EXHIBIT "D"

Eben Corey

117 Retreat House Rd.

Glenmont, NY 12077

July 7, 2022

Andrew Dangler

US Army Corps of Engineers- Department of the Army

Upstate Regulatory Field office

1 Buffington St., Building 10 3rd FL

North Watervliet, NY 12189-4000

Dear Mr. Dangler,

My name is Eben Corey and I reside at 117 Retreat House Rd. in Glenmont. Earlier this year my neighbors and I immediately noticed the deforestation on over 80 acres across the street from my house, which we later learned was done for a new and gigantic manufacturing facility. I was not happy to find out about this project in this way but was much angrier to learn that not only was that section of woodlands wiped out of existence but was done so without EPA approval and without the safeguards to prevent the fly ash dumped there from spreading in the wind. The clouds of dust and debris that was released from the clear cutting floated like a fog throughout my neighborhood. This obviously made its way into the Hudson River immediately to the east and undoubtedly wound its way into our drinking water.

Upon researching the history of that land (I moved into my home with my family in late 2019) as I wasn't previously aware, about the fly ash nor did I know how harmful it can be as it's a known hazard and cancer causing. This was bad enough but to then find out much later that the building that would be placed nearest my home would have around 20 smokestacks that despite the claims from the Port of Albany of it being very safe, will still produce a variety of toxic compounds and pollutants. These pollutants were described in the report done by "Proactive Environmental Solutions" on pages 4 and 5 of the environmental impact survey. Even the effects on the pollutants from the stacks is discussed on pages 21-25 and that will be a concern for how it affects the Hudson. They range from Nitrogen Dioxide and methane to Sulfur Dioxide and others. The claim of the report is that through "state of the art" purification systems, minimal amounts of these pollutants will enter the atmosphere or affect the surrounding community.

The proposed dredging of the Hudson in order to make way for this manufacturing plant is going to cause a ton of negative issues least of which, is causing instability and erosion. By removing the root systems and destroying the integrity of the land there are bound to be issues with erosion, and thus any non-native soil compounds will leach back into the river. This in turn will provide an array of issues from polluted water sources, to flooding, displacement of any flora or fauna in the river or on land. These issues would seem to run against the Federal Clean Air and Clean water acts to protect the environment.

The issue I have with these statements is that I have kids and there are a number of kids, elderly and those with medical issues and giving off ANY pollutants into a community with members who have medical issues is not only immoral but cruel. It seems like the Port of Albany has skated by with this project because of the claims of supporting green energy and no one I have spoken to is opposed to that but harming my family and my community in order to get green energy up and running is irresponsible and without compassion. Beacon Island is not the best place for this project as it not only creates unnecessary traffic for the community living there but it becomes an issue with the environmental effects on the human and wild residents that call it home. I would just like to request a public hearing with the town of Bethlehem, Army Corps and the Port as well as an extension for public comment.

Sincerely,

S/ Eben Corey

Eben Corey

518-321-0101

ebencorey@gmail.com

EXHIBIT "E"

To Whom It May Concern,

You probably have never been to our neighborhood – nor will you likely ever have any reason to – but it is an enigma. Lying just a couple minutes south of the densely populated downtown Albany and its sprawling industrial center, the Port of Albany, there is a patch of forest within which we have made our home. It is a sanctuary not just to us humans who crave nature in an increasingly urbanized world, but to the many plants and animals who share this land. We moved here so that we could enjoy the benefits of nature while remaining close enough to the city to be the productive citizens that everyone wants us to be.

Your notice says that you are "soliciting comments from the public ... and other interested parties in order to consider and evaluate the impacts of this proposed activity." In doing so, you are looking to the "cumulative impacts of the proposed activity on the public interest." I do not envy your task. And I hope that you do not misunderstand our intentions. We support the development of renewable energy. We recognize the need for such factories. But, when the impacts of this project are examined in conjunction with one another – as they must be – rather than individually, the result is clear: this project, as proposed, is detrimental the public interest.

Your notice states that you are considering whether to issue a permit which permits the applicant to "discharge fill material into waters of the United States, including wetlands; dredge with upland disposal and 10-year maintenance dredging," among other things. But, there significant issues which call into question the prudence of issuing such permits at the proposed location. Beacon Island, the proposed site, was created by the dumping of millions of tons of fly ash. There are questions as to how much of the "fill material" which would be dumped into "waters of the United States" are made of this known carcinogen and what impacts such a toxic material could have the Hudson River, surrounding waterways, and the multitude of species that make a home there. This does not even take into account the impact that the fly ash will have when it is disturbed by construction and is released into the air. Additionally, your permit relates to dredging and installation of a new wharf. Yet, there has not been a thorough inquiry into the impact, if any, that the proposed project would have on the PCBs released into the Hudson River by GE (https://www.epa.gov/hudsonriverpcbs/hudson-river-cleanup#:~:text=During%20a%2030%2Dyear%20period,and%20Hudson%20Falls%2C%20New%20York.).

Without a thorough investigation into these issues by people with the proper qualifications and experience, how can you find that this project will have a positive impact on the "public interest?" An inquiry is necessary to ensure the health and well-being of our community. And this inquiry must be conducted not by contractors paid for by the applicant, but by the Government which is supposed to objectively evaluate this project and protecting the interests of the public.

Looking at the list of factors the notice deems relevant to the Army Corps of Engineers' determination, we can see only three which could plausibly be advanced by the continuation of this project: (1) economics, (2) general environmental concerns, and (3) energy needs. We cannot deny that this planet needs more renewable energy. Nor can we deny that it would be beneficial to the State of New York to be an early participant in the development of off-shore

wind turbines. Ordinarily, we would be cheering this project on. But we beg you not to put it at the proposed location. And we submit to you that is unnecessary, and detrimental to this community, to build this project as proposed.

We installed solar panels in our backyard and changed the infrastructure of our house so that we could have a net-zero home. We drive a hybrid and an all-electric car. We don't use pesticides on our property. We planted a pollinator garden and indigenous plants so that native species always have a reliable food-source. If this project goes forward, there will be less than 400 yards between our back yard and this heavy industrial facility. We are concerned not only for our own health, but the well-being of the natural world around us. All of our efforts to foster a safe and reliable environment for native species would be threatened by near-constant noise and fumes, the increased pollution from steady road traffic, and the danger that an even a minor malfunction could result in the venting or spill of toxic chemicals onto our land or into our water.

We wish we could point to a study which says that the levels of toxins, whether it be fly ash in the air or PCBs in the water, are harmful. But, from what little we can decipher in these highly technical reports, the levels are apparently within an acceptable range – or so they say. Yet, there is one question that runs on a loop in our heads: how much poison in really acceptable. Because that is what these are. They are carcinogens and toxins. They are noxious and foul. And as much as we try to "minimize their impact" or keep them within "acceptable levels," we cannot accept that anyone would accept a factory full of toxins as a neighbor.

At the end of the day, while this project may advance the interests of renewable energy, it does so at the expense of the people, animals, and other life in this community. To suggest that such a project advances "green" or "environmental" interests is to view this project with blinders. Doing so would result in serious, detrimental, and irreversible impacts on all of us who have chosen this place as our home.

We request that a public hearing be held to ensure that those with greater expertise on the true impact of this project is considered before any more construction occurs.

Sincerely,

S/Eamon Murphy and Allee Von Stackelberg

Eamon Murphy and Allee von Stackelberg
28 Halter Road
Glenmont, NY

EXHIBIT "F"

July 7, 2022

Andrew Dangler
US Army Corps of Engineers
(via mail : Andrew.c.dangle1@usace.army.mil)

Department of the Anny
US Army Corps of Engineers

Re: Public Notice: NAN-2021-00948-UDA
Albany Port District Commission, Town of Bethlehem, and City of Albany, Albany County, NY

Dear Mr. Dangler:

I am a resident of the Town of Bethlehem and I am very concerned about the project currently underway along River Road on the land known as Beacon Island in my town. I have major environmental, public health, safety and welfare concerns. When I first read about the proposal in Times Union newspaper a few years ago, the article an artist's rendering of the project and I noticed that it showed construction right up to the bank of the Normanskill and that was my main concern. But I checked out our Town ordinances and found that a 100 foot buffer zone is required by law. Never did I imagine that out Planning Board would grant a variance that threatens such an important natural resource that is a spawning area for many species, including, I believe, the sturgeon population currently considered a threatened fish. The same artist's rendering did not show any smokestacks that we now know are intended to be spewing toxic chemicals into the air, all within a short distance of many residential properties. Nor did the article mention that the site is contaminated with fly ash, a known carcinogen! I was frankly shocked to learn that the Albany Port District Commission clear cut 80+ acres and all trees removed prior to completion of the environmental studies that were required for receipt of the federal grant money intended to fund some of this project. Residents of the area currently report dust accumulating on their decks, roofs, and cars. Will this also leach into the Hudson River and the Normanskill when tons of concrete support the proposed building? Is there a plan to encapsulate this ash? There are many unanswered questions that need must be addressed before any further work is done on this debacle.

The Town Board tells us that the permit process is done and cannot be revisited as we had a chance to object before, but I would submit to you that proper notice of the actual intent of this plant was not disclosed and therefor the public did not have an adequate opportunity to object. It also appears that the variances granted by our planning board were given when the meetings were closed to the public because of the Covid pandemic. I strongly believe that a public hearing is necessary and just at this time. Furthermore, we need ample time to conduct our own research and learn exactly what the impact of this

proposal will be both to public safety and the health of our wetlands, river, and the Normanskill. I respectfully request an extension of 30 (thirty) days from June 23, 2022, so that we have time to further research and comment on this project, proposal, and a public hearing to inform the citizens of Bethlehem as well as those of the City of Albany.

Thank you for your attention to this extraordinarily urgent matter.

Sincerely,

Diane Easton
43 Sunset Drive
Delmar, NY 12054

EXHIBIT "G"

Kerry McCarey
36 Old River Road
Glenmont NY 12077

July 8, 2022

To the Army Corp of Engineers:

I live at 36 Old River Road in Glenmont, and have been very upset by the clearing of trees behind my home. I have many birdfeeders in my back yard and have enjoyed watching the birds visit them all summer. Hummingbirds, Baltimore oriels, cardinals and sparrows along with lots of other birds have been common visitors to my yard. Now all of a sudden there is dust on ,my feeders and the birds do not come. I have seen other wildlife running through my yard, like wild turkeys. One was just hit by a truck yesterday as it tried to fly across the road, and a tiny baby turkey wandered into my yard all by itself. Usually a baby that small would be with its mother but I think the nest was razed when all the trees were cut down. And my next door neighbor has a baby eagle in his yard! The hawks and eagles we used to be able to see in the sky have disappeared.

On a windy day the winds are stronger than ever. We are worried about the winter when the winds off of the river used to be blocked by trees that are gone now. The bigger trees protected the little ones and my beautiful gardens. And we feel dust in our noses and throats. My son and I both feel it and have been getting headaches. Is this making us sick? We did not know this was going to happen and we are very worried about the long term effects on the people in the area and on the wildlife.

I have heard that there were supposed to be studies done and rules in place to stop this kind of mess, and that's all we want. Maybe we're not rich people, but don't we count? Please help us save our homes and our lives. We really need someone who cares about the environment to step in and help us.

Thank you,

Kerry McCarey

EXHIBIT "H"

Mary Bercharlie
29 Old River Road
Glenmont, NY 12077

July 8, 2022

To Whom it May Concern:

I Mary Ann Bercharlie have lived at 29 Old River Road for about 22 years. In my 22 years here I have never seen so many animals in my yard. I have seen deer hit by cars and get run over twice. They didn't used to come up here, I think because they had all those woods that are gone now. My dogs just killed a weasel and there are turkeys wandering around and calling, like they are looking for their lost babies. My neighbor across the street found a baby eagle that must have been lost when the tree its nest was in came down, and we were worried about it but afraid to do anything because we know we're not supposed to touch eagles.
Not only are all these animals showing up, there is ash blowing around and you can feel it in your nose and mouth. I am very worried and so are my husband and son. There are less birds around. The hawks and eagles are gone. We want to know exactly what is happening and what will be done to protect human life and wildlife. Please give us a public hearing and time to talk to experts about the problems we are experiencing. It would only be fair. We just want to be treated fairly like any other homeowner.

Thank you,

Mary Bercharlie

EXHIBIT "I"

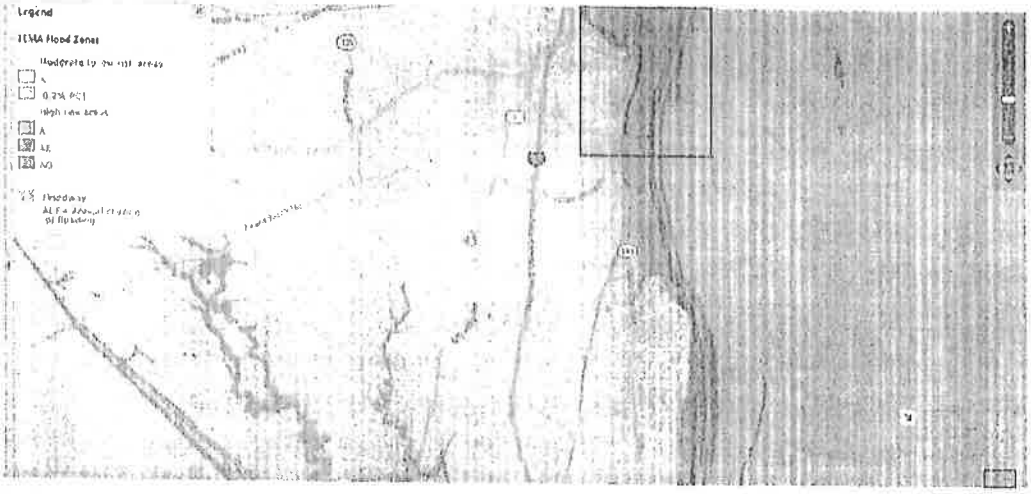
Amanda, Maddeson, Lola and Kellin Rowlands
64 Halter Road
Glenmont, NY 12077
December 6, 2021

Dear Mr. Dangler,

We are deeply grateful for the opportunity to respond to the Beacon Hill Windmill project in both this forum and moving forward in an open discussion. We write this letter with deep concerns, both procedural and operationally, as it relates to this project. While we strongly advocate for the nature of the project – the expansion of green industry in New York State – the selected location for this project would be grossly antithetical due to the significant environmental impact developing this site would have *across* the state. We speak here specifically about contamination of Coal Combustion Residuals.

Coal Combustion Residuals (CCR)

Of gravest concern, the selected Beacon Island site was historically geographically a network of three islands in the Hudson River. National Grid electric utilities facility began discarding industrial fly ash and other CCR, depositing over *two hundred million* tons and ultimately connecting the three islands into what is now, one – Beacon Island. Considered by Federal statutory definition a surface impoundment[1] Beacon Island connects directly to the Hudson River in a FEMA designated floodway outline in red in the image below.



Per 2015 Federal Statute 80 FR 21301[2], the Environmental Protection Agency outlines in Resource Conservation and Recovery Act (RCRA) the regulation for the safe storage, maintenance, treatment, and ongoing monitoring of CCR storage facilities (landfills and surface impounds). Designated a surface impoundment, "the final rule establishes requirements for owner or operators to conduct a number of

[1] Hazardous and Solid Waste Management System; Identification and Listing of Special Wastes; Disposal of Coal Combustion Residuals From Electric Utilities: https://www.federalregister.gov/documents/2010/06/21/2010-12286/hazardous-and-solid-waste-management-system-identification-and-listing-of-special-wastes-disposal-of

[2] Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals From Electric Utilities: https://www.federalregister.gov/documents/2015/04/17/2015-00257/hazardous-and-solid-waste-management-system-disposal-of-coal-combustion-residuals-from-electric

Amanda, Maddeson, Lola and Kellin Rowlands
64 Halter Road
Glenmont, NY 12077
December 6, 2021

structural integrity-related assessments regularly. These include: (1) Conducting periodic hazard potential classification assessments to assess the potential adverse incremental consequences that would occur if there was a failure of the CCR surface impoundment; (2) conducting periodic structural stability assessments by a qualified professional engineer to document whether the design, construction, operation and maintenance is consistent with recognized and generally accepted good engineering practices; and (3) conducting periodic safety factor assessments to document whether the CCR unit achieves minimum factors of safety for slope stability."[3]

The Beacon Island surface impoundment ceased operation approximately fifty-years ago. Special consideration is given to surface impoundments post-closure. Per the RCRA "the closure and post-closure care criteria require all CCR units to close in accordance with specified standards and to monitor and maintain the units for a period of time after closure, including the groundwater monitoring and corrective action programs. These criteria are essential to ensuring the long-term safety of closed CCR units. Closure of a CCR unit must be completed either by leaving the CCR in place and installing a final cover system or through removal of the CCR and decontamination of the CCR unit."[4]

Further consideration is given to abandoned surface impoundments due to the extremely high-risk of ground and surface water contamination. Per RCRA "Congress was clear that subtitle D was intended to specifically address the problem of abandoned leaking "open dumps" scattered across the country, "where frequently the use of the site for waste disposal is neither authorized nor supervised." H. Rep. No. 94-1491, p 37, 94th Cong., 2d Sess (1976). For example, the report described the consequences when "the City of Texarcana Arkansas/Texas, abandoned its six open dumps, in 1968" to support the need to require open dumps to upgrade or close. Similarly, in describing the need for the legislation,"[5]

Given the above statutory requirements for management and ongoing monitoring of surface impoundments, I strongly urge that the selected Beacon Island site be reevaluated for viability. I have not referenced here the multitude of concurrent concerns with the environmental impacts this project would have on the State, including PCB from dredging, habitat destruction, and air pollution.

I thank you again for making this forum available to hear our deep concerns. We look forward to continued and productive conversation to resolve this matter – appropriate testing, containment, and the identification of an alternate site.

Sincerely,

Kellin Rowlands Amanda Rowlands

Kellin Rowlands, Amanda Rowlands, Maddeson Rowlands, Lola Rowlands

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[3] Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals From Electric Utilities
[4] Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals From Electric Utilities
[5] Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals From Electric Utilities

EXHIBIT "J"

I recently returned from a wonderful trip with my husband and my sister's family to the Annapolis, MD and Washington, DC area. While there we enjoyed seeing the many historic sites, the beautiful architecture and the breathtaking scenery of the Chesapeake Bay and along the Potomac River. I was struck with awe, admiration and gratitude as I considered the imagination and foresight of the people who worked so hard to preserve the history and beauty of those places. For example, we learned as we toured Mount Vernon, George Washington's historic estate, that its preservation occurred because of a letter written to her daughter by Louisa Bird Cunningham in 1853 when she noticed how the estate had fallen into disrepair. This prompted her daughter to challenge the nation to save the site, and she founded the Mount Vernon Ladies' Association who raised the money and bought the property for $200,000 within 5 years. This intrepid group of American patriots has been preserving and promoting George Washington's Mount Vernon for more than 160 years. They have also fought and have succeeded in preserving the stunning viewshed of the Potomac River so that people who visit today can stand on Mount Vernon's rolling front lawn and, except for the few boats on the river, experience the same view that Washington had more than 200 hundred years ago. This particular battle began in the early 1950's when the Association (MVLA) joined with the Accoceek Foundation, the National Park Service, the Smithsonian Institute, and many neighboring property owners, to prevent the construction of an oil tank farm directly across the Potomac from Mount Vernon. Their efforts stopped the construction. There have been many similar battles fought and won in the decades since to preserve that view. I have often lamented that Albany and the Town of Bethlehem have not done more to preserve the incredible history and beauty of the views and shorelines of the Hudson River, which has such a prominent role in the history of our Nation. I have been feeling that sadness even more so in recent months as I have become aware of the Wind Tower Factory project, and felt it so keenly during our recent trip.

Much like Mount Vernon, our little Town of Bethlehem has a special and noteworthy history. When I moved here from the midwest in the mid-80s, where the earliest recorded history is easily 100 years younger than the history of the east coast, I fell in love with this storybook town. I was fascinated to learn that the history of its establishment resulted, literally, from Henry Hudson's historic river voyage that I had learned about in school. I was enthralled with the many beautiful, historic homes and loved learning the stories behind the many historic names of streets, roads, and streams. I saw how Bethlehem celebrated its history in the many books written and published, the preservation and restoration of historic buildings, archaeological digs, museums, and, of course, the annual Memorial Day parade. My husband's family, who had lived in Bethlehem for a couple generations, was proud to share Bethlehem's history with me. Chris's dad, Lou Dempf, who graduated from Bethlehem High School in 1947, and whose family owned and operated the Dempf Pastry Shoppe from 1927 would often say, "I grew up in Utopia." I think most of us who stayed here, moved here, and raised our families here, feel the same way. Why do we feel this way? Is it because of the widening roads, or the proliferation of housing developments and shopping centers coming in to the town? For me, it's because of the charming homes and quiet streets where kids can still safely ride their bikes to a friend's house, how I always run into a familiar face at My Place, Swifty's or Delmar Marketplace, the wonderful programs and gallery displays at the library celebrating local talents

and history, and how the fife and drum corps in our annual parade reminds me how connected we are to our nation's earliest history.

When we think of the historical nature of Bethlehem, our minds might immediately think "Old Delmar." However, did you know that the earliest days of our recorded history actually began in Glenmont? Town historian Susan Leath in her book *Bethlehem People and Places,* tells us that just a short distance from the location of the original Fort Orange, the Abbey Hotel was built on River Road in the early 1700s and was a Bethlehem landmark for over 200 years. The Abbey Hotel was located just down the street from Retreat House Road near the horse race track (Leath)(see also survey attached). It provided lodging and refreshment for travelers on horseback, steamboat, train, and later, automobile. In *Bethlehem Revisited* by the Bicentennial History Committee, Floyd L. Brewer, senior editor, we learn It was a popular gathering place for local politicians, as well as a popular spot for family picnics and clambakes along the Hudson River (Brewer). It is even thought to have been a speakeasy during the days of prohibition (Leath). Supreme Curt Judge Eliha Powell Hulburt, who wrote *Rights of Women* in 1841, and later served on the New York State Suffrage Committee in the 1880s lived in mansion on Halter Road. A Titanic survivor from 1912 lived in another mansion on Glenmont Road. The owner of the Hinkel Brewery in Albany had a weekend mansion in the country along River Road, across from the Abbey Hotel and the Hudson River.

Many of us who live in Glenmont live in historic homes that have enjoyed the beautiful river views for generations. Our house on Hartman Road just off Glenmont Road was built in 1893. Our friends on Anders Lane and Old River Road live in homes that date at least as far back as the early 1800's. Did you know that this area of Glenmont was once known as Frazertown? It was most likely named after the Frazier family who lived on Anders Lane and Old River Road in the mid 1800s (Leath). Frazertown became known as Glenmont in the late 1880s when the West Shore Railroad extended their Albany Branch north from Ravena and established a station they called Glenmont. It is thought that the name came from two prominent homes in the area: "The Glen" which was north on River Road, and "The Mount" which was up on Glenmont Road (Leath).

A portion of Beacon Island is itself part of our town history. It once included several small islands behind The Abbey and along River Road where families would spend time together fishing, boating enjoying the scenic river and its scenic views of the hills(400 +/- feet above sea level) of East Greenbush and Castleton on Hudson (see also attached maps: Map of Hudson River about 1630; Sidney & Arrott maps, 1851 and 1866)(Brewer, Leath).

There are many of us who live in both historic homes and newer homes in Glenmont who take pride in the history of this beautiful hamlet of Bethlehem along the Hudson River. Aside from the serious environmental concerns raised by this proposed wind tower factory, and the disruption it will cause to our relatively calm and peaceful Glenmont lifestyle, we feel that the history and character of our town has not been considered and appreciated. Is it not true that a marina project had been previously proposed for this wind tower factory site? Wouldn't a town park or a marina be much more in keeping with the historical nature and character of Glenmont? We are devastated by the many ways in which our lives will change if this project goes forward.

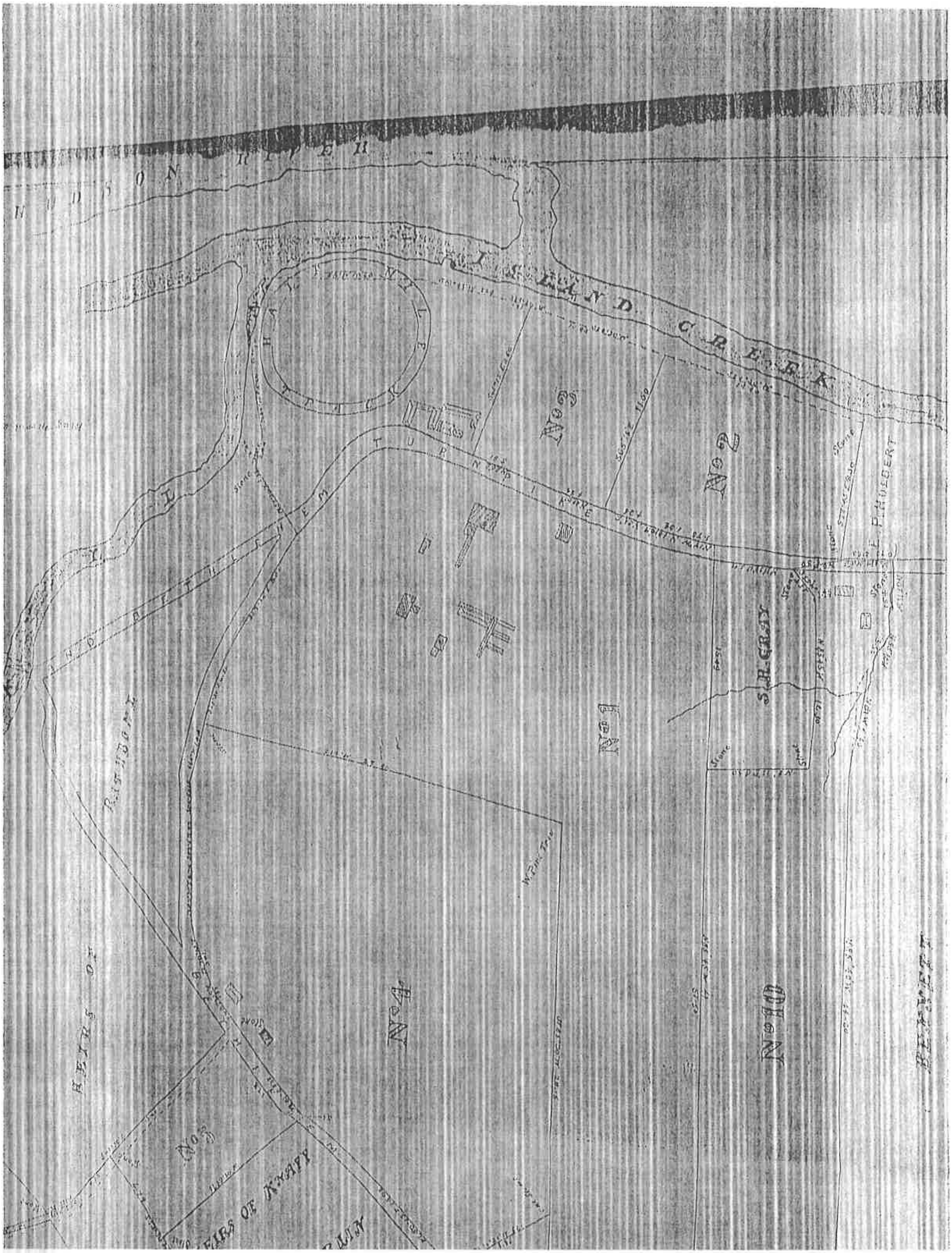
Respectfully,
Lori Dempf

74 Hartman Rd
Glenmont, NY 12077

Works Cited

Brewer, Floyd, editors. *Bethlehem Revisited A Bicentennial Story 1793–1993*. Albany, New York, Bicentennial Commission Town of Bethlehem, New York, 1993.

Leath, Susan. *Bethlehem People and Places*. Troy, New York, The Troy Book Makers, 2019.



ISLAND CREEK
No 3
No 2
No 1
S.R. GRAY
No 4
No 10
No 5
HEIRS OF
HEIRS OF KNAPP

MAP

OF PROPERTY OF

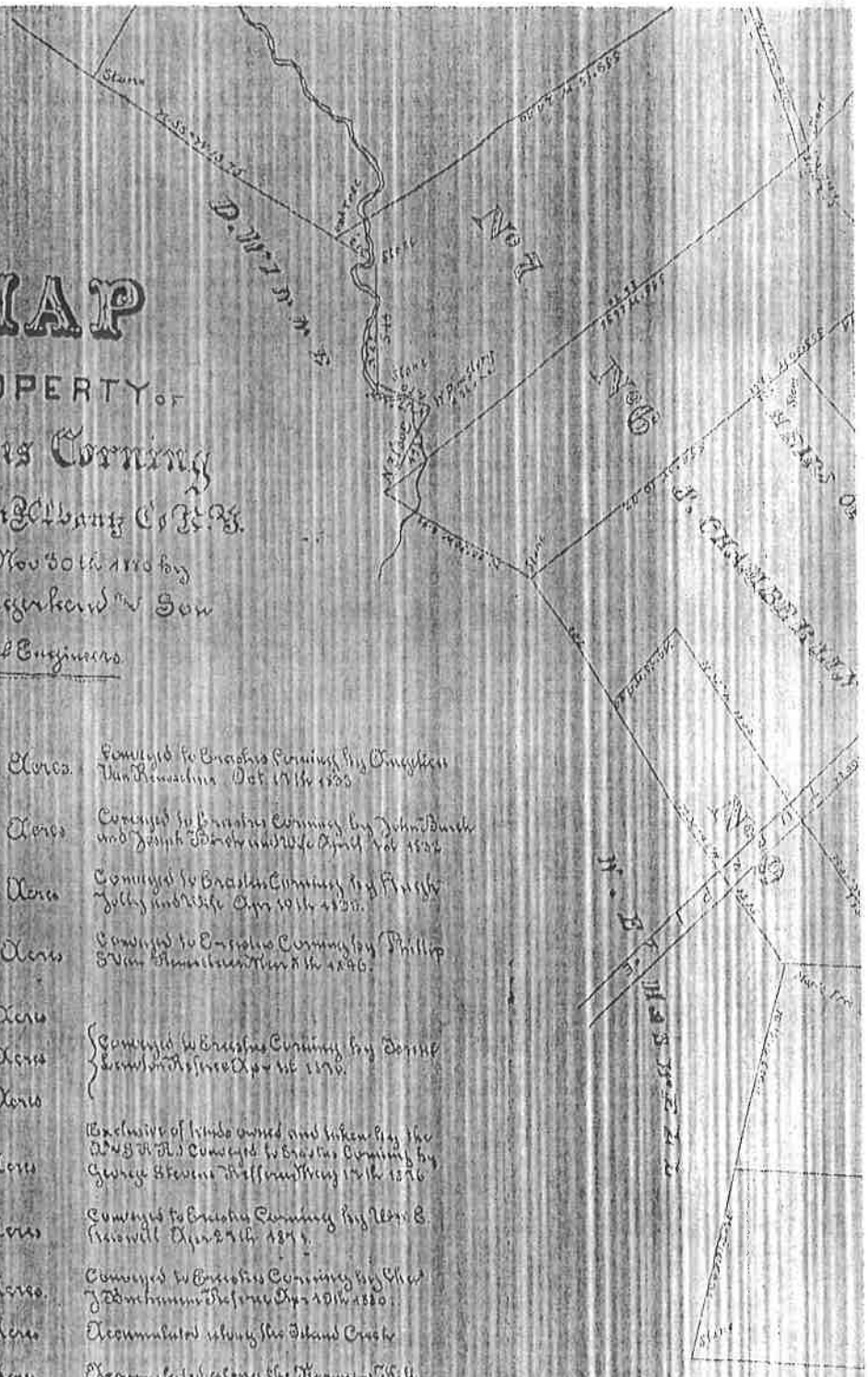
Erastus Corning

Bethlehem Albany Co N.Y.

Made Nov 30th 1880 by

W. H. Slingerland & Son

Civil Engineers



EXPLANATION

Lot No 1 Contains	136.77	Acres.	Conveyed to Erastus Corning by Angelica Van Rensselaer Oct 17th 1833
Lot No 2 Contains	17.4	Acres	Conveyed to Erastus Corning by John Burch and Joseph Burch and Wife April 1st 1832
Lot No 3 Contains	12.0	Acres	Conveyed to Erastus Corning by Hugh Jolly and Wife Apr 10th 1833.
Lot No 4 Contains	75.0	Acres	Conveyed to Erastus Corning by Phillip S Van Rensselaer Mar 8th 1846.
Lot No 5 Contains	11.6	Acres	
Lot No 6 Contains	1895	Acres	Conveyed to Erastus Corning by Jeremy Lewton Referee Apr 1st 1876.
Lot No 7 Contains	23.2	Acres	
Lot No 8 Contains	100.0	Acres	Exclusive of lands owned and taken by the W & S R R Conveyed to Erastus Corning by George Stevens Referee May 17th 1876
Lot No 9 Contains	8.6	Acres	Conveyed to Erastus Corning by Wm E. Griswell Apr 27th 1871.
Lot No 10 Contains	44.3	Acres.	Conveyed to Erastus Corning by Chas J Buchanan Referee Apr 10th 1880.
	5.37	Acres	Accumulated along the Island Creek
	1.2	Acres	Accumulated along the Hermans Kill
Total	457.33	Acres	

Seal

Corp

Made May 6th 1881

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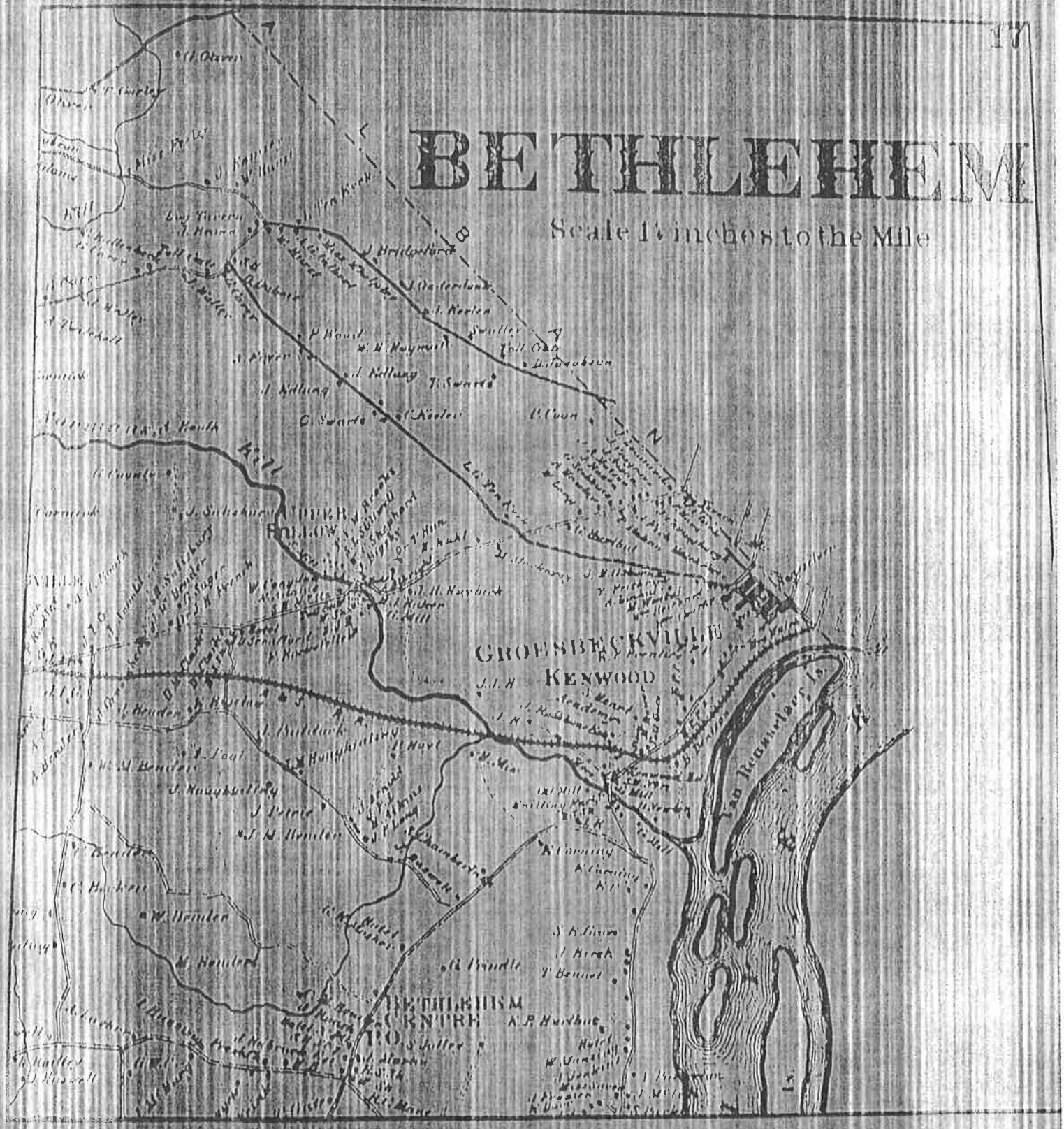
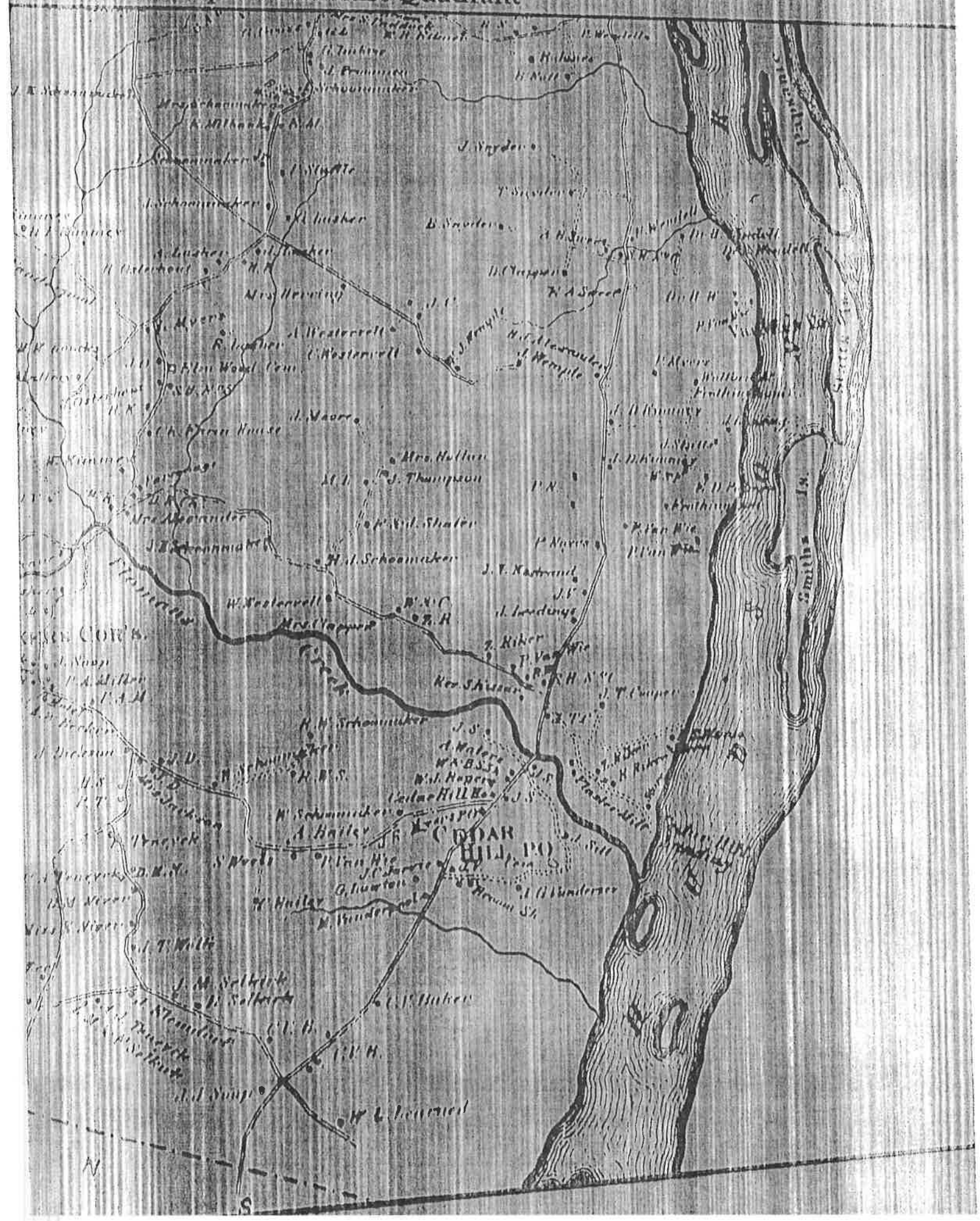
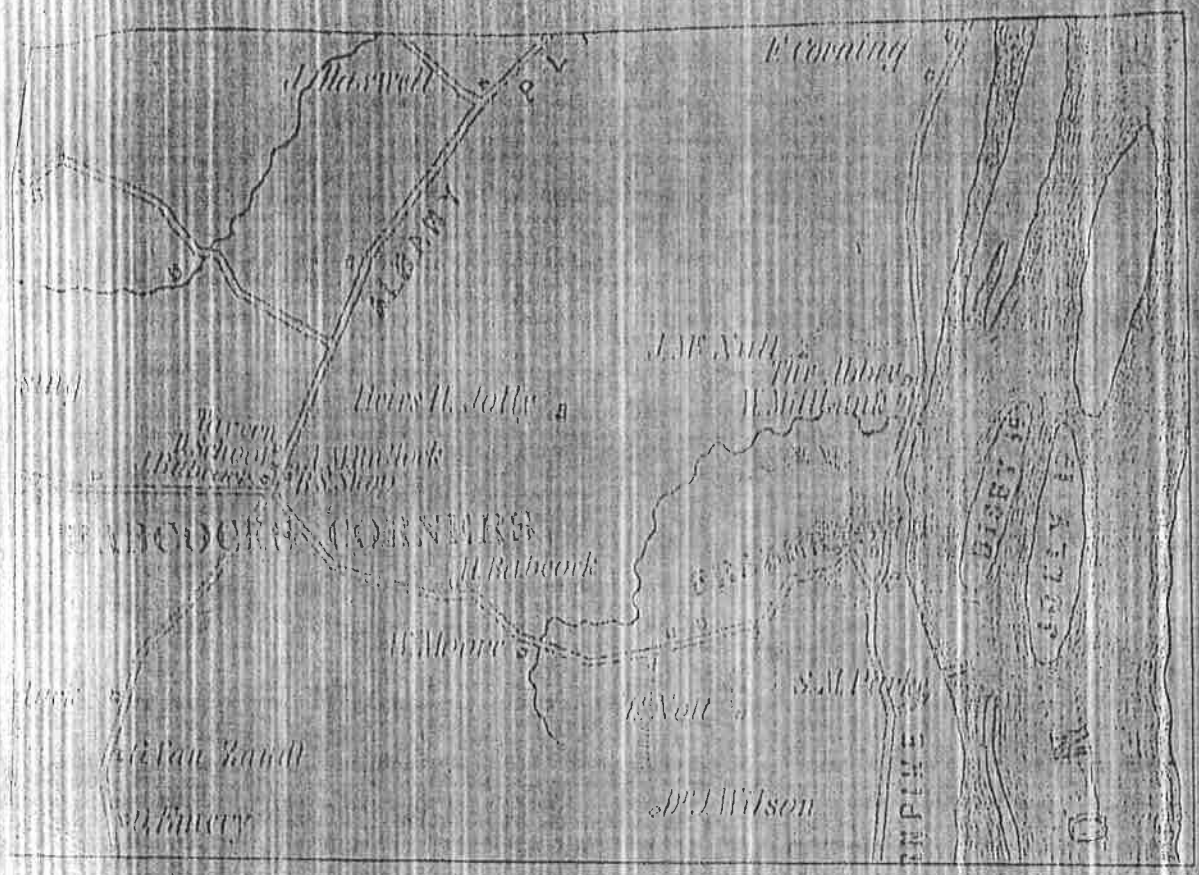
The Hudson River, about 1630. Places named (from left to right) are: Barren Island, Three Clovers, Smacks (Shad) Island, Castle (Westerlo) Island, and Fort Orange.

1866 Beers Map—Northeast Quadrant

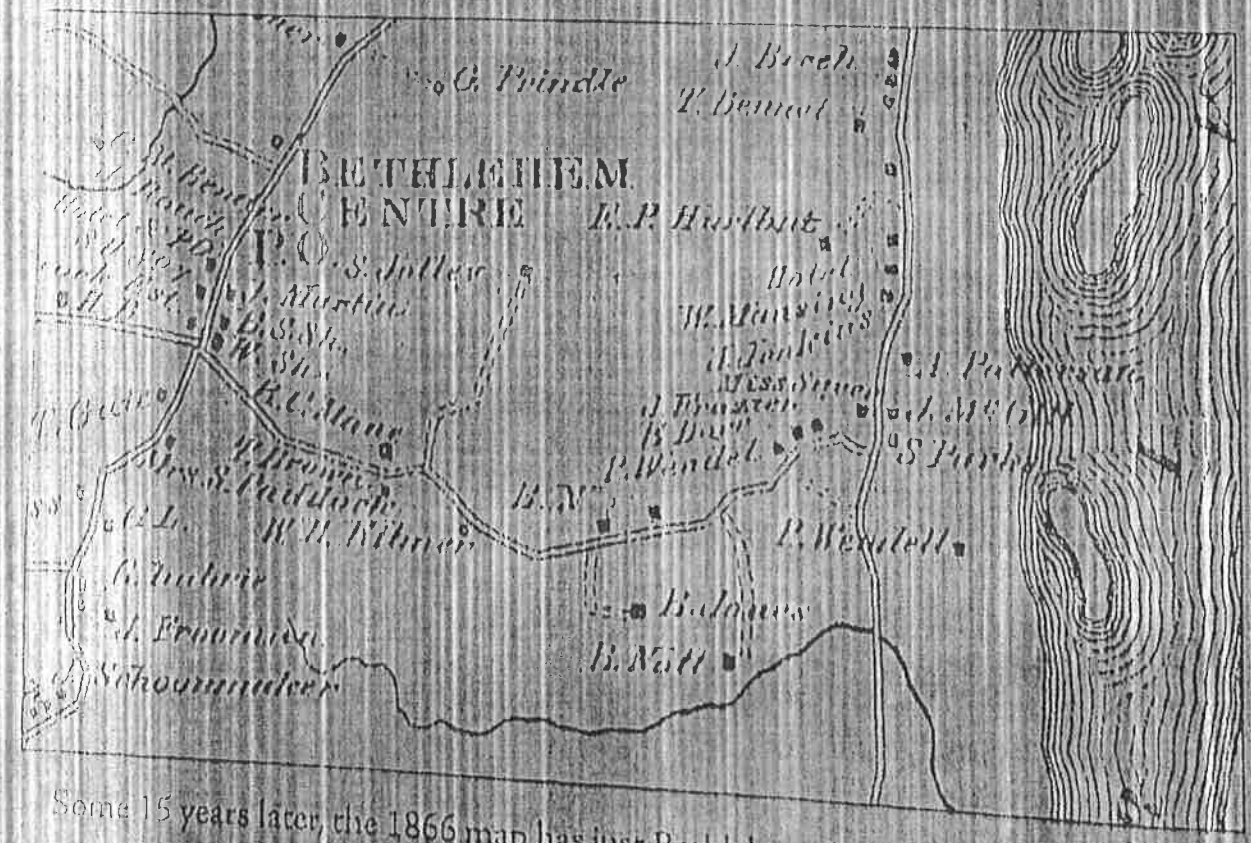


1866 Beers Map—Southeast Quadrant

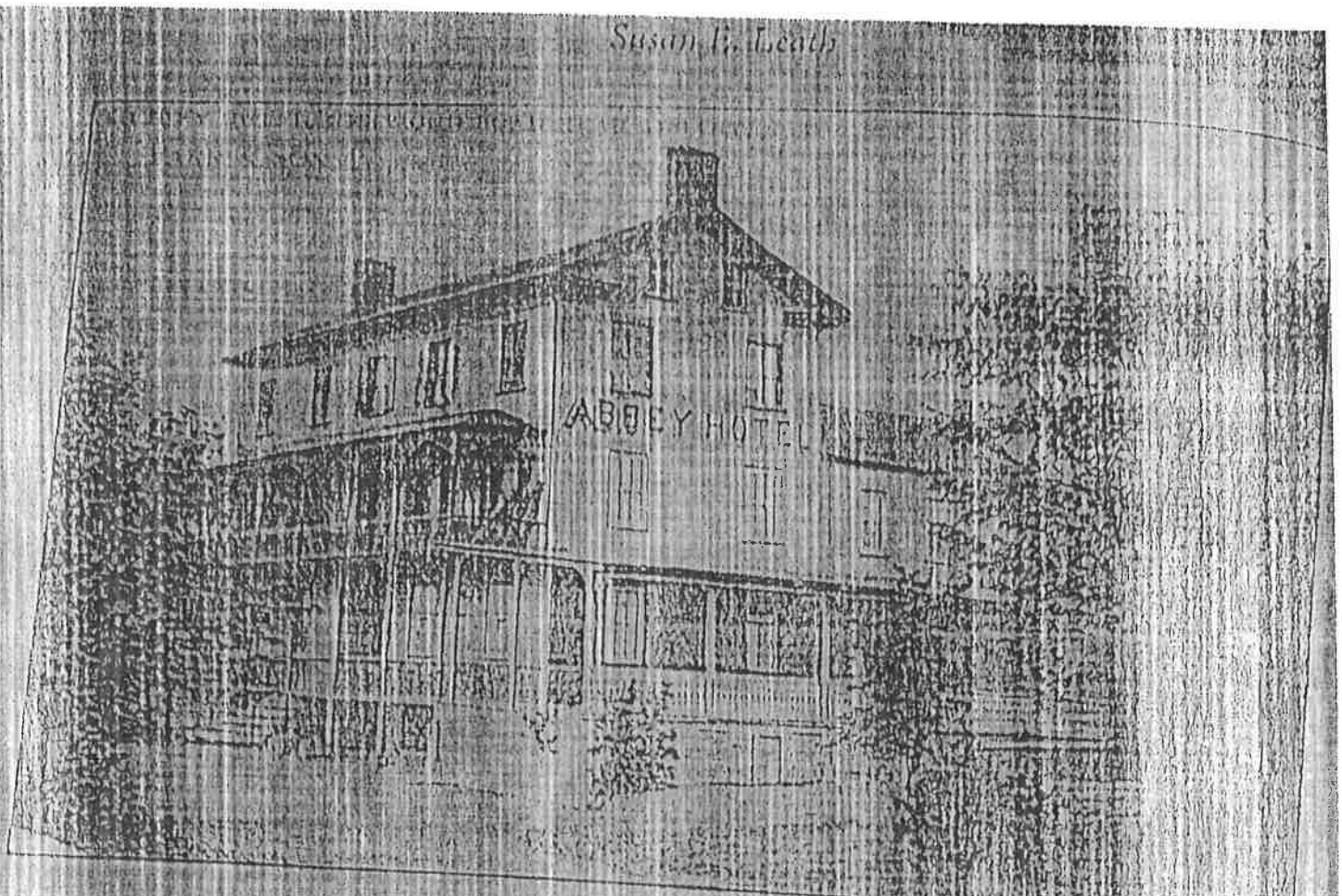




A portion of the 1851 Sidney & Arrott map showing Babcock's Corners and Frazertown.



Some 15 years later, the 1866 map has just Bethlehem Center.



The Abbey Hotel is shown in a circa 1910 postcard. A newspaper clipping affixed to the back notes that "Things look bright for big doings at the Abbey on September 25." Regarding the upcoming races, it notes that "the best horses of Woodland Park will be there" and that "a rare day of sport is in store for followers of the pacing and trotting game. Guess we'll all have to be at the Abbey."

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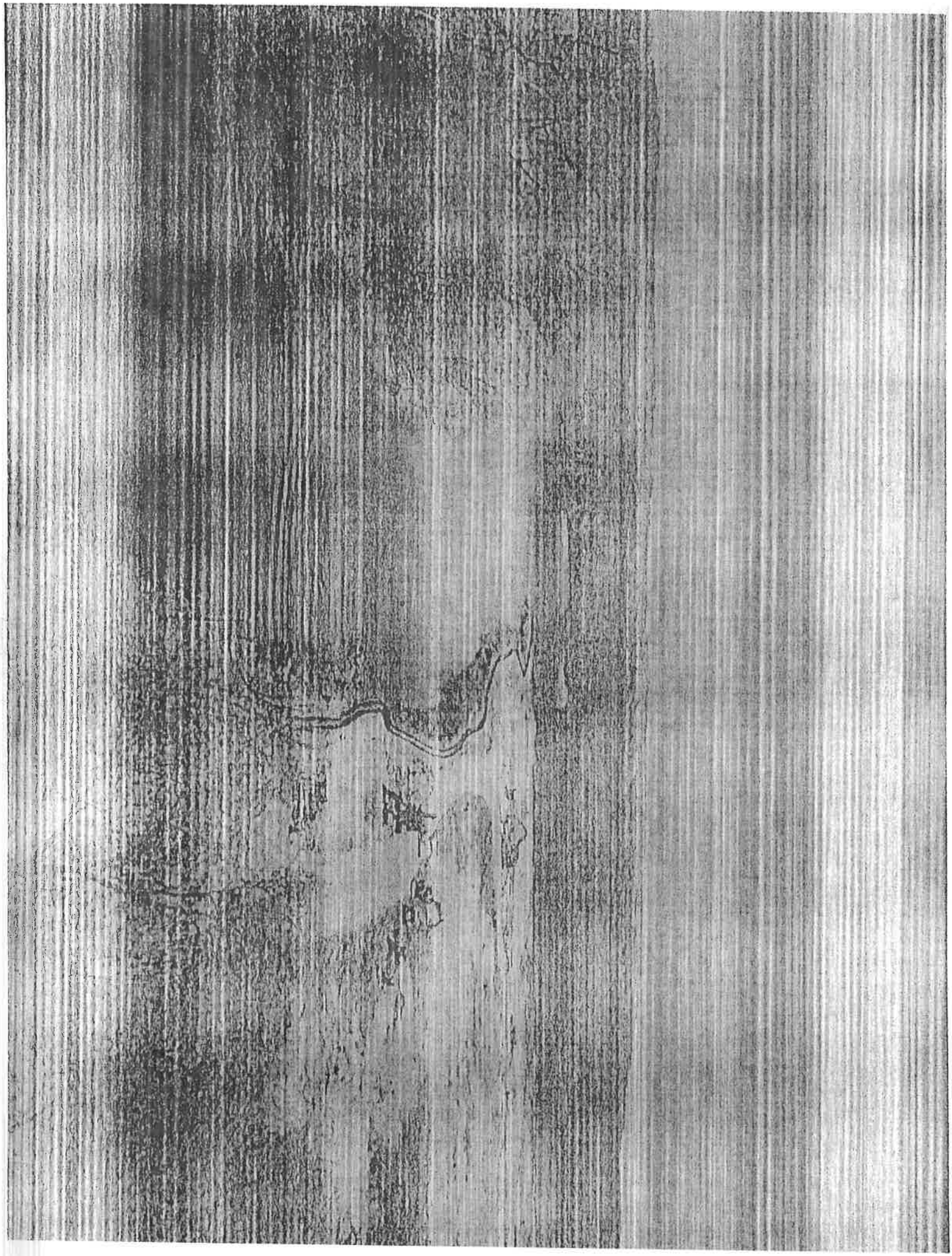

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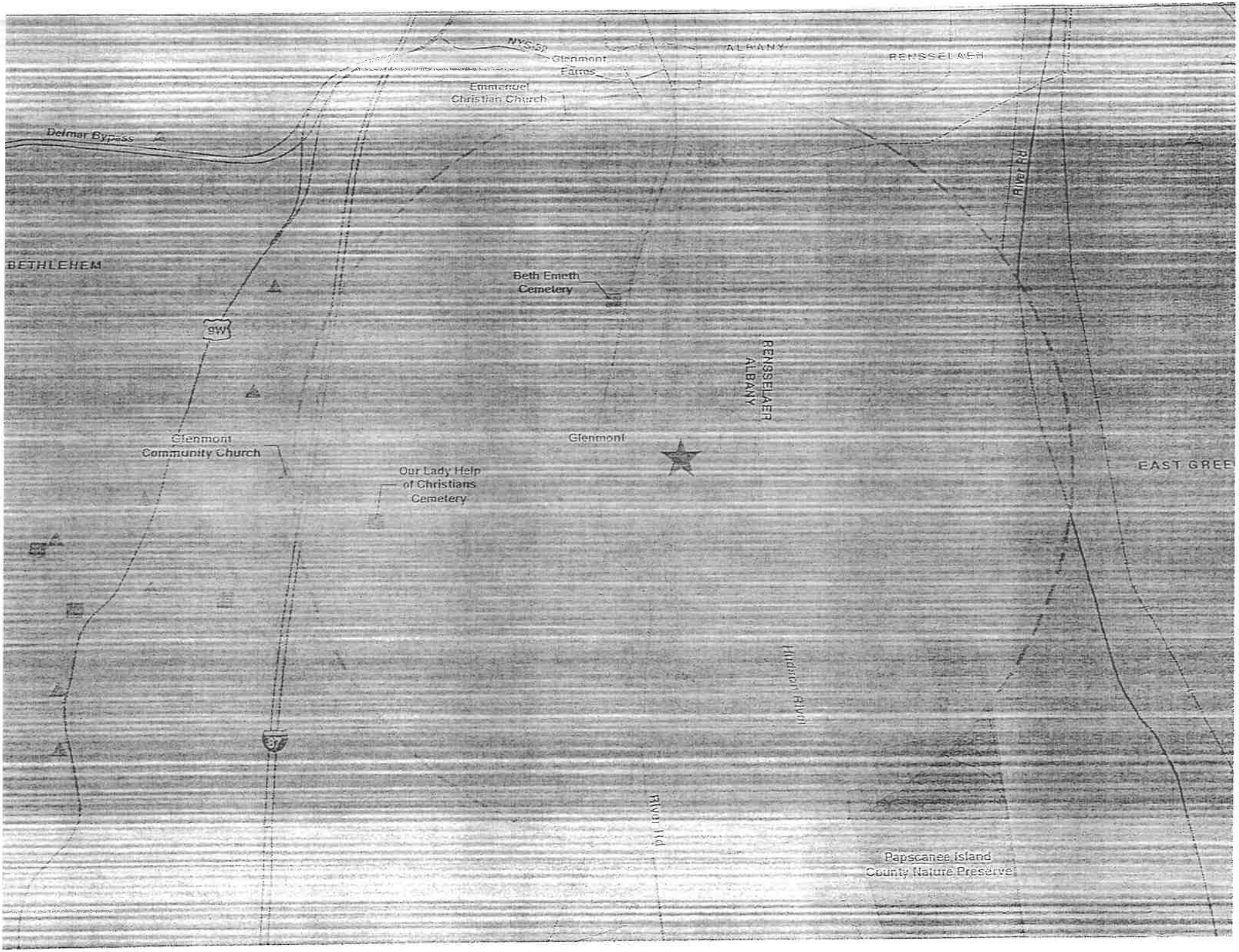
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Our Lady Help
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EAST GREE
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River Rd
Papscanee Island
County Nature Preserve

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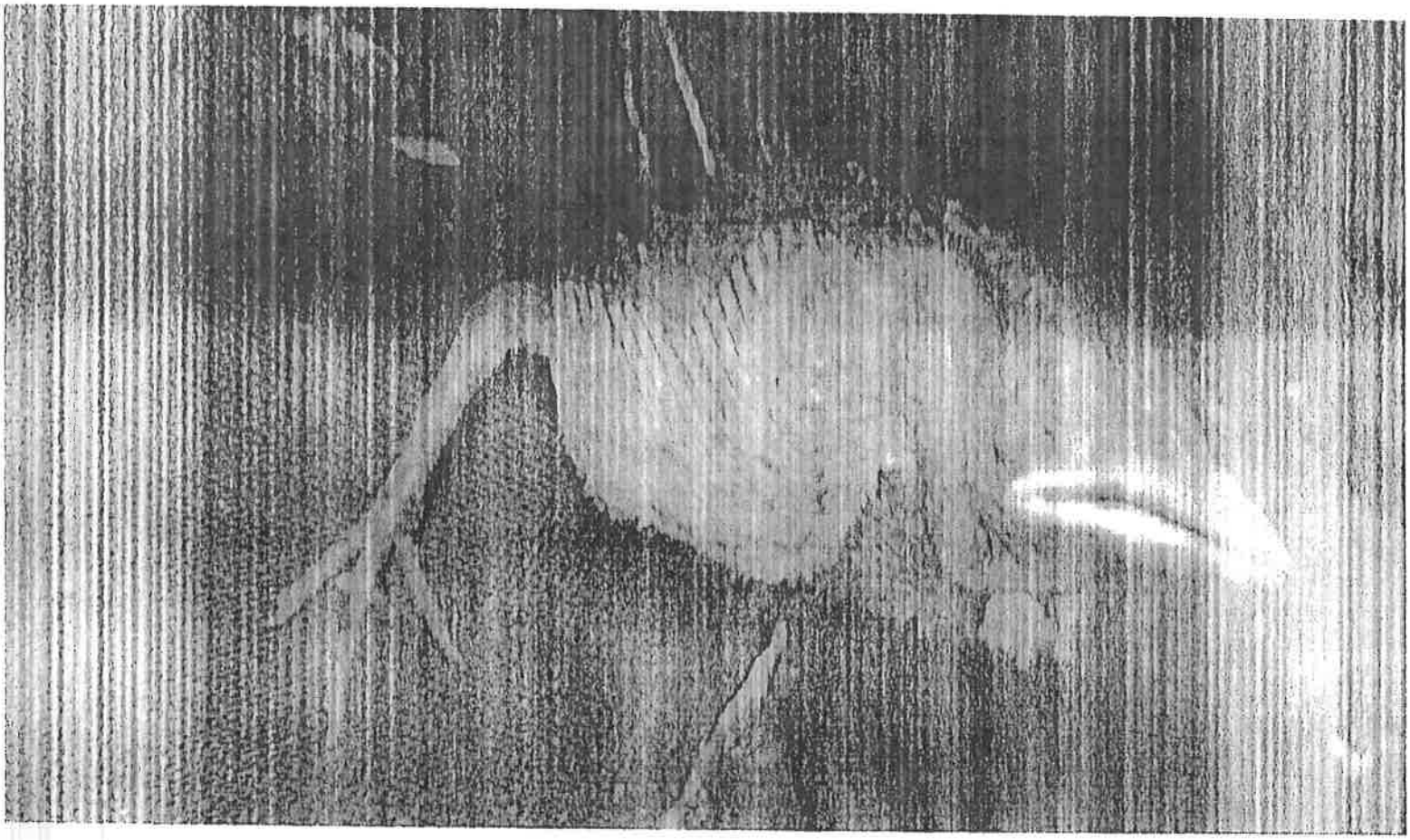

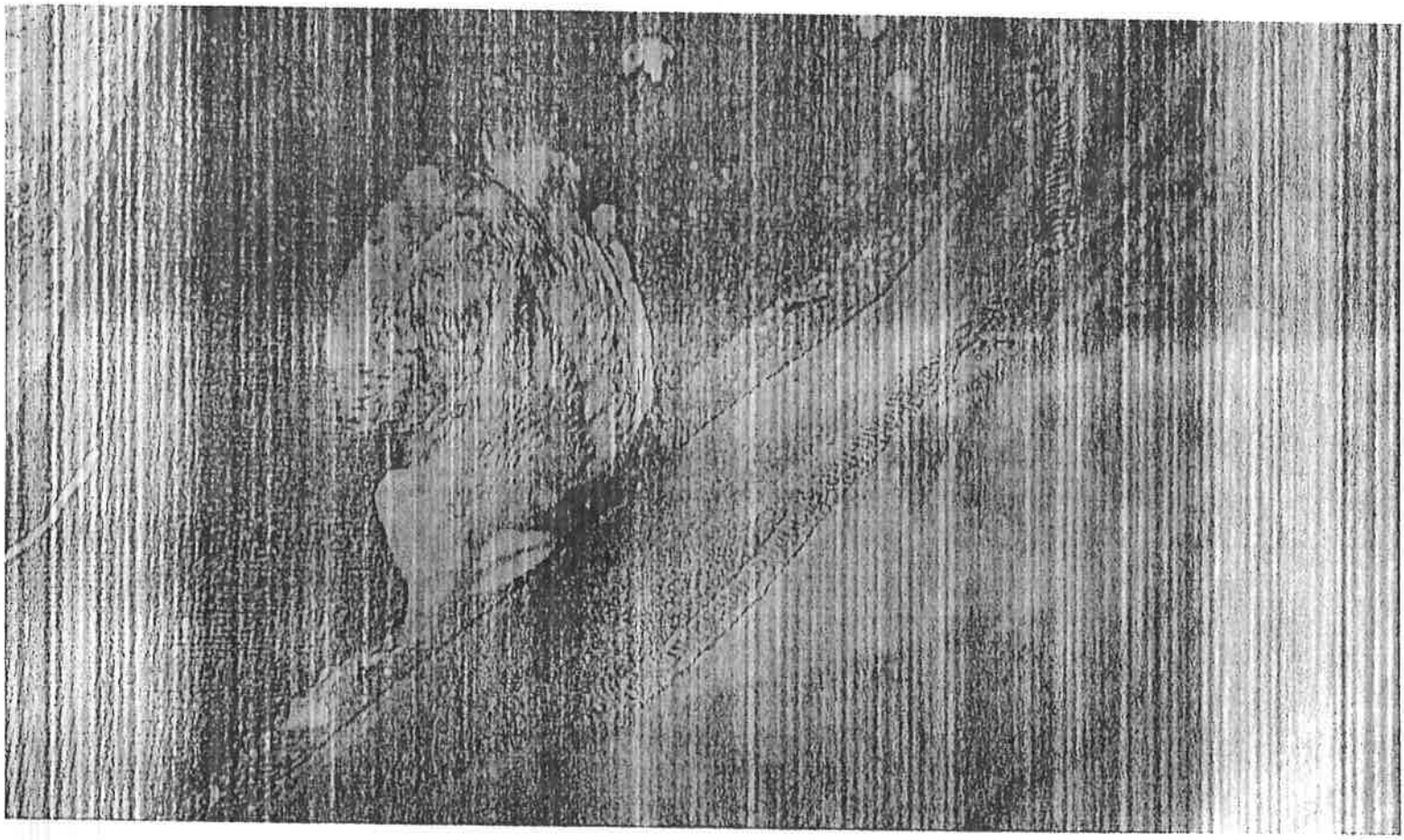

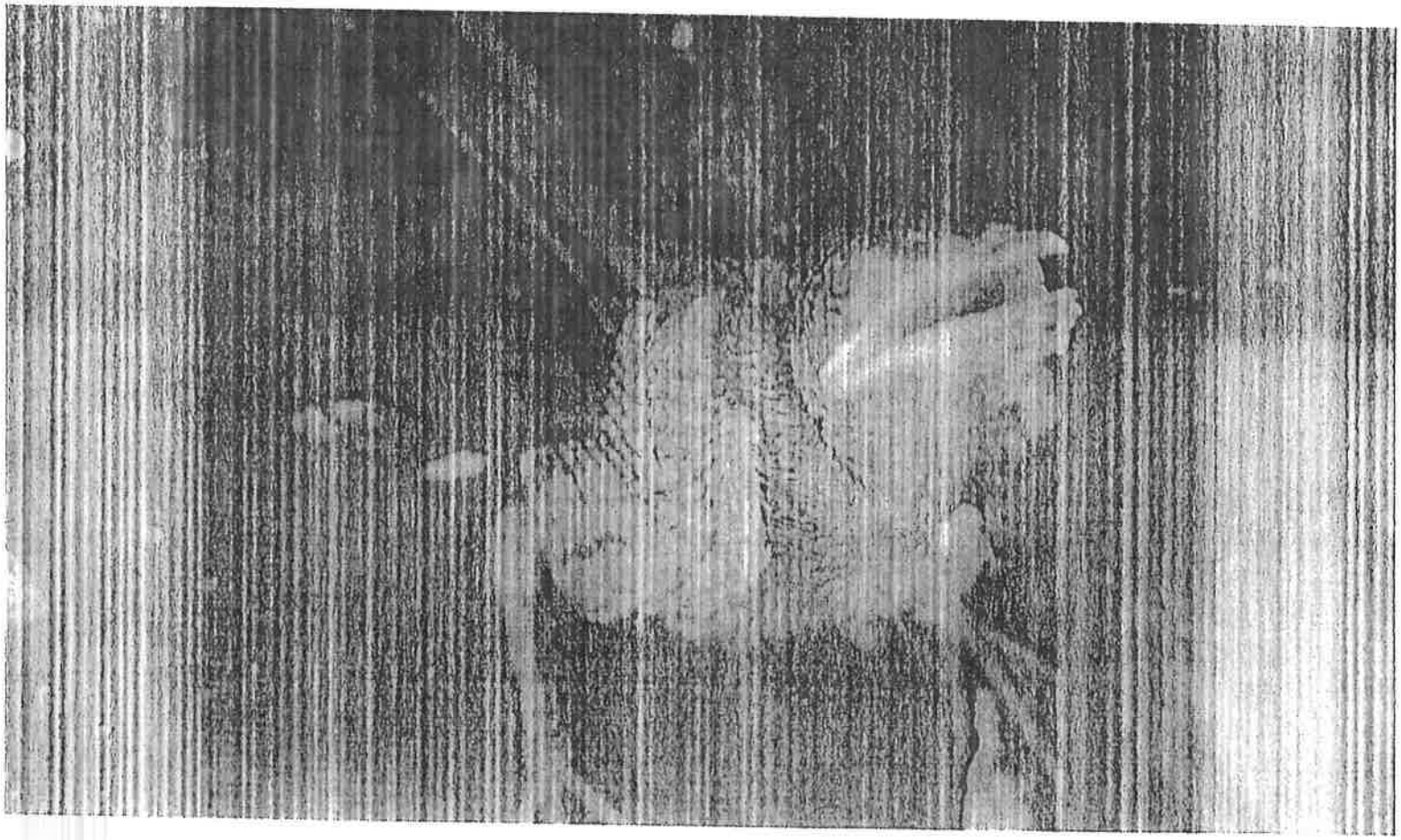

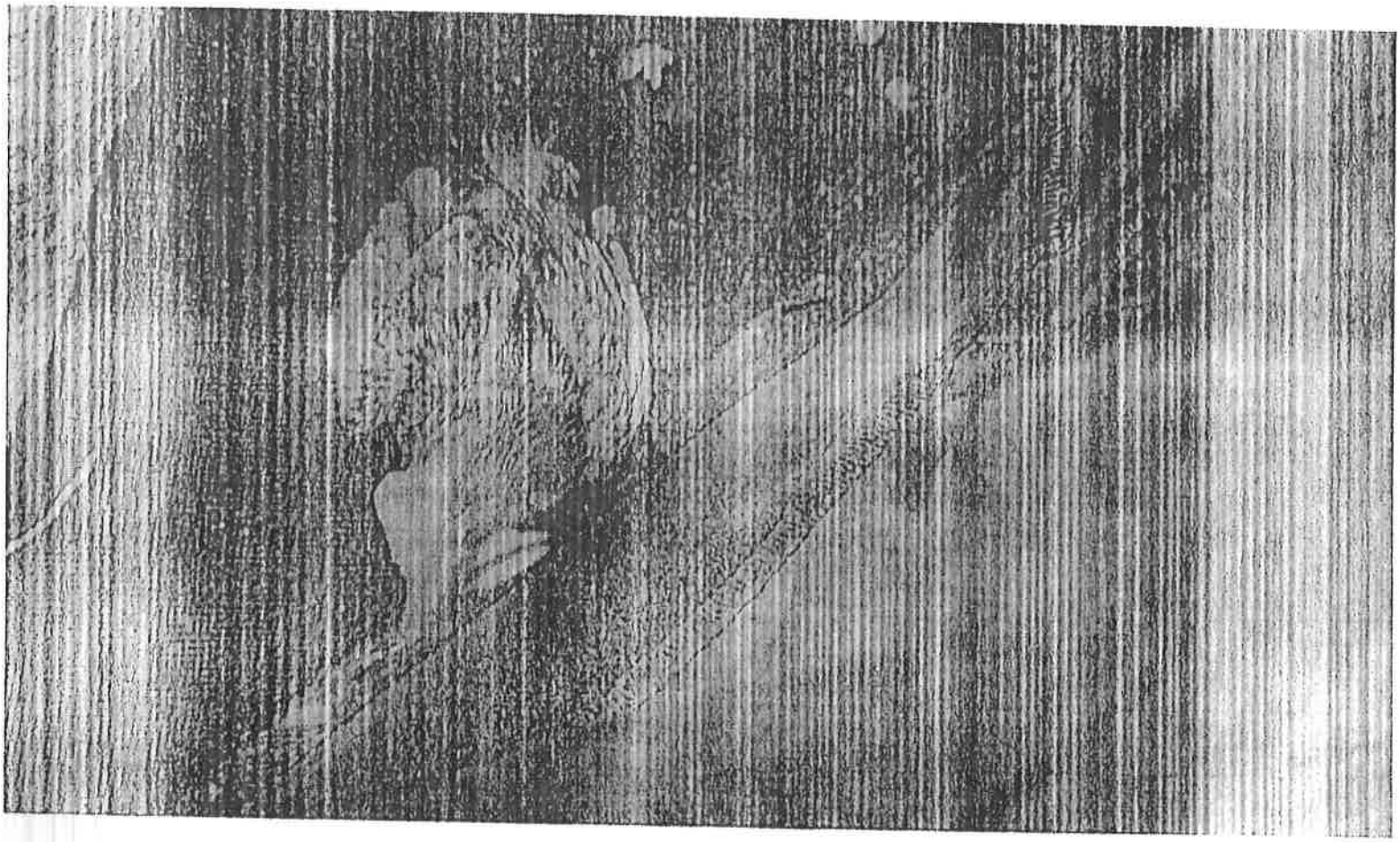

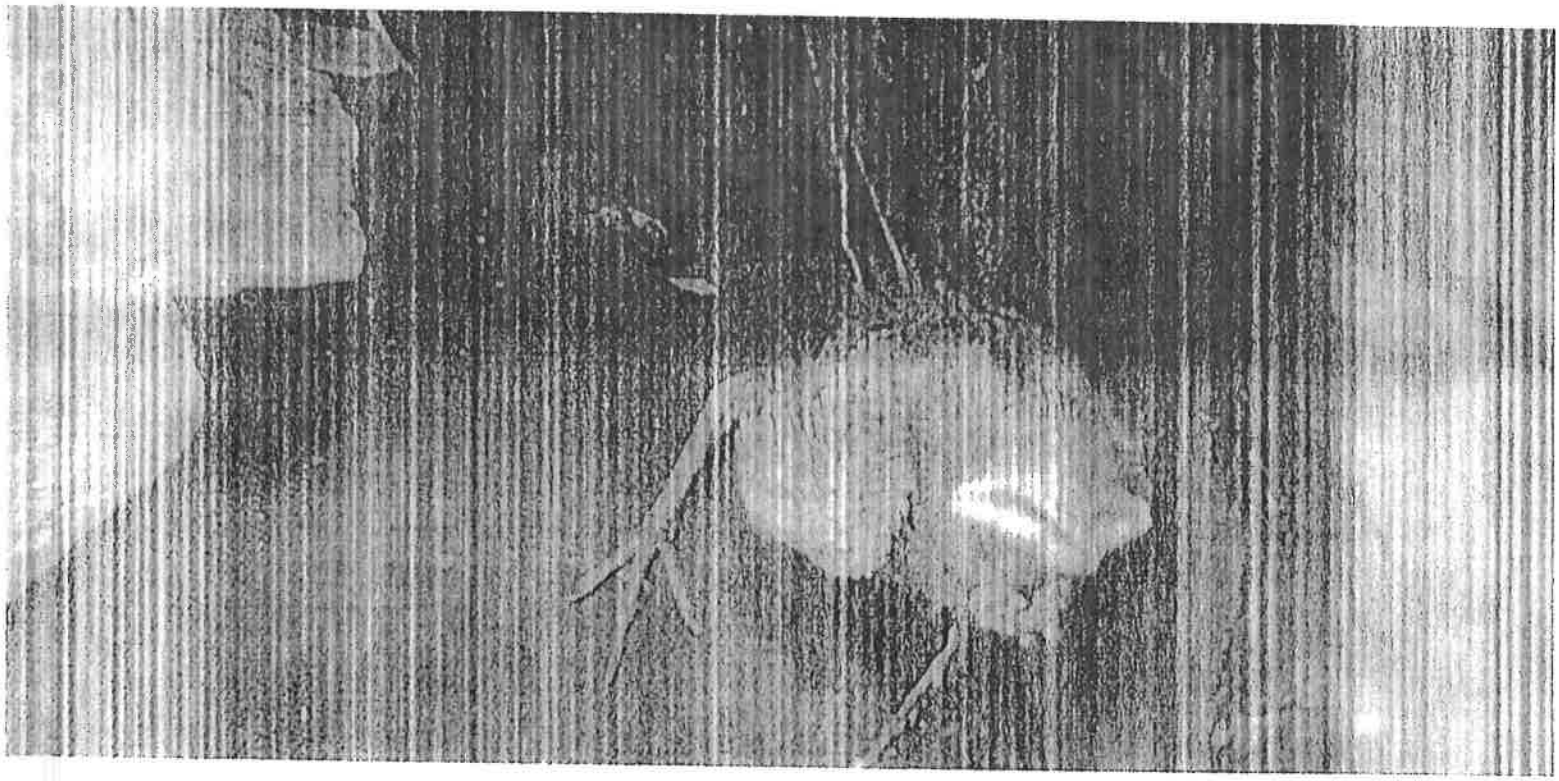

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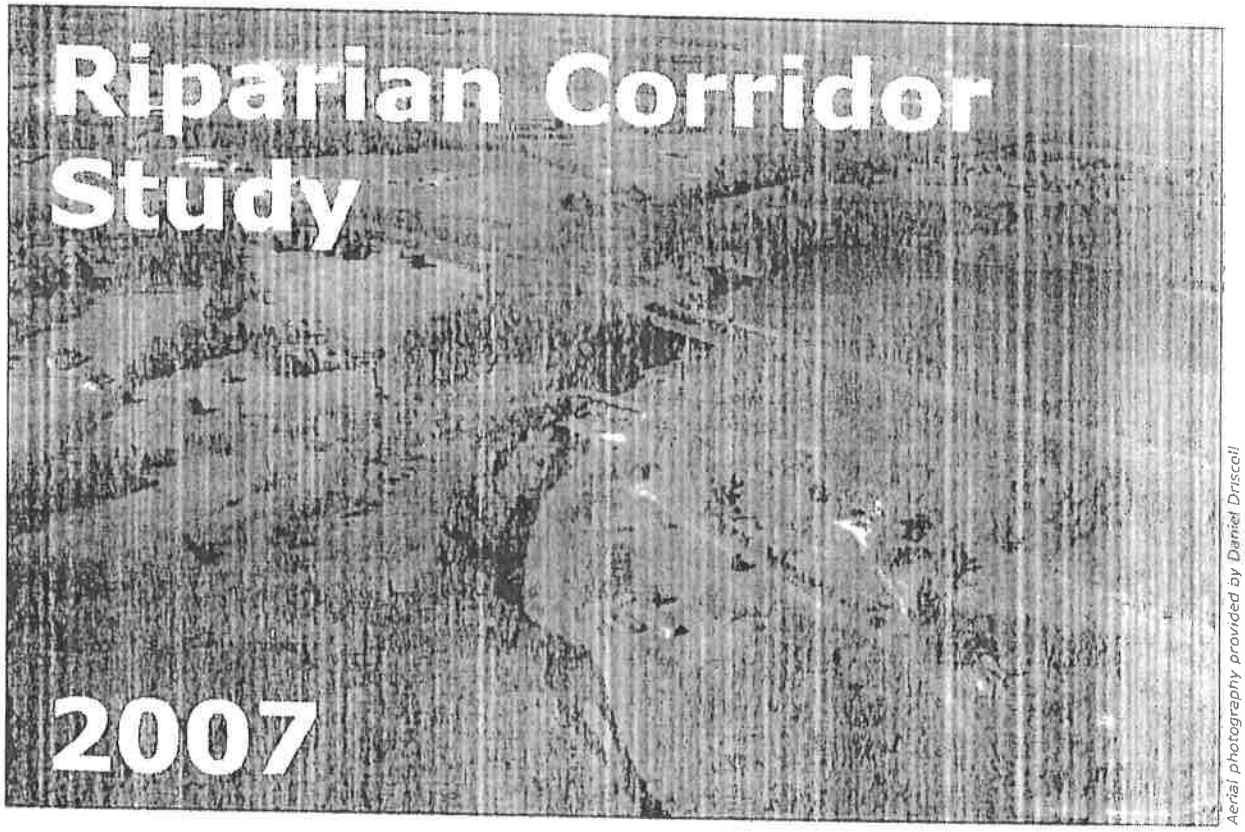

Aerial photography provided by Daniel Driscoll

Prepared for Audubon New York by the
Albany County Department of Economic Development,
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Unless otherwise credited, photographs were taken by Laura DeGaetano, Senior Natural Resources Planner, Albany County Office of Natural Resources.

Executive Summary

The Normans Kill and its tributaries constitute one of the largest and most important watersheds in the Capital District. While most of the main stream corridor is relatively undeveloped, recent trends suggest that certain areas are under increasing development pressure, which may seriously impact the creek in terms of water quality, bank stability, habitat diversity, and recreational opportunities. The purpose of this report is to present an overview of the existing natural and physical conditions that define the Normans Kill corridor; consider current and future threats to the corridor; and propose recommendations for public use that are compatible with the long-term structural and functional integrity of the corridor.

This study of a 1-km corridor on either side of the Normans Kill in Albany County was conducted in order to highlight the value of the stream and surrounding land as a buffer and habitat as well as to explore the opportunities for passive recreation both in the stream and on adjacent land. The resulting document is meant to serve as an overview of natural and recreational resources in the corridor and a basis for moving forward toward protecting habitat and enhancing recreational uses. The scope of this study included:

- Review of local plans and zoning to identify existing land and water protection strategies currently in place
- Contacting riparian landowners
- Field analysis of riparian conditions
- Compilation of GIS coverages including environmental conditions, water quality data, land use data, zoning, recreational resources, and aerial photography
- Mapping of current land use using existing aerial imagery
- Mapping of the study area, parks and recreational areas, floodplains and wetlands, land use, zoning, water quality and fisheries data, steep clay slopes, and Department of State Designated Significant Coastal Fish and Wildlife Habitat
- Summarizing existing data on biodiversity
- Recommendations on development of recreational opportunities and trail connections
- Identification of stakeholders and contacts to become involved in future watershed planning and recreational and preservation activities.

An analysis of the information collected for this study revealed that there are many valuable environmental features along the Normans Kill corridor, a healthy diversity of plants and animals, as well as several opportunities to improve access to the stream and expand passive recreational uses in the corridor.

Land use mapping indicated that there are over 11,000 acres of forest, oldfield, agricultural land, and other undeveloped land in the corridor, in addition to

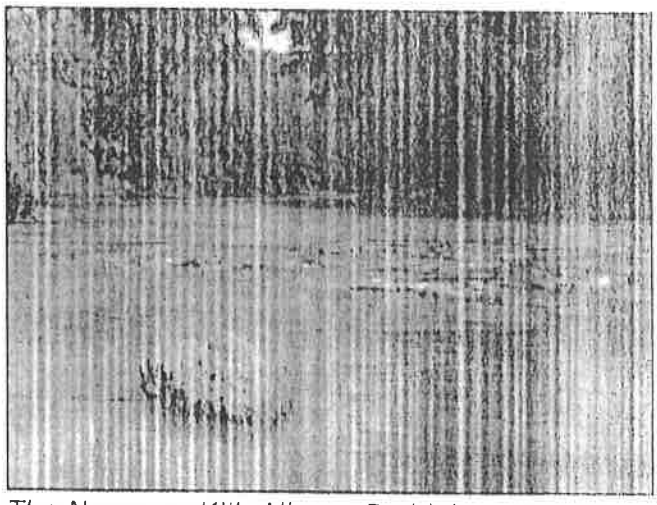
concentrated areas of residential development and several large residential subdivisions recently constructed and proposed along the stream. There is some concern about the impact that development will have on stream bank stability and water quality as the currently developed areas appear to be more impacted by erosion and sedimentation problems. Previous studies of the Normans Kill documented landslides and areas along the stream that are slippage-prone due to soil type and slope. While an analysis of current planning and zoning laws found that there are some protections provided to riparian areas and steep slopes, there may be room to enhance local plans and laws to further protect the Normans Kill and the adjacent land that buffers it.

In order to preserve important habitat and species diversity; prevent erosion, landslides, and flooding; and protect water quality, it appears that the best use of the riparian corridor is for passive recreation such as kayaking/canoeing, hiking, fishing, and wildlife observation. Toward this end, recommendations for improved recreational access and use include the following:

- Explore the possibility of a footpath connection between Western Turnpike Golf Course in Guilderland and the Pine Bush Preserve trail network
- Connect trails at the Normans Kill Farm in the City of Albany to other proximate trail systems
- Look for ways to extend the City of Albany's trail network beyond the municipal golf course into Bethlehem possibly using easements along the creek from new developments
- Work with the Department of Environmental Conservation to establish public fishing access points and easements
- Establish formal canoe/kayak launch sites and consider developing a water trail
- Pursue possibilities for facilitating public use of the area currently limited by conflicts associated with the National Guard Rifle Range in the Town of Guilderland
- Encourage and facilitate formation of a Normans Kill Watershed Council consisting of interested stakeholders including residents, government agencies, businesses, and private not-for-profits to examine the potential for trail connections, boating and fishing access, and habitat protection in the corridor.

Introduction

The Normans Kill is a medium gradient, perennial warmwater stream that flows over 40 miles through Schenectady and Albany counties, with a drainage basin of over 170 square miles of farmland, woodland, wetlands, and developed area. Within Schenectady County, the Normans Kill and its tributaries drain a large portion of the towns of Duanesburg, Princetown, and Rotterdam before crossing into Albany County in the Town of Guilderland where it enters the north basin of the Watervliet Reservoir. It then traverses Albany County in a generally southeasterly direction until its outlet to the Hudson River in the City of Albany. The Normans Kill is one of the major tributaries of the Hudson River and the largest one in Albany County. The lower section of the creek includes an approximately 1-mile segment of tidal zone, which is a critical spawning area for anadromous fish.



The Normans Kill, Albany-Bethlehem Border

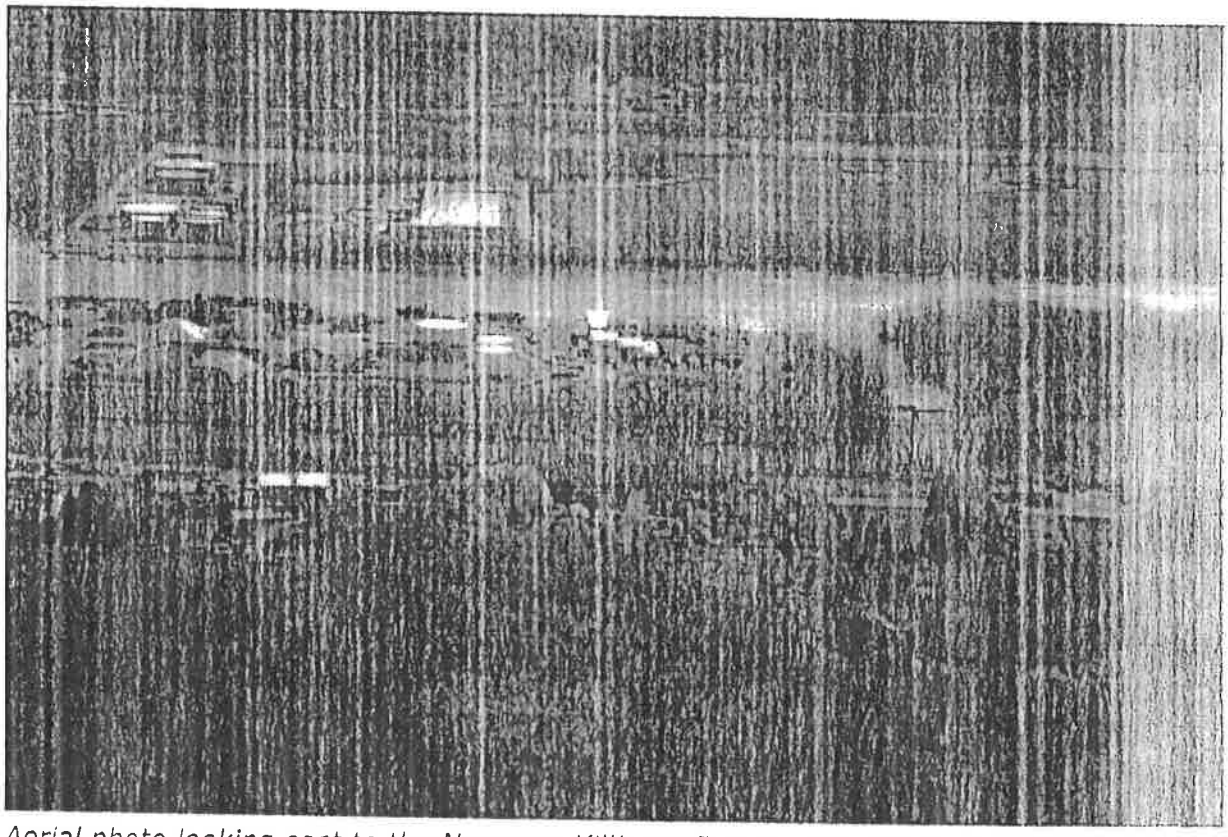
Considering that the course of the Normans Kill meanders through the heart of the Capital District, the majority of the corridor is relatively undeveloped. The riparian zone associated with the creek provides valuable habitat for diverse flora and fauna, in addition to providing a variety of recreational opportunities such as fishing, kayaking and canoeing, hiking, cross-country skiing, bird watching, and picnicking. Many of these activities are available in existing parks and preserves located along the corridor. The riparian corridor also serves an important role in slowing down stormwater runoff to reduce erosion, minimize flooding, and filter out non-point source pollutants before they reach the stream.

Gaining an understanding and appreciation of existing physical and natural conditions in the stream corridor is an important step toward developing a strategy to secure sensitive areas, protect important habitats, and enhance recreational opportunities. Using Geographic Information Systems (GIS) to display natural and manmade features in the corridor allows planners to get a comprehensive view of the area and serves as an important tool for making land use decisions and also for identifying opportunities to link parks, preserves, and trail systems. GIS maps can also be useful in identifying areas that require low impact development plans as well as areas that may be a priority for conservation.

In addition to GIS coverages, a summary of land use laws that currently provide protections to the corridor have been included in this report. Considering these in combination with current land uses, one can get a good idea of potentially vulnerable portions of the corridor and focus on best management practices where necessary or appropriate.

Study Objectives

The Normans Kill Riparian Corridor Study is an inventory and analysis of natural and recreational resources within a 1-km area on both sides of the creek (see **Map 1**). The study area was defined in Audubon New York's Hudson River Estuary Program grant application and includes an area from the northern boundary of Albany County to the confluence with the Hudson River in the City of Albany, a land area of approximately 17,200 acres. This study is intended to provide a foundation for educating the public about the value of this stream corridor, encouraging stewardship, and improving access and use of the corridor as a recreational resource. It may also serve as a basis to develop a plan to guide preservation and use of the corridor and to recommend optimal areas for recreation and conservation efforts. Taking a comprehensive look at this important Hudson River tributary also contributes to advancing the natural resource protection goals of the Hudson River Estuary Action Plan to protect and conserve natural resources and ecosystem health.



Aerial photo looking east to the Normans Kill's confluence with the Hudson River

Aerial photography provided by Daniel Driscoll

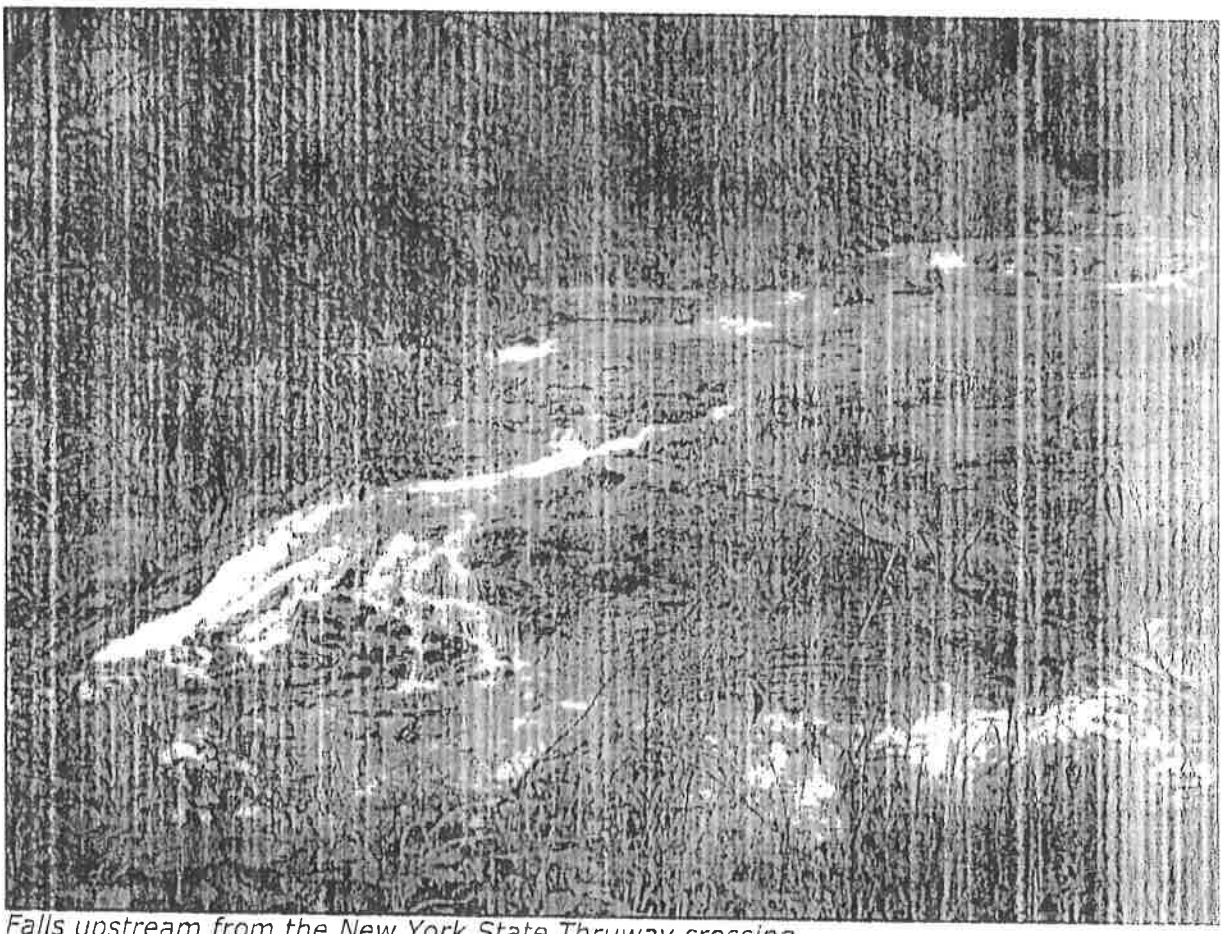
Map 1

Normans Kill Watershed and Study Area

SEE MAP BOOK

Stream Conditions

While the majority of the Normans Kill through the study area is characterized by areas of riffles and rapids, depth and flow in some sections are highly variable, particularly in the vicinity of the Watervliet Reservoir dam.



Falls upstream from the New York State Thruway crossing

Stream conditions are also variable with respect to the structure and composition of the underlying substrate. In the Guilderland portion or, generally, the western portion of the study area, most of stream courses through sandy soils with areas of bedrock and cobble mix. However, downstream of Tawasentha Park, there are steep rock ravines leading to deeper, slower moving water. In these areas, soils range from a mixture of clay and silt to heavy clay and some steep clay banks are present. After the Delaware Avenue Bridge in the Town of Bethlehem, there is a small set of falls followed by relatively shallow depths and moderate flow over a gravelly substrate for approximately 1 mile through a wooded gorge. A mix of steep shale ravines and clay banks runs downstream to the tidal portion of the study area, which is referred to on some maps as "Island Creek." This lower mile of the creek flows over a deep substrate of silt and clay and is characterized by wide mud flats extending to the Normans Kill's confluence with the Hudson River.

Part of the tidal portion of the Normans Kill has been channelized to accommodate industrial use of the area east of State Route 32 proximate to the Port of Albany. West of Route 32, however, the tidal stream and associated riparian zone remain in a relatively natural condition. Habitat disturbance in this area is generally limited to road and rail crossings, litter, and discharges of stormwater runoff from paved surfaces.

Stream Classification

Streams in New York State are classified by the NYS Department of Environmental Conservation (DEC) based on the best use of the waterbody. These classifications affect standards and restrictions related to the water quality and use.

Class A waters are used for drinking water supplies, culinary or food processing, and contact recreation and fishing. These waters must also be suitable for fish propagation and survival. Class B waters are best used for contact recreation and fishing and should support fish propagation and survival. Class C waters are best used only for fishing and also support fish propagation and survival. The quality of Class C water must also be suitable for contact recreation although other factors may limit its use for that purpose. In Albany County, the Normans Kill is Class A above the Watervliet Reservoir, Class B from the Reservoir to the Delaware Avenue Bridge, and Class C to the confluence with the Hudson River (see **Map 2**).[1]

Since macroinvertebrates are sensitive to impacts resulting from pollution, sedimentation, turbidity, and changes in water temperature, the diversity and abundance of these organisims are frequently used as a measure of water quality. Biological sampling of resident macroinvertebrates was conducted on the Normans Kill by NYS DEC's Stream Biomonitoring Unit in August of 1993 to assess water quality (see **Map 2**). Results from this monitoring showed the Normans Kill to have slightly impacted water quality, which was similar to the findings of a comparable 1974 study (see **Appendix A**).[2] Impacts to water quality appear to be related to discharges from combined sewers and sewage treatment plants, with non-point source nutrient enrichment and siltation being the primary stressors.[3] Other sampling done in 1991, 1992, 1997, and 1998 at the Delaware Avenue Bridge showed similar results to the 1993 survey.

In addition to periodic water sampling, DEC conducts 5-year updates of their Waterbody Inventory/Priority Waterbodies List (WI/PWL), which is a statewide inventory of all surface water bodies in New York State. It is used by the Department to track the status of water quality in the state. For each waterbody, the WI/PWL characterizes available information on general water quality and the degree to which designated water uses(e.g., water supply, recreation) and

[1]NYS DEC Water Quality Regulations Title 6, Chapter X Parts 700-706

[2]Biological Stream Assessment Normans Kill 1993 Survey, Novak et al., DEC/DOW, BWAR, Jan. 1994

[3]NYS DEC 30-year Trends in Water Quality of Rivers and Streams in New York State Based on Macroinvertebrate Data 1972-2002. published 2004

Map 2

Water Quality

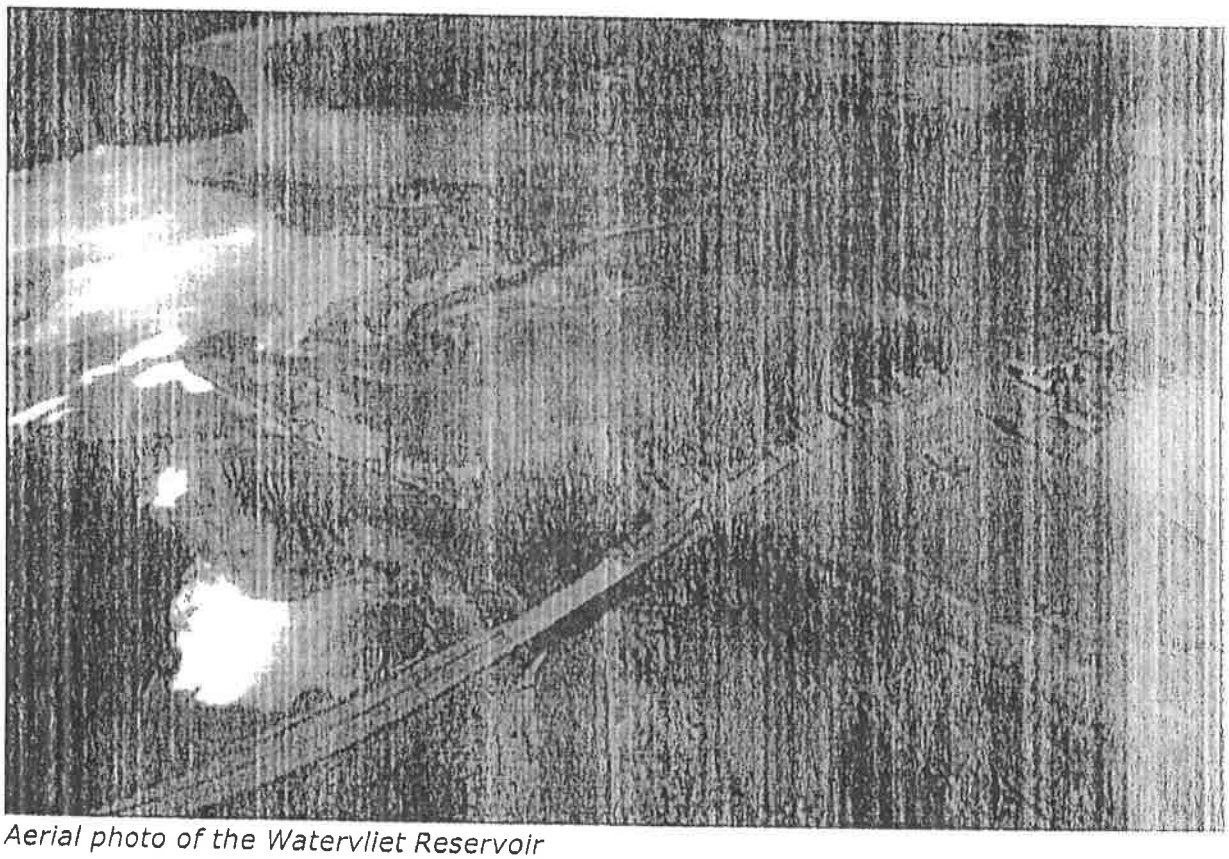
SEE MAP BOOK

healthy aquatic life are supported, and provides information on the identification of water quality problems, sources, and restoration and protection efforts.

The 1999 Lower Hudson River Basin WI/PWL published by DEC in June of 2000 notes water quality impairments along the Normans Kill (see **Map 2**). The stream segment from the Watervliet Reservoir to the Hunger Kill is identified as an impacted segment. Aquatic life was found to be impaired due to hydrologic habitat modification caused by the Watervliet Reservoir dam. The stream regularly goes dry during the summer when no water is released from the reservoir.

Water quality impairments to aquatic life and aesthetics are noted as possible and suspected in the segment from the Hunger Kill to the mouth, as well as in the segment north of the reservoir; however, the types of pollutants and sources have not yet been identified. The impairments are suspected to be related to sediment and nutrients from urban runoff and construction; combined sewer overflows below the reservoir; and agricultural runoff and falling on-site septic systems above the reservoir.

The Watervliet Reservoir is also listed as impacted by algal blooms and other aquatic vegetation, particularly water chestnut which covers approximately 30 percent of its surface area. Other impairments include excessive nutrients and sediment, and low dissolved oxygen. The possible sources are construction activity, municipal and private wastewater, storm sewer discharges, and agriculture (see **Appendix A**).



Aerial photo of the Watervliet Reservoir

Aerial photography provided by Daniel Driscoll

Soils

An analysis of the soils in the study area was performed using digitized soil data from the Soil Survey of Albany County, NY, completed in 1983 by USDA Soil Conservation Service (now, the Natural Resource Conservation Service) (see **Map 3**). Additional information about soil slope, percent clay, drainage, and suitability for recreation that was provided in the hard copy Soil Survey was added to the attribute table of the digital data by Albany County Office of Natural Resources. While the Soil Survey is a valuable resource for planning for natural resource protection and trail development, field investigation is needed to determine the actual condition on a site and to plan for uses in small areas.

Table 1 — Predominant Soil Types

Soil Type	Acres of Corridor Coverage
Hudson (Hu)	5,011
Scio (Sc)	1,191
Nunda (Nu)	1,139
Teel (Te)	626
Rhinebeck (Rh)	598
Chenango (Ch)	506

Predominant soils in the Corridor (over 500 acres) are Hudson, Scio, Nunda, Teel, Rhinebeck, and Chenango which range from clayey silt loam to sandy and gravelly silt loam. Soils composed of a high percentage of clay, such as the Hudson and Rhinebeck series, have moderate to severe limitations for recreation and have high potential for trail erosion. As the slope of these soils increases, the limitations and erosion hazard also increase (see **Appendix B**).

Stream Bank Erosion – Slippage Prone Soils

A 1982 study on the Normans Kill watershed prepared by SCS, Forest Service, NYS DEC, and Economic Research Service looked at stream bank erosion problems above and below the Watervliet Reservoir. Erosion was not found to be a significant problem or source of turbidity above the reservoir. A study conducted in 1981 by the Albany County Environmental Management Council (EMC) below the reservoir found erosion to be higher than that identified above the reservoir, but was still considered to be in the moderate range. The report concluded that the cost of remedial measures would not be justified.

Despite these findings, erosion and landslides appear to be persistent problems along the Normans Kill, particularly where there is stream-side development and/or significant clearing of slopes. The urban areas of the City of Albany appear to be particularly vulnerable to erosion from stormwater runoff.

On June 28, 1968, an approximately 15-acre landslide near Maher Road in Slingerlands, blocked an area of the Normans Kill resulting in upstream flooding that caused the loss of crops and threatened the property of at least 18 upstream landowners. According to a Cornell University report[4], the slide was believed to have been triggered by filling that took place at the top of the bank.

[4]Landslides in Soils of Albany County, New York: Descriptions and Data From Maher Landslide About Four Miles East of Voorheesville, Department of Agronomy, Cornell University

Map 3

Erosion and Slippage Prone Soils and Steep Slopes

SEE MAP BOOK

The scarp of the slide was more than 300 meters long and involved an estimated 1 million cubic meters of soil. An environmental inventory completed by the EMC in 1976 showed additional areas of slippage prone soils along almost the entire portion of the Normans Kill located in the Town of Bethlehem.

In May of 2000, another major landslide occurred on Delaware Avenue in Delmar, closing a portion of the road for 3 months. This slide, believed to have been caused by long-term filling and loading of the bank, exacerbated by heavy spring rains, destroyed a produce stand and threatened neighboring buildings and the road itself. As a result, it was necessary to redirect the channel of the Normans Kill away from the base of the slide area, resulting in substantial changes to both the stream and the adjacent corridor.

Bethlehem Landslide Site

Biodiversity

While a comprehensive biodiversity inventory has not been completed specifically for the Normans Kill corridor, other recent studies and surveys which include this area reflect a high species diversity. This can be attributed to the diversity of covertypes comprising the corridor, including woody and herbaceous wetlands, mixed hardwood forests, occasional conifer stands, oldfield, open meadow, and agricultural fields.

Vegetative Covertypes

The upper portion of the corridor above the Watervliet Reservoir to Tawasentha Park is subtantially undeveloped with a mix of farm fields and predominantly deciduous forest, including large mature species such as American sycamore and eastern cottonwood typically found in stream corridors and floodplains. In addition, the Tawasentha Park area has some particularly large oak trees. The lower portion of the corridor between Rockefeller Road and South Pearl Sreet is also dominated by mixed deciduous forest although this area tends to exhibit a denser understory of species such as sumac, gray dogwood, alder, multiflora rose, Virginia creeper, grape, poison ivy, and sapling growth of overstory species. This area also has a higher incidence of invasive species such as black locust. Much of the middle segment of the Normans Kill corridor was not easily accessible due to difficult footing, stream depth, areas of extremely thick growths of barberry and stinging nettle along the stream bank, and limited access points. Species noted during field work can be found in **Appendix C-1**.

Macroinvertebrates

Benthic macroinvertebrates refer to larger than microscopic invertebrate aquatic animals that live in and on the bottom substrate of water bodies. Common freshwater forms include a variety of mollusks (e.g., clams, mussels, snails), crustaceans (e.g., crayfish), and the larvae of various insects such as mayflies, caddisflies, and dragonflies. Since these organisms are sensitive to impacts resulting from pollution, sedimentation, turbidity, and changes in water temperature, the relative health of macroinvertebrate populations is frequently used as a measure of water quality. Therefore, while no systematic survey of macroinvertebrate life has been conducted on the Normans Kill as a measure of biodiversity, DEC's Stream Biomonitoring Unit has conducted long-term water quality testing at four sites on the creek from Altamont to Albany, which has included sampling of macroinvertbrates.

The most recent results from DEC biomonitoring of the Normans Kill are from 1993, which showed little change in macroinvertbrate species richness or abundance from a previous sample in 1974. These results are indicative of very limited deterioration in water quality over that 20-year period. Similar results were obtained regarding macroinvertebrate species richness in the Normans Kill in a more recent (1998) sample as part of a DEC biological assessment of tributaries of the lower Hudson River. A copy of the 1993 Biological Stream Assessment of the Normans Kill, as well as the 1998 Normans Kill collection, both of which include a detailed taxonomic breakdown of macroinvertebrates in the respective samples, is included in **Appendix C-2**.

Fish

The Normans Kill supports a high diversity of freshwater fish in addition to providing critical spawning habitat for a variety of anadromous species. In the latter case, which includes alewife, blueback herring, and white perch, these species enter the stream for spawning between April and June, then leave shortly thereafter. Within several weeks, the eggs have hatched and larval fish begin to move downstream to nursery areas in the Hudson River. According to the NYS Department of State (DOS), the Normans Kill is considered one of only 10 significant spawning streams for these species in the upper Hudson River. Furthermore, DOS's Division of Coastal Resources has designated an approximately 2-mile portion of the Normans Kill from its confluence with the Hudson River to a falls located just downstream of the NYS Thruway bridge as a Significant Coastal Fish and Wildlife Habitat (SCFWH) (see **Map 4**). A copy of the Normans Kill's Significant Coastal Habitat rating, according to a system developed by DOS and DEC, is included in **Appendix C-3**.

In addition to DOS fisheries evaluations of the Normans Kill's tidal area, DEC conducted periodic surveys on upstream segments of the Normans Kill in 1934, 1972, 1981, and 1987. Results of these surveys indicate a high diversity of fish species ranging from American shad, striped bass, and white perch to smallmouth bass, largemouth bass, rock bass, and yellow perch. Additional sampling done by Hudsonia in the spring of 1999 found alewife and blueback herring adults at the mouth of the stream. Complete species lists for the Normans Kill based on DEC's sampling are included in **Appendix C-4**.

Amphibians and Reptiles

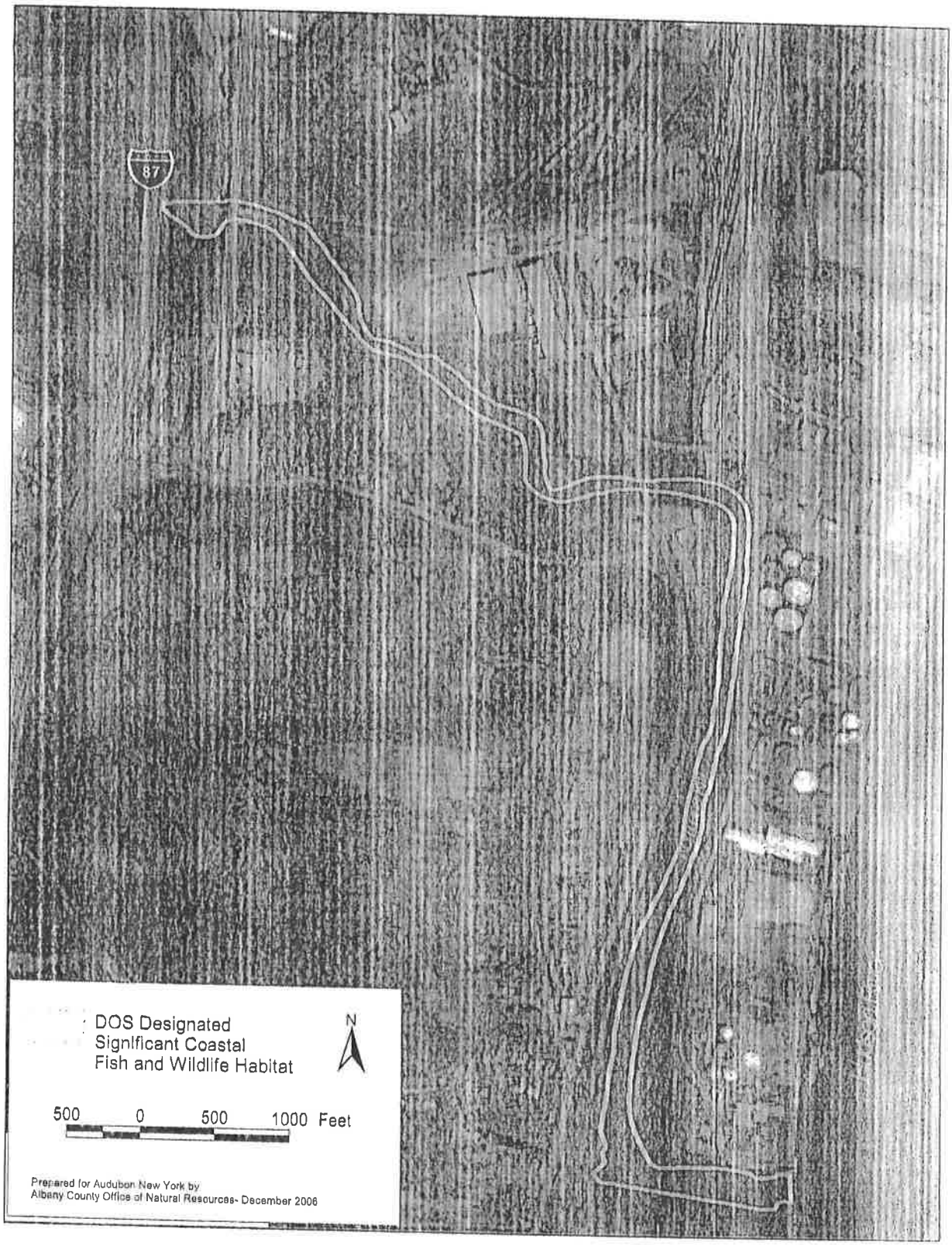
Although no herpetological survey data specific to the Normans Kill watershed is available, records from New York State's Amphibian and Reptile Atlas Project, conducted by DEC over a 10-year period from 1990 to 1999, were made available from which the diversity of amphibians and reptiles species in the general area of the Normans Kill could be determined. Based on those records, it would appear that at least 19 amphibian and 15 reptile species occur within the Normans Kill watershed, and 16 and 10 of these, respectively, occur within the Normans Kill corridor itself. None of the species found within the study area or surrounding drainage area are Endangered or Threatened; however, three amphibians (Jefferson salamander, blue-spotted salamander, and eastern spadefoot) and five reptiles (eastern hognose snake, eastern worm snake, spotted turtle, wood turtle, and eastern box turtle) are listed as New York State Species of Special Concern. A complete list of the 34 herptile species associated with the Normans Kill corridor or the larger watershed is provided in **Appendix C-5**.

Birds

A comprehensive survey of breeding birds in New York State was conducted over a 6-year period from 2000 to 2005. While the results of this NYS Breeding Bird Atlas have not as yet been published, preliminary results suggest a rich diversity of bird life in the general area of the Normans Kill corridor. A total of 129 species of birds considered to be at least possible breeders were recorded in this area, of which breeding status was confirmed for 87 species. Of the 129 total species

Map 4

DOS Designated Significant Coastal Fish & Wildlife Habitat



recorded, 11 species are considered to be rare or uncommon, including one State Endangered species (peregrine falcon); four State Threatened species (pied-billed grebe, least bittern, bald eagle, and northern harrier); and six State Special Concerned species (American bittern, sharp-shinned hawk, Cooper's hawk, red-shouldered hawk, whip-poor-will, and grasshopper sparrow). A complete list of all bird species recorded and their breeding status (confirmed, probable, or possible) is provided in **Appendix C-6**.

Mammals

Unlike the comprehensive distribution data available from statewide surveys of amphibians, reptiles, and birds, no such atlas or survey data are available for mammals. Nonetheless, mammal species diversity for the Normans Kill may be projected from historic distribution data, available habitat, and cursory observations made in the corridor and surrounding watershed. Based on these sources of information, it is safe to assume that most common mammals known to occur in Albany County and the surrounding Capital District such as white-tailed deer, eastern coyote, raccoon, striped skunk, red and gray fox, opossum, beaver, muskrat, woodchuck, eastern cottontail, gray and red squirrel, and a variety of small mammals occupy suitable habitats throughout the Normans Kill watershed.

Regarding other mammals, several species that may be regarded as uncommon in the area, including fisher, mink, bobcat, and porcupine are actually not rare, but rather seldom seen due to their secretive and/or nocturnal nature. Similarly, several inconspicuous species including shrews, moles, bats, and weasels are widely distributed over the Normans Kill watershed. It should also be mentioned that while noteworthy or unusual species such as black bear and moose have been recorded recently in and around the study area, these would be regarded as occasional transients and not permanent residents. Finally, with the possible exception of the Endangered Indiana bat and Special Concern small-footed bat, both of which may make occasional feeding forays in areas of the watershed, no other special status mammal species are known to inhabit the area.

Other Special Status Species

A report on rare plants and animals in the Normans Kill corridor was provided by the New York Natural Heritage Program which lists the general location of special status species that have been documented in the last 25 years and includes similar records dating to before 1980. In addition to rare vertebrate species referenced above, several other noteworthy species are known to occur in the Normans Kill watershed, including various grasses, sedges, and flowering plants, as well as a number of invertebrates. As would be expected, many of these notable species records are associated with unique portions of the watershed, such as the tidal portions of the lower Normans Kill and the pine barrens habitat found in the upper or northern portions of the corridor. A complete list of these species (without reference to specific location), is included in **Appendix C-7**.

Land Use

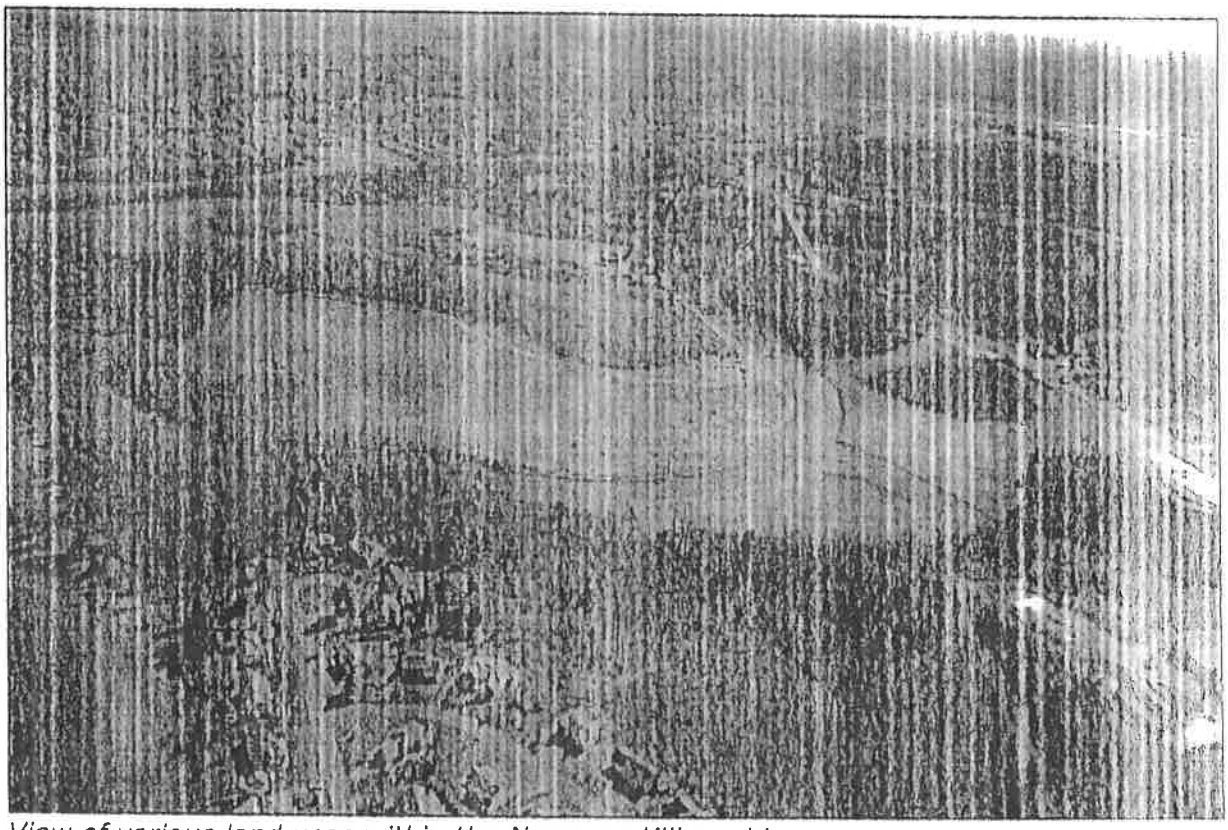
Land use in the corridor was mapped using 2004 digital orthoimagery obtained from the New York State GIS Clearinghouse. The land use categories that were mapped and an indication of their coverage within the corridor are included in **Table 1** (see **Maps 5** and **6**).

While topography and other environmental constraints have generally limited development in the corridor in the past, there have been several housing developments constructed recently and at least three substantial development projects proposed proximate to the stream in the towns of Guilderland and Bethlehem. Development in the sensitive riparian area has the potential to cause degradation of water quality, increased erosion and flooding, loss of wildlife habitat, and reduced opportunities for recreation along the creek.

Table 2 — Major Land Uses*

Land Use	Acres	Approximate Coverage
Residential	2045	15.00%
Urban	81	0.05%
Industrial	195	1.40%
Commercial/Services	251	1.80%
Open & vacant land	960	7.00%
Forest land	6976	50.00%
Agricultural	2583	18.00%
Recreation	989	7.00%

*Based upon land uses mapped within Albany County. These land use categories are broken down further in the digital map coverage.



Aerial photography provided by Daniel Driscoll

View of various land uses within the Normans Kill corridor

Map 5

Northwest Study Area Land Use

SEE MAP BOOK

Map 6

Southeast Study Area Land Use

SEE MAP BOOK

Land Use Planning and Zoning

A municipality's zoning ordinance, subdivision regulations, and planning process can go a long way toward protecting stream corridors and riparian habitat. Similarly, comprehensive plans can also help a community establish clear guidelines for the protection and use of lands along stream corridors. With respect to the Normans Kill, the following presents a summary of current municipal planning, zoning, and other local laws and programs which apply to land use, development, conservation, and recreation in the corridor (see **Map 7**).

Town of Bethlehem Comprehensive Plan

The Town adopted a comprehensive plan in August of 2005. While the goals and recommendations in the Town's plan do not address environmental concerns specifically related to the Normans Kill corridor, the following goals and recommendations do consider the importance of protecting water quality, improving recreational opportunities, and managing natural resources along the creek:

- Expand public, private, or non-profit active and passive recreational resources and community services available in the Town to meet the growing and changing demand for these amenities.
- Manage and protect significant environmental systems such as stream corridors and associated ravines, steep slopes, wetland systems, and in particular, the Town's Hudson River waterfront. Enhance public access to, and understanding of, these resources.
- Recognize the Town's significant cultural resources, historic resources, and natural resources (such as farm land, forest land, or mineral deposits). Develop mechanisms for protecting and enhancing these for future generations. Communicate the value of these resources to individuals and to the community.
- Work with willing landowners to conserve quality open space throughout the Town and create a network of open lands to provide wildlife habitat and potential recreational trail corridors
- Develop zoning that addresses the protection of stream corridors – It is critical that the Town protect the stream corridors from development to help reduce pollution and protect all its water resources. Such protections could include development setbacks and clearing regulations to protect water quality in the Town's streams and the Hudson River.
- Develop zoning that addresses the protection of steep slopes to protect the many ravines and steep slopes in the community from destructive development. This may be done by placing limitations on the type and amount of development that occurs in steep slope areas.

Map 7

Generalized Zoning

SEE MAP BOOK

- Coordinate with the Mohawk Hudson Land Conservancy, the Hudson River Valley Greenway, and other interested organizations in developing and maintaining a recreational trail system. These organizations can assist with the creation, funding, and maintenance of current and/or proposed trail systems.

Bethlehem Zoning Law

In addition to the Town's Comprehensive Plan, the Town of Bethlehem's Zoning Law, updated in September of 2006, provides protection to the Normans Kill and other streams. The most significant provision is the stream buffer requirement which states that "No building permit will be issued for the construction or installation of any permitted or accessory use in any district within 100 feet of the bank of the Normans Kill Creek, Vloman Kill, Onesquethaw Creek, Phillipin Kill, and the Dowers Kill south of Route 32 or within the 100-year flood zone of these waterbodies."

In addition, the code specifies that when building lots border a stream, there is no construction or installation of any accessory use in any district allowed within 100 feet of the stream's bank. The zoning code states that design plans must ensure that development will not:

- Cause silt and eroded material to enter the stream during storm events or as a result of wind movement.
- Affect the efficiency or the capacity of the stream.
- Increase flood heights.
- Cause an increase in water flow velocity.
- Obstruct, catch, or collect debris that would obstruct flow under flood conditions.

Town of New Scotland Comprehensive Land Use Plan

The Town of New Scotland has included policies and recommendations in their January 2004 comprehensive plan to guide the land development process and protect the environment. The following policies and recommendations in this plan recognize the Normans Kill as a critical environmental area in need of protection.

Policies:

- To identify floodplains, floodways, stream corridors, wetlands, water supply resources, steep slopes, vistas, cultural and historic resources, watersheds, parklands, unique geological features, and agricultural lands.
- To maximize buffer areas adjacent to stream corridors, wetlands, steep slopes, and vistas.
- To modify zoning in the Town such that environmentally critical and sensitive areas and land use for agriculture and forestry are protected and maintained.

Recommendations:

- The Normans Kill should be protected utilizing flexible zoning techniques. Mandatory cluster provisions should be used to preserve open space around the Normans Kill.
- To further protect the Normans Kill and create open space the Town could offer a "bonus" to developers who in exchange would designate riverfront land as open space for public use.
- Draft an Open Space plan to outline the Normans Kill area and designate where an open space corridor is to be established. In addition, the plan could establish an overlay district. As part of the subdivision review process, riverfront open space would have to be set aside for public use as stated in the Open Space Plan.

Town of New Scotland Zoning Law

Although the Town of New Scotland's Zoning Law does not mention the Normans Kill or have a specific law relating to the protection of the stream, the Normans Kill falls within the Residential Conservation district in the Town.

The Residential Conservation District is considered an area that generally has soils and slopes that are unsuitable for urban development. The district is accessible to population centers and lies outside of the prime agricultural area. The purpose of this district is to discourage growth on unsuitable lands and encourage use of natural areas suitable for passive recreation. Uses allowed in this zone include forest management, agriculture, single-family homes, and public outdoor recreation.

Rural Guilderland Plan: Open Space and Farmland Protection Plan

The Rural Guilderland Plan was developed in 2004 to address the relatively rural, western part of Guilderland that is rich with natural resources and differs greatly from the commercial and intensive suburban land uses found in the eastern portion of the Town. This plan addresses issues unique to this area and recommends measures to protect sensitive environmental areas.

To assist with the protection of local streams and waterways, the Town adopted a stream buffer requirement that excludes buildings from being constructed within 50 feet on each side of a stream. In addition to the stream buffer requirement, the Town developed concepts for conservation, several of which can be applied to protection of the Normans Kill.

- Protect Significant Natural Resources – natural resources, such as the Helderberg Escarpment, Settles Hill, Black Creek Marsh, and large patches of woodlands and wetlands, contribute to the rural character of the Town. They provide for wildlife and recreational and economic opportunities for people. Protection of these natural resources should be the basis for all planning endeavors in rural Guilderland.

- Protect Water Supply – the Watervliet Reservoir is a primary drinking water source for the Town and the City of Watervliet. The reservoir and its watershed, including the Normans Kill, Black Creek, and Bozen Kill, should be protected to the highest extent.

The Rural Guilderland Plan also developed recommendations and actions that may apply to protection of the Normans Kill corridor and development of recreational opportunities.

- Recommendation: Protect Water Supply

  Action: Enhance the Town's Strategy to protect drinking water quality. Efforts to do so include:

  1. Enhancement of municipal stream and watershed regulations. This could include larger setbacks from streams.
  2. Continued protection of sensitive environmental areas (floodplains, wetlands, and steep slopes) through existing buffer regulations and utilization of new conservation subdivision requirements.
  3. Reduction of overall density of development throughout the rural Guilderland study area.

- Recommendation: Protect Significant Natural Resource Areas

  The key elements that the Town's natural resources program should focus on include:

  1. Preservation of large tracts of woodlands to avoid fragmentation of the Town's "big woods" – a particular focus of these efforts should be the targeting of large, unbroken tracts of wooded areas and stream corridors.
  2. Protection of scenic, wooded hills and ridges from significant development
  3. Conservation of wildlife habitat

- Recommendation: Enhance Human Connections to the Land

  Actions:

  1. Provide for enhanced community/pedestrian connections throughout rural Guilderland. These pedestrian connections should follow natural features and connect residential areas with parks, other recreation areas, and commercial centers.
  2. Enhance low-impact recreation opportunities, particularly those uses that do not adversely impact or require significant modification of the natural environment. To achieve this, the Town should investigate opportunities to formalize existing trail networks through a landowner incentive program, and expand the scope of the Guilderland Pathways initiative to include rural Guilderland.

Town of Guilderland Comprehensive Plan

The Town of Guilderland updated their Comprehensive Plan in 2001 to address current land use and other community issues. The Town developed policies and recommendations to manage the community impacts associated with the influx of businesses and demand for new housing, several of which will help protect the natural resources of the Town, including the Normans Kill corridor.

Recreation and Open Space

- Promote clustering and other innovative design measures that preserve open space, including 10 percent parkland dedication regulations to preserve land along the Normans Kill.
- Investigate potential recreational access to stream corridors.

Natural Resources

- Preservation of critical lands adjacent to the Watervliet Reservoir can be accomplished through a number of open space techniques. For the best control, the Town should purchase these lands.

Streams and Floodplains

- Buffer all stream corridors from development to protect the integrity of the stream corridor to maintain water quality, promote wildlife corridors, provide potential recreational opportunity, and protect the health, safety and welfare of the community from slope failure. The width of the buffer should not be less then 100 feet from the stream edge to prevent potential impacts of erosion and sedimentation. In the case of stream corridors with steep banks (ravines), the angle of repose should be used to define top of bank. The current 30-foot setback from the angle of repose (top of bank) as provided in the subdivision regulations should continue to be used. The 12 degree angle of repose is used to protect steep slopes and stream corridors from development.
- Require the preparation of an erosion control plan for new projects.
- Special consideration should be given to the streams that are tributary to the Watervliet Reservoir. Other regulations, such as the new National Pollutant Discharge Elimination System (NPDES) Water Pollution Control Program (Phase II) may prove to be useful in protecting the watershed from stormwater runoff from new development.
- Explore potential access opportunities to stream corridors at appropriate locations for recreational uses (primarily trails and fishing access). Emphasis should be placed on voluntary easements to achieve appropriate connections.
- Prevent encroachment into the 100-year floodplain, as delineated on the Flood Insurance Rate Maps prepared by the Federal Emergency Management Agency.

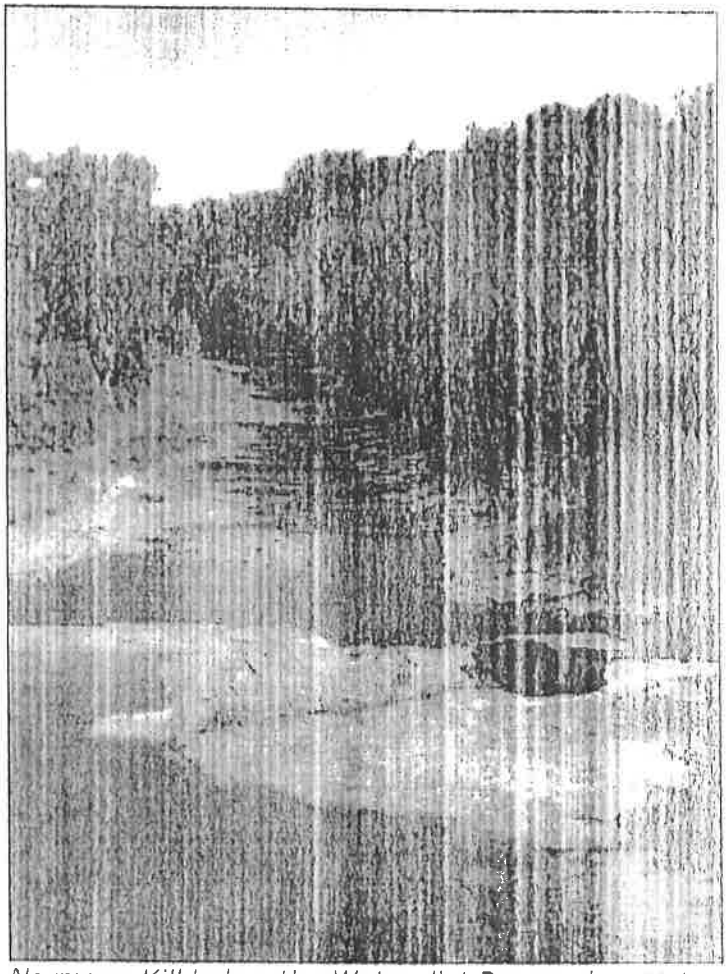
Reservoir Corridor

- Development in this area of Town should be significantly limited. The following are specific solutions for protection of this corridor:
- Develop measures to prevent impact to the Reservoir from spills along Route 20.
- Implement watershed protection regulations in accordance with an overall watershed management plan.

Town of Guilderland Zoning

The Town of Guilderland's Zoning Ordinance does provide for the protection of streams by restricting construction of structures within 100 feet of the water's edge.

Floodplain regulations add further protection to the riparian corridor by controlling the alteration of natural floodplains, stream channels, and natural protective barriers which are involved in the accommodation of floodwaters, controlling filling, grading, dredging, and other development which may increase erosion or flood damages, and regulating the construction of flood barriers which will unnaturally divert floodwaters or which may increase flood hazards to other lands.



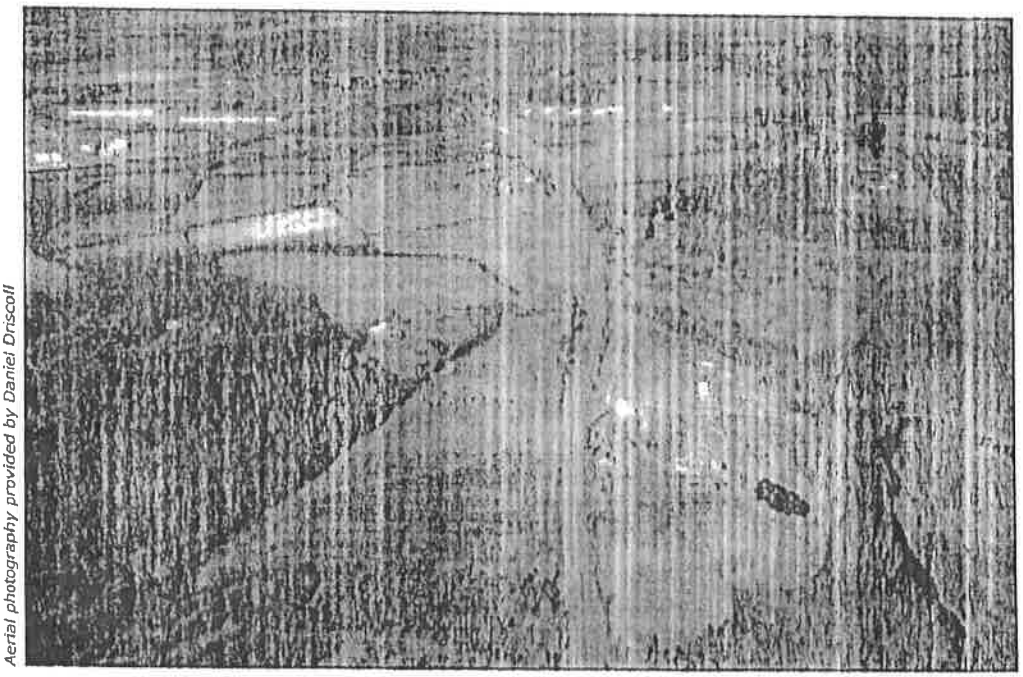
Normans Kill below the Watervliet Reservoir outlet

Agricultural Planning and Farmland Protection

There are approximately 2,583 acres of agricultural land within the Normans Kill corridor. The majority of the active farmland lies within County Agricultural District #3 in northern Guilderland surrounding the reservoir. Active agriculture is also found along the creek in southeastern Guilderland and the northeast corner of New Scotland. Not surprisingly, these areas also include the majority of the 3,830 acres of prime farmland and 1,574 acres of soils of statewide importance which occur in the corridor. Most of these important soils are found in and near the flood plains of the stream.

While farmland protection is regarded to be an important land use consideration, it should be noted that certain agricultural practices contribute to water quality impairment in the Normans Kill as well as the Watervliet Reservoir. These impairments include elevated nutrient levels, algal blooms, and excessive vegetative growth, which may impact aquatic life and water quality in the immediate vicinity of the farmland as well as downstream from agricultural sources. It should also be noted, however, that while agriculture is a suspected contributor to these water quality impairments, according to DEC's waterbody inventory, it is not considered the main source.

The Albany County Soil and Water Conservation District is scheduled to conduct assessments in the Normans Kill watershed in 2007-2008 as part of the Agricultural Environmental Management Program (AEM). AEM is a voluntary, incentive-based program that helps farm operators examine land management, nutrient and pesticide management, and environmental risks. An AEM farm assessment can help identify improvements that will save the operator money, minimize the farm's impact on the environment, and evaluate any risks to drinking water supplies on and around the farm. AEM assessments identify best management practices that can significantly reduce non-point source pollution, such as establishing vegetative buffers, fencing livestock from sensitive areas, and manure management.



Aerial photography provided by Daniel Driscoll

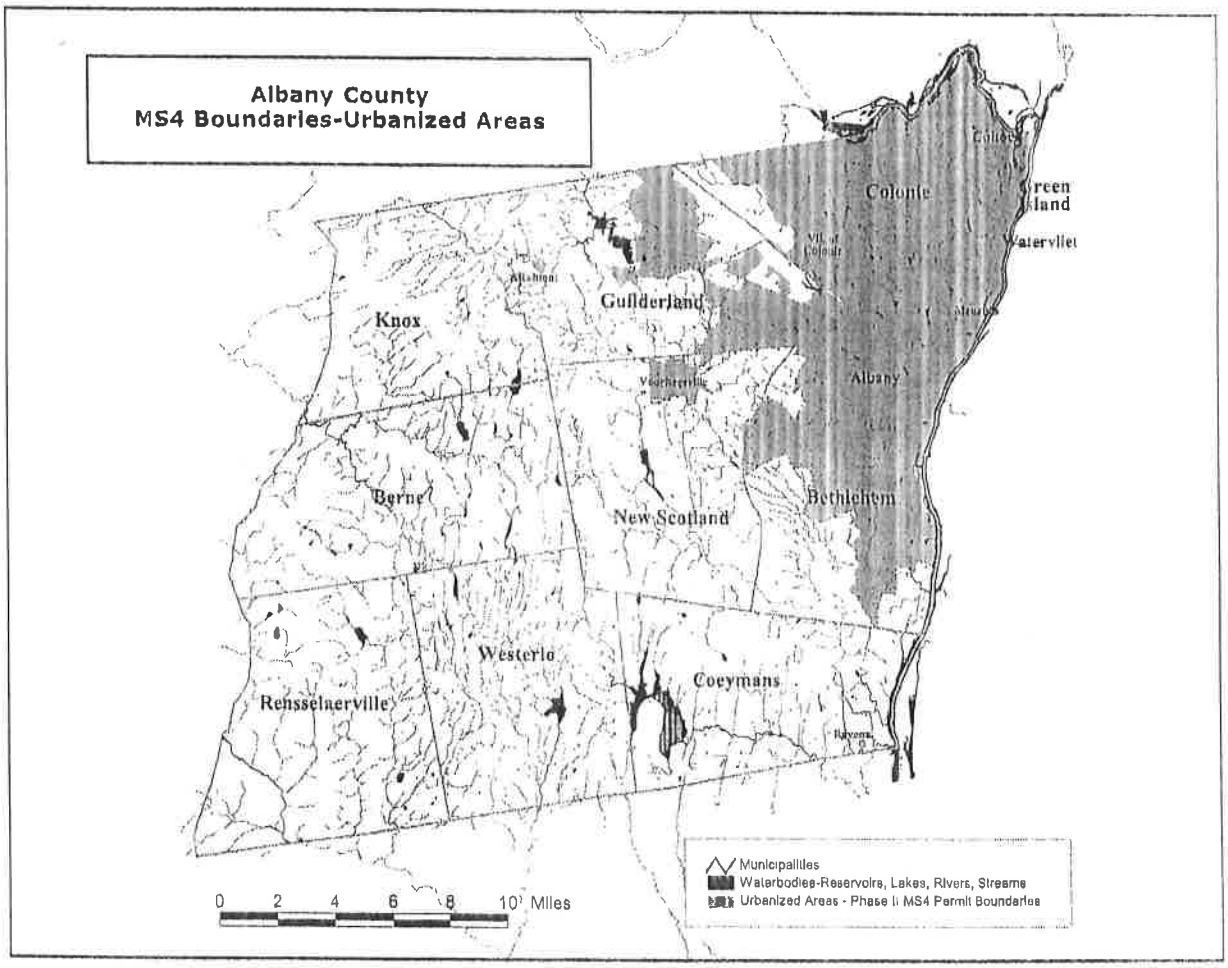
Farmland in the northern portion of the stream corridor

Stormwater Management Local Laws

Under Phase II Stormwater regulations[5] (commonly referred to as the MS4 regulations, or Municipal Separate Storm Sewer System), municipalities are required to pass a local law prohibiting illicit discharges to the storm sewer system and controlling erosion and sediment caused by construction activity. These laws must be in place by January 2008. Passage and enforcement of these laws in the Towns of Guilderland, New Scotland, and Bethlehem and the County and City of Albany will help reduce sediment and other non-point source pollutants found in stormwater runoff and improve water quality. **Map 8** highlights the urban, regulated areas (MS4 areas) within each of the relevant municipalities.

Map 8

Regulated MS4 Areas



[5]In 1990, EPA promulgated rules establishing Phase I of the National Pollutant Discharge Elimination System (NPDES) stormwater program. The Phase I program for MS4s requires operators of "medium" and "large" MS4s, that is, those that generally serve populations of 100,000 or greater, to implement a stormwater management program as a means to control polluted discharges from these MS4s. The Stormwater Phase II Rule extends coverage of the NPDES stormwater program to certain "small" MS4s, but takes a slightly different approach to how the stormwater management program is developed and implemented.

Previous Plans and Studies

The Normans Kill and its corridor have long been recognized as a unique and valuable resource as well as a sensitive area in need of careful planning. A series of studies conducted by federal, state, and local agencies have examined the Normans Kill and the affect of surrounding land uses on the stream.

A technical memorandum published in 1977[6] examined the current conditions of the Albany-Bethlehem segment and outlined means of protecting and utilizing the stream and surrounding lands. It looked at protecting life and property, stabilizing physical and biological systems, improving water quality, and developing recreational facilities. This study advised that stabilizing eroding gullies, removing fallen trees in the stream, ceasing dumping and filling, and addressing erosion around stormwater outfalls would help reduce erosion and slippage. It also recommended avoiding grading and tree removal in the Normans Kill valley.

This study also called for development of recreational opportunities such as boat launches, fishing access, and a trail system and recommended that an intermunicipal group of governments and other interested organizations be formed to work on planning goals on a watershed basis.

This memorandum also looked closely at the geology of the corridor and the suitability for development, particularly at constraints posed by slippage-prone soils. The thick layers of clay and silt which form much of the Normans Kill valley are considered to be unstable and poorly suited for development as the unconsolidated material has a tendency to move downhill when disturbed, filled, or built on. The study includes excerpts from a report on geology and land uses in the Pine Bush[7], which discusses the characteristics and uses in this area. Maps produced by the Albany County Environmental Management Council[8] as part of a natural resources inventory predict the slippage-prone areas based on surficial geology and slope gradient as those areas of clay and silt having a slope gradient greater than 8 percent. Maps included in this report also show areas of actual slippage found by field survey and known by Soil and Water Conservation District staff.

This study also collected information on water quality, bank conditions, and tributary erosion. A map of present conditions and current land uses which show eroding tributaries and stormwater channels and bank slough is included in the report. Sources of degraded water quality are attributed to stream bed erosion, felled trees, and eutrophication of the Watervliet Reservoir, which is believed to cause low dissolved oxygen levels downstream as far as Delaware Avenue.

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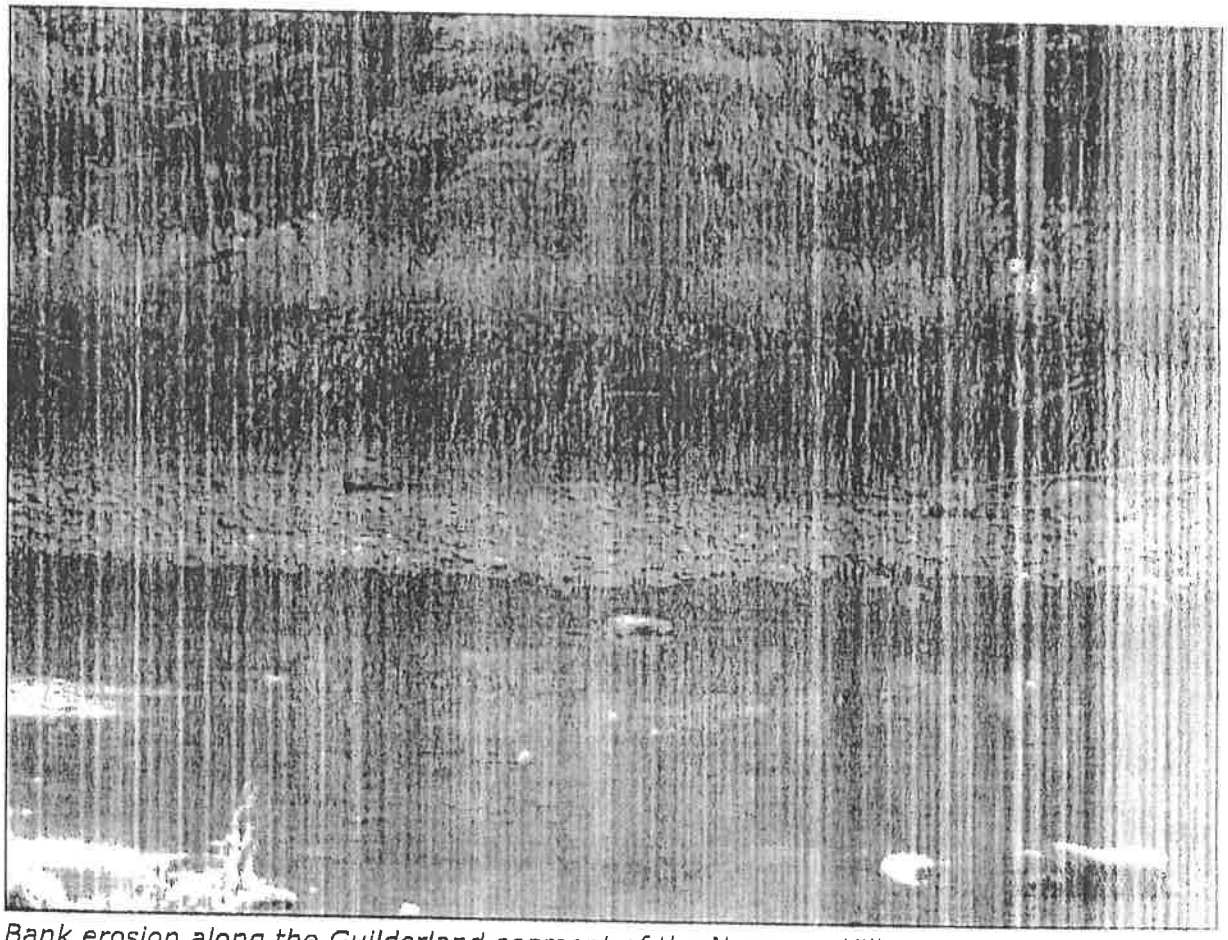
[6] *Protection and Improvement of the Normans Kill Technical Memorandum* July, 1977, City of Albany Dept. of Urban Redevelopment Comprehensive Planning Assistance

[7] Robert Dineen, Geology and Land Uses in the Pine Bush: Albany County, New York, NYS Museum and Science Service, p. 18, 1975

[8] Albany County EMC, City of Albany: Natural Resources Inventory (1975) and Town of Bethlehem: Natural Resources Inventory (1976)

The 1978 Albany County Land Use & Development Plan describes a Normans Kill Valley Planning area from the mouth of the creek to Route 85 (New Scotland Road) which includes the Normans Kill gorge. The plan recommends the creation of special districts for flood plain zoning as well as preservation and protection of this environmentally sensitive area through the use of land conservation practices. In support of these goals, the plan also calls for consideration of this area for development of low intensity recreational opportunities.

In conclusion, previous and current studies of the creek and riparian corridor show that the soil and slopes create sensitive areas in need of careful planning to protect people and the environment and that the stream, while partially degraded, still supports a healthy diversity of plants and animals, and the scenic corridor offers the opportunity to enhance recreational opportunities for county residents.



Bank erosion along the Guilderland segment of the Normans Kill

Normans Kill Farm

The City of Albany purchased the Normans Kill Farm in 1980 to preserve open space along the creek and as a recreational area. The farm is located in the City of Albany just east of the Delaware Avenue Bridge over the Normans Kill. The property remains a working farm as well as the headquarters of Albany's mounted police. There is also a trail on the property, which begins along the bank of the Normans Kill, traverses an open field, and follows along a power line through Albany's municipal golf course ending at the golf course clubhouse/ restaurant. The complete trail is approximately 2.5 miles one way.

Normans Kill Farm, Albany

Other amenities at the farm include a large dog park, community gardens, and picnic facilities. Also of interest is a Whipple cast & wrought iron bowstring truss bridge located on the access road to the farm. This historic bridge was designed by architect Squire Whipple and initially constructed in Syracuse in 1867. It was dismantled and rebuilt at the Normans Kill Farm in Albany around 1900 and is now listed on the National Register of Historic Places.

Normans Kill Preserve

The Normans Kill Preserve, owned and managed by the Mohawk Hudson Land Conservancy, consists of 46 acres donated by Albany County in 2005. The preserve spans both sides of the 2000 Delaware Avenue landslide and includes over a half-mile of frontage on the Normans Kill directly across from City of Albany's Normans Kill Farm.

Currently, a trail has been developed over 12 acres on the eastern end of the property. This trail runs through a wooded area, including a portion along the top of the stream bank offering views of the Normans Kill and the Normans Kill Farm. Future plans include extending the trail across a ravine to link it with adjacent parcels. The trail can be accessed from Delaware Avenue in the Town of Bethlehem just before the Normans Kill Bridge. Visitors may park in the Bagdon Environmental parking lot.

In addition, the Conservancy has recently obtained a Hudson River Valley Greenway grant to rehabilitate the Normansville bridge to provide a linkage to the City of Albany trail system.

Albany Pocket Park

A small park was added on the Albany-Bethlehem line as part of the City's New Scotland Road reconstruction. There is a gazebo and streamside picnic area here and although steep, it may be used as a take-out location for paddlers.

Map 9

Parks, Preserves and Recreational Opportunities

SEE MAP BOOK

Nott Road Park

There are five soccer and five softball fields at Nott Road Park. The park borders the Normans Kill and offers the opportunity for development of a stream-side trail with future linkage potential to trails at nearby Tawasentha Park and Western Turnpike Golf Course.

The surrounding land is relatively flat so there might also be an opportunity to develop a boat launch and fishing access here.

Tawasentha Town Park

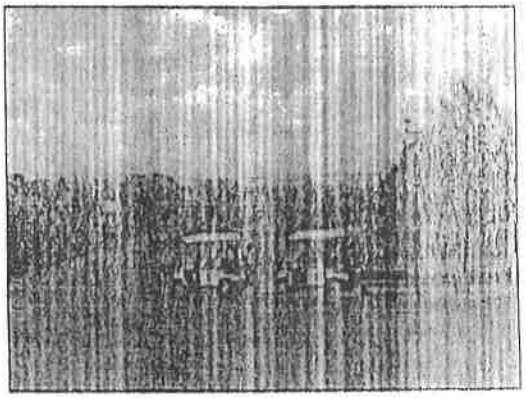
Tawasentha Park is a 192-acre park in the Town of Guilderland, bisected by the Normans Kill. There is a summer recreation area with a swimming pool, picnic areas, playing fields, and a streamside trail on the east side and a winter recreation area and community gardens located on the west side, which offer opportunities for hiking, picnicking, cross country skiing, and wildlife observation. Three short loop trails which can be connected for a longer hike wind through open meadow, wetland, and deciduous forest with scenic vistas of the Normans Kill valley. The meadows in the wildlife management area are managed to retain early successional characteristics that provide favorable habitat for grassland birds, as well as for deer, fox, woodchuck, and a variety of small mammals.

The trails also offer a view of the privately-owned historic Battle of the Normans Kill site. It is believed that the battle that occurred here during the Revolutionary War was of great importance, and a vital factor in securing victory at the Battle of Saratoga five weeks later thus paving the way for American independence. The Town is currently exploring possibilities for obtaining ownership of this historic creek-side parcel.

The Town has recently announced plans to extend the trail system to connect areas of Tawasentha Park and the Town-owned Western Turnpike Golf Course. Combined, these areas would provide 600 acres for outdoor recreation including summer and winter trails for hiking, biking, skiing, and snowshoeing. Construction of a pedestrian bridge over the Normans Kill to connect the Winter Recreation Center to trails at Western Turnpike is planned in 2007.

Other Recreation

There are several private and public creek-side golf courses in the corridor. Albany Country Club in Guilderland and Normanside Country Club in Bethlehem are privately owned and use of the facilities is restricted to members. The municipally-owned courses in Guilderland and Albany, however, offer a variety of recreational opportunities to the public. The Town of Guilderland acquired the stream-side Western Turnpike golf course in 2002. In addition to golf, which is open to the public,



Capital Hills at Albany Golf Course

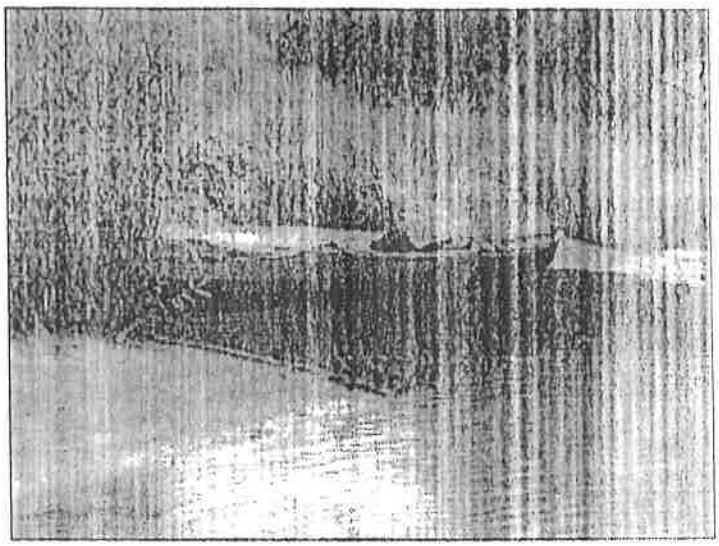
residents can also enjoy banquet and picnic facilities, hiking trails, cross country skiing trails, and ice skating. Capital Hills at Albany allows public access when the golf course is closed, which allows for hiking, cross country skiing, snow shoeing, and sledding.

Fishing

The abundant fisheries resources of the Normans Kill have the potential to provide significant opportunities for recreational fishing; however, there are no designated fishing access points or fishing areas in the study area. As such, fishing is concentrated at existing public parks and near road crossings, which limit accessibility.

Fishing appears to be popular below the Watervliet Reservoir at the dam, in addition to public access areas on the bank at Tawasentha Park, Western Turnpike Golf Course, and Nott Road Park in Guilderland;and at Capital Hills Golf Course and Normans Kill Farm in Albany. Species most commonly taken from the upper Normans Kill include, perch, pickerel, bullhead, largemouth and smallmouth bass, American eel, bluegill, pumpkinseed, and common carp. However, there is essentially no public access to tidal portions of the creek other than at the bridge crossing on Route 32, thereby limiting fishing opportunities in the Normans Kill for striped bass and American shad.

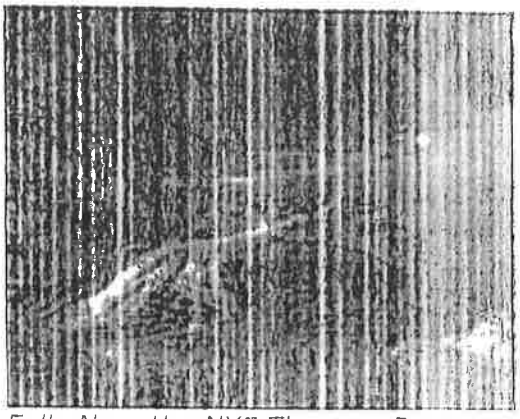
Boating



Kayak launch site below Route 155 overpass.

It is possible to canoe or kayak long stretches of the Normans Kill at certain times of the year, depending on the water level. Generally, the best time is in the spring or following periods of significant rainfall. The difficulty level is rated up to class II, which is suitable for novice paddlers. Potential problems include downed trees and strainers. There are a few possible spots to put in: at the road crossings of Fuller station Road just below the Watervliet Reservoir; Grant Hill Road; and State Route 155. However, even at these sites, there are no formal boat launches along the creek. Access at either the Johnston Road or the Krumkill Road crossing is difficult and not recommended. While the upper portion of the creek includes class II rapids and impressive black rock cliffs, putting in above State Route 155 is potentially dangerous and not recommended since it requires passage though a National Guard Rifle Range. Headquarters must be contacted in advance to obtain permission to float this portion and to ensure boater's safety.

One possible canoe or kayak route is to put in at the State Route 155 crossing in the Town of Guilderland and take out at the pocket park just before the State Route 85 crossing in Albany. This 9-mile trip is an easy paddle along a steam course which meanders through forest and farmland. The trip can be extended to take out at the parking area at the Normans Kill Farm just past Capital Hills at Albany and the Normanside golf courses. Care must be taken not to go beyond this point as there are steep drop-offs and falls just beyond the Delaware Avenue bridge.



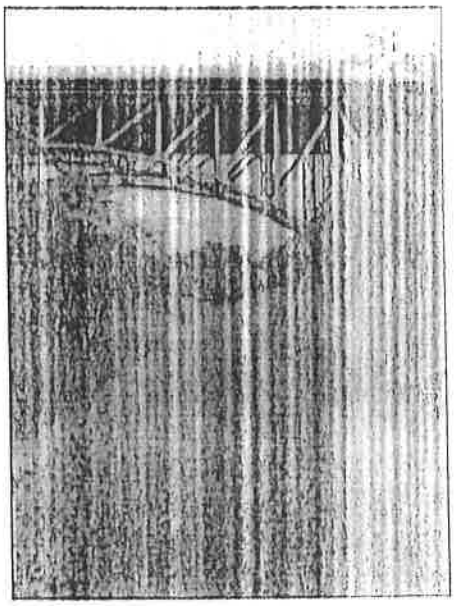
Falls Near the NYS Thruway Bridge

Future Recreation Opportunities

The Town of Guilderland Pathways Master Plan prepared by the Guilderland Pathways Committee in 2005 looked at, among other things, opportunities for enhancing pedestrian and bicycle trails and open space linkages. Their recommendations included several options for improving access to and enjoyment of the Normans Kill corridor and for linking this area to other trail systems and natural areas. One option was to link Guilderland Center to the inactive rail corridor via the French's Mill pedestrian bridge. They also envisioned a path connecting Nott Road Park and the French's Mill Bridge along the Normans Kill. This path would connect the Dam area, the Battle of the Normans Kill historic site, Tawasentha Park, and Nott Road Park, and could be extended to Grant Hill Road. While much of the land along the creek is publicly owned, there are areas where an easement would need to be obtained from private landowners. For new developments along the creek, the Town encourages developers to include an area of dedicated open space in the riparian zone with the hope that, in the future, additional trail connections can be made. The complete master plan is available on the Town's website at http://www.guilderland.org/.

The Town of Bethlehem is also interested in developing a trail system along the Normans Kill. A recently completed plan recommends a trail along the Normans Kill beginning near New Scotland Avenue crossing. The Town may be able to work with the City of Albany to connect trails at the golf course and Normans Kill Farm.

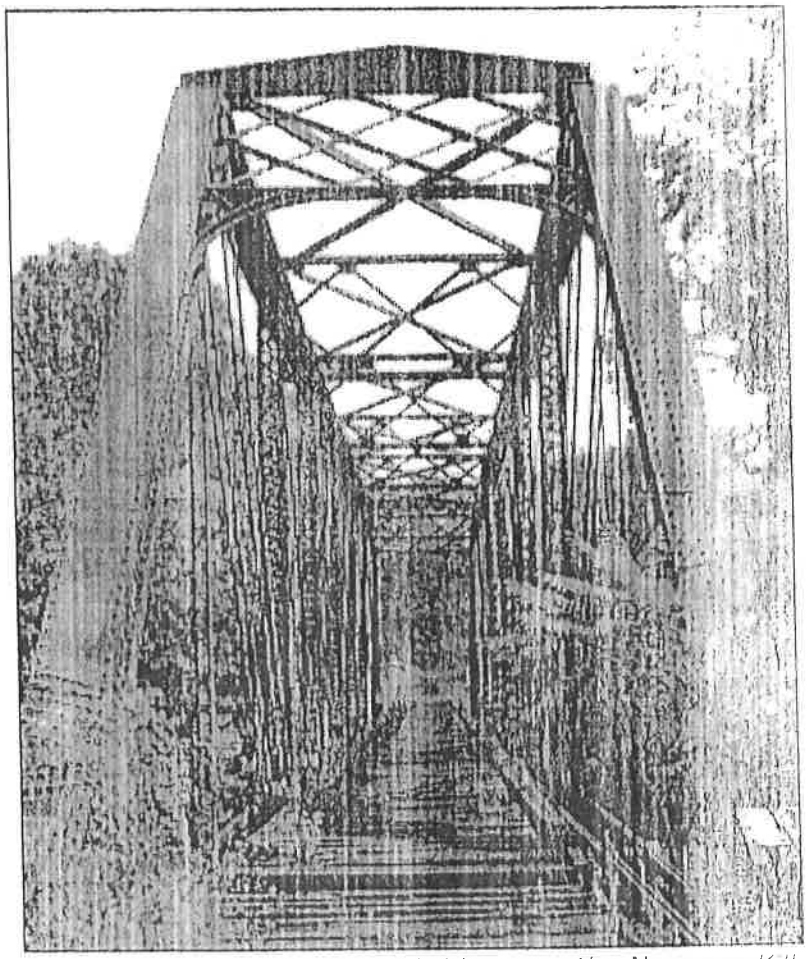
Of further interest regarding trail systems connecting to the Normans Kill is Albany County's proposal to develop a rail trail along a 9.1-mile segment of abandoned rail corridor. The County is currently in the process of negotiating the purchase of the corridor from Canadian Pacific Railway for that purpose. The abandoned segment begins just east of South



Abandoned Rail Corridor, Albany

Pearl Street in the City of Albany, extends through a busy commercial area in the hamlet of Delmar, and continues through a mixture of residential, commercial, agricultural, and undeveloped areas in the hamlet of Slingerlands and the Town of New Scotland before terminating in the Village of Voorheesville. The acquisition phase of this initiative will involve funding assistance from the Scenic Hudson Land Trust, Inc., as well as a park acquisition grant from the New York State Office of Parks, Recreation and Historic Preservation.

The proposed rail trail will be developed along the entire length of the abandoned rail line, which runs parallel and adjacent to the Normans Kill in the City of Albany for a distance of approximately 1.2 miles. This segment offers spectacular views of falls and rapids over exposed rock formations near the Route 9W bridge. The rail line also crosses the Normans Kill at the Bethlehem Town line via a unique 188-foot iron and steel truss bridge constructed in 1884, which will be incorporated into the rail trail. The County has had preliminary conversations with the City of Albany and Mohawk Hudson Land Conservancy regarding opportunities to connect the rail trail to other trails in the Normans Kill corridor. In addition to these internal linkages, the east terminus of the rail trail will connect to the existing Mohawk-Hudson Bike-Hike Trail, eventually yielding approximately 50 miles of continuous trail northward along the Hudson River to Cohoes and westward along the Mohawk River to Rotterdam Junction in Schenectady County.



Iron and steel truss railroad bridge over the Normans Kill

Recommendations for Recreational Use

In order to preserve open space and important habitats; minimize erosion, landslides, and flooding; and protect water quality, it appears that the best use of the Normans Kill corridor is for passive recreation such as canoeing and kayaking, hiking, fishing, and wildlife observation. Unstable soils and slopes and floodplain areas along the creek suggest it would not be an ideal site for a bike path, except along the abandoned D&H rail line in the Albany and Bethlehem portions of the corridor.

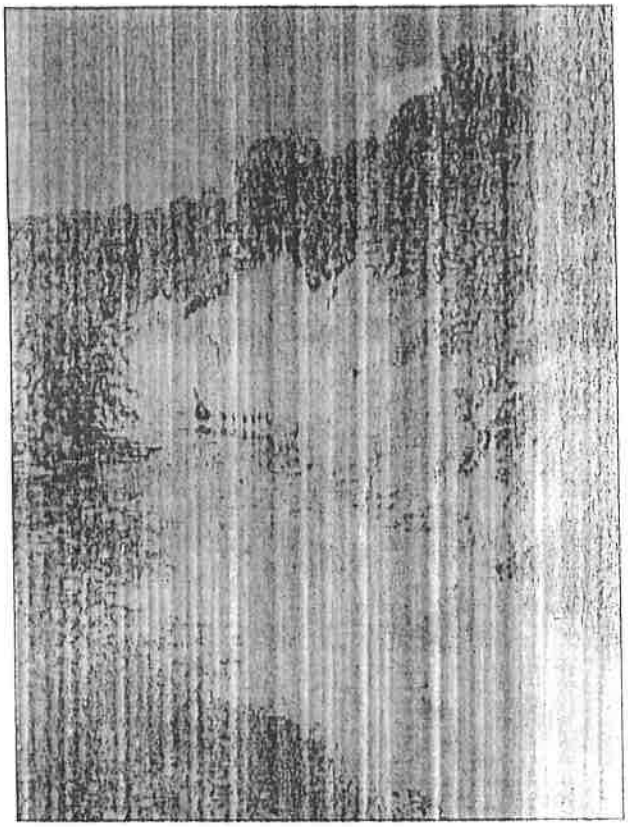
Based on mapping of the existing trail network within the study area it appears that there may be several opportunities to link parks and trails throughout the corridor. One such possibility is a connection to the nearby Albany Pine Bush Preserve. While the Preserve is outside of the corridor study area, it is within the Normans Kill watershed and represents an important regional natural, cultural, and recreational resource area. There is an extensive trail system, and an environmental education center is scheduled to open at the Preserve in the summer of 2007. The Pine Bush trail network is located less than 1 mile from the entrance to Western Turnpike golf course, which borders the Normans Kill, so it may be possible to link the two recreation areas either by road or by a combination of roads and trails through surrounding open space if the parcels can be purchased or easements can be obtained.

Another important opportunity for trail linkages involves the proposed rail trail along the abandoned D&H rail corridor. Following development of the rail trail, connections may be made to the Normans Kill Farm and Normans Kill Preserve via Rockefeller Road and Old Delaware Avenue. The Rockefeller Road Bridge over the rail line that connects Albany and Bethlehem is currently closed to vehicles; however, if it is safe for pedestrian traffic, this approximately 0.7-mile route would easily connect these two recreation areas. Another bridge that crosses the Normans Kill on Old Delaware Avenue is scheduled to be restored so that it is safe for pedestrians. This bridge would afford connections between the Normans Kill Preserve on the Bethlehem side of the creek and the trail along the Normans Kill on the Albany side, which extends into the Normans Kill Farm.

A newly released pedestrian study prepared for the Town of Bethlehem recommends developing a trail along the Normans Kill in the New Scotland Avenue area that may be linked to existing trails in the City of Albany. Such a trail would likely require acquisition in fee or obtaining an easement on privately-owned land and cooperating with the City of Albany. Challenges in this area related to trail development include periodic flooding, heavy vegetative growth, and areas of steep slope.

There is a large undeveloped and relatively inaccessible stretch of the Normans Kill beyond New Scotland Avenue, to Johnson Road. This stretch would link the major existing recreation areas in Guilderland and Albany. The challenges with developing a trail in this area are that the majority of the parcels are privately owned and there are several sections with severely steep slopes.

Another major obstacle in developing a continuous land or water trail along the Normans Kill is the National Guard Rifle Range just north of the Grant Hill Road Bridge. This area is used as a shooting range for the National Guard and State Police. Apparently it is possible to call ahead to get permission to paddle through the area; however, public access is generally not permitted. As long as the National Guard continues to operate a rifle range, opportunities for public use in this portion of the corridor are limited. If a change of use occurred, it would allow for a continuous water trail along the entire stream from the Watervliet Reservoir in Guilderland to the Delaware Avenue Bridge in Bethlehem. It could also open an impressive gorge section of the stream to the public and enhance the opportunity to link existing recreation areas along the corridor.



Shale Banks at Grant Hill Road Crossing, Guilderland

There is also a need to improve public access for fishing and for canoes and kayaks. While there are currently certain locations that are popularly used for these purposes, there are no formal public fishing access or launch sites for canoes and kayaks. In the case of launches, establishment of put-in and take-out sites would help boaters safely access the stream without trespassing on private property or degrading bank conditions. Possible sites include the crossing at Frenchs Mill Road, Tawasentha Park, and Western Turnpike Golf Course. It is important to note that a trip beginning from these locations would require passage through the rifle range area. Downstream of the rifle range, ideal locations for fishing and boat launching and take-out include Nott Road Park and State Farm Road crossing in Guilderland, the pocket park at the New Scotland Avenue crossing in Albany, and at Normans Kill Farm trail head parking just before the Delaware Avenue Bridge.

Another recreational deficiency relates to limited access to the tidal portion of the stream. There may be a suitable area to establish fishing access in the tidal area near the South Pearl Street (State Route 32) crossing. New York State Department of Environmental Conservation has established a procedure for acquiring public fishing rights and can work with groups to navigate this process.

In order to work toward these recommendations and examine the potential for trail connections, boating and fishing access, and habitat protection in the corridor, formation of a Normans Kill Watershed Council should be encouraged and facilitated. This council should consist of interested residents and agency stakeholders such as those listed in the following section.

Stakeholders and Contacts

There are several municipal and not-for-profit groups in Albany County that may be interested in working together to educate the public about the value of stream corridors and how to protect them and to encourage conservation efforts and enhance recreational opportunities in the Normans Kill corridor. Below is a listing of groups and organizations along with a brief description of their interest and involvement in the Normans Kill corridor.

Audubon Society of the Capital Region-http://www.capitalregionaudubon.org Established in 1969 as a chapter of the National Audubon Society, Capital Region Audubon aims to protect and conserve birds and wildlife habitat, building a culture of conservation through advocacy and education. Contact the President, at president@capitalregionaudubon.org.

NYS Department of Environmental Conservation, Hudson River Estuary Program - http://www.dec.state.ny.us/website/hudson/hrep.html The Hudson River Estuary Program is a regional partnership designed to protect, conserve, restore, and enhance the Hudson River estuary using grants, community planning, and biodiversity studies.

NYS Department of Environmental Conservation, Region 4, Fisheries - http://www.dec.state.ny.us/website/dfwmr/fish/fishmail.html

NYS Department of State Coastal Resources Division - http://nyswaterfronts.com/index.asp The Department of State has designated the tidal portion of the Normans Kill as a Significant Coastal Fish and Wildlife Habitat. As such, a habitat map and narrative was created that provides site-specific information, including a description of the habitat, its fish and wildlife values, and an impact assessment.

City of Albany - http://www.albanyny.org/

Town of Bethlehem - http://www.townofbethlehem.org/

Town of Guilderland – http://www.guilderland.org

Town of New Scotland - http://www.townofnewscotland.com/

Mohawk Hudson Land Conservancy - http://www.mohawkhudson.org The Conservancy, founded by area residents in 1992, is dedicated to the protection and stewardship of natural, cultural, and scenic areas in and around their region. They have recently acquired land along the Normans Kill in the Town of Bethlehem and have begun establishing trails, which they hope to extend and connect to other trail systems in the future.

Albany County Department of Economic Development, Conservation, and Planning / Office of Natural Resources - http://www.albanycounty.com This Department studies the planning, economic development, and conservation needs of Albany County and conducts specialized research and investigation regarding the planning, management, and conservation of the County's natural resources.

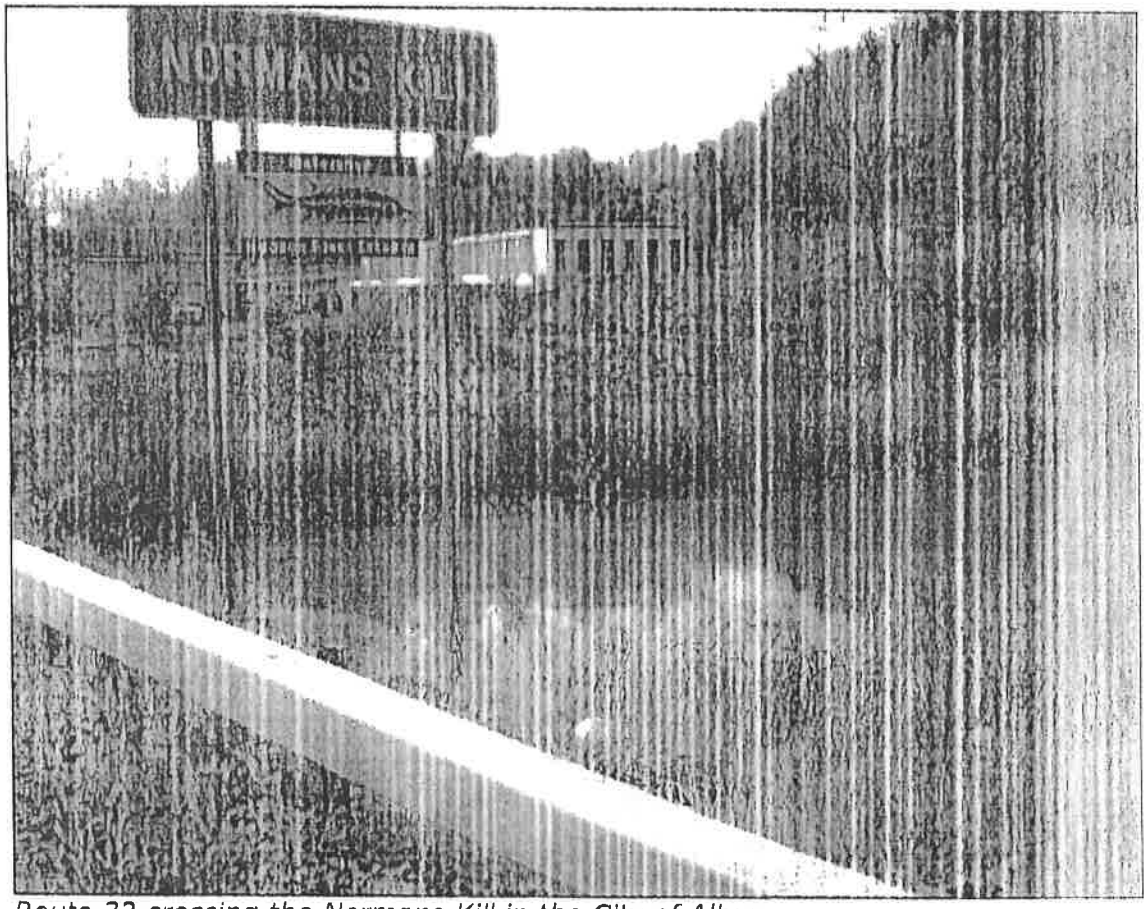
Albany County Water Quality Coordinating Committee - http://www.albanywater.org The Albany County Water Quality Coordinating Committee (ACWQCC), formed in 1991, is comprised of individuals, non-governmental organizations, and governmental agencies, who are all stakeholders in the quest to protect & enhance the quality of Albany County's surface and sub-surface waters. The Committee focuses its efforts on non-point source pollution prevention and protection of the county's water bodies and water supplies. The Committee also serves as a clearinghouse for water quality information, a funding source for small water quality improvement projects, and a forum where stakeholders can collaborate on projects and activities that protect and enhance the quality of the county's water resources. The committee considers the lower Normans Kill to be a high priority for targeted efforts to improve water quality.

United States Geologic Survey - http://ny.water.usgs.gov Phone: (518) 285-5600 The U.S. Geological Survey (USGS) collects, monitors, analyzes, and provides scientific understanding about natural resource conditions, issues, and problems. USGS currently has a monitoring station at the Normans Kill Farm where they are monitoring velocity and water level and plan to analyze the effects of this tributary on the Hudson River.

Albany Pine Bush Preserve Commission - http://www.albanypinebush.org The Albany Pine Bush Preserve Commission was created by the NYS Legislature in 1988 to protect and manage the unique and endangered natural communities and species of the Albany Pine Bush for ecological, recreational, and educational benefits. While the preserve does not fall within the corridor study area, most of the preserve land is within the Normans Kill watershed. In addition, sections of the Pine Bush Preserve trail system are close to the corridor and offer possibilities for trail extensions and connections.

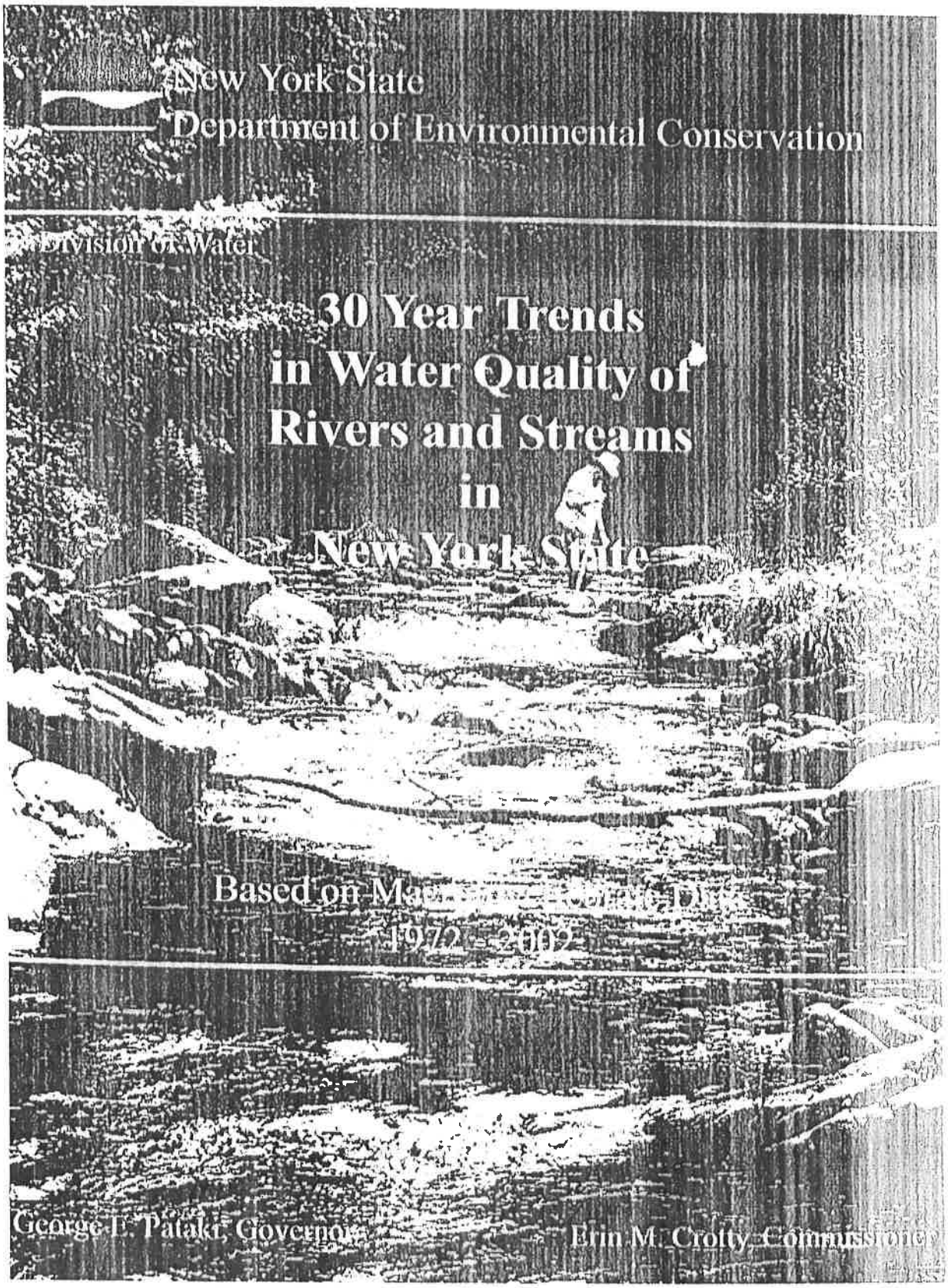
Delaware Avenue Neighborhood Association (DANA)
http://www.delawareneighborhood.com/ The Delaware Avenue Neighborhood includes the area of the Normans Kill Farm. Members of DANA have been active in historic preservation and education related to the Normans Kill Farm.

Appendices



Route 32 crossing the Normans Kill in the City of Albany

EXHIBIT "P"


New York State
Department of Environmental Conservation
Division of Water
30 Year Trends
in Water Quality of
Rivers and Streams
in
New York State
Based on Ma
1972 - 2002
George E. Pataki, Governor
Erin M. Crotty, Commissioner

Normans Kill, Reserv to Hunger Kill (1311-0002) Impacted Seg

Waterbody Location Information

Revised: 12/29/99

Water Index No: H-221- 4 (portion 2) **Drain Basin:** Lower Hudson River
Hydro Unit Code: 02020006/030 **Str Class:** B
Waterbody Type: River **Flow Cat:** Low **Reg/County:** 4/Albany Co. (1)
Waterbody Size: 5.0 Miles **Quad Map:** VOORHEESVILLE (K-25-1)
Seg Description: from Watervliet Reservoir to Hunger Kill (Trib -8)

Water Quality Problem/Issue Information

(CAPS indicate PRIMARY Impair/Poll/Source)

Use Impairment(s)	Severity	Problem Documentation
AQUATIC LIFE	Impaired	Known

Type of Pollutant(s)
Known: WATER LEVEL/FLOW
Suspected: - - -
Possible: - - -

Source(s) of Pollutant(s)
Known: HYDRO/HABITAT MODIF.
Suspected: - - -
Possible: - - -

Resolution/Management Information

Lead Agency/Office: DOW/Reg4 **Resolution Potential:** Medium
Issue Resolvability: 1 (Needs Verification/Study (see STATUS))
Verification Status: 4 (Source Identified, Strategy Needed)
TMDL/303d Status: 2c (TMDL Unlikely (Other Control Actions More Appropriate))

Further Details

Aquatic life support including fish populations in this portion of the Normans Kill below the Watervliet Reservoir is impaired as a result of hydrologic modification. Specifically, no water is released from the reservoir to the creek during dry weather, a regular summertime occurrence, causing the creek to go dry. In light of the increasing growth in the surrounding areas, water demands on the reservoir are expected to increase. (DEC/DOW, Region 4, 1996)

A 1993 biological (macroinvertebrate) survey found slightly impacted conditions in this reach. (Normans Kill Biological Assessment Report, Novak et al, DEC/DOW, BWAR, January 1994) These conditions were confirmed by sampling in 1997 and 1998. (DEC/DOW, BWAR, SBU, December 1999)

Watervliet Reservoir (1311-0001) Impacted Seg

Waterbody Location Information

Revised: 10/06/99

Water Index No: H-221-4-P270
Hydro Unit Code: 02020006/030 **Str Class:** A
Waterbody Type: Lake(R)
Waterbody Size: 403.3 Acres
Seg Description: entire reservoir

Drain Basin: Lower Hudson River
Reg/County: 4/Albany Co. (1)
Quad Map: VOORHEESVILLE (K-25-1)

Water Quality Problem/Issue Information

(CAPS indicate PRIMARY Impair/Poll/Source)

Use Impairment(s)	Severity	Problem Documentation
WATER SUPPLY	Stressed	Suspected
Aquatic Life	Stressed	Suspected
Aesthetics	Stressed	Suspected

Type of Pollutant(s)
Known: AESTHETICS (algal blooms, vegetation)
Suspected: Nutrients, Silt/sediment, Oxygen Demand
Possible: - - -

Source(s) of Pollutant(s)
Known: - - -
Suspected: CONSTRUCTION (resid/comm development), Municipal (Altamont WWTP), Private System (Thatcher St.Pk.), Storm Sewers
Possible: Agriculture

Resolution/Management Information

Lead Agency/Office: DOW/Reg4
Resolution Potential: High
Issue Resolvability: 1 (Needs Verification/Study (see STATUS))
Verification Status: 2 (Problem Verified, Cause Unknown)
TMDL/303d Status: 1 (Problem Identified, But Insufficient Pollutant/Source Data)

Further Details

Various uses of the Watervliet Reservoir, including water supply, recreation, fishery and aesthetics are limited by occasional algal blooms and excessive aquatic weed growth. Water chestnuts proliferate to the point that they need to be harvested on a regular basis. Low dissolved oxygen and high turbidity that may restrict the fishery have also been noted. Suspected sources of nutrient and other pollutant loads include upstream sewage treatment plant discharges from the Village of Altamont and Thatcher State Park plants. Urban runoff from various residential and commercial development projects in the watershed may also affect water quality in the reservoir. Storm sewers in an industrial park discharge into Black Creek (Trib -1-1), a trib to the Bozen Kill and the reservoir. Some agriculture activity still exists in the watershed but it is not extensive. (DEC/DEW, Region 4, 1996)

Normans Kill, HungerKill to mouth (1311-0010) Need Verific

Waterbody Location Information

Revised: 10/05/99

Water Index No: H-221- 4 (portion 1)
Hydro Unit Code: 02020006/030 **Str Class:** SeeBlw
Waterbody Type: River **Flow Cat:** Med.
Waterbody Size: 12.0 Miles
Seg Description: from Hunger Kill (Trib -8) to mouth

Drain Basin: Lower Hudson River
Reg/County: 4/Albany Co. (1)
Quad Map: ALBANY (K-25-2)...

Water Quality Problem/Issue Information

(CAPS indicate PRIMARY Impair/Poll/Source)

Use Impairment(s)	Severity	Problem Documentation
AQUATIC LIFE	Stressed	Possible
Aesthetics	Stressed	Suspected

Type of Pollutant(s)
Known: - - -
Suspected: SILT/SEDIMENT, Nutrients
Possible: Unknown Toxicity

Source(s) of Pollutant(s)
Known: - - -
Suspected: URBAN RUNOFF, Construction (resid/comm development)
Possible: Comb. Sewer Overflow

Resolution/Management Information

Lead Agency/Office: DOW/Reg4
Issue Resolvability: 1 (Needs Verification/Study (see STATUS))
Verification Status: 1 (Waterbody Nominated, Problem Not Verified)
TMDL/303d Status: 0

Resolution Potential: Medium

Further Details

The fishery and aesthetics in the lower Normans Kill may be affected by considerable residential and commercial development in the watershed. Silt/sediment and nutrients from urban, lawn and golf course runoff are potential sources. The creek runs quite turbid at times. (DEC/DOW, Region 4, 1996)

Biological (macroinvertebrate) sampling was conducted along the main stem of the Normans Kill and its larger tributaries in August 1993. Multiple locations exhibited some slight impacts, but the character of the stream (slow moving water, upstream reservoir influences) make rapid biological assessment less reliable. Nonetheless, no significant water quality problems were noted. Several small municipal WWTPs discharge to the creek and its tribs, and various nonpoint sources may affect the creek. CSO discharges have also been reported by regional staff. The unknown toxic pollutants cited refer to inputs detected in some of the tributaries. (Normans Kill Biological Stream Assessment Report, Bode et al, January 1994)

Stream classification of the Normans Kill is Class B from the Watervliet Reservoir to the Delaware Avenue bridge in Normansville, and Class C from there to the mouth.

Normans Kill

The overall assessment of water quality for the Normans Kill is slightly impacted. Four mainstem sites were sampled from Westmere to Albany in 1993, and determined to be slightly impacted. Nonpoint source nutrient enrichment and siltation are the primary stressors. Macroinvertebrate sampling at the downstream site in 1991, 1992, 1997, and 1998 also showed similar impacts.

LOWER HUDSON RIVER DRAINAGE BASIN SAMPLING SITES, 1972-2002

STATION	LOCATION	YEAR SAMPLED
NORMANS KILL (NORM)		
04	Westmere, above State Farm Rd bridge	93
05	Voorheesville, below Normans Kill Rd	93
09	Albany, Albany Municipal Golf Course; opp 14th hole	93
10	Delmar, above Delaware Ave bridge	91 92 93 97 98 02
NORTH CREEK (NORC)		
01	Mellenville, below Rte 217 bridge	02
NORTH LAKE OUTLET (NRTH)		
01	North Lake Campground, 15 m above STP discharge	90
02	North Lake Campground, 15 m below STP discharge	90
03	North Lake Campground, 150 m below STP discharge	90
04	North Lake Campground, 300 m below STP discharge	90
NORTH PETERS KILL (NPET)		
01	Whitfield, below Canyon Lake Rd bridge	02
ONESQUETHAW CREEK (ONES)		
02	below Clarksville, above Rt. 32 bridge	98
03	below Clarksville, above Onesquethaw Creek Rd. bridge	98
04	Spawn Hollow; Hollyhock Santuary off Rarick Rd.;above Audubon parking lot	98
05	South Bethlehem, below Rt. 53 bridge	84 87 98
PATROON CREEK (PATS)		
04	Albany, above I-90 pond, Central Ave.	94 99 00
05A	Albany, below Tivoli Lake	91
06	Albany, Pleasant Street	93 94 97 98 99 00 02
07	Albany, at mouth	91
PEACH LAKE OUTLET (PEAC)		
01	Brewster, above Cobb Rd. bridge	00 01 02
PEEKSKILL HOLLOW (PEEK)		
01	Van Cortlandtville, below Pump House Rd. bridge	98
PETERS KILL (PETK)		
01	St. Josen, above Rock Hill Rd bridge	02
PHILIPSE BROOK (PHLP)		
01	Garrison, below Rte 9D bridge	02
PLATTE KILL (PKIL) (Ulster County)		
01	Jenkinstown, above Rte 208 bridge	02
PLATTE KILL (PLAK) (Sullivan County)		
01	Burlingham, below CR 61	02

ASSESSMENTS OF WATER QUALITY OF STREAMS IN THE LOWER HUDSON RIVER DRAINAGE BASIN, BASED ON MACROINVERTEBRATE COMMUNITIES

Site/Reach	Water Quality Assessment	Change from 1992
Muddy Brook, Towners	moderately impacted	no prior data
Muitzes Kill, Castleton	slightly impacted	no prior data
Muscoot River, Baldwin Place	slightly impacted	no prior data
Muscoot River, Yorktown	moderately impacted	no prior data
Normans Kill, Westmere	slightly impacted	no prior data
Normans Kill, Voorheesville	slightly impacted	no prior data
Normans Kill, Albany, Albany Municipal Golf Course	slightly impacted	no prior data
Normans Kill, Delmar, Delaware Ave.	slightly impacted	no change
North Creek, Mellenville	slightly impacted	no prior data
North Peters Kill, Whitfield	non-impacted	no prior data
Onesquethaw Creek, below Clarksville, above Rt. 32	non-impacted	no prior data
Onesquethaw Creek, below Clarksville, above Onesquethaw Creek Rd.	slightly impacted	no prior data
Onesquethaw Creek, Spawn Hollow;	slightly impacted	no prior data
Onesquethaw Creek, South Bethlehem	slightly impacted	**DECLINED**
Patroon Creek, Albany, above I-90 pond	moderately impacted	no prior data
Patroon Creek, Albany, Pleasant St	slightly impacted	no prior data
Peach Lake Outlet, Brewster	moderately impacted	no prior data
Peekskill Hollow, Van Cortlandtville	slightly impacted	no prior data
Peters Kill, St. Josen	slightly impacted	no prior data
Philipse Brook, Garrison	slightly impacted	no prior data
Platte Kill, Jenkinstown	non-impacted	no prior data
Platte Kill, Burlingham	non-impacted	no prior data
Plattekill Creek, Mt. Marion	non-impacted	no prior data
Plum Brook, Lake Lincolndale	slightly impacted	no prior data
Plum Brook, Lincolndale	slightly impacted	no prior data
Pocantico River, Sleepy Hollow Manor	moderately impacted	no prior data
Pochuck Creek, Newport	non-impacted	no prior data
Poesten Kill, East Poestenkill, at SR 40 bridge	non-impacted	**IMPROVED**
Poesten Kill, East Poestenkill, intersection of Co Rt 40 & 44	non-impacted	no prior data
Poesten Kill, Barberville	non-impacted	no change

B - Soils

Soil code	% SLOPE	% CLAY (top 2 layers)	DRAINAGE	RECREATIONAL LIMITATION	TRAIL EROSION HAZARD
Ad	N/A	----	VP	severe	yes
Ae	N/A	20-60	P	severe	yes
AnA	0-3	8-35	SP	severe	yes
AnB	3-8	8-35	SP	severe	yes
AsF	25-75	8-18	MW-SX	severe	yes
Br	0-2	3-16	VP	severe	
BuA	0-3	15-35	SP	severe	yes
BuB	3-8	15-35	SP	severe	yes
BuC	8-15	15-35	SP	severe	yes
CeA	0-3	6-15	MW	moderate-severe	
CeB	3-8	6-15	MW	moderate-severe	
ChA	0-3	6-18	SX-W	slight-severe	
ChB	3-8	6-18	SX-W	slight-severe	
ChC	8-15	6-18	SX-W	slight-severe	
ChD	15-25	6-18	SX-W	moderate-severe	
CkB	3-8	6-18	SX-W	slight-severe	
ClA	0-3	1-3	MW	moderate-severe	
ClB	3-8	1-3	MW	moderate-severe	
CoB	3-8	1-2	SX-W	slight-moderate	
CoC	8-15	1-2	SX-W	slight-severe	
CoD	15-25	1-	SX-W	moderate-severe	
CoE	25-50	1-2	SX-W	severe	
Cs	0-3	1-3	SP	severe	
Du	N/A	N/A	N/A	N/A	
ElA	0-3	2-8	MW	moderate	
ElB	3-35	2-8	MW	moderate	
EnA	0-3	2-10	MW	moderate	
EnB	0-8	2-10	MW	moderate	
Fx	N/A	----	SP-VP	----	
Gr	0-2	0-14	P-VP	severe	
Ha	0-3	5-18	W	slight-severe	
Ha	0-3	5-18	W	slight-severe	
HnA	0-3	18-60	SP	severe	yes
HnB	3-8	18-60	SP	severe	yes
HuB	3-8	20-60	MW	moderate-severe	yes
HuC	8-15	20-60	MW	moderate-severe	yes
HuD	15-25	20-60	MW	severe	yes
HuE	25-45	20-60	MW	severe	yes
In	0-3	10-35	P	severe	yes
LoC	8-15	8-18	W	slight-severe	
LoD	15-25	8-18	W	moderate-severe	
Ma	0-3	25-60	P-VP	severe	
MbB	3-8	6-18	X-W	slight-severe	
MbC	8-15	6-18	X-W	slight-severe	
MbD	15-25	6-18	X-W	moderate-severe	
MbE	25-35	6-18	X-W	Severe	
Mh	N/A	----	VP	N/A	
NaB	3-8	1-10	SX	slight-severe	
NaC	3-15	1-10	SX	slight-severe	
NrC	8-15	1-10	SX	slight-severe	
NuB	3-8	10-35	MW	moderate-severe	yes

Soil code	% SLOPE	% CLAY (top 2 layers)	DRAINAGE	RECREATIONAL LIMITATION	TRAIL EROSION HAZARD
NuC	8-15	10-35	MW	moderate-severe	yes
NuD	15-25	10-35	MW	severe	yes
NuE	25-35	10-35	MW	severe	yes
Pm	N/A	----	----	N/A	
Ra	0-3	3-16	SP-P	severe	yes
RhA	0-3	15-60	SP	severe	yes
RhB	3-8	15-60	SP	severe	yes
RkA	0-3	1-10	W	slight	
RkB	3-8	1-10	W	slight-moderate	
RkC	8-15	1-10	W	slight-severe	
ScA	0-3	2-15	MW	moderate	
ScB	3-8	2-15	MW	moderate	Yes
Sh	N/A	2-8	SP-P	severe	
St	N/A	1-10	SP	severe	
SuA	0-3	2-7	MW	slight-moderate	
SuB	3-8	2-7	MW	slight-moderate	
Te	Nearly level	5-18	MW-SP	moderate-severe	yes
To	Nearly level	5-18	W	slight-moderate	
Ud	Variable	-----	X-W	N/A	
Uf	Level-sloping	-----	X-W	N/A	
Ug	Level-sloping	-----	X-SP	N/A	
Uh	Level-sloping	-----	X-SP	N/A	
Uk	Level-sloping	-----	X-SP	N/A	
UnA	0-3	2-18	W	slight	
UnB	3-8	2-18	W	slight-moderate	yes
UnC	8-15	2-18	W	moderate-severe	yes
UnD	15-25	2-18	W	Severe	yes
Ur	0-15	----	impervious	N/A	
Ut	Level-sloping	----	----	N/A	
W	N/A	N/A	N/A	N/A	
Wa	Nearly level	10-17	SP	moderate-severe	
Wo	0-3	15-35	P-VP	severe	

Drainage classifications

X – excessively drained
SX -somewhat excessively drained
W – well drained
MW – moderately well drained
SP – somewhat poorly drained
P – poorly drained
VP – very poorly drained

C - Biodiversity

C-1 Field Findings

Observations recorded while walking the stream bank summer, 2006

South Pearl St. - Rockefeller Rd.

Plants and Trees	Birds	Fish	Amphibians /Reptiles	Mammals
Ostrich Fern, Lady Fern, Sensitive fern, ebony spleenwort, marginal wood fern grey dogwood, may apple, hickory, raspberry, honey suckle, wild mint, northern red oak, red maple, white oak, white pine,	Spotted sandpiper, great blue heron, Immature bald eagle, robin, catbird, goldfinch, downy woodpecker (see NYS Breeding Bird Atlas records)	None recorded	None recorded	Chipmunk, grey squirrel

Watervliet Reservoir to Tawasentha Park

Plants and Trees	Birds	Fish	Amphibians /Reptiles	Mammals
Water lily, broadleaf arrowhead, oak, sliver maple, gray dogwood, black cherry, hop hornbeam, basswood, American beech, shagbark hickory, sycamore, white ash, witch hazel, buckhorn, white pine, hemlock, eastern cottonwood, gray birch	Great Blue Heron (see NYS Breeding Bird Atlas records)	Largemouth bass, bluegill sunfish, crayfish	Green Frog, bull frog, painted turtle	Chipmunk, gray squirrel, white-tailed deer, beaver

New York State
Department of Environmental Conservation

Division of Water

Biological assessment of tributaries of the Lower Hudson River

January, 2001

GEORGE E. PATAKI, *Governor*

JOHN P. CAHILL, *Commissioner*

STREAM SITE:	Normans Kill Station 10
LOCATION:	Delmar, NY, Route 443 bridge
DATE:	1 Oct 1998
SAMPLE TYPE:	Kick sample
SUBSAMPLE:	100 individuals

MOLLUSCA			
GASTROPODA	Physidae	Physella sp.	2
PELECYPODA	Sphaeriidae	Sphaerium sp.	6
ARTHROPODA			
CRUSTACEA			
AMPHIPODA	Gammaridae	Gammarus sp.	18
INSECTA			
EPHEMEROPTERA	Baetidae	Baetis intercalaris	4
COLEOPTERA	Psephenidae	Ectopria sp.	1
	Elmidae	Stenelmis crenata	2
TRICHOPTERA	Hydropsychidae	Cheumatopsyche sp.	11
		Hydropsyche morosa	2
		Hydropsyche scalaris	2
		Hydropsyche sparna	1
	Leptoceridae	Oecetis avara	1
LEPIDOPTERA	Pyralidae	Petrophila sp.	1
DIPTERA	Simuliidae	Simulium vittatum	10
	Chironomidae	Thienemannimyia gr. spp .	20
		Cricotopus bicinctus	2
		Nanocladius rectinervis	1
		Orthocladius nr. dentifer	1
		Parakiefferiella triquetra gr.	1
		Paratrichocladius sp.	2
		Microtendipes pedellus gr.	1
		Phaenopsectra dyari?	2
		Polypedilum convictum	4
		Pseudochironomus sp.	1
		Tanytarsus glabrescens gr.	3
		Tanytarsus guerlus gr.	1

SPECIES RICHNESS	25 (good)
BIOTIC INDEX	5.86 (good)
EPT RICHNESS	6 (good)
MODEL AFFINITY	47 (poor)
ASSESSMENT	slightly impacted

DESCRIPTION

The indices denoted slight impact at this site, although the predominantly bedrock substrate in part controls the fauna. Impact Source Determination showed nutrient enrichment, siltation, and possible municipal/industrial sources.

Department of Environmental Conservation

Division of Water

Biological Stream Assessment

Normans Kill

1993 Survey

New York State Department of Environmental Conservation
MARIO M. CUOMO, *Governor* THOMAS C. JORLING, *Commissioner*

MACROINVERTEBRATE SAMPLE

STREAM/SITE: Normans Kill, Station 4
LOCATION: Westmere, State Farm Road
DATE: 9 August 1993
SAMPLE TYPE: Kick sample
SUBSAMPLE: 100 individuals

OLIGOCHAETA	Tubificidae	Undet. Tubificid w/o cap setae	2
MOLLUSCA			
GASTROPODA	Physidae	Physa sp.	2
ARTHROPODA			
INSECTA			
EPHEMEROPTERA	Baetidae	Baetis flavistriga	2
COLEOPTERA	Elmidae	Stenelmis bicarinata	10
		Stenelmis crenata	4
TRICHOPTERA	Hydropsychidae	Hydropsyche bronta	15
		Hydropsyche morosa	1
		Hydropsyche sparna	3
DIPTERA	Tipulidae	Antocha sp.	3
	Rhagionidae	Atherix sp.	3
	Empididae	Hemerodromia sp.	2
	Chironomidae	Thienemannimyia gr. spp.	2
		Cricotopus bicinctus	5
		Cricotopus tremulus gr.	16
		Cricotopus trifascia gr.	17
		Eukiefferiella devonica gr.	1
		Parametriocnemus lundbecki	1
		Tvetenia vitracies	6
		Polypedilum convictum	2
		Polypedilum illinoense	1
		Cladotanytarsus sp.	2

SPECIES RICHNESS: 21
BIOTIC INDEX: 5.93
EPT VALUE: 4
MODEL AFFINITY: 54
ASSESSMENT: slightly impacted

DESCRIPTION: At this location, all major clean water organism groups were present in the field evaluation, but the fauna appeared to be influenced by enrichment and an abundant midge species, Cricotopus tremulus, is often associated with areas of toxic input. Mayfly abundance in the 100-organism subsample was low. The site was assessed as slightly impacted.

MACROINVERTEBRATE SAMPLE

STREAM/SITE:	Normans Kill, Station 5
LOCATION:	Voorheesville, Normans Kill Rd.
DATE:	9 August 1993
SAMPLE TYPE:	Kick sample
SUBSAMPLE:	100 individuals

PLATYHELMINTHES	Turbellaria	Undet. Turbellaria	1
OLIGOCHAETA	Naididae	Ophidonais serpentina	1
MOLLUSCA			
GASTROPODA	Ancylidae	Ferrissia rivularis	1
ARTHROPODA			
CRUSTACEA			
ISOPODA	Asellidae	Caecidotea sp.	1
AMPHIPODA	Gammaridae	Gammarus sp.	2
INSECTA			
EPHEMEROPTERA	Baetidae	Acentrella sp.	1
		Baetis flavistriga	16
		Baetis intercalaris	1
	Heptageniidae	Undetermined Heptageniidae	1
	Ephemerellidae	Serratella deficiens	2
COLEOPTERA	Elmidae	Stenelmis bicarinata	12
		Stenelmis crenata	12
MEGALOPTERA	Sialidae	Sialis sp.	1
TRICHOPTERA	Hydropsychidae	Hydropsyche bronta	12
		Hydropsyche morosa	1
		Hydropsyche scalaris	1
		Hydropsyche slossonae	3
	Hydroptilidae	Hydroptila sp.	2
DIPTERA	Rhagionidae	Atherix sp.	9
	Chironomidae	Thienemannimyia gr. spp.	2
		Potthastia gaedii	1
		Cricotopus trifascia gr.	4
		Cricotopus vierriensis	1
		Parametriocnemus lundbecki	2
		Tvetenia vitracies	8
		Polypedilum convictum	1
		Rheotanytarsus exiguus gr.	1

SPECIES RICHNESS:	27
BIOTIC INDEX:	4.90
EPT VALUE:	10
MODEL AFFINITY:	72
ASSESSMENT:	slightly impacted

DESCRIPTION: Two subsamples were taken from the sample collected at this site, since the first was inconclusive in determining whether to assess water quality as non- or slightly impacted. Indices from both subsamples were averaged, according to Quality Assurance protocols (Bode et. al., 1991); the averaged values resulted in an assessment of slightly impacted. However, all measured indices showed improvement from the upstream site at State Farm Rd. Cricotopus tremulus, a midge associated with toxic inputs, and present at the upstream location, was not present in either 100-organism subsample at this site. Numbers of mayfly individuals, as well as EPT value increased at this location.

MACROINVERTEBRATE SAMPLE

STREAM/SITE:	Normans Kill, Station 9
LOCATION:	Albany, Albany Municipal Golf Course
DATE:	9 August 1993
SAMPLE TYPE:	Kick sample
SUBSAMPLE:	100 individuals

OLIGOCHAETA	Tubificidae	Undet. Tubificid. w/o cap. setae	1
MOLLUSCA			
PELECYPODA	Sphaeriidae	Sphaerium sp.	17
GASTROPODA	Physidae	Physa sp.	2
ARTHROPODA			
CRUSTACEA			
AMPHIPODA	Gammaridae	Gammarus sp.	1
INSECTA			
EPHEMEROPTERA	Baetidae	Baetis intercalaris	7
	Caenidae	Caenis sp.	1
COLEOPTERA	Hydrophilidae	Berosus sp.	1
	Elmidae	Optioservus trivittatus	2
		Stenelmis concinna	6
TRICHOPTERA	Hydropsychidae	Cheumatopsyche sp.	8
		Hydropsyche betteni	9
		Hydropsyche morosa	3
		Hydropsyche scalaris	5
DIPTERA	Simuliidae	Simulium fibrinflatum	11
	Empididae	Hemerodromia sp.	2
	Chironomidae	Thienemannimyia gr. spp.	1
		Cricotopus bicinctus	2
		Dicrotendipes neomodestus	1
		Polypedilum convictum	6
		Polypedilum scalaenum	1
		Rheotanytarsus exiguus gr.	9
		Tanytarsus glabrescens gr.	4

SPECIES RICHNESS:	22
BIOTIC INDEX:	5.74
EPT VALUE:	6
MODEL AFFINITY:	58
ASSESSMENT:	slightly impacted

DESCRIPTION: The substrate at this site was mostly bedrock; the kick sample was taken in small pockets of rubble. In the field, the fauna appeared balanced, and the field assessment was of non-impacted water quality. However, richness, EPT value, and percent model affinity were lower than would be expected for a non-impacted site; the overall water quality assessment assigned was slightly impacted.

MACROINVERTEBRATE SAMPLE

STREAM/SITE:	Normans Kill, Station 10
LOCATION:	Albany, Delaware Avenue bridge
DATE:	9 August 1993
SAMPLE TYPE:	Kick sample
SUBSAMPLE:	100 individuals

ANNELIDA			
OLIGOCHAETA	Tubificidae	Limnodrilus hoffmeisteri	9
HIRUDINEA	Glossiphoniidae	Undetermined Hirudinea	1
MOLLUSCA			
PELECYPODA	Sphaeriidae	Sphaerium sp.	16
GASTROPODA	Physidae	Physa sp.	4
ARTHROPODA			
CRUSTACEA			
AMPHIPODA	Gammaridae	Gammarus sp.	10
INSECTA			
EPHEMEROPTERA	Baetidae	Acentrella sp.	1
		Baetis intercalaris	5
	Ephemerellidae	Serratella deficiens	1
COLEOPTERA	Elmidae	Stenelmis crenata	5
TRICHOPTERA	Hydropsychidae	Cheumatopsyche sp.	7
		Hydropsyche morosa	2
		Hydropsyche scalaris	3
		Macrostemum zebratum	2
	Hydroptilidae	Hydroptila sp.	1
	Leptoceridae	Oecetis avara	1
	Helicopsychidae	Helicopsyche borealis	3
DIPTERA	Simuliidae	Simulium fibrinflatum	9
	Empididae	Hemerodromia sp.	1
	Chironomidae	Thienemannimyia gr. spp.	4
		Cricotopus bicinctus	1
		Chironomus sp.	1
		Dicrotendipes fumidus	1
		Polypedilum convictum	6
		Polypedilum scalaenum	1
		Pseudochironomus sp.	1
		Tribelos atrum	1
		Rheotanytarsus exiguus gr.	1
		Tanytarsus glabrescens gr.	1
		Tanytarsus guerlus gr.	1

SPECIES RICHNESS:	29
BIOTIC INDEX:	6.04
EPT VALUE:	10
MODEL AFFINITY:	56
ASSESSMENT:	slightly impacted

DESCRIPTION: The substrate at this site was similar to that upstream; small pockets of rubble on bedrock were sampled. The field assessment and the overall water quality assessment were both judged to one of slight impact.