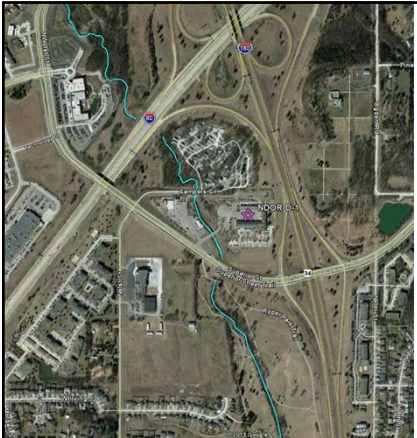


Bioswales (2010)

Partially funded by NDEQ & LPSNRD

District 1 Headquarters
302 Superior Street
Lincoln, Nebraska





Lynn Creek bisects property



Context: cross between industry and business

Project Goals:
Improve water quality
Rapid establishment
Low cost
Low maintenance
Experiment

Constraints:
Institutional knowledge
Inflexibility of contracting process
Salt?
Space


NDOR manages vegetated swales all over the state

Treat the first inch

North bioswale

South bioswale




Google




South Bioswale ~3 acres
1/2 ac impervious, 20%
2 ac mowed grass, 80%



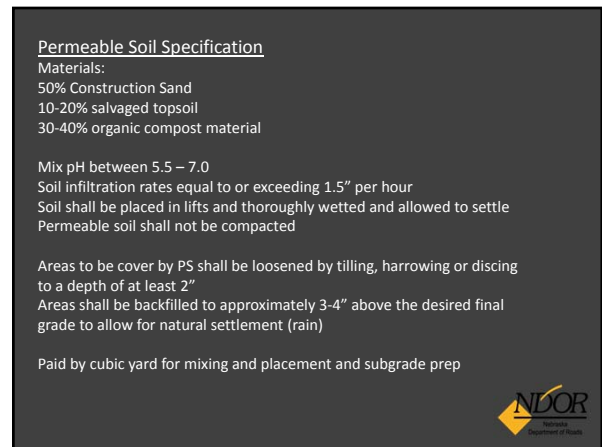
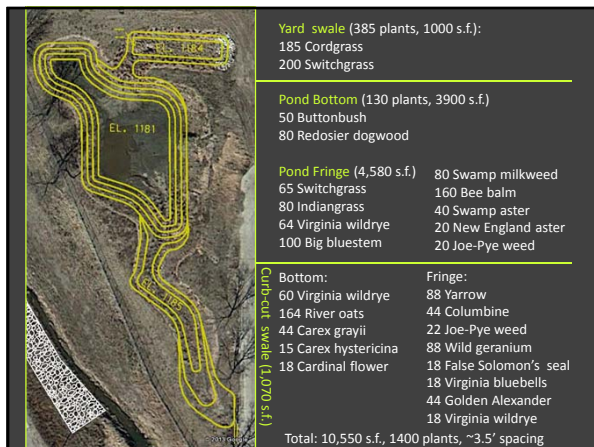
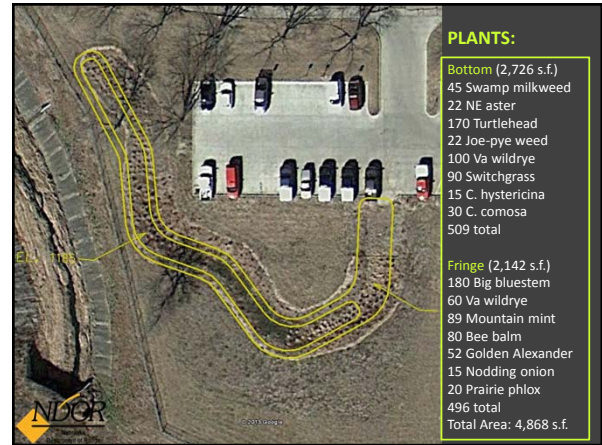
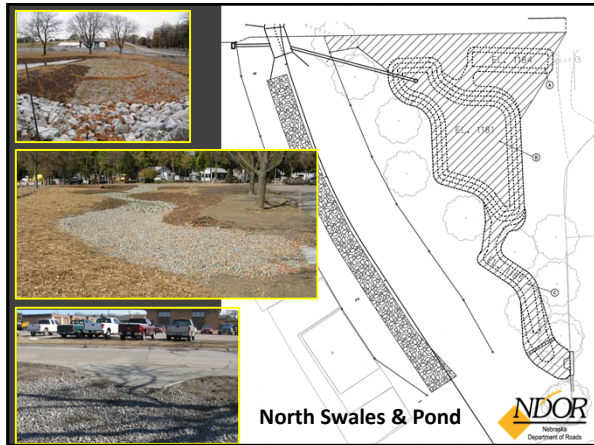
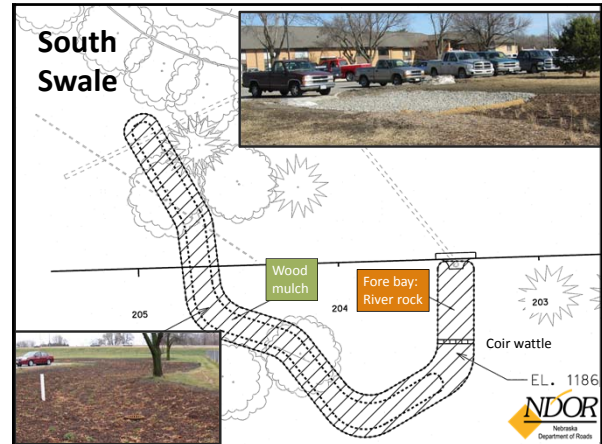
Google



North Bioswales ~5 ac
2 ac impervious, 45%
2 ac semi-pervious, 45%
1 ac vegetated, 10%



Google





Percolation testing
South swale: easily drained 1" per hour
North swale: ok except for slope between pond curb inlet

pH testing of soil mix over 8
Adjusted mix 7.5:
40% sand, pH 8+
40% topsoil, pH 7
20% compost, pH 8
Topsoil was alluvial material,
not heavy clay (Judson silt
loam, Nodaway silt loam)




Construction Issues: South Swale




Unmarked
pipes



South Swale Parking Lot



October 19, 2010 completion




June 27, 2011 after 1.9" multi-day
rain event





June 27, 2011
1.9" rainfall




Construction Issues: North Swale & Pond



Missing survey information
Undersized culvert pipe
Erosion control (2" event,
several smaller events)





October 19, 2010




Maintenance Issues: Capacity

April 15, 2011 – 1"



Lowered pipe 1 foot
Drilled drain weeps 1 foot above ground
April 14th 3 inch rain event, flowed over creek bank



Maintenance Issues: Snow Management



Maintenance Issues: Snow Management



Maintenance Issues: Sediment Load



Maintenance Issues: Volunteer Vegetation



Volunteer Vegetation



Project Evaluation

Improve water quality: **no data**

Rapid establishment: **yes**

Low cost: **not sure**

North Swale: \$40,000, South Swale: \$20,000

Low maintenance: **yes, with reservations**



Lessons Learned

- Do not replace area by stacking volume!!!
- Seeding works: Black-eyed Susan, Tickseed Coreopsis, Yarrow
- Shrubs may not be suitable for all sites
- Manage volunteer vegetation, encourage/remove some species
- Consider snow removal and storage
- Biomass removal



Carex grayii
Carex comosa
Carex hystericina
Nodding onion
Phlox pilosa
Joe-pye weed
Black-eyed Susan
Canada & Va Wildrye
Coreopsis tinctoria
Achillea millefolium

Thriving Plants

Future Management Activities



