Potential Studies/Work Activities by UNL

- *Study of other states legal approaches to closing basins (complete)*

- *Water conservation/water balance education package*

- *Provide economic information to assist in fully appropriated and other determinations*

- *Compile pump transmissivity, pump test, and well log information*

- *Compile and index water table level and seepage run information to assist in determining timing, amount and area of groundwater contribution to streams*

- *Assist in developing/aggregating irrigated acres information and potentially assist with consumptive use information (may or may not need UNL)*

- *Dialogue with appropriate UNL faculty on what is needed to determine degree of hydrologic connection and amounts of streamflow resulting from different use levels*

WATER CONSERVATION / WATER BALANCE EDUCATION PACKAGE

This educational package would be used to help Nebraskans better understand how water use and water conservation affect groundwater and surface water availability and the water balance. Emphasis would be on explaining the difference between water withdrawals and consumptive use. There would also be discussion of surface-water groundwater relationships, evapotranspiration salvage, crop water use efficiencies, and withdrawal and consumptive use differences between furrow and pivot irrigation. The package would consist of some or all of the following elements:

- A Powerpoint presentation delivered at a set number of public meetings
- A brochure or perhaps a NebGuide widely distributed and easily available at the local level
- A NETV program to be aired statewide
- Presentations to each NRD Board involved in an integrated management planning process
- Radio or Television Appearances/Interviews?
- News Releases?
- Magazine article for Nebraskaland?

Schedule:

Budget:

PROVIDE ECONOMIC INFORMATION TO ASSIST IN FULLY APPROPRIATED AND OTHER DETERMINATIONS

In making the determination of whether a basin is fully appropriated the DNR must consider if then current water uses will cause the surface water supply to be insufficient to sustain over the long term the beneficial or useful uses for which the right was granted. The DNR must also consider whether streamflow will be insufficient to sustain the beneficial uses of wells dependent on recharge from the river or stream. Integrated management plans will also need to identify the difference between the current and fully appropriated levels of development. Making those determinations involves both an understanding of the water supply likely to be available and an understanding of how much water supply is needed to sustain the beneficial uses of the more junior users. The supply needed to sustain those beneficial uses is in turn partially dependent upon the economic constraints experienced by those individual junior appropriators.

The purpose of this project would be to develop figures on the amount and timing of water supplies needed for junior appropriators to maintain their beneficial and useful purposes. It is possible this information may need to be supplied on a regional basis.

Schedule:

Budget:

*** Integrated management plans are required to include *"Clear goals and objectives with a purpose of sustaining a balance between water uses and water supplies so that the economic viability, social and environmental health, safety and welfare of the basin, subbasin, or reach can be maintained for both the near term and the long term"*. Is there any type of economic viability study that should be done similar to the economic impact analysis that Suppala did for the Republican Basin?

COMPILE PUMP TRANSMISSIVITY, PUMP TEST AND WELL LOG INFORMATION

- Compile a new statewide transmissivity map, including associated factors
  - Consider grain size, pump tests, well logs
  - Examine and evaluate existing reports
  - Report findings
- Place pump test data into an electronic format and index
- Finish indexing of well log data
- Develop specific yield data

Rationale: Developing/Indexing this hydrologic information will help in determining water balance, timing of groundwater impacts on surface water, modeling, and detailed hydrologic studies for individual natural resources districts.

Schedule:

Budget:

COMPILE AND INDEX WATER TABLE LEVEL AND SEEPAGE RUN INFORMATION TO ASSIST IN DETERMINING TIMING, AMOUNT AND AREA OF GROUNDWATER CONTRIBUTION TO STREAMS

- Review and index DNR, USGS, CNIPPID, Bureau of Reclamation, and possibly NDNR seepage data/studies. Note who collected data and how they compiled. Place data into a useful format. Use information from old hydrographic reports.
- Compile existing water table information into a format useful for examining individual streams.
- Compile additional water table information where potentially needed for further studies.
- Conduct a new water table monitoring program for selected sites??

Rationale: Determining whether groundwater pumping is affecting an existing surface water right may sometime depend upon knowing the degree to which that specific spot is receiving baseflow from the aquifer and how that may have changed over time. This work may make it easier to determine baseflow contribution to some individual sites.

Schedule:

Budget:

ASSIST IN DEVELOPING/AGGREGATING IRRIGATED ACRES INFORMATION AND POTENTIALLY ASSIST WITH CONSUMPTIVE USE INFORMATION

- Approach FSA about their annual polygon data and aggregate and index in a manner useful for integrated management planning.

- Examine other data that may be used to help determine irrigated acres and consumptive use, including:
  - COHYST Aerial Photography/Satellite Images
  - Center Pivot Inventories
  - Power Records
  - Census Records
  - Nebraska Agricultural Statistics

Rationale:

Schedule:

Budget:

DIALOGUE WITH APPROPRIATE UNL FACULTY ON WHAT IS NEEDED TO DETERMINE DEGREE OF HYDROLOGIC CONNECTION AND AFFECTS OF DIFFERENT WATER USES ON STREAMFLOW

Additional discussion would be helpful in refining how to determine the degree of hydrologic connectivity between areas. There needs to be further examination of the degree of sophistication of various tools. For instance, it would be worthwhile to discuss where is a COHYST type of modeling effort may be needed and where will a much smaller effort would suffice. There may also need to be discussion of how groundwater levels can be managed to produce appropriate levels of long-term surface water supply. Discussion is also likely to be needed on additional topics as the LB 962 implementation process proceeds.

This effort would be used to reimburse the time of UNL faculty contacted for general discussion assistance on a variety of topics. The participants, and billing would be organized by a cooperative effort between DNR staff and the UNL Water Center.

Schedule:

Budget: