Georges Creek Shaft Stream Restoration Project

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Chesapeake Bay
Total Maximum Daily Load (TMDL)

Trees Planted
since 2014:

90 acres Stream Buffer
40 acres Urban Trees

TREES

Planting trees helps Allegany County do its part to restore the Chesapeake Bay Watershed. No special taxes are needed.

Have some land? Want trees? Call Allegany County today to find out how you can help.

301.876.9560

NOT TAXES

Total Stream Restoration since 2014:

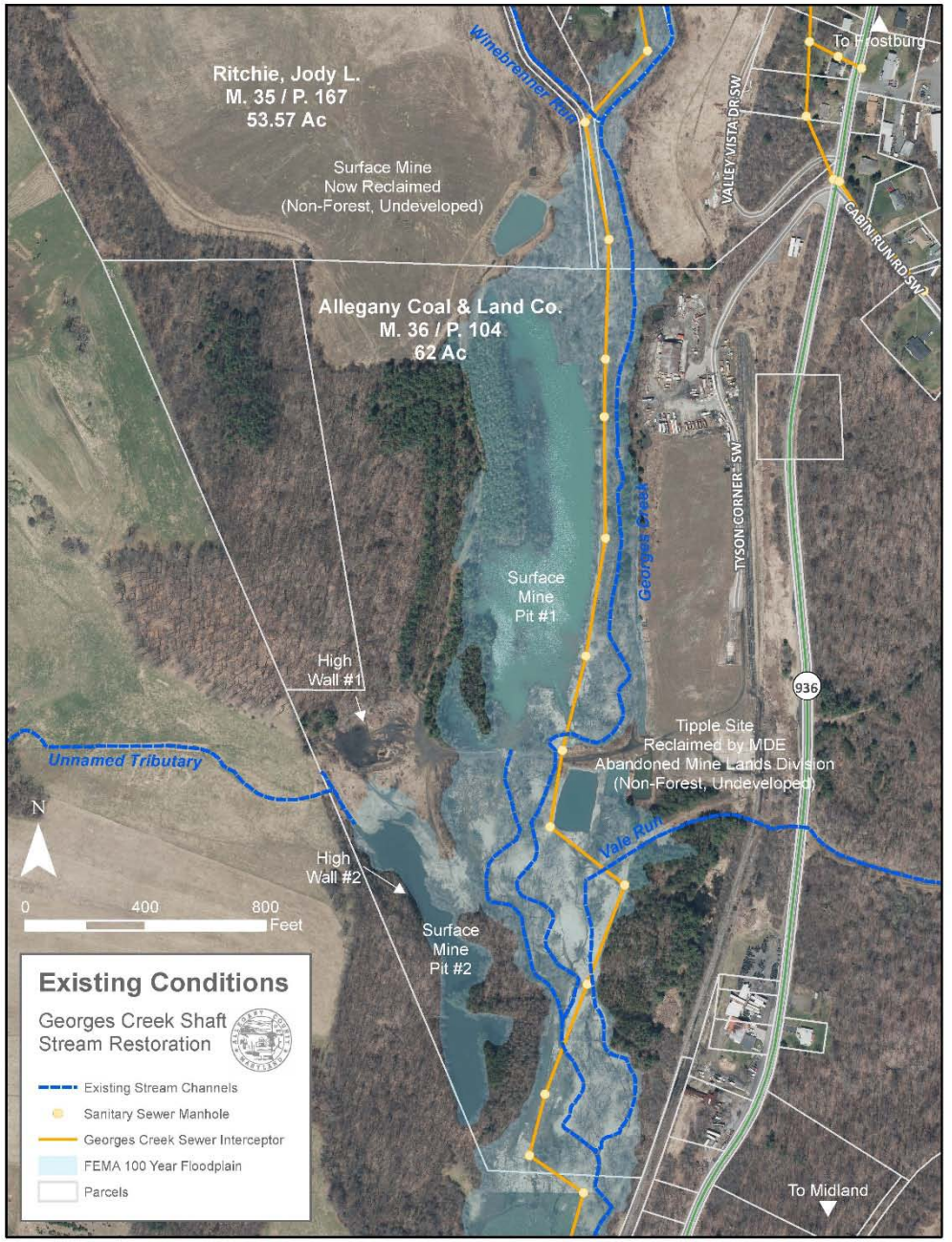
4,000 Linear Feet (¾ Mile)

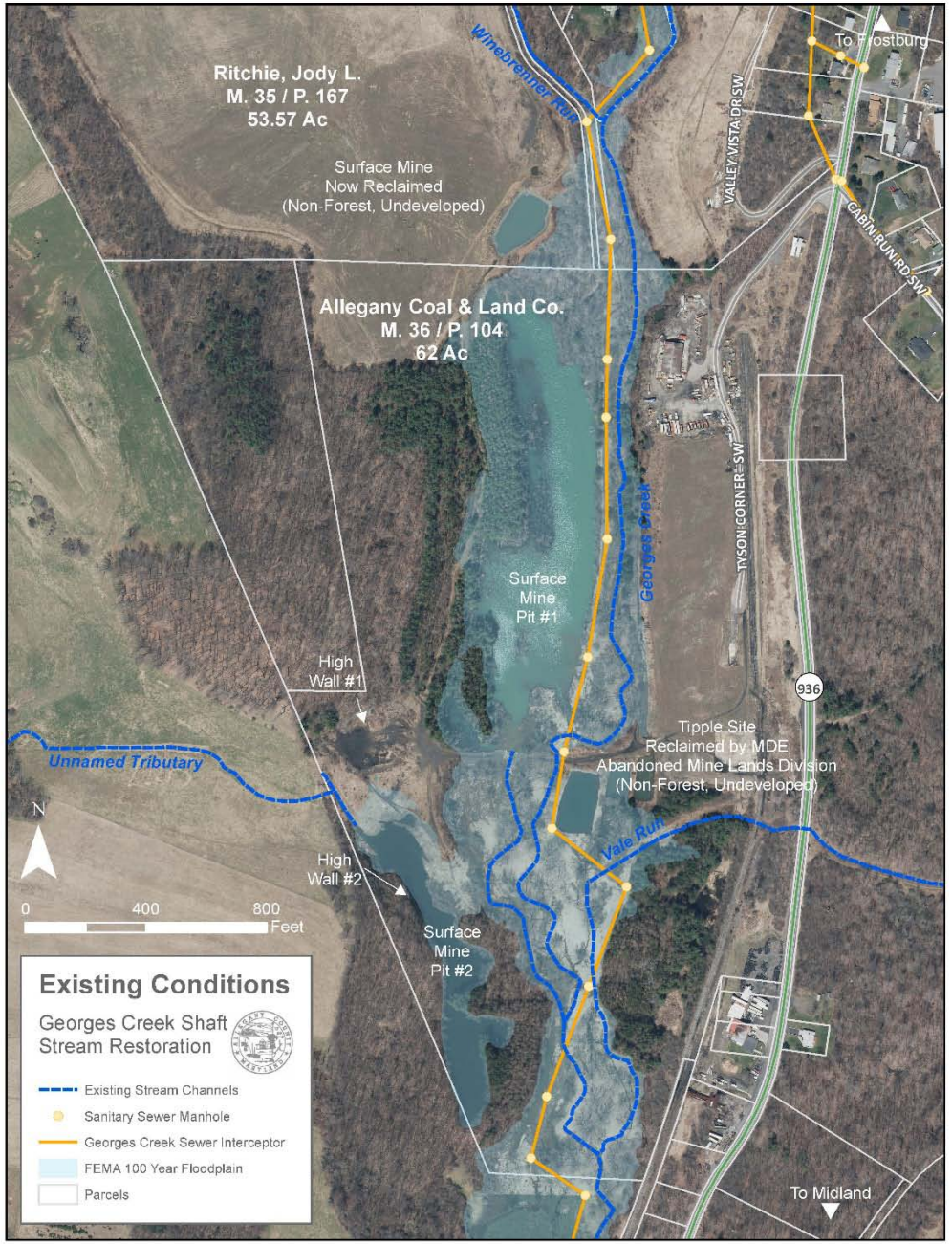

Sewer manhole in stream channel is never a good idea!

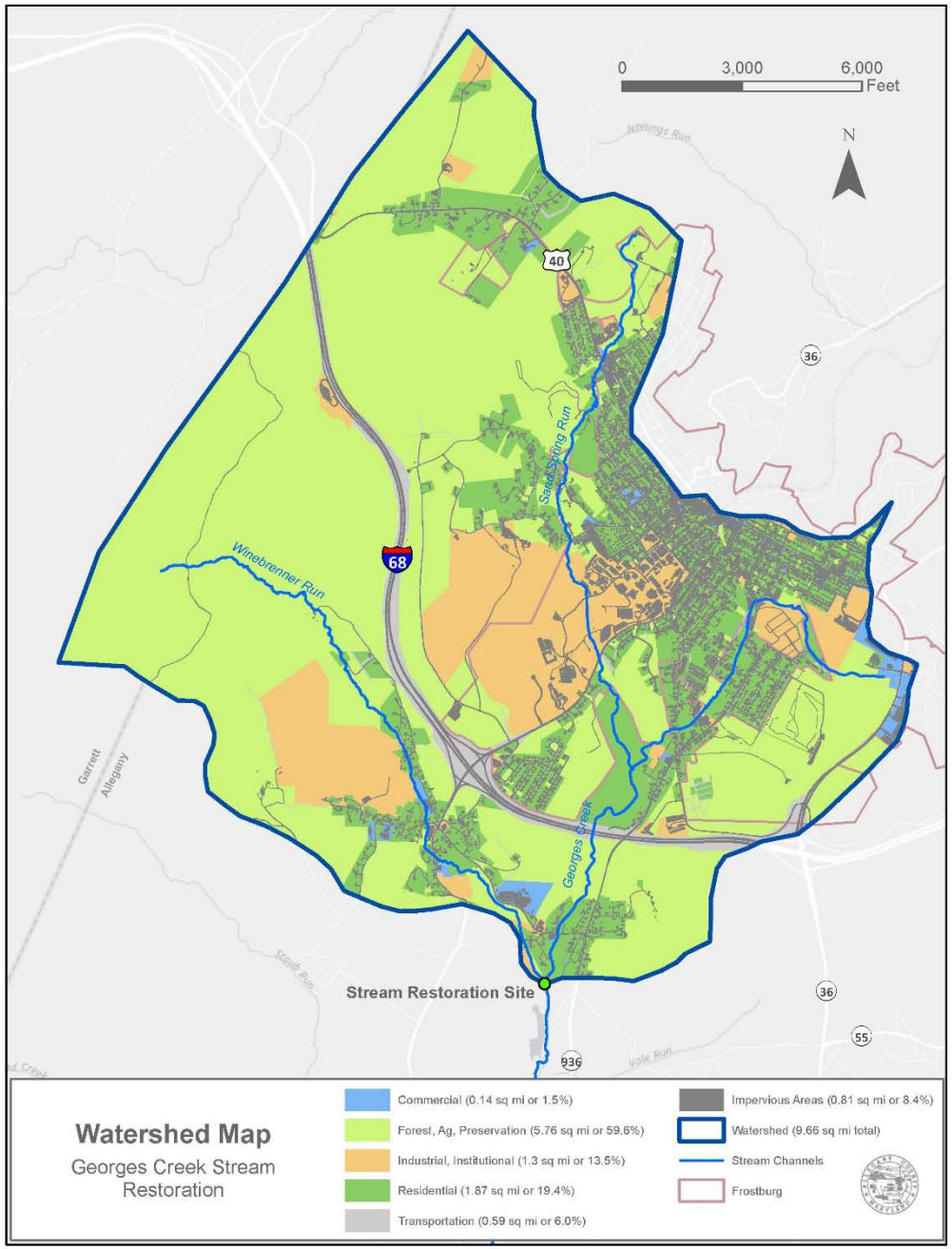
Why did we choose Georges Creek in Shaft?

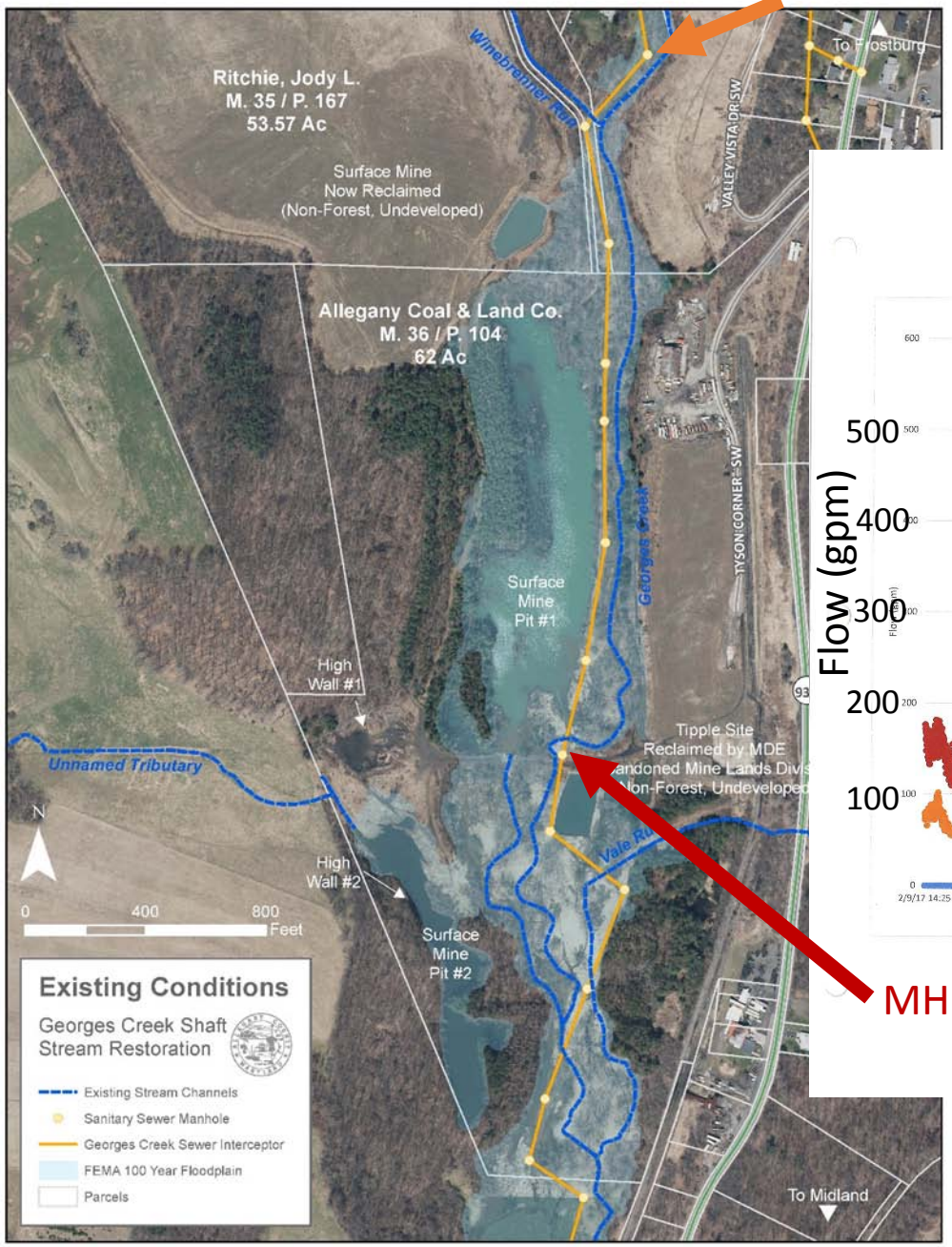
"Co-Benefits"

- Abandoned Surface Mine Pit
  - Water Quality: Interfering with stream channel; missing nutrient processing opportunity
  - Water Quantity: Loss of surface water into Hoffman Drainage Tunnel; redirecting flow to Braddock Run watershed
- Sewer Interceptor
  - Maintenance Access
  - Inflow & Infiltration overtaxes sewer line, contributes to sewer overflows

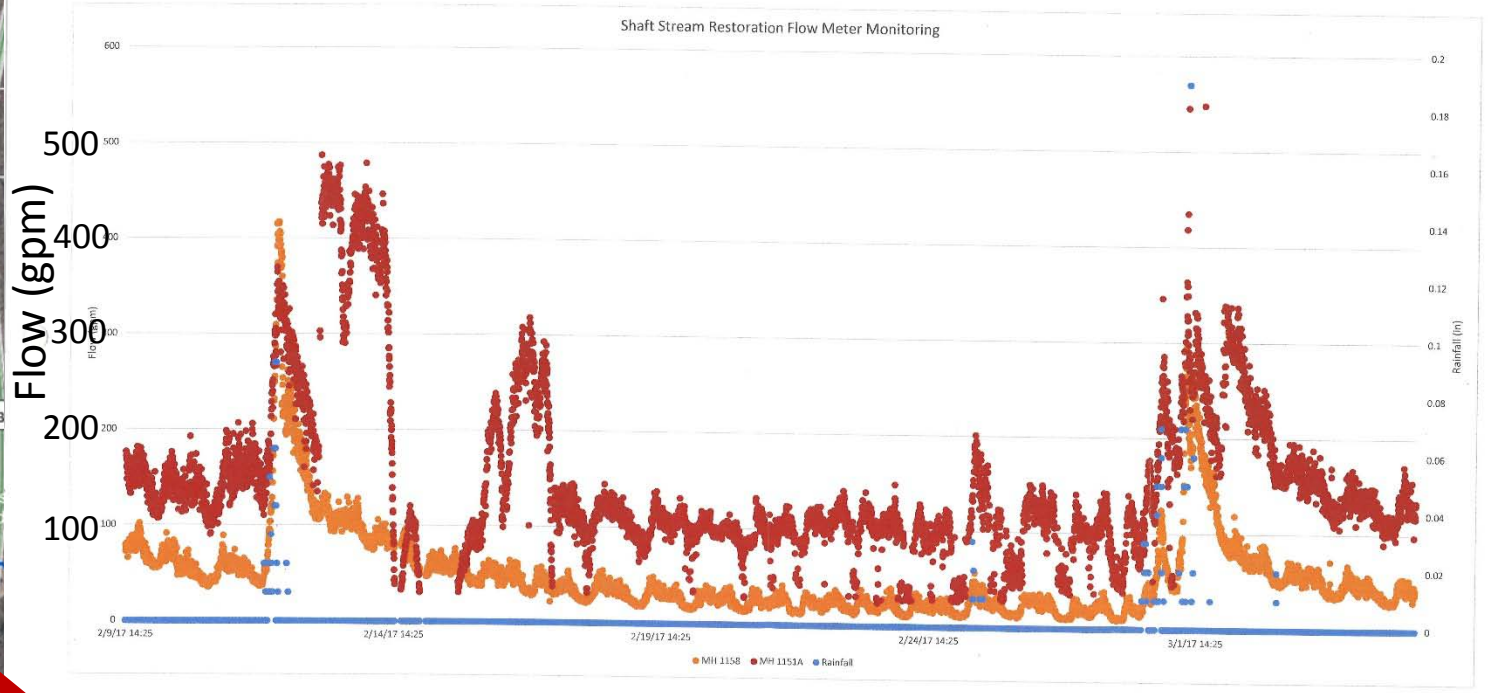



Ritchie, Jody L.
M. 35 / P. 167
53.57 Ac
Surface Mine
Now Reclaimed
(Non-Forest, Undeveloped)
Allegany Coal & Land Co.
M. 36 / P. 104
62 Ac
Surface
Mine
Pit #1
High
Wall #1
Tipple Site
Reclaimed by MDE
Abandoned Mine Lands Division
(Non-Forest, Undeveloped)
Unnamed Tributary
High
Wall #2
Surface
Mine
Pit #2
Winebrenner Run
Georges Creek
Vale Run
VALLEY VISTA DR SW
TYSONS CORNER SW
CABIN RUN RD SW
To Frostburg
To Midland
936
N
0
400
800
Feet
Existing Conditions
Georges Creek Shaft
Stream Restoration
Existing Stream Channels
Sanitary Sewer Manhole
Georges Creek Sewer Interceptor
FEMA 100 Year Floodplain
Parcels


0
3,000
6,000
Feet
N
40
36
68
Winebrenner Run
Saddle Spring Run
Georges Creek
Vale Run
Jennings Run
Garrett
Allegany
Stream Restoration Site
936
55
Watershed Map
Georges Creek Stream
Restoration
Commercial (0.14 sq mi or 1.5%)
Forest, Ag, Preservation (5.76 sq mi or 59.6%)
Industrial, Institutional (1.3 sq mi or 13.5%)
Residential (1.87 sq mi or 19.4%)
Transportation (0.59 sq mi or 6.0%)
Impervious Areas (0.81 sq mi or 8.4%)
Watershed (9.66 sq mi total)
Stream Channels
Frostburg



Sewer Flow Meter Monitoring Feb 9 – Mar 1, 2017



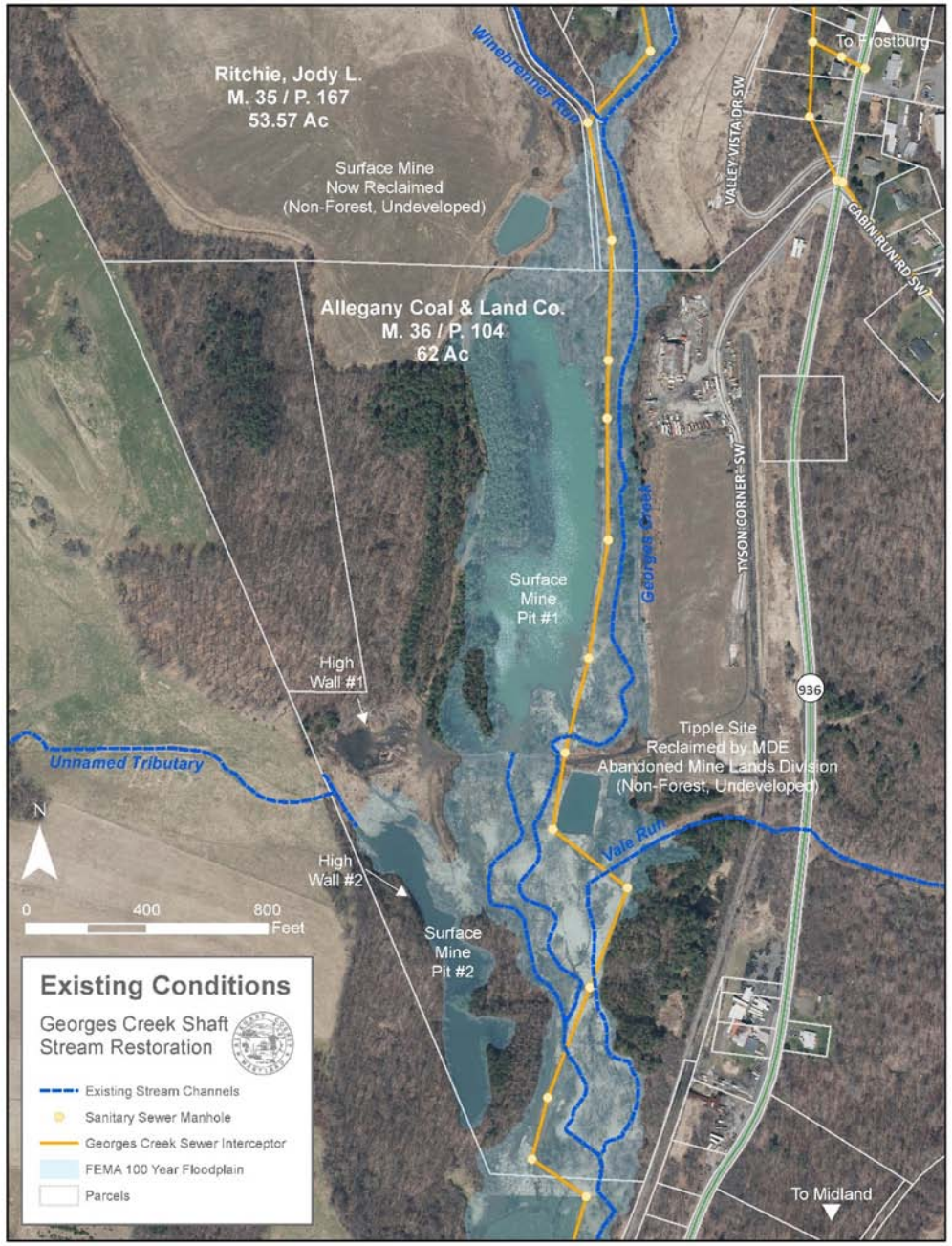

Hoffman Drainage Tunnel Facts
• Built in 1903-1906
• Built by Consolidation Coal Company because miners were standing in 1-2 ft of water in active deep mine shafts
• 2 miles long, 0.355% slope
• Bored conduits 4-6 ft. in circumference
Frostburg
Braddock Run
Georges Creek
Project Site
Hoffman Drainage Tunnel Daylight into Braddock Run

Hoffman Drainage Tunnel

- Redirects Georges Creek watershed to Braddock Run

Timeline

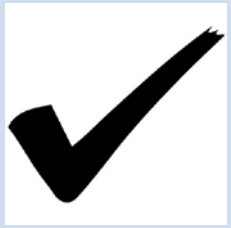
2012	Stream Restoration Priority List – Phase II WIP Milestone Goals
2014	Awarded Chesapeake Bay Trust Watershed Assistance 2-Year Milestone Support Grant **$60K** (administered by MDE)
2015	Completed Alternatives Analysis / Preliminary Engineering – Conceptual Design to fill and seal pit and realign Georges Creek
2017	Awarded Chesapeake & Atlantic Coastal Bays Trust Fund – Nonpoint Source Pollution Reduction Grant **$786K** (administered by DNR)
2017	MOA with MDE Abandoned Mine Lands Division, Mining Remediation Program **$1.2M**
2018	Contract Civil & Environmental Consultants, Inc. (CEC) for Final Design/Permitting **$202K**
2020	**Goal: Construction Complete**



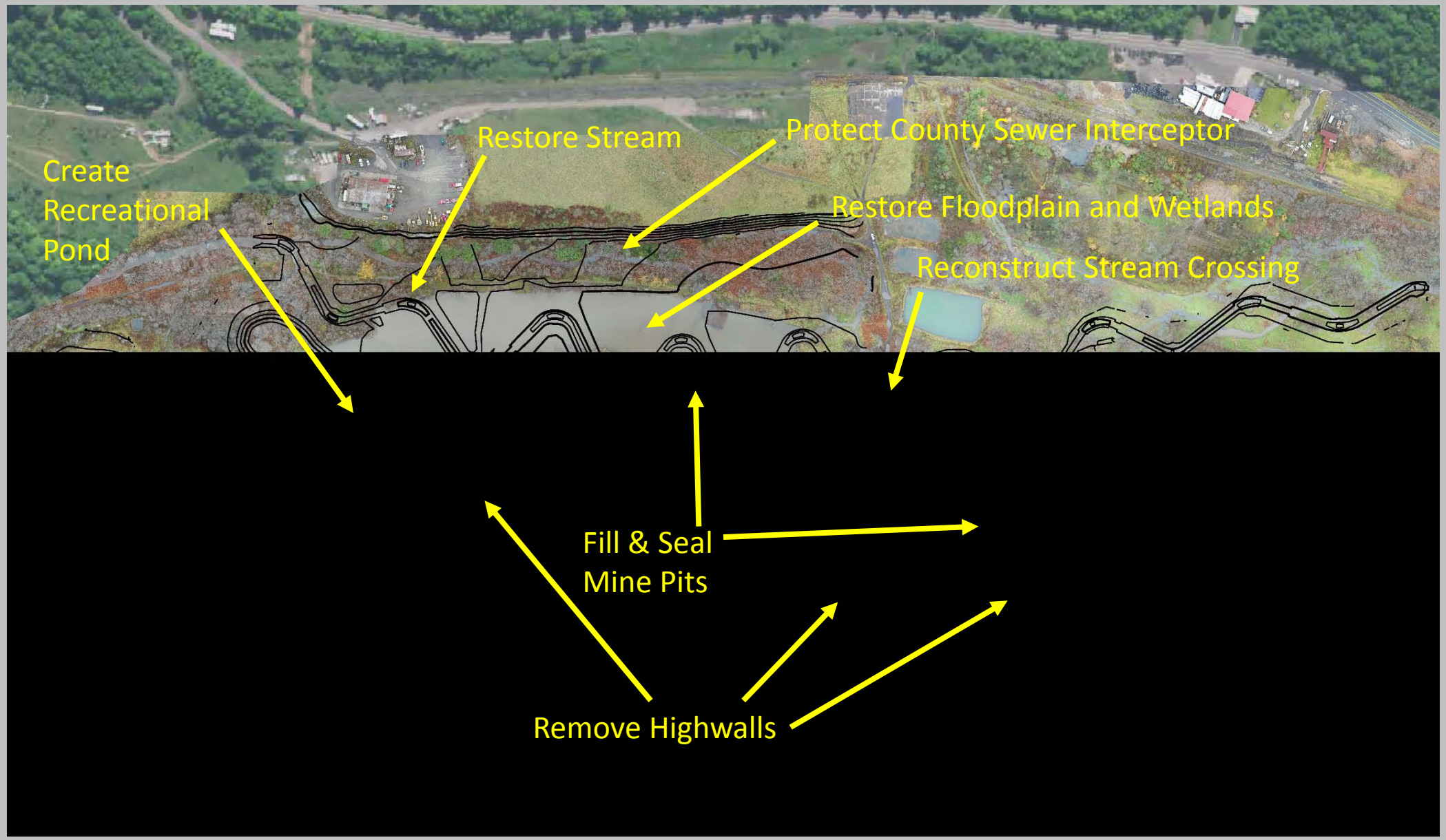
Project Goals

- Fill and Seal Surface Mine Pits #1 and #2
- Restore Georges Creek Channel and Floodplain
  - Maximize connectivity, habitat diversity, flood storage, riparian buffer
- Separate stream and sewer
- Reclaim High Walls #1 and #2
- Reconstruct stream crossing
- Construct public-use recreation pond

Permits Required

	State Clearinghouse Review by Maryland Department of Planning MDE – consistent with plans, programs & objectives MDP – consistent with plans, programs & objectives DNR Wildlife & Heritage – no comments re: species; support for project DNR Fisheries Service – no comments re: species; support for project DNR Chesapeake & Coastal Service – no comments re: species; support for project MHT – “no effect” on historic properties
	U.S. Army Corps of Engineers Nationwide Permit 27 - Aquatic Habitat Restoration, Enhancement, and Establishment Activities
	Maryland Department of the Environment Non-tidal Wetlands and Waterways Construction Permit
	Maryland Department of the Environment NPDES General Permit for Stormwater Associated with Construction Activity
	Allegany County Grading Permit (Sediment and Erosion Control, Stormwater Management)

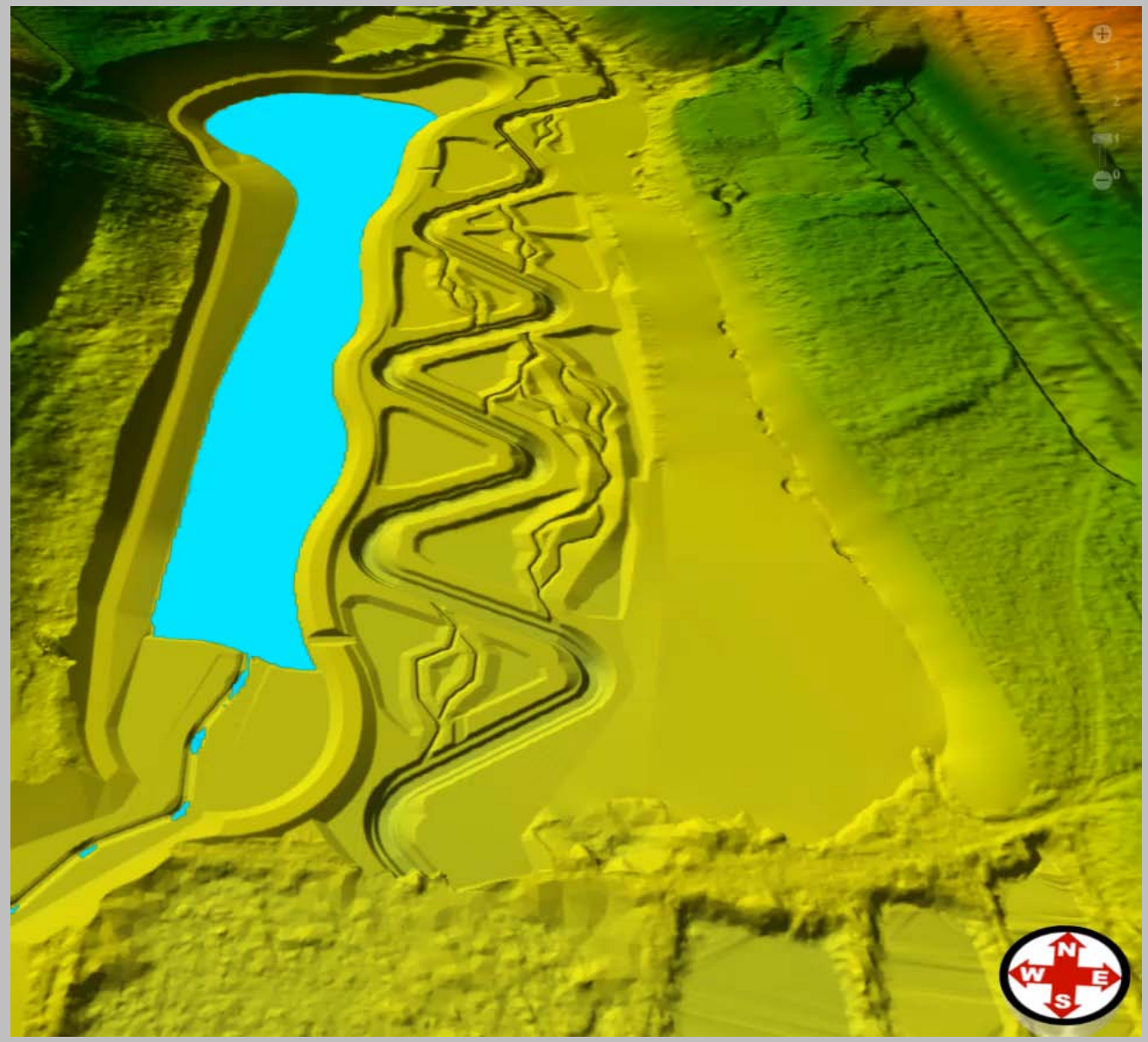
Initial Restoration Design

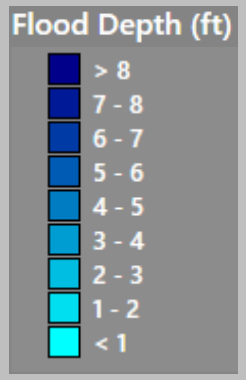


Stream Restoration Design Criteria

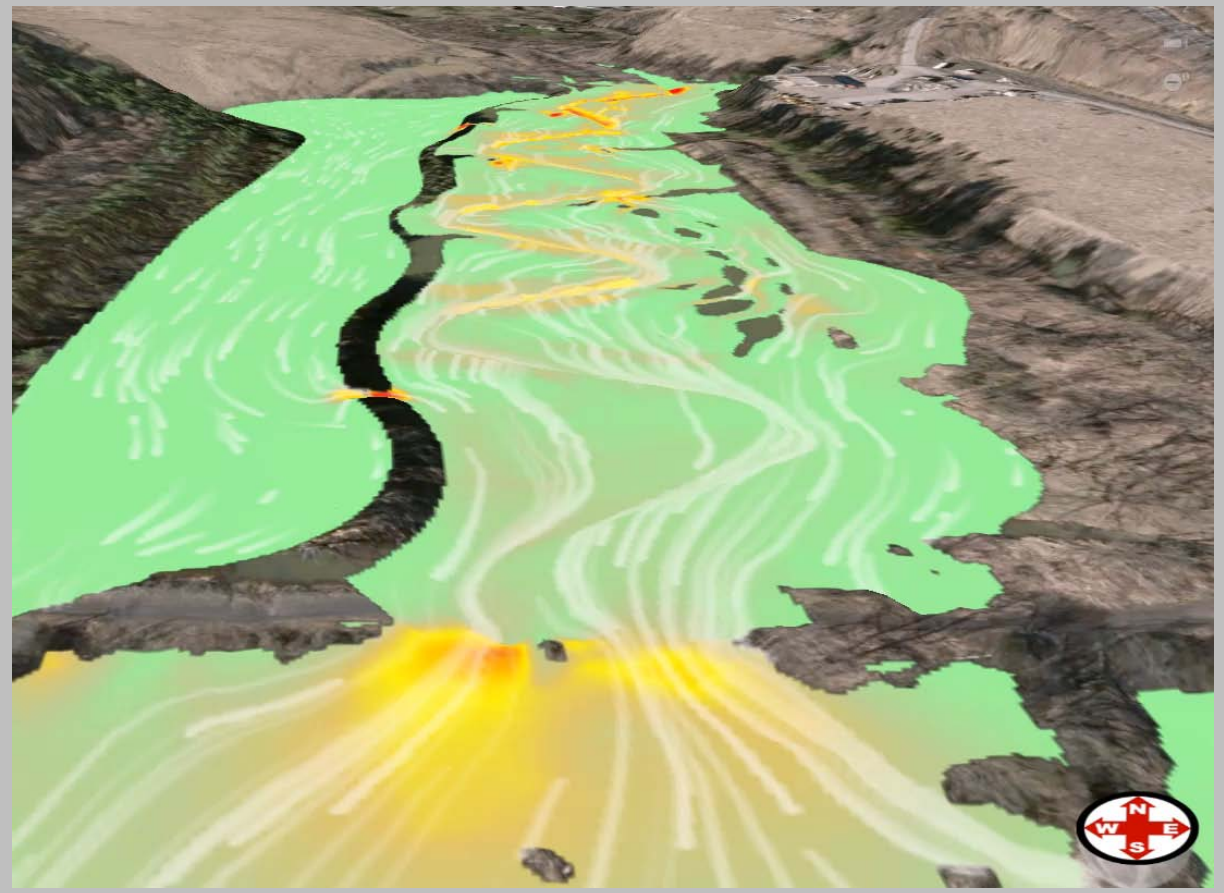
Georges Creek Design Criteria	
Design Parameter	Value
Drainage Area (mi^2)	10.2
Bankfull Discharge (cfs)	158
Bankfull Cross-sectional Area (ft^2)	66.5
Bankfull Width (ft)	33.7
Bankfull Depth (ft)	2.0
Bankfull slope (ft/ft)	0.009
Width to depth ratio (ft/ft)	17
Bankfull Shear Stress (lb/ft^2)	1.0

GeoHECRAS Model of Flood Depth for 2-Year Flood

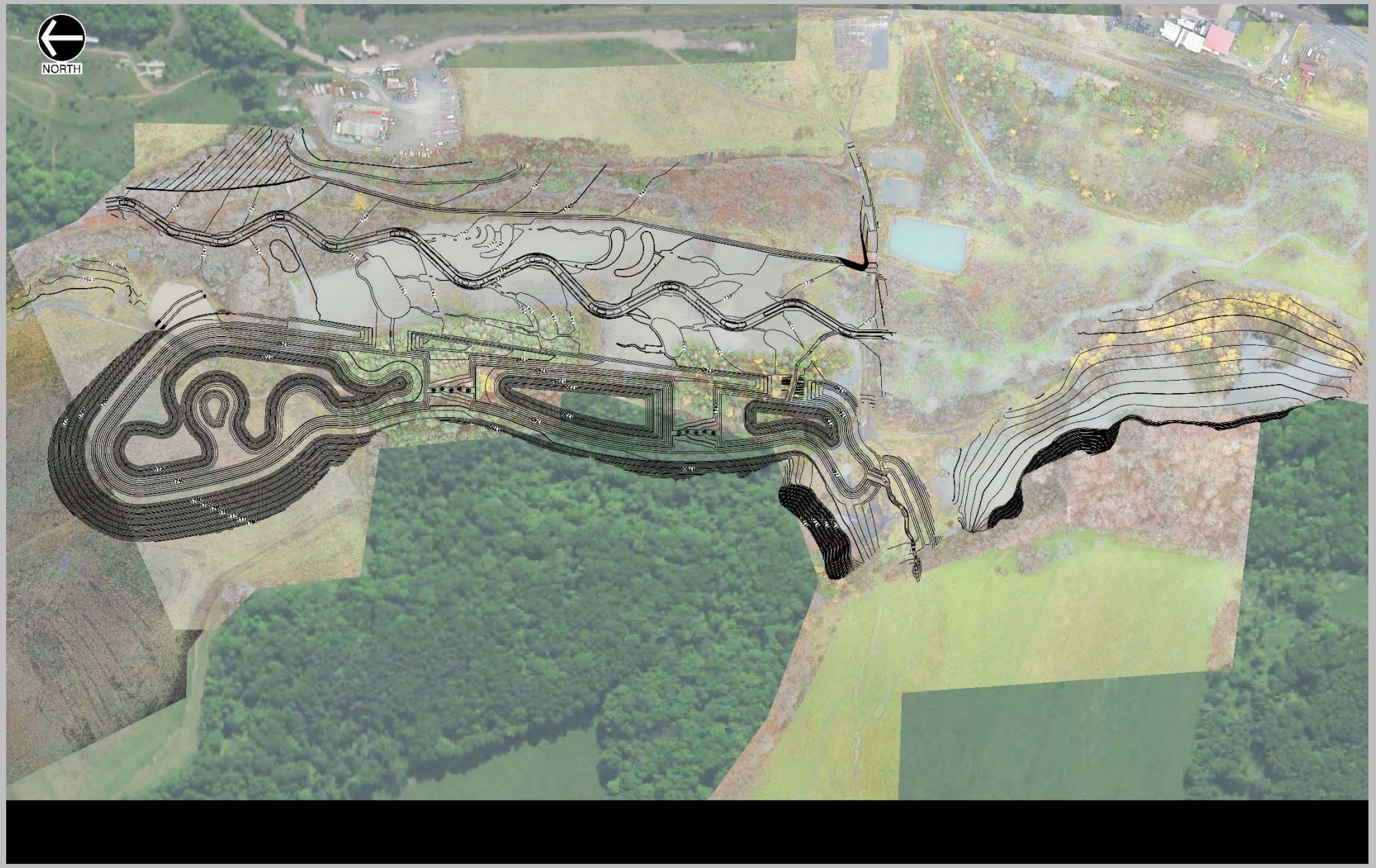




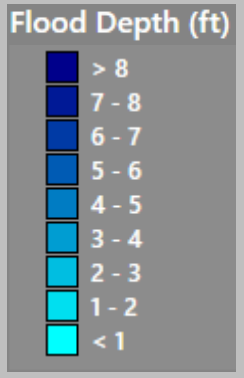
Modeled Shear Stress for 2-Year Flood

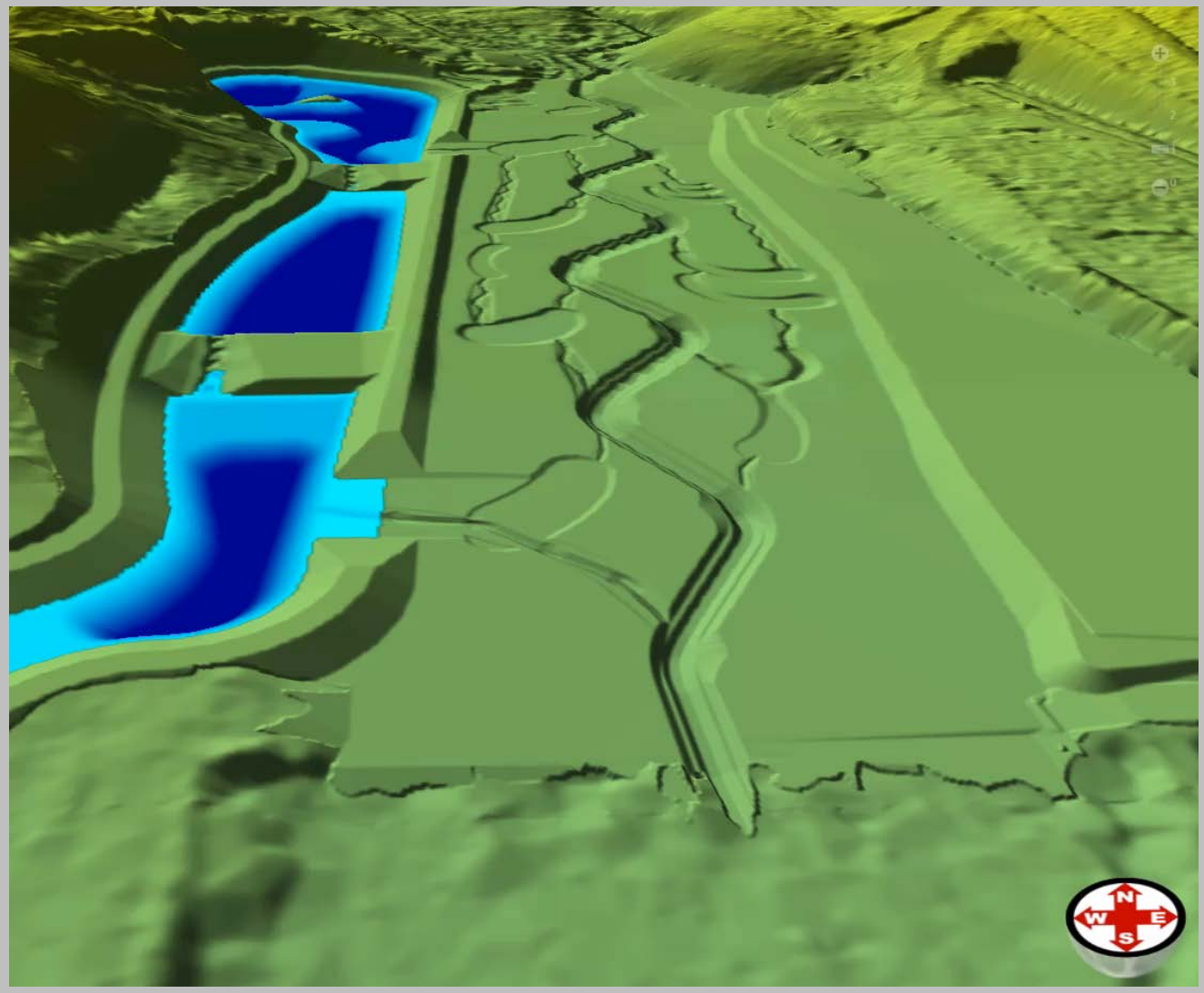


Revised Restoration Design

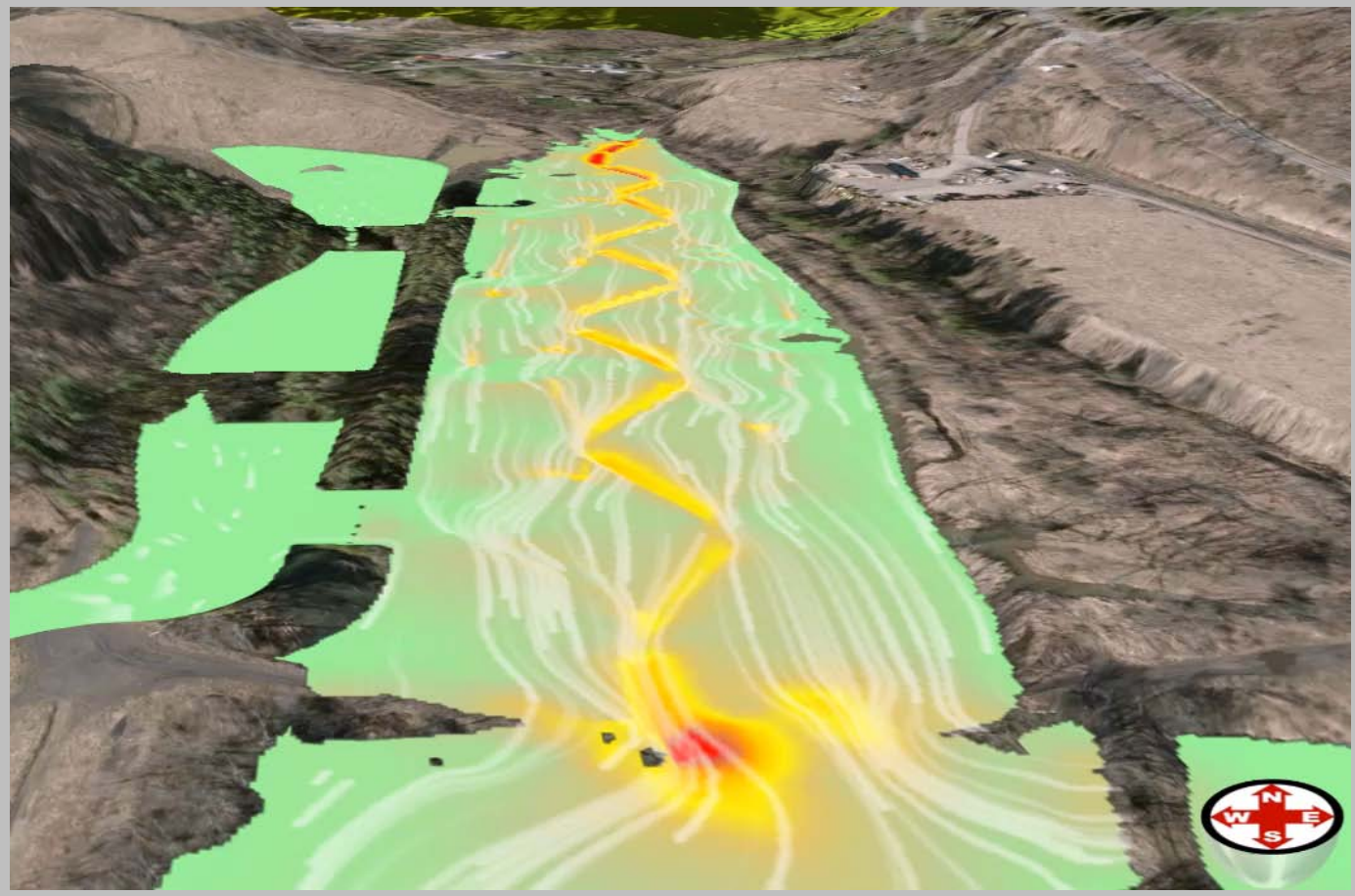


GeoHECRAS Model of Flood Depth for 2-Year Flood - Revised





Modeled Shear Stress for 2-Year Flood - Revised



PC 2yr Shear Stress (lb/ft²)

- > 2
- 1.75 - 2
- 1.5 - 1.75
- 1.25 - 1.5
- 1 - 1.25
- 0.75 - 1
- 0.5 - 0.75
- 0.25 - 0.5
- < 0.25

Your Thoughts and Questions