

ENGINEERING SERVICE COMPANY
IF IT'S ENGINEERING, WE DO IT
"SERVICE THAT INSURES PERMANENCE"
LOS ANGELES, CAL.

1316 Washington Building
August 21, 1922

PRELIMINARY REPORT ON WATER PROJECT

The demand for water in the area under consideration is of two classes, viz; domestic and irrigation. Of the domestic demand we may make a reasonable estimate. Of the irrigation service which could be developed, we can make no reliable estimate.

POPULATION:

The population of the possible area which might be served is not less than 33,000. This is based upon our own estimate, which is conservative, and is composed of the following units:

Culver City	850
Palms	1200
Beverly	850
Venice	12000
Santa Monica	<u>18250</u>
Total -	33150

PRESENT WATER CONSUMPTION:

Based on reliable figures in the case of one of the cities, and on a general estimate according to

population for the other four cities, the ordinary domestic demand would be as follows:

Culver City	100,000	Gals. per 24 hrs.
Palms	150,000	
Beverly	100,000	
Venice	1,225,000	
Santa Monica	<u>2,000,000</u>	

A total of - 3,575,000 Gals. per 24 hrs.

These amounts are now being taken care of by the various local water companies, in most cases, however, with a slender margin to spare for normal increased demand.

The demand for farming (irrigation) purposes within this area is very difficult to approximate. Truck farming in general predominates and if we may assume an acreage of 1200 acres under service, the demand for this class of service should be approximately 1,500,000 gallons per 24 hrs. This would be the average demand if the irrigation were uniformly distributed over a period of five months.

If, as has been stated, the City of Beverly Hills will contract for 100 inches per 24 hrs., there will be a demand of 1,196,000 gallons in excess of the amount already estimated for that community.

Excluding the demand of the beach cities therefore, which has been figured at 3,225,000 gallons, there would be a possible market for 3,000,000 gallons distributed as follows:

Culver City - Palms	250,000 Gals. per 24 hrs.
Beverly	1,296,000
Possible ranch services	<u>1,500,000</u>
	3,046,000 Gals. per 24 hrs.

SITUATION AT BEACH TOWNS:

The City of Venice is supplied by the Venice Water Company. The Ocean Park district within Venice is supplied by the City Water Company, and the inland or tributary district by the Fredericks Water Company. All of these Companies derive their supply from comparatively shallow wells. The City of Santa Monica is supplied by a municipal plant which obtains water both from springs and streams in two canyons northwest of Santa Monica, and from bored wells.

The present supply for Venice and Ocean Park is ample in volume; the uncertain feature in this supply lies in the possibility of well failure due to increasing hardness and general mineral content. The Santa Monica City supply is about sufficient for the present population; it is probably not in shape to meet the future considerable increase in population which seems likely in that area.

The water consumption of these towns is not definitely known. That section supplied by the Venice Water Company we know requires at peak load not less than 800,000 gallons per 24 hrs., at normal load the demand is 425,000 gals. per 24 hrs. The City water Company has an output of perhaps 800,000 gallons per day, but we have not yet determined the exact consumption. The Water consumption of Santa Monica is

not known to us but based on a present population of 18,250 which includes the section of Ocean Park included within the City, the demand could hardly be less than 2,000,000 gallons per day for domestic purposes alone:

WATER PRICES
IN OCEAN PARK -
VENICE

The retail price of water from City Water Company of Ocean Park, ranges from 25¢ per 100 cu. ft. for the first 500 cu. ft. unit to 10¢ per 100 cu. ft. for consumption over 5000 cu. ft. per day. This is equivalent to a range of from 33¢ down to 13.3 per 1000 gallons. Inasmuch as the domestic demand is the principal one, the individual rate is somewhere nearer the higher rate in each case, so that the average price received for the water is nearer the high figure. The schedule granted by the State Railroad Commission as of their order of March 27, 1922, is as follows:

0 -	500 cu. ft.	25¢ per 100 cu. ft.
500 -	1000 " "	20¢ " " " "
1000 -	5000 " "	15¢ " " " "
Over	5000 " "	10¢ " " " "

The rates charged by the Venice Water Company are in general slightly below those now allowed to the City Water Company which serves territory contiguous to that of the Venice Company.

WATER VALUA-
TION AND
OPERATING
EXPENSES

The conditions prevailing in the beach cities may be illustrated by the case of the City Water Company of Ocean Park.

The City Water Company has approximately 2200 consumers, served with 166,000 ft. of mains ranging in size from 10-inch to 1-1/4 inches.

The City Water Company of Ocean Park had a valuation of \$238,000 upon which the figures leading to the rate increase were allowed. The Company carries among its assets the following:

Equipment & Wells	\$31,361.00
Land	7,852.00
Mains	30,925.00
Services	7,488.00
Meters	<u>10,623.00</u>
Total -	88,249.00

In addition there is

Fixed Capital of	158,035.00
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included within the assets.

The net operating revenue of this company during 1921 was at the rate of approximately \$1500.00 per annum. This was before the increase in rates was authorized. The full effect of the new rates is rather difficult to appraise as yet, but the apparent increase would seem to be in the neighborhood of 25%. In any event the present net revenue of this company according to its statement of operating expense appears to be less than 2% of its capital stock issue of \$200,000.

According to the operating figures presented by the City Water Company, in its report to the Railroad

Commission, and according to our estimate of the output of the plant which is inexact, we estimate their total production cost at nearly 15 cents per 1000 gallons. Of this amount, the pumping cost which includes delivery into the mains under pressure is approximately 4.2¢ per 1000 gallons. This is very nearly the same as the pumping cost of the neighboring Venice Water Company.

Considering the conditions which prevail in the Venice - Ocean Park territory, therefore, and which we believe would apply to the adjacent territory of the Fredericks Water Company it would seem that these water companies either should be willing to re-invest or transfer the capital which they have in these plants to some other more remunerative enterprise, or to purchase water at wholesale at a rate slightly lower than their present operating costs, for retailing within their own distribution systems.

WHALESALE DISTRIBUTION:

Preliminary inspection of the area which might be served under this project indicates that the trunk main should be laid southwesterly from the well locations, and proceeding along Preuss Road, should ultimately extend along either Venice or Washington Boulevards to the junction of the Venice water system. This will make the system almost entirely a gravity one. The use of Santa Monica Boulevard or of Pico Boulevard would involve lifting the water over elevations of 120 ft. and of 70 ft. respectively,

in its course toward the beach towns.

The route via Preuss Road and Venice Boulevard would be the most desirable, and the total length of the system from the wells to a distribution point in Venice would be approximately 50,000 ft.

The location of the main along Washington Boulevard would add approximately 1000 ft. to the total length of the system.

STORAGE AND PUMPING INSTALLATION:

For the purposes of this discussion, it is assumed that pumping will be done from SIX wells, and that the combined output will be 4200 gallons per minute or 465 inches (old Calif. standard). Storage to the amount of 5,000,000 gallons would be desirable for this service. This would require a reservoir having dimensions of 250 x 100 x 27 ft. No reservoir site of this size is immediately available without very heavy cost. We have therefore considered a storage of 1,000,000 gallons in three elevated steel tanks which would provide the head for gravity service, but would not provide more than 4 hours emergency storage.

The alternative of no storage and direct pumping into the mains has been considered. A system without storage would be highly undesirable, and if storage is to be provided it could economically be combined with elevation, and gravity pressure thereby included. We have not yet investigated the cost of pumping directly into the mains.

In considering pump equipment, we assume the lift to be 60 ft., and the pumps of such type that extra pump column may be added in case of excessive draw-down in the wells. We also recommend the multiple stage turbine type of well pump. In the absence of complete data on the capacity of these wells we must assume a pump installation of 6-750 gallon pumps, motor driven with motor in the head, operating on a 60 cycle power circuit.

OF INSTALLATION:

The estimated cost of the various installations for this 4200 gals. per minute and elevated steel tank reservoirs is as follows:

Pumps, motors and installation at 6 wells	\$9600.00
3 - 300,000 gal. elevated steel tanks	14000.00
Mains, estimated, to Venice	<u>155000.00</u>
Total -	\$178600.00

OPERATING COST:

We estimate the operating cost of a plant of this capacity to be as follows:

Power	1.60¢ per 1000 Gals.
Labor	0.50
Maintenance	0.25
Lubric, etc.	<u>.008</u>
Total direct	2.43¢ per 1000 Gals.
Deprc. pump & Equip.	0.25¢ " " " Not including mains
Interest " "	<u>0.12¢</u> " " "
Total -	0.37¢
Total operating cost	2.80¢ " " "

Interest and depreciation on the distribution mains, assuming a 10 year life on the installation would amount to nearly 1.50¢ per 100 Gals.

The total cost including the fixed charges on the distribution system we therefore estimate as 4.30¢ per 1000 Gals.

170-20
ENGINEERING SERVICE COMPANY

Los Angeles, Cal.

1316 Washington Building,
August 28, 1922

File 1120_13

Mr. S. H. Woodruff,
Third Street & Larchmont Boulevard,
Los Angeles, California.

Dear Sir:

With reference to our report to you of August 21st, on the water project, we desire to add that since that date we have come into possession of some fairly reliable information on the sources of water supply, which will qualify the estimates of installation and operating cost.

An official of the former Hollywood Water Company has furnished us with figures on the depth and production of the wells in this tract which are based on operating conditions. Unfortunately the complete records of this company have been destroyed.

In our preliminary report we based our assumptions on production of 4200 gallons per minute from six wells. Our first information indicated a production of 80 inches per well. The information which we now receive from the defunct water company indicates that there are only two wells which approach this capacity. To produce 4030 galls per minute, 11 of the 18 available wells on this property would have to be in operation. The increased pumping equipment required by these extra wells would add \$12,000.00 to the first estimate of equipment cost. The operating cost we estimate would be raised to 4.7¢ per 1000 gallons.

We present the well data, which we have received from the company which operated these wells, as follows:

#2

MAIN GROUP

Well No.	Diam.	Depth	Capacity Inches of Water	
1	12"	300'	30"	Interconnected at pits by 12" pipes
2	12"	340	50	
3	12"	456	45	
4	16"	328	-	Well lost
5	16"	375	25	
6	16"	515	75	
7	16"	408	25	
8	16"	410	40	
9	12"	535	10	Cased with 12" and 10" pipe
10	10"	495	15	
11	12"	545	75	Cased 530' Some gas
12	12"	651	30	Tunnel to well

EAST GROUP ON PROPERTY WEST OF TRACT

1	10"	179	40*	Drilled 195 ft.*
2	10"	133	40*	Drilled 201 ft.
3	10"	129	40*	Drilled 150 ft.

WEST GROUP ON PROPERTY WEST OF TRACT

1	Size not known	82	40*	
2	" "	63	40*	
3	" "	185	40*	
4	" "	75	40*	
5	" "	421	-	Sulphur water

* Estimated capacity only.

SELECTION OF WELLS

It is obvious that wells 9 and 10 should not be considered as part of the system; the installation cost is disproportionately high for the amount of water that may be delivered. We consider a 250 gallon per minute capacity to be almost below the minimum for economical installation, but as five of the remaining wells in the main group have a range close to this limit we must include them, i.e. Nos. 1, 2, 5, 7 and 12.

All of the wells are of economical size for pumping, 12" and 16" in diameter, and it is not anticipated at present that they will need re-boring. The well data as presented show that 9 wells in the main group have a total capacity of 3350 gallons per minute. Five of these wells are now flowing wells according to our own observations.

#3

To bring production to 4030 gallons per minute it would be necessary to use two wells of the East Group. These are shallow wells, and we have no information, excepting that of the former operating company, that they may be expected to deliver 360 gallons per minute each.

For present purposes we have assumed, therefore, that the old data on these wells is reliable, and that 9 wells of the Main Group and 2 of the East Group will furnish 4000 gallons per minute continuously, or 5,760,000 gallons per 24 hours.

DRAW DOWN UNDER PRODUCTION.

It has been stated that the Main Group of wells draw down to 135 feet during pumping just prior to the shut-down of the Hollywood Water Company. This was stated as being under extreme conditions. One well, No. 11, which is the largest producer, under a pumping test during two weeks, showed a fall of only 40 feet in water level. Of the East Group of wells, we know nothing regarding the draw-down.

We have assumed an average lift of 100 feet from all of the wells in Main and East Groups.

REVISED INSTALLATION COST.

As already stated, we find that these conditions involve an addition of \$12,000.00 in plant investment to the previous estimate. The revised estimate follows:

Pumps, motors and installation	\$21,040.00
3 - 300,000 gal. elevated tanks	14,000.00
Mains, estimated to Venice	155,000.00
Total - - - - -	\$190,040.00

OPERATING COST

The operating cost under the revised conditions is estimated as follows, on the basis of continuous operation at full capacity:

Power	1.60¢ per 1000 gals.
Labor	0.86
Maintenance	0.26
Lubricants, etc.	0.05
Total - - -	2.77¢ per 1000 gals.
Depreciation pump and equipment	0.29
Interest	0.12
Total	0.41
Total direct operating Cost	3.18¢ per 1000 gals.
Interest and Depreciation on Distrib'n System mains	1.50
Total including distribution system -	4.68¢ per 1000 gals.

4

If the plant is operated at one-half capacity, the indicated total operating cost, including charges for mains, would be 7.10¢ per 1000 gallons. The desirability of an assured demand for nearly the normal continuous capacity of the plant is therefore very apparent, especially in view of the limited storage capacity which we have assumed.

Respectfully submitted

ENGINEERING SERVICE COMPANY

By T. A. JORDAN

DBS/LMD

MEASUREMENT OF FLOW OF WELLS ON
WEST HOLLYWOOD TRACT NO. 1.

Nov. 6, 1922

WELL	LOCATION OF WELLS	TIME IN SECS TO FILL CONT.	AVERAGE TIME IN SECS.	CAPACITY OF CONT- AINER IN GALLONS	AVERAGE FLOW IN GAL. LONS PER SEC.	AVERAGE FLOW IN GAL- LONS PER MIN.	SIZE OF CASING INCHES
#1	Lot "E" on S.E. Cor. of Rugby and Westmount	26 26	26.	30.	1.152	69.3	10"
#2	Lot "J" on E. Side of Westmount between Rugby and Sherwood	(63 (61 (53 (49.	62. 51	18. 18.	0.2905 0.353	17.4 21.2	16"
#3	Lot "I" on W. Side of Westmount bet. Rugby and Sherwood	9. 10.	9.5	18.	1.895	113.5	16"
#4	Lot "G" on W. side of Westbourne, bet. Rugby and Sherwood	27. 28. 28.	27.67	18.	0.65	39.0	16"
#5	Lot "K" on W. side of Westbourne, bet. Sherwood & Melrose	26. 26. 26.	26.0	18.	0.693		
#6	Lot "L" on N.W. Cor. of Westbourne & Melrose	48. 48.	48.	30.	0.625	41.5	12"
#7	Lot "M" on N. W. Cor. of Westmount and Melrose	130. 132.	131.	30.	0.229	37.5	10"
#8	Lot "F" on W. side West Knoll S. of Rugby	590.	590.	598.	<u>1.012</u>	13.7 <u>60.8</u>	12" 16"
T O T A L S ----					6.8995	415.90	

Note: Measurements were made by volumetric method with a 50-gal. barrel and an 18 gal. small tank for containers. The time elapsing being the filling of the container in each case was checked by a series of observations, and only the observations made under the best conditions for accuracy were used in compiling the above results.

Ed Fletcher Papers

1870-1955

MSS.81

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General Correspondence - Engineering Service Company



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