UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

DEC 29 2009

Colonel Keith A. Landry
U.S. Army Corps of Engineers
Louisville District
ATTN: Ms. Lee Anne Devine
600 Dr. Martin Luther King, Jr. Place
Louisville, Kentucky 40202

Subject: NWP # 21, LRL 2008000139, Apex Energy – Carver Fork (KDNR 898-0646)

Dear Colonel Landry:

The Environmental Protection Agency (EPA) Region 4 is providing final comments and recommended special conditions (Enclosure) in accordance with the enhanced coordination process (ECP), as laid out by the June 11, 2009, Memo to the Field on Enhanced Surface Coal Mining Pending Permit Coordination Procedures. This permit was the first permit released by the Army Corps of Engineers Louisville District (Corps) for formal coordination under the ECP on October 15, 2009. After discussions with the Louisville District, by letter dated December 15, 2009, EPA extended the initial 60 day coordination period by 15 days to December 30, 2009, consistent with the ECP.

As described by our December 15, 2009, letter there remain three unresolved issues: (1) potential water quality impacts to receiving waters, (2) the cumulative effects of multiple mines within the Paw Paw Creek watershed, and (3) the adequacy of the proposed compensatory mitigation. The enclosed special conditions, once made a part of the proposed permit, will bring the permit into compliance with the Clean Water Act Section 404(b)(1) Guidelines (Guidelines).

Water Quality

The Commonwealth of Kentucky's water quality standards include a narrative criterion that prohibits the discharge of toxic substances in toxic amounts. Specific provisions in the water quality standards are:

> "Total dissolved solids or specific conductance shall not be changed to the extent that the indigenous aquatic community is adversely affected." 401 KAR 10:031, Section 4(1)(f); and

> "Surface waters shall not be aesthetically or otherwise degraded by substances that injure, are chronically or acutely toxic to or produce adverse physiological or behavioral responses in humans, animals, fish and other aquatic life." 401 KAKR 10:031, Section 2.

The 404(b)(1) Guidelines require that no discharge of dredge or fill material shall be permitted if it will cause or contribute, after consideration of disposal site dilution and dispersion, to violations of any applicable State water quality standard (40 C.F.R. 230.10(b)) or which will cause or contribute to significant degradation of the waters of the United States (40 C.F.R. 230.10(c)). It is our understanding that the anticipated discharges from the Apex Energy project are currently covered by a general National Pollutant Discharge Elimination System (NPDES) permit issued by the Kentucky Division of Water. However, EPA does not believe that a sufficient reasonable potential analysis has been conducted in accordance with Section 301(b)(1)(C) of the Clean Water Act and 40 C.F.R. 122.4 (a, d, and i) and 40 C.F.R. 122.44(d)(1). Absent an analysis demonstrating that discharges from the proposed mining operations will not have a reasonable potential to cause or contribute to a water quality standards violation, EPA believes that sufficient evidence exists to conclude that it is reasonable to assume that significant water quality degradation will occur.

A growing body of evidence demonstrates that certain pollutants associated with coal mine discharges are causing or contributing to violations of narrative water quality standards. Recent studies have shown that there is a direct correlation between stream impairment and discharge of total dissolved solids (TDS)/specific conductivity (SC) due to coal mining and coal processing.[1] Much of this body of developing information regarding the extent to which coal mines are causing, or could cause, impairments to waters receiving discharges from coal mines in Appalachian coal mining regions has recently become available.

In addition to these studies, the Kentucky Division of Water's own 2008 list of impaired waters provided to EPA under Section 303(d) of the CWA identified 1,199 stream miles in the Upper Kentucky River watershed, 487 stream miles in the Upper Cumberland River watershed, and 780 stream miles in the Big Sandy/Little Sandy/Tygarts Creek watershed as impaired with coal mining identified as a suspected source. The "2008 Integrated Report to Congress on Water Quality in Kentucky" (305(b) Report), Table 3.3.1-4, ranks TDS as the seventh leading cause of pollution to Kentucky rivers and streams and ranks SC as seventeenth.

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[1] A 2003 published study, "Field and Laboratory Assessment of a Coal Processing Effluent in the Leading Creek Watershed, Meigs County, Ohio" by Kennedy, et al. linked elevated specific conductance levels in the effluent to impaired, sensitive aquatic fauna. A 2004 Kentucky Department for Environmental Protection, Division of Water, Water Quality Branch study, "Effects of Surface Mining and Residential Land Use on Headwater Stream Biotic Integrity in the Eastern Kentucky Coalfield Region" (http://www.water.ky.gov/NR/rdonlyres/ED76CE4E-F46A-4509-8937-1A5DA40F3838/0/coal_mining1.pdf) found that the wholesale loss of mayflies at mined sites indicated that these organisms are especially sensitive to coal mine drainage. Dissolved solids emanating from hollowfills are a primary cause of biological impairment because of their severe impact to mayflies (a key component of headwater stream communities) and other sensitive taxa. A 2005 published study, "Evaluation of Ionic Contribution to the Toxicity of a Coal-Mine Effluent Using *Ceriodaphnia dubia*" by Kennedy, et al. linked impairment of aquatic life to elevated TDS levels. Finally, a 2008 published study, "Downstream effects of mountaintop coal mining: comparing biological conditions using family- and genus-level macroinvertebrate bioassessment tools" by Pond, et al. found evidence indicating that mining activities have subtle to severe impacts on aquatic life and the biological conditions of a stream.

The absence of water quality-based conditions in the 404 permit necessary to ensure that the discharges authorized by the permit will not cause or contribute to violations of State water quality standards or cause or contribute to significant degradation of waters of the United States is inconsistent with the Guidelines (40 C.F.R. §230.10(b) and (c)). The enclosed draft permit conditions provide the necessary requirements to address these concerns.

Cumulative Effects

This permit is proposed to be covered as a Nationwide Permit 21. While EPA is not specifically opposing authorization of this project under a Nationwide general permit, we request that the Corps provide an explanation of how this project is consistent with 40 C.F.R. 230.1(c) and 40 C.F.R. 230.11(g). EPA has consistently expressed significant concerns regarding potential cumulative impacts associated with this project in the Paw Paw Creek watershed. Other surface coal mining permits within the Paw Paw Creek watershed include: the original Apex Energy project, including the Collie Fork impacts (Permit No. 898-0303); Apex Energy's Grassy Fork mine (Permit No. 898-0814); Hubbert Scarberry Surface K.B.L.C. Mine; K.B.L.C. Mine – Cove Hollow; Howard Dotson – Surface K.B.L.C. Mine; and Hollie Scarberry Heirs Surface K.B.L.C. Mine. The water quality monitoring required by the KDNR Surface Mining Coal and Reclamation Act (SMCRA) permits for the second active Apex (898-0814) surface coal mine documented conductivity values five times higher than pre-mining conditions (200s to >1,100 *u*S/cm). It is critical that additional mining within the Paw Paw Creek watershed not lead to further degradation of water quality. The enclosed draft permit conditions for in-stream chemical and biological monitoring, together with the remedial actions required, will ensure that further cumulative effects are sufficiently monitored and avoided.

Mitigation

The third unresolved issue involves three specific concerns related to compensatory mitigation. First is the use of groin ditches to compensate for the loss of ephemeral streams. EPA believes that groin ditches are not adequate compensatory mitigation for natural streams. At the Pittsburg, Pennsylvania multi-agency meeting on Coal mining in Central Appalachia, the U.S. Army Corps of Engineers Headquarter representative agreed that groin ditches should not be used as compensatory mitigation for ephemeral streams. The resolution of other recent mining permits within the Central Appalachian area has disallowed the use of groin ditches for mitigation. EPA's concern is that the current proposed permit is inconsistent with this position. We understand that the Louisville District believes that specially designed groin ditches may be effective mitigation. However, there are no specially designed groin ditches in the current permit and there is no supporting data available to demonstrate that special groin ditch designs would provide functions similar to an ephemeral stream. Therefore, additional compensatory mitigation should be required to compensate for the loss of the ephemeral streams.

Second, there are no long-term protections provided for the groin ditches or the enhanced intermittent stream reaches. Long-term protection of all compensatory mitigation areas is critical to ensuring consistent implementation of the 2008 mitigation regulations.

Third, the current functional assessment for ephemeral and intermittent streams addresses three chemical parameters, eight physical parameters, and two riparian zone plant indicators. Biological monitoring of the intermittent reaches also should be required as success criteria in the mitigation plan.

The enclosed permit conditions would ensure adequate compensatory mitigation consistent with the Guidelines, specifically the 2008 Mitigation Regulations for all three concerns.

We look forward to discussing these issues with the Corps and receiving your written decision regarding this permit within ten days of the close of the extended coordination period January 11, 2010. If you have any questions regarding this letter or the attached permit conditions please contact me, or have your staff contact Tom Welborn at (404)562-9354 or Duncan Powell at (404)562-9258.

Sincerely,

James D. Giattina
Director
Water Protection Division

Enclosure

cc: Philip Elswick, Summit Engineering
Corps, Sassafras Field Office

Bruce Scott, Commissioner
Kentucky Department for Environmental Protection

Carl Campbell, Commissioner
Kentucky Department for Natural Resources

THE CONSTRUCTION, OPERATION AND RECLAMATION
OF THE
APEX ENERGY'S CARVER FORK SURFACE COAL MINE
Permit Special Conditions

The discharge of dredged/fill material into waters of the United States in conjunction with the construction of Hollow Fills No. HF-10 and HF-11 may proceed immediately upon receipt of this authorization, subject to the conditions herein. As noted in the December 15, 2009, letter, EPA considers our previous concerns regarding avoidance and minimization issues to be generally addressed. However, we would like confirmation that the recently developed Kentucky fill minimization requirements will also be applied to this mine.

Water Quality

(1) The permittee shall submit, within 120 days of the effective date of the permit, a Water Quality Standards Protection Plan (WQSPP), specific to the proposed mining activity that would be authorized by the final permit. The permit shall require that the WQSPP include best management practices (BMPs) that will ensure that discharges from the mine's permitted outfalls do not cause or contribute to violations of the Commonwealth's narrative water quality standards. The specific content of the WQSPP should be tailored to conditions at the proposed mine.

Explanation: The Section 404(b)(1) Guidelines require that no discharge of dredged or fill material shall be permitted if it causes or contributes to violations of any applicable State water quality standard (40 C.F.R. 230.10(b)) or which will cause or contribute to significant degradation of the waters of the United States (40 C.F.R. 230.10(c)). Therefore, EPA is recommending that the applicant be required to develop and implement a Water Quality Standards Protection Plan and appropriate monitoring to ensure that significant degradation does not occur. EPA believes that to ensure consistency with the Guidelines the development of a WQSPP that includes BMPs to address pollutants that have the potential to cause or contribute to violations of Kentucky's water quality standards or which will cause or contribute to significant degradation of waters of the United States are appropriate for the Section 404 permit.

BMPs must be implemented during construction and operation. BMPs may include but are not limited to: topsoil management, utilization of silt fences, straw bales, check dams, limiting vegetation removal and bank shaping to the maximum extent practicable, mulching and seeding, leachate analysis of the soil profiles to determine the potential conductivity and selenium potential, appropriate relocation of potentially high conductivity or selenium soil and isolation of this material from stormwater run-off, multiple-in series sediment ponds, use of fill that will not result in increased conductivity or toxic levels of metals, the prohibition of the use or storage of toxic or hazardous materials within the construction areas, and soil compaction of fill areas. Construction

activities shall be performed during low flow conditions. All disturbed areas shall be seeded and mulched to minimize erosion as soon as possible. Appropriate stream bank protection measures should be installed in channel or on barren areas requiring erosion control, including but not limited to native grasses and forbs, vegetation, and other acceptable clean non-contaminated material.

(2) In addition to monitoring requirements elsewhere in this Department of the Army permit, the permittee shall conduct chemical, physical and biological monitoring as indicated below one year prior to the start of mining operations (to provide baseline data) and post initiation of mining operations at the frequencies described below.

a) In-stream Chemical Monitoring

1. Locations: In-stream sampling points shall include:

i. Point(s) of compliance for the KDOW NPDES permit – discharge from the off-line sediment pond into Carver Fork.

ii. All non-NPDES permit in-stream sampling points shall be downstream of riprap and other disturbance and located within a relatively natural and intact stream channel.

iii. In Carver Fork above and below sediment Pond No. 20's discharge point, approximately 100 meters up stream and down stream prior to confluence with Paw Paw Creek;

iv. In-stream sampling points in Paw Paw Creek above and below the confluence with Carver Fork, approximately 200 meters above and below this confluence.

v. In-stream sampling points in Paw Paw Creek above and below the confluence with Collie Fork, approximately 200 meters above and below this confluence. And

vi. In-stream sampling points in Paw Paw Creek above and below the confluence with Grassy Fork, approximately 200 meters above and below this confluence.

2. Each water quality sample will be analyzed for*:

Parameter	**Test Method**
Stream Flow, cubic feet per second	
Specific conductance, uS/cm	
TDS, mg/l	EPA Method 160.1
Turbidity, NTU	
Sulfates, mg/l	EPA Method 300.0
Chlorides, mg/l	EPA Method 300.0
Bicarbonate Alkalinity, mg/l	
Total Dissolved Antimony, ug/l	EPA Method 200.8
Total Dissolved Arsenic, ug/l	EPA Method 200.8
Total Dissolved Beryllium, ug/l	EPA Method 200.8

Total Dissolved Cadmium, ug/l	EPA Method 200.8
Total Dissolved Chromium, ug/l	EPA Method 200.8
Total Dissolved Copper, ug/l	EPA Method 200.8
Total Dissolved Iron, ug/l	EPA Method 200.8
Total Dissolved Lead, ug/l	EPA Method 200.8
Total Dissolved Manganese, ug/l	EPA Method 200.8
Total Dissolved Mercury, ug/l	EPA Method 1631E
Total Dissolved Nickel, ug/l	EPA Method 200.8
Total Dissolved Selenium, ug/l	EPA Method 200.8
Total Dissolved Silver, ug/l	EPA Method 200.8
Total Dissolved Thallium, ug/L	EPA Method 200.8
Total Dissolved Zinc, ug/l	EPA Method 200.8
Hardness, mg/l (as $CaCO_3$)	SM 2340B
PH, Standard Units	
Total Calcium, ug/l	EPA Method 200.7
Total Magnesium, ug/l	EPA Method 200.7
Total Sodium, ug/l	
Total Potassium, ug/l	

*Specific conductance (SC) is a measurement of the sum of various ionic components in water that have the ability to conduct electricity. Due to differences in site-specific geology, the specific individual constituents comprising a SC (or TDS) concentration can vary. Relatively high levels of SC/TDS may impair the ability for some organisms to osmoregulate. Based on best professional judgment, the analyses for these parameters will be useful in determining the specific ionic species that may be the major constituent(s) in the conductivity level at the site.

3. Sample Type
   Grab samples should be taken whenever possible.

4. Sample Frequency
   The sampling frequency should be twice per month, at least five days apart, until reclamation is completed, the bond is released, and all compensatory mitigation sampling is completed. In the event that monitoring results show in-stream conductivity levels above 400 uS/cm as a monthly average, the permittee should increase the monitoring frequency to four times per month. The amount of precipitation for the previous 24 hour period should be noted.

5. Conditions for Taking Samples
   Samples shall be collected during low- or base-flow conditions (e.g., not during, or within 24 hours after, a precipitation event).

6. Test Methods
All analyses shall be done using EPA methods in 40 C.F.R. Part 136; specific low-level methods for metals are indicated in Section 2(a)(2) above.

7. Reporting
Within 30 days of the receipt of the laboratory results, the permittee shall submit the laboratory report showing the analytical results and the latitude and longitude of the sampling locations, to the Kentucky Department of Natural Resources (KYDNR), as part of the permittee's Discharge Monitoring Report; to the Louisville District Engineer; and to EPA.[1]

b) Effluent Chemical Monitoring

1. Test Methods
The permittee shall perform effluent monitoring, using at least one grab sample, for the parameters listed in Section 2(a)(2) above. Methods in 40 C.F.R. Part 136 should be used.

2. Sampling Location
The sampling should be conducted at the off-line sediment pond outfall.

3. Sampling Frequency
The sampling frequency should be twice per month, at least five days apart, during dry-weather or precipitation-driven discharges, and the inches of precipitation measured during at the sampling location should be recorded and reported as part of the sampling report. In the event that monitoring results show in-stream conductivity levels above 400 uS/cm, the permittee is required to increase the effluent monitoring frequency to four times per month. Note that these sampling and reporting requirements are in addition to any water quality-based or technology-based effluent limits and/or permit conditions in the NPDES permit.

4. Reporting
Within 30 days of the receipt of the laboratory results, the permittee shall submit the laboratory report showing the analytical results and the latitude and longitude of the sampling locations, to KYDNR, as

[1] Reports shall be sent to the Kentucky Department of Natural Resources, Division of Mine Permits, 2 Hudson Hollow Road, Frankfort, KY, 40601; the District Engineer, Louisville District of the U.S. Army Corps of Engineers, 600 Dr. Martin Luther King, Jr. Place, Louisville, Kentucky, 40202; and the EPA's Branch Chief of the Wetlands, Coastal, and Oceans Branch, U.S. Environmental Protection Agency, Region IV, 61 Forsyth Street South West, Atlanta, Georgia, 30303-8960.

part of the permittee's Discharge Monitoring Report; to the Louisville District Engineer; and to EPA.[2]

c) Whole Effluent Toxicity (WET) Monitoring

1. The discharge from the Apex Mine is complex due to the combination of specific conductivity/TDS levels and metals concentrations. Therefore, the permittee shall perform either acute or chronic WET tests on the representative outfall, depending on the duration of the discharge. The results of WET monitoring will be used to determine the effectiveness of the BMPs. Although some coal mining outfalls discharge only during wet-weather events, EPA has reviewed data sampling results which indicate some sedimentation ponds discharge on a regular basis. The Corps should verify the duration of the discharge.

2. Where data for the discharge from the off-line sediment pond into Carver Fork indicates a consistent discharge lasting more than four consecutive days, chronic WET tests shall be performed using *Ceriodaphnia dubia* and *Pimephales promelas* and using a dilution series that includes 100% effluent and the In-stream Waste Concentration. The end points shall be reported as the inhibition concentration that affects 25% of the test organisms compared to the control (IC_{25}). Sampling shall be performed quarterly. Any WET failures during the permit term shall result in a requirement to conduct additional WET tests every 2 weeks for 6 weeks; if subsequent testing results in a single WET failure the permittee shall notify KYDNR, the Louisville District Engineer, and EPA and immediately conduct a toxicity reduction evaluation. If the subsequent testing indicates no additional failures the permittee shall notify KYDNR, the Louisville District Engineer, and EPA, and resume quarterly testing.

3. In cases where the effluent discharge may be short in duration, it may be necessary to collect a high volume effluent sample and properly preserve it for used in the static-renewal test. Please refer to Section 8.5.4 on page 32 of EPA's document entitled, "Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms" (October 2002). Alternatively, the operator can use an acute WET test using either *Daphnia magna* or *D. pulex* and *P. promelas*. Any WET failures during the permit term shall result in a requirement to conduct additional WET tests every 2 weeks

[2] Reports shall be sent to the Kentucky Department of Natural Resources, Division of Mine Permits, 2 Hudson Hollow Road, Frankfort, KY, 40601; the District Engineer, Louisville District of the U.S. Army Corps of Engineers, 600 Dr. Martin Luther King, Jr. Place, Louisville, Kentucky, 40202; and the EPA's Branch Chief of the Wetlands, Coastal, and Oceans Branch, U.S. Environmental Protection Agency, Region IV, 61 Forsyth Street South West, Atlanta, Georgia, 30303-8960.

for 6 weeks; if subsequent testing results in a single WET failure the permittee shall notify KYDNR, the Louisville District Engineer, and EPA and immediately conduct a toxicity reduction evaluation. If the subsequent testing indicates no additional failures the permittee shall notify KYDNR, the Louisville District Engineer, and EPA, and resume quarterly testing.

4. Reporting
Within 30 days of the receipt of the toxicity results, the permittee shall submit the laboratory report showing the results to KYDNR, as part of the permittee's Discharge Monitoring Report; to the Louisville District Engineer; and to EPA.[3] At the completion of any toxicity reduction evaluation (TRE), the permittee shall submit a report documenting the results of the TRE and all remedial actions taken to reduce toxicity to KYDNR, to the Louisville District Engineer, and to EPA.[4]

d) In-stream Biological Monitoring

1. Methods: Each in-stream biological sampling sites shall be sampled for benthic macroinvertebrates following Kentucky Department of Water 's Methods for Assessing Biological Integrity of Surface Waters in Kentucky dated July 2002 (MABISW) protocol for benthic macroinvertebrate sampling, Chapter 8, or EPA's Rapid Bioassessment Protocol Tier 4 methods (habitat, bugs, fish, and diatoms). Taxonomic resolution shall be at the genus-level. All samples will be taken during low- or base-flow conditions (e.g., not during or within 24 hours after a precipitation event).
2. Frequency: Sampling shall be conducted in Head Water High-Gradient streams from mid-February through early June (MABISW page 57), and in Wadeable-Moderate/High Gradient streams from February through May for spring then again from June through September for summer (MABISW page 53), avoiding recent drought conditions, or periods of scouring floods.
    i. Three samples shall be taken during each season at each sample site and no sample at any site may be collected less than three weeks apart.

[3] Reports shall be sent to the Kentucky Department of Natural Resources, Division of Mine Permits, 2 Hudson Hollow Road, Frankfort, KY, 40601; the District Engineer, Louisville District of the U.S. Army Corps of Engineers, 600 Dr. Martin Luther King, Jr. Place, Louisville, Kentucky, 40202; and the EPA's Branch Chief of the Wetlands, Coastal, and Oceans Branch, U.S. Environmental Protection Agency, Region IV, 61 Forsyth Street South West, Atlanta, Georgia, 30303-8960.

[4] Reports shall be sent to the Kentucky Department of Natural Resources, Division of Mine Permits, 2 Hudson Hollow Road, Frankfort, KY, 40601; the District Engineer, Louisville District of the U.S. Army Corps of Engineers, 600 Dr. Martin Luther King, Jr. Place, Louisville, Kentucky, 40202; and the EPA's Branch Chief of the Wetlands, Coastal, and Oceans Branch, U.S. Environmental Protection Agency, Region IV, 61 Forsyth Street South West, Atlanta, Georgia, 30303-8960.

ii. Sampling should be avoided during periods of excessive precipitation and scouring floods.

iii. In cases where a large flow rate of the receiving water does not lend itself to a benthic assessment (i.e., only has non-wadeable sites), the permittee shall perform a bioassessment using fish, (MABISW Chapter 9). Both fish and benthic macroinvertebrate studies shall be performed for receiving waterbodies that are conducive to fisheries assessments (e.g., Paw Paw Creek). However, results from sampling either one of the two assemblages may be used to determine if the waterbody is impaired.

3. Concurrent in-stream monitoring
In-stream samples for SC, TDS, pH, temperature and dissolved oxygen should be taken at the same locations along with benthic samples.

4. Sampling Locations
See In-stream Chemical Monitoring. 2(a)(1) above.

5. Reporting
Reports shall provide a comparison between pre-mining conditions and post initiation of mining, including the other data analysis described in Chapter 8. IV. Data Analysis of the MABISW. The report shall be provided within 90 days of the last data collected during each period, spring and summer. Reports shall be provided to KYDNR, to the Louisville District Engineer, and to EPA.[5]

(3) Remedial Actions

a) The effluent and in-stream biological and chemical monitoring before (i.e., baseline), during, and after active mining activities is required in order to evaluate the effectiveness of the BMPs and any downstream water quality effects as the mining proceeds. The permittee shall, whenever monitoring results show in-stream conductivity levels above 400 uS/cm as a monthly average at any of the sampling location identified in Section 2(a)(1) above during low- or base-flow conditions (e.g., not during, or within 24 hours after, a precipitation event), immediately notify the KYDNR, the Corps and EPA, and implement additional BMPs to further reduce pollutant discharges. In addition, the permittee shall increase the in-stream and effluent chemical monitoring frequency to four times per month. If in-stream SC levels rise to more than 500 uS/cm as a monthly average for two successive quarters at any of the sampling location identified in Section

[5] Reports shall be sent to the Kentucky Department of Natural Resources, Division of Mine Permits, 2 Hudson Hollow Road, Frankfort, KY, 40601; the District Engineer, Louisville District of the U.S. Army Corps of Engineers, 600 Dr. Martin Luther King, Jr. Place, Louisville, Kentucky, 40202; and the EPA's Branch Chief of the Wetlands, Coastal, and Oceans Branch, U.S. Environmental Protection Agency, Region IV, 61 Forsyth Street South West, Atlanta, Georgia, 30303-8960.

2(a)(1) above during low- or base-flow conditions, the permittee shall notify the KYDNR, the Corps and EPA, and shall conduct an analysis of the reasons for the increased conductivity and identify the corrective measures the permittee intends to take to reduce the discharge. Corrective measures may include reducing the footprint of disturbed acreages of land and applying additional BMPs to the area contributing to the associated outfall or alternatively, treating the effluent or ceasing further mining activities in areas contributing to the discharge from the outfall until the in-stream SC is below 500 uS/cm as a monthly average for two consecutive months. The permittee shall implement those measures following written approval by the Corps, in consultation with EPA and the NPDES permitting authority.

b) Should monitoring indicate that any of the chemicals monitored are likely to cause or contribute to a violation of Kentucky's narrative or numeric water quality standards, the permittee shall: immediately notify the KYDNR, the Corps and EPA, conduct an analysis of the reasons for the increasing trends and potential violations, and identify the corrective measures the permittee intends to take to reduce the discharge of the appropriate parameters. The permittee shall implement those measures following written approval by the Corps, in consultation with EPA and the NPDES permitting authority.

c) Reporting: By the November following the third biological sampling season after completing construction of the first lift associated with Hollow Fills HF No. 10 and 11, the permittee shall provide a report to the KYDNR, the Corps, and EPA that includes all sampling data available to date and discusses the impacts, if any, to the chemical, physical and biological condition of the receiving streams at each monitoring location. The sampling results shall be analyzed comparing the results to the threshold trigger values identified in Section 3(a) above and any pertinent State numeric and/or narrative criteria that exist at the time of the last sample period. The report shall document each time a threshold trigger value or threatened excursion occurred, the remedial action(s) taken, and how the remedial action(s) affected the monitoring results following the remedial action(s).

d) The summary reports required above shall be sent to the District Engineer, Louisville District of the U.S. Army Corps of Engineers, 600 Dr. Martin Luther King, Jr. Place, Louisville, Kentucky, 40202. Reports to the EPA shall be sent to the Branch Chief of the Wetlands, Coastal, and Oceans Branch, U.S. Environmental Protection Agency, Region IV, 61 Forsyth Street South West, Atlanta, Georgia, 30303-8960 and to the Branch Chief of the S.E.S.D.'s Ecological Assessment Branch, 980 College Station Road, Athens, Georgia 30605-2720.

e) Should new information regarding the scope and/or proposed impacts of the project become available that was not submitted during review of the proposal, the permittee shall submit in writing such information and their proposed actions regarding this information to the Corps and EPA for review and evaluation, as soon as the new information is discovered.

f) As-built drawings, certified by a professional engineer, shall be furnished to EPA and the Corps offices within 60 days of completion of construction showing the location and configuration, as well as all pertinent dimensions and elevations of each project component authorized under this Department of the Army Permit.

Cumulative Effects

Explanation: This permit is proposed to be covered as a Nationwide Permit 21. While EPA is not specifically opposing authorization of this project under a Nationwide general permit, we request that the Corps provide an explanation of how this project is consistent with 40 C.F.R. 230.1(c) and 40 C.F.R. 230.11(g). EPA has consistently expressed significant concerns regarding cumulative impacts associated with this project in the Paw Paw Creek watershed. Other surface coal mining permits within the Paw Paw Creek watershed include: the original Apex Energy project, including the Collie Fork impacts (Permit No. 898-0303); Apex Energy's Grassy Fork mine (Permit No. 898-0814); Hubbert Scarberry Surface K.B.L.C. Mine; K.B.L.C. Mine – Cove Hollow; Howard Dotson – Surface K.B.L.C. Mine; and Hollie Scarberry Heirs Surface K.B.L.C. Mine. The water quality monitoring required by the KDNR Surface Mining Coal and Reclamation Act (SMCRA) permits for the second active Apex (898-0814) surface coal mine documented conductivity values five times higher than pre-mining conditions (200s to >1,100 uS/cm). It is critical that additional mining within the Paw Paw Creek watershed not lead to further degradation of water quality. The permit conditions described above for in-stream chemical and biological monitoring, together with the remedial actions required, will ensure that further cumulative effects are sufficiently monitored and avoided.

Compensatory Mitigation

The permittee shall implement and abide by Chapter 7 MITIGATION, beginning on page 14, of the Department of the Army Permit Application, Mitigation Work Plan (MWP) pages 1 through 8, minus reference to the creation of groin ditches, and the following special conditions. The permittee shall implement the mitigation work plan and complete the initial construction and plantings in accordance with the time frames specified in the above referenced chapter. Completion of all elements of this section is a requirement of this Department of the Army permit. In the event there is conflict between the MWP and a special condition, the special condition shall be followed.

(1) Site Locations shall include the creation of jurisdictional waters along the edges of fill, typically called groin ditches, to include stream side riparian areas at least 50 feet wide on both sides, planted with at least four of the trees listed on "Proposed Riparian Zone Planting Plan" trees with a modification to the tree sizes to be containerized trees with a height of greater than 0.75 meters tall (above the roots) at the time of planting.

a) Baseline Information. Pre-work shall include the collection of Existing Channel Material measurement for the existing ephemeral streams of Carver Fork and the unnamed tributary to Carver Fork.

b) Goals and Objectives. The goals of this section shall be modified to include compensatory mitigation monitoring of the functional values, both projected and monitored, shall include the physical, chemical, and biological elements of the Eastern Kentucky Headwater Stream Assessment Protocol (EKHSAP), United States

Environmental Protection Agency Rapid bioassessment protocols for use in streams and wadeable rivers (EPA 841- B-99-002), and KDOW's MABISW for the enhanced intermittent Carver Fork compensatory mitigation sites.

i. To compensate for unavoidable adverse impacts to waters of the United States, the permittee will ensure the following mitigation measures are successfully implemented and monitored: Enhancement of greater than 1,542 linear feet of Carver Fork; and

ii. Monitoring shall continue for ten years for the vegetation survival within the 50-foot riparian zone on both sides of the enhanced intermittent stream channels and the in-stream physical, chemical, and biological elements.

c) Long Term Protection for Compensatory Mitigation Sites. The permittee shall dedicate in perpetuity by an appropriate real estate instrument or other long-term protection mechanism approved in writing by the United States Army Corps of Engineers as aquatic resource mitigation 1,542 linear feet of enhanced stream channels within Carver Fork and the unnamed tributary to Carver Fork with the riparian zones of 50 feet on either side of the stream channels (4.3 acres).

i. The long-term protection instrument or mechanism must also include a map depicting the boundary of the preservation sites.

ii. The permittee shall survey the mitigation areas, develop appropriate restrictive instruments for the surveyed areas, submit the appropriate real estate instrument or other long-term protection mechanism to the United States Army Corps of Engineers for approval, and record the approved real estate instrument or other long-term protection mechanism with the Pike County Clerk or other approved entity.

d) The protective real estate instrument or other long-term protection mechanism must stipulate that the mitigation areas shall be properly marked and shall not be disturbed, except by those activities that will not adversely affect the intended extent, condition and function of the mitigation areas. The real estate instrument must, to the extent appropriate and practicable, prohibit incompatible uses (e.g., clear cutting) that might otherwise jeopardize the objectives of the compensatory mitigation project. Livestock grazing, mowing, clear cutting, and similar activities are not allowed unless written permission is granted by the United States Army Corps of Engineers.

e) The permittee shall provide a copy of the recorded instrument or other long-term protection mechanism for the mitigation areas within 120 days from the date of the permit.

f) The restriction shall not be removed from the deed or modified without written approval of the United States Army Corps of Engineers and conveyance of any interest in the property must be subject to the recorded instrument or mechanism. Any proposed activities, including transfer of title to, or establishment of any other legal claims over, the compensatory mitigation sites within the protected easement areas must be coordinated through this office 60-days in advance.

2) Natural Stream Design

a) The permittee must use natural stream design techniques and concepts, based on reference stream pattern, profile, and dimensions using sound geomorphology techniques, to determine the appropriate hydrogeomorphic configuration of the enhanced stream channels. The permittee shall incorporate appropriate in-stream enhancement measures such as step pools, eddy rocks, aquatic habitat structures, and meanders within the created and enhanced stream channels to provide future aquatic diversity functions. The new channel configurations will conform to the restored watershed size and shape and be capable of transporting the corresponding stream flow and bedload. All enhanced streams must be designed in a manner that will not eliminate partial canopy closure over the mitigation channels. The use of grout is prohibited to prevent the loss of hydrology in the restored stream channels. The permittee shall immediately notify the United States Army Corps of Engineers to discuss other alternative methods which shall be directed by the United States Army Corps of Engineers in its sole discretion.

b) Planting

i. A minimum a 50-foot vegetated buffer zone (on each stream side), consisting of native riparian grasses, shrub and tree species will be planted and, or established along 1,542 linear feet of enhanced stream channels in the Carver Fork. The trees planted in the riparian zones shall be container trees that are at least 0.75 meters tall above the roots. The riparian zone must have a cumulative succession rate of at least 500 stems (tree and shrub stems) per acre three years after planting and maintained throughout the ten year monitoring period. The native plantings shall consist of a minimum of 70% tree stems and no more than 25% of these trees should be soft mast producers. Woody stems shall be irregularly placed along the corridor and low growing shrubs will be planted between trees. All trees and shrubs shall be selected based upon their hydrologic and edaphic tolerances, wildlife food and cover value, and shall be native to the project area. At least 5 herbaceous species, 4 shrub species and 5 tree species shall be used along each of the 50-foot mitigation riparian buffer zones. The use of chicken wire, hardware cloth, repellants, or other materials may be necessary to achieve succession requirements in areas with a beaver population.

ii. Loosely graded non-compacted topsoil or topsoil substitutes that include woody debris and native seeds shall be used in each riparian area.

iii. Excessive competition from ground cover has had a negative impact on establishment of tree stands on mined lands due to the use of aggressive species such as fescue and excessive fertilization designed for herbaceous vegetation. Selection of ground cover shall be based on soil pH and the growth habit of the species. Slow growing ground cover species insures soil stabilization while allowing tree seedlings to emerge above the ground cover, ensuring their survival. Therefore, native and non-competitive domestic ground covers (tree-compatible) shall be used to quickly protect the site, encourage native forest plants and animals, and enhance forest succession.

iv. Invasive plant species are prohibited from use in the 50 foot buffer zones along stream channels. Invasive species reproduce rapidly, forming stands that

exclude nearly all other plant species. In the worst cases, they radically alter the ecosystem processes, alter natural areas, and displace native species. On February 3, 1999, Executive Order 13112 was issued to discourage the introduction of invasive species and provide for their control to minimize the economic, ecological and human health impacts that invasive species cause. Preventative measures will be taken to inhibit invasive species from establishing in the vegetated buffer zones along the mitigation areas. Upon discovery of invasive species, the permittee shall coordinate removal efforts with the United States Army Corps of Engineers to determine and implement appropriate eradication techniques.

c) As Built Submittal 0f Compensatory Mitigation Sites

d) As-built channel surveys will be conducted to document the dimension, pattern, and profile of the 1,542 linear feet of enhanced intermittent stream channels of Carver Fork and surrounding 50-foot riparian areas totaling 3.5 acres. Permanent cross-sections will be established during this survey for use during future monitoring surveys. At a minimum, two permanent cross-sections will be established in each mitigation area. The intermittent stream locations will be selected to represent approximately 50 percent of the riffle habitat and 50 percent of the pool areas. The as-built surveys will include photographic documentation at cross-sections and structures, a plan view diagram, vegetation information, and a pebble count for at least three cross-sections per reach.

e) Within 6 weeks of completion of mitigation construction (i.e. site preparation and planting), a report must be submitted to the United States Army Corps of Engineers describing the as-built status of the mitigation project(s). Topographic maps must be submitted showing as-built contours of the compensatory mitigation streams. The location of plantings and other installations or structures shall be indicated on the maps.

3) Performance Standards

a. Implementation of the MWP must ensure the enhanced stream segments and adjacent 50-foot riparian areas totaling 3.5 acres meet the performance standards outlined in the MWP referenced on pages 1 through 8 in the application; the KYDOW's MABISW are equal to or better than the pre-work, reference, and "good" classification; and the following special conditions. If the mitigation efforts do not meet the performance standards outlined in the MWP and the above conditions, then corrective measures, and/or additional mitigation will be required.

i. Definable Bed and Bank with Ordinary High Water marks enhanced streams must develop and maintain definable bed and bank with an ordinary high water mark in order to meet the definition of waters of the United States under the Regulatory Program regulations.

ii. Waters of the United States must function at the level of ecological performance prescribed in the mitigation plan along with the physical, chemical and biological counterparts, where applicable (i.e., biological invertebrate sampling may not be appropriate for ephemeral reaches). Proposed mitigation

areas will be evaluated for U.S. Environmental Protection Agency Rapid Bioassessment Protocol for use in streams and wadeable rivers (EPA 841- B-99-002) habitat assessment values (HAV), the Eastern Kentucky Headwater Stream Protocol Environmental Integrity Index (EII) scores, and the MABSIW assessments found in Chapter 8. Comparison to the baseline data will be used to determine if the proposed mitigation measures have resulted in an overall increase in the applicable chemical, physical, and biological scores. Comparisons to the projected scores found in the 404 application shall also be conducted.

iii. Success of proposed intermittent mitigation areas will include benthic macroinvertebrate communities compared to KYDOW's MABISW macroinvertebrate assessment protocol, Chapter 8 and United States Environmental Protection Agency Rapid bioassessment protocols for use in streams and wadeable rivers (EPA 841- B-99-002). This information shall be compared to the baseline data, the KDOW reference sites for the same ecosystem, and the Data Analysis, subchapter 8.IV.

iv. Success of proposed intermittent mitigation areas will also be based on water chemistry data as compared to baseline data as shown in the MWP, along with all applicable Kentucky numeric and narrative water quality standards for each of the water quality parameters listed above, and benthic assessments identified above.

v. Buffer and riparian zones and other areas integral to the enhancement of the aquatic ecosystem must function as the intended type of ecosystem component and at the level of ecological performance prescribed in the MWP, page 3.

b. Linear Foot and Stream Flow Origin

A total of 1,542 linear feet **[may be more to account for ephemeral stream impacts]** of enhanced intermittent stream channels in Carver Fork and 3.5 acres of riparian buffer habitat must be present and functioning as the intended type of waters of the United States and at the level of ecological performance prescribed in the mitigation plan and describe above for the biological and chemical counterparts.

c. Geomorphology.Bankfull Events

i. For the intermittent Carver Fork and downstream perennial stream reaches of Paw Paw Creek, two bankfull flow events must be documented within the 10-year monitoring period. The purpose of monitoring bankfull events is to document that out-of-bank flows and an active floodplain have been restored as part of the mitigation work.

ii. There must be little change in as-built cross sections. If changes do take place, they must be evaluated to determine if they represent a movement toward a more unstable condition (e.g., down-cutting or erosion) or a movement toward increased stability (e.g., settling, vegetative changes, deposition along the banks, or decrease in width/depth ratio). Cross sections would be classified using the Rosgen Stream Classification System, and all monitored cross sections would fall within the quantitative parameters defined for channels of the design stream type.

d. Longitudinal Profile

Longitudinal profiles would be completed to determine the stability of the bedform features for the intermittent stream compensatory mitigation. The intermittent stream pools must remain deep, with flat water surface slopes, and the riffles must remain steeper and shallower than the pools. Bedforms observed must be consistent with those observed for channels of the design stream type.

e. Bed Material Analyses

Pebble count data would be plotted on a semi-log graph and compared with data from previous years and baseline conditions. Data must indicate a relative coarsening of the riffles (or maintenance of a coarse bed in constructed riffles) and a relative fining in the pools for the enhanced intermittent stream reaches.

f. Vegetative Survival

i. Transect surveys of vegetation would be performed to determine survival of native vegetation and avoidance of exotic or invasive species. At least 500 live shrub and tree stems per acre survival at end of monitoring period, minimum 75% woody tree stems with no more than 25% being soft mast producers must be present in the 50 foot vegetated riparian area. Proposed mitigation areas must exhibit a total of 80% survival rate of native vegetation.

ii. The riparian areas shall contain no more than 5 percent aerial cover of any invasive species identified by the resource agencies.

g. Habitat Assessment Scores

i. Proposed mitigation areas will be evaluated for United State Environmental Protection Agency Rapid Bioassessment Protocol (EPA 841- B-99-002) habitat assessment values (HAV), KDOW MABISW Core and Supplemental Metrics (CSMs) and the Macroinvertebrate Bioassessment Index (MBI) values, and Eastern Kentucky Headwater Stream Protocol EII. Data derived from HAV, CSM, MBI and EII will be used as a comparison to baseline data to determine if the proposed mitigation measures have resulted in an overall increase in the HAV, CSM, MBI or EII in addition to was shown in the MWP.

ii. Success of proposed intermittent mitigation areas will also be based on water chemistry data as compared to baseline data as shown in the MWP, and the applicable Kentucky numeric and, or narrative water quality standards existing at time of the last data collection for each of the water quality parameters listed above.

4) Other Performance Standards:

a. Storm water run-off must remain in the mitigation stream channels and not outside the channels unless the storm event exceeds the design capacity of the stream channels;

b. Water must flow above ground when present in the enhanced intermittent stream channels, respectively.

c. At least 85% of the primary channel bottom in the proposed enhanced stream channels would be free of sediment.

d. The stream restoration work must ensure the enhanced stream segments develop into equal or better habitats than existed prior to construction activities. A habitat assessment would be performed to determine if the morphological characteristics of the affected streams have returned to or have exceeded their original habitat scoring. If the enhancement efforts do not meet this performance standard, corrective measures or additional mitigation would be required.

e. All mitigation streams must be surrounded by a minimum 50-foot wide vegetated riparian buffer on either side of the stream.

   i. All mitigation sites shall be monitored annually for 10 years following completion of the applicant's proposed compensatory mitigation efforts. Monitoring reports must be submitted to and received in this office by December 31 of each year following the first full year of completion of the enhanced mitigation activities. The first report must contain as-built drawings of all mitigation areas. All reports must provide a status of the restored stream segments, including photographs and narrative descriptions of channel development. The District Engineer may extend the monitoring past the minimum 10 years based upon a determination that performance standards stated herein, in the CMP have not been met or the compensatory mitigation project(s) is not on track to meet them (e.g. high mortality rate of vegetation, absence of an ordinary high water mark, lack of habitat diversity, lack of surface hydrological connection to navigable waters). The District Engineer may also revise the monitoring requirements when remediation is required. The District Engineer may require monitoring of the mitigation sites more often than annually during the early stages of development to quickly address problems and/or concerns associated with the mitigation site.

   ii. Annual evaluations shall be performed to determine whether the mitigation efforts are on track to meet performance standards identified in the permittee's CMP and the United States Army Corps of Engineers permit special conditions, to allow for mid-course adjustments, and to report on any unanticipated benefits or problems as a result of the monitoring program.

f. The information accumulated through this process will be used to adjust strategy periodically on the basis of what has been learned. If the mitigation site(s) are generally progressing as expected or if progress is slower than expected but would probably meet mitigation goals and objectives within a reasonable amount of time, no action would be necessary. However, physical actions might be required to maintain aquatic resource development on course toward its goals or significant changes in parts of the implemented mitigation plan could be required. And chemical situation may require advanced treatment technology as part of the adaptive management plan.

   i. In order to provide a comparison of stream and riparian area development throughout the years of required monitoring, the scores United States Environmental Protection Agency Rapid bioassessment protocols for use in streams and wadeable rivers (EPA 841- B-99-002), the KDOW MABISW wadeable streams, and the Eastern Kentucky Headwater Stream Assessment Protocol (EKHSAP) will be provided with each submitted monitoring report.

ii. To ensure coordination with resource agencies one original and five copies of the monitoring report must be submitted for review. Failure to submit monitoring reports constitutes permit non-compliance.

g. Annual monitoring reports must include details sufficient for an inspector to determine compliance with performance standards and to identify any required remedial actions. At a minimum, information outlined in the United States. Army Corps of Engineers Regulatory Guidance Letter (RGL) No. 08-03 and titled "Minimum Monitoring Requirements for Compensatory Mitigation Projects Involving the Creation, Restoration, and/or Enhancement of Aquatic Resources" must be provided. This RGL is attached.

h. Monitoring reports are required by December 31 of each year even if no coal mining related work is conducted during the reporting period.

i. Remedial actions taken during the monitoring period shall be described. These actions may include, but are not limited to, removing debris, replanting, controlling invasive species, regrading the site, applying additional topsoil or soil amendments, adjusting site hydrology, etc. Remedial measures may be necessary to achieve or maintain achievement of the success criteria and otherwise improve the extent to which the mitigation site(s) replace the functions and values lost due to project impacts.

j. All compensatory mitigation is expected to ensure the stream segments develop into an equal or better habitat than existed prior to construction, meeting performance standards. If the mitigation efforts do not meet a performance standard, efforts indicated by the applicant's Contingency Plan or other corrective measures will be required to be performed by the permittee as directed by the District Engineer.

k. If an annual performance criterion is not met for all or any portion of the mitigation/restoration project in any year, or if the final performance standards are not met, the applicant shall prepare an analysis of the cause(s) of failure, if determined necessary by the United States Army Corps of Engineers, and propose remedial actions for approval.

l. If performance standards are not met, a brief explanation of the difficulties and potential remedial actions or additional compensatory mitigation proposed by the permittee, including a timetable, must be provided. The District Engineer will ultimately determine if the mitigation site is successful for a given monitoring period.

m. The permittee shall monitor for the presence of invasive species within the boundaries of the mitigation sites, including the upland buffers. Invasive species reproduce rapidly, forming stands that exclude nearly all other plant species. In the worst cases, they radically alter the ecosystem processes, alter natural areas, and displace native species. Should the presence of any of these species be documented at any time during monitoring procedures, the permittee must contact the United States Army. Corps of Engineers to discuss appropriate measures needed to control and eradicate these species and to take such measures as the United States Army Corps of Engineers directs.

n. The permittee is reminded that remedial measures are necessary to achieve or maintain achievement of the success criteria and otherwise improve the extent to which the mitigation site(s) replace the functions and values lost due to project impacts.

5) Monitoring Inspections

a. The permittee shall arrange an on-site meeting with the United States Army Corps of Engineers during the growing season after the first, third, fifth, seventh and ninth year reports are submitted. The purpose of the meeting is to determine if the stream mitigation sites have been constructed in accordance with the mitigation plan and are functioning as expected. A current jurisdictional determination documenting the limits of all waters of the United States shall be provided for verification at the end of the second growing season.

b. Problems at the mitigation areas shall be addressed and potential solutions must be incorporated into actions the permittee would take to allow the mitigation areas to reach their proposed functional status. The permittee is responsible for implementing reasonable corrective measures recommended by the United States Army Corps of Engineers.

c. The permittee's responsibility to complete the required compensatory mitigation as set forth in the application's MWP and as stated above will not be considered fulfilled until the permittee has demonstrated a sustainable level of mitigation success and has received written verification from the United States Army Corps of Engineers that areas within the mitigation areas meet the success criteria established in the application for the physical form of the created and enhanced areas and as stated above for the biological and chemical components.

Following submittal of the tenth year of compensatory mitigation monitoring report, a determination of the mitigation success will be made by the United States Army Corps of Engineers. If the performance standards have been achieved, the applicant would be released from future monitoring requirements. However, if success criteria have not been adequately met, the applicant may be required to implement contingency measure(s), including additional mitigation, to ensure compensation adequately offsets the loss of waters in association with the proposal as determined in the sole discretion of the District Engineer. Monitoring may be extended for a longer period if completed mitigation is not functioning as predicted in the CMP. Additionally, the permittee will contribute funding to the KY In-Lieu Fee Program, purchase credits from an approved mitigation bank and/or preserve aquatic resources or other alternative mitigation as determined by the United States Army Corps of Engineers in the event the District Engineer determines that additional mitigation and monitoring would not ensure adequate compensation for impacts to waters of the United States. The amount of in- lieu fee paid shall be based upon the length of restored channel that does not meet the mitigation goals and performance standards.