CITY OF ROSEMOUNT:

STORMWATER MANAGEMENT PLAN

CLAUSEN // LYBECK // THILL // WALSH

PROJECT PURPOSE

- TO HELP THE CITY OF ROSEMOUNT BETTER UNDERSTAND STORMWATER SYSTEMS.
- TO IDENTIFY WHAT WILL WORK BEST FOR THEM.
- TO RESEARCH TRADITIONAL PRACTICES FOR MANAGING STORMWATER.
- TO RESEARCH NEW BEST MANAGEMENT PRACTICES FOR STORMWATER INFILTRATION.
- PROVIDE RECOMMENDATIONS.
- PROVIDE COMMUNITY ENGAGEMENT IDEAS.

TRADITIONAL PRACTICES

CURB AND GUTTER SYSTEMS

- HAVE BEEN AROUND FOR THOUSANDS OF YEARS
- THEY DON'T DO A GOOD JOB OF CLEANING THE STORMWATER
- TYPICALLY OVER ENGINEERED
- LEADS TO HIGH COSTS OF INSTALLATION. TYPICALLY $11,000-$15,000 PER 500 LINEAR FEET.

BEST MANAGEMENT

PRACTICES

SMALL SCALE BMP'S

PERMEABLE PAVEMENT

- SMALL PAVERS ALLOW WATER TO INFILTRATE INTO STORAGE RESERVOIR BELOW.

- DIFFERENT TYPES: CAN BE PAVER SYSTEMS OR POURED SYSTEMS LIKE CONCRETE.

- VERY EFFECTIVE AT TREATING WATER ON SITE.

- DRAWBACKS INCLUDE:
  - -UPFRONT COSTS
  - -MAINTENANCE
  - -CLIMATE CONTROLLED ISSUES

GREEN ROOF // BLUE ROOF

- STRUCTURALLY DESIGNED ROOFTOP SYSTEM
- HELPS TO PREVENT ROOF RUNOFF
- CUTS BACK ON ENERGY COSTS OF HEATING AND COOLING.
- PROVIDES HABITAT FOR POLLINATORS AND SMALL BIRDS.
- CHICAGO CITY HALL:
  - -20,300 SQ FT THAT ABSORBS 75% OF 1 INCH RAINFALLS
- DRAWBACKS INCLUDE:
  - -MOST NEED RE-ENGINEERING
  - -NOT AS EFFECTIVE IF PLANT MATERIAL DIES

COLLECTION

- PRESERVATION SYSTEM OF WATER.
- DEPENDING ON THE SYSTEM MAY BE SMALL SCALE.
- WATER CAN BE REUSED FOR IRRIGATION, GREY WATER PURPOSES.
- SHEPPARD CREEK PROJECT, OHIO
  - -CURRENTLY HAS 100 RAIN BARRELS, REDUCES RUNOFF BY 28%.
- DRAWBACKS INCLUDE:
  - -SMALL SCALE
  - -VOLUMES VARY

RAIN GARDENS // BIOSWALES

- SMALLER SCALE SYSTEMS THAT ARE EFFECTIVE AND CHEAP.
- HELP TO REMOVE SELECT POLLUTANTS FROM RUNOFF.
- PROVIDES AESTHETIC APPEAL TO NEIGHBORHOODS.
- PROVIDES SAFE BUFFER ZONES FOR PEDESTRIANS.
- DRAWBACKS INCLUDE:
  - -HARD TO MAINTAIN LARGE SYSTEMS OF RAIN GARDENS
  - -LIMITED IN THE AMOUNT OF WATER THEY CAN TREAT

Rain Garden impervious drainage area to treatment facility ratio = 5:1
Bioswale impervious drainage area to treatment facility ration = up to 15:1
For 5 - 10yr storm events

LARGE SCALE BMP'S

CONSTRUCTED WETLANDS

- PART OF THE SYSTEM IS PERMANENTLY SUBMERGED BY WATER.
- TAKES ON CHARACTERISTICS OF DISTINCT ECOSYSTEMS.
- CREATE AREAS FOR RECREATION, ADDING TO LAND VALUE.
- ACT AS NATURAL SPONGES AND FILTERS OF STORMWATER.
- DRAWBACKS INCLUDE:
  - -LARGE FOOTPRINT WITHIN THE LANDSCAPE
  - -LARGE INVESTMENT OF CAPITOL WITH LITTLE RETURN
  - -MAY BE UNSIGHTLY TO SOME DURING DORMANT MONTHS

WATER QUALITY CHANNELS

- LARGER VERSION OF A BIOSWALE.
- DESIGNED TO BE AESTHETICALLY PLEASING BUT YET FUNCTIONAL.
- CONTAIN 3 COMPONENTS:
  - -WET BIOSWALES
  - -CHANNELIZED WATER FLOW
  - -SEDIMENT POOLS
- THORNTON CREEK, SEATTLE WA:
  - -USED TO SLOW RUNOFF BEFORE IT ENTERS THE CREEK
- DRAWBACKS INCLUDE:
  - -LARGE AREA FOOTPRINTS
  - -COSTLY

RETENTION // DETENTION PONDS

- WET RETENTION PONDS ARE DESIGNED TO COLLECT AND PERMANENTLY HOLD STORMWATER.

- DRY RETENTION PONDS ARE DESIGNED TO TEMPORARILY STORE WATER BEFORE IT IS RELEASED TO THE GREATER SYSTEM.

- TYPICAL SYSTEMS CAN HOLD THOUSANDS OF GALLONS OF WATER.

- DRAWBACKS INCLUDE:
  - -LARGE FOOTPRINTS
  - -UNDEVELOPABLE LAND
  - -MAY CREATE “SWAMPY” ODOR

MULTIUSE AREAS

- FLEXIBLE AREAS THAT COLLECT STORMWATER AND ACT AS RECREATION AREAS.

- COMMON IN URBANIZED AREAS WHERE SPACE IS LIMITED.

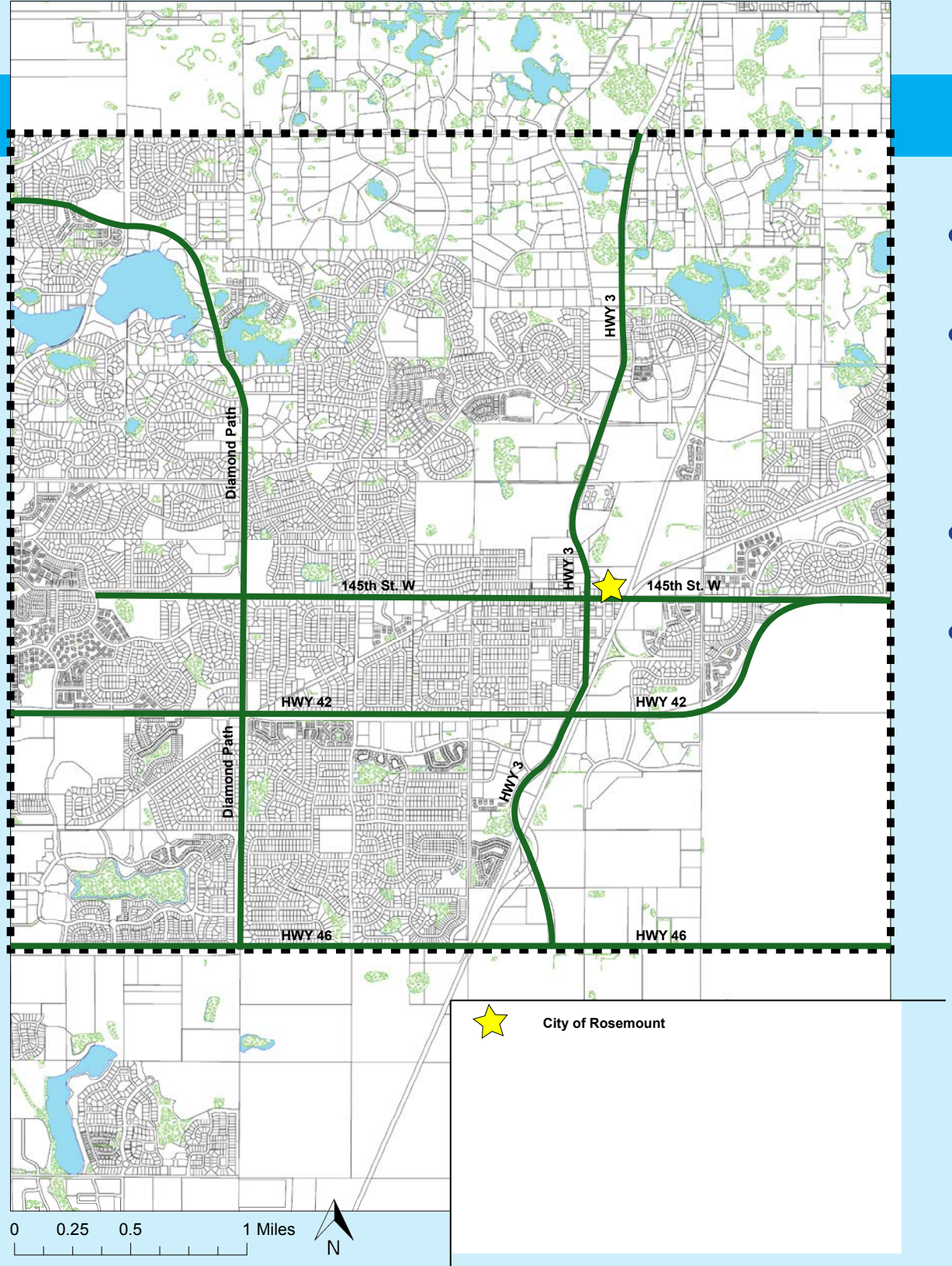
- TYPICAL AREAS USED ARE:
  - -BALL FIELDS
  - -PARKING LOTS
  - -ROOFTOPS (BLUE ROOF)

- DRAWBACKS INCLUDE:
  - -MUDDY PARKS
  - -UNUSABLE SPACE AFTER RAIN EVENT
  - -ADDITIONAL MAINTENANCE DUE TO DUAL PURPOSE

WHATS BEST

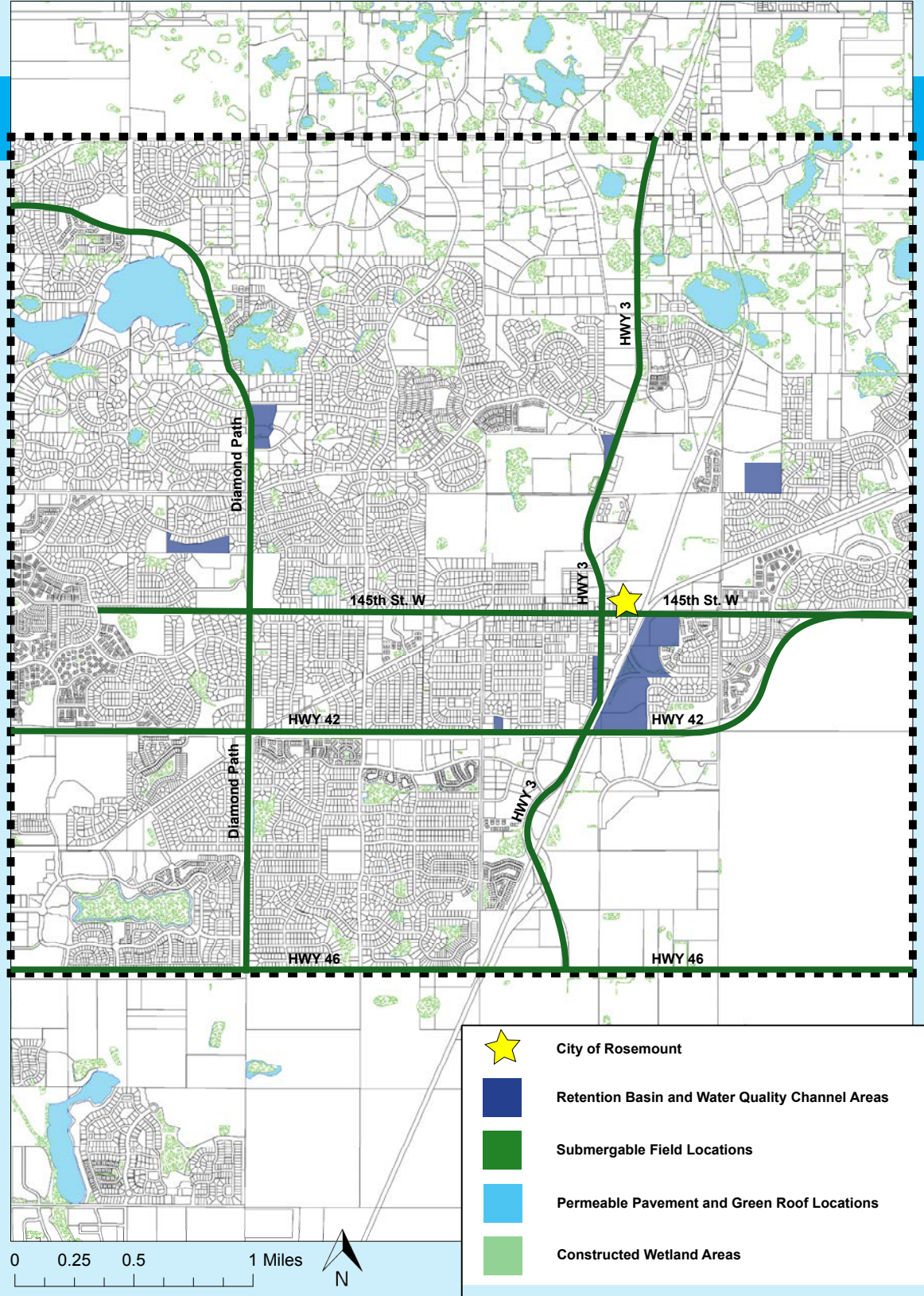
FOR ROSEMOUNT

CITY LOCATION



- CITY OF ROSEMOUNT
- LOCATED 15 MILES SOUTHEAST OF THE TWIN-CITIES.
- POPULATION: 22,000
- CURRENTLY HAS AN INFILTRATION BASED STORMWATER SYSTEM.

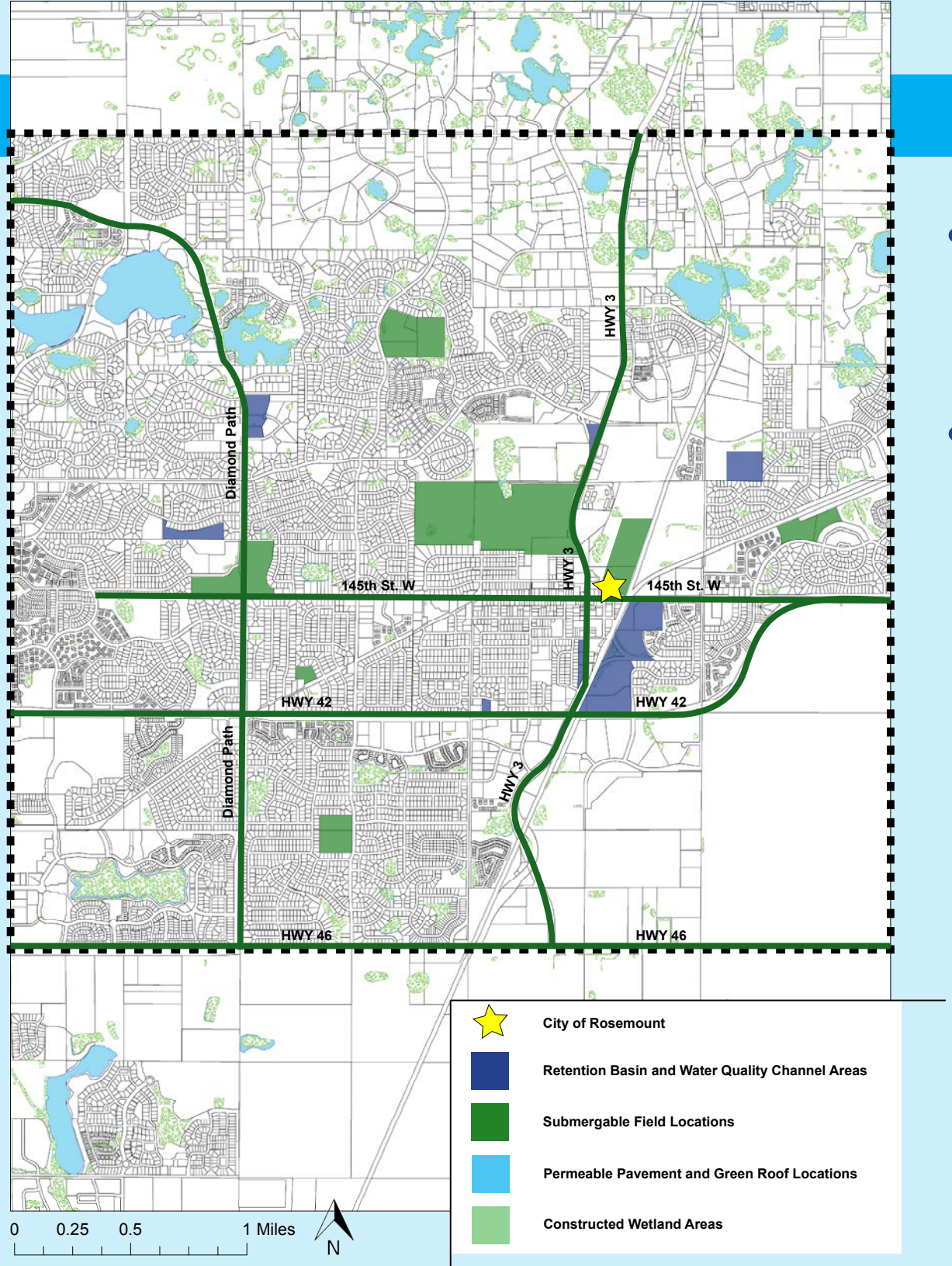
BIORETENTION



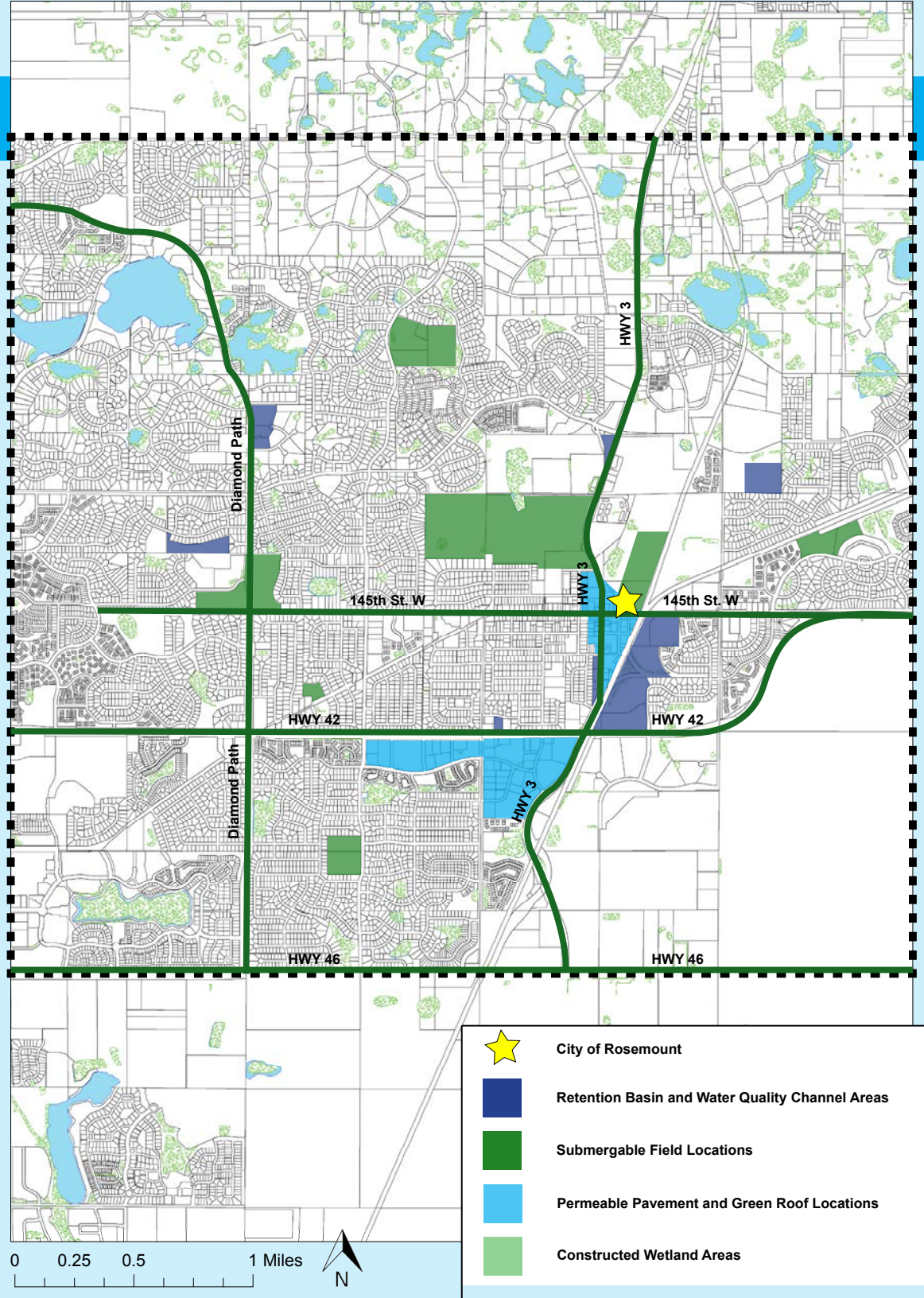
- AREAS IN BLUE SHOW IDEAL LOCATIONS FOR BIORETENTION AREAS.
- CHOSEN USING SATELLITE IMAGING SOFTWARE AND GIS TECHNOLOGIES.
- AREAS ARE TYPICALLY OPEN SPACES.
- AREAS NEXT TO RAILROADS IDEAL.

MULTIUSE AREAS

- GREEN AREAS DEPICT IDEAL LOCATIONS FOR MULTIUSE AREAS.
- MAINLY EXISTING PARKS AND OPEN AREAS.

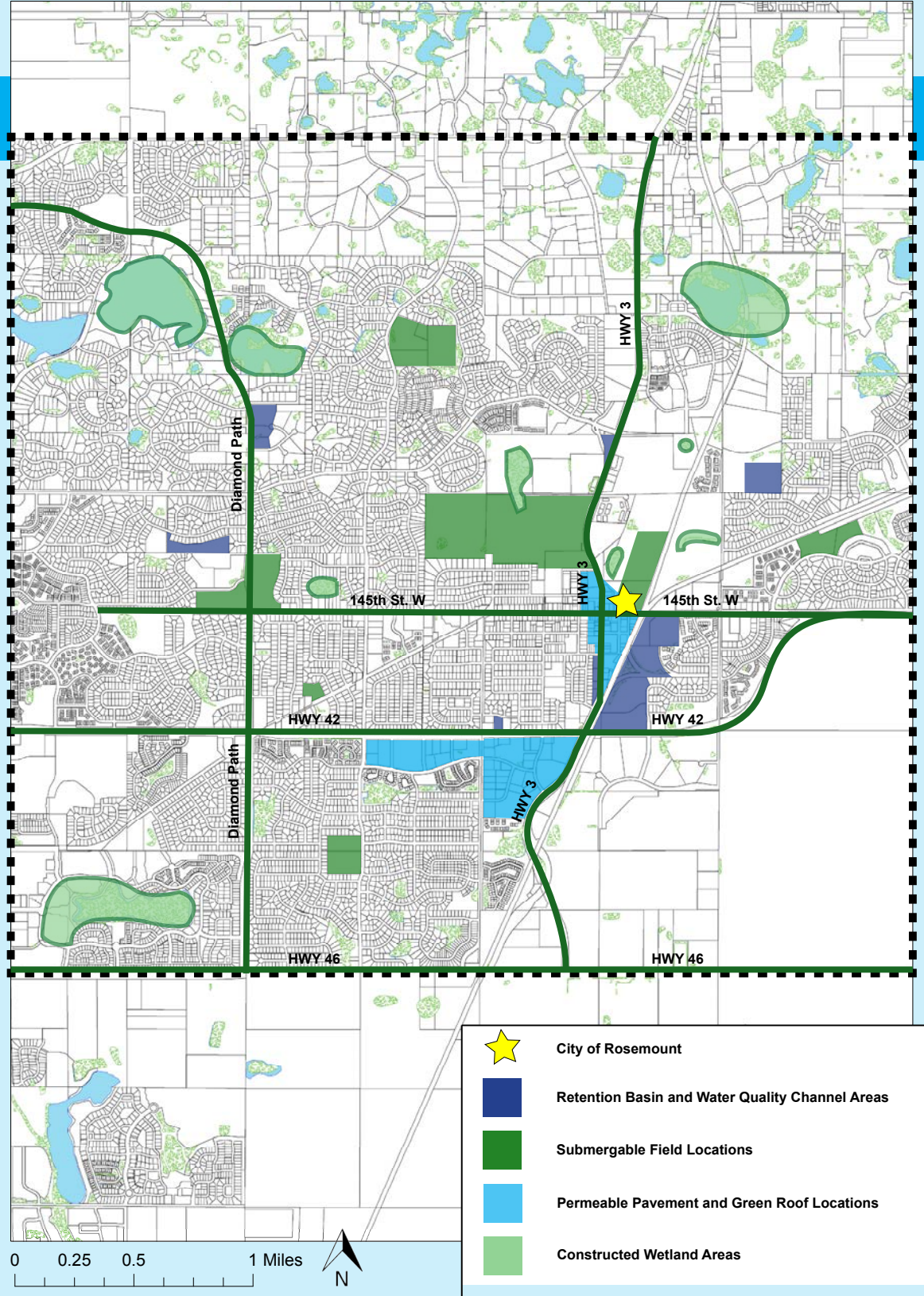


PERMEABLE PAVE.



- LIGHT BLUE AREAS SHOW HEAVY COMMERCIAL ZONES.
- IDEAL FOR RETROFIT PROJECTS.
- SUBJECT TO PERMEABLE PAVING AND GREEN ROOF PROJECTS
- LARGE SQ FOOTAGES INCREASE EFFECTIVENESS OF THESE SYSTEMS.

CON. WETLANDS



- LIGHT GREEN AREAS DEPICT IDEAL LOCATIONS.
- LOCATIONS WERE DETERMINED USING "WET" AREA INFORMATION IN GIS TECHNOLOGY.
- LAKES AND STREAMS ARE HIGH PRIORITY AREAS. ACTS AS A LAST STOP BARRIER TO PREVENT EROSION AND POLLUTANTS FROM ENTERING WATER.

LONG TERM IMPACTS

- PROVIDES ECOLOGICAL BENEFITS FOR THE CITY. PROVIDES HABITAT AND MANAGES STORMWATER VOLUMES.

- WHILE EXPENSIVE UPFRONT, SELF SUSTAINING SYSTEMS. LITTLE TO NO MAINTENANCE NEEDED AFTER INITIAL INSTALLATION.

- STUDIES BY THE EPA HAVE SHOWN THAT BMP PRACTICES HAVE BETTER COST SAVINGS TO CITIES THAN TRADITIONAL METHODS.

- OVERALL CAPITAL COSTS ARE GENERALLY LOWER BY 15-85% FOR COMPARABLE PERFORMANCES.

COMMUNITY INVOLVEMENT

- PLAYS IMPORTANT ROLE IN IMPLEMENTING STORMWATER BMP'S
- EDUCATION AND OUTREACH PROGRAMS NEEDED.
- FORUMS ALLOW THE PUBLIC TO GET INVOLVED WITH PROJECTS, NOT ONLY EDUCATING THEM ON WHY THESE SHOULD BE IMPLEMENTED, BUT HELPS THEM TO FEEL LIKE THEY ARE PART OF THE PROCESS WITHIN THEIR NEIGHBORHOOD.
- PUBLIC REPRESENTATION AT LOCAL EVENTS SUCH AS:
  - -FARMERS MARKETS
  - -FRIDAY NIGHT LIVE
  - -OTHER GATHERINGS

THANK YOU

CLAUSEN // LYBECK // THILL // WALSH