DRAFT

Methodology Matrix

Assessment of Data Adequacy

#	Data Characteristics	Abundant Data	Adequate Data	Limited Data
1	Sufficient Recent and Historical Data (no large gaps in time period, e.g. 10+ years)	Yes	Yes	No
2	Data Contains Large Spatial Gaps (is more than half the area not covered?)	No	No	Yes
3	Percent Of Wells With Construction Info	>50%	10-50%	<10%
4	Percent of Wells With Accurate Locations (<100m error)	>50%	10-50%	<10%

Methodology Options

Spatial Methods for Determining Ambient Groundwater Quality Conditions

	Basic Statistical Analyses	Abundant Data	Adequate Data	Limited Data[1]
5	By Region	Better representation	Sufficient representation	Potential for bias
6	By Areal Hydrologic Zones (e.g. subbasins)	Better representation	Sufficient representation	Potential for bias
7	By Vertical Hydrologic Zones	Better representation	Sufficient representation	Potential for bias
	Spatial Analysis	**Abundant Data**	**Adequate Data**	**Limited Data[1]**
8	Declustering Data with Grid	Better representation	Sufficient representation	Potential data gap
9	Interpolation	Better representation	Sufficient representation	Potential data gap and/or skewed interpretation

Temporal Methods for Determining Groundwater Quality Trends

	Visual Trend Analyses	Abundant Data	Adequate Data	Limited Data[1]
10	Plot Time Series of All Well Data Within Region	Better representation	Sufficient representation	May not be suitable
11	Plot Time Series of All Well Data Within Areal Hydrologic Zones (e.g. subbasins)	Better representation	Sufficient representation	May not be suitable
12	Plot Time Series of All Well Data Within Vertical Hydrologic Zones	Better representation	Sufficient representation	May not be suitable
13	Plot Time Series of Representative Wells	Better representation	Sufficient representation	May not be suitable
	Statistical Trend Analyses	**Abundant Data**	**Adequate Data**	**Limited Data[1]**
14	Parametric Tests for Trend (T test, Regression, Correlation)	Better representation	Sufficient representation	May not be suitable
15	Non-Parametric Tests for Trend (Kendall Tau, Spearman's Rank)	Better representation	Sufficient representation	May not be suitable
16	Regional Kendall Test	Better representation	Sufficient representation	May not be suitable

[1]Not applicable or limited utility pending data limitations

Assimilative Capacity

Calculating Assimilative Capacity

17	Regulatory Limit (concentration units) - Ambient GW Quality (concentration units)= Assimilative Capacity (concentration units) Example: 10 mg/L NO3-N - 4 mg/L NO3-N = **6 mg/L NO3-N**

Volume Weighted Assimilative Capacity

18	Ambient conditions for a location can be determined on a depth/aquifer basis and be combined to obtain a volume weighted ambient value to calculate an assimilative capacity for the production zone. Example for a 700ft production zone with shallow and deep ambient groundwater quality: Shallow (0-200ft) Ambient = 12 mg/L NO3-N Deep (200-700ft) Ambient = 4 mg/L NO3-N (12mg/L x 200ft) + (4mg/L x 500ft) / 700ft = 6.3 mg/L NO3-N 10 mg/L NO3-N - 6.3 mg/L NO3-N = **3.7 mg/L NO3-N**