CAMBRIA AMD TASK FORCE PASSIVE TREATMENT SYSTEM EVALUATION

KOONTZTOWN
AMD 56(2524)102.1
OVEN RUN SITE “B”
SHADE TWP., SOMERSET CO.
MARCH - APRIL, 2008

PREPARED BY:
JEFFREY J. WESTRICK, P.E.
RICH BEAM, P.G.
MAX SCHEELER

OVEN RUN PROJECT

PARTNERING LOCAL, STATE AND
FEDERAL FUNDS

FOR

STONYCREEK RIVER

WATER QUALITY IMPROVEMENT
ACID MINE DRAINAGE ABATEMENT

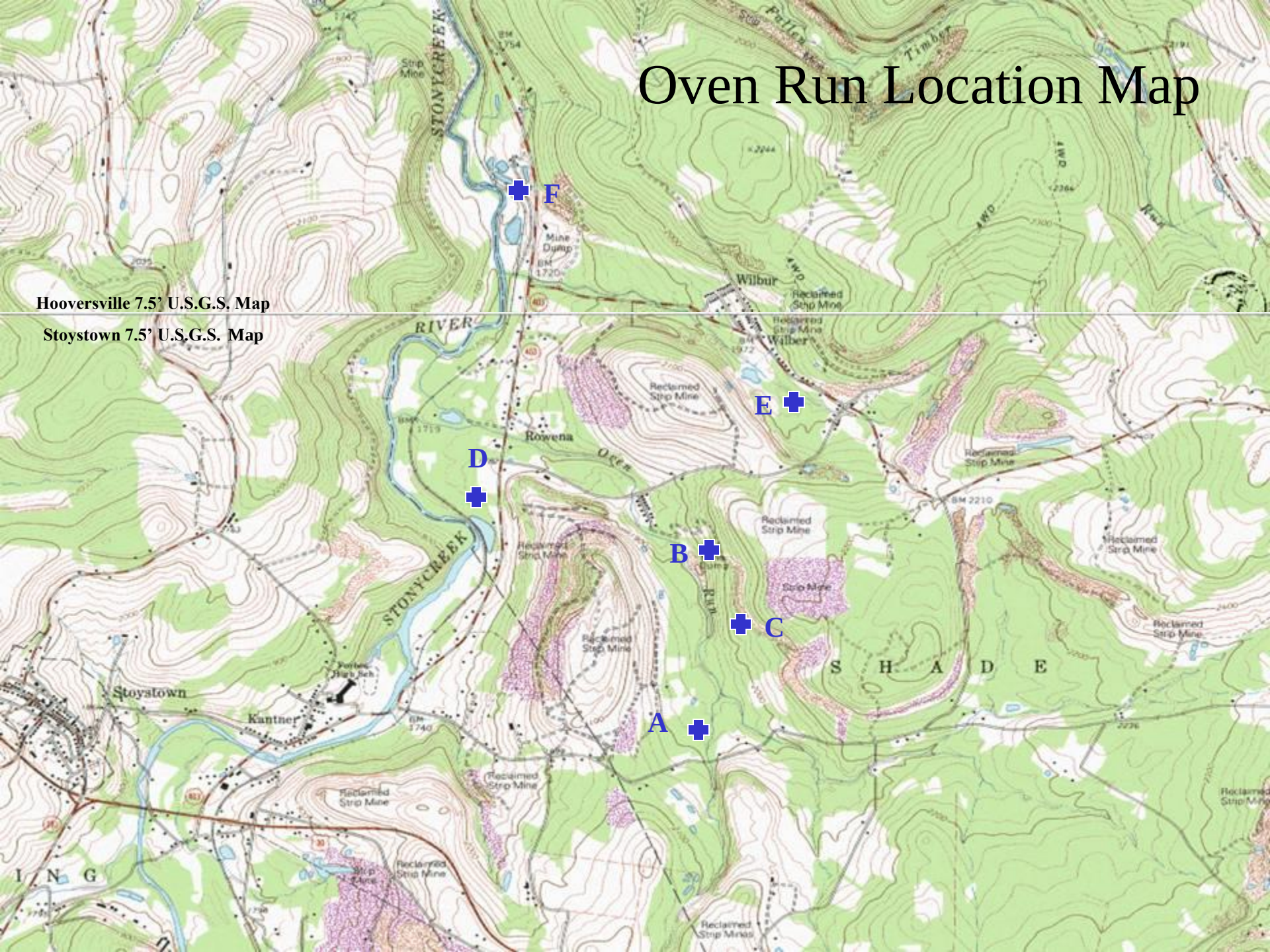
OVEN RUN PROJECT AREA

12 MILES NORTH OF SOMERSET, PA
BETWEEN COMMUNITIES OF KANTNER
AND HOOVERSVILLE

TOTAL OF SIX TREATMENT SITES

BAMR TOTAL CONSTRUCTION COST
APPROXIMATELY $1,832,000
FOR TWO PROJECT SITES

Oven Run Location Map



FUNDING PARTNERS

- USDA NRCS PL-566 Small Watershed Program (Sites D, E, F)
- PA DEP BAMR Title IV and 10% Set Aside Programs (Sites B & C)
- US EPA/PA DEP 319 Funds (Sites D & F)
- PA DEP Growing Greener Funds (Site A)

OVEN RUN PROJECT AREA

Project Sponsors:

USDA-NRCS
DEP-BAMR
Somerset County Commissioners
Somerset Conservation District

Expected Benefits:

Improved Water Quality in Oven Run and the Stonycreek River

Restoration of 10 miles of trout fishery

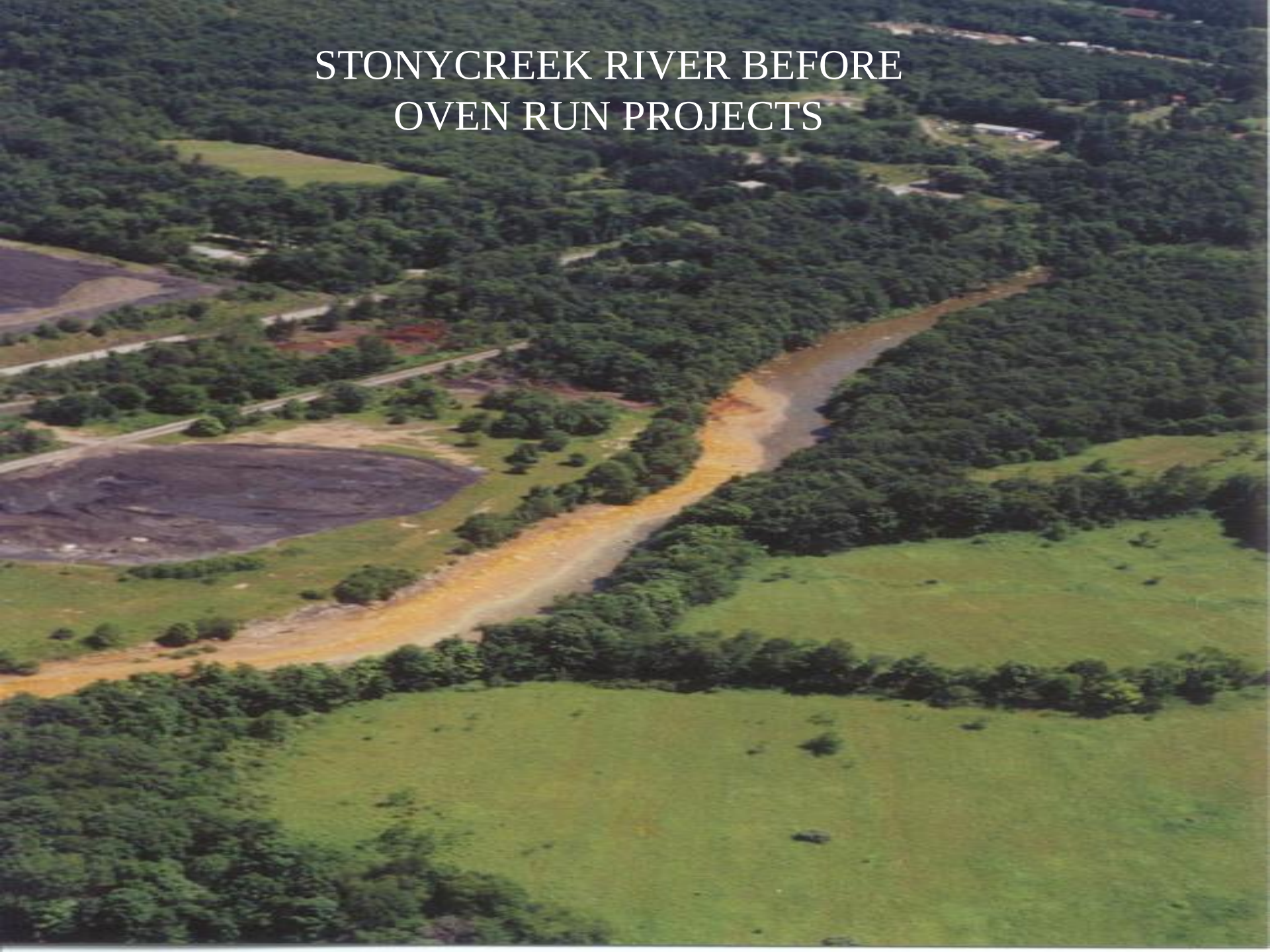
Elimination of public safety hazards

Improved water supply for Hooversville Borough

Improved recreational potential

Funding:

Authorized for PL 83-566 funding July 1993
Total BAMR Costs: $1,832,000
PL 83-566: $2,907,000


STONYCREEK RIVER BEFORE
OVEN RUN PROJECTS

BAMR PHASE I
OVEN RUN SITE “C”

ABANDONED MINE RECLAMATION
PROJECT NO. OSM 56(2524)101.1
COMPLETED 1997
FINAL COST OF $730,001.41

GDF CONSULTANT DESIGN
RECLAIMED 57.6 ACRE SURFACE MINE;
BACKFILLED 3,400 L.F. OF DANGEROUS HIGHWALL;
ELIMINATED A SOURCE OF WATER INFILTRATION
TO THE DEEP MINES;
AND SEALED THREE MINE OPENINGS

ABANDONED MINE RECLAMATION PROJECT
KOONTZTOWN (OVEN RUN SITE "C")
SHADE TOWNSHIP, SOMERSET COUNTY
CONTRACT NO. OSM 56(2524)101.1

This project is Phase 1 of a two phase DEP project being done in conjunction with the U.S.D.A. Natural Resources Conservation Service and EPA's 319 Non Point Source Program. A total of 6 projects will be completed in the immediate area, with the goal of abating AMD impacts and improving water quality in Oven Run, Pokeytown Run, and Stony Creek.

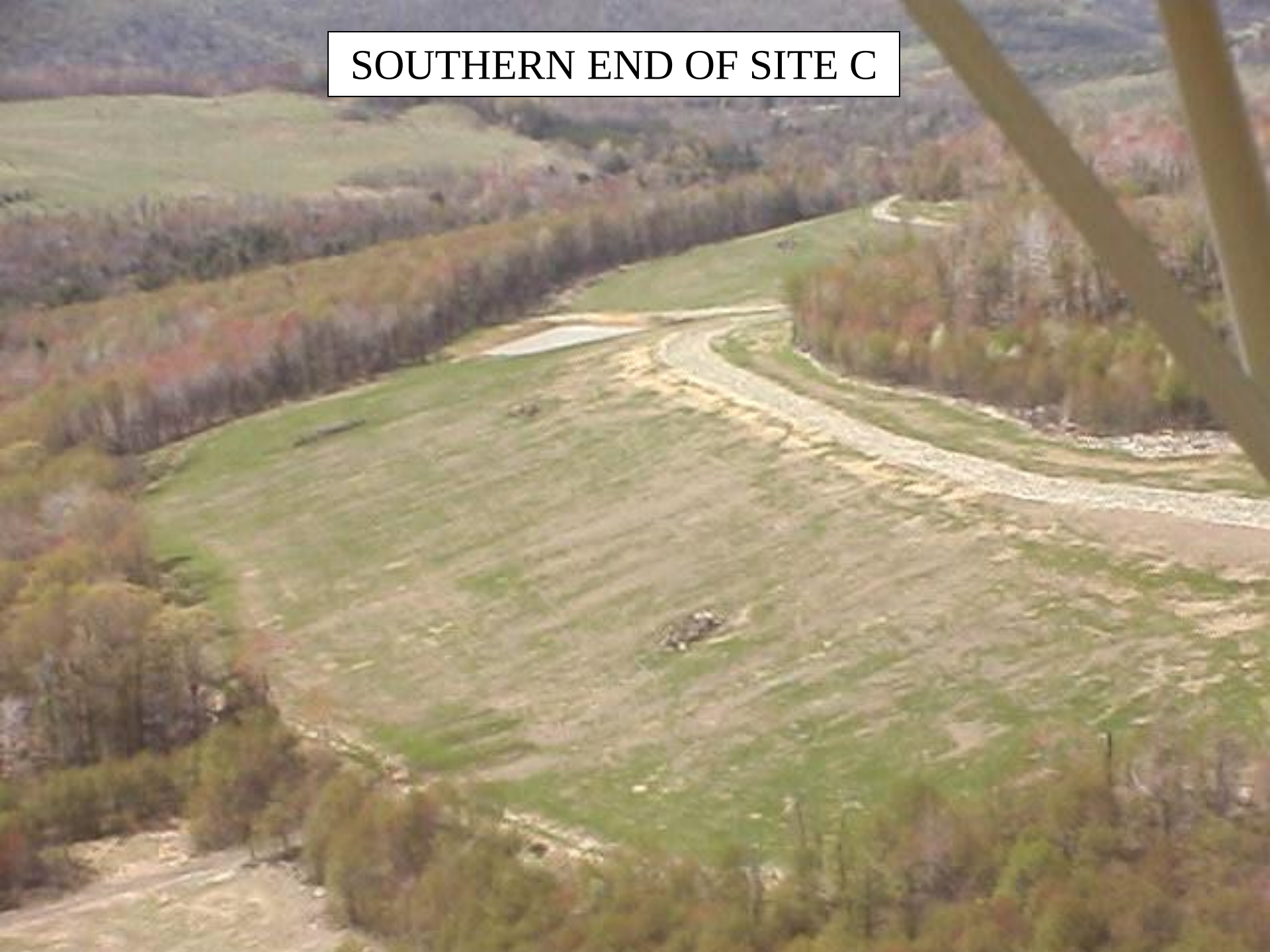
Contract Information

Contractor:	Casselman Enterprises,Inc.
	140 W. Union Street
	Somerset, PA 15501
Bid Opening Date:	Apr 08, 1997
Bid Amount:	$738,020.00
Award Date:	May 06, 1997
Notice to Proceed:	May 27, 1997
Completion Date:	Dec 03, 1997

Items of Construction

Mobilization and Demobilization	$26,080.00
55.6 Acres of Clearing & Grubbing	9,200.00
Dewatering Old Impoundments	8,377.50
348,578 Cubic Yards of Grading	226,575.70
6,479 L. F. of Ditch Contruction	239,769.06
Roadway Construction	11,918.93
Limestone Screenings for Placement of Refuse Material	23,886.19
Sealing of Deep Mine Openings	32,380.00
55.6 Acres of Seeding	62,978.50
Implementation of Erosion and Sedimentation Control Plan	85,495.00
DEP- Office Facilities	3,340.53
FINAL TOTAL AMOUNT	**$730,001.41**

One of the three mine openings that was sealed; the acid mine drainage that is collected from the openings will be treated in phase 2.


SOUTHERN END OF SITE C


NORTHERN END OF SITE C

BAMR PHASE II
OVEN RUN SITE “B”

ACID MINE DRAINAGE ABATEMENT
PROJECT NO. AMD 56(2524)102.1
COMPLETED 1998-1999
FINAL COST OF $1,101,947.83

GDF CONSULTANT DESIGN
REVISED IN CONSTRUCTION BY BAMR;
PASSIVE TREATMENT SYSTEM CONSISTING OF TWO SAPS AND TWO SEDIMENTATION BASINS
WITH A DESIGN FLOW OF 350 GPM

PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF ABANDONED MINE RECLAMATION
CONTRACT NO. AMD 56(2524)102.1
Acid Mine Drainage Abatement Project
Koontztown (Oven Run)
Shade Township, Somerset County

FACT SHEET

Final Cost:	*1,101,947.83*
Contractor:	*Amerikohl Mining, Inc., 202 Sunset Drive, Butler, PA 16001*
Notice To Proceed Date:	*September 21, 1998.*
Completion Date:	*November 2, 1999.*

Major Work Items:

Grading	*132,900 Cubic Yards*
Rock Lining	*2,700 Square Yards*
Wetland Treatment Material	
AASHTO #10 Limestone	*2,600 Ton*
AASHTO #1 Limestone	*22,000 Ton*
Spent Mushroom Compost	*7,000 Cubic Yards*
Seeding	*10 Acres*
Wetland Planting	*3.55 Acre*

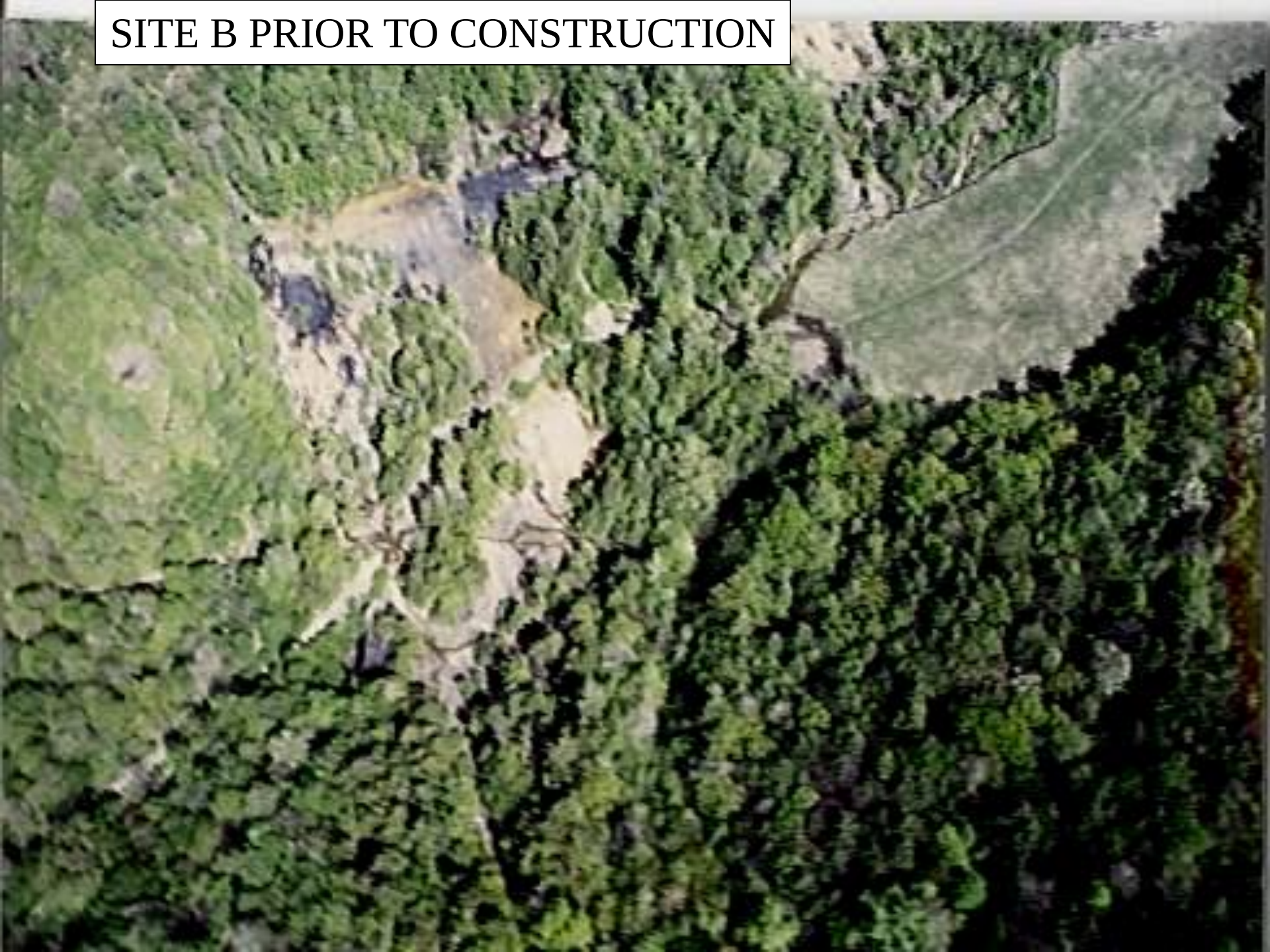
Description of Project:

The intent of the project is the abatement of acid mine drainage via passive wetland treatment facilities and successive alkalinity producing systems (SAPS). In general, a series of sedimentation basins and SAPS will be constructed. The sedimentation basins will remove metals precipitates and the SAPS will neutralize acidity using a combination of limestone, spent mushroom compost wetland planting and gravity.

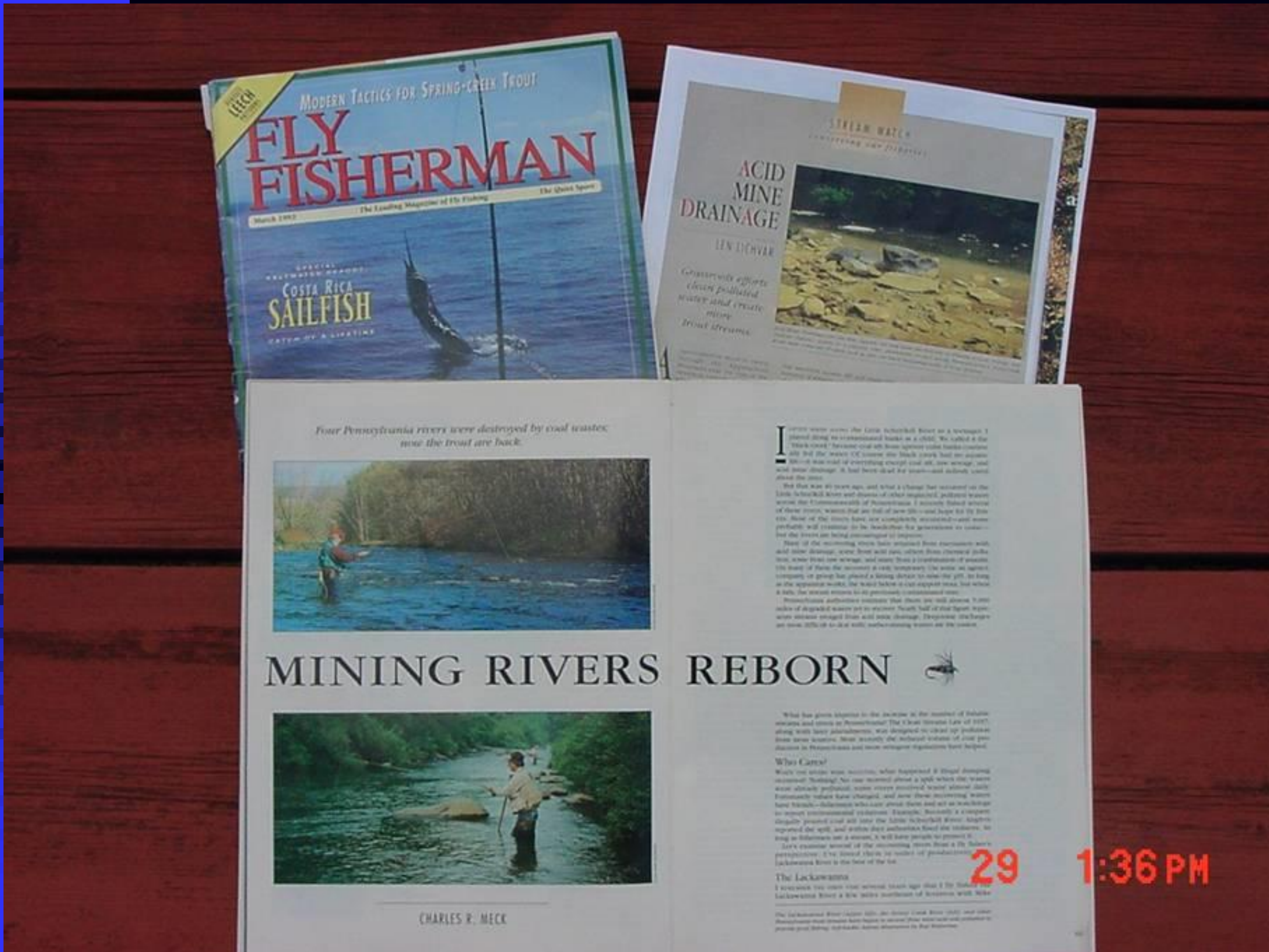
Backround:

Upstream of Oven Run, Stony Creek is relatively unimpacted by AMD and is a heavily used recreational fishery. Downstream, AMD has significantly adversely affected stream uses, including the fishery and a public water supply in the Borough of Hooversville. A local watershed association, the Stony Creek - Conemaugh River Improvement Project (SCRIP), has spearheaded an effort to rehabilitate the watershed. As a result, six (6) AMD abatement projects were identified in the vicinity of Oven Run, five (5) of which have been completed. The projects were funded by the NRCS PL566 program, BAMR, through the Ten Percent Set Aside, Title IV and ACSI programs, and the DEP's 319 non-point source program. Completion of the six projects is expected to eliminate mine drainage in Oven Run and three (3) miles of Stony Creek, including the section where the Hooversville water supply is located. Benefits have already been observed along the entire length of the Stony Creek, including the partial restoration of a fishery down to the City of Johnstown, 22 miles downstream.

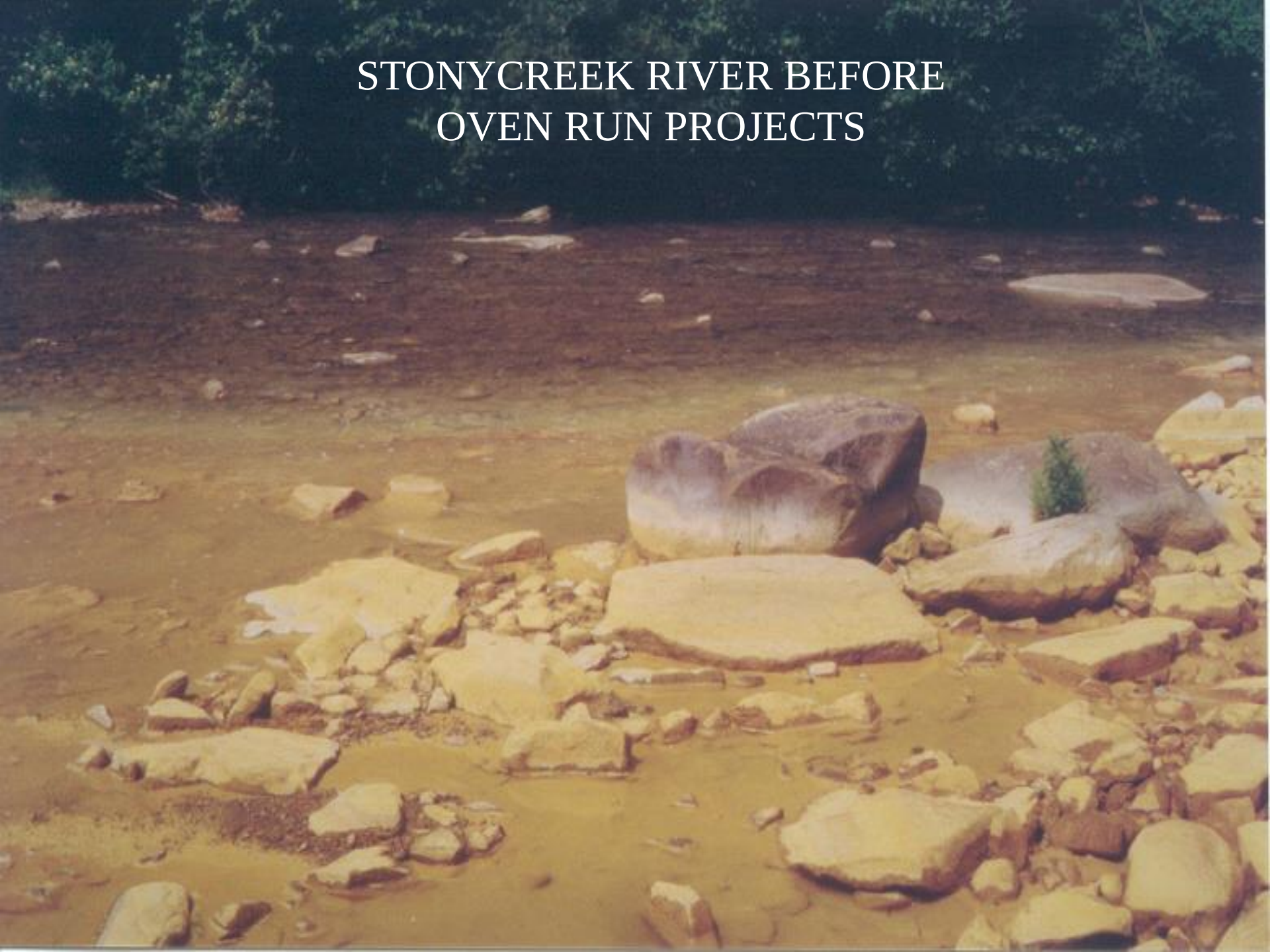
SITE B PRIOR TO CONSTRUCTION

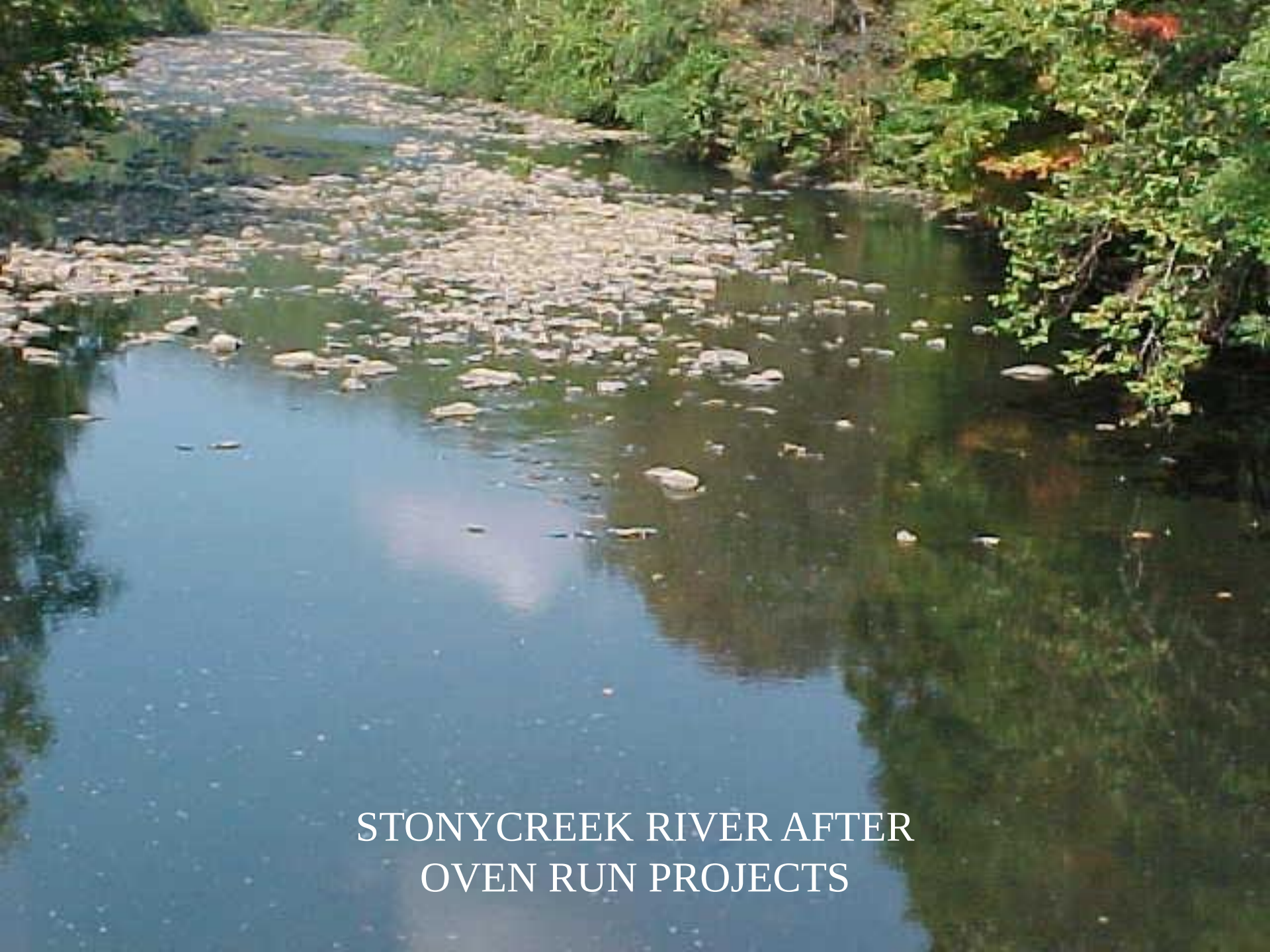



START OF CONSTRUCTION SITE B



Modern Tactics for Spring-Creek Trout
FLY FISHERMAN
Costa Rica
SAILFISH
STREAM WATCH
ACID MINE DRAINAGE
LEN LICHVAR
Grassroots efforts clean polluted water and create more trout streams.
Four Pennsylvania rivers were destroyed by coal wastes; now the trout are back.
MINING RIVERS REBORN
Who Cares?
The Lackawanna
CHARLES R. MECK
29 1:36 PM


STONYCREEK RIVER BEFORE
OVEN RUN PROJECTS


STONYCREEK RIVER AFTER
OVEN RUN PROJECTS


28 6:42PM

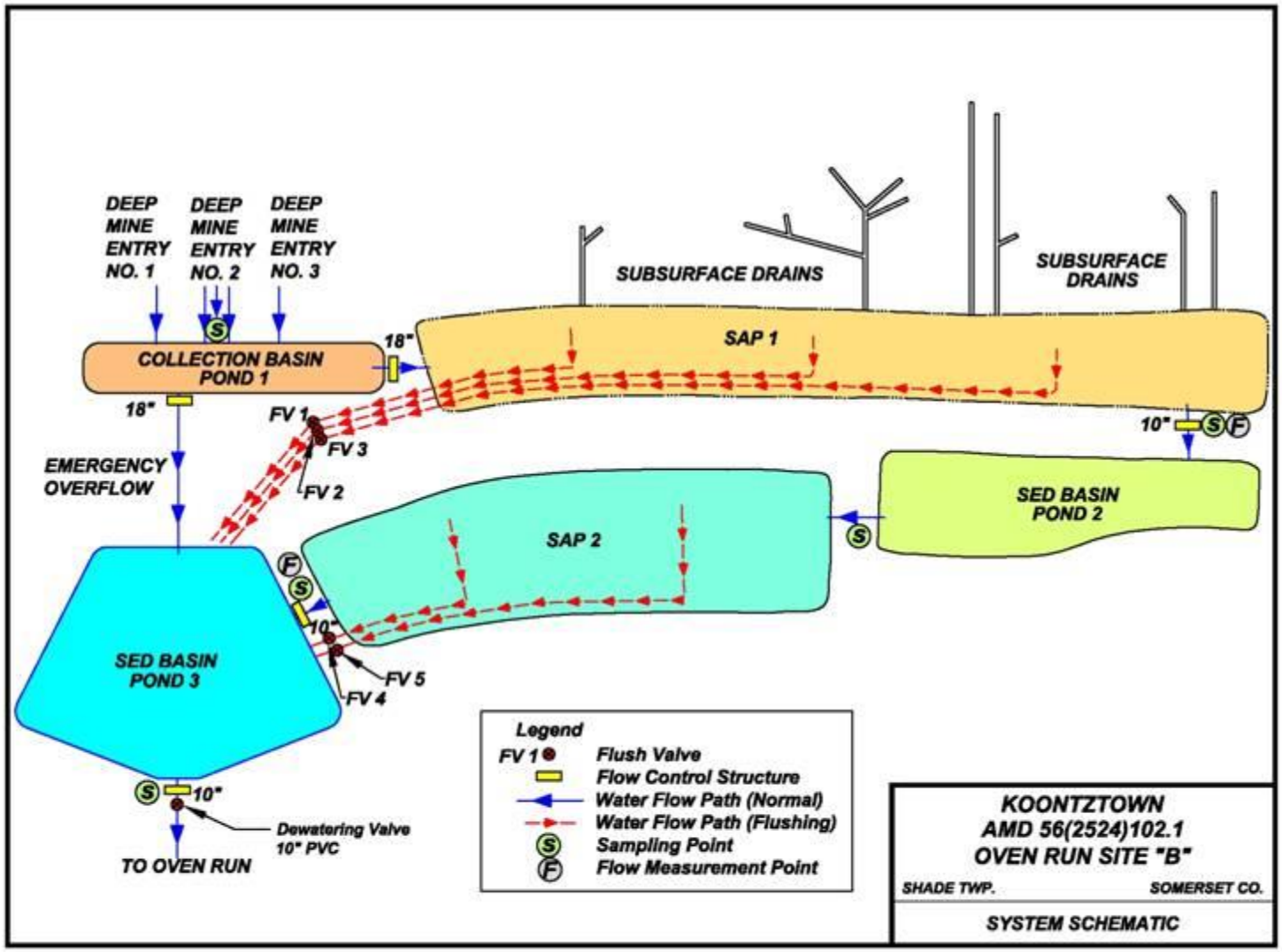

19
8:52AM


16 8:05AM

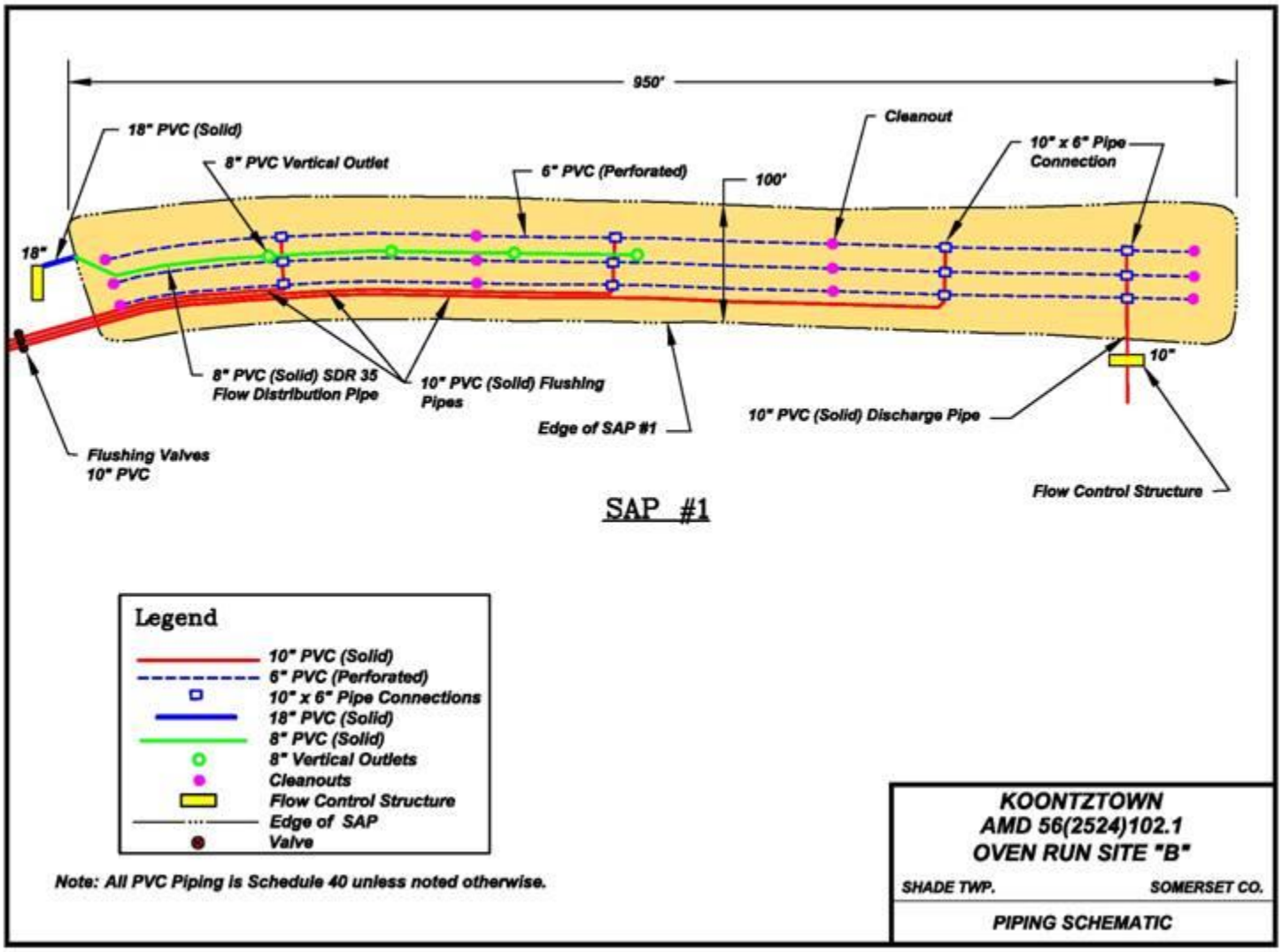
EXISTING OPERATIONS AND MAINTENANCE PLAN OVEN RUN SITE "B"

- Water sampling performed quarterly
- System flushing performed two to three times per year
- Flow distribution pipe added to SAP #1 by BD crew 07/24/2001
- Iron accumulation removed from Sap #1 and #2 compost layer and fresh compost added by BD crew and Bureau of Forestry in October 2001 at a cost of $2,901.97
- Broken seal around flow control structure caused Pond #3 liner to float - BD crew fixed Oct-Nov 2006 at a cost of $1,288.10
- Broken flow control structure on Pond #3 fixed by BD crew June 2007

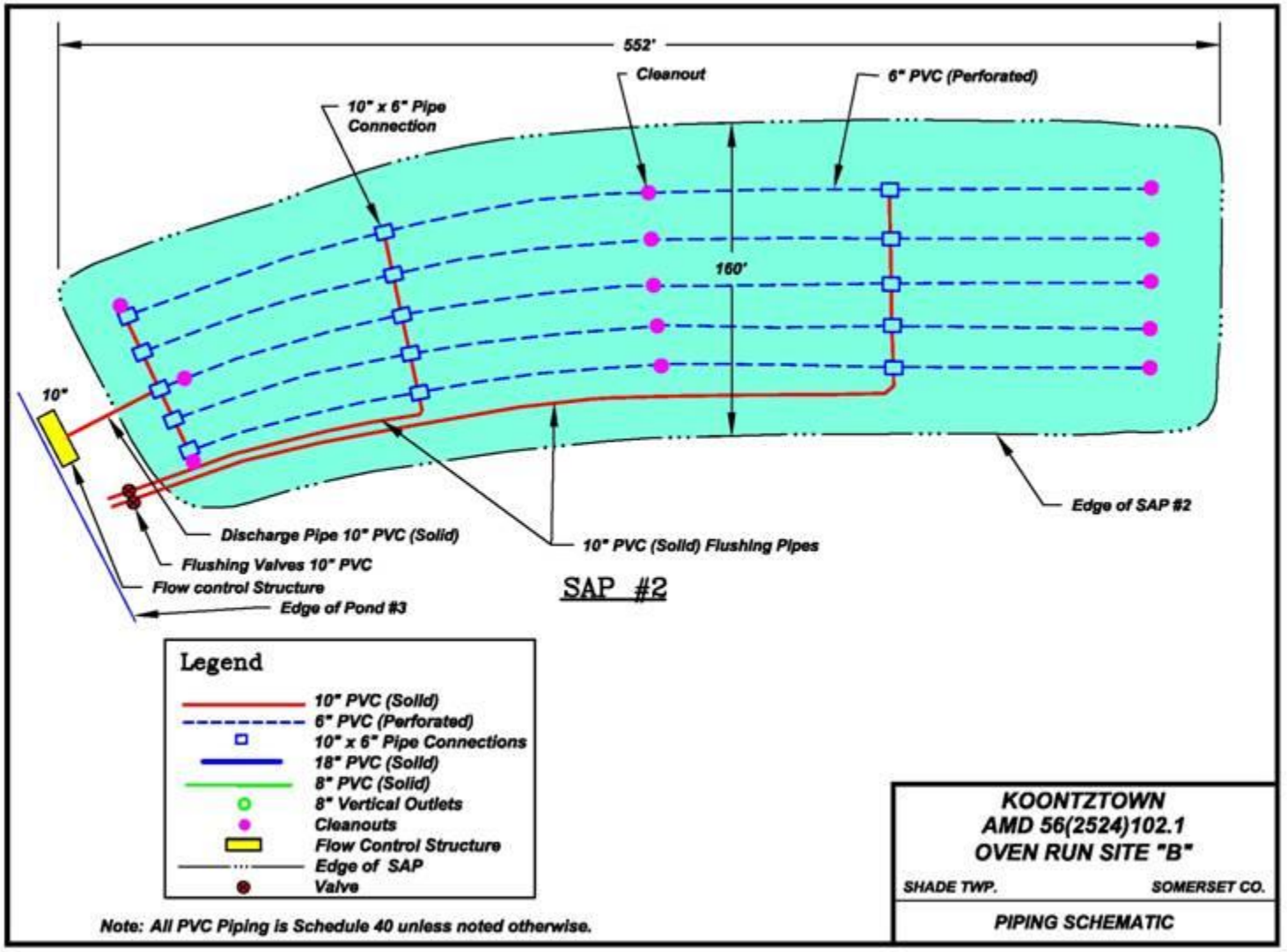
TREATMENT SYSTEM SCHEMATIC



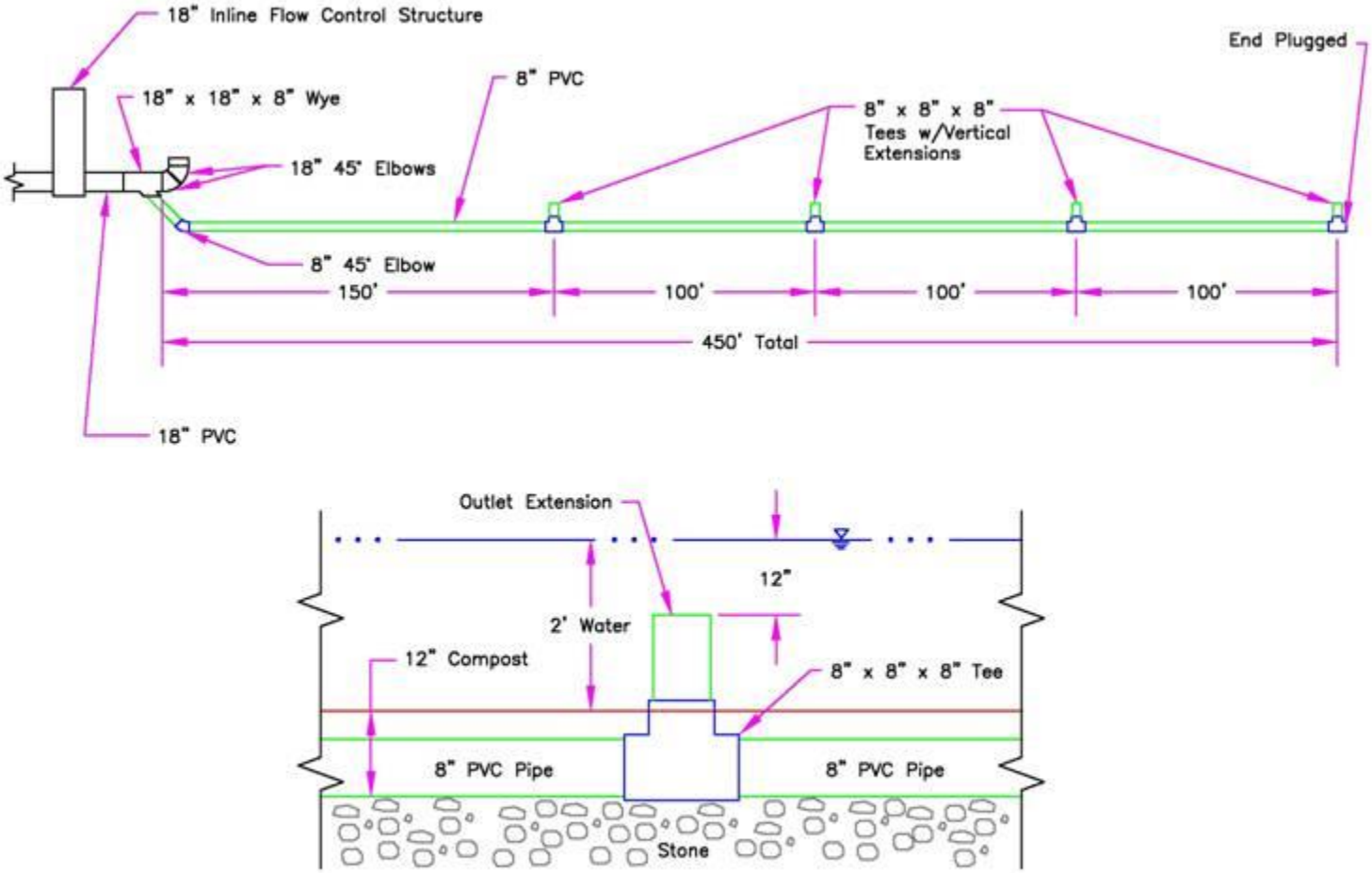
PIPING SCHEMATIC SAP #1



PIPING SCHEMATIC SAP #2



FLOW DISTRIBUTION PIPE DETAILS



OVEN RUN SAP 1 SDR 35 PVC FLOW DISTRIBUTION PIPE

SIS SAMPLING POINT ID'S

DEP Laboratory Sample Submission Sheet

LAB USE ONLY
Date Received:

Bureau of Abandoned Mine Reclamation
Cambria Office
286 Industrial Park Road
Ebensburg, PA 15931-4119

Telephone: 814-472-1800

Program: 0015

Funding Link: 038

Reason: 01

Collector ID: 7485

Date Collected: (MM-DD-YY)

SAC: 719

Routine Monitoring Form

Project (Name/Number)**:OVENRUN / Oven Run Watershed Project**

Seq. # (001-999)	Time: (HH:MM)	Monitoring Point ID Alias:	Point Description: *	Field Measurements: pH	D.O. (mg/l)	Cond. (umho/cm)	Flow (cfs)	Flow E/M	Lab Number
		ORBI	Raw Influent						
		ORBSAP1	DSG SAP #1						
		ORBPOND2	DSG Pond #2						
		ORBUS	Oven Run Upstream						
		ORBSAP2	DSG SAP #2						
		ORBO	Final DSG						
		ORBDS	Oven Run 300 ft downstream						

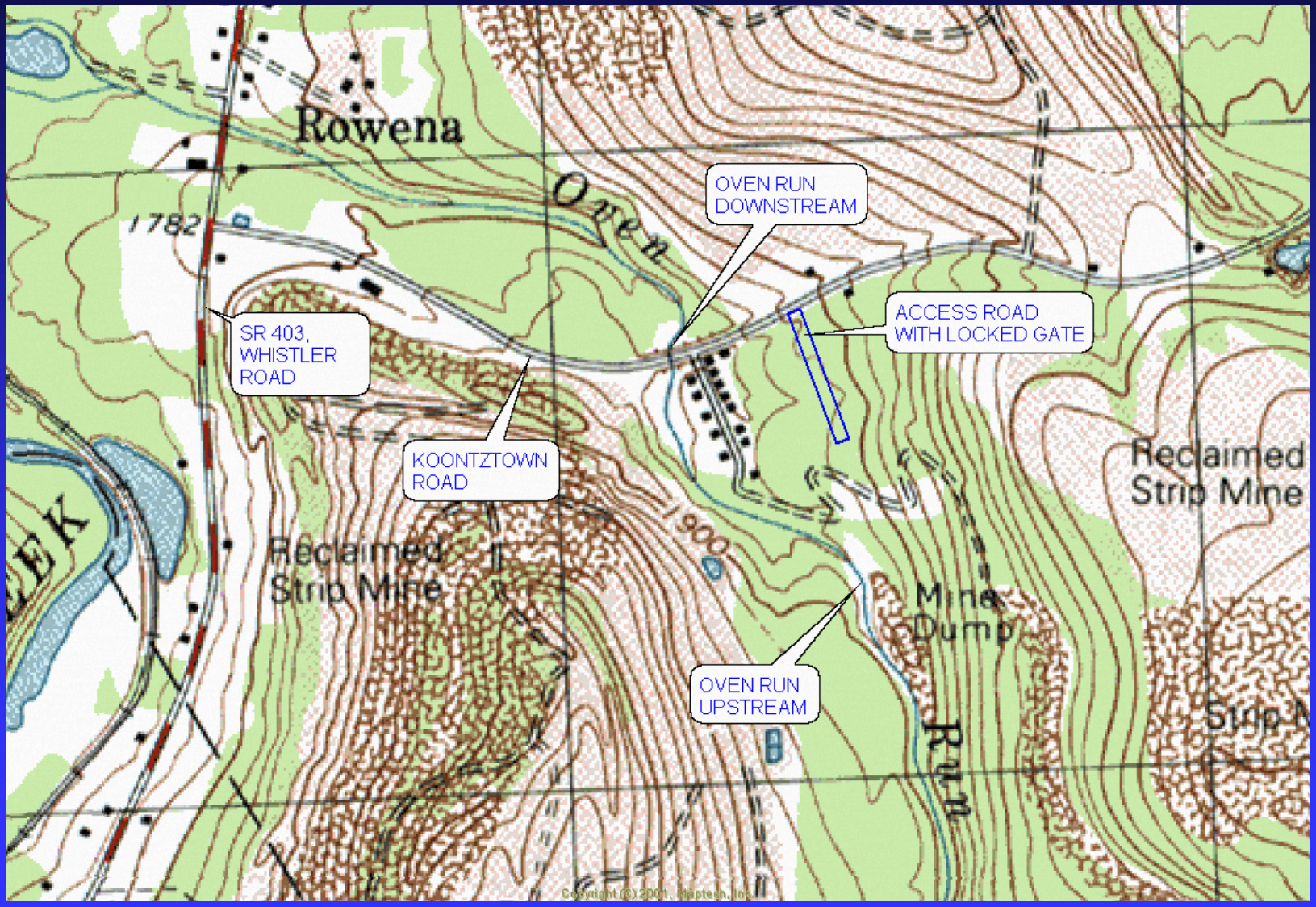
Weather Conditions:

Comments:

Collector Name (Please Print): Rich Beam Signature:

* For non-established monitoring points, include latitude/longitude. Indicate datum and method in comments.

OVEN RUN SAMPLING LOCATIONS UPSTREAM AND DOWNSTREAM OF SITE "B"



SIS SAMPLING POINT INVENTORY FORM

SIS
MONITORING POINTS INVENTORY CREATE

Project ID # Oven Run Project Name Oven Run Watershed Project Primary Township Shade Primary County Somerset Multi Township/County* _____
*If multi township/county you will need to indicate appropriate township and/or county for each MP.

LOCATION METHOD Map ELEVATION ACCURACY 10 feet MEASUREMENT METHOD Map

MP # ALIAS	TYPE	LOCATION DESCRIPTION	LATTITUDE	LONGITUDE	SURFACE ELEVATION	QUAD
ORBI	MDSEP	Oven Run Site B Raw Discharge (Influent)	40-06-44	078-54-42	2120	Stoystown
ORBSAP1	MPTRM	Oven Run Site B Sap #1 Effluent	40-06-41	078-54-41	1980	Stoystown
ORBPOND2	MPTRM	Oven Run Site B Pond #2 Effluent	40-06-39	078-54-44	1935	Stoystown
ORBUS	STRM	Site B Oven Run Upstream	40-06-43	078-54-48	1870	Stoystown
ORBSAP2	MPTRM	Oven Run Site B Sap #2 Effluent	40-06-42	078-54-45	1930	Stoystown
ORBO	MPTRM	Oven Run Site B Effluent from Treatment system	40-06-44	078-54-47	1860	Stoystown
ORBCN	MPTRM	Oven Run Site B Effluent from Treatment system at outlet	40-06-46	078-54-48	1820	Stoystown
ORBSAP1FP1	MPTRM	Oven Run Site B Sap #1 #1 Flush Pipe	40-06-46	078-54-45	2000	Stoystown
ORBSAP1FP2	MPTRM	Oven Run Site B SAP #1 Flush Pipe #2	40-06-46	078-54-45	2000	Stoystown
ORBSAP1FP3	MPTRM	Oven Run Site B SAP #1 Flush Pipe #3	40-06-46	078-54-46	2000	Stoystown
ORBDS	STRM	Site B Oven Run 300 ft Downstream	40-06-46	078-54-51	1860	Stoystown

COMMENTS: _____

2001 - INSTALLATION OF FLOW DISTRIBUTION PIPE TO SAP #1

2001 - IRON CRUST ON TOP OF SAP #2 COMPOST LAYER

2001 - COMPOST ADDED TO SAP #1

2001 - BUREAU OF FORESTRY ADDING COMPOST TO SAP #2

2001 - COMPOST ADDED TO SAP #2

2006 - FLOATING LINER ON POND #3

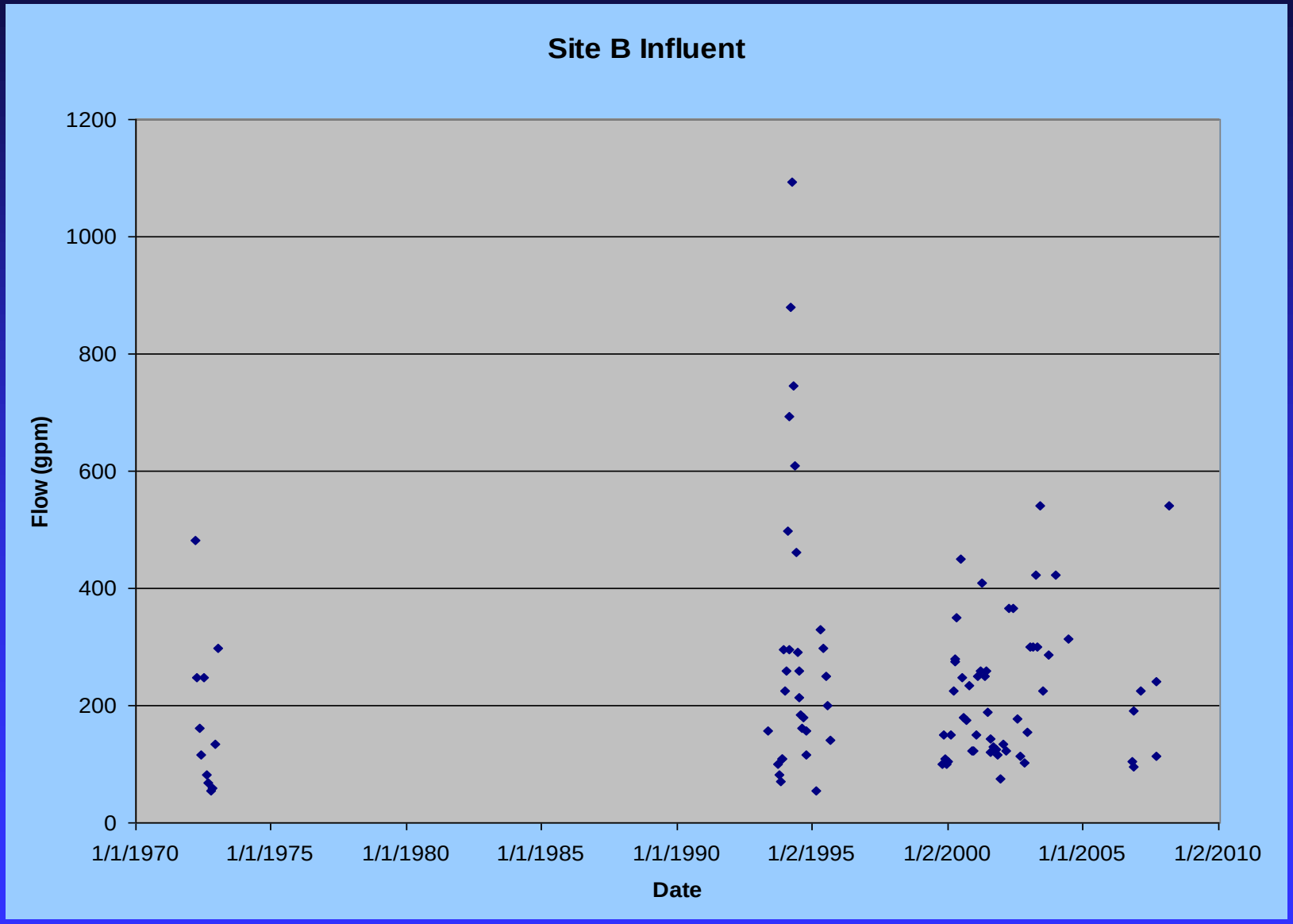
2006 - WATER RUNNING UNDER LINER ON POND #3

2007 - BROKEN FLOW CONTROL STRUCTURE ON POND #3

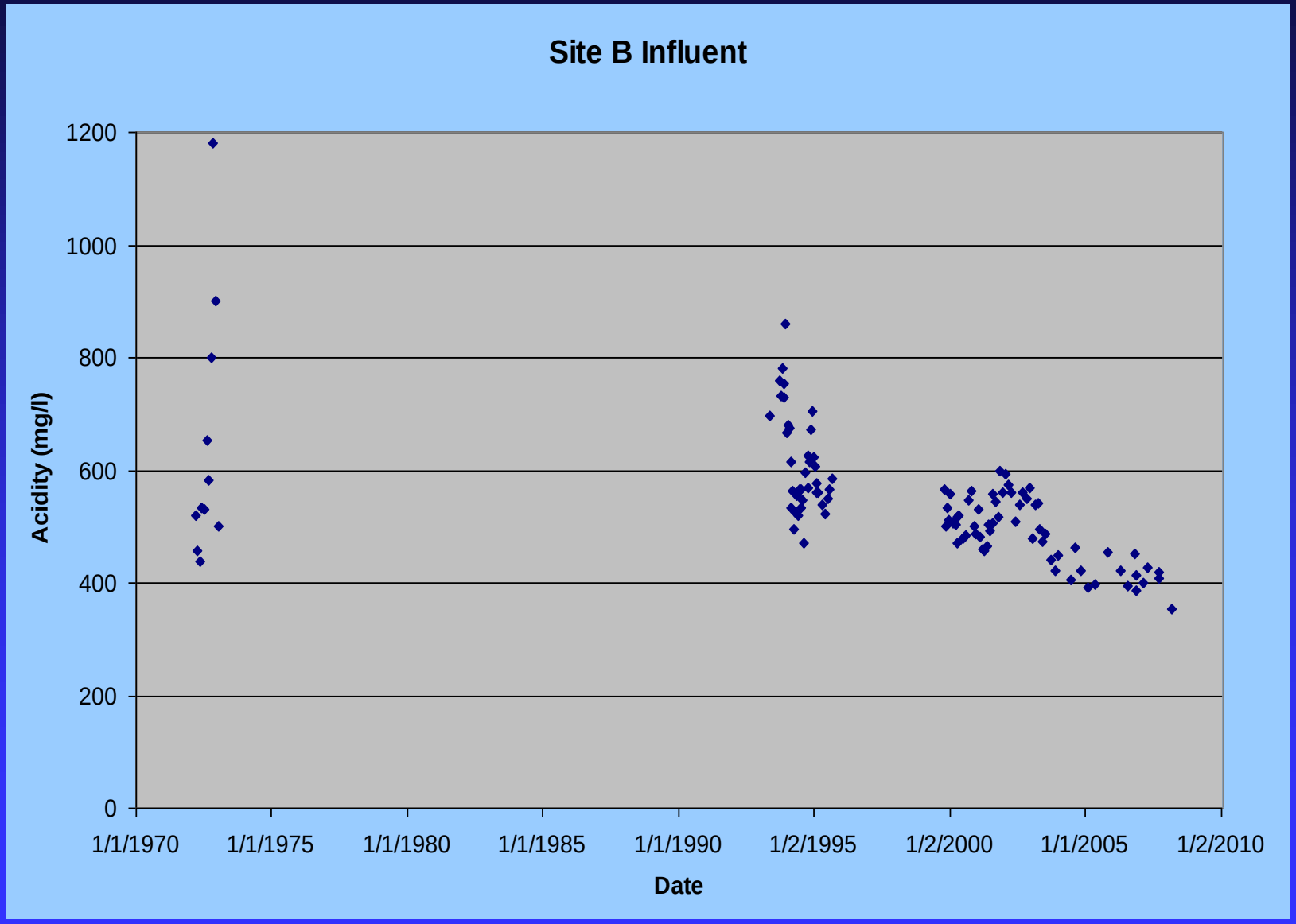
SYSTEM PERFORMANCE

OVEN RUN SITE “B”

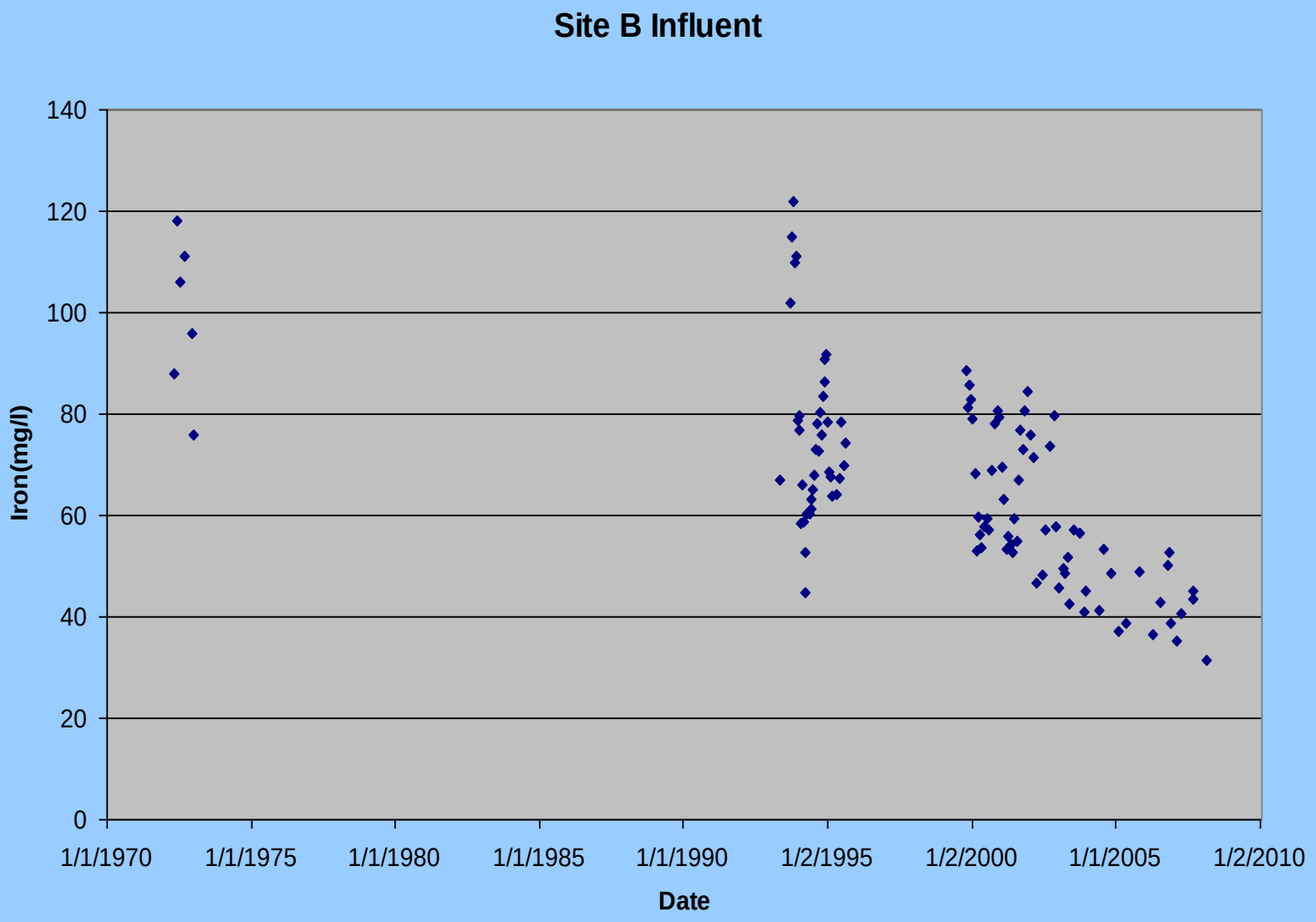
INFLUENT FLOW TO SYSTEM



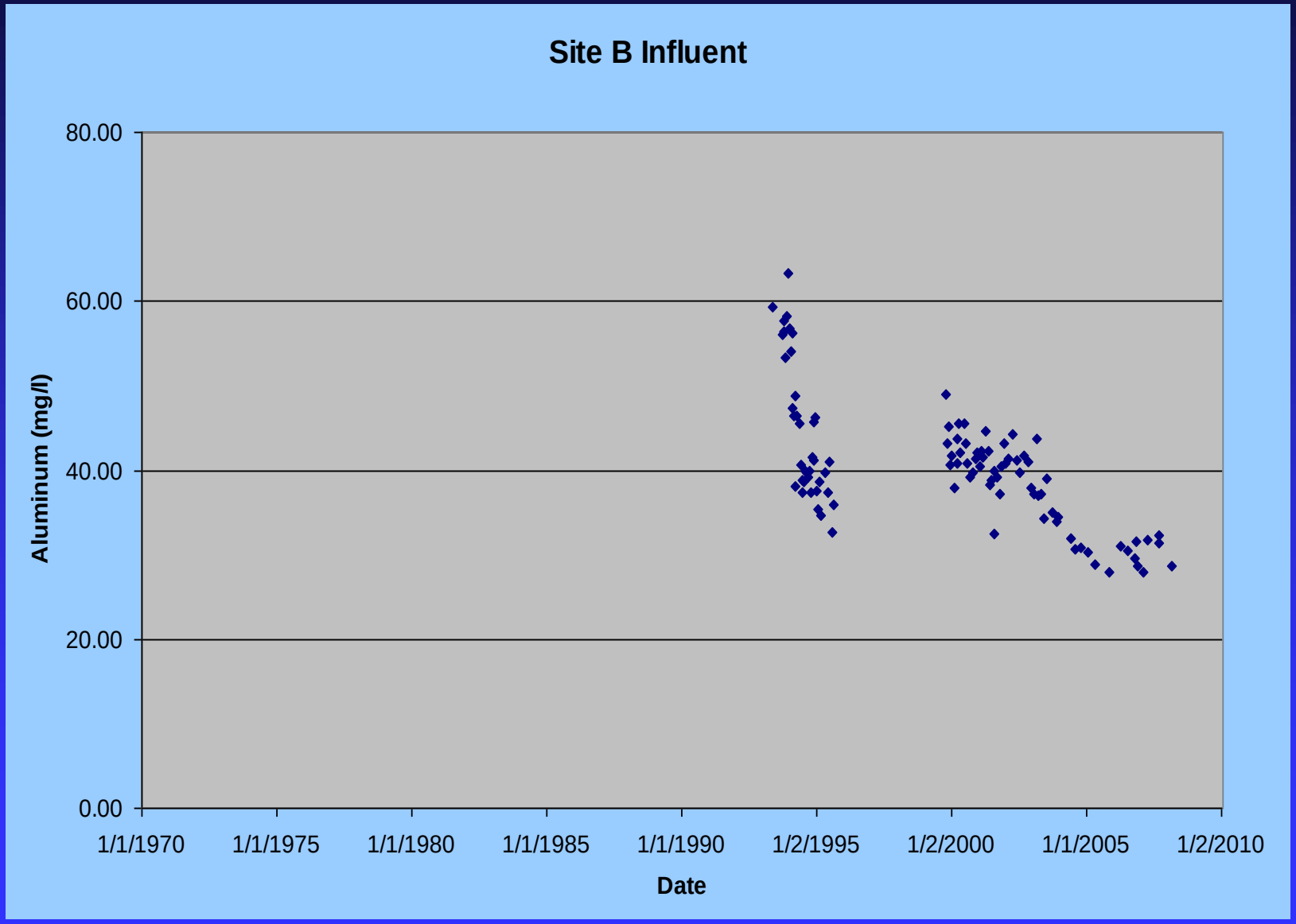
INFLUENT ACIDITY



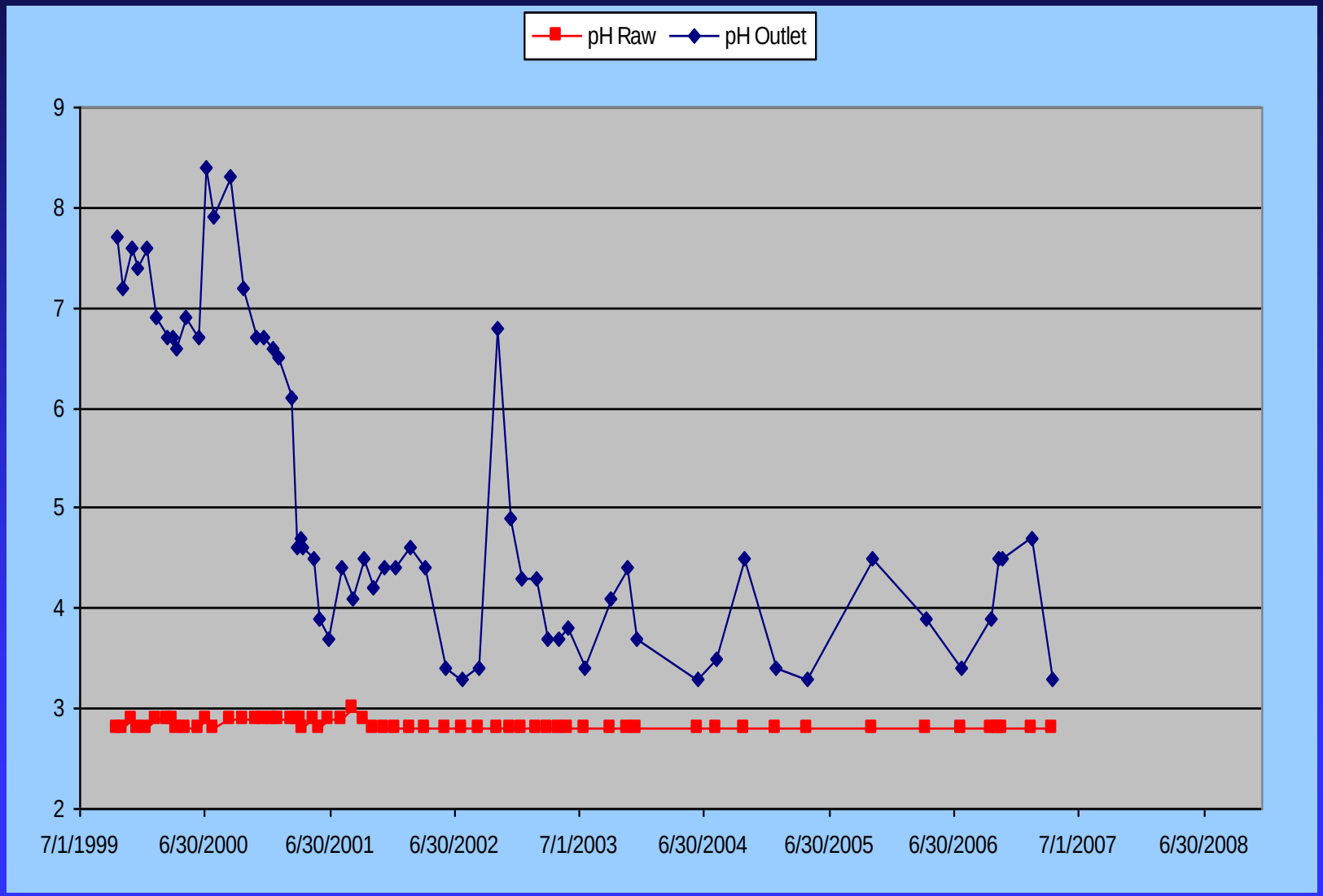
INFLUENT IRON CONCENTRATIONS



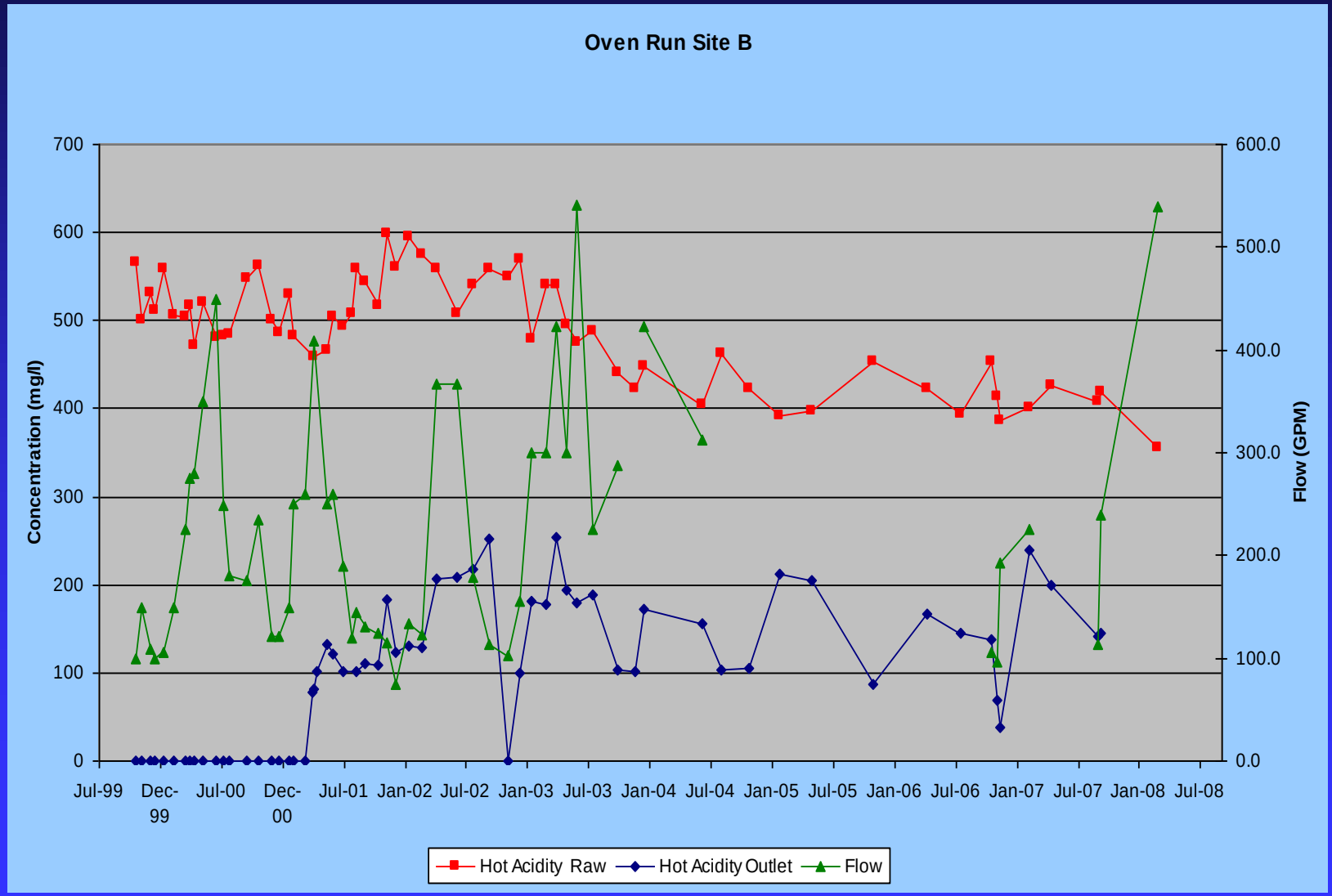
INFLUENT AL CONCENTRATIONS



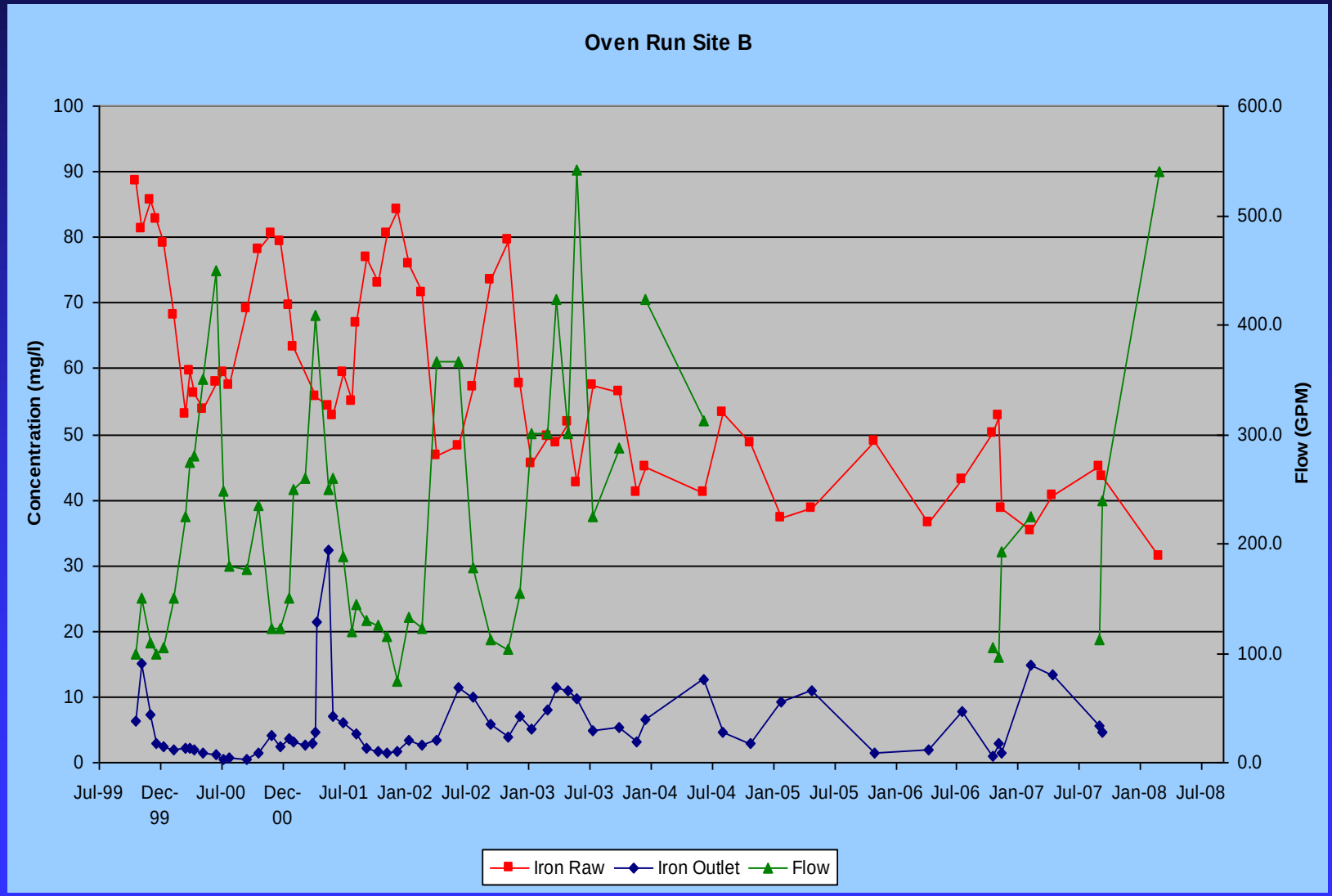
INFLUENT PH VS. EFFLUENT PH



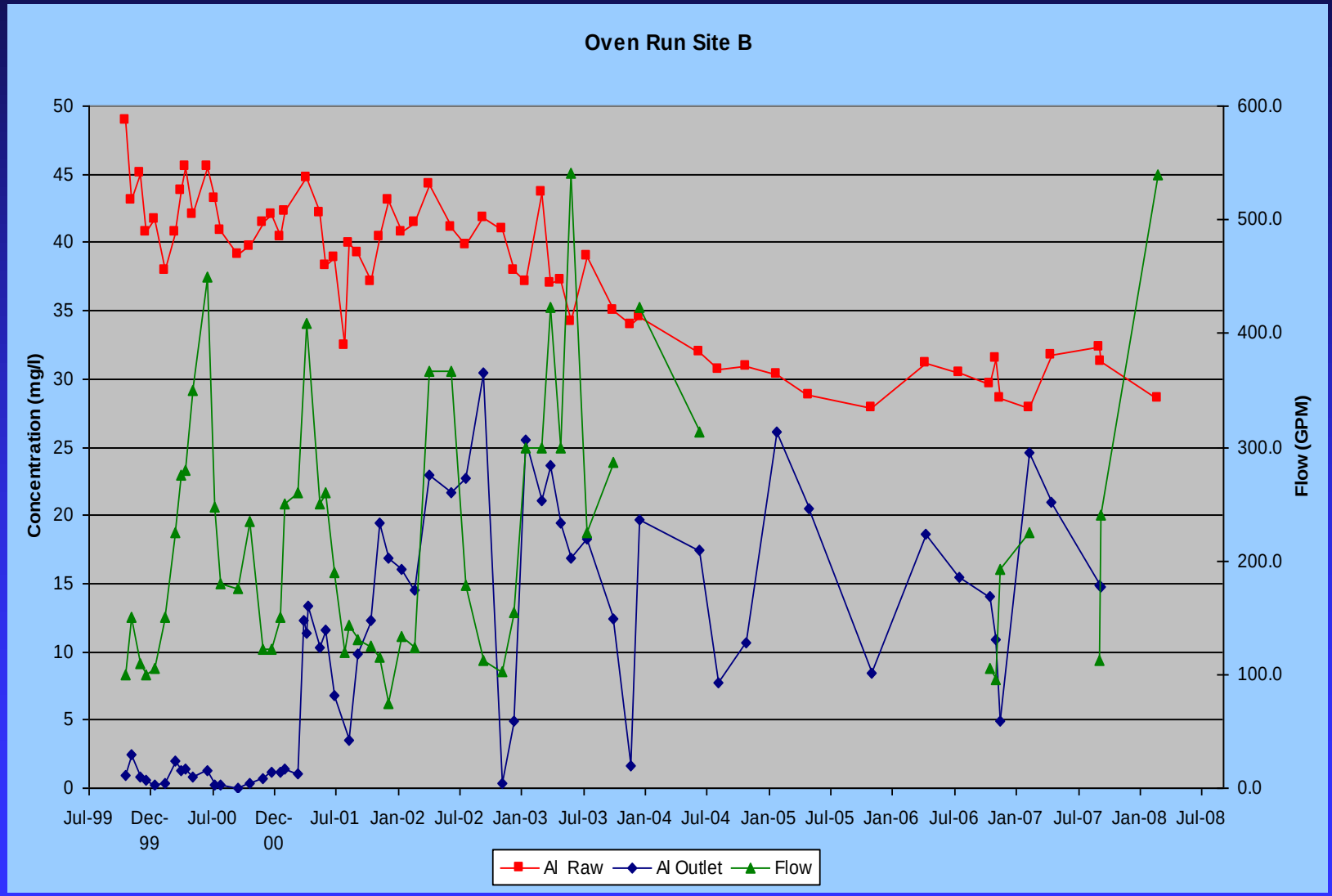
INFLUENT ACIDITY VS. EFFLUENT ACIDITY



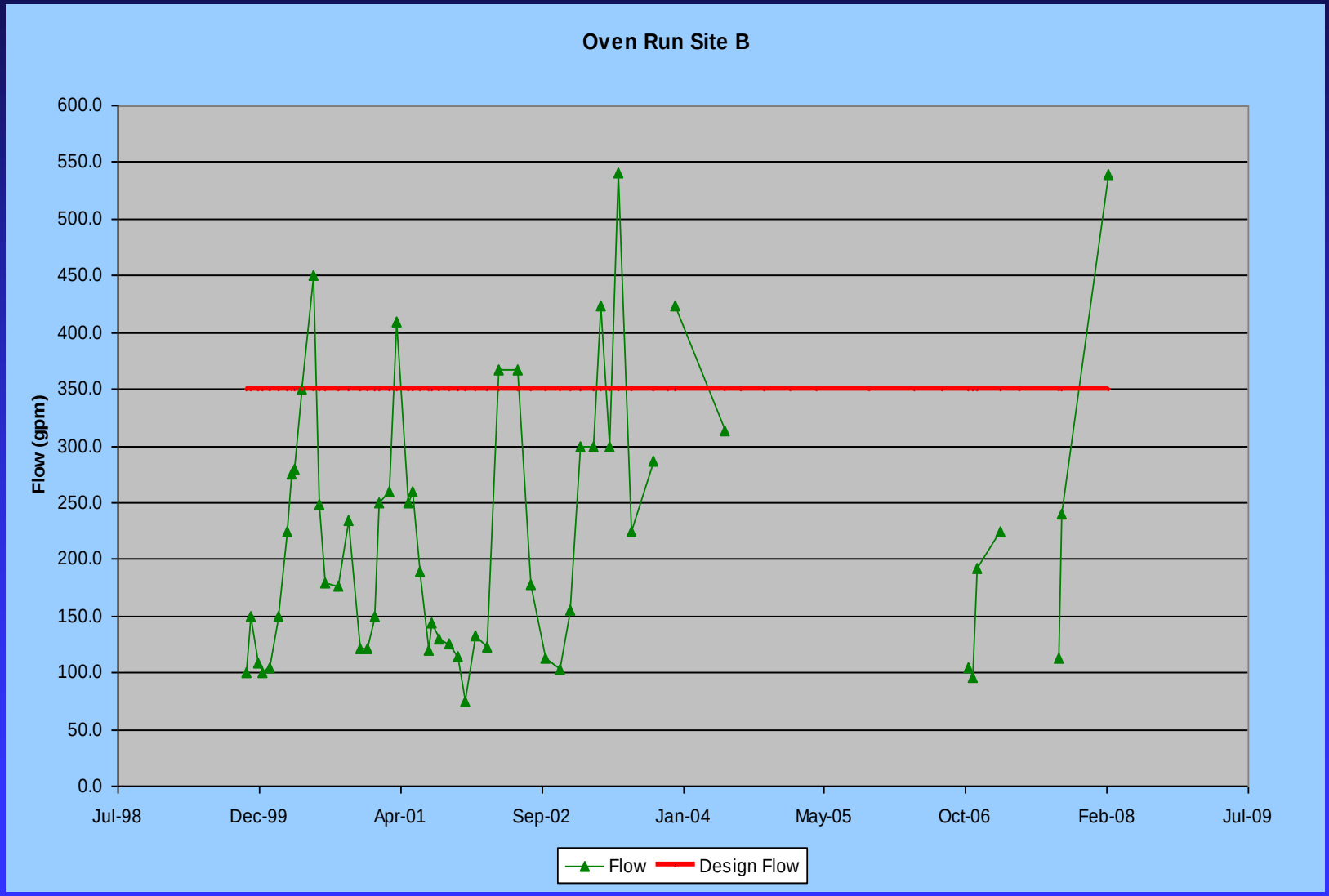
INFLUENT IRON VS. EFFLUENT IRON



INFLUENT AL VS. EFFLUENT AL



SYSTEM FLOW RATES VS DESIGN FLOW RATE



CAMBRIA AMD TASK FORCE SITE INSPECTION

KOONTZTOWN

AMD 56(2524)102.1

OVEN RUN SITE “B”

MARCH 17, 2008

MARCH 17, 2008 OBSERVATIONS

- Full flow from the Collection Basin is directed to the treatment system
- Water level in SAP #1 is very low; exposing much of the compost layer to the atmosphere
- Possible AMD flow paths on surface of SAP #1 causing short circuiting
- Seep through lower embankment of SAP #1
- Apparent preferential flow paths through compost layer over top of perforated piping system particularly at cleanout locations
- Broken cleanout on back end of SAP #2 allows short circuiting
- Dewatering valve on Pond #3 not functioning; thereby decreasing settling time for suspended solids in the flush water
- Flushing discharge rate on flush pipe #3 appears slower than #1 and #2
- Flushing discharge rate on flush pipe #4 and # 5 appears fine; but broken cleanout on back end of SAP #2 allows short circuiting
- Access ramp to level control structure on Pond #3 is under water
- Cleanout pipes are located in the ponds instead of along the sides

FLOW DISTRIBUTION PIPE IN SAP #1; COMPOST LAYER EXPOSED TO THE ATMOSPHERE

FLOW DISTRIBUTION PIPE IN SAP #1

DISCHARGE FROM FLUSH PIPE #3 APPEARS SLOWER

CLEANOUT PIPES IN MIDDLE OF SAP #2

BROKEN CLEANOUT AT BACK END OF SAP #2 LYING ON THE BOTTOM OF THE SAP

SEEP ON EMBANKMENT OF SAP #1; BROKEN CLEANOUT IN FOREGROUND

WATER PREFERENTIAL FLOW PATH THROUGH COMPOST LAYER AT CLEANOUT

OVEN RUN SITE "B" OM&R PRIORITY RECOMMENDATIONS

BD CREW TO COMPLETE THE FOLLOWING REMEDIAL WORK:

- Dewater Pond #3 and replace the broken butterfly dewatering valve with a PVC GATE valve
- Build up the height of the access ramp to the flow control structure on Pond #3 approximately two feet
- Divert the system inflow to the emergency spillway of Pond #1 and treat the discharge with caustic soda or soda ash briquettes
- Dewater the SAPS and power clean all of the flush pipes
- Power clean all of the other SAPS pipes via the exposed cleanouts
- Cut off all cleanouts just below the compost layer and install adapters and reinstall the existing screw caps – fix broken cleanout at back of SAP #2
- Separate the SAP discharge header pipes from the perforated flushing pipes (by cutting and capping all of the 6" perforated pipes) to conform with current design practices for SAP systems to reduce preferential flow paths
- Install two plywood baffles on SAP#1 and one plywood baffle on SAP #2 with tops approx. 2.5 feet above the compost layer
- O&M Section to observe and note the extent of limestone coating at cleanouts; header pipe and baffle locations
- Dig additional test pits as directed by O&M Section to check extent of limestone coating
- BAMR Surveyors to do an as-built survey to record all cleanout locations; header pipe changes; flow distribution pipe; and to obtain elevations on all flow control boxes, spillways and embankments and install markers on sap embankments inline with the cleanouts
- Fluff the compost layer of SAP #1 and SAP #2 and replace compost in any areas as needed
- Using the survey results, adjust the stop log elevations in the flow control boxes on the Collection Basin to prevent overloading the treatment system beyond the designed flow rate of 350 GPM – emergency spillway should be three inches (3") above the primary discharge

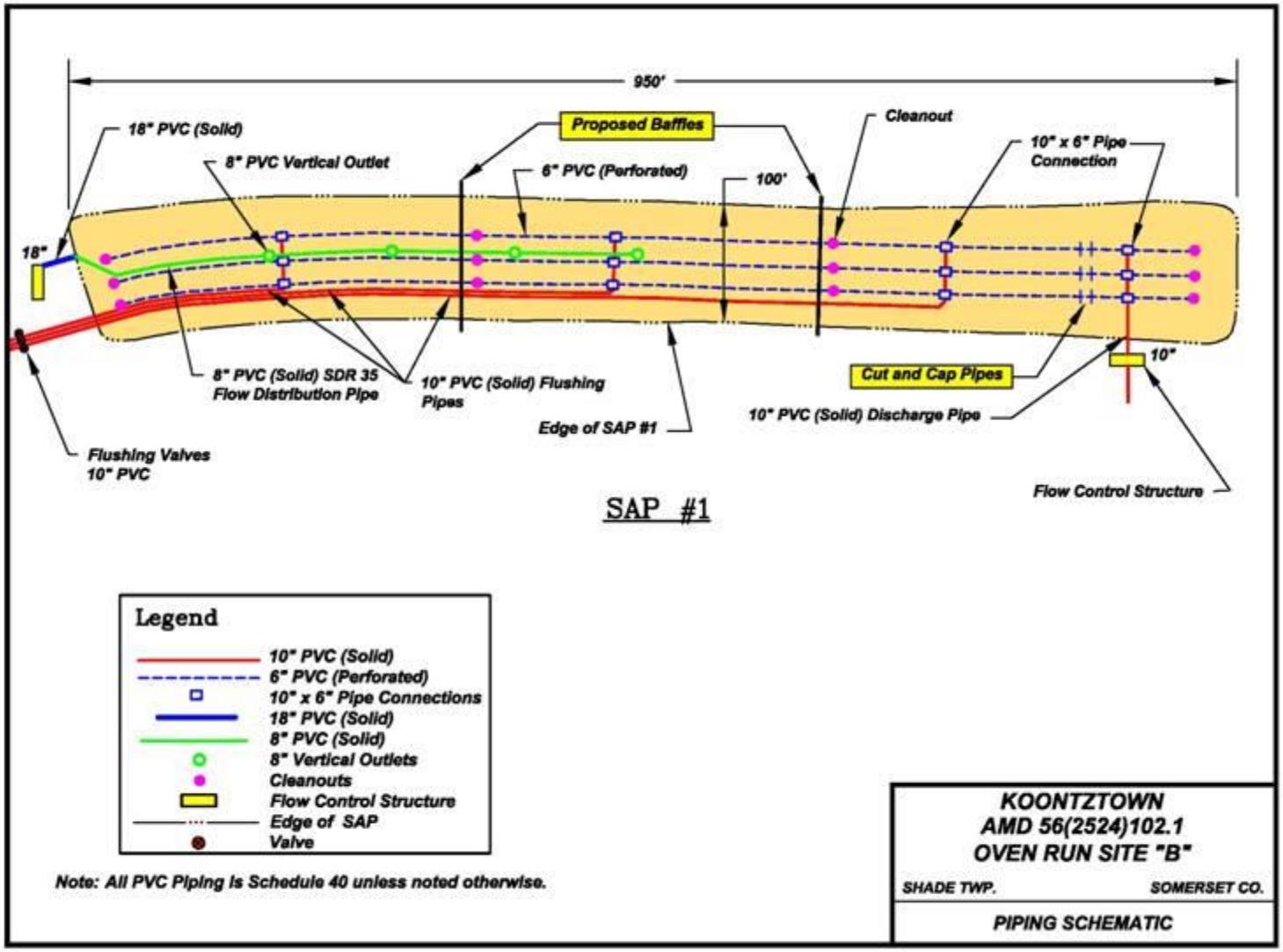
GENERAL OM&R RECOMMENDATIONS

- All Consent for Right of Entry agreements for this project are more than ten years old. The O & M Section should have the property ownership information refreshed and checked for current ownership; and new Right of Entry agreements obtained if deemed necessary by the realty and/or legal Departments.
- Right of Entry agreements should be checked by the O & M Section for all BAMR passive treatment systems and be kept current.
- As-built drawings need to be completed and recorded; particularly relating to the piping systems and critical system elevations.
- Any changes made during OM&R operations to the piping systems, valves, cleanouts, water levels, etc. need to be added to the original as-built drawings and recorded as revised as-builts with dates.
- System water sampling needs to be performed consistently and at regular time intervals to provide for reliable system analysis.
- Accurate flow data needs to be collected at the same time as system water sampling to provide for reliable system analysis.
- Water sampling data needs to be recorded in one central location and reviewed on a regular basis by the O & M Section to monitor system performance.
- Flow measurements, sample collection, and data recording should be done by one or two people in the O & M Section to ensure reliability and accountability.
- All Right of Entry agreements; as-built drawings, sampling location points and descriptions, SIS ID's, sampling data and analysis, OM&R operations, system changes, dates, costs, etc. for each treatment system need to be recorded in one central location by the O & M Section.
- A continuous flow recorder should be installed at any future site during project development to provide more accurate flow data to the project designer and could be reused over and over.
- A continuous flow recorder should be designed and built into the treatment system to provide more accurate and reliable flow data for system analysis by the O & M Section.

ESTIMATED LIST OF MATERIALS FOR BD PROJECT FOR OVEN RUN SITE "B"

- One 10" Schedule 40 PVC Gate Valve
- Twenty-two (22) 6" Schedule 40 PVC cleanout adapters with female threaded ends (re-use existing threaded caps)
- Four (4) 10" Schedule 40 PVC cleanout adapters with female threaded ends (re-use existing threaded caps)
- Sixteen (16) 6" Schedule 40 PVC end caps
- PVC cement
- Forty-five (45) 4' x 8' sheets of ¾" pressure treated plywood for three (3) baffles
- Forty-seven (47) 4" x 4" x 12' pressure treated posts (cut to 6' lengths)
- Pressure treated posts to rebuild access ramp
- Stainless steel screws for fastening plywood
- 400 l.f. x 5 ft. wide rubber roofing to seal plywood bottom edge, joints and ends
- Rubber roofing wrap cement and bonding adhesive
- Twenty (20) tons of AASHTO #57 sandstone to support ends of plywood baffles and to rebuild access ramp on Pond #3
- Caustic soda drip system or soda ash briquettes

PROPOSED BAFFLE LOCATIONS AND HEADER PIPE SEPARATION SAP #1



PROPOSED BAFFLE LOCATION AND HEADER PIPE SEPARATION SAP #2