Preliminary Land Use Service (PLUS)

Delaware State Planning Coordination

122 William Penn Street • Dover, DE 19901 • Phone: 302-739-3090 • Fax: 302-739-5661

Purpose of PLUS - -The PLUS process is intended to provide consolidated State comments regarding the proposed project. The Applicant is encouraged to submit the application during the concept stages of planning as this process often offers recommendations for changes to the plan. The application should be submitted after the pre-application meeting with the local jurisdiction but before formal application is made.

Please complete this PLUS application in its entirety. **All questions must be answered. If a question is unknown at this time or not applicable, please explain.** Unanswered questions on this form could lead to delays in scheduling your review. This form will enable the state staff to review the project before the scheduled meeting and to have beneficial information available for the applicant and/or developer at the time of review. If you need assistance or clarification, please call the State Planning Office at (302) 739-3090.

PLUS Number (to be completed by OSPC): _____

Investment Level Per Strategies for State Policies and Spending (to be determined by OSPC): _____

1. Project Title/Name: 743 PULASKI HIGHWAY
2. Location (please be specific): 743 Pulaski Highway, Bear, DE 19701
3. Parcel Identification #: 10-034.30-183
4. County or Local Jurisdiction Name: where project is located: New Castle County
5. If contiguous to a municipality, are you seeking annexation: No
6. Owner's Name: Ali Abdullah

Address: P.O. Box 3836

City: Wilmington State: DE Zip: 19807

Phone: 302.420.6187 Fax: Email: aldobugs@comcast.net

7. Equitable Owner/Developer **(This Person is required to attend the PLUS meeting):**

Address:

City: State: Zip:

Phone: Fax: Email:

8. Project Designer/Engineer: Jeffrey C. Williams, P.E. c/o Kercher Engineering, Inc.

Address: 254 Chapman Road, Suite 202

City: Newark State: DE Zip: 19702

Phone: 302.894.1098 x303 Fax: 302.894.1099 Email: JCW@Kercherei.com

9. **Please Designate a Contact Person, including phone number, for this Project:**

Information Regarding Site:

10. Type of Review: ☒ Rezoning, if not in compliance with certified comprehensive plan ☐ Site Plan Review ☐ Subdivision

11. Brief Explanation of Project being reviewed:
This project is to rezone the parcel from NC6.5 to CR and add a 2,000 sf building for general office use.
If this property has been the subject of a previous LUPA or PLUS review, please provide the name(s) and date(s) of those applications.

12. Area of Project (Acres +/-): 0.26 Number of Residential Units: None Commercial square footage: 2,000

13. Present Zoning: NC6.5 - Residential

14. Proposed Zoning: CR - Commercial Regional

15. Present Use: Vacant Parcel

16. Proposed Use: Commercial, General Office

17. Water: ☐ Central (Community system) ☐ Individual On-Site ☒ Public (Utility)
Service Provider Name:

Will a new public well be located on the site? ☐ Yes ☐ No

18. Wastewater: ☐ Central (Community system) ☐ Individual On-Site ☒ Public (Utility)
Service Provider Name:

Will a new community wastewater system be located on this site? ☐ Yes ☒ No

19. If residential, describe style and market segment you plan to target (Example- Age restricted):

20. Environmental impacts:

How many forested acres are presently on-site? None How many forested acres will be removed? None

To your knowledge, are there any wetlands, as defined by the U.S. Army Corps of Engineers or the Department of Natural Resources and Environmental Control, on the site? ☐ Yes ☒ No

Are the wetlands: ☐ Tidal Acres:
☐ Non-tidal Acres:

If "Yes", have the wetlands been delineated? ☐ Yes ☐ No

Has the Army Corps of Engineers signed off on the delineation? ☐ Yes ☐ No

Will the wetlands be directly impacted and/or do you anticipate the need for wetland permits? ☐ Yes ☐ No If "Yes", describe the impacts:

How close do you anticipate ground disturbance to wetlands, streams, wells, or waterbodies? _____

21. Does this activity encroach on or impact any tax ditch, public ditch, or private ditch (ditch that directs water off-site)? ☐ Yes ☒ No

22. List the proposed method(s) of stormwater management for the site: Bioretention facilty

23. Is open space proposed? ☒ Yes ☐ No If "Yes," how much? 35% Acres: 0.9 ac

What is the intended use of the open space (for example, active recreation, passive recreation, stormwater management, wildlife habitat, historical or archeological protection)? Landscaping & stormwater management

24. Are you considering dedicating any land for community use (e.g., police, fire, school)? ☐ Yes ☒ No

25. Please estimate How many vehicle trips will this project generate on an average weekday? A trip is a vehicle entering or exiting. If traffic is seasonal, assume peak season: 22

What percentage of those trips will be trucks, excluding vans and pick-up trucks? 0

26. Will the project connect to state maintained roads? ☒ Yes ☐ No

27. Please list any locations where this project physically could be connected to existing or future development on adjacent lands and indicate your willingness to discuss making these connections.

28. Are there existing sidewalks? ☐ Yes ☒ No; bike paths ☐ Yes ☒ No
Are there proposed sidewalks? ☒ Yes ☐ No; bike paths ☒ Yes ☐

Is there an opportunity to connect to a larger bike, pedestrian, or transit network? ☒ Yes ☐ No

29. To your knowledge, is this site in the vicinity of any known historic/cultural resources or sites? ☐ Yes ☒ No

Has this site been evaluated for historic and/or cultural resources? ☐ Yes ☒ No

Would you be open to a site evaluation by the State Historic Preservation Office? ☐ Yes ☒ No

30. To promote an accurate review of your parcel's features, would you permit a State agency site visit? ☐ Yes ☒ No
Person to contact to arrange visit: Jeff Williams phone number: 302.894.1098 x303

31. Are any federal permits, licensing, or funding anticipated? ☐ Yes ☒ No

I hereby certify that the information on this application is complete, true and correct, to the best of my knowledge.

Signature of property owner — Date 5/15/13

Signature of Person completing form (if different than property owner) — Date 5/20/13

Signed application must be received before application is scheduled for PLUS review.

This form should be returned to the Office of State Planning **electronically** at Dorothy.morris@state.de.us **along with an electronic copy of any site plans and development plans for this site.** Site Plans, drawings, and location maps should be submitted as image files (JPEG, GIF, TIF, etc.) or as PDF files. GIS data sets and CAD drawings may also be submitted. If electronic copy of the plan is not available, contact Dorothy at (302) 739-3090 for further instructions. A signed copy should be forwarded to the Office of State Planning, 122 William Penn Street, Dover, DE 19901. Thank you for this input. Your request will be researched thoroughly. **Please be sure to note the contact person** so we may schedule your request in a timely manner.

1080 S. Chapel St.
Suite 200
Newark, Delaware 19702
Tel: (302) 731-8633 Fax: (302) 731-8655

606 Federal Street
Milton, Delaware 19968
Tel: (302) 684-5080 Fax: (302) 684-5081

April 3, 2013

Via Email

Mr. Ali Abdullah
Delmar Enterprise
1115 Hillside Road
Greenville, DE 19807

RE: P.N. 13-1263.B
Wetland Evaluation
743 Pulaski Highway
New Castle, New Castle County, Delaware

Dear Mr. Abdullah:

Ten Bears Environmental Associates Company has completed a wetland evaluation at the referenced Property (herein referred to as "Property" or "Site") (Tax Parcel No. 10-034.30-052). The evaluation included visual review of the site and two test pits that were completed as part of a stormwater recharge evaluation in January 2013. The purpose was to identify the boundary of non-tidal wetlands, if present, on the Property. The results of the delineation did not identify any wetlands within the Property. The following describes conditions observed during the evaluation to support this finding.

The Property is located at 743 Pulaski Highway and is portion of this site. Surrounding properties are primarily residential and commercial. The Property is very flat, with a gradual slope to the south. Observations made during the evaluation indicated the Property is undeveloped maintained lawn. Areas of prolonged soil saturation suggestive of potential wetland conditions, water features such as ponds or streams, or potential wetland vegetation were not observed within the Property.

On January 30, 2013, Ten Bears reviewed the excavation of two test pits at the site. The test pits were completed to depths of approximately 13.5± feet and 6± below ground surface (bgs) in an effort to determine the feasibility for subsurface stormwater recharge. In general, observed soils were characterized as brown silt extending to a depth of approximately 2.5 feet bgs underlain by orange brown variably graded sand with varying amounts of silt and clay to the termination depth of the test pits. In addition, apparent perched groundwater seepage was observed at approximately 10.4 feet bgs. Seasonal

high water level (SHWL) was estimated to correspond with the perched groundwater seepage at 10.4 feet bgs.

The evaluation was performed in general accordance with the 1987 United States Army Corps of Engineers Wetland Investigation Manual and associated guidance letters. The delineation was performed during the growing season recommended by the Corps for conducting delineations. In Delaware, this is generally considered to begin around the middle of March and end towards the middle of November. A general walking review of the Property was performed to assess the potential presence of wetland conditions and / or primary waterways. The Property was generally evaluated utilizing the "three-parameter" approach as outlined in the 1987 Corps Manual and the 2007 Draft Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic & Gulf Coastal Plain Region. The criteria utilized by the U.S. Army Corps of Engineers (USACE) for identification of wetlands requires the presence of all three wetland indicators; hydric soils, hydrology, and dominant hydrophytic vegetation. The visual review indicated the majority of vegetation within the property consisted primarily of maintained lawn as well as black cherry trees and crape myrtle shrubs. Vegetation within this area consisted of non-Facultative dominant (≤ 50%) herbaceous plants. No rivers, streams, or areas of prolonged saturation were observed within the project area. In addition, non-hydric soils were identified during the test pitting activities.

DOCUMENT REVIEW

Ten Bears personnel also reviewed the applicable United States Fish and Wildlife Service National Wetland Inventory Mapping (1982) and the United States Department of Agriculture Soil Conservation Service Web Soil Survey for New Castle County, Delaware for the presence of mapped regulated wetlands and hydric soils on the Property. Our review of these materials indicated that wetlands and hydric soils were not mapped within the Property.

The soil mapping indicated the Property was mapped as Matapeake silt loam, 2 to 5 percent slopes, moderately eroded. The Matapeake series is described as a deep, well-drained soil found on uplands of the Coastal Plain. Therefore, based upon this "well draining" characteristic, the Matapeake soil would not be considered a hydric soil and / or a potential indicator of wetland conditions.

The results of Ten Bears' wetland delineation did not identify regulated wetlands within the Property. While typically recommended, a "Jurisdictional Determination" (JD) is not warranted at this time due to the absence of wetlands and / or other potentially regulated waters. Also, while the evaluation was performed during the period recommended by the Corps for conducting delineations, the absence of hydrologic conditions associated with wetlands indicates confirmation during the growing season would be unnecessary and not recommended.

This report is based on Ten Bears Environmental Associates Co.'s professional opinion regarding wetland / non-wetland conditions observed during the field investigation at the Property and our interpretation of the observed site conditions, reviewed historical information, maps, and regulatory information. The observations and conclusions presented in this report are based solely on conditions encountered at the time of the investigation effort. Final authority as to the accuracy of this investigation and jurisdictional status of waters of the Unites States rests with the Philadelphia District, U.S. Army Corps of Engineers.

Please do not hesitate to contact us should you have any questions.

Sincerely,

TEN BEARS ENVIRONMENTAL ASSOCIATES CO.

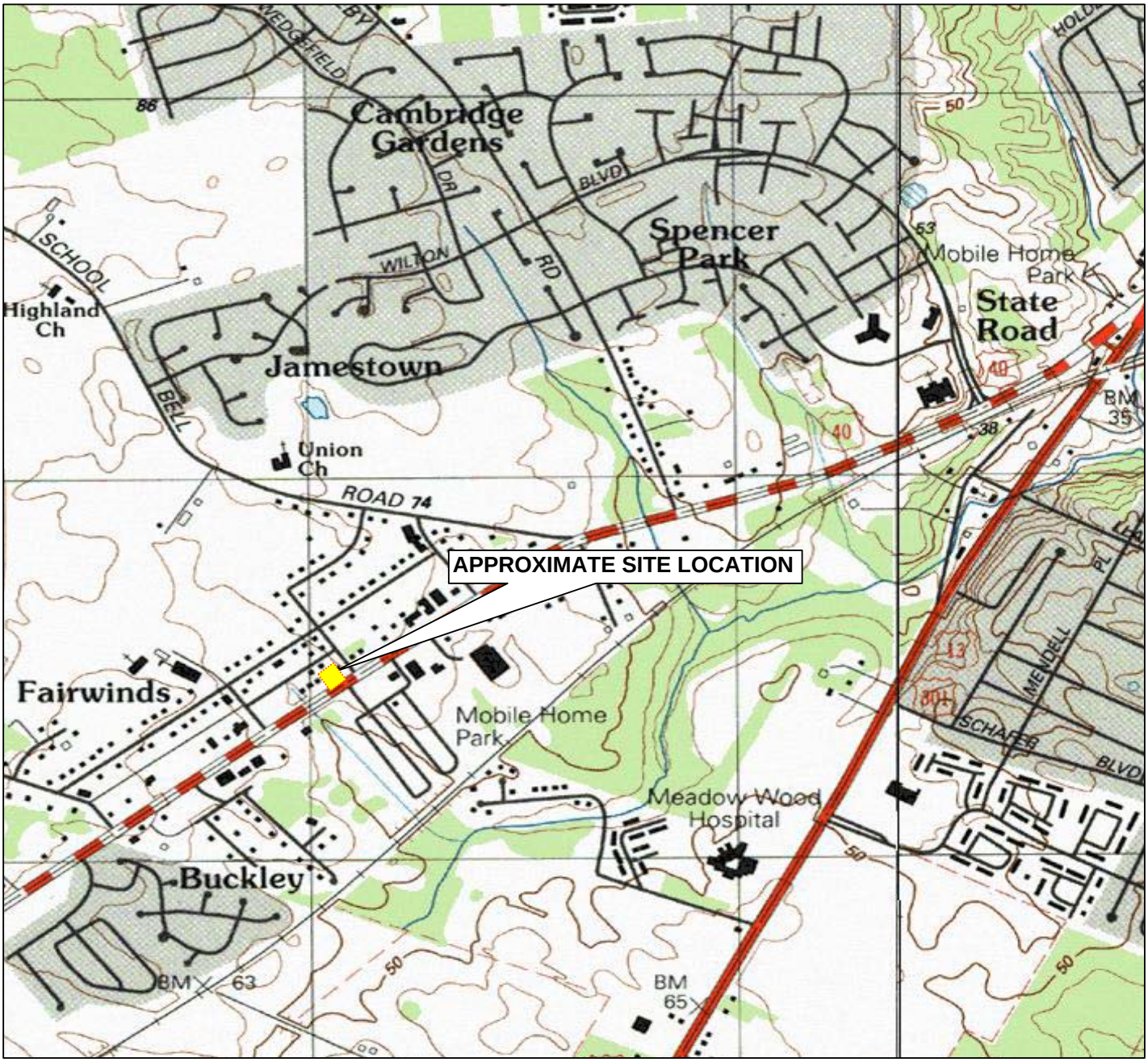
David P. Bailey
Senior Environmental Scientist

R. Clayton Greer, P.E.
Senior Environmental Engineer

Attachments: Figure 1 – Site Location Sketch
Figure 2 – National Wetlands Inventory Mapping
Test Pit Log

FIGURE 1

SITE LOCATION SKETCH



This location sketch was adapted from the Maptech USGS Topographic Series, Edition 1.0 for Delaware (2001)

Ten Bears Environmental

Ten Bears Environmental, L.L.C.
606 Federal Street
Milton, DE 19968
Phone: (302) 684-5080 Fax: (302) 684-5081

FIGURE 1 - SITE LOCATION SKETCH

743 PULASKI HIGHWAY PROPERTY

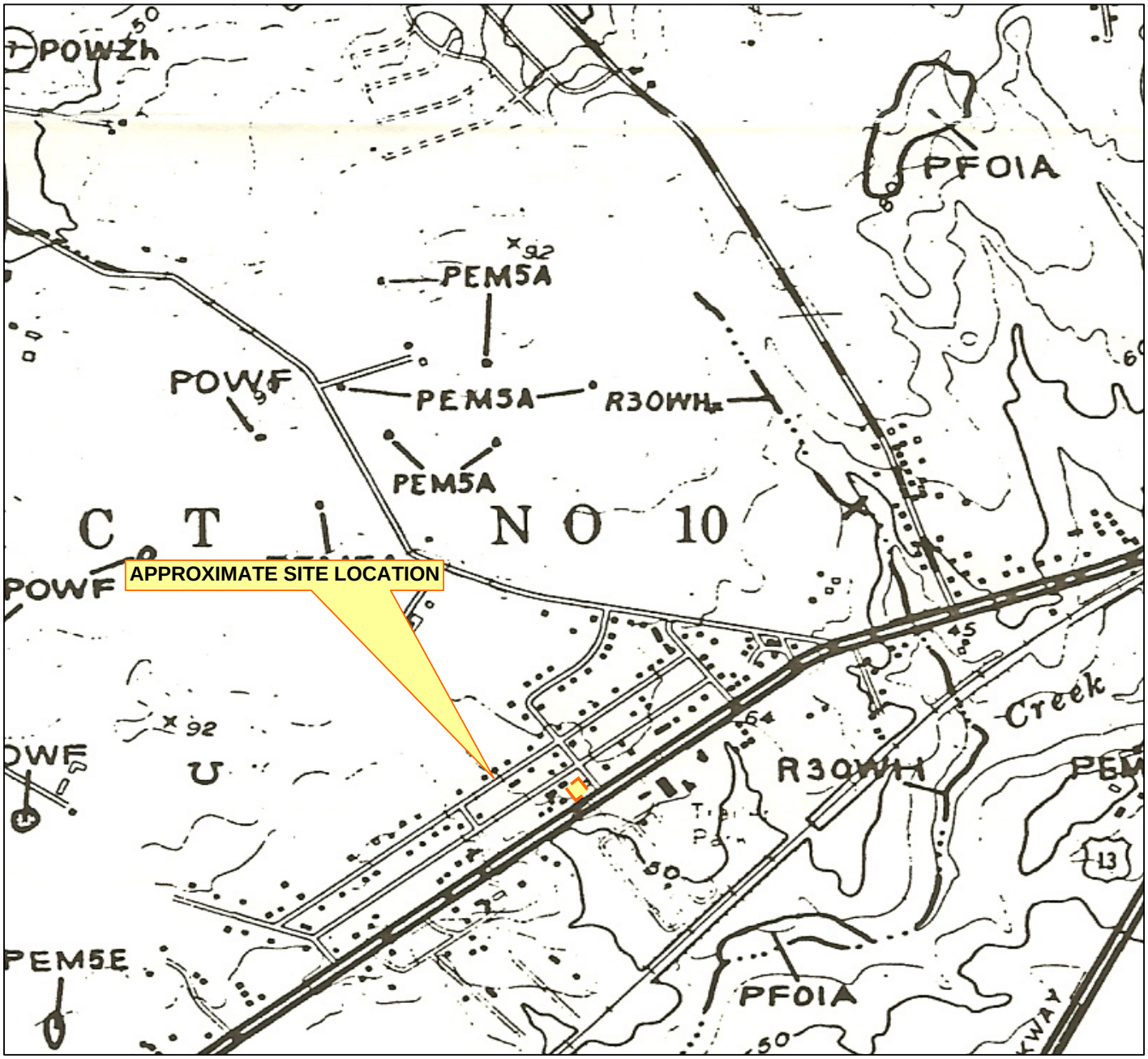
743 PULASKI HIGHWAY

NEW CASTLE, NEW CASTLE COUNTY, DELAWARE

DATE: 2/18/2013	JOB NUMBER: 12-1263.A
DRAWN BY: DPB	SCALE: N.T.S.
CHECKED BY:	FIGURE NO: 1
FILE NO: 12-1263.A.FIG1	SHEET 1 OF 1

FIGURE 2

NWI MAPPING



This location sketch was adapted from the 4. U.S. Department of the Interior, Fish and Wildlife Service. National Wetlands Inventory, Map Middletown, Delaware, based on aerial photography dated April 1981.

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FIGURE 2 - NATIONAL WETLANDS INVENTORY MAP

743 PULASKI HIGHWAY PROPERTY

743 PULASKI HIGHWAY

NEW CASTLE, NEW CASTLE COUNTY, DELAWARE

DATE:	4/3/2012	JOB NUMBER:	13-1263.B
DRAWN BY:	DPB	SCALE:	N.T.S.
CHECKED BY:		FIGURE NO:	1
FILE NO:	13-1263.B.FIG1	SHEET 1 OF 1	

TEST PIT LOG

TEST PIT LOG

Test Pit No. 1

TEN BEARS ENVIRONMENTAL, L.L.C.

Project: 743 Pulaski Highway		Project No.: 12-1263.A	Date: January 30, 2013
Location: 743 Pulaski Highway, New Castle, DE		Surface Elevation	Datum
Earthwork Contractor Christiana Excavating Company	Excavation Equipment Track Excavator	Weather Sunny, 55º F	Logged by DPB

Depth (feet) From	Depth (feet) To	Generalized Soil Description
0.0	2.5	Grey brown to orange brown SILT, trace to little clay, trace fine sand
2.5		Orange tan fine to medium SAND, little silt, trace to little small gravel, trace clay
	5.2	Tan fine to medium SAND, trace to little silt (moist) Mangenese concentrations, trace small gravel
		small inclusions / lenses of silt
6.5		Light tan fine to medium SAND, trace silt, trace small gravel (moist)
	8.0	Very light grey medium to fine SAND, trace silt (moist)
10.4	…	Light grey low placticity SILT with orange brown mottling and clay lenses

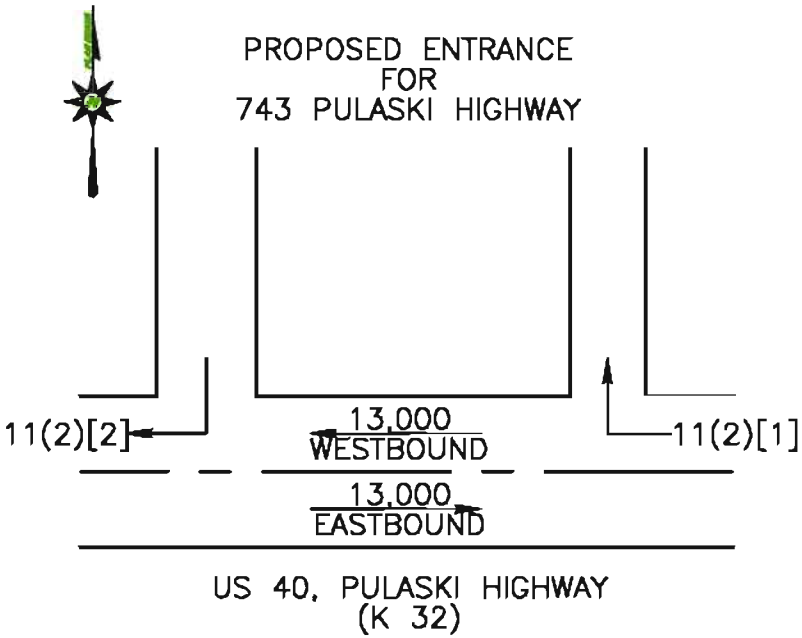
Notes:

1. The test pit was terminated at a depth of approximately 13.5 feet below the ground surface.
2. Groundwater seepage was observed at ~10.4 feet bgs at sand / silt interface.

Test Pit No. 1

TRIP GENERATION - US 40, PULASKI HIGHWAY (K 32)

(ALL MOVEMENTS)



TRAFFIC GENERATION DIAGRAM

TRIPS PER DAY (VEHICLES IN A.M.) [P.M. PEAK HOUR]

ROAD TRAFFIC DATA:

FUNCTIONAL CLASSIFICATION – Other Principal Arterials
POSTED SPEED LIMIT – 55 MPH
AADT = 26,000 TRIPS (FROM 2011 DelDOT TRAFFIC SUMMARY)
10–YR PROJECTED AADT = 1.20 x 26,000 TRIPS = 31,200 TRIPS
10–YR PROJECTED AADT + SITE ADT = 31,222 TRIPS
DIRECTIONAL SPLIT = 50%/50%

SITE TRIPS GENERATED:

SOURCE: ITE TRIP GENERATION MANUAL 9TH EDITION
GENERAL OFFICE BUILDING USE (L.U. CODE 710)

PROPOSED ENTRANCE – (ALL MOVEMENTS)
GENERAL OFFICE BUILDING – 2,000 SF GFA

TOTAL ADT FOR PROJECT– 50% ENTER/50% EXIT
WEEKDAY = 22 TRIPS
SATURDAY = 5 TRIPS
DIRECTIONAL DISTRIBUTION: 50% EAST/50% WEST
50% FROM EAST: 11 TRIPS (2 – AM PEAK HR)
[1 – PM PEAK HR]
50% TO WEST: 11 TRIPS (2 – AM PEAK HR)
[2 – PM PEAK HR]

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February 18, 2013

Via Email

Mr. Ali Abdullah
1115 Hillside Road
Greenville, DE 19807

RE: P.N. 12-1263.A
Subsurface Soil Evaluation and Stormwater Infiltration Testing
743 Pulaski Highway
New Castle, New Castle County, Delaware

Dear Mr. Abdullah:

Ten Bears Environmental Associates Company has completed a subsurface evaluation and infiltration testing at the proposed location for a subsurface stormwater recharge system on the referenced Property (herein referred to as "Property" or "Site") (Tax Parcel No. 10-034.30-052). The field work included visual review of one test pit excavated to a depth of approximately 13.5± feet and performance of two single-ring infiltration tests. The following summarizes the results of our subsurface evaluation and results of the infiltration tests.

SUBSURFACE EXPLORATION

On January 30, 2013, Ten Bears reviewed the excavation of one test pit at the site, completed by Christiana Excavating Co., Inc., as a subcontractor to Ten Bears Environmental Associates Co., using a tracked mini-excavator. Figure 1 depicts the approximate location of the test pit. The test pit was completed to a depth of approximately 13.5± feet below ground surface (bgs) in an effort to determine the feasibility for subsurface stormwater recharge.

Subsurface soils / sediments, as observed in the test pit excavation, were characterized into three generalized strata:

- The upper 2.5± feet consisted of silt;
- The soils from 2.5± to 6.5± feet consisted of variably textured sand with little to some silt;
- From 6.5 to 10.4 feet, variably graded sand containing trace to little amounts of silt; and

- A stratum of low plasticity silt beginning at approximately 10.4 feet bgs and extending beyond the termination depth of the test pit, which was approximately 13.5 feet bgs.

In addition, apparent perched groundwater seepage was observed at the lower sand / silt interface, which was approximately 10.4 feet bgs. Redoximorphic indications of potential seasonal soil saturation were not observed in the test pit. As such, we estimate a seasonal high water level (SHWL) corresponding with the perched groundwater seepage at 10.4 feet bgs.

INFILTRATION RATE TESTS

Two infiltration tests were performed in a second test pit excavated perpendicular to the first test pit at depths of approximately 5.5 and 7.0± bgs. The test were completed in general accordance with the ASTM D-5125-90, Standard Guide For Comparison of Field Methods for Determining Hydraulic Conductivity in the Vadose Zone, utilizing a single ring infiltrometer. The infiltrometer test consisted of driving an approximately 12-inch diameter metal ring into the bottom of the excavation approximately 6 inches. Approximately 2 inches of filter sand was placed in the ring, which was then filled with approximately 0.5 feet of water. Subsequently, water was incrementally added to the ring to maintain a relatively consistent "head" in the range of 0.5 feet to 0.45 feet, with head drop measurements taken each time water was added. The infiltration tests were terminated after apparent equilibrium (i.e. consistent rate of infiltration) was reached. The test data are attached. The result of the infiltration test indicated an estimated infiltration rate of approximately 4.0 inches per hour was recorded for the sand interval at approximately 5.5 feet bgs and an estimated infiltration rate of approximately 9.0 inches per hour was recorded for the test completed at a depth of approximately 7.0 feet bgs.

CONCLUSIONS AND RECOMMENDATIONS

Based on the infiltration test results, recharge to the sand interval located between 2.5 to 6.5 feet bgs appears feasible but limited. However, the lower sand interval starting at a depth of approximately 7.0 feet bgs appears to be better suited for subsurface stormwater recharge. As such, it may be prudent to over-excavate trenches beneath the proposed infiltration structure to the underlying porous strata.

Please be aware that the infiltration tests are based on unsaturated, vertical flow, which may not be indicative of operational conditions. Mounding of groundwater beneath the infiltration structure following saturation of the underlying soils could significantly reduce the functional infiltration rate. However, this potential appears limited since no groundwater or redoximorphic indicators of seasonal saturated conditions were observed to the depth of observed seepage at 10.4 feet.

Therefore, we recommend a groundwater mounding analysis only if designing for infiltration of volumes greater than the underlying storage capacity of the unsaturated zone beneath the infiltration structure and above the SHWL of 10.4 feet. The storage volume of the soils underlying infiltration structure can be estimated using the total volume beneath the structure, multiplied by the estimated effective porosity for the sand, estimated at 0.2 (literature range for sand is 0.1 to 0.3). In the event that infiltration trenches are over-excavated beneath the structure to the underlying porous unit at 6.5

feet, we recommend backfilling the trenches with washed sand wrapped in geotextile fabric and using an effective porosity of 0.3 for the sand in the trenches.

Please do not hesitate to contact us if you have any questions regarding any of the above, or if Ten Bears can assist you with follow-up evaluation of these or other potential questions regarding the proposed stormwater infiltration system.

Sincerely,

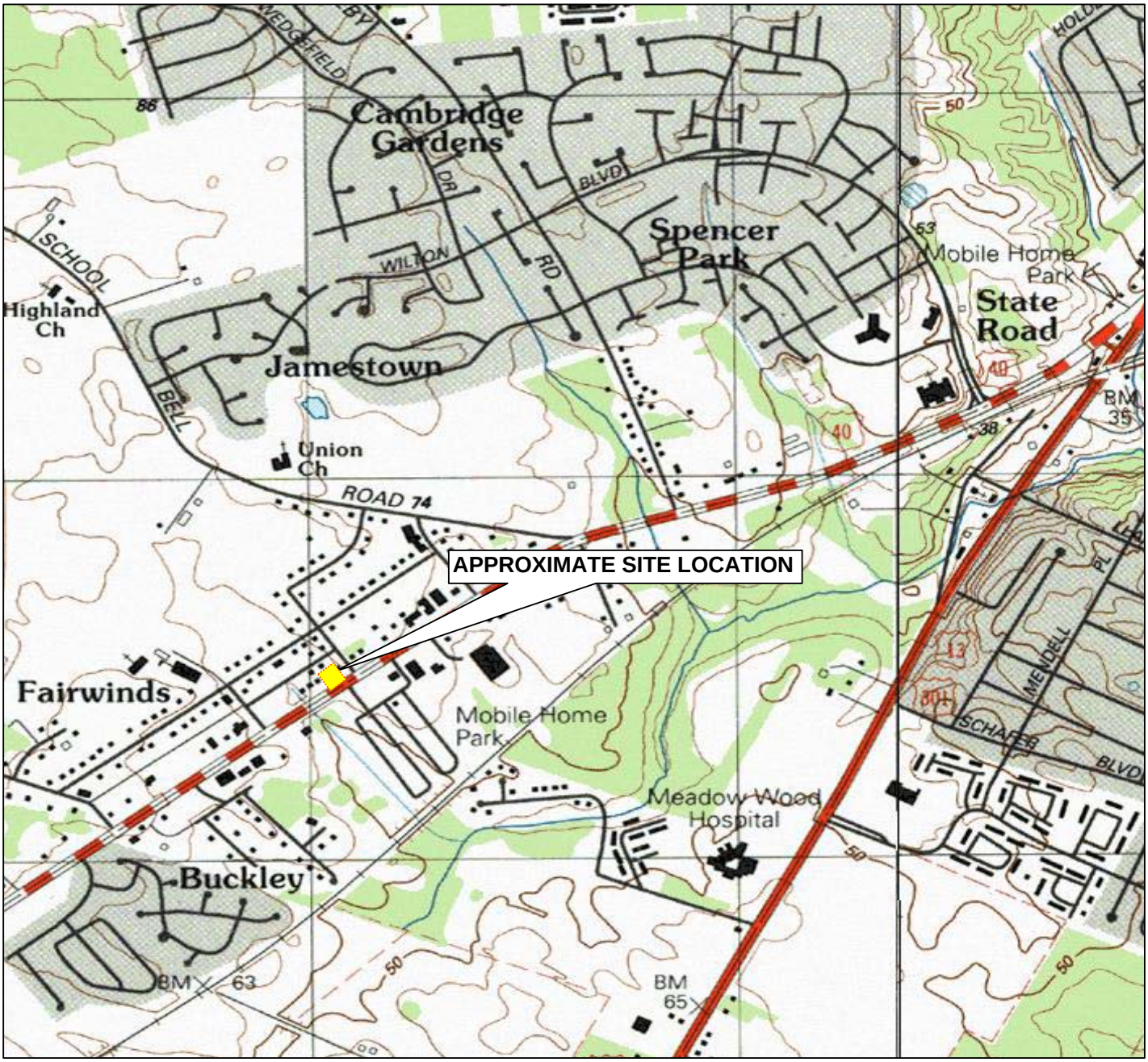
TEN BEARS ENVIRONMENTAL ASSOCIATES COMPANY

David P. Bailey
Senior Environmental Scientist

R. Clayton Greer, P.E.
Senior Engineer

cc: Jeffrey Williams, P.E. – Kercher Engineering, Inc.

Enclosures: Figure 1 – Approximate location of Infiltration Test
Table 1 – Test #1 Incremental Infiltration Rate
Table 2 – Test #2 Incremental Infiltration Rate
Test Pit Log



This location sketch was adapted from the Maptech USGS Topographic Series, Edition 1.0 for Delaware (2001)

Ten Bears Environmental

Ten Bears Environmental, L.L.C.
606 Federal Street
Milton, DE 19968
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FIGURE 1 - SITE LOCATION SKETCH

743 PULASKI HIGHWAY PROPERTY

743 PULASKI HIGHWAY

NEW CASTLE, NEW CASTLE COUNTY, DELAWARE

DATE: 2/18/2013	JOB NUMBER: 12-1263.A
DRAWN BY: DPB	SCALE: N.T.S.
CHECKED BY:	FIGURE NO: 1
FILE NO: 12-1263.A.FIG1	SHEET 1 OF 1

TEST PIT LOG

Test Pit No. 1

TEN BEARS ENVIRONMENTAL, L.L.C.

Project: 743 Pulaski Highway		Project No.: 12-1263.A	Date: January 30, 2013
Location: 743 Pulaski Highway, New Castle, DE		Surface Elevation	Datum
Earthwork Contractor Christiana Excavating Company	Excavation Equipment Track Excavator	Weather Sunny, 55º F	Logged by DPB

Depth (feet) From	Depth (feet) To	Generalized Soil Description
0.0	2.5	Grey brown to orange brown SILT, trace to little clay, trace fine sand
2.5		Orange tan fine to medium SAND, little silt, trace to little small gravel, trace clay
	5.2	Tan fine to medium SAND, trace to little silt (moist) Mangenese concentrations, trace small gravel
		small inclusions / lenses of silt
6.5		Light tan fine to medium SAND, trace silt, trace small gravel (moist)
	8.0	Very light grey medium to fine SAND, trace silt (moist)
10.4	…	Light grey low placticity SILT with orange brown mottling and clay lenses

Notes:

1. The test pit was terminated at a depth of approximately 13.5 feet below the ground surface.
2. Groundwater seepage was observed at ~10.4 feet bgs at sand / silt interface.

Test Pit No. 1

TABLE 1

Test #1 Infiltration Rate

Proposed Development
743 Pulaski Highway
New Castle, Delaware

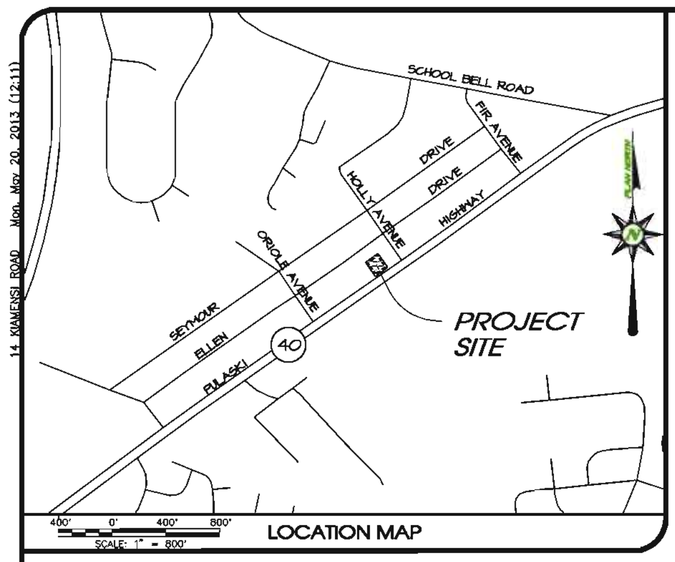
			TEST INCREMENTAL DATA		
			Water Level Drop		Incremental Infiltration Rate (in/hr)
Time	Run Time	Time Interval (min)	Feet	Inches	
10:00	0:00	0:00	0	0.00	0
10:07	0:07	0:07	0.05	0.60	5.14
10:16	0:16	0:09	0.05	0.60	4.00
10:25	0:25	0:09	0.05	0.60	4.00
10:34	0:34	0:09	0.05	0.60	4.00
10:42	0:42	0:08	0.05	0.60	4.50

TABLE 2

Test #2 Infiltration Rate

Proposed Development
743 Pulaski Highway
New Castle, Delaware

			TEST INCREMENTAL DATA		
			Water Level Drop		Incremental Infiltration Rate (in/hr)
Time	Run Time	Time Interval (min)	Feet	Inches	
11:02	0:00	0:00	0	0.00	0
11:06	0:04	0:04	0.05	0.60	9.00
11:10	0:08	0:04	0.05	0.60	9.00
11:14	0:12	0:04	0.05	0.60	9.00
11:18	0:16	0:04	0.05	0.60	9.00
11:23	0:21	0:05	0.05	0.60	7.20
11:27	0:25	0:04	0.05	0.60	9.00
11:31	0:29	0:04	0.05	0.60	9.00
11:36	0:34	0:05	0.05	0.60	7.20



LOCATION MAP

SITE SOIL DATA

SOILS MAPPED FROM THE SOIL MAP AND SOILS STATISTICS COMPILED FROM SOILS DATA EXPLORER OF THE USDA NRCS WEB SOIL SURVEY

Soil Name	Slopes	Depth to restrictive feature	Soil Drainage	Capacity of the most limiting layer to transmit water (in/hr)	Depth to water table	Hydrologic Soil Group	Commercial Building Limitations	Road Limitations	Lawns & Landscaping Limitations
MuB – Mattapex–Urban land complex	0 to 5%	>80"	Moderately well drained	0.06 to 0.57	20"–40"	C	Somewhat limited	Very limited	Very limited

PRE-DEVELOPMENT DRAINAGE AREA DATA

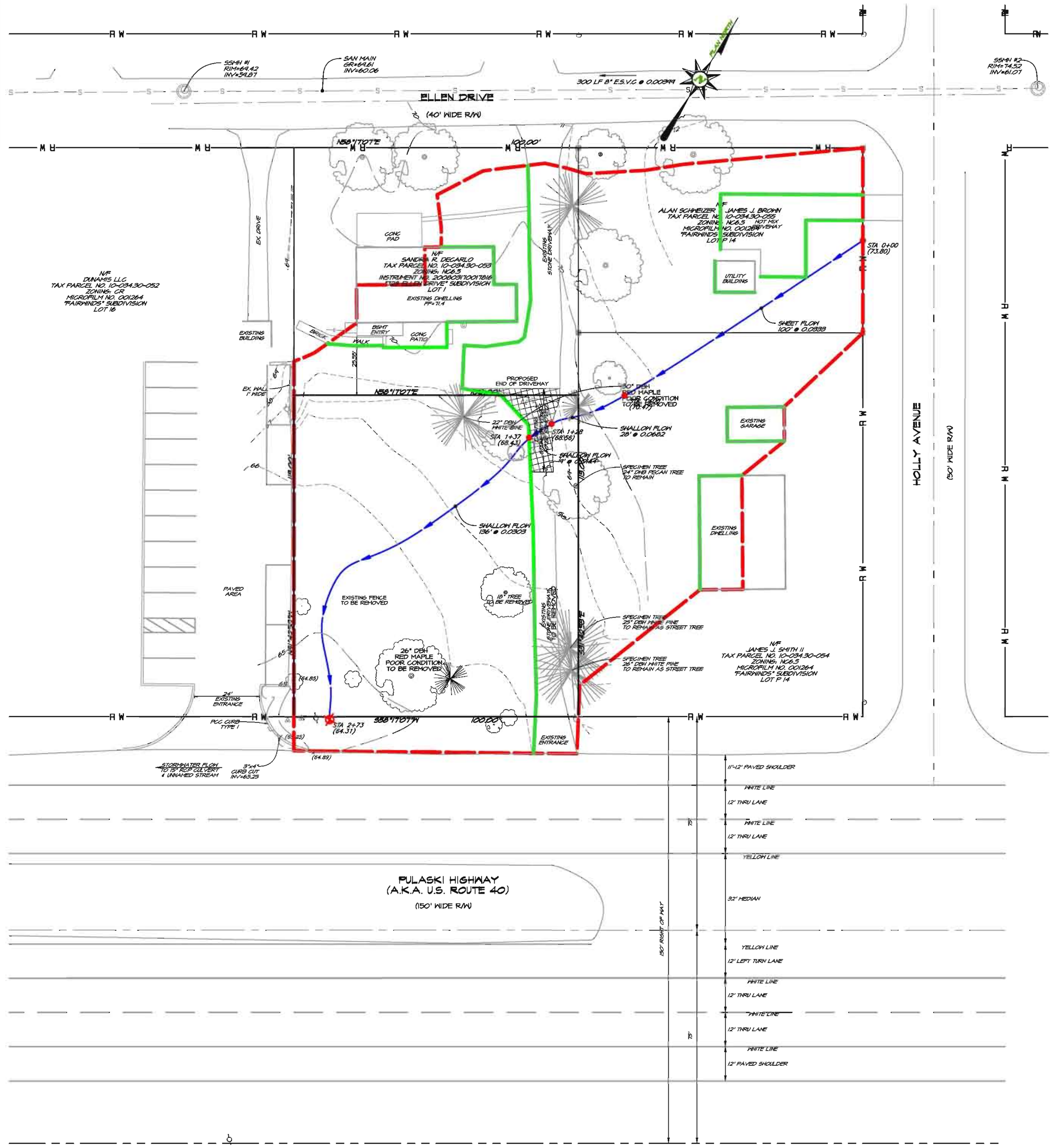
SURFACE COVERAGE:

IMPERVIOUS	0.15 ACRES
OPEN SPACE (LAWN)	0.56 ACRES
TOTAL AREA	0.71 ACRES

Tc FLOW PATH

SHEET FLOW	100 LF @ 3.33%	(n=0.24)
SHALLOW CONCENTRATED FLOW	28 LF @ 6.82%	(unpaved)
	139 LF @ 2.96%	(unpaved)

DISCONNECTED WETTED LENGTH 629 LF



PLAN LEGEND

- 31 — EXISITNG CONTOUR (1' INTERVAL)
- 35 — EXISITNG INDEX CONTOUR (5' INTERVAL)
- EXISITNG SOIL SERIES LIMITS
- DRAINAGE AREA BOUNDARY
- Tc FLOW PATH
- STA 4+57 46.46 — POINT OF INTEREST
- STA 16+02 30.00 — ANALYSIS POINT

REVISIONS			
No.	DATE	DESCRIPTION	BY
1	4/10/13	PER NCC LAND USE PRE-APPLICATION MEETING	J.C.W.

APPROVED BY: A.S.K. | DESIGNED BY: J.C.W. | DRAWN BY: J.C.W. | LAYER LIST: B-15

SCALE IN FEET (1" = 20')

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OWNER/APPLICANT:
ALI ABDULLAH
P.O. Box 3836
Wilmington, DE 19807
Phone: 302.420.0187

PARCEL INFORMATION:
Tax Parcel No.: 10-034.30-163
Deed Reference: 20120119-0016312
GROSS AREA: 0.2594 Acres
ROW DED: 0.0004 Acres
NET AREA: 0.2594 Acres

EXPLORATORY PLAN APP. NO: 2013-0311-S
PRE-DEVELOPMENT DRAINAGE AREA PLAN
743 PULASKI HIGHWAY
NEW CASTLE HUNDRED – NEW CASTLE COUNTY – DELAWARE

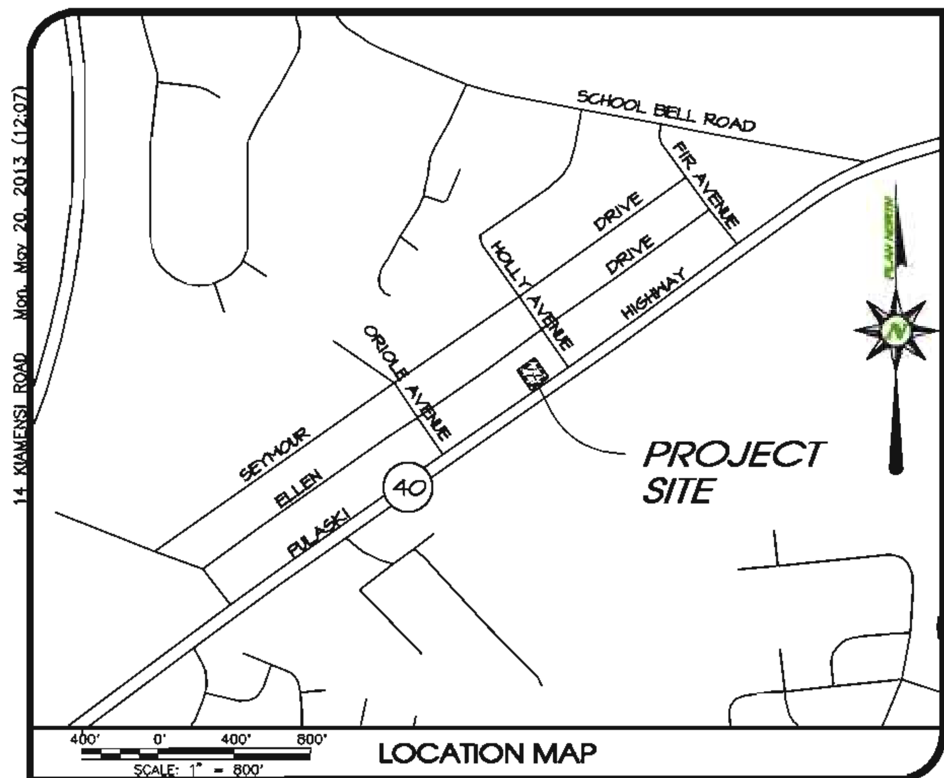
KERCHER ENGINEERING, INC.
ENGINEERS • PLANNERS • SURVEYORS
234 E. CHURCH ROAD, ELKTON, MARYLAND 21921
302.894.1069 (Voice) 302.894.1099 (Fax) www.kercherenet.com

JOB No: 13-0301E

PLAN DATE: Mar 6, 2013

SHEET No.: 1 of 1

14 KIMMERSI ROAD Mon, May 20, 2013 (12:11)



LOCATION MAP

SITE DATA and ZONING SCHEDULE

TAX PARCEL No.:	10-034.30-183	
SOURCE OF TITLE:	20121220 0075312.	
EXISTING ZONING DISTRICT:	NC6.5 – RESIDENTIAL	
PROPOSED ZONING DISTRICT:	CR – COMMERCIAL REGIONAL	
EXISTING SITE USE:	VACANT LOT, RESIDENTIAL	
PROPOSED SITE USE:	COMMERCIAL, GENERAL OFFICE	
SITE GROSS AREA:	0.2594 Acres	
SITE NET AREA:	0.2594 Acres	
BENCHMARK:	AS SHOWN ON PLAN	
DATUM:	NAVD 88	
ORDINANCE ITEM:	REQUIREMENT:	PROVIDED:
MINIMUM OSR/LSR	0.35	0.35
MAXIMUM GROSS FLOOR AREA	0.50	0.18
MINIMUM LOT AREA	1 Acre	0.26 Acre
MINIMUM LOT WIDTH	100 Ft.	100 Ft.
MINIMUM SETBACKS:		
BUILDING		
STREET	15 Ft.	15 Ft.
SIDE	20 Ft.	32 Ft.
REAR	20 Ft.	65 Ft.
PAVING		
STREET	25 Ft.	55 Ft.
OTHER	5 Ft.	13 Ft.
MAXIMUM BUILDING HEIGHT	50 Ft.	35 Ft.
EXTERIOR STORAGE	5%	5%
UTILITIES:		
SEWER SERVICE	PUBLIC	NEW CASTLE COUNTY
WATER SERVICE	PUBLIC	ARTESIAN WATER COMPANY

RECORDED EASEMENTS TO REMAIN

1. A DECLARATION OF UTILITY EASEMENT HAS BEEN MADE GRANTING "UTILITY FOR LOT 2 ACROSS LOT 1, TO AND FROM ELLEN DRIVE", IN THE AREA SHOWN AND DEPICTED ON THE PLAN AS THE UTILITY EASEMENT, COMPRISING APPROXIMATELY 0.0399 ACRES. THE DECLARATION OF UTILITY EASEMENT IS RECORDED IN THE OFFICE OF THE RECORDER OF DEEDS IN AND FOR NEW CASTLE COUNTY, STATE OF DELAWARE, ON 12/14/2007, AT INSTRUMENT NO. 20071221-0107850.

RECORDED EASEMENTS TO BE ELIMINATED

1. A DECLARATION OF ACCESS EASEMENT HAS BEEN MADE GRANTING "ACCESS FOR LOT 2 ACROSS LOT 1, TO AND FROM ELLEN DRIVE", IN THE AREA SHOWN AND DEPICTED ON THE PLAN AS THE UTILITY EASEMENT, COMPRISING APPROXIMATELY 0.0399 ACRES. THE DECLARATION OF UTILITY EASEMENT IS RECORDED IN THE OFFICE OF THE RECORDER OF DEEDS IN AND FOR NEW CASTLE COUNTY, STATE OF DELAWARE, ON 12/14/2007, AT INSTRUMENT NO. 20071221-0107849.

VARIANCES REQUESTED

1. MINIMUM LOT AREA OF 1 ACRE TO ALLOW 0.26 ACRE.
2. NC6.5 BUFFERYARD OPACITY OF 0.4 ALONG NORTH SIDE TO ALLOW 0.3.
3. NC6.5 BUFFERYARD OPACITY OF 0.4 ALONG EAST SIDE TO ALLOW 0.1.
4. PARKING BUFFERYARD OPACITY OF 0.1 ALONG NORTH & EAST SIDES TO ALLOW 0.0.

PLAN LEGEND

- EXISTING CONTOUR (1' INTERVAL)
- EXISTING INDEX CONTOUR (5' INTERVAL)
- EXISTING SPOT ELEVATION
- EXISTING RIGHT-OF-WAY LINE
- EXISTING OVERHEAD UTILITY WIRES
- EXISTING SANITARY SEWER MAIN
- EXISTING SANITARY SEWER LATERAL
- EXISTING STORMWATER PIPE
- EXISTING WATER MAIN
- EXISTING WATER SERVICE
- BUILDING SETBACK LINE
- PAVING SETBACK LINE
- PROPOSED CONTOUR (1' INTERVAL)
- PROPOSED SPOT ELEVATION
- PROPOSED FLOW PATH
- PROPOSED LIMIT OF DISTURBANCE
- PROPOSED SAFETY FENCE
- PROPOSED SILT FENCE

SANITARY SEWER FLOWS

Office:
– 0.10 gpd/sf x 2,000 sf = 200 gpd

LANDSCAPING REQUIRED

Landscaping Plant Units per:
– Lot: 8/ac x 0.26 ac = 2.1 PU
– Open Space: 6/ac x 0.00 ac = 0.0 PU
– Parking Spaces: 1/20 spaces x 7 spaces = 0.35 PU

Bufferyard Opacity Standards:
– Streets: Arterial = 0.1 (per Sec. 40.26.220.B.)
– Adjoining District: NC6.5 = 0.4 (Variance Requested)
– Adjoining District: CR = 0.0
– Parking Lot = 0.1 (Variance Requested)

Street Trees Spacing = 50 Ft (Existing)

PARKING DATA TABLE

Based on Parking Rational for Commercial Uses: Office, General:
– 3.5 spaces per 1,000 sf of GFA
– 3.5 spaces x 2,000 sf/1,000 sf = 7 spaces

SPACES REQUIRED = 7 spaces
– ADA Spaces = 1 spaces

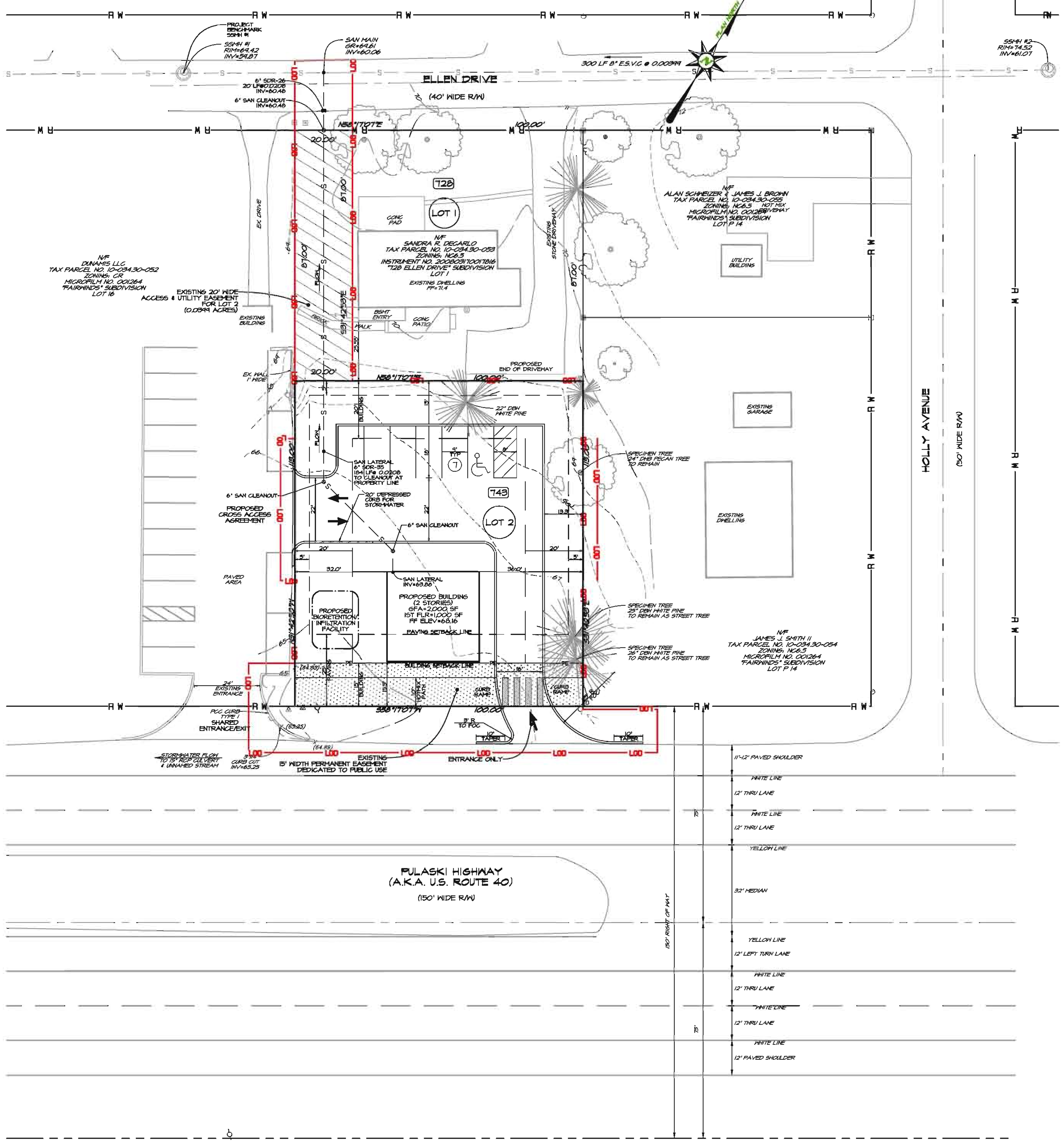
SPACES PROVIDED = 7 spaces (9'x18')
– ADA Spaces = 1 spaces (8'x18' w/ 8'x18' access)

EXISTING SITE COVERAGE

GRASS	11,300 SF	(100%)
TOTAL SITE AREA	11,300 SF	(100%)

PROPOSED SITE COVERAGE

IMPERVIOUS AREA		
– BUILDINGS	1,000 SF	(8.8%)
– HOT MIX PAVEMENT	5,147 SF	(45.6%)
TOTAL IMPERVIOUS AREA	6,147 SF	(54.4%)
PERVIOUS AREA		
– GRASS	5,674 SF	(41.0%)
– STORMWATER MANAGEMENT	500 SF	(4.6%)
TOTAL SITE AREA	11,300 SF	(100.00%)



GENERAL NOTES

1. PURPOSE OF PLAN:
THE PURPOSE OF THIS PLAN IS TO REZONE PARCEL 10-034.30-183 FROM NC6.5 TO CR AND ADD A 2,000 SF BUILDING AND ASSOCIATED PAVING FOR GENERAL OFFICE USE UPON THE APPROVAL OF NEW CASTLE COUNTY.
2. SITE LOCATION:
THE PROJECT SITE IS KNOWN AS 734 PULASKI HIGHWAY AND IS LOCATED APPROXIMATELY 175 FEET WEST OF THE INTERSECTION OF PULASKI HIGHWAY AND HOLLY AVENUE IN NEW CASTLE COUNTY.
3. SURVEY:
AN OUTBOUND AND TOPOGRAPHIC SURVEY HAS BEEN PERFORMED FOR THIS SITE IN JANUARY 2007 BY KERCHER ENGINEERING, INC., 254 CHAPMAN ROAD, SUITE 202, NEWARK, DELAWARE 19702. THE DATUM USED WAS NEW CASTLE COUNTY SANITARY SEWER. THE PROJECT BENCHMARK FOR THIS SITE IS SSMH #1 LOCATED IN ELLEN DRIVE TO THE NORTH EAST OF THE PARCEL.
4. WATER SUPPLY:
WATER SUPPLY (ARTESIAN WATER) IS SUBJECT TO THE APPROVAL OF THE DELAWARE STATE DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL AND THE DELAWARE DEPARTMENT OF PUBLIC HEALTH.
5. SANITARY DISPOSAL:
SEWERAGE IS SUBJECT TO THE APPROVAL OF THE NEW CASTLE COUNTY DEPARTMENT OF SPECIAL SERVICES. AT THE TIME OF APPROVAL OF THIS PLAN, SEWER CAPACITY EXISTED TO ACCOMMODATE THE ANTICIPATED FLOWS GENERATED BY THIS ADDITIONAL DEVELOPMENT. NEW CASTLE COUNTY HAS COMMITTED TO PROVIDE SEWER SERVICE IN ACCORDANCE WITH THE LAND DEVELOPMENT IMPROVEMENT AGREEMENT FOR THIS DEVELOPMENT. THE OWNER OF THIS PROPERTY, HIS SUCCESSORS OR ASSIGNS, SHALL BE RESPONSIBLE FOR EXTENDING SEWER SERVICE TO EACH LOT SHOWN ON OR CREATED BY THIS PLAN.
6. FLOODPLAIN:
THIS PROPERTY LIES WITHIN ZONE X – AREAS DETERMINED TO BE OUTSIDE OF THE 500 YEAR FLOODPLAIN ACCORDING TO MAP NUMBER 10003C0145J OF THE FEDERAL EMERGENCY MANAGEMENT AGENCY DATED JANUARY 17, 2007.
7. WATER RESOURCE PROTECTION AREA:
THIS SITE IS NOT LOCATED WITHIN A WRPA PER WATER RESOURCE PROTECTION AREAS MAP 2 OF 3, REVISED DECEMBER 2011.
8. WETLANDS:
THIS SITE DOES NOT CONTAIN ANY WETLANDS PER THE WETLANDS INVESTIGATION PERFORMED BY JCM ENVIRONMENTAL IN FEBRUARY 2007.
9. CRITICAL NATURAL AREA:
THIS SITE DOES NOT INCLUDE ANY CRITICAL NATURAL AREAS (CNA) PER THE STATE INVENTORY OF NATURAL AREAS.
10. SUPERCEDURE:
THIS PLAN SUPERSEDES, IN PART, THE MINOR SUBDIVISION PLAN OF "728 ELLEN DRIVE", DATED 12/4/06 AND RECORDED ON 3/17/08 IN THE RECORDER OF DEEDS IN AND FOR NEW CASTLE COUNTY, STATE OF DELAWARE, INSTRUMENT NO. 200803170017816.
11. DEBRIS DISPOSAL:
NO DEBRIS IS TO BE BURIED ON SITE.
12. IMPACT FEES:
THIS PLAN IS SUBJECT TO THE IMPACT FEE PROVISIONS OF CHAPTER 40, ARTICLE 14 OF THE NEW CASTLE COUNTY CODE, AS MAY BE AMENDED BY NEW CASTLE COUNTY COUNCIL.
13. LANDSCAPE PLAN:
A LANDSCAPE PLAN, PREPARED BY__________ LAST DATED __________ OR AS AMENDED AND APPROVED IN WRITING BY THE DEPARTMENT OF LAND USE, IS HEREBY CONSIDERED A PART OF THE RECORD PLAN.
14. UTILITY EASEMENTS:
A 6' FOOT WIDE EASEMENT ON EACH SIDE OF EACH SIDE AND REAR LOT LINE SHOWN ON THE PLAN, AND ON EACH SIDE OF EACH SIDE AND REAR LOT LINE SUBSEQUENTLY ESTABLISHED WITHIN THE AREA SHOWN ON THIS PLAN IS HEREBY DEDICATED TO BE AVAILABLE FOR ANY UTILITY USE, PROVIDED THAT WHERE ANY LOT LINE IS ELIMINATED THE EASEMENT ALONG SAID LOT LINE SHALL BE EXTINGUISHED EXCEPT AS TO UTILITIES THEN EXISTING IN SAID EASEMENT.
15. LAND DEVELOPMENT IMPROVEMENT AGREEMENT:
ALL IMPROVEMENTS REQUIRED BY THIS PLAN AND THE NEW CASTLE COUNTY CODE SHALL BE SUBJECT TO THE LAND DEVELOPMENT IMPROVEMENT AGREEMENT (LDIA), AND THE PERFORMANCE GUARANTEE INCORPORATED THEREIN. THE LDIA IS RECORDED IN THE OFFICE OF THE RECORDER OF DEEDS IN AND FOR NEW CASTLE COUNTY ON 7/17/03, AT INSTRUMENT NO. 20030717-0085136 AND AS LATER AMENDED AND RECORDED ON 10/27/08, AT INSTRUMENT NO. 20081027-0070586.
16. NEW CASTLE COUNTY DRAINAGE CODE:
DRAINAGE, EROSION AND SEDIMENT CONTROL, AND STORMWATER MANAGEMENT SHALL BE PROVIDED IN ACCORDANCE WITH THE NEW CASTLE COUNTY DRAINAGE CODE.
17. ENTRANCES:
ALL ENTRANCES SHALL CONFORM TO THE STATE OF DELAWARE DEPARTMENT OF TRANSPORTATION AND WILL BE SUBJECT TO ITS APPROVAL.
FIRE PROTECTION:
ALL FIRE LANES, FIRE HYDRANTS, EXITS, STANDPIPE AND SPRINKLER CONNECTIONS SHALL BE MARKED IN ACCORDANCE WITH DELAWARE STATE FIRE PROTECTION REGULATIONS 2006, OR LATEST EDITION THEREOF.
18. LIMIT OF DISTURBANCE:
THE LIMIT OF DISTURBANCE (LOD) DEPICTED ON ANY CONSTRUCTION PLANS FOR THIS PROJECT REPRESENTS THE LIMIT OF DISTURBANCE FOR GENERAL SITE CONSTRUCTION AND GRADING ONLY.
19. STORMWATER MANAGEMENT ACCESS EASEMENT:
A STORMWATER MANAGEMENT ACCESS EASEMENT IN FAVOR OF NEW CASTLE COUNTY, ITS AGENTS AND ASSIGNS IS HEREBY CREATED ON, OVER, UNDER AND ACROSS THE ENTIRE AREA OF ALL STORMWATER MANAGEMENT FACILITIES INCLUDING, STORMWATER CONVEYANCE SYSTEMS, BASINS, AND ALL COMPONENTS THEREOF, IDENTIFIED ON THIS PLAN AND ALL WATERCOURSES FOR THE PURPOSE OF INSPECTING, EVALUATING AND MAINTAINING THE STORMWATER MANAGEMENT FACILITIES AND WATERCOURSES. THE EASEMENT SHALL EXTEND 10' FROM THE OUTER EDGES OF EACH SUCH STORMWATER FACILITY. A GENERAL ACCESS EASEMENT IS HEREBY CREATED OVER AND ACROSS THE PROPERTY SHOWN ON THIS PLAN GRANTING NEW CASTLE COUNTY, ITS AGENTS AND ASSIGNS THE RIGHT, PRIVILEGE AND AUTHORITY TO ENTER UPON AND TRAVEL ACROSS THE PROPERTY TO EACH STORMWATER MANAGEMENT FACILITY. THE EASEMENT HEREIN CREATED SHALL BE FOR PEDESTRIAN, VEHICULAR AND EQUIPMENT USE. IF NEW CASTLE COUNTY, ITS AGENTS OR ASSIGNS DETERMINES THAT MAINTENANCE IS REQUIRED TO A STORMWATER MANAGEMENT FACILITY, NEW CASTLE COUNTY SHALL PROVIDE NOTICE OF THE REQUIRED NOTICE AND THE TIME FRAME IN WHICH SUCH MAINTENANCE SHALL BE COMPLETED TO THE TO THE PROPERTY OWNER OR RESPONSIBLE PARTY. NO NOTICE SHALL BE REQUIRED WHERE NEW CASTLE COUNTY PERFORMS THE MAINTENANCE WHERE THERE IS IMMINENT THREAT TO LIFE, HEALTH OR PROPERTY. IN THE EVENT NEW CASTLE COUNTY ELECTS TO MAINTAIN THE STORMWATER MANAGEMENT FACILITIES, ALL EXPENSES SHALL BE ASSESSED JOINTLY AND SEVERALLY AGAINST THE OWNERS OF THE PROPERTY SHOWN ON THE PLAN.
20. LONG TERM NON-RESIDENTIAL STORMWATER MANAGEMENT FEE:
THE OWNER/DEVELOPER SHALL PAY, TO NEW CASTLE COUNTY, FUNDS FOR NON-RESIDENTIAL STORMWATER MANAGEMENT FACILITY MAINTENANCE PURSUANT TO SECTION 40.27.240 OF THE COUNTY CODE. THE FUNDS SHALL BE USED FOR THE COSTS ASSOCIATED WITH FACILITY MAINTENANCE AND INSPECTIONS. AN AMOUNT OF $______ SHALL BE FUNDED PRIOR TO THE COMPLETION AND USE OF ANY PARKING PROPOSED BY THIS PLAN. THE DEPARTMENT OF LAND USE SHALL WITHHOLD ITS FINAL INSPECTION OF THE SITE PLAN UNTIL THE DEPARTMENT OF LAND USE IS FURNISHED WITH SATISFACTORY WRITTEN PROOF THAT THE FUNDS HAVE BEEN PAID TO NEW CASTLE COUNTY IN ACCORDANCE WITH THE REQUIREMENTS.
21. THE CURRENT OWNER, HIS SUCCESSORS OR ASSIGNS, ARE RESPONSIBLE FOR THE MAINTENANCE OF THE STORMWATER MANAGEMENT FACILITIES SHOWN ON THIS PLAN.
22. THE TOTAL LAND DISTURBANCE PROPOSED BY THIS PLAN IS 16,256 SF.
23. TEMPORARY CONSTRUCTION EASEMENTS WILL BE OBTAINED FOR IMPROVEMENTS ON PARCELS 10-034.30-052 & 10-034.30-053.

CERTIFICATION OF PLAN ACCURACY

I, JEFFREY C. WILLIAMS, HEREBY CERTIFY THAT I AM A REGISTERED PROFESSIONAL ENGINEER WITH A BACKGROUND IN CIVIL ENGINEERING IN THE STATE OF DELAWARE AND THAT ALL OF THE INFORMATION ON THIS PLAN IS TRUE AND CORRECT TO THE ACCURACY REQUIRED BY ACCEPTED SURVEYING STANDARDS AND PRACTICES AND BY THE NEW CASTLE COUNTY UNIFIED DEVELOPMENT CODE.

JEFFREY C. WILLIAMS (DE. P.E. #13928) ______ DATE

CERTIFICATION OF OWNERSHIP

I, ALI ABDULLAH, CERTIFY THAT WE ARE THE OWNER OF THE PROPERTY WHICH IS SUBJECT OF THIS PLAN AND THAT THE LAND USE PROPOSED BY THIS PLAN IS MADE AT MY DIRECTION AND THAT I AUTHORIZE THIS PLAN TO BE RECORDED IN ACCORDANCE WITH THE REGULATIONS OF THE NEW CASTLE COUNTY UNIFIED DEVELOPMENT CODE.

ALI ABDULLAH ______ DATE

CERTIFICATION OF PLAN APPROVAL

APPROVED ______ DATE ______ BY ______ GENERAL MANAGER
FOR DEPARTMENT OF LAND USE OF NEW CASTLE COUNTY.

APPROVED ______ DATE ______ BY ______ GENERAL MANAGER
FOR COUNTY COUNCIL OF NEW CASTLE COUNTY.

REVISIONS

No.:	DATE:	DESCRIPTION:	BY:
1	4/10/13	PER NCC LAND USE PRE-APPLICATION MEETING	J.C.W.

JEFFREY C. WILLIAMS LICENSE No. 13928 PROFESSIONAL ENGINEER DELAWARE

APPROVED BY: A.S.K.	DESIGNED BY: J.C.W.	DRAWN BY: J.C.W.	LAYER LIST: B-02

SCALE IN FEET (1" = 20')
20' 0' 20' 40'

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OWNER/APPLICANT:
ALI ABDULLAH
P.O. Box 3836
Wilmington, DE 19807
Phone: 302.420.6187

PARCEL INFORMATION:
Tax Parcel No.: 10-034.30-183
Deed Instr No.: 20121220 0075312.
GROSS AREA: 0.2594 Acres
ROW DED: 0.0000 Acres
NET AREA: 0.2594 Acres

EXPLORATORY PLAN APP. NO: 2013-0311-S
REZONING/MINOR LAND DEVELOPMENT RECORD PLAN
743 PULASKI HIGHWAY
NEW CASTLE HUNDRED – NEW CASTLE COUNTY – DELAWARE

KEI
KERCHER ENGINEERING, INC.
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254 CHAPMAN ROAD, SUITE 202 – NEWARK, DELAWARE 19702
302.894.1098 (Voice) 302.894.1099 (Fax) www.kercherei.com

JOB No: 13-0301E
PLAN DATE: Mar 6, 2013
SHEET No.: 1 of 1

KERCHER ENGINEERING, INC.
ENGINEERS PLANNERS SURVEYORS

STORMWATER REPORT

FOR

743 PULASKI HIGHWAY

NEW CASTLE COUNTY
DELAWARE

App. No. 2013-_____-S

Prepared For: Ali Abdullah
P.O. Box 3836
Wilmington, DE 19807

Date: April 9, 2013

254 Chapman Road • Topkis Bldg, Suite 202 • Christiana, DE 19702
Phone: 302.894.1098 • Fax: 302.894.1099
www.KercherEI.com

TABLE OF CONTENTS

		Page
1)	NARRATIVE & SUMMARY	1
2)	PRE-DEVELOPMENT DRAINAGE AREA	4
3)	POST-DEVELOPMENT DRAINAGE AREA	6

NARRATIVE

&

SUMMARY

743 Pulaski Highway (Parcel # 10-034.30-183)
New Castle Hundred, Bear, Delaware
New Castle County
Project Narrative

The owner of 743 Pulaski Highway (Parcel No. 10-034.30-183), Ali Abdullah, is proposing to rezone the 0.26 acre parcel from NC6.5 to CR for Office use. The parcel is located on the north side of Pulaski Highway just west of Holly Avenue. The existing vacant parcel is surrounded by NC6.5 and CR parcels and consists of good grass cover with some trees. The proposed site will consist of a 2,000 sf general office building with a 1,000 sf footprint, 4,626 sf of pavement, grass, landscaping and a bioretention facility for stormwater management.

The majority of the present site drains toward the southwest corner of the site at Pulaski Highway, and previously discharged to the west along the edge of Pulaski Highway to a 15" RCP culvert that discharges to an unnamed stream which flows south under Pulaski Highway. When the adjacent parcel to the west, 745 Pulaski Highway (Parcel # 1003430052), was improved, the entrance was curbed with concrete vertical curb. The placement and height of this curb has caused the runoff to pond behind the curb approximately 12" deep. A 3" wide by 4" deep cut was made in the curb to allow the ponded area to discharge to Pulaski Highway. However, the invert of the curb cut is approximately 12" above the invert of the 1000 sf ponded area. Previously, the runoff was able to discharge to the shoulder of Pulaski Highway and flow along the grass edge of the shoulder to a 15" RCP culvert that discharges to an unnamed stream which flows south under Pulaski Highway to Army Creek.

The proposed post-development site will be graded so that the pre-development drainage area and direction of flow is maintained. The runoff will be captured and managed by the proposed bioretention facility which will be located at the southwest corner and low point of the site. The bioretention facility will be designed for infiltration, as the tested rates are very good, 8.55 in/hr average, and there is no defined outfall on-site. We are proposing to design bioretention/infiltration facility the manage the increased volume from the 100 year storm event with minimal discharge to the entrance of the adjacent parcel and the grass edge of the shoulder to the 15" RCP culvert, as in pre-development conditions. It is our opinion that this will not cause any adverse effect on adjacent properties and the downstream conveyance system, as the discharge flows to Pulaski Highway will not be increased, but decreased. The post development grading proposes filling the low area where the stormwater presently ponds to allow the runoff from the grass area of the site to be discharged at a low point of 64.85 just north of the concrete curb to allow the runoff to discharge to the shoulder of Pulaski Highway and flow along the grass edge of the shoulder as it did before the curb was installed. This will restore the drainage flow to its original condition before the curbing was installed. It is our opinion the existing culvert pipe will provide adequate conveyance since the discharge flow rate to Pulaski Highway will be decreased.

The stormwater hydrologic calculations were performed using the HydroCAD 8.00. Vince Davis of the DelDOT Stormwater Section previously approved the Minor Subdivision project on November 21, 2007 with a 0.1 cfs increased discharge to the DelDOT right of way.

Erosion and sediment controls will be implemented on the site as shown on the detail for ESC for Minor Development. The practices that will be used are stabilized construction entrance, silt fence, sediment trap, tree protection, and a topsoil stockpile area. A sediment trap will be used at the location of the bioretention facility. It will be excavated at least two (2) feet above the invert of the bioretention facility invert.

Stormwater Management Summary

Project Name: **743 PULASKI HIGHWAY** By: **J.C.W.**

Project Location: **BEAR, DE (NEW CASTLE HUNDRED)** Date: **4/1/2013**

PRE-DEVELOPMENT:

CONDITION	AREA "A"		
	2	10	100
Area (acres)	0.71	0.71	0.71
CN	69	69	69
Tc (min)	12.6	12.6	12.6

PEAK DISCHARGE RATES & VOLUMES:

STORM FREQ.	AREA "A" RATE (CFS)
2	0.71
10	1.79
100	4.34

PRE – DEVELOPMENT

DRAINAGE AREA

Subcatchment 1S: Pre-Dev DAB

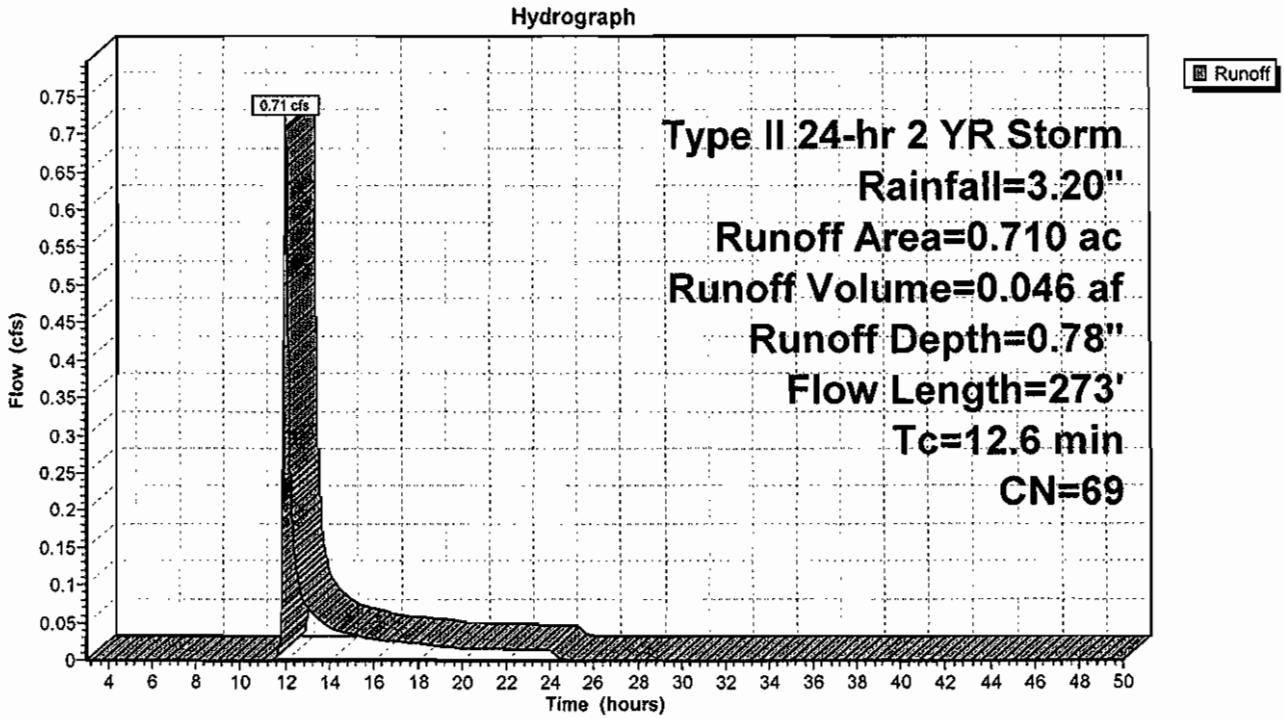
Runoff = 0.71 cfs @ 12.06 hrs, Volume= 0.046 af, Depth= 0.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 3.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 2 YR Storm Rainfall=3.20"

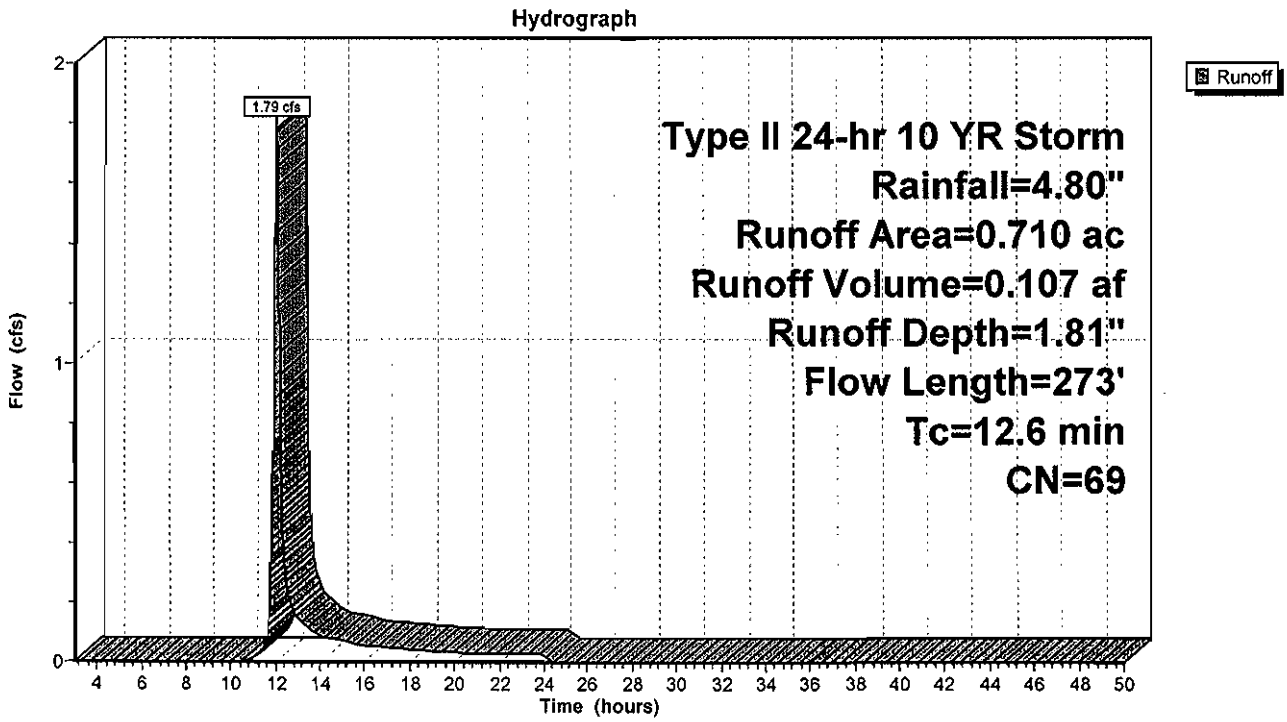
Area (ac)	CN	Description
0.050	98	Unconnected roofs, HSG B
0.100	98	Unconnected pavement, HSG B
0.560	61	>75% Grass cover, Good, HSG B
0.710	69	Weighted Average
0.560		Pervious Area
0.150		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	100	0.0333	0.14		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.20"
0.1	28	0.0628	4.03		**Shallow Concentrated Flow, Grass** Unpaved Kv= 16.1 fps
0.1	9	0.0144	2.44		**Shallow Concentrated Flow, Gravel** Paved Kv= 20.3 fps
0.8	136	0.0303	2.80		**Shallow Concentrated Flow, Grass** Unpaved Kv= 16.1 fps
12.6	273	Total			

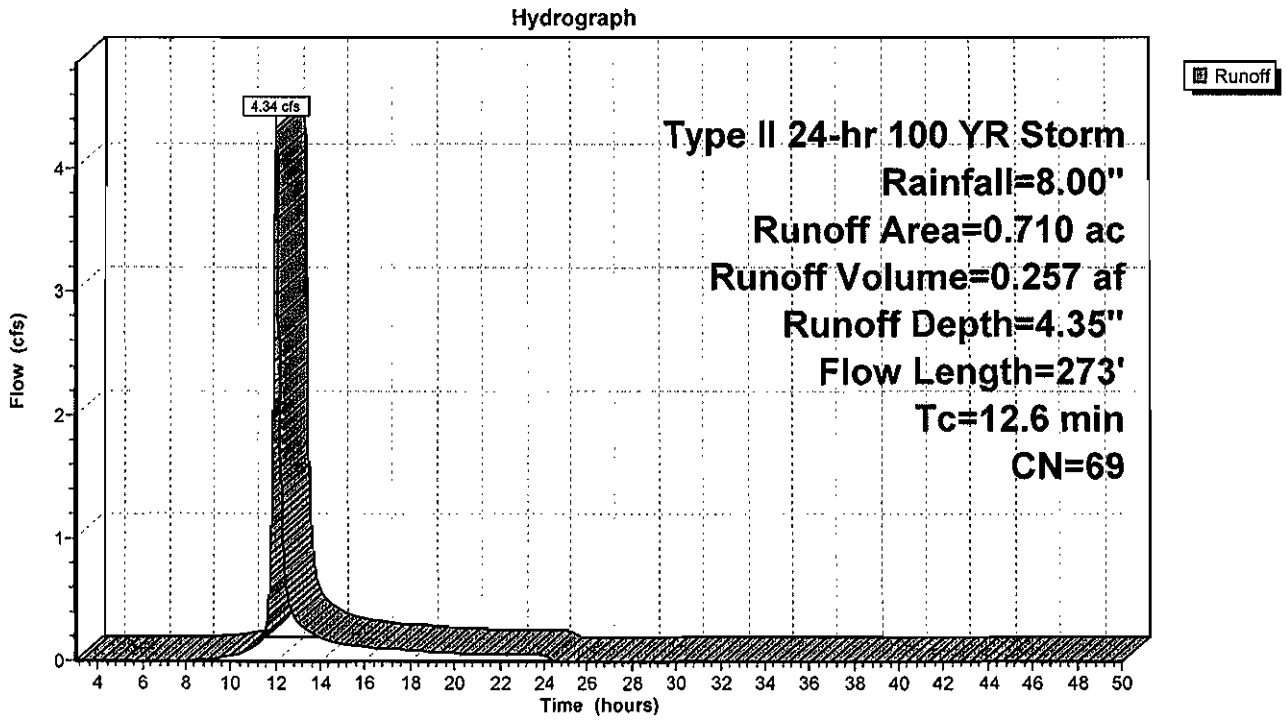
Subcatchment 1S: Pre-Dev DAB



Subcatchment 1S: Pre-Dev DAB

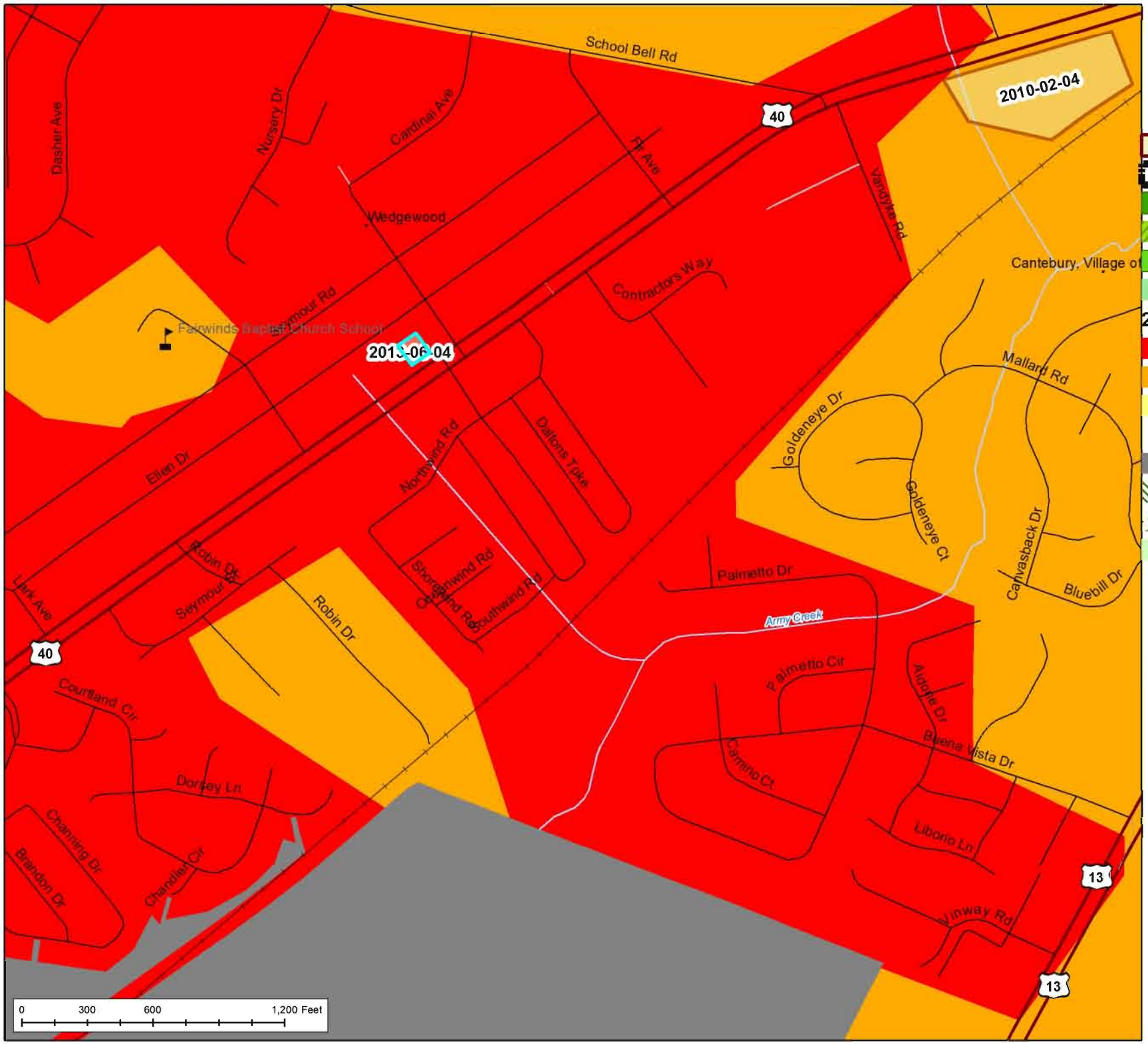


Subcatchment 1S: Pre-Dev DAB



Preliminary Land Use Service (PLUS)

743 Pulaski Highway
2013-06-04



PLUS Project Areas
Municipalities
State Parks
Forestry Easements
Purchased Dev. Rights
Ag District

2010 State Strategies

Level 1
Level 2
Level 3
Level 4
Out of Play
Nat. Res. & Rec. Priorities
Working Forests
Highest Value Agriculture

1:7,000

OSPC Delaware Office of State Planning Coordination

N W E S

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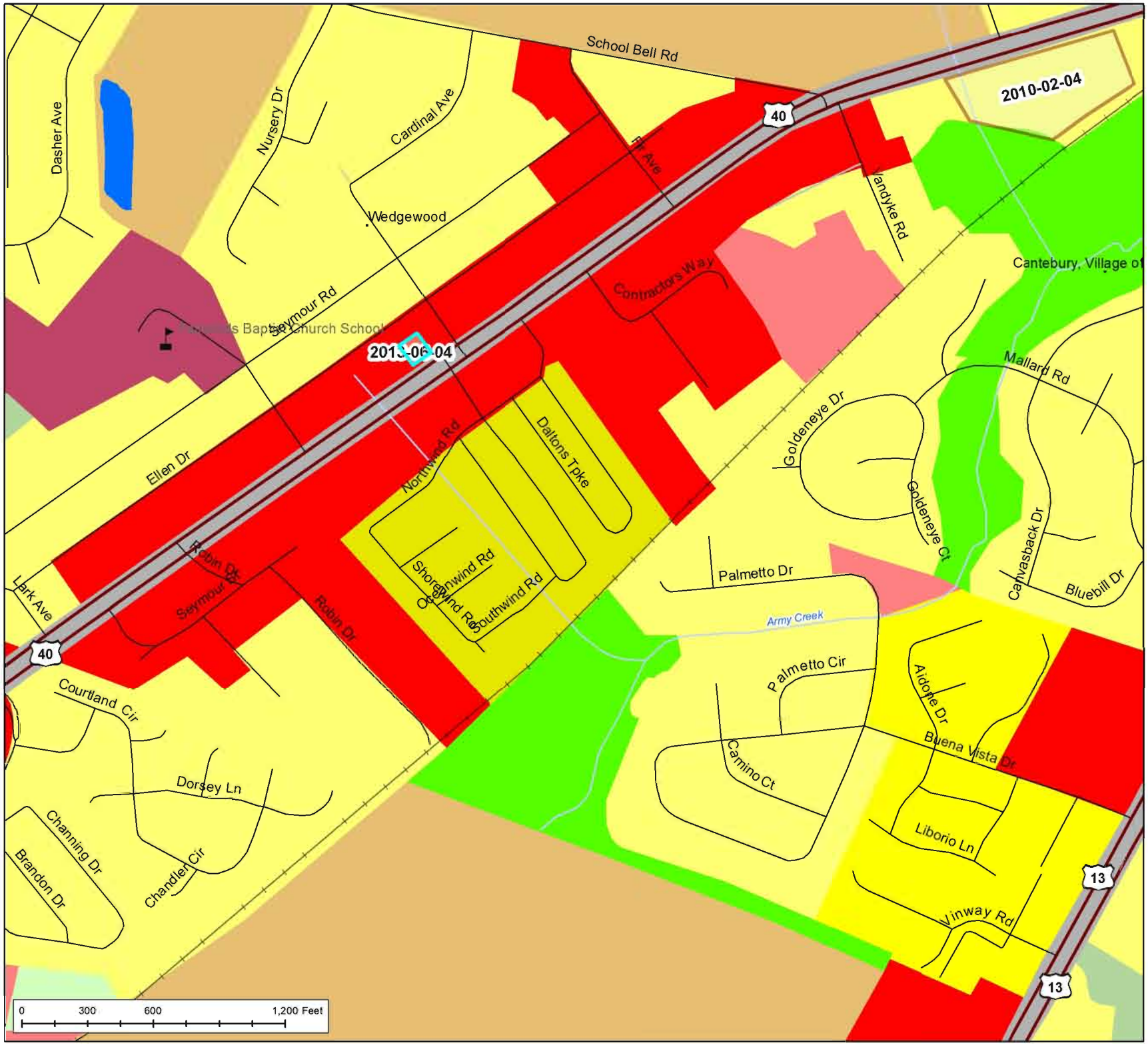
Preliminary Land Use Service (PLUS)

743 Pulaski Highway
2013-06-04



Project Areas
Municipalities

Land Use/Land Cover

- Single Family Dwellings
- Multi-Family Dwellings
- Mobile Home Parks/Courts
- Commercial
- Industrial
- Trans./Comm./Utilities
- Mixed Urban/Built-up
- Institutional/Governmental
- Recreational
- Farms, Pasture, Cropland
- CAFO
- Rangeland
- Orchards/Nurseries
- Deciduous Forest
- Evergreen Forest
- Mixed Forest
- Shrub/Brush Rangeland
- Clear-cut
- Reservoirs and Impoundments
- Marinas/Ports/Docks
- Open Water
- Emergent Wetlands
- Forested Wetlands
- Scrub/Shrub Wetlands
- Sandy Areas
- Extraction/Transition

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OSPC Delaware Office of State Planning Coordination

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Preliminary Land Use Service (PLUS)

743 Pulaski Highway
2013-06-04

Project Areas

Municipalities

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