

Rocky Reach and Rock Island Hydroelectric Projects

2014 Total Dissolved Gas Monitoring

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Monitoring Requirements

Rock Island Project

- 1989 FERC License Order
- 1974 - 401 Water Quality Certification

Rocky Reach Project

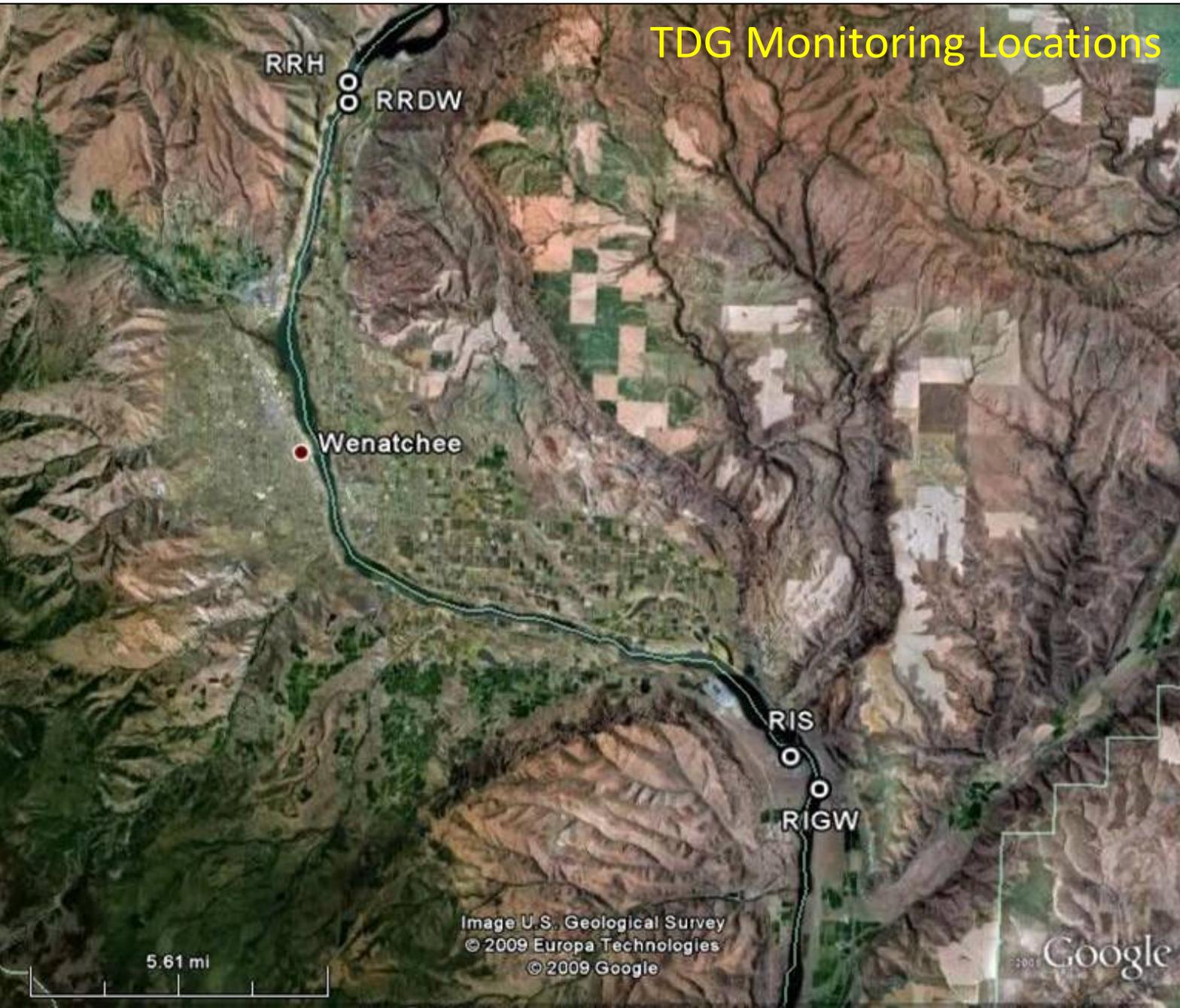
- February 2009 - FERC License Order
- March 2006 - 401 Water Quality Certification

Monitoring Parameters

- Monitor temperature and TDG hourly/year-round (4 sites)
- 2010 Ecology/FERC approved Quality Assurance Project Plan (QAPP)



TDG Monitoring Locations



CHELAN COUNTY
POWER

www.chelanpud.org

Rocky Reach Dam TDG Monitoring Locations



1032 ft

© 2011 Google

Daisy Hill © 2010 Google

Imagery Date: 12/31/2001

lat 47.530469° lon -120.296330° elev 610 ft

Eye alt 5377 ft



Rock Island Dam TDG Monitoring Locations



RIS
○

RIGW
○

2165 ft

© 2011 Google
Image U.S. Geological Survey
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Imagery Date: 6/30/2006

lat 47.337717° lon -120.086943° elev 575 ft

Eye alt 9967 ft

Data and QA/QC Methods

- Minisonde MS5 in forebay and tailrace of both projects
- Calibrated by John Lemons according to QAPP and manufactures recommendations
- Data processed through SCADA (supervisory control and data acquisition) system
- Data reported to USACE http://www.nwd-wc.usace.army.mil/ftppub/water_quality/

QA/QC

- Outlying or erroneous data highlighted by pre-programmed software
- Data is graphically displayed by Chelan PUD to identify outlying or erroneous data



QA/QC Results

Data loss

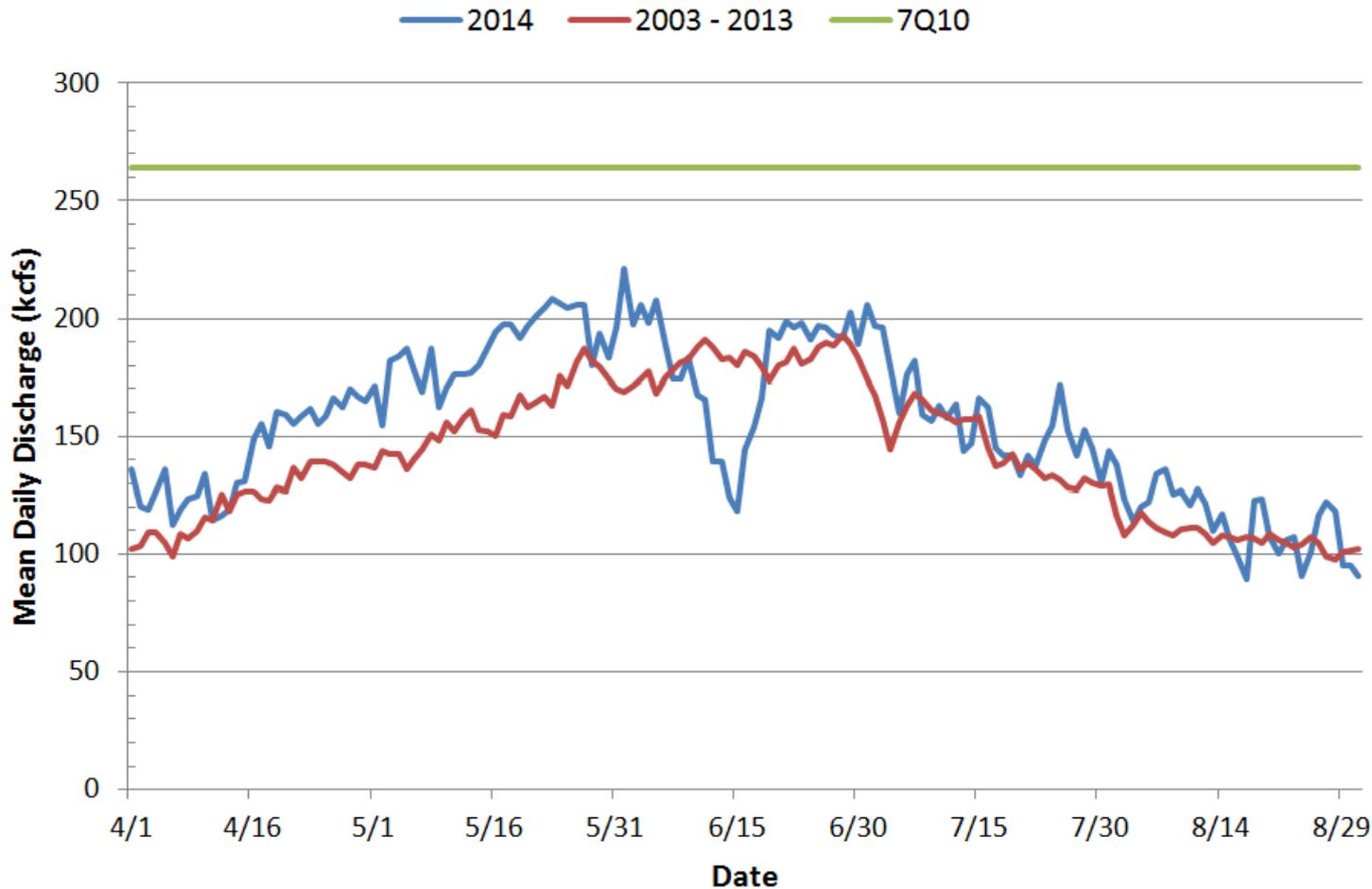
- communication issues from aging probes (replaced June 18, 2014) and/or system upgrades
- probe was out of the water due to the nature of the monitoring site at Rock Island tailrace and the Wanapum drawdown

Overview of total dissolved gas data set during 2014 fish-spill season April 1 – August 31.

Location	Available data hours	Number of omitted/lost hourly readings ¹	Percent data loss (%)
RRFB	3,672	4	0.1
RRTR	3,672	3	0.08
RIFB	3,672	380	10.3
RITR	3,672	544	14.8
Total	14,688	931	6.3

Note: RRFB = Rocky Reach Forebay, RRTR = Rocky Reach Tailrace, RIFB = Rock Island Forebay, RITR = Rock Island Tailrace.

TDG Monitoring Results



Comparison of 2014 vs. previous 10-year average (2004-2013) of mean daily discharge at Rock Island.

TDG Monitoring Results

Total number of times TDG levels exceeded the current water quality standards during the fish-spill season.

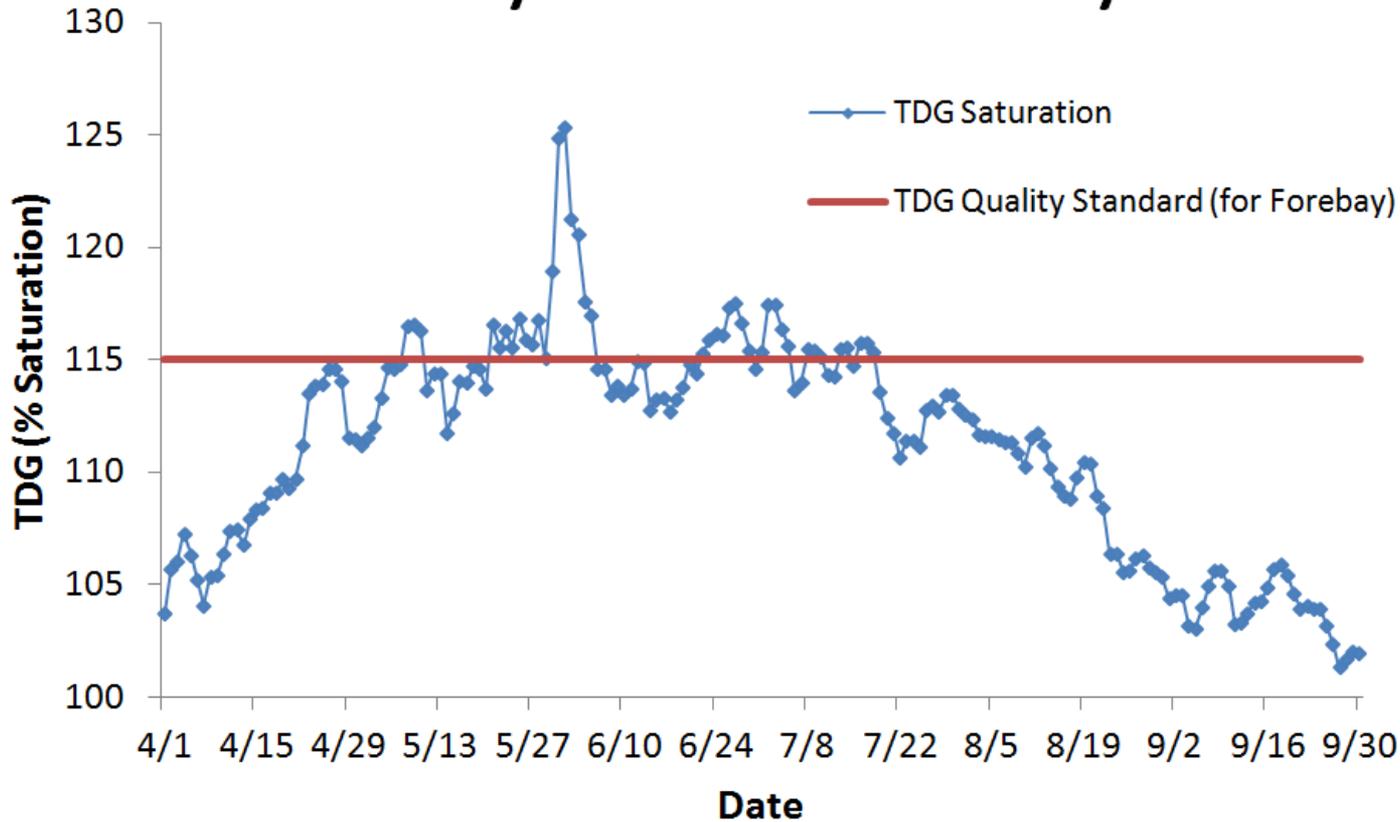
Location ¹	Number of 115 % /120% exceedances					Number of 125% exceedances		
	Spring Spill	Summer Spill	Total	Total # of days ²	% below standard	Total hours	Total # of hours ²	% below standard
RRTR	3	8	11	153	92.8	18	3,668	99.5
RIFB	2	5	7	141	95.0	0	3,669	100
RITR	0	7	7	146	95.2	0	3,292	100
WANF	4	19	23	153	84.9	0	3,128	100
total	9	39	48	593	91.9	18	13,757	99.9

¹RRFB = Rocky Reach forebay, RRTR = Rocky Reach tailrace, RIFB = Rock Island forebay, RRTR = Rocky Reach tailrace, WANF = Wanapum forebay

² Based on total number of available days/hrs minus days/hrs omitted due to TDG membrane failures or other QA/QC issues.

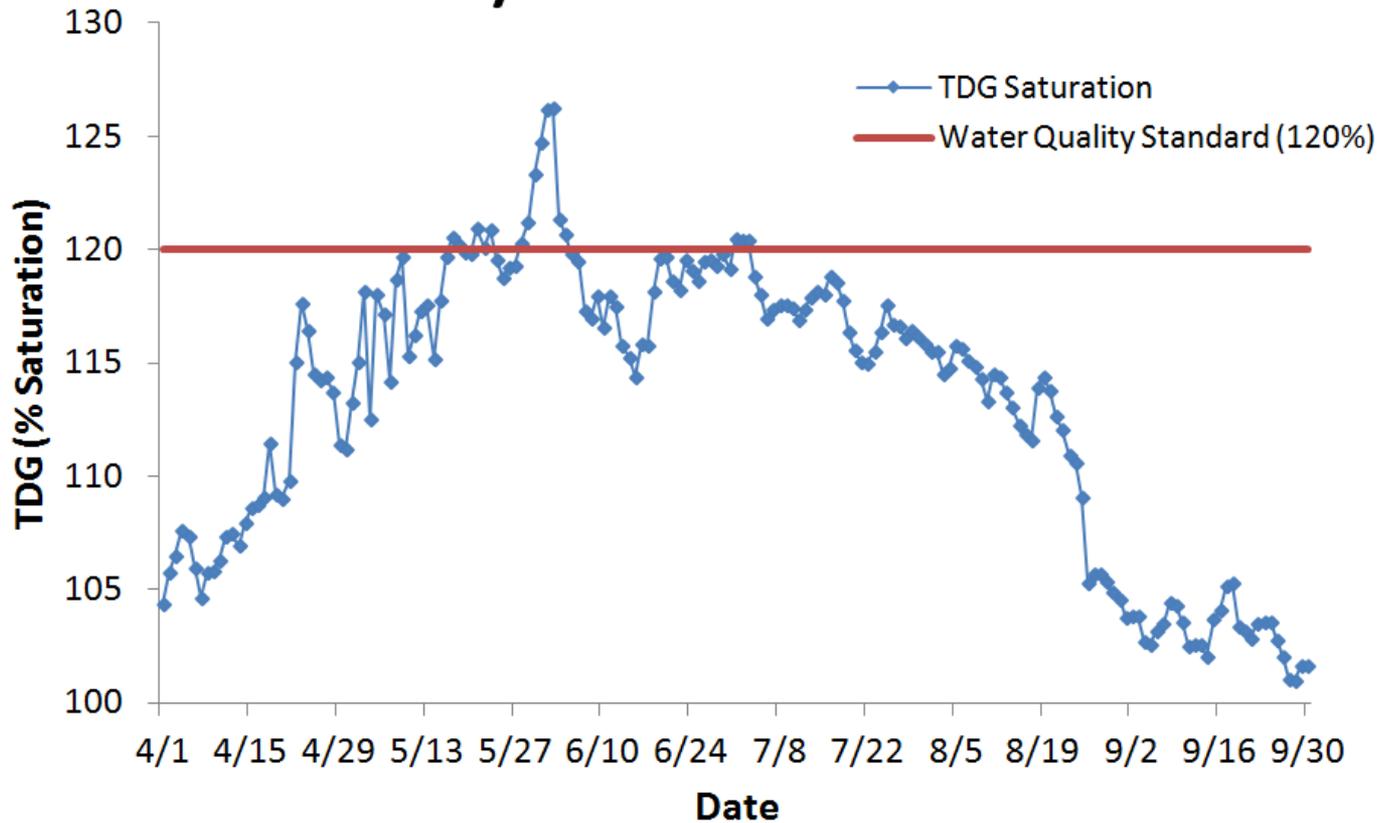
TDG Monitoring Results

Rocky Reach Dam Forebay



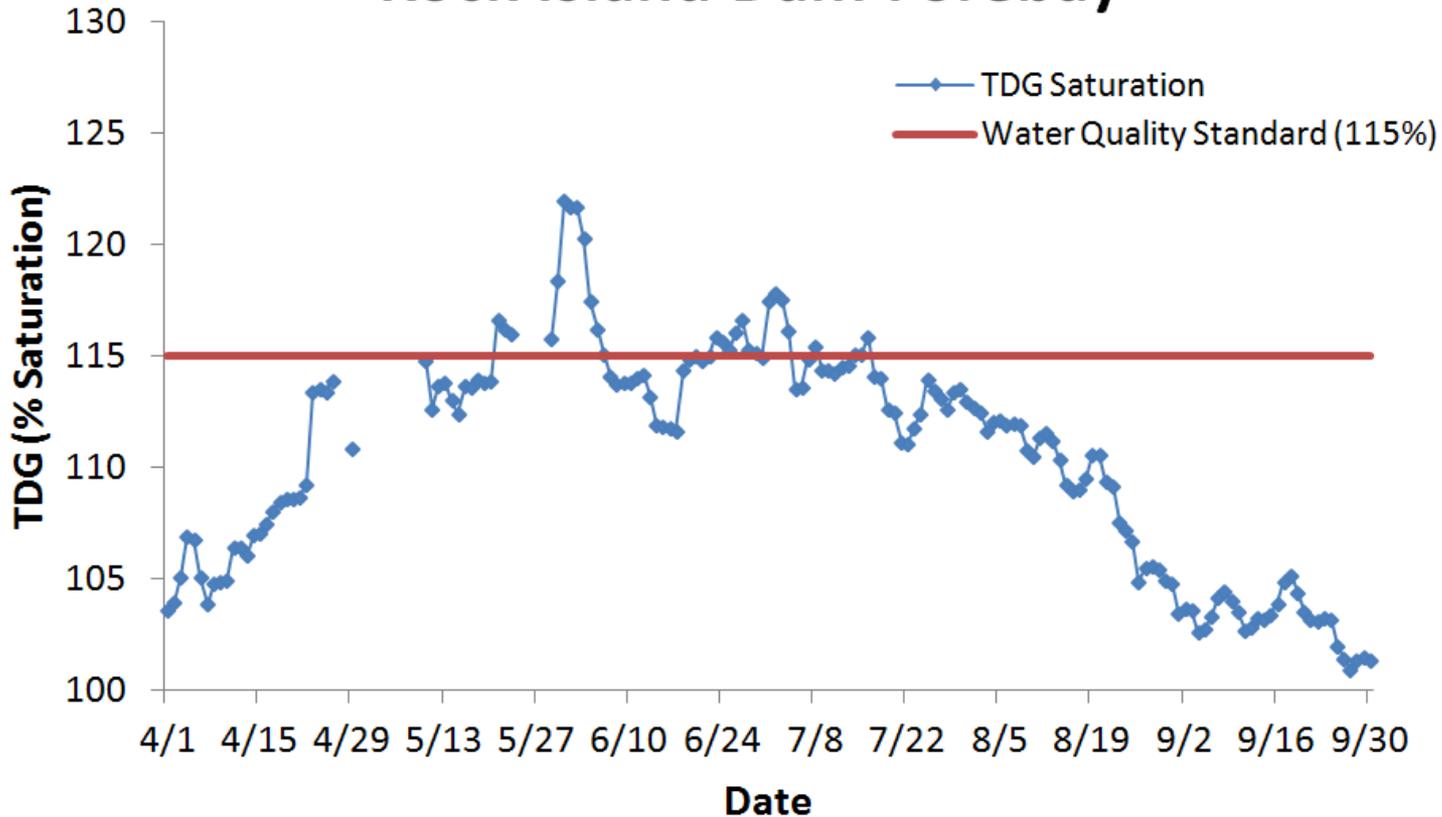
TDG Monitoring Results

Rocky Reach Dam Tailrace



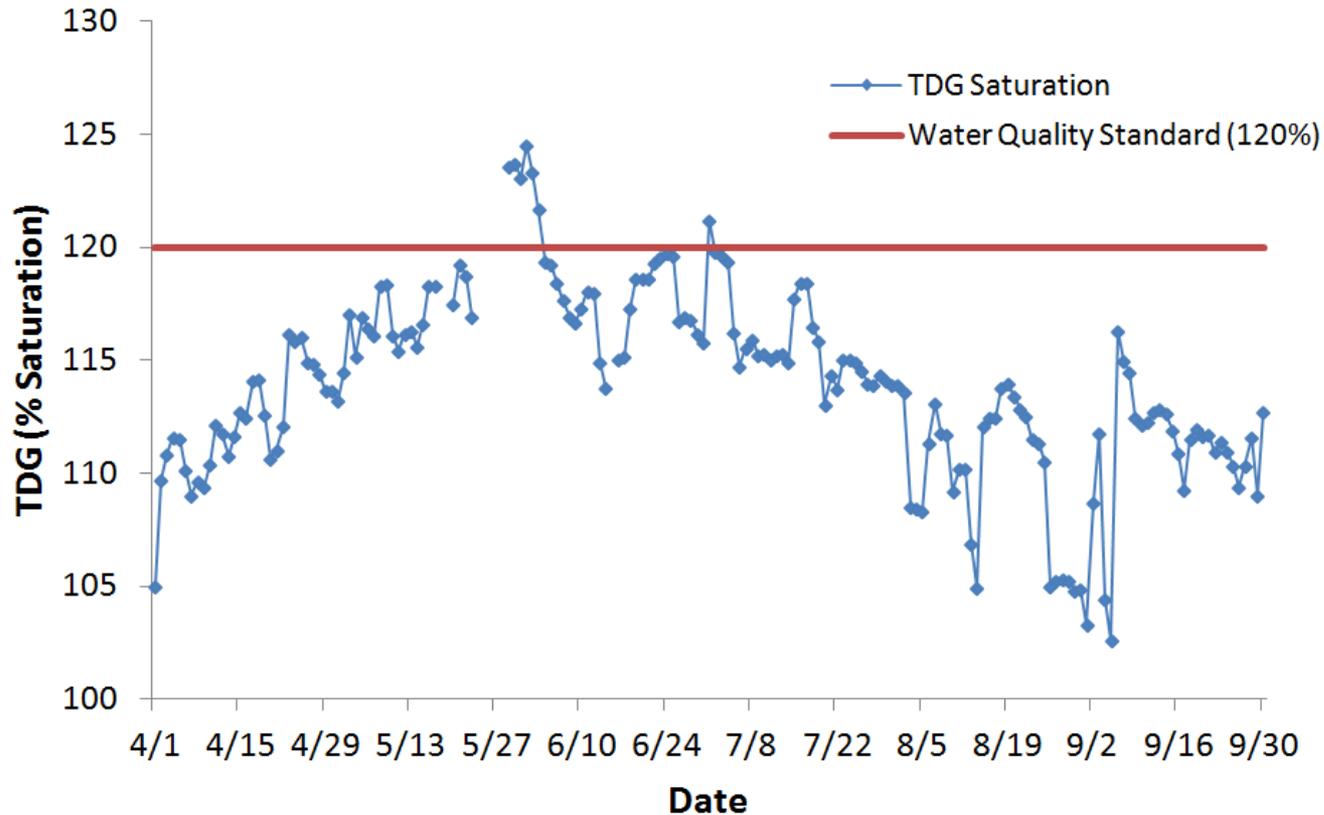
TDG Monitoring Results

Rock Island Dam Forebay



TDG Monitoring Results

Rock Island Dam Tailrace



Conclusions

- Continue to follow Ecology's 401 certification conditions
 - Gas Abatement Measures
 - Quality Assurance Project Plan (QAPP)
 - Annual Gas Abatement Plan (GAP)
 - Annual TDG and Water Quality reports
- Continue to follow established guidelines for calibration, maintenance and QA/QC procedures as outlined in Chelan PUD's QAPP
- Continue to closely monitor TDG levels during the fish spill season in accordance with Ecology approved GAPs, the Rocky Reach 401 WQC (Ecology, 2006), and the Rocky Reach QAPP (Chelan PUD, 2010b).

Questions?

