Watershed Assessments

- 2000 – Upper Schuylkill River Assessment Report
  by L Robert Kimball & Associates

  Approximately 127 square miles of the Main Branch and West Branch of the Upper Schuylkill

  Collected all available data from regulatory agencies, coal operators, and local citizens

  Identified 109 discharge / recharge locations

  Selected 8 priority sites based on data using

  - Average Contaminate Concentrations
  - Average Contaminant Loading

Watershed Assessments

- 2000 – Upper Schuylkill River Assessment Report

  8 priority sites included:

  Pine Knot Tunnel / Oak Hill Mine Boreholes
  Repplier Mine Water Level Tunnel
  Tuscarora Mine Sinkhole
  Brockton Mine Strip Pool
  Pine Forest Mine Discharge
  Silver Creek Mine Tunnel
  Mary D Mine Borehole
  Otto Mine Shaft

Watershed Assessments

- 2001 – Little Schuylkill River Assessment Report
  by L Robert Kimball & Associates

  Approximately 137 square miles of the Little Schuylkill River and its' tributaries

  Collected all available data from regulatory agencies, coal operators, and local citizens

  Identified 62 discharge / recharge locations

  Selected 9 priority sites based on data using

  - Average Contaminate Concentrations
  - Average Contaminant Loading

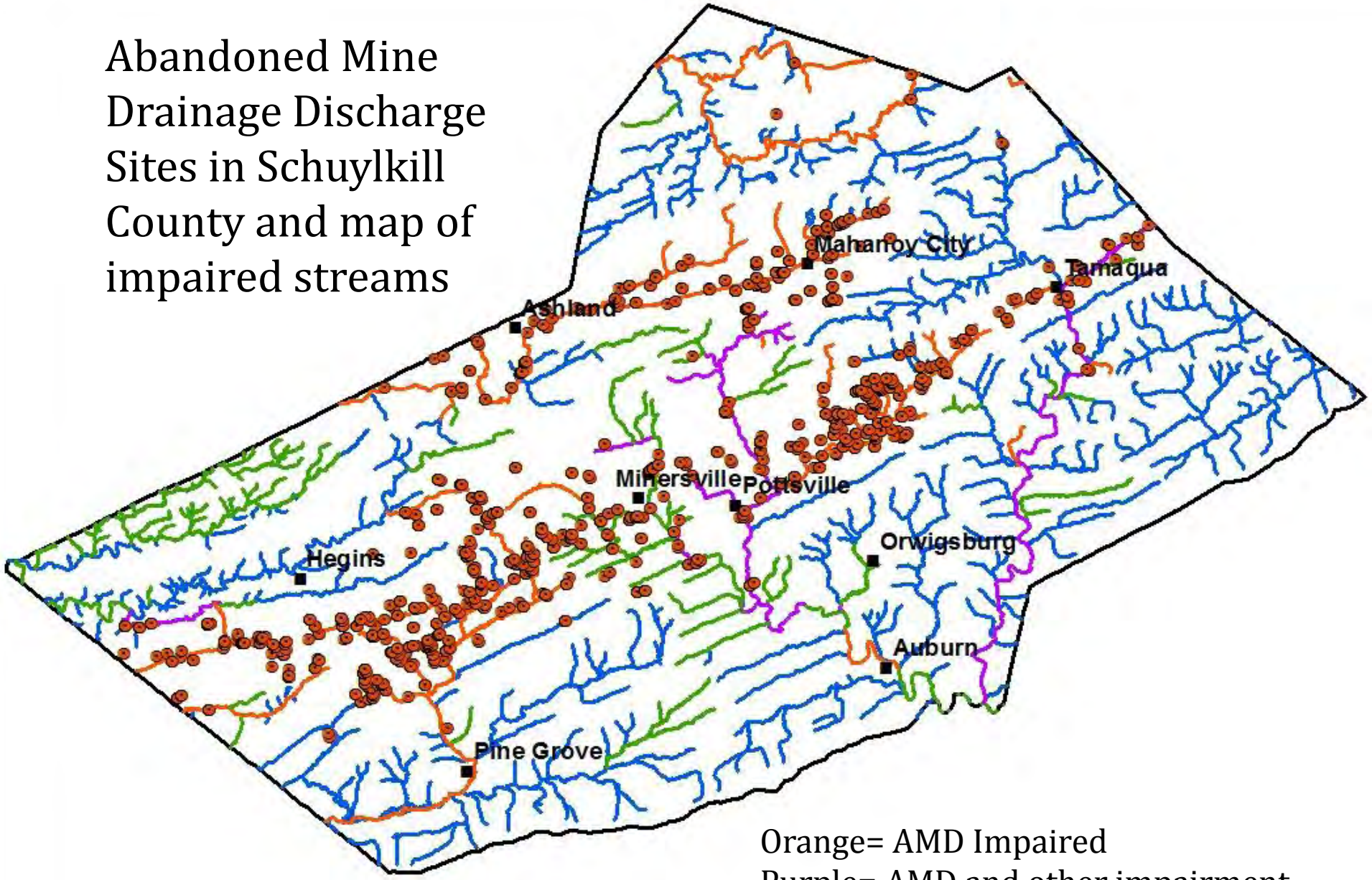
Watershed Assessments

- 2001 – Little Schuylkill River Assessment Report

  9 priority sites included:

  Silverbrook Mine Outfall
  Reevesdale No. 1
  Reevesdale No. 2
  Newkirk Mine Tunnel
  Newkirk Mine Tunnel (South Dip)
  Foster Tunnel
  Lofty Creek Sedimentation
  Locust Creek Stream Bank Erosion
  Discharges / seeps southwest of Tamaqua

Abandoned Mine Drainage Discharge Sites in Schuylkill County and map of impaired streams



Orange= AMD Impaired
Purple= AMD and other impairment
Green=Other impairment
Blue= Clean streams

UPPER SCHUYLKILL RIVER TMDL WATERSHED IMPLEMENTATION PLAN (WIP)

May 2005

Prepared by:

Schuylkill Conservation District

Schuylkill Headwaters Association, Inc.

RETTEW Associates, Inc.

For submission to:

Pennsylvania Department of Environmental Protection

and

United States Environmental Protection Agency

WIP
IDENTIFICATION AND SUMMARY OF PROBLEM AND POLLUTION SOURCES

- Abandoned Mine Drainage (AMD)
- Sediment Runoff and Abandoned Mine Drainage from Refuse Piles
- Uncontrolled Stormwater Runoff
- Sewage
- Agriculture Related Impairment (Nutrient and Sediment)
- U. S. EPA Superfund Sites

WIP
Remediation Projects

High Priority:

- Mary D Mine Outflow
- Oak Hill Mine
- Pine Forest Mine
- Pine Knot Tunnel
- Silver Creek Mine
- Randolph Discharge
- Silverbrook Mine
- Sharp Mountain Mine Subsidence Reclamation

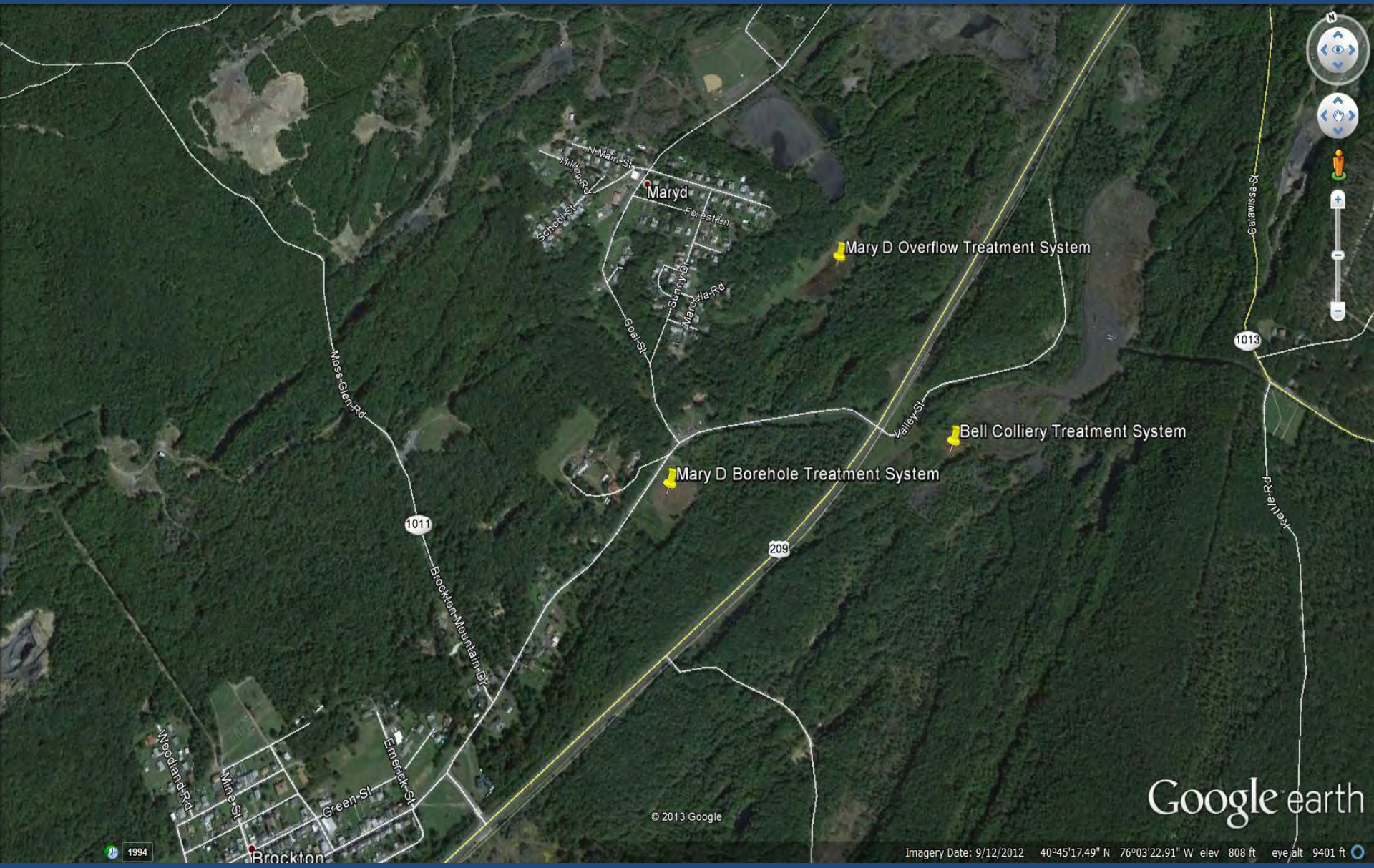
WIP
Remediation Projects

Medium Priority

- Newkirk Tunnel - North Dip
- Eagle Hill Mine
- Reevesdale No. 1

WIP
Other Discharges

- Kaska Silt Dam
- Repplier Mine Tunnel
- Morea Mine
- Newkirk Tunnel - South Dip
- Brockton Discharge
- Fosters Tunnel Discharge
- Kaska Mine Outfall
- Middleport Mine Discharge
- Various Tunnel Discharges


Maryd
Mary D Overflow Treatment System
Bell Colliery Treatment System
Mary D Borehole Treatment System
N Main St
Hillsdale Rd
School St
Forest Ln
Sunny Dr
Marcella Rd
Coal St
Moss Glen Rd
Valley St
Catawissa St
Kelly Rd
Brockton Mountain Dr
Woodland Rd
Mine St
Green St
Emerick St
Brockton
1011
209
1013
© 2013 Google
Google earth
1994
Imagery Date: 9/12/2012 40°45'17.49" N 76°03'22.91" W elev 808 ft eye alt 9401 ft

Mary D Overflow

Mary D Borehole
Old ball field

Mary D Recreation Complex

On line June 10, 2013

Monitoring Data

- Avg. flow:
- 689 gpm

- Raw water:
- Fe – 7.2 ppm
- pH – 5.5

- Treated water:
- Fe – 1.0 ppm
- pH – 7.5

- Iron removal:
- 30.5 lbs./day -- 11,130 yr.

Bell Colliery

On-line September 5 2013

Monitoring data

- Avg. flow:
- 281 gpm

- Raw water:
- Fe – 2.99 ppm
- pH -- 4.3

- Treated water:
- Fe – 1.08 ppm
- pH – 7.0

- Iron removal:
- 9.7 lbs. / day -- 3540 yr.

Stream monitor data Oct 2013

- Above Bell:
  - Fe 0.370
  - H acidity 8.0
  - Alk 13.4
  - pH 6.42
  - Al 0.189
- Above Mary D:
  - Fe 0.403
  - H acidity -3.4
  - Alk 29.4
  - pH 6.93
  - Al 0.084
- At Middleport:
  - Fe 0.193
  - H acidity -1.0
  - Alk 26.2
  - pH 6.98
  - Al 0.134

Stream monitor data Dec 2013

- Above Bell:
  - Fe 0.584
  - H acidity 40.8
  - Alk 12.0
  - pH 6.16
  - Al 0.470
- Above Mary D:
  - Fe 1.062
  - H acidity 18.2
  - Alk 17.2
  - pH 6.70
  - Al 0.434
- At Middleport:
  - Fe 0.607
  - H acidity 19.2
  - Alk 12.0
  - pH 6.60
  - Al 0.611

Big Creek Watershed Coldwater Conservation Plan

PREPARED FOR:
SCHUYLKILL HEADWATERS ASSOCIATION, INC.

WITH FUNDING BY:
COLDWATER HERITAGE PARTNERSHIP

PREPARED BY:
RETTEW ASSOCIATES, INC.
950 EAST MAIN STREET, SUITE 220
SCHUYLKILL HAVEN, PA 17972
(570) 385-2270

RETTEW
We answer to you.

Big Creek Watershed

- Drainage area encompasses 3.67 square miles
- Includes approx. 8.46 miles of streams
- Water quality designation of CWF, MF
- Not a naturally reproducing trout stream (PFBC)
- Historic land use includes anthracite coal mining and timber harvesting
- Currently used as a municipal water source and for outdoor recreation

Sample Points

- Our study included nine sample points throughout the watershed

- Parameters:
  - **Water Quality**
  - **Macroinvertebrates**
  - **Fish**

Sample Point #1

Sample Point #4

Water Quality Data

Table 1. Summary of Water Quality Data

Sample Point	Acidity (mg/L)	Alkalinity (mg/L)	Iron (mg/L)	pH	Conductivity (µS/cm)
1	17.1	20.0	0.0	5.0 – 5.5	-
2	17.1	20.0	0.0	5.0	-
3	17.1	20.0	0.8	5.0	-
4	17.1	20.0	1.0	5.5	-
5	34.2	20.0	0.0	5.0	-
6	-	-	-	5.5 – 6.0	-
7	-	-	-	6.80	157.5
8	-	-	-	4.89	365.0
9	-	-	-	3.0	212.0

Macroinvertebrate Data

Table 2. Summary of Macroinvertebrate Data

Sample Point	Modified Becks Index	EPT Taxa Richness	Total Taxa Richness	Shannon Diversity Index	HBI Index	Percent Intolerant Individuals (TV 5 or less)	IBI Value
1	0	2	3	0.672	17.50	15.00	**10.14**
2	1	4	6	1.426	35.56	72.22	**29.53**
4	1	2	5	1.076	23.89	38.89	**18.66**

- Total number of individuals was multiplied by 5
- Macroinvertebrate impairment is based on the *Index of Biological Integrity (IBI) for Wadeable, Freestone Streams in Pennsylvania*
  - Non-impaired streams = 63
  - EV, HQ streams = 80
- Pollution sensitive stoneflies were found at each sample point

Electrofishing Data

- One small brook trout at Sample Point #1
- Very poor due to low pH and lack of reliable food source
- Few crayfish, frogs, and salamanders observed

Priority Projects

- **Big Creek Headwaters Area**
  - Big Creek originates at an abandoned stripping pit
  - Prior stream restoration project has been moderately successful