

APPENDIX A

GROUND WATER PROTECTION AREAS (GWPA'S)

Ground Water Protection Areas (GWPA's) are defined as one-square-mile sections of land that have been determined by the DPR Director to be sensitive to the movement of pesticides to groundwater. These areas are identified through the detection in groundwater of pesticides (or their degradates) listed in 3CCR section 6800(a),²³ or through the use of the CALVUL computer model.

History of GWPA Development

Early research conducted by DPR scientists enabled DPR to identify two important soil conditions that contribute to groundwater contamination: 1) coarse-textured soils where *leaching* is the predominant contamination pathway (Troiano et al., 1993); and 2) hardpan soil layers where *runoff* from the application site into dry wells or areas with high infiltration rates is the predominant contamination pathway (Braun and Hawkins, 1991). Depth-to-groundwater was identified as another factor that contributes to contamination when it was discovered that pesticide detections were more frequent in areas of shallow groundwater (Troiano et al., 1999). Based on this research, the empirical model CALVUL was used to identify areas vulnerable to groundwater contamination.²⁴

Criteria for GWPA Designation

GWPA's for *leaching* or *runoff* pathways were established based on the following criteria (Troiano et al., 2000; Marade and Troiano, 2000):

- If a section of land had an estimated depth-to-groundwater of 70 feet or less and the predominant soil type was characterized as coarse-textured, it was identified as a *leaching* GWPA. If the section had an estimated depth-to-groundwater of 70 feet or less and the soil contained a hardpan layer, it was identified as a *runoff* GWPA.
- If a section had both leaching and runoff characteristics (coarse-textured soil with a hardpan layer), it was identified as a leaching GWPA if the mean hardpan depth was greater than 48 inches, or as a runoff GWPA if the mean hardpan depth was less than 48 inches.
- If a section did not meet the above criteria but was previously identified as a Pesticide Management Zone (PMZ), it was classified as a leaching or runoff GWPA as follows:
 - If the predominant soil in the section was coarse-textured it was classified as a leaching GWPA; otherwise, the section was classified as a runoff GWPA.
 - If the PMZ lacked soil survey data it was assigned a GWPA pathway based on soil condition information provided by local agencies. DPR also assessed agronomic practices in the section to determine whether leaching or runoff was the apparent pathway for recharge of water to groundwater.

²³ Pesticides listed in 3CCR section 6800(a): atrazine, bentazon, bromacil, norflurazon, prometon, simazine, and diuron (except for diuron products with less than 7% diuron that are applied to foliage).

²⁴ GWPA's are classified in regulation as sections of land characterized by either coarse-textured or hardpan soils with a ten-year spring-averaged annual estimated depth-to-groundwater of 70 feet or less.

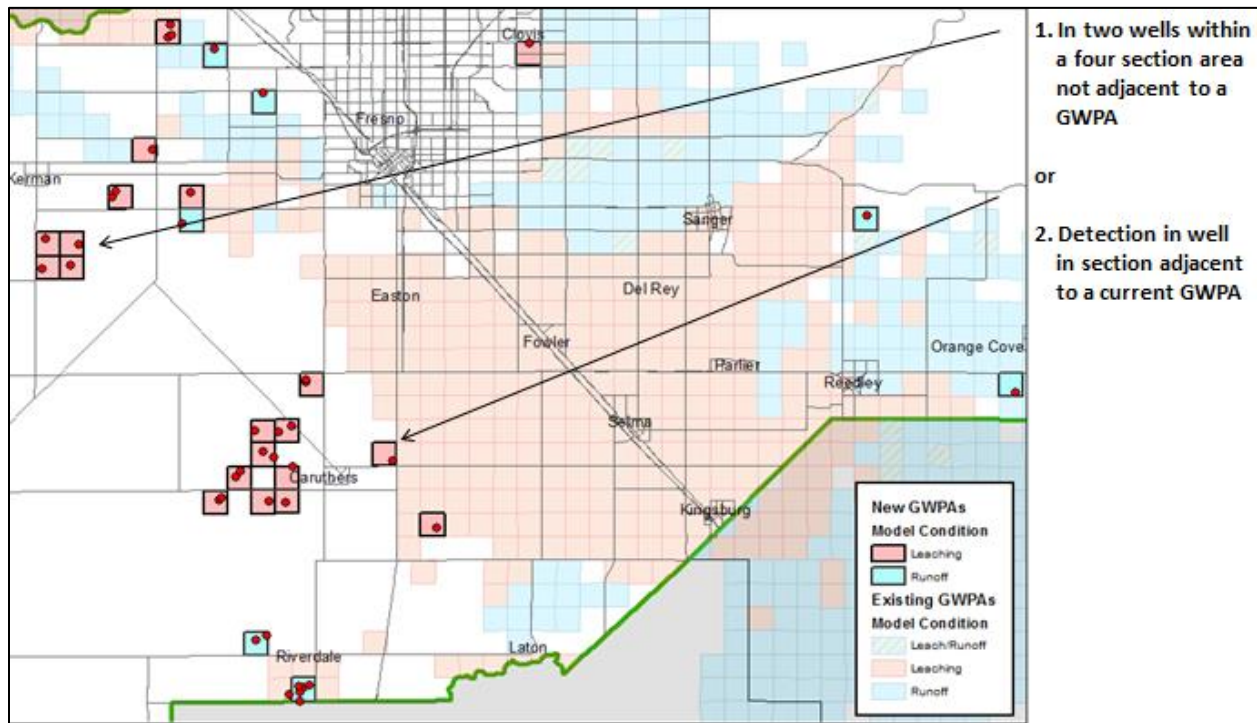
GWPA Designation

By 2004, designation of GWPAs was based largely on modeling efforts that used soil type and depth-to-groundwater data to identify areas vulnerable to groundwater contamination, although all of the former (and draft) PMZs developed by DPR from 1989 to 1999 were also designated GWPAs.

DPR establishes new GWPAs based on the following criteria:

- CALVUL modeling identifies the area as vulnerable; or
- Active ingredients listed in 3CCR section 6800(a), or their degradation products, are detected in:
 - One well in a section that is adjacent to a GWPA; or
 - Two or more wells within a four-section area that is not adjacent to an existing GWPA.(See the Fresno County example in **Figure A-1** to see how new GWPAs are added based on detections.)

Figure A-1. Fresno County GWPAs.



DPR's use of the CALVUL model increased the area under regulation from 313,000 acres (the acreage identified as PMZs) to about 2.4 million acres (PMZs plus GWPAs). Currently, there are about 3,718 GWPAs in California (**Figure A-2**).

Pesticide Use in GWPA's

Individuals using 3CCR section 6800(a) pesticides registered for agricultural, outdoor industrial, and outdoor institutional use in GWPA's are required to modify their use practices. Users must obtain a [Restricted Materials](#) permit from their CACs. The management practices required in each type of GWPA are identified on a permit or Notice of Intent.²⁵ At least one of the following management practices (or an alternative management practice approved by the DPR Director) must be met for the following type of GWPA:

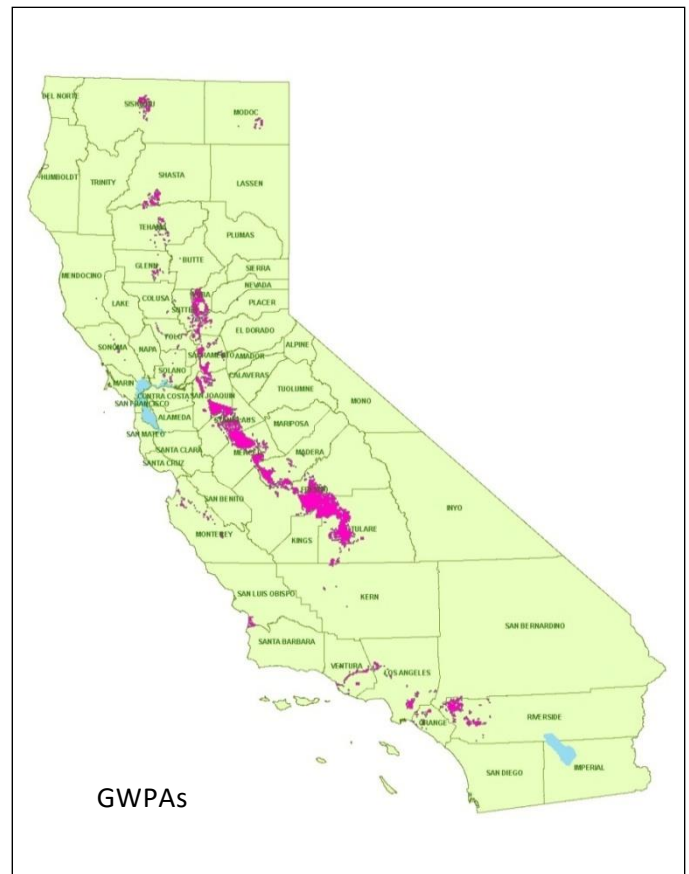
- **6487.3 Engineered Rights-of-Way** within a GWPA: 1) runoff is directed to a vegetated area or a fallow field; 2) compliance with a permit issued pursuant to the storm water provisions of the federal Clean Water Act; or 3) the property owner complies with the requirements of 6487.4 (see below).
- **6487.4 Runoff GWPA's:** 1) application timing is limited to the period April 1 – July 31; 2) the soil is disturbed prior to pesticide application; 3) the pesticide is incorporated into the soil; 4) the pesticide is applied as a band treatment; or 5) runoff is retained on- or off-site, or directed to a fallow field.
- **6487.5 Leaching GWPA's:** 1) the permittee shall not apply any irrigation water for six months following application of the pesticide; 2) the pesticide shall be applied to the planting bed or the berm above the level of irrigation water; or 3) irrigation shall be managed according to a specified formula.

The permittee must notify the CAC within 24 to 48 hours prior to application to give the CAC an opportunity to inspect the site. Pre-application site inspections allow CACs to determine whether the use modifications are protective and, if they are not, to revise the permit accordingly.

2018 Regulatory Action Impacting the Number of GWPA's

On May 25, 2018, DPR published in the *California Regulatory Notice Register* a Notice of Proposed Regulatory Action concerning GWPA's.²⁶ Under this action, DPR proposes to amend 3CCR section

Figure A-2. Ground Water Protection Areas.



²⁵ More information on how DPR and CACs regulate the use of groundwater contaminants in vulnerable areas is available at: http://www.cdpr.ca.gov/docs/emon/grndwtr/gwp_id_gwpa.htm.

²⁶ Register 2018, No. 21-Z, p. 794-797. Notice of Proposed Action, Statement of Reasons, and the proposed text of the regulation are available at: <https://www.cdpr.ca.gov/docs/legbills/rulepkgs/18-001/18-001.htm>.

6000 by adding new GWPA. The new GWPA have been identified based on detections of 3CCR section 6800(a) pesticides or their degradation products in the groundwater.

When adopted, the proposed action will add 122 new GWPA in 15 different counties. The document EH03-05 (Est. 08/03) entitled "Ground Water Protection Areas"—incorporated by reference in the definitions of 3CCR section 6000—will be amended to include the new GWPA and will be retitled "Ground Water Protection Areas 2018 (Rev. 10/18)." The document will identify each GWPA as either a leaching or runoff GWPA. (See **Figure A-3** for Southern San Joaquin Valley proposed GWPA.)

Figure A-3. Locations of proposed and existing GWPA in the Southern San Joaquin Valley.

