Polacca, Arizona
December 31,1933

Mr H.C.Neuffer
Supervising Engineer
Albuquerque.N.M.
Dear Mr Neuffer:

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This refers to Water development described in a telegram to you from the Honorable Commissioner under date of December 19,1933, as follows:

Quote;Investigate possibility procuring abundant water supply at locations near to an north of railroad,east of Chambers and within a mile or two west of the Arizona,New Mexico line.Likewise investigate for abundant supply Mexican spring,and environs.end of quote.
Signed Collier

On my return from Albuquerque I investigated the general conditions as mentioned in the above telegram,at Chambers,Houck and near state line. I find at Houck which is at a distance of approximately ten miles east of Chambers.The Sanat Fe railroad company has developed a shallow well 26 feet in diameter by 85 feet deep.This well supplies 275 gaoolns per minute. Also, a similar well was sunk by the same company at Chambers and a supply of water was developed that would equal 300 gallons per minute.These wells were however,carried on at unusual expense to the company and required considerable equipment to accomplish development to this depth. I also found that the same conditions governing water development to exist at location one mile west of New Mexico,Arizona state line.

In order to develop water in large quantity in the vicinity mentioned above,it will be necessary to sink large concrete caisson in quick sand to a depth of at least forty feet,also sinking large casing below bottom of same,place button screen tubing and the placing of graded filter,later pull outside string of heavy casing.It will also require the cementing of the entire bottom of caisson around button screened points to prevent a future heaving of sand from bottom.

Following is a copy of analysis as taken from the Santa Fe railroads records of water pumped from these wells which coincides with analysis of water taken from wells farther west and east in the same valley.
Calcium carbonate and magnesia 14.6 grains per gallon.
Cloride 18.6 grains per gallon.

The next possible method of development would be to drill a deep well down into the Perian formation,encountering sandstone loaally named De-Chelly sand stone,which would require a depth of possibly 1500 to 2000 feet.While it is believed that a reasonable supply of water could be developed from this source,it would be rather hazardous to blindly say that an abundant supply of water could be had,not knowing what requirements would finally be exacted.It is reasonably safe to presume that the water encountered in this formation would be good domestic water,reasonably free from mineral salts. If some idea could be had as to the quantity of water to be pumped daily from these wells,it would enable one to judge whether

or not an abundant supply could be developed.

With further referance to Mexican spring, will say, we are carrying on investigation at this location at the present time with a view of cross cutting the valley through the sand stone seepage area, which should reveal in a few days approximately the amount of water to be developed. However, it is doubtful to expect more than 8000 to 10,000 gallons per day after all seepage has been developed. However, the necessary development will be carried on with a view of developing all the water available by cross cutting seepage area at right angles with the under ground water movement, draining same by gravity to a lower sump or storage reservoir of sufficient size to hold the entire flow of water developed. We should have somn sufficient development to determine at least approximately the amount possible.

Very truly yours

A.H.Womack

A.H.Womack
Gen.Foreman

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