



pennsylvania

DEPARTMENT OF ENVIRONMENTAL PROTECTION

Bureau of Conservation & Restoration

Now Office of Water
Resources Planning

Local Government Entities in Improving AMD Impaired Waters

Joint Conference of West Virginia Mine
Drainage Task Force Symposium, ASMR
and ARRI

April 10, 2017

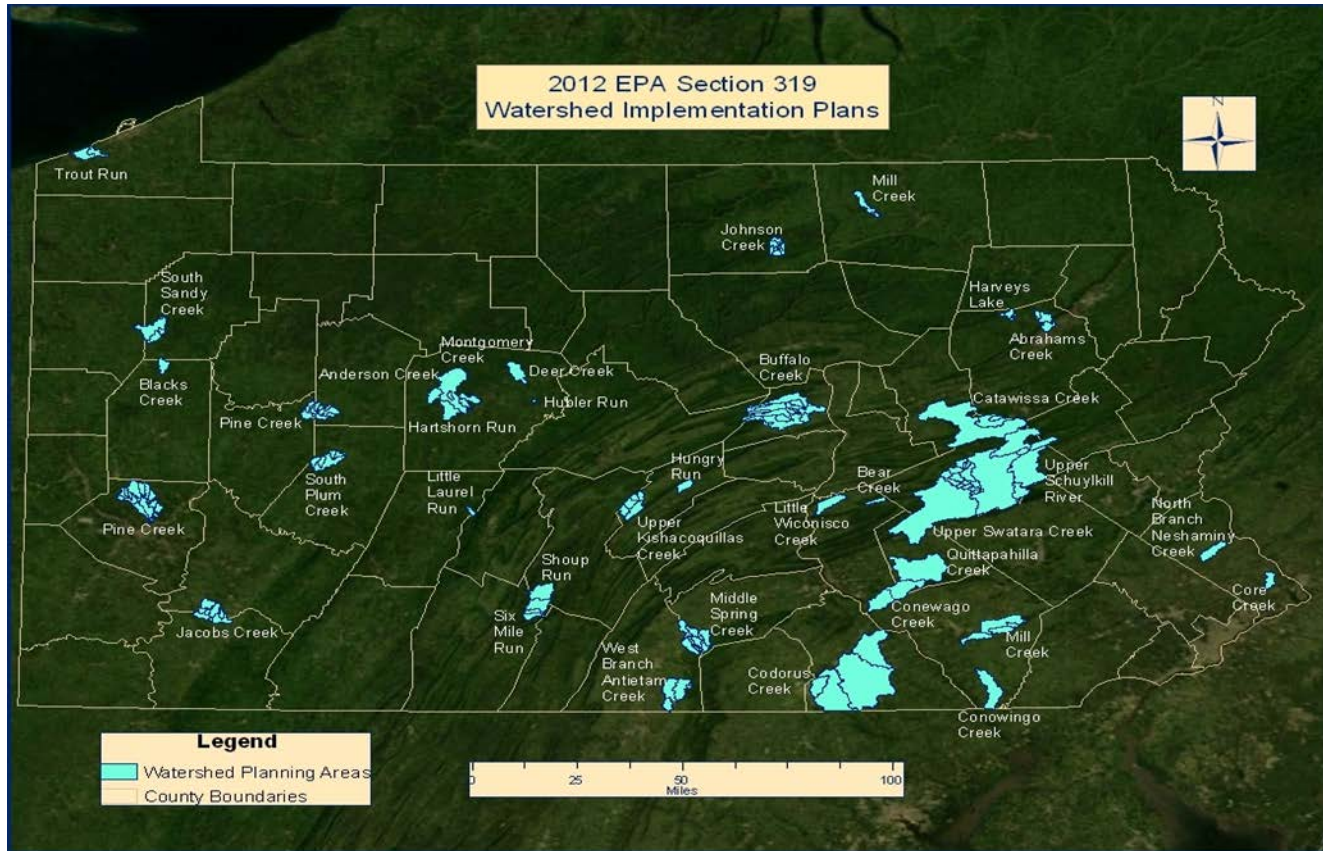
Overview

- Section 319 Program in PA
- Broad Top Township
- Water Quality

Section 319 Program in PA

- 36 Total Watershed Implementation Plans (WIP's)
- 16 WIP's have AMD as their main pollutant

WIP's in 2012



Partnerships

- Mostly in PA it is the watershed groups and conservation districts looking to partner with others
- Townships are a great partner if you can get them involved

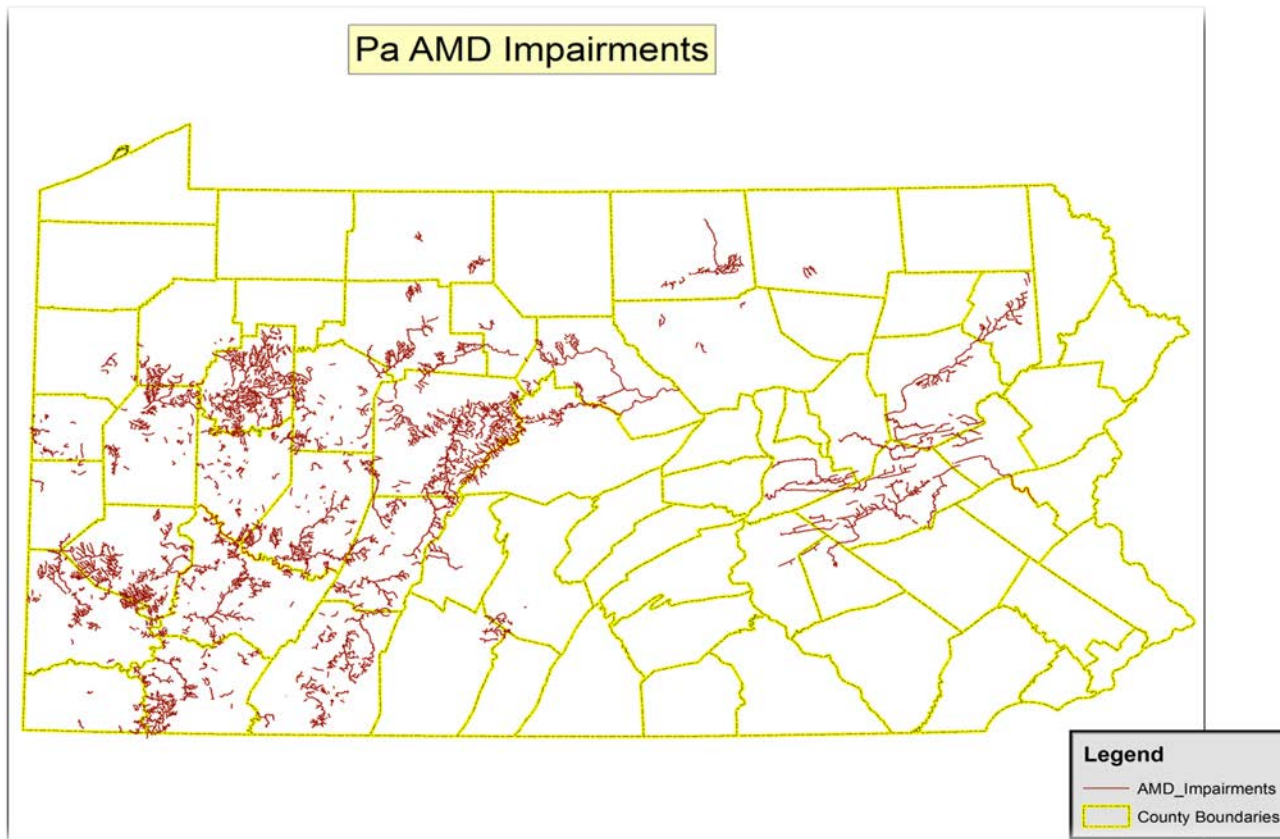
General Broad Top Info

- Population in 2015 was 1,632
- Area of township 48.5 square miles
- Median Income for Household in 2010 \$30,250 (PA \$53,581)
- Median Income for Family in 2010 \$33,289 (PA \$67,281)
- Per Capita Income in 2010 \$14,781 (PA \$28,671)
- Most people worked in Office and Administrative Support or building and Grounds Maintenance
- 13 % below poverty level

Broad Top on map



AMD Impairments



History of Mining

- Earliest deep mining occurred in 1825
- Six Mile Watershed had 117 known mine openings, Sandy Run had 67 mine openings
- Surface mining began in 1930's and peaked during World War II
- Very little mining now

Broad Top

- 1981 Watershed Study sponsored by 3 local conservation districts was completed
- Sewage, illegal dumping and AMD were the main problems in township

Broad Top

Unique Mission Statement

“Waterway cleanup and public waste disposal are just as important as maintaining roads, which has long been the primary responsibility of tiny local governments”

David Thomas, Broad Top Township, from the Altoona Mirror

Sewage

- Streams were impacted by failing on-lot and wildcat sewage systems
- Act 537 Sewage Plan was completed in 1995
- PADEP accepted the plan as a demonstration for other municipalities

Broad Top – Unique as a township

Sewage

- Township agreed to build 4 community sewage collection and treatment systems using USCOE Section 313 program
- On-lot septic systems are maintained and upgraded by the township
- All for \$20/month
- Township crew does all the work

Broad Top – Unique as a township

Garbage Disposal

- First started a per bag charge and township employees picked up the garbage
- Since landfill is now in township garbage disposal is no cost to residents
- Started out with only a pick-up truck to remove garbage – now have own garbage truck
- Offer bulky waste days to get rid of bigger items
- Offer recycling

AMD

- In 1979 first RAMP project was completed at a church that was highly visible
- Success got more people recruited for RAMP projects
- Mid 1990's BAMR completed a few projects

AMD

- In 2001 Township completed an assessment and remediation plan
- Watershed Implementation Plan was completed in 2005
- Since then over 3.5 million in Section 319 funding and over half million of Growing Greener funds have been used to complete 35 passive treatment systems

Broad Top – Unique as a township

Use their own workforce to build systems

Advantages

- Know the system is built right
- Know how to operate them efficiently
- Keep jobs local
- Able to keep costs down

Construct their own systems



Example of Work



Example of Work



Example of Work



Operation and Maintenance

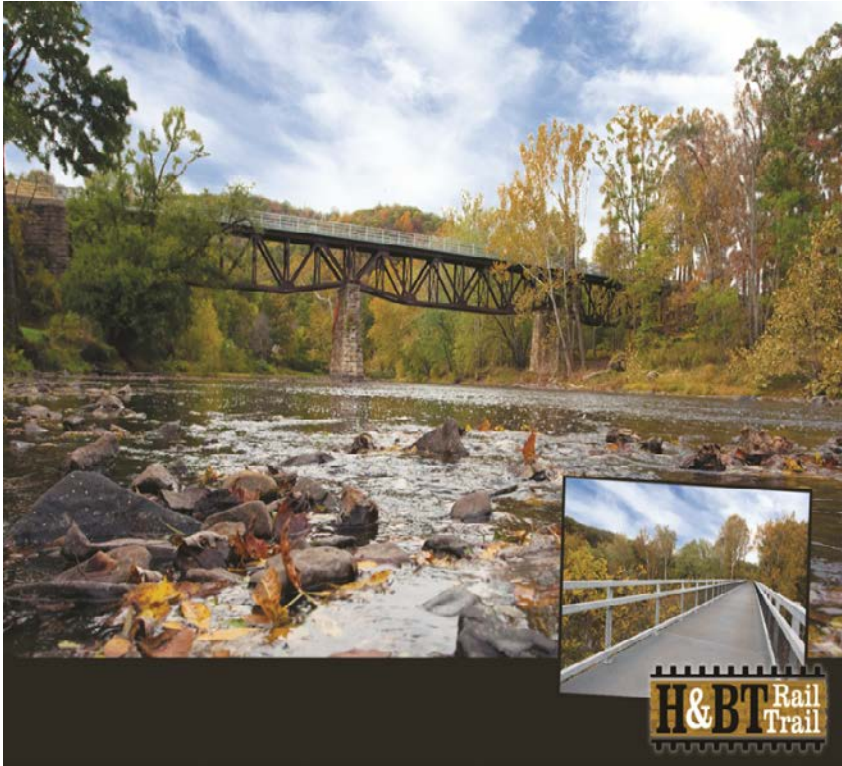
- Have a crew of 2 dedicated to maintenance
- Have the equipment needed for routine maintenance
- Know the system because they built it
- Quarterly do field testing for pH, conductivity and flow
- Some systems need flushed manually quarterly

Operation and Maintenance



Broad Top – Unique as a township

Rails to Trails



- Along the Raystown Branch of the Juniata River
- Broad Top Township is lead organization
- 10 miles completed from Riddlesburg to Tatesville

EPA Superheroes



Left to right: Bernie Hoffner,
Donnie Hedge , Intern, Ernest
Fuller



More than
willing to give
tours and share
knowledge

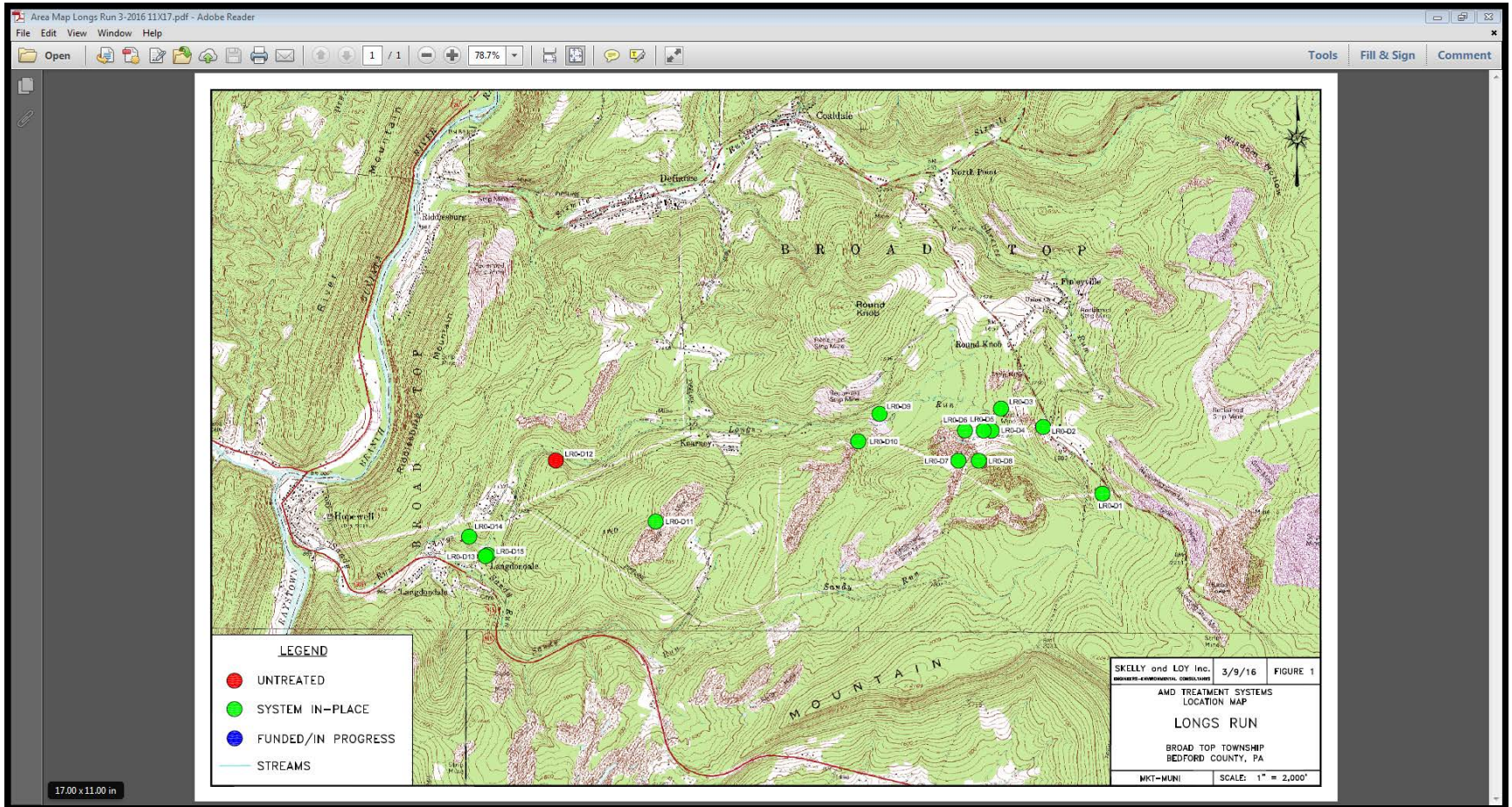
Dave Thomas

Long Run

- **Tributary of Sandy Run**
- **\$102,000 Growing Greener funds**
- **\$470,000 Section 319 Funds**
- **13 discharges are being treated with passive systems**



Long Run Systems



Long Run Delisted

- Started to see fish in 2007
- Was delisted on the 2014 Integrated Report – 5.3 miles
- Freestone IBI score of 78.3



Six Mile Run

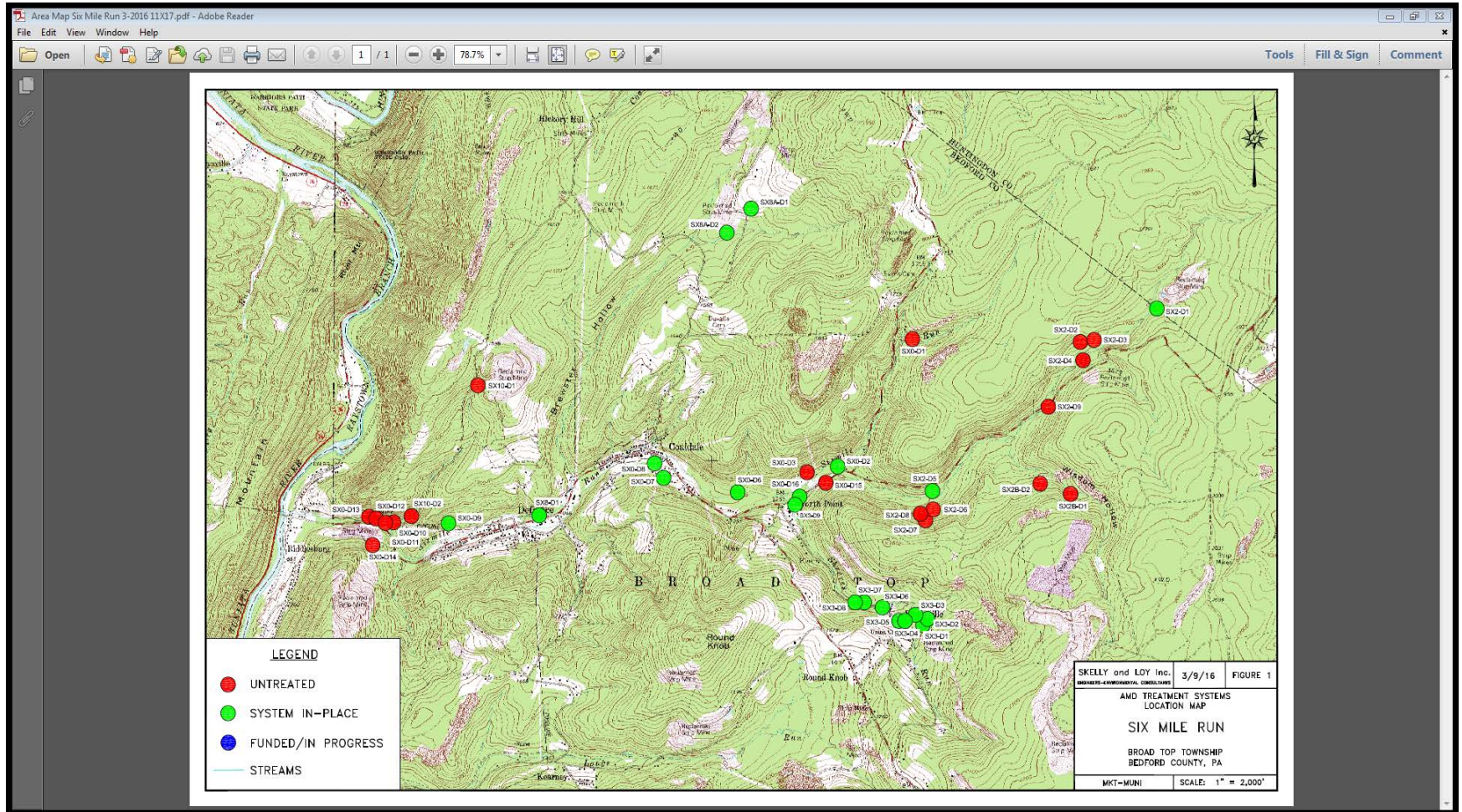
SX3-D9 & SX0-D16



Six Mile Run

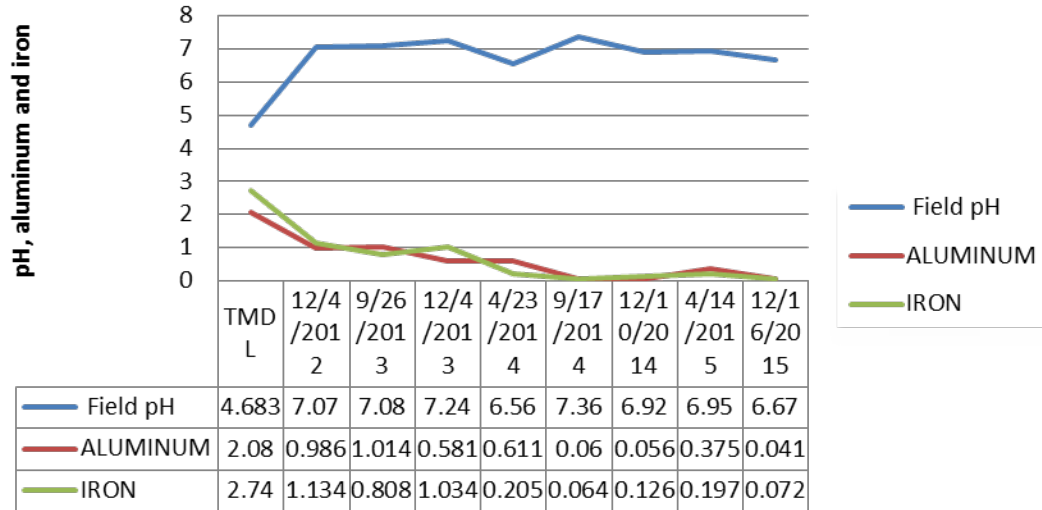


Six Mile Run



Six Mile Run Site 53

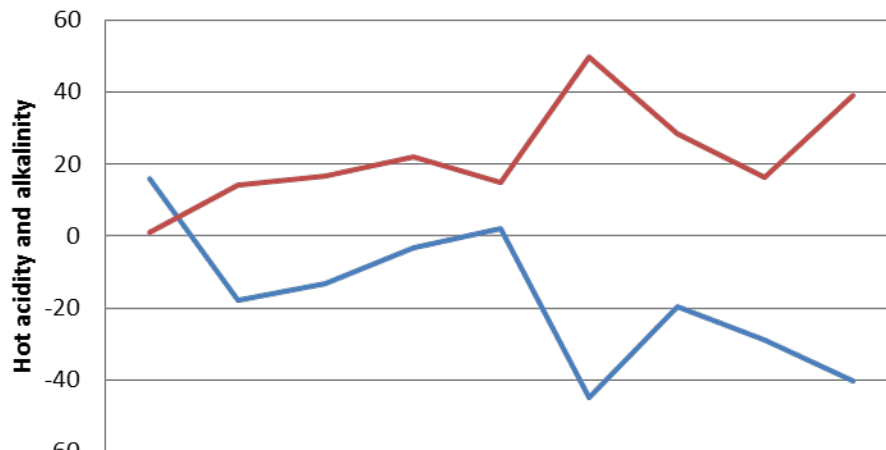
TMDL MP 53



| Date: | Field pH | ALUMINUM | IRON | Flow (GPM) |
|------------|----------|----------|-------|------------|
| TMDL | 4.683 | 2.08 | 2.74 | |
| 12/4/2012 | 7.07 | 0.986 | 1.134 | 1572.36 |
| 9/26/2013 | 7.08 | 1.014 | 0.808 | 471.66 |
| 12/4/2013 | 7.24 | 0.581 | 1.034 | 1289.44 |
| 4/23/2014 | 6.56 | 0.611 | 0.205 | 8673.42 |
| 9/17/2014 | 7.36 | 0.0598 | 0.064 | 612.09 |
| 12/10/2014 | 6.92 | 0.0562 | 0.126 | 3678.26 |
| 4/14/2015 | 6.95 | 0.375 | 0.197 | 11357.81 |
| 12/16/2015 | 6.67 | 0.0412 | 0.072 | 1140.33 |

Six Mile Run Site 53

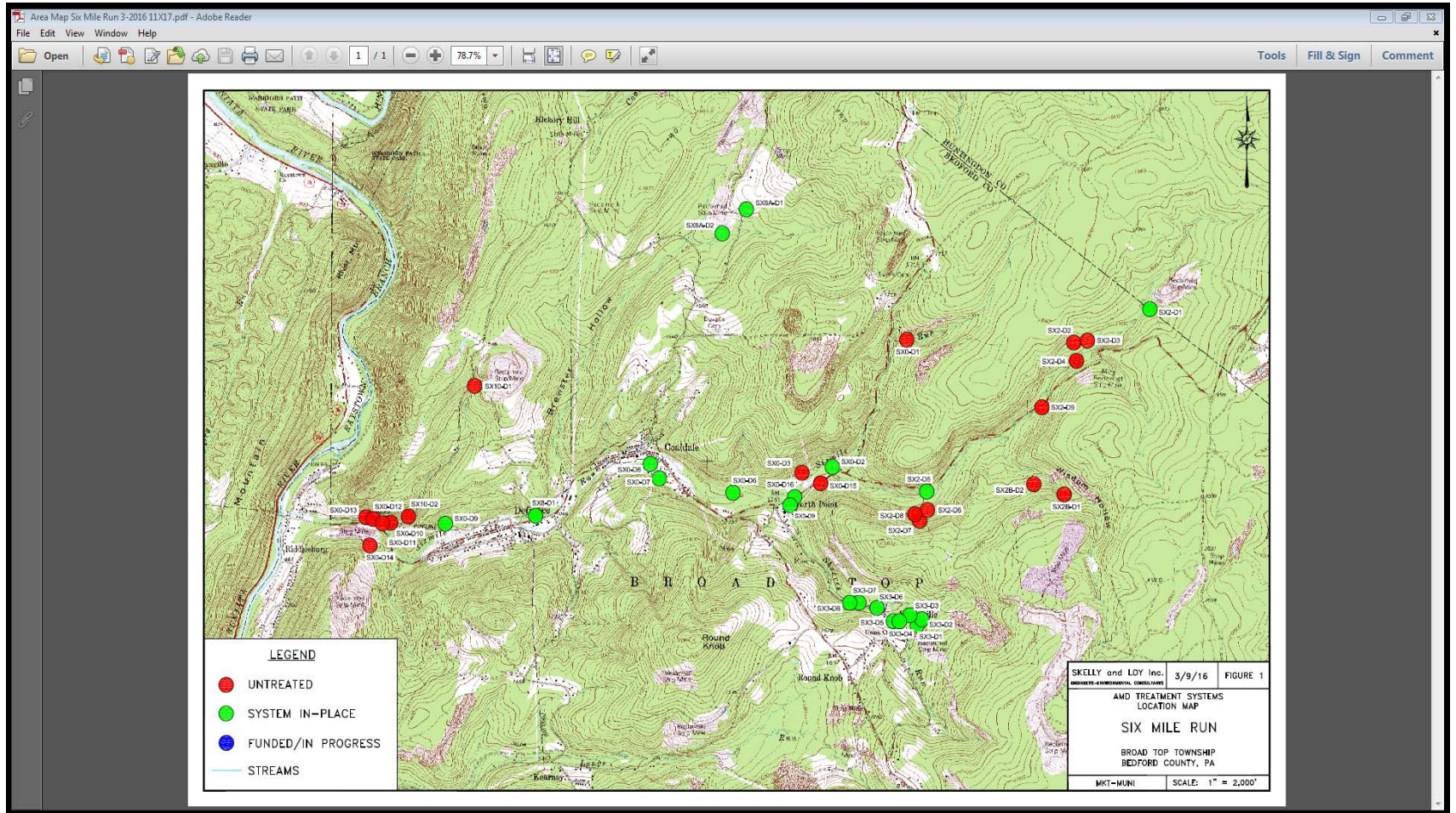
TMDL MP 53



| | TMDL | 12/4/2012 | 9/26/2013 | 12/4/2013 | 4/23/2014 | 9/17/2014 | 12/10/2014 | 4/14/2015 | 12/16/2015 |
|-------------|------|-----------|-----------|-----------|-----------|-----------|------------|-----------|------------|
| HOT ACIDITY | 16 | -17.8 | -13.2 | -3.4 | 2 | -45 | -19.8 | -29 | -40.4 |
| ALKALINITY | 1 | 14.2 | 16.6 | 22 | 15 | 50 | 28.6 | 16.2 | 39.2 |

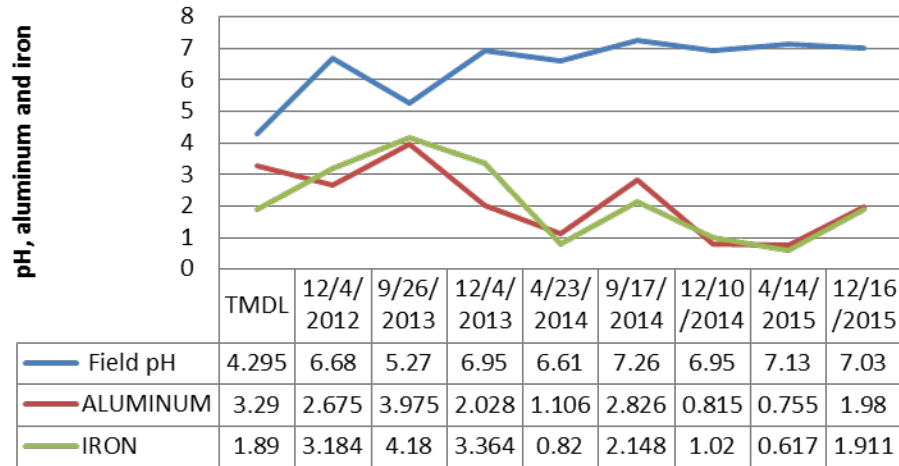
| Date: | HOT ACIDITY | ALKALINITY | Flow (GPM) |
|------------|-------------|------------|------------|
| TMDL | 16 | 1 | |
| 12/4/2012 | -17.8 | 14.2 | 1572.36 |
| 9/26/2013 | -13.2 | 16.6 | 471.66 |
| 12/4/2013 | -3.4 | 22 | 1289.44 |
| 4/23/2014 | 2 | 15 | 8673.42 |
| 9/17/2014 | -45 | 50 | 612.09 |
| 12/10/2014 | -19.8 | 28.6 | 3678.26 |
| 4/14/2015 | -29 | 16.2 | 11357.81 |
| 12/16/2015 | -40.4 | 39.2 | 1140.33 |

Six Mile Run



Six Mile Run Site 50

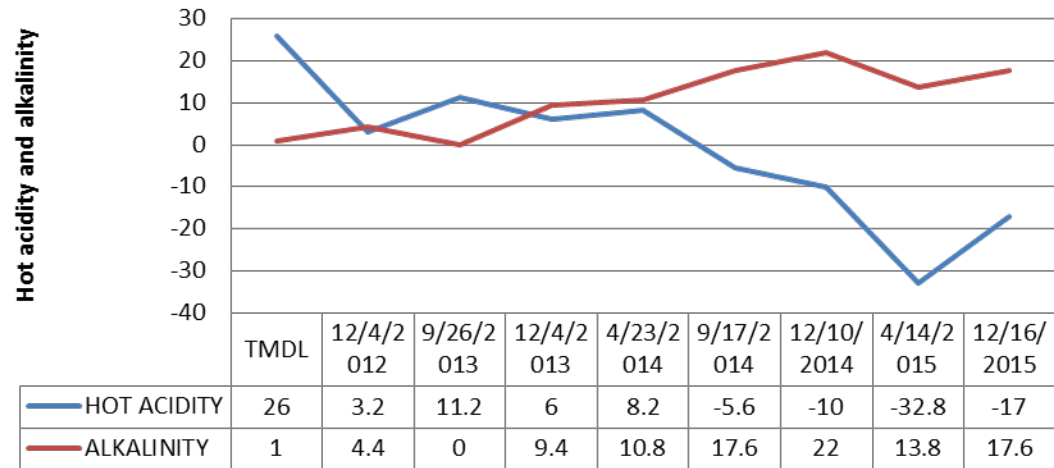
TMDL MP 50



| Date: | Field pH | ALUMINUM | IRON | Flow (GPM) |
|------------|----------|----------|-------|------------|
| TMDL | 4.295 | 3.29 | 1.89 | |
| 12/4/2012 | 6.68 | 2.675 | 3.184 | 1905.68 |
| 9/26/2013 | 5.27 | 3.975 | 4.18 | 857.04 |
| 12/4/2013 | 6.95 | 2.028 | 3.364 | 1726.75 |
| 4/23/2014 | 6.61 | 1.106 | 0.82 | 10994.71 |
| 9/17/2014 | 7.26 | 2.826 | 2.148 | 889.77 |
| 12/10/2014 | 6.95 | 0.815 | 1.02 | 4370.5 |
| 4/14/2015 | 7.13 | 0.755 | 0.617 | 13122.64 |
| 12/16/2015 | 7.03 | 1.98 | 1.911 | 1380.79 |

Six Mile Run Site 50

TMDL MP 50



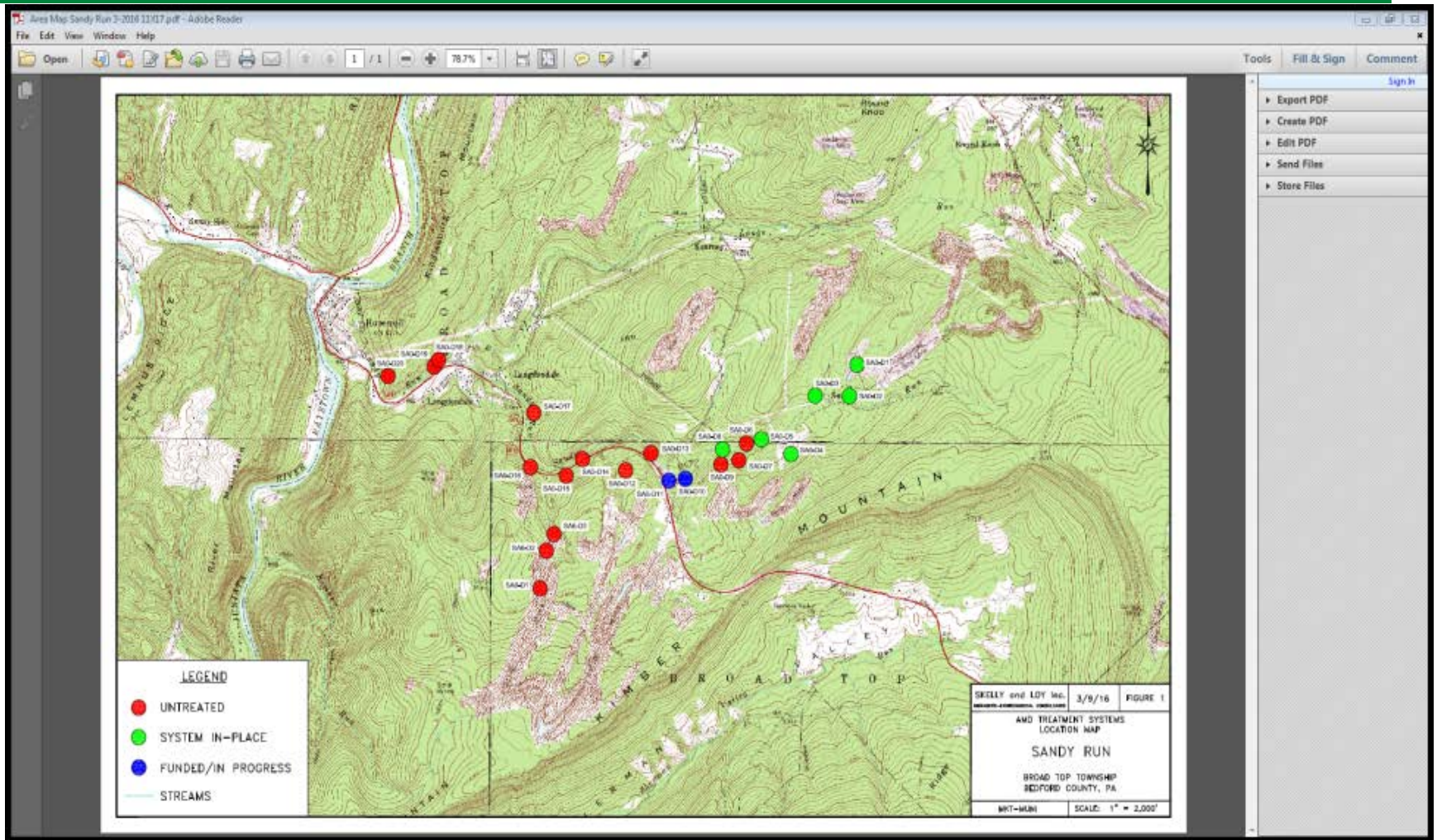
| Date: | HOT ACIDITY | ALKALINITY | Flow (GPM) |
|------------|-------------|------------|------------|
| TMDL | 26 | 1 | |
| 12/4/2012 | 3.2 | 4.4 | 1905.68 |
| 9/26/2013 | 11.2 | 0 | 857.04 |
| 12/4/2013 | 6 | 9.4 | 1726.75 |
| 4/23/2014 | 8.2 | 10.8 | 10994.71 |
| 9/17/2014 | -5.6 | 17.6 | 889.77 |
| 12/10/2014 | -10 | 22 | 4370.5 |
| 4/14/2015 | -32.8 | 13.8 | 13122.64 |
| 12/16/2015 | -17 | 17.6 | 1380.79 |

Sandy Run

SAO-D4 & SAO-D5

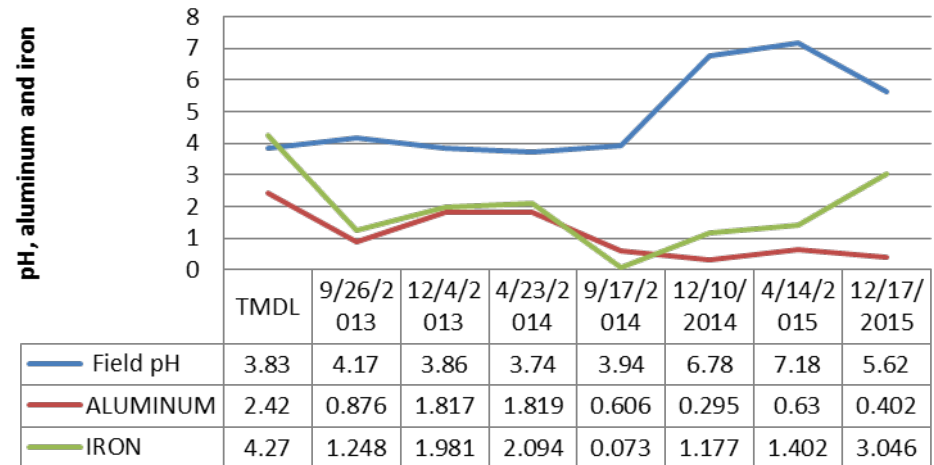


Sandy Run



Sandy Run Site 69

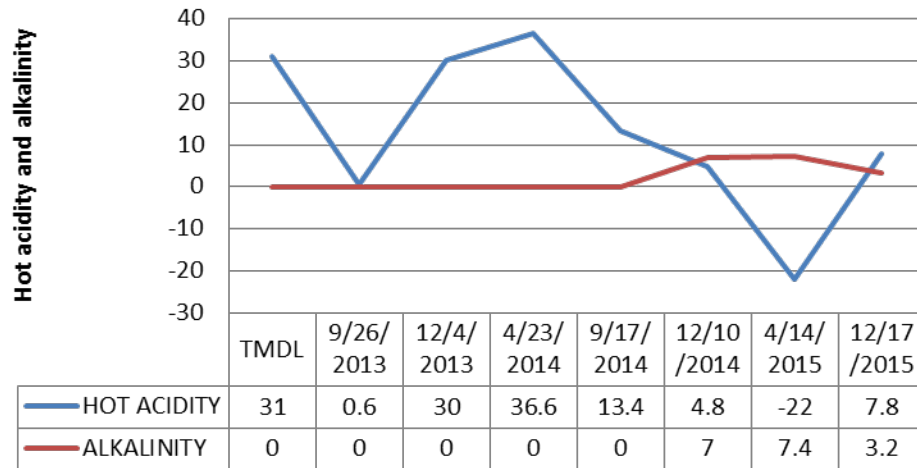
TMDL MP 69



| Date: | Field pH | ALUMINUM | IRON | Flow (GPM) |
|------------|----------|----------|-------|------------|
| TMDL | 3.83 | 2.42 | 4.27 | |
| 9/26/2013 | 4.17 | 0.876 | 1.248 | 10.05 |
| 12/4/2013 | 3.86 | 1.817 | 1.981 | 2 est. |
| 4/23/2014 | 3.74 | 1.819 | 2.094 | 1545.31 |
| 9/17/2014 | 3.94 | 0.606 | 0.073 | 5 est |
| 12/10/2014 | 6.78 | 0.295 | 1.177 | 1379.82 |
| 4/14/2015 | 7.18 | 0.63 | 1.402 | 2186.46 |
| 12/17/2015 | 5.62 | 0.402 | 3.046 | 139.59 |

Sandy Run Site 69

TMDL MP 69



| Date: | HOT ACIDITY | ALKALINITY | Flow (GPM) |
|------------|-------------|------------|------------|
| TMDL | 31 | 0 | |
| 9/26/2013 | 0.6 | 0 | 10.05 |
| 12/4/2013 | 30 | 0 | 2 est. |
| 4/23/2014 | 36.6 | 0 | 1545.31 |
| 9/17/2014 | 13.4 | 0 | 5 est |
| 12/10/2014 | 4.8 | 7 | 1379.82 |
| 4/14/2015 | -22 | 7.4 | 2186.46 |
| 12/17/2015 | 7.8 | 3.2 | 139.59 |



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