INLAND WETLANDS COMMISSION
MINUTES
Regular Meeting of June 27, 2018 at 7:30 p.m.
Council Chambers, Newtown Municipal Center
3 Primrose Street, Newtown, CT

These Minutes are subject to Approval by the Inland Wetlands Commission

Present: Sharon Salling, Craig Ferris, Vanessa Villamil, Mike McCabe, John Davin
Absent: Kristen Hammar, Suzanne Guidera

Staff Present: Steve Maguire, Senior Land Use Enforcement Officer, Dawn Fried, Clerk

Ms. Salling opened the meeting at 7:30 p.m.

PENDING APPLICATIONS

Application #18-12 by David Basak-Smith, property located at 71 Lakeview Terrace, for construction of a 5-ft. wide switch-back trail from the house to the lake bordered on both sides by a 1 ½- ft. high stone wall and plantings.

The applicant has requested the application be tabled because he is waiting for revised plans from his engineer.

Application #18-15 by Eduard Abukhovich, property located at 82 Huntingtown Road, for pond dredging.

Mr. Robert Mastroni, 460 Hammertown Road, Monroe, CT, spoke on behalf of the applicant.
Mr. Mastroni explained that the pond dried up many years ago and the applicant would like the pond back to its original state. Mr. Mastroni proposed to dredge the pond to a depth of 4-feet. There will be one entrance and one exit and a sump that will catch sediment.

Mr. McCabe asked how long the pond has been dry. Mr. Mastroni wasn't sure but guessed 20 years.

Mr. Mastroni would like to start the project in August. He will be digging a trench which will travel along the outskirts of the pond for water diversion if needed. He will be using an excavator.

Mr. Maguire recommended installing a sediment forebay at the inlet of the pond to contain sediment.

Mr. Ferris moved to approve Application #18-15 by Eduard Abukhovich, property located at 82 Huntingtown Road, for pond dredging with standard conditions A, B, C, D, E, F, O and P. The approved plans are: GIS Map 82 Huntingtown Road, Dated February 8, 2018 and all supporting documents. In addition please note the following conditions: Dredging shall only occur when pond is dry and diversion measures shall be in place in event of rain or unforeseen water while digging.
Ms. Villamil seconded. All in favor.

PUBLIC HEARING

Application #18-14 by Hawleyville Properties, LLC, Matthew D'Amico, property located at 90 Mt. Pleasant Road, 10 Hawleyville Road and 1 Sedor Lane, for the construction of medical office buildings (275,000 sq. ft.) and warehouse (250,000 sq. ft.)

Mr. McCabe read the public notice in to the record. Ms. Salling welcomed the public and stated the public hearing process.

Ms. Michelle Carlson P.E., BL Companies, Meriden, CT, Ms. Holly Linders, Staff Engineer and Atty., BL Companies, Meridan, CT, and Mr. James Cowen, Wetland Scientist, Davison Environment, Chester, CT spoke on behalf of the applicant.

Mr. Cowen gave an overview of the "Wetland Delineation" document dated June 23, 2018. See attached document.

Ms. Carlson gave an overview of the alternatives that were requested by the Commission at the last Inland Wetland meeting.

The original plan was to fill wetlands and disturb 7 acres of upland, the alternative is not to directly fill any wetlands on site. The applicant achieved this by decreasing the footprint of two medical buildings from 40,000 sq. ft to 30,000 sq. ft and 37,000 sq. ft to 30,000 sq. ft. They also eliminated 157 parking spaces and pulled the buildings further back from the residential site and further back from the wetlands. The warehouse building was also shifted and the cul de sac will be pulled further back. There will be 2 acres of "green" gained and a better buffer along the wetlands near the residential and upland areas.

Ms. Carlson gave a "high level overview" of the storm water management system.

The rooftop water from the warehouse will be collected through down spouts that will flow into an underground system. The overflow will come out into a level spreader and will flow back in to the wetlands. There will be a decrease in the rate of run-off from storm water.

The parking lot area run-off will go through hydrodynamic separators then into a storm water management basin and ultimately end up in the wetland system.

The medical buildings' roof run-off will go through hydrodynamic separators and then into rain gardens. The rain gardens will have overflow catch basins that will go to level spreaders into the wetlands.

The roof discharge that flows into the grassed areas will flow into the swales which will end up in the hydrodynamic separators and ultimately piped into the wetlands.

Detailed information can be found in the attached document titled "Developed Site Conditions and Hydrologic Conditions" dated May 23, 2018, Revised June 25, 2018.

Ms. Carlson stated that the grading on the site has been modified from '2 to 1' slope to a '3 to 1' slope which is more preferable.

Ms. Carlson gave an overview of the sediment and erosion control. Some items mentioned were: silt fencing installed along the perimeter of the property, anti-tracking construction pads installed at all of the entrances, buildup of the cut and fill, box out for the roads, soil stock piles, moving of earth, establish main detention basins, box out for the buildings. An independent third party engineer will monitor weekly. The final phase of sediment and erosion control is to make sure everything is stabilized, grading out of slopes, seed everything left bare, and erosion control matting on the 3 to 1 slopes. The property will be inspected weekly during construction and the engineers will work with the town staff to make sure everything is functioning properly.

Ms. Carlson gave an overview of the landscaping plan. Native trees, shrubs and plantings will be used throughout the site. Roadways will have canopy trees and slopes will have grasses and wildflowers. All areas of upland disturbance will have a buffer of native edge plantings as well as deer resistant plants. Mr. Cowen stated it will be a diverse planting plan with a variety of mixed species throughout the property. The plantings will be within 50-ft of the wetlands. There will be a wetland buffer enhancement of approximately ½ acre by the warehouse and ¾ acre by the medical buildings.

Ms. Carlson gave an overview of the rain gardens on the property. The rain gardens will have an extensive maintenance plan and will be monitored monthly during the first year while the rain gardens establish their functionalities. Thereafter the rain gardens will be cleaned twice a year in April and October. The rain gardens will have an edge of wildflowers and shrubs.

Ms. Salling appreciated that Ms. Carlson addressed the notes from the last IWC meeting and discussed the rain gardens. Ms. Salling questioned whether there were any vernal pools. Ms. Carlson stated that a biologist walked the site at three different times and confirmed there were no vernal pools identified.

Ms. Salling also appreciated the new presentation and the applicant's serious consideration to alternatives being reduction of the square footage of the parking lots and withdrawal of the buffer areas.

Mr. Ferris thanked the applicant for accommodating the Commission to be able to walk the site. Mr. Ferris also thanked the applicant for taking their comments from the last IWC meeting in to consideration. Mr. Ferris questioned whether there were any significant impacts to the wetlands and whether the storm water system will sufficiently mimic the existing system so the hydrologic integrity of the wetlands will be maintained.

Mr. Cowen stated that all direct impacts to wetlands have been eliminated therefore no wetland creation was necessary and that there will be no significant adverse impacts to wetlands and watercourses. Mr. Cowen reviewed the document titled "Wetland Impact Assessment" dated June 23, 2018, see attached.

Mr. McCabe thanked the applicant for giving the Commission access to the wetland areas and appreciated the new presentation and taking the Commission's comments into consideration. Mr. McCabe asked whether there is a mitigation plan for removing the invasives. Mr. Cowen stated they are only removing invasives in the spaces they are adding new plantings. They will also add taller shrubs and over story trees to compete with the barberry.

Mr. Maguire thanked the applicant for the revised plans.

Ms. Salling questioned whether the eliminated parking spaces will create an area for seeding and planting. Ms. Carlson reviewed the parking plans and pointed out the shrinkage of the parking area.

Mr. McCabe questioned whether there was a snow removal plan. Ms. Carlson stated the snow will be piled on the parking lot and removed from the site if necessary.

PUBLIC PARTICIPATION

Michael Ricardi, 16 Whippoorwill Hill Road, had concerns with the run-off from the wetlands and the water level in the hillside flowing down to the residential area. Ms. Carlson stated the swales on the hill will divert the water to yard drains and end up in the wetlands. Geotech tests will be perfomed.

Mary Gaudet Wilson, 12 Whippoorwill Hill Road, had concerns with the hydro-carbon run-off from the parking lots. Ms. Wilson thanked the applicant for the native plants and grasses. Ms. Wilson had concerns with the balance between impervious surfaces and the small areas of infiltration and storm water run-off. Ms. Wilson also questioned who would be responsible for the maintenance of the rain gardens and invasives. Ms. Carlson responded that any run-offs from the parking lot go through the storm water control management system. Mr. Cowen responded that are many places for vegetation. Ms. Carlson stated the applicant is vested in Newtown and will want to maintain the property.

Kristin Roberts, 6 Whippoorwill Hill Road, thanked the applicant for using native plants. Ms. Roberts also asked whether herbicides or pesticide will be used. Mr. Maguire stated that there are no town regulations banning pesticides or herbicides.

It is recommended that the public hearing remain open and be continued to the next regularly scheduled meeting of the Inland Wetland Commission on July 11, 2018 at 7:30 PM in Council Chambers at the Municipal Center located at 3 Primrose Street to allow the commission, staff and public time to review the recently submitted revised plans.

APPROVAL OF MINUTES for June 13, 2018

Mr. Ferris moved to accept the minutes from June 13, 2018. Mr. Davin seconded. All in favor. The minutes from June 13, 2018 were approved.

ADJOURNMENT

With no additional business, Mr. McCabe moved to adjourn. Mr. Davin seconded. All in favor. The meeting of June 27, 2018 was adjourned at 9:07 pm.

Respectfully Submitted, Dawn Fried.

DAVISON
ENVIRONMENTAL

Biodiversity Studies • Wetland Delineation & Assessment • Habitat Management • GIS Mapping • Permitting • Forestry

ORIGINAL

June 23, 2018

INLAND WETLANDS COMMISSION
ORIGINAL DOCUMENT

Received Date: 6/26/18

Received By: AT

Michael Sullivan
BL Companies
355 Research Parkway
Meriden, CT 06450

RE: Wetland delineation
Mount Pleasant Road, Hawleyville Road and Sedor Lane, Newtown

Dear Mr. Sullivan,

I am writing this letter to provide additional detail regarding the delineation of wetlands at the above-referenced site. The wetland delineation work conducted by Davison Environmental is summarized in the *Wetlands/Watercourses Delineation Report* drafted in December of 2017. This letter is intended to provide additional details regarding this work as requested by the Newtown IWWC.

Delineation work was conducted from November 24th through December 11th, 2017 by registered soil scientists Eric Davison, Matthew Davison and James Cowen. Most of the site had previously been flagged in 2015 by soil scientist Jim McManus, and most of the flags set by Mr. McManus were still visible in the field. This previous work gave us a detailed basemap for use as a field reconnaissance map and starting point. We were able to relocate all the wetlands previously mapped and flag some additional small areas not previously mapped (e.g., wetland finger between 1Q and 33Q).

At two locations we utilized the previously surveyed wetland lines. The first area is the isolated wetland (delineated by flags B1-B5; 1B1-1B5) in the north central portion of the site. This wetland was not reflagged as it was accurately depicted on the previous survey, and the flagging was visible and accurate in the field. The second area is along Mount Pleasant Road, from flag 167Q south to the road embankment/culvert inlet. At this location the dense brush and downs trees prevented full access to that location.

The subject site includes areas of very dense and impenetrable brush, particularly in the southern portions of the site along Mount Pleasant Road. Because some areas were physically inaccessible, the typical process of examining the soil profile at approximately 20-30-foot intervals could not be accomplished in those areas. This resulted in several wider breaks between some flags (such as at 135Q-136Q and 168Q-169Q).

Although at some locations the flags are placed further apart we have a high degree of confidence in the delineation with respect to the overall extent of the wetlands, given the difficult field conditions.

Respectfully submitted,

Eric Davison

Eric Davison
Certified Professional Wetland Scientist
Registered Soil Scientist

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Biodiversity Studies • Wetland Delineation & Assessment • Habitat Management • GIS Mapping • Permitting • Forestry

June 23, 2018

Michael Sullivan
BL Companies
355 Research Parkway
Meriden, CT 06450

RE: Wetland impact assessment
Proposed warehouse and medical office building development
Mount Pleasant Road, Hawleyville Road and Sedor Lane, Newtown

Dear Mr. Sullivan,

This letter documents our review of the proposed project and its potential to impact wetlands and watercourses. Based on feedback received during the initial IWWC meeting, the project as originally proposed has now been modified to remove all areas of direct wetland impact.

As all direct impacts have been eliminated, our review focused on the potential for indirect impacts resulting from activities occurring within the Upland Review Area. After a detailed review of the site plans, we raised concerns over the project's potential to impact wetland hydrology, primarily resulting from alteration of the existing drainage patterns and groundwater discharge zones into wetlands.

To resolve these concerns, I met with your team on 6/21/18 and we worked towards several substantive changes to the plans to reduce the likelihood of secondary wetland impacts. Provided below are site plan modifications and additional recommendations that resulted from that meeting:

<u>Site Grading / Activities Proximate to Wetlands</u>

1. To mimic pre-construction hydrology, water flow from the east side of the development will be allowed to pass through the site - captured in swales and piped to a level spreader along the wetland boundary. This will help mimic the

existing site hydrology where water flows off the central drumlin into the wetlands.

2. Stormwater outfall locations have been modified to mirror the natural groundwater discharge zones. Additionally, the outfall design has been modified to include level spreaders to reduce concentrated flows. To improve water quality and stabilize soils, we recommend these outlets be planted with Soft Rush (*Juncus effusus*) to provide additional stormwater pollutant removal.
3. South of the western warehouse building there is a wetland finger (ending at flags 174-175) that extends west from the stream. Due to the proposed cut slope north of the wetland, we raised concerns regarding the potential to dewater this wetland. The potential for this impact has been mitigated by incorporating two measures: (1) a bentonite clay liner will be installed into the slope coincidental with the retaining wall to prevent exfiltration of water; (2) a swale will be placed at the top of the slope which will capture existing drainage area flows to this wetland finger from the hillside and redirect that water into the wetland to minimize the loss of contributing watershed.
4. North of the western warehouse building, we raised concerns over the proximity of the grading to the stream and the impacts associated with removal of the tree canopy over the stream. The potential for this impact has been mitigated by pulling back the activity further from the stream, and the stormwater outlet locations and design were modified. They now include level spreaders, and the outlet points were moved to the base of the slope as opposed to the mid-slope, reducing erosion concerns.

<u>Water Quality Recommendations</u>

1. To mitigate the loss of wetland buffer vegetation we have proposed native plantings along with modest removal of invasive plants to occur along the LOD. Invasive plants will only be removed where we have proposed wetland buffer plants (e.g. within 50 feet of the wetland edge and within the limits of disturbance). This will serve to improve water quality by filtering surface water runoff from developed areas and provide wildlife habitat. Slopes and disturbed

soils shall be seeded with new England Roadside Matrix Upland Seed Mix to stabilize soils with native species including trees and shrubs

2. To further improve water quality in the proposed stormwater ponds, they should be planted with emergent shrubs such as buttonbush (*Cephalanthus occidentalis*) or aquatic plants such as water lily. Plants and seed mixes should be selected which are appropriate for the proposed basin hydrology and provide stormwater renovation. Ponded areas, if any, within basins should be planted with plugs of emergent or aquatic species depending on water depth. Final number of plantings and determination of species may be altered/adjusted during construction due to final hydrology conditions. Basin and rain garden soil mixes have been specified to maximize plant growth and stormwater renovation. To maximize residence time for smaller storms, create a circuitous flow path with low flow berms and micrograding which will be finalized at the time of construction.
3. To minimize compaction of soil in rain gardens, avoid the use of heavy equipment. Refracture subsoil as needed before placement of soil mix (see drainage report and O&M plan).
4. We recommend that Project Wetland Scientist should monitor the wetland plantings for 3 years to determine success and to recommend any necessary remedial actions.

5. The wetland located along the western access drive (at wetland flags 59-68) is presently degraded due to sediment deposition, and the vegetation consists of invasive autumn olive. To improve the water quality renovation function of this wetland, we would recommend that the olive be removed to open the canopy, and the area be planted with the native seed mix *New England Erosion Control/Restoration Mix For Detention Basins and Moist Sites* (http://newp.com/catalog/seed-mixes/#erosionMoist).

Erosion and Sedimentation Control

We also raised concerns over the potential for erosion and sedimentation during the various phases of construction. The site is steeply sloping, and broad graded slopes are

proposed near wetlands. Due to the moderately-well drained glacial till soils present there is increased risk of erosion and sedimentation during construction. As such, a detailed sequence and phasing for sediment and erosion control measures has been included and consists of four phases: an initial phase, two interim phases, and one final phase. Each of the four phases is subdivided into two distinct developed areas: the eastern medical office buildings (Nos. 3, 2 and 1 in sequence), and the western warehouse development.

In general, and in the context of erosion and sediment protection, each initial phase is characterized by the establishment of perimeter controls, anti-tracking apron at entrance/egress locations, clearing/grubbing and temporary stockpiles. Also at the onset for this initial phase, diversion swales, check dams and construction and establishment of sediment basins and temporary sediment traps are prioritized and commensurate with disturbance in each developed area.

The two interim phases are associated with the general progression for cuts/fills as the developed areas are modified to improve access roads, install retaining walls, achieve interim grades and maintain construction stormwater controls by adjusting diversion swales and raising/lowering the elevation of temporary sediment traps to match interim grades as site work continues.

The final phase in general is characterized by the phasing-out of temporary sediment and erosion measures as final grades and surfaces are prepared and installed. Also, sediment basins will be converted to permanent stormwater detention basins and all permanent system stormwater structures cleaned and confirmed fully functional.

Finally, following all erosion and sediment phases and after the engineer of record has determined that the site has been stabilized, all temporary erosion and sediment control measures will be removed to match existing and/or proposed conditions.

In our professional opinion with the incorporation of our proposed site plan modifications and additional recommendations, the project will have no significant adverse impacts to wetlands and watercourses.

Respectfully submitted,

Eric Davison
Certified Professional Wetland Scientist
Registered Soil Scientist

And

James Cowen
Certified Professional Wetland Scientist
Registered Soil Scientist

Developed Site Conditions and Hydrologic Conditions

General Site Information

The proposed site development consists of proposed medical office buildings totaling up to 240,000 s.f. and a 250,000 s.f. warehouse building, associated impervious parking and drives, various subsurface detention systems, several above-ground stormwater ponds and rain gardens, and lawn with various plantings. The exfiltration rate for ponds and rain gardens was assumed to be 0.1 in/hr. per recommendations from the NRCS Soil Survey data that indicated infiltration rates for existing soils range between 0.00-0.14 in/hr.

Proposed Hydrologic Conditions

For the purposes of the drainage analysis and discussion, the design points for the proposed conditions analysis are the same as the existing conditions analysis. The proposed development has been analyzed as sixteen sub-drainage basins as illustrated on the enclosed Proposed Drainage Plan (PD-1) located in Appendix E. The proposed analysis includes a total of 155.5 acres and is approximately 16.04% impervious. The intent of the proposed site drainage is to mimic existing drainage patterns to the maximum extent practical. The site stormwater system will provide stormwater quantity and quality improvements through a formalized street sweeping program for the impervious surfaces, the installation of subsurface detention systems throughout the site, and various detention ponds and rain gardens, before ultimately flowing to the design points. These measures will treat the stormwater quality flow through various means to provide water quality treatment in conformance with the State of Connecticut Water Quality Manual. For the hydrologic analysis, the developed site retains the same Design Points as the existing model. The following drainage areas were developed to model the proposed site improvements.

Proposed Drainage Area 110 (PDA-110): PDA-110 is a 23.09-acre drainage area is approximately 1.19% impervious which consists mainly of native wooded vegetation cover and impervious roofs and drives associated with the single-family homes on Sedor Lane. About half of the area is composed of existing wetlands. PDA-110 encompasses the southwestern portion of the proposed site. Stormwater runoff from this drainage area flows directly to the existing low point on the western side of the property, Design Point 1 (DP-1).

Proposed Drainage Area 111 (PDA-111): PDA-111 is a small 0.46-acre drainage area which consists pervious lawn area and a small portion of impervious proposed road. This area is approximately 70.57% and the runoff flows directly from the proposed road the to the existing low point on the western side of the property, Design Point 1 (DP-1).

Proposed Drainage Area 120 (PDA-120): PDA-120 is a 14.51-acre drainage area that consists of the entire proposed impervious road connecting the warehouse to Hawleyville Road in addition to the surrounding lawn impacted by the road grades tying into existing slopes. This area is approximately 8.22% impervious. The runoff sheet flows northwesterly into either the swale along the proposed road or into catch basins in the road which then discharge to the surface detention pond P-120 to the east of the proposed road. The stormwater then flows through an outlet control structure and ultimately discharges to the south to the existing low point along the west side of the property, Design Point 1 (DP-1).

Proposed Drainage Area 210 (PDA-210): This 44.61-acre drainage area is approximately 0.55% impervious. PDA-210 consists almost entirely of untouched, native wooded vegetation with some impervious roofs and drives associated with the adjacent property single-family homes along Mount Pleasant Road, and some of the impervious parking field associated with Medical Office Building 3. PDA-210 is the largest drainage area and includes the center portion of the site with an existing stream located in the central wetlands. In the PDA-210 drainage area, the stormwater runoff flows into the central wetlands, along the existing central stream, and ultimately to the inlet located just north of the property, Design Point 2 (DP-2).

Proposed Drainage Area 211 (PDA-211): This 8.39-acre drainage area is approximately 27.58% impervious. PDA-211 consists of the pervious southwestern lawn behind the proposed warehouse, proposed impervious warehouse parking field and associated impervious drives and some existing untouched wooded area to the west of the warehouse. Runoff flows either from the rear edge of the residential lawn along Mount Pleasant Road into a swale behind the proposed warehouse building, into a surface detention pond P-211 to the northwest of the building and parking, into an outlet control structure that discharges under the proposed road and out to the other side to the existing inlet just north of the subject property, Design Point 2 (DP-2). Otherwise, stormwater collected from the parking field and truck access drive flows into curb catch basins that discharge to the surface detention pond P-211 to the northwest of the building and parking, into an outlet control structure that directs stormwater under the proposed road, through a level spreader, and ultimately to the existing inlet just north of the subject property, Design Point 2 (DP-2).

Proposed Drainage Area 212 (PDA-212): This 5.74-acre drainage area consists of the proposed warehouse building roof that is exactly 100.00% impervious. Runoff flows along the roof and discharges to the roof drains along the eastern and western sides of the building. The roof drain header pipes then discharges the stormwater into a subsurface system below the parking lot, through an outlet control structure, outlets to a level spreader upstream of the central wetlands

which ultimately directs flows to the existing inlet just north of the subject property, Design Point 2 (DP-2).

Proposed Drainage Area 220 (PDA-220): This 0.76-acre drainage area is exactly 0.00%. PDA-220 consists of native wooded vegetation and impervious roofs and drives associated with the adjacent single-family homes located on Whippoorwill Hill Road in addition to the associated residential lawns impervious. Runoff flows from the edge of a single-family home on the abutting property along Whippoorwill Hill Road, into the Mount Pleasant Road drainage system through a double catch basin located to the west of the proposed road connecting the medical office buildings to Mount Pleasant Road, outlets to the existing wetlands in the center of the site, through the existing stream, and ultimately to the existing inlet just north of the subject property, Design Point 2 (DP-2).

Proposed Drainage Area 221 (PDA-221): This 4.01-acre drainage area is approximately 33.09% impervious. PDA-221 consists of Medical Office Building 1, Rain Garden #1 (RG-1), and some of the impervious parking field with associated pervious landscaped islands. Runoff flows from the edge of a single-family home on the abutting property along Whippoorwill Hill Road, into Rain Garden #1 to the south of Medical Office Building 1, discharges through an outlet control structure under the proposed road out to the other side of the road through a level spreader, into the existing wetlands in the center of the site, through the existing stream, and ultimately to the existing inlet just north of the subject property, Design Point 2 (DP-2).

Proposed Drainage Area 222 (PDA-222): This 2.65-acre drainage area is approximately 84.76% impervious. PDA-222 consists of the remaining impervious parking field for Medical Office Building 2 and associated pervious landscaped islands. Runoff flows along the impervious pavement and into curb inlet catch basins that discharge to a subsurface detention system in the northwest corner of the parking field. The subsurface detention system then discharges through an outlet control structure under the proposed road out to the other side of the road through a level spreader, into the existing wetlands in the center of the site, through the existing stream, and ultimately to the existing inlet just north of the subject property, Design Point 2 (DP-2).

Proposed Drainage Area 222A (PDA-222A): This 1.85-acre drainage area is approximately 4.35% impervious. PDA-222A consists almost entirely of untouched, native wooded vegetation with some impervious roofs and drives associated with the adjacent property single-family homes along Whippoorwill Hill Road, and some of the lawn area above the retaining wall to the east of Medical Office Building 1. In the PDA-222A drainage area, the stormwater runoff is collected in an inlet at the high side of the retaining wall, is piped through the development to the west, through

a level spreader, flows into the central wetlands, along the existing central stream, and ultimately to the inlet located just north of the property, Design Point 2 (DP-2).

Proposed Drainage Area 223 (PDA-223): This 2.26-acre drainage area is approximately 86.79% impervious. PDA-223 consists of Medical Office Building 2, a portion of the impervious parking field for Medical Office Building 2 and associated pervious landscaped islands. Runoff flows along the impervious pavement and into curb inlet catch basins that discharge to a subsurface detention system in the southern portion of the parking field. The subsurface detention system then discharges through an outlet control structure under the proposed road out to the other side of the road through a level spreader, into the existing wetlands in the center of the site, through the existing stream, and ultimately to the existing inlet just north of the subject property, Design Point 2 (DP-2).

Proposed Drainage Area 223A (PDA-223A): This 5.14-acre drainage area is approximately 5.61% impervious. PDA-223A consists mainly of untouched, native wooded vegetation with some impervious roofs and drives associated with the adjacent property single-family homes along Whippoorwill Hill Road, and some of the lawn area above the retaining wall to the east of Medical Office Building 2 and the parking lot between buildings 1 and 2. In the PDA-223A drainage area, the stormwater runoff is collected in an inlet at the high side of the retaining wall, is piped through the development to the west, through a level spreader, flows into the central wetlands, along the existing central stream, and ultimately to the inlet located just north of the property, Design Point 2 (DP-2).

Proposed Drainage Area 224 (PDA-224): This 3.35-acre drainage area is approximately 63.96% impervious. PDA-224 consists of the impervious shared parking field for Medical Office Buildings 2 & 3, associated pervious landscape islands, and some lawn to the west of the parking field containing Rain Garden #2 (RG-2). Runoff flows into various curb inlet catch basins that discharge in the rain garden. The stormwater then flows through an outlet control structure into the proposed road drainage system that eventually flows to a surface detention pond to the northwest of all the development. Stormwater from this pond then discharges ultimately to the central wetlands that direct flows to the existing inlet just north of the subject property, Design Point 2 (DP-2).

Proposed Drainage Area 224A (PDA-224A): This 6.02-acre drainage area is approximately 20.56% impervious. PDA-224A consists partially of untouched, native wooded vegetation, partially of the lawn area to the east of the parking lots between building 2 and 3, and partially of the parking deck associated with Medical Office Building 3. In the PDA-224A drainage area, the stormwater runoff is collected in a series of inlets within the lawn area and parking areas, is piped through the development to the west, through a level spreader, flows into the central wetlands,

along the existing central stream, and ultimately to the inlet located just north of the property, Design Point 2 (DP-2).

Proposed Drainage Area 225 (PDA-225): This 1.02-acre drainage area is approximately 73.97% impervious. PDA-225 contains a portion of the impervious parking field to the southwest of Medical Office Building 3 and the pervious lawn containing Rain Garden #3. Runoff flows along the impervious pavement and into curb inlet catch basins that discharge to the rain garden. The rain garden then discharges to the proposed road drainage system through an outlet control structure that eventually flows to a surface detention pond to the northwest of all the development. Stormwater from this pond then discharges ultimately to the central wetlands that direct flows to the existing inlet just north of the subject property, Design Point 2 (DP-2).

Proposed Drainage Area 226 (PDA-226): This 1.95-acre drainage area consists of the proposed building roof that is approximately 84.20% impervious. PDA-226 consists of Medical Office Building 3, Rain Garden #4 (RG-4), and some of the impervious parking field with associated pervious landscaped islands. Runoff flows along the impervious pavement and into curb inlet catch basins that discharge into Rain Garden #4 to the west of Medical Office Building 3. The stormwater then discharges through an outlet control structure to the proposed road drainage system that eventually flows to a surface detention pond to the northwest of all the development. Stormwater from this pond then discharges ultimately to the central wetlands that direct flows to the existing inlet just north of the subject property, Design Point 2 (DP-2).

Proposed Drainage Area 227 (PDA-227): This 4.79-acre drainage area is approximately 45.48% impervious. PDA-227 contains the entire impervious proposed road connecting the medical office buildings to Mount Pleasant Road, lawn area, and the surface detention pond at the northwest corner of the medical office building development. Runoff flows along the impervious pavement and into curb inlet catch basins that discharge to the proposed road drainage system that flows through a hydrodynamic separator and eventually flows to a surface detention pond to the northwest of all the development. Stormwater from this pond then discharges ultimately to the central wetlands that direct flows to the existing inlet just north of the subject property, Design Point 2 (DP-2).

Proposed Drainage Area 300 (PDA-300): PDA-300 is completely unaffected by the proposed construction and remains as it is today. This drainage area is 23.41 acres and is approximately 4.20% impervious, consisting of native wooded vegetation and impervious roofs and drives associated with the adjacent single-family homes located on Whippoorwill Hill Road in addition to the associated residential lawns. PDA-300 includes the northeastern corner of the subject property and significant portions of the abutting properties on Whippoorwill Hill Road. In the

PDA-300 drainage area, the stormwater runoff flows from the end of the cul-de-sac of Whippoorwill Hill Road directly to the existing low point located to the northeast of the subject property along Interstate 84, Design Point 3, DP-3.

Proposed Drainage Area 400 (PDA-400): This drainage area is 1.45 acres and is approximately 0.00% impervious, consisting entirely of native wooded vegetation in the northwestern portion of the subject property. In the PDA-400 drainage area, the stormwater runoff flows directly to the low point located in the northwestern corner of the property, Design Point 4 (DP-4).

Table 3 – Post Development Drainage Characteristics.

Drainage Area / Design Point	Area (Acres)	Composite Curve Number	Impervious Cover (%)	Time of Concentration (minutes)
PDA-110	23.09	73	1.19%	41.7
PDA-111	0.46	90	70.57%	5.0
PDA-120	14.51	77	8.22%	32.5
PDA-210	44.61	74	0.55%	47.7
PDA-211	8.39	83	27.58%	29.5
PDA-212	5.74	98	100.00%	5.0
PDA-220	0.76	79	0.00%	47.6
PDA-221	4.01	85	33.03%	10.1
PDA-222	2.65	95	84.76%	5.0
PDA-222A	1.85	78	4.35%	9.7
PDA-223	2.26	95	86.79%	5.0
PDA-223A	5.14	77	5.61%	23.2
PDA-224	3.35	91	63.96%	9.9
PDA-224A	6.02	82	20.56%	15.2
PDA-225	1.02	93	73.97%	5.0
PDA-226	1.95	95	84.20%	5.0
PDA-227	4.79	88	45.48%	5.0
PDA-300	23.41	76	4.20%	24.4
PDA-400	1.45	70	0.00%	18.5

Table 4 – Post-Development Conditions Peak Flows

Analysis Point	Peak Flow (cfs)			
	2-yr	10-yr	25-yr	100-yr
Design Point 1	19.41	41.62	55.44	77.74
Design Point 2	1.09	2.55	3.51	5.06
Design Point 3	21.85	44.08	58.17	80.07
Design Point 4	1.09	2.55	3.51	5.06

Table 5a – Existing vs Proposed Peak Rates of Runoff

	Peak Flow (cfs)			
Drainage Area	**2-yr**	**10-yr**	**25-yr**	**100-yr**
Design Point 1				
Existing	19.73	42.60	57.45	80.85
Proposed	19.41	41.62	55.44	77.74
% Change	-1.62%	-2.30%	-3.50%	-3.84%
Design Point 2				
Existing	52.28	110.64	148.45	207.87
Proposed	51.27	102.54	139.46	198.08
% Change	-1.93%	-7.32%	-6.06%	-4.71%
Design Point 3				
Existing	21.85	44.08	58.17	80.07
Proposed	21.85	44.08	58.17	80.07
% Change	-	-	-	-
Design Point 4				
Existing	2.96	6.89	9.51	13.68
Proposed	1.09	2.55	3.51	5.06
% Change	-63.18%	-62.99%	-63.09%	-63.01%

Stormwater Management

Hydrologic Modeling of the Entire Site

The hydrologic analysis to determine peak stormwater discharge rates was performed using the HydroCAD stormwater modeling system computer program, version 10.00 developed by HydroCAD Software Solutions, LLC. Hydrographs for each watershed were developed using the SCS Synthetic Unit Hydrograph Method. Rainfall depths and distribution per the NOAA Atlas 14 for Newtown, CT were used for the calculation of peak flow rates and are listed in Table 6. The drainage areas, or subcatchments as labeled by the program, are depicted by hexagons on the attached drainage diagrams. Pre-development HydroCAD output can be found in Appendix B and Post-development HydroCAD output can be found in Appendix C.

Table 6 – Rainfall Depths per NOAA Atlas 14
Appendix B - 24-hour Rainfall Data

Return Period	24-hour Rainfall Depth
2-year	3.57"
10-year	5.59"
25-year	6.86"
100-year	8.81"

Summary

The post-development peak discharge rates for the developed site have been decreased for all storm events. All post development stormwater discharged will mimic existing drainage patterns. The proposed surface and subsurface stormwater detention systems have been designed to attenuate peak flows and detain stormwater for the largest storm event. Stormwater quality is being addressed by water quality structure and sediment sweeping program. These features will provide the minimum required 80% TSS removal as required in the CT Stormwater Manual. The proposed stormwater management system will meet the stormwater quality requirements of the State of Connecticut.