

COMPARISON OF ANTHRACITE COAL FIELD DISCHARGES

Flow

The Anthracite Coal Fields of Eastern Pennsylvania are known for their large flow discharges that drain massive underground mine pools. For example, more than 21 percent of the total Anthracite AMD flow in the Susquehanna River Basin originates from only two discharges, the Old Forge Borehole in the Lackawanna River Watershed (11.5 percent) and the Jeddo Tunnel (9.8 percent) in the Nescopeck Creek Watershed (Table 3).

More than 50 percent of the Anthracite AMD flow in the Susquehanna River Basin originates from only 3.4 percent (11 discharges) of the 320 discharges. Taking the flow data further, greater than 75 percent of the Anthracite AMD flow in the Susquehanna River Basin originates from only 10.6 percent (34 discharges) of the 320 discharges.

Very similar results are seen when completing the same analysis for discharge AMD loadings. Very few of the Anthracite Region discharges create a majority of the AMD loading contribution. Consequently, the treatment of a small percentage of the Anthracite Region discharges would lead to significant Susquehanna River Basin water quality improvements. The

analyses below is an attempt by SRBC to prioritize the discharges that should be the main focus when considering broad-scale water quality restoration of the Susquehanna River Basin.

Iron Loading

The 320 discharges of the Susquehanna River Basin Anthracite Fields create 73,847 lbs/day of iron loading pollution. The top ten iron loading producers contribute 63.1 percent of that total or 46,615 lbs/day (Table 4). The Old Forge Borehole alone contributes 16.8 percent of the total iron loading pollution.

In addition, the top four and seven of the top ten iron loading producers are located in the Northern Field. Cumulative, those seven discharges create more than 51 percent of the iron loading.

Manganese Loading

The 320 discharges of the Susquehanna River Basin Anthracite Fields create 12,928 lbs/day of manganese loading pollution. The top ten manganese loading producers contribute 61.5 percent of that total or 7,955 lbs/day (Table 5). The Old Forge Borehole and Jeddo Tunnel combined contribute nearly 25 percent of the total manganese loading pollution.

Aluminum Loading

The 320 discharges of the Susquehanna River Basin Anthracite Fields create 8,965 lbs/day of aluminum loading pollution. The top ten aluminum loading producers contribute 78.2 percent of the total or 7,007 lbs/day (Table 6). The Jeddo Tunnel produces nearly 43 percent of the aluminum loading itself.

Four of the top five aluminum loading producers are located in the Eastern-Middle Field. Those four discharges cumulatively create nearly 66 percent of the aluminum loading.

Acidity Loading

The 320 discharges of the Susquehanna River Basin Anthracite Fields create 189,444 lbs/day of acidity loading pollution. The top ten acidity loading producers contribute 51.7 percent of the total or 98,002 lbs/day (Table 7). Greater than 13 percent of the acidity loading originates from one source, the Jeddo Tunnel.

Five of the top ten acidity loading producers are located in the Northern Field. Those five discharges cumulatively create nearly 21 percent of the acidity loading.

Table 4. Top-10 Iron Loading Discharges in the Susquehanna River Basin Anthracite Region

Ranking	Fe Loading - lbs/day	% Loading Total	Site Number	Watershed	Mine Discharge
1	12,393.02	16.78	NFD016	Lackawanna River	Old Forge Borehole
2	6,700.92	9.07	NFD022	Solomon Creek	Solomon Creek Boreholes
3	5,798.45	7.85	NFD012	Solomon Creek	Nottingham-Buttonwood Airshaft
4	5,464.45	7.40	NFD020	Lackawanna River	Duryea Breach
5	3,435.41	4.65	WFD089	Mahanoy Creek	Gilberton Pump Discharge
6	3,319.93	4.50	NFD033	Nanticoke Creek	Truesdale/Dundee Outfall
7	2,746.11	3.72	WFD027	Mahanoy Creek	Packer #5 Breach and Borehole
8	2,544.26	3.45	EFD009	Nescopeck Creek	Jeddo Tunnel
9	2,434.14	3.30	NFD014	Newport Creek	Susquehanna #7 Shaft
10	1,778.10	2.41	NFD017	Susquehanna River	Plainsville Outlet
Top 10 Total	46,614.79				
All	73,846.76				
% Loading Total	63.12				

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Table 5. Top-10 Manganese Loading Discharges in the Susquehanna River Basin Anthracite Region

Rankings	Mn Loading - lbs/day	% Loading Total	Site Number	Watershed	Mine Discharge
1	1,726.76	13.36	NFD016	Lackawanna River	Old Forge Borehole
2	1,461.01	11.30	EFD009	Nescopeck Creek	Jeddo Tunnel
3	785.01	6.07	WFD027	Mahanoy Creek	Packer #5 Breach and Borehole
4	739.48	5.72	NFD020	Lackawanna River	Duryea Breach
5	674.81	5.22	NFD012	Solomon Creek	Nottingham-Buttonwood Airshaft
6	660.77	5.11	WFD089	Mahanoy Creek	Gilberton Pump Discharge
7	616.21	4.77	NFD022	Solomon Creek	Solomon Creek Boreholes
8	582.27	4.50	EFD005	Nescopeck Creek	Gowen Tunnel
9	388.23	3.00	WFD116	Mahanoy Creek	Continental Plant Bypass
10	320.77	2.48	WFD114	Mahanoy Creek	Centralia Tunnel
Top 10 Total	7,955.32				
All	12,928.21				
% Loading Total	61.53				

Table 6. Top-10 Aluminum Loading Discharges in the Susquehanna River Basin Anthracite Region

Rankings	Al Loading - lbs/day	% Loading Total	Site Number	Watershed	Mine Discharge
1	3,847.62	42.92	EFD009	Nescopeck Creek	Jeddo Tunnel
2	937.87	10.46	EFD005	Nescopeck Creek	Gowen Tunnel
3	856.61	9.56	EFD001	Catawissa Creek	Audenreid Tunnel
4	337.01	3.76	WFD114	Mahanoy Creek	Centralia Tunnel
5	253.13	2.82	EFD004	Nescopeck Creek	Derringer Tunnel
6	182.23	2.03	SFD089	Wiconisco Creek	Porter Tunnel
7	167.77	1.87	NFD016	Lackawanna River	Old Forge Borehole
8	153.68	1.71	WFD127	Mahanoy Creek	West Penn Breaker Discharge
9	138.41	1.54	WFD019	Mahanoy Creek	Doutyville Tunnel
10	132.53	1.48	NFD025	Susquehanna River	Mocanaqua Tunnel
Top 10 Total	7,006.84				
All	8,964.70				
% Loading Total	78.16				

Table 7. Top-10 Acidity Loading Discharges in the Susquehanna River Basin Anthracite Region

Rankings	Acidity Loading - lbs/day	% Loading Total	Site Number	Watershed	Mine Discharge
1	25,410.56	13.41	EFD009	Nescopeck Creek	Jeddo Tunnel
2	16,570.82	8.75	EFD001	Catawissa Creek	Audenreid Tunnel
3	14,024.59	7.40	NFD012	Solomon Creek	Nottingham-Buttonwood Airshaft
4	8,147.17	4.30	NFD022	Solomon Creek	Solomon Creek Boreholes
5	7,130.31	3.76	EFD005	Nescopeck Creek	Gowen Tunnel
6	6,902.56	3.64	NFD025	Susquehanna River	Mocanaqua Tunnel
7	5,480.49	2.89	NFD033	Nanticoke Creek	Truesdale/Dundee Outfall
8	4,804.65	2.54	WFD027	Mahanoy Creek	Packer #5 Breach and Borehole
9	4,804.59	2.54	WFD114	Mahanoy Creek	Centralia Tunnel
10	4,726.07	2.49	NFD016	Lackawanna River	Old Forge Borehole
Top 10 Total	98,001.81				
All	189,444.30				
% Loading Total	51.73				