

LINKING HABITAT RESTORATION TO BIOENERGY

PILOT PROJECTS January 2008 TO May 2011

(June 2011)

Background

The Department of Natural Resources, Division of Ecological Resources (DNR) received a one-time appropriation of \$500,000 from the MN legislature as part of the 2007 environment, natural resources, energy, and commerce finance bill.

The DNR Woody Biomass Project, Linking Habitat Restoration to Bioenergy, is an innovative new project that unites two separate but linked aspects of environmental health: habitat restoration and bioenergy. The goal of this effort is to restore valuable habitats while providing a local source of energy. The legislative funding for this project is helping to facilitate habitat restoration efforts that might not have otherwise occurred while making the woody material generated as a by-product of restoration available to facilities that convert this material to energy. The woody biomass material was ground up, collected and transported to District Energy St. Paul by its subsidiary Environmental Wood Supply, unless otherwise noted.

Phase 1 Pilot Projects – Winter 2008

Pilot Knob Hill, Mendota Heights, City of Mendota Heights

Status: Completed March 2008.

Description: 3 acres. Oak savanna restoration. This is a unique site of significant cultural, ecological and historic significance. The City of Mendota Heights, with many partners including the DNR Metro Greenways program, Trust for Public Land, and Dakota County, purchased a 15 acre addition (Phase II) to the 8 acres (Phase I) of existing public natural area on Pilot Knob Hill on January 31, 2008. This project helped to implement the *Pilot Knob Hill Phase II Natural Resource Management Plan* dated November 2007 prepared by Great River Greening.

Distance: 10 miles from the Wood Recycling Center in St. Paul.

Press/Media: 1) Pioneer Press article, Nick Ferraro, March 6, 2008; 2) KMSP-TV, Channel 5 aired a 2:19-minute segment on this project titled “Pilot Knob Energy Project in Mendota Heights” on March 7, 2008 at 6:00 p.m.

Operations: Great River Greening managed the project on behalf of the City of Mendota Heights and contracted with Tree Top Service. Upon completion of the grinding of biomass material, volunteers planted acorns collected from trees in the immediate vicinity.

Biomass Type: Mixed hardwoods.

Biomass Volume: 16 loads, 1,280 cy, 320 tons.

Hastings Sand Coulee SNA, Hastings, Minnesota Department of Natural Resources.

Status: Cutting completed March 2008, grinding completed June 2008.

Description: 6.8 acres. Sand-gravel prairie restoration. Hastings Sand Coulee SNA is situated in a sandy ravine, or coulee, formed by a tributary stream to the Vermillion River. It contains 13 rare species of plants and animals. This project implemented the management goal of removing a planted conifer stand and invading red cedar as outlined in the *Prairie Stewardship Plan* dated June 2006 prepared by Friends of the Mississippi River for the Maher Family who previously owned the property.

Distance: 24 miles from the Wood Recycling Center in St. Paul.

Press/Media: None.

Operations: Friends of the Mississippi River managed the project on behalf of the DNR SNA Program and contracted with Tree Technology & Recycling, Inc.

Biomass Type: Planted red pine, white pine, mixed spruce and invading red cedar.

Biomass Volume: 27 loads, 2,160 cy, 540 tons.

Phase 2 Pilot Projects – Spring/Summer 2008:

Janet and Carl T. Schuneman Wildlife Preserve, White Bear Lake, Jaques Chapter, Izaak Walton League.

Status: Completed August 2008.

Description: 3 acres. Oak savanna restoration. This project implemented an important component of the *Schuneman Marsh Restoration Project Plan* dated February 2006 to restore the 100-acre site, including a wetland complex to pre-European settlement conditions and increase public accessibility to the Preserve.

Distance: 21 miles from the Wood Recycling Center in St. Paul.

Press/Media: None.

Operations: The Washington Conservation District and Izaak Walton League managed the project and contracted with Tree Technology & Recycling, Inc.

Biomass Type: Planted red pine, jack pine, and spruce and invading mixed hardwoods.

Biomass Volume: 16 loads, 1,280 cy, 320 tons.

Indian Mounds Regional Park, St. Paul, City of St. Paul.

Status: Phase 1 completed June 2008; Phase 2 completed December 2008.

Description: 11.7 acres DNR funded plus an additional 2.4 acres funded by the City of St. Paul. Oak savanna and oak forest restoration. This project implemented an important management recommendation as outlined in the *Natural Resource Inventory and Management Plan of Indian Mounds Park* dated December 2007, compiled by Great River Greening. A population of kittentails (*Besseyia bullii*), a state threatened vascular plant species, was documented in the park in the 1990s. This project was implemented in two phases; the second phase occurring upon receipt of funding from the Ramsey-Washington Metro Watershed District for erosion mitigation following biomass removal from areas with steep slopes:

- **Phase 1 – June 2008-September 2008:** Funding through the DNR Woody Biomass Project was granted for the cutting, moving, and staging of material from approximately 6.7 acres through June 30, 2008.
- **Phase 2 – October-December 2008:** The City of St. Paul secured a \$13,850 grant from the Ramsey-Washington Metro Watershed District to restore highly erodible slopes following the buckthorn removal. Additional funding through the DNR Woody Biomass Project was granted to complete the project as originally proposed.

Distance: Less than 1 mile from the Wood Recycling Center in St. Paul.

Press/Media: None.

Operations:

- **Phase 1:** The City of St. Paul managed the project and contracted with Natural Resources Restoration, Inc. who utilized Sentencing to Service (STS) crews for hand-cutting and stump treatment of buckthorn through June. The City of St. Paul cut the large trees and additional buckthorn July-September. Many community volunteers were utilized to move and stage the material for transport to the Wood Recycling Center, as well as plant native replacement tree and shrub species. Partner organizations assisting with additional funding and coordinating volunteer activities included: Hands On Twin Cities; National Park Service; Great River Greening, Corporate Volunteerism Council; Church of Latter Day Saints; REI; Minnesota Conservation Corps; and Minnesota Teen Challenge.
- **Phase 2:** The City of St. Paul managed the project and contracted with Natural Resources Restoration, Inc. that utilized Sentencing to Service (STS) crews to cut, move and stage the buckthorn from approximately 5 additional acres.

Biomass Type: Predominantly buckthorn with additional mixed hardwood and conifer tree species.

Biomass Volume: 1,488 cy, 372 tons. The City of St. Paul and Ever-Green Energy (service provider to District Energy St. Paul) transported raw material, no load count.

Phase 3 Pilot Projects – Fall 2008/Winter 2009:

Bridgeview Park Reserve, Big Lake, Sherburne County.

Status: Completed January 2009.

Description: 15 acres. Oak woodland-brushland restoration. The Bridgeview Park Reserve was created in 1999 utilizing grants from the DNR's Natural and Scenic Areas grant program (matched by the adjacent developer) and the Central Minnesota Initiative Fund's Scenic Area Land Preservation Program and is included in a large-scale Mississippi River corridor restoration effort. This project helped to implement the *Sherburne County Management Plan for the Bridgeview Park Reserve* dated May 2001, prepared by a team of experts.

Distance: 55 miles from the Wood Recycling Center in St. Paul.

Press/Media: West Sherburne Tribune article, Ken Francis, November 13, 2008.

Operations: Due to the elimination of the Sherburne County Parks and Forestry Coordinator, management of the project was a coordinated effort of the Sherburne County Planning and Zoning Administrator, the Sherburne County SWCD and DNR Forestry. Sherburne County contracted with Prairie Restorations, Inc. that utilized Sentencing to Service crews for the hand-cutting and stump treatment, and Tree Top Services for mechanized cutting and skidding.

Biomass Type: Buckthorn and honeysuckle shrubs, eastern red cedar and mixed hardwoods.

Biomass Volume: 23 loads, 1,840 cy, 460 tons.

Zumbro Falls Woods SNA, Zumbro Falls, Minnesota Department of Natural Resources (updated February 2011).

Status: Completed June 2010. The cutting and staging was completed on 7 of 8 originally designated sites in January 2009. Some grinding occurred in February 2009 but warm weather conditions stopped grinding operations. The final grinding operation, postponed until fall 2009, was cancelled due to the purchase of remaining logs and standing timber by an independent local logger, Gary Carlson, in the fall 2009-winter 2010.

Description: 29 acres. Oak savanna restoration. Zumbro Falls Woods SNA, located along the Zumbro River in the southeast, is characterized by steep bluffs, loess-covered uplands, narrow river valleys and broad floodplains. This project involved the complete removal of 2 red pine plantations, partial removal of 3 white pine plantations, and appropriate clearing of woody vegetation from 3 mixed hardwood, conifer and shrub sites.

Distance: 75 miles from the Wood Recycling Center in St. Paul.

Press/Media: None. DNR SNA staff and a representative from Ever-Green Energy (service provider to District Energy St. Paul) attended a Zumbro Falls Town Hall meeting on December 8, 2008.

Operations: This complex project was managed as a joint effort by DNR SNA staff, DNR Forestry staff and the Woody Biomass Project Coordinator. DNR Foresters coordinated with the Society of American Foresters (SAF) and the MN SAF Student Chapter on March 29, 2008 to mark the trees and boundaries of the specific biomass harvest areas and collect additional information necessary to solicit bids for biomass removal contractors. Johnson Logging, Inc. was awarded the initial cutting contract and purchased 120 cords of scaled logs utilized for higher value products @2.50/cord = \$300 (which was deducted from the original contract amount and reincorporated into the project budget). DNR Forestry sold the remaining logs and standing timber to independent logger, Gary Carlson, as an informal timber sale (Permit #F010423) with a value of \$887.50. Cords unknown. The revenue was collected and incorporated into the woody biomass project budget. The pine logs were utilized by a mill in Mosinee, WI for pulp and paper.

Biomass Type: Planted red pine, white pine, and encroaching mixed hardwoods, conifers and shrubs.

Biomass Volume: As of 2/13/09: 56 loads; 4,480 cy; 1,120 tons = bioenergy.

Fort Snelling WPA, Mendota Heights, Minnesota Department of Natural Resources.

Status: Completed April 2009.

Description: 16.5 acres. Oak savanna and dry prairie restoration. This is a unique site of historical and ecological importance. In 1935, the National Park Service and the Works Progress Administration (WPA) established a residential work camp at the site. This project implemented management goals as indicated in the *Fort Snelling State Park Management Plan* (1997); *Inventory of Biological Features and Fort Snelling State*

Park (1995); and, *WPA Camp Management Plan* (2008) as well as enhance access and educational opportunities at the WPA camp site.

Distance: 10 miles from the Wood Recycling Center in St. Paul.

Press/Media: KARE-11, Channel 11, Jeffrey DeMars aired 1:57 minute at 6:00p.m. on March 18, 2009.

Operations: DNR Parks and Recreation managed the project. Olsen Fencing, LLC was awarded the contract. Minnesota Conservation Corps crews were funded through the DNR Terrestrial Invasives grant program to treat the buckthorn stumps immediately after cutting.

Biomass Type: Shrubs (buckthorn, honeysuckle) and mixed hardwoods.

Biomass Volume: 19 loads; 1,520 cy; 380 tons.

Lake Edith Prairie and Savanna Phase 1, Afton, Belwin Conservancy.

Status: Completed September 2009. Lake Edith Prairie cutting and grinding was completed January 2009, 33.4 acres. Lake Edith Savanna cutting was completed April 2009, 40.9 acres; grinding completed September 2009.

Description: 74.3 acres. Oak savanna and dry prairie restoration. The Belwin Conservancy owns 1,300 acres which are managed, in part, to protect the Valley Creek trout stream. This project helped to implement their management goals for the Lake Edith Unit and was originally proposed to complete 34 acres with the funding provided. Many more acres were accomplished due to extended frozen ground conditions and cost efficiencies in project implementation.

Distance: 16 miles from the Wood Recycling Center in St. Paul.

Press/Media: 1) Minnesota Public Radio, Stephanie Hemphill, December 3, 2008; 2) Pioneer Press article, Dennis Lien, December 8, 2008; 3) Outdoor News article, Joe Albert, December 12, 2008.

Operations: Belwin Conservancy managed this project by overseeing Mike's Tree Service, Inc. who did the majority of the cutting, moving and staging in areas conducive to mechanized equipment. They also worked with Sentencing to Service and Minnesota Conservation Corps crews for hand-cutting, stump treating and moving of material. Access to the biomass staging area for grinding operations required road improvements as determined by Belwin and Ever-Green Energy.

Biomass Type: 1) Lake Edith Prairie: Planted pine and spruce, and mixed hardwoods and shrubs; 2) Lake Edith Savanna: Shrubs, primarily buckthorn and Amur maple, and mixed hardwoods.

Biomass Volume:

Lake Edith Prairie: 44 loads; 3,520 cy; 880 tons from 33.4 acres.

Lake Edith Savanna: 165 loads; 13,200 cy; 3,300 tons from 40.9 acres.

TOTAL BIOMASS: 209 loads; 16,720 cy; 4,180 tons from 74.3 acres.

Kelleher Park, Burnsville, City of Burnsville.

Status: Completed April 2009.

Description: 23 acres. Oak savanna and oak woodland restoration. Kelleher is a Burnsville city park and is known to have a population of kittentails (*Besseyia bullii*), a state threatened vascular plant species. This project implemented recommendations outlined in the *2007 Natural Resources Master Plan* to restore oak savanna areas.

Distance: 25 miles from the Wood Recycling Center in St. Paul.

Press/Media: 1) Burnsville Bulletin article, Volume 18, No. 3, October 2008; 2) Star Tribune article, Joy Powell, January 22, 2009, plus related video posted to startribune.com; 3) Pioneer Press article, Jessica Fleming, January 23, 2009.

Operations: The City of Burnsville managed this project and contracted with Applied Ecological Services, Inc. The City also involved volunteers from the Minnesota Native Plant Society and students from the University of Minnesota Fisheries, Wildlife, and Conservation Biology club to help mark trees to be saved.

Biomass Type: Mixed hardwoods, conifers and shrubs (primarily buckthorn and honeysuckle).

Biomass Volume: 41 loads; 3,280 cy; 820 tons.

Uncas Dunes SNA-South Unit Phase 1, Zimmerman, Minnesota Department of Natural Resources.

Status: Cutting and staging completed March 2009. Grinding completed February 2010.

Description: 31 acres. Oak savanna. Uncas Dunes, located within the Anoka Sandplain, contains a relic dunefield associated with Glacial Lake Grantsburg. Named for the rare butterfly, Uncas skipper (*Hesperia uncas*), this is one of only two sites in the state where this species was found. Several other rare plant and animal species are being documented through surveys in progress. The SNA is embedded within the Sand Dunes State Forest, administered by DNR Forestry. The Anoka Sand Plains is the focus of much funding and restoration work. This project accelerated the removal of ecologically inappropriate woody plant material on a larger area than was originally planned in support of restoration goals.

Distance: 55 miles from the Wood Recycling Center in St. Paul.

Press/Media: None.

Operations: Great River Greening managed the project logistics on this site under contract with the DNR SNA Program and sub-contracted portions of the work with Minnesota Native Landscapes, Inc. DNR Forestry staff was actively involved in planning the project. Due to concerns over pine bark beetle, all pine was chipped on-site for collection at the time of final grinding. Great River Greening hosted the Uncas Dunes Restoration Event held May 2, 2009 for volunteers sponsored by the Minnesota Board of Water and Soil Resources, DNR, and National Fish and Wildlife Foundation.

Biomass Type: Mixed hardwoods, shrubs, eastern red cedar and planted conifers.

Biomass Volume: 27 loads; 2,160 cy; 540 tons.

Phase 4 Pilot Projects – Fall 2009/Winter 2010

Lake Edith Savanna Phase 2, Afton, Belwin Conservancy.

Status: Completed September 2009.

Description: 15.4 acres. Oak savanna. The Belwin Conservancy owns 1,300 acres which are managed, in part, to protect the Valley Creek trout stream. This project continued to implement their restoration goals for the Lake Edith Unit.

Distance: 16 miles from the Wood Recycling Center in St. Paul.

Press/Media: None.

Operations: Belwin Conservancy managed this project by overseeing Mike's Tree Service, Inc. who did the majority of the cutting, moving and staging in areas conducive to mechanized equipment. Belwin staff also worked with Sentencing to Service crews for hand-cutting, stump treating and moving of material from the steep areas. Access to the biomass staging area for grinding operations required road improvements as determined by Belwin, DNR and Ever-Green Energy.

Biomass Type: Mixed hardwoods and shrubs (primarily buckthorn and Amur maple).

Biomass Volume: 37 loads; 2,960 cy; 740 tons.

Alimagnet Park, Burnsville, City of Burnsville.

Status: Completed January 2010.

Description: 28 acres. Red oak-sugar maple-basswood (bitternut hickory) forest restoration. This park was established in 1979 and lies between the two lobes of Alimagnet Lake. The natural areas within the park are designated as Priority A (highest priority) for implementing recommendations outlined in the *2007 Natural Resources Master Plan* to restore important natural areas.

Distance: 21 miles from the Wood Recycling Center in St. Paul.

Press/Media: City of Burnsville Official Website article, November 14, 2009.

Operations: The City of Burnsville managed this project and contracted with Minnesota Native Landscapes, Inc. The City also utilized Sentencing to Service crews and City Forestry staff to complete the project.

Biomass Type: Primarily buckthorn and honeysuckle with additional mixed shrubs and trees.

Biomass Volume: 13 loads; 1,040 cy; 260 tons.

Uncas Dunes SNA-South Unit Phase 2, Zimmerman, Minnesota Department of Natural Resources.

Status: Completed February 2010.

Description: 16 acres. Oak savanna restoration. Uncas Dunes, located within the Anoka Sandplain, contains a relic dunefield associated with Glacial Lake Grantsburg. Named for the rare butterfly, Uncas skipper (*Hesperia uncas*), this is one of only two sites in the state where this species was found. Several other rare plant and animal species are being documented through surveys in progress. The SNA is embedded within the Sand Dunes State Forest, administered by DNR Forestry. The Anoka Sand Plains is the focus of much funding and restoration work. This project accelerated the removal of ecologically inappropriate woody plant material on a larger area than was originally planned in support of restoration goals.

Distance: 55 miles from the Wood Recycling Center in St. Paul.

Press/Media: None.

Operations: Great River Greening managed the logistics of this project under contract with the DNR SNA Program, in consultation with DNR Forestry and DNR Trails and Waterways, and contracted with Minnesota Native Landscapes, Inc. A local snowmobile club assisted in resolving issues relating to the state snowmobile trail impacted by this project. Great River Greening hosted the Uncas Dunes Brush Hauling event held April 17, 2010, utilizing volunteers and sponsored by the Minnesota Board of Water and Soil Resources, DNR, and National Fish and Wildlife Foundation.

Biomass Type: Mixed hardwoods, shrubs, eastern red cedar and planted conifers.

Biomass Volume: 17 loads; 1,360 cy; 340 tons.

DNR St. Paul Hatchery Aquatic Management Area, St. Paul, Minnesota Department of Natural Resources (updated February 2011).

Status: Completed November 2010. Terminated in March 2010 due to nesting bald eagles, the project resumed in September 2010.

Description: 13.2 acres (10.3 DNR-owned plus 2.9 City of St. Paul-owned). Oak woodland and wet ash swamp restoration. This DNR-owned land is immediately adjacent to Indian Mounds Regional Park, managed by the City of St. Paul, where a previous woody biomass project was conducted. This project will further implement an important management recommendation as outlined in the *Natural Resource Inventory and Management Plan of Indian Mounds Park* compiled by Great River Greening (December 2007) and will become an important component of the overall restoration of this park. A population of kittentails (*Besseyia bullii*), a state threatened vascular plant species, was documented in the park in the 1990s.

Distance: Less than 1 mile from the Wood Recycling Center in St. Paul.

Press/Media: None.

Operations: The City of St. Paul managed this project with oversight from the DNR and contracted with Natural Resources Restoration, Inc. who utilized Sentencing to Service (STS) crews for hand-cutting, moving material, and chemical treatment of stumps. Funding for the chemical treatment of stumps was provided by the DNR Terrestrial Invasives grant program. Volunteers from Hands-On Twin Cities and Youth Outdoors! (a Conservation Corps Minnesota program) moved and staged material. A grant from the Ramsey-Washington Metro Watershed District was utilized to stabilize and revegetate highly erodible steep slopes within the project area.

Biomass Type: Primarily buckthorn with additional mixed hardwoods.

Biomass Volume: 1,728 cy, 144 tons. The City of St. Paul transported raw material, no load count.

Phase 5 Pilot Projects – Fall 2010/Winter 2011:

Stagecoach Prairie Natural Area (formerly known as Sauers Pond Natural Area), Afton, Belwin Conservancy.

Status: Cutting and staging completed January 2011. Grinding completed May 2011.

Description: 12.4 acres (44 total project acres*). Dry-mesic prairie. The Belwin Conservancy owns 1,300 acres which are managed, in part, to protect the Valley Creek trout stream. The Stagecoach Prairie Natural Area is 279 acres and is being managed principally to promote grassland birds. Currently, the vegetation of the natural area includes remnant and restored prairies, old pastures, pine plantations, a lowland hardwood forest, and moderately-degraded oak woodlands.

Distance: 16 miles from the Wood Recycling Center in St. Paul.

Press/Media: 1) Pioneer Press article, Mary Devine, April 17, 2011; 2) Tara Kelly interviewed on Garage Logic with Joe Soucheray, April 18, 2011.

Operations: Belwin Conservancy managed this project and contracted with Mike's Tree Service, Inc. Mike's Tree Service subcontracted with three additional loggers to help cut, move and stage material.

Biomass Type: 15 acres of pine plantations; 20 acres of mixed hardwoods; and 9 acres of mixed shrubs including buckthorn for the total 44 acres.

Biomass Volume: Total for 12.4 acres = 20 loads; 1,600 cy; 487 tons (Volume is based on actual scaled weight).

*Total project acres are 44. This funding paid for 12.4 acres; the remaining project acres were funded by the 2010 Environment and Natural Resources Trust Fund.