## Water Monitoring

Without water monitoring, how can we:

- Reconcile our water demand with the water supply?
- Meet the needs of downstream users and vital ecosystem functions?
- Engineer structures in, and near, the water to be resilient to high likelihood events?
- Detect impactful trends and/or events?
- Provide warnings of imminent danger?

Failure to protect the environment, failure of infrastructure, failure to respect the rights of downstream users, and failure of timely warnings is not a matter of just being unlucky. Water can be collectively managed to eliminate over-use, misuse, and abuse if, and only if, trusted hydrological information is available as the foundation for building trust and consensus amongst all stakeholders.





*E. coli* (H) 406 ct/100ml Phosphorus (H) 0.07 mg/L Sediment (H) 50 mg/L Flows (H) Temperature (H) Precipitation/weather (H) Nitrogen (M) TDS/conductivity (M) Dissolved oxygen (M-L) pH (M-L) Pesticides (L) Metals (L) Hardness (L) Mercury (L)





River flow is a foundation for many water quality analyses. Many water parameters are measured as a concentration of a substance, and water flow is then needed to calculate quantities of material carried, such as nutrients or sediment.

All freshwater research on fowl, trout, and the native fish species relies on flow and waterlevel information.

I.E. The marine farming industry closely monitors river flows to assess whether harvesting of shellfish can occur without risk from pathogens borne by rivers draining to the coast.

NO3/NO2 mg/L	Ortho-P mg/L	T-Phos mg/L	E. coli ct/100mL	TSS mg/L	Lab pH SU	Turbidity NT	U	Flow		Days/Seg	# N	# P	# TSS
								0			0	0	0
7.66	0.182	0.2	220	6	8.1	5		3		30.4	3765.41	98.31	2949.41
7.59	0.132	0.19	20	19	8.2	6		18.4		30.4	22883.47	572.84	57284.06
7.41	0.124	0.24	- 78	83	8.2	18		1.8		30.4	2185.51	70.79	24480.09
2.21	0.126	0.243	140	66	8	47		3		30.4	1086.37	119.45	32443.49
1.64	0.076	0.39	400	172	8	57		34.8		30.4	9351.59	2223.85	980776.47
2.14	0.105	0.44	1300	226	7.9	87		12.2		30.4	4277.95	879.58	451783.76
2.44	0.094	0.5	1400	339	7.8	123		12.3		30.4	4917.65	1007.71	683230.36
2.67	0.105	0.74	1300	465	7.8	153		12.5		30.4	5468.69	1515.67	952413.00
3.08	0.106	0.28	900	72	7.9	36		2.5		30.4	1261.69	114.70	29494.08
3.77	0.11	0.33	320	144	7.9	25		3.4		30.4	2100.31	183.85	80223.90
8.33	0.161	0.208	300	26	8.1	13		2.5		30.4	3412.30	85.21	10650.64
8.11	0.157	0.196	440	28	8.1	15		7.5		30.4	9966.54	240.87	34409.76
								Total pounds		70677.48	7112.8251	3340139	
									Total tons		35.33874	3.5564126	1670.07











WW fall cover crop, Alfalfa seed strip tilled, Nampa, Id 2012



## Improved cultural efficiency



## Saving soil and nutrients by reducing erosion loss





## "Cornstalks just don't let the water run off!"



Crop residue

Crop residues Cover Crops Animal manure The greatest roadblock in solving a problem is the human mind!