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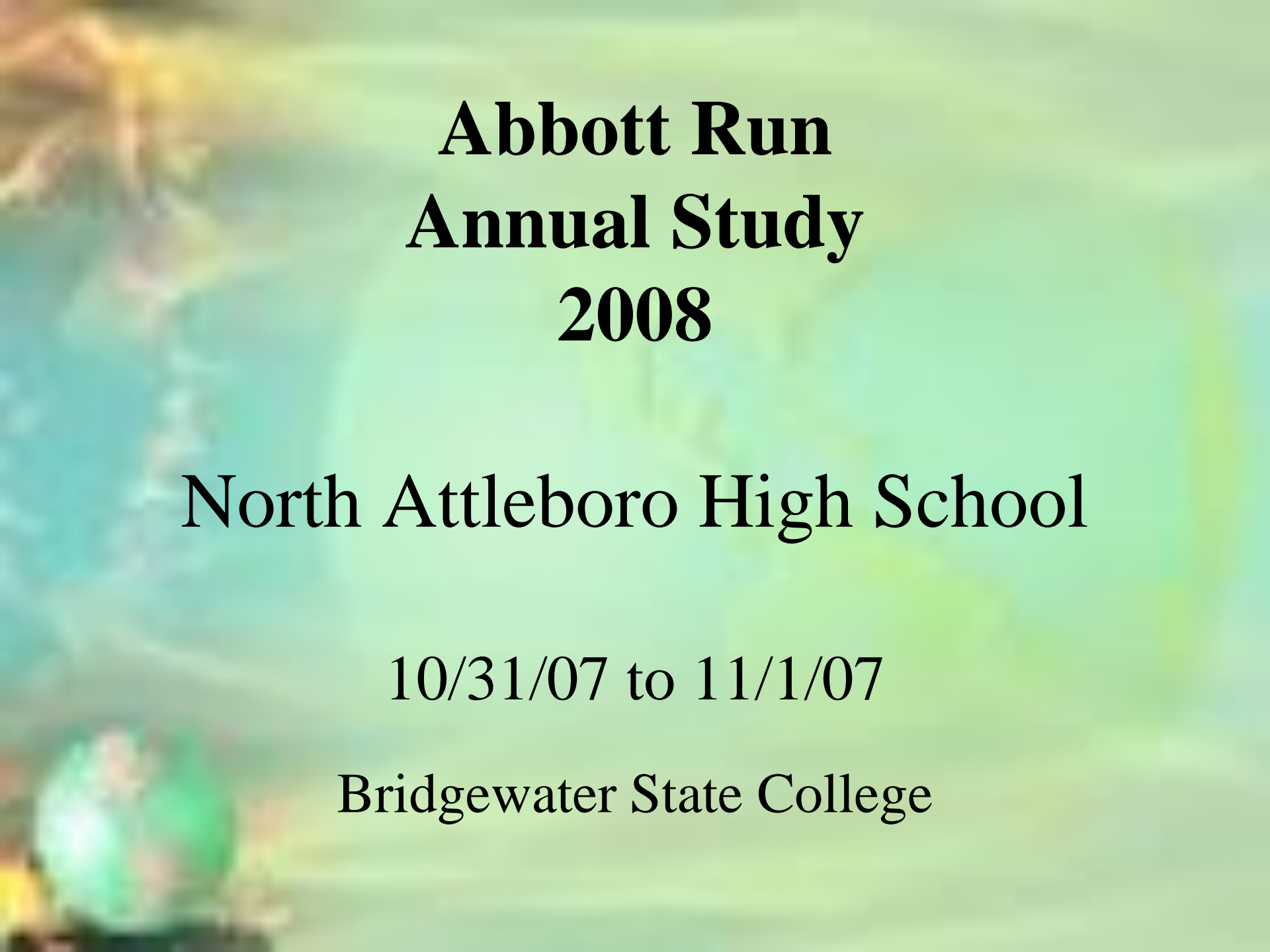


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Abbott Run Annual Study 2008

North Attleboro High School

10/31/07 to 11/1/07

Bridgewater State College

Purpose Of Study

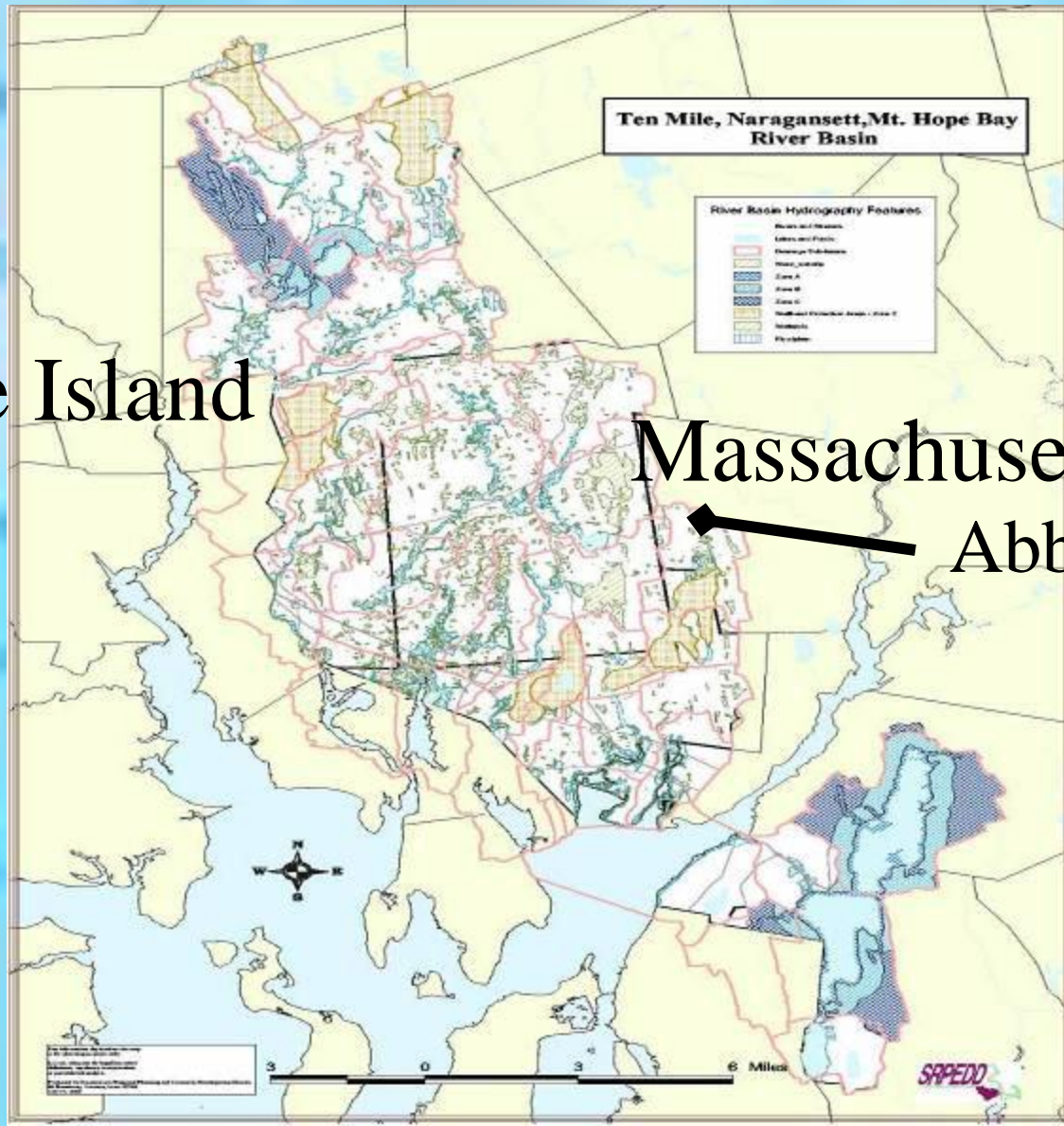
- The purpose of our study is to research any physical, chemical or biological changes that may have occurred.
- Abbott Run is a Class A river and a public water supply source for Pawtucket, RI.
- We checked the pH, dissolved oxygen, the river flow, specific conductivity, temperature, precipitation levels, benthic macro-invertebrates, and depth to see if the river meets Massachusetts standards

Blackstone Watershed

Rhode Island

Massachusetts

Abbott Run



History of Abbott Run

- Abbott Run has been the water-source for Cumberland, RI and Pawtucket, RI for centuries.
- It helped Cumberland begin an early industrial growth along with the Blackstone River
 - One of the first manufacturing sites in Cumberland was called Robin Hollow and it was located on Abbott Run
- On the west side of Abbott Run, during the 1660s, a furnace was erected near Robin Hollow and it was called the Iron Rust
 - During the Revolution, canons were made in this furnace
- A woolen factory built in 1840 by two men named Rawson and Crowningshield was named Abbott's after the river
 - A New York and New England Railroad has a station that is also named Abbott's

Abbott Run

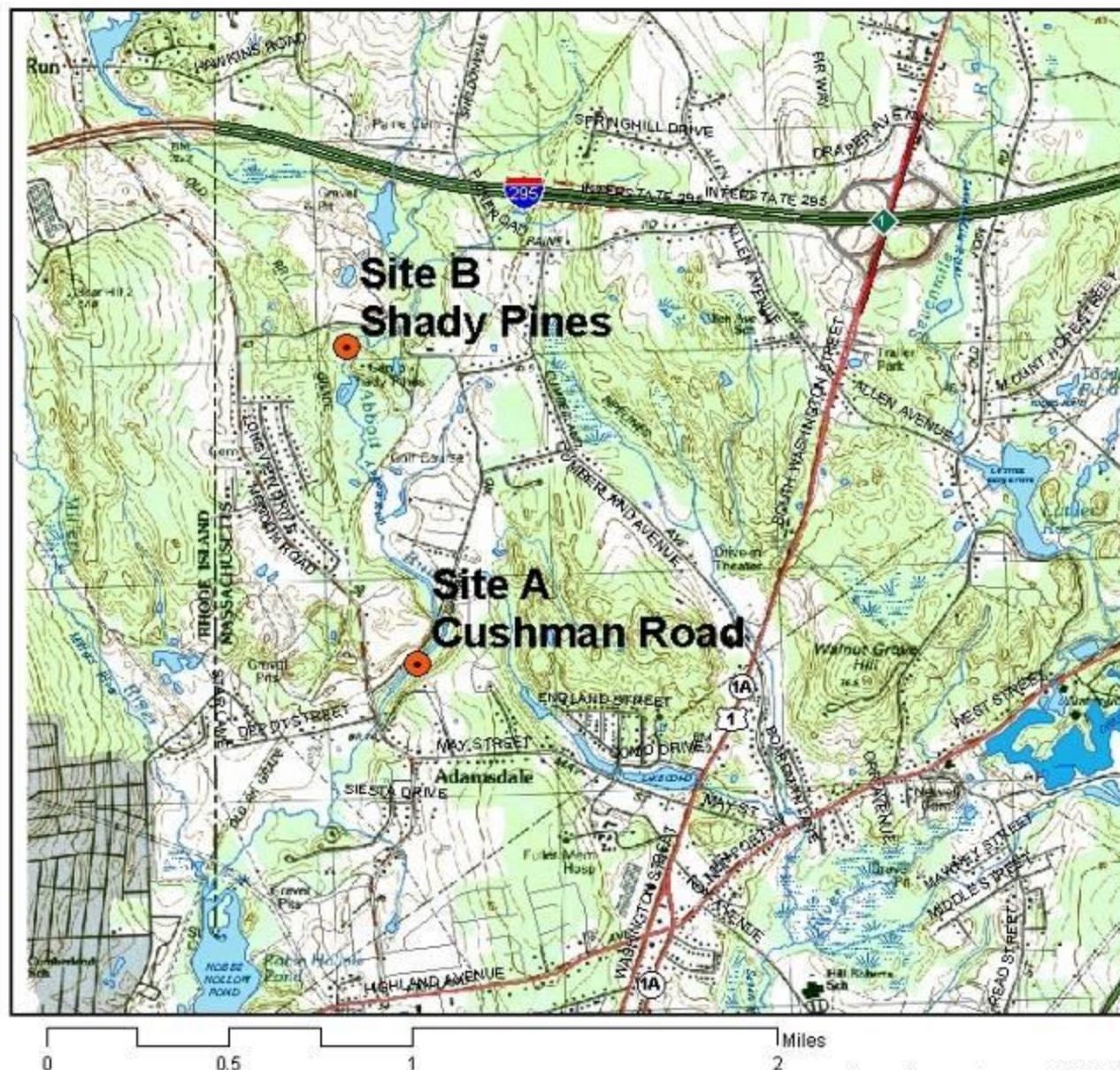
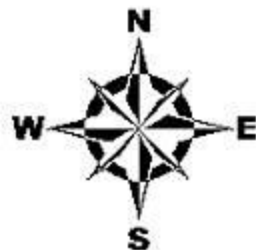
Legend

- Perennial Stream
- Intermittent Stream
- Shoreline
- Intermittent Shoreline
- Manmade Shoreline
- Ditch/Canal
- Aqueduct
- Dam
- Channel in Water
- Pond, Lake, Ocean
- Reservoir
- Wetland
- Salt Wetland
- Submerged Wetland
- Cranberry Bog
- Tidal Flat
- Inundated Area
- ◆ Highway Exit Locations

All Roads

Road Classification

- Limited Access Highway
- Multi-lane Hwy, not limited access
- Other Numbered Highway
- Major Road, Collector
- Minor Road, Arterial
- Towns
- Interstate
- Coast
- Towns



Site A: Cushman Road

Site A

© 2007 Europa Technologies

Image MassGIS, Commonwealth of Massachusetts EOE

Pointer 41°55'49.98" N 71°22'26.09" W elev 98 ft Streaming ||||| 100% Ey

Site B: Shady Pines

Site B

© 2007 Europa Technologies

Image MassGIS, Commonwealth of Massachusetts EOE

Pointer 41°56'27.36" N 71°22'15.06" W elev 104 ft Streaming ||||| 100% Ey

Average Stream Width, Average Depth, and Bottom Composition

Site A Cushman Road

Average Width	39 feet
Average Depth	1.47 feet
Bottom Composition	The bottom is solid and rocky

Site B Shady Pines

Average Width	20 feet
Average Depth	1.2 feet
Bottom Composition	The bottom is sandy

Average Flow, Total Discharge, Concentration of Nitrogen Concentration of Phosphorous

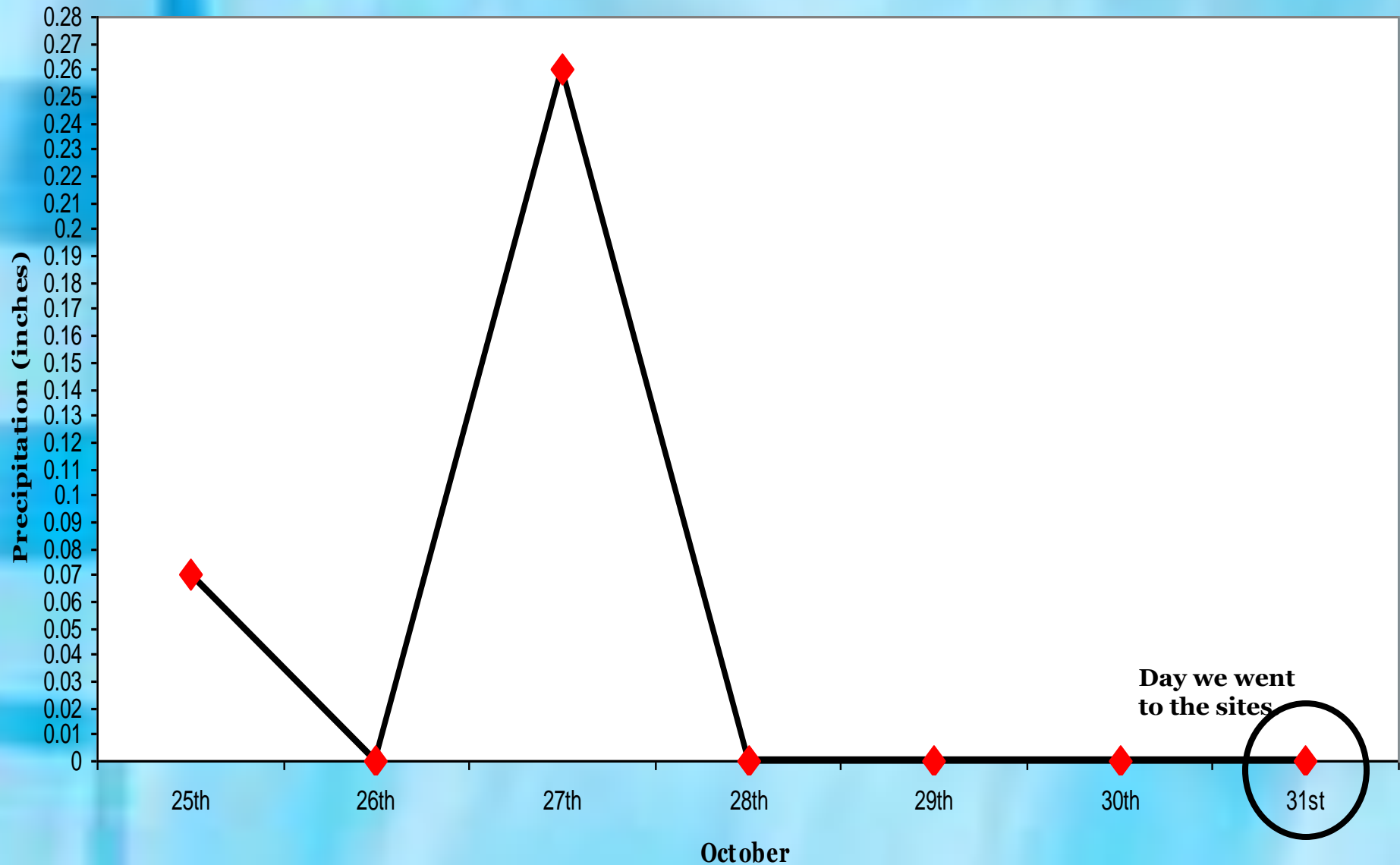
Site A Cushman Road

Average Flow	0.41 ft/sec
Total Discharge	22.39 CFS 633.98 L/s
Concentration of N mg/L N load g/day	0.24 mg/L 13,146.12 g/day
Concentration of P mg/L P load g/day	.009 mg/L 492.98 g/day

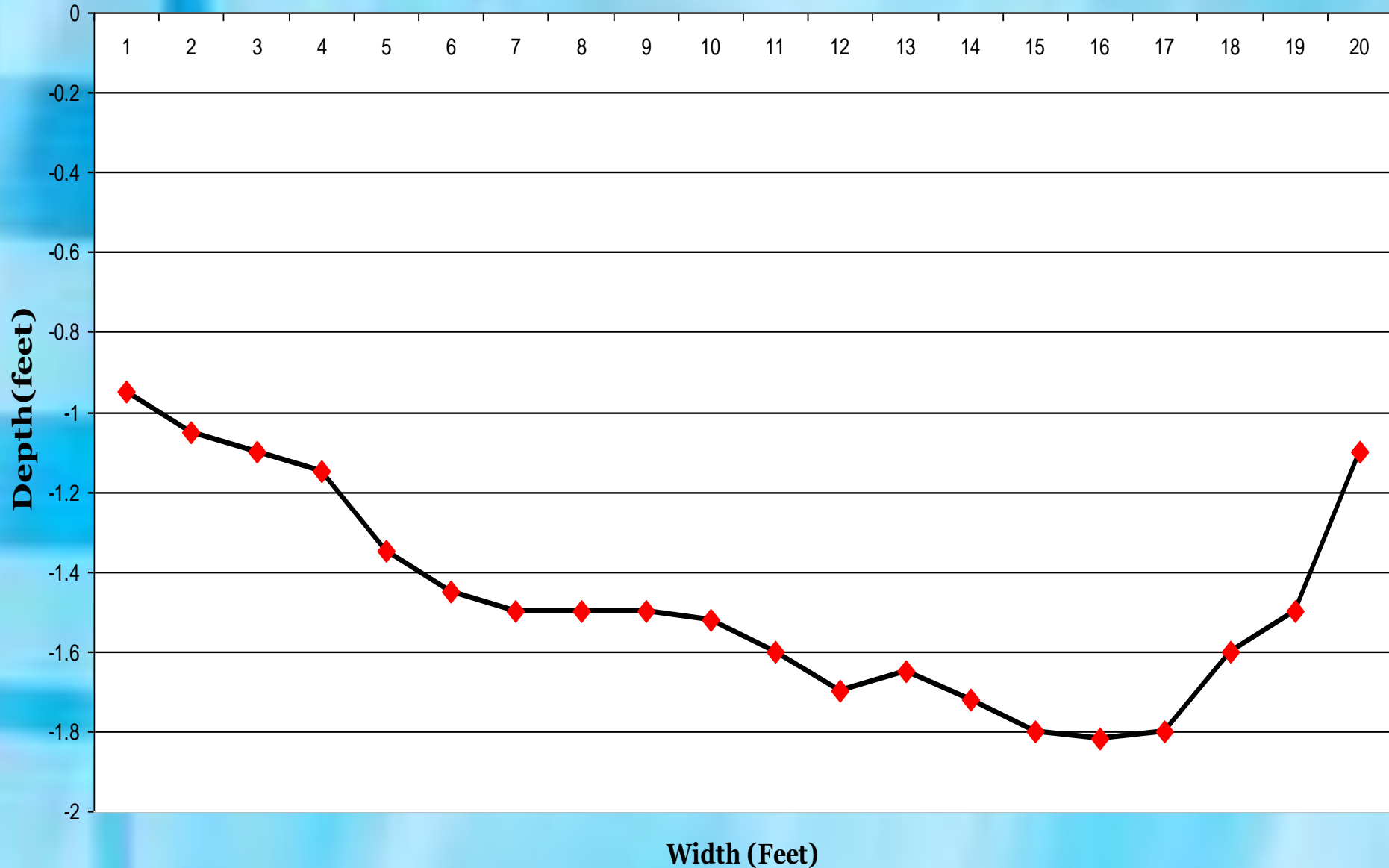
Site B Shady Pines

Average Flow	1.33 ft/sec
Total Discharge	31.91 CFS 903.79 L/s
Concentration of N mg/L N load g/day	0.23 mg/L 17, 960.15 g/day
Concentration of P mg/day P load g/day	.005 mg/L 390.44 g/day

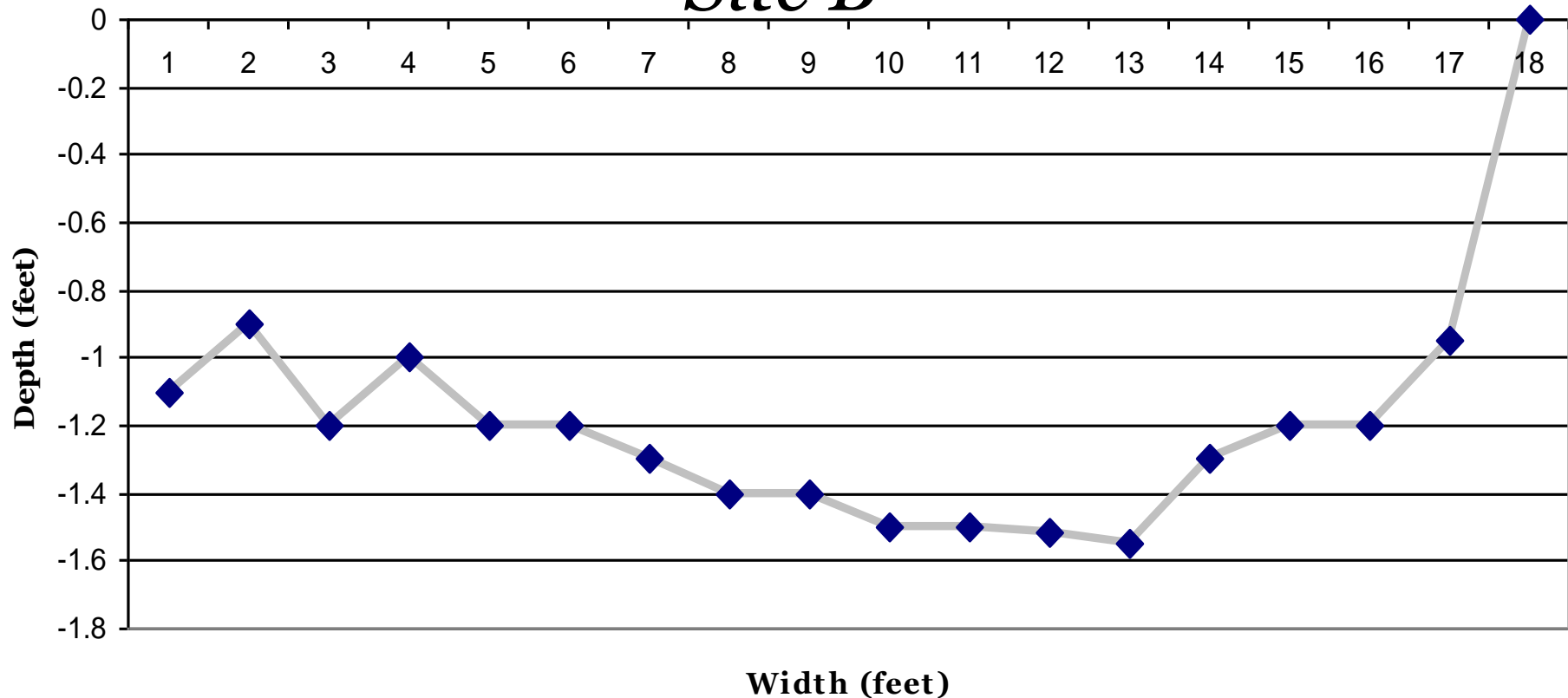
October 2007 Precipitation for North Attleboro



Stream Profile of Cushman Rd., Site A



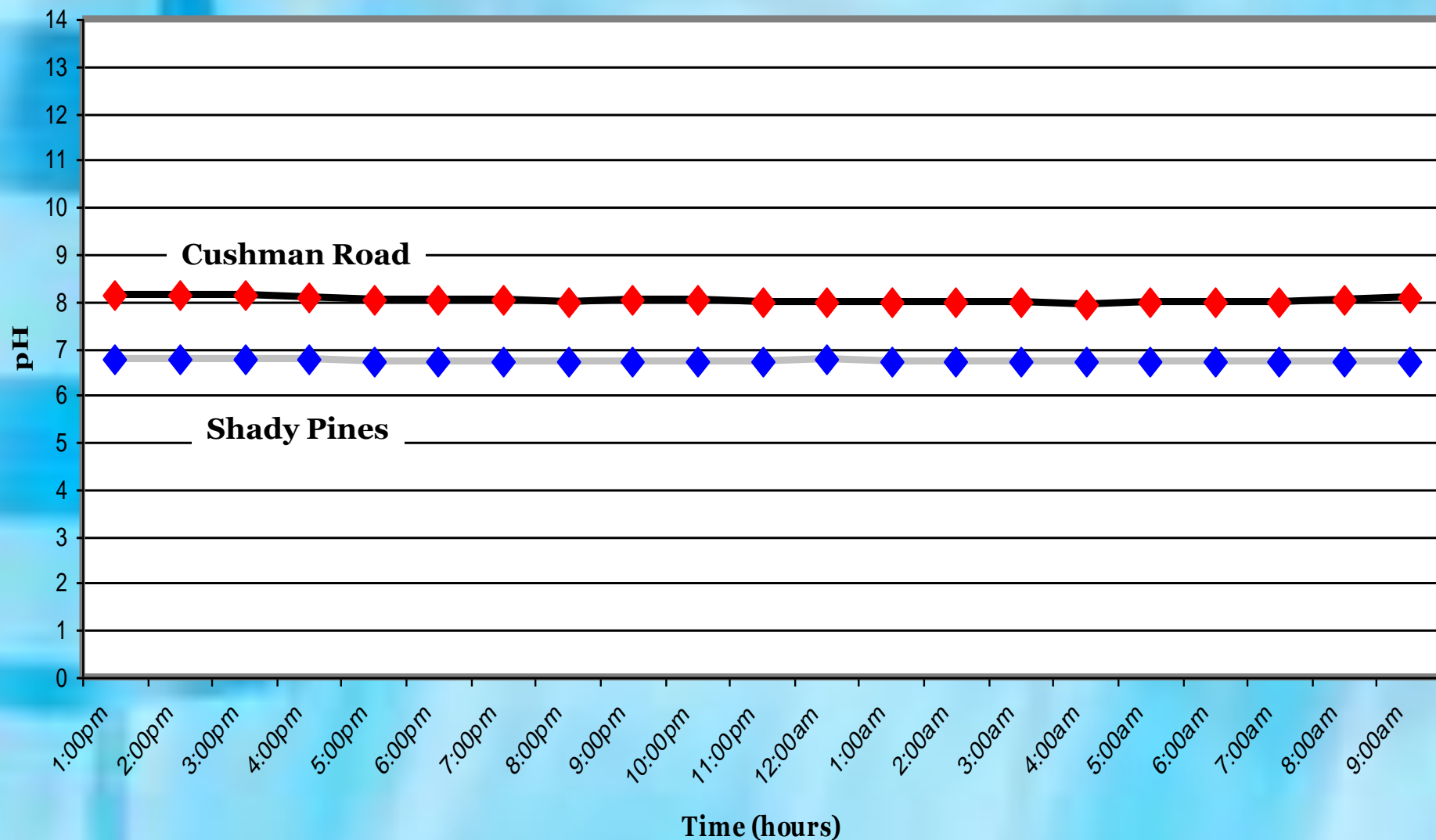
Stream Profile for Shady Pines, Site B



pH Comparison Of Site A and Site B - Ryan Morrissey

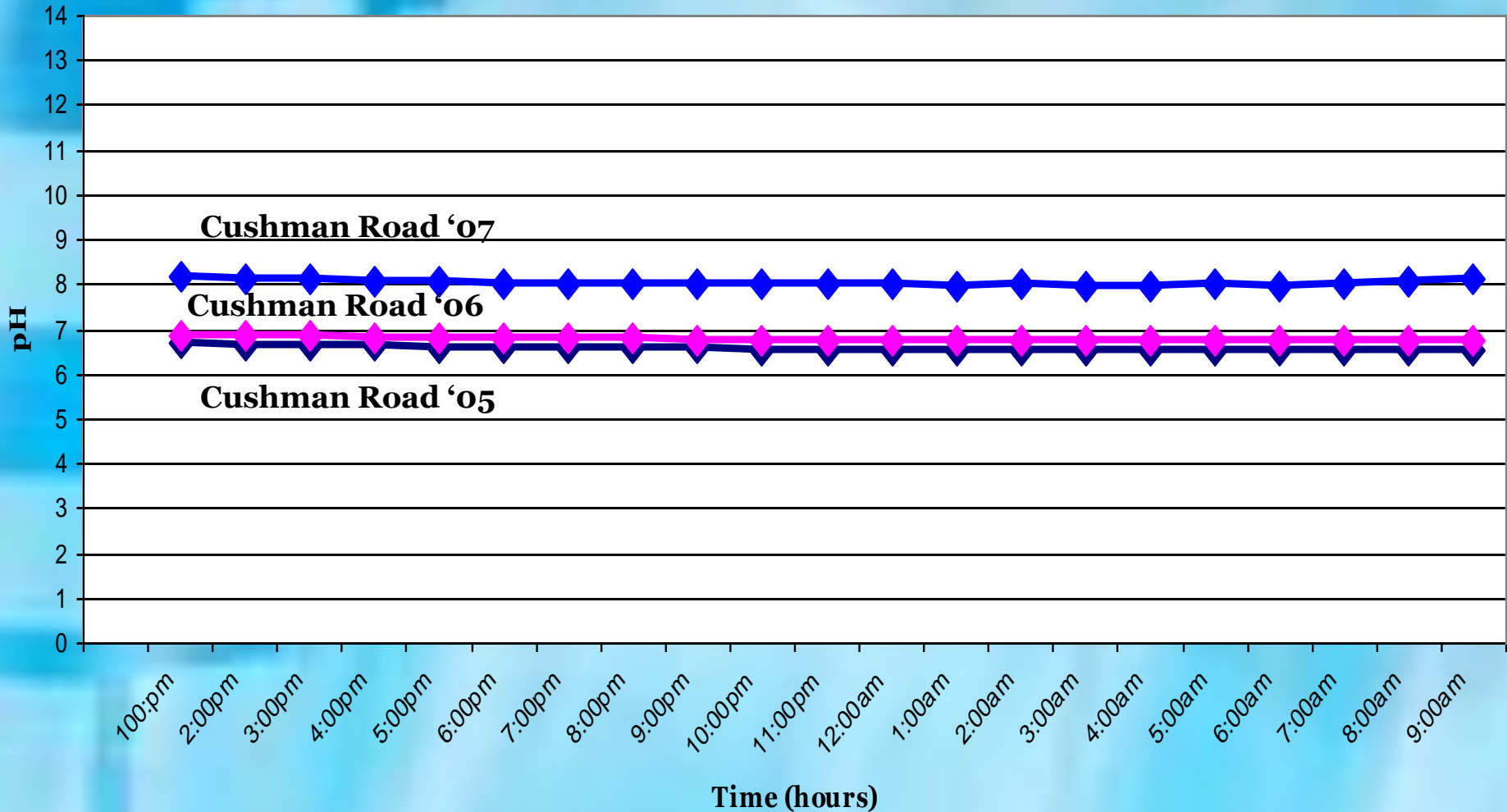
October 31, 2007-November 1, 2007

Class A Water Standard:pH between 6.5 and 8.3

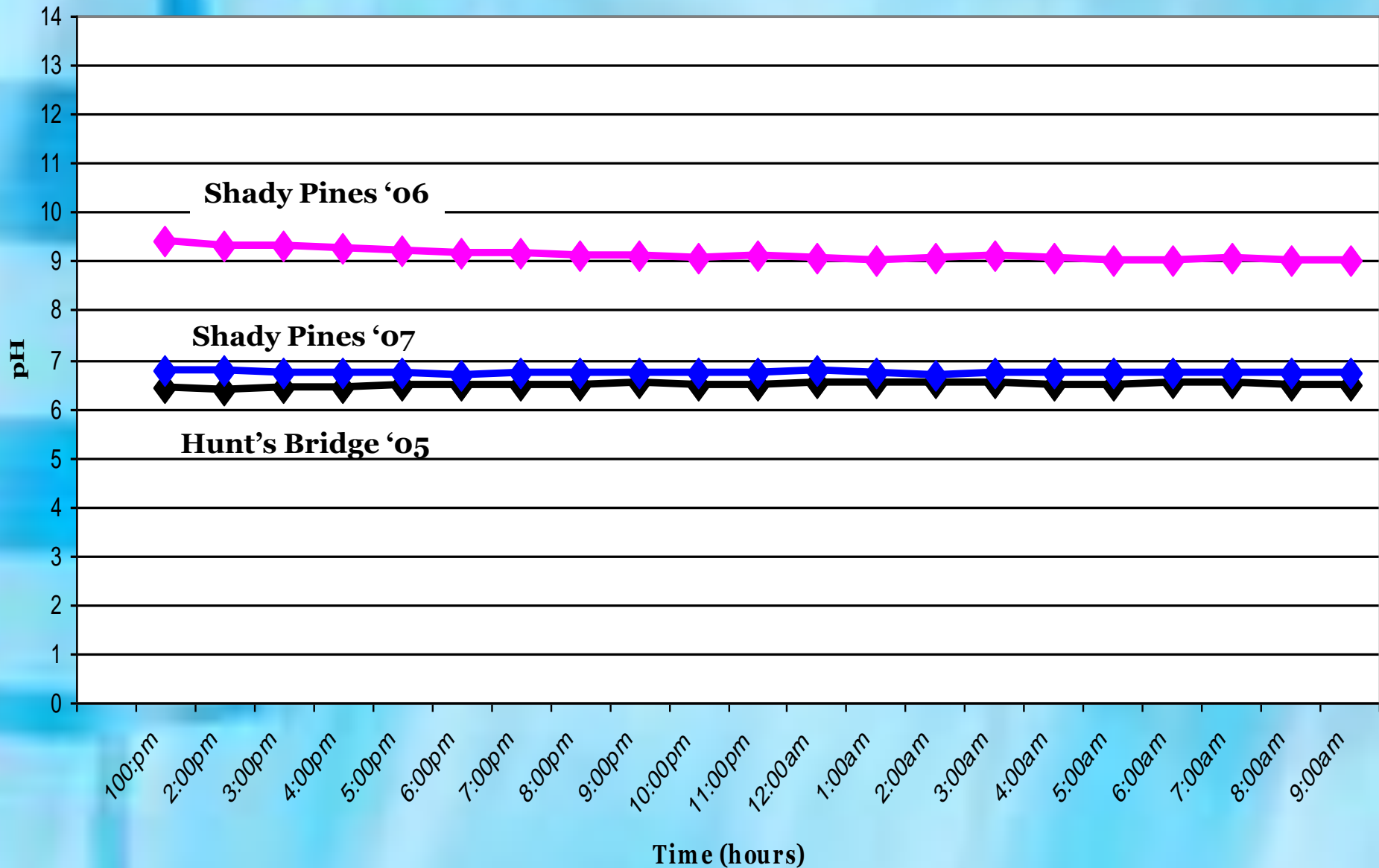


pH Comparison from '05-'07 of Site A- Ryan Morrissey

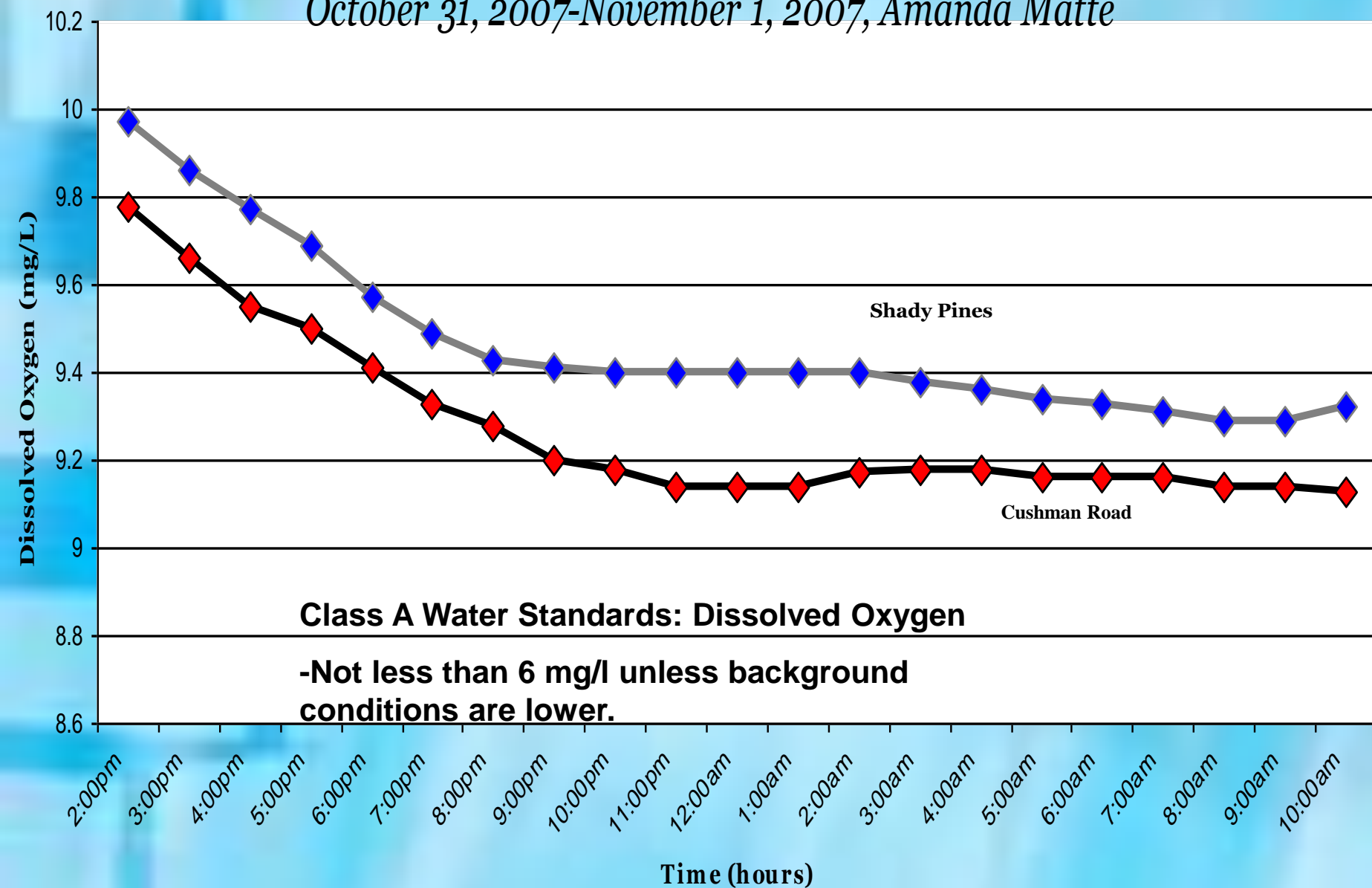
Class A Water Standard: pH between 6.5 and 8.3 standard units



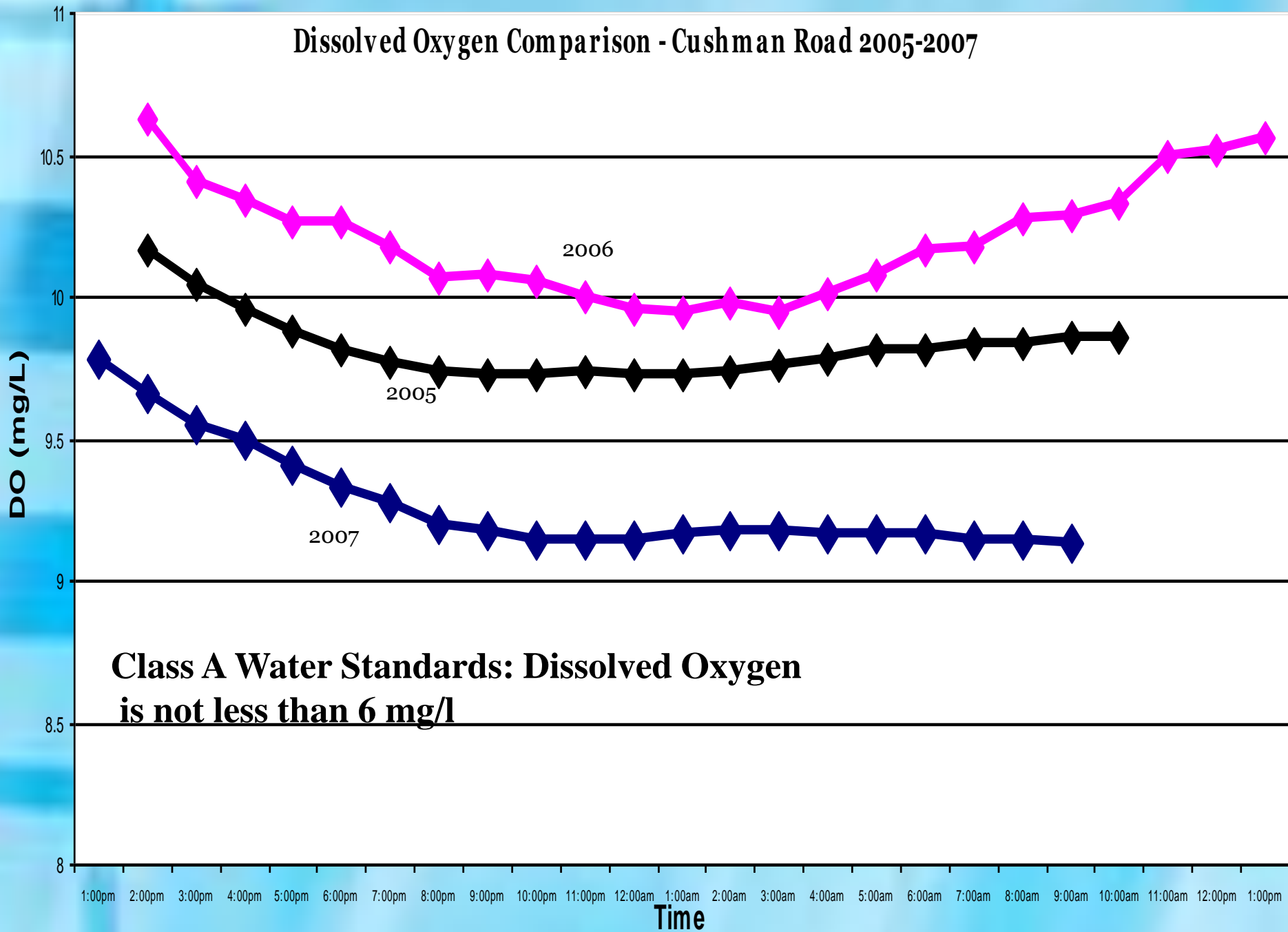
pH Comparison '05-'07 of Site B- Ryan Morrissey
Class A Water Standard: pH between 6.5 and 8.3 standard units



*Dissolved Oxygen Comparison,
October 31, 2007-November 1, 2007, Amanda Matte*

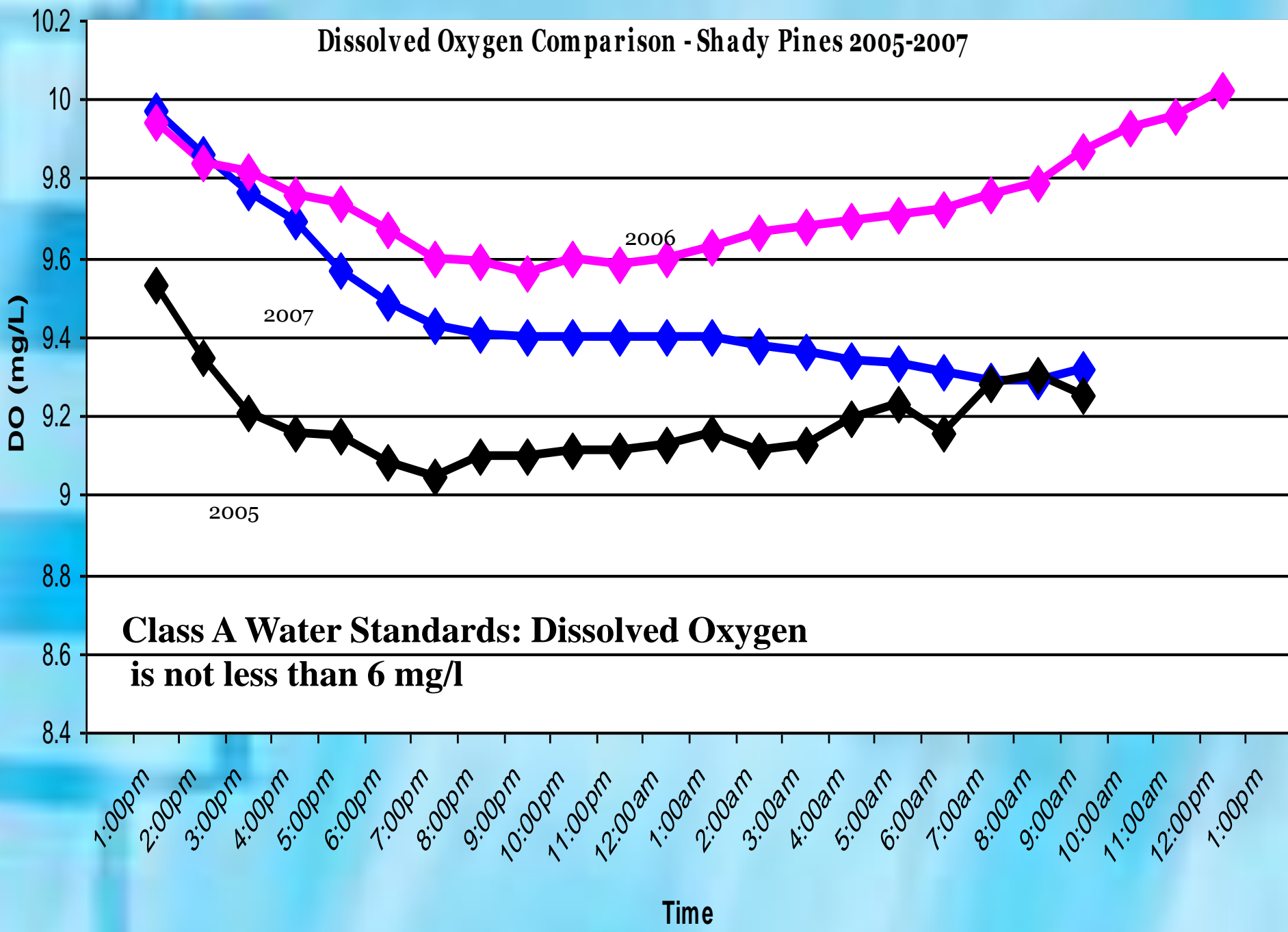


Dissolved Oxygen Comparison - Cushman Road 2005-2007



**Class A Water Standards: Dissolved Oxygen
is not less than 6 mg/l**

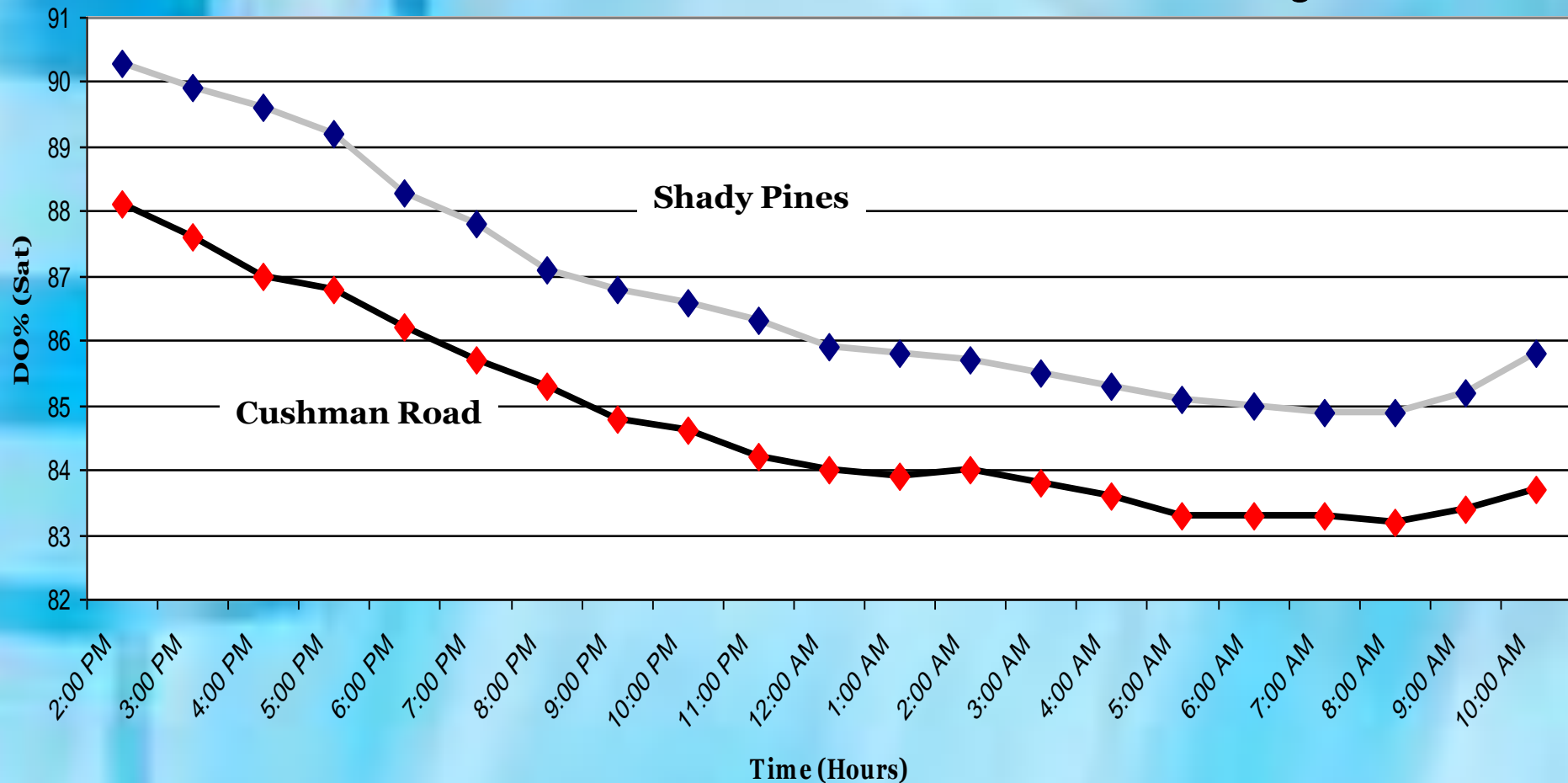
Dissolved Oxygen Comparison - Shady Pines 2005-2007



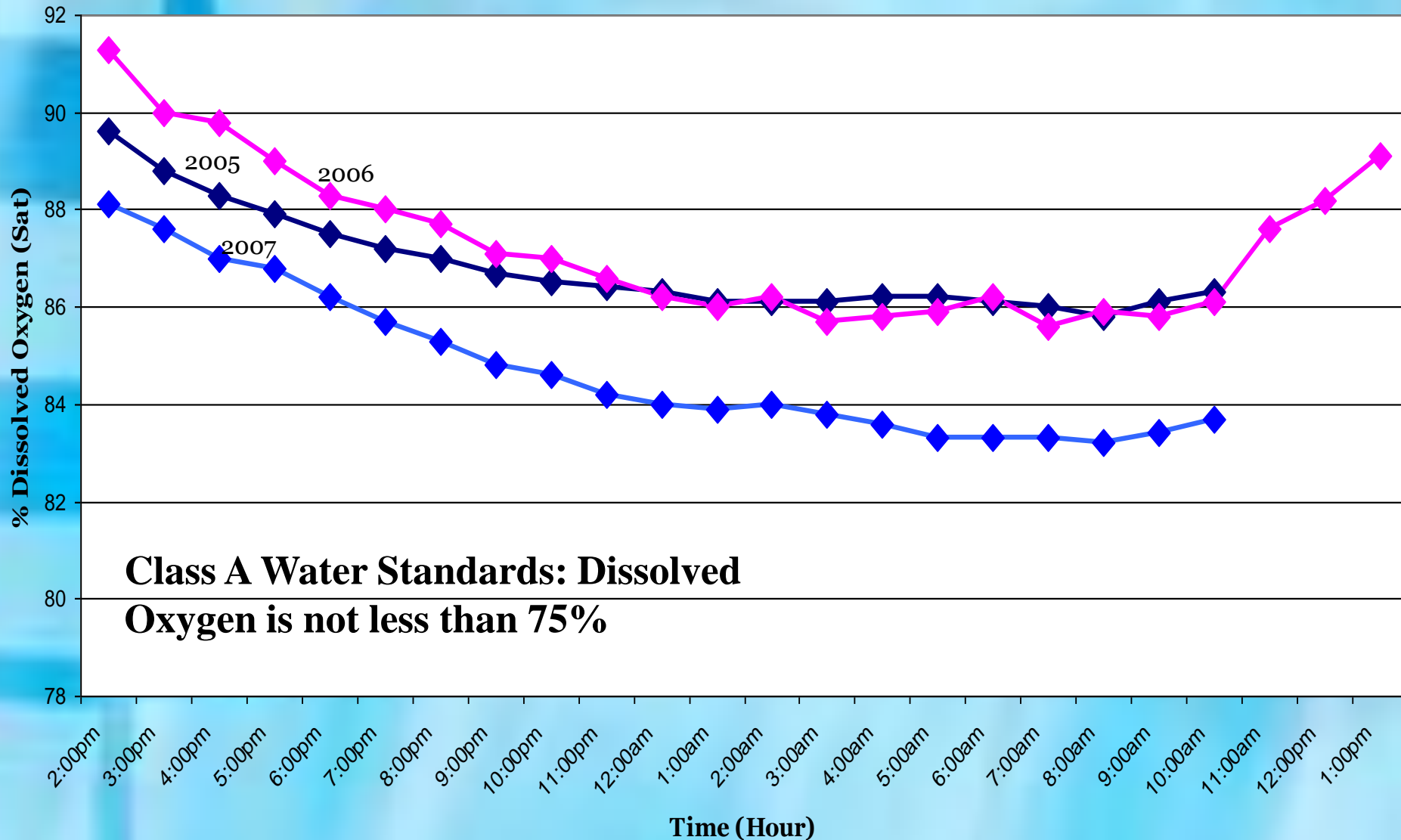
%DO Comparison

October 31, 2007 - November 1, 2007 - Dave Zaniboni

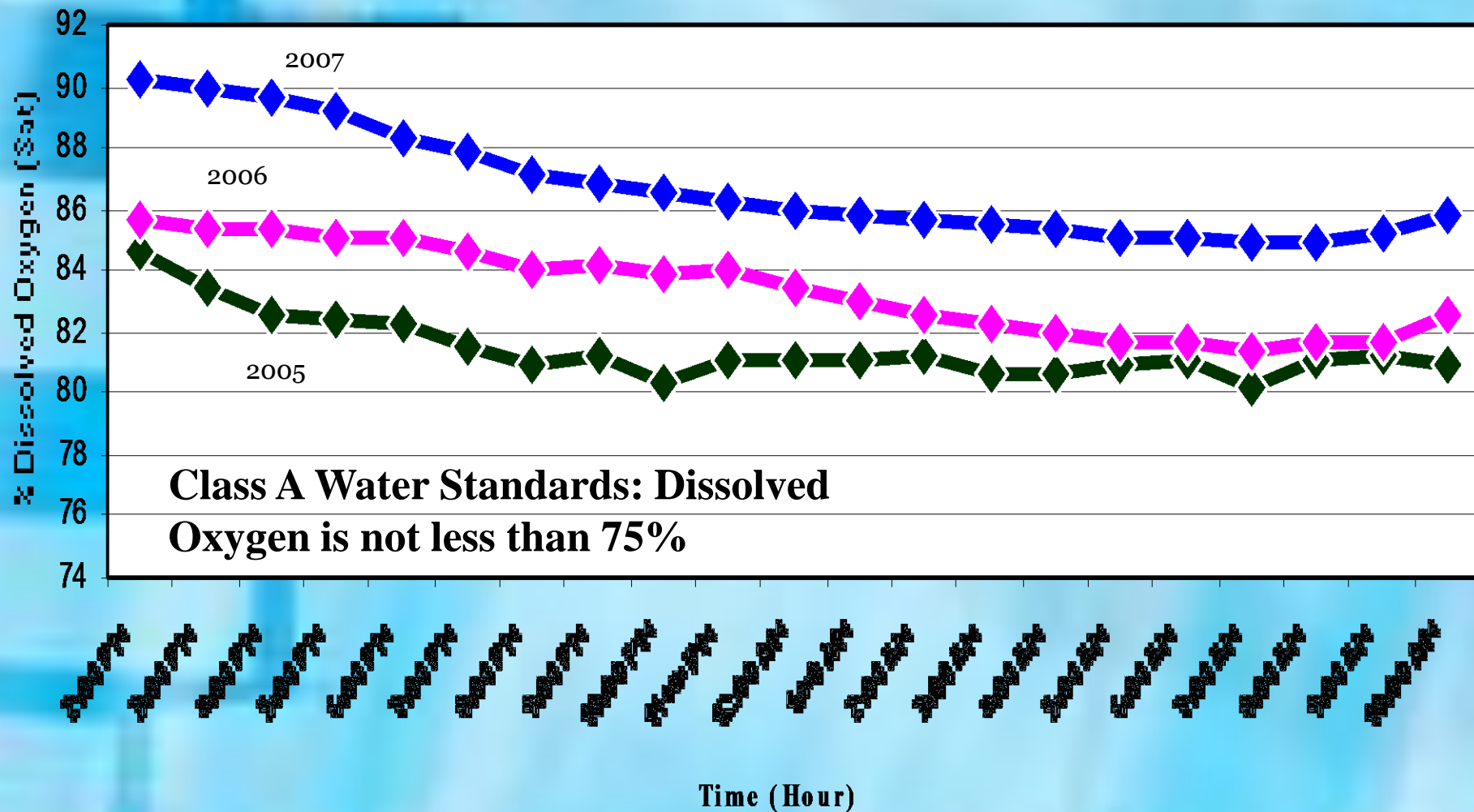
Class A water standards: % dissolved oxygen = Levels shall be maintained no lower than 75% of saturation due to discharge.



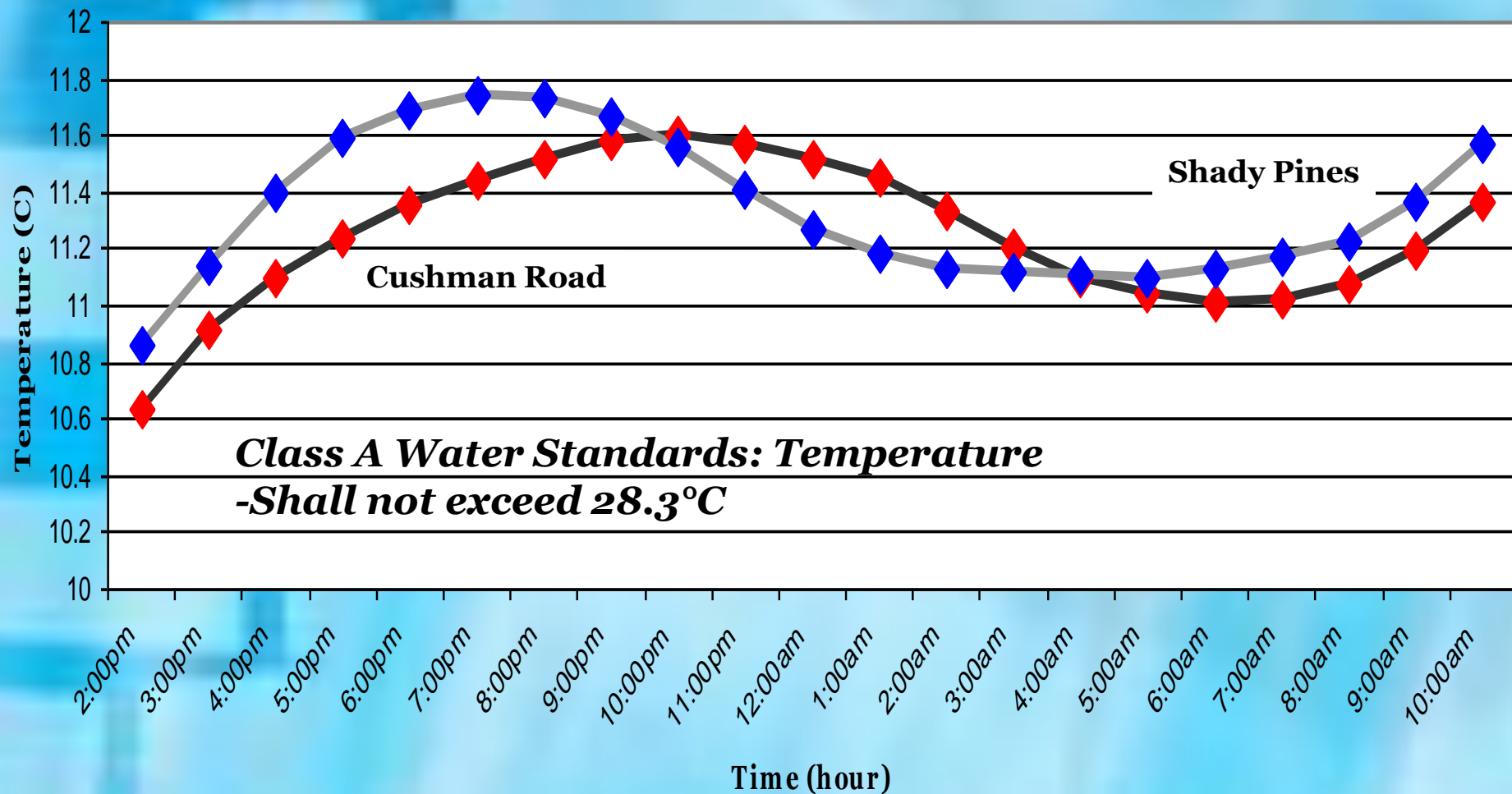
***% of Dissolved Oxygen of Cushman Road, Site A
October 2005, October 2006, and October-November 2007,
Rory MacEachern***



% of Dissolved Oxygen of Shady Pines, Site B
October 2005, October 2006, and October-November 2007,
David Zaniboni

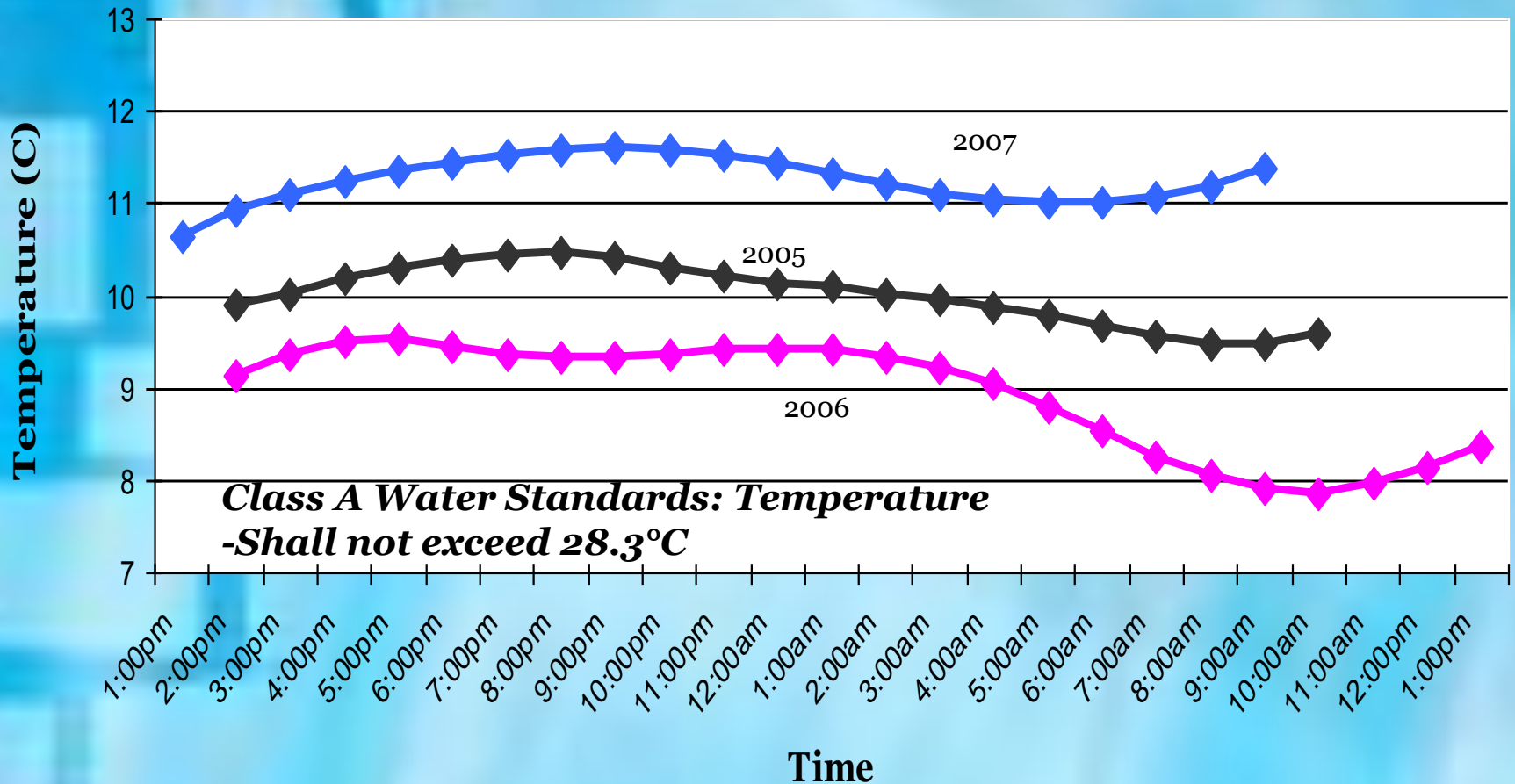


Temperature Comparison of Site A and Site B
October 31, 2007- November 1, 2007
Jessica Lagasse



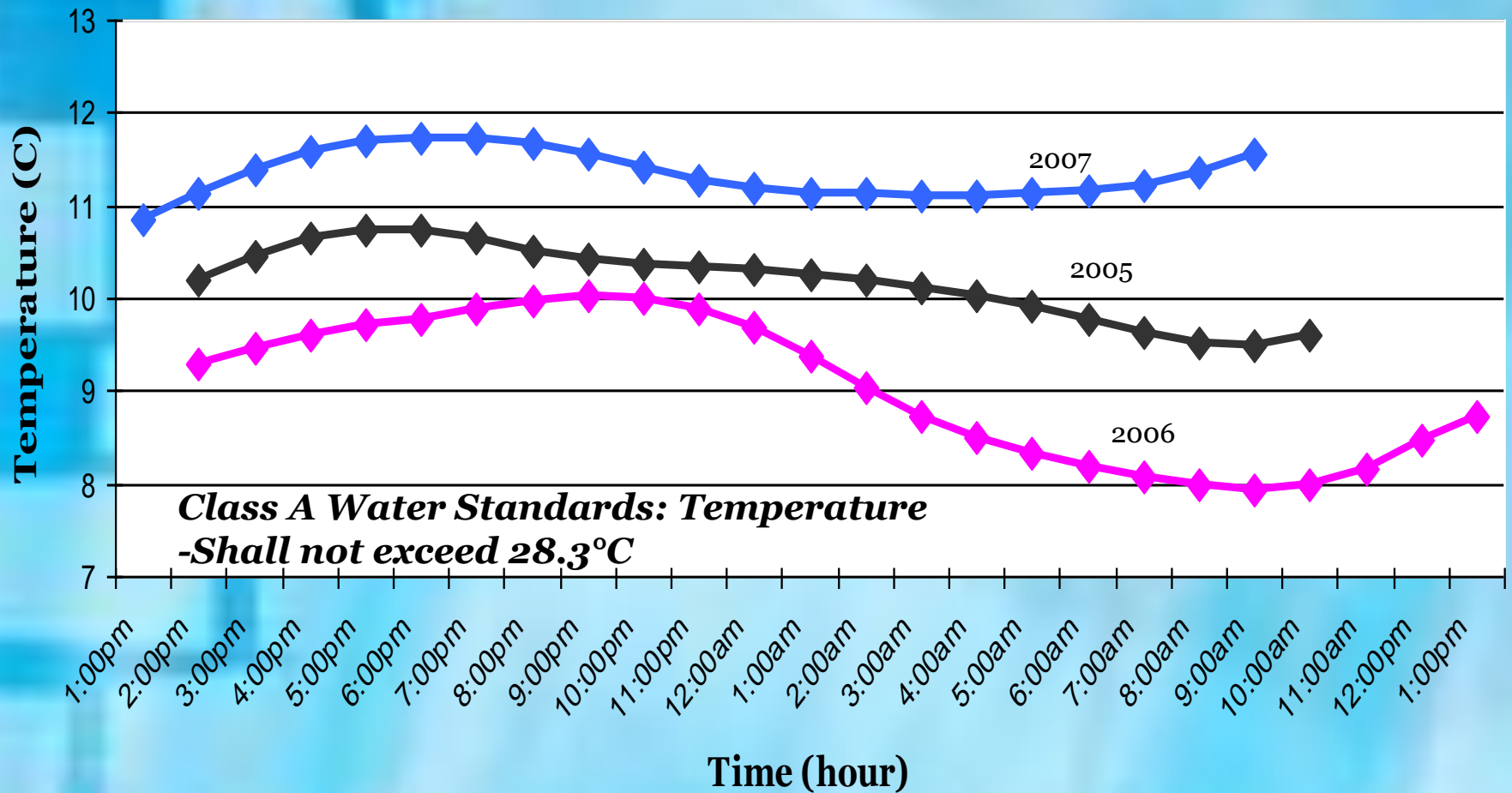
Temperature Comparisons of Site A

2005-2007, Jessica Lagasse

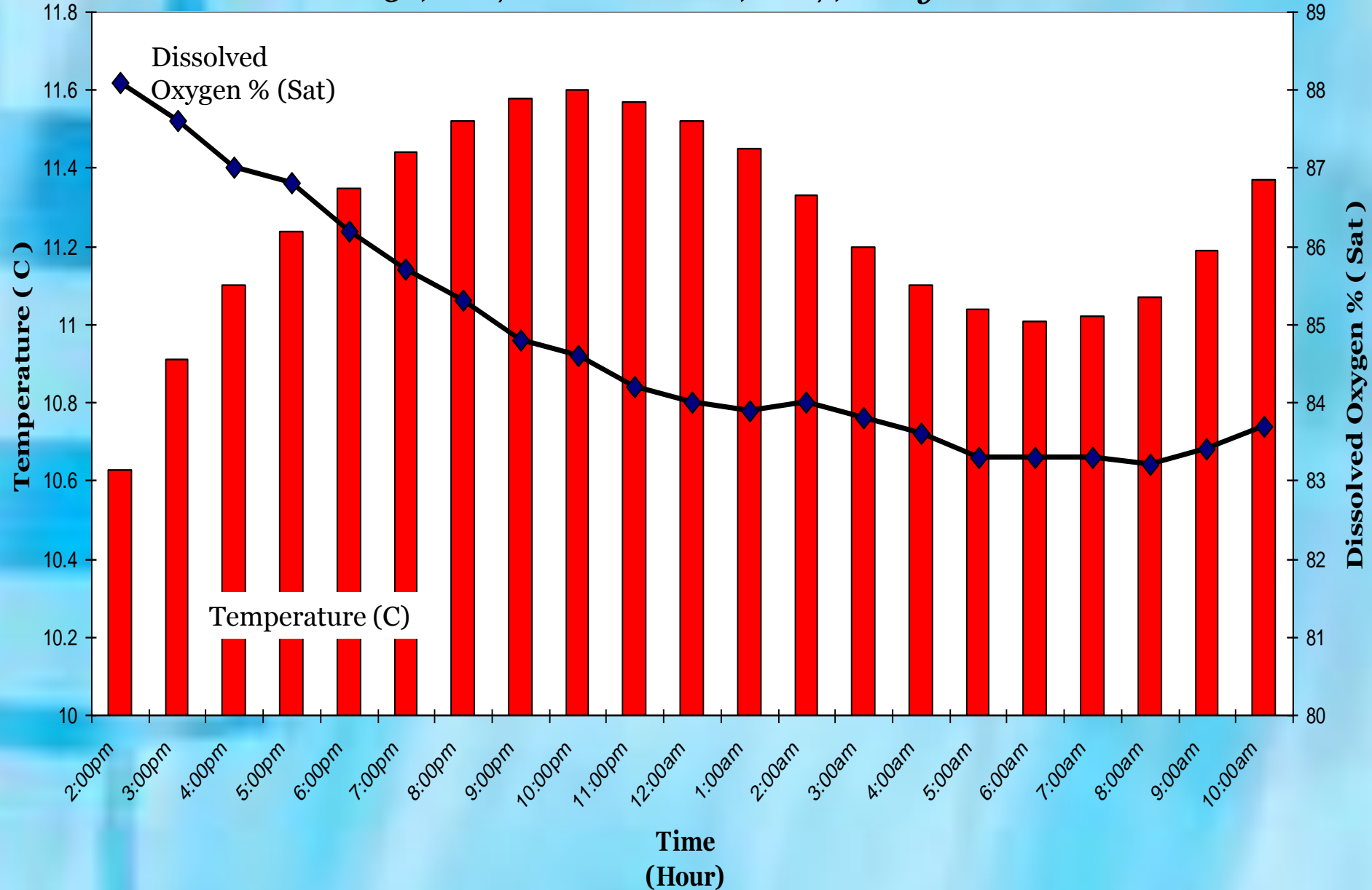


Temperature Comparisons of Site B

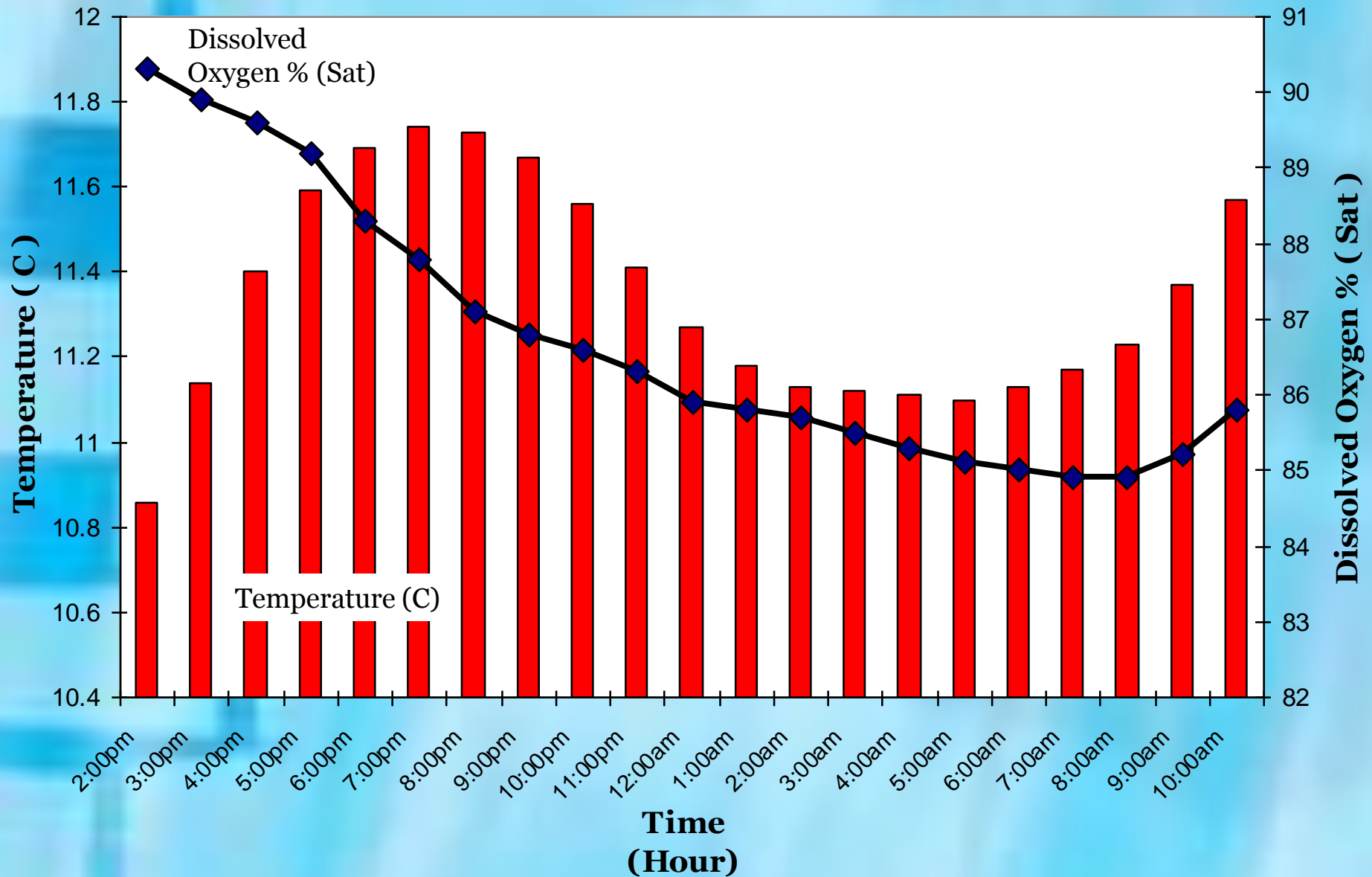
2005-2007, Jessica Lagasse



Cushman Road, Site A, Temperature to % Dissolved Oxygen
October 31, 2007- November 1, 2007, Rory MacEachern

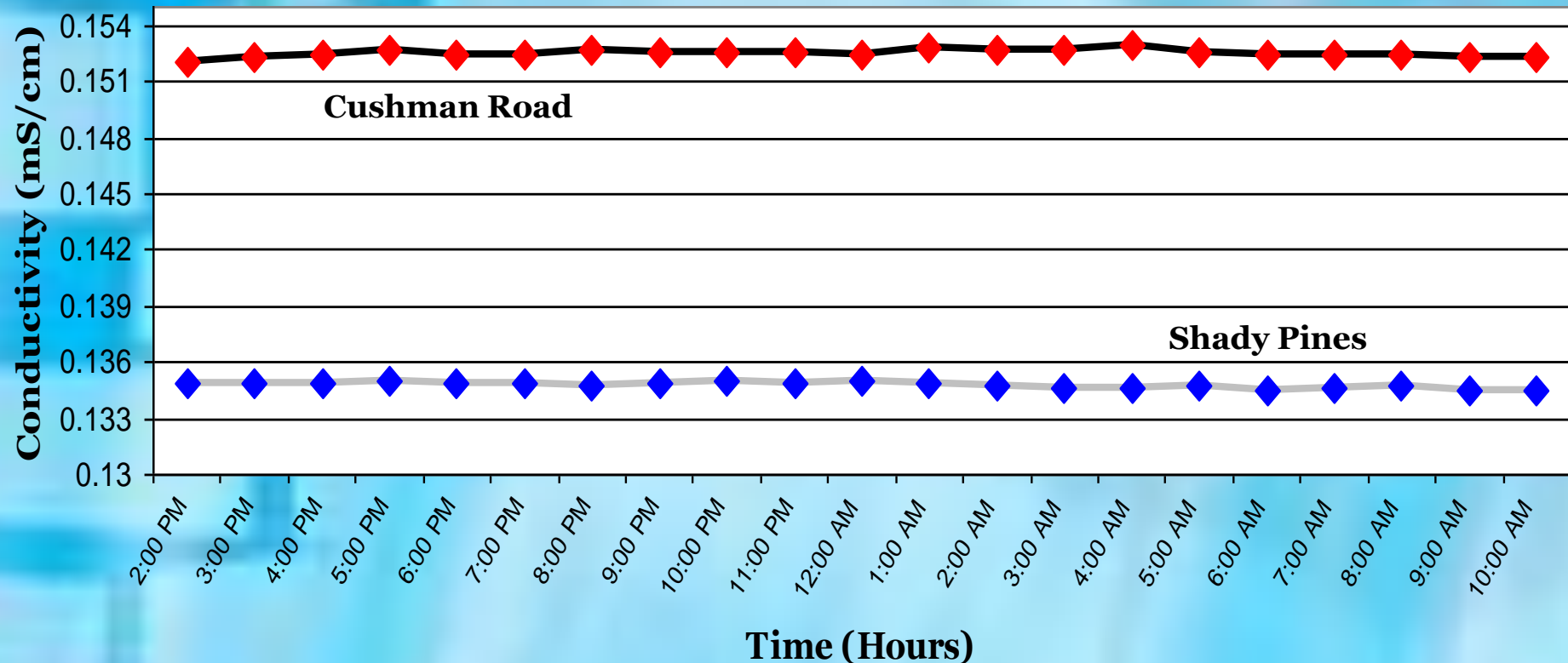


Shady Pines, Site B, Temperature to % Dissolved Oxygen
October 31, 2007- November 1, 2007, David Zaniboni



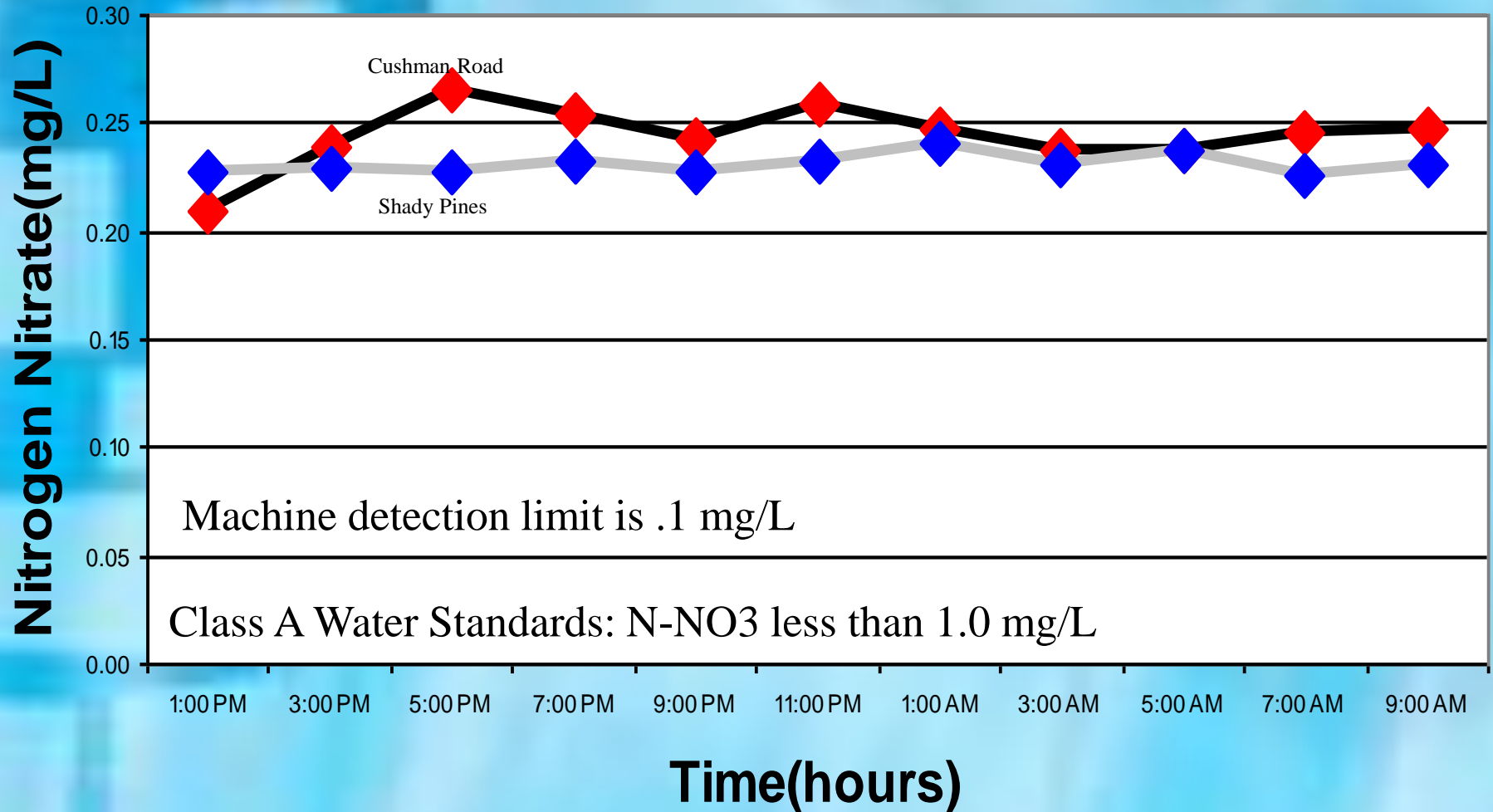
Specific Conductivity - Peter Forte
October 31, 2007 - November 1, 2007

"... natural conductivity level without human influence would be
around 0.05mS/cm or less." -Doug Heath, EPA



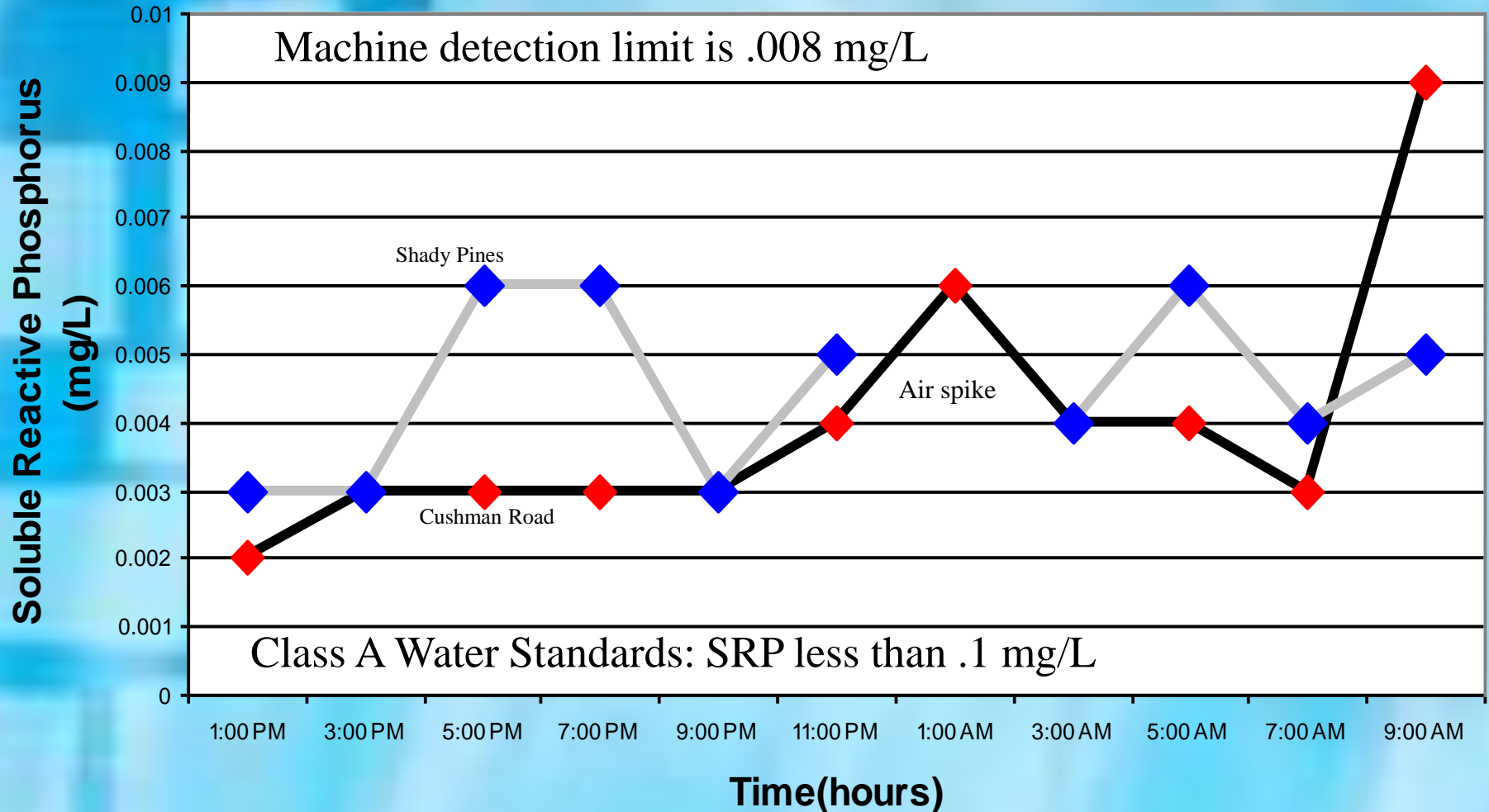
Nitrogen Nitrate (N-NO₃) Comparison

October 31, 2007-November 1, 2007

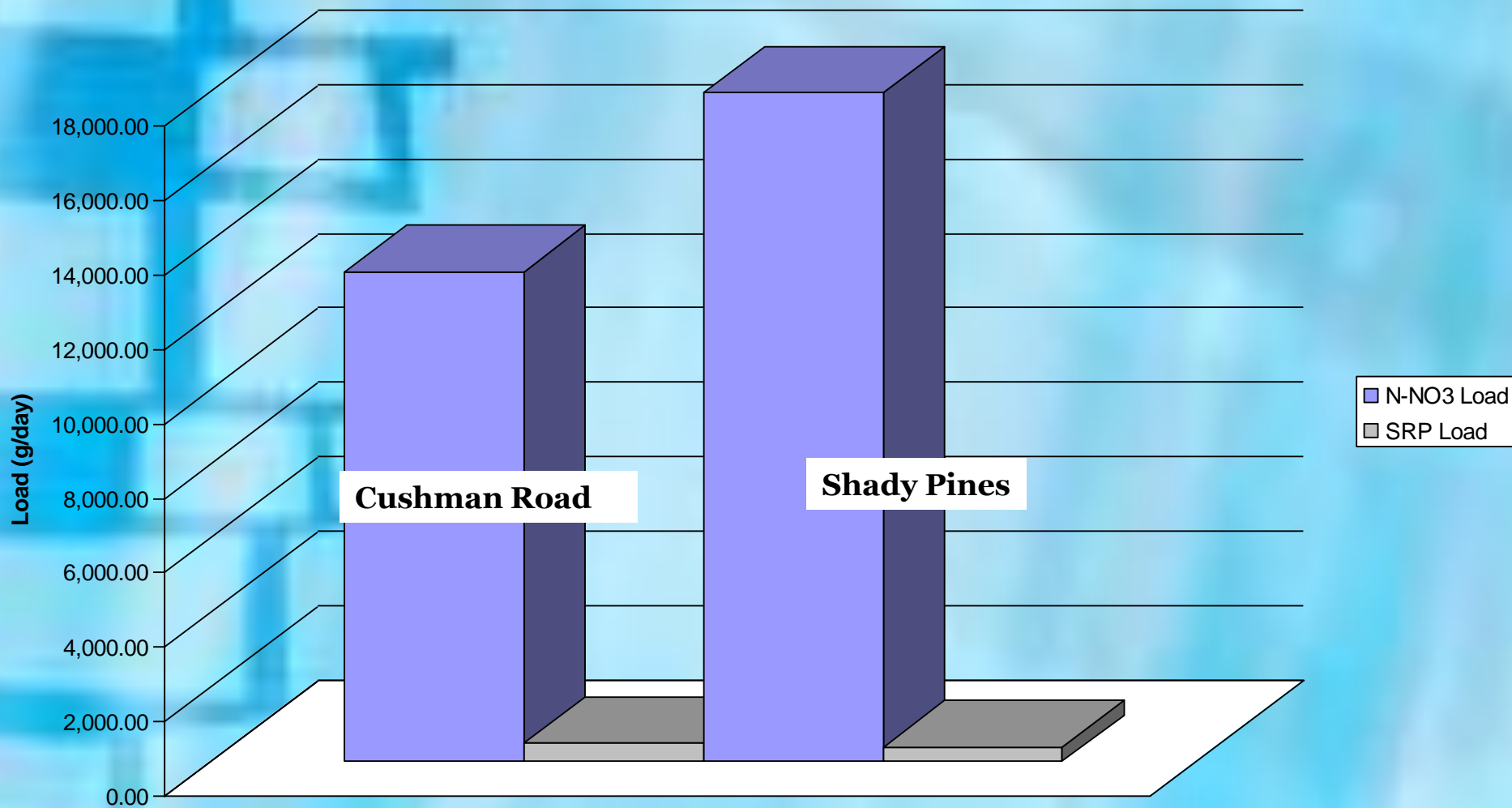


Soluble Reactive Phosphorus (SRP)

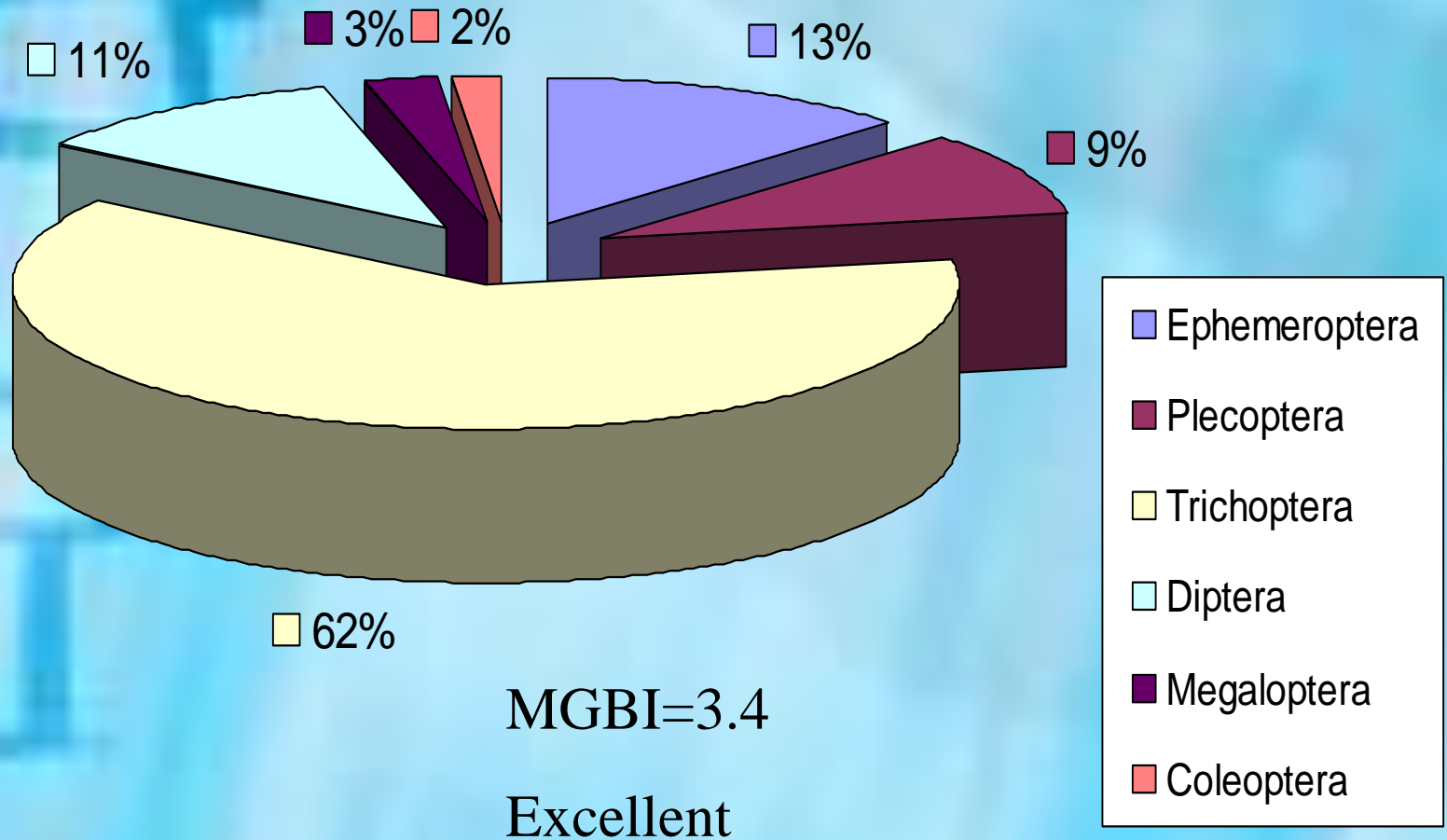
October 31, 2007-November 1, 2007



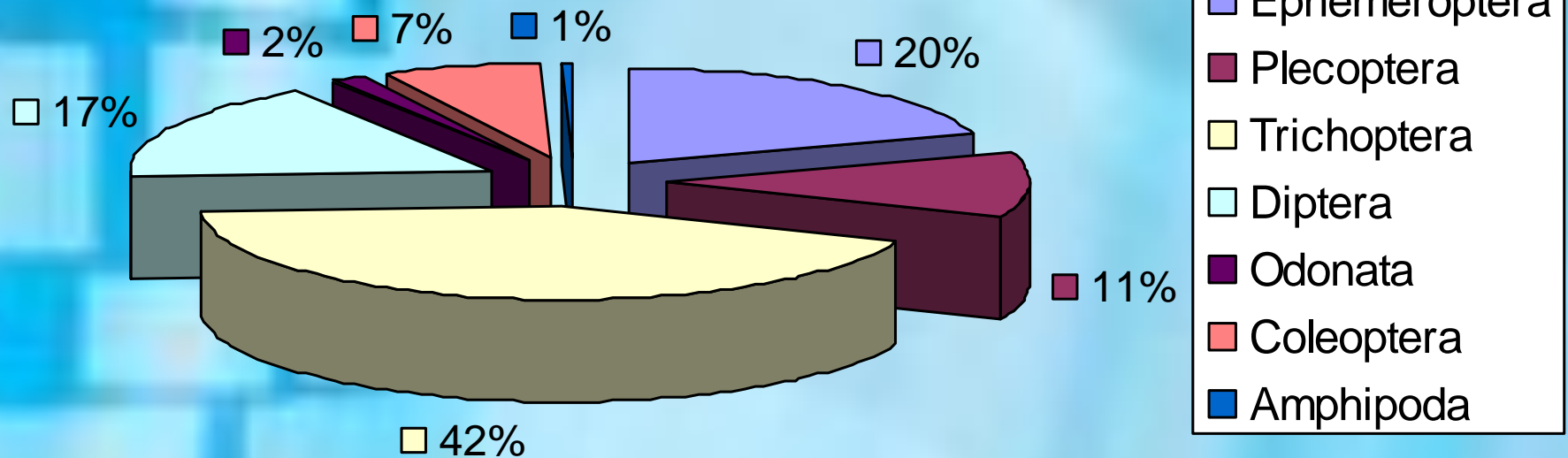
***Abbott Run Comparison of N-NO₃ and SRP Loads Using Lachat Data
Site A and Site B, David Zaniboni***



**Benthic Macro-Invertebrate
Site A - Cushman Road - 10/31/07**



Benthic Macro-Invertebrates Site B - Shady Pines - 10/31/07



MGBI=3.8
Very Good

Summary

- Site A and Site B met the Class A Standards.
- Both sites had high MGBI results, with Site A having an excellent value and Site B having a very good value according to the Hilsenhoff Biotic Index.
- Site B's pH levels dropped back to normal from last year's levels which did not meet the Class A Standards.

Presented By:

Elizabeth Clark

Peter Forte

Jessica Lagasse

Amanda Matte

Ryan Morrissey

David Zaniboni