A Compilation of Remedial Action Plan (RAP) Stage 2 Addenda for New York State Areas of Concern

Updated December 2011

Submitted by:
Buffalo Niagara Riverkeeper

Updated Addendum to Stage 2 Remedial Action Plan Report
Buffalo River AOC – December 2011

I. Purpose:

This document provides an update to the January 28, 2011 "Addendum to Stage 2 Remedial Action Plan Report Buffalo River AOC" based on new projects and information.

This document briefly (a) outlines the existing Beneficial Use Impairments (BUIs), the purported causes and potential remedies as described in the Remedial Action Plan's (RAP) Combined Stage 1/2 Report published November 1989, and (b) tentatively identifies a series of project-specific actions, either regulatory or non-regulatory, needed to accomplish the remedies and to ultimately justify re-designation of the BUI.

This document will be used to assist government and non-government organizations in focusing their efforts and funding opportunities on the most immediate "action-oriented" projects needed within the AOC, or its contributing watershed. Because this document has not undergone an extensive public consultation process, it should be considered as an interim planning piece of the overall RAP, subject to future changes as needed. In addition, this document will be used to support a more thorough strategic re-evaluation and planning process, currently underway in each AOC, in order to prioritize implementation projects specifically designed to address BUI delisting targets, and to direct public and non-public support as appropriate.

II. RAP Management, Coordination and Stewardship

Buffalo Niagara Riverkeeper (BNR) is currently funded via USEPA to coordinate specific tasks associated with the coordination of the Buffalo River RAP though the end of 2012 (Please see Attachment A for a draft detailed workplan). Additional funding is needed to implement emerging tasks and projects in 2012 as well as general RAP coordination and RAP capacity support effective January 1, 2013.

The Buffalo River RAP Coordinator is Jill Spisiak-Jedlicka, 716-852-7483 ext. 21, and technical and program support is provided by Katherine Winkler, 716-852-7483 ext. 15.

III. Current Beneficial Use Impairments, Likely Causes, Planned Remedies, Specific Actions

The Buffalo River Remedial Advisory Committee will be meeting again in early 2012 to re-evaluate the current delisting criteria for the Buffalo River AOC based on updated reports and assessment data that is expected to be received by the end of 2011. Discussions regarding possible criteria modifications continue.

A. **BUI # 1 – Restrictions on Fish and Wildlife Consumption**

Fish advisories exist for the Buffalo River and Harbor in addition to the lake-wide advisories for Lake Erie due to PCBs. Recent studies indicate that PCBs, PAHs, and metals in fish are sufficiently high to pose risk to human and ecological receptors in the Buffalo River AOC (e.g., Sultrac 2007, ENVIRON et al. 2009, Skinner et al. 2009). Sediment remediation, elimination of toxic inputs, and long-term monitoring are key elements to removing this BUI.

1. Known or Suspected Cause – PCB's and Chlordane in sediments.

(a.) Remedies & Specific Actions Needed –

WORK COMPLETED OR UNDERWAY

- The Buffalo River Great Lakes Legacy Act (GLLA) and USACE dredging projects will minimize the ecological and human health risks from contaminated sediment within the Buffalo River AOC. Phase 1 of the dredging, via GLRI funding to the USACE for "Enhanced Navigational Dredging" began in the late summer 2011 and is anticipated to be completed by December 31, 2012. Once contract agreements are executed, Phase II of the dredging is expected to be funded under the Great Lakes Legacy Act, and is targeted to commence in Fall 2012. The second phase is expected to take 1-2 years to complete.
- New York State projects to cleanup brownfields and inactive hazardous waste sites and continued monitoring of SPDES permit renewals will prevent recontamination of the AOC water and sediments.
- Buffalo Niagara Riverkeeper's current GLRI-funded project, "Enhanced Fish Consumption Advisory," will help reduce human exposure to contaminants in fish through the on the ground outreach and education of immigrant, minority, and other non-traditional anglers using the Buffalo River for sustenance fishing. Riverkeeper will be providing its primary data and coordinating with NYS Department of Health to discuss potential revisions of consumption advisories and seeking out ways to improve information transfer to high-risk communities.

FUTURE NEEDS

- Continued authorization of the Great Lakes Legacy Act beyond 2012 will ensure that the Buffalo River AOC is fully remediated as designed.
- Funding is needed for extended long-term monitoring of the sediment, biota, and surface water beyond that which is included as part of the Great Lakes Legacy Act Project. Funding may be provided for post-Legacy Act dredging monitoring for three years following remediation activities, though this will be determined during the final Remedial Design process (early 2012). Additional monitoring will most likely be needed to ensure BUI removal and ultimately AOC delisting.

- Coordination with NYS Department of Health to increase public awareness on public health advisories related to fish consumption during and after dredging.
- State support for complete Brownfield and Inactive Hazardous Waste Site cleanups in, and upstream of, the AOC to prevent recontamination of the AOC water and sediments after sediment remediation.

B. **BUI #2 – Tainting of Fish and Wildlife Flavor**

This BUI has been designated as "impaired" due to elevated levels of PAHs in sediments. Current data to support this designation is not available.

1. Known or Suspected Cause – PAH's in sediments.

(a.) Remedies & Specific Actions Needed –

WORK COMPLETED OR UNDERWAY

- The Buffalo River Great Lakes Legacy Act (GLLA) and USACE dredging projects will minimize the ecological and human health risks from contaminated sediment within the Buffalo River AOC. Phase 1 of the dredging, via GLRI-funding to the USACE for "Enhanced Navigational Dredging" began in the late summer 2011 and is anticipated to be completed by December 31, 2012. Once contract agreements are executed, Phase II of the dredging is expected to be funded under the Great Lakes Legacy Act, and is targeted to commence in Fall 2012. The second phase is expected to take 1-2 years to complete. PAH's are a targeted "contaminant of concern" and it is expected that with completion of the two phases of dredging, and post-dredge monitoring, this BUI can be removed.
- New York State projects to cleanup brownfields and inactive hazardous waste sites and continued monitoring of SPDES permit renewals will prevent recontamination of the AOC water and sediments.
- Buffalo Niagara Riverkeeper's current GLRI-funded project, "Enhanced Fish Consumption Advisory", will help reduce human exposure to contaminants in fish through the on the ground outreach and education of immigrant, minority and other non-traditional anglers using the Buffalo River for sustenance fishing. As part of the survey process, information is being gathered from local fishermen regarding fish taste issues (which may be linked to contamination).
- Buffalo Niagara Riverkeeper's current partnership with the City of Buffalo for the Buffalo River Brownfield Opportunity Area phase II study. Through this process opportunities for environmental enhancement and sustainable development will be identified. Riverkeeper continues to work with project partners to create a master plan for the future that will not further contribute pollutants to the River.
- Building on planning work through the Buffalo River Greenway Vision and Implementation Plan Riverkeeper has and will continue to identify opportunities within and near the AOC for buffers, greenspace, and green infrastructure that serve to reduce the addition of PAHs in to the ecosystem.

FUTURE NEEDS

- Continued authorization of the Great Lakes Legacy Act beyond 2012 will ensure that the Buffalo River AOC is fully remediated as designed.
- A comprehensive survey of fish and wildlife officials, or other informed observers, is needed to determine the extent of tainting which will complement the primary sediment data.
- Funding is needed for extended long-term monitoring of the sediment, biota, and surface water beyond that which is included as part of the Great Lakes Legacy Act Project. Funding may be provided for post-Legacy Act dredging monitoring for three years following remediation activities, though this will be determined during the final Remedial Design process (early 2012). Additional monitoring will most likely be needed to ensure BUI removal and ultimately AOC delisting.
- Building on the Buffalo River Greenway Plan, green infrastructure site identification, and phase II Brownfield Opportunity Area study efforts between 2009 and 2011. In 2012, Riverkeeper can begin the implementation of buffers, naturalized re-generation areas, and/or green infrastructure projects within and near the AOC to reduce the ongoing inputs of PAHs into the system from non-point sources.

C. BUI #3 – Degradation of Fish and Wildlife Populations

The degradation of fish and wildlife populations in the Buffalo River AOC is due to past discharges of industrial and municipal wastes, habitat loss, poor water quality, and other factors. For all of the known causes listed below, funding is needed to identify a suitable reference community to aid in the delisting process.

1. Known or Suspected Cause – Low Dissolved Oxygen.

(a.) Remedies & Specific Actions Needed –

WORK COMPLETED OR UNDERWAY

- As part of the Buffalo River Great Lakes Legacy Act project negotiations and permit applications, several aquatic and riparian habitat projects are identified and designed that will serve to 1) mitigate damages associated with planned dredging, and 2) increase and rehabilitate sub-aquatic and emergent habitat, and 3) help improve localized dissolved oxygen levels. It is yet to be determined if and when these projects will be implemented under the Legacy Act Project Agreeement.
- Buffalo Niagara Riverkeeper, and our partners, have received GLRI funding for three habitat restoration projects (Riverbend Phase I, Riverbend Phase II, and Seneca Bluffs) which will incrementally help increase habitat and improve DO levels in two discrete areas of the AOC.
- The City of Buffalo Combined Sewer Overflow (CSO) Long-Term Abatement Plan (LTCP) is expected to improve water quality in the AOC by reducing loadings of biological oxygen demand (BOD), nutrients, and other substances, thereby improving DO and other water quality parameters. The Buffalo Sewer Authority (BSA) is actively negotiating with New York State and the USEPA on

a consent decree, however, the BSA is also pro-actively working with Riverkeeper in identifying sites in the Buffalo River that could benefit from green infrastructure solutions.

- NYSDEC collects surface water samples yearly from the Buffalo River (at Ohio Street) as part of their RIBS program. These data provide a valuable long-term record of changes in TSS, dissolved oxygen, and other water quality parameters.
- Through its current "Buffalo River RAP Coordination" grant funding, Buffalo Niagara Riverkeeper has contracted with a consultant to coordinate a baseline inventory of mammal, bird, reptile, and amphibian populations in the AOC. The survey began in the Fall of 2011 and will continue through the end of 2012. Data will be used to compare pre and post habitat restoration communities.
- Buffalo Niagara Riverkeeper's current partnership with the City of Buffalo for the Buffalo River Brownfield Opportunity Area phase II study. Through this process opportunities for environmental enhancement and sustainable development will be identified. Riverkeeper continues to work with project partners to create a master plan for the future that will not further contribute pollutants to the River.
- Building on planning work through the Buffalo River Greenway Vision and Implementation Plan Riverkeeper has and will continue to identify opportunities within and near the AOC for buffers, greenspace, and green infrastructure that serve to reduce the addition of excess stormwater into our combined sewer system that leads to overflow events.

FUTURE NEEDS

- Secure funding for habitat restoration (i.e.:, sub-aquatic, emergent, riparian, and upland areas including overhanging vegetation) at sites identified in Buffalo River Ecological Restoration Master Plan will help make progress towards removing this BUI and BUI #14 (Loss of Habitat) See Tables 1 & 2 for a priority project list.
- Secure and leverage funding (local, state and federal) for CSO abatement projects as identified in both the Buffalo Sewer Authority's (BSA) Long Term Control Plan and the collaborative BSA-Riverkeeper green infrastructure/buffer projects.
- Funding is needed for extended long-term monitoring of the sediment, biota, and surface water beyond that which is included as part of the Great Lakes Legacy Act Project. Funding may be provided for post-Legacy Act dredging monitoring for three years following remediation activities, though this will be determined during the final Remedial Design process (early 2012). Additional monitoring will most likely be needed to ensure BUI removal and ultimately AOC delisting.
- Continued authorization of the Great Lakes Legacy Act beyond 2012 will ensure that the Buffalo River AOC is fully remediated as designed.
- Building on the Buffalo River Greenway Plan, green infrastructure site identification, and phase II Brownfield Opportunity Area study efforts between 2009 and 2011. In 2012, Riverkeeper can begin the implementation green infrastructure projects within and near the AOC to reduce the amount of stormwater entering our combined sewer system to reduce overflow events.

2. Known or Suspected Cause – River Channelization and Altered Hydrology (specific to AOC).

(a.) Remedies & Specific Actions Needed –

- The USACE will continue to maintain the Buffalo River at a navigable depth to support commercial navigation and lake freighter traffic for the foreseeable future. Through proper implementation and enforcement of buffer zones, green infrastructure and habitat rehabilitation along the shoreline, areas of higher dissolved oxygen and cover could provide habitat value for the migrant and resident species, even with continued management of the navigation channel.

3. Known or Suspected Cause – Contaminated Sediments

(a.) Remedies & Specific Actions Needed –

WORK COMPLETED OR UNDERWAY

- The Buffalo River Great Lakes Legacy Act (GLLA) and USACE dredging projects will minimize exposure to the majority of contaminated sediment within the Buffalo River AOC, thereby reducing bioaccumulation in fish and wildlife.
- NYSDEC collects surface water samples yearly from the Buffalo River (at Ohio Street) as part of their RIBS program. These data provide a valuable long-term record of changes in TSS, dissolved oxygen, and other water quality parameters.

FUTURE NEEDS

- Continued authorization of the Great Lakes Legacy Act beyond 2012 will ensure that the Buffalo River AOC is fully remediated as designed.
- Funding is needed for extended long-term monitoring of the sediment, biota, and surface water beyond that which is included as part of the Great Lakes Legacy Act Project. Funding may be provided for post-Legacy Act dredging monitoring for three years following remediation activities, though this will be determined during the final Remedial Design process (early 2012). Additional monitoring will most likely be needed to ensure BUI removal and ultimately AOC delisting.

D. **BUI #4 – Fish Tumors and Other Deformities**

The prevalence of liver tumors in bullheads collected from the Buffalo River in the 1970s and 1980s led to the "impaired" status for this BUI. The prevalence of liver tumors in bullheads and other bottom-dwelling fish has been shown to be associated with PAH exposure due to contaminated sediment.

1. Known or Suspected Cause – Contaminated Sediment

(a.) Remedies & Specific Actions Needed –

WORK COMPLETED OR UNDERWAY

- The Buffalo River Great Lakes Legacy Act (GLLA) and USACE dredging projects will minimize exposure to the majority of contaminated sediment within the Buffalo River AOC, thereby reducing bioaccumulation in fish and wildlife of chemical constituents that contribute to the development of liver tumors.
- New York State projects to cleanup brownfields and inactive hazardous waste sites and continued monitoring of SPDES permit renewals will prevent recontamination of the AOC water and sediments.

FUTURE NEEDS

- Continued authorization of the Great Lakes Legacy Act beyond 2012 will ensure that the Buffalo River AOC is fully remediated as designed.
- Funding is needed for extended long-term monitoring of the sediment, biota, and surface water beyond that which is included as part of the Great Lakes Legacy Act Project. Funding may be provided for post-Legacy Act dredging monitoring for three years following remediation activities, though this will be determined during the final Remedial Design process (early 2012). Additional monitoring will most likely be needed to ensure BUI removal and ultimately AOC delisting.

2. Known or Suspected Cause – Navigational Dredging

(a.) Remedies & Specific Actions Needed –

- The USACE will continue to maintain the Buffalo River at a navigable depth to support commercial navigation and lake freighter traffic for the foreseeable future.

E. BUI #5 – Bird or Animal Deformities or Reproductive Problems

PCB, DDT, and metabolite contamination of Buffalo River AOC sediments is the likely cause for deformities or reproductive problems in wildlife because of their persistence, tendency to biomagnify in aquatic food webs, and toxicological properties.

1. Known or Suspected Cause – Contaminated Sediment

(a.) Remedies & Specific Actions Needed –

WORK COMPLETED OR UNDERWAY

- The Buffalo River Great Lakes Legacy Act (GLLA) and USACE dredging projects will minimize exposure to the majority of contaminated sediment within the Buffalo River AOC, thereby reducing bioaccumulation in fish and wildlife of chemical constituents that contribute to deformities and reproductive problems.
- New York State projects to cleanup brownfields and inactive hazardous waste sites and continued monitoring of SPDES permit renewals will prevent recontamination of the AOC water and sediments.

FUTURE NEEDS

- Continued authorization of the Great Lakes Legacy Act beyond 2012 will ensure that the Buffalo River AOC is fully remediated as designed.
- Funding is needed for extended long-term monitoring of the sediment, biota, and surface water beyond that which is included as part of the Great Lakes Legacy Act Project. Funding may be provided for post-Legacy Act dredging monitoring for three years following remediation activities, though this will be determined during the final Remedial Design process (early 2012). Additional monitoring will most likely be needed to ensure BUI removal and ultimately AOC delisting.

F. BUI # 6 – Degradation of Benthos

The benthic community in the Buffalo River AOC is negatively affected by sediment contamination, continued navigational dredging, and low dissolved oxygen levels.

1. Known or Suspected Cause – Contaminated Sediments

(a.) Remedies & Specific Actions Needed –

WORK COMPLETED OR UNDERWAY

- The Buffalo River Great Lakes Legacy Act (GLLA) and USACE dredging projects will eliminate the majority of contaminated sediment within the biological active zone of the benthic substrate within the Buffalo River AOC, thereby reducing the impact to the benthic community.
- The City of Buffalo Combined Sewer Overflow (CSO) Long-Term Abatement Plan (LTCP) is expected to improve water quality in the AOC by reducing loadings of biological oxygen demand (BOD), nutrients, TSS, and other substances, thereby improving DO and other water quality parameters. The Buffalo Sewer Authority (BSA) is actively negotiating with New York State DEC and the USEPA on a consent decree, however, the BSA is also pro-actively working with Riverkeeper in identifying sites in the Buffalo River that could benefit from green infrastructure solutions.
- New York State projects to cleanup brownfields and inactive hazardous waste sites and continued monitoring of SPDES permit renewals will prevent recontamination of the AOC water and sediments.

FUTURE NEEDS

- Continued authorization of the Great Lakes Legacy Act beyond 2012 will ensure that the Buffalo River AOC is fully remediated as designed.
- Funding is needed for extended long-term monitoring of the sediment, biota, and surface water beyond that which is included as part of the Great Lakes Legacy Act Project. Funding may be provided for post-Legacy Act dredging monitoring for three years following remediation activities, though this will be determined during the final Remedial Design process (early 2012). Additional monitoring will most likely be needed to ensure BUI removal and ultimately AOC delisting.

- Secure funding for habitat restoration (i.e.:, sub-aquatic) and substrate enhancement at sites identified in Buffalo River Ecological Restoration Master Plan will help make progress towards removing this BUI and several other BUIs. See Table 1 & 2 for a priority project list.
- Secure and leverage funding (local, state and federal) for CSO abatement projects as identified in both the Buffalo Sewer Authority's (BSA) LTCP and the collaborative BSA-Riverkeeper green infrastructure/buffer projects to eliminate sediment recontamination.

2. Known or Suspected Cause – Navigational Dredging

(a.) Remedies & Specific Actions Needed –

- The USACE will continue to maintain the Buffalo River at a navigable depth to support commercial navigation and lake freighter traffic for the foreseeable future. Through proper implementation and enforcement of buffer zones, green infrastructure and habitat rehabilitation outside the navigational channel can support areas of higher dissolved oxygen and improved substrate that could provide habitat value for the benthic community.

G. **BUI #7 – Restrictions on Dredging**

1. Known or Suspected Cause – Contaminated Sediment

(a.) Remedies & Specific Actions Needed –

WORK COMPLETED OR UNDERWAY

- The Buffalo River Great Lakes Legacy Act (GLLA) and USACE dredging projects will minimize the ecological and human health risks from contaminated sediment within the Buffalo River AOC. Phase 1 of the dredging, via GLRI-funding to the USACE for "Enhanced Navigational Dredging" began in the late summer 2011 and is anticipated to be completed by December 31, 2012. Once contract agreements are executed, Phase II of the dredging is expected to be funded under the Great Lakes Legacy Act, and is targeted to commence in Fall 2012. The second phase is expected to take 1-2 years to complete. PAH's are a targeted "contaminant of concern" and it is expected that with completion of the two phases of dredging, and post-dredge monitoring, this BUI can be removed.
- New York State projects to cleanup brownfields and inactive hazardous waste sites and continued monitoring of SPDES permit renewals will prevent recontamination of the AOC sediments.

FUTURE NEEDS

- Continued authorization of the Great Lakes Legacy Act beyond 2012 will ensure that the Buffalo River AOC is fully remediated as designed.
- Long term, post-dredge monitoring of sediment in AOC to determine the potential for beneficial reuse.

- Funding is needed for extended long-term monitoring of the sediment, biota, and surface water beyond that which is included as part of the Great Lakes Legacy Act Project. Funding may be provided for post-Legacy Act dredging monitoring for three years following remediation activities, though this will be determined during the final Remedial Design process (early 2012). Additional monitoring will most likely be needed to ensure BUI removal and ultimately AOC delisting.
- State support for complete Brownfield and Inactive Hazardous Waste Site cleanups in, and upstream of, the AOC to prevent recontamination of the AOC water and sediments after sediment remediation.

H. BUI #11 – Degradation of Aesthetics

The aesthetics of the Buffalo River AOC are impaired due to non-point source inputs (such as litter, unnatural debris and bacterial inputs from both CSOs and upstream failing septic systems), poorly maintained buffer areas and failing infrastructure along the shoreline.

1. Known or Suspected Cause – Floatables, debris, and foul odors from CSOs and upper watershed.

(a.) Remedies & Specific Actions Needed –

WORK COMPLETED OR UNDERWAY

- Buffalo Niagara Riverkeeper has engaged in ongoing community outreach, education, and stewardship activities which have begun to change the perception of the AOC and behaviors of individuals and communities in and around the AOC. Riverkeeper currently organizes biannual volunteer cleanups to remove thousands of pounds of debris and litter from the shoreline of the Buffalo River AOC and other local waterways, and conducts innumerable points of outreach, education, presentations, etc., to address non-point source inputs.
- The City of Buffalo Combined Sewer Overflow (CSO) Long-Term Abatement Plan (LTCP) is expected to improve water quality aesthetics in the AOC by reducing loadings of foul-smelling bacteria, biological oxygen demand (BOD), nutrients, TSS and other substances, thereby improving DO and other water quality parameters. The Buffalo Sewer Authority (BSA) is actively negotiating with New York State and the USEPA on a consent decree, however, the BSA is also pro-actively working with Riverkeeper in identifying sites in the Buffalo River that could have improved aesthetic benefits associated with green infrastructure solutions (buffers, bioswales, safe access, etc.).

FUTURE NEEDS

- Secure and leverage funding (local, state and federal) for CSO abatement projects as identified in both the BSA's LTCP and the collaborative BSA-Riverkeeper green infrastructure/buffer projects.

- Promotion and incorporation of Green Infrastructure techniques into development projects to reduce the burden on the aging sewer system.
- Streamlined, consistent, and ongoing public awareness, education, and stewardship of the Buffalo River AOC and its watershed.

I. BUI # 14 – Loss of Fish and Wildlife Habitat

Fish and wildlife habitat in the Buffalo River AOC is severely degraded as a result of historical and ongoing human activities such as riparian and shoreline development, bulkheading, and navigational dredging.

1. Known or Suspected Cause – Physical Disturbances and Lack of Suitable Substrate

(a.) Remedies & Specific Actions Needed –

WORK COMPLETED OR UNDERWAY

- As part of the Buffalo River Great Lakes Legacy Act project negotiations and permit applications, several aquatic and riparian habitat projects are identified and designed that will serve to 1) mitigate damages associated with planned dredging, and 2) increase and rehabilitate sub-aquatic and emergent habitat, and 3) greatly improve habitat connectivity throughout the corridor. It is yet to be determined if and when these projects will be implemented under the Legacy Act Project Agreement.
- Buffalo Niagara Riverkeeper and our partners have received GLRI funding for three habitat restoration projects (Riverbend Phase I, Riverbend Phase II, and Seneca Bluffs) which will incrementally help increase habitat and improve DO levels in two discreet areas within the AOC.
- Through its current "Buffalo River RAP Coordination" grant funding, Buffalo Niagara Riverkeeper has contracted with a consultant to coordinate a baseline inventory of mammal, bird, reptile, and amphibian populations in the AOC. The survey began in the Fall of 2011 and will continue through the end of 2012. Data will be used to compare pre and post habitat restoration communities.
- Funded locally through the Niagara River Greenway Commission, Buffalo Niagara Riverkeeper's "Niagara River Riparian Restoration Program" is currently working with numerous private waterfront landowners to install vegetated riparian buffers and encourage habitat connectivity. In 2011, 500 linear feet of shoreline in the Buffalo River AOC were cleared of invasive plant species and replanted with native vegetation. Several additional sites are being targeted for 2012-13.

FUTURE NEEDS

- Secure funding for habitat restoration (i.e.:, sub-aquatic, emergent, riparian, and upland areas including overhanging vegetation) at sites identified in Buffalo River Ecological Restoration Master Plan will help make progress towards removing this BUI See Tables 1 & 2 for a priority project list.

- Secure and leverage funding (local, state and federal) for CSO abatement projects as identified in both the BSA's LTCP and the collaborative BSA-Riverkeeper green infrastructure/vegetated buffer projects.
- Technical assessment associated with planning and designing climate adaptability into restoration projects to account for changes in ice scour patterns and fluctuating water levels.
- A comprehensive invasive species management plan is needed for Western New York's AOC's including the Buffalo River, to protect the investment in habitat restoration efforts. In addition, capacity is needed at the local level to commit and implement long term invasive species management
- Funding is needed for extended long-term monitoring of the sediment, biota, and surface water beyond that which is included as part of the Great Lakes Legacy Act Project. Funding may be provided for post-Legacy Act dredging monitoring for three years following remediation activities, though this will be determined during the final Remedial Design process (early 2012). Additional monitoring will most likely be needed to ensure BUI removal and ultimately AOC delisting.
- Funding is needed to identify and analyze a suitable reference community (outside, or just upstream, of the AOC) to aid in the delisting process.

Table 1 - Potential Habitat Restoration Sites in the Buffalo River Area of Concern (as identified in the Buffalo River ERMP)

ERMP Site Number and Site Name		Property Owner(s)	Restoration Activities	Upland Site Acreage (approximate)	Linear Feet of Shoreline (approximate)	Percent towards Delisting Target*	Estimated Cost for Restoration
1	Old Bailey Woods	City of Buffalo, Buffalo Urban Renewal Agency, TOPS Markets	In-Channel and Nearshore • In-channel habitat structure and complexity • Integrated resistive and redirective hydraulic features integrated with shoreline structural complexity to create a more natural channel geomorphology Shoreline • Shoreline stabilization • Integrated habitat and resistive structures to capture sediment, provide erosion control, and increase aquatic habitat diversity Stream Bank • Bank reshaping and stabilization • Toe protection • Secured structural features for sediment and erosion control • Increase riparian structure and diversity to enhance habitat value and soil stability Inland and Upland • Increase native species richness • Increase habitat connectivity, structure, and complexity • Invasive plant community control	4.25	930	5%	$524,000.00
2	Bailey Woods Adjacent Parcels	City of Buffalo	In-Channel and Nearshore • In-channel habitat structure and complexity • Resistive and redirective hydraulic features integrated with shoreline structural complexity to create a more natural channel geomorphology Shoreline • Shoreline stabilization • Integrated habitat and resistive structures to capture sedimentation, provide erosion control, and increase aquatic habitat diversity Stream Bank • Bank reshaping and stabilization • Toe protection • Secured structural features for sediment and erosion control • Increase riparian structure and diversity to enhance habitat value and soil stabilization Inland and Upland • Soil mapping and characterization • Determine need for soil amendments • Invasive plant community mapping	10.5	980	5%	$1,195,000.00

ERMP Site Number and Site Name		Property Owner(s)	Restoration Activities	Upland Site Acreage (approximate)	Linear Feet of Shoreline (approximate)	Percent towards Delisting Target*	Estimated Cost for Restoration
			• Increase native species richness • Increase habitat connectivity, structure, and complexity				
3	Bailey Avenue Peninsula	Erie County	In-Channel and Nearshore • Fish habitat enhancement • Nearshore structure creation and enhancement • Submerged aquatic vegetation bed development • Bank stabilization Shoreline • Shoreline stabilization and expansion • Resistive and redirective features for sediment trapping and erosion control • Establishment of fringe emergent wetland community Stream Bank • Bank stabilization • Resistive and redirective features for sedimentation and erosion control • Expansion of emergent wetland community Inland and Upland • Continued bottomland and riparian forest development in small areas	4	325	2%	$270,000.00
5	Concrete Central Peninsula	CSX, City of Buffalo	In-Channel and Nearshore • Fish habitat enhancement • In-channel habitat structure and complexity • Submerged aquatic vegetation bed development • Nearshore structure creation and enhancement Shoreline • Shoreline stabilization • Integrated habitat and resistive structures to capture sedimentation, provide erosion control, and increase aquatic habitat diversity • Substrate enhancement Stream Bank • Bank reshaping and stabilization • Toe protection • Secured structural features foe sediment and erosion control • Increase riparian structure and diversity to enhance habitat value and soil stabilization • Substrate enhancement Inland and Upland • Soil mapping and characterization	**45**	**2430**	**12%**	**$2,884,000.00**

ERMP Site Number and Site Name		Property Owner(s)	Restoration Activities	Upland Site Acreage (approximate)	Linear Feet of Shoreline (approximate)	Percent towards Delisting Target*	Estimated Cost for Restoration
			• Determine need for soil amendments • Invasive plant community mapping • Increase native species richness and strata diversity • Increase habitat connectivity, structure, and complexity				
6	Blue Tower Turning Basin	None	In-Channel and Nearshore • Fish habitat enhancement • In-stream structure creation and enhancement • Submerged aquatic vegetation bed development • Emergent wetland fringe Shoreline • Debris removal • Bank Stabilization • Mudflat/beach community enhancement • Shoreline anchoring • Substrate/soil enhancement Stream Bank • Bank stabilization • Sediment and erosion control • ISCMP • Increasing riparian structure and diversity	**0**	**1565**	**8%**	**$478,000.00**
11	Katherine Street Peninsula Shoreline Adjacent to Smith Street Park	City of Buffalo	In-Channel and Nearshore • Fish habitat enhancement • Nearshore structure and complexity • Regeneration of emergent and SAV • Nearshore area stabilization Shoreline • Toe of stream bank stabilization • Integrated resistive and redirective structures • Sediment loss and erosion control • Expansion of emergent wetland community Stream Bank • Invasive plant community control • Soil amendment combined with sediment and erosion control	**1.5**	**1030**	**5%**	**$837,000.00**

ERMP Site Number and Site Name		Property Owner(s)	Restoration Activities	Upland Site Acreage (approximate)	Linear Feet of Shoreline (approximate)	Percent towards Delisting Target*	Estimated Cost for Restoration
			• Increasing riparian structure and diversity Inland and Upland • Invasive plant community control • Enhancing upland habitat structure and complexity				
21	Smith Street Park	Erie County	In-Channel and Nearshore • Fish habitat enhancement • In-stream structure creation and enhancement • Submerged aquatic vegetation bed development • Nearshore area stabilization Shoreline • Bank Stabilization • Sediment and erosion control • Expansion of emergent wetland community Stream Bank • Bank stabilization • Sediment and erosion control • Increasing riparian structure and diversity Inland and Upland • Enhancing upland habitat structure and complexity	**7**	**850**	**4%**	**$632,000.00**

*For BUI #14 (Loss of Fish and Wildlife Habitat), Delisting Criteria 1c states that: *A minimum 25% of the AOC shoreline is restored to natural slope, shallows, and aquatic (emergent and submerged) native vegetation, including naturalizing areas of the City Ship Canal shoreline.* In order to achieve this goal, 19,902 linear feet of shoreline must be restored in the AOC. To date; 6,485 (33% of the goal) linear feet of shoreline have been restored, or are currently being restored, in the Buffalo River AOC.

Table 2 - Potential Habitat Restoration Sites upstream of the Buffalo River Area of Concern (as identified in the Buffalo River ERMP)

ERMP Site Number and Site Name		Property Owner(s)	Restoration Activities	Upland Site Acreage (approximate)	Linear Feet of Shoreline (approximate)	Estimated Cost for Restoration
4	Seneca Bluffs	Erie County	In-Channel and Nearshore • In-Channel habitat structure and complexity • Integrated resistive and redirective hydraulic features with stream bank bioengineering to preserve natural channel geomorphology Shoreline • Shoreline stabilization • Sediment and erosion control • Aquatic habitat diversity Stream Bank • Bank stabilization • Toe protection • Sediment and erosion control • Increasing riparian structure and diversity to enhance habitat value and soil stability Inland and Upland • Increase native species richness • Increase habitat connectivity, structure, and complexity • Complement existing restoration design for restored parts of the site	15	960	$673,000.00
7	Ogden Estates	Privately Owned	In-Channel and Nearshore • Fish habitat enhancement • In-stream structure creation and enhancement Shoreline • Debris removal • Bank stabilization • Shoreline development and anchoring, emergent wetland fringe Stream Bank • Bank reshaping and stabilization • Sedimentation and erosion control • Invasive species control and management • Increasing riparian structure and diversity Inland and Upland • Terrestrial habitat structure and diversity • Restoration of off-channel habitat	27	1,900	$1,319,000.00

ERMP Site Number and Site Name		Property Owner(s)	Restoration Activities	Upland Site Acreage (approximate)	Linear Feet of Shoreline (approximate)	Estimated Cost for Restoration
8	North Bank Riparian Buffer	City of Buffalo	In-Channel and Nearshore • Fish habitat enhancement • In-stream structure creation and enhancement • Submerged aquatic vegetation bed development Shoreline • Shoreline stabilization • Sediment and erosion control • Expansion of shoreline habitat and fringe emergent community Stream Bank • Bank toe protection and stabilization • Sediment and erosion control • Bank revegetation to increase riparian structure and diversity Inland and Upland • Enhancing habitat structure and complexity • Improving habitat values and function • Regeneration of upland hardwood forest with shrubs and herbaceous understory	-	2,000	$385,000.00
9	West Seneca – Behind Compost Facility	Several – Including: Town of West Seneca, Oakgrove Construction, and National Fuel	In-Channel and Nearshore • Fish habitat enhancement • In-stream structure creation and enhancement • Submerged aquatic vegetation bed development Shoreline • Shoreline stabilization • Sedimentation and erosion control • Expansion of shoreline habitat and fringe emergent community Stream Bank • Bank stabilization • Sedimentation and erosion control • Increased riparian structure and diversity Inland and Upland • Enhance habitat structure and complexity • Improve habitat values and function • Create habitat for amphibian and reptilian species	66	2,220	$2,173,000.00

ERMP Site Number and Site Name		Property Owner(s)	Restoration Activities	Upland Site Acreage (approximate)	Linear Feet of Shoreline (approximate)	Estimated Cost for Restoration
12	NYSDEC Fishing Access at Harlem Rd.	State of NY	In-Channel and Nearshore • In-channel habitat structure and complexity • Integrated resistive and redirective hydraulic features with stream bank soil bioengineering to preserve natural channel geomorphology Shoreline • Shoreline stabilization • Sedimentation and erosion control • Aquatic habitat diversity Stream Bank • Bank stabilization • Sediment and erosion control • Increasing riparian structure and diversity to enhance habitat value and soil stability Inland and Upland • Increase native species richness • Increase habitat connectivity and habitat structure and complexity	2.4	480	$338,000.00

Table 3 - Future Needs for BUI Delisting

Beneficial Use Impairment Indicator		Current Status	Future Needs	Lead Organization	Estimated Project Cost	Estimated Time to Delist BUI
1	Restrictions on Fish & Wildlife Consumption	Impaired	• Continued authorization of the Great Lakes Legacy Act beyond 2012 will ensure that the Buffalo River AOC is fully remediated as designed. • Funding is needed for extended long-term monitoring of the sediment, biota, and surface water beyond that which is included as part of the Great Lakes Legacy Act Project. Funding may be provided for post-Legacy Act dredging monitoring for three years following remediation activities, though this will be determined during the final Remedial Design process (early 2012). Additional monitoring will most likely be needed to ensure BUI removal and ultimately AOC delisting. • Coordination with NYS Department of Health to increase public awareness on public health advisories related to fish consumption during and after dredging. • State support for complete Brownfield and Inactive Hazardous Waste Site cleanups in, and upstream of, the AOC to prevent recontamination of the AOC water and sediments after sediment remediation.	Buffalo Niagara Riverkeeper	TBD	5+ years
2	Tainting of Fish & Wildlife Flavor	Impaired	• Continued authorization of the Great Lakes Legacy Act beyond 2012 will ensure that the Buffalo River AOC is fully remediated as designed. • A comprehensive survey of fish and wildlife officials, or other informed observers, is needed to determine the extent of tainting which will complement the primary sediment data. • Funding is needed for extended long-term monitoring of the sediment, biota, and surface water beyond that which is included as part of the Great Lakes Legacy Act Project. Funding may be provided for post-Legacy Act dredging monitoring for three years following remediation activities, though this will be determined during the final Remedial Design process (early 2012). Additional monitoring will most likely be needed to ensure BUI removal and ultimately AOC delisting. • Building on the Buffalo River Greenway Plan, green infrastructure site identification, and phase II Brownfield Opportunity Area study efforts between 2009 and 2011. In 2012, Riverkeeper can begin the implementation of buffers, naturalized re-generation areas, and/or green infrastructure projects within and near the AOC to reduce the ongoing inputs of PAHs into the system from non-point sources	Buffalo Niagara Riverkeeper	TBD	2-5 years

Beneficial Use Impairment Indicator		Current Status	Future Needs	Lead Organization	Estimated Project Cost	Estimated Time to Delist BUI
3	Degradation of Fish & Wildlife Populations	Impaired	• Secure funding for habitat restoration (i.e.:, sub-aquatic, emergent, riparian, and upland areas including overhanging vegetation) at sites identified in Buffalo River Ecological Restoration Master Plan will help make progress towards removing this BUI and BUI #14 (Loss of Habitat) See Tables 1 & 2 for a priority project list. • Secure and leverage funding (local, state and federal) for CSO abatement projects as identified in both the Buffalo Sewer Authority's (BSA) Long Term Control Plan and the collaborative BSA-Riverkeeper green infrastructure/buffer projects. • Funding is needed for extended long-term monitoring of the sediment, biota, and surface water beyond that which is included as part of the Great Lakes Legacy Act Project. Funding may be provided for post-Legacy Act dredging monitoring for three years following remediation activities, though this will be determined during the final Remedial Design process (early 2012). Additional monitoring will most likely be needed to ensure BUI removal and ultimately AOC delisting. • Continued authorization of the Great Lakes Legacy Act beyond 2012 will ensure that the Buffalo River AOC is fully remediated as designed. • Building on the Buffalo River Greenway Plan, green infrastructure site identification, and phase II Brownfield Opportunity Area study efforts between 2009 and 2011. In 2012, Riverkeeper can begin the implementation green infrastructure projects within and near the AOC to reduce the amount of stormwater entering our combined sewer system to reduce overflow events. • Continued authorization of the Great Lakes Legacy Act beyond 2012 will ensure that the Buffalo River AOC is fully remediated as designed.	Buffalo Niagara Riverkeeper	TBD	5+ years
4	Fish Tumors and Other Deformities	Impaired	• Continued authorization of the Great Lakes Legacy Act beyond 2012 will ensure that the Buffalo River AOC is fully remediated as designed. • Funding is needed for extended long-term monitoring of the sediment, biota, and surface water beyond that which is included as part of the Great Lakes Legacy Act Project. Funding may be provided for post-Legacy Act dredging monitoring for three years following remediation activities, though this will be determined during the final Remedial Design process (early 2012). Additional monitoring will most likely be needed to ensure BUI removal and	Buffalo Niagara Riverkeeper	TBD	5+ years

Beneficial Use Impairment Indicator		Current Status	Future Needs	Lead Organization	Estimated Project Cost	Estimated Time to Delist BUI
			ultimately AOC delisting.			
5	Bird or Animal Deformities or Reproductive Problems	Impaired	• Continued authorization of the Great Lakes Legacy Act beyond 2012 will ensure that the Buffalo River AOC is fully remediated as designed. • Funding is needed for extended long-term monitoring of the sediment, biota, and surface water beyond that which is included as part of the Great Lakes Legacy Act Project. Funding may be provided for post-Legacy Act dredging monitoring for three years following remediation activities, though this will be determined during the final Remedial Design process (early 2012). Additional monitoring will most likely be needed to ensure BUI removal and ultimately AOC delisting.	Buffalo Niagara Riverkeeper	TBD	2-5 years
6	Degradation of Benthos	Impaired	• Continued authorization of the Great Lakes Legacy Act beyond 2012 will ensure that the Buffalo River AOC is fully remediated as designed. • Funding is needed for extended long-term monitoring of the sediment, biota, and surface water beyond that which is included as part of the Great Lakes Legacy Act Project. Funding may be provided for post-Legacy Act dredging monitoring for three years following remediation activities, though this will be determined during the final Remedial Design process (early 2012). Additional monitoring will most likely be needed to ensure BUI removal and ultimately AOC delisting. • Secure funding for habitat restoration (i.e.:, sub-aquatic) and substrate enhancement at sites identified in Buffalo River Ecological Restoration Master Plan will help make progress towards removing this BUI and several other BUIs. See Table 1 & 2 for a priority project list. • Secure and leverage funding (local, state and federal) for CSO abatement projects as identified in both the Buffalo Sewer Authority's (BSA) LTCP and the collaborative BSA-Riverkeeper green infrastructure/buffer projects to eliminate sediment recontamination.	Buffalo Niagara Riverkeeper	TBD	2-5 years
7	Restrictions on Dredging	Impaired	• Continued authorization of the Great Lakes Legacy Act beyond 2012 will ensure that the Buffalo River AOC is fully remediated as designed. • Long term, post-dredge monitoring of sediment in AOC to determine the potential for beneficial reuse. • Funding is needed for extended long-term monitoring of the	Buffalo Niagara Riverkeeper	TBD	2-5 years

Beneficial Use Impairment Indicator		Current Status	Future Needs	Lead Organization	Estimated Project Cost	Estimated Time to Delist BUI
			sediment, biota, and surface water beyond that which is included as part of the Great Lakes Legacy Act Project. Funding may be provided for post-Legacy Act dredging monitoring for three years following remediation activities, though this will be determined during the final Remedial Design process (early 2012). Additional monitoring will most likely be needed to ensure BUI removal and ultimately AOC delisting. • State support for complete Brownfield and Inactive Hazardous Waste Site cleanups in, and upstream of, the AOC to prevent recontamination of the AOC water and sediments after sediment remediation.			
8	Eutrophication or Undesirable Algae	Not Impaired				
9	Restrictions on Drinking Water	Not Applicable				
10	Beach Closings	Not Applicable				
11	Degradation of Aesthetics	Impaired	• Secure and leverage funding (local, state and federal) for CSO abatement projects as identified in both the BSA's LTCP and the collaborative BSA-Riverkeeper green infrastructure/buffer projects. • Promotion and incorporation of Green Infrastructure techniques into development projects to reduce the burden on the aging sewer system. • Streamlined, consistent, and ongoing public awareness, education, and stewardship of the Buffalo River AOC and its watershed.	Buffalo Niagara Riverkeeper		2-5 years
12	Added Cost to Agriculture	Not Impaired				
13	Degradation of Phytoplankton or Zooplankton Populations	Not Impaired				
14	Loss of Fish & Wildlife Habitat	Impaired	• Secure funding for habitat restoration (i.e.:, sub-aquatic, emergent, riparian, and upland areas including overhanging vegetation) at sites identified in Buffalo River Ecological Restoration Master Plan will help make progress towards removing this BUI See	Buffalo Niagara Riverkeeper	TBD	5+ years

Beneficial Use Impairment Indicator		Current Status	Future Needs	Lead Organization	Estimated Project Cost	Estimated Time to Delist BUI
			Tables 1 & 2 for a priority project list. • Secure and leverage funding (local, state and federal) for CSO abatement projects as identified in both the BSA's LTCP and the collaborative BSA-Riverkeeper green infrastructure/vegetated buffer projects. • Technical assessment associated with planning and designing climate adaptability into restoration projects to account for changes in ice scour patterns and fluctuating water levels. • A comprehensive invasive species management plan is needed for Western New York's AOC's including the Buffalo River, to protect the investment in habitat restoration efforts. In addition, capacity is needed at the local level to commit and implement long term invasive species management • Funding is needed for extended long-term monitoring of the sediment, biota, and surface water beyond that which is included as part of the Great Lakes Legacy Act Project. Funding may be provided for post-Legacy Act dredging monitoring for three years following remediation activities, though this will be determined during the final Remedial Design process (early 2012). Additional monitoring will most likely be needed to ensure BUI removal and ultimately AOC delisting. • Funding is needed to identify and analyze a suitable reference community (outside, or just upstream, of the AOC) to aid in the delisting process.			

ATTACHMENT A

DRAFT
Expanded Workplan
for Buffalo River RAP Coordination, 2010 – 2012

USEPA Agreement No. GL-97217610
Project Period: 07/01/2010 – 12/31/2012
EPA Project Officer: Frederick Luckey
Buffalo Niagara Riverkeeper Project Manager: Jill Jedlicka

Attachment A

Objective 1 – Continue the local coordination of the current Great Lakes Legacy Act Project for the Buffalo River Area of Concern

Background Information: Contaminated sediment in the Buffalo River AOC poses a risk to benthic organisms, impairs fish and wildlife communities, and hinders the use of the Buffalo River AOC as a recreational area. These contaminated sediments in the AOC have, at least in part, contributed to the "Impaired" designation of 7 Beneficial Use Impairments.

In 2007, Buffalo Niagara Riverkeeper became the non-federal sponsor for a Great Lakes Legacy Act (GLLA) agreement with USEPA-GLNPO to conduct a complete assessment of the contaminated sediment in the Buffalo River Area of Concern. This assessment lead to the development of a draft Remedial Investigation/Feasibility Study report which was completed in late 2010. This report will undergo internal review by the Project Coordination Team (PCT) which consists of representatives from Buffalo Niagara Riverkeeper, USEPA, US Army Corps of Engineers, Honeywell Inc., and NYSDEC. Upon review, the document will be released for public comment and public meetings will be held. The PCT will then negotiate a Great Lakes Legacy Act modification to commence remedial design.

As per the Project Agreement signed between Riverkeeper and USEPA in 2007, the following tasks are required:

> Article III – Project Coordination Team
> 11. GLNPO's Project Coordinator and the Non-Federal Sponsor's counterpart shall keep the Project Coordination Team Informed of Project progress and significant pending issues and actions, and shall seek the views of the Project Coordination Team on matters that the Project Coordination Team generally oversees.
> 12. Until Project completion, the Project Coordination Team shall generally oversee the project including, but not necessarily limited to, matters related to design, remedial investigation and feasibility studies; plans and specifications; scheduling; real property, relocation, and removal requirements; real property acquisition; contract awards or modifications; contract costs; the application of and compliance with the Davis-Bacon Act, Contract Work Hours and Safety Standards Act and the Copeland Anti-Kickback Act for relocations; GLNPO's cost projections; final inspection of the entire project or functional portions of the project; preparation of the management plan for proposed dredged or excavated material disposal; anticipated requirements for operating and maintaining the general navigational features; and other project-related matters. The Project Coordination Team also shall generally oversee the coordination of project schedules.

Personnel Involved in Objective: Jill Jedlicka

Anticipated hours: Estimated at 500 hrs over 3 years.

Other Sources of Funding or Overlapping Grants: While the Great Lakes Legacy Act is providing funds to evaluate and remediate contaminated sediment in the Buffalo River Area of Concern, no funding is provided for local coordination efforts. Funds from this grant will only be used to cover personnel costs for Jill Jedlicka; no funds will be used for meeting supplies, meeting facilitation, or travel.

Action Steps:

- **Buffalo Niagara Riverkeeper will continue to coordinate and participate in all Project Coordination Team (PCT) conference calls and meetings.**
    - The PCT will meet approximately once per week (via conference call or face-to-face meetings in Buffalo or Chicago) to discuss various aspects of and make decisions on the Buffalo River Legacy Act Project. Buffalo Niagara Riverkeeper provides the team with local knowledge and expertise and is required to participate as per the USEPA project agreement. Discussion topics are anticipated to include: internal review of draft RI/FS, modifications to the GLLA to include Remedial Design, critical structure decisions, habitat restoration planning, ecological assessment and targets, public outreach and education about the project, securing additional cost share partners, negotiating a GLLA remediation agreement.
    - Upon release of the RI/FS for public comment, Buffalo Niagara Riverkeeper will help facilitate the local public meetings. Meetings will be held at community buildings (schools, community center, etc.) in neighborhoods adjacent to the Buffalo River. Meeting time and location will be decided by the PCT and will coincide with project milestones. Facilitation includes the following tasks: meeting site selection, meeting setup/breakdown, public notice coordination, meeting presentation, distribution of informational publications, and compilation and release of public comments.

Deliverables: Details on the number of hours dedicated to this task, the number of phone calls and meetings, public meeting documents, and status reports on the progress of the GLLA project will be provided in Quarterly Progress Reports and Final Reports to USEPA.

Objective 2 – Assist with the development of a Habitat Restoration Master Plan for the Buffalo River Area of Concern in partnership with U.S. Environmental Protection Agency-Great Lakes National Program Office (U.S. EPA-GLNPO)

Background Information: In 2010, USEPA-GLNPO initiated the development of an "Ecological Restoration Master Plan" for the Buffalo River. This purpose of this plan, which was contracted to Ecology & Environment, Inc., is to provide a framework for future efforts to improve the health of the watershed by providing a "ready list" of habitat restoration projects that specify restoration features and will individually and collectively

contribute to the delisting of the identified BUIs. The overall goal of the ERMP is to remediate and eliminate specific impairments that currently occur within the lower Buffalo River watershed by listing and describing a number of sites where meaningful and effective habitat restoration can be implemented. The specific goals are to; protect water quality, protect habitat quality in the Buffalo River and its tributaries, and assist efforts to delist the three habitat-related BUIs listed above.

Riverkeeper has done most of the groundwork associated with identifying and prioritizing habitat restoration sites, which has lead directly to the commencement of the Master Plan process. Riverkeeper also has the unmatched local knowledge of the Buffalo River Area of Concern needed to move the Master Plan forward to implementation.

Personnel Involved in Objective: Jill Jedlicka and Katherine Winkler

Anticipated hours: Estimated at 100 hrs over 3 years.

Other Sources of Funding or Overlapping Grants: USEPA-GLNPO contracted with Ecology & Environment Inc. for the development of this plan. Riverkeeper has not received any funds from that contract to participate in the effort. Funds from this grant will only be used to cover personnel and local travel costs for Jill Jedlicka and Katherine Winkler to accomplish the following Action Steps.

Action Steps:

- **Buffalo Niagara Riverkeeper will assist USEPA-GLNPO with local stakeholder coordination.**
    - As the Buffalo River RAP Coordinator, Riverkeeper maintains a spreadsheet of contact information for Buffalo River Stakeholders. Riverkeeper will evaluate and update this list to accurately represent the individuals that need to be invited to participate in the ERMP process. This list, anticipated to include contact information for approximately 300 groups and individuals, will be provided to E&E.
    - Riverkeeper will allow for a brief presentation by E&E at a regularly scheduled Buffalo River Remedial Advisory Committee stakeholder meeting giving an overview of the project and results. This meeting is anticipated to occur in January 2011.
    - Riverkeeper will note project progress and solicit comments from our Buffalo River RAC Stakeholders on the Draft and Final ERMP documents. This will be accomplished via email notifications with comments to be submitted directly to E&E.
- **Buffalo Niagara Riverkeeper will use local knowledge of the AOC and Buffalo River watershed to identify on-the-ground project locations.**

- As part of the ERMP process, E&E will be soliciting input from stakeholders on potential project locations. Due to Riverkeeper's vast knowledge of the AOC, we will compile a list of potential project sites that will aid in the restoration of the Buffalo River AOC. This list will be submitted to E&E for inclusion in the ERMP.

- **Buffalo Niagara Riverkeeper will attend project stakeholder meetings.**
  - USEPA-GLNPO and E&E will be hosting two public meetings about this project. Riverkeeper will attend the "kick-off" meeting to provide ideas and input on site locations and general project goals. The second public meeting will be held upon release of the Draft report and Riverkeeper will attend in order to provide comments on the project.
- **Buffalo Niagara Riverkeeper will review and provide comments on Draft and Final ERMP documents.**
  - Upon release of the documents by USEPA-GLNPO and E&E, Riverkeeper will review the plan to make sure it includes accurate information and effective steps for habitat restoration in the Buffalo River AOC. Comments will be provided to E&E if warranted.
- **Buffalo Niagara Riverkeeper will develop and host final project website.**
  - E&E is obligated to host a project specific website on their site until project completion. At the point where E&E's contract with USEPA-GLNPO expires, Riverkeeper will develop and host a similar site on its website to ensure that the project documents are available for future reference.

Deliverables: Details on the number of hours dedicated to this task will be provided in Quarterly Progress Reports and Final Reports to USEPA.

Objective 3 – Secure additional funding and partnerships to implement sediment remediation and habitat restoration within the Buffalo River Area of Concern

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Riverkeeper is committed to identifying funds and partnerships to implement sediment remediation and habitat restoration within the Buffalo River Area of Concern. At the least, Riverkeeper will work with the Legacy Act Project Coordination Team to implement the six habitat project sites that have been identified as part of the RI/FS. In addition, with the completion of the Habitat Restoration Master Plan (as described above), an additional 30 or more sites and habitat projects will be fully evaluated. Riverkeeper will then be able to begin addressing BUI #14 – Loss of Fish and Wildlife Habitat. Shoreline habitat is severely degraded since the vast majority of the banks within the Area of Concern are hardened and instream habitat is lacking due to routine navigational dredging of the River. Riverkeeper will work with public and private

landowners to soften the banks and provide instream habitat outside of the navigational channel. Habitat restoration is planned as a component of the Great Lakes Legacy Act project; however Legacy-funded work is limited to in-channel habitat restoration. Riverkeeper will leverage its role as Remedial Action Plan Coordinator to secure additional funds, from various sources, which are needed to implement complementary riparian, shoreline, and emergent zone habitat restoration projects. As RAP Coordinator, Riverkeeper has also provided much needed information and serves as a valuable asset to the NYS Trustees, who are currently litigating a Natural Resource Damage Claim in the Buffalo River. Coordination of the Legacy project, NRD process and proposed habitat restoration projects is critical to keep costs and efforts streamlined, efficient, and ecologically sound. It is anticipated that habitat restoration work will begin in the Buffalo River Area of Concern in 2011.

Personnel Involved in Objective: Jill Jedlicka and Katherine Winkler

Anticipated hours: Estimated at 500 hrs over 3 years.

Other Sources of Funding or Overlapping Grants: Riverkeeper has not received any other funding to accomplish the following action steps.

Action Steps:

- Buffalo Niagara Riverkeeper will continue partner and stakeholder coordination and collaboration.
    - Emails, phone calls, and one-on-one meetings.
- Buffalo Niagara Riverkeeper will identify and secure funds to implement restoration.
    - As the non-federal sponsor of the Great Lakes Legacy Act Project for the Buffalo River AOC, Riverkeeper will work with the Project Coordination Team (as outlined in Objective 1) to secure funds from the Great Lakes Legacy Act for Sediment Remediation and in-channel habitat restoration.
    - Riverkeeper will develop grant proposals (as released) for habitat restoration at sites identified in the Buffalo River Environmental Master Plan and through other sources.
- Buffalo Niagara Riverkeeper will continue to work with the Great Lakes Legacy Act Project Coordination Team.
    - As mentioned above, Riverkeeper will secure the implementation of six in-channel restoration sites in the Buffalo River Area of Concern (as identified in the RI/FS)
- Buffalo Niagara Riverkeeper will work with various partners and stakeholders to implement riparian, shoreline, and emergent habitat sites identified in the Habitat Restoration Master Plan (ERMP).
    - Attend public meetings

- Consult on technical drawings
- Advise on mitigation and enhancement opportunities

Deliverables: Details on the number of hours dedicated to this task will be provided in Quarterly Progress Reports and Final Reports to USEPA.

Objective 4 – Identify potential monitoring protocol for delisting BUIs in partnership with New York State and other Areas of Concern

Significant work, including sediment remediation and habitat restoration, is planned in the Buffalo River Area of Concern within the next five years which will bring the Buffalo River closer towards delisting. Delisting criteria for most of the Buffalo River BUIs involve specific or measurable targets towards which progress can be tracked. Monitoring plans and protocols need to be developed to track each BUI as they approach and meet the current delisting goals. Riverkeeper is requesting funds to continue convening the Buffalo River Area of Concern Remedial Advisory Committee and other stakeholders to develop a monitoring plan in partnership with New York State and other Areas of Concern.

Personnel Involved in Objective: Jill Jedlicka and Katherine Winkler

Anticipated hours: Estimated at 250 hrs over 3 years.

Other Sources of Funding or Overlapping Grants: Funds from this grant will be used to cover personnel costs for Jill Jedlicka and Katherine Winkler. Funds will not be used to cover costs of Strategy development.

Action Steps:

- **Continue partnering with NY State and U.S. Areas of Concern**
- **Secure funds for Beneficial Use Impairment Strategy development**
    - Riverkeeper will sign a cost share agreement with the US Army Corps of Engineers to fund the Strategy development (for Buffalo and Niagara River AOCs). Riverkeeper will need to provide approximately $90,000 of in-kind services under Section 401 of the Water Resources Development Act of 1990.
    - It is anticipated that the Final BUI Strategy will be completed by Spring 2011.
- **Work with US Army Corps of Engineers to develop the BUI Strategy**
    - The USACE will be responsible for Strategy development which will be accomplished either in-house or through one of their outside contractors.
    - Riverkeeper will work with USACE or consultants to provide them with the latest reports and documents pertaining to Buffalo River AOC Beneficial Use Impairments.
- **Ensure completeness and quality of the BUI Strategy**
    - Upon completion of the Draft document, Riverkeeper will review the Strategy and provide comments. In addition, Riverkeeper will distribute the draft document to the Buffalo River Remedial Advisory Committee for review and comments.

- **Distribute Final BUI Strategy document**
    - The Final document will be made available to the public on Riverkeeper's website. Direct notice of the release of the document will be sent to the Buffalo River Remedial Advisory Committee members and other Stakeholders via email.

Deliverables: A BUI Strategy Document is developed to guide the Buffalo River Area of Concern towards complete delisting. Details on the number of hours dedicated to this task, the number of phone calls and meetings, and status reports on the progress of this objective will be provided in Quarterly Progress Reports and Final Reports to USEPA.

Objective 5 - Coordinate a baseline inventory of mammalian, herpetofaunal, and avian populations in the Buffalo River Area of Concern

Background Information: As described previously, significant projects are being planned to progress the Buffalo River Area of Concern towards delisting. Riverkeeper is requesting funding to contract with a consultant or researcher for a professional analysis of the mammalian, herpetofaunal, and avian populations in the Buffalo River Area of Concern. Limited data and information is currently available that identifies the wildlife populations of the area. This analysis will provide a current baseline condition of the type and number of wildlife utilizing the Area of Concern prior to any significant remediation efforts. These results will be used during the delisting process of BUI #3 – Degradation of Fish and Wildlife Populations and BUI #14 – Loss of Fish and Wildlife Habitat.

Personnel Involved in Objective: Jill Jedlicka and Katherine Winkler

Anticipated hours: Estimated at 200 hrs over 3 years.

Other Sources of Funding or Overlapping Grants: Funds from this grant will pay for Riverkeeper personnel and project implementation ($30,000).

Action Steps (with anticipated timeframe):

- Riverkeeper will develop a comprehensive Request for Proposals for the Wildlife Survey which will be sent to USEPA Project Manager for approval. (April 2011)
- Upon approval, Riverkeeper will release the RFP via standard protocol for a period of no less than three weeks. This includes publishing a notice in the *Buffalo News* and sending the notice directly to a list of known contractors. (May, 2011)
- Riverkeeper will use the Scoring Criteria identified in the RFP, phone interviews, and independent advisors to select the consultant for this project. (June, 2011)
- Prepare contracts and detailed Scope of Work (July 2011)
- Riverkeeper will maintain communications with the contractor to ensure project goals are being met. One face-to-face meeting and biweekly phone calls are anticipated throughout the project period. (June, 2011 – December 2012)
- Review Final Report (December 2012)
- Disseminate the Final Report via email to Buffalo River Stakeholders and on the Riverkeeper website.

Deliverables: Details on the number of hours dedicated to this task, the number of phone calls and meetings, public meeting documents, and status reports on the progress of the GLLA project will be provided in Quarterly Progress Reports and Final Reports to USEPA.

Objective 6 – Identify opportunities, potential partnerships, and funding to assess, evaluate, and design Green Infrastructure projects that will assist in Combined Sewer Overflow abatement and habitat improvement

Background Information: Combined Sewer Overflows have been identified as a major contributor to the impairment of BUI # 11 – Degradation of Aesthetics, and also significantly contribute to the unacceptable levels of bacteria and dissolved oxygen in the Buffalo River Area of Concern, which are addressed under BUI #8 and #10 (Eutrophication and Beach Closings) respectively. The floatables, debris, and foul odors that occur after a Combined Sewer Overflow (CSO) event significantly impact the aesthetics of the Buffalo River which limits promoting the River as high quality habitat and a public recreational destination. The implementation and construction of projects related to Combined Sewer Overflow abatement is best funded by the NYS Revolving Loan Fund. However, Riverkeeper strongly believes that the assessment, identification, development of conceptual designs, and evaluation of potential Green Infrastructure projects, which can be implemented in parallel with shoreline habitat restoration, will significantly reduce the impacts of CSO events and quantity of untreated sewage that is released directly to the Buffalo River Area of Concern. As RAP Coordinator, Riverkeeper is currently engaged in dialogue and partnering with municipal and private entities to identify key locations for Green Infrastructure projects. This effort will increase over the next three years.

Personnel Involved in Objective: Jessie Fischer, Renata Kraft, Mark Bogdan, and Nicole Lipp.

Anticipated hours: Estimated at 3000 hrs over 3 years.

Other Sources of Funding or Overlapping Grants: Funds from this grant will pay for Riverkeeper personnel time only.

Action Steps (with anticipated timeframe):

- Work with the Buffalo Sewer Authority, its consultants and regulatory agencies as appropriate in regards to mitigating CSO impacts in the Buffalo River AOC.
    - The development of a list of recommendations on Green Infrastructure actions and projects.
- Continue building partnerships and identifying funding sources.
    - Daily/weekly emails, phone calls, and one-on-one meetings.
- Work with municipal and private entities to ensure inclusion of Green Infrastructure in development projects.
    - A detailed list of potential projects for Feasibility Analysis will be developed.
- Consult as necessary on roadway projects adjacent to the Buffalo River AOC.

Deliverables: Details on the number of hours dedicated to this task, the number of phone calls and meetings, public meeting documents, a detailed list of potential projects, and

status reports on the progress of the GLLA project will be provided in Quarterly Progress Reports and Final Reports to USEPA.

Objective 7 - Implement shoreline buffer projects in partnerships with individual land owners in and around the Buffalo River Area of Concern to address non-point source pollution and BUIs #3 and #14.

Background Information: Riparian buffers are an effective way of filtering excess nutrients, sediment, contaminants, and pathogens from runoff as well as providing habitat for wildlife along streams and rivers. The Buffalo River Area of Concern and upper watershed have degraded shorelines due to past development practices. In areas where full scale habitat restoration cannot be accomplished due to this development, the creation of shoreline buffers is crucial to improving water quality in the Buffalo River Area of Concern. In addition to water quality, these buffer strips will provide habitat corridors between larger habitat areas. Riverkeeper is requesting funding to continue its partnerships with landowners and municipalities in the implementation of shoreline buffers in and around the Buffalo River Area of Concern. The improved water quality and increased wildlife habitat will aid in the delisting of BUIs #3 "Degradation of Fish and Wildlife Populations" and #14 "Loss of Fish and Wildlife Habitat."

Personnel Involved in Objective: Jill Jedlicka, Kerri Bentkowski, and Nicole Lipp

Anticipated hours: Estimated at 1600 hrs over 3 years.

Other Sources of Funding or Overlapping Grants: Funds from this grant will pay for Riverkeeper personnel time only.

Action Steps (with anticipated timeframe):

- Continue to develop relationships with private and public landowners adjacent to the Buffalo River AOC
    - Daily/weekly emails, phone calls, and one-on-one meetings to encourage participation in the development of shoreline buffers in the AOC
    - A list of properties and owners within the AOC that have potential for buffer installation.
- Implement shoreline buffers in the AOC
    - Install 3-4 shoreline buffers within the Buffalo River AOC.

Deliverables: Details on the number of hours dedicated to this task, the number of phone calls and meetings, public meeting documents, a detailed list of potential projects, and status reports on the progress of the GLLA project will be provided in Quarterly Progress Reports and Final Reports to USEPA. 3-4 shoreline buffers will be implemented within the AOC.

Objective 8 - Continue education and outreach plan to build partnerships and engage stakeholders about issues affecting the Buffalo River Area of Concern.

Public and governmental knowledge of the issues affecting the Buffalo River and the actions needed to address the issues had generally been lacking. Since 2003, Riverkeeper has increased the profile of the Area of Concern locally, regionally, and nationally. Riverkeeper created and maintains a Buffalo River Remedial Action Plan website, has held several Buffalo River Summits to engage the public, has held countless meetings with stakeholders, and has revived the Remedial Advisory Committee. Through the unique "Riverwatch Program", over 100 stream captain volunteers have been trained and mobilized and

offer an invaluable resource to the region by monitoring water quality, reporting questionable activities, observing shoreline impacts and activities, and promoting waterway stewardship within their respective communities.

As work progresses towards delisting the Buffalo River Area of Concern, it is crucial to keep the public well educated and involved in the process. Riverkeeper will continue to implement its Riverwatch program, maintain the website to include up-to-date information, hold public/private meetings on the issues and related actions steps towards remediation, and produce videos and presentations to provide AOC information.

Personnel Involved in Objective: Jill Jedlicka and Kerri Bentkowski

Anticipated hours: Estimated at 2000 hrs over 3 years.

Other Sources of Funding or Overlapping Grants: Funds from this grant will pay for Riverkeeper personnel time only.

Action Steps (with anticipated timeframe):

- Continue to increase the profile of the buffalo River AOC on a local, regional, and federal level.
  - Convene public/private meetings
  - Maintain the Buffalo River RAP website to include up-to-date restoration information
  - Produce videos, presentations, and fact sheets on the AOC.
  - Maintain and update a master contact list of AOC stakeholders.
  - Attend public meetings, conference calls, webinars, and conferences related to the Buffalo River AOC
- **Continue to engage the Buffalo River Remedial Advisory Committee and RAP Stakeholders**
  - Develop and release RAP Monthly Reports
  - Develop and release RAP e-newsletter to Riverkeeper listserve
  - Coordinate Buffalo River RAP Stakeholder meetings
  - Emails, phone calls, and one-on-one meetings with stakeholders
- **Remain up-to-date on Technical Documents and other Environmental Issues/Impacts related to the Buffalo River AOC**
  - Review technical/scientific documents and prepare comments
  - Monitor NYSDEC's Environmental Notice Bulletin
  - Review and provide comments (when needed) on SPDES permits impacting the Buffalo River AOC
- **Continue to improve community access to the Buffalo River AOC**
  - Participate in meetings to ensure appropriate access is incorporated into shoreline development
  - Integrate habitat enhancements with all proposed Buffalo River access and trail development
- **Monitor water quality in and upstream of the AOC**

- Monitor basic water quality parameters and E.coli at 15 sites within the Buffalo River watershed and AOC
- Up-to-date water quality data available to the public on Riverkeeper's website

Deliverables: Details on the number of hours dedicated to this task, the number of phone calls and meetings, public meeting documents, and status reports on the progress of the GLLA project will be provided in Quarterly Progress Reports and Final Reports to USEPA.