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Delivering Water to the Wagner, Tower, and Greenwood Irrigation Units

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Delivering Water to the Wagner, Tower, and Greenwood Irrigation Units

This publication covers proposed water resources developments in the areas commonly referred to as the Wagner, Greenwood, and Tower Units. A discussion of potential areas such as the proposed Geddes and Tyndall Units is not included in this fact sheet. These areas are to be given further study and consideration. Map No. 1 shows the group of units referred to above.

Irrigation is the primary purpose of the proposed developments although recreation, fish, wildlife, and municipalities will also realize sizeable benefits especially in the Wagner Unit.

Wagner Unit

There are 19,500 irrigable acres proposed for irrigation development in this unit. Fish and wildlife developments are considered for Lake Andes, Choteau Creek, and others.

Municipal water may be obtained at canal side by any municipality in the area desiring to build necessary diversion works. Studies that have been completed include industrial and municipal water supplies for the towns of Lake Andes, Wagner, Armour, Avon, Geddes, Ravina, and Dante. These studies show that Lake Andes and Wagner communities would enjoy definite financial advantage over other possible sources of supply by using the Wagner Unit water supply for municipal purposes. The other communities may find it to their advantage to explore other sources.

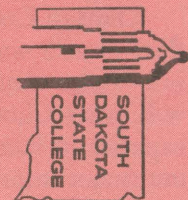
The supply and distribution system is shown on Map No. 2. Pertinent data on each major installation shown on Map No. 2 is tabulated below:

Randall Pumping Plant. Consists of three pumps each capable of pumping 31,000 gallons per minute. Each will be powered by a 1650 HP electric motor. The average lift out of the Ft. Randall Reservoir will approximate 90 feet.

Andes Canal. Length 3.8 miles; bottom width, 14 feet; normal water depth, 4.6 feet; will cross Highways 18 and 281 through a 90-inch diameter closed conduit; other structures include one 72-inch diameter pipe road crossing, one timber bridge, and six cross drainage culverts ranging in size from 24 inches to 72 inches and five farm turnout structures that will irrigate about 100 acres of land adjacent to the canal.

Andes Inlet Channel. Serves to carry water from Andes Canal to the lake of Lake Andes and to carry water from the lake to Andes Spillway Channel during excessive storm water inflow into the lake. Length, 1.3 miles (zero grade) 50 feet wide at bottom; normal water depth, 8 feet; structures include three side drainage inlets, one highway bridge, one railway bridge, one spillway control structure to

By F. F. Kerr, Extension water resources specialist, and Raymond Lund, district specialist, Water Resources Commission



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Delivering Water to the Wagner,
Tower, and Greenwood Irrigation Units

automatically control water surface elevation in the channel.

Andes Spillway Channel. For the purpose of conveying excess water from the lake of Lake Andes to Ft. Randall Reservoir during high storm water inflows into the lake. Bottom width, 42 feet; includes three drop structures which drop the water 20 feet, 29 feet, and 64 feet respectively. One township road crossing would make up a part of the final drop structure.

Lake Andes. The present division of the lake into three sub-impoundments or lakes will be maintained. The north lake and Owens Bay will be reserved for fish and wildlife and will not be used for irrigation water storage operations. The maximum drawdown for irrigation purposes on the south lake will be 1.5 and 2.5 feet on the middle lake.

North Main Canal. Irrigable acres served, 3,400; length, 8.2 miles; 11 laterals and 30 farm turnouts will be on this canal; natural drainage will underpass the canal at nine locations. Bottom width will vary from an initial 10 to 3 feet. There are twelve pipe road crossings including county, township, and farm roads.

Water will be lifted a maximum of 38 feet at north relift #1 and 31.2 feet at north relift #2. North relift #2 will permit irrigation of that portion of the irrigable acres which lie at the higher elevation.

South Main Canal. Irrigable acres served, 16,000; length, 19.6 miles; overstructures; two highway bridges, five county and township bridges, one railroad bridge; 23 lateral and 43 farm turnouts from the main canal. There are ten drop structures in the final 5 miles of the canal. Bottom width will vary from an initial 20 feet to 3 feet. Natural drainage will pass under the canal at 19 places.

Water will be lifted a maximum of 57.4 feet at south relift #1 and 21 feet at south relift #2. South relift #2 will permit irrigation of that portion of the irrigable acres which lie at the higher elevation.

Choteau Creek. A small percentage of the return flow (waste water from irrigation) will drain back into Lake Andes. Most of these flows, however, will enter Choteau Creek. The creek has sufficient capacity to handle this accumulation of flows without major improvements.

Tower Unit

The proposed 1,400 acre Tower Unit is located as shown on Map No. 1. The electrically driven pumping plant would consist of three pumps, one being able to pump 7,400 gallons per minute and two being capable of pumping 3,700 gallons each per minute. Average lift out of the Missouri River would be 20 feet. Electric facilities to serve the pumps would be a part of the same system serving the Greenwood Unit.

The 7.8 mile long canal and lateral system shown in Map No. 3, would have a maximum bottom width of 6 feet and maximum water depth of

2.4 feet.

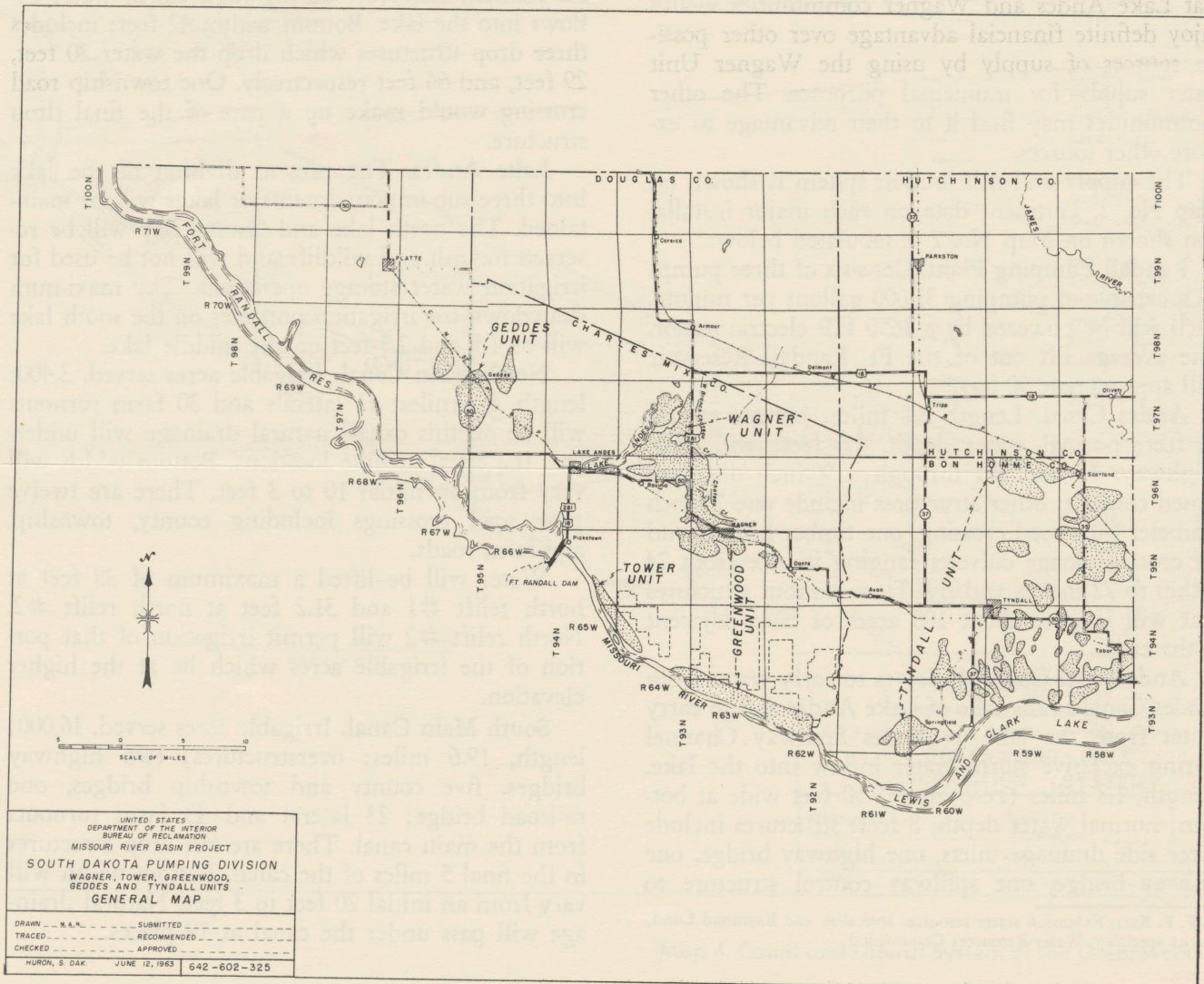
Structures required by the canal and lateral system will include 18 pipe road crossings, 6 checks, 37 turnouts, 6 culverts under the canal and 2 syphons under drainageways.

Greenwood Unit

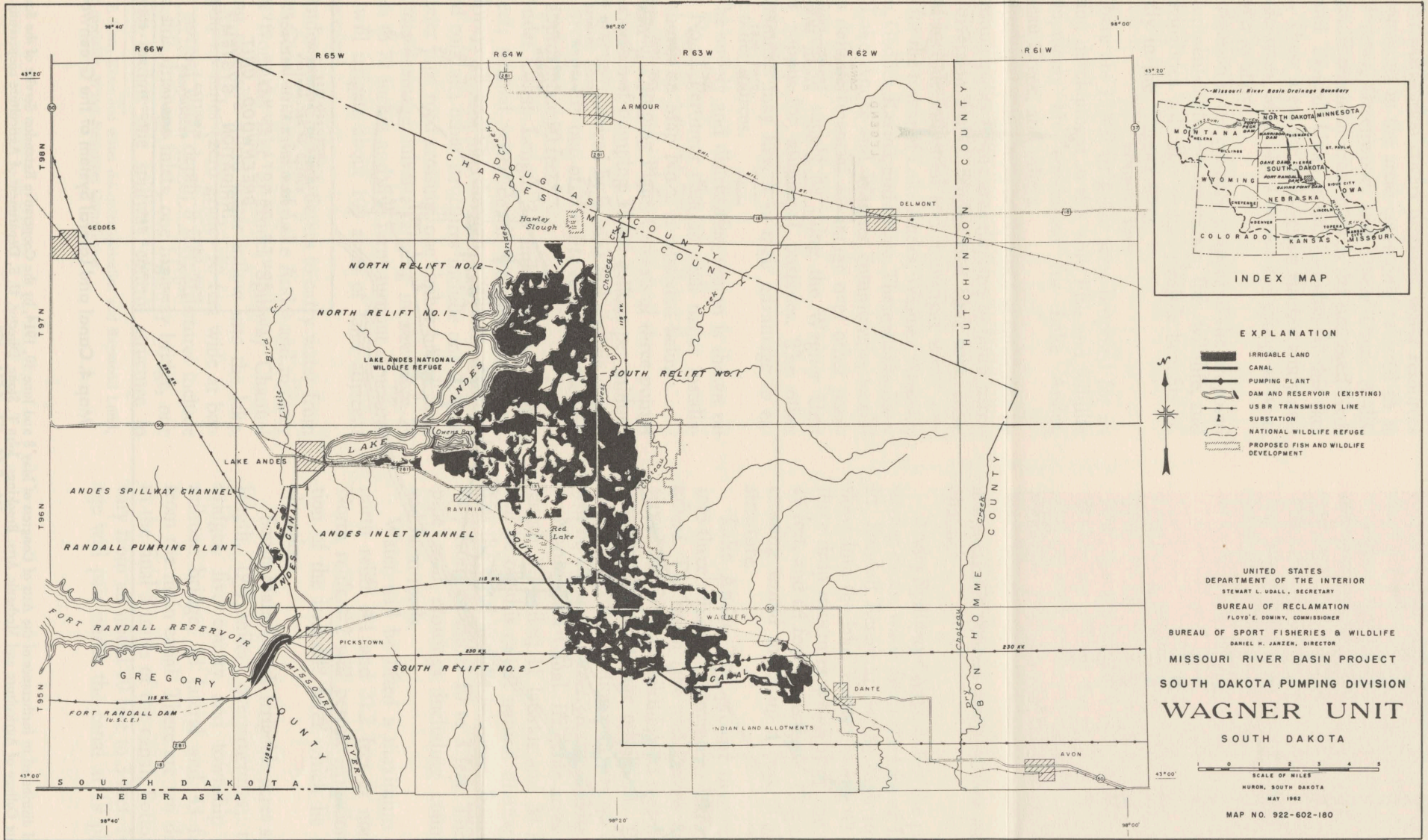
The proposed 3,550 acre Greenwood Unit is located as shown on Map No. 1. This unit would be served by four electrically driven pumps that would lift the water an average of 16 feet out of the Missouri River. Two pumps would each be capable of pumping 11,220 gallons per minute and the other two would each pump 5,610 gallons per minute.

The 18.8 mile canal and lateral system shown in Map No. 4 would have a maximum bottom width of 12 feet and a maximum water depth of 4 feet.

Structures required by the canal and lateral system will include 17 pipe road crossings, 29 checks, one drop, 80 turnouts, 16 culverts under the canal and laterals and 2 inverted syphons under the canal for natural drainage water.



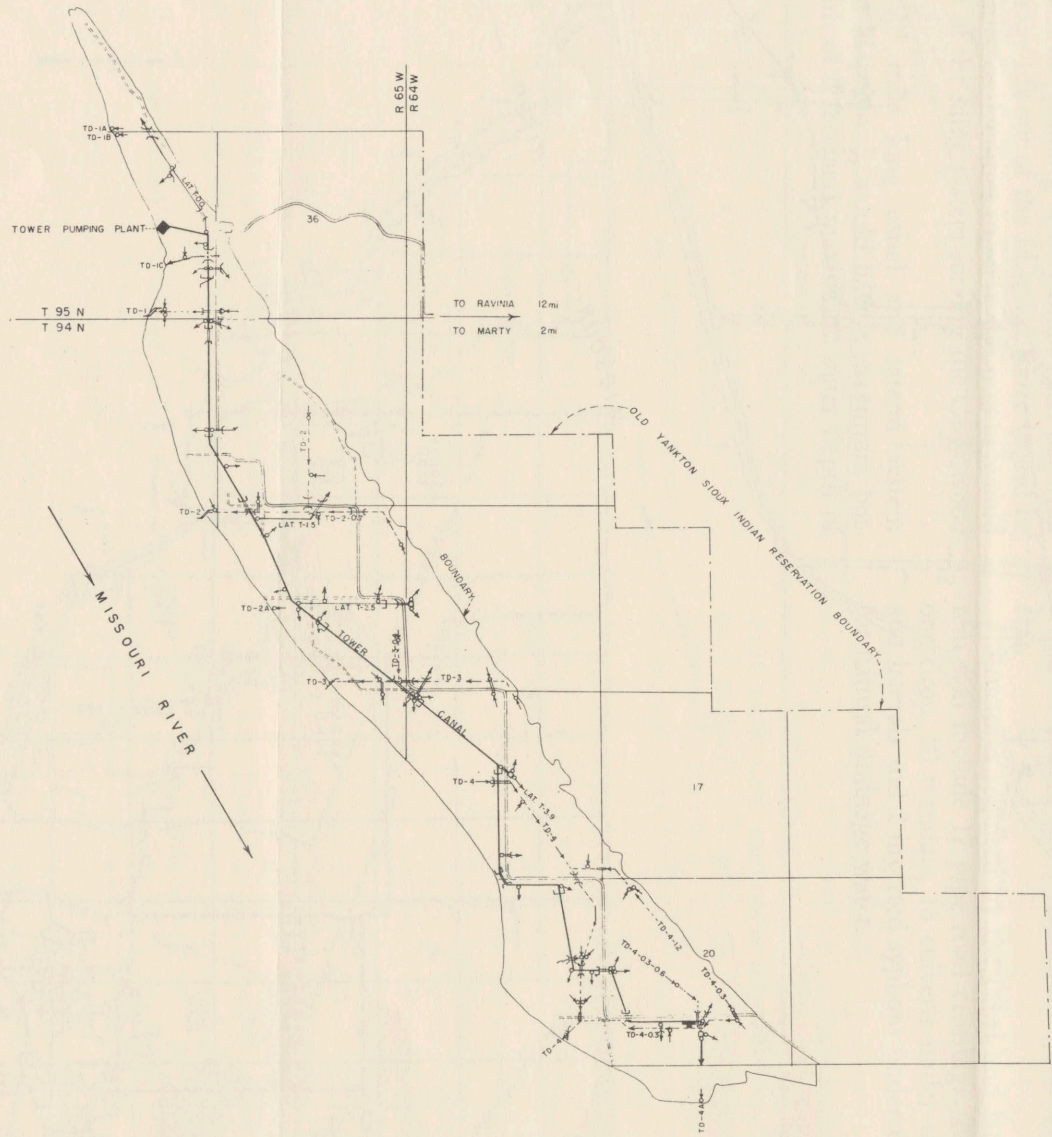
Map 1. Wagner, Tower, and Greenwood Units.



Map 2. Supply and Distribution System of the Wagner Unit.

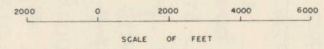
SOUTH DAKOTA

CHARLES MIX COUNTY



LEGEND

- CANAL
- LATERAL
- PROJECT DRAIN
- NATURAL DRAIN
- DELIVERY
- TURNOUT, METERED
- DRAIN INLET
- PIPE
- TRANSITION
- CHECK
- CHECK DROP
- R. I. DROP
- PIPE DROP
- BAFFLED APRON DROP
- PIPE DIVISION BOX
- OPEN DIVISION BOXES
- CROSS DRAINAGE CULVERT
- WASTEWAY
- PUMPING PLANT
- SIPHON



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MISSOURI RIVER BASIN PROJECT
SOUTH DAKOTA PUMPING DIVISION
TOWER UNIT
IRRIGATION SYSTEM

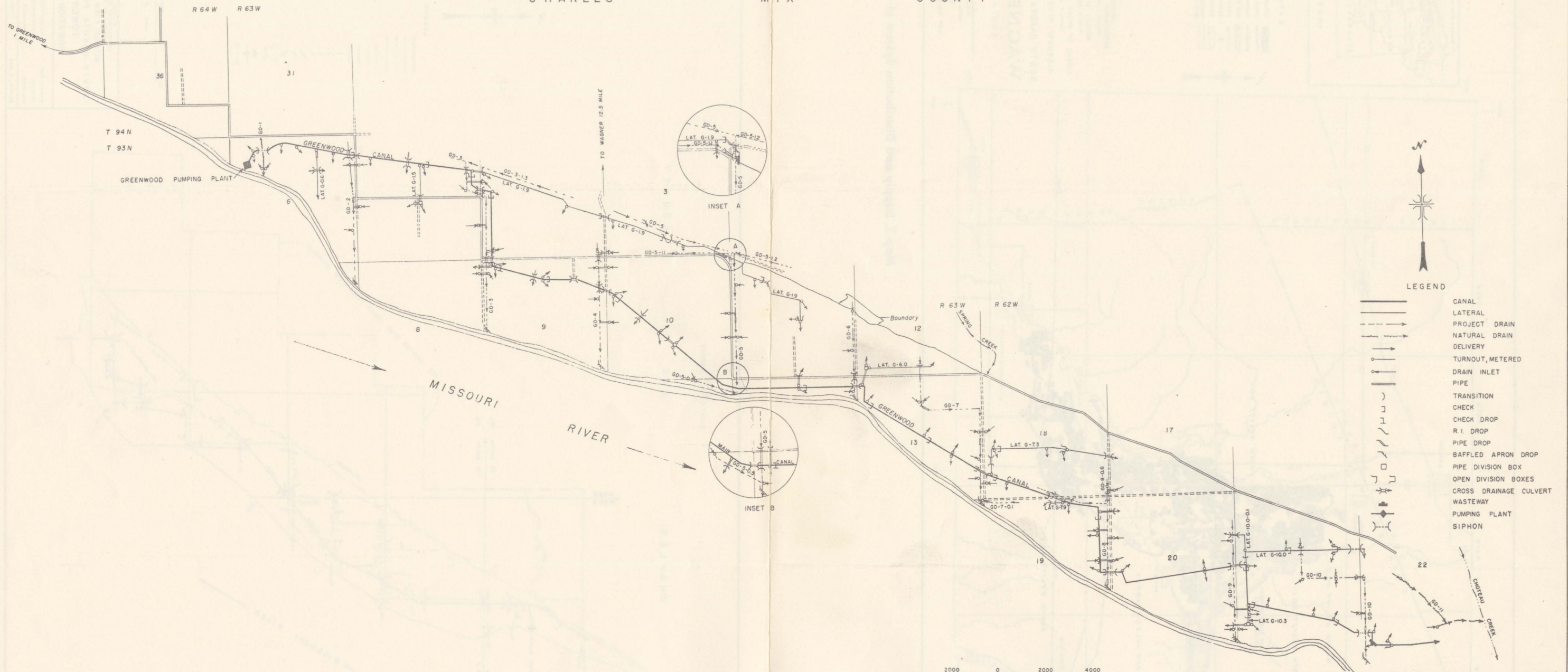
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TRACED RECOMMENDED
CHECKED APPROVED

HURON, S. DAK. 7-18-62 954-602-15

Map 3. Canal and Lateral System of the Tower Unit.

SOUTH DAKOTA

CHARLES MIX COUNTY



LEGEND

- CANAL
- LATERAL
- PROJECT DRAIN
- NATURAL DRAIN
- DELIVERY
- TURNOUT, METERED
- DRAIN INLET
- PIPE
- TRANSITION
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- PIPE DIVISION BOX
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- CROSS DRAINAGE CULVERT
- WASTEWAY
- PUMPING PLANT
- SIPHON

2000 0 2000 4000
SCALE 1" = 2000'

UNITED STATES
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SOUTH DAKOTA PUMPING DIVISION
GREENWOOD UNIT
IRRIGATION SYSTEM

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Map 4. Canal and Lateral System of the Greenwood Unit.