

# **APPENDIX B**

Preliminary Conceptual Mitigation Plan

Based on the Proposed

*Minimal Degradation Alternative*

# CONCEPTUAL PLAN TO MITIGATE IMPACTS TO WETLAND RESOURCES

## *LOCATED WITHIN THE PROPOSED REMEDIATION & EXPANSION FOOTPRINT OF THE GENEVA LANDFILL*

UPDATED: SEPTEMBER 04, 2011

### *INTRODUCTION*

A critical first step in the mitigation process is to recognize the relative value of the wetland resources in a project area and to **avoid or minimize impacts** to higher quality resources wherever possible. This concept has been conscientiously applied in the development of the **preferred minimal degradation alternative** and has involved active solicitation of input from regulatory agencies in the layout of various landfill footprint alternatives, all of which have substantially reduced originally proposed wetland impacts and the useable volume projected for the landfill development.

As a result of Ohio Environmental Protection Agency (OEPA) and U.S. Army Corps of Engineers input, the Ohio Rapid Assessment Methodology (ORAM Version 5.0) was applied to evaluate wetlands with potential to be affected by the Geneva Landfill, Inc. (GLI) remediation and expansion project. The wetlands were scored and assigned initial ORAM Categories in anticipation of review by the OEPA.

Prior to field review and assessment with OEPA and U.S. Army Corps of Engineers representatives, wetland and waters impacts anticipated for the proposed landfill remediation/expansion footprint were addressed with the landfill design engineers and the GLI management. Substantial adjustments were made to initial designs to avoid direct encroachment into unnamed tributaries to Cowles Creek, and,....with progressive revision of the original footprint proposal, all higher quality wetland areas (ORAM Category 3 wetlands) have been avoided. In addition, the currently proposed minimal degradation alternative has lowered total permanent impacts from more than 22 acres to approximately 9.68 acres, all of which are within relatively lower quality Category 1 and Category 2 wetland resources.

The required design geometry of the structurally stable three-dimensional landfill configuration has dictated the position of structural slopes and resulting wetland impacts. However, as noted above, the applicant's design team has made a very deliberate effort to adjust the siting of the landfill waste disposal limits to avoid direct wetland impacts to the riparian corridors of the unnamed tributaries of Cowles Creek.

At the time of this writing, the USACE has completed an assessment of the wetland and waters resources on/within the proposed wetland footprint, and the Corps has completed a Preliminary Jurisdictional Determination of the extent of the areas that they

will be regulating. The applicant has accepted the Preliminary Jurisdictional Determination and is offering the following CONCEPTUAL MITIGATION ALTERNATIVES to compensate for anticipated impacts. The applicant is mindful of the fact that these proposals are preliminary in nature and must be developed in greater detail through careful discussion with OEPA and the Corps.

The design and construction of wetland replacement acreage at a minimum 2:1 ratio as well as protection and enhancement of existing wetland and waters resources are being offered as compensatory mitigation for the proposed wetland and waters impacts. As noted above, more detailed mitigation options are likely to be developed to accommodate anticipated Corps and OEPA mitigation goals. However, based on past discussions with OEPA and Corps representatives, the GLI mitigation plan is likely to include:

### **Minimum Requirement**

- Construction of approximately 19.0 acres of replacement wetlands [to provide compensation for the permanent impacts to ±9.68 acres of Category 1 and Category 2 wetlands plus multiple stream restoration and habitat enhancements with the UNT 1 corridor.

### **Additional Mitigation Measures**

- Replacement of wooded vernal pool habitat that will be lost adjacent to Tuttle Road and within several meters of the former Doherty closure project area is proposed to be conducted at the extreme northern limit of the GLI holdings. The proposed vernal pool replacement area is within a forested upland/wetland complex that has nexus with the Cowles Creek Riparian Corridor and is within an area where foraging adult wood frogs (*Rana sylvatica*) were observed during delineation efforts.
- Remediation of hydrology discharges for UNT 1 and 2 corridors (discharge of outflows from storm water detention/sedimentation basins to these streams to offset surface water runoff diverted due to landfill grading and development), and
- Establishment of conservation and protection measures for all replacement wetlands and the areas within and along the UNT 1, 2 and 3 riparian corridors.

Analysis of the sub-watersheds within the vicinity of the GLI project holdings resulted in selection of proposed wetlands replacement areas that are entirely within the same headwaters areas of the unnamed tributaries to Cowles Creek. This selection was fortunate because the acreage due south of current GLI holdings gradually transitions into the entirely separate watershed of the Grand View River. The soils and topography of the proposed replacement areas are encouraging regarding the potential of these areas to be converted to wetlands that are similar in slope, landscape position, and hydroperiod to the areas that are being proposed for impact. Initial hydrograph preparation for these sites demonstrates similar depth duration and timing of wetlands hydrology and suggests that similar forms and functions can be asserted within the replacement wetland areas to

ensure development of functions and societal values similar to those occurring in the ±9.68 acres of wetlands that are proposed to be affected by the landfill development.

The replacement wetland hydrograph and water budget are being developed concurrently with the structural and drainage designs for the final landfill configuration and will be submitted in greater detail when the landfill design is finalized.

### ***RATIONALE***

The initial evaluation of wetland functions and relative societal values of these functions was achieved through use of the ORAM categorization scoring of the wetlands on the GLI site. Presently, all wetland impacts are proposed within Category 1 and 2 wetland resources. The hydrology of these wetlands is driven mostly by direct precipitation, and limited surface runoff. As a result, the primary replacement wetland areas identified in the enclosed figure are being designed to rely on similar hydrology sources. The details of the replacement wetlands configuration will determine how the areas are to be graded and what parts of the wetlands will be only seasonally saturated or inundated and IF any portions of the replacement wetlands will be designed in a manner similar to other replacement wetlands that GLI has developed as a result of other past permitting activities (emergent and vegetated open water designed to attract and harbor migratory waterfowl and wading birds...while providing small areas for amphibian reproduction).

The replacement wetlands will be sited and designed to attenuate currently flashy flows into the UNT 1 corridor. The current flows entering the UNT 1 corridor are largely unrestrained during heavy storms and have resulted in several areas of erosion and sediment deposition with the UNT 1 corridor. Provision of several acres of detention and slower release within the UNT-1 headwaters is anticipated to remediate some of the erosive problems within the UNT-1 corridor...which, with some degree of stream habitat enhancement, is expected to open much of the UNT-1 corridor for better use by locally important fish species. The proposed design placement in the headwaters of Cowles Creek is also expected to provide enhanced water quality within Cowles Creek by filtering/polishing and detaining significant storm water flows. The proximity and hydrologic connection of the replacement wetlands to Cowles Creek is also expected to enhance their value as wildlife habitat.

### ***GOALS***

- To construct approximately 19.0 acres of replacement wetlands similar in form (appearance) and function to the wetlands that are proposed to be affected by the landfill remediation and expansion (to emphasize seasonally inundated/saturated “flatwoods” similar in composition to the impact wetlands, perimeter scrub/shrub, and shallow open water areas that will be attractive for amphibian reproduction).

- To create habitat capable of supporting migratory songbird and waterfowl species; and nesting, resting, feeding opportunities for animals/birds known to breed and/or over-winter in the vicinity of Ashtabula County, Ohio.
- To provide a significant increase in stormwater storage and floodwater detention within the Cowles Creek watershed. (Approximately 8.0 additional acre feet of short-duration storage volume.)
- To provide additional mitigation enhancement by replacing vernal pool habitat for amphibian reproduction within a wooded corridor of Cowles Creek known to support adult wood frogs.
- To remediate the re-grading of watershed drainage area resulting from landfill development. (To be accomplished through discharge of outflows from storm water detention/sedimentation basins at volumes intended to offset hydrology losses from upslope development.)
- To establish conservation and protection measures within and along the Cowles Creek riparian corridor, its associated wetlands, and its unnamed tributaries occurring within GLI controlled lands. (To include current and past areas of replacement wetlands.)

***WATER BUDGET/HYDROLOGY CALCULATIONS  
FOR WETLAND REPLACEMENT AREA***

The water budget for the replacement wetland area is currently being finalized based on the final grading plan for the proposed landfill footprint.

**INPUTS:** Direct precipitation data is available through the U.S. Weather Bureau Regional Climate Center. Runoff volumes will be calculated based on the size of the watershed area that will be draining to the constructed wetland site. The size of the surface water drainage area is considered to be critical factor in calculating the anticipated runoff curve numbers and runoff volumes likely to flow to the constructed wetland area. Although it would be welcome, the occurrence of ground water as a net hydrology input to the site is unlikely and cannot be assured. Therefore groundwater will not be included as a net hydrology input in the final water budget calculations.

**LOSSES:** Although recent data suggest that water losses from the wetlands through evapo-transpiration (ET) can be adjusted downward to a fraction of pan evaporation, pan evaporation (based on regional climate data) will be the basis for anticipated ET losses from the constructed wetlands. Although conservative, use of pan evaporation loss incorporates a "cushion" in the water budget calculation. Water losses through the soil substrate will be based on anticipated soil conditions and the condition of the proposed wetland subgrade, but are expected to be at a rate in the vicinity of  $10^{-7}$ cm/sec. These figures will be finalized with additional field data from site-specific backhoe test pits. Flow-through losses will also be estimated based on the final design and size of the contributing watershed area.

**WATER BUDGET RESOLUTION (Pending)**

Inputs (Hydrology gains) - Losses (Hydrology losses) = Net available hydrology for replacement wetland area.

### **HYDROGRAPH (Pending)**

(Visual display of hydrology distribution throughout the year.)

### ***REPLACEMENT WETLAND APPEARANCE (To be determined with Regulatory Agency Input.)***

The appearance ("form") of the replacement wetlands is based on the condition of the "better quality" wetland areas that are expected to be affected by the proposed landfill footprint (the "reference" wetlands). With this in mind, it is proposed that the replacement area will be designed to include mostly forested and scrub/shrub vegetative communities. However, propensity for the scrub/shrub areas to evolve to forested conditions will not be discouraged. In fact, portions of the scrub/shrub and "fringe" wetland areas may also be selectively planted with seedling hydrophyte tree species.

The replacement area is also planned to include linear areas of shallow open water that will act as "refugia" for water dependent animals during seasonal drawdown conditions and resting areas for migratory waterfowl that are already using previously constructed wetland replacement areas on the GLI property. Stumps and other woody debris will be placed liberally where they can provide cover and perching opportunities for various bird, reptile, and amphibian species.

**GRADING:** The form of the replacement wetlands will be largely dependent on grading of the wetland subgrade and substrate and the establishment of the fixed outlet weir(s) elevations for the replacement wetlands. In general, the finished topography of the replacement area will dictate the composition of the vegetative communities. The GLI replacement wetland area is being designed to present seasonal water depths that range from 0 to 6 inches over the majority of the site. With the exception of buttonbush, all shrub dominated vegetative stands will be sited in areas with minimal inundation that are generally lacking in obvious surface water during most of the growing season. Emergent meadow/marsh areas will have much longer duration inundation but will also be expected to experience periodic or seasonal drawdowns that encourage germination of hydrophyte species on the exposed wetland substrate. The "deeper" water refugia will be designed to be no deeper than 3.0 feet during maximum springtime hydrology conditions. All areas to be planted to hydrophyte tree species will be designed to be only seasonally saturated or barely inundated for a few weeks at the beginning of the growing season.

**WETLAND SUBSTRATE:** The wetland substrate is the "growing medium" for the wetlands vegetation and is considered separately from the "subgrade" of the wetland. The subgrade is the engineering medium in which the wetland is constructed and may or may not facilitate establishment of wetland vegetation. The wetland substrate generally occurs above the subgrade and, in this scenario, will consist of 0.5 to 1.0 feet of native topsoil, imported hydric soils, and/or suitable mineral soils that are augmented with organic amendments. The currently proposed replacement wetland areas are former

agricultural fields that have ample “topsoils” for use as the wetland substrate. The time since these fields were last used for agriculture is likely to preclude any potential or “residual” herbicide activity in these soils, but the potential will be assessed in greater detail as the mitigation planning proceeds.

**VEGETATION:** Following substrate grading, the entire area of replacement wetlands will be seeded to annual ryegrass, oats, and/or winter rye to protect all exposed soils from erosion. Upland slopes will be seeded to perennial grass and legume species that are compatible with (and may include) local native warm-season grasses. Upland areas will also be planted with selected native tree seedlings.

Because the replacement wetlands will be constructed concurrently or in advance of anticipated wetland impacts, the impact wetlands may be used as hydrophyte "donor" sites for the constructed wetlands. Care will be taken to ensure that invasive species are not inadvertently transferred to the replacement wetlands during transplant. Salvaged plants will be carefully positioned in the replacement wetlands based on observation of post construction hydrology. Supplemental plantings may also include species that are not locally common such as softstem bullrush, burreed, common three-square, spatterdock, and duck potato. Again, all plantings will be positioned following observation of seasonal hydrology.

Natural colonization by "volunteer", non-invasive hydrophyte species is anticipated and will be encouraged. In addition, because cattail is ubiquitous within this watershed, it will not be controlled aggressively unless it becomes apparent that it is likely to dominate the site without natural competition or control (muskrat). Purple loosestrife, reed canarygrass, and common reed will be controlled by mechanical and/or herbicide treatment for the first five years of the wetland monitoring program.

A more detailed planting plan will be prepared as the replacement wetland grading plan is finalized and is reviewed with regulatory agency personnel.

### ***WETLANDS MONITORING***

The replacement wetlands and other mitigation measures undertaken to offset impacts to Jurisdictional resources at Geneva Landfill will be monitored in accordance with conditions presented in Wetland/Waters and Water Quality permits issued for this project. At a minimum, an initial "as-built" wetland construction report will be prepared for the wetland replacement area and vernal pools following final grading and erosion control seedings. Following initial stabilization and planting, spring, summer and fall monitoring will be conducted for the wetlands for two consecutive calendar years. An annual monitoring report will be produced in accordance with permit specifications. At a minimum, the following information will be included in each monitoring report.

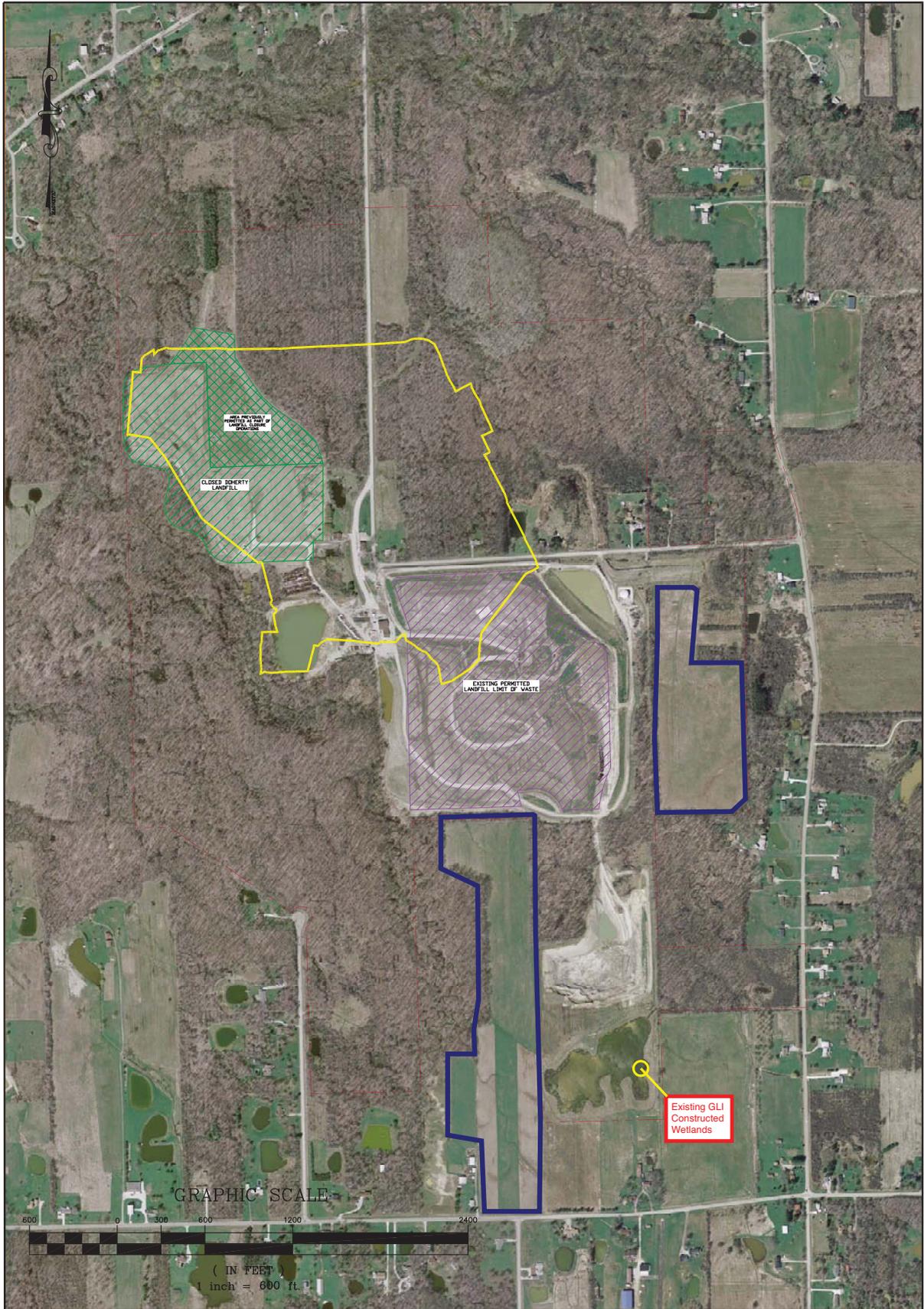
- Assessment of seasonal hydrologic conditions to include: seasonal timing of saturation and inundation; the depth, apparent duration, and extent of inundation events in the replacement wetland; and an assessment of the appropriateness of initial plantings based on

observed hydrologic conditions. As necessary, recommendations for adjustment of plantings will be presented in the monitoring report based on observation of at least one full year of site hydrology.

- Assessment of the relative success of wetland plantings (estimate of survival and/or proliferation) and the occurrence of desirable volunteer hydrophyte species. Areal estimates of percent cover and species composition of hydrophytes will be made for each distinct vegetative zone (and layer) within the constructed wetland. In addition, assessments will be made of the occurrence of undesirable invasive volunteer species such as common reed and purple loosestrife. Recommendations for control of invasives will be presented as necessary.
- A brief discussion of apparent wetland functions being performed within the replacement area and an assessment of the relative success of the constructed wetland areas based on the goals established in the Mitigation Plan will be presented in a separate section of each report. As necessary, recommendations for corrective actions and suggested scheduling of such actions will be summarized in this section as well.
- If authorized, standard Constructed Wetland Assessment Forms will be used to document formal and/or informal wetland monitoring inspections. Copies of these forms will be included as an appendix section of each report. An example form will be provided.
- Color photographs will be taken of the wetland replacement area and other mitigation features completed for the project. These representative photographs will be included with each monitoring report. For comparison purposes, the color photographs will be taken from the same location and direction of exposure with similar camera settings for use in each report. Supplemental photographs may also be included to highlight other items of interest.

**• THE AERIAL VIEW THAT FOLLOWS ON THE NEXT PAGE PROVIDES AN AERIAL PERSPECTIVE OF POTENTIAL SITES FOR REPLACEMENT WETLAND CONSTRUCTION.**

**• THE FINAL MITIGATION PLAN WILL BE DEVELOPED AND WILL USE A FORMAT SIMILAR TO THE EXAMPLE OUTLINE THAT FOLLOWS IN THE PAGES AFTER THE AERIAL PHOTO.**



**LEGEND:**

- PROPERTY BOUNDARY
- PROPOSED LANDFILL FOOTPRINT The yellow footprint was modified further in October and November 2010 to avoid additional PFO wetlands along the northeastern limit of disturbance. See current design footprints included with this application.
- POTENTIAL AREAS FOR WETLAND REPLACEMENT PROJECTS (under consideration only)



USA WASTE  
GENEVA LANDFILL, INC.

**POTENTIAL MITIGATION SITES MAP**

GENEVA TOWNSHIP     ASHTABULA COUNTY     DNO

**PLAN FORMAT .....**

***FOR Preparation of Detailed Mitigation Plan***

**FOR REFERENCE ONLY.**

The Detailed Plan will evolve in concert with consultation with the Regulatory Agencies that Oversee the 404/401 Permit Application Process.....

The “Table Of Contents” that follows this page provides the outline that will be followed to present the Final Format of the Mitigation Plan

**Plan to Provide Compensatory Mitigation**

**for**

***Impacts to Wetlands and Waters***

**Associated With The**

**Expansion and Concurrent Remediation of  
The USA Waste Geneva Landfill, Inc.**

**USACE File No.:** \_\_\_\_\_

**OHIO EPA ID No.:** \_\_\_\_\_

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**APPENDICES**

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**Appendix B: Example Constructed Wetland Assessment Form**

**Appendix C: Professional Qualifications of Principal Planner**

**Appendix D: Replacement Wetland Grading Plan and Planting Plan Drawings**

**ETC. ETC. As appropriate**