Wetland Creation Site Suitability Guidance for Regulatory Requirements

The District Department of Energy and Environment (DOEE) developed this guidance for the selection of potential wetland creation sites within the District for mitigation projects for District and federal wetland permits. This guidance compliments the guidance issued by the U.S. Army Corps of Engineers in order that any wetland creation proposed as part of a wetlands permit is acceptable to both District and federal agencies. For the enhancement and restoration of existing or former wetlands, see DOEE's Wetland Restoration/Enhancement Evaluation Tool (available in the Districts Wetland Registry documents) to determine if an existing wetland or altered (i.e., drained) wetland is suitable for restoration or enhancement.

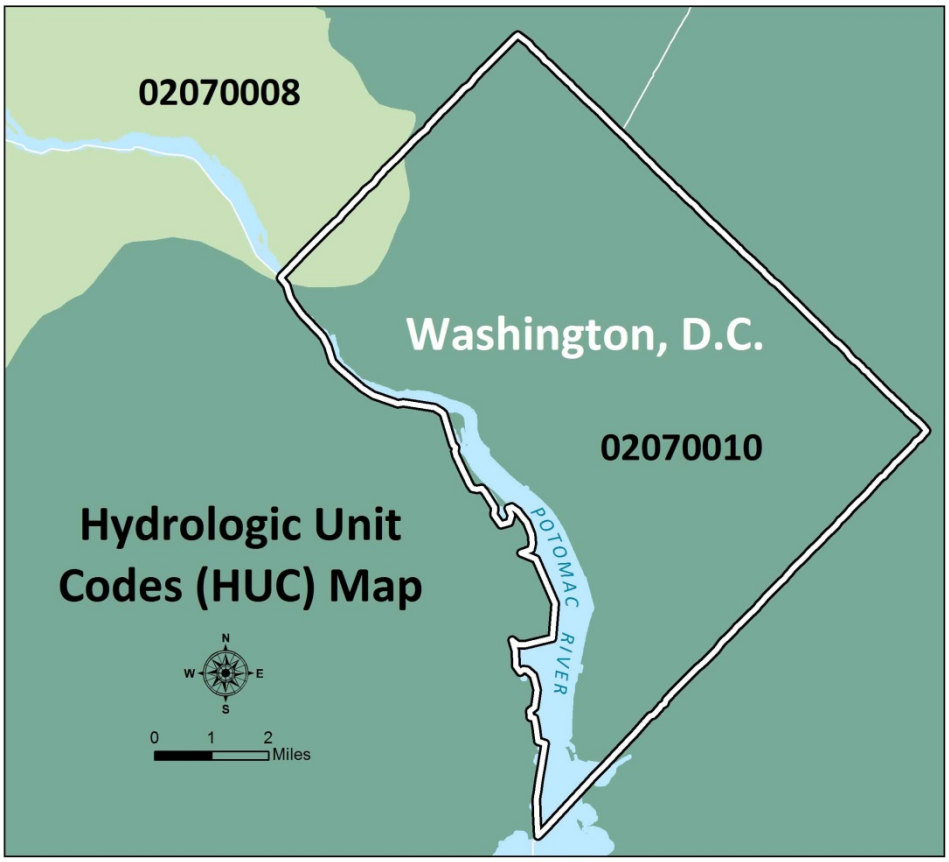
Please note, the use of this guidance does not supersede the District's wetland policies, or any other federal statutes, regulations, or policies. All necessary approvals including, but not limited to, wetland permits, stormwater permits, grading permits, and site plan approvals must be obtained (as applicable) prior to commencing work on any wetland creation project. Once wetlands are created, they will fall under the jurisdiction of the District and potentially the U.S. Army Corps of Engineers and a permit would be required for any future impacts to a created wetland.

This guidance is divided into the following sections: Regulatory Considerations, General Considerations, and Specific Considerations.

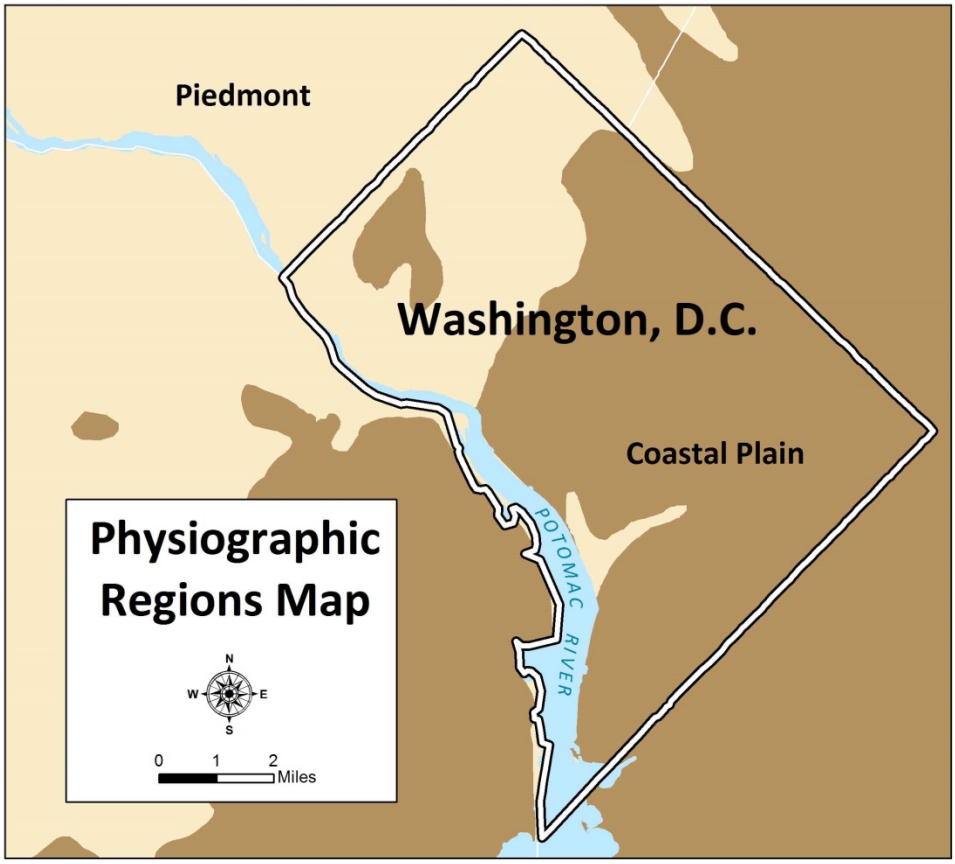
<u>Regulatory Wetland Creation Considerations</u>:

These considerations are intended to aid in choosing a project that will comply with federal and District requirements for mitigation sites for a wetland permit. Please nothe, these considerations are not all-inclusive and other requirements will still need to be met during the permit review process.

- The most preferred mitigation projects are located on the same site where the wetland impacts were taken, or within the same watershed.
- The wetland creation site should be within the same 8-digit Hydrologic Unit Code (HUC) or the adjacent HUC. Note that the District consists of two HUC's: 02070010 (the majority of the District), and 02070008 (northwestern part of the District in an area defined by the watershed of Little Falls Branch and the Dalecarlia Reservoir).



- The wetland creation site should be within the same physiographic province. In the District, the physiographic provinces consist of the piedmont and the coastal plain. The piedmont province is roughly defined by the eastern boundary of Rock Creek Park and a small section of the District along the Anacostia River. The remainder of the District is in the coastal plain, with the exception of a disjoint portion occurring in the northwest, west of Rock Creek Park.



- The type of wetland proposed should be "in-kind" when compared to the impacts taken (i.e., palustrine creation for palustrine impacts, estuarine for estuarine, etc.). Wetland creation should not be used as compensation for stream impacts or open water (i.e., pond) impacts. Thus, when selecting the location for the wetland creation site, only consider those areas that will allow for in-kind creation.
- Consider sites that are not currently forested. The conversion of forested, natural areas to wetlands is generally not encouraged due to the ecosystem benefits provided by forests. However, if the forested area is dominated by invasive species (such as tree of heaven; *Ailanthus altissima*), it may be of greater ecological benefit to remove these species and create a forested wetland comprised of native species. Each project will be evaluated on a case-by-case basis during permit review.
- To mitigate for impacts to federally jurisdictional wetlands, the wetland should be created nearby or adjacent to existing wetlands/streams to meet federal jurisdiction requirements. Jurisdiction requirements will be evaluated during the permit review process.
- Sites that do not have the legal ability to be placed in a long-term protective easement (or transferred to District ownership) should be avoided.
- To mitigate wetland impacts for non-federally jurisdictional, District-jurisdictional wetlands, multiple sites can be used to achieve wetland acreage requirements.

General Considerations:

The following items should be considered when selecting a wetland creation site. Consideration of these items will allow a site selector to better identify sites where the Specific Considerations (discussed below) can be applied. One should not assume that any available piece of land can be designed and engineered to create a wetland community. Factors including surrounding land use, topography, hydrology, soils, water quality, and other existing site conditions can dramatically influence the technical and economic feasibility, as well as the long-term success of a wetland creation project.

- Consider sites that are contiguous or connected to other aquatic features such as wetlands, streams, or ponds.
- Sites that are adjacent to other natural areas such as forests, unmaintained fields, and natural parks should be given priority over areas surrounded by developed areas. This allows for greater connectivity for fauna between natural areas.
- Consider avoiding sites where adjacent development is planned upgradient of the proposed creation site. Discharges from adjacent activities can have negative effects on creation sites, such as release of sediments or accidental impacts during construction. Wetlands intended to treat stormwater may not qualify as mitigation wetlands, per DOEE regulations. Discharge of contaminated water into a created wetland would not meet the District's surface water quality standards.
- Consider avoiding areas where future disturbance (e.g., earthwork or vegetation maintenance) could occur, such as in utility easements and rights-of-way.
- Avoid sites with known hazardous waste conditions, unless remediation is planned (or a goal) of the project. Exposure of contaminated soils or other such conditions can result in downstream contamination from site runoff. Remediation may be cost-prohibitive.
- Determine if the site is large enough to support the wetland acreage desired by the project.
- If the proposed creation project has the potential to attract waterfowl and other bird species that might pose a threat to aircraft, it should not be sited within the limits specified by the Federal Aviation Administration Advisory Circular on Hazardous Wildlife Attracts on or near Airports (AC No: 150/5200-33B, 8/28/2007) currently 10,000 feet from the airport. This is expanded to 5 statute miles if the attractant may cause hazardous wildlife movement into or across the approach or departure airspace. Note that this Advisory Circular is guidance and not regulation. Consider the size of the proposed creation site when addressing this factor; larger sites will pose a greater attractant than smaller sites.
- Consider if the site will be able to meet the replacement criteria (i.e., is tidal wetland creation proposed for tidal impacts, etc.).
- Consult historic maps of the District to determine if streams or wetlands were mapped in the area in the past. If streams or wetlands were present in the past, it may be easier to re-establish these systems.

Specific Considerations:

The following are specific considerations that should be reviewed for a proposed creation site when determining the ability of the site to be successful. Depending on the size, significance, and amount of funds to be spent on a given wetland creation project, it is best to take the time to collect the necessary data to determine if a site can be successfully used.

- Consider the source of hydrology to support the proposed project. The hydrology source should be sufficient to provide saturation or inundation of the site continuously for a minimum of 5% of the growing season[1,2] (12% is recommended). Hydrology sources could include treated (in order to meet District Water Quality Standards) run-off from stormwater that can be directed to the site, precipitation, or overbank flooding from an adjacent stream or other water body. Several tools exist to help prepare water budgets for wetland creation sites.
- If relict hydric soils are present, re-establishing wetland hydrology may be sufficient to establish a wetland. Note that even if hydric soils are present, a water budget must still be prepared to confirm that the final design will meet wetland hydrology. Similarly, a water budget will need to be prepared for any site where hydric soils are not present.
- Determine if the soil type or compaction is sufficient to pond water to establish wetland hydrology. If the in-situ soils are not suitable, compaction of soils or the installation of a clay liner or similar measure may be necessary.
- Consider removing impervious area (e.g., a parking lot or gravel surface) to create the proposed wetland.
- If the area is a former wetland that was drained or filled, a native seed source may be available. Sites that do not have a native seed source will require importing native seeds, and additional planting of vegetation.
- Consider available construction access to the site and if it is adequate for the proposed project.
- Determine if there are existing utilities that will impede the design or construction of the site. Such conditions should be avoided, when possible.
- Avoid known archeological or other historic sites. Consult with the DC State Historic Preservation Office to determine if historic or archeological sites are present on or near the site. Some mapping of historic sites are available through the District Office of Planning at: http://planning.dc.gov/page/landmarks-and-districts and from publicly available District data at: http://opendata.dc.gov/
- Determine if there are any threatened or endangered species known to inhabit the site. Such sites should be avoided, unless the project is intended to create or enhance habitat for these species Information regarding threatened or endangered

[1] Per the U.S. Army Corps of Engineers 1987 Wetland Delineation Manual (Technical Report Y-87-1) and the "Questions & Answers on the 1987 Manual," memorandum from John F. Studt (USACOE) dated 7 October 1991.

[2] Per the Soil Survey for the District of Columbia, July 1976, the growing season (frost-free days above 28ºF, 5 years in 10) is from March 20 to November 23, a period of 247 days.

species within the District can be found at: http://doee.dc.gov/publication/2015-wildlife-action-plan and through the U.S. Fish and Wildlife Service Information, Planning and Conservation website: http://ecos.fws.gov/ipac/

- Consider the cost of long-term maintenance and controls if invasive species are present (e.g., pulling or spraying of invasive plants). Invasive plant species include common reed (*Phragmites australis*), purple loosestrife (*Lythrum salicaria*), and cattails (*Typha* spp.), which can result in monotypic plant communities. Information regarding invasive species can be found at www.invasivespeciesinfo.gov, www.invasive.org, and http://plants.usda.gov/java/noxiousDriver.
- Deer, geese, beaver, muskrat, nutria, and carp can negatively affect the establishment of plants and can significantly alter the hydrology of a wetland creation site.
- Determine if there are known sources of contaminants (e.g., sediment, nutrients, heavy metals, oil and grease, and de-icing salts) that could affect water quality, or adversely affect flora and fauna.
- Consider the effects of wind and wave actions on tidal creation sites because they can adversely affect wetland establishment. Try to focus on lower-energy sites that will have a higher likelihood of success.
- Consider the in-situ soil chemistry and if soil amendments will be necessary to make the soils adequate for establishment of the desired vegetative community. Soils amendments may include lime, organic material, or fertilizer.
- Consider impacts on flooding or meeting flood management requirements.

References

Dennison, M.S. 1997. Wetland Mitigation: Mitigation Banking and Other Strategies for Development and Compliance. Government Institutes. Rockville, Maryland.

Garbisch, E.W. 2002. The Dos and Don'ts of Wetland Construction: Creation, Restoration and Enhancement. Environmental Concern, Inc. St. Michaels, Maryland.

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U.S. Army Corps of Engineers. October 31, 2001. Regulatory Guidance Letter No. 01-1: Guidance for the Establishment and Maintenance of Compensatory Mitigation Projects Under the Corps Regulatory Program Pursuant to Section 404(a) of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899.

U.S. Environmental Protection Agency. April 10, 2008. Compensatory Mitigation for Losses of Aquatic Resources; Final Rule. 40 CFR Part 230.

Wetland Creation Site Suitability Guidance for General Use

The District Department of Energy and Environment (DOEE) developed this guidance for the selection of potential wetland creation sites within the District. The purpose of this guidance is to assist practitioners in selecting sites that are suitable for the creation of wetlands, where wetlands currently do not exist. For the enhancement and restoration of existing or former wetlands, see DOEE's Wetland Restoration/Enhancement Evaluation Tool (available in the Districts Wetland Registry documents) to determine if an existing wetland or altered (i.e., drained) wetland is suitable for restoration or enhancement. This guidance can be used to select sites for water quality and habitat enhancement projects.

Please note, the use of this guidance does not supersede the District's wetland policies, or any other federal statutes, regulations, or policies. All necessary approvals including, but not limited to, wetland permits, stormwater permits, grading permits, and site plan approvals must be obtained (as applicable) prior to commencing work on any wetland creation project. Once wetlands are created, they will fall under the jurisdiction of the District and potentially the U.S. Army Corps of Engineers and a permit would be required for any future impacts to a created wetland.

This guidance is divided into the following sections: General Considerations, and Specific Considerations.

<u>General Wetland Creation Considerations</u>:

The following items should be considered when selecting a wetland creation site. Consideration of these items will allow a site selector to better identify sites where the Specific Considerations (discussed below) can be applied. One should not assume that any available piece of land can be designed and engineered to create a wetland community. Factors including surrounding land use, topography, hydrology, soils, water quality, and other existing site conditions can dramatically influence the technical and economic feasibility, as well as the long-term success of a wetland creation project.

- Consider sites that are contiguous or connected to other aquatic features such as wetlands, streams, or ponds.
- Give priority to sites that are adjacent to other natural areas such as forests, unmaintained fields, and natural parks over areas surrounded by developed areas. This allows for greater connectivity for fauna between natural areas.
- Consider avoiding sites where adjacent development is planned upgradient of the proposed wetland creation site. Discharges from adjacent activities can have negative effects on wetland creation sites, such as the release of sediments or accidental impacts during construction. Wetlands intended to treat stormwater may not qualify as mitigation wetlands, per DOEE regulations (per Rule 21-1104). Discharge of contaminated or untreated water into a created wetland would not meet the District's surface water quality standards if the contaminant levels exceed those allowed under District regulations (per Rule 21-1104).

- Consider avoiding areas where future disturbance (e.g., earthwork or vegetation maintenance) could occur, such as in utility easements and rights-of-way.
- Avoid sites with known hazardous waste conditions, unless remediation of the site is a goal of the project. Exposure of contaminated soils or other such conditions can result in downstream contamination from site runoff. Remediation may be cost-prohibitive.
- Determine if the site is large enough to support the wetland acreage desired by the project.
- Use caution if the proposed wetland creation project has the potential to attract waterfowl and other bird species that might pose a threat to aircraft, as it should not be sited within the limits specified by the Federal Aviation Administration Advisory Circular on Hazardous Wildlife Attracts on or near Airports (AC No: 150/5200-33B, 8/28/2007). The limits are currently 10,000 feet away from an airport. This is expanded to 5 statute miles if the attractant may cause hazardous wildlife movement into or across the approach or departure airspace. Note that this Advisory Circular is guidance and not regulation. Consider the size of the proposed creation site when addressing this factor; larger sites will pose a greater attractant than smaller sites.
- Consult historic maps of the District to determine if streams or wetlands were mapped in the area in the past, because it may be easier to re-establish these systems. Historic maps can be found at: http://opendata.dc.gov/.
- Consider sites that are not currently forested. The conversion of forested, natural areas to wetlands is generally not encouraged due to the ecosystem benefits provided by forests. However, if the forested area is dominated by invasive species (e.g., tree of heaven; *Ailanthus altissima*), it may be of greater ecological benefit to remove these species and create a forested wetland comprised of native species. Each project will be evaluated on a case-by-case basis during permit review.

Specific Wetland Creation Considerations:

The following are specific wetland creation considerations that should be reviewed for a proposed creation site when determining the ability of the site to be successful. Depending on the size, significance, and amount of funds to be spent on a given wetland creation project, it is best to take the time to collect the necessary data to determine if a site can be successfully used.

- Consider the source of hydrology to support the proposed project. The hydrology source should be sufficient to provide saturation or inundation of the site continuously for a minimum of 5% of the growing season[1,2] (12% is recommended by the U.S. Army Corps of Engineers). Hydrology sources could

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[2] Per the Soil Survey for the District of Columbia, July 1976, the growing season (frost-free days above 28ºF, 5 years in 10) is from March 20 to November 23, a period of 247 days.

include treated (in order to meet District Water Quality Standards) run-off from stormwater that can be directed to the site, precipitation, or overbank flooding from an adjacent stream or other water body. A water budget must be developed as part of the design process to ensure that the wetland hydrology criteria can be met. Several tools exist to help prepare water budgets for wetland creation sites.

- Determine if relict hydric soils are present. If relict hydric soils are present, re-establishing wetland hydrology may be sufficient to re-establish a wetland, provided that a water budget confirms that adequate hydrology is available.
- Determine if the soil type or soil compaction is sufficient to pond water to establish wetland hydrology. If the in-situ soils are not suitable, compaction of soils or the installation of a clay liner or similar measure may be necessary.
- Consider removing impervious area (e.g., a parking lot or gravel surface) to create the proposed wetland.
- Consider the availability of a native seed source. If the area is a former wetland that was drained or filled, a native seed source may be available. Sites that do not have a native seed source will require importing native seeds, and additional planting of vegetation. Only native seeds and plants should be planted.
- Consider available construction access to the site and if it is adequate for the proposed project.
- Determine if there are existing utilities that will impede the design or construction of the site. Such conditions should be avoided, when possible.
- Avoid known archeological or other historic sites. Consult with the District of Columbia State Historic Preservation Office to determine if historic or archeological sites are present on or near the site. Some mapping of historic sites are available through the District Office of Planning at: http://planning.dc.gov/page/landmarks-and-districts and from publicly available District data at: http://opendata.dc.gov/
- Avoid any sites where threatened or endangered species are known to inhabit the site, unless the project is intended to create or enhance habitat for these species. Information regarding threatened or endangered species within the District can be found at: http://doee.dc.gov/publication/2015-wildlife-action-plan and through the U.S. Fish and Wildlife Service Information, Planning and Conservation website: http://ecos.fws.gov/ipac/
- Consider the cost of long-term maintenance and controls if invasive species are present (e.g., pulling or spraying of invasive plants). Invasive plant species include common reed (*Phragmites australis*), purple loosestrife (*Lythrum salicaria*), and cattails (*Typha* spp.), which can result in monotypic plant communities. Information regarding invasive species can be found at www.invasivespeciesinfo.gov, www.invasive.org, and http://plants.usda.gov/java/noxiousDriver.
- Deer, geese, beaver, muskrat, nutria, and carp can negatively affect the establishment of plants and can significantly alter the hydrology of a wetland creation site.
- Determine if there are known sources of contaminants (e.g., sediment, nutrients, heavy metals, oil and grease, and de-icing salts) that could affect water quality, or adversely affect flora and fauna.

- Consider the effects of wind and wave actions on tidal creation sites because they can adversely affect wetland establishment. Try to focus on lower-energy sites that will have a higher likelihood of success.
- Consider the in-situ soil chemistry and if soil amendments will be necessary to make the soils adequate for establishment of the desired vegetative community. Soils amendments may include lime, organic material, or fertilizer.
- Consider impacts on flooding or meeting flood management requirements.

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U.S. Environmental Protection Agency. April 10, 2008. Compensatory Mitigation for Losses of Aquatic Resources; Final Rule. 40 CFR Part 230.