

TMDLs and California Viticulture

Part I

by Lizanne Wheeler & Patrick Brown

This is the first in a series of articles discussing the implications of Nonpoint Source Discharges and the TMDL process with respect to California Viticulture. The second of the series will review the TMDL process in the Monterey Bay watersheds. This article was first published in Practical Winery & Vineyard, March 2001.

With all the current attention on GWS, PD, GPS, IPM and GMOs few of us involved in California viticulture can get excited about another acronymic threat to our ability to farm. Yet, here it comes. In this article we will describe the beast and its history, what is its intent and how we can learn to farm with it.

The Natural History of the Beast.

In 1972 Congress overrode President Nixon's veto to pass the Clean Water Act. The new law directed the US EPA to regulate pollution entering the nation's waterways. The Act identified two basic sources of pollution: Point Source Pollution, which enters the waterways through definable pipes and conduits such as industrial plant waste streams or municipal sewage outfalls, and; Nonpoint Source Pollution, which enters the waterways in a non-discrete manner, such as natural soil erosion, agricultural run-off and storm drains.

When developing the Act thirty years ago, Congress decided that cleaning up the Point Source Pollution with the best available technology was the most reasonable first step in addressing the issue of pollution in the nation's waterways. The Clean Water Act established a waste discharge permit system to regulate Point Source Pollution. This permit system phased in a technology-based solution to the nation's most obvious and easily identifiable pollution streams, so that by 1983, they were to achieve control levels based on the "best available technology economically available." At an enormous cost to industry and taxpayers (Congress eventually spent \$40 billion for the construction of municipal wastewater treatment plants) the Point Source Pollution effluents in the United States are largely under control. Even in light of the cost of compliance, today few people argue the validity and success of this portion of the Clean Water Act.

At the same time (1972), Congress also called for a comprehensive set of water quality standards to be established by *each State* for every navigable river and water in America. If the technology-driven Point Source effluent limits were sufficient to achieve the established water quality standards that would be great. If not, the State was to add the waterway to its list of "impaired waterways" along with which pollutant was not in compliance. The State would then calculate how much of the specific pollutant the waterway could tolerate and still meet its water quality standard. This figure would be

expressed as the Total Maximum Daily Load, or TMDL. The State would then identify all of the sources (both Point and Nonpoint) of the pollutant, allocate the calculated load amongst the Point and Nonpoint Sources and develop an action plan to bring the waterway into compliance.

Three decades after passage of The Clean Water Act we are passing through the threshold from *technology-driven* pollution control to *water quality standards-driven* control, and this is a most significant passage. In the first phase of the clean up, Congress mandated that industry and municipalities use the “best available technology” to treat point source waste discharge effluents. Now that these measures are largely in place, we have matured into the second phase of the Act with the establishment of water quality standards and waste load allocations. The regulatory measure of compliance shifts from its focus on point-by-point waste discharges to the physical monitoring of the entire watershed and comparing the results to the water quality standard established for that watershed. This is more mature, holistic and significantly different approach than the nation has taken for the past thirty years.

Does the Beast have Teeth?

Under the Clean Water Act the US EPA has the authority to regulate *Point Source* pollution through its permit system. In many States, this Point Source permit process has been contractually delegated to State agencies. In California, for example, the Point Source permits are issued through the State Water Resources Control Board.

In the case of *Nonpoint Source* pollution entering impaired waterways, Congress expected the States to implement action plans that brought the waterways into compliance with the State-declared water quality standards. It was hoped that these plans would be largely voluntary with agriculture, forestry, grazing interests and public lands utilizing “best management practices” to reduce the total pollutant load to meet the compliance standards. The US EPA has no authority to regulate Nonpoint Source pollution. This is clearly within the realm of the State’s authority.

A number of Federal Court cases have defined the parameters of the US EPA authority. Each State is to prepare a comprehensive set of water quality standards along with a list of impaired waterways that fail to meet these standards and calculate the TMDLs. If a State fails to provide the list within a given time frame or the US EPA rejects the list, the US EPA is mandated to provide or revise the list and TMDLs.

With the prepared TMDLs, the action plan will take into account Point Source contributions, which are regulated through the US EPA permit system, and Nonpoint contributions, which are regulated by the State. It is entirely up to the discretion of the individual State as to the enforcement of the TMDL Nonpoint Source action plan. A State’s refusal to implement a plan is legal, but could provoke the Federal Government to withhold grant money from the State.

The California State Water Resources Control Board has authority under the 1969 California Porter-Cologne Act to regulate all discharges into waterways in the State,

making no distinction between Point and Nonpoint sources. Anyone discharging or intending to discharge a waste into the waters of the State is required to obtain and comply with a Waste Discharge Requirement issued by one of the nine the Regional Water Resources Control Board. A Point Source Waste Discharge Requirement complies with the US EPA permit process. Nonpoint Source discharges were specifically addressed by the California 1988 Nonpoint Source Management Plan, which established a three-tier approach that the Regional Water Resources Control Boards are to employ to reduce nonpoint discharges:

1. Voluntary implementation of Best Management Practices
2. Regulatory-based encouragement of Best Management Practices
3. Effluent requirements

However, this three-tier approach may prove to be inadequate under the TDML process, which requires “reasonable assurance” that the management plan is successful. Once a water quality standard has been set by the State for a given waterway and a pollutant is identified that exceeds the standard, a Total Maximum Daily Load for that particular pollutant in that particular watershed must be developed. A component of the TMDL process is the allocation of the waste load among the Point and Nonpoint source. The implications here make all stakeholders nervous. The Point Source Permit holders worry that their waste load allocations will be further reduced. The Nonpoint contributors fear more regulations, permits and costly compliance requirements. The State regulatory agencies face the enormous tasks of setting the water quality standards, monitoring the water quality and developing the TMDLs on a tight time schedule with little or no funding to perform these tasks. To round out the party, fishing interests and the environmentally conscious groups are watchdogging this process, buoyed by a successful series of Federal Court cases.

The Regional Water Resources Control Boards have the authority and the responsibility to insure that appropriate management measures are implemented to bring the State’s waterways into compliance with the water quality standards. With regard to the Nonpoint Pollution sources they prefer an approach where landowners voluntarily implement effective measures to reduce nonpoint discharges. Only if this approach proves insufficient would they rely on regulatory action. In order to provide the US EPA “reasonable assurance” that these management plans are working (and keep the Federal grant dollars flowing into the State) the Regional Boards must establish Performance Measures that benchmark the success of the plan.

Where is the Beast Now?

The US EPA approved California’s list of “impaired waterways” and the priorities of developing the TMDLs in May 1999. This is referred to as the “303(d) List” after the section of the Clean Water Act that mandates it. As funding becomes available the State will be calculating the individual TMDLs according to that list. This presents all Nonpoint stakeholders with a unique window of opportunity. In order to calculate the TMDL for a given watershed, a monitoring program must be established to identify the

current waste load and its sources. If, for example sedimentation is the pollutant in question, the landowners in a given watershed could potentially reduce the sediment load input through land management practices to where the watershed or a tributary to the watershed meets the water quality standards and avoid a TMDL listing all together.

Following the same example, if the landowners chose to not address the issue of their contribution to the total load of sediments in the watershed, the TMDL will eventually be calculated and regulatory agencies will be coming around to “assist” them in complying to the mandated management plans.

In either case the outcome is the same: the landowners will reduce their nonpoint sediment discharges through appropriate land management practices to comply with the water quality standards established by the State for their particular watershed.

Living with the Beast.

First of all we need remind to ourselves that we are in the midst of a “rites of passage”. The old rules no longer apply. A new paradigm has met us on the other side of the threshold. We are no longer talking about “his effluent”, “their sewer” “your ranch” and “my farm”. That is all part of the old technology-based point source approach we have been living for thirty years. The new dialog revolves around a holistic, inclusive adjective: “Our watershed”, “our river”, “our erosion challenges”, “our nitrate loading”, “our mining wastes”, “our diazinon in the city storm drains”. It belongs to all of us. It’s not *his* problem, *your* fault or *their* responsibility anymore. It’s *ours*.

In order to successfully meet the objectives of the Clean Water Act and insure that all our waterways are approaching the water quality standards we set in our own States we need to work together. We need to consider the entire drainage basin as a whole, along with the economic and beneficial uses in each tributary and those impacts on the overall water quality.

Viticulture is a huge industry with a multi-billion dollar impact on the economy and water use in California. We have already made tremendous strides in addressing the issues of the Clean Water Act through our adoption of proven management practices such as Integrated Pest Management, Micro Irrigation and Water Management, Fertigation, Cover Cropping and Low-Till Farming. We need to quantify and document the impacts of these practices. In order to comply with the standards of this era, we need to prevent the loss of our topsoil, fertilizers and farm chemicals into the waterways. It only makes sense to work towards that goal. We have a window of opportunity to significantly modify the impact of the TMDL process. We can do that by

- Increasing our awareness of where our runoff goes and what it carries off.
- Step up our pace in addressing the issues of runoff from our vineyards.
- Support local groups such as Farm Bureau in the effort to address the issues on a basin-wide management plan.

- Become more familiar with the challenges of all nonpoint runoff in the watershed, including other agricultural commodities, communities, county roads and open land.
- We need to share the successful practices with our neighbors. We need to broaden our definition of “our neighbors” to include all of the landholders in our watershed: vineyards, grazing interests, open space, cities and towns.

This next level of water management requires the participation of everyone because everyone is a stakeholder. Our industry, because of its size and visibility is in a unique position to take the lead in demonstrating agriculture’s commitment to sound land management practice while improving the environment and quality of life for all Californians.

The authors relied heavily upon and suggest the following documents for further reading:

- *TMDLs, The Revolution in Water Quality Regulation*, Jennifer Ruffolo, California Research Bureau CRB-99-005, April 1999.
- *EPA Region 9: TMDL Program*, <http://www.epa.gov/region09/water/tmdl/>
- *1998 CALIFORNIA 303(d) LIST AND TMDL PRIORITY SCHEDULE*, US EPA 12-May-1999
- *EPA Region 9: California Water Quality Planning Projects*, <http://www.epa.gov/region09/water/projects/index.html>
- *MBNMS Action Plan IV: Agricultural & Rural Lands*, http://bonita.mbnms.nos.noaa.gov/Resourcepro/reports/AgactionIV_99/index.html
- *Pronsolino et al v. US EPA (Garcia River California) Decision*, US District Court No. C 99-01828 WHA, March 30, 2000.

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The Impact of TMDLs on California viticulture

Part II

The Central Coast

by Lizanne Wheeler & Patrick Brown

In our previous article (*PWV* March 2001) we discussed the history of the United States *Clean Water Act* and California's water act, *Porter-Cologne*. In this article we will describe how the total Maximum Daily Load (TMDL) and Nonpoint Source Pollution process is playing out in the Central Coast.

It is not surprising to find the leading edge of the management of nonpoint source pollution located in the heart of the Central Coast of California. This is where the nation's largest marine protected area, the 5,000 square mile Monterey Bay National Marine Sanctuary, meets "The Nation's Salad Bowl", the 3 billion dollar agricultural industry of the Monterey Basin. The Sanctuary holds the greatest biodiversity in the world's temperate zone, as well as 50+ species that are federally listed. Monterey Basin agriculture produces over 200 different crops, including 80% of the nation's lettuce. The lands that drain into the Sanctuary contain forests, urban areas, intensive cropland, vineyards and rangeland. The potential nonpoint pollutants that may impact the Sanctuary include sediments, pesticides, oils and grease, nutrients, heavy metals and pathogens. Of these potential pollutants, three are of primary concern to the viticulturist:

1. Sedimentation. Although sediment run-off is a natural element of any watershed, excessive sedimentation can effect fish populations, smother the bottom-dwelling ecosystems in estuaries and the Sanctuary, fill in wetlands and cause stream channel instability.
2. Pesticides. It is interesting to note that many of the pesticides that are being detected in the Sanctuary are "old generation pesticides" that have been banned for a number of years. These include DDT, chlordane and toxaphene. These persistent pesticides are transported with the sediment run-off from urban and agricultural sites. Because the newer generation pesticides are far less persistent and their application is more closely monitored, they are expected to be less of an issue. However, very little data has been collected at this time.
3. Nutrients. Nutrient run-off, particularly nitrates and phosphates can lead to algae blooms, which in turn can reduce oxygen levels and may cause toxin accumulations in shellfish. Although viticultural practices generally call for minimal nutrient inputs, we can expect these practices to be scrutinized.

Basin Strategies

To address the issues of water quality protection within the Monterey Sanctuary and drainage basin, the federal, state and local authorities under whose jurisdiction water quality falls met as part of the sanctuary designation in 1992 and signed a Memorandum of Agreement. From

this agreement the Water Quality Protection Plan (WQPP) for Monterey Bay National Marine Sanctuary has evolved. The WQPP attempts to coordinate all of the regulatory authorities to ensure a consistent approach to the issues and prevent subjecting participants to conflicting applications. An outcome of the WQPP is the Agricultural and Rural Lands Action Plan that outlines a series of strategies intended to address their specific issues of nonpoint source pollution. The Strategies can be grouped into six principle areas of concern:

1. Agricultural Industry Networks
2. Technical Information & Outreach
3. Education & Public Relations
4. Regulatory Coordination & Streamlining
5. Funding Mechanisms & Incentives
6. Public Lands & Rural Roads

We will take a brief look at the first two, which are currently impacting viticulture to the greatest degree.

Agricultural Industry Networks

The first strategies revolve around the inherent conflicts between the regulatory authorities charged with implementing the WQPP and the property owners that are targeted by the regulations. It is the policy of the regulatory agency, the Regional Water Quality Control Board (RWQCB), to encourage voluntary implementation of practices that will reduce nonpoint runoff and keep their regulatory “hammer” behind their backs. Landowners, while perhaps eager to voluntarily implement appropriate practices, are apprehensive about allowing any regulatory agent an inspection of their environmental “laundry”, soiled or not. In an effort to defuse this conflict, the six local County Farm Bureaus have stepped up to the plate to act as go-betweens for the two groups and formed the Coalition of Central Coast County Farm Bureaus. An important aspect of the WQPP is to evaluate if the practices being implemented are effective in reducing nonpoint pollution. The Coalition will provide this data in a compiled form that will satisfy the regulators and ensure the confidentiality of the landowners. The Coalition will also serve as a conduit for organizing regional meetings.

Technical Information & Outreach

The second set of strategies involves the dissemination of technical information. This includes the evaluation of appropriate land stewardship practices, developing self-monitoring tools, providing technical expertise in the field, compiling information into a central location and providing grower workshops. This spring there are a series of grower workshops scheduled to introduce WQPP and continue the process of grower education. The University of California Cooperative Extension has prepared a workshop series on Nonpoint Source Self-Assessment that allows a grower to evaluate their own farms and identify areas that need improvement. The participants of the workshop will then have the opportunity to meet with the regulators to discuss funding, cost share programs, regulations and the permit process.

Tracking Performance

A major component of the regulations are Performance Measures that allow the regulators to prove to the US EPA, Congress and the public that the entire process is moving forward. The Performance Measures are spelled out in the Implementation Plan developed by the State Water Quality Control Board and the California Coastal Commission. (Available on

the web at <http://www.swrcb.ca.gov/nps/cammpr-agr.doc>.) An example of a Performance Measure for the Central Coast is the implementation of sediment basins, cover crops or grass-lined waterways on five to ten farms each year from 1999 through 2002.

A second aspect of performance tracking is whether or not the actual Management Practices being implemented are effective in reducing nonpoint pollution. This issue is being dealt with at the local level as funding becomes available. The local Resource Conservation Districts, the National Resource Conservation Service (NRCS), UC Extension and private consultants are providing technical expertise in this area. The Central Coast Vineyard Team grower group was recently awarded a \$250,000 grant from the RWQCB for a three-year program to evaluate and incorporate appropriate management practices into their Positive Points System evaluations and to correlate Positive Points scoring and water quality.

Management Practices

There are many practices available that can be utilized to reduce the potential of nonpoint pollution from agricultural fields. These are often referred to as Best Management Practices, or BMP's. It is important to point out that these practices should be considered as site specific. What may be "best" for one grower may not be appropriate for his neighbor. Therefore, when we refer to BMP's we should be thinking "Most Appropriate Management Practices". There are published lists of Practices that are generally accepted as appropriate. The NRCS has a list of Practices for California on the web at <http://www.ca.nrcs.usda.gov/rts/sec4.htm>. Many of these Practices have been integrated into mainstream viticulture in the Central Coast. These include the growing of cover crops, the use of windbreaks, Integrated Pest Management, micro-irrigation management, soil moisture monitoring and low-till farming. Some of the other practices that are less widely adopted but hold promise are vegetative buffer strips, grassed waterways, sediment basins and rural road erosion control. Your local Farm Advisor or NRCS office can provide a list of appropriate Practices for your specific vineyard site.

Becoming Involved

The TMDL and Nonpoint pollution regulatory machinery is definitely on the move. The programs are coalescing and it is critical to your future ability to farm that you and your neighbors become involved in the process this season. Viticulture is one of the most visible agricultural industries in the state, allowing us the opportunity to prove our stewardship of our land and our communities' water resources. Plan on attending a water quality workshop in your local community. If there is not one planned, contact your local Farm Advisor or NRCS office and help plan one.

The authors relied heavily upon and suggest the following documents for further reading:

- A Region 9: California Water Quality Planning Projects, <http://www.epa.gov/region09/water/projects/index.html>.
- MBNMS Action Plan IV: Agricultural & Rural Lands, http://bonita.mbnms.nos.noaa.gov/Resourcepro/reports/AgactionIV_99/index.html.
- California Field Office Technical Guide Section IV Practice Standards, NRCS, <http://www.ca.nrcs.usda.gov/rts/sec4.htm>.
- Nonpoint Source Program Strategy and Implementation Plan, 1998-2013 (PROSIP), <http://www.swrcb.ca.gov/nps/planvol1.doc>.

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