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DEPARTMENT OF WATER SUPPLY
OF THE
COUNTY OF HAWAII
HILO, HAWAII

F I N A L

ENVIRONMENTAL IMPACT STATEMENT

FOR THE

PAPAIKOU-KAIEIE-KALAOA WATER SYSTEM

PAPAIKOU-KAIEIE-KALAOA

SOUTH HILO, HAWAII

PURSUANT TO SECTION 102 (2)(c), P. L. 91-190
AND SECTION 4 (f), P. L. 89-670

JUNE 1972

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APPENDIX:

GENERAL LOCATION PLAN OF PROJECT AREA

ENVIRONMENTAL IMPACT STATEMENT
FOR THE
PAPAIKOU-KAIEIE-KALAOA WATER SYSTEM

1. PROJECT DESCRIPTION AND PURPOSE

The Papaikou-Kaieie-Kalaoa Water System serves three communities consisting of residential homes, an elementary and intermediate school, and supporting facilities. Although these locations are adjacent to one another and interconnected, each system has a separate source. Of these, only the Kaieie source is dependable. During dry seasons Papaikou and Kalaoa become deficient in water supply. Kaieie Springs, however, produce more than what is needed for the Kaieie system. In addition, water from the Kalaoa source is highly corrosive which has encrusted the barrel of the pipe with a loose coating of rust that has constantly caused complaints of rusty and dirty water. The Kalaoa source which contains poor quality water will be abandoned. The system will receive water from the Kaieie Springs source and the proposed deep well.

The proposed project is to improve the source, to drill and develop a well, to increase the size of the transmission line from Kaieie Springs and to install large trunk lines with non-corrosive linings adequate to serve Kaieie Homesteads, Papaikou Village and Kalaoa Homesteads together with the necessary storage facilities.

The estimated population to be served by this project is 1890 and consists of various ethnic groups which make up our State-wide

population. An average family consists of four (4) persons with an average annual income of \$6500.

Land allocation, according to the County General Plan, depicts Papaikou village as a medium density urban core with its immediate environs being low density residential.

It can be considered a bedroom community for the greater urban area of Hilo and as such be attractive to those desiring a more rural setting close to the city.

The Kalaniana'ole Elementary and Intermediate School, situated in the community of Papaikou, has a student body of 929 students. A growth of 18% in the population of the census period 1960-1970 and the major capital improvements made to the school facilities in the last five years are indications of the continued growth pattern in this area.

However, because of the development of a home site subdivision at Pepeekeo, approximately 4 miles north of the project site, the anticipated growth within the Papaikou-Kaieie-Kalaoa area maybe somewhat slower.

Balancing this however is the imminent merger of the Mauna Kea (Hilo) Sugar mill with Papaikou at the latter location.

The area closest to the proposed well is under consideration by the sugar company to be taken out of consideration for urban uses and thus revert to agriculture. The allocated area being decreased is intended to be allotted to Pepeekeo for the subdivision mentioned above.

The small, inadequate lines (2", 2- $\frac{1}{2}$ ", and 3" galvanized iron pipes) are unable to furnish adequate water for health, domestic and fire

protection purposes. Water mains will be sized to provide fire protection. A serious housing shortage exists in the County of Hawaii and the improvements to these systems will enable our Department to allow additional low and moderate income homes to be constructed. Under present conditions, additional construction of residential units and subdivision of residential lots have been curtailed because of the inadequate corrosive pipelines.

Planning is estimated to take three (3) months to complete. Shipment and delivery of materials would take another three (3) months and construction, approximately nine (9) months.

A project of this magnitude is beyond the scope of our financial ability. We have on a yearly basis submitted to the State legislature a request for funds to implement our Capital Improvement Program. The State and County in their own priority have included this project in their budgets. At the present time the estimated project cost is \$510,000 of which \$365,000 has been appropriated by the State and the County governments. The balance, if approved, would be funded by a grant of \$226,100 from the Department of Housing and Urban Development.

This project will serve a residential area as zoned by the County Planning Commission, which is the area-wide planning organization for the County of Hawaii of which we are a member. Also, this project is master planned in our 701 water study which was made a part of the County's General Plan.

II. PROBABLE IMPACT ON THE ENVIRONMENT

No significant impact on the environment is foreseen. Water mains will be buried in trenches and the concrete reservoir will be painted to blend with the background. The old water lines will be removed and disposed of at the County disposal site. The pump for the well will be installed within the existing reservoir site. Grading of land will be done to channel runoff to existing ditches and any amount of runoff will be negligible because of the relatively small land area required for the reservoir site in relation to the surrounding cane lands. Grading will also follow guidelines laid out by the soil conservation service and all disturbed or graded areas will be revegetated to minimize erosion. No appreciable ground water losses are anticipated because 300 inches of rainfall annually will provide a natural recharge.

Land is presently zoned agriculture and now planted in cane. Construction of the facilities will not alter the use of land.

These improvements should raise the standards of living because the improvements to the system will provide an ample supply of water for health, domestic and fire protection purposes.

III. PROBABLE ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

This project may indirectly increase cost to taxpayer by the increase in land values because of these improvements. Increase in land values could subsequently cause an increase in real estate taxes. Construction of the above ground concrete tanks and pump stations is unavoidable because of the extremely high construction cost to install these facilities underground. These facilities will only occur every two

years when the cane is harvested. Even then, this exposure will only be temporary until the growth of the surrounding cane shields them from the general public view.

According to the report by the Division of Water and Land Development, natural recharge of the basal ground water body originates from the heavy rainfall belt (300 inches annually) located about 5 miles inland on the mauka slopes of South Hamakua. Therefore, no appreciable losses of ground water are anticipated.

Records of wells located approximately 4 miles north of the project area and situated only a few hundred feet from the shoreline produced a remarkable 3000 gallons a minute of potable ground water having a static water level about 8 feet above sea level and a chloride content of about 120 parts permillion. These figures certainly indicate that there is an ample supply of good quality water to take care of our present consumption which amounts to 173,000 gallons per day. The design period for the transmission line from Kaieie Springs to Kaieie Reservoir is twenty years. The projected demand at the end of this period is 0.50 MGD.

Should the pump run for a 16-hour period each day, the well will be required to produce approximately 520 GPM. This rate is much less than what other wells in the area are capable of producing with no noticeable ground water losses.

IV. PROJECT ALTERNATIVES

None. This is an existing system and a major portion of the

project consist of the replacement of old, inadequate water lines following the existing routes. The existing route must be followed because the primary purpose of this project is to replace these old, inadequate, corroded lines to improve the quality and quantity of water to the existing residents. The pipeline route follows the existing road through the populated areas and, therefore, any alternate route or proposal would defeat the purpose of the project.

The concrete tank will be a new structure and the drilling of a deep well will be a new addition to the system. However, these facilities are required and necessary to provide storage facilities and a dependable source of supply.

Should the well source become contaminated, an alternate would be to seek a new well source at a higher elevation beyond the contaminated area. Because of the heavy rainfall, indications are that there are other sites available to drill a successful well.

V. RELATIONSHIP BETWEEN SHORT-TERM USE AND LONG-TERM PRODUCTIVITY

The proposed improvements will facilitate both the short-term of man's environment and the maintenance and enhancement of long-term productivity.

The design period of 20 years assures immediate and future residents of an adequate and dependable supply of potable water. Further, the design is based on the master water plan which is part of the recently adopted County General Plan. These improvements will

definitely reduce maintenance and operation costs for a lengthy period of over 50 years because of the excellent quality of materials to be used in the project.

VI. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

The well will be drilled on land which is part of the existing Papaikou Reservoir site. Therefore, there will be no need to acquire any additional lands which are now planted with cane. However, the drilling of the well could commit all surrounding lands to agricultural use. The intent is to control the zoning and usage of the area surrounding the proposed well to protect the watershed and recharge area. Scheduled monitoring of the well will be done to check the water quality. Should there be any indication of the lowering of the water quality, steps will be taken to safeguard the source. We may, in the future, be compelled to institute eminent domain proceedings to increase the area of the well site to protect the recharge area.

New sources at a higher elevation would have to be developed should we be unable to protect the proposed and existing sources from contamination.

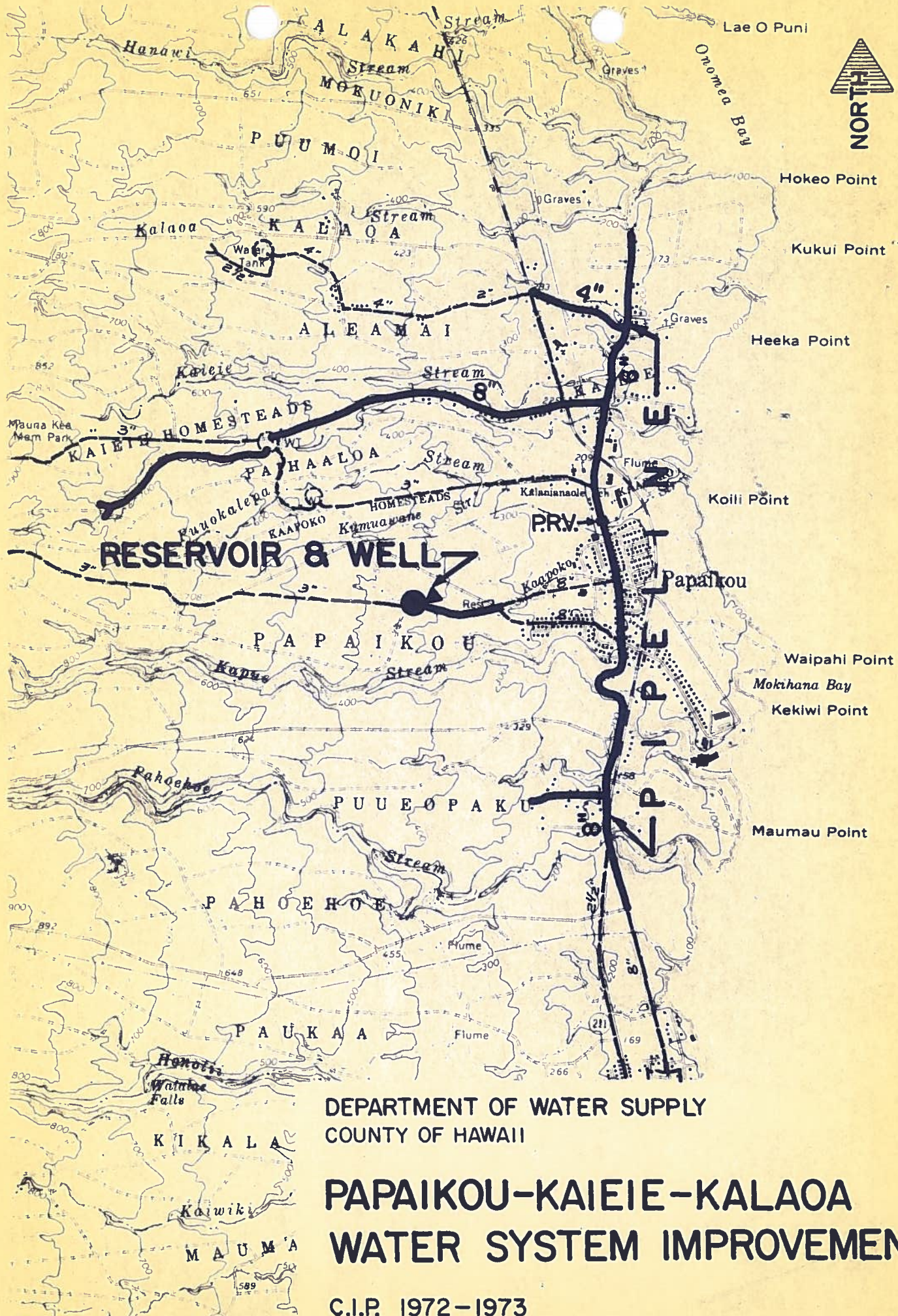
Should this area be urbanized, a sewer and solid waste disposal system must be made a part of the overall urban development. The County government together with the plantation is seeking ways to obtain Federal grants to provide facilities for a treatment plant.

This is part of the overall conformance with Water Quality Standards of the State which have been violated by virtue of cane

trash and other mill refuse and the direct dumping of sewage into the ocean by this private system. This treatment plant will alleviate much of the polluting potential from the residential zoned areas near the well.

Because of the heavy rainfall (300 inches annually) natural recharge to the basal ground water body will occur. Therefore, we do not anticipate any appreciable ground water losses.

Land required for the construction of the concrete reservoir will lessen the total area planted in cane. However, the amount of land (18,750 square feet) required does not present a major economical loss to the sugar industry.



DEPARTMENT OF WATER SUPPLY
 COUNTY OF HAWAII

PAPAIKOU-KAIEIE-KALAOA WATER SYSTEM IMPROVEMENT

C.I.P. 1972-1973
 SCALE: 1" = 2,000'

SOUTH HILLO