

DESIGN PLAN FOR:

# CHEVY COMMONS

FLINT, MICHIGAN  
JANUARY 28, 2015



*Reference Site: Corktown Commons, Toronto*



PREPARED FOR:  
CITY OF FLINT AND GENESEE COUNTY LAND BANK



INTRODUCTION

This site design plan provides a “blueprint” to convert a 60-acre portion of the city-owned, former automobile manufacturing facility, commonly known as Chevy in the Hole, into a natural area called Chevy Commons. The park-like space will be re-developed in phases to include open grasslands, woodlands, and wetlands interlaced with trails that will link to the surrounding institutions, neighborhoods, and regional trails. The design detailed in this plan will serve as a guide for the development of phases as funding becomes available. Details on the first three proposed phases are included in this document. The specific scale and scope of future phases may change based on community and stakeholder interests and the sources or amount of funding available at any given time. This approach will enable the City and Genesee County Land Bank to use available federal brownfield funds to address immediate safety concerns on the site and begin to build the first phases of the green cap.

DESIGN PROCESS

The City of Flint was awarded a \$1.6 million United States Environmental Protection Agency (EPA) Revolving Loan Cleanup Sub-grant from the Genesee County Treasurer to address environmental concerns and construct the initial phases of a landscaped cap on Chevy Commons. The City of Flint entered into an agreement with the Genesee County Land Bank to manage the process of addressing environmental contamination concerns, developing the site design and construction plans, and completing the first phase of development. A group of partners were invited to participate in a technical advisory group to help build support for redevelopment, use and maintenance of the site. The group included representatives from surrounding neighborhoods, nearby institutions and organizations with a potential interest in programming and using the site. During the two technical advisory group meetings, the design team - including landscape architects, environmental consultants, and engineers - shared information on the planning history, site context, and examples of similar projects in other cities. The design team created this design plan based on an in-depth site analysis of opportunities and constraints combined with information gathered during this and previous site planning processes.

SITE PLANNING HISTORY

Community and stakeholder discussions to transform this riverfront site into park-like space began in 2005 through the process of developing the Flint River District Strategy.<sup>1</sup> In 2007, Re-Imagining Chevy in the Hole<sup>2</sup> was drafted by graduate students from the University of Michigan under the direction of the Genesee County Land Bank and other partners. The concept plan further developed green space design opportunities, in light of the environmental constraints caused by the previous on-site industrial manufacturing. The Flint Riverfront Restoration Plan,<sup>3</sup> vetted by the public and adopted by the Flint River Corridor Alliance in 2010, focuses on creating connected green space along the banks of a rehabilitated Flint River. A link to the above plans is located on the Imagine Flint Master Plan website: <http://www.imagineflint.com/Documents/LinksandResources.aspx>

Through the City of Flint Master Plan, adopted in 2013, residents supported recommendations to transform this site into an “asset for economic development, as well as a mix of both active and passive community open space.” (www.imagineflint.com).

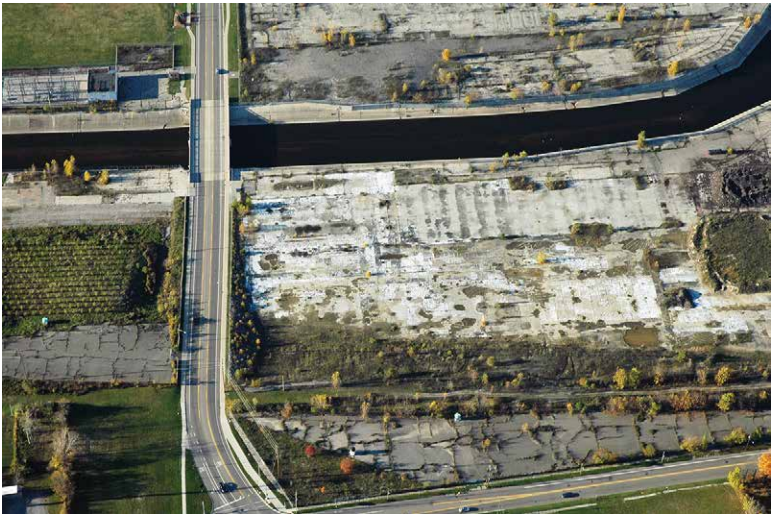
The plan includes Chevy in the Hole (CITH) within the University Ave Core area of the Place Based Land Use Plan. The area is “anchored around institutions with the potential to connect with one another, blossoming into a more intense area of the City. Future uses envisioned within this setting include public institutions, professional offices, residential building, open space and greenways, research and development, as well as light manufacturing.”<sup>4</sup>

All of the planning processes described above involved multiple public meetings and extensive discussions with stakeholders. In addition to these public plans, Kettering University is in the process of updating its campus master plan to include the development of a possible vehicle testing ground on the portion of the Chevy in the Hole manufacturing site that it owns, on the north side of the river adjacent to campus.

<sup>1</sup> Flint River District Strategy, Sasaki Associates, Inc. (July 2005).  
<sup>2</sup> Reimagining Chevy in the Hole, Flint Future Group, School of Natural Resources and Environment, University of Michigan (2007).  
<sup>3</sup> Flint Riverfront Restoration Plan, Wade Trim (2010).  
<sup>4</sup> Master Plan for a Sustainable Flint, Imagine Flint (October 2013), 60-76.

“CITH is a truly unique and potentially valuable amenity and must be creatively addressed to help transform Flint.”

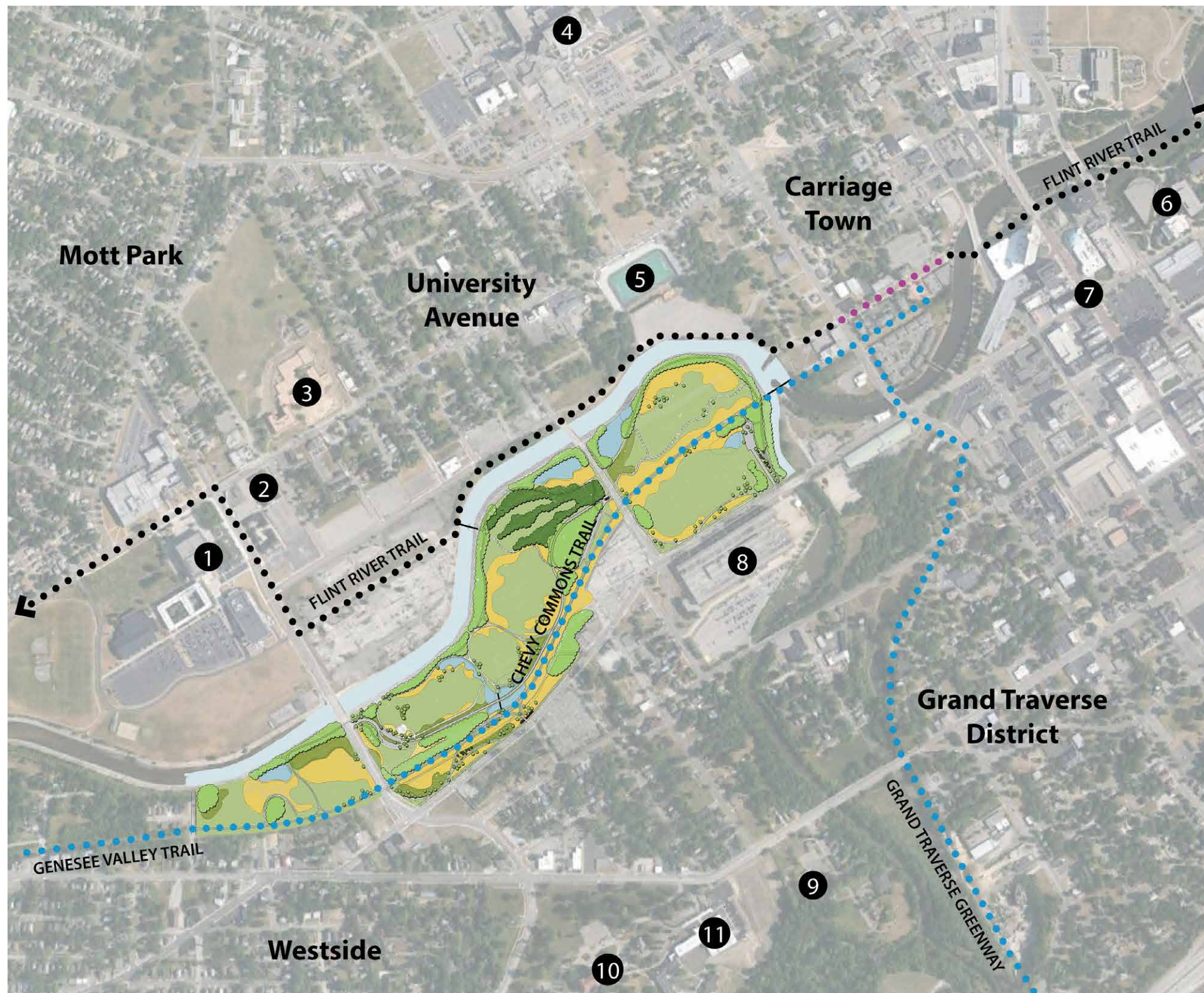
- Imagine Flint; Master Plan for a Sustainable Flint, p. 76.



Phase One area existing conditions (2014)

CHEVY COMMONS:  
DESIGN  
CONTEXT  
& PROCESS





## LEGEND

- EXISTING GREENWAY/TRAIL
- PLANNED GREENWAY/TRAIL
- ON-STREET CONNECTION

## INTRODUCTION

Chevy Commons is located along the Flint River a few blocks west of Downtown and adjacent to Kettering University, Atwood Stadium and GM Tool and Die. Additional nearby institutions include Hurley Medical Center, Flint Children's Museum, Power Catholic and Michigan School for the Deaf. Kearsley Street provides a direct link to the site from the University of Michigan-Flint Campus and Downtown.

The site is bordered by the Flint River to the north and Kearsley Street/Greenwood Avenue to the south, and bisected by Chevrolet Avenue and Stevenson Street. Existing or planned regional bike trails nearby include the Flint River Trail, Genesee Valley Trail and Grand Traverse Greenway Trail. When these trails are built they will connect to Chevy Commons.

## COMMUNITY INSTITUTIONS AND LANDMARKS

- 1 Kettering University Campus
- 2 Flint Children's Museum
- 3 Durant-Tuuri-Mott Elementary School
- 4 Hurley Medical Center
- 5 Atwood Stadium
- 6 University of Michigan-Flint
- 7 Central Business District
- 8 General Motors
- 9 The Shelter of Flint
- 10 Powers High School
- 11 Michigan School for the Deaf

# CHEVY COMMONS: COMMUNITY CONNECTIONS



This Site Design will guide the transformation of the Chevy in the Hole site into Chevy Commons over several years as funding becomes available for each phase of development. This section details the guiding principles, goals and strategies that shaped the design. This summary will assist future leaders and design professionals working on this project to make decisions that respond to and line up with the original principles and goals.

## CORE DESIGN PRINCIPLES

### CITY OF FLINT MASTER PLAN GUIDING PRINCIPLES

The plan to transform Chevy Commons from a former industrial manufacturing site into an accessible and well-connected public green space along the Flint River, is in alignment with the six guiding principles of the City of Flint Master Plan for a Sustainable Flint: social equity and sustainability; quality of life; youth; reshaping the economy; adapting to change; and civic life.

### SAFE ENVIRONMENT

Environmental contamination concerns were addressed with guidance and oversight by the Michigan Department of Environmental Quality (MDEQ) and the EPA to create a safe place for the public to enjoy.

Contamination left behind by the former industrial operations is at relatively low levels with isolated areas of high impact. Implementation of the design is planned to ensure that the contamination does not pose a threat to the community or site visitors. This will be done through targeted cleanups and by installing a soil and vegetative cap over the existing surface of the property. The cap will also include filling old vaults, drains and sewers that no longer serve a purpose and restricting access to some areas of the site until funding is secured and improvements are completed.

The principles of Crime Prevention Through Environmental Design (CPTED) will be applied to create a climate of safety on the site. The CPTED theory is based on four principles: natural access control, natural surveillance, territoriality, and maintenance.

### NATURAL AND LOW MAINTENANCE LANDSCAPE

The site will be planted with attractive low-maintenance native plants, shrubs and trees in grasslands, wetlands, wooded areas, and open meadows. The natural landscape will help to minimize maintenance and stormwater management costs. Anticipated maintenance will include regular mowing around the edges, annual mowing of

interior areas, clearing paths and walkways, adding wood-chips to trails, cutting limbs and trees once they mature, trimming shrubs and grasses, as well as potentially using controlled burns in grasslands and meadows.

### PUBLIC PLACES AND SPACES

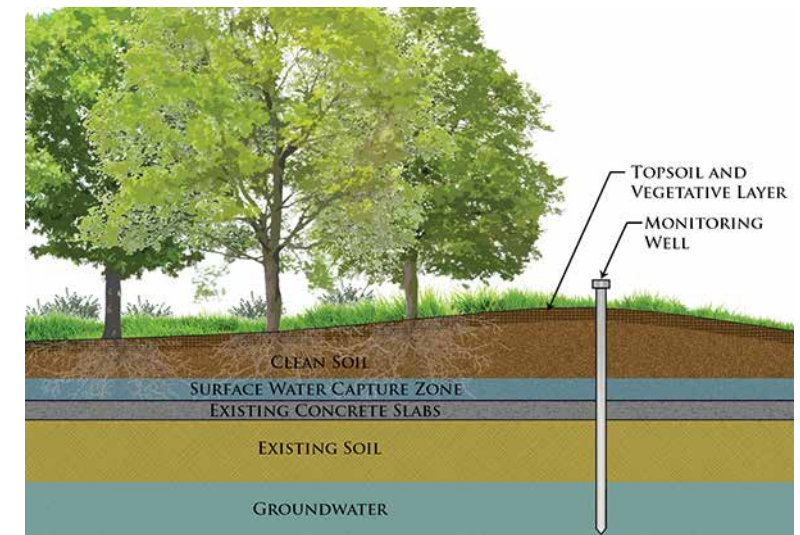
The layout and design of plantings and trails combined with the site topography will help to create distinct places within the site. Walkways and pathways made in different lengths and widths using a range of materials, including wood chips, concrete, and gravel, will create distinct spaces for visitors while also providing opportunities to move easily across the site. While some people will never veer from a paved river walk with overlooks and benches, others will seek gravel or mowed pathways to explore the interior of the site. Different places and spaces will highlight natural features and the historical significance of the site.

### RIVER VIEWS AND ACCESS

The design aims to maximize river views and access points by lowering the concrete flood walls when possible, using attractive detailed railings, and paving some stretches along the river. These areas will be further enhanced by installing benches, waste receptacles, lighting and other amenities. The remainder of the river's edge is landscaped to create an attractive natural barrier between the pathways and the concrete flood control channel.

### CONNECTIONS

The design aims to provide visitors with several routes to enter and explore the site. This includes providing links to roads, sidewalks, streets and trails to connect the site to neighborhoods, anchor institutions, Downtown and other assets.



*Proposed Green Cap at Chevy Commons*

### ENVIRONMENTAL REMEDIATION

Targeted cleanups are occurring to remove some contamination “hot spots.” Much of this work is being conducted by the EPA. Capping is a well-established and reliable cleanup technology for sealing off contamination from the aboveground environment and significantly reducing the migration of pollutants. At Chevy in the Hole, the cap will be installed over the existing paved surfaces to further isolate the contamination, limit the movement of water, and protect people and wildlife. A vegetative layer consisting primarily of native species will be planted on the cap surface. In addition to stabilizing the clean soils and providing an aesthetically pleasing landscape, the planting of trees and other vegetation will restrict wind, rain, and groundwater movement, further stabilizing subsurface contaminants at the site.

# CHEVY COMMONS: SITE DESIGN PRINCIPLES

## DESIGN GOALS AND STRATEGIES

**Goal: Create a safe public place that is accessible to the community**

Strategies:

- Eliminate known safety hazards throughout the site.
- Restrict access to areas of the site that are unsafe for public use until improvements are made.
- Remove and contain environmental contaminants.
- Construct car access, trails and parking to the site.
- Create clear views into and through different places and spaces at the site to reduce criminal activity
- Apply the principles of Crime Prevention Through Environmental Design (CPTED) to create a climate of safety on the site.

**Goal: Develop a low-maintenance landscape that is cost effective to manage**

Strategies:

- Plant low growing groundcover and native plants, shrubs and trees that require minimal maintenance.
- Use alternative maintenance techniques such as controlled burns.

**Goal: Create blue and green infrastructure as described in the City's Master Plan**

Strategies:

- Manage all stormwater on the landscaped cap.
- Close unnecessary drains on the site to minimize City owned infrastructure.
- Create a green corridor along the river for habitat and recreation.

**Goal: Redevelop the site in phases as funding is available**

- Design specific public places that can be constructed as separate projects.
- Create a flexible plan that enables stakeholders to pick and choose design elements to fit the project budgets and community interest.

**Goal: Create access to the Flint River and connections to surrounding neighborhoods and trails**

Strategies:

- Build on-site trails and pathways and link them to exterior sidewalks, roads and trails.
- Provide signage as funding is available.
- Provide vehicle access and parking.

**Goal: Enhance the appearance of the site to create opportunities for economic development**

Strategies:

- Develop the edges of the site to improve the appearance of the site to surrounding neighborhoods.
- Enhance streetscapes and create public access ways to the site.

**Goal: Recognize and celebrate the historical significance of the site**

Strategies:

- Create opportunities for memorializing historically significant events, such as the UAW Sit-Down Strike and Native American settlements.
- Use native plants from pre-settlement times and design feature inspired by the site's industrial heritage.
- Benches, posts and other site features will be designed with materials and styles that celebrate the site's industrial heritage.



*Reference Site: Corktown Commons, Toronto*

# CHEVY COMMONS: GOALS & STRATEGIES



**PUBLIC PLACES**

- A Glenwood Parkway
- B Valley Vista
- C Fisher Fields
- D The Pinery
- E Swartz Creek Trailhead
- F Happy Valley



CHEVY COMMONS:  
**SITE  
MASTER  
PLAN**

- LEGEND**
- Grassland
  - Shrubland
  - Riparian Buffer or Reforestation Area
  - Pine Woodlot
  - Open | Flex Area
  - Wetland | Wet Meadow
  - River or Creek
  - Gravel or Mowed Trail
  - Asphalt Pathway (10')
  - Asphalt Road | Parking



PUBLIC PLACES

The landscape will be developed in phases as funding is available. Development of the public places described below will transform the site from a vacant, post-industrial landscape into safe community green space linking to surrounding institutions, trails and neighborhoods.

**A Glenwood Parkway:** This linear strip of green space with walking trails along Glenwood Street creates an attractive gateway into Chevy Commons and Kettering University to the north of the site. It also provides easy access to the rail line bisecting the site that will be converted to a bike trail. In addition, the area connects the site to surrounding neighborhoods.

**B Valley Vista:** The steep bluffs on this section of the site transition to soft slopes immediately across the river from Kettering University. Visitors may enjoy open recreational space or trail walking to take in the views of the Chevy Commons and the larger river valley.

**C Fisher Fields:** The open area east of Chevrolet Avenue and adjacent to the Flint River creates many opportunities for active recreation including walking along trails or playing in the open fields. Home to the 1936/37 Sit Down Strike, this area may prove to be a setting for recognizing the birth of the organized labor movement at the property. The close proximity to Kettering University and the easy-access parking make this area ideal for gathering. This space may eventually be home to a future playground and/or pavilion for public use.

**D The Pinery:** As visitors enter Chevy Commons off Stevenson Street, they will enjoy views of grasslands, wetlands, and pine woodlands. In addition to providing attractive views, this landscape serves an important role in managing surface water on the green cap. This creates an opportunity for environmental education about managing contaminants on a brownfield site and restoring a natural landscape. The trailhead will allow bikers and walkers to experience Chevy Commons as well as link to the regional trail systems. Chevy Commons can be used as a staging area for day trips throughout the regional trail system.

**E Swartz Creek Trailhead:** This area along Swartz Creek could provide an ideal location for fishing and enjoying river views. A future potential bridge across the creek and the Flint River could provide an area for fishing and create a link to Grand Traverse Street for bikers and walkers. A large open area on the site creates opportunities for playfields or future development.

**F Happy Valley:** This area transitions sharply from uplands to a low lying area where Swartz Creek meets the Flint River. The topography creates a unique opportunity for river views, trail walking, and recreation in the open fields. A created wetland would provide an attractive natural feature that serves a valuable stormwater management function.

DEVELOPMENT PHASES

The City will develop the site in phases as grant funding becomes available. This phased approach will enable the City to take advantage of brownfield funding currently available for site improvements, while ensuring a coordinated approach to future development. This section details the site design for the first three phases of development.



Reference Site: Corktown Commons, Toronto

CHEVY COMMONS:  
SITE DESIGN  
PLAN



IMPLEMENTATION PHASING

Developing Chevy Commons will occur over time as funding is secured. Implementation is planned for Phase 1 during the 2014-2015 construction season. Future phases will be implemented based on future funding sources and community interest.

Phase 1:

- Glenwood Parkway
- Valley Vista
- Fisher Fields

Future Phase:

- Regional Recreational Trail Extension
- The Pinery
- Swartz Creek Trailhead
- Happy Valley



CHEVY COMMONS:  
MASTER  
PHASING  
PLAN

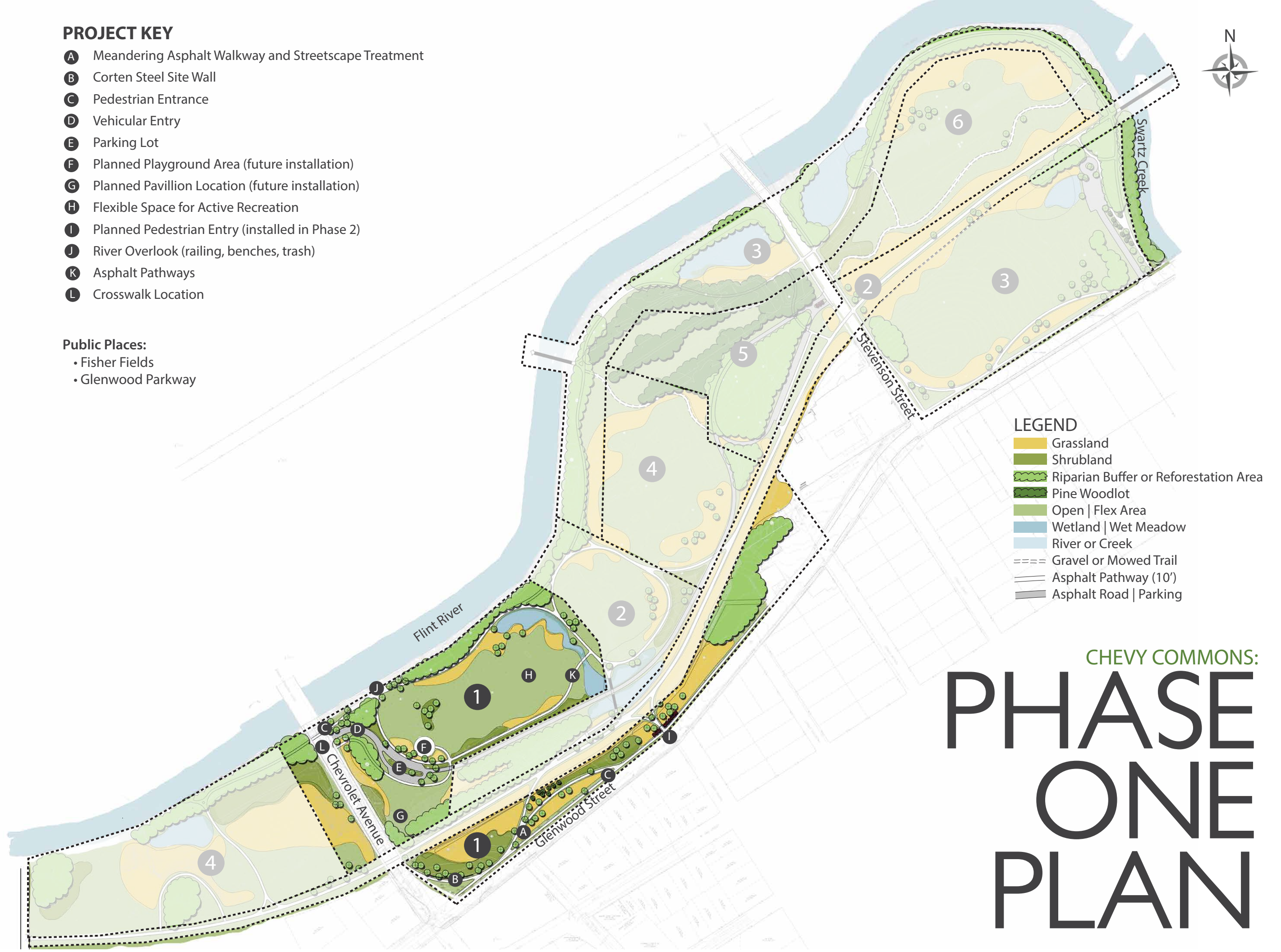


## PROJECT KEY

- A Meandering Asphalt Walkway and Streetscape Treatment
- B Corten Steel Site Wall
- C Pedestrian Entrance
- D Vehicular Entry
- E Parking Lot
- F Planned Playground Area (future installation)
- G Planned Pavillion Location (future installation)
- H Flexible Space for Active Recreation
- I Planned Pedestrian Entry (installed in Phase 2)
- J River Overlook (railing, benches, trash)
- K Asphalt Pathways
- L Crosswalk Location

### Public Places:

- Fisher Fields
- Glenwood Parkway



# CHEVY COMMONS: PHASE ONE PLAN





*Materials such as Cor-Ten steel will be used in the site elements.  
Reference Site: Energy Biosciences Building, Berkeley*



*Stormwater wetlands will manage runoff at the surface of the landscape.  
Reference Site: Westergasfabriek Park, Amsterdam*



*Trails, walks and paths along the Flint River will provide connections to the community.  
Reference Site: Olympic Park, London*

## INTRODUCTION

Phase one includes developing Glenwood Parkway and sections of Fisher Fields. The high impact improvements along key corridors will enhance connections between anchor institutions, the site, surrounding neighborhoods and Downtown. This phase will serve as a demonstration to show what is possible and inspire future phases.

## HIGH IMPACT IMPROVEMENTS

The first phase involves improving the edges of the site that are most visible and accessible to the community and surrounding institution to encourage visitors to come to the site and create opportunities for economic development. This phase includes improving sections of the site adjacent to Chevrolet Avenue and the entire stretch of Glenwood/Kearsley Avenue. Improving these areas will further enhance the streetscape developments recently made on Chevrolet Avenue and create gateways between the site and adjacent neighborhoods, Downtown and Kettering University.

Streetscape treatments will include meandering walkways, lighting, plantings, trees, benches, Cor-Ten weathering steel clad site walls, and signage. These improvements will welcome visitors to the site by bringing the look, feel and planned site developments up to the street edge.

## CONNECTIONS TO ANCHOR INSTITUTIONS

Phase One focuses on creating connections to neighborhoods and surrounding assets including GM - Tool and Die and Kettering University. Spaces are created to allow for gathering, walking and recreating. Opportunities for partnerships in programming and maintenance exist where Chevy Commons becomes a shared amenity to its neighbors, inspiring stewardship from the neighborhood and businesses that directly benefit from this investment.

## INSPIRATION FOR FUTURE PHASES

Visitors will be encouraged to enter and park at Fisher Fields, walk along looped pathways and enjoy views from a river overlook that includes decorative railing, benches, trash containers, and lighting. Several future enhancements are planned for the area, including a pad prepared for a future playground and an area for a future pavilion that will set the stage for community engagement and use on a larger scale. Open flexible space within the Fisher Fields can be used for festivals, soccer, open play and activities. Ecological zones are created with plantings along the river. Short and medium grasses planted in the flat floors of former manufacturing buildings and wet meadows that capture and treat stormwater create an interesting experience for visitors.

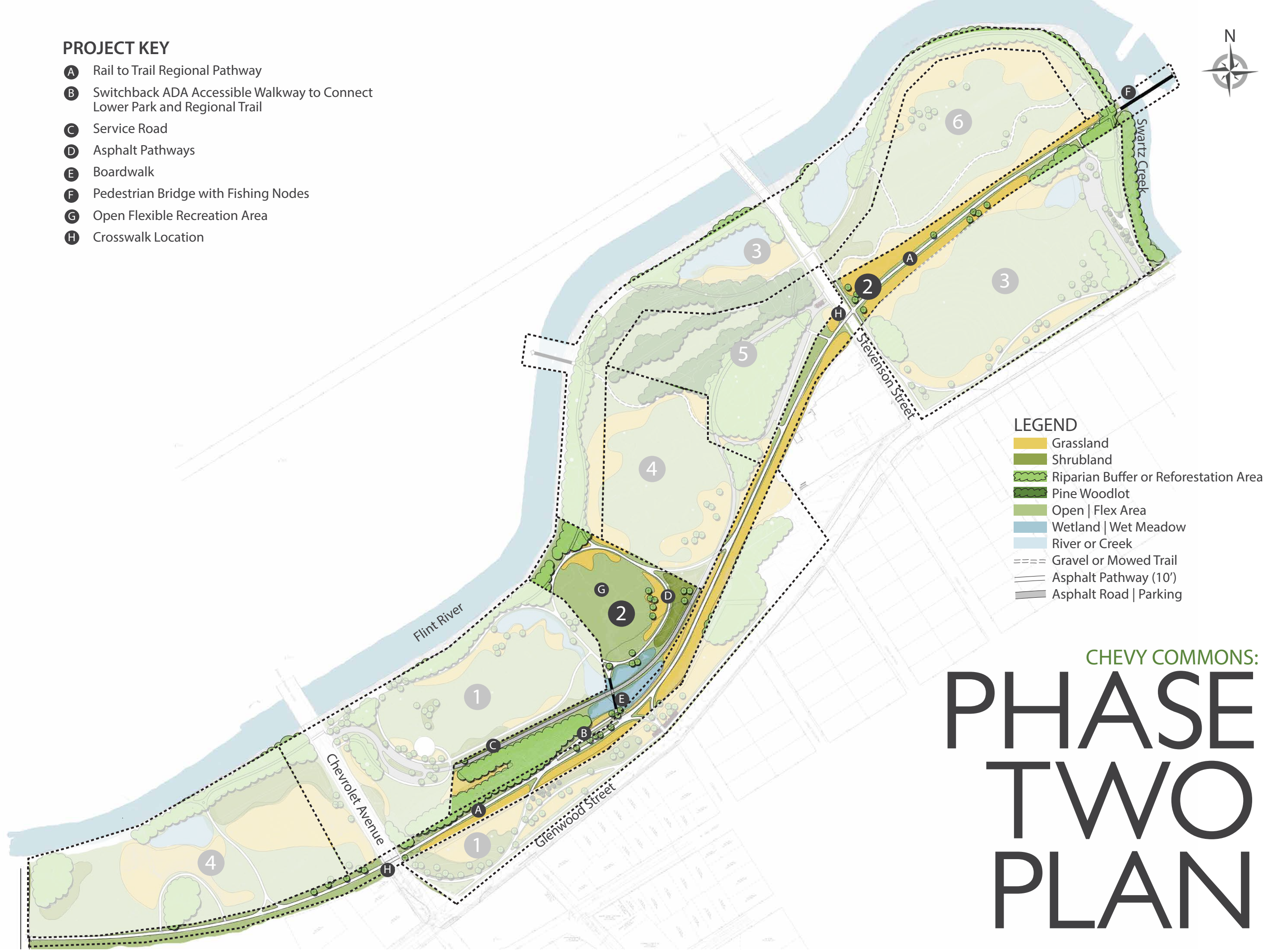
This small area starts to provide a precedent for transforming the 60-acre redevelopment. This initial phase showcases what the community can expect to see over the long-term at Chevy Commons.

# CHEVY COMMONS: PHASE ONE DESIGN



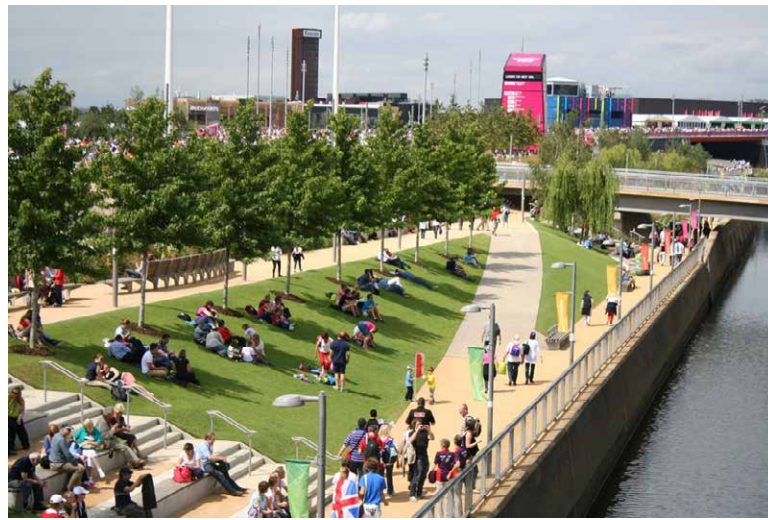
## PROJECT KEY

- A** Rail to Trail Regional Pathway
- B** Switchback ADA Accessible Walkway to Connect Lower Park and Regional Trail
- C** Service Road
- D** Asphalt Pathways
- E** Boardwalk
- F** Pedestrian Bridge with Fishing Nodes
- G** Open Flexible Recreation Area
- H** Crosswalk Location



# CHEVY COMMONS: PHASE TWO PLAN





*The river walkways will provide a visual and physical connection to the river.*

*Reference Site: Olympic Park, London*



*Flexible spaces for all ages will define the places created at the site.*

*Reference Site: Garden City Play Environment, Richmond, British Columbia*



*Maintaining and enhancing views of the City and river valley will define the user experience at the site.*

*Reference Site: Gas Works Park, Seattle*

## INTRODUCTION

Phase Two involves developing sections of Fisher Fields east of Phase One and converting the abandoned rail line running through the site into a bike trail to extend the Genesee Valley Trail to downtown Flint. These developments will enhance regional connections, improve river views and expand the flexible open spaces of Fisher Fields along the river.

## REGIONAL CONNECTIONS

Transforming the existing Canadian National Rail right-of-way that bisects the site into a bike trail will enable visitors to travel through the site. This will connect Chevy Commons to the regional trail system and provide a link between the upper and lower sections of the site. The proposed trail connector allows visitors to move from the neighborhoods to the south, directly into the park and to the river through an ADA-accessible walkway.

## IMPROVED RIVER VIEWS AND ACCESS

A potential bridge will link Chevy Commons with Carriage Town and provide an ideal place for fishing in the Flint River. A stretch of native plants and shrubs along the river provides an attractive natural area and visual connection across to the Flint River Trail and to the open recreation areas to the north.

## FLEXIBLE SPACES

Expanding the active, flexible spaces of Fisher Fields adjacent to the Phase One development will allow for additional activity within the park and create opportunities to use historical walks and environmental education to attract people to the site.

# CHEVY COMMONS: PHASE TWO DESIGN



**PROJECT KEY**

- A Meandering Asphalt Walkway
- B Pedestrian Entrance
- C Vehicular Entry
- D Parking Lot
- E Regional Trailhead
- F Swartz Creek Overlook and Access
- G Flexible Space for Active Recreation or Future Development
- H River Overlook (railing, benches, trash)
- I Pedestrian Bridge with Fishing Nodes
- J Crosswalk Location



- LEGEND**
- Grassland
  - Shrubland
  - Riparian Buffer or Reforestation Area
  - Pine Woodlot
  - Open | Flex Area
  - Wetland | Wet Meadow
  - River or Creek
  - Gravel or Mowed Trail
  - Asphalt Pathway (10')
  - Asphalt Road | Parking

CHEVY COMMONS:  
**PHASE  
THREE  
PLAN**





*Monuments to historical events will be sited at open spaces, connecting the user to the City's past.  
Reference Site: Houtan Park, Shanghai*



*Swartz Creek and the riparian corridor will be restored and naturalized to improve habitat and fishing access.  
Reference Site: Corktown Commons, Toronto*



*Open spaces connected with walking trails will provide a variety of settings for recreational and environmental learning.  
Reference Site: Brooklyn Bridge Park, New York*

## INTRODUCTION

Phase Three involves developing Swartz Creek Trail area and all of the remaining sections of the Flint River walk east of Chevrolet Avenue. These developments will improve river views and water access and complete links between trails to enable visitors to complete a figure eight walking loop traversing much of the site.

## RIVER VIEWS AND ACCESS

This phase involves constructing an accessible river walk and overlook to include decorative railings, benches, trash containers, and lighting. A walkway meanders through a naturalized area planted with grasses, trees and shrubs that is reminiscent of the vegetation that once grew along the river's edge. The walkway connects trailheads, provides access to active and passive open spaces, and creates a direct off-street connection between Kettering University and Downtown.

## SWARTZ CREEK NATURALIZED AREA

Swartz Creek provides a naturalized river edge with access to the water. This Phase includes installing a regional trailhead drop-off for the rail trail, a parking area immediately adjacent to the trail and the creek, a creek overlook, as well as seating and rest areas. Additional improvements in this area may include an ADA ramp/walkway that allows for kayak and canoe access to Swartz Creek and the Flint River.

## WALKING LOOP

Phase Three will complete the figure eight walking loop along the river, down the rail trail and back up the Glenwood/Kearsley greenway.

# CHEVY COMMONS: PHASE THREE DESIGN





# CHEVY COMMONS: APPENDIX



The master plan for Chevy Commons is designed to diversify the landscape into a mosaic of landscape types that result in a new kind of urban ecosystem; one that embraces human presence and activity while increasing environmental awareness, benefits and diversity. As the previous sections of the report summarize, the process of restoring the landscape at Chevy Commons relies on an integrated design approach to addressing all the variables needed to create a sustainable landscape including the primary determinants of soils and hydrology. The following section summarizes the recommendations for the establishment and maintenance at the front end of the planning process; so that establishment criteria and budgets can be identified as well as metrics to quantify success are detailed. At the end of this section is a matrix of project costs for establishment and maintenance of each major landscape type proposed for Chevy Commons.

OPEN/FLEXIBLE AREAS

The Open/Flexible areas are large, open areas of low-maintenance, high durability vegetation that can handle periodic mowing for high-traffic use during active recreation or public events.

MDOT Michigan Roadside Seed Mix

Perennial Ryegrass  
Creeping Red Fescue  
Kentucky Bluegrass

Maintenance

Mowing: May be left unmowed or mowed up to three times during the growing season. Mow prior to high-traffic events. A broad leaf herbicide may be used to control weeds as needed.

OR

Dutch White Clover (*Trifolium repens*)

Maintenance

Mowing: May be left unmowed or mowed up to three times during the growing season. Mow prior to high-traffic events. A broad leaf herbicide may be used to control weeds as needed.

EDGE AREAS

Edge areas provide a maintained buffer adjacent to pathways and roads to create a sense of place and security for users of the site.

ECO Turf Mix (Non-native slow growing fescues)

Maintenance

Mowing: May be left unmowed or mowed up to three times during the growing season. Mow prior to high-traffic events. A broad leaf herbicide may be used to control weeds as needed.

NATIVE GRASSLANDS

Native Grassland areas consist of a diverse mix of native wildflowers and grasses which increase the infiltration of stormwater and reduce pollution by nutrient uptake through their roots, thereby improving water quality. Native Grasslands also provide key habitat for many species of wildlife, serving as important breeding, nesting and shelter areas.

Upland Prairie Mix

*Amorpha canescens* (Lead Plant)  
*Asclepias tuberosa* (Butterfly Weed)  
*Coreopsis lanceolata* (Sand Tickseed)  
*Echinacea purpurea* (Purple Coneflower)  
*Lupinus perennis* (Wild Lupine)  
*Ratibida pinnata* (Yellow Coneflower)  
*Rudbeckia hirta* (Black-eyed Susan)  
*Solidago speciosa* (Showy Goldenrod)

*Vernonia missurica* (Ironweed)  
*Andropogon gerardii* (Big Bluestem)  
*Elymus Canadensis* (Canada Wild Rye)  
*Panicum virgatum* (Switchgrass)  
*Schizachyrium scoparius* (Little Bluestem)  
*Sorghastrum nutans* (Indian Grass)

Maintenance

1st Year

- 1. Mowing: Keep the vegetation mowed to a height of 4-6 inches and mow when the vegetation reaches 10-12 inches. This may require mowing about once a month depending on the amount of rainfall. Stop mowing at the end of the growing season (September).
- 2. Non-native species control: Spot spraying or hand wicking herbicide application may be required to deter aggressive persistent non-native species. Avoid contact with native seedlings.
- 3. General maintenance: If bare areas occur, additional seeding may be necessary. Periodically inspect for debris and/or erosion and address as required.

2nd Year

- 1. Mowing: Keep the vegetation mowed to a height of 8 inches and mow when the vegetation reaches 12-18 inches. Stop mowing at the end of the growing season (September).
- 2. Non-native species control: Hand pulling and spot treatments of herbicide may be needed during the second year.
- 3. General maintenance: If bare areas occur, additional seeding may be necessary. Periodically inspect for debris and/or erosion and address as necessary.

CHEVY COMMONS:

ECOLOGICAL  
ELEMENTS



*Long Term Management*

1. Mowing: If desired, the entire planting can be mowed in late fall or early spring. Mow to a height of 4-6 inches in early spring (February through April) or late fall and use a rake to remove the cut plant material (thatch).
2. Weed control: Inspect and remove invasive species as necessary. Hand-pulling, cutting or spot spraying with herbicide may be needed as determined by the species being controlled.
3. General maintenance: If bare areas occur, additional seeding may be necessary. Periodically inspect for debris and/or erosion and address as necessary.

**SHRUBLAND**

Shrubland areas provide a vegetative structure which improves the uptake of stormwater and creates wildlife habitat. Native shrubs will be installed in natural groupings of the same species in a variety of sizes to replicate a natural growth habit. These groupings of shrubs and the associated ground cover will act as a barrier to ground surface pollutants as well as provide some phytoremediation benefits in terms of stormwater.

**Shrub Species (Mix of 5 gal., 1 gal. and bare root)**

*Cornus sericea* (Red Osier Dogwood)  
*Cornus racemosa* (Gray Dogwood)  
*Physocarpus opulifolius* (Ninebark)  
*Rhus Aromatica ‘Lo Gro’* (Lo Gro Sumac)  
*Viburnum dentatum* (Arrow-wood)  
*Viburnum lentago* (Nannyberry)  
*Viburnum opulus v. americanum* (American Highbush Cranberry)  
*Viburnum prunifolium* (Black Haw)

**Ground Cover: ECO Turf Mix (Non-native slow growing fescues)**

**Maintenance**

Assess shrubs for damage and prune as necessary. Cut back vegetation (weed whip) around shrubs periodically during establishment.

**RIPARIAN BUFFER/REFORESTATION ZONE**

The Riparian Buffer is composed of a variety of native tree species and ground cover specifically placed adjacent to the river to reduce the amount of pollutants associated with runoff from impacting water quality. Reforestation Zones in general improve overall water quality, provide shade and aesthetic appeal, and are important wildlife stopover and breeding areas. The trees planted in these areas make contact with soils and groundwater and provide for uptake, degradation or sequestration of pollutants and contribute to the phytoremediation efforts currently ongoing at the site.

**Tree Species (Large trees 2 - 2.5” cal.; trees 6’ BB; whips (1 gal.)**

*Acer rubrum* (Red Maple)  
*Acer saccharinum* (Silver Maple)  
*Amelanchier Canadensis* (Serviceberry)  
*Carpinus caroliniana* (Musclewood)  
*Celtis occidentalis* (Hackberry)  
*Hamamelis virginiana* (Witch Hazel)  
*Larix Laricina* (Tamarack)  
*Liquidambar styraciflua* (Sweet Gum)  
*Liriodendron tulipifera* (Tulip Tree)  
*Ostrya virginiana* (Ironwood)  
*Quercus palustris* (Pin Oak)  
*Salix discolor* (Pussy Willow)  
*Sambucus Canadensis* (Elderberry)

**Ground Cover: Upland Prairie Mix**

*Amorpha canescens* (Lead Plant)  
*Asclepias tuberosa* (Butterfly Weed)  
*Coreopsis lanceolata* (Sand Tickseed)  
*Echinacea purpurea* (Purple Coneflower)  
*Lupinus perennis* (Wild Lupine)  
*Ratibida pinnata* (Yellow Coneflower)  
*Rudbeckia hirta* (Black-eyed Susan)  
*Solidago speciosa* (Showy Goldenrod)  
*Vernonia missurica* (Ironweed)  
*Andropogon gerardii* (Big Bluestem)  
*Elymus canadensis* (Canada Wild Rye)  
*Panicum virgatum* (Switchgrass)  
*Schizachyrium scoparius* (Little Bluestem)  
*Sorghastrum nutans* (Indian Grass)

**Maintenance**

*1st Year*

1. Mowing: Keep the vegetation mowed to a height of 4-6 inches and mow when the vegetation reaches 10-12 inches. This may require mowing about once a month depending on the amount of rainfall. Stop mowing at the end of the growing season (September).
2. Non-native species control: Spot spraying or hand wicking herbicide application may be required to deter aggressive, persistent non-native species. Avoid contact with native seedlings.
3. General maintenance: If bare areas occur, additional seeding may be necessary. Periodically inspect for debris and/or erosion and address as required. Assess trees for damage and prune as necessary. Cut back vegetation (weed whip) around trees as needed.

*2nd Year*

1. Mowing: Keep the vegetation mowed to a height of 8 inches and mow when the vegetation reaches 12-18 inches. Stop mowing at the end of the growing season (September).
2. Non-native species control: Hand pulling and spot treatments of herbicide may be needed during the second year.
3. General maintenance: If bare areas occur, additional seeding may be necessary. Periodically inspect for debris and/or erosion and address as necessary. Assess trees for damage and prune as necessary. Cut back vegetation (weed whip) around trees as needed.

*Long Term Management*

1. Mowing: If desired, the entire planting can be mowed in late fall or early spring. Mow to a height of 4-6 inches in early spring (February through April) or late fall and use a rake to remove the cut plant material (thatch).
2. Weed control: Inspect and remove invasive species as necessary. Hand-pulling, cutting or spot spraying with herbicide may be needed as determined by the species being controlled.
3. General maintenance: If bare areas occur, additional seeding may be necessary. Periodically inspect for debris and/or erosion and address as necessary. Assess trees for damage and prune as necessary. Cut back vegetation (weed whip) around trees as needed.



WOODLAND “SPONGE” ZONE

The Woodland “Sponge” Zone is located in low lying areas where stormwater naturally collects on the site. The native trees, shrubs and ground cover selected for this zone essentially acts like a sponge to trap runoff and then slowly release it. This prevents flooding and also acts as a filter by absorbing nutrients.

Tree Species (Large trees 2 – 2.5” cal.; trees 6’ BB)

- Acer rubrum (Red Maple)
- Acer saccharinum (Silver Maple)
- Larix Laricina (Tamarack)
- Liriodendron tulipifera (Tulip Tree)
- Salix discolor (Pussy Willow)
- Sambucus Canadensis (Elderberry)
- Thuja occidentalis (Northern White Cedar)

Shrubs (5 gal. and 1 gal.)

- Cornus sericea (Red Osier Dogwood)
- Cornus ammomum (Silky Dogwood)
- Ilex verticillata (Michigan Holly)
- Lindera benzoin (Spicebush)
- Physocarpus opulifolius (Ninebark)
- Rhus Aromatica ‘Lo Gro’ (Lo Gro Sumac)
- Viburnum dentatum (Arrow-wood Viburnum)
- Viburnum lentago (Nannyberry)

Ground Cover: Saturated Seed Mix

- Alisma subcordatum (Common Water Plantain)
- Asclepias incarnata (Swamp Milkweed)
- Aster novae-angliae (New England Aster)
- Bidens frondosa (Common Beggar’s Tick)
- Carex Bebbii (Bebb’s Sedge)
- Carex lupuliformis (Knobbed Hop Sedge)
- Carex scoparia (Pointed Broom Sedge)
- Carex stipata (Awl-fruited Sedge)
- Carex vulpinoidea (Fox Sedge)
- Elymus Canadensis (Canadian Wild Rye)
- Elymus virginicus (Virginia Wild Rye)
- Eupatorium maculatum (Spotted Joe Pye Weed)
- Eupatorium perfoliatum (Boneset)
- Glyceria striata (Fowl Manna Grass)
- Helenium Autumnale (Sneezeweed)
- Iris virginica (Blue Flag Iris)
- Juncus tenuis (Path Rush)
- Juncus torreyi (Torrey’s Rush)
- Leersia oryzoides (Rice Cut grass)
- Mimulus ringens (Monkey Flower)
- Panicum virgatum (Switchgrass)
- Rudbeckia laciniata (Green Coneflower)

- Sagittaria latifolia (Duck Potato)
- Sicrpus atrovirens (Dark Green Rush)
- Scirpus fluviatilis (River Bulrush)
- Scirpus validus (Soft Stem Bulrush)
- Spartina pectinata (Prairie Cord Grass)

Maintenance

1st Year

- 1. Mowing: Keep the vegetation mowed to a height of 4-6 inches and mow when the vegetation reaches 10-12 inches. This may require mowing about once a month depending on the amount of rainfall. Stop mowing at the end of the growing season (September).
- 2. Non-native species control: Spot spraying or hand wicking herbicide application may be required to deter aggressive, persistent non-native species. Avoid contact with native seedlings.
- 3. General maintenance: If bare areas occur, additional seeding may be necessary. Periodically inspect for debris and/or erosion and address as required. Assess trees and shrubs for damage and prune as necessary. Cut back vegetation (weed whip) around trees as needed.

2nd Year

- 1. Mowing: Keep the vegetation mowed to a height of 8 inches and mow when the vegetation reaches 12-18 inches. Stop mowing at the end of the growing season (September).
- 2. Non-native species control: Hand pulling and spot treatments of herbicide may be needed during the second year.
- 3. General maintenance: If bare areas occur, additional seeding may be necessary. Periodically inspect for debris and/or erosion and address as required. Assess trees and shrubs for damage and prune as necessary. Cut back vegetation (weed whip) around trees as needed.

Long Term Management

- 1. Mowing: If desired, the entire planting can be mowed in late fall or early spring. Mow to a height of 4-6 inches in early spring (February through April) or late fall and use a rake to remove the cut plant material (thatch).
- 2. Weed control: Inspect and remove invasive species as necessary. Hand-pulling, cutting or spot spraying with herbicide may be needed as determined by the species being controlled.
- 3. General maintenance: If bare areas occur, additional seeding may be necessary. Periodically inspect for debris and/or erosion and address as necessary. Assess trees and shrubs for damage and prune as necessary. Cut back vegetation (weed whip) around trees as needed.

WET MEADOW

The Wet Meadow areas will fluctuate between brief periods of flooding and saturation. These areas are seeded with a diverse mix of native herbaceous plants which are able to handle the fluctuating conditions. Although wet meadows do not generally support aquatic life, they are important breeding areas for amphibians and also attract a variety of mammals, birds and insects.

Ground Cover: Wet Meadow Seed Mix

- Alisma subcordatum (Common Water Plantain)
- Asclepias incarnata (Swamp Milkweed)
- Aster novae-angliae (New England Aster)
- Bidens frondosa (Common Beggar’s Tick)
- Carex Bebbii (Bebb’s Sedge)
- Carex lupuliformis (Knobbed Hop Sedge)
- Carex scoparia (Pointed Broom Sedge)
- Carex stipata (Awl-fruited Sedge)
- Carex vulpinoidea (Fox Sedge)
- Elymus Canadensis (Canadian Wild Rye)
- Elymus virginicus (Virginia Wild Rye)
- Eupatorium maculatum (Spotted Joe Pye Weed)
- Eupatorium perfoliatum (Boneset)
- Glyceria striata (Fowl Manna Grass)
- Helenium Autumnale (Sneezeweed)
- Iris virginica (Blue Flag Iris)
- Juncus tenuis (Path Rush)
- Juncus torreyi (Torrey’s Rush)
- Leersia oryzoides (Rice Cut grass)
- Mimulus ringens (MonkeyFlower)
- Panicum virgatum (Switchgrass)
- Rudbeckia laciniata (Green Coneflower)
- Sagittaria latifolia (Duck Potato)
- Sicrpus atrovirens (Dark Green Rush)
- Scirpus fluviatilis (River Bulrush)
- Scirpus validus (Soft Stem Bulrush)
- Spartina pectinata (Prairie Cord Grass)

Maintenance

1st Year

- 1. Mowing: Keep the vegetation mowed to a height of 4-6 inches and mow when the vegetation reaches 10-12 inches. This may require mowing about once a month depending on the amount of rainfall. Stop mowing at the end of the growing season (September).
- 2. Non-native species control: Spot spraying or hand wicking herbicide application may be required to deter aggressive persistent non-native species. Avoid contact with native seedlings.



- 3. General maintenance: If bare areas occur, additional seeding may be necessary. Periodically inspect for debris and/or erosion and address as required.

2nd Year

- 1. Mowing: Keep the vegetation mowed to a height of 8 inches and mow when the vegetation reaches 12-18 inches. Stop mowing at the end of the growing season (September).
- 2. Non-native species control: Hand pulling and spot treatments of herbicide may be needed during the second year.
- 3. General maintenance: If bare areas occur, additional seeding may be necessary. Periodically inspect for debris and/or erosion and address as required.

Long Term Management

- 1. Mowing: If desired, the entire planting can be mowed in late fall or early spring. Mow to a height of 4-6 inches in early spring (February through April) or late fall and use a rake to remove the cut plant material (thatch).
- 2. Weed control: Inspect and remove invasive species as necessary. Hand-pulling, cutting or spot spraying with herbicide may be needed as determined by the species being controlled.
- 3. General maintenance: If bare areas occur, additional seeding may be necessary. Periodically inspect for debris and/or erosion and address as necessary.

WETLAND

Wetland areas will generally have standing water of depths ranging from three inches to one foot. Similar to the Sponge Zones and Wet Meadow Areas, wetlands improve water quality by collecting stormwater runoff, filter pollutants and prevent flooding. Wetlands provide habitat for a variety of water-dependent wildlife species including birds, mammals, amphibians and insects.

Seed Mix and Plugs

- Acorus calamus* (Sweet Flag)
- Alisma subcordatum* (Common Water Plantain)
- Asclepias incarnata* (Swamp Milkweed)
- Carex comosa* (Bristly Sedge)
- Carex lacustris* (Lake Sedge)
- Carex lurida* (Bottlebrush Sedge)
- Carex vulpinoidea* (Fox Sedge)
- Cephalanthus occidentalis* (Buttonbush)
- Eleocharis ovata* (Blunt Spike Rush)

- Eupatorium maculatum* (Spotted Joe-Pye Weed)
- Juncus effuses* (Common Rush)
- Leersia oryzoides* (Rice Cut Grass)
- Lobelia cardinalis* (Cardinal Flower)
- Lobelia siphilitica* (Great Blue Lobelia)
- Lycopus americanus* (Common Water Horehound)
- Mimulus ringens* (Monkey Flower)
- Peltandra virginica* (Arrow Arum)
- Penthorum sedoides* (Ditch Stonecrop)
- Pontederia cordata* (Pickerel Weed)
- Sagittaria latifolia* (Common Arrowhead)
- Scirpus acutus* (Hard-Stemmed Bulrush)
- Scirpus pungens* (Chairmaker's Rush)
- Scirpus validus* (Great Bulrush)
- Sparganium americanum* (American Bur Reed)
- Sparganium eurycarpum* (Common Bur Reed)
- Verbena hastata* (Blue Vervain)

Maintenance

Weed control: Inspect and remove invasive species as necessary. Hand-pulling, cutting or spot spraying with herbicide may be needed as determined by the species being controlled.

TRADITIONAL SEEDED LAWN

This landscape type is to be used sparingly across the site when native plant communities are not desired or feasible do to site constraints or other management objectives prevail.

Lawn Seed Mix

Maintenance

Mowing: Weekly mowing during the growing season.  
Weed control: Broad-leaf herbicide as needed.



ECOLOGICAL PROJECT COST

PROJECTS	INSTALLATION COST (PER ACRE)	MAINTENANCE COST (PER YEAR)
OPEN/FLEXIBLE AREAS		
MDOT Michigan Roadside Seed Mix	\$850 - \$1,000	\$1,200 - \$1,500
Dutch White Clover ( <i>Trifolium repens</i> )	\$675 - \$900	\$1,200 - \$1,500
EDGE AREAS		
ECO Turf Mix (Non-native slow growing fescues)	\$1,000 - \$1,300	\$1,200 - \$1,500
NATIVE GRASSLANDS		
Upland Prairie Mix	\$1,200 - \$1,500	\$1,500 - \$2,000
SHRUBLAND		
Shrub Species (Mix of 5 gal., 1 gal. and bare root)	\$18,000 - \$22,000	\$1,200 - \$1,500
ECO Turf Mix (non-native slow growing fescues)		
RIPARIAN BUFFER/REFORESTATION ZONE		
Tree Species (Large trees 2 - 2.5" cal.; trees 6' BB; whips (1 gal.)	\$56,800 - \$63,000	\$1,500 - \$2,000
Upland Prairie Mix		
WOODLAND "SPONGE" ZONE		
Tree Species (Large trees 2 – 2.5" cal.; trees 6' BB)	\$65,000 - \$78,000	\$1,500 - \$2,000
Shrubs (5 gal. and 1 gal.)		
Saturated Seed Mix		
WET MEADOW		
Wet Meadow Seed Mix	\$2,400 - \$2,800	\$1,500 - \$2,000
WETLAND		
Seed Mix and Plugs	\$3,400 - \$4,000	\$1,500 - \$2,000
TRADITIONAL SEEDED LAWN		
Lawn Seed Mix	\$500 - \$600	\$1,200 - \$1,500



Consultant Team

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