

Title: Filtration Preservation Study of Groundwater Samples (Study No. 23)

Investigators: Principal Investigator

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Objectives: To determine effects of laboratory analytical results on groundwater when sample filtration and/or preservation is done immediately on the site as compared to 24 hours later.

Background/Need: The requirement of industrial and municipal facilities to monitor groundwater necessitates considerable time and expense for in-field filtering of groundwater samples. Filtration of nonmetal samples in the laboratory has been accepted, provided it is done as soon as possible. This study analyzes the validity of this policy.

Methods: Three separate field sites were chosen for the study to represent the various soil types, wastewater effluent qualities, and groundwater qualities found throughout the state. Field site 1 was an absorption pond system receiving untreated dairy wastewater. Field site 2 was an absorption pond system receiving pretreated meat processing wastewater. Field site 3 was a ridge and furrow system receiving untreated dairy wastewater. Wells were sampled upgradient and downgradient from the wastewater disposal systems to ensure that a range of groundwater parameter concentrations were obtained. Each of the wells were sampled for ten consecutive weeks between June and August of 1986.

Following collection, each groundwater sample was divided into three portions. Portion 1 was filtered and preserved with sulfuric acid immediately. Sample 2 was filtered and acidified after 24 hours and Portion 3 was acidified immediately and filtered after 24 hours.

Conclusions: Investigators conclude that a decline in chloride and TDS concentration occurs by waiting to filter in the lab. This difference is not significant when compared to lab variability or standards contained in NR 140. For COD, the lab analysis contains sufficient variability to conceal any difference between filtering time. For ammonia, Kjeldahl nitrogen and nitrate plus nitrite, no difference was found between filtering in the field and filtering 24 hours later or preserving in the field and preserving 24 hours later.

**Recommendations/
Implications:** Suggestions for minimizing the variabilities in the field and laboratory include properly purging the wells, immediately cooling the sample to 4 degrees celsius, filtering within 24 hours and performing sulfuric acid preservation for nitrogen and COD analysis either before or after filtering the sample. Field filtering is preferred, although laboratory sampling is acceptable as long as proper sampling procedures are followed.

Availability of Report: This report is available for viewing and loan at:

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