

.Project Area No. 20

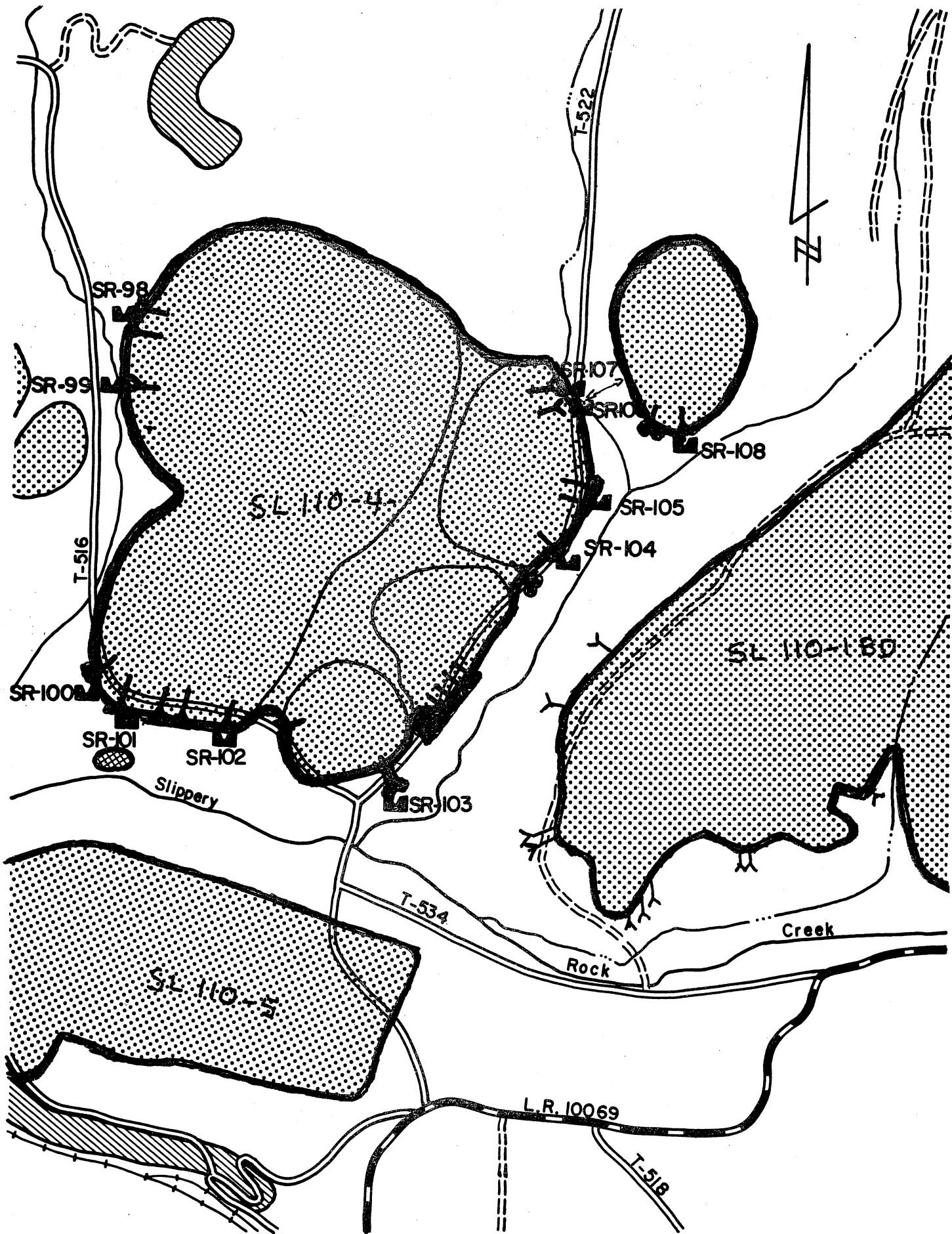
Location Lake Erie Area Township Washington County Butler

Priority Rating 2

This area includes several medium sized deep mines (Lake Erie #1, Lake Erie #2, McKain, Cooper and Boston) and several small deep mines in the Clarion seam of coal, and associated refuse piles. The discharges flow through Weirs SR 98 to SR 100 into Slippery Rock Creek. During 1969 these discharges had an average acid production of 70 pounds per day and a maximum acid production of 190 pounds per day. The proposed abatement project consists of hydraulic seals for an estimated 24 deep mine entries and refuse pile reclamation for approximately 10,000 cubic yards.

The following are the estimated costs for the recommended abatement measures in the project area:

Deep Mine Hydraulic Seals	\$450,000
Refuse Pile Reclamation	20,000
Design, Supervision and Inspection	<u>45,000</u>
Estimate Reclamation Costs	\$515,000



PROJECT MAP NO. 20
LAKE ERIE MINES AREA

Project Area No. 21

Location Argentine

Township Washington

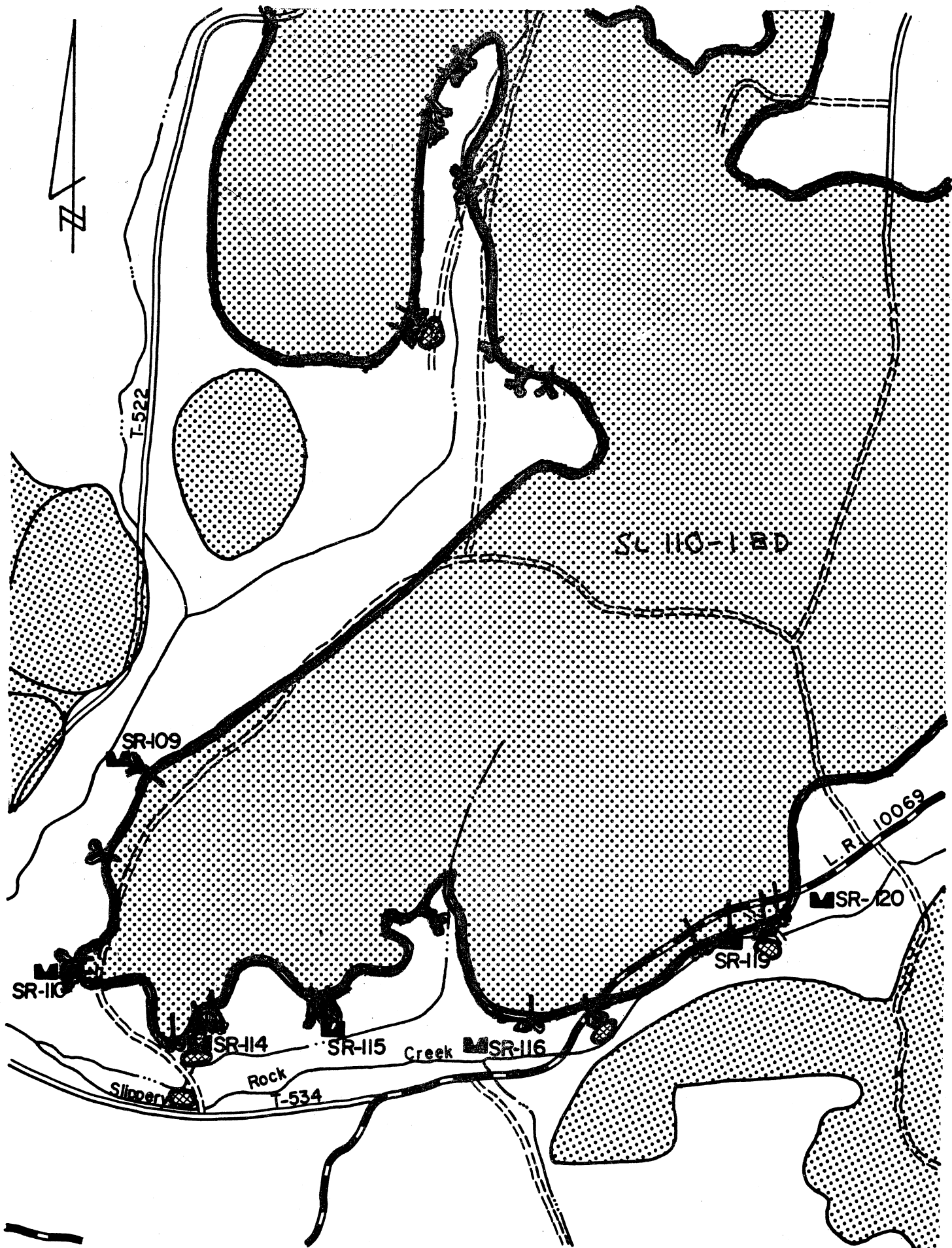
County Butler

Priority Rating 1

This area includes the largest deep mined area in the Slippery Rock Creek Watershed. Five large deep mines, Royle, Standard, Keystone #5, Lake Trade #1, and Lake Trade #2 which had a total production of over 4,000,000 tons, operated in the Clarion seam of coal. The discharges flow through Weirs SR 109, SR 110, SR 114 thru SR 116, SR 118 and SR 119 into Slippery Rock Creek. During 1969 these discharges had an average acid loading of 469 pounds per day and a maximum acid loading in the range of 800 pounds per day. The proposed abatement work consists of hydraulic seals for an estimated 27 deep mine entries, several hundred feet of grout curtain in the applicable outcrop areas, and a refuse and stream channel reclamation for an estimated 50,000 cubic yards. The deep mine hydraulic seals and grout curtain installation are included in the "Quick Start" Project SL-110-1BD now under contract.

The following are the estimated costs for the recommended abatement measures in the project area:

Deep Mine Hydraulic Seals	\$500,000
Grout Curtain Installation	100,000
Refuse Pile Reclamation	100,000
Design, Supervision and Inspection	<u>60,000</u>
Estimated Reclamation Costs	\$760,000



PROJECT MAP NO. 21
 ARGENTINE MINE AREA

Project Area No. 22

Location Argentine

Township Washington

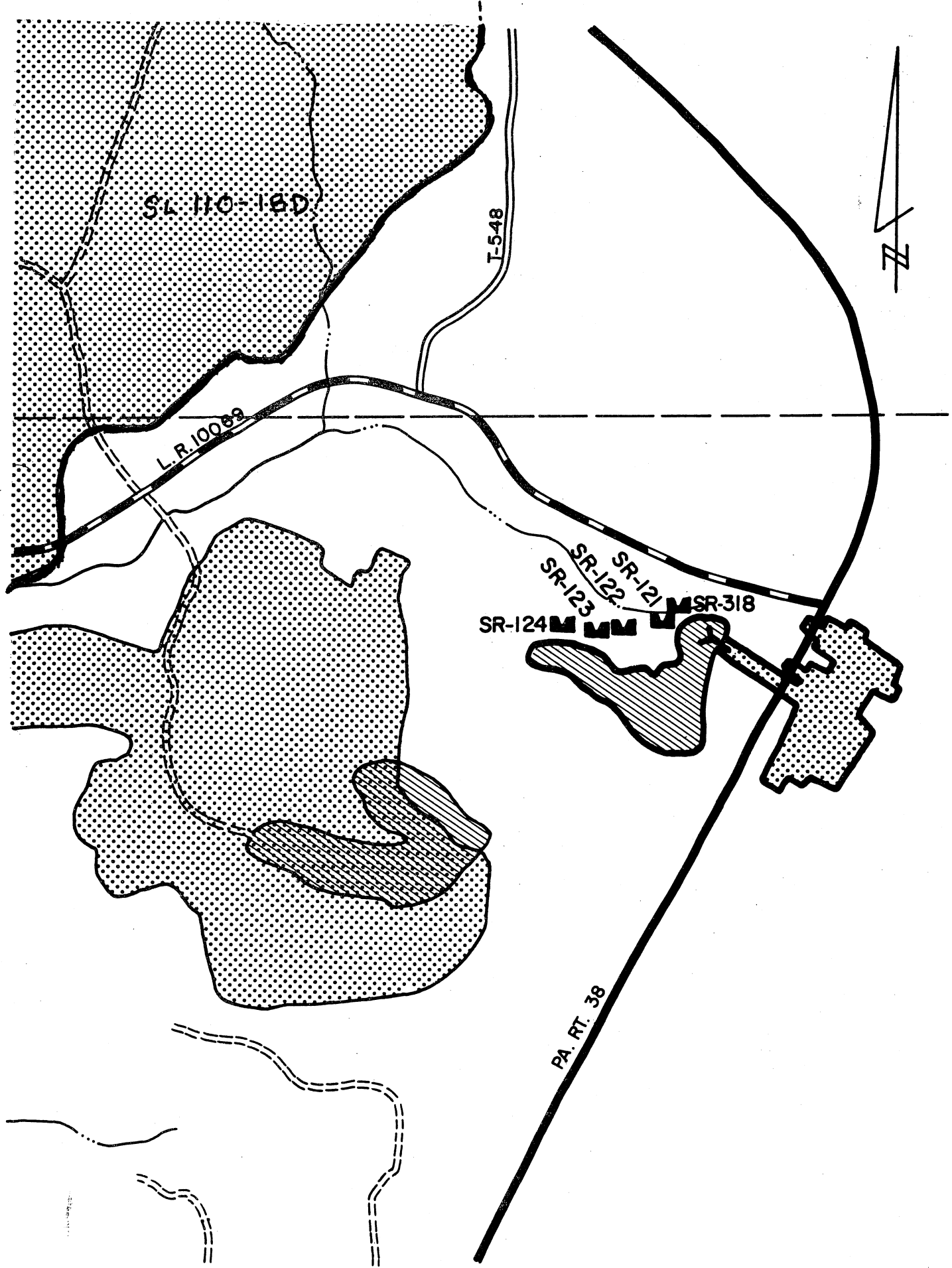
County Butler

Priority Rating 3

This area consists of a small deep mine and strip mine in the Middle Kittanning seam of coal. The discharges flow through Weirs SR 121 thru SR 124 and SR 318 into Slippery Rock Creek. The project area has an average acid loading of 5 pounds per day with a maximum of about 10 pounds per day. The proposed abatement consists of three deep mine seals and twenty acres of strip mine reclamation work.

The following are the estimated costs for the recommended abatement measures in the project area:

Deep Mine Hydraulic Seals	\$35,000
Strip Mine Reclamation	20,000
Design, Supervision and Inspection	<u>5,000</u>
Estimated Reclamation Costs	\$60,000



PROJECT MAP NO. 22
STRIP & DEEP MINE NEAR ARGENTINE

Project Area No. 23

Location Argentine

Township Washington

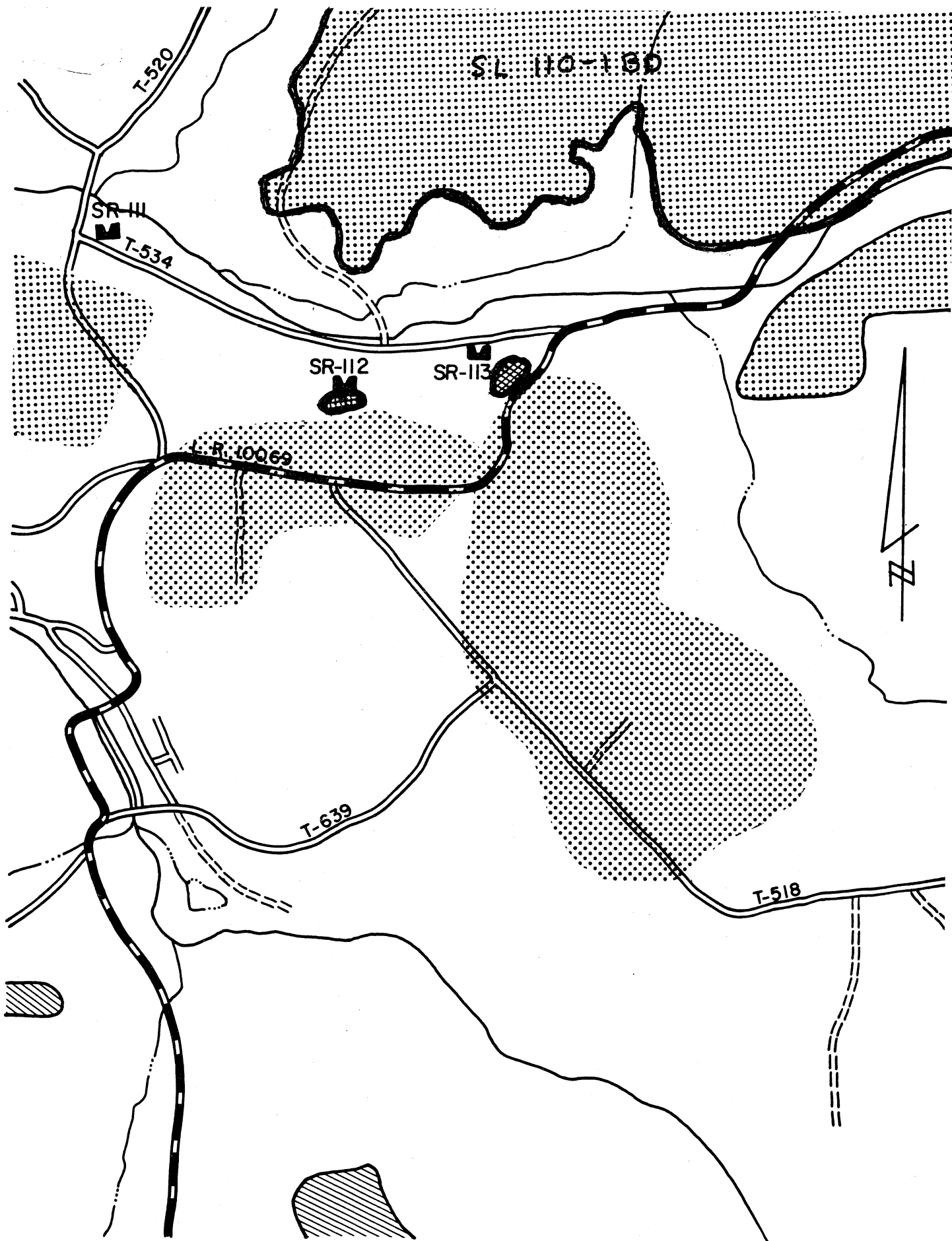
County Butler

Priority Rating 3

This area consists of refuse piles associated with deep mines in the Clarion seam of coal. Since these mine workings were driven to the dip and are probably flooded, the quality of the water discharges are good. The discharges flow through Weirs SR 111, SR 112 and SR 113 into Slippery Rock Creek. These discharges have an average acid loading of 3 pounds per day and a maximum acid loading of 7 pounds per day. The proposed abatement work consists of a refuse pile reclamation project for an estimated 10,000 cubic yards.

The following are the estimated costs for the recommended abatement measures in the project area:

Refuse Pile Reclamation	\$20,000
Design, Supervision and Inspection	<u>3,000</u>
Estimated Reclamation Costs	\$23,000



PROJECT MAP NO. 23
REFUSE PILES NEAR ARGENTINE

Project Area No. 24

Location Hilliards

Township Washington

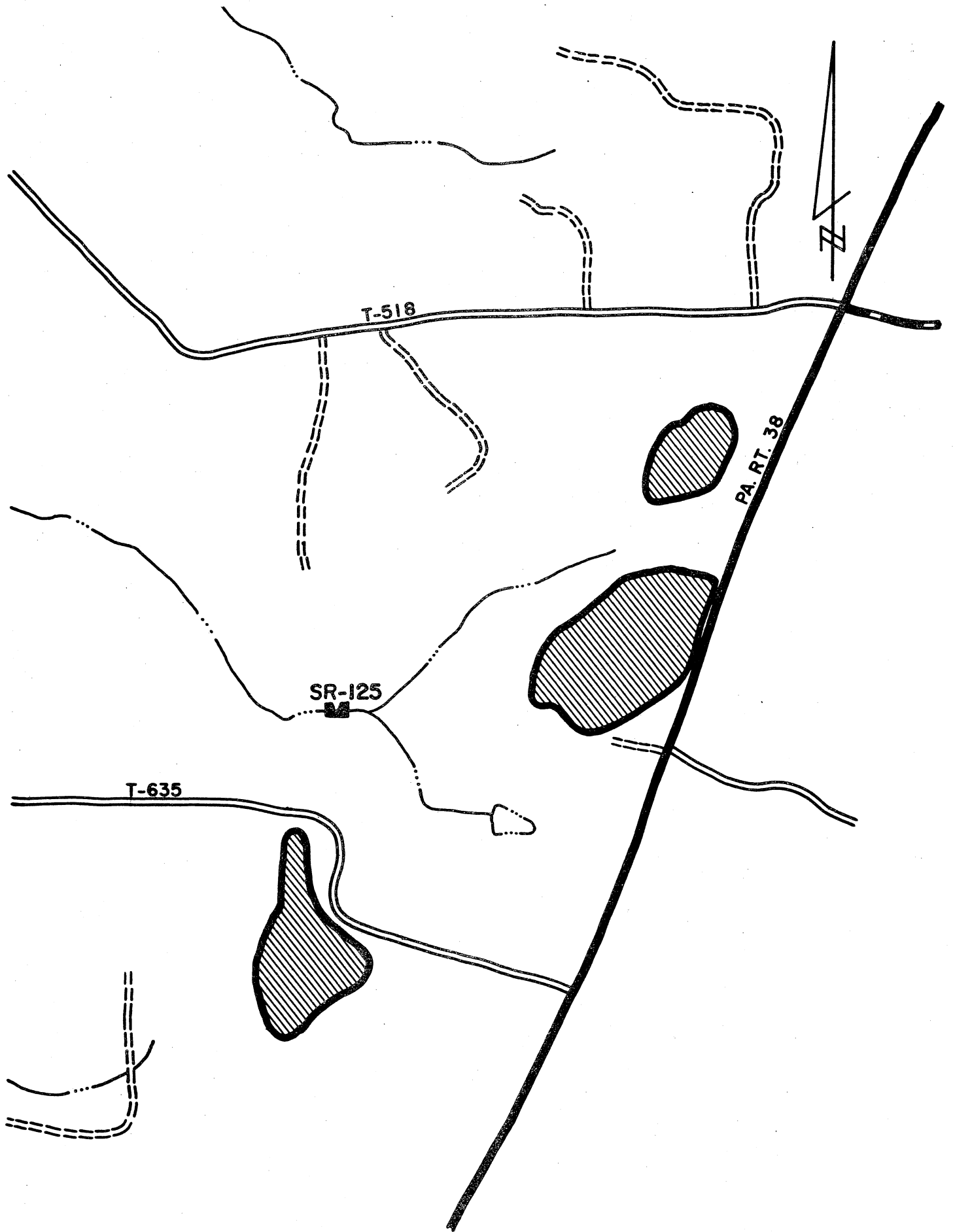
County Butler

Priority Rating 2

This area consists of three strip mine areas in the Upper Freeport seam of coal that have been backfilled. These strip mines need additional backfilling work, soil treatment, spoil neutralization and planting. The discharge flows through Weir SR 125 into Slippery Rock Creek. This discharge has an average acid loading of 100 pounds per day and a maximum acid loading of 350 pounds per day. The total affected area consists of 60 acres and requires additional backfilling overall. In addition, spoil neutralization (lime injection) is recommended in all three areas.

The following are the estimated costs for the recommended abatement measures in the project area:

Strip Mine Reclamation	\$ 50,000
Lime Injection	80,000
Design, Supervision and Inspection	<u>10,000</u>
Estimated Reclamation Costs	\$140,000



PROJECT MAP NO. 24
STRIP MINE NEAR HILLIARDS

Project Area No. 25

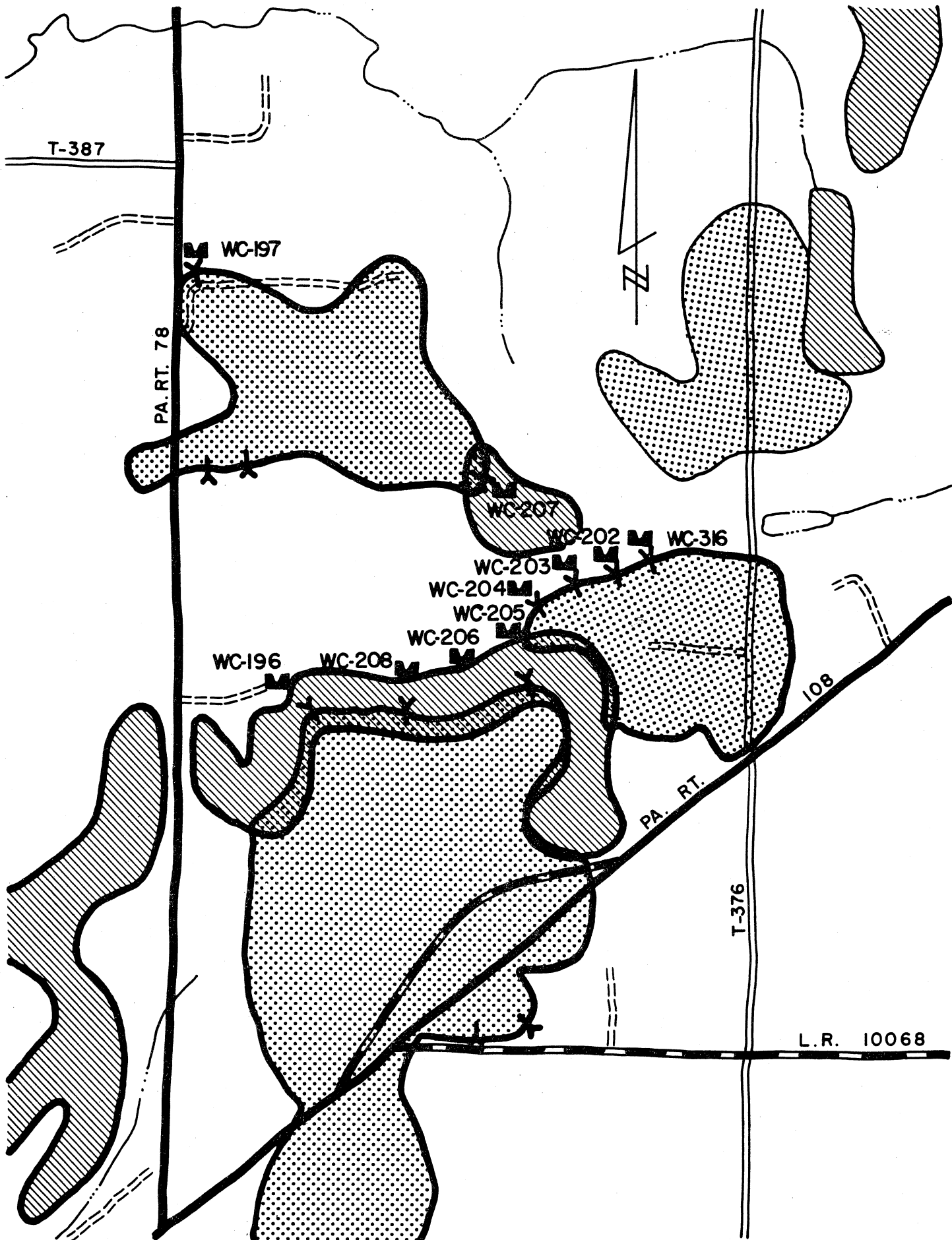
Location Redmond Area Township Slippery Rock County Butler

Priority Rating 3

This area consists of several small deep and strip mines in the Middle Kittanning seam of coal. The discharges flow through Weirs WC 196, WC 197, WC 202 thru WC 208 and WC 216 into Wolf Creek. During 1969 these discharges had an average acid loading of 33 pounds per day and a maximum acid loading of 80 pounds per day. The proposed abatement work consists of deep mine hydraulic seals for an estimated 13 mine entries and strip mine restoration for an estimated 115 acres.

The following are the estimated costs for the recommended abatement measures in the project area:

Deep Mine Hydraulic Seals	\$195,000
Strip Mine Reclamation	115,000
Design, Supervision and Inspection	<u>30,000</u>
Estimated Reclamation Costs	\$340,000



PROJECT MAP NO. 25
STRIP & DEEP MINES NEAR REDMOND