

Date: December 19th, 2006

To: President Pierotti and Board of Commissioners

From: David Guritz, Director Office of Education
Ross Hill, District Project Engineer
Andrea Hoyt, Director Office of Planning and Development
John "Ole" Oldenburg, Director Office of Natural Resources
Mike Palazzetti, Director Office of Land Management

Re: West Branch Preserve Special Restoration Projects

- River Improvements
- Klein Road Fen Restoration

Staff recommends approval of the West Branch Forest Preserve Special Restoration Projects and respectfully seeks a **Motion**:

Approving the planned expenditure of bond funding for two natural resource management projects at West Branch Forest Preserve, including 1) River Improvements (not to exceed \$1,300,000) and 2) Klein Road Fen Restoration (not to exceed \$1,125,000).

In light of Commissioner comments during discussion at the 12/12/06 Planning Meeting, Executive Director Manning directed staff to address three identified issues and report back to Commission. The three issues key to the discussion were: 1) Project access, 2) Educational interpretation, and 3) Ecological valuation and project prioritization. The staff listed above met and discussed these elements and provide the subsequent follow-up information.

Project access:

The project is currently accessible by the Regional Trail (1st tier trail type) along the eastern side of the projects and by a mowed grass trail (2nd tier trail type) along the western side of the projects. The combined trail system currently provides public access along and/or through approximately 1.75 miles of the restoration projects planned viewing over 375 acres of the river valley landscape. Minor adjustments to alignment of the mowed turf trail are expected to be made in accommodating the hydration restoration.

The structural river improvements proposed for the West Branch of the DuPage River will be designed in a manner to maintain current water depths for recreational accessibility by canoe/kayak over the 4900 foot long lift of the stream bed. Flow chute elements shall be designed within the grade controls to ensure appropriate water conveyance and to accommodate passage of watercraft through the weir of the grade control and riffle run. Improved water velocity pulses will result through these series of grade controls and it is anticipated to add value to the recreational experience.

To increase public access to the western preserve project areas, staff recommends that a future bridge project be considered to traverse the West Branch DuPage River. The conceptual plan would site the bridge at the north end of the preserve in functional proximity to the existing parking facility. This bridge would address high recreational demands to access both Deep Quarry and Bass Lake on either side of the river and connect the east Regional Trail to the west mowed turf trail system. This bridge would also address current safety concerns caused by the necessity of users exiting the preserve and crossing the river on the R.O.W. of Army Trail Road. An additional turf trail connection extending west from the bridge would formalize trail access along Bass Lake and would then be connected to the existing west turf trail adjacent to the project areas.

Finally, Nature Trail paths (3rd tier trail type) will emanate from the Regional Trail on the east and turf trail on the west toward and through various river valley habitats on both side of the river. These nature trails will serve multiple functions and provide service accessibility to a network of monitoring points and systems for scientific purposes (10 year DuPage County monitoring and maintenance requirement). These nature trails will facilitate accessibility of interested persons into mesic grasslands, wet prairie, wet sedge meadow, calcareous seeps, graminoid fens, marshland, floodplain and river habitats.

Education interpretation:

The intrinsic value of restoring rare habitats and conserving species is of significant concern to these restoration projects. A primary interpretive message will be made to help introduce the educational value for conserving this area. As we look to other recovery and education initiatives, one educational goal is to expand the public understanding of our statutory Mission to preserve and protect, restore and restock the fauna and flora of our holdings and manage these resources as nearly as may be in their natural state and condition towards healthy, functioning and diverse ecosystems. Staff anticipates these landscape-scale wetland communities to emerge as a “diamond” in the “jeweled necklace” of the County’s holdings.

During the design / engineering process, the expected restored project landscape and features will be examined by a team of staff members. This team will identify significant interpretive node locations along the existing trail system that facilitate unique visual and other sensory opportunities for user experiences. Interpretive signage panels will be developed and constructed in-house for placement of passive interpretive signage at strategic locations throughout the trail system. District-wide signage funding will be used to complete this program within 5 years.

One target audience for educational services would be highly mobile conservation scientists and enthusiasts interested in learning and becoming involved with restoration and wildlife observations within an increasingly rare ecotype. On a broader scale, this is a wetland complex restoration initiative which could be used as a platform for connecting students to broader water resource issues and action projects underway in DuPage County. Opportunities for building public capacity for preserve stewardship through volunteers and a formal Ecosystem Partnership of public and private stakeholders along this river reach would be a goal to achieve over the next 10 years. Additional public programming and embedded school curriculum opportunities will also develop as demand increases proportional to the restoration visibility.

Ecological valuation and prioritization:

Of the 25,404 acres of District holdings, 2,841 acres are classified as natural area wetlands. Of these wetlands, some of the last remaining graminoid fen communities within the District/County comprise less than 200 acres, or 0.78%, of all District holdings. Although only 32 acres in size, Klein Road Fen represents the only hanging valley - perched graminoid fen and calcareous seep community within the District and County.

District staff is unable to assess an ecological monetary value of the benefits of this fen restoration. However, this fen community is considered regionally rare and globally significant with respect to habitat type and the genetic remnant, conservative, and listed species (plants, insects, and amphibians) that may be potentially restored, restocked, protected, and preserved. Additional values that can be attributable to this project include expected ground water recharge to local aquifers and the direct water filtration value and added water quality value contributions to the West Branch of the DuPage River while benefiting flood reduction.

The fen and river restoration projects at West Branch Preserve, along with the wetland mitigation project, represent a significant component and contribution to the West Branch of the DuPage River Watershed Plan within DuPage County. When viewed in the context of all the open space preservation, restoration and enhancement projects that are either completed, in progress, planned or being planned at Mallard Lake, Hawk Hollow, West Branch, Timber Ridge, West DuPage Woods, Blackwell, St. James Farm, Warrenville Grove, McDowell Grove, Pioneer Park/Naperville Riverway and Springbrook Prairie Preserves, the collective values and benefits will represent a total greater than the sum of its individual project investments.

In addition to supporting the goals of the West Branch DuPage River Watershed Plan, these restoration projects are also consistent with the goals of the Salt Creek/DuPage River Working Group, DuPage River Coalition, Conservation Foundation, Chicago Wilderness Coalition and are foundational to the District's Mission. The Office of Natural Resources is confident that grant funding will be secured for portions of both of these projects as well as realizing significant cost savings and potential revenues stemming from the Wetland Bank Project.

Chicago Wilderness, a coalition of 196 conservation member organizations, addressed graminoid fen communities within northeast Illinois in the Biodiversity Recovery Plan for the region. The following is an excerpt from that Plan:

Graminoid Fens of the Northeastern Illinois

Chicago Wilderness Findings and priorities (Biodiversity Recovery Plan)

Graminoid fens are in the first tier of priority for additional conservation action, due to their rarity, degraded condition, and the global significance of the remaining examples in the Chicago Wilderness region. Fens in general have high overall diversity as well as distinctive plant communities, and they are of high biological importance to the region. Priority plant species dependent on fens include marsh valerian, a candidate for federal listing, American burnet, and queen of the prairie.

Although there are more graminoid fens than other types of fen, they are being lost at an alarming rate. Unprotected graminoid fens have been identified recently, and experts think more are still to be discovered in the region, although their condition is likely declining. Hydrological changes, invasive species, and cattle grazing threaten graminoid fens. Although the full effects of these threats have not been seen yet, there is a high potential for further degradation of the graminoid fens. In general, graminoid fens are in poorer condition than calcareous floating mats and, of the fens, are the most sensitive to groundwater changes.

The reptile and amphibian assemblage of sedge meadow, fen, and dolomite prairie includes western chorus frog, green frog, northern leopard frog, pickerel frog, Blanding's turtle, smooth green snake, northern water snake, and queen snake. This assemblage in the region is considered to be globally important. Across the region, this assemblage is declining, although there is a north/south division. In the northern part of the region (Lake and McHenry Counties in Illinois), the assemblage is doing better, perhaps even increasing, due to management and protection. In the southern part of the region, the species that are specialists are declining, with only a few species hanging on. This is primarily due to fragmentation and isolation. Purple loosestrife poses a threat to these species over time.

The fen insects are of conservation concern with many rare species. Sensitive species, which are rare and habitat restricted, include Baltimore checkerspot, swamp metalmark, and bluebell dragonfly. Hydrological alteration and invasion by common reed and cattail threaten fen insects.

WETLAND COMMUNITIES: Conservation targets in top tiers (CW)

First (highest) tier: Graminoid fen, Panne; Second tier: Calcareous seep, floating mat, Streamside marsh; Third tier: Forested fen, Sedge meadow

Forest Preserve District of DuPage County Findings

Fens

Fens, which are pre-settlement wetland communities, are created and maintained by the continuous internal flow of mineralized groundwater emanating from bordering upland calcareous sand and gravel glacial outwash formations. An impervious layer of till below the outwash gravel lenses forces cold, oxygen-deficient, mineralized groundwater to seep laterally at the bases of upland slopes. Fens can take several topographic forms. They can be perched (on a terrace), hanging (on a steep slope) or on calcareous flats such as in prairies or over dolomite. Peat enriched with magnesium and calcium carbonates form the fen substrate, which supports many calcophilic plants adapted to high concentrations of dissolved alkaline minerals (as high as 3000 ppm). Fens are often found in association with strongly calcareous spring runs as well as natural communities such as calcareous seeps, sedge meadows, and marshes.

Present Status (FPDDC)

Most fens in DuPage County today are small and suffer from degradation due to hydrological changes and invasion by adventive species, such as *Rhamnus cathartica* (Common Buckthorn) and *Phalaris arundinacea* (Reed Canary Grass).

Pre-settlement Distribution/Size

Fens were probably once a common floristic community in northeastern Illinois due to hydrologic conditions.

Dominant Plants (FPDDC)

Carex hystericina (Porcupine Sedge) and *C. stricta* (Common Tussock Sedge).

Characteristic Plants (FPDDC)

Angelica atropurpurea (Great Angelica), *Aster puniceus firmus* (Shining Aster), , *Chelone glabra* (Turtlehead), *Cicuta bulbifera* (Bulblet-Bearing Water Hemlock), *Cirsium muticum* (Swamp Thistle), *Epilobium leptophyllum* (Fen Willow Herb), , *Lobelia kalmii* (Bog Lobelia), *Pedicularis lanceolata* (Swamp Betony), *Rumex orbiculatus* (Great Water Dock), *Solidago patula* (Swamp Goldenrod), *Stachys tenuifolia hispida* (Rough Hedge Nettle), *Symplocarpus foetidus* (Skunk Cabbage), and *Viola nephrophylla* (Northern Bog Violet).

Special Concern Plants that were known from DuPage Forest Preserves but have disappeared:

Carex leptalea (Slender Sedge)
Gentiana crinita (Fringed Gentian)
Parnassia glauca (Grass of Parnassus)

Special Concern Plants that are currently known from fens in DuPage Forest Preserves but are very restricted:

Juncus brachycephalus (Short-headed Rush)
Habenaria hyperborea huronensis (Northern Bog Orchid)
Solidago ohioensis (Ohio Goldenrod)

Species currently listed as E/T that grow in fens (or calcareous spring runs) that were known from DuPage County in the literature:

Calopogon tuberosus (Grass Pink)
Cypripedium calceolus parviflorum (Small Yellow Lady's Slipper)
Filipendula rubra (Queen of the Prairie)
Veronica americana (American Brooklime)

Species currently listed as E/T that grow in fens (or calcareous spring runs) that are known from northeastern Illinois but not DuPage County:

Cypripedium reginae (Showy Lady's Slipper)
Eleocharis rostellata (Wicket Spike Rush)
Galium labradoricum (Bog Bedstraw)
Helianthus giganteus (Tall Sunflower)
Mimulus glabratus fremontii (Yellow Monkey Flower)

Fen Dependant Lepidoptera and host plants: Butterflies (FPDDC)

Black Dash Skipper - Upright sedge (*Carex stricta*), and possibly others
Dion Skipper - Various sedges including woolgrass (*Scirpus cyperinus*), hairy sedge (*Carex lacustris*), and shoreline sedge (*Carex hyalinolepis*)
Bronze Copper - Water dock (*Rumex orbiculatus*) and curled dock (*Rumex crispus*).
Acadian Hairstreak - Various willow species including black willow (*Salix nigra*) and silk willow (*Salix sericea*).
Baltimore Checkerspot - Turtlehead (*Chelone glabra*), hairy beardtongue (*Penstemon hirsutus*), English plantain (*Plantago lanceolata*), and false foxglove (*Aureolaria*).
Eyed Brown - Various sedges (*Carex stricta*, *C. lupulina*, *C. bromoides*, and *C. trichocarpa*) in the sedge family (Cyperaceae spp.).

Fen Dependant Lepidoptera and host plants: Moths (FPDDC)

Papaipema nelita - Wild golden glow (*Rudbeckia laciniata*)
Papaipema limpida - Ironweeds (*Vernonia*)

Examples of significant graminoid fen communities are represented in the following preserves along with their status of restoration and management:

Restoration Status Completed: Structural (S), Compositional (C), Functional (F)

West DuPage Fens at West DuPage Woods FP (39 Acres) - [S,C,F] in house work
Tri-County Fen at James "Pate" Philip State Park (2 acres) - [S] grant project 2005
Springbrook Fen at Springbrook Prairie FP (8 acres) - [S,C,F] in house work
Elsen's Hill Fens at West DuPage Woods FP (1.2 acres) - grant funded project March 2007
River Valley Fens at Blackwell FP (8 acres) - Tronox/NOAA/District projects in progress
Klein Road Fens South at West Branch FP (32 acres) - bond project pending
Schick Road Fen at Hawk Hollow FP (26 acres) - highly degraded
Fens at Warrenville Grove FP (1.5 acre) - bond scoping project pending w/grant
Emerald Fen at Waterfall Glen FP (26 acres) - grant funded project and ISTHA mitigation 2007/8