

A. INTRODUCTION AND METHODOLOGY

This chapter describes the onsite wetland types and potential significant impacts to wetland resources from the proposed project. The extent of onsite wetlands was determined by examination of Federal and State wetland mapping and by an onsite wetland delineation conducted by Schoor DePalma Engineers and Consultants in June, 2004. Wetlands onsite were delineated in accordance with the 1987 Corps of Engineers Delineation Manual. Mapped New York State wetlands on the project site were delineated in accordance with the NYSDEC Freshwater Wetlands Delineation Manual (1996).

B. EXISTING CONDITIONS

Wetlands are defined at the federal level as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas." (Federal Register, 1982). Wetlands are regulated at the federal level by the Army Corps of Engineers (ACOE) pursuant to Section 404 of the Clean Water Act and its implementing regulations.

New York State also regulates wetlands under Article 24 of the Environmental Conservation Law (ECL). Regulated State wetlands are defined as "lands and submerged lands commonly called marshes, swamps, sloughs, bogs, and flats supporting aquatic or semi-aquatic vegetation..." New York limits its regulatory authority to those wetlands shown on its State Wetland Maps which are generally 12.4 acres in size or greater. In addition, New York regulates a 100 foot "adjacent area" surrounding all State-mapped freshwater wetlands within which disturbance is generally discouraged.

The purpose of wetland regulation by State and Federal government is to protect the unique functions and values served by wetlands. Wetlands absorb stormwater runoff and improve water quality thereby mitigating downstream flooding and preventing degradation of water quality in streams and other surface waters. From an ecological perspective, wetlands typically provide higher primary productivity (grams of biomass per area per year) than upland habitat. Many species of plants and animals are endemic to wetlands (cannot exist without them) and many additional animals rely on wetlands as a source of food, shelter or breeding habitat. Lastly, roughly half of New York State's threatened and endangered plants and animals are wetland dependent.

MAPPED WETLANDS

Both Federal and New York State wetlands occur on the project site and have been mapped by the U.S. Fish and Wildlife Service's "National Wetlands Inventory" (NWI) and by the New York State Department of Environmental Conservation (NYSDEC).

NEW YORK STATE WETLANDS

As shown in Figure 3.4-1, two State-regulated wetlands have been mapped on the project site. Wetland GO-13 comprises the central-southern wetland system that includes the central farm pond, emergent (herbaceous) wetlands and forested wetlands (swamp) extending southwards offsite. Wetland MB-1 occupies a corner of the northern portion of the project site, with the bulk of the wetland located offsite, further north. Both of these wetlands have been classified by the NYSDEC as "Class II" wetlands (ranked in declining order of value from I to IV), indicating that they provide a relatively high level of wetland functions with a diversity of vegetative cover types, species diversity and/or wildlife uses.

The extent of State-regulated wetlands has been verified in the field by NYSDEC personnel based on delineation of wetland indicators, principally those areas showing a predominance of hydrophytic vegetation. Therefore, the actual boundaries of NYS wetlands GO-13 and MB-1 include wetland area contiguous with the mapped extent of these wetlands. However, while wetland delineated maps have been submitted to the ACOE and the NYSDEC, neither agency has completed their final verification of wetland boundaries as of the date of this DEIS. Partial wetland verification has been obtained from the NYSDEC for wetland boundaries south of Eager Road, but not for areas north of Eager Road. All federal and state wetlands were delineated using the delineation criteria and standards established by the ACOE and the NYSDEC. As a result, no significant changes in the wetland delineations are expected. However, any adjustments to the site plan or changes in net density would be made pending these agency's determinations and Town consultant review of the wetland boundaries.

FEDERAL WETLANDS

The National Wetlands Inventory has also mapped freshwater wetlands on the project site as shown in Figure 3.4-2. NWI wetlands are classified by wetland type, in accordance with the Cowardin system of wetland classification (USFWS, 1979). On the project site, the following wetland types are mapped:

- PFO1E and PFO1A: Palustrine forested, broad-leaved deciduous wetlands, both seasonally flooded and temporarily flooded. These wetlands are predominant in the eastern forested portions of the project site. This wetland type is also mapped along the Wallkill River, west of the project site. Although not mapped by NWI, this wetland type also occurs on the western side of the project site closer to Route 416 in forested, lowland areas.
- PUBHx and PUBHh: Palustrine, unconsolidated bottom, permanently flooded. These are ponded areas derived from excavation on the western side of the project site (PUBHx) or derived from diking/impoundment (PUBHh) as is the case with the larger farm pond located in the east central portion of the project site. On the project site, these wetland types typically transition to adjacent forested wetlands sharing the same hydrologic source.
- PEM1C, PEM1Cd, PEM1E, and PEM1Fh: Palustrine emergent wetlands, including persistent wetlands that are either seasonally flooded/saturated or semipermanently flooded. These wetlands are dominated by herbaceous grasses and sedges and exhibit a continuum of hydrologic conditions from frequent flooding to saturated soil conditions

allowing wetland vegetation to predominate. These wetland types are mapped on the project site in the hedgerow/field areas immediately east of Route 416, within the northernmost portion of the project site, and in pockets adjacent to the Wallkill River. Although not mapped by NWI, this wetland type also occurs in the eastern portion of the project site, just south of the large central pond.

- PSS1E: Palustrine scrub-shrub, broad-leaved deciduous wetlands that are seasonally flooded-saturated. These wetlands consist of shrubs and sapling trees and are mapped only at the northernmost portion of the project site, north of Eager Road and east of Route 416. However, unmapped scrub-shrub wetlands also occur in the southwest portion of the project site in successional areas and within some of the wetter hedgerow habitats occurring throughout the project site.

WETLAND DELINEATION

All wetlands within the principle development area east of Route 416 and south of Eager Road were delineated in the field by Schoor DePalma, Inc. in June of 2004. Delineated wetlands are shown in Figure 3.4-3. As is clear from a comparison of the mapped versus delineated wetland figures, the extent of freshwater wetlands onsite is somewhat greater than indicated by Federal/State wetland mapping. The regulatory boundaries of the NYSDEC mapped wetland GO-13 located adjacent to the primary development area south of Eager Road were field verified by representatives of the NYSDEC during a field inspection on November 5, 2004. Verification of the boundaries of NYSDEC wetland MB-1 and all ACOE-regulated wetlands has been scheduled with the regulatory agencies and is expected to occur in the fall of 2005.

The project site contains active and inactive (former) agricultural fields and hedgerows interspersed with areas of early successional and mature forest. Within each of these primary vegetative cover types, wetlands and streams occur in topographically low areas due in part to the prevalence of soils of low permeability throughout the project site.

WET MEADOW

Portions of the meadow communities found at lower elevations contain plant species favoring periodic wet conditions where groundwater seepage or less permeable soils predominate. Such wet meadow areas are dominated by purple loosestrife (*Lythrum salicaria*) and also contain such herbaceous plant species as bulrush (*Scirpus atrovirens*), tussock sedge (*Carex stricta*), umbrella sedge (*Cyperus strigosus*), wild mint (*Mentha arvensis*), switch grass (*Panicum virgatum*), and reed canary grass (*Phalaris arundinacea*). Examples of such wet meadow areas include land adjacent to the north-south trending drainageway south of Eager Road and east of Route 416 and a linear emergent wet meadow dominated by purple loosestrife and tussock sedge located east and south of the central farm pond.

HEDGEROW WETLAND

Hedgerows are common throughout the project site and in many cases follow drainageways leading to wetlands or tributaries both onsite and offsite. Typical species occurring in the project site's hedgerow wetlands include red osier dogwood (*Cornus amomum*), common buckthorn (*Rhamnus cathartica*), tartarian honeysuckle (*Lonicera tatarica*), American elm (*Ulmus americana*), broad leaved cattail (*Typha latifolia*), swamp milkweed (*Asclepias incarnata*), pin oak (*Quercus palustris*), white oak (*Quercus alba*), green ash (*Fraxinus pennsylvanica*), rubus sp., elderberry (*Sambucus canadensis*) and multiflora rose (*Rosa multiflora*).

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EARLY SUCCESSIONAL FORESTED WETLAND

Although not as abundant as other habitat types, early successional forest habitat occurs onsite. Such areas are often found where surface wetness or seasonal ponding causes their utility as pasture or agricultural land to be lower than lands currently in herbaceous cover. For this reason, this community typically includes areas of palustrine wetlands containing hydrophytic species of deciduous trees and shrubs. Within areas of transition between old field and early successional forest, a high stem density is encountered. Red maple (*Acer rubrum*) and green ash saplings predominate in such areas, along with facultative wetland species of dogwood (*C. stolonifera*, *C. amomum*) and viburnum (*V. lentago*, *V. recognitum*). Where frequent flooding occurs, tussock sedge (*Carex stricta*) and woolgrass (*Scirpus cyperinus*) occur in the understory. Examples of this wetland type are found along the southern boundary of the project site south of the unpaved drive (Lazy Lane) as well as an area of red maple swamp located at the northernmost portion of the project site, within State Wetland MB-1.

MATURE FORESTED WETLAND

Portions of the project site that exist in a mature forested condition also generally contain unfavorable conditions for agriculture due to soil saturation and flooding. Therefore most of the site's forests are located in topographically lower regions and contain an abundance of facultative wetland species. In the overstory of forested wetlands onsite, species include red maple (*Acer rubrum*), swamp white oak (*Quercus bicolor*), American elm (*Ulmus americana*), pin oak (*Quercus palustris*), sugar maple (*Acer saccharum*), and green ash (*Fraxinus pennsylvanica*). Understory species include sensitive fern (*Onoclea sensibilis*) dewberry (*Rubus hispidus*) arrowwood (*Viburnum recognitum*) smooth blackhaw (*Viburnum prunifolium*), nannyberry (*Viburnum lentago*), spicebush (*Lindera benzoin*), highbush blueberry (*Vaccinium Corymbosum*), wood fern (*Dryopteris sp.*), raspberry (*Rubus idaeus*), and skunk cabbage (*Symplocarpus foetidus*). Pondered water and vernal pool habitat (seasonally flooded) occur in forested wetlands onsite.

PONDS

Small open water areas or farm ponds occur within lowlands onsite. These are labelled as PUBH wetland areas in Figure 3.4-2. Their origin is likely due to agricultural modification/excavation and from the effects of the last glaciation which scoured depressions in the landscape and left areas for meltwater to pool. The largest onsite pond is in the east-central portion of the site bordered by forested wetlands to the north and emergent wet meadow wetlands to the south. Such ponds are characterized by shallow, nutrient-rich water with abundant aquatic vegetation and eutrophic conditions. As indicated by Reschke¹, eutrophic ponds typically contain such plants as coontail (*Ceratophyllum demersum*), duckweeds (*Lemna minor*), waterweed (*Elodea canadensis*), pondweeds (*Potamogeton spp.*), water starwort (*Heteranthera dubia*), algae (*Cladophora spp.*), yellow pond lily (*Nuphar luteum*), and white water lily (*Nymphaea odorata*). Characteristic fish include warm water species such as bluegill (*Lepomis macrochirus*) and yellow perch (*Perca flavescens*).

¹ "Ecological Communities of New York State," Carol Reschke, 1990.

C. FUTURE WITHOUT THE PROPOSED PROJECT

The spatial extent of wetlands on the project site can be expected to persist largely unchanged in the future without the project. If open field and early successional habitats are left fallow, free of grazing and haying operations, these areas would see an increasing number of woody shrubs and trees in the coming decades, ultimately turning these areas into forested palustrine wetlands similar to other forested wetlands onsite. However, if current land uses persist in the future without the project, the relative abundance of wet meadow, scrub-shrub, early-successional and forested wetlands onsite would remain in their current proportions.

D. THE PROBABLE IMPACTS OF THE PROPOSED PROJECT

As shown on the Site Plan in Figure 2-5, in Chapter 2, “Project Description,” the proposed development has avoided onsite wetlands and 100-foot wetland adjacent area with only minor encroachments to widen and improve an existing roadway crossing necessary to gain safe access to the site's development areas. Specifically, a very small portion of the early successional wetland adjacent to Lazy Lane and a small portion of the wet meadow wetland (NYSDEC GO-13) south of the central pond would be filled for roadway improvements. At both locations an existing crossing exists in the form of a dirt roadway (Lazy Lane) and old farm path/road (GO-13) therefore the extent of additional disturbance is minimized and no new wetland fragmentation would result. The location of these minor wetland impacts are shown in Figure 3.4-4. The existing 10 foot farm path crossing of wetland GO-13 would be improved to a 24 feet roadway section with a newly design culvert to maintain the north/south hydraulic connection. This road provides access to the development areas on the eastern portion of the project site.

Table 3.4-1 presents total wetland and wetland buffer disturbance resulting from the proposed project.

**Table 3.4-1
Wetland Disturbance**

Project Component	Wetland Disturbance	NYSDEC Buffer Disturbance
Lazy Lane Crossing (ACOE)	590 sf	No Buffer
GO-13 Roadway Crossing NYSDEC	4,100 sf	15,652 sf
TOTAL	4,690 sf	15,652 sf
Notes:		

Of the 4,100 sf of NYSDEC wetland disturbance, 2494 sf (more than 60%) would be fill/soil that will be revegetated allowing wetland buffer functions to continue. Of the 15,652 sf of buffer disturbance, 8,438 sf (more than 50 percent) would also be revegetated to restore buffer functions.

Wetlands have been shown to be hydrologically disconnected from the onsite bedrock groundwater resources as shown by no draw-down in piezometer readings during pump tests. Stormwater management systems have been located outside the boundaries of all wetlands and would avoid any adverse impacts to wetland resources. Stormwater runoff would continue to

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reach onsite and offsite wetlands via surface flow thereby sustaining wetland hydrology. The single outfall proposed for the sewage treatment plant would have a very small footprint and would constitute only a temporary impact due to trenching to the riparian wetlands adjacent to the Wallkill River during construction. However, these areas will be restored to their natural condition once construction is completed. The total temporary disturbance will be less than 3,000 square feet. All disturbed areas will be re-vegetated with appropriate wetland plants.

WETLAND IMPACT AVOIDANCE MEASURES

- Water quality will be preserved by limiting the footprint of the development area through clustering and by directing all stormwater runoff to four extended detention basins located on the periphery of the site. As described in Chapter 3.7: "Stormwater Management and Subsurface Water," these detention basins would treat stormwater runoff from all roadways and developed areas prior to discharging to onsite wetlands and watercourses.
- The drainage characteristics of the project site are preserved with the proposed layout and drainage plan such that surface runoff in the post-construction condition would continue to reach onsite wetlands. In this way, the wetland's hydrologic inputs are sustained. Runoff is not shunted away from wetland areas. For example, the detention basins used to treat runoff from the "Meadow Green" and "The Mews" housing areas would discharge to the lower, forested portions of wetland GO-13 preserving the drainage patterns that exist now. Similarly, detention basins serving "The Meadow" and "The Grove" would discharge to the western wet meadow and eastern mature forested wetland adjacent to the rail line respectively.
- The two roadway crossings requiring minor wetland fill would retain water flow through box culverts such that no change in surface or subsurface hydrologic inputs would result. The use of box culverts and retaining walls at the shoulders of these crossings will minimize disturbance and grading impacts within the wetlands.
- In order to preserve the wetlands' ecological integrity and to promote habitat linkages, the full 100 foot NYS wetland adjacent area is preserved free of disturbance for the vast majority of the site. In addition, as shown on the large scale project plans, the vast majority of other onsite wetlands are provided buffers of 50 to 100 feet or more that would remain undisturbed (all vegetation untouched) during and after the construction process. In this way, the potential for introducing sediment, water quality changes or invasive species (phragmites australis, purple loosestrife) to onsite wetlands is avoided to the maximum extent practicable.
- Upon final grading, the small amount of disturbance within the 100-foot adjacent area of wetland GO-13 would be revegetated with native shrubs and herbaceous species such that only the 7,214 square feet (0.17 acres) of roadway surface would constitute a permanent loss of functional wetland buffer.

Due to the significant design modifications made to avoid nearly all wetland and wetland buffer impacts, the proposed project would have no significant, adverse effects to onsite or offsite wetlands and waters.

The Hydrogeologic Technical Report (see Appendix G) demonstrates no significant impact to wetlands from the proposed water supply sources.

E. MITIGATION

Wetland impacts required by the proposed project are necessary to improve and make safer existing roadways such that minor widening/improvements would encroach in wetland areas on either side of these existing roadways. This roadway widening alone accounts for project related wetland impacts. It should be noted that the layout of the proposed project has specifically avoided impacts to wetlands and wetland buffer area by placing all construction on upland areas, centrally located on the topographic high ground onsite. Of the total 370 acres of the project site, only approximately 115 acres would be disturbed with development - all within upland areas with the exception of the two minor roadway widening impacts to wetlands located on existing dirt roads currently adjacent to wetland area. Existing culverts bring surface runoff under these two dirt roads and account for the wetlands bordering the roadways at two select locations. In order to gain access to the site from Route 416 and to access the development areas on the eastern portion of the project site, wetland impacts are unavoidable. As described above, these impacts have been minimized to the maximum extent practicable.

The need for mitigation for wetland impacts is minimal due to the very minor amount of fill required for roadway construction. In total 0.11 acres (4,690 square feet) of wetland would be disturbed by the proposed project. As mitigation for these impacts, wetland enhancement of 0.23 acres (9,877 square feet) is proposed within onsite wetlands heavily degraded by invasive plants - specifically purple loosestrife. This provides a wetland mitigation ratio of 2.11 to 1.0, fully offsetting any detrimental wetland impacts. The primary, emergent wetland onsite located immediately south of the central pond would be remediated by removal of purple loosestrife and supplemental plantings of appropriate rushes/sedges including tussock sedge, soft rush and other species. This work would be designed and carried out in cooperation with the NYSDEC and ACOE. Planting details will be developed as the approval process moves forward and shall be made part of the FEIS. In addition, all areas of NYSDEC wetland buffer encroachment not in pavement/roadway would be mitigated through replanting with facultative wetland shrubs and grasses. These mitigation efforts would compensate for all significant adverse wetland impacts.

Wetland enhancement is proposed in lieu of wetland creation due to the documented degraded condition of onsite wetlands and the higher potential for improvement to wetland functions/values as compared to the creation of a smaller wetland area within existing upland. Because none of the proposed wetland impacts would alter existing hydrology or constitute a sizeable loss of wetland area or diminish wetland functions in any measurable way, it is expected that all wetland areas would continue to function without any detrimental effects - with or without mitigation.