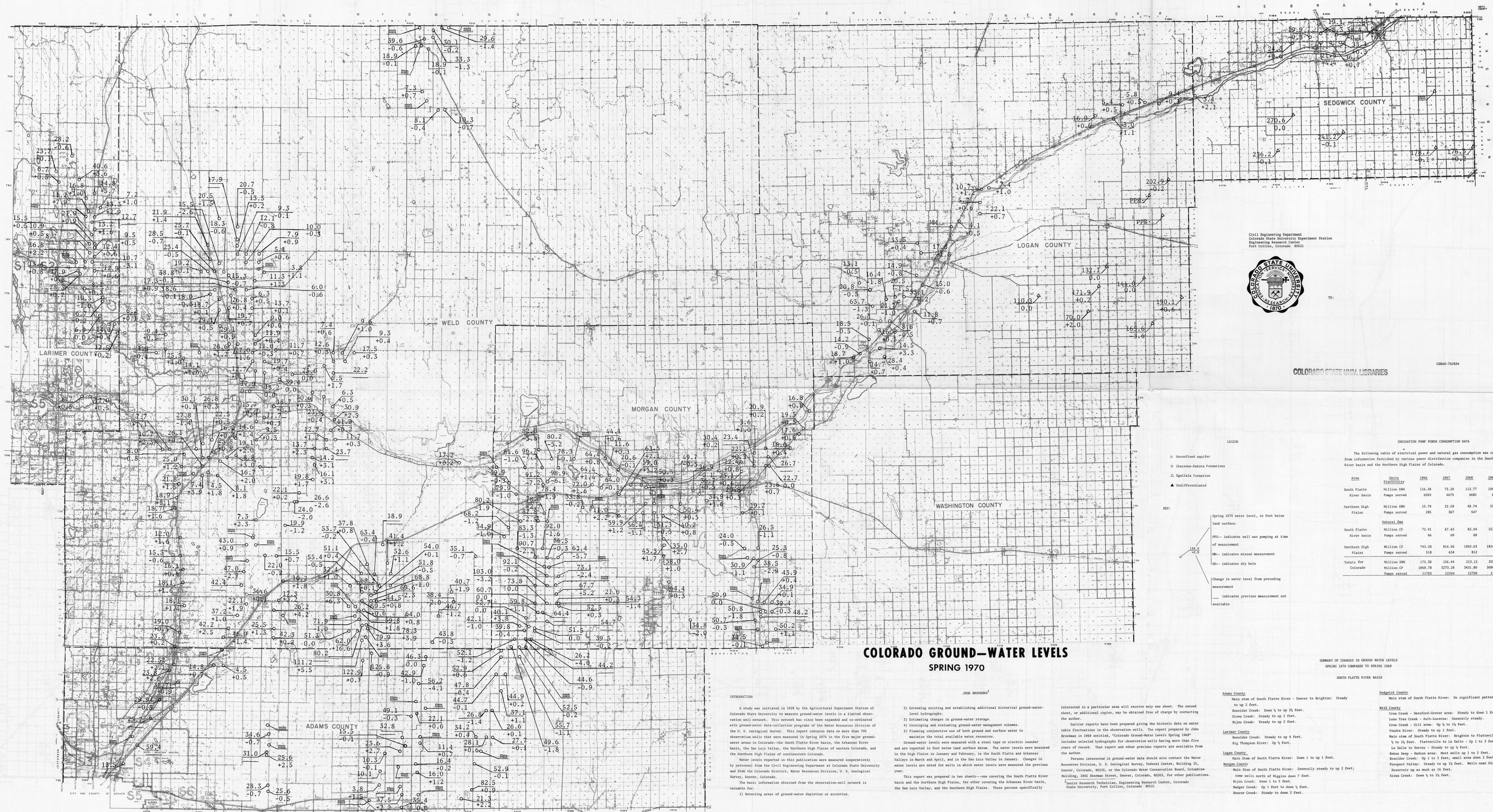


TA 7
C6
69170-34
sheet 1

Spring 70



Civil Engineering Department
Colorado State University Experiment Station
Engineering Research Center
Fort Collins, Colorado 80521



COLORADO STATE UNIV. LIBRARIES

CE69-70J854

LEGEND

- Unconfined aquifer
- Cheyenne-Sioux Formations
- △ Ogallala Formation
- ▲ Undifferentiated

KEY:

- Spring 1970 water level, in feet below land surface.
- PPG-- indicates well was pumping at time of measurement
- MM-- indicates missed measurement
- DB-- indicates dry hole
- Change in water level from preceding measurement
- indicates previous measurement not available

IRRIGATION PUMP POWER CONSUMPTION DATA

The following table of electrical power and natural gas consumption was compiled from information furnished by various power distribution companies in the South Platte River basin and the Northern High Plains of Colorado.

Area	Units	1966	1967	1968	1969
Electricity					
South Platte River basin	Million KWH	116.38	73.29	112.77	106.93
Pumps served		6593	6675	6681	6778
Natural Gas					
Northern High Plains	Million KWH	15.79	22.58	49.74	55.63
Pumps served		285	367	547	783
South Platte River basin					
Million CF		72.41	67.43	82.04	153.32
Pumps served		66	69	69	105
Northern High Plains					
Million CF		743.28	814.66	1850.03	1816.81
Pumps served		518	634	812	929
Totals for Colorado					
Million KWH		175.30	156.44	213.13	205.10
Million CF		1969.78	3273.28	3431.80	3090.22
Pumps served		11793	12399	12709	15501

SUMMARY OF CHANGES IN GROUND-WATER LEVELS
SPRING 1970 COMPARED TO SPRING 1969

SOUTH PLATTE RIVER BASIN

- Adams County**
Main stem of South Platte River - Denver to Brighton: Steady to up 2 feet.
Boulder Creek: Down 1/4 to up 3/4 feet.
Long Tree Creek - Arden-Lower: Generally steady.
Kiona Creek: Steady to up 2 feet.
Hijon Creek: Steady to up 2 feet.
- Larimer County**
Boulder Creek: Steady to up 4 feet.
Big Thompson River: Up 1/4 foot.
- Logan County**
Main stem of South Platte River: Down 1 to up 1 foot.
- Morgan County**
Main stem of South Platte River: Generally steady to up 2 feet.
Some wells north of Wiggins down 7 feet.
Hijon Creek: Down 1 to 5 feet.
Rader Creek: Up 1 foot to down 1/2 foot.
Reaver Creek: Steady to down 2 feet.
- Sedgwick County**
Main stem of South Platte River: No significant pattern.
- Weld County**
Crow Creek - Hereford-Glover area: Steady to down 1 foot.
Long Tree Creek - Arden-Lower: Generally steady.
Crow Creek - Gili area: Up 1/4 to 1/2 feet.
Poudre River: Steady to up 1 foot.
Main stem of South Platte River: Brighton to Plattville - Up 1/4 to 1/2 feet. Plattville to La Salle - Up 1 to 3 feet.
La Salle to Kersey - Steady to up 1/2 foot.
Beebe Dam - Hudson area: Most wells up 1 to 2 feet.
Boulder Creek: Up 1 to 3 feet; small area down 2 feet.
Prospect Valley: Steady to up 1/2 feet. Wells near Olds Reservoir up as much as 10 feet.
Kiona Creek: Down 1/4 to 1/2 feet.

COLORADO GROUND-WATER LEVELS
SPRING 1970

JOHN BROODMAN

INTRODUCTION

A study was initiated in 1929 by the Agricultural Experiment Station of Colorado State University to measure ground-water levels in a limited observation well network. This network has since been expanded and co-ordinated with ground-water data-collection programs of the Water Resources Division of the U. S. Geological Survey. This report contains data on more than 700 observation wells that were measured in Spring 1970 in the five major ground-water areas in Colorado--the South Platte River basin, the Arkansas River basin, the San Luis Valley, the Northern High Plains of eastern Colorado, and the Southern High Plains of southeastern Colorado. River levels reported in this publication were measured cooperatively by personnel from the Civil Engineering Department at Colorado State University and from the Colorado District, Water Resources Division, U. S. Geological Survey, Denver, Colorado. The basic information obtained from the observation-well network is valuable for:
1) Detecting areas of ground-water depletion or accretion.

- 2) Extending existing and establishing additional historical ground-water level hydrographs.
 - 3) Establishing changes in ground-water storage.
 - 4) Developing and evaluating ground-water management schemes.
 - 5) Planning conjunctive use of both ground and surface water to maximize the total available water resources.
- Ground-water levels were measured with a steel tape or electric sounder and are reported in feet below land surface datum. The water levels were measured in the High Plains in January and February; in the South Platte and Arkansas Valleys in March and April; and in the San Luis Valley in January. Changes in water levels are noted for wells in which water levels were measured the previous year. This report was prepared in two sheets--one covering the South Platte River basin and the Northern High Plains, the other covering the Arkansas River basin, the San Luis Valley, and the Southern High Plains. Those persons specifically

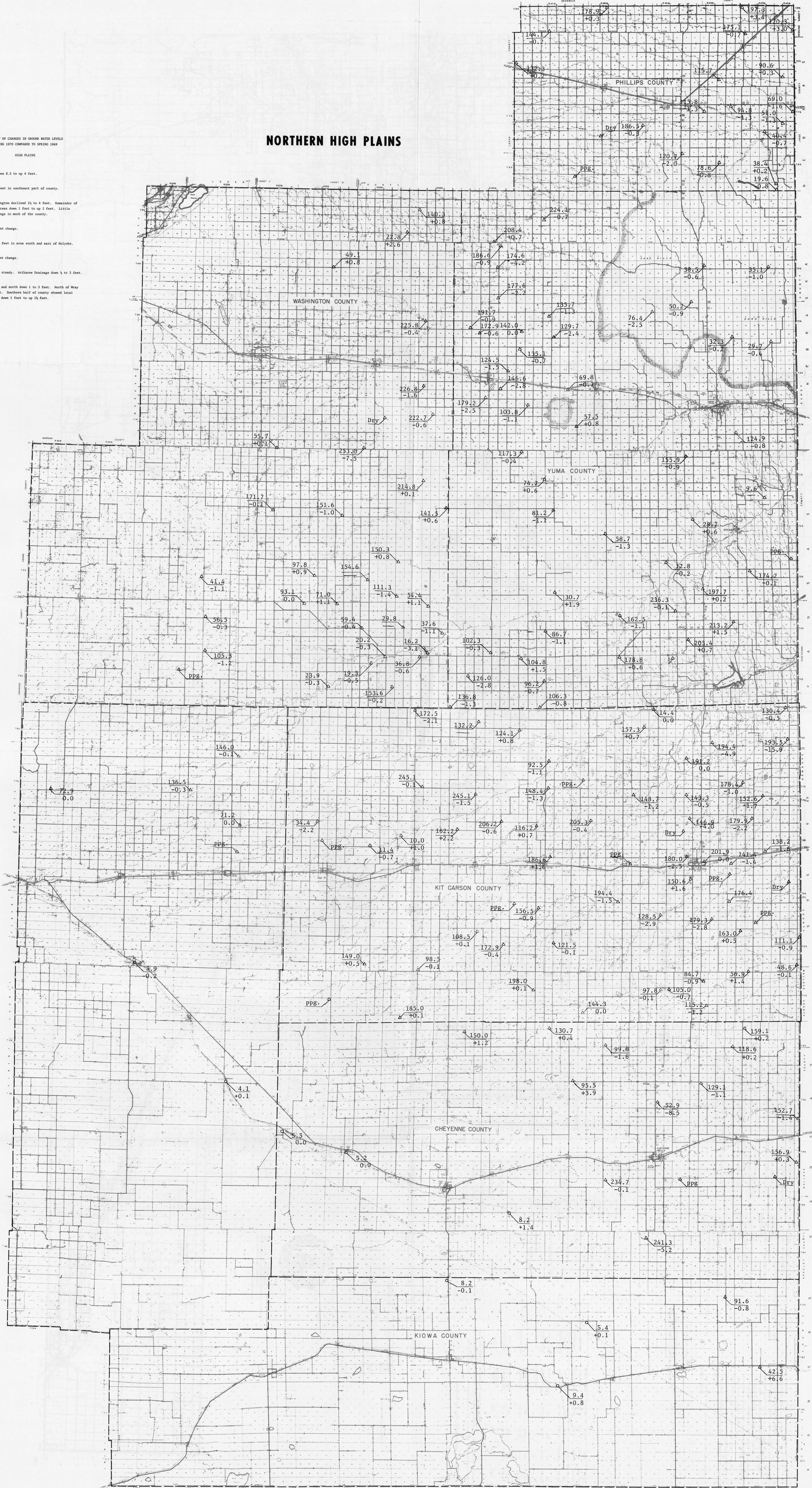
interested in a particular area will receive only one sheet. The second sheet, or additional copies, may be obtained free of charge by contacting the author. Earlier reports have been prepared giving the historic data on water table fluctuations in the observation wells. The report prepared by John Broodman in 1969 entitled, "Colorado Ground-Water Levels Spring 1969" includes selected hydrographs for observation wells having more than five years of record. That report and other previous reports are available from the author. Persons interested in ground-water data should also contact the Water Resources Division, U. S. Geological Survey, Federal Center, Building 25, Denver, Colorado, 80225, or the Colorado Water Conservation Board, Columbus Building, 1845 Sherman Street, Denver, Colorado, 80202, for other publications. Senior Research Technician, Engineering Research Center, Colorado State University, Fort Collins, Colorado 80521

SOUTH PLATTE RIVER BASIN

SUMMARY OF CHANGES IN GROUND WATER LEVELS
SPRING 1970 COMPARED TO SPRING 1969
HIGH PLAINS

NORTHERN HIGH PLAINS

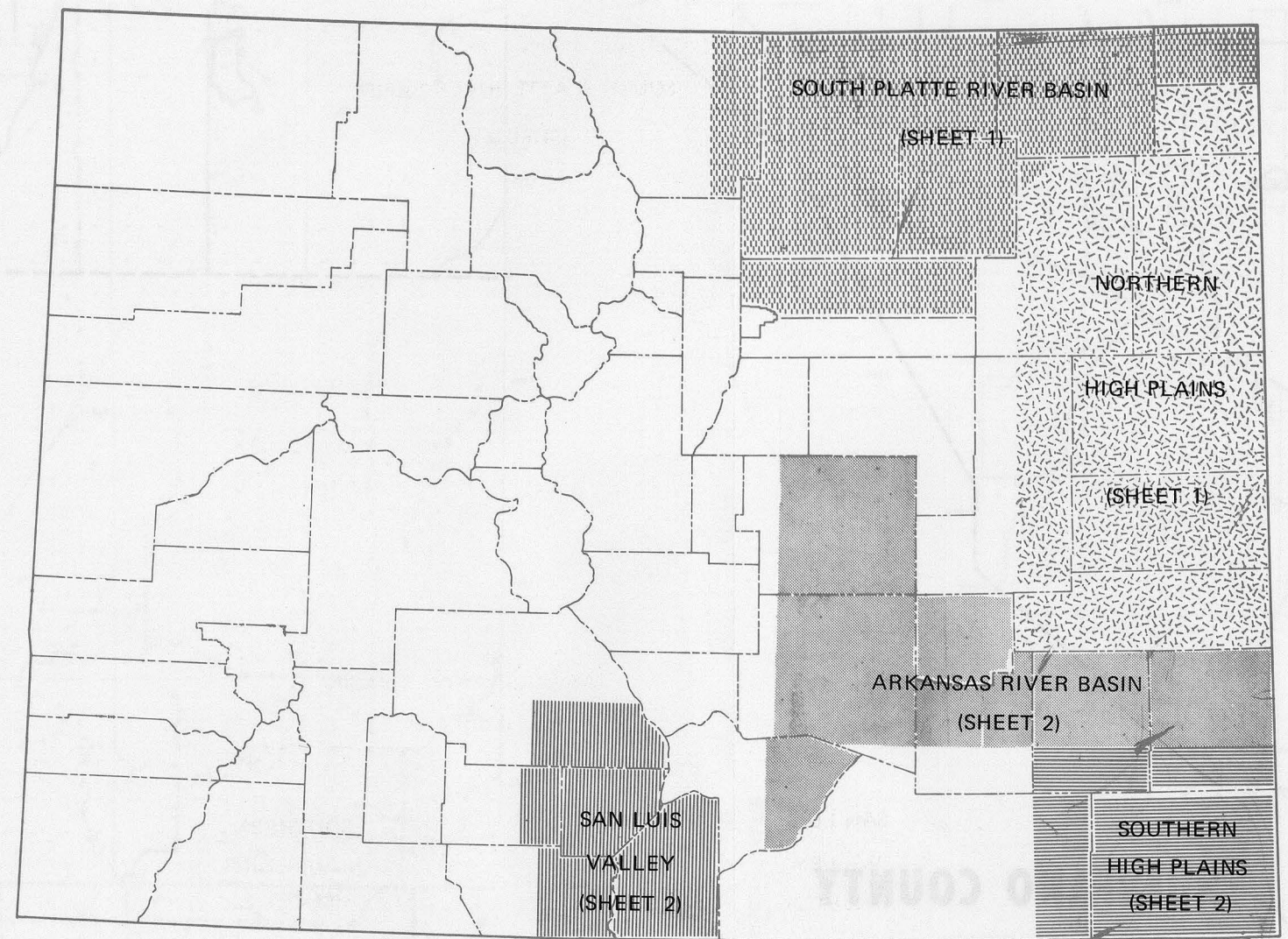
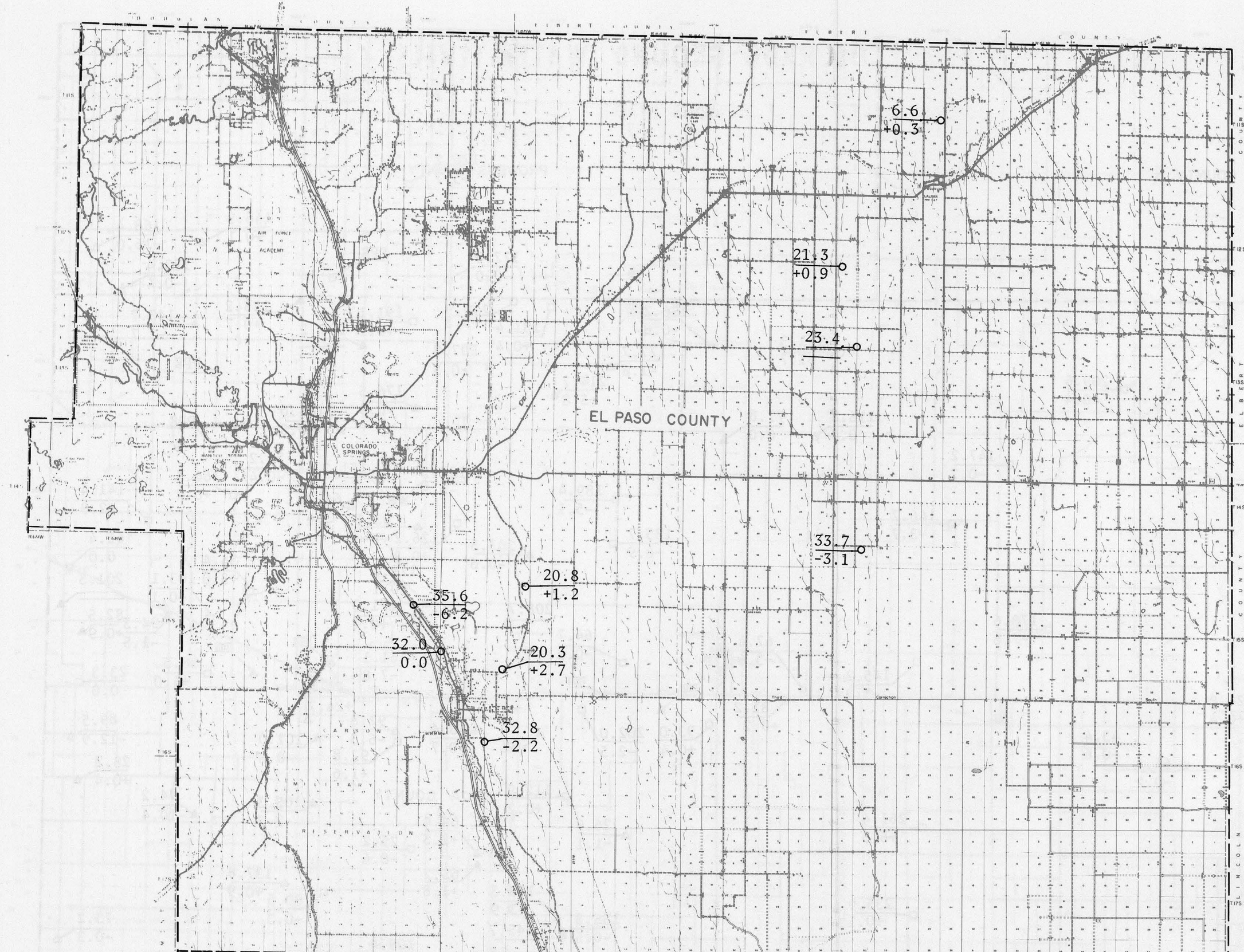
- Cheyenne County**
Variable from down 8.5 to up 4 feet.
- Lincoln County**
Steady to up 6 feet in southeast part of county.
- Kit Carson County**
Wells near Burlington declined 1½ to 4 feet. Remainder of county-local areas down 1 foot to up 2 feet. Little significant change in much of the county.
- Lincoln County**
Little significant change.
- Phillips County**
Steady to down 2 feet in area south and east of Holyoke.
- Sedgewick County**
Little significant change.
- Washington County**
County generally steady. Arilsee Drainage down ½ to 3 feet.
- Yuma County**
Vicinity of Yuma and north down 1 to 3 feet. North of Wray down ½ to 1 foot. Southern half of county showed local variations from down 1 foot to up ½ feet.



TA-7
CG
69/70-34
sheet 2

COLORADO GROUND WATER LEVELS INCLUDED IN THIS REPORT

COLORADO GROUND WATER LEVELS
SPRING 1970



INTRODUCTION

A study was initiated in 1929 by the Agricultural Experiment Station of Colorado State University to measure ground-water levels in a limited observation well network. This network has since been expanded and co-ordinated with ground-water data-collection programs of the Water Resources Division of the U. S. Geological Survey. This report contains data on more than 700 observation wells that were measured in Spring 1970 in the five major ground-water areas in Colorado--the South Platte River basin, the Arkansas River basin, the San Luis Valley, the Northern High Plains of eastern Colorado, and the Southern High Plains of southeastern Colorado.

Water levels reported in this publication were measured cooperatively by personnel from the Civil Engineering Department at Colorado State University and from the Colorado District, Water Resources Division, U. S. Geological Survey, Denver, Colorado.

The basic information obtained from the observation-well network is valuable for:

- 1) Detecting areas of ground-water depletion or accretion.

JOHN BROOKMAN¹

- 2) Extending existing and establishing additional historical ground-water level hydrographs.
 - 3) Estimating changes in ground-water storage.
 - 4) Developing and evaluating ground-water management schemes.
 - 5) Planning conjunctive use of both ground and surface water to maximize the total available water resources.
- Ground-water levels were measured with a steel tape or electric sounder and are reported in feet below land surface datum. The water levels were measured in the High Plains in January and February, in the South Platte and Arkansas Valleys in March and April, and in the San Luis Valley in January. Changes in water levels are noted for wells in which water levels were measured the previous year.
- This report was prepared in two sheets--one covering the South Platte River basin and the Northern High Plains, the other covering the Arkansas River basin, the San Luis Valley, and the Southern High Plains. Those persons specifically

interested in a particular area will receive only one sheet. The second sheet, or additional copies, may be obtained free of charge by contacting the author.

Earlier reports have been prepared giving the historic data on water table fluctuations in the observation wells. The report prepared by John Brookman in 1969 entitled, "Colorado Ground-Water Levels Spring 1969" includes selected hydrographs for observation wells having more than five years of record. That report and other previous reports are available from the author.

Persons interested in ground-water data should also contact the Water Resources Division, U. S. Geological Survey, Federal Center, Building 25, Denver, Colorado, 80225, or the Colorado Water Conservation Board, Columbine Building, 1845 Sherman Street, Denver, Colorado, 80205, for other publications.

¹Senior Research Technician, Engineering Research Center, Colorado State University, Fort Collins, Colorado 80521

LEGEND

- Unconfined aquifer
- Cheyenne-Ogallala Formations
- △ Ogallala Formation
- ▲ Undifferentiated

KEY:

- Spring 1970 water level, in feet below land surface.
- FFG-- indicates well was pumping at time of measurement
- W-- indicates missed measurement
- DK-- indicates dry hole
- Change in water level from preceding measurement
- Indicates previous measurement not available

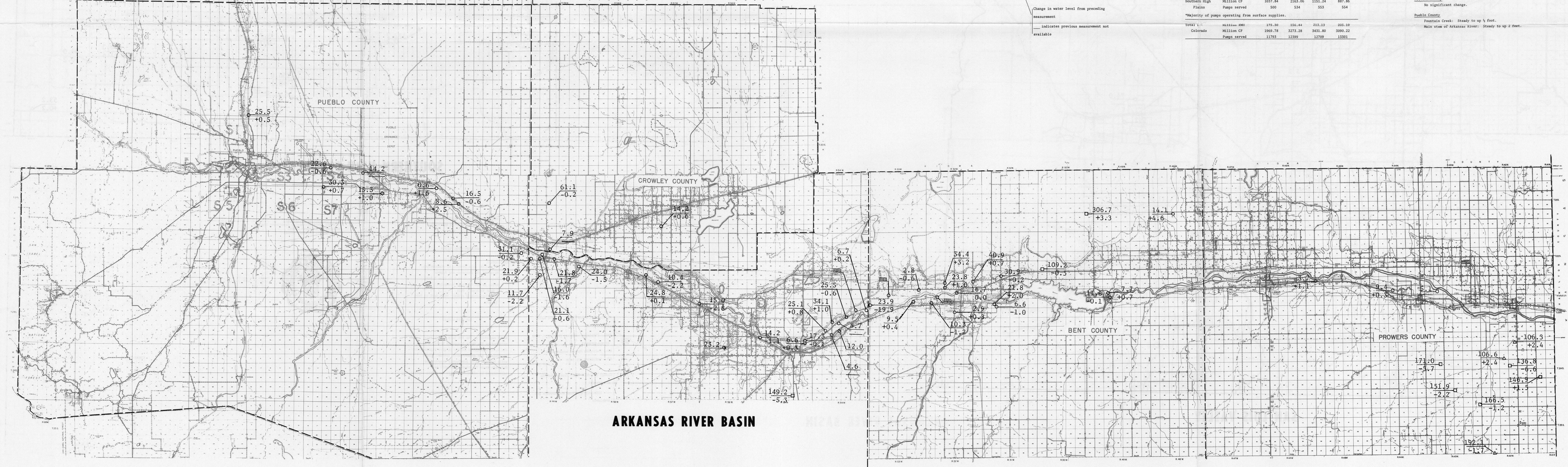
IRRIGATION PUMP POWER CONSUMPTION DATA

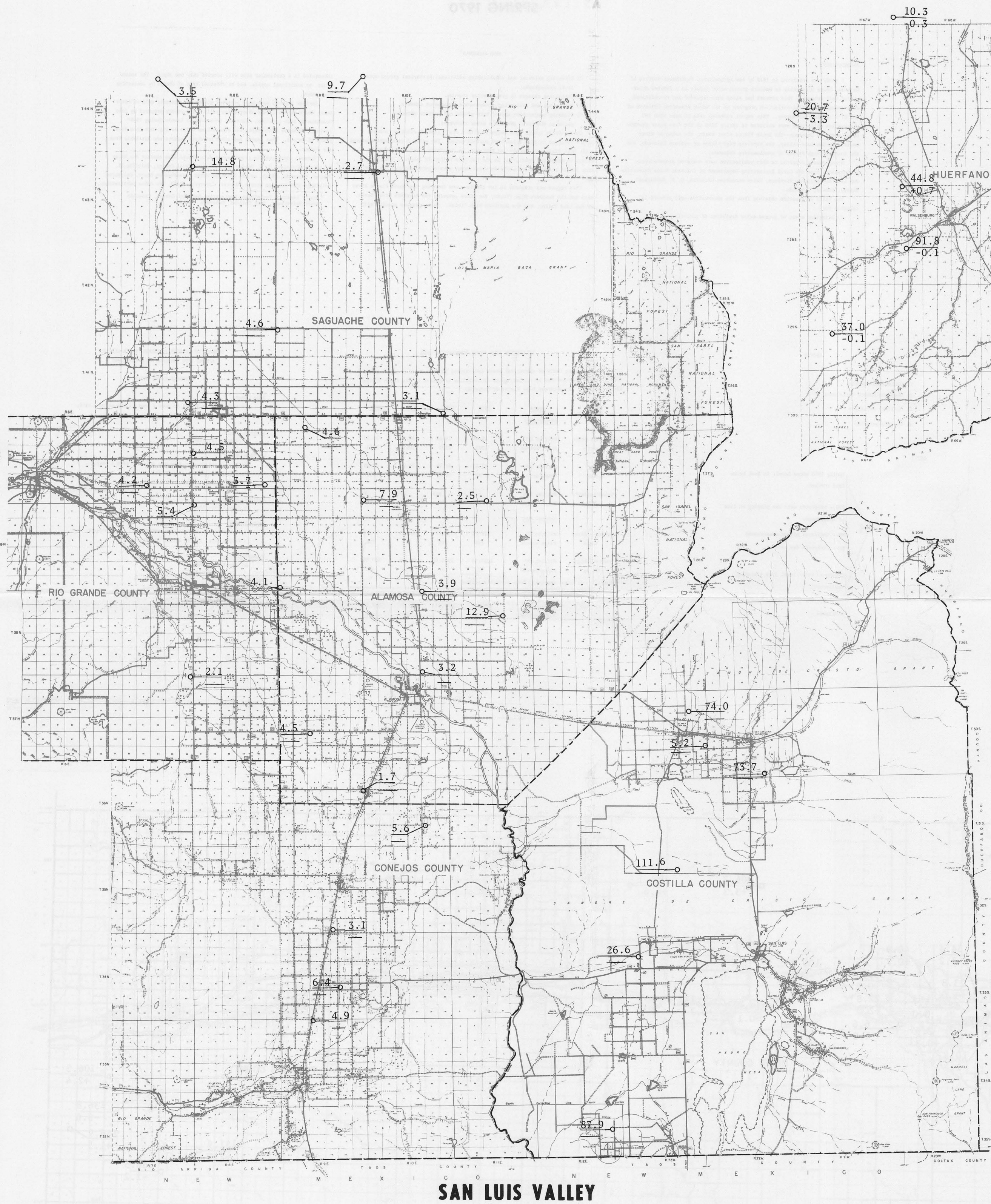
The following table of electrical power and natural gas consumption was compiled from information furnished by various power distribution companies in the South Platte River basin and the Northern High Plains of Colorado.

Area	Units		1966	1967	1968	1969
			Electricity			
Arkansas River basin	Million KWH		15.04	18.65	20.89	16.30
	Pumps served		1903	1903	1912	1915
San Luis Valley	Million KWH		27.63	41.56	29.40	25.85
	Pumps served		1747	1978	1872	1941
Grand Valley*	Million KWH		452	363	331	385
	Pumps served		56	75	58	74
Arkansas River basin	Million CF		116.25	228.15	345.40	232.23
	Pumps served		122	164	205	224
Southern High Plains	Million CF		1037.84	2163.96	1151.24	887.86
	Pumps served		500	524	533	524
*Majority of pumps operating from surface supplies.						
TOTAL	Million KWH		179.30	186.44	213.13	205.10
	Million CF		1969.78	3273.28	3431.80	3080.22
Colorado	Pumps served		11793	12299	12709	13301

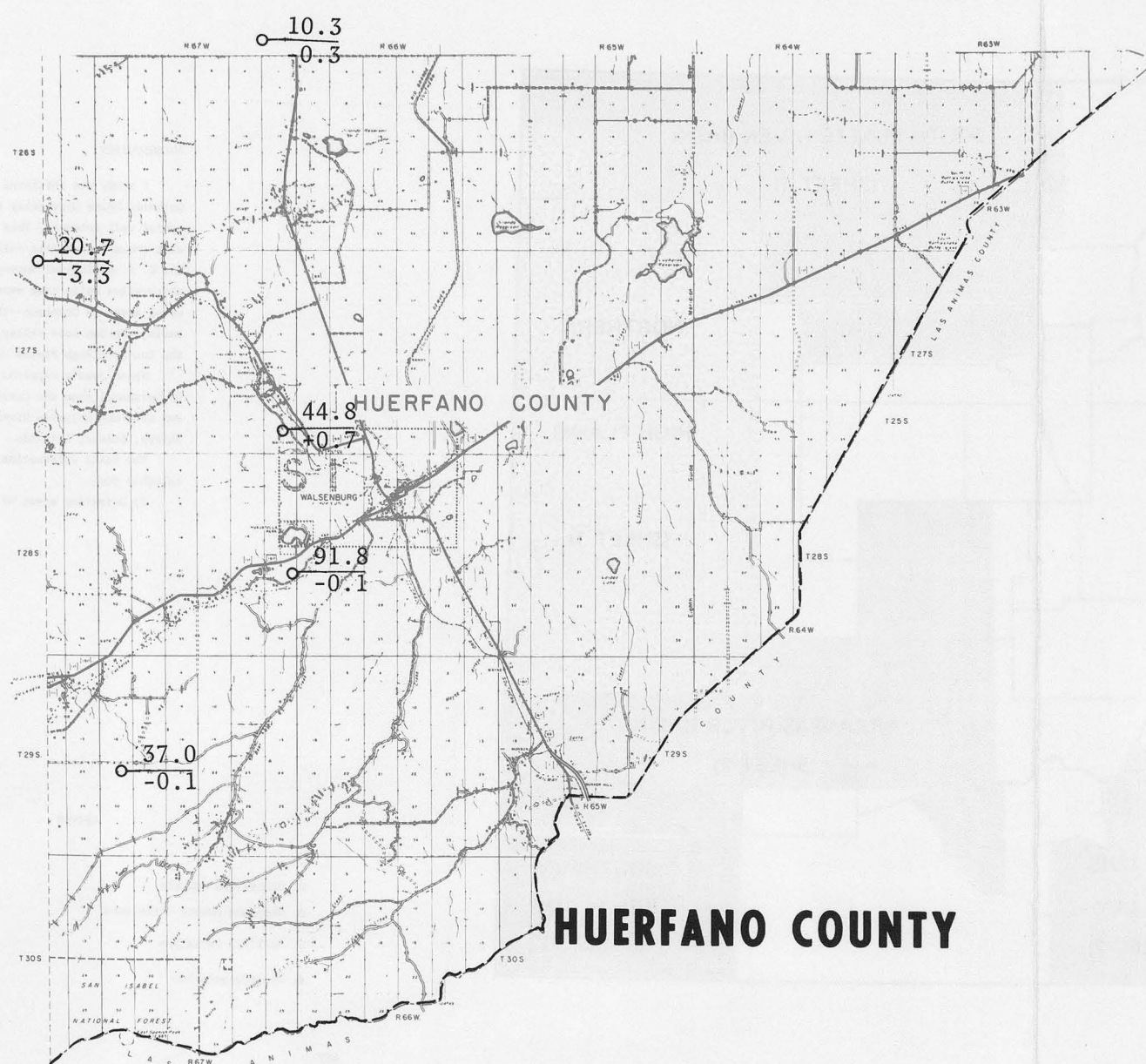
SUMMARY OF CHANGES IN GROUND WATER LEVELS
SPRING 1970 COMPARED TO SPRING 1969

- ARKANSAS RIVER BASIN**
- Best County**
Variable from up 3 feet to down 1 foot in the western half; steady in the eastern half.
- Crowley County**
No significant change.
- El Paso County**
Black Squirrel Creek: Steady - one well down 3 feet.
Jenny Camp Creek: Up 1 to 2½ feet.
Fountain Creek: Down 2 to 6 feet.
- Huerfano County**
No significant change.
- Otero County**
Steady to down 2 feet in the western half of county; up 1 foot to down 1 foot in the eastern half.
- Prowers County**
No significant change.
- Pueblo County**
Fountain Creek: Steady to up ½ foot.
Main stem of Arkansas River: Steady to up 2 feet.

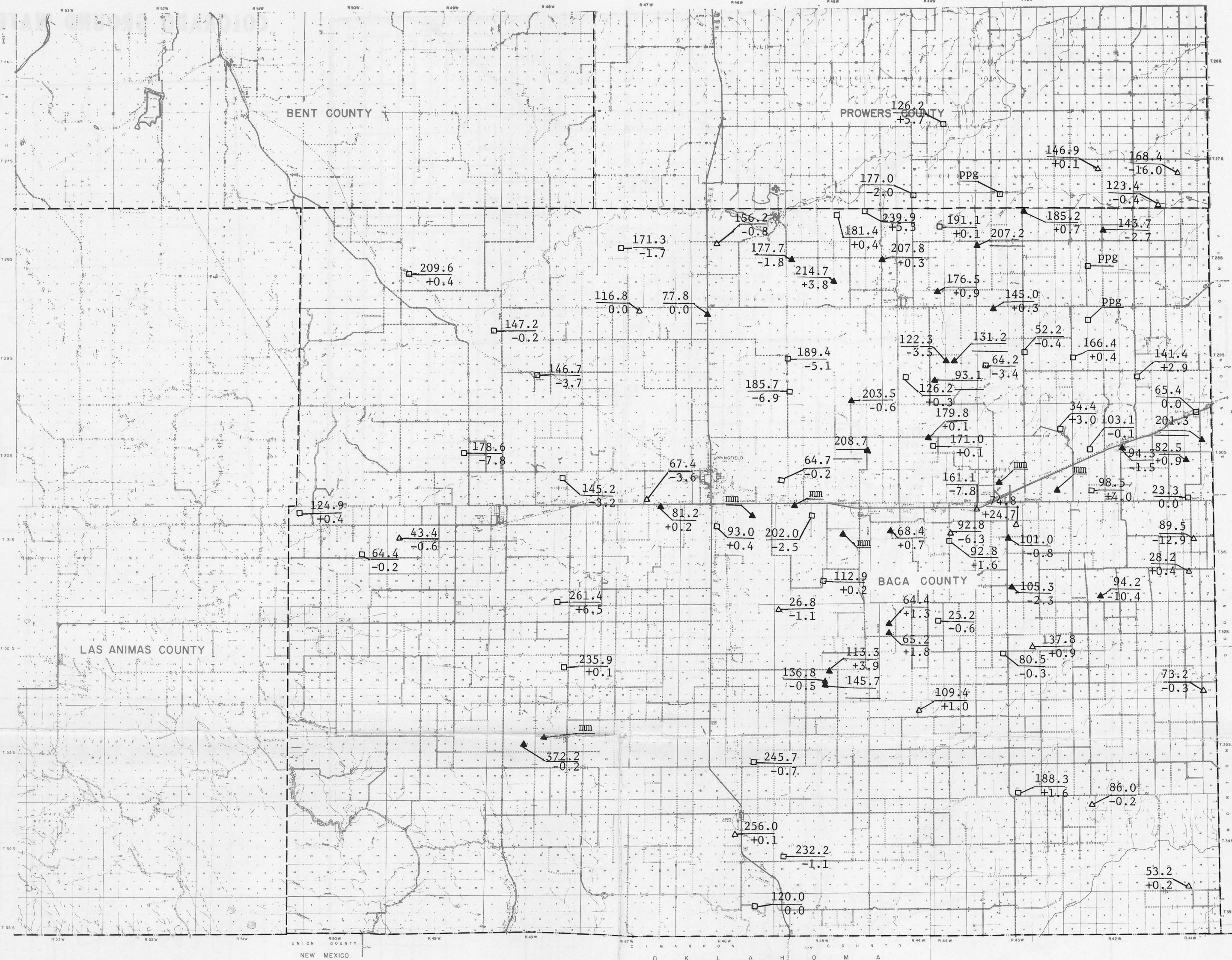




SAN LUIS VALLEY



HUERFANO COUNTY



SOUTHERN HIGH PLAINS

- LEGEND
- Unconfined aquifer
 - Cheyenne-Dakota Formations
 - △ Ogallala Formation
 - ▲ Undifferentiated
- KEY:
- Spring 1970 water level, in feet below land surface.
 - PPG-- indicates well was pumping at time of measurement
 - M-- indicates missed measurement
 - DN-- indicates dry hole
 - Change in water level from preceding measurement
 - indicates previous measurement not available

SUMMARY OF CHANGES IN GROUND WATER LEVELS
SPRING 1970 COMPARED TO SPRING 1969

SOUTHERN HIGH PLAINS

Baca County
No general area pattern to fluctuation.
Wells in the Cheyenne and Dakota Formations: Up 6 feet to down 7 feet.
Wells in the Ogallala Formation: Up 1 foot to down 6 feet.
Undifferentiated wells: Up 4 feet to down 3 1/2 feet.

SAN LUIS VALLEY

Wells reported in the San Luis Valley were selected by the Water Resources Division of the U. S. Geological Survey to give representative coverage of the ground-water system. These wells replace those previously measured by Colorado State University and will be implemented by additional wells in future reports.



TO: