Third priority is the emphasis on septic and sewer drains into the stream. Septic runoff is a continuing problem in rural areas. The exact number of failing or inadequate septic systems is unknown. However, the Indiana Board of Health estimates seventy percent of pre 1970 homes statewide has failing systems. The inclusion of Homer residents in the regional sewer district will alleviate one major discharge direct line into Mud Creek. The number of residential systems still discharging into the stream or tile ditches remains a concern.

Fourth priority is the use of farming practices and their impact on the stream. According to crop residue transect results from Purdue University and Indiana Department of Natural Resources, no till acreage is decreasing slightly in both Rush and Shelby counties. Conservation tillage practices affect the amount of soil that could be lost to water erosion each year. Encouraging farmers to adopt no till and reduced tillage practices on farm ground in the watershed would reduce the potential for erosion and soil loss. Conservation programs available through the USDA partnership would further benefit the watershed project by reducing sedimentation and erosion concerns.

Continued regulation and education about CAFOs in the watershed will reduce the potential of accidental spills or improper manure applications on the land. CAFOs are currently monitored by local officials and IDEM for potential contamination of adjacent water supplies. These regulations help to reduce the risk for *E. coli* contamination in the stream. Monitoring livestock and their access to water supplies, either directly or indirectly, will further reduce *E. coli* potential contamination.

3.0 GOALS, DECISIONS, AND MEASURING PROGRESS

3.1 Goals for improving fish and macroinvertebrate habitat in Conns Creek

Objective: In order to reach this goal, the steering committee will cooperate with DNR biologists to

1) Compile history of fish species changes and macroinvertebrate habitat in stream
2) Complete study on how to provide adequate habitat in channelized stream and legal drain

Action plan: A preliminary history of fish species was begun through research for this watershed management plan. Additional information on fish species and habitat in the creek will be compiled through the cooperation of the DNR fish biologists. Another fish survey will be encouraged within the next 10 years to gauge the success of this plan. Successful completion of other goals of this plan (sediment reduction, *E. coli* elimination, and trash removal) will have an impact on the fish habitat, spawning and nursery areas in the upper portion of the watershed and in the northern, more narrow sections of the creek.

Evaluation: Success will be measured in the number of additional spawning areas created in the northern portions of the creek and the increase in pollution intolerant species in the southern portion of the creek. A survey of the spawning areas will be included in the request to DNR fish biologists for a complete fish survey of Conns Creek.

Time frame: The fish and spawning area survey will be requested in the next year with a second survey requested in ten years.
Estimated cost: <$10,000 funded through DNR

3.2 Goals for reduction of sediment in Conns Creek

Objective: In order to reach this goal, the steering committee will work with county surveyor and county commissioners in legal drain areas and with landowners in non-legal drain areas to:

1) Remove fallen trees from stream and those in danger of falling from stream banks
2) Stabilize bank areas with appropriate materials
3) Increase width of riparian areas along stream
4) Encourage no till and minimum tillage practices in the watershed
5) Remove concrete bridge pieces under the bridge areas
6) Encourage landowners to restrict access to stream from wheeled vehicles and livestock

Action Plan: The Rush County surveyor has set in motion the legalities of extending the legal drain designation to the Rush-Shelby county line. This process is estimated to require a minimum of eighteen months to become finalized. Funding for tree removal and bank stabilization projects are expected tax revenues from landowners in the watershed.

- The steering committee will continue to encourage landowners in the removal of trees in jeopardy of falling and fallen trees from the stream. The removal of these trees will reduce sediment trapping and the incidence of stream bank scouring during high water events. When removing jeopardized trees, the stumps will be left with the roots to help stabilize the bank area. There are an estimated 12.3 miles of trees that need attention. Estimated cost for tree removal is $4,000 per mile.
- Stream bank areas that need stabilization are estimated at 12.3 miles along Mud Creek/Conns Creek at an estimated cost of $6,000 per mile. A variety of stabilization techniques will be used to hold the banks and reduce erosion. In less steep areas, a combination of grasses and shrubs can be planted or stone rip rap placed for stabilization. In high bank areas, stone can be placed to the high water level and then grasses planted in the upper areas.
- Increasing the width of riparian areas along the stream will improve erosion control and wildlife habitat in the watershed. Landowners with conservation plans will be identified and encouraged to fully implement their plans for the establishment of conservation practices including waterways, filter strips, wildlife habitat, and wetlands. This will also assist in the management of practices already in place and to determine additional practices that could be implemented in the watershed. One other volunteer group that could be contacted for help in establishing erosion control areas, such as native grasses and/or wildflowers, is the Master Gardeners. This cooperative extension service sponsored program trains volunteers in gardening techniques and practices. Both counties have active Master Gardener groups that are required to perform community service.
- Conservation staff will direct landowners in the development of new conservation plans and in the application process for EQIP, CRP, WHIP, and other cost share programs that might be available. These programs will be more accepted than the

cost share programs that were developed through this grant because of the availability of rental or a per acre dollar amount for land entered into specific programs. Conservation staff will also encourage no till and minimum tillage practices in the watershed. Both county extension services provide continuing education classes for private chemical licenses, a required license for individual farmers to purchase and apply chemicals on crops.

- The Rush County surveyor will work with the Rush County Highway Department to remove old concrete bridge pieces from the stream and place them on the banks for stabilization.
- The steering committee will communicate with individual property owners about the need to reinforce the banks where recreational and farming vehicles cross the stream and in livestock access areas. .

Evaluation: Success will be measured by the number of miles of streambank that is stabilized by both the tree removal program and the stream bank stabilization program and the number of acres implementing BMPs in the watershed. This construction work will be contracted by the county, supervised by the county surveyor, and funded through tax revenues. The number of no till and minimum till acres will be recorded yearly and this number should continue to increase.

Time frame: Streambank and tree removal construction projects should be completed by the end of 2004. Conservation practice installations will be ongoing and will adhere to deadlines imposed by specific NRCS/FSA deadlines.

Estimated cost: Construction costs for the streambank and tree work is approximately $125,000 funded through tax revenues. Other program costs are estimated at <$25,000 for conservation staff expenses.

3.3 Goals for reduction of *E. coli* problems in Conns Creek

Objective: In order to reach this goal, the steering committee will cooperate with residents to:

1) Educate about private septic systems and proper maintenance
2) Educate regional sewer and municipal sewer customers about their responsibility for protecting water supplies
3) Educate livestock producers about CAFOs stream access issues and their responsibility in protecting water from contamination

Action Plan: Educational information packets about septic systems and proper maintenance and homeowner responsibility in a municipal sewer district have been developed through prior Section 319 grants. These materials will continue to be available through the local soil and water conservation district offices. Development of manure management plans for livestock owners will be handled through the conservation districts. Educational materials will be assembled and made available through the soil and water district offices.

Evaluation: Success will be measured through the number of informational packets and contacts made concerning septic systems and livestock manure plans.

Time frame: These programs will be ongoing and will utilize materials that have been developed with Section 319 grant funds. The development of manure management plans for livestock producers will be handled by conservation staff.

Estimated cost: < $5,000 for conservation staff expenses

3.4 Goals for elimination of trash in Conns Creek

Objective: In order to reach this goal, the steering committee will work with local residents and government officials to:

1) Pick up trash along Conns Creek
2) Establish educational program about trash removal and its impact on water quality

Action Plan: To remove trash and litter from stream areas, the steering committee will sponsor clean up days for volunteer and service groups. Waldron Elementary and Waldron Junior Senior High School groups are possible participants. Other possible groups would be scout troops and 4-H clubs. For large trash items, the Shelby County commissioners would be contacted for assistance.

Evaluation: Success will be measured by the number of trash sites cleaned up and maintained along the stream.

Time frame: The first trash pick up day will be scheduled in 2003. Subsequent clean up days will be scheduled annually.

Estimated cost: <$100 for trash bags, publicity, and refreshments for volunteers

3.5 Legal Matters

The legal drain status of the Rush County portion of Mud Creek will provide a regulated method of collecting tax money for the maintenance of the stream. The county surveyor has determined the watershed boundaries, surveyed the area included, and requested a combined legal drain for the three smaller legal drains from the beginning of Mud Creek to just north of Homer. This was accomplished in November 2002. The next steps have been to survey the remaining portion of Mud Creek from Homer to the Rush-Shelby county line and determine the costs and priority areas. The surveyor will request a hearing with the drainage board and ask to extend the drain. This proposal will include a cost estimate for performing any work on the stream. Upon approval by the drainage board, this proposal will be submitted to DNR to comply with Section 404 of the federal Clean Water Act (33U.S.C.1344). Tentatively, the initial hearing will occur in fall, 2003, plans submitted to DNR during winter of 2003, with planned work beginning in spring, 2004.

3.6 Operation and Maintenance

The conservation staff will supervise follow-up for installed practices. In all areas of the stream, the landowner is responsible for repairs and maintenance of installed structures or BMPs on their property. In legal drain areas of the stream, the county surveyor will make sure the structure is the correct size and that the structure and practices are installed properly. Because of the primarily agricultural area included in the watershed, the drainage board (commissioners) are aware of the concerns and problems of the landowner/farmers in the area. Their knowledge of available conservation programs is at a higher level than a more urban board and their appreciation for landowner rights has been heightened by recent actions to declare portions of Flatrock River in Rush County as a legal drain. The county surveyor has assured landowners and the steering committee that every effort will be made during construction work to maintain the present conservation practices that are or will be established along Conns Creek.

Expansion of the current boundaries of the regional sewer district and conservancy district in the future would help eliminate a portion of the failing septic systems that are continuing to discharge into field tiles and ditches. The development of non-traditional septic systems, including wetland systems or mound systems is an unexplored area for the watershed and would also be helpful in reducing the *E. coli* potential contaminants in Conns Creek.

3.7 Plan Evaluation

The watershed plan will be re-evaluated annually by representatives of the current steering committee. The steering committee will be responsible for revisions or adaptations to the original plan. Assistance for revision and implementation aspects of the management plan will be available from the Rush and Shelby County SWCD's and NRCS staff as needed. Drainage boards from Rush and Shelby counties, including the county surveyors, will be apprised of any changes in the management plan. Updated copies of the plan will be provided to the steering committee and any interested parties, upon request.

4.0 CONTACT INFORMATION

4.1 Contact Agency

All records and documents concerning this plan will be kept by the Rush County Soil and Water Conservation District office. All requests for further information should also be referred to this office. The current address for the Rush County SWCD office is:

Rush County SWCD
146 E. U.S. Highway 52
Rushville, Indiana 46173
(765) 932-2813 extension 3

4.2 Distribution List

The watershed management plan will be made available to the steering committee, county surveyors, county commissioners, and Rush and Shelby county SWCD offices. The possibility of placing a copy in other public locations such as the public libraries will be investigated.

APPENDIX

Appendix A: Calendar of Events

Date Completed	Activity
06/25/01--06/29/01	Informational display at Rush County Fair
07/15/01--07/21/01	Informational display at Shelby County Fair
8/25/01	Abandoned well display at Farm Safety field day
9/18/01	First public meeting
12/3/01	Steering committee formed
12/10/01	Watershed windshield survey with Rush and Shelby County commissioners
1/8/02	Steering committee and public meeting
2/12/02	Steering committee and public meeting
2/26/02	Pesticide training presentation
3/12/02	Steering committee and public meeting
4/12/02	Steering committee and public meeting
5/14/02	Steering committee and public meeting
7/11/02	Watershed survey
06/23/02--06/28/02	Informational display at Rush County Fair
07/13/02--07/20/02	Informational display at Shelby County Fair
7/24/02	Watershed display at farm and field day
8/5/02	Meeting with Rush County commissioners
8/23/02	Volunteer water monitoring training
9/9/02	Meeting with Rush County commissioners
9/10/02	Steering committee and public meeting
10/10/02--10/11/02	National Water Monitoring Day events with Rush County fifth graders
10/17/02	National Water Monitoring Day with Waldron fifth graders
10/22/02	National Water Monitoring Day with Milroy fifth graders
11/1/02	Meeting with Rush & Shelby Co. commissioners, form Mud Creek legal drain
10/8/02	Steering committee and public meeting
11/12/02	Steering committee and public meeting
1/10/03	Watershed survey
2/11/03	Steering committee and public meeting
3/11/03	Steering committee and public meeting
4/10/03	Watershed survey
6/17/03	Public meeting for final presentation of watershed plan
Summer, 2003	Organize clean up for trash removal project
Fall, 2003	Hearing for legal drain with Rush County commissioners
Winter, 2003-2004	Expected completion date for Western Rush Regional Sewer District
Winter, 2003-2004	Submit plans to DNR for legal drain approval
Spring, 2004	Begin streambank stabilization projects
June, 2004	Annual review of watershed management plan by steering committee

Indicates anticipated activity dates

Appendix B: Table of Acronyms

TABLE OF ACRONYMS

DNR	Department of Natural Resources
IDEM	Indiana Department of Environmental Management
CAFO	Confined Animal Feeding Operation
NRCS	Natural Resources Conservation Service
SWCD	Soil and Water Conservation Service
USGS	United States Geological Survey
EQIP	Environmental Quality Incentive Program
CRP	Conservation Reserve Program
WHIP	Wildlife Habitat Incentive Program
BMP	Best Management Practices
EPA	Environmental Protection Agency
USDA	United States Department of Agriculture

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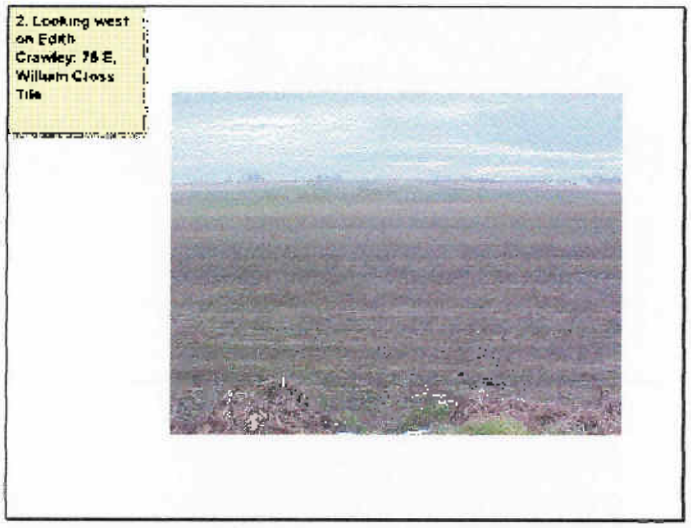

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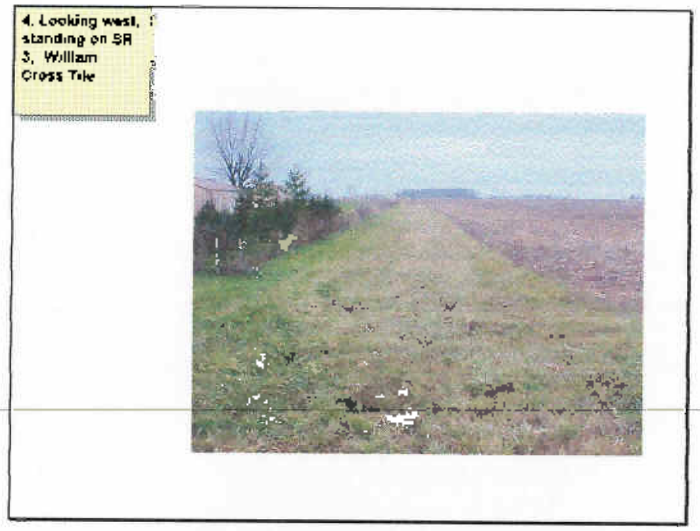

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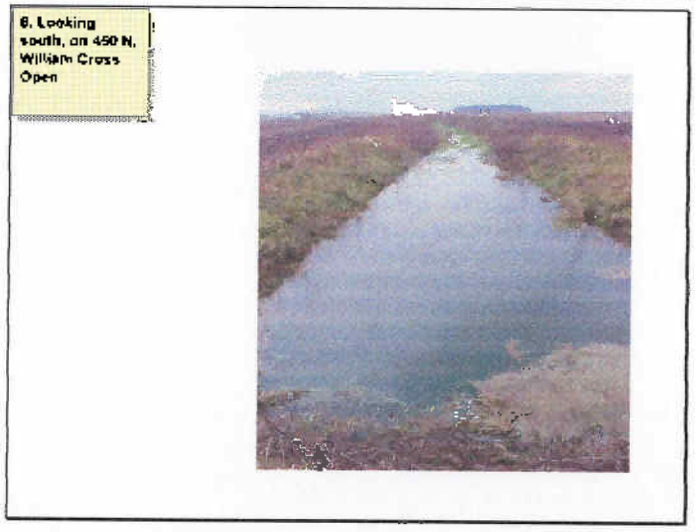

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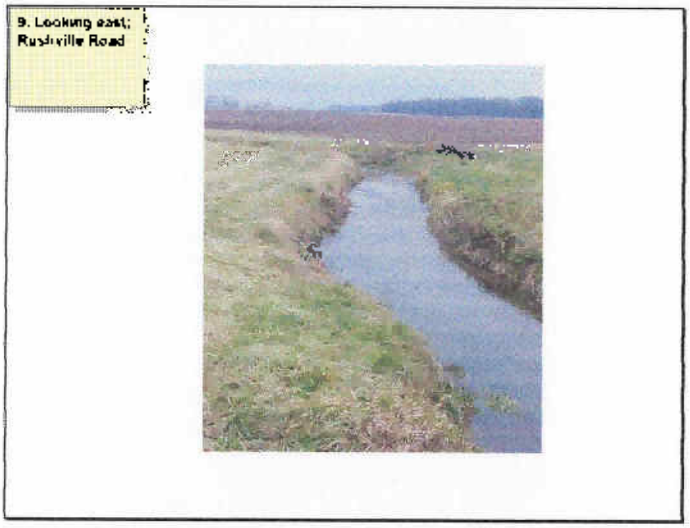

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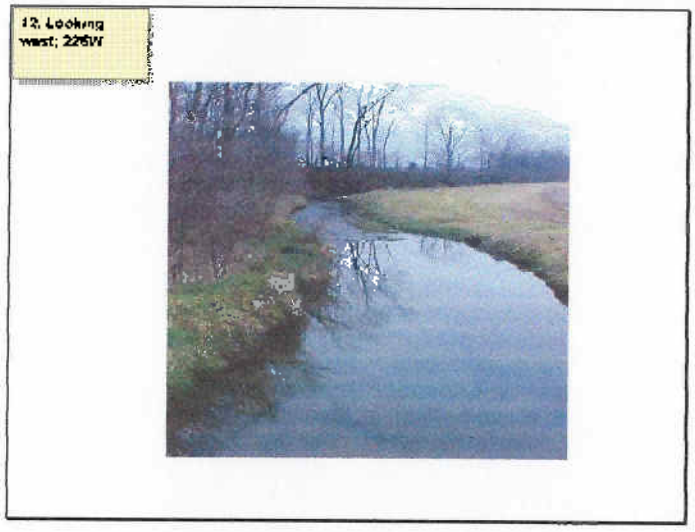

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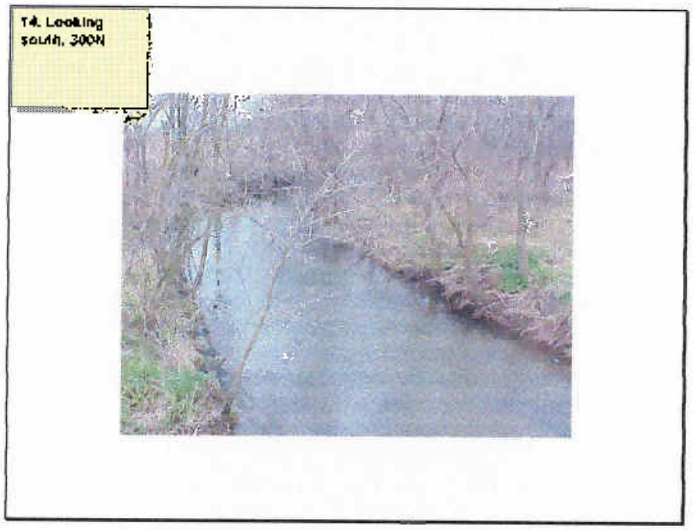

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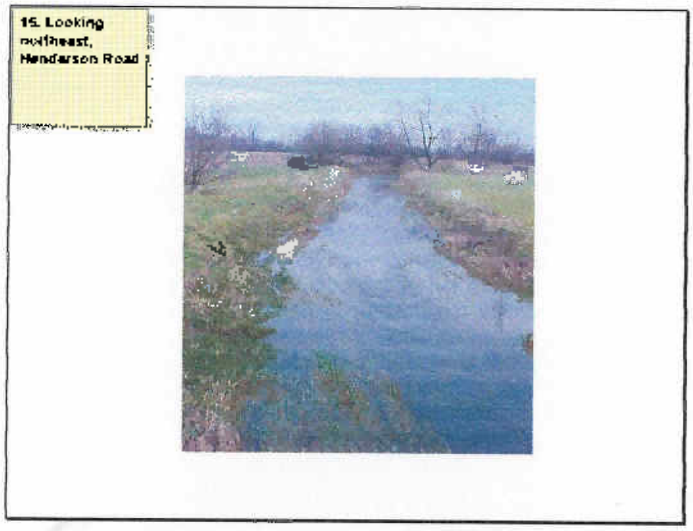

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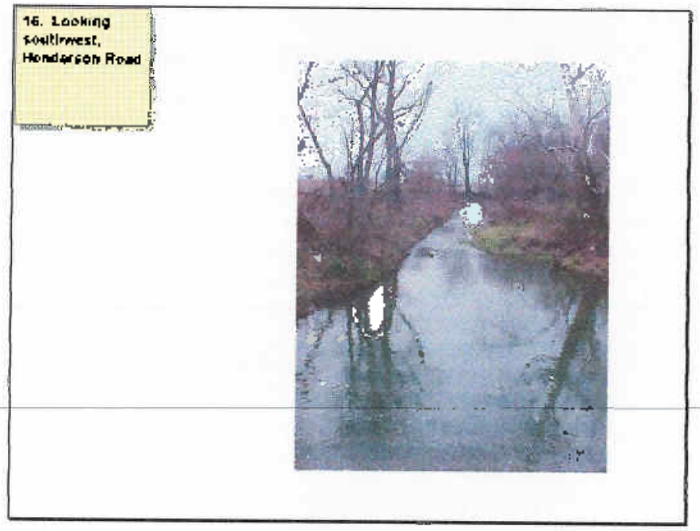

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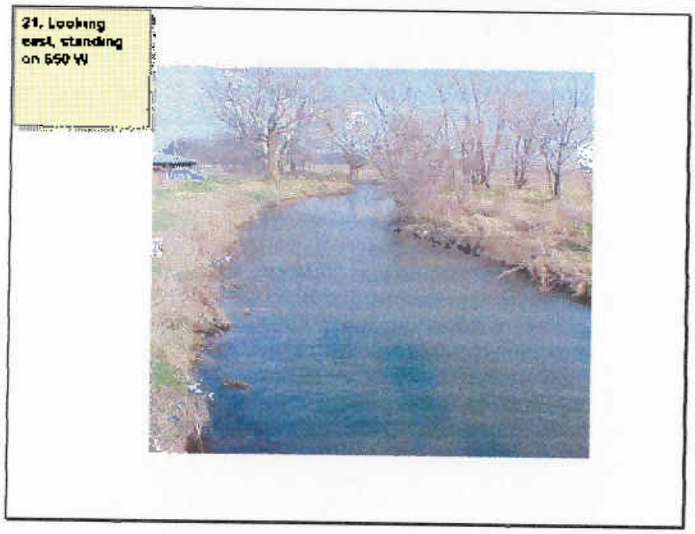

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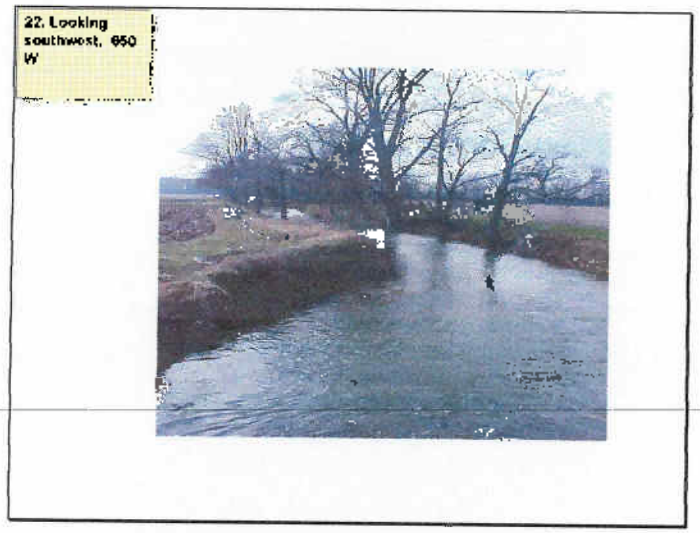

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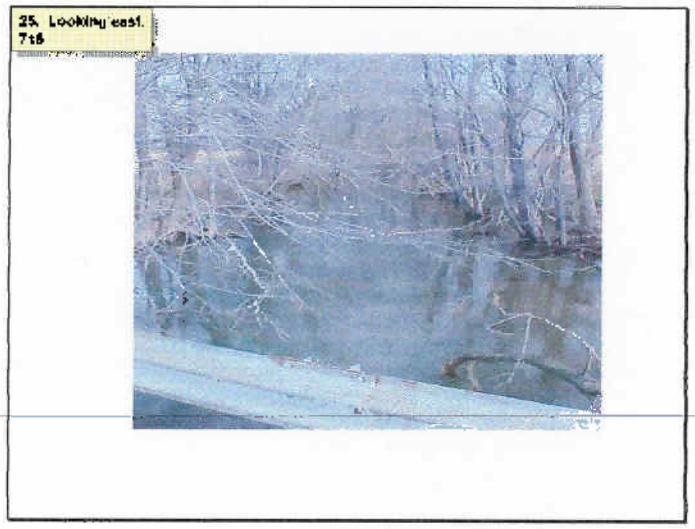

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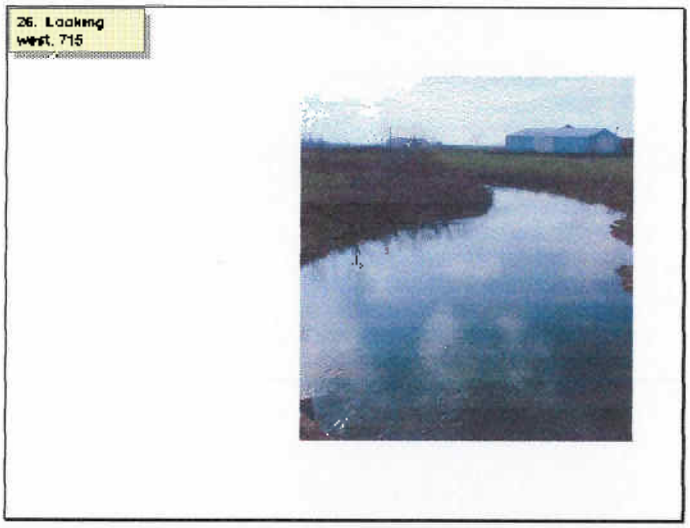

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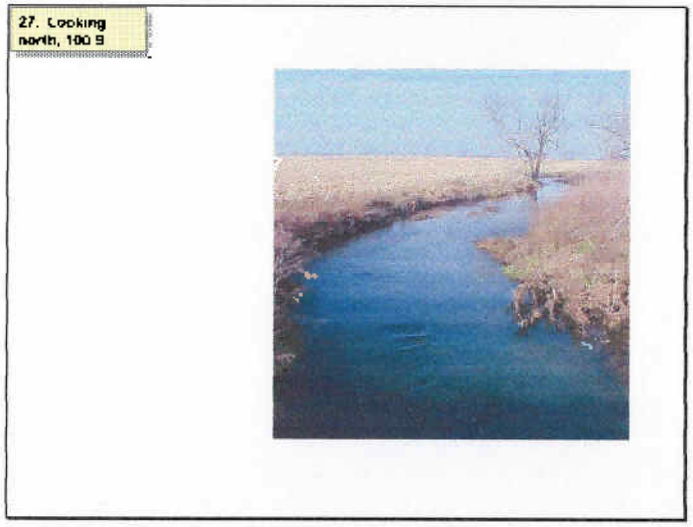

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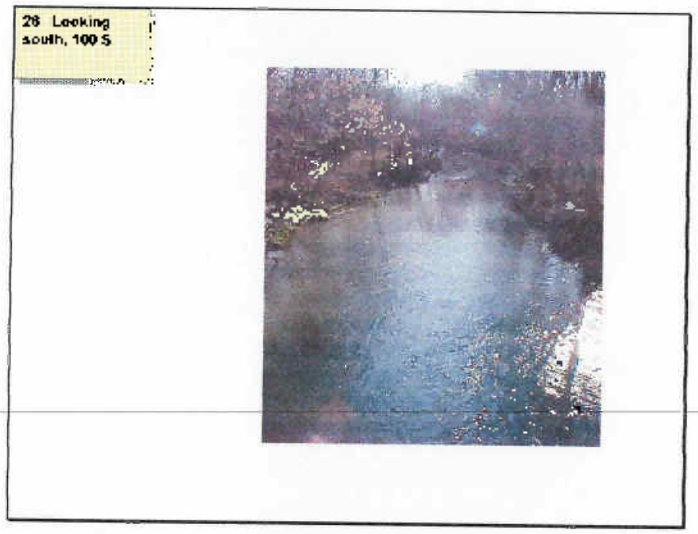

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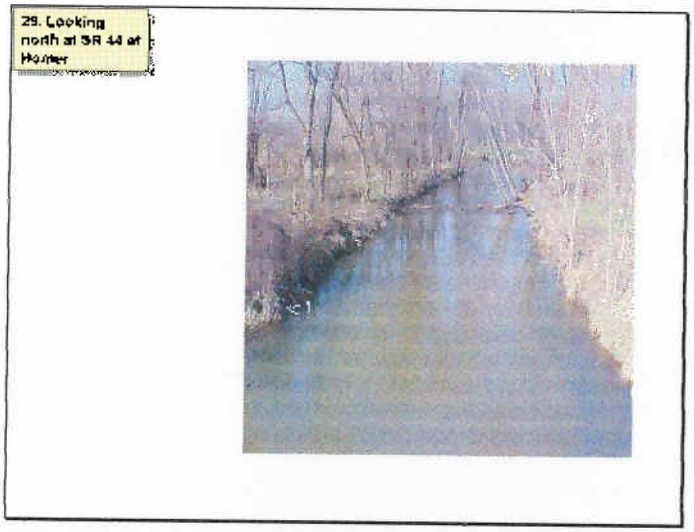

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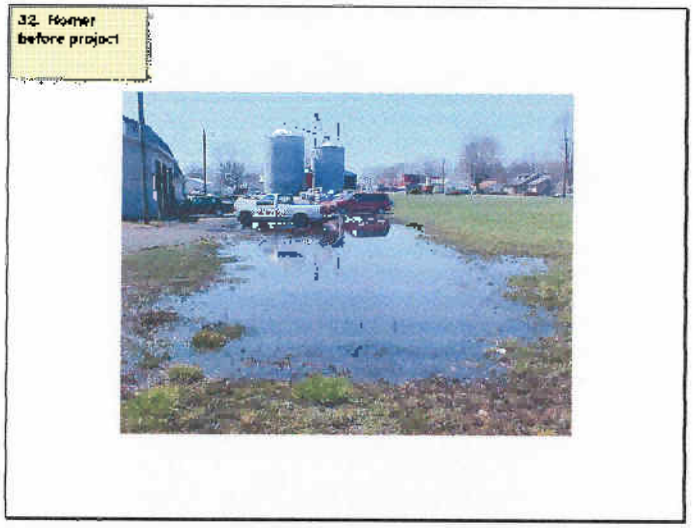

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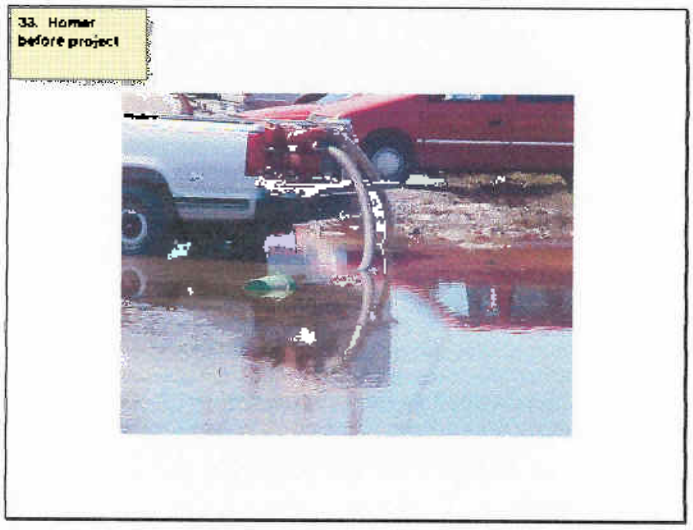

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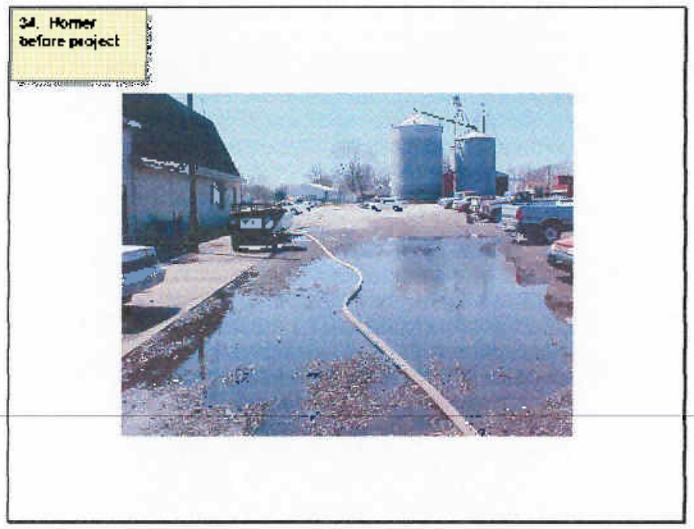

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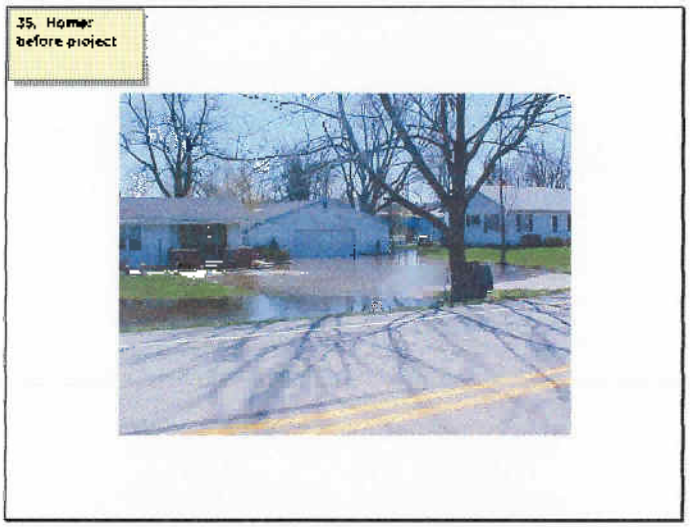

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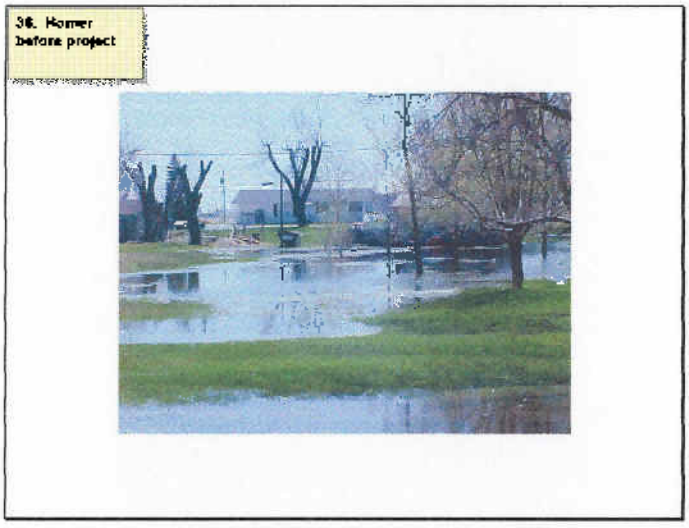

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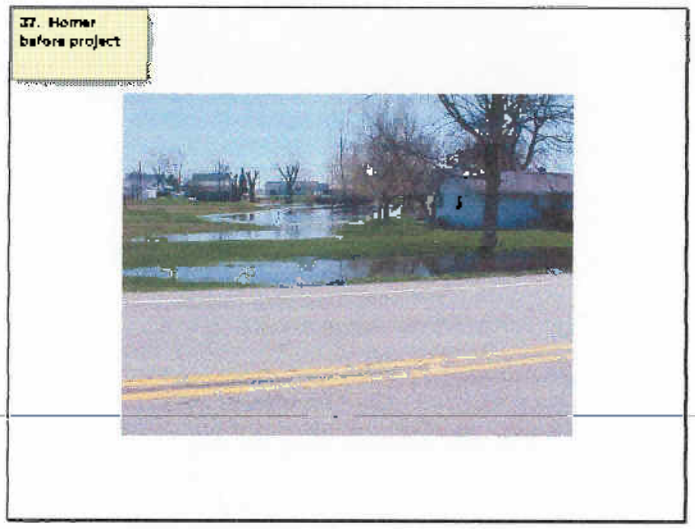

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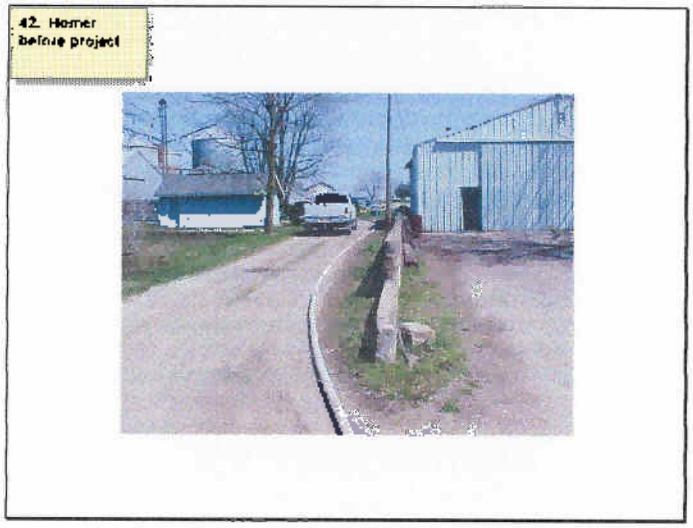

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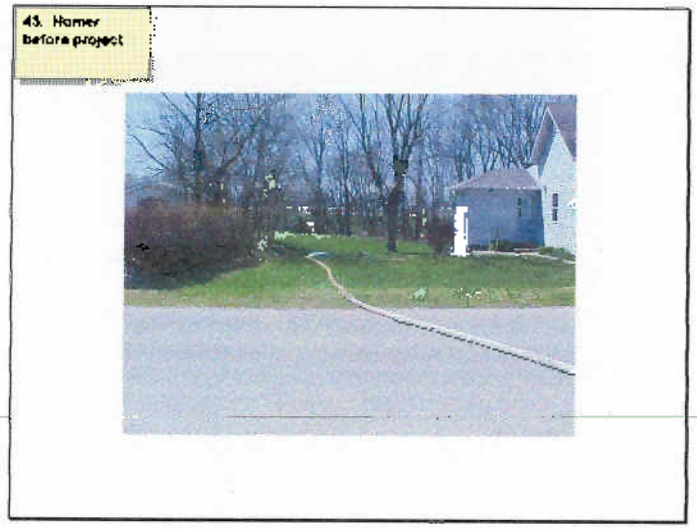

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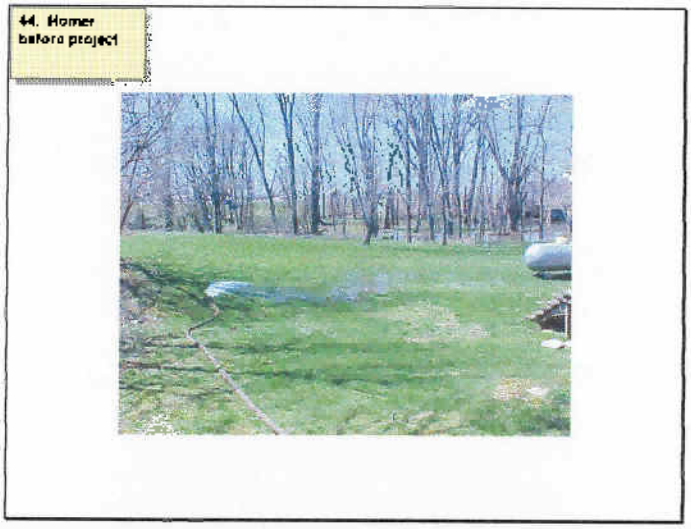

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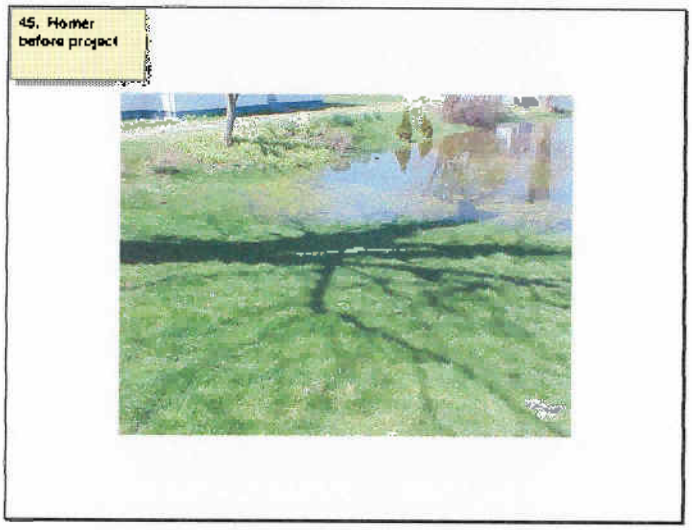

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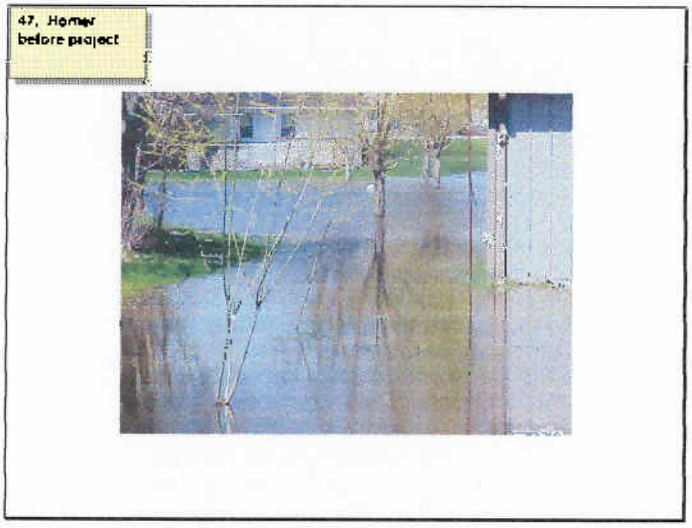

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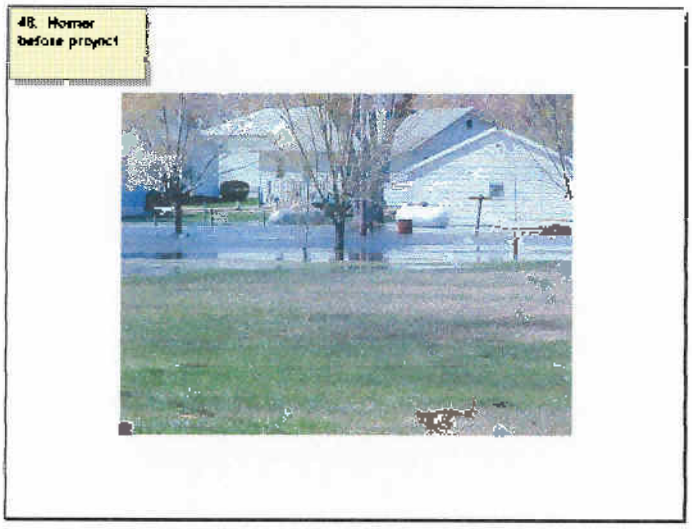

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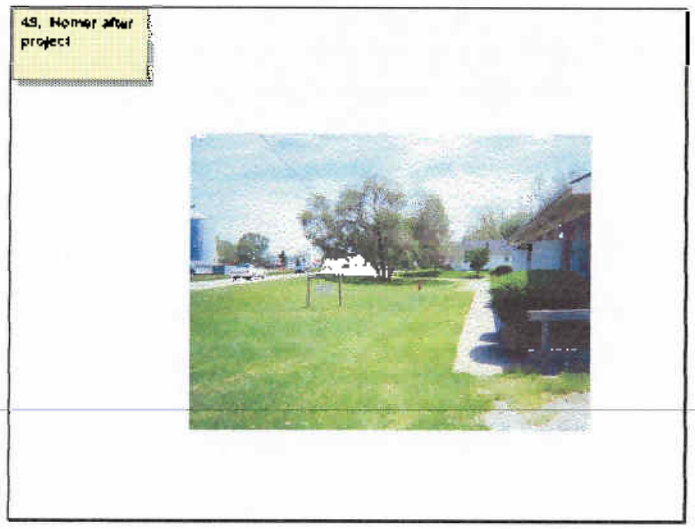

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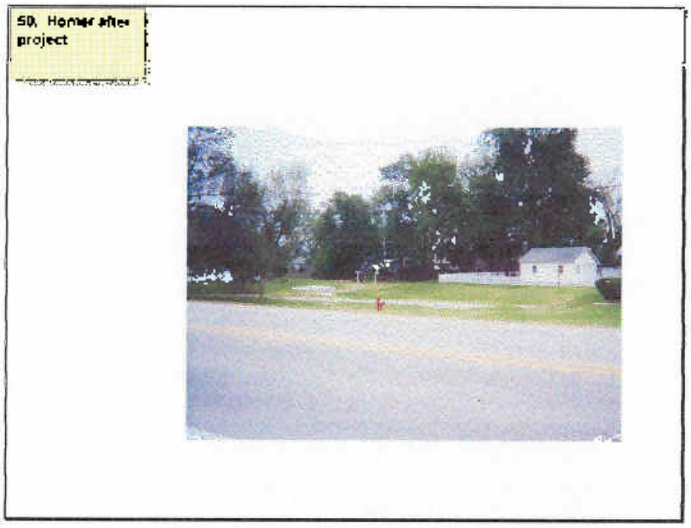

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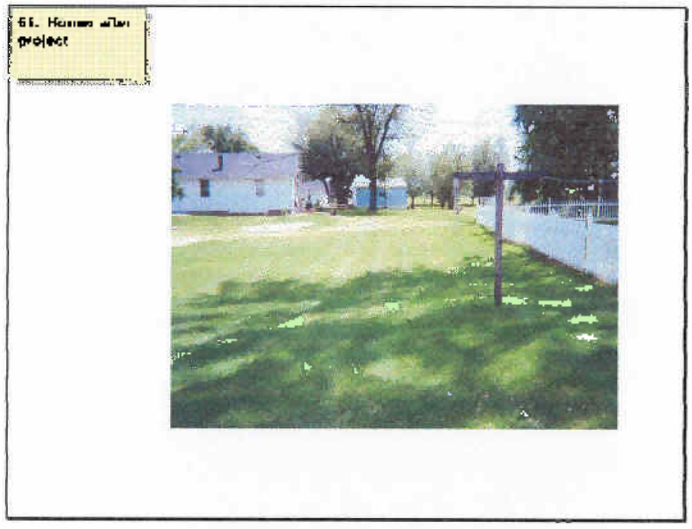

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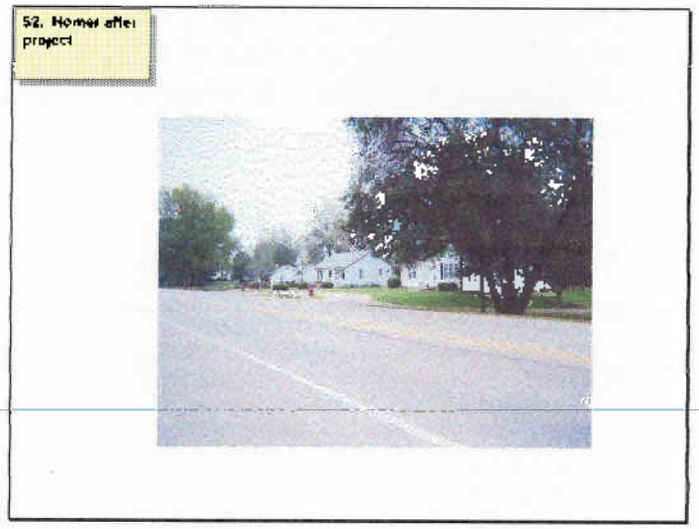

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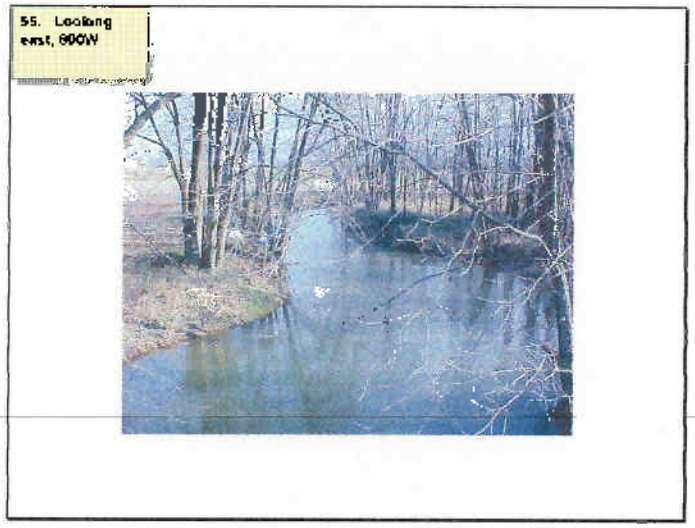

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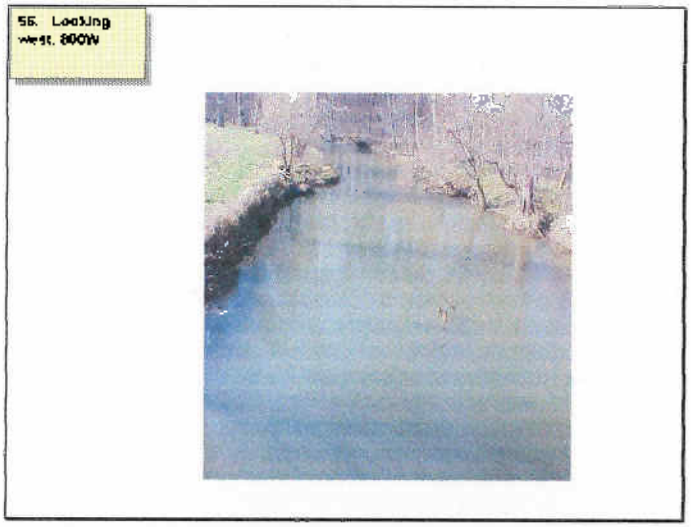

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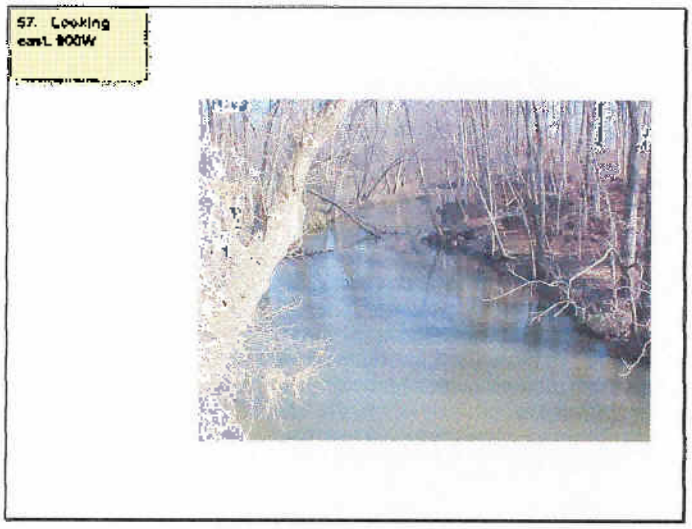

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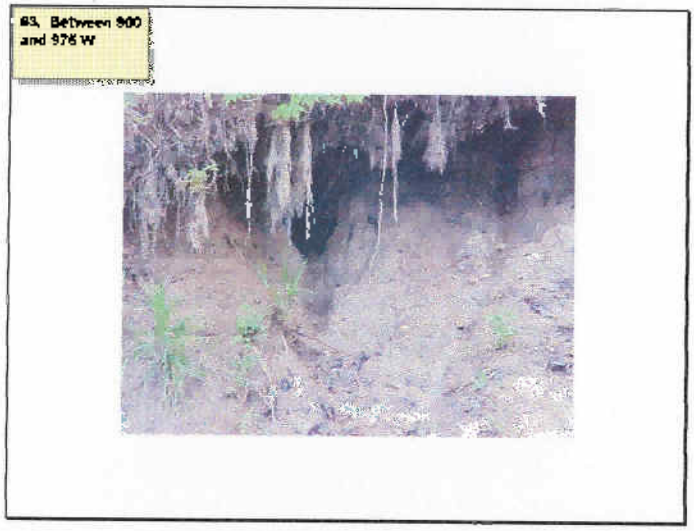

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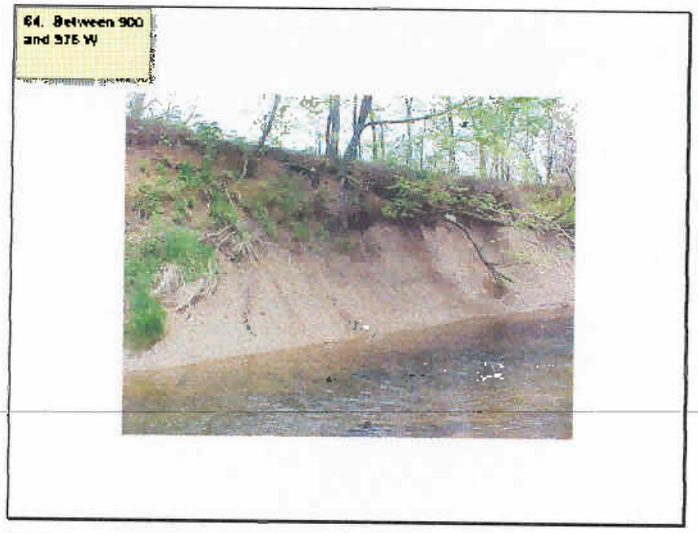

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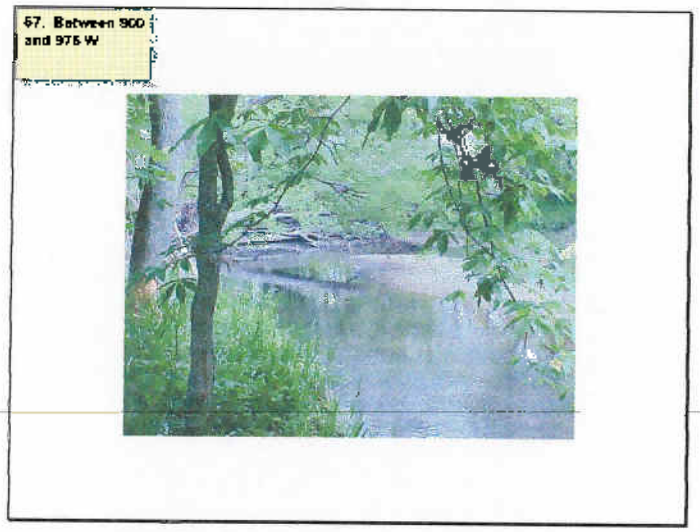

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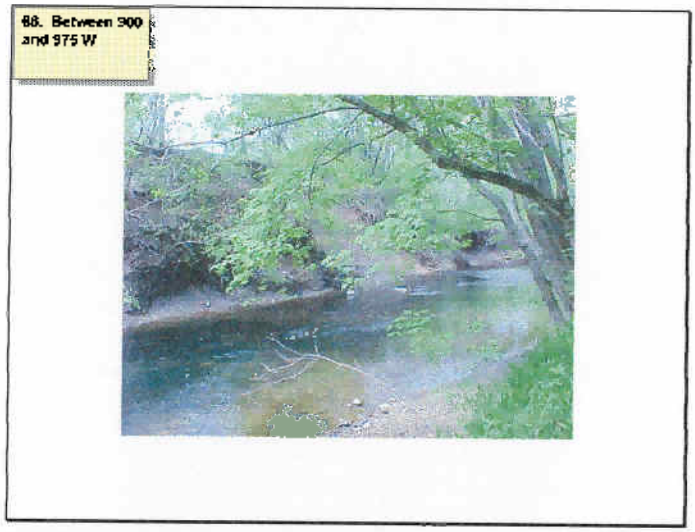

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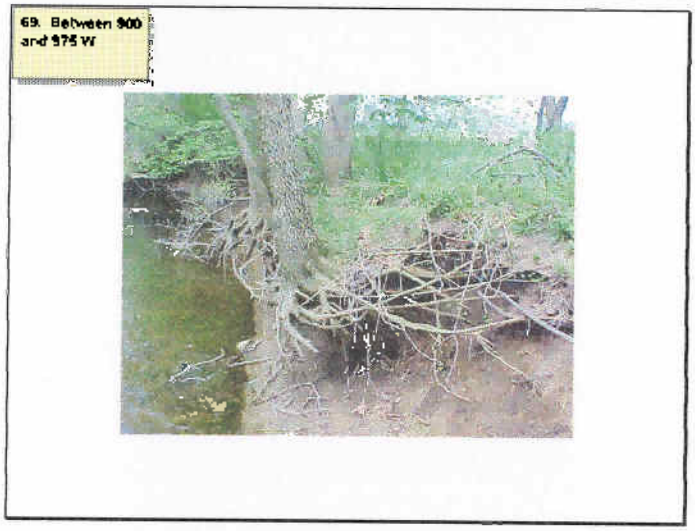

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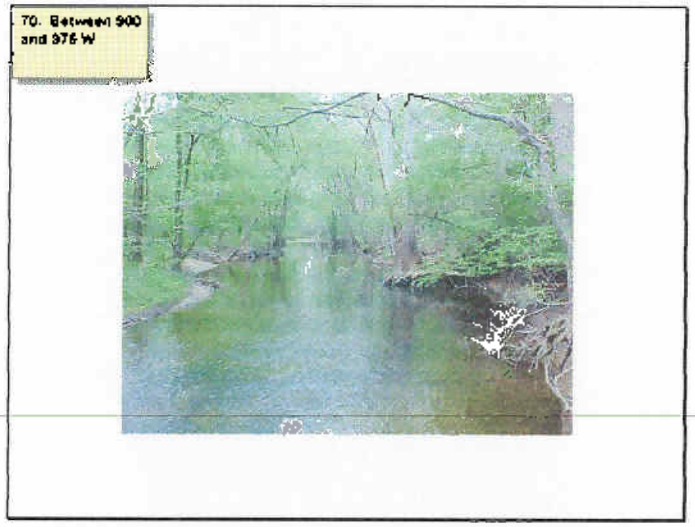

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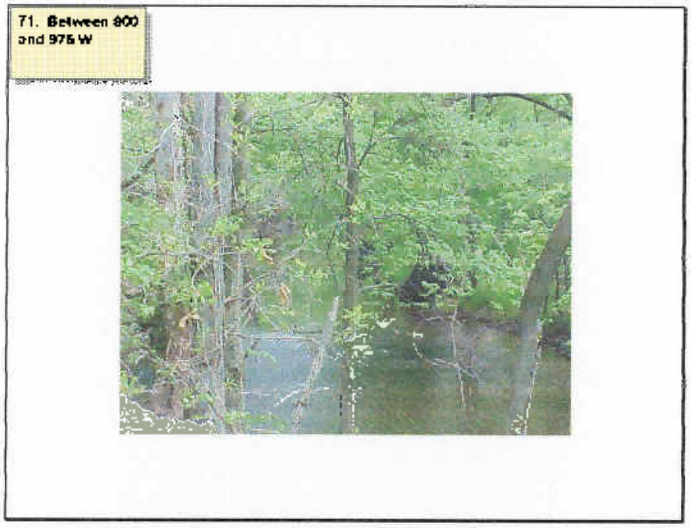

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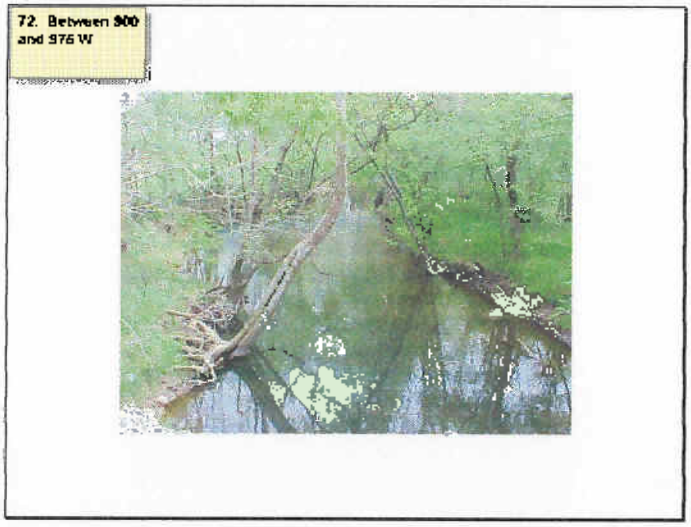

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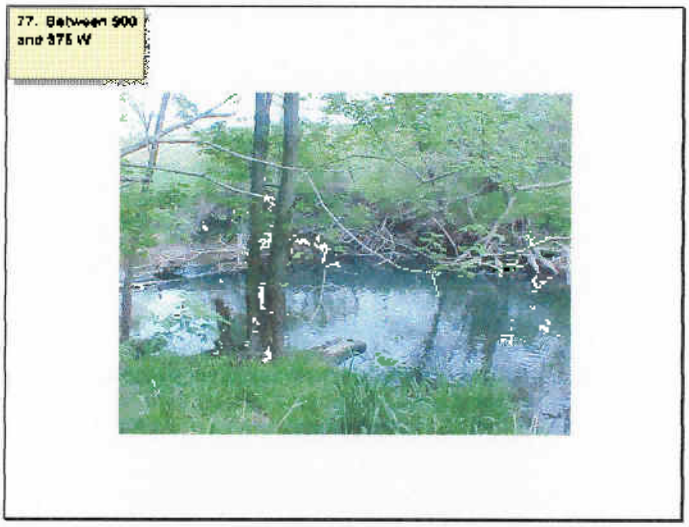

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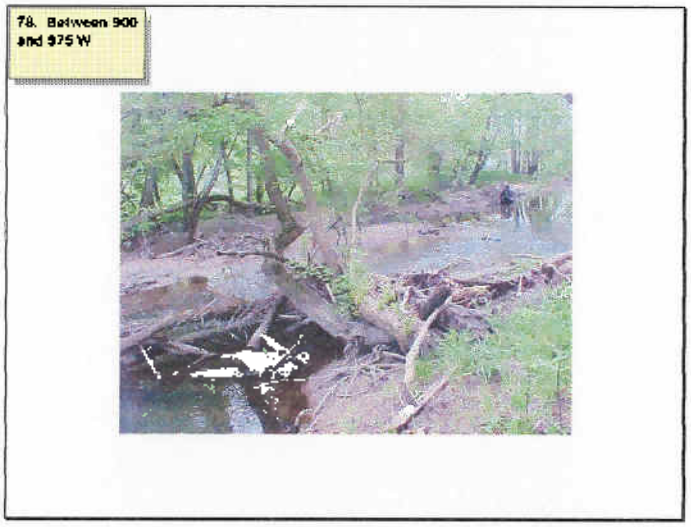

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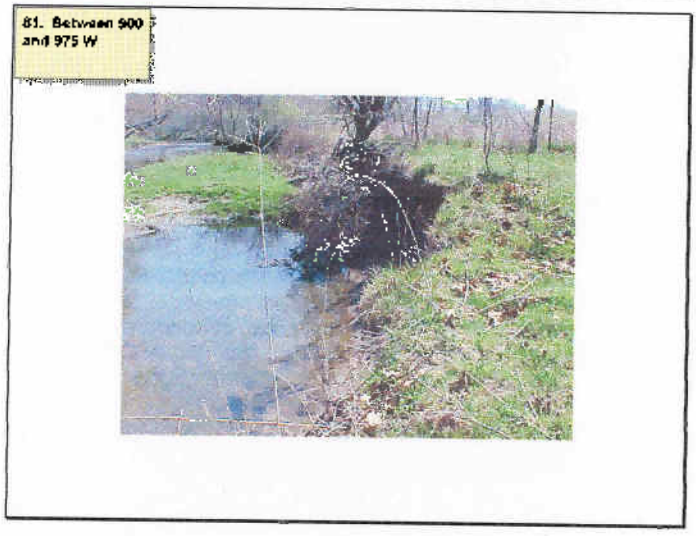

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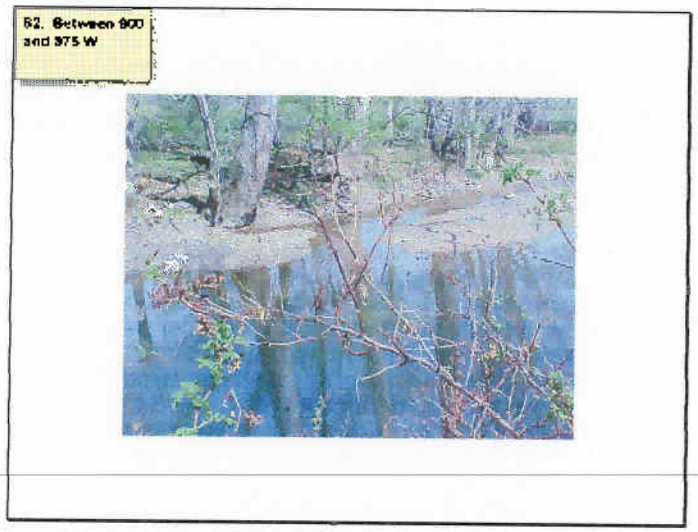

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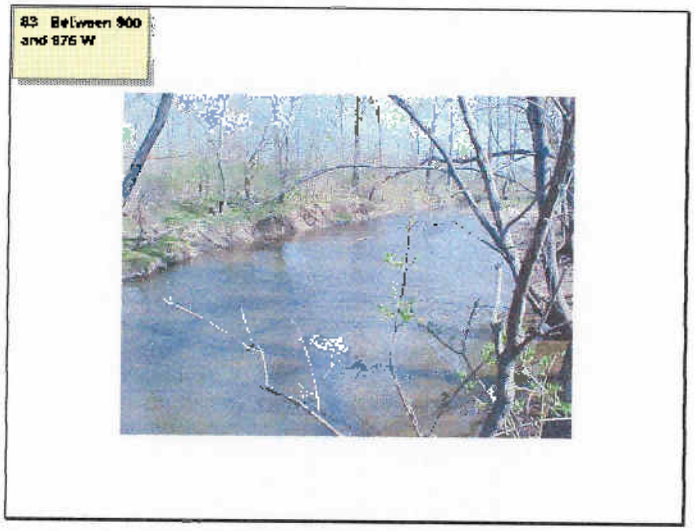

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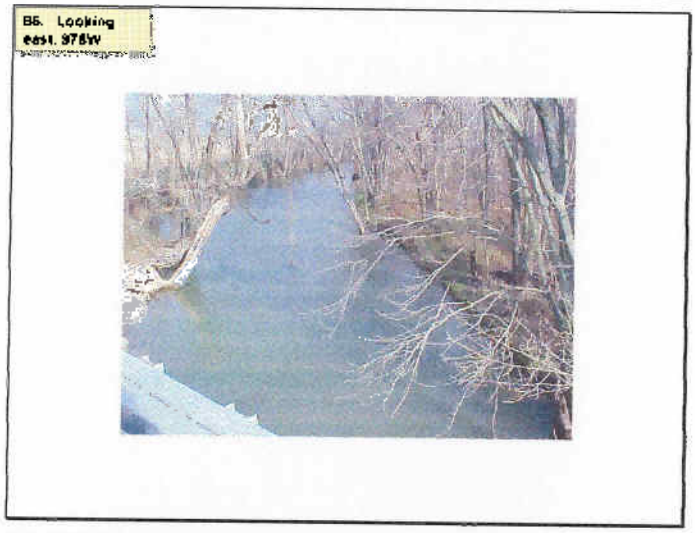

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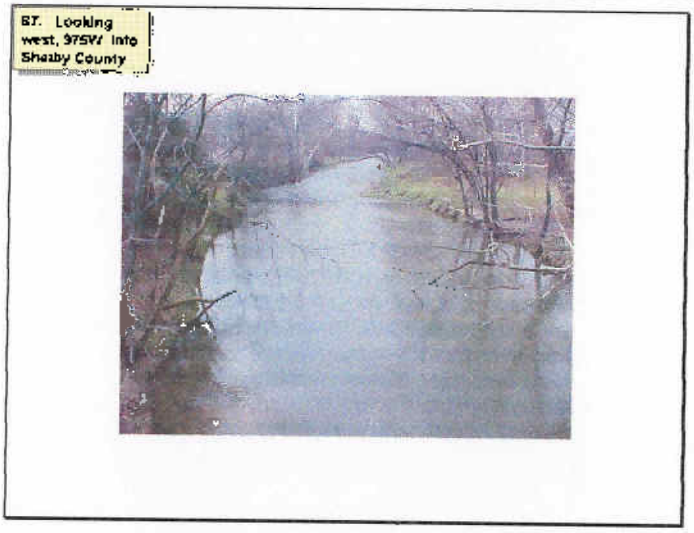

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88. Looking east, 775E in Shelby County

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89. Looking west, 775E

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90. Looking north, Blue Ridge, 603

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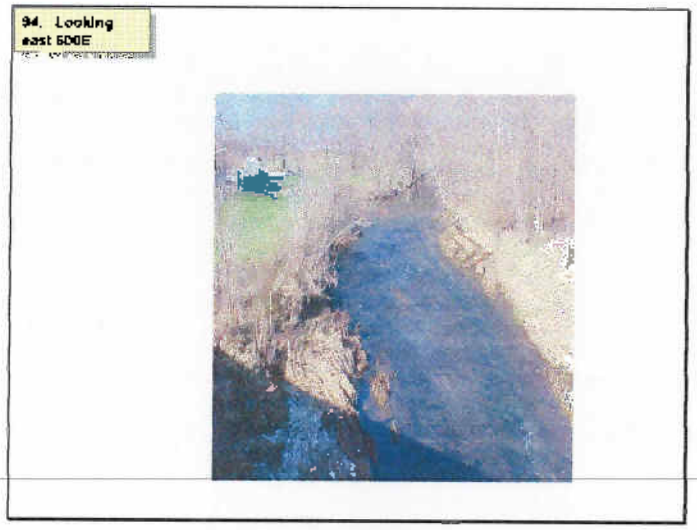

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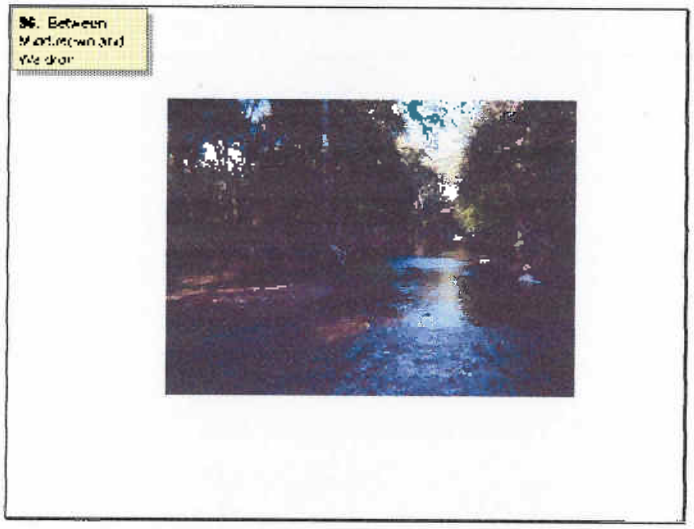

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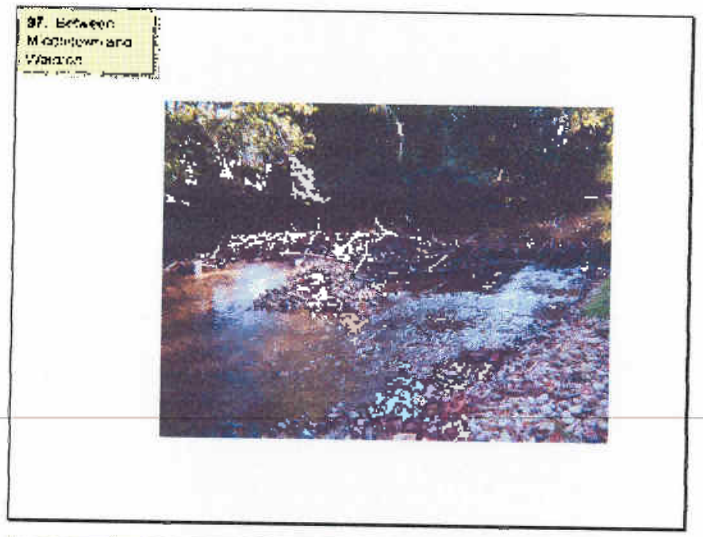

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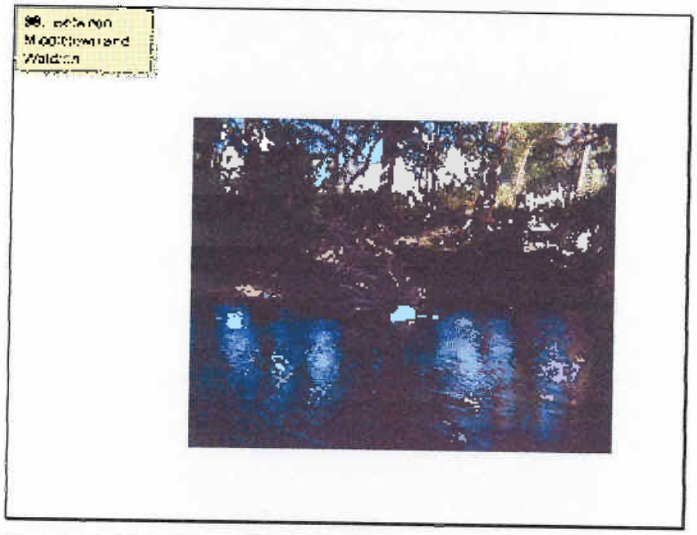

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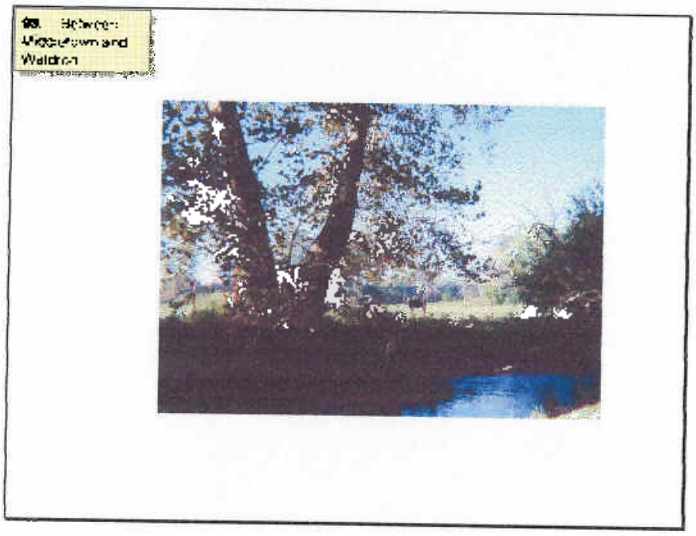

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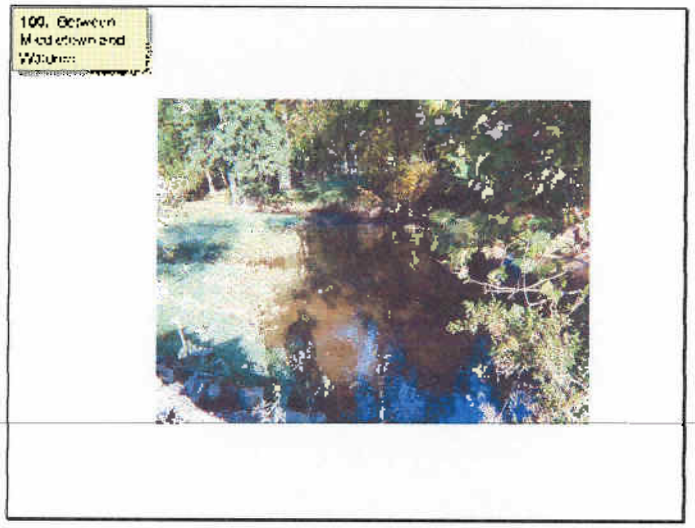

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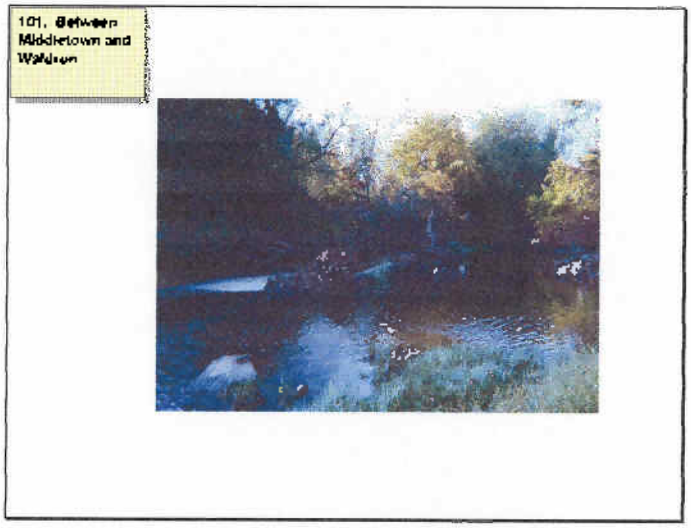

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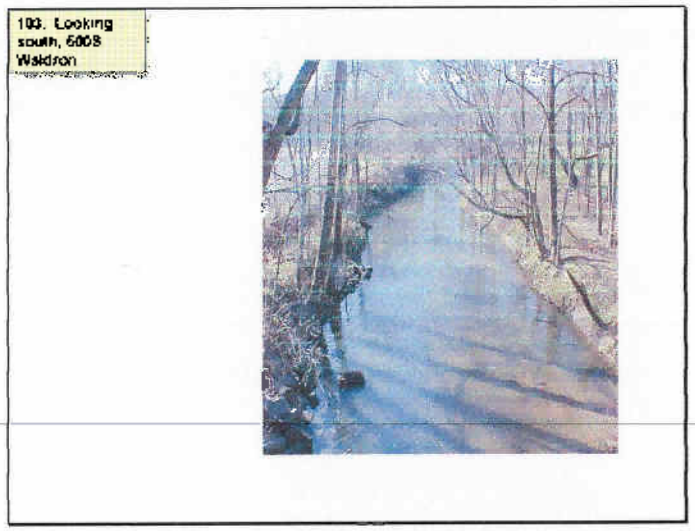

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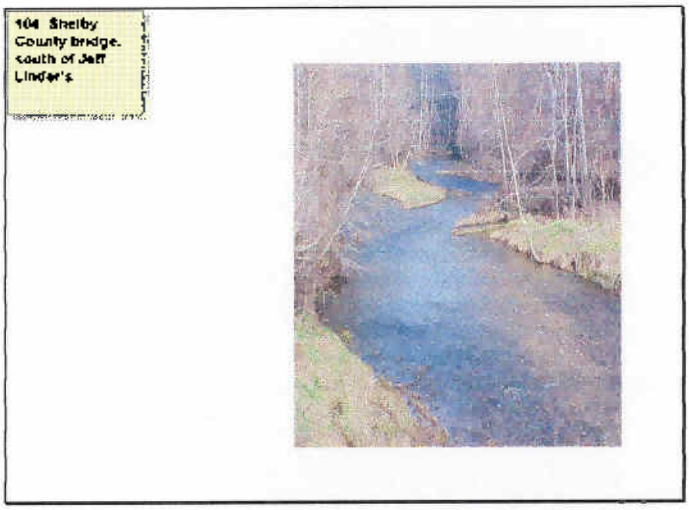

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