

**Environmental Review of 349 Main Street, Block 1003-Lot 3
Lambertville Police Department Site**

**As prepared by
Dr. Stephen J. Souza
27 July 2020**

At the direction of the City of Lambertville’s Community Advisory Team (CAT) I was asked to conduct a preliminary environmental review and stormwater quality management assessment of the Police Department site, 349 Main Street, Block 1003-Lot 3, which is one of the locations being considered for the construction of affordable housing. Additionally, I was asked to answer questions submitted by the City’s environmental Commission to the CAT. The following is my report as based on my review of available public documents and data available through public access databases and on-line mapping tools. Among the documents that I reviewed are the Clark Caton Hintz 1 July 2020 report (Preliminary Investigation of an Area in Need of Redevelopment (Non-Condemnation) for Police Station Tract) and the 22 January 2014 geotechnical study of the site conducted by EEI (Report Of Geotechnical Investigation Existing Lambertville Police Station Headquarters Building, 349 North Main Street, City Of Lambertville, Hunterdon County, New Jersey). Please note in preparing this report I did not conduct any in-person field investigations or site-walk of the property or adjacent lands.

1. NJDEP GeoWeb Database

Review of the NJDEP GeoWeb database for the subject site (349 Main Street, Block 1003-Lot 3) generated extremely limited information. As is usually the case with the GeoWeb database, the mapped information should be considered a “starting point” and does not preclude the need for on-site investigations and more detailed site surveys, especially with respect to flood hazard area, floodplain boundaries, wetlands and wetland buffers (transition areas).

As per the NJDEP’s database the site is not encumbered by any wetlands, steep slope, or habitat for threatened and endangered species. The database did not reveal any known contamination problems or other related environmental hazards. The database does show that the site falls within the boundaries of the Delaware Raritan Canal Commission and as such any development of the site would be subject to the DRCC’s review. The database also shows that the site falls within the Alexauken Creek drainage area. The Alexauken Creek is defined as a Category-1 water. Further details of the significance of this are provided in my response to the questions posed by the Environmental Commission (20 July 2020). Of note though is that the stream’s water quality is protected by the State’s antidegradation policies (NJAC 7:9B). Also, as per NJAC 7:13-4.1, the width of the riparian buffers associated with Alexauken Creek is 300’ as measured from the top of bank. NJDEP limits the extent of disturbance that can occur within the riparian buffer.

2. Soils

USDA Web Soil Survey - The soil data available through the USDA’s on-line soil survey site reflects mapped data, that has not necessarily been field verified. The data is intended to provide a

general assessment of the types of soils expected to occur in a given area. The mapped data is a guide and is not intended to negate the need to on-site, soil investigations. The database for Block 1003-Lot 3 shows three mapped soils occurring within the boundaries of the subject site:

- **RoPF** – Rough broken land (limited to No. Main Street roadway and right-of-way)
- **PomAs** – Pope Fine Sandy Loam (delineated along western side of property, sub-dominant accounting for approximately 30% of site’s total area)
- **BhnB** – Birdsboro Silt Loam (delineated through central portion of the site, dominant soil type accepting for approximately 60% of site’s total area).

It should be noted that the USDA data does not acknowledge nor account for the historical importation of fill material onto the site.

As per the USDA, the characteristics of the Pope Fine Sandy Loam and Birdsboro Silt Loam soils are summarized in following table:

Soil Characteristic	Birdsboro Silt Loam	Pope Fine Sandy Loam
Landform	Stream terraces	Floodplain
Soil texture	Silt loam	Fine sandy loam to gravelly sandy loam
Depth to restrictive horizon	> 80”	> 80”
Depth to groundwater (SHWT)	> 80”	> 80”
Drainage	Well drained	Well drained
Runoff classification	Low	Low
Frequency of flooding	None	Occasional
Frequency of ponding	None	None
Available water storage	High approx. 10”	Moderate approx. 7.1”
Limits for dwelling with basement	None	Limited due to occasional flooding
Use for shallow infiltration systems	Not limited	Somewhat limited
Soil erosion potential	Medium	Medium - low
Hydrologic soil group	B	B

The USDA definitions of the above soil characteristics are as follows:

Stream terrace - One of a series of platforms in a stream valley, flanking and more or less parallel to the stream channel, originally formed near the level of the stream; represents the remnants of an abandoned flood plain, stream bed, or valley floor produced during a former state of fluvial erosion or deposition.

Runoff - The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Ponding - Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Floodplain - The nearly level plain that borders a stream and is subject to flooding unless protected artificially.

Floodplain landforms - A variety of constructional and erosional features produced by stream channel migration and flooding. Examples include backswamps, flood-plain splays, meanders, meander belts, meander scrolls, oxbow lakes, and natural levees.

Drainage class (natural) - Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil.

Soil erosion potential (k factor) - Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and saturated hydraulic conductivity (Ksat). Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Hydrologic soil group - Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups (A, B, C, D) according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms. **Group B. Soils** have a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

NJDEP – Referring to the soil characteristics contained in Appendix D of NJAC 7:9A, the state’s septic regulations, the Pope soil group are classified I; IISc whereas the Birdsboro soil group are classified I; IIWr; IISc; IIWrSc. These designations are used by NJDEP to determine the suitability of a soil for use in managing and treating septic effluent. These designations can also provide some insight on the capabilities of the soils to be used for the construction of infiltration and recharge basins. The designations defined as follows:

- I Sc Fractured rock or excessively coarse substratum > 5’ (representative of fast draining soil)
- II Sc Fractured rock or excessively coarse substratum 0-5’ (representative of fast draining soil)
- II Wr Regional zone of saturation 2-5’ (representative of a soil prone to saturated conditions)
- II WrSc Perched zone of saturation 2’-5’ (representative of a soil with a perched water table)

Part 2 - Answers to Questions Raised by Lambertville Environmental Commission dated 20 July 2020

Question #1 – Referring to the Geotechnical Report January 2014, does the Report raise any environmental concerns?

1. Soil contamination: The site previously was used as a vehicle service station, prior to becoming the police station in 1999. Is this prior use a concern? What studies must the City/Redeveloper conduct during a Phase 1 assessment? If a Phase 2 assessment is required would samples for contaminants related to vehicle repair, such as PAH and lead, be required? If soil is found to be contaminated, would it require a cost/benefit analysis of options based on another round of sampling? What are the options if contamination is found? (if soil is found to be contaminated is it cheaper to remove and bring in new fill rather than compact; or compact and cap?) How could site be remediated to a residential standard?

Answer to Questions #1 – The answers to these questions are best addressed by a Licensed Site Remediation Professional (LSRP). Review of the NJDEP's Site Remediation Program database (accessed via NJDEP Data Miner), shows that there is no record of the Police Station Site (349 No Main Street, Block 1003, Lot 3) as a Open, Closed or Pending contaminated site.

The EEI geotechnical study, while comprehensive with respect to subsidence concerns raised about the police station and the physical qualities of the site's historic fill, it does not address the above concerns pertaining to potential historic contamination and the measures that should be taken in the event that sampling corroborates some degree of soil contamination. As such, in my opinion it would be prudent to conduct a Phase 1 analysis and given the site's history, as well as evidence of recent dumping, comprehensive soil testing. An LSRP can answer the questions concerning the contents of a Phase 1 and Phase 2 site investigation, and remedial options should testing confirm the presence of soil contaminants present in concentrations in excess of the NJDEP's contamination thresholds for sites developed for residential use.

Question #2 - Stormwater: Are there stormwater issues that raise any environmental concerns for this site? Major redevelopment concern proximity to Class 1 waterway, Alexauken Creek. What storm water protection measures would be required for the Redeveloper to protect water quality during construction? What long term measures would be required in design of building and grounds to protect storm water quality at the site? (perhaps a rain garden, collecting water from the parking lot to filter contaminants prior to discharge? or porous parking lot material could be used to encourage recharge rather than run off?) What mitigation measures would you recommend? Specifically related to Alexauken Creek?

Answer to Question #2 – Given that the Alexauken Creek is categorized by NJDEP, within NJAC 7:9B as a Category 1 (C1) water. As per NJAC 7:9B, C1 waters are defined as follows:

"...those waters designated in the tables in N.J.A.C. 7:9B-1.15(c) through (i), for purposes of implementing the antidegradation policies set forth at N.J.A.C. 7:9B-1.5(d), for protection from measurable changes in water quality based on exceptional ecological significance, exceptional recreational significance, exceptional water supply significance or exceptional fisheries

resource(s) to protect their aesthetic value (color, clarity, scenic setting) and ecological integrity (habitat, water quality and biological functions).”

Referring to the antidegradation policies contained within NJAC 7:9B-1.5(d): “Category One Waters shall be protected **from any measurable changes (including calculable or predicted changes)** to the existing water quality. Water quality characteristics that are generally worse than the water quality criteria, except as due to natural conditions, shall be improved to maintain or provide for the designated uses where this can be accomplished without adverse impacts on organisms, communities, or ecosystems of concern.

As such, it will be incumbent on the applicant to implement stormwater management, including stormwater quality management, techniques that prevent the creek from experiencing **any measurable changes (including calculable or predicted changes)** to its existing water quality.

To accomplish this will require the implementation of various green infrastructure stormwater best management practices (GI-BMPs) capable of removing sediment, nutrients (phosphorus and nitrogen) and other dissolved and particulate contaminants from the site’s stormwater before its discharge to the creek. While it will not be possible to remove 100% of all of the pollutants, it should be possible, with the correct GI-BMPs to prevent the proposed re-development of the site from further degrading Alexauken Creek.

My recommendation would be to utilize a number of GI-BMPs throughout the site; essentially making use of a decentralized stormwater management approach as opposed to the conventional centralized, end-of-the-pipe solution. To maximize post-development stormwater quality, maximize stormwater recharge and decrease the total volume of runoff discharged to the creek following the site’s development, my recommendation would be to require a stormwater design that retains on site the entire post-development runoff volume generated by the 1-year (2.75”/24 hour) or Water Quality (1.25”/2 hour) storm events. In doing so, it will be possible to significantly decrease pollutant loading to Alexauken Creek, while simultaneously promoting the recharge of the surficial groundwater table critical to the long-term maintenance of the creek’s associated wetlands and riparian areas. Examples of applicable GI-BMPs are provided in Chapter 9 of the NJDEP’s Best Management Practices Manual¹ as well as documents available through NJ Future² and Rutgers Agricultural Extension Service³.

Also please note that because this site falls within the development review boundaries of the Delaware and Raritan Canal Commission (DRCC), an applicant will be required to also satisfy the stormwater quality and management requirements contained within the DRCC’s regulations (refer to https://www.nj.gov/dep/drcc/pdf/drcc_drainage-review.pdf).

¹ NJDEP https://www.njstormwater.org/bmp_manual/NJ_SWBMP_9.0%20print.pdf Chapters 9.1-9.15.

² NJ Future https://www.nifuture.org/wp-content/uploads/2017/03/NJ-Developers-Green-Infrastructure-Guide_FINAL_web.pdf

³ Rutgers http://water.rutgers.edu/Green_Infrastructure_Guidance_Manual/2015-03-31_Manual.compressed.pdf

Question 3 - What plants are currently found on the site? (provide an inventory?) How would development impact them? Can the site be sustainably developed considering the existing plant life? Are there recommendations for replanting new native plantings?

Answer 3 – It is customary as part of any site development project to require a pre-development flora and fauna inventory. Referring to the City’s Land Development Regulations; § LDR-600 Subdivision And Site Plan Review And Certificates Of Approval, sub-section § LDR-602. B. 1, states that an applicant must submit a complete application for preliminary approval including a properly completed Planning Board and Zoning Board of Adjustment application form and supporting checklist(s). Specifically referring to ***City of Lambertville; Checklist No. 2 – Determination of Completeness of Application for Preliminary Major Subdivision Approval***, Applicants are required as per checklist item #23 to provide the:

“Location of all man-made & natural features, both on-site and within 200’ of the property, including, but not limited to: Dedicated open space, culverts, structures, drain pipes, water courses, railroads, bridges, wooded areas, rock outcrops, wetlands (specific source & notation if there are any wetlands present), swamps, buildings, streets, drainage right-of-ways & sewer & water facilities”.

Additionally, as per checklist item #34, for a development project of the nature proposed for Block 1003-Lot3, the applicant should be required to conduct a:

“Natural Resource Inventory & Environmental Impact Statement, as required by Ordinance or as determined by the Board”.

In complying with checklist items #23 and #34, the applicant would need to provide details of the types of plants (canopy, forbes and understory species) currently present on the site. This would include an inventory of both native and non-native species and the location and size (DBH) of all specimen trees present within the boundaries of Block 1003-Lot3.

With respect to post-development plantings, again referring to ***Checklist No. 2 – Determination of Completeness of Application for Preliminary Major Subdivision Approval***, an applicant is required as per Checklist item #25 to prepare and submit for review by the Planning Board a:

Landscaping plan for street shade trees noting location, material type & sizes, planting details & tree preservation details.

It is customary for the Planning Board’s landscape architect to review the applicant’s proposed planting plan. During this review the Planning Board should have the latitude to prevent the planting of non-native species and require the planting of plant species, including tree species, that are consistent with the environmental character of the site.