Table 13

Evaluation of Grand Forks

Groundwater Quality Ambient Network

Network Name :	**GRAND FORKS**
Aquifer Numbers:	158 (Grand Forks)
Monitored Since:	March 5, 1985
Footprint Area:	38.8 km^2
Number of Obs wells:	25 wells at 21 sites
Number wells in WRA:	500
Aquifer Classification:	158 IA (rank 17)
Parameters ≥ GCDWQ:	Nitrate, Chloride
Contaminants of Concern:	NO3, Cl, K

Network Objective		Measurement Criteria		Current Status		Evidence of Change		Response Options		Comments	
1	**Spatial and Depth Coverage**	a.	background well(s)	-	very good spatial coverage	-	no evidence of geothermal	-	no response/change		
		b.	coverage in areas of suspected impacts			-	no significant land use change	-	add wells from Town of Grand Forks and various irrigation districts		
		c.	coverage of all indicated spatial mode areas			-	several municipal wells available for sampling				
		d.	coverage of hydraulically isolated formations								
2	**Suite of Chemistry Parameters and Lab Methods**	a.	indicator parameters capable of identifying existing/potential threats	-	insufficient parameters to verify charge balance	-	Cl increasing at hosipital	-	no response/change		
		b.	ability for anion/cation balance	-	HCO3 not regularly included	-	NO3 decreasing	-	sample for complete suite in all parameters annually		
		c.	continuity of historical parameters	-	background for some parameters is modal			-	monitor WTN 7962, WTN 35526, WTN 59167 more closely		
		d.	consistent suite of parameters					-	include turbidity		
		e.	new parameters reflect emerging lab methods and recs. by Kohut (2009)								
		f.	surrogate monitoring methods								
3	**Sampling Frequency for Network + Wells of Importance**	a.	consistency in suite of parameters	-	parameters not consistent	-	sample frequency is not	-	no response/change		
		b.	duration frequency for primary and secondary priority wells	-	no seasonal sampling		consistent	-	sample more consistently		
		c.	sampling for seasonal variation								
4	**Field Methods QA/QC Data Validation**	a.	field sampling + handling protocols	-	some outliers identified, probably related to sampling methods			-	no response/change		
		b.	QA/QC lab results					-	adherence to field protocols		
		c.	cation/anion balance					-	EMS results reviewed quickly so that sample re-testing still possible		
		d.	QA/QC data entered in EMS								
		e	identify statistical outliers								
5	**Spatial and Temporal Analysis and Reporting**	a.	visual outliers and spatial/temporal trends	-	one upwards trend exists	-	upward trend in Cl	-	no response/change	-	nitrogen continues to be an issue but is declining
		b.		-	one downward trend exists	-	downward trend in NO3	-	regular analysis/validation	-	more attention needed in area of hospital
									to identify outliers/trends	-	more attention need in industrial area near
								-	communicate with planners		WTN 59167
								-	communicate with water users	-	K elevated down-gradient of agricultural areas.
								-	communicate with planners		