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Potential Impacts of the Proposed Valley Lateral Gas Pipeline on Catlin Creek, Associated Wetlands, and Vicinity, Town of Wawayanda, Orange County, New York

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Background

This report refers to the Valley Lateral Project proposed by Millennium Pipeline Company LLC in the Towns of Wawayanda and Minisink, Orange County, New York, and originally known as FERC Docket No. PF15-23 (subsequently assigned to Docket No. CP16-17). The Valley Lateral gas pipeline is proposed to transmit natural gas from the existing Millennium Pipeline to the CPV Valley electric generating plant that is under construction in Wawayanda. The proposed alignment of the Valley Lateral pipeline includes multiple crossings of Rutgers Creek and its tributary Catlin Creek. At the request of property owners Sarah Burns and Amanda King, Hudsonia undertook a preliminary biodiversity assessment to assess the potential impacts of pipeline construction and operation on the stream system and other biological resources. The site is in the area of County Route 93 and State Route 284 in the Town of Wawayanda, Orange County, New York (USGS 1969).

Hudsonia does not oppose or support land use proposals. Rather we collect observations and data in the field and from extant sources to assess biodiversity and the impacts of land use.

Study Area

The study area constitutes the Burns-King property and its vicinity east of Route 284 and mostly north of Route 93. Bedrock was mapped as graywacke (a gray, carbonaceous sandstone), argillite, shale, and siltstone (Fisher et al. 1970). Soil parent materials (surficial geology) include glacial till, glacial outwash, glaciolacustrine silty clay, and Recent alluvium (Olsson 1981). Bedrock outcrops occur, for example on the ridges east of Catlin Creek, and on the east side of Route 284 north of Rutgers Creek.

The area I reconnoitered is as follows. A meadow on the north side of Route 93 covers perhaps 1 hectare (2.5 acres). (The proposed pipeline alignment enters the Burns-King property from the south at this meadow.) The meadow has a wetland connection via a ditch to the east then northeast to an extensive wooded swamp. An old conifer plantation borders the northern end of the meadow, and a narrow corridor of meadow extends up a narrow ridge about 200 meters north-northeast, bordered by forest on both sides. The corridor broadens into a dry ridgetop meadow, also bordered by forest. The east side of the ridge descends steeply into the above-mentioned swamp. Near the northern end of the Burns-King property, the west side of the ridge descends steeply to an old farm road and beyond that the floodplain of Catlin Creek.

Pipeline Proposal

The 7.8 mile long proposed pipeline to the best of my understanding lies approximately parallel to, and just east of, Catlin Creek in my study area, between MP 3 and MP 4 (milepoints 3 and 4; Millennium Pipeline Company [2015] Figure 1.1-1). However, the Millennium document does not allow exact location of the pipeline alignment in the field, nor is the alignment flagged in the field. According to Millennium Pipeline Company (2015), the proposed pipeline would cross Catlin and Rutgers creeks at multiple locations.

Focus and Methods of this Report

I examined selected documents and background information. On 25 May 2016 I was on the site ca. 1500-1830 of which I spent 4.5 hours in the field. I focused on areas estimated to be close to or downslope (downflow) from the pipeline alignment. Because the alignment is not flagged in the field, and is potentially subject to relocation, this was of necessity somewhat generalized. The time frame of my study did not allow extensive review of documents or inquiries to sources of biological information such as the New York Natural Heritage Program (NHP).

Streams and Floodplains

Catlin Creek has a well developed floodplain on the western portion of the Burns-King property. The part of the floodplain I visited had a savannah-like plant assemblage dominated by large, multi-stemmed river birch (*Betula nigra*) with individual trunks approximately 30 cm dbh (diameter-at-breast-height). There were ash (*Fraxinus*) trees up to 60 cm dbh. There was a sparse to medium-density shrub layer with silky dogwood (*Cornus amomum*) and other species including American prickly-ash (*Zanthoxylum americanum*). The herb layer was dense with grasses, sedges, and forbs. On the east side of the creek just south of the stone wall indicating the northern Burns-King property line were patches of May-apple (*Podophyllum peltatum*), a forb that is uncommon in the Hudson Valley. Wild-ginger (*Asarum canadense*) was present, possibly common, on the Catlin Creek floodplain.

The Catlin Creek stream channel itself is broad and shallow in this area. At the time of my visit there was a slow flow with depth as great as 30 cm (1 foot) or more. There were beaver food caches and at least one beaver dam on the creek. The streambed varied from fine sediment to cobble-size rocks, and banks were predominantly silty or clayey.

Wetlands

The meadow on the north side of Route 93 contains a large area of wet meadow in its center that is almost certainly federal jurisdictional wetland. A 19 September 2013 satellite image on Google Earth shows a texture suggesting that most of this meadow is wetland. In any case, the wetter central area is connected through an old ditch bordered by wetland plants into the extensive wooded swamp to the east and northeast.

The site and its vicinity contain extensive interconnected areas of soils that are potentially hydric (i.e., wetland soils). Soils with drainage classifications of Poorly Drained and Very Poorly Drained are usually hydric, and soils classified as Somewhat Poorly Drained are often hydric (Kiviat and Stevens 2001). According to Olsson (1981), the local soils, including areas of the Burns-King property, that are Poorly Drained and Very Poorly Drained are Madalin, and the soils that are Somewhat Poorly Drained include Erie (ErA, ErB, ESB), and Rhinebeck (RbA, RbB). It is very likely that there is a sufficient, contiguous area of hydric soils to qualify as New York State regulated wetland (i.e., 5 hectares [12.4 acres] or greater); this need not all occur on a single parcel. It appears from the Environmental Resource Mapper, which is difficult to interpret, that part but not all of this area was mapped as Freshwater Wetlands. It is well known that the

New York State Freshwater Wetlands mapping (and the National Wetland Inventory mapping) are generally much more restricted than the actual distribution of wetlands on the landscape. Under-mapping of State regulated wetlands in the study area would not absolve the applicant from accurately determining the actual regulatory wetland boundaries and proceeding accordingly.

Forests

The upland forests in the vicinity of the alignment have oak, sugar maple, hickory (*Carya*, 5-30 cm dbh), ash, and other trees. There is also an old Norway spruce plantation located approximately where the alignment leaves the northwestern corner of the meadow on Route 93.

Upland Meadow

The upland meadow on the ridgetop was approximately 15 to 30+ m (50-100+ feet) wide. The soils appeared dry and shallow with bedrock at the surface locally. Vegetation had species such as goldenrod (*Solidago*), blackberry and dewberry (*Rubus* spp.), multiflora rose (*Rosa multiflora*), a native rose (*Rosa* sp.), yarrow (*Achillea millefolium*), wild strawberry (*Fragaria virginiana*), sweet vernal grass (*Anthoxanthum odoratum*) and other grasses, sedge (*Carex*), hawkweed (*Hieracium*), seedling-size oaks (*Quercus*), and haircap moss (*Polytrichum*). Perhaps 10 or 20 plants of small-flowered agrimony (*Agrimonia parviflora*) were in one spot in the narrow, southern portion of the meadow.

Biodiversity Assessment

Catlin Creek and Floodplain. May-apple and wild ginger indicate a good quality floodplain soil and vegetation. The combination of stream channel and floodplain habitats has good potential to support wood turtle (New York Special Concern) which could also occur in Rutgers Creek. Catlin Creek also has potential habitat for red salamander (SGCN).

The floodplain river birch savannah appears to be unusual in Orange County. Although river birch is common in low elevation areas of New Jersey, it is uncommon to rare along the Wallkill River and lower Esopus Creek in Orange and Ulster counties, New York (Kiviat 1991, Kiviat et al. 1994). River birch does not seem to occur as a dominant tree in these areas as it does at Catlin Creek. Uncommon or scarce plants such as May-apple indicate that rare plants (categorized as S1, S2, or S3 by the New York Natural Heritage Program) are likely to occur. For example, we found cattail sedge (*Carex typhina*) along the Wallkill near Rutgers Creek (Kiviat et al. 1994), and this species could occur along Catlin Creek. We also round red-root flatsedge (*Cyperus erythrorhizos*) in a floodplain forest on the Wallkill (Kiviat et al. 1994) and this rare plant could occur at Catlin Creek.

Wetlands. The wet meadow on the north side of Route 93 is potential habitat for sedge wren (New York State Threatened). This species can breed in a similarly small area of wet meadow habitat.

The swamp connected to the wet meadow has extensive ponding of surface water. These swamp pools are likely to support breeding (spawning and larval development) of "vernal pool" or "intermittent woodland pool" ampibians (Kiviat and Stevens 2001) including wood frog, spotted salamander, Jefferson salamander (New York Special Concern), marbled salamander (SC), four-toed salamander [SGCN], and possibly the swamp-breeding blue-spotted salamander (SC).

Potential habitat for the state (Endangered) and federally (Threatened) listed bog turtle has been identified on the Brunn property across Route 93 from, and sharing contiguous wetlands with, the Burns-King property (Crow 2016). Irrespective of the characteristics of the swamp and wet meadow on the Burns-King property, if potential bog turtle habitat is identified in offsite portions of the same wetland the entire wetland would be considered potential bog turtle habitat under U.S. Fish and Wildlife Service guidelines. The DEC online Environmental Resource Mapper (http://www.dec.ny.gov/animals/38801.html) shows a Rare Animal Overlay encompassing the study area. This overlay may refer to the bog turtle.

The presence of wild-ginger and American prickly-ash on the Catlin Creek floodplain suggest a calcareous (calcium-rich) soil. Such soils often support regionally-rare and statewide-rare plants.

Forests. The forests could support two federally-listed species, Indiana bat and northern long-eared bat. Live hickories (probably shagbark, *Carya ovata*) and dead trees of various species provide potential summer roosting and nursery microhabitats for both species. Migratory forest songbirds listed as SGCN in New York include wood thrush and scarlet tanager, and I heard one tanager and multiple wood thrushes singing at the site. Patches of May-apple occurred at low elevations on the north end and east side of the ridge, as well as on the Catlin Creek floodplain.

Upland Meadow. Small-flowered agrimony is Rare – S3 in New York. The upland meadow (along with other habitats nearby) is potential habitat for eastern box turtle (SC). The lichen flora on exposed bedrock and spots of sparsely vegetated soil included a tentatively-identified dog lichen (*Peltigera*) and a pyxie lichen (*Cladonia*), both unfamiliar-looking; the meadow could contain rare lichen species. I observed dragonflies and damselflies flying and perching in the meadow including spangled skimmer. Upland meadows near surface waters can be important foraging habitats for adult odonates (dragonflies and damselflies).

According to Millennium Pipeline Company (2015), the federally Endangered plant small whorled pogonia "prefers" Arnot complex soils and is not anticipated to occur on the proposed pipeline alignment which lacks Arnot soils. However, small whorled pogonia may occur on other types of soil. Because it is hard to precisely specify the habitat of this species, the only way to avoid harming it is for appropriately experienced, independent botanists to conduct field surveys, potentially in multiple years, to discover any species occurrences.

Impacts on Wetlands, Streams, and Floodplains

The most important potential impact of pipeline construction is siltation, i.e., the movement of disturbed or excavated soil material into downslope habitats. Pollution by drilling muds, petroleum hydrocarbons, and other materials are also a risk. Horizontal directional drilling (HDD) is proposed for pipeline crossings of Catlin Creek and Rutgers Creek (Millennium Pipeline Company 2015). Rutgers Creek is a protected trout stream (Gaidasz 2015). HDD can result in "inadvertent returns" (leaks or spills of the bentonite and water drilling mud mixture at one end or the other of the tunnel beneath a stream or wetland). Hundreds of such inadvertent returns have been recorded where HDD has been used for laying pipelines in Pennsylvania (Kiviat 2016 and references cited therein). Inadvertent returns commonly result in bentonite pollution of the stream or wetland being drilled under; the effects of bentonite on wetland soils, and wetland and stream organisms, are not understood.

Catlin Creek drains into Rutgers Creek which therefore is subject to any water quality disturbances affecting Catlin Creek. Substantial siltation, or a bentonite spill, into Catlin Creek or Rutgers Creek would affect the Rutgers Creek and Catlin Creek fisheries. Although developers of pipelines and other infrastructure claim to be able to prevent erosion and siltation, the effectiveness of silt barriers is limited (see Kiviat 2015 and references cited therein).

The application proposes the use of glyphosate herbicide to control invasive plants (Millennium Pipeline Company 2015). Glyphosate is toxic to all plants to some degree, as well as to animals. For example, glyphosate alone (without adjuvants) causes airway inflammation in mice (Kumar et al. 2014) and this effect would be expected in wild mammals. This is but a single example of glyphosate hazards to wildlife that should be considered in planning any management of nonnative weeds.

Impacts on Uplands

The dry ridgetop meadow with its lichens and odonates, small-flowered agrimony, and the forests with wood thrushes and other songbirds, potential summer bat habitat, and May-apple would be severely disturbed by pipeline construction if it takes place on the ridgetop. Although the meadow is gentle in slope, the forest to east and west are steep would be subject to erosion. Bedrock near the surface of the ridgetop would have to be broken or blasted.

Millennium Pipeline Company (2015) stated that tree cutting would only be conducted during the winter period when bats are hibernating in caves or mines, and that roosting trees would not be salvaged. I recommend that shagbark hickories (*Carya ovata*), of all sizes, be located, marked, and left standing, because this species is believed especially suitable for summer bat roosting and nursery microhabitat. Small shagbarks, of course, are tomorrow's mature microhabitat trees.

The construction right-of-way width was described as 75-135 feet (Millennium Pipeline Company 2015). This width is excessive and should be reduced.

Conclusions and Recommendations

The proposed alignment of the Valley Lateral gas pipeline has many potentially adverse impacts on biodiversity (wildlife, flora, and habitats). Several State-listed Endangered, Threatened, or Special Concern species and other Species of Greatest Conservation Need may be affected, as may rare plants. A river birch floodplain savannah along Catlin Creek, apparently an unusual habitat in New York, is subject to negative impacts. Pipeline construction would probably adversely alter extensive wetlands and the Catlin Creek – Rutgers Creek stream system. Siltation into Catlin Creek and Rutgers Creek would be expected, with resulting degradation of the stream fauna. Apparently the Applicant has not conducted biological studies in the area between Valley Lateral Milepoints 3 and 4. There is an urgent need for flagging an exact pipeline alignment in the field, an accurate and independent wetland boundary delineation to determine the limits of state and federal jurisdiction, and thorough biological surveys to establish presence or absence of the wildlife and plant species of concern.

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