CENTER for BIOLOGICAL DIVERSITY Because life is good.

March 26, 2015

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Re: Comments in Opposition to Arrakis Oil Recovery 404 Permit Application for Tar Sand Mining; Public Notice No. LRL-2014-947--gjd.

Dear Staff of the Army Corps,

On behalf of the Center for Biological Diversity (the "Center"), we respectfully submit the following comments (w/ attachments) urging your agency to reject the Clean Water Act 404 permit application for Arrakis Oil Recovery (the "Applicant") to relocate streams and wetlands to facilitate the recovery of tar sands in the vicinity of Motts Creek and Mud River in Logan county, Kentucky (the "Project"). The tremendous environmental and climate impacts, as well as the risks to the area's waterways, wetlands and wildlife posed by the Project, are simply unjustifiable and warrant denial of the requested permit for this Project.

The Center is a national non-profit conservation organization with more than 825,000 members and online activists, including members and supporters in Kentucky. Our organization and members are concerned about the survival of imperiled plants and animals, and the waterways of Kentucky and the species they support, which hold scientific, moral, aesthetic, and other value to our members and staff. The Center also herein incorporates by reference the comments submitted by the Kentucky Waterways Alliance, which discuss additional concerns regarding water quality impacts from the Project, and provide further reasons for the Corps to deny this permit.

As discussed below, there are numerous reasons why this Project should not be allowed to proceed and we ask the Corps to deny the necessary Clean Water Act permits for the Project. If the 404 permit will not be immediately denied outright based on these concerns, the Center urges the Corps to complete an environmental impact statement pursuant to the National Environmental Policy Act ("NEPA") and to reconsider the potential for harm to species protected under the Endangered Species Act ("ESA").

I. The Proposed Project Does Not Comply With the Section 404(b)(1) Guidelines and is Not in the Public's Interest.

Section 404 of the Clean Water Act ensures that no discharge of dredged or fill material is allowed if a practicable alternative exists that is less damaging to the aquatic environment or if the proposal would significantly degrade the nation's waters. The Clean Water Act Section 404 Guidelines and the Corps' implementing regulations require the Corps to deny the 404 permit "unless it can be demonstrated that such discharge will not have an unacceptable adverse impact" on the aquatic ecosystems.[1] A permit must also be denied if it will jeopardize the continued existence of a threatened or endangered species under the ESA.[2] Furthermore, the decision whether to issue a permit must be based on an evaluation of the probable impact of the proposed activity on the public's interest, which includes the cumulative impacts on conservation, general environmental concerns, fish and wildlife values, and the needs and welfare of people.[3]

Here, it is difficult to conceive of a project with greater unacceptable adverse and cumulative impacts, and there has been no showing that practicable alternative do not exist that would be less damaging to the aquatic environment. The Project would entail bulldozing wetlands and streams -- destroying habitat and water resources -- in order to strip mine for bitumen, a dirty fossil fuel that will contribute to climate change and poses a risk of harm to the local environment through toxic contamination.

In addition, several of the species put at risk by the proposed Project are protected under the ESA. Irrespective of the concurrence letter from the U.S. Fish and Wildlife Service (which only covers bats and actually confirms that the "streams and wetlands within the proposed action area likely serve as foraging habitat for gray bats"),[4] the Project has the potential to take endangered freshwater mussels and bats through the poisoning of surface water resources from strip mining activities or spills of bitumen - an issue not covered by the Service's concurrence letter. This can harm these species directly, or through bioaccumulation of contaminants, such as in the water-dependent insects that the bats eat. Allowing activities that may harm these species opens up both the agency and private actors to ESA take liability,[5] and the potential harm to these listed species from a spill suggests that the Project is not in the public interest.

Moreover, the Corps must, when determining whether the Project is in the public interest, take into account the extent and permanence of the detrimental effects which the proposed Project is

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[1] 40 C.F.R § 230.1(c).
[2] *Id.* § 230.10(b)(3).
[3] 33 C.F.R. § 320.4(a).
[4] The Service's concurrence with the Applicant's "Biological Assessment" fails to consider the full range of impacts to these imperiled species, ignores the likely take of listed bats from spills and related contamination of foraging areas, and is therefore inconsistent with the ESA. given the potential for contamination from strip mining for tar sands and spills of bitumen or other substances, along with the large amount (82 acres) of bat forage habitat and the fact that an endangered gray bat was in fact captured during the Applicant's mist-net survey, the Project clearly has the potential to adversely affect these listed species. The Service's concurrence is therefore not based on the best scientific evidence, and must be set aside. *See* 5 U.S.C. § 706(2) (if the Services' concurrence in a "not likely to adversely affect" finding is inconsistent with the best available science, any such concurrence must be set aside).
[5] 16 U.S.C. §§ 1538(a)(1)(B), 1532(13).

likely to have on the area.[6] The Corps must make specific findings on the potential impacts of the Project on aquatic ecosystems and organisms and the cumulative effects on the aquatic ecosystems.[7] The impacts to the environment discussed below require a finding that the Project is not in the public interest. Nor is it in the public's interest to support dirty fossil fuel extraction, which will exacerbate climate change. The permit must therefore be denied.

A. The Environmental Impacts of Tar Sand Extraction

Tar sands oil comes from sand "impregnated with a viscous, extra-heavy crude oil known as bitumen."[8] Bitumen is the desired portion of the tar sands because liquid fuels can be derived from it.[9] Unlike conventional crude, bitumen must be mined or extracted in-situ.[10] Mining occurs when the tar sands deposits are less than about 75 meters below the surface and are akin to conventional strip mining methods,[11] which are well known to have far-reaching environmental impacts.

Though the Applicant has not disclosed how it intends to transport the bitumen, thick heavy bitumen must be diluted, thus made lighter and less viscous, so that it can be transported.[12] This is often accomplished by mixing the Bitumen with diluents to create diluted bitumen or dilbit, upgrading the bitumen to synthetic crude, or mixing the bitumen with lighter sweet crudes to create synbit.[13] While the Applicant has stated its intent to upgrade the bitumen to synthetic oil to be sold to Gulf Coast oil refining markets, it has not provided any information on the process it would use (normally a chemical and heating process to remove impurities that can also release toxic polycyclic aromatic hydrocarbons (PAHs)), or where this would take place, and how the bitumen would be transported to that location. It does not appear from the application materials that the Applicant intends to upgrade the bitumen to synthetic crude on-site, so it would be necessary for the Applicant to dilute the bitumen (most likely with lighter oil to create synbit) before transporting it to be upgraded.[14] Without this information, it is not possible for the Center -- or the Corps -- to fully analyze the cumulative impacts of this Project. The Applicant's failure

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[6] 33 C.F.R § 320.4(a)(2).
[7] 33 C.F.R § 230.11.
[8] U.S. Department of Interior, Oil Shale and Tar Sands Draft Programmatic Environmental Impact Statement, Appendix B at 3 (February 2012) (available at http://ostseis.anl.gov/documents/peis2012/chp/OSTS_Appendix_B.pdf).
[9] *Id.*
[10] NATURAL RESOURCES DEFENSE COUNCIL, TAR SANDS PIPELINES SAFETY RISKS AT 5 (February 2011) (*available at* http://www.nrdc.org/energy/files/tarsandssafetyrisks.pdf).
[11] CONGRESSIONAL RESEARCH SERVICE, CANADIAN OIL SANDS: LIFE-CYCLE ASSESSMENTS OF GREENHOUSE GAS EMISSIONS at 4 (June 2012) (*available at* http://www.fas.org/sgp/crs/misc/R42537.pdf).
[12] *Id.*
[13] *Id.*
[14] If the bitumen will be transported without being diluted, which is rare, it would have to be heated to load into tank cars and then heated again at the destination, since raw bitumen is the consistency of peanut butter. This heating process allows volatile organic compounds to escape, which poses a significant risk of human health impacts. The Applicant's materials do not discuss this; however, the Corps must include these issues in its analysis of the cumulative impacts of the Project.

to include any information on how it will upgrade the bitumen and where the process will take place renders its application incomplete.

The Corps should be aware that bitumen tar sand products are highly corrosive, acidic, and potentially unstable. Tar sand bitumen products are characterized, when compared with conventional crudes, as being extremely heavy, having high viscosity and a high total acid number, containing significant sediment, and potentially high sulfur and heavy metal content.[15] These physical differences between bitumen and conventional crude are significant because they impact how the respective substances act in the event of a spill. Heavy oils persist longer, sinks in water bodies and can smother shorelines and the biota that live there. This viscous type of oil, once spilled into aquatic environments, creates a nightmare clean-up scenario with lasting and perhaps irreversible impacts to water quality and aquatic ecosystems. It is therefore surprising that the Applicant has not discussed the potential for spills anywhere in the application materials. This further renders the application incomplete.

As discussed further below, the proposed Project would have far-reaching impacts on human health and the environment. While the Applicant has stated that it will be using a new extraction method (Sandklene 950), which it claims may have less impact on the environment, unless and until these claims are proven the Corps must consider the potential impacts that tar sand extraction has been shown to cause to human health and the environment. Furthermore, without a permit condition requiring that the Applicant use this method, it could alter its plans at any time after the permit is issued (based on economic considerations) to use traditional tar sand extraction methods that have been shown to be incredibly detrimental to the environment. Therefore, the Corps must not rely on the unproven and discretionary methods the Applicant claims it intends to utilize in its analysis of the impacts of this Project.

Development of tar sands has been shown to be environmentally destructive, and water and energy intensive. Studies show that the production of synthetic crude oil from oil sands, on a per barrel basis, may include more than 5 lbs of Ammonium Sulfate, 300-440 lbs of CO_2, 68 lbs of petroleum coke, and 3/4 lb of sulfur, as well as requiring around 20 kWh of electricity and 3 pounds of fuel.[16] Much of this is from the process required to upgrade the bitumen to synthetic crude; however, as set forth above the Applicant has failed to provide any information on this process or its impacts in the Application materials.

Producing tar sands oil may also require up to three barrels of water for every barrel of oil.[17] The Applicant claims that the Sandklene 950 process it intends to test on this site will require "none... of the water use that traditional bitumen extraction and processing requires."[18] The EPA

[15] NATURAL RESOURCES DEFENSE COUNCIL, TAR SANDS PIPELINES SAFETY RISKS AT 6-7 (February 2011) (*available at* http://www.nrdc.org/energy/files/tarsandssafetyrisks.pdf).
[16] Institute for Clean and Secure Energy, A Market Assessment of Oil Shale and Oil Sands Development Scenarios in Utah's Uinta Basin, table 8 (July, 2013) (available at http://www.icse.utah.edu/assets/for_download/pdfs/projects/2013OilShaleMarketAssessment.pdf).
[17] Ed Struzik, *Report: With Tar Sands Development, Growing Concern on Water Use,* Yale Environment 360 (available at http://e360.yale.edu/feature/with_tar_sands_development_growing_concern_on_water_use/2672/).
[18] Applicant's Alternatives Analysis at 7.

webpage for Sandklene, however, indicates that 350 gallons of Sandklene/water solution (with a 0.15-1.0% Sandklene concentration) is needed to clean just 3 cubic yards of oiled sands, and that the mixture must be agitated at an elevated temperature in the range of 100-150 degrees.[19] This suggests that, contrary to the claims made by the Applicant, this Project has the potential to require excessive amounts of water and energy to extract bitumen from tar sands. Furthermore, the EPA analysis indicates that Sandklene 950 is in fact toxic at high doses (contrary to the erroneous claims of the Applicant), with an LC50 (the lethal concentration required to kill 50% of the population) of 1,200-1,700 ppm for the species that have been tested.[20]

The wastewater from separating the fossil fuels in tar sands from the sand, silt, and clay can contain carcinogenic substances like cyanide. Studies have shown, in fact, that the oil sands industry releases 13 elements considered priority pollutants under the Clean Water Act.[21] These include toxic heavy metals, like lead, nickel, and mercury -- and portions of the Mud River are already impaired due to high mercury levels and PCBs. The Project undoubtedly has the potential to exacerbate these problems, and could cause a violation of the water quality standards.[22] Tar sands development destroys species' habitat, wastes enormous volumes of water, pollutes air and water, and degrades and defiles the land.

Furthermore, compared with conventional crude oil production, tar sand exploitation generates 70 to 110 percent more greenhouse gas emissions from well to tank.[23] Therefore, extracting this product would deal a disastrous blow to any hope of reducing atmospheric CO2 levels to below 350 parts per million — the level we need to reach *soon* to stabilize Earth's climate. Allowing this Project to proceed will push us toward global warming catastrophe.

Little has been published on the impacts of tar sand exploitation specific to Kentucky or on the use of Sandklene 950, making this a new issue with unknown risks; however, it is clear from a review of published studies that the environmental impacts, excessive energy needs, and the substantially high GHG emissions from tar sand exploitation signify that there are far-reaching implications that the Corps must include in its analysis of whether permitting the Project is in the public interest. The harms discussed below indicate that permitting this Project would not be in the public interest, and the permit should be denied.

i. Impacts to water and habitat

While the application does not provide information on the specific type or amount of tar sands present in the area that the Applicant intends to strip mine, studies show that the tar sands in Kentucky are oil-wet (hydrocarbon-wet, sometimes called dry tar sands) like the tar sand

[19] *Id.*
[20] *Id.*
[21] Kelly, E.N. *et al*., Oil sands development contributes elements toxic at low concentrations to the Athabasca River and its tributaries, Proceedings of the National Academy of Sciences of the United States of America, Vol. 107 No. 37 (July 2, 2010) (available at http://www.pnas.org/content/107/37/16178.full).
[22] *See* Comments of Kentucky Waterways Alliance, incorporated herein by reference.
[23] Richard K. Lattanzio, *Canadian Oil Sands: Life-Cycle Assessments of Greenhouse Gas Emissions*, Congressional Research Service, Summary (July 18, 2012) (*available at* http://www.fas.org/sgp/crs/misc/R42537.pdf).

deposits in other portions of the U.S. such as the Colorado River Basin, as opposed to the water-wet tar sands of Alberta Canada; however, these different types of tar sands pose similar threats to water resources and wildlife habitat.

Oil-wet tar sands require chemicals, rather than steam, to extract bitumen. While the Applicant has stated an intent to use Sandklene 950 to extract bitumen, this does not mean that it could not switch to traditional methods of bitumen extraction if it turns out that the proposed method is uneconomical. Furthermore, as set forth above, contrary to the Applicant's claims Sandklene 950 may be toxic in high concentrations, such as may occur if the product is spilled. Regardless, diluted bitumen, when compared to the North American benchmark conventional crude, contains total acid concentrations 15-20 times higher, has a viscosity that is 40-70 times higher, has a sulfur content 5-10 times higher, and contains significant quantities of quartz and silicates while conventional crude contains almost none.[24] Strip mining for bitumen therefore poses a substantial risk of harm to the waters and habitats in and around the Project area.

Tar sands oil extraction has many unique and potentially catastrophic impacts for wildlife. Reports have shown that birds can die simply from landing on the tailings ponds of tar sands operations.[25] Though the Applicant's current plans do not include the use of tailings ponds,[26] this shows just how dangerous the waste products from tar sand mining can be for birds and other species. The toxic chemicals associated with tar sand mining can get into surface water resources, contaminating habitat and poisoning plants, animals and invertebrates.[27]

Studies have further shown that the exploitation of tar sands releases polycyclic aromatic hydrocarbons (PAHs) into both aquatic and terrestrial environments.[28] PAHs are known to be toxic and carcinogenic to aquatic species. Numerous scientific reports have made clear that fish

[24] NATURAL RESOURCES DEFENSE COUNCIL ET AL, PIPELINE AND TANKER TROUBLE: THE IMPACT TO BRITISH COLUMBIA'S COMMUNITIES, RIVERS, AND PACIFIC COASTLINE FROM TAR SANDS TRANSPORT 7 (NOV. 2011) (*available at* http://www.nrdc.org/international/files/PipelineandTankerTrouble.pdf).
[25] CBC News, *The Syncrude Duck Trial*, August 20, 2010 (*available at* http://www.cbc.ca/news/canada/edmonton/story/2010/03/24/f-edmonton-indepth-syncrude-ducks-trial.html).
[26] Note that without some permit provision requiring that the Applicant use the Sandklene bitumen extraction method, the Applicant could change its plans at any time and therefore the use of tailings ponds in the future is certainly possible.
[27] This has the potential to impact birds that are protected under the Migratory Bird Treaty Act (MBTA), which prohibits the take of migratory birds entirely and requires the minimization of loss, destruction, and degradation of their habitat. U.S. courts have found that deaths of protected birds resulting from oil sump pits and other contamination related to oil production are takings or killings under the MBTA. *See United States v. Moon Lake Elec. Ass'n, Inc.*, 45 F. Supp. 2d 1070, 1083 (D. Colo. 1999) (citing three cases in which the United States charged oil companies for deaths of protected birds resulting from the oil company's construction, maintenance, or operation of its oil sump pits).
[28] Giesy, J.P. *et al*., Alberta oil sands development, Proceedings of the National Academy of Sciences of the United States of America, Vol. 107 No. 3 (July 2, 2010) (available at http://www.pnas.org/content/107/3/951.full).

eggs laid on sediment contaminated by bitumen have shown frequent death or physical abnormalities including spinal deformities, lesions, hematomas, and eye defects. [29]

There are also additional concerns regarding the development of tar sands in Kentucky that pose increased risks of harm to people and the environment when compared with tar sand extraction in places like Utah. While Utah sees an average of around 12 inches of precipitation annually, Kentucky experiences much more, at nearly 50 inches per year. This magnifies the pollution threats already established from tar sand mining in places like Utah, since it exacerbates the potential movement of toxic chemicals into ground and surface waters, increasing the potential for contamination and exposure to people and wildlife. The Corps must consider these impacts in its analysis, and should find that the proposed Project is not in the public interest given these risks.

Again, the Corps may not ignore these potential threats to wildlife simply because the Applicant claims to have a new process for extracting bitumen from tar sands. This unproven technology may cause similar or worse impacts, or could be replaced with traditional methods if the Applicant decides to do so. Moreover, concerns regarding tar sand mining extend well beyond the land and water contamination associated with mining the tar sands and stripping out the bitumen -- spills of bitumen or other substances used in the production process are also likely, and pose a serious threat to the environment. The Applicant has provided no information on spill risk, nor has it provided a spill response plan, rendering the application woefully inadequate. The very real potential for toxic contamination and harm to the aquatic environment from spills at the Project site must be incorporated into the Corps' analysis, and the incredible risk of harm from these spills suggests that the Project would not be in the public interest.

A look at the types of wildlife primarily suffering adverse impacted from the 2010 Kalamazoo diluted bitumen spill and the recent Mayflower diluted bitumen spill reveals that these spills impact reptiles, amphibians, and species such as ducks that rely on aquatic habitats. In Kalamazoo, the Binder Zoo veterinarian who cared for many of the impacted reptiles and amphibians reported taking in 1,795 animals including eight varieties of turtles, two types of snakes, two frog varieties, and one toad species.[30] According to the Pipeline and Hazardous Materials Safety Administration (PHMSA), about 2,500 animals were treated.[31] Some were injured badly enough that they were still in the full time care of a veterinarian 15 months later.[32]

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[29] Colavecchia, M.V., Backus, S.M., Godson, P.V. & Parrott, J.L., 2004, Toxicity of oil sands to early life stages of fathead minnows (Pimephales promelas), Environmental Toxicology and Chemistry, 23:7, 1709-1718; Colavecchia, M.V., Hodson, P.V. & Parrott, J.L., 2006, CYP1A induction and blue sac disease in early life stages of white suckers (Catostomus commersoni) exposed to oil sands, Journal of Toxicology and Environmental Health, 69:10, 967-994; Colavecchia, M.V., Hodson, P.V. & Parrott, J.L., 2007, The relationships among CYP1A induction, toxicity, and eye pathology in early life stages of fish exposed to oil sands, Journal of Toxicology and Environmental Health, 70:18, 1542-1555.

[30] *See* http://www.binderparkzoo.org/kalamazooriver/

[31] Killian, C., The Kalamazoo River Oil Spill: What did we learn and how did we learn it. Kalamazoo Gazette (available at www.pstrust.org/docs/Kilian.ppt).

[32] Tainted turtles still suffering 15 months after river oil spill, Battle Creek Enquirer (Nov. 4, 2011) (available at http://www.battlecreekenquirer.com/article/20111104/OILSPILL/111040320/Tainted-turtles-still-suffering-15-months-after-river oilspill?odyssey=tab%7Ctopnews%7Ctext%7CFrontpage&nclick_check=1).

The recent and much smaller Mayflower diluted bitumen spill killed at least 205 animals within two weeks.[33] From these two incidents it is clear that spills of bitumen have significant impacts on many species, and pose a high risk of harm to the aquatic environment.

The impacts of bitumen spills on wildlife can be divided into two categories: effects of toxicity and effects of lost habitat.[34] The impacts of a diluted bitumen spill on wildlife include, but are not limited to reproductive failure, hypothermia or drowning due to coating of wings or fur, and fatal damage to internal organs.[35]

The difference between bitumen and conventional crude are made clear when the different substances spill into water. When conventional crude spills in a water body, it typically floats on the surface, thus oil spill responses have been designed to deal with floating oil.[36] Mechanical devices such as booms, skimmers, and adsorbent materials to contain and recover oil floating on surface waters are utilized as the primary line of defense for controlling conventional oil spills and minimizing their impacts.[37] However, these mechanisms do not work for spills of bitumen:

> [U]nlike conventional crude oils, the majority of DilBit is composed of raw bitumen which is heavier than water. Following a release, the heavier fractions of DilBit will sink into the water column and wetland sediments. In these cases, the cleanup of a DilBit spill may require significantly more dredging than a conventional oil spill. Further, heavy oil exposed to sunlight tends to form a dense, sticky substance that is difficult to remove from rock and sediments. Removing this tarry substance from river sediment and shores requires more aggressive cleanup operations than required by conventional oil spills. These factors increase both the economic and environmental costs of DilBit spills.[38]

Whether DilBit, SynBit or synthetic crude, the Applicant's bitumen-based tar sand oil will tend to sink in water. Spills at the site could therefore have disastrous consequences for the environment. Since the heavy compounds in bitumen will sink in water, it would also require much more invasive and energy intensive response actions, such as dredging, which destroys the

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[33] ExxonMobil: 205 Animals Killed in Mayflower Oil Spill, Arkansas Matters (April 17, 2013) (available at http://www.arkansasmatters.com/story/d/story/exxonmobil-205-animals-killed-in-mayflower-oil-spi/28520/FVT9VwIN4ECt-vNrjuUxjw).

[34] Enbridge, Northern Gateway Project Application Volume 7C: Risk Assessment and Management of Spills – Kitimat Terminal, at 7-40 (May 2010) (*available at* http://www.ceaa-acee.gc.ca/050/documents_staticpost/cearref_21799/43499/Volume_7C_-_Risk_Assessment_Mgmt_of_Spills-Kitimat.pdf).

[35] *Id.*

[36] Lisa Song, *A Dilbit Primer: How It's Different from Conventional Oil*, Inside Climate News (June 26, 2012) (*available at* http://insideclimatenews.org/news/20120626/dilbit-primer-diluted-bitumen-conventional-oil-tar-sands-Alberta-Kalamazoo-Keystone-XL-Enbridge).

[37] EPA, *Oil Spill Response Techniques,* EPA Emergency Management (January 2001) (available at http://www.epa.gov/oem/content/learning/oiltech.htm).

[38] NATURAL RESOURCES DEFENSE COUNCIL, TAR SANDS PIPELINES SAFETY RISKS 7 (February 2011) (*available at* http://www.nrdc.org/energy/files/tarsandssafetyrisks.pdf).

benthic environment.[39] Cleaning up spilled bitumen would be an expensive, lengthy process, with lasting and perhaps irreversible impacts to water quality and aquatic ecosystems. The reality of how much more difficult diluted bitumen is to clean up became obvious in the aftermath of the first major spill of diluted bitumen into U.S. waters near Marshall, MI in July 2010. The presence of submerged oil created challenges that cleanup experts were completely unprepared for.[40]

It remains unclear from the Application materials whether this Applicant is similarly unprepared to deal with spills at the Project site; however, the lack of any discussion of spills and spill response cannot be ignored by the Corps, since permitting the Project absent this information poses unacceptable adverse impacts to aquatic ecosystems. A spill response plan specific to tar sands and the unique risks they pose is essential for this Project; however, due to the nature of these heavy tar sands -- the difficulty they pose regarding clean-up efforts, along with the harm they pose to the environment if spilled -- the proposed Project is simply not in the public interest.

Additional habitat impacts include the direct loss of habitat through the planned strip mining and filling of streams and wetlands, which will kill most any species currently in the immediate area (at least those that cannot flee for their lives). The Corps should take into consideration that there are two state-listed endangered plant species in the area: *Echinodorus tenellus,* which is listed in Kentucky as S1 (critically imperiled) and endangered, and *Schoenoplectus hallii,* which is a G1 (critically imperiled) species and listed endangered, threatened, or historical in most states of known occurrence; it is S1 and endangered in Kentucky.[41] These plant species grow in depressions that are commonly found in Logan County, and in fact studies have shown that Logan County is the most likely place to find these rare and imperiled plants.[42] If these State-endangered plants are in the area, they, along with many other plants, invertebrates and animals in the Project area, will be bulldozed or potentially poisoned if the Project is approved. Allowing these harms, especially when they are for the purpose of exploiting dirty fossil fuels, is not in the public interest.

Furthermore, given the historic loss of wetlands in the area, any further loss would have a significant impact on the species that depend upon these sensitive ecosystems. According to the Applicant's Cumulative Impacts Analysis ("CIA"), "of the potentially 753 acres of historic wetland in the Review Area, approximately 54 acres remain, a loss of approximately 93%. Percentage-wise, this is extensive and would indicate the loss is greater in the RA than the

[39] Lisa Song, *Is Dilbit Oil? Congress and the IRS Say No*, Truthout (Aug. 4, 2012) (*available at* http://truth-out.org/news/item/10693-is-dilbit-oil-congress-and-the-irs-say-no).
[40] Lisa Song, *supra* note 36.
[41] Kentucky State Nature Preserves Commission, Rare plant list (available at http://eppcapp.ky.gov/nprareplants/index.aspx).
[42] Chester, E.W. and B.L. Palmer-Ball, 2011, Second county records for two Kentucky endangered species, Echinodorus tenellus (Alismataceae) and Schoenoplectus hallii (Cyperaceae), Phytoneuron, 2011-43: 1–4. (Sep. 6, 2001) (available at http://www.phytoneuron.net/PhytoN-Kentuckyrecords.pdf). This study found that these plants are often found in wet places in cultivated fields, pastures, and ditches, which is consistent with the land type of the proposed Project area. *See* Applicant's Aquatic Macroinvertebrate and Fish Survey Report at 2 (stating that the area is predominantly pasture and forest).

approximately 80%-85% estimated for the state as a whole."[43] While the Applicant has agreed to mitigate the loss of wetlands by rehabilitating the area after it has razed it, even the temporary loss of wetlands may have dire consequences for those species that rely on these areas for food and habitat, since so little remains. It would be egregious for the Corps to allow for any further loss of wetlands in this area, even temporarily, given this history.

The Project would include not only filling wetlands, but portions of streams as well. This has the potential to harm not only those species that live in and rely on those streams, but will likely result in increased sedimentation of the area's waterways. In fact, the Applicant's mitigation plan states that "Most of the existing intermittent streams... involve locations with steep gradients above major existing waterways,"[44] indicating that strip mining this site will likely cause increased sedimentation of nearby waters due to mining activities on steep slopes above major waterways. This sedimentation may smother streams or otherwise cause harm to aquatic habitats, including to endangered mussels (see below).

The Applicant has attempted to downplay the potential impacts to stream habitat in its application materials by suggesting that the areas just upstream and downstream of the Project area do not meet the KDOW aquatic habitat standards.[45] This, however, is based on admittedly incomplete information. The EPA has made it clear that "Both physical characteristics and water quality parameters are pertinent to characterization of the stream habitat."[46] One of the water quality parameters used to assess habitat is dissolved oxygen;[47] however, the applicant has readily admitted that the low DO levels it found were attributable to "equipment error."[48] It is unclear why the biologist conducting the analysis did not return with workable equipment, but what is clear is that any claim of habitat quality made by the Applicant is unreliable, given this equipment error. The Applicant's claim is further belied by the fact that the survey found "A total of 96 individuals and six native fish species" in the area just upstream, as well as "163 macroinvertebrate specimens, or 21 taxa," and "47 individuals and 10 species" of fish - including "fairly abundant" Native spotfin shiners (*Cyprinella spiloptera*) and greenside darters (*Etheostoma blennioides*) in the area just below the proposed Project site. This indicates a rather healthy aquatic habitat, which the Applicant intends to strip mine to access dirty fossil fuels.

The Corps should either direct the Applicant to conduct a survey with proper working equipment, or assume that the streams in the vicinity of the Project are of significantly higher habitat quality than the Applicant has claimed. Moreover, the Applicant's own study found that "further examination of annual monitoring data is necessary" to understand the nature of impairment in the area.[49] The Corps should require such further monitoring prior to considering the application for this Project, if it is not denied outright.

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[43] CIA at 3.
[44] Applicant's Mitigation Plan at 1.
[45] Applicant's Aquatic Macroinvertebrate and Fish Survey Report at 4-5.
[46] Barbour, M.T. et. al., Rapid Bioassessment Protocols for Use in Streams and Wadeable Rivers: Periphyton, Benthic Macroinvertebrates, and Fish - Second Edition, Chapter 5, EPA 841-B-99-002 (available at http://water.epa.gov/scitech/monitoring/rsl/bioassessment/).
[47] *Id.*
[48] Applicant's Aquatic Macroinvertebrate and Fish Survey Report at 4-5.
[49] *Id.* at 6.

It is clear that the proposed Project can have far-reaching impacts on the waters and habitats in the area, and poses significant risks of contamination through strip mining of tar sands and potential spills of bitumen or other substances. Due to the high risk of harm to these resources, the Project is not in the public interest.

ii. Human Health Impacts

Tar sand crudes can contain high levels of heavy metals (including lead, nickel, chromium, boron, arsenic, zinc, and vanadium), solid residues, carcinogenic components, developmental toxins, birth defect toxins, neurological toxins, reproductive toxins, immunological toxins, endocrine disrupting toxins, cardiovascular toxins, respiratory toxins, gastrointestinal toxins, liver toxins, kidney toxins, musculoskeletal toxins, skin or sense organ toxins, and others. Many of these chemicals are known to be toxic to humans, animals, fish, plants, and microbes at particular levels of exposure.[50]

The compounds that predominate in bitumen are the non-volatile compounds that include asphaltenes and polycyclic aromatic hydrocarbons, among which there are hundreds to thousands of compounds present in the bitumen. One of the most significant concerns regarding tar sands mining is that regulators don't really know the chemical composition of the bitumen products because the chemical properties are kept secret by the industry. The EPA notes that:

> in order for the bitumen to be transported..., it will be either diluted with cutter stock (the specific composition of which is proprietary information to each shipper) or an upgrading technology is applied to convert the bitumen to synthetic crude oil… Without more information on the chemical characteristics of the dilutent or the synthetic crude, it is difficult to determine the fate and transport of any spilled oil in the aquatic environment. For example, the chemical nature of the dilutent may have significant implications for response as it may negatively impact the efficacy of traditional floating oil spill response equipment or response strategies. In addition, the Draft EIS addresses oil in general and as explained earlier, it may not be appropriate to assume this bitumen oil/synthetic crude shares the same characteristics as other oils…We recommend that a more complete chemical/physical profile of the oil and details describing the processing activities be provided…[51]

The propriety nature of the mixture used to dilute bitumen and the lack of specific information on the composition of the upgraded synthetic crude leaves regulatory entities, who are accustomed to acting on spills of conventional crude, in a situation where they may be unprepared to protect public health. The Corps should require the Applicant to provide a complete chemical/physical profile of the product it intends to produce to inform the analysis of whether this permit is in the public interest.

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[50] Letter from Neil Carman, et. al to John Robinson, Director Office of Civil Rights Department of State (October 20, 2011) (attached hereto).

[51] Comment Letter from Cynthia Giles, Assistant Administrator for Enforcement and Compliance Assurance, U.S. EPA to Jose W. Fernandez and Kerry-Ann Jones, U.S. Department of State at 2 (July 16 2010) (attached hereto).

What is known is that tar sands contain significant quantities of toxins. Oil giant Imperial Oil has reported that dilbit contains a variety of toxins including hydrogen sulphide, benzene, and polynuclear aromatic hydrocarbons.[52] These chemical compounds can cause a variety of significant human health problems including, but not limited to, breathing difficulty, dizziness, damage to the central nervous system, coma, cancer, and death.[53] Diluted bitumen also contains compounds such as arsenic, nickel, and vanadium[54] in larger quantities than what is found in conventional crude.[55] In addition to having short term toxic effects, these heavy metals do not biodegrade and therefore accumulate, becoming an ongoing threat to the health of people and wildlife.[56]

Extracting tar sands would also cause increases in hazardous air pollutants, VOCs and other ozone pre-cursors, and a range of other pollutants – an especially significant concern in the communities of color and low-income neighborhoods surrounding the refineries that would likely process the tar sands, many of which are located in 8-hour ozone non-attainment areas.

Due to the potential human health impacts from these toxic chemicals, and the risk of exposure from the Project and spills of bitumen or other substances, the Project is not in the public interest and the permit should be denied.

iii. Climate Change Impacts

The Corps must consider that this is not a run-of-the-mill wetland and stream fill project. The Applicant is seeking permission to undertake open-pit strip mining to extract tar sands, which are considered some of the dirtiest fossil fuel products in the world. Allowing the Applicant to exploit these resources at the expense of our waters and natural communities is simply inexcusable, and tantamount to declaring war on our atmosphere. Tar sands represent a massive new source of fossil fuels, which leading climate scientist Dr. James Hansen has called "game over" for avoiding climate catastrophe caused by global climate change.[57] The negative impacts to our climate from tar sand exploitation warrant denying the 404 permit.

Current atmospheric concentrations of greenhouse gases are already resulting in severe and significant climate change impacts that are projected to worsen as emissions rise.[58] The US EPA

[52] Imperial Oil, Material Safety Data Sheet: DilBit Cold Lake Blend (2002) (*available at* http://www.msdsxchange.com/english/show_msds.cfm?paramid1=2479752).
[53] *Id.*
[54] Environment Canada, Athabasca Bitumen, *available at* http://www.etc-cte.ec.gc.ca/databases/OilProperties/pdf/WEB_Athabasca_Bitumen.pdf
[55] NATURAL RESOURCES DEFENSE COUNCIL, TAR SANDS PIPELINES SAFETY RISKS 7 (February 2011), *available at* http://www.nrdc.org/energy/files/tarsandssafetyrisks.pdf.
[56] *Id.*
[57] James Hansen, *Game Over for the Climate*, New York Times, May 9, 2012, http://www.nytimes.com/2012/05/10/opinion/game-over-for-the-climate.html.
[58] U.S. Global Change Research Program, Global Climate Change Impacts in the United States (2009) (available at http://downloads.globalchange.gov/usimpacts/pdfs/climate-impacts-report.pdf).

has found that climate change endangers the health and welfare of this and future generations.[59] We are fast approaching a global "state-shift" that could result in unanticipated and rapid changes to Earth's biological systems.[60] The proposed Project would exacerbate this crisis, and is therefore not in the public interest.

One of the most significant ways that tar sands oil differs from conventional crude is in the quantity of climate change inducing greenhouse gas ("GHG") emissions its utilization produces. Conventional crude is unquestionably a significant source of greenhouse gas emissions. However, the use of tar sands oils is far more GHG emission intensive simply due to its chemical nature. An evaluation of key studies indicates that there are two main reasons for this.

> (1) oil sands are heavier and more viscous than lighter crude oil types on average, and thus require more energy- and resource-intensive activities to extract; and (2) oil sands are compositionally deficient in hydrogen, and have a higher carbon, sulfur, and heavy metal content than lighter crude oil types on average, and thus require more processing to yield consumable fuels by U.S. standards.[61]

Emissions generated from production of synthetic crude oil from tar sands are at least three times the GHG emissions per barrel as production of conventional crude.[62] Utilizing a well-to-wheel approach, GHG emissions for tar sands derived fuels are on average 14%-20% higher than emissions for the weighted average of transportation fuels sold or distributed in the United States that would be displaced at refineries by tar sands oil.[63]

The potential ramifications to our climate from allowing increased tar sand exploitation must be fully considered by the Corps. Increased greenhouse gas emissions from the Project could exacerbate global climate change, leading to loss of sea ice and the species that depend on it,[64] lead to sea level rise,[65] extreme weather events,[66] ocean acidification,[67] and loss of habitat and

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[59] U.S. Environmental Protection Agency, Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act; Final Rule, 74 Federal Register 66496 (2009).
[60] A.D. Barnosky et al., *Approaching a state shift in Earth's biosphere*, 486 NATURE 52 (2012).
[61] RICHARD K. LATTANZIO, CONGRESSIONAL RESEARCH SERVICE, CANADIAN OIL SANDS: LIFE-CYCLE ASSESSMENTS OF GREENHOUSE GAS EMISSIONS Summary 16-17 (July 18, 2012), *available at* http://www.fas.org/sgp/crs/misc/R42537.pdf.
[62] NATURAL RESOURCES DEFENSE COUNCIL, TAR SANDS PIPELINES SAFETY RISKS 5 (February 2011), *available at* http://www.nrdc.org/energy/files/tarsandssafetyrisks.pdf.
[63] RICHARD K. LATTANZIO, CONGRESSIONAL RESEARCH SERVICE, CANADIAN OIL SANDS: LIFE-CYCLE ASSESSMENTS OF GREENHOUSE GAS EMISSIONS Summary (July 18, 2012) (*available at* http://www.fas.org/sgp/crs/misc/R42537.pdf); NATURAL RESOURCES DEFENSE COUNCIL, SETTING THE RECORD STRAIGHT: LIFECYCLE EMISSIONS OF TAR SANDS (NOVEMBER 2010) (*available at* http://docs.nrdc.org/energy/files/ene_10110501a.pdf).
[64] A. Robinson, et al., *Multistability and critical thresholds of the Greenland ice sheet*, 2 NATURE CLIMATE CHANGE 429 (2012).
[65] S. Rahmstorf et al., *Recent climate observations compared to projections*, 316 SCIENCE 709 (2007).
[66] Intergovernmental Panel on Climate Change (IPCC), Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation (SREX) (2012) (available at http://ipcc-wg2.gov/SREX/); U.S. Global Change Research Program, Global Climate Change Impacts in the US:

species.[68] Climate change also imperils human health through increases in heat waves and other extreme weather events, aliments caused or exacerbated by air pollution and airborne allergens, and the increased occurrence of climate-sensitive infectious diseases.[69]

All of these potential impacts of the Project must be considered by the Corps, and should result in a denial of the permit as contrary to the public interest.

II. Harm To Species Protected Under The Endangered Species Act

Congress enacted the Endangered Species Act ("ESA" or "Act") in 1973 to provide for the conservation of endangered and threatened fish, wildlife, plants and their natural habitats.[70] Under section 9(a)(1)(B) of the Act, it is illegal to engage in any activity that "takes" an endangered species.[71] The ESA further imposes substantive and procedural obligations on all federal agencies and persons with regard to listed species and their critical habitats.[72] Each federal agency has a duty to consult with the Services to ensure that "any action authorized, funded, or carried out by such agency . . . is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of [critical] habitat of such species . . . ."[73]

The Center is concerned that the Corps appears to be giving short shrift to the potential for harm to protected species from this Project. While the US Fish and Wildlife Service ("Service") has provided a letter of concurrence, finding that the Project is not likely to adversely affect listed bats, given the potential for contamination from strip mining for tar sands and spills of bitumen or other substances, along with the large amount (82 acres) of bat forage habitat and the fact that an endangered gray bat was in fact captured during the Applicant's mist-net survey, it appears that take of individual bats is likely over the 15 year course of the proposed Project.

Global Climate Change (2009); Dim Coumou & Stefan Rahmstorf, *A Decade of Weather Extremes*, 2 NATURE CLIMATE CHANGE 491 (2012); National Oceanic and Atmospheric Administration, *Extreme Weather 2011* (available at http://www.noaa.gov/extreme2011/).

[67] See, e.g., O. Hoegh-Guldberg et al., *Coral reefs under rapid climate change and ocean acidification*, 318 SCIENCE 1737 (2007); K. Caldeira and M.E. Wickett, *Ocean model predictions of chemistry changes from carbon dioxide emissions to the atmosphere and ocean*, 110 J. GEOPHYS. RES. C09S04, doi:10.1029/2004JC002671 (2005).

[68] Camille Parmesan & Gary Yohe, *A Globally Coherent Fingerprint of Climate Change Impacts Across Natural Systems*, 421 NATURE 37 (2003); Terry L. Root et al., *Fingerprints of Global Warming on Wild Animals and Plants*, 421 NATURE 57 (2003); Camille Parmesan, *Ecological and Evolutionary Responses to Recent Climate Change*, 37 ANNUAL REV. OF ECOLOGY EVOLUTION AND SYSTEMATICS 637 (2006); I-Ching Chen et al., *Rapid Range Shifts of Species Associated with High Levels of Climate Warming*, 333 SCIENCE 1024 (2011); Ilya M. D. Maclean & Robert J. Wilson, *Recent Ecological Responses to Climate Change Support Predictions of High Extinction Risk*, 108 PROC.OF THE NATL. ACAD. OF SCIENCES OF THE U.S. 12337 (2011); Rachel Warren et al., *Increasing Impacts of Climate Change upon Ecosystems with Increasing Global Mean Temperature rise*, 141 CLIMATIC CHANGE 106 (2011).

[69] U.S. Global Change Research Program, Global Climate Change Impacts in the United States (2009).

[70] 16 U.S.C. §§ 1531, 1532.

[71] 16 U.S.C. § 1538(a)(1)(B).

[72] *See Id.* §§ 1536(a)(1), (a)(2) and 1538(a); 50 C.F.R. § 402.10.

[73] 16 U.S.C. § 1536(a)(2).

Furthermore, the Corps has failed to consult with the Service over potential harm to endangered freshwater mussels that are found in Logan county, and has therefore not fulfilled its responsibilities pursuant to the Act.

The environmental harms associated with strip mining tar sands, as well as the potentially devastating impacts from a spill at the site or during transport of the bitumen product, have the very real potential to result in take of federally protected species. Congress intended the term "take" to be defined in the "broadest possible manner to include every conceivable way" in which a person could harm or kill wildlife.[74] The term "take" is defined in the statute to include "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct."[75]

The implementing regulations for the Act define "harm" to include "significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering."[76] As discussed herein, through the filling of streams and wetlands, the strip mining for heavy bitumen, the processing and transportation of the crude and the exploitation of this GHG intense product that will exacerbate climate change, the Project has the potential to harm endangered wildlife through increased sediment loading and degradation of the habitat areas that these species rely on.

For the reasons discussed below, permitting this Project would open up the Corps and the Applicant to ESA take liability,[77] and the Corps must undertake consultation regarding potential harm to mussels. Moreover, because Congress has accorded the protection of endangered species the highest of priorities,[78] the potential for take of listed species should be carefully considered by the Corps in its evaluation of this Project. The potential harm to these species is yet another reason why this Project is not in the public interest.

A. The Corps Must Initiate Consultation On Harm To Freshwater Mussels

Both the Federal and county-wide list of threatened and endangered species indicate that several endangered freshwater mussels occur within Logan county, including:[79]

- Snuffbox, *Epioblasma triquetra* (ESA Endangered)
- Slabside Pearlymussel, *Lexingtonia dolabelloides* (ESA Endangered)
- Littlewing Pearlymussel, *Pegias fabula* (ESA Endangered)

[74] S. Rep. No. 93-307, 93d Cong., 1st Sess. 1, reprinted in 1973 USCAAN 2989, 2995.
[75] 16 U.S.C. § 1532(18).
[76] 50 C.F.R. § 17.3.
[77] Persons subject to the prohibition on take includes individuals and corporations, as well as "any officer, employee, agent, department, or instrumentality . . . of any State."[77] The ESA provides for civil penalties of up to $25,000 per violation, and criminal penalties of up to $50,000 and one year imprisonment per violation.16 U.S.C. § 1540(a), (b).
[78] *Tennessee Valley Auth. v. Hill*, 437 U.S. 153, 184 (1978).
[79] *See* Kentucky State Nature Preserves Commission, County Report of Endangered, Threatened, and Special Concern Plants, Animals, and Natural Communities of Kentucky (available at http://naturepreserves.ky.gov/pubs/publications/KSNPC_countylist.pdf)

- Rabbitsfoot, *Quadrula cylindrica cylindrica* (ESA Threatened)

The "Biological Assessment" and the Service's concurrence letter do not cover these species, which could be devastated by the impacts to the environment associated with the Applicant's proposed tar sand extraction Project. The Corps should not only consider the potential for take of these species, but must initiate consultation with the Service to ensure that the Project will not jeopardize their continued existence.

Each federal agency has a duty to consult with the Services to ensure that agency action is not likely to jeopardize the continued existence of any threatened or endangered species.[80] The definition of agency "action" is broad and includes "all activities or programs of any kind authorized, funded, or carried out, in whole or in part" including "the granting of licenses, contracts, leases, easements, rights-of-way, [or] permits," such as the permit at issue here, and any "actions directly or indirectly causing modifications to the land, water, or air."[81]

Each federal agency must review its actions at "the earliest possible time" to determine whether any action "may affect" listed species or their critical habitat in the "action area."[82] The "action area" encompasses all areas that would be "affected directly or indirectly by the Federal action and not merely the immediate area involved in the action."[83] The term "may affect" is broadly construed to include "[a]ny possible effect, whether beneficial, benign, adverse, or of an undetermined character," and thus is easily triggered.[84] If a "may affect" determination is made, "consultation" is required.

The proposed Project would result in the filling of streams and wetlands and potential contamination of waterbodies through spills of bitumen or other substances, with associated impacts to downstream species and communities. This Project would, by definition, cause an increase in the sediment load in several streams, since the plan is to fill 5,752 linear feet of ephemeral streams and 2,105 linear feet of intermittent streams. Further, the Applicant's mitigation plan states that "Most of the existing intermittent streams... involve locations with steep gradients above major existing waterways,"[85] indicating that strip mining this site will likely cause increased sedimentation of nearby waters due to mining activities on steep slopes above major waterways.

Freshwater mussels are incredibly susceptible to sediment loading. Studies have shown that "One of the most ubiquitous factors that may adversely affect mussel populations is excessive sedimentation caused, in part, by poor land-use practices. Excessive sedimentation has been suspected as a cause of unionid mussel declines since the late 1800s."[86] The EPA has

[80] 16 U.S.C. § 1536(a)(2).
[81] 50 C.F.R. § 402.02.
[82] 50 C.F.R. § 402.14(a).
[83] 50 C.F.R. § 402.02.
[84] *Interagency Cooperation – Endangered Species Act of 1973, As Amended*, 51 Fed. Reg. 19,926 (June 3, 1986).
[85] Applicant's Mitigation Plan at 1.
[86] Box, J.B., Mossa, J., *Sediment, land use, and freshwater mussels: prospects and problems*, J. N. Am. Benthol. Soc. at 100, 18(1):99-117 (1999).

specifically stated that "significant deterioration of water quality from siltation, wastes, and runoff from strip mining, coal washing, and agriculture has drastically affected the populations of" the little-wing pearly mussel in Logan County, KY,[87] and this Project has the potential to exacerbate the decline of this species by allowing additional strip mining in this area.

Excessive amounts of sediments, especially fine particles, that wash into streams can potentially affect mussels through multiple mechanisms. Fine sediments can lodge between coarse grains of the substrate to form a hardpan layer,[88] thereby reducing interstitial flow rates. Silt and clay particles can clog the gills of mussels,[89] interfere with filter feeding,[90] or affect mussels indirectly by reducing the light available for photosynthesis and the production of food items.[91]

Mussels could also be directly impacted by the toxic constituents in the bitumen discussed above, which if spilled could smother the areas that these mussels rely on. These toxic chemicals could further impact the food chain, causing a trophic cascade through contamination that would pose a threat to the mussel's food sources and habitats.

Since endangered freshwater mussels are known to reside in Logan county, a full and complete assessment of the potential impacts the Project may have on these imperiled species is warranted. This should include thorough surveys of not only the waters that will be directly impacted by the proposed fill activities, but surveys and an analysis of the downstream effects of the planned activities as well as possible spills, which have the potential to be far-reaching.

Pursuant to the ESA, the Army Corps must "use the best scientific and commercial data available" to determine whether listed species are likely to be adversely affected by the action.[92] It does not appear that the Corps has complied with this mandate; rather, it has made a preliminary and erroneous determination that the Project would not adversely affect any listed species. The Center urges the Corps to reconsider this conclusion, and to undertake the necessary ESA consultation,[93] which will provide a thorough analysis of the potential effects of this Project on these imperiled species,[94] and hopefully lead to the implementation of measures

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[87] EPA, Pesticides: Endangered Species Protection Program, Logan County Kentucky (available at http://www.epa.gov/espp/kentucky/logan.htm) (emphasis added).
[88] GORDON, N. D., T. A. MCMAHON, AND B. L. FINLAY-SON. 1992. Stream hydrology: an introduction for ecologists. John Wiley and Sons, New York.
[89] ELLIS, M. M. 1936. Erosion silt as a factor in aquatic environments. Ecology 17:29-42.
[90] Aldridge, D. W. *et al.*, 1987, The effects of intermittent exposure to suspended solids and turbulence on three species of fresh-water mussels, Environmental Pollution, 45:17-28.
[91] DAVIES-COLLEY, R. J., C. W. HICKEY, J. M. QUINN, AND P. A. RYAN. 1992. Effects of clay discharges on streams: 1. Optical properties and epilithon, Hydrobiologia, 248:215-234.
[92] 16 U.S.C. § 1536(a)(2).
[93] Note that the threshold for triggering the formal consultation requirement is "very low;" "any possible effect . . . triggers formal consultation requirements." 51 Fed. Reg. 19,926.
[94] The "effects of the action" include all direct and indirect effects of the proposed action, plus the effects of actions that are interrelated or interdependent, added to all existing environmental conditions - that is, added to the environmental baseline. "The environmental baseline includes the past and present impacts of all Federal, state, and private actions and other human activities in the action area . . . ." "Interrelated actions are those that are part of a larger action and depend on the larger action for their justification." "Interdependent actions are those that have no independent utility apart from the action under

necessary to avoid harm to the aquatic resources that these imperiled species rely on. Absent this analysis, the Project poses a risk of harm to endangered species, and is not in the public interest.

B. The Project Will Likely Result In Take Of Endangered Bats

The proposed Project poses a risk of harm to two species of ESA endangered bats -- Gray bat (*Myotis grisescens*), and Indiana Bat (*Myotis sodalis*) -- both of which are found in Logan county. Logan county is geologically a karst landscape,[95] which is characterized by sinkholes, sinking streams, caves, and springs. The karst terrains of Kentucky are mostly on limestone and formed over hundreds of thousands of years. As water moves underground, from hilltops toward a stream through tiny fractures in the limestone bedrock, the rock is slowly dissolved away by weak acids found naturally in rain and soil water. These areas are well known for caves and sinkholes that can provide habitat for endangered bats.

While the Service has provided a letter of concurrence indicating its opinion that the Project is not likely to adversely affect endangered bats, that does not mean that the Project may not result in take of individual bats, especially given that the Service does not appear to have taken the potential for spills into consideration. Pursuant to the ESA, if the Services' concurrence in a "not likely to adversely affect" finding is inconsistent with the best available science, any such concurrence must be set aside. *See* 5 U.S.C. § 706(2). Given the potential for contamination from strip mining for tar sands and spills of bitumen or other substances, along with the large amount (82 acres) of bat forage habitat and the fact that an endangered gray bat was in fact captured during the Applicant's mist-net survey, the Project clearly has the potential to adversely affect these listed species. The Service's determination is therefore incomplete and inconsistent with the best available science, and must be set aside as arbitrary and capricious.[96]

The Service's concurrence letter in fact confirms that the "streams and wetlands within the proposed action area likely serve as foraging habitat for gray bats." The Project has the potential

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consideration." The effects of the action must be considered together with "cumulative effects," which are "those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation." 50 C.F.R. § 402.02. This would include other proposed tar sand extraction projects planned for this area, which the Applicant or others may undertake.

[95] This is confirmed by the Applicant's Aquatic Macroinvertebrate and Fish Survey Report, which states that the area has karst geology.

[96] The Service has concluded -- based on a survey of rock outcrops that showed no gray bat hibernacula -- that the Project's "effects to gray bat foraging habitat would be insignificant and discountable." This disregards the fact that the Project may harm gray bats, regardless of the fact that no hibernacula are in the Project footprint, through impacts to foraging habitat and the species they depend upon for food. As discussed herein, the Project has the potential to take these endangered bats through the poisoning of surface water resources from the strip mining activities or spills of bitumen -- and the impacts of a bitumen spill were not covered in the Biological Assessment or the Service's concurrence letter. Spills can harm bats directly, or through bioaccumulation of contaminants in the water-dependent insects that the bats eat. Since it is readily apparent from the Applicant's study that gray bats do utilize the Project area, and as discussed above the Project will likely cause increased sedimentation and pollution of streams and wetlands and poses a risk of dangerous spills that could devastate the area, the Project has the potential to adversely affect this endangered species, and formal consultation should have been required.

to take these endangered bats through the poisoning of surface water resources from the strip mining activities or spills of bitumen, which was not covered in the Biological Assessment or concurrence letter. This can harm bats directly, or through bioaccumulation of contaminants in the water-dependent insects that the bats eat.

Allowing activities that may harm these species opens up both the agency and private actors to ESA take liability.[97] The Service's concurrence letter does not provide any protection against this liability. Surveys conducted by the Applicant show that a gray bat was in fact captured in the area during mist-netting,[98] indicating that there are indeed individuals of this endangered species in the Project area that could be impacted by the Project. According to the Kentucky Bat Working Group, gray bat Summer caves are normally located close to rivers or lakes where the bats feed, and Gray bats have been known to fly as far as 12 miles from their colony to feed.[99] It is therefore likely that the gray bat found during the Applicant's mist-netting study roosts in a nearby cave or cave-like structure.

In fact, the Applicant has admitted that "the proposed Peak mine is within flight range of several well-known caves where Gray bats have been identified and are known to occur,"[100] and stated that it intends to avoid rock outcrops found on-site due to "potential impacts to the endangered gray bat,"[101] suggesting that the Applicant is fully aware that gray bats are within the Project area and could be impacted by the Project; however, the Applicant has narrowly construed the potential for harm to these species in its "Biological Assessment" by focusing only on the presence of caves in the immediate area, concluding that "there should be no effect on the federally threatened Gray bat due to the absence of suitable habitat (i.e. caves) within the proposed project footprint."[102] This disregards the fact that the Project may harm gray bats, regardless of the fact that no caves are in the Project footprint, through impacts to foraging habitat and the species they depend upon for food.

Gray bats feed primarily on flying insects over rivers and lakes. Aquatic insects, particularly mayflies, make up most of their diet. Therefore, pollution and siltation of streams can cause a reduction in aquatic insects that may negatively affect gray bat populations, and if those insects have been exposed to the toxins associated with tar sand mining, it could poison gray bats. Since it is readily apparent from the Applicant's study that gray bats do utilize the Project area, and as discussed above the Project will likely cause increased sedimentation and pollution of streams and wetlands and poses a risk of dangerous spills that could contaminate the area, the Project has the potential to cause a take of this endangered species.

The Project may likewise result in take of Indiana bats. Indiana bats hibernate in caves and mines in the winter and migrate over varying distances to summer habitat in a variety of habitat types — most often forests, but also wetlands, parklands, and agricultural areas. Reproductive

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[97] 16 U.S.C. § 1538(a)(1)(B).
[98] Applicant's "Biological Assessment" at 7.
[99] Kentucky Bat Working Group, Gray Bat Webpage (available at http://biology.eku.edu/bats/graybat.htm).
[100] Applicant's "Biological Assessment" at 7.
[101] Permit App. at 4.
[102] Applicant's "Biological Assessment" at 10.

females may migrate great distances to form maternity colonies. Indiana bats are nocturnal insectivores, eating flying insects during the nighttime hours. The Applicant's Aquatic Macroinvertebrate and Fish Survey Report confirms that such insects are found in the Project area.[103] A single bat can eat thousands of insects in one night, and if those insects have been exposed to the toxins associated with tar sand mining, then it could cause a trophic effect up the food chain, poisoning bats and therefore further harming a species whose rapid decline from habitat loss and white nose syndrome has left it on the brink of extinction.

Though no Indiana bats were found during the three nights of mist-netting that the Applicant undertook, that may well have been a fluke, since critical habitat for Indiana bats is a mere 40 or so miles away (as the bat flies),[104] Indiana bats can travel up to 300 miles from hibernacula to their summer range,[105] and the Applicant's "Biological Assessment" for the Project confirms that there are 82 acres of suitable summer habitat in the Project area. The area could therefore provide summer range for Indiana bats now or in the future, since it has the mixed land cover they prefer along with wetlands where the species they feed on breed. Therefore, there remains the potential for the Project to result in take of these imperiled species, regardless of the results of this one survey.

Indiana bats travel great distances, and move across the landscape such that their presence in the Project area may not be found during one survey, yet Indiana bats may still visit this area and be impacted by the Project. The 82 acres of suitable forage habitat in the Project area could very well be utilized by these bats as they move across the landscape, though they were not present during the just three days of mist-netting the Applicant conducted. Bats need access to clean surface water for both direct consumption and for its association with aquatic insects that serve as important prey species. Access to drinking water is especially important for lactating bats, which need far more.[106] The Center is concerned that these endangered bats may be harmed if they drink contaminated water collected in strip mined areas, or if a spill of bitumen or other substances occurs on-site or during transportation of the products. These issue were not discussed in the "Biological Assessment" or the Service's concurrence letter.

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[103] Aquatic Macroinvertebrate and Fish Survey Report at 4-5 (noting the presence of caddisflies (*Hydropsyche sp*.), and pollution-tolerant midges (*Chironomid sp.*)).

[104] Applicant's Biological Assessment at 2; 41 Fed. Reg. 41914 (Sep. 24, 1976).

[105] USFWS, Indiana Bat Section 7 and Section 10 Guidance for Wind Energy Projects, Revised at 18 (Oct. 26, 2011) (available at http://www.fws.gov/midwest/endangered/mammals/inba/pdf/inbaS7and10WindGuidanceFinal26Oct2011.pdf).

[106] Adams, R., and M. Hayes, "Water availability and successful lactation by bats as related to climate change in the arid regions of western North America," Journal of Animal Ecology (2008) 77:1115–1121; Kurta, A., G. P. Bell, K. A. Nagy, and T. H. Kunz, Water balance of free-ranging little brown bats (*Myotis lucifugus*) during pregnancy and lactation, Canadian Journal of Zoology (1998) 67:2468–2472; Johnson, J. S., J. D. Kiser, K. S. Watrous, and T. S. Peterson, Day-roosts of *Myotis leibii* in the Appalachian ridge and valley of West Virginia, Northeastern Naturalist (2011) 18:95–106.

Surface water habitat produces higher concentrations of nocturnal insects that bats rely on.[107] Aquatic insects are especially important to Indiana bats.[108] Ready access to water and the insects it helps produce is even more critical during times of increasing drought. Environmental contaminants may be a major factor specifically in Indiana bat decline.[109] Heavy metals and other toxins can reduce aquatic insect populations on which bats rely.[110] Strip mining for tar sands would certainly make this situation worse by risking increased contamination of the land and the area's water resources, and the potential for spills of toxic bitumen or other substances that may result in take of these endangered bats.

The decision whether to issue a permit must be based on an evaluation of the probable impact of the proposed activity on the public's interest, which includes the cumulative impacts on conservation, general environmental concerns, fish and wildlife values, and the needs and welfare of people.[111] The potential for take of these imperiled species not only opens up the Corps and the Applicant to ESA Section 9 liability, but provides a further basis for finding that the Project is not in the public interest.

III. An Environmental Impact Statement is Required Pursuant to NEPA

The Public Notice for the Project states that "Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act." Due to the impacts that tar sand extraction would have on both the local and global environment, it is readily apparent that a full Environmental Impact Statement ("EIS") must be developed for this Project. If the permits will not be denied outright, then the Center urges the Corps to begin that process now, as NEPA requires agencies to consider the environmental impacts of projects, and alternatives to the proposed action, at "the earliest possible time."[112] The Center looks forward to commenting on the EIS, and implores the Corps to refrain from making any determinations in this matter (other than outright denial for the reasons discussed above) until the NEPA process is complete.[113]

Congress enacted the National Environmental Policy Act ("NEPA") in 1969, directing all federal agencies to assess the environmental impact of proposed actions that significantly affect the

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[107] MacGregor, J. and J. Kiser, "Recent reproductive records of eastern small-footed bat, *Myotis leibii* in Kentucky with notes on a maternity colony located in a concrete bridge," Bat Research News, Abstract (1998).
[108] Murray, S. W. and A. Kurta, Nocturnal activity of the endangered Indiana bat (*Myotis sodalist)*," Journal of Zoology 262:197–206 (2004).
[109] "Agency draft Indiana bat (*Myotis sodalis*) revised recovery plan," US Fish and Wildlife Service, (1999) Fort Snelling, Minnesota.
[110] Mason, C. F., Biology of freshwater pollution, 4th edition. Pearson Education Ltd., Harlow, Great Britain (1997); Jones, G., Jacobs, D., Kunz, T., Willig, M., and P. Racey, "Carpe noctem: the importance of bats as bioindicators," Endangered Species Research (2009) 8:93–115.
[111] 33 C.F.R. § 320.4(a).
[112] 40 C.F.R. § 1501.2.
[113] *See* 40 C.F.R. § 1500.1(b) ("NEPA procedures must ensure that environmental information is available to public officials and citizens before decisions are made and before actions are taken.").

quality of the environment.[114] The Council on Environmental Quality (CEQ) has promulgated uniform regulations to implement NEPA, which are binding on all federal agencies.[115]

The CEQ regulations implementing NEPA require the Corps to disclose and analyze the environmental effects of the proposed action.[116] Specifically, the regulation explains that "Accurate scientific analysis, expert agency comments, and public scrutiny are essential to implementing NEPA."[117] The purpose of this requirement is to ensure that the public has information that allows it to question, understand, and, if necessary, challenge the decision made by the agency.

When it is not clear whether or not an action will significantly affect the environment (and thus require the preparation of an EIS), the regulations direct agencies to prepare an Environmental Assessment ("EA") in order to determine whether an EIS is required.[118] An EA is "a concise public document" that "[b]riefly provide[s] sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact."[119] An EA "shall include brief discussions of the need for the proposal, of alternatives as required by section 102(2)(E), of the environmental impacts of the proposed action and alternatives, and a listing of agencies and persons consulted."[120] The Center is concerned that the Corps has initiated a review of this Project apparently without having commenced this process. The Center reminds the Corps that NEPA requires an analysis of environmental impacts at "the earliest possible time."[121] The Public Notice provides none of the information that would be included in an EA, so it is not possible for the Center to provide comments on specific alternatives at this time (more on this below).

While the Center believes that a full EIS is warranted, at the very least an Environmental Assessment must be provided that explores the environmental impacts of the reasonable alternatives to the proposed action. NEPA requires the Corps to analyze all reasonable alternatives, other than just the preferred alternative and no-action alternative, so a full discussion of alternative project configurations or locations should be provided for comment.[122]

Furthermore, it is readily apparent that a full EIS is warranted for this proposed Project. The NEPA regulations require the agency to consider ten "significance factors" in determining whether a federal action may have a significant impact, thus requiring an EIS.[123] Among other factors, the agency must consider the beneficial and adverse impacts of the project, the effect on public health and safety, unique characteristics of the geographic area, the degree to which possible effects are highly controversial, uncertain, or involve unique or unknown risks,

[114] 42 U.S.C. § 4332(2)(C).
[115] 42 U.S.C. § 4342; 40 C.F.R. §§ 1500-1508.
[116] 40 C.F.R. § 1500.1(b).
[117] *Id*.
[118] 40 C.F.R. §§ 1501.4(b), 1508.9.
[119] 40 C.F.R. § 1508.9(a).
[120] 40 C.F.R. § 1508.9(b).
[121] 40 C.F.R. § 1501.2.
[122] 42 U.S.C. § 102(2)(E) and 40 C.F.R. § 1501.2(c).
[123] 40 C.F.R. § 1508.27.

cumulatively significant effects, and whether the proposed action will violate any laws or standards of environmental protection.[124] If the agency's action may be environmentally significant according to any of the criteria, the agency must prepare an EIS.[125]

Here, the Corps is considering a permit to allow the Applicant to bulldoze through wetlands and streams (where endangered bats are known to forage) and strip mine for tar sands. This not only poses an excessive risk of adverse impacts to the local environment, including to several federally protected species as discussed above, but it will exacerbate global climate change through the exploitation of petroleum products that are energy intensive to mine, and when burned will increase the concentration of green house gasses in our atmosphere. While the benefits of this Project are minimal (i.e. a few jobs and taxes), the adverse impacts are significant, and would include potential impacts on public health and safety from not only climate change (a cumulatively significant impact), but spills and toxic contamination of groundwater resources.

Furthermore, tar sand extraction is clearly a highly controversial activity, with uncertain environmental impacts. Tar sand mining is relatively new to Kentucky, and the Applicant has proposed using novel techniques that are unproven and could prove to be dangerous. Any claims that the Applicant's process is environmentally safe must be taken with a grain of salt, since the Applicant has not provided conclusive proof to support these claims, many of which are contradicted by the EPA.

The Applicant states the Sandklene 950 it will use has been "approved by the EPA;" however, this is misleading. Sandklene 950 has been approved by the EPA as a surface washing agent in oil spill response, and not for use in extracting bitumen from tar sands for commercial use.[126] Further, the EPA webpage for Sandklene indicates that 350 gallons of Sandklene/water solution (with a 0.15-1.0% Sandklene concentration) is needed to clean just 3 cubic yards of oil sands, and that the mixture must be agitated at an elevated temperature in the range of 100-150 degrees.[127] This suggests that, contrary to the claims made by the Applicant, this Project has the potential to require excessive amounts of water and energy to extract bitumen from tar sands. Furthermore, the EPA analysis indicates that Sandklene 950 is in fact toxic at high doses (the Applicant has erroneously claimed otherwise), with an LC50 (the lethal concentration required to kill 50% of the population) of 1,200-1,700 ppm for the species that have been tested.[128] The actual amounts of water, energy and Sandklene that will be needed, as well as the potential impacts that Sandklene may have on the environment if spilled, must be analyzed in an EIS.

Furthermore, spills of bitumen are almost certain to occur, making it highly likely that this Project will, to some extent, contaminate the area. Numerous articles have been authored in recent years about the dangers of tar sand mining, and there is a growing sentiment in this country that these activities are not in the public interest due to the impacts on climate change,

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[124] *Id.*
[125] *Id.*
[126] EPA Emergency Response, Sandklene 950 (available at http://www2.epa.gov/emergency-response/sandklene-950).
[127] *Id.*
[128] *Id.*

and the poisoning of our waters. The highly controversial, uncertain and unknown risks associated with tar sand exploitation suggest that a full EIS is required pursuant to 40 C.F.R. § 1508.27.

The EIS must include a full and complete analysis of the alternatives to the proposed action, as well as the environmental consequences of the Project, including the direct, indirect and cumulative impacts.[129] The Applicant has provided a "Cumulative Impacts Analysis" ("CIA"); however, this document does not provide a sufficient analysis of the full range of impacts that the Corp must consider in an EIS.

For instance, the Applicant's analysis regarding reasonably foreseeable future actions uses a methodology developed in a 2005 EIS on Mountaintop Mining/Valley Fills in Appalachia, wherein permit information for the previous ten years is used to determine the rate of past impact, which is then extrapolated to project future impact, based on the assumption that the rate will continue at this same level in the future. Using this methodology, the Applicant has argued that further agricultural, residential and commercial development of the area is unlikely, or will remain at static levels.[130] However, the Applicant has failed to address the potential for increased mining in this area, which may be spurred by this Project.

It is reasonably foreseeable that other companies would undertake efforts to exploit the tar sand resources in this area if the Applicant is able to do so successfully, and it is further foreseeable that the Applicant itself may seek to expand its operations in this area; yet the Applicant avoids any mention of the potential for increased strip mining in its cumulative impacts analysis. The methodology used by the Applicant allows it to ignore future impacts from mining in its CIA simply because this is a new land use for the area, so no such permits have been issued in the past ten years; however, this clearly ignores that increased tar sand mining is now a reasonably foreseeable future land use that may cause negative cumulative impacts to the environment in the region.

Similarly, the Applicant's CIA fails to make any mention of the long and short-term impacts that the Project could have on habitats and species within the Project area. For example, the Project entails strip mining a 144-acre area, and the CIA states that "the proposed Project will remove approximately 84 acres of forest cover;" yet the Applicant attempts to avoid any discussion of the impacts of this change in land cover by stating that "much of this will be re-established on site during stream restoration activities, and reclamation of portions of the mine facility."[131] This does not provide any analysis of the potential short-term impacts that removing 84 acres of trees may have on the species currently relying on those areas for habitat, nor does it address the long-term impacts that could be felt over the course of the decades it would take to allow the forest, streams and wetlands that the Applicant intends to strip mine to reestablish themselves. The Applicant appears to want the Corp to focus only on the mitigation they will provide, but this does nothing to assess the cumulative impacts the Project will have during construction and the many years it will take to restore the area.

[129] 40 C.F.R. §1502, 1508.
[130] CIA at 4-5.
[131] CIA at 6.

Perhaps the biggest issue with the Applicant's CIA is that it completely ignores the potential for spills and other accidents, and their potential impacts on the environment and human health. An analysis of the cumulative impacts of a Project that entails strip mining tar sands to recover bitumen MUST contain an analysis of the potential for spills of both the chemicals being used in the process as well as the bitumen itself after it has been recovered from the tar sands. The Applicant has stated that it intends to extract the bitumen and upgrade it to synthetic oil to be sold to Gulf Coast oil refining markets (NOTE: the Applicant has not provided any information on the process that will be used to upgrade the bitumen to synthetic oil, the environmental impacts of this process, or where it would occur, and therefore has failed to provide a complete analysis of the cumulative impacts of its intended actions).[132] The CIA, however, makes no mention of how the product would be shipped to the Gulf Coast, or the cumulative impacts of that shipping, which would include not only spills, but emissions and related threats to human health and the environment.

Any potential form of transportation of bitumen -- pipelines, trucks, rail cars -- would have impacts to human health and the environment, which must be analyzed in an EIS. These shipping methods would not only require energy and produce greenhouse gasses and other contaminants (such as particulates), but would also pose substantial threats from accidents and spills. The Center is unaware of any pipelines in the area that the Applicant would be able to utilize to move the bitumen, and even if a pipeline was available, they are far from safe. Since 1986 there have been nearly 8,000 accidents involving pipelines (nearly 300 per year on average), resulting in more than 500 deaths, more than 2,300 injuries, and nearly $7 billion in damage. Without access to a pipeline, either trucks or rail cars would be needed to transport the bitumen, and crude-by-rail has proven to be just as dangerous, if not even more so, than pipelines.

Recent events have shown just how dangerous transporting crude oil can be, with several catastrophic and deadly rail accidents throughout North America, and hundreds of thousands of gallons of crude oil being spilled into our nation's waterways. In 2013 there were 117 crude-by-rail spills in the United States, resulting in more than 1.1 million gallons of crude oil spilled in the country, more in one year than the total amount spilled from 1975-2012.[133] And in 2014, there were more crude-by-rail spills than in any year since the federal government began collecting data on spill incidents in 1975.[134] Furthermore, recent accidents involving tar sands bitumen indicate that much like Bakken crude, tar sand bitumen can explode and cause fires if spilled in a train derailment.[135]

The Applicant's failure to include any information on potential spills at the Project site, as well as how it would upgrade and then transport the bitumen, and the cumulative impacts and risks

[132] Applicant's Alternatives Analysis at 1.
[133] Curtis Tate, More Oil Spilled From Trains in 2013 than in Previous 4 Decades, Federal Data Show, *McClatchy D.C.*, (Jan. 20, 2014) (*available at* http://www.mcclatchydc.com/2014/01/ 20/215143/more-oil-spilled-from-trains-in.html).
[134] Dokoupil, T., Oil Train Spills Hit Record Level in 2014, *NBC News* (Jan. 26, 2015) (available at http://www.nbcnews.com/news/investigations/oil-train-spills-hit-record-level-2014-n293186).
[135] Thomas, D., Why bitumen isn't necessarily safer than Bakken, Railway Age (Feb. 23, 2015) (available at http://www.railwayage.com/index.php/safety/why-bitumen-isnt-necessarily-safer-than-bakken.html).

associated with moving the bitumen to refineries, are glaring omissions that render the application incomplete. If the requested permits are not denied outright, as they should be, then the Corps must consider the full range of environmental impacts -- including direct, indirect and cumulative -- of strip mining this site, processing the tar sands and transporting the product. This analysis must include the potential for spills as well as the water and energy use, loss of habitat, climate change impacts and all of the other impacts discussed herein. For the reasons set forth above, this analysis must be undertaken in an EIS. A thorough review of the cumulative impacts of this Project should result in a denial of the permit, since these impacts indicate that the Project is not in the public interest.

IV. The Impacts to Human Health, Wildlife and Habitat From this Project Require Careful Consideration of Alternatives, and Further Require Denial of the Permit.

It is not clear from the application materials why it is necessary to fill 5,752 linear feet of ephemeral streams and 2,105 linear feet of intermittent streams in order to access dirty tar sands. There are numerous potential configurations of this Project and myriad of impacts that need to be disclosed and publicly addressed through the consideration of alternatives. However, the Corps has not laid out for public consideration a single project alternative. This is a grave error in the public process and a significant legal concern for this Project.

Without some public consideration of the available alternatives to this Project and its impacts, we simply cannot grapple with this Project as the Clean Water Act intended. We respectfully request that once the Corps has developed its project alternatives and impacts analysis, that it release them for public comment for at least 30 days before making a decision on the permit and its configuration (if the permit is to be issued).

Moreover, pursuant to 40 C.F.R. § 230.10, "no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem...." Practicable alternatives include activities or alternate locations that would not require filling wetlands, and may include areas not currently owned by the applicant, but capable of being obtained. Importantly, where fill is proposed for a wetland, if the project is not water dependent, then practicable alternatives are assumed to exist, and all practicable alternatives not requiring the filling of wetlands are presumed to have less adverse impacts. The regulations further provide that no discharge of fill will be permitted "unless appropriate and practicable steps have been taken which will minimize potential adverse impacts of the discharge on the aquatic ecosystem."[136]

Here, there has been no showing by the Applicant that this Project could not be undertaken without the need to fill streams and wetlands. There is no scientific reason for needing to fill wetlands and streams to obtain bitumen tar sands. The simple fact is that no wetlands and streams *must* be filled to mine tar sands; rather, it is merely *cheaper and easier* to access these tar sands by bulldozing across a large area, irrespective of the landscape features in the path. The

[136] 40 C.F.R. § 230.10(d).

CWA and the implementing regulations do not allow for a permit to be issued for such needless destruction.[137]

Furthermore, there is no reliable indication that this is the only location available for the intended use. The Project is clearly not water dependent, so the Corps must presume that alternative locations are available that would not require any stream or wetland impacts. The Applicant has provided an "Alternatives Analysis;" however, this document does not demonstrate that practical alternatives are unavailable. The Applicant provides no list or description of the alternative areas that may be available for the Project, but rather has stated that alternate sites were rejected because they "could potentially impact other resources and also result in discharges into Waters of the U.S."[138] This is not an analysis. It is an irresolute statement that provides no support for the decision to eliminate specific sites for specific reasons. The Applicant goes on to state that "Development of alternate mine sites could have similar or more severe impacts to the environment than those at the proposed site."[139] Once again, this meaningless and unsupported claim cannot be relied on by the Corps to find that the CWA requirements have been met.

The Applicant has not, in fact, provided ANY actual information suggesting that alternative sites or Project configurations are unavailable. It asserts that "Finding sites large enough to satisfy the economics of proposed mining while limiting environmental impacts, having the infrastructure required, and have willing property owners is often a difficult process;" however, the fact that this process may be difficult does not excuse the Applicant and the Corps from undertaking the required effort to locate alternatives that would not require impacts to aquatic resources.

The Applicant has not provided anything to suggest that they did in fact undertake this process in a meaningful way. In fact, the Applicant concludes by explaining that its site selection was based on economic concerns, rather than the need to avoid impacts to aquatic resources, stating that the Project site was chosen because "the land was available for leasing, and mineral rights were available for purchase, making the proposed site most viable of the locations considered." This is not an acceptable showing of a lack of practicable alternatives. The Applicant's unsupported assertion that this is the "most viable" site does not suggest that other sites are unavailable, and the Corps must assume that alternatives are available since the Project is not water dependent. Without some compelling reason why these wetlands and streams need to be filled, along with a showing that no other alternative is available, the Corps cannot approve this permit.

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[137] The Applicant states, without providing any support, that "Completely avoiding impacts to all streams and wetlands within the project boundary was determined not to be practical." This indicates that the Applicant's ability to avoid impacts to aquatic resources is based on economic considerations, rather than an analysis of the actual alternatives available. With no evidence provided to support this claim, the Corp must not rely on it to find that this Project complies with the requirements of the CWA. 40 C.F.R. § 230.10 ("[N]o discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem...." No discharge of fill will be permitted "unless appropriate and practicable steps have been taken which will minimize potential adverse impacts of the discharge on the aquatic ecosystem.").

[138] Applicant's "Alternatives Analysis" at 2.

[139] *Id.*

V. The Proposed Mitigation is Insufficient

The Applicant is proposing to complete stream and wetland mitigation as follows: "Intermittent streams are proposed to be mitigated at a 1:1 ratio, while ephemeral streams are proposed to be mitigated at 0.5:1 ratio. Ephemeral streams are proposed to be constructed with 25' riparian buffers and intermittent streams are proposed to be constructed with 50-foot buffers on each side. Streams are designed utilizing by natural stream design principles. The applicant is proposing to mitigate the wetland impacts by constructing 2.31 acres of PFO wetlands managed primarily for hard mast species."

The Center takes issue with the low ratios being proposed for mitigation of the several thousand linear feet of streams that the Applicant would bulldoze to extract dirty tar sands. Further, the proposed buffers are too small, providing insufficient protections for aquatic resources. The Center urges the Corps to require 1.5:1 ratios or better for all impacts, and no less than 50-foot buffers (along each bank) for all water bodies.

Furthermore, the Applicant has stated that "Streams will be replaced on site and will perform the same functions as the existing streams as described in the baseline report." The baseline report, however, suggests that many of the streams in the area are of suboptimal stream quality. The Center is therefore concerned that the Applicant's proposed mitigation would allow it to "replace" streams on the affected site with suboptimal streams that will not provide the functions and values needed to fully restore the area. If the Project is approved, the Corps should require that all streams and wetlands that are impacted be replaced with high quality water bodies with optimal flow, streambed morphology, vegetative cover and riparian zone width to ensure that these areas are fully rehabilitated.

If mitigation measures are not implemented to protect ground water, the mining, processing, and disposal activities will impair the water quality of area waters. If approved, the Corps must require the Applicant to properly monitor area ground and surface waters for contamination from its mining operation.

Monitoring and control of invasive species should also be required if the Project is approved. The Applicant has stated that "Maintenance will include elimination of volunteer species by use of general or spot applications of herbicides or hand picking and mowing, where appropriate."[140] The Center is concerned that the Applicant may use herbicides that could have a negative impact on native species, and urges the Corps to limit the use of herbicides. The Center further notes that the use of herbicides must be addressed in the cumulative effects analysis for the Project (though the Applicant has failed to do so in its CIA).

It is not clear whether the Applicant intends to store any tailings from its mining operation; however, if the Project is approved, the Corps should include a requirement that any such tailings be stored with an impermeable liner to prevent groundwater contamination.

Furthermore, in order to approve the permit, the Applicant must submit the results of Synthetic Precipitation Leaching Procedure (SPLP) and Toxicity Characteristic Leaching Procedure

[140] Applicant's Mitigation Plan at 6.

(TCLP) testing of its process wastes. This is needed to evaluate the potential for contamination, and the need for any additional mitigation measures.

Finally, the Applicant must provide a spill response plan (and the Corps should allow public comment on that plan) to ensure that it has sufficient personnel and equipment to respond to a worst-case spill event.

VI. Conclusion

For all the foregoing reasons, and those discussed in Kentucky Waterways Alliance's comment letter, we respectfully request that the Corps deny the 404 permit. This Project is not in the public's interest, does not comport with the 404 guidelines, has an incomplete application, threatens potential harm to imperiled species, and otherwise fails to comport with the Clean Water Act's requirements. Please contact us with any questions about these comments and thank you for your attention to this comment letter.

Respectfully submitted,

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