UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

MAR 29 2010

REPLY TO THE ATTENTION OF:

WW-16J

U.S. Army Corps of Engineers, Pittsburgh District
1000 Liberty Avenue
Pittsburgh, Pennsylvania 15222-4186
ATTN: Allen Edris

Re: Public Notice No. 2003-1526 / The Ohio Valley Coal Company-No. 3 Impoundment

Dear Mr. Edris:

The United States Environmental Protection Agency has reviewed the subject public notice issued on December 5, 2009, the Section 401/404 revised permit application dated December 4, 2009, and the addendum to the application dated December 18, 2009 associated with the proposed construction of a 12,908 acre-foot coal slurry impoundment (No. 3 Impoundment) in Washington Township, Belmont County, Ohio. The proposed No. 3 Impoundment would be constructed immediately west of the existing No. 2 Impoundment on Perkins Run within the Casey Run watershed. The No. 3 Impoundment would have a surface footprint of 130 acres. The project includes an embankment that will ultimately be constructed to an elevation of 1,200 feet, a decant structure and outlet, and an open channel emergency spillway. Approximately 11,421,000 cubic yards of coarse refuse and 25,376,000 cubic yards of fine refuse (slurry) would be discharged into the impoundment.

This letter is a follow-up to the letter addressed to Colonel Michael P. Crall, District Engineer, dated January 4, 2010. The following sections will provide detailed comments based on our review of the above mentioned documents:

Section 401/404 Permit Application

Section 2.2-Project Purpose and Need

The Powhatan No. 6 Mine is operated by The Ohio Valley Coal Company (TOVCC) and the Century Mine is operated by American Energy Corporation (AEC), both subsidiaries of Murray Energy Corporation (MEC). Combined they produce approximately 16,000,000 tons of clean coal per year from the Pittsburgh #8 seam. According to TOVCC, the purpose of the project is to provide 16 years of fine and coarse refuse disposal life for coal generated from the Powhatan No. 6 and Century underground mining operations. TOVCC projects that at the current production levels of both mines, the No. 2 impoundment will be filled by 2011. However, TOVCC does not provide any

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information to substantiate that projection. It is imperative that the applicant clearly demonstrate through a table and narrative how they arrived at the conclusion that the current impoundment will be filled by 2011.

Section 3-Existing Resources

3.2 Summary of Existing Aquatic Resources

Table 2, *Summary of Existing Streams within the No. 3 Impoundment Area*, must include Headwater Habitat Evaluation Index (HHEI) or Qualitative Habitat Evaluation Index (QHEI) scores (whichever has been calculated for a given stream reach) for all stream reaches assessed just as Ohio Rapid Assessment Method (ORAM) scores are included for each wetland inventoried within the No. 3 Impoundment area (Table 1).

3.3.2 Casey Run Stream Use

Casey Run is designated Warmwater Habitat (WWH) and is a direct tributary to Captina Creek. Captina Creek is designated Exceptional Warmwater Habitat (EWH) and listed by the State of Ohio as an Outstanding State Water (OSW). According to Ohio Administrative Code (OAC) Chapter 3745-1-07, Warmwater Habitat is defined as "...waters capable of supporting and maintaining a balanced, integrated, adaptive community of warmwater aquatic organisms having a species composition, diversity, and functional organization comparable to the twenty-fifth percentile of the identified reference sites within each ecoregion" [paragraph (B)(1)(a)]; and Exceptional Warmwater Habitat is defined as "...waters capable of supporting and maintaining an exceptional or unusual community of warmwater aquatic organisms having a species composition, diversity, and functional organization comparable to the seventy-fifth percentile of the identified reference sites on a statewide basis" [paragraph (B)(1)(c)]. According to OAC Chapter 3745-1-05, Captina Creek is an OSW based on exceptional ecological values from River Mile (RM) 25.42, which is upstream from Casey Run, down to RM 0.7, just before it enters the Ohio River – a total of approximately 25 miles (almost its entire length).

R.D. Zande and Associates, Inc. (Zande), a TOVCC consultant, performed a use attainability analysis for Casey Run in 2003. Zande conducted physical habitat assessments in August using the QHEI. QHEI scores were calculated at RM 0.08 and 1.4. Scores for the two stations were 57 and 61, respectively. However, this method is generally less suitable for streams with a drainage area of less than 1.0 square mile than the HHEI. Zande also conducted a fish community and macroinvertebrate assessment in Casey Run using methods specified in the Ohio Environmental Protection Agency (OEPA) guidelines. A total of 8 fish species and 275 individuals were recorded at RM 0.08 on two sampling dates, and no fish were collected at RM 1.4. The Index of Biotic Integrity (IBI) score for RM 0.08 was 44, which would normally support a WWH designation (WWH = 40-48). Zande's analysis concluded that Casey Run was in partial attainment of WWH downstream of the proposed dam at RM 0.08 but in non-attainment at an upstream location at RM 1.4. Reasons for non-attainment were determined to be

natural (inadequate flow and habitat diversity). However, these results should be given less weight because the QHEI method is not designed for use in small streams (less than 1.0 square mile). Also, according to Zande, macroinvertebrate data were difficult to evaluate due to low taxonomic resolution and damaged specimens. This stated difficulty raises methodological concerns.

Zande concluded that because there were no fish present at RM 1.4, the stream is ineligible for WWH designation, and the company expressed its professional opinion that the reach upstream of RM 0.08 is a Limited Resource Water (LRW). However, 2 of the 8 fish species collected at RM 0.08, Redside Dace (*Clinostomus elongatus*) and Southern Redbelly Dace (*Phoxinus erythrogaster*), are coldwater species. According to the OEPA field evaluation manual for Primary Headwater Habitat (PHWH) streams, the presence of coldwater fish triggers the coldwater use designation.

In July 2004, OEPA collected physical habitat data at RM 0.75-0.77, 1.13, and 1.43-1.45 of Casey Run using the HHEI method. The substrate consisted largely of bedrock, cobble, gravel and sand; pool depth ranged between 10 and 22 cm; bankfull width varied from 1.5 to greater than 4.0 m; sinuosity and stream gradient were moderate; and the riparian zone was forested. The scores at each of the three stations were 84, 83 and 73, respectively. All of the scores are above the minimum score of 70 needed to achieve Class III PHWH stream status. As described in the Ohio EPA PHWH Manual (2002):

> "Class III-PHWH streams represent a very unique assemblage of cool-cold water adapted species of fish, and/or salamanders, and/or cool water adapted benthic macroinvertebrates that require flowing water on an annual basis for the resident species to complete their life cycles...Class III PHWH streams should receive water quality criteria protection identical to larger streams currently designated Cold Water Habitat (CWH), OAC, Chapter 3745-1."

Thus, the habitat rating assigned to the stream by OEPA indicates that the habitat is consistent with that required of a coldwater aquatic community. OEPA also sampled for fish, macroinvertebrates and salamanders at three locations on Casey Run. No fish were caught at any of the three locations. During macroinvertebrate sampling, OEPA collected 33 taxa at RM 0.75 of which 4 were coldwater taxa, 18 taxa at RM 1.13 of which 5 were coldwater taxa, and 23 taxa at RM 1.43 of which 7 were coldwater taxa. OEPA calculated the Headwater Macroinvertebrate Field Evaluation Index (HMFEI) for the three locations. Scores were 29, 33 and 27, all of which exceed the minimum score of 19 needed to be classified as a Class III PHWH stream.

Several tributaries to Casey Run were also sampled. These also contained many coldwater taxa. A total of 13 distinct coldwater macroinvertebrate taxa were collected across the various mainstem and tributary sampling locations on Casey Run.

The dominant species of salamander present was the Two-lined Salamander (*Eurycea bislineata*), a coldwater species that requires conditions typical of small, high-gradient headwater streams, such as relatively low temperature and high dissolved oxygen. Overall, 54 coldwater salamander larvae and no non-coldwater larvae were

collected. 6 coldwater salamander juveniles/adults and 5 non-coldwater juveniles/adults were collected. OEPA field personnel estimated that 5-10 Two-lined Salamander larvae per square meter were present in the stream. Both macroinvertebrate and salamander data further support designation of Casey Run as CWH.

On December 14, 2006, OEPA collected macroinvertebrates at 3 stations along Stream 46 and 1 station on Stream 46 C (as identified by TOVCC consultants). At the first station along Stream 46 at Stream 46 E, 4 taxa were collected. 3 of those taxa were identified as coldwater taxa. At a second station along Stream 46 upstream of Stream 46 C, 22 taxa were collected. 9 of the taxa were identified as coldwater taxa. At a third station along Stream 46, 16 taxa were collected. 5 of those taxa were identified as coldwater taxa. At a fourth station on Stream 46 C, 9 taxa were collected. 2 of those were identified as coldwater taxa.

In June and July of 2007, another TOVCC consultant, EnviroScience, Inc., conducted a habitat survey on Casey Run, Reeves Hollow and Berrys Run – which are three adjacent headwater tributaries to Captina Creek – using the HHEI method. EnviroScience, Inc. evaluated three sites on Casey Run and calculated HHEI scores of 85, 74 and 72, which consistently rated Casey Run as a Class III PHWH stream. HMFEI scores for the Casey Run sites were 26, 24 and 23, all of which again exceeded the minimum score for a Class III PHWH stream. One coldwater macroinvertebrate taxon was found. Two-lined Salamanders were found at all three stations further supporting an existing use of CWH.

Finally, OEPA surveyed Captina Creek in June 2009, and as part of that survey, the field crew sampled Casey Run for fish at RM 0.2 and macroinvertebrates at RM 0.1. 5 species of warmwater fish were sampled for an IBI score of 44 (meets WWH criteria). Macroinvertebrate sampling resulted in 20 Ephemeroptera, Plecoptera and Trichoptera (EPT) taxa and 7 coldwater taxa. Once again, the presence of a large number of coldwater taxa supports the CWH designation. It should be noted that the presence of WWH fish species in this sample near the confluence of Casey Run with Captina Creek does not discount the presence of coldwater macroinvertebrate species, since the fish would have presumably migrated upstream from Captina Creek. In addition, the small number of fish in Casey Run appears to be due to natural structural barriers, such as rocks and bedrock ledges in the channel, rather than the lack of CWH.

Under the established process for assigning aquatic life designated uses to streams in Ohio, a stream is classified as coldwater if it fits in one of two sets of coldwater categories described in OAC 3745-1-07(B)(1)(f). The first is "Coldwater habitat, inland trout streams" and is applied when a stream supports trout stocking and management. The second category is applicable to Casey Run and is "Coldwater habitat, native fauna." It applies to waters that are *capable* of supporting native coldwater fish, macroinvertebrates, and/or other coldwater taxa. The process OEPA uses to place a stream in the latter coldwater category is expressed in the current draft rule (referred to as "Native cold water fauna streams"), which specifies the following:

a) Streams with a drainage area > 1.0 square mile must have one of the following:
- native populations of brook trout;
- 2 species of coldwater fish and two species of coldwater macroinvertebrates; or
- 4 taxa of coldwater macroinvertrebrates.

b) Streams with drainage of < 1.0 square mile must have one of the following:
- 1 reproducing population of a coldwater vertebrate species; or
- 4 taxa of coldwater macroinvertabrates.

As an example, in the Upper Grand River TSD (OEPA June 2009), a footnote states:

> "Coldwater Aquatic Life Use (existing or proposed) - biological criteria do not apply. Attainment status is qualitatively based on narrative assessment of the number of coldwater macroinvertebrate and/or fish taxa, their relative abundance, and the presence of salamanders."

One example of how Ohio assigns the coldwater designation to these streams is demonstrated in the following, taken from the same report:

> "Hoskins Creek has a verified EWH designation based on one fish sample collected at Windsor Mechanicsville Road (RM 1.7). Fish and macroinvertebrate samples collected at two locations in 2007 demonstrate that a CWH use is a better fit given that four or more coldwater macroinvertebrate taxa were collected at both sites, along with mottled sculpin."

Another OEPA report on the Mad River Basin (2005) provided more elaboration on how the coldwater designation is made based on either qualitative or quantitative macroinvertebrate samples:

> "Ohio's CWH use designation should be amended to read that four or more coldwater macroinvertebrate taxa must be present and, if a quantitative sample is taken, nine percent or more of the organisms collected must be coldwater types."

This same report also demonstrates how initial use designations are often made without the benefit of field data and are subsequently changed once data are available to support the change:

> "A WWH aquatic life use is recommended for Spring Run, Owens Creek, Hog Creek, Deer Creek and Blacksnake Creek. While groundwater likely contributed to the overall good condition of aquatic communities, coldwater taxa were not present to the extent that would justify a CWH designation. WQS rulemakings in 1978 and 1985 designated these streams as CWH but the use was never verified with biological sampling."

This is similar to the Casey Run watershed, except the change is in the opposite direction, from WWH to CWH, once field data were available to inform the designation.

Why WWH is Not Protective of Casey Run

As indicated previously, the current aquatic life use designation for Casey Run is WWH. Coldwater organisms require conditions typical of small, high-gradient streams, such as relatively low temperature and high dissolved oxygen. The Ohio water quality standards rules include more stringent water quality criteria for coldwater streams than for warmwater streams for not only temperature and dissolved oxygen, but also for ammonia, cyanide, and pH (OAC Chapter 3745-1-07). Temperature and pH are not to exceed natural background conditions in coldwater streams. This is because coldwater organisms are more sensitive to these parameters than are warmwater organisms. Thus, assigning a warmwater designation to a coldwater system means that less stringent water quality criteria will apply for these parameters, which will allow conditions that are not protective of coldwater organisms. This is why the Ohio water quality standards rules specify different water quality criteria for the different aquatic life designated uses.

Physical Data for Casey Run and Comparison with CWH and WWH Streams

Coldwater designation is assigned to a stream based on biological data, and not physical data such as temperature. However, it may be informative to compare temperature and other physical data with typical data from both coldwater and warmwater streams, collected around the same time of year.

In July 2004, OEPA collected data on Casey Run for temperature, dissolved oxygen, pH and conductivity in conjunction with its biological and habitat surveys. Results were as follows:

Casey Run Data, July 2004.

River Mile:	Temperature (° C):	Dissolved Oxygen (mg/L):	pH (S.U.):	Conductivity (umhos/cm):
0.75-0.77	19.66	9.92	8.38	419
1.13	17.29	9.12	8.26	426
1.43-1.45	16.52	8.25	8.12	412
Mean:	17.82	9.10	8.25	419

By way of contrast, EPA culled the following physical data from water quality reports for recent stream surveys throughout Ohio during July for streams with a drainage area of less than 10 square miles:

Use Designation:	Temperature (° C):	Dissolved Oxygen (mg/L):	pH (S.U.):	Conductivity (umhos/cm):
CWH	19.50	7.66	7.92	506
WWH	21.55	7.54	7.83	657

Results are averages based on available data for 31 CWH and 34 WWH streams.

As clearly demonstrated by these data, the physical data for Casey Run are more in line with typical values for coldwater streams than for warmwater streams; in fact, mean temperatures and conductivity in Casey Run are even lower, and dissolved oxygen levels and pH values higher, than averages for coldwater streams throughout Ohio.

On page 8 of the application, TOVCC mentions that Casey Run is under consideration by EPA for designation as CWH, but TOVCC believes no new information supports that designation. As evidenced in the discussion above, EPA is confident that the data and information available fully support a CWH designation for Casey Run.

Section 4-Alternatives Analysis and December 18, 2009 addendum

1.1 Mining Practices Related to Slurry Reduction/Elimination

The applicant indicates that approximately 83% of the coal is mined using longwall methods and that the remaining 17% is mined using continuous miners. It is also indicated that the continuous miners have to mine draw rock. The applicant should discuss what percentage, of both the coarse and fine refuse, is produced by each of the primary mining methods. The applicant should discuss options for the reduction in out-of-seam waste from the continuous miners.

1.2 Coal Analyzer

The coal analyzer was eliminated from further discussion based on Task Force conclusion. However, there are times when either the longwall or the continuous miners are mining high ash (waste) material. The applicant should reconsider this as an option especially as the analyzer could be installed prior to the co-mingling of feed from the various sections of the mine.

1.3 Presses

The applicant has conducted significant research to indicate that filter presses are not capable of reducing the slurry moisture content to a level where it can be combined with coarse refuse to be adequately compactable for structural fill. In the absence of any contradictory opinions and given the history of litigation that the Century Mine had with its filter press vendor, it is unlikely that filter presses are a viable stand alone alternative. However, the applicant should continue to consider the use of a filter press in combination with other alternatives, especially the underground placement of fine refuse (slurry).

1.4 Thermal Drying

The applicant and Task Force agreed that this alternative should be removed from further consideration. However, thermal drying could be viable if it were combined with a filter press to reduce the moisture content prior to drying. Using the data included in the application it appears that the slurry from the thickener underflow has about 18.5% solids

by weight. This means that the combined Century / Powhatan No. 6 slurry contains about 172 tons per hour of high ash coal plus 757 tons per hour of water.

The discussion associated with filter presses indicates that the company produced a filter cake with about 38.1% moisture content. For the same 172 tons per hour of coal, this indicates that there was 78 tons of water remaining. This means that the filter press was removing 679 tons of water per hour.

A thermal dryer could then be used to reduce the moisture content to a level where the fine refuse could be combined with the coarse refuse. The application indicates that 14% moisture content would be acceptable for a non-structural fill. In this case the dryer is only required to remove about 58 tons per hour of water. The report submitted to the Task Force by Dr. Kalb indicates that the Powhatan preparation plant originally included a thermal dryer.

The applicant should further evaluate the option of combining thermal drying with filter presses. Any analysis should include detailed cost proposals for the required capital and operating costs to the level of detail provided by Weir for the slurry line / conveyor option.

1.6 Alternative Impoundment Locations

In both the existing No. 2 Impoundment and the proposed No. 3 Impoundment, the impoundment is designed using the coarse refuse to create the impounding dam. The location of these impoundments is restricted by Mining Safety and Health Administration (MSHA) concerns regarding the placement of impoundments above active or abandoned mine workings. Attachment A to the task force report stated that a minimum vertical separation of 200 feet is required. However, this limitation does not apply to the disposal of coarse refuse. The current operation of the Century Mine is a perfect example of the separation of the disposal for the fine and coarse refuse. The Century Mine uses upland disposal for its coarse refuse. In order to fully evaluate alternate disposal options the applicant should review separate alternatives for coarse refuse disposal and fine refuse disposal. The alternatives analysis should be reevaluated to identify potential upland sites for coarse refuse disposal as the coarse refuse accounts for about 75% of the total waste disposal tonnage.

One of the screening factors used to evaluate the suitability of alternate impoundment locations was the presence of abandoned underground mines. Appendix A to the "Task Force Final Summary Document" (Appendix G to the application) concluded that "siting a coal slurry impoundment over old works is not recommended whether longwall, room and pillar or augering." However, the drawing of No. 2 Impoundment prepared by Esmer & Associates clearly indicates that the dam and portions of the existing No. 2 Impoundment are located above old room and pillar workings. MSHA has recently approved raising the dam crest elevation to 1,200 feet. The applicant should review the screening used to see if some previously undermined sites could be re-considered. With regard to placing an impoundment over previously

longwall mined areas, Appendix A did not adequately discuss the effect of depth on the effectiveness of the overburden to preclude downward migration of slurry.

It should also be recognized that if the use of a filter press combined with thermal drying is considered, then all of the refuse could be disposed of as "combined refuse" and be located in an upland area. The December 18, 2009 addendum discounts the use of underground workings for slurry distribution even though this approach avoids the issues raised by TOVCC over property rights and pipeline construction obstacles. With regard to transporting fines to the Lamira site, the response that "there is no guarantee that the reserves north of McMahon Creek...will ever be mined" is a matter of priorities. If the Lamira site were considered the preferred disposal location, this could be the impetus to include the development of the reserves in that area.

1.7 Direct Utilization

The Task Force agreed that this alternative should be removed from further consideration. There does not appear to be any basis for questioning this finding. However, if a filter press combined with thermal drying is considered, there could be an opportunity to blend some of the dried fines with the clean coal without exceeding the quality specifications of TOVCC's customers.

1.9 Incised Ponds

If the fine refuse disposal is separated from the coarse refuse disposal, then issues regarding the required overall capacity of the site plus the transportation issues associated with coarse refuse are removed. When alternate surface disposal sites are reviewed, the potential of excavating the impoundment area in order to provide material for the embankment construction should be considered as it provides additional storage volume and avoids the need for the coarse refuse. This calculation could significantly increase the storage capacity of previously evaluated alternate sites.

1.10 Underground Injection

It is understood that 83% of the coal mined at both the Century and Powhatan No. 6 mines is from longwall mining, which is the most cost effective method of underground mining. However the remaining portions of the mine use conventional room and pillar mining for the gate roads and the main entries. In addition, certain portions of the resource are not minable by longwall due to the length and width required for a longwall panel. These remnant blocks of coal could be mined as conventional sections; thus, creating void space for the underground disposal of fine refuse.

If the slurry is distributed as a paste rather than a more fluid slurry, some of the identified MSHA issues could be alleviated. The annual tonnage of fine refuse is approximately 1.5 million tons; this equates to 17.6% of the coal mined from the Powhatan No. 6 Mine and is equal to the conventional miner production. It is recognized the longwall panel main entries are not the optimal use for underground disposal, but it does illustrate that the current conventional mining activity is similar to that which would be required for underground disposal.

One of the issues raised in the Task Force report relating to underground injection was the surface disturbance associated with the injection well drilling and slurry line routes. This is not necessarily the only method of placing the slurry as it could be routed through the underground workings. Similar underground slurry distribution is a standard practice of cut-and-fill mining used in metal mines. In metal mining, the slurry is pumped through the underground workings and placed into the mined out portion of the mine. Rather than trying to route any slurry pipeline on the surface, the applicant should consider placing the slurry pipeline in the existing underground entries where the company already has the mining rights and the mine floor is relatively flat. In addition, if the area for underground disposal is designed correctly, the slurry can be placed directly into that area, thus saving the cost and impacts of drilling injection holes from the surface to the mine workings. The placement of slurry into specifically designed room and pillar areas avoids the problems stated by TOVCC relating to variable injection rates when using injection wells. The specifically designed room and pillar areas would need to be down dip of the other active mining areas.

1.11 Off Site Disposal

To the extent that off site disposal is considered as an option at sites outside of the area considered for alternative impoundment locations, it is reasonable to exclude this option from further consideration.

1.13 Relocation of Preparation Plant

The applicant evaluated the feasibility of a new plant at Powhatan Point and discounted it due to costs. The December 18, 2009 addendum addressed a new plant west of the current location. Additional information should be provided regarding coal ownership in order to evaluate other potential sites that could accommodate a preparation plant and refuse disposal.

Additional Comments on Section 4 and the December 18, 2009 addendum

Coal Preparation Upgrade

This alternative was not considered by TOVCC within the revised application. However, it is recommended that it be subject to additional review. Actual production data for 2008, provided by the applicant, indicate that the yield for the Powhatan plant is lower than the Century plant, as the Powhatan plant uses an older jig system. The reported yields are shown on the following table:

Powhatan No. 6 Mine			
Coarse Refuse %	25.3%		
Fine Refuse %	8.4%		
		33.7%	
Clean Coal	66.3%		
		66.3%	
			100.0%

In addition to the Powhatan plant, the plant at the Century Mine is also critical as the fine refuse from that facility is pumped to the existing No. 2 Impoundment. Data provided by the applicant indicate that the Century Mine, which does have a heavy media circuit, has a higher yield as indicated on the following table:

Century Mine			
Coarse Refuse %	23.6%		
Fine Refuse %	7.9%		
		31.5%	
Clean Coal	68.5%		
		68.5%	
			100.0%

If the Powhatan plant could match the performance achieved at the newer Century plant there would be an increase in yield of about 2.1%, which equates to about 190,000 tons of additional clean coal per year. In the December 18, 2009 addendum, the applicant estimates that the improvement in coal recovery of 189,000 tons, which they state is worth $7.2M, does not justify the construction of a heavy media plant. The applicant should provide further justification for the $38 per ton coal price and also include avoided costs for the disposal of this material, which equates to approximately 9% of the Powhatan plant's coarse refuse production. The applicant should also detail the stated capital cost of over $30M as this appears to provide a 4-year payback period, which is reasonable considering the remaining 20-year plus life of the reserves. On a cash flow basis the $30M investment has an internal rate of return of about 24%.

Cost Analysis

The applicant discounts many of the alternatives due to cost and makes statements that alternatives are "economically impracticable." A detailed cost analysis for each of the potential avoidance or minimization options should be prepared using the same basis and level of detail for each option. Where possible, actual costs should be used and should be similar in detail to that provided for the cost of the slurry pipeline from Century

to the No. 2 Impoundment. The cost analysis should consider the combination of options such as the installation of a heavy media plant at Powhatan, plus filter press, plus thermal drying.

Required Refuse Capacity

In order to evaluate any of the avoidance or minimization options, it is critical to understand the volume of both coarse and fine refuse that will be produced over the life of the mine.

The December 18, 2009 supplemental response stated that the life of mine projection was for 454 million tons of run of mine material, resulting in 264 million tons of salable coal. This information is summarized on the following table:

Mine	Production	CoarseRefuse		FineRefuse		Total
		%	20-year	%	20-year	20-year
Century			97,000,000			
Powhatan			47,000,000			
Total	454,000,000	31.7%	144,000,000	10.6%	48,000,000	192,000,000

Source: OVCC December 18, 2009 letter

The December 18 addendum also indicates the following capacities for the existing No. 2 Impoundment and the proposed No. 3 Impoundment:

Dam	Fine Refuse	Coarse Refuse
#2	21,000,000	12,000,000
#3	29,000,000	19,000,000
Total	50,000,000	31,000,000

This indicates that there is adequate fine refuse capacity but insufficient coarse refuse capacity. The applicant suggests that additional coarse refuse capacity will exist when the No. 2 Impoundment is capped. This option does not appear logical as the preparation plant produces both coarse and fine refuse at the same time and there will never be a situation, under the current operating practices, where only coarse refuse is produced. Additionally, the No.2 Impoundment is proposed as part of the decant system for the No. 3 Impoundment.

Review of Section 1 of the application indicates a slightly different response with regard to the life of the facility and the disposal volumes. Section 1 includes the Application for Department of the Army Permit, Form 4345. Section 18 of that form indicates a 16-year life for both coarse and fine refuse disposal; meanwhile, Section 21 of the same form indicates the following disposal volumes: coarse refuse=11,421,000 cubic

yards and fine refuse =25,376,000 cubic yards. These capacities do not match the tonnages reported in the December 18, 2009 addendum.

The application states that the existing No. 2 Impoundment will be filled by 2011. However, the table above, which is based on information in the December 18, 2009 addendum, indicates that the dam has 33 million tons of remaining capacity. Using the current plant yields for both the Century and Powhatan No. 6 mines combined with the applicant's projected infeed tonnage of 8.5 million tons for the Powhatan Mine and 10 million tons for the Century Mine, the annual refuse production is detailed on the following Table:

Mine	Production		Coarse Refuse			Fine Refuse			Total
		20-year	%	Tons	20-year	%	Tons	20-year	20-year
Century	10,000,000	200,000,000	23.6%	2,364,984	47,299,690	7.9%	788,328	15,766,563	63,066,253
Powhatan	8,500,000	170,000,000	25.3%	2,146,737	42,934,734	8.4%	715,579	14,311,578	57,246,311
Total		370,000,000	24.4%		90,234,423	8.1%	1,503,907	30,078,141	120,312,564

This information indicates that No. 2 Impoundment has a remaining life of 14 years for fine refuse and about 5.5 years for coarse refuse. This contradicts the applicant's estimate of being filled in 2011 and indicates that the short-term problem is for coarse refuse disposal. Morgan Worldwide has prepared a preliminary calculation on the proposed impoundment and has identified the following capacities: coarse refuse =8,746,000 cubic yards and fine refuse =8,434,000 cubic yards. These values are about 74% of the quantities indicated by the applicant in Section 21 of the form. It is imperative that this discrepancy be resolved.

The applicant should clearly indicate the annual waste production volumes and the remaining capacity of the No. 2 Impoundment. In addition the applicant should provide detailed engineering calculations of the capacity of the proposed No. 3 Impoundment to reconcile the discrepancy between the reported volume and tonnage capacities.

For non-water dependant activities, such as disposal of coal refuse, proposed to be located in special aquatic sites, the 404 (b)(1) Guidelines presume that less damaging upland alternatives are available, unless clearly demonstrated otherwise by the applicant.[1] The alternatives analysis does not include adequate information for EPA to evaluate whether or not the alternatives presented are practicable. Most of the alternatives were eliminated due to cost; however, EPA does not have the financial information to confirm these assertions. The applicant must address the issues raised in this section in an effort to provide a complete analysis of alternatives. At this time, the applicant has not demonstrated compliance with the 404(b)(1) Guidelines.

[1] 40 C.F.R. § 230.10(a)(3)

Section 5-Stream and Wetland Mitigation Plan: Proposed No. 3 Slurry Impoundment Washington Township, Belmont County, Ohio

2.2 Proposed Stream Impacts

Table 2, *Summary of Proposed Stream Impacts from the Development of the No. 3 Dam Slurry Impoundment*, must include HHEI scores for each stream reach assessed to provide baseline physical habitat data.

3.2 Stream Values and Functions

Civil & Environmental Consultants, Inc. (CEC) and Stantec Consulting (Stantec) assert that stream functions are limited by hydrologic regime and watershed size. EPA disagrees with this assertion. There are seventy-two headwater stream reaches within a tributary system that is currently supporting CWH which would be impacted by the construction of the proposed impoundment. This system possesses unique characteristics and requires the highest level of protection as it is home to a unique assemblage of aquatic communities. These headwater streams and their associated wetland and riparian systems improve water quality by diluting and filtering pollutants from surface water runoff, reducing sediment loads and siltation downstream, maintaining the hydrological and physical dynamics of receiving waters, and providing processed leaf litter and organic matter, which are important to sustaining biological communities and beneficial uses of Captina Creek, an EWH, downstream. Combined, organic interactions and improvements in water quality and stream channel conditions provide habitat for aquatic fauna that depend upon seasonally flooded habitat for advancement in their life cycle. In turn, aquatic fauna contribute to the overall biodiversity of the watershed by fitting into the complex food webs of Casey Run and Captina Creek. Additionally, terrestrial fauna including mammals and passerines benefit from the interconnected stream corridors that create edge habitat, travel corridors and supply cover and food sources.

4.1 Mitigation Goals

In 2008, EPA and the Department of the Army issued joint regulations on compensatory mitigation which contain requirements as to the assessment, monitoring, and goals of mitigation projects. [2] EPA believes there are several areas of the proposed mitigation package for this project which do not comply with the 2008 Compensatory Mitigation Rule (2008 rule). For example, the applicant states that the goal of stream mitigation projects is to offset lost values and functions of existing streams through replacement and enhancement of existing degraded streams. Yet, the mitigation plan fails to include large scale preservation of existing high quality streams such as Berrys Run and Reeves Hollow and restoration. It should be noted that the expected preservation ratio would be a minimum of 15:1. The applicant was informed of this ratio by the Corps on several occasions.

[2] 33 C.F.R. § 332 et. seq.; 40 C.F.R. § 230.91-230.98

4.2 Mitigation Success Criteria

In general, the applicant needs to be more specific about the ecological performance standards to be achieved so that the success of mitigation areas may be properly evaluated. EPA and Corps regulations require that an "approved mitigation plan must contain performance standards that will be used to assess whether the project is achieving its objectives."[3] The regulations also require that performance standards "relate to the objective of the compensatory mitigation project, so that the project can be objectively evaluated to determine if it is developing into the desired resource type, providing the expected functions, and attaining any other applicable metrics (e.g. acres)." These performance standards must be included in the mitigation plan.[4]

Here, the applicant has not provided proposed planting lists with planting rates and methods for mitigation areas. These must be included in the mitigation plan to ensure that the species and density would be appropriate for mitigation areas.

5.0 Proposed Wetland Mitigation

The mitigation plan states that a 25 foot wide buffer strip area would be maintained around the perimeter of the created wetland in the Miller's Run preservation area. At minimum a 50 foot wide buffer strip would need to be maintained around the perimeter of the created wetland area.

Additionally, mitigation for impacts to wetlands greater than 1.0 mile from the site is considered off-site mitigation and higher ratios are required than for on-site mitigation. Also, impacts to forested wetlands should be mitigated at a higher ratio. To mitigate offsite for this project, impacts to Category 2 emergent wetland should be at a minimum ratio of 2:1; impacts to Catergory 2 forested wetland should be at a minimum ratio of 2.5:1; and impacts to Catergory 1 emergent wetlands should be at a minimum ratio of 1.5:1. These mitigation ratios would be appropriate for in-kind mitigation. Any mitigation proposed that is out-of-kind would require higher ratios to offset the lost function and values.

6.2 Onsite Stream Channels

The mitigation plan states that ephemeral and intermittent stream impacts will be mitigated through the construction and enhancement of 17,875 linear feet of perimeter stream channels and that the use of relocated stream channels to mitigate ephemeral and intermittent stream impacts has been documented through the issuance of 401 permits by the OEPA and Section 404 permits by the Corps.

The mitigation rule requires that "the required compensatory mitigation shall be of a similar type to the affected aquatic resource" unless the district engineer uses the watershed approach to determines that out-of-kind mitigation will serve the aquatic

[3] 33 C.F.R. § 332.5; 40 C.F.R. § 230.95
[4] 33 C.F.R. § 332.4(c); 40 C.F.R. § 230.94(c)

resource needs of the watershed.[5] The mitigation rule also creates a strong preference for in-kind mitigation. In-kind refers to a "resource of a similar structural and functional type as the impacted resource."[6] For difficult-to-replace resources, such as streams, "the required compensation should be provided, if practicable, through in-kind rehabilitation, enhancement, or preservation since there is greater certainty that these methods of compensation will successfully offset permitted impacts.[7]

Based on the requirements of the 2008 rule, EPA believes that it is inappropriate in this case to generate credits for perimeter ditches because it is unlikely the ditches will replace the functions and values of the impacted intermittent and ephemeral streams. Drainage ditches are constructed to convey surface runoff. They do not replace the numerous valuable functions and values of headwater tributary systems. The site conditions will not be comparable to the existing CWH. Coldwater organisms require conditions typical of small, high-gradient streams, such as relatively low temperature and high dissolved oxygen.

In addition, the applicant proposes to enhance 6,600 linear feet of an unnamed tributary to Perkins Run. The application does not include a detailed location or an aerial or digital photograph of the Perkins Run enhancement location. Further, the application does not include any specific chemical, biological or physical information for the tributary. The mitigation plan does state that it is an engineered channel, but it does not indicate when it was altered and for what purpose. This type of information must be included in the mitigation plan to evaluate what amount of mitigation credit, if any, would be considered for this activity.

6.3 Captina Creek Stream Enhancements

TOVCC proposes to conduct stream mitigation and enhancement work along 10,000 linear feet of Captina Creek immediately to the west of the proposed project, which includes stream bank stabilization, Eastern Hellbender Salamander (*Cryptobranchus alleganiensis alleganiensis*) habitat improvement, riparian planting, etc. EPA agrees with the United States Fish and Wildlife Service (USFWS) comments of February 1, 2010 regarding "Captina Creek Enhancements." Specifically, the applicant may have overestimated the stream lengths for which these measures would significantly benefit Captina Creek. The applicant must expand the discussion to include a riparian planting plan for each applicable location and an explanation regarding how enhancement techniques proposed at each location would significantly benefit Captina Creek, an EWH. EPA will consider this information in determining the appropriate mitigation credit for these activities. In addition, enhancement on Captina Creek does not replace the loss of Casey Run CWH.

According to the USFWS, the Eastern Hellbender Salamander is a large, entirely aquatic salamander currently listed as endangered by Ohio and under evaluation for

[5] 40 C.F.R. § 230.93(e)(2)
[6] 40 C.F.R. § 230.92
[7] 40 C.F.R. § 230.93(e)(3)

Federal Candidate Status, which may lead to a proposal for listing as federally threatened or endangered in the near future. These salamanders live 25 to 30 years, do not start breeding until they are 10 years old, and require a clean substrate to thrive. Captina Creek has a greater number and wider size (age) range of Eastern Hellbenders than any other stream in Ohio. It's the only stream in Ohio in which young Eastern Hellbenders (~ 5-7 years old) have been identified since the 1980's. There has been an approximately 80% decline in the Eastern Hellbender population in Ohio since the late 1980's.

The applicant is proposing habitat enhancement for Eastern Hellbender Salamanders in particular locations along Captina Creek, but has not provided any information regarding the presence of Hellbenders or potential for presence of Hellbenders within the areas proposed for enhancement (boulder placement). While boulder placement may improve habitat for some aquatic fauna at the chosen locations, various considerations must be made about local hydrology, existing substrate, and water chemistry to arrive at some conclusions about whether the conditions would be suitable for Hellbenders. Boulder placement will only tentatively enhance Hellbender habitat value and does not qualify for stream mitigation credit without the detailed site assessment, monitoring, and performance standards necessary to document ecological improvement.

6.4 Miller's Run Mitigation Area

TOVCC proposes to preserve 37,000 linear feet of Miller's Run and 100 feet of riparian buffer surrounding each stream segment with a conservation easement. At minimum, 100 feet of riparian buffer should be protected on each side of each stream segment to prevent any potential impacts from activities such as timbering. The proposed preservation area is located north of the proposed No. 3 Impoundment. EPA would consider these activities appropriate for mitigation credit as part of a mitigation plan that includes large scale preservation of CWH and restoration.

The applicant also proposes to conduct tree planting and remove trash within the preserved areas of Miller's Run. EPA recommends the applicant provide more detail on tree planting to evaluate whether or not the planting would be considered as mitigation. Removal of trash on does not warrant any type of enhancement credit. It is TOVCC's responsibility to remove trash and illegal waste dumped on their property.

6.5 Streambank Fencing/Stream Enhancement Projects

Perkins Farm is located west of Casey Run and spans the confluence of the Reeves Hollow and Berrys Run drainages. At Perkins Farm, approximately 5,000 linear feet of streams within the farm property would be fenced to exclude cattle with the exception of 4 stone stream crossings.

Campbell Farm is located approximately 3 miles northeast of Casey Run. Streams onsite drain to Andersons Run and Miller's Run. Andersons Run discharges into Captina Creek. Miller's Run discharges into Bend Fork, which is a tributary of Captina

Creek. At Campbell Farm, approximately 7,950 linear feet of streams would be fenced to exclude cattle with the exception of 3 stone stream crossings.

Kemp Farm is located approximately 3 miles north of Casey Run. Streams onsite drain into an unnamed tributary of Joy Fork, which discharges into Bend Fork, a tributary of Captina Creek. At Kemp Farm, approximately 6,300 linear feet of streams within the farm property would be fenced to exclude cattle with the exception of 2 stone stream crossings.

The applicant must provide a plan for stream bank stabilization at each of these sites that includes information about how stream stabilization will be conducted, where it will occur, any planting involved, etc. Also, TOVCC asserts that within 5 years following the installation of fencing, a minimum 20% increase in HHEI/QHEI will be documented at designated locations. EPA strongly recommends that the entire PHWH evaluation be conducted for each monitoring location, including HMFEI. Monitoring should occur annually, for a minimum of 5 years, to determine whether the mitigation is on track to meeting performance standards and biological communities are showing improvement. EPA would consider these activities appropriate for mitigation credit as part of a mitigation plan that includes large scale preservation of CWH and restoration.

6.6 Linn Tipple Passive Mine Drainage Treatment System

TOVCC identified an abandoned coal refuse disposal pile (gob pile) located approximately 5 miles to the east of the proposed No. 3 Impoundment which currently produces acid mine drainage (AMD). TOVCC is proposing to redirect the outflow of the gob pile onto a portion of the Linn Tipple site through a passive treatment system. It is unclear why the applicant is not proposing to eliminate the gob pile and reclaim the entire area altogether. It is imperative that the applicant state what baseline parameters will be measured (e.g. physical, chemical and biological) to help track improvement of surface water quality at this site, frequency of the monitoring, how much water quality is expected to improve and over what period of time, and how that will be sustained long-term. The applicant must expand the discussion to include historical information about the Linn Tipple site and indicate whether or not any current monitoring requirements exist for the site associated with water quality. The applicant must demonstrate how the improvements will be documented over 2,000 linear feet of Captina Creek. This type of information must be included in the mitigation plan to evaluate the amount of mitigation credit, if any, that would be considered for this activity.

6.7 Summary of Proposed Stream Mitigation

Because of the uniqueness of Casey Run, EPA agrees with the Corps that the preservation ratio should be approximately 15:1, depending on the resource to be preserved. The applicant should focus its efforts on preserving resources similar to Casey Run in quality, function, and aquatic assemblages. As stated above, the applicant should consider preserving the Berrys Run and Reeves Hollow watersheds in their entirety in perpetuity.

9.0 Contingency Plan

In addition to an adaptive management plan, the applicant must provide information regarding the Financial Assurances that will be provided and what form they will take and more details about long-term management of all mitigation sites to insure the success of mitigation. The mitigation rule provides that the "district engineer shall require sufficient financial assurances to ensure a high level of confidence that the compensatory mitigation project will be successfully completed."[8] The amount of required financial assurances "must be based on the size and complexity of the compensatory mitigation project, the degree of completion of the project at the time of project approval, the likelihood of success, the past performance of the project sponsor, and any other factors the district engineer deems appropriate."[9] If the applicant does not provide the necessary information to the Corps, then the district engineer will be unable to determine the required amount of financial assurance that is needed. Ultimately, the mitigation plan must include more detailed information than what was provided by the applicant to satisfy the 2008 rule so as "to ensure a high level of confidence that the compensatory mitigation project will be successfully completed in accordance with its performance standards."[10]

In conclusion, based on the information currently available, the alternatives analysis is incomplete and not in compliance with the requirements of the 404(b)(1) Guidelines. Once the least environmentally damaging practicable alternative has been identified, the amount of mitigation required to compensate for lost functions and values can be determined. However, as currently proposed, the mitigation plan is inadequate for the substantial environmental impacts associated with the project. As stated above, a portion of the proposed mitigation activities do not warrant mitigation credit. In other instances, EPA needs more information to evaluate the merit of and determine the appropriate credit that should be given for the activities. The project, as proposed, will have substantial and unacceptable adverse impact on Casey Run and the integrity of Captina Creek, an EWH, OSW and, as mentioned in our letter of January 4, 2010, an Aquatic Resource of National Importance.

Thank you for the opportunity to review these documents and provide comments. If you have questions concerning EPA's comments, please contact Wendy Melgin of my staff at (312) 886-7745.

Sincerely,

Tinka G. Hyde, Director
Water Division

[8] 33 C.F.R. § 332.3(n); 40 C.F.R. § 230.93(n)
[9] Id.
[10] 33 C.F.R. § 332.4(c); 40 C.F.R. § 230.94(c)

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