a 141-foot depth. The estimated permeability values for the sediments at both wells is about 135 gpd/ft². This approximate permeability indicates that pumpage at this well cannot directly affect Scott River flows. Recharge to these wells is primarily from Tyler Gulch underflow.

By projecting the protruding hill in the NE corner of Section 30 to that on the south in the NE corner of Section 31, the bedrock depth a well -30J suggests that there is a buried bedrock (greenstone) ridge. In view of ground surface elevations adjacent to the river along this buried ridge, the approximate alluvial depth beneath the present course of the river should be less than 40 feet. Assuming that the groundwater hydraulic gradient is essentially constant at about 15 feet per mile in this area (see Plate 1 of WSP 1462), based on Darcy's equation where the underflow $Q = PIA$, then maximum underflow would be about 50 cfs.

HYDROLOGY

Where subsurface waterbearing sediments are in hydraulic connection with significantly permeable deposits underlying or adjacent to surface streams, infiltration of runoff can be induced by pumpage at wells when groundwater levels are lowered to below those of stream levels. To evaluate streamflow infiltration or runoff diminution due to groundwater extractions, it is necessary to obtain detailed geologic and hydrologic data. These would include specific information such as the: (1) thickness, lateral extent, and horizontal permeability of the waterbearing materials (aquifer), (2) vertical permeability of the streambed materials which may be part of the aquifer, (3) distance between groundwater extraction well(s) and area of streambed infiltration, (4) impediment(s) to flow within or adjacent to the aquifer, (5) available groundwater in storage within the aquifer (6) groundwater level(s) in the aquifer (7) saturated thickness reduction in the aquifer due to groundwater withdrawals, (8) range of stream stages and heads, and (9) local subsurface hydraulic gradients.

Based on the readily available information, the following is an assessment of the groundwater hydrology in Scott Valley as it relates to streamflow of the Scott River.

Groundwater Occurrence

In Scott Valley, the main source of groundwater is the stream channel and floodplain deposits that are beneath and contiguous to the course of the Scott River where groundwater is normally found within ten feet below ground surface. Generally, the most permeable and productive deposits underlie the area between Horne Lane, which is east of Etna to approximately the north-eastern periphery of Chaparral Hill. It is evident that the Moffett Creek stream channel deposits in the vicinity of Fort Jones are hydraulically continuous with those of the Scott River. Beneath the boulder layer sequence upstream from Horne Lane, the alluvium predominantly consists of "cemented gravels" and clay (well 41N/9W-11F) which generally have estimated permeabilities of 300 gpd/ft² or less. These permeabilities and local aquifer boundary conditions caused by the valley bedrock walls are apparently unsuitable for long-term sustained yields at wells for irrigation purposes.

Downstream from the Scott River-Moffett Creek confluence, the physical and hydraulic characteristics of the stream channel-floodplain deposits remain virtually unknown. However, the surficial alluvial fan remnant in the vicinity of Meamber Bridge indicates that the lateral extent of the more permeable river-deposited sediments would be essentially restricted to near the present stream course.

The most permeable sediments along the western margin of the valley are those deposited in the fanhead areas by Etna, Patterson (west), and Kidder Creeks. Surficial evidence and sparse well data indicate that groundwater can readily

infiltrate and percolate through the coarse-grained sediments in the upper reaches of the streambeds. Consequent water table underflow from the fanhead-streambed area migrates in a fan-like manner to the areas where fine-grained materials predominate. In the fine-grained extremities of the alluvial fans, subsurface fluid transmission capacity is more restricted than in the fanhead areas. There, groundwater discharges to the surface to form a marsh-like area. Furthermore, interfingering of coarse and fine layers cause seasonal artesian flows in portions of the alluvial fan as demonstrated by wells 42N/9W-4P1, -4Q1, and -21A1, and 43N/9W-33G1. The eastern extent of the artesian areas is transitional with the water table conditions within the western margin of the area underlain by the Scott River stream channel and floodplain deposits.

Oro Fino Creek area alluvium consists primarily of clays that contain laterally discontinuous coarse materials possibly derived from nearby Chaparral and Quartz Hills as slope wash. These materials, which also appear to be related to Kidder Creek alluvial fan deposition, are insufficient to supply irrigation wells. However, these materials are seasonally fully saturated to allow for collection of subsurface water at excavated sumps that is used for irrigation purposes.

Alluvium within the lateral tributaries east of the Scott River transmit groundwater that infiltrates principally along the intermittent streambeds. However, the permeability of this alluvium is low and generally provides only sufficient quantities of groundwater for domestic purposes. Limited litholog data indicate that groundwater conditions within Hamlin Gulch vary from unconfined in the upslope vicinity of well 43N/8W-17G to semiconfined and/or confined in the downslope area that approximates the eastern margin of the Scott River floodplain in the vicinity of wells 43N/9W-24F1 and -24F2.

In the Moffett Creek and McAdam Creek drainage system, unconfined groundwater occurs within moderately permeable stream channel deposits. Alluvial fan materials in the minor lateral tributaries to these creeks have permeabilities too low for production of significant amounts of groundwater at wells.

West of Fort Jones, alluvium within the lateral tributaries such as Indian, Rattlesnake, and Patterson (north) Creeks are incapable of storing sufficient groundwater to supply irrigation wells. Limited data indicate that sediments below the water table along Scott River Road have moderate permeabilities. Upslope from the valley margin, these materials are probably more permeable, but subsurface bedrock conditions restrict the storage capacity and negate sustained groundwater extractions at wells for irrigation purposes.

Groundwater Recharge, Movement, and Discharge

Groundwater recharge to the alluvium is due to direct infiltration of precipitation and percolation of surface runoff into the valley alluvium. There is probable subsurface recharge of the alluvium by water transmitted through bedrock openings primarily in the lateral tributary areas. Also, significant recharge results from infiltration losses from conveyance ditches

and deep percolation of irrigation waters. It is evident that the major source of continuous recharge into stream channel and floodplain deposits between Etna and Fort Jones is due underflow and surface runoff that originates upstream from Horne Lane. This northward groundwater movement is supplemented mainly by underflow associated with runoff from the western tributaries. Subsurface recharge from the west is sustained groundwater released from storage by the fan sediments of lesser permeability during periods of low flow within the Scott River.

The general physical characteristics of the alluvium within the eastern lateral tributaries suggests that underflow contribution is relatively minor from that portion of the valley to the stream channel-floodplain deposits of the river. The only other significant source of underflow to these deposits during low river stages could be that from Moffett Creek. From Fort Jones downgradient to Meamber Bridge, subsurface inflow from the lateral tributaries to westerly river underflow seems to be minor in comparison to that which is more readily provided from upstream sources.

Groundwater hydraulic gradients reflect the permeability of the underlying materials and generally conform with the local ground surface slopes in some areas. Prevailing hydraulic gradients between the given locations are estimated to be as follows (in the direction of flow): (1) McConaughy Gulch to Horne Lane, 10 feet per mile; (2) Horne Lane to Ellen Lane, 7 feet per mile; (3) Ellen Lane to Fort Jones, 4 feet per mile; and (4) Fort Jones to Meamber Bridge, 10 feet per mile.

Based on available data, estimates of subsurface inflow and outflow through the stream channel deposits could be made at Horne Lane and Meamber Bridge. By applying Darcy's equation which can be expressed as $Q = PIA$, where Q is the underflow, P is the coefficient of permeability of the waterbearing sediments, I is the local hydraulic gradient, and A is the vertical cross-sectional area through which there is underflow. The maximum saturated sediment thickness that can be reasonably expected at both locations is about 100 feet and the sediment width approximately 3,000 feet at Horne Lane and 2,000 feet at Meamber Bridge. An applicable permeability value at Horne Lane would be about 300 gpd/ft² and the stream channel deposits would have permeabilities in the range of 600 gpd/ft² in the vicinity of Meamber Bridge. Based on the above assumptions, maximum underflow into Scott Valley at Horne Lane can be about 10 cubic feet per second (cfs) and subsurface outflow approximates 20 cfs at Meamber Bridge.

Groundwater Level Fluctuations

There are several wells at which groundwater level measurements have been obtained since the early 1950's. Two of these, wells 43N/9W-23F1 and -24F1 are known to withdraw subsurface water from stream channel-floodplain deposits and, therefore, are in hydraulic continuity with river flows. At both wells, water level fluctuations have been a maximum of about 10 feet between early spring and late summer. The sediments that are dewatered at

each well during the pumping season, is fully recharged during the ensuing wet season.

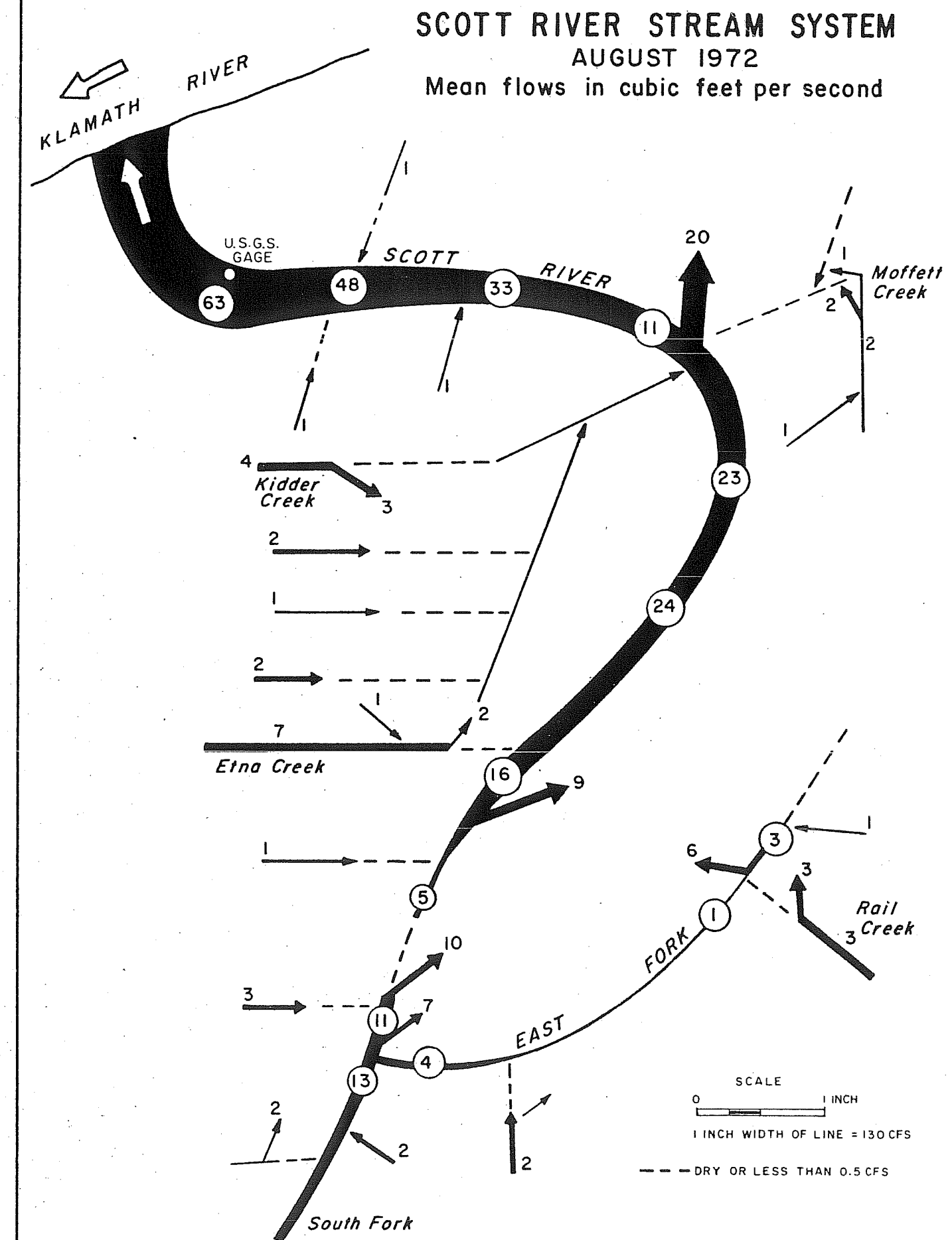
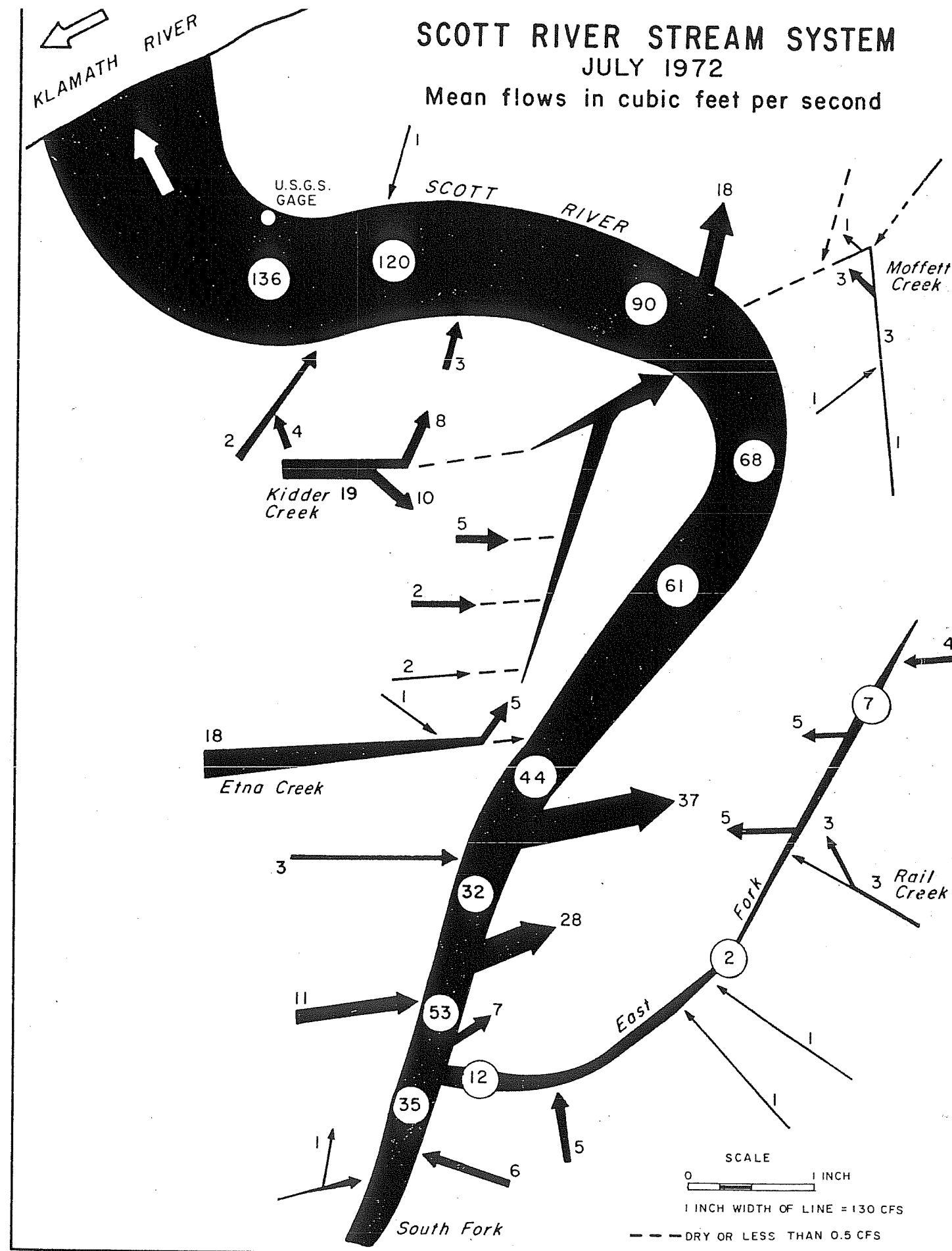
Because the relative elevation of the lowest groundwater levels have remained above that of the local reach of the low stage streamflow or streambed, it appears that river flow infiltration has not been induced by pumpage at these wells. As long as the hydraulic gradients remain downward toward the river, this stream will continue to be gaining during the summer months prior to the seasonally wet period. The reason for the prevailing stream gains is that there is sufficient hydraulic head and groundwater in storage to provide lateral inflows to the river during the low stream stage periods.

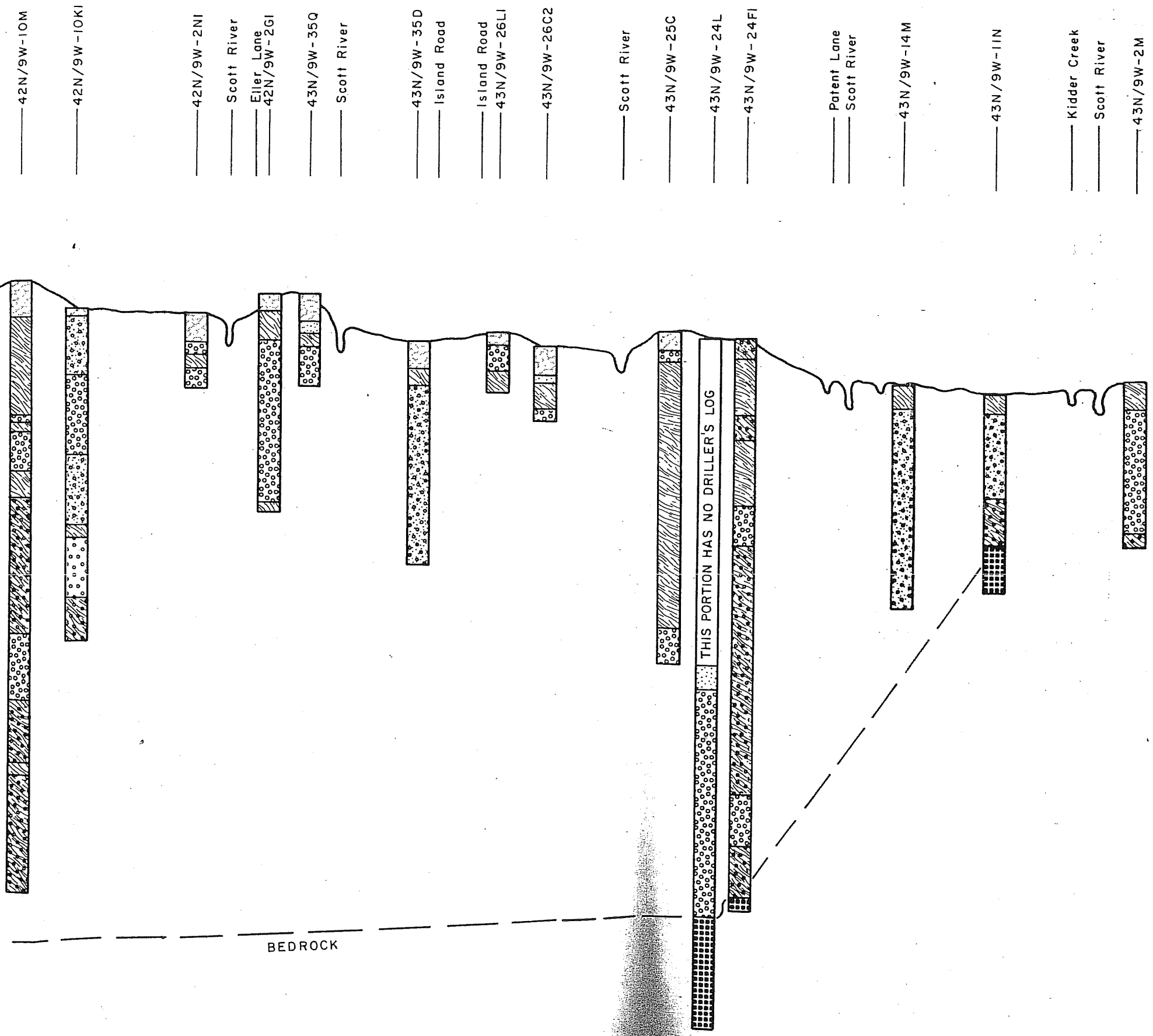
Similar hydraulic gradient conditions occur at wells 42N/9W-2A2 and 42N/9W-23J where the local sediments are hydraulically connected with these in the vicinity of the river. Measurements at well -2A2, obtained since 1965, indicate that recharge is sufficient to maintain underflow in the direction of the river. Also, measurements obtained at well -23J since mid-1973 show that pumping water levels generally appear to have remained above the seasonally low stream stage (and streambed) along the nearby river reach. It would appear that groundwater released from storage during pumping is supplemented by percolating irrigation return waters and infiltration losses from the Scott Valley Irrigation District Ditch which is upslope from both wells.

Although there is no definitive groundwater level fluctuation information along other reaches of the river, it is likely that the river continually remains a gaining stream throughout its course within Scott Valley. Thus, it sustains or supplements base flow during low surface inflows to the Etna-Fort Jones reach of the river. There is no other area, underlain by the stream channel floodplain deposits, from which groundwater is as intensely extracted as that between Etna and Fort Jones.

Groundwater Storage Capacity

Pumpage at wells along the axis of the valley, between Etna and Fort Jones, and resultant water levels show that groundwater in storage has not been significantly diminished during the intense pumpage periods. Based on the available data and on technically reasonable assumptions, the storage capacity of the channel and floodplain deposits along the Scott River is about 300,000 acre-feet. This would be from about two miles north McConaughy Gulch to the vicinity of Fort Jones. If it were to become necessary, local pumpage in this area possibly could be used in conjunction with a groundwater management plan to irrigate all usable land and to maintain or supplement desired river runoff during the seasonal low flow periods.





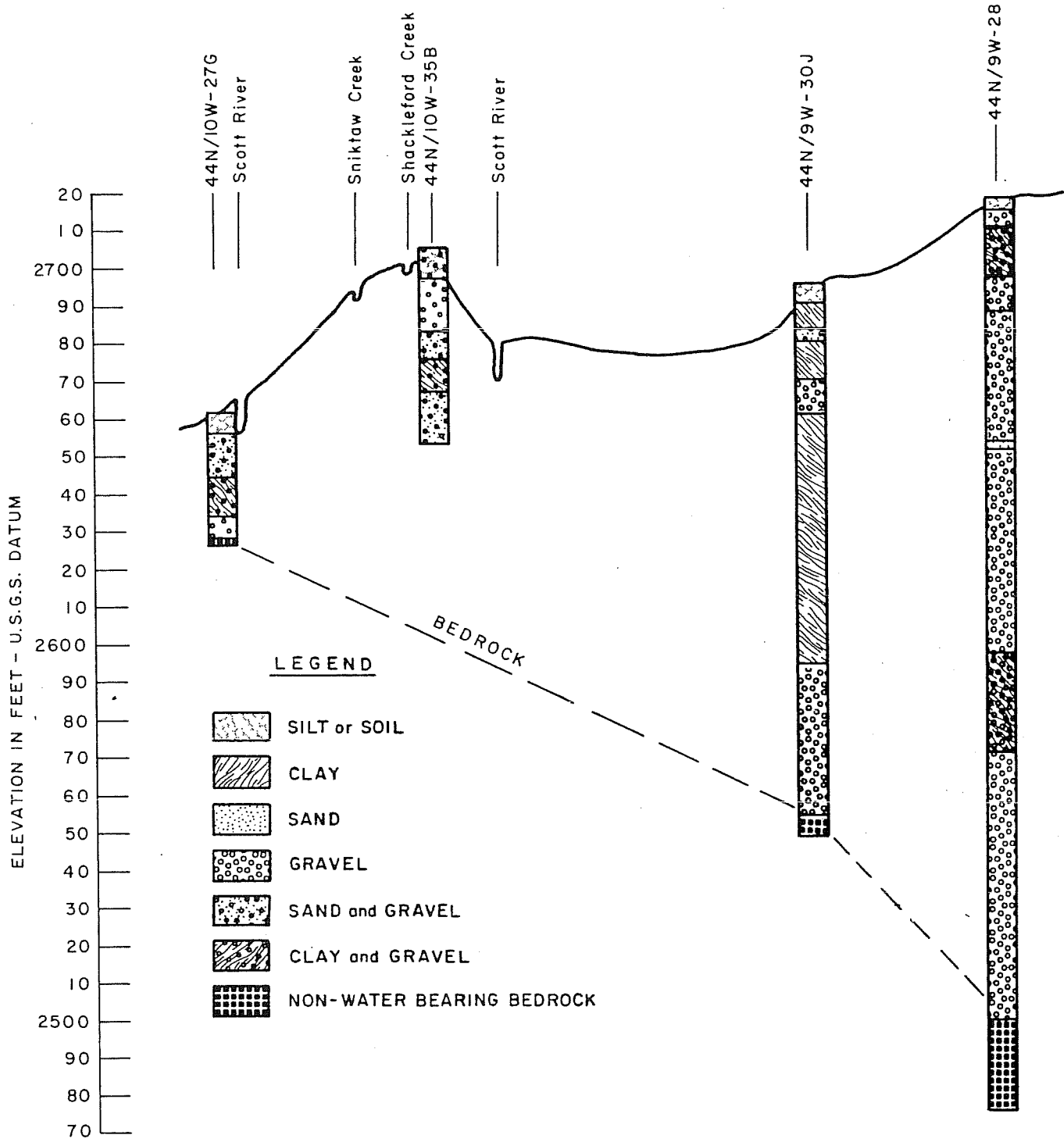
LEGEND

- SILT or SOIL
- CLAY
- SAND
- GRAVEL
- SAND and GRAVEL
- CLAY and GRAVEL
- NON-WATER BEARING BEDROCK

State of California
STATE WATER RESOURCES CONTROL BOARD

SCOTT VALLEY
GEOLOGIC CROSS SECTION A-A'
1975

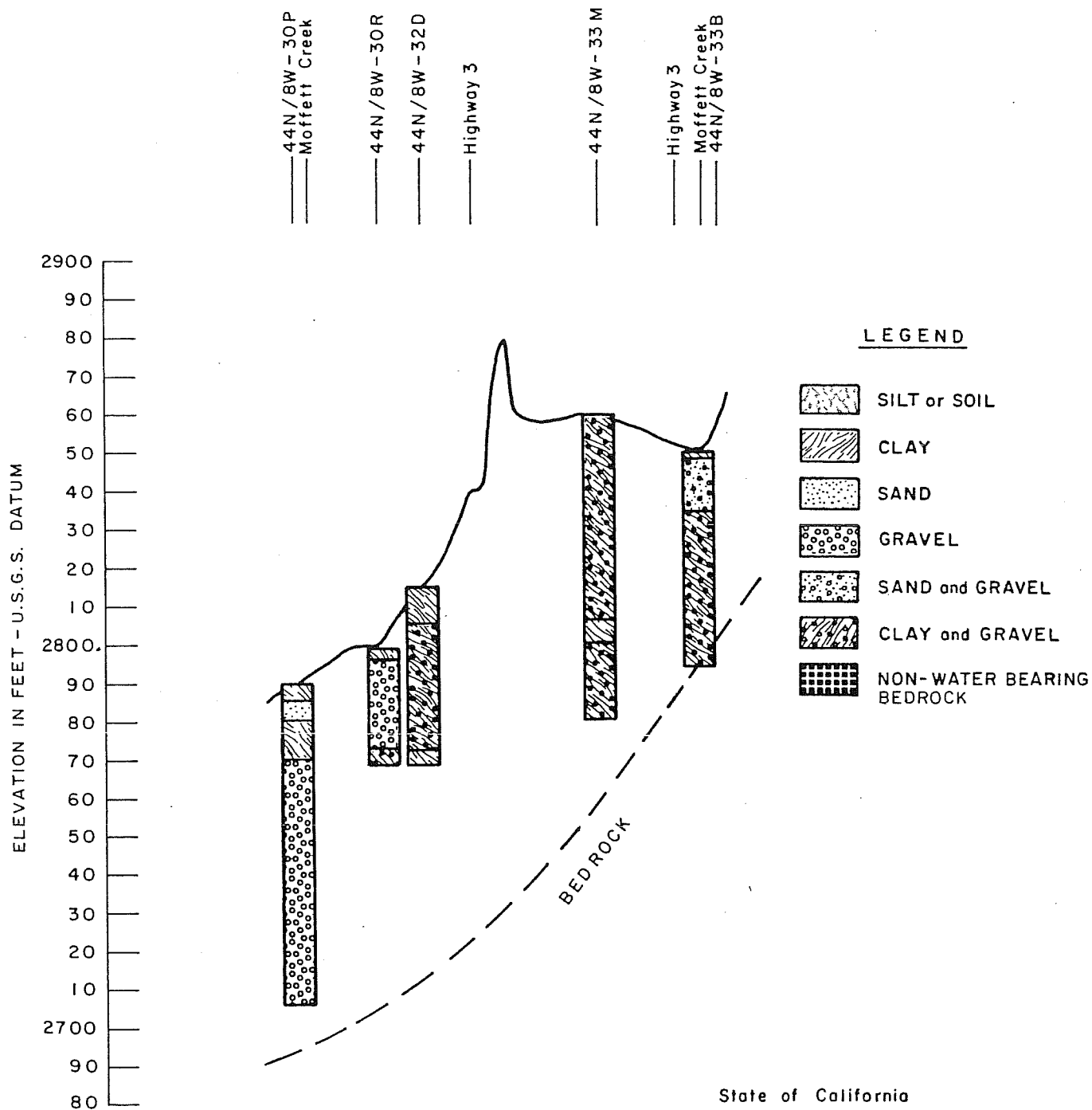
0 3000 6000 FT.
SCALE



State of California
STATE WATER RESOURCES CONTROL BOARD

SCOTT VALLEY
GEOLOGIC CROSS SECTION B-B'
1975

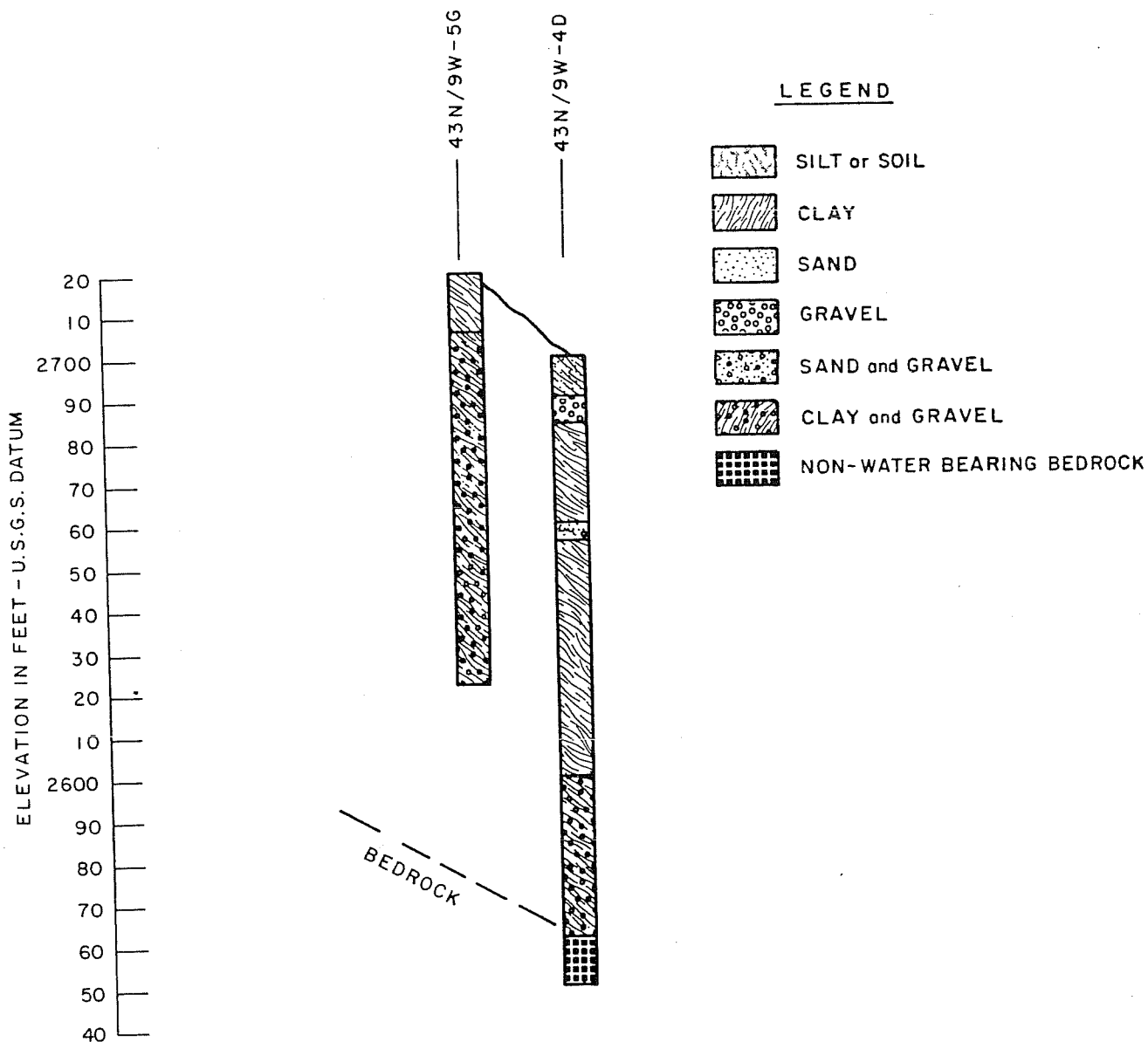




State of California
STATE WATER RESOURCES CONTROL BOARD

SCOTT VALLEY
GEOLOGIC CROSS SECTION C-C'
1975

0 3000 6000 FT.
SCALE

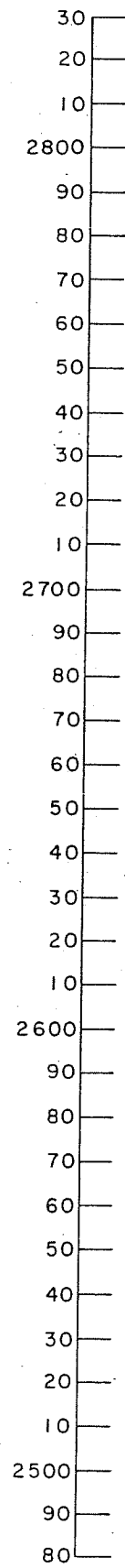


State of California
STATE WATER RESOURCES CONTROL BOARD

SCOTT VALLEY
GEOLOGIC CROSS SECTION D-D'
1975

0 3000 6000 FT.
SCALE

ELEVATION IN FEET - U.S.G.S. DATUM



41N/9W-11F
Clark Creek

41N/9W-2E

42N/9W-34K

42N/9W-34C

Scott River

42N/9W-23J

Scott River

42N/9W-14N

42N/9W-14F

42N/9W-10QI

42N/9W-10M

42N/9W-10KI

42N/9W-2N

Scott River

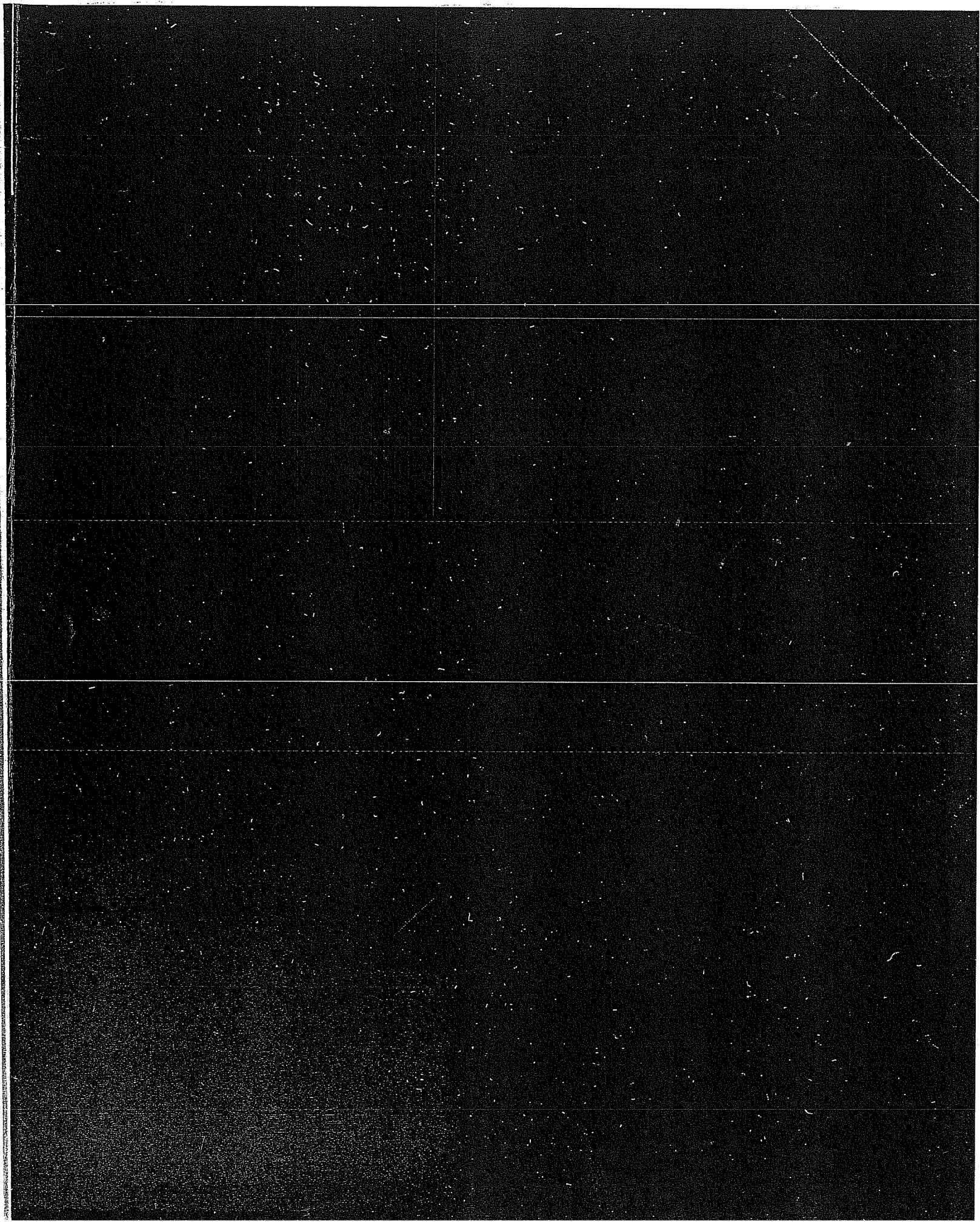
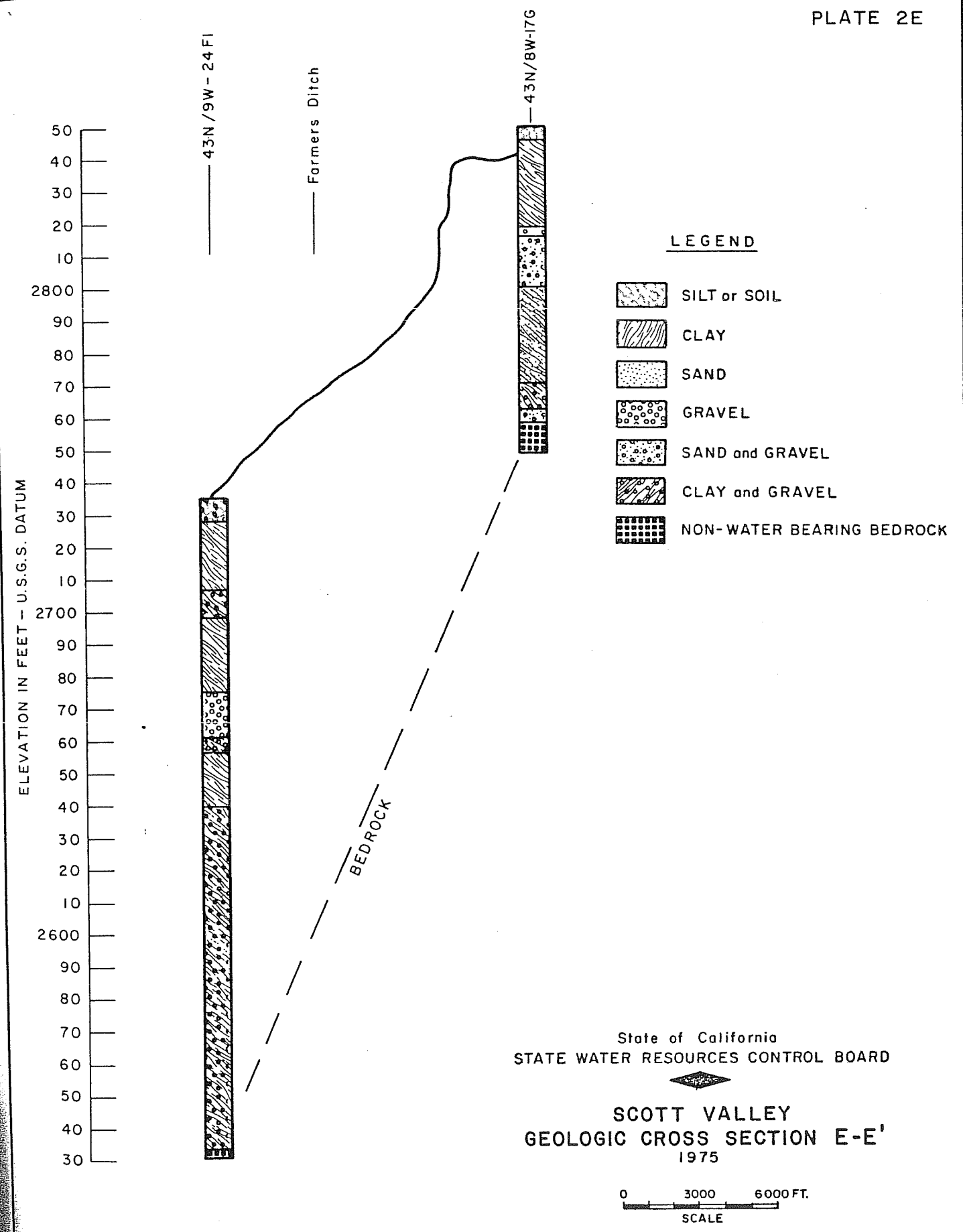
42N/9W-26I

43N/9W-35Q

Scott River

BEDROCK

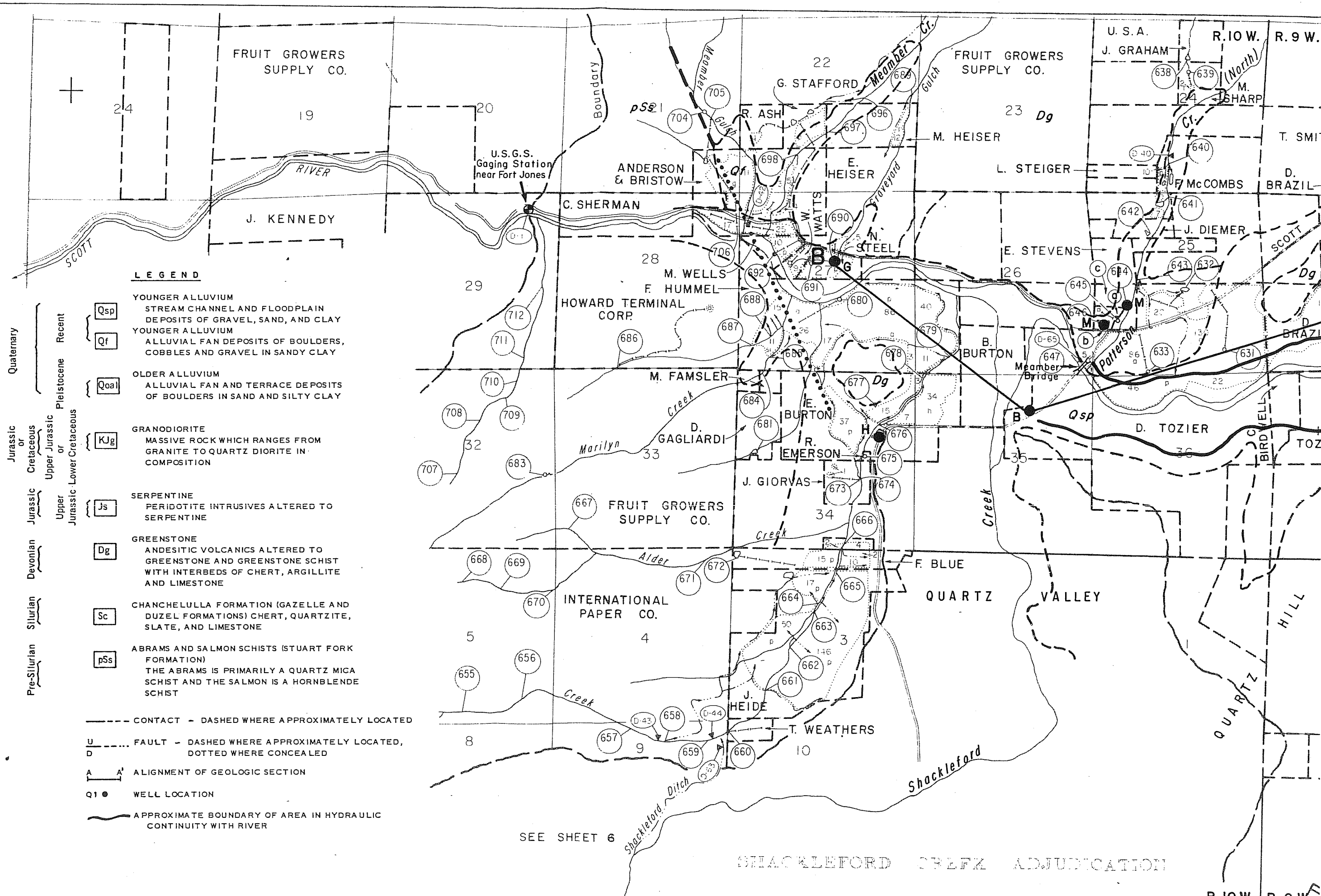
BEDROCK

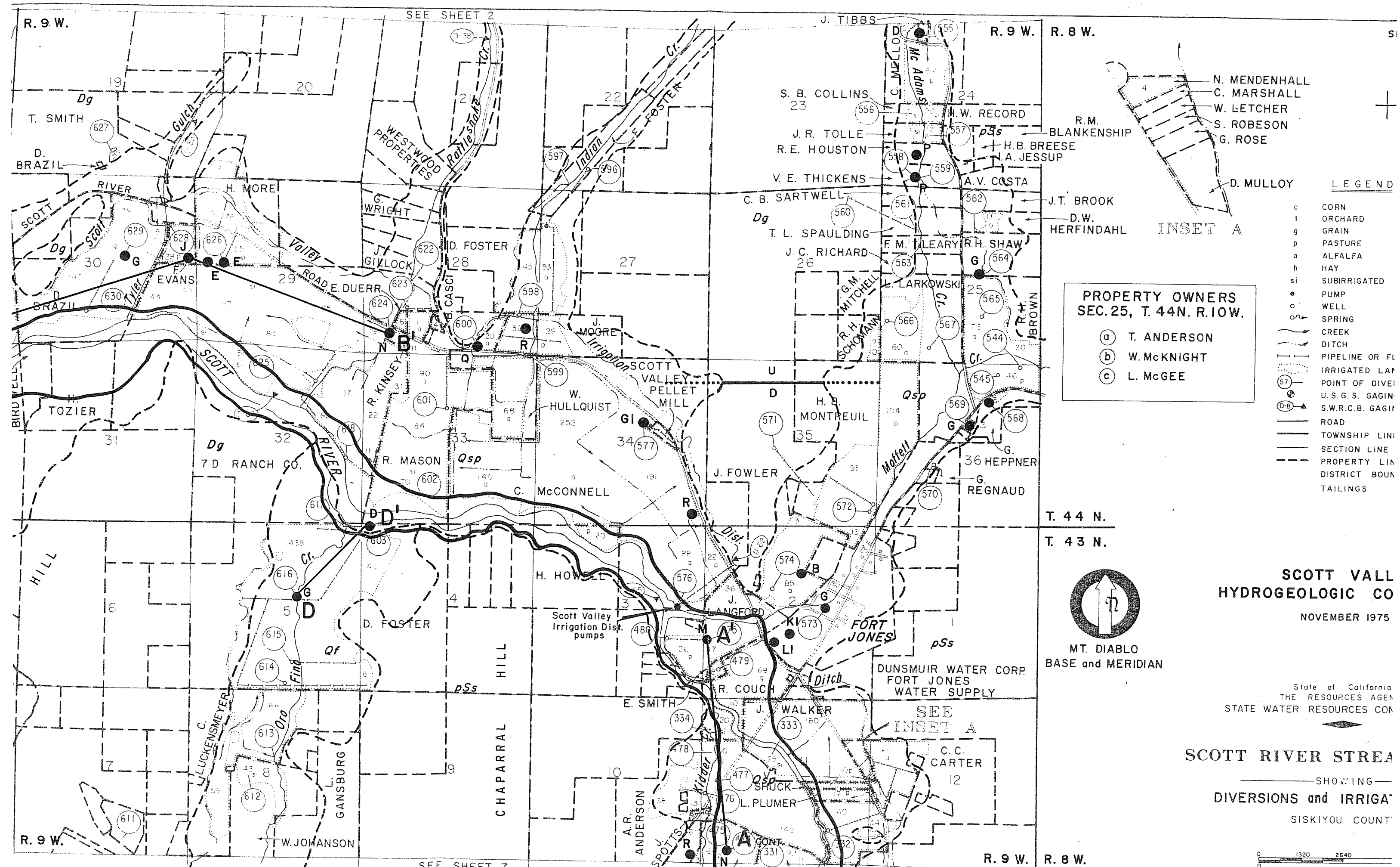


GROUNDWATER SURFACE ELEVATION IN FEET - U.S.G.S. DATUM

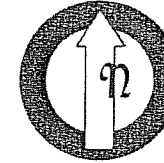


NOTE: LOCATIO









MT. DIABLO
BASE and MERIDIAN

LEGEND

YOUNGER ALLUVIUM
STREAM CHANNEL AND FLOODPLAIN
DEPOSITS OF GRAVEL, SAND, AND CLAY
YOUNGER ALLUVIUM
ALLUVIAL FAN DEPOSITS OF BOULDERS,
COBBLES AND GRAVEL IN SANDY CLAY
OLDER ALLUVIUM
ALLUVIAL FAN AND TERRACE DEPOSITS
OF BOULDERS IN SAND AND SILTY CLAY

GRANODIORITE
MASSIVE ROCK WHICH RANGES FROM
GRANITE TO QUARTZ DIORITE IN
COMPOSITION

SERPENTINE
PERIDOTITE INTRUSIVES ALTERED TO
SERPENTINE

GREENSTONE
ANDESITIC VOLCANICS ALTERED TO
GREENSTONE AND GREENSTONE SCHIST
WITH INTERBEDS OF CHERT, ARGILLITE
AND LIMESTONE

CHANCELULLA FORMATION (GAZELLE AND
DUZEL FORMATIONS) CHERT, QUARTZITE,
SLATE, AND LIMESTONE

ABRAMS AND SALMON SCHISTS (STUART FORK
FORMATION)
THE ABRAMS IS PRIMARILY A QUARTZ MICA
SCHIST AND THE SALMON IS A HORNBLende
SCHIST

CONTACT - DASHED WHERE APPROXIMATELY LOCATED

FAULT - DASHED WHERE APPROXIMATELY LOCATED,
DOTTED WHERE CONCEALED

ALIGNMENT OF GEOLOGIC SECTION

WELL LOCATION

APPROXIMATE BOUNDARY OF AREA IN HYDRAULIC
CONTINUITY WITH RIVER

LEGEND

c CORN
f ORCHARD
g GRAIN
p PASTURE
a ALFALFA
h HAY
si SUBIRRIGATED
• PUMP
o WELL
o SPRING
CREEK
DITCH
PIPELINE OR FLUME
IRRIGATED LAND
57 POINT OF DIVERSION
U.S.G.S. GAGING STATION
D-8 S.W.R.C.B. GAGING STATION
ROAD
TOWNSHIP LINE
SECTION LINE
PROPERTY LINE
DISTRICT BOUNDARY
TAILINGS

SCOTT VALLEY
HYDROGEOLOGIC CONDITIONS

NOVEMBER 1975

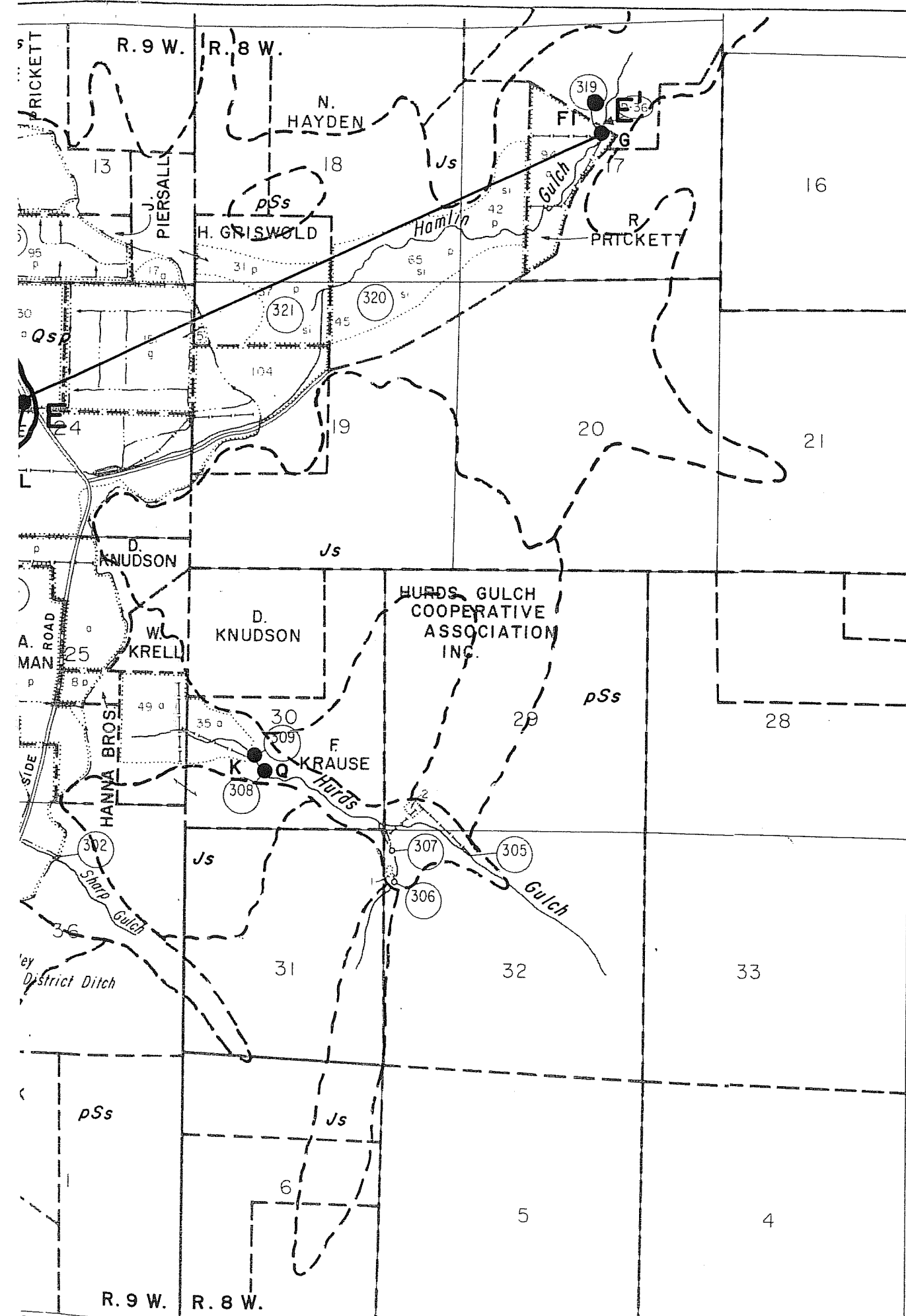
State of California
THE RESOURCES AGENCY
STATE WATER RESOURCES CONTROL BOARD

SCOTT RIVER STREAM SYSTEM

SHOWING
DIVERSIONS and IRRIGATED LANDS

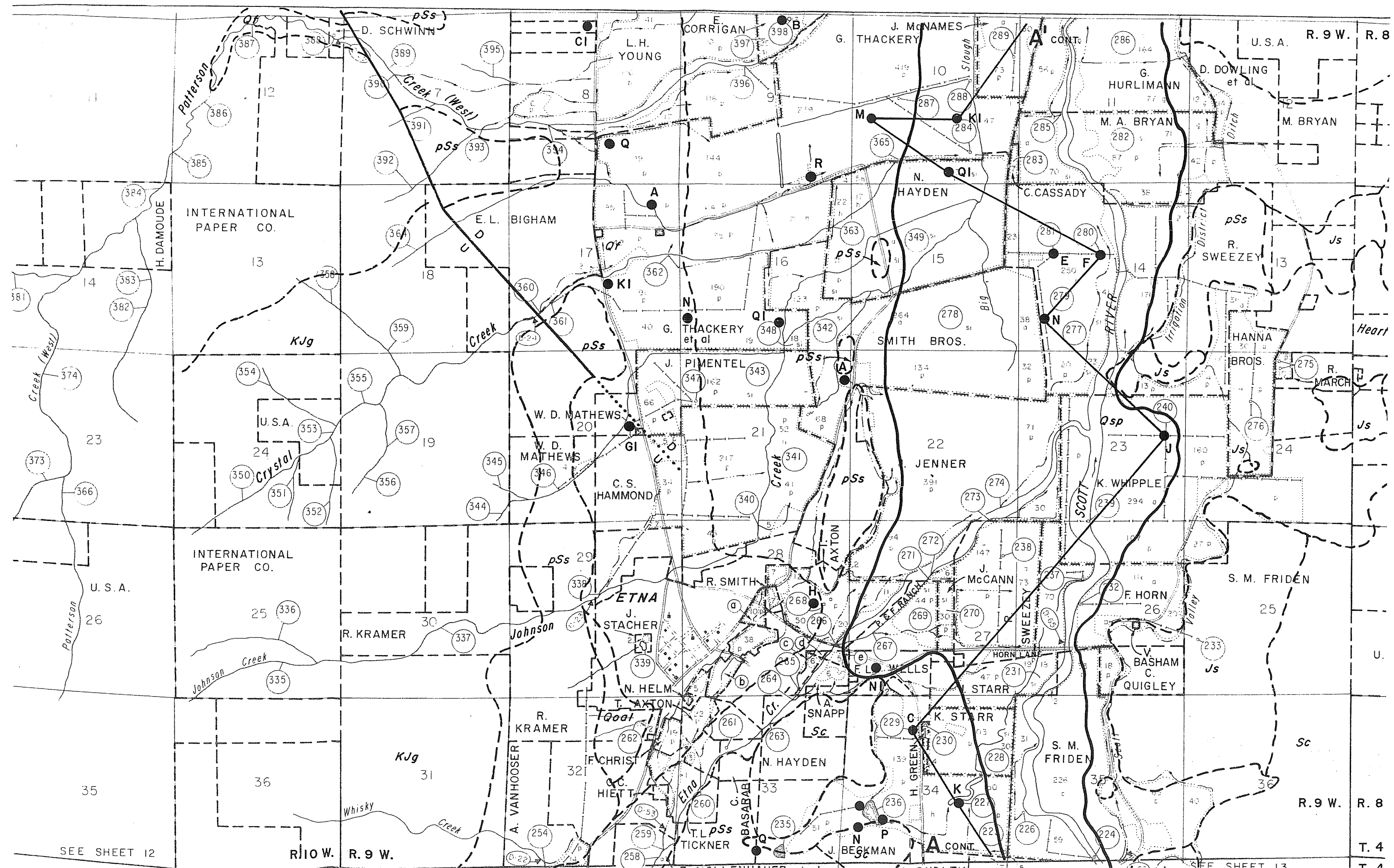
SISKIYOU COUNTY

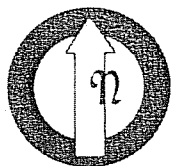
0 1320 2640 5280 FEET



SEE SHEET 8

T. 43 N.
T. 42 N.





MT. DIABLO
BASE and MERIDIAN

LEGEND

- c CORN
- t ORCHARD
- g GRAIN
- p PASTURE
- a ALFALFA
- h HAY
- si SUBIRRIGATED
- PUMP
- o WELL
- SPRING
- CREEK
- DITCH
- PIPELINE OR FLUME
- IRRIGATED LAND
- 57 — POINT OF DIVERSION
- U.S.G.S. GAGING STATION
- S.W.R.C.B. GAGING STATION
- ROAD
- TOWNSHIP LINE
- SECTION LINE
- PROPERTY LINE
- DISTRICT BOUNDARY
- TAILINGS

PROPERTY OWNERS
SEC. 28, T. 42N. R. 9W.

- (a) J. CRECHRIOU
- (b) M. WARD et al
- (c) C. SNAPP Sr.
- (d) E. SNAPP
- (e) C. SNAPP Jr.

LEGEND

- YOUNGER ALLUVIUM
STREAM CHANNEL AND FLOODPLAIN
DEPOSITS OF GRAVEL, SAND, AND CLAY
- YOUNGER ALLUVIUM
ALLUVIAL FAN DEPOSITS OF BOULDERS,
COBBLES AND GRAVEL IN SANDY CLAY
- OLDER ALLUVIUM
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OF BOULDERS IN SAND AND SILTY CLAY
- GRANODIORITE
MASSIVE ROCK WHICH RANGES FROM
GRANITE TO QUARTZ DIORITE IN
COMPOSITION
- SERPENTINE
PERIDOTITE INTRUSIVES ALTERED TO
SERPENTINE
- GREENSTONE
ANDESITIC VOLCANICS ALTERED TO
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SCHIST

--- CONTACT --- DASHED WHERE APPROXIMATELY LOCATED

U --- FAULT --- DASHED WHERE APPROXIMATELY LOCATED,
D --- DOTTED WHERE CONCEALED

A — A' ALIGNMENT OF GEOLOGIC SECTION

Q1 • WELL LOCATION

— APPROXIMATE BOUNDARY OF AREA IN HYDRAULIC
CONTINUITY WITH RIVER

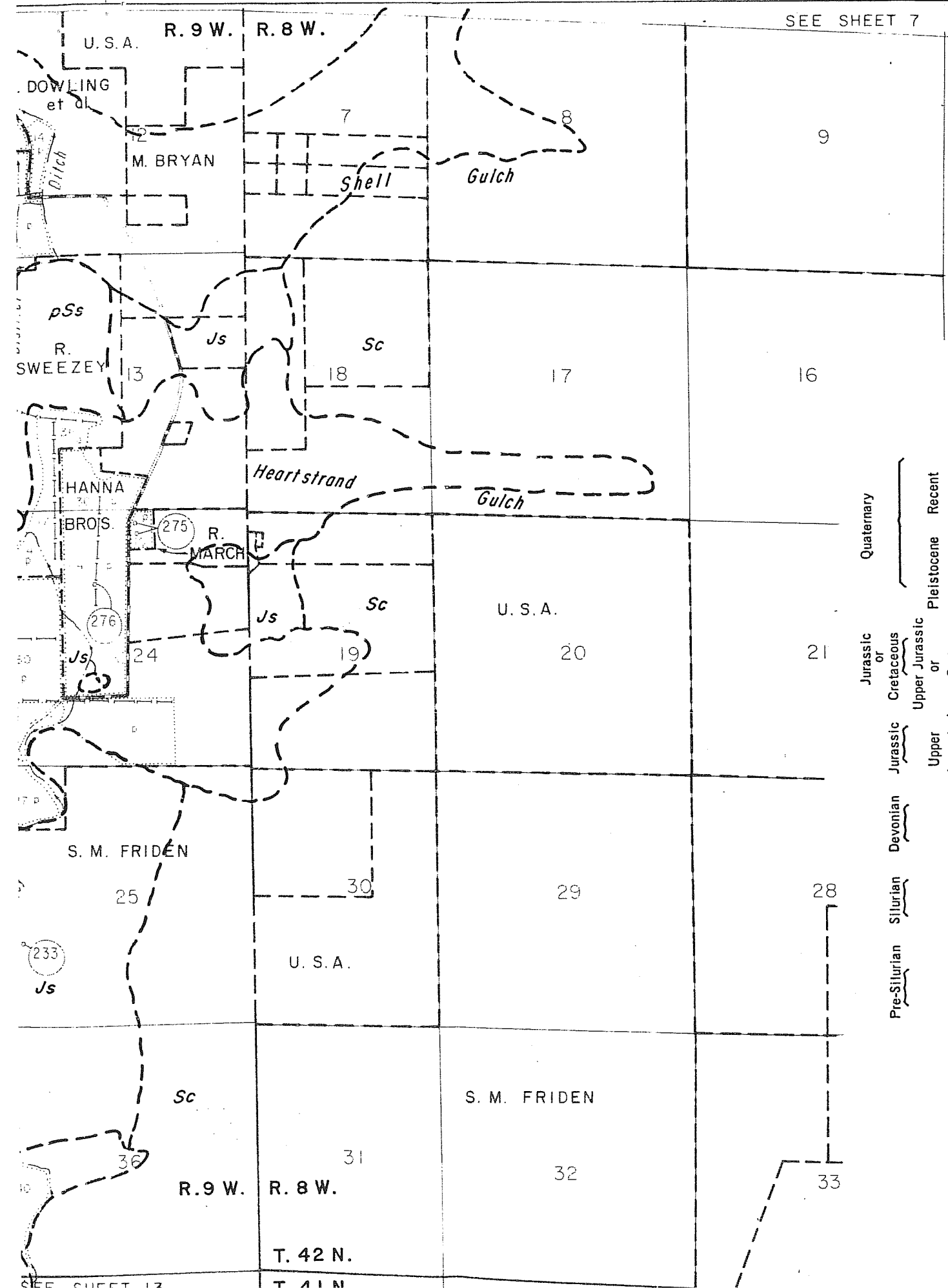
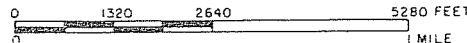
SCOTT VALLEY
HYDROGEOLOGIC CONDITIONS

NOVEMBER 1975

State of California
THE RESOURCES AGENCY
STATE WATER RESOURCES CONTROL BOARD

SCOTT RIVER STREAM SYSTEM

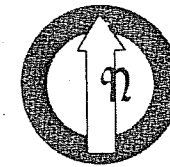
— SHOWING —
DIVERSIONS and IRRIGATED LANDS
SISKIYOU COUNTY



SEE SHEET 10

T. 42 N.

T. 41 N.

MT. DIABLO
BASE and MERIDIAN

LEGEND

- c CORN
- t ORCHARD
- g GRAIN
- p PASTURE
- a ALFALFA
- h HAY
- si SUBIRRIGATED
- PUMP
- o WELL
- SPRING
- CREEK
- - - DITCH
- PIPELINE OR FLUME
- IRRIGATED LAND
- 57 POINT OF DIVERSION
- ⊕ U.S.G.S. GAGING STATION
- ⊕-B S.W.R.C.B. GAGING STATION
- ROAD
- TOWNSHIP LINE
- SECTION LINE
- - - PROPERTY LINE
- - - DISTRICT BOUNDARY
- TAILINGS

LEGEND

- Qsp YOUNGER ALLUVIUM
STREAM CHANNEL AND FLOODPLAIN
DEPOSITS OF GRAVEL, SAND, AND CLAY
- Qf YOUNGER ALLUVIUM
ALLUVIAL FAN DEPOSITS OF BOULDERS,
COBBLES AND GRAVEL IN SANDY CLAY
- Qoa OLDER ALLUVIUM
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OF BOULDERS IN SAND AND SILTY CLAY

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--- CONTACT --- DASHED WHERE APPROXIMATELY LOCATED

U --- FAULT --- DASHED WHERE APPROXIMATELY LOCATED,
D --- DOTTED WHERE CONCEALED

A --- ALIGNMENT OF GEOLOGIC SECTION

Q1 • WELL LOCATION

--- APPROXIMATE BOUNDARY OF AREA IN HYDRAULIC
CONTINUITY WITH RIVERSCOTT VALLEY
HYDROGEOLOGIC CONDITIONS

NOVEMBER 1975

State of California
THE RESOURCES AGENCY
STATE WATER RESOURCES CONTROL BOARD

SCOTT RIVER STREAM SYSTEM

--- SHOWING ---
DIVERSIONS and IRRIGATED LANDS

SISKIYOU COUNTY

0 1320 2640 5280 FEET
0 1 MILE