Review comments – Constitution Pipeline EIS

U.S. Geological Survey
New York Water Science Center

Executive Summary

Page ES-4 Mention here (and elsewhere) of state-specific Environmental Construction Plans (ECPs) are made but are not supplied for review. The information in them is likely useful, therefore our evaluation of the EIS is likely incomplete or our questions may be addressed within the ECPs.

Page ES-12 Mention of specific 'environmental' Plans is made, but again they are not available for review. Of greatest interest is the Karst Mitigation Plan.

Section 2.0 Project Description

Page 2-16 Karst Mitigation Plan is not available for review – While mentioned in Section 4, the Plan is not there either.

Page 2-17 Granted that this is likely not the first pipeline this firm has constructed, but details on backfilling, padding around the pipe (clean soils), especially in rock-lined and rock-backfilled trenches lack sufficient detail for evaluation. Concerns here would be frost penetration, associated rock movement within the filled trench and initial pipeline settlement within the rock trench any of which might cause damage in the long term.

Page 2-27 Rugged topography – If groundwater is present during construction, or afterwards (seasonally dependent), is there a means to assess changes in local hydrology as it might affect nearby streams, many of which are designated as trout-class waters? Trench/slope breakers and re-routing of flow from these breakers to surface water and how that water might be handled is not clearly stated. The greater concern is such rock-cut construction in the eastern karst region. Loss of water into karst features exposed in rock-lined trenches might develop as point sources of increased dissolution and subsidence in the long-term.

From our past experience, these pipelines can handle a lot of stress due to induced stresses such as slow, gradual subsidence, but sudden events such as landslides and rapid sinkhole development might cause greater stresses on the pipeline. No mention of long-term inspections (scheduled overflights or on the ground inspections) is mentioned in a clear fashion. Slope indicators were mentioned in suspected landslide areas, but how these units are maintained and inspected was not. In suspected areas of induced infiltration in karst areas similar types of monitoring might be required in 'suspect' areas, as evaluated by trained geotechnical personnel.

Section 4 – Environmental Analysis

Page 4-2 The statement "The bedrock underlying the New York portion of the pipeline project consists of Mesoproterozoic metamorphic rock, the majority of which is overlain by till, recent alluvium, kame

deposits, or is exposed." is not correct. The Mesoproterozoic metamorphic rocks are deeply buried below Devonian-age sedimentary bedrock.

Lower paragraph - New York – 6th line – 'surficial' not 'superficial'

Page 4-4 Bedrock Geology –New York – While most of the bedrock is as described for the western and central part of the pipeline, the limestone and karst terrain of the Onondaga Limestone and Helderberg Group on the eastern end of pipeline should receive some mention here as there are specialized concerns that follow in the EIS dealing with karst terrain.

TABLE 4.1.1-1

The New York State Bedrock Geology map by Rickard and Fisher (1970) should not be listed as a reference for surficial geology as it is the reference for the New York State Bedrock Geology Map. The reference for the New York State Surficial Geology Map is Cadwell, D.H. Surficial Geologic Map of New York. Consists of 5 sheets, 1:250,000: Finger Lakes Sheet, 1986; Hudson-Mohawk Sheet, 1987; Niagara Sheet, 1988; Lower Hudson Sheet, 1989; Adirondack Sheet, 1991. Map and Chart Series No. 40. 5 maps: 1:250,000.

Why use different terms for the same surficial geologic unit? Bedrock (sandstone, siltstone, and shale) = Sandstone and Shale Bedrock; Alluvium = Recent alluvium; Wisconsinan Ice-Contact Stratified Drift = Kame deposits; Wisconsinan Till = Till

Pages 4-13 and 14 – Landslide hazards – while on the ground inspections are good, there is a need for better means to determine landslide susceptibility in the steep slope areas. While mature trees might indicate slope stability – no mention was made of the structure of the trees -- Jay-ed trees would be indicative of slope creep, while LiDAR imagery, using last-returns, should be considered for finding old landslide scarps, scars, and slope failure that are not visible in the forested terrain or from topographic maps.

Following Hurricane Irene and Tropical Storm Lee (2011), several 'ancient' slides were reactivated, some with appreciable hill slope movement in the pipeline region. Not enough detail was given in the EIS (understandably) to determine to what degree Constitutions' geotechnical consultants went to identify landslide potential on steep slopes.

On page 4-14 it is noted that during construction Constitution EIs and construction crews would identify possible landslide conditions. What criteria would be used and how much training will be provided to the crews to do such evaluations? It is recommended that a geotechnical specialist assess all such locations, not "as necessary". Recommend that this specialist inspect all steep slope areas during construction, document (written with digital pictures) any geologic anomalies – trained eyes see more than untrained eyes. Also, the ECPs for both states were not available through the EIS – therefore the above concerns might be answered within each ECP, but there is no way to determine such.

Pages 4-14 and 4-15 Karst topography – Identification of karst features is good but the Karst Mitigation Plan within the ECP for each state were not available through the EIS, therefore it is difficult to assess what the plans address, how such features would be identified and documented, nor how mitigation practices would be employed during and following construction.

Page 4-37 Second paragraph – Surficial aquifers are usually sand and gravel and not till, as presently stated. Till does not easily yield water and is not considered an aquifer. The sentence that follows about the pipeline and the presence of till on the hilltops and slopes is generally correct, but these conditions vary depending on slope orientation in relation to glacial ice movement.

Page 4-37 Sole Source Aquifers - Reference was made in several sections of the EIS concerning the Constitution pipeline being constructed in the Clinton-Ballpark aquifer. I'm not sure where this statement came from as the identified aquifer (Clinton-Ballpark) is located in the Binghamton- Johnson City area of western Broome County which is nowhere near the proposed construction. The authors might be referring to an aquifer study completed in 2012 for the valley-fill aquifer system in the Susquehanna River Valley which is referenced below. This study area is located in eastern Broome and southwestern Chenango Counties where pipeline construction is planned. There is no 'named' aquifer within this area.

Heisig, P.M., 2012, Hydrogeology of the Susquehanna River valley-fill aquifer system and adjacent areas in eastern Broome and southeastern Chenango Counties, New York: U.S. Geological Survey Scientific Investigations Report 2012–5282, 21 p., at http://pubs.usgs.gov/sir/2012/5282.

"The glacial outwash is thicker than 200 feet along the river valley… " – "glacial outwash" should be changed to glacial deposits (which include outwash, lacustrine, and ice-contact deposits).

Page 4-39 Table 4.3.1-2 Here and elsewhere in the EIS, two wells are identified as monitoring wells. Information on these (owner, depths, etc.) could be useful as a means to determine any impacts to these wells and aquifer during construction. Especially the one listed as being 0 feet from the work area……..

Page 4-42 Information referring to the Clinton-Ballpark aquifer should be removed and revised.

Page 4-48 Early in the EIS there is a passing reference made that many of the streams in New York were trout streams which would receive some type of 'sensitive' designation, according to the verbiage above Table 4.3.3-3. Follow-through with this designation appears 'spotty' in the following paragraphs. Does this mean that the streams in question would likely be 'dry' or would receive 'dry construction techniques' to protect this designated habitats? Will follow-through water-quality testing be applied during the first year or so following construction to assure that these streams are not affected? Pages 4-87-and 4-88 do address some of these concerns.

Page 4-91 As evidenced by the accidental release of drilling fluids into Laurel Lake Creek (Susquehanna County, PA) and Larry's Creek (Lycoming Co., PA) during recent Marcellus gas pipeline construction, directional drilling under streams that flow on

fractured bedrock is problematic. The hydrogeologic setting of stream crossings where this technique is to be employed needs to be evaluated and mitigation plans and materials need to be in place.