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REPORT

TO THE

Lake Tahoe and San Francisco

WATER WORKS COMPANY.

ON ITS

SOURCES OF SUPPLY: PROPOSED LINE OF WORKS: ESTIMATED COST AND INCOME.

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A. W. VON SCHMIDT, CIVIL ENGINEER;

PROJECTING AND CONSTRUCTING ENGINEER OF THE SAN FRANCISCO WATER WORKS, SPRING VALLEY WATER WORKS, WHITE PINE WATER WORKS, SAN FRANCISCO STONE DRY DOCK; INVENTOR AND PATENTEE OF THE NEW AND IMPROVED METHOD OF REMOVING SUB-MARINE ROCKS, AS SUCCESSFULLY ACCOMPLISHED BY HIM IN THE REMOVAL OF BLOSSOM ROCK FROM THE HARBOR OF SAN FRANCISCO.

OCTOBER 1, 1871.

SAN FRANCISCO: ALTA GALIFORNIA PRINTING HOUSE, 529 CALIFORNIA STREET,

1871.





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- 2

REPORT.

SAN FRANCISCO, CAL., October 1st, 1871.

To the President and Board of Directors of the Lake Tahoe and San Francisco Water Works.

GENTLEMEN:—At your request I herewith submit to you a Report on the water supply of Lake Tahoe, the proposed lines of your Company's works for the supply of mines, towns and cities, together with estimated cost and sources of income, as follows:

SOURCES OF SUPPLY.

Lake Tahoe, the main source of supply of the Lake Tahoe and San Francisco Water Works, is located in the Sierra Nevada Mountains, at an elevation of 6,220 feet above the level of the sea, and covers an area of two hundred and forty square miles. Its greatest depth is 1.500 feet.

The quality of the water is probably the purest of any in the world, being produced from melting snows and mountain streams. The surrounding mountains are mostly of granite formation.

The only outlet of the Lake is the Truckee River, which flows during the dryest time of the year, in ordinary seasons, 800,000,000 gallons of water per diem, and for some months, during the floods, more than three times that quantity.

To guard against dry seasons, a Dam has been constructed by the Company, on the Truckee River at the outlet of the Lake, with suitable gates, for the purpose of storing the water, by preventing the floods from escaping out of the Lake and running to waste, at the same time allowing the necessary amount of water to flow down the Truckee River for the use of mills and manufactories. The Lake will fill to the capacity of this Dam in one ordinary season. The quantity of water thus stored will be immense, and will be better understood by stating that one foot of water drawn from this Lake in a year, will give one hundred and thirty-seven million gallons per day.

2

The Lake will be raised by said Dam six feet above low water mark or about one foot above high water mark, it will then give six times 137,000,000 gallons, or 822,000,000 gallons per diem, without interfering with the natural or ordinary flow of the Truckee River, that is after the Lake is once filled to the height of the Dam.

A second Dam has been constructed on the Truckee River, at a point three and three-quarter miles below the Dam at the Lake, at which second Dam the water is diverted from the river and taken into a Canal.

Independent of the Lake, there are several creeks or streams which the Company can draw water from during the rainy season, and while the snow is melting in the Spring of the year, namely: Bear Creek, Squaw Valley Creek, Deer Creek and Hardscramble Creek, all of these streams are on the east side of the mountains, and are tributaries of the Truckee River below the Lake.

On the west side of the Sierras, the Company has several tributaries of the American river, which afford quite a large supply of water in the Spring and early Summer months. It will therefore be understood that water from Lake Tahoe will only be drawn, when these streams fail to supply the amount of water required; it is estimated that the Company will only require to draw from Lake Tahoe, about eight months out of the twelve.

TITLE.

The Company's title and ownership to the waters and right of way is acquired and confirmed under and by virtue of the Incorporation Laws of the State of California, and by an Act of Congress of the United States, passed July 26th, 1866, entitled "An Act granting the right of way to Ditch and Canal owners, over the Public Lands, and for other purposes."

The right of way over the lands of the Central Pacific Railroad Company is not yet complete, owing to the fact of the final location of the Water Company's line of works not having been surveyed throughout the entire route.

A Franchise has been granted to the Company by the Board of

Supervisors of the City and County of San Francisco to lay pipes in the said City and County of San Francisco.

Similar rights to lay pipes can be obtained in other towns and cities en route, in the event that the Company does not contract for their supply directly with the authorities of such cities and towns.

LINE OF WORKS.

To make the waters of Lake Tahoe available, the following work is necessary to be done:

The water from the Dam at the outlet of the Lake will flow down the Truckee River, three and three-quarter miles to the Company's second Dam on the river, at which point it is diverted from the river into a canal to be constructed, six miles long, through which it flows to the entrance of the proposed Tunnel at Hardscramble Creek, through the Sierra Nevada Mountains. The Tunnel by this Hardscramble Creek route is 26,400 feet, or five miles long. The water from the said canal enters and flows through this Tunnel coming out on the west side of the mountains at a point a short distance above the Soda Springs (so called) on the South Fork of the North Fork of the American River.

Several other routes for a Tunnel have been surveyed, that at the head of Cold Stream, surveyed for Railroad Tunnel, is 24,172 feet long, with an open cut half a mile long of an average depth of twenty feet; to reach the entrance of this Railroad Tunnel it would require nine miles more canal on the east side of the mountains, making fifteen miles of canal from said second Dam to entrance of Tunnel or cut. I am therefore of opinion that the Hardscramble route, although longer than some of the other lines, is by far the most preferable; so far as can be seen and judged of from the surface of the ground, the Hardscramble route is apparently free from Granite, the rock appears to be a volcanic stone, called by some "Cement Rock," it works and stands well.

The lines of the Company's works from the Tunnel will be as follows:

For mining purposes on the Main Ridge lying between the North and Middle Forks of the American River, the water is taken from the Tunnel and conveyed in a large Ditch say (for 500,000,000 gallons of water) fifteen feet wide at the bottom, twenty-seven feet wide at the top, and six feet deep, net water line, on a grade of ten feet to the mile where the lay of the ground will permit such a grade, along the backbone of said Ridge to the several mining camps thereon, viz: Iowa Hill, Michigan Bluffs, Yankee Jims, Forest Hill and other places in that vicinity. It is estimated that it will take about forty miles of ditch to reach Iowa Hill, from which place smaller ditches can be run as required.

For the supply of towns and cities the water after leaving the Tunnel at or near Soda Springs, on the west side of the mountain, will flow down the granite bed of the American River about fwelve miles, where it will be taken from the river, and conducted in a suitable canal a distance of about forty miles, to a point near Auburn, in Placer County, at which point it will enter a Reservoir of convenient size to be constructed for that purpose. Leaving this Reservoir the water will enter a large wrought iron pipe, and by that means be conducted to the City of San Francisco, via Sacramento, Fairfield, Vallejo and Oakland.

The Canal to Auburn will have capacity to carry 100,000,000 gallons per day. The length of pipe from Auburn to San Francisco will be about one hundred and twelve miles, making the total distance of actual line of works to be constructed to reach San Francisco, one hundred and sixty-three miles.

ESTIMATED COST.

I have estimated the cost of Tunnel through the Sierra Nevada. Mountains as follows, yiz:

Circular Tunnel ten feet diameter, with a fall of ten feet to the mile, the contents of which are 78,539 cubic feet to each foot in length—or 2.9 cubic yards to each running foot—the length of Tunnel is 26,400 feet, multiplied by 2.9 gives 76,560 cubic yards at \$10.861 per yard, or 26,400 feet at \$31.50 per foot gives \$831,600 Add contingent expenses thereon, say 25 per cent. 207,900

Total	cost of	Tunnel.	 • • •	• • • •	• • •	. 	•••	<u>\$1,039,500</u>

The cost of Ditch or Canal I estimate as follows: East of Sierra Nevada Mountains, six miles at \$20,000	я
per mile	\$120,00 0 800,00 0
	\$920,000

Cost of Reservoir to be constructed at Auburn, \$100,000.

Wrought iron pipe from the Town of Auburn to the City of San Francisco; I have stated the distance per line at one hundred and twelve miles, but to allow for curves I add eight miles more, making one hundred and twenty miles of pipe, for the cost of which I give copy of estimate furnished me, as follows:

"Vulcan Iron Works Company, office 135 and 137 Fremont street.

"SAN FRANCISCO, February 24th, 1870.

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"A. W. VON SCHMIDT, Esq.

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"Sir:—The approximate cost of the pipe line to be constructed "will be as follows:

40 miles of 5,280 feet each, of water pipe 5 feet	;
"diameter, of quarter inch iron	\$2 576:076 80
"40-miles of 5,280 feet each, of water pipe 4 feet	-
diameter, of quarter inch iron	2.117.772.80
"40 miles of 5,280 feet each, of water pipe 3 feet	- <u>-</u>
" diameter, of quarter inch iron	1,692,908.80
"120 miles	\$6,386,758.40
	-

"The pipe will be made here in sections of thirty feet length, "which will have to be riveted together on the ground; above "figures include the riveting together of the sections, but not the "cost of transportation.

"The weight for one mile of pipe will be respectively 931,040 "Ibs.; 745,360 lbs.; 568,480 lbs.

"Respectfully yours, "VULCAN IRON WORKS CO., "Per Henry J. Huttner."

This pipe is calculated to deliver at least 20,000,000 gallons of water per day in the city of San Francisco, at an elevation of three hundred and seventy feet above the city base. I estimate the cost of laying the pipe at \$200,000; and the transportation thereof at \$100,000.

It will however be observed that a large portion of this pipe can be less than a quarter inch in thickness; again, to save expense, the pipe should be made on the ground near where it is to be laid, thus avoiding the cost of hauling and transportation. The dipping in Asphaltum can also be done on the ground, the expense of which will not be great, and I have included it in the above estimate:

To bring the water to the City of San Francisco, in addition to the above cost must be added the tunneling of the Straits of Carquines, amounting say to \$350,000.

And extra work crossing the Bay of San Francisco which I estimate at \$500,000.

I propose to cross the Bay of San Francisco in the following manner:

1.-I drive two rows of piles in pairs, six feet apart one way and one hundred feet apart the other way, across the Bay from shore to shore. I put the pipe together on a small railroad on the Alameda shore, the outer end thereof being closed up; as fast as I put the pipe together, I float it out on the surface of the water in a line between the two rows of double piles, where it remains; section after section is so added until the pipe reaches from shore to shore; while this pipe is being so floated across the Bay, an air pressure is kept thereon to prevent water from the outside filling it before the whole distance across the Bay is When the pipe is ready to be lowered I stop the air supply laid. and gradually fill the pipe with water which will cause it to sink to the bottom of the Bay and soon form its own bed; the pipe being guided by the double row of piles on either side will of course settle down in a straight line, all the pipes will have flexible joints which will permit them to form a considerable angle without breaking or leaking.

This method has been successfully used in crossing the Schuylkill River, at Philadelphia, (see annual report of the Chief Engineer of the Water Department of the City of Philadelphia, presented to the Council, February 16th, 1871, on page 14) which says: "This plan was patented by Mr. Jno. F. Ward, of Jersey City, a contract was accordingly made with that gentleman, and the Main has been successfully laid. It is thirty-six inches diameter, has a moveable joint of simple and peculiar construction, which admits its being sunk length after length from a scow, by suitable skids and derricks.

The inside of the bell of the pipe is turned smooth to a spherical form, the small end of the pipe has grooves in it to retain the lead when the pipes are put together, a lead joint is cast and caulked in the ordinary way. The smoothness and form of the inside of the bell permits the requisite motion, the lead joint slipping upon that, whilst it is retained firmly by the grooves in the small end of the pipe."

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I state the above to prove that the laying of submarine pipes has already been successfully accomplished, however I am of opinion that my plan of floating the pipe out from the shore is better than that of laying it out of a boat or scow.

In relation to the cost of line for mining purposes only, I estimate the forty miles of canal from the Tunnel, along the Ridge above mentioned, at \$20,000 per mile, making \$800,000, add to this the cost of Tunnel as given at \$1,039,500, cost of Canal on east side of Tunnel \$120,000, and twenty-five per cent. of the whole for contingent expenses, gives a total of \$2,449,375, cost of line for mining purposes only.

RECAPITULATION OF ESTIMATED COST.

For line of works from Tahoe to San Francisco,

Cost	of	Tunnel	\$1.039 500
"	"	Canal East of Tunnel	120 000
"	"	Canal West of Tunnel	800.000
"	"	Reservoir at Auburn.	100,000
"	"	Pipe from Auburn to San Francisco	6.386 758
"	"	Laying Pipe	200.000
"	"	Transportation thereof	100,000
"	"	Tunnel Straits of Carquines	350,000
"	"	Crossing Bay of San Francisco	500,000
			\$9,596,258

Say for total cost of line to San Francisco, \$10,000,000.

For Mining purposes only.

Cost	of Tunnel	\$1,039,500
	" Canal East of Tunnel	120,000
"	" " West" "	800,000
a		\$1,959,500
Conti	ngent expenses, 25 per cent	489,875
	Total,	\$2,449,375

For both purposes.

To the City of San Francisco	\$	9,596,258
Add the Cost of Canal along the Mining Ridge for		
Mining purposes		800,000
Total:	\$1	0,396,258

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SOURCES OF INCOME.

The Company will derive an Income from the sale of water for Hydraulic Mining; for water power for Mills and Factories along the line of works; for irrigation; and for the supply of Towns, Villages and Cities.

Only a few miles below the western end of the Tunnel, are located vast and rich gold fields of gravel and cement deposits. the ridge lying between the North and South Forks of the American River, (the proposed line of the Company's works,) exists the largest and best gravel deposit known in the State of California. For richness it is conceded by all to be unsurpassed. The area of this immense and rich deposit is estimated to be over 30 miles in length, and an average of about seven miles in width, making in the aggregate an area of 210 square miles. This deposit is from fifty to four hundred feet in depth, yielding the precious metal from top to bottom. It will however be understood, that in this immense deposit there is some cement formation very rich, but too hard to be worked by the hydraulic process, requiring mills for crushing, but it is fair to estimate that one-fourth of the entire ground can be washed. It has been proved that from a few cents up to eight and ten dollars to the cubic yard can be relied on. Portions of this ground have been worked whenever a supply of water could be procured, during the rainy season, and always It is well known that if a constant supyielding a large profit. ply of water could be obtained the whole year, it would be one of the most prosperous Mining Districts in this State, if not in the Country; untold millions of wealth would be produced that is .now hidden for the want of water. No other supply than that from Lake Tahoe can be procured in quantity for want of sufficient elevation. It is safe to say that this mining ground, with all the water that can be brought upon it or made available, cannot be worked out or exhausted in a hundred years.

Miners calculate the sale of water by the inch. I calculate one miners' inch of water, with a six inch head, to run 14,400 gallons in twenty-four hours, or at the rate of six hundred gallons per hour. (See statement of J. V. Martin, in the Sacramento *Daily* Union of May 2d, 1871.)

The gold-bearing district referred to, will afford sale for at least 40,000 miners' inches of water per day throughout the year, at ten cents per inch.

I therefore estimate the income from the sale of water as follows, viz.:

· For Mining Purposes Only.

Makes net profit per year	 \$96	3,	32	<u>6</u>	40
		2	-		

If, however, the Company's works are completed for mining purposes, and for the supply of towns and cities also, then only four hundred million gallons of water would be used for mining purposes, and one hundred million gallons for towns and cities, in which event the revenue from mines would be as follows:

400,000,000 gallons daily gives 27,777 miners' inches daily.

Leaves net profit per year, on 400,000,000 gallons, \$746,642 40

From Towns and Cities.

I estimate the inco	ome from towns and cities as follo	ws:	
Sacramento City, on	e month	\$4,000	00
Oakland "	"	4,000	00
San Francisco "	"	40,000	Ø0
Monthly income Making total income	e from towns and cities for one	\$48,000	00
year amount to	• • •	\$576,000	00

RECAPITULATION OF INCOME.

From the sale of 500,000,000 gallons of water daily,		
for one year, for mining purposes only, expenses		
deducted	\$963,326	4 0

From Towns, Cities and Mines.

From the sale of 400,000,000 gallons of water daily,		
for one year, for mining purposes, expenses de-		
ducted	\$746,642	40
From the sale of 100,000,000 gallons daily, for one	- ,	
year, to towns, cities, etc	576,000	00
	1,322,642	40
Deduct yearly expenses of line of works for towns	, ,	
and cities	200,000	00
Gives total net income	\$1,122,642	40
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The foregoing estimates of receipts may be regarded as very 'low indeed, especially for the city of San Francisco. The yearly revenue of the Spring Valley Water Works, at present supplying the city, is \$900,000, from a daily supply of not more than 6,500,000 gallons of water. Judging from past years, it may be safely estimated that there will be an increase of receipts from this city of full ten per cent., or \$100,000 per year. At this rate of increase, we have, say five years hence, from San Francisco alone; a revenue of \$1,400,000 per year, according to present prices, which I consider much too high, and I have therefore only estimated the revenue from this city at \$40,000 per month. No mention is made of many smaller towns *en route* to be supplied, among others Auburn, Fairfield, Vallejo, Mare Island and Benicia, from which no inconsiderable revenue may be derived. The income from mines is also estimated at the lowest figure, and I have only mentioned the first sale of water, whereas it is the well known right and custom of Water Companies to gather the same water and sell it over again at decreasing rates.

I have estimated to take 500,000,000 gallons of water per day from the Lake. The present Dam at the outlet will admit of 822,000,000 gallons being taken daily, the water in the Lake having been raised six feet. As I before remarked, each foot of the Lake gives 137,000,000 per day, if therefore, any additional supply of water is required, the Dam at the outlet of the Lake can be raised an additional two feet, at an expense of not more than \$2,500. The evaporation will not be materially increased thereby. This would be the limit that the Lake could be raised without causing damage to the low lands at the southern end of the Lake.

When the Lake is once filled the surplus water will flow over the waste weir of the Dam, and run down the Truckee River as usual.

For the past two years, the water of the Lake has been lower than ever before remembered, running to waste only 80,000,000 gallons per day, at its lowest stage, whereas when I measured it in the month of September, 1865, it run to waste 800,000,000 gallons per day.

This shows the great necessity of storing the water in the Lake by means of a Dam as I have described, to guard against dry seasons.

I would further state that I have purposely made the estimates of the cost of works very large, so as to guard against the many contingencies that may unavoidably have been overlooked or occur, in an enterprise of such magnitude in a rough mountainous country.

In an Addenda to this Report, I have given certain statistics and general information as to the Mining District on the Company's proposed line of works, furnished me by reliable gentlemen whose well-known acquaintance with the subject make their statements well worthy of full credence. Many more confirmatory reports could be obtained, but the facts are so well and generally known that I consider it unnecessary. The actual quantity of the miners inch of water has never been definitely fixed, it varies in different districts from about 14,000 to 17,000 gallons per day, also in the size of the opening and head of water, in accordance with custom and, usage, scarcely apy two authorities agree upon this subject, and I have given in the former portion of this Report what I consider a fair and just estimate, and near enough for all practical purposes.

- In conclusion, I beg leave to state, that I know of no other enterprise which will pay a better or surer rate of interest on the amount of capital to be invested, or that will be of greater blessing to the greatest majority of the people of California, than the utilizing of this unfailing and abundant supply of pure water.

All of which is most respectfully submitted,

A. W. VON SCHMIDT,

CHIEF ENGINEER,

Lake Tahoe and San Francisco Water Works.

ADDENDA.

W. Van Vactor, an old resident of Placer County, and for many years County Assessor of said County, in a report on the Mining District between the North and Middle Forks of the American River; the Company's proposed line of works, says:

"The following is the amount of gold taken out in the year 1866, from the section of Country your Canal would command when completed. The amount here given is what was shipped through the different Express offices, and what was carried out by private hands from January 1st to December 31st, 1866.

"Iowa Hill, by Express	\$163,633	92
"Iowa Hill, by private hands	23,100	00
"Michigan Bluff, by Express	400,000	00
"Michigan Bluff, by private hands	31,000	00
"Forest Hill, by Express	367,000	00
"Forest Hill, by private hands	28,000	00
"Todds' Valley, by Express	148,482	00
"Todds' Valley, by private hands	15,000	00
	\$1,176,215	92

The amounts given as passing through the Express office are the exact figures taken from the books in those offices. The amounts by private hands are a little under the true estimate.

The amount paid by miners during the same period for water was about \$100,000.

The present supply of water for the above named localities is as follows:

Iowa Hill District including all of Township No. 7, Placer County 1,300 inches per day.

Michigan Bluffs including all of Township No. 6, 1,400 inches per day.

Forest Hill, Todds' Valley and Yankee Jims, including all of Township No. 5, 4,000 inches per day.

Township No. 8, the southern part of which could be supplied from your Canal, has a few small ditches that run water during the season of the melting of the snow, which furnish a daily supply of about three hundred inches for a short period.

This makes a total supply as you will see of 7,000 inches per day, for the whole section.

This is the maximum supply and cannot be relied on, in the most favorable seasons, for over sixty days in each year. One-half this supply might be kept up in a favorable season for seventy-five days, and one-third for ninety days. Many seasons it does not reach 7,000 inches for a single day, and frequently one-third of the hydraulic miners do not get five days run during the whole season.

Aside from this very serious difficulty in regard to the short time the present limited supply of water continues each year, in working the mines, situated so as to be accommodated by the Ditches furnishing the same, there is another that could not be obviated providing they furnished an ample supply, and that is, the ditches are too low to be used in working these mines, this difficulty applies to over half the Mining Country. This fact is very important for you to know in making your calculations as to the amount of water that could be disposed of from your canal.

Your Canal will reach the top of the main divide at a point sufficiently high to command all the mining land of this section above mentioned, providing you could furnish enough water to supply the demand.

It is the prevailing opinion among the miners here that you could sell every inch of water you can bring on the divide, and I have no doubt of this fact myself, but lest you might consider this opinion rather extravagent and not altogether warranted by the facts, I will here intrude a few figures and calculations, that I think will satisfy you that this opinion is not far out of the way.

First. If miners who are now working claims by means of Hydraulics could obtain the water to justify, they would enlarge their operations to use four times the amount of water now used. For example, the claims that now use one handred inches would enlarge to use four hundred inches, with a very large increase of profits in proportion.

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This is a fact that no miner will dispute, then; taking this as true, the miners that are now working by the hydraulic process would, if your canal was completed, instead of using 7,000 inches in the aggregate, use four times that amount, viz., 28,000 inches per day; this, at fifteen cents per inch for sixty days, the length of time water now lasts, would be \$250,000 per season, and for the length of time your canal could furnish it each year, say three hundred days, would be \$1,260,000.

Second. There are now as many claims in this same section being worked by drifting as those worked by hydraulicing, that would change and hydraulic their claims if water could be had.

This would require 28,000 inches more water, making in the whole 56,000 inches per day. Value, at same rate, for sixty days, \$500,000; and for three hundred days, \$2,520,000.

It will be observed that in this calculation I have only considered the mining ground that is so situated to be worked from the ditches now in use, were it possible for them to furnish water sufficient. This, as I have heretofore observed, does not comprise one-half of the mining land that could be worked if your canal was completed as proposed, and water could be furnished to supply the demand.

I think that these figures will satisfy you that you need have no fears of not disposing of all the water you can bring into this section.

The miners are exceedingly anxious to have you bring water here sufficient to supply them winter and summer, would do anything in their power to encourage the enterprise, and would hail the completion of this great work as the greatest blessing that could be bestowed on this community, and a lasting benefit to the whole State, as it would without doubt be a source of immense revenue to your Company.

(Signed)

W. VAN VACTOR."

. Copy of letter written by Mr. Philipp Deidesheimer, Mining Engineer, to Alvinza Hayward, Esq., to wit:

"SAN FRANCISCO, May 23d, 1870.

A. Hayward, Esq.—DEAR SIR :—I beg to call your attention to a project of mine, which I have carefully thought over for many years and well considered, and which to carry out, practically and successfully, the proper opportunity seems now to have arrived.

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According to my judgment, based upon the long experience I have had in all sorts of mining enterprises, this is one of the most simple and strictly legitimate that has ever come under my observation, and I will therefore lay it before you in short and plain language, and conscientiously endeavor to point out to you its magnificent inducements for a profitable investment.

The mining district in question (of which I shall speak in detail more hereafter) is, as you know, located in Placer County, California. It includes your valuable mining property at Forest Hill, consisting of a rich bed of gold-bearing gravel, 1,600 feet front by 4,000 feet in depth, and an average heighth of 150 to 450 feet; which has been prospected by means of a tunnel, commenced in 1854, now 2,700 feet long, the key to that entire mining district; exposing, to a large extent, a wonderfully rich deposit of gold.

There is no further doubt in my mind that many millions of dollars are hidden in this grand deposit, and in order to get them out I propose to you as follows:

To get the control of all the water that can be brought to and made available of, for this district. Having done this, you will be able to control the whole mining region, already prospected, extending over thirty miles in length (E. and W.) seven miles in width (N. and S.), and about four hundred feet depth, all containing a deposit of more or less gold-bearing gravel. Part of this plateau, of which Forest Hill is about the best, has been for many years, and is now, being worked very disadvantageously, on a primitive and small scale.

Most of the Companies working this district have, for the last eighteen years, extracted large amounts of money, under all possible disadvantages, of which is chiefly, the scarcity of water, yet successfully was it done in early years by mere drifting, latterly by hydraulics.

The quantity of water used for this purpose was indeed very small, for instance, the ditches supplying Forest Hill, Todds' Valley, Yankee Jims and other companies, amounting only to 1,500 inches, running from three to four months only of the entire year, and yet sustained at high wages, a population of several thousand men.

Most of this water is sold at ten cents an inch per ten hours, but miners are anxious to pay twenty-five cents for it per twentyfour hours, if it were to be had all the year throughout. To explain this more satisfactorily, a verbal exposition of the connecting details, would much facilitate the clearness of the point, which I mean to come at, and which is this, that (excepting Lake Tahoe) the only living water that can be brought into this district at comparatively small expense, is the water claimed by you, namely, the "South Fork of the North Fork of the American River," and which stream could on an average, to suit all purposes, easily provide for 5,000 inches all the year round.

The ditch to bring it would have a length of about thirty-eight miles, and could be built with Chinese labor, canal six by eight feet, within six months, at an expense of about one hundred and fifty dollars per mile. This stream of water, brought to Forest Hill, and hydraulically applied to several of the most favorable points, the proceeds of washings would certainly amount to sixty dollars per mile per month, for a great number of years (say over three years of the Baltimore front ground alone)-meanwhile with these earnings I would propose to buy the Todds' Valley Ditch, the Oro, Dardanelle and Yankee Jims' Ditches, also some good mining ground joining Baltimore claim, which I have already carefully and economically planned out, and could be accomplished at low figures. With these additional ditches and ground secured for the purpose only to control the valuable mining grounds surrounding them, the proceeds of the washings could be made to average about one hundred and twenty-five dollars per mile per month.

The ditch is not constructed with the view of selling water to other mining Companies (which in case of necessity could be done at twenty-five dollars per mile per month) but chiefly as a means to get hold of the richest mining locations and deposits along its course, and thus secure a large extent of gold-bearing ground, which, well managed, will have a value of untold millions in the course of a few years, and hold out for generations to come.

In addition, I further propose to build a wagon-road connecting with the railroad, ten miles shorter distance than the present road in use, which can be built for twenty dollars per mile, and pay for itself in two years.

The drifts to be run in all the richest strata of the ground, would ensure a handsome income, independent of the hydraulic works and facilitate the working of these. The whole project I undertake to set into successful operation, within ten months from this, if commenced at once.

The manner in which the funds required for this undertaking are to be raised, is to be personally discussed, and can no doubt be arranged on a most profitable basis.

The amount required to be advanced within ten months will not exceed two hundred dollars per mile.

I recommend this proposition to your best consideration, and am ready any time to explain points which here may not be intelligibly enough expressed.

This grand enterprise is deserving of all our energy that we can bring to bear upon it, it will, when in full operation, stand ahead of all other enterprises of this coast and continent.

It will be a mine of wealth, and a source of pride and satisfaction to its owners and projectors.

Most respectfully,

(Signed) PHILIPP DEIDESHEIMER."

EXTRACT FROM THE AUBURN STARS AND STRIPES.

The Auburn Stars and Stripes in an article published in March, 1871, referring to the supply by the Lake Tahoe and San Francisco Water Works, for Mining purposes in Placer County, says:

"In this connection we are in receipt of a letter from Iowa Hill, dated March 13th, containing facts and estimates, from a gentleman, whose standing in the community, recognized intelligence, and facilities for obtaining correct information, entitle his statements to respect and interest."

He says: "There is on this divide, between the North and Middle Forks of the American River, the most extensive range of Hydraulic gravel deposits that can be, or has ever been found in the State, extending lengthwise of the ridge fifteen or twenty miles, divided by deep Cañons affording good outlets for working the gravel deposits on the different ridges, which deposits vary from half a mile to three miles in width, making an average width of the deposits on the main divide, of about five miles, presenting an area of more than seventy-five square miles of good gravel deposit (50,000 acres). As to the quality of the gravel it is generally conceded by experienced miners from other localities who have visited

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this section, examined the character of the ground, noted the facilities we have for working, and who, to a certain extent, have practically tested the matter by prospecting, that this divide contains the best Hydraulic Mining Ground in the State.

The whole capacity of all the Ditches on this Divide is about 7,000 inches, the average time which the miners are enabled to work at Hydraulic Mining is about three months, or one-fourth of the year. The average amount of water used during said three months is about 3,000 inches, the average yield of the mines on this Divide for the last four years, has been about \$1,200,000 per annum. Deducting one-third from this sum as the probable yield of Tunnel or Drift claims, we have a balance of \$800,000 as the proceeds of Hydraulic Mining for three months with 3,000 inches of water per day. If with 30,000 inches per day during the whole year-which we are assured is a low estimate of what the Lake Tahoe Company can afford us, and with the additional facilities for working (i. e. a higher elevation of the water giving more fall or hydraulic pressure, and enabling us to work richer ground, which is now above the line of the water supply, and the advantage of working during the warm weather, when gold will best amalgamate and thus a greater portion be saved,) the proceeds from the mines on this divide will equal the yield of all the balance of California combined, as the facts and figures will fully demonstrate.

As regards the amount of water required to work the mines on this divide, 30,000 inches per day would be but a limited supply furnishing say, one hundred Companies with an average head of three hundred inches.

Three times that amount of water could be used to advantage (if such supply could be obtained) for fifty years at the very least. We have had but little water this season, the water companies endeavoring to accommodate as many as they can by furnishing different Companies alternately, a day or two at a time, so as to give all who have been to the expense of fitting up, an equal chance for working, but we are in hopes for the welfare of this section, and the balance of the Country, as well as the prosperity of the whole State, that ere long we will receive a good supply of water, when the memories of early California days will be revived." Å ب بر ŧ i de des 5 1 1

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