GROUND WATER INVESTIGATION OF THE MOUNTAIN HOME PLATEAU, IDAHO

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TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS	i
LIST OF FIGURES	ii
LIST OF TABLES	iii
INTRODUCTION	1
Purpose and Objectives	1
Description of the Study Area	2
Previous Studies	5
HYDROGEOLOGY	6
Geology	6
Aquifer Description	13
Data Collection	16
Direction of Ground Water Flow	16
Water Level Fluctuations	22
Changes in the Ground Water Systems	31
WATER SUPPLY AND USE	36
Basin Yield	36
Irrigated Lands	41
Consumptive Irrigation Requirement	43
Water Balance	44
REASONABLE PUMPING LEVELS	46
CONCLUSIONS	56
RECOMMENDATIONS	58

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LIST OF FIGURES

		Page
1.	Study Area Location	3
2.	Mountain Home Plateau Study Area	4
3.	Major Geologic Units and Locations of Cross Sections on Mountain Home Plateau	8
4a.	Cross Section A	9
4b.	Cross Section B	10
4c.	Cross Section C	11
4d.	Cross Section D	12
5.	Location of Perched Aquifer	14
6.	Locations of Wells Measured in 1982	15
7.	Water Levels of the Regional Aquifer in Fall of 1976	16
8.	Water Levels of the Regional Aquifer in Fall of 1981	17
9.	Water Levels of the Perched Aquifer, 1976	20
10.	Water Levels of the Perched Aquifer, 1981	21
11.	Hydrographs of Wells on the Mountain Home Plateau	24
12.	Hydrographs of Wells on the Mountain Home Plateau	25
13.	Hydrographs of Wells on the Mountain Home Plateau	26
14.	Hydrographs of Wells on the Mountain Home Plateau	27
15.	Hydrographs of Wells on the Mountain Home Plateau	28
16.	Hydrographs of Wells on the Mountain Home Plateau	29
17.	Hydrographs of Wells on the Mountain Home Plateau	30
18.	Change in Water Levels in the Regional Aquifer From 1976 to 1981 in Feet	32
19.	Change in Water Levels in the Perched Aquifer From 1976 to 1981 in Feet	34
20.	Irrigated Lands on Mountain Home Plateau, 1980	42
21.	Indices of Prices Paid and Prices Received by Farmers, U.S., 1973-1981	48
22.	Per Acre Electricity Cost Comparisons for Ground Water Pumping in Idaho	49
23.	Recommended Critical Groundwater Area Boundaries	60

LIST OF TABLES

		Page
1.	Description and Water-Bearing Characteristics of Geologic Units in the Mountain Home Plateau Area (Young, 1977)	7
2.	Annual Precipitation and Departure From Normal for Stations in Vicinity of Mountain Home Plateau in Inches	35
3.	Developed, Applications for, and Permitted Lands, Mountain Home Study Area (acres)	41
4.	Row Crop and Small Grain Classification	43
5.	Water Balance for Mountain Home Study Area, 1980 Conditions	45
6.	Per Acre Crop Enterprise and Farm Budget Summaries for Mountain Home Area With Center Pivot Irrigation	50
7.	Per Acre Crop Enterprise and Farm Budget Summaries for Mountain Home Area With Hand Line Sprinkler Irrigation	51
8.	Farm Budget	53
9.	Annual Cost of Pumping Ground Water - Idaho Power Service Area as of March 1, 1982	54
10.	Annual Cost of Pumping Ground Water - Idaho Power Service Area as of March 1, 1982	55

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INTRODUCTION

Purpose and Objectives

On May 7, 1981, a 128 square mile area northwest of Mountain Home was designated as the Cinder Cone Butte Critical Ground Water Area (C.G.W.A). This declaration was the response by the Director of the Idaho Department of Water Resources (IDWR) to declining ground water levels and a possibly over-appropriated system.

This study was initiated on May 19, 1981 to review the hydrogeology of a larger area including and surrounding the Cinder Cone Butte C.G.W.A. and to develop a water budget for the combined areas. The results of the study will be used to modify the boundaries of the C.G.W.A., if warranted, and develop recommendations for management of the region's ground water resource.

The objectives of the study are:

1) Determine the recharge for the study area,
2) Determine the aquifer(s) and ground water movement for the study area,
3) Determine the net withdrawal from existing development and the potential net withdrawal from the study area by water right permits and applications for ground water development projects,

4) Propose changes in the C.G.W.A. boundaries, if warranted, and

5) Recommend management provisions such as well spacing, casing requirements.

Description of the Study Area

Located in southwestern Idaho (Figure 1), much of the study area is part of a generally broad, flat plateau which slopes gently towards the southwest. The plateau is broken by volcanic structures --- crater rings, cinder cones, and shield volcanoes. The northern boundary of the study area is formed by the Danskin Mountains while the southern boundary is the rim of the Snake River Canyon (Figure 2). Local ground water conditions within the canyon along the river are not addressed by this study. The eastern boundary of the study area was selected to include essentially all of the plateau east of Mountain Home which could be considered to have a source of recharge similar to areas to the west. The boundary is a topographic divide running generally north-south approximately one mile east of Reverse. The northwestern boundary was similarly chosen to include areas where the ground water recharge is considered to be a common source (Figure 2). Tributaries of Indian Creek which flow westward to the Boise River were excluded.

The study area varies in elevation from 6694 feet at Danskin Peak to about 2330 feet near the Snake River. All streams draining the plateau are ephemeral, flowing south toward the Snake River. The larger streams draining the

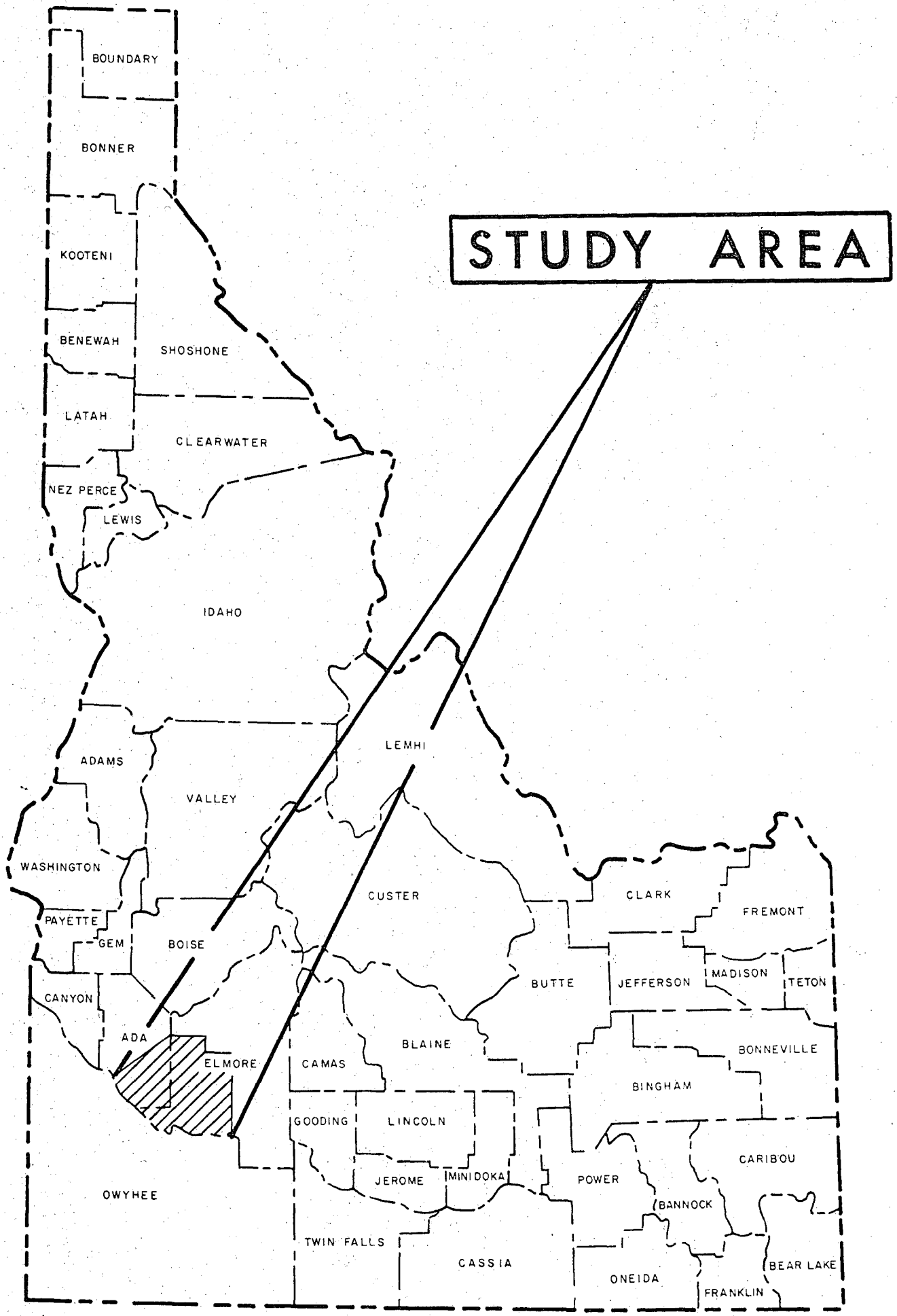

Figure I. Study Area Location

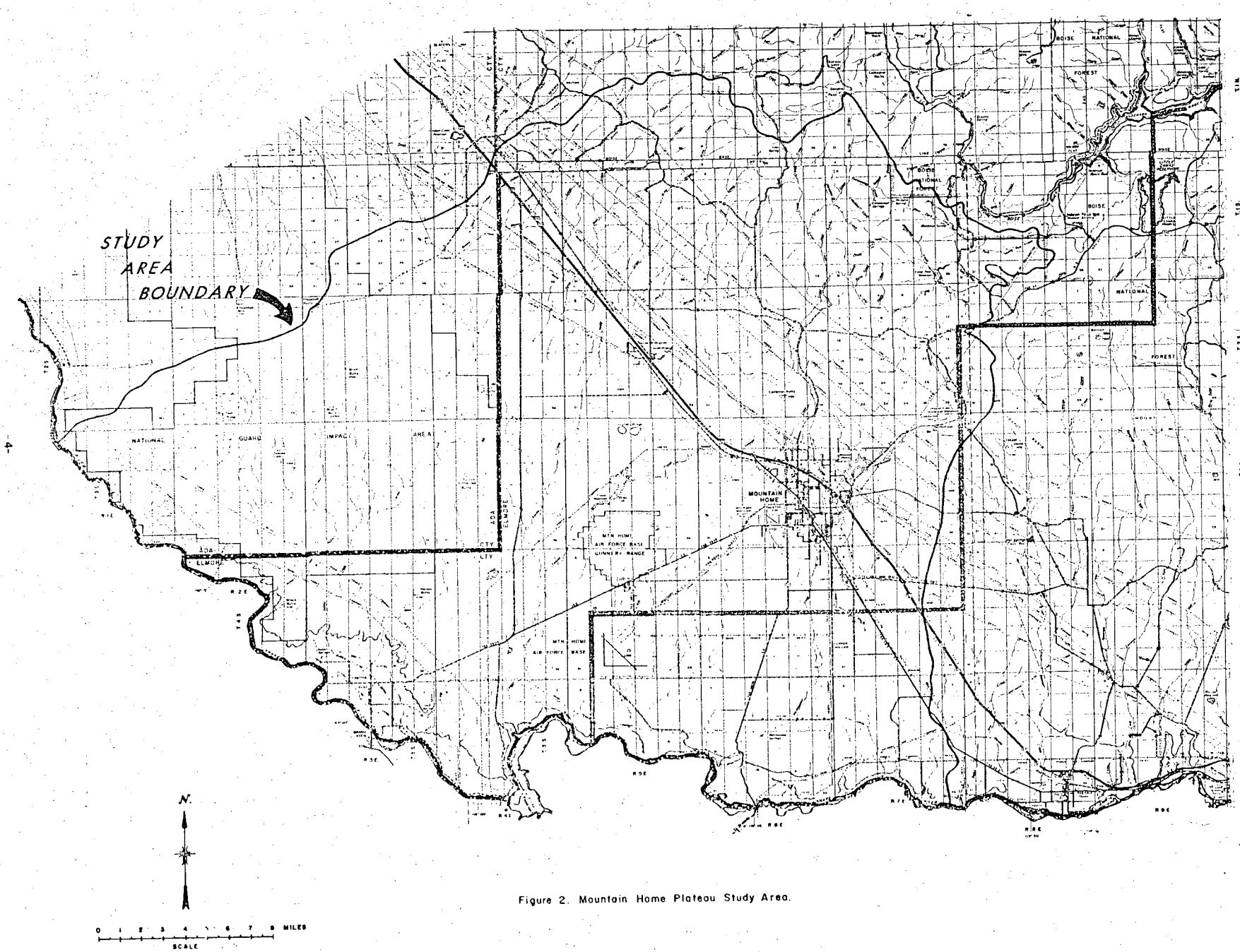

Figure 2. Mountain Home Plateau Study Area.

Danskin Mountains are fed by springs in the Tertiary volcanics and Cretaceous granites. Characterized by hot, dry summers and cold winters, the climate of the plateau is semi-arid. Average annual precipitation ranges from nine inches on the plateau to about 23 inches in the mountains.

Previous Studies

Two studies were made by Ralston and Chapman (1968 and 1970) before the majority of ground water development took place. Those studies found that recharge to the ground water system in the eastern portion of the Mountain Home Plateau is limited due to low amounts of precipitation, relatively impermeable material in the area of most precipitation, and high evapotranspiration rates. The authors further state: "The lack of evidence of recharge and discharge in the area indicates a very limited resource."

By 1977, development of the ground water resource had caused water levels to decline in areas south and west of Mountain Home (Young, 1977). The conclusion was drawn that additional large scale ground water development would probably result in economically prohibitive pumping lifts or excessive uses of energy to lift the water. No estimate was made of the volume of recharge to the ground water system.