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Environmental Impact Evaluation
Northwest Science Quadrangle

University of Connecticut | Storrs, CT

December 2018

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Executive Summary

The University of Connecticut (University or UConn) proposes to construct a new Northwest Science Quad on an approximately 22-acre site located at the northwest corner of the Storrs campus in Mansfield, CT. The site is mostly three surface parking areas Lot 9, X-Lot and L-Lot. The proposed project, which is anticipated to begin construction in the second half of 2019, consists of the following elements (Figure ES-1):

- Science 1 - An approximately 193,600 GSF STEM Research Center will be constructed to house new STEM teaching and research facilities, including the Institute for Materials Science (IMS) and Materials Science and Engineering (MSE) programs. Science 1 will incorporate best practices of sustainability with a target goal of LEED Gold certification. UConn will also conform to Connecticut High Performance Building requirements and pursue the U.S. Green Building Council Sustainable SITES certification for sustainable landscape design. The feasibility of installation of a solar array on Science 1 is also being evaluated in the design process.

- Supplemental Utility Plant (SUP) - It is anticipated that the SUP will be completed on the western side of the site in three separate phases in order to meet near-term and long-term campus utility needs. The SUP full buildout will consist of the plant building, which is anticipated to include four chiller units, emergency power via two 2-MW diesel generators, 100,000 lb/hr steam boiler, two gas combustion turbines, cooling towers and the associated auxiliary equipment needed to operate these utility generating units. The total building footprint at full buildout is anticipated to be approximately 56,300 SF. The SUP facility will also include an approximately 50 megawatt electrical substation designed for 115 KV along with utility switching equipment, above ground storage tanks for ammonia, and below ground storage tanks for diesel fuel. A green roof in Phase 2 of the SUP construction is also being evaluated in the design process. The initial phase of the SUP construction is the focus of analysis in this EIE, with full buildout considered in the analysis of cumulative impacts.

Figure ES-1. Proposed Action – Northwest Science Quadrangle

- North Woodland Corridor - Landscaping of the project area will be designed to form part of the North Woodland Corridor featured in the Campus Master Plan. The North Woodland Corridor will serve as a landscape connector and pedestrian pathway to link the Northwest Science Quad to the rest of the science district. The corridor will also provide an area to implement green infrastructure for stormwater management.

- Improvements to King Hill Road and realignment to Hillside Road and Alumni Drive - A portion of King Hill Road may be converted to one way traffic in the westbound direction. Final access to the Northwest Science Quad will be available from both the east and the west. Hillside Road and Alumni Drive will undergo realignment to clarify patterns for vehicle traffic.

- Utility Tunnel from current Central Utility Plant (CUP) to proposed SUP - The existing utility tunnel on Auditorium Road will be extended to the new SUP. Utility conveyances will be contained within the tunnel for access and ongoing maintenance. It is anticipated that the tunnel will contain domestic water, reclaimed water, chilled water, pumped condensate, steam, high pressure condensate, fire protection, and a cable tray support system to support insulated electrical cables.

- Stormwater and Utilities to serve the Northwest Science Quad - In addition to those contained in the proposed utility tunnel, sanitary sewer, electricity, emergency power, and stormwater utilities will be direct burial on-site. Stormwater management will be incorporated into the North Woodland Corridor using green infrastructure techniques and will serve a dual purpose as a teaching tool.

- Surface Parking- A new surface parking lot will be created parallel to King Hill Road. The lot is proposed to be constructed on an existing parking lot or other currently developed surface and will contain approximately 180 parking spaces.

Project Purpose

Provide additional STEM research and teaching facilities and additional utility capacity on the UConn Storrs campus.

Project Need

Proposed Action needed to support *NextGenCT* and Master Plan initiatives and goals.

- Replace aging STEM space
- Add STEM facility space to meet demand
- Attract top-notch faculty and students
- Increase utility production and distribution capacity

The University, as the sponsoring agency for this project, has prepared an Environmental Impact Evaluation (EIE) to further evaluate the potential environmental impacts of the proposed Northwest Science Quad development, hereafter referred to as the Proposed Action.

The University considered reasonable alternatives to the Northwest Science Quad development, including the No Action alternative (i.e., "do nothing"). The alternatives evaluation is summarized below:

- No Action Alternative - The No Action Alternative would fail to address the purpose and need for the project, which is to provide state-of-the-art STEM facilities with sufficient space to support research and teaching in these disciplines. Furthermore, the No Action Alternative would not address the purpose and need of the project relative to increasing utilities capacity to support campus and master planning goals. The No Action Alternative is not aligned with Campus Master Plan goals or the goals of *NextGenCT*. Both explicitly aim to expand STEM teaching and research at UConn through updated infrastructure, new STEM research and teaching labs, and increased STEM student enrollment. Consequently, the No Action Alternative was rejected by the University.

- Alternative Campus Locations - UConn underwent an extensive planning process to develop the 2015 Campus Master Plan. That effort sought to prioritize needs, define the highest and best use for sites on the Storrs campus, and establish planning principles to guide future campus development. In considering alternatives, the Master Plan identified the North Eagleville Science District. The location identified in the Master Plan for the development of the Northwest Science Quad is a natural extension of the existing science core to the east, does not result in the loss of greenspace, and is currently occupied by surface parking lots which result in substantial runoff to Eagleville Brook. Consequently, the area occupied by Lot 9, X-Lot and L-Lot was selected as the preferred location on the Storrs campus for the development of the Northwest Science Quad. The SUP was co-located to the Northwest Science Quad, as the sciences are projected to be the largest single new user of chilled water and have the greatest need for access to new emergency power capacity (Skidmore, Owings, and Merrill, LLP, 2015b, pp. 51, 53).

- Alternative Site Concepts - Alternative site configurations for the Proposed Action within the Northwest Science Quad site were assessed throughout the project planning process (Towers Golde, 2016). Goals for the site layout included minimizing impacts to wetlands and existing trees/woodland area, providing pedestrian/vehicle separation on site, and providing a woodland corridor to allow for green infrastructure and low impact design for improved stormwater management. Off-site effects of any of the proposed site configurations are anticipated to be similar with the exception of traffic circulation, which could differ based on traffic circulation through the site and on King Hill Road but could be addressed through traffic management measures.

- Preferred Alternative - The preferred alternative to emerge from the site configuration planning process is shown in Figure ES-1. This alternative allows for the necessary buildable area to construct the key elements

needed to address the purpose and need for the Proposed Action while also meeting the goals of minimizing disturbance to natural resources on the site, providing for pedestrian vehicular separation, and allowing for development of a woodland corridor. Consequently, the site configuration shown in Figure ES-1 was selected as the Preferred Alternative which was carried forward for analysis in the CEPA process.

Potential direct adverse effects resulting from the Proposed Action are those associated with the loss of an approximately 2500 SF inland wetland area. One area of wetland impact is an isolated wetland located in the southeast corner of the proposed Science 1 building and the other is located in the northeast corner of the project area where the North Woodland Corridor pedestrian path encroaches on the wetland area in the vicinity of the intersection of King Hill Road and North Eagleville Road. Alteration of the wetland area will be permitted under the Connecticut Department of Energy and Environmental Protection (CTDEEP) *General Permit for Water Resource Construction Activities* and subject to the conditions of the U.S. Army Corps of Engineers Connecticut General Permit. Appropriate mitigation will be identified through the permitting process.

Limited construction-related impacts to traffic, air quality, noise, hazardous materials, solid waste, and stormwater are unavoidable but are temporary in nature and will be mitigated through the use of best management practices during construction and are not anticipated to result in permanent adverse effects.
There are two possible types of secondary or indirect effects – encroachment-alteration and induced growth (or growth influencing). Since the project is largely a redevelopment of parking lots, there is little potential for impact from encroachment-alternation. Although the Proposed Action is within the Eagleville Brook watershed, the redevelopment of the existing parking lots and, in particular, the improvements to stormwater management, are anticipated to have a net benefit impact to water quality. Therefore, no adverse indirect effects associated with encroachment-alteration are anticipated as a result of the Proposed Action.

Foreseeable indirect impacts associated with induced growth are limited to potential increases in utility capacity, which will enable growth, especially in the northern portion of the Storrs Campus. However, the construction of a SUP was specifically identified in the Campus Master Plan as an important element for growth to provide utility capacity and redundancy consistent with long-term master planning goals. So, while the development of a SUP will be a growth influencing factor, it is specifically intended to do so and to do so in a way that is consistent with responsible planning for campus growth. Future construction that is enabled by the SUP will also be subject to environmental review and permitting, as appropriate, and should impacts associated with future projects be identified later in time, appropriate mitigation would be identified to reduce or offset adverse effects.

Cumulative impacts to utility demand and air quality are relevant to this project. While short-term utility demand will increase as a result of the Proposed Action, a combination and campus-supplied and, in some cases, imported, capacity exists to address the additional loads for electricity, water, sanitary sewer, gas, telecommunications, stormwater drainage, and steam. As mentioned above the impact created by Science 1 to chilled water and emergency power is offset within the Proposed Action itself by the construction of the first phase of the SUP. Subsequent phases of the SUP are intended to provide the additional capacity and

resiliency in campus-wide electricity, steam, and chilled water, providing a cumulative benefit to campus utilities.

The cumulative effects on air quality are also inherently linked to the expansion of large fuel-burning equipment that will foreseeably occupy the SUP. The University's commitment to maintaining emissions below the critical thresholds identified in the campus Title V permit effectively limits the potential for cumulative air quality impact by placing a cap on emissions that is specifically intended to avoid direct and cumulative air quality impacts. The University has developed a strategy for phase-out of aging equipment at the CUP and installation of new equipment at the SUP and CUP to both address campus utility demands and maintain campus-wide emissions below the Clean Air Act de minimis rule emissions caps for NOx and VOCs.

Anticipated impacts and proposed mitigation measures to avoid, minimize, or offset potential adverse impacts are summarized in Table ES-1.

Table ES-1. Summary of Impacts and Proposed Mitigation

Resource Category	Impacts	Proposed Mitigation
Consistency with Planning	· Will be consistent with Connecticut's State Conservation and Development Policies Plan · Will be consistent with Local Zoning and Planning · Will be consistent with Campus Master Planning	· None
Geology, Topography, and Soils	· No unique features or farmland soils. The site is already developed and topography and soils have been previously modified.	· None
Water Resources	· Will be consistent with Eagleville Brook TMDL and Watershed Plan · No floodplain-related impacts are expected. · Stormwater runoff from the site is anticipated to decrease due to implementation of stormwater controls. · Water quality of runoff leaving the site is expected to improve relative to existing conditions.	· The stormwater management system for Science 1 will be consistent with the guidelines contained in the CTDEEP *Connecticut Stormwater Quality Manual* (as amended). · LID measures such as disconnected impervious areas, bioretention, and pervious surfacing. · Infiltration chambers are being considered under the main parking area to manage peak rates of runoff from the project site. · Good housekeeping practices will ensure ongoing operation of stormwater features.
Wetlands	· Anticipate approximately 2000 SF of inland wetland to be directly impacted by construction of Science 1 · An additional approximately 500 SF of wetland area near the western North Eagleville Road/King Hill Road intersection will be impacted by the construction of the North Woodland Corridor pathway	· Mitigation will be identified through the permitting process.
Natural Communities, Flora, and Fauna	· One federally threatened/endangered species (northern long-eared bat) potentially in the region · NDDB Review indicated no negative impacts to state-listed species. · Vegetation clearing, including removal of invasives.	· Planting of trees and native plant species to establish the North Woodland Corridor through the site. · Field review for potential northern long-eared bat maternal roost trees prior to tree removal.
Noise	· Consistent with existing institutional and commercial setting	· None

Table ES-1. Summary of Impacts and Proposed Mitigation

Resource Category	Impacts	Proposed Mitigation
Air Quality	· New stationary sources to be phased into the SUP beginning with emergency generators and chiller units	· Stationary sources to be included in UConn facility-wide Title V air quality permit · Implement operational restrictions and emissions limitations for new emissions sources subject to permitting (e.g., turbines, boilers) along with collateral conditions for emission sources not subject to permitting (e.g., new CUP chiller units) to remain below campus-wide emission thresholds set forth in the Clean Air Act De Minimis Rule. · The emergency generators will be operated less than 300 hours per year pursuant to CTDEEP's "permit-by-rule" · Installation of new equipment at the SUP will be coordinated with retirement of existing equipment at the CUP to cap emissions of NOx and VOCs to remain below Clean Air Act De Minimis Rule thresholds.
Solid Waste	· Typical institutional waste stream	· None
Toxic and Hazardous Materials	· Generation of toxic and/or hazardous materials consistent with other campus laboratory facilities and Central Utility Plant.	· Hazardous materials to be directed to the Main Accumulation Area and managed according to existing University protocols, including the UConn Chemical Waste Disposal Guidelines, Biological Waste Guide, and UConn Radiation Safety Manual. · Transport of hazardous materials from existing laboratories to the new Science 1 will be performed by a permitted hazardous materials transporter.
Public Health and Safety	· Expansion of existing activities, equipment, and processes associated with other campus laboratories and the Central Utility Plant.	· Incorporation of standard laboratory, classroom, office, and utility plant safety measures.
Visual and Aesthetic Character	· Better integration of the site with surrounding landscapes and built environment.	· Implementation of visual/aesthetic elements of the Campus master Plan and District guidelines, including the North Woodland Corridor, incorporation of stormwater infrastructure into the visual landscape, and use of natural materials.

Table ES-1. Summary of Impacts and Proposed Mitigation

Resource Category	Impacts	Proposed Mitigation
Socioeconomics	· No impacts to Environmental Justice Communities · Generates new construction jobs and sustainable long-term employment · Contributes to the Next Generation Connecticut capital investment program and associated economic benefits	· None
Traffic, Parking, and Circulation	· No expected increase in site-generated traffic volumes · Shift of parking from campus core to periphery for approximately 705 vehicles · No disruption of existing intersections · Minimal new vehicle trips · Improved pedestrian and bicycle access within campus core · No anticipated impacts to event parking	· None, although recommendations for possible changes to signal phases/timing are suggested in the Traffic Impact Study prepared for the project.
Utilities	· Increases in utility demands will occur due to the construction of Science 1. · Immediate need for increased chilled water and emergency power capacity for operation of Science 1 since that campus-wide capacity will be exceeded. · Additional electrical loads can be augmented by imported power from Eversource, although the long term goal is to reduce or remove that dependence.	· The initial phase of the SUP will meet the immediate needs of Science 1 for chilled water and emergency power. · Future phases of the SUP will increase capacity and resiliency of campus electrical supply and reduce or eliminate use of imported electricity. · Design of the buildings promotes conservation to reduce electrical and water demand. · Reclaimed water will be used in Science 1 for toilet flushing.
Energy Use and Conservation	· Increased energy demands to serve new Science 1 building · Increased efficiency of energy production due to operation of new SUP	· Compliance with Connecticut High Performance Building requirements for both Science 1 and SUP · Achievement of LEED Gold and Sustainable CITES certifications for Science 1 building · Achievement of LEED Silver for SUP · Emphasis on energy conservation measures in lab spaces, where the majority of energy is used · Design to feature high-performance building envelope

Table ES-1. Summary of Impacts and Proposed Mitigation

Resource Category	Impacts	Proposed Mitigation
Construction Period		
Traffic, Parking, and Circulation	· Minor, temporary disruptions to traffic in the immediate area of construction	· Use of construction-phase traffic management measures to maintain efficient traffic operations during the construction period including construction phasing to minimize disruptions to traffic, signage, and detours.
Air Quality	· Construction activities may result in short-term impacts to ambient air quality due to direct emissions from construction equipment and fugitive dust emissions	· Contractors will be required to comply with air pollution control requirements in UConn *Environmental, Health, and Safety Policies, Regulations, and Rules for Construction, Service, and Maintenance Contractors,* including reference to such requirements in contract documents. · Ensure proper operation and maintenance of construction equipment. · Limit idling of construction vehicles and equipment to three minutes. · Implement traffic management measures during construction. · Implement appropriate controls to prevent the generation and mobilization of dust.
Noise	· Heavy construction equipment associated with site development may result in temporary increases in noise levels in the immediate area of construction	· Contractors will be required to comply with noise control requirements in UConn *Environmental, Health, and Safety Policies, Regulations, and Rules for Construction, Service, and Maintenance Contractors,* including reference to such requirements in contract documents. · Ensure proper operation and maintenance of construction equipment. · Construction contractors should make every reasonable effort to limit construction noise impacts.
Water Resources	· Exposure of soil increases potential for erosion and sedimentation	· Use of appropriate erosion and sediment controls during construction, consistent with the *2002 Connecticut Guidelines for Soil Erosion and Sediment Control* (as amended) and the August 21, 2013 *General Permit for Stormwater and Dewatering Wastewaters from Construction Activities*.

Table ES-1. Summary of Impacts and Proposed Mitigation

Resource Category	Impacts	Proposed Mitigation
Toxic and Hazardous Materials	· Temporary on-site storage and use of fuels and other materials associated with construction vehicles and equipment	· Contractors will be required to comply with requirements for construction-related hazardous materials and solid waste in UConn *Environmental, Health, and Safety Policies, Regulations, and Rules for Construction, Service, and Maintenance Contractors,* including reference to such requirements in contract documents. · Hazardous or regulated materials or subsurface contamination encountered during construction will be characterized and disposed of in accordance with applicable state and federal regulations.
Solid Waste	· Generation of solid waste including construction and demolition debris	· Contractors will be required to comply with requirements for construction-related hazardous materials and solid waste in UConn *Environmental, Health, and Safety Policies, Regulations, and Rules for Construction, Service, and Maintenance Contractors,* including reference to such requirements in contract documents. · Construction-related solid waste will be handled and disposed of in a manner that meets current regulations and University standards. Construction and demolition debris will be managed in accordance with applicable state and federal regulations and the University's contractor policies.

1 Introduction

The University of Connecticut (University or UConn) proposes to construct a new Northwest Science Quad on an approximately 22-acre site located at the northwest edge of campus. The proposed project, described in detail in Section 1.2, consists of the following elements:

- Science Technology Engineering and Math (STEM) Research Center 1, also known as the Science 1 building – an approximately 193,600 gross square foot (GSF) Science Technology Engineering and Math (STEM) Research Center
- Supplemental Utility Plant (SUP), including an electrical substation
- North Woodland Corridor walkway
- Improvements to King Hill Road and realignment of Hillside Road and Alumni Drive
- Stormwater management and other campus-wide utilities to service the Northwest Science Quad
- Utility tunnel from existing Central Utility Plant (CUP) to theSUP
- Surface parking (approximately 180 spaces)

The construction of a new STEM research and teaching facility and Supplemental Utility Plant are identified in the 2015 University of Connecticut Campus Master Plan (Skidmore, Owings, and Merrill, LLP, 2015a) and are part of the capital project initiatives in support of *Next Generation Connecticut* (*NextGenCT*) to significantly expand educational opportunities, research, and innovation in the (STEM) disciplines at UConn. Both the Master Plan and *NextGenCT* emphasize a commitment to increasing STEM capacity, particularly through increasing faculty numbers and student enrollment in STEM disciplines and providing new teaching and research laboratories.

The Master Plan further calls for the concentration of campus STEM facilities to create a hub known as the North Eagleville Science District. The proposed science and research quad will link to, and expand upon, existing STEM facilities in the northwest corner of campus to help build this new STEM district. In recognition of this, the Master Plan points to the need to expand campus utility capacity, and to do so in conjunction with campus sustainability goals and a campus-wide commitment to reach climate neutrality by 2050 (Skidmore, Owings, and Merrill, LLP, 2015b, p. 2).

The University has prepared an Environmental Impact Evaluation (EIE) to further evaluate the potential environmental impacts of the proposed construction of the Northwest Science Quad on the existing Lot 9, X-Lot, and L-Lot parking lots, hereafter referred to as the Proposed Action, as well as other alternatives considered, including taking no action (see Section 2).

The format and content of this EIE are based on the requirements of the Connecticut Environmental Policy Act (CEPA) (Connecticut General Statutes [CGS] Sections 22a-1 through 22a-1h, inclusive, and, where applicable, CEPA regulations Sections 22a-1a-1 through 22a-1a-12, inclusive, of the Regulations of Connecticut State Agencies [RCSA]). State funds would be used for the Proposed Action, which triggers the CEPA process. The University is the sponsoring agency of this project. The central purpose of the CEPA process is for state agencies to determine whether or not a proposed action will have a "significant effect," which means substantial adverse impact on the environment (RCSA 22a-1a-1, Definitions). Agencies preparing an EIE must consider direct and indirect effects as well as cumulative impacts. This document EIE includes a description of the Proposed Action; the purpose and need for the action; an evaluation of the direct and indirect effects and cumulative impacts of the proposed action; identification of

unavoidable adverse environmental effects; evaluation of alternatives; and a description of proposed mitigation measures.

1.1 Purpose and Need

The purpose of the Proposed Action is provide additional STEM research and teaching facilities on the UConn Storrs campus, consistent with the 2015 Campus Master Plan and the *Next Generation Connecticut* initiative and to provide additional utility capacity through construction of a Supplemental Utility Plant to support campus-wide utility demands.

The Proposed Action contributes to two key steps in building the vision laid out in the University of Connecticut Campus Master Plan (Skidmore, Owings, and Merrill, LLP, 2015a): creation of a new science and research quad (Northwest Science Quad), and construction of campus Woodland Corridors to enhance the landscape and prioritize pedestrians. Both of these goals have been targeted as part of the Near Term 2015-2020 Plan. Investments through *NextGenCT* will enable development of the new science quad and surrounding landscape, designed to provide additional STEM space as well as opportunities for collaboration and interdisciplinary work, all of which are vital to advancing UConn's master planning goals. The proposed action also incorporates critical improvements to the utilities infrastructure of the University through construction of a Supplemental Utility Plant (SUP) that will provide utility capacity in support of the proposed Science Quad and supplement services provided by the existing Central Utility Plant (CUP).

The Proposed Action addresses a need for additional STEM research and teaching space. The new science quad, and particularly the proposed Science 1 building, is needed to increase available STEM space on campus and to enable replacement and renovation of aging STEM facilities. The 2015 Campus Master Plan defined a need for 176,000 new assignable square feet (ASF) of research laboratory space beyond what currently exists on campus (Skidmore, Owings, and Merrill, LLP, 2015a, p. 15); additional space is needed to remedy deficits in laboratory space for curricular use. Within existing science buildings, many facilities are nearing functional obsolescence and require updating. One of the primary occupants of Science 1 is anticipated to be the Institute of Materials Science (IMS). IMS is currently housed in the outdated Gant North building; relocation to the Northwest Science Quad is necessary in order to facilitate the timeline for planned renovations of the Gant Complex. Locating IMS in a built-to-purpose facility will also allow the University to develop spaces that meet the needs of IMS as well as

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Project Need
Proposed Action needed to support *NextGenCT* and Master Plan initiatives and goals.

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- Increase utility production and distribution capacity

plan for future expansion and strategic shared facilities that can be utilized by other science laboratories, future faculty hires, and in support of an expanding student STEM population.

Materials Science and Engineering (MSE) Teaching laboratories currently located in the Engineering II building are also anticipated to be moved to Science 1, allowing undergraduate students access and proximity to state-of-the-art research facilities and activities. By creating new avenues for undergraduates to connect with academic research, this will, in turn, support *NextGenCT* initiatives that aim to create a "premier STEM honors program" (University of Connecticut), attract high achieving undergraduate students, and encourage enrollment in STEM disciplines.

State-of-the-art research facilities and expansion capacity are also necessary to attract top-notch faculty. Science 1 is being designed to include a number of laboratories that will be built out but not yet assigned, thus providing the flexibility necessary to attract high caliber researchers as well as support retention of existing faculty through the expansion of current successful research programs. The proposed action is needed to support the *NextGenCT* goal of building UConn's preeminence as a world-class research university.

The physical consolidation of science activities made possible through the Proposed Action also addresses several of the needs defined by the Campus Master Plan's "Big Ideas" for the campus (Skidmore, Owings, and Merrill, LLP, 2015a). Creation of the Northwest Science Quad contributes to enactment of the "Campus District Guidelines" which aim to cluster related functions into geographic units with common character. The Northwest Science Quad will be linked to the existing science core via proposed landscape connections to create the pedestrian-focused North Eagleville Science District referenced in master planning documents.

In addition to the need for increased space and facilities on campus, the utility infrastructure is also in need of upgrades and expansion, and the Proposed Action addresses this need through construction of the SUP. The campus is outgrowing the existing Central Utility Plant's (CUP) generation capacity. Expanding the existing CUP is not an option for a variety of reasons, including physical constraints and regulatory hurdles and even under reduced-load scenarios that assume renovations and campus-wide efficiency increases, campus growth is still expected to outpace energy savings (Skidmore, Owings, and Merrill, LLP, 2015b, p. 9). The following needs have been specifically identified:

- Emergency power needs of 2.1MW in the near term (2015-2020) and an additional 4.5MW increase beyond that for the long-term (2026-2035).
- Replacement of existing boilers as part of long-term utilities improvements (Skidmore, Owings, and Merrill, LLP, 2015b, p. 18).
- Near-term steam infrastructure improvements are required to fully service expansion of the North Eagleville Science District.
- Near-, mid-, and long-term increases in chilled water demand, in part because science research labs are intensive users of chilled water.
- An estimated 8 MW shortfall in electric power generation by 2020, with a long-term shortfall in electrical supply capacity of approximately 15 MW based on forecast campus demand.

The new SUP will meet utility needs by providing increased utility production and distribution capacity to address current and anticipated utility demands. The plant is anticipated to include four (4) new chillers to supplement existing CUP chilled water production, emergency power to serve the Northwest Science Quad area, and also for utility power switching. Steam production

capacity is also under consideration and would be used to replace capacity lost when the Central Utility Plant boilers are phased out because they are beyond their expected life and require replacement by 2023 to comply with State of Connecticut air quality regulations. Incorporation of a new steam boiler at the SUP would replace approximately one-third of the existing generation capacity at the CUP. Extension of the north utility tunnel will link the SUP and CUP and provide ongoing access and maintenance to newly installed utilities. Expansion of the utility tunnel and infrastructure linking the SUP to the CUP is a goal of the Utilities Master Plan that aims to simplify maintenance, minimize above-ground disruptions, and guarantee service longevity (Skidmore, Owings, and Merrill, LLP, 2015b, p. 4).

1.2 Proposed Action

UConn proposes to construct a Northwest Science Quad on an approximately 22-acre site (Figure 1.1) which is currently in use for parking and includes the existing Lot 9, X-Lot, and L-Lot. The Northwest Science Quad is identified as part of the North Eagleville Science District in the University's Campus Master Plan and is part of the capital project initiatives in support of *NextGenCT*. The proposed action consists of the following elements:

- Science 1 - An approximately 193,600 GSF STEM Research Center will be constructed at the back of the site, primarily on the existing X-Lot (Figure 1.1). Science 1 will house new STEM teaching and research facilities, including the Institute for Materials Science (IMS) and Materials Science and Engineering (MSE) programs. Current programming for the building includes lavatories, core laboratories, a cleanroom, an auditorium, and an IMS and MSE department office suite. Science 1 will incorporate best practices of sustainability with a target goal of LEED Gold certification. UConn will also conform to Connecticut High Performance Building requirements and pursue the U.S. Green Building Council Sustainable SITES certification for sustainable landscape design. The feasibility of installation of a solar array on Science 1 is also being evaluated in the design process.

- Supplemental Utility Plant (SUP) - The SUP will be constructed on the west side of the site on what is now L-Lot. The SUP full buildout will consist of the plant building, which is anticipated to include four chiller units, emergency power via two 2-MW diesel generators, 100,000 lb/hr steam boiler, two gas combustion turbines, cooling towers and the associated auxiliary equipment needed to operate these utility generating units. The total building footprint at full buildout is anticipated to be approximately 56,300 SF. The SUP facility will also include an approximately 50 megawatt electrical substation designed for 115 KV along with utility switching equipment, above ground storage tanks for ammonia, and below ground storage tanks for diesel fuel. The feasibility of installation of a green roof in Phase 2 of the SUP construction is also being evaluated in the design process. It is anticipated that the SUP will be completed in three separate phases in order to meet near-term and long-term campus utility needs. The initial phase of the SUP construction is the focus of analysis in this EIE, with full buildout considered in the analysis of cumulative impacts.

- Woodland Corridor - Landscaping of the project area will be designed to form part of the North Woodland Corridor featured in the Campus Master Plan. The North Woodland

Corridor will serve as a landscape connector and pedestrian pathway to link the Northwest Science Quad to the rest of the science district. Natural topography and plantings will be utilized in the corridor's design to define spaces and contribute to placemaking goals on campus. The corridor will also provide an area to implement green infrastructure for stormwater management.

- Improvements to King Hill Road and realignment to Hillside Road and Alumni Drive - A portion of King Hill Road may be converted to one way traffic in the westbound direction. The new pattern will mitigate vehicle queuing and facilitate traffic access to the Northwest Science Quad as well as private properties and the Campus Visitor Center. Final access to the Northwest Science Quad will be available from both the east and the west. Realignment of the road will also provide for future utility easements. Hillside Road and Alumni Drive will undergo realignment to clarify patterns for vehicle traffic, including modifying road widths, incorporating new turning lanes, and installing a new entry/exit for the North Garage.

- Utility Tunnel from current Central Utility Plant (CUP) to proposed SUP - The existing utility tunnel on Auditorium Road will be extended to the new SUP. Utility conveyances will be contained within the tunnel for access and ongoing maintenance. It is anticipated that the tunnel will contain domestic water, reclaimed water, chilled water, pumped condensate, steam, high pressure condensate, fire protection, and a cable tray support system to support insulated electrical cables.

- Stormwater and Utilities to serve the Northwest Science Quad -The science quad project will be serviced by multiple utilities. In addition to those contained in the proposed utility tunnel, sanitary sewer, electricity, emergency power, and stormwater utilities will be direct burial on-site. Stormwater management will be incorporated into the North Woodland Corridor in using green infrastructure techniques and will be exposed for dual use as a teaching tool. Existing drainage in the vicinity of existing Lot 9 will be relocated as part of the redevelopment.

- Surface Parking - A new surface parking lot will be created parallel to King Hill Road. The lot is proposed to be constructed on an existing parking lot or other currently developed surface and will contain approximately 180 parking spaces, with 173 spaces in front of the building and 7 by the loading dock.

This description of the Proposed Action represents the preferred alternative after consideration of other alternatives described in Section 2 (Alternatives Analysis).

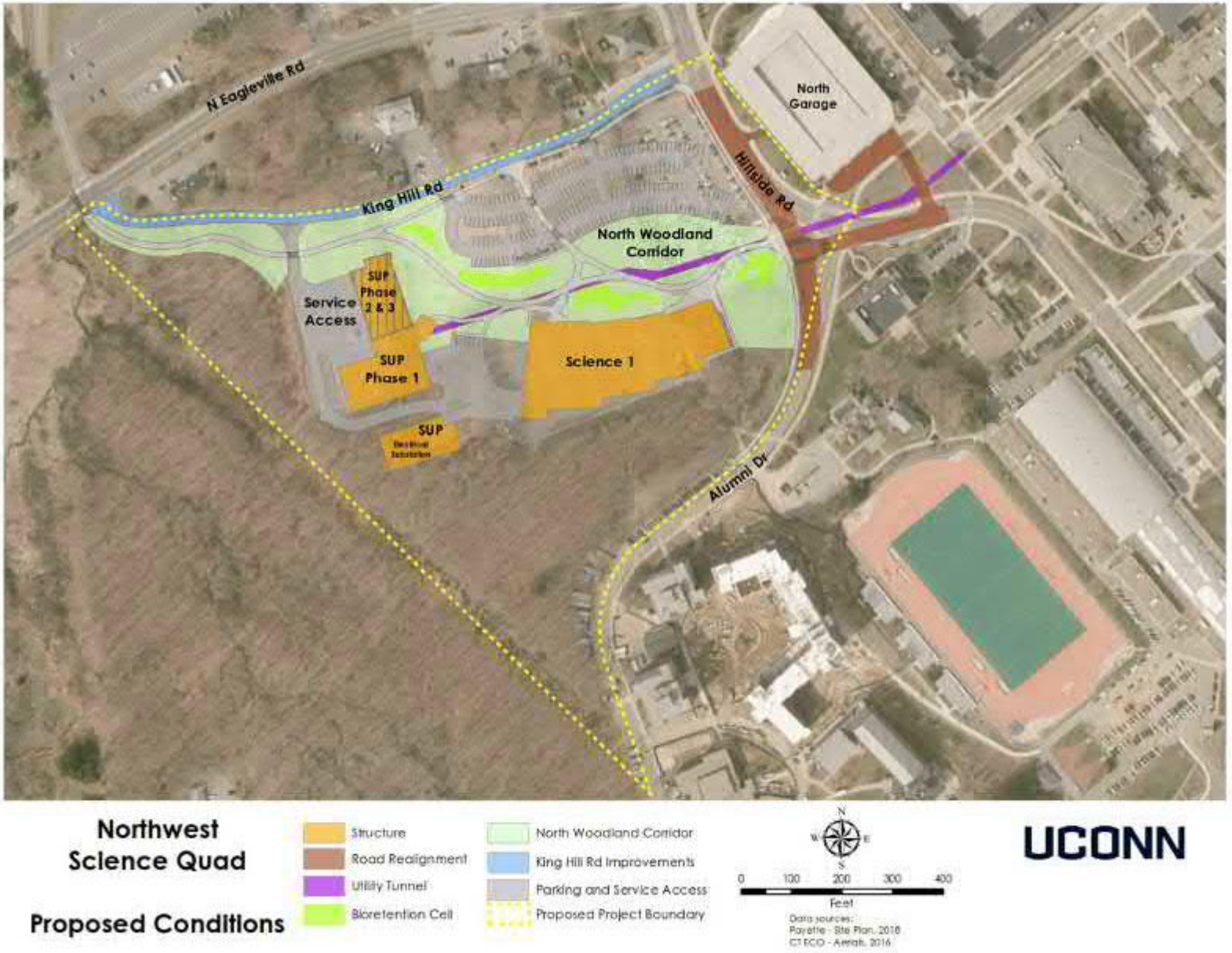

Figure 1.1. Proposed Action – Northwest Science Quad

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1.3 Public Participation and Agency Coordination

Public input and participation and coordination with local, regional, state, and federal agencies are major elements of the CEPA process. CEPA requires an early public scoping process to identify issues of concern related to the proposed action through coordination with interested persons and affected agencies. Scoping begins with the publication of a scoping notice in the Environmental Monitor, a semi-monthly online publication of the Council on Environmental Quality (CEQ) (http://www.ct.gov/ceq). The scoping process includes a 30-day public comment period during which governmental agencies, as well as other organizations and the public, can submit comments on the proposed project and request a public scoping meeting. During the preparation of an EIE, the sponsoring agency must consider the issues raised and comments received during scoping.

A scoping notice for the Northwest Science Quad project appeared in the November 21, 2017 edition of the Environmental Monitor (Appendix A), beginning the 30-day scoping period. During the scoping period, a public scoping meeting was held on the UConn campus on December 7, 2017. A copy of the attendance sheet and slide presentation can be found in Appendix A. The meeting was livestreamed and the recording of the meeting can be viewed at https://kaltura.uconn.edu/media/Science+1+And+Parking+Meeting/1_9rw2jv1i No public oral comments were received during the public scoping meeting. During the scoping period, written comments were received from the Connecticut Department of Energy and Environmental Protection, the Town of Mansfield, and the Connecticut Department of Public Health. Copies of written comment letters received during the scoping period are provided in Appendix A.

In addition to project scoping, the following additional agency coordination occurred:

- Connecticut Department of Energy and Environmental Protection – A Request for Natural Diversity Data Base (NDDB) State Listed Species Review was submitted on January 8, 2018.
- Connecticut State Historic Preservation Office (SHPO) – A Project Review request was submitted on January 8, 2018.

Formal notice of the availability of this EIE has been published in the Willimantic Chronicle (December 18, 2018) and in the Environmental Monitor (December 18, 2018). An electronic copy of this document is also available on the UConn University Planning, Design, and Construction (UPDC) website (https://updc.uconn.edu). The document was sent to the following agencies and entities for review and comment:

- Council on Environmental Quality
- Connecticut Department of Energy and Environmental Protection
- Connecticut Department of Public Health
- Connecticut Department of Transportation
- Connecticut Commission on Culture and Tourism
- Connecticut Office of Policy and Management
  Town of Mansfield (public copies available with Town Clerk and Public Library)

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2 Alternatives Analysis

The Connecticut Environmental Policy Act (CEPA) requires state agencies undertaking an action that may result in potential significant effects on the environment to consider reasonable alternatives, particularly alternatives that might enhance environmental quality or avoid potential adverse environmental effects. This section describes alternatives that were considered in addition to the Preferred Alternative described in the Section 1.2 (Proposed Action) and Section 2.4. These include the No Action alternative and reasonable alternatives in light of their ability to meet the project purpose and need. This section describes consistency with the project purpose and need and the potential environmental considerations associated with each alternative. The No Action alternative (i.e., the baseline for analysis of impacts under CEPA) and Proposed Action are further evaluated in Section 3, Existing Environment and Analysis of Impacts.

2.1 No Action Alternative

Under the No Action Alternative, the project would not be constructed and UConn would continue to use the existing STEM research and teaching facilities on campus. The UConn Master Plan (Skidmore, Owings, and Merrill, LLP, 2015a) details the insufficiency of these existing facilities, including insufficient STEM space and aging facilities. The No Action Alternative would therefore fail to address the purpose and need for the project, which is to provide state-of-the-art STEM facilities with sufficient space to grow research and teaching in these disciplines.

The Master Plan also documents the fact that existing utilities, based at the CUP, are reaching capacity. Demand is expected to outpace the capacity of various systems in either the near, mid, or long-term projections of campus growth. The No Action Alternative would not address the purpose and need of the project relative to increasing utilities capacity to support campus growth and master planning goals.

The No Action Alternative is not aligned with Master Plan goals or the goals of *NextGenCT*. Both explicitly aim to expand STEM teaching and research at UConn through updated infrastructure, new STEM research and teaching labs, and increased STEM student enrollment. Consequently, the No Action Alternative was rejected by the University.

2.2 Alternative Campus Locations

UConn underwent an extensive planning process to develop the 2015 Campus Master Plan. That effort sought to prioritize needs, define the highest and best use for sites on the Storrs campus, and establish planning principles to guide future campus development. In considering alternatives, the Master Plan established that, although campus growth has historically favored outward expansion, new buildings should now focus on “adding vitality to the Main Campus” (Skidmore, Owings, and Merrill, LLP, 2015a) and should, more specifically, be situated in clusters or districts to organize related activities and create gathering spaces for intellectual exchange. One such cluster identified in the Master Plan is the North Eagleville Science District.

In the Master Plan, the North Eagleville Science District (Figure 2.1) connects multiple research areas via a new North Woodland Corridor, linking multiple science departments as well as the agricultural departments across a shared green corridor to improve collaboration, socialization, and interdisciplinarity. The proposed site, located at the northwest corner of the main campus and bounded by King Hill Road to the north, Hillside Road to the east, Alumni Drive to the south, and the Eversource utility easement to the west (Figure 2.2), was identified in the Master Plan as the most logical location as it allows UConn to build on existing dense concentration of science programs in the north part of campus to establish this district. The current science core, clustered on the north side of campus, along the south side of North Eagleville Road, does not have room to expand, and in fact, the Master Plan calls for removing some of the outdated buildings in order to open up green space and promote connectivity and circulation. The location identified in the Master Plan for the development of the Northwest Science Quad is a natural extension of the existing science core to the east, does not result in the loss of greenspace, and is currently occupied by surface parking lots which result in substantial runoff to Eagleville Brook. Consequently, through the Master Plan development process the area occupied by Lot 9, X-Lot and L-Lot was selected as the preferred location on the Storrs campus for the development of the Northwest Science Quad. The SUP was co-located to the Northwest Science Quad, as the sciences are projected to be the largest single new user of chilled water and have the greatest need for access to new emergency power capacity (Skidmore, Owings, and Merrill, LLP, 2015b, pp. 51, 53).

Figure 2.1. Proposed Districts in Campus Master Plan (Skidmore, Owings, and Merrill, LLP, 2015a)

2.3 Alternative Site Concepts

Alternative site configurations for the Proposed Action within the Northwest Science Quad site were assessed throughout the project planning process (Towers Golde, 2016). All of the configurations considered included three buildable areas, or "parcels," on the 22 acre site. Goals for the site layout included minimizing impacts to wetlands and existing trees/woodland area, providing pedestrian/vehicle separation on site, and providing a woodland corridor to allow for green infrastructure and low impact design for stormwater management. Off-site effects of any of the proposed site configurations are anticipated to be similar with the exception of traffic circulation, since different patterns of traffic circulation through the site and on King Hill Road (one-way, two-way, etc.) would result in some differences in circulation in the vicinity of North Eagleville Road, Hillside Road, and Alumni Drive. Traffic management measures were assumed to be able to minimize or mitigate any potential impact to traffic circulation associated with all alternatives.

Figure 2.2. Proposed Project Site

2.4 Preferred Alternative

The preferred alternative to emerge from the site configuration planning process is shown in Figure 2.3. This alternative allows for the necessary buildable area to construct the key elements necessary to address the purpose and need for the Proposed Action while also meeting the goals of avoiding or minimizing disturbance to wetlands and existing woodlands on the site, providing for pedestrian vehicular separation, and allowing for development of a woodland corridor. Initial traffic analyses also demonstrated that improvements to Hillside Road and reconfiguration of King Hill Road into a partial one-way westbound would maintain existing levels of service under future conditions. Consequently, the site configuration shown in Figure 2.3 was selected as the Preferred Alternative which was carried forward for analysis as summarized in this Environmental Impact Evaluation document.

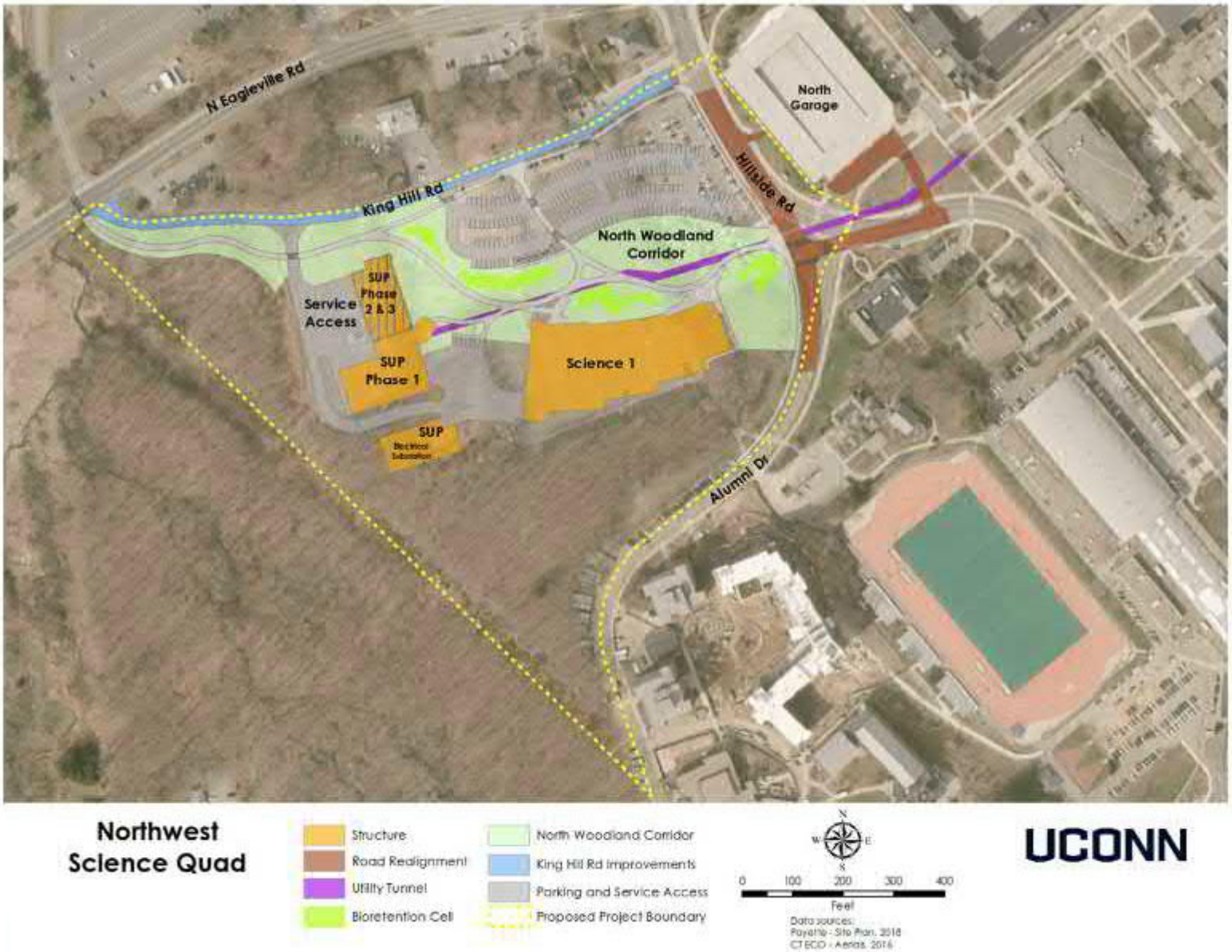

Figure 2.3. Preferred Alternative

3 Existing Environment and Impact Evaluation

3.1 Environmental Resources of No Significance in the Project Area

Some environmental resources do not occur in the project area and consequently would not be affected by the Proposed Action. These resources, described below, are not included in the description of existing conditions or analysis of impacts in this EIE:

- Coastal Resources – The project area is not within the Connecticut Coastal Management Zone. Therefore, the project will not affect coastal resources.
- Consistency with Connecticut Coastal Management Act – The project area is located outside of the coastal boundary, as defined in C.G.S. Section 22a-94(b), and consequently is not subject to the provisions of the Connecticut Coastal Management Act, Sections 22a-90 through 22a-112.
- Cultural Resources – The project area is not located within any federal, state, or locally designated historic district, not does it contain any existing recognized historic or cultural resources. Furthermore, the Connecticut State Office of Historic Preservation (CT SHPO) has determined that the project has no potential effect on historic properties (See Appendix B).
- Drinking Water Supply Watershed – The project is not located in a public drinking water supply source water area, as indicated in scoping comments received from the Connecticut Department of Public Health Drinking Water Section. Therefore, the project will not affect drinking water supply.
- Farmland Soils – Natural Resource Conservation Service (NRCS) soils mapping shows no prime farmland soils or farmland soils of statewide importance within the project area. Therefore, the project will not have impacts to farmland soils.
- Sole Source Aquifers – The project area contains no sole source aquifers, as identified by the U.S. Environmental Protection Agency (USEPA).

3.2 Consistency with Planning

3.2.1 State Conservation and Development Policies Plan

The Proposed Action, which seeks to re-use/re-develop land, create new development, and address education and economic develop policy laid out by *NextGenCT*, is consistent with Connecticut's 2013-2018 Conservation and Development Policies Plan (Connecticut Office of Policy and Management, 2013), as well as the Revised Draft 2018-2023 Conservation and Development Policies Plan which has yet to be adapted as final (Connecticut Office of Policy and Management, 2017) (State C&D Plan). Consistency with the State C&D Plan is a requirement in this case because the Proposed Action will use state funds to develop/improve real property at a cost in excess of $200,000, conditions which trigger a consistency determination under CGS Sec. 16a-31(a).

Consistency with the State C&D Plan is demonstrated in several ways:

- The Proposed Action promotes two of the seven Smart Growth Principles defined by Public Act 09-230 (the other five are not applicable):
  - Redevelopment of existing infrastructure
  - Conservation and protection of natural and cultural resources and furthering energy efficiency

- The Proposed Action is in conformity with the State Conservation and Development Policies Plan's Growth Management Principles (GMP) and associated policies. Some of the GMPs address issues that are outside the scope of the project (such as housing, transit, and broad-scale planning) but two (GMP#1 and #4) are directly relevant, and the Proposed Action supports both:

  - GMP#1 (Redevelop and Revitalize Regional Centers and Areas with Existing or Currently Planned Physical Infrastructure): The location of the Proposed Action is in an urban area with already developed public water, sewer, and transit. The Proposed Action would redevelop existing parking lots and therefore represents reuse of existing developed area with available infrastructure. The Proposed Action has anticipated positive impacts to educational and economic development initiatives consistent with *NextGenCT*. It is also generally consistent with surrounding land uses.

  - GMP#4 (Conserve and Restore the Natural Environment, Cultural and Historical Resources, and Traditional Rural Lands): The Proposed Action will establish a new North Woodland Corridor that utilizes green infrastructure as part of stormwater management. The location is also identified for stormwater retrofits. Positive impacts are anticipated to water quality in the impaired Eagleville Brook.

- Pursuant to the requirements of CGS Sec. 161-35c, the Proposed Action meets the definition of a growth-related project and is located entirely within Priority Funding Areas (PFA) indicated on the Locational Guide Map.

3.2.2 Local Zoning and Planning

As a state institution, the University of Connecticut is not subject to local zoning regulations. Nonetheless, the Proposed Action is consistent with future land use designations identified by the Town of Mansfield in its Plan of Conservation and Development (Town of Mansfield, 2015). The Proposed Project area is designated for institutional use, consistent with plans to develop the Northwest Science Quad. More specifically, the Proposed Project area falls within the Core Campus area designated within the Plan of Conservation and Development. The Town's preferred design characteristics for that area include mixed academic and residential use characterized by "large footprint, multi-story buildings with support facilities, including utilities, surface and structured parking…limited vehicular access and a strong pedestrian and bicycle network."

All components of the Proposed Action are clearly consistent with this intended use, including the Science 1 building, Supplemental Utility Plant, proposed surface parking, and North Woodland Corridor pedestrian network.

The Proposed Action's landscape planning and green space design, particularly the North Woodland Corridor and proposed on-site stormwater management, is further consistent with several of the general Community Design Concepts defined in Mansfield's Plan of Conservation and Development, including:

- Providing focal point for units such as a central green
- Incorporating natural features of site into design as amenities
- Integrating stormwater as a site amenity

Finally, the proposal to site the Northwest Science Quad within an already developed area in the campus core is consistent with the Town's Conservation and Development Plan, Goal 8.1, Strategy D, Action 1: "Encourage UConn to focus development and non-agricultural activities in the Core Campus, North Campus and Depot Campus areas."

3.2.3 University Planning

The Proposed Action is consistent with UConn planning, as exemplified by the UConn Campus Master Plan (Skidmore, Owings, and Merrill, LLP, 2015a) and the UConn Northwest Science Quad Site Assessment and Development Plan (Towers Golde, 2016). Two key components of the near-term (2015-2020) vision laid out in the Master Plan are the creation of a new science and research quad and development of campus woodland corridors that will enhance the University's landscape and prioritize pedestrians; these goals will be met by the

Figure 3.1. North Eagleville Science District in the UConn Campus Master Plan

Proposed Action as follows.

- The Northwest Science Quad will be developed under the Proposed Action, in accordance with the Master Plan's "Campus District Guidelines" (Skidmore, Owings and Merrill LLP, 2015c) which call for the creation of a North Eagleville Science District and, more specifically, call for the existing X -Lot to be redeveloped and become a new Northwest Science Quad, as proposed.

- Construction of the Northwest Science Quad and SUP will repurpose land currently in use for parking lots. The majority of the parking will be shifted to the campus periphery, further emphasizing the pedestrian core in keeping with the Master Plan and, specifically, the Campus Parking and Pedestrian Circulation strategies outlined in Appendix C of the Master Plan

(Skidmore, Owings & Merrill LLP, 2015d). The new pedestrian walkway known as the North Woodland Corridor will double as both a landscape element and a location for stormwater management and green infrastructure. As such, the North Woodland Corridor will improve conditions in the Eagleville Brook watershed and is in keeping with the 2013 Memorandum of Understanding (MOU) between UConn and CTDEEP which outlines a Low Impact Design (LID) approach to stormwater reduction and water quality improvement.

Construction of the proposed Supplemental Utility Plant is likewise consistent with Campus Master Planning which identifies a significant need for increased utilities capacity. Expansion of campus utility tunnel infrastructure, which will occur under the Proposed Action, is also a specific goal of the Utilities Master Plan (Skidmore, Owings, and Merrill, LLP, 2015b).

3.3 Geology, Topography and Soils

3.3.1 Existing Conditions

The proposed project area slopes down toward King Hill Road and is situated on the north facing slope of one of a drumlin. Much of the sloping topography has been previously manipulated, resulting in 0-4% slopes under most of the area currently occupied by Lot 9, X-Lot, and L-Lot. There are somewhat steeper 4-10% slopes in the more southern sections of the parking lots, with this slope increasing to a 10-20% slope toward the southern border of the site. A consistent steep slope (30%+) of 15 ft to 50 ft in height historically bisected the parcel from north to south; portions of this slope remain intact, but it was modified during construction of King Hill Road and the parking surfaces (Towers Golde, 2016).

Soils under the developed portion of the proposed project site are predominantly Udorthents-Urban Land Complex. No prime farmland soils or farmland soils of statewide importance are present on the project site. The woodlands are situated on Woodbridge fine sandy loams that are either very stony or extremely stony. Soils under the wetlands in the northwest corner of the site are mapped as Ridgebury, Leicester, and Whitman soils (Figure 3.2). Wetland resources are discussed in Section 3.5.

A drumlin is a elongated, egg-shaped hill consisting of a mix of rock and sediment (e.g., sand and gravel) that formed under moving glacial ice.

3.3.2 Impact Evaluation

No Action Alternative

Under the No Action alternative, no change will occur to the existing geology, topography, or soils at or near the site.

Proposed Action

Under the Proposed Action, grading and site work will be necessary to construct the proposed Northwest Science Quad. Construction

will likely involve removal of soils from portions of the site[1] and placement of fill in others, with the goal of balancing cuts and fills on site to the extent feasible. Excavation of soils for the utility tunnel will also be required for the project.

The site topography and soils have already been modified from undeveloped conditions by the construction of Lot 9, X-Lot, and L-Lot and the Proposed Action is not expected to create additional direct or indirect impact to soils or the topographic or geologic features of the already disturbed site.

[1] A discussion of soil quality and best practices for any necessary soil disposal is included in Section 3.10.

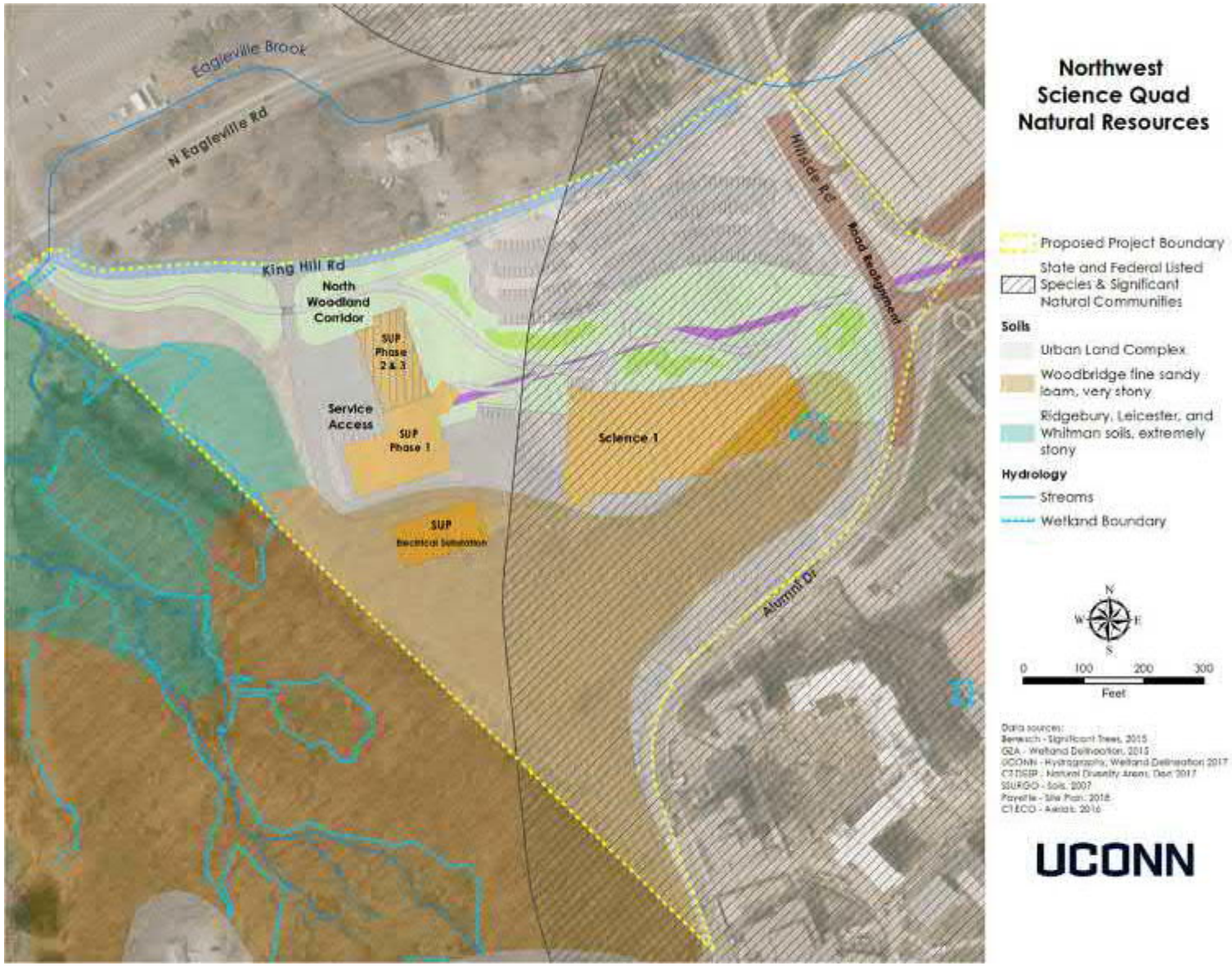

Figure 3.2. Existing Natural Environment of Proposed Project

3.4 Water Resources and Floodplains

3.4.1 Existing Conditions

Surface Water

The Proposed Project Area is located in the Eagleville Brook watershed, a subregional basin within the larger Willimantic River watershed. Topography of the proposed project area slopes down to the north, toward Eagleville Brook. The brook intersects the project site at both the northwest and northeast corners of the project area, near where the Brook passes under North Eagleville and Hillside Roads, respectively (Figure 3.2). Between these points, the Brook meanders north of the edge of the project area, averaging 200 or more feet from the project area boundary. Some portions of the brook are piped along the north side of the project site, and Eagleville Brook is culverted beneath Hillside Road where it intersects the northeast corner of the proposed project area. West of the proposed project area, Eagleville Brook flows southwest and eventually joins King's Brook before reaching Eagleville Pond, an impoundment of the Willimantic River.

Inland waters in Connecticut are assigned a Water Quality Classification based on Connecticut's Water Quality Standards (CTDEEP, 2011). According to the 2011 Eagleville Brook Watershed Management Plan (Dietz & Arnold, 2011) and the Total Maximum Daily Load Analysis (TMDL) (CTDEP, 2007) the segment of Eagleville Brook adjacent to the project site (Eagleville Brook_02) has a water quality classification of Class B/A, indicating that the Brook is not fully meeting the goals of its original Class A Water Quality standard (CTDEEP, 2011). Designated uses for Class A waters uses are habitat for fish and other aquatic life and wildlife; potential drinking water supplies; recreation; navigation; and water supply for industry and agriculture. Class B waters have identical designated uses as Class A with the exception of potential drinking water supply, which is not a designated use for Class B waters (CTDEEP, 2011); however, Eagleville Brook_02 was listed in the *2004 List of Connecticut Waterbodies Not Meeting Water Quality Standards* (CTDEP, 2004) as an impaired water and appears in the *2016 State of Connecticut Integrated Water Quality Report* (CTDEEP, 2016) as a waterbody not supporting aquatic life or recreational use. Impairment in Eagleville Brook is related to an influx of pollutants carried by stormwater. A TMDL was completed and approved by the U.S. EPA in 2007

Figure 3.3. Location of Eagleville Brook water monitoring sampling site. (Source: Dietz 2014)

(CTDEP, 2007) as a response to listing in the 2004 report, per the requirements of section 303(d) of the Federal Clean Water Act. The TMDL assigned impervious cover (IC) as a surrogate pollutant, allowing IC to stand in for an array of potential pollutants in recognition of the crucial role IC plays in generating the suite of conditions that in turn led to the Brook's impairment. IC for the

Eagleville Brook watershed was estimated at 14% in the TMDL (CTDEP, 2007). For the segment of Eagleville Brook on the UConn campus, the TMDL identified a goal of 21% reduction in impervious cover (compared to 2007 conditions) to meet the target IC of 11%, to be accomplished by improved stormwater management within the watershed (CTDEP, 2007). This TMDL goal does not preclude new development, but instead means that new development should implement stormwater management controls to maintain current site hydrology, effectively resulting in no net increase in impervious cover in the watershed. The adaptive management strategy identified includes reducing impervious cover where practical, disconnecting impervious cover from the surface waterbody, minimizing additional disturbance to maintain existing natural buffering capacity and installing engineered BMPs to reduce the impact of impervious cover on receiving water hydrology and water quality.

A watershed-based management plan (Dietz & Arnold, 2011) was developed for Eagleville Brook in June 2011 by UConn's Center for Land Use Education and Research (UConn CLEAR). The watershed management plan provides a framework and recommendations for implementing the Eagleville Brook TMDL. Lot 9 (which is located within the proposed project area) was identified in the Watershed Management Plan as a top ten location for a high-priority retrofit project to include bioretention areas/grassy swales to capture stormwater runoff from the parking area. High-priority retrofits were also proposed for stormwater management along North Eagleville Road. The Watershed Management Plan further recommended that all construction project proposals affecting the Eagleville Brook_02 reach utilize an LID site planning checklist.

Impervious cover is any type of human-made surface that doesn't absorb rainfall, including rooftops and paved and unpaved driveways and parking lots.

Eagleville Brook is also included in the 2012 Statewide Bacteria TMDL (CT DEEP, 2012). The Eagleville Brook segment (CT3100-19_02), which begins on the UConn campus and flows southeast to the confluence with King's Brook just east of North Eagleville Road, is considered to be impaired for both aquatic life and recreation due to bacteria coming from a variety of natural and human sources.

Ongoing water monitoring was conducted just upstream of an existing monitoring weir (Figure 3.3) from November 2012 to November 2013 and revealed relatively low levels of suspended sediment (mean 12.2mg/L; median 5.0mg/L), but consistently high levels of chloride (mean 490.9 mg/L; median 290.8mg/L), with particularly high chloride peaks reflecting an influx of deicing materials following snowmelt events (Dietz M. , 2014). 80% of the 36 samples analyzed had chloride concentrations in excess of the Connecticut chronic aquatic life criterion. For copper, 95% of 35 samples analyzed exceeded the chronic aquatic life criterion and 25% exceeded the acute aquatic life criterion (mean 18.1µg/L; median 9.7 µg/L). Long-term discharge records are also being tracked at the monitoring site to establish a baseline against which to compare future data and evaluate the impacts of disconnecting IC (Figure 3.4).

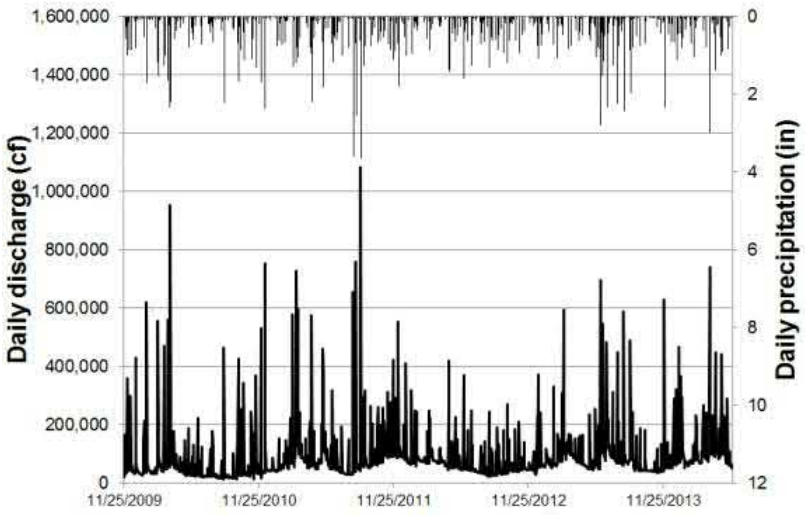

Figure 3.4. Long-term daily discharge and precipitation data from the Eagleville Brook monitoring site (Source: Dietz 2014)

Groundwater

The quality of groundwater beneath the project site is classified by CTDEEP as Class GA. This class designates groundwater used for existing private water supply wells and potential public or private supplies of water, as well as for waters not specifically classified. Class GA groundwater is presumed suitable for drinking or other domestic uses without treatment (CTDEEP, 2011). There is an area of contribution to the public water supply for the Orchard Acres Apartments, classified as GAA, which serves approximately 176 individuals located on Cheney Drive to the south of the Proposed Project Area. The area north of the Proposed Project area between Hunting Lodge Road and Discovery Drive (and primarily to the north of North Eagleville Road) is designated GB, indicating uses of industrial process water and cooling waters not presumed suitable for consumption without treatment (CTDEEP, 2011).

Floodplain

The 100-year floodplain, as mapped by the Federal Emergency Management Agency (FEMA) intersects the northwest and northeast corners of the Proposed Project Area. However, Eagleville Brook, which is the basis for potential flood risk in the area, is culverted under the northeast corner of the property.

3.4.2 Impact Evaluation

No Action Alternative

Under the No Action Alternative, untreated runoff from parking areas will continue to contribute to the impairment of water quality in Eagleville Brook. Approximately 9 acres of the roughly 22 acre Proposed Project Area currently consists of paved and unpaved parking lots; due to the compacted nature of the unpaved, gravel lots, both surface types are effectively impervious. No IC will be disconnected under this alternative, so the No Action Alternative will not help to achieve the TMDL target of 21% reduction in IC. In addition, the snowmelt from these extensive area of parking will continue to impact water quality in Eagleville Brook. No impacts to floodplain are anticipated under the No Action Alternative, as no changes will be made to the site.

Proposed Action

The redevelopment project encompassed in the Proposed Action will result in 8.81 acres of impervious cover (i.e., roof top, paved parking and driveways, sidewalks) following construction of Science

1, the SUP, and Hillside Road realignment, compared to 7.94 acres pre-development, for an overall increase of 0.87 acres of impervious cover. However, this pre-development impervious cover value does not include the existing gravel parking areas, which, as noted above, are compacted and effectively act as impervious cover. Therefore, despite the 0.87 acre increase in impervious area, use of low impact development (LID) and green infrastructure (GI) is expected to result in a 2-4% overall decrease in both total volume of stormwater runoff and peak flows during storm events, as well as improvements in the water quality of stormwater runoff.

Science 1 is seeking to achieve Sustainable SITES certification as well as a LEED Gold rating, and to ahiece LEED Gold, the stormwater design has a goal of managing runoff for the 95th percentile rain event. This will be achieved through a combination of Low-Impact Development (LID) features, such as bioswales, bio-retention areas, infiltration chambers, and permeable paving (Figure 3.2).

- A series of four bio-retention areas are proposed to be located between the Science 1 Building and proposed parking areas, along the new North Woodland Corridor. A combination of catch basins, piping and surface flow will direct stormwater from the site into these bioretention features.

- The project site will be re-graded to channel surface runoff into LID features.

- Pervious surfacing will be incorporated into select areas not exposed to heavy traffic.

- Consistent with the goals of the impervious cover TMDL and statewide bacteria TMDL, bio-retention areas will

Disconnection of impervious cover happens when stormwater that is piped to a drainage system is directed to a vegetated or other pervious surface that allows water to infiltrate.

disconnect impervious area from the stormwater drainage system and Eagleville Brook, reducing stormwater runoff; promoting greater infiltration and groundwater recharge; and filtering nutrients, sediment, bacteria and other pollutants, thereby improving the quality of any excess stormwater runoff that does ultimately enter the drainage system.

- Plantings in the LID features and throughout the site will provide vegetated cover on the site, slowing surface runoff and providing additional filtration and infiltration capacity, as well as uptake of nutrients.

- Infiltration chambers are under consideration for installation under the main parking area to further increase infiltration capacity on the project site and manage peak runoff volumes.

- Additional non-structural controls and good housekeeping practices (e.g., parking lot sweeping, catch basin cleaning, and maintenance of bioretention areas) will be implemented post-construction in order to ensure the ongoing proper operation of the stormwater LID features.

In addition, a Flood Management Certification will be prepared and submitted prior to the start of construction, and the stormwater management system for the project site will be consistent with the current edition of the CTDEEP *Connecticut Stormwater Quality Manual*. During construction, an erosion and sedimentation control plan will be implemented for the project and will be incorporated into the stormwater pollution control plan (SWPCP) as required under the *General Permit for Stormwater and Dewatering Wastewaters from Construction Activities*. All work will be consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control.

Given the stormwater design features planned for the project site and the stormwater controls in place for construction, the Proposed Action is not expected to result in adverse direct or indirect impacts to water quality during construction or during post-construction operations. The Proposed Action is consistent with the goals outlined in the Eagleville Brook Watershed Management Plan and Statewide Bacteria TMDL for the existing Lot 9 site, which was identified in both documents as a high-priority retrofit site where LID practices should be implemented to manage stormwater runoff into Eagleville Brook.

Given that Eagleville Brook is already culverted/piped in the northeast corner of the Proposed Project Area, and the northwest corner of the Proposed Project Area will remain pervious under the Proposed Action, the possibility for floodplain-related impacts is limited to improvements at the King Hill Road intersections where the stream is culverted. As design progresses, the potential for disturbance will be tracked and, is necessary, addressed through Flood Management Certification and inland wetlands permitting.

Overall, the Proposed Action is anticipated to have a benefit to water quality in the Eagleville Brook watershed due to both the decrease in stormwater runoff from the site and improvements in the stormwater management system to incorporate filtration and infiltration.

3.5 Wetlands

3.5.1 Existing Conditions

A portion of a palustrine forested wetland system associated with Eagleville Brook is located on the western part of the project area (Figure 3.2). The wetland habitat locations and descriptions are consistent with those described in the wetland delineation report prepared by (GZA, 2015). (Appendix C).

A small isolated wetland (approximately 2000 SF) was confirmed on the southeast portion of the project area. The wetland is located within a topographic depression between Alumni Drive and Parking Lot 9. Wetland hydrology appears to be supported via seepage from the surrounding hillslope to the west, south, and east. Dominant canopy species include red maple (*Acer rubrum*), American elm (*Ulmus americana*), and ash species (*Fraxinus* spp.). The sparse understory consisted of sensitive fern (*Onoclea sensibilis*), royal fern (*Osmunda regalis*), and various species of goldenrod (*Solidago* spp.) and sedges (*Carex* spp.). Hand-augered soil test pits exhibited a high water table and hydric soils in saturated conditions.

3.5.2 Impact Evaluation

No wetland disturbance would occur under the No Action Alternative. Based on the current level of design, significant adverse impacts to the wetlands resulting from proposed construction activities or subsequent operation of the facilities on the Northwest Science Quad are not anticipated. The western portion of the North Woodland Corridor crosses Eagleville Brook near North Eagleville Road and some wetland disturbance (less than 500 SF) is anticipated in that area. In addition, the proposed location of the new Science 1 building is anticipated encroach into the isolated wetland on the southeast portion of the project area (Figure 3.2). Should the final design result in disturbance of regulated wetland resource area, appropriate permits will be obtained and any necessary mitigation identified through the permitting process will be conducted. In addition, best management practices (BMPs) associated with construction activities include installing erosion and sedimentation (E&S) controls prior to construction commencement and will be implemented at the site to protect resource areas.

3.6 Natural Communities, Flora, and Fauna

3.6.1 Existing Conditions

The proposed location for the Northwest Science Quad is bordered by roads to the north (King Hill Road) and east (Hillside Road and Alumni Drive), and to the west and south by vegetated habitat including mid-successional forest, early successional meadow, and forested wetlands.

Table 3.1 Summary of Terrestrial Habitat

Terrestrial Habitat	Yes	No
Unique or high quality habitat present?	☐	☒
Does project need DEEP Fisheries Coordination?	☐	☒

The portion of mid-successional forest that borders the project area to the south consisted of a fairly dense canopy with minimal understory vegetation. Dominant canopy species included black birch (*Betula lenta*), white oak (*Quercus alba*), red oak (*Quercus rubra*), and white ash (*Fraxinus americana*). Various standing dead trees (aka snags) exhibited holes made by cavity nesting birds (i.e., woodpecker species). Tree diameters at breast height (DBH) ranged from approximately 3 inches to greater than 24 inches. A total of 17 trees with a DBH of greater than 24 inches were identified within the anticipated limit of disturbance. Understory in the areas along the west border of the project area and in the area of the proposed SUP was dense and consisted mainly of plant species considered invasive in the state. Dominant understory species included Japanese knotweed (*Fallopia japonica*), wild grape (*Vitis* spp.), Asiatic bittersweet (*Celastrus orbiculatus*), rambler rose (*Rosa multiflora*), Autumn olive (*Elaeagnus umbellata*), and Japanese barberry (*Berberis thunbergii*).

A utility right-of-way (ROW) running northwest/southeast borders the project area to the southwest. Vegetation within the Eversource utility easement is managed to maintain a shrub and/or herbaceous dominant plant community for safety purposes. Vegetation within the utility ROW was consistent with common species found in an early successional meadow.

Direct observation or evidence of wildlife noted on-site during the November 29, 2017 field investigation included a group of adult and young white-tailed deer (*Odocoileus virginianus*), various species of common song birds (e.g., dark-eyed juncos (*Junco hyemalis*), white-breasted nuthatch (*Sitta carolinensis*), black-capped chickadees (*Poecile atricapillus*), blue jays (*Cyanocitta cristata*)), eastern gray squirrel (*Sciurus carolinensis*) individuals and nests, and evidence of woodpecker species activity.

According to the CTDEEP Natural Diversity Data Base (NDDB) Areas map for the Town of Mansfield (December 2017), the eastern half of the Site is located within a NDDB State and Federal Listed Species & Significant Natural Communities polygon.

Table 3.2 Threatened and Endangered Species

Threatened and Endangered Species	Present? (Y/N)	Impacts? (Y/N)
Within the known range of any federally protected species	Y	N
Critical habitat within project area	N	N
Federal species found in project area	N	N
State species found in project area	Y	N
Within 1 mile of known hibernacula for Northern long-eared bat	N	N
	Yes	No
Will trees be cut as part of this project?	☒	☐

The northern long-eared bat (NLEB) (*Myotis septentrionalis*) is Federally Threatened and State Endangered (statewide in Connecticut). The U.S Fish & Wildlife Service (USFWS) enacted a final rule that identifies Endangered Species Act protections for the NLEB. The final 4(d) rule, published in the Federal Register on January 14, 2016, identifies prohibitions that focus on protecting the bat's sensitive life stages in areas affected by white-nose syndrome. The prohibitions are intended to avoid or limit disturbance to the NLEB hibernacula, i.e., a shelter such as a tree, building, bridge or bat house occupied during the winter by a dormant bat) or known, occupied maternity roost trees or any other trees within a 150-foot radius around the roost tree during pup season (June 1 – July 31) The project site is located within Tolland County, which is located within the White Nose Syndrome (WNS) Zone (Appendix D).

There are no known hibernacula located within Mansfield according to the Northern Long-eared Bat Areas of Concern in Connecticut to assist with Federal Endangered Species Act Compliance map, dated February 1, 2016 (Appendix D). No other known federally listed threatened or endangered species are located within or directly adjacent to the project boundary.

3.6.2 Impact Evaluation

No Action Alternative

Under the No Action Alternative no effect to existing flora, fauna, or natural communities in the project area would occur.

Proposed Action

Tree and vegetation clearing of a portion of the mid-successional forest along the southern part of the parcel will be associated with the construction of the Northwest Science Quad. As mentioned above, the majority of the plant species within the understory are considered invasive in Connecticut, and thus do not provide high

quality habitat. Consequently, no negative impact to terrestrial habitat is anticipated.

The proposed action also includes planting of trees and native species to establish the North Woodland Corridor. This corridor will create a habitat linkage from woodlands on the west side of campus to meadows on the east side, restoring connectivity to the ecological surroundings of the University. By adding new terrestrial habitat and a wildlife corridor, the Proposed Action is thus anticipated to have positive impacts for natural communities, particularly plants, birds and small mammals. The North Woodland Corridor will also incorporate green infrastructure for stormwater infiltration, which may result in the addition of habitat suitable for wetland species.

Adverse impacts to the vegetated community within the adjacent utility ROW resulting from proposed construction activities are not anticipated, as it is located outside the project boundary.

A Request for NDDB State Listed Species Review was submitted to CT DEEP. The resultant determination (No. 201800339) found that no negative impacts to State-listed species were anticipated as a result of the proposed project (Appendix D)

Since the activity will take place at least 0.25 miles outside of any known NLEB hibernaculum, no potential for impact to hibernaculum will occur. Because the timing of tree removal will not be restricted, field review for potential maternal roosts will be performed by a qualified ecologist prior to any tree removal.

3.7 Noise

3.7.1 Existing Conditions

CTDEEP has established Noise Zone Standards for the evaluation of noise generated by adjacent noise zones (RCSA 22a-69-1 through 22a-69-7.4), with Class A being the most noise-sensitive of the three types and Class C being the least sensitive.

The UConn campus is classified as a Class B Noise Zone. According to RCSA Section 22a-69-3.5, a Class B emitter shall not emit noise exceeding Leq[2] levels of 55 dBA[3] (daytime) or 45 dBA (nighttime) to an adjacent Class A Noise Zone, or 62 dBA at any time to an adjacent Class B or C Noise Zone. Nighttime is defined as between 10 p.m. to 7 a.m. Noise created by on-site recreational or sporting activity which is sanctioned by the state or local government is exempt from the Noise Zone Standards.

The existing noise environment of the site is dominated by traffic along Hillside Road, King Hill Road, and Alumni Drive. Recreational facilities to the southeast may be a source of intermittent noise.

[2] The Leq, or Equivalent Level, is the steady-state noise level for a given time period that has the same acoustic energy as the fluctuating noise levels observed during that time period. The Leq can be evaluated over different time periods including one hour (expressed as a one-hour Leq or Leq(h)) or 24 hours (expressed as a 24-hour Leq or Leq(24)).

[3] The unit typically used to describe sound levels perceptible to humans is the A-weighted decibel (dBA). The A-weighting attempts to approximate the human ear's sensitivity to sounds of varying frequencies and pitch. The decibel is a logarithmic unit of measure. For instance, a 10-decibel change in noise level is perceived as a doubling or halving of loudness. A 3-dB change would be barely perceivable for most people.

The site is bordered along Alumni Drive and Hillside Road by additional UConn property and buildings. Three restaurants/bars are located opposite the site along King Hill Road and this commercial area is also currently a Class B noise zone. The only adjacent residential property (Class A noise zone) is approximately 800 feet to the west through the woods.

3.7.2 Impact Evaluation

No Action Alternative

Under the No Action alternative, no measurable change will occur to the existing noise environment at or near the site.

Proposed Action

The Proposed Action is consistent with the existing institutional and commercial land uses in the vicinity of the site and is not expected to exceed the Class B emitter levels based on the nature of the proposed site activities (science laboratories, classroom space, and utilities). No direct or indirect noise-related impacts are anticipated to result from the Proposed Action.

The existing noise environment is suitable for the proposed educational institution use. Classroom and teaching spaces will have adequate construction materials to provide an appropriate classroom and work noise environment for students, faculty, and staff. All major mechanical equipment associated with the SUP (i.e., turbines, boilers, chillers, etc.) will be enclosed within structures and operation of the SUP should not result in any noticeable increase in the ambient noise environment in the area.

Noise impacts from the Proposed Action would be most noticeable during construction; however, construction noise is exempt from the Connecticut noise regulations per RCSA 22a-69-1.

3.8 Air Quality

Under the authority of the U.S. Clean Air Act, as amended (CAAA), the U.S. Environmental Protection Agency (EPA) established National Ambient Air Quality Standards (NAAQS) for concentrations of six air pollutants: carbon monoxide (CO), nitrogen dioxide (NO_2), ozone, particulate matter ten microns or smaller in diameter (PM_{10}, includes particulate matter 2.5 microns or smaller, $PM_{2.5}$), sulfur dioxide (SO_2), and lead (Pb). Primary standards are established to protect public health; secondary standards are established to protect plants and animals and to prevent economic damage.

Connecticut adopted the national standards and subsequently developed a State Implementation Plan (SIP) to attain and maintain these standards. CTDEEP has pollutant monitoring stations across Connecticut that are used to determine compliance with the EPA primary and secondary air quality standards and to evaluate the effectiveness of pollution control and abatement strategies.

This section addresses existing air quality and potential environmental consequences associated with the Proposed Action and No Action alternative, including both regional (i.e., mesoscale) and local (or microscale) potential air quality impacts associated with mobile and stationary sources of air pollutants. Mobile sources of air pollutants consist of vehicles and construction equipment. Stationary sources include boilers, emergency generators and other fuel-burning equipment. A discussion of existing conditions and potential air quality impacts is presented in the following section.

3.8.1 Existing Conditions

The State of Connecticut is divided into designation areas by pollutant for air quality planning purposes and those areas are designated as being in attainment or non-attainment with the air quality standards established for the criteria pollutants. The UConn campus is located within the Eastern Connecticut Intrastate Air Quality Control Region (AQCR 041) and the Greater Connecticut Area designation areas, depending on the pollutant designation.

The project site is located in a non-attainment area for ozone (moderate non-attainment for the 2008 8-hr standard and marginal non-attainment for the 2015 8-hr standard) and is located in unclassified or attainment air quality designation areas for the other criteria pollutants: CO, NO_2, Pb, SO_2, $PM_{2.5}$, and PM_{10}. The Eastern Connecticut Intrastate Air Quality Control Region designation area is an attainment area for CO, meaning that it was previously in nonattainment but currently meets the NAAQS.

Stationary Sources

Under the Clean Air Act Amendments of 1990, major sources of air pollution are required to obtain a Title V operating permit, which is administered in Connecticut by the CTDEEP Bureau of Air Management. The University campus at Storrs is considered a major source because it has the potential to emit pollutants in excess of thresholds established for regulated air pollutants. As such, the University currently holds an active Title V permit for the Storrs campus. The pollutants covered by the Title V permit nitrogen oxides (NO_x) VOCs, sulfur dioxides (SO_x), particulate matter (PM), and other hazardous air pollutants (HAPs). The campus is a "major source" for each pollutant except the HAPs. Fuel burning equipment is the major stationary source of air emissions on the campus. All emission sources with applicable permitting and regulatory requirements are accounted for in the Storrs campus Title V permit. This includes emergency and non-emergency engines, boilers, heating equipment and combustion turbines. Fuel burning equipment currently at the Central Utility Plant (CUP) (See Section 3.15, Utilities) includes three dual fuel combustion turbines each with heat recovery steam generators (HRSG) and natural gas duct burners, five dual fuel steam boilers, two natural gas chiller units and three diesel emergency generators. A separate South Campus chiller plant includes one natural gas chiller engine and one diesel emergency generator. Other stationary sources of air pollutants throughout campus include emergency generators as well as natural gas or oil fired heating equipment for building locations not serviced by the CUP.

Because the site of the proposed Northwest Science Quad is currently used for parking, there are no stationary sources present. Other buildings in the general project area are served by the campus Central Utility Plant for electricity, and are either supplied with heating and cooling from on-site equipment or campus-wide utilities from the CUP (steam, chilled water).

Mobile Sources

Mobile sources of air pollutants on the UConn Campus include vehicles and service equipment. The air quality effects of mobile sources are considered on a regional, or mesoscale, level in the context of the SIP. The CAAA requires that each state submit a SIP for attainment of the NAAQS to the EPA and the SIP and subsequent SIP revisions submitted to EPA have demonstrated that Connecticut has met all requirements mandated by the CAAA for moderate 8-hour ozone nonattainment areas.

At the local, or microscale level, concern with mobile sources of air pollution focus on increased emissions from greater vehicle

volumes or increases in vehicle congestion, especially at intersections, where delays can lead to vehicle queuing and idling. Most intersections in the project area are operating at a Level of Service (LOS) C or better, the threshold typically used to identify potential mobile source air quality concerns (EPA, 1992). Although some intersections experience greater delays during peak traffic hours (See Section 3.14, Traffic, Parking, and Circulation and Appendix E for more details), there are no documented existing concerns with mobile sources of air pollution near the project area.

3.8.2 Impact Evaluation

Stationary Sources

Under the No Action alternative, there would continue to be no new direct stationary sources of air pollutant emissions.

Under the Proposed Action, new stationary sources of air pollutants would result from the construction of Science 1 and the SUP. These consist of fuel-burning equipment in the SUP as well as chemical emissions from fume hood and clean room exhaust in Science 1.

Science 1

Because heating, cooling, electricity and emergency power will be provided by the SUP, there will be no fuel-burning stationary sources of air pollutants associated with that building. In addition to the criteria pollutants associated with the NAAQS, chemical emissions will be generated by general manifold, fume hood and clean room exhaust in Science 1. Dispersion modeling of worst-case dilution scenarios determined that potential impacts to sensitive air quality receptors at Science 1 (i.e., air intakes and operable windows) could be avoided through a combination of appropriate stack height and stack exit velocity (RWDI, 2018). As a result, no air quality impacts are anticipated from station sources at Science 1.

Supplemental Utility Plant

The SUP design is conceptualized to allow for a phased build out meeting the near-term and long-term campus utility needs while remaining under the emissions thresholds set forth in the Clean Air Act De Minimis Rule. As mentioned above, the Storrs campus is a major source of NOx and VOC emissions located in a nonattainment area for ozone. As such, UConn is required to limit net emissions increases of NOx and VOC to 25 tons per year (TPY) or less over any consecutive period of five calendar years. An analysis of potential emissions for the SUP full build out design demonstrates campus emissions could remain below the critical thresholds through a combination of phasing equipment installations, replacements and decommissioning at the SUP and CUP and implementing operational restrictions and emissions limitations for emission sources subject to permitting (turbines, boilers, generators). As needed, additional emissions limitations would be achieved for emission sources not subject to permitting (i.e., replacement natural gas chiller units at the CUP) by implementing collateral conditions to reduce potential emissions in order to minimize the impact on the campus 25-ton emissions cap. The analysis assumed the full build out of the SUP in three phases would include the following:

<u>Phase 1</u>

- 2 – 1,000 ton Steam Driven Chillers
- 2 – 1,000 ton Electric Driven Chillers
- 2 – 2 MW Diesel Emergency Generators
- 1 – 50 MW, 115 KV Electrical Sub-Station
- An interconnection to the Public Electrical Distribution System (Eversource)
- Placeholder Space for One Boiler

Phase 2 (Future Considerations)

- 1 – 100,000 lb/hr Dual Fuel Steam Boiler

Phase 3 (Future Considerations to Achieve Full Build Out)

- 2 – 8 MW Dual Fuel Combustion Turbines

Phase 1 of the SUP includes installation and operation of equipment needed to meet the immediate chilled water and emergency power needs of Science 1 and the nearby Gant Complex. Phase 2 provides steam production capacity replacing lost capacity when CUP boilers are phased out by 2023. Phase 3 addresses campus electrical generation needs in the long-term (2026-2035).

However, the Proposed Action, which only includes Phase 1 of the SUP, includes installation and operation of only that fuel burning equipment needed to meet the immediate chilled water and emergency power needs of Science 1 and the nearby Gant building.

Mobile Sources

Under the No Action alternative, there would be no anticipated direct effects to the mobile sources of air pollution at the project site. However, changes in mobile source emissions associated with other on-going or future projects at the University are likely to result in changes to traffic operations and subsequent mobile source emissions. Based on the traffic impact analysis conducted for the No Action Alternative under future conditions (2022), signalized intersections in the project area would operate at a LOS C or better during peak hours. Of the unsignalized intersections assessed, the northbound and southbound approaches at the intersection of South Eagleville Road and Separatist Road/Sycamore Drive would operate at a LOS lower than C during peak AM and/or peak PM hours under future conditions for the No Action Alternative.

The Proposed Action is not anticipated to increase student enrollment or staff. Science 1 primarily represents a relocation of existing classroom and laboratory functions and operation of the SUP is expected to result in only minor staff increases. As a result, it is redistribution of traffic from the closure of the existing lots, not new traffic generation (which is negligible), that influences traffic in the project area.

The results of the traffic impact analysis (See Section 3.14, Traffic, Parking, and Circulation and Appendix E for more details) demonstrate that under future (2022) conditions, intersections in the proposed project area will continue to operate at the same or better LOS compared to the No Action alternative, with the exception of the signalized intersection at North Eagleville Road and Discovery Drive/Hillside Road. While this intersection would operate at a LOS D under either the No Action or Preferred Alternative during the AM peak hour and would drop from a LOS C to D under peak PM hour conditions under the Preferred Alternative, changes in signalization to include a protected left-turn phase could improve both AM and PM conditions to LOS C under the Preferred Alternative. As a result, the Proposed Action is not expected to increase traffic delays at nearby intersections to levels associated with air quality impacts.

Deliveries to Science 1 and the SUP will be made by both light duty and heavy duty diesel truck. Dispersion modeling completed during the schematic design phase confirmed that there is no impact to the air quality at the supply louvers or operable windows in Science 1 (RWDI, 2018) due to the diesel emissions from the delivery vehicles. Consistent with Regulations of Connecticut State Agencies (RCSA) 22a-174-18, idling of vehicles will be limited to less than 3 minutes and no direct or indirect impact to air quality from these mobile sources is anticipated.

3.9 Solid Waste

3.9.1 Existing Conditions

The Proposed Project Area is currently developed as parking lots (Lot 9, X-Lot and L-Lot). No solid waste is currently generated within the Proposed Project Area.

3.9.2 Impact Evaluation

No Action Alternative

Under the No Action alternative, no change will occur to existing solid waste conditions.

Proposed Action

Under the Proposed Action, solid waste will be generated during the construction process through demolition of the existing parking surfaces, site preparation, and construction wastes. In addition, ongoing solid waste generation will occur from operation of the Science 1 building and SUP.

Asphalt from the existing parking lots will be demolished and removed. This material has been exposed to incidental releases of fuel and vehicle fluids during the normal operation of motor vehicles and will therefore be recycled separately from fill and native soils. On-site fill and other land clearing debris is expected to be handled as unrestricted material, based on the findings of environmental sampling at the Proposed Project Area (GZA, 2018). Therefore, once asphalt is removed, other land clearing debris and construction wastes will be recycled, reused, and/or disposed of at a permitted landfill or other solid waste facility in accordance with applicable regulatory requirements and University policy regarding waste recycling by contractors. The University's Contractor EHS Manual (University of Connecticut Environmental Health and Safety, 2017) outlines UConn's policy for contractor recycling, including materials that must be recycled, collection and disposal of solid waste, and proper treatment or disposal of hazardous and regulated waste.

Solid waste generated during daily operations of the UConn campus that is not classified as hazardous or regulated waste (see Section 3.9) is collected by the University's waste contractor, Willimantic Waste Paper Co. (WilliWaste). WilliWaste manages the campus's single stream recycling program, which accepts plastics, metal, glass, paper, cardboard, and certain other containers) as well as solid waste disposal. Materials that are not recycled are transported to an approved off-site waste disposal facility by WilliWaste.

The Proposed Action is not expected to greatly impact the per person quantity of waste generated or types of waste generated, since all activities and uses encompassed by the proposed Science 1 building and SUP are already taking place elsewhere on the campus.

3.10 Toxic and Hazardous Materials

3.10.1 Existing Conditions

Prior Investigations

Prior environmental investigations in the proposed project area were reviewed to assess the existing soil, surface water, and groundwater conditions and to determine whether the potential exists for hazardous materials to be released during the proposed redevelopment activities. A list of the prior investigation reports reviewed to evaluate the existing site conditions and a summary of

the key findings of the prior investigation reports are provided in Table 3.3 and the existing environmental conditions are described below.

Soil

The Connecticut Remediation Standard Regulations (RSRs) are the standards established by the Connecticut Department of Energy and Environmental Protection (CT DEEP) to guide investigation and remediation activities within the State at sites subject to the Connecticut Property transfer Law, formal voluntary remediation programs directed by the CT DEEP, or an administrative order. Since the proposed project area is not covered any of these programs, the RSRs do not technically apply to the Site. However, the RSR criteria have been used throughout the previous investigations (Table 3.3) as a framework to evaluate the relative environmental risk of the reported constituents of concern. The residential direct exposure criteria (Res DEC) and the pollutant mobility criteria for groundwater class GA areas (GA PMC) were used as the reference criteria for soil analytical results and the groundwater protection criteria (GWPC), and surface water protection criteria (SWPC) were used as the reference criteria for groundwater analytical results.

In 2009 and 2013, low levels of extractable total petroleum hydrocarbons (ETPH) and insecticide compounds related to DDT (dichlorodiphenyltrichloroethane) were identified in piles of fill material located southwest of X-Lot from the 1990s through at least 2013 (*Phase II ESA*, Fuss & O'Neill, 2009 and Fuss & O'Neill, 2013). The concentrations of ETPH and pesticides in these piles were below the Res DEC and the ETPH concentrations were below the GA PMC. Based on these results, Fuss & O'Neill deemed these piles of fill material acceptable for reuse as fill. The piles of fill material are no longer present in the proposed project area and no evidence of a release or impact associated with these piles has been noted following completion of the 2013 investigation performed by Fuss & O'Neill.

Elevated total and leachable lead were detected in two soil samples collected along the northern and western sides of the former residence at the address 17 King Hill Road. The reported total lead concentration was below the published Res DEC but above a lower Res DEC guidance level in place during the 2009 investigation in anticipation of revisions to the RSRs by the CT DEEP (*Phase II ESA*, Fuss & O'Neill, 2009). Leachable lead, extracted using the Synthetic Precipitation Leaching Procedure (SPLP), was reported at concentrations exceeding the GA PMC, indicating that the lead found in the soil has the potential to leach into the groundwater at concentrations exceeding the GWPC.

During the 2015 investigation, low-level concentrations of poly-aromatic hydrocarbons (PAHs) were identified in a single boring (GZ-102) southwest of the paved parking area, X-Lot. The concentrations of PAHs detected were consistent with concentrations associated with asphalt fragments in the fill material or with incidental releases associated with normal vehicular travel and were below the Res DEC and GA PMC.

Despite former agricultural activities in the vicinity of the proposed project area, former subsurface soil investigations indicate no evidence of residual pesticides or herbicides in the soil (*Phase II ESA*, Fuss & O'Neill, 2009, and *Phase II ESA Addendum*, Fuss & O'Neill, 2009, and GZA, 2018.

A 2017 Environmental Database Search report provided by Environmental Data Resources, Inc. (EDR) (Appendix F) described the following releases in the proposed project area:

- In 1995, a release of an unidentified quantity of gasoline was reported in Lot 9 as a result of fuel tank failure. The spill was reportedly contained and removed and the status of the spill is now "closed". No other pertinent information regarding the spill was provided.
- In 1996, 0.25 gallons of brake fluid was reportedly released to the ground surface of Lot 9 as a result of a motor vehicle accident. The release was reportedly sanded and the status of the spill is now reportedly "closed".
- In 1997, one gallon of gasoline was reportedly released to the ground surface of Lot 9. The release was reportedly sanded and the status of the spill is now "closed".
- In 2002, one gallon of mercury was reportedly released inside of a building formerly located on the proposed project area as a result of a broken thermometer. The release was reportedly contained and cleaned and the status of the spill is now reportedly "closed".
- In 2005, five gallons of No. 2 fuel oil was reportedly released inside of a building formerly located on the proposed project area as a result of an above ground storage tank (AST) failure. The release area was reportedly sanded and the status of the spill is now reportedly "closed".
- In 2006, 0.25 gallons of gasoline was reportedly released to the ground surface of X-Lot. The release was reportedly sanded and cleaned and the status of the spill is now reportedly "closed".

These releases are not expected to have had an adverse impact to the surficial or subsurface soil or the groundwater in the proposed project area.

Table 3.3 Previous Environmental Investigations

Report	Summary of Findings
Phase I Environmental Site Assessment Fuss & O'Neill, Inc., August 2009	Fuss & O'Neill did not identify evidence of a release during this investigation. Several piles of fill and solid waste were identified southwest of the present day X-Lot and small amounts of debris were found throughout the parking areas. However, no associated release was identified. Fuss & O'Neill recommended sampling the soil in the proposed project area for residual pesticides due to the former agricultural use of the area.
Phase II Environmental Site Assessment Fuss & O'Neill, Inc., September 17, 2009	Fuss & O'Neill sampled and analyzed soil from the piles of fill material found southwest of X-Lot, as well as shallow soils near the residential properties formerly located in the proposed project area, and groundwater in the vicinity of the former residences. Extractable total petroleum hydrocarbons (ETPH) and pesticides were identified in the piles of fill material at concentrations below the most stringent regulatory criteria applicable. Elevated total and leachable lead were detected in two soil samples collected along the northern and western sides of the former residence at the address 17 King Hill Road (now occupied by X-Lot). Trace concentrations of volatile organic compounds consistent with those found in the vicinity of residential leaching fields were identified near the residential leach fields associated with the former residences at 17 and 29 King Hill Road. No evidence of residual pesticide impacts associated with former agricultural activities was identified.
Phase II Environmental Site Assessment Addendum Fuss & O'Neill, Inc., October 14, 2009	This investigation was initiated to evaluate soils in the area of the then Connecticut Light & Power (CL&P), now Eversource, right-of-way for residual pesticide impacts associated with historical agricultural activities. No evidence of residual pesticide impacts was identified.
Update of Phase I Environmental Site Assessment and Limited Soil Sampling Summary Fuss & O'Neill, February 28, 2013	This purpose of this report was to evaluate any changes in the environmental condition since the 2009 Phase I environmental site assessment (ESA). The soil piles located southwest of present-day X-Lot were sampled and re-characterized as a part of this investigation. ETPH was identified in three of the four samples collected in 2013. ETPH concentrations were below the most stringent regulatory criteria applicable.
Environmental Screening and Testing – Proposed Science 1 Building GZA Geoenvironmental, Inc., January 12, 2018	This report summarizes the results of soil samples collected from 15 soil borings. Soil samples were collected from the interval containing fill material. No visual evidence of a release was identified in any of the 15 soil boring logs. Analytical results from the three soil boring locations that were analyzed revealed no ETPH, volatile organic compounds (VOCs), pesticides, herbicides, or polychlorinated biphenyls (PCBs). Only one soil sample, GZ-102, located at the southwestern edge of X-Lot, contained polycyclic aromatic hydrocarbons (PAHs) at concentrations below the most stringent regulatory criteria applicable. In this report, GZA recommended that the asphalt atop the fill material be removed and recycled and that soil in the vicinity of the former foundation be further characterized, but that otherwise the soil in the proposed project area should be considered unrestricted and could be reused during the redevelopment.

Groundwater
Trace concentrations of volatile organic compounds were identified in the groundwater in the vicinity of the leach fields associated with the former residences at 17 and 29 King Hill Road. The VOC concentrations were consistent with those typically detected in the vicinity of residential leach field and were below the GWPC and SWPC (*Phase II ESA*, Fuss & O'Neill, 2009).

Operations
The Proposed Project Area is currently occupied by three parking lots (L-Lot, X-Lot, and Lot 9) and therefore does not routinely generate toxic or hazardous materials as part of operations. Accidental releases (i.e., gasoline, brake fluid, etc) have been occasionally reported as described above.

3.10.2 Impact Evaluation

No Action Alternative
Under the No Action alternative, operation of the existing parking lots would continue for the foreseeable future. Although there would be no soil disturbance due to construction and no anticipated disturbance or generation of hazardous or toxic materials or substances as a result of parking lot operations, the compacted dirt parking lot is an ongoing source of sedimentation to Eagleville Brook via the catch basin near the Visitor's Center during rainfall events and will continue to be so under the No Action Alternative.

Proposed Action - Soil
Based on a review of available information on the proposed project area and nearby properties (including site history and federal, state, and local environmental databases), the proposed project area is not expected to contain hazardous materials or substances at concentrations above applicable regulatory criteria with the following exceptions:

- Elevated total and SPLP Lead were identified in the vicinity of the residential buildings formerly located in the proposed project area. In their 2009 investigation, Fuss & O'Neill recommended additional characterization of the impacted soil or removal and off-site disposal of the impacted material. No documentation of further action to address the soil impacted with elevated lead concentrations has been identified. Further investigation of this area may be necessary prior to off-site disposal of the impacted soil or to redevelopment of the proposed project area.

No other evidence of a release of contaminants to the soil or the groundwater in the proposed project area was identified. Following their 2018 investigation, GZA recommended that the asphalt found in the paved parking areas be removed and recycled and that further subsurface investigation in the vicinity of the foundation located in the proposed project area be performed (GZA, 2018). Following those measures, GZA determined that based on their sample analytical results, the fill material and soil in the proposed project area can be reused or disposed of off-site without limitations. The University and/or its contractors must follow applicable state and federal regulations regarding the proper management of potentially impacted soil and fill material should it be found during construction.

Proposed Action - Operations
The Proposed Action will yield two new facilities, Science 1 and the SUP, each of which may generate toxic and/or hazardous materials. The sizing of the recently-constructed Main Accumulation Area (MAA) accounted for anticipated growth in waste generation on

campus. There are therefore no concerns at this time about the MAA or UConn Environmental Health and Safety being able to accommodate hazardous waste generation from these facilities. The Proposed Action does not incorporate activities, equipment or processes that are new to the campus and is not anticipated to have any significant impacts to the handling of toxic and hazardous materials. All waste streams will be managed according to pre-existing university protocols.

Science 1

The proposed Science 1 building will contain laboratory facilities that handle biological, chemical, and radiological wastes typical of a university laboratory, as well as universal wastes including batteries, light bulbs, electronic waste, and mercury-containing devices. Hazardous wastes are primarily expected to be generated in laboratory spaces. Following UConn's Chemical Waste Disposal guidelines (UConn Environmental Health and Safety, 2016), each such laboratory site will be designated as a "Satellite Accumulation Area" (SAA), allowing wastes to be collected and stored at the generation site. Individual departments will be responsible for day-to-day regulatory compliance, and UConn Environmental Health and Safety will conduct annual laboratory inspections. Biological wastes will be handled following the existing protocols outlined in the Biological Waste Guide (UConn Environmental Health and Safety, n.d.) and overseen by the Department of Environmental Health and Safety. These protocols include the use of sharps containers and biohazard box-bag units for collecting solid wastes. Additional protocols are in place for animal research wastes and decontamination and disposal of liquid biological wastes. Following the UConn Radiation Safety Manual (UConn Environmental Health and Safety, 2017), radioactive waste will be collected from laboratories by the Radiation Safety Office, which will arrange for its final disposal. Upon reaching specified accumulation limits, wastes will be transported to the campus's Main Accumulation Area (MAA) before being sent to off-campus disposal sites.

Some of the labs ultimately located in Science 1 will be relocated to the new building from other buildings on campus. Any hazardous materials being transported to the new building will be moved by a permitted hazardous materials transporter. Upon vacating existing labs elsewhere on campus, departments will be responsible for following the existing campus procedure and filing a Laboratory Clearance Form which includes a checklist of procedures for preparing to vacate laboratories that handle radioactive materials, biohazardous materials, chemicals, or other potentially dangerous equipment.

Other areas within Science 1 (e.g., mechanical rooms, kitchens, and offices) may occasionally generate regulated materials. If these areas routinely generate waste they will have a designated SAA, however, it is more likely that waste will be generated on an episodic basis and would be removed from the generation site to the MAA within 48 hours.

Universal waste (which includes mercury-containing light bulbs and batteries) will continue to be managed by UConn's contracted custodial service, with Facilities Operations or Environmental Health and Safety picking up full boxes of Universal Waste Lamps as necessary. Electronic wastes are returned to the UConn Surplus Center where they are evaluated for possible reuse or sale. Electronic wastes with no reuse value become Universal Waste and are managed as such along with the aforementioned materials.

Supplemental Utility Plant

The SUP will follow the same existing University waste protocols detailed above. Wastes generated at the SUP are expected to be

very similar to those currently generated at the Central Utility Plan (CUP), including: used oils, oily debris (rags, filters), glycol based antifreeze and Citrisolv based cleaning products. As such, most wastes generated at the SUP will fall under non-RCRA Hazardous Waste. The SUP may occasionally generate other hazardous wastes (for example, water treatment chemicals). The SUP will have a designated SAA where such wastes will be stored until transfer to the MAA. In some cases, bulk waste shipments may be transported directly from the SUP to a permitted disposal site; however, routine waste volumes (e.g., 2 to 3 55-gallon drums) will typically be transferred to the MAA along with wastes generated elsewhere on campus.

3.11 Public Health and Safety

3.11.1 Existing Conditions

Public Safety

The UConn Division of Public Safety maintains campus fire, police, and ambulance services for the protection of life and property at the Storrs campus. The police and fire departments are co-located on campus at 126 North Eagleville Road. The campus has a state-of-the-art Emergency 911 center and a system of emergency phones is located throughout the campus.

The UConn Police Department is an organized police department with the same authority and responsibilities as any municipal police department within the State of Connecticut. The UConn Fire Department is a fully operational department providing 24/7 response from the Public Safety Building on North Eagleville Road and responds to all emergencies and performs routine duties, including but are not limited to, fire code inspections in academic and residential buildings and approving open-flame permits at new construction sites. All of the firefighters are Hazardous Material trained to technician level.

The Mansfield Fire Department provides first responder services for incidents within Mansfield and outside of the University campus and also provides backup for the UConn Fire Department.

UConn Division of Public Safety

- Police Department
- Fire Department
- Office of Emergency Management
- Fire Marshal and Building Inspector

Medical Facilities within 20 Miles of Campus

- UConn Student Health Services
- UConn Health at Storrs Center
- Windham Community Memorial Hospital
- Natchaug Hospital
- Rockville General Hospital
- Manchester Memorial Hospital

Public Health

Primary care, women's health care, nutrition counseling, behavioral health services, and physical therapy are all offered on campus during business hours and with limited evening availability through Student Health Services. The campus also offers an on-site pharmacy and x-ray facility. Professional emergency units are available 24 hours a day. Area health and medical services that are available to UConn students, faculty, and staff include those listed (see box).

Environmental Health & Safety

UConn's Environmental Health and Safety department (EHS) develops and implements policies aimed at preventing injuries and ensuring compliance with regulatory standards. Environmental health and safety is important for laboratory and other facilities where there is the potential for biological, chemical, occupational, and radiation exposure in the course of research and teaching. Within the laboratory environment, EHS oversees biosafety, animal handling, chemical handling and disposal, as well as standard operating procedures for various classes of chemical, and radiation safety. New employees and student researchers undergo one or more lab safety trainings, depending on the nature of the research work they will be involved in. The University has also established a campus-wide system for administering and tracking lab safety training for undergraduates in laboratory courses.

3.11.2 Impact Evaluation

No Action Alternative

The No Action alternative would have no adverse impacts on public health and safety since existing conditions would remain unchanged.

UConn Environmental Health & Safety

- Injury Prevention Policies
- Regulatory Compliance
- Lab Safety Training
- Chemical Handling Procedures
- Animal Handling Protocols

Proposed Action

The construction of the new Science 1 building and the SUP will incorporate standard laboratory, classroom, office and utility plant safety measures including keycard access, fire suppression, signage for proper personal protection equipment (e.g., safety glasses, etc).

Existing public health and safety services on campus are a function of the overall campus requirements and will respond to changes in the overall needs. In addition, environmental health and safety policies and procedures should be sufficient to address the needs of the facilities included within the Proposed Action. The Proposed Action does not incorporate activities, equipment or processes that are new to the campus and is not anticipated to impact the provision of public or environmental health and safety.

3.12 Visual and Aesthetic Character

3.12.1 Existing Conditions

The 22-acre site of the proposed Northwest Science Quad is located at the northwest corner of the main campus and bounded by King Hill Road to the north, Hillside Road to the east, Alumni Drive to the south, and the Eversource utility easement to the west. The site is currently occupied by three parking lots covering approximately 9 acres: Lot 9, X-Lot, and L-Lot. The visual character of the eastern portion of the site is dominated by a flat expanse of pavement and unpaved parking areas; wooded buffer strips separate the three lots. A minimal landscape strip runs along the edge of Lot 9 separating the parking area from the sidewalk and Hillside Road. All paved parking is lit at night from light poles within the lots. A larger woodlot occupies the south and southwest portions of the site and blocks views out of the site in these directions. Overhead power lines run along the west edge of the site but are largely blocked from view by trees. Views to the east include the North Garage, Jorgensen Center for the Performing Arts, and a view along Auditorium Road toward the Pharmacy Building and existing science core. Figures 3.5 and 3.6 illustrate the existing visual appearance of the site.

Figure 3.5. View From Hillside Road Looking Southwest

Figure 3.6. View From King Hill Road Looking Toward X-Lot

3.12.2 Impact Evaluation

No Action Alternative

No change to the existing visual environmental would result under the No Action alternative.

Proposed Action

The Proposed Action will transform the visual character of the site. The existing parking lot landscape is out of keeping with the visual character of the surrounding campus environment, and redevelopment of the area is of high priority to meet the purpose and need of the Proposed Action as well as to enhance the aesthetic character of a prominent site at the gateway to campus from North Eagleville Road. Construction of the Northwest Science Quad will result in better integration of the site with the surrounding landscape and built environment.

Figure 3.7. Rendering of Science 1 Looking West

Particular attention is being paid to the landscape elements of the Proposed Action. The Campus Master Plan (Skidmore, Owings, and Merrill, LLP, 2015a) calls for establishment of a North Woodland

Figure 3.8. View of the SUP Full Build Out Looking West from Science 1

Corridor that will provide visual and physical connection between the Northwest Science Quad and the existing science core to the east, creating a North Eagleville Science District with unified character and function. The planning concept calls for replacing previously developed spaces with green space, minimizing impervious surface, and aligning new science buildings to create an open view corridor (Skidmore, Owings and Merrill LLP, 2015c). District guidelines further outline the suggested use of stormwater infrastructure such as rain gardens and infiltration basins incorporated into the landscape, with reliance on natural materials in lieu of benches or other furnishings to create informal gathering spaces (Skidmore, Owings and Merrill LLP, 2015c). The first segment of the North Woodland Corridor has already been constructed just east of the project area.

Figure 3.9. Rendering of Initial Phase of SUP (looking southeast from King Hill Road)

the site. In addition, in the case of the SUP, the design also sought During the schematic design process for both Science 1 and the SUP, building massing and location sought to balance the functional and operational requirements of each structure and the topography of

to accommodate potential future buildout of the SUP to increase utility capacity on site. Figure 3.7 shows a rendering of the Science 1 Building only looking west and Figure 3.8 shows the façade of Science 1 with the SUP in the distance. Figure 3.9 shows a schematic design rendering of the initial phase of the SUP. While development of the Northwest Science Quad will change the visual character of the site compared to the existing parking lots, no direct or indirect impacts on visual character are anticipated given the distance from recognized scenic roads or vistas and the consistency with the surrounding campus environment.

3.13 Socioeconomics

3.13.1 Existing Conditions

Economy, Employment, and Income

The University of Connecticut is a major employer and provides a significant positive economic impact for the Town of Mansfield (Connecticut Economic Resource Center, 2017; Connecticut Department of Labor, 2017)

The *Next Generation Connecticut (NextGenCT*) program involves a 10-year capital improvements plan for the University to support academic programming in the STEM areas. The program is jointly funded through Public Act 13-233, An Act Concerning Next Generation Connecticut, and the University's state appropriation funds. UConn plans to contribute $235 million in reallocated UCONN 2000/21st Century UConn funds for the building program and $149 million in operating funds to support the academic program components.

Environmental Justice

According to the CTDEEP Environmental Justice Program, "Environmental Justice" means that all people should be treated fairly under environmental laws regardless of race, ethnicity, culture or economic status. CTDEEP's Environmental Justice Policy ensure that Environmental Justice Communities are provided enhanced notice and opportunities for public participation in certain permitting processes. The Environmental Justice Policy states that no segment of the population should, because of its racial or economic makeup, bear a disproportionate share of the risks and consequences of environmental pollution or be denied equal access to environmental benefits.

CTDEEP's Environmental Justice Program does not consider the Town of Mansfield to be an environmental justice community as it does not fit the definitions of a distressed municipality or other affected town. Note that although U.S. Census data indicates the project area consists of approximately 29% low-income population, in the calculation of Environmental Justice populations, institutionalized people or people living in group quarters, i.e., people in military group quarters, people in college dormitories, and unrelated individuals under 15 years old, are generally not included because of the special conditions of their residence that prohibit a determination of poverty status. As such, the project area is not considered to be located in an Environmental Justice Community.

Local Economic Indicators (2017)

- Mansfield Unemployment – 4.0%
- Hartford Labor Market Area Unemployment – 4.4%
- Mansfield Median Annual Income – $60,263
- Tolland County Median (Annual) Income – $79,626
- State-wide Median Household Annual Income – $70,331

UConn Economic Impact (2017)

- 10,019 Faculty and Staff Employed
- Top 5 Major Employer in Mansfield
- $194.5 million Research Funding

3.13.2 Impact Evaluation

Economy, Employment, and Income

Construction of the approximately $150 to $170 million project will result in employment for construction workers in the region and the purchase of construction materials from local and regional suppliers within the State of Connecticut.

NextGenCT, which the proposed Science 1 building and Northwest Science Quad supports, will create both construction jobs and sustainable long-term employment. This proposal will also leverage and maximize the State's related investments in Bioscience CT, Jackson Labs, UCONN 2000/21st Century UConn, and the UConn Tech Park. If fully realized, by 2024, the $1.5 billion capital investment associated with Next Generation Connecticut may yield:

- $146 million per year in new research awards

- $285 million per year in new business activity in Connecticut resulting from research at UConn
- 2,190 new or 4,050 total permanent jobs
- 30,000 total construction jobs through 2024

Environmental Justice
No impacts to Environmental Justice Communities will result as a result of either the No Action or Proposed Action alternatives.

3.14 Traffic, Parking, and Transportation

3.14.1 Existing Conditions

The proposed site for the Northwest Science Quad is an approximately 22 acre area bounded by King Hill Road to the north, Hillside Road to the east, Alumni Road to the south and a utility easement to the west. The site predominantly consists of mature woodlands and surface parking areas. Analysis for this portion of the EIE also includes the North Parking Garage, which is located on the east side of Hillside Road, opposite the proposed Science Quad.

Adjacent Roadway Network
The roadways surrounding the Northwest Science Quad are internal campus roadways, which are classified by the Connecticut Department of Transportation (CTDOT) as State Institutional roadways. King Hill Road runs east/west along the northern border of the site between North Eagleville Road and Hillside Road. Hillside Road begins at a signalized intersection with North Eagleville Road and Discovery Drive and continues south along the east side of the site past Alumni Drive. Hillside Road ends in the southern section of the campus at the all-way stop-controlled intersection with Bolton Road and Hillside Circle. Alumni Drive runs predominantly north/south along the southeast portion of the site between Hillside Road and Jim Calhoun Way.

Motorists accessing this area of the campus could travel on Route 44 (Middle Turnpike) to Route 195 or to Discovery Drive. Route 44 (Middle Turnpike) is classified by CTDOT as a principal arterial roadway which runs west to east all the way through the town of Mansfield from the border with Coventry to the border with Willington. Route 44 in this area is one lane in each direction with turn lanes at the signalized intersections with Route 195 and with Discovery Drive. The speed limit on this section of Route 44 is 40 mph and on Discovery Drive is 25 mph

To access this area of the campus, many motorists could travel on Route 195 (Storrs Road) to North Eagleville Road. Route 195 (Storrs Road) is classified by CTDOT as a principal arterial roadway which runs north to south all the way through the town of Mansfield from the border with Coventry to the border with Windham. Route 195 in the area of the UConn campus is generally one lane in each direction with turn lanes at major intersections. The speed limit on Route 195 in the vicinity of the campus is 25-30 mph, and in the areas immediately to the north and south of the campus, the speed limit is 40 mph. The speed limit on North Eagleville Road near the project area is 25 mph.

Existing Traffic Operations

Existing traffic operations in the area of the Northwest Science Quad were analyzed by Fuss & O'Neill in a Traffic Impact Study of August 2018. The following study area intersections were reviewed (Figure 3.10):

- Route 44 (Middle Turnpike) and Discovery Drive
- SR 430 (North Eagleville Road) and Hunting Lodge Road
- SR 430 (North Eagleville Road) and Discovery Drive/Hillside Road
- Route 195 (Storrs Road) and SR 430 (North Eagleville Road)
- Route 195 (Storrs Road) and Mansfield Road/Bishop Circle
- Route 195 (Storrs Road) and Bolton Road
- Route 195 (Storrs Road) and Route 275 (South Eagleville Road)/Charles Smith Way
- Route 275 (South Eagle Road) and Separatist Road/Sycamore Drive
- Separatist Road at Jim Calhoun Way
- Route 44 (Middle Turnpike) at Hunting Lodge Road

In order to determine the traffic impact of the proposed development on adjacent street traffic, a.m. and p.m. peak hour manual turning movement counts were obtained on January 16, 2018 and April 26, 2018 at the ten intersections in the study area. The traffic count data collected indicates that the a.m. peak hour of traffic occurs between 7:00 a.m. and 9:00 a.m. and the p.m. peak hour occurs between 4:00 p.m. and 6:00 p.m. These peak hours were subsequently analyzed for impacts. The full study with analysis results can be found in Appendix E.

Pedestrian and Bicycle Access

There are several sidewalk systems on the roadways surrounding the Northwest Science Quad. North Eagleville Road has a continuous sidewalk along the north side which runs the entire

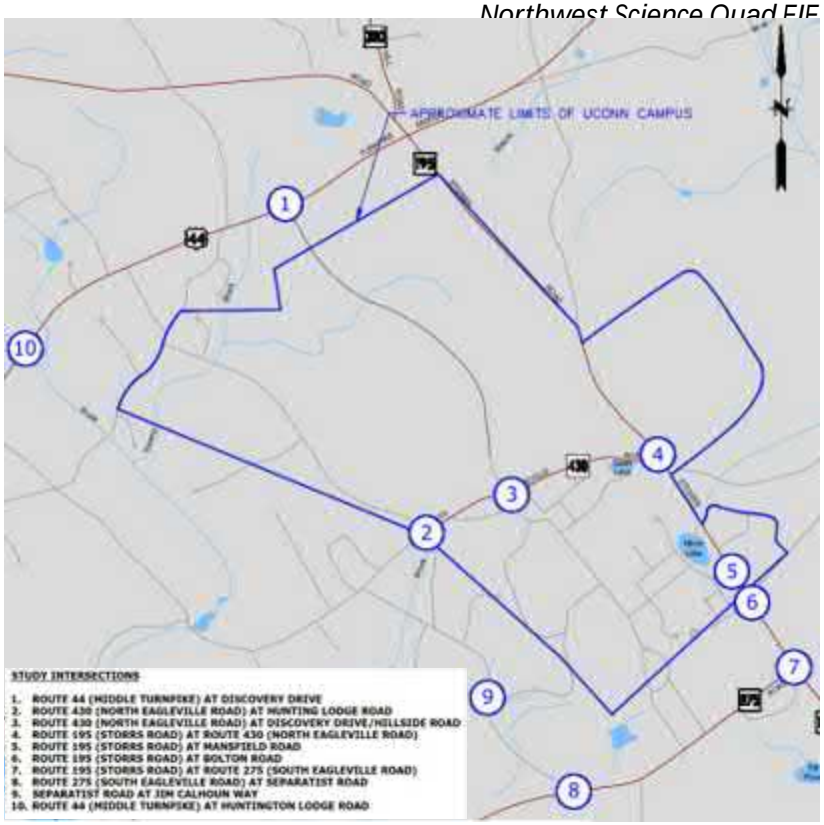

Figure 3.10. Traffic Impact Study Intersections

length of the roadway and a continuous sidewalk on the south side from a point approximately 200 feet west of Hillside Road to Route 195. Hillside Road has a continuous sidewalk along the east side which runs the entire length of the roadway and a continuous sidewalk on the west side from North Eagleville Road to Gilbert Road. Alumni Drive has a continuous sidewalk along the south side which runs the entire length of the roadway. King Hill Road currently does not have any sidewalks.

Crosswalks exist at the signalized intersection of North Eagleville Road, Hillside Road, and Discovery Drive. This intersection is also equipped with an exclusive pedestrian phase allowing pedestrians

to cross all approaches to the intersection without vehicular conflicts. Crosswalks also exist on Hillside Road at King Hill Road and at Alumni Drive.

Bike racks are currently provided at various locations around the campus; biking on-street is allowed, and there are existing marked bike lanes on the majority of North Eagleville Road including past the project site, Hillside Road and Discovery Drive, as well as marked shared lanes on Alumni Drive and Jim Calhoun Way.

Parking

UConn Parking Services currently identifies 1,053 parking spaces in the project area, with 20 of those spaces currently occupied by construction trailers. According to the "Northwest Science Quad Site Assessment and Development Plan" dated May 26, 2016, the Northwest Science Quad parking spaces account for 38% of the total site area. Approximately 70% of the available parking areas are paved while the remainder are compacted gravel.

3.14.2 Impact Evaluation

No Action Alternative

Upon consultation with CTDOT, the 2018 existing traffic volumes were projected to the 2022 design year using a 1.0 percent per year peak hour growth factor to account for normal traffic growth in the study area. It was also confirmed with CTDOT that there are no pending or approved developments having site related traffic in the study area. Therefore, the projected traffic volumes account for No Action (or No-Build) traffic volumes which are defined as design year traffic without the proposed development. The No Build analysis results can be found in the Traffic Impact Study in Appendix E.

Under the No Action Alternative, there would be no immediate change in parking, or pedestrian or bicycle movement as long as the existing parking lots remained in operation.

Proposed Action

Trip Generation

The proposed construction of approximately 200,000 square feet of building space for STEM research in the Northwest Science Quad is in support of the current curriculum offered at UConn. This building space will highlight and support the teaching and research capabilities for the Institute of Materials Science and Material Science Engineering currently housed in the Gant Building but is currently not expected to result in an increase in existing or projected enrollment at the university. Therefore, Proposed Action (or Build) traffic volumes do not include any additional site-generated traffic.

Traffic Impact

According to the UConn Parking Services parking lot maps, the approximately 900 existing parking spaces that will be removed due to the construction of the Northwest Science Quad will impact employees and commuting students who park in these spaces on a daily basis. The university has begun construction of a new lot located on an undeveloped portion of campus labeled Parcel D, which will be built north of this site prior to construction of the Northwest Science Quad; the lot has a target completion date of May 2019. Parcel D will be located on Discovery Drive, approximately ¾ mile north of SR 430 (North Eagleville Road) and will contain 705 parking spaces. In determining the traffic volumes for the Proposed Action, vehicles were redistributed from the Northwest Science Quad to the proposed Parcel D. It is assumed that a portion of the 900 existing parking spaces currently occupied by faculty will be accommodated either within the Northwest

Science Quad or in surrounding existing lots. To be conservative in the redistribution, it is assumed that 705 vehicles will be redistributed from the area of the Northwest Science Quad to the proposed Parcel D parking area.

Utilizing data from a traffic impact study of the Parcel D parking lot development prepared by Stantec dated April 12, 2018 (Stantec, 2018), and an evaluation of traffic patterns throughout the area, the arrival and departure distributions for the existing parking lots were determined and carried through all of the study area intersections. These existing distributions were then revised to account for traffic relocating from the existing parking lots on the Northwest Science Quad site to the proposed Parcel D. The results of this analysis can be found in the Traffic Impact Study in Appendix E.

Overall, the redistributed traffic will not have a significant impact to the study area intersections, and mitigation is therefore not required. Nonetheless, the traffic study notes several areas where voluntary infrastructure improvements or further study could be beneficial to the user experience. These are described below.

The signalized intersection of SR 430 (North Eagleville Road) and Discovery Drive/Hillside Road will experience a decrease in level-of-service (LOS) from C to D under Build conditions during the p.m. peak hour. This decrease in level-of-service is mainly due to the increase in left-turning vehicles from SR 430 eastbound onto Discovery Drive, which will also increase the left-turn queue length for the eastbound approach. A review of the signal operation showed that there is currently an exclusive left-turn lane for SR 430 eastbound, but this movement does not have a protected left-turn phase. An upgrade to the traffic signal equipment would provide the protected left-turn phase, which would allow the signal to continue to operate at level-of-service C. Also, restriping of SR 430 to increase the length of the eastbound left-turn lane would provide more storage for the eastbound queue.

The unsignalized intersection of Route 275 (South Eagle Road) and Separatist Road/Sycamore Drive will continue to experience LOS F for the stop-controlled southbound approach of Separatist Road under both No Build and Build conditions. However, a review of the average delay experienced by southbound vehicles revealed that the average delay will be decreased under Build conditions due to the redistributed traffic, and could be further decreased if Separatist Road were widened to provide a two-lane approach. This would also result in an increase to LOS E during the a.m. peak hour (see details in Section 5.2 of the Traffic Impact Study in Appendix E).

In addition to the capacity analyses that were conducted as part of this report, the latest available three years of crash data at the study locations was reviewed. A pattern of crashes was noted at the intersection of Route 195 (Storrs Road) and Route 275 (South Eagleville Road)/Charles Smith Way. This intersection experienced 26 crashes during the three-year analysis period, the majority of which were rear-end type crashes and angle type crashes. Although not a requirement, a review of the traffic signal timings, specifically the clearance timings, is recommended to ensure that the timings are the most appropriate for this intersection. This intersection could also benefit from Police enforcement to ensure that crashes are not resulting from violations.

Pedestrian and Bicycle Access

The sidewalk and crosswalk systems on the roadways surrounding the Northwest Science Quad described under Existing Conditions will be improved under the Proposed Action. A sidewalk will be added along King Hill Road, and the crosswalks at Alumni Drive will be reconfigured. Existing sidewalk and crosswalk systems will

provide pedestrian access to and from the Northwest Science Quad via Hillside Road. A new pedestrian corridor, known as the North Woodland Corridor, will further improve pedestrian and bicycle access through the Northwest Science Quad and link the Northwest Science Quad to the rest of the science district.

The Northwest Science Quad will be located along the existing 2018 Blue Line, Red Line, Silver Line, and Purple Line routes and will also be accessible via the late night and weekend shuttle services. It is anticipated that bike racks will be provided at various locations throughout the Quad.

Parking

There will still be approximately 180 parking spaces available within the Northwest Science Quad under the Proposed Action. These parking spaces are anticipated to be primarily handicapped accessible and employee parking. As indicated above, the parking lot to be constructed on Parcel D lot will contain 705 parking spaces, which will be available for commuter students who currently utilize the existing parking spaces on the Northwest Science Quad site. This shift of parking to the campus periphery is consistent with campus master planning and the goal of prioritizing pedestrian access in the campus core.

The University has developed Special Event logistics plans to ensure that no negative impacts to event parking will result from the proposed project. Parking for campus events is currently directed to the existing campus parking garages, and event visitors to the nearby Jorgensen Center for the Performing Arts and other on-campus events will continue to be directed to the garages, as they are under current conditions. Capacity of the parking garages is considered to be sufficient for existing event parking needs. Future proposed event-related projects, such as the proposed hockey rink project, would include separate, project-specific traffic and parking analyses, and are not accounted for in the current analysis, which considers anticipated background growth and impacts specific to the Proposed Action.

3.15 Utilities

3.15.1 Existing Conditions

Electrical Service

The UConn Storrs Campus obtains electrical power from two sources. The primary source is the University-owned Central Utility Plant (CUP). This is supplemented by Eversource through the UConn Substation 5P on North Eagleville Road. The CUP consists of three (3) 7.5 MW gas turbine generators and one (1) 5.0 MW steam generator. There are five main feeders that provide electrical service to the campus. The substation 5P is a 69 kV tap at the overhead transmission line on North Eagleville Road. The substation is connected to a switchgear, which has five circuits that service the campus distribution system. Four of the five directly interface with the CUP to import power to the campus when demand exceeds capacity as a backup if one or more of the CUP generators are unavailable. Peak electrical demand on campus was reported as approximately 28.0 MW, including the load from the CUP itself. Since permitted plant output capacity is 24.9 MW, the additional approximately 3.1 MW is imported from Eversource as needed to satisfy demand.

Based on current estimates (Richard Turlington Architects, Inc., February 28, 2018), by 2020 campus electrical generation will fall approximately 8 MW short of the demand and in the long term, the electrical supply capacity is estimated to be approximately 15 MW short of the forecast campus demand. Since the construction of the

cogeneration plant, UConn has established a goal of supplying 100% of the campus electrical demand without reliance on external sources, while remaining below campus-wide emissions thresholds set forth in in the Clean Air Act De Minimus Rule (See Section 3.8, Air Quality).

Emergency Power

Emergency power on campus consists of the 4,160 volt Central Emergency System located at the CUP, comprised of one 1.5 MW and two 1.25 MW diesel engine generators, and individual stand-alone emergency generators at individual buildings. The Campus Master Plan reports that, currently, the capacity of the Central Emergency System is 4.0 MW. Peak load on the system is estimated at 3.52 MW and at the completion of the Gant Complex renovations, it is estimated that little to no reserve capacity will remain (BVH Integrated Services, July 31, 2017). The nearest distribution to the project site from the central emergency power system will be to the east in a duct bank system that is being installed as part of the Gant Tunnel project (Figure 3.11)

Telecommunications

There is currently little telecommunications infrastructure at the proposed project area. New telecommunications infrastructure tray is being installed in the new Gant Tunnel to the east of the project area with the intent of providing expansion to the Northwest Science Quad Site. New telecommunications infrastructure is also being installed along North Eagleville Road with connection points on the Auditorium Road extension. In addition, there is existing infrastructure along Hillside Road which will provide a secondary connection point to the project area (Figure 3.12).

Figure 3.11. Gant Utility Tunnel to the East of the Project Area (November 15, 2017). Source: https://youtu.be/16zqvNcWDAc

Steam Service

Steam service on campus is provided by the CUP located on Glenbrook Road. Current firm production capacity is 470,000 lbs/hr, which is reduced to 320,000 lbs/hr when gas is not available and oil is the sole fuel source (BVH Integrated Services, July 2016b), and campus demand was estimated in the 2016 Framework Utility Analysis as 257,723 lbs/hr. Steam is generated at 600 and 125 pounds per square inch gauge (psig), then distributed from the CUP at 65 psig and reduced to 15 psig for use in HVAC/plumbing within the buildings. Condensate is produced within the steam distribution system due to heat losses within piping systems as well as at the interface with the facilities being served. Each facility contains condensate receiver and pump system to return condensate to the CUP. Condensate generation is a function of the steam production, although due to failed pipes at various points, not all of the steam produced is returned in the form of condensate. Current condensate generation is estimated at approximately 30,900 gals/hr or 515 gallons per minute (GPM) of continuous condensate flow (BVH Integrated Services, July 2016b). Steam and condensate will

be extended to the site from the existing utility tunnel to the west of the site (i.e., the Gant Tunnel).

Chilled Water

Chilled water in the portion of the campus where the Proposed Action is located is provided by the CUP, which currently has a firm maximum capacity of 12,600 tons of chilled water. A South Campus Chiller Plant with a capacity of 1000 tons and a firm capacity of 500 tons is also located on campus, but does not serve the Proposed Project area. Reported demand for the system served by the CUP is approximately 8,800 tons (BVH Integrated Services, July 2016a).

Sanitary Sewer

The University owns and operates a wastewater collection and treatment system that serves the Main Campus, the Depot Campus, and some non-University properties in proximity to the campus including local residences, businesses, schools, and Town of Mansfield properties. The water pollution control facility (WPCF) has a design capacity of 3.0 million gallons per day (MGD) average daily flow and 7.2 MGD peak flow. Although the WPCF is permitted to discharge an average of 3.0 MGD, the average daily discharge is currently approximately 1.1 MGD, with an average peak flow of 2.2 MGD (BVH Integrated Services, July 2016c). Discharges fluctuate with the seasonal nature of the campus population. While peak flows have been up to 90% of WPCF peaking capacity in the past, these occurred during wet weather and were directly attributable to inflow and infiltration problems in the aging wastewater collection system. UConn has made several improvements in recent years to reduce inflow and infiltration issues into its collection system in an effort to reduce peak flows; these efforts are ongoing. Further, the sludge reduction capacity of the facility limits processing to 2.2 MGD and UConn is currently working to address this issue (Nolan, pers. comm., 2018). The benefits of these improvements are anticipated to continue reducing inflow and infiltration, thus reserving capacity for sanitary wastewater treatment. Sanitary sewer lines are currently available in the project area (Figure 3-12).

The University has a separate water treatment facility to provide tertiary treatment to effluent from the WPCF. This "Reclaimed Water Facility" (RWF) produces high-quality reclaimed water for use in non-potable applications such as heating and cooling. The RWF was brought online in May 2013 and has a capacity of 1 MGD and has over 50% excess capacity at the present time. There is currently no reclaimed water system in the proposed project area. The Gant Tunnel includes a new reclaimed water main that would bring reclaimed water to the east of the Northwest Science Quad site.

Gas

Connecticut Natural Gas (CNG) supplies gas to the Storrs Campus through the Algonquin Gas Transmission (AGT) pipeline. A dedicated 500 psi gas main that served the CUP originates at the UConn Gate Station on Route 195, south of the main campus. In the project area, there is a 6" gas main (75 psi) in North Eagleville Road and Hillside Road extending up Alumni Drive (BVH Integrated Services, July 31, 2017). Other areas of campus are served by Connecticut Natural Gas distribution network originating at Maple Avenue.

Potable Water (Domestic and Fire Protection)

The University of Connecticut supplies potable water to the Main and Depot Campuses. Fire protection water is also supplied by the UConn water system. The water supply system is operated under contract by Connecticut Water Company's subsidiary, New England Water Utility Services. The current water source consists of 8 wells located in 2 wellfields in Mansfield. Four of the wells are located in the stratified drift aquifer beneath the Fenton River, and an

additional four wells are located in the stratified drift aquifer beneath the Willimantic River. Connecticut Water Company has extended a pipeline from Shenipsit Reservoir to provide additional water to the University and the Town of Mansfield.

In December 2016, UConn also began receiving water from the Connecticut Water Company (CWC). A diversion permit and authorization for a 5.2 mile pipeline from the Connecticut Department of Energy and Environmental Protection (CTDEEP) allowed for the connection of the CWC reservoir in Vernon to the UConn Storrs Campus. The diversion permit authorizes CWC over the 25 year period, to provide 1.18 million gallons per day (mgd) on average and a maximum of 1.85 mgd for a peak day. This will bring total potential available supply to 4.6643 MGD over the 20-year duration of the CTDEEP Diversion Permit authorizing this interconnection.

The Willimantic River wellfield consists of four wells and is registered to withdraw 2.3077 MGD; however pumping tests have determined that the 1.97 MGD is the maximum sustained withdrawal (Milone and MacBroom, Inc. , 2011). Consequently, although that value is lower than the registered withdrawal for the Willimantic River wellfield, it should be used in consideration of available potable water supply. Using a maximum withdrawal of 1.97 MGD, the safe yield of the Willimantic Well Field is 1.48 MGD (Milone and MacBroom, Inc. , 2011). The Fenton River wellfield contains four wells that are permitted to withdraw at 0.8443 MGD (Milone and MacBroom, Inc. , 2011).

Water conservation and limiting "unaccounted for water" have been at the forefront of water supply management at the University for a decade. Unlike the vast majority of public water supply systems, UConn has direct operational influence on the demand of the majority of end-uses of its water as well as methods of regulating and enforcing conservation. Voluntary and mandatory conservation measures are implemented when instream flows in the Fenton River and Willimantic River call for such conservation.

The University now operates a reclaimed water facility (RWF) that supplies non-potable water to its Central Utility Plant, formerly the campus' largest domestic user. The RWF is capable of treating 1.5 MGD (design capacity is 1.0 MGD and assumes that one of the three treatment trains is off-line) and produces non-potable water that is stored in a 1 million gallon capacity tank. Reclaimed water is used for the CUP and will be used for other non-potable uses on campus such as cooling water and toilet flushing. UConn is currently seeking an irrigation permit for reclaimed water to further reduce potable water consumption.

Before the reclaimed water facility began operation, from 2005 to 2012 UConn had reduced its potable water production from 1.49 MGD to 1.26 MGD (-15%) while servicing a population that had increased by 2,020 (+8%) and campus facilities that had increased by approximately 385,000 square feet. Additional ways to supplant potable with reclaimed water for other uses are being investigated and designed into new projects. For example, the Innovation Partnership Building uses reclaimed water for its cooling towers' make up water and the New Engineering Science Building (NESB) will uses reclaimed water for toilet flushing.

UConn's water conservation efforts include upgrades to ultra low-flow fixtures in existing buildings, detection and repair of system leaks, student and staff education and engagement in conservation, design of new buildings to meet or exceed water savings targets, reducing process water use (e.g., for food service and laundry), and optimization of the UConn Reclaimed Water Facility. The recent

retrofitting of many of the existing residence halls, beginning in July 2014, to ultra-low flow fixtures (shower heads and aerators) resulted in an approximately 51,000 gpd reduction in water consumption during the academic year when the halls are occupied (Milardo, pers. comm., 2015).

In addition to the water sources, the UConn water system includes a water treatment facility at each wellfield, three booster pump stations, six water tanks, and 36 miles of water mains that are located throughout campus, including the South Campus area.

The University has been pursuing water conservation efforts, which is apparent in the decline in water consumption on campus, despite population growth. Average water consumption for 2018 (to date) is approximately 0.86 MGD and the peak demand is approximately 1.25 MGD (Milardo, pers. comm., 2018), down from 1.29 MGD daily and 2.23 MGD peak demand in 2010 as reported in the Water Supply Plan (Milone and MacBroom, Inc. , 2011).

Potable and fire protection water mains are located just east of the proposed project site, in the Gant Tunnel and potable water mains are located within Hillside Road and Alumni Drive.

Stormwater/Drainage

The project site is located in the Willimantic River subregional basin and the Eagleville Brook watershed. The project area in the vicinity of the proposed project is developed and therefore has structural storm drainage systems. The storm drainage system along North Eagleville Road, King Hill Road, Hillside Road, and Alumni Drive, including the project area, consists of a traditional collection system of catch basins, manholes, and a drainage pipe network that eventually discharges via outfalls to Eagleville Brook and the wetland complex on the western edge of the site. Stormwater runoff in the existing paved parking areas of X-Lot and Lot 9 flows via overland flow to downgradient catchbasins at the eastern and southern edges of the site that carry stormwater runoff into the drainage system. Drainage from those portions of the site is ultimately discharged to Eagleville Brook via two outfalls just south of North Eagleville Road. Some of the stormwater runoff from unpaved areas in X-Lot flows via overland flow into grass or wooded areas at the edge of the parking area. Stormwater runoff from Lot L flows into downgradient catchbasins along the western edge of the parking lot and is discharged to the wooded area on the western side of the site, where it flows overland toward the downgradient wetland complex. The 2016 *University of Connecticut Framework Utility Analysis Phase 1* report (BVH Integrated Services, July 2016d) indicates that four of the catch basins located at the north end of Lot 9 are undersized based on the 10 year storm event and exhibit over topping during precipitation events. None of the stormwater runoff from the site is currently treated.

As discussed in *Section 3.4*, Eagleville Brook is listed as an impaired waterbody by CTDEEP. Total Maximum Daily Loads (TMDLs) for impervious cover and bacteria have been developed for Eagleville Brook, requiring improved stormwater management for existing and proposed development within the watershed.

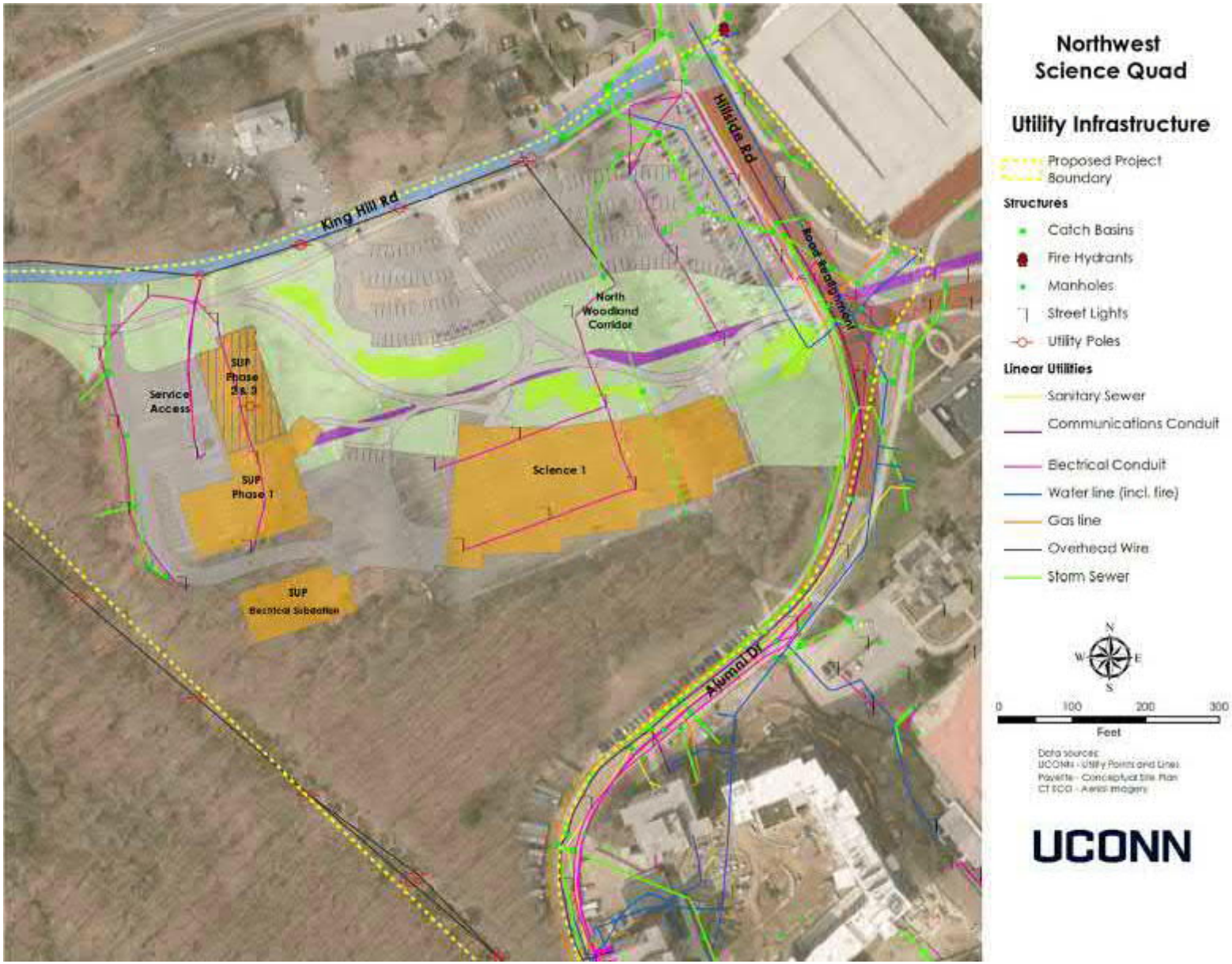

Figure 3.12. Existing Utility Infrastructure in the Project Area

3.15.2 Impact Evaluation

In general the No Action alternative will result in no change to campus utilities. While the No Action alternative will not result in any demand on utilities, it will also not address any of the identified utility needs (i.e., increased chilled water, etc) or provide additional utility capacity and resiliency.

Utilities will be brought to the site through both a utility tunnel and direct bury of lines. The Proposed Action includes the installation of a new cast in place concrete utility tunnel from the Gant Phase 1 project limit (i.e., the "Gant Tunnel") to the east of the site to the proposed SUP. The utilities will be sized for both the construction of Science 1 and the SUP as well as future development within the Northwest Science Quad as envisioned by the Master Plan. The tunnel extension will accommodate the following utilities:

- Express 125 psig steam line between the Central Utility Plant (CUP) to SUP
- Express condensate transfer line between the CUP and SUP
- High pressure condensate return line to the SUP.
- Domestic Water Service
- Fire Service
- Reclaimed Water Service

Figure 3.13. Example of Utility Tunnel Interior (Gant Utility Tunnel June 8, 2018) Source: https://youtu.be/MKlvm5cVAzo

Electrical Service

Initially, electrical service will be supplied to the Northwest Science Quad by existing electrical sources. Projected loads include 1MW for Science 1, 1.5 MW for the fill buildout of the Data Center that will be relocated from Gant to Science 1, and 2 MW from the SUP in order to generate 2,000 tons of chilled water, for an initial total load of approximately 4.5 MW. The Master Plan (Reference) recognized the need for additional electricity generation in order to maintain 100% dual mutual back-up supply, as required for a leading research university, to properly provide resilient, reliable utilities for the high value research on site, while simultaneously meeting growing campus needs. In addition, demand mitigation efforts will continue on campus. Using elements outlined in the 2015 Sustainability Framework Plan and taking advantage of retrofitting existing buildings including installing LED lighting in all campus buildings and exterior/parking areas and designing more energy efficient buildings, it is possible to stabilize campus energy requirements

while increasing the capacity for research to be conducted in buildings on the campus.

While the initial construction of the Proposed Action will result in an additional demand, albeit one that was anticipated in campus master planning, subsequent phases of the SUP construction are anticipated to address electrical generation capacity on campus (BVH Integrated Services, July 31, 2017):

- New prime generation for the campus – This will likely consist of two 8 MW combustion turbine generators (CTGs). Ideally, the CTGs should be capable of firing from either high pressure natural gas or diesel fuel, with a heat recovery steam generator (HRSG) to generate medium pressure steam for distribution.
- Electric substation to the south of the SUP – At the substation, installation of a new medium voltage switching station installed in a ring bus configuration would allow for an increase in both feeder capacity (the number of feeder circuits could be increased) and source capacity (new generation could be installed and connected to the entire campus distribution system).

The Proposed Action will create an increase in the electrical load on the Storrs Campus. In the short-term this load will be met by the combination of supply from the CUP and Eversource. Over the longer-term, the SUP and proposed substation provide the ability to address the identified needs for electricity generation and distribution on campus. As a result, the Proposed Action is anticipated to result in a long-term benefit to electrical service on campus.

Emergency Power

There is a need for additional emergency power to support Science 1, the SUP and any future loads in this region of campus. The Proposed Action will incorporate two 2,000 kW diesel emergency generators within the SUP for emergency power generation to support the SUP, Gant Building, and Science 1. This will add to the available emergency power on campus, and as discussed in Section 3.8 (Air Quality) can be achieved without exceeding the emission thresholds established for the campus Title V General Permit to Limit the Potential to Emit. As a result, a positive impact to emergency power capacity is expected as a result of the Proposed Project. Under the No Action alternative there would be no increase in emergency power capacity on campus.

Telecommunications

Telecommunication services will be available adjacent to the project site and will be expanded into the Northwest Science Quad as part of the proposed action. No direct or indirect adverse impact to campus telecommunications is anticipated as a result of the either the No Action alternative or Proposed Action.

Steam

High pressure steam (125 psig) and express condensate lines in the tunnel will extend directly from Gant to the CUP without any branch line pipe connections. There is currently existing capacity in the UConn steam generation facilities to produce stream with excess capacity remaining for the next 20 years (Campus Master Plan, 2015), even with full build out of Next Generation UConn and assuming no energy reduction improvements. Consequently, no impact to campus-wide steam utilities will result from the Proposed Action. However, the equipment is reaching the end of its lifecycle and will need to be replaced by 2023. Additionally, it is anticipated that the SUP could provide steam at some later phase when a

combustion turbine boiler and heat recovery steam generator are installed. The waste heat from the turbine would be converted into 125 psig steam using the HRSG (Richard Turlington Architects, Inc., February 28, 2018). While the No Action Alternative would have no impact on available steam utilities, the Proposed Action will result in no impact to the availability of campus-wide steam and has the potential to provide a direct and cumulative positive impact by providing additional capacity and resilience to the campus-wide system. The SUP boiler would also provide critical swing space to ease the transition of existing CUP boilers to new units, a process which would be more difficulty and costly in the absence of the SUP facility.

Chilled Water

Given the current capacity and demand on the CUP, additionally chilled water will need to be provided by the SUP for distribution to surrounding buildings and future connection to the campus chilled water distribution system. It is anticipated that chilled water piping would be directly buried in lines traveling from the SUP to Science 1 via a manhole (BVH Integrated Services, July 2016a) (Payette Associates, March 23, 2018). Over the long-term as much as 4,000 tons of chilled water could be generated at the SUP (Richard Turlington Architects, Inc., February 28, 2018). Without the construction of the SUP, the demand for chilled water created by the construction of Science 1 would exceed the available capacity of the CUP. While this could be addressed through decentralized cooling, the SUP provides a more robust solution consistent with the University's Master Plan vision for campus-wide utilities, resulting in an overall positive impact to the campus chilled water utility.

Sanitary Sewer

It is anticipated that sanitary sewer lines exiting the SUP and Science 1 will tie into existing lines located to the east of the project site (Payette Associates, March 23, 2018). While gravity flow is likely possible from Science 1, further design for the SUP may confirm the need for a booster pump (BVH Integrated Services, July 31, 2017). Over the long term, it may be necessary to either provide booster pumps for flow to the east or use gravity flow to route sanitary to a new pump station along Discovery Drive.

Science 1 and the SUP will tie into the campus-wide sanitary sewer. Science 1 is estimated to generate 9,100 gpd (Payette Associates, March 23, 2018), with is less than 0.1% of the capacity of the WPCF. Although an estimate for water use at the SUP has not yet been developed, the water demand is expected to be significantly less than the demand generated by Science 1. In the Master Plan ((Skidmore, Owings, and Merrill, LLP, 2015b)), estimates of water use (in gallons per day per square foot of facility) are approximately 62 times greater for science building space (0.123 gpd/sf) compared to utilities/services space (0.002 gd/sf) due to the high water demand associated with science research space.

Reclaimed water will be provided to Science 1 via the extension of the Gant Tunnel to the NWSQ and will be used for toilet flushing in the building. Reclaimed water is anticipated to be used in the SUP or cooling tower makeup water. Sufficient reclaimed water is anticipated to be available for use at Science 1 and the SUP (BVH Integrated Services, July 2016e) based on available capacity at the RWF.

The WPCF is currently operating at approximately 50% of its 3.0 MGD capacity, so there is sufficient capacity to treat sanitary sewer flows from the Proposed Action. Given the current excess capacity

in the WPCF and the on-going implementation of potable water use reduction, which will in turn reduce wastewater generation, the WPCF is anticipated to have excess capacity for at least a decade. Consequently, no impact to sanitary sewer utilities will result from the Proposed Action.

Gas

There is no requirement for utility natural gas (direct buried or in the tunnel) for Science 1 laboratories at this time. The 75 psi gas main in Alumni Drive can be extended to provide service to the SUP. For later phases of the SUP, a new high pressure gas main will be required (BVH Integrated Services, July 31, 2017). This could be achieved by extending the dedicated gas main from the CUP west along Glenbrook Drive, north on Hillside and west along Alumni Drive, terminating at the SUP. Alternatively, a new high pressure line could be extended roughly 2 miles directly from the CNG pipeline at the intersection of South Eagleville Road and Maple Road to the SUP site. In either case, it is feasible to provide a short- and long-term supply of natural gas to the site. Therefore, the Proposed Action is not anticipated to result in any significant impact to gas service.

Potable Water (Domestic and Fire Protection)

Potable water will be provided to the Northwest Science Quad via the proposed tunnel. Fire protection and potable water mains would be extended from the Gant Tunnel to the Science 1 site and SUP. Tee connections out of the utility tunnel would supply service to hydrants. It is anticipated that connections out of the tunnel would be made to hook the existing 8" potable water main within Hillside Road and Alumni Drive with provisions for hookup to a possible future new main within Hillside Road. Domestic and fire Protection water piping would be direct buried between the new utility tunnel and Science 1.

Future potable water demands for the UConn water system were identified in both the Water Supply Plan EIE (2012) and its subsequent Record of Decision (2013). The EIE and ROD concluded that the average day demand was projected to exceed available supply (i.e., supply available from wellfields only) by 2030 when the projected margin of safety is included. Peak day demands were projected to require an additional 0.464 million gallons per day (MGD) as early as 2015 if all the projected demands that were predicted were realized. That increase projected in the Water Supply Plan EIE and ROD was not realized. Peak demands have actually declined from 2.23 MGD in 2010 to 1.25 MGD in 2018.

Water demand resulting from Science 1 has been estimated at 9,100 GPD for potable water for both academic and laboratory uses and a maximum of 60,000 GPD for a fire event (Payette Associates, March 23, 2018). As discussed above, although an estimate for water use at the SUP has not yet been developed, the water demand is expected to the significantly less than the demand generated by Science 1. In the Master Plan ((Skidmore, Owings, and Merrill, LLP, 2015b)), estimates of water use (in gallons per day per square foot of facility) are approximately 62 times greater for science building space (0.123 gpd/sf) compared to utilities/services space (0.002 gpd/sf) due to the high water demand associated with science research space.

The Master Plan revisited the anticipated potable water average daily demand and peak demand for the mid-term (5-10 years; 2020-2025) when construction would be completed considering both no additional conservations measures and conservation representing 10%, 20%, and 30% reduction in water use. The Master Plan estimated a "business as usual" approach resulting in an average daily demand of 2.834 MGD and a 30% conservation approach resulting in an average daily demand of 2.15 MGD. Although no

peak water demand estimates were provided in the Master Plan, an estimate of 130% over average day demand can be used to estimate a peak demand of 3.684 MGD to 2.795 MGD, depending on conservation efforts. This is well under the 4.6643 MGD available supply indicating that no direct or indirect impact to water supply is anticipated by the Proposed Action.

Stormwater/Drainage

Under the No Action alternative, stormwater from the project site would continue to discharge to the existing campus stormwater drainage system and ultimately to Eagleville Brook, or, in the case of unpaved parking areas, to drain via overland flow. Existing issues with the capacity of the stormwater drainage system would be unchanged, and stormwater runoff would remain untreated. As noted in *Section 3.4*, the Proposed Action (including roof top area, paved parking and driveways, and sidewalks) would increase impervious cover by 0.87 acres. However, this value relies on the assumption that existing unpaved gravel parking lots are acting as pervious surfaces, when in fact these areas are compacted and largely impervious. Therefore, despite the 0.87 acre increase in impervious area, use of low impact development (LID) and green infrastructure (GI) is expected to result in a 2-4% overall decrease in both total volume of stormwater runoff and peak flows during storm events, as well as improvements in the water quality of stormwater runoff. The LID and GI practices (described in more detail in *Section 3.4*) proposed for the site include bioretention areas, pervious surfacing, and infiltration chambers.

Bioretention areas will be located in the center of the site along the proposed North Woodland Corridor and will capture water from the roof of the Science 1 building and the western portions of the proposed parking areas. Catchbasins and manholes at the south edge of the project site will carry water from the roof of Science 1 to the eastern-most bioretention area. An overflow pipe will carry excess stormwater to a second bioretention area further west on the site and adjacent to the parking lot. Ultimately, an overflow at the western edge of the parking area just south of King Hill Road will carry any remaining overflows to the drainage system under King Hill Road.

In addition to the green infrastructure proposed, additional improvements to the stormwater drainage are anticipated. As part of the Proposed Action, the existing undersized 24" storm drainage line on the north corner of the site is proposed to be relocated to match the realignment of the roadway and upsized in the process to increase capacity. New drainage will also be installed along King Hill Road, with catchbasins and manholes proposed at approximately 200 foot intervals. Those portions of the proposed parking areas for Science 1 that do not drain to bioretention areas will drain to catchbasins that will carry stormwater to the north and east edges of the site. Drainage piping will direct these flows through a hydrodynamic separator at the northeast corner of the site, near the intersection of King Hill Road and Hillside Road, before the stormwater passes into the existing drainage system, ultimately making its way to the existing outfall on Eagleville Brook. Similarly, an overflow outlet from the bioretention areas will transmit excess flows through a hydrodynamic separator and into the existing drainage system that discharges to Eagleville Brook. Catchbasins and manholes are also proposed in the vicinity of the SUP to carry stormwater runoff to a single 30 inch outfall on the western edge of the site. Hydrodynamic separators will treat all stormwater collected in the vicinity of the SUP before it is discharged.

The stormwater management system for the project site will be consistent with the guidelines contained in the CTDEEP *Connecticut Stormwater Quality Manual* (as amended). The proposed project

will also meet flood and stormwater management standards specified in section 25-68d of the Connecticut General Statutes (CGS) and section 25-68h-1 through 25-68h-3 of the Regulations of Connecticut State Agencies through the CTDEEP Flood Management Certification process.

Consistent with the University of Connecticut Stormwater Management Plan (UConn, n.d.), established as a condition of the CTDEEP *General Permit for the Discharge of Stormwater for Small Municipal Separate Storm Sewer Systems*, additional non-structural controls and good housekeeping practices (e.g., parking lot sweeping, catch basin cleaning, and maintenance of bioretention areas) will be implemented post-construction in order to prevent pollution and improve the water quality of stormwater runoff leaving the site. The LID and GI practices described above will also help to facilitate disconnection of directly connected impervious areas, as required by the permit.

Overall, the Proposed Action is anticipated to decrease stormwater runoff volume and peak flows from the site and improve water quality by providing treatment of all stormwater runoff. No direct or indirect adverse impacts are anticipated.

3.16 Energy Use and Conservation

3.16.1 Existing Conditions

UConn has several ongoing energy efficiency and sustainability initiatives at the Storrs campus:

- Campus Sustainable Design Guidelines (JJR and Smith Group, 2004). The guidelines include specific measures for reduction of energy consumption on new construction projects on campus including: planning sustainable sites, safeguarding water, conserving materials and resources, improving energy efficiency, and enhancing indoor environmental quality.
- Sustainable Design & Construction Policy (UConn, 2016b). Adopted in 2007 and revised in 2016, the policy requires all building construction or renovation projects entering the pre-design planning phase, and projects with estimated total costs in excess of $5 million to achieve a LEED Gold rating as a minimum performance standard.
- UConn Climate Action Plan (UConn, 2009). The University is striving towards a carbon neutral campus by the year 2050. The UConn Climate Action Plan focuses on strategies for reducing greenhouse gas emissions from the University. Progress is being tracked through an annual greenhouse gas inventory.
- 2020 Vision for Campus Sustainability and Climate Leadership (UConn, 2016a). The 2020 Vision for Campus Sustainability and Climate Leadership is a set of specific guidance metrics to support the goals outlined in the UConn Climate Action Plan that were endorsed by the University President in 2016. The metrics establish baselines and numeric goals by which to measure successful implementation of the UConn Climate Action Plan across a variety of areas, including energy and buildings, water reduction, outreach and engagement, water resources, food and dining, grounds and open space, purchasing, and transportation.

- UConn Renewable Energy Strategic Plan (UConn, 2018). The Preliminary Feasibility Study and Strategic Deployment Plan for Renewable & Sustainable Energy Projects identifies and assesses target locations for the development of 12 demonstration-scale renewable and sustainable energy projects for the following technologies: solar thermal, solar photovoltaic, wind, fuel cells, geothermal, and biofuels.

- Sustainability Framework Plan (Skidmore, Owings, & Merrill, LLP, 2015d). The Sustainability Framework Plan includes initiatives in the areas of energy, water, land, materials, and movement; these initiatives serve as a lens to direct the development of the Campus Master Plan and ensure sustainable growth. The energy initiatives outlined in the Sustainability Framework Plan are intended to support the campus goal of reaching carbon neutrality by 2050.

3.16.2 Impact Evaluation

The Proposed Action will result in increased energy demands over existing conditions in order to serve the new Science 1 building. However, the Science 1 building will comply with the Connecticut High Performance Building (CTHPB) mandatory requirements and, consistent with the Sustainability Framework Plan, will pursue a LEEDv4 Gold rating as well as Sustainable SITESv2 certification. As such, Science 1 is expected to be at least 21% more energy efficient than a building constructed to the baseline ASHRAE 90.1-2010 energy standards. Sub-metering and smart-metering compliant with LEEDv4 standards and the Sustainability Framework Plan will be employed to track and monitor energy consumption.

Building energy use was modeled using the United States Green Building Council's District Energy Systems (DES) Guideline Option 1, Path 1. Current energy estimates for the building are considered to be conservatively high, however, as Science 1 will be connected to a new Supplemental Utility Plant (SUP) that is also part of the Proposed Action and which will further increase the efficiencies of Science 1 and other campus facilities.

Energy analysis for the proposed Science 1 design indicates that the building will consume 27,911 MMBTU on an annual basis for heating, cooling, pumps, fans, lighting, equipment, and hot water. Heating and cooling use accounts for 58% of projected energy use, with equipment accounting for an additional 24%. Energy use is expected to be most intensive in the cleanroom, followed by the science labs, with non-lab spaces being significantly less energy intensive; overall, the projected energy use intensity for Science 1 is 154 KBTU per square foot of building space. Compared to a baseline LEEDv4 design, this represents 39% lower energy use and 25% lower energy costs.

Key energy conservation measures being recommended in the Science 1 design include low-flow (60 FPM) fume hoods, proximity-sensor controls for exhaust systems, automatic monitoring systems for air change rates, and efficient heat recovery. Consistent with the directive in the Sustainability Framework Plan to utilize ground source or air source heat pump systems in STEM labs, the building features a heat pump chiller to simultaneously produce hot water and medium-temperature chilled water for use throughout the building. To further reduce heating and cooling loads, the design features a high-performance building envelope. The window to wall ratio will be under 40%, and windows will feature triple-pane glazing for insulation. A daylight study was conducted as part of the design process to facilitate use of natural daylight from skylights and

windows to provide for illumination in lieu of, or in support of, electric lighting. A photovoltaic renewable energy system is also under consideration and will be evaluated for its ability to generate power on-site and further reduce the energy costs associated with Science 1.

Consistent with Campus Master Plan Sustainability goals (Skidmore, Owings, & Merrill, LLP, 2015d), the project will also include underground electrical utilities, an action that was identified as important to increasing resiliency to storm events.

Science 1 will also enable older existing, less energy efficient science lab spaces on other parts of campus to be decommissioned, renovated, or updated, although these energy offsets were not quantified in the energy modeling for the Proposed Action.

Although still in the design phase, the Supplemental Utility Plant is anticipated to achieve LEEDv4 Silver certification and comply with Connecticut High Performance Building Standards. The SUP will incorporate the use of Energy Star products will be utilized where feasible and the construction will incorporate features such as advanced energy metering, optimized energy performance, and green power and carbon offsets. A green roof on the second phase of the SUP construction is being considered in the design process.

The SUP will support the overall energy goals of the campus by expanding the on-campus capacity for energy production. As described in the 2015 Campus Master Plan (Skidmore, Owings, and Merrill, LLP, 2015b), there is a current shortfall of on-campus electricity production at the Central Utility Plant (CUP), met by imported electricity from Eversource, and is anticipated to increase as projects identified in the Master Plan (Skidmore, Owings, and Merrill, LLP, 2015a) are constructed. As a result, the construction of the SUP will enable UConn's long-term energy goals of developing district-based supplemental utility plants that are interconnected via looped systems to provide redundancy and shared load distribution on the Storrs Campus.

4 Summary of Impacts

Based upon the findings presented in Section 3, Existing Environment and Analysis of Impacts, this section summarizes unavoidable adverse impacts associated with the proposed project, irreversible and irretrievable commitments of resources, and mitigation measures to reduce or minimize potential impacts associated with the Proposed Action.

4.1 Unavoidable Adverse Impacts

The preceding sections of this EIE have analyzed the potential for "significant effects" (i.e., substantial adverse impacts on the environment) associated with the Proposed Action. Anticipated potential impacts associated with the Proposed Action are summarized in Table 4-1. Design elements and best management practices will be incorporated into the Proposed Action, as described in Sections 1 and 3, to avoid, minimize, or mitigate potential adverse impacts.

The only unavoidable adverse impacts anticipated with the Proposed Action are those associated with the loss of an approximately 2500 SF of inland wetland area and those related to the construction phase of the project. Construction-related impacts to traffic, air quality, noise, hazardous materials, solid waste, and stormwater are unavoidable but are temporary in nature and will be mitigated through the use of best management practices during construction *(*see Section 3.16 and Section 4.4*)*.

Alteration of the wetland area will be permitted under the CTDEEP *General Permit for Water Resource Construction Activities* and subject to the conditions of the U.S. Army Corps of Engineers Connecticut General Permit. Appropriate mitigation will be identified through the permitting process.

4.2 Irreversible and Irretrievable Commitments of Resources

Irreversible and irretrievable commitments of resources associated with the Proposed Action consist of resources that remain committed to a project through its lifespan (i.e., irreversible commitment) or those that are consumed or permanently impacted during project construction and operation as a result of the Proposed Action (i.e., irretrievable commitment).

Irreversible and irretrievable resources that would be committed to the Proposed Action include energy (electric and natural gas), construction materials, land, human labor, and finances:

- Energy – Energy will be consumed for project construction, and operation of the proposed facility will require more overall energy use on campus.
- Construction Materials – A variety of construction materials will be utilized to construct the proposed building and site features. Some materials used in the construction of Science 1 and the SUP may be reused or recycled.
- Land – Use of the proposed site for construction of the Northwest Science Quad will preclude the possibility of other uses in the foreseeable future. Note that the land is already developed as parking lots.
- Human Labor – The dedication of human labor to the construction and operational phases of the project

represents an irretrievable expenditure of time and production that cannot be used for other purposes.

- Financial – The required expenditures represent funds that, once committed, are no longer available for other purposes and once spent, cannot be regained.

4.3 Indirect and Cumulative Impacts

CEPA requires that the sponsoring agency consider the indirect or secondary impacts and cumulative impacts of its actions. Secondary or indirect impacts are effects of an action that are removed in time or distance from the action itself. Cumulative impacts are those that result from the incremental impact of a proposed action when added to other past, present or reasonably foreseeable future actions of the agency (i.e., UConn).

4.3.1 Indirect Impacts

There are two possible types of secondary or indirect effects – encroachment-alteration and induced growth (or growth influencing).

Indirect or secondary effects associated with encroachment-alteration can result in long-term degradation to a resource. The proposed action will result in direct impact to a small isolated wetland area and will result in the conversion of some currently forested area on the edges of the project site. However, the area will be surveyed for potential NLEB roosts prior to construction and the site does not provide any other potential habitat for threatened and endangered species. Since the project is largely a redevelopment of parking lots, there is little potential for impact from encroachment-alternation. Although the Proposed Action is within the Eagleville Brook watershed, the redevelopment of the existing parking lots and, in particular, the improvements to stormwater management, are anticipated to have a net benefit impact to water quality. Therefore, no adverse indirect effects associated with encroachment-alteration are anticipated as a result of the Proposed Action.

Foreseeable indirect impacts associated with induced growth are limited to potential increases in utility capacity, which will enable growth, especially in the northern portion of the Storrs Campus. However, the construction of a SUP was specifically identified in the Campus Master Plan as an important element for growth to provide utility capacity and redundancy consistent with long-term master planning goals. So, while the development of a SUP will be a growth influencing factor, it is specifically intended to do so and to do so in a way that is consistent with responsible planning for campus growth. Future construction that is enabled by the SUP will also be subject to environmental review and permitting, as appropriate, and should impacts associated with future projects be identified later in time, appropriate mitigation would be identified to reduce or offset adverse effects.

4.3.2 Cumulative Impacts

Potential cumulative impacts can occur to those resources for which direct or indirect impacts from the Proposed Action are anticipated. Based on the analysis in Section 3 of this EIE, the Proposed Action will result in changes to parking, but the impact analysis in Section 3 does not indicate significant adverse effects to traffic or parking under the Proposed Action. Because of the isolated nature of the wetland to be impacted, no cumulative impacts to a larger wetland system will occur. Although the Proposed Action will create a need (Science 1) for chilled water and emergency power that exceeds

available campus-wide utility capacity, the Proposed Action also includes facilities (the SUP) to address those capacity needs, effectively mitigating that impact of increased demand.

Typically, cumulative impacts would not be anticipated in the absence of significant adverse effects. However, in light of the past, present, and reasonably foreseeable University actions, a discussion of cumulative impacts is provided. In particular, cumulative impacts to utility demand and air quality are relevant to this project. While short-term utility demand will increase as a result of the Proposed Action, a combination and campus-supplied and, in some cases, imported, capacity exists to address the additional loads for electricity, water, sanitary sewer, gas, telecommunications, stormwater drainage, and steam. As mentioned above the impact created by Science 1 to chilled water and emergency power is offset within the Proposed Action itself by the construction of the first phase of the SUP. Subsequent phases of the SUP are intended to provide the additional capacity and resiliency in campus-wide electricity, steam, and chilled water, providing a cumulative benefit to campus utilities.

The cumulative effects on air quality are also inherently linked to the expansion of large fuel-burning equipment that will foreseeably occupy the SUP. The University's commitment to maintaining emissions below the critical thresholds identified in the campus Title V permit effectively limits the potential for cumulative air quality impact by placing a cap on emissions that is specifically intended to avoid direct and cumulative air quality impacts. The University has developed a strategy for phase-out of aging equipment at the CUP and installation of new equipment at the SUP and CUP to both address campus utility demands and maintain campus-wide emissions below the Clean Air Act de minimis rule emissions caps for NOx and VOCs (Bolduc, pers. comm., 2018).

4.4 Summary of Impacts and Mitigation Measures

Mitigation measures have been identified to reduce or offset potential adverse impacts associated with the proposed project. These are summarized in Table 4-1 by resource category as described in Section 3 of this EIE. For resource categories for which no mitigation is proposed, the impact evaluation has determined that either the impacts are insignificant, requiring no mitigation, or that there will be no adverse impacts resulting from the proposed project.

Table 4-1. Summary of Impacts and Proposed Mitigation

Resource Category	Impacts	Proposed Mitigation
Consistency with Planning	· Will be consistent with Connecticut's State Conservation and Development Policies Plan · Will be consistent with Local Zoning and Planning · Will be consistent with Campus Master Planning	· None
Geology, Topography, and Soils	· No unique features or farmland soils. The site is already developed and topography and soils have been previously modified.	· None
Water Resources	· Will be consistent with Eagleville Brook TMDL and Watershed Plan · No floodplain-related impacts are expected. · Stormwater runoff from the site is anticipated to decrease due to implementation of stormwater controls. · Water quality of runoff leaving the site is expected to improve relative to existing conditions.	· The stormwater management system for Science 1 will be consistent with the guidelines contained in the CTDEEP *Connecticut Stormwater Quality Manual* (as amended). · LID measures such as disconnected impervious areas, bioretention, and pervious surfacing. · Infiltration chambers are being considered under the main parking area to manage peak rates of runoff from the project site. · Good housekeeping practices will ensure ongoing operation of stormwater features.
Wetlands	· Anticipate approximately 2000 SF of inland wetland to be directly impacted by construction of Science 1 · An additional approximately 500 SF of wetland area near the western North Eagleville Road/King Hill Road intersection will be impacted by the construction of the North Woodland Corridor pathway	· Mitigation will be identified through the permitting process.
Natural Communities, Flora, and Fauna	· One federally threatened/endangered species (northern long-eared bat) potentially in the region · NDDB Review indicated no negative impacts to state-listed species. · Vegetation clearing, including removal of invasives.	· Planting of trees and native plant species to establish the North Woodland Corridor through the site. · Field review for potential northern long-eared bat maternal roost trees prior to tree removal.
Noise	· Consistent with existing institutional and commercial setting	· None

Table 4-1. Summary of Impacts and Proposed Mitigation

Resource Category	Impacts	Proposed Mitigation
Air Quality	· New stationary sources to be phased into the SUP beginning with emergency generators and chiller units	· Stationary sources to be included in UConn facility-wide Title V air quality permit · Implement operational restrictions and emissions limitations for new emissions sources subject to permitting (e.g., turbines, boilers) along with collateral conditions for emission sources not subject to permitting (e.g., new CUP chiller units) to remain below campus-wide emission thresholds set forth in the Clean Air Act De Minimis Rule. · The emergency generators will be operated less than 300 hours per year pursuant to CTDEEP's "permit-by-rule" · Installation of new equipment at the SUP will be coordinated with retirement of existing equipment at the CUP to cap emissions of NOx and VOCs to remain below Clean Air Act De Minimis Rule thresholds.
Solid Waste	· Typical institutional waste stream	· None
Toxic and Hazardous Materials	· Generation of toxic and/or hazardous materials consistent with other campus laboratory facilities and Central Utility Plant.	· Hazardous materials to be directed to the Main Accumulation Area and managed according to existing University protocols, including the UConn Chemical Waste Disposal Guidelines, Biological Waste Guide, and UConn Radiation Safety Manual. · Transport of hazardous materials from existing laboratories to the new Science 1 will be performed by a permitted hazardous materials transporter.
Public Health and Safety	· Expansion of existing activities, equipment, and processes associated with other campus laboratories and the Central Utility Plant.	· Incorporation of standard laboratory, classroom, office, and utility plant safety measures.
Visual and Aesthetic Character	· Better integration of the site with surrounding landscapes and built environment.	· Implementation of visual/aesthetic elements of the Campus master Plan and District guidelines, including the North Woodland Corridor, incorporation of stormwater infrastructure into the visual landscape, and use of natural materials.

Table 4-1. Summary of Impacts and Proposed Mitigation

Resource Category	Impacts	Proposed Mitigation
Socioeconomics	· No impacts to Environmental Justice Communities · Generates new construction jobs and sustainable long-term employment · Contributes to the Next Generation Connecticut capital investment program and associated economic benefits	· None
Traffic, Parking, and Circulation	· No expected increase in site-generated traffic volumes · Shift of parking from campus core to periphery for approximately 705 vehicles · No disruption of existing intersections · Minimal new vehicle trips · Improved pedestrian and bicycle access within campus core · No anticipated impacts to event parking	· None, although recommendations for possible changes to signal phases/timing are suggested in the Traffic Impact Study prepared for the project.
Utilities	· Increases in utility demands will occur due to the construction of Science 1. · Immediate need for increased chilled water and emergency power capacity for operation of Science 1 since that campus-wide capacity will be exceeded. · Additional electrical loads can be augmented by imported power from Eversource, although the long term goal is to reduce or remove that dependence.	· The initial phase of the SUP will meet the immediate needs of Science 1 for chilled water and emergency power. · Future phases of the SUP will increase capacity and resiliency of campus electrical supply and reduce or eliminate use of imported electricity. · Design of the buildings promotes conservation to reduce electrical and water demand. · Reclaimed water will be used in Science 1 for toilet flushing.
Energy Use and Conservation	· Increased energy demands to serve new Science 1 building · Increased efficiency of energy production due to operation of new SUP	· Compliance with Connecticut High Performance Building requirements for both Science 1 and SUP · Achievement of LEED Gold and Sustainable CITES certifications for Science 1 building · Achievement of LEED Silver for SUP · Emphasis on energy conservation measures in lab spaces, where the majority of energy is used · Design to feature high-performance building envelope

Table 4-1. Summary of Impacts and Proposed Mitigation

Resource Category	Impacts	Proposed Mitigation
	Construction Period	
Traffic, Parking, and Circulation	· Minor, temporary disruptions to traffic in the immediate area of construction	· Use of construction-phase traffic management measures to maintain efficient traffic operations during the construction period including construction phasing to minimize disruptions to traffic, signage, and detours.
Air Quality	· Construction activities may result in short-term impacts to ambient air quality due to direct emissions from construction equipment and fugitive dust emissions	· Contractors will be required to comply with air pollution control requirements in UConn *Environmental, Health, and Safety Policies, Regulations, and Rules for Construction, Service, and Maintenance Contractors,* including reference to such requirements in contract documents. · Ensure proper operation and maintenance of construction equipment. · Limit idling of construction vehicles and equipment to three minutes. · Implement traffic management measures during construction. · Implement appropriate controls to prevent the generation and mobilization of dust.
Noise	· Heavy construction equipment associated with site development may result in temporary increases in noise levels in the immediate area of construction	· Contractors will be required to comply with noise control requirements in UConn *Environmental, Health, and Safety Policies, Regulations, and Rules for Construction, Service, and Maintenance Contractors,* including reference to such requirements in contract documents. · Ensure proper operation and maintenance of construction equipment. · Construction contractors should make every reasonable effort to limit construction noise impacts.
Water Resources	· Exposure of soil increases potential for erosion and sedimentation	· Use of appropriate erosion and sediment controls during construction, consistent with the *2002 Connecticut Guidelines for Soil Erosion and Sediment Control* (as amended) and the August 21, 2013 *General Permit for Stormwater and Dewatering Wastewaters from Construction Activities*.

Table 4-1. Summary of Impacts and Proposed Mitigation

Resource Category	Impacts	Proposed Mitigation
Toxic and Hazardous Materials	· Temporary on-site storage and use of fuels and other materials associated with construction vehicles and equipment	· Contractors will be required to comply with requirements for construction-related hazardous materials and solid waste in UConn *Environmental, Health, and Safety Policies, Regulations, and Rules for Construction, Service, and Maintenance Contractors,* including reference to such requirements in contract documents. · Hazardous or regulated materials or subsurface contamination encountered during construction will be characterized and disposed of in accordance with applicable state and federal regulations.
Solid Waste	· Generation of solid waste including construction and demolition debris	· Contractors will be required to comply with requirements for construction-related hazardous materials and solid waste in UConn *Environmental, Health, and Safety Policies, Regulations, and Rules for Construction, Service, and Maintenance Contractors,* including reference to such requirements in contract documents. · Construction-related solid waste will be handled and disposed of in a manner that meets current regulations and University standards. Construction and demolition debris will be managed in accordance with applicable state and federal regulations and the University's contractor policies.

5 Costs and Benefits

Short-term and long-term economic, social, and environmental costs and benefits are summarized in this section for the Proposed Action. Costs and benefits associated with a project may be both quantifiable (tangible) and non-quantifiable (intangible).

Costs

Based on preliminary design, the total cost of the project (engineering design, permitting, construction, etc.) is estimated at $$150 to $170 million, including removal of existing parking surfaces, site preparation, utility extension, building construction and outfitting, and final site landscaping. It should be noted that these costs are a reasonable estimate of costs to develop the project as described in this EIE and may change slightly as the project design is completed. Operational costs are unknown at this time, but will likely be comparable in magnitude to other existing science buildings located on the UConn campus, minus potential energy cost savings attributable to sustainability features of the project.

Benefits

Construction of the proposed project will result in employment for construction workers in the region and the purchase of construction materials from local and regional suppliers within the State of Connecticut.

The proposed project addresses a need for expanded energy generation and utility distribution capacity on campus. Energy shortfalls on campus are currently being met with energy purchased from Eversource; the new SUP will enable additional on-campus capacity and reduce energy costs.

The proposed project also addresses a general need for additional STEM research and teaching space and will enable replacement and renovation of aging STEM facilities elsewhere on campus. These improvements are necessary to attract top-notch faculty and establish UConn as a world-class research university, thereby increasing the University's ability to obtain funding.

Expansion of STEM teaching and research capacity are key components of the *Next Generation Connecticut* initiative, which is anticipated to have multiple economic benefits including:

- $146 million per year in new research awards
- $285 million per year in new business activity in Connecticut resulting from research at UConn
- 2,190 new or 4,050 total permanent jobs
- 30,000 total construction jobs through 2024.

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6 Potential Certificates, Permits, and Approvals

Table 6-1 lists the certificates, permits, and approvals that are anticipated to be potentially required for the construction of the Proposed Action. Additional certificates, permits, and approvals may be identified following the CEPA process, pending the final design of the project, and/or may be required for operation of facilities after construction.

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Table 6-1. List of Required Certificates, Permits and Approvals

Certificate/Permit/ Approval	Category	Agency	Comments
Inland Wetlands & Watercourses Permit	Wetlands	CTDEEP Land and Water Resources Division	Impacts to inland wetlands as a result of construction of Science 1.
Clean Water Act - Self-Verification under the Department of the Army General Permit #17	Wetlands	U.S. Army Corps of Engineers	Self-verification allowed since the wetland impacts are less than 5,000 sf
New Source Review for Stationary Sources of Air Pollution	Air Quality	Permits for new Stationary Sources and/or Permit by Rule notification for Emergency Generators	May not be required for first phase of SUP depending on Emergency Generator operation. Would be required for new boilers, turbines, etc.
Title V Operating Permit	Air Quality	CTDEEP Bureau of Air Management	New stationary sources would be added to the existing Title V permit
Flood Management Certification	Flood Management	CTDEEP Bureau of Water Protection and Land Reuse's Inland Water Resources Division	Required for alteration of drainage system
Administrative Decision Review	Traffic	Office of the State Traffic Commission (OSTA)	The project will qualify as an expansion under Section 14-312-1 of the OSTA regulations. A new Major Traffic Generator Certificate for the campus will not be required.
General Permit for Miscellaneous Discharges of Sewer Compatible (MISC) Wastewater	Wastewater	CTDEEP Bureau of Materials Management and Compliance Assurance	Required for non-contact cooling water discharges
General Permit for Discharge of Stormwater and Dewatering Wastewater Associated with Construction Activities	Stormwater	CTDEEP Bureau of Materials Management and Compliance Assurance	Registration required since total site disturbance exceeds 1 acre

2

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Appendix A – Scoping Materials

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ENVIRONMENTAL MONITOR
- Current Issue
- Archives
- Publication Dates
- What is CEPA?
- CEPA Statutes
- CEPA Regulations
- What is Scoping?
- What to Expect at a Scoping Meeting
- How to Request a Public Scoping Meeting
- Guide to the State Lands Transfer Process

CEQ HOME

November 21, 2017

Scoping Notices

1. Wastewater Facilities Plan, Fairfield
2. Naugatuck Industrial Park Expansion Project, Naugatuck / Waterbury
3. **NEW!** UConn Main Campus Parking Replacement Project, Mansfield
4. **NEW!** UConn NW Science Quad Improvements, Mansfield

Post-Scoping Notices: Environmental Impact Evaluation (EIE) Not Required

1. Westbrook Village, Hartford

Environmental Impact Evaluations

No Environmental Impact Evaluation has been submitted for review and comment.

State Land Transfers

No proposed Land Transfer has been submitted for publication in this edition.

The next edition of the Environmental Monitor will be published on December 5, 2017.

Subscribe to e-alerts to receive an e-mail when the Environmental Monitor is published.

Notices in the Environmental Monitor are written by the sponsoring agencies and are published unedited. Questions about the content of any notice should be directed to the sponsoring agency.

Scoping Notices

"Scoping" is for projects in the earliest stages of planning. At the scoping stage, detailed information on a project's design, alternatives, and environmental impacts does not yet exist. Sponsoring agencies are asking for comments from other agencies and from the public as to the scope of alternatives and environmental impacts that should be considered for further study. Send your comments to the contact person listed for the project by the date indicated.

The Following Scoping Notice has been submitted for review and comment.

1. Notice of Scoping for Wastewater Facilities Plan for the Town of Fairfield

Project Title: Wastewater Facility Plan

Municipality where proposed project might be located: Fairfield

Project Location: One Rod Highway, Fairfield

Project Description: The Wastewater Facility Plan proposes improvements to the town's wastewater treatment infrastructure. The Water Pollution Control Facility (WPCF) has a design annual average flow rate of 9 million gallons per day (MGD) and a peak flow rate of 24 MGD and currently processes an annual average flow rate of 8.64 MGD with peaks over 33 MGD. The WPCF was originally constructed in 1950 and was expanded in 1968 and 1972 to meet the needs of a growing town and expansion of the sewer collection system. Additions were made in 1980 to improve bio-solids dewatering and a composting facility for beneficial reuse of plant sludge was added in 1988. In 1996 and 2002, modifications to the plant's aeration system were completed to allow the plant to achieve nitrogen removal per the permit. In the past 5 years, flows have been increasing and the WPCF has been receiving flows greater than 90% of the design flow rate for the previous 180 days consistently since Aprils 2017 and intermittently prior to that.

The study evaluated alternatives for providing improvements to the existing WPCF to meet the long-term needs of the town. The evaluation considered current regulatory requirements, the age and condition of the existing equipment, the capacity of existing unit processes to meet projected flows and loads, and process reliability. Major components recommended in the plan include the following:

- Improvements to preliminary and primary treatment facilities including the replacement of the mechanical bar screens, installation of screenings grinder/washer/ compactors, construction of new aerated grit tanks and a grit washer, a new raw

sewage pump station, process and structural improvements to the primary structures to improve flow splitting to the primary settling tanks and to the Zone A aeration tanks.
- Improvements to the secondary treatment processes, including modifications to the aeration system by converting the Zone A tanks to three train operation, structural modification to facilitate the passing and removal of scum, installation of three new aeration blowers, optimization of aeration controls and methanol feed, replacement of mechanisms and drives in the final settling tanks, and improvements to process reliability and improved energy efficiency.
- Improvements to effluent disinfection and pumping including installation of new UV disinfection in a second redundant channel, new outfall pumps to handle peak hour flows and a new plant water system.
- Improvements to the solids handling system to account for increased flows and loadings including the installation of two screw presses, a mixing system in the secondary digester, new pumps, piping, boilers, and heat exchanger in the primary digester, a new cover on the secondary digester and two new sludge storage tanks for use during periods of high loadings to maintain the required SRT in the digesters.
- Improvements to the compost facility to improve operator health and safety concerns including installation of negative aeration to reduce emissions within the building and new process and electrical equipment.
- Improvements to existing Building Systems including modifications to the existing Control Building to address HVAC control issues, upgrades to specific HVAC equipment to replace items that are approaching their service life or are currently inoperable, and addressing code-related ventilation, egress and electrical classification issues in specific spaces such as the Primary Settling Tanks, Dewatering Building, Return Sludge Pump Room and Control Building.
- Improvements to the Control Building including expansion to the men's locker room, lavatory and break room.
- Upgrading the instrumentation and controls and SCADA system.
- Replacing the older electrical distribution equipment that was constructed prior tot he 2000 upgrade and modifying the remaining electrical distribution system as required based on process modifications to the facility.
- Install new odor control systems for all process areas and refurbish Biofilter B to be maintained for the compost building exhaust.

Draft Facilities Plan: View the draft Town of Fairfield Wastewater Facilities Plan.

Project Map: Location map of the Town of Fairfield WPCF.

Written comments from the public are welcomed and will be accepted until the close of business on December 7, 2017.

There will be a Public Scoping Meeting for this project:

DATE: **November 15, 2017**

TIME: 7:30pm

PLACE: Sullivan Independence Hall, 1st Floor Conference Room, 725 Old Post Road, Fairfield

NOTES: The Connecticut Department of Energy and Environmental Protection is an Affirmative Action/ Equal Opportunity Employer that is committed to complying with the requirements of the Americans with Disabilities Act. Please contact us at (860) 418-5910 or deep.accomodations@ct.gov if you: have a disability and need a communication aid or service; have limited proficiency in English and may need information in another language; or if you wish to file an ADA or Title VI discrimination complaint. Any person needing a hearing accommodation may call the State of Connecticut relay number -711. Requests for accommodations must be made at least two weeks prior to any hearing, program, or event.

Written comments and/or requests for a Public Scoping Meeting should be sent to

Name: Ann A. Straut
Agency: DEEP Bureau of Water Protection and Land Reuse, Water Planning and Management Division
Address: 79 Elm Street, Hartford CT 06106-5127
Phone: (860) 424-3137
Fax: (860) 424-4067
E-Mail: ann.straut@ct.gov

If you have questions about the public meeting, or other questions about the scoping for this project, contact:

Name: Ann A. Straut
Agency: DEEP Bureau of Water Protection and Land Reuse, Water Planning and Management Division
Address: 79 Elm Street, Hartford CT 06106-5127
Phone: (860) 424-3137
Fax: (860) 424-4067
E-Mail: ann.straut@ct.gov

If you have questions about the public meeting, or other questions about the scoping for this project, please contact Ms. Straut as directed above.

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2. Notice of Scoping for Greater Waterbury-Naugatuck Valley Regional Industrial Park Expansion Project

Municipalityies where proposed project might be located: Naugatuck/Waterbury

Address of Possible Project Location: 0 Great Hill Road, Naugatuck, CT

Project Description: The Waterbury Development Corporation, on behalf of the City of Waterbury, is requesting up to $2.8M in

Urban Act funding for the construction & extension of roadway & utilities from the existing Naugatuck Industrial Park into Waterbury. The Naugatuck Industrial Park is located in Naugatuck near the southern border of Waterbury, along Routes 8 & 68, across the street from the Naugatuck River and the Metro-North Waterbury Line, and is home to 49 companies.

The City of Waterbury owns 163 acres of land adjacent to the Industrial Park with 57 of those acres actually lying within Naugatuck. Approximately 60 acres of this property is relatively flat and suitable for development, but it is located at the highest elevation of the property that is not easily accessible from Waterbury. Currently the only access to this land from Waterbury lies along South Main Street but this option has proven to be cost prohibitive due to the property's steep grades. A concept of a regional economic development project involving the current Naugatuck Industrial Park and the adjacent City of Waterbury owned land has been agreed by both the City of Waterbury and Borough of Naugatuck. In order to provide access from Naugatuck, both the Waterbury Development Corporation and Borough of Naugatuck purchased an undeveloped 10 acre lot within the Industrial Park in order to provide the land needed for an access roadway with utilities to be extended from Naugatuck.

With the goal of unlocking the economic potential of Waterbury's land, alternate approaches have been studied but it has become clear that if access to the Waterbury owned 163 acres of land could be achieved via the Naugatuck Industrial Park, rather than the South Main street Waterbury approach, this property would become economically attractive for development. Please refer to the proposed Conceptual Layouts.

Project Map: Click here to view a map of the project area.

Written comments from the public are welcomed and will be accepted until the close of business on: December 7th.

Any person can ask the sponsoring agency to hold a Public Scoping Meeting by sending such a request to the address below. If a meeting is requested by 25 or more individuals, or by an association that represents 25 or more members, the sponsoring agency shall schedule a Public Scoping Meeting. Such requests must be made by November 17th.

Written comments and/or requests for a Public Scoping Meeting should be sent to:

Name: Nelson Tereso
Agency: CT Dept. of Economic and Community Development
Address: 450 Columbus Boulevard, Hartford CT 06103
Phone: (860) 500-2322
E-Mail: nelson.g.tereso@ct.gov

If you have questions about the public meeting, or other questions about the scoping for this project, contact:

Name: Nelson Tereso
Agency: CT Dept. of Economic and Community Development
Address: 450 Columbus Boulevard, Hartford CT 06103
Phone: (860) 500-2322
E-Mail: nelson.g.tereso@ct.gov

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3. Notice of Scoping for University of Connecticut Main Campus Parking Replacement Project

Municipality where proposed project might be located: Mansfield

Address of Possible Project Location: W Lot between State Route 195 and Tower Loop Road, and undeveloped land known as Parcel D along Discovery Drive on the University of Connecticut Storrs Campus

Project Description:
The University of Connecticut (UConn) is proposing construction of up to 1000 parking spaces through the construction of up to two elevated parking decks above a portion of W Lot and a new surface lot in Parcel D, connected to each other by a restricted access drive for buses, service, and emergencies. This project is consistent with parking priorities identified in the UConn Master Plan, including replacing spaces that are lost to new construction, prioritize decks (2-3 levels) with small footprints instead of large garages, limiting parking in the campus core and supporting a robust shuttle system. The construction of this parking within the North Campus replaces other parking to be lost within the North Campus as a result of new construction.
Project Maps: Click here to view a map of the project area. Click here to view a conceptual map of the proposed project.

Written comments from the public are welcomed and will be accepted until the close of business on: **Friday, December 22, 2017**

A **Public Scoping Meeting** will be held for this project at:
DATE: **Thursday, December 7, 2017**
TIME: 7:00 pm. (Doors will be open at 6:30 pm.)
PLACE: Konover Auditorium at the Dodd Center, 405 Babbidge Road, Unit 1205
Storrs, CT 06269-1205. The closest public parking is in the South Garage, 2366 Jim Calhoun Way, Storrs, CT 06269.
Adjacent to the UConn Bookstore.

NOTES:
To watch live go to
http://www.kaltura.com/index.php/extwidget/preview/partner_id/2090521/uiconf_id/37902451/entry_id/1_uvccae0m/embed/auto?&flashvars[streamerType]=auto for live-stream. Or go to http://ait.uconn.edu/live-streaming/; find the date and time for the event on the calendar; and choose the link based on the description on the calendar information.

Written comments should be sent to:
Name: Paul Ferri, Environmental Compliance Professional
Agency: University of Connecticut, Office of Environmental Policy
Address: 31 LeDoyt Road, Unit 3055, Storrs, CT 06269-3055
Fax: (860) 486-5477
E-Mail: paul.ferri@uconn.edu

If you have questions about the public meeting, or other questions about the scoping for this project, contact:
Name: Paul Ferri, Environmental Compliance Professional

Agency: University of Connecticut, Office of Environmental Policy

4. Notice of Scoping for University of Connecticut Northwest Science Quad Improvements

Municipality where proposed project might be located: Mansfield

Address of Possible Project Location: X Lot, Lot L, and Lot 9 and surrounding area south of King Hill Road on the University of Connecticut Storrs Campus, Mansfield, Connecticut

Project Description:
The University of Connecticut (UConn) is proposing to begin construction of the Northwest Science Quad on an approximately 22-acre site located at the northwest edge of campus which includes the existing Lot 9, X-Lot, and L-Lot. The Northwest Science Quad is identified as part of the North Eagleville Science District in the University's Campus Master Plan and is part of the capital project initiatives in support of Next Generation Connecticut to significantly expand educational opportunities, research, and innovation in the science, technology, engineering, and math (STEM) disciplines at UConn. The proposed project consists of the following:

- Science 1 building (~250,000 sf STEM Research Center
- Supplemental Utility Plant (SUP) including substation
- Surface parking
- Improvements to King Hill Road
- Possible realignment to Hillside Road and Alumni Drive
- Northern Woodland Corridor walkway
- Stormwater and utilities to serve the Northwest Science Quad
- Utility tunnel from the current Central Utility Plan (CUP) to the proposed SUP.

Science 1 building project will incorporate best practices of sustainability with a minimum goal of LEED Gold certified, with an aspirational goal of certified for the U.S. Green Building Council Sustainable SITES program.

Project Maps: Click here to view a map of the project area. Click here to view a conceptual map of the Northwest Science Quad improvements.

Written comments from the public are welcomed and will be accepted until the close of business on: **Friday, December 22, 2017**

There will be a Public Scoping Meeting for this project at:

DATE: **Thursday, December 7, 2017**

TIME: 7:00 pm. (Doors will be open at 6:30 pm.)

PLACE: Konover Auditorium at the Dodd Center, 405 Babbidge Road, Unit 1205
Storrs, CT 06269-1205. The closest public parking is in the South Garage, 2366 Jim Calhoun Way, Storrs, CT 06269. Adjacent to the UConn Bookstore.

NOTES:
To watch live go to
http://www.kaltura.com/index.php/extwidget/preview/partner_id/2090521/uiconf_id/37902451/entry_id/1_uvccae0m/embed/auto?&flashvars[streamerType]=auto
for live-stream. Or go to http://ait.uconn.edu/live-streaming/; find the date and time for the event on the calendar; and choose the link based on the description on the calendar information.

Written comments should be sent to:

Name: Paul Ferri, Environmental Compliance Professional
Agency: University of Connecticut, Office of Environmental Policy
Address: 31 LeDoyt Road, Unit 3055, Storrs, CT 06269-3055
Fax: (860) 486-5477
E-Mail: paul.ferri@uconn.edu

If you have questions about the public meeting, or other questions about the scoping for this project, contact:

Name: Paul Ferri, Environmental Compliance Professional
Agency: University of Connecticut, Office of Environmental Policy

Post-Scoping Notices: Environmental Impact Evaluation Not Required

This category is required by the October 2010 revision of the Generic Environmental Classification Document for State Agencies. A notice is published here if the sponsoring agency, after publication of a scoping notice and consideration of comments received, has determined that an Environmental Impact Evaluation (EIE) does not need to be prepared for the proposed project.

The following Post-Scoping Notice has been submitted for publication in this edition.

1. Post-Scoping Notice for Westbrook Village

Municipality where project will be located: Hartford

CEPA Determination: On November 8, 2016 the Department of Housing published a Notice of Scoping to solicit public comments for this project in the *Environmental Monitor*. During the scoping period, the DOH recevied comments from the Department of Public Healthand the Department of Energy and Environmental Protection. The DOH has taken those comments into consideration and has concluded that the project does not require the preparation of Environmental Impact Evaluation under CEPA.

The agency's conclusion is documented in a Memo of Findings and Determination and Environmental Assessment Checklist.
If you have questions about the project, you can contact the agency at:

Name: Jacqueline Simpson
Agency: Department of Housing
Address: 505 Hudson Street
Hartford, CT 06106
Phone: 860-270-8038

E-Mail: jacqueline.simpson@ct.gov

What happens next: The DOH expects the project to go forward. This is expected to be the final notice of the project to be published in the *Environmental Monitor*.

EIE Notices

After Scoping, an agency that wishes to undertake an action that could significantly affect the environment must produce, for public review and comment, a detailed written evaluation of the expected environmental impacts. This is called an Environmental Impact Evaluation (EIE).

No EIE Notice has been submitted for publication in this edition.

State Land Transfer Notices

Connecticut General Statutes Section 4b-47 requires public notice of most proposed sales and transfers of state-owned lands. The public has an opportunity to comment on any such proposed transfer. Each notice includes an address where comments should be sent. Read more about the process.

No Land Transfer Notice has been submitted for publication in this edition.

The Adobe Reader is necessary to view and print Adobe Acrobat documents, including some of the maps and illustrations that are linked to this publication. If you have an outdated version of Adobe Reader, it might cause pictures to display incompletely. To download up-to-date versions of the free software, click on the Get Acrobat button, below. This link will also provide information and instructions for downloading and installing the reader.

Download the free Acrobat Reader! Access.Adobe is a tool that allows blind and visually impaired users to read any documents in Adobe PDF format. For more information, read the product overview at Adobe.com.

Content Last Modified on 11/21/2017 9:51:03 AM

FUSS & O'NEILL

ATTENDANCE SHEET

Northwest Science Quad and
Main Campus Parking Replacement
Mansfield, Connecticut
Connecticut Environmental Policy Act (CEPA) Project Scoping

University of Connecticut

December 7, 2017 Public Scoping Meeting

NAME	ADDRESS	TELEPHONE/ EMAIL
Eric Thomas	CT DEEP 79 Elm St Hartford, CT 06106	eric.thomas@ct.gov
Sean Vasington	UConn UPDC 31 Ledoyt Rd U-3038 Storrs CT 06269	sean.vasington@uconn.edu
Michael Schrier	UCONN UPDC 31 Ledoyt RD U-3038 STORRS CT 06269	michael.schrier@uconn.edu
Linda Painter	Town of Mansfield	painterlm@mansfieldct.org

Response to Scoping Comments

CT Department of Energy and Environmental Protection provided written scoping comments from Linda Brunza, Environmental Analyst, dated December 22, 2017.			
Comment Number	Comment	Response	EIE Section
1	Consider ways to document baseline and proposed development impacts to the Eagleville Brook segment immediately downstream from the long established Eagleville Brook gaging station.	Existing ambient water quality data were reviewed for the EIE and a summary of baseline conditions is discussed in Section 3.4 (Water Resources and Floodplains).	3. 4
2	Monitor development proposals (cumulative impacts) in Eagleville Brook such as pending multi-family residential development proposals.	As noted, the Proposed Action is anticipated to have a positive impact on water quality in Eagleville Brook given the proposed improvements to the stormwater management system compared to existing parking lot conditions (see Section 3.4 – Water Resources and Floodplains and Section 3.15 – Utilities). While UConn will remain aware of development proposals adjacent to the campus, the potential cumulative impacts associated with actions undertaken by others are subject to review and approval by other state and local agencies.	3.4 and 3.15
3	Consider that actions by UConn and the Town of Mansfield to address the Eagleville Brook TMDL target goal of reducing impervious surface area by 31+ acres will likely be set back by potential increases in impervious surface from this proposed development.	If the compacted but unpaved existing parking areas are considered impervious surface, the Proposed Action will not result in a decrease in impervious area. However, an improvement in water quality (the goal of the TMDL) is anticipated since the stormwater management system will be significantly improved over existing conditions.	3.4 and 3.15; Appendix G
4	Engage the Eagleville Brook Watershed Advisory Team in project reviews and updates.	UConn remains in contact with the Eagleville Brook Watershed Advisory Team on an ongoing basis. Dr. Michael Dietz of the Advisory Team was contacted for data contained in Section 3.4 (Water Resources and Floodplains).	3.4
5	Discuss consistency with Eagleville Brook Watershed Management Plan.	Fuss & O'Neill reviewed the Eagleville Brook Watershed Management Plan. The Proposed Action is consistent with the goals outlined in the Eagleville Brook Watershed Management Plan for the existing Lot 9 site, which was identified as a high-priority retrofit site where LID practices should be implemented to manage stormwater runoff into Eagleville Brook. The Proposed Action will redevelop the Lot 9 site, effectively reducing impervious cover by disconnecting impervious cover from Eagleville Brook and implementing LID stormwater management features throughout the project site.	3.4 and 3.15; Appendix G
6	The project will need to obtain flood management certification from DEEP's Land and Water Resources Division.	Flood Management Certification will be sought for the proposed project since it is a State action affecting man-made storm drainage facilities. It is included in the list of potential permits in Section 6.	6

CT Department of Energy and Environmental Protection provided written scoping comments from Linda Brunza, Environmental Analyst, dated December 22, 2017.			
Comment Number	Comment	Response	EIE Section
7	NDDB request should be performed.	An NDDB review was requested by Fuss & O'Neill on January 9, 2018, and a determination letter was received from Dawn M. McKay, Environmental Analyst 3, dated January 17, 2018. The determination indicates that CTDEEP does not anticipate negative impacts to State-listed species as a result of the proposed activity based on the information included in the review request. A new NDDB Request for Review will be required if the scope of work changes or work has not begun by January 17, 2020. The NBBD request is	3.6; Appendix D
8	Conduct site reconnaissance by a certified soil scientist to determine whether there will be impacts to regulated wetlands or watercourses and pursue all related permitting as necessary (including 401/404 and DEEP permits).	Delineation of the wetland area on the western portion of the site was conducted in 2015 by GZA and follow up reconnaissance was performed in 2018 by F&O. The isolated wetland area on the southeastern edge of the site was delineated several years ago. A new delineation will be performed in 2018 to confirm wetland boundaries. Anticipated impacts will be subject to permitting as listed in Section 6 (Potential Certificates, Permits and Approvals).	3.5 and 6; Appendix C
9	Determine whether the project falls under the Locally Approvable or Locally Exempt category as defined in the General Permit for Stormwater and Dewatering Wastewaters from Construction Activities, and follow relevant procedures accordingly.	As a state project, the Proposed Action is considered Locally Exempt. As noted in the CTDEEP scoping comments, Locally Exempt projects with greater than 1 acre of disturbance must submit a registration form and Stormwater Pollution Control Plan (SWPCP) to CTDEEP under the requirements of the permit. Per the permit requirements, this submittal will be made at least 60 days prior to planned commencement of work. The SWPCP will include both erosion and sediment controls and plans for post-construction stormwater management.	6
10	3% of parking spaces should provide Level 2 electric vehicle charging stations for EV Readiness.	The Schematic Design currently includes an anticipated 2 EV charging stations, approximately 2% of the anticipated 180 spaces at Science 1.	n/a
11	Ensure that all on and off-road construction vehicles meet the latest EPA or CARB standards or have been retrofitted with appropriate emission controls.	All construction contracts will include language similar to the requirements for contractors in Article 39 of the Connecticut Department of Administrative Services Division of Construction Services (DCS) General Conditions of the Contract for Construction for Design-Bid-Build. These conditions include requirements that vehicles be retrofitted with emission control devices and comply with all state and federal emissions regulations.	4.4

CT Department of Energy and Environmental Protection provided written scoping comments from Linda Brunza, Environmental Analyst, dated December 22, 2017.			
Comment Number	Comment	Response	EIE Section
12	Limit idling of vehicles on site to three minutes. Post signs on site notifying all operators of this limit and include language to this effect in all construction contracts.	All construction contracts will include language similar to the requirements for contractors in Article 39 of the Connecticut Department of Administrative Services Division of Construction Services (DCS) General Conditions of the Contract for Construction for Design-Bid-Build. These conditions include a 3 minute idling limit in accordance with Section 22a-74-18(b)(3)(C).	3.8
13	Follow Connecticut Guidelines for Soil Erosion and Sediment Control.	An erosion and sedimentation control plan will be implemented for the construction phase of the project and will be incorporated into the SWPCP as required under the General Permit for Stormwater and Dewatering Wastewaters from Construction Activities which is one of the permits listed in Section 6 (Potential Certificates, Permits, and Approvals). All work will be consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control as noted in Section 3.4 .	3.4

The State of Connecticut Department of Public Health (CTDPH), Drinking Water Section provided written scoping comments from Eric McPhee, Supervising Environmental Analyst, dated December 22, 2017.			
Comment Number	Comment	Response	EIE Section
1	CTDPH noted that the project is not located in a public drinking water supply source area, and therefore no source water protection comments were necessary.	None required.	3.1
2	Focus on energy and water efficiency in Science, Technology, Engineering, and Math (STEM) buildings, which are typically resource intensive.	Science 1 incorporates energy and water efficiency and is anticipated to achieve LEED Gold certification.	3.16
3	Prioritize upgrades of inefficient energy and water users.	Science 1 incorporates energy and water efficiency and is anticipated to achieve LEED Gold certification. Water conservation continues to be an ongoing priority for the University.	3.15 and 3.16
4	Utilize reclaimed water for cooling tower water makeup, particularly in new or renovated science buildings.	Currently, reclaimed water is planned to be used for toilet flushing in Science 1 and cooling tower makeup water in the SUP.	3.15 and 3.16
5	Design and construct the Northwest Science Quad to include the Sustainable Opportunities outlined in UConn's 2015 Campus Master Plan that promote the sustainable use of public drinking water.	Numerous strategies recommended in the Sustainability Framework Plan are incorporated into the Proposed Action, including sustainable use of public drinking water.	3.15 and 3.16

The State of Connecticut Department of Public Health, Environmental Health Section provided written scoping comments from Suzanne Blaneaflor, Chief of the Environmental Health Section, dated November 22, 2017.			
Comment Number	Comment	Response	EIE Section
1	Radon resistant features should include the following: below slab installation of gas permeable layer (e.g., 4"gravel), with plastic sheeting over gas permeable layer; sealing and caulking all openings in foundation floor; installation of vent pipe from gas permeable layer to roof (e.g., 6" PVC); installation of electrical junction box for potential later tie in to vent fan.	The schematic design does not currently include specific radon resistant features, which are not required of non-residential buildings under the Connecticut State Building Code.	n/a
2	The new building should be tested for radon after construction is complete, and the aforementioned system activated if radon results are at or above 4.0 picocuries per liter.	The Science 1 building will be subject to normal UConn Environmental Health and Safety inspections.	3.11

The Town of Mansfield Planning and Zoning Commission provided written scoping comments from JoAnn Goodwin, Chair of the Commission, dated December 21, 2017. The Mansfield Town Council later voted on January 8, 2018 to endorse the comments.			
Comment Number	Comment	Response	EIE Section
1	The Commission recommends that a full Environmental Impact Evaluation (EIE) be conducted for the proposed project.	An EIE has been prepared.	n/a
2	The Commission supports pursuit of LEED Gold and Sustainable SITES certifications.	Science 1 is anticipated to achieve LEED Gold and sustainable SITES certification. The SUP is anticipated to achieve LEED Silver certification	3.16
3	Strategies recommended in the Sustainability Framework Plan adopted as part of the larger Campus Master Plan should be implemented in the project.	Numerous strategies recommended in the Sustainability Framework Plan are incorporated into the Proposed Action.	3.16
4	Conduct a full evaluation of impacts to off-campus traffic and identify any needed mitigation measures.	A traffic impact study was conducted for existing conditions and the project build year (2022) and concluded that the proposed project is not anticipated to produce significant adverse impacts to surrounding state and local road networks compared to the No Action condition.	3.14; Appendix E
5	Consider future traffic patterns related to proposed hockey rink.	Event parking will continue to be directed to the existing parking garages; no impacts to future traffic patterns are expected as a result of this project. Recently completed and on-going traffic impact analyses account for project-specific and anticipated background growth; should the hockey rink project move forward, traffic will also be assessed as part of environmental reviews and approvals conducted for that project.	3.14

The Town of Mansfield Planning and Zoning Commission provided written scoping comments from JoAnn Goodwin, Chair of the Commission, dated December 21, 2017. The Mansfield Town Council later voted on January 8, 2018 to endorse the comments.			
Comment Number	Comment	Response	EIE Section
6	Evaluate traffic impacts holistically, considering more than just the north side of campus.	A traffic impact study was conducted for existing conditions and the project build year (2022) and concluded that the proposed project is not projected to produce significant adverse impacts to surrounding state and local road networks.	3.14; Appendix E
7	Address anticipated traffic patterns on multi-event days.	Visitors for events are encouraged to park in the existing parking garages. Existing garages have sufficient capacity for event parking, and traffic patterns on multi-event days are not expected to be negatively impacted by the proposed project.	3.14
8	Include the following locations in the traffic study: the intersection of Hunting Lodge Road and North Eagleville Road, the intersection of Separatist Road and Jim Calhoun Way, and the intersection of Hunting Lodge Road and Route 44.	Each of the requested locations was included in the traffic impact analysis.	3.14; Appendix E
9	Provide the Town with an opportunity to review and comment on proposed transportation/shuttle plans for connecting the UConn community to new remote lots.	New remote parking will be located along existing bus routes (Purple Line, Blue Line) and accessible via the evening and weekend shuttle services. UConn has coordinated with the Town through the OSTA review process and will do so for future projects.	n/a
10	Provide detailed information regarding short-term replacement of W-Lot parking during garage construction.	Redevelopment of W-Lot is no longer proposed. W-Lot parking will continue to be available during the construction of the Northwest Science Quad and replacement parking at Parcel D.	n/a
11	Conduct parking study to address loss of parking from lots in proposed Northwest Science Quad, particularly impacts on attendance of events at Jorgensen Center for the Performing Arts, especially elderly and disabled access.	Existing parking garages have sufficient capacity for event parking, and event visitors will continue to be directed to the garages. No negative impacts to event parking are expected as a result of the proposed project.	3.14; Appendix E
12	Provide detailed information regarding the frequency of transit service and proposed routes.	The Northwest Science Quad will be located along the existing 2018 Blue Line, Red Line, Silver Line, and Purple Line routes and will also be accessible via the late night and weekend shuttle services.	3.14
13	Provide detailed information for plans to address parking demand during multiple on-campus events.	Existing parking garages have sufficient capacity for event parking, and event visitors will continue to be directed to the garages. No negative impacts to event parking are expected as a result of the proposed project.	3.14
14	The Commission supports use of Low-Impact Development and Green Infrastructure practices for improving stormwater quality and reducing impacts to the Eagleville Brook watershed.	A description of the LID and GI features used in the stormwater management design for the Proposed Action is included in Sections 3.4 (Water Resources and Floodplains) and Section 3.15 (Utilities).	3.4 and 3.15; Appendix G
15	Improve the pedestrian system and crossings along western portion of Eagleville Road.	The Proposed Action includes the construction of a pedestrian crossing from the Northwest Science Quad to Lot F west of the intersection of King Hill Road and North Eagleville Road.	

The Town of Mansfield Planning and Zoning Commission provided written scoping comments from JoAnn Goodwin, Chair of the Commission, dated December 21, 2017. The Mansfield Town Council later voted on January 8, 2018 to endorse the comments.			
Comment Number	Comment	Response	EIE Section
16	Provide safe pedestrian access to King Hill Road and the Northwest Science Quad.	The Woodland Corridor provides pedestrian access through the Northwest Science Quad.	3.14

Connecticut Department of
ENERGY &
ENVIRONMENTAL
PROTECTION

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To: Paul Ferri, Environmental Compliance Professional
UCONN, Office of Environmental Policy, 31 Le Doyt Road, Storrs CT

From: Linda Brunza- Environmental Analyst **Telephone:** 860-424-3739

Date: 12/22/2017 **Email**: Linda.Brunza@ct.gov

Subject: Scoping Notice for UConn Northwest Science Quad Improvements

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The Department of Energy and Environmental Protection (DEEP) has received the Notice of Scoping for the project proposed by University of Connecticut (UConn) for the construction of the Northwest Science Quad on 22 acres located on the existing Lot 9, X-Lot, and L-Lot. The project will consist of a STEM Research Center, parking, road improvements, walkway, and utilities. No detailed plans were provided in the scoping notice. The following comments are submitted for your consideration based on the information available.

Watershed Evaluation

The proposed location for the Northwest Science Quad Development project is in the contributing drainage area that influences Eagleville Brook immediately downstream from the long established Eagleville Brook gaging station. UConn should consider ways to document baseline and proposed development impacts to this segment, which has been assessed as chronically water-quality impaired for the designated "Aquatic Life Use" as well as for "Recreation Use." 1 In addition, UConn should closely follow pending multi-family residential development proposals to the Town of Mansfield along the adjacent King Road and North Eagleville Road area. 2 The past and current actions by both UConn and the Town of Mansfield to effectively address the Eagleville Brook TMDL target goal reduction of impervious surface area by an aggregate of 31+ acres will likely be significantly set back by potential increases in impervious surface area additions with this proposed development. 3 DEEP suggests that the Eagleville Brook Watershed Advisory Team be included in project reviews and updates as they reflect on potential impacts to implementation of the Eagleville Brook Watershed Management Plan. 4,5

Flood Management

Any state agency proposing an activity or critical activity within or affecting a floodplain will need to obtain flood management certification from DEEP's Land and Water Resources Division. The need to obtain certification is in accordance to Connecticut General Statutes (CGS) 25-68b, definition of "Activity." Activity is defined as any proposed state action in a floodplain *or* any proposed state action that impacts natural or man-made storm drainage facilities that are located on property that the commissioner determines to be controlled by the state. For further information 6

contact the Land and Water Resources Division at 860-424-3019, or refer to DEEP's website at Flood Management Certification Fact Sheet.

Threatened and Endangered Species

The Natural Diversity Database (NDDB) maps represent the approximate locations of species listed by the State, pursuant to section 26-306 of the CGS, as endangered, threatened or special concern. The maps are a pre-screening tool to identify potential impacts to state listed species. The location of this projects falls within one of these areas. The applicant will be required to submit a *Request for Natural Diversity Data Base (NDDB) State Listed Species Review Form* (DEEP-APP-007) and all required attachments, including maps, to the NDDB for further review. Additional information concerning NDDB reviews and the request form may be found on-line at: NDDB Requests. 7

Inland Wetlands and Watercourses

A reconnaissance of the site by a certified soil scientist is necessary to determine the if there are areas that would be regulated as wetlands or watercourses as defined by section 22a-38 (15) and (16) of the Connecticut General Statutes respectively.

Any activity within federally regulated wetland areas or watercourses at the site may require a permit from the U.S. Army Corps of Engineers pursuant to section 404 of the Clean Water Act. Further information is available on-line at Army Corps of Engineers, New England District or by calling the Corps Regulatory Branch in Concord, Massachusetts at 978-318-8338. If a permit is required from the U.S. Army Corps of Engineers, a Water Quality Certificate will also be required from DEEP pursuant to section 401 of the Clean Water Act. For further information, contact the Land and Water Resources Division at 860-424-3019. A fact sheet regarding 401 Water Quality Certification is available on-line at 401 Certification. 8

Stormwater During Construction

The general permit for Stormwater and Dewatering Wastewaters from Construction Activities may be applicable depending on the size of the disturbance regardless of phasing. This general permit applies to all discharges of stormwater and dewatering wastewater from construction activities. The construction stormwater general permit dictates separate compliance procedures for Locally Approvable projects and Locally Exempt projects (as defined in the permit). Locally Exempt construction projects disturbing over 1 acre must submit a registration form and Stormwater Pollution Control Plan (SWPCP) to the Department. Locally Approvable construction projects with a total disturbed area of one to five acres are not required to register with the Department provided the development plan has been approved by a municipal land use agency and adheres to local erosion and sediment control land use regulations and the CT Guidelines for Soil Erosion and Sediment Control. Locally Approvable construction projects with a total disturbed area of five or more acres must submit a registration form to the Department prior to the initiation of construction. This registration shall include a certification by a Qualified Professional who designed the project and a certification by a Qualified Professional or regional Conservation District who reviewed the SWPCP and deemed it consistent with the requirements of the general permit. The SWPCP for Locally Approvable projects is not required to be submitted to the Department unless requested. The SWPCP must include measures such as erosion and sediment controls and post construction stormwater management. A goal of 80 percent removal of total suspended solids from the stormwater discharge shall be used in designing and installing post-construction stormwater management measures. Stormwater treatment systems must be designed 9

to comply with the post-construction stormwater performance management requirements of the permit. These include post-construction performance standards requiring retention of the water quality volume and incorporating control measures for runoff reduction and low impact development practices. For further information, contact the division at 860-424-3018. The construction stormwater general permit registrations can now be filed electronically through DEEP's e-Filing system known as ezFile. Additional information can be found on-line at: Construction Stormwater GP.

EV Readiness

In keeping with the DEEP's interest in furthering the use of alternate fuels for transportation purposes, we recommend that Level 2 electric vehicle charging stations be included at 3% of the parking spaces in the project design. Increasing the availability of public charging stations will facilitate the introduction of the electric vehicle technology into the state and serve to alleviate the present energy dependence on petroleum and improve air quality. 10

Clean Vehicles

DEEP recommends the use of newer off-road construction equipment that meets the latest EPA or California Air Resources Board (CARB) standards. If newer equipment cannot be used, equipment with the best available controls on diesel emissions including retrofitting with diesel oxidation catalysts or particulate filters in addition to the use of ultra-low sulfur fuel would be the second choice that can be effective in reducing exhaust emissions. The use of newer equipment that meets EPA standards would obviate the need for retrofits. 11

DEEP also recommends the use of newer on-road vehicles that meet either the latest EPA or California Air Resources Board (CARB) standards for construction projects. These on-road vehicles include dump trucks, fuel delivery trucks and other vehicles typically found at construction sites. On-road vehicles older than the 2007-model year typically should be retrofitted with diesel oxidation catalysts or diesel particulate filters for projects. Again, the use of newer vehicles that meet EPA standards would eliminate the need for retrofits.

Idling

Additionally, Section 22a-174-18(b)(3)(C) of the Regulations of Connecticut State Agencies (RCSA) limits the idling of mobile sources to 3 minutes. This regulation applies to most vehicles such as trucks and other diesel engine-powered vehicles commonly used on construction sites. Adhering to the regulation will reduce unnecessary idling at truck staging zones, delivery or truck dumping areas and further reduce on-road and construction equipment emissions. Use of posted signs indicating the three-minute idling limit is recommended. It should be noted that only DEEP can enforce Section 22a-174-18(b)(3)(C) of the RCSA. Therefore, it is recommended that the project sponsor include language similar to the anti-idling regulations in the contract specifications for construction in order to allow them to enforce idling restrictions at the project site without the involvement of the DEEP. 12

Thank you for the opportunity to review this project. These comments are based on the reviews provided by relevant staff and offices within DEEP during the designated comment period. They may not represent all applicable programs within DEEP. Feel free to contact me if you have any questions concerning these comments.

Erosion and Sedimentation Control

In order to protect wetlands and watercourses on or adjacent to the site, strict erosion and sediment controls should be utilized during construction. The *Connecticut Guidelines for Soil Erosion and Sediment Control* prepared by the Connecticut Council on Soil and Water Conservation in 13

cooperation with DEEP is a recommended source of technical assistance in the selection and design of appropriate control measures. The 2002-revised edition of the Guidelines is available online at Erosion Control Guidelines.

cc: Robert Hannon, DEEP/ OPPD

STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC HEALTH

Raul Pino, M.D., M.P.H.
Commissioner

Dannel P. Malloy
Governor

Nancy Wyman
Lt. Governor

Drinking Water Section

December 22, 2017

Mr. Paul Ferri
Environmental Compliance Professional
University of Connecticut
Office of Environmental Policy
31 LeDoyt Road, Unit 3055
Storrs, CT 06269

Re: Notice of Scoping for University of Connecticut Northwest Science Quad Improvements

Dear Mr. Ferri:

The Department of Public Health (DPH) Drinking Water Section (DWS) has reviewed the above referenced Notice of Scoping published for the University of Connecticut (UCONN). UCONN proposes to begin construction of the Northwest Science Quad on an approximately 22-acre site located at the northwest edge of campus which includes the existing Lot 9, X-Lot, and L-Lot. The proposed project is not located in a public drinking water supply source water area, therefore the DWS has no source water protection comments to offer. 1

The 2015 Campus Master Plan provides a vision for the North Eagleville Science District, which includes development of the Northwest Science Quad. The DWS recommends that the Northwest Science Quad is designed and constructed to include the Sustainability Opportunities outlined in UCONN's 2015 Campus Master Plan that promote the sustainable use of public drinking water. These opportunities include but are not limited to: 2,3,4,5

- Focus on energy and water efficiency in Science, Technology, Engineering and Math (STEM) buildings, which are typically resource intensive
- Prioritize upgrades of inefficient energy and water users
- Utilize reclaimed water for cooling tower water makeup, particularly in new or renovated science buildings

Thank you for the opportunity to comment on this project. If you have any questions, please contact Pat Bisacky of my staff.

Sincerely,

Eric McPhee
Supervising Environmental Analyst
Source Assessment and Protection Unit

Phone: (860) 509-7333 • Fax: (860) 509-7359
410 Capitol Avenue, MS#12DWS, P.O. Box 340308
Hartford, Connecticut 06134-0308
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STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC HEALTH

Raul Pino, M.D., M.P.H.
Commissioner

Dannel P. Malloy
Governor

Nancy Wyman
Lt. Governor

Environmental Health Section

November 22, 2017

Paul Ferri, Environmental Compliance Professional
University of Connecticut, Office of Environmental Policy
31 LeDoyt Road, Unit 3055
Storrs, CT 06269-3055

RE: Notice of Scoping for University of Connecticut Northwest Science Quad Improvements

Dear Mr. Ferri:

A review of the scoping notice reveals a proposal to begin construction of the Northwest Science Quad on a 22-acre site, located at the northwest edge of campus. The proposal includes an occupied science building for STEM research. When a new building is to be constructed as part of a project plan, it is best practice to use radon resistant features for occupied spaces at or near ground level to decrease the risk of radon-induced lung cancer for the occupants.

The following summarizes the Department's position with regard to radon:

A. Radon

The Connecticut Department of Public Health Radon Program recommends that during the construction of an occupied building, radon resistant features should be built into the infrastructure of the building. 1

The list below describes the basic components of radon resistant new construction:

- A gas permeable layer, such as 4-inch gravel, placed beneath the slab to allow soil gases to move freely underneath the building

Keeping Connecticut Healthy
DPH
Connecticut Department of Public Health

Phone: (860) 509-7299 • Fax: (860) 509-7295
410 Capitol Avenue, P.O. Box 340308
Hartford, Connecticut 06134-0308
www.ct.gov/dph

- Plastic sheeting over the gas permeable layer and under the slab to help prevent soil gases from entering the home
- Sealing and caulking all openings in the foundation floor to reduce soil gas entry
- A vent pipe, such as 6 inch PVC pipe, to run from the gas permeable layer through the building to the roof to safely vent soil gases above the building
- An electrical junction box installed in case an electric venting fan is needed later

The new building should be tested for radon after construction is completed. If radon results are at or above 4.0 picocuries per liter (pCi/L), the existing system should be activated by installing an in-line fan.

Additional inquiries on the subject of radon resistant new construction can be directed to Allison Sullivan, Environmental Analyst 3 of the Radon Program at 860-509-7299.

Sincerely,

Suzanne Blanchard, M.S., M.P.H.
Chief, Environmental Health Section

TOWN OF MANSFIELD
PLANNING AND ZONING COMMISSION

JoAnn Goodwin, Chair

AUDREY P. BECK BUILDING
FOUR SOUTH EAGLEVILLE ROAD
MANSFIELD, CT 06268-2599
(860) 429-3330
Fax: (860) 429-6863

December 21, 2017

Mr. Paul Ferri
UConn Office of Environmental Policy
31 LeDoyt Road, U-3055
Storrs, Connecticut 06269

Subject: Main Campus Parking Replacement Project and Northwest Science Quad Scoping

Dear Mr. Ferri:

The Mansfield Planning and Zoning Commission (PZC) offers the following comments and recommendations with regard to the proposed Main Campus Parking Replacement Project and Northwest Science Quad Project. As these projects are related, we have provided one set of comments to apply to both projects. Based on the following comments, the Commission recommends that full Environmental Impact Evaluations (EIE) be conducted the proposed projects. 1

- *Sustainability.* We support UConn's goal of attaining LEED Gold and Sustainable SITES certification for the proposed projects and encourage the University to include implementation of strategies recommended in the Sustainability Framework Plan adopted as part of the larger campus master plan. 2,3

- *Off-Campus Traffic Impacts.* A full evaluation of the impacts of the proposed improvements on off-campus traffic should be conducted as part of an EIE to identify needed mitigation. As the university begins the process of shifting parking to the perimeter, it is anticipated that travel patterns will change as staff and commuter students seek alternate routes to their parking location. As such, while the improvements are concentrated on the north side of campus, the traffic study needs to be approached in a more holistic manner to understand how these changes will impact overall traffic patterns. Such evaluation should address anticipated traffic patterns on days where multiple events are scheduled on campus, including the potential locations for a new hockey rink that are currently under consideration. 4,5,6,7

  In particular, the Town has identified the need for the following additional locations to be included in the traffic study to better evaluate impact on off-campus roadways: 8

  - Intersection of Hunting Lodge Road and North Eagleville Road
  - Intersection of Hunting Lodge Road and Route 44
  - Intersection of Separatist Road and Jim Calhoun Way

- *Off-Campus Parking Impacts.* The Commission is very concerned that the proposed relocation of parking to more remote locations will result in increased demand for off-campus parking closer to the campus core. As previously stated in the Town's formal comments on the campus master plan: "The master plan takes an aggressive approach with regard to limiting parking on-campus as a

catalyst for increasing reliance on alternate modes of transportation. While we agree that such an approach is necessary if we are to change behaviors in the long-term, we are also concerned that the Town could be impacted in the short-term if staff and students seek alternative parking off-campus. We will look to the University to support the Town in any efforts needed to address off-campus parking if they arise, including financial support for enforcement if needed."

This is the first project to move a substantial amount of parking out of the campus core to the periphery. There is significant concern that the added distance and inconvenience may spur pressure for off-campus parking in adjacent neighborhoods and at Storrs Center. Intrusion into residential neighborhoods and loss of parking needed for downtown businesses would be incredibly detrimental to Town residents and businesses. As such, it is imperative that the Town be provided with an opportunity to review and comment on proposed transportation/shuttle plans for connecting faculty, students and visitors to these new remote lots. Detailed information regarding short-term plans for replacement of parking at W-Lot that will be impacted by garage construction; frequency of transit service; proposed transit routes; and plans for addressing parking demand when multiple events are occurring on-campus is needed.

9

10,12,13

- *On-Campus Parking Impacts.* In addition to a more detailed study of potential off-campus parking impacts, the evaluation should also address the potential impacts to facilities on-campus, particularly the Jorgensen Center for the Performing Arts. Much of the parking for Jorgensen is located at the Northwest Science Quad. While the north garage also provides parking for the performing arts center, it does not appear to be sufficient for popular, highly-attended events as evidenced by the use of the surface lots in the proposed Northwest Science Quad. The Town is concerned that relocation of parking may have the unintended consequence of deterring attendance of events at the performing arts center. In addition to impacts on general attendance, a parking study should also address special event parking for the elderly and disabled, as the loss of convenient parking may limit their access to events.

11

- *Stormwater.* We support the use of Low-Impact Development and Green Infrastructure practices to improve stormwater quality and reduce impacts to the Eagleville Brook watershed. The use of these practices will be particularly important given the location of the Northwest Science Quad in the Eagleville Brook watershed.

14

- *Pedestrian Safety.* With the relocation of parking and the introduction of substantial new development at the Northwest Science Quad, the existing pedestrian system along the western portion of North Eagleville Road needs to be improved, particularly with regard to crossings. Such improvements should be considered during traffic analysis, as the multitude of crossings on the eastern portion of the road can lead to traffic back-ups during heavy crossing periods. The lack of such crossings west of Discovery Drive will need to be addressed to ensure that pedestrians have safe access to King Hill Road and the Northwest Science Quad.

15, 16

- *Viewshed Analysis.* Storrs Road is one of the main gateways to campus and Mansfield, known for the iconic views of Horsebarn Hill, which are representative of the town's rural character. The west side of Storrs Road leading into campus is similarly agricultural in nature. Any addition of structured parking on the west side of the road should be hidden from view by landscaping and topography if possible; however, if the parking decks will be visible from Storrs Road, additional design treatments will be needed to reduce the visual impact of those structures on the rural character and viewsheds afforded in this area. As such, the Town recommends that a viewshed analysis be prepared as part of the environmental impact evaluation to identify the visibility of the parking decks. If a location/design alternative to limit views of the parking decks is not possible, mitigation in terms of structure design will be needed to reduce visual impacts on the landscape.

Not applicable to this Proposed Action.

These comments are based upon discussions of the Town's Traffic Authority and Planning and Zoning Commission. The Town Council will be reviewing these comments at their January 8, 2017 meeting and may issue supplemental comments at that time.

If you have any questions regarding these comments, please contact Linda Painter, Director of Planning and Development.

Sincerely,

JoAnn Goodwin
Chair, Mansfield PZC

Cc: Town Council
Planning and Zoning Commission
Mansfield Traffic Authority

TOWN OF MANSFIELD

Paul M. Shapiro, Mayor

AUDREY P. BECK BUILDING
FOUR SOUTH EAGLEVILLE ROAD
MANSFIELD, CT 06268-2599
(860) 429-3330
Fax: (860) 429-6863

January 8, 2017

Mr. Paul Ferri
UConn Office of Environmental Policy
31 LeDoyt Road, U-3055
Storrs, Connecticut 06269

Subject: Main Campus Parking Replacement Project and Northwest Science Quad Scoping

Dear Mr. Ferri:

Thank you for providing us with the opportunity to comment on the proposed Main Campus Parking Replacement and Northwest Science Quad projects as well as considering these comments outside of the formal comment period. After review, the Mansfield Town Council voted on January 8th to endorse the comments submitted by the Planning and Zoning Commission in a letter to you dated December 21, 2017.

If you have any questions regarding these comments, please contact Linda Painter, Director of Planning and Development.

Sincerely,

Paul M. Shapiro
Mayor

Cc: Town Council
Planning and Zoning Commission
Mansfield Traffic Authority

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Appendix B – SHPO Correspondence

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Connecticut
still revolutionary

Department of Economic and Community Development

State Historic Preservation Office

April 19, 2018

Diane Mas
Fuss & O'Neill
1550 Main Street, Suite 400
Springfield, MA 01103

Subject: UCONN Northwest Science Quad Project
Mansfield, CT

Dear Ms. Mas:

The State Historic Preservation Office has reviewed the information submitted for the above-named properties pursuant to the provisions of Section 106 of the National Historic Preservation Act of 1966 and the Connecticut Environmental Policy Act.

It is our opinion that the subject property does not appear to be eligible for listing on the National Register of Historic Places. Based on the information provided to this office, no historic properties will be affected.

The State Historic Preservation Office appreciates the opportunity to review and comment upon this project. These comments are provided in accordance with the Connecticut Environmental Policy Act and Section 106 of the National Historic Preservation Act. For further information please contact Todd Levine, Environmental Reviewer, at (860) 256-2759 or todd.levine@ct.gov.

Sincerely,

Catherine Labadia
Deputy State Historic Preservation Officer
cc: Williams, DEEP
Breen, acoe

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Appendix C – Wetland Delineation

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GEOTECHNICAL
ENVIRONMENTAL
ECOLOGICAL
WATER
CONSTRUCTION MANAGEMENT

1350 Main Street
Suite 1400
Springfield, MA 01103
413.726.2100
www.gza.com

September 25, 2015
GZA File No.: 05.0045498.00

John Robitaille AIA CSI
University of Connecticut
31 Ledoyt Road, Unit 3038
Storrs, CT 06269-3038

RE: Wetland Delineation Report
STEM Research Center, University of Connecticut, Storrs, CT.
Work Order No.: 901802; Contract No.: 005-2-500-103117

Dear Mr. Robitaille:

As per your request, GZA GeoEnvironmental, Inc. (GZA) is pleased to provide this report of the jurisdictional wetland areas as well as large tree inventory at the above referenced site. The delineated wetland boundaries were flagged by GZA and surveyed by the Alfred Benesch Company and are shown on the survey plans, STEM Research Center Project, September 1, 2015.

The site was evaluated on July 20, 2015 for the presence of regulated wetland resources as well as large diameter, >24" diameter breast height (DBH), trees. The evaluations were conducted by professional wetland scientists, soil scientists and biologists from GZA GeoEnvironmental, Inc. (Mr. Steven Riberdy, PWS, PSS, CWB) and Ms. Kasie Collins (PSS). Wetland resources were assessed and delineated according to State of Connecticut and Federal criteria. The wetland delineation included all wetland resource areas located within the study area.

The site is located on the University of Connecticut, Campus in Mansfield CT, roughly bounded to the north by King Hill Road, to the south by Separatist Road, to the west by Hunting Lodge Road and to the east by Alumni Drive (Figure 1). The study area is approximately 40 acres in size. The parcel is bisected on a SE-NW axis by a cleared transmission line corridor. The areas on the northeast side of this corridor contain younger forest (30-50 years old) and also several large parking areas for the campus (both paved and unpaved). Wetland areas on this side of the corridor are limited. The southwestern side of the transmission line corridor is completely forested with a mixture of forested wetland and upland habitats. The forest community on this side of the corridor is more mature with numerous trees > 24" DBH. Topography is highest in the northeast and south steadily dropping to the northwest toward Eagleville Brook. This stream system is located in the northwest portion of the parcel, with all wetland areas bordering on this stream system. Eagleville Brook flows into the study area from under King Hill Road and exits the study area under Hunting Lodge Road.

Description of Wetland Resource Areas: Most wetland areas are located on the southwestern portion of the study area and consist of a primarily large palustrine forested wetlands. This wetland is present on a northwest facing slope and has several intermittent drainages conveying surface flow toward

Proactive by Design

Eagleville Brook, which all wetlands on site directly border. The wetlands on site can be classified as a red maple swamp community with red maple the principal canopy constituent. Green ash, yellow birch and American elm are also present and constitute less than 10 percent of the total canopy. The understory is relatively open, with sapling red maple, highbush blueberry, and spicebush being most common understory species. The groundcover contains a mixed assemblage skunk cabbage, dewberry, tussock sedge, soft rush, and cinnamon fern. The adjacent upland area are dominated by a canopy dominated by red oak, white oak, black oak, tulip tree and hickory.

Soils within the wetland system generally correlate with the published soils data for the area. Observed soil conditions within the flat portions of the of the wetland along the stream system can be classified as poorly drained Leicester soils while the slope wetlands feeding into the stream were generally poorly drained Ridgebury soil types, with steep, very rocky hydric soils present. The wetland quickly transition to upland moderately well drained Woodbridge fine sandy loams.

Also located within the wetland system, near wetland flag 66-69, and completely enclosed within the larger wetland complex, is a small area of potential vernal pool habitat. Due to the time of year that the field study was conducted vernal pool fauna could not be observed in the shallow pooled water (3-6" of water) area. This area appears to be able to hold up to 24 inches of standing water prior to overflow down gradient. We recommend evaluating this area in the spring to determine if this area is functioning as vernal pool habitat.

Upland soils at the site were consistent with the mapped Woodbridge soil series, moderately well drained, sandy loam soil series. The current soils mapping shows the Woodbridge soils extend over most of the site, it should be noted much of this area on the southern portion of the parcel consists of Ridgebury soils.

Wetland resources were delineated with pink, sequentially numbered flags. Flag series WF-1 to WF-128 demarcate the outer edge of the wetland system, while flags W-1A to 7A denote the edge of the watercourse near King Hill Road.

Wetlands Jurisdiction: The wetlands on site are regulated by the local, State and Federal wetlands regulations. The Connecticut Natural Diversity Database (NDDB) program does not indicate the presence of any rare species occurrences on site, however there are NDDB areas proximal to the site, one 400 feet to the North, and a second 3,700 feet to the northwest of the site.

Functions & Values of the Wetland Resources: This wetland system primary functions are to provide wildlife habitat, protect surface water quality by filtering localized surface runoff, and provide flood storage and attenuation. Other lesser functions include production export, scenic value and nutrient retention.

Large Tree Assessment: As part of our study efforts, all trees >24" DBH were survey located, identified to species, and assessed with regards to the overall health and shape. This was done because some of

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these trees may be used as"specimen" trees as part of the proposed development. Table 1 below identifies all trees >24" DBH found on site, and these trees are also shown on the survey plans. In general, most large trees were found south and west of the transmission line corridor, where the forest community is more mature. Most trees were red oak as this is the most prevalent tree within the forest upland community. Other common large trees included white oak, black oak, sugar maple and tulip tree. Some of the sugar maples and white oaks have a sprawling growth form, and were likely pasture trees prior to the forest growing on around them 50-80 years ago. Most trees were canopy trees, with minimal understory or sub-canopy branching. Most trees examined appeared in good health, with some pear thrip damage present in the maples found along King Hill Road.

Very truly yours,

GZA GEOENVIRONMENTAL, INC.

Steven D. Riberdy, MS, PWS, CWB
Project Ecologist

Stephen Lecco, AICP, CEP
Consultant Reviewer

Dan T. Kinard
Associate Principal

Attachments:
Table 1: Large Tree Inventory
Figure 1: Locus Map
Figure 2: Soils Map
Appendix A: Wetland Delineation Data Forms

Attachments available upon request from UConn.

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Appendix D – Threatened and Endangered Species

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Connecticut Department of
ENERGY &
ENVIRONMENTAL
PROTECTION

79 Elm Street • Hartford, CT 06106-5127 www.ct.gov/deep Affirmative Action/Equal Opportunity Employer

January 17, 2018

Diane Mas
Fuss & O'Neill, Inc.
1550 Main St
Springfield, MA 01103
dmas@fando.com

Project: Construction of a NW Science Quad south of King Hill Rd, UConn, Storrs (Mansfield)
NDDB Determination No.: 201800339

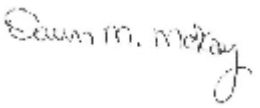
Dear Diane Mas,

I have reviewed Natural Diversity Data Base (NDDB) maps and files regarding the area delineated on the map provided for the proposed Construction of a NW Science Quad south of King Hill Rd, UConn, Storrs (Mansfield), Connecticut. I do not anticipate negative impacts to State-listed species (RCSA Sec. 26-306) resulting from your proposed activity at the site based upon the information contained within the NDDB. The result of this review does not preclude the possibility that listed species may be encountered on site and that additional action may be necessary to remain in compliance with certain state permits. This determination is good for two years. Please re-submit a new NDDB Request for Review if the scope of work changes or if work has not begun on this project by January 17, 2020.

Natural Diversity Data Base information includes all information regarding critical biological resources available to us at the time of the request. This information is a compilation of data collected over the years by the Department of Energy and Environmental Protection's Natural History Survey and cooperating units of DEEP, private conservation groups and the scientific community. This information is not necessarily the result of comprehensive or site-specific field investigations. Consultations with the Data Base should not be substitutes for on-site surveys required for environmental assessments. Current research projects and new contributors continue to identify additional populations of species and locations of habitats of concern, as well as, enhance existing data. Such new information is incorporated into the Data Base as it becomes available.

Please contact me if you have further questions at (860) 424-3592, or dawn.mckay@ct.gov . Thank you for consulting the Natural Diversity Data Base.

Sincerely,

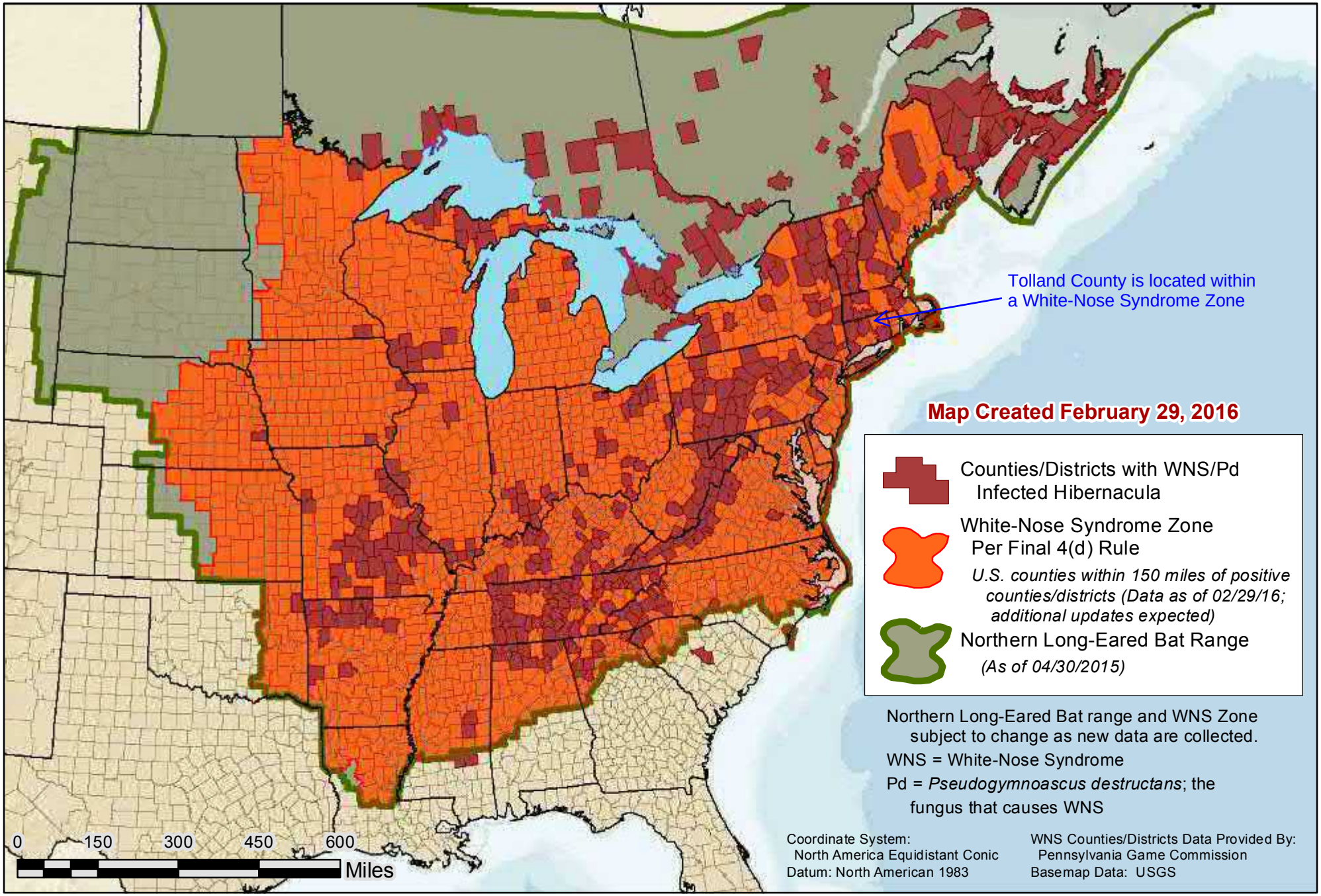


Dawn M. McKay
Environmental Analyst 3

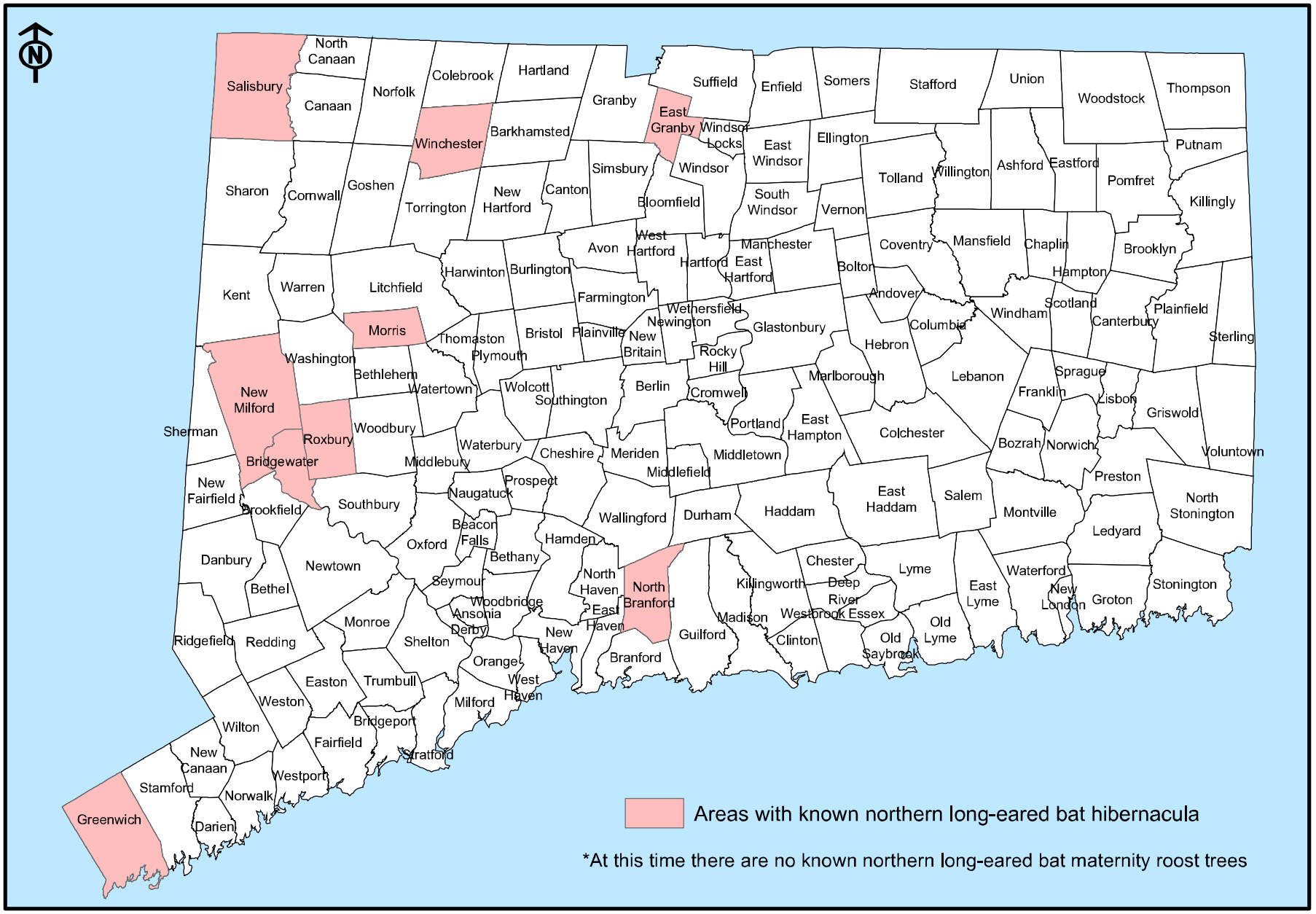
U.S. Fish & Wildlife Service

Northern Long-Eared Bat Final 4(d) Rule

White-Nose Syndrome Zone Around WNS/Pd Positive Counties/Districts



Northern long-eared bat areas of concern in Connecticut to assist with Federal Endangered Species Act Compliance



February 1, 2016

For information on federal requirements visit http://www.fws.gov/midwest/endangered/mammals/nleb/

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Appendix E – Traffic Impact Study

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Northwest Science Quad
Traffic Impact Study

University of Connecticut
Storrs, CT

August 2018

FUSS & O'NEILL

146 Hartford Road
Manchester, CT 0604

20140661.A22

FUSS & O'NEILL

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Traffic Impact Study
Northwest Science Quad
University of Connecticut
Storrs, CT

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(continued)

Traffic Impact Study
Northwest Science Quad
University of Connecticut
Storrs, CT

Appendices **End of Report**

Appendix A - Tables

Appendix B - Figures

Appendices B-F available upon request from UConn.

Appendix C

Appendix D

Appendix E

Appendix F

1 Introduction

The University of Connecticut proposes to develop the Northwest Science Quad on a 22-acre site located on the northwest portion of the Storrs campus. The site is current occupied by three campus parking lots: X Lot, L Lot and Lot 9. The site is bounded by North Eagleville Road and King Hill Road to the north, Alumni Drive to the south, Hillside Road to the east and an Eversource (utility) easement and undeveloped land to the west.

As part of the redevelopment, the approximately 900 parking spaces located in this area will be affected. There will still be faculty and handicap parking available within the Northwest Science Quad, but the majority of the existing parking will be relocated to other areas on the campus. The relocation of parking from the campus core to the perimeter is a goal identified in the recent Campus Master Plan to create a more pedestrian friendly campus core.

Because the development of the Northwest Science Quad and the construction of the first building within that quad, Science 1, includes construction of over 25,000 square feet of floor space, the project is subject to review under the Connecticut Environmental Policy Act (CEPA). Fuss & O'Neill has been retained to study the impact of the proposed development on traffic conditions throughout the adjacent roadway network in support of the CEPA documentation. A study area location map is shown on *Figure 1* of *Appendix B*.

2 Existing Condition

2.1 Site of Development

The approximately 22 acres encompassing the proposed Northwest Science Quad is currently occupied by approximately nine (9) acres of surface parking lots containing approximately 900 parking spaces and the remaining space is undeveloped, mostly forested, land.

2.2 Study Area Intersections

The following study area intersections, as shown on *Figure 1* of *Appendix B,* were reviewed:

- Route 44 (Middle Turnpike) and Discovery Drive
- SR 430 (North Eagleville Road) and Hunting Lodge Road
- SR 430 (North Eagleville Road) and Discovery Drive/Hillside Road
- Route 195 (Storrs Road) and SR 430 (North Eagleville Road)
- Route 195 (Storrs Road) and Mansfield Road/Bishop Circle
- Route 195 (Storrs Road) and Bolton Road
- Route 195 (Storrs Road) and Route 275 (South Eagleville Road)/Charles Smith Way
- Route 275 (South Eagle Road) and Separatist Road/Sycamore Drive
- Separatist Road at Jim Calhoun Way
- Route 44 (Middle Turnpike) at Hunting Lodge Road

The signalized intersection of Route 44 (Middle Turnpike) and Discovery Drive (formerly known as the North Hillside Road Extension) was built in 2015 when Discovery Drive was extended north from

Laurel Drive to intersect with Route 44 opposite Professional Park Road, which is a private commercial drive. The eastbound approach of Route 44 provides an exclusive left-turn lane, a through lane and an exclusive right-turn lane. The westbound approach of Route 44 provides an exclusive left-turn lane and a shared through/right-turn lane. Discovery Drive is a two-lane approach with a shared left-turn/through lane and an exclusive right-turn lane. Professional Park Road is a single lane approach. The signal is equipped with an exclusive pedestrian phase and allows pedestrian crossings with painted crosswalks on the north, south and east legs of the intersection.

SR 430 (North Eagleville Road) and Hunting Lodge Road is a four-leg, all-way stop controlled intersection with SR 430 running east/west and Hunting Lodge Road running north/south. The westbound leg of SR 430 provides a shared left-turn/through lane and an exclusive right-turn lane. All other legs of the intersection are single lane approaches.

SR 430 (North Eagleville Road) and Discovery Drive/Hillside Road is a four-leg, signalized intersection with SR 430 running east/west and Discovery Drive intersecting from the north directly opposite Hillside Road. The eastbound approach of SR 430 provides an exclusive left-turn lane, a through lane and an exclusive right-turn lane. Each of the other approaches to the intersection provides an exclusive left-turn lane and a shared through/right-turn lane. The signal is equipped with an exclusive pedestrian phase and allows pedestrian crossing with a painted crosswalk on the east leg of SR 430.

Route 195 (Storrs Road) and SR 430 (North Eagleville Road) is a three-leg, signalized intersection, with Route 195 running north/south and SR 430 intersecting from the west. The northbound approach of Route 195 provides and exclusive left-turn lane and a through lane. The southbound approach of Route 195 provides a through lane and an exclusive right-turn lane. The egress lane of SR 430 provides an exclusive left-turn lane and an exclusive right-turn lane onto Route 195, which are separated from the ingress lane by a raised landscaped island. The traffic signal at this intersection also controls the intersection of Route 195 and Horsebarn Hill Road, which is located approximately 300 feet south of SR 430. The signal is equipped with an exclusive pedestrian phase and allows pedestrian crossing with painted crosswalks on all legs of both intersections, except the southern leg of Route 195 at Horsebarn Hill Road.

Route 195 (Storrs Road) and Mansfield Road/Bishop Circle is a four-leg, signalized intersection with Route 195 running north/south and Mansfield Road intersecting from the west opposite Bishop Circle. The northbound approach of Route 195 provides an exclusive left-turn lane and a shared through/right-turn lane. The southbound approach of Route 195 provides an exclusive left-turn lane, a through lane and an exclusive right-turn lane. The Mansfield Road approach provides a shared left-turn/through lane and an exclusive right-turn lane, and Bishop Circle is a single lane approach. The signal is equipped with an exclusive pedestrian phase and allows pedestrian crossing with painted crosswalks on all legs of the intersection.

Route 195 (Storrs Road) and Bolton Road is a four-leg, signalized intersection with Route 195 running north/south and Bolton Road running east/west. Each approach to the intersection provides an exclusive left-turn lane and a shared through/right-turn lane. The signal is equipped with an exclusive pedestrian phase and allows pedestrian crossing with painted crosswalks on all legs of the intersection.

Route 195 (Storrs Road) and Route 275 (South Eagleville Road)/Charles Smith Way is a four-leg, signalized intersection with Route 195 running north/south and SR 430 intersecting from the west

directly opposite Charles Smith Way. The southbound approach of Route 195 provides an exclusive left-turn lane, a through lane, and a shared through/right-turn lane. All other approaches provide an exclusive left-turn lane and a shared through/right-turn lane. The signal is equipped with an exclusive pedestrian phase and allows pedestrian crossing with painted crosswalks on all legs of the intersection.

Route 275 (South Eagle Road) and Separatist Road/Sycamore Drive is a four-leg intersection with Route 275 running east/west and Separatist Road intersecting from the north opposite Sycamore Drive. Separatist Road and Sycamore Drive are stop-controlled and Route 275 runs free at this intersection. All four legs of the intersection are single lane approaches.

Separatist Road and Jim Calhoun Way is a three-leg intersection with Separatist Road running north/south and Jim Calhoun Way intersecting from the east. Jim Calhoun Way is stop-controlled and both approaches of Separatist Road run free. All three legs of the intersection are single lane approaches.

Route 44 (Middle Turnpike) at Hunting Lodge Road is a three-leg intersection with Route 44 running east/west and Hunting Lodge Road intersecting from the south. Hunting Lodge Road is stop-controlled and both approaches of Route 44 run free. All three legs of the intersection are single lane approaches.

2.3 Traffic Counts

The greatest potential for traffic impact on the roadway network by the proposed development will occur during the a.m. and p.m. peak hours, the periods when commuter and/or campus related trips are at their highest levels. In order to determine the traffic impact of the proposed development on adjacent street traffic, a.m. and p.m. peak hour manual turning movement counts were obtained on January 16, 2018 and April 26, 2018 at the ten intersections in the study area. The traffic count data collected indicates that the a.m. peak hour of traffic occurs between 7:00 a.m. and 9:00 a.m. and the p.m. peak hour occurs between 4:00 p.m. and 6:00 p.m. These peak hours were subsequently analyzed for impacts. The existing traffic volumes for these peak hours are shown in *Figure 2* of A*ppendix B.*

3 No-Build Traffic Conditions

3.1 Growth Rate

Upon consultation with the Connecticut Department of Transportation (CTDOT) the 2018 existing traffic volumes were projected to the 2022 design year using a 1.0 percent per year peak hour growth factor to account for normal traffic growth in the study area. It was also confirmed with CTDOT that there are no pending or approved developments having site related traffic in the study area. Therefore, the grown traffic volumes account for No-Build traffic volumes which are defined as design year traffic without the proposed development. These projected No-Build traffic volumes are shown in *Figure 3* of *Appendix B.*

4 Proposed Conditions

4.1 Development

The Northwest Science Quad is identified as part of the North Eagleville Science District in the University's Campus Master Plan. The Northwest Science Quad is part of the capital project initiatives in support of Next Generation Connecticut to significantly expand educational opportunities, research, and innovation in the science, technology, engineering, and math (STEM) disciplines at UConn.

The proposed construction and improvements to the 22-acre area of campus designated as the Northwest Science Quad include an approximately 200,000 square foot STEM Research Center, a supplemental utility plant, surface parking, improvements to King Hill Road, possible realignment to Hillside Road and Alumni Drive, and the Northern Woodland Corridor walkway.

As a result of the proposed construction, the approximately 900 existing parking spaces located in this area will be affected. There will still be approximately 177 parking spaces available within the Northwest Science Quad, but the majority of the existing parking will be relocated to other areas on the campus.

4.2 Trip Generation

The proposed construction of approximately 200,000 square feet of building space for STEM research is in support of the current curriculum offered at UConn. This building space will highlight and support the teaching and research capabilities for the Institute of Materials Science and Material Science Engineering currently housed in the Gant Building, and could result in an expanded program in the future, but will not result in an increase in current or projected enrollment at the university.

4.3 Trip Distribution

According to the UConn Parking Services parking lot maps, the approximately 900 existing parking spaces that will be removed due to the construction of the Northwest Science Quad will impact employees and commuting students who park in these spaces on a daily basis. The university has a proposed lot located on an undeveloped portion of campus labeled Parcel D, which will be built north of this site prior to construction of the Northwest Science Quad. Parcel D will be located on Discovery Drive, approximately ¾ mile north of SR 430 (North Eagleville Road) and will contain 705 parking spaces. It is assumed that a portion of the 900 existing parking spaces currently occupied by faculty will be accommodated either within the Northwest Science Quad or in surrounding existing lots. To be conservative in the redistribution, it is assumed that 705 vehicles will be redistributed from the area of the Northwest Science Quad to the proposed Parcel D.

Utilizing data from a traffic impact study of the Parcel D parking lot development prepared by Stantec dated April 12, 2018, and an evaluation of traffic patterns throughout the area, the arrival and departure distributions for the existing parking lots were determined and carried through all of the study area intersections. These existing distributions were then revised to account for traffic relocating from the existing parking lots on the Northwest Science Quad site to the proposed Parcel D.

The revised trip distribution for both a.m. and p.m. peak hours are shown in *Figure 4* of *Appendix B*. The redistributed volumes were applied to the study area intersections and are shown in *Figure 5* of *Appendix B*.

4.4 Build Volumes

The redistributed volumes were added to the No-Build volumes to yield the year 2022 peak hour Build traffic volumes shown in *Figure 6* of *Appendix B*.

5 Analyses

5.1 Crash Analysis

A crash analysis was conducted at each of the study area intersections. Crash data was gathered from the University of Connecticut Crash Data Repository for the most recent 3 years of available data, June 1, 2015 through May 31, 2018. A summary of the crash data per intersection and roadway segment is provided in *Table 1* of *Appendix A*. Compiled crash data records have been provided in *Appendix F*.

The intersection of Route 44 (Middle Turnpike) and Discovery Drive experienced five reported crashes during the three-year analysis period. All were angle type crashes. Two of the crashes involved property damage only, while the other three resulted in minor injuries. In all cases, the crash occurred on a clear day during daylight hours and with dry roadway conditions.

The intersection of SR 430 (North Eagleville Road) and Hunting Lodge Road experienced three reported crashes during the three-year analysis period. One involved a bicycle, which occurred on a clear day during daylight hours and with dry roadway conditions and resulted in property damage only. The other two crashes involved only motor vehicles. One was a rear-end type crash, which occurred at night under rainy and wet roadway conditions. The other was an angle crash, which occurred on a clear day during daylight hours and with dry roadway conditions. Both motor vehicle crashes resulted in property damage only.

The intersection of SR 430 (North Eagleville Road) and Discovery Drive/Hillside Road experienced eight reported crashes during the three-year analysis period. One involved a pedestrian, which occurred at night under rainy and wet roadway conditions. This crash resulted in non-life threatening injuries. The other seven crashes involved only motor vehicles. Four were sideswipe same direction crashes and four were angle crashes. Two of the seven occurred at night under rainy and wet roadway conditions and the other five occurred on clear days during daylight hours and with dry roadway conditions. All of the motor vehicle crashes resulted in property damage only.

The intersection of Route 195 (Storrs Road) and SR 430 (North Eagleville Road) experienced 12 crashes during the three-year analysis period. Nine were rear-end type crashes, two were angle crashes, and one was a side-swipe opposite direction crash. Six of the 12 occurred on a clear day during daylight hours, with dry roadway conditions, two occurred under dry roadway conditions at night, three occurred at night under rainy and wet roadway conditions, and one occurred during snowy conditions. Two of the rear-end type crashes resulted in minor injuries, all the rest of the crashes resulted in property damage only.

The intersection of Route 195 (Storrs Road) and Mansfield Road/Bishop Circle experienced six crashes during the three-year analysis period. Five were rear-end type crashes, three of which occurred at night with dry roadway conditions, one which occurred on a clear day during daylight hours with dry roadway conditions and one which occurred at night under rainy and wet roadway conditions. The sixth crash was a sideswipe same direction, which occurred at night with dry roadway conditions. One of the rear-end type crashes resulted in minor injuries, all the rest of the crashes resulted in property damage only.

The intersection of Route 195 (Storrs Road) and Bolton Road experienced 10 crashes during the three-year analysis period. Five were rear-end type crashes and two were sideswipe same direction crashes, all of which occurred on a clear day during daylight hours with dry roadway conditions. Two were angle crashes and one was a run off the road crash, all of which occurred at night with dry roadway conditions. All ten crashes resulted in property damage only.

The intersection of Route 195 (Storrs Road) and Route 275 (South Eagleville Road)/Charles Smith Way experienced 26 crashes during the three-year analysis period. Fourteen were rear-end type crashes, ten of which occurred on a clear day during daylight hours with dry roadway conditions, two of which occurred at night under rainy and wet roadway conditions, and two of which occurred at night with dry roadway conditions. Seven were angle type crashes, all of which occurred under different conditions: two clear and dry during daylight hours, one clear and dry at night, one rainy during the day, one rainy at night, one in foggy daytime conditions, and one during snow at night. Two were sideswipe same direction crashes, both of which occurred during clear conditions, one during the day and one at night. Three were run off the road crashes, one of which occurred at night with dry roadway conditions, one occurred at night under rainy and wet roadway conditions, and the third occurred at night in snowy conditions. Six of the total crashes resulted in minor injuries and the rest resulted in property damage only. Further analysis could be done to address the number of crashes experienced at this intersection during the three year review period. A review of signal timings could be made in order to determine if the timings, specifically the clearance intervals could be a contributing factor to the rear-end and angle type crashes. These recommendations are outlined in Section 6: Conclusions and Recommendations.

The intersection of Route 275 (South Eagle Road) and Separatist Road/Sycamore Drive experienced eight crashes during the three-year analysis period. Three were angle type crashes, all of which occurred at night, two under clear conditions and one in the snow. Three were run off the road type crashes, all of which on a clear day during daylight hours with dry roadway conditions. Two were rear-end type crashes, both of which occurred at night with dry roadway conditions. Two of the crashes resulted in minor injuries and the rest resulted in property damage only.

The intersection of Separatist Road and Jim Calhoun Way experienced one crash during the three year analysis period. The rear end type crash occurred during daylight hours under snow conditions and resulted in property damage only.

The intersection of Route 44 (Middle Turnpike) at Hunting Lodge Road experienced three crashes during the three year analysis period. One was an angle type crash, which occurred during daylight hours under clear conditions and resulted in a possible injury. One was a run off the road type crash, which occurred during daylight hours under snow conditions and resulted in a minor injury. The third was a sideswipe opposite direction crash, which occurred during daylight hours under clear conditions and resulted in property damage only.

5.2 Intersection Capacity Analysis

Capacity analyses for both signalized and unsignalized intersections were conducted using Synchro Professional Software, version 10.0.

In discussing intersection capacity analyses results, two terms are used to describe the operating condition of the road or intersection. These two terms are volume to capacity ratio (v/c) and level of service (LOS).

The v/c ratio is a ratio of the volume of traffic using an intersection to the total capacity of the intersection (the maximum number of vehicles that can utilize the intersection during an hour). The v/c ratio can be used to describe the percentage of capacity utilized by a single intersection movement, a combination of movements, an entire intersection approach, or the intersection as a whole.

LOS is a measure of the delay experienced by stopped vehicles at an intersection. LOS is rated on a scale from A to F, with A describing a condition of very low delay (less than 10 seconds per vehicle), and F describing a condition where delays will exceed 50 seconds per vehicle for unsignalized intersections and 80 seconds per vehicle for signalized intersections. Delay is described as a measure of driver discomfort, frustration, fuel consumption, and lost travel time. Therefore, intersections with longer delay times are less acceptable to most drivers.

LOS is generally used to describe the operation (based on delay time) of both signalized and unsignalized intersections, while v/c ratio is applied to signalized intersections only. These definitions for v/c ratio and LOS, as well as the methodology for conducting signalized and unsignalized intersection capacity analyses, are taken from the "Highway Capacity Manual 6th Edition" published by the Transportation Research Board.

In discussing two way stop controlled unsignalized intersection capacity analyses, LOS is used to provide a description of the delay and operational characteristics of the turns from the minor street (stop sign controlled) to the major street, and turns from the major street to the minor street. Through vehicles are not delayed by the minor street and do not experience delay, therefore they are not rated with a level of service.

In discussed all-way stop controlled intersection capacity analysis, LOS provides a description of the delay for each approach as well as the overall intersection.

Using the above referenced methodologies, a.m. and p.m. peak hour capacity analyses were conducted at the following signalized intersections:

- Route 44 (Middle Turnpike) and Discovery Drive
- SR 430 (North Eagleville Road) and Discovery Drive/Hillside Road
- Route 195 (Storrs Road) and SR 430 (North Eagleville Road)
- Route 195 (Storrs Road) and Mansfield Road/Bishop Circle
- Route 195 (Storrs Road) and Bolton Road
- Route 195 (Storrs Road) and Route 275 (South Eagleville Road)/Charles Smith Way

Also, a.m. and p.m. peak hour capacity analyses were conducted at the following unsignalized intersections:

- SR 430 (North Eagleville Road) and Hunting Lodge Road
- Route 275 (South Eagle Road) and Separatist Road/Sycamore Drive
- Separatist Road at Jim Calhoun Way
- Route 44 (Middle Turnpike) at Hunting Lodge Road

Tables 2 and 3 of *Appendix A* present a summary of the levels of service at the unsignalized and signalized intersections, for both No-Build and Build Conditions traffic volumes. Copies of the analysis worksheets can be found in *Appendices C and D*, for the a.m. and p.m. peak hours respectively.

The determination of the traffic impact from the proposed development is made through a comparison of the No-Build Conditions LOS (without the proposed development) versus the Build Conditions LOS (with the proposed development).

The signalized intersection of Route 44 (Middle Turnpike) and Discovery Drive operates at LOS B under the No-Build conditions during the a.m. peak hour. During the p.m. peak hour the intersection operates at a LOS C under No Build conditions. Capacity analysis shows that under Build conditions the intersection will continue to operate at LOS B during the a.m. peak hour and LOS C in the p.m. peak hour.

The signalized intersection of SR 430 (North Eagleville Road) and Discovery Drive/Hillside Road operates at a LOS D under No Build conditions in the a.m. peak hour and LOS C under No Build conditions in the p.m. peak hour. Capacity analysis revealed that under Build conditions the intersection will continue to operate at LOS D during the a.m. peak hour and will decrease to LOS D during the p.m. peak hour. This decrease in LOS is due mainly to the increase in left-turning vehicles from SR 430 eastbound onto Discovery Drive. A review of the signal operation showed that there is currently an exclusive left-turn lane for SR 430 eastbound, but this movement does not have a protected left-turn phase. An upgrade to the traffic signal equipment would provide the protected left-turn phase, which would allow the signal to continue to operate at LOS C during the p.m. peak hour and improve to LOS C during the a.m. peak hour. These improvements are outlined in Section 6: Conclusions and Recommendations.

The signalized intersection of Route 195 (Storrs Road) and SR 430 (North Eagleville Road) operates at a LOS B under No Build conditions in the a.m. and p.m. peak hours, and capacity analysis shows that the intersection will continue to operate at LOS B under Build conditions during both peak hours.

The signalized intersection of Route 195 (Storrs Road) and Mansfield Road/Bishop Circle operates at LOS A under No Build conditions during the a.m. peak hour, and capacity analysis shows that it will continue to do so under Build conditions. The intersection operates at LOS B under No Build conditions during the p.m. peak hour, and capacity analysis shows that it will decrease to LOS C under Build conditions. This is due to the increase in vehicles that will remain on Route 195 northbound under the redistributed volumes condition. LOS C is considered acceptable; therefore, no improvements are recommended.

The signalized intersection of Route 195 (Storrs Road) and Bolton Road operates at a LOS B under No Build conditions in the a.m. and p.m. peak hours, and capacity analysis shows that the intersection will continue to operate at LOS B under Build conditions during both peak hours.

The signalized intersection of Route 195 (Storrs Road) and Route 275 (South Eagleville Road)/Charles Smith Way operates at LOS B under the No-Build conditions during the a.m. peak hour. During the p.m. peak hour the intersection operates at a LOS C under No Build conditions. Capacity analysis shows that under Build conditions the intersection will continue to operate at LOS B during the a.m. peak hour and LOS C in the p.m. peak hour.

The eastbound, westbound, and northbound approaches of the unsignalized intersection of SR 430 (North Eagleville Road) and Hunting Lodge Road operate at a LOS B under No Build conditions during both the a.m. and p.m. peak hours. The southbound approach operates at a LOS C under No Build conditions during both the a.m. and LOS D during the p.m. peak hour. The redistributed traffic volumes remove vehicles from the eastbound and southbound approaches; therefore, the eastbound, westbound, and northbound approaches increase to LOS A and the southbound approach increases to LOS B under Build conditions during the a.m. peak hour and the eastbound, westbound, and northbound approaches increase to LOS B and the southbound approach increases to LOS C under Build conditions during the p.m. peak hour.

At the unsignalized intersection of Route 275 (South Eagle Road) and Separatist Road/Sycamore Drive, Route 275 runs free, therefore operates at LOS A under No Build and Build conditions during the a.m. and p.m. peak hours. The stop-controlled northbound approach of Sycamore Drive operates at LOS D during the a.m. peak hour and LOS C during the p.m. peak hour under both No Build and Build conditions. The stop-controlled southbound approach of Separatist Road operates under LOS F during both peak hours under both No Build and Build conditions. This is not an unusual LOS for a stop-controlled approach to an unsignalized intersection; therefore, in order to further analyze the impacts to this intersection, the average delay experienced by southbound vehicles was reviewed. Under No Build conditions, the average delay per vehicle is 77 seconds during the a.m. peak hour and over four minutes during the p.m. peak hour. Under Build conditions, when a portion of the traffic will be removed from this intersection due to redistribution, the average delay per vehicle decreases to 50 seconds during the a.m. peak hour and to just over three minutes in the p.m. peak hour. In order to further reduce the average delays, a review of the intersection showed that Separatist Road could possibly be widened to provide a two-lane approach. This would result in an average delay of 10 seconds for right-turning vehicles and 50 seconds for left-turning vehicles during the a.m. peak hour. The approach would also increase to LOS E during the a.m. peak hour. During the p.m. peak hour, the average delay for right-turning vehicles would be 13 seconds and for left-turning vehicles it would decrease to just over two minutes. This shows that under Build conditions, vehicular movements are improved from No Build conditions at this intersection, and could be further improved if roadway widening was found to be feasible. Further study including 24-hour traffic counts would be necessary to determine if a signal is warranted at this intersection. These recommended improvements are outlined in Section 6: Conclusions and Recommendations.

At the unsignalized intersection of Separatist Road and Jim Calhoun Way, Separatist Road runs free, therefore operates at LOS A under No Build and Build conditions during the a.m. and p.m. peak hours. The stop-controlled westbound approach of Jim Calhoun Way operates at LOS B during the a.m. peak hour and LOS C during the p.m. peak hour under both No Build and Build conditions.

At the unsignalized intersection of Route 44 (Middle Turnpike) at Hunting Lodge Road, Route 44 runs free, therefore operates at LOS A under No Build and Build conditions during the a.m. and p.m. peak hours. The stop-controlled northbound approach of Hunting Lodge Road operates at LOS B during the a.m. peak hour under No Build conditions and LOS C during the a.m. peak hour under No Build conditions and during No Build and Build conditions during the p.m. peak hour.

5.3 Queue Analysis

No-Build and Build Condition 95th percentile queue lengths were reviewed at each intersection in the study area. The 95th percentile vehicle queue lengths represent the maximum queue lengths that can be expected at each of the critical approach lanes of the study area intersections. The queue lengths are provided in the Synchro capacity analysis worksheets, which are located in *Appendix C and D*. *Tables 4 and 5* of *Appendix A* provide a summary of the queue lengths for the critical lanes at each intersection.

All queue lengths at the study intersections under Build conditions will remain at or close to No Build conditions, with the exception of the signalized intersection of SR 430 (North Eagleville Road) and Discovery Drive/Hillside Road. At this intersection, the eastbound left-turn queue length will exceed the available storage under No Build conditions during the p.m. peak hour, and will exceed it even further under Build conditions during both the a.m. and p.m. peak hours. The increase in queue length under Build conditions is due to the increase in left-turning vehicles from SR 430 eastbound onto Discovery Drive. Under improved conditions, as described in Section 5.2 above, the queue lengths will decrease. However, the decreased values still exceed the available storage length of the exclusive left-turn lane. Therefore, as part of the improvements, restriping of SR 430 to increase the eastbound left-turn could be pursued. These improvements are outlined in Section 6: Conclusions and Recommendations.

At the intersection of Route 195 (Storrs Road) and Mansfield Road/Bishop Circle, the northbound through/right-turn queue length will increase from 275 feet to 500 feet during the p.m. peak period; however, this queue length can be accommodated within the 600 feet of available storage for this approach.

6 Conclusions & Recommendations

The purpose of preparing a Traffic Impact Study is to identify the impact of the proposed development's site generated traffic. The study efforts have indicated that the proposed Northwest Science Quad will not generate any new trips to the campus. The relocation of the parking spaces currently located in the area of the Northwest Science Quad to a proposed lot on Discovery Drive north of SR 430 will result in redistributed traffic volumes in the surrounding area. Signalized and unsignalized intersections in the study area were analyzed to determine what impacts the redistributed volumes would have on the intersection capacities. Overall, the redistributed traffic will not have a significant impact to the study area intersections. While not required as part of the EIE, the areas noted in the report as potentially benefitting from infrastructure improvements or further study are described below.

The signalized intersection of SR 430 (North Eagleville Road) and Discovery Drive/Hillside Road will experience a decrease in level-of-service from C to D under Build conditions during the p.m. peak hour. This decrease in level-of-service is mainly due to the increase in left-turning vehicles from SR 430

eastbound onto Discovery Drive, which will also increase the left-turn queue length for the eastbound approach.. A review of the signal operation showed that there is currently an exclusive left-turn lane for SR 430 eastbound, but this movement does not have a protected left-turn phase. An upgrade to the traffic signal equipment would provide the protected left-turn phase, which would allow the signal to continue to operate at level-of-service C. Also, restriping of SR 430 to increase the length of the eastbound left-turn lane would provide more storage for the eastbound queue.

The unsignalized intersection of Route 275 (South Eagle Road) and Separatist Road/Sycamore Drive will experience LOS F for the stop-controlled southbound approach of Separatist Road during No Build and Build conditions and will continue to do so under Build conditions. However, a review of the average delay experienced by southbound vehicles revealed that the average delay will be decreased under Build conditions due to the redistributed traffic, and can be further decreased if Separatist Road could be widened to provide a two-lane approach. This would also result in an increase to LOS E during the a.m. peak hour. As described in Section 5.2: Intersection Capacity Analysis, further study including 24-hour traffic counts could be conducted to determine if a signal is warranted at this intersection.

In addition to the capacity analyses that were conducted as part of this report, the latest available three years of crash data at the study locations was reviewed. A pattern of crashes was noted at the intersection of Route 195 (Storrs Road) and Route 275 (South Eagleville Road)/Charles Smith Way. This intersection experienced 26 crashes during the three-year analysis period, the majority of which were rear-end type crashes and angle type crashes. A review of the traffic signal timings, specifically the clearance timings, should be conducted to ensure they are the most appropriate for this intersection. This intersection could also benefit from Police enforcement to ensure the crashes are not the result of violations.

Based on the results of the foregoing analysis, it is the professional opinion of Fuss & O'Neill, Inc. that the proposed redevelopment on the UConn campus will not have a significant impact to traffic operations within the study area.

Appendix A

Tables

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Table 1

CRASH DATA SUMMARY - 6/1/2015 - 5/31/2018 STUDY AREA: UCONN NW SCIENCE QUAD STORRS, CONNECTICUT										
Criteria	Rte 44 at Discovery Dr.	SR 430 at Hunting Lodge Rd	SR 430 at Discovery Dr.	Rte 195 at SR 430	Rte 195 at Mansfield Rd.	Rte 195 at Bolton Rd.	Rte 195 at Rte 275	Rte 275 at Separatist Rd.	*Separatist* Rd. at Jim Calhoun Way	Rte 44 at Hunting Lodge Rd.
YEAR										
2015	0	0	1	2	0	2	6	2	0	0
2016	3	2	2	4	3	4	7	0	1	2
2017	2	0	5	4	2	3	9	3	0	0
2018	0	1	0	2	1	1	4	3	0	1
Total	5	3	8	12	6	10	26	8	1	3
TYPE										
Angle	5	1	4	2	0	2	7	3	0	1
Front to Front	0	0	0	0	0	0	0	2	0	0
Front to Rear	0	1	0	8	5	5	13	0	0	0
Rear to Rear	0	0	0	1	0	0	1	0	1	0
Sideswipe-Same	0	0	3	0	1	2	2	0	0	0
Sideswipe-Opposite	0	0	0	1	0	0	0	0	0	1
Unknown/Other	0	1	1	0	0	1	3	3	0	1
Total	5	3	8	12	6	10	26	8	1	3
SEVERITY										
Property Damage Only	2	3	7	10	5	10	20	6	1	1
Non-fatal Injury	3	0	1	2	1	0	6	2	0	2

*Values indicated are number of crashes within 200 feet of each intersection during time period shown.
Data provided by the UConn Crash Repository.

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Table 2

Unsignalized Intersection Level of Service Summary
Northwest Science Quad
University of Connecticut
Storrs, CT

Stop Controlled Intersections	2022 A.M. Peak Hour		2022 P.M. Peak Hour	
	No-Build	Build	No-Build	Build
SR 430 (North Eagleville Road) and Hunting Lodge Road				
EB Approach	LOS B*	LOS A	LOS B	LOS B
WB Approach	LOS B	LOS A	LOS B	LOS B
NB Approach	LOS B	LOS A	LOS B	LOS B
SB Approach	LOS C	LOS B	LOS D	LOS C
Route 275 (South Eagle Road) and Separatist Road/Sycamore Drive				
EB Approach	LOS A	LOS A	LOS A	LOS A
WB Approach	LOS A	LOS A	LOS A	LOS A
NB Approach	LOS D	LOS D	LOS C	LOS C
SB Approach	LOS F	LOS F	LOS F	LOS F

*Values indicated are critical movement Level of Service (LOS)

Stop Controlled Intersections	2022 A.M. Peak Hour		2022 P.M. Peak Hour	
	No-Build	Build	No-Build	Build
Separatist Road and Jim Calhoun Way				
WB Approach	LOS B	LOS B	LOS C	LOS C
NB Approach	LOS A	LOS A	LOS A	LOS A
SB Approach	LOS A	LOS A	LOS A	LOS A
Hunting Lodge Road and Route 44				
EB Approach	LOS A	LOS A	LOS A	LOS A
WB Approach	LOS A	LOS A	LOS A	LOS A
NB Approach	LOS B	LOS C	LOS C	LOS C

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Table 3

Signalized Intersection Level of Service Summary
Northwest Science Quad
University of Connecticut
Storrs, CT

Signalized Intersections	2022 A.M. Peak Hour			2022 P.M. Peak Hour		
	No-Build	Build	Build w/ Improvements	No-Build	Build	Build w/ Improvements
Route 44 (Middle Turnpike) and Discovery Drive	0.65/LOS B*	0.65/LOS B	0.65/LOS B	0.52/LOS C	0.56/LOS C	0.56/LOS C
SR 430 (North Eagleville Road) and Discovery Drive/Hillside Road	0.47/LOS D	0.77/LOS D	0.79/LOS C	0.55/LOS C	0.89/LOS D	0.84/LOS C
Route 195 (Storrs Road) and SR 430 (North Eagleville Road)	0.49/LOS B	0.49/LOS B	0.49/LOS B	0.53/LOS B	0.59/LOS B	0.59/LOS B
Route 195 (Storrs Road) and Mansfield Road/Bishop Circle	0.36/LOS A	0.41/LOS A	0.41/LOS A	0.58/LOS B	0.70/LOS C	0.70/LOS C
Route 195 (Storrs Road) and Bolton Road	0.40/LOS B	0.43/LOS B	0.43/LOS B	0.53/LOS B	0.58/LOS B	0.58/LOS B
Route 195 (Storrs Road) and Route 275 (South Eagleville Road)/Charles Smith Way	0.68/LOS B	0.69/LOS B	0.69/LOS B	0.66/LOS C	0.68/LOS C	0.68/LOS C

*Values indicated are intersection v/c Ratio/LOS

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Table 4

A.M. Peak Hour Queue Length Summary
Northwest Science Quad
University of Connecticut
Storrs, CT

Intersection	Approach Lane	2022 No-Build Queue	2022 Build Queue	2022 Build w/ Imp Queue	Available Storage
Route 44 (Middle Turnpike) and Discovery Drive	EB Left Turn	10 Feet	15 Feet	15 Feet	200 Feet
	EB Thru	140 Feet	140 Feet	140 Feet	>1000 Feet
	EB Right Turn	30 Feet	25 Feet	25 Feet	200 Feet
	WB Left Turn	225 Feet	225 Feet	225 Feet	280 Feet
	WB Thru/Right Turn	150 Feet	150 Feet	150 Feet	>1000 Feet
	NB Left Turn/Thru	15 Feet	15 Feet	15 Feet	>1000 Feet
	NB Right Turn	10 Feet	10 Feet	10 Feet	150 Feet
	SB Approach	20 Feet	20 Feet	20 Feet	200 Feet
SR 430 (North Eagleville Road) and Discovery Drive/Hillside Road	EB Left Turn	30 Feet	150 Feet	110 Feet	50 Feet
	EB Thru	30 Feet	30 Feet	35 Feet	1000 Feet
	EB Right Turn	20 Feet	20 Feet	10 Feet	100 Feet
	WB Left Turn	25 Feet	25 Feet	30 Feet	200 Feet
	WB Thru/Right Turn	20 Feet	25 Feet	45 Feet	>1000 Feet
	NB Left Turn	25 Feet	25 Feet	15 Feet	190 Feet
	NB Thru/Right Turn	95 Feet	95 Feet	70 Feet	500 Feet
	SB Left Turn	45 Feet	45 Feet	35 Feet	200 Feet
	SB Thru/Right Turn	470 Feet	470 Feet	340 Feet	>1000 Feet
Route 195 (Storrs Road) and SR 430 (North Eagleville Road)	EB Left Turn	70 Feet	70 Feet	70 Feet	100 Feet
	EB Right Turn	20 Feet	20 Feet	20 Feet	100 Feet
	NB Left Turn	25 Feet	45 Feet	45 Feet	250 Feet
	NB Thru	85 Feet	85 Feet	85 Feet	250 Feet
	SB Thru	510 Feet	510 Feet	510 Feet	>1000 Feet
	SB Right Turn	30 Feet	30 Feet	30 Feet	150 Feet

Intersection	Approach Lane	2022 No-Build Queue	2022 Build Queue	2022 Build w/ Imp Queue	Available Storage
Route 195 (Storrs Road) and Mansfield Road/Bishop Circle	EB Thru/Left Turn	45 Feet	45 Feet	45 Feet	780 Feet
	EB Right Turn	0 Feet	0 Feet	0 Feet	250 Feet
	WB Approach	20 Feet	20 Feet	20 Feet	280 Feet
	NB Left Turn	5 Feet	5 Feet	5 Feet	150 Feet
	NB Thru/Right Turn	245 Feet	305 Feet	305 Feet	600 Feet
	SB Left Turn	15 Feet	15 Feet	15 Feet	130 Feet
	SB Thru	160 Feet	150 Feet	150 Feet	>1000 Feet
	SB Right Turn	25 Feet	25 Feet	25 Feet	170 Feet
Route 195 (Storrs Road) and Bolton Road	EB Left Turn	20 Feet	20 Feet	20 Feet	250 Feet
	EB Thru/Right Turn	10 Feet	10 Feet	10 Feet	>1000 Feet
	WB Left Turn	25 Feet	25 Feet	25 Feet	100 Feet
	WB Thru/Right Turn	25 Feet	25 Feet	25 Feet	100 Feet
	NB Left Turn	50 Feet	45 Feet	45 Feet	125 Feet
	NB Thru/Right Turn	215 Feet	245 Feet	245 Feet	>1000 Feet
	SB Left Turn	20 Feet	20 Feet	20 Feet	350 Feet
	SB Thru/Right Turn	210 Feet	210 Feet	210 Feet	600 Feet
Route 195 (Storrs Road) and Route 275 (South Eagleville Road)/Charles Smith Way	EB Left Turn	125 Feet	125 Feet	125 Feet	280 Feet
	EB Thru/Right Turn	120 Feet	120 Feet	120 Feet	>1000 Feet
	WB Left Turn	35 Feet	35 Feet	35 Feet	140 Feet
	WB Thru/Right Turn	80 Feet	80 Feet	80 Feet	450 Feet
	NB Left Turn	115 Feet	105 Feet	105 Feet	210 Feet
	NB Thru/Right Turn	340 Feet	350 Feet	350 Feet	>1000 Feet
	SB Left Turn	15 Feet	15 Feet	15 Feet	400 Feet
	SB Thru/Right Turn	40 Feet	40 Feet	40 Feet	>1000 Feet

NOTE: Values indicated represent 95th percentile (design) vehicle queue lengths. Values are rounded to the nearest 5 feet.

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Table 5

P.M. Peak Hour Queue Length Summary
Northwest Science Quad
University of Connecticut
Storrs, CT

Intersection	Approach Lane	2022 No-Build Queue	2022 Build Queue	2022 Build w/ Imp Queue	Available Storage
Route 44 (Middle Turnpike) and Discovery Drive	EB Left Turn	15 Feet	15 Feet	15 Feet	200 Feet
	EB Thru	145 Feet	145 Feet	145 Feet	>1000 Feet
	EB Right Turn	0 Feet	35 Feet	35 Feet	200 Feet
	WB Left Turn	85 Feet	85 Feet	85 Feet	280 Feet
	WB Thru/Right Turn	180 Feet	175 Feet	175 Feet	>1000 Feet
	NB Left Turn/Thru	75 Feet	90 Feet	90 Feet	>1000 Feet
	NB Right Turn	50 Feet	50 Feet	50 Feet	150 Feet
	SB Approach	20 Feet	20 Feet	20 Feet	200 Feet
SR 430 (North Eagleville Road) and Discovery Drive/Hillside Road	EB Left Turn	75 Feet	315 Feet	185 Feet	50 Feet
	EB Thru	65 Feet	65 Feet	65 Feet	1000 Feet
	EB Right Turn	0 Feet	0 Feet	0 Feet	100 Feet
	WB Left Turn	30 Feet	30 Feet	30 Feet	200 Feet
	WB Thru/Right Turn	50 Feet	60 Feet	230 Feet	>1000 Feet
	NB Left Turn	80 Feet	80 Feet	85 Feet	190 Feet
	NB Thru/Right Turn	455Feet	455 Feet	470 Feet	500 Feet
	SB Left Turn	45 Feet	45 Feet	45 Feet	200 Feet
	SB Thru/Right Turn	215 Feet	215 Feet	220 Feet	>1000 Feet
Route 195 (Storrs Road) and SR 430 (North Eagleville Road)	EB Left Turn	155 Feet	155 Feet	155 Feet	100 Feet
	EB Right Turn	65 Feet	65 Feet	65 Feet	100 Feet
	NB Left Turn	35 Feet	90 Feet	90 Feet	250 Feet
	NB Thru	300 Feet	300 Feet	300 Feet	250 Feet
	SB Thru	370 Feet	370 Feet	370 Feet	>1000 Feet
	SB Right Turn	20 Feet	20 Feet	20 Feet	150 Feet

Intersection	Approach Lane	2022 No-Build Queue	2022 Build Queue	2022 Build w/ Imp Queue	Available Storage
Route 195 (Storrs Road) and Mansfield Road/Bishop Circle	EB Thru/Left Turn	70 Feet	70 Feet	70 Feet	780 Feet
	EB Right Turn	25 Feet	25 Feet	25 Feet	250 Feet
	WB Approach	60 Feet	60 Feet	60 Feet	280 Feet
	NB Left Turn	35 Feet	15 Feet	15 Feet	150 Feet
	NB Thru/Right Turn	275 Feet	500 Feet	500 Feet	600 Feet
	SB Left Turn	30 Feet	30 Feet	30 Feet	130 Feet
	SB Thru	265 Feet	265 Feet	265 Feet	>1000 Feet
	SB Right Turn	35 Feet	35 Feet	35 Feet	170 Feet
Route 195 (Storrs Road) and Bolton Road	EB Left Turn	40 Feet	40 Feet	40 Feet	250 Feet
	EB Thru/Right Turn	85 Feet	85 Feet	85 Feet	>1000 Feet
	WB Left Turn	55 Feet	55 Feet	55 Feet	100 Feet
	WB Thru/Right Turn	35 Feet	35 Feet	35 Feet	100 Feet
	NB Left Turn	45 Feet	20 Feet	20 Feet	125 Feet
	NB Thru/Right Turn	260 Feet	350 Feet	350 Feet	>1000 Feet
	SB Left Turn	30 Feet	30 Feet	30 Feet	350 Feet
	SB Thru/Right Turn	345 Feet	345 Feet	345 Feet	600 Feet
Route 195 (Storrs Road) and Route 275 (South Eagleville Road)/Charles Smith Way	EB Left Turn	160 Feet	160 Feet	145 Feet	280 Feet
	EB Thru/Right Turn	300 Feet	300 Feet	285 Feet	>1000 Feet
	WB Left Turn	155 Feet	155 Feet	145 Feet	140 Feet
	WB Thru/Right Turn	200 Feet	200 Feet	195 Feet	450 Feet
	NB Left Turn	70 Feet	55 Feet	35 Feet	210 Feet
	NB Thru/Right Turn	235 Feet	260 Feet	255 Feet	>1000 Feet
	SB Left Turn	25 Feet	25 Feet	20 Feet	400 Feet
	SB Thru/Right Turn	155 Feet	155 Feet	150 Feet	>1000 Feet

NOTE: Values indicated represent 95th percentile (design) vehicle queue lengths. Values are rounded to the nearest 5 feet.

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Appendix F – Environmental Database Search Report

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UCONN Northwest Science Quad
King Hill Road & Alumni Drive
Storrs Mansfield, CT 06268

Inquiry Number: 5117897.2s
November 27, 2017

The EDR Radius Map™ Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

TABLE OF CONTENTS

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

KING HILL ROAD & ALUMNI DRIVE
STORRS MANSFIELD, CT 06268

COORDINATES

Latitude (North):	41.8077350 - 41° 48' 27.84''
Longitude (West):	72.2603660 - 72° 15' 37.31''
Universal Tranverse Mercator:	Zone 18
UTM X (Meters):	727587.8
UTM Y (Meters):	4631845.0
Elevation:	585 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	5642409 COVENTRY, CT
Version Date:	2012
East Map:	5642455 SPRING HILL, CT
Version Date:	2012

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140712
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
KING HILL ROAD & ALUMNI DRIVE
STORRS MANSFIELD, CT 06268

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
A1	UCONN ON-CAMPUS HOUS	ALUMNI DRIVE	FINDS, ECHO		TP
A2	UCONN ON-CAMPUS HOUS	ALUMNI DR	CT NPDES		TP
A3	UCONN FOUNDATION OFF	ALUMNI ROAD	CT SDADB, CT SPILLS		TP
A4	UCONN GEOPHYSICS BLD	UCONN CAMPUS	CT LUST, CT CPCS		TP
B5		STORRS-MANSFIELD/ 29	CT SPILLS	Lower	1 ft.
A6		17 KING HILL RD	CT SPILLS	Lower	1 ft.
C7	PAROUSIA PRESS (FORM	153 NORTH EAGLEVILLE	CT RGA LUST	Lower	32, 0.006, WNW
C8	PAROUSIA PRESS (FORM	153 NORTH EAGLEVILLE	CT LUST, CT CPCS	Lower	32, 0.006, WNW
C9	HIRSCH PROPERTY	153 NORTH EAGLEVILLE	CT SDADB	Lower	32, 0.006, WNW
10		ALUMNI AND HILLSIDE	CT SPILLS	Lower	36, 0.007, ENE
C11		EAGLEVILLE BROOK AT	CT SPILLS	Lower	70, 0.013, WNW
C12		KING HILL ROAD/EAGLE	CT SPILLS	Lower	70, 0.013, WNW
C13		NORTH EAGLEVILLE ROA	CT SPILLS	Lower	70, 0.013, WNW
C14		NO. EAGLEVILLE RD. &	CT SPILLS	Lower	70, 0.013, WNW
C15		NORTH EAGLEVILLE AND	CT SPILLS	Lower	70, 0.013, WNW
C16		KINGS HILL RD & NORT	CT SPILLS	Lower	70, 0.013, WNW
C17		NORTH EAGLEVILLE RD	CT SPILLS	Lower	152, 0.029, WNW
C18		UCONN CAMPUS N. EAGL	CT SPILLS	Lower	152, 0.029, WNW
B19		KING HILL RD STORRS	CT SPILLS	Lower	192, 0.036, NNW
D20		NORTH EAGLE RD AT DB	CT SPILLS	Lower	202, 0.038, North
E21		STORRS-MANSFIELD 1	CT SPILLS	Lower	211, 0.040, NNE
E22		CONNER STADIUM AND H	CT SPILLS	Lower	221, 0.042, NNE
E23		UCONN, MATERIAL SCIE	CT SPILLS	Lower	221, 0.042, NNE
D24		STAFF LOT 9	CT SPILLS	Lower	225, 0.043, North
F25		HILLSIDE ROAD INTERS	CT SPILLS	Lower	229, 0.043, NE
G26		NORTH EAGLEVILLE RD/	CT SPILLS	Lower	233, 0.044, West
E27		N. EAGLEVILLE RD AT	CT SPILLS	Lower	240, 0.045, NNE
D28		STAFF LOT 9-A	CT SPILLS	Lower	241, 0.046, NNW
D29	SPIKES SERVICE STATI	125 NORTH EAGLEVILLE	EDR Hist Auto	Lower	280, 0.053, North
E30		NORTH EAGLEVILLE RD,	CT SPILLS	Lower	288, 0.055, NNE
D31		LEDOYT RD/N. EAGLEVI	CT SPILLS	Lower	297, 0.056, NNW
D32		122 NORTH EAGLEVILLE	CT SPILLS	Lower	310, 0.059, North
F33		121 NORTH EAGLEVILL	CT SPILLS	Lower	319, 0.060, NE
D34		126 NORT EAGLEVILLE	CT SPILLS	Lower	319, 0.060, North
D35		NORTH EAGLEVILLE RD	CT SPILLS	Lower	319, 0.060, North
D36		STORRS-MANSFIELD 126	CT SPILLS	Lower	319, 0.060, North
D37		X-LOT 126 NORTH EAGL	CT SPILLS	Lower	319, 0.060, North
H38		2376 ALUMNI DRIVE	CT SPILLS	Higher	328, 0.062, SE
G39		N EAGLEVILLE/HUNTING	CT SPILLS	Lower	329, 0.062, West

MAPPED SITES SUMMARY

Target Property Address:
KING HILL ROAD & ALUMNI DRIVE
STORRS MANSFIELD, CT 06268

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
D40		UCONN CAMPUS IMS ROO	CT SPILLS	Lower	331, 0.063, North
D41		126 NORTH EAGLEVILLE	CT SPILLS	Lower	333, 0.063, NNW
D42	UCONN FIRE DEPARTMEN	126 N EAGLEVILLE RD	CT UST	Lower	333, 0.063, NNW
D43	UNIVERSITY OF CT	128 N EAGLEVILLE RD	CT MANIFEST	Lower	338, 0.064, NNW
D44	UCONN	128 N EAGLEVILLE RD	CT MANIFEST	Lower	338, 0.064, NNW
D45	U-CONN MTR POOL	128 N EAGLEVILLE RD	CT MANIFEST	Lower	338, 0.064, NNW
46		44 CHENEY DRIVE	CT SPILLS	Higher	357, 0.068, South
E47		STORRS-MANSFIELD 110	CT SPILLS	Higher	388, 0.073, NNE
I48		STORRS-MANSFIELD, 19	CT SPILLS	Higher	389, 0.074, ENE
F49		EAGLEVILLE RD & HILL	CT SPILLS	Lower	390, 0.074, NE
F50		NORTH EAGLEVILLE/HIL	CT SPILLS	Lower	390, 0.074, NE
F51		GAMPT COMPLEX UCOON	CT SPILLS	Lower	390, 0.074, NE
F52		NORTH EAGLEVILLE RD/	CT SPILLS	Lower	390, 0.074, NE
F53		STORRS, STAFF LOT 9	CT SPILLS	Lower	390, 0.074, NE
F54		EAGLEVILLE RD/HILLSI	CT SPILLS	Lower	390, 0.074, NE
F55		STORRS-MANSFIELD, NO	CT SPILLS	Lower	390, 0.074, NE
E56		110 NORTH EAGLEVILLE	CT SPILLS	Higher	391, 0.074, NNE
E57		GOODYEAR HALL - 110	CT SPILLS	Higher	392, 0.074, NNE
E58		110 NORTH EAGLEVILLE	CT SPILLS	Higher	393, 0.074, NNE
G59		HUNTING LODGE RD AND	CT SPILLS	Lower	412, 0.078, West
G60		NO EAGLEVILLE/HUNTIN	CT SPILLS	Lower	412, 0.078, West
F61		STORRS-MANSFIELD -UC	CT SPILLS	Lower	420, 0.080, NE
I62		HILLSIDE DRIVE (GAMP	CT SPILLS	Higher	426, 0.081, ENE
63	UNIVERSITY OF CONNEC	OFF NORTH EAGLEVILLE	SEMS	Lower	429, 0.081, WNW
E64		N. EAGLEVILLE RD NOR	CT SPILLS	Higher	430, 0.081, NNE
F65		IMS BUILDING RM 215	CT SPILLS	Lower	433, 0.082, NE
H66		PUTNUM REFRECTORY, A	CT SPILLS	Higher	465, 0.088, SE
H67		STORRS-MANSFIELD, PU	CT SPILLS	Higher	465, 0.088, SE
I68		U T C ENG BLDG	CT SPILLS	Higher	479, 0.091, ENE
I69	UNIVERSITY OF CONN	189 AUDITORIUM RD	CT MANIFEST	Higher	487, 0.092, ENE
I70	UNIVERSITY OF CONN H	189 AUDITORIUM RD	CT MANIFEST	Higher	487, 0.092, ENE
I71	UCONN POWER PLANT	189 AUDITORIUM RD	CT UST	Higher	487, 0.092, ENE
I72	UNIVERSITY OF CONNEC	233 GLENBROOK ROAD	RCRA NonGen / NLR, PADS, RI MANIFEST	Higher	487, 0.092, ENE
I73	UNIVERSITY OF COONNE	189 189 AUDITORIUM R	CT MANIFEST	Higher	487, 0.092, ENE
I74	UNIVERSITY OF CONNEC	189 AUDITORIUM RD	CT MANIFEST	Higher	487, 0.092, ENE
I75	UNIVERSITY OF CT	189 AUDITORIUM RD	CT MANIFEST	Higher	487, 0.092, ENE
J76		NO. EAGLE VILLE RD.	CT SPILLS	Higher	502, 0.095, NE
77		134 NO. EAGLEVILLE R	CT SPILLS	Lower	537, 0.102, NNW
K78	JORGENSEN AUDITORIUM	2132 HILLSIDE RD	CT UST	Higher	580, 0.110, East

MAPPED SITES SUMMARY

Target Property Address:
KING HILL ROAD & ALUMNI DRIVE
STORRS MANSFIELD, CT 06268

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
J79		NORTH WEST DINING HA	CT SPILLS	Higher	586, 0.111, NNE
J80		NORTH EAGLEVILLE ROA	CT SPILLS	Higher	586, 0.111, NNE
K81		UCONN CAMPUS 2132 HI	CT SPILLS	Higher	589, 0.112, East
82		CHEENY DR ORCHARD AC	CT SPILLS	Higher	601, 0.114, South
K83		GLENBROOK RD . & HIL	CT SPILLS	Higher	614, 0.116, East
K84		GLENBROOK/HILLSIDE	CT SPILLS	Higher	616, 0.117, East
J85		97 NORTH EAGLEVILL R	CT SPILLS	Higher	636, 0.120, NE
J86		STORRS-MANSFIELD UCO	CT SPILLS	Higher	636, 0.120, NE
J87		STORRS-MANSFIELD, 97	CT SPILLS	Higher	636, 0.120, NE
J88		97 NORTH EAGLEVILLE	CT SPILLS	Higher	636, 0.120, NE
J89		97 NORTH EAGLEVILLE	CT SPILLS	Higher	638, 0.121, NE
J90		STORRS-MANSFIELD 97	CT SPILLS	Higher	639, 0.121, NE
J91		STORRS-MANSFIELD 97	CT SPILLS	Higher	640, 0.121, NE
92	UNIVERSITY OF CONNEC	25 LEDOYT ROAD U-38	CT UST	Lower	857, 0.162, NNW
93	UCONN - TORREY LIFE	75 N EAGLEVILLE RD	CT UST	Higher	999, 0.189, NE
L94	UNIVERSITY OF CONNEC	NORTH EAGLEVILLE ROA	CT LWDS	Lower	1123, 0.213, NW
L95	UNIVERSITY OF CONNEC	TECHNICAL PARK AND M	CT LWDS	Lower	1229, 0.233, NW
M96	UCONN PUMPING STATIO	FENTON RIVER	CT LUST, CT CPCS	Higher	1367, 0.259, East
M97	UCONN PHYSICS DEPT.	N. EAGLEVILL RD.	CT LUST, CT CPCS	Higher	1367, 0.259, East
M98	UCONN GLENNBROOK ROA	GLENNBROOK ROAD	CT LUST, CT CPCS	Higher	1367, 0.259, East
99	RICHARD CLOCK	65 MEADOWOOD RD.	CT LUST, CT SPILLS, CT CPCS	Lower	1983, 0.376, WSW
100	DAIRY MART	NORTH EAGLEVILLE ROA	CT SHWS, CT SDADB, CT LUST, CT SPILLS, CT CPCS	Lower	1988, 0.377, NW
101	NORTHWOOD APARTMENT	1 NORTHWOOD RD	CT LUST, CT UST	Lower	2629, 0.498, WSW

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was identified in the following records. For more information on this property see page 8 of the attached EDR Radius Map report:

Site	Database(s)	EPA ID
UCONN ON-CAMPUS HOUS ALUMNI DRIVE STORRS, CT 06269	FINDS Registry ID:: 110067602678 ECHO	N/A
UCONN ON-CAMPUS HOUS ALUMNI DR STORRS, CT 06269	CT NPDES Permit Number: GSN000315 Permit Number: GSN002852 Status: Expired Status: Active	N/A
UCONN FOUNDATION OFF ALUMNI ROAD MANSFIELD, CT 06268	CT SDADB Facility Id: 3733 CT SPILLS Facility Status: closed Case Number: 9604607	N/A
UCONN GEOPHYSICS BLD UCONN CAMPUS STORRS, CT 6268	CT LUST Lust Status: 1 LUST Id: 45120 CT CPCS Lust Status: Pending	N/A

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL ---------- National Priority List
Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ---------- National Priority List Deletions

EXECUTIVE SUMMARY

Federal CERCLIS list

FEDERAL FACILITY ..... Federal Facility Site Information listing

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE ..... Superfund Enterprise Management System Archive

Federal RCRA CORRACTS facilities list

CORRACTS ..... Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ..... RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ..... RCRA - Large Quantity Generators
RCRA-SQG ..... RCRA - Small Quantity Generators
RCRA-CESQG ..... RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

LUCIS ..... Land Use Control Information System
US ENG CONTROLS ..... Engineering Controls Sites List
US INST CONTROL ..... Sites with Institutional Controls

Federal ERNS list

ERNS ..... Emergency Response Notification System

State and tribal landfill and/or solid waste disposal site lists

CT SWF/LF ..... List of Landfills/Transfer Stations

State and tribal leaking storage tank lists

INDIAN LUST ..... Leaking Underground Storage Tanks on Indian Land

State and tribal registered storage tank lists

FEMA UST ..... Underground Storage Tank Listing
CT AST ..... Marine Terminals and Tank Information
INDIAN UST ..... Underground Storage Tanks on Indian Land

State and tribal institutional control / engineering control registries

CT ENG CONTROLS ..... Engineering Controls Listing
CT AUL ..... ELUR Sites

State and tribal voluntary cleanup sites

CT VCP ..... Voluntary Remediation Sites

INDIAN VCP ---- Voluntary Cleanup Priority Listing

State and tribal Brownfields sites

CT BROWNFIELDS ---- Brownfields Inventory

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS ---- A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

CT SWRCY ---- Recycling Facilities
INDIAN ODI ---- Report on the Status of Open Dumps on Indian Lands
ODI ---- Open Dump Inventory
DEBRIS REGION 9 ---- Torres Martinez Reservation Illegal Dump Site Locations
IHS OPEN DUMPS ---- Open Dumps on Indian Land

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL ---- Delisted National Clandestine Laboratory Register
CT CDL ---- Clandestine Drug Lab Listing
US CDL ---- National Clandestine Laboratory Register

Local Land Records

CT PROPERTY ---- Property Transfer Filings
CT LIENS ---- Environmental Liens Listing
LIENS 2 ---- CERCLA Lien Information

Records of Emergency Release Reports

HMIRS ---- Hazardous Materials Information Reporting System

Other Ascertainable Records

FUDS ---- Formerly Used Defense Sites
DOD ---- Department of Defense Sites
SCRD DRYCLEANERS ---- State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR ---- Financial Assurance Information
EPA WATCH LIST ---- EPA WATCH LIST
2020 COR ACTION ---- 2020 Corrective Action Program List
TSCA ---- Toxic Substances Control Act
TRIS ---- Toxic Chemical Release Inventory System
SSTS ---- Section 7 Tracking Systems
ROD ---- Records Of Decision
RMP ---- Risk Management Plans
RAATS ---- RCRA Administrative Action Tracking System
PRP ---- Potentially Responsible Parties
ICIS ---- Integrated Compliance Information System
FTTS ---- FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

MLTS ---- Material Licensing Tracking System
COAL ASH DOE ---- Steam-Electric Plant Operation Data
COAL ASH EPA ---- Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER ---- PCB Transformer Registration Database
RADINFO ---- Radiation Information Database
HIST FTTS ---- FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS ---- Incident and Accident Data
CONSENT ---- Superfund (CERCLA) Consent Decrees
INDIAN RESERV ---- Indian Reservations
FUSRAP ---- Formerly Utilized Sites Remedial Action Program
UMTRA ---- Uranium Mill Tailings Sites
LEAD SMELTERS ---- Lead Smelter Sites
US AIRS ---- Aerometric Information Retrieval System Facility Subsystem
US MINES ---- Mines Master Index File
ABANDONED MINES ---- Abandoned Mines
UXO ---- Unexploded Ordnance Sites
DOCKET HWC ---- Hazardous Waste Compliance Docket Listing
FUELS PROGRAM ---- EPA Fuels Program Registered Listing
CT AIRS ---- Permitted Air Sources Listing
CT DRYCLEANERS ---- Drycleaner Facilities
CT ENF ---- Enforcement Case Listing
CT Financial Assurance ---- Financial Assurance Information Listing
CT LEAD ---- Lead Inspection Database
CT SEH ---- List of Significant Environmental Hazards Report to DEEP

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP ---- EDR Proprietary Manufactured Gas Plants
EDR Hist Cleaner ---- EDR Exclusive Historical Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

CT RGA HWS ---- Recovered Government Archive State Hazardous Waste Facilities List

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

EXECUTIVE SUMMARY

STANDARD ENVIRONMENTAL RECORDS

Federal CERCLIS list

SEMS: SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

A review of the SEMS list, as provided by EDR, and dated 07/11/2017 has revealed that there is 1 SEMS site within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
UNIVERSITY OF CONNEC	OFF NORTH EAGLEVILLE	WNW 0 - 1/8 (0.081 mi.)	63	109

State- and tribal - equivalent CERCLIS

CT SHWS: The State Hazardous Waste Sites records are the states' equivalent to CERCLIS. These sites may or may not already be listed on the federal CERCLIS list. Priority sites planned for cleanup using state funds (state equivalent of Superfund) are identified along with sites where cleanup will be paid for by potentially responsible parties. The data come from the Department of Environmental Protection's Inventory of Hazardous Disposal Sites.

A review of the CT SHWS list, as provided by EDR, and dated 04/23/2010 has revealed that there is 1 CT SHWS site within approximately 1 mile of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
DAIRY MART State ID: 226 EPA ID: CTD981894280	***NORTH EAGLEVILLE ROA***	***NW 1/4 - 1/2 (0.377 mi.)***	***100***	***221***

CT SDADB: Site Discovery and Assessment Database.

A review of the CT SDADB list, as provided by EDR, and dated 04/23/2010 has revealed that there are 2 CT SDADB sites within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
HIRSCH PROPERTY Facility Id: 5558	153 NORTH EAGLEVILLE	WNW 0 - 1/8 (0.006 mi.)	C9	21
DAIRY MART Facility Id: 226	***NORTH EAGLEVILLE ROA***	***NW 1/4 - 1/2 (0.377 mi.)***	***100***	***221***

State and tribal leaking storage tank lists

CT LUST: The Leaking Underground Storage Tank Incident Reports contain an inventory of reported leaking underground storage tank incidents. The data come from the Department of Environmental Protection's Leaking Underground Storage Tank List.

A review of the CT LUST list, as provided by EDR, and dated 07/25/2017 has revealed that there are 7 CT LUST sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
UCONN PUMPING STATIO	***FENTON RIVER***	***E 1/4 - 1/2 (0.259 mi.)***	***M96***	***208***
Lust Status: 1				
LUST Id: 45123				
UCONN PHYSICS DEPT.	***N. EAGLEVILL RD.***	***E 1/4 - 1/2 (0.259 mi.)***	***M97***	***211***
Lust Status: 1				
LUST Id: 45122				
UCONN GLENNBROOK ROA	***GLENNBROOK ROAD***	***E 1/4 - 1/2 (0.259 mi.)***	***M98***	***214***
Lust Status: 4				
LUST Id: 31389				

Lower Elevation	Address	Direction / Distance	Map ID	Page
PAROUSIA PRESS (FORM	***153 NORTH EAGLEVILLE***	***WNW 0 - 1/8 (0.006 mi.)***	***C8***	***18***
Lust Status: 1				
LUST Id: 45483				
RICHARD CLOCK	***65 MEADOWOOD RD.***	***WSW 1/4 - 1/2 (0.376 mi.)***	***99***	***217***
Lust Status: 4				
LUST Id: 36418				
DAIRY MART	***NORTH EAGLEVILLE ROA***	***NW 1/4 - 1/2 (0.377 mi.)***	***100***	***221***
Lust Status: 1				
LUST Id: 35647				
NORTHWOOD APARTMENT	***1 NORTHWOOD RD***	***WSW 1/4 - 1/2 (0.498 mi.)***	***101***	***227***
Lust Status: 3				
LUST Id: 35628				

State and tribal registered storage tank lists

CT UST: The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The data come from the Department of Environmental Protection's "Town Inventory" UST Listing.

A review of the CT UST list, as provided by EDR, and dated 02/21/2017 has revealed that there are 5 CT UST sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
UCONN POWER PLANT	189 AUDITORIUM RD	ENE 0 - 1/8 (0.092 mi.)	I71	134
Facility Id: 78-6002				
Tank Status: Permanently Closed				
Tank Status: Currently In Use				
JORGENSEN AUDITORIUM	2132 HILLSIDE RD	E 0 - 1/8 (0.110 mi.)	K78	184

Facility Id: 78-12401 Tank Status: Permanently Closed				
UCONN - TORREY LIFE Facility Id: 78-12339 Tank Status: Permanently Closed	75 N EAGLEVILLE RD	NE 1/8 - 1/4 (0.189 mi.)	93	207

Lower Elevation	Address	Direction / Distance	Map ID	Page
UCONN FIRE DEPARTMEN Facility Id: 78-12396 Tank Status: Temporarily Closed	126 N EAGLEVILLE RD	NNW 0 - 1/8 (0.063 mi.)	D42	57
UNIVERSITY OF CONNEC Facility Id: 78-9997 Facility Id: 78-9999 Tank Status: Permanently Closed	25 LEDOYT ROAD U-38	NNW 1/8 - 1/4 (0.162 mi.)	92	201

ADDITIONAL ENVIRONMENTAL RECORDS

Records of Emergency Release Reports

The Oil & Chemical Spill Database from the Department of Environmental Protection

A review of the CT SPILLS list, as provided by EDR, and dated 07/25/2017 has revealed that there are 70 CT SPILLS sites within approximately 0.125 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
Not reported Facility Status: CLOSED Case Number: 201206528	2376 ALUMNI DRIVE	SE 0 - 1/8 (0.062 mi.)	H38	50
Not reported Facility Status: Closed Case Number: 200406424	44 CHENEY DRIVE	S 0 - 1/8 (0.068 mi.)	46	88
Not reported Facility Status: CLOSED Case Number: 201406169	STORRS-MANSFIELD 110	NNE 0 - 1/8 (0.073 mi.)	E47	90
Not reported Facility Status: CLOSED Case Number: 200705864	STORRS-MANSFIELD, 19	ENE 0 - 1/8 (0.074 mi.)	I48	91
Not reported Facility Status: Closed Case Number: 9900493	110 NORTH EAGLEVILLE	NNE 0 - 1/8 (0.074 mi.)	E56	101
Not reported Facility Status: CLOSED Case Number: 200905354	GOODYEAR HALL - 110	NNE 0 - 1/8 (0.074 mi.)	E57	102
Not reported Facility Status: CLOSED Case Number: 200604473	110 NORTH EAGLEVILLE	NNE 0 - 1/8 (0.074 mi.)	E58	103
Not reported	HILLSIDE DRIVE (GAMP	ENE 0 - 1/8 (0.081 mi.)	I62	108

Facility Status: Closed Case Number: 200306603				
Not reported Facility Status: Closed Case Number: 200300506	N. EAGLEVILLE RD NOR	NNE 0 - 1/8 (0.081 mi.)	E64	111
Not reported Facility Status: Closed Case Number: 200202592	PUTNUM REFRECTORY, A	SE 0 - 1/8 (0.088 mi.)	H66	113
Not reported Facility Status: Closed Case Number: 200406683	STORRS-MANSFIELD, PU	SE 0 - 1/8 (0.088 mi.)	H67	114
Not reported Case Number: 1772	U T C ENG BLDG	ENE 0 - 1/8 (0.091 mi.)	I68	115
Not reported Facility Status: Closed Case Number: 200005920	NO. EAGLE VILLE RD.	NE 0 - 1/8 (0.095 mi.)	J76	182
Not reported Facility Status: Closed Case Number: 200504702	NORTH WEST DINING HA	NNE 0 - 1/8 (0.111 mi.)	J79	185
Not reported Facility Status: closed Case Number: 200408178	NORTH EAGLEVILLE ROA	NNE 0 - 1/8 (0.111 mi.)	J80	186
Not reported Facility Status: Closed Case Number: 200005101	UCONN CAMPUS 2132 HI	E 0 - 1/8 (0.112 mi.)	K81	187
Not reported Case Number: 3895	CHEENY DR ORCHARD AC	S 0 - 1/8 (0.114 mi.)	82	188
Not reported Facility Status: Closed Case Number: 200404059	GLENBROOK RD . & HIL	E 0 - 1/8 (0.116 mi.)	K83	191
Not reported Case Number: 53	GLENBROOK/HILLSIDE	E 0 - 1/8 (0.117 mi.)	K84	192
Not reported Facility Status: CLOSED Case Number: 201005318	97 NORTH EAGLEVILL R	NE 0 - 1/8 (0.120 mi.)	J85	192
Not reported Facility Status: CLOSED Case Number: 201402812	STORRS-MANSFIELD UCO	NE 0 - 1/8 (0.120 mi.)	J86	193
Not reported Facility Status: CLOSED Case Number: 200703075	STORRS-MANSFIELD, 97	NE 0 - 1/8 (0.120 mi.)	J87	194
Not reported Facility Status: CLOSED Case Number: 201606724	97 NORTH EAGLEVILLE	NE 0 - 1/8 (0.120 mi.)	J88	195
Not reported Facility Status: CLOSED Case Number: 200905160 Case Number: 201302153 Case Number: 201504073	97 NORTH EAGLEVILLE	NE 0 - 1/8 (0.121 mi.)	J89	197
Not reported	STORRS-MANSFIELD 97	NE 0 - 1/8 (0.121 mi.)	J90	199

Facility Status: CLOSED Case Number: 201100056				
Not reported Facility Status: CLOSED Case Number: 201101694	STORRS-MANSFIELD 97	NE 0 - 1/8 (0.121 mi.)	J91	200

Lower Elevation	Address	Direction / Distance	Map ID	Page
Not reported Facility Status: closed Case Number: 200203096	STORRS-MANSFIELD/ 29	0 - 1/8 (0.000 mi.)	B5	15
Not reported Facility Status: CLOSED Case Number: 200507549	17 KING HILL RD	0 - 1/8 (0.000 mi.)	A6	16
Not reported Facility Status: Closed Case Number: 200308828	ALUMNI AND HILLSIDE	ENE 0 - 1/8 (0.007 mi.)	10	22
Not reported Facility Status: Closed Case Number: 200202247	EAGLEVILLE BROOK AT	WNW 0 - 1/8 (0.013 mi.)	C11	23
Not reported Facility Status: Closed Case Number: 200407124	KING HILL ROAD/EAGLE	WNW 0 - 1/8 (0.013 mi.)	C12	24
Not reported Facility Status: Closed Case Number: 200302663	NORTH EAGLEVILLE ROA	WNW 0 - 1/8 (0.013 mi.)	C13	25
Not reported Facility Status: Closed Case Number: 200200137	NO. EAGLEVILLE RD. &	WNW 0 - 1/8 (0.013 mi.)	C14	26
Not reported Facility Status: closed Case Number: 200402522	NORTH EAGLEVILLE AND	WNW 0 - 1/8 (0.013 mi.)	C15	27
Not reported Facility Status: Closed Case Number: 200103404	KINGS HILL RD & NORT	WNW 0 - 1/8 (0.013 mi.)	C16	28
Not reported Facility Status: Closed Case Number: 200206391	NORTH EAGLEVILLE RD	WNW 0 - 1/8 (0.029 mi.)	C17	29
Not reported Facility Status: closed Case Number: 200207358	UCONN CAMPUS N. EAGL	WNW 0 - 1/8 (0.029 mi.)	C18	30
Not reported Facility Status: Closed Case Number: 9701192	KING HILL RD STORRS	NNW 0 - 1/8 (0.036 mi.)	B19	31
Not reported Facility Status: Closed Case Number: 200401579	NORTH EAGLE RD AT DB	N 0 - 1/8 (0.038 mi.)	D20	32
Not reported Facility Status: Closed Case Number: 200203019	STORRS-MANSFIELD 1	NNE 0 - 1/8 (0.040 mi.)	E21	33
Not reported	CONNER STADIUM AND H	NNE 0 - 1/8 (0.042 mi.)	E22	34

Facility Status: Closed Case Number: 200300165				
Not reported Facility Status: Closed Case Number: 200207502	UCONN, MATERIAL SCIE	NNE 0 - 1/8 (0.042 mi.)	E23	35
Not reported Case Number: 4894	STAFF LOT 9	N 0 - 1/8 (0.043 mi.)	D24	36
Not reported Facility Status: Closed Case Number: 200408208	HILLSIDE ROAD INTERS	NE 0 - 1/8 (0.043 mi.)	F25	39
Not reported Case Number: 1637	NORTH EAGLEVILLE RD/	W 0 - 1/8 (0.044 mi.)	G26	40
Not reported Facility Status: Closed Case Number: 9802605	N. EAGLEVILLE RD AT	NNE 0 - 1/8 (0.045 mi.)	E27	40
Not reported Facility Status: closed Case Number: 9605111	STAFF LOT 9-A	NNW 0 - 1/8 (0.046 mi.)	D28	41
Not reported Facility Status: CLOSED Case Number: 200605862	NORTH EAGLEVILLE RD,	NNE 0 - 1/8 (0.055 mi.)	E30	42
Not reported Facility Status: Closed Case Number: 200402617	LEDOYT RD/N. EAGLEVI	NNW 0 - 1/8 (0.056 mi.)	D31	43
Not reported Facility Status: Closed Case Number: 200100895	122 NORTH EAGLEVILLE	N 0 - 1/8 (0.059 mi.)	D32	44
Not reported Case Number: 1887	121 NORTH EAGLEVILL	NE 0 - 1/8 (0.060 mi.)	F33	45
Not reported Facility Status: Closed Case Number: 9800356	126 NORT EAGLEVILLE	N 0 - 1/8 (0.060 mi.)	D34	46
Not reported Facility Status: closed Case Number: 9907381	NORTH EAGLEVILLE RD	N 0 - 1/8 (0.060 mi.)	D35	47
Not reported Facility Status: CLOSED Case Number: 200702698	STORRS-MANSFIELD 126	N 0 - 1/8 (0.060 mi.)	D36	48
Not reported Facility Status: CLOSED Case Number: 200606095	X-LOT 126 NORTH EAGL	N 0 - 1/8 (0.060 mi.)	D37	49
Not reported Case Number: 7161	N EAGLEVILLE/HUNTING	W 0 - 1/8 (0.062 mi.)	G39	51
Not reported Facility Status: closed Case Number: 200404690	UCONN CAMPUS IMS ROO	N 0 - 1/8 (0.063 mi.)	D40	54
Not reported Case Number: 1263	126 NORTH EAGLEVILLE	NNW 0 - 1/8 (0.063 mi.)	D41	55
Not reported	EAGLEVILLE RD & HILL	NE 0 - 1/8 (0.074 mi.)	F49	92

Facility Status: Closed Case Number: 200304780				
Not reported Case Number: 6373	NORTH EAGLEVILLE/HIL	NE 0 - 1/8 (0.074 mi.)	F50	93
Not reported Facility Status: closed Case Number: 200200903	GAMPT COMPLEX UCOON	NE 0 - 1/8 (0.074 mi.)	F51	95
Not reported Facility Status: Closed Case Number: 200207736	NORTH EAGLEVILLE RD/	NE 0 - 1/8 (0.074 mi.)	F52	96
Not reported Facility Status: closed Case Number: 9701941	STORRS, STAFF LOT 9	NE 0 - 1/8 (0.074 mi.)	F53	97
Not reported Case Number: 7195	EAGLEVILLE RD/HILLSI	NE 0 - 1/8 (0.074 mi.)	F54	98
Not reported Facility Status: Closed Case Number: 200401090	STORRS-MANSFIELD, NO	NE 0 - 1/8 (0.074 mi.)	F55	100
Not reported Facility Status: closed Case Number: 200503081	HUNTING LODGE RD AND	W 0 - 1/8 (0.078 mi.)	G59	104
Not reported Case Number: 225	NO EAGLEVILLE/HUNTIN	W 0 - 1/8 (0.078 mi.)	G60	105
Not reported Facility Status: Closed Case Number: 200303378	STORRS-MANSFIELD -UC	NE 0 - 1/8 (0.080 mi.)	F61	107
Not reported Facility Status: CLOSED Case Number: 200603908	IMS BUILDING RM 215	NE 0 - 1/8 (0.082 mi.)	F65	112
Not reported Facility Status: CLOSED Case Number: 9803862	134 NO. EAGLEVILLE R	NNW 0 - 1/8 (0.102 mi.)	77	183

Other Ascertainable Records

RCRA NonGen / NLR: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

A review of the RCRA NonGen / NLR list, as provided by EDR, and dated 09/13/2017 has revealed that there is 1 RCRA NonGen / NLR site within approximately 0.125 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
UNIVERSITY OF CONNEC	***233 GLENBROOK ROAD***	***ENE 0 - 1/8 (0.092 mi.)***	***I72***	***141***

EXECUTIVE SUMMARY

CT CPCS: A list of Contaminated or Potentially Contaminated Sites within Connecticut. This list represents the "Hazardous Waste Facilities," as defined in Section 22a-134f of the Connecticut General Statutes (CGS). The list contains the following types of sites: Sites listed on the Inventory of Hazardous Waste Disposal Sites; Sites subject to the Property Transfer Act; Sites at which underground storage tanks are known to have leaked; Sites at which hazardous waste subject to the RCRA; Sites that are included in EPA's (CERCLIS); Sites that are the subject of an order issued by the Commissioner of DEP that requires investigation and remediation of a potential or known source of pollution; and Sites that have entered into one of the Department's Voluntary Remediation Programs.

A review of the CT CPCS list, as provided by EDR, and dated 09/26/2017 has revealed that there are 6 CT CPCS sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
UCONN PUMPING STATIO	***FENTON RIVER***	***E 1/4 - 1/2 (0.259 mi.)***	***M96***	***208***
Lust Status: Pending				
UCONN PHYSICS DEPT.	***N. EAGLEVILL RD.***	***E 1/4 - 1/2 (0.259 mi.)***	***M97***	***211***
Lust Status: Pending				
UCONN GLENNBROOK ROA	***GLENNBROOK ROAD***	***E 1/4 - 1/2 (0.259 mi.)***	***M98***	***214***
Lust Status: LUST Completed (DEP's significant hazard definition)				

Lower Elevation	Address	Direction / Distance	Map ID	Page
PAROUSIA PRESS (FORM	***153 NORTH EAGLEVILLE***	***WNW 0 - 1/8 (0.006 mi.)***	***C8***	***18***
Lust Status: Pending				
RICHARD CLOCK	***65 MEADOWOOD RD.***	***WSW 1/4 - 1/2 (0.376 mi.)***	***99***	***217***
Lust Status: LUST Completed (DEP's significant hazard definition)				
DAIRY MART	***NORTH EAGLEVILLE ROA***	***NW 1/4 - 1/2 (0.377 mi.)***	***100***	***221***
Lust Status: Pending				

CT LWDS: The Leachate and Waste Water Discharge Inventory Data Layer (LWDS) includes point locations digitized from Leachate and Wastewater Discharge Source maps compiled by the Connecticut DEP.

A review of the CT LWDS list, as provided by EDR, and dated 07/17/2009 has revealed that there are 2 CT LWDS sites within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
UNIVERSITY OF CONNEC	NORTH EAGLEVILLE ROA	NW 1/8 - 1/4 (0.213 mi.)	L94	208
Leachate and Wastewater Number: 3100018				
UNIVERSITY OF CONNEC	TECHNICAL PARK AND M	NW 1/8 - 1/4 (0.233 mi.)	L95	208
Leachate and Wastewater Number: 3100017				

CT MANIFEST: Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

A review of the CT MANIFEST list, as provided by EDR, and dated 07/28/2017 has revealed that there are 8 CT MANIFEST sites within approximately 0.125 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
UNIVERSITY OF CONN	189 AUDITORIUM RD	ENE 0 - 1/8 (0.092 mi.)	I69	116

EPA Id: CTP000012069				
UNIVERSITY OF CONN H EPA Id: CTD077309300	189 AUDITORIUM RD	ENE 0 - 1/8 (0.092 mi.)	I70	125
UNIVERSITY OF COONNE EPA Id: CTP000012069	189 189 AUDITORIUM R	ENE 0 - 1/8 (0.092 mi.)	I73	148
UNIVERSITY OF CONNEC EPA Id: CTD077309300	189 AUDITORIUM RD	ENE 0 - 1/8 (0.092 mi.)	I74	157
UNIVERSITY OF CT EPA Id: CTD077309300	189 AUDITORIUM RD	ENE 0 - 1/8 (0.092 mi.)	I75	172

Lower Elevation	Address	Direction / Distance	Map ID	Page
UNIVERSITY OF CT EPA Id: CTD983884297	128 N EAGLEVILLE RD	NNW 0 - 1/8 (0.064 mi.)	D43	59
UCONN EPA Id: CTD983884297 EPA Id: CTP000012144	128 N EAGLEVILLE RD	NNW 0 - 1/8 (0.064 mi.)	D44	65
U-CONN MTR POOL EPA Id: CTP000012144	128 N EAGLEVILLE RD	NNW 0 - 1/8 (0.064 mi.)	D45	85

RI MANIFEST: Hazardous waste manifest information

A review of the RI MANIFEST list, as provided by EDR, and dated 12/31/2013 has revealed that there is 1 RI MANIFEST site within approximately 0.125 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
UNIVERSITY OF CONNEC EPA Id: CTD077309300 Manifest Document Number: 006032750JJK	***233 GLENBROOK ROAD***	***ENE 0 - 1/8 (0.092 mi.)***	***I72***	***141***

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR Hist Auto: EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

A review of the EDR Hist Auto list, as provided by EDR, has revealed that there is 1 EDR Hist Auto site within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
SPIKES SERVICE STATI	125 NORTH EAGLEVILLE	N 0 - 1/8 (0.053 mi.)	D29	42

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

CT RGA LUST: The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Energy & Environmental Protection formerly know as the DEP which changes in July 2011 in Connecticut.

A review of the CT RGA LUST list, as provided by EDR, has revealed that there is 1 CT RGA LUST site within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
PAROUSIA PRESS (FORM	153 NORTH EAGLEVILLE	WNW 0 - 1/8 (0.006 mi.)	C7	17

EXECUTIVE SUMMARY

There were no unmapped sites in this report.

OVERVIEW MAP - 5117897.2S

Target Property

Sites at elevations higher than or equal to the target property

Sites at elevations lower than the target property

Manufactured Gas Plants

National Priority List Sites

Dept. Defense Sites

0 1/4 1/2 1 Miles

Indian Reservations BIA

Power transmission lines

100-year flood zone

500-year flood zone

National Wetland Inventory

State Wetlands

Upgradient Area

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	UCONN Northwest Science Quad	CLIENT:	Fuss & ONeill Consulting Eng.
ADDRESS:	King Hill Road & Alumni Drive Storrs Mansfield CT 06268	CONTACT:	Stefanie Wierszchalek
LAT/LONG:	41.807735 / 72.260366	INQUIRY #:	5117897.2s
		DATE:	November 27, 2017 3:53 pm

Appendix G – LID Checklist

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UConn Low Impact Development (LID) Site Planning and Design Checklist

Items listed below need to be considered by developers in the creation of site plans. Due to individual site differences, not all items will apply to each individual site. Check items that have been applied, or explain why the items have not been used. For more information on LID practices and how to implement them please refer to the 2004 Connecticut Stormwater Quality Manual. Where applicable, references have been made to the appropriate section of the University of Connecticut Campus Sustainable Design Guidelines (SDGs) (JJR & Smithgroup, 2004).

1. **Assessment of Natural Resources** *(See SDGs, page 7, Goal 1)*
   - [x] Natural resources and constraints have been indicated and are identified on the plans (wetlands, rivers, streams, flood hazard zones, meadows, agricultural land, tree lines, slopes [identified with 2 foot contours], soil types, exposed ledge & stone walls.
   - [x] Onsite soils have been assessed to determine suitability for stormwater infiltration, and identified on plans.

     See sheet# SV.01-SV.05

   - [x] Natural existing drainage patterns have been delineated on the plan and are proposed to be preserved or impacts minimized.
   - [ ] *For items not checked, please use the space below to explain why that item was not appropriate or possible for your project, or any other pertinent information:*

     Drainage patterns will be delineated as the design progresses.
     Results of infiltration testing are forthcoming.

2. **Minimization of Land Disturbance** *(See SDGs, page 7, Goal 2)*
   - [x] The proposed building(s) is/are located where development can occur with the least environmental impact (for projects that have NOT had an Environmental Impact Evaluation as required under CT Environmental Policy Act).
   - [x] Disturbance areas have been delineated to avoid unnecessary clearing or grading.
   - [x] Plan includes detail on construction methods and sequencing to minimize compaction of natural and future stormwater areas.

☐ *For items not checked, please use the space below to explain why that item was not appropriate or possible for your project, or any other pertinent information:*

As design progresses, notes will be added to the drawings directing the contractor to limit the use of heavy equipment in stormwater areas and prohibiting stock piling of soil material in stormwater areas.

3. **Reduce and Disconnect Impervious Cover** *(See SDGs, page 11, Goal 1)*
   - ☒ Impervious surfaces have been kept to the minimum extent practicable, using the following methods (check which methods were used):
     - ☒ Minimized road widths
     - ☒ Minimized driveway area
     - ☒ Minimized sidewalk area
     - ☒ Minimized building footprint
     - ☒ Minimized parking lot area
   - ☒ Impervious surfaces have been disconnected from the stormwater system, and directed to appropriate pervious areas, where practicable. Pervious areas may be LID practices, or uncompacted turf areas.
   - ☐ *For items not checked, please use the space below to explain why that item was not appropriate or possible for your project, or any other pertinent information:*

4. **LID Practices Installed** *(See SDGs, page 11, Goal 1)*
   - ☒ Sheet flow is used to the maximum extent possible to avoid concentrating runoff.
   - ☐ Vegetated swales have been installed adjacent to driveways and/or roads in lieu of a curb and gutter stormwater collection system.
   - ☒ Rooftop drainage is discharged to bioretention/rain gardens.
   - ☐ Rooftop drainage is discharged to drywell or infiltration trench.
   - ☐ Rain water harvesting methods such as rain barrels or cisterns have been installed to manage roof drainage.
   - ☒ Driveway, roadway, and/or parking lot drainage is directed to bioretention/rain gardens.
   - ☐ Cul-de-sacs include a landscaped bioretention island.
   - ☐ Vegetated roof systems have been installed.

☐ Pervious pavements have been installed.

☐ *For items not checked, please use the space below to explain why that item was not appropriate or possible for your project, or any other pertinent information:*

_____

_____

_____

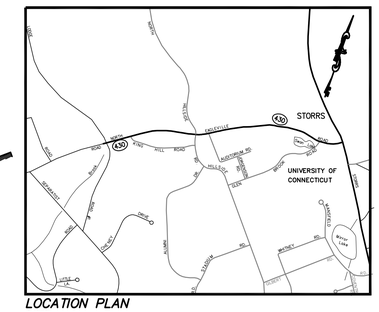
_____

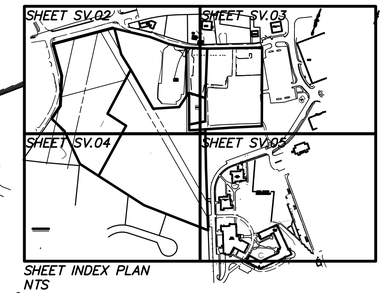
Swales are being installed, however, they are not in lieu of a curb and gutter system. In the winter months plowing practices can make swales along the road ineffective. Roof water is being discharged to surface bio-retention areas rather then to drywells where practicable. Rain water harvesting is not being used on site, however, the University has a reclaimed water distribution system that is currently part of the design as an alternate.There are no cul-de-sacs on the project. Vegetated roofs are not being installed per guidance from the University. Pervious pavements are part of the design as an alternate.

SURVEY CONTROL POINTS				
POINT NO.	NORTH	EAST	ELEVATION	DESCRIPTION
30	855178.71	1133924.09	629.85	DH-30
40	855072.87	1133725.06	643.97	RB-40
60	854592.13	1133704.09	659.53	DH-60
70	854359.42	1133794.80	667.01	DH-70
100	855401.71	1134086.73	606.47	CP100RB/CAP
110	855688.92	1133932.18	584.77	CP110XCUT
120	855957.32	1133778.88	576.22	CP110XCUT
130	855779.09	1133588.76	581.28	CP130DNROCK
140	855687.14	1133265.40	588.09	CP140PK
150	855597.77	1133077.52	572.27	CP150DHTCC
160	855645.89	1132697.64	538.07	CP160RB/CAP
170	855533.15	1132389.10	533.08	CP170PK
180	855273.98	1132298.33	529.64	CP180RB/CAP
190	855046.86	1132394.60	529.46	CP190PK
200	854829.94	1132428.38	533.97	CP200DHROCK
210	854637.85	1132485.61	546.38	CP210SPK
220	854598.22	1132777.19	556.96	DHROCK
230	854567.64	1132916.02	568.81	CP230SPK
240	854504.04	1133188.06	586.58	CP240DHROCK:
250	854526.64	1133476.37	627.11	CP250SPK

LEGEND

UTILITY SERVICES (UNDERGROUND OR OVERHEAD)
SYMBOL LEGEND
ABBREVIATIONS
PROPERTY/BOUNDARY LINES
FEATURE LINES





SURVEY NOTES

1. THIS SURVEY AND MAP HAS BEEN PREPARED IN ACCORDANCE WITH THE REGULATIONS OF CONNECTICUT STATE AGENCIES, SECTIONS 20-300B-1 THRU 20-300B-20 AND THE "MINIMUM STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT" ENDORSED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. ON SEPTEMBER 26, 1996. THE TYPE OF SURVEY IS A BOUNDARY, TOPOGRAPHIC AND GENERAL LOCATION SURVEY. THE BOUNDARY DETERMINATION CATEGORY IS RESURVEY. THE ACCURACIES ARE AS FOLLOWS:

HORIZONTAL CONTROL	CLASS "A-2"
VERTICAL CONTROL	CLASS "V-2"
BOUNDARY	CLASS "A-2"
TOPOGRAPHY	CLASS "T-2"
SURFACE UTILITIES	CLASS "T-2"
UNDERGROUND UTILITIES	CLASS "D" (COMPILED)

2. THE COORDINATES AND ELEVATIONS DEPICTED ON THE PLAN REPRESENT THE NAD '83 AND THE NAVD '88 DATUMS. COORDINATES WERE ESTABLISHED ON THE SITE BASED UPON GPS OBSERVATIONS TAKEN ON JULY 10, 2015 USING TRIMBLE GNSS RTK R8 RECEIVERS AND SOLUTIONS PROVIDED THROUGH THE KEYNET NETWORK.
3. UNDERGROUND UTILITIES (IF DEPICTED) HAVE BEEN COMPILED, IN PART, BASED UPON INFORMATION FURNISHED BY OTHERS. THIS INFORMATION IS TO BE CONSIDERED APPROXIMATE AND ALFRED BENESCH & COMPANY DOES NOT TAKE RESPONSIBILITY FOR SUBSEQUENT ERRORS OR OMISSIONS WHICH MAY HAVE BEEN INCORPORATED INTO THIS PLAN AS A RESULT. ADDITIONALLY, OTHER SUCH FEATURES MAY EXIST ON THE SITE, THE EXISTENCES OF WHICH ARE UNKNOWN TO ALFRED BENESCH & COMPANY. THE SIZE, LOCATION AND EXISTENCE OF ALL SUCH FEATURES MUST BE FIELD DETERMINED AND VERIFIED BY THE APPROPRIATE AUTHORITIES PRIOR TO ANY CONSTRUCTION. CALL "CALL BEFORE YOU DIG" 1-800-922-4455.
4. THE SUBJECT PROPERTY'S CURRENT DEED CAN BE FOUND IN VOLUME 99 PAGE 281, AND VOLUME 746 PAGE 214 OF THE MANSFIELD LAND RECORDS.
5. A PORTION OF THE PROPERTY LIES WITHIN THE FLOOD ZONE A (AREAS OF 100 YEAR FLOOD BASE ELEVATIONS AND FLOOD HAZARD FACTORS NOT DETERMINED). THE REST OF THE PROPERTY LIES WITHIN THE "OTHER AREAS ZONE 'C' – AREAS OF MINIMAL FLOODING. "PER THE FEMA FLOOD INSURANCE RATE MAP TOWN OF MANSFIELD, CONNECTICUT TOLLAND COUNTY PANEL 5 OF 20 COMMUNITY–PANEL NUMBER 090128 0005 C EFFECTIVE DATE JANUARY 2, 1981"
6. SEE SHEETS SV.02, SV.03, SV.04, & SV.05 FOR TOPOGRAPHIC AND UTILITY INFORMATION.
7. WETLANDS DELINEATED AND FLAGGED BY GZA GEOENVIRONMENTAL, INC. AND FIELD LOCATED BY ALFRED BENESCH COMPANY.

MAP REFERENCES:

1. MAP TITLED "PROPERTY SURVEY OF MAP 15 BLOCK 32 LOTS 1, 2, 4, & 5, PROPERTY SURVEY, DRAWING NUMBER Sv-1, SHEET 1 OF 1." SCALE 1"=60', DATED FEBRUARY 13, 2013, REVISED MARCH 5, 2013, BY VANASSE HANGEN BRUSTLIN, INC.
2. UNIVERSITY OF CONNECTICUT FACILITIES MANAGEMENT DEPARTMENT, MAP TITLED "SITE PLAN, PARKING GARAGE – LOT NO. 9, DRAWING NUMBER C-1." SCALE 1"=20', DATED JULY 1997, BY CLOSE JENSEN & MILLER, P.C.
3. STATE OF CONNECTICUT PUBLIC WORKS DEPARTMENT, MAP TITLED "SITE LAYOUT PLAN 'A', DINING FACILITIES, DRAWING NUMBER SI-1." SCALE AS NOTED, BY MORTON S. FINE AND ASSOCIATES.

TO THE BEST OF MY KNOWLEDGE AND BELIEF THIS MAP IS SUBSTANTIALLY CORRECT AS DEPICTED AND NOTED HEREON.

DAVID A. CARICCHIO, P.L.S. No. 70036 — DATE
ALFRED BENESCH & COMPANY, GLASTONBURY, CONNECTICUT
(not valid without original signature and embossed seal)

REVISIONS		
No.	DATE	DESCRIPTION

SURVEY BOOK: 14-04
SURVEYOR: DP- MC
DRAWN: DAC
CHECKED: DAC
APPROVED: DAC

SCALE: HORZ.: 1" = 80'
VERT.:
SURVEY DATUM: HORZ.: NAD 1983
VERT.: NAVD 1988

80 0 80 40 80
GRAPHIC SCALE

Prepared By:
benesch
engineers · scientists · planners
Alfred Benesch & Company
90 National Drive
Glastonbury, Connecticut 06033
860-633-8341

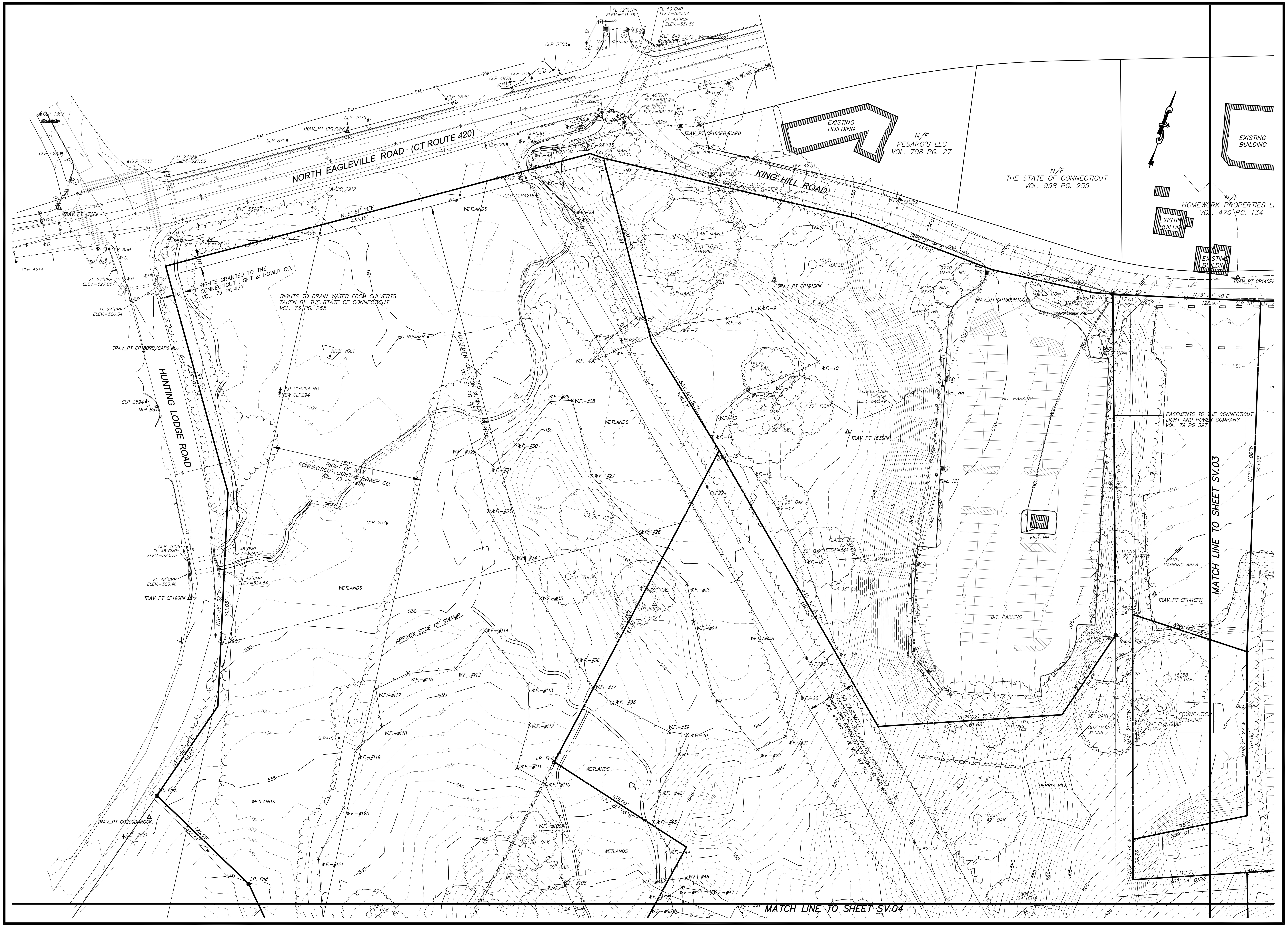
UNIVERSITY OF CONNECTICUT
BOUNDARY & TOPOGRAPHIC SURVEY
PREPARED FOR
GZA GEOENVIRONMENTAL, INC.
STEM RESEARCH CENTER PROJECT
STORRS CONNECTICUT

PROJ.No.: 70284.00
DATE: SEPT. 1, 2015

SV.01

PAPER SPACE LAYOUT NAME:
TWISTVIEW:
VIEWNAME:
LAYER MANAGER NAME:
PLOT TABLE: STB

File Location/Name - W:\2015\2150093 - Uconn Utility Framework\CIVIL\X-lot Survey\70284 Base - Standard\70284 Base.dwg
Date of Plot: August 07, 2018 - 1:45 PM


NORTH EAGLEVILLE ROAD (CT ROUTE 420)
KING HILL ROAD
HUNTING LODGE ROAD
EXISTING BUILDING
N/F PESARO'S LLC VOL. 708 PG. 27
N/F THE STATE OF CONNECTICUT VOL. 998 PG. 255
N/F HOMEWORK PROPERTIES LL VOL. 470 PG. 134
RIGHTS GRANTED TO THE CONNECTICUT LIGHT & POWER CO. VOL. 79 PG.477
RIGHTS TO DRAIN WATER FROM CULVERTS TAKEN BY THE STATE OF CONNECTICUT VOL. 73 PG. 265
150' RIGHT OF WAY CONNECTICUT LIGHT & POWER CO. VOL. 73 PG. 499
EASEMENTS TO THE CONNECTICUT LIGHT AND POWER COMPANY VOL. 79 PG 397
WETLANDS
APPROX EDGE OF SWAMP
BIT. PARKING
GRAVEL PARKING AREA
FOUNDATION REMAINS
DEBRIS PILE
MATCH LINE TO SHEET SV.03
MATCH LINE TO SHEET SV.04

SURVEY BOOK: 14-04
SURVEYOR: DP-MC
DRAWN: DAC
CHECKED: DAC
APPROVED: DAC

REVISIONS

No.	DATE	DESCRIPTION

SCALE: HORZ.: 1" = 40
VERT.:
SURVEY DATUM: HORZ.: NAD 83
VERT.: NAD 88

GRAPHIC SCALE

Prepared By:

benesch
engineers · scientists · planners

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Glastonbury, Connecticut 06033
860-633-8341

UNIVERSITY OF CONNECTICUT
TOPOGRAPHIC SURVEY
PREPARED FOR
GZA GEOENVIRONMENTAL, INC.
STEM RESEARCH CENTER PROJECT
STORRS CONNECTICUT

PROJ No.: 70284.00
DATE: SEPT. 1, 2015

SV.02

PAPER SPACE LAYOUT NAME:
TWISTVIEW:
REFERENCE NAME:
LAYER MANAGER NAME:
PLOT TABLE: STB

No.	DATE	REVISIONS DESCRIPTION

SURVEY BOOK: 14-04
SURVEYOR: DP-MC
DRAWN: DAC
CHECKED: DAC
APPROVED: DAC

SCALE: HORZ.: 1" = 40'
VERT.:

SURVEY DATUM: HORZ.: NAD 83
VERT.: NAVD 88

GRAPHIC SCALE
40 0 20 40

Prepared By:

benesch
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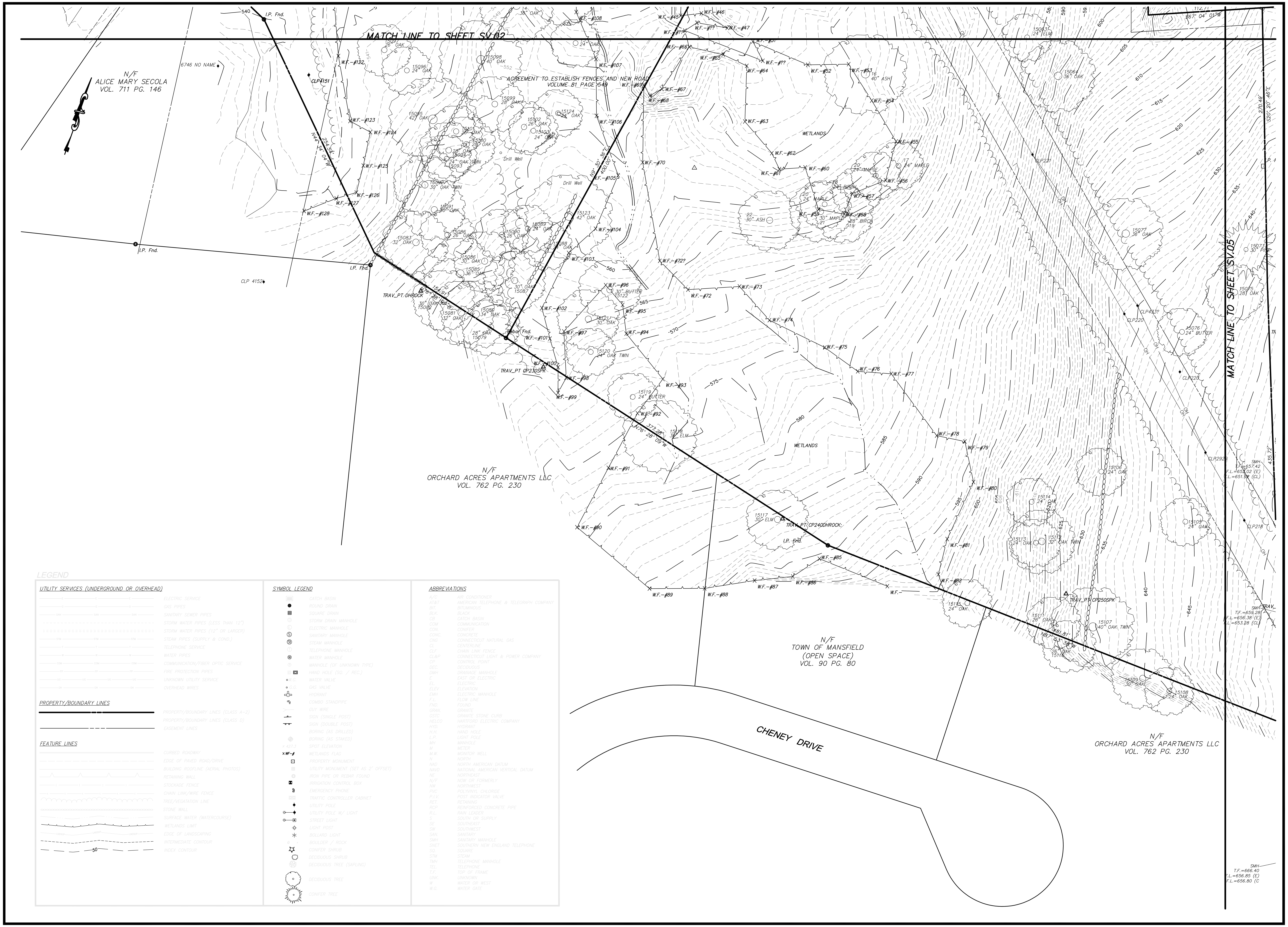
CONNECTICUT
STORRS

PROJ.No.: 70284.00
DATE: SEPT. 1, 2015

SV.03

File Location/Name - W:\2015\2115093 - Uconn Utility Framework\CIVIL\X-lot Survey\70284 Base - Standard\70284 Base.dwg
Date of Plot: August 07, 2018 - 1:46 PM



REVISIONS

No.	DATE	DESCRIPTION

SURVEY BOOK: 14-04-
SURVEYOR: DP-MC
DRAWN: DAC
CHECKED: DAC
APPROVED: DAC

SCALE: HORZ.: 1" = 40'
VERT.:
SURVEY DATUM: HORZ.: NAD 1983
VERT.: NAVD 1988

GRAPHIC SCALE

Prepared By:

benesch
engineers · scientists · planners

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STEM RESEARCH CENTER PROJECT
STORRS CONNECTICUT

PROJ No.: 70284.00
DATE: SEPT. 1, 2015

SV.04

File Location/Name - W:\2015\2150093 - Uconn Utility Framework\CIVIL\X-lot Survey\70284 Base - Standard\70284 Base.dwg
Date of Plot: August 07, 2018 - 1:47 PM

PAPER SPACE LAYOUT NAME:
TABSVIEW:
VIEWNAME:
LAYER MANAGER NAME:
PLOT TABLE: STB

1 C CB
T.F.= 531.21
F.L.= 528.81 (15"CPP S)

2 C-L CB
T.F.= 531.62
F.L.= 528.62 (15"CPP N)
F.L.= 527.32

3 C CB DBL
T.F.= 536.32
F.L.= 531.92 (12"RCP E)
F.L.= 532.02 (15"RCP N)
F.L.= 532.77 (4"CPP N)

4 C CB
T.F.= 536.34
F.L.= 531.74 (12"RCP E
F.L.= 531.74 (12"RCP W

5 C-L CB
T.F.= 539
F.L.= 534.8 (15"CPP SW
F.L.= 535.4 (15"CPP E

6 C-L CB
T.F.= 536.54
F.L.= 532.64 (18"RCP W
F.L.= 533.24 (15"CPP NE

7 C CB
T.F.= 569.04
F.L.= 565.54 (12"RCP SW

8 C CB DBL
T.F.= 567.4
F.L.= 564.15 (18"CMP W
F.L.= 564.6 (12"RCP NE

9 C CB
T.F.= 568.93
F.L.= 564.93 (12"RCP SW

10 C-L CB
T.F.= 570.15
F.L.= 563.85 (12"RCP S
F.L.= 563.65 (15"CMP W
F.L.= 564.00 (12"RCP NE

11 C-L CB
T.F.= 570.55
F.L.= 566.65 (12"RCP SE
F.L.= 566.45 (12"RCP N

12 C-L CB
T.F.= 570.78
F.L.= 567.08 (12"RCP NW

13 RND CB
T.F.= 576.16
F.L.= 573.86 (12"RCP SE

14 C CB DBL
T.F.= 576.09
F.L.= 572.19 (15"RCP NE
F.L.= 572.69 (12"RCP NW

15 C CB DBL
T.F.= 573.81
F.L.= 570.61 (18"RCP N
F.L.= 570.71 (15"RCP SW

16 C-L DBL
T.F.= 572.96
F.L.= 567.26 (24"RCP NE
F.L.= 569.36 (24"RCP S
F.L.= 568.76 (18"RCP S

17 DMH
T.F.= 574.11
F.L.= 569.71 (24"RCP N
F.L.= 570.31 (12"RCP NE
F.L.= 569.96 (24"RCP SE
F.L.= 570.01 (4"METAL SW

18 C CB
T.F.= 575.85
F.L.= 571.15 (24"RCP SE
F.L.= 571.75 (12"RCP SW
F.L.= 570.95 (24"RCP NW
F.L.= 571.45 (4"METAL NE

19 C CB
T.F.= 575.9
F.L.= 572.5 (12"RCP NE
F.L.= 573.4 (12"RCP SW
F.L.= 572.9 (4"METAL SE

20 C-L CB
T.F.= 582.55
F.L.= 580.15 (10"CPP S
F.L.= 579.75 (10"CPP N

21 C-L CB
T.F.= 593.84
FILLED WITH DEBRIS AND SILT

22 C-L CB
T.F.= 609.72
F.L.= 605.72 (6"CPP W
F.L.= 605.22 (6"PVC N
F.L.= 605.22 (6"PVC N

23 C CB
T.F.= 573.76
F.L.= 570.76 (12"RCP SW

24 STORM MH
T.F.= 576.19
F.L.= 564.99 18"RCP N
F.L.= 565.29 (24"RCP SW
F.L.= 570.99 (18"RCP E

25 C CB
T.F.= 575.46
F.L.= 571.26 (18"RCP W

26 STORM MH
T.F.= 575.28

27 STORM MH
T.F.= 575.63

28 STORM MH
T.F.= 575.43

29 T.F.= 575.38
F.L.= 571.88 (18"RCP N

30 C CB
T.F.= 572.25
F.L.= 564.65 (15"RCP SW
F.L.= 565.55 (12"RCP NE

31 C CB
T.F.= 575.32
F.L.= 569.62 (15"PVC W
F.L.= 571.72 (12"RCP SE

32 C-L CB
T.F.= 578.48
STRUCTURE IS CAVED IN
INVERT NOT ACCESSIBLE

33 C-L CB
T.F.= 578.18
F.L.= 574.03 (12"RCP SW)
F.L.= 573.03 (24"RCP NW)
F.L.= 573.18 (24"RCP SE)

34 STORM MH
T.F.= 584.75
F.L.= 574.75 (24"RCP NW)
F.L.= 574.75 (18"RCP SE)
F.L.= 576.55 (24"RCP NE)

35 C CB
T.F.= 583.79
F.L.= 577.79 (15"RCP SW)
F.L.= 578.09 (12"RCP E)

36 C CB
T.F.= 584.89
F.L.= 580.09 (12"RCP W)

37 STORM MH
T.F.= 585.44
F.L.= 574.74 (24"RCP NW)
F.L.= 578.24 (12"RCP SE)
F.L.= 575.34 (24"RCP S)

38 C CB
T.F.= 589.29
F.L.= 582.89 (12"RCP NW)
F.L.= 584.29 (12"PVC SE)

39 STORM MH
T.F.= 591.58
F.L.= 584.83 (12"PVC NW)
F.L.= 585.28 (12"RCP NE)

40 C-L CB
T.F.= 591.66
F.L.= 586.26 (12"RCP SW)
F.L.= 586.06 (12"RCP NE)

41 STORM MH
T.F.= 591.05
F.L.= 583.05 (24"RCP N)
F.L.= 586.25 (24"RCP S)
F.L.= 584.25 (12"RCP SW)
F.L.= 584.15 (15"RCP SE)

42 C CB
T.F.= 595.02
F.L.= 588.92 (15"RCP W)
F.L.= 589.02 (15"RCP E)

43 C CB
T.F.= 595.14
F.L.= 589.24 (15"RCP W)
F.L.= 590.84 (12"RCP S)
F.L.= 589.44 (18"RCP SE)

44 STORM MH
T.F.= 597.19
F.L.= 589.99 (18"RCP NW)
F.L.= 590.09 (24"RCP NE)
F.L.= 591.99 (12"CPP SW)
F.L.= 593.59 (6"PVC S)
F.L.= 593.59 (6"PVC S)

45 C CB
T.F.= 596.62
F.L.= 590.67 (24"RCP SW)
F.L.= 590.82 (12"RCP NE)

46 C CB
T.F.= 596.50
F.L.= 591.00 (12"RCP SW)

47 RND CB
T.F.= 600.97

48 C CB
T.F.= 598.85
F.L.= 594.15 (12"RCP N)
F.L.= 594.20 (8"PVC E)
F.L.= 594.55 (12"RCP W)

49 C CB
T.F.= 598.76
F.L.= 595.06 (12"RCP E

50 STORM MH
T.F.= 602.6
F.L.= 596.3 (24"RCP NW)
F.L.= 596.4 (24"RCP S)
F.L.= 596.7 (15"RCP E)

51 STMH
TF=601.92
INVERT NOT ACCESSIBLE

52 C CB
T.F.= 604.64
F.L.= 600.94 (12"PVC NW)
F.L.= 601.14 (12"PVC SE)

53 'C-L' CB
T.F.=625.15
F.L.=619.15 (18" SE)
F.L.=619.15 (24" SW)
F.L.=618.65 (24" NE)

54 C' CB
T.F.=630.44
F.L.=626.09 (12" SW)
F.L.=625.14 (12" NE)
F.L.=624.44 (12" NW)

55 C' CB
T.F.=630.67
F.L.=628.17 (12" SE)
F.L.=626.77 (12" NE)

56 'C-L' CB
T.F.=643.62
F.L.=637.02 (18" SE)
F.L.=637.02 (24" SW)
F.L.=636.92 (24" NE)

57 C' CB
T.F.=643.66
F.L.=638.56 (15" SW)
F.L.=638.36 (18" SE)
F.L.=638.26 (18" NW)

58 DMH
T.F.=645.58
F.L.=641.48 (12" S)
F.L.=641.28 (12" SW)
F.L.=641.28 (15" NE)

59 DMH
T.F.=657.13
F.L.=653.03 (12" SW)
F.L.=648.53 (15" NW)

60 DMH
T.F.=649.27
F.L.=645.17 (12" NE)

61 'C' CB
T.F.=651.62
F.L.=643.92 (24" SW)
F.L.=643.82 (24" NE)

62 'C' CB
T.F.=653.75
F.L.=646.45 (15" E)
F.L.=646.35 (18" SE)
F.L.=646.25 (24" NE)

63 C' CB
T.F.=653.48
F.L.=647.58 (15" SE)
F.L.=645.78 (15" W)

64 RND. CB
T.F.=653.82
F.L.=650.12 (12" SE)
F.L.=650.02 (15" NW)

65. RND. CB
T.F.=659.84
WATER=654.64
F.L.=662.2± (12" SE

66 RND. CB
T.F.=667.80
F.L.=662.20 (12" SE)
F.L.=662.10 (12" NW)

67 RND. CB
T.F.=668.84
F.L.=662.84 (12" S)
F.L.=662.84 (12" N)

68 RND. CB
T.F.=670.92
F.L.=664.92 (12" S)
F.L.=664.32 (12" N)

69 'C' CB
T.F.=657.26
F.L.=652.56 (12" E)
F.L.=651.46 (15" S)
F.L.=651.16 (18" N)

70 'C' CB
T.F.=657.16
F.L.=654.26 (12" E)
F.L.=654.06 (12" W)

71 RND. CB
T.F.=657.66
(Top Broken)

72 DMH
T.F.=661.55
F.L.=658.55 (8" E)
F.L.=655.95 (12" W)

73 Sq. CB
T.F.=659.40
F.L.=658.10 (6" NE)
F.L.=657.70 (8" NW)

74 Sq. CB
T.F.=661.70
F.L.=660.00 (6" E)
F.L.=659.80 (6" W)

75 Sq. CB
T.F.=661.64
F.L.=660.44 (6" W)

76 DMH
T.F.=659.82
F.L.=656.62 (10" E)
F.L.=654.72 (15" S)
F.L.=654.57 (15" N)

77 Rnd. CB
T.F.=660.74
F.L.=658.54 (6" NW)
F.L.=657.89 (4" NE)
F.L.=657.84 (10" SW)

78 Sq. CB
T.F.=660.11
F.L.=658.91 (6" SE)

79 'C' CB
T.F.=663.32
F.L.=658.82 (15" E)
F.L.=658.72 (15" N)

80 'C' CB
T.F.=663.19
F.L.=659.59 (12" E)
F.L.=659.49 (15" S)
F.L.=659.19 (15" W)

81 DMH
T.F.=663.96
(Frozen Shut)

82 DMH
T.F.=670.66
F.L.=667.46 (12" E)
F.L.=661.46 (12" W)

83 RND. CB
T.F.=684.37
F.L.=681.57 (10" E)

84 RND. CB
T.F.=682.80
F.L.=679.40 (10" S)
F.L.=674.00 (10" NE)
F.L.=673.70 (15" N)

85 Rnd. CB
T.F.=684.84
F.L.=681.84 (10" NE)

86 RND. CB
'T.F.=682.65
F.L.=680.25 (10" S)

87 RND. CB
T.F.=683.81
F.L.=674.51 (All 10")

88 RND. CB
T.F.=683.85
F.L.=680.95 (10" N)

89 RND. CB
T.F.=677.89
F.L.=675.59 (10" SE)

90 RND. CB
T.F.=678.51
F.L.=674.91 (10" E)
F.L.=674.81 (10" N)
F.L.=674.81 (10" W)
F.L.=674.71 (10"

91 RND. CB
T.F.=677.71
Water=673.61
(Recessed Pipes)

92 RND. CB
T.F.=677.95
(Recessed Pipes)

93. Rnd. CB
T.F.=678.22
(Recessed Pipes)

SURVEY BOOK: 14-04
SURVEYOR: DP-MC'
DRAWN: DAC
CHECKED: DAC
APPROVED: DAC

REVISIONS

No.	DATE	DESCRIPTION

SCALE: HORZ.: 1" = 40'
VERT.:

SURVEY DATUM: HORZ.: NAD 83
VERT.: NAVD 88

40 20 0 40
GRAPHIC SCALE

Prepared By:
benesch
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PREPARED FOR
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STEM RESEARCH CENTER PROJECT
STORRS CONNECTICUT

PROJ.No.: 70284.00
DATE: AUGUST 31, 2015

SV.05

File Location/Name – W:\2015\2115093 – Uconn Utility Framework\CIVIL\X-lot Survey\70284 Base – Standard\70284 Base.dwg
Date of Plot: August 07, 2018 – 1:47 PM

PAPER SPACE LAYOUT NAME:
TWISTVIEW:
VIEWNAME:
LAYER MANAGER NAME:
PLOT TABLE: STB

146 Hartford Road
Manchester, CT 06040

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