

Best Management Practices for Surface Water Protection

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August 2009

Surface Water Protection – Best Management Practices

- Primary water way that serves as receiving stream for Y-12, East Fork Poplar Creek (EFPC)
- EFPC has unique qualities – requires constant attention
- Using a team approach, great improvement has been made over the last 20 years
- Focus – working to meet the letter and spirit of the law
- East Fork Poplar Creek originates at the center of Y-12. Early construction had a major impact on the creek; rock blasting, channelizing, and underground drainage system.



Surface Water Protection – Best Management Practices

- Y-12's large process buildings are still there, which also served in support of the Cold War programs. The site grows to over 500 buildings, with over 250 outfalls to the creek.
- Untreated discharges that flowed to creek from a variety of sources; legacy pollutants, mercury, PCB's, and heavy metals known to impact EFPC.
- Initial efforts to improve the creek began in the mid-1980s, with focus on eliminating untreated discharges.
- Wastewater treatment facilities constructed, and a plant-wide project to remove sinks, tanks, and drains with ties to the creek.
- Biomonitoring and toxicity testing to identify pollutants and measure their impact on aquatic life.



Surface Water Pollution – Best Management Practices

- **Tests showed that chlorine from cooling water was having a major impact to the creek. Projects initiated to treat chlorinated discharges.**
- **Early 1990s, environmental authorities began emphasis on non-point source pollution. New regulations to control non-point sources, especially storm water related.**



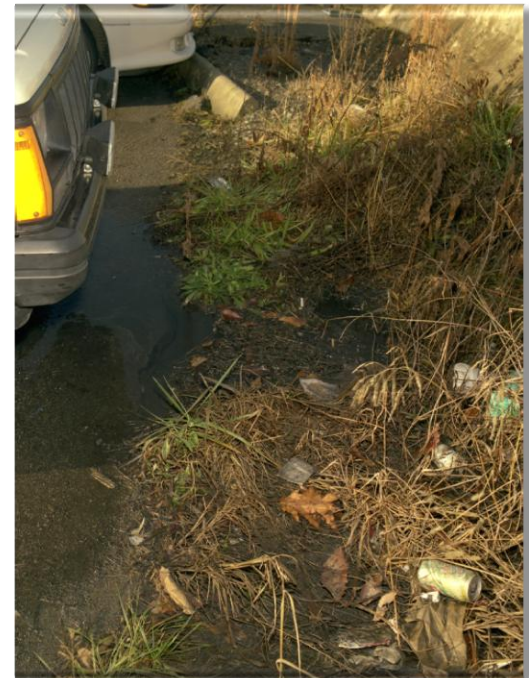
Surface Water Pollution – Best Management Practices

- **Number one pollutant to waters of the state in Tennessee is Siltation. This is also a concern with EFPC and one of the reasons this stream is listed on the state's 303(d) list. (water bodies impaired and do not meet their intended use)**
- **Y-12 does not have a Total Suspended Solids limit as part of its storm water permit. Therefore, a Best Management Practices (BMP) program is implemented to minimize impacts.**



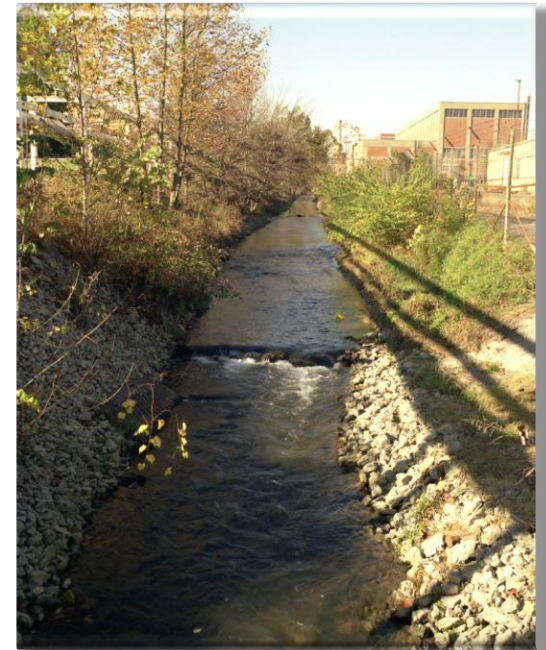
Surface Water Pollution – Best Management Practices

- **Non-point source pollution is not always storm water related. Activities, such as flushing, sand blasting, concrete truck rinsing, building and tank cleaning, construction and demolition activities are often significant sources.**
- **How does one protect surface waters when they have a large complex like Y-12, with facilities over 65 years old, over 6,000 workers, and has both demolition and modernization programs?**



Surface Water Pollution – Best Management Practices

- At Y-12, we work to implement BMP's into all activities and projects. We maintain BMP policies and procedures, and communicate these BMP's to the plant population.
- An effective communication tool - Environmental Officers (EO) Programs. EO's attend monthly meetings/training sessions and deliver information to their divisions.
- Communication between contractors and sub-contractors - It is important to communicate what the special concerns are i.e., area of contamination, known pollutants, etc.
- EFPC today supports large population of fish and aquatic life. This was not true 20 years ago.



Lower EFPC Approaching Reference Stream

Downstream EFPC 2008 (EFK 13.8)



Caddisflies



Beetle larvae



Snails



Mayflies



Clams



Stoneflies



Chironomids (midges)



Oligochaetes (worms)

Brushy Fork Reference Site 2008 (BFK 7.6)



Clams



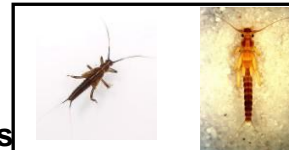
Beetle larvae



Chironomids (midges)



Oligochaetes (worms)



Stoneflies

Improvements in Upper East Fork Poplar Creek

Total Number of Species (EFK 24.4)



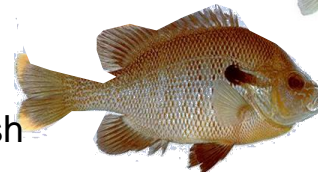
Striped shiner

1989
(1 species)

20 years



Blacknose dace



Redbreast sunfish

Striped shiner



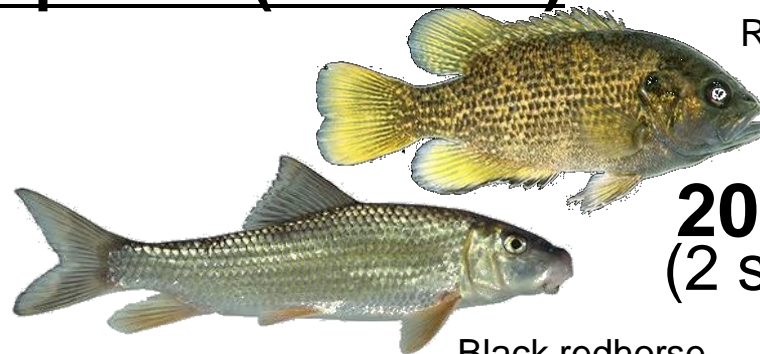
Largescale stoneroller



2008
(4 species)

Number of Sensitive Species (EFK 23.4)

1989
(0 species)



Black redhorse

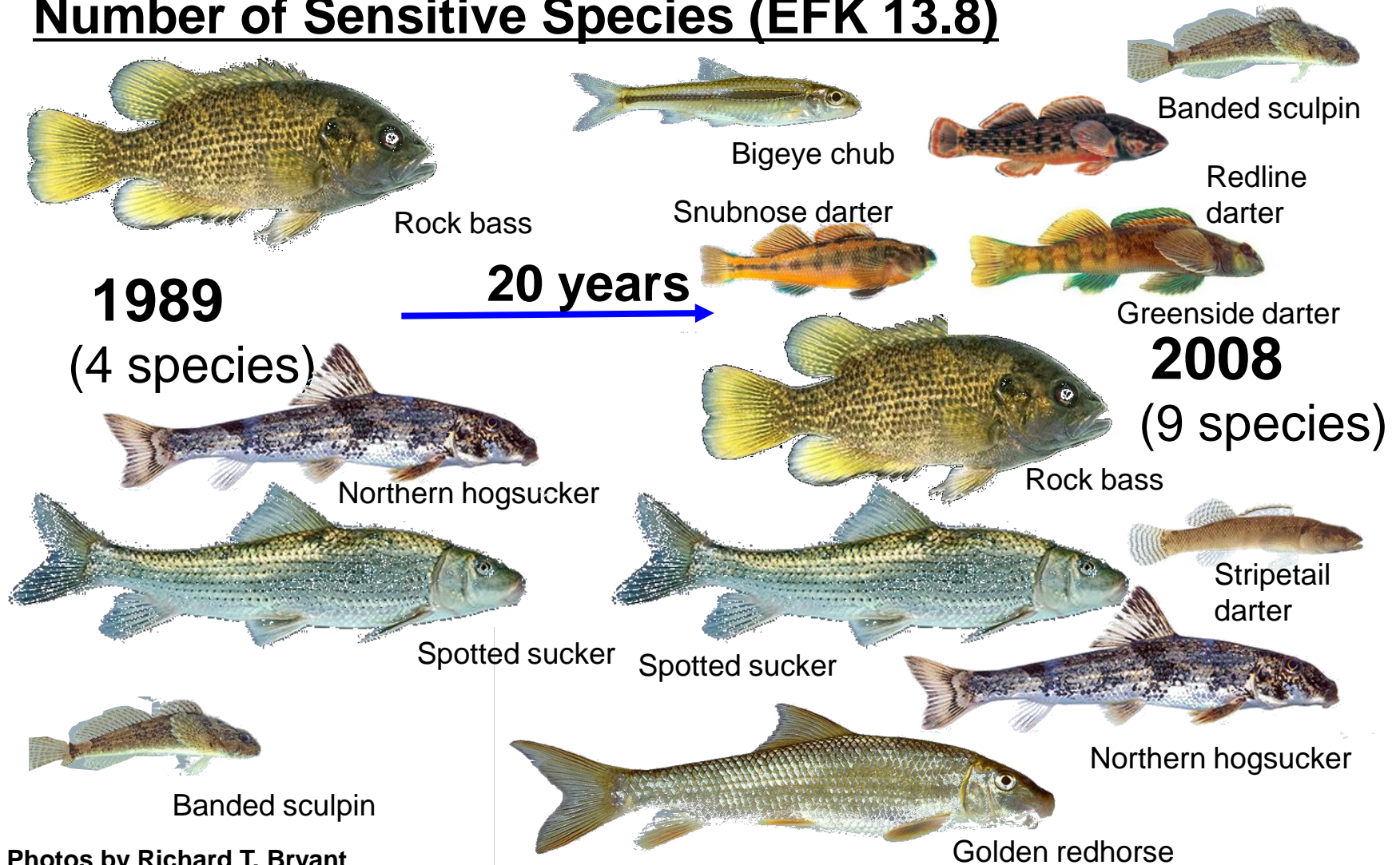
Rock bass

2008
(2 species)

Photos by Richard T. Bryant

Improvements in Lower East Fork Poplar Creek

Number of Sensitive Species (EFK 13.8)



Photos by Richard T. Bryant

Why should we care about the state of the creek?

- Globally and regionally, water quantity/quality increasingly important
- EFPC is worth caring about; natural features and ecology remain
- It's in "our own backyard"; stream important to the OR community
- Water is needed for Y-12 mission success
- Regulatory noncompliance is a serious issue



Why should we care about the state of the creek?

- Risk reduction IS possible: new approaches and resources may be applied to the mercury problem
- Significant investment of effort (pollution prevention, abatement, remedial actions) to get where we are -- need to keep making progress!
- We can make a difference



Surface Water Pollution – Best Management Practices

We can not rest on the successes we have made up to this point. A number of efforts are underway to ensure we continue to improve the quality of our surface waters.

- 1.Ensure that a thorough NEPA review and environmental screening is completed early in the project.**
- 2.Incorporate ISM into project plans, particularly the BMP plans (intended to minimize environmental impacts).**



Surface Water Pollution – Best Management Practices

- 3. Perform a CERCLA screening to identify possible legacy contaminants that could pose a problem for new projects.**
- 4. Seek new products, methods, and technologies that improve our environmental compliance record, i.e., new erosion and sediment control methods and products, and new spill control products, etc.**



Surface Water Pollution – Best Management Practices

5. Encourage environmental training, such as the state certification course for erosion and sediment control, and the Y-12 Environmental Officer and Training Program.



Surface Water Pollution – Best Management Practices

- 6. Maintain real-time monitoring systems, like the SWHISS monitoring system on the creek that signals when key parameters are out of range.**



Surface Water Pollution – Best Management Practices

- 7. Seek new information from web sites, like the EPA web site where a BMP section is regularly updated. Individual state and regional BMP guidance is listed here as well, with specific measures to control specific pollutants.**
- 8. Maintain an active inspection and oversight program, where the Environmental Compliance Department works closely with the activity or project.**



Surface Water Pollution – Best Management Practices

- **The goal is not to just be in compliance with a water quality permit limit; the goal should be to see where you can continue to improve. Example: metal chips outside the Machine Shop.**
- **Continual improvements are at the heart of the ISM process.**
- **Regulatory standards continue to change, often presenting tighter limits to meet. A good BMP program can give you a step up on meeting new permit limits.**
- **The best approach is having employees that are not just focused on regulatory limits, but are working as a team for the good of their workplace and their environment.**

Protecting America's Future and Being A Good Neighbor!

