

Publicly Funded Mine Drainage Treatment or Abatement Project Information Sheet

General Project Information

Project Name and or No.: BELLWOOD (LLOYDVILLE RUN) SITE C PA-070
Location: Municipality and County: CAMBRIA
Watershed: BELLS GAP RUN
USGS Quadrangle: BLANDBURG
Latitude and Longitude: 40.665278000000001 -78.406389000000004

Contact Information

Contact Organization: PADEP BAMR
Contact Person: SCOTT HORRELL
Contact Address: 286 INDUSTRIAL PARK ROAD
EBENSBURG
PA
15931
Contact Telephone Number: 814472-1800
Contact Email: pmilavec@state.pa.us

Organization Currently Responsible For Project Operations, Monitoring and Maintenance

Is this organization different from Contact Organization? True
Organization Name: Altoona City Authority
Organization Contact Name: Tobias Nagle
Organization Contact Address: Westerly Wastewater Treatment Facility
3172 Rt. 764, Duncansville, PA 16635-7800
Organization Telephone Number: (814) 949-2250
Organization Email: acalab1@atlanticbbn.net

Site Information

Who owns the property the project is constructed upon?
Commonwealth of Pennsylvania, Pennsylvania Game Commission, State Game Lands #158

Driving Directions to the Project Site (from an easily identifiable reference point):
From Interstate 99 in Blair County, between the cities of Altoona and Tyrone, take the Bellwood Exit. The end of the exit ramp directs you immediately onto State Route 865. From the end of the exit ramp continue on SR 865 through the town of Bellwood, past the Bellwood Reservoir towards the village of Blandburg approximately 7.5 miles. Traveling from this direction the Site C system is immediately adjacent and visible on the right side of the road.

Special instructions for entry to the site (gates, keys, notifications or permissions, etc.):
There is an access road off of SR 865 which loops around the downslope perimeter of the system and then back up onto SR 865. This access road is open and not gated. The southern entrance is flatter and the Construction Entrance stone was left in place at SR 865 making a convenient pull-off area. This is the easiest and safest place to access the site. The entire Site C system is small and can be easily accessed on foot from here. The entire access road loop is only about 400 feet total in length. Any 2WD vehicle can normally travel to about the mid point on the access road, however backing out will most likely be required for 2WD. The northern portion of the access road to the northern access point at SR 865 is steeper, more rutted and often wet and soft. 2WD is not advised on this section of the access road.

Is there a perpetual access agreement for monitoring and O&M? No
Is the site readily accessible (by 2WD vehicle)? Yes. See "Special Instructions for Entry to the Site" above.
Was project completed as part of an overall watershed restoration plan? No
Is the plan available electronically? N/A
Could you provide the DEP a copy of the plan? N/A
Is a copy of the plan attached? N/A

Publicly Funded Mine Drainage Treatment or Abatement Project Information Sheet

Project Description (Describe the treatment system including each individual component):

Abandoned mine drainage had historically been a problem on SR 865 south of the village of Lloydville. The drainage seeped out along the western edge of the road and frequently upwelled and broke through the blacktop pavement. Subsurface drain was installed beneath the road which intercepted the mine drainage and conveyed it downslope to a 6 inch crosspipe beneath the road which discharged on the eastern side of SR 865 at the location of Site C. This pipe discharge and accumulated iron sludge spread downslope creating a small kill zone of approximately 0.2 acre which discharged into Lloydville Run, a tributary to Bells Gap Run which is the source water for the Bellwood Reservoir. The kill zone was also immediately adjacent to SR 865 and highly visible. The discharge average flow is about 5 GPM. The discharge is primarily iron laden with undetectable aluminum, net acidic with some alkalinity and low dissolved oxygen. An Anoxic Limestone Drain (ALD) system was designed and constructed for Site C.

The Site C System starts with a concrete encased 10 inch PVC pipe connection to the existing 6 inch mine drainage discharge pipe. The 10 inch PVC pipe is slid over the end of the discharge pipe, the gap between pipes sealed and the connection encased in concrete. The 10 inch connection pipe is then reduced to 6 inch PVC for the rest of the main plumbing. The 6 inch PVC extends to a 6 inch tee. Both the run and the branch off of this tee have a 6 inch PVC body gate valve installed on them. The run from the tee is the normal flow to the ALD. The branch from the tee is a 6 inch PVC bypass around the ALD to the Site C Sedimentation Pond. The bypass gate valve remains closed and the valve to the ALD open during normal operation. The valve to the ALD is closed and the bypass valve opened for raw water sampling or to bypass the ALD if necessary.

The ALD dimensions are 24 feet wide by 55 feet long by 4 feet deep. The ALD limestone is encapsulated within a 45 mil EPDM rubber liner that is sandwiched between inside and outside layers of 10 ounce non-woven geotextile. At the influent end the first 12 feet of the ALD is filled with R-3 limestone. The remainder of the ALD is filled with AASHTO No. 3 limestone. The 6 inch PVC pipe conveying the influent to the ALD pierces the ALD liner from the western side about 3 feet from the upstream end and 1 foot below the top. This 6 inch influent pipe runs through the width of the ALD R-3 limestone where it is perforated to distribute the flow within the ALD, and then exits with solid pipe through the liner on the opposite (eastern) side. After exiting the ALD the 6 inch PVC influent pipe is connected to a 6 inch PVC wye. The run from the 6 inch PVC wye is reduced down to 2 inch PVC which extends horizontally until it daylight on the downslope surface of the site. At the beginning of this 2 inch pipe, near the 6 inch wye, a 2 inch PVC ball valve is installed. The ball valve is hand lever operated and remains closed during normal operation. The ball valve is used for flushing the ALD influent area via the perforated section of 6 inch pipe within the stone inside the ALD. Back at the 6 inch PVC wye, the branch is oriented vertically upwards and extends with 6 inch PVC pipe to an elevation approximately 18 inches above the top of the ALD where it is fitted with a threaded end cap. This 6 inch branch is used as a clean-out for the ALD influent pipe. At the discharge end of the ALD a 6 inch PVC discharge pipe is embedded within the AASHTO No. 3 limestone about 3 feet from the end and 1 foot off of the bottom. The discharge pipe pierces the ALD liner on the opposite (eastern) side from the influent pipe. Inside the ALD the 6 inch PVC discharge pipe is capped on the upstream end. The length of pipe within the stone is perforated to drain the effluent from the ALD. Outside of the ALD the discharge pipe has a 6 inch PVC body gate valve installed for shutdown of the ALD if necessary. From the outside gate valve on the discharge pipe, 6 inch PVC runs to a 6 inch true wye fitting. This is a PVC fitting with a run and two branches in the shape of the letter "Y." The two branches of this true wye fitting are oriented vertically one up and one down. The bottom branch is reduced to 2 inch PVC which is configured in the same manner as at the influent pipe, daylighting on the site downslope with a 2 inch flushing ball valve installed. The top branch off of the true wye runs upward to a 45° fitting which turns the piping horizontal to a short 6 inch PVC horizontal pipe section which discharges the final effluent from the ALD. In order for the ALD to operate completely full of water, the invert of this final horizontal section of discharge pipe is located at 1 inch above the top of the ALD. All gate valves are covered with valve boxes which extend to the surface with locking lids and are equipped with extension rods from the valve operating nut to the top of the box to allow for valve operation using a short operating key. The influent pipe 6 inch PVC clean-out and both 2 inch PVC flushing ball valves are covered with utility boxes that extend to the surface and have locking lids.

The ALD effluent from the discharge pipe aerates through an approximate 12 inch fall into a grouted R-3 limestone channel. The channel falls 3 feet over an approximate 30 foot length, further aerating the ALD effluent and discharging it into the Site C Sedimentation Pond.

The Site C Sedimentation Pond is approximately 75 feet long by 40 feet wide and approximately 0.06 acres at the top of embankment inside perimeter. The total depth of the Sedimentation Pond is 4.5 feet with 3:1 side slopes and a design water depth of 3 feet and 18 inches of freeboard which translates to a design water surface area of approximately 0.04 acres. The pond is lined with 18 inches of compacted impervious soil obtained from best available on-site excavated material. The principal discharge structure for the sedimentation pond is a 10 inch PVC pipe that runs through the embankment and under the access road. The influent end of this pipe is supported within a headwall constructed with timbers manufactured from recycled plastics. The influent end of this pipe is also enclosed within a custom made trash rack, fabricated from plastic and fiberglass materials, that is anchored to the headwall. The Site C Sedimentation Pond emergency spillway is a 15 inch corrugated plastic pipe set with invert 6 inches above the invert of the principal discharge pipe. This emergency spillway pipe also runs parallel with the principal discharge pipe through the embankment and under the access road. Both of these spillway pipes discharge to a grouted R-3 limestone slope protection pad. The pad conveys the Site C system final effluent approximately 12

Publicly Funded Mine Drainage Treatment or Abatement Project Information Sheet

feet downslope into an adjacent ditch that runs from an upstream road culvert under SR 865. The Site C system final effluent then runs within this ditch approximately 90 feet and discharges to Lloydville Run.

Pre-Construction Discharge Flow and Monitoring Data

Is data available electronically? Yes
In what format? Microsoft Excel X Access Database Other(specify)
Indicate how flow was measured: Bucket & Stopwatch
Indicate laboratory that analyzed samples (or whether field kits were used) DEP Lab
Could you provide this data to the DEP? Yes
Is a copy of the data attached? No

Pre-Construction Receiving Stream Flow and Monitoring Data

Is data available electronically? Yes
In what format? Microsoft Excel X Access Database Other(specify)
Indicate how flow was measured: No Flow Measurement
Indicate laboratory that analyzed) DEP Lab
Were any biological or fish surveys completed? Yes
Could you provide this data to the DEP? Yes
Is a copy of the data attached? No

Treatment System Design Information and Criteria

Who or what firm completed project design? (Include name, address, phone, email and contact person, if available): MAX SCHEELER

PADEP BAMR

814 472 1800

Are digital photographs of the site before, during and/or after construction available? Yes

Was there a Specific Restoration or Treatment Goal for this treatment system? Yes

If yes, please describe the goal: Enhance source water quality for Bellwood Reservoir and improve aquatic habitat in Bells Gap Run

What is the Design Flow Rate? 7 GPM

Other design criteria (retention time, acidity loading or removal rate, metals loading or removal rate, alkalinity generation rate, etc.) Design Life = 25 Years

ALD Design Retention Time = 15 Hours at the end of the 25 year design life. ALD design retention time was calculated for the AASHTO No. 3 portion of the ALD only and accounting for limestone dissolution over the design life using 200 mg/L alkalinity generation for a stone dissolution factor and 87% CaCO₃ content for the stone. Retention time for the newly completed ALD based on the total stone volume = 47 hours.

Sedimentation Pond Design Retention Time = 32 Hours at the end of the 25 year design life accounting for sludge accumulation over the design life using 60 mg/L of metals and 1.09 gm/cm³ of sludge. Retention time for the newly completed sedimentation pond is 54 hours.

Does the treatment system take all of the flow or is some of the flow bypassed? All

Plans and Specifications:

As-Bid Project Drawings and Technical Specifications

Is this information available electronically? Yes

Could you provide the DEP a copy of the plan? Yes

Is a copy attached? No

As-Built Drawings

Is this information available electronically? Yes

Could you provide the DEP a copy of the plan? Yes

Is a copy attached? No

Publicly Funded Mine Drainage Treatment or Abatement Project Information Sheet

Construction and Project Funding Information

What year was the project constructed? 2001
When (specific date) did project construction begin? August 8, 2000
When (specific date) was project construction completed? October 10, 2001
Who was the Construction Contractor? (Name, Address, Phone, email, contact person)
T.J. Mining, Inc., P.O. Box 370, Carrolltown, PA 15722
When (specific date) did the treatment system go on-line? November 21, 2001 first ALD effluent sample taken.

Primary Funding Partners, and funding provided:

Source	True or false	Amount
Title IV, Appalachian Clean Streams	True	\$166,454.65
PADEP Growing Greener	True	\$337,515.39
10% AMD Set Aside Funds	False	\$.00
EPA Section 319	False	\$.00
OSM Watershed Cooperative Assistance Program	False	\$.00
NRCS	False	\$.00
EPA Watershed Protection	False	\$.00
USCOE	False	\$.00
University	False	\$.00
Private/Foundation	False	\$.00

 : The Bellwood (Lloydville Run) Project included the Site A, Site B and Site C treatment systems plus surface reclamation. The above amounts are for the project total. Costs for individual systems were not calculated.

How or by whom was treatment system construction funded or other funding not included in the table?

Source	Amount
	\$.00
	\$.00

Post Construction Operation, Monitoring and Maintenance

Is there a Sampling and Monitoring Plan? Yes. Sampling Plan is included in O&M Plan
Is the plan available electronically? Yes
Is a copy of the plan attached? No
Is treatment system currently being sampled and monitored? Yes
If so, by whom? Altoona City Authority
Approximately how many hours per year are spent doing O,M&M for this system? Don't Know
Where are samples being analyzed? (Name, Address, Phone, email, contact person) DEP Lab
If DEP Lab is being used, what is the project ID and the Sample Information System (SIS) monitoring point IDs? See Attached
Is there an Operation and Maintenance Plan? Yes
Is the plan available electronically? Yes
Could you provide the DEP a copy of this information? Yes
Is a copy of the information attached? No

Comments on the treatment system: _____

Publicly Funded Mine Drainage Treatment or Abatement Project Information Sheet

Post- Construction Discharge Flow and Monitoring Data

Is the data available electronically? Yes
In what format? Microsoft Excel X Access Database Other(specify)
Indicate how flow was measured: Bucket and Stopwatch
Could you provide the DEP a copy of this information? Yes
Is a copy of the information attached? No

Post-Construction Receiving Stream Flow and Monitoring Data

Is the data available electronically? Yes
In what format? Microsoft Excel X Access Database Other(specify)
Indicate how flow was measured: No Stream Flow Measurement Taken
Could you provide the DEP a copy of this information? Yes
Is a copy of the information attached? No
Were any biological or fish surveys that were completed on the receiving stream? Yes

Treatment System Maintenance and/or Rehabilitation

Has rehabilitation work been performed at the site? No
True(yes) or false(no): False

If yes, please list the rehabilitation activity.

If yes, please list the date of rehabilitation. 0

If yes, please list the rehabilitation cost. \$.00

What routine or non-routine maintenance issues have arisen since system was put online?

Utility boxes over both 2 inch ball valves used for flushing the ALD have become full of ground water submerging both valves under about 12 inches of water.

How was maintenance work funded? This issue has not yet been addressed.

What routine or non-routine maintenance is currently needed or anticipated in the next 1-3 years?

Install permanent drains to correct the issue discussed above.

Other Comments

Person(s) Completing this Form (Name, Address, Phone, email, Date Completed):

Max Scheeler, DEP BAMR Cambria Office

286 Industrial Park Road, Ebensburg, PA 15931

(814) 472-1800, mscheeler@state.pa.us

Form Completed: 03/30/2009

Is there any other person, company or organization that should be contacted for information about this treatment system or the information requested in this form?

(Include Name, Address, Phone, email, etc): None

Publicly Funded Mine Drainage Treatment or Abatement Project Information Sheet

Attachments

DEP Sample Information System (SIS) - Monitoring Points For Bellwood (Lloydville Run) Site C Project

03/30/2009

Project/Monitoring Points

Page 1

Project Unit: Abandoned Mine Reclamation
Project ID: PA2568
Project Name: Bellwood(Lloydville Run)

State: PA

County: Cambria

Municipality: Reade Twp

MP Alias/ID	Type	Latitude	Longitude	Elevation	Active	Inactive	Last Sampled	Location/Name
ABRAM/STB/69747	STRM	40-39-52	078-24-04	2,176.00	09/20/2002			Bellwood (Lloydville Run)
ASAP/SED/69749	MPTRM	40-39-49	078-24-09	2,169.00	09/20/2002			Site A SAP discharge to sediment pond.
ASED/WET/69750	MPTRM	40-39-51	078-24-09	2,162.00	09/20/2002			Site A sediment pond discharge to wetland.
ASTB/SAP/69748	MPTRM	40-39-51	078-24-06	2,176.00	09/20/2002			Site A SAP influent from stabilization pond.
AWETOUT/69751	MPTRM	40-39-51	078-24-08		09/20/2002			Site A system final discharge from wetland.
BG1/68445	STRM	40-38-12	078-23-38		05/17/2002			Bells Gap Run Upstream Reservoir
BG2/68446	STRM	40-38-19	078-23-43		05/17/2002			Shaw Run Mouth
BG3/68447	STRM	40-38-25	078-23-59		05/17/2002			Bells Gap Run downstream Lloydville Run
BG4/68448	STRM	40-38-35	078-24-12		05/17/2002			Bells Gap Run upstream Lloydville Run
BG5/68449	STRM	40-38-39	078-24-06		05/17/2002			Lloydville Run Mouth
BG6/68450	STRM	40-39-25	078-24-18		05/17/2002			Lloydville Run 1 mile upstream of BG5
BG7/68451	STRM	40-40-09	078-24-22		05/17/2002			Lloydville Run Headwaters
BLR1/58755	STRM	40-39-51	078-24-10	2,150.00	02/10/2000			UNT Lloydville Run Weir At Abandoned RR Grade
BLR2/58756	STRM	40-39-49	078-24-21	1,995.00	02/10/2000			Lloydville Run Upstream Of UNT
BLR3/58757	STRM	40-39-48	078-24-21	1,990.00	02/10/2000			Lloydville Run Downstream Of UNT
BLR4/58758	MDSEP	40-39-54	078-24-24	2,105.00	02/10/2000			Discharge From Pipe Under Rt865, ALD Source
BLR5/58782	STRM	40-39-56	078-24-22	2,040.00	02/11/2000			Lloydville Run Upstream Of ALD
BOLC/WET/69754	MPTRM	40-39-57	078-24-07	2,166.00	09/20/2002			Site B OLC discharge to wetland.
BSEDOUT/69767	MPTRM	40-39-52	078-24-08	2,164.00	09/23/2002			Site B system final discharge from sed. pond.
BSTB/OLC/69753	MPTRM	40-39-52	078-24-06		09/20/2002			Site B stb. pond discharge to open limestone channel.
BWET/SED/69755	MPTRM	40-39-54	078-24-08	2,166.00	09/20/2002			Bellwood (Lloydville Run)

Publicly Funded Mine Drainage Treatment or Abatement Project Information Sheet

03/30/2009

Project/Monitoring Points

Page 2

Project Unit: Abandoned Mine Reclamation
Project ID: PA2568
Project Name: Bellwood(Lloydville Run)

State: PA County: Cambria Municipality: Reade Twp

MP Alias/ID	Type	Latitude	Longitude	Elevation	Active	Inactive	Last Sampled	Location/Name
CALD/SED/69758	MPTRM	40-39-55	078-24-23	2,090.00	09/20/2002			Site C system final discharge from sediment pond.
CRAW/ALD/69757	MDSEP	40-39-55	078-24-22	2,090.00	09/20/2002			Site C ALD discharge to sediment pond.
CSEDOUT/69761	MPTRM	40-39-56	078-24-22	2,090.00	09/23/2002			Site C system final discharge from sediment pond.
LVRUSC/69764	STRM	40-39-56	078-24-21	2,070.00	09/23/2002			Lloydville Run upstream of Site C.
SAPOUTE/70646	MPTRM	40-39-49	078-24-16	2,169.00	12/10/2002			SAP EAST OUTLET (FLUSH WATER)
SAPOUTM/70647	MPTRM	40-39-48	078-24-17	2,152.00	12/10/2002			SAP MIDDLE OUTLET (FLUSH WATER)
SAPOUTW/70648	MPTRM	40-39-47	078-24-19	2,133.00	12/10/2002			SAP WEST OUTLET (FLUSH WATER)
UNTATLVR/69763	STRM	40-39-49	078-24-20	1,995.00	09/23/2002			Mouth of UNT at Lloydville Run.
UNTDSRR/69762	STRM	40-39-52	078-24-10	2,140.00	09/23/2002			UNT downstream of railroad grade.