Appendix C
Big Creek Watershed Action Plan - 319 Appendix 8 elements and GAP List

During the development of this watershed plan for Big Creek, FOBC and RAP/CRCPO have determined that it would be very hard to qualify Big Creek or the Plan as a State Endorsed 319 Watershed Plan for any 319 restoration funding.

The original project grant application was based on the Mill Creek and Euclid Creek efforts, and was prepared when the Ohio Lake Erie Commission Balanced Growth Initiative was in its pilot stage. The Big Creek project team was advised during a review of the Mill Creek Plan (for which RAP/CRCPO provided substantial support to the Cuyahoga County Board of Health) that it would not qualify for 319 funding support. The Team was further advised that the already approved Euclid Creek Plan would not qualify for approval under the current 319 guidelines. This led to a deliberate decision by FOBC to morph the Big Creek effort into a Balanced Growth Initiative Watershed Plan.

Big Creek is so urbanized that it borders on being slightly better than an open storm drain and does not fit well with 319 style plans that focus on water quality improvements from non-point sources. There is little, if any, feasibility to significantly reduce urbanized stream discharge – the fire hose effect – which dominates watershed issues for Big Creek.

There is a paucity of relevant data for actionable water quality stewardship. RAP/CRCPO had much more data available for Mill Creek than for Big Creek. Further, nothing we have found, and which is presented below, changes the watershed management strategy to promote Watershed Stewardship under the aegis of the Ohio Lake Erie Commission Balance Growth Initiative.

CRCPO has developed very useful BGI model for watershed planning and management, especially useful for urban streams; and which fits closely to RAP Strategic Delisting Objectives. Since the State's approval of the Chippewa BGI plan CRCPO has also completed Phase I of a BGI plan for Brandywine Creek. We are also well underway on a BGI plan for Furnace Run. The project team - FOBC and RAP- believe the Big Creek Plan will function well as a BGI plan and serve the interests of the watershed, the local watershed communities and the RAP restoration goals.

Going forward, FOBC may choose to pursue funding eligibility under the EPA 319 program.
In order to establish eligibility a State Qualified 319 Plan will have to be produced.

Below is a discussion of the "319 Appendix 8" items in this BGI Plan; the Elements are discussed and gaps noted:

Table of Contents for a 319 Qualified Big Watershed Action Plan
The Table of Contents for a 319 Qualified Big Watershed Action Plan will need to include the following major elements:

Introduction

1. Watershed Plan Development
2. Watershed Inventory
3. Water Resource Quality
4. Watershed Impairments
5. Big Creek Watershed Protection and Restoration Goals
    a. Problem Statement-
    b. Purpose of the Big Creek Watershed Plan-
    c. Implementation Goals –
    d. Timetable-

e. Performance Indicators –
f. Education and Outreach -
g. Funding-

6. Evaluating Plan Progress
7. Ohio Coastal Zone Management Plan Benefits

1. Watershed Plan Development

Watershed Group / Mission / Governance -
It is an ongoing RAP strategic goal to incubate functional trib-based watershed organizations to facilitate stewardship and plan implementation at the local level. CRCPO helped to incubate the Friends of Big Creek (FOBC) as a stakeholder committee. During the course of the plan development Friends of Big Creek matured into a 501(c) 3 NGO for the purpose of supporting implementation of the plan.
This is important to CRCPO as FOBC will be the implementing mechanism for the Watershed Plan in close cooperation with the local communities.

FOBC plan development has been by consensus led by the chair of FOBC. Community endorsement and participation in remedial actions requires the public vote by the Community governing body.

Friends of Big Creek's mission is "to conserve, enhance, and bring recognition to the natural and historic resources of the Big Creek Watershed and develop a recreational trail network that joins these resources to each other and the community. FOBC shall advocate, develop, and execute programs and activities incidental to the foregoing."

The organization's Bylaws, adopted on December 5, 2007, call for "a Steering Committee of voting, dues-paying members, a non-voting Advisory Committee, and a non-voting General Body of dues-paying members. All classes of membership shall be entitled to full participation in all functions and discussions, with the only distinction being that only Steering Committee members shall vote on matters before FOBC."

Four Standing Committees, "consider matters which exist continually.
Greenway and Trails: works to establish and expand a network of recreational trails and public spaces that join watershed amenities to neighborhoods, adjoining communities, and regional attractions.

Watershed Stewardship: promotes, plans, and implements conservation and restorationbased activities throughout the watershed; fosters environmentally sensitive development of the landscape.

Education and Outreach: raises awareness of and encourages public/private involvement in FOBC, its activities, and the watershed; supports publicity and membership activities, presentations, heritage tours, nature walks, newsletter, brochure development, displays.

Finance and Development: works to expand membership and donor base in public and corporate sectors; prepares grant applications in conjunction with an initiating committee or on its own initiative; organizes fund raising activities."

Friends of Big Creek STEERING COMMITTEE
Mary Ellen Stasek, Chair

Jeffrey Lennartz, Vice-Chair
Diana Slobodian, Treasurer
Bob Gardin, Project Manager
Thomas Coyne
Greg Cznadel

Friends of Big Creek STEERING COMMITTEE (continued)

James A. Gazda
Kim Knall
Ann M. Kuula
Donald C. Martin
David McBean, RLA
Alfred Penko, P.E.
Dennis Petro
Jim Wohl

Friends of Big Creek ADVISORY COMMITTEE
Gayle Albers, Conservation Coordinator, Cleveland Metroparks Zoo
Regis Barrett, Chair, City of Brooklyn Zoning Board of Appeals
Sean Brennan Parma City Council - Ward 2
George Cantor, Senior Planner, Cleveland City Planning
Brian J. Cummins, Cleveland City Council - Ward 15
Mary Galinas, Parma City Council - Ward 1
Kevin Kelley, Cleveland City Council - Ward 16
David Lincheck, Director, West Creek Preservation Committee
James McCall, Parma Heights City Council
Melissa Miller, Planning and Safety Coordinator, Bellaire-Puritas Development Corporation

Kathleen Pucci, Brooklyn City Council
Carla Regener, Associate Senior Planner, Cuyahoga County Planning Commission
Janine Rybka, District Administrator, Cuyahoga Soil and Water Conservation District
Lester Stumpe, Manager of Watershed Programs, Northeast Ohio Regional Sewer District
Laura Travers, Sanitarian, Cuyahoga County Board of Health
Andy Vidra, Senior Environmental Planner, Northeast Ohio Areawide Coordinating Agency
Jim White, Executive Director, Cuyahoga River Remedial Action Plan

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2. Watershed Inventory

The majority of the watershed inventory items listed in “Appendix 8” has been included in this Balanced Growth Watershed Plan. However, due to the extensive urbanization of the watershed, much of the other information is not relevant to this plan.

Due to the historic and extensive urbanization of this watershed, a modified inventory pertaining to natural stream conditions was assembled.

For the purposes of this plan, landforms and land cover were inventoried and analyzed as part of the process for selecting Priority Conservation, Priority Development and Priority Redevelopment Areas. A discussion of this is contained on pages 19, 7 21-41.

a. Description of the watershed - see page 5-6 for general description of the watershed
   i. Geology –Topography & Soils – Topography on page 10; Soils on pages 5, 9, 23-25; Steep Slopes on pages 9, 26
   ii. Biological Features – use attainment and IBI discussed on pages 6, 16-17
   iii. Water resources
      a. Climate and Precipitation

Big Creek Watershed has the same climate and weather as the City of Cleveland and Cleveland International Airport. Therefore the following climate and weather description would also be valid for the Big Creek Watershed.

> *"Cleveland features a continental climate and is typical of Ohio weather. Standing alongside Lake Erie, the weather in Cleveland is moderated by this vast expanse of water, keeping the winters fairly mild at times.*

The summer climate in Cleveland can be hot, although rarely excessively humid, feeling pleasant on even the sunniest of days. Between June and September, temperatures average 25°C / 77°F or more, exceeding 30°C / 86°F during the hottest weather. The average annual daytime temperatures in Cleveland are around 15°C / 59°F.

Cleveland Climate Description: Continental climate
Cleveland Hopkins Airport (CLE) Location: Northern Hemisphere, USA, Ohio
Annual High / Low Daytime Temperatures at Cleveland: 28°C / 0°C (82°F / 32°F)
Average Daily January Temperature at Cleveland Airport (CLE): 0ºC / 32ºF
Average Daily June Temperature at Cleveland Airport (CLE): 26ºC / 79ºF
Annual Rainfall / Precipitation Cleveland at Airport (CLE): 941 mm / 37 inches" .
Source: www.cleveland-cle.airports-guides.com/cle_climate.html

b. Surface Water
   1. Wetlands – see pages 29-31 & Appendix A: Big Creek Watershed Wetlands Analysis 2008 & 2 additional projects CRCPO, 2008 & Fennessey, 2007.
   2. Subwatershed & Streams – Subwatersheds on page 7; Streams page 27, 34
   3. Groundwater & DRASTIC maps (groundwater pollution potential)
      -available, but determined not relevant due to the urban nature of the watershed

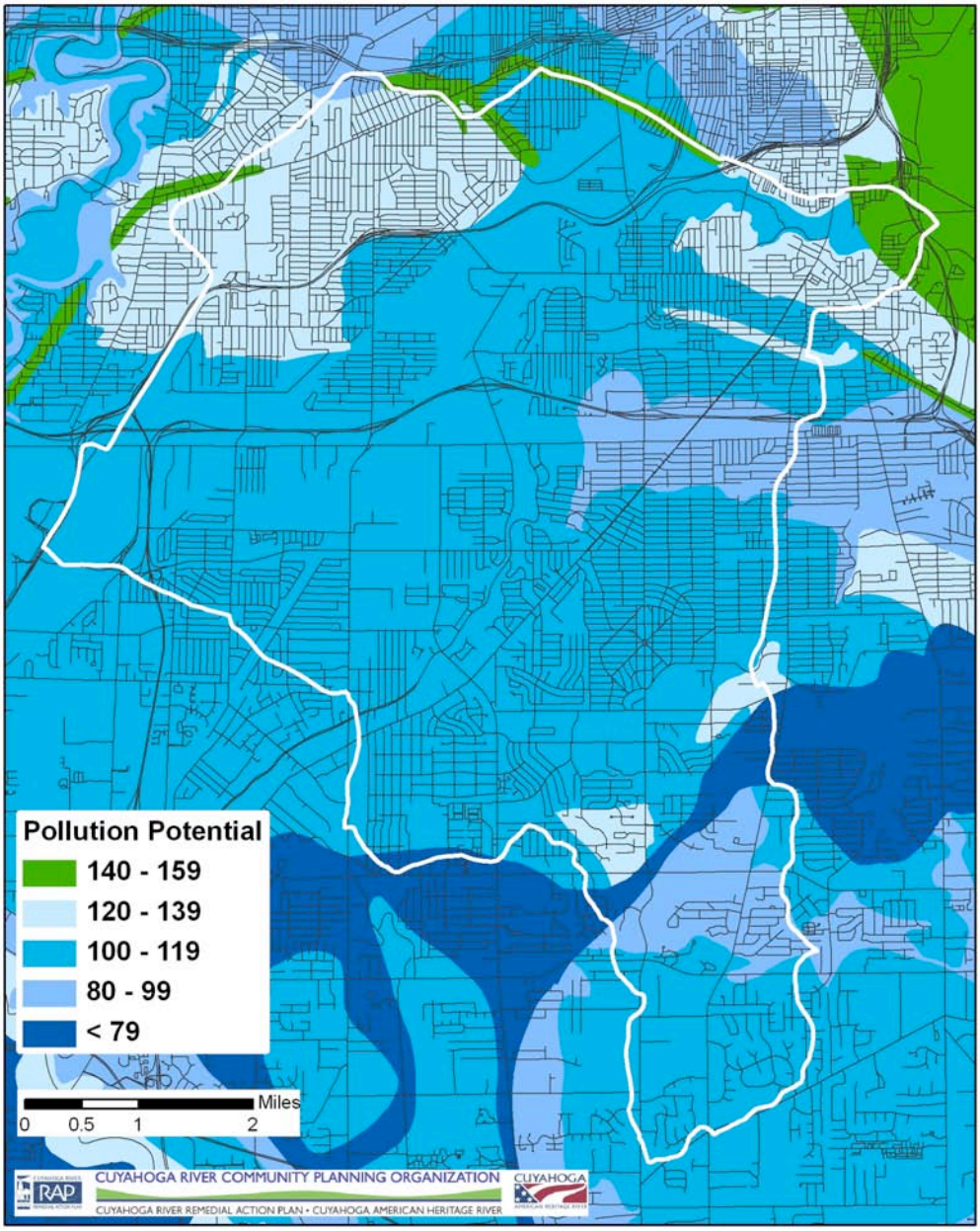
Ground Water - There is no reliance on groundwater within the watershed; the entire watershed is served by the City of Cleveland municipal water supply from Lake Erie.

Aquifers (location, recharge rates, uses) Due to the extensive amount of impervious cover within the watershed, there is very little recharge of aquifers.

Flow regime Due to the extensive amount of impervious cover, the flow regime is "flashy" – stormwater enters the stream system directly and is quickly conveyed downstream, causing numerous out of bank events.

DRASTIC maps- groundwater pollution potential The groundwater pollution potential is very low since stormwater remains on the surface and runs off into surface water bodies. Overall DRASTIC map categories range from , 79 to > 200, the range for the Big Creek Watershed is from 40 to 145.

See map below.



iv. Land Use/Land Cover pages 19-20

1. Land cover description (with percentages by subwatershed*)
   Several sources (NOAA, OEPA) exist for land cover data, however due to the extensive urbanization of the watershed, quantification of the imperviousness of the watershed is more meaningful for the purpose of this plan. See pages 12-15.

2. Status and Trends –RIDE Study, Section 4, Table 4.1
   -watershed is fully developed & fully impacted

v. Cultural Resources

Protected Land – Parklands see page 36.

vi. Previous and Complementary Efforts (Project / Reports)

Cuyahoga River Community Planning Organization, 2008. ***Prioritizing Wetland Restoration Potential in the Tributaries of the Cuyahoga River Area of Concern (AOC)***

The goal of this project is to identify the "top wetland sites" in each tributary watershed of the Cuyahoga River AOC. This project will help expedite and focus efforts to meet mitigation needs, as well as make the best use of other public or private funding sources.

Cuyahoga River Remedial Action Plan, 2001. ***State of Big Creek Report***

The purpose of this report was to provide an update on stewardship and outreach efforts within the Big Creek Watershed.

Fennessy, M. S., J. J. Mack, E. Deimeke, M. T. Sullivan, J. Bishop, M. Cohen, M. Micacchion and M. Knapp, 2007. ***Assessment of wetlands in the Cuyahoga River watershed of northeast Ohio. Ohio EPA Technical*** Report WET/2007-4. Ohio Environmental Protection Agency, Division of Surface Water, Wetland Ecology Group, Columbus, Ohio.

The goal was to assess wetlands using the Ohio Rapid Assessment Method (ORAM) to determine their ecological condition and report on how ecological condition changes as surrounding land-use changes (urban, agricultural, natural). Sample sites were randomly selected using wetlands mapped by the Ohio Wetland Inventory.

Floyd Browne Group, 2009. ***Big Creek Greenway Trail Alignment & Neighborhood Connector Plan***

The purpose of this study was "to develop a greenway and trail system that protects community natural resources and provides connections among communities. The Big Creek Greenway Trail Alignment & Neighborhood Connector Study completes the prior efforts by assessing the feasibility of developing a system of trails and preservation areas for the City of Brooklyn."

Floyd Browne Group, 2008. Lower ***Big Creek Greenway Redevelopment & Restoration Plan***

This plan "builds on previous efforts by blending the best concepts of each study with new ideas developed by the planning team to create a new vision for the Lower Big Creek Greenway. The creation of this vision incorporates detailed future land use, public access, infrastructure, ecological restoration and environmental regeneration, open space and trail linkages and economic development concepts."

Northeast Ohio Areawide Coordinating Agency, 2002. ***Lower Big Creek Study - Phase I Report***

The purpose of this study was *"to plan for and implement long and short-term actions and policies to stabilize and improve physically and environmentally sensitive natural areas in the study area with the intention of eventually connecting the Cleveland Metroparks Zoo with the Canal Towpath".*

Northeast Ohio Regional Sewer District. ***DRAFT Regional Intercommunity Community Drainage Evaluation (R.I.D.E) Study***

This DRAFT report presents a comprehensive management plan for intercommunity drainage within the Big Creek Watershed. The RIDE Study evaluated Big Creek and its major tributaries at a watershed scale.

Northeast Ohio Regional Sewer District, 1999. ***Regional Plan for Sewerage and Drainage - Phase I Study***

The purpose of this study was to collect and organize existing data related to storm water problems. The study was designed to identify: existing regional storm water drainage network, current watershed problems, legal and regulatory issues, funding options, community awareness and concerns regarding storm water regulations and management.

Northeast Ohio Regional Sewer District, 1999-2002 & 1987-1998. ***Greater Cleveland Area Environmental Water Quality Assessment.***

Reports document water quality status and improvements due to NEORSD facilities; determine sources of environmental disruption and recommendations; provide a scientifically sound current information basis for environmental planning and future abatement projects.

Ohio Environmental Protection Agency, Division of Surface Water, 2003. ***Total Maximum Daily Loads for the Lower Cuyahoga River***

This report covers the Lower Cuyahoga River Watershed, from Akron north to Cleveland, which includes the Big Creek Watershed.

"The Total Maximum Daily Load (TMDL) program, established under Section 303(d) of the Clean Water Act (33 U.S.C. 1313), focuses on identifying and restoring polluted rivers, streams, lakes and other surface water bodies. A TMDL is a written, quantitative assessment of water quality problems in a water body and contributing sources of pollution. It specifies the amount a pollutant needs to be reduced to meet water quality standards (WQS), allocates pollutant load reductions, and provides the basis for taking actions needed to restore a water body."

URS Corporation, 2000. ***Flood Relief Options for the Cleveland Metroparks Zoo.***

"The goal of this study was to evaluate options to maximize flood protection for the Zoo, minimize loss of Zoo land for flood control purposes, evaluate stream restoration options, perform flood modeling to verify flood elevations, and identify flood prone locations and areas to avoid for future Zoo development."

ii. Physical attributes of streams and floodplain areas that support habitat, recreation, water quality.

The Stream is highly channelized, especially in the lower reaches where it was at one time a concrete trough and there are no natural floodplains. There is a flood zone in the lower reaches. In the upper watershed the stream is highly entrenched.

Vegetated riparian corridor -minimal amounts and only exists in parks and a few unprotected upper reaches.

Dams -flow alteration structure in the lower portion of the watershed

Eroding banks –Because of the narrow stream channel and high peak discharge volumes the stream has endured historic bank erosion. As urban land uses encroached on the filled flood plains significant sections of the stream's banks have been lined with a variety of armoring devices. While this has reduced erosion and bank failures it also serves to compound the volume and energy of water which the stream discharges. Many of the retrofit sites and devices are intended to reduce the effects from Stream channelization.

Status and Trends – see pages 16-17; suitable habitat is the limiting factor; extensive urbanization has encroached upon the riparian corridor leaving no room for the stream to meander, no floodplains and since the water enters and moves through the stream rapidly after a storm there is very little instream habitat.

3. Water Resource Quality

(to meet the requirements of the Clean Water Act, lakes, streams and wetlands must be included in this assessment)

a. Use designations/use attainment see pages 6, 16-17
   i. Number of water-body miles in full, partial, non-attainment (see TMDL)
   ii. Number of streams designated but not monitored - unknown
   iii. Wetlands/quality **-** – see pages 29-31 & Appendix A: Big Creek Watershed Wetlands Analysis 2008 & 2 additional projects CRCPO, 2008 & Fennessey, 2007.
   iv. Groundwater/quality (N/A)

b. Causes and sources of impairment or threats 305(b) 303 (d)

c. Point sources (by subwatershed or stream segment)
   i. Permitted discharges (NPDES) – available from Ohio EPA
   ii. Spills and illicit discharges – available from Ohio EPA

d. Non point sources (by subwatershed or stream segment)
   i. Inventory of home sewage treatment systems, and a projected number of failing systems - N/A
   ii. Number of new homes being built. - N/A
   iii. Acres of Highly Erodible Land and potential soil loss. These areas were identified on page 25 and protection of the most and areas identified as "highly erodible land" are included as Critical Soils in need of protection.
   iv. Culverted streams – numerous culverts exist in the Big Creek Watershed streams – those on the mainstems were identified for the NEORSD RIDE Study. Bu t due to the highly urbanized nature of the watershed their locations are not relevant for the BGI plan.

e. Status and trends

"Big Creek (Confluence RM 7.2)

The results of the three sites monitored on Big Creek in 1996 (RMs 7.8, 3.1 and 0.2) indicated no Ohio WQS criteria exceedences excepting numerous violations of the Primary Contact Recreation criterion for Fecal Coliform bacteria. Predominant sources of impairment include CSOs, sanitary sewer overflows (SSOs), and urban runoff. NEORSD and Ohio EPA personnel have responded to numerous reports of sanitary discharges into Big Creek. Many of these were illegal tie-ins to storm sewers that were easily remediated, while other problems such as blockages or breaks have become more frequent. Many problems seem to stem from Parma and other areas in the Stickney Creek watershed (confluence RM 4.91).

Though warmwater habitat attributes were more prevalent than modified attributes, macrohabitats at the three sites evaluated in Big Creek were marginally suited to supporting warmwater stream faunas owing to storm water and urban runoff. Flashy scouring flows denuded the channel of natural cover, leaving behind fractured shale bedrock and artificial substrates (concrete and bricks) as the principle cover type. Riffles were embedded with silt and pulverized bedrock.

Effects of urban runoff were most manifest at the mouth, where the channel was braided with small gravel and pulverized shale. Because of the erodible nature of the parent shale bedrock, the channel was generally well developed and sinuous, especially at the most upstream site, and recovered free flowing character within the confines of revetments.

The fish communities lacked sensitive species, darters, insectivores and simple lithophils, implying habitat limitation and Stoneroller minnows dominated the catch at all sites. This combination of community attributes reflects habitat impacts, organic and nutrient enrichment related to urban storm water and CSOs. Community performance improved in 1996 when compared to the grossly polluted conditions observed in 1984. Compared to 1991 sampling, conditions near the mouth in 1996 (poor) were similar between surveys. Big Creek was not sampled in 2000 but the Cuyahoga River showed substantial improvement immediately downstream from the confluence. The results suggest an improving trend in Big Creek following CSO remediation projects conducted after 1996.

Big Creek Tributaries

Ford Branch Big Creek (Confluence RM 3.95)

This tributary to Big Creek receives the effluent from the Ford engine plant. The stream has been modified throughout its length and the majority of the stream is culverted and impacted by urban land use. Elevated metals in sediments compared to Ohio EPA least impacted reference sites were documented in 1996." (pages 21-22, Ohio EPA's 2003, Lower Cuyahoga River TMDL Report)

4. Watershed Impairments - Identify and quantify the sources of pollution.

a. TMDL & other WQ info by stream segment
   Sampling has been and continues to be done in the mainstem of the Lower Big Creek by the Northeast Ohio Regional Sewer District & the Ohio Environmental Protection Agency. The main issue continues to be the presence of *E. coli* due to combined sewer overflows (CSOs). As NEORSD continues to eliminate CSOs, water quality will continue to improve.
b. Habitat conditions (dams, corridor and riparian cover)
   Habitats are limited and degraded due to the amount of urbanization within the watershed. Much of the riparian corridor has been encroached upon, the stream is highly entrenched, and there is little or no floodplain, and due to channelization there are few riffle, pools or other instream habitat.
c. Review and assess habitat modification inventory (QHEI, IBI, ICI, RIDE Info.)
   Though some data exists for the Lower Big Creek, there is nearly no data for the upper reaches of the watershed. Since areas of the upper watershed have been identified as possible conservation areas various sampling efforts would prove useful in monitoring these areas.

5. Big Creek Watershed Restorations and Protection Goals

a) Problem Statement-
Big Creek is so urbanized it borders on being slightly better than an open storm drain and it is barely relevant to focus on water quality goals unless and until urban stream discharge flow variability is effectively managed. The Watershed Partnership's assessment of the stream and watershed conditions indicated there is no feasible way to significantly reduce urbanized stream discharge, "the fire hose effect", which dominates watershed issues for Big Creek and Watershed Stewardship.

b) Purpose of the Big Creek Watershed Plan-
The purpose and goals of the plans are focused on protection of the scarce remaining natural stream features and implementation of flow attenuation devices at several sites in an effort to provide mechanism to reduce the effects from excess peak discharge.

- The Big Creek Plan included an assessment of the watershed and stream features.
- The plan applies a carefully developed methodology used by the Watershed Partnership to define Priority Conservation Areas including opportunities for storm water attenuation retrofits and Priority Development Areas which are identified in the plan.
- The plan also includes a suite of actions for local governments to adopt Low impact-watershed friendly -land development codes.

c) Implementation Goals -
The Big Creek Watershed Plan identifies a series of actions for implementation under the leadership of FOBC.

The Action Elements include five general goals:

1) Securing adoption of the Plan by the local government in the watershed.
2) Securing State endorsement of the Plan by the Ohio Lake Erie Commission
3) Updates to local development codes to promote low impact, " watershed friendly" development, and redevelopment,
4) Installation of Storm water retrofit devices, and
5) Preservation of Priority Conservation Areas

d) Timetable-
Action on the items is difficult to define, since there are factors beyond the control of the FOBC that will impact progress. FOBC is committed to develop and pursue implementation efforts based on:

- Legislative priorities of the local governing bodies;
- Willingness of land owners to participate in retrofit or preservation actions; and
- Availability of funding sources to implement physical projects.

e) Performance Indicators-
Ecosystem and stream quality response will be very difficult to assess, due the magnitude and complexity of urban-based stressors which impact overall stream health. There are no established science-based parameters which can definitively link actions and stream restoration achievement in a highly urbanized set of conditions. While each of the defined projects may exert some watershed benefit, it is unclear and doubtful that any single action will yield measurable outcomes.

The 40 year's of steady recovery in the Cuyahoga River Area of Concern clearly indicates that the collective and cumulative effect from restoration efforts will produce incremental improvements to the water body.

Plan implementation activities can, however be measured and reported:

- Plan adoption and State endorsement is its own desired outcome
- Code updates will be measured by the actual number of communities updating their codes as described in the plan.
- Installation of retrofit flow attenuation devices can be measured by the number of devices and related upstream acres impacted.
- Preservation of priority conservation sites can be measured by the number of sites and acres, which are contained in PCAs.

f) Education and Outreach-
FOBC has developed a website to provide ongoing information in the watershed. The plan will also be available for download or linked from the FOBC website.

FOBC also regularly organizes and leads hikes, programs and tours - all aimed at promoting the stream and community watershed stewardship.

In order to keep the local governments engaged FOBC regularly reports to the participating local governments regarding planning efforts, programs and emerging restoration opportunities.

CRCPO also includes Big Creek Info on its website and provides links to FOBC.

The plan and summary posters of the plan will be printed and distributed to Big Creek Communities and Libraries, and partner agencies including NEORSD, Cleveland Metroparks and Cuyahoga Soil and Water, County Board of Health, NOACA and Cuyahoga River RAP.

g) Funding-
As previously noted, during the course of the development of the Plan, FOBC matured into its own 501c3 NGO. Operationally it receives modest revenue from local members. It also received a grant for operating support from NEORSD. It seeks grants from a variety of sources. FOBC also benefits from significant support from volunteers.

Funding sources for project implementation is uncertain. Like most Great Lakes Watershed Organizations there is no defined, stable and sufficient revenue source available.

FOBC will seek grants for projects and will proceed with implementation for those which are funded.

Many of the local governments, which might serve as a local match resource, are fiscally stressed further compounding the challenge of providing local match for projects if needed.

6. Evaluating Plan Progress

As noted above, water quality outcomes will be virtually impossible to assess in this high density urban stream setting.

The RAP will support FOBC develop efforts to develop programs to monitor and report Plan implementation progress.

Periodic assessments of overall stream health will be conducted in cooperation with the scheduled stream assessments conducted by OEPA, in collaboration with NEORSD and Metroparks.
FOBC will review projects and build on ‘lessons learned“, guiding future actions.

RAP/CRCPO will monitor project activities and provide support and collaborative support as requested.

RAP/CRCPO is in the process of developing a long-term program to train and implement stream monitoring teams for use in the various tributaries of the Area of Concern.

7. Ohio Coastal Zone Management Plan Benefits

Flowing into the Cuyahoga River at mile 7.4, Big Creek is the closest stream to the river's mouth at Lake Erie. As a highly urbanized stream, its' excess discharge and pollutants enter the Cuyahoga River unabated.

Pollutants from stream attach to sediments which gather in the Ship Channel adding extra expense to dredging and sediment disposal costs for the important maritime economy.

Consistent with the goals of the Ohio Lake Erie Commission Balance Growth Initiative, any improvements in stream discharge will yield benefit to the Cuyahoga River and Lake Erie.

The plan places significant emphasis on flow attenuation relying on a variety of restoration, preservation and non-structural techniques.

Big Creek
Balanced Growth Initiative Watershed Plan

produced by

CUYAHOGA RIVER COMMUNITY PLANNING

CUYAHOGA RIVER RAP REMEDIAL ACTION PLAN

CUYAHOGA AMERICAN HERITAGE RIVER

www.crcpo.org

in cooperation with

Friends of Big Creek

www.friendsofbigcreek.org

and the

Big Creek Watershed Planning Partnership

For more information on the

OHIO BALANCED GROWTH PROGRAM

go to www.balancedgrowth.ohio.gov