



WATER RESOURCES RESEARCH GRANT PROPOSAL

Project ID: 2003IN112B

Title: Soil and Mineralogical Processes Involved in Septic System Failure

Project Type: Research

Focus Categories: Non Point Pollution, Waste Water

Keywords: Septic systems failure, Allen County, clay mineralogy, soil absorption fields

Start Date: 03/01/2003

End Date: 02/28/2004

Federal Funds: \$20,000

Non-Federal Matching Funds: \$40,627

Congressional Districts: 4 & 6

Principal Investigators:

Brad Lee

Brad Joern

Abstract

One-third of Indiana residents utilize septic systems, however the Indiana State Department of Health (ISDH) estimates that 25% of these septic systems operate inadequately. These 200,000 failing septic systems represent approximately 32 billion gallons of untreated effluent discharged annually to surface and groundwater. A 1997 survey of county health department administrators indicated that problematic soils are the primary reason for septic system failure. More recently, the ISDH has stated that northeastern Indiana soils are the cause of premature septic system failure in 16 counties. These failures result in ponding of effluent on the soil surface due to hydraulic overloading of the septic system soil absorption field within months to a few years after installation however, the cause of these premature failures is unknown. These problematic fine-textured soils formed on recessional moraines and till plains deposited by the Erie-Ontario glacial lobe about 15,000 years ago. Because soil is an integral part of wastewater treatment in a septic system, it is imperative that a thorough investigation of soil processes involved in septic system septic system failure be conducted before a properly functioning septic system design can be developed. We propose to evaluate the spatial extent and distribution of septic system failures related to soil and geologic

properties, and evaluate the applicability of current septic system design parameters used by ISDH in these problematic soils. Due to the recent trend in migration of urban populations to rural areas, the results of this study will be pertinent to current and future land use issues throughout northeastern Indiana.