FRSG Low Flow Study Collaboration

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Overview

- Client: Fox River Study Group (FRSG)
- Contractors: Illinois State Water Survey (ISWS) and Deuchler Environmental, Inc. (DEI)
- Time Frame: June 2012
- Location: Fox River from Crystal Lake to Sheridan, IL

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Overview

- Purpose: Collect dissolved oxygen data and water quality data during “low flow” conditions for model needs
  - 3 days of data collection
  - 3 times a day: 4-7 a.m., 11-2 p.m., and 4-7 p.m.
  - 12 mainstem sites, 11 tributary sites
  - Sondes and manpower needed
  - ISWS north half, DEI south half
  - Other aspects – benthic algae, stage and discharge measurements, SOD measurements, surveying

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Organizational Chart

QUALITY ASSURANCE PROJECT PLAN
FOR FRSG LOW FLOW MONITORING PROJECT

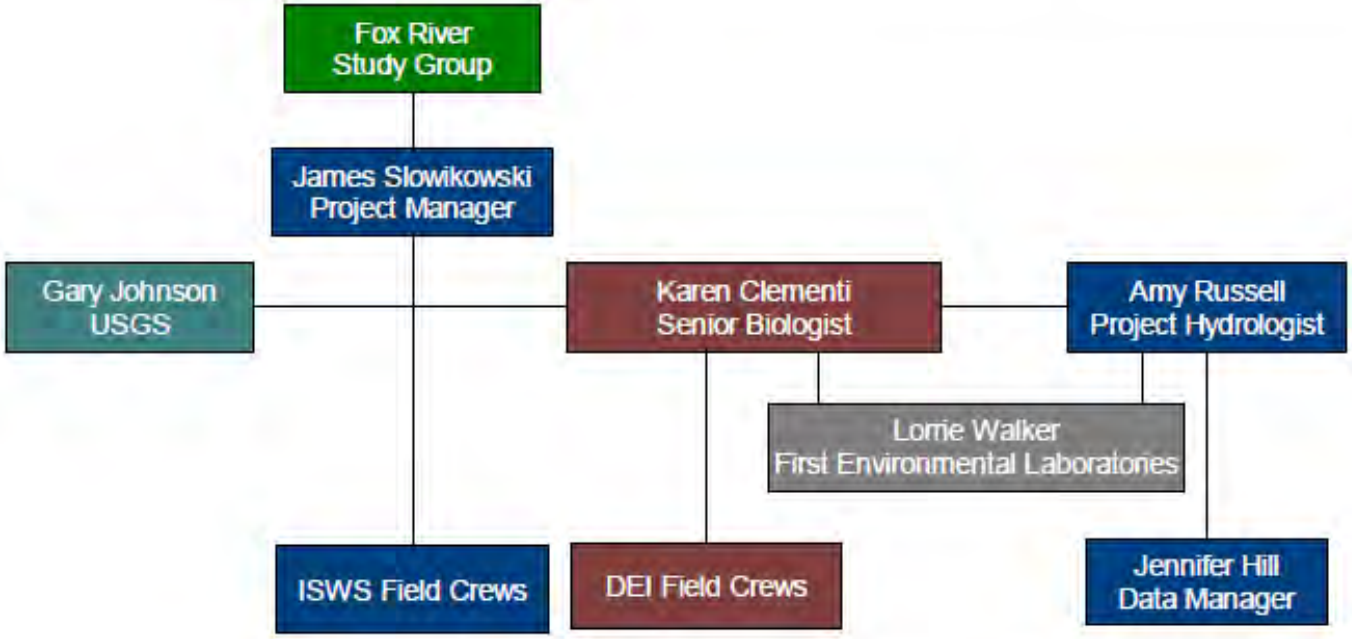

Figure 1-1. Organizational chart of the FRSG DO monitoring project

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Organization

- 4 ISWS teams, 4 DEI teams of 2 people collecting the WQ data
- Additional DEI team collecting algae data
- DEI staff member collecting samples at Geneva for all DEI and ISWS teams and taking to lab
- Waiting since 2006 so timing was crucial

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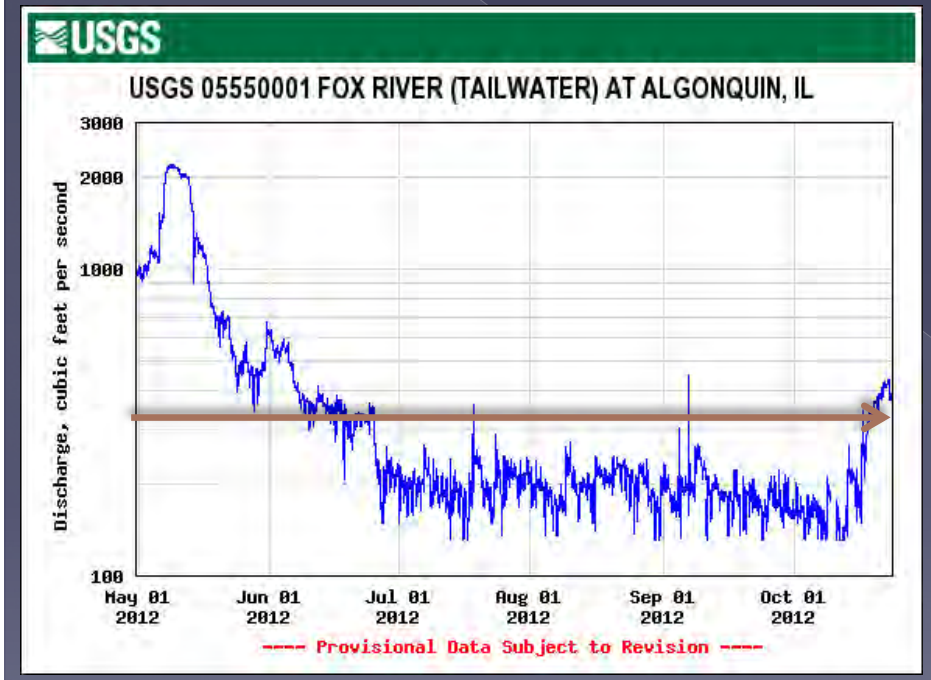
Algae

Algae

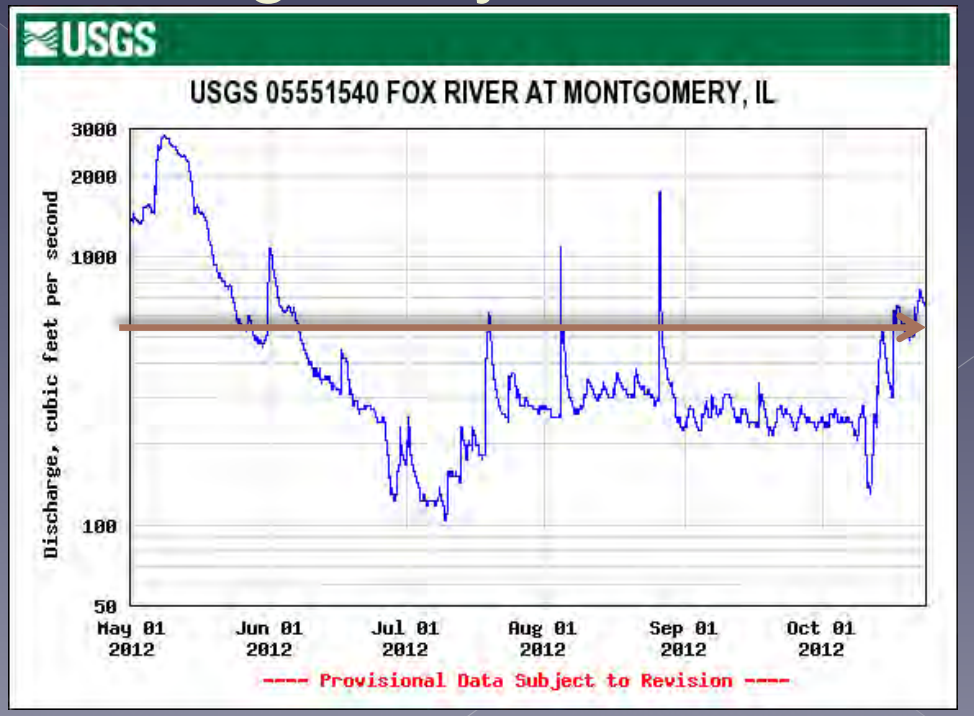
Watermarks on Montgomery dam retaining wall

Target Flows reached in late June

Algonquin



Montgomery



Tasks and Timeline

TASK	COMPLETED DATE
Revise and complete QAPP	June 22, 2012
Dissolved oxygen profiles at 12 mainstem sites	June 20-22, 2012
Sonde deployment	June 23-24, 2012
Equipment decontamination and setup	June 24, 2012
Internal training with ISWS and DEI staff	June 25, 2012
Three day intensive sampling event	June 26-28, 2012
Algal sampling by DEI	June 26-28, 2012
Stage and discharge measurement by USGS	June 26-28, 2012
Sonde retrieval and post-deployment calibration	June 29-30, 2012
SOD measurements by ISWS	Summer 2012
Surveying work by WEDA (DEI's sister company)	Summer 2012

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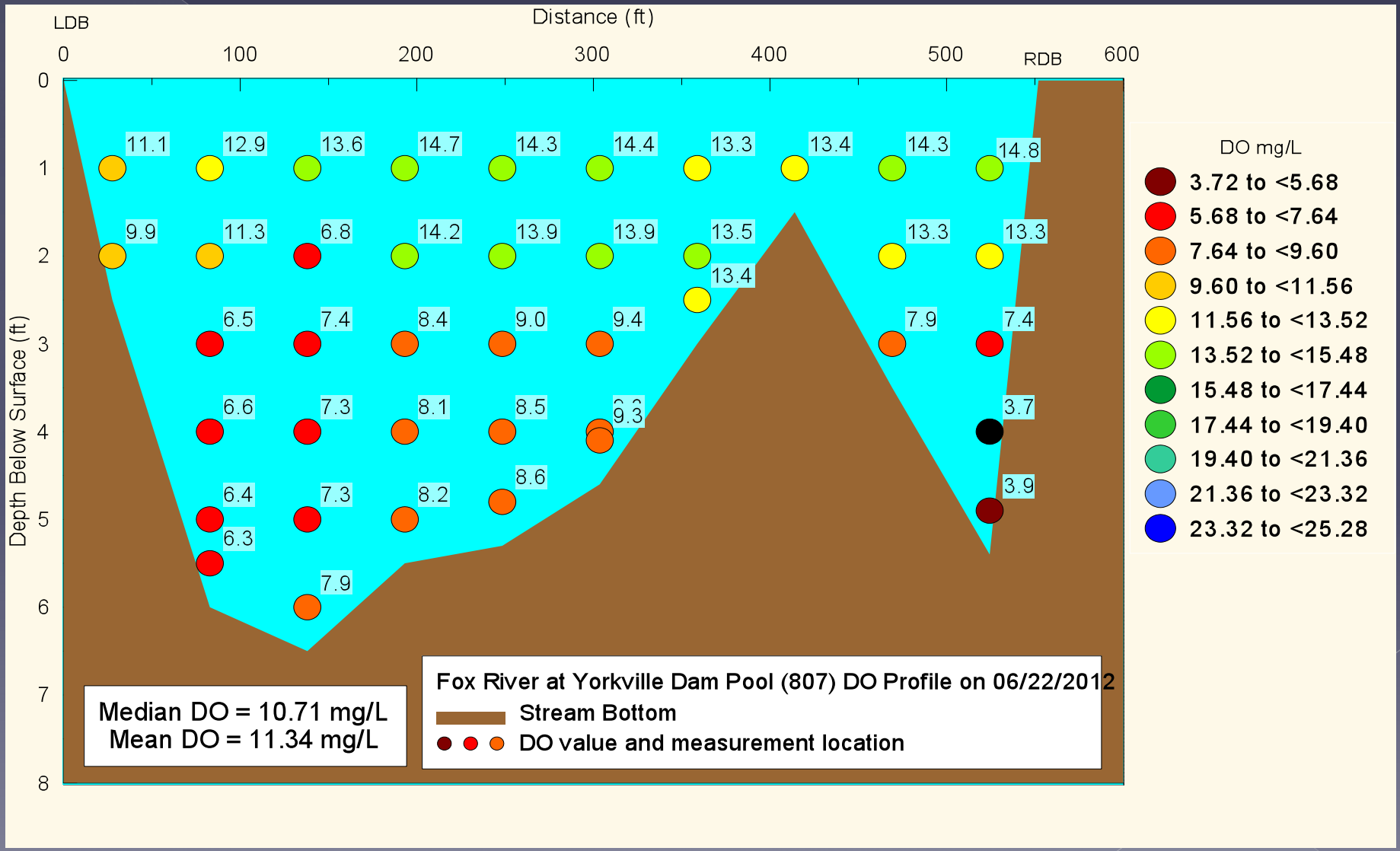
DO Profiles


Distance (ft)
LDB
RDB
0
100
200
300
400
500
600
Depth Below Surface (ft)
0
1
2
3
4
5
6
7
8
11.1
12.9
13.6
14.7
14.3
14.4
13.3
13.4
14.3
14.8
9.9
11.3
6.8
14.2
13.9
13.9
13.5
13.4
13.3
13.3
6.5
7.4
8.4
9.0
9.4
7.9
7.4
6.6
7.3
8.1
8.5
9.3
3.7
6.4
7.3
8.2
8.6
3.9
6.3
7.9
DO mg/L
3.72 to <5.68
5.68 to <7.64
7.64 to <9.60
9.60 to <11.56
11.56 to <13.52
13.52 to <15.48
15.48 to <17.44
17.44 to <19.40
19.40 to <21.36
21.36 to <23.32
23.32 to <25.28
Median DO = 10.71 mg/L
Mean DO = 11.34 mg/L
Fox River at Yorkville Dam Pool (807) DO Profile on 06/22/2012
Stream Bottom
DO value and measurement location

Sonde deployment

Lots of equipment

Calibrating equipment

Training on Monday

Little Rock Creek

Equal width transect on mainstem

DEI-2 boat site at Yorkville

Indian Creek

Mill Creek - ladder

4 a.m. sample

Day 3 -- Dry dam at Yorkville

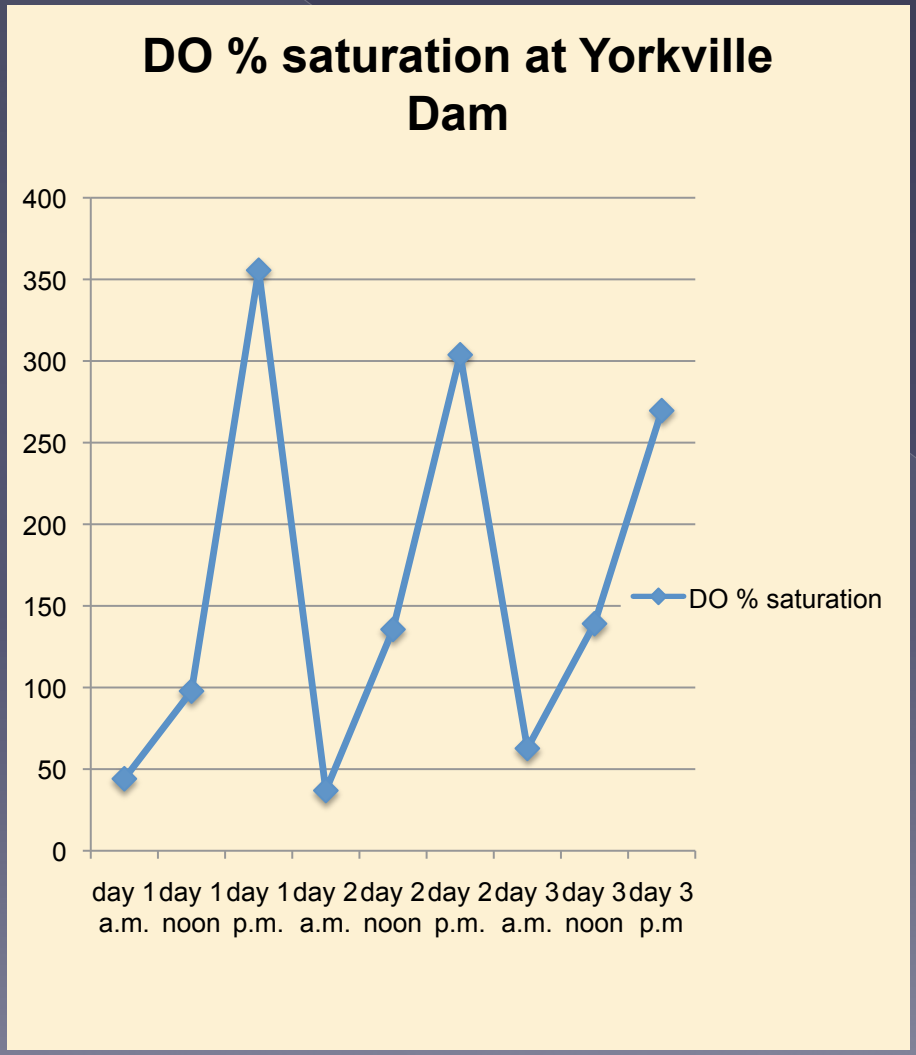
Day 3

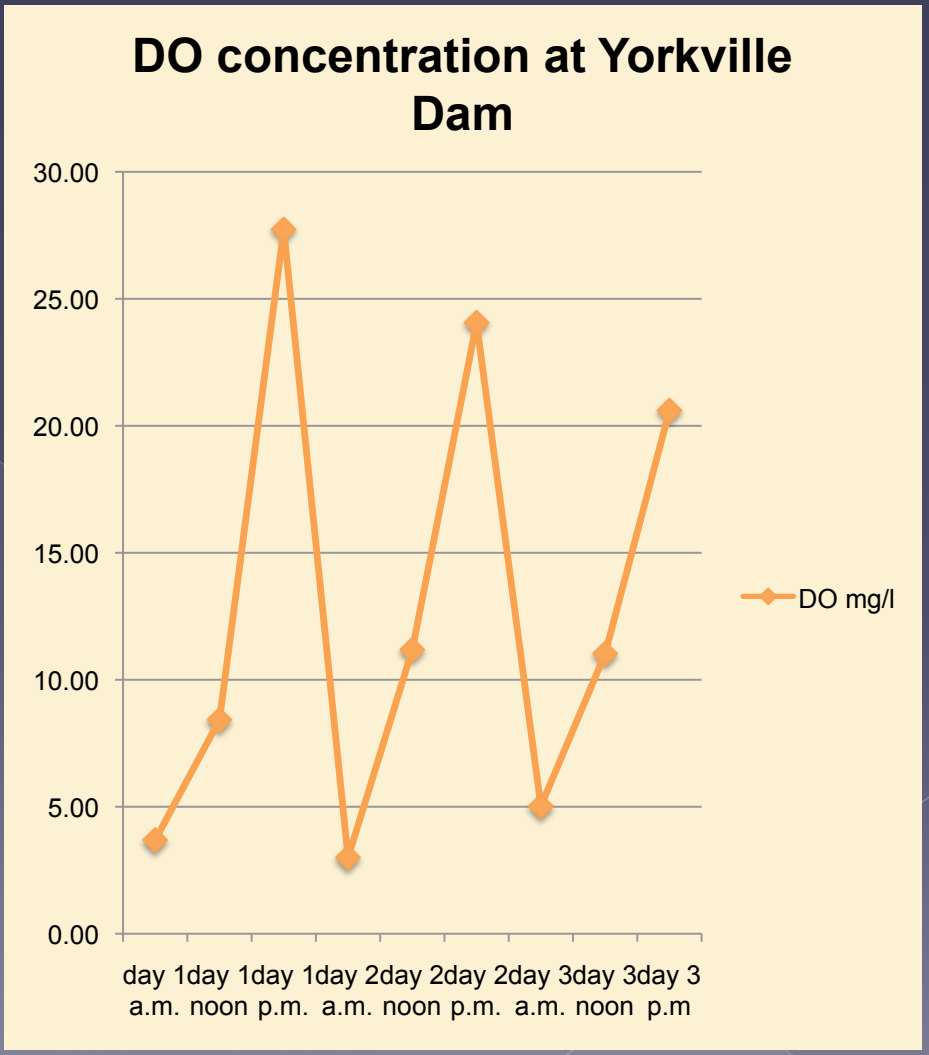
Lost ponar dredge

Lost sampler

Stolen water

In-situ measurements -- wide DO fluctuations





Storm Friday

Lessons Learned

- Early reconnaissance was helpful
- Organization and preparation are critical
- Backups of staff and equipment
- Planning for worst-case scenarios
- Project manager should manage project only
- Extra staff as runners

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Keys to Success

- Experienced staff were #1 key
- Problem solving
- Minimize stress
  - Patience
  - Sleep
  - Food
  - Hydrate

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Acknowledgements

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