HYDROGEOLGY
PART III- ANSWER KEY

1. Yes the town should close their well. (3 points)

   They should close their well because the contaminant can move both vertical and laterally to the town's well. Although the town is several miles away, the pollutant can easily migrate, especially if the material is very permeable. (2 points)

2. Nitrate (5 points)

3. It would spread faster if the underlying material was gravel. (3 points)

   It would spread faster through gravel because it is more porous, leading to a greater permeability. (2 points)

4. I expect there to be an increase in algae (1 point)
   Eutrophication (1 point)
   Fish kills (1 point)
   Lower levels of dissolved oxygen (1)
   Increase in water temperature (1)
   **Or any other comparable answer (1)

Remediation Technique	Definition (1 pt)	In- or ex-situ (0.5 pt)	Type (Physical, Biological, or Chemical) (0.5 pt)	Cost (low, medium, high) (0.5 pt)	Applicable to contaminant X? (yes/no) (0.5 pt)
Electrokinetic Separation	A process that removes metals and organic contaminants by using electrochemical and electrokinetic processes to desorb, and then remove, metals and polar organics	In situ	Physical/chemical	Medium	yes
Air Stripping	The process of moving air through contaminated groundwater or surface water in an above-ground treatment systems.	Ex situ	Physical/chemical	high	no
Bioventing	The process of stimulating the natural in situ biodegradation of contaminants in soil by providing air or oxygen to existing soil micro-organisms. Uses low air flow rates to provide only enough oxygen to sustain microbial activity in the vadose/unsaturated zone.	In situ	Biological	high	no