

PROJECT TEAM MEETING MINUTES
August 12, 2008

1. **ATTENDANCE:** Maynard Pick – Congressional, Paul Wannarka – DNR Regional Operations, Dan Thul – DNR Waters, Randy Huelskamp – NRCS, Cathy Henry – US Fish and Wildlife, Lawrence Woodbury – Houston Engineering, Paige Guetter – West Polk SWCD, Adam Woltjer – SWCD, Wayne Goeken – Red River Watershed Management Board Monitoring, Brian Dwight – BWSR, April Swenby – SHRWD Administrative Assistant, and Daniel Wilkens – SHRWD Administrator.
2. **AGENDA REVIEW:** No new items were added to the agenda.

UNION LAKE EROSION CONTROL: The project was completed in June. The project has been seeded and the project has been considered a success. The area near the township road (the lower portion) was not included in the project due to the lack of funding.

On the lakeside near Don Kuntz's property, Lee reported that Mary Blickerdorfer, rain garden specialist stated that the proposed rain garden is not feasible.

OVERALL PLAN UPDATE: Woodbury will have a draft ready in September. Dwight informed Woodbury that US Fish and Wildlife has a drained wetland inventory database that may be beneficial to the overall plan.

GARDEN SLOUGH: The Flood Damage Reduction Work Group Project Team (PT) of the Sand Hill River Watershed District has been investigating the potential for a flood control project on Garden Slough in Garden and Bear Park Townships of Norman County. Garden Slough is directly tributary to and outlets into the Sand Hill River in Section 29 of Garden Township. The total drainage area at the Garden Slough outlet is 13.04 sq. miles (8345 acres). The Flood Control Project (Project) is currently proposed to consist of one or more flood detention / retention structures on Garden Slough and its sub-tributaries. At this time five impoundment sites have been selected for study within the Project watershed. Attachment No. 2 (attached hereto the minutes) is a map of the Garden Slough drainage area showing the locations of these impoundment sites.

At our May 13, 2008 meeting, the PT decided that we would explore other alternatives to compliment Step 2 of the Corps of Engineers Points of Concurrence. It was suggested that five alternative sites will be necessary. Woodbury was directed to proceed with an investigation and identification of additional alternative sites. Woodbury reported on the preliminary findings of this investigation.

The scope of effort used in identifying alternatives is necessarily limited to existing topographic mapping information, previous surveys and studies of flood control projects within the SHRWD over the last 34 years, and the historical experience of the SHRWD Managers and consultants with various flood related problems since its inception. There have been no new field surveys conducted as part of this investigation. Thus, should the PT and the SHRWD desire to explore any of these further, additional field surveys and engineering analysis will be required.

I. Approach Methodology

In accordance with Red River Basin Flood Damage Reduction Strategy, Technical Paper No. 11, the SHRWD area affected most by the Garden Slough project is classified in the Middle Upstream Area. Table 1 of Technical Paper No. 11 outlines several flood damage reduction measures (FDRM) which would benefit peak flow reductions on the Red River Main Stem. Attachment No. 1 (attached hereto the minutes) is a copy of Table 1. The four general categories of measures and their effect for SHRWD are:

1. Reduce Flood Volume – Rated as substantially positive
2. Increase Conveyance Capacity – Rated as mostly negative
3. Increase Temporary Flood Storage – Rated as substantially positive for gated impoundments and setback levees, and positive for ungated impoundments, wetland, drainage and culvert sizing
4. Protection/Avoidance: Rated as negative or neutral.

Based on the above ratings, our alternative investigation will focus mainly on FDRM categories 1 and 3, as having the most potential for positive impact on the Red River for peak flow reductions.

II. Alternative Analysis

A. Measures Reducing Flood Volume

- a. **Wetlands** - enhancement, restoration, or creation of wetlands are rated as having a positive impact on the Red River. Wetland enhancement should be addressed in the SHRWD Updated Overall Plan. This should then be followed with the creation of an aggressive wetland protection and enhancement program.
- b. **Cropland BMPs** - establishment of an effective Best Management Practices (BMP) program for agricultural cropland is rated as having a substantially positive impact on the Red River. Cropland BMPs should be addressed in the SHRWD Updated Overall Plan. This should then be followed with the creation of an aggressive cropland BMP education and incentive program.
- c. **Conversion to Grassland** - conversion of agricultural cropland to grassland is rated as a substantially positive impact of the Red River. Conversion of agricultural land to grassland should be addressed in the SHRWD Updated Overall Plan. This should then be followed with the creation of a conversion to grassland program.
- d. **Conversion to Forest** - conversion of agricultural cropland to forest is rated as a substantially positive impact of the Red River. Conversion of agricultural land to forest should be addressed in the SHRWD Updated Overall Plan. This should then be followed with the creation of a conversion to forest program.

e. **Other Beneficial Uses of Stored Water** – rated as substantially positive effects on the Red River. The investigation of other beneficial uses of stored water should be addressed in the SHRWD Updated Overall Plan. Possible beneficial uses could include irrigation, fish and wildlife, water supply, water quality enhancement, etc.

B. Measures Increasing Temporary Storage

a. **Gated Impoundments** – rated as substantially positive effects on peak flow reduction on the Red River. This FDRM is a fundamental strategy of the SHRWD as reflected in the proposed impoundment structures for the Garden Slough drainage area. Additional gated storage alternatives have been identified on the Sand Hill River Main Stem upstream from US Highway No. 59. Because the Garden Slough and Sand Hill River Main Stem alternatives have been more fully developed, they are discussed in more detail under Section IV of this document.

b. **Ungated Impoundments** – rated as positive effects on peak flow reduction on the Red River, but not as effective as gated storage. The SHRWD has experience in constructing ungated impoundments. A major example is Project No. 1 of the District – Bear Park Dam on the Sand Hill River Main Stem in Bear Park Township of Norman County. This project has the potential to be retrofitted with a gated outlet, which would substantially increase peak flood reduction benefits to the Red River. This alternative is discussed in more detail under Section IV of this document.

c. **Restored or Created Wetlands** – rated as positive effects on peak flow reduction on the Red River, but not as effective as gated storage. Wetland restoration or creation should be addressed in the SHRWD Updated Overall Plan. This should then be followed with the creation of an aggressive wetland protection and enhancement program.

d. **Drainage** – rated as positive effects on peak flow reduction on the Red River, but not as effective as gated storage. Technical Paper No. 11 focuses most of its discussion on subsurface (tile) drainage benefits in providing subsurface storage. Subsurface tile drainage is developed by individual landowners on a case by case basis and is dependent on a sufficient economic return to justify the investment. Current crop prices and land values are causing a significant interest in subsurface drainage projects in the Red River Valley. Several watershed district and county drainage jurisdictions are currently involved in developing strategies policies to manage subsurface drainage projects as they rapidly evolve. Subsurface drainage should be addressed in the SHRWD Updated Overall Plan. This will allow the SHRWD to develop strategies and policies relative to the beneficial development of subsurface drainage systems.

e. **Culvert Sizing** – rated as positive effects on peak flow reduction on the Red River, but not as effective as gated storage. Culvert and bridges on federal, state, county and township roads present frequent opportunities for surface water management. Culverts can be hydraulically sized to restrict the flow of water and create ungated temporary flood water storage on the upstream side of roads. Generally, the amount of storage provided on an individual site basis is relatively small compared to those developed by dams. However, on a cumulative basis they can have a positive impact. Some watershed districts have developed or are in the process of developing culvert sizing policies as part of their permitting process. However, it should be kept in mind that road system owners must become involved in any such policy development as the needs and functioning of the road ways must be addressed. Many times it is possible for a watershed district and a road system owner to conjunctively in developing a multipurpose road-dam serving both the

purposes of transportation and flood control. The Garden Slough impoundment site number 3 presents such an opportunity with the Norman County Highway Department. SHRWD Project No. 1 – Bear Park Dam is a multipurpose road-dam serving both the purposes of transportation and flood control. Culvert sizing strategies and policies should be addressed in the SHRWD Updated Overall Plan.

f. **Setting Back Existing Levees (to increase flood plain storage)** – rated as substantially positive in peak flow reduction on the Red River. There are very few existing levees in the middle upstream area of the SHRWD to evaluate for this alternative. Therefore, this alternative was not evaluated.

g. **Overtopping Levees** – rated as positive effects in peak flow reduction on the Red River, but not as effective in setting back existing levees. There are very few existing levees in the middle upstream area of the SHRWD to evaluate for this alternative. Therefore, this alternative was not evaluated.

III. Impoundment Alternatives

A. Garden Slough Drainage Area Alternatives

The in-basin Garden Slough Alternatives have been presented previously to the SHRWD PT. Attachment No. 2 (attached hereto the minutes) is a map of the Garden Slough drainage area showing the locations of these impoundment sites. Attachment No. 3 (attached hereto the minutes) is a tabulation of water surface elevation and storage for each site, and total additional storage in combination with upstream sites. Each of the five impoundment sites can be configured as either gated or ungated, gated being more effective in reducing Red River peak flood flows. In reviewing the storage potential for these sites, as outlined on Attachment No. 3, (attached hereto the minutes) indicating that there is much more storage potential than can be generated from the 13 square mile drainage area. Therefore, further studies and modeling analysis is needed to arrive at an optimum site or combination of sites that produce the needed storage. For example, if it is decided to set a goal of retaining 4 inches of runoff from the Garden Slough drainage area, then only about 2,400 acre-feet of storage would be needed. This could be accomplished individually at sites 1, 3 and 4, or some combination of multiple sites.

B. Sand Hill River Main Stem Alternatives

1. Modification of SHRWD Project No. 1 – Bear Park Dam

There are several Sand Hill River Main Stem impoundment opportunities available. One of these would involve retrofitting an existing ungated impoundment structure with control gates. This project is known as Project No. 1 of the District – Bear Park Dam. Attachment No. 4 (attached hereto the minutes) shows the location and layout of Project No. 1 and its impoundment area. The current ungated storage capability of this project is 3,800 acre-feet. The drainage area of the Sand Hill River at the dam is 146 square miles. This represents about 33% of the total Sand Hill River drainage area (440 square miles at the Red River). Retrofitting the outlet structure with gate(s) would substantially increase peak flood flow reduction benefits to the Red River according to the criteria in Technical Paper No. 11. This action would require an analysis of temporary

impoundment easement impacts and a revision of the operations plan. Further engineering analysis and modeling will be required to evaluate this alternative further.

2. Development of Main Stem Impoundment(s) East of US Highway 59

Reaches of the Sand Hill River south and east of US Highway 59 near Winger have been previously studied by the SHRWD for flood water storage potential. Attachments No. 5 and 6 (attached hereto the minutes) show possible configurations of one large impoundment or two smaller impoundments. The contributing drainage area to these impoundments is about 90 square miles. This represents about 21% of the total Sand Hill River drainage area (440 square miles at the Red River).

The larger single impoundment as shown on Attachment No. 5 (attached hereto the minutes) would consist of an earthen dam on the Sand Hill River, creating a temporary flood impoundment of about 960 acres with a storage capacity of 6,800 acre-feet. The outlet works could be gated or ungated. However, providing gated storage would substantially increase peak flood flow reduction benefits to the Red River according to the criteria in Technical Paper No. 11. Further engineering analysis and modeling will be required to evaluate this alternative further.

A second alternative would involve developing one or two smaller impoundments as shown on Attachment No. 6 (attached hereto the minutes). The lower impoundment would consist of an earthen dam on the Sand Hill River just to the east of US Highway 59, creating a temporary flood impoundment of about 750 acres. The upper impoundment would consist of an earthen dam on the upstream side of Polk County Road No. 1, or a reconstruction of the county road into multipurpose dam and road system. This would create a temporary flood impoundment of about 501 acres. Together, the two impoundments would generate about 7,300 acre-feet of storage capacity. The outlet works for both structure could be gated or ungated. However, providing gated storage would substantially increase peak flood flow reduction benefits to the Red River according to the criteria in Technical Paper No. 11. Further engineering analysis and modeling will be required to evaluate this alternative further.

Dwight suggested viewing Garden Slough with a culvert sizing alternative rather than the gated structure alternative. Woodbury reminded Dwight that in the early 1980's, McCombs Study and the Corp of Engineers studied various water holding options. These studies indicated that gated storage is more effective.

Dan Thul reminded Woodbury of the issues regarding these options if they produce a high hazard dam or restrict fish passage in any way. Any loss of life, damage to highways, or public loss proposes a high hazard dam. Highway 59 is considered public loss. Winger dam also provides a permanent pool, which has given concern to various organizations. To find answers to the above questions a breach analysis would be completed.

The group agreed that all strategies are needed to achieve our long term goal of reducing flooding on the Red River. The group has decided to continue their conversations on Garden Slough when the long range plan is finished.

FUTURE AGENDA: Dwight suggested using the project team to assist in the district's long range plan. The team can assist in the long range plan and give their input and use their knowledge of the districts needs. Cathy Henry will assist by locating the drainage inventory map. The group will invite Clayton Schmidt – Twin Valley (clayton.Schmitz@mn.usda.gov) and Curtis Borchert – Twin Valley (Borchert@arvig.net) to the next meeting. The next project team meeting will be labeled a “project planning meeting”.

- 3. ADJOURN:** Meeting was adjourned 3:05 PM. The next meeting will be held on October 14, 2008 at 10:30 a.m. or when the planning process dictates the need, at the Sand Hill River Watershed District office in Fertile, MN.

Minutes respectfully submitted:

April Swenby – Administrative Assistant