



CHANDLER PARK STORMWATER MANAGEMENT PLAN

DESIGN SUMMARY

CONNECTIONS

- Activate Frankfort St. and the south side of the park by providing more pedestrian routes with clear visibility and strong connections to neighborhoods. The community gardens help form that connection.
- Provide direct vehicular access to Frankfort St. and Anderson Avenue creating a strong visual connection to the heart of the park.
- Encourage pedestrian circulation along Frankfort St. by providing sidewalks, street trees and parking.
- Create stronger visual connection between golf course and park.
- Connect greenways and trails from Conner and St. Jean through park to Dickerson and beyond.

CHANDLER PARK DRIVE

- Provide 10' wide off road path linking Chandler Park and residential neighborhoods to Conner Creek Greenway, according to AASHTO Standards.
- Retain road profile, accommodate parallel parking, two way traffic and bike lanes.
- Bump outs at pedestrian crossings slow traffic and delineate parking areas.
- Utilize roundabouts to slow traffic while providing efficient traffic circulation and wayfinding.

THE MEADOWS

- Main picnic area - improve picnic facilities with "picnic pods" - grills, tables, trash, prep table and horseshoe pits in one localized area.
- Provide play structure for children.
- Provide group picnic pavilions with electricity and water.
- Parts of area are sown with native meadow plants. Consider burning yearly as part of educational curriculum or only mow twice a year.
- Other areas will be regularly mowed in main picnic areas.
- Scattered tree emphasizes natural prairie succession.

THE MARSHLANDS

- Restore native wet environment.
- Consider "daylighting" old creek.
- Major educational element regarding blue/green infrastructure and healing the natural environment.
- Establish different types of ecosystems.
- Create paths and pavilions to bring users closer to the plants and water.

GATEWAYS

- Enhance entrance into park at both ends with signage and landscaping.
- Use uniform materials as in the rest of the park and at school.
- Create wayfinding for whole campus.

HISTORIC COMFORT STATION

- Repair, restore and enhance building.
- Expand - adding informational services and additional programming.

CITY MAINTENANCE FACILITY

- Evaluate how much area the facility needs.
- Connect to surrounding campus.
- Keep area tidy and clean.
- Improve landscaping.
- Provide opportunity for green maintenance education.

- Basketball courts - highly visible/accessible yet separated from family picnic areas.
- concession stands & restrooms

CITY MAINTENANCE FACILITY

Parking accommodates school and athletic facilities

CHARTER SCHOOL / GYMNASIUM / COMMUNITY CENTER

- Utilize green technology: native landscaping, and gardens to facilitate sustainability while providing ecological educational opportunities.
- Utilize native plantings from Frankfort St. to park entrance on Conner to link/emphasize sustainable philosophy and indicate educational and recreational uses within park.
- Use similar materials on building and entrances to park.
- Capitalize on prominent location and visibility of Conner St. frontage. Establish a strong presence in the community while integrating sports facilities into campus-like atmosphere of Chandler Park: includes football/soccer field, baseball, softball and tennis facilities with concessions.
- Improve the health and fitness of residents at the Samaritan Center. Provide direct pedestrian access to fitness classrooms etc.

CHARTER SCHOOL/ GYMNASIUM AND COMMUNITY CENTER

native plantings

educational gardens/playground

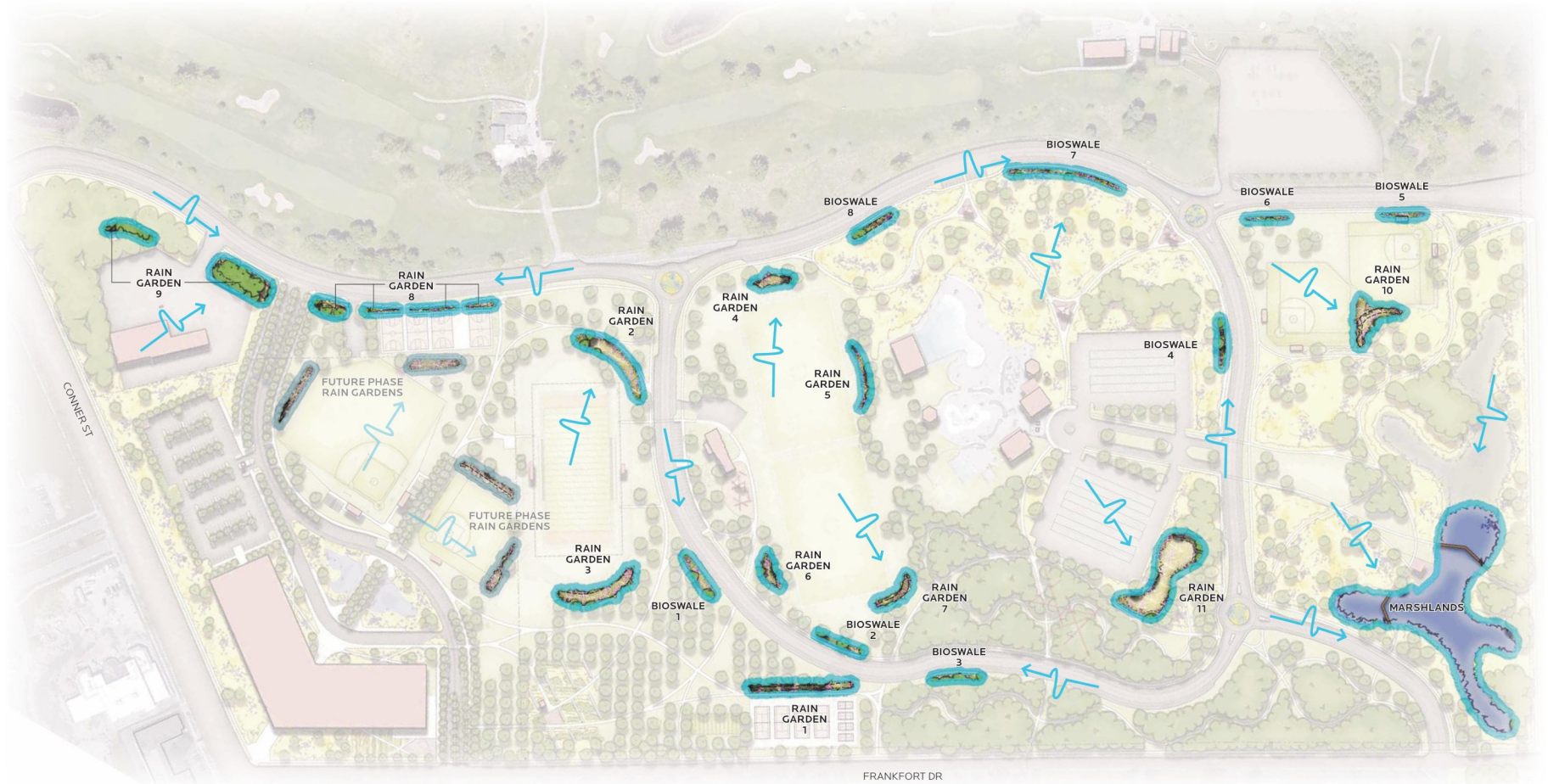
iconic structure to provide visual anchor at Conner & Frankfort

PEDESTRIAN PATHS

- Provide pedestrian paths linking use areas while activating the heart of the park.
- Utilize pedestrian paths to organize spaces and uses while establishing clear site lines and enhancing safety and access between use areas.



Chandler Park CONCEPTUAL MASTER PLAN

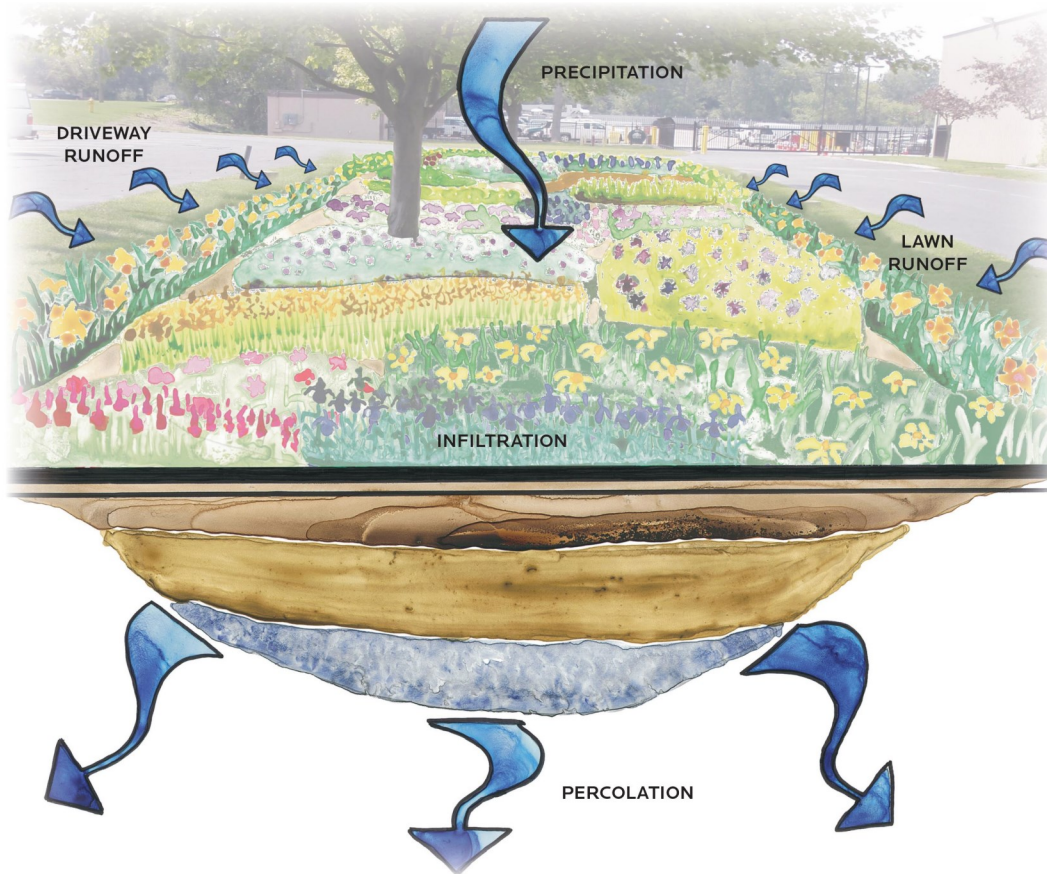


STORMWATER DETENTION AREAS

- Capacity to collect the first 1" of stormwater runoff from recreational facilities, roads, and parking lots
- Native plants filter contaminants out of stormwater and provide wildlife habitat
- Filtered, cleaner stormwater infiltrates slowly into the ground and replenishes groundwater
- Infiltrated stormwater is kept out of the combined sewer system, relieving stress on the combined sewer system

CHANDLER PARK MASTER PLAN STORMWATER MANAGEMENT PLAN

SEPTEMBER 2015 | 7



What is a Rain Garden?

A Rain Garden has four primary functions in the landscape:

- INFILTRATION
- WATER QUALITY
- HABITAT
- AESTHETICS



PLANTING PLAN TYPE "A" EXAMPLE

Rain Garden & Bioswale Planting

Rain gardens and bioswales are generally planted with native plants due to their positive contribution to habitat, resilience to fluctuations in precipitation, and hardiness throughout harsh changes in seasonality. However, in the absence of a careful planting plan and proper maintenance, these native plant gardens can have a weedy appearance. In some locations, a weedy appearance may be appropriate and this more cost-effective option may be

implemented. In more formal, higher-density locations, a more maintained aesthetic may be desired.

Planting Plan Type A

Planting Plan Type A uses all plugs rather than seed for plant material. The plants are grouped to provide intentional swaths of color, and groupings overlap little. Planting Plan Type A has a higher maintenance requirement and a higher installation cost than Planting Plan Type B.



PLANTING PLAN TYPE "B" EXAMPLE

Planting Plan Type B

Planting Plan Type B uses a mixture of plugs and seed for plant material. The plants are randomly distributed around the rain garden, and not grouped. Individuals of different species are all mixed together as they would be in a naturally-occurring prairie. Planting Plan Type B has a lower maintenance requirement and a lower installation cost than Planting Plan Type A.

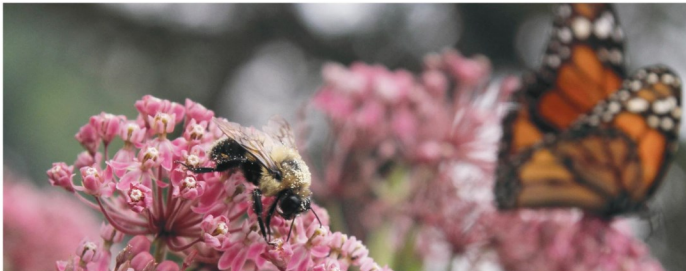
Infiltration

Rain gardens and bioswales catch stormwater, slow it down, and allow it to infiltrate into the ground. Groundwater seeps slowly to rivers, lakes, and streams preventing flash floods and drought events. Infiltrated stormwater can be used by plants and recharges the groundwater. Keeping stormwater out of the municipal combined sewer system reduces the pressure on the already burdened system and reduces the number of combined sewer overflows (CSOs) that occur that send untreated stormwater directly into natural rivers and streams.



Water Quality

Fast moving water carries sediment and contamination to our rivers, lakes, and streams. Rain gardens and bioswales filter sediment and contaminants from stormwater and keeps them out of natural ecosystems. Reductions in CSOs keeps bacterial contamination out of natural ecosystems.



Habitat

Native wetland flowering plants provide nectar for insects and hummingbirds, and their leaves and seeds are a source of food for many species. Native plants provide structure and habitat for birds, small mammals and insect species. Many flowering wetland plants are host plants for butterflies and moths. Host plants are specific plants required by caterpillars for food.



Aesthetics

When maintained properly, rain gardens are beautiful. Many native wetland plants have beautiful and fragrant flowers, that not only appeal to the appetite of nectar-loving wildlife but also appeal to us! Like any garden, a rain garden must be weeded and cared for, but once established, a rain garden does not need to be watered!

WETLAND MARSH

- STORES ON-SITE SURFACE STORMWATER RUNOFF
- REDUCES IMPACT ON MUNICIPAL COMBINED SEWER SYSTEM
- NATIVE WETLAND PLANTS PROVIDE HABITAT FOR BIRDS, SNAKES, AMPHIBIANS, POLLINATORS AND DRAGONFLIES
- REMOVES POLLUTANTS AND CONTAMINANTS FROM STORMWATER

OBSERVATION PLATFORM

- BOARDWALK NETWORK WITH OVERLOOK
- BENCHES
- INFORMATIONAL SIGNAGE

EVENTS LAWN

- LARGE OPEN STAGING AREA FOR COMMUNITY EVENTS & GATHERINGS

PICNIC PAVILION/OUTDOOR CLASSROOM

- SHADE PAVILION
- PICNIC TABLES
- EDUCATIONAL WORK STATIONS
- OVERLOOK AREA WITH EDUCATIONAL SIGNAGE

WETLAND SHELF

- AVAILABLE FOR STORMWATER STORAGE DURING LARGER STORM EVENTS
- DRY MOST OF THE YEAR
- NATIVE PLANTS PROVIDE HABITAT FOR POLLINATORS AND DRAGONFLIES

EXISTING WATER PARK

EXISTING BASEBALL FIELDS

SURFACE RUNOFF

INTERACTION ZONE

NATURAL HABITAT
OBSERVATION PLATFORM

SURFACE RUNOFF

KEY MAP



CHANDLER PARK MASTER PLAN WETLAND MARSH CONCEPT

CHANDLER PARK STORMWATER CAPITAL COST ESTIMATE

Feature	Size	Units	Budget Estimate		
			Construction	Engineering	Total
RAIN GARDEN 1-Tennis Courts, Planting Type A	3,758	sq ft	\$50,838	\$7,626	\$58,464
RAIN GARDEN 2 -Football N, Planting Type A	6,653	sq ft	\$85,337	\$12,800	\$98,137
RAIN GARDEN 3 -Football S, Planting Type A	5,203	sq ft	\$70,771	\$10,616	\$81,387
RAIN GARDEN 4 -Soccer N, Planting Type B	2,029	sq ft	\$23,318	\$3,498	\$26,816
RAIN GARDEN 5 -Soccer NE, Planting Type B	2,230	sq ft	\$25,651	\$3,848	\$29,499
RAIN GARDEN 6 -Soccer SE, Planting Type A	1,875	sq ft	\$26,109	\$3,916	\$30,025
RAIN GARDEN 7 -Soccer SW, Planting Type B	1,661	sq ft	\$20,371	\$3,056	\$23,427
RAIN GARDEN 8 -Basketball & Parking, Planting Type A	5,803	sq ft	\$81,597	\$12,240	\$93,837
RAIN GARDEN 9 • Maintenance Yard, Planting Type B	11,926	sq ft	\$147,329	\$22,099	\$169,428
RAIN GARDEN 10 • Youth Softball, Planting Type B	2,107	sq ft	\$16,111	\$2,417	\$18,528
RAIN GARDEN 11• Aquatic Center Parking Lot, Planting Type B	16,890	sq ft	\$174,621	\$26,193	\$200,814
BIOSWALE 1• Football Field	2,800	sq ft	\$31,639	\$4,746	\$36,385
BIOSWALE 2 -Tennis Courts	1,804	sq ft	\$20,899	\$3,135	\$24,034
BIOSWALE 3 • Soccer South	1,804	sq ft	\$20,884	\$3,133	\$24,017
BIOSWALE 4 -Youth Ball Field SW	1,804	sq ft	\$20,921	\$3,138	\$24,059
BIOSWALE 5 -Youth Ball Field NE	1,305	sq ft	\$15,532	\$2,330	\$17,862
BIOSWALE 6 • Youth Ball Field NW	1,120	sq ft	\$13,565	\$2,035	\$15,600
BIOSWALE 7 -Chandler Park Drive East	3,590	sq ft	\$40,135	\$6,020	\$46,155
BIOSWALE 8 -Chandler Park Drive West	1,665	sq ft	\$19,426	\$2,914	\$22,340
MARSH AND DRAINAGE SWALES	3.59	acres (wet & dry)	\$1,369,570	\$205,436	\$1,575,006
EVALUATION/MEASUREMENT of Result of Creating a			\$0	\$100,000	\$100,000
Total			\$2,274,624	\$441,196	\$2,715,820

Notes:

Includes 25% contingency on construction costs

Engineering includes design and construction oversight at 15% Items not included in costs:

- o Contaminated soil handling o Disposal of excavated soil o Dewatering
- o Permitting

CHANDLER PARK STORMWATER MAINTENANCE COST ESTIMATE

Feature	Size (SF)	Maintenance Level	Regular Annual Maintenance Costs	Corrective Annual Maintenance Costs	Total
RAIN GARDEN 1- Tennis Courts, Planting Type A	3,758	High	\$ 2,376.00	\$ 1,800.00	\$ 4,176.00
RAIN GARDEN 2 - Football N, Planting Type A	6,653	High	\$ 4,236.00	\$ 3,000.00	\$ 7,236.00
RAIN GARDEN 3 - Football S, Planting Type A	5,203	High	\$ 3,368.00	\$ 2,600.00	\$ 5,968.00
RAIN GARDEN 4 - Soccer N, Planting Type B	2,029	Medium	\$ 692.00	\$ 1,070.00	\$ 1,762.00
RAIN GARDEN 5 - Soccer NE, Planting Type B	2,230	Medium	\$ 754.00	\$ 1,170.00	\$ 1,924.00
RAIN GARDEN 6 - Soccer SE, Planting Type A	1,875	High	\$ 1,260.00	\$ 900.00	\$ 2,160.00
RAIN GARDEN 7 - Soccer SW, Planting Type B	1,661	Medium	\$ 568.00	\$ 800.00	\$ 1,368.00
RAIN GARDEN 8 - Basketball & Parking, Planting Type A	5,803	High	\$ 3,740.00	\$ 2,500.00	\$ 6,240.00
RAIN GARDEN 9 - Maintenance Yard, Planting Type B	11,926	Medium	\$ 3,730.00	\$ 6,000.00	\$ 9,730.00
RAIN GARDEN 10 - Youth Softball, Planting Type B	2,107	Medium	\$ 692.00	\$ 1,000.00	\$ 1,692.00
RAIN GARDEN 11- Aquatic Center Parking Lot, Planting Type B	16,890	Medium	\$ 5,280.00	\$ 7,856.00	\$ 13,136.00
BIOSWALE 1- Football Field	2,800	Medium	\$ 878.00	\$ 1,400.00	\$ 2,278.00
BIOSWALE 2 - Tennis Courts	1,804	Medium	\$ 630.00	\$ 900.00	\$ 1,530.00
BIOSWALE 3 - Soccer South	1,804	Medium	\$ 630.00	\$ 900.00	\$ 1,530.00
BIOSWALE 4 - Youth Ball Field SW	1,804	Medium	\$ 630.00	\$ 900.00	\$ 1,530.00
BIOSWALE 5 - Youth Ball Field NE	1,305	Medium	\$ 444.00	\$ 600.00	\$ 1,044.00
BIOSWALE 6 - Youth Ball Field NW	1,120	Medium	\$ 382.00	\$ 500.00	\$ 882.00
BIOSWALE 7 - Chandler Park Drive East	3,590	Medium	\$ 1,126.00	\$ 1,500.00	\$ 2,626.00
BIOSWALE 8 - Chandler Park Drive West	1,665	Medium	\$ 568.00	\$ 800.00	\$ 1,368.00
MARSH AND DRAINAGE SWALES	156,380	Medium	\$ 15,000.00	\$ 1,000.00	\$ 16,000.00
Total	232,407		\$ 46,984.00	\$ 37,196.00	\$ 84,180.00

Notes:

Regular Medium Maintenance Costs for rain gardens and bioswales include once a year maintenance event,2 hours of labor, 2 people per 200 SF of

Regular Maintenance Costs for marsh includes once a year maintenance event, invasive species treatment based on area 30% of marshland is assumed to be vegetated

Corrective Maintenance Costs for marsh includes sediment removal once every 10 years

TOTAL Capital & Maintenance	\$	2,800,000.00
TOTAL Operations	\$	200,000.00
	\$	3,000,000.00



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