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DYNAMICS OF PLAYA LAKES IN THE TEXAS HIGH PLAINS

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Prepared for
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PREFACE

The purpose of this project was to correlate ERTS-1 satellite imagery signatures with the water balance ecosystem and geology of select playa lake basins in West Texas. Work was concentrated at the large Double Lakes test site in Lynn County, Texas, although ground-truth of three other small playas was determined.

The principal work during this report period consisted of gathering details and data from the various research associates, the initiation of steps toward preparation of the preliminary final report, the measurement of film densities over the test site, and presentation of two talks to two different professional Symposia.

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DYNAMICS OF PLAYA LAKES IN THE TEXAS HIGH PLAINS

INTRODUCTION

The purpose of this report is to describe work performed during the six-month period of October 1973-March 1974, under NASA contract NAS5-21720, on the ERTS-1 test site at Double Lakes, Lynn County, Texas.

Essentially, ground-truth studies have been concluded at the test site and data from the many investigators and different disciplines is now being accumulated, condensed and evaluated.

WORK PERFORMED

During the report period (October, 1973-March, 1974), the following work (directly or indirectly related to the project) was performed:

- 1) the Principal Investigator presented a paper to the 3rd ERTS-1 Principal Investigators Symposium, in Washington, D.C. held during the period December 10-16.
- 2) a paper on the cost/benefits of using ERTS-1 MSS and CCT imagery compared to conventional methods, such as aerial photographs and ground survey, for a survey of surface water resources in West Texas, was presented to the American Geophysical Union Symposia on "Evaluation of

Water Resources From Satellite Observations" during the period December 10-14, in San Francisco, California.

- 3) the film densities at the Double Lakes test site have been measured within the playa areas and correlated to the signatures of the dry playa, the muddy playa, and the water-flooded playa.
- 4) the tensiometer data is being analyzed in the Agronomy Department by Dr. R. Stevens: no results as yet available.
- 5) data for inclusion in the final report is being assembled and figures are being drafted and reproduced.
- 6) the scan of clay mineralogy from the original Spade playa test site was completed by Mr. J. Goebel.

NEXT 6 MONTHS PROGRAM

A representative core of the lacustrine section from the Double Lakes test site has not been secured, as yet, because of either a flooded or a muddy playa. Although this last year has been unusually dry, the water level in the playa is near-surface, thus the playa has been too soft for the core rig. However, the core will be taken during this next

port period from the playa edge if the ground water level does not drop enough to allow drying of the central playa area.

The draft copy of the final report for this project is due on or before August 24, 1974, thus the next work period will concentrate on completion of this report.

NTIS SUMMARY

Discipline 4 - Water Resources

Subdiscipline - Limnology

The purpose of this project was to correlate ERTS-1 satellite imagery signatures with the water balance ecosystem and geology of select playa basins in West Texas. Work has concentrated at the large Double Lakes test site in Lynn County, Texas.

The work conducted during this report period consisted of refinement of weather data, investigation of soil moisture data, measurement of film densities, correlation of film densities to signatures of the dry playa, the muddy playa, and the flooded playa, and the presentation of two papers to the 3rd ERTS-1 Principal Investigators Symposium and the American Geophysical Unions Symposium on "Evaluation of Water Resources From Satellite Observations."