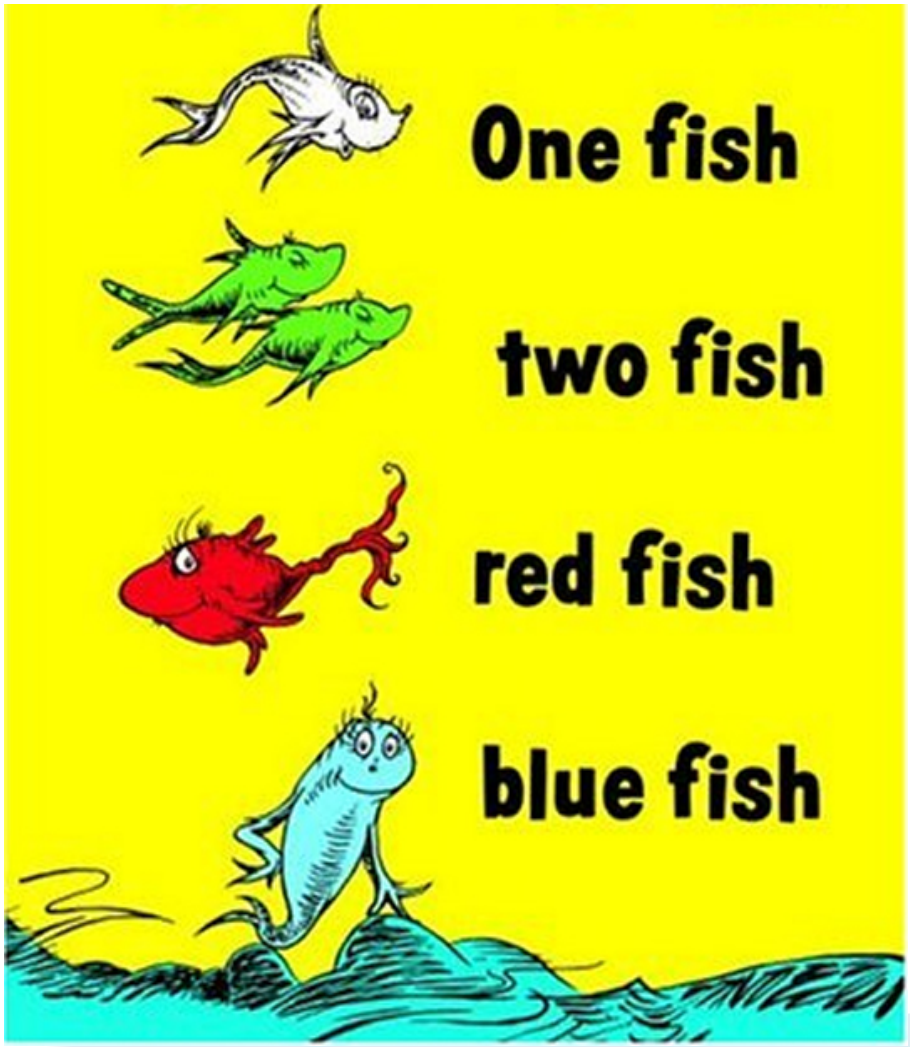
CWA §316(b)

Cooling Water Intake Structure Proposed Rule

CIBO E/E Committee

~~June 7-8, 2011~~

March 4, 2014



Background on CWA §316(b)

- Requires that the location, design, construction and capacity of CWIS reflect the best technology available to minimize harmful impacts on the environment
  - Impact: impingement and entrainment of fish and shellfish

History

- 1972 Clean Water Act
- 1977 Draft Rule
  - Prior to draft rule, I&E addressed on a case-by-case BTA
- 1993 Riverkeeper Case
  - EPA settled and set phased schedule
    - Phase 1-2001
    - Phase 2 -2004
    - Phase 3 - 2006
- Phase 2 rule suspended – 2007
- Dec 2010 Settlement with NGO consolidated cases
- Phase II +III proposed – April 20, 2011

Definitions

- **Cooling Water** – water used for contact or noncontact cooling, including equipment cooling, tower makeup and dilution of effluent heat content
- **Impingement**– occurs when organisms are trapped against the outer part of the screening device of the intake structure
- **Entrainment** – organisms pass through the screening system and the intake structure and travel through the entire cooling system
- **Design Intake Flow** – Maximum volume facility is capable of withdrawing
- **Actual Intake Flow** – average volume of water withdrawn on an annual basis over last 3 years

Proposed Rule Applicability

- Must be a *Point Source* (NPDES permit)
- Cooling Water Intake Structure has a total design intake flow of $>$ 2 MGD
- $>$ 25% of intake water is used for cooling measured on a annual average basis for each calendar year

Compliance Timeline -- TBD

- Proposed Rule April 20, 2011
  - Comments due July 19, 2011

- Pursuant to Settlement Agreement with Plantiff, Final Rule must be issued no later than:
  - ~~July 27, 2012~~ ~~June 27, 2013~~ ~~November 4, 2013~~ April 17, 2014

- Compliance with the rule no later than 8 years after promulgation

General Approach for Impingement and Entrainment

- Reduced Flow
  - closed cycle cooling, velocity reduction
- Exclusion
  - Physical Barrier with nets
  - Modified screens
- Collection and Return systems
  - Fish Buckets, traveling screen fish returns
- Change Intake Location

EPA Exhibit V– 2

Existing Facility	Impingement	Entrainment
Actual Intake Flow >125MGD	12 % annual average 31% monthly average	Need to conduct a entrainment characterization study
Design Intake Flow >2 Actual Intake Flow <125 MGD	12% annual average 31% monthly average	Case –By Case
New Unit DIF > 2 MGD	Reduce flow equal to closed – loop recycle; or	Mortality reductions 90% equal to closed–loop recycle
DIF < 2 MGD	Case – By– Case	Case – By Case

Impingement

- Option 1
  - Traveling Screen Performance
    - Seek alternate technology, fish returns, collection buckets, etc. to achieve
      - <12% mortality annual average
      - <31% mortality monthly average
      - Must monitor during "primary periods" at least once per week

OR

- Option 2
  - Demonstrate Intake Velocity
    - $\leq$ 0.5ft/sec (velocity measured as water passes through the structural components of a screen measured perpendicular to the screen mesh)
    - maximum actual or maximum design flow

Requirements for Impingement

- Currently as written would require “Ristroph” screens and fish friendly returns
- Fish survival testing looks really difficult!!!
  - Requires a monthly survival rate of 69% of fish captured on the screens
  - Annual survival rate of captured fish is 88% of fish captured on screens
- However, if you can’t pass the velocity and fish survival, well there are always cooling towers

Fish Friendly Return

Entrainment

- Any facility > 2MGD is subject to Site Specific requirements
- Conduct an Entrainment Characterization Study
  - Entrainment Mortality Data Collection Plan
    - Must be Peer Reviewed
  - Technical Feasibility and Cost Evaluation Study
  - Benefits Valuation Study
  - Non-Water Quality and Other Environmental Impacts Study

Monitoring and Reporting

- IM – Monitor once per week during primary periods
  - Count organisms on 3/8 inch sieve
  - Naturally moribund fish and invasives are excluded
- Average calculated each month
- Reported on the Monthly DMRs

Monitoring and Reporting

- Report Entrainment Mortality Flow on monthly DMRs
  - Report would include:
    - compliance measurement location
    - description of flow monitoring procedure
    - documentation of flow reductions

Concerns over Time…

- Willingness to Pay Survey
- Cost Benefit Ratio 20:1 in the initial documents
- Heavy **and expensive** work load to prepare for compliance:
  - Application Requirements
  - Characterization Studies
  - Monitoring Studies
- Peer Reviewed Studies required?

Just a Few Words about 316(a)

- Thermal Effluent Limits -- temperature limits for heated wastewater streams.
- New sources are required to have closed loop cooling water.
- Rule is not out for existing facilities yet, but states are placing limits into permits and then requiring facilities to demonstrate either compliance with limits or perform studies to justify alternate thermal limits, or… Both.
- Typically a regional EPA office will demand that a state place a numerical limit in the permit(s), usually based on "something" but usually "Best Professional Judgment" (BPJ).
- Now the twist, states are just now getting out their "Draft" study plans.

- Remember: Fish are friends, not food