



# FACILITIES DEVELOPMENT

[usaswimming.org](http://usaswimming.org)

## WE WILL .....

- Foster the development of new pool projects
- Assist with renovations and expansion of existing pools
- **Help with pool challenge solutions**
- Provide Total Aquatic Program planning for sustainability
- Promote positive Aquatic Industry relationships



# Facility MANAGEMENT & USE



## Cooperative

Facility owners and directors/staff

Meet host and teams using facility

Officials and Spectators

Swimmers & Coaches



The safe – W<sub>ater</sub> A<sub>ir</sub> Y<sub>ou</sub>

Water – Air – You

Somewhere along the line we lost

*control*



**FACILITIES  
DEVELOPMENT**

## • *Relationship of water to air*

Prime Directive: The air can only be as good as the water !

## • *What has changed in the last 4 decades ?*

Everything:

Air – Source water – Treatment methods – Environment

*Problems:* *Causes ? Cures ?*



# Water - how we treat it *Physically* - **Filtration**



• **Sand**

• **DE**



• **Cartridge and Ceramic**

NEW Technology

• **UV**

• **Not a filter**



# Water –

- How we treat it

*Chemically*

**pH**

*critical*



# Water –

- How we treat it

## *Chemically*

- **Chlorine**
- **Bromine**

## *Physically*

- **Ultra Violet Light**



# Water –

- How we treat it



- ***Biaguanides***
- ***Saline chlor generation***
- ***Ozone***
- ***Other***

# What happened ?

## *Heating methods*

Hot water – Coal

Natural Gas – Electric

heat rise / dry air / forced air – **What are the 2 things HVAC does?**

## *Water treatment methods*

Gas Chlorine –

Di & Tri Chlorides – Calcium Chlorides – Sodium Chlorides –

Lithium Chlorides – Bromines – Others –

Binders and Inerts .....



# Chloramines (3) = bad air



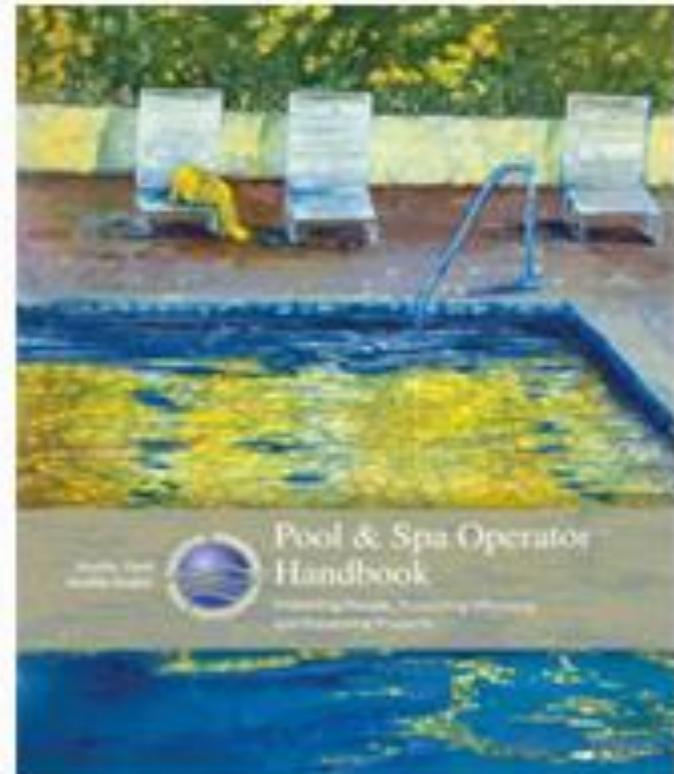


## Part of Aquatic Management

**Thomas M Lachocki, Ph.D.**  
**Chief Executive Officer**  
**National Swimming Pool**  
**Foundation**  
**4775 Granby Circle**  
**Colorado Springs, CO 80919-3131**  
**719-540-9119**  
**719-540-2787 (fax)**

**[www.nspf.org](http://www.nspf.org)**

**World Aquatic Health Conference –**  
**Usually in October – Portland OR this**  
**year – Scottsdale AZ next year**



# Diethionolamines mean bad water

Make that 90

There are over **30** chemicals that continually affect our pool water – and they shouldn't be there.



- **Fluoxetine**
- **Metoprolol**
- Etc. Etc. Etc.

What is the #1 defense



**Put out the FIRE and the  
smoke goes away**



**Correct the water problems and the  
CHLORAMINES go away**

**Then we can concentrate on fresh air  
ASHRAE - CDC - CPSC - others**

**PREVENTION:** Usually more than one thing needs to be changed to alleviate the problem. The most common methods are:

- Change the air circulation system to include more fresh air and better turnover or more efficient closed system circulation & dehumidification. Make sure all air-filters are clean and all belts, compressors, motors, are operational and all vents are functional.
- Evaluate the type and brands of chemicals being used to treat the pool water for both chlorine and pH control
- Evaluate the pool filtration system to see if a filter that filters down to a more effective micron rating (like DE at 4 microns) would help or is it allowed.
- Check the labels on all cleaning products to make sure they do not contain ammonia or are not nitrogen enriched. *A few bad guys = Monoethanolamine & Ethyl alcohol & Butoxyethanol & N-DODECYL/TETRADECYL-N,N-DIMETHYL BENZYL AMMONIUM CHLORIDE*

• Have facility staff attempt to get the users of the pool to take showers before entering – this is usually required by state health codes yet ignored (not enforced) in most places.

• Consider installing the right type of Ultra Violet (UV) water treatment system that cuts down on the amount of chlorine you have to use and also “breaks down” mono and di and tri chloramines. Be aware of bulb life and effective range.

• Install an activated carbon filter for the fill or make up water to remove chloramines from the city water.

### Plain English:

1. Stop people from peeing in the pool
2. Make people take showers before entering and re-entering pool
3. Require indoor pools to be fresh water and have UV operational
4. Stop shocking pools before meets and between sessions
5. Check equipment before meet with enough time to fix.

# H V A C

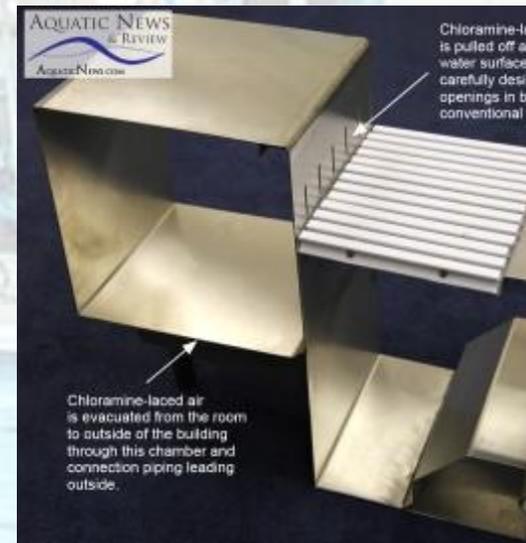
- **Problems don't just "happen"**
  - **Air filters**
  - **Vents**
  - **Compressors**
  - **Belts**
  - **Motors**
  - **Ducts**
  - **Gutter and bench systems**



Recirculation of what quality of air



*Original equipment and sizing?  
Many times it's not the pool or equipment it's the swimmers !*



## Problems – Solutions

**Filtration** use the best that is allowed –  
DE – Cartridge – Sand –

**UV is paramount indoors.**

**Sanitization** Use the simplest system that is  
practical for your areas water quality –

### **Operations & Procedures**

*The car is only as good as its' driver.  
Record keeping & maintenance.  
What to believe.*

**[http://www.bulkreefsupply.com/  
chloramines-database](http://www.bulkreefsupply.com/chloramines-database)**

**REVIEW**



**Activated CARBON filter on your pool water make up line. Remove chloramines from city water.**

275 pools



Medium Pressure UV -  
Separate units for each pool

# Regenerative DE Filters (Perlite)

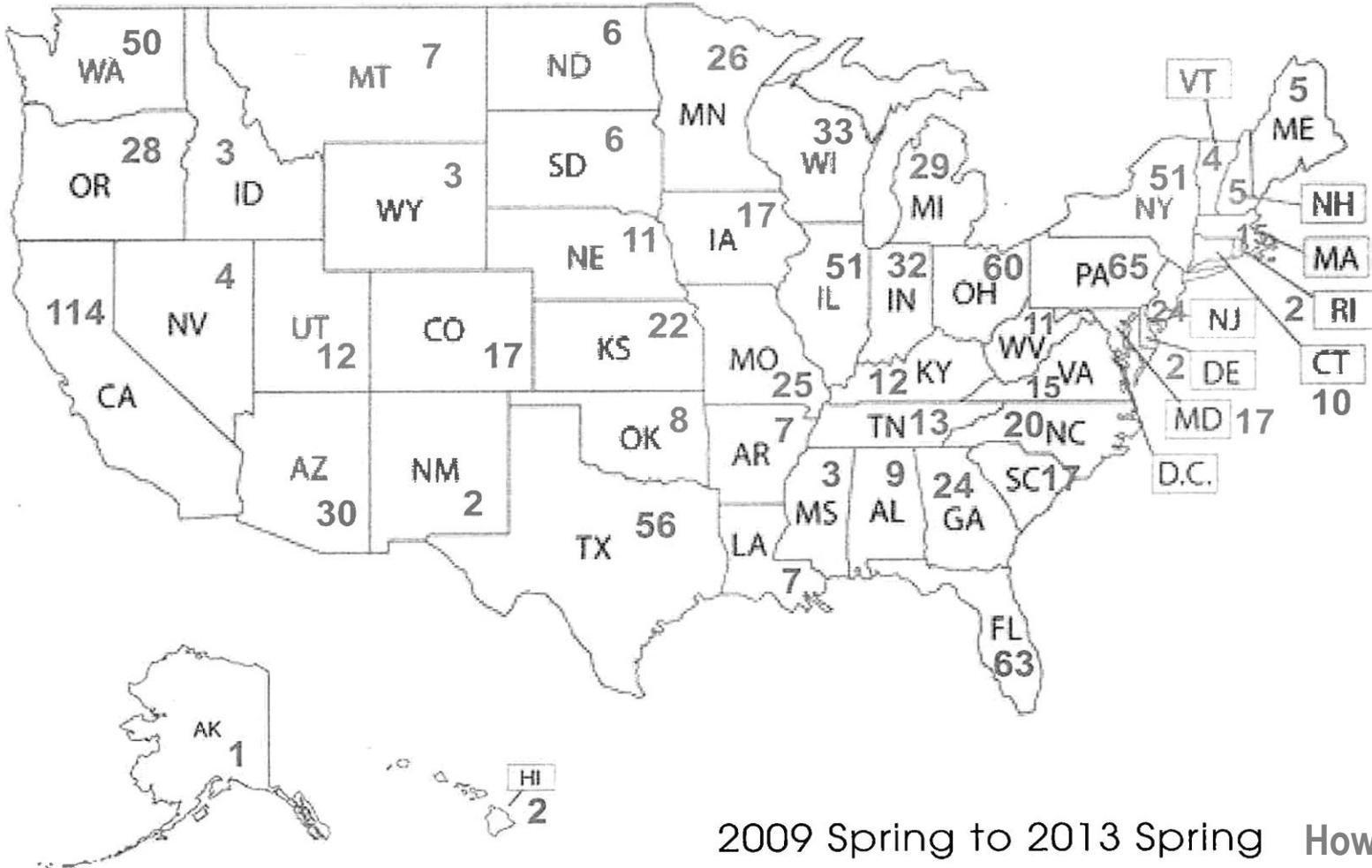


38 new pools



Save 75% on water usage and  
25% on chemicals.

COMMERCIAL POOL CLOSING BY STATE:



2009 Spring to 2013 Spring How many total?

TIPS to save \$ follow .....

**250+ pools initiated**

**Indoor pools need to be covered when not in use.  
Save 20% on building heat + 30% on pool  
chemicals + 40% on water heat**



**Cover reel with wheels to handle 2 ea 45' x 10' or 12' covers = \$300 each including freight**

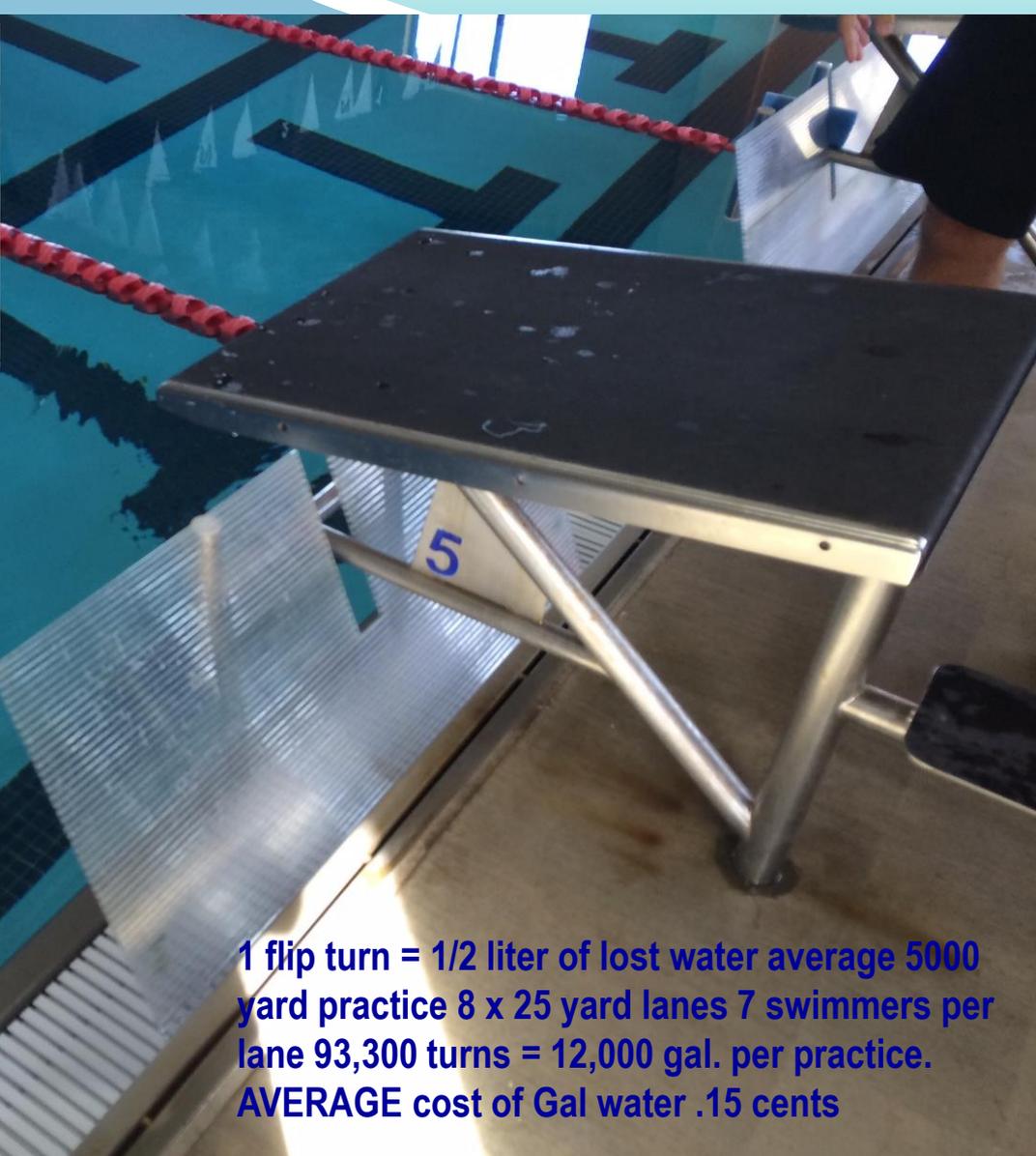
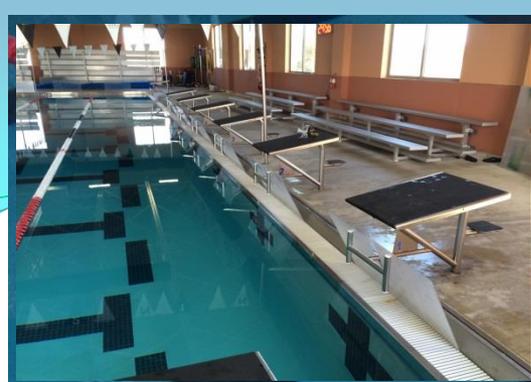


**12 mil solar cover 20' x 40' then cut into 2 x 10' covers \$149.95 freight included**

**Shop the web – best time to buy is in the fall and winter – usually free freight and sales in Nov to Feb. Key word search = “ pool solar covers”**



**Affordable is most important**



## Flip Turn Splash Guard

~ 2' x 4'  
Plexiglass

Can do  
foam  
edges

Removable  
Room on  
each side  
to get in  
and out of  
water

Produce  
locally-  
advertising

1 flip turn = 1/2 liter of lost water average 5000  
yard practice 8 x 25 yard lanes 7 swimmers per  
lane 93,300 turns = 12,000 gal. per practice.  
AVERAGE cost of Gal water .15 cents

# Save thousands of gallons daily ~\$6570 annually

## What now ?



### **Systematic problem solving**

- **no “canned” solutions – no assumptions**
- **non-reliable information from manufacturers and those they sponsor**

### **Communications**

- **Sharing the stories and being responsible to correct the errors rather than point fingers of fault. **CAFDA & Conventions****

### **Tracking results**

- **Every problem solved is a testimonial to proper design and planning – even if in hind sight.**
- **Air testing may not be the most practical plan when we know the problem is in the water**





**Walters ParkPool – 9/19/14 5:00 AM - A reader submitted this picture of the Walters Park Pool, concerned it was filled with green water. The mayor says a mosquito commission inspector deemed it free of insects!**

# Crystal Ball:

- **Drains** *5 years ago*
- **Lifts** *3 years ago*
- **Chloramines** *10 years ago*
- **HVAC retrofits** *6 years ago*
- **Decks** ?
- **Shower rooms** ? *Safety and privacy*
- **Liability & Responsibility**
- **MAHC**



Other things we need to mention:



- Low pressure UV
- High turnover ventilation
- Shocking
- Ozone
- Potassium Monopersulfate drip
- Saline
- Testing air instead of water



Asthma  
Sniff test



# *FACILITIES DEVELOPMENT*

*usaswimming.org*

## **CONTACT INFORMATION:**

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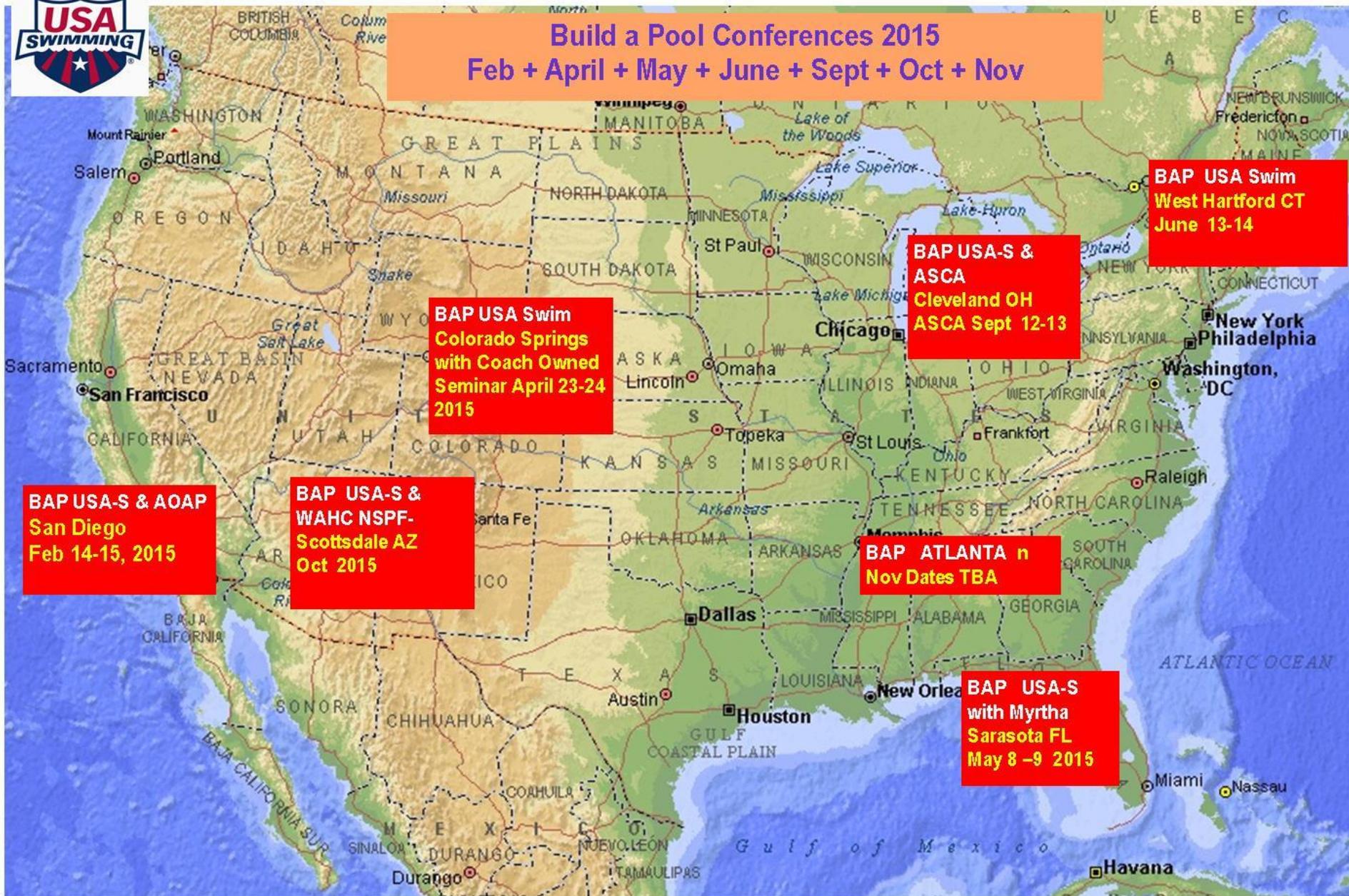
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## Build a Pool Conferences 2015 Feb + April + May + June + Sept + Oct + Nov



Registration and information at [www.usaswimming.org/facilities](http://www.usaswimming.org/facilities) (active 90 days prior to each conference)