

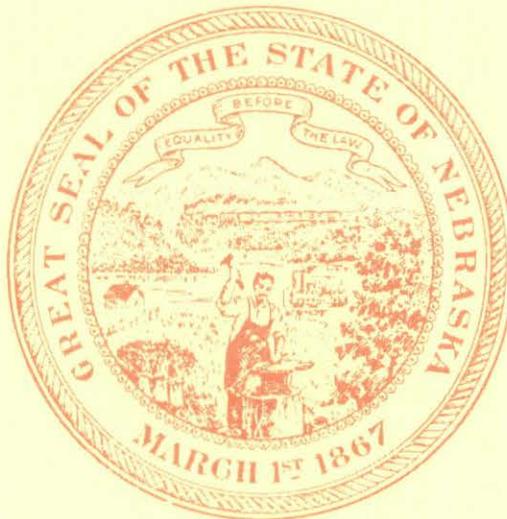
STATE SOIL AND WATER
CONSERVATION COMMISSION
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NEBRASKA

SOIL AND WATER CONSERVATION COMMISSION



ANNUAL WATERSHED PLANNING REPORT

January 1, 1969 - December 31, 1969

OFFICIAL COPY

Prepared by: David B. Burris, Head
Watershed Planning Section

NEBRASKA SOIL AND WATER CONSERVATION COMMISSION

Watershed Planning Section

ANNUAL REPORT

January 1, 1969 - December 31, 1969

Submitted by: David B. Burris, Head
Watershed Planning Section
Soil and Water Conservation
Commission

PROGRAMS:

SOIL & WATER CONSERVATION
WATERSHED PROTECTION
FLOOD CONTROL
RIVER BASIN INVESTIGATIONS
FLOOD PLAIN STUDIES
STATE WATER PLAN



April 10, 1970

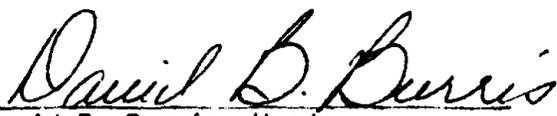
TO: Warren D. Fairchild
Executive Secretary
Nebraska Soil and Water Conservation Commission

Dayle E. Williamson
Head, Operations Division
Nebraska Soil and Water Conservation Commission

FROM: David B. Burris
Head, Watershed Planning Section
Nebraska Soil and Water Conservation Commission

The purpose of this report is to summarize the activities of the Watershed Planning Section during the past year.

In addition to the progress made in the P. L. 566 program a large portion of the paty's time was spent on other water resource related projects. It is my opinion, that the Watershed Planning Section has contributed substantially to the Commission's goal of soil and water resource planning.


David B. Burris, Head
Watershed Planning Section

DBB:ldl

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ANNUAL WATERSHED PLANNING REPORT

INTRODUCTION

The Watershed Planning Section of the State Soil and Water Conservation Commission has two basic programs. The oldest provides surveying and kesh plotting services for the Soil Conservation Service for use primarily in the small watershed program administered by that agency. The second major program of the State Watershed Planning Section is the formulation of watershed work plans in accordance with Public Law 566, the Small Watershed Act.

In addition to the programs listed above, the Watershed Planning Section has provided technical assistance to the Flood Plain Zoning Program, local groups and individuals, and Soil Conservation Service District Conservationists. Other areas of activity include flood reporting and flood forecasting.

During 1969, the survey crews worked on 12 watersheds for the Soil Conservation Service and four for the State Soil and Water Conservation Commission. Surveying, to establish elevations of all critical points, determine channel and valley cross sections, stream profiles, the capacity of bridges and channels, is the starting point of watershed planning. This information is later used by the hydrologist to determine peak flows and capacities of the various watercourses, by the engineer to select structure sites, and by the economist to determine damages and to calculate benefits from proposed works of improvement. Additional surveys are needed later in the planning process to define and evaluate structural measures.

The State Watershed Planning Section provides 100 percent of all planning surveys needed by both the Soil Conservation Service and the State Watershed Planning Section. In addition, surveys were completed for use in the Flood Plain Zoning Program and for use by Soil Conservation Service District Conservationists in planning and laying out terraces and other conservation measures.

The survey crew activities are shown in more detail in the following three tables.

TABLE 1a
SURVEY ASSISTANCE S.C.S. WATERSHEDS

Watershed	County	Area (acres)	Vertical Control	Stream Profile	Valley X Section	Bridge X Section	Kelsh Control	Topo- graphy	Total Crew Weeks
Blackwood	Hayes & Hitchcock	151,000	10.0		1.0		18.0	4.0	33.0
Long Branch	Richardson, Pawnee, Nemaha & Johnson	46,080					6.0	3.0	9.0
Tekamah-Mud	Burt	18,055			0.8			0.4	1.2
Ash-Plum	Garden	18,100						1.0	1.0
Middle Big Nemaha	Pawnee, Gage & Johnson	136,415					5.8		5.8
South Fork	Pawnee & Richardson	30,400					1.0		1.0
South Fork Tribs.	Pawnee & Richardson	111,360	4.0	3.0	6.0	3.0			16.0
Rock Creek	Saunders & Lancaster	83,840					0.4		0.4
Big Muddy	Richardson, Johnson & Nemaha	183,680					0.6		0.6
South Branch Little Nemaha	Otoe, Johnson & Lancaster	126,220					8.0		8.0
Upper Little Nemaha	Otoe, Lancaster & Cass	123,520						6.0	6.0
Upper Big Nemaha	Otoe, Johnson Gage & Lancaster	119,600					1.0		1.0
TOTAL			14.0	3.0	7.8	3.0	40.8	14.4	83.0

TABLE 1b
COMMISSION WATERSHEDS

Watershed	County	Area (acres)	Vertical Control	Stream Profile	Valley X Section	Bridge X Section	Kelsh Control	Topo- graphy	Total Crew Weeks
Wahoo	Saunders	235,530			8.0				8.0
Bone	Butler	46,120	2.0	2.0	3.0	1.4			8.4
Lost-Dry	Phelps & Kearney	183,040	5.0	3.0	5.0	3.0	1.0		17.0
Creighton Valley	Scotts Bluff & Banner	32,000					3.0		3.0
TOTAL			<u>7.0</u>	<u>5.0</u>	<u>16.0</u>	<u>4.4</u>	<u>4.0</u>		<u>36.4</u>

TABLE 1c
MISCELLANEOUS SURVEYS

Project	County	Type of Survey	Crew Weeks
City of Columbus	Platte	Vertical Control, kelsh X-sections	8.0
Beals Slough	Lancaster	X-sections	1.0
City of North Platte	Lincoln	Vertical Control, X-sections	5.0
City of Sidney	Cheyenne	Vertical Control, X-sections	2.4
TOTAL			16.4

KELSH PLOTTING

The Watershed Planning Section furnishes all the kelsh plotting assistance needed by the Soil Conservation Service as well as that necessary to meet its own needs. Kelsh plotting is the determination by photogrammetric means of ground elevation and contour lines from low level aerial photographs. It cuts the cost and time for topographic maps on reservoir sites by approximately 50 percent over conventional methods.

Approximately 115 acres of topography can be obtained from one model in the kelsh plotter. This involves a total of two to three man-days of preparation, plotting, tracing, and reproduction, depending on the terrain involved.

The 1969 progress of the kelsh plotting unit is shown on Table 2.

TABLE 2
KELSH PLOTTING PROGRESS, 1969

Project	County	Work Completed
South Branch Little Nemaha	Johnson, Otoe & Lancaster	7 flood water retarding structures
Blackwood	Hitchcock & Hayes	10 flood water retarding structures
Tekamah-Mud	Burt	2 flood water retarding structures
Lost-Dry	Phelps & Kearney	4 sections topography
Creighton Valley	Scotts Bluff & Banner	5 sections topography
South Fork	Richardson & Pawnee	¼ section for terraces
Long Branch	Richardson, Johnson, Nemaha & Pawnee	¼ section for terraces
Big Muddy	Richardson, Johnson & Nemaha	1 section for terraces
Upper Big Nemaha	Gage, Lancaster Otoe & Johnson	1½ sections for terraces
City of Columbus	Platte	10½ sections for flood plain zoning

OTHER ASSISTANCE TO THE SOIL CONSERVATION SERVICE

The Watershed Planning Section also furnishes one engineering technician to the Soil Conservation Service. The technician is permanently assigned to the Soil Conservation Service Watershed Planning Party. This technician assists the planning party by planimentering acreages, performing routine calculations, and preparing land rights maps.

WORK PLAN DEVELOPMENT

The following table indicates the status of each watershed the Commission Planning staff is working on as of December 31, 1969.

In addition to the work shown on Table 3, a preliminary surface drainage plan was developed for the Brown's Canyon Watershed in Scotts Bluff County. After suitable topographic maps are completed, a final plan will be presented to the sponsors during 1970.

The staff hydrologist devoted much of his time during the winter of 1968-1969 to forecasting flood hazards from the heavy snow pack. This information was disseminated and coordinated by the civil defense unit in Lincoln.

TABLE 3
 WORK PLAN PROGRESS
 COMMISSION WATERSHEDS

	Basic Data	Basic Surveys	Preliminary Hydrology	Preliminary Engineering	Preliminary Economics	Preliminary Geology	Costs	Benefits	Compare Alternatives	Present to Sponsors	P. I. Report	Planning Authorization	Site Surveys	Detailed Hydrology	Detailed Engineering	Detailed Economics	Costs	Benefits	Final Alternate Comparison	Present to Sponsors	Select Plan	Agency Review	Sponsors Acceptance	Authorized	% Complete	
Exeter-Dogtown																									0	
Balls Branch										XXXXXXX															40	
Wahoo			XXXXXXXXXXXXXXXXXX																						35	
Bone	XXX																								10	
Humbug				XXX																					30	
Lost-Dry																									10	
Twin			XXX																						20	
Winters Creek														XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX	90
Creighton Valley								XXXXXXXXXXXXXXXXXXXX					XXX												50	

1. XXXXX indicates work accomplished during 1969.

SUMMARY OF PLANNING STATUS
1969

EXETER-DOGTOWN

Planning will be initiated on this watershed as soon as the current limits of the problem area and that of the watershed can be defined.

BALLS BRANCH

A preliminary investigation report has been prepared and presented to the sponsors. We are awaiting their decision before continuing with the work plan development.

WAHOO

All preliminary studies have been completed. After proper evaluation, the alternate schemes will be presented to the sponsors.

BONE

The basic surveys have been completed. Work has been initiated on preliminary hydrology.

HUMBUG

The preliminary hydrology, geology and economics have been completed. Work is progressing on alternate structural schemes. It is anticipated that the preliminary investigation report will be presented to the sponsors in March, 1970.

LOST-DRY

The problems in this watershed do not lend themselves to any conventional method of evaluation. For this reason, a model study has been initiated with the Water Resources Institute.

TWIN

The development of preliminary hydrology is almost complete.

WINTERS CREEK

The draft of the work plan has been completed and forwarded for technical review and comments. Upon receipt of these comments, the work plan will be completed and presented to the sponsors for their signature.

CREIGHTON VALLEY

The preliminary investigation report has been completed and accepted by the sponsors. A planning authorization has been requested, but not received, from Washington. Detailed kelsh work has also been completed for all proposed structural works of improvement.

FUNDS EXPENDED:

WATERSHED PLANNING

January 1, 1969 to December 31, 1969

	Kelsh	Planning	Survey	S.C.S.	Total
Salaries	26,667.88	65,041.48	63,751.54	5,168.76	160,629.66
Travel	200.00	2,555.28	14,000.00	--	16,755.28
Contracts	1,900.00	--	--	4,314.49	6,214.49
Capital	154.67	2,600.79	392.61	--	3,148.07
Supplies	<u>2,523.86</u>	<u>3,000.00</u>	<u>4,000.00</u>	<u>--</u>	<u>9,523.86</u>
TOTAL	31,446.41	73,197.55	82,144.15	9,483.25	196,271.36

Sixty-seven percent of the total kelsh expenditures and 73 percent of the surveying expenditures were used for Soil Conservation Service planning efforts and the Flood Plain Zoning Program. The Commission Watershed Planning Section also paid the salary of one technician employed exclusively by the Soil Conservation Service Planning Party.

The total operating cost of the Commission Watershed Planning Section is shown below:

Total expenditures	\$ 196,271.36
Less kelsh costs on other projects	21,069.09
Less survey costs on other projects	59,965.23
Less technician salary	<u>5,168.76</u>
Operating cost of the Nebraska Watershed Planning Section	\$ 110,068.28