PRELIMINARY STORMWATER MANAGEMENT ANALYSIS & REPORT

FOR

THE PROSPERITA & ORION STEM SCHOOLS

NAPERVILLE, ILLINOIS

REVISED JUNE 05, 2023
REVISED APRIL 12, 2023
REVISED FEBRUARY 14, 2023
REVISED JANUARY 30, 2023
REVISED DECEMBER 20, 2022
REVISED SEPTEMBER 30, 2022
REVISED SEPTEMBER 14, 2022
AUGUST 30, 2022

JOB NO. 904.426

PROFESSIONAL ENGINEER'S CERTIFICATION

STATE OF ILLINOIS }
SS.
COUNTY OF DUPAGE }

I, RANDALL W. BUS, A LICENSED PROFESSIONAL ENGINEER OF ILLINOIS, HEREBY CERTIFY THAT THIS TECHNICAL SUBMISSION WAS PREPARED ON BEHALF OF VRUTTHI, LLC BY CEMCON, LTD. UNDER MY PERSONAL DIRECTION.

DATED THIS 5th DAY OF June

RANDALL W. BUS
062-032381
REGISTERED PROFESSIONAL ENGINEER OF ILLINOIS

ILLINOIS LICENSED PROFESSIONAL ENGINEER NO. 062-032381

MY LICENSE EXPIRES ON NOVEMBER 30, 2023

PROFESSIONAL DESIGN FIRM LICENSE NO. 184002937 – EXPIRES APRIL 30, 2025

NOTE: UNLESS THIS DOCUMENT BEARS THE ORIGINAL SIGNATURE AND IMPRESSED SEAL OF THE DESIGN PROFESSIONAL ENGINEER, IT IS NOT A VALID TECHNICAL SUBMISSION.

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FOR

THE PROSPERITA & ORION STEM SCHOOLS

NAPERVILLE, ILLINOIS

I. PROJECT DESCRIPTION

The Prosperita & Orion STEM Schools Project will be platted and developed on a 12.35± acre property assemblage comprised of small lots and vacated rights-of-way in Naper Villa Manor originally subdivided in 1926. The property abuts Diehl Rd. on the north, Mill St. on the east, West St. (ironically) on the west, and Harborchase of Naperville on the south (see Exhibit A). Additional rights-of-way (0.36± acres) will be dedicated for the Mill St. pavements and street lights which already encroach onto the property and for future public use sidewalks. The north half of the existing driveway off Harborchase was previously included in the stormwater management system for that project (0.18± acres), so site runoff storage and PCBMPs have already been provided for that area. Within the proposed Mill St. ROW dedication of 0.36± acres a right turn lane and public sidewalk will be constructed so the Net Area of the On-Site Development will be 12.35 – 0.54 = 11.81± acres.

This On-Site Development Area will be platted into two (2) lots, one of which to the north on 5.01± acres will be the site of a private STEM school for grades K – 8, and on the lot of 6.80± acres to the south, 76 townhome units will be constructed, all of which development will be accessed via private streets but served by the City's public sanitary sewer collection and water distribution systems that will be extended within PU&DE along with both public and private street access easements. The Prosperita & Orion STEM School Project also has access rights to the private driveway previously constructed along the north and east sides of Harborchase with access to West St. and to Commons Dr. (and the traffic signal at Mill St. and Commons Dr.). Otherwise, a right-in-right-out driveway with dedicated right turn lane is proposed off Mill St. along with a full access driveway on West St. with right out and left out turn lanes for westbound Perla Dr., which will be marked with striping and signage and a mountable median to preclude through traffic into the Little Friends driveway to the west (see Preliminary Plat and Preliminary Site Development Plan in Exhibit B).

II. EXISTING DRAINAGE CONDITIONS

There is approximately 12 feet of topographic relief across the property from the high point near the northeasterly corner at 738.8± to the low point at the end section of a15-inch RCP stubbed from the Harborchase development with a flowline of 726.7± which extends westward across West St. and along Conestoga Rd. with eventual discharge to Cress Creek. When the capacity of this 15-inch storm sewer is exceeded during the critical 100-year shorter duration storms, overflows do occur into the Harborchase storm drainage system which then discharges to the existing 36-inch storm sewer on Mill Street at Commons Drive. There are very slight depressional areas near the southerly central portion of the site a few tenths of a foot deep which do not collectively afford any attenuating effect on existing rates of runoff and two (2) slightly deeper depressional areas in the northwesterly corner of the site that overflow to the southeast into a swale which depressions may have a potential attenuating effect so they were modeled in the Existing Condition Flood Routing Analysis in revised Exhibit E. There is also an existing 15- and 18-inch public storm drain along West St. that is fairly shallow and extends northward to Diehl Rd. and then westward along Diehl Rd. and a deeper 36-inch storm sewer (FL = 721.3±) along Mill St. that extends southward with discharge also to Cress Creek. These storm sewer systems are depicted in the City's storm sewer atlas sheets.

A Soils Investigation was conducted by Rubino Engineering, Inc. which revealed that soils ranging over the Project Site were relatively consistent with about 12± inches of topsoil and a silty clay layer extending 8-9 feet down to elevation 721± which soils are then underlain by a thick glacial sand and gravel deposit with 1-2 feet of finer grained sands and gravel in the upper layer trending to coarse sands and gravels down to at least 25 feet below grade (705-706) (see Exhibit C). No ground water was observed in any of the soil boring logs. From well logs in the area, this glacial formation extends in a layer 30± feet thick to the West Branch DuPage River, which formation was extensively mined over the years including the Erb Family Gravel Pit immediately across West St. from this Site (which was later developed into the Century Farms residential subdivision). Rubino Engineering, Inc. also conducted sieve analyses on the upper layer of silt and fine sands in the 720-721 interval and also in the slightly lower coarse grained sands and gravel in the 719-720 interval, which analyses are summarized in an Addendum Letter dated 3/24/23 attached to Exhibit C. Each of the three (3) sieve analyses were then correlated to an infiltration rate using the USDA Textural Classification Chart. Except for the one sieve analysis in an upper silty layer (720-721) indicating an infiltration rate of 1.63 in/hr, the sieve analyses in the medium dense to dense well graded gravel with sand and silt were correlated to have infiltration rates of 3.60 in/hr.

Even these infiltration rates are likely conservative and there is a concern that, in conducting an infiltrometer test on the graded gravel and coarser sand below elevation 719, a sustained water level will not be achievable in calculating a steady state infiltration rate under typical infiltrometer test procedures. Additional testing is currently underway.

In the Existing (Without Project) Condition, about 11.51± acres of the gross 12.35± acre Site are directly tributary to the 15-inch end section and the West St. / Conestoga Rd. drainage system (with possible overflows to the Harborchase drainage system) while 0.31± acres of the Site are tributary to the West St. or Diehl Rd. ROW's which both drain into the Diehl Rd. 18-inch storm sewer system. About 0.35± acres of the Site in the northeast corner drain to the Mill St. ROW and the 36-inch storm sewer (see Existing Catchment Exhibit D).

Exhibit D also delineates those offsite portions of the West St. and Diehl Rd. ROW's that drain into the Site (0.50± acres) and delineates those sections of the Mill St. ROW that are now, but may or may not continue to be, directly tributary to the 36-inch storm sewer on Mill St which sections consist of the roadway pavement itself from a high point in the curb line about 160 feet southerly of the Diehl Rd. intersection and extending from the centerline of pavement to back of curb and from the high point to the curb line inlet at the southeasterly corner of the Site (0.65± acres).

Pondpack flood routing models were devised for each of these catchment areas based on their respective CN's and TC's, the work sheets for which and the flood routing results are contained in the Existing Condition Pondpack Flood Routing Model Exhibit E.

For the 11.51± acre onsite catchment and the 0.50± acres of the Diehl Rd. and West St. ROW's that drain into the Site and then to the 15-inch end section in the southwest corner, the peak rate of runoff for the 2-year and 100-year 24-hour duration design rainstorm events of Bulletin 75 and Huff Distributions (Design Storms) were determined to be 1.89± cfs and 7.91± cfs respectively. The existing 15-inch storm sewer is capable of intercepting and conveying these peak flow rates to the 15-inch West St. / Conestoga drainage system but, for the critical 100-year storms of shorter duration, overflows do occur into the Harborchase drainage system which connects to the Mill St. storm sewer system. For the combined 0.48± acres of the Mill St. and Diehl Rd. rights-of-way that are tributary to the 18-inch storm sewer system on West Diehl Rd., the peak rates of Design Storm runoff were determined to be 0.09± cfs and 0.32± cfs respectively.

For those onsite catchments that are tributary to the West St. storm system which drains northward and connects to the Diehl Rd. system (0.04± acres) and the 0.27± acres in the northeast corner that also drain to the Diehl Rd. system (0.31± acres in total), the peak rates of runoff for the Design Storms were determined to be 0.06± cfs and 0.21± cfs respectively.

The 0.35± acre On-Site Catchment Area also in the northeast quadrant of the Site and adjacent to the Mill St. ROW that is tributary to the Mill St. 36-inch storm sewer will produce peak rates of runoff for the Design Storms of 0.06± cfs and 0.24± cfs respectively. These peak rates of runoff combined with those sections of the Mill St. ROW up to the curb line inlet at the southeasterly corner that are in the Existing Condition all tributary to the 36-inch storm sewer produce total peak rates of 0.26 cfs and 0.73 cfs respectively for the 2-year and 100-year Design Storms.

These rather diffuse distributions of stormwater runoff from the Project Site into three (3) different storm sewer systems under City of Naperville, City of Warrenville and DuDOT jurisdictions present a rather complicated context and a set of multiple drainage system conditions in which to compare and contrast the Pre-Development 2-year and 100-year 24-hour duration design storm events to those in the Development Site Condition under the provision of Article IX, Section 15-73.B of the Ordinance. Catchment areas in the Existing Condition and in the Proposed Condition have, accordingly, been carefully crafted and delineated to make that comparison as clear and accurate as possible.

III. PROPOSED WITH-PROJECT CONDITION STORMWATER MANAGEMENT & PCBMP SYSTEMS

Given the somewhat restrictive site area available and desire to create landscaped open areas for neighborhood gatherings and for outdoor educational facilities, Developer Vrutthi, LLC has elected to provide site runoff storage in sub-surface modules, as a means of stormwater management and PCBMP's, which modules will be arrayed under those open space areas within the Development Site. As these open space areas are limited in size, the storage volume required can only be attained by maximizing the depth of the modules which, in turn, requires connection to the storm sewer system with the lowest flowline and virtually all of the available open space would be utilized to accommodate 350 storage modules within the maximum depth range afforded by the existing storm sewer systems.

As previously stated, a 17 foot wide ROW will be dedicated along Mill St. for construction of a public sidewalk and for a dedicated right turn lane at the proposed RI/RO driveway on Mill St. as now required by DuDOT. That right turn lane and the attendant pavement gradient sloping away from the edge of the existing pavement will divert a portion of the existing roadway and widened parkway into the Site at the RI/RO driveway. Those portions of the Site in the northeasterly corner and along the easterly fringe that formally drained to the Diehl Rd. or Mill St. drainage systems, will now be captured and conveyed to the subsurface storage modules. The existing parkway areas along Diehl Rd. and West St., which fall off rather abruptly into the Project Site and cannot be reversed without extensive adjustment and disruption to existing utility systems, will remain tributary to the Site. All of the central portion of the Site will also be captured, conveyed and managed in the storage module SWMF. A total of 0.12± Ac. + 0.36± Ac. = 0.48± Ac. of the West St. and Diehl Rd. parkways will continue to drain to the Diehl Rd. storm system. The Proposed Condition Catchment Exhibit F, Sheet 1 (attached), delineates these catchment areas and the Catchment legend quantifies those areas.

The On-Site Development Area will consist of the 12.35± acre gross Site area less the 0.18± acre of existing driveway adjacent to Harborchase that was included in the stormwater management program for that project, less the 0.36± acres of the Mill St. ROW dedication, but plus the 0.09± acres the right turn lane pavement Development for a Net On-Site Development Area of 11.90± acres. Tributary to this Net On-Site Development Area will be portions of the Diehl Rd. and West St. parkways (0.50± acres) and the Mill St. pavement and parkways from the high point in the curb line south of Diehl Rd. to the RI / RO driveway (0.57± Ac. – 0.09± Ac. = 0.48± Ac.) which will be routed into the On-Site stormwater management system and partially managed and accommodated in the overflow conveyance system at 0.50± Ac. + 0.48± Ac. = 0.98± Ac. with the overflow weir discharge to occur above the elevation at which the site runoff storage volume is met in accordance with Section 15-73.A.2.

Composite Coefficients of Runoff CN and Times of Concentration Tc were then computed for the School Site with gymnasium (CN = 86) and for the 76 unit Townhome Site (CN = 88) with Type C soils and Pondpack flood routing routines were devised to assess the rate of discharge to each of the three (3) storm sewer systems in the Proposed Condition compared to those discharges in the Existing Condition determined in Section II above. As the 36-inch storm sewer on Mill St. afforded the deepest flowline more conducive to deployment of storage modules at least 6-foot deep, that storm sewer system was selected as the primary point of discharge with a flowline at 721.3. A 6-foot diameter catch basin with center weir wall through which an orifice restrictor can

be inserted was initially selected to achieve the restrictive discharge rate of 1.19 cfs with the top of weir wall set at the computed design HWL.

As an initial trial, 350 storage modules 8-foot wide by 16-foot long by 8-foot high (7' x 15' x 6' ID) were arrayed within the available open space areas with 198 modules in the Townhome Site and 152 on the school Site with each module accommodating 676± cubic feet of storage volume (5.43± Ac.-Ft.) which, along with storage in storm sewer pipes (0.15 Ac.-Ft.) and proposed on-site depressional areas below elevation 730.0 (0.24± Ac.-Ft.), brings the total available storage volume to about 5.82± Ac.-Ft. These modules, supported on a proposed 3-foot thick bedding of CA-7 aggregate, will serve both as a PCBMP for the impervious surfaces over both Sites (6.7 Ac. x 1.25 inches = 0.70 Ac.-Ft.) and to create a contact surface with the underlying coarse sand and gravel in the 717.0 to 718.0 interface. For the 350 modules, that contact surface will amount to about 51,000 SF. Total available storage capacity from elevation 721.5 to 730.0 will then be 6.52± Ac.-Ft. per Section 15-64.C.2.

Given these initial input parameters, the 11.90± acre onsite and offsite Net Project Development Site was then flood routed for the 2-year and 100-year 24-hour duration Design Storm Events in which analysis it was determined that the initially designed storage volume of 6.52 Ac.-Ft. (per the above) and a restrictive orifice of 4.25-inch diameter would be capable of attenuating discharges from the 11.90± acre Net Project Development Site alone to 1.14± cfs at a HWL of 727.9± in keeping with the provisions of Sections 15-73.A and assuming a free discharge. However, the resulting discharge to the 36-inch storm sewer from the Development Site (1.14± cfs) plus the remainder of the Mill St. roadway not intercepted by the RI / RI driveway (0.13± cfs due to time delay) for a total of 1.27± cfs would exceed the 100-year Design Storm rate of 0.73 cfs in the Existing Condition. For the 2-year Design Storm, the peak discharge plus inflow rate (0.51± cfs) would also exceed Existing Condition (0.26± cfs). Inflows to the Diehl Rd. and West St. / Diehl Rd. storm systems will be reduced or remain the same under this scenario (see Table 1 below).

It is worth mentioning that the times to reach peak inflow rates in the Existing Condition occur in the 16th hour while those in the Proposed Condition occur two (2) or more hours later in the 18th hour when the peak rates of inflow will have dissipated. Also, if storm sewer capacity is the real issue, the 2-year and 100-year 24-hour storm events are hardly critical since the shorter duration 1-, 2-, and 3-hour storms of 2-, 5-, 10-, 25- and 100-year recurrence intervals with peaks as high as 6.5± cfs are much more taxing on the capacity of the 36-inch storm sewer. For those storms,

the attenuating effect of the available storage will be much more pronounced and the discharge rates from the control structure would be less than the Existing Condition flow rates. But, if the 2-year and 100-year 24-hour duration Design Storms are the established ground rules per Section 15-72.B, then the practical solution is to design a secondary point of discharge, in this case the 15-inch West St. / Conestoga Rd. storm sewer, to distribute discharges in an effort to replicate distributions in the Existing Condition or take into consideration allowing the rate of infiltration into the sand and gravel formation to supplement the allowable release rate. Both of these solutions were analyzed separately and in combination with each other.

If both a primary (Mill St.) and secondary (West St. / Conestoga Rd.) outlet is flood routed with 350 modules but without infiltration, the 2-year and 100-year discharges would amount to 0.26± cfs and 0.71± cfs respectively, which are below inflows in the Existing Condition and, while discharges plus inflows from the 2-year and 100-year Design Storms to the West St. / Conestoga Rd. system at 0.23± cfs and 2.21± cfs are respectively less than in the Existing Condition, the total release rate of 1.19± cfs would still be exceeded. If a primary outlet alone with a 4.25-inch restrictor to Mill St. with 350 modules plus infiltration is flood routed, the 2-year and 100-year discharges plus inflows would be 0.10± cfs and 0.71± cfs respectively (or less than allowable) with all other inflows to sewer systems remaining equal to the Existing Condition. But the HWL in the storage modules would be 722.85±, utilizing only 30% or less of the available storage capacity. For the scenario with both a primary outlet and a smaller 2.75-inch diameter orifice restrictor to Mill St. and a secondary outlet connected to the 15-inch West St. Conestoga Rd. storm sewer along with 350 modules plus infiltration, a flood routing analysis indicated the 2-year and 100-year Design Storm discharges will be the same at 0.10± cfs (as there is no discharge to the higher West St. / Conestoga Rd. storm sewer flowline) and slightly lower for the 100-year Design Storm (due to the smaller orifice) but at a somewhat higher (722.93±) HWL. Again, available storage utilization would only be 30% or less.

The results of these last two (2) analyses with 350 storage modules and either single or dual points of discharge plus infiltration offer a compelling rationale for reducing the number of storage modules. As a trial, an analysis of 185 storage modules was conducted with a contact area interface with the sand and gravel formation of 27,290 SF (2.27± cfs) with primary outlet (2.75-inch diameter orifice) discharging to the Mill St. system and a secondary connection to the West St. / Conestoga Rd. system with an overflow weir plate to be set at the elevation equal to the HWL. That combination of stormwater management components was then flood routed and it was determined that the total discharge plus inflow to the 36-inch Mill St. storm sewer would be

0.67± cfs for the 100-year Design Storm (vs. 0.73± cfs in the Existing Condition and below the Project Site allowable discharge of 1.19± cfs) and would still be only 0.10± cfs for the 2-year Design Storm (vs. 0.26± cfs in the Existing Condition). For the West St. / Conestoga Rd. storm sewer the peak 100-year Design Storm discharge was 0.32± cfs (or far less than the 7.91± cfs in the Existing Condition) and there will be no discharges for the 2-year Design Storm as the HWL would only reach 721.5±. The HWL for the 100-year Design Storm for this combined system will be slightly below 727.1 so there is still excess storage capacity available. This same configuration of stormwater management components was again flood routed with the internal weir plate in Control Structure #2 set at the design HWL of 727.1 and both the Net On-Site Development Area of 11.90± acres and Off-Site ROW areas of 0.98± acres were flood routed through the same Optimal system for the 2-year and 100-year Design Storms. It was determined in this analysis that the 2-year discharge plus inflow to Mill St. would still be only 0.10± cfs and the 100-year discharge plus inflows would increase slightly to 0.70± cfs while the discharges to West St. / Conestoga Rd. would remain at 0.0 cfs for the 2-year storm (HWL below the 15-inch flowline) and 0.32± cfs for the 100-year at a HWL of 727.6± over the weir (see Option F Table 1 and Exhibits F-1 and F1 & 2).

In a subsequent review of this Optimal System, however, the City has determined that, while the use of infiltration to satisfy the volume and pollution control (PCBMP) provisions is accountable under the Ordinance, the City has taken the stance that they will not allow infiltration as a means of determining the volume of site runoff storage and control of release rates. The City has cited their concern that the rate of infiltration may not be sustainable over an extended period of time due, presumably, to contamination of fines into the subsurface gravelly sand formation underlying the Site.

At the City's request, an alternative stormwater management system configuration of components with 360 storage modules, primarily and secondary outlets / control structures, no infiltration and with 2.75 inch (primary) and 3.6 inch (secondary) restrictors. That option also proved to satisfy all of the conditions of overall restriction to total discharge and restriction to each of the receiving storm sewer systems (see Option G Table 1 and Exhibits F-2 and F1 & 2).

Table 1 below summarizes all of these combinations and permutations of stormwater management components for the Proposed Condition and compares and contrasts them to the Existing Condition.

TABLE 1

Comparison of 2-Year and 100-Year 24-Hour Duration Design Storms

Existing vs. Proposed Condition

FLOW RATES (cfs)		STORM SEWER SYSTEM			
		Mill St.	Diehl Rd.	West St. / Conestoga Rd.	West St. to Diehl Rd.
Existing Condition	2-Yr	0.26	0.09	1.89	0.07
	100-Yr	0.73	0.32	7.91	0.25
Proposed w/ Primary Outlet & 350 Modules – No Infiltration, No ROW's (OPTION A)	2-Yr	0.51 ②	0.09	0.00	0.07
	100-Yr	1.27 ①②	0.32	0.00	0.25
Proposed w/ Primary and Secondary Outlets & 350 Modules – No Infiltration, No ROW's (OPTION B)	2-Yr	0.26	0.09	0.23	0.07
	100-Yr	0.69 ①	0.32	2.21 ①	0.25
Proposed w/ Primary Outlet & 350 Modules plus Infiltration (4.25" Restrictor) No ROW's ④ (OPTION C)	2-Yr	0.10	0.09	0.00	0.07
	100-Yr	0.71 ④	0.32	0.00 ④	0.25
Primary and Secondary Outlets & 350 Modules plus Infiltration, No ROW's (2.75" Restrictor) ④ (OPTION D)	2-Yr	0.10 ④	0.09	0.00 ④	0.07
	100-Yr	0.46 ④	0.32	0.00 ④	0.25
Primary and Secondary Outlets & 185 Modules plus Infiltration, No ROW's (Optimal) (2.75" Restrictor) HWL = 727.1 ④ (OPTION E)	2-Yr	0.10 ④	0.09	0.00 ④	0.07
	100-Yr	0.67 ④	0.32	0.55 ④	0.25
Proposed Primary and Secondary Outlets & 185 Modules plus Infiltration, with ROW's (Optimal) HWL = 727.6 ④ (OPTION F)	2-Yr	0.10	0.09	0.00	0.07
	100-Yr	0.70 ④	0.32	2.59 ③④	0.25
Proposed Primary and Secondary Outlets & 360 Modules, No Infiltration, No ROW's (2.75" + 3.6" Restrictors) HWL = 729.9 ④ (OPTION G)	2-Yr	0.26	0.09	0.00	0.07
	100-Yr	0.68 ④	0.32	0.60 ④	0.25

① *Exceeds the allowable Net Project Site Release Rate of 1.19± cfs*
② *Exceeds the Existing Condition Release Rate*
③ *Secondary Weir Overflow due to Off-Site ROW's*
④ *Satisfies both Allowable Release and Existing Condition Rates at respective times to peak*

As noted in the above Table 1 “Comparison of Existing vs. Proposed Condition” and the various combinations and permutations of storage module capacity, control structure configurations and infiltration that were flood routed and analyzed to derive those results, the Option F Optimal Combination of those stormwater management components to effectively and efficiently meet each of the performance criteria in keeping with the provisions of the “Stormwater Ordinance” would consist of the following:

A. Control Structure #1 with 2.75-inch circular orifice restrictor and top of weir wall set at 727.6 connected to the 36-inch Mill St. storm sewer and Control Structure #2 connected to both the internal Site storm sewer system and to the existing 15-inch West St. / Conestoga Rd. storm sewer over a top of weir plate set at 727.1.

B. 185 storage modules with 80 arrayed on the School Site and 105 on the Townhome Site.

C. Infiltration through a CA-7 aggregate base with interface at 717.5 to the existing 30-foot thick coarse sand and gravel formation with contact area at interface of 27,290± SF and preliminary design infiltration rate of 23± csf.

D. Sediment and debris traps with forebay settling chambers.

Also noted in Table 1 “Comparison of Existing vs. Proposed Condition”, the combination of stormwater management components in meeting the City’s policy of precluding infiltration in the determination of required site runoff control storage, in Option G would consist of the following:

A. Control Structure #1 with 2.75-inch circular orifice restrictor and top of weir wall set at 729.5 connected to the 36-inch Mill St. storm sewer and Control Structure #2 with a 3.6 inch restrictor connected to the West St. / Conestoga Rd. storm sewer.

B. 360 storage modules with 154 arrayed on the School Site and 206 arrayed on the Townhome Site with a contact area at the interface of 52,460± SF with a continuing but unaccounted for preliminary design infiltration rate of 4.3± cfs.

C. Sediment and debris traps with forebay settling chambers.

In the Existing Condition 11.51± acres of the On-Site Development Area and 0.50± acres of Off-Site West St. and Diehl Rd. ROW drain to the westerly Harborchase driveway. In the Proposed Condition, due to the right turn lane on Mill St., the catchment areas tributary to the On-Site stormwater management system increases to 12.88± acres including the West St. and Diehl Rd. ROW's. In accordance with Section 15-73.A.2., the overflow conveyance system for this upstream watershed of 12.88± acres to Harborchase was analyzed for a flow of 1 cfs/Ac. x 12.88 Ac. = 12.9± cfs. The westerly and easterly driveway pavements, to which these overflows are directed in both the Existing Condition and the Proposed Condition, were modeled as weirs and it was determined that the maximum water surface elevation reached on the lower westerly driveway section to which 12.7± acres will be tributary was 730.3± while at the higher easterly driveway to which only 0.2± acres will be tributary, the peak WSEL will be 730.6±. The lowest proposed finished floors of townhomes north of the Harborchase west driveway are proposed at 732.0 so there will be 1.7± feet of freeboard at the westerly driveway and at the easterly Harborchase driveway with finished floors of 733.4 the freeboard will be 2.8± feet (see Overland Flood Route Exhibit G).

The manufacturer's details for the StormCapture and StormTrap storage modules are attached to Sheet 2 of Exhibit F, along with details of Control Structure #1 and Control Structure #2. These storage modules, designed for H-20 loading, will be arrayed in mostly open space areas under playgrounds, outdoor educational facilities, light duty pavements and open space courtyards, where surface runoff and overland flows can be directed. Modules will have portals on all four sides to allow the unrestricted flow of collected runoff between modules and the module array in the School Site will be hydraulically interconnected with the two (2) module arrays on the Townhome Site (which will also be interconnected) by low flow flat gradient conduits of a size sufficient (about 24-inch diameter) to allow the unrestricted transfer of collected stormwater to equalize hydraulic elevations (i.e. an energy equalizer system – see Exhibit F, Sheets 1 & 2).

A number of the modules will have surface ports with high capacity grates for the entry of local surface runoff and to intercept the overland flood routes that will be designed along street pavements and open space corridors to convey excess accumulated runoff to the three (3) sub-surface storage module sites. As previously mentioned, each module will also have side-to-side and end-to-end hatchways to allow the unrestricted passage of stormwater between modules in addition to the interconnected equalizer conduits (see Illustration on Special Subsurface Modules, Exhibit F, Sheet 3). The external Project storm sewer system will be connected to end modules that will be 10-feet deep to provide a sump for collection of sediments. Those end modules will

be in close proximity to paved areas to facilitate access by vac-all pump out trucks in accordance with Section 15-64.C.4. Preceding those forebay sediment traps will be large diameter catch basins with basket screens to intercept larger debris, floatables and heavier sediments (see both Details on Exhibit F1 & 2 Sheet 3).

IV. SWPP PLAN IMPLEMENTATION

Erosion and sedimentation measures and devices to minimize and control erosion for the Project would consist of silt fencing, inlet and manhole filter inserts, a construction entrance off West St. to minimize traffic disruptions, a concrete wash-out facility, protective fencing for the few quality trees on the site that may form a part of the Landscaping Plan to be approved for the Project, and catch basins / debris traps. Such measures and devices would be periodically maintained during construction and vegetative stabilization established as building sites are developed. An NPDES Permit will need to be obtained for this Project which will exceed more than 1 acre.

V. STORMWATER SYSTEMS MONITORING & MAINTENANCE PLAN

As there would otherwise be frequent accumulations of debris and sediments in the sub-surface storage modules, discharges into the modules would first be routed through large forebay sediment traps which would be strategically located near paved areas for access by a vac-all truck (see Exhibit F, Sheet 1), and which accumulations will need to be periodically removed and sediments vacuumed out (per the Stormwater System Monitoring & Maintenance Plan). Both the school and townhome HOA would be charged with these tasks through a Monitoring, Maintenance and Reporting Program that would be incorporated into the covenants recorded with the Plat of Subdivision against each lot. There would also be infrequent but scheduled inspections of the storage modules through access ports that would be provided at regular intervals which would allow relatively quick visual inspection without necessarily entering the modules.

VI. SPECIAL MANAGEMENT AREAS

There are no wetlands or flood plains on the site either indicated on the DuPage County Wetland Maps or D-FIRM Maps (see Exhibit I) nor were wetlands inventoried in the Negative Wetland Findings Report conducted by ENCAP, Inc. (see Exhibit J).

VII. SURETY

Surety for the stormwater management components (earthwork, SWPP Plan implementation, storm sewers and drainage system improvements, storage systems, PCBMP systems, etc.) would be posted as part of the required stormwater certification for the Project.

VIII. SUMMARY & CONCLUSION

The requirement to construct a right turn lane on Mill St. and the limitations on discharges to the three (3) different storm sewer systems to which the Project Site is tributary (under three (3) different jurisdictions) has further complicated an already complex stormwater management and flood routing design challenge. In order to provide the volume of stormwater storage require to attenuate discharges in conformance with those limitations, and to effectively utilize available open space areas for outdoor educational amenities and community events, Owner / Developer Vrutthi, LLC has elected to utilize sub-surface precast concrete modules that are commercially available for that purpose.

A right-in turn lane on Mill St. will further divert stormwater runoff into the Site, which has now necessitated routing that 0.09± acre turn lane Development Area through the stormwater management system and which then has affected design storage capacity and discharge rates. Sub-surface soil conditions consisting of a 30± foot sand and gravel formation underlaying this Site, which is an unusual soil condition for DuPage County, affords a very effective means of not only incorporating a PCBMP into the stormwater management system, but also of enhancing the available rate of dissipation of stormwater runoff and to actually reduce existing impacts to the three (3) storm drainage systems to which this Site is tributary. The City has indicated, however, that utilizing infiltration for this purpose is not acceptable even through it will occur to one extent and another. Further soil borings and infiltrometer testing are underway and should be available in the next 2-3 weeks so those results will be available for the Final Design Phase to either support

the use of infiltration to satisfy the Volume and Pollution Control provisions of Section 15-64.A.1. of the Ordinance and possibly, with City concurrence, accounting for some portion of infiltration in the determination of volume of runoff storage required. Taking into account the ability of the coarse sand and gravel formation to dissipate runoff through infiltration, an Optimal stormwater management system with safeguards and redundancies to allay concerns of long term viability can be devised that is capable of meeting in all respects the limitations on discharge and inflow to both storm sewer systems. Those safeguards and redundancies might consist of a flood routing design input of only ½ of the tested rate of infiltration or increasing the number of modules or increasing the contact surface area at the interface to be twice as much as theoretically needed which could collectively provide a factor of safety of four (4) or more along with the gravity outlets which will also provide a degree of redundancy to the design of the stormwater management system.

A number of flood routing iterations were conducted as part of this Preliminary Stormwater Management Analysis & Report, with different combinations and permutations of storage modules, single or dual control structure outlets and with and without accounting for infiltration which results are quantified in Table 1 found on page 9 of this Report, which provides to the City multiple options and the range of components that can be deployed in compliance with the complex and multiple drainage system conditions that exist at the subject Site as described in Section II on Page 4. Of those combinations of components, two (2) were found to achieve each of the restrictive rates of release to the adjacent storm sewer systems, all be it with one (1) – Option F with only 185 storage modules and another – Option G – with 360 storage modules as depicted on Exhibit F-1 and F1 & 2 and on F-2 and F1 & 2. These are both presented in this Report for consideration by the City.

The PCBMP volume and pollutant control requirements under Article VIII of the “Ordinance” can be provided using one of the practices listed under Section 15-64.A. as cited below:

15-64. Post Construction Best Management Practices Design Criteria.
15-64.A PCBMPs shall provide volume and pollutant control using one of the following practices:
15-64.A.1 Infiltration of 1.25 inches for all new impervious surfaces; or
15-64.A.2 Native vegetated wetland bottom site runoff storage basin; or

Notably, one of those practices under paragraph 15-64.A.1 provides for infiltration of 1.25 inches of runoff for all new impervious surfaces, but it does not state or imply that infiltration is limited to 1.25 inches. Table 1 demonstrates conclusively that, for the 2-year 24-hour duration Design Storm of 3.34 inches, there is no discharge through either control structure to the outlet storm sewer systems which means that a volume of rainfall of at least 1.25 inches over the 6.7± acres of impervious surfaces (6.7± acres x 1.25 inches = 0.70± Ac.-Ft.) will be dissipated through infiltration. In concert with the stormwater management components described above for the Option G or Option F, those combinations of components will also control and restrict aggregate discharges to the receiving storm sewer systems below the allowable rate of 1.19 cfs to the extent that discharges plus inflows from the off-site rights-of-way will also be less (in some cases far less) than in the Existing Condition for the 2-year and 100-year Design Storms.

Subject to further soil testing and establishment of design parameters for the Final Design Phase, the sub-surface geological conditions underlying the Prosperita & Orion STEM School Site and the thoroughgoing Preliminary Flood Routing Analyses described herein for this, the Preliminary Design Phase, affords to the City of Naperville and DuPage County DOT a compelling rationale to conclude that the Optimal 185 storage module stormwater management system with dual control structures and infiltration proposed will be fully capable of providing a functionally effective Volume and Pollution Control PCBMP and a Site Runoff Conveyance System in accordance with Article VIII and Article IX of the Ordinance. If infiltration cannot be counted in the determination of site runoff storage, then Option F can be deployed. Infiltration that achieves the Volume and Pollution Control functions will also afford the means of supplementing sub-surface dissipation of runoff, whether or not the City recognizes that infiltration will continue to occur. We request the City maintain an open mind on these alternatives.

TAB 1

PROJECT OVERVIEW

EXHIBIT A

LOCATION MAP

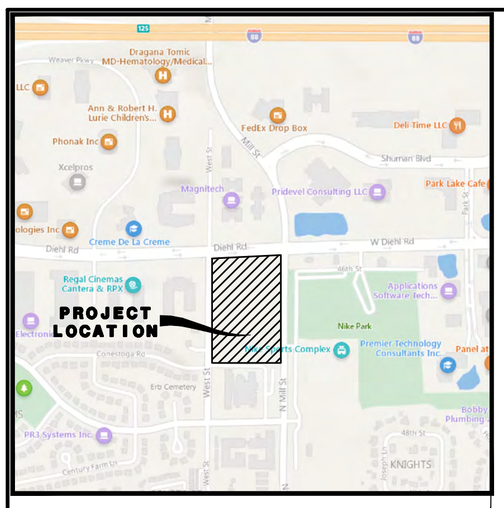
The Prosperita & Orion STEM School
T38N, R9E, SEC. 1
NAPERVILLE QUADRANGLE

CEMCON, Ltd.	PROJECT / CLIENT: Vrutthi, LLC. 3644 White Eagle Drive Naperville, IL 60564 (630) 803-5768	DRAWN BY:	DJF	08-30-22
		CHECKED BY:		
		APPROVED:		
		SCALE: N.T.S.		

EXHIBIT B

PRELIMINARY SITE DEVELOPMENT PLAN AND PRELIMINARY PLAT OF SUBDIVISION

PRELIMINARY SITE DEVELOPMENT PLAN
FOR
THE PROSPERITA & ORION STEM SCHOOL



LOCATION MAP

;OVERALL PARCEL DESCRIPTION

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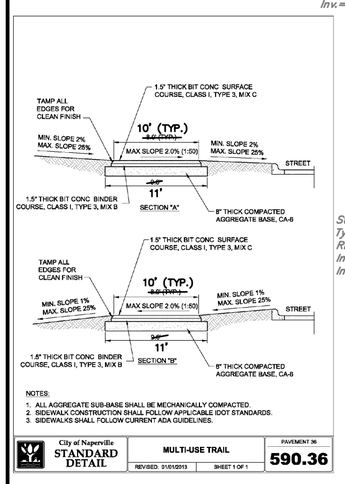
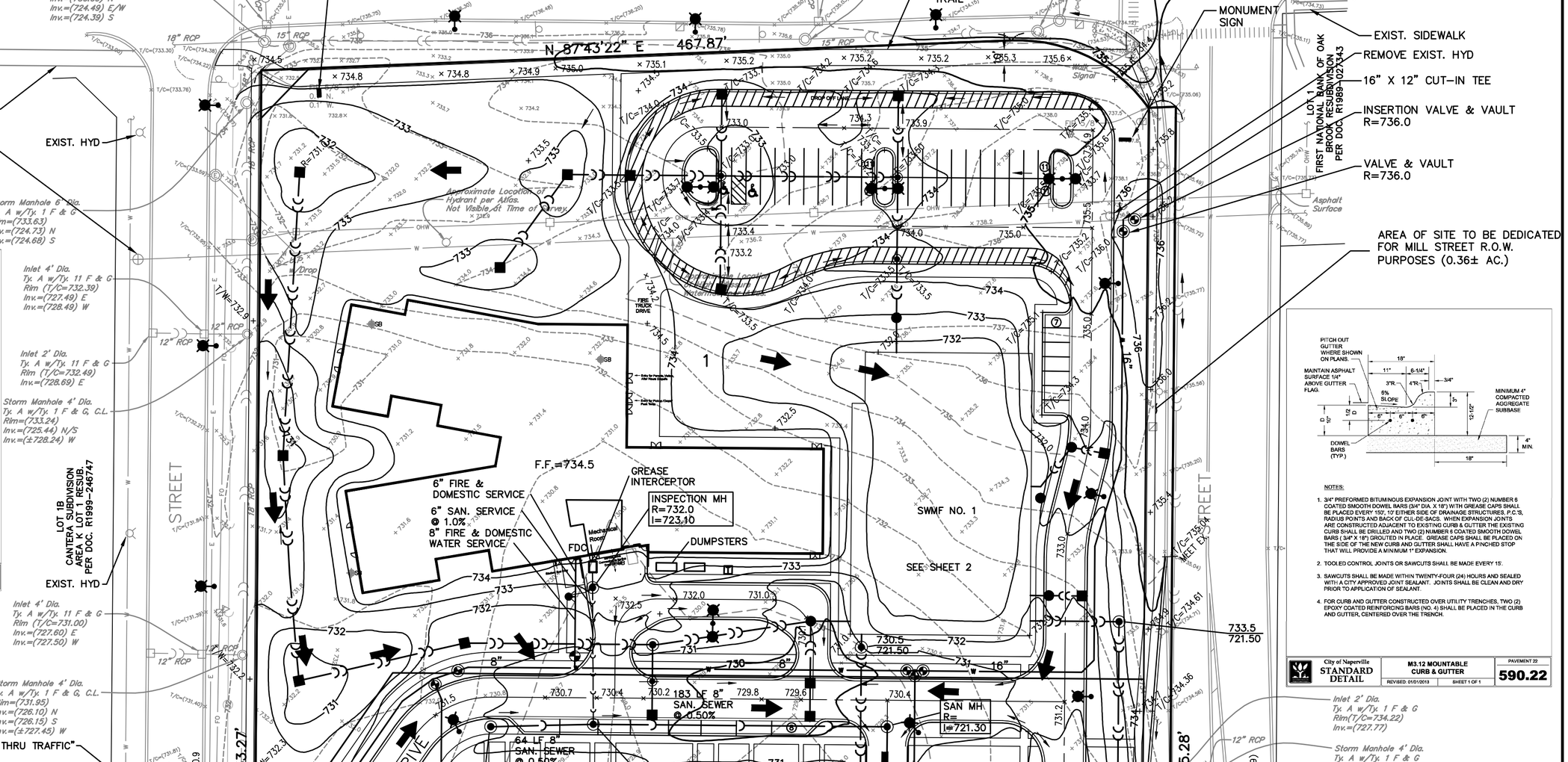
THAT PART OF THE SOUTH HALF OF SECTION 1 AND THE NORTH HALF OF SECTION 12, TOWNSHIP 38 NORTH, RANGE 9 EAST OF THE THIRD PRINCIPAL MERIDIAN BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS: BEGINNING AT THE NORTHWEST CORNER OF LOT 1 IN THE FINAL PLAT OF SUBDIVISION FOR HARBORCHASE OF NAPERVILLE RECORDED AS DOCUMENT R2014–088045 SAID POINT ALSO BEING ON THE EAST LINE OF WEST STREET DEDICATED PER DOCUMENTS R95–183401, R97–92072 AND R98–117566; THENCE NORTH.0 DEGREES 28 MINUTES 30 SECONDS EAST 933.27 FEET ALONG SAID EAST LINE OF WEST STREET TO A POINT ON THE SOUTH LINE OF LAND CONVEYED TO THE COUNTY OF DUPAGE FOR DIEHL ROAD BY WARRANTY DEED RECORDED JULY 14, 1989 AS DOCUMENT R89–084247; THENCE NORTH 87 DEGREES 43 MINUTES 22 SECONDS EAST 467.87 FEET ALONG SAID SOUTH LINE TO A POINT OF CURVATURE; THENCE SOUTHEASTERLY 99.23 FEET ALONG A CURVE TO THE RIGHT HAVING A RADIUS OF 100.0 FEET AND A CHORD BEARING NORTH 63 DEGREES 50 MINUTES 56 SECONDS WEST; THENCE NORTH 87 DEGREES 46 MINUTES 40 SECONDS EAST 17.02 FEET TO A POINT ON THE WESTERLY LINE OF MILL STREET (COUNTY HIGHWAY 32) DEDICATED PER DOCUMENTS 213969 AND R2010–041209; THENCE SOUTH.0 DEGREES 28 MINUTES 30 SECONDS WEST 915.28 FEET ALONG SAID WESTERLY LINE TO THE NORTHEAST CORNER OF LOT 1 IN THE AFOREMENTIONED HARBORCHASE OF NAPERVILLE; THENCE NORTH 89 DEGREES 31 MINUTES 30 SECONDS WEST 570.14 ALONG THE NORTH LINE OF SAID LOT 1 TO THE POINT OF BEGINNING, ALL IN DUPAGE COUNTY, ILLINOIS.

N



NOTES:
1. ALL AGGREGATE SUB-BASE SHALL BE MECHANICALLY COMPACTED.
2. SIDEWALK CONSTRUCTION SHALL FOLLOW APPLICABLE IDOT STANDARDS.
3. SIDEWALKS SHALL FOLLOW CURRENT ADA GUIDELINES.

City of Naperville STANDARD DETAIL | MULTI-USE TRAIL | REVISED: 01/01/2013 | SHEET 1 OF 1 | PAVEMENT 36 | 590.36



NOTES:
1. 3/4" PREFORMED BITUMINOUS EXPANSION JOINT WITH TWO (2) NUMBER 6 COATED SMOOTH DOWEL BARS (3/4" DIA. X 18") WITH GREASE CAPS SHALL BE PLACED EVERY 150', 10' EITHER SIDE OF DRAINAGE STRUCTURES, P.C.'S, RADIUS POINTS AND BACK OF CUL-DE-SACS. WHEN EXPANSION JOINTS ARE CONSTRUCTED ADJACENT TO EXISTING CURB & GUTTER THE EXISTING CURB SHALL BE DRILLED AND TWO (2) NUMBER 6 COATED SMOOTH DOWEL BARS (3/4" X 18") GROUTED IN PLACE. GREASE CAPS SHALL BE PLACED ON THE SIDE OF THE NEW CURB AND GUTTER SHALL HAVE A PINCHED STOP THAT WILL PROVIDE A MINIMUM 1" EXPANSION.
2. TOOLED CONTROL JOINTS OR SAWCUTS SHALL BE MADE EVERY 15'.
3. SAWCUTS SHALL BE MADE WITHIN TWENTY-FOUR (24) HOURS AND SEALED WITH A CITY APPROVED JOINT SEALANT. JOINTS SHALL BE CLEAN AND DRY PRIOR TO APPLICATION OF SEALANT.
4. FOR CURB AND GUTTER CONSTRUCTED OVER UTILITY TRENCHES, TWO (2) EPOXY COATED REINFORCING BARS (NO. 4) SHALL BE PLACED IN THE CURB AND GUTTER, CENTERED OVER THE TRENCH.

City of Naperville STANDARD DETAIL | M3.12 MOUNTABLE CURB & GUTTER | REVISED: 01/01/2013 | SHEET 1 OF 1 | PAVEMENT 22 | 590.22

BENCHMARKS

NAPERVILLE BM 526 – FLANGE ENCASED ROD LOCATED NEAR THE SOUTHEAST CORNER OF THE INTERSECTION OF OXFORD LANE AND 75TH STREET.

ELEVATION = 681.48 (NAVD 88)

NAPERVILLE BM 1506 – FLANGE ENCASED ROD LOCATED NEAR THE NORTHWEST CORNER OF THE INTERSECTION OF MILL STREET AND 5TH AVENUE.

ELEVATION = 690.61 (NAVD 88)

LEGEND

EXISTING	PROPOSED	DESCRIPTION
◎	◉	MANHOLE
○	●	CATCH BASIN/DEBRIS TRAP
□	■	INLET
	⬢	CLEANOUT
	▭	SLOPE INLET BOX
⊢	⊢	HEADWALL
◁	◀	END SECTION
CC	CC	STORM SEWER
C C	C C	SANITARY SEWER
W	W	WATERMAIN
⊗	◔	VALVE & BOX
⊗	◉	WATER VALVE IN VAULT
♂	♂	FIRE HYDRANT
		CONTOURS
(ELEV)	ELEV	ELEVATIONS
☼	✦	STREET LIGHT
		WATERMAIN PROTECTION
		SILT FENCE INLET PROTECTOR
		TEMPORARY STRAW BALE DITCH CHECK
		SILT FENCE DITCH CHECK
		RIP-RAP
	➡	OVERFLOW ROUTE

NOTES:

UNDERGROUND STORMWATER STORAGE CHAMBERS AND PRIVATE ROADWAYS TO BE PRIVATELY OWNED AND MAINTAINED.

LED WALL MOUNTED LUMINAIRE

LED SITE LUMINAIRE w/POLE AND DOUBLE OR SINGLE MAST ARM

CURB LEGEND

- B-6.12 CURB & CUTTER
- MOUNTABLE CURB
- CARRIAGE CURB
- DEPRESSED CURB

PREPARED FOR:

VRUTTHI LLC
3644 WHITE EAGLE DRIVE
NAPERVILLE, ILLINOIS 60564
(630) 803–5768

PREPARED BY:

CEMCON, Ltd.
Consulting Engineers, Land Surveyors & Planners
2280 White Oak Circle, Suite 100
Aurora, Illinois 60502–9675
PH: 630.862.2100 FAX: 630.862.2199
E–Mail: info@cemcon.com Website: www.cemcon.com

DISC NO.: 904426 FILE NAME: PREOVER
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COMPLETION DATE: 09–08–22 JOB NO.: 904.426
XREF : TOPO PROJECT MANAGER : RWB
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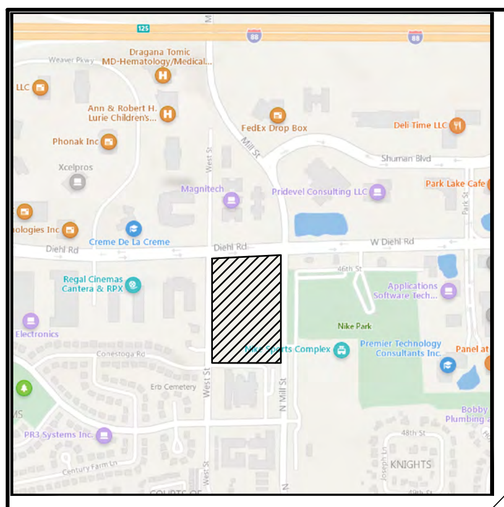
PRELIMINARY ENGINEERING PLAN FOR THE PROSPERITA & ORION STEM SCHOOLS
CITY OF NAPERVILLE PROJECT NO.: 22-10000097

PLOT FILE CREATED: 4/13/2023 BY: KRISTIN STAERKEL DRAWING PATH: P:\904426\DWG\ENG\DRAWINGS\PRELIMINARY\PREOVER.DWG

PRELIMINARY SITE PLAN
FOR
THE PROSPERITA & ORION STEM SCHOOL



LOCATION MAP

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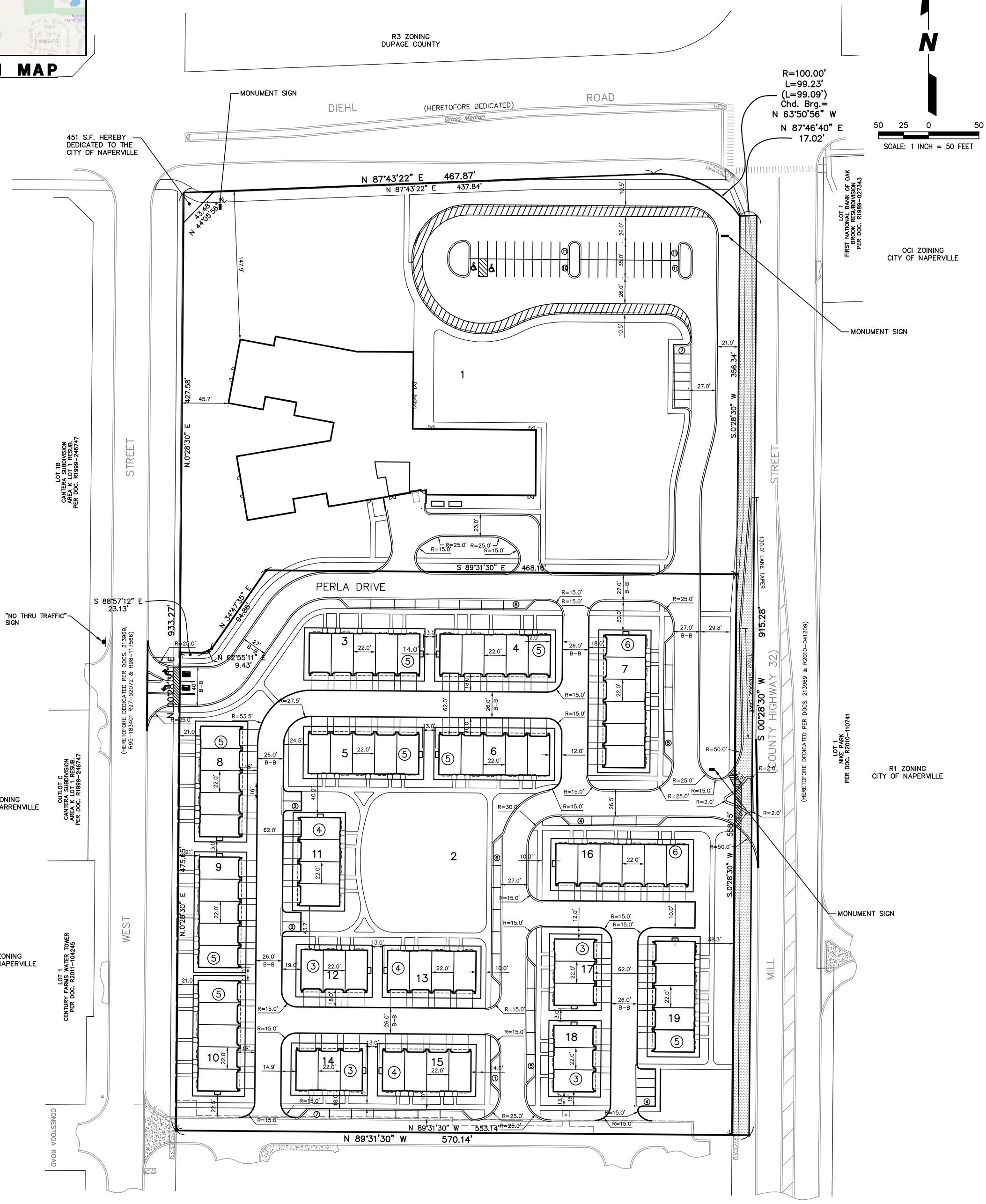

LOT 1
HARBORCHASE OF NAPERVILLE SUBDIVISION
PER DOC. R2014–088045

OCI ZOINING
CITY OF NAPERVILLE

SITE DATA

A. TOTAL AREA	12.35 AC.±
B. SCHOOL SITE	5.01 AC.±
1. PROPOSED ZONING	OCI
2. BUILDING SQUARE FOOTAGE	44,000 S.F.
3. PARKING STALLS PROVIDED	50
4. F.A.R	0.201
C. RESIDENTIAL AREA	7.20 AC.±
1. PROPOSED ZONING	OCI/CONDITIONAL USE
2. UNITS	76
3. LOT AREA	313,632 S.F.
REQUIRED (4,000 S.F. X 76)	304,000 S.F.
4. SETBACKS	
FRONT YARD SETBACK	20 FT.
CORNER SIDE YARD	20 FT.
INTERIOR SIDE YARD	10 FT.
6. BUILDING SEPARATION	
REAR TO REAR	62' (GARAGE DOOR TO GARAGE DOOR)
SIDE TO SIDE	13'
SIDE TO FRONT	40'
SIDE TO REAR	50'
7. PARKING REQUIRED	171
8. PARKING PROVIDED	
GARAGE	152
DRIVEWAY	152
SURFACE	44
TOTAL	348
D. MILL STREET R.OW. DEDICATION	0.36 AC.±
E. WEST STREET R.O.W. DEDICATION	0.01 AC.±

PREPARED FOR:

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PRELIMINARY SITE PLAN FOR THE PROSPERITA & ORION STEM SCHOOLS
CITY OF NAPERVILLE PROJECT NO.: 22-10000097

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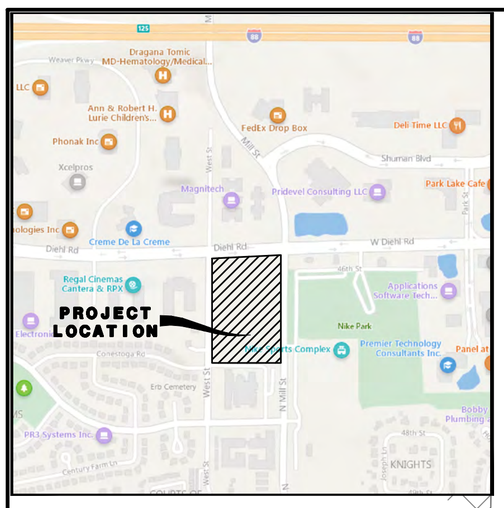
PRELIMINARY PLAT OF SUBDIVISION
FOR
THE PROSPERITA & ORION STEM SCHOOL



LOCATION MAP

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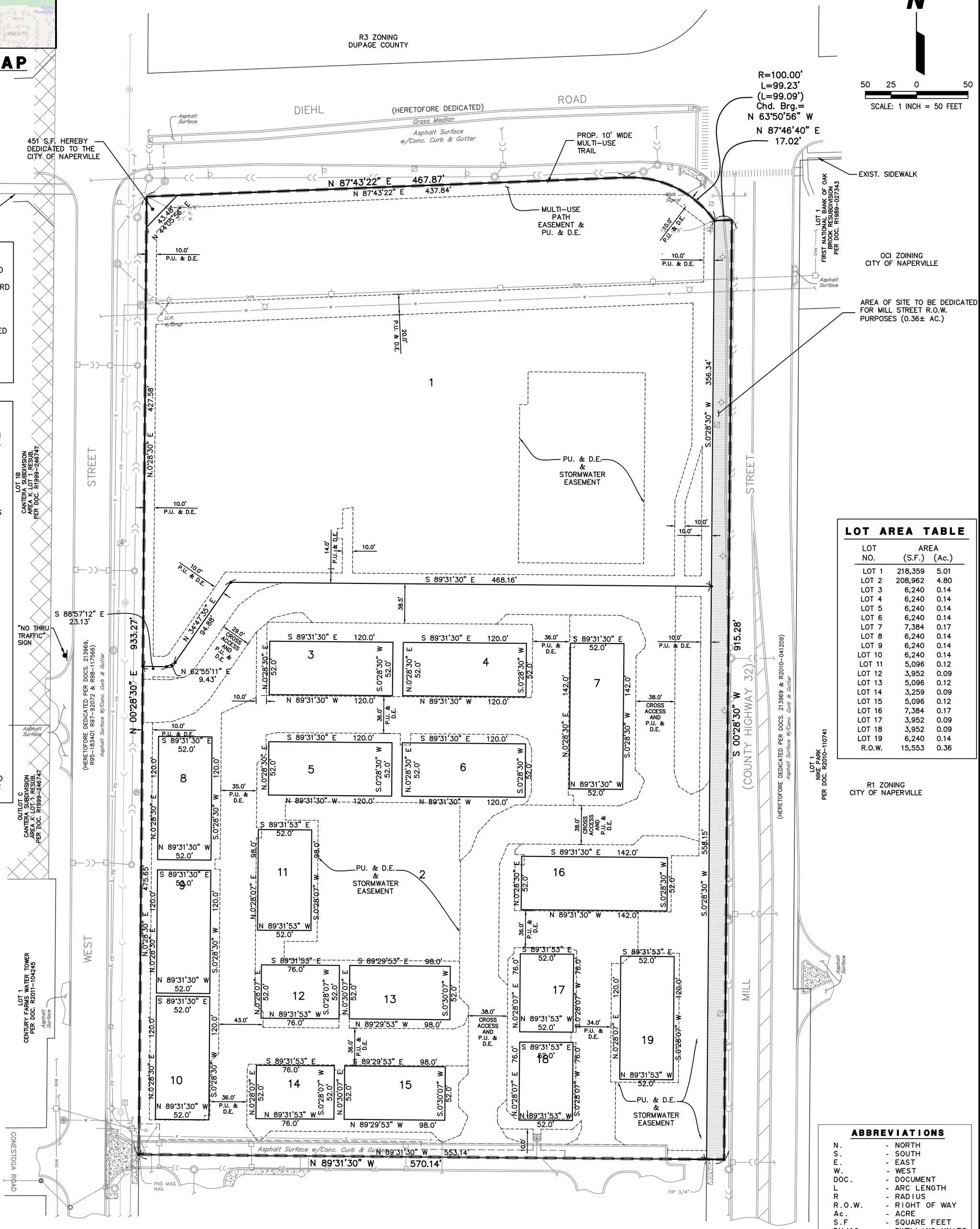
ELEVATION = 690.61 (NAVD 88)

NOTES

1. ADDITIONAL P.U. & D.E. EASEMENTS MAY BE REQUIRED ON FINAL PLATS BASED ON UTILITY SIZE AND LOCATIONS FROM FINAL ENGINEERING.
2. A BLANKET STYLE STORMWATER MANAGEMENT EASEMENT WILL BE GRANTED ON ALL STORMWATER MANAGEMENT AREAS AND STORMWATER OVERFLOW ROUTES.
3. DIMENSIONS SHOWN ALONG CURVED LINES ARE ARC DISTANCES.
4. ALL RIGHT-OF-WAYS ARE TO BE PUBLIC DEDICATIONS.
5. ALL UTILITY PIPES AND MAINS SHALL BE PUBLICLY OWNED AND MAINTAINED.
6. ALL EASEMENTS DEPICTED ON THIS PLAT WILL BE GRANTED ON THE FINAL SUBDIVISION PLATS (UNLESS OTHERWISE NOTED)
7. ALL EASEMENTS ON THE PLAT MAP ARE FOR PUBLIC UTILITIES AND DRAINAGE PURPOSES (UNLESS OTHERWISE NOTED)
8. STORMWATER MANAGEMENT EASEMENTS WILL BE GRANTED ON THE FINAL SUBDIVISION PLATS (UNLESS OTHERWISE NOTED)
9. STORMWATER STORAGE VOLUMES TO BE PROVIDED AND THE DESIGN OF STORMWATER MANAGEMENT FACILITIES SHALL BE IN ACCORDANCE WITH CITY OF NAPERVILLE AND DUPAGE COUNTY REQUIREMENTS.
10. EASEMENTS TO BE PROVIDED PER CITY AND UTILITY COMPANY REQUIREMENTS.
11. FOR PROPOSED CONTOURS, GRADES, UTILITIES, STREETS, AND WALLS REFER TO THE PRELIMINARY ENGINEERING PLAN FOR THIS DEVELOPMENT.

;OVERALL PARCEL DESCRIPTION

THAT PART OF THE SOUTH HALF OF SECTION 1 AND THE NORTH HALF OF SECTION 12, TOWNSHIP 38 NORTH, RANGE 9 EAST OF THE THIRD PRINCIPAL MERIDIAN BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS: BEGINNING AT THE NORTHWEST CORNER OF LOT 1 IN THE FINAL PLAT OF SUBDIVISION FOR HARBORCHASE OF NAPERVILLE RECORDED AS DOCUMENT R2014-088045 SAID POINT ALSO BEING ON THE EAST LINE OF WEST STREET DEDICATED PER DOCUMENTS R95-183401, R97-92072 AND R98-117566; THENCE NORTH.0 DEGREES 28 MINUTES 30 SECONDS EAST 933.27 FEET ALONG SAID EAST LINE OF WEST STREET TO A POINT ON THE SOUTH LINE OF LAND CONVEYED TO THE COUNTY OF DUPAGE FOR DIEHL ROAD BY WARRANTY DEED RECORDED JULY 14, 1989 AS DOCUMENT R89-084247; THENCE NORTH 87 DEGREES 43 MINUTES 22 SECONDS EAST 467.87 FEET ALONG SAID SOUTH LINE TO A POINT OF CURVATURE; THENCE SOUTHEASTERLY 99.23 FEET ALONG A CURVE TO THE RIGHT HAVING A RADIUS OF 100.0 FEET AND A CHORD BEARING NORTH 63 DEGREES 50 MINUTES 56 SECONDS WEST; THENCE NORTH 87 DEGREES 46 MINUTES 40 SECONDS EAST 17.02 FEET TO A POINT ON THE WESTERLY LINE OF MILL STREET (COUNTY HIGHWAY 32) DEDICATED PER DOCUMENTS 213969 AND R2010-041209; THENCE SOUTH.0 DEGREES 28 MINUTES 30 SECONDS WEST 915.28 FEET ALONG SAID WESTERLY LINE TO THE NORTHEAST CORNER OF LOT 1 IN THE AFOREMENTIONED HARBORCHASE OF NAPERVILLE; THENCE NORTH 89 DEGREES 31 MINUTES 30 SECONDS WEST 570.14 ALONG THE NORTH LINE OF SAID LOT 1 TO THE POINT OF BEGINNING, ALL IN DUPAGE COUNTY, ILLINOIS.



LOT AREA TABLE

LOT NO.	AREA (S.F.)	(Ac.)
LOT 1	218,359	5.01
LOT 2	208,962	4.80
LOT 3	6,240	0.14
LOT 4	6,240	0.14
LOT 5	6,240	0.14
LOT 6	6,240	0.14
LOT 7	7,384	0.17
LOT 8	6,240	0.14
LOT 9	6,240	0.14
LOT 10	6,240	0.14
LOT 11	5,096	0.12
LOT 12	3,952	0.09
LOT 13	5,096	0.12
LOT 14	3,259	0.09
LOT 15	5,096	0.12
LOT 16	7,384	0.17
LOT 17	3,952	0.09
LOT 18	3,952	0.09
LOT 19	6,240	0.14
R.O.W.	15,553	0.36

ABBREVIATIONS

N.	- NORTH
S.	- SOUTH
E.	- EAST
W.	- WEST
DOC.	- DOCUMENT
L	- ARC LENGTH
R	- RADIUS
R.O.W.	- RIGHT OF WAY
Ac.	- ACRE
S.F	- SQUARE FEET
DU/AC	- DWELLING UNITS PER ACRE
B/C	- BACK OF CURB
B-B	- BACK TO BACK
MIN.	- MINIMUM
TYP.	- TYPICAL

PERMANENT TAX INDEX NUMBERS

07-01-401-012	07-01-405-032
07-01-401-014	07-01-405-033
07-01-401-016	07-01-405-034
07-01-401-017	07-01-406-010
07-01-402-013	07-01-406-011
07-01-402-016	07-01-406-012
07-01-402-018	07-01-406-013
07-01-402-019	07-01-406-014
07-01-405-002	07-01-406-015
07-01-405-003	07-01-406-028
07-01-405-004	07-01-406-029
07-01-405-005	07-01-406-030
07-01-405-006	07-01-406-032
07-01-405-007	07-01-406-033
07-01-405-024	07-01-406-034
07-01-405-026	07-01-406-035
07-01-405-027	07-01-406-036
07-01-405-029	07-01-406-037
07-01-405-030	07-12-200-030
07-01-405-031	07-12-201-034

LOT 1
HARBORCHASE OF NAPERVILLE SUBDIVISION
PER DOC. R2014-088045

OCI ZOINING
CITY OF NAPERVILLE

LOT DIMENSIONS & AREAS ARE APPROXIMATIONS & WILL VARY AT TIME OF FINAL PLATTING.

CURB LEGEND

- B-6.12 CURB & CUTTER
- MOUNTABLE CURB
- CARRIAGE CURB
- DEPRESSED CURB

● - IRON PIPE

LINE LEGEND

- ADJACENT LOT LINE/PROPERTY LINE (Light Solid Line)
- SUBDIVISION BOUNDARY LINE (Heavy Solid Line)
- LOT LINE/PROPERTY LINE (Solid Line)
- EASEMENT LINE/LIMITS OF EASEMENT (Short Dashed Line)
- EXISTING EASEMENT LINE (Dashed Dotted Line)
- CENTERLINE (Single Dashed Lines)
- EXISTING CORPORATE LIMITS OF THE CITY OF NAPERVILLE (Heavy Dashed Line)
- CITY OF WARRENVILLE

PREPARED FOR:
VRUTTHI LLC
3644 WHITE EAGLE DRIVE
NAPERVILLE, ILLINOIS 60564
(630) 803-5768

PREPARED BY:
CEMCON, Ltd.
Consulting Engineers, Land Surveyors & Planners
2280 White Oak Circle, Suite 100
Aurora, Illinois 60502-9675
PH: 630.862.2100 FAX: 630.862.2199
E-Mail: info@cemcon.com Website: www.cemcon.com

DISC NO.: 904426 FILE NAME: PREOVER
DRAWN BY: KMS FLD. BK. / PG. NO.: -----
COMPLETION DATE: 09-08-22 JOB NO.: 904.426
XREF : TOPO PROJECT MANAGER : RWB
REV.: 09-27-22/KMS, 12-13-22/KMS, 01-23-23/KMS, 02-14-23/KMS, 03-27-23/KMS, 04-12-23/KMS

PRELIMINARY PLAT OF SUBDIVISION FOR THE PROSPERITA & ORION STEM SCHOOLS
CITY OF NAPERVILLE PROJECT NO.: 22-10000097

PLOT FILE CREATED: 4/13/2023 BY: KRISTIN STAERKEL DRAWING PATH: P:\904426\DWG\ENG\DRAWINGS\PRELIMINARY\PREOVER.DWG

EXHIBIT C

SOILS INVESTIGATION REPORT BY RUBINO ENGINEERING, INC. AND ADDENDUM LETTER WITH INFILTRATION RATES

rubino ENGINEERING INC.

ADDENDUM LETTER

April 12, 2023

To: Selvei Rajkumar
Vrutthi LLC & Brio Estates LLC
2719 Beebe Drive
Naperville, Illinois 60564
Ph: (630) 803-5768

Re: **Preliminary Estimate of Infiltration Rate**
Proposed Townhomes & STEM Academy
SW Corner Diehl Road and Mill Street
Naperville, Illinois 60563

Rubino Project No. G22.148
Addendum_REV2

Via email: selvei.rajkumar@gmail.com

Dear Ms. Rajkumar,

Rubino Engineering, Inc. (Rubino) is submitting this revised addendum letter in response to the request for preliminary estimate of infiltration rate at the above referenced site.

Project Information and Correspondence

Rubino Engineering, Inc. submitted a preliminary geotechnical engineering report for the Proposed Townhomes & STEM Academy, Rubino Project No. G22.148 dated August 19, 2022. This addendum provides a preliminary estimate of the infiltration rate for the native predominantly granular soils. These predominantly granular strata were encountered at approximate elevations ranging from EL. 723 ½ to EL. 720 feet. Underground stormwater management is planned for the subject site.

Preliminary Infiltration Rate Discussion

Soil samples from the preliminary geotechnical exploration were used to run grain-size lab tests as follows:

- *Laboratory Determination of Amount of Material Finer than No. 200 Sieve (Washed Sieve) Analysis of Soils (ASTM D1140)*
- *Laboratory Determination of Particle Size Analysis of Soils (No Hydrometer) (ASTM D422)*

Subsequently, these soils were characterized by the USDA soil texture classification in order to estimate the infiltration rates. The results are plotted in the attachment, Washed Sieve Analysis. The following table includes soil classifications based on USDA and estimates of the design infiltration rates for soils based on USDA soil texture classification (Univ. of Wisconsin, Madison, 2006). The IDH Classification Triangle from the previous Addendum dated December 13, 2022 has been replaced with the USDA Textural Classification Chart (see following page). The results are similar (see following page).

KEY	BORING	APPROXIMATE ELEVATION (FEET)	USDA SOIL TEXTURE CLASSIFICATION	DESIGN INFILTRATION RATE (IN/HR)
◆	B-03	719	Loamy Sand	1.63
▲	B-07	720	Sand	3.60
■	B-12	719	Sand	3.60

USDA Soil Texture	Design Infiltration Rate (in/hr)
Sand	3.60
Loamy Sand	1.63
Sandy Loam	0.50
Loam	0.24
Silt Loam	0.13
Sandy Clay Loam	0.11
Silty Clay Loam	0.19
Clay Loam	0.03
Sandy Clay	0.04
Silty Clay	0.07
Clay	0.07

Discussion and Limitations

The infiltration rates in the table above are estimates based upon empirical data and classifications. The presence of groundwater at or just below the design infiltration elevation can significantly lower (or eliminate) the infiltration rate. Groundwater was not encountered in the borings at the time of the preliminary geotechnical exploration. During the spring groundwater levels typically exhibit the highest elevations. At this time, Rubino recommends a site mobilization for the following purposes:

- Installation of a minimum of two piezometers to measure the groundwater level
- Perform the outstanding soil borings and additional laboratory grain size analyses
- Perform an in-situ infiltration test to measure the infiltration rate into the native granular soils (if a sustained water level can be achieved in the test pipe)

Closing

All terms, conditions, and recommendations from Rubino Report Number G22.148 dated August 19, 2022, remain in effect unless explicitly addressed in this addendum letter. Rubino appreciates the opportunity to continue providing services for this project.

If you have questions pertaining to this report, or if Rubino may be of further service, please contact our office at (847) 931-1555.

Respectfully Submitted,

Rubino Engineering, Inc.

David T. Lewandowski, P.E
Senior Engineer

Michelle Lipinski, P.E
President

Attachment: Washed Sieve Analyses
Boring Location Plan
Boring Logs B-03, B-07, and B-12

Preliminary Geotechnical Engineering Services Report

PROPOSED TOWNHOMES & STEM ACADEMY

DIEHL ROAD AND MILL STREET

NAPERVILLE, ILLINOIS

RUBINO PROJECT NO. G22.148

Drilling
Laboratory Testing
Geotechnical Analysis

PREPARED BY:

DAVID LEWENDOWSKI, PE

rubino ENGINEERING INC.

Michelle A. Lipinski, PE
President
IL No. 062-061241, Exp. 11/30/23

PREPARED FOR:

VRUTTHI LLC & BRIO ESTATES LLC

2719 BEEBE DRIVE
NAPERVILLE, ILLINOIS

AUGUST 19, 2022

TABLE OF CONTENTS

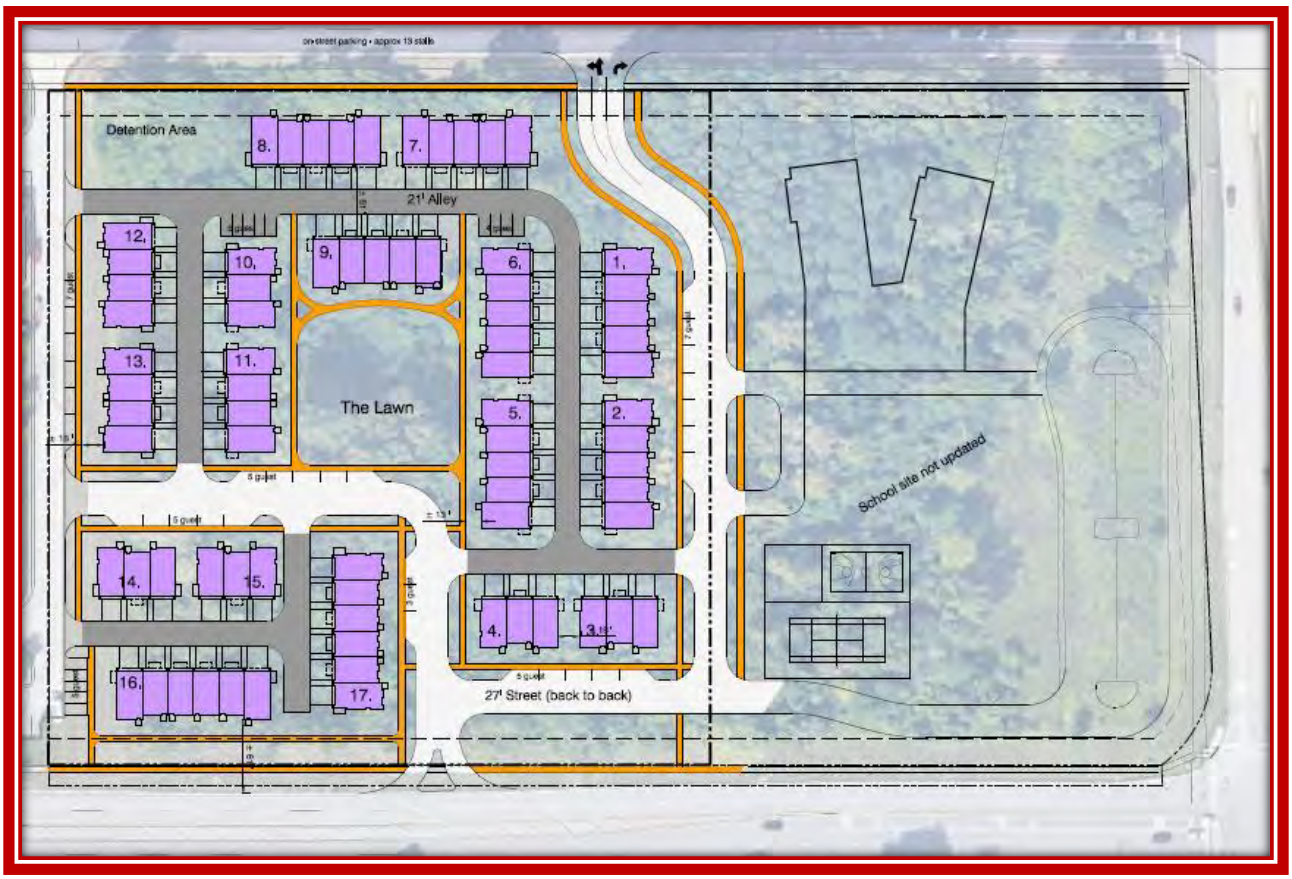
PROJECT INFORMATION

Rubino Engineering, Inc. (Rubino) understands that Vrutthi is planning to construct a townhome development at the southern half of the site. In addition, Brio Estates is planning to build a STEM Academy at the northern part of the site.

The proposed townhome structures will be 3-stories in height with probable slab-on-grade construction. Each townhome unit will have dimensions of 20 feet by 40 feet with an attached 2-car garage. One townhome building will include 3 or 5 townhome units. Therefore, a 3-unit building will have plan dimensions of 40 feet by 60 feet and 5-unit building will be 40 feet by 100 feet. Per the preliminary site plan, there will be a total of 17 buildings in the new development.

The proposed school building will be 2-stories in height with probable slab-on-grade construction. The building is a V-shape. The plan area is on the order of 15,000 to 20,000 square feet.

A Draft Site Plan provided by the client is shown in the image below.



A site grading plan was not received but is based on the following:

- Site grading including cuts being less than 2 feet and fills being less than 2 feet.
- Finished floor elevations of proposed buildings not available at the time of this preliminary report.

Structural loads were not received; however, this report is based on the following:

- Individual column loads not exceeding 100 kips
- Bearing wall loads not exceeding 5 kips per lineal foot (klf)
- Grade-supported slab live loads not exceeding 125 psf.
- Site grading including cuts and fills being less than 2 feet

Documents received:

- Preliminary Site Plan received from Vrutthi LLC & Brio Estates LLCon July 13, 2022
- Draft Site Plan received from Vrutthi LLC & Brio Estates LLC on July 27, 2022
- Topographic Survey received from Cemcon, Ltd., prepared by Cemcon, dated July 8, 2022

Project Correspondence:

- RFP phone call from Selvei Rajkumar of Vrutthi LLC & Brio Estates LLCon July 19, 2022
- Authorization to proceed in the form of signed Proposal No. Q22.256g_REV2 on July 23, 2022
- Structural loads not provided to date

The preliminary geotechnical recommendations presented in this report are based on the available project information and the subsurface materials described in this report. If any of the information on which this report is based is incorrect, please inform Rubino in writing so that we may amend the recommendations presented in this report (if appropriate, and if desired by the client). Rubino will not be responsible for the implementation of our recommendations if we are not notified of changes in the project.

Purpose / Scope of Services

The purpose of this study was to explore the subsurface conditions at the site in order to prepare preliminary geotechnical recommendations for foundation design and general site development for the proposed construction. Rubino's scope of services included the following drilling program:

Table 1: Drilling Scope

NUMBER OF BORINGS	DEPTH (FEET BEG*)	LOCATION
B-03, B-07, B-12, and B-16	25	Proposed Townhomes
B-19	25	Proposed STEM Academy

*BEG = below existing grade

Representative soil samples obtained during the field exploration program were transported to the laboratory for additional classification and laboratory testing.

This preliminary report briefly outlines the following:

- *Summary of client-provided project information and report basis*
- *Overview of encountered subsurface conditions*
- *Overview of field and laboratory tests performed including results*
- *Preliminary geotechnical recommendations pertaining to:*
  - *Subgrade preparation and cut / fill recommendations*
  - *Foundations, including suitable foundation type(s), allowable bearing pressure(s), and estimated settlement*
  - *Seismic design site classification parameters per International Building Code (IBC) 2018*
  - *Utility Installation and backfill recommendations*
  - *Dewatering*
- *Construction considerations, including temporary excavation and construction control of water*

DRILLING, FIELD, AND LABORATORY TEST PROCEDURES

Rubino selected the number of borings and the boring depths. Rubino located the borings in the field based on the Draft Site Plan and existing aerial imagery (Google Earth Pro). Rubino generated GPS coordinates for the boring locations. Subsequently, Rubino staked the borings with a manual GPS device. The borings were advanced utilizing 3 ¼ inch inside-diameter, hollow stem auger drilling methods and soil samples were routinely obtained during the drilling process.

Selected soil samples were tested in the laboratory to determine material properties for this report. Drilling, sampling, and laboratory tests were accomplished in general accordance with ASTM procedures. The following items are further described in the Appendix of this report.

- *Field Penetration Tests and Split-Barrel Sampling of Soils (ASTM D1586)*
- *Field Water Level Measurements*
- *Laboratory Determination of Water (Moisture) Content of Soil by Mass (ASTM D2216)*
- *Laboratory Determination of Atterberg Limits (ASTM D4318)*
- *Laboratory Organic Content by Loss on Ignition (ASTM D2974)*

The laboratory testing program was conducted in general accordance with applicable ASTM specifications. The results of these tests are to be found on the accompanying boring logs located in the Appendix.

SUMMARY OF GEOTECHNICAL CONSIDERATIONS

The main geotechnical design and construction considerations at this site are:

SUBSURFACE SOILS

- **Subgrade soils** generally consisted of natural brown to gray, stiff to very stiff silty clay soils underlain by medium dense to dense, occasionally very dense, granular soils. However, strata of **high plasticity clay soils** were encountered in the upper profile in two borings. See the *Subsurface Conditions* and *Expansive Soil Discussion* sections for more detailed information.

BUILDING STRUCTURE

- **Shallow Foundations** are a possible foundation design option at this site with the possibility of undercuts. See *Foundation Recommendations* section for more detailed information.

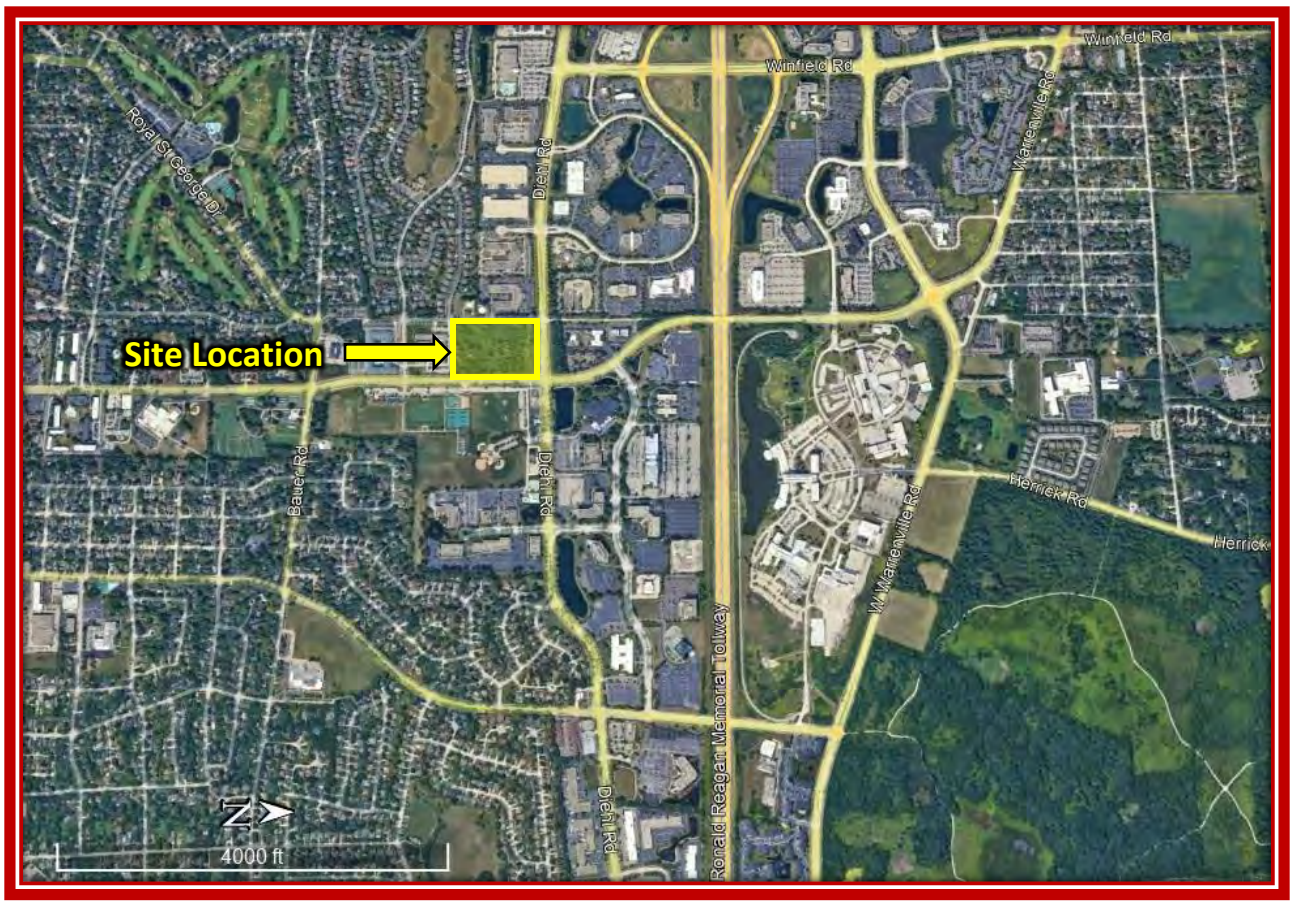
The geotechnical-related preliminary recommendations in this report are presented based on the subsurface conditions encountered and Rubino's understanding of the project. Should changes in the project criteria occur, a review must be made by Rubino to determine if modifications to our recommendations will be necessary.

SITE AND SUBSURFACE CONDITIONS

Site Location and Description

The subject site is located southwest of the intersection of N. Mill Street and Diehl Road in Naperville, Illinois. The site is reported to be about 12 ½ acres in area. Per Google Earth Pro imagery dating back to the year 1994, the site was undeveloped and covered with trees and vegetation.

Per the Topographic Survey provided, the elevations range from approximately EL. 738 feet at the northeast site corner to about EL. 728 feet at the southwest site corner. Therefore, the terrain slopes generally downward to the south / southwest. An aerial image from Google Earth Pro is shown on the following page.



The midpoint of the project site has an approximate latitude and longitude of 41.7998º and -88.1560º, respectively.

Subsurface Conditions

- The **topsoil** thickness ranged between 2 and 14 inches
- The native **silty clay** soils were generally stiff to very stiff in consistency
- The native **silt** soils were generally stiff to very stiff in consistency
- The **granular** soils were generally medium dense to very dense in apparent density

Table 2: Subsurface Conditions Summary

ELEVATION RANGE (FEET)	SOIL DESCRIPTION	SPT N-VALUES (BLOWS PER FOOT)	MOISTURE CONTENT (%)	ESTIMATED SHEAR STRENGTH
Borings B-03, B-07, B-12, B-16, and B-19				
731 - 720	Stiff to very stiff, light brown and brown silty CLAY	8 - 20	12 - 21	c = 1,200 to 3,000 psf
730 – 727 ½	Stiff, dark brown-black silty CLAY *(B-19)*	10 - 11	19 - 27	c = 1,500 to 1,650 psf
730 - 725	Stiff to very stiff, brown / brown and gray HIGH PLASTICITY SILTY CLAY	10 - 22	21 - 27	c = 1,500 to 3,000 psf
728 ½ – 720 ½	Stiff to very stiff, light brown SILT	12 - 20	9 - 20	c = 1,800 - 3,000 psf
9 ½ - 25	Medium dense to very dense brown gravelly SAND to SAND	16 – 50+	3 - 8	ϕ = 32° - 45°

*BEG = Below existing grade

The native soils were visually classified as silty clay (CL), high plasticity silty clay (CH), silt (ML), and poorly graded sand (SP) according to the Unified Soil Classification System (USCS). The above table is a general summary of subsurface conditions. Please refer to the boring logs for more detailed information.

Estimated shear strength of clay soils is based on empirical correlations using N-values, moisture content, and unconfined compressive strength.

Groundwater Conditions

Groundwater was not observed in the borings during the soil sampling operations. It should be noted that elevated moisture contents were found in some of the silty clay and silt soils at an approximate depth range of 6 to 10 feet BEG (EL. 726 - 721± feet). These moisture conditions may indicate that the soils are saturated. Water may seep into open trenches where saturated soils are encountered.

It should be noted that fluctuations in the groundwater level should be anticipated throughout the year depending on variations in climatological conditions and other factors not apparent at the time the borings were performed. Groundwater may not have been observed in some areas due to the low permeability of soils. Additionally, discontinuous zones of perched water may exist within the soils. The possibility of groundwater level fluctuation should be considered when developing the design and construction plans for the project.

PRELIMINARY EVALUATION AND RECOMMENDATIONS

The geotechnical-related preliminary recommendations in this report are presented based on the subsurface conditions encountered and Rubino's understanding of the project. Should changes in the project criteria occur, a review must be made by Rubino to determine if modifications to our recommendations will be necessary.

Topsoil Discussion

Topsoil materials as described in this report have not been analyzed for quality according to any minimum specifications. If topsoil is to be imported to or exported from this site, Rubino recommends that it meet the minimum specifications defined in **Section 1081.05** of the, "Standard Specifications for Road and Bridge Construction," adopted by the Illinois Department of Transportation, January 1st, 2022.

Rubino has reported topsoil thicknesses at each boring based on visual observation of surficial soils. Surficial topsoil thickness was visually observed to be between approximately 10 and 14 inches at most boring locations.

Expansive Soil Discussion

Soils with moderate expansive properties were observed in B-12 and B-19 to elevations ranging from 660 ½ - 654 feet (approximately ¼ to 7 feet below existing grade) during the drilling operations. There is a possibility that expansive soils could be encountered at other locations on the site. **Rubino recommends that the outstanding borings on the Boring Location Plan in the Appendix be completed prior to final design and construction.**

Table 3: Expansive Soils by Location

BORING NO. / LOCATION	SOIL DESCRIPTION	ELEVATION RANGE (FEET)	LIQUID LIMIT (LL)	PLASTICITY INDEX (PI)
B-12	Very stiff, brown HIGH PLASTICITY SILTY CLAY	730 – 726 ½	54	26
B-19	Stiff, brown and gray HIGH PLASTICITY SILTY CLAY	727 - 725	57	28

Expansive soils are considered unsuitable for construction due to their tendency to absorb moisture from the ground or atmosphere which causes swelling and, in turn, an increase in volume. Soils with Liquid Limits greater than 50% (LL > 50%) may exhibit highly plastic behavior and may be considered to have expansive properties (IDOT Manual 2015).

Expansive soils have high frost susceptibility and may have higher moisture contents which could contribute to failed proof-rolls, however expansive soils are difficult to visually delineate in the field during construction. For that reason, **Rubino recommends that surface and subsurface drainage plans be designed to mitigate moisture changes of the soil during operation of the roadway.**

Where expansive soils are encountered, subgrade treatment options may include, but are not limited to:

- Provide surface and subsurface drainage techniques to reduce moisture changes in the soil.
- Removal and replacement (recommendations presented herein)
- Treatment with additives (such as lime stabilization) to reduce the plasticity of the material

Site Preparation Recommendations

The following comments are considered site-specific. To reference general subgrade preparation recommendations and compaction recommendations, please refer to the Appendix of this report.

- During construction, the site should be stripped of existing concrete, foundations, abandoned utilities, and pavement sections including asphalt, subbase, and curbs if applicable.

- The presence of high plasticity soils in the upper soils may require undercutting and replacement or chemical treatment to achieve stability for fill placement or support of structural elements.

- Please note that silty clay subgrade soils are sensitive to moisture and can be easily disturbed by precipitation, groundwater, or construction equipment. Therefore, extra care should be used to avoid disturbing these soils during construction activities.

Preliminary Shallow Foundation Recommendations

Design – Soil Bearing Pressure

Based the borings performed up to this point, the proposed structures can be supported on shallow, spread footing foundations. Rubino recommends that foundations extend through high plasticity clays and be supported on the natural stiff to very stiff silty clay soils or compacted and documented structural fill over suitable natural soils. Preliminary bearing capacities range from approximately 2,500 to 4,000 psf. Additional borings in the individual building plans and final grades are required to provide allowable bearing pressures for specific structures.

Maximum net allowable soil bearing pressures based on dead load plus design live load for sizing the shallow foundations.

Design / Construction – Frost Protection

Exterior footings should be located at a depth of at least 3 ½ feet below the outside final exterior grades to provide adequate frost protection. If the building is constructed during winter months

or if the footings will likely be subjected to freezing temperatures after construction is completed, then the footings should be protected from freezing.

Interior footings should be founded at least 2 feet below the final floor slab level for proper confinement of the bearing soils or as recommended above. Both depths should bear on soils described above.

- **Fine-grained soils such as silts and clays are susceptible to moisture fluctuations and freezing weather**, therefore concrete for the foundations should ideally be poured right after the foundations have been dug and formed if rain is being predicted. Otherwise, foundations that have already been excavated should be protected from rain or surface runoff water.

Design – Settlement Estimate

Given that final grades and structural loading are not available at the time of this preliminary report, settlement estimates cannot be provided at this time. Once the aforementioned data is available and additional borings are performed, settlement analyses can be performed.

Dewatering Recommendations

Dewatering may be necessary during excavation of soils due to precipitation, surficial runoff, and the presence of sand seams or other conditions not apparent at the time of drilling. Shoring or trench boxes may be required where the soils are granular, saturated, or have low shear strengths. Please reference the anticipated groundwater levels on the attached boring logs and in the *Groundwater Conditions* section of this report. Additional borings across the site may provide more information about the likelihood of groundwater infiltration.

Seismic Site Classification

Per the City of Naperville website, the 2018 International Building Code (IBC) is in use. IBC 2018 requires a site class for the calculation of earthquake design forces. This class is a function of soil type (i.e., depth of soil and strata types). Given the limited number of borings and the absence of final grades, Site Class “D” is the preliminary recommendation for the proposed structures at this site. After additional borings are performed in the proposed building plans and a site grading plan is provided, analyses can be performed to more accurately determine the site class.

Utility Installation and Backfill Recommendations

If granular material is used for the backfill of the utility trench, the **granular material should have a gradation that will filter protect the backfill material from the adjacent soils**. If this gradation is not available, a geosynthetic non-woven filter fabric should be used to reduce the potential for the migration of fines into the backfill material. Granular backfill material shall be compacted to meet requirements outlined in Appendix C.

Recommendations for Additional Testing

Given the size of the site and the numerous proposed structures, Rubino recommends that the outstanding borings on the Boring Location Plan in the Appendix be completed. The additional subsurface data from the borings will allow Rubino to more accurately provide foundation recommendations for the proposed structures. These recommendations would be provided in a final geotechnical report. In addition, once the structural loads and grading plan are finalized, please notify Rubino so that we can review our preliminary recommendations and use the additional subsurface data for the direct use of the structure and development of the site. Changes in building locations, foundation depth, and structural loading can affect the geotechnical recommendations for this site.

During construction, Rubino recommends that one of our representatives be onsite for typical **observations and documentation** of exposed subgrade for trench excavation, support of floor slabs, and foundations, including proofrolling and penetrometer testing.

CLOSING

The preliminary recommendations submitted are based on the available subsurface information obtained by Rubino Engineering, Inc. and design details furnished by Vrutthi LLC & Brio Estates LLC for the proposed project. Rubino recommends that the outstanding borings be completed to better evaluate the subsurface conditions for the proposed structures at this site. Subsequently, a final geotechnical report can be issued. If there are any revisions to the plans for this project or if deviations from the subsurface conditions noted in this preliminary report (or final report) are encountered during construction, Rubino should be notified immediately to determine if changes in the foundation recommendations are required. If Rubino is not retained to perform these functions, we will not be responsible for the impact of those conditions on the project.

The scope of services did not include an environmental assessment to determine the presence or absence of wetlands, or hazardous or toxic materials in the soil, bedrock, surface water, groundwater or air on, below, or around this site. Any statements in this report and/or on the boring logs regarding odors, colors, and/or unusual or suspicious items or conditions are strictly for informational purposes.

After the plans and specifications are more complete, the geotechnical engineer should be retained and provided the opportunity to review the final design plans and specifications to check that our engineering recommendations have been properly incorporated into the design documents. At this time, it may be necessary to submit supplementary recommendations. This report has been prepared for the exclusive use of Vrutthi LLC & Brio Estates LLC and their consultants for the specific application to the proposed Townhomes and STEM Academy in Naperville, Illinois.

Appendix A – Drilling, Field, and Laboratory Test Procedures

ASTM D1586 Penetration Tests and Split-Barrel Sampling of Soils

During the sampling procedure, Standard Penetration Tests (SPT's) were performed at regular intervals to obtain the standard penetration (N-value) of the soil. The results of the standard penetration test are used to estimate the relative strength and compressibility of the soil profile components through empirical correlations to the soils' relative density and consistency. The split-barrel sampler obtains a soil sample for classification purposes and laboratory testing, as appropriate for the type of soil obtained.

Water Level Measurements

Water level observations were attempted during and upon completion of the drilling operation using a 100-foot tape measure. The depths of observed water levels in the boreholes are noted on the boring logs presented in the appendix of this report. In the borings where water is unable to be observed during the field activities, in relatively impervious soils, the accurate determination of the groundwater elevation may not be possible even after several days of observation. Seasonal variations, temperature and recent rainfall conditions may influence the levels of the groundwater table and volumes of water will depend on the permeability of the soils.

Ground Surface Elevations

The Topographic Survey was prepared by Cemcon. Rubino interpolated the ground surface elevations at the boring locations from this figure.

ASTM D2216 Water (Moisture) Content of Soil by Mass (Laboratory)

The water content is an important index property used in expressing the phase relationship of solids, water, and air in a given volume of material and can be used to correlate soil behavior with its index properties. In fine grained cohesive soils, the behavior of a given soil type often depends on its natural water content. The water content of a cohesive soil along with its liquid and plastic limits as determined by Atterberg Limit testing are used to express the soil's relative consistency or liquidity index.

ASTM D2974 Standard Test Method for Organic Soils using Loss on Ignition (Laboratory)

These test methods cover the measurement of moisture content, ash content, and organic matter in peats and other organic soils, such as organic clays, silts, and mucks. Ash content of a peat or organic soil sample is determined by igniting the oven-dried sample from the moisture content determination in a muffle furnace at 440°C (Method C) or 750°C (Method D). The substance remaining after ignition is the ash. The ash content is expressed as a percentage of the mass of the oven-dried sample. 2.4 Organic matter is determined by subtracting percent ash content from 100.

ASTM D4318 Atterberg Limits (Laboratory)

Atterberg limit testing defines the liquid limit (LL) and plastic limit (PL) states of a given soil. These limits are used to determine the moisture content limits where the soil characteristics changes from behaving more like a fluid on the liquid limit end to where the soil behaves more like individual soil particles on the plastic limit end. The liquid limit is often used to determine if a soil is a low or high plasticity soil. The plasticity index (PI) is difference between the liquid limit and the plastic limit. The plasticity index is used in conjunction with the liquid limit to determine if the material will behave like a silt or clay.

Appendix B – Site Preparation – Clearing & Grubbing

Rubino recommends that unsuitable soils or fill be removed from the site, as applicable. Unsuitable soils or fills can be described as, but are not limited to:

- organic soil / topsoil / plants / trees / shrubs / grass
- frozen soil
- existing asphalt or concrete pavement sections
- existing foundations
- building debris
- existing curbs

Stripping operations should extend a minimum of: **10** feet beyond proposed building limits and **5** feet beyond proposed pavement limits

Exceptions: where property limits allow. Notify geotechnical engineer if there are property boundary limitations. Stripping operations should be monitored and documented by a representative of the geotechnical engineer at the time of construction.

Proofrolling:

After stripping and excavating to the proposed subgrade level, as required, the floor slab areas should be proof-rolled and scarified and compacted to at least 95 percent of the standard Proctor maximum dry density ASTM D 698 for a depth of at least 8 inches below the surface during a period of dry weather.

Proofrolling Equipment:

Tandem-axle dump truck or similar rubber-tired vehicles are acceptable and should be loaded with at least 9 tons per axle.

Benefits of Proofrolling:

- Aids in providing a firm base for compaction of fill soils
- Helps to delineate soft, loose, or disturbed areas that may exist below subgrade level.

Subgrade Stability:

Soils which are observed to rut or deflect excessively (typically greater than 1 inch) under the moving load should either be scarified and re-compacted, or undercut and replaced.
Subgrade soils may be **stabilized** by one of the following **options**:

- **Scarifying and re-compacting** the existing subgrade soil to at least 95% compaction per ASTM D698 Standard Proctor (12-inch depth).
- **Remove and replace** with non-woven filter fabric and 3-inch stone capped with CA-06 stone.
  - A layer of non-woven filter geotextile should be placed between silty clay soil and an open-graded stone.
  - The contractor can also attempt to stabilize the existing subgrade in place by “losing” 3-inch stone into the subgrade until the until the voids of the 3-inch stone are filled with the soft soil and the subgrade “locks up,” showing minimal deflection under a proof-roll.
- **Geogrid and a stone mat** per manufacturer’s installation specifications could reduce the amount of stone required and provide additional lateral support for foundation loads in service.
- **Lime or other chemical additive** stabilization (12 to 14 inches). This can be done as part of a lift structure. Compaction requirements still apply.

Appendix C – Fill Recommendations

In general, fill materials should meet the following:

- Standard Proctor maximum dry density >100 pcf
- Free of organic or other deleterious materials
- Have a maximum particle size no greater than 3 inches
- Have a liquid limit <45 and plasticity index <25
- Testing should include areas at least 5 feet outside the parking area perimeters, if applicable
- Each lift of compacted, engineered fill should be tested and documented by a representative of the geotechnical engineer prior to placement of subsequent lifts
- If a fine-grained silt or clay soil is used for fill (CL or ML), close moisture content control will be essential to achieve the recommended degree of compaction
- If water must be added, it should be uniformly applied and thoroughly mixed into the soil by disking or scarifying

Suitable Soil Classifications:

CL, SC, GW, and SW will generally be suitable for use as structural fill under pavements.

Unsuitable Soil Classifications:

OL, OH, MH, ML, SM, CH and PT should be considered unsuitable.

Structural fill added to the site shall be evaluated in accordance with the following table:

Material Tested	Proctor Type*-1	Min % Dry Density	Placement Moisture Content Range	Frequency of Testing*-2	Maximum Loose Lift Height
Structural Fill (Cohesive & Well-graded Granular)	Standard	98%	-2 to +3 %	1 per 2,500 yd^2 of fill placed	8 inches
Random Fill (non-load bearing)	Standard	95%	-3 to +3 %	1 per 5,000 yd^2 of fill placed	8 inches
Utility Trench Backfill	Standard	95%	-2 to +2 %	1 per 50 LF of fill placed	6 inches

*-1 The test frequency for the laboratory reference shall be one laboratory Proctor or Relative Density test for each material used on the site. If the borrow or source of fill material changes, a new reference moisture/density test should be performed.

*-2A minimum of one test per lift is recommended unless otherwise specified.

Tested fill materials that do not achieve either the required dry density or moisture content range shall be recorded, the location noted, and reported to the Contractor and Owner. A re-test of that area should be performed after the Contractor performs remedial measures. The above test frequencies should be discussed with the contractor prior to starting the work.

The geotechnical engineer of record can only certify work that was performed under their direct observation, or under the observation of a competent person under their specific direction.

Appendix D – Foundation Construction Recommendations

Rubino recommends that soils at the bottom of the footing design elevation be observed, documented, and tested by a representative of Rubino prior to concrete placement to evaluate the consistency of the soils in the field with the geotechnical report findings. The remedial procedures described in the following paragraph can be used to provide suitable foundation support where unsuitable material such as soft or loose soils, existing fill, or organic soils are encountered.

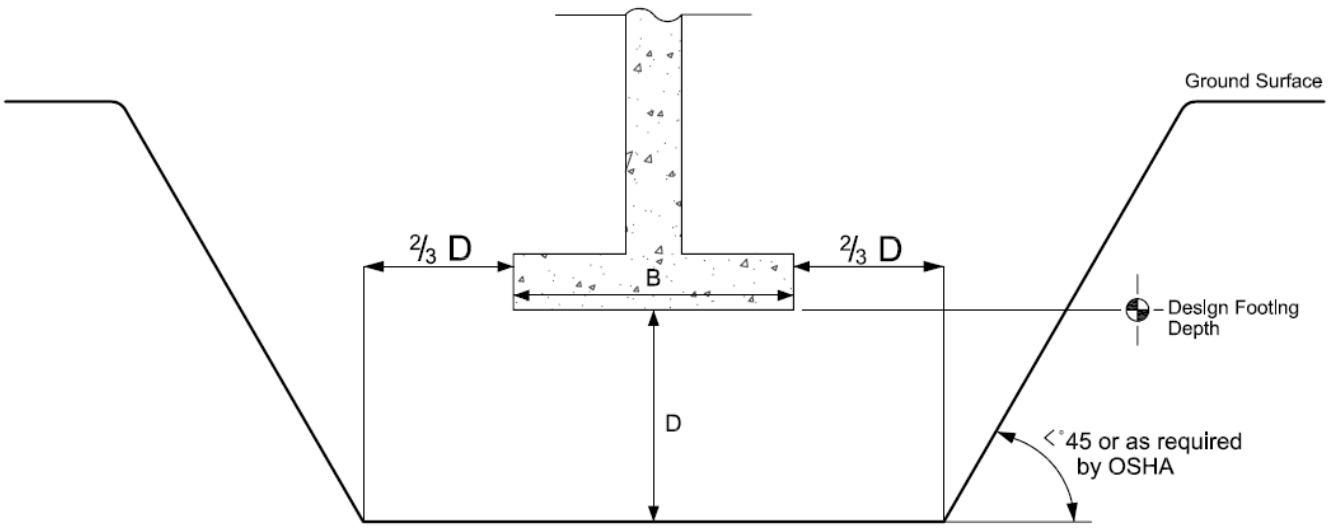
After opening, footing excavations should be observed and concrete placed as quickly as possible to avoid exposure of the footing bottoms to wetting and drying. Surface runoff water should be drained away from the excavations and not be allowed to pond. If possible, the foundation concrete should be placed during the same day the excavation is made. If it is required that footing excavations be left open for more than one day, the soils in the excavation should be protected to reduce evaporation or entry of moisture.

If unsuitable bearing soils are encountered in a footing excavation, the footing should be deepened to competent bearing soil and the footing could be lowered, or an over excavation and backfill procedure could be performed. If an over excavation and backfill procedure will be utilized, it would require widening the deepened excavation in all directions at least 8 inches beyond the edges of the footing for each 12 inches of over excavation depth (See "Over Excavation and Backfill Procedure" diagram below).

The over excavation should then be backfilled in a maximum of 8-inches thick loose lifts with suitable granular fill material, such as ¾ -inch stone with fines (CA-6), compacted to at least 98% of the maximum Standard Proctor dry density (ASTM D 698).

Another alternative is to undercut and refill the unsuitable area with flowable mortar up to the design elevation of the footings. The flowable mortar would serve as a protection to the subgrade during construction of the foundations. In this case, widening the footings is not necessary.

Over Excavation and Backfill Procedure



* Drawing not to scale

Appendix E – Report Limitations

Subsurface Conditions:

The subsurface description is of a generalized nature to highlight the major subsurface stratification features and material characteristics. The boring logs included in the appendix should be reviewed for specific information at individual boring locations. These records include soil descriptions, stratifications, penetration resistances, locations of the samples and laboratory test data as well as water level information. The stratifications shown on the boring logs represent the conditions only at the actual boring locations. Variations may occur and should be expected between boring locations. The stratifications represent the approximate boundary between subsurface materials and the actual transition between layers may be gradual. The samples, which were not altered by laboratory testing, will be retained for up to 60 days from the date of this report and then will be discarded.

Geotechnical Risk:

The concept of risk is an important aspect of the geotechnical evaluation. The primary reason for this is that the analytical methods used to develop geotechnical recommendations do not comprise an exact science. The analytical tools that geotechnical engineers use are generally empirical and must be used in conjunction with engineering judgment and experience. Therefore, the solutions and recommendations presented in the geotechnical evaluation should not be considered risk-free, and more importantly, are not a guarantee that the interaction between the soils and the proposed structure will perform as planned. The engineering recommendations, presented in the preceding section, constitute Rubino's professional estimate of the necessary measures for the proposed structure to perform according to the proposed design based on the information generated and reference during this evaluation, and Rubino's experience in working with these conditions.

Warranty:

The geotechnical engineer warrants that the findings, recommendations, specifications, or professional advice contained herein have been made in accordance with generally accepted professional geotechnical engineering practices in the local area. No other warranties are implied or expressed.

Federal Excavation Regulations:

In Federal Register, Volume 54, No. 209 (October 1989), the United States Department of Labor, Occupational Safety and Health Administration (OSHA) amended its "Construction Standards for Excavations, 29 CFR, part 1926, Subpart P". This document was issued to better ensure the safety of workmen entering trenches or excavations. This federal regulation mandates that all excavations, whether they be utility trenches, basement excavation or footing excavations, be constructed in accordance with the new OSHA guidelines. It is our understanding that these regulations are being strictly enforced and if they are not closely followed, the owner and the contractor could be liable for substantial penalties.

The contractor is solely responsible for designing and constructing stable, temporary excavations and should shore, slope, or bench the sides of the excavations as required to maintain stability of both the excavation sides and bottom. The contractor's "responsible person," as defined in 29 CFR Part 1926, should evaluate the soil exposed in the excavations as part of the contractor's safety procedures. In no case should slope height, slope inclination, or excavation depth, including utility trench excavation depth, exceed those specified in local, state, and federal safety regulations. Rubino is providing this information solely as a service to our client. Rubino is not assuming responsibility for construction site safety or the contractor's activities; such responsibility is not being implied and should not be inferred.

Appendix F – Soil Classification General Notes

DRILLING & SAMPLING SYMBOLS:

SS:	Split Spoon - 1 3/8" I.D., 2" O.D., unless otherwise noted	PS:	Piston Sample
ST:	Thin-Walled Tube - 3" O.D., Unless otherwise noted	WS:	Wash Sample
PM:	Pressuremeter	HA:	Hand Auger
RB:	Rock Bit	HS:	Hollow Stem Auger
DB:	Diamond Bit - 4", N, B	BS:	Bulk Sample

Standard "N" Penetration: Blows per foot of a 140-pound hammer falling 30 inches on a 2-inch O.D. split spoon sampler (SS), except where noted.

WATER LEVEL MEASUREMENT SYMBOLS:
Water levels indicated on the boring logs are the levels measured in the borings at the times indicated. In pervious soils, the indicated levels may reflect the location of groundwater. In low permeability soils, the accurate determination of ground water levels is not possible with only short-term observations.

DESCRIPTIVE SOIL CLASSIFICATION:
Soil Classification is based on the Unified Soil Classification System as defined in ASTM D-2487 and D-2488. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; they are described as: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve; they are described as: clays, if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse grained soils are defined on the basis of their relative in-place density and fine-grained soils on the basis of their consistency. Example: Lean clay with sand, trace gravel, stiff (CL); silty sand, trace gravel, medium dense (SM).

CONSISTENCY OF FINE-GRAINED SOILS:

Unconfined Compressive Strength, Qu (tsf)			N-Blows/ft.			Consistency
	<	0.25	< 2			Very Soft
0.25	-	0.5	2	-	4	Soft
0.5	-	1	4	-	8	Medium Stiff
1	-	2	8	-	15	Stiff
2	-	4	15	-	30	Very Stiff
4	-	8	30	-	50	Hard
>	-	8	> 50			Very Hard

RELATIVE DENSITY OF COARSE-GRAINED SOILS

N-Blows/ft.			Relative Density
0	-	3	Very Loose
4	-	9	Loose
10	-	29	Medium Dense
30	-	49	Dense
50	-	80	Very Dense
		80+	Extremely Dense

RELATIVE PROPORTIONS OF SAND & GRAVEL

Descriptive Term	% of Dry Weight		
Trace		<	15
With	15	-	29
Modifier		>	30

RELATIVE PROPORTIONS OF FINES

Descriptive Term	% of Dry Weight		
Trace		<	5
With	5	-	12
Modifier		>	12

*Descriptive Terms apply to components also present in sample

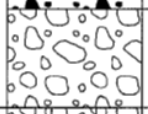
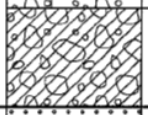
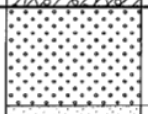
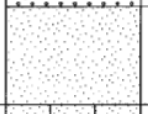
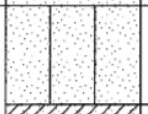
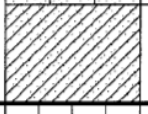
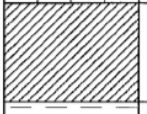
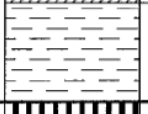
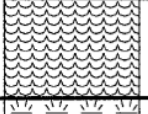
GRAIN SIZE TERMINOLOGY

Major Component	Size Range
Boulders	Over 12 in. (300mm)
Cobbles	12 in. To 3 in. (300mm to 75mm)
Gravel	3 in. To #4 sieve (75mm to 4.75mm)
Sand	#4 to #200 sieve (4.75mm to 0.75mm)

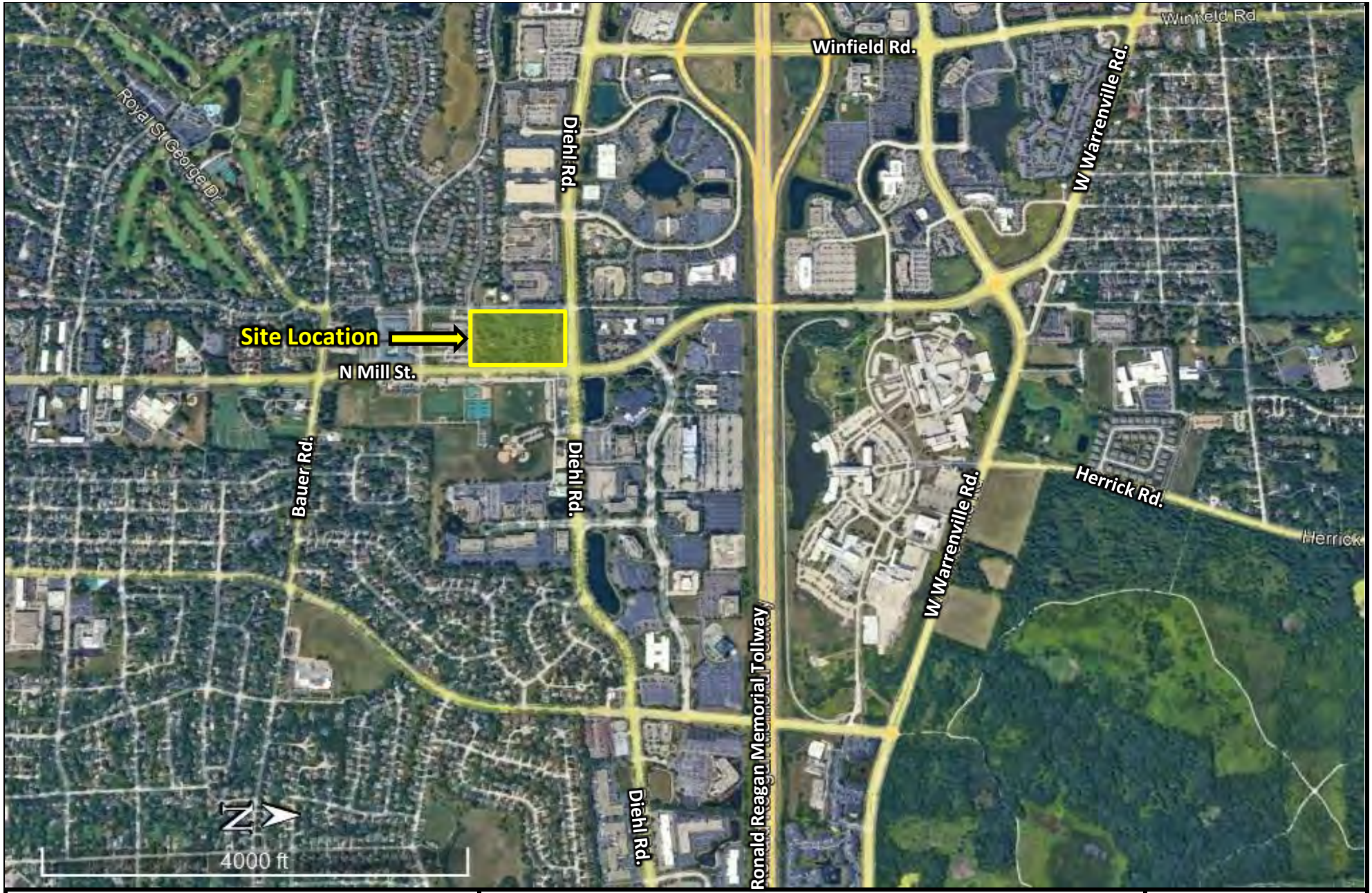
Appendix G – Soil Classification Chart

SOIL CLASSIFICATION CHART

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	(LITTLE OR NO FINES)		GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
		(APPRECIABLE AMOUNT OF FINES)		GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	SAND AND SANDY SOILS	CLEAN SANDS		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	(LITTLE OR NO FINES)		SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES		SM	SILTY SANDS, SAND - SILT MIXTURES
		(APPRECIABLE AMOUNT OF FINES)		SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

Appendix H – Site Vicinity Map & Boring Location Plan

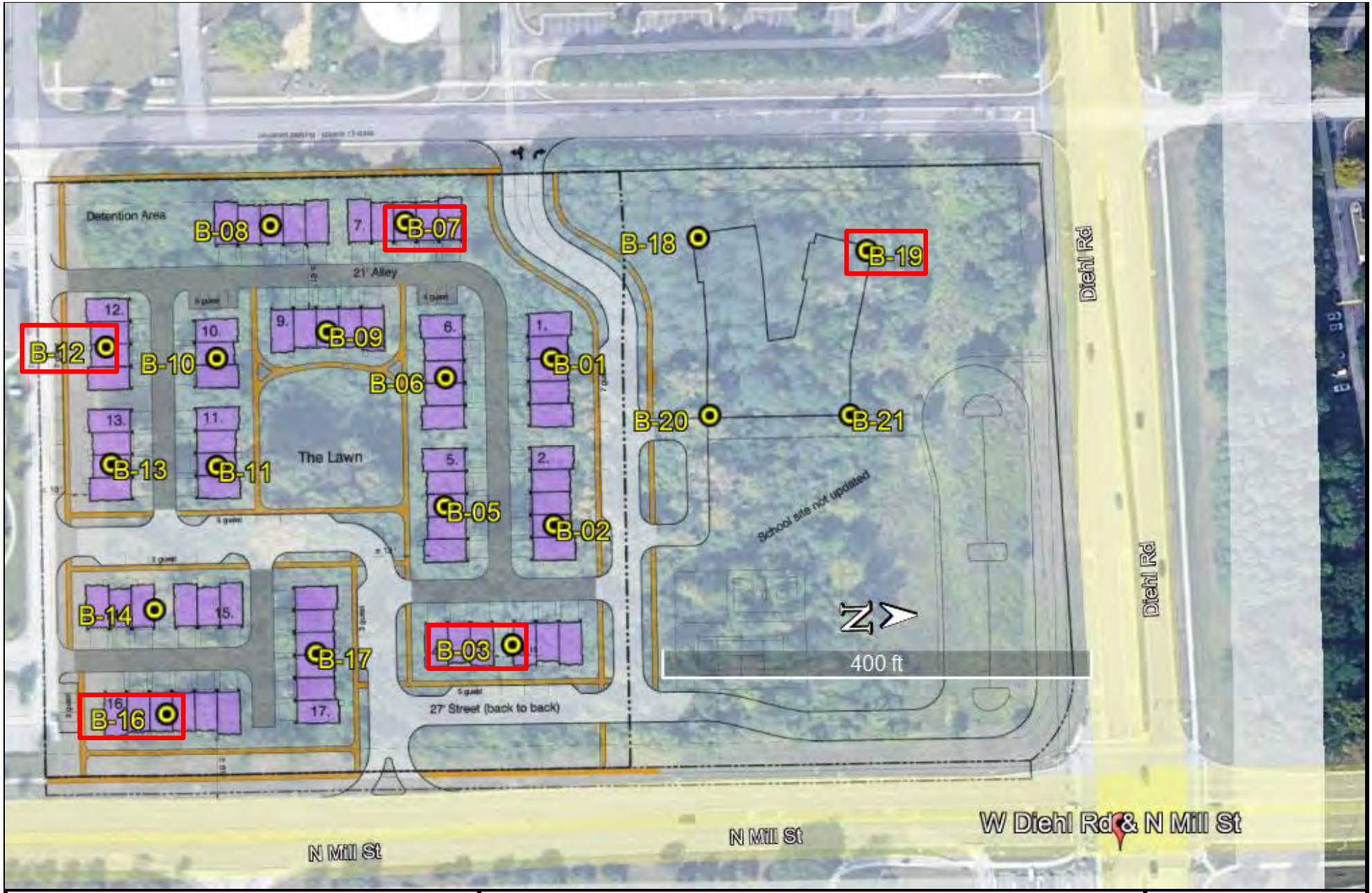


rubino ENGINEERING INC.

425 Shepard Drive
Elgin, Illinois 60123

Project Name:	Proposed Townhomes & STEM Academy
Project Location:	SWC W. Diehl Rd. and N. Mill St. Naperville, Illinois
Client:	Vrutthi, LLC & Brio Estates, LLC
Rubino Project # :	G22.148

Site Vicinity Map



rubino ENGINEERING INC.

425 Shepard Drive
Elgin, Illinois 60123

Project Name: Proposed Townhomes & STEM Academy
Project Location: SWC W. Diehl Rd. and N. Mill St.
Naperville, Illinois
Client: Vrutthi, LLC & Brio Estates, LLC
Rubino Project # : G22.148

Boring Location Plan

Appendix I – Borings Logs

Rubino Engineering, Inc.
425 Shepard Drive
Elgin, IL 60123
Telephone: 847-931-1555
Fax: 847-931-1560

LOG OF BORING B-03

Rubino Job No.:	G22.148
Project:	Proposed Townhomes & STEM Academy
Location:	SWC Diehl Road and Mill Street
City, State:	Naperville, Illinois
Client:	Vrutthi LLC & Brio Estates LLC

Drilling Method:	3 ¼ Hollow Stem Auger
Sampling Method:	Split Spoon
Hammer Type:	Automatic
Boring Location:	Townhomes #3 and #4

WATER LEVELS***	
While Drilling	N/A
Upon Completion	N/A
Delay	N/A

Station: N/A
Offset: N/A

Elevation (feet)	Depth, (feet)	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch	Moisture, %	Additional Remarks
	0			**Surface Elev.:** 730 ft				
		1	10	Approximately 10 inches of TOPSOIL: dark brown silty clay with organic matter				
				Stiff, brown silty CLAY, trace sand and gravel	CL	6-6-8 N=14	21	>>✳ Qp=4.5 tsf
				Stiff to very stiff, light brown silty CLAY, with medium grain sand and gravel			12	
		2	16	*Sand and gravel proportion decreases to trace at 3 ½ feet below existing grade*		6-6-8 N=14	16	>>✳ Qp=4.5 tsf
725	5	3	16		CL	4-5-7 N=12	18	✳ Qp=4.0 tsf
		4	13			4-7-13 N=20	20	✳ Qp=3.0 tsf
				Very stiff, light brown SILT with fine grain sand, trace gravel	ML			
720	10			Dense to very dense, brown fine grain gravelly SAND			15	
		5	14	*Potential cobbles / boulders*		33-22-32 N=54	3	>>✳
				Rig chatter starts at approximately 11 feet below existing grade				
		6	13	*Sand grain sizes increase to medium at approximately 13 ½ feet below existing grade*		20-21-23 N=44	3	
715	15				SP			
		7	12			13-14-23 N=37	4	
710	20							
		8	0	*Cobbles appear in auger cuttings at approximately 23 ½ feet below existing grade*		50-50/3-		>>✳
705	25			End of boring at approximately 25 feet below existing grade.				

STANDARD PENETRATION TEST DATA
Moisture, PL, LL (0 – 25 – 50)
STRENGTH, tsf: Qu (Rimac) ✳Qp/Qr (0 – 2.0 – 4.0)

Completion Depth:	25.0 ft
Date Boring Started:	8/10/22
Date Boring Completed:	8/10/22
Logged By:	P.P.
Drilling Contractor:	Rubino Engineering, Inc.

Sample Types:
- Auger Cutting
- Split-Spoon
- Rock Core
- Pressuremeter
- Shelby Tube
- Grab Sample
- No Recovery

Latitude: 41.7997
Longitude: -88.1554
Drill Rig: Geoprobe 7822DT
Remarks: Offset 5 ft. East due to tree branch
Log Entry: P. Patel
Checked By:

The stratification lines represent approximate boundaries. The transition may be gradual.
***Please reference the geotechnical report text for specific groundwater / dewatering recommendations.

Rubino Engineering, Inc.
425 Shepard Drive
Elgin, IL 60123
Telephone: 847-931-1555
Fax: 847-931-1560

LOG OF BORING B-07

Rubino Job No.:	G22.148
Project:	Proposed Townhomes & STEM Academy
Location:	SWC Diehl Road and Mill Street
City, State:	Naperville, Illinois
Client:	Vrutthi LLC & Brio Estates LLC

Drilling Method:	3 ¼ Hollow Stem Auger
Sampling Method:	Split Spoon
Hammer Type:	Automatic
Boring Location:	Townhome #7

WATER LEVELS***

While Drilling	N/A
Upon Completion	N/A
Delay	N/A

Station: N/A
Offset: N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch	Moisture, %	Additional Remarks
						Surface Elev.: 731 ft				
730	0			1	10	Approximately 14 inches of TOPSOIL: dark brown silty clay with organic matter		3-4-4 N=8	20	>>* Qp=4.5 tsf
						Very stiff, brown and gray silty CLAY, trace sand and gravel				
				2	12		CL	7-8-12 N=20	17	>>* Qp=4.5 tsf
725	5			3	18	Stiff to very stiff, brown silty CLAY, trace sand and gravel		7-7-10 N=17	17	>>* Qp=4.5 tsf
				4	18		CL	4-5-7 N=12	22	* Qp=4.0 tsf
720	10			5	12	*Rig chatter starts at approximately 10 ½ feet below existing grade* Medium dense to dense, brown gravelly SAND		15-11-10 N=21	3	
				6	14	*Gravel size increases to coarse gravel and cobbles at approximately 13 ½ feet below existing grade*		9-9-7 N=16	8	
715	15						SP			
				7	6			15-11-10 N=21	4	
710	20									
				8	12			19-17-14 N=31	4	
	25					End of boring at approximately 25 feet below existing grade.				

STANDARD PENETRATION TEST DATA
Moisture; PL; LL
0 25 50
STRENGTH, tsf
Qu (Rimac) *Qp/Qr
0 2.0 4.0

Completion Depth:	25.0 ft
Date Boring Started:	8/8/22
Date Boring Completed:	8/9/22
Logged By:	J.W.
Drilling Contractor:	Rubino Engineering, Inc.

Sample Types:
Auger Cutting
Split-Spoon
Rock Core
Pressuremeter
Shelby Tube
Grab Sample
No Recovery

Latitude: 41.7994
Longitude: -88.1568
Drill Rig: Geoprobe 7822DT
Remarks:
Log Entry: P. Patel
Checked By:

The stratification lines represent approximate boundaries. The transition may be gradual.
***Please reference the geotechnical report text for specific groundwater / dewatering recommendations.

Rubino Engineering, Inc.
425 Shepard Drive
Elgin, IL 60123
Telephone: 847-931-1555
Fax: 847-931-1560

LOG OF BORING B-12

Rubino Job No.:	G22.148
Project:	Proposed Townhomes & STEM Academy
Location:	SWC Diehl Road and Mill Street
City, State:	Naperville, Illinois
Client:	Vrutthi LLC & Brio Estates LLC
Drilling Method:	3 ¼ Hollow Stem Auger
Sampling Method:	Split Spoon
Hammer Type:	Automatic
Boring Location:	Townhome #12

WATER LEVELS***

While Drilling	N/A
Upon Completion	N/A
Delay	N/A

Station: N/A
Offset: N/A

Elevation (feet)	Depth, (feet)	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch	Moisture, %	Additional Remarks
	0			**Surface Elev.:** 730 ft				
		1	10	Approximately 2 inches of TOPSOIL: dark brown silty clay with organic matter Very stiff, brown HIGH PLASTICITY SILTY CLAY, trace sand and gravel	CH	4-8-14 N=22	21	Qp=4.5 tsf LL = 54 PL = 28
		2	12	Stiff, brown silty CLAY, trace sand and gravel	CL	5-6-9 N=15	15	Qp=4.5 tsf
725	5	3	12	Stiff, light brown SILT, trace sand and gravel	ML	5-6-8 N=14	17 16	Qp=3.0 tsf
		4	10	Medium dense to dense, brown gravelly SAND		7-16-10 N=26	5	
720	10			*Rig chatter starts at approximately 10 feet below existing grade*				
		5	12			10-18-9 N=27	4	
		6	12			25-19-10 N=29	4	
715	15				SP			
		7	18	*Potential cobbles / boulders at approximately 18 ½ feet below existing grade*		19-22-23 N=45	5	
710	20							
		8	12	Medium dense, brown fine grain sand, trace gravel	SP	10-9-8 N=17	6	
705	25			End of boring at approximately 25 feet below existing grade.				

STANDARD PENETRATION TEST DATA
Moisture | PL | LL
0 25 50
STRENGTH, tsf
Qu (Rimac) Qp/Qr
0 2.0 4.0

Completion Depth:	25.0 ft
Date Boring Started:	8/8/22
Date Boring Completed:	8/8/22
Logged By:	J.W.
Drilling Contractor:	Rubino Engineering, Inc.

Sample Types:
Auger Cutting
Split-Spoon
Rock Core
Pressuremeter
Shelby Tube
Grab Sample
No Recovery

Latitude: 41.7987
Longitude: -88.1564
Drill Rig: Geoprobe 7822DT
Remarks:
Log Entry: P. Patel
Checked By:

The stratification lines represent approximate boundaries. The transition may be gradual.
***Please reference the geotechnical report text for specific groundwater / dewatering recommendations.

Rubino Engineering, Inc.
425 Shepard Drive
Elgin, IL 60123
Telephone: 847-931-1555
Fax: 847-931-1560

LOG OF BORING B-16

Rubino Job No.:	G22.148
Project:	Proposed Townhomes & STEM Academy
Location:	SWC Diehl Road and Mill Street
City, State:	Naperville, Illinois
Client:	Vrutthi LLC & Brio Estates LLC

Drilling Method:	3 ¼ Hollow Stem Auger
Sampling Method:	Split Spoon
Hammer Type:	Automatic
Boring Location:	Townhome #16

WATER LEVELS***	
While Drilling	N/A
Upon Completion	N/A
Delay	N/A

Station: N/A
Offset: N/A

Elevation (feet)	Depth, (feet)	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch	Moisture, %	Additional Remarks
	0			**Surface Elev.:** 732 ft				
				Approximately 12 inches of TOPSOIL: dark brown silty clay with organic matter				
730		1	6	Stiff, brown silty CLAY, trace sand and gravel	CL	5-5-6 N=11	20	
		2	10	Stiff, light brown SILT with fine grain sand, trace gravel	ML	6-6-6 N=12	9	
	5							
725		3	12	Stiff, brown silty CLAY with interspersed medium grain sand lenses of 1 inch, trace gravel	CL	3-3-5 N=8	20	Qp=4.5 tsf
		4	10	Dense to very dense, light brown gravelly SAND *Potential cobbles / boulders*		18-16-21 N=37	4	
	10			*Rig chatter starts at approximately 10 feet below existing grade*				
720		5	0			50/2--		
		6	13			19-22-25 N=47	4	
	15							
715					SP			
		7	14	*Increase in gravel proportion at approximately 18 ½ feet below existing grade*		22-21-19 N=40	3	
	20							
710								
		8	12	*Cobbles appear in auger cuttings at approximately 23 ½ feet below existing grade*		23-33-25 N=58	3	
	25			End of boring at approximately 25 feet below existing grade.				

STANDARD PENETRATION TEST DATA
Moisture, PL, LL
0 25 50
STRENGTH, tsf
Qu (Rimac) Qp/Qr
0 2.0 4.0

Completion Depth:	25.0 ft
Date Boring Started:	8/10/22
Date Boring Completed:	8/10/22
Logged By:	P.P.
Drilling Contractor:	Rubino Engineering, Inc.

Sample Types:
Auger Cutting
Split-Spoon
Rock Core
Pressuremeter
Shelby Tube
Grab Sample
No Recovery

Latitude: 41.7988
Longitude: -88.1551
Drill Rig: Geoprobe 7822DT
Remarks: Offset 3 ft. West due to tree branch
Log Entry: P. Patel
Checked By:

The stratification lines represent approximate boundaries. The transition may be gradual.
***Please reference the geotechnical report text for specific groundwater / dewatering recommendations.

Rubino Engineering, Inc.
425 Shepard Drive
Elgin, IL 60123
Telephone: 847-931-1555
Fax: 847-931-1560

LOG OF BORING B-19

Rubino Job No.:	G22.148
Project:	Proposed Townhomes & STEM Academy
Location:	SWC Diehl Road and Mill Street
City, State:	Naperville, Illinois
Client:	Vrutthi LLC & Brio Estates LLC

Drilling Method:	3 ¼ Hollow Stem Auger
Sampling Method:	Split Spoon
Hammer Type:	Automatic
Boring Location:	STEM Academy Northwest corner

WATER LEVELS***	
While Drilling	N/A
Upon Completion	N/A
Delay	N/A

Station: N/A
Offset: N/A

Elevation (feet)	Depth, (feet)	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch	Moisture, %	Additional Remarks
				Surface Elev.: 731 ft				
730	0	1	16	Approximately 12 inches of TOPSOIL: dark brown silty clay with organic matter Stiff, dark brown to black silty CLAY, trace sand, gravel, and organics	CL	7-5-6 N=11	19	Qp=4.0 tsf 4% Organic content
		2	12			4-5-5 N=10		Qp=3.5 tsf
725	5	3	6	Stiff, brown and gray HIGH PLASTICITY SILTY CLAY, trace sand and gravel Stiff, light brown silty CLAY, trace sand and gravel	CH	4-6-5 N=11	27	LL = 57 PL = 29 2% Organic content Qp=3.0 tsf
		4	12		CL	5-5-6 N=11	17 18	Qp=3.3 tsf
720	10	5	0	Dense to very dense, brown gravelly SAND *Potential cobbles / boulders* *No recovery at 11 feet, observation from auger cuttings* *Rig chatter starts at approximately 10 feet below existing grade*		50/2--		>>
		6	12		SP	48-20-18 N=38	3	
715	15	7	6			40-50/1-	3	>>
710	20			End of boring at 19 feet, 2 inches below existing grade due to auger refusal.				
	25							

STANDARD PENETRATION TEST DATA
Moisture | PL | LL
0 25 50
STRENGTH, tsf
Qu (Rimac) Qp/Qr
0 2.0 4.0

Completion Depth:	25.0 ft
Date Boring Started:	8/9/22
Date Boring Completed:	8/9/22
Logged By:	J.W.
Drilling Contractor:	Rubino Engineering, Inc.

Sample Types:
Auger Cutting
Split-Spoon
Rock Core
Pressuremeter
Shelby Tube
Grab Sample
No Recovery

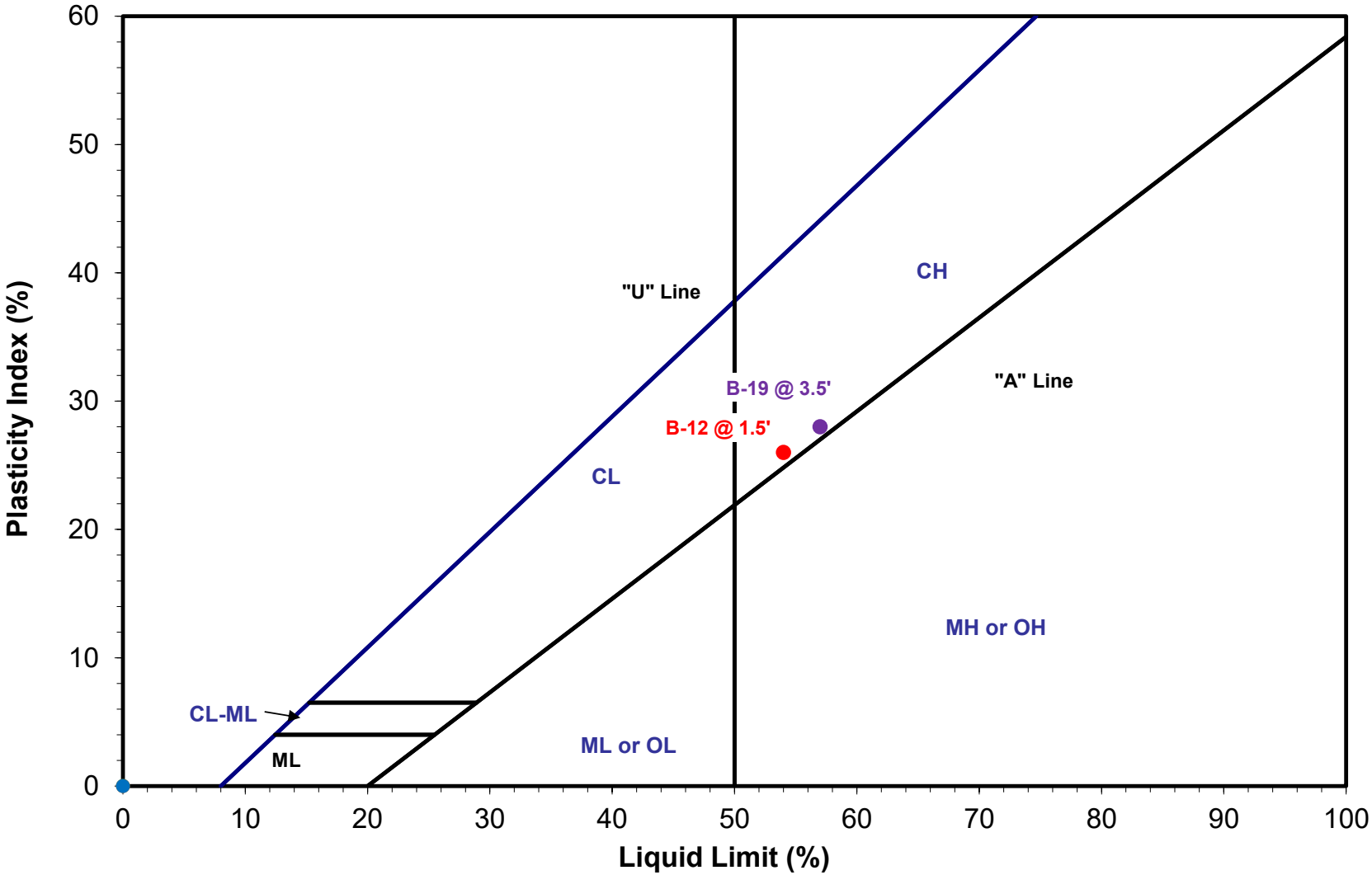
Latitude: 41.8007
Longitude: -88.1566
Drill Rig: Geoprobe 7822DT
Remarks: Offset 10 ft. North due to tree branch
Log Entry: P. Patel
Checked By:

The stratification lines represent approximate boundaries. The transition may be gradual.
***Please reference the geotechnical report text for specific groundwater / dewatering recommendations.

Appendix J – Laboratory Test Results

rubino ENGINEERING INC.

Report of Atterberg Limits Test (ASTM D4318 / AASHTO T89 / AASHTO T90)



Boring #	B-12 @ 1.5'	B-19 @ 3.5'				
LL	54	57				
PL	28	29				
PI	26	28				

Project: Proposed Townhomes & STEM Academy
Location: Naperville, Illinois
Client: Vrutthi LLC & Brio Estates LLC
Project #: G22.148

SOIL PERMEABILITY RATES

Soil Separate	Particle size Diameter (mm)	Permeability	Permeability Rate/ Percolation Rate (inches/hour)	Permeability (gal/day/ft² soil area)
Clay	Below 0.002	Very slow	Less than 0.05	0.025
Silt	0.05–0.002	Slow	0.05–0.2	0.5
Very fine sand	0.10–0.05	Moderately slow	0.2–0.8	50
Fine sand	0.25–0.10	Moderate	0.8–2.5	100
Medium sand	0.5–0.25	Moderately rapid	2.5–5.0	250
Coarse sand	1.0–0.5	Rapid	5.0–10.0	2500
Very coarse sand	2.0–1.0	Very rapid	10.0 and over	>2500

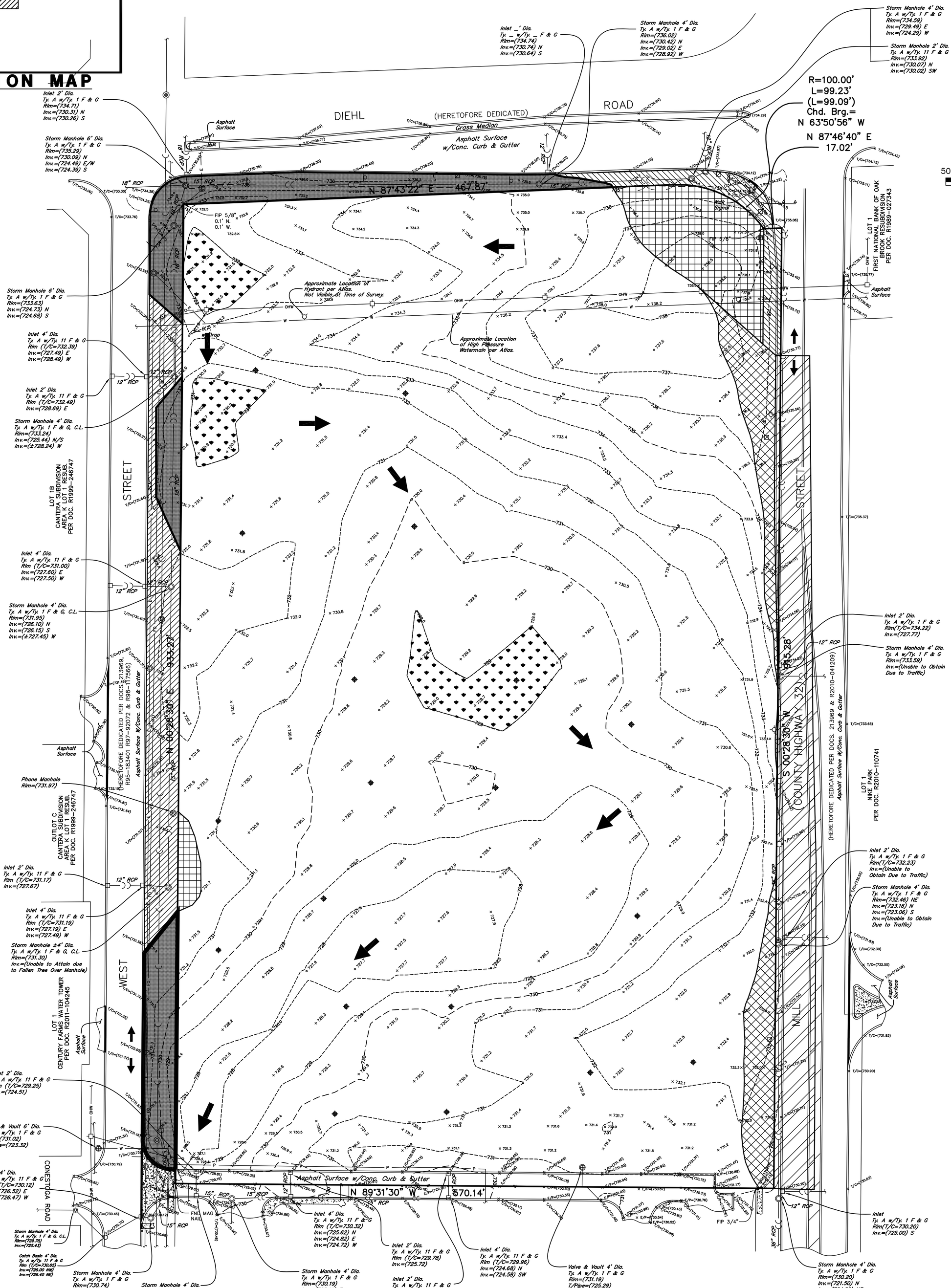
EXHIBIT D

EXISTING CONDITION ONSITE AND OFFSITE CATCHMENT EXHIBIT

EXHIBIT D - EXISTING CONDITIONS
CATCHMENT EXHIBIT
FOR
THE PROSPERITA & ORION STEM SCHOOL

PROJECT LOCATION

LOCATION MAP



LEGEND

EXISTING	PROPOSED	DESCRIPTION
◎	◎	MANHOLE
○	●	CATCH BASIN/DEBRIS TRAP
□	□	INLET
	⬢	CLEANOUT
	▮	SLOPE INLET BOX
⊢	⊢	HEADWALL
◁	——▷	END SECTION
—C—C—	—C—C—	STORM SEWER
—C—C—C—	—C—C—C—	SANITARY SEWER
—W—	—W—	WATERMAIN
⊗	✣	VALVE & BOX
⊗	✣	WATER VALVE IN VAULT
♉	♉	FIRE HYDRANT
----------	————	CONTOURS
(ELEV)	ELEV	ELEVATIONS
☼	✦	STREET LIGHT
	▨	WATERMAIN PROTECTION
	▣	SILT FENCE INLET PROTECTOR
	⌒	TEMPORARY STRAW BALE DITCH CHECK
	— — —	SILT FENCE DITCH CHECK
	▒	RIP-RAP
	➡	OVERFLOW ROUTE

CATCHMENT AREA LEGEND

- ▩ - ON-SITE AREA TRIBTARY TO MILL ST ROW (0.35± ACRES TOTAL)
- ▦ - ON-SITE AREA TRIBTARY TO WEST ST / DIEHL ROAD ROW (0.31± ACRES)
- □ - ONSITE AREA TRIBUTARY TO WEST ST / HARBORCHASE (11.51± ACRES)
- ▩ - ROW TRIBUTARY TO SITE AND WEST ST / HARBORCHASE DRAINAGE SYSTEMS (0.50± ACRES)
- ▨ - ROW TRIBUTARY TO WEST ST ROW / DIEHL RD STORM SYSTEM (0.36± ACRES)
- ▨ - ROW TRIBUTARY TO DIEHL ROAD ROW (0.12± ACRES)
- ▨ - ROW TRIBUTARY TO MILL ST STORM SEWER (0.65± ACRES
- ▩ - DEPRESSIONAL STORAGE AREA (0.35± ACRES)
- ➡ - OVERLAND FLOW DIRECTION

CURB LEGEND

- ═══ - B-6.12 CURB & CUTTER
- ——— - MOUNTABLE CURB
- ═══ - CARRIAGE CURB
- ——— - DEPRESSED CURB

PREPARED FOR:
VRUTTHI LLC
3644 WHITE EAGLE DRIVE
NAPERVILLE, ILLINOIS 60564
(630) 803-5768

PREPARED BY:
CEMCON, Ltd.
Consulting Engineers, Land Surveyors & Planners
2280 White Oak Circle, Suite 100
Aurora, Illinois 60502-9675
PH: 630.862.2100 FAX: 630.862.2199
E-Mail: info@cemcon.com Website: www.cemcon.com

DISC NO.: 904426 FILE NAME: EXIST CATCH EXH D
DRAWN BY: DJF FLD. BK. / PG. NO.: -----
COMPLETION DATE: 2022-12-15 JOB NO.: 904.426
XREF : TOPO PROJECT MANAGER : RWB
REV.: 09-15-22/KMS, 09-22-22/KMS, 09-27-22/KMS 09-30-22/KMS, 12-XX-22/KMS, 4-12-23, KPB

PRELIMINARY ENGINEERING PLAN FOR THE PROSPERITA & ORION STEM SCHOOLS
CITY OF NAPERVILLE PROJECT NO.: XX-XXXXXXX

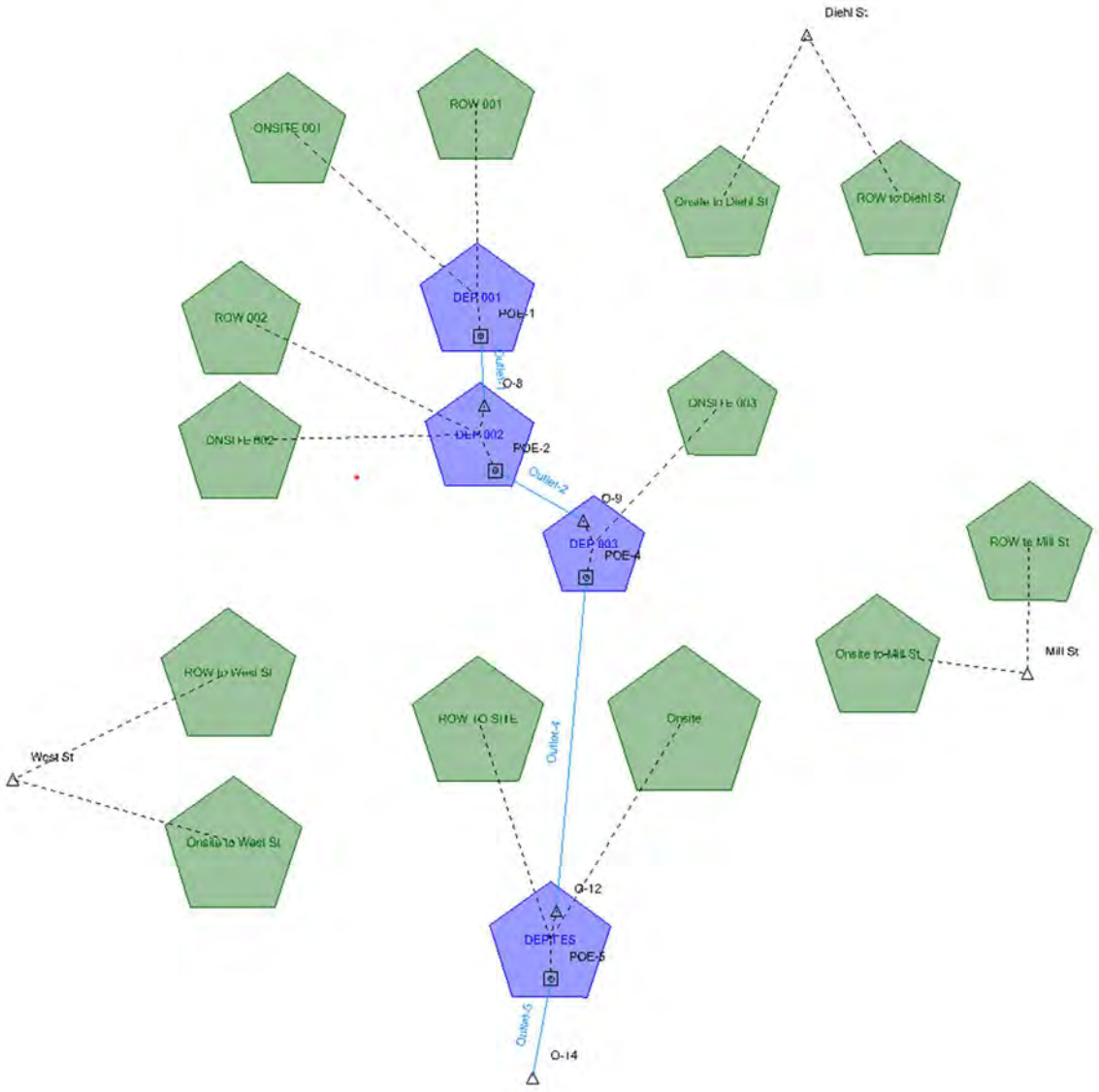
PLOT FILE CREATED: 4/12/2023 BY: KYLE BRAGHINI DRAWING PATH: P:\904426\DWG\ENG\DRAWINGS\DESIGN ENGINEERING\2023-3-28 EXISTING CONDITIONS CATCHMENT EXHIBIT D.DWG

EXHIBIT E

EXISTING CONDITION PONDPACK FLOOD ROUTING MODEL FOR EACH CATCHMENT BASED ON CN & TC

(REVISED)

EXISTING CONDITION PONDPACK SCHEMATIC



Scenario Calculation Summary

Scenario Summary	
ID	42
Label	2 YR - 24 HR
Notes	
Active Topology	Base Active Topology
Hydrology	Base Hydrology
Rainfall Runoff	2 YR - 24 HR
Physical	Base Physical
Initial Condition	Base Initial Condition
Boundary Condition	Base Boundary Condition
Infiltration and Inflow	Base Infiltration and Inflow
Output	Base Output
User Data Extensions	Base User Data Extensions
PondPack Engine Calculation Options	24 HR

Output Summary			
Output Increment	0.010 hours	Duration	48.000 hours

Rainfall Summary			
Return Event Tag	2	Rainfall Type	Time-Depth Curve
Total Depth	3.3 in	Storm Event	2YR-24HR

ICPM Output Summary			
Target Convergence	0.00 ft³/s	ICPM Time Step	0.010 hours
Maximum Iterations	35		

Executive Summary (Nodes)

Label	Scenario	Return Event (years)	Truncation	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
DEP 001 (IN)	2 YR - 24 HR	2	None	0.199	16.990	0.33	(N/A)	(N/A)
DEP 001 (OUT)	2 YR - 24 HR	2	None	0.103	17.030	0.33	733.11	0.098
DEP 002 (IN)	2 YR - 24 HR	2	None	0.205	17.010	0.49	(N/A)	(N/A)
DEP 002 (OUT)	2 YR - 24 HR	2	None	0.136	17.160	0.46	731.54	0.074
DEP 003 (IN)	2 YR - 24 HR	2	None	0.592	17.040	1.18	(N/A)	(N/A)
DEP 003 (OUT)	2 YR - 24 HR	2	None	0.531	17.160	1.11	729.33	0.094
DEP FES (IN)	2 YR - 24 HR	2	None	1.031	17.060	1.89	(N/A)	(N/A)
DEP FES (OUT)	2 YR - 24 HR	2	None	0.995	17.290	1.78	727.87	0.060

Scenario Calculation Summary

Executive Summary (Nodes)

Label	Scenario	Return Event (years)	Truncation	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft^3/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
Diehl St	2 YR - 24 HR	2	None	0.042	16.990	0.07	(N/A)	(N/A)
Mill St	2 YR - 24 HR	2	None	0.208	16.010	0.26	(N/A)	(N/A)
O-14	2 YR - 24 HR	2	None	0.995	17.290	1.78	(N/A)	(N/A)
ONSITE 001	2 YR - 24 HR	2	None	0.168	16.990	0.28	(N/A)	(N/A)
ONSITE 002	2 YR - 24 HR	2	None	0.094	16.990	0.16	(N/A)	(N/A)
ONSITE 003	2 YR - 24 HR	2	None	0.456	16.990	0.76	(N/A)	(N/A)
Onsite	2 YR - 24 HR	2	None	0.481	17.000	0.80	(N/A)	(N/A)
Onsite to Diehl St	2 YR - 24 HR	2	None	0.028	16.990	0.05	(N/A)	(N/A)
Onsite to Mill St	2 YR - 24 HR	2	None	0.040	16.990	0.06	(N/A)	(N/A)
Onsite to West St	2 YR - 24 HR	2	None	0.004	16.990	0.01	(N/A)	(N/A)
ROW 001	2 YR - 24 HR	2	None	0.031	16.990	0.05	(N/A)	(N/A)
ROW 002	2 YR - 24 HR	2	None	0.008	16.990	0.01	(N/A)	(N/A)
ROW TO SITE	2 YR - 24 HR	2	None	0.018	16.990	0.03	(N/A)	(N/A)
ROW to Diehl St	2 YR - 24 HR	2	None	0.014	16.990	0.02	(N/A)	(N/A)
ROW to Mill St	2 YR - 24 HR	2	None	0.168	15.000	0.19	(N/A)	(N/A)
ROW to West St	2 YR - 24 HR	2	None	0.041	16.990	0.07	(N/A)	(N/A)
West St	2 YR - 24 HR	2	None	0.045	16.990	0.07	(N/A)	(N/A)

Executive Summary (Links)

Label	Type	Location	Hydrograph Volume (ac-ft)	Peak Time (hours)	Peak Flow (ft^3/s)	End Point	Node Flow Direction
Outlet-1	Pond Outlet	Upstream	0.199	16.990	0.33	DEP 001	Pond Inflow
Outlet-1	Pond Outlet	Outflow	0.103	17.030	0.33	DEP 001	Pond Outflow
Outlet-1	Pond Outlet	Link	0.103	17.030	0.33		
Outlet-1	Pond Outlet	Downstream	0.205	17.010	0.49	DEP 002	
Outlet-2	Pond Outlet	Upstream	0.205	17.010	0.49	DEP 002	Pond Inflow

Scenario Calculation Summary

Executive Summary (Links)

Label	Type	Location	Hydrograph Volume (ac-ft)	Peak Time (hours)	Peak Flow (ft^3/s)	End Point	Node Flow Direction
Outlet-2	Pond Outlet	Outflow	0.136	17.160	0.46	DEP 002	Pond Outflow
Outlet-2	Pond Outlet	Link	0.136	17.160	0.46		
Outlet-2	Pond Outlet	Downstream	0.592	17.040	1.18	DEP 003	
Outlet-4	Pond Outlet	Upstream	0.592	17.040	1.18	DEP 003	Pond Inflow
Outlet-4	Pond Outlet	Outflow	0.531	17.160	1.11	DEP 003	Pond Outflow
Outlet-4	Pond Outlet	Link	0.531	17.160	1.11		
Outlet-4	Pond Outlet	Downstream	1.031	17.060	1.89	DEP FES	
Outlet-5	Pond Outlet	Upstream	1.031	17.060	1.89	DEP FES	Pond Inflow
Outlet-5	Pond Outlet	Outflow	0.995	17.290	1.78	DEP FES	Pond Outflow
Outlet-5	Pond Outlet	Link	0.995	17.290	1.78		
Outlet-5	Pond Outlet	Downstream	0.995	17.290	1.78	O-14	

Messages

Message Id	6
Scenario	(N/A)
Element Type	(N/A)
Element Id	-2
Label	(N/A)
Time	(N/A)
Message	There are user notifications available. Double-click this message to load these messages.
Source	Project File

Scenario Calculation Summary

Scenario Summary	
ID	1
Label	100 YR - 24 HR
Notes	
Active Topology	Base Active Topology
Hydrology	Base Hydrology
Rainfall Runoff	100 YR - 24 HR
Physical	Base Physical
Initial Condition	Base Initial Condition
Boundary Condition	Base Boundary Condition
Infiltration and Inflow	Base Infiltration and Inflow
Output	Base Output
User Data Extensions	Base User Data Extensions
PondPack Engine Calculation Options	24 HR

Output Summary			
Output Increment	0.010 hours	Duration	48.000 hours

Rainfall Summary			
Return Event Tag	100	Rainfall Type	Time-Depth Curve
Total Depth	8.6 in	Storm Event	100YR-24HR

ICPM Output Summary			
Target Convergence	0.00 ft³/s	ICPM Time Step	0.010 hours
Maximum Iterations	35		

Executive Summary (Nodes)

Label	Scenario	Return Event (years)	Truncation	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
DEP 001 (IN)	100 YR - 24 HR	100	None	0.895	16.010	1.24	(N/A)	(N/A)
DEP 001 (OUT)	100 YR - 24 HR	100	None	0.799	16.040	1.24	733.15	0.105
DEP 002 (IN)	100 YR - 24 HR	100	None	1.260	16.010	1.88	(N/A)	(N/A)
DEP 002 (OUT)	100 YR - 24 HR	100	None	1.191	16.040	1.88	731.62	0.083
DEP 003 (IN)	100 YR - 24 HR	100	None	3.264	16.010	4.77	(N/A)	(N/A)
DEP 003 (OUT)	100 YR - 24 HR	100	None	3.203	16.040	4.76	729.44	0.123
DEP FES (IN)	100 YR - 24 HR	100	None	5.468	16.020	7.91	(N/A)	(N/A)
DEP FES (OUT)	100 YR - 24 HR	100	None	5.432	17.110	7.24	729.12	0.494

Scenario Calculation Summary

Executive Summary (Nodes)

Label	Scenario	Return Event (years)	Truncation	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft^3/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
Diehl St	100 YR - 24 HR	100	None	0.187	16.010	0.26	(N/A)	(N/A)
Mill St	100 YR - 24 HR	100	None	0.624	15.990	0.73	(N/A)	(N/A)
O-14	100 YR - 24 HR	100	None	5.432	17.110	7.24	(N/A)	(N/A)
ONSITE 001	100 YR - 24 HR	100	None	0.762	16.010	1.06	(N/A)	(N/A)
ONSITE 002	100 YR - 24 HR	100	None	0.426	16.010	0.59	(N/A)	(N/A)
ONSITE 003	100 YR - 24 HR	100	None	2.073	16.010	2.89	(N/A)	(N/A)
Onsite	100 YR - 24 HR	100	None	2.187	16.000	3.05	(N/A)	(N/A)
Onsite to Diehl St	100 YR - 24 HR	100	None	0.128	16.010	0.18	(N/A)	(N/A)
Onsite to Mill St	100 YR - 24 HR	100	None	0.173	16.010	0.24	(N/A)	(N/A)
Onsite to West St	100 YR - 24 HR	100	None	0.019	16.010	0.03	(N/A)	(N/A)
ROW 001	100 YR - 24 HR	100	None	0.133	16.010	0.18	(N/A)	(N/A)
ROW 002	100 YR - 24 HR	100	None	0.035	16.010	0.05	(N/A)	(N/A)
ROW TO SITE	100 YR - 24 HR	100	None	0.079	16.010	0.11	(N/A)	(N/A)
ROW to Diehl St	100 YR - 24 HR	100	None	0.059	16.010	0.08	(N/A)	(N/A)
ROW to Mill St	100 YR - 24 HR	100	None	0.451	14.990	0.50	(N/A)	(N/A)
ROW to West St	100 YR - 24 HR	100	None	0.178	16.010	0.24	(N/A)	(N/A)
West St	100 YR - 24 HR	100	None	0.197	16.010	0.27	(N/A)	(N/A)

Executive Summary (Links)

Label	Type	Location	Hydrograph Volume (ac-ft)	Peak Time (hours)	Peak Flow (ft^3/s)	End Point	Node Flow Direction
Outlet-1	Pond Outlet	Upstream	0.895	16.010	1.24	DEP 001	Pond Inflow
Outlet-1	Pond Outlet	Outflow	0.799	16.040	1.24	DEP 001	Pond Outflow
Outlet-1	Pond Outlet	Link	0.799	16.040	1.24		
Outlet-1	Pond Outlet	Downstream	1.260	16.010	1.88	DEP 002	
Outlet-2	Pond Outlet	Upstream	1.260	16.010	1.88	DEP 002	Pond Inflow

Scenario Calculation Summary

Executive Summary (Links)

Label	Type	Location	Hydrograph Volume (ac-ft)	Peak Time (hours)	Peak Flow (ft^3/s)	End Point	Node Flow Direction
Outlet-2	Pond Outlet	Outflow	1.191	16.040	1.88	DEP 002	Pond Outflow
Outlet-2	Pond Outlet	Link	1.191	16.040	1.88		
Outlet-2	Pond Outlet	Downstream	3.264	16.010	4.77	DEP 003	
Outlet-4	Pond Outlet	Upstream	3.264	16.010	4.77	DEP 003	Pond Inflow
Outlet-4	Pond Outlet	Outflow	3.203	16.040	4.76	DEP 003	Pond Outflow
Outlet-4	Pond Outlet	Link	3.203	16.040	4.76		
Outlet-4	Pond Outlet	Downstream	5.468	16.020	7.91	DEP FES	
Outlet-5	Pond Outlet	Upstream	5.468	16.020	7.91	DEP FES	Pond Inflow
Outlet-5	Pond Outlet	Outflow	5.432	17.110	7.24	DEP FES	Pond Outflow
Outlet-5	Pond Outlet	Link	5.432	17.110	7.24		
Outlet-5	Pond Outlet	Downstream	5.432	17.110	7.24	O-14	

Messages

Message Id	6
Scenario	(N/A)
Element Type	(N/A)
Element Id	-2
Label	(N/A)
Time	(N/A)
Message	There are user notifications available. Double-click this message to load these messages.
Source	Project File

APPENDIX F

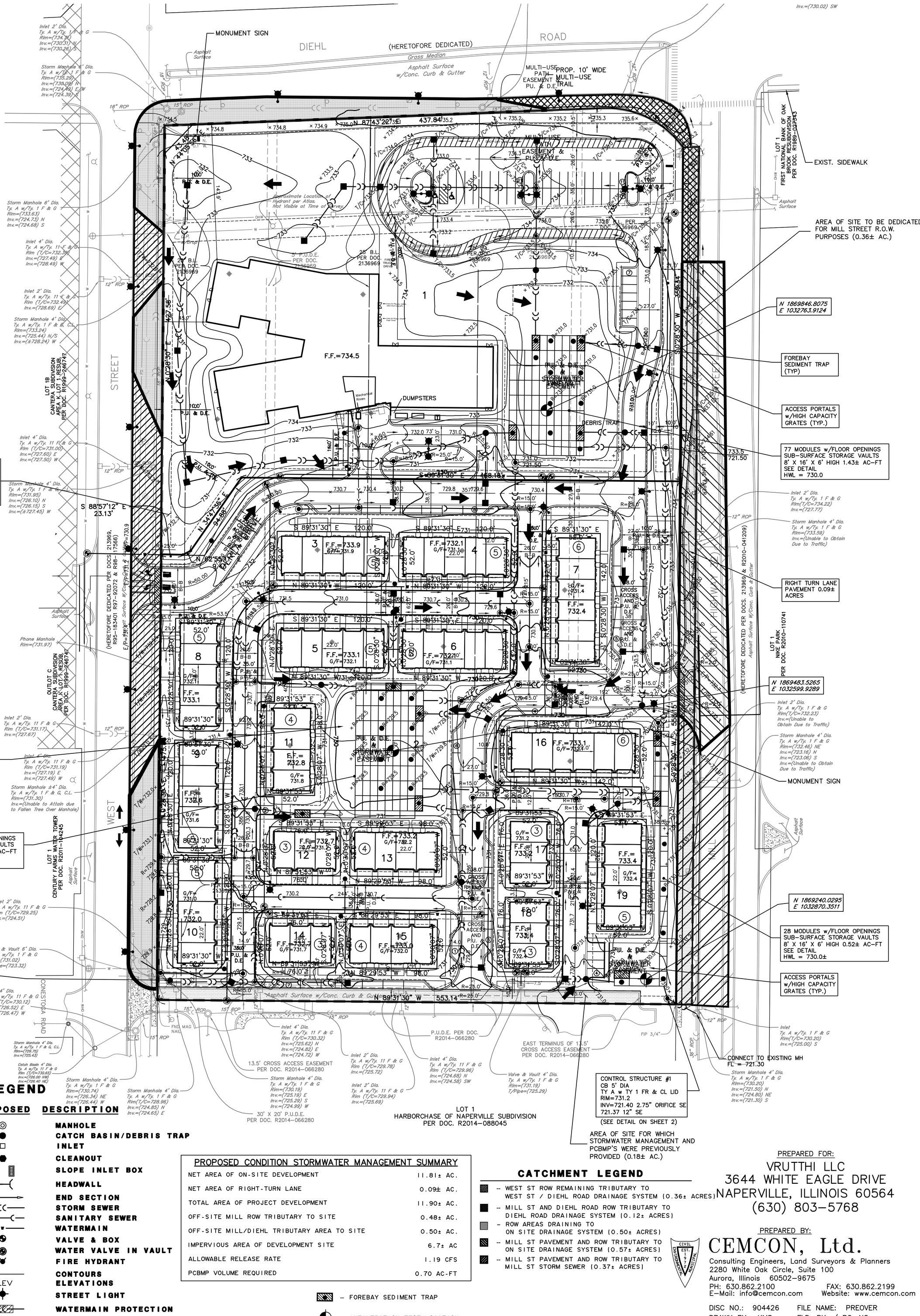
PROPOSED CONDITION ONSITE AND OFFSITE CATCHMENT EXHIBIT AND STORMWATER MANAGEMENT SUMMARY AND DETAIL SHEETS 1, 2, & 3

EXHIBIT F1 - PROPOSED CATCHMENT EXHIBIT
FOR
THE PROSPERITA & ORION STEM SCHOOL
185 STORAGE MODULE CONFIGURATION

N

50 25 0 50

SCALE: 1 INCH = 50 FEET



LEGEND

EXISTING	PROPOSED	DESCRIPTION
○	◎	MANHOLE
○	●	CATCH BASIN/DEBRIS TRAP
□	□	INLET
	⬢	CLEANOUT
	▯	SLOPE INLET BOX
⊢	⊢	HEADWALL
◁	——▷	END SECTION
——CC——	——CC——	STORM SEWER
——S——S——	——S——S——	SANITARY SEWER
——W——	——W——	WATERMAIN
⊗	●	VALVE & BOX
⊗	◉	WATER VALVE IN VAULT
♉	♉	FIRE HYDRANT
----------	————	CONTOURS
(ELEV)	ELEV	ELEVATIONS
☼	✦	STREET LIGHT
▨	▨	WATERMAIN PROTECTION
▣	▣	SILT FENCE INLET PROTECTOR
⌒	⌒	TEMPORARY STRAW BALE DITCH CHECK
— — —	— — —	SILT FENCE DITCH CHECK
▒	▒	RIP-RAP
➡	➡	OVERFLOW ROUTE

PROPOSED CONDITION STORMWATER MANAGEMENT SUMMARY

NET AREA OF ON-SITE DEVELOPMENT	11.81± AC.
NET AREA OF RIGHT-TURN LANE	0.09± AC.
TOTAL AREA OF PROJECT DEVELOPMENT	11.90± AC.
OFF-SITE MILL ROW TRIBUTARY TO SITE	0.48± AC.
OFF-SITE MILL/DIEHL TRIBUTARY AREA TO SITE	0.50± AC.
IMPERVIOUS AREA OF DEVELOPMENT SITE	6.7± AC
ALLOWABLE RELEASE RATE	1.19 CFS
PCBMP VOLUME REQUIRED	0.70 AC-FT

▨ -- FOREBAY SEDIMENT TRAP

✦ -- INFILTRATION TEST LOCATION

CURB LEGEND

-- B-6.12 CURB & CUTTER

-- MOUNTABLE CURB

-- CARRIAGE CURB

-- DEPRESSED CURB

CATCHMENT LEGEND

- -- WEST ST ROW REMAINING TRIBUTARY TO WEST ST / DIEHL ROAD DRAINAGE SYSTEM (0.36± ACRES)
- -- MILL ST AND DIEHL ROAD ROW TRIBUTARY TO DIEHL ROAD DRAINAGE SYSTEM (0.12± ACRES)
- -- ROW AREAS DRAINING TO ON SITE DRAINAGE SYSTEM (0.50± ACRES)
- -- MILL ST PAVEMENT AND ROW TRIBUTARY TO ON SITE DRAINAGE SYSTEM (0.57± ACRES)
- -- MILL ST PAVEMENT AND ROW TRIBUTARY TO MILL ST STORM SEWER (0.37± ACRES)

PREPARED FOR:

VRUTTHI LLC
3644 WHITE EAGLE DRIVE
NAPERVILLE, ILLINOIS 60564
(630) 803-5768

PREPARED BY:

CEMCON, Ltd.
Consulting Engineers, Land Surveyors & Planners
2280 White Oak Circle, Suite 100
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DISC NO.: 904426 FILE NAME: PREOVER
DRAWN BY: KMS FLD. BK. / PG. NO.: -----
COMPLETION DATE: 09-08-22 JOB NO.: 904.426
XREF : TOPO PROJECT MANAGER : RWB
REV.: 4-12-2023. 06-01-23

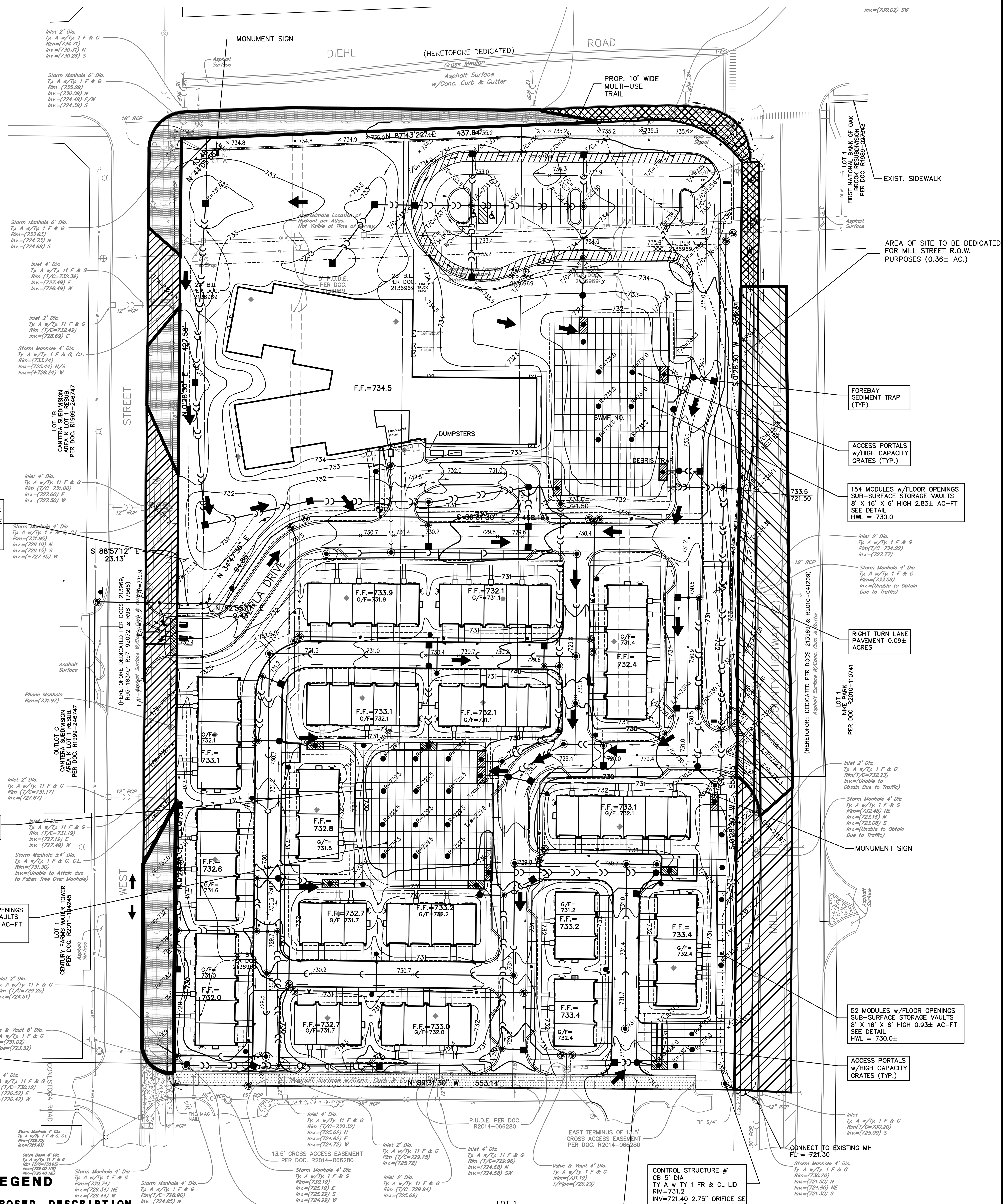
CITY OF NAPERVILLE PROJECT NO.: 22-10000097

PLOT FILE CREATED: 6/5/2023 BY: KRISTIN STAERKEL DRAWING PATH: P:\904426\DWG\ENG\DRAWINGS\EXHIBITS\223-06-01 PROP DRAINAGE EXHIBIT.DWG

EXHIBIT F2 - PROPOSED CATCHMENT EXHIBIT
FOR
THE PROSPERITA & ORION STEM SCHOOL
350 STORAGE MODULE CONFIGURATION

N

50 25 0 50
SCALE: 1 INCH = 50 FEET



LEGEND

EXISTING	PROPOSED	DESCRIPTION
		MANHOLE
		CATCH BASIN/DEBRIS TRAP
		INLET
		CLEANOUT
		SLOPE INLET BOX
		HEADWALL
		END SECTION
		STORM SEWER
		SANITARY SEWER
		WATERMAIN
		VALVE & BOX
		WATER VALVE IN VAULT
		FIRE HYDRANT
		CONTOURS
(ELEV)	ELEV	ELEVATIONS
		STREET LIGHT
		WATERMAIN PROTECTION
		SILT FENCE INLET PROTECTOR
		TEMPORARY STRAW BALE DITCH CHECK
		SILT FENCE DITCH CHECK
		RIP-RAP
		OVERFLOW ROUTE

PROPOSED CONDITION STORMWATER MANAGEMENT SUMMARY

NET AREA OF ON-SITE DEVELOPMENT	11.81± AC.
NET AREA OF RIGHT-TURN LANE	0.09± AC.
TOTAL AREA OF PROJECT DEVELOPMENT	11.90± AC.
OFF-SITE MILL ROW TRIBUTARY TO SITE	0.48± AC.
OFF-SITE MILL/DIEHL TRIBUTARY AREA TO SITE	0.50± AC.
IMPERVIOUS AREA OF DEVELOPMENT SITE	6.7± AC
ALLOWABLE RELEASE RATE	1.19 CFS
PCBMP VOLUME REQUIRED	0.70 AC-FT

-- FOREBAY SEDIMENT TRAP

CATCHMENT LEGEND

- -- WEST ST ROW REMAINING TRIBUTARY TO WEST ST / DIEHL ROAD DRAINAGE SYSTEM (0.36± ACRES)
- -- MILL ST AND DIEHL ROAD ROW TRIBUTARY TO DIEHL ROAD DRAINAGE SYSTEM (0.12± ACRES)
- – ROW AREAS DRAINING TO ON SITE DRAINAGE SYSTEM (0.50± ACRES)
- -- MILL ST PAVEMENT AND ROW TRIBUTARY TO ON SITE DRAINAGE SYSTEM (0.57± ACRES)
- -- MILL ST PAVEMENT AND ROW TRIBUTARY TO MILL ST STORM SEWER (0.37± ACRES)

CURB LEGEND

- -- B-6.12 CURB & CUTTER
- – MOUNTABLE CURB
- – CARRIAGE CURB
- – DEPRESSED CURB

PREPARED FOR:

VRUTTHI LLC
3644 WHITE EAGLE DRIVE
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PREPARED BY:

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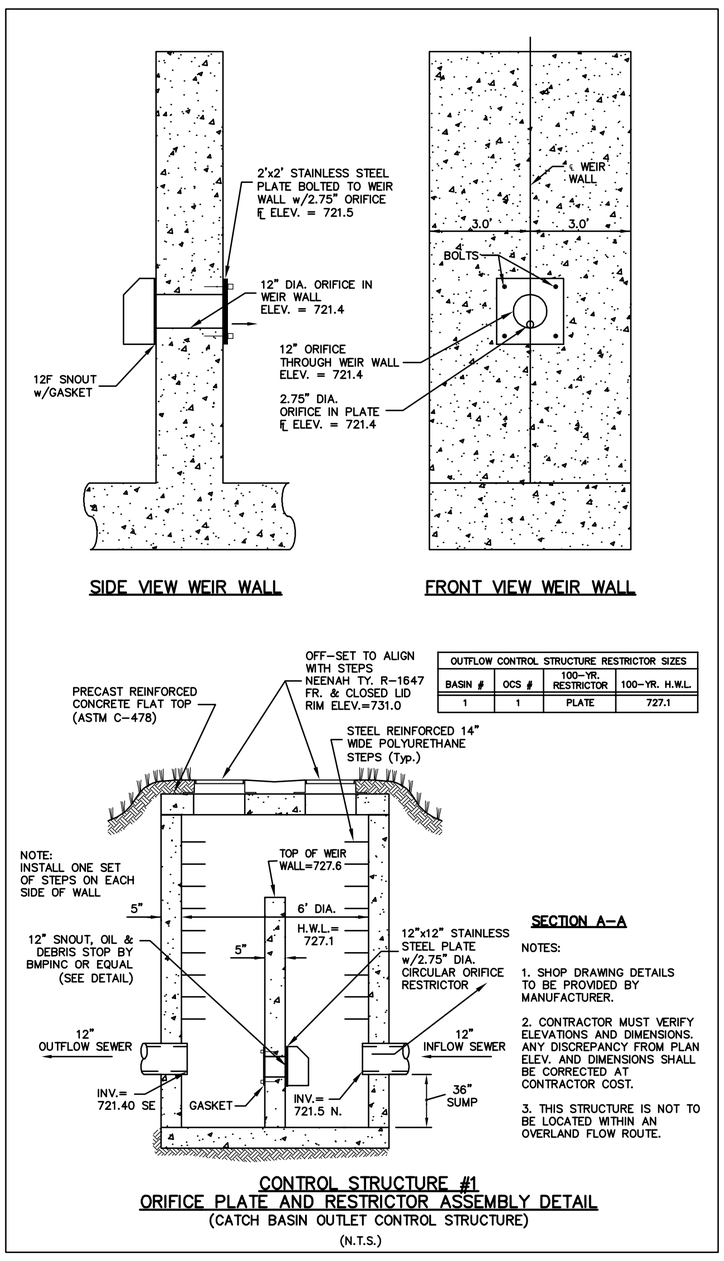
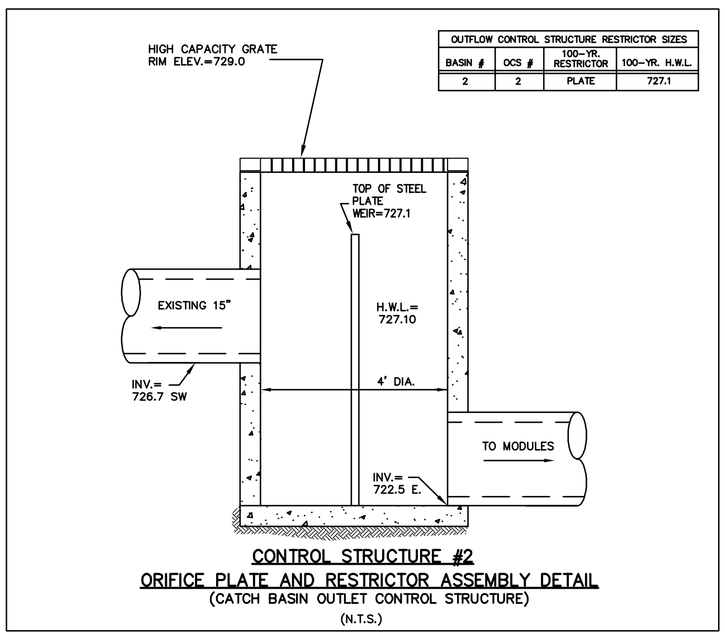
CITY OF NAPERVILLE PROJECT NO.: 22-10000097

EXHIBIT F1 & 2 - PROPOSED CATCHMENT EXHIBIT DETAILS
FOR
THE PROSPERITA & ORION STEM SCHOOL



OUTFLOW CONTROL STRUCTURE RESTRICTOR SIZES			
BASIN #	OCS #	100-YR. RESTRICTOR	100-YR. H.W.L.
1	1	PLATE	727.1

CONTROL STRUCTURE #1
ORIFICE PLATE AND RESTRICTOR ASSEMBLY DETAIL
(CATCH BASIN OUTLET CONTROL STRUCTURE)
(N.T.S.)

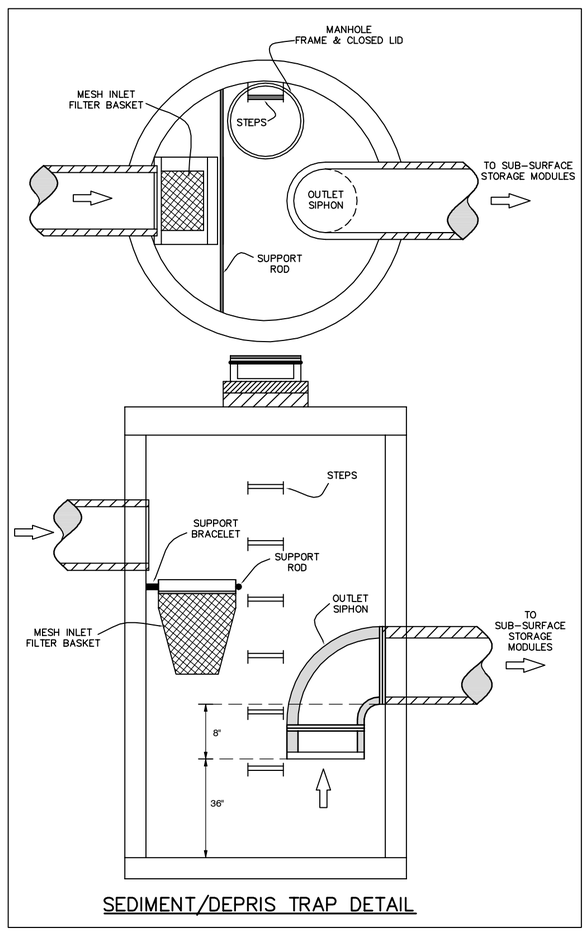


OUTFLOW CONTROL STRUCTURE RESTRICTOR SIZES			
BASIN #	OCS #	100-YR. RESTRICTOR	100-YR. H.W.L.
2	2	PLATE	727.1

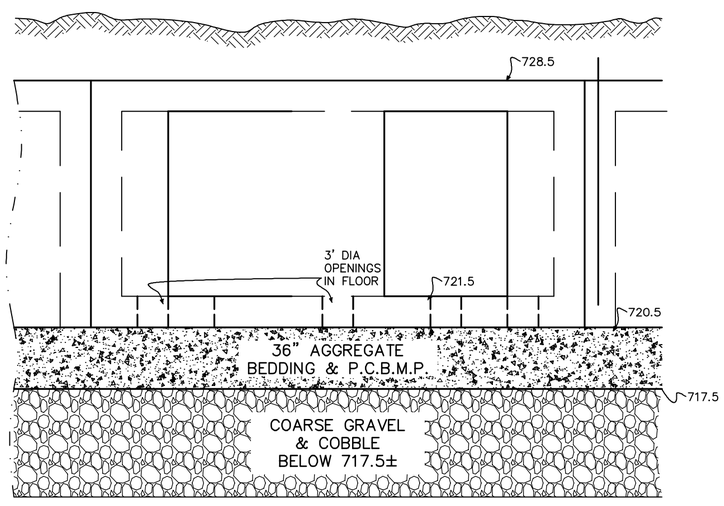
CONTROL STRUCTURE #2
ORIFICE PLATE AND RESTRICTOR ASSEMBLY DETAIL
(CATCH BASIN OUTLET CONTROL STRUCTURE)
(N.T.S.)

ILLUSTRATION OF SUB-SURFACE VAULT
"DOUBLETRAP" BY STORMTRAP SYSTEMS

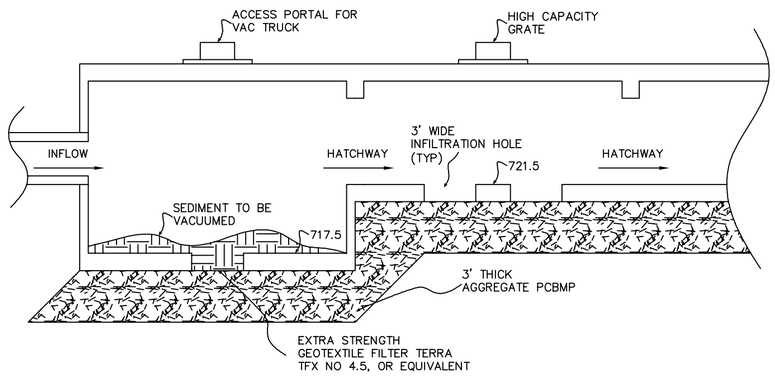
ILLUSTRATION OF SUB-SURFACE
INFILTRATION VAULT
BY STORMCAPTURE SYSTEMS



SEDIMENT/DEPRIS TRAP DETAIL



TYPICAL SECTION
SUB-SURFACE STORAGE MODULES
w/INFILTRATION HOLES



CROSS-SECTION OF FOREBAY
SEDIMENT TRAP

PREPARED FOR:
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CITY OF NAPERVILLE PROJECT NO.: 22-10000097

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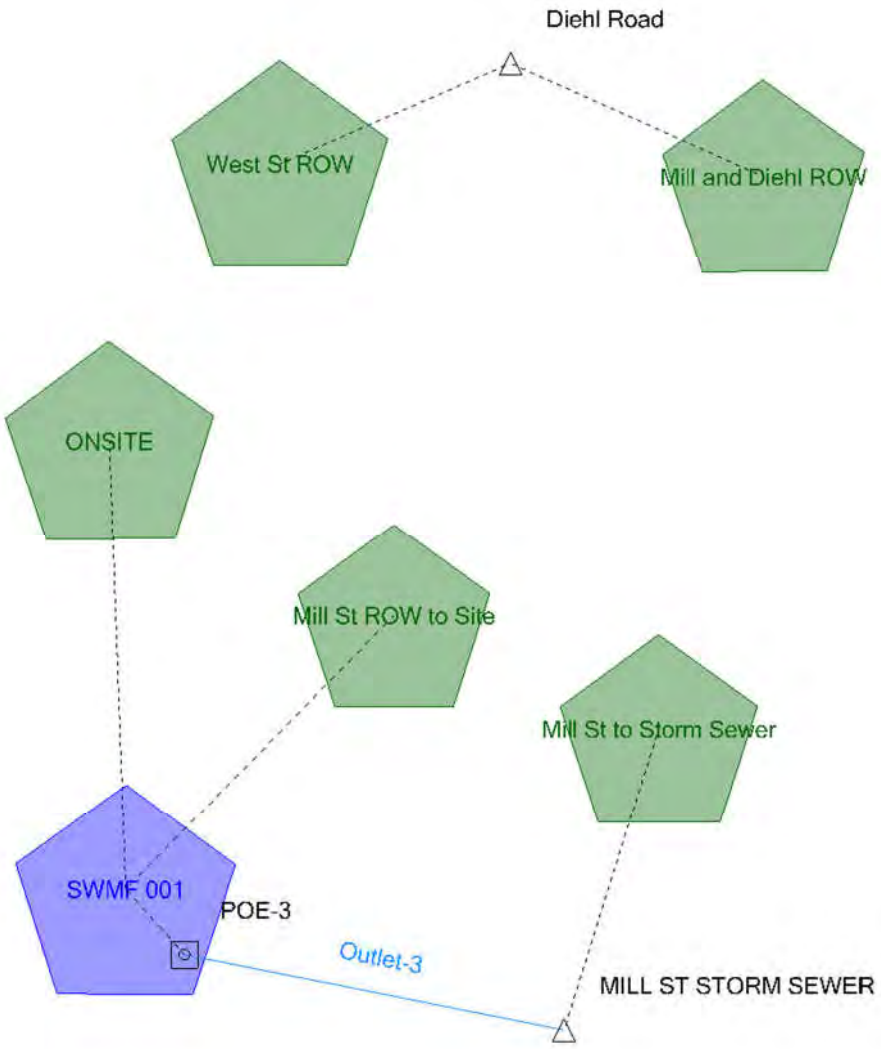
APPENDIX G

PROPOSED CONDITION COLLECTIVE EXHIBIT OF FLOW CHARTS, PONDPACK SUMMARIES AND EXECUTIVE SUMMARY, OVERLAND FLOOD ROUTE EXHIBIT AND FLOWMASTER COMPUTATIONS (SPECIFIC FLOOD ROUTING MODELS AVAILABLE UPON REQUEST)

EXHIBIT G - Proposed Pondpack Model Output Summary

			2 Year 24 Hr (cfs)				100 Year 24 hour (cfs)			
			Mill St	Diehl Rd	West St / Conestoga Rd	West St to Diehl Rd	Mill St	Diehl Rd	West St / Conestoga Rd	West St to Diehl Rd
Exist			0.26	0.07	1.89	0.07	0.73	0.26	7.91	0.27
Run 1	Outlets	1	0.51	0.09	0.00	0.07	1.27	0.32	0.00	0.25
	Infiltration	N/A								
	Modules	350								
	Diehl/West ROW	No	HWL	722.74			HWL	727.49		
	Other	N/A	Total Release	0.49			Total Release	1.14		
Run 2	Outlets	2	0.26	0.09	0.00	0.07	0.69	0.32	1.72	0.25
	Infiltration	N/A								
	Modules	350								
	Diehl/West ROW	No	HWL	722.92			HWL	727.48		
	Other	N/A	Total Release	0.23			Total Release	2.21		
Run 3	Outlets	1	0.10	0.09	0.00	0.07	0.71	0.32	0.00	0.25
	Infiltration	4.25 CFS								
	Modules	350								
	Diehl/West ROW	No	HWL	721.50			HWL	722.85		
	Other	N/A	Total Release	0.00			Total Release	0.51		
Run 4	Outlets	2	0.10	0.09	0.00	0.07	0.46	0.32	0.00	0.25
	Infiltration	4.25 CFS								
	Modules	350								
	Diehl/West ROW	No	HWL	721.50			HWL	722.93		
	Other	N/A	Total Release	0.00			Total Release	0.23		
Run 5	Outlets	2	0.10	0.09	0.00	0.07	0.67	0.32	0.55	0.25
	Infiltration	2.27 CFS								
	Modules	185								
	Diehl/West ROW	No	HWL	721.50			HWL	727.10		
	Other	OCS #2 Weir Plate at 727.1	Total Release	0.00			Total Release	1.01		
Run 6	Outlets	2	0.10	0.09	0.00	0.07	0.70	0.32	2.59	0.25
	Infiltration	2.27 CFS								
	Modules	185								
	Diehl/West ROW	Yes	HWL	721.50			HWL	727.60		
	Other	OCS #2 Weir Plate at 727.1	Total Release	0.00			Total Release	3.08 CFS		

RUN 1 PONDPACK SCHEMATIC



Scenario Calculation Summary

Scenario Summary	
ID	61
Label	2 YR - 24 HR
Notes	
Active Topology	Base Active Topology
Hydrology	Base Hydrology
Rainfall Runoff	2 YR - 24 HR
Physical	Base Physical
Initial Condition	Base Initial Condition
Boundary Condition	Base Boundary Condition
Infiltration and Inflow	Base Infiltration and Inflow
Output	Base Output
User Data Extensions	Base User Data Extensions
PondPack Engine Calculation Options	24 HR

Output Summary			
Output Increment	0.010 hours	Duration	120.000 hours

Rainfall Summary			
Return Event Tag	2	Rainfall Type	Time-Depth Curve
Total Depth	3.3 in	Storm Event	2YR-24HR

Executive Summary (Nodes)

Label	Scenario	Return Event (years)	Truncation	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft^3/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
Diehl Road	2 YR - 24 HR	2	None	0.062	16.010	0.10	(N/A)	(N/A)
MILL ST STORM SEWER	2 YR - 24 HR	2	None	1.486	20.020	0.51	(N/A)	(N/A)
Mill St ROW to Site	2 YR - 24 HR	2	None	0.137	15.990	0.17	(N/A)	(N/A)
Mill St to Storm Sewer	2 YR - 24 HR	2	None	0.071	16.010	0.10	(N/A)	(N/A)
Mill and Diehl ROW	2 YR - 24 HR	2	None	0.015	16.010	0.02	(N/A)	(N/A)
ONSITE	2 YR - 24 HR	2	None	2.040	16.010	2.91	(N/A)	(N/A)
SWMF 001 (IN)	2 YR - 24 HR	2	None	2.176	16.010	3.07	(N/A)	(N/A)
SWMF 001 (OUT)	2 YR - 24 HR	2	None	1.414	24.050	0.49	722.74	1.851
West St ROW	2 YR - 24 HR	2	None	0.047	16.010	0.07	(N/A)	(N/A)

Scenario Calculation Summary

Executive Summary (Links)

Label	Type	Location	Hydrograph Volume (ac-ft)	Peak Time (hours)	Peak Flow (ft^3/s)	End Point	Node Flow Direction
Outlet-3	Pond Outlet	Upstream	2.176	16.010	3.07	SWMF 001	Pond Inflow
Outlet-3	Pond Outlet	Outflow	1.414	24.050	0.49	SWMF 001	Pond Outflow
Outlet-3	Pond Outlet	Link	1.414	24.050	0.49		
Outlet-3	Pond Outlet	Downstream	1.486	20.020	0.51	MILL ST STORM SEWER	

Messages

Message Id	67
Scenario	2 YR - 24 HR
Element Type	Composite Outlet Structure
Element Id	34
Label	SWMF 001
Time	(N/A)
Message	Flow direction set to reverse for one ore more structures in composite outlet structure SWMF 001. To eliminate this warning, edit outlet data and select forward only. If reverse flow analysis is required, then the tailwater conditions must be set to interconnected pond.
Source	Warning

Scenario Calculation Summary

Scenario Summary	
ID	1
Label	100 YR - 24 HR
Notes	
Active Topology	Base Active Topology
Hydrology	Base Hydrology
Rainfall Runoff	100 YR - 24 HR
Physical	Base Physical
Initial Condition	Base Initial Condition
Boundary Condition	Base Boundary Condition
Infiltration and Inflow	Base Infiltration and Inflow
Output	Base Output
User Data Extensions	Base User Data Extensions
PondPack Engine Calculation Options	24 HR

Output Summary			
Output Increment	0.010 hours	Duration	120.000 hours

Rainfall Summary			
Return Event Tag	100	Rainfall Type	Time-Depth Curve
Total Depth	8.6 in	Storm Event	100YR-24HR

Executive Summary (Nodes)

Label	Scenario	Return Event (years)	Truncation	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft^3/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
Diehl Road	100 YR - 24 HR	100	None	0.249	16.000	0.33	(N/A)	(N/A)
MILL ST STORM SEWER	100 YR - 24 HR	100	None	6.541	18.010	1.27	(N/A)	(N/A)
Mill St ROW to Site	100 YR - 24 HR	100	None	0.384	15.010	0.44	(N/A)	(N/A)
Mill St to Storm Sewer	100 YR - 24 HR	100	None	0.228	15.990	0.28	(N/A)	(N/A)
Mill and Diehl ROW	100 YR - 24 HR	100	None	0.062	16.010	0.08	(N/A)	(N/A)
ONSITE	100 YR - 24 HR	100	None	6.942	15.990	8.68	(N/A)	(N/A)
SWMF 001 (IN)	100 YR - 24 HR	100	None	7.326	15.990	9.12	(N/A)	(N/A)
SWMF 001 (OUT)	100 YR - 24 HR	100	None	6.314	24.080	1.14	727.49	6.277
West St ROW	100 YR - 24 HR	100	None	0.187	16.000	0.25	(N/A)	(N/A)

Scenario Calculation Summary

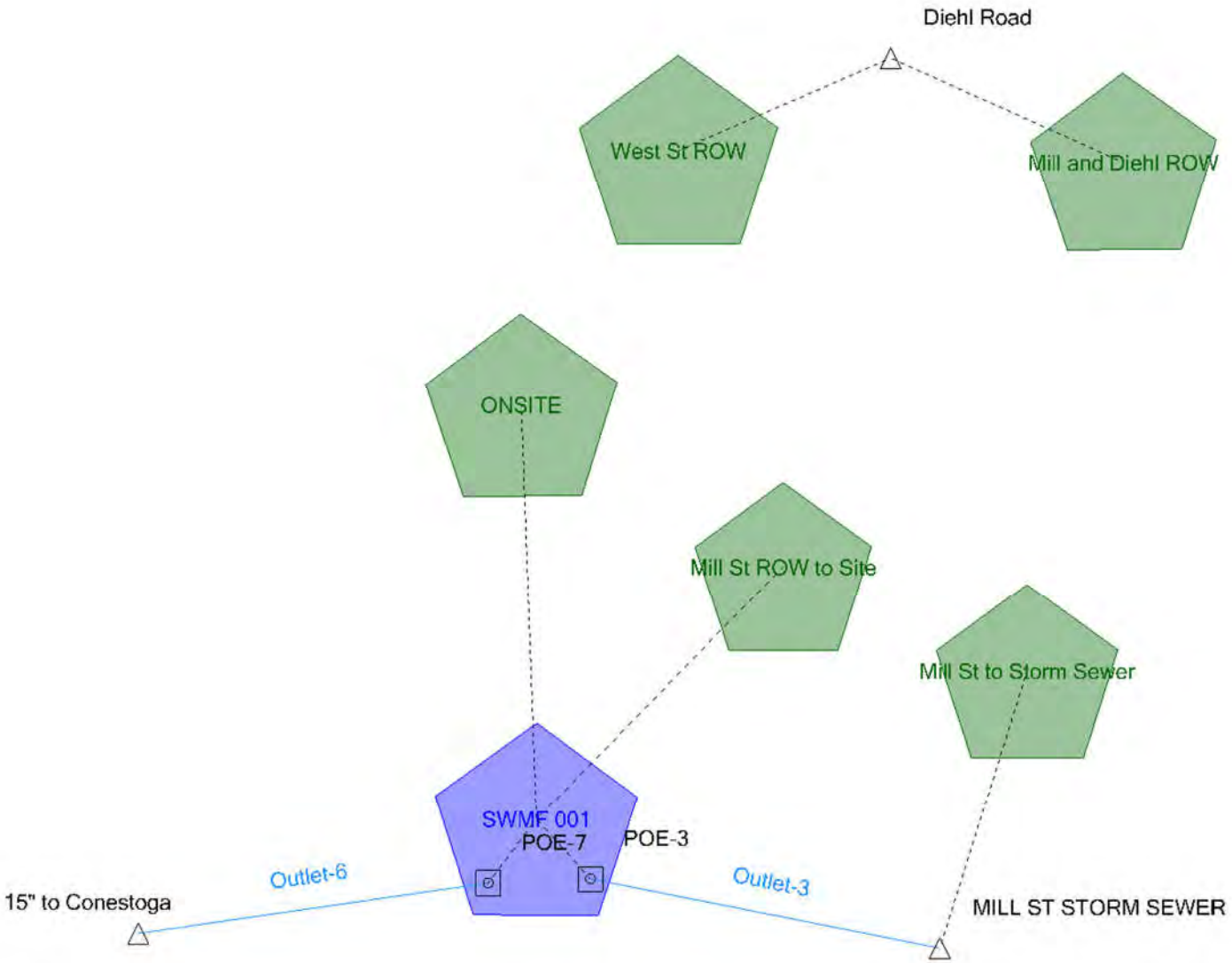
Executive Summary (Links)

Label	Type	Location	Hydrograph Volume (ac-ft)	Peak Time (hours)	Peak Flow (ft^3/s)	End Point	Node Flow Direction
Outlet-3	Pond Outlet	Upstream	7.326	15.990	9.12	SWMF 001	Pond Inflow
Outlet-3	Pond Outlet	Outflow	6.314	24.080	1.14	SWMF 001	Pond Outflow
Outlet-3	Pond Outlet	Link	6.314	24.080	1.14		
Outlet-3	Pond Outlet	Downstream	6.541	18.010	1.27	MILL ST STORM SEWER	

Messages

Message Id	67
Scenario	100 YR - 24 HR
Element Type	Composite Outlet Structure
Element Id	34
Label	SWMF 001
Time	(N/A)
Message	Flow direction set to reverse for one ore more structures in composite outlet structure SWMF 001. To eliminate this warning, edit outlet data and select forward only. If reverse flow analysis is required, then the tailwater conditions must be set to interconnected pond.
Source	Warning

RUN 2 PONDPACK SCHEMATIC



Scenario Calculation Summary

Scenario Summary	
ID	1
Label	100 YR - 24 HR
Notes	
Active Topology	Base Active Topology
Hydrology	Base Hydrology
Rainfall Runoff	100 YR - 24 HR
Physical	Base Physical
Initial Condition	Base Initial Condition
Boundary Condition	Base Boundary Condition
Infiltration and Inflow	Base Infiltration and Inflow
Output	Base Output
User Data Extensions	Base User Data Extensions
PondPack Engine Calculation Options	24 HR

Output Summary			
Output Increment	0.010 hours	Duration	120.000 hours

Rainfall Summary			
Return Event Tag	100	Rainfall Type	Time-Depth Curve
Total Depth	8.6 in	Storm Event	100YR-24HR

Executive Summary (Nodes)

Label	Scenario	Return Event (years)	Truncation	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft^3/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
15" to Conestoga	100 YR - 24 HR	100	None	0.960	21.080	1.72	(N/A)	(N/A)
Diehl Road	100 YR - 24 HR	100	None	0.249	16.000	0.33	(N/A)	(N/A)
MILL ST STORM SEWER	100 YR - 24 HR	100	None	3.702	17.010	0.69	(N/A)	(N/A)
Mill St ROW to Site	100 YR - 24 HR	100	None	0.384	15.010	0.44	(N/A)	(N/A)
Mill St to Storm Sewer	100 YR - 24 HR	100	None	0.228	15.990	0.28	(N/A)	(N/A)
Mill and Diehl ROW	100 YR - 24 HR	100	None	0.062	16.010	0.08	(N/A)	(N/A)
ONSITE	100 YR - 24 HR	100	None	6.942	15.990	8.68	(N/A)	(N/A)
SWMF 001 (IN)	100 YR - 24 HR	100	None	7.326	15.990	9.12	(N/A)	(N/A)
SWMF 001 (OUT)	100 YR - 24 HR	100	None	4.434	21.080	2.21	727.48	6.268
West St ROW	100 YR - 24 HR	100	None	0.187	16.000	0.25	(N/A)	(N/A)

Scenario Calculation Summary

Executive Summary (Links)

Label	Type	Location	Hydrograph Volume (ac-ft)	Peak Time (hours)	Peak Flow (ft^3/s)	End Point	Node Flow Direction
Outlet-3	Pond Outlet	Upstream	7.326	15.990	9.12	SWMF 001	Pond Inflow
Outlet-3	Pond Outlet	Outflow	4.434	21.080	2.21	SWMF 001	Pond Outflow
Outlet-3	Pond Outlet	Link	3.474	21.080	0.48		
Outlet-3	Pond Outlet	Downstream	3.702	17.010	0.69	MILL ST STORM SEWER	
Outlet-6	Pond Outlet	Upstream	7.326	15.990	9.12	SWMF 001	Pond Inflow
Outlet-6	Pond Outlet	Outflow	4.434	21.080	2.21	SWMF 001	Pond Outflow
Outlet-6	Pond Outlet	Link	0.960	21.080	1.72		
Outlet-6	Pond Outlet	Downstream	0.960	21.080	1.72	15" to Conestoga	

Messages

Message Id	67
Scenario	100 YR - 24 HR
Element Type	Composite Outlet Structure
Element Id	34
Label	SWMF 001
Time	(N/A)
Message	Flow direction set to reverse for one ore more structures in composite outlet structure SWMF 001. To eliminate this warning, edit outlet data and select forward only. If reverse flow analysis is required, then the tailwater conditions must be set to interconnected pond.
Source	Warning

Scenario Calculation Summary

Scenario Summary	
ID	61
Label	2 YR - 24 HR
Notes	
Active Topology	Base Active Topology
Hydrology	Base Hydrology
Rainfall Runoff	2 YR - 24 HR
Physical	Base Physical
Initial Condition	Base Initial Condition
Boundary Condition	Base Boundary Condition
Infiltration and Inflow	Base Infiltration and Inflow
Output	Base Output
User Data Extensions	Base User Data Extensions
PondPack Engine Calculation Options	24 HR

Output Summary			
Output Increment	0.010 hours	Duration	120.000 hours

Rainfall Summary			
Return Event Tag	2	Rainfall Type	Time-Depth Curve
Total Depth	3.3 in	Storm Event	2YR-24HR

Executive Summary (Nodes)

Label	Scenario	Return Event (years)	Truncation	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft^3/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
15" to Conestoga	2 YR - 24 HR	2	None	0.000	0.000	0.00	(N/A)	(N/A)
Diehl Road	2 YR - 24 HR	2	None	0.062	16.010	0.10	(N/A)	(N/A)
MILL ST STORM SEWER	2 YR - 24 HR	2	None	1.352	18.010	0.26	(N/A)	(N/A)
Mill St ROW to Site	2 YR - 24 HR	2	None	0.137	15.990	0.17	(N/A)	(N/A)
Mill St to Storm Sewer	2 YR - 24 HR	2	None	0.071	16.010	0.10	(N/A)	(N/A)
Mill and Diehl ROW	2 YR - 24 HR	2	None	0.015	16.010	0.02	(N/A)	(N/A)
ONSITE	2 YR - 24 HR	2	None	2.040	16.010	2.91	(N/A)	(N/A)
SWMF 001 (IN)	2 YR - 24 HR	2	None	2.176	16.010	3.07	(N/A)	(N/A)
SWMF 001 (OUT)	2 YR - 24 HR	2	None	1.280	24.130	0.23	722.92	2.026
West St ROW	2 YR - 24 HR	2	None	0.047	16.010	0.07	(N/A)	(N/A)

Scenario Calculation Summary

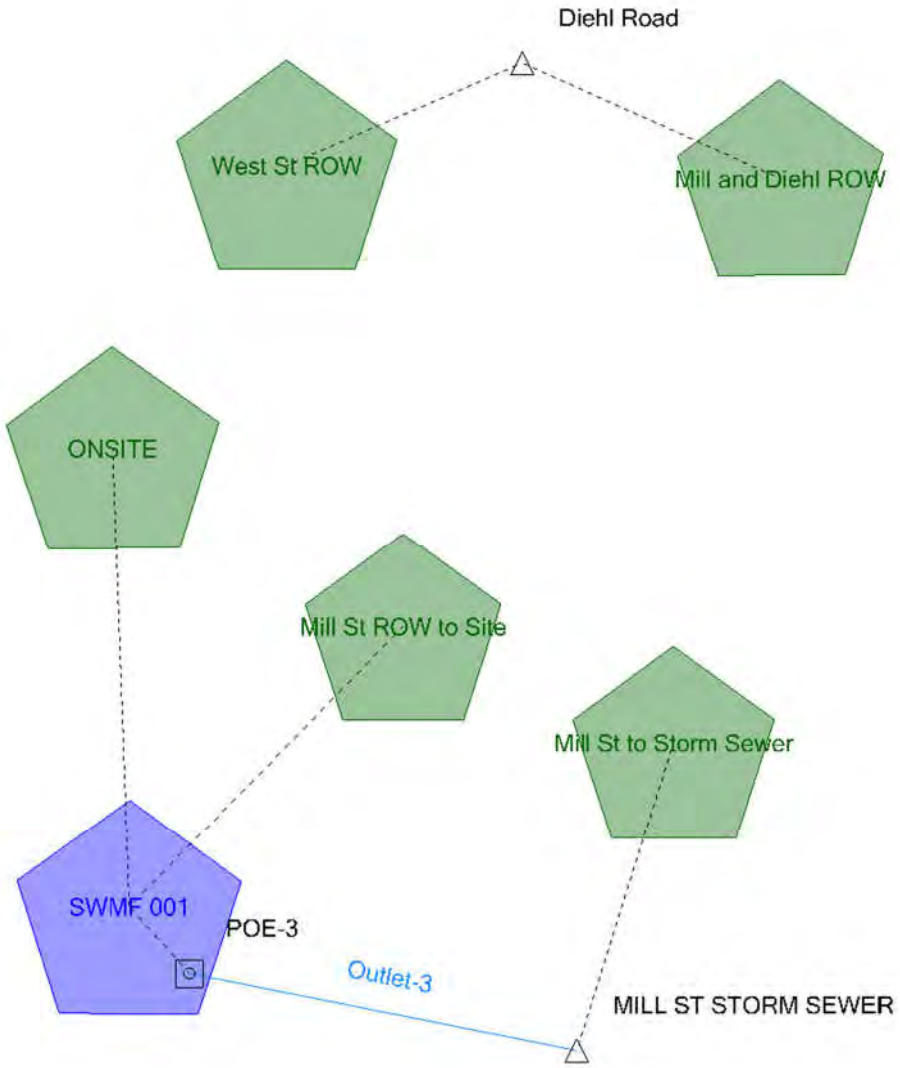
Executive Summary (Links)

Label	Type	Location	Hydrograph Volume (ac-ft)	Peak Time (hours)	Peak Flow (ft^3/s)	End Point	Node Flow Direction
Outlet-3	Pond Outlet	Upstream	2.176	16.010	3.07	SWMF 001	Pond Inflow
Outlet-3	Pond Outlet	Outflow	1.280	24.130	0.23	SWMF 001	Pond Outflow
Outlet-3	Pond Outlet	Link	1.280	24.130	0.23		
Outlet-3	Pond Outlet	Downstream	1.352	18.010	0.26	MILL ST STORM SEWER	
Outlet-6	Pond Outlet	Upstream	2.176	16.010	3.07	SWMF 001	Pond Inflow
Outlet-6	Pond Outlet	Outflow	1.280	24.130	0.23	SWMF 001	Pond Outflow
Outlet-6	Pond Outlet	Link	0.000	0.000	0.00		
Outlet-6	Pond Outlet	Downstream	0.000	0.000	0.00	15" to Conestoga	

Messages

Message Id	67
Scenario	2 YR - 24 HR
Element Type	Composite Outlet Structure
Element Id	34
Label	SWMF 001
Time	(N/A)
Message	Flow direction set to reverse for one ore more structures in composite outlet structure SWMF 001. To eliminate this warning, edit outlet data and select forward only. If reverse flow analysis is required, then the tailwater conditions must be set to interconnected pond.
Source	Warning

RUN 3 PONDPACK SCHEMATIC



Scenario Calculation Summary

Scenario Summary	
ID	61
Label	2 YR - 24 HR
Notes	
Active Topology	Base Active Topology
Hydrology	Base Hydrology
Rainfall Runoff	2 YR - 24 HR
Physical	Base Physical
Initial Condition	Base Initial Condition
Boundary Condition	Base Boundary Condition
Infiltration and Inflow	Base Infiltration and Inflow
Output	Base Output
User Data Extensions	Base User Data Extensions
PondPack Engine Calculation Options	24 HR

Output Summary			
Output Increment	0.010 hours	Duration	120.000 hours

Rainfall Summary			
Return Event Tag	2	Rainfall Type	Time-Depth Curve
Total Depth	3.3 in	Storm Event	2YR-24HR

Executive Summary (Nodes)

Label	Scenario	Return Event (years)	Truncation	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft^3/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
Diehl Road	2 YR - 24 HR	2	None	0.062	16.010	0.10	(N/A)	(N/A)
MILL ST STORM SEWER	2 YR - 24 HR	2	None	0.071	16.010	0.10	(N/A)	(N/A)
Mill St ROW to Site	2 YR - 24 HR	2	None	0.137	15.990	0.17	(N/A)	(N/A)
Mill St to Storm Sewer	2 YR - 24 HR	2	None	0.071	16.010	0.10	(N/A)	(N/A)
Mill and Diehl ROW	2 YR - 24 HR	2	None	0.015	16.010	0.02	(N/A)	(N/A)
ONSITE	2 YR - 24 HR	2	None	2.040	16.010	2.91	(N/A)	(N/A)
SWMF 001 (IN)	2 YR - 24 HR	2	None	2.176	16.010	3.07	(N/A)	(N/A)
SWMF 001 (OUT)	2 YR - 24 HR	2	None	0.000	26.170	0.00	721.50	0.701
West St ROW	2 YR - 24 HR	2	None	0.047	16.010	0.07	(N/A)	(N/A)

Scenario Calculation Summary

Executive Summary (Links)

Label	Type	Location	Hydrograph Volume (ac-ft)	Peak Time (hours)	Peak Flow (ft^3/s)	End Point	Node Flow Direction
Outlet-3	Pond Outlet	Upstream	2.176	16.010	3.07	SWMF 001	Pond Inflow
Outlet-3	Pond Outlet	Outflow	0.000	26.170	0.00	SWMF 001	Pond Outflow
Outlet-3	Pond Outlet	Link	0.000	26.170	0.00		
Outlet-3	Pond Outlet	Downstream	0.071	16.010	0.10	MILL ST STORM SEWER	

Messages

Message Id	67
Scenario	2 YR - 24 HR
Element Type	Composite Outlet Structure
Element Id	34
Label	SWMF 001
Time	(N/A)
Message	Flow direction set to reverse for one ore more structures in composite outlet structure SWMF 001. To eliminate this warning, edit outlet data and select forward only. If reverse flow analysis is required, then the tailwater conditions must be set to interconnected pond.
Source	Warning

Scenario Calculation Summary

Scenario Summary	
ID	1
Label	100 YR - 24 HR
Notes	
Active Topology	Base Active Topology
Hydrology	Base Hydrology
Rainfall Runoff	100 YR - 24 HR
Physical	Base Physical
Initial Condition	Base Initial Condition
Boundary Condition	Base Boundary Condition
Infiltration and Inflow	Base Infiltration and Inflow
Output	Base Output
User Data Extensions	Base User Data Extensions
PondPack Engine Calculation Options	24 HR

Output Summary			
Output Increment	0.010 hours	Duration	120.000 hours

Rainfall Summary			
Return Event Tag	100	Rainfall Type	Time-Depth Curve
Total Depth	8.6 in	Storm Event	100YR-24HR

Executive Summary (Nodes)

Label	Scenario	Return Event (years)	Truncation	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft^3/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
Diehl Road	100 YR - 24 HR	100	None	0.249	16.000	0.33	(N/A)	(N/A)
MILL ST STORM SEWER	100 YR - 24 HR	100	None	0.533	18.010	0.71	(N/A)	(N/A)
Mill St ROW to Site	100 YR - 24 HR	100	None	0.384	15.010	0.44	(N/A)	(N/A)
Mill St to Storm Sewer	100 YR - 24 HR	100	None	0.228	15.990	0.28	(N/A)	(N/A)
Mill and Diehl ROW	100 YR - 24 HR	100	None	0.062	16.010	0.08	(N/A)	(N/A)
ONSITE	100 YR - 24 HR	100	None	6.942	15.990	8.68	(N/A)	(N/A)
SWMF 001 (IN)	100 YR - 24 HR	100	None	7.326	15.990	9.12	(N/A)	(N/A)
SWMF 001 (OUT)	100 YR - 24 HR	100	None	0.306	19.070	0.51	722.85	1.955
West St ROW	100 YR - 24 HR	100	None	0.187	16.000	0.25	(N/A)	(N/A)

Scenario Calculation Summary

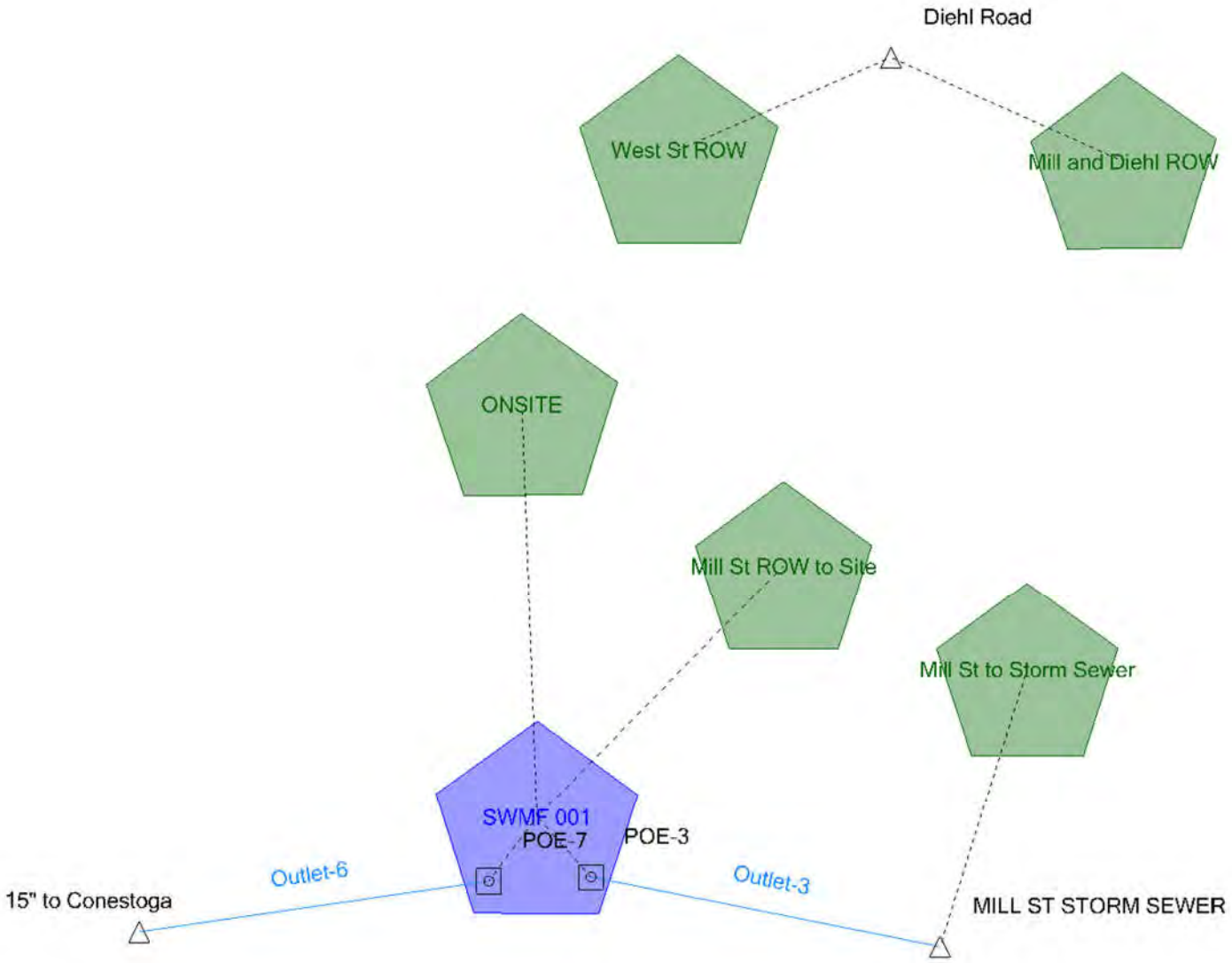
Executive Summary (Links)

Label	Type	Location	Hydrograph Volume (ac-ft)	Peak Time (hours)	Peak Flow (ft^3/s)	End Point	Node Flow Direction
Outlet-3	Pond Outlet	Upstream	7.326	15.990	9.12	SWMF 001	Pond Inflow
Outlet-3	Pond Outlet	Outflow	0.306	19.070	0.51	SWMF 001	Pond Outflow
Outlet-3	Pond Outlet	Link	0.306	19.070	0.51		
Outlet-3	Pond Outlet	Downstream	0.533	18.010	0.71	MILL ST STORM SEWER	

Messages

Message Id	67
Scenario	100 YR - 24 HR
Element Type	Composite Outlet Structure
Element Id	34
Label	SWMF 001
Time	(N/A)
Message	Flow direction set to reverse for one ore more structures in composite outlet structure SWMF 001. To eliminate this warning, edit outlet data and select forward only. If reverse flow analysis is required, then the tailwater conditions must be set to interconnected pond.
Source	Warning

RUN 4 PONDPACK SCHEMATIC



Scenario Calculation Summary

Scenario Summary	
ID	61
Label	2 YR - 24 HR
Notes	
Active Topology	Base Active Topology
Hydrology	Base Hydrology
Rainfall Runoff	2 YR - 24 HR
Physical	Base Physical
Initial Condition	Base Initial Condition
Boundary Condition	Base Boundary Condition
Infiltration and Inflow	Base Infiltration and Inflow
Output	Base Output
User Data Extensions	Base User Data Extensions
PondPack Engine Calculation Options	24 HR

Output Summary			
Output Increment	0.010 hours	Duration	120.000 hours

Rainfall Summary			
Return Event Tag	2	Rainfall Type	Time-Depth Curve
Total Depth	3.3 in	Storm Event	2YR-24HR

Executive Summary (Nodes)

Label	Scenario	Return Event (years)	Truncation	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft^3/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
15" to Conestoga	2 YR - 24 HR	2	None	0.000	0.000	0.00	(N/A)	(N/A)
Diehl Road	2 YR - 24 HR	2	None	0.062	16.010	0.10	(N/A)	(N/A)
MILL ST STORM SEWER	2 YR - 24 HR	2	None	0.071	16.010	0.10	(N/A)	(N/A)
Mill St ROW to Site	2 YR - 24 HR	2	None	0.137	15.990	0.17	(N/A)	(N/A)
Mill St to Storm Sewer	2 YR - 24 HR	2	None	0.071	16.010	0.10	(N/A)	(N/A)
Mill and Diehl ROW	2 YR - 24 HR	2	None	0.015	16.010	0.02	(N/A)	(N/A)
ONSITE	2 YR - 24 HR	2	None	2.040	16.010	2.91	(N/A)	(N/A)
SWMF 001 (IN)	2 YR - 24 HR	2	None	2.176	16.010	3.07	(N/A)	(N/A)
SWMF 001 (OUT)	2 YR - 24 HR	2	None	0.000	26.170	0.00	721.50	0.701
West St ROW	2 YR - 24 HR	2	None	0.047	16.010	0.07	(N/A)	(N/A)

Scenario Calculation Summary

Executive Summary (Links)

Label	Type	Location	Hydrograph Volume (ac-ft)	Peak Time (hours)	Peak Flow (ft^3/s)	End Point	Node Flow Direction
Outlet-3	Pond Outlet	Upstream	2.176	16.010	3.07	SWMF 001	Pond Inflow
Outlet-3	Pond Outlet	Outflow	0.000	26.170	0.00	SWMF 001	Pond Outflow
Outlet-3	Pond Outlet	Link	0.000	0.000	0.00		
Outlet-3	Pond Outlet	Downstream	0.071	16.010	0.10	MILL ST STORM SEWER	
Outlet-6	Pond Outlet	Upstream	2.176	16.010	3.07	SWMF 001	Pond Inflow
Outlet-6	Pond Outlet	Outflow	0.000	26.170	0.00	SWMF 001	Pond Outflow
Outlet-6	Pond Outlet	Link	0.000	0.000	0.00		
Outlet-6	Pond Outlet	Downstream	0.000	0.000	0.00	15" to Conestoga	

Messages

Message Id	67
Scenario	2 YR - 24 HR
Element Type	Composite Outlet Structure
Element Id	34
Label	SWMF 001
Time	(N/A)
Message	Flow direction set to reverse for one ore more structures in composite outlet structure SWMF 001. To eliminate this warning, edit outlet data and select forward only. If reverse flow analysis is required, then the tailwater conditions must be set to interconnected pond.
Source	Warning

Scenario Calculation Summary

Scenario Summary	
ID	1
Label	100 YR - 24 HR
Notes	
Active Topology	Base Active Topology
Hydrology	Base Hydrology
Rainfall Runoff	100 YR - 24 HR
Physical	Base Physical
Initial Condition	Base Initial Condition
Boundary Condition	Base Boundary Condition
Infiltration and Inflow	Base Infiltration and Inflow
Output	Base Output
User Data Extensions	Base User Data Extensions
PondPack Engine Calculation Options	24 HR

Output Summary			
Output Increment	0.010 hours	Duration	120.000 hours

Rainfall Summary			
Return Event Tag	100	Rainfall Type	Time-Depth Curve
Total Depth	8.6 in	Storm Event	100YR-24HR

Executive Summary (Nodes)

Label	Scenario	Return Event (years)	Truncation	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft^3/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
15" to Conestoga	100 YR - 24 HR	100	None	0.000	0.000	0.00	(N/A)	(N/A)
Diehl Road	100 YR - 24 HR	100	None	0.249	16.000	0.33	(N/A)	(N/A)
MILL ST STORM SEWER	100 YR - 24 HR	100	None	0.375	17.010	0.46	(N/A)	(N/A)
Mill St ROW to Site	100 YR - 24 HR	100	None	0.384	15.010	0.44	(N/A)	(N/A)
Mill St to Storm Sewer	100 YR - 24 HR	100	None	0.228	15.990	0.28	(N/A)	(N/A)
Mill and Diehl ROW	100 YR - 24 HR	100	None	0.062	16.010	0.08	(N/A)	(N/A)
ONSITE	100 YR - 24 HR	100	None	6.942	15.990	8.68	(N/A)	(N/A)
SWMF 001 (IN)	100 YR - 24 HR	100	None	7.326	15.990	9.12	(N/A)	(N/A)
SWMF 001 (OUT)	100 YR - 24 HR	100	None	0.148	19.100	0.23	722.93	2.035
West St ROW	100 YR - 24 HR	100	None	0.187	16.000	0.25	(N/A)	(N/A)

Scenario Calculation Summary

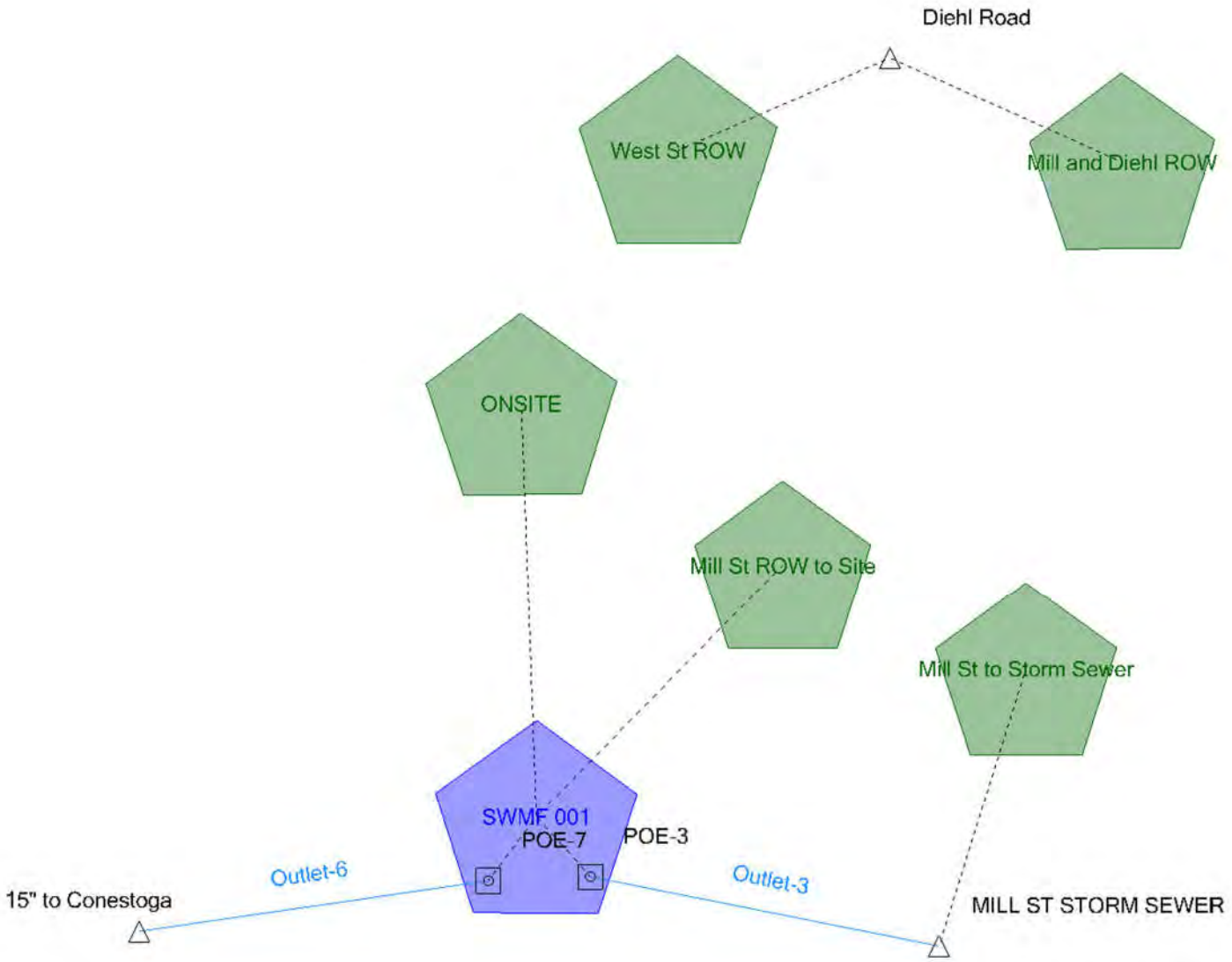
Executive Summary (Links)

Label	Type	Location	Hydrograph Volume (ac-ft)	Peak Time (hours)	Peak Flow (ft^3/s)	End Point	Node Flow Direction
Outlet-3	Pond Outlet	Upstream	7.326	15.990	9.12	SWMF 001	Pond Inflow
Outlet-3	Pond Outlet	Outflow	0.148	19.100	0.23	SWMF 001	Pond Outflow
Outlet-3	Pond Outlet	Link	0.148	19.100	0.23		
Outlet-3	Pond Outlet	Downstream	0.375	17.010	0.46	MILL ST STORM SEWER	
Outlet-6	Pond Outlet	Upstream	7.326	15.990	9.12	SWMF 001	Pond Inflow
Outlet-6	Pond Outlet	Outflow	0.148	19.100	0.23	SWMF 001	Pond Outflow
Outlet-6	Pond Outlet	Link	0.000	0.000	0.00		
Outlet-6	Pond Outlet	Downstream	0.000	0.000	0.00	15" to Conestoga	

Messages

Message Id	67
Scenario	100 YR - 24 HR
Element Type	Composite Outlet Structure
Element Id	34
Label	SWMF 001
Time	(N/A)
Message	Flow direction set to reverse for one ore more structures in composite outlet structure SWMF 001. To eliminate this warning, edit outlet data and select forward only. If reverse flow analysis is required, then the tailwater conditions must be set to interconnected pond.
Source	Warning

RUN 5 PONDPACK SCHEMATIC



Scenario Calculation Summary

Scenario Summary	
ID	61
Label	2 YR - 24 HR
Notes	
Active Topology	Base Active Topology
Hydrology	Base Hydrology
Rainfall Runoff	2 YR - 24 HR
Physical	Base Physical
Initial Condition	Base Initial Condition
Boundary Condition	Base Boundary Condition
Infiltration and Inflow	Base Infiltration and Inflow
Output	Base Output
User Data Extensions	Base User Data Extensions
PondPack Engine Calculation Options	24 HR

Output Summary			
Output Increment	0.010 hours	Duration	120.000 hours

Rainfall Summary			
Return Event Tag	2	Rainfall Type	Time-Depth Curve
Total Depth	3.3 in	Storm Event	2YR-24HR

Executive Summary (Nodes)

Label	Scenario	Return Event (years)	Truncation	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft^3/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
15" to Conestoga	2 YR - 24 HR	2	None	0.000	0.000	0.00	(N/A)	(N/A)
Diehl Road	2 YR - 24 HR	2	None	0.062	16.010	0.10	(N/A)	(N/A)
MILL ST STORM SEWER	2 YR - 24 HR	2	None	0.071	16.010	0.10	(N/A)	(N/A)
Mill St ROW to Site	2 YR - 24 HR	2	None	0.137	15.990	0.17	(N/A)	(N/A)
Mill St to Storm Sewer	2 YR - 24 HR	2	None	0.071	16.010	0.10	(N/A)	(N/A)
Mill and Diehl ROW	2 YR - 24 HR	2	None	0.015	16.010	0.02	(N/A)	(N/A)
ONSITE	2 YR - 24 HR	2	None	2.040	16.010	2.91	(N/A)	(N/A)
SWMF 001 (IN)	2 YR - 24 HR	2	None	2.176	16.010	3.07	(N/A)	(N/A)
SWMF 001 (OUT)	2 YR - 24 HR	2	None	0.000	27.910	0.00	721.50	0.701
West St ROW	2 YR - 24 HR	2	None	0.047	16.010	0.07	(N/A)	(N/A)

Scenario Calculation Summary

Executive Summary (Links)

Label	Type	Location	Hydrograph Volume (ac-ft)	Peak Time (hours)	Peak Flow (ft^3/s)	End Point	Node Flow Direction
Outlet-3	Pond Outlet	Upstream	2.176	16.010	3.07	SWMF 001	Pond Inflow
Outlet-3	Pond Outlet	Outflow	0.000	27.910	0.00	SWMF 001	Pond Outflow
Outlet-3	Pond Outlet	Link	0.000	0.000	0.00		
Outlet-3	Pond Outlet	Downstream	0.071	16.010	0.10	MILL ST STORM SEWER	
Outlet-6	Pond Outlet	Upstream	2.176	16.010	3.07	SWMF 001	Pond Inflow
Outlet-6	Pond Outlet	Outflow	0.000	27.910	0.00	SWMF 001	Pond Outflow
Outlet-6	Pond Outlet	Link	0.000	0.000	0.00		
Outlet-6	Pond Outlet	Downstream	0.000	0.000	0.00	15" to Conestoga	

Messages

Message Id	67
Scenario	2 YR - 24 HR
Element Type	Composite Outlet Structure
Element Id	34
Label	SWMF 001
Time	(N/A)
Message	Flow direction set to reverse for one ore more structures in composite outlet structure SWMF 001. To eliminate this warning, edit outlet data and select forward only. If reverse flow analysis is required, then the tailwater conditions must be set to interconnected pond.
Source	Warning

Scenario Calculation Summary

Scenario Summary	
ID	1
Label	100 YR - 24 HR
Notes	
Active Topology	Base Active Topology
Hydrology	Base Hydrology
Rainfall Runoff	100 YR - 24 HR
Physical	Base Physical
Initial Condition	Base Initial Condition
Boundary Condition	Base Boundary Condition
Infiltration and Inflow	Base Infiltration and Inflow
Output	Base Output
User Data Extensions	Base User Data Extensions
PondPack Engine Calculation Options	24 HR

Output Summary			
Output Increment	0.010 hours	Duration	120.000 hours

Rainfall Summary			
Return Event Tag	100	Rainfall Type	Time-Depth Curve
Total Depth	8.6 in	Storm Event	100YR-24HR

Executive Summary (Nodes)

Label	Scenario	Return Event (years)	Truncation	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft^3/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
15" to Conestoga	100 YR - 24 HR	100	None	0.018	20.090	0.38	(N/A)	(N/A)
Diehl Road	100 YR - 24 HR	100	None	0.249	16.000	0.33	(N/A)	(N/A)
MILL ST STORM SEWER	100 YR - 24 HR	100	None	0.867	17.010	0.67	(N/A)	(N/A)
Mill St ROW to Site	100 YR - 24 HR	100	None	0.384	15.010	0.44	(N/A)	(N/A)
Mill St to Storm Sewer	100 YR - 24 HR	100	None	0.228	15.990	0.28	(N/A)	(N/A)
Mill and Diehl ROW	100 YR - 24 HR	100	None	0.062	16.010	0.08	(N/A)	(N/A)
ONSITE	100 YR - 24 HR	100	None	6.942	15.990	8.68	(N/A)	(N/A)
SWMF 001 (IN)	100 YR - 24 HR	100	None	7.326	15.990	9.12	(N/A)	(N/A)
SWMF 001 (OUT)	100 YR - 24 HR	100	None	0.657	20.090	0.85	727.14	3.541
West St ROW	100 YR - 24 HR	100	None	0.187	16.000	0.25	(N/A)	(N/A)

Scenario Calculation Summary

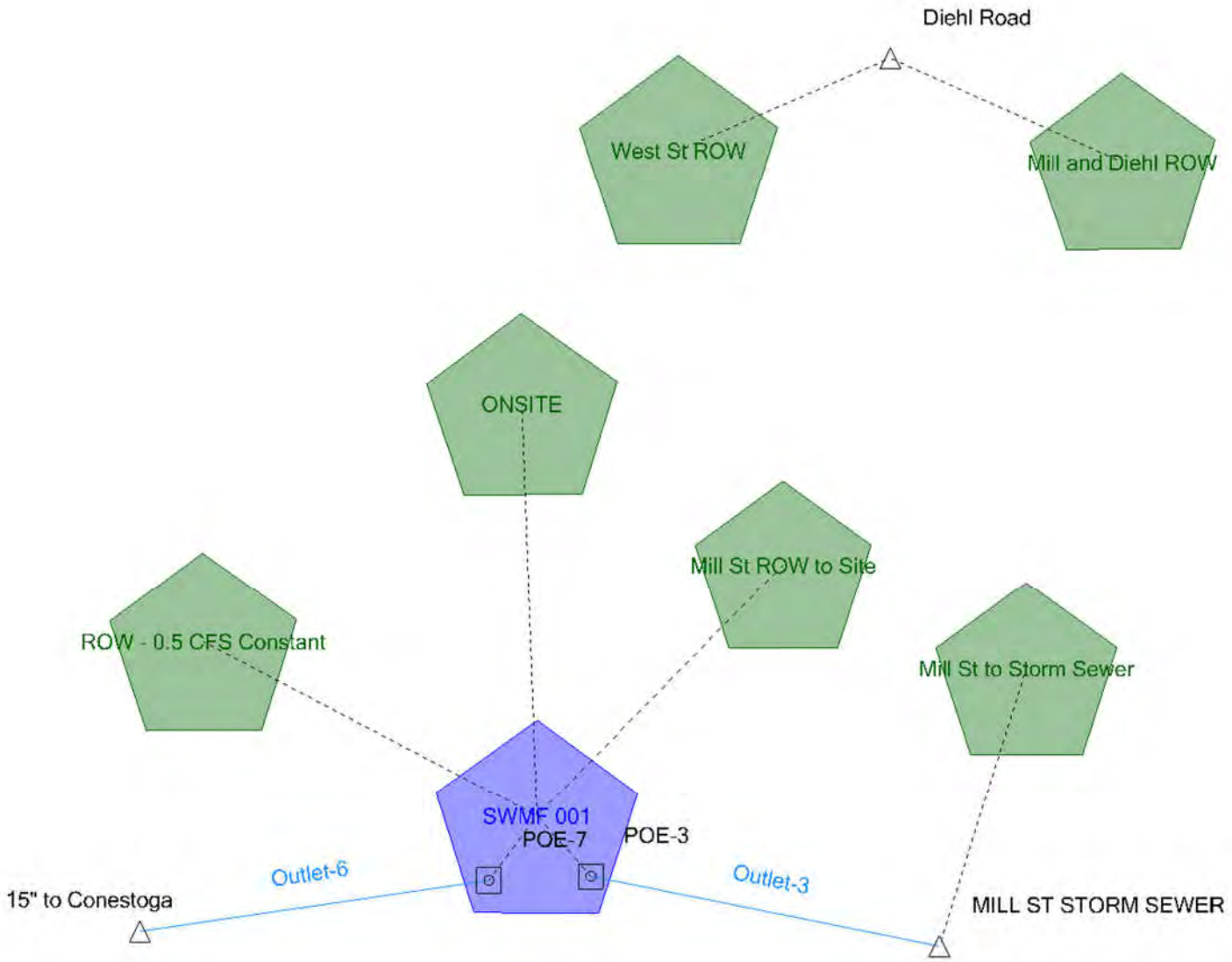
Executive Summary (Links)

Label	Type	Location	Hydrograph Volume (ac-ft)	Peak Time (hours)	Peak Flow (ft^3/s)	End Point	Node Flow Direction
Outlet-3	Pond Outlet	Upstream	7.326	15.990	9.12	SWMF 001	Pond Inflow
Outlet-3	Pond Outlet	Outflow	0.657	20.090	0.85	SWMF 001	Pond Outflow
Outlet-3	Pond Outlet	Link	0.639	20.090	0.47		
Outlet-3	Pond Outlet	Downstream	0.867	17.010	0.67	MILL ST STORM SEWER	
Outlet-6	Pond Outlet	Upstream	7.326	15.990	9.12	SWMF 001	Pond Inflow
Outlet-6	Pond Outlet	Outflow	0.657	20.090	0.85	SWMF 001	Pond Outflow
Outlet-6	Pond Outlet	Link	0.018	20.090	0.38		
Outlet-6	Pond Outlet	Downstream	0.018	20.090	0.38	15" to Conestoga	

Messages

Message Id	67
Scenario	2 YR - 24 HR
Element Type	Composite Outlet Structure
Element Id	34
Label	SWMF 001
Time	(N/A)
Message	Flow direction set to reverse for one ore more structures in composite outlet structure SWMF 001. To eliminate this warning, edit outlet data and select forward only. If reverse flow analysis is required, then the tailwater conditions must be set to interconnected pond.
Source	Warning

RUN 6 PONDPACK SCHEMATIC



Scenario Calculation Summary

Scenario Summary	
ID	61
Label	2 YR - 24 HR
Notes	
Active Topology	Base Active Topology
Hydrology	Base Hydrology
Rainfall Runoff	2 YR - 24 HR
Physical	Base Physical
Initial Condition	Base Initial Condition
Boundary Condition	Base Boundary Condition
Infiltration and Inflow	Base Infiltration and Inflow
Output	Base Output
User Data Extensions	Base User Data Extensions
PondPack Engine Calculation Options	24 HR

Output Summary			
Output Increment	0.010 hours	Duration	120.000 hours

Rainfall Summary			
Return Event Tag	2	Rainfall Type	Time-Depth Curve
Total Depth	3.3 in	Storm Event	2YR-24HR

Executive Summary (Nodes)

Label	Scenario	Return Event (years)	Truncation	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft^3/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
15" to Conestoga	2 YR - 24 HR	2	None	0.000	0.000	0.00	(N/A)	(N/A)
Diehl Road	2 YR - 24 HR	2	None	0.062	16.010	0.10	(N/A)	(N/A)
MILL ST STORM SEWER	2 YR - 24 HR	2	None	0.071	16.010	0.10	(N/A)	(N/A)
Mill St ROW to Site	2 YR - 24 HR	2	None	0.137	15.990	0.17	(N/A)	(N/A)
Mill St to Storm Sewer	2 YR - 24 HR	2	None	0.071	16.010	0.10	(N/A)	(N/A)
Mill and Diehl ROW	2 YR - 24 HR	2	None	0.015	16.010	0.02	(N/A)	(N/A)
ONSITE	2 YR - 24 HR	2	None	2.040	16.010	2.91	(N/A)	(N/A)
ROW - 0.5 CFS Constant	2 YR - 24 HR	2	None	4.959	0.000	0.50	(N/A)	(N/A)
SWMF 001 (IN)	2 YR - 24 HR	2	None	7.135	16.010	3.57	(N/A)	(N/A)

Scenario Calculation Summary

Executive Summary (Nodes)

Label	Scenario	Return Event (years)	Truncation	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft^3/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
SWMF 001 (OUT)	2 YR - 24 HR	2	None	0.000	0.000	0.00	719.47	0.460
West St ROW	2 YR - 24 HR	2	None	0.047	16.010	0.07	(N/A)	(N/A)

Executive Summary (Links)

Label	Type	Location	Hydrograph Volume (ac-ft)	Peak Time (hours)	Peak Flow (ft^3/s)	End Point	Node Flow Direction
Outlet-3	Pond Outlet	Upstream	7.135	16.010	3.57	SWMF 001	Pond Inflow
Outlet-3	Pond Outlet	Outflow	0.000	0.000	0.00	SWMF 001	Pond Outflow
Outlet-3	Pond Outlet	Link	0.000	0.000	0.00		
Outlet-3	Pond Outlet	Downstream	0.071	16.010	0.10	MILL ST STORM SEWER	
Outlet-6	Pond Outlet	Upstream	7.135	16.010	3.57	SWMF 001	Pond Inflow
Outlet-6	Pond Outlet	Outflow	0.000	0.000	0.00	SWMF 001	Pond Outflow
Outlet-6	Pond Outlet	Link	0.000	0.000	0.00		
Outlet-6	Pond Outlet	Downstream	0.000	0.000	0.00	15" to Conestoga	

Messages

Message Id	67
Scenario	2 YR - 24 HR
Element Type	Composite Outlet Structure
Element Id	34
Label	SWMF 001
Time	(N/A)
Message	Flow direction set to reverse for one ore more structures in composite outlet structure SWMF 001. To eliminate this warning, edit outlet data and select forward only. If reverse flow analysis is required, then the tailwater conditions must be set to interconnected pond.
Source	Warning

Scenario Calculation Summary

Scenario Summary	
ID	1
Label	100 YR - 24 HR
Notes	
Active Topology	Base Active Topology
Hydrology	Base Hydrology
Rainfall Runoff	100 YR - 24 HR
Physical	Base Physical
Initial Condition	Base Initial Condition
Boundary Condition	Base Boundary Condition
Infiltration and Inflow	Base Infiltration and Inflow
Output	Base Output
User Data Extensions	Base User Data Extensions
PondPack Engine Calculation Options	24 HR

Output Summary			
Output Increment	0.010 hours	Duration	120.000 hours

Rainfall Summary			
Return Event Tag	100	Rainfall Type	Time-Depth Curve
Total Depth	8.6 in	Storm Event	100YR-24HR

Executive Summary (Nodes)

Label	Scenario	Return Event (years)	Truncation	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft^3/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
15" to Conestoga	100 YR - 24 HR	100	None	0.517	19.060	2.59	(N/A)	(N/A)
Diehl Road	100 YR - 24 HR	100	None	0.249	16.000	0.33	(N/A)	(N/A)
MILL ST STORM SEWER	100 YR - 24 HR	100	None	0.997	17.010	0.70	(N/A)	(N/A)
Mill St ROW to Site	100 YR - 24 HR	100	None	0.384	15.010	0.44	(N/A)	(N/A)
Mill St to Storm Sewer	100 YR - 24 HR	100	None	0.228	15.990	0.28	(N/A)	(N/A)
Mill and Diehl ROW	100 YR - 24 HR	100	None	0.062	16.010	0.08	(N/A)	(N/A)
ONSITE	100 YR - 24 HR	100	None	6.942	15.990	8.68	(N/A)	(N/A)
ROW - 0.5 CFS Constant	100 YR - 24 HR	100	None	4.959	0.000	0.50	(N/A)	(N/A)
SWMF 001 (IN)	100 YR - 24 HR	100	None	12.284	15.990	9.62	(N/A)	(N/A)

Scenario Calculation Summary

Executive Summary (Nodes)

Label	Scenario	Return Event (years)	Truncation	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft^3/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
SWMF 001 (OUT)	100 YR - 24 HR	100	None	1.286	19.060	3.08	727.60	3.731
West St ROW	100 YR - 24 HR	100	None	0.187	16.000	0.25	(N/A)	(N/A)

Executive Summary (Links)

Label	Type	Location	Hydrograph Volume (ac-ft)	Peak Time (hours)	Peak Flow (ft^3/s)	End Point	Node Flow Direction
Outlet-3	Pond Outlet	Upstream	12.284	15.990	9.62	SWMF 001	Pond Inflow
Outlet-3	Pond Outlet	Outflow	1.286	19.060	3.08	SWMF 001	Pond Outflow
Outlet-3	Pond Outlet	Link	0.769	19.060	0.49		
Outlet-3	Pond Outlet	Downstream	0.997	17.010	0.70	MILL ST STORM SEWER	
Outlet-6	Pond Outlet	Upstream	12.284	15.990	9.62	SWMF 001	Pond Inflow
Outlet-6	Pond Outlet	Outflow	1.286	19.060	3.08	SWMF 001	Pond Outflow
Outlet-6	Pond Outlet	Link	0.517	19.060	2.59		
Outlet-6	Pond Outlet	Downstream	0.517	19.060	2.59	15" to Conestoga	

Messages

Message Id	67
Scenario	2 YR - 24 HR
Element Type	Composite Outlet Structure
Element Id	34
Label	SWMF 001
Time	(N/A)
Message	Flow direction set to reverse for one ore more structures in composite outlet structure SWMF 001. To eliminate this warning, edit outlet data and select forward only. If reverse flow analysis is required, then the tailwater conditions must be set to interconnected pond.
Source	Warning

EXHIBIT H

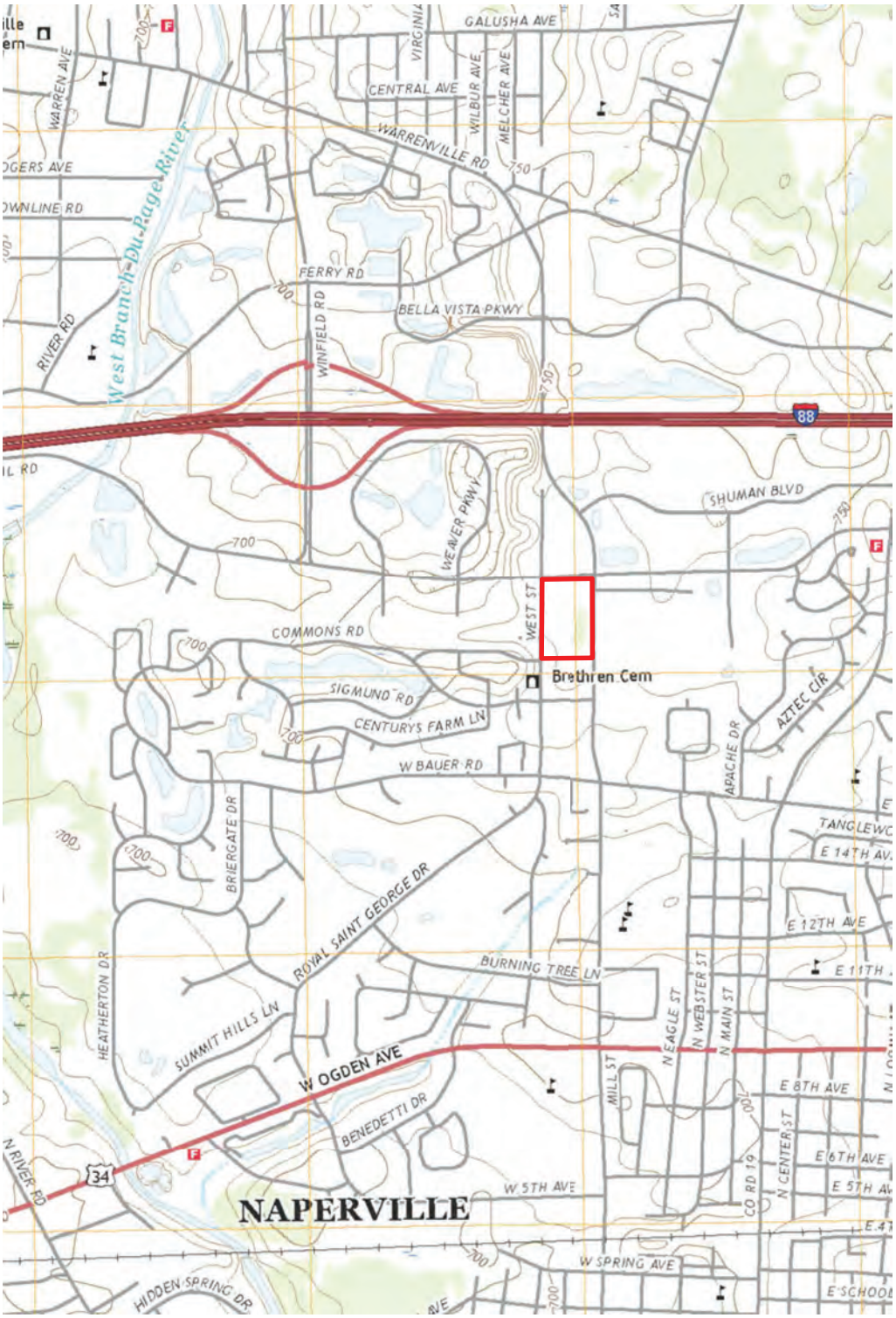
ILLUSTRATION OF SPECIAL SUB-SURFACE MODULES WITH REQUIRED PCBMP STORAGE AND TYPICAL SECTIONS

(SEE EXHIBITS F1, F2, AND F1 & 2)

EXHIBIT I

WETLAND MAPS AND

FLOOD PLAIN MAPS



ENCAP INCORPORATED

LEGEND:

Project Area

Location Map

Source: U.S. Geological Survey
Section 1 T38N R9E
Latitude: 41.799906 Longitude: -88.155993

SWC Diehl Rd & N Mill St

Project Number: 22-0511A

Vrutthi LLC

0 1000 2000 4000

SCALE: 1"= 2000'

NORTH

Exhibit A

ENCAP INCORPORATED

LEGEND:

Project Area

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

National Wetlands Inventory

Source: U.S. Fish & Wildlife Service

0 100 200 400

SCALE: 1"=200'

NORTH

SWC Diehl Rd & N Mill St

Project Number: 22-0511A

Vrutthi LLC

Exhibit B

ENCAP INCORPORATED

LEGEND:

Project Area

LAKES_PONDS

Wetlands

Critical Wetland

Regulatory Wetland

DuPage County Wetland Inventory

Source: DuPage County Stormwater Management

SWC Diehl Rd & N Mill St

Project Number: 22-0511A

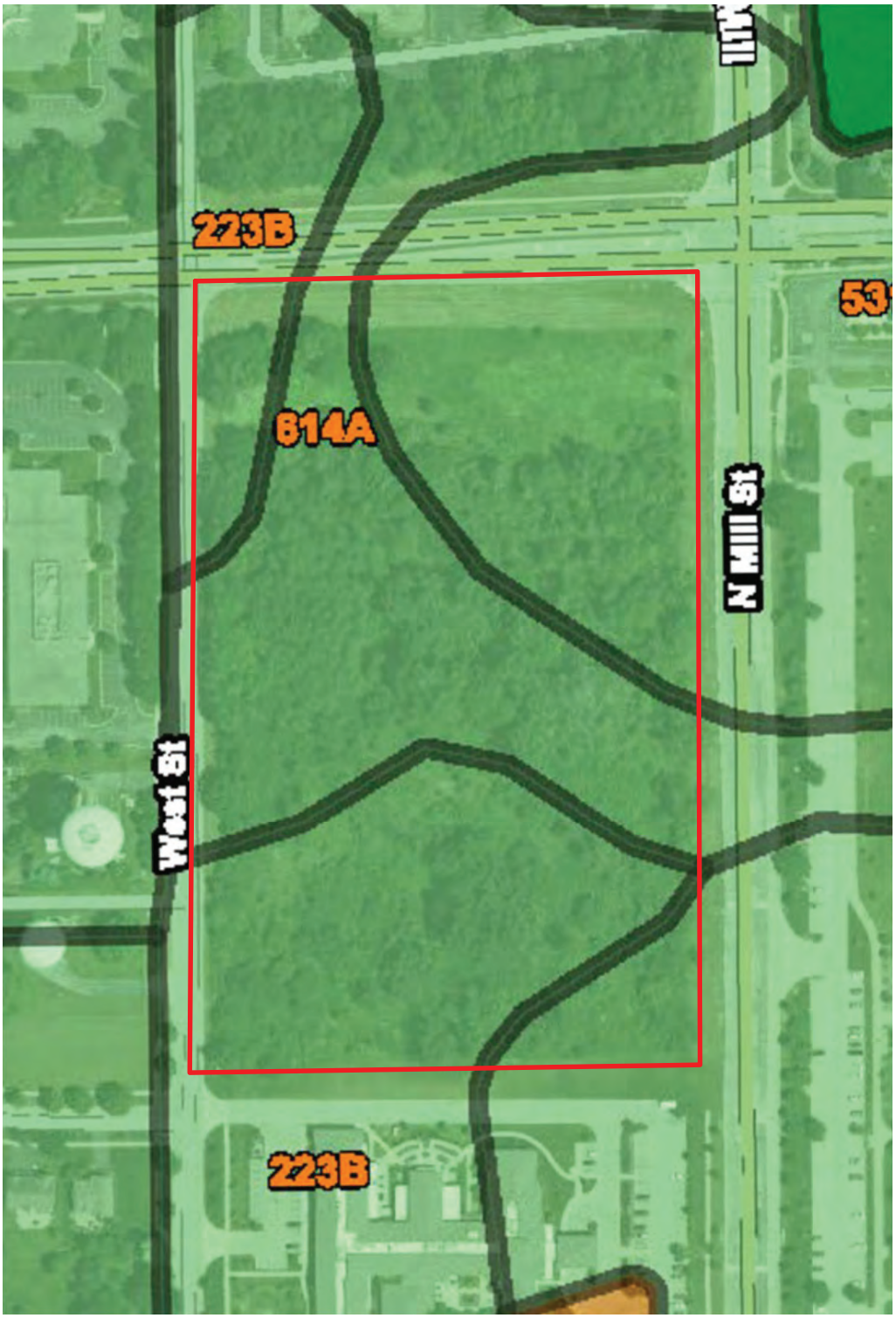
Vrutthi LLC

0 100 200 400

SCALE: 1"=200'

NORTH

Exhibit C



ENCAP INCORPORATED

LEGEND:

Project Area

- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Soil Map

Source: U.S. Department of Agriculture
Natural Resources Conservation Service
Web Soil Survey 3.1

0 100 200 400

SCALE: 1"=200'

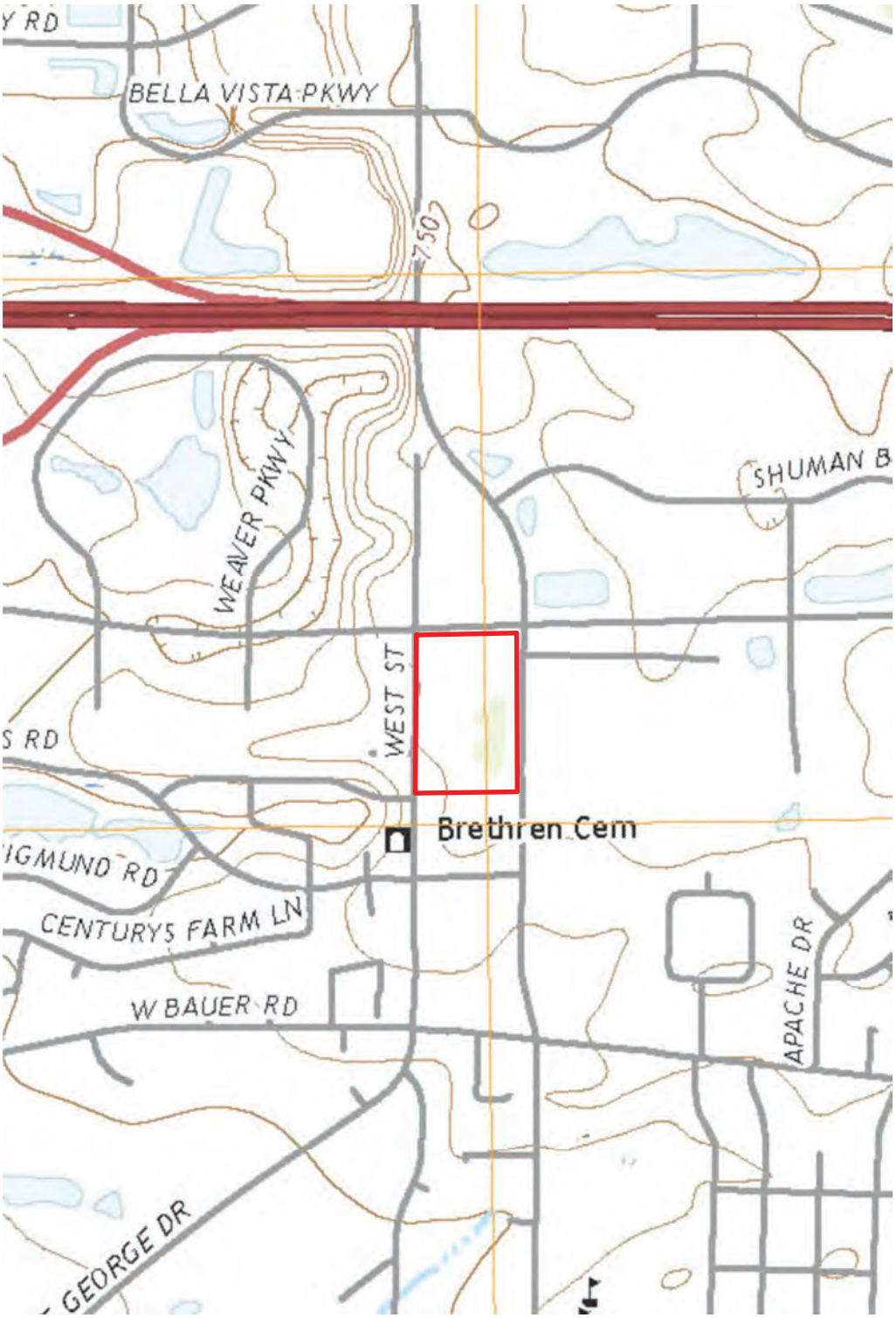
NORTH

SWC Diehl Rd & N Mill St

Project Number: 22-0511A

Vrutthi LLC

Exhibit D



ENCAP INCORPORATED

LEGEND:

Project Area

RIVERS, LAKES, AND CANALS
- Perennial stream
- Perennial river
- Intermittent stream
- Intermittent river
- Disappearing stream

SUBMERGED AREAS AND BOGS
- Marsh or swamp
- Submerged marsh or swamp
- Wooded marsh or swamp
- Submerged wooded marsh or swamp
- Land subject to inundation

VEGETATION
- Woodland
- Shrubland
- Orchard
- Vineyard
- Mangrove
- Land subject to inundation

2021 USGS Topographic Map

Source: U.S. Geological Survey
Naperville Quadrangle

0 500 1000 2000

SCALE: 1"=1000'

NORTH

SWC Diehl Rd & N Mill St

Project Number: 22-0511A

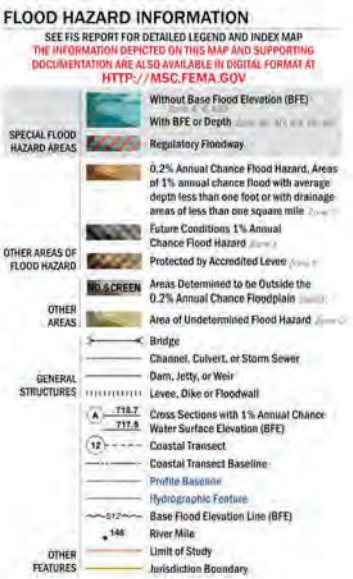
Vrutthi LLC

Exhibit E

ENCAP INCORPORATED

LEGEND:

Project Area



Flood Insurance Rate Map

Source: Federal Emergency Management Agency (FEMA)
Panel Number: 17043C0142J
Effective Date: August 1, 2019

SWC Diehl Rd & N Mill St

Project Number: 22-0511A

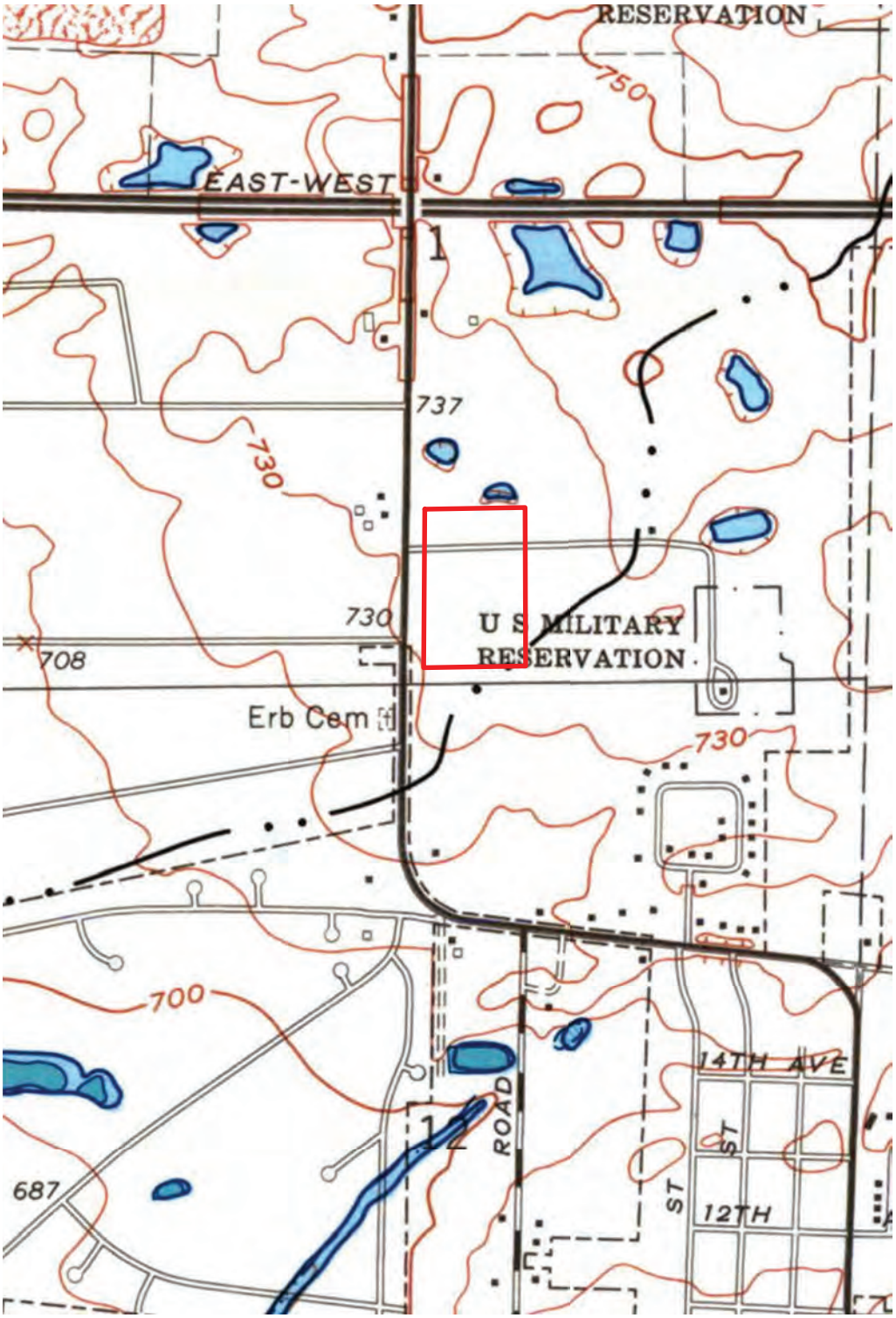
Vrutthi LLC

0 100 200 400

SCALE: 1"=200'

NORTH

Exhibit F



ENCAP INCORPORATED

LEGEND:

Project Area

Hydrologic Atlas

Source: U.S. Geological Survey
Naperville Quadrangle

0 500 1000 2000

SCALE: 1"=1000'

NORTH

SWC Diehl Rd & N Mill St

Project Number: 22-0511A

Vrutthi LLC

Exhibit G

ENCAP INCORPORATED

LEGEND:

Project Area

National Register Properties

- Part of a NR Historic District
- Determined eligible for the NR
- Part of a NR Historic District - contributing
- Entered in the NR
- Undetermined
- Other

Historic Architectural Resources Geographic Information System

Source: Illinois State Historic Preservation Office

0 200 400 800

SCALE: 1"=400'

NORTH

SWC Diehl Rd & N Mill St

Project Number: 22-0511A

Vrutthi LLC

Exhibit H

ENCAP INCORPORATED

LEGEND:

Project Area

Sample Points A-C

WL Delineation Field Work
Completed 05.24.2022

Aerial Photograph

Map data: ©2020Google
Image Date: 2018

0 100 200 400
SCALE: 1"=200'

NORTH

SWC Diehl Rd & N Mill St

Project Number: 22-0511A

Vrutthi LLC

Exhibit I

EXHIBIT J

NEGATIVE WETLAND FINDINGS

REPORT CONDUCTED BY ENCAP, INC.

ENCAP INCORPORATED

2585 Wagner Ct.
DeKalb, IL 60115
Phone: 815.748.4500
Fax: 815.748.4255
www.encapinc.net

TRANSMITTAL LETTER

TO:	**Vrutthi LLC**	**DATE:**	July 14, 2022
	3644 White Eagle Drive	**PROJECT:**	SWC Diehl Road and N. Mill Street
	Naperville, Illinois 60564		
ATTN:	**Ms. Selvei Rajkumar** selvei.rajkumar@gmail.com	**ENCAP Project #**	22-0511A

We are sending you:	**Date of Enclosed Materials**	**# of Copies**
2022 Negative Wetland Findings Report	July 14, 2022	PDF

CC:	**Date of Enclosed Materials**	**# of Copies**

Via: ☐ **UPS Ground** ☐ **UPS Overnight** ☐ **U.S. Mail** ☒ **Electronic**

THESE ARE TRANSMITTED AS CHECKED BELOW:

☐ **For Approval** ☐ **As Requested** ☒ **For your review** ☒ **For your use**

REMARKS: _____

_____

_____

_____

Signed: Susan Rowley, PWS, CWS, LEED AP
srowley@encapinc.net

NEGATIVE WETLAND FINDINGS REPORT

SWC DIEHL ROAD AND N MILL STREET

NAPERVILLE TOWNSHIP, DUPAGE COUNTY, ILLINOIS

Prepared for: Ms. Selvei Rajkumar
Vrutthi LLC
3644 White Eagle Drive
Naperville, IL 60564

Prepared by: ENCAP, Inc.
Ms. Susan Rowley, PWS, CWS, LEED AP

Date Prepared: July 14, 2022

ENCAP, Inc. Project #: 22-0511A

ENCAP INCORPORATED

2585 Wagner Ct.
DeKalb, IL 60115
Phone: 815.748.4500
Fax: 815.748.4255
www.encapinc.net

NEGATIVE WETLAND FINDINGS REPORT

SWC Diehl Road and N Mill Street / Vrutthi LLC

Table of Contents

Attachments:

NEGATIVE WETLAND FINDINGS REPORT

Project Name and Client: SWC Diehl Road and N Mill Street / Vrutthi LLC

Project Number: 22-0511A

Location: Illinois, DuPage County, Naperville Township, City of Naperville, T38N R9E, Section 1; Latitude: 41.799844; Longitude: -88.156023

Date of Site Visit: May 24, 2022

Field Investigators: S. DeDina, R. Van Herik

EXECUTIVE SUMMARY

The project area (approximately 12.5 acres in size) is located on the southwest corner of Diehl Road and N. Mill Street, Naperville, DuPage County, Illinois (Exhibit A: Location Map). It is generally bounded by Diehl Road to the north, commercial development to the south, N. Mill Street to the east, and West Street to the west. The project area consists of undeveloped, unmanaged woodland dominated by invasive woody brush. The topography of the site is flat with no buildings on site.

On May 24, 2022 ENCAP, Inc. performed an investigation of the project area in order to identify regulated surface water resources on, or within 100 feet of the site. A floodplain determination was not included as part of our investigation. No wetlands or other waters of the U.S. were identified within or adjacent to the project area.

METHODS AND FINDINGS

Map Review

Prior to the field investigation, a preliminary site evaluation was performed using natural resource mapping. Reviewed maps are attached as Exhibits B - H and summarized below.

- The **National Wetland Inventory** does not identify any water resources or wetlands within the project area (Exhibit B).

- The **DuPage County Wetland Inventory Map** does not identify any wetlands within the project area (Exhibit C).

- The **Soil Map** identifies the following soils within the project area: Varna silt loam, 2 to 4 percent slopes (223B), Markham silt loam, 2 to 4 percent slopes (531B), Graymont silt loam, 2 to 5 percent slopes (541B), and Chenoa silty clay loam, 0 to 2 percent slopes (614A). None of the soils present are considered predominantly hydric in DuPage County (Exhibit D).

- The **2021 United States Geological Survey (USGS) Topographic Map** does not identify any surface drainage within or adjacent to the project area (Exhibit E).

- The **FEMA Flood Insurance Rate Map** identifies the project area outside the 500-year floodplain (Exhibit F).

- The **U.S.G.S. Hydrologic Atlas** does not identify any historic flooding on the project area (Exhibit G).

- The **Illinois State Historic Preservation Office (ISHPO) Historic Architectural Resources Geographic Information System (HARGIS) Map** does not identify any properties or objects that have been listed in the National Register of Historic Places, determined eligible, or surveyed without determination within the project area (Exhibit H).

Field Investigation

ENCAP, Inc. performed a site investigation to determine if any areas within the project area meet the requirements for a wetland based on U.S. Army Corps of Engineers (USACE) parameters of vegetation, hydrology, and soils. In general, positive indication of each of the three parameters must be demonstrated to classify an area as wetland. Each of these parameters is discussed below.

- **Vegetation** – Three vegetative indicators are applied to plant communities in order to determine if the hydrophytic vegetation criterion is met.
  1. More than 50% of the dominant plant species across all strata must be hydrophytic (water tolerant). The U.S. Army Corps of Engineers has prepared a regional list of plants occurring in wetlands which assigns the plant species different indicators. Wetland plants fall into three indicator classes based on differing tolerances to water level and soil saturation. These indicators are rated obligate wetland (OBL), facultative wetland (FACW), or facultative (FAC). Dominant plant species are recorded at sample points within investigated areas.
  2. The prevalence index is 3.0 or less. The prevalence index is a weighted-average wetland indicator status of all plant species in a sampling plot. Each indicator status category is given a numeric value (OBL = 1, FACW = 2, FAC = 3, FACU = 4, and UPL = 5) and weighting is by abundance. A prevalence index of 3.0 or less indicates that hydrophytic vegetation is present. The prevalence index is used to determine whether hydrophytic vegetation is present on sites where indicators of hydric soil and wetland hydrology are present but the vegetation initially fails the dominance test.
  3. The plant community passes either the dominance test (Indictor 1) or the prevalence index (Indicator 2) after reconsideration of the indicator status of certain plant species that exhibit morphological adaptations for life in wetlands. Common morphological adaptations include but are not limited to adventitious roots, multi-stemmed trunks, shallow root systems developed on or near the soil surface, and buttressing in tree species. To apply this indicator, these morphological features must be observed on more than 50% of the individuals of a FACU species living in an area where indicators of hydric soil and wetland hydrology are present.

- **Hydrology** – To be considered a wetland, an area must have 14 or more consecutive days of flooding or ponding, or a water table 12 inches or less below the soil surface, during the growing season at a minimum frequency of 5 years in 10. Wetland hydrology indicators are divided into four groups as described below:

- **Group A** – indicators are based on the direct observation of surface water or groundwater during a site visit.
- **Group B** – consists of evidence that the site is subject to flooding or ponding, although it may not be inundated currently. These indicators include water marks, drift deposits, sediment deposits, and similar features.
- **Group C** – consists of other evidence that the soil is saturated currently or was saturated recently. Some of these indicators, such as oxidized rhizopheres surrounding living roots and the presence of reduced iron or sulfur in the soil profile, indicate that the soil has been saturated for an extended period.
- **Group D** – consists of landscape and vegetation characteristics that indicate contemporary rather than historical wet conditions. These indicators include stunted or stressed plants, geomorphic position, and the FAC-neutral test.

Wetland hydrology indicators are intended as one-time observations of site conditions that are sufficient evidence of wetland hydrology. Within each group, indicators are divided into two categories – *primary* and *secondary*. One primary indicator from any group is sufficient to conclude that wetland hydrology is present. In the absence of a primary indicator, two or more secondary indicators from any group are required to conclude that wetland hydrology is present.

- **Soils** - To be considered a wetland, an area must contain hydric soil. Hydric soils are formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic (lacking oxygen) conditions in the upper part. Soils generally, but not always, will develop indicators that are formed predominantly by the accumulation or loss of iron, manganese, sulfur, or carbon compounds in a saturated and anaerobic environment. The most current edition of the United States Department of Agriculture, Natural Resource Conservation Service *Field Indicators of Hydric Soils in the United States* is used for identification of hydric soils. Field indicators of hydric soils include but are not limited to the presence of any of the following: histic epipedon, sulfidic odor, at least 2 centimeters of muck, depleted matrix, and/or redoximorphic features. Field indicators are usually examined in the top 24 inches of the soil. Soil colors are determined using *Munsell Soil Color Charts*.

At the time of the field investigation, the majority of the project area consisted of undeveloped, unmanaged woodland dominated by invasive woody brush such as Common Buckthorn (*Rhamnus cathartica*), Black Cherry (*Prunus serotina*), and Eastern Cottonwood (*Populus deltoides*). There were several openings in the woodland which were examined to determine if they satisfied wetland criteria. None of these sites so qualified. Each area is briefly described below and U.S. Army Corps of Engineers data forms are provided to support our negative findings (See Wetland Determination Data Forms).

Investigated Area 1. This investigated area is located in the southwestern portion of the project area (Exhibit I: Aerial Photograph – Sample Point A). This area was investigated because it consisted of an opening in the woodland and contained hydrophytic vegetation (Photograph 1).

The area around Investigated Area 1 was primarily vegetated by Box Elder Maple (*Acer negundo*), Black Cherry, Eastern Cottonwood, Gray Dogwood *(Cornus racemosa*), Blackberry (*Rubus allegheniensis*), and Riverside Grape (*Vitis riparia*). The mapped soil series is Varna silt loam, 2 to 4 percent slopes (223B), a non-hydric soil. The field investigated soils did not exhibit

hydric characteristics. Evidence of persistent hydrology was not observed (See USACE data forms).

Based on the non-persistent hydrology and the presence of non-hydric soil, Investigated Area 1 does not qualify as wetland.

Investigated Area 2. This investigated area is located in the western portion of the project area (Exhibit I: Aerial Photograph – Sample Point B). This area was investigated because it consisted of an opening in the woodland and contained hydrophytic vegetation (Photograph 2).

The area around Investigated Area 2 was primarily vegetated by Black Locust (*Robinia pseudoacacia*), Siberian Elm (*Ulmus pumila)*, White Mulberry (*Morus alba*), Common Buckthorn, and Tatarian Honeysuckle (*Lonicera tatarica*). The mapped soil series is Chenoa silty clay loam, 0 to 2 percent slopes (614A), a non-hydric soil. The field investigated soils did not exhibit hydric characteristics. Evidence of persistent hydrology was not observed (See USACE data forms).

Based on the dominance of upland plant species, non-persistent hydrology, and the presence of non-hydric soil, Investigated Area 2 does not qualify as wetland.

Investigated Area 3. This investigated area is located in the southeastern portion of the project area (Exhibit I: Aerial Photograph – Sample Point C). This area was investigated because it consisted of an opening in the woodland and contained hydrophytic vegetation (Photograph 3).

The area around Investigated Area 3 was primarily vegetated by Eastern Cottonwood, Black Cherry, and Common Buckthorn. The mapped soil series is Varna silt loam, 2 to 4 percent slopes (223B), a non-hydric soil. The field investigated soils did not exhibit hydric characteristics. Evidence of persistent hydrology was not observed (See USACE data forms).

Based on the non-persistent hydrology and the presence of non-hydric soil, Investigated Area 3 does not qualify as wetland.

CONCLUSIONS AND RECOMMENDATIONS

No wetlands or other waters of the U.S. were identified on, or within 100 feet of the project area. Further concurrence with regulatory agencies is not required at this time. ENCAP, Inc. recommends that this report be submitted as part of a development package as necessary for future development of the property.

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Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Diehl Rd and N Mill Street City/County: Naperville/ DuPage Sampling Date: May 24, 2022

Applicant/Owner: Vrutthi LLC State: IL Sampling Point: A

Investigator(s) S. DeDina, R. Van Herik Section, Township, Range: S1 T38N R9E

Landform (hillslope, terrace, etc.): Woodland opening Local Relief (concave, convex, none): none

Slope (%): 0% *Lat: 41.799185 *Long: -88.156088 Datum: Investigated Area 1

Soil Map Unit Name: Varna silt loam, 2 to 4 percent slopes (223B) NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If no explain in remarks)

Are vegetation ☐ Soil ☐ Hydrology ☐ significantly disturbed? Are normal circumstances present? Yes ☒ No ☐

Are vegetation ☐ Soil ☐ Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒ No ☐	
Hydric Soils Present?	Yes ☐ No ☒	**Is the Sampled Area Within a Wetland?** **Yes ☐ No ☒**
Wetland Hydrology Present?	Yes ☐ No ☒	

Remarks: Precipitation data from the previous 3 months indicates the climatic/hydrologic conditions have been wetter than normal.

*Coordinates obtained from Google Earth.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Prunus serotina*	20	Y	FACU
2. *Acer negundo*	15	Y	FAC
3. *Populus deltoides*	15	Y	FAC
4.			
5.			
	50	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Rubus allegheniensis*	25	Y	FACU
2. *Cornus racemosa*	20	Y	FAC
3. *Rhamnus cathartica*	5	N	FAC
4.			
5.			
6.			
	50	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Cercis canadensis*	10	Y	FACU
2. *Calystegia sepium*	3	Y	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	13	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1. *Vitis riparia*	50	Y	FACW
2.			
	50	=Total Cover	

Dominance Test worksheet:
Number of Dominant Species That are OBL, FACW, or FAC: 5 (A)
Total Number of Dominant Species Across All Strata: 8 (B)
Percent of Dominant Species That are OBL, FACW, or FAC 63% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1	
FACW species		x 2	
FAC species		x 3	
FACU species		x 4	
UPL species		x 5	
TOTALS (A)		(B)	

Prevalence Index (B/A) =

Hydrophytic Vegetation Indicators:

☐ Rapid Test for Hydrophytic Vegetation
☒ Dominance Test is >50%
☐ Prevalence Index is ≤ 3.0[1]
☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
☐ Problematic Hydrophytic Vegetation[1] (Explain)
[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks: (Include photo numbers here or on a separate sheet)
Photograph 1

SOIL

Sampling Point A

Profile Description: (Describe the depth needed to document the indicator or confirm the absence of indicators

Depth (Inches)	Matrix Color (Moist)	Matrix %	Redox Features Color (Moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-24	**10YR 3/1**	**100**					**SiL**	
24-30	**10YR 4/2**	**85**	**10YR 5/3**	**5**	**C**	**M**	**SiCL**	
			10YR 3/1	**10**	**N/A**	**M**		

[1]Type: C = Concentration, D= Depletion, RM = Reduced Matrix, CS = Covered or Coated Sand Grains [2]Locaton: PL =Pore Lining, M = Matrix

Hydric Soil Indicators

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron- Manganese Masses (F12)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present unless disturbed or problematic.

Restrictive Layer (if observed)

Type: _____

Depth: _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (Minimum of one is required: check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water Stained Leaves (B9)
- ☐ Aquatic Fauna (B 3)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches) N/A

Water Table Present? Yes ☐ No ☒ Depth (inches) N/A

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches) N/A

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Diehl Rd and N Mill Street City/County: Naperville/ DuPage Sampling Date: May 24, 2022

Applicant/Owner: Vrutthi LLC State: IL Sampling Point: B

Investigator(s) S. DeDina, R. Van Herik Section, Township, Range: S1 T38N R9E

Landform (hillslope, terrace, etc.): Woodland Local Relief (concave, convex, none): none

Slope (%): 0% *Lat: 41.799670 *Long: -88.156664 Datum: Investigated Area 2

Soil Map Unit Name: Chenoa silty clay loam, 0 to 2 percent slopes (614A) NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If no explain in remarks)

Are vegetation ☐ Soil ☐ Hydrology ☐ significantly disturbed? Are normal circumstances present? Yes ☒ No ☐

Are vegetation ☐ Soil ☐ Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐ No ☒	
Hydric Soils Present?	Yes ☐ No ☒	**Is the Sampled Area Within a Wetland?** **Yes ☐ No ☒**
Wetland Hydrology Present?	Yes ☐ No ☒	

Remarks: Precipitation data from the previous 3 months indicates the climatic/hydrologic conditions have been wetter than normal.

*Coordinates obtained from Google Earth.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Robinia pseudoacacia*	30	Y	FACU
2. *Ulmus pumila*	15	Y	FACU
3. *Morus alba*	15	Y	FAC
4.			
5.			
	60	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Rhamnus cathartica*	60	Y	FAC
2. *Lonicera tatarica*	20	Y	FACU
3.			
4.			
5.			
	80	=Total Cover	
Herb Stratum (Plot size: 5')			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
		=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
		=Total Cover	

Dominance Test worksheet:
Number of Dominant Species That are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 5 (B)
Percent of Dominant Species That are OBL, FACW, or FAC 40% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1	
FACW species		x 2	
FAC species		x 3	
FACU species		x 4	
UPL species		x 5	
TOTALS	(A)		(B)

Prevalence Index (B/A) =

Hydrophytic Vegetation Indicators:

☐ Rapid Test for Hydrophytic Vegetation
☐ Dominance Test is >50%
☐ Prevalence Index is ≤ 3.0[1]
☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
☐ Problematic Hydrophytic Vegetation[1] (Explain)
[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? Yes☐ No ☒

Remarks: (Include photo numbers here or on a separate sheet)
Photograph 2

SOIL

Sampling Point B

Profile Description: (Describe the depth needed to document the indicator or confirm the absence of indicators

Depth (Inches)	Matrix Color (Moist)	Matrix %	Redox Features Color (Moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR 3/1	100					SiL	
14-18	10YR 4/3	80	10YR 3/1	15	N/A	M	SiCL	
			10YR 5/6	5	C	M		
18-24	10YR 4/4	85	10YR 5/6	10	C	M	SiCL	
			10YR 3/1	5	N/A	M		

[1]Type: C = Concentration, D= Depletion, RM = Reduced Matrix, CS = Covered or Coated Sand Grains [2]Locaton: PL =Pore Lining, M = Matrix

Hydric Soil Indicators

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron- Manganese Masses (F12)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present unless disturbed or problematic.

Restrictive Layer (if observed)

Type:

Depth:

Hydric Soil Present? Yes ☐ No ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (Minimum of one is required: check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water Stained Leaves (B9)
- ☐ Aquatic Fauna (B 3)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches) N/A

Water Table Present? Yes ☐ No ☒ Depth (inches) N/A

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches) N/A

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Diehl Rd and N Mill Street City/County: Naperville/ DuPage Sampling Date: May 24, 2022

Applicant/Owner: Vrutthi LLC State: IL Sampling Point: C

Investigator(s) S. DeDina, R. Van Herik Section, Township, Range: S1 T38N R9E

Landform (hillslope, terrace, etc.): Woodland Local Relief (concave, convex, none): none

Slope (%): 0% *Lat: *Long: Datum: Investigated Area 3

Soil Map Unit Name: Varna silt loam, 2 to 4 percent slopes (223B) NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If no explain in remarks)

Are vegetation ☐ Soil ☐ Hydrology ☐ significantly disturbed? Are normal circumstances present? Yes ☒ No ☐

Are vegetation ☐ Soil ☐ Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒ No ☐	
Hydric Soils Present?	Yes ☐ No ☒	**Is the Sampled Area Within a Wetland?** **Yes ☐ No ☒**
Wetland Hydrology Present?	Yes ☐ No ☒	

Remarks: Precipitation data from the previous 3 months indicates the climatic/hydrologic conditions have been wetter than normal.

*Coordinates obtained from Google Earth.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus deltoides*	40	Y	FAC
2. *Prunus serotina*	20	Y	FACU
3. *Betula papyrifera*	10	N	UPL
4.			
5.			
	70	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Rhamnus cathartica*	60	Y	FAC
2.			
3.			
4.			
5.			
	60	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Rhamnus cathartica*	5	Y	FAC
2. *Prunus serotina*	5	Y	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	10	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
		=Total Cover	

Dominance Test worksheet:
Number of Dominant Species That are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 5 (B)
Percent of Dominant Species That are OBL, FACW, or FAC 60% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1	
FACW species		x 2	
FAC species		x 3	
FACU species		x 4	
UPL species		x 5	
TOTALS (A)		(B)	

Prevalence Index (B/A) =

Hydrophytic Vegetation Indicators:

☐ Rapid Test for Hydrophytic Vegetation
☒ Dominance Test is >50%
☐ Prevalence Index is ≤ 3.0[1]
☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
☐ Problematic Hydrophytic Vegetation[1] (Explain)
[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? Yes☒ No ☐

Remarks: (Include photo numbers here or on a separate sheet)
Photograph 3

SOIL

Sampling Point C

Profile Description: (Describe the depth needed to document the indicator or confirm the absence of indicators

Depth (Inches)	Matrix Color (Moist)	Matrix %	Redox Features Color (Moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-16	**10YR 3/1**	**100**					**SiL**	
16-24	**10YR 3/1**	**95**	**10YR 4/4**	**5**	**C**	**M**	**SiL**	

[1]Type: C = Concentration, D= Depletion, RM = Reduced Matrix, CS = Covered or Coated Sand Grains [2]Locaton: PL =Pore Lining, M = Matrix

Hydric Soil Indicators

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron- Manganese Masses (F12)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present unless disturbed or problematic.

Restrictive Layer (if observed)

Type: _____

Depth: _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (Minimum of one is required: check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water Stained Leaves (B9)
- ☐ Aquatic Fauna (B 3)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches) N/A

Water Table Present? Yes ☐ No ☒ Depth (inches) N/A

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches) N/A

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Site Photographs

PHOTOGRAPH 1	
DESCRIPTION: Diehl Road & N. Mill Street / Vrutthi LLC Investigated Area 1 Sample Point A Facing West	
DATE PHOTO TAKEN: May 24, 2022	

PHOTOGRAPH 2	
DESCRIPTION: Diehl Road & N. Mill Street / Vrutthi LLC Investigated Area 2 Sample Point B Facing West	
DATE PHOTO TAKEN: May 24, 2022	

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PHOTOGRAPH 3	
DESCRIPTION: Diehl Road & N. Mill Street / Vrutthi LLC Investigated Area 3 Sample Point C Facing West	
DATE PHOTO TAKEN: May 24, 2022	

PHOTOGRAPH 4	
DESCRIPTION: Diehl Road & N. Mill Street / Vrutthi LLC Site Boundary Overview Facing West	
DATE PHOTO TAKEN: May 24, 2022	

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PHOTOGRAPH 5	
DESCRIPTION: Diehl Road & N. Mill Street / Vrutthi LLC Site Overview Facing West	
DATE PHOTO TAKEN: May 24, 2022	

PHOTOGRAPH 6	
DESCRIPTION: Diehl Road & N. Mill Street / Vrutthi LLC Site Overview Facing East	
DATE PHOTO TAKEN: May 24, 2022	

PHOTOGRAPH 7	
DESCRIPTION: Diehl Road & N. Mill Street / Vrutthi LLC Site Overview Facing West	
DATE PHOTO TAKEN: May 24, 2022	

PHOTOGRAPH 8	
DESCRIPTION: Diehl Road & N. Mill Street / Vrutthi LLC Site Overview Facing Southwest	
DATE PHOTO TAKEN: May 24, 2022	

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PHOTOGRAPH 9	
DESCRIPTION: Diehl Road & N. Mill Street / Vrutthi LLC Site Overview Facing North	
DATE PHOTO TAKEN: May 24, 2022	

PHOTOGRAPH 10	
DESCRIPTION: Diehl Road & N. Mill Street / Vrutthi LLC Site Overview Facing North	
DATE PHOTO TAKEN: May 24, 2022	

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PHOTOGRAPH 11	
DESCRIPTION: Diehl Road & N. Mill Street / Vrutthi LLC Site Overview Facing Southeast	
DATE PHOTO TAKEN: May 24, 2022	

PHOTOGRAPH 12	
DESCRIPTION: Diehl Road & N. Mill Street / Vrutthi LLC Site Overview Facing North	
DATE PHOTO TAKEN: May 24, 2022	

PHOTOGRAPH 13	
DESCRIPTION: Diehl Road & N. Mill Street / Vrutthi LLC Fire Hydrant Facing South	
DATE PHOTO TAKEN: May 24, 2022	

PHOTOGRAPH 14	
DESCRIPTION: Diehl Road & N. Mill Street / Vrutthi LLC Site Overview Facing West	
DATE PHOTO TAKEN: May 24, 2022	

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PHOTOGRAPH 15	
DESCRIPTION: Diehl Road & N. Mill Street / Vrutthi LLC Site Boundary Overview Facing West	
DATE PHOTO TAKEN: May 24, 2022	

PHOTOGRAPH 16	
DESCRIPTION: Diehl Road & N. Mill Street / Vrutthi LLC Site Boundary Overview Facing South	
DATE PHOTO TAKEN: May 24, 2022	

ENCAP INCORPORATED

PHOTOGRAPH 17	
DESCRIPTION: Diehl Road & N. Mill Street / Vrutthi LLC Site Overview Facing North	
DATE PHOTO TAKEN: May 24, 2022	

PHOTOGRAPH 18	
DESCRIPTION: Diehl Road & N. Mill Street / Vrutthi LLC Site Overview Facing South	
DATE PHOTO TAKEN: May 24, 2022	

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PHOTOGRAPH 19	
DESCRIPTION: Diehl Road & N. Mill Street / Vrutthi LLC Culvert Pipe Facing Southwest	
DATE PHOTO TAKEN: May 24, 2022	

PHOTOGRAPH 20	
DESCRIPTION: Diehl Road & N. Mill Street / Vrutthi LLC Site Overview Facing Northeast	
DATE PHOTO TAKEN: May 24, 2022	

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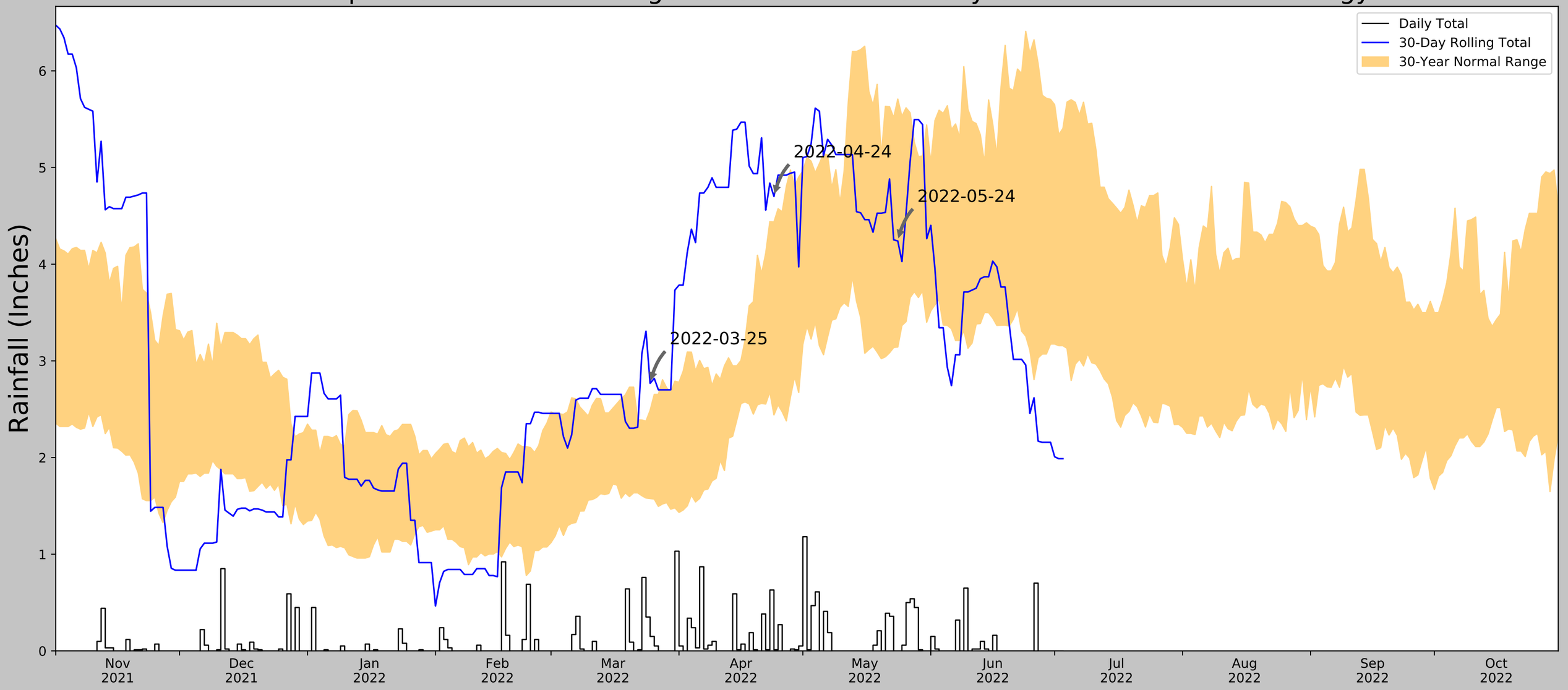
USACE Antecedent Precipitation Tool Figure & Tables (05/24/2022)

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	41.799844, -88.156023
Observation Date	2022-05-24
Elevation (ft)	731.97
Drought Index (PDSI)	Incipient wetness
WebWIMP H_2O Balance	Wet Season

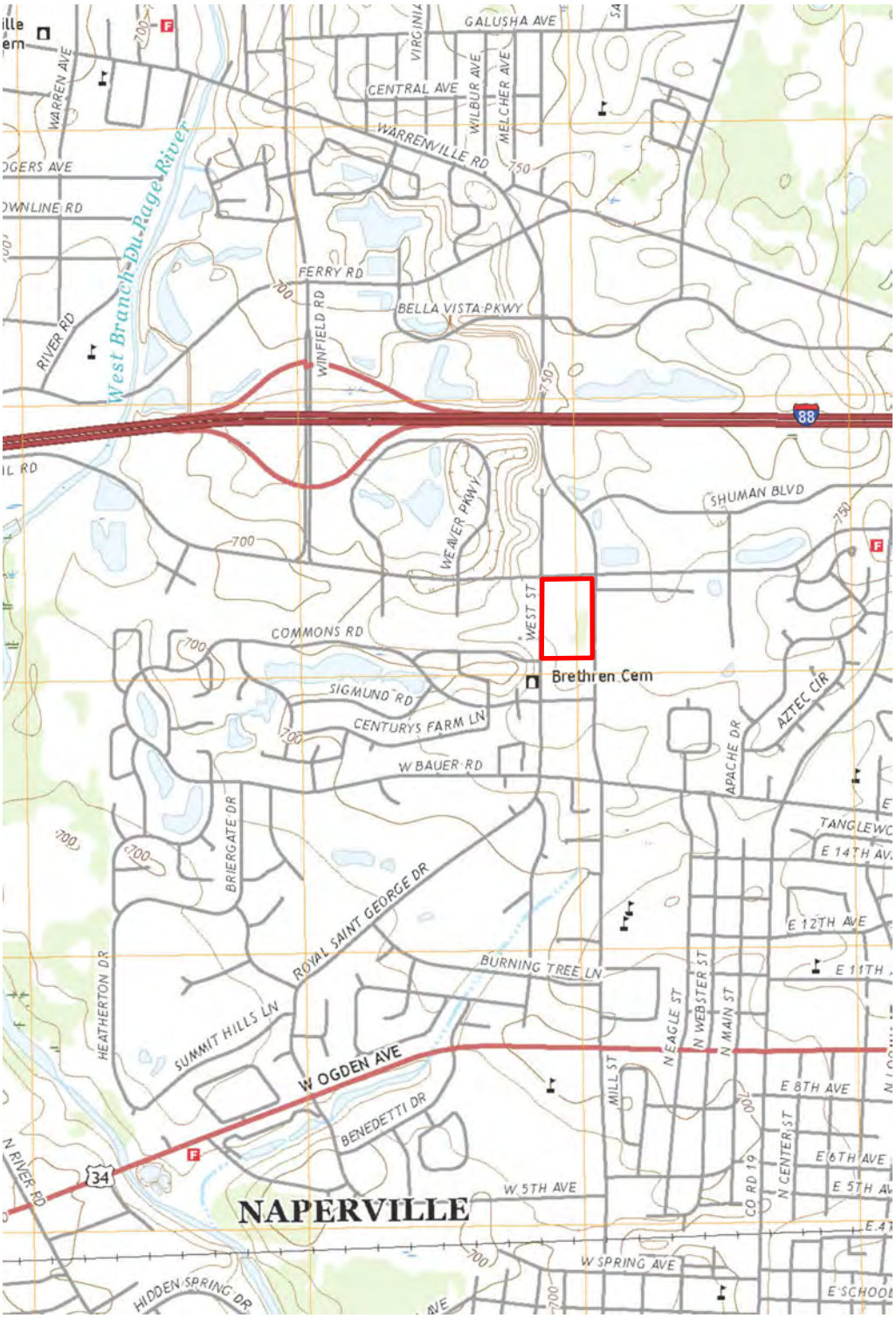
30 Days Ending	30^{th} %ile (in)	70^{th} %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2022-05-24	3.143307	5.708268	4.240158	Normal	2	3	6
2022-04-24	2.440551	4.437008	4.700788	Wet	3	2	6
2022-03-25	1.576378	2.487795	2.767717	Wet	3	1	3
Result							Wetter than Normal - 15

Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days (Normal)	Days (Antecedent)
AURORA	41.7803, -88.3092	660.105	8.006	71.865	4.178	11292	88
NAPERVILLE 1.1 NW	41.7729, -88.1713	691.929	2.021	40.041	0.99	6	0
NAPERVILLE 0.5 NW	41.7685, -88.1603	675.853	2.177	56.117	1.102	1	2
NAPERVILLE 1.9 ENE	41.7682, -88.1174	748.032	2.956	16.062	1.378	2	0
WHEATON 3 SE	41.8128, -88.0728	680.118	4.379	51.852	2.198	52	0

Exhibits A - I



ENCAP INCORPORATED

LEGEND:

Project Area

Location Map

Source: U.S. Geological Survey
Section 1 T38N R9E
Latitude: 41.799906 Longitude: -88.155993

SWC Diehl Rd & N Mill St

Project Number: 22-0511A

Vrutthi LLC

0 1000 2000 4000

SCALE: 1"= 2000'

NORTH

Exhibit A

ENCAP INCORPORATED

LEGEND:

Project Area

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

National Wetlands Inventory

Source: U.S. Fish & Wildlife Service

0 100 200 400

SCALE: 1"=200'

NORTH

SWC Diehl Rd & N Mill St

Project Number: 22-0511A

Vrutthi LLC

Exhibit B

ENCAP INCORPORATED

LEGEND:

Project Area

LAKES_PONDS

Wetlands

Critical Wetland

Regulatory Wetland

DuPage County Wetland Inventory

Source: DuPage County Stormwater Management

SWC Diehl Rd & N Mill St

Project Number: 22-0511A

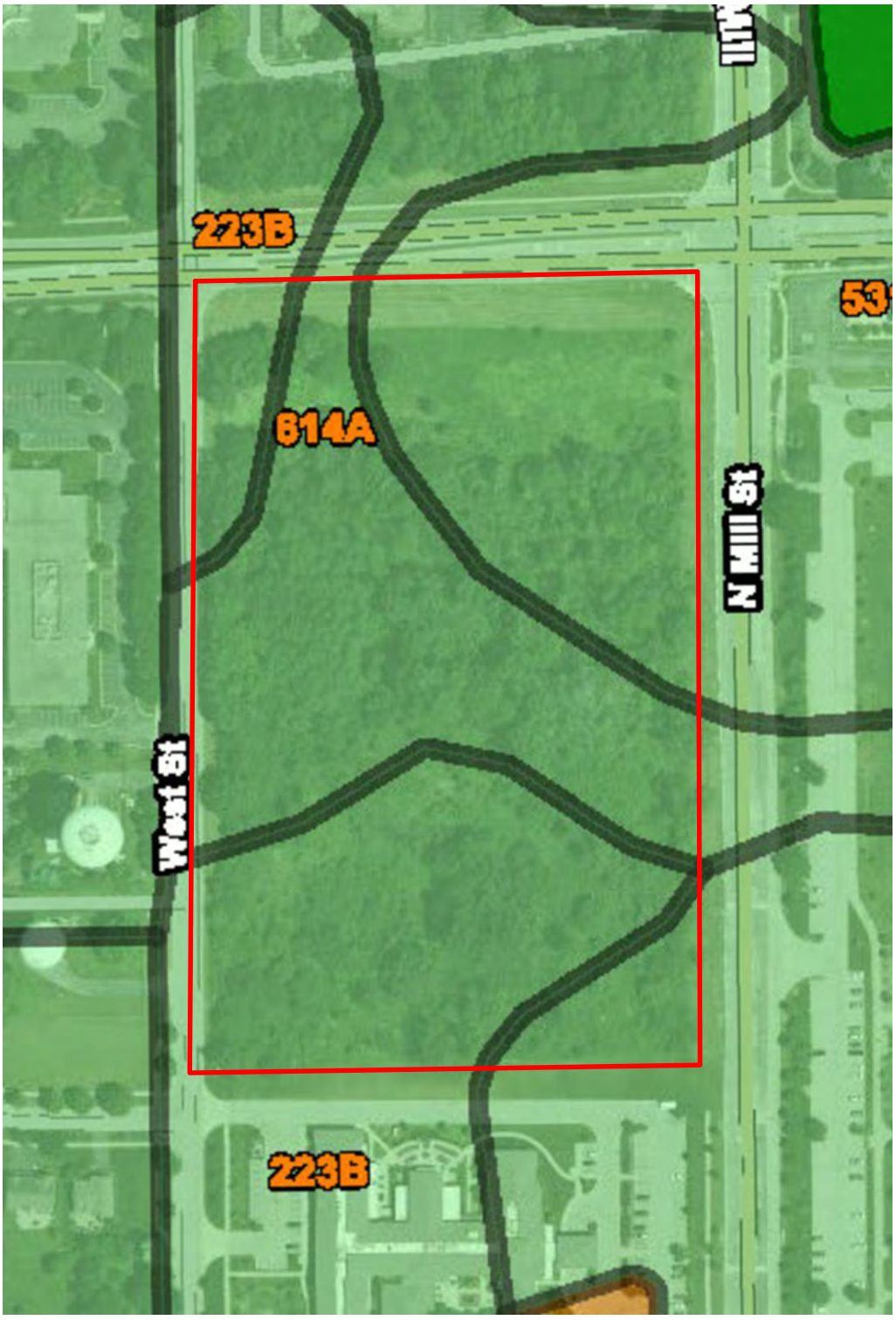
Vrutthi LLC

0 100 200 400

SCALE: 1"=200'

NORTH

Exhibit C



ENCAP INCORPORATED

LEGEND:

Project Area

- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Soil Map

Source: U.S. Department of Agriculture
Natural Resources Conservation Service
Web Soil Survey 3.1

0 100 200 400

SCALE: 1"=200'

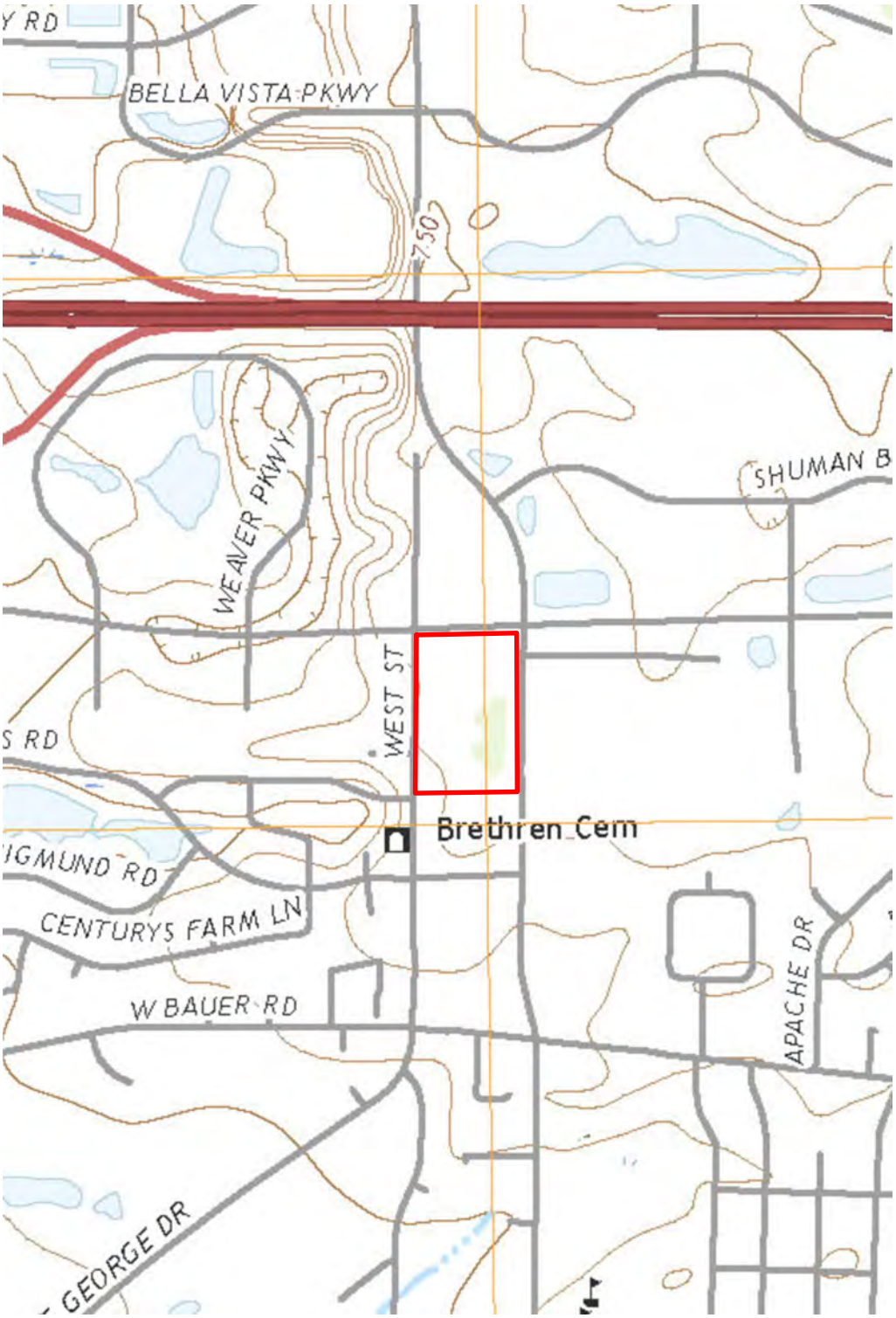
NORTH

SWC Diehl Rd & N Mill St

Project Number: 22-0511A

Vrutthi LLC

Exhibit D



ENCAP INCORPORATED

LEGEND:

Project Area

RIVERS, LAKES, AND CANALS
- Perennial stream
- Perennial river
- Intermittent stream
- Intermittent river
- Disappearing stream

SUBMERGED AREAS AND BOGS
- Marsh or swamp
- Submerged marsh or swamp
- Wooded marsh or swamp
- Submerged wooded marsh or swamp
- Land subject to inundation

VEGETATION
- Woodland
- Shrubland
- Orchard
- Vineyard
- Mangrove
- Land subject to inundation

2021 USGS Topographic Map

Source: U.S. Geological Survey
Naperville Quadrangle

0 500 1000 2000

SCALE: 1"=1000'

NORTH

SWC Diehl Rd & N Mill St

Project Number: 22-0511A

Vrutthi LLC

Exhibit E

ENCAP INCORPORATED

LEGEND:

Project Area

Flood Insurance Rate Map

Source: Federal Emergency Management Agency (FEMA)
Panel Number: 17043C0142J
Effective Date: August 1, 2019

SWC Diehl Rd & N Mill St

Project Number: 22-0511A

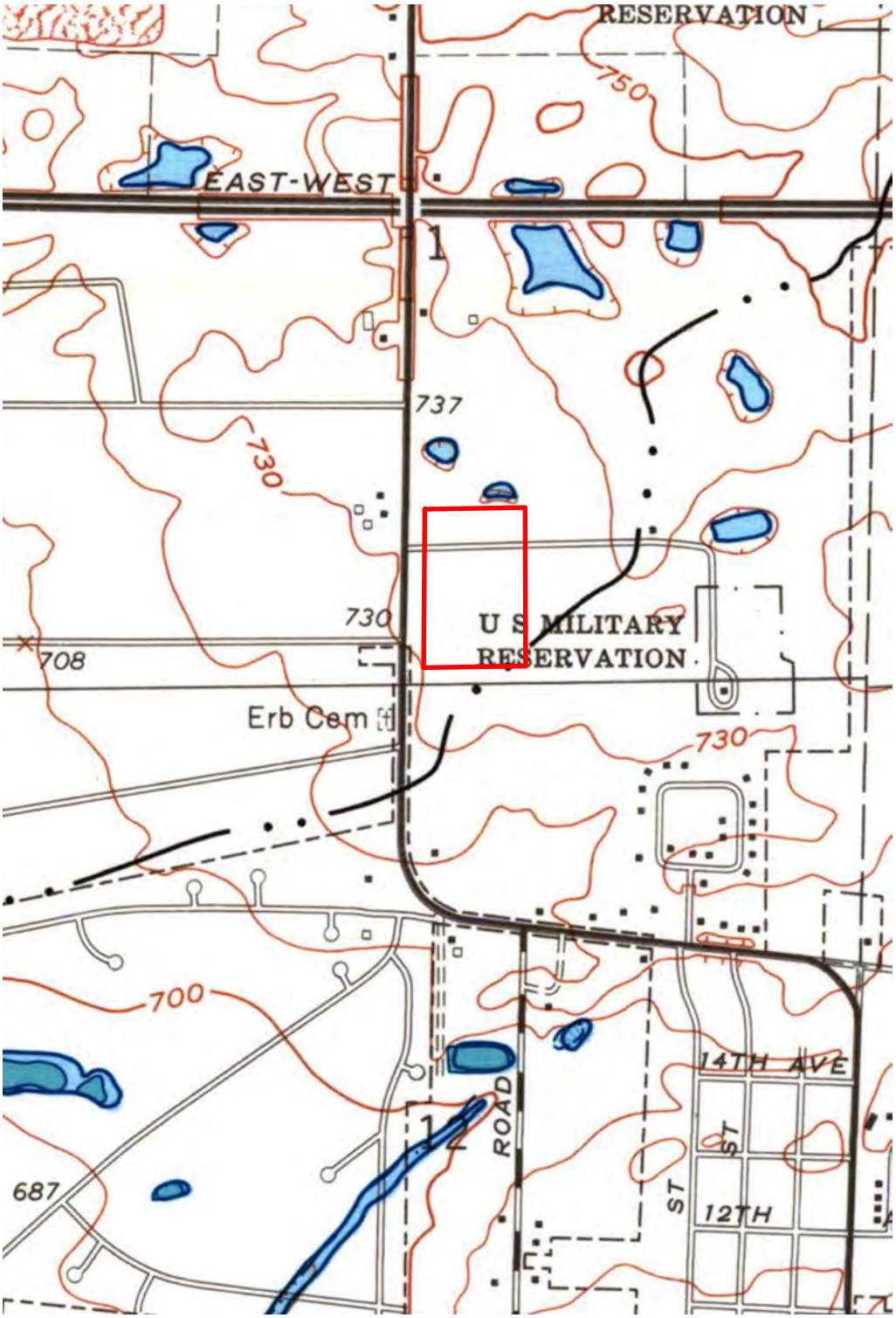
Vrutthi LLC

0 100 200 400

SCALE: 1"=200'

NORTH

Exhibit F



ENCAP INCORPORATED

LEGEND:

Project Area

Hydrologic Atlas

Source: U.S. Geological Survey
Naperville Quadrangle

0 500 1000 2000

SCALE: 1"=1000'

NORTH

SWC Diehl Rd & N Mill St

Project Number: 22-0511A

Vrutthi LLC

Exhibit G

ENCAP INCORPORATED

LEGEND:

Project Area

National Register Properties

- Part of a NR Historic District
- Determined eligible for the NR
- Part of a NR Historic District - contributing
- Entered in the NR
- Undetermined
- Other

Historic Architectural Resources Geographic Information System

Source: Illinois State Historic Preservation Office

0 200 400 800

SCALE: 1"=400'

NORTH

SWC Diehl Rd & N Mill St

Project Number: 22-0511A

Vrutthi LLC

Exhibit H

ENCAP INCORPORATED

LEGEND:

Project Area

Sample Points A-C

WL Delineation Field Work
Completed 05.24.2022

Aerial Photograph

Map data: ©2020Google
Image Date: 2018

0 100 200 400
SCALE: 1"=200'

NORTH

SWC Diehl Rd & N Mill St

Project Number: 22-0511A

Vrutthi LLC

Exhibit I