


**Aquatic Weed Management
Demonstration Day
October 30, 2009**

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California's NPDES Permit for Discharge of Aquatic Pesticides for Aquatic Weed Control in Waters of the US



Blankinship & Associates, Inc.
Agricultural & Environmental Consultants

Aquatic Weeds....So What's the Problem?

- **Its All About Flow**
 - Stormwater
 - Convey Away from Structures
 - Aesthetics
 - Irrigation
 - Maintain Delivery Rates
 - Maintain Quality

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Manning's Equation: $V = (R^{0.66} \times S^{0.5}) / n$

Modified Manning's Equation: $V = \text{Money}$

V= Velocity
R= Hydraulic Radius
S= Slope
n= roughness


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Manning Equation:

$$V = (R^{0.66} \times S^{0.5}) / n$$

V= Velocity
R= Hydraulic Radius
S= Slope
n= Roughness



History

- **1996 Talent Irrigation District**
 - Acrolein/Copper
 - 90,000 juvenile steelhead dead
- **1998 Headwaters Suit**
 - Alleged CWA Violation



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History (con't)

- **2001 9th Circuit Court Decision**
 - Overturns Lower Court
 - CWA violation cited
 - NPDES Permit required



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Regional Consequences

- **2002:** SWRCB issues Emergency General Permit for Discharge of Aquatic Pesticides
- **2004:** New 5 year Permit Issued
- **2009:** Permit Renewal Underway



Requirements

You Need One if....

- You apply aquatic pesticides to "Waters of U.S."
- Your chemical leaves a "residue" greater than its WQO or "Produces Unintended Effects"
- Perceived CWA Violations and Subsequent Citizen Lawsuits Concern You



Typical Aquatic Weeds

- Water milfoil (*Myriophyllum aquaticum*)
- Water Primrose (*Ludwigia hexapetala*)
- Cordgrass (*Spartina alterniflora*)
- Parrot feather (*Myriophyllum aquaticum*)
- Cattail (*Typha* spp)
- Bulrush (*Scirpus fluviatilis*)
- Giant reed (*Arundo donax*)


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**You May Not Need One if
You Apply to**

- A canal or ditch bank above the water level
- A dry canal that was or will be filled with water later
- To land where pesticide may be conveyed in storm or irrigation runoff
- Vernal pools
- Ponds that are not hydrologically connected to a water of the U.S.

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“Waters of the U.S.”




- Currently or formally used, or susceptible to use in interstate commerce (*think the Delta*)
- Tributaries to waters of the U.S.
- Irrigation/ flood control channels that **exchange water** with waters of the U.S.
- **Impoundments** (drinking water reservoirs, ornamental lakes/ponds, irrigation water impoundments)
- Wetlands adjacent to waters of the U.S.
- All interstate waters
- All other waters the use/degradation/destruction of which would or could affect interstate or foreign commerce
- Used by interstate/ foreign travelers for recreation
- From which fish/shellfish are taken and sold in interstate or foreign commerce

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“Waters of the U.S.”

- Anything more than:



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Requirements

Submit Notice of Intent (NOI)

- Prepare and Execute an Aquatic Pesticide Application Plan (APAP)
- Report Annually



Aquatic Pesticide Application Plan (APAP):

- Prepare Quality Assurance Plan
- Describe weeds, water body, tolerances
- Document all applications
- Sample 10 % of all applications
- Evaluate BMP effectiveness
- List Gates/Control Structures
- Get Local RWQCB Approval

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“Water Quality Objectives”



Chemical	WQO (ug/L)
Triclopyr	N/A, monitoring required
Diquat Dibromide	20
Glyphosate	700
Fluridone	560
Na ₂ CO ₃ Peroxyhydrate	Pending
Non-Ionic Surfactant (nonylphenol)	6.6
2,4-D	70
Imazapyr	N/A, monitoring required
Endothall	100
Acrolein *	320
Copper *	3-52 (Hardness Dependent)


* Requires SIP Exception

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APAP Execution:

- Carefully Pick Your Sites
- Sample
- Document
- Report



APAP Sampling:


- Remember: Once selected, every time a site is treated, it is sampled.

Number of Application Sites	Number of Sample Sites
1	1
2-24	2
25-34	3
35-44	4
45-54	5

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APAP Documentation:

- **Aquatic Pesticide Application Log**
 - Gate Opening/Closing
 - Amount of Chemical Used
 - Weeds Controlled



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APAP Documentation:



- **Field Sampling & Monitoring**

- Moving Water (canals, creeks)
- Static Water (ponds, reservoirs, lakes)

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APAP Documentation:



- **Moving Water (canals, creeks)**

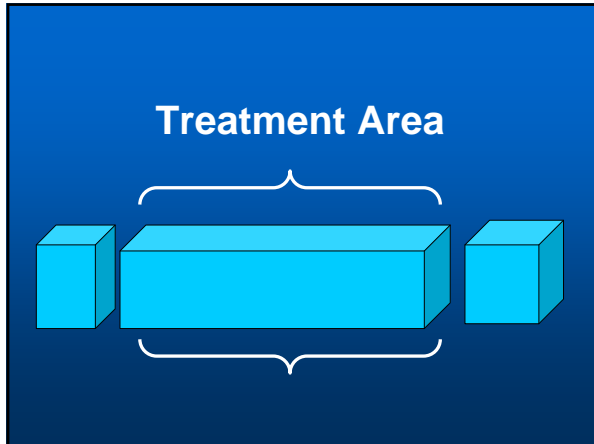
- Upstream
- Downstream of Treatment Area
- Downstream of Treatment Area ≤ 7 d Later
- In the Treatment Area ≤ 7 d Later

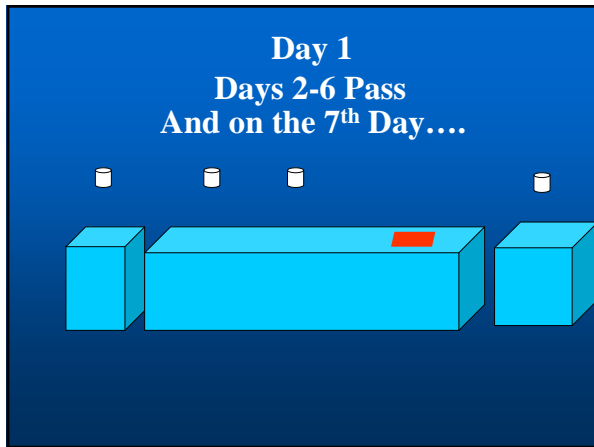
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**Water Body
Requiring Treatment**



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APAP Documentation:



- **Static Water (ponds, lakes)**
 - Background
 - Adjacent to Treatment Area immediately following application
 - Treatment Area ≤ 7 d Later
 - Adjacent to Treatment Area ≤ 7 d Later

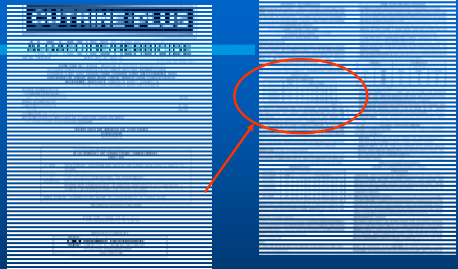
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An Important Difference: Copper & Acrolein



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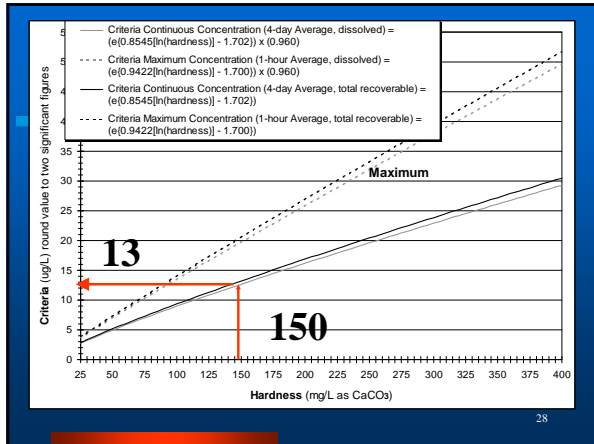
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i.e., 200 ug/L

ALGAE TYPE	PPM COPPER	Application Rates Gallons Per Surface Acre	
		1	DEPT 2
Planktonic	0.2	0.6	1.2
Filamentous	0.2	0.6	1.2
Chara/Nitella	0.4	1.2	2.4

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An Important Difference: Copper & Acrolein

- Refer to State Implementation Plan (SIP) & California Toxics Rule (CTR)
- If CTR exceeded, need SIP exception
- SIP Exception Requires CEQA Process
 - Initial Study/Mitigated Negative Declaration

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Red Legged Frog



- Oct 2006: Stipulated Injunction
- 66 pesticides restricted within designated habitat

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Red Legged Frog



- 4 aquatic pesticides on list:
 - Imazapyr
 - 2,4-D
 - Glyphosate
 - Triclopyr
- ~40K Acres & 33 Counties

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“Goby 11”

- 11 Species
 - Tiger salamander
 - SJ Kit Fox
 - Alameda Whip Snake
 - SF Garter Snake
 - Salt Marsh Harvest Mouse
 - CA Clapper Rail
 - CA Freshwater Shrimp
 - Bay Checkerspot Butterfly
 - VELB
 - Tidewater Goby
 - Delta Smelt

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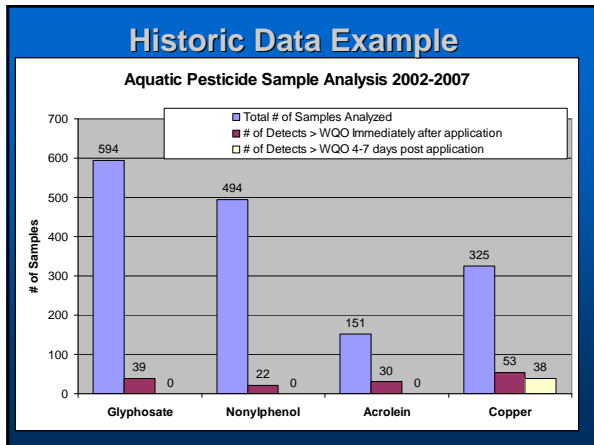
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“Goby 11”



- **74 Pesticides; 3 Aquatic**
 - 2,4-D
 - Acrolein
 - Diquat
- **8 Counties**
 - Alameda
 - Contra Costa
 - Marin
 - Napa
 - San Mateo
 - Santa Clara
 - Solano
 - Sonoma

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