

APPENDIX A

**NATIONAL ENVIRONMENTAL
POLICY ACT**

and

OTHER PROJECT COORDINATION



DEPARTMENT OF THE ARMY
PHILADELPHIA DISTRICT, CORPS OF ENGINEERS
WANAMAKER BUILDING, 100 PENN SQUARE EAST
PHILADELPHIA, PENNSYLVANIA 19107-3390

REPLY TO
ATTENTION OF

Environmental Resources Branch

JUL 19 2004

Mr. Lou Cattune
NJDEP Land Use Regulation
P.O. Box 439
Trenton, New Jersey 08625-0439

Dear Mr. Cattune:

The purpose of this letter is to request a pre-application site meeting for an environmental restoration project at Grover's Mill Pond (Figures 1 and 2) located on Big Bear Creek, a tributary of the Millstone River, which eventually flows into the Raritan River. Grover's Mill Pond is a 37-acre man-made lake created by an earthen dam across Big Bear Creek. The present earthen dam is 400 feet long and 11 feet high and forms the base for Clarksville Road. The water level in the pond, surrounding wetlands and outflow from the pond are controlled by a concrete spillway and sluice gate. The pond was originally impounded in Colonial times to power a gristmill and the dam was upgraded in 1931. The ownership of the earthen dam is shared by West Windsor Township and Mercer County. Currently, the county and township are rehabilitating the spillway of the dam.

Over the years the pond has exhibited eutrophic tendencies and has silted to the point where average water depth is between one and four feet. During the summer months, the pond depth can be as shallow as a few inches and algae blooms are common. The pond becomes anoxic during this time period. In addition, there is little refuge habitat for local fishery populations due to the shallowness of the water and the high water temperatures during the summer months and the ice and colder water temperatures during the winter season.

The goal of the Grover's Mill Pond Restoration Project is to restore fisheries habitat at the degraded freshwater pond. The restoration goal will be accomplished through sediment removal from the existing pond to create better water depths for local fishery populations. The preferred alternative includes de-watering of the pond to allow excavation of the sediments to occur in the dry. The estimated quantity of material to be excavated will be 80,000 cubic yards. The material will be disposed at an upland Township owned site adjacent to Grover's Mill Pond (Figure 3). In addition, habitat structures such as porcupine cribs, random rock rubble humps, and gravel-spawning beds will be placed into the pond to further enhance the existing fishery habitat. Placement of an aeration system into the pond is being considered but is dependent on funding availability. The project is authorized under Section 206 of the Water Resources Development Act of 1996.

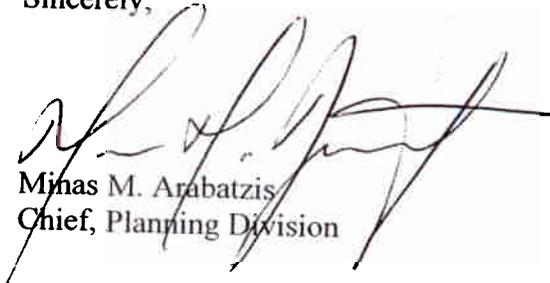
The fishery and other aquatic species would benefit from the increased available amount of oxygen in the lower portions of the water column that, during a substantial portion of the year were not formerly suitable for life processes. Excavation will be conducted in such a way to create multiple pools of 8 to 10 feet in depth (target goal of 25% of the bottom), which will create refuge areas for fish during the summer and winter and an increase in circulation within and through the pond. In addition, excavation will be completed in a manner to insure that depth is not uniform and that contours are created to provide habitat diversity to fishery populations. Anoxic conditions may still occur in the summer months, due to organic inputs from the watershed, but excavation will push the anoxic area further down in the water column and provide more oxygenated habitat area. In addition, cover structures will be placed throughout the pond to create cover areas for foraging and resting. Target species for the project will be warmwater species that include: largemouth bass (*Micropterus salmoides*), chain pickerel (*Esox niger*), bluegill sunfish (*Lepomis macrochirus*), and brown bullheads (*Ameiurus nebulosus*). The New Jersey Department of Environmental Protection (NJDEP), Bureau of Freshwater Fisheries, has stated that if this project is completed, they will restock the pond with additional largemouth bass. Contributions to the pond food web are likely to be improved and pond community stress is likely to decrease by increasing the amount of habitat available for fish and macroinvertebrates. In addition, an improvement in the fishery population will benefit local wading birds found in the area, such as the great blue heron (*Ardea herodias*).

Recreational fishing opportunities for the public are expected to increase with improved fishery populations in the pond. The community park along the pond also offers opportunities for environmental education signs discussing the importance of habitat to fish. Furthermore, West Windsor Township will be conducting a public education campaign to help improve the water quality of runoff coming into the pond by encouraging vegetated buffer strips around the pond and in the watershed.

The NJDEP, Bureau of Freshwater Fisheries and Philadelphia District Corps representatives have conducted a fishery survey of the pond. A bathymetric survey has also been conducted to characterize the ponds underwater profile. In addition, a draft sediment excavation-sampling plan has been developed to comply with N.J.A.C. 7:26D Residential Direct Contact Soil Cleanup Criteria. Bulk analysis and Synthetic Precipitation Leaching Procedure methodologies will be used to analyze sediments and soils. In order to comply with the NJDEP land Use Regulation Program, a pre-application meeting is requested so all permit requirements can be identified.

Please contact my project biologist, Mr. Gregory Wacik (Gregory.A.Wacik@usace.army.mil) directly at (215) 656-6561 to schedule a site visit. He may also be contacted if you should have any further questions or require additional information. Your cooperation in this matter is appreciated.

Sincerely,



Minas M. Arabatzis
Chief, Planning Division

Enclosures

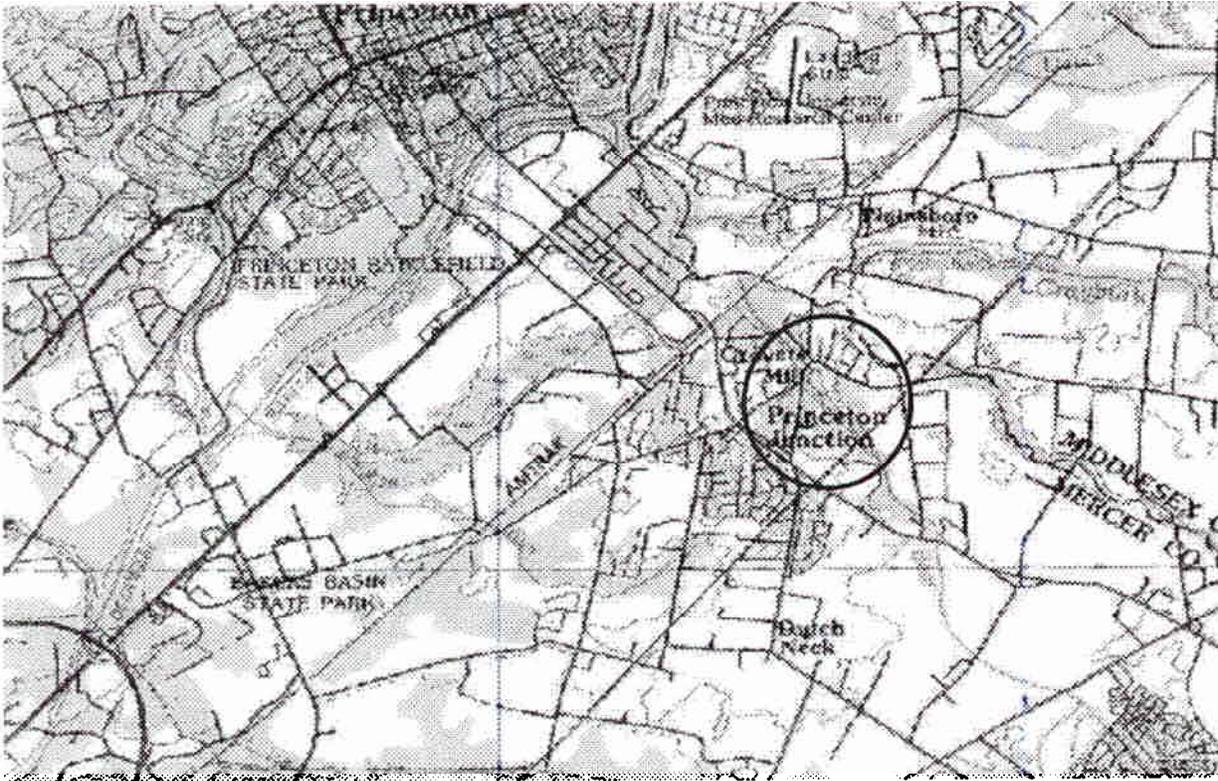


Figure 1. Site Location

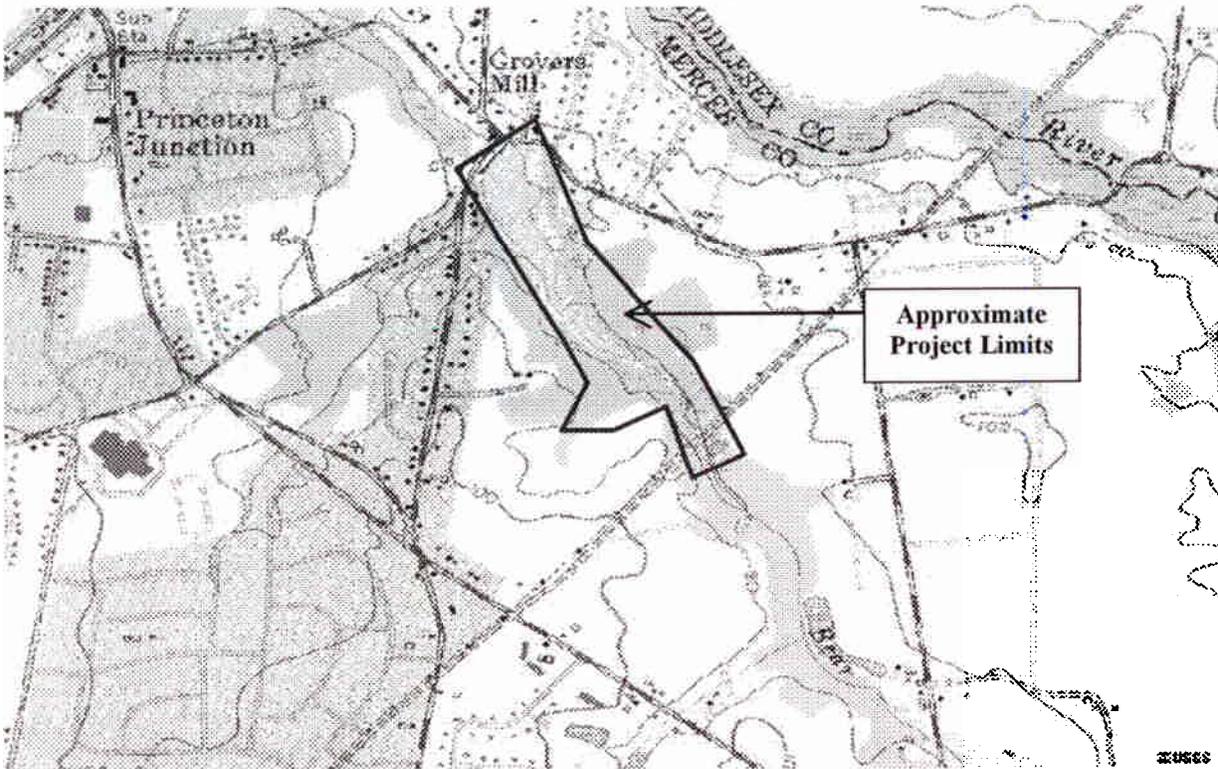


Figure 2. Project Location

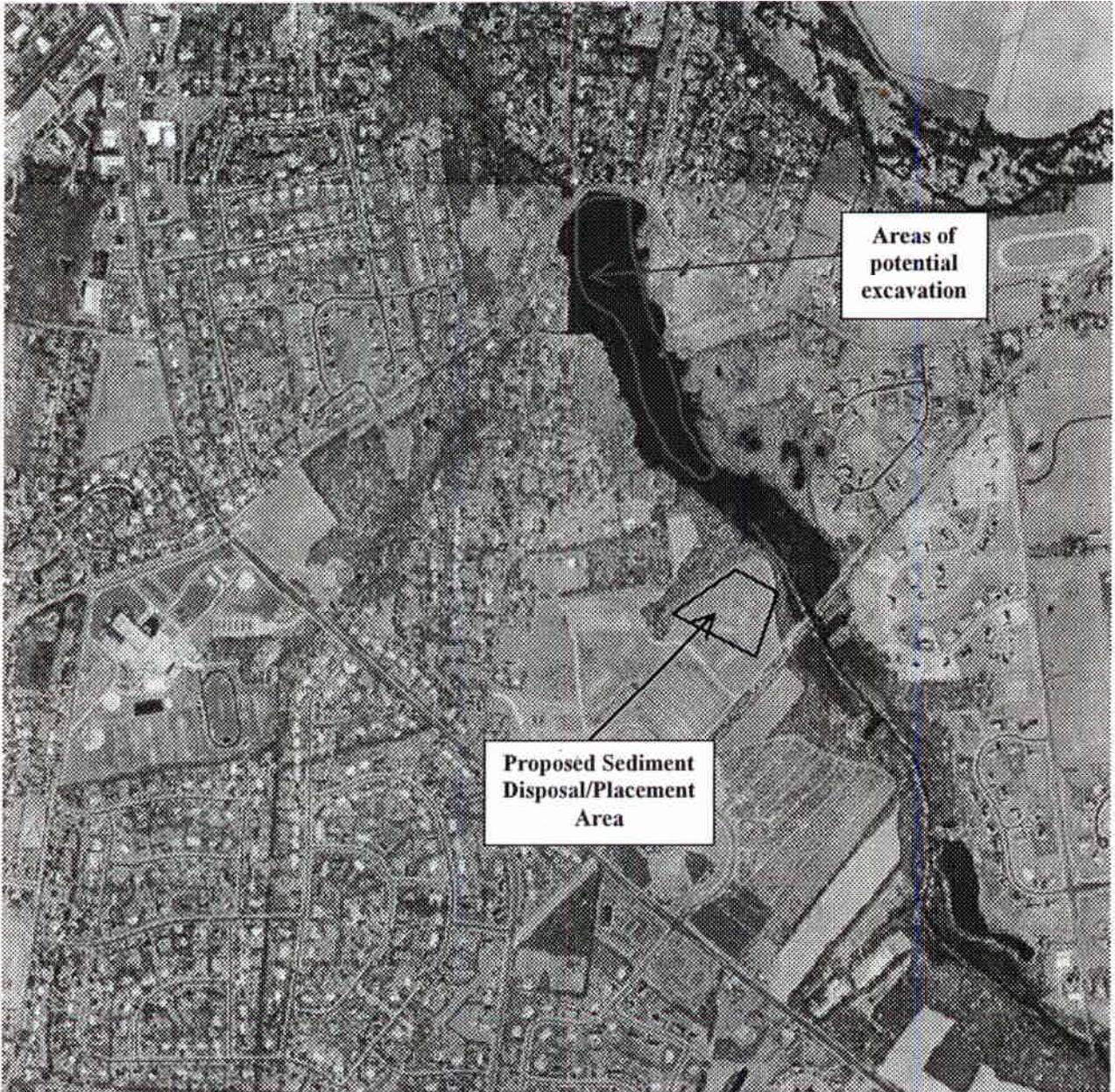


Figure 3. Project and wetland delineation task limits

CENAP-PL-E

15 NOV 2004

Mb/6561

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LULEWICZ

ARABATZIS

DEC 0 3 2004

Environmental Resources Branch

Mr. Lawrence Niles
New Jersey Division of Fish and Wildlife
NJDEP
P.O. Box 394
Lebanon, New Jersey 08333

Dear Mr. Niles:

The Philadelphia District, U.S. Army Corps of Engineers, is preparing an Environmental Assessment (EA) for a proposed environmental restoration project at Grover's Mill Pond (Figures 1 and 2) located on Big Bear Creek, a tributary of the Millstone River, which eventually flows into the Raritan River. The restoration project will be funded under Section 206 (Aquatic Ecosystem Restoration) of the Water Resources Development Act of 1996, as amended. The purpose for this correspondence is to solicit your agency's comments regarding potential environmental effects of the proposed initial plan.

The environmental assessment will be prepared in accordance with National Environmental Policy Act (NEPA) regulations, the Council on Environmental Quality's (CEQ's) regulations for implementing NEPA and *U.S. Army Corps of Engineers Procedures for Implementing NEPA, Engineering Regulation (ER) 200-2-2*. The EA will assess existing environmental, cultural, and socio-economic conditions at the project site and will evaluate the effects of project alternatives on existing resources in the immediate and surrounding areas.

Grover's Mill Pond is a 37-acre man-made lake created by an earthen dam across Big Bear Creek. The present earthen dam is 400 feet long and 11 feet high and forms the base for Clarksville Road. The water level in the pond, surrounding wetlands and outflow from the pond are controlled by a concrete spillway and sluice gate. The pond was originally impounded in Colonial times to power a gristmill and the dam was upgraded in 1931. The ownership of the earthen dam is shared by West Windsor Township and Mercer County. Currently, the county and township are rehabilitating the spillway of the dam.

Over the years the pond has exhibited eutrophic tendencies and has silted to the point that average water depth is between one and four feet. During the summer months, the pond depth can be as shallow as a few inches and algae blooms are common. The pond becomes anoxic during this time period. In addition, there is little refuge habitat for local fishery populations due to the shallowness of the water and the high water temperatures during the summer months and the ice and colder water temperatures during the winter season.

The goal of the Grover's Mill Pond Restoration Project is to restore fisheries habitat at the degraded freshwater pond. The restoration goal will be accomplished through sediment removal from the existing pond to create better water depths for local fishery populations. The preferred alternative includes de-watering at least a portion of the pond to allow excavation of the sediments to occur in the dry. The estimated quantity of material to be excavated will be 80,000 cubic yards. The material will be disposed at an upland Township owned site adjacent to Grover's Mill Pond (Figure 3). In addition, habitat structures such as porcupine cribs, random rock rubble humps, and gravel-spawning beds will be placed into the pond to further enhance the existing fishery habitat. Placement of an aeration system into the pond is being considered but is dependent on funding availability.

The fishery and other aquatic species would benefit from the increased available amount of oxygen in the lower portions of the water column that, during a substantial portion of the year were not formerly suitable for life processes. Excavation will be conducted in such a way to create multiple pools of 8 to 10 feet in depth (target goal of 25% of the bottom), which will create refuge areas for fish during the summer and winter and an increase in circulation within and through the pond. In addition, excavation will be completed in a manner to insure that depth is not uniform and that contours are created to provide habitat diversity to fishery populations. Anoxic conditions may still occur in the summer months, due to organic inputs from the watershed, but excavation will push the anoxic area further down in the water column and provide more oxygenated habitat area. The New Jersey Department of Environmental Protection (NJDEP), Bureau of Freshwater Fisheries, has stated that if this project is completed, they will restock the pond with additional largemouth bass. Contributions to the pond food web are likely to be improved and pond community stress is likely to decrease by increasing the amount of habitat available for fish and macroinvertebrates. In addition, an improvement in the fishery population will benefit local wading birds found in the area. Recreational fishing opportunities for the public are expected to increase with improved fishery populations in the pond.

The NJDEP, Bureau of Freshwater Fisheries and Philadelphia District Corps representatives have conducted a fishery survey of the pond. A bathymetric survey has also been conducted to characterize the pond's underwater profile. In addition, a draft sediment excavation-sampling plan has been developed to comply with N.J.A.C. 7:26D Residential Direct Contact Soil Cleanup Criteria. Bulk analysis and Synthetic Precipitation Leaching Procedure methodologies will be used to analyze sediments and soils.

To assist us in identifying environmental issues that may effect the implementation of this project, please provide written comments concerning interests within your agency's area of responsibility. Specific issues of concern include transportation; infrastructure; cultural

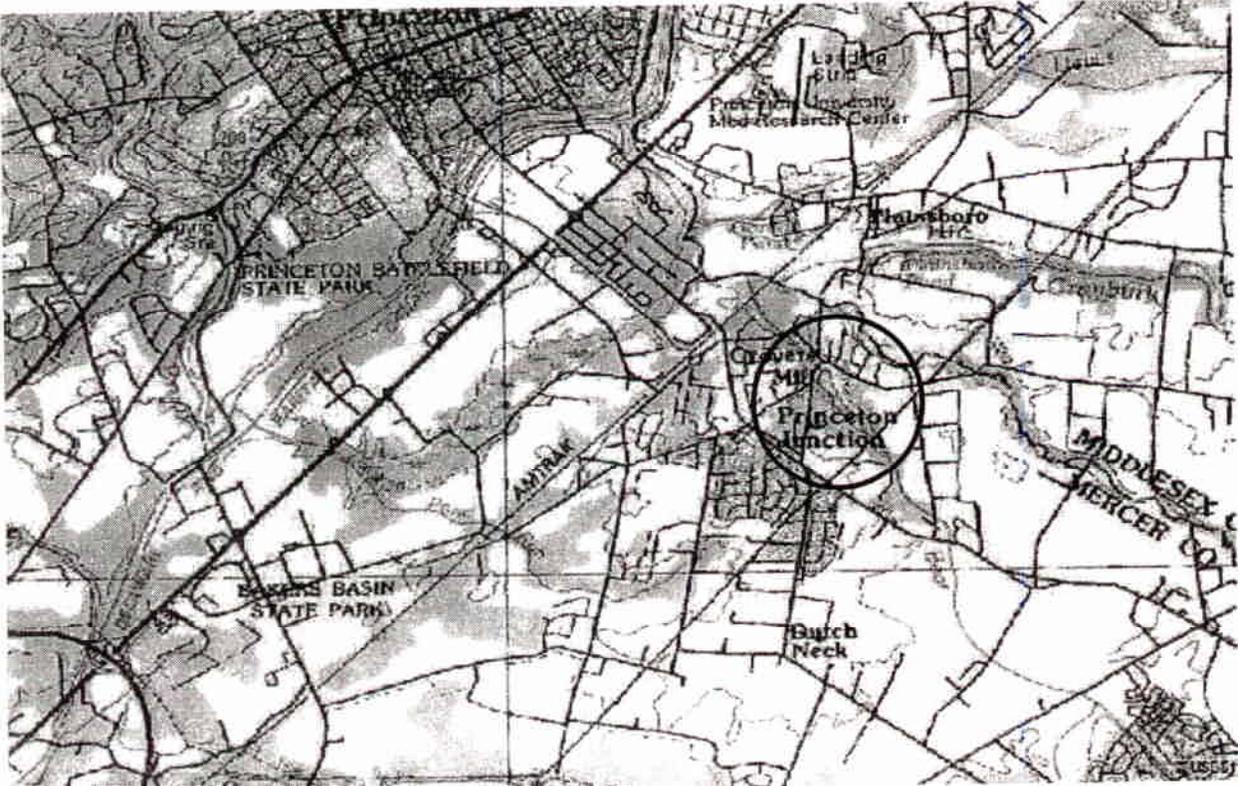


Figure 1. Site Location

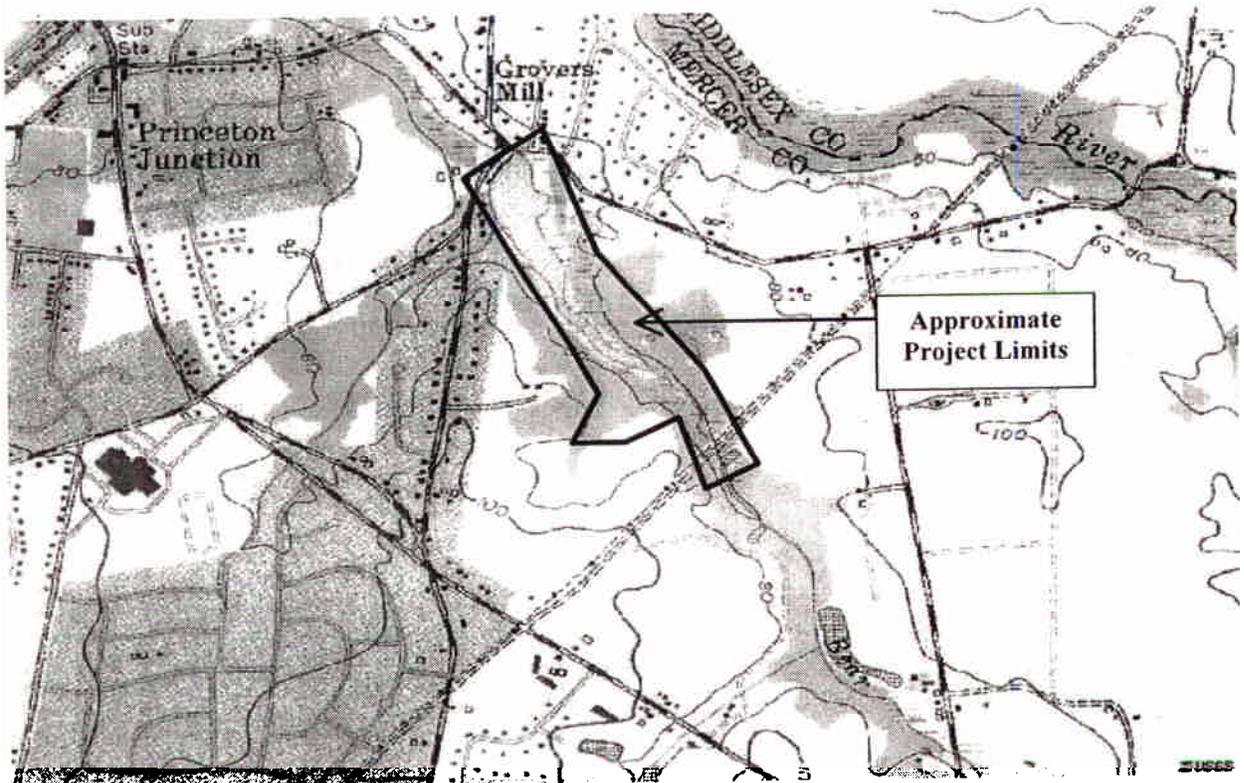


Figure 2. Project Location

resources, including view shed and aesthetic resources; the presence of rare, threatened or endangered species; fish and wildlife resources; jurisdictional wetlands or other critical habitats; wild and scenic rivers; prime and unique farmlands; air and water quality, and /or highly erodible soils at or near the proposed project sites.

Please contact my project biologist, Mr. Gregory Wacik (Gregory.A.Wacik@usace.army.mil) directly at (215) 656-6561 if you should have any further questions or require additional information. Your cooperation in this matter is appreciated.

Sincerely,

Minas M. Arabatzis
Chief, Planning Division

Enclosures

MFR: This is a NEPA coordination letter requesting environmental information from applicable resource agencies for the Grover's Mill Pond Section 206 environmental restoration project.



Figure 3. Project and wetland delineation task limits

Multiple Letters

Mr. Lawrence Niles
New Jersey Division of Fish and Wildlife
NJDEP
P.O. Box 394
Lebanon, New Jersey 08833

Mr. William Brash, Jr.
Mercer County Soil Conservation District
508 Hughes Drives
Hamilton Square, New Jersey 08690

Mr. Mario Paula
Environmental Compliance Division
Environmental Protection Agency
USEPA Region 2
290 Broadway
New York, New York 10007

Mr., John Moyle, P.E.
Dam Safety Section
New Jersey Division of Engineering and Construction
NJDEP
501 East State Street
P.O. Box 419
Trenton, New Jersey 08625

Mr. David Jenkins
Endangered and Non-Game Species
Division of Fish, Game and Wildlife
NJDEP
PO Box 400
501 East State Street, Floor 3
Trenton, New Jersey 08625-0400

Mr. Clifford Day, Supervisor
U.S. Fish and Wildlife Service
927 North Main Street
Building D1
Pleasantville, New Jersey 08232

Office of Natural Lands Management
Natural Heritage Program
P.O. Box 404
Trenton, New Jersey 08625-0404



State of New Jersey

Department of Environmental Protection

Division of Parks and Forestry
Office of Natural Lands Management
Natural Heritage Program
P.O. Box 404
Trenton, NJ 08625-0404
Tel. #609-984-1339
Fax. #609-984-1427

Bradley M. Campbell
Commissioner

Richard J. Codey
Acting Governor

December 8, 2004

Gregory A. Wacik
US Army Corps of Engineers, Philadelphia District
Wanamaker Building, CENAP-PL-E
100 Penn Square East
Philadelphia, PA 19107-3390

Re: Grover's Mill Pond

Dear Mr. Wacik:

Thank you for your data request regarding rare species information for the above referenced project site in West Windsor Township, Mercer County.

Searches of the Natural Heritage Database and the Landscape Project (Version 2) are based on a representation of the boundaries of your project site in our Geographic Information System (GIS). We make every effort to accurately transfer your project bounds from the topographic map(s) submitted with the Request for Data into our Geographic Information System. We do not typically verify that your project bounds are accurate, or check them against other sources.

Neither the Natural Heritage Database nor the Landscape Project has records for occurrences of any rare wildlife species on or within 1/4 mile of the referenced site.

We have also checked the Natural Heritage Database for occurrences of rare plant species or natural communities. The Natural Heritage Data Base does not have any records for rare plants or natural communities on or within 1/4 mile of the site.

Attached is a list of rare species and natural communities that have been documented from Mercer County. If suitable habitat is present at the project site, these species have potential to be present.

Status and rank codes used in the tables and lists are defined in the attached EXPLANATION OF CODES USED IN NATURAL HERITAGE REPORTS.

If you have questions concerning the wildlife records or wildlife species mentioned in this response, we recommend that you visit the interactive I-Map-NJ website at the following URL, <http://www.state.nj.us/dep/gis/imapnj/imapnj.htm> or contact the Division of Fish and Wildlife, Endangered and Nongame Species Program.

PLEASE SEE THE ATTACHED 'CAUTIONS AND RESTRICTIONS ON NHP DATA'.

Thank you for consulting the Natural Heritage Program. The attached invoice details the payment due for processing this data request. Feel free to contact us again regarding any future data requests.

Sincerely,

Herbert A. Lord
Data Request Specialist

cc: Robert J. Cartica
Lawrence Niles
NHP File No. 04-4007435



State of New Jersey

Department of Environmental Protection
Natural and Historic Resources
Office of Engineering & Construction

Richard J. Codey
Acting Governor

Bradley M. Camp
Commissioner

DEC 23 2004

Department of the Army
Philadelphia District, Corps of Engineers
Wanamaker Building, 100 Penn Square East
Philadelphia, PA 19107-3390

Attention: Minas M. Arabatzis
Chief, Planning Division

Subject: Grover's Mill Pond Restoration Project
Grover's Mill Dam, NJDEP Dam File No. 28-16

Dear Mr. Arabatzis:

Thank you for your December 3, 2004 letter which informs our office that the Philadelphia District, Corps of Engineers, is preparing an Environmental Assessment (EA) for a proposed environmental restoration project at the Grover's Mill Pond located on Big Bear Brook, a tributary of the Millstone River, within the Township of West Windsor, Mercer County.

Grover's Mill Pond is impounded and created by the Grover's Mill Dam, which is an earthen dam located across Big Bear Brook, and is owned and operated by both West Windsor Township and Mercer County. Please note that the New Jersey Department of Environmental Protection (NJDEP) considers the Grover's Mill Dam to be a Class II-Significant Hazard Potential dam structure in accordance with the dam classifications as defined within the New Jersey Dam Safety Standards (N.J.A.C. 7:20). In addition, the spillway design storm (SDS) event designated for the Grover's Mill Dam is the 100-year storm frequency flood event. On August 19, 2004, the NJDEP issued Dam Permit No. 1168 to both West Windsor Township and Mercer County for the safety upgrade and rehabilitation of the Grover's Mill Dam in accordance with its current hazard classification and required SDS event.

Upon review of your December 3, 2004 letter, the NJDEP understands that the goal of the Grover's Mill Pond Restoration Project will be accomplished through sediment removal from the existing pond to create better water depths for local fishery populations. The estimated quantity of material to be excavated will be 80,000 cubic yards. Our review of the proposed project has determined that the following issue will need to be addressed:

- The associated increase in storage volume, due to the proposed sediment removal, within the Grover's Mill Pond may have a direct impact on the hazard classification of the Grover's Mill Dam and/or its appropriate spillway design flood (SDF). A downstream hazard classification and SDF

E-Mail Address: DamSafety@dep.state.nj.us

Internet Address: www.state.nj.us/dep/damsafety

Mailing Address: 501 East State Street, P.O. Box 419, Trenton, NJ 08625

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analysis considering the proposed increases in storage volume will need to be evaluated. Should the evaluation determine it appropriate to increase the hazard classification and/or the SDF, this may result in additional requirements including safety upgrades of the dam and spillway structure, emergency action planning and inundation mapping requirements, increased site inspection frequencies, security issues, etc.

Should you have any questions regarding this matter, please do not hesitate to contact Joseph Ruggeri of this office at (609) 984-0859.

Sincerely yours,



John H. Moyle, P.E., Manager
Bureau of Dam Safety and Flood Control

C: James Parvesse, West Windsor Township
Nassef Soliman, P.E. of Parsons Brinckeroff
Mercer County Engineer

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In Reply Refer to:

FP-04/062

United States Department of the Interior

FISH AND WILDLIFE SERVICE

New Jersey Field Office
Ecological Services
927 North Main Street, Building D
Pleasantville, New Jersey 08232
Tel: 609/646 9310
Fax: 609/646 0352
<http://njfieldoffice.fws.gov>



DEC 30 2004

Mr. Minas M. Arabatzis, Chief
Planning Division, Philadelphia District
U.S. Army Corps of Engineers
Environmental Resources Branch
100 Penn Square East
Philadelphia, Pennsylvania 19107

Dear Mr. Arabatzis:

This is in reference to your letter dated December 3, 2004 to the U.S. Fish and Wildlife Service (Service), requesting comments on a proposed project at Grover's Mill Pond in West Windsor Township, Mercer County, New Jersey. The U.S. Army Corps of Engineers (Corps) is proposing to dredge 80,000 cubic yards of material, which would be disposed at an upland site adjacent to the project area.

AUTHORITY

The following comments on the proposed activity have been prepared under the authority of the National Environmental Policy Act of 1969 (83 Stat. 852 as amended; 42 U.S.C. 4321 et seq.) (NEPA), the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) (ESA), and the Migratory Bird Treaty Act of 1918 (40 Stat. 755, as amended; 16 U.S.C. 703-712), and are consistent with the intent of the U.S. Fish and Wildlife Service's Mitigation Policy (Federal Register, Vol. 46, No. 15, Jan. 23, 1981).

FEDERALLY LISTED SPECIES

Except for an occasional transient bald eagle (*Haliaeetus leucocephalus*), no other federally listed or proposed endangered or threatened flora or fauna under Service jurisdiction are known to occur within the vicinity of the project site. If additional information on federally listed species becomes available, or if project plans change, this determination may be reconsidered.

GENERAL COMMENTS

The Environmental Analysis (EA) should provide an overview of natural resource values in the project area, including characterizations of surface water, ground water, wetland, and wildlife resources. The Corps should assess the current sediment loading into the pond in order to determine the long-term probability of success of the proposed project.

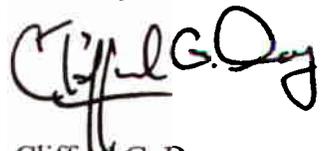
As you know, wetlands provide habitats for a variety of migratory and resident species of fish and wildlife. The Service discourages activities in and affecting wetlands that would unnecessarily damage, degrade, or destroy the values associated with them. Therefore, the Service recommends that the Corps determine how the conversion of existing shallow water habitat at Grover's Mill pond to deep water habitat would affect federal trust resources and local fisheries. The EA should evaluate the short-term and long-term effects on the benthos as a result of the proposed dredging. In addition, the Corps should address potential impacts to forested wetlands adjacent to the proposed disposal site.

As noted above, the Service has no record of federally listed species occurring within, or in the vicinity of, the proposed project area; however, there may be State-listed (endangered and threatened) species at the proposed project site. The Service encourages federal agencies and other planners to consider State-listed endangered, threatened, and sensitive species in project planning. More detailed information on State-listed species can be obtained by contacting the New Jersey Division of Fish and Wildlife:

New Jersey Division of Fish and Wildlife
Endangered and Nongame Species Program
P.O. Box 400
501 East State Street
Trenton, New Jersey 08625-0400
Attn: Larry Niles, Chief

The Service appreciates the opportunity to provide these comments. Once the EA has been completed, please forward a copy of the document to this office for review. Please contact Gian Dodici of my staff at (609) 646-9310 extension 22 should you have any questions regarding these comments or require further assistance on issues regarding fish and wildlife resources related to the subject project, including federally listed threatened or endangered plants or animals.

Sincerely,

A handwritten signature in black ink that reads "Clifford G. Day". The signature is written in a cursive style with a large, stylized "D" at the end.

Clifford G. Day
Supervisor



State of New Jersey

Department of Environmental Protection

Division of Fish and Wildlife

Martin J. McHugh, Director

P.O. Box 400

Trenton, NJ 08625-0400

njfishandwildlife.com

Bradley M. Campbell
Commissioner

Richard J. Codey
Acting Governor

February 8, 2005

Department of the Army
Philadelphia District, Corps of Engineers
Wanamaker Bldg.; 100 Penn Square East
Philadelphia, PA 19107-3390
Attn: Gregory Wacik

RE: Grover's Mill Pond Restoration

Dear Mr. Wacik:

Reference is made to your office's letter of December 3, 2004 to the Division of Fish and Wildlife [DFW] regarding the dredging and restoration project for Grover's Mill Pond located on Bear Brook, West Windsor Township, Mercer County. Specifically, the letter requests fish / wildlife resource information relative to endangered and threatened species as well as other critical wildlife habitats. Your letter, addressed to Dave Jenkins in our Endangered and Nongame Species Program [ENSP], has been forwarded to the DFW's Office of Environmental Review for a coordinated response from all of the division's elements.

As noted in your letter, representatives from the Philadelphia ACOE and our Bureau of Freshwater Fisheries have conducted fish surveys on Grover's Mill Pond. Fisheries data has already been shared. Relative to wildlife resources, Grover's Mill Pond is expected to support breeding populations of Canadian geese, mallards and possibly wood ducks. In addition, the pond serves as a winter roost for thousands of migratory and resident Canadian geese. However, no special dredging precautions are anticipated relative to these resources since waterfowl have the ability to relocate to any number of nearby aquatic sites. If your office requires further information about waterfowl resources, questions should be directed to Ted Nichols [609-628-2103] in our Bureau of Wildlife Management.

A review of faunal endangered and threatened [E/T] species records shows no E/T sitings at or immediately near Grover's Mill Pond. There is, however, a 2003 record for the threatened long-eared owl downstream of the pond near the confluence of Bear Brook and the Millstone River. No impacts to the owl are expected from the dredging / restoration proposal. Landscape Mapping indicates the presence of suitable wet-forest and emergent habitats around the pond perimeter, however, no specific E/T or priority concern species are noted. If more information on E/T species is required, it can be obtained from Amanda Dey [609-259-6962] in our ENSP.

Relative to the project itself, the DFW would be required to comment to the Land Use Regulation Program [LURP] on stream encroachment and freshwater wetland permits for pond dredging. Standard concerns to the LURP on pond dredging projects would include:

- a fisheries timing restriction - for pond lowering from May 1st thru July 31st in order to protect warmwater fish spawning and early development in their nests; a September 1st thru October 31st lowering and dredging schedule would be recommended to minimize impacts to aquatic resources; initial lowering after November 1st thru April 1st is discouraged because of turtle hibernation;

- **a Water Lowering Permit** - to be obtained from the Bureau of Freshwater Fisheries; call: 908-236-2118 for an application; timing constraints, rates of lowering / refilling and fish salvage requirements are found in this permit;
- **a by-pass or diversion channel** - designed to carry incoming stream flows around the work area in order to maintain continuous flow downstream; by-pass or diverted flows must be free of project sedimentation.

As part of the project restoration, our Bureau of Freshwater Fisheries proposes to continue working with the Philadelphia ACOE on in-pond habitat enhancement measures and angler access. As noted in your letter, varying the depth contours in the pond would be a first step in creating habitat diversity, however, the strategic placement of habitat structures [e.g. anchored trees, gravel spawning bars] would greatly supplement the contour work. Further, providing increased access to utilize pond resources [e.g. fishing pier(s)] should also be considered. Shawn Crouse [908-236-2118], regional fisheries biologist, or Lisa Barno [609-292-8642], fisheries chief, can provide continued coordination on these issues.

The DFW acknowledges and supports the dredging and restoration efforts of the Philadelphia ACOE for Grover's Mill Pond; we hope to continue an open dialog and cooperation on the project.

Sincerely,



Andrew Didun, Supervisor
DFW, Office of Environmental Review

c. L. Barno, BFF
S. Crouse, BFF
C. D. Jenkins, ENSP
A. Dey, ENSP
T. Nichols, BWM

Environmental Resources Branch

2000 2 8 2000

Ms. Suzanne Dietrick
Office of Dredging and Sediment Technology
NJDEP
Assistant Commissioner's Suite
401 East State Street, 6th Floor, Box 028
Trenton, New Jersey 08625-0028

Dear: Ms. Dietrick:

The Philadelphia District, U.S. Army Corps of Engineers, has proposed an environmental restoration project at Grover's Mill Pond (Figures 1 and 2) located on Big Bear Creek, a tributary of the Millstone River, which eventually flows into the Raritan River. The restoration project is funded under Section 206 (Aquatic Ecosystem Restoration) of the Water Resources Development Act of 1996, as amended. The purpose for this correspondence is to solicit your agency's comments regarding the project plan and specifically the sediment sampling plan and analysis results that are enclosed. The sampling plan and analysis was originally conducted based on a project plan that involved draining of the pond and excavation of the material. Sample analysis for this plan was specifically based on recommendations provided by your office. As a result of comments received from state and federal resource agencies, the project plan has been revised. The project will now involve dredging of the accumulated sediments from the pond and placement into an upland confined disposal facility (Enclosures).

Grover's Mill Pond is a 37-acre man-made lake created by an earthen dam across Big Bear Creek. The present earthen dam is 400 feet long and 11 feet high and forms the base for Clarksville Road. The water level in the pond, surrounding wetlands and outflow from the pond are controlled by a concrete spillway and sluice gate. The pond was originally impounded in Colonial times to power a gristmill and the dam was upgraded in 1931. The ownership of the earthen dam is shared by West Windsor Township and Mercer County.

The goal of the Grover's Mill Pond Restoration Project is to restore fisheries habitat at the degraded freshwater pond. The restoration goal will be accomplished through sediment removal from the existing pond to create better water depths for local fishery populations. The preferred alternative includes dredging of approximately 50,000-60,000 cubic yards of accumulated sediments from the pond. The material will be disposed at an upland Township owned site adjacent to Grover's Mill Pond (Figure 3). An upland disposal area will be constructed at this 11 acre site. A sediment sampling plan was developed to comply with N.J.A.C. 7:26D Residential Direct Contact Soil Cleanup Criteria. Bulk analysis and Synthetic Precipitation Leaching

Procedure methodologies were used to analyze sediments and soils (Enclosed CD). Please provide written comments concerning the project design and sample results as they pertain to your agency's area of responsibility and New Jersey regulations.

Please contact my project biologist, Mr. Gregory Wacik (Gregory.A.Wacik@usace.army.mil) directly at (215) 656-6561 if you should have any further questions or require additional information. Your cooperation in this matter is appreciated.

Sincerely,

Minas M. Arabatzis
Chief, Planning Division

Enclosures

MFR: This is a sediment analysis review request for NJDEP Dredging and Sediment Technology section as it pertains to NJ dredging regulations and the Grover's Mill Pond Section 206 environmental restoration project.

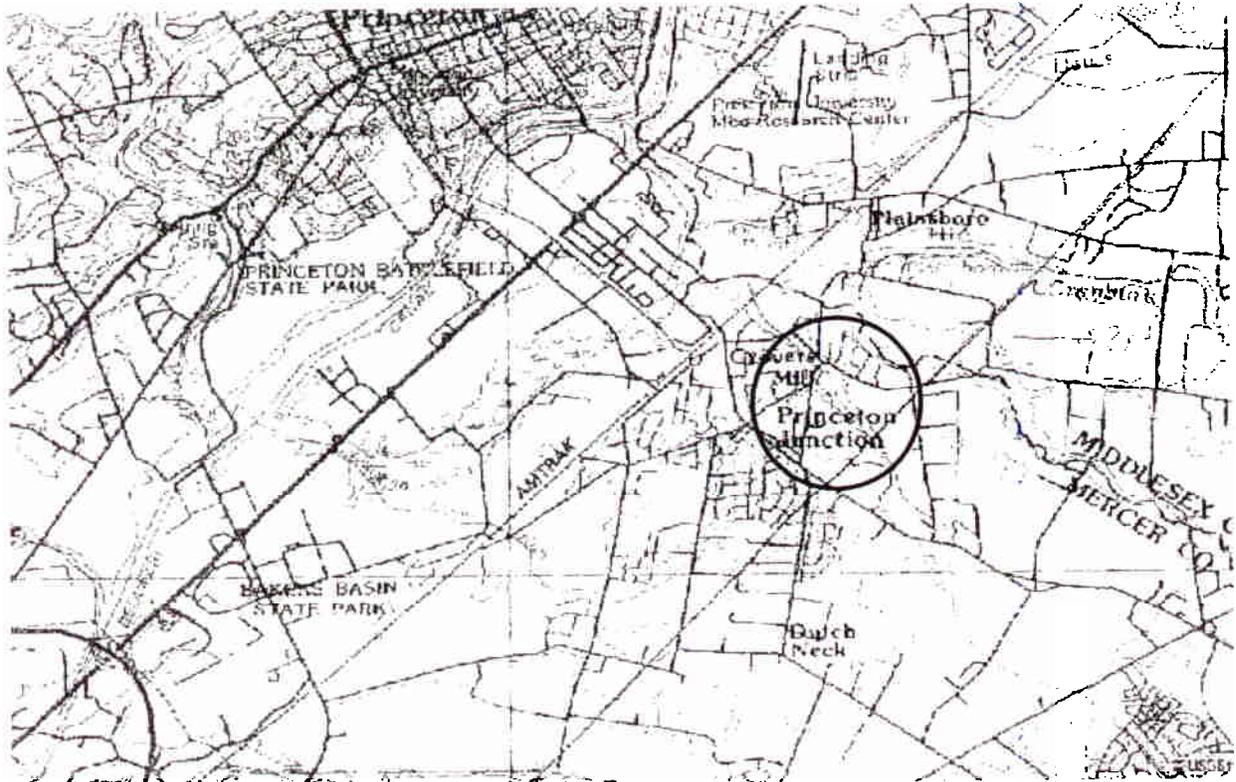


Figure 1. Site Location

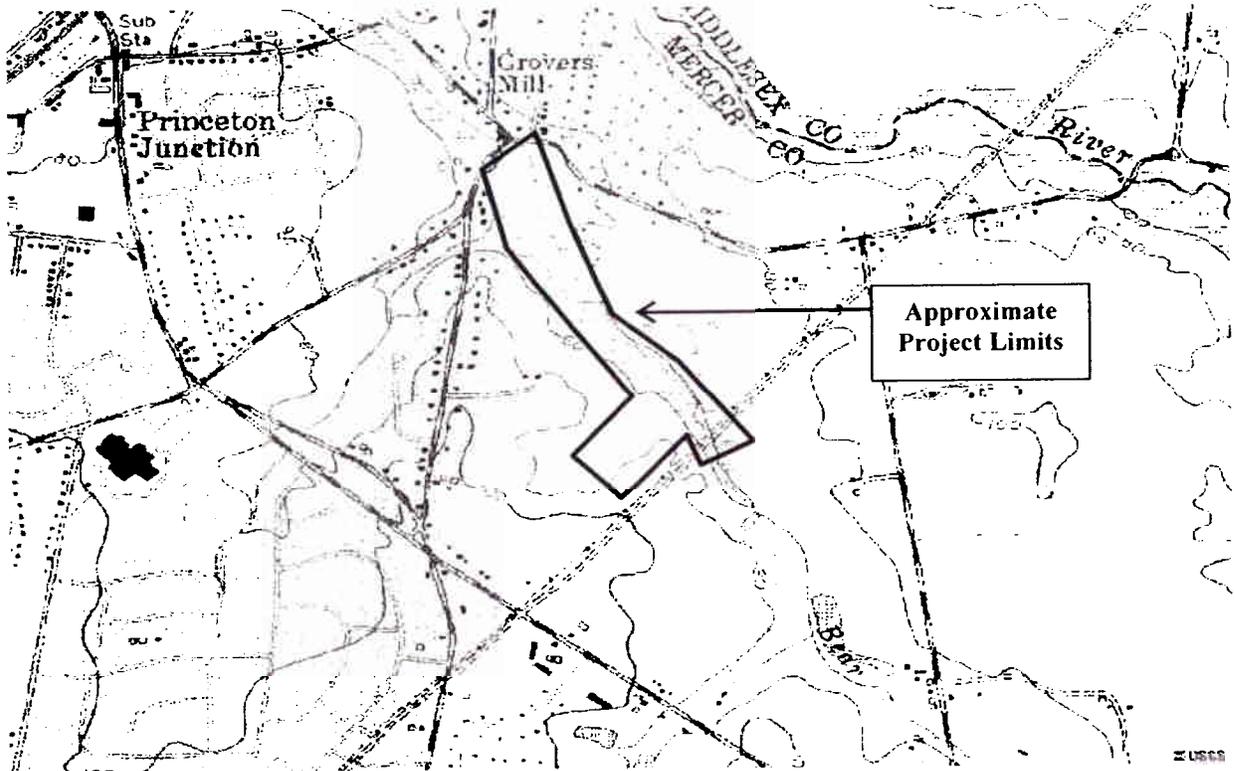


Figure 2. Project Location



Figure 3. Project and wetland delineation task limits



United States Department of the Interior

FISH AND WILDLIFE SERVICE

New Jersey Field Office
Ecological Services
927 North Main Street, Building D
Pleasantville, New Jersey 08232
Tel: 609/646 9310
Fax: 609/646 0352
<http://njfieldoffice.fws.gov>



In Reply Refer To:
FP-05/53

JAN 26 2006

Minas M. Arabatzis, Chief
Planning Division
U.S. Army Corps of Engineers
Wanamaker Building, 100 Penn Square East
Philadelphia, Pennsylvania 19107-3390

Dear Mr. Arabatzis:

This is in response to the December 20, 2006 submission of an updated draft Scope of Work (SOW) by Mr. Gregory Wacik of your staff for a Fish and Wildlife Coordination Act (48 Stat. 401; U.S.C. 661 *et seq.*) (FWCA) Section 2(b) report to assist the U.S. Army Corps of Engineers, Philadelphia District (Corps) with activities pertaining to the Grover's Mill Pond Aquatic Ecosystem Restoration Project, Mercer County, New Jersey.

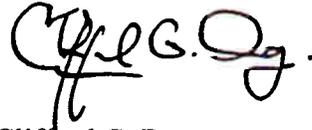
Specifically, you have requested the U.S. Fish and Wildlife Service (Service), New Jersey Field Office (NJFO) to prepare a:

1. Planning Aid letter on existing conditions of the project area,
2. Draft Fish and Wildlife Coordination Act Section 2(b) report, and
3. Final Fish and Wildlife Coordination Act Section 2(b) report.

The NJFO is pleased to participate in the proposed restoration project. We have reviewed the draft SOW and a revised draft SOW is being returned to you with an estimated cost for services. The total cost of technical assistance and report preparation is \$20,395. If you are in agreement with the draft SOW and cost estimate for technical assistance by the NJFO, please prepare the appropriate transfer-fund authorization and forward it to this office (ATTN: Laura Perlick). Please be advised that no cost should be incurred by the Service prior to a reimbursable agreement signed by all parties.

The Service looks forward to working with you and your staff on the Grover's Mill Pond Aquatic Ecosystem Restoration Project. If you have any questions regarding the cost estimate or any other aspect of this draft SOW, please contact John Staples or Carlo Popolizio of my staff at (609) 646-9310, extensions 12 and 32, respectively.

Sincerely,

A handwritten signature in black ink that reads "Clifford G. Day". The signature is written in a cursive style with a large, stylized "C" and "D".

Clifford G. Day
Supervisor

Enclosure

APPENDIX B

SOIL/SEDIMENT
SAMPLING and ANALYSIS



May 18, 2005

Via Overnight Mail

Daniel J. Kelly P.E.
U.S. Army Corps of Engineers
Wanamaker Building
100 Penn Square East
Philadelphia, PA 19107-3396

RE: Project No. 5739.GE
Contract DACW61-01-D-0004, Task Order 029, Modification 2
Subsurface Investigation and Testing
for Grover's Mill Pond Project
West Windsor Township, New Jersey

Dear Mr. Kelly:

This correspondence has been prepared to summarize Duffield Associates' geotechnical and analytical testing of subsurface conditions at Grover's Mill Pond, as well as at an upland area adjacent to the Pond, which we understand is being considered for a potential future disposal area of dredged material. These services were performed in general accordance with the scope of work for Contract DACW61-01-D-0004, Task Order No. 029, Modification No. 2, dated August 11, 2004.

INTRODUCTION

The U.S. Army Corps of Engineers' Philadelphia District (USACE) retained Duffield Associates to perform Standard Penetration Testing (SPT) borings and hand auger borings for the Grover's Mill Pond Project (Grover's Mill Pond). The purpose of the borings was to collect soil samples for the purpose of performing geotechnical and analytical testing of selected samples for potential future dredging to be performed by the USACE at Grover's Mill Pond. The purpose of the hand augers was to assess the existing conditions of potential disposal areas.

Grover's Mill Pond is located in West Windsor Township, Mercer County, New Jersey. The adjacent upland area for potential future disposal of dredged materials from the Pond is approximately 11 acres in area and is located at the southern end of West Windsor Township Park. A site location sketch has been included as Attachment A.

Daniel J. Kelly, P.E.
RE: Project No. 5739.GE
May 18, 2005
Page 2

FIELD EXPLORATION PROGRAM

Prior to performing any field work, a drilling and sampling plan titled "Drilling and Sampling Plan; Subsurface Investigation and Testing for the Grover's Mill Pond Project; West Windsor Township, New Jersey" was submitted to the USACE on March 17, 2005.

The field exploration program included the performance of the following:

- Soil sample collection from three (3) Standard Penetration Test (SPT) borings for geotechnical assessment of the shallow subaqueous soils for Grover's Mill Pond;
- Grab and composite soil sample collection from three (3) SPT borings for environmental assessment of the shallow subaqueous soils for Grover's Mill Pond;
- Soil sample collection from five (5) hand auger borings for geotechnical assessment of the shallow soils from the proposed upland dredged material disposal area; and
- Grab and composite soil sample collection from five (5) hand auger borings for environmental assessment of the shallow soils from the upland dredged material disposal area.

As-built locations of the hand auger and SPT borings were approximated utilizing a hand-held Global Positioning System (GPS) device. The as-built locations are shown on the Test Boring and Hand Auger Boring Location Sketch included as Attachment B. In addition, the as-built locations are summarized in a table included as Attachment C. Geo-environmental test boring and hand auger boring locations are distinguished from geotechnical borings by the letter "A" attached at the end of the numeric designation (e.g., TB-1A).

Hand auger borings, sample collection, and sample compositing was performed by a representative of Duffield Associates on March 22, 2005. Upon completion of the field work, custody of the geo-environmental samples for analytical testing was transferred to Duffield Associates subcontracted analytical laboratory for this project, Accutest Laboratories (Accutest) of Dayton, New Jersey. A copy of the "chain of custody" is included as Attachment D. The geotechnical samples were returned to Duffield Associates geotechnical laboratory in Wilmington, Delaware for subsequent geotechnical testing. Hand auger boring logs describing the subsurface conditions encountered during performance of the hand auger borings are included as Attachment E.

Standard Penetration Test (SPT) borings were performed by Uni-Tech Drilling Company (Uni-Tech) of Malaga, New Jersey on March 29, and March 30, 2005. Review of the SPT borings, sample collection, and sample compositing was performed by a representative of Duffield Associates. Uni-Tech utilized a barge-mounted tripod drilling rig for the drilling and sampling operations performed on Grover's Mill Pond. Upon completion of each days drilling, the geo-

Daniel J. Kelly, P.E.
RE: Project No. 5739.GE
May 18, 2005
Page 3

environmental analytical samples and the geotechnical soil samples were returned to Duffield Associates' Wilmington, Delaware laboratory. Custody of the geo-environmental samples for analytical testing was subsequently transferred to Accutest on March 31, 2005. A copy of the "chain of custody" is included as Attachment D. Test boring logs describing the subsurface conditions encountered during performance of the SPT borings are included as Attachment F.

The Scope of Work for this project indicated that the SPT borings were to be advanced approximately 20 feet below the "mudline" of the Pond. However, apparent refusal conditions to the drilling equipment at depths less than 20 feet were encountered in the first two borings performed. The apparent refusal conditions were discussed with a USACE project representative on March 30, 2005 during drilling, who subsequently approved the test borings as performed, as well as the performance of one additional geotechnical SPT boring for the purposes of collecting additional information. The additional test boring was completed on March 30, 2005 and is designated TB-4.

Routine decontamination, cross-contamination prevention measures, soil and water storage, and equipment disposal procedures were utilized as outlined in the previously submitted "Drilling and Sampling Plan" when performing the geo-environmental borings and collecting samples for subsequent analytical testing.

During various site visits by Duffield Associates' personnel prior to the performance of the field program, approximately 2 to 3 feet of soft soils were observed near the perimeter of the pond. Therefore, the subsurface conditions encountered during the field program along the centerline of the pond may not be representative of the conditions across the entire pond area.

GEOTECHNICAL LABORATORY TESTING

Upon receipt of the soil samples for geotechnical testing from the Grover's Mill Pond Project, a laboratory testing schedule was prepared and forwarded to the USACE for approval along with preliminary test boring and hand auger boring logs on April 7, 2005. The testing schedule was subsequently approved via telephone on April 8, 2005. A copy of the approved Schedule of Laboratory Testing is included as Attachment G.

Laboratory tests performed for this project included the following:

Test	ASTM Designation	Number of Samples
Atterberg Limits	D 4318	15
Sieve Analysis w/out Hydrometer	D 422	20
Sieve Analysis w/Hydrometer	D 422	6
Natural Water Content	D 2216	26

The individual geotechnical laboratory testing results are included as Attachment H. Additionally, the enclosed test boring logs have been modified to reflect the laboratory testing results.

GEO-ENVIRONMENTAL ANALYTICAL TESTING

As noted above, geo-environmental samples were collected and submitted to Accutest to perform the analytical tests listed below.

Pond sediments (bulk analysis methodology):

- TAL Metals SW 846 3050B/6010B/7470A (Thallium using 6020)
- TCL VOCs SW 846 5035/8260B
- TCL SVOCs SW 846 3540C/8270C
- TCL Pesticides SW 846 3540C/8081A
- Herbicides (a) SW 846 3540C/8151A
- PCBs SW 846 3540C/8082

Pond sediments (Synthetic Precipitation Leaching Procedure):

- RCRA-LIST Metals SW 846 1312/3020A/6010B/7470A
- RCRA-LIST VOCs SW 846 5030B/1312/8260B (jarred sample)
- RCRA-LIST SVOCs SW 846 1312/3520C/8270C
- RCRA-LIST Herbicides SW 846 1312/3520C/8151A
- RCRA-LIST Pesticides SW 846 1312/3520C/8081A
- PCBs SW 846 3540C/8082
- Ignitability SW 846 Chap 7.1
- Reactivity SW 846 Chap 7.3

Upland area for (bulk analysis methodology):

- TAL Metals SW 846 3050B/6010B/7470A
- TCL VOCs SW 846 5035/8260B
- TCL SVOCs SW 846 3540C/8270C
- TCL Pesticides SW 846 3540C/8081A
- Herbicides (a) SW 846 3540C/8151A
- PCBs SW 846 3540C/8082

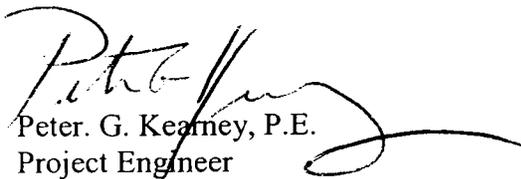
Results of the analytical testing for the upland, hand auger boring samples are included as Attachment I. Results of the analytical testing for the pond sediment samples from SPT borings samples are included as Attachment J.

Daniel J. Kelly, P.E.
RE: Project No. 5739.GE
May 18, 2005
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We have appreciated this opportunity to be of continued service to the U.S. Army Corps of Engineers' Philadelphia District and look forward to receiving any comments that you may have pertaining to the data provided. If you have any questions or require further information, please do not hesitate to contact us.

Very truly yours,

DUFFIELD ASSOCIATES, INC.



Peter G. Kearney, P.E.
Project Engineer



W. Hank Stack, P.E.
Task Manager

PGK\WHS:lba
WORD\5739GE.COVER.LTR

Enclosures: Attachment A - Site Location Sketch
Attachment B - Test Boring and Hand Auger Boring Location Sketch
Attachment C - As-Built Location Data
Attachment D - Chain of Custody (2)
Attachment E - Hand Auger Boring Logs
Attachment F - Test Boring Logs
Attachment G - Geotechnical Laboratory Testing Schedule
Attachment H - Geotechnical Laboratory Testing Results
Attachment I - Analytical Testing Results for Hand Auger Boring Samples
From Upland Disposal Area
Attachment J - Analytical Testing Results for Test Borings Samples
From Grover's Mill Pond
Attachment K - General Notes

APPENDIX C

**14 DECEMBER 2004
WETLAND DELINEATION REPORT**

14 December 2004

Mr. Gregory Wacik
US Army Corps of Engineers
Philadelphia District
Environmental Resources Branch
100 Penn Square East
Philadelphia, PA 19107

Dear Greg:

I am sending you this letter wetland report to describe our results from the 5 and 11 October 2004 wetland delineation on and adjacent to the Grover's Mill Pond site near Princeton, New Jersey. Wetlands were identified, delineated, and documented using the Routine Onsite Determination Method as described in the 1989 Interagency Wetlands Delineation Manual methodology (the 1989 Manual supports criteria required by the State of New Jersey for identifying state jurisdictional wetlands and buffer zones), and other related guidance.

Wetland indicator statuses of all appropriate site flora were determined using *New Jersey Higher Plants, Volume 1*, by James A. Schmid, published in 1990 by Schmid & Company, Inc., Media, PA. All delineated wetlands were then surveyed via a Trimble differential global positioning system (DGPS), as described below.

The Grover's Mill Pond is located on Big Bear Creek, a tributary of the Millstone River, which flows into the Raritan River several miles downstream. Grover's Mill Pond is a 37-acre man-made lake created by an earthen dam across Big Bear Creek. The present earthen dam is 400 feet long and 11 feet high and forms the base for Clarksville Road. The water level in the pond and surrounding wetlands and outflow from the pond are controlled by a concrete spillway and sluice gate. The pond was originally impounded in Colonial times to power a gristmill and the dam was upgraded in 1931. The pond was completely drained at the time of the October 2004 fieldwork.

The project site is bounded by residential development, two small County parks, and some narrow areas of undeveloped forest (both upland and wetland). Much of the immediate periphery around the southern two-thirds of the lake possessed a narrow margin of deciduous forest. Principal species in this margin of forest were red maple (*Acer rubrum*; FAC), black gum (*Nyssa sylvatica*; FAC) and sweetgum (*Liquidambar styraciflua*; FAC). The size of the trees varied somewhat in this area, but in general most averaged approximately 6 to 10 inches diameter at breast height (dbh). The shrub and woody vine layer was moderately dense; principal species throughout included sweet pepperbush (*Clethra alnifolia*; FAC+), common greenbrier (*Smilax rotundifolia*; FAC), and highbush blueberry (*Vaccinium corymbosum*; FACW-). The herbaceous layer was typically sparse, but was occasionally dense in the wettest areas. Principal herbaceous species in the wet areas at the time of the fieldwork included cinnamon fern (*Osmunda cinnamomea*; FACW), royal fern (*Osmunda regalis*; OBL), sensitive fern (*Onoclea sensibilis*; FACW), and false nettle (*Boehmeria cylindrica*; FACW). In addition to the on-site forested wetlands, much of the shallow water habitat around the outer periphery of the Grover's Mill Pond exhibited herbaceous marsh. The principal species at the time of

the fieldwork in the herbaceous marsh was spatterdock (*Nuphar lutea*; OBL). Other species commonly observed in the herbaceous marsh included water smartweed (*Polygonum amphibium*; OBL), broad-leaved cattail (*Typha latifolia*; OBL), common reed (*Phragmites australis*; FACW), and sallow sedge (*Carex lurida*; OBL).

No state or federal listed threatened or endangered flora or other flora of special concern were observed either on or adjacent to the Grover's Mill Pond site during the October 2004 fieldwork.

The Mercer County, New Jersey soil survey was reviewed prior to the delineation to determine the approximate locations of mapped hydric soils on and adjacent to the Grover's Mill Pond site. Hydric soils conditions are defined as those that meet the criteria of the National Technical Committee for Hydric Soils (NTCHS 1987), and the NRCS (1998). Saturation in such soils creates anaerobic conditions that typically produce rust-colored mottles in a matrix of gray soil within approximately 6 inches of the surface. Hydric soils frequently are indicated by high chroma mottling in combination with moist soil matrix chromas of 2 or less at the top of the B horizon or a chroma of 1 or less (with or without mottles) at the same depth -- as determined by comparison with standard Munsell color charts.

Soils on and adjacent to the Grover's Mill Pond site are all generally sandy loams and silt loams, (refer to attached field data sheets). The soil survey indicates 6 soils types on and adjacent to the Grover's Mill Pond site. The primary soils types throughout the Grover's Mill Pond site are in the Sassafras series; all of these soils are considered nonhydric. The County soil survey maps three hydric soils within the boundaries of the site; these include Manahawkin muck, frequently flooded (Makt); Othello silt loam (Oth); and Fluvaquents, loamy, frequently flooded (Fmht). The hydric soils are generally mapped along the edges of the pond and Big Bear Creek, and along one small tributary on the northwestern side of the site.

Soil colors were determined using Munsell color charts (Kollmorgan 1975); textures were also documented. Where possible, each soil sample was examined to a depth of at least 20 inches from the surface. Soil profiles were observed at each of 10 data collection points (see attached). In general, the soils observed were similar physically to the descriptions provided in the county soil survey. Most of the soils observed possessed matrices with a Hue of 10YR; Values and Chromas varied somewhat by depths and site location, but were in the very dark gray to very dark grayish brown to black and very dark brown (3/1 to 3/2 and 2/1 to 2/2, respectively) range for the silt soils. Soils throughout the site were generally categorized as sandy loams and silt loams within and adjacent to the site wetlands. All of the soils within the mapped wetlands possessed chromas of 2 or less with mottles within major portions of the root zone. Soils outside of the mapped wetlands generally possessed chromas of 2 or greater, usually without mottles.

According to the 1989 Manual (and other subsequent federal and state guidance), some of the typical indicators of wetland hydrology include inundation during the growing season, saturation of the soils within major portions of the root zone, water marks on vegetation, oxidized rhizospheres, and others. These hydrologic indicators were observed throughout the mapped wetlands (refer to wetlands data sheets).

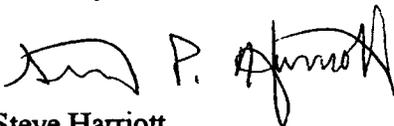
Wherever there was a predominance of hydrophytic vegetation co-existing with hydric soils and clear wetland hydrological indicators, these areas were flagged as wetlands with pink day-glow surveyor's ribbon. The wetlands flags were subsequently surveyed via a differential global positioning system (DGPS). The DGPS equipment used for this task was a survey-grade Trimble GeoXT system with a portable differential antenna that collected real-time, differentially-corrected satellite data. According to the manufacturer, the accuracy of horizontal fixes from the unit is plus/minus approximately 12 inches with no data post-processing. All wetland boundary data was downloaded directly into an ArcView GIS system for data manipulation and map plotting.

Three areas of wetlands were surveyed, including the principal area around the lake and Big Bear Creek (47.58 acres), one small area to the north of the pond's dam (i.e., immediately north of Clarksville Road; 1.15 acres), and another small area in the southeastern section of the site (1.47 acres). It was confirmed during the fieldwork that the small southeastern wetland is isolated from the Grover Mill Pond wetlands and Big Bear Creek. Based on these findings from the wetland fieldwork, all three of the surveyed wetlands appear to meet New Jersey Department of Environmental Protection criteria for Intermediate resource value wetlands, and presumably would be assigned a 50-foot transition area beyond (i.e., on the upland side of) the flagged wetland line.

It should also be noted that one small isolated ponded area on the northeast side of the site was not delineated as wetlands. The small pond is located to the immediate south of the small county park and horse farm on the northeast side of the site. A large swath of forest was recently cleared around the small pond and down to the lake; a significant amount of earthwork apparently took place at that time. The pond is currently unvegetated, does not possess hydric soils, and is completely isolated from other site wetlands. This area, therefore, was not included within the surveyed wetland boundary.

Thank you again for giving Versar ESM the opportunity to complete the wetlands studies at the Grover's Mill Pond site. Please give me a call if you have any questions or have other needs regarding this task.

Sincerely,



Steve Harriott
Professional Wetland Scientist

SH/gl

Enc.

cc: W. Burton
M. Berlett
File: 110943-0066-018
22\phila04\grovers mill\13658-1.doc



Figure 1. Wetlands mapped at the Grover's Mill Pond site in Mercer County, New Jersey, by VersarESM. The wetlands were delineated and surveyed in the field by Versar ESM via a survey-grade differential global positioning system in October 2004 (refer to letter report for description of methods; full set of DGPS data is included in report appendix).



Figure 2. Wetlands data points collected at the Grover's Mill Pond site in Mercer County, New Jersey, by Versar ESM. The wetlands were delineated, surveyed, and documented in the field by Versar ESM via a survey-grade differential global positioning system in October 2004 (refer to letter report for description of wetlands methods and data).

APPENDIX A

**WETLAND DATA SHEETS FOR THE OCTOBER 2004
DIFFERENTIAL GLOBAL POSITIONING SURVEY
OF WETLANDS AT THE GROVER'S MILL POND SITE,
MERCER COUNTY, PRINCETON, NJ**

WETLANDS DETERMINATION FORM

Completed By: SPH/MB
 Project/Site: GROVERS MILL POND
 Client: USACE
 State/County: NJ/MERCER

Sample #: W1
 Date: 11 OCTOBER 2004
 Vegetation Type: WETLAND DECIDUOUS FOREST

VEGETATION

Trees			Shrubs				
	Indicator Status	%		Indicator Status	%		
1.	NYSSA SYLVATICA	FAC	40	1.	CLETHRA ALNIFOLIA	FAC+	60
2.	ACER RUBRUM	FAC	40	2.	LINDERA BENZOIN	FACW-	40
3.	FRAXINUS PENNSYLVANICA			3.			
4.	VAR. SUBINTEGRIMA	FACW		4.			
5.	LIQUIDAMBAR STYRACIFLUA	FAC		5.			
6.				6.			
7.				7.			
8.				8.			
9.				9.			
10.				10.			
Saplings/Woody Vines			Herbs				
	Indicator Status	%		Indicator Status	%		
1.	SMILAX ROTUNDIFOLIA	FAC	60	1.	OSMUNDA CINNAMOMEA	FACW	50
2.	LIQUIDAMBAR STYRACIFLUA	FAC	40	2.	BOEHMERIA CYLINDRICA	FACW+	50
3.				3.			
4.				4.			
5.				5.			
6.				6.			
7.				7.			
8.				8.			
9.				9.			
10.				10.			
% of dominant species that are OBL, FACW, or FAC: <u>100</u> Hydrophytic vegetation: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Inconclusive <input type="checkbox"/> Disturbed/Atypical: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Inconclusive <input type="checkbox"/>							

→ NEAR ROAD

WETLANDS DETERMINATION FORM

Completed By: SPH/MB
 Project/Site: GROVERS MILL POND
 Client: USACE
 State/County: NT/MERCER

Sample #: U1
 Date: 11 OCTOBER 2004
 Vegetation Type: UPLAND DECIDUOUS FOREST

VEGETATION

Trees		Indicator Status	%	Shrubs		Indicator Status	%
1.	QUERCUS ALBA	FACU	60	1.	CLOTHRA ALNIFOLIA	FAC+	10
2.	QUERCUS VELUTINA	NI	40	2.			
3.				3.			
4.				4.			
5.				5.			
6.				6.			
7.				7.			
8.				8.			
9.				9.			
10.				10.			
Saplings/Woody Vines		Indicator Status	%	Herbs		Indicator Status	%
1.	TOXICODENDRON RADICANS	FAC	50	1.	POLYGONUM PERFOLIATUM	FAC	50
2.	LONICERA JAPONICA	FACU	40	2.	GRASSES	N/A	50
3.	SMILAX GLAUCA	FACU		3.			
4.	VITIS SP.	N/A		4.			
5.				5.			
6.				6.			
7.				7.			
8.				8.			
9.				9.			
10.				10.			
% of dominant species that are OBL, FACW, or FAC: <u>43</u> Hydrophytic vegetation: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Inconclusive <input type="checkbox"/> Disturbed/Atypical: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Inconclusive <input type="checkbox"/>							

WETLANDS DETERMINATION FORM

Completed By: SPH/MB
 Project/Site: GROVERS MILL POND
 Client: USACE
 State/County: NY/MERCER

Sample #: W12
 Date: 11 OCTOBER 2004
 Vegetation Type: HERBACEOUS MARSH

VEGETATION

Trees			Shrubs				
	Indicator Status	%		Indicator Status	%		
1.	ACER RUBRUM	FAC	100	1.	ALNUS RUGOSA	FACW+	100
2.				2.			
3.				3.			
4.				4.			
5.				5.			
6.				6.			
7.				7.			
8.				8.			
9.				9.			
10.				10.			
Saplings/Woody Vines			Herbs				
	Indicator Status	%		Indicator Status	%		
1.	NONE PRESENT		1.	NUPHAR LUTEA	OBL	80	
2.			2.	TYPHA LATIFOLIA	OBL	10	
3.			3.	POLYGONUM AMPHIBIVM	OBL	10	
4.			4.				
5.			5.				
6.			6.				
7.			7.				
8.			8.				
9.			9.				
10.			10.				
% of dominant species that are OBL, FACW, or FAC: <u>100</u> Hydrophytic vegetation: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Inconclusive <input type="checkbox"/> Disturbed/Atypical: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Inconclusive <input type="checkbox"/>							

WETLANDS DETERMINATION FORM

Completed By: SPH/MB
 Project/Site: GROVERS MILL POND
 Client: USACE
 State/County: NJ/MERCER

Sample #: _____
 Date: 11 OCTOBER 2004
 Vegetation Type: UPLAND DECIDUOUS FOREST

VEGETATION

Trees		Indicator Status	%	Shrubs		Indicator Status	%
1.	LIQUIDAMBAR STYRACIFLVA	FAC	40	1.	ROSA MULTIFLORA	FACU	60
2.	FAGUS GRANDIFOLIA	FACU	20	2.	LONICERA TATARICA	FACU	40
3.	QUERCUS ALBA	FACU-	20	3.			
4.	QUERCUS PRINUS	UPL	20	4.			
5.				5.			
6.				6.			
7.				7.			
8.				8.			
9.				9.			
10.				10.			
Saplings/Woody Vines		Indicator Status	%	Herbs		Indicator Status	%
1.	LONICERA JAPONICA	FACU	30	1.	RUBUS SP. (BLACKBERRY)	N/A	100
2.	TOXICODENDRON RADICANS	FAC	70	2.			
3.				3.			
4.				4.			
5.				5.			
6.				6.			
7.				7.			
8.				8.			
9.				9.			
10.				10.			
% of dominant species that are OBL, FACW, or FAC: <u>25</u> Hydrophytic vegetation: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Inconclusive <input type="checkbox"/> Disturbed/Atypical: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Inconclusive <input type="checkbox"/>							

WETLANDS DETERMINATION FORM

Completed By: SPH/MB
 Project/Site: GROWERS MILL POND
 Client: USACE
 State/County: NT/MERCER

Sample #: W3
 Date: 11 OCTOBER 2004
 Vegetation Type: SCRUB-SHRUB (WET)

VEGETATION

Trees (Few)		Indicator Status	%	Shrubs		Indicator Status	%
1.	NYSSA SYLVATICA	FAC	47	1.	ALNUS RUGOSA	FACW+	80
2.	ACER RUBRUM	FAC	30	2.	CLETHRA ALNIFOLIA	FAC+	20
3.	ULMUS RUBRA	FAC	20	3.			
4.	LIRIODENDRON TULIPIFERA	FACU	10	4.			
5.				5.			
6.				6.			
7.				7.			
8.				8.			
9.				9.			
10.				10.			
Saplings/Woody Vines		Indicator Status	%	Herbs		Indicator Status	%
1.	ACER RUBRUM	FAC	100	1.	MIKANIA SCANDENS	FACW+	50
2.				2.	PHRAGMITES AUSTRALIS	FACW	10
3.				3.	EUPATORIUM FISTULOSUM	FACW	15
4.				4.	POLYGONUM HYDROPIPER	OBL	15
5.				5.	POLYGONUM PUNCTATUM	OBL	10
6.				6.			
7.				7.			
8.				8.			
9.				9.			
10.				10.			
% of dominant species that are OBL, FACW, or FAC: <u>91</u> Hydrophytic vegetation: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Inconclusive <input type="checkbox"/> Disturbed/Atypical: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Inconclusive <input type="checkbox"/>							

WETLANDS DETERMINATION FORM

Completed By: SPH/MB
 Project/Site: GROVIERS MILL WETLANDS
 Client: USACE
 State/County: NJ/MERCER

Sample #: U3
 Date: 11 OCTOBER 2004
 Vegetation Type: UPLAND DECIDUOUS FOREST

VEGETATION

Trees		Indicator Status	%	Shrubs		Indicator Status	%
1.	LIRIODENDRON TULIPIFERA	FACU	60	1.	ILEX GLABRA	FACW	10
2.	FAGUS GRANDIFOLIA	FACU		2.	LINDERA BENZOIN	FACW	10
3.	JUGLANS NIGRA	FACU		3.	VIBURNUM DENTATUM	FAC	80
4.	LIQUIDAMBAR STYRACIFLUA	FAC		4.			
5.	QUERCUS ALBA	FACU		5.			
6.				6.			
7.				7.			
8.				8.			
9.				9.			
10.				10.			
Saplings/Woody Vines		Indicator Status	%	Herbs		Indicator Status	%
1.	SMILAX GLAUCA	FACU	20	1.	SOLIDAGO SP.	N/A	30
2.	TOXICODENDRON RADICANS	FAC	40	2.	POLYSTICHUM ACROSTICHOIDES	FACU	70
3.	LONICERA JAPONICA	FACU	20	3.			
4.	LIQUIDAMBAR STYRACIFLUA	FAC	20	4.			
5.				5.			
6.				6.			
7.				7.			
8.				8.			
9.				9.			
10.				10.			
% of dominant species that are OBL, FACW, or FAC: <u>50</u> Hydrophytic vegetation: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Inconclusive <input type="checkbox"/> Disturbed/Atypical: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Inconclusive <input type="checkbox"/>							

WETLANDS DETERMINATION FORM

Completed By: SPK/MB
 Project/Site: GROVERS MILL POND
 Client: USACE
 State/County: NJ/MERCER

Sample #: WJ4
 Date: 11 OCTOBER 2004
 Vegetation Type: WETLAND DECIDUOUS FOREST

VEGETATION

Trees		Indicator Status	%	Shrubs		Indicator Status	%
1.	NYSSA SYVATICA	FAC		1.	CLETHRA ALNIFOLIA	FAC+	
2.	LIQUIDAMBAR STYRACIFLUA	FAC		2.	ILEX GLABRA	FACW-	
3.	ACER RUBRUM	FAC		3.	LINDERA BENZOIN	FACW-	
4.	DIOSPYROS VIRGINIANA	FAC-		4.	VACCINIUM CORYMBOSUM	FACW	
5.	FRAXINUS PENNSYLVANICA			5.			
6.	VAR. SUBINTEGRIMA	FACW		6.			
7.				7.			
8.				8.			
9.				9.			
10.				10.			
Saplings/Woody Vines		Indicator Status	%	Herbs		Indicator Status	%
1.	SMILAX ROTUNDIFOLIA	FAC		1.	ONOCLEA SENSIBILIS	FACW	
2.	SMILAX GLAUCA	FACU		2.	OSMUNDA REGALIS	OBL	
3.	TOXICODENDRON RADICANS	FAC		3.	OSMUNDA CINAMOMEA	FACW	
4.				4.	BOEHMERIA CYLINDRICA	FACW+	
5.				5.			
6.				6.			
7.				7.			
8.				8.			
9.				9.			
10.				10.			
% of dominant species that are OBL, FACW, or FAC: 88 Hydrophytic vegetation: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Inconclusive <input type="checkbox"/> Disturbed/Atypical: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Inconclusive <input type="checkbox"/>							

WETLANDS DETERMINATION FORM

Completed By: SPH/MB
 Project/Site: GROVERS MILL POND
 Client: USACE
 State/County: NI/MERCER

Sample #: U4
 Date: 11 OCTOBER 2004
 Vegetation Type: UPLAND DECIDUOUS FOREST

VEGETATION

Trees		Indicator Status	%	Shrubs		Indicator Status	%
1.	QUERCUS COCCINEA	FACU	20	1.	CLETHRA ALNIFOLIA	FAC+	60
2.	QUERCUS VELUTINA	NI	40	2.	GAYLUSSACIA BACCATA	FACU	40
3.	FAGUS GRANDIFOLIA	FACU		3.			
4.	LIRIODENDRON TULIPIFERA	FACU		4.			
5.	LIQUIDAMBAR STYRACIFLUA	FAC		5.			
6.				6.			
7.				7.			
8.				8.			
9.				9.			
10.				10.			
Saplings/Woody Vines		Indicator Status	%	Herbs		Indicator Status	%
1.	TOXICODENDRON RADICANS	FAC	40	1.	RUBUS SP. (BLACKBERRY)	N/A	60
2.	PARTHENOCISSUS QUINQUEFOLIA	FACU	30	2.	PTERIDIUM AQUILINUM	FACU	40
3.	SMILAX GLAUCA	FACU	50	3.			
4.				4.			
5.				5.			
6.				6.			
7.				7.			
8.				8.			
9.				9.			
10.				10.			

% of dominant species that are OBL, FACW, or FAC: 27

Hydrophytic vegetation: Yes No Inconclusive

Disturbed/Atypical: Yes No Inconclusive

WETLANDS DETERMINATION FORM

Completed By: SPH/MB
 Project/Site: GROVERS MILL POND
 Client: USACE
 State/County: NJ/MERCER

Sample #: W15
 Date: 11 OCTOBER 2004
 Vegetation Type: WETLAND DECIDUOUS FOREST

VEGETATION

Trees			Shrubs		
	Indicator Status	%		Indicator Status	%
1. SALIX NIGRA	FACW	30	1. ALNUS RUGOSA	FACW+	20
2. ACER RUBRUM	FAC	40	2. CLETHRA ALNIFOLIA	FAC+	80
3. NYSSA SYLVATICA	FAC	30	3.		
4.			4.		
5.			5.		
6.			6.		
7.			7.		
8.			8.		
9.			9.		
10.			10.		
Saplings/Woody Vines			Herbs		
	Indicator Status	%		Indicator Status	%
1. NONE PRESENT			1. OSMUNDA CINNAMOMEA	FACW	70
2.			2. OSMUNDA REGALIS	OBL	15
3.			3. POLYGONUM PUNCTATUM	OBL	15
4.			4.		
5.			5.		
6.			6.		
7.			7.		
8.			8.		
9.			9.		
10.			10.		
% of dominant species that are OBL, FACW, or FAC: <u>100</u> Hydrophytic vegetation: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Inconclusive <input type="checkbox"/> Disturbed/Atypical: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Inconclusive <input type="checkbox"/>					

WETLANDS DETERMINATION FORM

Completed By: SPH/MB
 Project/Site: GROVERS MILL POND
 Client: USACE
 State/County: NJ / MERCER

Sample #: U5
 Date: 11 OCTOBER 2004
 Vegetation Type: UPLAND DECIDUOUS FOREST

VEGETATION

Trees		Indicator Status	%	Shrubs		Indicator Status	%
1.	NYSSA SYLVATICA	FAC	40	1.	CLETHRA ALNIFOLIA	FAC	100
2.	QUERCUS VELUTINA	NI	30	2.			
3.	ACER RUBRUM	FAC	10	3.			
4.	LIQUIDAMBAR STYRACIFLUA	FAC	20	4.			
5.				5.			
6.				6.			
7.				7.			
8.				8.			
9.				9.			
10.				10.			
Saplings/Woody Vines		Indicator Status	%	Herbs		Indicator Status	%
1.	SIMILAX GLAUCA	FACU	60	1.	PTERIDIUM AQUILINUM	FACU	70
2.	TOXICODENDRON RADICANS	FAC	40	2.	GRASSES	NA	30
3.				3.			
4.				4.			
5.				5.			
6.				6.			
7.				7.			
8.				8.			
9.				9.			
10.				10.			
% of dominant species that are OBL, FACW, or FAC: <u>63</u> Hydrophytic vegetation: Yes <input type="checkbox"/> No <input type="checkbox"/> Inconclusive <input checked="" type="checkbox"/> Disturbed/Atypical: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Inconclusive <input type="checkbox"/>							

APPENDIX B

**GPS DATA FROM VERSAR'S OCTOBER 2004
DIFFERENTIAL GLOBAL POSITIONING SURVEY
OF WETLANDS AT THE GROVER'S MILL POND SITE,
MERCER COUNTY, PRINCETON, NJ**

Table 1. Data from Versar's October 2004 differential global positioning survey of wetlands at the Grover Mill Pond site near Princeton, NJ.

GPS Point	Longitude	Latitude	Standard Deviation	Altitude	PDOP	HDOP	GPS Status	GPS Type	Time
1	-74.60598	40.31265	-12.704	21.095	4.4	2.3	Real-time Code	GeoXT	09:46:35am
2	-74.60592	40.31257	-10.994	22.805	3.3	1.5	Real-time Code	GeoXT	09:48:03am
3	-74.60585	40.31239	-14.399	19.4	2.3	1.3	Real-time Code	GeoXT	09:49:59am
4	-74.60585	40.31229	-11.066	22.733	2.3	1.2	Real-time Code	GeoXT	09:50:26am
5	-74.60587	40.3122	-12.111	21.688	2.3	1.2	Real-time Code	GeoXT	09:51:18am
6	-74.60584	40.31204	-9.513	24.286	3.4	1.6	Real-time Code	GeoXT	09:53:30am
7	-74.60585	40.31191	-9.733	24.065	3.6	1.6	Real-time Code	GeoXT	09:55:00am
8	-74.60586	40.31181	-8.328	25.47	3.4	1.5	Real-time Code	GeoXT	09:55:51am
9	-74.60574	40.31184	-14.17	19.629	3.2	1.4	Real-time Code	GeoXT	09:58:46am
10	-74.60552	40.31172	-19.084	14.714	4.8	2	Real-time Code	GeoXT	10:01:50am
11	-74.6054	40.31164	-14.973	18.826	3.9	1.4	Real-time Code	GeoXT	10:02:39am
12	-74.6053	40.31166	-11.297	22.502	2.4	1.2	Real-time Code	GeoXT	10:03:15am
13	-74.6052	40.31157	-8.428	25.37	3.5	1.6	Real-time Code	GeoXT	10:04:36am
14	-74.60517	40.31146	-11.909	21.889	3.3	1.5	Real-time Code	GeoXT	10:05:24am
15	-74.60523	40.3113	-13.467	20.331	2.5	1.2	Real-time Code	GeoXT	10:08:57am
16	-74.60531	40.31126	-12.01	21.788	2.5	1.2	Real-time Code	GeoXT	10:09:43am
17	-74.60526	40.31109	-13.622	20.176	2.5	1.2	Real-time Code	GeoXT	10:10:56am
18	-74.60502	40.31109	-14.13	19.667	2.5	1.2	Real-time Code	GeoXT	10:12:11am
19	-74.60469	40.31108	-14.4	19.397	4.9	3	Real-time Code	GeoXT	10:14:08am
20	-74.60472	40.311	-10.24	23.557	2.5	1.2	Real-time Code	GeoXT	10:14:55am
21	-74.60471	40.31088	-9.5	24.298	2.6	1.2	Real-time Code	GeoXT	10:16:10am
22	-74.60468	40.31079	-10.423	23.374	2.6	1.2	Real-time Code	GeoXT	10:22:59am
23	-74.60469	40.31061	-7.237	26.56	2.6	1.2	Real-time Code	GeoXT	10:23:51am
24	-74.60461	40.31063	-10.169	23.629	3.8	1.9	Real-time Code	GeoXT	10:25:03am
25	-74.60444	40.31064	-13.092	20.705	5	1.9	Real-time Code	GeoXT	10:25:57am
26	-74.60431	40.31063	-11.102	22.695	3.6	1.8	Real-time Code	GeoXT	10:27:42am
27	-74.60415	40.3106	-8.338	25.458	2.6	1.2	Real-time Code	GeoXT	10:28:49am
28	-74.60406	40.31046	-10.978	22.819	3.6	1.8	Real-time Code	GeoXT	10:30:15am
29	-74.60394	40.31036	-12.062	21.735	2.6	1.2	Real-time Code	GeoXT	10:31:16am
30	-74.60382	40.31037	-12.565	21.231	3.7	1.8	Real-time Code	GeoXT	10:35:27am
31	-74.60368	40.31031	-10.129	23.667	2.6	1.2	Real-time Code	GeoXT	10:36:09am
32	-74.60353	40.3103	-14.173	19.623	2.8	1.4	Real-time Code	GeoXT	10:37:04am
33	-74.60345	40.31019	-6.52	27.277	3.8	1.8	Real-time Code	GeoXT	10:38:12am
34	-74.60341	40.31009	-11.575	22.221	3.7	1.8	Real-time Code	GeoXT	10:40:14am

GPS Point	Longitude	Latitude	Standard Deviation	Altitude	PDOP	HDOF	GPS Status	GPS Type	Time
71	-74.60174	40.30665	-13.802	19.992	2	1.2	Real-time Code	GeoXT	11:35:39am
72	-74.60172	40.30663	-10.948	22.845	2.6	1.9	Real-time Code	GeoXT	11:36:58am
73	-74.60161	40.3067	-10.155	23.639	2.3	1.6	Real-time Code	GeoXT	11:37:59am
74	-74.60156	40.30677	-11.106	22.687	2	1.2	Real-time Code	GeoXT	11:39:20am
75	-74.60149	40.30683	-11.193	22.6	2	1.2	Real-time Code	GeoXT	11:40:12am
76	-74.60142	40.30689	-12.061	21.732	3.2	2	Real-time Code	GeoXT	11:41:20am
77	-74.60132	40.30697	-9.461	24.332	3.2	2	Real-time Code	GeoXT	11:41:54am
78	-74.60122	40.30695	-11.124	22.669	4.1	3.2	Real-time Code	GeoXT	11:42:22am
79	-74.60117	40.30684	-9.954	23.839	3.2	2	Real-time Code	GeoXT	11:43:34am
80	-74.60117	40.30678	-11.12	22.673	2.4	1.4	Real-time Code	GeoXT	11:45:11am
81	-74.6024	40.30898	-14.812	18.983	3.3	2.1	Real-time Code	GeoXT	11:55:35am
82	-74.60232	40.30898	-13.597	20.197	6.5	2.9	Real-time Code	GeoXT	11:57:09am
83	-74.60216	40.30912	0.044	33.838	7	4.4	Real-time Code	GeoXT	11:59:28am
84	-74.60207	40.3092	-22.597	11.197	6	2.7	Real-time Code	GeoXT	12:00:28pm
85	-74.60211	40.30939	-5.276	28.518	5.6	2.6	Real-time Code	GeoXT	12:01:28pm
86	-74.60214	40.30947	-7.037	26.758	5.4	2.5	Real-time Code	GeoXT	12:02:44pm
87	-74.60209	40.30956	-8.287	25.508	5.4	2.5	Real-time Code	GeoXT	12:03:31pm
88	-74.60234	40.30993	-10.161	23.634	7	4	Real-time Code	GeoXT	12:11:15pm
89	-74.60237	40.31004	-9.735	24.06	6.8	5.1	Real-time Code	GeoXT	12:12:27pm
90	-74.6023	40.31009	-12.017	21.778	4.2	2.1	Real-time Code	GeoXT	12:13:46pm
91	-74.60219	40.31009	-10.926	22.869	5.6	4.5	Real-time Code	GeoXT	12:14:29pm
92	-74.60209	40.31016	-7.37	26.424	6.7	3.8	Real-time Code	GeoXT	12:15:02pm
93	-74.60211	40.31024	-8.213	25.582	2.7	1.8	Real-time Code	GeoXT	12:16:25pm
94	-74.60212	40.31035	-11.971	21.823	6.4	3.6	Real-time Code	GeoXT	12:17:25pm
95	-74.60211	40.31044	-6.095	27.7	6.2	3.5	Real-time Code	GeoXT	12:18:59pm
96	-74.60212	40.3105	-9.115	24.68	2.6	1.7	Real-time Code	GeoXT	12:19:36pm
97	-74.60217	40.31051	-15.314	18.481	6.1	3.4	Real-time Code	GeoXT	12:19:57pm
98	-74.60221	40.31042	-11.206	22.589	3.8	2	Real-time Code	GeoXT	12:21:36pm
99	-74.60224	40.31034	-12.546	21.249	5.7	3.2	Real-time Code	GeoXT	12:22:59pm
100	-74.60227	40.31022	-12.145	21.65	3.1	1.7	Real-time Code	GeoXT	12:24:37pm
101	-74.60236	40.31011	-9.304	24.491	3.7	1.9	Real-time Code	GeoXT	12:25:33pm
102	-74.60253	40.31007	-10.907	22.888	5.2	2.9	Real-time Code	GeoXT	12:26:38pm
103	-74.60266	40.31006	-6.701	27.094	4.6	2	Real-time Code	GeoXT	12:27:29pm
104	-74.60282	40.31	-2.893	30.902	3.6	1.9	Real-time Code	GeoXT	12:28:32pm
105	-74.60284	40.30988	-7.346	26.449	3.2	1.7	Real-time Code	GeoXT	12:29:34pm
106	-74.6029	40.30966	-6.038	27.757	2.5	1.5	Real-time Code	GeoXT	12:31:34pm

GPS Point	Longitude	Latitude	Standard Deviation	Altitude	PDOF	HDOP	GPS Status	GPS Type	Time
143	-74.60632	40.31445	-10.252	23.548	3.4	1.4	Real-time Code	GeoXT	02:16:59pm
144	-74.60626	40.31447	-21.972	11.828	2.1	1.3	Real-time Code	GeoXT	02:17:30pm
145	-74.60627	40.31455	-11.865	21.935	2	1.1	Real-time Code	GeoXT	02:18:36pm
146	-74.60663	40.31459	-13.878	19.922	3.6	1.4	Real-time Code	GeoXT	02:20:14pm
147	-74.60637	40.31468	-15.105	18.695	4.3	2.3	Real-time Code	GeoXT	02:21:14pm
148	-74.60644	40.31473	-14.301	19.499	3.6	1.5	Real-time Code	GeoXT	02:21:58pm
149	-74.60652	40.31476	-14.725	19.075	3.6	1.5	Real-time Code	GeoXT	02:22:56pm
150	-74.60662	40.31477	-14.852	18.949	3.7	1.5	Real-time Code	GeoXT	02:24:08pm
151	-74.60672	40.31481	-13.164	20.637	4.5	2.3	Real-time Code	GeoXT	02:24:55pm
152	-74.60689	40.31484	-13.583	20.218	4.6	2.3	Real-time Code	GeoXT	02:25:46pm
153	-74.60705	40.31487	-13.735	20.065	4.7	2.3	Real-time Code	GeoXT	02:26:37pm
154	-74.60732	40.3149	-13.049	20.752	4.7	2.3	Real-time Code	GeoXT	02:27:24pm
155	-74.60752	40.31491	-12.118	21.683	2.4	1.2	Real-time Code	GeoXT	02:28:28pm
156	-74.60763	40.31493	-11.466	22.335	4.8	2.2	Real-time Code	GeoXT	02:29:04pm
157	-74.60775	40.31494	-15.152	18.649	3.7	1.5	Real-time Code	GeoXT	02:30:25pm
158	-74.60787	40.31495	-11.405	22.397	5	2.2	Real-time Code	GeoXT	02:31:45pm
159	-74.60794	40.31494	-12.406	21.396	3.7	1.4	Real-time Code	GeoXT	02:32:45pm
160	-74.60806	40.31486	-13.228	20.573	3	1.7	Real-time Code	GeoXT	02:33:39pm
161	-74.60822	40.31471	-12.993	20.809	2.4	1.2	Real-time Code	GeoXT	02:35:53pm
162	-74.60819	40.31465	-14.666	19.135	2.5	1.2	Real-time Code	GeoXT	02:36:59pm
163	-74.60841	40.31449	-15.174	18.628	2.5	1.2	Real-time Code	GeoXT	02:37:53pm
164	-74.60871	40.31415	-13.288	20.514	2.5	1.2	Real-time Code	GeoXT	02:39:22pm
165	-74.60877	40.31393	-13.734	20.068	2.5	1.3	Real-time WAAS	GeoXT	02:40:33pm
166	-74.6088	40.31387	-16.114	17.688	3	1.8	Real-time WAAS	GeoXT	02:41:29pm
167	-74.60888	40.31388	-7.767	26.035	3.4	1.4	Real-time WAAS	GeoXT	02:42:28pm
168	-74.60885	40.31378	-10.486	23.317	3	1.9	Real-time Code	GeoXT	02:44:19pm
169	-74.6088	40.3137	-15.111	18.691	2.5	1.3	Real-time Code	GeoXT	02:45:40pm
170	-74.60876	40.31366	-12.318	21.484	3.1	1.3	Real-time Code	GeoXT	02:46:05pm
171	-74.60236	40.30557	-7.871	25.923	2.5	1.5	Real-time Code	GeoXT	10:55:27am
172	-74.60245	40.30565	-11.168	22.626	2	1.2	Real-time Code	GeoXT	10:56:21am
173	-74.60249	40.30573	-11.026	22.768	3.1	1.6	Real-time Code	GeoXT	10:56:59am
174	-74.60245	40.30595	-11.091	22.703	2.6	1.4	Real-time Code	GeoXT	10:58:41am
175	-74.60236	40.30601	-11.411	22.382	2.6	1.4	Real-time Code	GeoXT	11:00:18am
176	-74.60224	40.30612	-18.611	15.183	2.7	1.6	Real-time Code	GeoXT	11:01:59am
177	-74.60213	40.30624	-8.813	24.981	3.6	1.9	Real-time Code	GeoXT	11:03:09am
178	-74.60203	40.30632	-13.5	20.294	3	1.9	Real-time Code	GeoXT	11:05:01am

GPS Point	Longitude	Latitude	Standard Deviation	Altitude	PDOP	HDOP	GPS Status	GPS Type	Time
215	-74.60659	40.30949	-3.759	30.04	3.2	1.4	Real-time Code	GeoXT	01:09:13pm
216	-74.6067	40.30946	-9.569	24.23	4.5	1.9	Real-time Code	GeoXT	01:10:05pm
217	-74.60677	40.30935	-7.942	25.857	3.2	1.4	Real-time Code	GeoXT	01:10:44pm
218	-74.60684	40.30926	-3.968	29.831	3.3	1.9	Real-time Code	GeoXT	01:11:58pm
219	-74.60695	40.30933	-4.498	29.301	5	2.8	Real-time Code	GeoXT	01:13:29pm
220	-74.60696	40.3094	-7.833	25.966	3.4	1.5	Real-time Code	GeoXT	01:14:29pm
221	-74.60693	40.30951	-12.474	21.325	3.2	1.4	Real-time Code	GeoXT	01:15:36pm
222	-74.60679	40.30957	-12.228	21.571	4.5	2.3	Real-time Code	GeoXT	01:16:36pm
223	-74.60672	40.30952	-11.027	22.772	3.6	1.6	Real-time Code	GeoXT	01:17:11pm
224	-74.60663	40.30958	-7.491	26.308	3.5	1.5	Real-time Code	GeoXT	01:18:22pm
225	-74.60661	40.30963	-12.235	21.564	6.8	3	Real-time Code	GeoXT	01:19:14pm
226	-74.6067	40.30976	-7.917	25.882	2.8	1.3	Real-time Code	GeoXT	01:20:01pm
227	-74.60674	40.30994	-14.046	19.753	5.5	1.8	Real-time Code	GeoXT	01:21:01pm
228	-74.60674	40.31009	-12.401	21.398	3.1	1.4	Real-time Code	GeoXT	01:21:43pm
229	-74.60668	40.31024	-12.419	21.38	3.4	1.4	Real-time Code	GeoXT	01:23:22pm
230	-74.60672	40.31035	-13.138	20.661	7	3.1	Real-time Code	GeoXT	01:28:05pm
231	-74.60682	40.31043	-7.122	26.677	3.7	1.7	Real-time Code	GeoXT	01:28:37pm
232	-74.60691	40.31046	-5.632	28.168	4.6	2.4	Real-time Code	GeoXT	01:29:13pm
233	-74.60694	40.31043	-1.71	32.09	3.3	1.6	Real-time Code	GeoXT	01:29:27pm
234	-74.6069	40.3103	-10.351	23.448	2.9	1.3	Real-time Code	GeoXT	01:29:56pm
235	-74.60685	40.31024	-12.1	21.699	3	1.4	Real-time Code	GeoXT	01:30:13pm
236	-74.60693	40.31017	-13.109	20.69	4.2	2	Real-time Code	GeoXT	01:30:38pm
237	-74.60698	40.31016	-7.299	26.5	3.4	1.6	Real-time Code	GeoXT	01:31:35pm
238	-74.60705	40.31023	-6.074	27.725	5.2	4.2	Real-time Code	GeoXT	01:32:01pm
239	-74.60707	40.31035	-11.934	21.865	3.4	1.6	Real-time Code	GeoXT	01:32:37pm
240	-74.60696	40.31072	-8.87	24.929	3.6	1.7	Real-time Code	GeoXT	01:34:35pm
241	-74.60709	40.31079	-8.644	25.156	3	1.4	Real-time Code	GeoXT	01:35:20pm
242	-74.60729	40.31081	-6.894	26.906	5.4	3.5	Real-time Code	GeoXT	01:36:07pm
243	-74.60738	40.31097	-14.227	19.573	4	1.5	Real-time Code	GeoXT	01:36:48pm
244	-74.6073	40.31102	-6.526	27.274	2.8	1.3	Real-time Code	GeoXT	01:37:42pm
245	-74.60735	40.31119	-11.843	21.957	3.5	1.7	Real-time Code	GeoXT	01:38:50pm
246	-74.60763	40.31172	-12.199	21.602	4.3	1.5	Real-time Code	GeoXT	01:43:37pm
247	-74.6077	40.31182	-14.432	19.369	3.4	1.7	Real-time Code	GeoXT	01:45:02pm
248	-74.60796	40.3119	-11.776	22.025	2	1.1	Real-time Code	GeoXT	01:47:17pm
249	-74.60809	40.31184	-13.422	20.378	4.8	2.7	Real-time Code	GeoXT	01:47:56pm
250	-74.60821	40.31195	-13.338	20.463	2	1.1	Real-time Code	GeoXT	01:48:30pm

GPS Point	Longitude	Latitude	Standard Deviation	Altitude	PDOP	HDOP	GPS Status	GPS Type	Time
287	-74.60864	40.3148	-14.531	19.271	2.2	1.2	Real-time Code	GeoXT	03:03:36pm
288	-74.60875	40.31471	-12.829	20.973	2.8	1.7	Real-time Code	GeoXT	03:04:27pm
289	-74.60879	40.31457	-14.14	19.662	2.2	1.3	Real-time Code	GeoXT	03:05:11pm

APPENDIX D

PROJECT COMPLIANCE WITH ENVIRONMENTAL STATUTES

REGULATORY COMPLIANCE REQUIREMENTS

<u>Federal Statutes</u>	<u>Level of Compliance</u>
Anadromous Fish Conservation Act	N/A
Archeological and Historic Preservation	OGC
Clean Air Act	FULL
Clean Water Act	OGC
Coastal Barriers Resources Act	N/A
Coastal Zone Management Act	N/A
Comprehensive Environmental Response, Compensation and Liability Act	FULL
Endangered Species Act	OGC
Estuary Protection Act	N/A
Federal Water Project Recreation Act	N/A
Fish and Wildlife Coordination Act	OGC
Land and Water Conservation Fund Act	N/A
Marine Mammal Protection Act	N/A
National Historic Preservation Act	OGC
National Environmental Policy Act	PARTIAL
Resource Conservation and Recovery Act	N/A
Rivers and Harbors Act	N/A
Watershed Protection and Flood Prevention Act	N/A
Wild and Scenic Rivers Act	FULL
 <u>Executive Orders, Memoranda, etc.</u>	
Protection and Enhancement of Cultural Environment (E.O. 11593)	OGC
Floodplain Management (E.O. 11988)	N/A
Protection of Wetlands (E.O. 11990)	OGC
Prime and Unique Farmlands (CEQ Memorandum, 11 Aug 80)	FULL
Environmental Justice in Minority and Low Income Populations (E.O. 12898)	N/A

Note:

Full Compliance (Full): Having met all requirements of the statute, E.O. or other environmental requirements for the current stage of planning.

Partial Compliance (Partial): Not having met some of the requirements that normally are met in the current stage of planning.

Non-Compliance (NC): Violation of a requirement of the statute, E.O. or other environmental requirement.

Not Applicable (N/A): No requirement for the statute, E.O. or other environmental requirement for the current stage of planning.

On Going Coordination (OGC): Currently coordinating to meet the requirements for this stage of planning.

APPENDIX E

404 (b)(1) ANALYSIS

EVALUATION OF THE DISCHARGE OF DREDGED OR FILL MATERIAL
 INTO THE WATERS OF THE UNITED STATES IN ACCORDANCE
 WITH GUIDELINES PROMULGATED BY THE ADMINISTRATOR
 OF THE ENVIRONMENTAL PROTECTION AGENCY, PURSUANT
 TO SECTION 404 (b)(1) OF THE CLEAN WATER ACT
 (40 CFR 230, DATED 24 DEC 1980)

Activity Being Evaluated: **Pond Dredging and material placement for the Grover's Mill Pond Aquatic Ecosystem Restoration Project**

Date of Site Inspection: **12/04/04 Wetland and stream assessment and numerous site visits (if none, so state)**

A. Restrictions on Discharges:

- | | <u>Yes</u> | <u>No</u> |
|--|--------------|--------------|
| 1. Alternatives: | | |
| a. Will there be a discharge into a special aquatic site?
If yes, can project be constructed out of aquatic site? (40 CFR 230.10(a)(3)) | (X) | () |
| b. Additional information is required to evaluate practicable discharge alternatives. Does a practicable alternative as defined in 40 CFR 230.1(a) exist which will Accomplish project goals with lessened adverse environmental impacts?
If so, specify: The project alternatives require in-pond work and accumulated sediment removal. All necessary permits will be secured for this work and all required methodologies to minimize discharges to Grover's Mill Pond and Bear Creek will be adhered to. | () | (X) |

2. Water Quality Standards:

- | | | |
|--|--------|--------------|
| a. Has a Water Quality Certificate been denied?
Is it suspected that a Water Quality Certificate will be denied? | () | (X) |
| b. Will the discharge violate toxic effluent standards pursuant to Section 307 of the Clean Water Act?
If yes, list suspected contaminants: _____ | () | (X) |
| c. Will the discharge jeopardize the continued existence of any threatened or endangered species?
If yes, specify: _____ | () | (X) |
| d. Will the discharge violate the protection of a marine sanctuary?
If yes, name the sanctuary: _____ | () | (X) |

3. Factual Determinations:

- | | <u>Major</u>
+ - | <u>Minor</u>
+ - | <u>None</u> |
|--|------------------------------------|------------------------------------|---|
| a. The substrate | | | |
| (1) has particle shapes, sizes and compactions different from discharged material. | <input type="checkbox"/> | <input type="checkbox" value="-"/> | <input type="checkbox"/> |
| (2) will be affected adversely by changes in contours based on method, volume, location, or rate of discharge.
(Pond will be dredged to original contours) | <input type="checkbox" value="+"/> | <input type="checkbox" value="-"/> | <input type="checkbox"/> |
| b. Will there be a <u>significant</u> change in the hydrologic regime due to: | | | |
| (1) current patterns | <input type="checkbox"/> | <input type="checkbox"/> | <input style="background-color: black; color: black;" type="checkbox"/> |
| (2) circulation | <input type="checkbox"/> | <input type="checkbox"/> | <input style="background-color: black; color: black;" type="checkbox"/> |
| (3) downstream flows | <input type="checkbox"/> | <input type="checkbox"/> | <input style="background-color: black; color: black;" type="checkbox"/> |

- (4) normal fluctuation
- (5) water chemistry (**Potentially during dredging operations**)
- c. Will suspended particulates have an adverse effect based upon
- (1) grain and plume size and shape
- (2) the volume, method, location or rate of discharge
- d. Will the discharge increase or replace contaminants?
If so, how and to what degree? _____

- e. Will the discharge have an adverse effect on aquatic organisms including
benthos (other than temporary construction impacts)?
- f. Is the mixing zone of the smallest practicable size?
Yes No
(X) ()
- g. Will there be adverse cumulative impacts associated with this discharge?
If so, what are they? _____

- h. Are there adverse secondary impacts associated with the discharge?
If yes, specify: _____

4. Have all appropriate and practicable steps been taken to minimize the potential
adverse impacts of the proposed discharge on the aquatic ecosystem? Yes No
(X) ()

Approved erosion and sedimentation control measures will be in place during construction activities. All other requirements outlined in the State 401 Water Quality Certificate and permit will be adhered to.

NOTE: plus (+) equals beneficial impact --- minus (-) equals adverse impact

B. Results of Testing

The project involves the modification of the existing pond by dredging of accumulated sediments and placement into an Upland Confined Disposal Facility that will have a discharge back to Grover's Mill Pond. Testing of sediments has shown compliance with New Jersey standards (see Environmental Assessment). Sediment sampling methodology and data analysis results are being reviewed by the State of New Jersey. If these are found to be acceptable, then no further testing will be required. Approved erosion and sediment control measures shall be in place during construction activities.

Are the test results sufficient to complete the evaluation? Yes No
(X) ()

If no, specify additional testing: **No additional sampling is planned at this time**

C. Finding of Compliance or Non-Compliance with the Restrictions on Discharges:

Based on the evaluation and/or analyses in accordance with the guideline promulgated by the Administrator of the Environmental Protection Agency pursuant to Section 404(b)(1) of the Clean Water Act (40 CFR 230) the proposed site for the discharge of dredged or fill material:

Complies with the guidelines.

Complies with the guidelines with the inclusion of practicable discharge conditions.

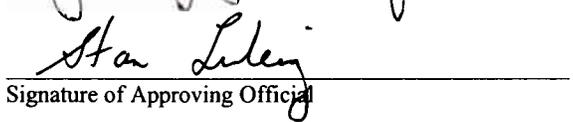
Fails to comply with the requirements of the guidelines. (See 40 CFR 230.12(a)(3)(i-iv))



Signature of Evaluator



Signature of Reviewing Official



Signature of Approving Official

