STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
BEFORE THE STATE ENGINEER AND
CHIEF OF THE DIVISION OF WATER RESOURCES

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In the Matter of Application 15488 by Ernest, Irene, Ellis E. and Thelma Lewis to Appropriate Water from an Unnamed Stream Tributary via Bear Creek to San Lorenzo River in Santa Cruz County for Domestic Purposes.

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Decision A 15488 D 810

Decided December 3, 1954

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In Attendance at Investigation Conducted by the Division of Water Resources at the Site of the Proposed Appropriation on March 17, 1954:

Ernest Lewis	Representing the Applicants
Weston L. Webber Water Superintendent City of Santa Cruz	Representing the Protestant
K. L. Woodward Associate Hydraulic Engineer Division of Water Resources Department of Public Works	Representing the State Engineer

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OPINION

General Description of the Project

The applicants seek to appropriate 250 gallons per day from an unnamed tributary of Bear Creek in Santa Cruz County. Bear Creek is a tributary of San Lorenzo River. The point of diversion is

described as being within the NW¼ SW¼ of Section 21, T9S R2W, MDB&M. Diversion is to be effected by means of an earth dam, 2 feet high by 6 feet long. The conduit is to be a 1 inch galvanized pipe, 170 feet long. The water is wanted year-round for domestic purposes at two cabins occupied by a total of five people. According to the application the applicants own the proposed place of use and have acquired right of access to the proposed point of diversion.

Protest

The City of Santa Cruz protests the proposed appropriation on apprehension that increased entitlement to divert at upstream points, especially between May and November when water is most scarce, will reduce the supply available at the City's intake. It states that it diverts at a point within the SW¼ NE¼ of Section 12, T11S R2W, MDB&M, and under claims a right under License 1553/Permit 2738, mentions no terms under which its protest may be disregarded and dismissed except withdrawal of the application. As to its own use of water it states that at present it diverts a maximum of 7,000,000 gallons per day from San Lorenzo River between March and December of each year for distribution for domestic, commercial, industrial and irrigation purposes among inhabitants of Santa Cruz and its environs.

Answer

No answer to the protest is of record.

Field Investigation

The applicants and the protestant with the approval of the Department having stipulated to the submittal of the application and protest upon the official records of the Department, a field investigation was conducted on March 17, 1954 by an engineer of the Division. The applicants and the protestant were present or represented during the investigation.

Records Relied Upon

Applications 4017, 5215, 8999, 15488, 15686 and all data and information on file therewith; Santa Cruz Quadrangle and Water Supply Papers, Part 11 -- Pacific Slope Basins in California, United States Geological Survey; Bulletin No. 5, State Water Resources Board -- Santa Cruz-Monterey Counties Investigation.

Information Secured by Field Investigation

The report covering the field investigation of March 17, 1954 contains among other statements the following:

> "The source is a typical mountain stream heading on the southeastern slopes of Bear Canyon approximately 2 miles northeast of the town of Boulder Creek. The watershed is steep and very heavily wooded. The stream,

a tributary of Bear Creek, is approximately 0.75 mile in length and according to Mr. Lewis is maintained even during the dry period by at least two springs some distance above the point of diversion. The estimated flow of the stream at its confluence with Bear Creek, about 200 feet below the point of diversion, was, at the time of the investigation, approximately 50 gallons per minute. Bear Creek at that point was flowing approximately 15 c.f.s. The area had experienced a considerable rainstorm on the day prior to the investigation and undoubtedly these flows were unusually large due to this storm. Mr. Lewis stated that from his observations during recent years he would estimate that the minimum flow at the point of diversion would possibly be around 10 gallons per minute."

"A temporary log and boulder dam about 1 foot high by 6 feet long had been placed in the streambed and water was diverted thereby into a 1-inch galvanized pipe and allowed to flow by gravity approximately 170 feet to the place of use. The capacity of the system was measured to be 3.75 gallons per minute. A ... pump and small regulatory tank had been installed at the lower end of the system to provide adequate pressure at the place of use. The place of use consists of two 5-room fully plumbed cabins which are used only intermittently, such as week-ends, vacations, etc."

"No outside use was visible except for possibly allaying dust. The cabins are situated on a 5.25-acre tract which extends to the center of Bear Creek for a distance of about 100 yards on the northwestern boundary below the confluence of the unnamed stream with Bear Creek with the point of diversion being located on property of the Estate of Henry L. Middleton."

"According to Mr. Lewis the property to be served was purchased by the applicants in 1948, the diversion system was complete and water was in use at that time. He had no information as to the length of time the water may have been used by prior owners."

"The City of Santa Cruz normally depends on San Lorenzo River water only during the period of from March through November and imports its water during the remainder of the year from Laguna Creek and other sources on the coast. According to Mr. Webber the City's filtration plant is inadequate to handle water from San Lorenzo River during the high flow period due to its muddied condition."

"During the period of operation the City maintains two pumps on the river with a combined capacity of 4500 gallons per minute. It also has two wells near the river with a total capacity of 1600 gallons per minute. These wells are maintained for an emergency supply in the event the storage tanks of 45 million gallons capacity plus the two river pumps may not be adequate to meet peak demand, which at times according to Mr. Webber has equalled 9 million gallons per day. These additional pumps have normally been operated only 3 or 4 days per year, however. Mr. Webber has been associated with the Water Department since 1946 and stated that to his knowledge water has always passed the City's point of diversion, except during late August of 1947. With the exception of that shortage he estimated that flow past the point of diversion has never been less than 2 c.f.s. The City normally pumps two eight-hour shifts per day at a maximum rate of 4500 gallons per minute. No diversion is made during the other eight-hour period."

"The San Lorenzo River, a stream to which the source presently under consideration is indirectly tributary, flows through one of the most important recreational areas on the Pacific Coast. The river rises near the crest of the Coast Range Mountains and flows in a southerly direction for some 25 miles into Monterey Bay at the City of Santa Cruz. Along its course are popular vacation resorts .... This is strictly a recreational area ...."

Information from Other Sources

The protestant City of Santa Cruz has filings before this office as follows:

Application 4017 Permit 2372 License 1553 to divert 6.2 cubic feet per second year-round from surface and subsurface flow of San Lorenzo River at a dam within the SE¼ NW¼ of projected Section 12, T11S R2W, MDB&M, and from four nearby wells, for municipal and domestic purposes, within Santa Cruz and its environs.

Application 5215 Permit 2738 to divert an additional 25 cubic feet per second, year-round, at the same points and for the same purposes as set forth in Application 4017. Application 5215 provides for considerable increase in the City's requirements. According to Permittee's most recent progress report total diversion by the City during July, 1953, the month of maximum use, averaged about 7.2 cubic feet per second.

Among other filings to appropriate from San Lorenzo River or from its tributaries are the following:

Application 8999 Permit 5299, Riverside Grove Water Company, for 0.10 cubic foot per second from about November 1st to about June 1st, from San Lorenzo River, at a point within the NW¼ SE¼ of Section 1, T9S R3W, MDB&M, for domestic purposes. As originally filed Application 8999 contemplated diversion year-round. It was protested by numerous parties, including the City of Santa Cruz. Grounds for objection expressed in one or another of the protests included fear of interference with some present use, fear of infringement of some riparian right, fear that the proposed diversion would impair or destroy recreational values, fear of increase of the mosquito nuisance, fear of loss of available water supply for fire protection, fear that unsanitary conditions would result. The protests against Application 8999, except the protest by the City of Santa Cruz, appear for the most part to have been initiated by owners of property located

above the mouth of Bear Creek. The application was heard and after due consideration of available information, including the hearing testimony, it was approved subject to the condition that diversions thereunder be limited to periods extending from about November 1st to about June 1st. The decision in the matter of Application 8999 includes the following passage:

> " ... the flow in this stretch of the river during the period from about June 1st to about October 31st doubtless falls frequently as low as 1½ to 2½ second feet, seldom averages more than 4 second feet and on occasion entirely ceases. Any further depletion of this flow will seriously interfere with the extensive use which is made in swimming pools; will increase the number and duration of periods when there is no flow thereby creating a health menace through stagnant pools and increase in the annoyance by mosquitos; and above all will grievously impair the healthful enjoyment which abutting landowners and all visitors to this area share as a result of the natural summer flowage in San Lorenzo River."

The flow of San Lorenzo River at Big Trees has been recorded by the United States Geological Survey since 1937. The Big Trees gaging station scales approximately 8.5 miles downstream from the point where Bear Creek enters San Lorenzo River; it scales approximately 3.5 miles upstream from the intake of the City of Santa Cruz. Flow during the period of record is reported (in United States Geological Survey Water Supply Papers) to have ranged from a maximum of 24,000 cubic feet per second to a minimum of 0.8 cubic feet per second and to have averaged 141 cubic feet per second. The data indicate no important diversions from

or accretions to the San Lorenzo River in the reach between the gage and the City of Santa Cruz intake. Flow during the 14 water-years of published record (1937-38 to 1950-51) averaged less than 10 cubic feet per second on 46 days, which is 46/(14 x 365) or less than 1% of the time; it averaged less than 15 cubic feet per second on 443 days, which is 443/(14 x 365) or 8.65% of the time.

Information bearing upon the water supply of the protestant City of Santa Cruz and of other users within San Lorenzo River system is contained in Bulletin No. 5, State Water Resources Board, "Santa Cruz-Monterey Counties Investigation", August, 1953. Pertinent extracts from that bulletin are:

> "Objectives of the Santa Cruz-Monterey Counties Investigation included investigation and study of the nature, occurrence, and amount of water resources, both surface and underground; survey of the location, type and extent of water utilization under present development; estimation of future water requirements for all beneficial uses; evaluation of present and future water problems; development of preliminary plans for securing supplemental water supplies to meet immediate and ultimate needs; and estimates of cost." (Pages 15 and 16)

> "In order to facilitate reference to its several parts, the Santa Cruz-Monterey Area was divided into four principal hydrographic units .... These were designated 'North Coastal Unit', "San Lorenzo Unit', 'Soquel Unit', and 'Pajaro Unit' . . . The San Lorenzo Unit includes the watershed of the San Lorenzo River and the coastal drainage ...." (Page 17)

> "Boulder, Bear and Zayante Creeks are the principal tributaries of the San Lorenzo River." (Page 18)

> "The 1950 federal census showed that the population of Santa Cruz County was 66,534, a substantial increase

over the 1940 population of 45,057 . . . The 1950 census enumerated 21,970 persons in Santa Cruz ...." (Page 19)

"The San Lorenzo River and its tributaries constitute the second largest system in the ... area, draining almost the entire San Lorenzo Unit, and discharging into the Pacific Ocean at Santa Cruz." (Page 24)

"Runoff originating within the Santa Cruz-Monterey Area closely approaches natural flow . . . There are no importations or exports." (Page 25)

"A considerable area along the San Lorenzo River was classified as urban and suburban rather than recreational, due to its permanent year-round habitation and commercial enterprise, even though it is supported largely by recreational development." (Page 47)

"Water requirement in the North Coastal, San Lorenzo, and Soquel Units is primarily by urban areas." (Page 54)

"The average seasonal urban demand for water in the Santa Cruz-Monterey Area, which is largely obtained from surface diversion, is considerably less than the total seasonal water supply presently available. However, in many of the water systems supplying urban and recreational service the peak demand rates roughly coincide with and may exceed minimum flows in the streams. As an example, if the draft by the City of Santa Cruz on the San Lorenzo River during 1947 had followed the average pattern into September, the city would have been required to ration water. In design of works to meet urban water demand it is common practice to provide for a full water supply without defieiency at any time. However, it has been the experience of many communities in California that substantial deficiencies may be endured for extended periods of time by rationing the limited water supplies on hand." (Page 55)

"At the present time significant requirements for supplemental water in the North Coastal, San Lorenzo, and Soquel Units are limited to Santa Cruz and neighboring suburbs served by the City of Santa Cruz Water Department. The present water problem is not due to a shortage of total seasonal supply, but rather to lack of facilities for regulating that supply. Peak demands occur at times of minimum stream flow, although a large amount of run-off

wastes to the ocean at other times . . . The derivation of the present seasonal deficiency, or supplemental water requirement, of the City of Santa Cruz Water Department, estimated to be about 600 acre-feet, is presented ...." (Page 57)

"Surveys and studies in connection with the Santa Cruz-Monterey Counties Investigation indicate that it would be feasible from the engineering standpoint to so regulate and conserve the flow of streams of the Santa Cruz-Monterey Area as to yield firm new water supplies in excess of the probable ultimate supplemental requirements of the North Coastal, San Lorenzo, Soquel, and Pajaro Units." (Page 60)

" ... the 'Zayante Project', could provide supplemental water to the service area in the San Lorenzo River basin north of Santa Cruz, while ... the 'Doyle Gulch' project could provide supplemental water to the service area in and adjacent to the City of Santa Cruz." (Page 65)

" ... the 'Zayante Project'... consisted of conservation of run-off of Zayante Creek by construction of a dam and reservoir on the creek ... about five miles northeast of Felton. Studies indicated that this plan would provide new water in the amount of the desired initial yield for the service area in the San Lorenzo River basin north of Santa Cruz." (Page 65)

The maximum diversion within one month from San Lorenzo River by the City of Santa Cruz during the period from 1950 to 1953, inclusive, according to recent Report of Licensee under Application 4017 and Progress Report under Application 5215, was 144,399,000 gallons pumped during August 1950. That pumpage within one month is equivalent to an average rate during that month of about 7.22 cubic feet per second.

Discussion

Two hundred fifty gallons per day, the amount sought by the applicants, is equivalent to 0.000387 cubic foot per second, a very small amount in comparison with 7.22 cubic feet per second, the average rate during the month when use by the City of Santa Cruz was greatest. The flow of San Lorenzo River at Big Trees reportedly averaged substantially more than 7.22 cubic feet per second every day of the 14 years of streamflow record. Daily mean flows reportedly exceeded 10 cubic feet per second on about 99% and 15 cubic feet per second on about 91% of the days of the same 14-year period. Plainly, under present conditions the applicants can divert as they propose, almost constantly, without injury to the City of Santa Cruz; and they can so divert some 91% of the time when demand by that City has approximately doubled.

Objections raised in the matter of Application 8999 other than the objection by the City of Santa Cruz — based upon apprehension of interference with its present use — were not the subject of protests against Application 15488. Such objections — fear of infringement of some riparian right, fear that the proposed diversion would impair or destroy recreational values or increase the mosquito nuisance or deplete the supply for fire protection or worsen sanitary conditions — apparently do not apply in the matter of Application 15488. Most of the protestants against Application 8999 were

concerned primarily with flows in the reach above the mouth of Bear Creek and cannot therefore be affected by diversion from a tributary of that stream. There is no evidence at hand that any downstream user would be injured materially if at all.

Summary and Conclusion

The applicants seek to appropriate 250 gallons per day, year-round, from an unnamed tributary of Bear Creek in Santa Cruz County for domestic purposes.

The application is protested by the City of Santa Cruz on apprehension that an increase of diversions at points upstream will reduce the supply available to that City, especially at times of low stages in San Lorenzo River.

No answer to the protest is of record.

The parties stipulated to proceedings in lieu of hearing and a field investigation was conducted on March 17, 1954. According to the report covering that investigation the unnamed stream drains a steep, heavily wooded watershed, is said to be perennial, was discharging about 50 gallons per minute; Bear Creek at the same time was discharging about 15 cubic feet per second, rain had fallen the day before the investigation; Applicant Lewis stated the least flow of the source to have been about 10 gallons per minute, a diversion system 3.75 gallons per minute in capacity was in place and operating, use consists of service to 2 fully plumbed cabins which

are used intermittently, the point of diversion is within lands belonging to the Middleton Estate; Mr. Lewis stated that the applicants own the place of use, that they bought it in 1948, that the diversion system was then in operation; the City of Santa Cruz normally diverts from San Lorenzo River only from March to November inclusive, securing its supply from Laguna Creek and other sources at other times, San Lorenzo River then being too muddy for the City's filtration plant to handle; the City maintains 2 pumps on San Lorenzo River of a combined capacity of 4500 gallons per minute, it has 2 wells near San Lorenzo River which together yield 1600 gallons per minute and it has storage tanks of an aggregate capacity of 45,000,000 gallons; Water Superintendent Webber stated that the City's peak demand has equalled 9,000,000 gallons per day, that within his local experience which dates from 1946 water has always passed the City's intake except in late August of 1947, that with the exception of that time of shortage flow past the City's intake has never been less than about 2 cubic feet per second, that the City normally pumps two 8-hour shifts per day at a maximum rate of 4500 gallons per minute, that no diversion is made during the other 8 hours; San Lorenzo River flows through an importaht recreational area.

The City of Santa Cruz holds Application 4017 Permit 2372 License 1553 and Application 5215 Permit 2738 to divert 6.2 cubic feet per second and 25 cubic feet per second respectively from San Lorenzo River at points within Section 12, T11S R2W, MDB&M, for municipal and

domestic purposes within Santa Cruz and its environs. Diversion during the month of maximum use is reported to have averaged about 7.2 cubic feet per second.

Riverside Grove Water Company holds Application 8992 Permit 5299 covering a diversion of 0.10 cubic foot per second from San Lorenzo River at a point roughly 4 miles above the mouth of Bear Creek, for domestic purposes. The application was heard and approved subject to restriction of diversions to periods extending from about November 1 to about June 1, the Division's decision in that regard stating:

> "The flow in this stretch of the river during the period from about June 1 to about October 31 doubtless falls frequently as low as 1½ to 2 second-feet ... and on occasion entirely ceases. Any further depletion ... will seriously interfere with ... swimming pools; will increase the number and duration of periods when there is no flow thereby creating a health menace ... ; and ... will grievously impair the healthful enjoyment which abutting land owners and all visitors to this area share as a result of the natural summer flowage ...."

United States Geological Survey gagings of San Lorenzo River at Big Trees (8.5 miles below Bear Creek, 3.5 miles above the City of Santa Cruz intake) indicate that the flow past that point over a 14-year period of record has averaged 141 cubic feet per second, and that monthly mean flows have exceeded 7.22 cubic feet per second all of the time, 10 cubic feet per second about 99% of the time, 15 cubic feet per second about 91% of the time.

protest having been filed, stipulations having been submitted, a field investigation having been conducted and the State Engineer now being fully informed in the premises:

IT IS HEREBY ORDERED that Application 15488 be approved and that a permit be issued to the applicants subject to such of the usual terms and conditions as may be appropriate.

WITNESS my hand and the seal of the Department of Public Works of the State of California this 3rd day of December 1954.

A. D. EDMONSTON
State Engineer

Bulletin No. 5, State Water Resources Board -- Santa Cruz-Monterey Counties Investigation -- indicates that water resources within the San Lorenzo River watershed potentially exceed foreseen demand.

The information above summarized points to the conclusion that under present conditions the applicants can divert in the manner that they propose without injury to the City of Santa Cruz and that they can so divert some 90% or more of the time until demand by that City has approximately doubled. It points to the further conclusion that the considerations that led to the limitation of diversions under Application 8999 to periods extending from November 1 to June 1 do not necessitate limitation of diversions under Application 15488. In view of these conclusions it is the opinion of this office that unappropriated water usually exists in the source from which appropriation is sought under Application 15488, that such water may be taken and used in the manner proposed by the applicants without injury to other users and that Application 15488 should therefore be approved and permit issued, subject to the usual terms and conditions.

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ORDER

Application 15488 for a permit to appropriate water having been filed with the Division of Water Resources as above stated, a