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## The Feasibility of Change-of-Use of Selected State Administered Lands in Utah

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Final Report  
to  
The Division of State Lands  
concerning

THE FEASIBILITY OF CHANGE-OF-USE OF  
SELECTED STATE ADMINISTERED LANDS IN UTAH

by

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FEASIBILITY OF CHANGE-OF-USE OF SELECTED  
STATE ADMINISTERED LANDS IN UTAH

Introduction

Many acres of the state come under the jurisdiction of the State Government and are managed by the appropriate department of state government. The Division of State Lands, Department of Natural Resources of the State of Utah is responsible for the management of much of the state owned land. The Division of State Lands leases the lands to various users. Revenues from the leases are used for the support of state administered programs such as education. The Division of State Lands desires to manage these lands as efficiently as possible and maximize the rents and thus increase the revenues available for the appropriate programs. The lands are classified according to their use or potential use such as mining lands, grazing lands, agricultural lands, or rangelands. The rent received varies according to the use. Since grazing land or rangeland has a low return, it would be desirable to change the use to one of the other or higher classifications. However, before a use can be changed, the tract must be upgraded or provided the characteristics of the tracts being classified for the other use.

Objective

The objective of this study is to provide an analysis of the characteristics of selected state land tracts and to judge whether or not it is physically and economically feasible to change the use classification of these tracts from rangeland or grazing to crop production.

### Procedure

The procedure used to accomplish the objective of this study includes two phases. The first phase determined the characteristics of each tract and compared these characteristics with known desirable characteristics of an agricultural tract to determine if the tract under consideration can be converted to an agricultural tract. The second phase was an analysis of the profitability of production of those tracts which meet the physical requirements of a use change.

### Land Tracts

The tracts of land chosen for consideration were selected by employees of the Division of State Lands and included seventeen parcels of land throughout the state. These lands were selected as those being most likely to have the required characteristics of an agricultural tract and are located in Rich, Uintah, Sanpete, Piute, Beaver, San Juan, Kane, and Washington counties. The list of land tracts and location of each is given in Table 1.

### Procedures

To determine the characteristics of each of the tracts, data were collected concerning soils, water levels, climate, elevation, slope, and accessibility. These data were then compared with the required characteristics of an irrigable land tract.

### Data Collection

The information given in this report was obtained from bibliographies (groundwater, surface water, climate), land use maps, USGS quad sheets, soil surveys, geologic surveys, water availability maps, well inspection reports,

Table 1. Land tracts to be studied.

NO.	LOCATION	SECTION	PORTION OF SECTION	COUNTY
1	T19S, R1E, SLM	9	SE $\frac{1}{4}$ NE $\frac{1}{4}$	SANPETE
2	T19S, R1E, SLM	10	SW $\frac{1}{4}$ NW $\frac{1}{4}$	SANPETE
3	T30S, R1W, SLM	13	NW $\frac{1}{4}$	WAYNE
4	T30S, R5W, SLM	2	ALL	BEAVER
5	T42S, R6W, SLM	32	ALL	KANE
6	T43S, R15W, SLM	19	ALL	WASHINGTON
7	T4S, R22E, SLM	16	ALL	UINTAH
8	T14N, R5E, SLM	18	ALL	RICH
9	T14N, R5E, SLM	19	ALL	RICH
10	T14N, R5E, SLM	20	ALL	RICH
11	T28S, R23E, SLM	32	ALL	SAN JUAN
12	T31S, R23E, SLM	14	ALL	SAN JUAN
13	T34S, R15E, SLM	32	ALL	SAN JUAN
14	T6S, R22E, SLM	32	ALL	UINTAH
15	T7S, R24E, SLM	2	ALL	UINTAH
16	T29S, R22E, SLM	36	ALL	SAN JUAN
17	T30S, R25E, SLM	2	ALL	SAN JUAN

and personal visits with local SCS personnel. At the onset of data collection, soil, topography, and ground water level information were the primary purpose of the search. Other types of data were collected after a preliminary screening. Table 2 gives a summary of the data collected.

It was difficult to find the same types of data for all tracts of land, and, therefore, to maintain continuity during the analysis. One area of special difficulty was that of groundwater availability. In many cases there were no wells near the tract of land of interest, and in some cases, there were no wells in the same township. In these difficult cases, an inference was made from the relationship of the geology in the area and in the area that had well log information.

The Appendix contains a definition of the soil classification system used in this study and a copy of the maps showing the tract locations.

Table 2. Land tract characteristics.

	1	2	3	4	5	6	7	8
	Soils	Well Data		Frost-Free Days	Annual Potential ET	Elevation	% Slope	Accessibility
		Depths	Static Levels					
T19S, R1E, Sec. 9	II-Irrig.	102	20	120	24-27	5300-5400	3-13	Unimproved dirt road
T19S, R1E, Sec. 10	II-Irrig.	102	20	120	24-27	5300-5400	3-13	Unimproved dirt road
T30S, R1W, Sec. 13						4200-4300	2-11	Unimproved dirt road
T30S, R5W, Sec. 2						9800-10100		
T42S, R6W, Sec. 32	No data	342	52	140	27-30	5000-5600	3-33	Heavy duty road
T43S, R15W, Sec. 18	VIII-NI	302	56	200	736	2900-3300	>20	Light duty road
T4S, R22E, Sec. 16	VII-NI	54	30	120	24-27	5260-5360	2-25	Light duty road
T14N, R5E, Sec. 18	VII-NI	390	231	100	<18	6000-6800	3-50	Unimproved dirt road
T14N, R5E, Sec. 19	VI-NI	390	231	120	<18	6000-6800	3-50	Unimproved dirt road
T14N, R5E, Sec. 20	VI-NI	390	231	120	<18	6000-6800	3-50	Primary highway
T28S, R23E, Sec. 32	VI-NI	850	480	100	27-30	6500-6960	1-6	No roads
T31S, R22E, Sec. 14	VII-NI	325	265	130	27-30	6000-6200	3-20	Medium duty road
T34S, R15E, Sec. 32	No data	No data		160	27-30	4600-5200	>4	Medium duty road
T6S, R22E, Sec. 32	VII-NI	No data	No data					
T7S, R24E, Sec. 17	VII-NI	No data	No data					
T29S, R22E, Sec. 36	VII-NI	325	No data	120	27-30	5600-5800		No roads
T30S, R25E, Sec. 2	VI-NI	400	351	110	24-27	6200-6400	>15	No roads

NI - Non-irrigable

Irrig. - Irrigable

Well data - this information was collected from well inspection reports obtained from State Engineers Office.

### Criteria for Agricultural Development

In order to make a comparison with the characteristics of each tract, it was necessary to set a criteria for irrigated agriculture. These criteria were developed from the experience of the authors. The criteria used for comparison of the individual tracts are:

1. Groundwater must be available with pumping lifts not to exceed 300 feet for complete sections and less for smaller tracts.
2. Surface water supplies should be adequate without construction of a dam.
3. Soil classifications must be at least IV and preferably I, II, or III.
4. Frostfree days should be at least 100 and preferably 120 days.
5. The slope must be less than 20% and will be considered marginal if greater than 15%.
6. The tract must be accessible from an existing road and must be reasonably close to a point of use or a shipping point.

Tracts of land that are near the limits of more than one of these criteria would be considered very marginal from the standpoint of agricultural development and should be given closer consideration before acceptance as an agricultural land parcel. Some of these considerations include local energy costs, water delivery system costs, the adaptability of the tract to the farming processes, and the size and shape of the land. An ideal land tract would have adequate surface water or groundwater close to the surface, less than five percent slope, a soil of class I, 200 frostfree days, and a close proximity to a city or a town with a processing plant or a shipping



facility. Of course, none of the selected tracts of state land are ideal or agricultural development would already have occurred.

### Data Analysis

The data analysis consisted of comparing the characteristics of each land tract with the criteria selected as necessary for the development of agricultural lands. The following list gives the location and number of the tract and the comparison with the basic criteria and the recommendation for that tract of land with respect to agricultural development.

### Land Tracts and Their Analysis

#### 1 & 2. T195, R1E, Sec. 9 & 10, 1/16 of each section.

These two tracts add to 80 acres. Soils are irrigable but being class II and IV do have limitations. The slope is quite steep but not excessive in some areas but good in others. Frost-free days are good. Some groundwater is available at about 66 feet from the surface. However, the well would need to be deeper to get sufficient water for irrigation. Other irrigation wells on the valley floor are about 200 feet deep or 300 feet below the level of this land. Two water problems that would make development of these tracts difficult are the water rights and the depth of pumpage for just 80 acres of land. The water rights problem might be satisfied by trading Central Utah Project water for a groundwater water right. However, with rising energy costs, these tracts should probably not be developed until produce prices catch up to inflate energy prices or until water becomes available from a less expensive source or method.

#### 3. T30S, R1W, Sec. 13, NW 1/4

Very little data were available for this tract which includes 160 acres. Accessibility is not good and the elevation is high. The soil is probably

in the non-irrigable class since it is in the high mountain range. Accessibility is not very good. Soils, frost-free days, accessibility, and water are probably all limiting. Development would most likely not be economical at this time.

4. T30S, R5W, Sec. 2, All

This tract is similar to number three so far as agriculture is concerned. However, since there are currently cabins or summer homes on the tract, it would seem feasible to rent summer home space instead of developing for agriculture.

5. T42S, R6W, Sec. 32, All

Only about one fifth of this section is flat enough for agricultural development. Groundwater would require too high a lift to be considered as a water source at this time. There is insufficient unappropriated surface water for agricultural development. Use of surface water would probably require construction of a reservoir for irrigation beyond the runoff peak. It is not recommended that this area be developed.

6. T43S, R15W, Sec. 19, All

This section does not have adequate soils, water, or small enough slope for development for irrigated agriculture.

7. T4S, R22E, Sec. 16, All

This tract has inadequate soils for agricultural development. Groundwater seems sufficiently close to the surface but would need additional investigation. The slope in some areas is too steep for agricultural development. The other factors seem acceptable. Development is not recommended.

8. T14N, R5E, Sec. 18

9. T14N, R5E, Sec. 19

10. T14N, R5E, Sec. 20

Major portions of these areas are too steep for irrigated agriculture. The soil surveys indicate that none of the sections have good potential for irrigated agriculture. However, approximately one-third of section 20 is currently irrigated and some dry farming is done in sections 18 and 19. Groundwater is nearly 400 feet down so irrigation water would be limited to surface supplies. We do not recommend additional agricultural development. However, parts of sections 18 and 19 and maybe 20 could be used for summer home development since there are currently homes on section 20.

11. T28S, R23E, Sec. 32

This section has neither soil nor water to support agricultural development. Water is about 500 feet down, and the soil is class VI which is non-irrigable. The intermittent streams in the area would require construction of a dam to hold early spring runoff for the irrigation season. Development for agriculture is not recommended.

12. T31S, R23E, Sec. 14

Soil quality and water availability are inadequate to recommend agricultural development of this tract. Other characteristics, however, seem adequate.

13. T34S, R15E, Sec. 32

Most of this tract is too steep for agricultural development. There were no available data concerning soils and groundwater. Only about 25 percent of the area is sufficiently level to be irrigated, and this area lies in a narrow belt along the highway for nearly one mile length. This tract is also removed from any municipal area and would require considerable transportation of goods and produce. The availability of water is also

likely to be limiting or at least too deep to pump economically. Indications are that this area should not be developed for agricultural use at this time.

14. T6S, R22E, Sec. 32

This tract is not sufficiently accessible for current development for agriculture. It is also estimated that soil and water would not support intense agriculture. There is currently one oil drill hole on this tract. Perhaps it should be considered for petroleum exploration rather than for agriculture.

15. T7S, R24E, Sec. 17

This section already has oil and gas wells on it. It should be leased for petroleum and gas, not agriculture.

16. T29S, R22E, Sec. 36

This tract is not very accessible and has soil class VII which is non-irrigable. Groundwater in the area is too deep to pump under present energy costs. No agricultural development is recommended.

17. T30S, R25E, Sec. 2

Both soil and water availability are inadequate for agricultural development of this tract. It is also highly inaccessible for farming. The slope is too steep for agriculture over much of the area. No agricultural development is recommended.

### Recommendations and Summary

The recommendation is that none of the land tracts receive further intensive investigation with agricultural development as the objective. None of the tracts were sufficiently free of deficiencies to qualify as having good potential for agricultural development. Poor soils and/or inadequate water conditions were the main factors in eliminating most of the tracts. High elevation, topography, and climate also contributed to the recommendation for some areas. In the case of two adjoining sites in Sanpete County, their elimination was due to the potential high cost of developing an irrigation system and the lack of available water and water rights. The use of additional water in these areas currently brings complaints and possible court action from downstream users.

In summary, it appears that none of the tracts currently qualify for consideration as irrigated agriculture lands. Some of the tracts may qualify for recreational development or other uses. Irrigated agriculture may be a viable consideration in the future if the relationship between energy costs and production returns changes or reverses.

All of the tracts of land studied in Rich and Beaver Counties show some potential for recreational homesites. It should be noted that areas surrounding these particular tracts are currently experiencing development of recreational homesites. With development already in the area, it seems possible that these areas could be developed with similar intent. Returns for such use would be considerably higher than for the current rangeland use.

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APPENDIX

## DEFINITION OF SOIL CLASSIFICATION SYSTEM

**Irrigable** - in this classification, soils are grouped according to their potentialities and limitations for sustained production of the common cultivated crops that do not require specialized site conditioning or site treatment.

**Non-irrigable** - are soils unsuitable for longtime sustained use for cultivated crops. These soils are grouped according to their potentialities and limitations for the production of permanent vegetation and according to their risks of soil damage if mismanaged.

### Capability classes

Land suited to cultivation and other uses

Class I - these soils have few limitations that restrict their use

Class II - these soils have some limitations that reduce the choice of plants for cultivation

Class III - these soils have severe limitations that reduce the choice of plants

Class IV - these soils have very severe limitations that restrict the choice of plants, and require very careful management

Land limited in use - generally not suited to cultivate

Class V - these soils have little or no erosion hazard but do have limitations that restrict their use largely for pasture or range development

Class VI - these soils have continuing limitations that cannot be corrected, such as steep slope, severe erosion hazard, effects of past erosion, stoniness, shallow rooting zone. Generally suited for pasture or range utilization.

Class VII - these soils have one or more continuing limitations that cannot be corrected, such as very steep slopes, erosion, shallow soil, unfavorable climate. Generally suited for pasture or range utilization.

Class VIII - these soils include badlands, rock outcrops, sand beaches, river wash, mine tailings, and other nearly barren lands. Not suitable for pasture or range utilization.