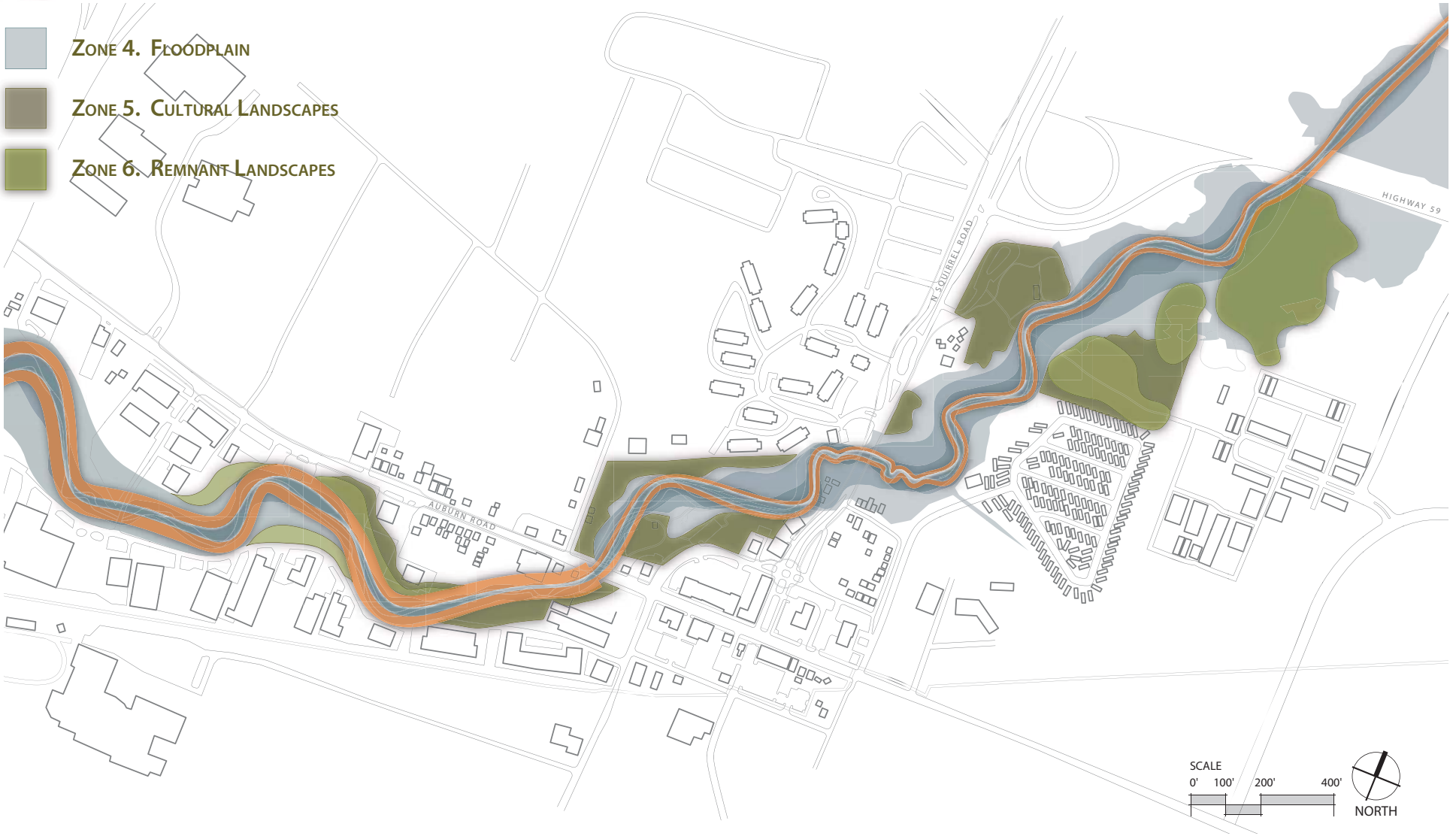
Landscape/Habitat Site Plan

- Zone 1. Floodway
- Zone 2. Flood-Prone Area
- Zone 3. River Shading Zone
- Zone 4. Floodplain
- Zone 5. Cultural Landscapes
- Zone 6. Remnant Landscapes



Riverwalk Districts

The Riverwalk area encompasses approximately 1.5 miles of Clinton River corridor. The plan further defines three sections, or “districts” within that area, based upon the context and general character and use. The middle district is called the **Riverside District**, as it includes the existing Riverside Park. It is the most actively programmed space within the Riverwalk, and is immediately adjacent to the Downtown Core. The northeastern district is called the **River Woods District**, named after River Woods Park, which it includes. This section is more passive in nature, with larger areas natural landscape, trails, and river overlooks. The third district is called **Up River District**, and it includes the river corridor south of Auburn Road west to I-75. This area is the least programmed in terms of use, and is planned to eventually have a trail extension along much of the north side, and potentially link several schools to the Riverwalk.

A description and illustrations of the three districts follow:

- **Riverside District**
- **River Woods District**
- **Up River District**

Riverwalk Districts

Riverwalk Districts

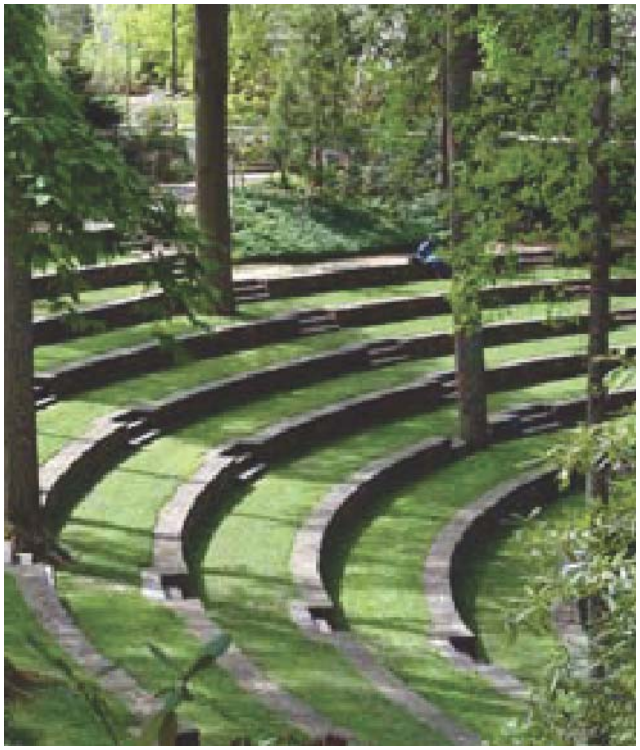
Riverside District

The Riverside District is the portion of the Riverwalk north of Auburn Road and west of Squirrel Road. This is the most actively programmed portion of the Riverwalk. It is the quintessential downtown park, with a performance pavilion, two new shelters, ample seating, walkways, and many places to access the river edge. The walkways have been linked and meshed with an expanded pedestrian walkway system to serve the downtown shops and restaurants, and to make it safe and convenient to walk between the park and the main street activities along Auburn Road.

Riverside District Features:

1. *Belvedere/Promenade*
2. *Main Stage/Performance Platform*
3. *Amphitheater seating*
4. *Picnic Pavilions*
5. *Bridges*
6. *Public restrooms (existing)*
7. *Paths*
8. *Adventure Play*
9. *Fishing and river access/shoreline stabilization*
10. *Interactive Water Elements*
11. *Water Play*
12. *River Gardens*
13. *Restaurant Site(s)/Main Street Development*


N. SQUIRREL ROAD
AUBURN ROAD
SCALE
0' 60' 120' 240'
NORTH



Riverside District Features:

Belvedere/Promenade

The primary interface between the downtown core and Riverside Park is the extension of Squirrel Road north of Auburn Road. To enhance the connection and improve the pedestrian scale and atmosphere, the views and vista will be opened up through the removal of the dense wall of vegetation along the west edge of the road. A new promenade, or "Belvedere" will be developed along the entire western edge, which will plaza-like, with permeable pavers, rain planters, seating, lighting, signage, and places for vendors, art displays, etc. This lively space will have a dramatic overlook of the river and Main Stage/Performance Platform. The roadway pavement will be re-configured with angled parking, defined crosswalks, and curb extensions to be pedestrian-friendly, encouraging walking from the park to shops and restaurants.

Main Stage/Performance Platform

One of the new functions of Riverside Park will be outdoor performances of various types, with the river as a backdrop, creating a spectacular setting for concerts, plays, and other events. The platform will be raised for visibility, and with a very light, open overhead structure, perhaps even temporary, to ensure visibility of the river corridor beyond.

Amphitheater seating

Casual open seating will be crafted into the hillside north of the Belvedere, using the natural topography, enhanced with stone or concrete vertical walls. The horizontal space will be lawn, and the space in front of the stage pavers, to support movable chairs, or dancing.

Picnic Pavilions

Several park pavilions have been located within the Riverside District portion of the Riverwalk. These pavilions, one larger and one smaller, provide shelter, a place for programmed events and gatherings, and for casual picnics. These pavilions will be highly desirable locations for family celebrations, corporate events, and public gatherings, just as the pavilion in Riverwoods Park has become. They are also architectural features, and will be an essential element of the riverfront scenery.

Bridges

Two new pedestrian bridge crossings over the river are planned as part of the overall trail system. The main bridge in the central portion of Riverside Park will be highly visible from many vantage points, and will become an architectural icon. It is an ideal location for a unique, sculptural bridge, perhaps an opportunity for a design competition to draw local, regional, and even international interest and creativity to Auburn Hills.

Public restrooms (existing)

Riverside Park is currently served with a public restroom on the north side of Squirrel Road extended, adjacent to the small park access parking lot. As a part of regular maintenance, the parking lot will be eventually be resurfaced with interlocking concrete, permeable pavers, and a walkway added for more convenient walking access. As new restaurant venues are added, additional public restrooms will be developed to better serve the park, especially for large events and gatherings.

Paths

A series of paths and walkways connect will connect with Riverside Park. The primary trail will extend north from the Clinton River Trail along the west side of the street (separate from the street/part of the sidewalk), and cross Auburn Road at the crosswalk. It will wind through the Belvedere, and extend along the west side of the parking lot, separated by rainwater planters. It will then cross the river over one of the two bridge crossings planned in this portion of the Riverwalk. The trail then extends west to connect to Churchill Road, a north connection to Westbury Village, and east along the river. It extends east to another bridge crossing and to the public parcel on the west side of Squirrel Road.

Another path follows along near the edge of the river, and provides access to the river and another interesting riverwalk experience. This path winds east, and goes under Squirrel Road at the existing grade-separated crossing on the south side of the river. The shoreline will be stabilized in locations where it is threatened with erosion, and the path will be separated with walls and terraces where it is adjacent to residences.

The path system will offer a series of loops of various lengths and experiences, suitable for walking, jogging, biking, rollerblading, and events.

Adventure Play

As an enhancement to the wide range of play experiences along the Riverwalk, several locations for Adventure Play have been identified. This is a type of play space growing in popularity that is intended to stimulate the imaginations of children of all ages through providing the opportunity to shape the space to some degree. Non-traditional materials and apparatus are combined with the existing or enhanced landscape to give children the ability to create games and activities on their own, manipulate the space, and take calculated risks.

Fishing and river access/shoreline stabilization

Access to the river will be enhanced for fishing and general water enjoyment while stabilizing and securing the shoreline. Sections of the river edge will be stabilized with stone or other suitable material, which will be more conducive to stepping down to the water's edge in certain locations. Other locations will be stabilized with perennial vegetation. Areas of flood-prone land adjacent to the river will be maintained in low-input turf with a naturalized perennial shoreline/tree canopy zone adjacent to the river edge.

Interactive Water Elements

As a visible, fun amenity, and to enhance the sense of the Clinton River and water, various water elements will be created along the Riverwalk. These water expressions will use harvested rainwater made clean through natural processes and flow through stone channels and basins woven into the fabric of the Riverwalk landscape. A re-created mill race will emerge in a similar location to where is once did over a century ago, and will be fed with small feeder streams and re-created "springs" along the brow of the hillside, stepping down from the Belvedere. The sound and sight of water will enhance the setting for outdoor dining, gathering, play, and general enjoyment.

Water Play

Active play space with a strong river/water theme will be created at several locations along the Riverwalk. Play spaces will be created with native stone, and boulders. Children will have the chance to play with water in a new and fun way- rain water will be harvested, stored below-grade, and be brought to the surface with kid-power- Archimedes' screws, levers, etc. and splash through kid-manipulated channels. Water spouts and sprays will emerge from different locations, powered with renewable sources.

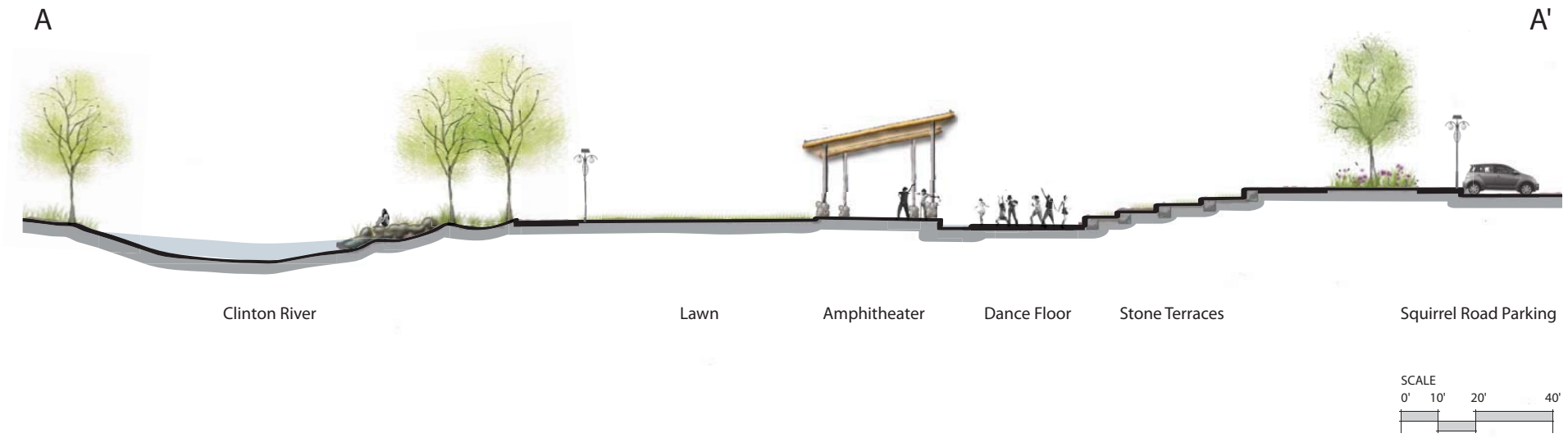
River Gardens

As part of the landscape, portions of the park will be developed with perennial plantings for both function and beauty. Rain gardens slow, cool, cleanse, and infiltrate surplus rainwater from rooftops and paved surfaces. Planted with perennial grasses and flowering plant species that are native and/or adapted to local conditions, these garden areas will provide beauty and change with the seasons.

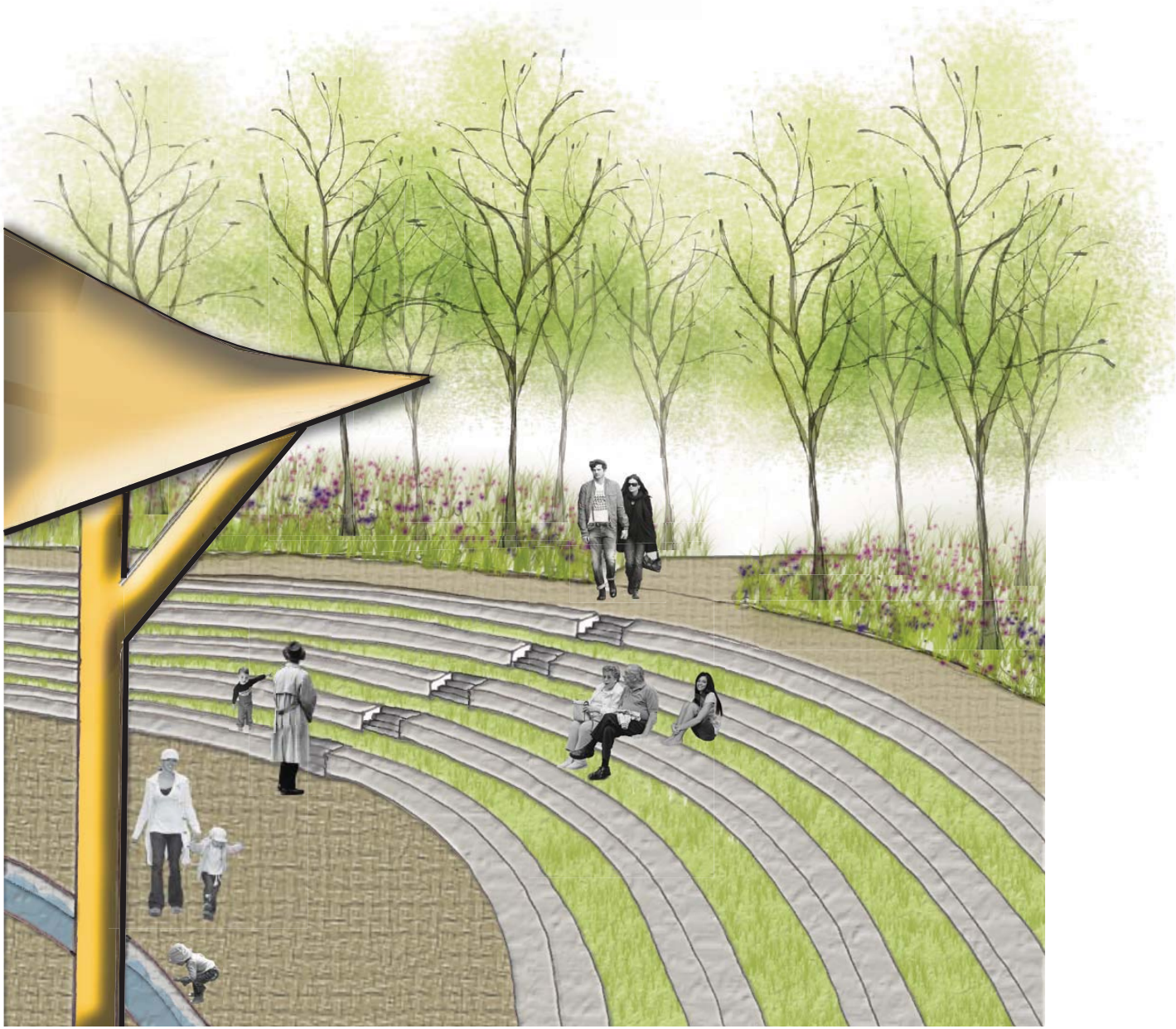
Restaurant Site(s)/Main Street Development

The Riverwalk will provide a pleasant and dramatic setting for dining and gathering. There are several vacant parcels that are key locations for restaurant venues- the northeast and northwest corners of Squirrel Road and Auburn Road. Both sites will be developed to reinforce the urban character of "Main Street" (Auburn Road) and a critical interface to the Riverwalk. The northeast corner is currently public parking, and would be an ideal location for a dining/café/coffee shop venue. An outdoor plaza with interactive water feature is indicated on the north side of this space to draw one between the Belvedere and Riverwalk and Main Street. On the northwest corner, vacant properties will be re-developed to enhance the Riverwalk and take advantage of the spectacular vistas to the north, and again continue the urban streetscape along the roadside. This location could be Auburn Hills' "Tavern on the Green"; a fantastic setting for indoor and outdoor dining on several levels, with green roof terraces overlooking the Riverwalk. It also provides the urban interface to the vacant parcel on the south side of Auburn Road; this parcel is ideal for mixed-use, urban-scale development oriented to Auburn, with retail on the first floor, and office/residential above. The bridge over the river is the western end of the "Main Street" section of Auburn, and a crosswalk here would connect the two sides and provide the essential pedestrian shopping loop.

A. Riverside Section



B. Amphitheater Vignette



Riverwalk Districts

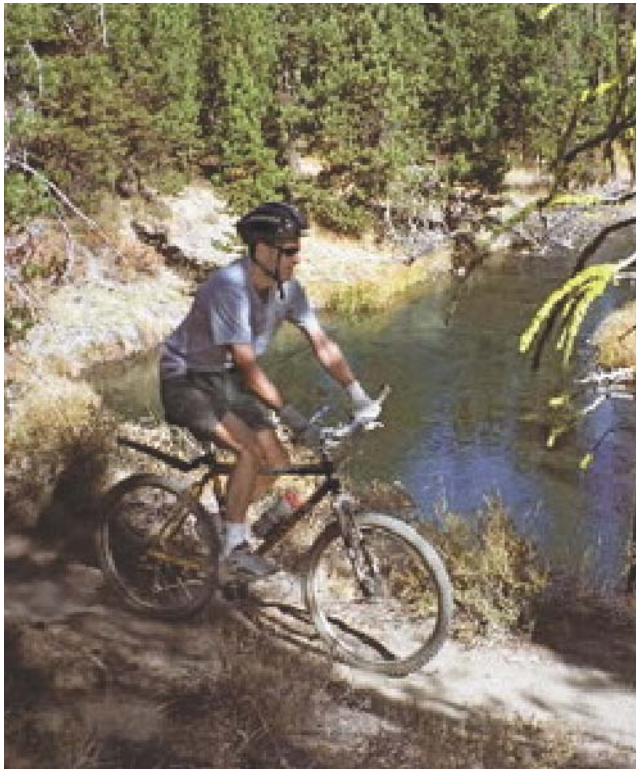
River Woods District

The River Woods District is the portion of the Riverwalk northeast of Squirrel Road. It includes all of River Woods Park, the existing skateboard park adjacent to Squirrel Road, and several other parcels, and extends east to Forester Square. This portion of the Riverwalk includes the high quality remnant landscape areas described earlier. The master plan calls for the extension of the trail systems and hierarchy, a new pavilion and play space, accessed from the east.

Primary features include:

1. *Park Pavilion*
2. *Public restrooms*
3. *Fishing and river access/shoreline stabilization*
4. *Water Play*
5. *Paths*
6. *Bridges*
7. *Adventure Play*
8. *Black Oak Savanna Restoration*
9. *Woodland restoration*
10. *Other Riverwalk Park Opportunities:*
    - *Geo-cashing*
    - *Fellowship Rings*

River Woods District



River Woods District

The River Woods District is the portion of the Riverwalk northeast of Squirrel Road. It includes all of River Woods Park, the existing skateboard park adjacent to Squirrel Road, and several other parcels, and extends east to Forester Square. This portion of the Riverwalk includes the high quality remnant landscape areas described earlier. The master plan calls for the extension of the trail systems and hierarchy, a new pavilion and play space, accessed from the east.

Primary features include:

Park Pavilion

A new park pavilion is planned on the south side of the river, close to the existing pavilion on the west side. The pavilion will provide the same kind of venue for programmed events and gatherings, and for casual picnics. The pavilion will be accessed by trails, and by a small parking area on the far east side of the park, off of Forester Boulevard.

Public restrooms

A new public restroom to serve the northeast portion of the Riverwalk will be constructed near the parking lot/trail head on the east side of the park. This restroom will utilize leading edge, sustainable techniques to treat water and have a positive effect on the environment.

Fishing and river access/shoreline stabilization

Similar to the section of the river through Riverside Park, access to the river will be enhanced for fishing and general water enjoyment through shoreline restoration. Sections of the river edge will be stabilized with stone or other suitable material, to allow better river access. Again, areas of flood-prone land adjacent to the river will be maintained in low-input turf with a naturalized perennial shoreline/tree canopy zone adjacent to the river edge.

Water Play

An active play space will be developed adjacent to the new park pavilion. This play area will have some open lawn, and various climbing and water elements, similar in character to the play space in Riverside Park.

Paths

The path system will continue along both sides of the river north and east from the river crossing at Squirrel Road, and connect with the existing pedestrian bridge and a new bridge further north. The path system will offer a series of loops of various lengths and experiences, suitable for walking, jogging, biking, rollerblading, and events.

Bridges

The existing bridge has been well used, and a new bridge is proposed further north to create a looped path system.

Adventure Play

As an enhancement to the wide range of play experiences along the Riverwalk, several locations for Adventure Play have been identified. This is a type of play space growing in popularity that is intended to stimulate the imaginations of children of all ages through providing the opportunity to shape the space to some degree. Non-traditional materials and apparatus are combined with the existing or enhanced landscape to give children the ability to create games and activities on their own, manipulate the space, and take calculated risks.

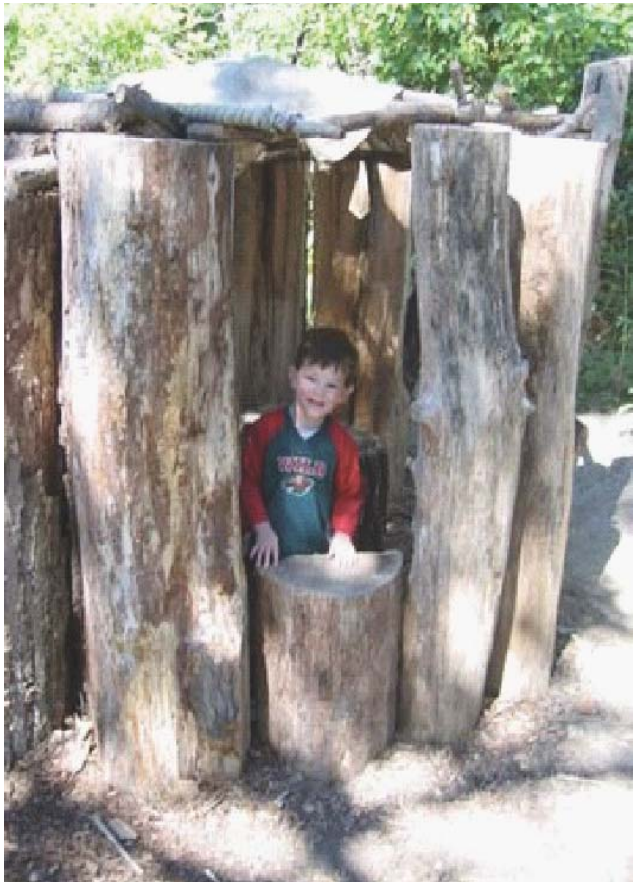
Black Oak Savanna Restoration

Efforts to restore this remnant natural system is important to understanding the history of the local landscape setting that was influenced by native peoples and later by European settlers.

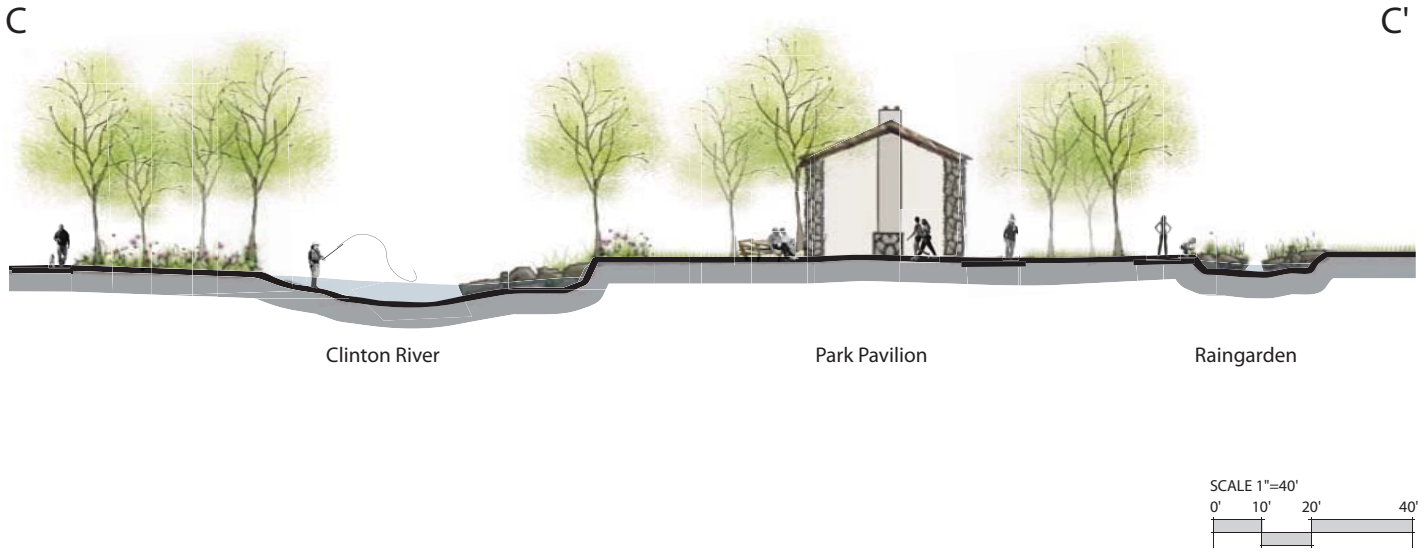
Woodland restoration

Other Riverwalk Park Opportunities:

Geo-cashing
Fellowship Rings



C. River Woods Section



D. Park Pavilion Vignette

Riverwalk Districts

Up River District

The Up River District includes the river corridor south of Auburn Road west to I-75. This area is currently on individual, privately owned parcels. It is largely restricted from any sort of building or development since it is largely prone to flooding and contains steep slopes along the north bank. Even though some of the upland portions remain undeveloped, they contain beautiful, mature oaks and other hardwood trees worthy of protection. The canopy of these native trees contribute greatly to keeping the surface water of the Clinton River cool. This section is planned to eventually have a trail extension along much of the north side, and potentially link several schools south of the Clinton River Trail to the Riverwalk.

Since this portion of the Riverwalk is upstream of the Riverside and River Woods districts, it is critical to ensure that everything possible is done to manage storm flows, and strive to maintain as stable hydrology as possible. This could be improved to some degree through the restoration of the landscapes throughout the Riverwalk area, including the Up River District. As this area is likely to be further developed as is anticipated by the City's comprehensive/downtown plan and there are vacant and underutilized parcels, it is also critical to adopt a planning policy that protects the integrity of the Riverwalk as development occurs. This means that properties adjacent to the Riverwalk should be planned to take advantage of the enormous value the Riverwalk creates. Active living spaces, rather than parking lots or the back sides of buildings and service areas, are the only development that should be allowed adjacent to the river to avoid squandering this valuable resource and amenity. Also, each new or retrofit project within the entire Village Center area should follow the same ecologically-based green guidelines that the Riverwalk will be developed under. This includes the use of high-performance, durable, beautiful materials and practices that will serve to slow, cool, cleanse, and infiltrate rainwater, and continue to build a fine-grained pedestrian-friendly system of walkways and paths to access every home, business, school, and church.


I - 75
AUBURN ROAD
SCALE
0' 60' 120' 240'
NORTH

Riverwalk Design Guidelines

1. Authentic

All structures, features, and elements will be constructed to have a sense of authenticity (not generic or contrived), and be congenial to the "spirit of the place and people" of Auburn Hills, sometimes referred to as Genius Loci. The following characteristics of Auburn Hills will be expressed in the materials, colors, and forms built into the Riverwalk:

a. North Temperate zone of a great continent {4 seasons}

Winter- quiet, with grays, blues, and whites, prevailingly northwest winds

Spring- bright young greens, bursting with the chatter of innumerable courting birds, often with southeast breezes

Summer- multiplicity of rich greens, prevailingly western, often dry winds

Fall- kaleidoscope of reds, maroons, bronzes, yellows, and browns; winds variable

f. In the rain shadow of the cordillera

g. Between two Great Lakes

h. Relatively recent glaciation in outwash of moraine

i. Thin soil on rolling, oak-dominated moraine

j. On a coldwater, sandy-bottomed, east-bound river with riffles and pools

k Large boulders and river-washed gravel rare

l. Inhabited by Algonquian-speaking, forest-inhabiting peoples from the end of glaciation to the settlement period

m. History of logging, mills, and water power

n. Recent culture of automotive engineering and technology, within view of the Chrysler Building

o. In the purlieus of a great city among expansive suburbs

p. Blessed with a remnant woodland, surrounded by landscapes now dominated by plants of European and Asian origin

q. Characterized once by beaver, grazing ungulates, and predators such as wolves, lions, and bear

r. Fish were plentiful and diverse and a significant part of the diet; recent history of trout fishing

s. Nexus of a regional trail system that serves hiking and biking

t. Contemporary population includes young families engaged in health, children, and wholesome activities

2. Sustainable

All structures, elements, and features will be built with sustainable, or green qualities and practices. These qualities are well defined in the Sustainable Sites Initiative (www.sustainablesites.org), an emerging green design tool:

HYDROLOGY

- Protect and restore existing hydrologic functions
- Manage and clean water on-site
- Design stormwater features to be accessible to site users
- Design to minimize or eliminate use of potable water for irrigation

SOILS

- Preserve and protect healthy soils
- Use plant trimmings as compost to nourish soils
- Improve health of degraded soils

VEGETATION

- Protect and use existing vegetation
- Use vegetation that promotes a regional identity and a sense of place
- Use vegetation to lower energy consumption
- Manage landscapes effectively to reduce potential damage

MATERIALS

- Re-use existing materials
- Purchase local and sustainably-produced plants and materials
- Consider the full life cycle of materials
- Work towards zero net waste
- Reduce urban heat island effect
- Reduce air pollution

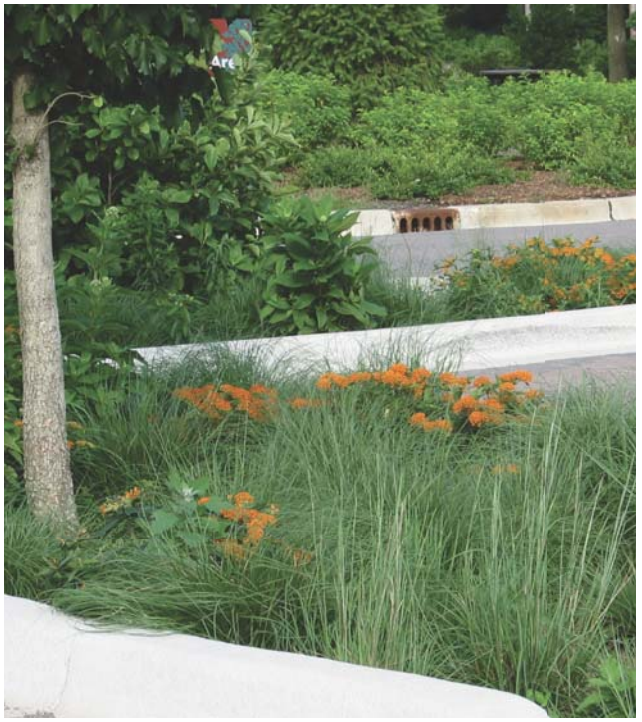
HUMAN HEALTH AND WELL-BEING

- Make the site user-friendly
- Focus on natural views
- Educate site users and keep culture and history alive
- Provide spaces for mental restoration, social interaction, and physical activity

Sustainable site strategies create multiple benefits with a single expenditure through the careful integration of materials and practices with the unique characteristics of a particular site. These strategies address functional and environmental issues, and are better performing, longer lasting, and require less on-going maintenance. These strategies typically include:

- Native landscape systems
- Rainwater harvesting and re-use
- Bio-retention systems
- Porous pavement
- Green roofs

These strategies are described further in Appendix iii.



3. Inspired by nature

Form, texture, and color of the materials and features built in the Riverwalk will come from nature as found in the native landscapes of Southeastern Michigan. Designs will be thoughtful of their surroundings; a sensitivity to views and natural landscape qualities will create an inspiring setting for the events and activities that will occur throughout the Riverwalk. Structures and elements will be beautiful, but subservient to the beauty of a restored natural riverfront setting. Designs for building and site improvements will incorporate the following materials:

- Stone
  - -Outwash sand and gravel- structure foundations, pathways, water features, play spaces.
  - -Granite and limestone erratic boulders- for way-finding elements along pathways, retaining walls, pathways, water features, play spaces, and seating.
- Wood
  - -White Oak- for structures, decks/platforms, signage, seating surfaces,
- Metal
  - -Iron- for signage, railings, ornamentation

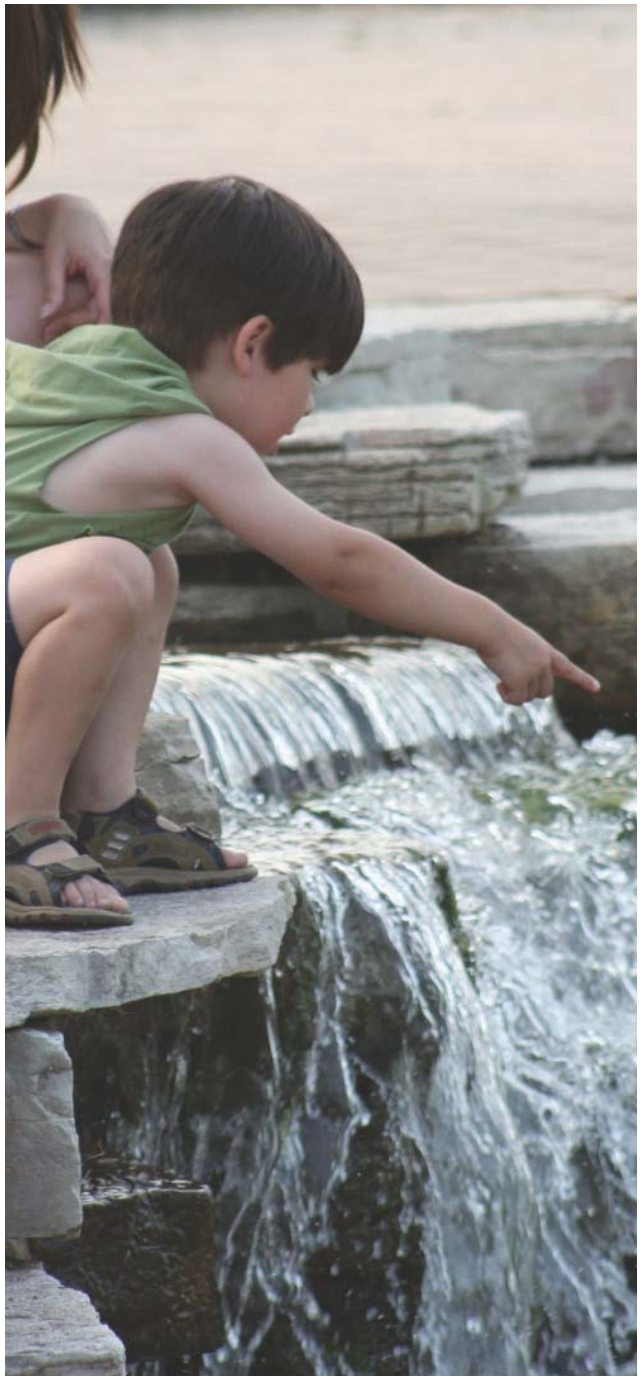
4. Beautiful

The features and elements created within the Riverwalk must be beautiful and perceived as aesthetically pleasing in order to be embraced and sustained over time by the community. A sense of beauty will be incorporated into the Riverwalk through close attention to all of the Guidelines, and the integration of art and craft. Public art can be both beautiful and functional through the integration of artisans and craftsmen into the detailed design and construction of various park elements and features.

5. Responsible

While the Riverwalk is certainly an incredible amenity and benefit to the community, it is a very practical, pragmatic feature in that the money invested will produce significant returns over the long term. Communities that have properly incorporated a wonderful, inspiring public realm into the fabric of the town have realized benefits in the form of increased retail use, tourism, desirability, increased real estate values, and payback in other ways. A focus of this project is to support the local economy. A leading edge project such as this has the potential to create jobs, increase local expertise in green practices, and foster local enterprise.

The detailed design and construction of the Riverwalk will be done in a way that benefits Southeastern Michigan's economy, and supports an environment of long-term investment ion the community.



6. Long-term

The Riverwalk will be designed to be cost-effective and provide value over the long term. In addition to designing with durable, long-lasting materials, this requires careful consideration of the resources and skills necessary to properly maintain the structures, paths, features, and landscapes within the Riverwalk. The landscapes will be maintained without drinking water of the use of harmful chemicals. Structures will look beautiful and attractive without frequent re-coating or surfacing (painting, material replacement, etc.). A detailed maintenance and operations plan will be developed in concert with the design and engineering planning process.

Design Elements:

Elements that are incorporated into the design include:

- Pavement- Roads, parking, trails, walkways

Pavement will be primarily constructed of interlocking concrete pavers, pored concrete, stone, and gravel. It will be safe, attractive, durable, and help to slow, cool, cleanse, and infiltrate rainwater. A pavement hierarchy will support the trail hierarchy to make it intuitive.

- Walls

Walls will be constructed of concrete, stone, and metal. Wall surfaces will be considered as a "canvas" for some of the interpretive aspects of the area.

- Structures- bridges, shelters, pavilions, restrooms

Structures will be constructed of concrete, stone, brick, metal, and wood. Structures will be designed to be architectural features, and will amplify the cultural references describe above. Some structures will be designated architectural icons, and contribute to the overall scenery.

- Site Amenities- play structures, water elements

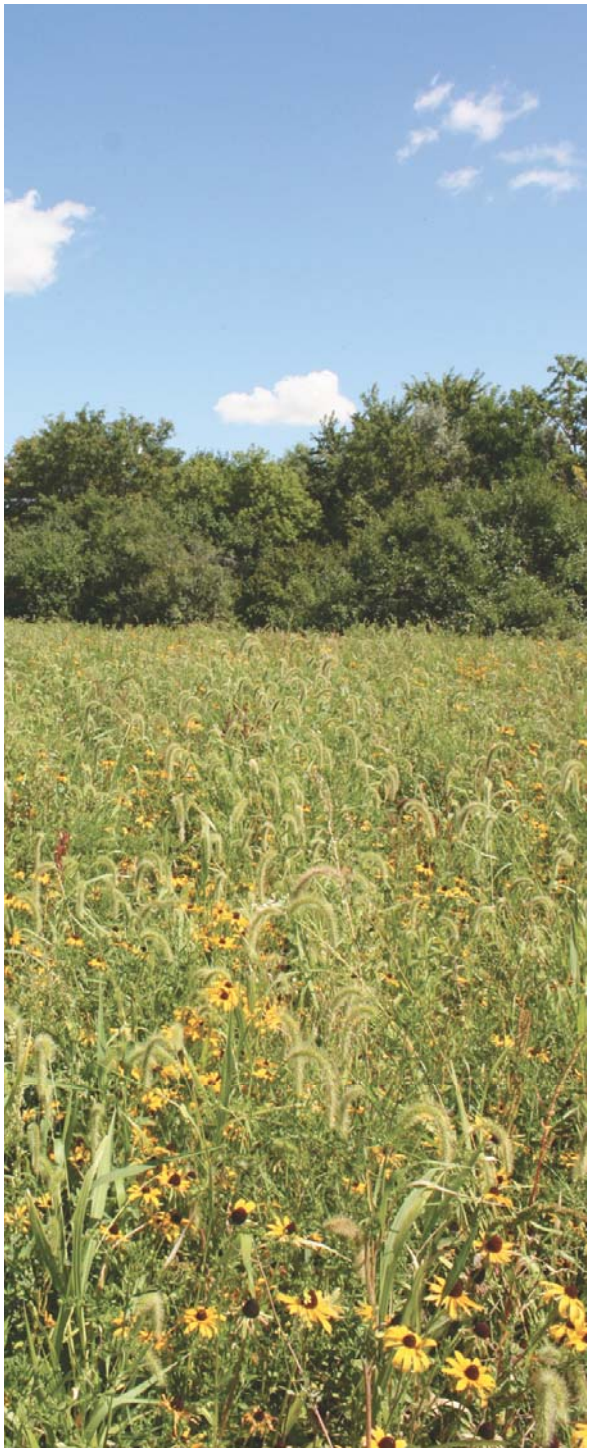
Play structures and water elements will be constructed of stone, concrete, wood, and metal. These fun, interactive water and adventure play are essential aspects of the plan, and offer an opportunity for beautiful, interesting, and functional features.

- Site Furnishings- seating, bike racks, waste recycling receptacles, etc.

• Lighting-
Lighting will be done to prove a safe, beautiful nightscape, while lighting primary access points, trails, and venues within the park. Energy-efficient lighting powered with renewable energy is a priority. Avoiding light trespass and night-sky impact are also critical.

• Signage- directional, identification, interpretive
Signage will be constructed of metal and wood. Signage is another excellent opportunity to incorporate local references in an artful way. A series of Riverwalk Icons will be developed to reinforce the interpretive messages in a fun, interesting way. These icons will mark the different water and landscape features:

Painted Turtle - Land and Water
Trout –Water
River- Watershed



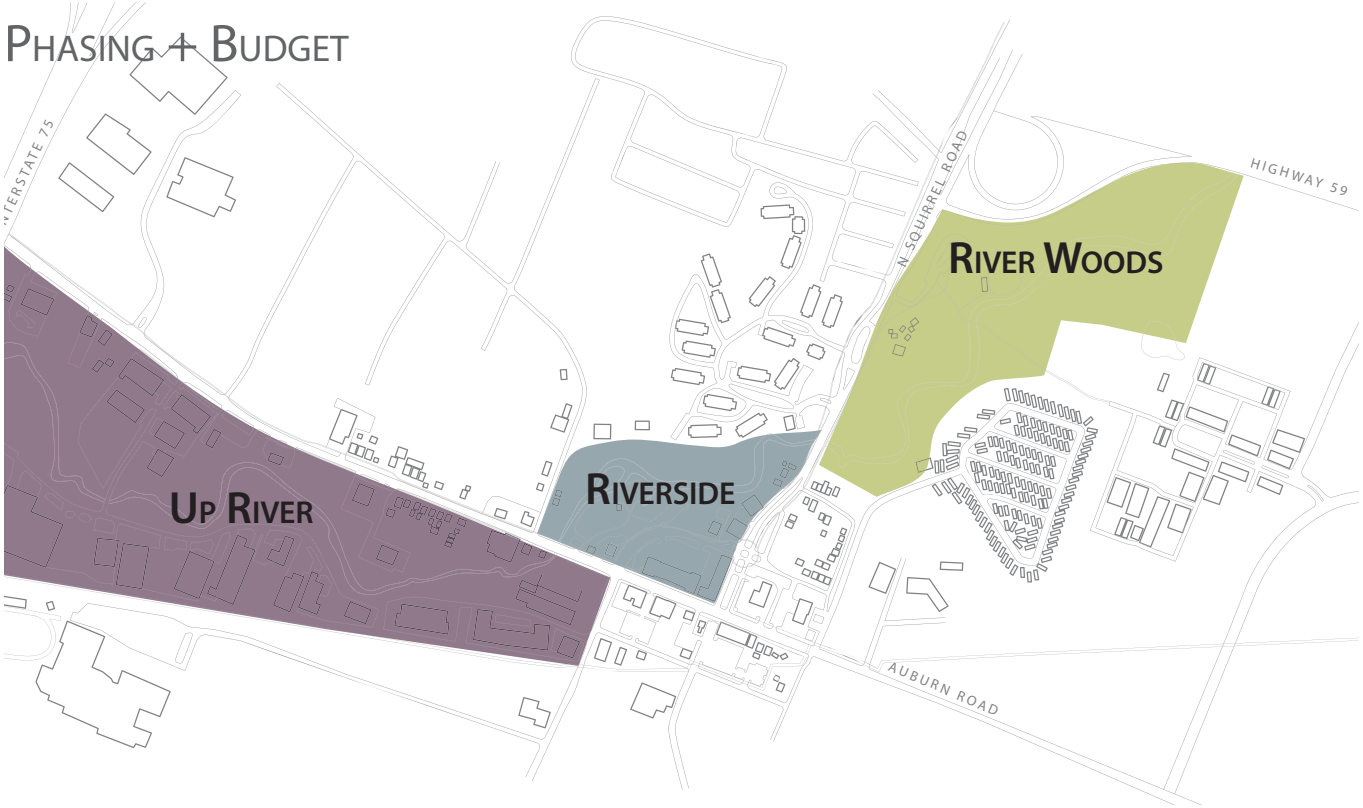
chapter five

NEXT STEPS + IMPLEMENTATION

The Master Plan for the Auburn Hills Riverwalk is an ambitious, long-term plan to realize a vision for a truly superlative healthy amenity for the people of Auburn Hills. This plan will provide for a range and quality of experiences available nowhere else in the area. The Riverwalk will become more harmonious in its natural setting, with the continued path of restoration and enhancement as a long-term asset. It envisions the application of leading edge green practices, which will provide greater value and performance, as well as a valuable demonstration for City residents, property owners, and municipal officials. It anticipates provisions of entertaining, environmental awareness and interpretation, and recreation of all users. The Master Plan provides high quality facilities and learning opportunities for people of all ages, skill levels, and capabilities. It is consistent with the stated goals and objectives of the various stakeholder and participant groups that generously gave their time and energy to help make a better plan. And, the plan has a rigid framework based upon the unique natural and cultural assets of the site, but also has built-in flexibility to accommodate the inevitable change over the decades of implementation.

It is anticipated that this Master Plan will be updated regularly to keep it current in light of each significant phase of development, so that it can remain a valuable tool towards the realization of the vision for Auburn Hills Riverwalk.

Phasing + Budget



	RECOMMENDED CONSTRUCTION BUDGET			Riverside		River Woods		Up River		
		Rough Grading Area (SF)		90000		110000		42000		
	Description	Unit	Unit Price[1]	Qty.	Extension	Qty.	Extension	Qty.	Extension	Notes
1										
2	**A. SITE PREPARATION AND DEMOLITION**									
3	Mobilization	LS	1	1	$250,000	1	$46,100	1	$1	Equipment Rental, Bonds, etc. 0.5% Const
4	Security Fencing	LF	$ 12	800	$9,600	20	$240	40	$480	8' Chainlink Fence Renta
5	Tree Protection Fencing	ALW	$ 2,500	1	$2,500	1	$2,500	1	$2,500	Vinyl Construction Fence
6	Temporary Construction Roads	LF	$ 90	50	$4,500	100	$9,000	150	$13,500	
7	Tree Removals	ALW	$ 6,000	1	$6,000	1	$6,000	0	$0	
8	Demolish Existing Asphalt Pavement & Base	SF	$ 0.35	650	$228	30000	$10,500	0	$0	
9										
10	**B. GRADING AND EROSION CONTROL**									
11	Layout and Surveying	SF	$ 0.05	90000	$4,500	110000	$5,500	42000	$2,100	
12	Strip and Stockpile Topsoil	SF	$ 0.03	90000	$2,700	110000	$3,300	42000	$1,260	surfaces
13	Site Grading - Cut	CY	$ 3	1665	$4,995	2035	$6,105	777	$2,331	surfaces
14	Site Grading - Fill	CY	$ 3	1665	$4,995	2035	$6,105	777	$2,331	surfaces
15	Rough Grading	SF	$ 0.05	90000	$4,500	110000	$5,500	42000	$2,100	Assumes Balanced Cut/Fill
16	Final Grading	SF	$ 0.04	90000	$3,600	110000	$4,400	42000	$1,680	
17	Silt Fence & Erosion Control Measures	SF	$ 0.02	90000	$1,800	110000	$2,200	42000	$840	
18										
19	**C. UTILITIES**									
20	Potable Water - Infrastructure	SF	$ 0.12	2030	$244	2765	$332	0	$0	Infrastructure costs are a per square foot costs for Architectural Line Items
21	Sanitary Infrastructure	LF	$ 25	200	$5,000	600	$15,000	0	$0	
22	Electrical Infrastructure	SF	$ 0.08	2030	$162	2765	$221	0	$0	
23	Storm Water - Infrastructure	SF	$ 0.05	90000	$4,500	110000	$5,500	50000	$2,500	
24	Potable Water - Drinking fountain	EA	$ 5,000	2	$10,000	1	$5,000	0	$0	
25	Storm Water - Bioretention Soils and Gravel Recharge Beds	SF	$ 10	1311	$13,110	3473	$34,725	0	$0	Assumes an area equal to 15% of paved surfaces. Cost includes soil, fabric, stone base
26	Rain Water - Collection and Reuse	GAL	$ 2	1000	$2,000	1000	$2,000	0	$0	
27	Electrical ~ Pavilions, Ampitheater Lighting	EA	$ 10,000	2	$20,000	2	$20,000	0	$0	Allowance per field cost
28	Electrical ~ Road/Parking Lot Lighting	EA	$ 7,500	4	$30,000	4	$30,000	0	$0	For 20' pole light, 60' O.C.
29	Electrical ~ Riverwalk Lighting	EA	$ 4,000	20	$80,000	10	$40,000	0	$0	For 13' pole light, 60' O.C.
30	Electrical ~ Landscape Lighting	ALW	$ 10,000	1	$10,000	1	$10,000	0	$0	
31										
32	**D. SITE PAVING**									
33	Vehicular Porous Unit Pavers	SF	$ 9	8500	$76,500	22500	$202,500	0	$0	For Parking Areas and Roadway, Mechanically-laid pavers over open graded stone
34	Vehicular Asphalt Paving w/ Stone Base	LF	$ 72	240	$17,280	650	$46,800	0	$0	$3/SF and 24' wide roads
35	Vehicular Concrete Paving	SF	$ 9	0	$0	0	$0	0	$0	8" Depth
36	Concrete Curb and Gutter	LF	$ 18	2150	$38,700	700	$12,600	0	$0	
37	Pedestrian Concrete Paving	LF	$ 24	1200	$28,800	2500	$60,000	400	$9,600	$4/SF and 6' wide walks
38	Pedestrian Specialty Paving	SF	$ 10	22000	$220,000	800	$8,000	0	$0	
39	Multi Use Paths - Pedestrian Asphalt Paving	LF	$ 19	2250	$42,750	5650	$107,350	4200	$79,800	$14/SY and 10' wide paths
40	Multi Use Paths - Crushed StonePaving	LF	$ 12	0	$0	0	$0	0	$0	$1/SF and 6' wide paths
41										
42	**E. ARCHITECTURAL PROGRAM**									
43	Amphitheater (17,225 SF)	LS	$ 5,000,000	1	$5,000,000	0	$0		$0	Inc. Lawn Seating, walls,
44	Park Pavilion	SF	$ 150	0	$0	2400	$360,000		$0	One-story, inc restrooms
45	Restroom	SF	$ 125	0		225	$28,125			inc green roof
46	Picnic Pavilion (25'x35')	SF	$ 40	875	$35,000	0	$0		$0	inc. concrete pad
47	Picnic Pavilion (15'x25')	SF	$ 40	375	$15,000	0	$0			Inc. concrete pad
48	Pedestrian Bridge - 12' Single Span	LF	$ 1,250	200	$250,000	100	$125,000		$0	Inc. concrete abutments, riprap, etc.
49	Pedestrian Bridge - 12' Single Span	LF	$ 1,250	94	$117,500	0	$0		$0	Inc. concrete abutments, riprap, etc.
50	Stream Crossing 12'	LF	$ 145	0	$0	40	$5,800		$0	
51	Boardwalk - Type A	LF	$ 150	225	$33,750	0	$0		$0	
52	Boardwalk - Type B	LF	$ 225	260	$58,500	0	$0		$0	inc. Streambank Stabilization
53	Restaurant/Concessions/Restrooms	SF	$ 250	3750	$937,500	0	$0		$0	Public/Private Food Service w/restrooms

	RECOMMENDED CONSTRUCTION BUDGET			Riverside		River Woods		Up River		
		Rough Grading Area (SF)		30000		550000		825000		
	Description	Unit	Unit Price[1]	Qty.	Extension	Qty.	Extension	Qty.	Extension	Notes
57										
54	**F. SITE PROGRAM**									
55	Playgrounds for Children	LS	$ 75,000	1	$75,000	0	$0	0	$0	Includes Equipment and Surfacing
56	Adventure Playground	LS	$ 120,000	1	$120,000	1	$120,000	0	$0	Includes Equipment and Surfacing
57	Interactive Water Elements	LS	$ 125,000	1	$125,000	0	$0	0	$0	
56	Water Play	LS	$ 80,000	1	$80,000	1	$80,000	0	$0	
58	Fishing/Shore Access - Boulders/Stone	LS	$ 5,000	4	$20,000	5	$25,000			
57			$ -	1	$0	0	$0	0	$0	
58	Natural Area Interpretation - Signage	ALW	$ 15,000	1	$15,000	1	$15,000	1	$15,000	
60	Monumental Signage	EA	$ 8,000	2	$16,000	1	$8,000	1	$8,000	
61	Directional Signage	ALW	$ 10,000	1	$10,000	1	$10,000	1	$10,000	
62	Site Amenities	ALW	$ 10,000	2	$20,000	2	$20,000	1	$10,000	Benches, Waste Receptacles, etc.
63			$ -		$0		$0		$0	
64	**G. LANDSCAPE**									
65	Turfgrass Seed	SF	$ 0.12	0	$0	0	$0	0	$0	
66	Turfgrass Sod	SF	$ 4.00	0	$0	0	$0	0	$0	
67	Deciduous Shade Trees - whip	EA	$ 80	0	$0	0	$0	0	$0	
68	Deciduous Shade Trees - 2.5" cal	EA	$ 425	40	$17,000	0	$0	0	$0	
69	Deciduous Shade Trees - 4" cal	EA	$ 500	18	$9,000	0	$0	0	$0	
70	Ornamental Tree - 6' height	EA	$ 200	15	$3,000	0	$0	0	$0	
71	Evergreen Tree - 6' height	EA	$ 400	6	$2,400	0	$0	0	$0	
72	Deciduous Shrub	EA	$ 40	500	$20,000	200	$8,000	0	$0	
75	Flowering Perennial Planting	SF	$ 10	3500	$33,250	1200	$11,400	0	$0	
76	Native Landscape Seeding	Acre	$ 4,500	0	$0	5	$22,500	1	$4,500	Includes establishment period maintenance
77	Native Landscape Plugs - 2" pot	SF	$ 5	6000	$30,000	10000	$50,000	0	$0	18" OC spacing for enhancement zone
78	Native Plant Community Management	ALW	$ 15,000	1	$15,000	1	$15,000	1	$15,000	Inc Prescription Burn
79	Invasive Plant Removal	ALW	$ 15,000	1	$15,000	1	$15,000	1	$15,000	
80					$0		$0		$0	
81	**H. IRRIGATION**									
82	Drip Irrigation System	SF	$ 2	3500	$7,000	1200	$2,400	0	$0	For Perennial Plantings
83	Sprinkler Irrigation System	SF	$ 0.40	0	$0	0	$0	0	$0	For Specialty Lawn
84										

TOTALS	Riverside		River Woods		Up River	
SubTotal A. Site Preparation and Demolition		**$272,828**		**$74,340**		**$16,481**
SubTotal B. Grading and Erosion Control		**$27,090**		**$27,090**		**$10,542**
SubTotal C. Utilities		**$175,016**		**$162,778**		**$2,500**
SubTotal D. Site Paving		**$424,030**		**$437,250**		**$89,400**
SubTotal E. Architectural Program		**$6,447,250**		**$518,925**		**$0**
SubTotal F. Site Program		**$481,000**		**$278,000**		**$43,000**
SubTotal G. Landscape		**$144,650**		**$121,900**		**$34,500**
SubTotal F. Irrigation		**$7,000**		**$2,400**		**$0**
20% CONTINGENCY		$1,595,773		$324,537		$39,285
TOTAL		**$9,574,636**		**$1,947,220**		**$235,708**
NOTES: [1]unit costs assume Material, Labor, Overhead, and Profit (2009 Values)						

chapter six

6 APPENDICES

I. Community Input

II. Sustainable Site Technologies + Green Materials

III. Funding and Grant Opportunities

IV. General Land Survey Notes

I. Community Input

1. Need better fishing access in and out of river
2. Facilitate a more direct access to B. Orchards. NE corner or side lot easement to Clinton River Trail
3. Kayak/Canoe put-in at Updike Road
4. Better path connection to whole City – Pedestrians at Civic Center and residents north of Walton
5. Security under Squirrel Road bridge.
6. Multiple links to Clinton River Trail
7. Loop along m-59 to Adams Street
8. River clean up (too much trash in floodplain)
9. Water Park/Splashpad
10. Cranbrook – different water features
11. Connection to higher density residential neighborhoods
12. Interpretation of historic Mill, restore/ develop, science/historical center
13. Healthy activities
14. Rest areas
15. Horseshoe pits
16. Nature Interpretation/signage
17. Visible transition from urban environment to natural (gateway park example) Focal point
    - Water feature
    - Native plantings
    - Gathering places
    - Map
    - Civic organizations
18. Age appropriate playground(s)
19. Footbridge(s) over Clinton River
20. Privacy for adjacent property owner's homes/yards
21. Issue with lack of snow removal maintenance on pedestrian routes to village center
22. Butterfly Garden Park
23. Natural Area
24. Garden Park with Benches
25. Lighting
26. Themed events along trail [example, "Taste of Auburn Hills"]
27. Science stuff
28. Safety issues (night time gatherings)
29. Cleanliness, dumping trash and pet waste
30. Make improvements to existing parks and trails instead of building new infrastructure
31. [River walk] may promote illegal activities/behavior. Especially in the nighttime.
32. Wal-Mart shopping carts abandoned in River Woods

II. Sustainable Site Technologies - Green Materials

One of the guiding principles for the **Riverwalk** is that it is envisioned to be a sustainable park. The word sustainable can have different meanings- in the case of Auburn Hills' Riverwalk Park, and surrounding Village Center area, it is meant to describe public infrastructure that is:

- positive for the environment and ecology of the region,
- operated with regards to fiscal responsibility, and
- developed and operated with materials and practices that are both durable and beautiful.

This will result in a park that meets the needs of Auburn Hills' residents now and long into the future. All of the park elements and facilities will be planned, designed, engineered, constructed, and operated according to sustainable practices. Many of these strategies are newly emerging in Southeast Michigan, and are being promoted and encouraged by various public agencies and organizations. While some have been in use for decades or longer, many are leading edge practices that continue to improve and become more cost effective as they become more widely used.

While these practices make common sense for the reasons listed, the **Riverwalk** also has the opportunity to serve as a demonstration of sustainable practices, and help to lead the region in this very essential area. The following paragraphs provide an overview of sustainable strategies to be applied in **Auburn Hills** along with a few examples and illustrations:

Native Landscape Strategies

Remnant native landscapes are irreplaceable and un-restorable if altered or displaced. Areas of remnant vegetation have been identified, and will be restored and stewarded as valuable assets to the park. Planned, un-programmed open lands throughout the park will be restored as sustainable native landscapes through the recreation of natural hydrology, the planting of appropriate vegetation, and long-term stewardship that combine to create stable, healthy, diverse habitats.

The manicured landscape features within the programmed portions of the park (turf play fields, ornamental landscape plantings, etc.) will be transitioned to implementation and management with sustainable practices- i.e. water conservation, integrated pest management, non-toxic fertilizers and pesticides, etc. Establishment of native vegetation in landscaped areas compliments the other stormwater best management practices such as filter strips, bioretention features, porous pavement, and green roofs. Deep root systems (3 to 10 feet or more) help filter and absorb rainwater. A filter strip is an area with dense, preferably native vegetative cover (which can also be planted with turf grass) that is used to slow, filter, and absorbs runoff from impervious areas. Native plant and tree species will be used that are well adapted to the conditions found at the park.

BENEFITS

- Reduces runoff volumes (by up to 65% when used with bioretention and/or filter strips).
- Increases ability of landscape to remove nutrients (up to 70%), heavy metals (up to 80%), sediment, and other pollutants, especially when used with other stormwater practices.
- Stabilizes and increases organic content of soils.
- Reduces irrigation and fertilization requirements.
- Reduces use of fossil fuels and air and noise pollution relative to turf landscapes that require regular mowing and maintenance.
- Provides wildlife habitat for birds, butterflies, and insects.
- Moderates temperature extremes and urban heat island effect.
- Provides aesthetic benefits throughout the year.

MAINTENANCE CONSIDERATIONS

Natural landscaping requires less irrigation, mowing, fertilizers, and pesticides than conventional landscapes. Annual mowing or controlled burning are appropriate for natural landscapes, though burning may not be appropriate. Initial watering and herbiciding may be necessary in the first 2-3 years after planting, but once established (3-4 years) these needs are greatly diminished.

WATER CONSERVATION STRATEGIES

The site rainwater system will be developed in a way that replicates natural hydrology. Therefore, rainwater will be slowed, cooled, cleansed, and infiltrated, thus avoiding surface water runoff. Existing natural drainage patterns and features will be preserved and enhanced to the extent possible.

Rainwater that falls on the site will move (infiltrate) to the surface groundwater as long as nutrients are held in the surface soils. The native landscape helps by keeping nutrients and organic matter in the upper layers of the soil. This will then provide appropriate hydrology to sustain the river, and other natural aquatic and terrestrial landscapes both in the park and downstream.

The concentration or accumulation of rainfall in any particular spot should be minimized, especially in smaller, more frequent rain events. Point discharge to the river, wetlands, or any remnant or restored natural landscape should be avoided.

As a water conservation strategy, the use of potable water for landscape irrigation, make-up water for ornamental water features, toilet flushing, and other such uses will be minimized. Rainwater can be harvested, stored, and re-used to provide water for such uses.

Green Building and Infrastructure Strategies

Green practices will be deployed to serve multiple functions, in addition to the facilitation of rainwater into the groundwater table. Roads, paths, parking areas, bridges, and other built elements will be designed and built to help manage stormwater as well as provide appropriate, durable and beautify walking and driving surfaces.

All buildings and other structures will be designed, built, and operated according to green practice- energy and water efficient, replete with natural light and healthy materials, either durable or rapidly renewable, and beautiful.

Surplus water, wastewater, and landscape waste will be recycled and reused on-site, using ecological design and engineering techniques, including constructed wetlands, composting, and other sustainable practices.

Rainwater running over impervious surfaces (rooftops, streets, parking lots, alleys, and sidewalks) picks up urban pollutants such as sediment, heavy metals, and excess nutrients. The temperature of rainwater also changes, typically warming as it flows across the landscape. At the **Riverwalk**, this rainwater and pollutants concentrate in drainage ditches and ultimately discharge to the Clinton River. These aquatic resources support fish and other aquatic species that are sensitive to environmental (i.e., water quality) conditions. This *Green Infrastructure Toolbox* identifies strategies for reducing the volume and improving the quality of rainwater entering the pond and creek on-site and beyond.

The tools presented in this section are multi-dimensional practices that meet traditional water quality and quantity standards outlined in many stormwater ordinances, as well as achieving planning, park design, and landscaping objectives. The practices are designed to address both the quantity and quality of runoff from new and existing developed sites and should be understood by local authorities, planners, designers, and engineers involved with the project. These measures can be designed and implemented in new park features as well as retrofitted into existing features in cost effective ways. The practices discussed here include *bio-retention, green roofs, pervious pavement, native landscape systems, and rainwater harvesting and reuse.*

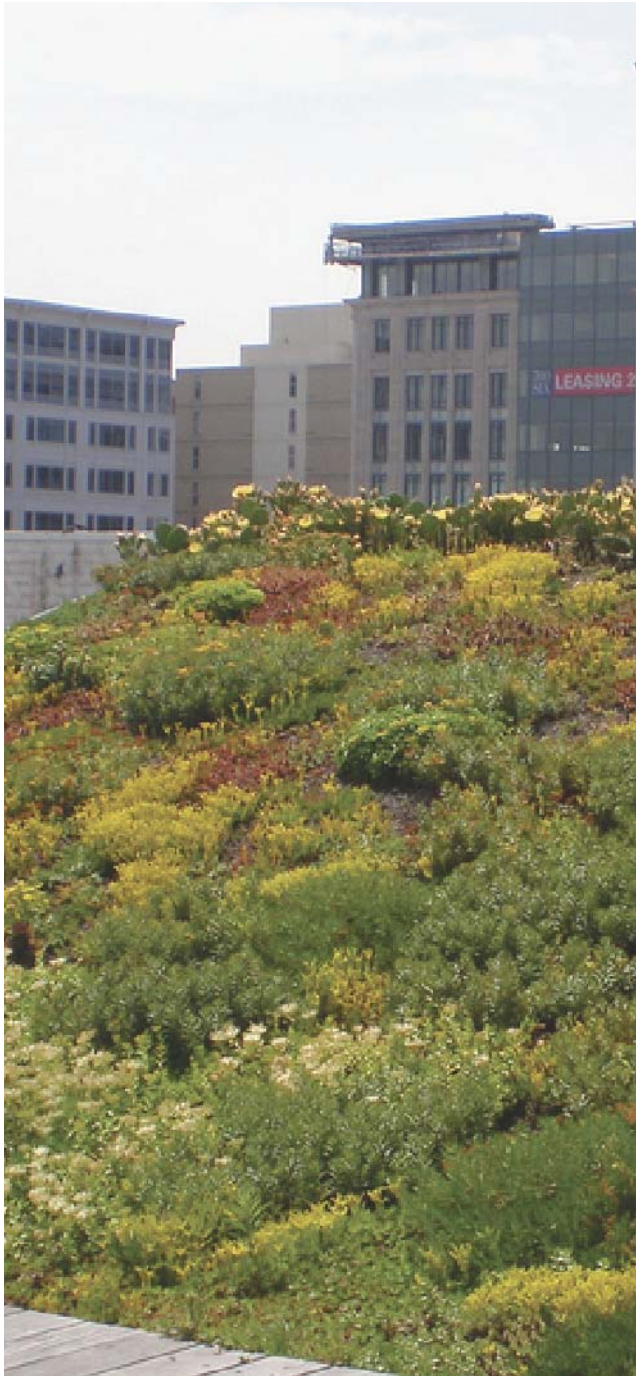
Bioretention

DEFINITION

Parkway rain gardens, tree wells, and planter boxes can be designed as vegetated stormwater bioretention features that convey, retain, cool, and cleanse stormwater before being discharged to streams. They are installed in parkways, medians, and parking lot islands, and along the sides of buildings to capture roof runoff. These practices are typically designed to allow stormwater to pond slightly and be absorbed and evaporated into the atmosphere by vegetation. Excess water is collected by a drain and discharged to storm sewers.

BENEFITS

- Reduces impervious surface runoff volumes (up to 15%) and rates (50% or more).
- Reduces sediments and metals (30 to 70%), nutrients (10 to 30%), and other pollutants from runoff.
- Provides stormwater detention, depending on the thickness of the gravel layer.
- Provides limited habitat for birds, butterflies, and beneficial insects such as dragonflies, which eat mosquitoes.
- Can increase aesthetic value of properties.



Green Roofs

DEFINITION

Vegetated roof system designed to retain, slow, cool, and cleanse rainwater runoff on the top of buildings. Green roofs are generally planted with drought tolerant vegetation. The soil and vegetation evaporate and transpire precipitation to the atmosphere.

BENEFITS

- Significantly reduces runoff volumes and rates (50 - 90% reduction in annual runoff) as well as thermal loading of runoff.
- Extend the life of roofs two to three times (20 years or more) by protecting the roofing system from inclement weather and solar radiation.
- Can help meet detention requirements.
- Reduces the urban heat island effect.
- Can reduce heating and cooling energy requirements.
- Creates opportunities for outdoor space as roof top gardens.
- Creates habitat and preserves biodiversity in an otherwise sterile urban landscape.

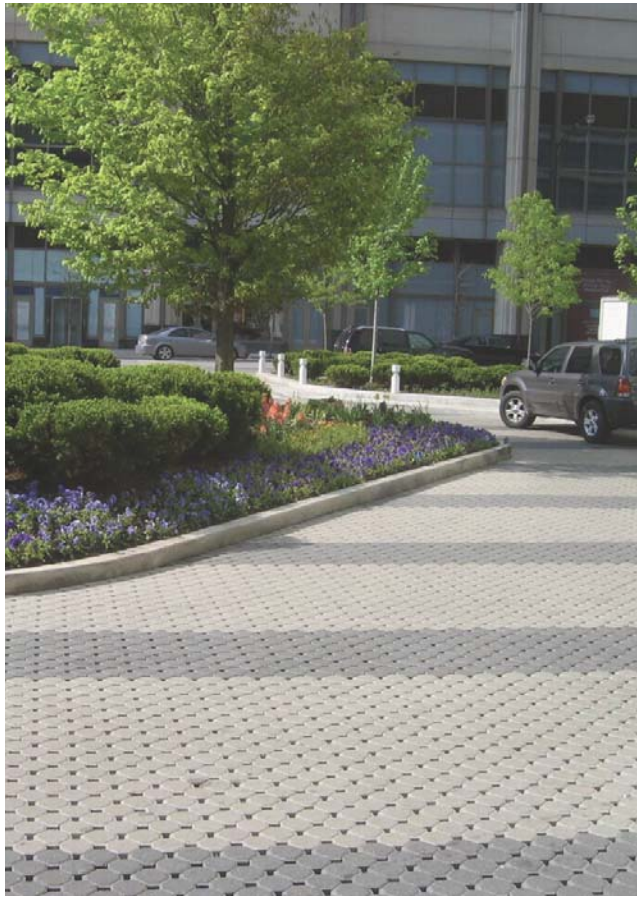
Permeable Pavement

DEFINITION

Permeable or perforated paving materials or pavers with spaces between pavers allow transmission of water to an aggregate base, reducing runoff volume and improving water quality. Runoff is temporarily stored in the base and slowly evaporated and released to storm sewers. Paving blocks and grids, the most common and available type of permeable pavement, are modular systems containing openings filled with gravel or rock chips. Porous pavement, concrete, and asphalt contain larger than typical aggregates and pore space to allow water percolation, but are less common with greater design concerns. Variations on gravel are a third type of permeable practice.

BENEFITS

- Reduces stormwater runoff volumes by 20% or more depending on depth of the aggregate base.
- Reduces stormwater runoff rates, by up to 95%.
- Filters sediments, hydrocarbons, nutrients, and other urban pollutants from runoff and reduces runoff temperatures.
- Can help meet detention requirements and reduce stormwater conveyance and detention infrastructure needs (detention storage can be provided within the gravel base below the surface.)
- Reduces need for deicing salt and salt impacts to water quality.
- Less ponding of water on the driving or parking surface reduces skidding, hydroplaning, and ice buildup.



Rainwater Harvesting and Reuse

DEFINITION

Downspouts from roof runoff can be directed into a vessel specially designed to capture and temporarily store rainwater for various uses, including greywater reuse and landscape irrigation.

BENEFITS

- Reduces runoff volumes from small to moderate rain events and prevents flow into the combined sewer system.
- Conserves water for reuse (e.g. irrigation of lawns and gardens).

III. Funding and Grant Opportunities

FUNDING OPPORTUNITY	POTENTIAL FUNDING RANGE	MATCH	DEADLINE	PURPOSE	POTENTIAL PROJECTS	POTENTIAL REQUEST	WEBSITE
Michigan DNR Grants							
Natural Resources Trust Fund (MNRTF)	Land Acquisition Grants	0% - 50+%	1-Apr 3 Aug	Acquire high quality land for outdoor recreation	High Quality Land Adjacent to Clinton River	No minimum/maximum limits	http://www.michigan.gov/dnr
Natural Resources Trust Fund (MNRTF)	Development Grants	0% - 50+%	1-Apr	Financial assistance for development of land for public outdoor recreation	All Outdoor Recreation Amenities	$15,000 to $500,000	http://www.michigan.gov/dnr/
Michigan Department of Transportation Grants							
Transportation Economic Development Fund (TEDF) Category A		20% Min	Year Around	Encourage economic development and redevelopment efforts that improve the health, safety, and welfare of MI	Tourism, Office centers	No minimum/maximum limits	http://www.michigan.gov/mdot/0,1607,7-151-9621_17216---,00.html
Transportation Enhancement (TE) Program		20% Min	1-Oct	Enhance Michigan's intermodal transportation system and improve the quality of life for MI citizens	Nonmotorized Transportation Transportation Aesthetics Water Quality & Wildlife	No minimum/maximum limits	http://www.michigan.gov/mdot/0,1607,7-151-9621_17216---,00.html
Safe Routes to School (SRTS) Program		None	Year Around	Program to it make safe, convenient and fun for children to bicycle and walk to school.	Sidewalks On-street and off-street bicycle facilities Traffic calming and speed reduction Off-street pedestrian facilities Pedestrian and bicycle crossing improvements	No minimum/maximum limits	http://www.michigan.gov/mdot/0,1607,7-151-9621_17216---,00.html
Small Urban		None	Pending	Transportation Program (STP) funding to areas with a population of 5,000 to 49,999. Road and transit capital	Road and transit capital projects located on the federal-aid highway system	No minimum/maximum limits	http://www.michigan.gov/mdot/0,1607,7-151-9621_17216---,00.html
State Infrastructure Bank (SIB)		20% Min	Pending	Low-interest loan program for tranporation improvements.		Not to exceed $2 million	http://www.michigan.gov/mdot/0,1607,7-151-9621_17216---,00.html
Private/Other Grants							
Volunteer Programs							
Stream Leaders	N/A	N/A	N/A				
Trout Unlimited	N/A	N/A	N/A		Streambank Stabilization		http://www.clintonvalleytu.com/

General Land Survey Notes for Auburn Hillls, Michigan

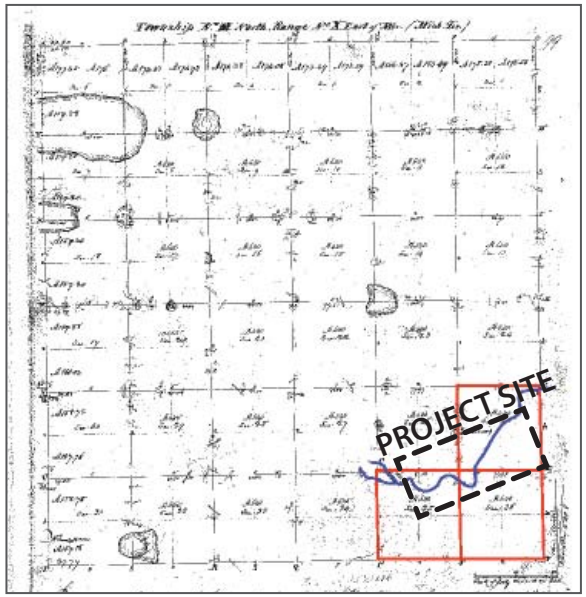
Surveyed by Deputy Surveyor, Joseph Wampler, 1817

T3N R10E

Chains	Feet	
		West on south side of SEC 36
24.36	*1608*	*White Oak, 18"*
40.00	*2640*	*Set Post: White Oak 28"; White Oak 34"*
77.16	*5093*	*White Oak 14"*
80.80	*5280*	*Set Post: White Oak 12"; White Oak 29"*
		Poor stony Oak Land
		West on south side of SEC 35
14.86	*981*	*Run 4 links [2.6'], SE*
24.50	*1617*	*White Oak 38"*
40.00	*2640*	*Set Post: Walnut 17"; White Oak 40"*
63.15	*4168*	*White Oak 23"*
80.00	*5280*	*Set Post: White Oak 28"; Hickory 8"*
		Tolerable White Oak land, with Sas sassafras undergrowth
		North on east side of SEC 36
2.50	*165*	*Entered prairie*
5.00	*330*	*Left prairie*
29.33	*1936*	*Black Oak 24"*
40.00	*2640*	*Set Post: Black Oak 18"; White Oak 16"*
67.71	*3369*	*White Oak 12"*
71.90	*4745*	*Indian Path, east and west*
80.00	*5280*	*Set Post: White Oak 24"; Black Oak 24"*
		Poor hilly oak land
		North on east side of SEC 25
7.47	*493*	*Black Oak 16"*
40.00	*2640*	*Set Post: Black Oak 17"; White Oak 8"*
77.66	*5125*	*"Huron" [Clinton River] 60 links [40'] EAST*
80.00	*5280*	*Set Post: White Oak 18"; White Oak 15"*
		Poor hilly sandy oak land
		North between SEC 35 & SEC 36
40.00	*2640*	*Set Post: White Oak 25"; White Oak 18"*
70.00	*4620*	*"Huron" [Clinton River] 51 links [34'] SE, very rapid*
76.31	*5036*	*White Oak 18"*
80.00	*5280*	*White Oak 36" no other trees near*
		Level good land, Oak, Linden, some undergrowth
		North between SEC 34 & SEC 35
10.64		*Lynn 12"*
12.65		*Brook 3 links [2]] NE*
40.00	*2640*	*Set Post; Aspen 3" (no other trees near) White Oak 14"*
57.74		*Entered wet prairie*
69.50		*Left wet prairie*
75.16		*Set Post: White Oak 24"; White Oak 18"*
80.00	*5280*	
		First half mile tolerable land, the other poor Oak land
		East between SEC 25 & SEC 36
14.50	*957*	*"Huron" [Clinton River] 50 links NORTH rapid*
40.00	*2640*	*Set Post:*
79.98	*5279*	*Intersected Range Line, 12 links Poor hilly land West corrected*
39.99	*2639*	*Moved post: Black Oak 15"; White Oak 18"*
79.98	*5279*	*Section corner [26/25/35/36]*
		North between SEC 25 & SEC 26
8.00	*528*	*Entered prairie*
13.00	*858*	*Left prairie*
23.00	*1518*	*Entered wet prairie*
28.00	*1848*	*Left wet prairie*
30.50	*2013*	*Entered cedar swamp*
37.40	*2468*	*Brook 3 links [2'] EAST*
40.00	*2640*	*Set Post: Cedar 3"; Ash 12"*
40.50	*2673*	*Left cedar swamp*
41.50	*2739*	*Black Oak 24"*
47.50	*3135*	*Entered tamarack swamp*
56.50	*3729*	*Left tamarack swamp*
58.00	*3828*	*Brook 2 links [1.3'] SE*
80.00	*5280*	*Set Post: no bearing trees*
		Poor land, oak, ash, cedar, some undergrowth
		East between SEC 24 & SEC 25
40.00	*2640*	*Set Post: no trees*
80.00	*5280*	*Intersected range line at post.*
		Poor level land very thinly timbered
		East between SEC 26 & SEC 35
9.28	*612*	*"Huron" [Clinton River] 60 links [40'] SE, very rapid*
17.50	*1155*	*Entered farm property*
22.50	*1488*	*Left farm*
40.00	*2640*	*Set Post:*
81.00	5346	Entered N&S line at post Poor land thinly timbered West corrected
40.50	2673	White Oak 24": White Oak 23" [May 8, 1817]
		North between SEC 26 & SEC 27
9.00		"Huron" [Clinton River] 50 links wide
22.00		Indian Path East West
40.00	2640	Set Post: Aspen 12"; Black Oak 15"
40.50		Pond [W 2.500; N 5.00; E 2.5]
80.00.	5280	Set Post: White Oak 10"; Hickory 11"
		Poor land badly timbered

T3N R11E

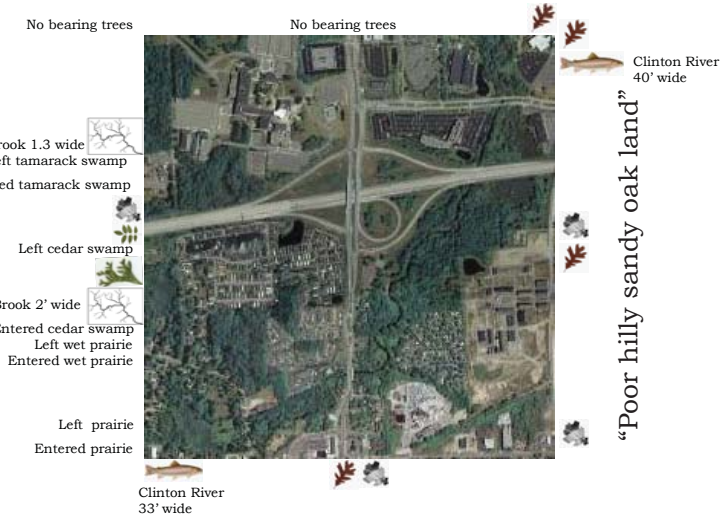
		West on south side of SEC 31
9.00	594	Left farm property
9.08	599	Ironwood 11"
33.48	2210	White Oak 22"
40.00	2640	Set Post: White Oak 10"; White Oak 14"
80.00	*5280*	*Set Post: White Oak 20"; White Oak 19" White Oak Land*
		West between SEC 30 & SEC 31
7.00	*462*	*Entered swamp*
23.50	*1551*	*Left swamp*
24.73	*1632*	*White Oak 15"*
40.00	*2640*	*Set Post: White Oak 24"; White Oak 18"*
79.88	*5272*	*Intersected range line 92 links north of post*
		Set Post: White Oak 16"; Black Oak 18"
		Poor hilly land
		West between SEC 19 SEC 30
40.00	2640	Set Post: White Oak 8"; White Oak 12"
80.00	5280	Intersected west line 50 links south of post Set Post: White Oak 18"; White Oak 7"
		Poor land badly timbered



Sec 25, T3N R10E

"Poor level land very thinly timbered"

"Poor land, oak, ash,cedar some undergrowth"



"Poor hilly sandy oak land"

"Poor hilly land"

Sec 35, T3N R10E

"Poor land thinly timbered"

"First half mile tolerable land, the other poor Oak land

"Level good land, Oak, Linden, some undergrowth"

"Tolerable White Oak land, with undergrowth Sassafras"

Sec 36, T3N R10E

"Poor hilly land"

"Level good land, Oak, Linden, some undergrowth"

"Poor hilly oak land"

"Poor stony Oak land"

Auburn Hills Riverwalk Master Plan

October 13, 2009