

Source Water Protection

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What Is Source Water Protection?

Taking **proactive** measures to prevent the pollution of lakes, rivers, streams and ground water that serve as sources of drinking water.

Wellhead Protection is another frequently used term that applies to Source Water Protection for ground water sources.

Why do Source Water Protection?

- Because the most cost effective method to ensure the safety of the drinking water supply is to protect the source from contamination.
- Because it is part of a “multi-barrier” approach to providing safe drinking water;
Treatment alone cannot always be successful in removing contaminants.
- To improve public perception of the safety of drinking water.
- Because safe drinking water is essential to the public health and economic well-being of communities.

Who Ultimately Protects the Source?



THE COMMUNITY

DWSAP and Source Water Protection

- The DWSAP program suggests procedures in establishing protection programs, but recommends that **VOLUNTARY** programs be established at the **LOCAL** level

What are Source Water Protection Measures?

- Practices to prevent contamination of ground water and surface water that are used or potentially used as sources of drinking water
- Protection measures form the first barrier to keep drinking water safe

SWP Procedures

- Review the DWSAP program
- Establish a local committee
- Review the initial source water assessment and update or expand as necessary
- Prepare reports and maps
- Develop protection plan
- Submit plan for review to local and state agencies
- Implement management measures
- Conduct contingency planning

Establish a Local Committee

Starting organization:

- Water system (municipality, water district, utility company, or regional agency)
- Community served by water system

Local Committee

- For best chance of success, include other stakeholders to balance interests, solicit a variety of opinions, and to obtain greater “buy-in”
 - Consumers and their advocates
 - Drinking water customers
 - Representatives for at-risk populations
 - Environmental groups
 - Business owners/operators of PCAs
 - Government officials with land use planning authority
 - Regulators of PCAs

Review the Assessment

- Initial assessment may have been done by
 - DHS
 - LPA county
 - Water System
 - Consultant
 - Regional agency
 - Other entity (CRWA)

Review the Assessment

- Verify accuracy of information
- Identify PCAs of primary concern
- Gather more information
 - Hydrogeology or surface water hydrology
 - Locations, density, and compliance of PCAs of primary concern

Develop a Protection Plan

- Identify measures currently in place that protect water supplies
- Identify possible new source water protection measures
- Identify resources and new regulations (if any) necessary to implement the measures
- Develop a time line for implementing measures
- Draft a report for review by local committee
- Solicit comments and revise plan as necessary

Measures Currently in Place

- Many current activities provide or support protection of water supplies
 - Control of well sites and intakes
 - Water quality monitoring
 - Compliance with and enforcement of existing regulations
 - Sewer system programs
 - Industrial waste discharges
 - Waste management
 - Used oil collection
 - Household hazardous waste collection
 - Land use planning

Identify Possible New SWP Measures

- Non-Regulatory
 - Good housekeeping practices
 - Public education
 - Land management
 - Land purchase and development rights
 - Man-made systems and devices
 - Emergency response planning
- Regulatory
 - Land use controls
 - Regulations and permits

Non-Regulatory Methods for Source Water Protection

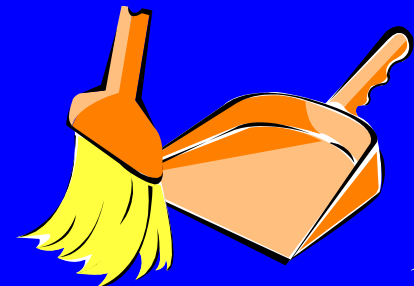
- *Without adopting any new ordinances or regulations, communities can be successful in protecting water supplies*

Good Housekeeping Practices

- At the water supply
 - This is the one area the water system should have complete control over
 - Prevent unauthorized access to the site
 - Keep the site clear of contaminants
 - Eliminate pathways of contamination
 - Abandoned wells
 - Storm drain discharges

Good Housekeeping Practices

- At PCAs:
 - Equipment operation and maintenance
 - Product storage, use and handling
 - Waste storage and disposal
- May be required by local ordinances or health regulations



Public Education



Public Education

- School children
 - Teach good environmental habits
 - Use presentations, experiments, and festivals
- Business owners
 - Proper material handling and spill response procedures
 - Ways to reduce use of contaminants
 - Use flyers and targeted mailings
- Public
 - Storm drain messages, posters
 - Consumer Confidence Reports

Land Management

Work with landowners



Contour strip farming

Land Management

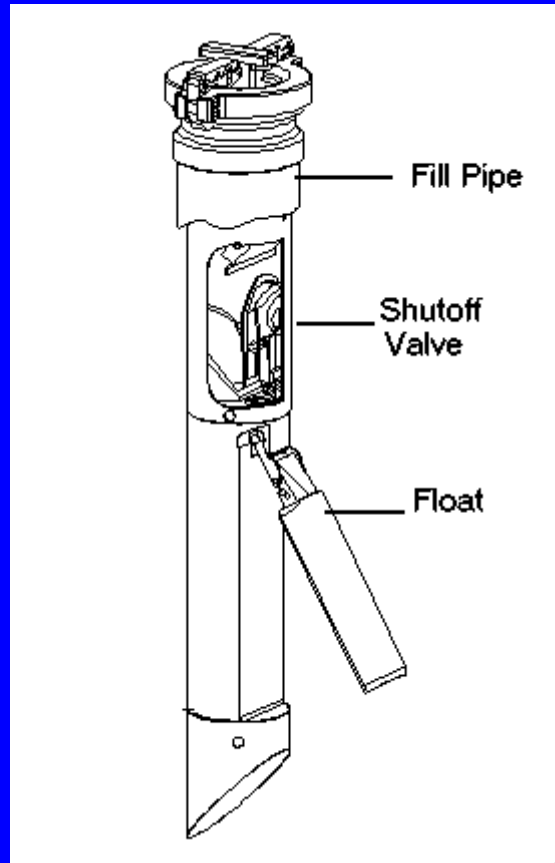
- Responsible Management:
 - Environmentally sensitive landscaping
 - Proper lawn maintenance
 - Agricultural:
 - Conservation tillage
 - Crop rotation
 - Contour strip farming
 - Animal grazing management
 - Integrated pest management
 - Some financial incentives from USDA

Land Purchase and Development Rights

- Limiting new development in watersheds and recharge areas
 - Land purchases
 - Conservation easements
 - Land trusts and conservancies



Man-made Systems or Devices

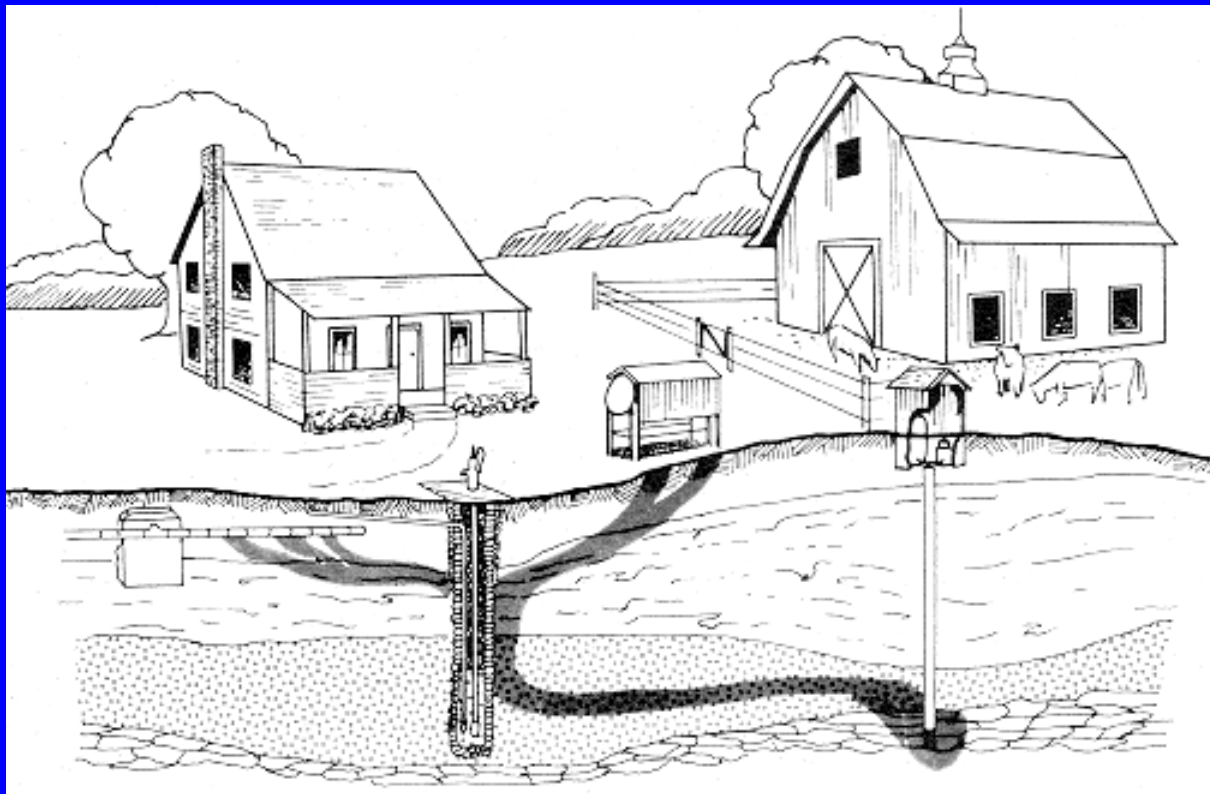


- At Business PCAs:
 - Automatic shut-off and leak detection devices on USTs
 - Secondary containment
 - Segregated floor drains
 - Drainage diversion
 - Waste collection devices

Man-made Systems or Devices

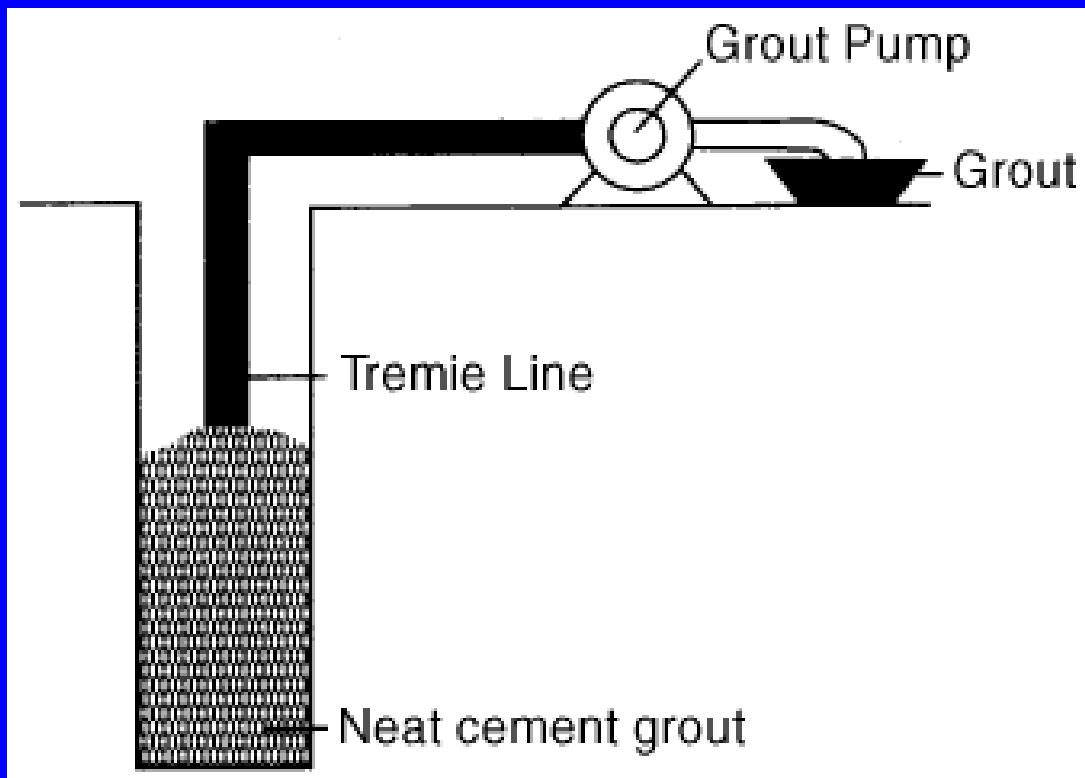
- Within Protection Areas:
 - Relocate storm drain discharge points
 - Prioritize repair or replacement of failing septic systems and leaking sewer lines in Zone A
 - Identification and destruction of improperly abandoned wells

Abandoned or Improperly Destroyed Wells



- Locations often unknown
- Common nearby activities may degrade water quality
- Runoff also poses threats

Abandoned Wells



- Plug abandoned wells
- Use licensed well drillers
- Get a permit

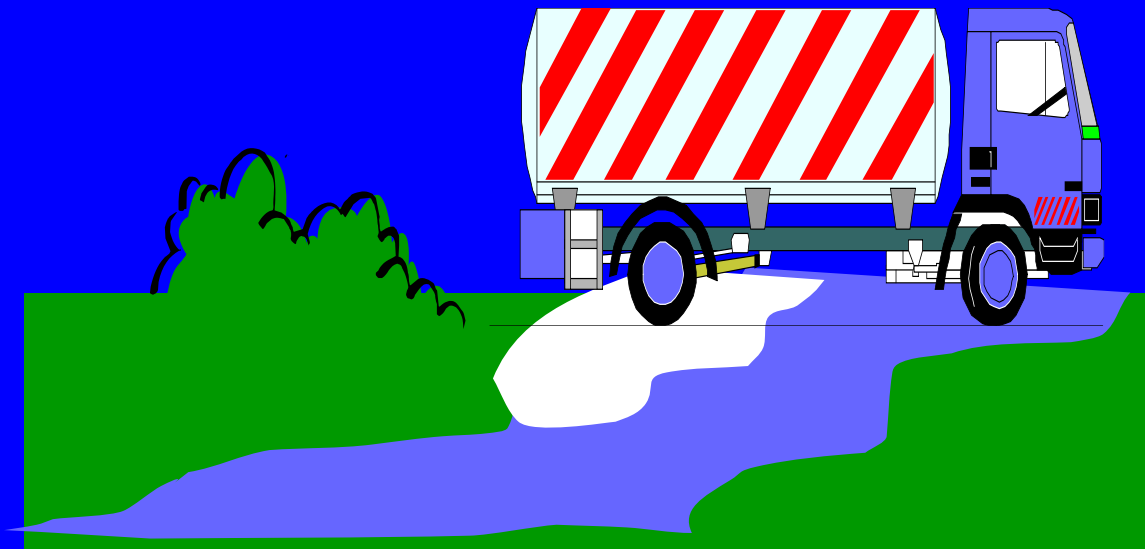
Vegetative Measures



- Reduces the speed of runoff
- Promotes filtering or infiltration of storm water
 - Constructed wetlands
 - Vegetated buffer strips
 - Grassed swales

Emergency Response Planning

What if..?



Emergency Response Planning

- Identify potential threats to water supply and formulate response scenarios
- At PCAs
 - Spill response plans
 - Surface spill reporting forms
 - Fire-fighting plans
 - Names and phone numbers of emergency response contacts (including water system)

Emergency Response Planning

- Identify potential threats to water supply and formulate response scenarios
- At the water system:
 - Information about the water system
 - Potential contamination sources and their locations
 - Needed equipment and supplies
 - Names and phone numbers of emergency response contacts
 - Short- and long-term water supply options

Regulatory Methods for Source Water Protection

- *When non-regulatory methods don't work*
- *When the contamination threat is particularly significant*
- *When state or regional regulations aren't strong enough for local issues*

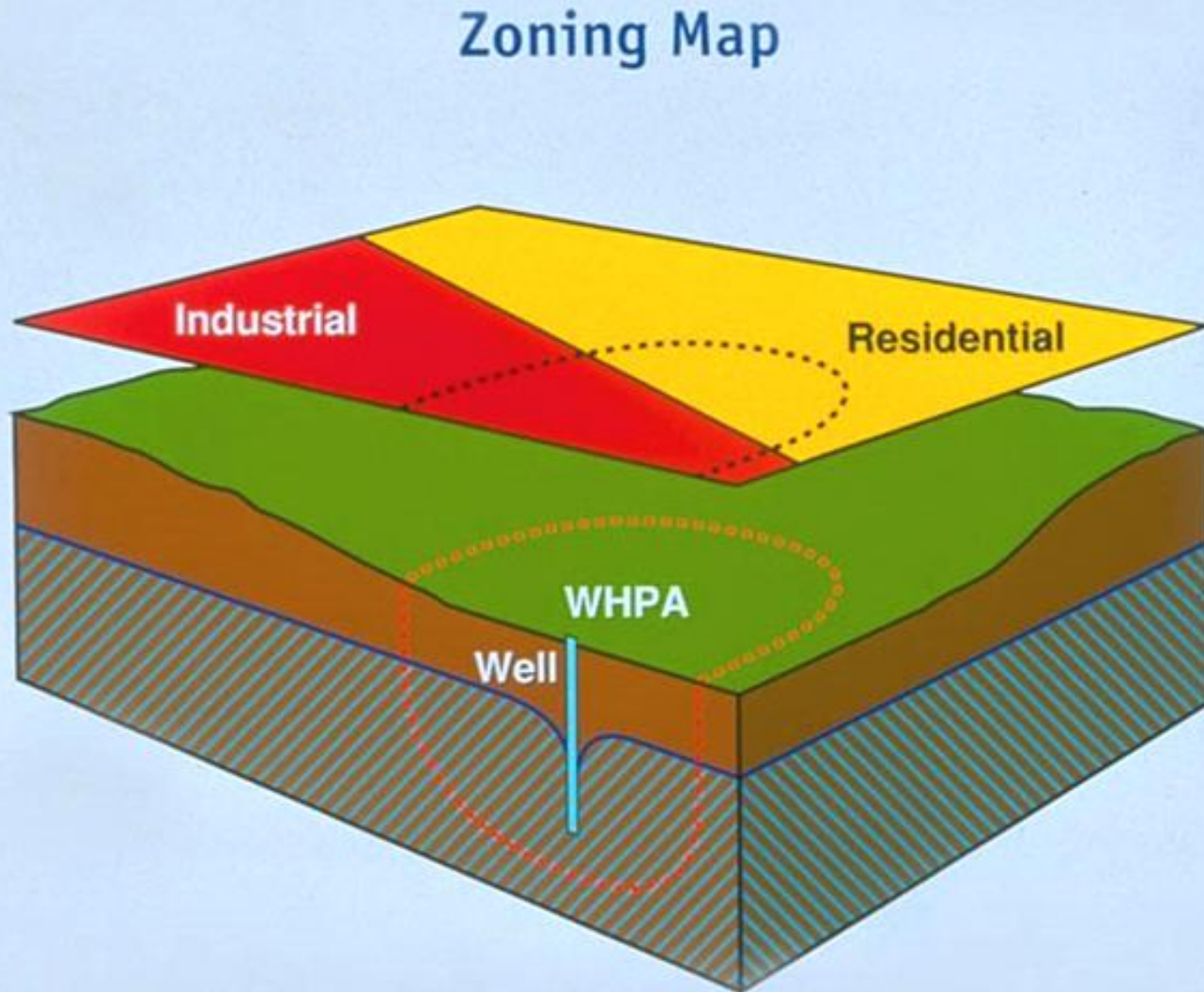
Land Use Controls

- To control or move land uses that pose risks to source water
 - Subdivision growth controls
 - Zoning
 - Land use prohibitions

Subdivision Growth Controls

- Primary purpose is to control division of land into lots suitable for building
- Can protect drinking water supplies from
 - Septic system effluent
 - Storm water runoff

Zoning



- Add an additional “Wellhead Protection Zone”; doesn’t change underlying zoning
- Generally not successful in addressing existing land uses
- Some communities offer “bonuses” for property owners to convert to lower risk land uses

Land Use Prohibitions

- Effective way to remove threats from sensitive areas
- Source-specific and chemical-specific standards
- Example:
 - Don't allow certain PCAs in zones, or allow only with mitigation measures to prevent and detect release and/or migration of contaminants

Regulations and Permits

- Construction and operating standards
- Permit requirements
- Land use prohibitions
- Public health regulations

Many of these regulations are already in place; check to see that the latest and most vigorous are adopted locally, or at least within zones

Permit Requirements

- Local authorities can require permits
- Permit fees can help recover program costs
- Permits can be site-specific
- Inspections enforce permit requirements
- California CUPA program is an example (to be discussed later)

Public Health Regulations

- Underground storage tanks
 - Construction standards
 - Leak testing
- Septic systems
 - Number and size in a given area
 - Siting, setback distances and construction
 - Maintenance standards
- Floor drains

Septic system regulations vary widely between counties and RWQCB regions; as a result of AB 885, efforts are underway to develop statewide minimum standards

Selecting Management Measures for the SWP Plan

- After considering possible measures, identify those that:
 - Address the primary contaminants and/or PCAs of concern
 - Can be readily implemented with the resources available
- Identify short-term and long-term actions
- Incorporate into Plan

Current Programs that Assist Source Water Protection

- AB 3030
- Total Maximum Daily Load (TMDL)
- Certified Unified Program Agencies (CUPA)
- Department of Pesticide Regulation
- Storm Water Pollution Prevention Plans
- California Rural Water Association
- *and more...*

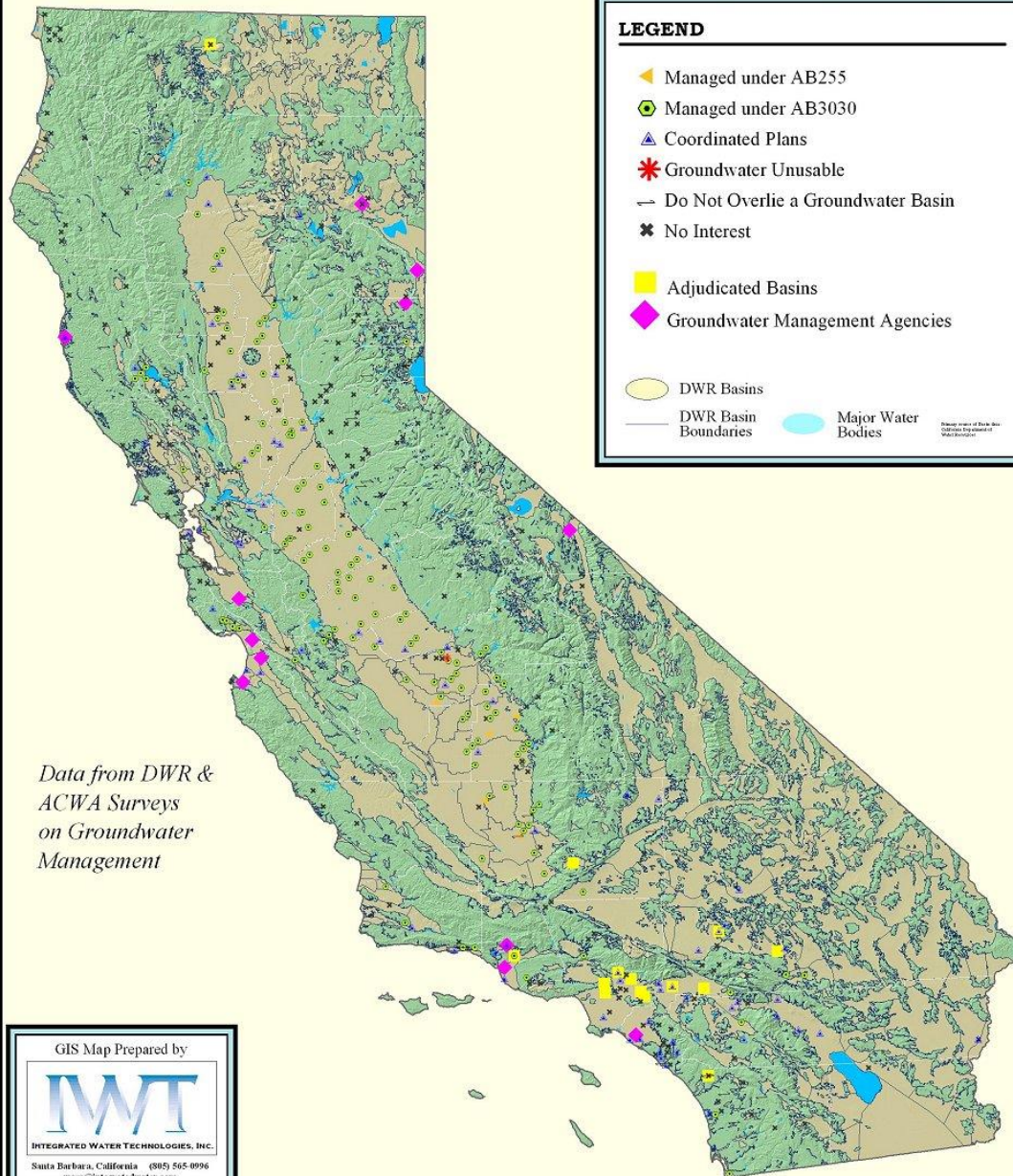
AB 3030

Groundwater Management Plans

- Legislation passed in 1992 allows existing local agencies to develop groundwater management plans
- Allows agencies to collect revenues to implement plans
- ~ 160 agencies have developed plans
- Components may include:
 - Identification of Wellhead Protection Areas
 - GW replenishment
 - Well destruction
 - Overdraft mitigation
 - Review of land use

Status of Groundwater Management in California

Updated to April 1998



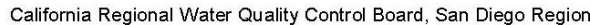
Groundwater Management in California

TMDL

Total Maximum Daily Load

- Required by Federal Clean Water Act; implemented by Regional Boards
- Written plan for impaired water body to describe how water quality standards will be met
- Must address all pollution sources within a watershed, both point and nonpoint
- Each impaired water body can have multiple TMDLs
 - TMDL for multiple contaminants
 - TMDL for individual contaminants
 - TMDL for multiple water bodies

TMDL
Total
Maximum
Daily
Load



- 44

CUPA

Certified Unified Program Agencies

- Unified Program under CalEPA established by legislation (1993)
- Coordinates 6 programs into a single point of contact for businesses
 - Hazardous Waste Generators and On-site Hazardous Waste Treatment
 - Underground Storage Tanks
 - Hazardous Material Release Response Plans and Inventories
 - CA Accidental Release Prevention Program (CalARP)
 - Above Ground Petroleum Storage Tanks
 - Uniform Fire Code Hazardous Material Management Plan and Inventories
- Local Agency (CUPA)
 - Permits, inspections, enforcement, fee collection
 - 43 counties, 23 cities, 3 Joint Powers

Department of Pesticide Regulation

Ground Water Protection Program

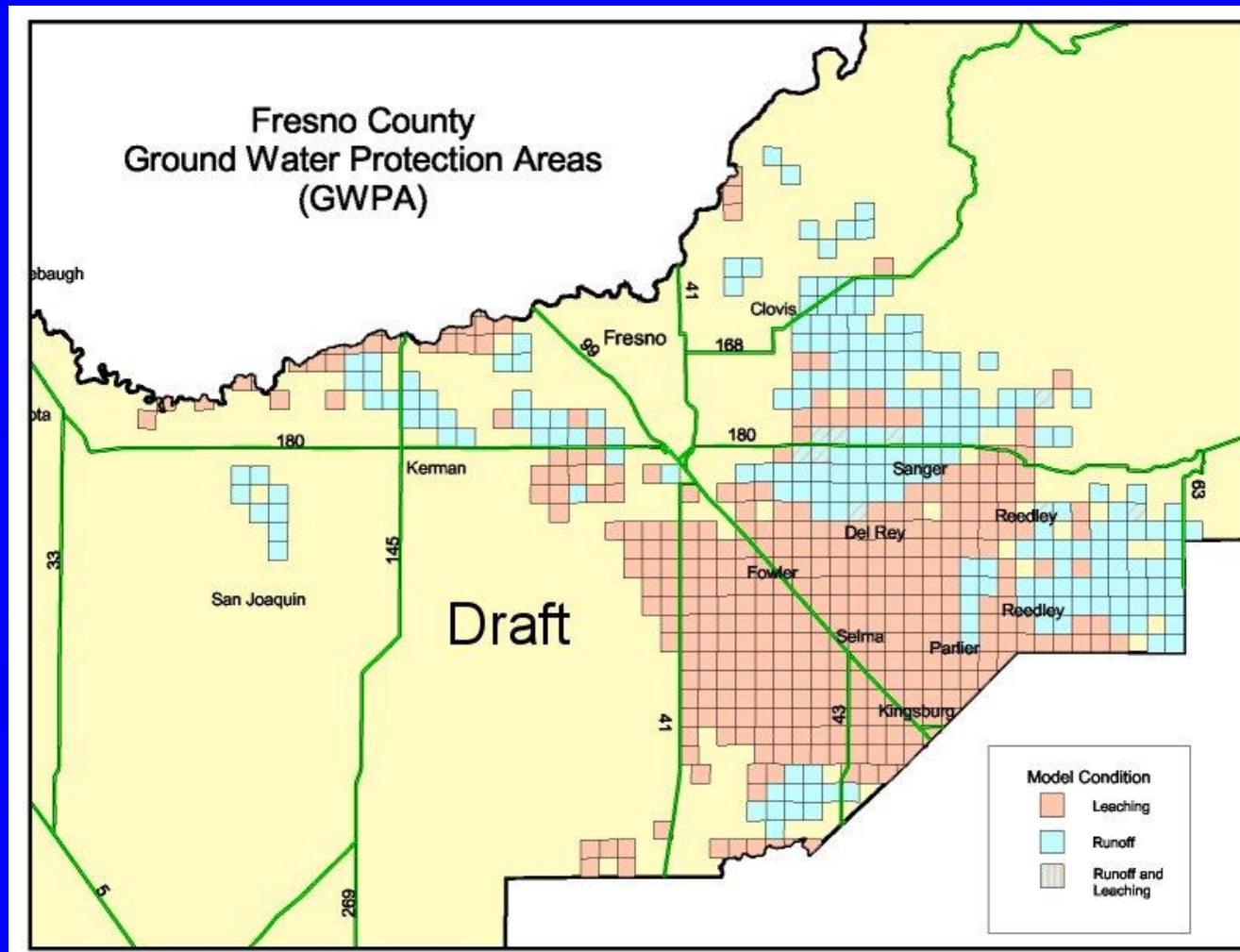
DPR currently defines “Pesticide Management Zones”

- 1mi² areas where use of pesticides is restricted

Proposed regulations:

- “Ground Water Protection Areas” to replace PMZs
 - Types of GWPAs:
 - Leaching
 - Runoff
 - Leaching and Runoff
 - Restricts use of pesticides
 - Determined by soil types and depth to GW
 - “Wellhead Protection Area” = no pesticide use or storage within 100’ of any well

Department of Pesticide Regulation Ground Water Protection Program



Storm Water Pollution Prevention Programs

- Required under Federal NPDES program
- Phase I – Plans being implemented
 - Municipalities > 100,000 population, large construction sites, and certain industries
- Phase II – Permits due by 12/2002, implementation within 5 years
 - Smaller municipalities, smaller construction sites, and more industries
- CalTrans has an extensive program and public information materials

California Rural Water Association

- CRWA has had a staff person (Sue Murphy) working with many small water systems on source water assessments and protection
 - smurphy@cwo.com
- CRWA now has a staff person (Kevin Knauss) working with water systems on source water protection
 - knauss@cwo.com

Possible Funding Sources for Source Water Protection

- **DHS SRF (State Revolving Fund) Source Water Protection funds**
 - Low interest loans to public water systems
 - ~\$4 million each year
 - <http://www.dhs.ca.gov/ps/ddwem/dwsap/protection.htm>
- **CALFED Bay-Delta Program — Watershed Program**
- **Cyber-Sierra's Conservation District Resource Center** — See "Find Funding"
- **Department of Water Resources (DWR): Loans and Grants**
- **Great Valley Center** — See LEGACI Grants
- **State Water Resources Control Board** — Proposition 13 (2000 Water Bond) projects.
- **University of California Sustainable Agriculture Research and Education Program Grants**
- **US EPA's Catalog of Federal Funding Sources for Watershed Protection Second Edition**
- **US EPA Region 9 Funding Opportunities** — See "Funding Sources for Communities"
- **Local Open Space funding**

Summary

- Source water protection is best done at the local level
- Non-regulatory actions can be successful
- Current federal, state, and local programs can be a basis or supplement local source water protection programs