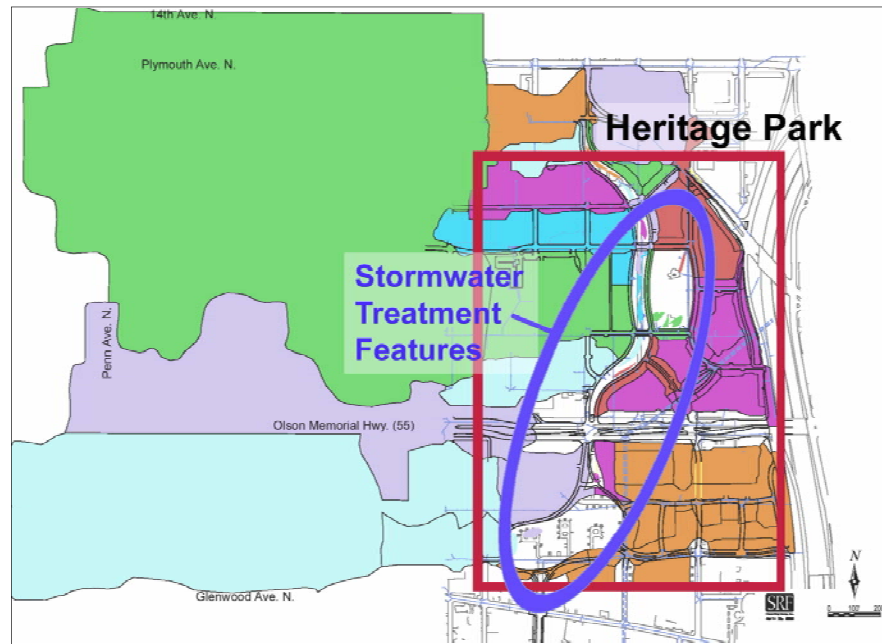


The Big Picture

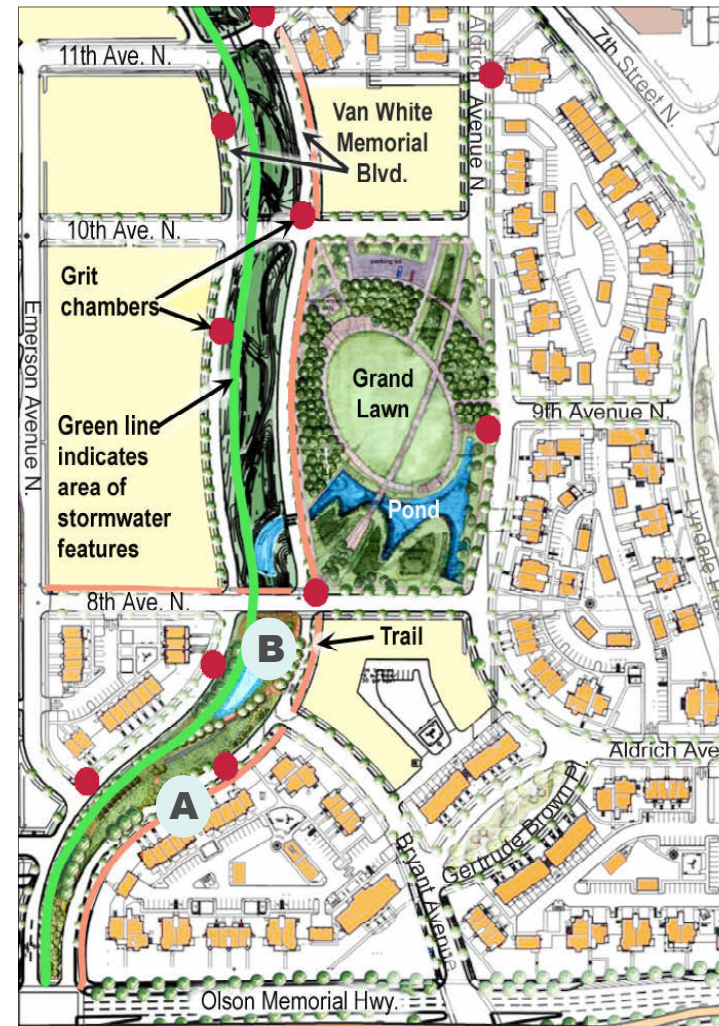
In addition to providing stormwater management for the immediate project area (about 140 acres, outlined below in red rectangle), the Heritage Park system will help clean runoff from hundreds of additional acres of residential and commercial land to the north and west. The colored areas shown here indicate the various subwatersheds, or drainage areas, that will contribute water to the Heritage Park system. Prior to redevelopment, stormwater from these areas flowed straight to the Mississippi through underground pipes, so that sediment, road salts, phosphorus and other pollutants flowed directly into the river as well. The Heritage Park stormwater treatment system, with its filtration devices and basins, is designed to remove 70% of suspended solids (the main target of this stormwater project) as well as reduce total phosphorus and metals. The result is cleaner water downstream and thus better habitat for fish and other wildlife.



Subwatersheds are indicated in color. The redevelopment area is outlined in red rectangle.

The design for the stormwater system harkens back to the natural history of the area, which was once dominated by wetlands and a meandering Bassett Creek. Heritage Park seeks to restore some of the hydrologic function of those natural systems, while creating attractive open space that fits into the urban fabric.

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The locations represented in the drawings below are indicated by letter on the map. Red dots show grit chamber locations. Orange = residential rental buildings. Yellow = future locations of for-sale housing.

A Stormwater Glossary

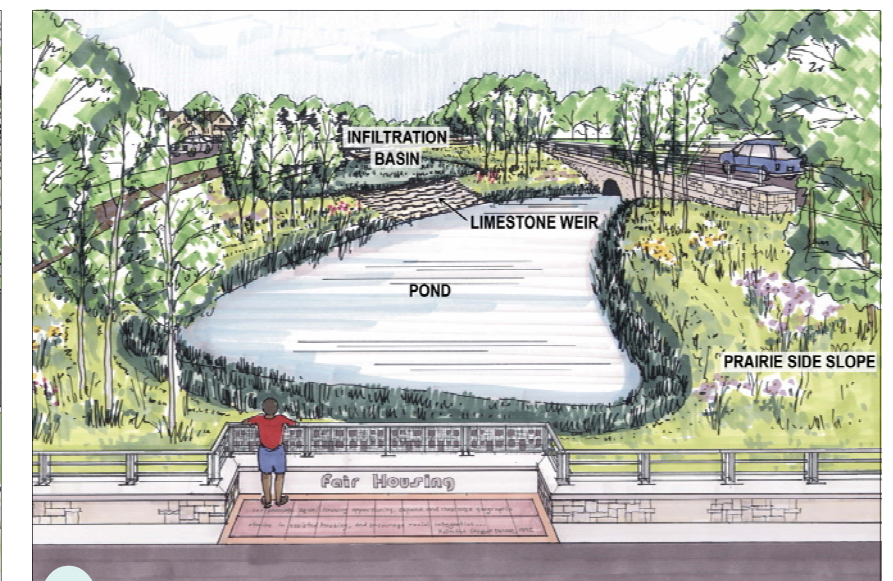
- Runoff.** Rainwater that enters stream channels by passing over lawns, streets, buildings and other surfaces rather than soaking into the ground.
- Impervious surface.** Any surface, such as a road, sidewalk or rooftop, that cannot effectively absorb or infiltrate rainfall.
- Infiltration.** A natural process in which water percolates into the subsoil and replenishes groundwater.
- Filtration.** Any number of processes that help cleanse water of sediments and other pollutants. At Heritage Park, filtration is accomplished by routing stormwater through plants and upper layers of soil.
- Level spreader.** An engineered device to dissipate water velocity and prevent erosion by spreading flow out over a wider area.
- Non-point-source pollution.** A cumulative type of pollution that comes from a wide range of sources, such as streets, parking lots and yards. The target of the Heritage Park treatment system.
- Phosphorus.** An essential plant nutrient that, when occurring in unnatural quantities, contributes to excess algae growth in water bodies. Phosphorus sources include some fertilizers, animal wastes and decaying leaves on roads.
- Sediment.** Mineral or organic particles that have been moved from their site of origin by air, water, gravity or ice. When suspended in stormwater, sediment ends up in lakes and rivers, where it can disrupt normal flow and impair water clarity.

The Cleaning Components

- Grit chambers.** Large, below-ground concrete structures designed to remove large particles and debris from stormwater. Water flows via pipes into each device through a stainless steel screen, which filters out sediment and other particles and allows them to settle at the bottom of the chamber. A vacuum truck periodically cleans out the settled material.
- Trench forebays.** Linear, above-ground cleaning devices, located immediately upslope of the infiltration basins. Pipes route stormwater into these low areas, which are defined by concrete and planted with bulrushes, cordgrass and other wetland plants. Here, more sediment drops out, to be scooped out by machine about every five years.
- Filtration basins.** The end of the treatment line, these shallow planted areas further clean water by encouraging it to pass into the soil, through to a layer of clay soil, then laterally underground to the park's open ponds. Plants are a critical part of the process: Aboveground, leaves and stems prevent water from moving too quickly and causing erosion. Below, plant roots form tiny channels in the soil, thus increasing filtration rates and helping remove phosphorus and other pollutants.



A Looking north, toward wet basin in distance. Filtration basins, with rock channel, in foreground.



B A view from the 8th Avenue bridge, toward west arm of pond.



A native prairie



Prairie dropseed



Stiff goldenrod



Purple prairie clover

The Plants

The Heritage Park stormwater treatment system employs more than 40 species of native plants to help filter sediment and other pollutants that are washed off of roads, sidewalks, rooftops and yards when it rains. Planted areas also act as sponges to absorb some of the rainwater that comes their way, and to dissipate the erosive energy of water flowing through them. Fortunately, these plants are not only functional, but beautiful year-round.

Plants were selected to suit specific site conditions, which range from dry, sunny uplands to frequently inundated basins. One of the plants' strategies for survival lies in their often extensive root systems. Deep-rooted prairie plants, for example, seek water far below ground, while moisture-loving species may send out dense lateral rhizomes. Both are excellent for stabilizing soils and helping water infiltrate.

Many of the native species in Heritage Park will spend their early energy in establishing root systems, so their leaves and flowers may not be very conspicuous right away. (It takes at least three years for most native plantings to mature.) Furthermore, non-native weeds will do their best to dominate the area, by sprouting extra early in spring and producing numerous seeds. That is why you'll notice the basins and slopes being mowed from time to time; this helps keep the area open for the slower-to-emerge natives and cuts off weed seedheads before they mature.



Golden alexander

Plant highlights

Prairie
(drier side slopes)
Prairie sage
Butterfly weed
Purple prairie clover
Purple coneflower
Rough blazingstar
Gray goldenrod
Stiff goldenrod
Prairie dropseed
Hoary vervain
Heartleaf alexander

Filtration Basins
New England aster
Swamp milkweed
Hummock sedge
Boneset
Great blue lobelia
Wild bergamot
Black-eyed Susan
Prairie cordgrass
Blue vervain
Culver's root
Golden alexander

A Dynamic Landscape

- Pay a visit during a heavy rainstorm, and you'll see water coursing over the limestone weirs and dry rock channels, and temporarily filling the basins.
- Walk by a week after that rainfall, you'll see lush plant growth, but no standing water.
- After several hot weeks without rain, some of the plants may look dry, while others seem just fine. If drought persists, some may produce flowers earlier than normal, or go dormant. This is as it should be — the prairie and wet meadow communities change their appearance and behavior to suit the changing conditions.
- On a windy winter afternoon, notice snow making sculpture of the mounded grasses while a hungry chickadee picks out seeds.

Brochure designed for the City of Minneapolis by Barr Engineering Company. Engineering and Landscape Design by SRF Consulting Group, Close Landscape Architects, Wenk Associates, Inc. and Barr. For more information on Heritage Park, visit http://www.mcda.org/development_projects/housing/Neighborhood/heritage/home.htm

City of Minneapolis Heritage Park: Treating Stormwater Differently



In typical urban settings, stormwater hits the ground or pavement, then quickly flows out of sight through a series of buried pipes, eventually becoming part of a river or lake. In Heritage Park, stormwater is treated differently. Rather than something to be disposed of, stormwater becomes a resource to be cleansed and enjoyed. While Heritage Park still uses below-ground treatment and conveyance systems, much of the water remains visible on the surface, as it passes through above-ground filtration structures and lush planted basins that also help clean the water. This combination of treatment techniques means improved water quality released to the Mississippi River and retained in new ponds. Think of the stormwater treatment system in Heritage Park as the "spine" of the new development, providing not only cleaner water, but a linear park that adds value and beauty to the neighborhood.

Above, a view of the future walk north toward the Grand Lawn, with filtration basins on both sides of the walkway. Arrows show the direction of stormwater flow through a dense "garden" of native plants. In addition to helping clean the water, the planted basins and open ponds provide safe storage for water that once flooded lawns and sidewalks in the neighborhood.

Turtle image derived from one of the park's decorative railings designed by Seitu Jones

