

- I. **Understand current groundwater conditions by evaluating existing data and reports. Develop a sampling strategy to collect water quality information across the counties in the Central Sands region. This information will be used to inform consumers, identify problem areas, interpret relationships to land use practices, and evaluate changes over time. In areas considered "hot spots", conduct further analysis to inform consumers and evaluate likely sources of nitrate contamination.**
 - a. Conduct a GAP analysis by assessing and summarizing existing nitrate data and groundwater studies.
 - i. Lead: WGNHS Post Doc
 - ii. Create a centralized database of water quality information from certified data sources.
 - iii. Develop a well construction database/GIS layer for the Central Sands region. Once developed, Counties will maintain it.
 - iv. Timeline: First 6 – 12 months
 - v. Estimated Cost: Post Doc \$62,000 plus \$5,000 travel and supplies
 - b. Develop and launch a sampling strategy for nitrate trend monitoring that will inform consumers and the interpretation of analyzed data, answer questions about how groundwater is changing over time and whether practices are achieving safe drinking water goals.
 - i. Leads: Design (year 1) and evaluation (year 5): USDA ARS, Sampling: CSGCC counties, Analyses: UWSP WEAL/CSGCC County labs
 - ii. Approximately 500 samples for nitrate annually for 5 years.
 - iii. Timeline: Year 1 – Year 5
 - iv. Estimated Cost: USDA ARS \$5,000, Analyses \$55,000, Supplies: \$4,000
 - c. In areas identified as "hot spots", conduct additional sampling that includes analysis of indicators for likely land management practices. Interpretation should include the use of existing data and identify the likely factors affecting nitrate contamination, when possible.
 - i. Lead: USDA ARS, Sampling: CSGCC Counties, Analyses: UWSP WEAL/CSGCC County labs
 - ii. Timeline: Design will be based on results of I.a. and I.b.
 - iii. Estimated Cost: No budget at this time.
 - d. Develop a spatial data layer with septic locations.
 - i. Lead: WGNHS
 - ii. Timeline: Year 1
 - iii. Estimated Cost: Included in Post Doc cost see I.a.
- II. **Understand where areas most vulnerable to groundwater contamination exist to guide development and use of ordinances, practices, and other preventative responses for intensive land uses such as dense housing/development or nitrogen-intensive agriculture.**
 - a. Develop a map of susceptibility/risk of nitrate contamination based on physical characteristics and land use attributes.
 - i. Lead: WGNHS
 - ii. Timeline: Year 1
 - iii. Estimated Cost: Included in Post Doc cost see I.a. plus \$5,000 GIS assistance

III. Develop a uniform understanding of methods to prevent groundwater contamination from nitrogen based on information from previous studies in the Central Sands region and similar settings.

- a. Conduct a systematic review to develop a menu of best management practices to address nitrate contamination concerns in the counties.
 - i. Lead: WGNHS (Post Doc)
 - ii. Additional Contributors: UWSP CWSE (McGinley, Mesarik), USGS ARS, DNR
 - iii. Timeline: First 6 months
 - iv. Estimated Cost: Included in Post Doc cost see I.a.
- b. Develop a menu of good groundwater options for residential, agricultural, industrial, and municipal uses.
 - i. Lead: UW Madison Extension Natural Resources or Community Development Educator
 - ii. Timeline: Year 1
 - iii. Estimated Cost: \$5,000 travel and printing