APPENDIX C

Correspondence

New York State Department of Environmental Conservation
Division of Environmental Permits, Region 3
21 South Putt Corners Road, New Paltz, New York 12561-1620
Phone: (845) 256-3054 • **FAX:** (845) 255-3042
Website: www.dec.ny.gov

Alexander B. Grannis
Commissioner

March 7, 2008

Mr. Steve Engelhardt
101 Old Flatbush Rd
Kingston, NY 12401

Re: Ulster Manor Subdivision
Town of Ulster, Ulster County
DEC Application ID #: 3-5154-00196/00001

Dear Mr. Engelhardt:

The NYS Department of Environmental Conservation (DEC) has reviewed your January 26, 2008 correspondence and associated materials which we received on January 29, 2008. I would like to thank you for your continued concern with regard to the above referenced project proposed within your community and the wetland resources which you obviously have a genuine concern for.

Based upon review of the information provided, it appears that one of the major concerns is that the "Intent of SEQR" was not being fulfilled by the designated Lead Agency; the Town of Ulster Planning Board. I feel that it is important to be fully aware of the intention of SEQR which is clearly indicated in 6NYCRR Part 617.1(d): "Accordingly, it is the intention of this Part that a suitable balance of social, economic and environmental factors be incorporated into the planning and decision making processes of state, regional and local agencies. It is not the intention of SEQR that environmental factors be the sole consideration in decision-making". The Town of Ulster Planning Board subjected this project to an environmental impact statement (EIS) review and the role of the Final EIS (FEIS) is to address the comments raised during the review period.

To the contrary, DEC staff believes that the intention of SEQR is truly being fulfilled. Due to your public involvement and DEC review, a wetland area, previously not regulated by NY State under Article 24, with a direct hydrologic connection to State regulated freshwater wetland KE-10 was recognized as being a significant resource and officially validated by our wetland staff. As a result, the project sponsors have decreased the size of the proposed development and removed all structures from the wetland 100 foot adjacent area accordingly. These revisions not only protect the wetland and fulfill the intent of SEQR, but also meet the DEC wetland regulations to avoid, minimize and mitigate adverse environmental impacts.

In regards to an appropriate evaluation of wetland resources, another major concern of yours, I would like to indicate that DEC wetland staff are extremely well versed in wetland functions and processes and are well aware of the significance of this resource to the people of New York. To this end, the Freshwater Wetlands Regulations (6 NYCRR Part 663) are being strictly adhered to during review of this proposed project. These regulations were developed specifically to preserve, protect and conserve freshwater wetlands and associated benefits. Deed notices and wetland boundary markers will be a condition of any DEC issued permit as a means to notify future owners of the presence of this resource and to continue to protect this wetland ecosystem.

I would also like to point out that the circulated fact sheet and associated Figure A you have included in the submitted materials are outdated (dated May 3, 2007). Proposed project plans were amended by the project sponsor in August 2007 and resubmitted to the DEC in October 2007.

Re: Ulster Manor Subdivision
Town of Ulster, Ulster County
DEC Application ID #: 3-5154-00196/00001

These proposed plans were available during your recent FOIL review on January 17, 2008. Current proposed plans included a reduction in the number of proposed units and also indicate that all proposed facilities and associated stormwater structures are located outside of the regulated 100 foot adjacent area. It is also important to note that DEC issued a Notice of Incomplete Application on December 21, 2007 to the project sponsor for sediment and erosion control items required by the DEC Division of Water (DOW). Specifically, DOW staff indicated that "due to the extensive NYS Wetland on site, **these measures must be aggressive in nature**". To date, DEC has not received amended plans to address these issues. Once these are submitted, DEC will be able to call the application complete and public notice it. You will be copied on this document.

In regards to the karst topography and the potential for negative impacts to groundwater and wetland resources from development near these features, it is important to note that while there is a potential for these features to exist on site, they are not a feature unique only to this site. In fact, karst features can be observed throughout the area as part of the Helderberg group (a carbonate-rock formation) that ranges throughout New York State, including areas in the Hudson Valley, west of the Hudson River. As I am sure you are aware, the area surrounding this proposed development is currently extensively developed with commercial, residential, and industrial features constructed on the same geologic formation. Through the appropriate location of stormwater structures, DEC staff feel that this will alleviate any potential impacts to karst features.

As previously stated in my letter on December 24, 2007, the DEC "participates in the review of proposed development projects where we have a regulatory jurisdiction and we strive to ensure that projects avoid, minimize or if necessary mitigate impacts to the environment to the maximum extent practical." In this particular proposed project, DEC jurisdiction is very limited. It remains the position of DEC staff that re-establishment with DEC as lead agency would not be appropriate under these circumstances. DEC staff will continue to thoroughly review the projects sponsors proposed plans to ensure that all applicable environmental regulatory standards are adhered to. At this time DEC staff believe that a meeting to discuss the project is not warranted based upon the above stated items.

Again, thank you for your intent in protecting the environment in Region 3.

Sincerely,

William C. Janeway
Regional Director

cc: M. Duke, DEC Region 3
J. Petronella, DEC Region 3
B. Drumm, DEC Region 3
K. Cahill
T. Ulster Planning Board, Chair

New York State Department of Environmental Conservation
Division of Fish, Wildlife & Marine Resources
New York Natural Heritage Program
625 Broadway, Albany, New York 12233-4757
Phone: (518) 402-8935 • **FAX:** (518) 402-8925

Alexander B. Grannis
Commissioner

January 31, 2008

Brian C. Bury
Tim Miller Associates, Inc
10 North Street
Cold Spring , NY 10516

Dear Mr. Bury:

In response to your recent request, we have reviewed the New York Natural Heritage Program database with respect to an Environmental Assessment for the proposed Ulster Manor Residential Development - 50 acre parcel, site as indicated on the map you provided, located in the Town of Ulster, Ulster County.

> We have no records of <u>known</u> occurrences of rare or state-listed animals or plants, significant natural communities, or other significant habitats, on or in the immediate vicinity of your site.

The absence of data does not necessarily mean that rare or state-listed species, natural communities or other significant habitats do not exist on or adjacent to the proposed site. Rather, our files currently do not contain any information which indicates their presence. For most sites, comprehensive field surveys have not been conducted. For these reasons, we cannot provide a definitive statement on the presence or absence of rare or state-listed species, or of significant natural communities. This information should not be substituted for on-site surveys that may be required for environmental assessment.

Our databases are continually growing as records are added and updated. If this proposed project is still under development one year from now, we recommend that you contact us again so that we may update this response with the most current information.

This response applies only to known occurrences of rare or state-listed animals and plants, significant natural communities and other significant habitats maintained in the Natural Heritage Data bases. Your project may require additional review or permits; for information regarding other permits that may be required under state law for regulated areas or activities (e.g., regulated wetlands), please contact the appropriate NYS DEC Regional Office, Division of Environmental Permits, at the enclosed address.

Sincerely,

Tara Seoane

Tara Seoane, Information Services
NY Natural Heritage Program

Encs.
cc:

**TIM
MILLER
ASSOCIATES, INC.**

10 North Street, Cold Spring, NY 10516 (845) 265-4400 265-4418 fax www.timmillerassociates.com

January 10, 2008

Ms. Jean Petrusiak
NYS Department of Environmental Conservation Information Services
Division of Regulatory Affairs
625 Broadway, 5th Floor
Albany, NY 12233-4757

Re: Ulster Manor Residential Development, Town of Ulster, Ulster County

Dear Ms. Petrusiak:

Tim Miller Associates is preparing environmental documentation for a proposed residential development project at the above referenced 50 acre property. The project site location is shown on the enclosed USGS topographic map for your reference.

The project site currently exists as wooded and wetland areas to the east of US Route 9W in the Town of Ulster, north of the City of Kingston. The local community also includes areas consisting of commercial and residential developments.

The concept for development of the site would include 42 multifamily townhouse units, 82 attached townhomes and 25 single-family detached dwellings. All existing wetland areas and 100 foot adjacent land as well as portions of the existing woodlands would remain undeveloped.

We would like to know if your records show the presence of any rare or protected plant or animal species or significant wildlife habitat communities on the project site or vicinity. Please notify this office by letter of any such resources within the project site or vicinity that may be impacted by future development on this property.

Thank you for your prompt assistance in this matter. Please call me at (845) 265-4400 should you have any questions or need additional information.

Sincerely,

Brian C. Bury
Environmental Scientist/Planner
TIM MILLER ASSOCIATES, INC.

enclosure

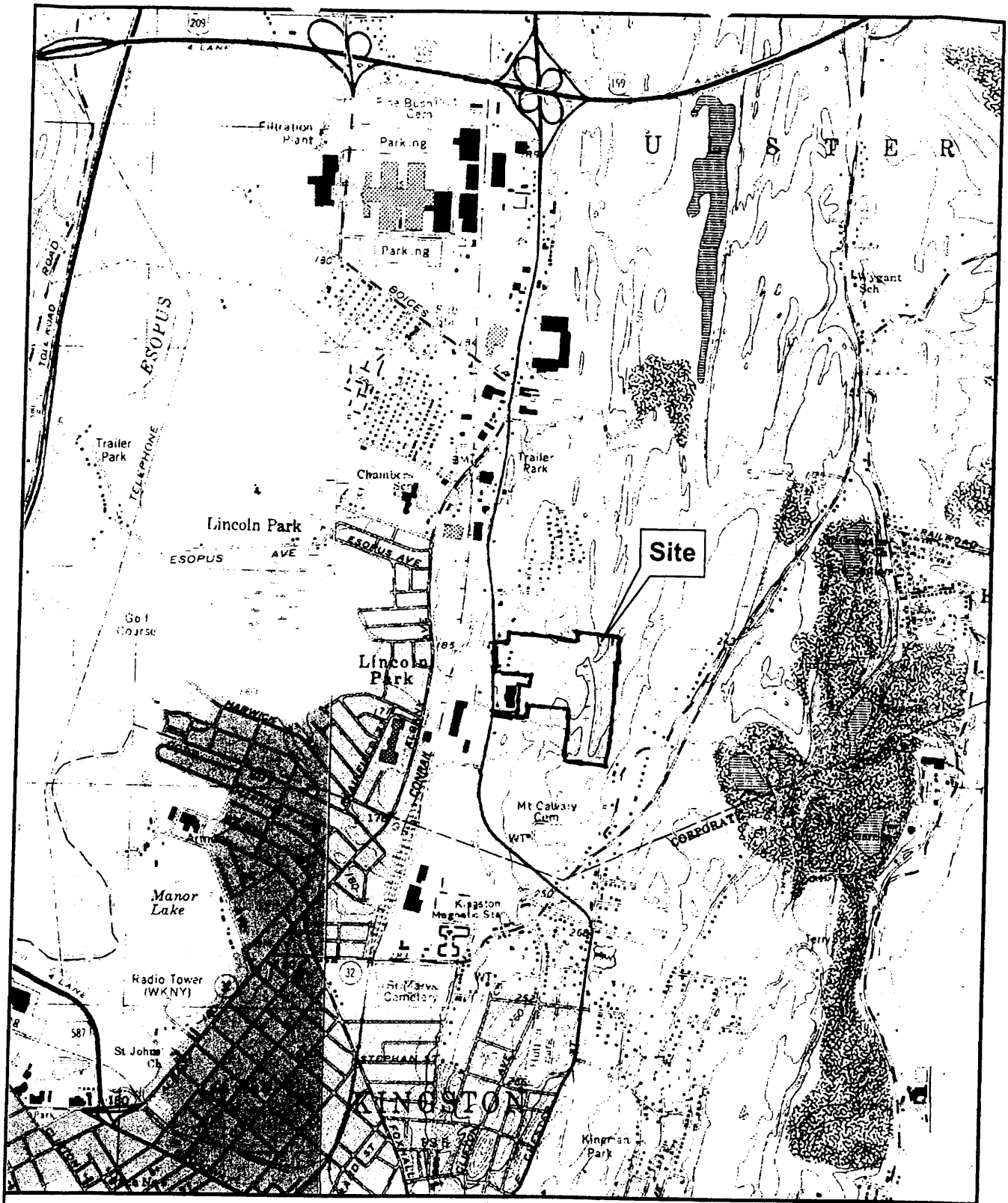

Figure 1: Site Location Map
Ulster Manor
Town of Ulster, Ulster County, New York
Base Map Source: USGS Topographic Map, Kingston East and West Quads, 1980
Property Line Source: Medenbach & Eggers, 01/28/05
Scale: 1 inch = 2,000 feet

New York State Department of Environmental Conservation
Division of Environmental Permits, Region 3
21 South Putt Corners Road, New Paltz, New York 12561-1620
Phone: (845) 256-3054 • **FAX:** (845) 255-3042
Website: www.dec.ny.gov

Alexanderr B. Grannis
Commissioner

December 21, 2007

Mr. Edward Sprague
Medenbach & Eggers, Civil Engineering and Land Surveying P.C.
4305 US Highway 209
Stone Ridge, NY 12484-5620

Re: Ulster Manor Subdivision
Town of Ulster, Ulster County
DEC Application ID #: 3-5154-00196/00001
Notice of Incomplete Application

Dear Mr. Sprague:

The NYS Department of Environmental Conservation (DEC) has reviewed the revised plans submitted by your office which DEC received on October 29, 2007. These plans were prepared as a result of DEC comments issued on November 30, 2006 (copy enclosed) regarding the subject project. Revised plans are titled "Ulster Manor" and dated August 9, 2007. The current proposed project involves the construction of a mixed-use, 128-unit (previously 148 units), residential development on a 48-acre parcel of land located east of the intersection of Route 9W and Memorial Drive in the Town of Ulster. The project is proposed to be served by municipal sewer and water supply systems. Based upon review of the materials provided, the DEC has determined that the application is incomplete. Please address the following:

1. **Stormwater Management**
DEC staff has reviewed the Stormwater Pollution Prevention Plans (SWPPP) for the subject site. Please address the comments included on the attached Division of Water memorandum (copy enclosed).

2. **Freshwater Wetlands**
DEC staff recognize that the project sponsor has removed 25 single family detached dwellings from the originally proposed plans and relocated remaining dwellings and structures to eliminate impacts to the state regulated wetland KE-10 (Class II) and it's 100 foot adjacent area (AA). At this time, DEC is satisfied that the applicant has avoided impacts to wetland resources to the greatest extent practical. However, per the November 30, 2006 correspondence from Mr. Sheeley of the DEC, it was indicated that the proposed future access road in the eastern area of the site is in close proximity to KE-10 and it's 100 foot AA. Accordingly, it was indicated that plans for the Ulster Manor site should be developed without the presumption that a future roadway connection is feasible. Current plans continue to indicate this proposed future connection. Please address this matter. Should this connection be pursued in the future, it will require a separate permit jurisdiction and SEQR review. In addition, we request additional detail be shown on plans for the retaining wall immediately adjacent to Bio-retention Zone #9 which abuts the AA of the regulated wetland

Re: Ulster Manor Subdivision
Town of Ulster, Ulster County
DEC Application ID #: 3-5154-00196/00001
Town of Carmel, Putnam County
Notice of Incomplete Application

3. **Cultural Resources**
Please provide an update on the status of the Phase III archeological Investigation required by the NYS Office of Parks Recreation and Historic Preservation.

You had also requested the current status of the DEC in relation to the SEQR review. As the project continues to require a public water supply permit from the DEC for the proposed extension of the water district to serve the site and a stormwater SPDES permit, our status will remain as an Involved Agency. Please be aware that the Town of Ulster must apply for the water supply permit.

The application will remain incomplete until the above referenced items are addressed. If you have any comments or questions, please feel free to contact me at (845) 256-3050.

Sincerely,

John W. Petronella

Environmental Analyst
Division of Environmental Permits
Region 3

Enc: November 30, 2006 DEC correspondence
Division of Water SWPPP Memorandum (December 7, 2007)

cc: F. Almquist, T. Ulster Planning Board
B. Drumm, DEC Region 3
J. Swentusky, DEC Region 3
NYS Office of Parks, Recreation and Historic Preservation (File no. 03PR3925)
W. Janeway, DEC Region 3

New York State Department of Environmental Conservation
Division of Water, Region 3
21 South Putt Corners Road, New Paltz, New York 12561-1620
Phone: (845) 256-3000 • **FAX:** (845) 255-3414
Website: www.dec.ny.gov

Alexander B. Grannis
Commissioner

Memorandum

DATE December 7, 2007
TO: Peg Duke (previously a Scott S. project)
FROM: Janet Swentusky
RE: Construction SPDES review comments –**Ulster Manor** # 3-5154-00196/00001
(T)-Ulster Ulster Co. Plans received Nov. 19, 2007.

General

- No more than 5 acres of soil may be disturbed at any one time without prior written permission. SWPPP and Site Plans must clearly outline and include a detailed sequence of construction activity in a phasing plan on the Site Plan, limiting disturbance to the aforementioned criteria. This must be clearly delineated and outlined on the Site Plan.

Sediment and Erosion Control

- There were no Sediment and Erosion Controls identified on the Site Plan. These measures (including, but not limited to: temporary retention facilities, silt fencing, stabilized entrances, soil matting, diversionary swales etc.) must be clearly identified on the Site Plan. Due to the extensive regulated NYS Wetland on site, **these measures must be aggressive in nature**. Due to the absence of information concerning Sediment and Erosion controls, further detailed review will be necessary upon receipt of a re-submittal.
- Temporary roads must be constructed in accordance with the design in "NY Standards and Specifications for Erosion and Sediment Control" and be included early in the construction sequence on the Site Plan.
- It must be demonstrated that any proposed temporary retention basin(s) is capable of holding 3600 cubic feet per acre drained.
- If the permanent outflow structure is installed in a temporary basin/trap during the construction phase, the Site Plan must indicate that any outlet orifices falling below the required stormwater runoff retention elevation must be closed off to allow the required holding capacity (3600 cf per acre drained).
- The Site Plan must clearly indicate how runoff will be conveyed to any temporary retention structure prior to the roadways receiving the final top coat.
- Due to the soil types, all temporary sediment and erosion control basins/traps must include an acceptable de-watering device designed in accordance with those found in "NY Standards for Erosion and Sediment Control". The design detail for the chosen structure must be included on the Site Plan & included in the construction sequence.
- Due to the slopes and soil types, roadside conveyances must be stabilized early in the construction sequence.
- Slopes greater than 3:1 must have some form of soil matting, & this must be clearly indicated on the Site Plan & included early in construction sequence.

Stormwater Management

- The SWPPP must demonstrate the required soil testing has been preformed as per specifications for infiltration systems which can be found in Appendix D of the "NYS Stormwater Management Design Manual".
- The under drains for the proposed bio-retention (filtration) areas must discharge to surface waters. Capped drainpipe ends are used only in infiltration practices.
- Infiltration basins may not go on line until the contributory drainage area has been stabilized, and this must be clearly indicated as such in the construction sequence on the Site Plan.
- The SWPPP and Site Plan indicate Stormwater Management facility receiving overflow from another SW facility. It is unclear if and how this is included in all related calculations.

Maintenance

- The Site Plan must identify the entity responsible for long term maintenance, and include a maintenance schedule of each Stormwater Management measure used.

Medenbach & Eggers
Civil Engineering and Land Surveying P.C.
4305 US Highway 209
Stone Ridge, New York
12484-5620

Barry Medenbach, P.E.
N.Y. Lic. No. 60142
N.J. Lic. No. 27646

Phone (845) 687-0047
FAX (845) 687-4783

William R. Eggers L.S.
N.Y. Lic. No. 49785

October 23, 2007

New York State Department of Environmental Conservation
Region 3, Division of Environmental Permits
21 South Putt Corners Road
New Paltz, NY 12561
Attention: Mr. Scott E. Sheeley – Deputy Regional Permit Administrator

Re: Ulster Manor Residential Community
Town of Ulster, Ulster County, NY
DEC Application No. 3-5154-00196/00001

Dear Mr. Sheeley:

The following response pertains to your November 30, 2006 comments and Draft EIS review. We have revised our site plan layout for the Final EIS (in progress) so that all development and site disturbances are outside of the KE-10 Wetlands and 100' Adjacent Area. The proposed 25 single-family detached dwellings have been removed from the project. We have also relocated the Attached and Multifamily Townhomes and drastically re-aligned the access road so that all potential impacts to either the wetlands or adjacent area is eliminated.

We respectfully request that the Department conduct a new review of the revised layout and plans since most of the earlier comments originated with the need for an Article 24, Freshwater Wetlands Permit:

ENCLOSED MATERIALS WITH QUANTITY:

a. Stormwater Management Plan (1)
b. Site Plan Set (3)
c. Disturbance Summary (1)*

*The Disturbance Summary sheet (color) will be incorporated into the Final EIS as an Illustrative Figure.

Please inform us whether the SEQR status of the DEC with regard to this project will be changed from Involved Agency to Interested Agency.

If you require additional copies or information, please call my extension x109.

Sincerely,

Edward Sprague
Project Manager

Copy: Bonnie Franson, AICP – Tim Miller Associates, Inc.
Enc.

Medenbach & Eggers
Civil Engineering and Land Surveying P.C.
4305 US Highway 209
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William R. Eggers L.S.
N.Y. Lic. No. 49785

October 22, 2007

Shuster Associates Planning & Zoning
3578 Atwook Road
Stone Ridge, NY 12484

Attention: Mr. Daniel Shuster, AICP

Re: Ulster Manor Revised Site Plan for FEIS
Route 9W, Town of Ulster, Ulster County, NY

Dear Dan:

As per our office meeting on 9-20-07, we are submitting a revised Plan Set and a Disturbance Summary Sheet for your review. The revised plan sheets listed below will become part of the FEIS responses to engineering comments presented by Joe Mihm of Brinnier & Larios, P.C.

Following your approval, the enclosed Disturbance Summary Sheet, will be incorporated as a figure into the FEIS response prepared by Tim Miller Associates, Inc.

REVISED SHEET INDEX

NUMBER	SHEET	BRIEF CORRECTION NOTE
I-1	Index Sheet	Index # revision
GP-1	Grading & Utility Plan	8% Road Grade at Entrance
GP-2	Grading & Utility Plan	Road Grading
TS-1	Tree Save Plan	Increased Trees / New Layout
RP-1	Road Profiles	New Road Layout
RP-2	Road Profiles	New Road Layout
U-1	Water Distribution System	Added Legend
U-2	Sewage Collection System	Added Legend
HIP-1	Highway Improvement Plan	Corrections for DOT
HIP-2	Highway Improvement Plan	Dot Notes & Details

Disturbance Summary; to be incorporated as part of FEIS as an illustrative figure.

If you require additional information or copies, please call our office.

Sincerely,

Edward Sprague
Project Manager

Cc: Bonnie Franson,AICP, Joe Mihm,P.E.
Enc.

Medenbach & Eggers
Civil Engineering and Land Surveying P.C.
4305 US Highway 209
Stone Ridge, New York
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Barry Medenbach, P.E.
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Phone (845) 687-0047
FAX (845) 687-4783

William R. Eggers L.S.
N.Y. Lic. No. 49785

October 22, 2007

Brinnier & Larios, P.C.
Professional Engineers & Land Surveyors
67 Maiden Lane
Kingston, NY 12401

Attention: Mr. Joseph Mihm, P.E.

Re: Ulster Manor Revised Site Plan for FEIS
Route 9W, Town of Ulster, Ulster County, NY

Dear Joe:

As per our office meeting on 9-20-07, we are submitting a revised Plan Set, Stormwater Management Plan and Disturbance Summary Sheet for your review. Based on the extent of the site revisions and calculations, comments from your previous January 5, 2007 review letter have been incorporated where applicable:

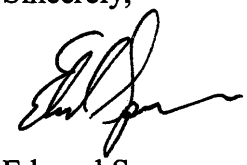
REVISED SHEET INDEX

NUMBER	SHEET	BRIEF CORRECTION NOTE
I-1	Index Sheet	Index # revision
GP-1	Grading & Utility Plan	8% Road Grade at Entrance
GP-2	Grading & Utility Plan	Road Grading
TS-1	Tree Save Plan	Increased Trees / New Layout
RP-1	Road Profiles	New Road Layout
RP-2	Road Profiles	New Road Layout
U-1	Water Distribution System	Added Legend
U-2	Sewage Collection System	Added Legend
HIP-1	Highway Improvement Plan	Corrections for DOT
HIP-2	Highway Improvement Plan	Dot Notes & Details

Disturbance Summary; to be incorporated as part of FEIS as an illustrative figure.

If you require additional information or copies, please call our office.

Sincerely,



Edward Sprague
Project Manager

Cc: Bonnie Franson,AICP, Dan Shuster,AICP
Enc.

05053

**TIM
MILLER
ASSOCIATES, INC.**

10 North Street, Cold Spring, NY 10516 (845) 265-4400 265-4418 fax www.timmillerassociates.com

March 7, 2007

Ms. Jean Petrusiak
NYS Department of Environmental Conservation Information Services
Division of Regulatory Affairs
625 Broadway, 5th Floor
Albany, NY 12233-4757

Re: Proposed 18-lot subdivision at Dobbs Ferry Road and Westchester View Lane
Town of Greenburgh, Westchester County

Dear Ms. Petrusiak:

Tim Miller Associates is preparing environmental documentation for a proposed residential development project at the above referenced 15 acre property. The project site location is shown on the enclosed USGS topographic reference map to assist your orientation to the parcel.

The project site currently exists as a wooded and undeveloped property, with an intermittent stream-course, in a residential community to the south of Dobbs Ferry Road (Route 100B) in the Worthington section of the Town of Greenburgh. The local community also includes areas consisting of commercial and municipal developments.

The concept for development of the site would include 18 single-family detached dwellings, a through road and on site extensions of municipal utilities.

We would like to know if your records show the presence of any rare or protected plant or animal species or significant wildlife habitat communities on the project site or vicinity. Please notify this office by letter of any such resources within the project site or vicinity that may be impacted by future development on this property.

Thank you for your prompt assistance in this matter. Please call me at (845) 265-4400 should you have any questions or need additional information.

Sincerely,

Bruce R. Friedmann
Environmental Planner
TIM MILLER ASSOCIATES, INC.

enclosure

File 04031 08/08/05
JS:\04031\Fig 4.8-12.cdr

Tim Miller Associates, Inc., 10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418

Steve Engelhardt
101 Old Flatbush Road
Kingston, NY 12401

December 10, 2007

Willie Jayneway, Regional 3 Director
NYS Department of Environmental Conservation
21 South Putt Corners Rd.
New Paltz, NY 12561

RE: Ulster Manor Residential Development Project, Town of Ulster, NY

Dear Mr. Jayneway:

I am writing in regard to the Ulster Manor Residential Development Project on Memorial Drive in the Town of Ulster, NY. This project, initially proposed in January 2004 by Ulster Land Holding Partners LLC ("applicant"), is for the development of 100 attached townhouses and 28 multifamily townhouses on a 48-acre site. The lead agency under the State Environmental Quality Review Act is Town of Ulster Planning Board ("Planning Board"). **I am respectfully requesting that New York State Department of Environmental Conservation Region 3 assume lead agency in this critical environmental decision-making process.**

The proposed unlisted Action was the subject of a Positive Declaration approved on July 21, 2005. Comments during the scoping period were given to the Planning Board between July and August 2005. A draft EIS was issued and accepted as complete on September 21, 2006. On May 17, 2007, the Planning Board directed the applicant to prepare a Final EIS. Between September 21, 2006 and December 8, 2007, the following respected and renowned professionals gave public comment on the DEIS and urged a Supplemental EIS:

1 Andrew Willingham, Professional Engineer, David Clouser & Associates, November 8,2006

2 J.G. Barbour, Ecological Consultant and Field Biologist for Hudsonia, Ltd., November 8, 2006 and November 20, 2006

3 Karen Schneller-McDonald, Wetland Specialist, Hickory Creek Consulting, LLC, December 21, 2006

4 Charles Silver, PhD, Environmental Scientist, Office of the Attorney General, State of New York, December 22, 2006

5 Paul A. Rubin, Hydrologist, Hydroquest, December 29, 2006

6 Jeffrey Anzevino, AICP, Scenic Hudson, Inc., December 29, 2006

7 David Clouser, Professional Engineer, David Clouser & Associates, December 29, 2006

8 Carl Dworkin, Attorney At Law, on behalf of clients Steve Englehardt and Vince Guido, June 14, 2007

The Town of Ulster Planning Board is poised to approve the proposed Ulster Manor development in the very near future. The next Planning Board meeting is scheduled for December 20, 2007, where a decision to accept the FEIS is expected.

Environmental Concerns

The DEIS minimizes the presence of significant impact; does not present adequate information regarding sensitive natural resources and ecological processes; does not adequately describe cumulative impacts, indirect and long term impacts, and impacts on adjacent properties and resources; and presents insufficient or ineffective mitigation for significant impacts, with respect to the following environmental impacts, as well as others not detailed below. If required, a Supplemental EIS could address these concerns.

Wetland and Watershed Impacts

The State wetland complex within and contiguous to the proposed project supports a significant salamander breeding population, as well as a number of other species of animals and plants. Wetlands on this site are connected to an extensive wetland complex, totaling more than 100 acres. As the proposal indicates, parking lots, buildings, detention basins, and other impervious surfaces will cover the headwaters to wetland complex KE-10 and will result in significant irreparable harm to the wetland's natural recharge regime. Please see Attachment A, *Fact Sheet: Environmental Review in the Town of Ulster.*

The project proponent intends to significantly modify and change sub-basin boundaries throughout the project area, thus disrupting the hydrologic and thermal fluxes that maintain wetland health and viability. Additionally, there are three vernal pools on the proposed project site, which fall under the jurisdiction of NYS DEC. The DEIS does not mention vernal pools - let alone explain how the applicant intends to comply with 6 NYCRR Part 663, New York States' Freshwater Wetland Permit Requirement Regulations.

Geology

In 2005, the New York State Region 3 Open Space Advisory Committee Report identified Ulster County as a conservation priority project and proposed it as a "Karst Aquifer Region." The Kingston-Rosendale Karst aquifer system is characterized by a complex of natural caves, mines, sinkholes, sinking streams, and springs in strata exposed along the western margin of the Hudson Valley. The proposed Ulster Manor

project is situated on well-developed hydrologically-active sinkholes. Regardless of repeated professional advice, the project applicant has *not* conducted (and the Town has not required) a full hydrogeologic investigation that assesses where infiltrating groundwater discharges and the potential water quality impacts associated with the project construction. In fact, the applicant did not even mention the existence of the Karst aquifer region in the DEIS. The relationship of this site to the geologic formation may be significant in terms of rare species of NYS threatened or endangered plants. Although raised in public meetings and in written comments, these concerns have not been addressed.

Stormwater
The Town of Ulster is an MS4 community and subject to stormwater control regulations. The proposed project will result in covering over 25% of the site with impervious surfaces which will result in dramatic increases in stormwater runoff and pollution. The disruption of drainage patterns and seasonal water levels can also lead to wetland loss and increased flooding problems. The DEIS does not address these impacts directly, but assumes that the SWPPP will take care to of the problem. Throughout the DEIS, the applicant provides conflicting information about the impact of polluted stormwater on the wetland complex and minimizes the ecological and financial impact to neighboring properties.

The project, as designed, will lead to the destruction of New York State wetlands. While this issue has been raised by Hydroquest, Hickory Creek Consulting, and biologist James Barbour, it has not been addressed by the Town or in the DEIS - again documenting that the Planning Board has no scientific foundation upon which to direct the applicant to advance to the Final EIS stage.

Biologically significant species
In Section 3.3 of the DEIS, the applicant fails to mention more than 50 rare plant and animal species that have been documented by the New York Natural Heritage Program as occurring in the Town of Ulster, City of Kingston, and neighboring towns of Hurley, Rosendale, and Saugerties. The DEIS lists only two species, bog turtle and Indiana Bat. An independent reviewer found 72 potential rare species and provided this information to the Town Board and applicant at a public meeting. However, the applicant did not perform all the additional surveys required under SEQRA and the Town Board has not required the applicant to correct this deficiency in the DEIS.

The above synopsis does not begin to cover the numerous inadequacies in the DEIS. A Supplemental Environmental Impact Statement is required to fully understand the environmental impacts to the project site, as well as the surrounding environment.

Legal Concerns

I understand that the DEC cannot become lead agency in every single local decision that

has environmental impacts. However, this is a particularly egregious case where the State Environmental Quality Review Act is being blatantly disregarded and the public input is being left out of the decision. In passing SEQRA, the legislature intended that SEQRA incorporate the consideration of environmental factors into the existing planning, review and decision-making processes of state, regional and local government agencies at the earliest possible time. To accomplish this goal, SEQR requires that all agencies determine whether the actions they directly undertake, fund or approve may have a significant impact on the environment, and, if it is determined that the action may have a significant adverse impact, prepare or request an environmental impact statement. Although the lead agency has required an EIS, the Planning Board has repeatedly refused to require the applicant to consider the full environmental impacts of this proposed project.

New York courts have determined that the Agency is not fulfilling its responsibility if it fails to consider issues brought to its attention. *Carpenter v. City of Ithaca Planning Board,* 190 A.D.2d 934, 935, 593 N.Y.S.2d 582, 584 (3rd Dept. 1993). Furthermore, the agency's review is deficient if studies done for review purposes aren't considered. *Hubbard v. Town of Sand Lake,* 211 A.D.2d 1005, 1006, 622 N.YS.2d 126, 127 (3rd Dept. 1995). I have spent thousands of dollars to have independent experts review the proposed project, visit the project site, and make recommendations to the Planning Board. The experts' suggestions to consider additional impacts, that are required to be considered by NY law, have not been addressed in writing nor verbally at Planning Board meetings. Rather, the town has held steadfast in its directive to the developer to proceed to the FEIS, without a thorough evaluation of all identified impacts. The Planning Board's decision does not take the requisite "hard look" and ultimately eliminates the public from participating in this decision-making process as SEQRA intended.

This request is unusual in that the environmental review process has clearly failed in this particular case. The lead agency has not adequately responded to the public comments referencing serious environmental concerns, rendering the public participation section of SEQRA void. The Planning Board's decision cannot be scientifically validated and should not be accepted. Additionally, because the Planning Board has refused to consider the new information provided to them by the expert witnesses (named above), the decision to proceed to the FEIS stage without performing a Supplemental EIS, is not legally defensible. As the Hudson Valley is experiencing exponential population growth and sprawl from NYC, we should be taking steps to preserve our natural ecosystem functions, such as this major wetland complex.

Regardless of repeated requests and advice, the Planning Board has refused to consider requiring the applicant to perform a Supplemental EIS to correct the deficiencies in the DEIS. Please see Attachment B, *Open Letter to the Town of Ulster Planning Board.*

I urge you to intervene in this process and take over as lead agency, requiring the developer to complete a Supplemental Environmental Impact Statement to thoroughly

examine the environmental issues in question. ***Time is of the essence***. The Final EIS is **expected** by the end of year. By taking the role as lead agency, and at the very least requiring a Supplemental EIS, you will be ensuring that impacts to this major wetland complex, its vernal pools, and biologically significant flora and fauna will be addressed.

I look forward to your prompt response and support in this particularly egregious case.

Respectfully,

Steve Englehardt

Steve Englehardt
Town of Ulster

Cc: Governor Eliot Spitzer
Kevin Cahill, NYS Assemblyman
John Bonacic, NYS Senator
Pete Grannis, DEC Commissioner
Judith Enck, Deputy Secretary of the Environment, Governor Spitzer's Office
James Tierney, Assistant Commissioner, Office of Water Resources, NYS DEC
Chris Amato, Assistant Commissioner, Office of Natural Resources, NYS DEC
John Taylor, NYS DEC Region 3 General Counsel
Andrew Cuomo, Attorney General, State of New York
Katherine Kennedy, Special Deputy Attorney General for Environmental Protection
Charles Silver, PhD, Watershed Inspector, General Scientist, Office of the Attorney General
Robert Elliott, Deputy Secretary for Local Government, NYS Department of State
Fran Dunwell, Director, Hudson River Estuary Program
Scott Sheeley, DEC Region 3 Permits
Greg Edinger, Chief Ecologist, NY Natural Heritage Program
Barbara Kendall, Stormwater Program, Hudson River Estuary Program
Dan Shuster, Town of Ulster Planner
Jeff Anzevino, AICP, Scenic Hudson
Manna Jo Greene, Environmental Director, Hudson River Sloop Clearwater
Bonnie Franson, AICP, PP, Tim Miller & Associates
Barry Medenbach, P.E. (Medenbach & Eggers)
Larry Wolinsky, Esq., (Jacobiowitz & Gubits, LLP)
Frank Almquist, Chair, Town of Ulster Planning Board
Ozzie Biechert, Member, Town of Ulster Planning Board
Larry Decker, Member, Town of Ulster Planning Board
Renno Budziak, Member, Town of Ulster Planning Board
George Lucente, Member, Town of Ulster Planning Board
Alan Sorenson, Town Planner, Town of Ulster Planning Board
Dan Shuster, Town Planner, Town of Ulster Planning Board

OPEN LETTER TO THE TOWN OF ULSTER PLANNING BOARD

December 6, 2007

Hand Delivered – For Distribution to each Board Member

Town of Ulster Planning Board
1 Town Hall Drive
Lake Katrine, New York 12449

RE: Ulster Manor – Critical Need to Require a Revised or Supplemental EIS

Dear Members of the Planning Board:

We the undersigned request that you seriously reconsider rescinding your current directive of advancing the Ulster Manor application to the FEIS stage. The scientific basis for advancing beyond a DEIS is incomplete. This letter directly addresses what we perceive as fast track type actions on your part that will, if followed, lead to removal of the public from the SEQRA process and to environmental destruction. We urge you to rescind your directive of May 17, 2007 to the applicant to prepare a Final Environmental Impact Statement (FEIS) and, instead, have the applicant prepare either a Supplemental EIS or a revised Draft EIS. In this manner, the public may participate in the SEQRA process, as per its intent. Please advise us if you plan to take this action in the near future and, also, if you note any errors in the content of this letter. We respectively request that you direct your response to Steve Engelhardt at 101 Old Flatbush Rd., Kingston, NY 12404 prior to the close of business on Tuesday, December 18, 2007. Thank you.

It is our understanding that the Town of Ulster Planning Board is poised to approve the proposed Ulster Manor development of some 100 attached Townhouses and 28 Multifamily Townhouses on a 48-acre site. Project construction WILL destroy the current healthy state of onsite wetlands, negatively affect the quality of offsite water resources, and contribute significantly to the amount of impervious surface within the watershed – which contributes to increased flooding conditions. The Board's approval process requires that you take the "hard look" required by the State Environmental Quality Review Act (SEQRA), the tenets of the Town's own July 2007 Comprehensive Plan, and follow your responsibility to act in a manner protective of your constituents' and the Town's environmental resources.

The State wetland within and contiguous with the proposed project site is an important water resource. The Town of Ulster's July 2007 Comprehensive Plan addresses wetlands as: *"...perhaps the most critical of all water resource considerations due to their extreme sensitivity to development."* This plan recommends that the Town: *"Work with DEC, NYCDEP and the Ulster County Soil & Water Conservation District to educate landowners about the natural functioning of streams and wetlands in order to mitigate damage to and protect water resources."* It is important that you, the Planning Board, not prematurely advance project approval based on the applicant's gross misidentification of site geology, lack of study and site-specific characterization of

surface water and groundwater hydrology, lack of assessment of wetland functions including habitat and hydrology, and an incomplete assessment of storm water impacts. Contaminant inputs from site development would chemically overwhelm and destroy the natural functioning of the Town's premier wetland ecosystem that the Town's Comprehensive Plan seeks to protect. Similarly, site sinkholes, not recognized in the DEIS, are likely to rapidly transport contaminants off-site to State wetlands.

Wetland functions including water quality improvement, minimization of flood frequency and peaks, habitat conservation, recreational opportunities, and groundwater recharge/ discharge are lost when wetlands and their buffers are degraded or destroyed.

The cost of inadequate protection of wetlands is high. Research on the economic value of wetland services supports the fact that the cost of wetland loss is higher than the cost of wetland protection. Wetland functions/services are expensive to replace, if they can be replaced at all. Their loss costs communities (e.g., property value and damage; public safety and prevention measures associated with increased flooding; loss of habitat; and reduced recreational, educational, and aesthetic open space affecting quality of life and rural character).

In addition, watershed protection requires protection of woodlands, adequate buffers, and a minimization of impervious surfaces. Cumulative impervious cover on multiple parcels can have significant adverse impacts on flooding, water quality, water supply, and the Town's natural resources. These are only some of the issues that have not been adequately examined in the DEIS.

The DEIS is so flawed and incomplete that it is impossible to scientifically and ethically justify advancing it to a Final EIS format removed from public participation. Environmental experts have thoroughly documented the environmental sensitivity of the project site and the wholly deficient DEIS. It is not prudent to advance the Ulster Manor project beyond a Draft EIS that has substantial omissions and incorrect content. The Planning Board has the authority to make sure the public remains fully able to participate in the SEQRA process.

On November 5, 2007, a comprehensive review of all Ulster Manor files in the Town of Ulster was conducted as part of a detailed Freedom of Information request. Simply put, Town Planning Board members have not been provided with and do not have adequate site-specific data and documentation to warrant advancing the project to the FEIS stage. While DEIS versions and assorted letters are present, the material in them is general in nature and does not address the many real concerns and issues raised by the public – even from the standpoint of a first correct assessment of critical geologic, hydrologic, and wetland-related characterization. Furthermore, project revisions have been put forth that alter the application material originally submitted. In the absence of public input, the Planning Board has approved revisions and, without any scientific assessment, characterization, written documentation, or justification reached unfounded and incorrect conclusions briefly alluded to meeting minutes, such as: *"Mr. Beichert states by eliminating the single family dwellings there is a 100% decrease in the disturbance of the wetlands; this was the major objection to the project."* (5-17-07) Unsupported statements

such as this do not justify advancing the project to the FEIS stage and removing the public from the review process. As designed, identified adverse environmental impacts cannot be *"mitigated or avoided* (as suggested in 5-17-07 meeting minutes). There has been no site-specific hydrologic testing or data collection to characterize site geology and hydrology and, thus, potential adverse impacts to wetlands and down gradient receptors (i.e., no scientific foundation to consider the DEIS application as complete). If advanced, construction of the current project proposal WILL destroy site wetlands. It is imperative that the public not be excluded from the project review process.

The Town of Ulster should require comprehensive assessment of all potential adverse environmental impacts based on actual site testing and data analysis before accepting the DEIS as complete, before removing public involvement, and before advancing to a FEIS. At this juncture, you, the Planning Board, has recently (5-17-07) directed the Ulster Manor project applicant to advance and complete a Final Environmental Impact Statement (FEIS) instead of a revised DEIS or a Supplemental EIS, as advised by environmental experts, the Attorney General's Office, and Attorney Carl Dworkin. It is the Planning Board's responsibility to fully consider issues brought to its attention. In this manner, the Planning Board can insure that the public will have further project input, that your actions are supportive of the stated interests of your concerned constituents, that your actions are totally supportive of the Town's own new Comprehensive Plan, that your project directives recognize the detailed technical input of environmental experts including the NYS Attorney General's Office, that your actions fully protect NYS's water resources, and that your actions are supportive of the intent of New York State's SEQRA law.

There is only one responsible action for the Planning Board to take – that is to rescind your directive to the project applicant and require the completion of either a Supplemental EIS or revised Draft EIS. In this way, the Planning Board will have effectively supported the democratic process, maintained the intent of SEQRA, potentially avoided positioning the Town for an expensive lawsuit, and provided comprehensive public input as part of a Town of Ulster development project. Experts have fully documented that the Planning Board has not been provided with scientifically or legally defensible material to form the basis for advancing the proposed Ulster Manor project to the Final EIS and approval stage. The real concerns of Town residents should be fully taken into account by you, the Town's representatives. Residents of the Town of Ulster should be afforded the opportunity of full public participation through comment and hearing. We look forward to your written response to this letter before the close of business on December 18, 2007. Thank you.

Paul A. Rubin
Hydrologist
HydroQuest

Spider Barbour
Ecological Consultant

Karen Schneller-McDonald
Hickory Creek Consulting

David Clouser
Engineer
David Clouser and Associates

Steve Engelhardt
Town resident

cc: Dan Shuster

Ulster Landing Holding Partners, LLC
David Clouser, PE, LS, David Clouser & Associates
Paul Rubin, Hydrologist, Hydroquest
Karen Schneller-McDonald, Hickory Creek Consulting
Spider Barbour, Field Biologist

Encl:/ 2

FACT SHEET:

Environmental Review in the Town of Ulster

Ulster Manor Site Concerns:

May 3, 2007

Public Review & Input Require Completion of a Supplemental Environmental Impact Statement (SEIS)

Four months after the end of the public comment period, significant factual information gaps have not been scientifically addressed

CRITICAL ISSUE: Advancement of the Project Application to a Final EIS by the Planning Board would fail to comply with the "hard look" and public review intent of SEQRA.

Project Description & Status: Ulster Landing Partners Holding, LLC seek to construct a residential development in the Town of Ulster. The proposed Ulster Manor site would include 42 multifamily townhouses, 82 attached townhomes, and 25 single-family detached dwellings on an approximately 48-acre site. A Draft Environmental Impact Statement (DEIS) has been prepared by the project applicant. The DEIS is broad-brushed in nature and lacks the site-specific characterization necessary to assess the geology, hydrology, and biology of the site. As a result, advancement of the housing project, as proposed, would cause "irreparable harm" to Town, New York State, and private resources. The Town of Ulster is not in a scientifically or legally defensible position to advance the existing application to a Final EIS. To do so would actively remove all public input, including that of private citizens, expert consultants, and the NY State Attorney General's Office.

Undocumented Hydrology: Development of the Ulster Manor site, as proposed, will permanently disrupt and destroy pristine wetland wildlife habitats and abundant species present in both on-site and off-site portions of a protected New York State wetland complex (KE-10). The species that live and reproduce in site wetlands rely on the slow, natural, influx of shallow groundwater. A delicate balance of surface water and groundwater now serve to maintain the proper proportion of chemicals, nutrients, and low-temperature, sustained, groundwater recharge. Continuation of existing KE-10 wetland ecosystem health requires a natural hydrologic flow regime that exactly mimics existing hydrologic conditions. The applicant has not conducted any site-specific assessment of surface water flow, groundwater flow, baseline water chemistry, or wetland species diversity. The applicant has failed to recognize that much of the site area is comprised of limestone bedrock with sinkholes and a sinking stream that funnel surface water underground. The applicant acknowledges that the "Groundwater flow direction on the site is not known.." Instead, the applicant plans to pave and roof a substantial portion of wetland recharge area, physically alter the drainage basins tributary to site wetlands, drain the shallow soil mantle with utility pipelines, blast high areas and fill low areas, and build within the State mandated 100-foot buffer zone. Stormwater contaminants will discharge into on- and off-site portions of wetland KE-10. Similarly, site contaminants will recharge the site's underlying karst aquifer and flow to undetermined receptors, perhaps wetland KE-10. The applicant's incomplete assessment is accented in their plan to construct a recreational building above a sinkhole. The hydrologic characterization presented in the DEIS is wholly deficient. It incorrectly asserts that wetlands and water resources will be negligibly impacted by the Ulster Manor project. It is incumbent upon the Town of Ulster Planning Board to require a SEIS of the applicant so that the public may continue to be involved in the SEQRA process. SEQRA was set-up to allow for public participation.

Contact Info:

Call **Steve Engelhardt** at **845 338-3602**, or e-mail **EDLYNLCC@verizon.net**

Prepared by Hydroquest for Steve and Marlene Engelhardt

Paul A. Rubin
HydroQuest
P.O. Box 387
Stone Ridge, N.Y. 12484
845-657-8111
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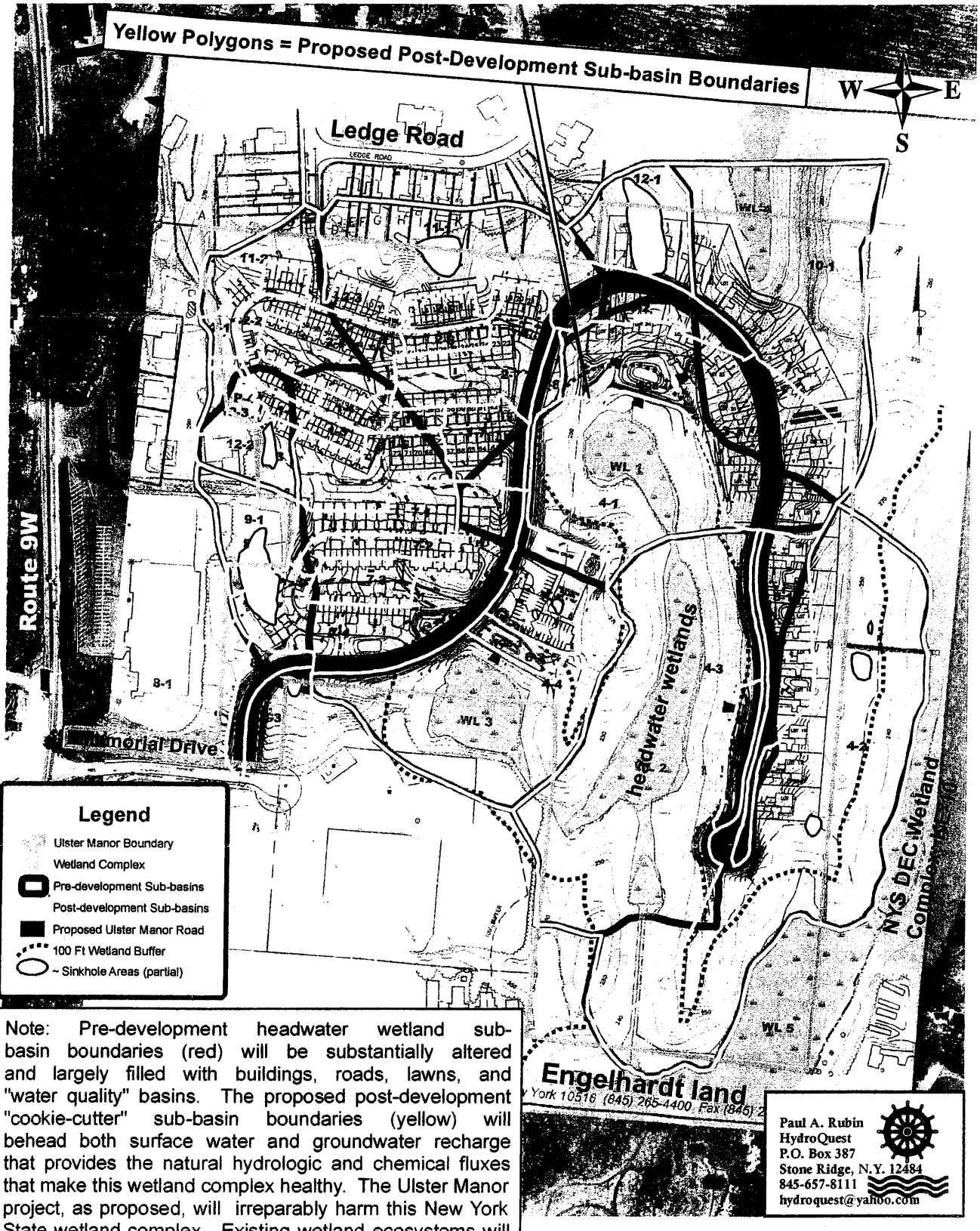
Proposed Ulster Manor Development Site: Pre and Post Development Drainage Sub-basins & Build-out; Town of Ulster, Ulster County, New York



Note: Pre-development headwater wetland sub-basin boundaries (red) will be substantially altered and largely filled with buildings, roads, lawns, and "water quality" basins. The proposed post-development "cookie-cutter" sub-basin boundaries (yellow) will behead both surface water and groundwater recharge that provides the natural hydrologic and chemical fluxes that make this wetland complex healthy. The Ulster Manor project, as proposed, will irreparably harm this New York State wetland complex. Existing wetland ecosystems will no longer be viable and will be destroyed. This proposal is not in keeping with NYS wetland protection statutes.

Paul A. Rubin
HydroQuest
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hydroquest@yahoo.com

Figure 2

CARL G. DWORKIN
ATTORNEY AT LAW
44 BENTWOOD COURT
ALBANY, NEW YORK 12203

(518) 452-5442
FACSIMILE (518) 452-5520
SERVICE BY FACSIMILE NOT ACCEPTED

June 14, 2007

Mr. Gerard Beichert, Chair
Town of Ulster Planning Board
1 Town Hall Drive
Lake Katrine, New York 12449

Mr. Frank Almquist, Member
Town of Ulster Planning Board
1 Town Hall Drive
Lake Katrine, New York 12449

Mr. Renno Budziak, Member
Town of Ulster Planning Board
1 Town Hall Drive
Lake Katrine, New York 12449

Mr. Lawrence Decker, Member
Town of Ulster Planning Board
1 Town Hall Drive
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Mr. George Lucente, Member
Town of Ulster Planning Board
1 Town Hall Drive
Lake Katrine, New York 12449

Mr. Alan Sorenson
Town of Ulster Planner
1 Town Hall Drive
Lake Katrine, New York 12449

Re: *Ulster Manor*

Gentlemen:

On behalf of Messrs. Vince Guido and Steve Englehardt, I am writing to you to request, in the strongest possible terms, that you require the applicant to either revise the Draft Environmental Impact Statement ("DEIS") or prepare and submit a Supplemental Environmental Impact Statement ("SEIS") for the purpose of dramatically augmenting the November, 2006 DEIS, either of which will be subject to a public hearing.

I understand that you have been inundated with expert reports. I also understand that, in addition to other experts and affected individuals having done so, the Office of the New York State Attorney General has explicitly stated that the preparation of an SEIS is indicated. [Strict interpretation of the New York State Department of Environmental Conservation ("NYSDEC") Environmental Impact Statement procedure regulation [6 NYCRR §617.9] suggests that the proper approach would be to reject the DEIS and direct revision; this discussion will take no position on whether the SEIS or revised DEIS is the preferable route to assuring more complete environmental impact consideration.]

The purpose of this letter is to put the expert reports and opinions, including those of the Attorney General's Office, into perspective by discussing the State Environmental Quality Review Act ("SEQRA") and why it demands the exhausting scrutiny of actions that it does using the specifics of the Ulster Manor project.

State Environmental Quality Review Act

Governmental bodies in New York are obligated to examine thoroughly the environmental impacts of any project for which regulatory approval is sought. This thorough examination is commonly referred to as a "hard look", a descriptor coined by the Appellate Division, Fourth Department in rejecting approval of the Carrier Dome in Syracuse for failure to consider the environmental impacts seriously. *H.O.M.E.S., et al. v. New York State Urban Development Corporation*, 69 A.D.2d 222, 231-32, 418 N.Y.S.2d 827, 832 (1979). Before work on a DEIS is begun, a formal "scoping process" may be undertaken in order to assure that all identifiable aspects and impacts of the action will be considered and how they will be considered [6 NYCRR §617.8], as occured in this case. Wihen there is a scoping process that produces an agreed scope of the DEIS, the scoping document provides explicit guidance as to what criteria will be used to determine whether a submitted DEIS contains all that was directed by the agreed scope and is otherwise adequate in all respects [6 NYCRR §617.9].

The totality of what is required by SEQRA was summarized by the Court of Appeals in its landmark decision in *Jackson, et al. v. New York State Urban Development Corporation*:

> SEQRA makes environmental protection a concern of every agency. ... an agency must give consideration not only to social and economic factors, but also to protection and enhancement of the environment. SEQRA insures that agency decision-makers--enlightened by public comment where appropriate--will identify and focus attention on any environmental impact of proposed action, that they will balance those consequences against other relevant social and economic considerations, minimize adverse environmental effects to the maximum extent practicable, and then articulate the bases for their choices. Moreover, ... SEQRA is not merely a disclosure statute; it "imposes far more 'action-forcing' or 'substantive' requirements on state and local decisionmakers than NEPA imposes on their federal counterparts".
> [67 N.Y.2d 400, 414, 503 N.Y.S.2d 298, 303 (1986); citations omited]

Once the public (and involved agencies) have been heard, the agency must "study" – a word that has real meaning – all that has been presented: the "hard look". The agency is not fulfilling its responsibility if it fails to consider issues brought to its attention. *Carpenter v. City of Ithaca Planning Board*, 190 A.D.2d 934, 935, 593 N.Y.S.2d 582,

584 (3rd Dept. 1993) (drainage concerns). The agency's review is deficient if studies done for review purposes aren't considered. *Hubbard v. Town of Sand Lake*, 211 A.D.2d 1005, 1006, 622 N.Y.S.2d 126, 127 (3rd Dept. 1995). Once the "hard look" is taken, the agency is mandated to take into account what the "hard look" has revealed and restrict, tailor or even deny the approval as indicated in order to minimize the environmental impacts to the greatest extent practicable consistent with social and economic considerations. Environmental Conservation Law §8-0114. Stated differently, and of particular import here, the agency cannot make the requisite SEQRA finding, much less assure, that environmental impacts to the greatest extent practicable consistent with social and economic considerations unless and until it has before it a thorough evaluation of all identified potential impacts.

The Court of Appeals has been quite deliberate in repeatedly reaffirming the principle that,

> Strict compliance with SEQRA is not is not "a meaningless hurdle. Rather, the requirement of strict compliance and attendant spectre of de novo environmental review insure that agencies will err on the side of meticulous care in their environmental review. Anything less than strict compliance, moreover, offers an incentive to cut corners and then cure defects only after protracted litigation, all at the ultimate expense of the environment" (citations omitted).
>
> Accordingly, where a lead agency has failed to comply with SEQRA's mandates, the negative declaration must be nullified (citations omitted).
>
> * * *
>
> ...the mandate that agencies implement SEQRA's procedural mechanisms to the 'fullest extent possible' reflects the Legislature's view that the substance of SEQRA cannot be achieved without its procedure, and that departures from SEQRA's procedural mechanism, thwart the purposes of the statute. (citation omitted) Strict compliance with SEQRA guarantees that environmental concerns are confronted and resolved prior to agency action and insulates rational agency determinations from judicial second-guessing.
>
> *[New York City Coalition to End Lead Poisoning, Inc., et al. v. Vallone*, 100 N.Y.2d 337, 348, 350, 763 N.Y.S.2d 530, 535-36, 537 (2003)]

The Final Environmental Impact Statement, comprised of the Board's findings and responses to all substantial comments, must be scientifically valid and supported by materials in the record considered by the Board. In *Tehan v. Scrivani*, 97 A.D.2d 769, 771, 468 N.Y.S.2d 402, 406 (2nd Dept. 1983) the Court minced no words in directing that future significance determinations be done the right way: "The planning board is

forewarned that a conclusory statement, unsupported by empirical or experimental data, scientific authorities or any explanatory information will not suffice as a reasoned elaboration for its determination of environmental significance or nonsignificance." To the extent that the DEIS is deficient, then there can be no evidentiary or scientific support for findings based upon those areas in which it is deficient, whether by dint of subjects ignored or given short shrift, and any conclusions are likely to be invalid as a matter of law.

DRAFT ENVIRONMENTAL IMPACT STATEMENT DEFICIENCIES

The Board has before it a DEIS which was prepared after determination of what its scope was to be. As the Board is aware, the DEIS has been examined by many people who have submitted their comments regarding its lack of thoroughness or analysis or both, including but not limited to omissions in their entirety and insufficient consideration of matters required by the scoping process. I suggest that such comments cannot be taken lightly, considering the numerous identified shortcomings. If even a small percentage of the critical observations are well-founded, conclusions and findings based on the DEIS will be without foundation as a matter of science and merit.

This is not just a matter of technical failure to fulfill SEQRA mandates; if this project is approved premised upon scientifically unsupportable findings, there could be vast and severe, adverse environmental consequences for the Town's, and perhaps a larger geographic area's, ecosystem. Such consequences are avoidable: all the Board needs to do is to direct the applicant to revise or supplement the DEIS to address the multitudinous concerns that have been raised. If the environmental impacts of the project as proposed are benign, full and thorough consideration in the revised DEIS will support findings that environmental impacts have been minimized to the greatest extent practicable consistent with social and economic considerations; if, on the other hand, full and thorough consideration reveals impacts that have not been so minimized, the Board will be on solid and fully defensible footing in tailoring the approval to accomplish minimization, or even to rejecting it if an action that is environmentally benign cannot be developed.

In the DEIS, the applicant ignored or glossed over significant concerns brought to its attention by the commenters, both during scoping and subesequent to its release. Particularly noteworthy is that the Board's own consultants have identified numerous, significant deficiencies fatal to being able to draw any conclusions regarding impacts; I refer to Shuster Associates' Memorandum of March 20, 2007, incorporating observations of various experts evaluating the applicant's work for the Board. Many of the comments relate either directly or indirectly to the wetlands, due to their being the most prominent and sensitive environmental feature to be impacted, the portion on site being only a small part of the totality of wetlands that will be unequivocally directly affected by the project.

Transmitted with and made a part of this letter is a discussion of a number of the issues raised by the many commenters, including the Board's own consultants. In that discussion we have endeavored to consolidate the issues and relate the various comments to one another as appropriate. I believe that the attached demonstrates the urgency of the Board's directing significant augmentation of the DEIS.

In addition to the SEQRA inadequacies, I would respectfully call the Board's attention to the matter of off-site water flow. The Board is not empowered to consider, much less approve, a trespass by Ulster Manor as against adjacent landowners. Unquestionably, Ulster Manor's runoff will affect lands off-site which are neither owned by nor under the control of the applicant. Under circumstances such as construction as proposed by the applicant herein, damage to property owned by adjacent landowners due to runoff created by such a project is actionable; by extension, approval by the Board of an action that causes such damaging runoff would render the Town liable for its role.

Thank you for your consideration.

Sincerely,

Carl G. Dworkin

Attachment a/s

cc: Mr. Daniel Shuster
Mr. Vince Guido
Mr. Steve Engelhardt

DEFICIENCIES IN ULSTER MANOR

SEPTEMBER, 2006

DRAFT ENVIRONMENTAL IMPACT STATEMENT

REQUIRING THAT IT BE REJECTED

Respectfully Submitted to the

Town of Ulster Planning Board

On Behalf of Vince Guido and Steve Engelhardt

by:

CARL G. DWORKIN and KAREN SCHNELLER-McDONALD

June 14, 2007

This analysis is respectfully submitted to the Planning Board to aid its consideration of Ulster Manor's Draft Environmental Impact Statement by, *inter alia*, summarizing what is set forth in that DEIS and the comments that have been submitted to date, including those of the Board's own consultants.

General Considerations

- As a first order of business in evaluating the DEIS, the Board must decide whether to accept it by comparing it to what was required by the scoping process. If it does not contain all of the data and analyses demanded by the scoping document, it must be rejected exactly because the scoping process determines the content and adequacy of the DEIS. The Board should not even be considering Ulster Manor's DEIS exactly because it fails to pass muster as defined by the scoping process, as even the Board's own consultants have said.

- The Town's Subdivision Regulations, in accordance with which the Planning Board operates, explicitly declare the Town's objective of preservation of natural cover and existing features. Ulster Manor proposes to disturb nearly 90% of the site, excluding wetlands and buffers. Clearly there is a disconnect, unaddressed by the DEIS. The Board must specifically address how that magnitude of disturbance is consistent with the letter and intent of the Subdivision Regulations; there is no foundation in the DEIS for any consideration, much less decision-making, relative to that threshold issue. Failure to find consistency based on substantial evidence will render any approval invalid with respect to meeting the letter of the law as enacted by the Town

- The development of a Stormwater Pollution Prevention Plan ("SWPPP") is required by the NYSDEC for purposes of stormwater management and watershed protection, which has promulgated mandatory technical guidance for their development. Ulster Manor's SWPPP fails to satisfy NYSDEC's demands by not providing adequate information regarding significant water quality and hydrologic impacts and their mitigation, and by miscalculating both overall on-site flows and magnitude of increased southern flows by a substantial margin. Moreover, the SWPPP is not intended for use as the sole mitigation for water quality and hydrologic impacts on wetlands and streams; nonetheless, that is how it is being used for this project, no other mitigation being described. These shortcomings are fatal to the SEQRA process, since the absence of data obviously precludes scientifically valid findings as to of impacts.

As a corollary, as specific flaws in the current SWPPP are rectified, the Board will need to demand that Ulster Manor evaluate impacts based upon adequate and defensible data and that it then propose mitigation measures relative to those identified impacts, since all mitigation for water-related impacts, onsite and offsite, is based on the SWPPP. When mitigation is based on inadequate identification of impacts, it cannot be effective and, therefore, mitigation measures cannot be developed that can be expected to achieve a high level of success unless and until all project impacts are sufficiently described. The necessity for adequate data and analysis refers particularly to impacts on water quality and supply to wetlands and streams, hydrologic connections among onsite and offsite wetlands, waterbodies and streams and habitat.

Impacts Upon Wetlands

- Scoping document requirements have not been met regarding functions and values of onsite and connected offsite wetlands. Indeed, the wetland delineation map included in the DEIS is not accurate: one area noted as wetland is not wetland; another area is underdelineated, and a third area is missing its delineation flagging (which was removed when the illegally placed drainage pipe was removed), all of which affect the position of the 100 foot buffer. An accurate redelineation is necessary information for project design. An assessment of wetland functions is essential for impact identification and evaluation including a description of the contributing drainage area for each wetland or stream (landscape features that transmit water to wetlands, including surface drainage areas, groundwater recharge areas, stormwater outfalls). This is part of a wetland functions assessment, and is essential for evaluation of impacts on water quality and supply. Clearly, before impacts can be identified and quantified, their wetland and stream locations, functions, values and inhabitants biota must be firmly established based upon verifiable source materials.

- Wetlands on and adjacent to this site are part of a larger watershed, including protected wetlands officially and formally designated by the State and denominated as KE-7, KE-8, KE-9 and KE-10. K-10 is partially onsite, mostly offsite, and it is into K-10 that the applicant illegally placed one end of the culvert which has now been removed. Impacts on this larger system, including diminished potential for flood control due to loss of forest cover and replacement of vegetative cover with impervious surfaces , are not addressed in the DEIS even though they could well be significant, cumulative and far-reaching. Wetland functions can be significantly affected by disruption of seasonal water level fluctuations and drainage patterns, increased ponding, introduction of invasive species associated with site disturbance, and degradation of water quality, *etc.* Wetland habitat functions can be destroyed if sufficient upland is not protected, if flows increase beyond the given wetland's capacity and by pollution, all of which are potentially the impacts of Ulster Manor

- The DEIS discusses only direct impacts to wetlands and streams, *i.e.* filling, failing to assess a variety of indirect and cumulative impacts, and (incorrectly) assuming that only direct impacts to wetlands may be significant. It is well documented that indirect impacts to wetlands may be significant to the extent that they can destroy wetland habitat and completely change the composition of wetland biota-- thus incurring subsequent changes (*i.e.* impairment) in wetland function. Indirect impacts include: increase in impervious surfaces within the watershed; changes in wetland water supply and normal seasonal fluctuations in water level; changes in ponding (water depth) within wetlands; increased stormwater runoff (uncontrolled, untreated); decreased groundwater recharge; changes in water quality including sediment deposition, pollutant accumulation in wetland sediments, fate of untreated stormwater pollutant load, nutrient enrichment, road salt; cumulative impacts on wetland complexes.

- The wetlands which can be expected to be indirectly impacted by Ulster Manor are almost entirely off-site, although the DEIS focusses on the very small area of K-10 that is onsite. They will be affected by runoff from Ulster Manor by virtue of: (1) both the proposed redirection of stormwater flow from north to south, which will increase dramatically the volume of flow to the south as compared to current flows, compounded by substantial increase in impermeable surface area, and (2) the quality of the flow due to the addition of pollutants added by residences that are not present in forests that have no residential development. These very real impacts have been all but ignored.

- A vernal pool is a waterbody in which there are no fish, which creates a favorable environment for an amphibian nursery. This site supports a number of vernal pools including portions of the larger DEC wetlands that extend offsite to the south. The wetland which is partially on site is a vernal pool, a fact totally ignored by applicant. As a consequence of the lack of information provided in the DEIS, the population of amphibians that breed in vernal pools, and other species of conservation concern that use vernal pools, supported by the vernal pool is unknown, and the resident and spawning species' abundance or otherwise and the importance of those species and their habitats locally and regionally is totally also unknown. Presuming that all calculations regarding impacts on the wetlands are accurate (which is not justified, as discussed elsewhere herein), the lack of evaluation of the impacts on a vernal pool species means that the Board can literally draw no conclusions whatsoever as to the effect of this project as proposed on the biota in the wetland. Significant development is planned within the 750 foot critical terrestrial area required for the existence of vernal pool in which amphibians breed vernal pool breeding species. Without this critical upland habitat, it is highly likely that these species will no longer be able to survive in this pool on this site. A 100 foot buffer is completely inadequate to protect these resources. Implementation of the project as described will result in the death of these pools as viable habitats; moreover, there is likely to be a ripple affect upon other offsite pools as well. Neither the fact of the vernal pools that will be affected or how they will be affected was even be considered by the applicant.

Stormwater Management

- If the stormwater runoff is not properly calculated, the attenuation and collection measures and systems will be insufficient, with the result of flooding, erosion and degradation of wetlands due to pollution carried to them, among other unknown adverse effects. Crucial portions of the SWPPP have been omitted from the DEIS (Appendix A and Appendix B). Without this information, the accuracy of the stormwater analysis and subsequent sizing of stormwater detention basins cannot be verified. (Considering how crucial this information is to evaluation of the SWPPP, it cannot be accepted by the Board without being subject to public comment.)

SWPPP inadequacies include insufficient water quality volume calculations for stormwater basins. Based on calculations performed by Clouser and Associates, the numbers in the Table Required Treatment Volumes on page 4 of the SWPPP are incorrect and the water quality basins cannot properly treat the water quality volume as required by NYSDEC. Substantially larger basins will be required if there is to be adequate treatment or retention of stormwater that can be expected to be resulting from proposed development on this site. Stormwater management facilities cannot remove all pollutants even when designed and built optimally; when they are inadequately designed, their capacity to remove pollutants is greatly diminished.

- The project will result in a potentially substantial increase in stormwater volume and discharge rate; inaccuracies in stormwater volume calculations and total volume draining into a DEC wetland complex are found in the SWPPP and will need to be corrected. Total volume of water draining into the DEC wetland complex will approximately double for the 100-yr. storm event, the complex including neighboring properties onto which the water will flow.

- Construction of large area of impervious surface on top of soil that is very permeable (very common on the project site), will create a massive increase in runoff compared to pre-development conditions. The total area draining to the central wetland complex is increased with the change from wooded to impervious and landscaped areas. Replacement of well-drained soil by impervious surfaces will have subsequent effects on groundwater recharge and wetland seasonal water level fluctuations. Impacts on these fluctuations, including drought conditions, have not been evaluated.

- This project will result in a massive increase in stormwater pollutants discharging into the central onsite wetland system and to the DEC wetlands to the south of the property. Amounts of Phosphorus and Nitrogen alone would be sufficient to significantly impair the health and function (*e.g.* habitat, floodwater control, water storage, groundwater recharge/discharge) of those wetlands. Those impacts have not been considered in the DEIS.

- Pollutant loading at this site will be directed into both onsite and offsite wetlands, ponds, and streams, thus contributing to the cumulative effect of regional pollutant loading, which is not addressed in the EAF. The wetlands on this site are all part of a larger watershed. Potential serious water quality degradation throughout the larger watershed system is a very real threat. It may even extend to groundwater and wells.

- The DEIS provides insufficient information to determine impacts of stormwater runoff pollutants on wetlands. The DEC Stormwater Design Manual lists fourteen common contaminants found in stormwater. A detailed comparison of ambient water quality to projected water quality for all of these contaminants should be provided, and mitigation re-evaluated and designed accordingly.

- Requirements for Channel Protection Volume according to NYSDEC Design Manual were not met by the SWPPP. If this condition cannot be met, a Downstream Analysis must be performed.

- The DEIS does not discuss the use, impacts or mitigation of impacts of road salt (*i.e.,* chloride). Chloride is extremely soluble in water, so there is no way to remove it once it enters surface waters. It can also contaminate groundwater. Chlorides can accumulate in detention ponds and contaminate nearby wetlands. The acute and chronic toxic effects of chloride on aquatic and wetland systems have been well documented. Increases in chloride levels can also lead to the spread of salt-tolerant plants, which may also have a negative impact on wetland systems. Impacts from snowpack (*i.e.*, plowed snow) must also be assessed. If the snow accumulated by plowing is to be stored onsite, the location must be known in order to assess the impact of its being stored and of its release of accumulated pollutants when it melts.

- Substantial changes are necessary to the project design for compliance with current stormwater regulations.

- Adequate long term management of the runoff control facilities and the snowpack storage is as important as proper stormwater management design, given the enormous potential for severe adverse impact to the wetlands in particular. The Board has not yet received any, let alone adequate, guarantees of performance by the projected Homeowners Association of the obligations it will have for that management over the long term. The potential for environmental catastrophe for lack of a known, responsible and accountable party is a sufficient basis for rejecting Ulster Manor.

Groundwater and Geology

- Impacts on groundwater recharge and discharge (including during drought years) are not sufficiently described, as a consequence of which required mitigation cannot be determined and any proposal for mitigation cannot be evaluated.

- The DEIS fails to recognize and adequately address the bedrock geology of the Ulster Manor site. The site is underlain by carbonate bedrock geology and has numerous sinkholes. The applicant has not determined where surface water that enters the aquifer beneath the site discharges, how fast it flows, how it affects wetlands, or how contaminants that enter it will impact water quality onsite and offsite. The project site is underlain by Karst, which is relatively unique in New York and has unique attributes. The DEIS does not contain information regarding the flow path of surface water recharge related to sinkholes, including, but not limited to, whether it is critical to nearby wetlands, or contributes to a deeper bedrock Karst aquifer. Unless the applicant can demonstrate that post-development hydrologic fluxes will closely mimic pre- construction conditions, there is no scientific basis for a finding of no significant impact, no ability to determine the need for mitigation or to evaluate any proposal for mitigation.

- The DEIS is seriously deficient in geologic information. Location of rock outcrops and detailed descriptions of site lithology, including, but not limited to, Karst features, is essential to assessment of impacts. While the DEIS refers to the presence of natural non-wetland depressions on the site, these areas may be sinkholes. The hydrologic connections between these depressions and groundwater needs to be assessed. A delicate balance of surface water and groundwater now serve to maintain water quality, low temperatures and sustained groundwater recharge. Continuation of the existing K-10 wetland ecosystem health requires the unimpaired continuation of natural existing hydrologic conditions. In addition, the crushed bedrock to be used as fill for roadways is very permeable, potentially affecting groundwater infiltration. Potential effects on groundwater recharge have not been assessed, particularly if the recharge water will carry with it pollutants that could adversely affect those who rely upon that recharge, including humans who use wells.

Habitat and Species

- Impacts of loss of forest are not addressed, in terms of either significant habitat or watershed function. The site is located within a rapidly shrinking 'island' of habitat – approximately one-third of the remaining forested habitat within the area bounded by routes 209, 9W, and 32 – and commercial development. Impacts of habitat fragmentation and loss on species that depend on this habitat are not assessed. Mature forests are rapidly disappearing from the landscape, affecting watershed functioning as well as species diversity.

- Species of conservation concern. The DEIS does not mention over fifty rare species of plants and animals documented by the New York State Natural Heritage Program ("NYSNHP") as occurring in the vicinity of the project site, any of which could potentially occur on the project site. The commenters have demonstrated to the Board just how easy it was to secure information regarding the possible presence of such species. Additional surveys and description of impacts to these species is needed for a full assessment of project impacts. Among the limited number of species listed in the DEIS are ones determined to be of "New York State Special Concern", but neither impacts on them nor mitigation or those

impacts is discussed. Because of potential for species of conservation concern both on and adjacent to this site, surveys of breeding birds and reptiles and amphibians must be conducted so that potential impacts can be described and mitigation can be developed.

- Absence of assessment of project impacts on both onsite and offsite habitats and biota and mitigation of those impacts is not limited to species of special concern. Pollutants, sediment and changes in wetland water level fluctuations are all likely to alter conditions to the detriment or even the extirpation of species that may live offsite, particularly in or in proximity to the wetlands that will clearly be affected.

- The Hudson Valley limestone and shale ridges comprise a unique and biologically significant area. The project site, with its unique geological features (*e.g.*, Karst formation) is likely to support high biodiversity and rare species. Impacts on biodiversity within the Town, which are not even mentioned, need to be addressed. Maintenance of established biodiversity has become a growing concern within the Hudson Valley and more generally in New York State.

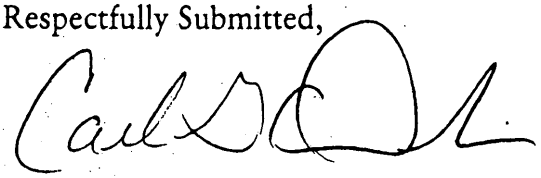
- There is no discussion in the DEIS of, much less documentation for, the conclusory 'no impact' on both protected and non-protected species and their habitats reported in the Environmental Assessment Form. Therefore, it is not possible to provide a science-based, professional evaluation of project impacts on these resources.

- The use by Ulser Manor of a letter from the NYNHP as the sole documentation for its urging a finding of no significant impact on plants and animals is not adequate to support such a finding by the Board. The NYNHP maintains records of known occurrences of rare species; because most sites have never been surveyed by biologists, the presence or absence of rare species or significant communities is often unknown. The NYNHP's refusal to vouch for a conclusion of there being no such species is quite explicit in this regard and should guide the Board:

> The absence of records does not necessarily mean that endangered or threatened species do not exist on or adjacent to the site, but rather that our files currently do not contain any information on the presence of these species. . . . In most cases, site-specific or comprehensive surveys have not been conducted. For these reasons, *we cannot provide a definitive statement on the presence or absence of species. Therefore, this information should not be substituted for on-site surveys that may be required for environmental impact assessment* [italics added].

The DEIS should be rejected and any supplementation, in whatever form, should be the subject of public participation through comment and hearing.

Respectfully Submitted,



CARL G. DWORKIN

and KAREN SCHNELLER-McDONALD

APPENDIX D

Geologic Report

DUKE GEOLOGICAL LABORATORY
16 Middle Lane
Westbury, NY 11590

Our 31st Year

Phone: (516) 334-7415
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09 January 2007

Daniel P. Simone
Director of Planning/Engineering
AVR Realty Company, LLC
One Executive Blvd.
Yonkers, NY 10701

Dear Mr. Simone:

On 01 August 2006, I visited the Hudson Landing site and examined most of the footprint of the proposed property paying careful attention to the exposed geologic features and also visited Lost Lake, the Lost Lake Mine and an abandoned mushroom mine on Delaware Avenue across the southeastern border of the Hudson Landing site. You had requested that I comment on the main points raised in the 26 June 2006 letter from EcoSystems Strategies, Inc. to Suzanne Cahill. I have also read the 1997 paper on degradation of karst aquifers by Rubin and Privatera, the undated paper on the Kingston-Rosendale aquifer system by Rubin, Burmeister, and Folsom, and the pertinent sections of the DGEIS for the Hudson Landing project. The following report outlines my opinion on these and on the nature of the geologic structure, the potential for a karst aquifer on site, and the potential for sinkholes and other related collapse features. As explained below, the hypothesis surrounding application of the term karst to the region is unjustifiable in light of the available geologic information.

Definition of Karst

According to the Glossary of Geology, published by the American Geological Institute (1972, p. 383), karst is defined as "A type of topography that is formed over limestone, dolomite, or gypsum by dissolving or solution, and that is characterized by closed depressions or sinkholes, caves, and underground drainage". The etymology is Germanic and stems from the Slavic kras, meaning "a bleak, waterless place." The classic type- locality for karst is a limestone region of Yugoslavia known as Slovenia. Some geomorphologists (geologists who study the development of landforms) utilize the term karst very freely, combining the fantastic karst towers of the Guilin region of southern China with areas of flat monotonous relief such as the Nullarbor Plain in Australia (Jennings 1983) and all subkarstic-landform types in between (Figure 1).

In the eastern United States and adjacent areas, recognized karst includes areas underlain by flat-lying carbonate rocks such as the sinkhole country in Kentucky and Tennessee, most

areas of Florida, and the cockpit country of Puerto Rico (Figure 2). Note that karst is not indicated in the northeastern United States since these areas do not harbor the basic geological and climatic elements necessary for development of karst.

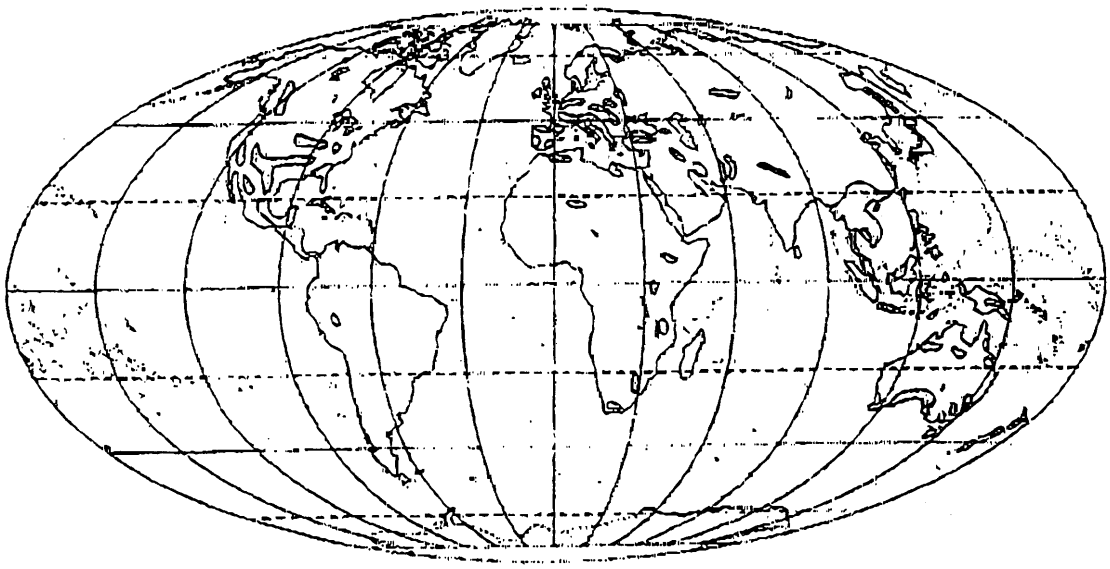

Figure 1 – World map showing the global distribution of significant areas (shaded) of karst landform development. (From Sweeting, 1973, fig. 2, p.7.)

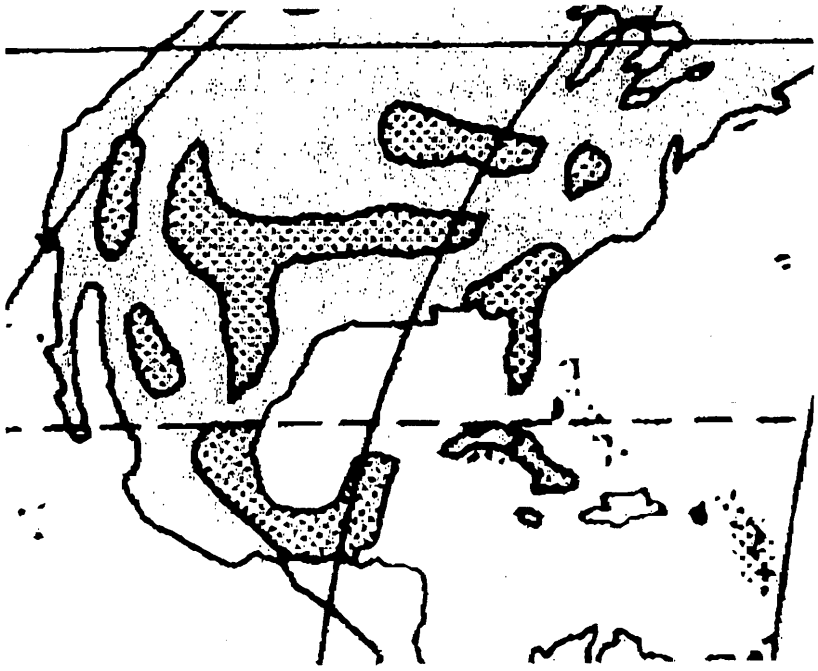

Figure 2 – Colorized inset from world map of Figure 1 showing the distribution of significant areas of karst landform development (blue stippled areas) in North America. (Adapted from Sweeting, 1973, fig. 2, p.7.)

Conditions Leading to Karst Development

Three factors are needed to promote the development of karst. Firstly, pure massive limestone with well-developed joints or faults must crop out at the surface. Secondly, adequate rainfall is a necessity. Indeed, karst landforms are totally absent in areas where rainfall is less than 10-12 inches/year (Sweeting 1973). Thirdly, vertical and underground circulation of drainage is an important ingredient fostered in areas of high topographic relief. According to noted geologist A. K. Lobeck, in his classic textbook on the subject of geomorphology, in suitable climates two basic types of carbonate subsurface geologic structures result in the development of karst. The first of these is termed **Karst Topography in a Plateau Region** where in the early stages dendritic drainage patterns of surface streams predominate (Figure 3A). Later, in late-youth and maturity (Figures 3B and 3C), dissolution along pre-existing joints and faults leads to the development of subsurface solution channels followed by surface depressions known as sinkholes. In some instances the sinkholes enlarge to great size producing valley sinks. All surface drainage disappears by percolating downward into anastomosing solution cavities and sinks. In the post-mature (old age) stage, very little original plateau surface remains except for remnant karstic hills, mesas, and buttes (Figure 3D).

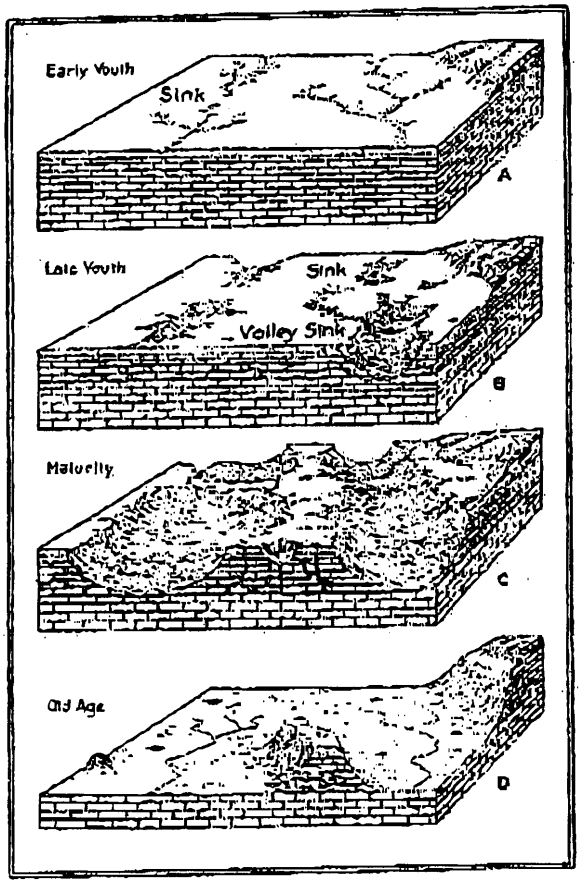

Figure 3 – Four stages in the karst development of a plateau region having underground drainage. Note, except for the earliest and latest stages, the total absence of surface drainage. (From Lobeck, 1939, p. 130.)

A second variety of karst landform, much more appropriate to evaluating the possible developmental stage of karst in the vicinity of Kingston, NY, is termed **Karst Topography in Complicated Structure** wherein folded and faulted carbonate rocks predominate. In this case, early youthful development (Figure 4A) brings about a few scattered sinkholes (and funnel-shaped enlargements called dolines) but surface drainage, which follows zones of faulting and folding, predominates. Elongate steep-walled depressions are sometimes found but these are of tectonic origin (related to erosion of faults and disrupted fold limbs) and not related to significant dissolution. In the late youthful stage (Figure 4B), enlarged sinkholes and dolines have increased greatly in number, and severely pock-mark the land surface. Underground collapse of caves and caverns can promote the joining of sinkholes and dolines into resembling valley sinks typical of the plateau type. In the mature stage (Figure 4C) extremely rugged conditions prevail with the coalescence of the surface dissolution features. Downward percolating, disappearing streams develop on the surface (except in areas of impermeable rock strata breached by erosion where normal surface drainage forms), underground waters flow, and a honeycomb of caves and caverns predominate. In old age, all of the surface carbonate rocks are stripped away and underlying impermeable strata may force resumption of normal surface streams (Figure 4D). Based on these recognized criteria and the lack of caves, sinkholes, and dolines, the Kingston area displays none of even the youthful or incipient karst features of Figure 4A.

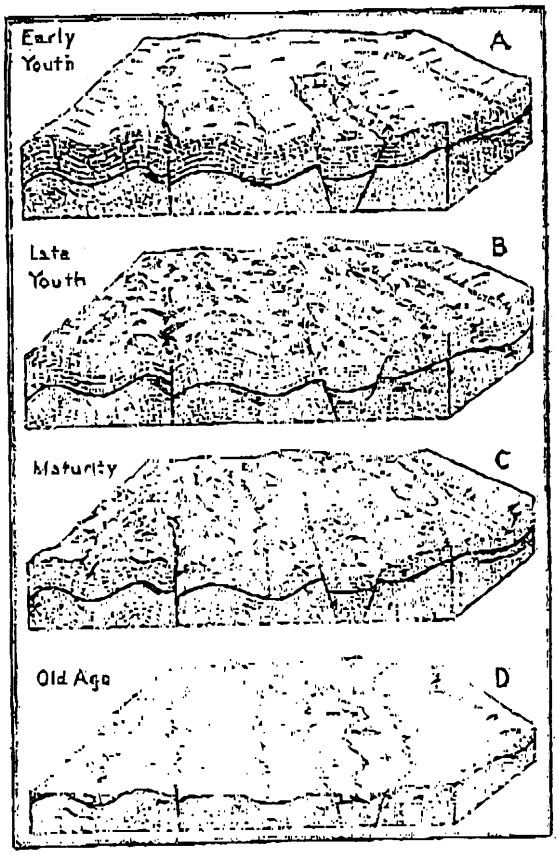

Figure 4 – Karst development in a folded and faulted carbonate region (similar to the Kingston area). Note, that except for the earliest and latest stages the total absence of surface drainage. (From Lobeck, 1939, p. 132.)

Geology of Typical Karst Terrains

The Kingston-Rosendale area should not be characterized as karstic because karst typically develops in tropical- to sub-tropical regions underlain by laterally continuous flat-lying to folded carbonate rocks that are cut by great numbers of intersecting high-angle joints and/or faults. In such environments, high ambient temperature and humidity acting in concert with abundant rainfall produces dissolution which ultimately results in underground drainage, caves and caverns, and eventual decay and collapse of surface carbonate strata to produce sinkholes and a unique topography that varies greatly depending upon underlying geologic structure and stage of maturity. Active surface drainages, ponds, and lakes tend not to exist because all water percolates downward to infill all connected subsurface openings, thus raising the regional water table. Based on these well-documented surface- and subsurface features, the Kingston area simply does not fit any of the geomorphic models presented above except for a vague similarity to that pictured in Figure 4A (early youth), but with an important distinction.

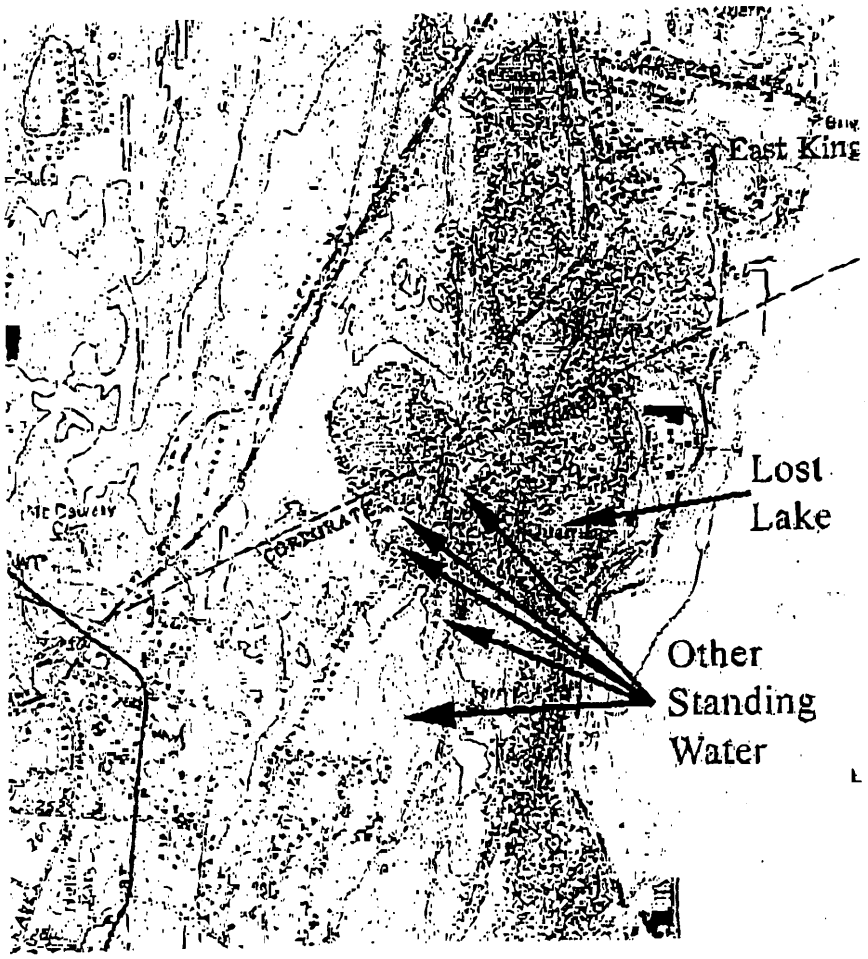

Figure 5 – Portion of the Kingston East United States Geological Survey topographic map showing the location of the Lost Lake and other standing water near the Hudson Landing site and surrounding area. Note the predominate NE-trend and parallel linearity of topographic contours. The map coverage area is roughly the same as depicted on Figure 6. Contour interval is 10'.

Figure 5 (previous page), a portion of the Kingston East United States Geological Survey topographic map, shows the linear aspect of the hilly limestone region surrounding the proposed Hudson Landing site. The Kingston area was strongly modified by glaciers, surface streams do drain the area and many lakes exist. **However, the natural features typically associated with karst (i.e. - sinkholes, dolines, disappearing streams, a network of interconnected caverns and caves, etc.) simply do not occur in the region.** The NE orientation of the hills follows the regional trend (strike) of the strata and shows the sculpting effects of SSW-directed glacial ice flow. Circular hills and closed depressions dominate maps of karst areas. Figure 6 illustrates a topographic map of a pitted, mature karst terrain (in Puerto Rico) which obviously bears no resemblance to the linear topography of the Kingston area. (Compare with Figure 5.) Such topographic patterns simply do not exist within or near the Kingston area.

Figure 6 – Topographic map of the limestone country southeast of Manati, north coast of Puerto Rico showing the topography of recognized karst terrains. Note that the map extends roughly 2.5 km on each side and covers roughly the same area as Figure 5. Contour interval is 5'. (From Sweeting, 1973, fig. 33, p. 68.)

Geology of the Kingston Area

Stratigraphically, the Kingston region consists of three distinct sequences of massive carbonate rock. The structurally lowest and oldest of these consists of interlayered dolostone and limestone of Cambrian- to Ordovician age (The Sauk Sequence) which is not exposed at the surface near Kingston but occupies a broad outcrop belt farther south and east. This sequence is

overlain by a vast thickness (>10,000' in some areas) of black shale and sandstone of the middle Ordovician Normanskill or Martinsburg Formation (Tippecanoe Sequence) which is in turn unconformably overlain by Silurian clastic sedimentary rocks. These are overlain by Silurian carbonate strata of the Rondout Formation consisting of four poorly fossiliferous sub-members that alternate from dolostone to limestone. These include the dolomitic "waterlime" layers that were mined during the Rosendale cement era of the early 1800s utilizing the room and pillar method of quarrying. The Silurian and older rocks are overlain by a great thickness of fossiliferous Devonian (Helderbergian Group) limestones which form the bulk of the surface rock exposures throughout the Kingston region and were the focus of extensive mining on the Hudson Landing site.

Recent structural studies of the region by Marshak (1990) and Merguerian and Sanders (1991, 1994) indicate that both the Silurian Rondout formation and the overlying Devonian Helderbergian sequence is highly folded and faulted by low-angle bedding-plane thrust faults and high-angle reverse faults of probable latest Paleozoic age (terminal-stage Appalachian orogeny). Figure 7, a geologic map and section in the vicinity of the proposed site adapted from Marshak (1990), indicates that the region is folded into major anticlines and synclines with many of these folds cut by layer-parallel strike faults that duplicate or omit layers. The faults are mostly healed and recrystallized since they were formed at depth during the same phase of **compressional** deformation that resulted in folding of the strata. As such these faults should not be looked upon as open fractures or cavities as would be expected if they were **tensional** (normal) faults. Just the opposite is true as they are tight and recrystallized reverse and thrust faults with mineralization and healing the result of percolating solutions during compressive deformational processes.

Reasons for Abandoning the Hypothesis that Kingston lies above a "Karst Aquifer"

The subsurface geology of the proposed Hudson Landing site is dominated by highly folded- and faulted carbonate rocks (See Figure 7.) that vary from middle Ordovician shale and sandstone of the Normanskill or Martinsburg Formations, to overlying Silurian (Rondout Formation) and Devonian (Helderbergian Group) carbonates. The lack of obvious pervasive, high-angle, intersecting open faults and joint sets precludes a primary geological condition that would foster mature karst development regardless of climatic condition. In addition, as argued above, the topography and geomorphic features of Kingston are not at all indicative of mature karst terrains.

In the vicinity of Kingston, modern surface drainage is immature with rivers flowing northeastward in marked contrast to the southward regional gradient followed by the Hudson River. Note that Rondout Creek and the Wallkill River flow northeastward into the Hudson near Kingston, thus forming a barbed tributary. This drainage anomaly is suggestive of recent surface-slope reversal (presumably, in response to post-glacial uplift). No doubt that glacial erosion and deposition have had a strong effect on the resulting topography. Thus, in the Kingston area, we are looking at a glacially rejuvenated immature valley and ridge topography not, by any means, a mature karst topography.

The false impression that the region's geology is karstic can not hold up in the face of geological fact. In my opinion, the Kingston area should not be termed a "maturely karstified carbonate aquifer" because of the absence of surface- and subsurface features diagnostically associated with such a classification. Indeed, the central theme of the objection to development (that the region is a mature karst) is most seriously flawed on the basis of scale. This problem may stem from a perception that some small-scale features adjacent to the proposed site (i.e. - a surface opening, a possible cave, and a possible sinkhole) identifies the region as karst. Rather, these are limited outcrop-scale features that commonly develop around the world in temperate areas underlain by carbonate rocks (limestone, dolostone, and in some areas, marble).

By contrast to folded mature karst terrains elsewhere, the Kingston-area carbonates occupy hilly areas, not valleys as is typical for karst. This, in and of itself, argues against a mature-karst classification for the region, as carbonates (limestones and dolostones) in a mature karst region would occupy valleys not ridges. (See Figure 4C and related discussion above.) The topographic map of the site and surrounding area (Compare Figures 5 and 6.) indicates a total lack of circular- or closed elongate features that could be interpreted as sinkholes, dolines, or valley sinks. What is more, within a "mature karst", disappearing drainages, interconnected caves and caverns, and deeply eroded valleys underlain by limestone develop over extended periods of geological time. The Kingston area, in contrast, displays linear topography, immature surface drainage, preserved, high-standing limestone ridges, and no hint of the natural subsurface features diagnostic of karst.

Specifically, the site is built upon a part of the Hudson Valley fold and thrust carbonate belt consisting of a series of folded Devonian and underlying Silurian rocks. Compressive forces have squeezed the rocks from the WSW and produced a series of N30°E-trending folds and bedding-parallel thrust faults. One NW-SE-trending tear fault is shown by Marshak (1990) that cuts across the structure to the south of Lost Lake. Axial surfaces of folds often manifest themselves as a spaced fracture cleavage that divides folded structures in half. This is mostly true in clastic rocks (shales, siltstones, sandstones). In carbonates, the axial surface cleavage is usually manifested by a solution cleavage of carbonate and insoluble residues that often strengthens the rocks mass because of recrystallization. Although the presence of the axis of a syncline centered on Lost Lake might provide a ready explanation for N30°E fracturing through the site, I did not detect any closely spaced fractures in the exposed core of the structure (Figure 8). Rather, a single fracture surface was exposed at lake level in the center of the structure. Thus, preliminary field results would indicate no evidence for pervasive strike faults trending ~N30°E through the Hudson Landing site that would help localize subterranean flow through the Lost Lake area southward to the mine south of the Hudson landing site and that the subterranean river has no obvious geologic basis in fact.

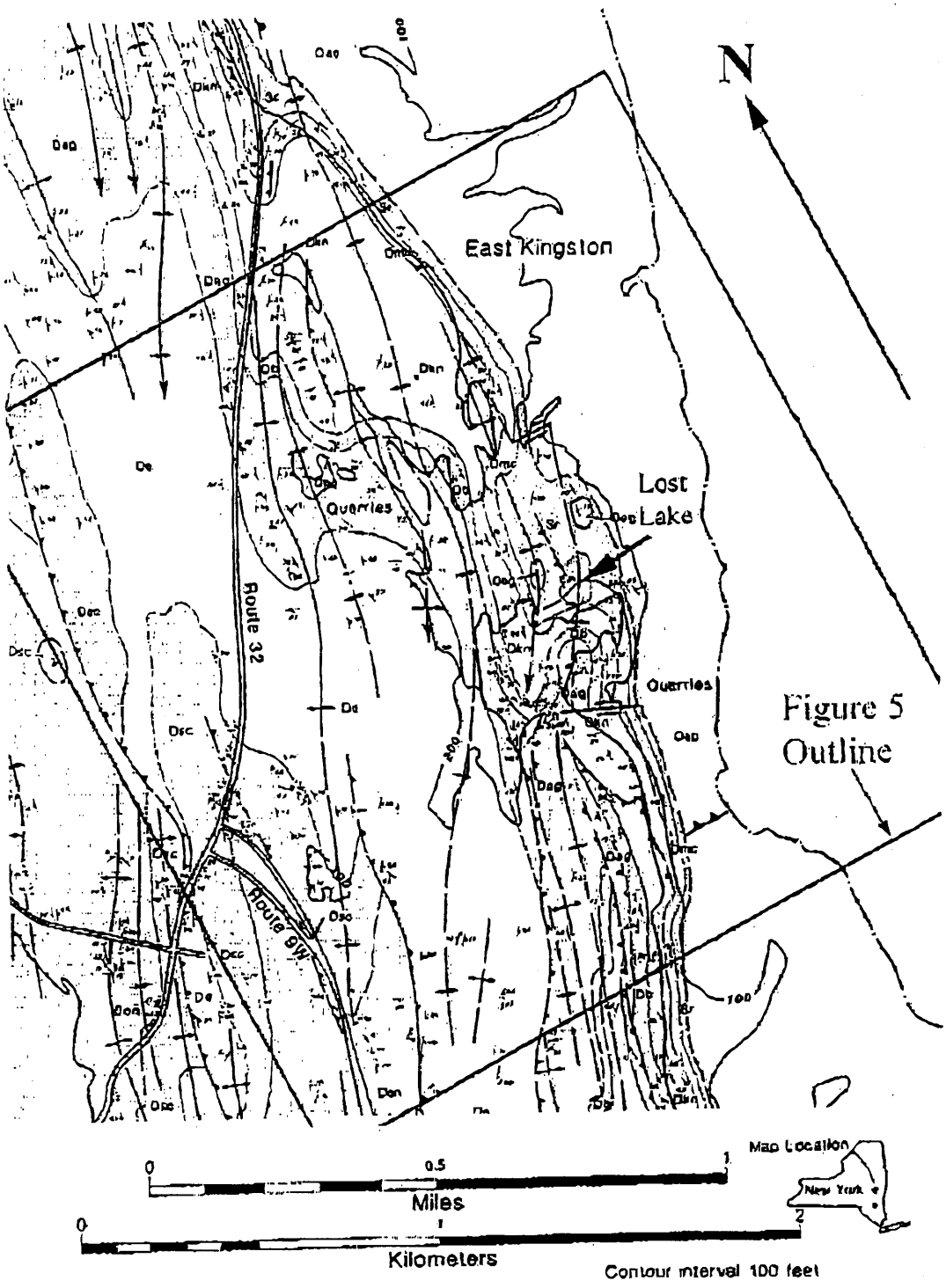

Figure 7 – Geological map and section (B-B' on next page) through the vicinity of the proposed Hudson Landing site. Note the folded and faulted structure of the Devonian limestones which predominate in the village of Kingston. (Adapted from Marshak, 1990, Plate 3.)

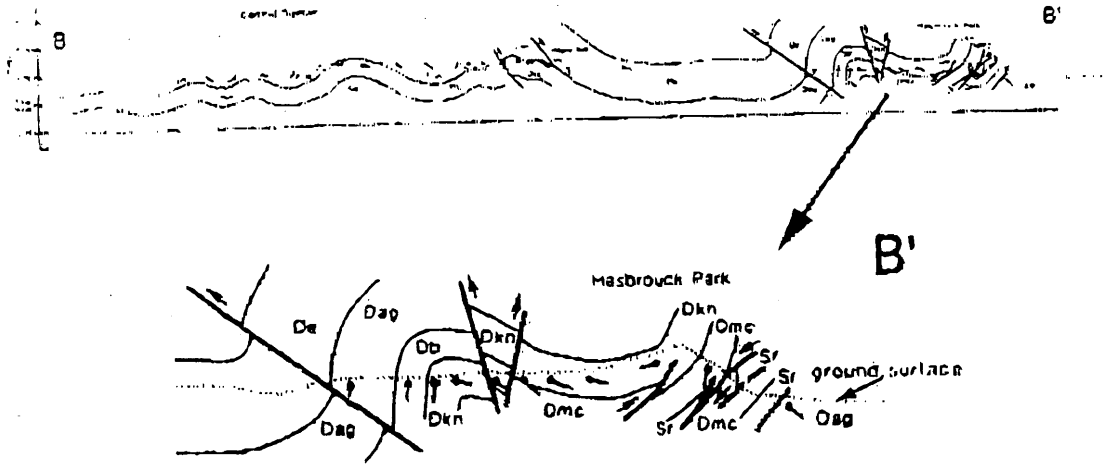

Figure 7 (cont'd) – East-west across-strike geological section just south of the proposed Hudson Landing site. Note the folded and faulted structure of the Devonian limestones which predominate in the village of Kingston and the presence of many compressional bedding plane faults (dark lines) that duplicate or omit strata. (Adapted from Marshak, 1990, Plate 3.)

Lost Lake and the Lost Lake Mine

A site visit performed on 01 August 2006 of the entire proposed Hudson Landing site included observation of exposed geologic features and mined-out features including Lost Lake (Figure 8) and the Lost Mine. The Lost Lake is a man-made feature resulting from aggressive quarrying in the core of an upright open syncline of Devonian "Helderbergian" limestones and underlying Silurian strata. (See location on Figures 5 and 7.) The filling of the lake and resulting lake levels are the result of collection of surface runoff. Thus, the lake level should (and does) mimic rainfall amounts. The Lost Mine excavation occurs along the eastern limb of the "Lost Lake" syncline where west-dipping Silurian strata dip beneath the Devonian Helderbergian strata. The Lost Mine is a typical Rosendale cement era artifact with removed Silurian Rondout formation supported by the venerable room and pillar method of mine roof support. Many similar mines honeycomb the region from Tillson-Rosendale area northward to the Hudson Landing site. The Silurian Rondout carbonate strata thins to inches farther north near the Route 23 Thruway interchange and as a result Rosendale type cement mines are not as numerous in Kingston as they are in the Rosendale-Tillson area. Only a few Rosendale-type mines exist in the area of the proposed project.

Since water is perched above the water table in Lost Lake no significant connectivity with underground aquifers are indicated. In addition a number of small "man-made" lakes (quarry pits filled with surface runoff) are also present in the western part of the Hudson Landing site. (See Figure 5.) The presence of such standing water and the long term stability of water levels in Lost Lake argue against any significant downward percolation of surface waters and strongly argue against an active karst aquifer in the region. Otherwise, downward percolation of lake water would result in periodic drainage of Lost Lake. Thus, in my opinion, any hypothesis

that characterizes the Kingston-Rosendale region as karst is simply not appropriate for the Hudson Landing site – the geology simply does not support such an assumption.

Figure 8 – Southward view of upright open syncline of Devonian carbonate rocks at the south end of Lost Lake, Hudson Landing site, NY. Strata are subhorizontal to gently inclined and cut by a multitude of closely spaced drill holes for blasting (used in quarrying operations). The shadowed area near lake level in the center of image displays a vertical healed rock cleavage related to axial surface of a synclinal fold. The Lost Lake is anthropogenic, the result of infilling of former on-site quarrying operations. (Digital image by C. Merguerian, taken 01 August 2006.)

Potential for Sinkholes and Caves

Sinkholes and caves are sometimes an environmental issue in carbonate regions, especially in tropical climates. While the creation of sinkholes on the proposed property which is largely underlain by limestone and dolostone can not be ruled out, in my opinion sinkholes are not a real problem for the proposed construction site. By contrast to areas in the southeastern United States where mature karst landforms produce sinkholes (especially Florida, Tennessee, and Kentucky), no such process appears active in this temperate portion of the country. (See Figure 2.)

Because stable room and pillar methods for mining were utilized in the removal of Silurian Rondout Formation throughout the region and in areas to the south, where more extensive mining operations were conducted, the potential for mine roof collapse is perhaps more significant than natural sinkhole development. I would recommend a thorough investigation of town records to satisfy the important concern of potential mine roof collapse in areas developed above the Tillson-Rosendale-Kingston mining district. A similar analysis would address the

potential for natural sinkhole and cave formation. I would not expect this since the underlying geology, ambient temperatures, and rainfall amounts are not sufficient to create dissolution and collapse as has been experienced in regions such as in the southeastern United States. To the best of my knowledge, no such reports of collapsed mine roofs or sinkholes exist for this region of New York State.

With regard to the natural vs. unnatural openings in the area, the older Silurian strata is stratigraphically thinner in the Kingston area, following a trend that brings thinning and truncation of all Silurian strata towards the NE (Figure 9). Thus, in the area of Kingston, we have an overall lowered chance for unnatural openings and less anthropogenic cavities.

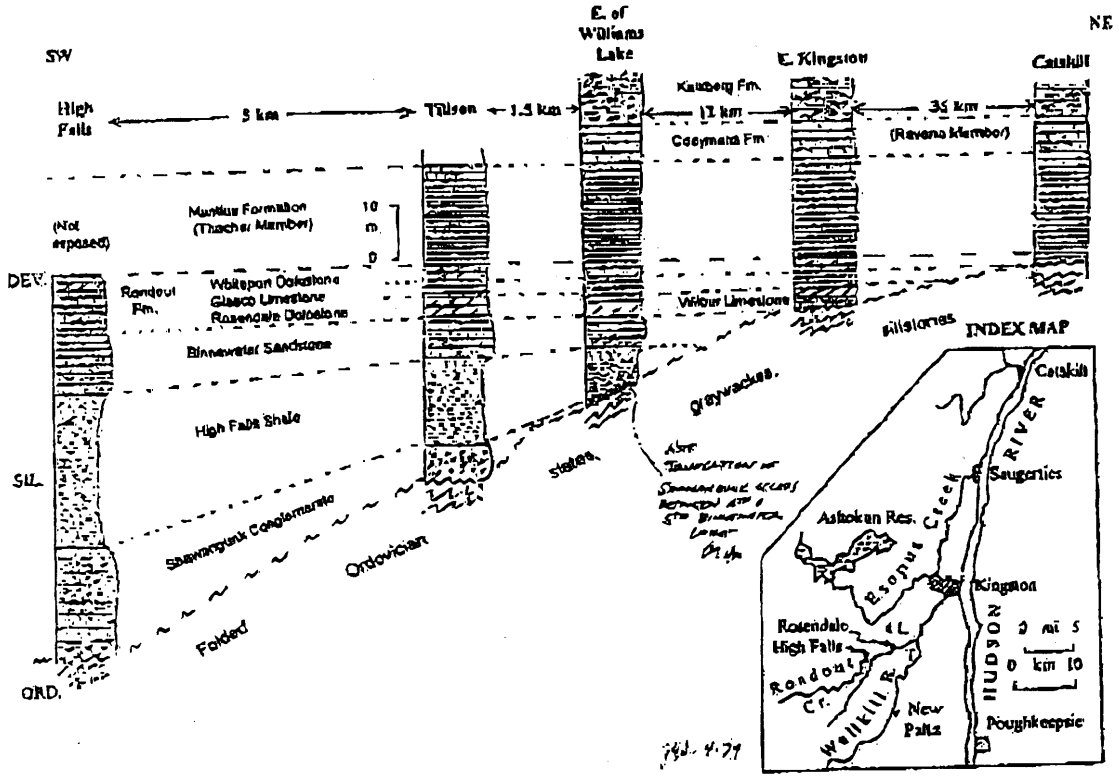

Figure 9 - Restored stratigraphic section showing northeastward thinning, truncation, and overstep of Silurian strata against a paleogeographic high area underlain by folded Ordovician strata, central Hudson Valley and vicinity, New York. (From Merguerian and Sanders, 1994.)

Conclusions and Recommendations

Having read the ESI review, DGEIS, and related papers, it would appear that the main objections revolve around the perception that an active karst aquifer exists beneath the Hudson Landing site. In reading through the many papers that Mr. Rubin et al. have written on the subject and in discussing this recently with Dr. Steven Marshak, it appears that local "experts" have indeed applied the term karst for this area. As I had pointed out in my previous consult in

1995 regarding the adjacent Huck Business Park site, to characterize the entire region as a mature karst is unwarranted since regional development and subsurface interconnectivity of such features had not been demonstrated. The various papers by Rubin et al. do not scientifically prove the existence of karst – they simply promote their hypothesis with verbiage. As outlined above, **the pervasive surface features diagnostic of karst are simply not present here**. This was amply demonstrated in 1995 at the adjoining Huck site. The geology is no different than anywhere along strike in the Hudson Valley carbonate belt – nothing is special or unique about Kingston vs. other adjacent, developed areas.

Groundwater remediation issues concerning point-source and non-point source pollution should be handled in accordance with existing code and regulations. Because no demonstration of mature karst has been established for the proposed site and little to no interconnectivity of existing man-made and natural openings can be scientifically demonstrated, I can see no special issues pertaining to karst since the term is simply not applicable to the region.

In any modern construction, geohydrologic understanding of downward percolation patterns of groundwater and proposed mitigation methods to deal with point-source and non-point-source pollutants and are a necessary prelude to building. In the absence of expensive ASTM tracer studies any discussion of major subsurface transfer of percolating surface waters is purely speculative and conjectural.

References Cited

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Sweeting, M. M., 1973, Karst Landforms: Columbia University Press, New York, 362 p.

Sincerely yours,

Charles Merguerian

Charles Merguerian, Ph.D.

Filename: DGL Report 2007-0.doc

APPENDIX E

Revised Construction Phasing Plan

CONSTRUCTION PHASING PLAN

Phase 1

Construct 1500' of Road A from Memorial Drive to Station 15+00. Construct storage and staging area to be located in vicinity of recreation center parking lot. Construct temporary sediment basins at locations of water quality basins #1, #2 and #4. Install all utilities within ROW up to Station 15+00. Construct sewage pump station adjacent to recreation center.

Construct Quale Drive connection and Townhouse Road C, from Station 10+00 – 16+00. Install all utilities within Quale Drive connection and Townhouse Road C. Construct water booster pump and proposed 10" water main connection between Quale Drive and Memorial Drive.

Phase 1 construction area limits = ±4.75 acres.

Phase 2

Construct remainder of Road A to temporary turn-around. Install all utilities and sewage pump station within Road A. Construct Townhouse Road A and all utilities within road. Construct condominium units 1–28. Construct water quality basins #1 and #2 after all disturbance in Phase 2 is stabilized.

Phase 2 construction area limits = ±5.0 acres.

Phase 3

Construct remainder of Road B and all utilities. Construct townhouse units 28-68 and construct recreation facilities. After Phase 3 disturbance is stabilized construct water quality basin #3 and bio retention zones #2, #8 and #9.

Phase 3 construction area limits = ±4.50 acres.

Phase 4

Constuct Road D and townhouse units 69-128. After Phase 4 disturbance is stabilized construct water quality basins #4 and #5 and bio retention zones #1, #3 - #7.

Phase 4 construction area limits = ±4.25 acres.

APPENDIX F

USACOE Documentation-
Jurisdictional Documentation

To: Jon Dahlgren
From: Nowicki

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO
ATTENTION OF:
Regulatory Branch

FEB 11 2008

SUBJECT: Permit Application Number NAN-2005-1312-WOR
by Ulster Land Holding Partners LLC

Michael Nowicki
Ecological Solutions, LLC
1248 Southford Road
Southbury, Connecticut 06488

Dear Mr. Nowicki:

On December 14, 2005, the New York District Corps of Engineers received a request for a Department of the Army jurisdictional determination for the above referenced project. This request was made by Ecological Solutions, LLC, as consultant for Ulster Land Holding Partners LLC. The site consists of approximately 48 acres, in the Hudson River watershed, located on New York State Route 9W in the Town of Ulster, Ulster County, New York. The proposed project would involve the construction of a residential development to be known as Ulster Manor.

In the letter received on December 14, 2005, your office submitted a proposed delineation of the extent of waters of the United States within the subject property. A site inspection was conducted by a representative of this office on May 23, 2006, in which it was agreed that changes would be made to the delineation and that the modified delineation would be submitted to this office. On April 11, 2007, this office received the modified delineation.

Based on the material submitted and the observations of the representative of this office during the site visit, this site has been determined to contain jurisdictional waters of the United States based on: the presence of wetlands determined by the occurrence of hydrophytic vegetation, hydric soils and wetland hydrology according to criteria established in the 1987 "Corps of Engineers Wetlands Delineation Manual," Technical Report Y-87-1 that are either adjacent to or part of a tributary system; and the presence of a defined water body (e.g. stream channel, lake, pond, river, etc.) which is part of a tributary system.

These jurisdictional waters of the United States are shown on the drawing entitled "ACOE Jurisdictional Wetlands Delineation Of Ulster Manor A Proposed Community Situate-9W Town of Ulster Ulster County, New York", prepared by Medenbach & Eggers Civil Engineering & Land Surveying, P.C., dated November 8, 2005, and last revised December 20, 2006. This drawing indicates that there are two (2) principal wetland areas on the project site which are part of a tributary system, and are considered to be waters of the United States.

The first wetland (labeled on the above referenced drawing as ACOE Wetlands A, B, C and NYSDEC Wetlands KE-10) is located on the southern and eastern portions of the property and is approximately 6.66 acres within the subject property. The second wetland (labeled on the above referenced drawing as ACOE Wetlands ±0.45 Ac.) is located in the northeastern corner of the property and is approximately 0.45 acres within the subject property.

This determination regarding the delineation shall be considered valid for a period of five years from the date of this letter unless new information warrants revision of the determination before the expiration date.

This delineation/determination has been conducted to identify the limits of the Corps Clean Water Act jurisdiction for the particular site identified in this request. If you object to this determination, you may request an administrative appeal under Corps regulations at 33 CFR Part 331. Enclosed is a combined Notification of Appeal Process (NAP) and Request For Appeal (RFA) form. If you request to appeal this determination you must submit a completed RFA form to the North Atlantic Division Office at the following address:

James W. Haggerty, Regulatory Appeals Review Officer
North Atlantic Division, U.S. Army Engineer Division
Fort Hamilton Military Community
General Lee Avenue, Building 301
Brooklyn, New York 11252-6700

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR Park 331.5, and that it has been received by the Division Office within 60 days of the date of the NAP. Should you decide to submit an RFA form, it must be received at the above address by APR 11 2008. It is not necessary to submit an RFA form to the Division Office if you do not object to the determination in this letter.

This delineation/determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985, as amended. If you or your tenant are USDA program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service prior to starting work.

It is strongly recommended that the development of the site be carried out in such a manner as to avoid as much as possible the discharge of dredged or fill material into the delineated waters of the United States. If the activities proposed for the site involve such discharges, authorization from this office may be necessary prior to the initiation of the proposed work. The extent of such discharge of fill will determine the level of authorization that would be required.

If any questions should arise concerning this matter, please contact Brian A. Orzel, of my staff, at (917) 790-8413.

Sincerely,

George Nieves
Chief, Western Permits Section

Enclosures

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: Ulster Land Holding Partners LLC	File Number: NAN-2005-1312-WOR	Date: FEB 11 2008

Attached is:		See Section Below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of Permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of Permission)	B
	PERMIT DENIAL	C
X	APPROVED JURISDICTIONAL DETERMINATION	D
	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://usace.army.mil/inet/functions/cw/cecwo/reg or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

•ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the New York District Engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations (JD) associated with the permit.

•OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the New York District Engineer. Your objections must be received by the New York District Engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the New York District Engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the New York District Engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit.

•ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the New York District Engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

•APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the North Atlantic Division Engineer, ATTN: CENAD-PD-PSD-O, Fort Hamilton Military Community, Building 301, General Lee Avenue, Brooklyn, NY 11252-6700. This form must be received by the Division Engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the North Atlantic Division Engineer, ATTN: CENAD-PD-PSD-O, Fort Hamilton Military Community, Building 301, General Lee Avenue, Brooklyn, NY 11252-6700. This form must be received by the Division Engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

•ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.

•APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the North Atlantic Division Engineer within 60 days of the date of this notice with a copy furnished to the New York District Engineer.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. [illegible] you may request an approved JD (which may be appealed), by contacting the Corps

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:
Richard L. Tomer
U.S. Army Corps of Engineers, New York District
Jacob K. Javits Federal Building
New York, NY 10278-0090
(917) 790-8510

If you only have questions regarding the appeal process you may also contact:
James W. Haggerty, Regulatory Appeals Review Officer
North Atlantic Division, U.S. Army Engineer Division
Fort Hamilton Military Community
General Lee Avenue, Building 301
Brooklyn, NY 11252-6700
(718) 765-7150
E-mail: James.W.Haggerty@nad02.usace.army.mil

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

Signature of appellant or agent.	Date:	Telephone number:

Revised 8/13/04

JURISDICTIONAL DETERMINATION
U.S. Army Corps of Engineers

DISTRICT OFFICE: NEW YORK DISTRICT (CENAN)
FILE NUMBER: NAN-2005-1312

PROJECT LOCATION INFORMATION:
State: New York
County: Ulster
Center coordinates of site (latitude/longitude): lat: 41-56-55 N lon: 73-59-28 W
Approximate size of area (parcel) reviewed, including uplands: 48 acres.
Name of nearest waterway: Hudson River
Name of watershed: Hudson River

JURISDICTIONAL DETERMINATION

Completed:	Desktop determination	[ ]	Date:
	Site visit(s)	[X]	Date(s): May 23, 2006

Jurisdictional Determination (JD):

[ ] Preliminary JD - Based on available information, [ ] *there appear to be* (or) [ ] *there appear to be no* "waters of the United States" and/or "navigable waters of the United States" on the project site. A preliminary JD is not appealable (Reference 33 CFR part 331).

[X] Approved JD - An approved JD is an appealable action (Reference 33 CFR part 331).
Check all that apply:

[ ] *There are* "navigable waters of the United States" (as defined by 33 CFR part 329 and associated guidance) within the reviewed area. Approximate size of jurisdictional area: .

[X] *There are* "waters of the United States" (as defined by 33 CFR part 328 and associated guidance) within the reviewed area. Approximate size of jurisdictional area: 7.11 acres.

[ ] *There are "isolated, non-navigable, intra-state waters or wetlands"* within the reviewed area.
[ ] Decision supported by SWANCC/Migratory Bird Rule Information Sheet for Determination of No Jurisdiction.

BASIS OF JURISDICTIONAL DETERMINATION:
A. Waters defined under 33 CFR part 329 as "navigable waters of the United States":
[ ] The presence of waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.

B. Waters defined under 33 CFR part 328.3(a) as "waters of the United States":
[ ] (1) The presence of waters, which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide.
[ ] (2) The presence of interstate waters including interstate wetlands[1].
[ ] (3) The presence of other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate commerce including any such waters (check all that apply):
[ ] (i) which are or could be used by interstate or foreign travelers for recreational or other purposes.
[ ] (ii) from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
[ ] (iii) which are or could be used for industrial purposes by industries in interstate commerce.
[ ] (4) Impoundments of waters otherwise defined as waters of the US.
[ ] (5) The presence of a tributary to a water identified in (1) - (4) above.
[ ] (6) The presence of territorial seas.
[ ] (7) The presence of wetlands adjacent[2] to other waters of the US, except for those wetlands adjacent to other wetlands.

Rationale for the Basis of Jurisdictional Determination (applies to any boxes checked above). *If the jurisdictional water or wetland is not itself a navigable water of the United States, describe connection(s) to the downstream navigable waters. If B(1) or B(3) is used as the Basis of Jurisdiction, document navigability and/or interstate commerce connection (i.e., discuss site conditions, including why the waterbody is navigable and/or how the destruction of the waterbody could affect interstate or foreign commerce). If B(2, 4, 5 or 6) is used as the Basis of Jurisdiction, document the rationale used to make the determination. If B(7) is used as the Basis of Jurisdiction, document the rationale used to make adjacency determination:* Wetlands include intermittent, unnamed tributary to the Hudson River. The Hudson River is navigable.

Lateral Extent of Jurisdiction: (Reference: 33 CFR parts 328 and 329)

[X] Ordinary High Water Mark indicated by:
- [X] clear, natural line impressed on the bank
- [X] the presence of litter and debris
- [X] changes in the character of soil
- [X] destruction of terrestrial vegetation
- [ ] shelving
- [ ] other:

[ ] High Tide Line indicated by:
- [ ] oil or scum line along shore objects
- [ ] fine shell or debris deposits (foreshore)
- [ ] physical markings/characteristics
- [ ] tidal gages
- [ ] other:

[ ] Mean High Water Mark indicated by:
[ ] survey to available datum; [ ] physical markings; [ ] vegetation lines/changes in vegetation types.

[X] Wetland boundaries, as shown on the attached wetland delineation map and/or in a delineation report prepared by:

Basis For Not Asserting Jurisdiction:

[ ] The reviewed area consists entirely of uplands.
[ ] Unable to confirm the presence of waters in 33 CFR part 328(a)(1, 2, or 4-7).
[ ] Headquarters declined to approve jurisdiction on the basis of 33 CFR part 328.3(a)(3).
[ ] The Corps has made a case-specific determination that the following waters present on the site are not Waters of the United States:
- [ ] Waste treatment systems, including treatment ponds or lagoons, pursuant to 33 CFR part 328.3.
- [ ] Artificially irrigated areas, which would revert to upland if the irrigation ceased.
- [ ] Artificial lakes and ponds created by excavating and/or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing.
- [ ] Artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating and/or diking dry land to retain water for primarily aesthetic reasons.
- [ ] Water-filled depressions created in dry land incidental to construction activity and pits excavated in dry land for the purpose of obtaining fill, sand, or gravel unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the United States found at 33 CFR 328.3(a).
- [ ] Isolated, intrastate wetland with no nexus to interstate commerce.
- [ ] Prior converted cropland, as determined by the Natural Resources Conservation Service. Explain rationale:
- [ ] Non-tidal drainage or irrigation ditches excavated on dry land. Explain rationale:
- [ ] Other (explain):

DATA REVIEWED FOR JURISDICTIONAL DETERMINATION (mark all that apply):

[X] Maps, plans, plots or plat submitted by or on behalf of the applicant.
[X] Data sheets prepared/submitted by or on behalf of the applicant.
[ ] This office concurs with the delineation report, dated , prepared by (company):
[ ] This office does not concur with the delineation report, dated , prepared by (company):
[ ] Data sheets prepared by the Corps.
[ ] Corps' navigable waters' studies:
[ ] U.S. Geological Survey Hydrologic Atlas:
[X] U.S. Geological Survey 7.5 Minute Topographic maps: Kingston East, NY
[ ] U.S. Geological Survey 7.5 Minute Historic quadrangles:
[ ] U.S. Geological Survey 15 Minute Historic quadrangles:
[X] USDA Natural Resources Conservation Service Soil Survey: Ulster County, NY
[X] National wetlands inventory maps: Kingston East, NY
[X] State/Local wetland inventory maps: Kingston East, NY
[ ] FEMA/FIRM maps (Map Name & Date):
[ ] 100-year Floodplain Elevation is: (NGVD)
[ ] Aerial Photographs (Name & Date):
[X] Other photographs (Date):
[ ] Advanced Identification Wetland maps:
[X] Site visit/determination conducted on: May 23, 2006
[ ] Applicable/supporting case law:
[ ] Other information (please specify):

---

[1]Wetlands are identified and delineated using the methods and criteria established in the Corps Wetland Delineation Manual (87 Manual) (i.e., occurrence of hydrophytic vegetation, hydric soils and wetland hydrology).

[2]The term "adjacent" means bordering, contiguous, or neighboring. Wetlands separated from other waters of the U.S. by man-made dikes or barriers, natural river berms, beach dunes, and the like are also adjacent.

APPENDIX G

Revised Stormwater Mangement Plan

STORM WATER MANAGEMENT PLAN

For

Ulster Manor

Situate
Memorial Drive
Town of Ulster
Prepared by

MEDENBACH and EGGERS

Civil Engineering and Land Surveying, P.C.
4305 US Highway 209
Stone Ridge, New York, 12484

Ph. 845-687-0047

Barry Medenbach P.E.
NY Lic. No. 60142

April 1, 2004
Revised: January 27, 2005
Revised: January 17, 2006
Revised: August 9, 2007

TABLE OF CONTENTS

Owner/Operator

Barry Medenbach, P.E.
New York Lic. No. 60142

I. Executive Summery:

Ulster manor is a proposed subdivision situated on a 48.0 acre parcel located in the town of Ulster. Currently the land is undeveloped and wooded. In addition there are also approximately 4.93 acres of New York State Freshwater Wetlands and approximately 0.18 acres of Federal Wetlands on the property.

The proposed project will involve constructing 128 town homes and a community recreation for the residents. In addition, approximately 2,200 linear feet of town road will be constructed and approximately 3,000 of private driveways and roads in order to provide access to various parts of the project.

Stormwater management for the project will include temporary erosion controls during construction as well as permanent post construction controls, such as swales, storm sewers, water quality ponds, etc. to mitigate the impacts of the proposed development. Proposed post construction stromwater controls are explained in detail within the Section III of this report and indicated on the accompanying site plans to this report.

The intent of this report is to prepare the calculations and sizing of the sites drainage system including Water Quality Basins as part of a Storm Water Pollution Prevention Plan (SWPPP) meeting standards of design of Storm water Management Practices (SMP) of the State of New York in accordance with National Pollutant Discharge Elimination System (NPDES).

When all proposed practices are constructed they will reduce all post-development peak flows from the site to less than peak development rates. Therefore there will be no negative impacts on downstream waters or adjacent lands caused by increased peak flow rates. The reductions are indicated in Section III.b of this report.

II. Pre-Development Drainage Conditions:

Currently, pre-development drainage patterns consist of eight watersheds, five which discharge off site at different locations and three which discharge into natural recharge areas with no outlet onsite. All of the watersheds are delineated in Figure 1 in Appendix A and in larger scale on the predevelopment drainage area worksheet.

For calculation purposes smaller sub watersheds have been delineated within some of the larger watersheds. Soil types for each watershed have been delineated using USDA Ulster County Soil Survey Maps and data collected from on-site test holes. Impervious and vegetative cover was delineated using aerial photographs and surveys. A brief description of each of the pre-development watersheds is described in detail below:

a. Pre-development Watershed 1 (Nodes 1-1 – 1-3):

This watershed is located in the southern portion of the site totals approximately 26.0 acres, as indicated in Figure 1 in Appendix A. Nodes 1-1, 1-2 and 1-3 make up the area of this watershed in the drainage calculations. Runoff from this watershed collects in the New York State DEC Freshwater Wetlands; represented by nodes WL-1 – WL-3. Ultimately the wetlands discharge concentrated flow over the southern property line through a existing stream channel on to adjacent lands which contain a large New York State DEC Freshwater Wetland. Except for the channel connecting the onsite State Wetlands with the offsite State Wetlands there are no drainage structures or obstructions within the water shed.

Currently watershed 1 is predominantly undeveloped with the exception of an existing parking lot located on an adjacent parcel, which makes up approximately 0.2 acres of impervious cover, less than 1% of the watershed area. The primary land cover in the watershed is hardwood forest.

The watershed contains soil types from all 2 hydrological groups, A and C. The predominate soil type in the watershed is hydrological group A soil, which accounts for 62.5% of the soils. Followed by group C soils which make up the remaining 36.6%.

b. Pre-development Watershed 2 (Node 2-1):

This watershed is located in the northeast corner of the site and totals approximately 6.6 acres, as indicated in Figure 1 in Appendix A, and represented by node 2-1 drainage calculations. Runoff from this watershed collects in a portion of Feral Freshwater Wetlands and ultimately discharges as concentrated flow over the northern property line into adjacent Federal Freshwater Wetlands which extend offsite.

Currently watershed 2 is undeveloped and predominantly covered by hardwood forest. The watershed contains soil types entirely from hydrological group C which male up 100% of the watershed.

c. Pre-development Watershed 3 (Nodes 3-1):

This watershed is located in the northern portion of the site totals approximately 6.4 acres, as indicated in Figure 1 in Appendix A, and represented by node 3-1 in the drainage calculations. Runoff from this watershed collects in a natural depression located behind the adjacent Fox Run townhouse development. The depression also has a 6" HDPE culvert which acts as an overflow when the water in the depression ponds above 242.99'. Runoff which discharges into this overflow pipe flows into a roadside swale along Ledge Drive. The natural depression and existing outlet are represented by Pond P-1 in the predevelopment drainage model.

Currently watershed 3 is predominantly undeveloped with the exception of some townhouse parcels located in the northern portion of the watershed, which makes up approximately 0.13 acres of impervious cover, about 2% of the watershed area. The primary land cover in the watershed is hardwood forest.

The watershed contains soil types from all 2 hydrological groups, A and C. The predominate soil type in the watershed is hydrological group A soil, which accounts for 88.2% of the soils. Followed by group C soils which make up the remaining 9.7%.

d. Pre-development Watershed 4 (Nodes 4-1):

This watershed is located in the northern portion of the site totals approximately 2.2 acres, as indicated in Figure 1 in Appendix A, and represented by node 4-1 in the drainage calculations. Runoff from this watershed drains north and discharges into a catch basin along Quail drive in the adjacent Fox Run townhouse development.

Currently watershed 4 is undeveloped and the primary land cover in the watershed is hardwood forest. The watershed is made up entirely of hydrological group A soil, which accounts for 100% of the soils.

e. Pre-development Watersheds 5, 7 and 8 (Nodes 5-1, 7-1, and 8-1):

Watersheds 5, 7 and 8 represent small watersheds which drain into isolated depressions with no outlet as indicated in Figure 1 in Appendix A. These watersheds consist primarily of undeveloped land with some small portions of impervious area.

f. Pre-development Watershed 6 (Nodes 6-1):

This watershed is located in the southwestern portion of the site totals approximately 3.6 acres, as indicated in Figure 1 in Appendix A, and represented by node 6-1 in the drainage calculations. Runoff from this watershed discharges into an 18" CMP which flows south under memorial drive.

Currently watershed 6 is a mix of undeveloped and developed land and includes 0.6 acres of impervious cover, which makes up approximately 16% of the watershed area. The remainder of the watershed area consists of hydrological group A soil.

g. Pre-development Runoff Rates (For off-site discharge points):

Watershed 1 Pre-development Peak Flows:

Storm	Pre-Development (cfs)
1 Year	2.38
10 Year	20.37
25 Year	24.02
100 Year	33.08

Watershed 2 Pre-development Peak Flows:

Storm	Pre-Development (cfs)
1 Year	8.01
10 Year	23.71
25 Year	27.15
100 Year	37.79

Watershed 3 Pre-development Peak Flows:

Storm	Pre-Development (cfs)
1 Year	0.00
10 Year	0.12
25 Year	0.19
100 Year	0.40

Watershed 4 Pre-development Peak Flows:

Storm	Pre-Development (cfs)
1 Year	0.00
10 Year	0.02
25 Year	0.04
100 Year	0.32

Watershed 6 Pre-development Peak Flows:

Storm	Pre-Development (cfs)
1 Year	0.01
10 Year	1.27
25 Year	2.02
100 Year	4.94

III. Post-Development Drainage Improvements and Mitigation:

To mitigate all of the potential stormwater impacts of the project a drainage study has been preformed and a stormwater management plan has been prepared in accordance with the New York State Stormwater Management Design Manual (NYSSMDM), SPDES general permit for stormwater discharges GP-02-01 and EPA Phase II requirements. The stormwater management practice locations map in Appendix A shows a general schematic of the proposed drainage improvements within each of the pre-development watersheds. Post-development drainage calculations are included in Appendix A. All nodes with the prefix 9-x thru 16-x are part of the post development calculations. A detailed work sheet is included in Appendix A showing the location of all post development nodes.

When complete the proposed drainage system will reduce peak runoff rates to less than pre-development levels. The proposed drainage improvements will also reduce pollutant levels in the runoff though several proposed treatment practices. The following sections give a detailed description of the proposed drainage system and on-site mitigations.

a. Peak Runoff Rate Reduction:

To mitigate the impacts of increased runoff rates after development the project will use a system of detention ponds/swales and infiltration practices to reduce post-development runoff rates to less then pre-development rates. As required by the NYSSMDM the proposed drainage system will provide the required channel protection volume, overbank flood protection, and extreme storm protection.

To meet channel protection requirements, or extended 24 hour detention of the 1-year design storm, a system of wet ponds and infiltration practices will be used, which can be seen on the stormwater management practice location map in Appendix A.

To satisfy channel protection requirements three pocket ponds (Type P-5), two infiltration basins (Type I-2), one wet swale (Type O-2) and nine bio-retention zones (Type F-5) all are practices listed in the NYSSMDM. The ponds and swales were selected for use due to the presence of hydrological group C soils in some locations and the lack of adequate separation from bedrock, less than 3 feet, required for infiltration practices. Ponds located where hydrological group A soils exist a 12" compacted clay liner will be installed in the ponds. At the locations of the infiltration basins and bio-retention zones hydrological group A soils are present and there is sufficient separation between the practice bottoms and bedrock.

Channel protection volume will be achieved by low flow orifices, as outlets, installed in the ponds which will release the 1 year storm over a 24 hour period and restore post-development peak flow rates to less than pre-development rates. The infiltration basins and bio-retention zones will recharge the required channel protection volume during the one year storm. Table 1 below gives the required channel protection volume, required 24 hour average release rate, actual release rate and orifice size for each practice. Table 2 shows the required channel protection volume for each of the bio-retention zones, the available storage above the bio-retention zone and the peak discharge for the 1 year storm for each of the bio-retention zones.

Table 1:

WQB	CPv (Cubic Ft)	Req. Average Release Rate Over 24hrs. (cfs)	Calculated Peak Release Rate (cfs)	Orifice Size (Min 3")	Duration of Release (Hours)
1	12,744	0.15	0.31	3"	30
2	5,944	0.07	0.22	3"	22 (Discharges Into WQB #1)
3 (Infiltration Basin)	7,192	0.08	0.00	N/A	N/A (Recharged)
4	13,504	0.16	0.21	3"	37
5 (Infiltration Basin)	18,818	0.21	0.00	N/A	N/A (Recharged)

Table 2:

Bio-Retention Zone	CPv (Cubic Ft)	Available Infiltration Storage (Cubic Ft)	Calculated 1 Year Peak Release Rate (cfs)
1	716	1,310	0.00
2	94	993	0.00
3	130	638	0.00
4	1,112	1,100	0.00
5	403	436	0.00
6	347	436	0.00
7	1,247	633	0.00
8	3,088	1,315	0.00
9	2,644	1,577	0.00

Detailed calculations for all basins and practices are included in Appendix A. Prior to entering the ponds, infiltration basins and bio-retention zones runoff will be pre-treated with forebays, grass swales, grass filter strips, mulch and gravel diaphragms to ensure the longevity of each practice. All pretreatment has been sized in accordance with the NYSSMDM.

To meet overbank flood protection and extreme storm protection requirements the proposed drainage improvements will provide extended detention and release post-development runoff for the 10 and 100 year storms at less than pre-development rates. The ponds on site will accomplish this through detaining the runoff and releasing it through outlet structures and spillways designed to release the stormwater gradually over a period of time. The infiltration practices will use the same methods. In addition, some runoff will also be recharged into the subsoil. Some of the infiltration practices have overflows which discharge into the ponds when their storage is exceeded during extreme storms.

When all proposed practices are constructed they will reduce post-development peak flows from the site to less than peak development rates. There will be a small increase for storms over the 10 year storm at watershed 4. This is caused be the runoff from the proposed Quail Drive extension. However, the increase will be very small 0.5 cfs or less for all storms and the existing drainage structures are more than adequate to handle this small increase. Therefore there will be no negative impacts on downstream waters or adjacent lands caused by increased peak flow rates. Furthermore, many of the methods selected (infiltration and bio-retention) simulate the pre-development conditions of the watershed by recharging the runoff through infiltration.

b. Pre and Post-development Runoff Rate Comparison:

In the tables below the changes in pre and post-development runoff rates for each of the watersheds is listed. Runoff rates are calculated at each of the discharge points mentioned in Section II. Detailed calculations are included in Appendix A.

Watershed 1 Peak Flows:

Storm	Pre Development (cfs)	Post Development (cfs)	% Change
1 Year	2.38	1.94	- 18.48%
10 Year	20.37	18.96	- 6.92%
25 Year	24.02	23.62	- 1.67%
100 Year	33.08	32.70	- 1.15%

Watershed 2 Peak Flows:

Storm	Pre Development (cfs)	Post Development (cfs)	% Change
1 Year	8.01	6.51	- 18.72%
10 Year	23.71	22.03	- 7.09%
25 Year	27.15	25.43	- 6.34%
100 Year	37.79	35.70	- 5.50%

Watershed 3 Peak Flows:

Storm	Pre Development (cfs)	Post Development (cfs)	% Change
1 Year	0.00	0.00	0.00%
10 Year	0.12	0.10	- 16.67%
25 Year	0.19	0.19	0.00%
100 Year	0.40	0.40	0.00%

Watershed 4 Peak Flows:

Storm	Pre Development (cfs)	Post Development (cfs)	Change In cfs
1 Year	0.00	0.00	0.00
10 Year	0.02	0.04	0.02
25 Year	0.04	0.11	0.07
100 Year	0.32	0.85	0.53

Watershed 6 Peak Flows:

Storm	Pre Development (cfs)	Post Development (cfs)	% Change
1 Year	0.01	0.00	- 100.00%
10 Year	1.27	0.93	- 26.77%
25 Year	2.02	1.65	- 18.31%
100 Year	4.94	4.89	-1.01%

IV. Runoff Calculation Methodology:

Drainage analyses performed for the 1, 10, 25 and 100 year design storms used the Runoff Curve Method as developed by the Soil Conservation Service (SCS), with peak discharge rates, hydrographs, and routing analyses generated using HydroCAD based upon the SCS TR-20 method. Curve numbers and times of concentration were determined using methodology in the SCS Technical Release 55. These calculations are detailed in Appendix A. Curve numbers were selected from soil type and ground cover which were determined from in field inspections and aerial photographs.

V. Water Quality and Runoff Pollutant Reduction:

To mitigate the impacts of increased pollutants in stormwater from the proposed development several methods will be used to treat stormwater from the project and remove pollutants before they are discharged into downstream waters. In accordance with the NYSSMDM the required water quality volumes have been calculated for all proposed on-site development. To treat the required water quality volume four practices, stormwater ponds, infiltration, bio-retention zones and open swales will be used. Calculations for sizing all the proposed practices are included in Appendix A.

a. Water Quality Volumes and Treatment Methods:

Three stormwater ponds will be used to treat runoff from portions of the site as seen on the stormwater management practice location map in Appendix A. These will consist of pocket ponds (Type P-5) as previously mentioned. Runoff entering the ponds will be treated through settling and biological uptake of pollutants. Prior to entering the ponds runoff will be pre-treated with forebays and grass swales located at the inflow points of each pond. The majority of the runoff entering the ponds will be collected by storm sewers and discharged into the ponds as concentrated flow. All pretreatment has been sized in accordance with the NYSSMDM.

Calculations for determining the required water quality volumes for each of the ponds are included in Appendix B. In the following table a summery of required and provided water quality volumes is indicated for each of the ponds. The provided water quality volume is the calculated volume of the pond below the overflow riser.

WQB (Ponds)	Required WQV (cubic feet)	Provided WQV (cubic feet)
1	3,560	7,565
2	3,999	6,886
4	9,763	16,556

Two infiltration basins (Type I-2) will be used to treat runoff from portions of the site. The required water quality volume will be treated in the basins by storing it and infiltrating it into the subsoil. Prior to entering the infiltration basins runoff will be pre-treated with forebays, grass swales, and grass filter strips. All pretreatment has been sized in accordance with the NYSSMDM.

Calculations for determining the required water quality volumes for the infiltration basins are included in Appendix B. In the following tables a summery of required and provided water quality volumes is indicated for each of the infiltration basins. The provided water quality volume is the calculated infiltration storage in each basin.

WQB (Infiltration Basins)	Required WQV (cubic feet)	Provided WQV (cubic feet)
3	4,917	5,122
5	7,658	16,748

At the entrance to the site a wet swale (Type O-2) will be used to treat runoff form a portion of the new town road. The swale will be located along memorial drive and outlet into an existing 18" CMP which flows south beneath memorial drive. A catch basin will be used as an outlet structure to reduce peak flows and provide water quality volumes.

Calculations for determining the required water quality volume for the swale is included in Appendix B. In the following table a summery of required and provided water quality volumes is indicated the swale. The provided water quality volume is the calculated volume of the swale below the overflow riser.

Wet Swale	Required WQV (cubic feet)	Provided WQV (cubic feet)
1	3,508	3,664

Nine bio-retention zones, located throughout the site, will be used to treat runoff from smaller isolated watersheds typically 0.5 acres or smaller. Bio-retention zones are landscaped shallow depressions which treat runoff by capturing it in the depression and filtering it through a layer of planting soil and the pollutants are removed through physical filtering and biological uptake. The impervious cover in these watersheds will typically consist of rooftops and small paved parking areas or driveways. Runoff will enter the bio-retention zones as sheet flow or shallow concentrated flow and be pre-treated with grassed filter strips, gravel diaphragms, and mulch. The table below indicates the required and provided water quality volumes and surface areas for each of the bio-retention zones. In addition the ponding depth before runoff enters the emergency overflow is also provided. Water quality calculations are provided in Appendix B. Each of the bio-retention zones stores at least 75% of the required water quality volume for the watershed prior to filtering as required by the NYSSMDM.

Bio-Retention Zone	Required WQV (cubic feet)	Required Storage (75% of WQV) (cubic feet)	Provided WQV Storage (cubic feet)	Required Area of Filter Bed (square feet)	Provided Area of Filter Bed (square feet)	Ponding Depth (inches)
1	1,174	880	1,310	1,043	2,400	6"
2	953	715	993	847	1,875	6"
3	583	437	638	518	1,100	6"
4	887	665	1,100	788	2,100	6"
5	389	292	436	346	745	6"
6	334	251	436	297	745	6"
7	683	512	633	607	1,250	6"
8	1,686	1,265	1,315	1,499	2,625	6"
9	1,584	1,188	1,577	1,408	3,725	6"

VI. Stormwater Controls During Construction:

The following measures and best management practices will be implemented to abate and control potential pollutants in stormwater discharges during construction:

1. Site disturbance during construction shall be limited to only the necessary grading of roads, parking areas, ditches and building pads as shown on the plan.
2. Gravel stabilized construction entrance/exit pad to minimize soil disturbance and movement.
3. Silt fences to be located down-gradient of area of stormwater sheet flow. Sediment ponds and traps located at outflows of concentrated flows.
4. Temporary swales to divert stormwater flows from disturbed areas.
5. Check dams as erosion checks within swales and ditches.
6. Temporary stabilization of disturbed portions of the site with temporary seed and mulch within 24 hours of disturbance. Temporary seed shall consist of Ryegrass, applied at the rate of 30 pounds per acre. Prior to

seeding, test for and fertilize as required. Mulch with hay or straw at the rate of 1.5 – 2.5 tons per acre.

7. After grading, temporary berms and swales shall be installed to divert runoff from newly graded areas to control erosion until permanent ground cover has been established.
8. Preserve all large and healthy trees (i.e. greater than 12 inches in diameter) where their removal is not necessary to construction of the project.
9. Placement of erosion control mat on slopes in excess of 2:1(i.e. two feet horizontal to one foot vertical) to control potential slope erosion. Project plans contain technical material and performance specifications including details of installation and maintenance to be utilized in the construction and maintenance of erosion control facilities.

VII. Site Assessments and Inspections:

Inspection of erosion control facilities shall be required to assure maximum adherence to the intent and letter of this plan. Inspections shall be conducted under supervision of a qualified professional at least ever 7 calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater. Construction inspection logs are included in Appendix C. The following information shall be recorded during the inspection:

1. Indicate the extent of all disturbed site areas and drainage pathways. Indicate site areas that are expected to undergo initial disturbance or significant site work within the next 14-day period;
2. Indicate on a site map all areas that have undergone active temporary or permanent stabilization;
3. Indicate on all site areas that have not undergone active site work during the previous 14-day period;
4. Inspect all sediment control practices and record the approximate degree of sediment accumulation as a percentage of the sediment storage volume;
5. Inspect all erosion and sediment control practices and record all the maintenance requirements. Identify any evidence of rill or gully erosion occurring on slopes and any loss of stabilizing vegetation or seeding/mulching. Document any excessive deposition of sediment or ponding water along barrier or diversion systems. Record the depth of sediment within containment structures and any erosion near outlet and overflow structures.

VIII. Contractors:

The site contractor and/or Subcontractor shall be responsible for implementing of the plan. Each contractor performing work on the site shall indicate his understanding of these responsibilities by affixing his signature to the certification statement provided in this document.

The certification states the contractor responsible for elements of the plan understands local codes pertaining to stormwater quality and will comply with the terms and conditions of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards.

IX. Stabilization:

The operator shall initiate stabilization measures as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no more than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased. This requirement does not apply in the following instances:

a. Where the initiation of stabilization by the 14th day after construction activity temporarily or permanently ceased is precluded by snow or frozen ground conditions, stabilization measures shall be initiated as soon as practicable;

b. Where construction activity on a portion of the site is temporarily ceased, and earth-disturbing activities will be resumed within twenty-one (21) days, temporary stabilization measures need not be initiated on that portion of the site.

X. Maintenance:

Sediment shall be removed from sediment traps or sediment ponds whenever their capacity has been reduced by fifty (50) percent from the design capacity. Weekly inspections of all erosion control practices shall be conducted and any deficiencies shall be noted and corrected.

XI. Reporting and Retention of Records:

The operator shall prepare a written summary of its status with respect to compliance with this general permit at a minimum frequency of every three months during which coverage under this permit exists.

The following documents shall be retained for a period of three years from the date the site is finally stabilized:

1. Notice of Intent
2. Reports and inspections generated during implementation of the plan
3. Contractors certifications
4. Notice of Termination

XII. Certifications:

Prior to filing the Notice of Termination, the operator shall have a qualified professional perform a final site inspection. The qualified professional shall certify that the site has undergone final stabilization using either vegetative or structural stabilization methods and that all temporary erosion and sediment controls not needed for long-term erosion control have been removed.
The operator shall certify that the requirements of Site Assessment and Inspection, Stabilization and Maintenance of this permit have been satisfied within 48 hours of actually meeting such requirements

Note: Appendix A through G

Including Hydrocac Calculations are Provided in Attached CD

APPENDIX H

Bat Survey Report

Ulster County, New York

Summer Woodland Bat Survey
Ulster Manor

July 2 - 3, 2007

Bat Conservation and Management, Inc.
Carlisle, Pennsylvania

Summer Woodland Bat Survey
Ulster Manor

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Eastern small-footed bat captured at mist net site 2

Summer Woodland Bat Survey
Ulster Manor

July 2 - 3, 2007

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August 21, 2007

General Sampling Location

Ulster Manor, Ulster County, New York

Figure 1

Executive Summary

The objective of this study was to provide an inventory of summer bat species occurring in the vicinity of the proposed Ulster Manor development. Bat Conservation and Management, Inc. (BCM) of Carlisle, Pennsylvania conducted a summer mist net survey exceeding the protocols set forth in the United States Fish and Wildlife Service Indiana Bat Revised Recovery Plan. Based on the acreage of the proposed development, two (2) sites were selected for summer mist net surveys.

A total of sixteen (16) bats of four (4) species were captured; including seven (7) Northern myotis (*Myotis septentrionalis*), five (5) Eastern small-footed bats (*Myotis leibii*), three (3) big brown bats (*Eptesicus fuscus*), and one (1) Eastern red bat (*Lasiurus borealis*). Five (5) Eastern small-footed bats (*Myotis leibii*), listed as a a state threatened species, were captured. No endangered species were captured.

Introduction

Background

The Ulster Manor development is located in the unincorporated area in the southern portion of the Town of Ulster, Ulster County, New York. Ulster Land Partners Holding, LLC, proposes to acquire and develop a total of 48.0 acres of land to construct a mixed housing residential development. The proposed development is considered to be within the summer range of the Indiana bat (*Myotis sodalis*); therefore, to satisfy compliance requests by the United States Fish and Wildlife Service (USFWS), a summer mist net survey was carried out following USFWS approved protocols.

Objective

The objective of this study was to provide an inventory of bat species occurring in the vicinity of the proposed Ulster Manor development. BCM conducted a summer mist net survey exceeding the protocols set forth in the United States Fish and Wildlife Service Indiana Bat Revised Recovery Plan.

Indiana Bat

The Indiana bat is a rare woodland bat species with documented occurrences in New York and all adjoining states; however, little survey data is available for this species. Indiana bats hibernate in caves and abandoned deep mines during the winter months (November-March), and use a variety of upland, wetland, and riparian habitats during the spring, summer, and fall. Female Indiana bats form nursery colonies under the exfoliating bark of a variety of tree species. Land clearing may adversely affect roosting bats or the quality of foraging habitat. In order to protect suitable habitat, periodic surveys for these individuals are needed. The USFWS typically requests that the site developer conduct a summer Indiana bat survey between May 15 and August 15. Hibernating Indiana bats have been well-documented in abandoned mines in southeastern New York. Numerous Indiana bat summer maternity colonies have also been documented in the vicinity within 20 miles of the winter sites.

Study Area

The project site is wooded and contains approximately 5.1 acres of federal- and state-regulated freshwater wetlands. With the exception of a single-family dwelling in the northeast corner of the site, the site consists of mature and second-growth mixed forest, intersected by narrow grassy jeep trails. Approximately half of the land consists of nearly level to sloping terrain, the remaining lands are sloped- to rolling terrain containing intermittent steep slope areas.

Based on the acreage of the site two (2) mist net sites were determined to sufficiently sample the area for Indiana bats (Table 1). The mist net sites were selected by BCM (Figure 2).

Table 1: Site Co-ordinates

Trap Site	Latitude	Longitude	Elevation
1	41° 56' 56.9"	73° 59' 22.5"	262'
2	41° 57' 05.3"	73° 59' 14.8"	258'

NAD 27 datum

Figure 2: Survey Locations

Methods and Results

Sampling was conducted between July 2 and 3, 2007 and consisted of two (2) trap sites sampled for two nights each. Each site contained three mist net locations (Table 2). The total inventory effort at this site exceeded the recommendations outlined by the United States Fish and Wildlife Service Indiana Bat Revised Recovery Plan (Appendix B).

The sites were sampled using traditional mist net trapping techniques. Mist nets were manufactured by Avinet, Inc. of Dryden, NY (38mm mesh - nylon, reduced bag, 50/2, 38mm mesh, 2.6m high, 4 shelves). Nets can be set at different heights according to specific site conditions. “Single-high” nets are simple 2.6-meter high nets between two poles. “Double-high” nets are slightly more complicated with two 2.6 meter high nets stacked between two poles. “Triple-high” nets consist of three 2.6 meter high nets stacked between two poles. Triple-high and single-high nets were chosen to be most appropriate for all sites. The net lengths were also dictated by the physical characteristics of the site and were up to 12 meters long. Nets were placed over existing grassy jeep roads, and in smaller forest openings. Nets blocked the majority of the travel-way in the area of sampling.

A net-night was defined as any configuration of mist net length and height between 2 poles set up for 1 night. Net-night level of effort totaled twelve (12) net-nights (Table 2) consisting of triple-high and single-high mist nets. The recommended level of effort for two sites as described by the Indiana Bat Revised Recovery Plan is six (6) net-nights (Appendix B).

Data collected at each trapping area included detailed net setup diagrams, weather conditions during sampling, and general habitat information. Data recorded on bats included species, sex, age, reproductive status, weight, and net of capture information.

In compliance with the New York Department of Environmental Conservation, all bats were also banded with unique identifiers. Eastern small-footed bats (*Myotis leibii*), and juveniles weighing less that six (6) grams were not banded. Tissue and fur samples were also collected for all endangered and threatened bats, including the Indiana (*Myotis sodalis*), Eastern small-footed (*Myotis leibii*), Eastern pipistrelle (*Parimyotis subflavus*), Eastern red (*Lasiurus borealis*), hoary (*Lasiurus cinereus*), and silver-haired (*Lasionycteris noctivagans*) bats if captured.

Table 2: Net Night Level of Effort

Trap type	Site 1	Site 2	Totals
Single-high	2	2	4
Triple-high	4	4	8
Totals	6	6	**12**

One net night is any size or stack of nets stretched between 2 poles.

Table 3: Capture Summary

Sample Site		Total Species	Total Captures
Name	Nights		
Site 1	2	2	6
Site 2	2	4	10
Total			**16**

Table 4: Mist Net Site Totals

Species		Site 1	Site 2	Totals M	Totals F	
Eptesicus fuscus	M		2	**2**		**3**
	F		1		**1**	
Lasiurus borealis	M			**0**		**1**
	F		1		**1**	
Myotis leibii	M	1		**1**		**5**
	F	1	3		**4**	
Myotis septentrionalis	M			**0**		**7**
	F	4	3		**7**	
Totals		**6**	**10**	**3**	**13**	**16**
		16		**16**		

Age classification was determined by degree of ossification of the epiphyseal plates of the finger bones. The reproductive condition of females was noted by abdominal palpation and inspection of mammary glands. The reproductive condition of female bats can be used to determine which species have maternity colonies in the general vicinity of the capture site during summer months. Mist net data sheets are provided in Appendix A.

Bat captures for this project are summarized in Tables 3 and 4. A total of sixteen (16) bats of four (4) species were captured; including seven (7) Northern myotis (*Myotis septentrionalis*), five (5) Eastern small-footed bats (*Myotis leibii*), three (3) big brown bats (*Eptesicus fuscus*), and one (1) Eastern red bat (*Lasiurus borealis*).

The reproductive condition of female bats is represented in Table 5. High numbers of pregnant, lactating, or post-lactating bats suggest that a maternity colony of that species may be nearby.

Table 5: Reproductive Condition of Female Bats

Species		Site 1	Site 2	Totals			
				NR	L	PL	
Eptesicus fuscus	L		1		**1**		**1**
Lasiurus borealis	L		1		**1**		**1**
Myotis leibii	L	1	3		**4**		**4**
Myotis septentrionalis	NR		1	**1**			**7**
	L	4	1		**5**		
	PL		1			**1**	
Totals		**5**	**8**	**1**	**11**	**1**	**13**
		13		**13**			

NR=non-reproductive, L=lactating, PL= post-lactating

Figure 3. Net Site 1.

Figure 4. Net Site 1.

Figure 5. Net Site 1

Figure 6. Net Site 2

Figure 7. Net Site 2

Figure 8. Net Site 2

Figure 9. Site 2, Eastern small-footed bat

Figure 10. Site 2, Eastern small-footed bat

Discussion

A total of sixteen (16) bats of four (4) species were captured; including seven (7) Northern myotis (*Myotis septentrionalis*), five (5) Eastern small-footed bats (*Myotis leibii*), three (3) big brown bats (*Eptesicus fuscus*), and one (1) Eastern red bat (*Lasiurus borealis*).

The bat fauna in the vicinity of the Ulster Manor includes common northeastern species. No endangered Indiana bats were encountered during this survey. If present, Indiana bats may be in such low numbers that they fail to be detected using the standard sampling protocol.

Eastern small-footed bat

Five (5) individuals captured were Eastern small-footed bats. In addition to the Federal listing, each state may have it's own list of protected species. In New York, the Eastern small-footed bat is also listed as a threatened species. While a number of factors can contribute to this listing, the most appropriate is probably because the species populations are rare or peripheral and in possible danger of severe decline throughout their range. This is one of the rarest bats in New York. In winter it is found hibernating in caves, but it is never abundant. In summer this bat prefers to roost in crevices found in cliffs, talus piles, and even road cuts with good solar exposure.

General recommendations

Numerous studies of bat roosting and foraging behaviors suggest that management for a diversity of day roosts (in buildings, artificial roosts, tree hollows and cavities), commensurate with encouraging habitat diversity (especially native vegetational diversity; ensuring both age-class and species diversity), and protection of aquatic diversity and quality will support a diversity of bat species, especially in areas where bats can find critical cold-temperature (but not freezing) over-wintering sites within their migratory limits.

Certain tree species, particularly the shagbark and shellbark hickory, provide valuable bat habitat throughout the tree's lifespan and have been shown to be particularly favored by many bat species. Retention of snags is also important to positive bat conservation practices.

Because bats are primary consumers of numerous night-flying insects, including many crop and forest pests, maintaining healthy bat populations in an area contributes greatly to general environmental health.

Appendix A

Mist Net Data Sheets

Notes and key to abbreviations used on data sheets

Instructions

All information must be completed each night. Partially complete forms will not be accepted. Completed forms are to be turned in to the Team Leader each morning.

PROJECT: Name of the entire survey project.
SITE#: The number given to every trap site in a seperate geographic location. Site # remains the same regardless of how many nights are spent at the same location.
DATE: Pre-midnight date which trapping began.
LONGITUDE/LATITUDE: Coordinates from a GPS receiver.
I.D. BY: USFWS qualified person identifying bats at this site.
MOON AFFECT: Was moon present during survey? If so what phase? Was moonlight illuminating nets? Note times.
NUMBER OF NETS/TRAPS: Description of nets, e.g. A: 3Hx9m, B: 2Hx6m, C: 1Hx9mx12m "L" configuration.
SKY CONDITIONS: General weather conditions and temperature in °F, at start, middle, and end of sampling times.
WIND CONDITIONS: Use Beaufort scale and note time.
SITE DESCRIPTION: A general overview of the site, e.g. "Shallow stream with long pools surrounded by deciduous forest with maple, oak, and beech. A small clearing and residence is nearby."
ANDERSON III CODE: Use Level III codes and percentages within 1KM of site. Percentages should total 100%.
DISTURBANCE CODE: List up to three of the most significant disturbances within 500 meters. Include distance to disturbance.

Disturbance Codes and Key

PROXIMITY	TYPE	
1 Disturbance on site	**A** Dumping	**H** Unimproved roads
	B Party spot	**I** Recreation area
2 Disturbance within 100 meters of site	**C** Buildings	**J** Mining
	D Agriculture	**K** Fire
	E Utility rights-of-way	**L** Clearcut
3 Disturbance 100-500 meters of site	**F** Railroad rights-of-way	**M** Insect defoliation
	G Improved roads	**N** No disturbance

Beuford Wind Scale Codes and Key

Code	Speed(m/sa)	Description	Land Condition	Comfort
0	0 - 0.5	Calm	Smoke rises	No noticeable wind
1	0.5 - 1.5	Light air	Smoke drifts vertically	
2	1.6 - 3.3	Light breeze	Leaves rustle	Wind felt on face
3	3.4 - 5.4	Gentle breeze	Wind extends	Hair disturbed, clothing flaps
4	5.5 - 7.9	Moderate breeze	Small branches in motion	Hair disarranged, raises dust & loose
5	8.0 - 10.7	Fresh breeze	Small trees w/leaf begin to sway	Force of wind felt on body
6	10.8 - 13.8	Strong breeze	Whistling in telegraph wires large branches in motion	Umbrellas used with difficulty
7	13.9 - 17.1	Near gale	Whole trees in motion	Inconvenience in walking
8	17.2 - 20.7	Gale	Twigs broken from trees	Progress impeded/difficult in gusts

Common name:	**Species:**
Little brown	*Myotis lucifugus*
Big brown	*Eptesicus fuscus*
Pipistrelle	*Pipistrellus subflavus*
Northern longear	*Myotis septentrionalis*
Smallfooted	*Myotis leibii*
Indiana	*Myotis sodalis*
Red	*Lasiurus borealis*
Hoary	*Lasiurus cinereus*
Silver haired	*Lasionycteris noctivagans*
Townsend's Big-eared	*Corynorhinus townsendii*
Rafinesque's Big-eared	*Corynorhinus rafinesquii*
Evening	*Nyctuceius humeralis*

Reproductive condition:	***Age:***
NR= Non Reproductive	A: Adult
PG= Pregnant	J: Juvenile
L= Lactating	
PL= Post Lactating	
SCR= Scrotal	

DO NOT WRITE IN MARGINS OF DATA SHEETS

Anderson Classification Codes first and second level categories

1	**Urban or Built-Up Land**
11	Residential
12	Commercial Services
13	Industrial
14	Transportation, Communications
15	Industrial and Commercial
16	Mixed Urban or Built-Up Land
17	Other Urban or Built-Up Land
2	**Agricultural Land**
21	Cropland and Pasture
22	Orchards, Groves, Vineyards, Nurseries
23	Confined Feeding Operations
24	Other Agricultural Land
3	**Rangeland**
31	Herbaceous Rangeland
32	Shrub and Brush Rangeland
33	Mixed Rangeland
4	**Forest Land**
41	Deciduous Forest Land
42	Evergreen Forest Land
43	Mixed Forest Land
5	**Water**
51	Streams and Canals
52	Lakes
53	Reservoirs
54	Bays and Estuaries
6	**Wetland**
61	Forested Wetlands
62	Non forested Wetlands
7	**Barren Land**
72	Beaches
73	Sandy Areas Other than Beaches
74	Bare Exposed Rock
75	Strip Mines, Quarries, and Gravel Pits
76	Transitional Areas
77	Mixed Barren Land

Bat Survey Data Form

Bat Conservation and Management, Inc. • 814-442-4246

Project: Ulster Manor	County:	Site #: 1	Night #: 1	Site Name: Ulster 1	Date: 7-2-07
Latitude: 41 56 56.9	Longitude: 73 59 22.5	Datum: NAD27	Elevation: circle: feet / meters 262	ID By: K. Rhone	
Observers: A. Corrigan, J. Kennedy, P. Kennedy		Actual net open time: 9:00 pm	Actual net close time: 2:00 am		

	dusk, note time+temp+description	mid-sample, note time+temp+description	end, note time+temp+description
Sky Conditions:	9:00, clear, 15.7°C	11:45, clear, 14.3°C	2:00, clear, 12.4°C
Wind Description:	1	1	1

Moon effect: (specify net and effect length if any) Start: Stop:

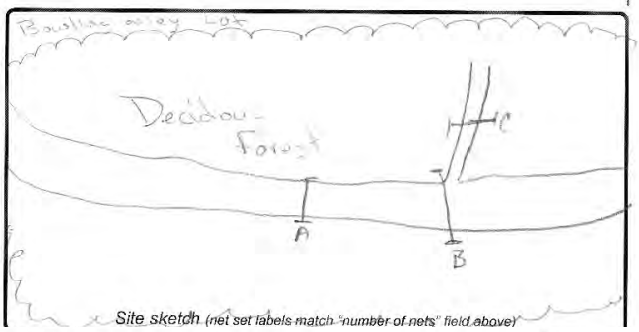
Number of nets/traps: (label and include size and configuration) A 3h x 6m B 3h x 9m C 1h x 6m

Site Description: (net placement, stream data, cover composition, surrounding habitat, dominant species) Nets A and B are set across a jeep trail going through deciduous forest. Net C is set over a 4 wheeler path off the jeep trail.

Locust, pine, oak, Maple

	most common+distance	2nd common+distance	3rd common+distance
Anderson Level II:	41 | 0	15 | 40m	11 | 100m
Disturbance codes:	H | 1	C | 2	G | 2

Remarks: (note rain event time and length, other wildlife, etc.)



Site sketch (net set labels match "number of nets" field above)

Bat Survey Data Form

Bat Conservation and Management, Inc. • 814-442-4246 Page 1 of 1

Project: Ulster Manor County: Site #: 1 Night #: 1 Site Name: Ulster 1 Date: 7-2-07

Time	Species	Age (A/JV)	Sex (M/F)	Reproductive Condition	Weight (grams)	Forearm Length	Above ground	Net Set	Band	Comments
10:05	MyoSep	A	F	L	6.6	36.3	5m	B	NYDEC 2048	1
11:05	MyoSep	A	F	L	6.2	36.9	7m	A	NYDEC 2030	2
										3
										4
										5
										6
										7
										8
										9
										10
										11
										12
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										14
										15
										16
										17
										18
										19
										20

Bat Survey Data Form

Bat Conservation and Management, Inc. • 814-442-4246

Project: Ulster Manor	County: Ulster	Site #: 1	Night #: 2	Site Name: Ulster 1		Date: 7-3-07
Latitude: 41 56 56.9	Longitude: 73 59 22.5			Datum: NAD27	Elevation: ~~800~~ 262 circle: ~~feet~~ meters	ID By: K. Rhome
Observers: H. Corcoran, J. Kennedy, P. Kennedy				Actual net open time: 8:50pm	Actual net close time: 1:50am	

	dusk, note time+temp+description	mid-sample, note time+temp+description	end, note time+temp+description
Sky Conditions:	8:50pm, 20.5°C, cloudy	11:40, 18.9°C, clear	1:50, 17.9°C, Cloudy
Wind Description:			

Moon effect: (specify net and effect length if any) Start: Stop:

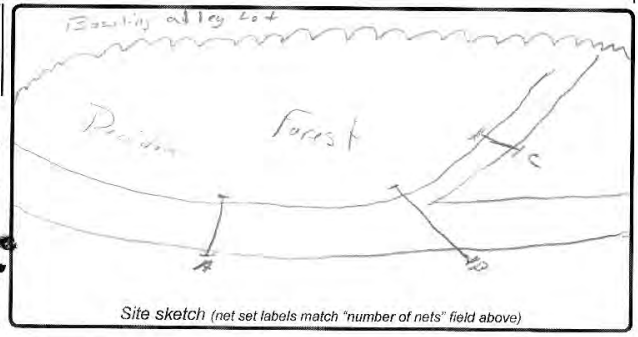
Number of nets/traps: (label and include size and configuration) A: 3h×6m B: 3h×9m C: 1h×6m

Site Description: (net placement, stream data, cover composition, surrounding habitat, dominant species) Nets A+B are set across a steep trail going through deciduous forest. Net C is set over 4wheeler path off the steep trail

Locust, Pine, Oak, Maple

	most common+distance		2nd common+distance		3rd common+distance	
Anderson Level II:	41	0	15	40m	11	100m
Disturbance codes:	H	1	C	2	G	2

Remarks: (note rain event time and length, other wildlife, etc.)



Site sketch (net set labels match "number of nets" field above)

Bat Survey Data Form

Bat Conservation and Management, Inc. • 814-442-4246 Page 1 of 1

Project: Ulster Manor County: Ulster Site #: 1 Night #: 2 Site Name: Ulster 1 Date: 7-3-07

Time	Species	Age (A/J/V)	Sex (M/F)	Reproductive Condition	Weight (grams)	Forearm Length	Above ground	Net Set	Band	Comments	
10:56	MyoLeb	A	M	NR	4.8	30.7	6m	A		Hair + Wing Sample taken	1
101	MyoLeb	A	F	L	5.2	31.2	3m	B		Hair + Wing Sample	2
1:30	MyoSep	A	F	L	6.6	35.5	2m	B	NYDEC 2037		3
1:36	MyoSep	A	F	C	7.8	35.8	4m	A	NYDEC 2034		4
											5
											6
											7
											8
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											10
											11
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											13
											14
											15
											16
											17
											18
											19
											20

Bat Survey Data Form

Bat Conservation and Management, Inc. • 814-442-4246

Project: Ulster Manor	County: Ulster	Site #: 2	Night #: 1	Site Name: Ulster #2		Date: 7/2/2007
Latitude: 041° 57' 05.32"	Longitude: 073° 059' 14.77"			Datum: NAD27	Elevation: 258 circle: (feet) meters	ID By: Matthew Hopkins
Observers: Matthew Hopkins, Katharina Papenbrock				Actual net open time: 20:55	Actual net close time: 02:00	

Sky Conditions:	dusk, note time+temp+description: 20:45, 17.7°C, Clear	mid-sample, note time+temp+description: 11:30, 15.5°C, Clear	end, note time+temp+description: 01:55, 13.3°C, Clear
Wind Description:	0, calm	0, calm	0, Calm

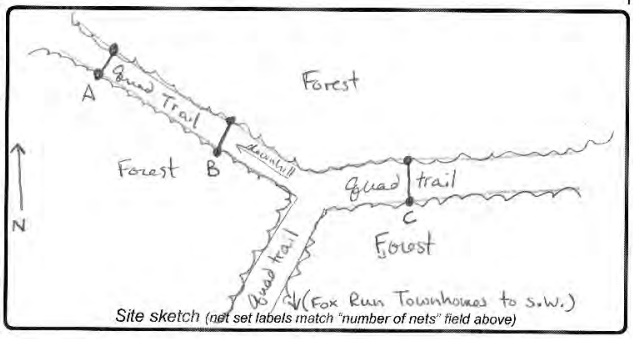
Moon effect: (specify net and effect length if any) Full moon, moon did not affect nets, forest canopy too dense. Start: Stop:

Number of nets/traps: (label and include size and configuration) A: 3×6m×2.6m; B: 3×6m×2.6m; C: 1×6m×2.6m

Site Description: (net placement, stream data, cover composition, surrounding habitat, dominant species) Dense mixed forest with quad trails passing through. Main tree species: Maple, birch, Pine, Tulip poplar, Sumac, Sassafrass. Dense undergrowth of ferns, Japanese barberry, raspberry, rose briar. Surrounded by residential development and improved roads. Wetland areas exist in forest. Terrain undulates throughout site.

	most common+distance		2nd common+distance		3rd common+distance	
Anderson Level II:	43	0m	11	100m	61	150m
Disturbance codes:	H	1	C	2	G	3

Remarks: (note rain event time and length, other wildlife, etc.)



Site sketch (net set labels match "number of nets" field above)

Bat Survey Data Form

Bat Conservation and Management, Inc. • 814-442-4246 Page 1 of 1

Project: Ulster Manor County: Ulster Site #: 2 Night #: 1 Site Name: Ulster #2 Date: 7-2-07

Time	Species	Age (A/JV)	Sex (M/F)	Reproductive Condition	Weight (grams)	Forearm Length	Above ground	Net Set	Band	Comments
21:33	Lasiurus Borealis	A	F	Lac	12.5	42.1	15m	C	NYDEC 2032	Fur + wing membrane samples taken (Cuke punch.) 1
21:45	Myotis leibii	A	F	Lac	5.5	34.0	4m	A	No band	Fur + wing membrane samples 2
11:06	Myotis leibii	A	F	Lac	5.6	31.8	1.0m	C	No band	Fur + wing membrain samples taken 3
1:10	Myotis septentrionalis	A	F	Post Lac.	7.3	36.5	1.25m	C	NYDEC 2029	4
1:55	Myotis leibii	A	F	Lac	5.2	31.8	4m	B	No band	Fur+wing samples 5
										6
										7
										8
										9
										10
										11
										12
										13
										14
										15
										16
										17
										18
										19
										20

Bat Survey Data Form

Bat Conservation and Management, Inc. • 814-442-4246

Project: Ulster Manor	County: Ulster	Site #: 2	Night #: 2	Site Name: Ulster 2	Date: 07/03/2007
Latitude: 041° 57' 05.32"	Longitude: 073° 59' 14.77"			Datum: NAD27	Elevation: 258 circle: (feet) meters
ID By: Matthew Hopkins					
Observers: Matthew Hopkins, Katharina Papenbrock				Actual net open time: 20:55	Actual net close time: 01:55

	dusk, note time+temp+description	mid-sample, note time+temp+description	end, note time+temp+description
Sky Conditions:	20:40, 20.4°C, Mostly Cloudy	23:30, 18.7°C, Partly Cloudy	01:55, 17.4°C, Partly Cloudy
Wind Description:	0, Calm	0, Calm	0, Calm

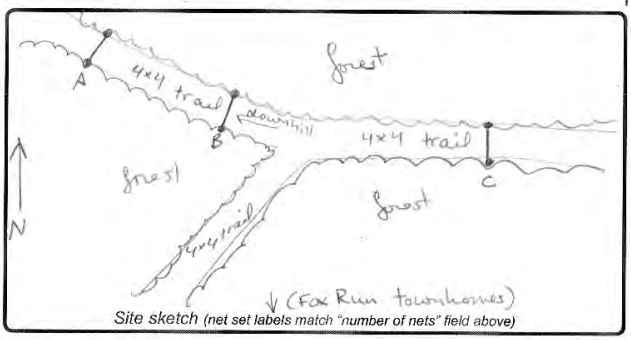
Moon effect: (specify net and effect length if any) N/A — Start: — Stop:

Number of nets/traps: (label and include size and configuration) A: 3×6m×2.6m; B: 3×6m×2.6m; C: 1×6m×2.6m

Site Description: (net placement, stream data, cover composition, surrounding habitat, dominant species) Dense mixed forest with 4×4 trails passing through. Main tree species: Maple, birch, pine, tulip poplar, sumac, sassafrass. Dense undergrowth of ferns, barberry, raspberry, rose briar. Surrounded by residential development and improved roads. Wetland areas nearby to forest. Terrain undulates through site.

	most common+distance	2nd common+distance	3rd common+distance
Anderson Level II:	43 | 0m	11 | 100m	61 | 150m
Disturbance codes:	H | 1	C | 2	G | 3

Remarks: (note rain event time and length, other wildlife, etc.)



Site sketch (net set labels match "number of nets" field above)

Bat Survey Data Form

Bat Conservation and Management, Inc. • 814-442-4246 — Page 1 of 1

Project: Ulster Manor County: Ulster Site #: 2 Night #: 2 Site Name: Ulster 2 Date: 07/03/2007

Time	Species	Age (A/JV)	Sex (M/F)	Reproductive Condition	Weight (grams)	Forearm Length	Above ground	Net Set	Band	Comments
9:10	Eptesicus fuscus	A	M	Scr.	16.6	47.1	3m	A	NYDEC 2028	1
9:41	Myotis septentrionalis	A	F	NR	6.2	36.5	1m	C	NYDEC 2027	2
9:58	Eptesicus fuscus	A	F	Lac.	20.3	46.8	6m	A	NYDEC 2021	3
9:58	Eptesicus fuscus	A	M	Scr.	16.7	45.3	3m	A	NYDEC 2008	4
00:10	Myotis septentrionalis	A	F	Lac	7.1	38.8	5m	A	NYDEC 2026	5
										6
										7
										8
										9
										10
										11
										12
										13
										14
										15
										16
										17
										18
										19
										20

Appendix B

Indiana Bat Sampling Protocol

MIST NETTING GUIDELINES

RATIONALE

A typical mist net survey is an attempt to determine presence or probable absence of the species; it does not provide sufficient data to determine population size or structure. Following these guidelines will standardize procedures for mist netting. It will help maximize the potential for capture of Indiana bats at a minimum acceptable level of effort. Although the capture of bats confirms their presence, failure to catch bats does not absolutely confirm their absence. Netting effort as extensive as outlined below usually is sufficient to capture Indiana bats. However, there have been instances in which additional effort was necessary to detect the presence of the species.

NETTING SEASON

May 15—August 15

These dates define acceptable limits for documenting the presence of summer populations of Indiana bats, especially maternity colonies. Several captures, including adult females and young of the year, indicate that a nursery colony is active in the area. Outside these dates, even when Indiana bats are caught, data should be carefully interpreted: If only a single bat is captured, it may be a transient or migratory individual.

EQUIPMENT

Mist nets - Use the finest, lowest visibility mesh commercially available:

1. In the past, this was 1 ply, 40 denier monofilament—denoted 40/1
2. Currently, monofilament is not available and the finest on the market is 2 ply, 50 denier nylon—denoted 50/2
3. Mesh of approximately 1 1/2 i/4 - 13/4) in (~38 mm)

Hardware - No specific hardware is required. There are many suitable systems of ropes and/or poles to hold the nets. See NET PLACEMENT below for minimum net heights, habitats, and other netting requirements that affect the choice of hardware. The system of Gardner, et al. (1989) has met the test of time.

NET PLACEMENT Potential travel corridors such as streams or logging trails typically are the most effective places to net. Place the nets approximately perpendicular across the corridor. Nets should fill the corridor from side to side and from stream (or ground) level up to the overhanging canopy. A typical set is seven meters high consisting of three or more nets "stacked" on top one another and up to 20 m wide. (Different width nets may be purchased and used as the situation dictates.)

Occasionally it may be desirable to net where there is no good corridor. Take caution to get the nets up into the canopy. The typical equipment described in the section above may be inadequate for these situations, requiring innovation on the part of the observers.

RECOMMENDED NET SITE SPACING:

Stream corridors—one net site per km of stream.

Non-corridor land tracts—two net sites per square km of forested habitat.

MINIMUM LEVEL OF EFFORT

Netting at each site should consist of:

- At least three net nights (unless bats are caught sooner) (one net set up for one night = one net night)
- A minimum of two net locations at each site (at least 30 m apart, especially in linear habitat such as a stream corridor)
- A minimum of two nights of netting
- Sample Period: begin at sunset; net for at least 5 hr
- Each net should be checked approximately every 20 min
- No disturbance near the nets, other than to check nets and remove bats

WEATHER CONDITIONS

Severe weather adversely affects capture of bats. If Indiana bats are caught during weather extremes, it is probably because they are at the site and active despite inclement weather. On the other hand, if bats are not caught, it may be that there are bats at the site but they may be inactive due to the weather. Negative results combined with any of the following weather conditions throughout all or most of a sampling period are likely to require additional netting:

- Precipitation
- Temperatures below 10°C
- Strong winds (Use good judgment: moving nets are more likely to be detected by bats.)

MOONLIGHT

There is some evidence that small myotine bats avoid brightly lit areas, perhaps as predator avoidance. It is typically best to set nets under the canopy where they are out of the moon light, particularly when the moon is 1/2-full or greater.

APPENDIX I

Revised Traffic Analysis

FEIS CAPACITY CALCULATIONS

EXISTING

NO-BUILD

BUILD REDUCED TRIP GENERATION

BUILD REDUCED TRIP GENERATION QUAIL DRIVE ACCESS ALTERNATIVE

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	AAC	Intersection	Rt 9W & Memorial Drive
Agency/Co.	TMA	Jurisdiction	Town of Ulster
Date Performed	11/15/2005	Analysis Year	Existing
Analysis Time Period	AM Peak Hour		

Project Description *Ulster Manor*

East/West Street: *Memorial Drive* | North/South Street: *Rt 9W East Chester Street*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		544	17	29	350	
Peak-Hour Factor, PHF	1.00	0.92	0.92	0.90	0.90	1.00
Hourly Flow Rate, HFR (veh/h)	0	591	18	32	388	0
Percent Heavy Vehicles	0	--	--	3	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	1	1	0
Configuration			TR	L	T	
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				39		48
Peak-Hour Factor, PHF	1.00	1.00	1.00	0.90	1.00	0.90
Hourly Flow Rate, HFR (veh/h)	0	0	0	43	0	53
Percent Heavy Vehicles	0	0	0	3	0	3
Percent Grade (%)	0			-2		
Flared Approach		N			Y	
Storage		0			2	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L		LR				
v (veh/h)		32		96				
C (m) (veh/h)		965		540				
v/c		0.03		0.18				
95% queue length		0.10		0.64				
Control Delay (s/veh)		8.9		17.5				
LOS		A		C				
Approach Delay (s/veh)	--	--	17.5					
Approach LOS	--	--	C					

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TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*AAC*
Agency/Co.	*TMA*
Date Performed	*10/25/2007*
Analysis Time Period	*AM Peak Hour*

Site Information

Intersection	*Rt 9W & Van Kleeks Lane*
Jurisdiction	*Town of Ulster*
Analysis Year	*Existing Condition*

Project Description *Ulster Manor*

East/West Street: *Van Kleeks Lane* | North/South Street: *RT 9W East Chestnut Street*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*5*	*454*	*0*	*17*	*353*	*3*
Peak-Hour Factor, PHF	*0.90*	*0.90*	*0.90*	*0.83*	*0.83*	*0.83*
Hourly Flow Rate, HFR (veh/h)	*5*	*504*	*0*	*20*	*425*	*3*
Percent Heavy Vehicles	*11*	--	--	*15*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LTR*			*LTR*		
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*5*	*1*	*12*	*9*	*0*	*43*
Peak-Hour Factor, PHF	*0.75*	*0.75*	*0.75*	*0.93*	*0.93*	*0.93*
Hourly Flow Rate, HFR (veh/h)	*6*	*1*	*16*	*9*	*0*	*46*
Percent Heavy Vehicles	*28*	*28*	*28*	*8*	*8*	*8*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LTR*	*LTR*		*LTR*			*LTR*	
v (veh/h)	*5*	*20*		*55*			*23*	
C (m) (veh/h)	*1085*	*997*		*436*			*347*	
v/c	*0.00*	*0.02*		*0.13*			*0.07*	
95% queue length	*0.01*	*0.06*		*0.43*			*0.21*	
Control Delay (s/veh)	*8.3*	*8.7*		*14.4*			*16.1*	
LOS	*A*	*A*		*B*			*C*	
Approach Delay (s/veh)	--	--	*14.4*			*16.1*		
Approach LOS	--	--	*B*			*C*		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	AAC	Intersection	Rt 9W & Memorial Drive
Agency/Co.	TMA	Jurisdiction	Town of Ulster
Date Performed	11/15/2005	Analysis Year	Existing
Analysis Time Period	PM Peak Hour		

Project Description: Ulster Manor

East/West Street: Memorial Drive | North/South Street: Rt 9W East Chester Street

Intersection Orientation: North-South | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		785	25	18	625	
Peak-Hour Factor, PHF	1.00	0.98	0.98	0.87	0.87	1.00
Hourly Flow Rate, HFR (veh/h)	0	801	25	20	718	0
Percent Heavy Vehicles	0	--	--	1	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	1	1	0
Configuration			TR	L	T	
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				5		5
Peak-Hour Factor, PHF	1.00	1.00	1.00	0.95	1.00	0.95
Hourly Flow Rate, HFR (veh/h)	0	0	0	5	0	5
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			-2		
Flared Approach		N			Y	
Storage		0			2	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L		LR				
v (veh/h)		20		10				
C (m) (veh/h)		809		240				
v/c		0.02		0.04				
95% queue length		0.08		0.13				
Control Delay (s/veh)		9.6		25.4				
LOS		A		D				
Approach Delay (s/veh)	--	--	25.4					
Approach LOS	--	--	D					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	AAC	Intersection	Rt 9W & Van Kleeks Lane
Agency/Co.	TMA	Jurisdiction	Town of Ulster
Date Performed	10/25/2007	Analysis Year	Existing Condition
Analysis Time Period	PM Peak Hour		

Project Description: Ulster Manor

East/West Street: Van Kleeks Lane | North/South Street: RT 9W East Chestnut Street

Intersection Orientation: North-South | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	0	542	20	32	651	0
Peak-Hour Factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Hourly Flow Rate, HFR (veh/h)	0	553	20	32	664	0
Percent Heavy Vehicles	2	--	--	1	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	1	0	1	23	0	22
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.95	0.95	0.95
Hourly Flow Rate, HFR (veh/h)	1	0	1	24	0	23
Percent Heavy Vehicles	0	0	0	2	2	2
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR			LTR	
v (veh/h)	0	32		47			2	
C (m) (veh/h)	925	1005		211			201	
v/c	0.00	0.03		0.22			0.01	
95% queue length	0.00	0.10		0.83			0.03	
Control Delay (s/veh)	8.9	8.7		26.9			23.1	
LOS	A	A		D			C	
Approach Delay (s/veh)	--	--	26.9			23.1		
Approach LOS	--	--	D			C		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	AAC	Intersection	Rt 9W & Memorial Drive
Agency/Co.	TMA	Jurisdiction	Town of Ulster
Date Performed	11/15/2005	Analysis Year	No-Build
Analysis Time Period	AM Peak Hour		

Project Description *Ulster Manor*

East/West Street: *Memorial Drive* | North/South Street: *Rt 9W East Chester Street*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		648	19	32	415	
Peak-Hour Factor, PHF	1.00	0.92	0.92	0.90	0.90	1.00
Hourly Flow Rate, HFR (veh/h)	0	704	20	35	461	0
Percent Heavy Vehicles	0	--	--	3	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	1	1	0
Configuration			TR	L	T	
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				43		53
Peak-Hour Factor, PHF	1.00	1.00	1.00	0.90	1.00	0.90
Hourly Flow Rate, HFR (veh/h)	0	0	0	47	0	58
Percent Heavy Vehicles	0	0	0	3	0	3
Percent Grade (%)	0			-2		
Flared Approach		N			Y	
Storage		0			2	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L		LR				
v (veh/h)		35		105				
C (m) (veh/h)		874		409				
v/c		0.04		0.26				
95% queue length		0.13		1.01				
Control Delay (s/veh)		9.3		22.1				
LOS		A		C				
Approach Delay (s/veh)	--	--	22.1					
Approach LOS	--	--	C					

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	AAC	Intersection	Rt 9W & Van Kleeks Lane
Agency/Co.	TMA	Jurisdiction	Town of Ulster
Date Performed	10/25/2007	Analysis Year	No-Build Condition
Analysis Time Period	AM Peak Hour		

Project Description *Ulster Manor*

East/West Street: *Van Kleeks Lane* | North/South Street: *RT 9W East Chestnut Street*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	5	543	0	18	394	3
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.83	0.83	0.83
Hourly Flow Rate, HFR (veh/h)	5	603	0	21	474	3
Percent Heavy Vehicles	11	--	--	15	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	5	1	13	10	0	46
Peak-Hour Factor, PHF	0.75	0.75	0.75	0.93	0.93	0.93
Hourly Flow Rate, HFR (veh/h)	6	1	17	10	0	49
Percent Heavy Vehicles	28	28	28	8	8	8
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR			LTR	
v (veh/h)	5	21		59			24	
C (m) (veh/h)	1040	914		365			293	
v/c	0.00	0.02		0.16			0.08	
95% queue length	0.01	0.07		0.57			0.27	
Control Delay (s/veh)	8.5	9.0		16.8			18.4	
LOS	A	A		C			C	
Approach Delay (s/veh)	--	--	16.8			18.4		
Approach LOS	--	--	C			C		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	AAC	Intersection	Rt 9W & Memorial Drive
Agency/Co.	TMA	Jurisdiction	Town of Ulster
Date Performed	11/15/2005	Analysis Year	Existing
Analysis Time Period	PM Peak Hour		

Project Description: Ulster Manor

East/West Street: Memorial Drive | North/South Street: Rt 9W East Chester Street

Intersection Orientation: North-South | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		971	28	20	820	
Peak-Hour Factor, PHF	0.98	0.98	0.98	0.95	0.95	0.98
Hourly Flow Rate, HFR (veh/h)	0	990	28	21	863	0
Percent Heavy Vehicles	0	--	--	1	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	1	1	0
Configuration			TR	L	T	
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				6		6
Peak-Hour Factor, PHF	0.98	0.98	0.98	0.87	0.98	0.87
Hourly Flow Rate, HFR (veh/h)	0	0	0	6	0	6
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			-2		
Flared Approach		N			Y	
Storage		0			2	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L		LR				
v (veh/h)		21		12				
C (m) (veh/h)		685		148				
v/c		0.03		0.08				
95% queue length		0.09		0.26				
Control Delay (s/veh)		10.4		37.7				
LOS		B		E				
Approach Delay (s/veh)	--	--	37.7					
Approach LOS	--	--	E					

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	AAC	Intersection	Rt 9W & Van Kleeks Lane
Agency/Co.	TMA	Jurisdiction	Town of Ulster
Date Performed	10/25/2007	Analysis Year	No-Build Condition
Analysis Time Period	PM Peak Hour		

Project Description *Ulster Manor*

East/West Street: *Van Kleeks Lane* | North/South Street: *RT 9W East Chestnut Street*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	0	667	21	34	798	0
Peak-Hour Factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Hourly Flow Rate, HFR (veh/h)	0	680	21	34	814	0
Percent Heavy Vehicles	2	--	--	1	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	1	0	1	24	0	23
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.95	0.95	0.95
Hourly Flow Rate, HFR (veh/h)	1	0	1	25	0	24
Percent Heavy Vehicles	0	0	0	2	2	2
Percent Grade (%)		5			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR			LTR	
v (veh/h)	0	34		49			2	
C (m) (veh/h)	813	901		139			131	
v/c	0.00	0.04		0.35			0.02	
95% queue length	0.00	0.12		1.45			0.05	
Control Delay (s/veh)	9.4	9.2		44.4			32.9	
LOS	A	A		E			D	
Approach Delay (s/veh)	--	--	44.4			32.9		
Approach LOS	--	--	E			D		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	AAC	Intersection	Rt 9W & Memorial Drive
Agency/Co.	TMA	Jurisdiction	Town of Ulster
Date Performed	11/15/2005	Analysis Year	Build Reduced Trip Gen
Analysis Time Period	AM Peak Hour		

Project Description *Ulster Manor*

East/West Street: *Memorial Drive* | North/South Street: *Rt 9W East Chester Street*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		648	24	38	415	
Peak-Hour Factor, PHF	1.00	0.92	0.92	0.90	0.90	1.00
Hourly Flow Rate, HFR (veh/h)	0	704	26	42	461	0
Percent Heavy Vehicles	0	--	--	3	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	1	1	0
Configuration			TR	L	T	
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				66		82
Peak-Hour Factor, PHF	1.00	1.00	1.00	0.90	1.00	0.90
Hourly Flow Rate, HFR (veh/h)	0	0	0	73	0	91
Percent Heavy Vehicles	0	0	0	3	0	3
Percent Grade (%)	0			-2		
Flared Approach		N			Y	
Storage		0			2	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L		LR				
v (veh/h)		42		164				
C (m) (veh/h)		869		400				
v/c		0.05		0.41				
95% queue length		0.15		1.96				
Control Delay (s/veh)		9.4		25.9				
LOS		A		D				
Approach Delay (s/veh)	--	--	25.9					
Approach LOS	--	--	D					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	AAC	Intersection	Rt 9W & Van Kleeks Lane
Agency/Co.	TMA	Jurisdiction	Town of Ulster
Date Performed	10/25/2007	Analysis Year	Build Reduced Trip Gen
Analysis Time Period	AM Peak Hour		

Project Description: Ulster Manor

East/West Street: Van Kleeks Lane | North/South Street: RT 9W East Chestnut Street

Intersection Orientation: North-South | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	5	572	0	18	400	3
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.83	0.83	0.83
Hourly Flow Rate, HFR (veh/h)	5	635	0	21	481	3
Percent Heavy Vehicles	11	--	--	15	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	5	1	13	10	0	46
Peak-Hour Factor, PHF	0.75	0.75	0.75	0.93	0.93	0.93
Hourly Flow Rate, HFR (veh/h)	6	1	17	10	0	49
Percent Heavy Vehicles	28	28	28	8	8	8
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR			LTR	
v (veh/h)	5	21		59			24	
C (m) (veh/h)	1034	889		346			281	
v/c	0.00	0.02		0.17			0.09	
95% queue length	0.01	0.07		0.61			0.28	
Control Delay (s/veh)	8.5	9.1		17.5			19.0	
LOS	A	A		C			C	
Approach Delay (s/veh)	--	--	17.5			19.0		
Approach LOS	--	--	C			C		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	AAC	Intersection	Rt 9W & Memorial Drive
Agency/Co.	TMA	Jurisdiction	Town of Ulster
Date Performed	11/15/2005	Analysis Year	Build Reduced Trip Gen
Analysis Time Period	PM Peak Hour		

Project Description *Ulster Manor*

East/West Street: *Memorial Drive* | North/South Street: *Rt 9W East Chester Street*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		971	50	47	820	
Peak-Hour Factor, PHF	0.98	0.98	0.98	0.95	0.95	0.98
Hourly Flow Rate, HFR (veh/h)	0	990	51	49	863	0
Percent Heavy Vehicles	0	--	--	1	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	1	1	0
Configuration			TR	L	T	
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				17		19
Peak-Hour Factor, PHF	0.98	0.98	0.98	0.87	0.98	0.87
Hourly Flow Rate, HFR (veh/h)	0	0	0	19	0	21
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			-2		
Flared Approach		N			Y	
Storage		0			2	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L		LR				
v (veh/h)		49		40				
C (m) (veh/h)		672		135				
v/c		0.07		0.30				
95% queue length		0.24		1.15				
Control Delay (s/veh)		10.8		49.2				
LOS		B		E				
Approach Delay (s/veh)	--	--	49.2					
Approach LOS	--	--	E					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	AAC	Intersection	Rt 9W & Memorial Drive
Agency/Co.	TMA	Jurisdiction	Town of Ulster
Date Performed	11/15/2005	Analysis Year	Build Reduced Trip Gen
Analysis Time Period	PM Peak Hour		

Project Description *Ulster Manor*

East/West Street: *Memorial Drive* | North/South Street: *Rt 9W East Chester Street*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		971	50	47	820	
Peak-Hour Factor, PHF	0.98	0.98	0.98	0.95	0.95	0.98
Hourly Flow Rate, HFR (veh/h)	0	990	51	49	863	0
Percent Heavy Vehicles	0	--	--	1	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	1	1	0
Configuration			TR	L	T	
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				17		19
Peak-Hour Factor, PHF	0.98	0.98	0.98	0.87	0.98	0.87
Hourly Flow Rate, HFR (veh/h)	0	0	0	19	0	21
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			-2		
Flared Approach		N			Y	
Storage		0			2	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L		LR				
v (veh/h)		49		40				
C (m) (veh/h)		672		135				
v/c		0.07		0.30				
95% queue length		0.24		1.15				
Control Delay (s/veh)		10.8		49.2				
LOS		B		E				
Approach Delay (s/veh)	--	--	49.2					
Approach LOS	--	--	E					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	AAC	Intersection	Rt 9W & Van Kleeks Lane
Agency/Co.	TMA	Jurisdiction	Town of Ulster
Date Performed	10/25/2007	Analysis Year	Build Reduced Trip Gen
Analysis Time Period	PM Peak Hour		

Project Description *Ulster Manor*

East/West Street: *Van Kleeks Lane* | North/South Street: *RT 9W East Chestnut Street*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	0	680	21	34	825	0
Peak-Hour Factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Hourly Flow Rate, HFR (veh/h)	0	693	21	34	841	0
Percent Heavy Vehicles	2	--	--	1	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	1	0	1	24	0	23
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.95	0.95	0.95
Hourly Flow Rate, HFR (veh/h)	1	0	1	25	0	24
Percent Heavy Vehicles	0	0	0	2	2	2
Percent Grade (%)	5			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR			LTR	
v (veh/h)	0	34		49			2	
C (m) (veh/h)	794	891		132			123	
v/c	0.00	0.04		0.37			0.02	
95% queue length	0.00	0.12		1.54			0.05	
Control Delay (s/veh)	9.5	9.2		47.5			34.8	
LOS	A	A		E			D	
Approach Delay (s/veh)	--	--	47.5			34.8		
Approach LOS	--	--	E			D		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	AAC	Intersection	Rt 9W & Memorial Drive
Agency/Co.	TMA	Jurisdiction	Town of Ulster
Date Performed	11/15/2005	Analysis Year	Build Red Trip Gen 50%
Analysis Time Period	AM Peak Hour		

Project Description *Ulster Manor*

East/West Street: *Memorial Drive* | North/South Street: *Rt 9W East Chester Street*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		648	24	35	415	
Peak-Hour Factor, PHF	1.00	0.92	0.92	0.90	0.90	1.00
Hourly Flow Rate, HFR (veh/h)	0	704	26	38	461	0
Percent Heavy Vehicles	0	--	--	3	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	1	1	0
Configuration			TR	L	T	
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				66		68
Peak-Hour Factor, PHF	1.00	1.00	1.00	0.90	1.00	0.90
Hourly Flow Rate, HFR (veh/h)	0	0	0	73	0	75
Percent Heavy Vehicles	0	0	0	3	0	3
Percent Grade (%)	0			-2		
Flared Approach		N			Y	
Storage		0			2	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L		LR				
v (veh/h)		38		148				
C (m) (veh/h)		869		367				
v/c		0.04		0.40				
95% queue length		0.14		1.90				
Control Delay (s/veh)		9.3		26.3				
LOS		A		D				
Approach Delay (s/veh)	--	--	26.3					
Approach LOS	--	--	D					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	AAC	Intersection	Rt 9W & Van Kleeks Lane
Agency/Co.	TMA	Jurisdiction	Town of Ulster
Date Performed	10/25/2007	Analysis Year	Build Reduced Trip Gen 50%
Analysis Time Period	AM Peak Hour		

Project Description *Ulster Manor*

East/West Street: *Van Kleeks Lane* | North/South Street: *RT 9W East Chestnut Street*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	5	558	0	21	397	0
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.83	0.83	0.83
Hourly Flow Rate, HFR (veh/h)	5	620	0	25	478	0
Percent Heavy Vehicles	11	--	--	15	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	5	1	13	10	0	60
Peak-Hour Factor, PHF	0.75	0.75	0.75	0.93	0.93	0.93
Hourly Flow Rate, HFR (veh/h)	6	1	17	10	0	64
Percent Heavy Vehicles	28	28	28	8	8	8
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR			LTR	
v (veh/h)	5	25		74			24	
C (m) (veh/h)	1039	901		372			277	
v/c	0.00	0.03		0.20			0.09	
95% queue length	0.01	0.09		0.73			0.28	
Control Delay (s/veh)	8.5	9.1		17.1			19.2	
LOS	A	A		C			C	
Approach Delay (s/veh)	--	--	17.1			19.2		
Approach LOS	--	--	C			C		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	AAC	Intersection	Rt 9W & Memorial Drive
Agency/Co.	TMA	Jurisdiction	Town of Ulster
Date Performed	11/15/2005	Analysis Year	Build Reduced Trip Gen 50%
Analysis Time Period	PM Peak Hour		

Project Description *Ulster Manor*

East/West Street: *Memorial Drive* | North/South Street: *Rt 9W East Chester Street*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		971	48	34	820	
Peak-Hour Factor, PHF	1.00	0.98	0.98	0.87	0.87	1.00
Hourly Flow Rate, HFR (veh/h)	0	990	48	39	942	0
Percent Heavy Vehicles	0	--	--	1	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	1	1	0
Configuration			TR	L	T	
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				17		13
Peak-Hour Factor, PHF	1.00	1.00	1.00	0.95	1.00	0.95
Hourly Flow Rate, HFR (veh/h)	0	0	0	17	0	13
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			-2		
Flared Approach		N			Y	
Storage		0			2	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L		LR				
v (veh/h)		39		30				
C (m) (veh/h)		674		106				
v/c		0.06		0.28				
95% queue length		0.18		1.06				
Control Delay (s/veh)		10.7		57.2				
LOS		B		F				
Approach Delay (s/veh)	--	--	57.2					
Approach LOS	--	--	F					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	AAC	Intersection	Rt 9W & Van Kleeks Lane
Agency/Co.	TMA	Jurisdiction	Town of Ulster
Date Performed	10/25/2007	Analysis Year	Build Reduced Trip Gen 50%
Analysis Time Period	PM Peak Hour		

Project Description *Ulster Manor*

East/West Street: *Van Kleeks Lane* | North/South Street: *RT 9W East Chestnut Street*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	0	674	21	47	812	0
Peak-Hour Factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Hourly Flow Rate, HFR (veh/h)	0	687	21	47	828	0
Percent Heavy Vehicles	2	--	--	1	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	1	0	1	24	0	29
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.95	0.95	0.95
Hourly Flow Rate, HFR (veh/h)	1	0	1	25	0	30
Percent Heavy Vehicles	0	0	0	2	2	2
Percent Grade (%)	5			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR			LTR	
v (veh/h)	0	47		55			2	
C (m) (veh/h)	803	895		138			118	
v/c	0.00	0.05		0.40			0.02	
95% queue length	0.00	0.17		1.71			0.05	
Control Delay (s/veh)	9.5	9.2		47.4			36.0	
LOS	A	A		E			E	
Approach Delay (s/veh)	--	--	47.4			36.0		
Approach LOS	--	--	E			E		

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FEIS CAPACITY CALCULATIONS

DEIS Replacement Pages based upon Creighton Manning Comments

EXISTING

NO-BUILD

BUILD POTENTIAL MITIGATION

HCS+™ DETAILED REPORT

General Information		Site Information	
Analyst	AAC	Intersection	Rt 9W Ulster Ave/Miron Lane
Agency or Co.	TMA	Area Type	All other areas
Date Performed	11/15/2005	Jurisdiction	Town of Ulster
Time Period	AM Peak Hour	Analysis Year	Existing Condition
		Project ID	Ulster Manor

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes, N_1	2	1	0	1	1	1	1	2	1	2	1	
Lane Group	L	TR		L	T	R	L	T	R	L	T	
Volume, V (vph)	333	102	100	34	111	81	151	459	38	91	253	
% Heavy Vehicles, %HV	3	3	0	6	6	6	7	7	7	8	8	
Peak-Hour Factor, PHF	0.76	0.76	0.76	0.87	0.87	0.87	0.92	0.92	0.92	0.83	0.83	
Pretimed (P) or Actuated (A)	A	A	A	A	A	A	A	A	A	A	A	
Start-up Lost Time, l_1	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Extension of Effective Green, e	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Arrival Type, AT	3	3		3	3	3	3	3	3	3	3	
Unit Extension, UE	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Filtering/Metering, I	1.000	1.000		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Initial Unmet Demand, Q_b	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Ped / Bike / RTOR Volumes	0	0	0	0	0	0	0	0	0	0	0	
Lane Width	12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking Maneuvers, N_m												
Buses Stopping, N_B	0	0		0	0	0	0	0	0	0	0	
Min. Time for Pedestrians, G_p	3.2			3.2			3.2			3.2		

Phasing	EB Only	WB Only	03	04	Thru & RT	Excl. Left	07	08
Timing	G = 34.0	G = 20.0	G =	G =	G = 30.0	G = 20.0	G =	G =
	Y = 4	Y = 4	Y =	Y =	Y = 4	Y = 4	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 120.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate, v	438	266		39	128	93	164	499	41	110	305	
Lane Group Capacity, c	964	491		284	299	254	281	845	679	541	440	
v/c Ratio, X	0.45	0.54		0.14	0.43	0.37	0.58	0.59	0.06	0.20	0.69	
Total Green Ratio, g/C	0.28	0.28		0.17	0.17	0.17	0.17	0.25	0.45	0.17	0.25	
Uniform Delay, d_1	35.4	36.4		42.6	44.9	44.4	46.2	39.6	18.7	43.1	40.8	
Progression Factor, PF	1.000	1.000		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Delay Calibration, k	0.11	0.14		0.11	0.11	0.11	0.18	0.18	0.11	0.11	0.26	
Incremental Delay, d_2	0.3	1.2		0.2	1.0	0.9	3.1	1.1	0.0	0.2	4.7	
Initial Queue Delay, d_3	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay	35.7	37.6		42.9	45.9	45.3	49.3	40.7	18.7	43.3	45.5	
Lane Group LOS	D	D		D	D	D	D	D	B	D	D	
Approach Delay	36.4			45.2			41.4			44.9		
Approach LOS	D			D			D			D		
Intersection Delay	40.9			X_c = 0.57			Intersection LOS			D		

HCS+™ DETAILED REPORT

General Information		Site Information	
Analyst	AAC	Intersection	RT 9W & Flatbush Ave RT 32
Agency or Co.	TMA	Area Type	All other areas
Date Performed	11/15/2005	Jurisdiction	Town of Ulster
Time Period	AM Peak Hour	Analysis Year	Existing Condition
		Project ID	Ulster Manor

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes, N_1	1	1	1	1	1	1	1	1	1	1	1	1
Lane Group	L	T	R	L	T	R	L	T	R	L	T	R
Volume, V (vph)	136	166	8	89	223	267	24	168	87	144	122	113
% Heavy Vehicles, %HV	3	3	3	6	6	6	9	9	9	6	6	6
Peak-Hour Factor, PHF	0.89	0.89	0.89	0.85	0.85	0.85	0.85	0.85	0.85	0.90	0.90	0.90
Pretimed (P) or Actuated (A)	A	A	A	A	A	A	A	A	A	A	A	A
Start-up Lost Time, l_1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green, e	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Arrival Type, AT	3	3	3	3	3	3	3	3	3	3	3	3
Unit Extension, UE	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Filtering/Metering, I	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Initial Unmet Demand, Q_b	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ped / Bike / RTOR Volumes	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking Maneuvers, N_m												
Buses Stopping, N_B	0	0	0	0	0	0	0	0	0	0	0	0
Min. Time for Pedestrians, G_p	3.2			3.2			3.2			3.2		

Phasing	EW Perm	Excl. Left	03	04	NS Perm	Excl. Left	07	08
Timing	G = 33.0	G = 20.0	G =	G =	G = 33.0	G = 18.0	G =	G =
	Y = 4	Y = 4	Y =	Y =	Y = 4	Y = 4	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 120.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate, v	153	187	9	105	262	314	28	198	102	160	136	126
Lane Group Capacity, c	584	507	431	626	493	699	622	479	704	589	493	724
v/c Ratio, X	0.26	0.37	0.02	0.17	0.53	0.45	0.05	0.41	0.14	0.27	0.28	0.17
Total Green Ratio, g/C	0.49	0.28	0.28	0.49	0.28	0.46	0.48	0.28	0.47	0.48	0.28	0.47
Uniform Delay, d_1	25.0	35.1	31.7	20.6	36.9	22.2	18.7	35.6	17.8	23.6	34.1	18.0
Progression Factor, PF	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Delay Calibration, k	0.11	0.11	0.11	0.11	0.13	0.11	0.11	0.11	0.11	0.11	0.11	0.11
Incremental Delay, d_2	0.2	0.5	0.0	0.1	1.1	0.5	0.0	0.6	0.1	0.3	0.3	0.1
Initial Queue Delay, d_3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay	25.2	35.6	31.7	20.8	38.0	22.6	18.7	36.2	17.9	23.8	34.4	18.1
Lane Group LOS	C	D	C	C	D	C	B	D	B	C	C	B
Approach Delay	30.9			28.3			29.0			25.6		
Approach LOS	C			C			C			C		
Intersection Delay	28.3			X_c = 0.41			Intersection LOS			C		

HCS+™ DETAILED REPORT

General Information		Site Information	
Analyst	AAC	Intersection	Rt 9W Ulster Ave/Miron Lane
Agency or Co.	TMA	Area Type	All other areas
Date Performed	11/15/2005	Jurisdiction	Town of Ulster
Time Period	PM Peak Hour	Analysis Year	Existing Condition
		Project ID	Ulster Manor

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes, N_1	2	1	0	1	1	1	1	2	1	2	1	
Lane Group	L	TR		L	T	R	L	T	R	L	T	
Volume, V (vph)	596	160	164	96	183	229	162	732	61	133	494	
% Heavy Vehicles, %HV	0	0	0	0	0	0	2	2	2	1	1	
Peak-Hour Factor, PHF	0.84	0.84	0.84	0.90	0.90	0.90	0.92	0.92	0.92	0.87	0.87	
Pretimed (P) or Actuated (A)	A	A	A	A	A	A	A	A	A	A	A	
Start-up Lost Time, l_1	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Extension of Effective Green, e	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Arrival Type, AT	3	3		3	3	3	3	3	3	3	3	
Unit Extension, UE	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Filtering/Metering, I	1.000	1.000		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Initial Unmet Demand, Q_b	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Ped / Bike / RTOR Volumes	0	0	50	0	0	115	0	0	15	0	0	
Lane Width	12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking Maneuvers, N_m												
Buses Stopping, N_B	0	0		0	0	0	0	0	0	0	0	
Min. Time for Pedestrians, G_p	3.2			3.2			3.2			3.2		

Phasing	EB Only	WB Only	03	04	Excl. Left	NS Perm	07	08
Timing	G = 30.0	G = 19.0	G =	G =	G = 10.0	G = 45.0	G =	G =
	Y = 4	Y = 4	Y =	Y =	Y = 4	Y = 4	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 120.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate, v	710	326		107	203	127	176	796	50	153	568	
Lane Group Capacity, c	876	445		286	301	256	249	1330	594	289	705	
v/c Ratio, X	0.81	0.73		0.37	0.67	0.50	0.71	0.60	0.08	0.53	0.81	
Total Green Ratio, g/C	0.25	0.25		0.16	0.16	0.16	0.49	0.38	0.38	0.08	0.38	
Uniform Delay, d_1	42.3	41.3		45.2	47.6	46.1	23.5	30.2	24.2	52.7	33.6	
Progression Factor, PF	1.000	1.000		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Delay Calibration, k	0.35	0.29		0.11	0.25	0.11	0.27	0.19	0.11	0.13	0.35	
Incremental Delay, d_2	5.8	6.1		0.8	5.9	1.5	8.9	0.8	0.1	1.8	6.8	
Initial Queue Delay, d_3	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay	48.1	47.5		46.0	53.4	47.6	32.4	31.0	24.3	54.6	40.4	
Lane Group LOS	D	D		D	D	D	C	C	C	D	D	
Approach Delay	47.9			49.9			30.9			43.4		
Approach LOS	D			D			C			D		
Intersection Delay	41.8			X_c = 0.80			Intersection LOS			D		

HCS+™ DETAILED REPORT

General Information		Site Information	
Analyst	AAC	Intersection	RT 9W & Flatbush Ave RT 32
Agency or Co.	TMA	Area Type	All other areas
Date Performed	11/15/2005	Jurisdiction	Town of Ulster
Time Period	PM Peak Hour	Analysis Year	Existing Condition
		Project ID	Ulster Manor

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes, N_1	1	1	1	1	1	1	1	1	1	1	1	1
Lane Group	L	T	R	L	T	R	L	T	R	L	T	R
Volume, V (vph)	249	302	7	119	272	318	13	199	130	229	259	176
% Heavy Vehicles, %HV	0	0	0	1	1	1	1	1	1	1	1	1
Peak-Hour Factor, PHF	0.96	0.96	0.96	0.91	0.91	0.91	0.92	0.92	0.92	0.86	0.86	0.86
Pretimed (P) or Actuated (A)	A	A	A	A	A	A	A	A	A	A	A	A
Start-up Lost Time, l_1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green, e	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Arrival Type, AT	3	3	3	3	3	3	3	3	3	3	3	3
Unit Extension, UE	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Filtering/Metering, I	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Initial Unmet Demand, Q_b	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ped / Bike / RTOR Volumes	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking Maneuvers, N_m												
Buses Stopping, N_B	0	0	0	0	0	0	0	0	0	0	0	0
Min. Time for Pedestrians, G_p	3.2			3.2			3.2			3.2		

Phasing	EW Perm	Excl. Left	03	04	NS Perm	Excl. Left	07	08
Timing	G = 33.0	G = 20.0	G =	G =	G = 33.0	G = 18.0	G =	G =
	Y = 4	Y = 4	Y =	Y =	Y = 4	Y = 4	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 120.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate, v	259	315	7	131	299	349	14	216	141	266	301	205
Lane Group Capacity, c	571	523	444	553	517	733	534	517	760	603	517	760
v/c Ratio, X	0.45	0.60	0.02	0.24	0.58	0.48	0.03	0.42	0.19	0.44	0.58	0.27
Total Green Ratio, g/C	0.49	0.28	0.28	0.49	0.28	0.46	0.48	0.28	0.47	0.48	0.28	0.47
Uniform Delay, d_1	30.1	37.8	31.7	27.0	37.5	22.5	24.7	35.6	18.1	27.1	37.5	19.0
Progression Factor, PF	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Delay Calibration, k	0.11	0.19	0.11	0.11	0.17	0.11	0.11	0.11	0.11	0.11	0.17	0.11
Incremental Delay, d_2	0.6	2.0	0.0	0.2	1.6	0.5	0.0	0.5	0.1	0.5	1.7	0.2
Initial Queue Delay, d_3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay	30.6	39.8	31.7	27.2	39.1	23.0	24.7	36.2	18.3	27.6	39.2	19.2
Lane Group LOS	C	D	C	C	D	C	C	D	B	C	D	B
Approach Delay	35.6			29.9			28.9			29.9		
Approach LOS	D			C			C			C		
Intersection Delay	31.1			X_c = 0.65			Intersection LOS			C		

HCS+™ DETAILED REPORT

General Information		Site Information	
Analyst	AAC	Intersection	Rt 9W Ulster Ave/Miron Lane
Agency or Co.	TMA	Area Type	All other areas
Date Performed	11/15/2005	Jurisdiction	Town of Ulster
Time Period	AM Peak Hour	Analysis Year	No-Build Condition
		Project ID	Ulster Manor

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes, N_1	2	1	0	1	1	1	1	2	1	2	2	
Lane Group	L	TR		L	T	R	L	T	R	L	T	
Volume, V (vph)	368	119	110	47	127	93	167	523	42	106	290	
% Heavy Vehicles, %HV	3	3	3	6	6	6	7	7	7	8	8	
Peak-Hour Factor, PHF	0.76	0.76	0.76	0.87	0.87	0.87	0.92	0.92	0.92	0.83	0.83	
Pretimed (P) or Actuated (A)	A	A	A	A	A	A	A	A	A	A	A	
Start-up Lost Time, l_1	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Extension of Effective Green, e	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Arrival Type, AT	3	3		3	3	3	3	3	3	3	3	
Unit Extension, UE	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Filtering/Metering, I	1.000	1.000		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Initial Unmet Demand, Q_b	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Ped / Bike / RTOR Volumes	0	0	27	0	0	46	0	0	10	0	0	
Lane Width	12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking Maneuvers, N_m												
Buses Stopping, N_B	0	0		0	0	0	0	0	0	0	0	
Min. Time for Pedestrians, G_p	3.2			3.2			3.2			3.2		

Phasing	EB Only	WB Only	03	04	Thru & RT	Excl. Left	07	08
Timing	G = 34.0	G = 20.0	G =	G =	G = 30.0	G = 20.0	G =	G =
	Y = 4	Y = 4	Y =	Y =	Y = 4	Y = 4	Y =	Y =

Duration of Analysis, T = 0.25 — Cycle Length, C = 120.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate, v	484	266		54	146	54	182	568	35	128	349	
Lane Group Capacity, c	964	490		284	299	254	281	845	679	541	838	
v/c Ratio, X	0.50	0.54		0.19	0.49	0.21	0.65	0.67	0.05	0.24	0.42	
Total Green Ratio, g/C	0.28	0.28		0.17	0.17	0.17	0.17	0.25	0.45	0.17	0.25	
Uniform Delay, d_1	35.9	36.4		43.0	45.4	43.2	46.7	40.6	18.6	43.4	37.7	
Progression Factor, PF	1.000	1.000		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Delay Calibration, k	0.11	0.14		0.11	0.11	0.11	0.23	0.24	0.11	0.11	0.11	
Incremental Delay, d_2	0.4	1.2		0.3	1.3	0.4	5.1	2.1	0.0	0.2	0.3	
Initial Queue Delay, d_3	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay	36.3	37.7		43.4	46.6	43.6	51.8	42.7	18.6	43.6	38.0	
Lane Group LOS	D	D		D	D	D	D	D	B	D	D	
Approach Delay	36.8			45.3			43.7			39.5		
Approach LOS	D			D			D			D		
Intersection Delay	40.7			X_c = 0.59			Intersection LOS			D		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*AAC*	Intersection	*Rt 9W & Kiefer Lane*
Agency/Co.	*TMA*	Jurisdiction	*Town of Ulster*
Date Performed	*11/15/2005*	Analysis Year	*No-Build Condition Revised*
Analysis Time Period	*AM Peak Hour*		

Project Description *Ulster Manor*

East/West Street: *Kiefer Lane* | North/South Street: *RT 9W East Chestnut Street*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*62*	*655*	*3*	*3*	*400*	*40*
Peak-Hour Factor, PHF	*0.99*	*0.99*	*0.99*	*0.78*	*0.78*	*0.78*
Hourly Flow Rate, HFR (veh/h)	*62*	*661*	*3*	*3*	*512*	*51*
Percent Heavy Vehicles	*10*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LTR*			*LTR*		
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*34*	*0*	*38*	*12*	*0*	*14*
Peak-Hour Factor, PHF	*0.74*	*0.74*	*0.74*	*0.75*	*0.75*	*0.75*
Hourly Flow Rate, HFR (veh/h)	*45*	*0*	*51*	*16*	*0*	*18*
Percent Heavy Vehicles	*17*	*0*	*17*	*0*	*0*	*0*
Percent Grade (%)		*2*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LTR*	*LTR*		*LTR*			*LTR*	
v (veh/h)	*62*	*3*		*34*			*96*	
C (m) (veh/h)	*970*	*935*		*179*			*183*	
v/c	*0.06*	*0.00*		*0.19*			*0.52*	
95% queue length	*0.20*	*0.01*		*0.68*			*2.66*	
Control Delay (s/veh)	*9.0*	*8.9*		*29.8*			*44.5*	
LOS	*A*	*A*		*D*			*E*	
Approach Delay (s/veh)	--	--	*29.8*			*44.5*		
Approach LOS	--	--	*D*			*E*		

HCS+™ DETAILED REPORT

General Information		Site Information	
Analyst	AAC	Intersection	RT 9W & Flatbush/ Rt 32
Agency or Co.	TMA	Area Type	All other areas
Date Performed	11/15/2005	Jurisdiction	Town of Ulster
Time Period	AM Peak Hour	Analysis Year	No-Build Condition
		Project ID	Ulster Manor

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes, N_1	1	1	1	1	1	1	1	1	1	1	1	1
Lane Group	L	T	R	L	T	R	L	T	R	L	T	R
Volume, V (vph)	156	202	13	101	306	367	27	197	98	190	139	132
% Heavy Vehicles, %HV	3	3	3	6	6	6	9	9	9	6	6	6
Peak-Hour Factor, PHF	0.89	0.89	0.89	0.85	0.85	0.85	0.85	0.85	0.85	0.90	0.90	0.90
Pretimed (P) or Actuated (A)	A	A	A	A	A	A	A	A	A	A	A	A
Start-up Lost Time, l_1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green, e	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Arrival Type, AT	3	3	3	3	3	3	3	3	3	3	3	3
Unit Extension, UE	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Filtering/Metering, I	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Initial Unmet Demand, Q_b	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ped / Bike / RTOR Volumes	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking Maneuvers, N_m												
Buses Stopping, N_B	0	0	0	0	0	0	0	0	0	0	0	0
Min. Time for Pedestrians, G_p	3.2			3.2			3.2			3.2		

Phasing	EW Perm	Excl. Left	03	04	NS Perm	Excl. Left	07	08
Timing	G = 33.0	G = 20.0	G =	G =	G = 33.0	G = 18.0	G =	G =
	Y = 4	Y = 4	Y =	Y =	Y = 4	Y = 4	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 120.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate, v	175	227	15	119	360	432	32	232	115	211	154	147
Lane Group Capacity, c	508	507	431	594	493	699	607	479	704	562	493	724
v/c Ratio, X	0.34	0.45	0.03	0.20	0.73	0.62	0.05	0.48	0.16	0.38	0.31	0.20
Total Green Ratio, g/C	0.49	0.28	0.28	0.49	0.28	0.46	0.48	0.28	0.47	0.48	0.28	0.47
Uniform Delay, d_1	31.3	36.0	31.8	22.6	39.5	24.6	19.3	36.4	17.9	26.6	34.5	18.3
Progression Factor, PF	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Delay Calibration, k	0.11	0.11	0.11	0.11	0.29	0.20	0.11	0.11	0.11	0.11	0.11	0.11
Incremental Delay, d_2	0.4	0.6	0.0	0.2	5.5	1.7	0.0	0.8	0.1	0.4	0.4	0.1
Initial Queue Delay, d_3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay	31.7	36.6	31.9	22.8	44.9	26.2	19.4	37.2	18.0	27.0	34.9	18.4
Lane Group LOS	C	D	C	C	D	C	B	D	B	C	C	B
Approach Delay	34.4			33.2			29.9			26.9		
Approach LOS	C			C			C			C		
Intersection Delay	31.4			X_c = 0.61			Intersection LOS			C		

HCS+™ DETAILED REPORT

General Information		Site Information	
Analyst	AAC	Intersection	Rt 9W Ulster Ave/Miron Lane
Agency or Co.	TMA	Area Type	All other areas
Date Performed	11/15/2005	Jurisdiction	Town of Ulster
Time Period	PM Peak Hour	Analysis Year	No-Build Condition
		Project ID	Ulster Manor

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes, N_1	2	1	0	1	1	1	1	2	1	2	1	
Lane Group	L	TR		L	T	R	L	T	R	L	T	
Volume, V (vph)	658	200	181	169	227	284	179	825	67	176	568	
% Heavy Vehicles, %HV	0	0	0	0	0	0	2	2	2	1	1	
Peak-Hour Factor, PHF	0.84	0.84	0.84	0.80	0.80	0.80	0.92	0.92	0.92	0.87	0.87	
Pretimed (P) or Actuated (A)	A	A	A	A	A	A	A	A	A	A	A	
Start-up Lost Time, l_1	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Extension of Effective Green, e	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Arrival Type, AT	3	3		3	3	3	3	3	3	3	3	
Unit Extension, UE	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Filtering/Metering, I	1.000	1.000		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Initial Unmet Demand, Q_b	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Ped / Bike / RTOR Volumes	0	0	45	0	0	142	0	0	17	0	0	
Lane Width	12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking Maneuvers, N_m												
Buses Stopping, N_B	0	0		0	0	0	0	0	0	0	0	
Min. Time for Pedestrians, G_p	3.2			3.2			3.2			3.2		

Phasing	EB Only	WB Only	03	04	Excl. Left	NS Perm	07	08
Timing	G = 30.0	G = 20.0	G =	G =	G = 10.0	G = 44.0	G =	G =
	Y = 4	Y = 4	Y =	Y =	Y = 4	Y = 4	Y =	Y =

Duration of Analysis, T = 0.25 | Cycle Length, C = 120.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate, v	783	400		211	284	177	195	897	54	202	653	
Lane Group Capacity, c	876	446		301	317	269	210	1301	580	289	690	
v/c Ratio, X	0.89	0.90		0.70	0.90	0.66	0.93	0.69	0.09	0.70	0.95	
Total Green Ratio, g/C	0.25	0.25		0.17	0.17	0.17	0.48	0.37	0.37	0.08	0.37	
Uniform Delay, d_1	43.5	43.5		47.2	49.0	46.8	32.6	32.2	24.9	53.5	36.9	
Progression Factor, PF	1.000	1.000		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Delay Calibration, k	0.42	0.42		0.27	0.42	0.23	0.44	0.26	0.11	0.27	0.46	
Incremental Delay, d_2	11.6	20.4		7.1	26.2	5.8	42.6	1.6	0.1	7.3	22.0	
Initial Queue Delay, d_3	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay	55.1	63.9		54.3	75.2	52.6	75.2	33.8	25.0	60.8	58.9	
Lane Group LOS	E	E		D	E	D	E	C	C	E	E	
Approach Delay	58.1			62.7			40.4			59.4		
Approach LOS	E			E			D			E		
Intersection Delay	53.9			X_c = 0.93			Intersection LOS			D		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*AAC*	Intersection	*Rt 9W & Kiefer Lane*
Agency/Co.	*TMA*	Jurisdiction	*Town of Ulster*
Date Performed	*11/15/2005*	Analysis Year	*No-Build Condition Revised*
Analysis Time Period	*PM Peak Hour*		

Project Description *Ulster Manor*

East/West Street: *Kiefer Lane* | North/South Street: *RT 9W East Chestnut Street*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*17*	*960*	*9*	*11*	*806*	*11*
Peak-Hour Factor, PHF	*0.96*	*0.96*	*0.96*	*0.84*	*0.84*	*0.84*
Hourly Flow Rate, HFR (veh/h)	*17*	*1000*	*9*	*13*	*959*	*13*
Percent Heavy Vehicles	*1*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LTR*			*LTR*		
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*46*	*0*	*34*	*6*	*0*	*7*
Peak-Hour Factor, PHF	*0.87*	*0.87*	*0.87*	*0.85*	*0.85*	*0.85*
Hourly Flow Rate, HFR (veh/h)	*52*	*0*	*39*	*7*	*0*	*8*
Percent Heavy Vehicles	*4*	*0*	*4*	*0*	*0*	*0*
Percent Grade (%)		*2*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LTR*	*LTR*		*LTR*			*LTR*	
v (veh/h)	*17*	*13*		*15*			*91*	
C (m) (veh/h)	*713*	*695*		*64*			*61*	
v/c	*0.02*	*0.02*		*0.23*			*1.49*	
95% queue length	*0.07*	*0.06*		*0.81*			*8.01*	
Control Delay (s/veh)	*10.2*	*10.3*		*77.7*			*402.4*	
LOS	*B*	*B*		*F*			*F*	
Approach Delay (s/veh)	--	--	*77.7*			*402.4*		
Approach LOS	--	--	*F*			*F*		

HCS+™ DETAILED REPORT

General Information		Site Information	
Analyst	AAC	Intersection	RT 9W & Flatbush/Rt 32
Agency or Co.	TMA	Area Type	All other areas
Date Performed	11/15/2005	Jurisdiction	Town of Ulster
Time Period	PM Peak Hour	Analysis Year	No-Build Condition
		Project ID	Ulster Manor

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes, N_1	1	1	1	1	1	1	1	1	1	1	1	1
Lane Group	L	T	R	L	T	R	L	T	R	L	T	R
Volume, V (vph)	290	465	26	140	398	433	14	248	154	370	315	210
% Heavy Vehicles, %HV	0	0	0	1	1	1	1	1	1	1	1	1
Peak-Hour Factor, PHF	0.96	0.96	0.96	0.91	0.91	0.91	0.92	0.92	0.92	0.86	0.86	0.86
Pretimed (P) or Actuated (A)	A	A	A	A	A	A	A	A	A	A	A	A
Start-up Lost Time, l_1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green, e	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Arrival Type, AT	3	3	3	3	3	3	3	3	3	3	3	3
Unit Extension, UE	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Filtering/Metering, I	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Initial Unmet Demand, Q_b	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ped / Bike / RTOR Volumes	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking Maneuvers, N_m												
Buses Stopping, N_B	0	0	0	0	0	0	0	0	0	0	0	0
Min. Time for Pedestrians, G_p	3.2			3.2			3.2			3.2		

Phasing	EW Perm	Excl. Left	03	04	NS Perm	Excl. Left	07	08
Timing	G = 33.0	G = 20.0	G =	G =	G = 33.0	G = 18.0	G =	G =
	Y = 4	Y = 4	Y =	Y =	Y = 4	Y = 4	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 120.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate, v	302	484	27	154	437	476	15	270	167	430	366	244
Lane Group Capacity, c	464	523	444	450	517	733	483	517	760	558	517	760
v/c Ratio, X	0.65	0.93	0.06	0.34	0.85	0.65	0.03	0.52	0.22	0.77	0.71	0.32
Total Green Ratio, g/C	0.49	0.28	0.28	0.49	0.28	0.46	0.48	0.28	0.47	0.48	0.28	0.47
Uniform Delay, d_1	39.2	42.3	32.1	36.6	41.1	25.1	27.9	36.8	18.5	35.4	39.2	19.5
Progression Factor, PF	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Delay Calibration, k	0.23	0.44	0.11	0.11	0.38	0.23	0.11	0.13	0.11	0.32	0.27	0.11
Incremental Delay, d_2	3.2	22.6	0.1	0.5	12.3	2.0	0.0	1.0	0.1	6.5	4.4	0.2
Initial Queue Delay, d_3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay	42.5	64.9	32.1	37.1	53.4	27.1	27.9	37.8	18.6	42.0	43.6	19.8
Lane Group LOS	D	E	C	D	D	C	C	D	B	D	D	B
Approach Delay	55.5			39.3			30.4			37.3		
Approach LOS	E			D			C			D		
Intersection Delay	41.4			X_c = 0.86			Intersection LOS			D		

M

HCS+™ DETAILED REPORT

General Information		Site Information	
Analyst	AAC	Intersection	Route 9W & Memorial Drive
Agency or Co.	TMA	Area Type	All other areas
Date Performed	2/8/2006	Jurisdiction	Town of Ulster
Time Period	AM Peak Hour	Analysis Year	Build Signal Mitigation LT 120
		Project ID	Ulster Manor

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes, N_1				0		0		1	0	1	1	
Lane Group					LR			TR		L	T	
Volume, V (vph)				75		92		648	27	41	415	
% Heavy Vehicles, %HV				4		4		8	8	9	9	
Peak-Hour Factor, PHF				0.78		0.78		0.92	0.92	0.85	0.85	
Pretimed (P) or Actuated (A)				A		A		A	A	A	A	
Start-up Lost Time, l_1					2.0			2.0		2.0	2.0	
Extension of Effective Green, e					2.0			2.0		2.0	2.0	
Arrival Type, AT					3			3		3	3	
Unit Extension, UE					3.0			3.0		3.0	3.0	
Filtering/Metering, I					1.000			1.000		1.000	1.000	
Initial Unmet Demand, Q_b					0.0			0.0		0.0	0.0	
Ped / Bike / RTOR Volumes				0	0	0	0	0	0	0	0	
Lane Width					12.0			12.0		12.0	12.0	
Parking / Grade / Parking				N	0	N	N	0	N	N	0	N
Parking Maneuvers, N_m												
Buses Stopping, N_B					0			0		0	0	
Min. Time for Pedestrians, G_p				3.2			3.2			3.2		

Phasing	WB Only	02	03	04	NS Perm	06	07	08
Timing	G = 41.0	G =	G =	G =	G = 71.0	G =	G =	G =
	Y = 4	Y =	Y =	Y =	Y = 4	Y =	Y =	Y =

Duration of Analysis, T = 0.25 | Cycle Length, C = 120.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate, v					214			733		48	488	
Lane Group Capacity, c					565			1035		299	1031	
v/c Ratio, X					0.38			0.71		0.16	0.47	
Total Green Ratio, g/C					0.34			0.59		0.59	0.59	
Uniform Delay, d_1					29.9			17.2		11.1	13.9	
Progression Factor, PF					1.000			1.000		1.000	1.000	
Delay Calibration, k					0.11			0.27		0.11	0.11	
Incremental Delay, d_2					0.4			2.3		0.3	0.3	
Initial Queue Delay, d_3					0.0			0.0		0.0	0.0	
Control Delay					30.3			19.5		11.3	14.2	
Lane Group LOS					C			B		B	B	
Approach Delay				30.3			19.5			14.0		
Approach LOS				C			B			B		
Intersection Delay	19.1			X_c = 0.59			Intersection LOS			B		

HCS+™ DETAILED REPORT

General Information		Site Information	
Analyst	AAC	Intersection	Route 9W & Memorial Drive
Agency or Co.	TMA	Area Type	All other areas
Date Performed	2/8/2006	Jurisdiction	Town of Ulster
Time Period	PM Peak Hour	Analysis Year	Build Signal Mitigation LT120
		Project ID	Ulster Manor

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes, N_1				0		0		1	0	1	1	
Lane Group					LR			TR		L	T	
Volume, V (vph)				22		25		971	58	57	820	
% Heavy Vehicles, %HV				0		0		1	1	1	1	
Peak-Hour Factor, PHF				0.36		0.36		0.96	0.96	0.87	0.87	
Pretimed (P) or Actuated (A)				A		A		A	A	A	A	
Start-up Lost Time, l_1					2.0			2.0		2.0	2.0	
Extension of Effective Green, e					2.0			2.0		2.0	2.0	
Arrival Type, AT					3			3		3	3	
Unit Extension, UE					3.0			3.0		3.0	3.0	
Filtering/Metering, I					1.000			1.000		1.000	1.000	
Initial Unmet Demand, Q_b					0.0			0.0		0.0	0.0	
Ped / Bike / RTOR Volumes				0	0	0	0	0	0	0	0	
Lane Width					12.0			12.0		12.0	12.0	
Parking / Grade / Parking				N	0	N	N	0	N	N	0	N
Parking Maneuvers, N_m												
Buses Stopping, N_B					0			0		0	0	
Min. Time for Pedestrians, G_p				3.2			3.2			3.2		

Phasing	WB Only	02	03	04	NS Perm	06	07	08
Timing	G = 36.0	G =	G =	G =	G = 76.0	G =	G =	G =
	Y = 4	Y =	Y =	Y =	Y = 4	Y =	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 120.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate, v					130			1071		66	943	
Lane Group Capacity, c					517			1182		239	1191	
v/c Ratio, X					0.25			0.91		0.28	0.79	
Total Green Ratio, g/C					0.30			0.63		0.63	0.63	
Uniform Delay, d_1					31.8			18.9		9.8	16.2	
Progression Factor, PF					1.000			1.000		1.000	1.000	
Delay Calibration, k					0.11			0.43		0.11	0.34	
Incremental Delay, d_2					0.3			10.1		0.6	3.7	
Initial Queue Delay, d_3					0.0			0.0		0.0	0.0	
Control Delay					32.1			29.0		10.4	19.9	
Lane Group LOS					C			C		B	B	
Approach Delay				32.1			29.0			19.3		
Approach LOS				C			C			B		
Intersection Delay	24.8			X_c = 0.70			Intersection LOS			C		

APPENDIX J

Fiscal Analysis Worksheet

FISCAL ANALYSIS WORKSHEET -- Ulster Manor, Town of Ulster - 128 Townhouse Units
2008 Municipal Taxes; 2007/2008 Kingston City School Tax
EXISTING & FUTURE CONDITIONS

Taxing Jurisdiction	Current Res.'l Assess.	Rate*	Current Taxes	Projected Taxes	Difference
Ulster County General Tax	$365,000	$5.0817	$1,855	$120,613	$118,759
Town General Tax	$365,000	$3.7352	$1,363	$88,655	$87,291
Town Highway Tax	$365,000	$1.8495	$675	$43,897	$43,222
Ulster Fire No. 5	$365,000	$1.2345	$451	$29,301	$28,850
Ulster Water	$365,000	$1.0407	$380	$24,701	$24,321
Ulster Sewer	$365,000	$1.3002	$475	$30,861	$30,387
Town Library	$365,000	$0.2415	$88	$5,731	$5,643
Ulster Fire #5 Bond	$365,000	$0.1831	$67	$4,346	$4,279
Total Town of Ulster Tax			$3,498	$227,492	$223,993
Kingston City School District	$365,000	$19.8814	$7,257	$471,886	$464,629
Total Kingston City School Tax			$7,257	$471,886	$464,629
TOTAL			**$12,610**	**$819,991**	**$807,381**
Average Tax per unit				**$6,406**	

'Lot s '48.58-7-21 and 48.58-7-22 were combined to form Lot 48.58-7-21.1

* Per $1000 of AV (2008); 2008 Tax Rates
School tax based upon 2007-2008 tax rates

Projected Total Market Value
$35,200,000

Projected Total Assessed Value	**$23,735,000**
2008 Equilization Rate=	0.69
Number of 2BR Townhouses Fee Simple=	**100**
Assumed Market Value/Unit =	**$275,000**
Total Market Value of Townhouse Fee Simple	$27,500,000
Sub-Total Townhouse Fee Simple Assessed Value	$18,975,000
Number of 2 BR Townhouse Condominiums	**28**
Market Value/Unit=	**$275,000**
Total Market Value Condominiums=	$7,700,000
Assessed Value/Unit*=	**$170,000**
Sub-total Condominium Assessed Value	$4,760,000
Total Units	**128**
Total Market Value	$35,200,000.00

* refer to Ulster Manor DEIS

APPENDIX K

Revised Municipal Water Distribution Report

Municipal Water Distribution System Report

For

Ulster Manor

Situate
Ulster Ave. (NYS Rt. 9W)
Town of Ulster
Prepared by

Medenbach & Eggers

Civil Engineering and Land Surveying, P.C.
4305 US Highway 209
Stone Ridge, New York, 12484

Ph. 845-687-0047

Barry Medenbach P.E.
NY Lic. No. 60142

March 1, 2006
Revised October 10, 2007

TABLE OF CONTENTS

I. Executive Summary:

Ulster Manor is a proposed subdivision situated on a 48.0 acre parcel located in the town of Ulster. When fully developed Ulster Manor will contain 128 housing units consisting of 100 attached townhouse units situated on 39.8 acres and a 28 multifamily townhouse units situated on 8.2 acres. Approximately 2,250 linear feet of town road will also be constructed to provide access to various parts of the project.

A portion of the overall parcel is located within the Town of Ulster Water District and as a result has been paying taxes into the district. Therefore all of the proposed units in the project will be provided with municipal water and sewer from the Town of Ulster.

Concerns have been raised by the public as to the impact this project will have on existing water pressure to the neighboring homes. Due to the relative elevation of the adjacent homes to the town storage tank, some of the neighbors experience lower pressure during peak use. This concern, as well as available supply and storage will be the focus of this report. As a result of this study, it is recommended that a cross connection between Memorial Drive and Quail Drive be provided to help boost pressure during peak flow.

In addition, the Ulster Manor project will not be directly connected to this main, but be supplied by a booster pump system before distribution. This will insure that the existing residual water pressure will be maintained and the new residences will have adequate pressure. A detailed analysis of the existing and proposed water system improvements has been performed to analyze flow and pressure. The results of the analysis are detailed with in this report.

II. Existing Town of Ulster Water System Description:

a. Existing Water System Demands and Operation:

The Town of Ulster municipal water system has a peak daily demand of approximately 800,000 gallons per day (gpd). Storage in the system is provided by three water tanks, a 0.45 and 5 million gallon tank located at the south end of the district and a 1.5 million gallon tank located at the north end of the district. The combined storage of all three tanks is approximately 7 million gallons. Water is supplied to the system from a well field located at the treatment plant. A pump at the plant pumps water into the system at a rate of 1,200 gpm and has the ability to pump for 24 hours if needed.

The system does not have a dedicated line which connects the pump to the storage tanks. Instead the pump feeds directly into the distribution system. If the demand in the system exceeds the pumps output the storage tanks will provide the extra capacity needed to satisfy the demands. During non peak hours when the pumps output exceeds the demand of the system the excess water pumped is stored in the storage tanks. Therefore flows and pressures within the distribution network can vary depending on hourly demands and pump cycles.

b. Access Points To Town Of Ulster Water System:

There are two existing water mains from which the Ulster Manor parcel can gain access to Town of Ulster municipal water. The first is a 10” ductile iron main located on Memorial Drive and the second is an 8” ductile iron main located on Quail Drive. Both of which are dead end lines within the existing network.

c. Existing Fire Flows and Pressures:

A pressure and fire flow analysis has been performed on the existing water distribution system in the vicinity of the project. The following table indicates the available pressure and fire flow at various locations surrounding the project. For a description of the methodology used to obtain these results refer to Section IV of this report.

Existing Fire Flows and Pressures

Location	Available Fire Flow (gpm)	Calculated Residual Pressure (psi)	Calculated Static Pressure (psi)
Memorial Dr. & NYS Rt. 9W	2,564.16	26.19	43.82
Van Kleeck's La.& Quail Dr.	832.63	27.78	45.42
Quail Dr. & Ledge Rd.	803.44	20	37.62
Entrance to UPS	2,183.91	20	39.49
Van Kleeck's La. & NYS Rt. 9W	1,176.55	34.66	52.29
Dog Wood Pl	826.75	20	38
Waren St. & Burns Pl.	845.62	20	39.33
Burns Pl. & Risely St.	842.7	22.35	40.84
Ledge Rd. & Risely St.	831.54	22.23	40.21
Tall Oaks Trailer Park	4,554.66	36.96	54.58

III. Proposed Water System Improvements:

a. Estimated Water Demands:

The proposed project will consist entirely of 128 two bedroom townhouses. Each dwelling will have a daily flow of 110 gallons per day per bedroom. Therefore average daily flow for one townhouse will be 220 gallons per day and the total daily demand will be 28,160 gallons per day.

Fire protection for the project is determined based on National Fire Protection Agency (NFPA) guidelines. For two story residences this is determined by the separation distance between structures. The townhouses will have a minimum separation of 35' between buildings. Therefore the required fire flow is 750 gpm at 20 psi. All fire distribution lines will be a minimum diameter of 6" and hydrants will be placed at a maximum of 500' apart. All hydrants and distribution lines will conform to NFPA guidelines.

b. Proposed Public Improvements:

To provide municipal water for Ulster Manor a new 10" public water main will be installed which will run through the site and connect the existing 10" main on Memorial Drive with the existing 8" main on Quail Drive. The installation of the proposed 10" main through the Ulster Manor site will create a new loop in the district between Memorial Drive and Quail Drive. In addition this loop will eliminate one existing dead end and shorten another within the existing network. One tap with a meter pit will be provided on the new main to serve the proposed development. This tap will connect to a privately operated booster pump which will provide water through a private distribution network to the rest of the development.

The proposed 10" main will have isolation valves at all junctions with existing mains and on new taps. In addition isolation valves will be placed at 800' intervals during strait runs. When complete the new loop will also improve pressure, fire flows and water quality for existing users in the vicinity of the adjacent Fox Run Development.

A pressure and fire flow analysis has been performed to determine the effect the proposed loop will have on existing users in the vicinity of the project. The following table indicates the expected increase in pressure and fire flow at various locations surrounding the project. For a description of the methodology used to obtain these results refer to Section IV of this report.

Post Development Fire Flows and Pressures

Location	Available Fire Flow (gpm)	Calculated Residual Pressure (psi)	Calculated Static Pressure (psi)
Memorial Dr. & NYS Rt. 9W	1,682.34	33.54	43.48
Van Kleeck's La.& Quail Dr.	1,134.89	34.74	46.31
Quail Dr. & Ledge Rd.	1,108.04	27.76	38.54
Entrance to UPS	1,419.61	28.66	39.02
Van Kleeck's La. & NYS Rt. 9W	1,302.32	39.64	52.64
Dog Wood Pl	1,195.14	21.31	38.77
Waren St. & Burns Pl.	1,156.58	24.67	40.17
Burns Pl. & Risely St.	1,153.66	27.93	41.69
Ledge Rd. & Risely St.	1,134.05	28.95	41.09
Tall Oaks Trailer Park	3,067.43	44.48	54.41
Ulster Manor Booster Pump Location	1,076.37	20	29.94

c. Proposed Private Improvements:

To provide water to Ulster Manor a connection will be made on the proposed 10” loop between Memorial and Quail Drive. Calculations show that at the proposed connection point the available static pressure will be approximately 30 psi and the available fire flow will be approximately 1,080 gpm at 20 psi. The Great Lakes – Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers Recommended Standards For Water Works 2003 Edition recommends minimum pressure for users at the street is 20 psi or greater. Based on proposed grading and finished floor elevations the maximum pressure loss based on elevation only will be approximately 22 psi. This will drop even more once friction loss from fittings, backflow preventers and pipe length is factored in. The end result is there will be less than 20 psi. available to most users in the proposed development. Therefore a booster pump will be needed to increase pressures to acceptable levels within the proposed development.

d. Proposed Booster Pump Requirements:

The proposed booster pump station will be designed to supply water to the entire Ulster Manor development. For estimating peak demands a peaking factor of 4 times the average daily flow will be used for design. Therefore

the pump will have a peak demand of 112,640 gallons per day or approximately 78 gallons per minute.

In addition the proposed pump will have a natural gas backup generator for use during power outages and be designed to provide adequate fire flows to hydrants during emergencies. The proposed pump station and distribution system will be privately owned and maintained and housed in a permanent structure to protect the mechanical components.

IV. Methodology:

A Hardy-Cross pressure and flow analysis was performed on the existing water system surrounding the project to determine the available flows and pressures at the two connection points.

To model the impacts of the project on the surrounding users a portion of the water distribution network was isolated and modeled. The isolated portion of the network included to be modeled was a section of NYS Rt. 9W between NYS Rt. 32 and Miron Lane. To analyze the existing water system Water CAD was used to create a model. The Town Water Department and Town Engineer were consulted to provide data for the model which included daily system demands, pipe diameters and lengths, pump data and storage tank data. In addition aerial photographs were also used to estimate the number of users in sections of the network. The rest of network was simulated by adding the systems remaining demands as outflows at their respective locations in the model. Peaking factors were then added to the average daily flows to simulate peak demands. Results in the model were compared with actual measurements in the field and the peaking factors were adjusted so the model would accurately represent the existing conditions in the field. After analyzing the system a peaking factor of 4 was used in the final model which yielded results in the model accurate to those observed in the field. Particular areas of interest were accurately modeling the static pressures at hydrant #34 on Memorial Drive and hydrant #199 on Risely Street for which flow test results were available.

Appendix A

Existing Conditions

Water CAD Calculations

Existing Conditions Pipe Report

Pipe	Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
P-2	P-2	2,000.00	10	Cast iron	130	FALSE	0	Open	459.71	337.27	334.35	2.92	1.46
P-3	P-3	600	6	Cast iron	130	FALSE	0	Open	152.57	334.35	332.98	1.37	2.28
P-4	P-4	400	8	Ductile Iron	130	FALSE	0	Open	46.65	332.98	332.96	0.03	0.06
P-5	P-5	500	10	Ductile Iron	130	FALSE	0	Open	9	337.27	337.27	0	0
P-6	P-6	2,400.00	10	Cast iron	130	FALSE	0	Open	301.64	334.35	332.75	1.61	0.67
P-7	P-7	2,600.00	8	Ductile Iron	130	FALSE	0	Open	-32.48	332.75	332.83	0.08	0.03
P-8	P-8	800	6	Cast iron	130	FALSE	0	Open	-25.6	332.83	332.9	0.07	0.08
P-9	P-9	900	6	Cast iron	130	FALSE	0	Open	-27.83	332.9	332.98	0.09	0.1
P-10	P-10	250	6	Cast iron	130	FALSE	0	Open	-13.37	332.9	332.9	0.01	0.03
P-11	P-11	700	6	Cast iron	130	FALSE	0	Open	28.88	332.9	332.83	0.07	0.1
P-12	P-12	450	8	Ductile Iron	130	FALSE	0	Open	-55.09	332.9	332.94	0.04	0.09
P-13	P-13	450	8	Ductile Iron	130	FALSE	0	Open	-58.84	332.94	332.98	0.04	0.1
P-14	P-14	950	8	Ductile Iron	130	FALSE	0	Open	24.65	332.96	332.94	0.02	0.02
P-15	P-15	1,700.00	10	Cast iron	130	FALSE	0	Open	390.87	340	338.16	1.84	1.08
P-16	P-16	500	10	Ductile Iron	130	FALSE	0	Open	510.87	338.16	337.27	0.89	1.78
P-17	P-17	1,700.00	12	Ductile Iron	130	FALSE	0	Open	631.37	340	338.16	1.84	1.08

Existing Conditions Node Report

	Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-1	Memorial Dr. & NYS Rt. 9W	236	Zone-1	Demand	42.16	Fixed	42.16	337.27	43.82
J-3	Van Kleeck's La. Quail Dr.	228	Zone-1	Demand	19.25	Fixed	19.25	332.98	45.42
J-4	Quail Dr. & Ledge Rd.	246	Zone-1	Demand	22	Fixed	22	332.96	37.62
J-5	Entrance to UPS	246	Zone-1	Demand	9	Fixed	9	337.27	39.49
J-2	Van Kleeck's La. & NYS Rt. 9W	213.5	Zone-1	Demand	5.5	Fixed	5.5	334.35	52.29
J-6	J-6	188	Zone-1	Demand	334.12	Composite	334.12	332.75	62.62
J-7	Dog Wood Pl	245	Zone-1	Demand	22	Fixed	22	332.83	38
J-8	Waren St. & Burns Pl.	242	Zone-1	Demand	15.6	Fixed	15.6	332.9	39.33
J-9	Burns Pl. Risely St.	238.5	Zone-1	Demand	12.84	Fixed	12.84	332.9	40.84
J-10	Ledge Rd. & Risely St.	240	Zone-1	Demand	28.4	Fixed	28.4	332.94	40.21
J-11	Tall Oaks Trailer Park	212	Zone-1	Demand	511.37	Fixed	511.37	338.16	54.58

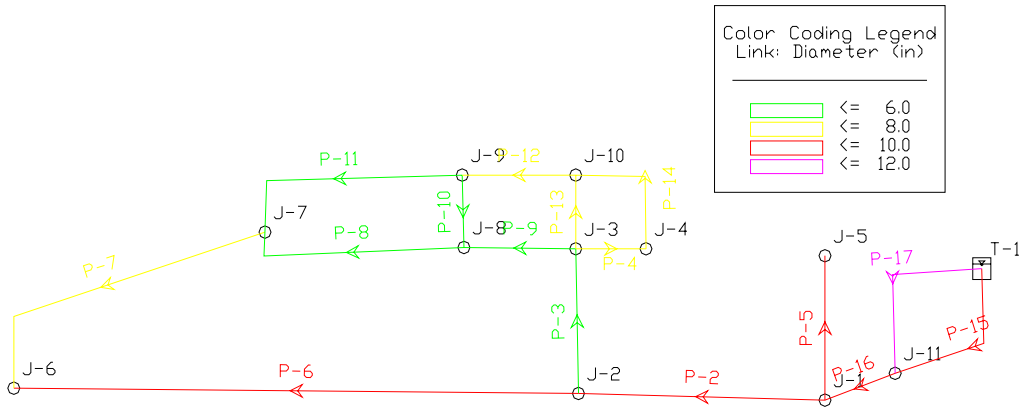
Existing Conditions Tank Report

	Label	Zone	Base Elevation (ft)	Minimum Elevation (ft)	Initial HGL (ft)	Maximum Elevation (ft)	Inactive Volume (gal)	Tank Diameter (ft)	Inflow (gpm)	Current Status	Calculated Hydraulic Grade (ft)	Calculated Percent Full (%)
T-1	T-1	Zone-1	278	320	340	354	0	52.9	-1,022.24	Draining	340	58.8

Existing Conditions Fire Flow Report

	Label	Zone	Fire Flow Iterations	Fire Flow Balanced?	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Total Flow Needed (gpm)	Total Flow Available (gpm)	Residual Pressure (psi)	Calculated Residual Pressure (psi)	Minimum Zone Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction	Minimum System Pressure (psi)	Calculated Minimum System Pressure (psi)	Minimum System Junction	Minimum System Junction
J-1	Memorial Dr. & NYS Rt. 9W	Zone-1	19	TRUE	TRUE	750	2,564.18	792.16	2,606.34	20	26.19	20	20	J-4	20	20	J-4	J-4
J-3	Van Kleeck's La. Quail Dr.	Zone-1	20	TRUE	TRUE	750	832.62	769.25	851.87	20	27.78	20	20	J-4	20	20	J-4	J-4
J-4	Quail Dr. & Ledge Rd.	Zone-1	20	TRUE	TRUE	750	803.44	772	825.44	20	20	20	22.36	J-7	20	22.36	J-7	J-7
J-5	Entrance to UPS	Zone-1	19	TRUE	TRUE	750	2,183.91	759	2,192.91	20	20	20	23.84	J-4	20	23.84	J-4	J-4
J-2	Van Kleeck's La. & NYS Rt. 9W	Zone-1	19	TRUE	TRUE	750	1,176.56	755.5	1,182.06	20	34.66	20	20	J-4	20	20	J-4	J-4
J-6	J-6	Zone-1	19	TRUE	TRUE	750	993.05	1,084.12	1,327.17	20	42.61	20	20	J-7	20	20	J-7	J-7
J-7	Dog Wood Pl	Zone-1	19	TRUE	TRUE	750	826.75	772	848.75	20	20	20	21.56	J-4	20	21.56	J-4	J-4
J-8	Waren St. & Burns Pl.	Zone-1	16	TRUE	TRUE	750	845.62	765.6	861.22	20	20	20	20.11	J-4	20	20.11	J-4	J-4
J-9	Burns Pl. Risely St.	Zone-1	14	TRUE	TRUE	750	842.7	762.84	855.54	20	22.35	20	20	J-4	20	20	J-4	J-4
J-10	Ledge Rd. & Risely St.	Zone-1	20	TRUE	TRUE	750	831.55	778.4	859.95	20	22.23	20	20	J-4	20	20	J-4	J-4
J-11	Tall Oaks Trailer Park	Zone-1	18	TRUE	TRUE	750	4,554.66	1,261.37	5,066.03	20	36.96	20	20	J-4	20	20	J-4	J-4

Existing Condition Model



Appendix B

Post Development Conditions

Water CAD Calculations

Post Development Pipe Report

Pipe	Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
P-2	P-2	2,000.00	10	Cast iron	130	FALSE	0	Open	285.75	336.74	335.53	1.21	0.61
P-3	P-3	600	6	Cast iron	130	FALSE	0	Open	36.29	335.53	335.43	0.1	0.16
P-4	P-4	400	8	Ductile Iron	130	FALSE	0	Open	-84.06	335.43	335.5	0.07	0.19
P-5	P-5	500	10	Ductile Iron	130	FALSE	0	Open	261.18	336.74	336.48	0.26	0.51
P-6	P-6	2,400.00	10	Cast iron	130	FALSE	0	Open	243.96	335.53	334.44	1.08	0.45
P-7	P-7	2,600.00	8	Ductile Iron	130	FALSE	0	Open	-90.16	334.44	334.99	0.55	0.21
P-8	P-8	800	6	Cast iron	130	FALSE	0	Open	-52.75	334.99	335.25	0.26	0.32
P-9	P-9	900	6	Cast iron	130	FALSE	0	Open	-41.25	335.25	335.43	0.18	0.2
P-10	P-10	250	6	Cast iron	130	FALSE	0	Open	-27.09	335.25	335.27	0.02	0.09
P-11	P-11	700	6	Cast iron	130	FALSE	0	Open	59.42	335.27	334.99	0.28	0.4
P-12	P-12	450	8	Ductile Iron	130	FALSE	0	Open	-99.35	335.27	335.39	0.11	0.25
P-13	P-13	450	8	Ductile Iron	130	FALSE	0	Open	-59.85	335.39	335.43	0.04	0.1
P-14	P-14	950	8	Ductile Iron	130	FALSE	0	Open	67.91	335.5	335.39	0.12	0.13
P-15	P-15	1,700.00	10	Cast iron	130	FALSE	0	Open	420.78	340	337.89	2.11	1.24
P-16	P-16	500	10	Ductile Iron	130	FALSE	0	Open	589.09	337.89	336.74	1.16	2.31
P-17	P-17	1,700.00	12	Ductile Iron	130	FALSE	0	Open	679.68	340	337.89	2.11	1.24
P-18	P-18	1,725.00	10	Ductile Iron	130	FALSE	0	Open	252.18	336.48	335.63	0.83	0.48
P-19	P-19	530	10	Ductile Iron	130	FALSE	0	Open	173.96	335.63	335.5	0.13	0.24

Post Development Node Report

	Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-1	Memorial Dr. & NYS Rt. 9W	236	Zone-1	Demand	42.16	Fixed	42.16	336.74	43.58
J-3	Van Kleeck's La. Quail Dr.	228	Zone-1	Demand	19.25	Fixed	19.25	335.43	46.48
J-4	Quail Dr. & Ledge Rd.	246	Zone-1	Demand	22	Fixed	22	335.5	38.72
J-5	Entrance to UPS	246	Zone-1	Demand	9	Fixed	9	336.48	39.15
J-2	Van Kleeck's La. & NYS Rt. 9W	213.5	Zone-1	Demand	5.5	Fixed	5.5	335.53	52.79
J-6	J-6	188	Zone-1	Demand	334.12	Composite	334.12	334.44	63.36
J-7	Dog Wood Pl	245	Zone-1	Demand	22	Fixed	22	334.99	38.94
J-8	Waren St. & Burns Pl.	242	Zone-1	Demand	15.6	Fixed	15.6	335.25	40.34
J-9	Burns Pl. Risely St.	238.5	Zone-1	Demand	12.84	Fixed	12.84	335.27	41.87
J-10	Ledge Rd. & Risely St.	240	Zone-1	Demand	28.4	Fixed	28.4	335.39	41.27
J-11	Tall Oaks Trailer Park	212	Zone-1	Demand	511.37	Fixed	511.37	337.89	54.47
J-12	Ulster Manor Boster Pump Connection	266	Zone-1	Demand	78.22	Fixed	78.22	335.63	30.13

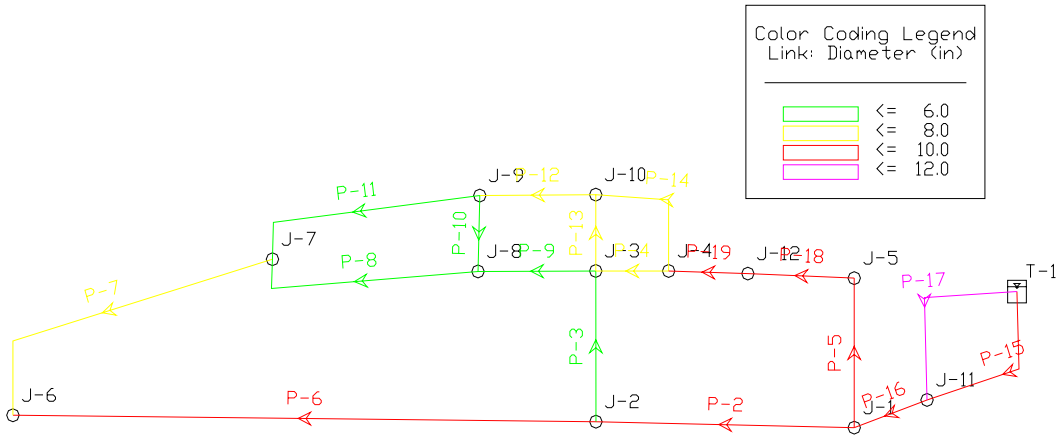
Post Development Tank Report

	Label	Zone	Base Elevation (ft)	Minimum Elevation (ft)	Initial HGL (ft)	Maximum Elevation (ft)	Inactive Volume (gal)	Tank Diameter (ft)	Inflow (gpm)	Current Status	Calculated Hydraulic Grade (ft)	Calculated Percent Full (%)
T-1	T-1	Zone-1	278	320	340	354	0	52.9	-1,100.46	Draining	340	58.8

Fire Flow Report

	Label	Zone	Fire Flow Iterations	Fire Flow Balanced?	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Total Flow Needed (gpm)	Total Flow Available (gpm)	Residual Pressure (psi)	Calculated Residual Pressure (psi)	Minimum Zone Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction	Minimum System Pressure (psi)	Calculated Minimum System Pressure (psi)	Minimum System Junction
J-1	Memorial Dr. & NYS Rt. 9W	Zone-1	18	TRUE	TRUE	750	1,725.85	792.16	1,768.01	20	33.46	20	20	J-12	20	20	J-12
J-3	Van Kleeck's La. Quail Dr.	Zone-1	18	TRUE	TRUE	750	1,172.76	769.25	1,192.01	20	34.61	20	20	J-12	20	20	J-12
J-4	Quail Dr. & Ledge Rd.	Zone-1	16	TRUE	TRUE	750	1,144.31	772	1,166.31	20	27.69	20	20	J-12	20	20	J-12
J-5	Entrance to UPS	Zone-1	17	TRUE	TRUE	750	1,454.24	759	1,463.24	20	28.65	20	20	J-12	20	20	J-12
J-2	Van Kleeck's La. & NYS Rt. 9W	Zone-1	17	TRUE	TRUE	750	1,346.61	755.5	1,352.11	20	39.36	20	20	J-12	20	20	J-12
J-6	J-6	Zone-1	18	TRUE	TRUE	750	1,282.62	1,084.12	1,616.74	20	44.13	20	20	J-12	20	20	J-12
J-7	Dog Wood Pl	Zone-1	18	TRUE	TRUE	750	1,235.16	772	1,257.16	20	20.81	20	20	J-12	20	20	J-12
J-8	Waren St. & Burns Pl.	Zone-1	18	TRUE	TRUE	750	1,195.42	765.6	1,211.02	20	24.29	20	20	J-12	20	20	J-12
J-9	Burns Pl. Risely St.	Zone-1	18	TRUE	TRUE	750	1,192.33	762.84	1,205.17	20	27.66	20	20	J-12	20	20	J-12
J-10	Ledge Rd. & Risely St.	Zone-1	18	TRUE	TRUE	750	1,171.81	778.4	1,200.21	20	28.79	20	20	J-12	20	20	J-12
J-11	Tall Oaks Trailer Park	Zone-1	17	TRUE	TRUE	750	3,129.48	1,261.37	3,640.85	20	44.34	20	20	J-12	20	20	J-12
J-12	Ulster Manor Boster Pump Connection	Zone-1	17	TRUE	TRUE	750	1,110.57	828.22	1,188.79	20	20	20	28.78	J-4	20	28.78	J-4

Post Development Model



APPENDIX L

Revised Blasting Protocal

Blasting Mitigation Plan

Blasting Protocol and Plan

The blasting plan will meet all New York State and Town of Ulster requirements for blasting. Title 12 of the New York State Code of Rules and Regulations (12 NYCRR Part 39) governs the statewide handling, transportation, and storage of explosives used for blasting. Town of Ulster Code Chapters 61-6, 141-49, 177-29, 190-15, and A194-1 regulate blasting activities within the Town, including provisions for permits, fees, insurance as well as the control of vibrations from regulated blasting. The following is a list of protocols that will be followed:

- All blasting will be conducted in compliance with New York State requirements (Title 12 of the New York Code of Rules and Regulations [12 NYCRR Part 39]) for the possession, handling, storage and transportation of explosives.
- Blasting will be conducted by licensed, qualified and insured blasting contractors. Prior to blasting, a permit will be obtained from the Town of Ulster. Blasting will comply with all applicable Town of Ulster Codes.
- Pre-blasting inspections will be conducted of all off-site structures located within 1,000 feet of the blasting/excavation area, if authorized by the property owners. These inspections will include photographic and/or video documentation.
- Prior to blasting, an analysis will be completed by the contractor, to determine the size, placement and timing of blasting charges. This analysis will be provided in a written blasting plan.
- This blasting plan will be available for review by the Town Engineer, of designee, and will include the layout, size of blast, timing of charges, and quantity of material to be extracted.
- Seismographic equipment with decibel meters will be placed on the property line, between the location of the blast and the nearest residences or structures. The results of the monitoring equipment will be promptly reviewed following each blast. Decibel levels will be recorded and monitored during all blasting activity.
- The quantity of explosives will be limited to the amount necessary to fracture the rock without endangering persons or property. Before firing, all blasts will be covered with a suitable protective device to prevent escape of broken material.
- Blasting operations will be limited to 8:00 am and 4:00 pm., Monday through Friday Blasting will not be conducted between the hours of 4:00 PM and 8:00 AM, nor on Saturday, Sunday, or holidays.
- The minimum required amount of explosives will be used in all blasting operations. Charges will be staggered to avoid the creation of high energy impacts.
- The contractor will conduct test blasting, if necessary, prior to any other blasting to determine appropriate on-site blasting techniques, when blasting is to occur within 1,000 feet of existing off-site structures.
- Blasting will be conducted so that the resulting ground vibrations at nearby structures does not exceed the standard industry measurement of a Peak Particle Velocity of 2.0 inches per second and the airborne noise does not exceed 120 dBA.

- Sufficient surficial coverage of the blast areas will be provided to prevent damage from air blast and vibration.
- Notification will be made to the Town Clerk, Police and Sheriff's Department and nearby off-site residences within 1,000 feet of the blasting area twice prior to blasting. Initially not less than 72 hours nor more than 30 days prior to the blast, notifying residents of the approximate anticipated day and time of blasting. The second notification would be not less than 24 hours nor more than 72 hours prior to the blast, to notify the exact time of blast (within 1 hour).
- When blasting activities are to be conducted, warning flags or other means will be used at a reasonable distance along roadways to give proper warning to the general public.
- For each blast, an air horn will be sounded in a manner to give proper warning once at least three (3) times in advance of firing, and two (2) times to give an "all clear" at the conclusion of each blast.

Preblast Surveys

The purpose of a preblast survey is to determine the condition of a dwelling or structure and document any preblast damage or other physical factors that could reasonably be affected by blasting. The survey can also be used to document that damage occurred after the survey was conducted.

Many structures develop hairline cracks over time. These can be caused by a number of environmental factors including humidity and temperature changes, settlement from consolidation, freeze-thaw cycles, variations in ground moisture and wind. Structural problems may result from constructing a building on improperly compacted fill, improperly sized footings or other structural elements not being built to Building Code requirements. Inadequate drainage around a building can also cause settling and cracking. These types of cracks will be noted during the preblast survey.

At least 30 days before the initiation of blasting, the blasting contractor shall notify, in writing, all residents and owners of existing dwellings or other structures located within 1,000 feet of the permit area as to how to request a preblasting survey. Any resident or owner of a dwelling within 1,000 feet of the permit area may request a preblast survey. The request must be made in writing, directly to the Building Inspector or the Town Code Enforcement Officer, who shall promptly notify the applicant. The survey will include visual inspection of foundations and exposed walls, as well as photographic and/or video documentation of conditions prior to blasting. In locations where existing wells will also be monitored, the condition of the well, depth of casing and depth to water elevation will also be measured and recorded.

The blasting contractor shall promptly conduct a preblast survey (at his expense) and prepare a written report of the survey. Copies of the report shall be provided to the Building Inspector or the Town Code Enforcement Officer and to the person requesting the survey. The operator shall perform an updated survey of any additions, modifications, or renovations to the structure, if requested by the resident or owner within the time frame of anticipated blasting. It is recommended that anyone eligible to receive a preblast survey request this service.

Airblast Restrictions

It is recommended that the blaster not exceed airblast limits of 130 decibels at the source. The blast contractor will be limited to airblast limits of 120 decibels at the property line. Typically, windows will not break under 140 decibels.

Flyrock

Flyrock is characterized as broken rock that is propelled through the air as a result of a blast. It is suggested that blasting mats, which are constructed of heavy woven metal or rubber mats, be utilized during blasts to reduce the amount of flyrock produced. Flyrock can also be minimized by managing the magnitude of blasts.

Dust Mitigation Techniques

Dust resulting from any blasting will be mitigated wherever possible, using techniques consistent with New York State Department of Conservation (NYSDEC) protocols. Such techniques are:

- to minimize areas of grading associated with the blasting at any one time and to stabilize exposed areas of the surface with mulch and seed as soon as practicable,
- minimize vehicle movement associated with blasting over areas of exposed soil and by covering trucks transporting any soil or rock debris from the blasting,
- any unpaved areas subject to traffic would be sprayed with water to reduce dust generation into the air,
- truck vehicle washing pads will be constructed at all construction entrances to avoid the tracking of soil onto local paved road, and
- by using blasting mats over the blasting zones will help to limit the debris into the air.

Dust control will be the responsibility of the project construction manager. The construction manager will determine when water spraying on exposed soils will be necessary, depending upon weather conditions, truck traffic, wind and/or areas of exposed soils close to adjacent residences. The Town Engineer or designated Town construction inspector can also require the implementing of dust control procedures, as listed above.

Geology Type

As stated in Section 3.1.1 Existing Conditions - Geology the area of eastern Ulster County in which the property is located is within the Hudson Lowland area of the Valley and Ridge province, an area made up of formations of Devonian and Silurian limestone, shale or sandstone bedrock. Specifically, the project site is underlain by the Onondaga Limestone and Ulster Group, which is a series of lower to middle Devonian- age limestone, siltstone, shale and cherty rocks (Geologic Map of New York, Lower Hudson Sheet, 1995). This type of material is easily broken for ripping and hammering as well as blasting. Vibrations move differently through different rock types. The rock type found on this property is primarily limestone. Local drillers and blasting contractors have advised, that the ground vibrations or peak particle velocity dampens quickly in this type of rock.

Wells

A few of the nearby residences may use private wells for their water supply. The Town of Ulster, Town Clerk (Receiver of Taxes), will be contacted regarding a list of properties in the vicinity of the project site that are on municipal water.

Based upon the information provided by the water district, approximately five (5) residents on Old Flatbush Road utilize private wells. Therefore, approximately five (5) residences with private wells are located within 1,000 feet of areas that may require blasting.

Blasting typically does not result in damage to existing foundations and wells if the work is completed according to current industry standards. Local variations in subsurface conditions or geology may occasionally result in unanticipated impacts to existing structures and wells. Interviews with specialists at the Putnam County, Orange County, and Westchester County Department of Health officials have indicated no recorded incidents of well failure as result of blasting activities in those counties[1].

The use of proper blasting techniques and mitigation measures will minimize the potential effects of blasting on nearby residences and businesses. In conjunction with the pre-blast surveys, described above, the condition of all wells within the 1000 foot monitoring radius wells will be inspected and documented before any blasting. The depth of well casing, water table elevation, and overall well function will be measured and recorded before blasting. The procedures for complaints regarding potential well damage are outlined below.

Complaints

Formal complaints about blasting, can be sent to the Building Inspector or the Town Code Enforcement Officer, which should include the dates and times of the blast (if known) and the owner's name, address and telephone number. Representative of the Town and the blasting contractor will follow-up all complaints with an inspection of the activities in question and provide a written response.

In the case of specific blast damage complaints, the Building Inspector or the Town Code Enforcement Officer and blasting contractor will interview the person involved, locate the structure, determine the distance and direction to the blasts, check the preblast survey, check the blast and seismic records and consider the probable or actual measured levels of energy from blasting at the structure. If it is determined that blasting has caused damage, the Building Inspector may issue a Notice of Violation. The notice will require appropriate mitigation to prevent recurrence of the violation. Monetary reparation for damage will be settled between the contractor and the property owner.

For complaints related to well damage, the following procedures will apply. A hydrogeologic consultant (Consultant) retained by the Town and funded by the Applicant, will determine if the well impact is the result of project pumping or other factors, not related to the project.

In making a determination regarding whether the private well impact is the result of project blasting, the Consultant will review the information from the complainant's well and blasting data and records maintained by the Blasting Constractor (see above). If the Consultant determines

[1] (Interviews conducted by TMA with Michael Budzinski, PE, Putnam County Department of Health 10/27/05, email from Keith Miller, Orange County Department of Health, and an interview with Edward Delaney, PE, former Westchester County Department of Health 10/27/05).

that the reported well problem is not related to the use of the on-site production well, then the Consultant will refer the homeowner to a qualified well or pump contractor to remedy the problem. The homeowner will be responsible for the costs of the well or pump repair. If the Consultant determines that the reported well problem is the result of on-site blasting, an appropriate remedy to the well problem would be implemented and funded by the Applicant. Potential remedies include:

- lowering the well pump
- hydro-fracturing the well (increasing the size and extent of bedrock fractures by pressurized water).
- redeveloping the well
- deepening the existing well
- drilling a new well.
- connecting the impacted residence to municipal water service

The Town of Ulster requires that contractors demonstrate that they have liability insurance for personal or property damage. The amounts would be determined at the time the building permit is issued.