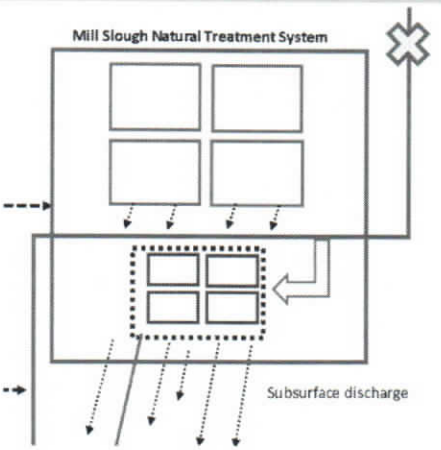
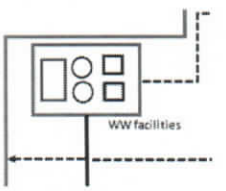
IPDES Permitting and Natural Treatment

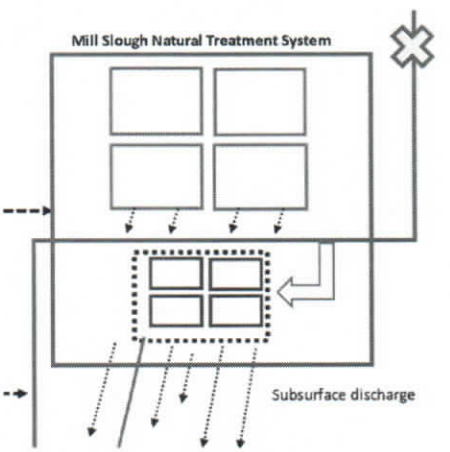


Jack Harrison PhD, PE, HyQual
Supported by
Civil Dynamics and WR2
April 3, 2019v1

Topics for discussion:



- Proposed IPDES Temperature Limits
  - Caldwell does not have temperature limits
    - Why, what changed??
  - No allowance for minor increase
    - Why ??
- Natural Treatment Systems
  - Not yet fully supported by DEQ
    - Why?
- Next Steps
  - set up meeting(s)?



Caldwell's 2016 NPDES Permit

Caldwell's 2016 permit DID NOT include temperature limits

- Written by EPA
- Certified by DEQ

2016 permit fact sheet

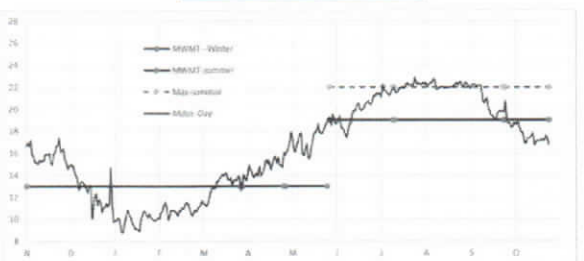
- **"Because there are no recent continuous receiving water data for temperature in the Boise River in the vicinity of the discharge and no continuous temperature data for the discharge**, the EPA cannot determine if the City of Caldwell's discharge of heat has the reasonable potential to cause or contribute to excursions above water quality criteria for temperature in the Boise River".

Allowable Temperature Increase ??

Middleton Increase

Boise River	Flow (cfs)	Temp (deg C)
Winter 7Q10	102	--
Mixing Zone	25.5	13
Md WW (avg?)	1.55	18
Mixed	27.05	13.29
Delta Temperature	--	0.29
Mixing Zone	25%	--
Summer 7Q10	67.8	--
Mixing Zone	16.95	19
Md WW (avg?)	1.55	22
Mixed	18.5	19.25
Delta Temperature	--	0.25
Assumptions		
Middleton flow (mgd)	1	--
Mixing Zone	25%	--

DEQ Proposed Limits



Idaho Rules

	Recieveing Water Temperautre	Allowable Mixing Zone Increase
A	Below Criteria	1.0 degree C
	Above Criteria	
B	due to Natural Background	0.3 degree C (approved by EPA)
C	due to Human causes	0.3 degree C (NOT approved by EPA)
B/C	No TMDL	No increase (meet criteria) ??
B/C	TMDL Allocation	Allocated increase TBD

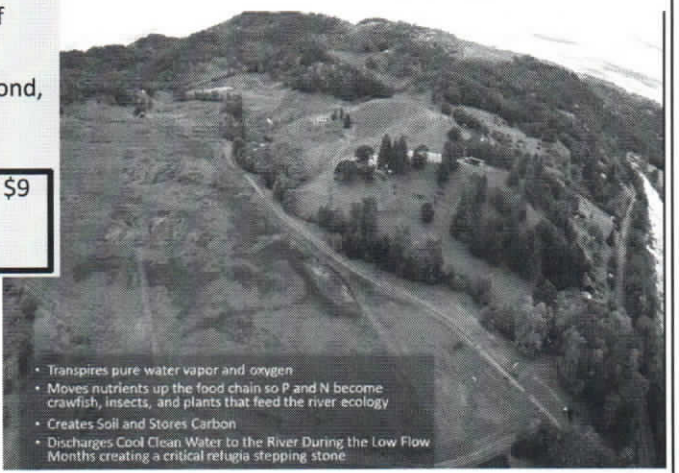
Roseburg Natural Treatment System

Spokane River Forum 2017
- Jim Baird – Manager RUSA
- Mark Madison – Jacob

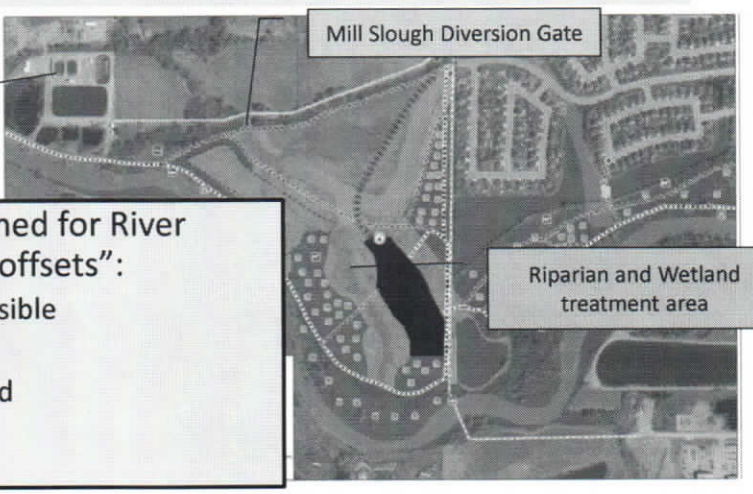
ODEQ and ACWA, 2014 state:

- treats secondary effluent using a combination of natural treatment processes
- NTS combines indirect discharge, an irrigation pond, treatment wetlands and restoration of natural wetlands
- a substantial cost savings— installed at a cost of $9 million (vs $100 million conventional treatment system and carried higher operating costs)

City of Roseburg took Oregon DEQ to court to save money and meet treatment requirements!!



River District and Water Quality Improvement



Natural Treatment is planned for River District area to generate "offsets":
- ✓Keep costs as low as possible
- ✓Reuse nutrients
- ✓Reduce temperature load
- ✓Provide open space

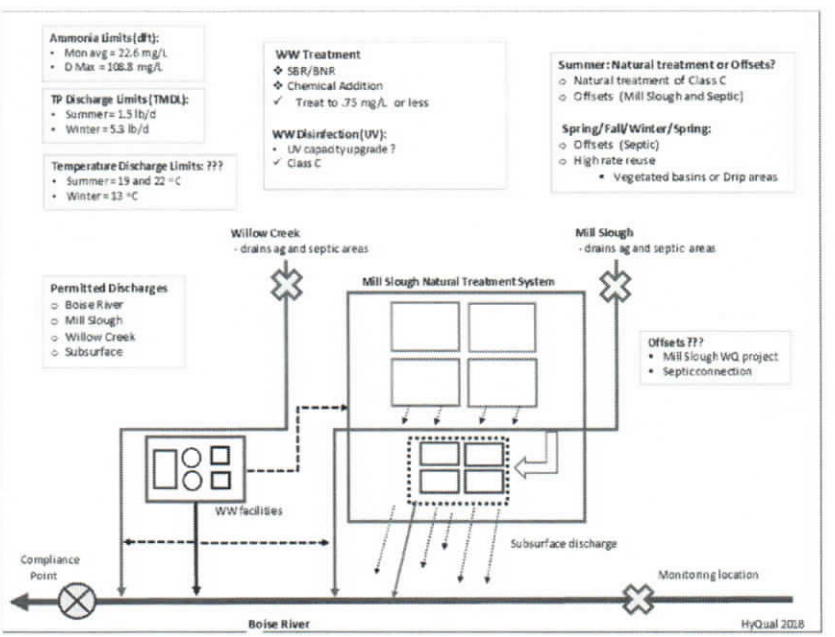
Natural Treatment…using agricultural land …north of Mill Slough

Agricultural Reuse via Drip Irrigation
- No runoff
- Subsurface water distribution
- Ag crop or trees for uptake

✓Helps keep costs low
✓Reuses nutrients
✓Reduces thermal load
✓Provides open space

Need multiple Discharge Locations!!

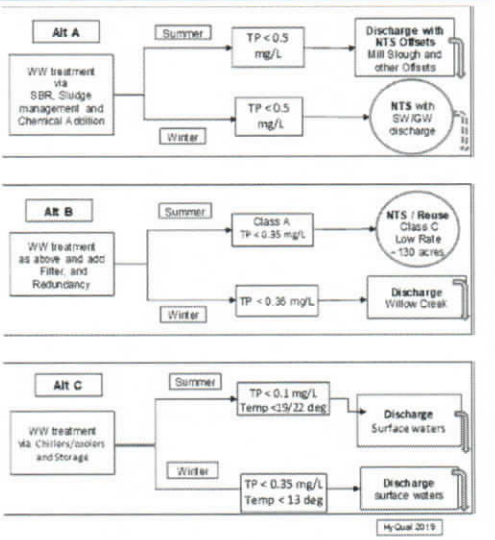
- Boise River
  - Point
  - Subsurface
- Mill Slough
  - Point
  - Subsurface
- Willow Creek



Middleton expects new discharge permits:

New IPDES Discharge Limits	Treatment Type	Compliance Timeframe (years)
Ammonia	Wastewater Plant	5
Phosphorus	Natural	10-15?
Temperature???	Natural???	15-20?

Working on master plan now!



Alt A: Potential cost savings of over $10,000,000 in 20 years

Middleton's next steps

❖ **Negotiate compliance schedules:**

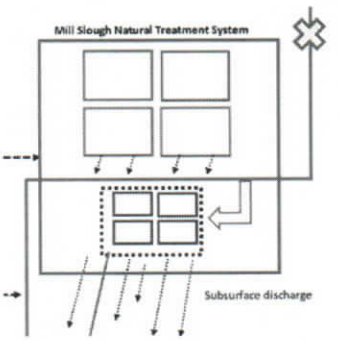
- ❑ 5-year for ammonia
- ❑ 10 to 15?? -years for phosphorus
- ❑ 15 to 20?? -years for temperature??

❖ Or push back for…. No Temperature Limits

- ❑ No limits in this permit
- ❑ Require collection of continuous data

➢ This allows time to:

- Study management approaches for both phosphorus and temperature
- Prepare recommendations for next permit



Next Steps??

- ✓ Letter to DEQ
- ○ Schedule meeting(s)??
- ○ Build support for natural treatment