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Dr. Val Connor
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Dear Val:

Following up on the discussions at the January 22, 1997 Sacramento River Watershed Toxics Control Program Toxics Subcommittee meeting, I wish to provide a brief write-up on groundwater quality issues that the Sacramento River Watershed Toxics Control Program should consider as part of developing a toxics control program that includes groundwater quality protection and enhancement where degradation has occurred.

I have been concerned since 1989 when I returned to California with the situation that exists today where while California has some of the strictest regulations in the country governing the protection of groundwaters from impaired use from waste management activities, these regulations are not being enforced by the regional water quality control boards. Further, there are no regulations governing the pollution of groundwaters by irrigated agriculture. The net result is that the groundwater resources of the state and the Sacramento River watershed are being polluted at a high rate to the detriment of the use of these groundwaters by the current generation and especially future generations.

The state of California either needs to admit that the current generation is "mining" the groundwater resources in California through allowing pollution to occur which would require a change in the regulations, or provide for full enforcement of the regulations so that future generations that wish to use the ground and surface water resources of the Sacramento River watershed can do so without impaired use beyond that which exists now due to municipal, industrial, commercial and agricultural activities. There is an immediate need to inform the public about the current situation and to provide the public with an opportunity to become active participants in preventing further degradation of groundwaters and enhancing groundwater quality where degradation has occurred.

While virtually everyone with whom I discuss these issues is supportive of groundwater quality protection, when it comes to becoming pro-active supporters, I find that few, including water utilities, are willing to make the effort to protect groundwater resources from further pollution by domestic, industrial or agricultural wastes. Possibly the Sacramento River Watershed Toxics Control Program can provide a mechanism through which improved groundwater quality protection can be developed in the Sacramento River watershed. Stakeholders concerned about water resources in the Sacramento River watershed can through the Toxics Control Program be provided the opportunity to become familiar with and then address improved groundwater quality protection. It may be possible through the Sacramento River Watershed Toxics Control Program to develop true groundwater quality protection within the Sacramento River watershed. Even if it proves to be impossible to get key stakeholders, such

Draft

Groundwater Quality Protection in the Sacramento River Watershed Sacramento River Watershed Toxics Control Program

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It is important to include groundwater quality protection and enhancement as part of the Sacramento River Watershed Toxics Control Program. Justification for this approach stems from the fact that surface and groundwaters in the Sacramento River watershed are infinitely interconnected. Carl Hauge of the California Department of Water Resources has repeatedly pointed out the importance of considering groundwater resources and groundwater quality an integral part of surface water quantity and quality in the Sacramento River Valley and the Sacramento River tributaries. Associated with the seven-year drought that occurred in California in the late 1980s to early 1990s, the interconnection between surface and groundwaters in the Sacramento River watershed was well documented. The removal of groundwaters for export to water-short areas during the drought resulted in less surface water flows in the Sacramento River system.

Further, the pollution of groundwaters impairing their use for domestic and other purposes places greater demands on the surface water resources available within the Sacramento River watershed to meet the water needs of the communities and individuals that were, until the pollution occurred, able to use the groundwater resources in their area. While often a groundwater remediation approach involves a pump and treat operation, as being permitted today, the discharge of the "treated" groundwaters often results in a poorer water quality occurring downstream of the point of discharge than occurred prior to the discharge of the pumped and "treated" groundwater.

Those familiar with groundwater quality protection in the state of California and in particular the Sacramento River watershed know that while state of California regulations require groundwater quality protection, the regulatory agencies at the state, regional and local levels are not enforcing the regulations.

In order to address the protection and enhancement where degraded of the groundwater resources of the Sacramento River watershed, it is proposed that a subcommittee of stakeholders be appointed to provide guidance to the other Sacramento River Watershed Toxics Control Program stakeholders on groundwater quality protection in the Sacramento River watershed. It is proposed that this subcommittee be called the "Groundwater Quality Protection Subcommittee." It would have as its primary responsibilities,

- assessing the current groundwater pollution - use impairment that is occurring in the Sacramento River watershed;

- evaluating the significance of the pollution as a threat to the groundwater as well as total water resource availability within the Sacramento River watershed;

- developing guidance on how stakeholders can develop programs to protect and, where degraded, enhance groundwater quality within the Sacramento River watershed;

- provide a framework for proactive groundwater quality protection within the Sacramento River watershed on behalf of the Sacramento River watershed stakeholders in regulatory activities concerned with groundwater quality protection, such as protection of groundwaters from pollution by waste management units, including landfills; municipal and industrial waste ponds and lagoons; stormwater runoff storage and/or infiltration areas; waste disposal systems such as septic tanks; and agricultural activities that result in nutrients and/or pesticide/herbicide pollution of groundwaters;

- develop guidance on the formulation of a groundwater quality monitoring program that is designed to assess current groundwater quality within the Sacramento River watershed and to detect incipient groundwater pollution by all sources through the development of early warning (vadose zone) and upper aquifer monitoring programs; and

- become an active participant with those concerned about the impacts of irrigated agriculture on groundwater quality through the accumulation of salts and nitrate in the groundwaters through formulating programs designed to more effectively manage groundwater pollution associated with agricultural activities than is occurring today.

Additional information on the need for the Sacramento River Watershed Toxics Control Program to include protection and enhancement of groundwater quality in the Sacramento River watershed is available upon request. Comments on this proposal should be directed to G. Fred Lee.

as municipalities, industries and agricultural interests, to protect groundwaters from further pollution, at least the stakeholders within the Sacramento River watershed would become aware of the fact that it is a facade to say that groundwaters within the Sacramento River watershed or for that matter, elsewhere in California, are, in fact, being protected from further pollution. The facts are that, at best, waste management units approved by regulatory agencies today only postpone when further pollution occurs, and there is essentially no regulation of some of the major causes of groundwater pollution that is occurring at a high rate due to certain types of activities, such as irrigated agriculture.

I have prepared several reviews on the need for enhanced groundwater quality protection which I can make available to anyone interested. These include:

Lee, G.F. and Jones-Lee, A., "Water Quality Aspects of Groundwater Recharge: Chemical Characteristics of Recharge Waters and Long-Term Liabilities of Recharge Projects," IN: *Artificial Recharge of Ground Water, II*, Proc. Second International Symposium on Artificial Recharge of Ground Water, American Society of Civil Engineers, NY, pp. 502-511, (1995).

Lee, G.F. and Jones-Lee, A., "Total Dissolved Solids and Groundwater Quality Protection," IN: *Artificial Recharge of Ground Water, II*, Proc. International Symposium on Artificial Recharge of Ground Water, American Society of Civil Engineers, NY, pp. 612-618 (1995).

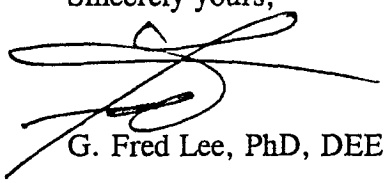
Lee, G.F. and Jones-Lee, A., "Groundwater Quality Protection: A Suggested Approach for Water Utilities," Report to the CA/NV AWWA Section Source Water Quality Committee, 8pp, August (1993).

Lee, G.F. and Jones-Lee, A., "An Approach for Improved Ground Water Quality Protection in California," Proc. 19th Biennial Conference on Ground Water, Are California's Ground Water Resources Sustainable?, University of California Centers for Water and Wildland Resources, University of California--Davis, Davis, CA, p. 155 (1994).

Copies are available from me upon request. The materials could be the starting point of the development of the Groundwater Quality Protection Subcommittee's activities.

Please consider the attached write-up as a draft write-up for consideration by the subcommittee members at a future subcommittee meeting. If you or others have questions about this write-up, please contact me. I welcome any comments that any of the subcommittee members and others may have on it.

Sincerely yours,



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Encl.