CITY OF ROSEVILLE CALIFORNIA

Environmental Utilities
Administration
2005 Hilltop Circle
Roseville, California 95747

March 16, 2009

Mr. Danny McClure
Regional Water Quality Control Board, Central Valley Region
11020 Sun Center Drive, #200
Rancho Cordova, CA 95670-6114

RE: Review and Comment on the Proposed 303(d) Listing of Pleasant Grove Creek, Kaseberg Creek, and South Branch Pleasant Grove Creek for Dissolved Oxygen and Pyrethroid Related Sediment Toxicity, and Dry Creek for Dissolved Oxygen

Dear Mr. McClure:

The City of Roseville (City) has reviewed the basis for the proposed addition of Pleasant Grove Creek, South Branch Pleasant Grove Creek, Kaseberg Creek and Dry Creek for dissolved oxygen on the State's Clean Water Action Section 303(d) List (303(d) List). Similarly, the City has reviewed the basis for the proposed addition of Pleasant Grove Creek, South Branch Pleasant Grove Creek, and Kaseberg Creek for pyrethroid related sediment toxicity on the 303(d) List.

For the reasons summarized below and discussed in greater detail in the enclosed attachment, the City formally requests that Pleasant Grove Creek, Dry Creek, and Kaseberg Creek be removed from the proposed 303(d) List for dissolved oxygen.

- In proposing to list Pleasant Grove Creek and Dry Creek for dissolved oxygen, the Regional Water Quality Control Board, Central Valley Region (Regional Water Board) did not evaluate and include the City's effluent discharge monitoring reports in its implementation of the State Water Resources Control Board's (State Water Board) Listing Policy (Listing Policy). According to the Listing Policy, the Regional Water Board is to use "readily available data," which is defined in the Listing Policy as including receiving water monitoring data from discharger monitoring reports. The City has measured dissolved oxygen at two points on Pleasant Grove Creek and four points on Dry Creek on a weekly basis since 2000. As discussed in greater detail in the enclosed attachment, when this additional data is included, a conclusion to *not list* in accordance with the Listing Policy is achieved.
- The proposed listing of Kaseberg Creek for dissolved oxygen is based on seven discrete measurements over two consecutive days. In fact, six of the seven measurements were gathered on the same day. The primary line of evidence for a proposed listing should not rely on samples collected over a single day, and in fact, the Listing Policy recommends that data in support of a proposed listing be available from two or more seasons.

Similarly, for reasons listed below and discussed in greater detail in the enclosed attachment, the City formally requests that the proposed listing for pyrethroid related sediment toxicity be confined to the reach of Pleasant Grove Creek upstream of Fiddyment Road, and not the entire length of Pleasant Grove Creek, as it is presently proposed.

- In proposing to list Pleasant Grove Creek for pyrethroid related sediment toxicity, the Regional Water Board identifies the entire length of Pleasant Grove Creek for listing. Data used in the listing proposal and data subsequently collected in 2006 and 2007 (discussed in the enclosed attachment) do not support this proposed action. Sources of pyrethroids entering Pleasant Grove Creek are believed to be related to residential land uses. At a point near Fiddyment Road on Pleasant Grove Creek, land use transitions from suburban residential to rural county agricultural. Samples collected downstream of this transition in the agricultural zone show an absence of toxicity, whereas samples upstream of this transition in land use show the presence of toxicity. Based on data collected by Weston et al. (2005) and based on the allowance for defining independent reaches under Section 303(d), it is not appropriate to propose Pleasant Grove Creek for listing in its entirety.

Whereas the City does not measure dissolved oxygen on South Branch Pleasant Grove Creek, the South Branch, although separately named, does reside in the same watershed and is surrounded by the same suburban land uses. Although the data driven line of evidence apparently supports the proposed listing of South Branch Pleasant Grove Creek for dissolved oxygen, in reality that proposed listing is based on as few as 21 samples, fifteen of which were collected on a monthly basis over the 2001 calendar year. The remaining 6 were collected on the same day in October of 2004. Although the proposal to list is strictly based on an implementation of the binomial distribution methodology of Section 3.2 of the Listing Policy, the robustness of such a small and temporally biased dataset call into question the validity of the proposed listing. Dissolved oxygen, particularly in such shallow and heavily urbanized drainages, naturally fluctuates throughout the day and season, and it is not reasonable to expect that monthly grab sampling will adequately describe the overall dissolved oxygen condition. Where dissolved oxygen TMDLs have been prepared on rivers such as the San Joaquin, continuous dissolved oxygen measurements are the standard. On the basis of reasonable doubt, the City respectfully requests that the proposed dissolved oxygen listing of South Branch Pleasant Grove Creek be removed, or at least delayed until additional confirmational monitoring can be conducted.

Finally, the City requests the correction of the clerical error, as described in the enclosed attachment, where data for the South Branch Pleasant Grove Creek at Pleasant Grove Boulevard was assigned to Pleasant Grove Creek, rather than the separately named South Branch Pleasant Grove Creek.

Thank you for the opportunity to comment and we look forward to your response.

Sincerely,

Art O'Brien
City of Roseville, Wastewater Utility Manager

ROBERTSON - BRYAN, INC.
Solutions for Progress

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TECHNICAL MEMORANDUM

Date: March 13, 2009

To: Mr. Arthur O'Brien, City of Roseville - Wastewater Utility

From: Brant Jorgenson
Michael Bryan, Ph.D.

Project: Proposed 303(d) listings on Pleasant Grove and Dry Creeks

Re: Review of RWQCB basis for listing additional constituents on the CWA 303(d) list

On behalf of the City of Roseville (City), Robertson-Bryan, Inc (RBI) has reviewed and assessed the basis and approach used by Regional Water Quality Control Board, Central Valley Region (Regional Water Board) staff for the proposed 303(d) listing of Pleasant Grove Creek, South Branch Pleasant Grove Creek, Kaseberg Creek, and Dry Creek for dissolved oxygen and pyrethroid-related toxicity. This memo provides findings from this review and assessment.

Assessment

Dissolved Oxygen

Clerical Error: Review of data used and referenced in the proposed listing reveals that data collected at the "South Branch @ Pleasant Grove Blvd." monitoring station was aggregated with data for the main stem of Pleasant Grove Creek (Water Body ID CAR5192200020070510150258) when in fact this station is located on the South Branch of Pleasant Grove Creek (Water Body ID CAR5192200020070510153551). This error, although needing correction, has no bearing on the outcome of the whether to list or not list.

Readily Available Data: Section 6.1.1 of the State Water Board's Listing Policy defines "readily available data" as including "Water quality problems and existing and readily available water quality data and information reported by local, state and federal agencies (including *receiving water monitoring data from discharger monitoring reports*)…" (SWRCB 2004; emphasis added). Review of data used in the proposed listing of Pleasant Grove and Dry Creeks did not include receiving water monitoring data collected by the City. Under the directive of the City's NPDES permits, Pleasant Grove and Dry creeks have been monitored weekly for dissolved oxygen at various specified locations upstream and downstream of effluent discharge (**Table 1**). Weekly dissolved oxygen measurements on these creeks is available as far back as January 2000, all of which has been submitted to the Regional Water Board as regular discharger monitoring reports as required in the respective NPDES permits. Samples have been collected under the direction of a City-maintained quality assurance and control plan and in a consistent manner since calendar year 2000 (samples collected and analyzed by SM 4500-O).

Table 1: City of Roseville Receiving Water Monitoring Stations

Monitoring Station	Dry Creek	Pleasant Grove Creek
RSW000	1,000 feet upstream of outfall	NA
RSW001	200 feet upstream of outfall	200 feet upstream of outfall
RSW002	200 feet downstream of outfall	200 feet downstream of outfall
RSW003	1 mile downstream of outfall	NA

When this additional and readily available data is added to the data sets used for the proposed listing of Pleasant Grove and Dry creeks, the conclusion is to *not list*. In fact, under various scenarios limiting the data based on spatial proximity or to the solicitation period, the conclusion is always to not list (**Table 2**).

Temporal Representation: Data used in support of a proposed listing decision must be temporally independent (Section 6.1.5.3 of State Water Resources Control Board (State Water Board) 303(d) listing policy). Data originally used by Regional Water Board staff for Pleasant Grove Creek, South Branch Pleasant Grove Creek, and Dry Creek are temporally independent; however, dissolved oxygen data used by Regional Water Board staff in the proposed listing of Kaseberg Creek clearly are not. Of the seven samples gathered from the SWAMP database and used in the proposed Kaseberg Creek listing, six were measured on September 24, 2004, and a single sample was measured on September 25, 2004. The majority of data (six out of seven) were collected on the same day. Such a temporally dependent dataset should not be used as the primary line of evidence supporting a proposed listing (See Section 6.1.5.3 of State Water Board 303(d) listing policy). The City does not monitor dissolved oxygen on Kaseberg Creek, so the dataset cannot be expanded as it can on Pleasant Grove and Dry Creeks.

Pyrethroids

Readily Available Data: Data for the listing of Pleasant Grove Creek, South Branch Pleasant Grove Creek, and Kaseberg Creek are referenced to a single published source. The article "Aquatic Toxicity Due to Residential Use of Pyrethroid Insecticides" published in the scientific journal *Environmental Science and Technology* (Weston *et al.* 2005) details the presence and absence of observed sediment toxicity related to pyrethroid insecticides on various reaches of these creeks.

Spatial Representation and Aggregation of Data: A contiguous named water body can often be broken into distinct reaches based on conditions of hydrology, introduction of a major point source,

Table 2: Listing Determination for Dry and Pleasant Grove Creeks Under Various Data Inclusion Scenarios

Scenario of Data Inclusion /a/	Total No. Samples	Total No. Excursions	Threshold /b/	Conclusion
Dry Creek				
Scenario 1: All Stations All Available Data (Jan 2000 – Feb 2009)	1916	146	320	**Do Not List**
Scenario 2: All Stations (Avg. RSW001 and RSW002) All Available Data (Jan 2000 – Feb 2009)	1436	117	239	**Do Not List**
Scenario 3: All Stations (Exclude RSW002) All Available Data (Jan 2000 – Feb 2009)	1436	124	240	**Do Not List**
Scenario 4: All Stations 303(d) Listing Date Range (Jan 2000 – Feb 2007)	1552	140	259	**Do Not List**
Scenario 5: All Stations (Avg. RSW001 and RSW002) 303(d) Listing Date Range (Jan 2000 – Feb 2007)	1176	112	196	**Do Not List**
Scenario 6: All Stations (Exclude RSW002) 303(d) Listing Date Range (Jan 2000 – Feb 2007)	1176	119	196	**Do Not List**
Pleasant Grove Creek				
Scenario 1: All Stations All Available Data (Jan 2000 – Feb 2009)	1015	84	169	**Do Not List**
Scenario 2: All Stations (Avg. RSW001 and RSW002) All Available Data (Jan 2000 – Feb 2009)	535	54	89	**Do Not List**
Scenario 3: All Stations (Exclude RSW002) All Available Data (Jan 2000 – Feb 2009)	535	61	89	**Do Not List**
Scenario 4: All Stations 303(d) Listing Date Range (Jan 2000 – Feb 2007)	807	81	134	**Do Not List**
Scenario 5: All Stations (Avg. RSW001 and RSW002) 303(d) Listing Date Range (Jan 2000 – Feb 2007)	431	52	72	**Do Not List**
Scenario 6: All Stations (Exclude RSW002) 303(d) Listing Date Range (Jan 2000 – Feb 2007)	431	59	72	**Do Not List**

/a/ Scenarios were developed around date range and spatial proximity of sample locations for purposes of comparison. Scenarios averaging RSW001 with RSW002 or excluding RSW002 did so on the basis of Section 6.1.5.2 of the State Water Board 303(d) listing policy (i.e., samples less than 200 meters apart are considered samples from the same station). However, it is reasonable to consider samples less than 200 meters apart as spatially independent when these stations are bisected by a continuous point source discharge, as is the case with Roseville's monitoring stations at RSW001 and RSW002. Date range limited scenarios either include 1) all SWAMP and Roseville data from Jan 2000 to Feb 2009, or 2) all SWAMP and Roseville data available during the RWQCB solicitation period (Jan 2000 to Feb 2007).

/b/ Threshold is based on Table 3.2 of State Water Board 303(d) listing policy (binomial distribution for numeric water quality objectives for conventional pollutants as expanded by the pertinent footnotes for sample sizes greater than 121).

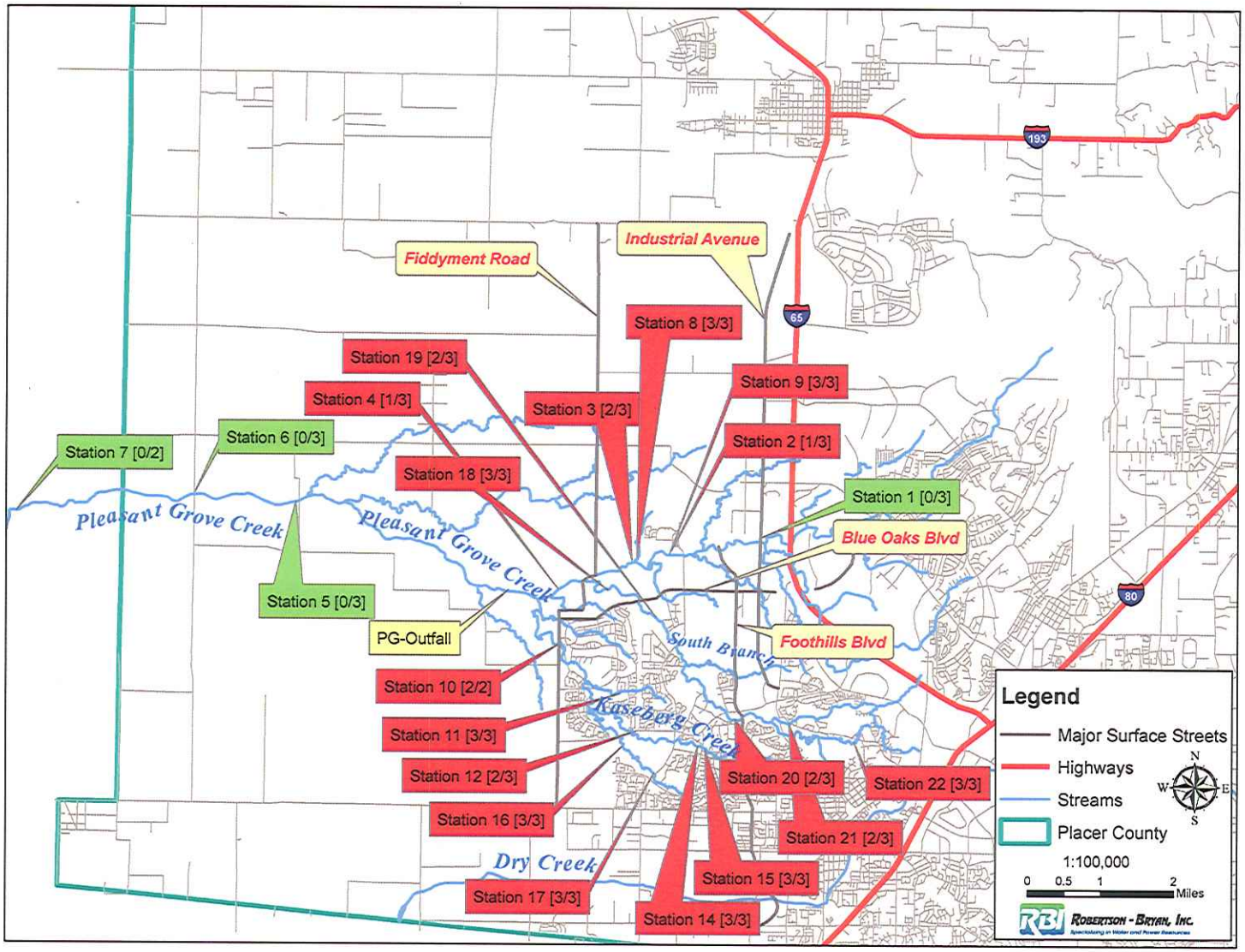

Figure 1: Frequency of samples with a sum of pyrethroid toxicity units (TU) greater than 0.5. Red indicates at least one sample with a TU > 0.5 and green indicates no sample with a TU > 0.5. [No. Samples with TU > 0.5 / Total No. of Samples]

and land use (Section 6.1.5.4 of the State Water Board 303(d) listing policy). The City discharges treated effluent to Pleasant Grove Creek at the point indicated on **Figure 1**, downstream from the confluence of Kaseberg and South Branch of Pleasant Grove Creek. At the location of if the City's discharge, the surrounding land uses transition from suburban to rural agricultural. In fact, the wastewater discharge not only marks a distinct transition in hydrology related to the introduction of a continuous point source discharge, but also between suburban and agricultural land uses. As presented in Figure 1, and as discussed in Weston et al. (2005), pyrethroid-related sediment toxicity is primarily sourced to points of suburban stormwater discharge. Statistically significant toxicity is absent downstream of the suburban/agriculture transition.

Presently, the whole of Pleasant Grove Creek and its named branches have been proposed for listing due to pyrethroid related sediment toxicity (approximately 33.7 miles). The data referenced by Regional Water Board staff (i.e., Weston *et al.* (2005)), do not support this proposed listing in its entirety. Where precedent exists (numerous contiguous water ways are segmented into distinct reaches) and State Water Board guidance allows, listing of Pleasant Grove Creek and its named branches should be limited to that point above the confluence of Kaseberg Creek, where the available data supports such a proposed listing.

Temporal Representation: Data supporting the proposed listing of pyrethroid-related sediment toxicity were collected in September and October of 2004. Data is temporally resolved and are considered independent.

Recommendations

Dissolved Oxygen

The City should pursue a reevaluation of the proposed dissolved oxygen 303(d) listing for Pleasant Grove Creek, Kaseberg Creek, and Dry Creek. The Regional Water Board staff involved should use monitoring data collected and submitted under the City's two respective NPDES permits for municipal wastewater discharge. Regional Water Board staff also should correct the clerical errors identified in their fact sheets with regard inclusion of "south branch @ Pleasant Grove Blvd." data with the Pleasant Grove Creek main stem. Furthermore, Regional Water Board staff should remove Kaseberg Creek from its proposed dissolved oxygen listing as the temporally dependent data do not support the line of evidence justification presented in the proposed listing fact sheet.

Pyrethroids

The City should pursue a reevaluation of the proposed pyrethroid-related sediment toxicity 303(d) listing for Pleasant Grove Creek. Data do not support the listing of Pleasant Grove Creek in its entirety. Multiple samples collected downstream of Fiddyment Road and the confluence of Kaseberg Creek were found to be absent of toxicity, relative to controls. Furthermore, introduction of the City's continuous discharge and the transition of land uses from suburban to agricultural correlate with this observed absence of toxicity. Based on available data, it would be appropriate to define Pleasant Grove Creek downstream of the confluence of Kaseberg Creek as a distinctively separate reach relative to pyrethroid-related sediment toxicity.

Citations

State Water Resources Control Board (SWRCB). 2004. *Water quality control policy for developing California's Clean Water Act section 303(d) list.* Sacramento, CA. September 2004.

Weston, D. P., R. W. Holmes, J. You, M. J. Lydy. 2005. Aquatic toxicity due to residential use of pyrethroid insecticides. *Environ. Sci. Technol.* 39:9778-9784.