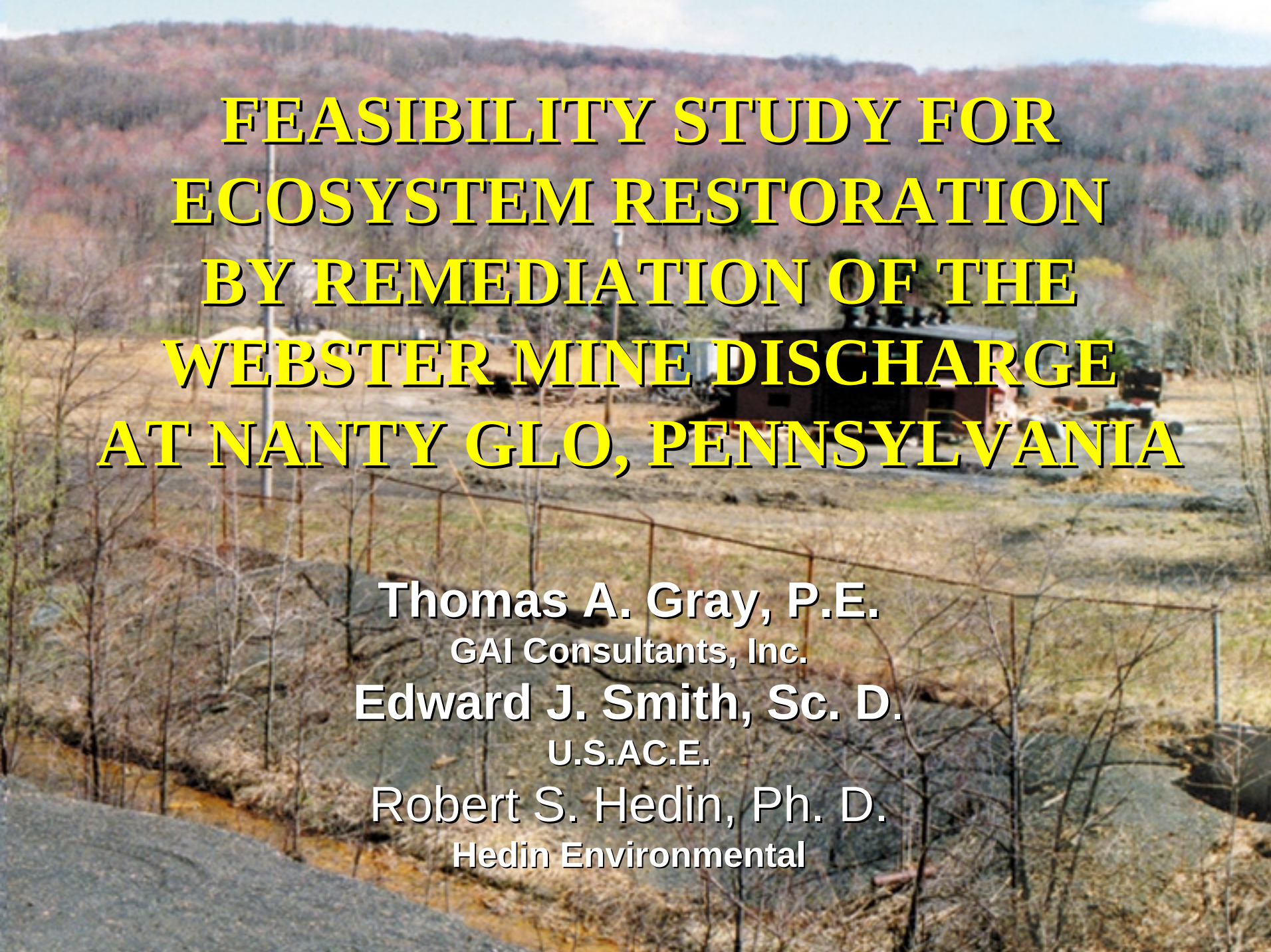
FEASIBILITY STUDY FOR ECOSYSTEM RESTORATION BY REMEDIATION OF THE WEBSTER MINE DISCHARGE AT NANTY GLO, PENNSYLVANIA



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BACKGROUND

- South Branch Blacklick Creek
  - Acid mine drainage
    - impaired ecosystem function
    - aquatic life eliminated
  - Significant sources of AMD
    - Webster deep mine
    - Revloc mine refuse site
    - Loraine mine refuse site
    - Beth Energy Mine 31 mine refuse site

AUTHORITY TO INVESTIGATE

- Water Resources Act of 1992

PREVIOUS STUDIES

- Conemaugh River Basin Reconnaissance Report - 1994
  - Recommended 7 mining related ecosystem projects for cost shared feasibility study
  - Pursue implementation of one ecosystem restoration project
- Webster Mine Remediation Concept Plan - 1995
  - Recommended SAPS technology

Existing Site Conditions

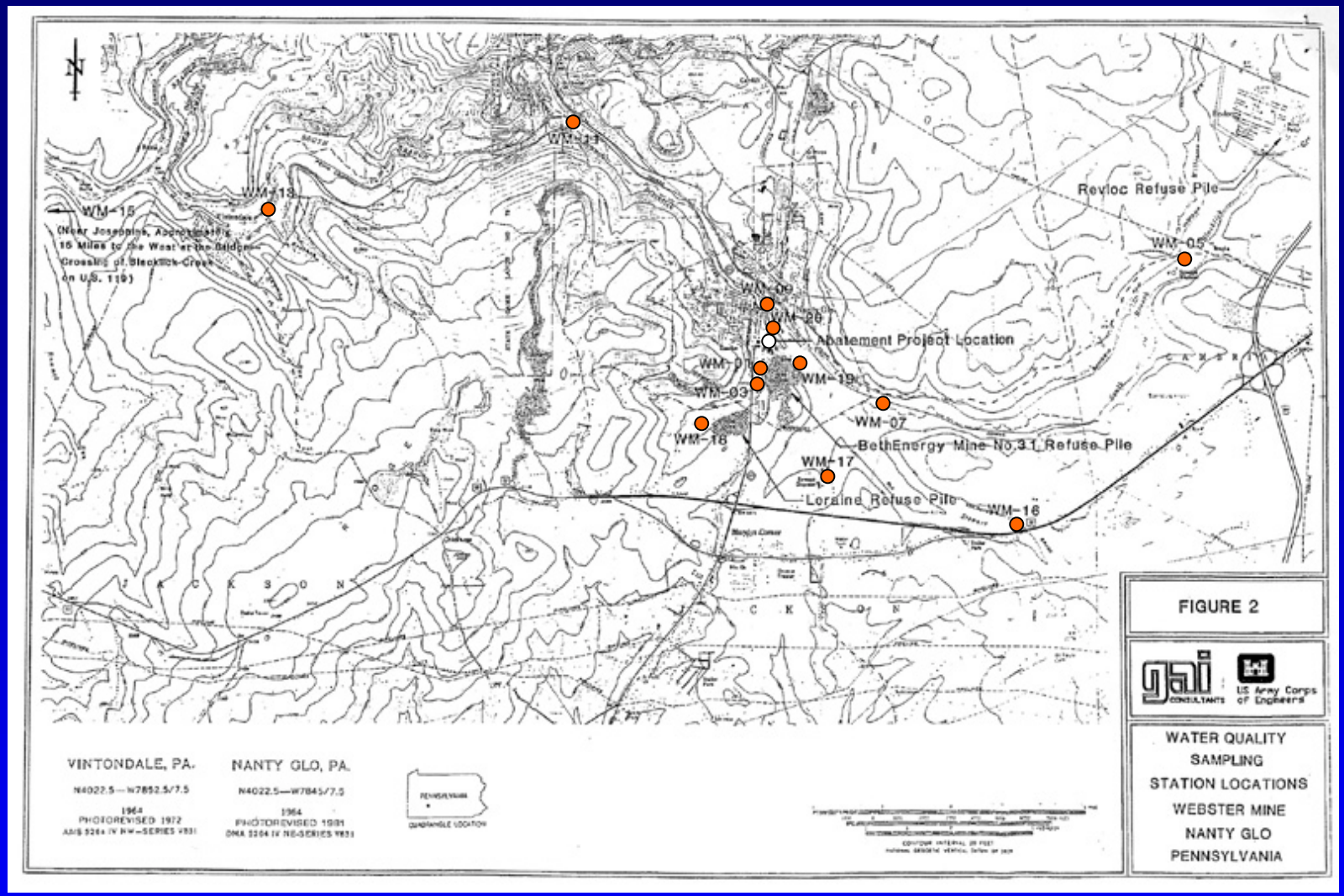
DISCHARGE RATE

	1990-92	1997-98
Average	292	446
Minimum	42	74
Maximum	603	1,266

Existing Site Conditions

WATER QUALITY CONCENTRATION

	High Flow	Low Flow
Flow	770 gpm	133
Acidity	342 mg/l	450
Fe	24	44
Al	30	44
So^4	388	496



WATER QUALITY SAMPLING STATION LOCATIONS

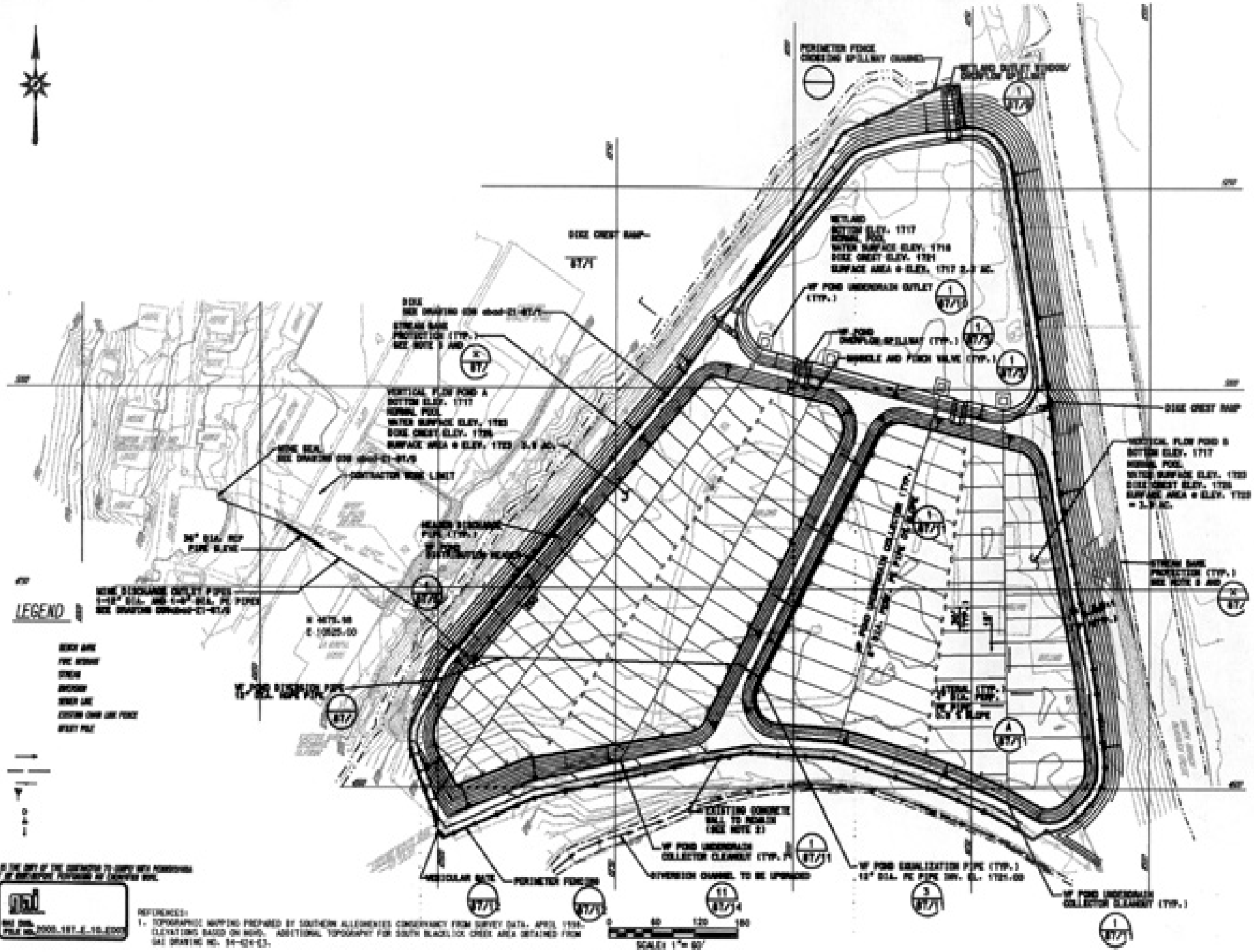
Webster Mine, Nanty Glo, PA

FUTURE CONDITIONS - WITHOUT PROJECT

- Revloc Pile
  - Currently being removed
    - reclamation by 2003
- Loraine Pile
  - Removal to start 2003
  - Reclamation by 2013
  - interim treatment
- Beth Energy Mine 31 Pile
  - Removal to start by 2013
- Webster Mine Discharge
  - Necessary to provide ecosystem restoration

ALTERNATIVES EVALUATED

- Alternative 1 - Single VF pond and single wetland
- Alternative 2 - Dual VF ponds and dual wetlands
- Alternative 3 - Dual VF ponds and single wetland
- Alternative 4 - 75% of ALT 3


LEGEND
REFERENCES:
1. TOPOGRAPHIC MAPPING PREPARED BY SOUTHERN ALLEGHENIES CONSERVANCY FROM SURVEY DATA, APRIL 1996. ELEVATIONS BASED ON NGVD. ADDITIONAL TOPOGRAPHY FOR SOUTH BLACKLICK CREEK AREA OBTAINED FROM GAI DRAWING NO. 94-024-03.
SCALE: 1" = 60'

EXPECTED CONDITIONS - WITH PROJECT

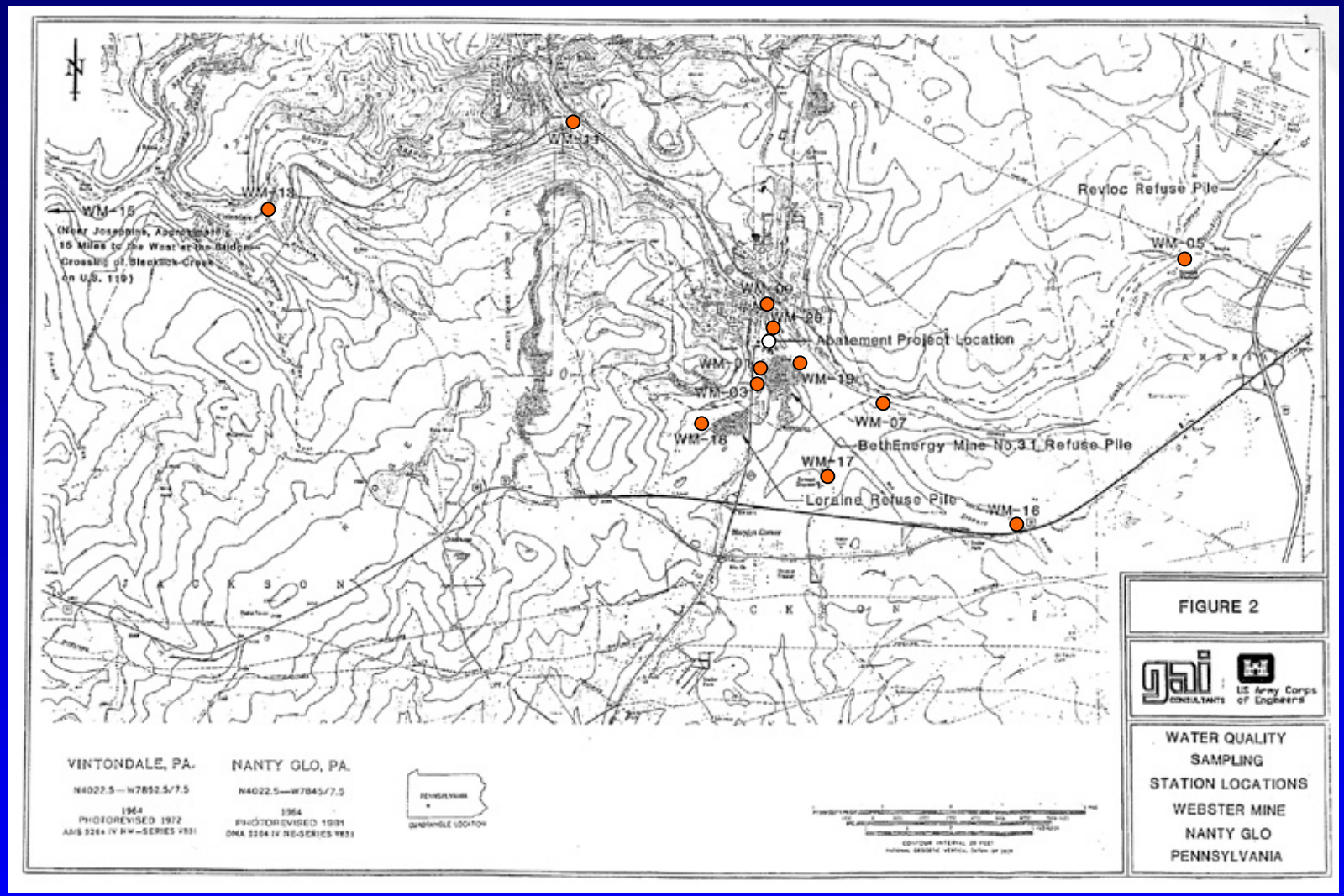
- Conversion of degraded industrial site to ponds and wetlands
- Improve water quality

WATER QUALITY MODEL

- Modeled South Branch Blacklick Creek
  - With project
  - With reduced size project
  - Without project

Webster Discharge - With Project

	Normal Flow	High Flow
Flow	446 gpm	1,400
pH	6.5	5.0
Acidity	0	20
Alkalinity	50	10
Iron (total)	1.0	8.0
Iron (Dissolved)	1.0	2.0
Maganese (total)	3.0	3.0
Aluminum (total)	0.2	4.0
Aluminum (dissolved)	0.2	1.0



WATER QUALITY SAMPLING STATION LOCATIONS

Webster Mine, Nanty Glo, PA

Estimated In-Stream Water Quality

S. Br. Blacklick Creek @ Revloc

	Flow (GPM)	Without Project	With Project
Net Acidity	1,800	-10	-10
Net Acidity	6,500	-10	-10
Net Acidity	71,000	-10	-10

Estimated In-Stream Water Quality

PERGRIN RUN

	Flow (GPM)	Without Project	With Project
Net Acidity	83	-10	-10
Net Acidity	486	-10	-10
Net Acidity	2,800	-10	-10

Estimated In-Stream Water Quality

WEBSTER MINE

	Flow (GPM)	Without Project	With Project
Net Acidity	133	450	-227
Net Acidity	778	342	-104
Net Acidity	1,090	276	-477

Estimated In-Stream Water Quality

S. Br. Blacklick Creek @ Nanty Glo

	Flow (GPM)	Without Project	With Project
Net Acidity	21,000	-25	-20
Net Acidity	40,000	2.9	-6
Net Acidity	158,000	1.5	-0.7

Estimated In-Stream Water Quality

S. Br. Blacklick Creek @ 1.5 Miles Downstream

	Flow	Without Project	With Project
Net Acidity	32,000	-28	-29
Net Acidity	59,000	2.9	-3
Net Acidity	238,000	0.1	-1.4

Estimated In-Stream Water Quality

S. Br. Blacklick Creek 7 Miles Downstream at Vintondale

	Flow	Without Project	With Project
Net Acidity	38,000	-13	-15
Net Acidity	71,000	70	65
Net Acidity	284,000	14.7	13.5

FINAL PLAN

- Alternative 3 - Selected
  - Dual VF ponds - provide operating flexibility
  - One wetland provides 0.2 acres more wetlands
- Alternative 4 - Eliminated
  - 90% cost, Alternative 3
  - Higher Annual Maintenance
  - Discharges acidic water in high flows

COST ESTIMATE

- Construction . . . . . $ 3,300,000
- Annual operating . . . . $ 22,000

PROJECT PARTNERS

- U.S.A.C.E. - Pittsburgh District
- Cambria County Conservation and Recreation Authority

PROJECT CONTRIBUTORS

- PA Department of Environmental Protection
- Cambria County Conservation District
- AmeriCorps
- Allegheny Heritage Development Corporation
- Southern Alleghenies Conservancy
- U.S. Fish and Wildlife
- Office of Congressman John P. Murtha

PROJECT ARCHITECT - ENGINEER

GAI Consultants, Inc.

APPROXIMATE LOCATION OF WEBSTER MINE DISCHARGE ENTRY

WEBSTER MINE DISCHARGE

LOCATION OF PROPOSED WEBSTER MINE DISCHARGE PASSIVE TREATMENT SYSTEM

BETHENERGY MINE NO. 31 REFUSE PILE

LORAINE REFUSE PILE


THANK YOU