Project 3 (Date revisions approved 1/08)

Title: Impact Of Domestic Septic Tanks On Groundwater In Central Oklahoma

Agency: Association of Central Oklahoma Government

JUSTIFICATION AND BACKGROUND:

Major development in the communities of Norman, Deer Creek, and Mustang is taking place due to improved transportation corridors such as the Outer Loop Project. Community planners are in the process of rezoning formerly rural acreage to suburban lots, usually five-acre tracts to two or one- acre lots. Many of the developers are using domestic wells for potable water sources and domestic septic tanks for sewerage.

Concern about the impact of domestic sewerage on groundwater quality has surfaced in public discussion many times over the past decade. High nitrate readings exist in several areas in the ACOG area, including Norman, Mustang, and Midwest City. Residents in these communities often express alarm when domestic sewerage is proposed for sixty or seventy units, claiming this would negatively impact their potable water supply.

Little in the way of published work or formal study has guided community planners in this decision-making process. A definitive study on septic tank density would aid the planning community as it reviews master development plans in areas that face development priorities.

This workplan will achieve Environmental Results under EPA Order 5700.7 and meet EPA's Strategic Plan for Oklahoma Goal 2 Objective 1 Sub-objective 2.1.1 Strategic Target F, "Percentage of source water areas for community water systems that achieve minimized risk to public health."

OBJECTIVES:

The objectives of this project are (1) locate areas of the Garber, Wellington, Hennessey, and Duncan formations which are susceptible to nitrate loading, (2) evaluate the impact of septic systems in higher-density lot sizes.

METHODS:

Much data may be already available – the Garber-Wellington Association has over 3000 nitrate samples listed in its groundwater database (see Figure 1); data from other sources such as county health departments and the state environmental lab may be useful. Data gaps may exist for the Duncan sandstone in Canadian County and field sampling may be necessary.

The following is a sequential outline of the methods to be followed in this project.

1. Review existing data – acquire additional data from other agencies.
    a. City-County Health
    b. DEQ Lab
2. Acquire information on housing units that have nitrate data – population and age.
    a. Acquire aerial photo information if necessary.
3. Quality assurance on data.
4. Fieldwork to fill data gaps (Duncan Sandstone in particular).
5. Generate statistical model.
6. Field work to confirm model if necessary.

The general timeline of this project is:

1. Submittal Of Workplan	Feb 05
2. Completion Of QAPP And Submittal To EPA	Oct 05
3. Collection and Review of Data	Jan 06
4. Field Work	Mar 06
5. Draft Report	Dec. 07
6. Final Report	Mar 08

Outputs:

(1) QAPP Document
(2) Draft Report
(3) Final Report

Proposed Budget:

Task 300 ($20,000)

	Impact Of Domestic Septic Tanks On Groundwater In Central Oklahoma FY 2005 604(b)				
1	Semi-Annual Progress Reports	1	MAN-DAYS	$206	
2	QAPP	5	MAN-DAYS	$1,030	
3	Acquire Additional Data and Review	15	MAN-DAYS	$3,090	
4	Draft Report	15	MAN-DAYS	$3,090	
5	Final Report	5	MAN-DAYS	$1,030	
	Total ACOG Salaries	41	MAN-DAYS		$8,446
6	Groundwater Samples	32	SAMPLES	$2,387	
7	YSI Nitrate Probe			$500	$2,887
8	Fringe	37.73%		$3,187	
9	Indirect Costs	47.12%		$5,481	
10	Fringe and Indirect Costs				$8,668
	Total Project Expenses				$20,000

Figure 1 - Excessive Nitrate Loading