

Appendix C Implementation of Ohio Coastal Nonpoint Pollution Control Program Management Measures

In accordance with Appendix 8 of *A Guide to Developing Local Watershed Action Plans in Ohio*, the following identifies implementation strategies for the Management Measures of the Ohio Coastal Nonpoint Pollution Control Program (OCNP). Management Measures identified in the OCNP to be implemented in Ohio Lake Erie watersheds include:

1. Agriculture: Irrigation Water Management
2. Urban:
 - a. New Development
 - b. Watershed Protection
 - c. Site Development
 - d. Existing Development
 - e. New On-Site Disposal Systems
 - f. Operating On-Site Disposal Systems
 - g. Planning, Siting and Developing Roads and Highways (Local Only)
 - h. Bridges (Local Only)
 - i. Operation and Maintenance of Roads, Highways and Bridges
 - j. Runoff Systems for Roads, Highways and Bridges
3. Hydromodification:
 - a. Channelization and Channel Modification
 - i. Physical and Chemical Characteristics of Surface Waters
 - ii. Instream and Riparian Habitat Restoration
 - b. Dams
 - c. Eroding Stream banks and Shorelines

The applicability of each of these Management Measures in the Chagrin River watershed, as well as the implementation strategies for each, is discussed below.

1. **Agriculture: Irrigation Water Management:** The goal of this Management Measure is to reduce nonpoint source pollution of surface waters by irrigation.

Nonpoint pollution from irrigation is not a significant source of nonpoint pollution in the Chagrin River Watershed. According to 2000 Landsat imagery, agricultural uses comprise approximately 6 % of land use in the watershed. This agriculture is mainly pastureland and hay fields that are not heavily irrigated.

2. **Urban:**
 - a. **New Development:** This Management Measure is intended to control urban runoff and to treat associated pollution.

Sixty-seven percent (67%) of the watershed is in communities designated under Ohio EPA's NPDES Phase II Storm Water Management requirements and are

exempt from this Management Measure. However, this Management Measure will be implemented throughout the watershed with both Phase II and non-Phase II communities, through the following goals of the Chagrin River Watershed Action Plan:

- **Goal 3 - Site Design Options:** Conduct research and assist local governments with the adoption of site design options to allow flexibility in site layout to reduce storm water runoff and nonpoint source pollution, and to maintain the flood control, erosion control, and water quality protection features of sites including riparian areas and wetlands.
- **Goal 4 - Protection of Open Spaces, Streams, Floodplains, and Wetlands:** Promote and facilitate the protection of open spaces with emphasis on streams, wetlands and riparian areas.
- **Goal 6 - Storm Water Management and Erosion and Sediment Control:** Assist local governments to upgrade storm water management and erosion and sediment control regulations to reduce water quantity and quality impacts and to maintain existing site hydrologic regimes. Provide education for site designers, engineers, and other professional advisors on proper selection, installation, and maintenance of best management practices.

- b. Watershed Protection:** The purpose of this Management Measure is to reduce the generation of nonpoint source pollutants and to mitigate the impacts of urban runoff and associated pollutants.

The Chagrin River Watershed Action Plan will implement this Management Measure through following goals:

- **Goal 3 - Site Design Options:** Conduct research and assist local governments with the adoption of site design options to allow flexibility in site layout to reduce storm water runoff and nonpoint source pollution, and to maintain the flood control, erosion control, and water quality protection features of sites including riparian areas and wetlands.
- **Goal 4 - Protection of Open Spaces, Streams, Floodplains, and Wetlands:** Promote and facilitate the protection of open spaces with emphasis on streams, wetlands and riparian areas.
- **Goal 5 – Restoration of Streams, Wetlands, and Floodplains:** Promote and facilitate the restoration of streams, wetlands, and floodplains.
- **Goal 6 - Storm Water Management and Erosion and Sediment Control:** Assist local governments to upgrade storm water management and erosion and sediment control regulations to reduce water quantity and quality impacts and to maintain existing site hydrologic regimes. Provide education for site designers, engineers, and other professional advisors on proper selection, installation, and maintenance of best management practices.
- **Goal 7 - Floodplain Management:** Promote update of floodplain maps and ensure floodplain regulations exceed minimum standards and encourage the restoration of floodplain functions.

- **Goal 8 - Bacteria Level Reduction:** Reduce stream bacterial levels to meet State water quality standards for recreational use.
- c. **Site Development:** The purpose of this Management Measure is to reduce the generation of nonpoint source pollutants and to mitigate the impacts of urban runoff and associated pollutants by providing controls and policies that are to be applied during the site planning and review process.

The Chagrin River Watershed Action Plan will implement this Management Measure through following goals:

- **Goal 3 - Site Design Options:** Conduct research and assist local governments with the adoption of site design options to allow flexibility in site layout to reduce storm water runoff and nonpoint source pollution, and to maintain the flood control, erosion control, and water quality protection features of sites including riparian areas and wetlands.
 - **Goal 4 - Protection of Open Spaces, Streams, Floodplains, and Wetlands:** Promote and facilitate the protection of open spaces with emphasis on streams, wetlands and riparian areas.
 - **Goal 6 - Storm Water Management and Erosion and Sediment Control:** Assist local governments to upgrade storm water management and erosion and sediment control regulations to reduce water quantity and quality impacts and to maintain existing site hydrologic regimes. Provide education for site designers, engineers, and other professional advisors on proper selection, installation, and maintenance of best management practices.
 - **Goal 7 - Floodplain Management:** Promote update of floodplain maps and ensure floodplain regulations exceed minimum standards and encourage the restoration of floodplain functions.
- d. **Existing Development:** The purpose of this Management Measure is to reduce runoff pollutant concentrations and volumes from existing development.

Sixty-seven percent (67%) of the watershed is in communities designated under Ohio EPA's NPDES Phase II Storm Water Management requirements and are exempt from this Management Measure. However, this Management Measure will be implemented throughout the watershed with both Phase II and non-Phase II communities, through the following goals of the Chagrin River Watershed Action Plan:

- **Goal 3 - Site Design Options:** Conduct research and assist local governments with the adoption of site design options to allow flexibility in site layout to reduce storm water runoff and nonpoint source pollution, and to maintain the flood control, erosion control, and water quality protection features of sites including riparian areas and wetlands.

- **Goal 4 - Protection of Open Spaces, Streams, Floodplains, and Wetlands:** Promote and facilitate the protection of open spaces with emphasis on streams, wetlands and riparian areas.
 - **Goal 5 – Restoration of Streams, Wetlands, and Floodplains:** Promote and facilitate the restoration of streams, wetlands, and floodplains.
 - **Goal 6 - Storm Water Management and Erosion and Sediment Control:** Assist local governments to upgrade storm water management and erosion and sediment control regulations to reduce water quantity and quality impacts and to maintain existing site hydrologic regimes. Provide education for site designers, engineers, and other professional advisors on proper selection, installation, and maintenance of best management practices.
 - **Goal 8 - Bacteria Level Reduction:** Reduce stream bacterial levels to meet State water quality standards for recreational use.
- e. **New On-Site Disposal Systems:** The purpose of this management measure is to protect the management area from pollutants from OSDS.

The Chagrin River Watershed Action Plan will implement this Management Measure through following goals:

- **Goal 3 - Site Design Options:** Conduct research and assist local governments with the adoption of site design options to allow flexibility in site layout to reduce storm water runoff and nonpoint source pollution, and to maintain the flood control, erosion control, and water quality protection features of sites including riparian areas and wetlands.
 - **Goal 4 - Protection of Open Spaces, Streams, Floodplains, and Wetlands:** Promote and facilitate the protection of open spaces with emphasis on streams, wetlands and riparian areas.
 - **Goal 8 - Bacteria Level Reduction:** Reduce stream bacterial levels to meet State water quality standards for recreational use.
- f. **Operating On-Site Disposal Systems:** The purpose of this management measure is to minimize loadings from pollutants from operating OSDS.

The Chagrin River Watershed Action Plan will implement this Management Measure through following goals:

- **Goal 8 - Bacteria Level Reduction:** Reduce stream bacterial levels to meet State water quality standards for recreational use.
- g. **Planning, Siting and Developing Roads and Highways (Local Only):** The purpose of this management measure is to plan and design local road and highway development to address and control NPS pollution.

The Chagrin River Watershed Action Plan will implement this Management Measure through following goals:

- **Goal 3 - Site Design Options:** Conduct research and assist local governments with the adoption of site design options to allow flexibility in site layout to reduce storm water runoff and nonpoint source pollution, and to maintain the flood control, erosion control, and water quality protection features of sites including riparian areas and wetlands.
 - **Goal 4 - Protection of Open Spaces, Streams, Floodplains, and Wetlands:** Promote and facilitate the protection of open spaces with emphasis on streams, wetlands and riparian areas.
 - **Goal 6 - Storm Water Management and Erosion and Sediment Control:** Assist local governments to upgrade storm water management and erosion and sediment control regulations to reduce water quantity and quality impacts and to maintain existing site hydrologic regimes. Provide education for site designers, engineers, and other professional advisors on proper selection, installation, and maintenance of best management practices.
- h. Bridges (Local Only):** This management measure requires the assessment of NPS runoff from bridge decks and appropriate management and treatment be employed to protect critical habitats and water resources.

The Chagrin River Watershed Action Plan will implement this Management Measure through following goals:

- **Goal 3 - Site Design Options:** Conduct research and assist local governments with the adoption of site design options to allow flexibility in site layout to reduce storm water runoff and nonpoint source pollution, and to maintain the flood control, erosion control, and water quality protection features of sites including riparian areas and wetlands.
 - **Goal 4 - Protection of Open Spaces, Streams, Floodplains, and Wetlands:** Promote and facilitate the protection of open spaces with emphasis on streams, wetlands and riparian areas.
 - **Goal 6 - Storm Water Management and Erosion and Sediment Control:** Assist local governments to upgrade storm water management and erosion and sediment control regulations to reduce water quantity and quality impacts and to maintain existing site hydrologic regimes. Provide education for site designers, engineers, and other professional advisors on proper selection, installation, and maintenance of best management practices.
- i. Operation and Maintenance of Roads, Highways and Bridges:** The purpose of this management measure is to incorporate pollution prevention procedures into the operation and maintenance of roads, highways and bridges to reduce pollutant loadings to surface waters.

Sixty-seven percent (67%) of the watershed is in communities designated under Ohio EPA's NPDES Phase II Storm Water Management requirements and are exempt from this Management Measure. However, this Management Measure

will be implemented throughout the watershed with both Phase II and non-Phase II communities, through the following goals of the Chagrin River Watershed Action Plan:

- **Goal 4 - Protection of Open Spaces, Streams, Floodplains, and Wetlands:** Promote and facilitate the protection of open spaces with emphasis on streams, wetlands and riparian areas.
- **Goal 5 – Restoration of Streams, Wetlands, and Floodplains:** Promote and facilitate the restoration of streams, wetlands, and floodplains.
- **Goal 6 - Storm Water Management and Erosion and Sediment Control:** Assist local governments to upgrade storm water management and erosion and sediment control regulations to reduce water quantity and quality impacts and to maintain existing site hydrologic regimes. Provide education for site designers, engineers, and other professional advisors on proper selection, installation, and maintenance of best management practices.

- j. Runoff Systems for Roads, Highways and Bridges:** This management measure is to develop and implement runoff management systems for existing roads, highways and bridges to reduce polluted runoff entering surface waters.

Sixty-seven percent (67%) of the watershed is in communities designated under Ohio EPA's NPDES Phase II Storm Water Management requirements and are exempt from this Management Measure. However, this Management Measure will be implemented throughout the watershed with both Phase II and non-Phase II communities, through the following goals of the Chagrin River Watershed Action Plan:

- **Goal 3 - Site Design Options:** Conduct research and assist local governments with the adoption of site design options to allow flexibility in site layout to reduce storm water runoff and nonpoint source pollution, and to maintain the flood control, erosion control, and water quality protection features of sites including riparian areas and wetlands.
- **Goal 4 - Protection of Open Spaces, Streams, Floodplains, and Wetlands:** Promote and facilitate the protection of open spaces with emphasis on streams, wetlands and riparian areas.
- **Goal 6 - Storm Water Management and Erosion and Sediment Control:** Assist local governments to upgrade storm water management and erosion and sediment control regulations to reduce water quantity and quality impacts and to maintain existing site hydrologic regimes. Provide education for site designers, engineers, and other professional advisors on proper selection, installation, and maintenance of best management practices.

3. Hydromodification:

- a. Channelization and Channel Modification:** The purpose of this management measure is to ensuring the planning of new hydromodification projects address changes to physical and chemical characteristics while concurrently correcting

and/or preventing detrimental changes to instream habitat and riparian habitat from the impact of these projects.

- i. Physical and Chemical Characteristics of Surface Waters**
- ii. Instream and Riparian Habitat Restoration**

The Chagrin River Watershed Action Plan will implement this Management Measure through following goals:

- **Goal 3 - Site Design Options:** Conduct research and assist local governments with the adoption of site design options to allow flexibility in site layout to reduce storm water runoff and nonpoint source pollution, and to maintain the flood control, erosion control, and water quality protection features of sites including riparian areas and wetlands.
 - **Goal 4 - Protection of Open Spaces, Streams, Floodplains, and Wetlands:** Promote and facilitate the protection of open spaces with emphasis on streams, wetlands and riparian areas.
 - **Goal 5 – Restoration of Streams, Wetlands, and Floodplains:** Promote and facilitate the restoration of streams, wetlands, and floodplains.
 - **Goal 6 - Storm Water Management and Erosion and Sediment Control:** Assist local governments to upgrade storm water management and erosion and sediment control regulations to reduce water quantity and quality impacts and to maintain existing site hydrologic regimes. Provide education for site designers, engineers, and other professional advisors on proper selection, installation, and maintenance of best management practices.
- b. **Dams** – Inventory of dam structures and determine applicability based on height and storage.

Section 10.6 details the location of dams in the Chagrin River watershed and the compliance status of the Class I dams. *The Chagrin River Watershed Action Plan will implement this Management Measure through following goal:*

- **Goal 10 – Dam and Impoundment Management:** Minimize the creation of additional online impoundments and ensure existing dams are safe and have the appropriate operation, maintenance, and inspection plans and emergency action plans.
- c. **Eroding Stream banks and Shorelines**

The Chagrin River Watershed Action Plan will implement this Management Measure through following goals:

- **Goal 4 - Protection of Open Spaces, Streams, Floodplains, and Wetlands:** Promote and facilitate the protection of open spaces with emphasis on streams, wetlands and riparian areas.
- **Goal 5 – Restoration of Streams, Wetlands, and Floodplains:** Promote and facilitate the restoration of streams, wetlands, and floodplains.

- **Goal 6 - Storm Water Management and Erosion and Sediment Control:** Assist local governments to upgrade storm water management and erosion and sediment control regulations to reduce water quantity and quality impacts and to maintain existing site hydrologic regimes. Provide education for site designers, engineers, and other professional advisors on proper selection, installation, and maintenance of best management practices.

Implementation Status: The status of activities implementing each of the Watershed Action Plan Goals discussed above is summarized below.

- **Goal 3: Site Design Options:** Conduct research and assist local governments with the adoption of site design options to allow flexibility in site layout to reduce storm water runoff and nonpoint source pollution, and to maintain the flood control, erosion control, and water quality protection features of sites including riparian areas and wetlands.

CRWP has conducted workshops in low impact development and design of best management practices for engineers, planners, and other professional advisors to local communities.

In 2004, we completed the Site Planning Forum to identify alternative development practices.

The regulations of the City of Aurora, Bainbridge Township, and Russell Township allow the use of alternative site designs for residential subdivisions.

The Village of Chagrin Falls has incorporated low impact development techniques in their on-going streetscape improvements in the Village downtown area. These techniques include tree box filters and Stormceptor filter devices.

CRWP has provided technical assistance to Auburn Township, Claridon Township, Munson Township, Village of Kirtland Hills, and other interested members to explore site design options and necessary zoning code updates to facilitate such practices.

- **Goal 4: Protection of Open Spaces, Streams, Floodplains, and Wetlands:** Promote and facilitate the protection of open spaces with emphasis on streams, wetlands and riparian areas.

CRWP has developed model ordinances and model resolutions for riparian and wetland setbacks.

These models have been adopted by the Cities of Aurora and Kirtland, Bainbridge and Auburn Townships, the Villages of Chagrin Falls and Hunting Valley, and Lake County as well as communities outside of the Chagrin River drainage.

CRWP continues to work with these communities to effectively implement the model.

CRWP is working with Orange Village, the City of Willoughby Hills, and Munson and Claridon Townships to adopt these models.

CRWP and other stakeholders have worked to preserve over 45 square miles of open space.

CRWP and other stakeholders will continue to promote permanent preservation of streams, wetlands, and floodplains.

- **Goal 5 – Restoration of Streams, Wetlands, and Floodplains:** Promote and facilitate the restoration of streams, wetlands, and floodplains.

CRWP has conceptual plans for restoration of over 8,000 linear feet of riparian corridor and is working with those in need of restoration locations to complete the restoration.

With funding from a 319 grant, CRWP completed three tree revetment demonstration projects highlighting the effectiveness of this technique at riparian area restoration.

CRWP has conceptual plans for restoration of approximately 25 acres of wetlands and is working with interested parties to complete these projects.

CRWP and other stakeholders have completed numerous restoration projects as detailed in individual stream segment discussions in Section 11.

- **Goal 6: Storm Water Management and Erosion and Sediment Control:** Assist local governments to upgrade storm water management and erosion and sediment control regulations to reduce water quantity and quality impacts and to maintain existing site hydrologic regimes. Provide education for site designers, engineers, and other professional advisors on proper selection, installation, and maintenance of best management practices.

Working with the Lake County Soil and Water Conservation District (SWCD) and Ohio EPA, CRWP updated its erosion and sediment control model ordinance to meet Ohio EPA's standards under the Phase II program.

CRWP has worked with the City of Willoughby Hills to adopt and implement this model and is working with the Cities of Willoughby and Eastlake on implementation.

CRWP has completed a similar update of the storm water management model ordinance, again working with other watershed stakeholders to ensure widespread implementation.

CRWP worked with Geauga County Planning Commission and the Geauga SWCD to develop a model resolution for erosion and sediment control and storm water management.

CRWP has worked with Russell Township to implement this model and is working with Munson and Auburn Townships on implementation.

CRWP regularly provides technical assistance on development design plans and implementation of detailed BMP's.

- **Goal 7 - Floodplain Management:** Promote update of floodplain maps and ensure floodplain regulations exceed minimum standards and encourage the restoration of floodplain functions.

CRWP has encouraged communities to participate in County All Hazards Mitigation Plan Development and attend FEMA sessions on updating local floodplain maps.

Provide review of local floodplain regulations and recommend updates to existing local codes.

- **Goal 8: Bacteria Level Reduction:** Reduce stream bacterial levels to meet State water quality standards for recreational use.

CRWP will collect data from various stakeholders to begin identifying local bacteria sources, including HSTS.

- **Goal 10 – Dam and Impoundment Management:** Minimize the creation of additional online impoundments and ensure existing dams are safe and have the appropriate operation, maintenance, and inspection plans and emergency action plans.

CRWP is planning a dam owner workshop modeled after ODNR/ODSA workshop from August 2005.

Appendix D Critical Parcels Maps for 14 Digit HUC Watersheds