Potential Riparian Buffer Development Site Evaluation Form
Woonasquatucket River

Date:_____ Photo #s:_____ Site I.D. #: _____

Ownership (if known): ☐ public ☐ private Describe:_____

Town:_____ Subsection:_____ Evaluator(s): _____

Size of Site (square ft): ☐ 0-5,000 ☐ 5-10,000 ☐ 10-20,000 ☐ 20-43,560 ☐ > 1 acre

☐ variable (describe):_____

Describe Buffer Location/Setting/Surrounding Land Use:

_____

_____

_____

Describe Buffer Topography/Gradient:

_____

_____

Describe Existing Cover Types in and Adjacent to Buffer Site:

_____

_____

Rate the Condition of the Adjacent In-stream Habitat:

☐ very natural/good habitat quality ☐ moderately natural/moderate habitat quality

☐ degraded/altered/low habitat quality

Site Diagram (Sketch):

BUFFER FUNCTIONAL CONSIDERATIONS

Ecological - Water Quality Renovation

y=1, n=0	Indicators that the Opportunity for Restoration Exists	Notes
	Concentrated stormwater runoff or point discharges bypass the buffer without long-term contact with the soil-root zone of the buffer (e.g., eroded gullies, piped drainage, paved swales, or hydrologic alterations that have impacted water quality functions).	
	Potential sources of sediment or pollutant loading present in the contributing sub-watershed (e.g., surrounding buffer is developed with a high percentage of impervious surfaces as opposed to mostly forested or naturally vegetated).	
	Poor vegetation condition or impervious surface (e.g., exposed soils, closely mowed lawn, sparse vegetation resulting from sterile soils, or impervious surface that is abandoned or in disrepair). There is potential to add native buffer vegetation to the buffer where it is currently lacking to improve water quality functions.	
	Active soil erosion or unstable stream bank sections occur in the buffer beyond natural levels (e.g., as a result of disturbance).	
	The physical characteristics of the buffer (such as flat topography or hydrologic modification that can be corrected) lend themselves to significant potential improvements to water quality functions such as sediment trapping and infiltration with noted modifications. Desired characteristics that encourage infiltration and diffuse rather than concentrated runoff include diverse microtopography including some slopes away from river or swales, wetlands with a basin configuration or constricted outlet, and a lack of slopes that grade steeply and smoothly to the watercourse. Sites where these characteristics can be reasonably developed are potential restoration sites.	
	Water Quality Subtotal (sum of above) = X_{wq}	
	Normalized Water Quality Score: $X_{wq}/5$	

BUFFER FUNCTIONAL CONSIDERATIONS (continued)

Ecological - Wildlife Habitat

y=1, n=0	Indicators that the Opportunity for Restoration Exists	Notes
	Exotic and/or invasive plant species are present and significantly impact biological functions such as plant and wildlife habitat (*e.g.*, one or two barberry bushes would not receive a "1", but an expanding patch of knotweed or purple loosestrife would).	
	Buffer is adjacent to naturally vegetated habitat such as forest, wetland, or abandoned field. There is opportunity to improve the overall habitat matrix of the surrounding area by planting trees and other native vegetation in the buffer site to extend or connect existing forested corridors, or enlarge interior habitat patches, or enhance habitat juxtapositions (such as re-planting forest adjacent to a vernal pool or riparian wetland).	
	Contiguous in-stream habitat is relatively high quality. Features such as important fish habitat and/or river-dependent wildlife habitat, or natural stream conditions are present.	
	Buffer is degraded by human activity in a way that negatively impacts wildlife habitat and can be corrected (e.g., trash dumping, poorly vegetated condition due to fill material or sterile soil conditions, abandoned or unnecessary impervious surface present)	
	Wildlife Habitat Subtotal (sum of above) = X_{wh}	
	Normalized Wildlife Habitat Score: $X_{wh}/4$	

BUFFER FUNCTIONAL CONSIDERATIONS (continued)

Ecological - Base Flow Maintenance/Peak Flow Attenuation (Flood Storage)

y=1, n=0	Indicators that the Opportunity for Restoration Exists	Notes
	Buffer occupies upper position in the watershed (i.e., upper part of the river or upper part of the watershed away from the river). Generally upstream from the Smithfield town line or along a tributary stream or away from the river proper.	
	Reasonable modifications (as noted) could increase the buffer's ability to store a significant volume of runoff. Characteristics that enhance flood storage capacity include basin configuration, constricted outlet, low g radient topography, complex topography or high surface roughness such as pit and mound topography, and complex drainage such as a meandering intermittent stream with LWD in it as opposed to channelized runoff. If such characteristics have been degraded/eliminated through human activity in the buffer and can be restored with modifications such as removing impervious surfaces, re-grading, or capturing channelized runoff, there is opportunity to enhance this function.	
	Base/Peak Flow Subtotal (sum of above) = X_{bp}	
	Normalized Base/Peak Flow Score: $X_{bp}/2$	

Ecological - Summary

	Ecological Total ($X_{wq} + X_{wh} + X_{bp}$) = E	
	Normalized Ecological Score = E/11	

BUFFER FUNCTIONAL CONSIDERATIONS (continued)

Education and Aesthetics (Summary)

y=1, n=0	Indicators that the Opportunity for Restoration Exists	Notes
	Site is visually accessible (e.g., conspicuous for a large number of people).	
	Site is physically accessible or potentially accessible to the public by foot, bike, or car (e.g., paths, nearby roads, and nearby parking).	
	Site is within 1 mile of a school or densely populated area.	
	The adjacent in-stream habitat is relatively natural (e.g., not channelized or highly degraded visually) and there is opportunity to view wildlife, native plant communities and other characteristics of a naturally functioning stream corridor.	
	Education/Aesthetics Subtotal (sum of above) = A (Education/Aesthetics Total)	
	Normalized Education/Aesthetics Score: A/4	

BUFFER FUNCTIONAL CONSIDERATIONS - SUMMARY

	Ecological and Education/Aesthetics Total (E + S) = T	
	Normalized Ecological and Education/Aesthetics Score = T/15	

COST CONSIDERATIONS

Potential Buffer Development Components

X	Components, mark (X) all that apply, add any not listed	Notes
	Installation of native buffer plantings (including trees, groundcover seeding, etc.)	
	Removal/eradication of exotic/invasive species	
	Soil amendments (e.g., addition of topsoil)	
	Soil removal (e.g., fill removal)	
	Bank stabilization - biostabilization (such as wattles, cuttings, and minor soil work/erosion control fabric)	
	Bank stabilization - structural (e.g., planted gabions, cribs)	
	Soil stabilization/erosion control during construction (e.g., silt fence, mulching and seeding)	
	Minor grading to enhance infiltration, storage, floodplain functions, or habitat	
	Major grading to enhance infiltration, storage, floodplain functions, or habitat	
	Impervious surface removal (specify whether structure, asphalt, etc.)	
	Remove/modify concentrated runoff (ditch, paved swale, etc.)	
	Construct stormwater management measure (e.g., settling basin/biofilter basin, level spreader, velocity dissipater, etc.)	
	Construct access (e.g., for people as well as equipment during development) if none exists	
	Trash removal (e.g., old cars, tires, etc.)	

COST CONSIDERATIONS (continued)

Estimated Cost* of Buffer Development

X	Categories, mark (X) all that apply, referring to components above	Notes
	Low cost ($0-$15,000)	
	Moderate cost ($15,000-$50,000)	
	High cost ($50,000-$100,000)	
	Very High cost (> $100,000)	
	Flexible** (any cost category could apply)	

* Does not include land acquisition, permitting, phase I environmental analyses or soil testing for contamination.

** Could develop aspects of buffer restoration with low costs if only the simplest aspects of restoration are implemented (such as planting only), but high costs are possible if other components (such as grading or impervious surface removal) are implemented.

Assess (X) the ratio of estimated restoration benefit (e.g., the gain in wetland functions and values) to estimated restoration costs.

___ Ratio is very high (e.g., significant functional gain with little cost/effort).
___ Ratio is moderately high (e.g., significant functional gain with moderate cost/effort, or moderate functional gain with little cost/effort).
___ Ratio is approximately even (e.g., significant functional gain with significant cost/effort, moderate functional gain with moderate cost/effort, or little functional gain with little cost/effort).
___ Ratio is moderately low (moderate functional gain with significant cost/effort, or little functional gain with moderate cost/effort).
___ Ratio is very low (little functional gain with significant cost/effort).

Assess the risk of restoration failure. Estimate the level of risk that restoration objectives might not be achieved because of unexpected problems with restoration design, physical site characteristic, or environmental variable. For example: 1) any project occurring on steep slopes at the bank of the main stream channel or on the floodplain has an increased risk of failure (planting failure due to large flood event or soil failure); or 2) any project where impervious surfaces such as buildings or parking areas are being removed may have soil contamination beneath or hidden variables.

___ Risk is very high (estimated >25% chance of failure in at least one significant restoration component).
___ Risk is moderately high (estimated 10-25% chance of failure in at least one significant restoration component).
___ Risk is moderately low (estimated 2-10% chance of failure in at least one significant restoration component).
___ Risk is very low (estimated <2% chance of failure in at least one significant restoration component).

PRACTICAL CONSIDERATIONS

Socioeconomic and Physical

y=1, n=0	Considerations, add any others not listed	Notes
	Ownership is public, or private owner has stated a willingness to donate or sell the property reasonably.	
	Site restoration could be accomplished relatively quickly assuming financial resources available. There are no known obvious impediments that could complicate implementation such as active land uses that would need to be relocated, multiple land-owners, unusually complicated permitting issues, or known opposition.	
	High potential for partnering with an interested organization or individual that would support the project, including potential financial or in-kind service support.	
	There appear to be no obvious ROW issues such as buried cable, utility ROWs, railroad tracks, etc. that would interfere with site development.	
	There are no reasons to suspect that soils may be contaminated (such as abandoned industrial use, odors, visible oil slicks, metal drums, transformers, etc.). This would be true of Superfund sites only after clean-up is complete.	
	There is good existing access for people and equipment or it appears such access could be easily created.	
	There are no topographic or geologic constraints to site development such as steep slopes, or shallow-to-bedrock soils.	
	There are no known endangered species issues or cultural resource issues at this site.	
	Practical Subtotal (sum of above) = P (Practical Total)	

PRACTICAL CONSIDERATIONS (continued)

Miscellaneous

Make note of constraints to restoration or other issues not accounted for elsewhere, if any. If possible, include a judgment as to the seriousness of the problem, potential solutions, and the feasibility and range of cost for those solutions. Also include any other information relevant to a decision on the potential for restoration of the site.