Memorandum

DATE: February 29, 2012

TO: Homeowners of North Shore Area

FROM: City of Crystal Lake – Engineering and Building Department

RE: Response to Residents Concerns Regarding the North Shore Area

Relocation of North Shore & Traffic Lanes

1. What are the Zoning plans for commercial or residential development current or future between Crystal Lake Avenue and the Crystal Lake Motel on the west side of Rt. 14?

   The City owns this area, which is zoned watershed, and there are no plans for any commercial or residential development on this land.

2. What are the conditions of the $482K Department of Commerce Grant? Is it tied to bike paths and safety concerns of the North Shore relocation to Crystal Lake Avenue? We would like a copy of the grant.

   The grant is for "all costs associated with the North Shore Flooding Improvement Project" and is not tied to bike paths or safety concerns (copy provided @ meeting). The grant money is being applied to the drainage improvement portion of this project.

3. After reviewing the City Council meetings of September 20, 2011 and December 6, 2011, it appears that you are trying to slam this through only to get it in this Fiscal Year budget and to get the grant. Is that true? If not, please explain.

   The project schedule is not being driven by the grant or any need to be completed in any one fiscal year. Improvements such as this often extend beyond a single fiscal year depending on the permitting and construction schedule.

4. What are the specifics of the accidents at North Shore/Rt. 14 intersection vs. Crystal lake Ave. & Rt. 14? They claim that it will be safer to eliminate North Shore/Rt. 14. Back those claim up with data.

   Council direction was to provide an improvement that drastically reduced the risk of future accidents, given the high volume of traffic that currently exists on US Route 14 (32,700 vehicles per day according to IDOT's website).

   Since 2009, there were 12 crashes at the North Shore Drive/US Route 14 intersection. With the completion of IDOT's upcoming widening of US Route 14, traffic volumes are anticipated to increase in the future (to 37,000 vehicles per day). Relocating this neighborhood's access to the traffic signal would minimize the risk for higher numbers of accidents that would likely be associated with the higher traffic volumes.

5. Rerouting to Crystal Lake Ave. will change the traffic pattern and bring us to a stop light, but we will be flowing into the other neighborhood, how will this additional traffic on Crystal Lake Ave be handled? Turn lanes?

   The additional traffic from North Shore Drive will not negatively affect the operation of the existing intersection of US 14 and Crystal Lake Avenue per an analysis completed by the consultant.

6. Have you considered a Right Turn Only out of North Shore?

   This is the sole access for this neighborhood and restricting the left turns onto US 14 would greatly inconvenience the residents. Providing access at the existing traffic signal achieves the safety goals without inconveniencing the residents wishing to head northwest on Route 14.

7. If this project is approved, will the City use Grants for reforestation, and beautification of the wet-lands? Will they be replanting native wetland trees, shrubs, and native plants?

   The City is planning for future invasive species remediation in the Cove Pond area. Grant funding may be available for this work, but is not part of our current project. The limited areas disturbed within the project limits would be restored using native vegetation whenever possible, however.

8. Where will the funds to replant come from?

   Grant funding may be available for this future work.

9. Additional traffic will come to North Shore weather by mistake or intentional, we would like you to consider a gated community, whereas we would use our boat key for access. Also a sign that states “PRIVATE COMMUNITY.” Where will people turn around?

   Signage reinforcing that there is “NO OUTLET” is present and the City will ensure that it is maintained or enhanced for visibility.

   A gated community would present issues from a life-safety perspective, as it would obstruct police/fire access to assist the residents in an emergency.

10. Rerouting North Shore Dr, what provision if any has the City made to increase water storage and filtration, what is going to happen to the old Northshore Drive.?

    Under the current plan, the paved road surface of the “old” North Shore Drive is planned to be removed and replaced with low maintenance native vegetation that will promote infiltration of rainfall. The channel between North Shore Drive and the lake will also feature deep-rooted native vegetation to enhance infiltration.

    The “old” North Shore Drive cannot be completely removed as it would direct additional water to the Woodland wetland channel and would have an adverse drainage impact to the homes on the north side of Woodland Drive as no overflow system will be provided due to easements not being provided to the City.

Additionally, it would allow water to leave Cove Pond prior to filtering through the full length of the treatment area, which would reduce the water quality benefits that were designed and permitted for Cove Pond.

Communication

1. Why did you not put this to a vote of the people?

   The City collected feedback at the four different public meetings (12/2008, 6/2009, 6/2010, 10/2010). This feedback was used in the design and presented as options to the City Council for direction.

2. It appears that the City and Council are rushing to do this as they claim they have had informational meetings with the affected residents while there have been none for this current plan.

   The feedback from the four previous public meetings was used in the design and presented as options to the City Council for direction.

3. We would like to request the City make a general mailing to all affected residence on any projects, meetings, or votes that pertain to the North Shore Dr and Woodland Dr. flooding.

   The City intends to notify residents of future meetings during the design process for Area 2 and Area 1D. Temporary signage will be placed along North Shore Drive near the entrance to the neighborhood for residents to be alerted of these meetings.

4. Will there be such a meeting before they vote on doing the project?
   When will that meeting be?
   When will they vote on the approving the project?
   Will the residents be notified of that meeting?

   Area 1D options will be presented at the 3/20/2012 or 4/3/2012 City Council meeting. A sign along North Shore Drive will be placed alerting the public of the final meeting date once it is scheduled.

   The next meeting for Area 2 will be scheduled once that work is far enough along to gather public feedback.

Engineering

1. Why does the City of Crystal Lake insist on dumping storm water into Cove Pond from East or Route 14? When did this practice start? Where was this water going before the development of Cove Pond?

   Based on historic and current survey information, as well as the 1975 Bauer Report, the water from the northeast has always naturally drained in this direction to this area.

   What may be perceived as a redirection of storm water in the 1960's was actually an area wide drainage improvement to pipe the runoff that already came from the northeast into the recently created Dog Lake (same drainage pattern that already existed).

2. What is the reasoning behind not averting dirty storm water to other areas south or east of the lake, thus preserving and protecting Crystal Lake, which was once a pristine Glacial Lake, with no inlets, only an outlet?

   Diverting runoff from this area away from Crystal Lake would violate Illinois Drainage Law, cause downstream flooding problems, significantly reduce recharge to the lake, and require cost-prohibitive infrastructure improvements. The Cove Pond wetland complex was constructed in part to improve the water quality for the lake while maintaining the existing drainage patterns as required by IL Drainage Law.

3. Why don't they seriously look at lowering the outlet and improving the downstream restrictions? Is it possible to install an adjustable outlet?

   The current plan for North Shore Drive is being designed to work with or without future modifications to the lake level.

   The options to adjust the outlet of the lake are currently being considered as part of a separate study; however, modification to the lake level and downstream channel is an extremely complex issue that requires significant engineering to determine the feasibility.

4. If the outflow pipe from Cove Pond under North Shore Dr. which was connected to Crystal lake was maintained and unclogged, would the roadway flood?

   The consultant's analysis included scenarios with and without blockages in the existing Cove Pond outlet pipe. Under both scenarios, North Shore Drive would continue to overtop on the same frequent basis (approximately every 2 years) that currently exists if no improvements are made.

5. Concerning the artificial dam on the North Shore in Cove Pond, which was put in, sometime in 1999, which they filled in, and plugged? If not plugged, we would not have had any flooding, and the water would have flowed into the lake. Is this dam adding to groundwater in other areas of North Shore and adding to flooding conditions?

   The need for maintenance of the Cove Pond filter and outlet pipe is being evaluated. As previously stated, without the proposed improvements North Shore Drive would continue to flood whether or not the pipe and filter are clogged.

6. Do you have a copy of the Permit from The Army Corp. of Engineering for this project that you can share with us, as to the purpose of this project? Permit Number LRC-2009-250 & LRC-1996-0764, LRC-1996-00777

   Copies will be provided of LRC-2009-250 and LRC-1996-00777; the City does not have any records of LRC-1996-0764.

7. Why can't they increase the Cove Pond area?

   This was investigated as part of the current study as a result of input from the public meetings. Increasing the size of Cove Pond is not a cost-effective means in reducing flood elevations. This is because of the:

- **Small amount of storage volume for storm water that can be physically created due to the elevation of the ground relative to the large upstream tributary area to Cove Pond,**
- **High cost to create this small amount of storage (over $1 million), and**
- **Very small benefit (<1.2 inches of flood elevation reduction).**

8. Can you create a permanent dike around Cove Pond and regulate it?

   Creating a permanent dike around Cove Pond would raise the flood elevations in the pond during severe storm events and would negatively impact upstream areas to the north, northeast, and east.

9. Can you build a bridge over North Shore with over flow of water to the culverts?

   The current plan has the same effect of a bridge but at a lower cost. The plan consists of raising North Shore Drive and constructing culverts under the roadway that will allow floodwater to flow from Cove Pond to Crystal Lake under North Shore Drive.

10. Increasing the slew spillway from North Shore to the lake, how will increasing the slew improve the storm water condition and flow?

    This improves the flow of excess stormwater by providing floodwaters with a safe and stable route into the lake via the culverts and a naturalized channel. Currently, water overtopping the road has several flow routes that are neither stable, safe or efficient.

11. Cove Pond and the Lake are what levels?

    The outlet weir elevation for Crystal Lake is 890.9 feet. Cove Pond is typically at ~891.1 feet. The average historic lake elevation is ~890.0 feet. All elevations vary based on runoff from rainfall and groundwater conditions.

12. Have you considered inserting culverts under North Shore Drive, instead of removing it?

    This was considered in the recent study. Inserting culverts under the eastern leg of North Shore Drive would direct additional water to the Woodland wetland channel and would have an adverse drainage impact to the homes on the north side of Woodland Drive. Additionally, it would allow water to leave Cove Pond prior to filtering through the full length of the treatment area, which would reduce the water quality benefits that were designed and permitted for Cove Pond.

13. Since storm water sewers and human waste sewers are separate and not connected, how is it possible people with basements had sewage in the basements during the 2007 flooding?

    This is likely due to water artificially entering the sanitary sewer system. This can occur from a variety of sources such as:

    - **Illegal connections to the sanitary sewer by property owners that allows floodwater to enter sanitary manholes or sump pumps; or**

- **Floodwater that leaks into the sanitary sewer system through cracks in the sanitary pipes or manholes when the ground is saturated with water.**

14. Why did they stop using Hey and Associates who are water experts and who say to leave the wetland area alone and are now using Burke Engineering who know less about water management and the Lake?

    Through a competitive selection process for a limited term contract, the most qualified consulting firms are utilized by the City.

    Christopher B. Burke Engineering Ltd. (CBBEL) has demonstrated that they are just as qualified as our previous stormwater consultant, Hey & Associates. Their staff carries a high level of credentials in water resources engineering. CBBEL has been the City's "water expert" for the past four years and also has considerable experience with the lake.

    Hey and Associates is still a consultant for the Crystal Lake Park District and remains in coordination with the City on issues related to the lake.

15. Why did the Engineering Department and the City Council not follow Hey and Associates recommendation of no urbanization on wetland? Also the Bauer Report of 1975 page 101, "City should protect from urbanization".

    This project is addressing existing drainage issues, not facilitating urbanization or new development.

16. What if any has the creation of Lippold Park contributed to the current conditions of flooding on the North Shore?

    The development of Lippold Park actually reduced the amount of drainage area that is directed directly towards the North Shore neighborhoods. The park's development reduced the drainage area leaving Lippold Park that affected the homes to the south. This area was not diverted, but is now detained in the wetland complex to improve water quality before resuming its original drainage pattern towards the lake.

17. Because of low water levels in Crystal Lake from time to time has Crystal Lake ever used this reasoning for diverting storm water to artificially keep our lake full?

    When the Lake is low, all the surrounding areas are low; there is no excessive stormwater remaining that could be diverted in this manner.

18. We would like to see the copy of the "Hydrology Report."

    A copy of the summary memorandum and hydrologic modeling for the various alternatives is available for viewing.

19. Was there ever an agreement between Lakewood (Wedgewood) and Burke Engineering and Cove Pond to add additional storm water?

    Not that the City is aware of.

20. Regarding drain tile system in Lippold Park, (North of East End Ave to Edgewood Ave) Hey and Associates claim they are working, have these tiles ever been videoed to confirm. (22 inch to 10 inch), if so, what dates were they videoed can they viewed?

    The mainline field tiles are functioning properly; the Crystal Lake Park District continually monitors them. To their knowledge, and the City's knowledge, a field tile does not exist north of East Ave to Edgewood Ave.

21. Regarding area between Crystal Beach Ave and Greenfield Rd to the North. Prior to 1988 this area was low, but dry in the summer, now since 1990 more water from the Park District is being diverted to this area making it a wetlands area, going into private property, please comment.

    Upon review of the 1976 topographic map, there is actually a reduction in drainage area leaving Lippold Park.

22. What plans are in the making if any for more water to exit the lake from the outlet to the south? Lake could be lowered in the fall to allow for more wetland retention in the spring.

    These options are currently being considered as part of a separate study. Modification to the lake level and downstream channel is an extremely complex issue that may or may not prove to be feasible. The current plan for North Shore Drive is being designed to work with or without future modifications to the lake level.

23. Does the City plan to put an overflow system from Woodland Dr Channel to planned swale system South of North Shore Drive?

    One of the options explored by the City was to provide an overflow system in this area; however, the adjacent property owner declined to provide the City with a temporary easement for construction and a permanent easement for maintenance. This overflow system is not a requirement to eliminate the flooding problem on North Shore Drive, however.

ADDITION PROJECTS AND COSTS

1. This is Phase I of a many phased project, what is the total cost of this project to eliminate the flooding of North Shore Dr, its neighborhoods and roadways?

    The estimated cost for each of the area improvements is as follows:
    - **Area 1B & 1D = ~$850,000**
    - **North Shore Drive Reroute = ~$714,000**

2. How have you prepared for these expenses?

    The budget proposal to the City Council (which is being presented in April) is to issue bonds for the improvements in Area 1B and 1D and use Home Rule Sales Tax to pay the bond. The proposal for the costs to reroute of North Shore Drive is to use Motor Fuel Tax money.

3. It has been since 2007, it is now 2012 when can we expect this project completed?

   The City is targeting construction in late 2012 or spring of 2013 depending on approval of the necessary permits.

4. Electric lines are sinking as a result of the flooding on the Southside of North Shore, when and how will these be replaced. This is a safety hazard for the residents.

   Thank you for bringing this to our attention; the City will have ComEd investigate.

5. There is concern among us about water that flows from storm sewers located to the north east on the far side of route 14 into Cove Pond.

   a. Is this water from the Crystal Lake Watershed that always flowed into Crystal Lake?

      Based on historic and current survey information, as well as the 1975 Bauer Report, the water from the northeast has always naturally drained in this direction to this area.

      What may be perceived as a redirection of storm water in the 1960's was actually an area wide drainage improvement to pipe the runoff that already came from the northeast into the recently created Dog Lake (same drainage pattern that already existed).

   b. Have there been changes in the last 20-40 years that has increased the flow to Cove Pond or Dog Lake from this area?

      Not to our knowledge

   c. Does this water impact Crystal Lake ecology negatively?

      The completion of Cove Pond improved the water quality and ecology.

      i. Does more silt (fine suspended particle that would later settle to the lake bottom and make muddy bottom) enter the lake.

         The current project will maintain the existing water quality benefits of Cove Pond and will enhance those benefits through creation of a wetland channel to filter floodwater prior to entering Crystal Lake. The amount of silt and sediment entering the lake should not increase and will likely decrease as a result of this project.

      ii. Oil and other fluids may leak from cars and be washed into the storm sewer. What happens to it? Does it entire the lake or does the natural filtering systems associated with Cove Pond capture it? If any of it does reach the lake what impact does it have? Does it float to the top and evaporate and/or float out the outlet or does it have an ecological impact?

         Cove Pond was designed to collect and filter as much of the pollutants from the upstream area as possible prior to releasing the water to Crystal Lake. Under the current plan, the collection and filtration capacity of Cove Pond will remain unchanged. The current plan has the added benefit that during severe storm

events water that used to overflow North Shore Drive will now be conveyed under the roadway and through a wetland channel for further filtration.

iii. Road salt may dissolve and flow to the lake in solution. Does this happen and it so does it impact lake ecology?

The Cove Pond wetland complex enhances the water quality for water entering the lake. The new flood mitigation project will not affect road salt use in the watershed, but ensures that water quality treatment is not diminished while addressing the safety concerns of the road flooding.

iv. Are there any other contaminates that impact lake ecology negatively?

Refer to the Lake Ecology Report on the Crystal Lake Park District website at www.crystallakeparks.org (News Café Tab/Current Publications).

v. In the overall is this water source rated as a negative or a positive impact on lake ecology?

The overall effect of this project is positive with respect to Cove Pond ecology, Crystal Lake ecology and residential/roadway flooding.

d. Does this water impact the wet condition (more water on the surface or immediately below the surface) experienced on residential properties on the north side of North Shore immediately west of Cove Pond?

The currently planned project consists of storm sewer improvements on North Shore Drive east of East Street (Area 1D). These improvements will reduce the wet condition experienced on the north side of North Shore Drive.

6. Regarding the planned change for connecting North Shore to Crystal Lake Axe, will this have a negative impact or a positive impact or no impact on lake ecology?

The roadway realignment to tie into Crystal Lake Avenue will not have an effect on the lake ecology.

Runoff would be routed through the Cove Pond wetland complex and the proposed native vegetation in the widened channel, in the same manner that the existing North Shore Drive runoff is treated.

7. Regarding the planned change of raising North Shore to alleviate (or eliminate) flooding of it
   a. Will this have a negative impact or a positive impact or no impact on lake ecology regarding the following?

      i. Flow of suspended particles that make a muddy bottom?

      It will have a positive impact from the additional filtering in the proposed wetland channel to the lake.

      ii. Any other contaminates?

It will have a positive impact from the additional filtering in the proposed wetland channel to the lake.

b. Will this have an impact on the wet condition of proprieties on north side of North Shore?

The current project consists of storm sewer improvements on North Shore Drive east of East Street. These improvements will reduce the wet condition experienced on the north side of North Shore Drive.

8. Regarding flooding during heavy rains that often occurs on the side streets north of North Shore (East End to Edgewood)

a. What is planned to eliminate this condition?

The current project consists of storm sewer improvements along North Shore Drive east of East Street.

b. When would this be done?

The City's intent, at this time, is to complete these improvements with the improvements to Area 1B.

9. My preference is to first deal with North Shore flooding before performing the two planned projects. (I live on lake side and do not personally experience flooding)

a. Connecting North Crystal Lake Ave would be nice to have but is not necessary in my view

Comment is duly noted

b. Raising North Shore to alleviate flooding of it is also simply a matter of enduring a minor inconvenience.

Comment is duly noted

i. Emergency equipment can make it through the water as it is only a few inches high at most

Water depths of more than a few inches on the roadway pose an extreme hazard for all types of vehicular traffic and cause damage to the roadway.

ii. There is the by pass from Oak Court to Woodland Drive for North Shore residents and emergency vehicles.

During extreme flood events, Woodland Drive may not be accessible from the east. This project is designed to ensure a much higher level of flood protection for North Shore Drive, so that the Woodland Drive emergency access route would not be needed on such a frequent basis.