



# TRENTON ENGINEERING Co., Inc.

CIVIL ENGINEERS AND SURVEYORS

Established 1907

2193 Spruce Street • Trenton, NJ 08638  
609-882-0616/882-0617 • Fax: 609-882-6004

## **STREAM BUFFER CONSERVATION ZONE MITIGATION REPORT**

The Township of Hamilton has adopted a township ordinance entitled “Chapter 583 Steam Buffer Conservation Zone” to provide regulations and controls governing the conservation, disturbance, restoration and management of stream buffers for all perennial and intermittent streams and all lakes, ponds and reservoirs within the Township by establishing a Steam Buffer Conservation Zone (SBCZ) in recognition to the contribution to the welfare of the residents of the Township.

### **PROJECT LOCATION:**

Our project is designated as “Synnergy, LLC”, Sweetbriar Avenue, Block 1581, Lot 27, as shown on sheets 32 and 33 of the “Hamilton Township Tax Map”, being Zoning Application No. 1605-012. The object of the project is to construct 11,532 solar panels within two (2) sections on the westerly half of the site to provide electrical power to the Ewing-Lawrence Sewerage Authority site to the north of this location.

### **PROJECT DISTURBANCE:**

There are two (2) primary areas of disturbance designated on our submitted engineering plans. They are Sections 1D & 2D. The total area of disturbance in Section 1D is 5.900 acres. The total area of disturbance in Section 2D is 6.407 acres. This will impact 32.1% of the entire Lot 27. The existing trees, brush, fill and cut areas from previous uses, deposited junk and debris as well as the remnants of a building and parking area will be removed from the entire project area. This will remove a total of 820 trees of caliper ten (10) inches or larger from the project area. Compensation for the tree removal will be given to the Township by agreement with the property owners to replace the trees in various locations within the Township of Hamilton as they deem necessary. Upon final removal of the tree stumps, the site will be re-graded as a smooth grass cover landscape with two (2) twelve (12) foot wide stone covered access and maintenance driveways around the boundaries of the solar panel areas. There will be two (2) ingress/egress access points from Sweetbriar Avenue with two (2) parking areas having two (2) spaces each. There are also four (4) detention basins proposed within the access driveways.

### **STREAM LOCATION:**

By definition, there are two (2) Category Two (C2) waters and one (1) Intermittent Stream which require (SBCZ) limits to be shown on our project site. The first stream is known as the “Assunpink Creek”, which is located across from and to the north of “Sweetbriar Avenue” in front of our project. It flows from east to west and approximated parallel to the road. The second stream is known as “Miry Run”, which is located near the center of our site and flows from a culvert under the railroad on the south through the culvert on the north at “Sweetbriar Avenue” and intercepts the Assunpink at a confluence. Miry Run will remain on the undisturbed easterly half of our site. The unnamed “Tributary to the Assunpink Creek” is a manmade channel created to carry the flow from the properties on the southerly side of the railroad through a culvert on the north at “Sweetbriar Avenue” to the “Assunpink Creek”. It is located on the

westerly side of our site between the proposed two (2) sections to be developed by our client. It normally runs dry and has no flood plain above the banks. The primary influence of the "Assunpink Creek" on our site is by the backup through the culvert into the "Tributary".

**BUFFER DETERMINATION:**

There are two (2) classifications of the (SBCZ) which affect this site. The first is the seventy-five (75) foot limit from the top of bank of the two streams and from the centerline of the intermittent stream. The second is the outer limit of the 100-year flood plain as established by the "Federal Emergency Management Agency" (FEMA) maps. The elevation datum shown for the two streams is based upon (NAVD 88). Our engineering plan elevations are based upon (NGVD 29) datum. The elevation conversion in this area is +1.07 feet. There is a ridge line between the two streams which occurs near the middle of Section 2D. The "Assunpink Creek" 100-year flood plain elevation for the westerly side of the ridge is 49.57 (NGVD 29). The "Miry Run" 100-year flood plain elevation for the easterly side of the ridge is 49.75 (NGVD 29). The 100-year flood plain is greater than the seventy-five (75) foot limit in both cases.

**DISTURBED BUFFER:**

We are incorporating into the engineering plans two (2) sheets displaying the disturbed (SBCZ) areas within the proposed project areas of the two (2) sections on the site. There are five (5) separate areas in Section 1D which lie below the 100-year flood plain elevation for the "Assunpink Creek". Four (4) of these areas are depressions that remained after previous uses on the site were abandoned or construction on the adjacent westerly lot helped trap the water. These areas are now a source of mosquito infestation. They have been obscured after years of subsequent growth of trees, brush, dumping and filling. Therefore, mosquito control has probably not been attempted in these areas. The total area of (SBCZ) disturbance in Section 1D is 3.023 acres. There are two (2) separate areas in Section 2D which lie below the 100-year flood plain elevation for the "Assunpink Creek" and one (1) which lies below the 100-year flood plain elevation for "Miry Run". Two (2) areas within Section 2D also fall within the low lying problem category. The total area of (SBCZ) disturbance in Section 2D is 2.892. This total 5.915 acres area of (SBCZ) disturbance is only 15.4% of the entire lot. The entire portion of the site to the east of the "Miry Run" will remain undisturbed by this project. It contains 14.575 acres of the (SBCZ) or 38.0% of the entire site. The undisturbed (SBCZ) portion of the site between the two sections is 4.563 acres or 11.9% of the entire site. The entire undisturbed (SBCZ) portion of the site is 19.773 acres or 51.6% of the lot.

**REGULATION INTENT:**

We have made every effort possible to be consistent with the intent and objectives of this ordinance and use accepted conservation practices in preserving as much of the on site (SBCZ) as we could and still make it possible to achieve a reasonable goal. We have managed to preserve over 50% of the original lot area within the (SBCZ) in its undisturbed forested condition. We have reduced the original project from three (3) sections to two (2) sections by eliminating the use of the land to the east of "Miry Run". We have left the entire wetlands on the site intact and only disturbed the wetland transition areas and riparian zones with four (4) small six (6) inch diameter outlet pipes from the detention basins. This has made it possible to preserve the canopy of trees over the most sensitive and important regions of the (SBCZ) and to

provide natural organic material such as fallen leaves and twigs and large woody debris so that sufficient food and protection for the habitat and aquatic organisms which remain primarily in and close to the waters of the streams. These vegetated buffer areas are also the most important for optimizing filtration, deposition, absorption, biodegradation and plant uptake.

### **REGULATION OF STORMWATER:**

I believe that the major reason for the (SBCZ) is to control the stormwater runoff which is conveyed through the vegetated buffer as a stable, distributed sheet flow prior to reaching the receiving waters. In an attempt to achieve this fact, we have obtained an approved individual permit for stream encroachment and stormwater maintenance from the New Jersey Department of Environmental Protection (NJDEP) along with the necessary wetlands permits for the construction of this project. A portion of the approval required that the proposed flood plain storage volume for the project be at least equal to or above the existing flood plain storage volume. The "Excavation Report" calculations indicate an increase in flood storage volume for the 100-year storm event for both sections. The increase is 4,992 cubic yards for section 1D and 552 cubic yards for Section 2D. The volume requirement does not allow for detention basins within the "Flood Hazard Area". Therefore, the necessary detention basin volume to control all of the storms up to and including the 100-year storm event, is in addition to the cut and fill calculations submitted. The detention basins have been designed to control the outflow from the proposed project for the minimum impact on the stream corridor. At the present time, the stormwater runoff from a major storm flows directly to the streams. Any existing excessive nutrients, sediment, organic matter, biocides, debris or other pollutants near the streams are washed directly into the flood waters. The basins will hold the entire 100-year storm volume for up to seventy two (72) hours after a major storm. Any of the necessary environmental provisions mentioned in the above sections are not impacted by non-stable flow. Because infiltration was not included in the calculations, the only outflow from the each basin is through the small six (6) inch pipe provided for minimal outflow. During the holding period, the grassed bottoms of the basins are continuously providing infiltration into the groundwater system, but the downstream residents do not feel any impact from the project area itself. The impact from the undisturbed areas on the site will remain the same.

### **SITE SPECIFIC CHANGES:**

Because the trees along Sweetbriar Avenue will remain as a buffer and additional buffering is required, the easterly forested area will remain and the railroad is elevated above the site, there will be no visible change from the surrounding area. The major portion of the project will be maintained grass cover. Screening will be provided across the outlet pipes. Any branches falling from remaining trees will normally remain outside of the project area. The few that will blow into the basin areas and any debris will be removed during maintenance. Since the grass will not be treated with pesticides, there will be no impact from excessive nutrients or sediment. The stability of the existing stream banks should also remain intact and erosion will be greatly diminished or eliminated. The natural features within the crucial seventy-five (75) feet of the stream banks will remain unchanged.

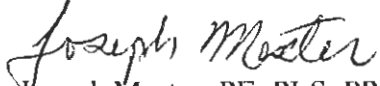
### **IMPACT:**

Because of the above referenced efforts to mitigate the (SBCZ) as much as possible and the overall improvement to some of the conditions on this site, the applicant, Synnergy, Inc.,

believes that the consequential impact that this project imposes on the (SBCZ) is minimal, they are asking for an administrative waiver from the requirements.

If there are any questions or additional recommendations or requirements, please do not hesitate to contact our office.

Very truly,

A handwritten signature in cursive script that reads "Joseph Mester". The signature is written in black ink and is positioned above the printed name.

Joseph Mester, PE, PLS, PP  
Project Engineer