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REPORT TO STATE LOAN BOARD

ON

LANDS SUITABLE FOR INCLUSION IN THE LYMAN PROJECT

BY

J. A. FRAPS, ENGINEER

STATE CERTIFICATION AND DAM CONTROL

H. C. Schwalen

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May 31, 1933

Mr. M. B. Hodges, Farm Loan Secretary
State Loan Board
Phoenix, Arizona

Sir:

I beg to present herewith a brief report on the suitability of certain lands near St. Johns for inclusion in the Lyman Project. Briefly stated, the conclusions of this report are based on a field reconnaissance, the advice of residents of St. Johns, and the valuable assistance of H. C. Schwalen, Irrigation Engineer of the University of Arizona. Topographical features of the terrain, the adequacy of present irrigation canals and a general idea of soils within the area were obtained from the field reconnaissance. Residents of St. Johns and vicinity, who were familiar with soil conditions and irrigation facilities, were of material assistance in this work. The actual selection of the more desirable tracts within the area, insofar as soil conditions were concerned, was made in collaboration with H. C. Schwalen.

Soil and topographic features of tracts of land designated in this report as the more desirable areas, are far from ideal. Generally speaking, conditions for irrigation and agriculture are not particularly favorable in the Lyman Project. The principal crop is alfalfa, so a very material improvement to soil conditions may be expected in the future. Tight clay soils in parts of the area can be improved by the addition of manure, by plowing under any of the various legumes, and by keeping all surface drainage channels open. The assignment was to pick out the more desirable areas, and this has been done by a process of elimination. There is such a vast difference between desirable and undesirable lands in the area that the problem was greatly simplified. Also, there was no excess of desirable lands to choose from, but rather a definite lack of such lands.

Tables will be found on pages 3, 9 and 11, which show the areas that are considered suitable for agriculture in Township 13N, Range 27 E; Township 13 N, Range 28 E, and Township 12 N, Range 28 E, respectively. The total area available amounts to only 1,120 acres, which is 402 acres less than

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the total desired by the State Loan Board. It is suggested that 560 acres in Section 19, Township 13 N, Range 28 E, be included, and that 160 acres in Sections 13 and 24, Township 13 N, Range 27 E, as tabulated on page 3 of this report, be excluded to make the desired total of 6,000 acres in the project.

Respectfully submitted,

J. A. Fraps, Engineer.

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INTRODUCTORY

The State Loan Board has expressed a desire to complete the reorganization of the Lyman Project. Several years ago, the area of the project was fixed at 6,000 acres and since that time 4,478 acres have been designated with water rights. It is now desired to designate the remaining 1,522 acres, in order that the lands may be sold to private individuals and placed under cultivation.

No attempt will be made in this brief report to pass upon the adequacy of the water supply for 6,000 acres in the project. Records of stream flow at Lyman Dam are not available for any continuous period of more than a few years. Past irrigation development in the St. Johns area has been used as a guide by the Loan Board in determining the maximum area that might be placed under the dam. In passing, it will be stated that the greatest care should be exercised in the distribution and use of water on the project, since it is quite apparent that there will be no excess water during years of normal precipitation and run-off. Greater care in the use of water might be obtained by charging for water on an ascending scale, as for example 50 cents per acre foot for the first two acre feet per acre, and $1.00 per acre foot for all water in excess of this amount.

A general survey of the area near St. Johns was made on May 16 and 17, in company with M. B. Hodges and Grover Udall. The purpose of this reconnaissance was to determine the areas best suited for irrigation, insofar as topographic features and existing irrigation canals were concerned. Soil conditions were also noted in a general way. Subsequently, the more desirable tracts were chosen by Mr. H. C. Schwalen, who has an excellent knowledge of soil conditions, and the writer.

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LANDS IN TOWNSHIP 13 NORTH, RANGE 27 EAST

General

It was not considered advisable to include any land in the project that lies west of Big Hollow Wash. To do so would result in the necessity of constructing a long canal or an expensive inverted siphon , as existing irrigation structures are all east of Big Hollow. This is unfortunate, because the state owns large tracts of land west of this wash, which, from a topographic standpoint, are admirably suited to agriculture. Definite information regarding soil conditions is not available, but from all appearances, and from opinions expressed by local farmers, the soil is better than can be found in many tracts now under cultivation. The cost of getting water to this land would be considered prohibitive at present, and the area will receive no further consideration in this report.

Some difficulty will be experienced in getting water to lands in Township 13 North, Range 27 East, that lie east of the Big Hollow Wash. This is attributed by the fact that the water must be carried from a high ridge that forms the eastern boundary of the Big Hollow drainage area, down a steep slope to the more gradually sloping lands in the valley. There is a further objection to lands in this Township, which is the lack of accurate information regarding soil conditions. On the other hand, cultivated fields in parts of the area give indications that the soil is suited to the growth of ordinary crops. There is the further factor in favor of including a few available tracts in this Township, which is that water must be supplied to areas of land already under contract, and it would not be difficult to supply water to a few contiguous small areas. The following tracts of land in Township 13 North, Range 27 East, are deemed satisfactory for inclusion in the project.

LANDS DEEMED SUITABLE FOR AGRICULTURAL
USE IN TOWNSHIP 13 NORTH, RANGE 27 EAST

Description	Acreage
NW¼, SE¼, Sec. 13	40
N½, SW¼, SE¼, Sec. 13	20
SE¼, SW¼, Sec. 24	40
NE¼, SW¼, Sec. 24	40
S ½, NW¼, SE¼, Sec. 24	20
SW¼, SE¼, Sec. 26	40
NE¼, SE¼, Sec. 26	40
E ½, SE¼, NE¼, Sec. 26	20
W ½, SW¼, NE¼, Sec. 26	20
E ½, NE¼, NE¼, Sec. 26	20
E ½, W ½, NE¼, NE¼, Sec. 26	10
Total	310 Acres

LANDS IN TOWNSHIP 13 NORTH, RANGE 28 EAST

General

It was possible, during the field reconnaissance, to obtain information regarding topographic conditions, existing canal systems, and estimates of local farmers regarding soil conditions. The writer is particularly indebted to Mr. Schwalen for his valuable assistance in furnishing detailed soil data for lands in this township and in the one immediately south.

Generally speaking, lands with favorable topographic features are found to have the better soil conditions. There are a few cases where the canal system is not suited to the irrigation of otherwise satisfactory lands. Also, the land in the river bottom immediately north of St. Johns offers excellent topographic features, but has gone to salt grass and alkali. Development costs must be kept to a minimum, and as a result these lands must be omitted. They could doubtless be reclaimed, but the cost of drainage ditches and reclamation would be prohibitive.

Sections 5 and 6.

The State owns 240 acres in Section 5, and 558 acres in Section 6, of this Township. Unfortunately, this land is practically worthless for agriculture, since it is rough and broken, and soil conditions are very poor. There are a few minor tracts where the topography is reasonably smooth, and where the soil would be satisfactory for the growth of crops. These areas are small, however, and do not constitute a sufficient portion of any 40-acre subdivision to include for sale.

Section 7.

There are 518 acres in Section 7 that are now owned by the State. One difficulty that must be overcome before placing all suitable lands under cultivation would be to construct the necessary canal extensions. A rather large expenditure would be required to construct canals for supplying water to suitable lands in the west half of the section. Accordingly, no land in the west half will be recommended at the present time. Detailed surveys and estimates should be made to determine the cost of placing water on the northeast quarter of the southwest quarter and on the southeast quarter of the northwest quarter.

A total of 100 acres in the east half of the section may be irrigated with relatively little cost for canal extensions. These lands are rolling, but soil conditions appear to be favorable. Reference is made to the table on page 9, and the map at the end of this report, for lands in Section 7 that are recommended for sale.

Section 8.

The southwest quarter and the west half of the east half of Section 8 are open for inclusion in the project. Only the southwest quarter of the

section would be recommended for inclusion. The entire east half of the section is of broken terrain and of inferior soils, and no attempt should be made to include any part of it in the project. The southwest quarter has favorable topographic features for irrigation. It would not be difficult to extend the canals to include land in this quarter section. In view of the fact that the land is relatively flat, there would be some danger of water-logging, if natural surface drainage channels are not kept open.

Section 17.

A total of 140 acres in Section 17 is under State ownership, all of which is in the north half, of the section. These lands are generally level or slightly rolling, except those in the northeast part of the section. Some new canal construction will be required if new lands are to be brought under cultivation in sections 8, 17, 20 and 21, but this would not be expected to be an expensive item. Soil conditions are generally favorable in Section 17, except in the northeast corner. There are a few tight soils that form a narrow strip running north and south thru the center of the section. These soils have been cultivated, however, and can be materially improved by proper treatment. It is considered essential to keep open all existing surface drainage channels, and in some cases it may be necessary to deepen the channels to prevent water-logging of adjacent lands.

Section 18.

There are two tracts of land in Section 18, one of which is in the north half and contains 120 acres, while the other is in the southeast quarter and contains 90 acres. Of the three 40-acre tracts in the north half, only one is considered of any value as agricultural land. This one has fair soil, and is not too rough for cultivation. The remaining two are rough and have poor soils. No difficulty need be overcome to place water on the good 40-acre tract in the

north half of this section. Generally favorable conditions of soil and topography exist in the tracts of land available in the southeast quarter of the section. Only 20 acres of the 90 are deemed unsatisfactory, and poor soils account for the exclusion of this small acreage. No difficulties are expected to arise in placing water on any of the suitable lands in the section. Reference is made to the map at the end of this report, for the areas considered of merit.

Section 20.

Only 50 acres are available for sale in Section 20. All this land is practically level and could be cultivated without difficulty. Good soils are found over the major portion of the area, altho tight soils and two natural lakes combine to make nearly 20 acres unfit for use. Water may be placed on these tracts without appreciable expense for canal extensions.

Section 21.

The State owns all of Section 21, with the exception of a row of 40-acre tracts along the southern boundary. A large portion of the remainder of the section could not be placed under cultivation, because of unfavorable soil and topographic features. There is a strip along the eastern edge of the section, varying from 1/8 to ¼ mile in width that is alkaline. Practically all of the remaining east half is rough, and has soil that is not considered satisfactory for the growth of crops. There are nearly 80 acres in the west half of the section that have similar characteristics. These poor lands reduce to 160 acres the area in Section 21 that may be sold. Favorable conditions exist on these 160 acres, as the soil is among the better types in the project, and the land would require no levelling before irrigating. It would be necessary to construct a new canal to serve these lands, and also some of the desirable

areas in sections 20, 17 and 8. This proposed canal would be in fill for a portion of its length along the southern boundary of section 21, which would add to its cost. There have been no detailed estimates of cost for the construction of the canal, but it would not be considered prohibitive.

Section 29.

There are two small tracts in Section 29 that will receive attention in this brief report. A tract containing 60 acres is in the southeast quarter of the section. Part of this land is alkaline, and the remainder has poor soils. No effort would be made to sell the tract for agricultural purposes. Another tract of 60 acres is in the southwest quarter of the section. Unfortunately, a considerable portion of this area has gone to alkali, and thus prevents the sale of one-half of the tract. The remaining thirty acres have good soils and are reasonably level. No appreciable extension of existing canals would be required to place water on these lands.

Section 30.

While the State owns 260 acres of land in Section 30, yet none of it would be recommended for agricultural purposes. Practically all of the area is above the main canal, and pumps would be needed to supply water to the land. In addition, nearly the entire acreage in State ownership has poor soil.

Section 31.

A quarter section of land owned by the State in Section 31 has the same general characteristics of lands under State ownership in Section 31. Reference is made to the preceding paragraph, which is deemed fully applicable to lands in this section.

Section 32.

There are two small tracts of 20 acres each in Section 32 that have

been investigated. Each of these tracts has small areas that contain good soils, but by far the greatest part of each 20 acres is alkaline. It is recommended that no part of either tract be sold for agricultural purposes.

LANDS DEEMED SUITABLE FOR AGRICULTURAL USE
IN TOWNSHIP 13 NORTH, RANGE 28 EAST

Description	Acreage
SW¼, NE¼, Section 7	40
NW¼, SE¼, Section 7	40
N ½, SW¼, SE¼, Section 7	20
SW¼, Section 8	160
SW¼, NE¼, Section 17	40
S ½, NW¼, NE¼, Section 17	20
NE¼, NW¼, Section 17	40
E ½, NW¼, NW¼, Section 17	20
NW¼, NE¼, Section 18	40
SW¼, SE¼, Section 18	40
S ½, NW¼, SE¼, Section 18	20
S ½, N ½, SE¼, NW¼, Section 18	10
	20
N ½, N ½, SE¼, NW¼, Section 20	10
NW¼, NW¼, Section 21	40
SW¼, NW¼, Section 21	40
NW¼, SW¼, Section 21	40
NE¼, SW¼, Section 21	40
W ½, NE¼, NW¼, Section 29	20
NW¼, SE¼, SW¼, Section 29	10
Total	710 Acres

LANDS IN TOWNSHIP 12 NORTH, RANGE 28 EAST.

Section 4.

The State owns 205 acres in the north half of Section 4. Small tracts may be found where soil conditions are good, but generally speaking, the soils in this area are of inferior quality. The total acreage of good land is not deemed sufficient to warrant selling any of these lands for agricultural purposes.

Section 7.

Two tracts of 40 acres each are under State ownership in Section 7. These areas are similar to several others that have been investigated in that they lie above the canal, and water could not be placed on them without pumping. The expense of installing and operating pumps is not considered warranted in the Lyman Project.

Section 18.

There are 120 acres of land in the northeast quarter of Section 18 that has received attention in this brief discussion. All this area has a moderate unbroken slope to the east, and could be placed under irrigation easily by tapping the main canal for water. A narrow strip of land near the southern boundary of the northeast quarter section has soil that is of inferior quality. There is also an area of 3 or 4 acres in the northwest corner of the quarter section that is alkaline. Aside from these two minor features, soil conditions are good in the tract.

The only lands in Township 12 North, Range 28 East, that would be offered for sale for agricultural purposes are in Section 18. These tracts are described as follows:

Description	Acreage
NW¼, NE¼, Section 18	40
N ½, SW¼, NE¼, Section 18	20
S ½, NW¼, NE¼, Section 18	20
N ½, SE¼, NE¼, Section 18	20
Total	100 Acres

SUMMARY

Reference to pages 3 and 9, and the above table, will show that a total of 310 acres are considered suitable for irrigation in Township 13 North, Range 27 East; 710 acres in Township 13 North, Range 28 East; and 100 acres in Township 12 North, Range 28 East; making a grand total of 1,120 acres. These lands are also shown on the map at the end of this report. It was desired to obtain a total of 1,522 acres, but this could not be secured if strictly favorable lands owned by the State are considered. The total may be reached, however, by including lands in Section 19, Township 13 North, Range 28 East.

While Section 19 is not under State ownership, it is believed that it could be brought into the project. The tract is particularly favorable from an agricultural point of view, as soil and topographic conditions are good, and no new canals would be required. There is an added fact that the inclusion of this section would make a more compact project. A strip about 1/8 of a mile wide on the west side of the section appears to be too high for irrigation under the present canal system. The remainder of the section, or a total of 560 acres, is deemed suitable for agricultural purposes.

If 560 acres in Section 19 of Township 13 North, Range 28 East, are included, there will be a total of 1,680 acres, which is 158 acres in excess

of the maximum requirement. In this event, it would be recommended that 560 acres in Section 19 be included, and that 160 acres in sections 13 and 24, Township 13 North, Range 27 East, as tabulated on page 3 of this report, be excluded from the project.

Respectfully submitted,

J. A. Fraps, Engineer

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Harold C Schwalb Collection
UA Special Collections