

TWI Response to Individual Comments Submitted  
in Response to Army Corps of Engineers  
Public Notice #2 for Goose Pond Pilot Project  
September 2008

## **Flooding Impacts**

- 1. The Goose Pond Project (GPP) will increase flooding. Area water levels will be adversely affected. The project will reduce total floodplain area by erecting levees.*

The increase in flood levels will be minor for flood events less than 453 MSL, the maximum height of the overflow spillways, which are structures that let water into the Project area to prevent damage to the berms when they are overtopped. The Project will not impact flood levels during events greater than a 3-yr event.

To determine the maximum water increase at this river stage, an interpolation was performed from the “worse-case” scenario model that assumes infinitely high berms for 2-yr and 5-yr flood events. Interpolating between the 2-yr and 5-yr increase of 0.42 and 0.61 feet, respectively, demonstrates that the maximum increase for the 3-yr event would be about 0.49 ft (5.88 inches).

The increase in water levels for flood events less than 453 feet MSL and the areas potentially impacted were based on the construction of exterior berms at both the Goose Pond and Sawmill Pocket, infinitely high berms, and no internal storage. There are no plans to proceed with the Sawmill Pocket Project. The spillways will be set at a maximum of 453 MSL and there will be internal water storage. Thus, the flood impacts will be less than the 0.49 ft that the modeling results predict. Based on the modeling results and site investigations, there will be no areas impacted by the slight increase in water surface profile due to the Goose Pond Project; however, IDNR is reviewing the flood impact study and will make its determination.

- 2. The problem of “rechanneling” at the levee constructed Big Bureau Creek will be reproduced at this project, without correcting the previous problems at the first levee along BBC.*

The Project plan calls for a net zero-sum sediment deposition balance. Construction of the berms will create a significant sediment deficit and alternative sediment deposition areas will be utilized during the Project period to prevent an increase in sedimentation outside of the Project area.

- 3. How does the change in the borrow area affect the rest of Goose Pond water level during duck hunting season?*

The removal of sediment from the borrow areas will not affect the water level in Goose Pond. Backwater lake water levels are dependent on the stage of the Illinois River and the flow from Big Bureau Creek.

- 4. Will water flow through the narrows to and from Lake Senachwine into Goose Pond during construction?*

Construction activities will not affect the flow of waters between Lake Senachwine and Goose Pond.

5. *What is the estimated 3 year flood stage of Big Bureau Creek? Will the levees or berms be breached by either BBC or the Illinois River?*

The estimated 3-year flood level for Big Bureau Creek is 443.5 ft MSL. When BBC reaches the top of the project perimeter berms (453 feet MSL), it will be approximately 12 feet deep with a flow rate of approximately 4,200 cfs (measured at the gauge in Princeton, IL) provided the Illinois River is not at flood stage. If the Illinois River is flooding, then backwater effects will reduce BBC flow rates while raising the BBC surface elevation at the project site, i.e., higher Illinois River surface elevations will cause any given BBC flood volume to rise slightly higher along the project berms.

When the Illinois River at Henry is at 453.8 feet MSL (approximately 454.0 feet MSL at Mullin's Slough), its flow rate is approximately 84,000 cfs, which has a probability of occurrence once every 5 years. Since the exterior berm is lower than the Illinois River 5-year flood stage, the 5-year flood will overtop the project. To prevent excessive damage to the berm crest and reduce the probability and/or degree of damage to the berm at one or more locations during an overtopping event, emergency spillways have been provided to allow inflow of water through a protected section of the berm to equalize water levels inside and outside of the perimeter berm.

6. *A levee and drainage district established under the Illinois Drainage Code are created to prevent flooding not create flooding.*

The Illinois Drainage code provides a statutory framework for the creation of new levees and drainage systems to allow the owners to make the best use of their property.

### **Nitrogen and Phosphorus Issues**

1. *Berm failure will release a dangerous concentration of stored nutrient pollution, i.e., N and P.*

The amount and form of nitrogen and phosphorus stored in wetlands is not toxic. The nitrogen will be removed from the system by denitrification, which returns it to the atmosphere. The only accumulation of nitrogen would be associated with normal levels of nitrogen that are incorporated into wetland plant biomass. Phosphorus is not toxic; it is an important nutrient. We expect most of the phosphorus to accumulate in sediments in the wetland, as it does naturally in other wetlands through the area.

2. *The toxic waste in the cells after 10 years will get into the river.*

Only Illinois River and Big Bureau Creek water, which currently flows through Goose Pond and out to the river, will flow through the Project site. Both water quality and soil characteristics of the site will be heavily monitored for research purposes.

3. *Increased runoff from excavation will damage property, wildlife, plants, and groundwater downstream.*

Excavation will not cause an increase in runoff. The construction strategy is intended to minimize the release of sediment. Erosion control plans along with the required SWPP and NOI will be prepared by the consulting design engineer and included in the contract documents. Erosion control efforts will include silt fences, geotubes, and reinforced turf. Within the proposed borrow areas and along open water berm, geotubes or earthen containment of levee sections may be more effective than silt fencing during initial construction.

- 4. Regardless of cost or the interest of research, point-source dischargers should reduce pollution at the source in order to meet new USEPA requirements.*

Upgrading conventional treatment technology to meet future water quality standards will be expensive in terms of both capital improvement and energy usage. Water quality trading (nutrient credit trading) provides treatment facilities an alternative means of reducing their pollution emissions if facilities can't afford to invest in technology to limit their own discharges. The goals of water quality trading are to achieve targeted watershed pollution load reductions from both point and non-point sources and to do it cost-effectively. By purchasing credits from nutrient farms or farmers implementing land management practices, trading alleviates agricultural runoff as well as allows treatment facilities to meet discharge limits. The USEPA supports water quality trading programs. In fact, the USEPA has developed a trading toolkit document for the development of trading programs.

- 5. Why at Goose Pond? Shouldn't it be closer to Chicago since its Chicago nutrients?*

It is not just Chicago's nutrient load in the Illinois River. A number of other cities discharge directly into the Illinois River or into upstream tributaries (e.g., Ottawa, LaSalle, Peru, Spring Valley). Furthermore, agricultural runoff contributes greatly to the nitrogen and phosphorus loads in the Illinois River.

Goose Pond was selected as the pilot project site because a large-scale project could be developed; the site is adjacent to the river, which minimizes electrical and mechanical costs; nitrogen and phosphorus loads are available in the source water; and there were willing landowners. Further, the land has never been commercially farmed so there are no real or imagined conflicts with the agricultural community.

## **Sediment Issues**

- 1. The GPP will increase sedimentation, causing Goose Pond to fill more rapidly.*

The project as has been outlined cannot and will not increase sediment loads from the Big Bureau Creek, Senachwine Creek, Mullin's Slough or the Illinois River. The project is located at the receiving end of these streams and water bodies and thus cannot increase the sediment loads to the Goose Pond complex.

- 2. BBC is not diverted away from the rest of Goose Pond, and, with the smaller area to deposit silt, will fill up soon.*

This is not a true statement. Part of the flow especially during the high flow events will be diverted into Area A via an emergency spillway (ES-1) above the project area (as shown on Vicinity Map in Public Notice). This diversion of the high flow events will be associated with a diversion of suspended sediment loads to Area A. It should be noted that majority of the suspended sediment loads in Illinois Streams are moved during high flow events. The sediment loads thus diverted will spread across Area A. This sediment and water diversion to Area A will in turn decrease the sediment loads that will be flowing below ES-1. A second overflow structure may be installed on the east bank of Big Bureau Creek.

A diversion structure below at the tip of Cell 1 will also allow water and sediment to flow into Cell 1 and then to Cell 2, 3 and 4. Thus, the project is not taking away all the Goose Pond Area for sediment deposition purposes. It is highly unlikely that an increased sediment deposition will take place outside of the project than those taking place before the project. In order to answer some of the questions in a very positive manner and also enhance the future managements of these lakes, a detail sediment research component has been incorporated with the proposed project. The Sediment Research Component will start before the project is implemented so that a comparative analysis could be done to identify before and after project benefits and or sedimentation patterns.

3. *Altering the flow of water from the Illinois River will cause more sediment to be deposited in Goose Pond, i.e., these sediments will no longer be mobilized by Illinois River flood energy.*

All the backwater lakes (e.g., Meadow Lake, Wightman Lake, Babb's Slough, Sawyer Slough, Pekin Lake) along the Illinois River are depositional in nature. This has been substantiated by numerous research activities by the Illinois State Water Survey, Illinois Natural History Survey, and Rock Island District of the US Army Corps of Engineers. Mostly sediments to the backwater lakes are coming from the Illinois River including those delivered by the local watersheds. As a matter of fact, for the backwater lakes in the vicinity of the Goose Pond area, the average rate of sediment deposition is about 0.26 to 0.36 inches per year since early 1900s. Thus it is extremely unlikely that the Illinois River will be scouring the sediments from the backwater lakes.

4. *Widening, deepening, and moving the Narrows west will reduce the velocity and energy of flows through the Narrows, causing more sediment deposition in the north end of Senachwine Lake, especially east of the current Narrows since the flow of energy is being moved west.*

It is true that in general widening and deepening any stream for a substantial length could decrease the velocity. Of course, there is no straight-line correlation of these activities. The widening and deepening will also have to be associated with a change in the energy gradient of the stream to enhance the additional movement of sediment and water. The connection between the Goose Pond and the Senachwine Lake is not like an ordinary stream channel. The trap efficiency analysis for the Goose Pond complex has shown that the Goose Pond area could trap as much 70% of the incoming sediments from the Big Bureau Creek. On top of that, the sediment that is delivered from the Senachwine Creek is now mostly depositing upstream of the narrows. It is almost certain that after widening and deepening the Narrows, initially most of the

sediments will deposit within the widened and deepened narrows before some kind of dynamic balance is attained. Once a dynamic balance between sediment, flows, energy gradient and sediment particle sizes is attained, then the normal movement of the sediment will take place within the Narrows based on the flow, geometric and dynamic characteristics of this area.

The Sediment Research Component will address this issue including a quantification of the sediment depositional patterns within and outside of the Narrows

5. *Increased Goose Pond flow velocity due to reduced Goose Pond area will cause less sediment deposition in Goose Pond and more sediment deposition in Senachwine Lake once these flows are past the Narrows.*

See responses to Questions No. 1 through 4. As mentioned previously, it is highly unlikely that the rate of sedimentation within the Senachwine Lake will be higher than what would take place without the project. All the backwater Lakes along the Illinois River have lost substantial amount of their capacities and it will continue to do so. This Project with its Sediment research component will try to answer questions that could be used to enhance the useful life of these water bodies.

6. *No one is going to manage sediment after TWI is gone in 10 years.*

Ultimately, the control of sediment reaching the Goose Pond area resides in the Upper Big Bureau Creek watershed. The Wetlands Initiative along with other organizations is pursuing control technologies in the upper watershed.

7. *If the levees fail, causing a ton of silt in Goose Pond, who has the responsibility to clean it out?*

If the levees are breached during the research period, the District will be responsible to repair the levees. After this period, the landowners will be responsible for any levee repairs.

8. *What is the quantity of silt collected by the ponds?*

Water and sediment will be introduced into Cell 1 by the diversion structure on an experimental basis. If 20% of the suspended sediment is diverted from Bureau Creek (e.g., during flood events exceeding 500 cfs), then Cell 1 would received an estimated 50,400 tons/yr (44,000 cubic yards/yr). The entire Goose Pond complex, including the Project area, will be inundated by the Illinois River during any flood higher than the 5-year flood stage. At these times, the entire project area will still be subjected to sediment loads from the Illinois River. Based on the mean number of flood events exceeding 453 ft MSL over the last 20 years at this location, it is expected that the Project will be flooded once every 1.89 years, with flood events occurring during the growing season once every 3.60 years. Assuming a low end backwater lake depositional rate of 0.26 in/yr, it is estimated that 53,200 tons (46,350 cubic yards) annually will be deposited within the 1,326 acre Project site. In addition, the water pumped into the project will carry a suspended sediment load that will settle out within the cells. Based on an average suspended sediment concentration of 104 mg TSS/L and an inflow pumping rate of 125 cfs,

approximately 12,855 tons of sediment (11,176 cubic yards) will be deposited within the cells annually. Based on these estimates and assumption that all diverted and pumped in suspended sediment is contained and evenly spread out in Cell 1, the accumulation will be 1.42 inches per year during the research period.

The effects of sediment accumulation on the plant community, nutrient removal and wildlife habitat will be monitored by Project researchers.

9. *Who has control of the Princeton emergency spillway and the sediment from Big Bureau Creek? (Implication is that PG&FC and SC will not divert sediment onto their property)*

Based on the preliminary design, the emergency spillway will be a passive system, which would be utilized whenever Big Bureau Creek water levels exceed the elevation of the spillway.

10. *Area A will be used for storage area for silt for life of project? The soil for growth of wildlife food and habitat would be covered over with sand/silt to what depth?*

The emergency spillways will be designed to allow only high frequency floods to overflow through the spillways and thereby avoid the catastrophic failure of the Big Bureau Creek levee system. Without the spillways, the frequent failures of the levees will lead to a very rapid loss of waterfowl habitat, the deposition of sandy material which is conveyed by the high energy through the failed section of the levee. The emergency spillway will allow some silt and some very light and very fine sand to enter the forested areas, but this will be little different than the water that annually inundates this forested area from the Illinois River. Nonetheless, extensive monitoring will be conducted during the course of the research program and the weirs can be adjusted if the existing plant community becomes stressed.

11. *Who is going to remove silt from ditches and land on a regular basis so as not to interfere will the planting of duck and wildlife food plots?*

During the Project period, the main channel between the spillways and the off-site pump will be maintained as part of the research effort.

12. *Who is going to monitor and make management decisions in regards to the sediment diversion from Big Bureau Creek into Cell 1?*

The diversion of water and sediment will be controlled by a gate within Big Bureau Creek and a channel or drop structure conveying it to cell one. The purpose of the diversion structure is, in part, to redirect the flow and sediment to the older course of Big Bureau Creek, which ran through Cell one. More importantly, however, the diversion of silt and water will assist in the evaluation of the abilities of wetlands to process silt, and its associated contaminants, particularly phosphorus, and for the wetland to be able to respond and survive the inundation of silt and excess nutrients. Finally, diversion of water and these materials into Cell one will slow the process of sedimentation within Goose Pond. The diversion will be the subject of intensive research and the impacts of this diversion will be carefully measured, not only in terms of physical changes in cell one, but also in terms of changes to the fauna and flora. The rate of

deposition is slow enough that cell one will not be filled with sediment during the course of the research program. Furthermore, the cell offers the ability to control water levels, thus being able to increase water depth when sediment accumulates in the cell and thereby maintaining the viability of native wetland plant communities.

*13. What effect will this project have on Big Bureau Creek impairments?*

This project will have no negative effect on Big Bureau Creek impairments, which, according to the 2006 IEPA 303d Report, are total nitrogen and fecal coliform. These impairments, in addition to total phosphorus, iron, and total suspended solids, originate in the watershed north of the confluence to Goose Pond. The Project will have a positive effect on the Big Bureau Creek flow that is diverted into the Project for research purposes as nitrogen, phosphorus and suspended sediment levels will be reduced prior to being discharged into Lake Senachwine.

**Narrows Issues**

*1. The Narrows will freeze more rapidly.*

The Project will not cause the Narrows to freeze more rapidly because the Project will increase the water flow in the Narrows. The Narrows currently is under the greatest threat of freezing when Big Bureau and Senachwine creeks are at their lowest flow rates, which during winter can be as low as 2 cubic feet per second (cfs). The project, however, will pump 24 hours per day, 365 days per year up to a rate of up to 250 cfs—far exceeding the current low flow stream discharge rates of Big Bureau and Senachwine creeks combined. (As a point of reference, the current annual average flow rate for Big Bureau Creek (2004-2008) is 153.2 cfs).

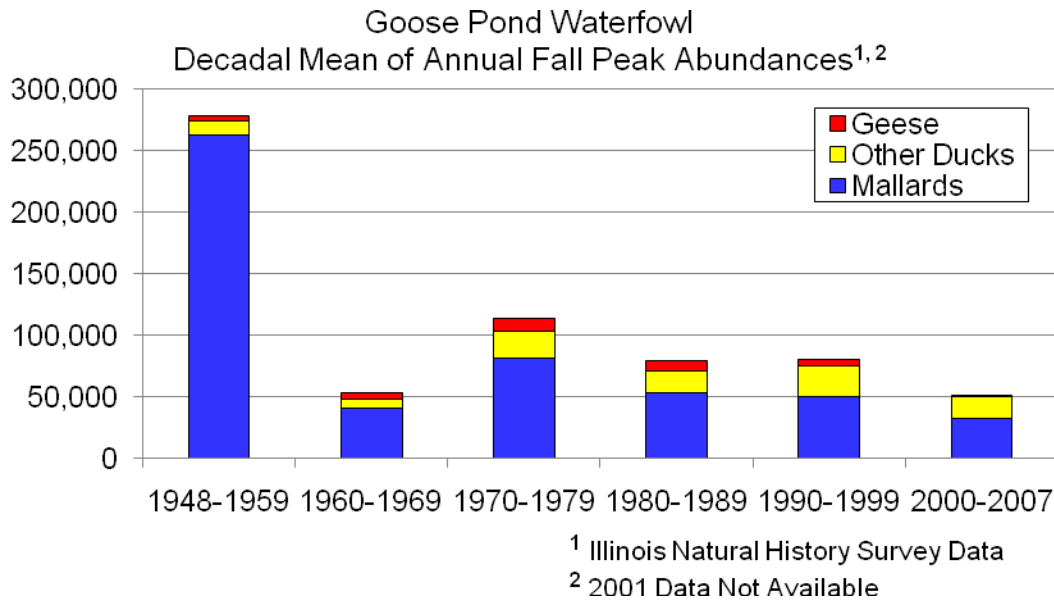
*2. Please explain why redirecting the narrows is necessary.*

During the public meetings, concern was raised about the proposed construction of berms on the eastern side of the Narrows. The berm was thought to restrict the conveyance of the Narrows, thus increasing upstream water levels and, thereby, increasing the velocity of the water flowing through the Narrows. In turn, there was concern expressed by the increased transportation of sediment from Goose Pond into Lake Senachwine, and particularly onto properties lying immediately south and east of the Narrows. After studying numerous old aerial photographs of the Narrows, and noting that the Narrows was considerably wider in 1940 through the 1950s, the revised project configuration included the restoration of the Narrows to its approximate configuration in the 1940's. By expanding the Narrows, velocities will be reduced and sediment transport lessened.

*3. The Narrows protects wildlife from the winds, so widening the Narrows will change their habitat.*

It is difficult to take issue with the assertion that widening the Narrows will change wildlife habitat. However, it is not clear that any potential change will be significant, but if it is, the evidence suggests that it will be positive. In the 1940s and 1950s when the duck population of Goose Pond was at its highest (Figure 1), the Narrows was nearly twice as wide as is currently

proposed. We propose widening the Narrows from its current width of 300 feet to 600 feet, while it was over 1,000 feet wide back in 1940 (Figure 2). There simply is no evidence to support the assertion that a 600 feet wide Narrows will be detrimental to wildlife.



**Figure 1.** Decadal means of the annual waterfowl abundance peaks at Goose Pond. Annual abundance data for each species were determined from multiple aerial surveys conducted each Fall by the Illinois Natural History Survey.



**Figure 2.** Illinois State Geological Survey aerial image composed from photographs taken 1939 to 1941. What is now the Narrows in 2008 is where Senachwine Creek once flowed into Goose Pond and Senachwine Lake in 1940, and can be identified by the Senachwine Creek delta.

## Endangered, Threatened, and Otherwise Protected Species Issues

### *1. The project threatens the federally threatened *Boltonia decurrens*.*

Although there is a projected loss of 0.6 acres of habitat suitable for the federally threatened plant *Boltonia decurrens* (decurent false aster), the project will create 3.5 acres of *B. decurrens* habitat outside the project site and 2.0 acres of *B. decurrens* habitat within the project site in mitigation for this loss. That is a 10-fold increase in *B. decurrens* habitat created as a result of the project. Moreover, the Biological Assessment of potential impacts to protected species concluded that activities associated with the project will not negatively impact the decurent false aster population in Illinois.

### *2. The mitigation strategy for the loss of *Boltonia* habitat is not acceptable because it recreates habitat upslope and distant from its naturally occurring population.*

This assertion was first made in a response to the original public notice due to a misreading of the text. This misreading was clarified in our response to that concern at that time. Moreover, the original *B. decurrens* mitigation plan was modified after reviewing the concerns of USFWS biologists and other scientists studying this species.

### *3. Bald eagles will be negatively affected.*

Although bald eagles are no longer protected under the Endangered Species Act, they remain a species of special concern among the public and to The Wetlands Initiative. The project is expected to positively impact overwintering eagles because the pumping activities will increase the amount of open water available in the winter and deeper water will increase fish habitat and foraging opportunities. Surveys conducted by Illinois State Heritage biologists indicated that bald eagles do not nest on the project site, although a former nest site is located outside of the project site to the south. This site was abandoned as of summer 2008.

### *4. List of endangered species doesn't include the river otter, which may be impacted.*

The river otter is not federally listed, but is on the Illinois State threatened list, primarily due to the loss of quality habitat in Illinois. Currently, Goose Pond is not particularly good river otter habitat, although river otters may be seen there as they move up and down the river. Good habitat can be found in rivers, lakes, or ponds with plenty of fish to eat and cover from predators. Abandoned beaver dens make ideal homes. They feed opportunistically on both fish and crayfish. Although Goose Pond does have some fish, the water is too shallow throughout most of the area at pool stage to support river otters full time. However, once the project has been developed, the interior habitat should be more attractive to river otters and it is likely that they will be seen there more often than they are now. Regardless, the project is not expected to have any negative impacts on river otters.

### *5. How does the project mitigate or guarantee the existence of lily pads that are on the northwest portion of the project area?*

The species found on the northwest corner of Goose Pond, which is not in the project site, is American lotus, a distant cousin of the white water lily. American lotus is a species well adapted to river backwaters, but whose distribution has been reduced in more recent years due to periodic flooding events overtopping the plants during the growing season. Since the project will have no impact on the frequency of such flood events, and no activities are otherwise planned in the area in which the lotus is found, there should be no impact on the lotus.

*6. If the Decurrent False Aster doesn't grow when it is replanted, what type of fine will be imposed on the applicant because of the loss of the plant?*

Fines are not levied for the failure of mitigations for federally protected plant species. However, the USACE is responsible for ensuring that such mitigation plans succeed, and they do require permittees to go back and take care of failed mitigations.

*7. The project destroys habitat for the Indiana bat, bald eagle, prairie bush clover, eastern prairie fringed orchid, and decurrent false aster without plans for mitigation.*

Of these species, only the decurrent false aster and bald eagle are known to occur on the project site. Although habitat suitable for the Indiana bat may be found on the site (mature silver maple trees), there are no records of the Indiana bat in Putnam or Bureau counties. The Biological Assessment of species impacts submitted to the USFWS by the USACE found that the project is not expected to significantly impact the Indiana bat or the bald eagle. A mitigation plan is currently in place for impacts to the decurrent false aster.

*8. Where is the data and research conducted by a third party that supports statement made concerning endangered species and their habitat and other statements regarding the proposal?*

Over a thousand pages of documents detailing the results of surveys, reports, and the professional opinion of independent scientists have been submitted to the USACE, USFWS, USEPA, and IDNR in the original permit application and subsequent communications with these agencies. Much of this was distilled down to the information transmitted in the two public notices by the USACE. All of it was discussed or was made available for discussion in the various public meetings held by The Wetlands Initiative in the effort to inform all interested parties. Most of the scientists evaluating this project or contributing to its development made themselves available at the public meetings to answer questions.

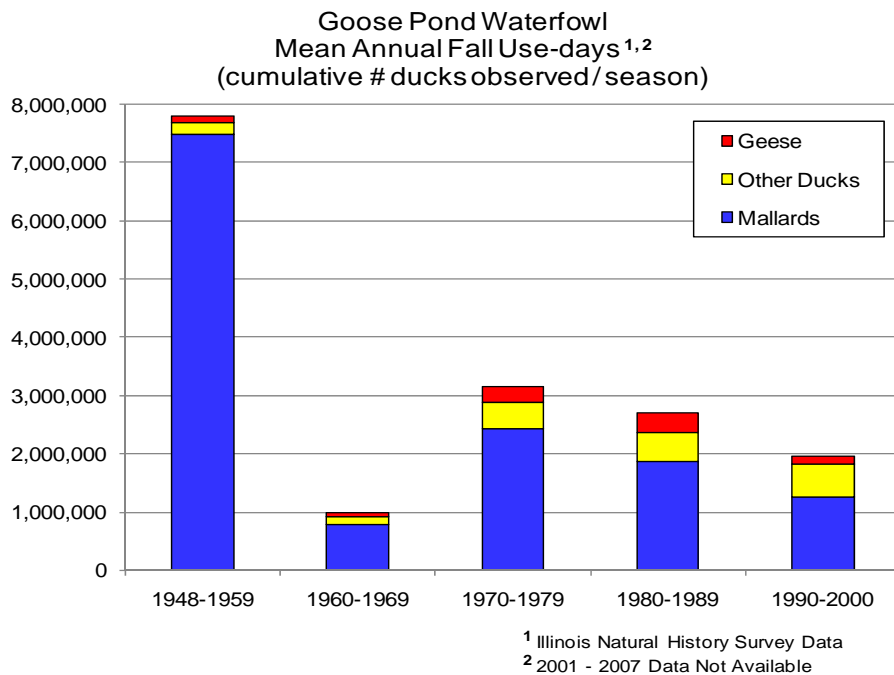
### **Migratory Waterfowl Issues**

*1. Goose Pond is currently one of the best migratory waterfowl resources in North America, and the proposed project will destroy it.*

There is absolutely no evidence to support this assertion. However, the number of migratory waterfowl visiting Goose Pond has been on the decline for many years now, most likely as a result of declining habitat quality due to ongoing sedimentation (see Figures 1 & 3). Illinois

Natural History Survey records indicate a significant decrease in waterfowl abundance from 1948 (year records first collected) through 2000. The Goose Pond project is not expected to exacerbate this loss, but may reverse the trend with the significant increase in vegetated open water developed on the site. Indeed, the hunting clubs would not have been interested in this project if it wasn't for the expectation that duck hunting prospects would be improved with the project going forward.

Although the Goose Pond project should not degrade the migratory waterfowl resource, what would change it irrevocably would be the loss of open water due to ongoing sedimentation. An analysis of sedimentation rates and the rate of open water loss indicate that the remaining open water of Goose Pond will be gone within 20 years – either with or without the project being built. Ironically, the landscape could begin to look much like it did prior to the Peoria dam being constructed back in 1939, i.e., an area of low marshy ground and rich meadows fed by streams and springs. Unfortunately, without active management, most of this area will be dominated by the invasive sandbar willow that is colonizing the Big Bureau Creek delta as quickly as it forms.



**Figure 3.** Decadal means of the annual waterfowl Fall use-days at Goose Pond. Fall use-days are the cumulative number of ducks for each species observed on Goose Pond for each day surveyed. Fall use-days data for each species were determined from multiple aerial surveys conducted each Fall by the Illinois Natural History Survey. Also see Figure 1.

*2. Migratory patterns of waterfowl will be disrupted.*

Again, there is no evidence to support this assertion. What will disrupt patterns of waterfowl migration is the impending loss of Goose Pond's open water. What will continue to attract migratory waterfowl long after the rest of Goose Pond is gone will be the large expanses of marsh and open water within the project site. This will not only benefit the hunt clubs, but also

local hunters outside the project site who will undoubtedly build berms and levees to capture or pump water for their own hunting purposes.

- 3. The impact to hunting and fishing will cripple the local economy, e.g. restaurants, hotels, etc.*

Since local hunting is not expected to be negatively impacted by the project, the local economy should not be impacted either.

- 4. Constant maintenance of the dikes will impact duck hunting during the fall (4-5 months).*

The hunting clubs have mandated that no project activities that threaten their hunting prospects will be allowed during the hunting season. This includes construction activities. There is no reason to suspect that maintenance of the berm system will be constant, and no maintenance activities will be planned short of preventing a catastrophic failure.

- 5. Shore bird habitat along Goose Pond will be damaged – it will become too deep.*

Shorebird habitat within the project site will be unavoidably reduced, although not completely. However, shorebird habitat outside the site will remain unaffected and local impacts to the shorebird community are expected to be minimal.

- 6. Will the project cause migrating birds to be preyed upon by land animals?*

It is difficult to imagine how this will happen, especially since the area of open water within the project site is expected to double, most of which will be deeper than any part of Goose Pond at pool stage. Since the character of Goose Pond outside of the project site is not expected to change due to project activities, predation rates should not be affected.

## **Invasive Species Issues**

- 1. The plan doesn't include control or mitigation of invasive species.*

Invasive species are an unavoidable fact of life all along the Illinois River, and indeed throughout the world. They can already be found throughout the Goose Pond area, and the project isn't expected to increase the rate or number of new invasions. However, the site management plan currently calls for significant invasive control measures within the site as such measures are necessary for successful operation of the nutrient farm.

## **Operations, Management, and Exit Strategy**

- 1. There is no exit strategy.*

There is an exit strategy that is on file with the Army Corps of Engineers, Rock Island District.

2. *Construction and maintenance cost estimates too low, i.e., there isn't enough money available to do the job.*

While the design engineers, Klingner and Associates, have not yet completed the final design of the project, their cost estimate will be in accordance with their experience and best engineering information available. Both the construction and maintenance costs are important pieces of information and the engineers' estimate will be thoroughly vetted. Ultimately, the true test of the engineers' estimate will be the construction bids and the first few years of operating the facilities.

### **Design and Construction Issues**

1. *The berm engineering design is faulty, specifically in regard to berm material integrity. Sediment excavated from the Soedler property is not adequate to build the western levee of the project – it will become fluid again once the levee is overtopped.*

The engineering design and the construction strategy are based on the geotechnical analysis of 26 soil borings taken from the borrow sites and from the open water and dry land areas that will serve as the foundation of the levees.

2. *Senachwine Creek flows will erode the SW project berms.*

The flow discharge from Senachwine Creek has been taken into consideration in the design of the western berm.

3. *The Winship property will not be used to bury the electrical cable and for construction access. Why build third road through Winship property and not Schroeder property?*

The current plan is to run electrical cable through the Schroeder property down to the Senachwine Club property. Construction access is currently scheduled to take place from the north through the Princeton Club property.

4. *Will the two bridges be permanent or temporary?*

A permanent bridge will span Mullin's Slough (low steel elevation designed for 450.8 ft MSL) to connect Cell 2 and Cell 3. A temporary bridge will be used for equipment access across Mullin's Slough at the Illinois River.

5. *How many off-site pumps?*

The exact number of pumps will be determined in the final engineering design. One off-site pump will be located at the Illinois River. One or more pumps may be located on Senachwine Club property.

6. *Will the channel from ES-1 be regraded and widened?*

The channel from ES-1 will be regarded to ensure that the water flows towards the off-site pump station located at the Illinois River. The width of the channel is dependent on the amount of water calculated to flow over the emergency spillway on Big Bureau Creek. The height of this spillway has not been finalized.

7. *Exhibit map doesn't show effects to areas outside of the project. Can a larger map of the project area and Exhibit 9 be provided? Have the contours of Exhibit 9 changed compared to the first map?*

The contours in the Joint Permit Application Exhibit 9 "Wetland Impacts and Modifications" have not been changed, but some of the potential internal and external borrow locations have been changed.

8. *What will this proposal cost? How much will be federal money?*

The Wetlands Initiative estimates an investment of nearly \$54 million over the course of the 10-year project. The Wetlands Initiative, an Illinois 501(c) (3) nonprofit organization, will raise \$6.2 million from individuals, foundations, and corporations – those interested in finding environmental solutions that promote wetland restoration. We are asking the Federal Government for an appropriation of up to \$14.6 million towards the research budget. Construction costs are expected to approach \$30 million to construct and restore the site. Both the landowners and participating academic institutions will be making in-kind contributions to complete the total budget.

9. *Why not construct a much smaller sized (1 acre) cells?*

The scale of wetland restoration needed to solve nutrient problems in Illinois and the Upper Mississippi River Basin is significant. The ability of small-scale wetlands to remove and store nutrients has been studied for over 30 years, little is known about large-scale wetlands, particularly in the Midwest. The purpose of this Project is to assess the efficacy of large-scale wetlands in water quality improvement. Information on construction and operation costs, loading rates, removal rates, seasonal effects and wildlife effects need to be considered in larger wetlands.

10. *Whose property is the pump on? PSI: why not a ditch from Mullen Slough to the pumping station?*

The property is owned by the Senachwine Club. The intake to the pumping station may well be a small channel leading north from Mullin's Slough to the pumping station.

11. *Will the PG&FC off-site pump be reversible?*

Yes, the off-site pumping station will be designed to both take water out of the northern zone of the Princeton Game & Fish Club's property via the channel and, at other times, bring water in from the Illinois River to inundate some or part of the property south of the off-site pump.

## Overall Strategy Issues

### *1. Creating wetlands to reduce nutrient pollution is a bad idea.*

It would be more accurate for the question to read “is restoring wetlands” rather than “creating wetlands”. The latter phrase refers to taking a non-wetland area and converting it to a wetland which can be costly, and in the long run, difficult to sustain. Restoring wetlands to control water quality (including nutrient control) is an idea that has been tested at a number of research sites and appears to provide an effective, efficient, sustainable and fair way of managing the water quality of our surface waters. While numerous research projects across the country and in Europe and elsewhere have shown the efficacy of using wetlands for this purpose, there are few projects of sufficient scale to prove or demonstrate the ability of wetlands to treat water quality on a basin the size of the Illinois or Mississippi Rivers. If the Goose Pond project proves successful, substantial and large-scale environmental, social and economic benefits will result.

### *2. This is a misuse of drainage district law.*

The activities of the constituted drainage district are the same as those for any other drainage and levee district: control of water levels for the propagation of plants which directly or indirectly produce a commodity which can be sold, earning revenue for the property owners within the levee district. In the case of the Goose Pond project, the plants to be grown are not corn and soybeans, but rather native wetland vegetation. The commodity, rather than corn or soybeans, will be the harvested nitrogen, phosphorus and carbon. In an agricultural sense, these activities are no different than the more traditional ones employed by drainage and levee districts across the country.

### *3. There is no strategy to control carp, which makes the underlying goals of the project unattainable.*

There is no doubt that the control of the common carp, as opposed to the various species of “Asian” carp that now plague the Illinois waterway, is essential to the successful operation of a nutrient farm. A good deal of research has been taken in the area of carp control and the Wetlands Initiative has been applying the results of this research as well as investigating alternative control techniques. The fishery scientists who are working with the Wetlands Initiative and will be employed to assist with the Goose Pond project, have a number of control technologies which we are convinced will effectively manage the project. These control technologies include:

- Drawdown of the various cells during the late fall to drive carp from the cells or freeze them during the winter
- The use of attractants, such as pheromones, to gather carp in concentrations so they can be easily netted and removed
- Periodically removing all populations of fish by the use of pesticides.

The control technologies, as a number of other management operations, will be thoroughly developed and tested during the course of the research project.

4. *There is no insurance or bonding for the impact of the project on nearby properties.*

During construction, all contractors will be required to carry liability insurance naming the Water Reclamation District, funding entities and the Wetlands Initiative as co-insured. After construction, the District, the Goose Pond Mutual Drainage and Levee District (GPMDLD) and the Wetlands Initiative will carry liability insurance to protect property owners and anyone lawfully accessing the project site.

### **Pollution Issues**

1. *Moving contaminated soil will have an effect on drinking water.*

There is no indication that the soil is contaminated. No harmful pollutants have been identified in the soil based on the analyses required for the issuance of a Section 401 Water Quality Certification in conjunction with the U.S. Army Corps of Engineers Section 404 Dredge and Fill Permit. The Illinois Environmental Protection Agency (IEPA) selected the chemical compounds to be measured in the sediment that will be dredged and used to form the berms. The sampling locations and testing laboratory were approved by the IEPA's Bureau of Water. In its Antidegradation Assessment, the IEPA only identified suspended solids as a potential pollutant load increase during construction. Any possible increase in suspended solids will be local and temporary. Erosion control measures will be utilized to minimize any increase and prevent impact to surrounding wetland areas.

2. *What is the chemical composition of dredge material and sediment in Goose Pond?*

The 37-page laboratory chemical results report for the sediment testing performed for the IEPA can be found at TWI's website <http://www.wetlands-initiative.org/images/SedimentTesting.pdf>

3. *Will dredging and placing dredge material in a different soil/air/water regime yield potential for contamination*

No as there is no indication that the soil is contaminated. No harmful pollutants have been identified in the soil based on the analyses required for the issuance of a Section 401 Water Quality Certification in conjunction with the U.S. Army Corps of Engineers Section 404 Dredge and Fill Permit.

### **Public Access Issues**

1. *The new project design does not alleviate the net loss of public waters in cells 3 and 4. Will isolation of public waters by cells 3 and 4 restrict navigation and use?*

Pullovers for watercraft will be incorporated in the project as required by the State of Illinois. These pullovers, according to the rules and regulations of the state, will be limited to specific crafts and to season of the year.

2. *The water crafter pullover will be constructed on land that is not public.*

Yes, it will be constructed on private property. But the public can use the pullovers in accordance to the rules and regulations of the state.

3. *Will the public have ATV or automobile access to the top of the levees?*

No. The levees are private property. No access will be allowed without permission of the Levee District and the two landowners.

4. *During the construction, will Goose Pond be navigable?*

Access to the interior cells will be limited due to construction of the exterior berm and restoration activities, but boat traffic should not be blocked permanently through the “Narrows” or Mullin’s Slough. A temporary bridge, most likely a barge bridge similar to what is currently used by the Senachwine Club, will be used for equipment access across Mullin’s Slough. The barge will block traffic for short periods of time as equipment is moved across the slough.

5. *After the project is over, will the cells be open to the public fishing or hunting?*

Princeton Game & Fish Club and Senachwine Club are the riparian landowners; therefore, no landing on or fishing/hunting from the areas considered private property will be accommodated or allowed without permission from the landowners during the Project and after the Project is completed.

6. *How much clearance is “adequate clearance to allow canoe or small boat access during flat pool from the river to Goose Pond? What will be the projected clearance distance for historically high water levels experienced during historical boat usage?”*

The current engineering design has the low steel elevation at 450.8 ft for the permanent bridge that connects the two exterior berms at Mullin’s Slough. Normal pool stage of the Illinois River is typically 440-441 ft. Precaution will be necessary as water levels rise to the height of the bridge. At historically high water levels, the bridge and the entire project will be under water.

7. *Mullin’s Slough is far more navigable all the way through the Narrows than any area in Goose Pond.*

The new design takes this into consideration as flow and access through Mullin’s Slough will not be permanently blocked.

## **Legal Issues**

1. *Bureau County Zoning Office has not been contacted in regards to the zoning of the District property and the allowable uses.*

TWI’s local attorney, Eric Swartz, is currently contacting the Zoning Office.

2. *How will any negative effects and problems resulting from project activities be resolved? Who will be responsible for any negative effects of the project and resolution of any problems created by the project after the end of the 10 year period?*

We cannot respond to unknown problems. The landowners are responsible for their property, and the drainage district is responsible for their property. We anticipate the landowners will continue to manage the project and their landscape successfully.

3. *Why were plans changed without PG&FC representation?*

The plans were not changed without representation. Discussions were held with both of the property owners, federal and state agencies and with the general public. In fact, it was the issues raised during public hearings that resulted in the modifications.

4. *Is anyone bonded so the land can be returned to former condition? What happens if project is started and never finished?*

Contracts will require that construction contractors will be bonded. The project is designed to provide benefits to the property owners regardless of their use for research. The facilities will not be started until construction funds are secured. These funds will be adequate to build and operate the berms and pumping stations without damage to surrounding property owners and over an extended, ten years at least, period of time. The landowners will ultimately take over the operation and management of the facilities and continue to use these facilities for the purposes of duck hunting.

5. *Is this a conflict of interest since the GPMDLD members are also the landowners and members of the hunt club. The commissioners are also members of the hunt clubs.*

As in all drainage districts, the commissioners are statutorily required to be land owners.

## **Mitigation Issues**

1. *Where is the mitigation land located?*

Mitigation required by the USACE and USFWS will be developed on land owned by the Princeton Fish & Game Club and the Senachwine Club. The areas are strategically located close to the impacts. The slope and soil materials of the locations were carefully considered in selecting the mitigation sites. Also, water access and protection from heavy sediment deposition were contributing factors to the site selection.

2. *How many acres of land will be mitigated on each club property?*

The total acreage to be developed for mitigation is 114 acres, 6 of which are for the 0.6 acres of decurrent false aster that will be impacted.

3. *Is it possible to move berms so no property is mitigated?*

At this stage of the planning process, there are no plans to alter or move the footprint of the berms. Since the purpose of mitigation is to offset impacts to protected resources, it is not desirable to avoid mitigation. Mitigation ensures that there is a net positive impact to wetland habitat following any negative impacts associated with developing the project.

4. *What happens to the mitigated land legally?*

The land areas on which mitigation is performed, will be controlled by a permanent easement as specified within the 404 permit issued by the Army Corps of Engineers.

5. *Who pays for taxes on the land?*

The taxes will continue to be paid by the landowners. The nature of the tax assessment is being explored with both Putnam and Bureau County governments.

6. *Who maintains the land?*

As long as research is being conducted within the Levee District, the District will maintain the project with the financial assistance from the Wetlands Initiative and other contributing entities. Once research is completed, the operation of the facilities and site will revert to the underlying property owners.

7. *Who pays liability insurance?*

During the research effort, TWI and the other supporting organizations and agencies will pay for the liability insurance. After the research is completed, the liability will fall to the underlying landowners.

8. *Who controls usage?*

Ultimately, the underlying landowners control the usage to their land. This will be coordinated through the Goose Pond Mutual Drainage and Levee District during the research program. After research has been located, the landowners will control usage.

TWI Response to Form Letters Submitted  
in Response to Army Corps of Engineers  
Public Notice #2 for Goose Pond Pilot Project  
September 2008

## **Form Letter Questions**

*Discharging pollutants into the river is environmentally unacceptable.*

This Project does not allow any facility to discharge more pollution into the river. The wetlands in this Project will process the amount of nutrients that currently flow down the Illinois River. Interestingly, a disproportionate amount of the nitrogen load in the river comes from local and regional agricultural run-off, not municipal wastewater.

*Isolating public waters of the United States (cell 3 and 4) restricts navigation and use for the public.*

The public can access the Waters of the United States (WUS) within Goose Pond from adjoining properties or from the Illinois River either via Senachwine Lake or Mullin's Slough. Based on feedback from the two public meetings, the main public access concern was that the original design would block access to the Illinois River via Mullin's Slough. The latest design will maintain the general west to east flow path of Mullin's Slough

Easy public access by boat, either across Goose Pond or up Senachwine Lake, is limited to periods when the river stage is several feet above normal river stage (440 MSL), as Goose Pond is fairly shallow (about 6 inches or less) at normal stage. Currently, the WUS within Cell 1 and the majority of Cell 4 are isolated from Goose Pond by landowner berms until water levels are above 444.6 MSL (mean sea level). Based on the pending recommendation of IDNR and IEPA, one or more boat pullovers will provide public access into the interior of the Project.

*Placing levees in the center of the historical waterfowl resting area in Goose Pond will be detrimental to waterfowl migration habits.*

This is an assertion not supported by the facts. The levee or berm system will enclose 354 acres of the remaining Goose Pond open water (at Illinois River pool stage), with an additional 214 acres enclosed in Senachwine Lake. Upon completion of the Project, there will be an additional 598 acres of new and vegetated open water, for a total of 1,166 acres of open water available for migratory waterfowl. Since the entire Goose Pond open water area is rapidly filling with sediment and Projected to be filled prior to 2030, the Project will provide critical open water habitat for migratory waterfowl long after the rest of Goose Pond's open water has disappeared.

*Goose Pond will freeze sooner sending waterfowl south sooner.*

This is an assertion not supported by the laws of physics. A water body freezes when the surface water temperature falls below 32 degrees F (actual temperature dependent on salt concentration). When water is moving, it may take considerably longer to freeze at the surface since the surface water is continually mixing with warmer water below the surface. Goose Pond currently freezes first in the open water areas with little surface velocity, and last in those areas where currents are maintained, such as at the mouths of Big Bureau Creek and Mullin's Slough. Since all significant water inputs—such as Big Bureau Creek and Mullin's Slough—will still flow into Goose Pond upon completion of the Project, these areas will remain open water during winter for as long as

they would have had the Project not gone forward. However, since water will be pumped through the Project 24 hours per day, there will be a significant portion of water that will freeze much later within the Project site, and which will likely not freeze at all in some years. This should result in at least some migratory waterfowl holding to the Goose Pond area longer than they would otherwise should the Project not be built.

*Changing the natural flow of waters increases sedimentation elsewhere.*

There is nothing natural about the flow of water into Goose Pond. Both the flow and water levels within the Illinois River and, particularly, Big Bureau Creek have been highly altered over the last 70 years. The Project plan calls for a net zero-sum sediment deposition balance. Construction of the berms will create a significant sediment deficit and alternative sediment deposition areas will be utilized during the Project period to prevent an increase in sedimentation outside of the Project area.

*Building new berms and levees will increase flooding.*

The increase in flood levels will be minor for flood events less than 453 MSL, the maximum height of the overflow spillways, which are structures that let water into the Project area to prevent damage to the berms when they are overtopped. The Project will not impact flood levels during events greater than a 3-yr event.

To determine the maximum water increase at this river stage, an interpolation was performed from the “worse-case” scenario model that assumes infinitely high berms for 2-yr and 5-yr flood events. Interpolating between the 2-yr and 5-yr increase of 0.42 and 0.61 feet, respectively, demonstrates that the maximum increase for the 3-yr event would be about 0.49 ft (5.88 inches).

The increase in water levels for flood events less than 453 feet MSL and the areas potentially impacted were based on the construction of exterior berms at both the Goose Pond and Sawmill Pocket, infinitely high berms, and no internal storage. There are no plans to proceed with the Sawmill Pocket Project. The spillways will be set at a maximum of 453 MSL and there will be internal water storage. Thus, the flood impacts will be less than the 0.49 ft that the modeling results predict. Based on the modeling results and site investigations, there will be no areas impacted by the slight increase in water surface profile due to the Goose Pond Project; however, IDNR is reviewing the flood impact study and will make its determination.

*Dredging silted waters can release harmful pollutants trapped in the soil.*

No harmful pollutants have been identified in the soil based on the analyses required for the issuance of a Section 401 Water Quality Certification in conjunction with the U.S. Army Corps of Engineers Section 404 Dredge and Fill Permit. The Illinois Environmental Protection Agency (IEPA) selected the chemical compounds to be measured in the sediment that will be dredged and used to form the berms. The sampling locations and testing laboratory were approved by the IEPA's Bureau of Water. In its Antidegradation Assessment, the IEPA only identified suspended solids as a potential pollutant load increase during construction. Any possible increase in

suspended solids will be local and temporary. Erosion control measures will be utilized to minimize any increase and prevent impact to surrounding wetland areas.

*Destroying Bureau/Putnam Co. habitat to save Chicago money is economically and ethically wrong.*

There are two misstatements in this one comment.

- First, the assertion that habitat is being destroyed is misleading. Wetland habitats of relatively poor quality are being either enhanced or restored by increasing species diversity and ecosystem functioning. A few upland habitats, principally roads or agricultural fields, are being developed into wetland habitat. The open waters of Goose Pond in the Project site, currently unvegetated, are being developed as hemi marsh habitat, the most beneficial natural habitat of mallards and other migratory waterfowl. Overall, the acreage of vegetated open water within the Project site that is available for feeding and resting waterfowl at Goose Pond will double. There will be a significant loss of habitat dominated by the invasive sandbar willow as it is converted to marsh, floodplain meadow, and floodplain forest habitat. There will be a net loss of floodplain forest (primarily black willow) as this habitat is converted to other wetland types.

Based on an analysis of sediment deposition patterns over the next 20 years, the open water areas of Goose Pond will disappear as sediment fills what little is left of the basin. This open water habitat will be lost to the expanding wave of sandbar willow colonizing the Big Bureau Creek delta as quickly as it forms. Big Bureau Creek will still maintain a channel through the basin draining into Senachwine Lake, with pockets of marsh persisting across the landscape as they did prior to permanent flooding from the dam built in Peoria in 1939.

Since development of the Goose Pond Project is based on a net zero change in sediment deposition, these changes due to expansion of the Big Bureau Creek delta will take place whether the Project moves forward or not.

- Second, the entire wastewater industry, not just Chicago, is looking for more cost effective and beneficial alternative solutions to improve water quality of its effluent. Tougher water quality standards are likely to be established for wastewater treatment facilities and other industries. In the coming years, facilities in Ottawa, LaSalle, Peru, and Peoria will be required to reduce their nitrogen and phosphorus discharges. Wetlands could be a cost effective and environmentally-sensible method to do so for these cities. Furthermore, nutrient farms are indifferent to the source of nutrients that are being removed, as agricultural and urban runoff contributes greatly to the nitrogen and phosphorus loads in the Illinois River.

The Metropolitan Water Reclamation District of Greater Chicago is involved in this research Project because it is an international leader in reclaiming wastewater. MWRD regularly invests in research to find new clean water technologies that are economical and

environmentally sound. This Project incorporates its own interests and that of the entire industry.

*Destroying any habitat for the endangered Indiana Bat is unacceptable.*

There are no existing records of the Indiana Bat occurring in Putnam or Bureau counties. Moreover, the Biological Assessment of potential impacts to protected species concluded that activities associated with the Project will not negatively impact the Indiana Bat population in Illinois.

*The \$40 million being spent would be better used at Public hunt site.*

This statement assumes that \$40 million is somehow available for Putnam and Bureau counties to invest however they choose. This is a false assumption. The funds that will go into this Project will only be available because the funders (government, individuals, foundations, corporations) are interested in supporting research to find alternative ways to restore wetlands and provide cleaner water. These funds would not be available for other purposes. For example, MWRD would not be interested in investing approximately \$20 million in Putnam and Bureau counties if the purpose was solely for recreational improvements.

*Destroying the endangered plant (*Boltonia decurrens*) in Princeton Duck Club is unacceptable (pg. 7 of permit application).*

Federal law requires that if anyone impacts habitat for an endangered species, they must create new habitat. The Wetlands Initiative will follow that law. The Project will create a total of 5.5 acres of new habitat for *Boltonia decurrens* (decurrent false aster)—3.5 acres outside the Project site and 2.0 acres within the Project site. This is a 10-fold increase in *B. decurrens* habitat created as a result of the Project because the Project will impact less than one acre (0.6 acres) of habitat. Moreover, the Biological Assessment concluded that activities associated with the Project will not negatively impact the decurrent false aster population in Illinois.

*When the 10 year [research] period is done, only the clubs will benefit from new lands that will be planted and hunted.*

While Project improvements are on private land and the future operation/management of the site is at the discretion of the landowners, the improvement in wetland habitat and function will provide benefits to the surrounding areas. Fish habitat quality will be directly enhanced within Goose Pond and Senachwine Lake by the higher quality of water (e.g., less sediment and more oxygen) moving out of the Project site into these waters 24 hours per day every day of the year. In addition to higher water quality, these waters will be rich with a greater abundance of the planktonic organisms desired by many fish species for food. Increase in water quality and native vegetation within the Project may increase the numbers and diversity of migratory waterfowl in the area.

*Misusing Drainage District law to create new levees is wrong.*

The Goose Pond Mutual Drainage & Levee District was voluntarily formed by the owners of the land within the District. The Illinois Drainage code provides a legal framework for the creation of new levees and drainage systems to allow the owners to make the best use of their property.