Robert Zatkin
Proposed Enforcement Mechanism for Illegal Diversion

October 12, 2014

State Water Resources Control Board
1001 I Street
Sacramento, CA 95814

Re: Dry Year Report Comments

Members of the Board:

Following from the Notice of Solicitation Regarding Improvements to the Implementation and Enforcement of Water Rights During Drought Conditions, dated September 10, 2014 and signed by Jeanine Townsend, Clerk to the Board, I present in this letter a proposed enforcement mechanism (*hereafter mechanism*) for efficient, cost-effective and indelible regulatory identification of illegal diversion of waters of the State of California. A test of the mechanism can readily be applied to the ocean draining San Gregorio Creek watershed (*hereafter San Gregorio watershed*), an adjudicated watershed located in central coastal San Mateo County. If a test of the mechanism proves effective to reduce illegal diversion the mechanism can be replicated in other ocean draining watersheds south of the Golden Gate in which critical public trust biological resources are dependent on maintenance of stream discharge adequate to maintain critical habitat.

The Mechanism

The mechanism is founded upon — (a) existing technology for measuring stream discharge enabled by U.S. Geological Survey (*hereafter USGS*) telemetry gages and available for no-fee use by the public and (b) the State of California Water Resources Control Board contracting with a commercial entity that provides computer generated alerting services through telephony, Web email and smart phone text messaging. A real world example of such services are those utilized by the petroleum refining industry and municipalities on the south shore of the Suisun Bay-Carquinez Strait-San Pablo Bay area of the San Francisco Bay estuary. In the event of a release of hazardous materials to the environment by a refinery, residents and business in the vicinity of the release are notified by way of computer-generated messaging that a release has occurred and are ordered, or advised, to shelter-in-place, or otherwise.

The USGS San Gregorio watershed gage (*hereafter San Gregorio gage*) is located about 1.5 miles upstream from the Pacific Ocean in the hamlet of San Gregorio. The gage collects discharge rate data, transmits the data to a geostationary satellite and the satellite relays the data to a data processing center[1] from which the data is posted to a Web

1. The data collected by the gage is transmitted to a Geostationary Operational Environmental Satellite of the U.S. National Environmental Satellite, Data, and Information Service (NESDIS) operated by National Oceanic and Atmospheric Administration (NOAA). The data is relayed from the satellite to Wallops Island, Mississippi for processing and uploaded into the U.S. Geological Service national system and displayed on a dedicated Web site for the gage.

site[2]. The time lag between recording a stream discharge measurement and the display of the value on the Web site is approximately one hour. The discharge data is the basis for the alerting services noticing parties to the adjudication that they must cease, or may resume, diversion of water.

An entity that provides computer-generated alerting services is Alerting Solutions, Inc.[3] located in Martinez, California. Likely other such entities exist to service the critical messaging needs of the petroleum refining industry.

The alerting service works in concert with the USGS to establish connectivity to the data stream generated by the San Gregorio gage. A telemetered stream discharge gage is an essential component of the mechanism as the data from the gage is the basis for determining if critical discharge flow rates exist in a watershed. In the case of the San Gregorio watershed a critical discharge flow rate is the bypass rate established by court decree for the adjudication[4].

At present the Watermaster[5] for the San Gregorio watershed sends letters through the U.S. Postal Service to notify parties of cessation or resumption of diversion. This approach effectively creates a communication channel in which notification is not in synchroneity with the actual stream discharge rates. The mechanism synchronizes to near-real time notification to parties and stream discharge rates. Following transmission of a bypass discharge rate, enforcement entities of the State of California, for example that of the Division of Water Rights and the California Department of Fish and Wildlife, can be mobilized to the field to walk the stream channel network of the San Gregorio watershed in search of legal diversions occurring during bypass discharge conditions, illegal diversions, and illegal diversion structures. Illegal diverters can be readily identified using GPS technology, map and compass, tracing pipelines upslope from the channel, and other means to correlate the location of an illegal diversion to the illegal diverter.

San Gregorio Watershed – Testing the Mechanism

A field test of the mechanism must be conducted to assure its practicality and efficacy. The San Gregorio watershed is well suited for a field test for the following reasons.

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2. USGS 11162570 SAN GREGORIO C A SAN GREGORIO CA
   http://waterdata.usgs.gov/usa/nwis/uv?11162570
3. Alerting Solutions, Inc.
   837 Arnold Drive., Suite 600
   Martinez, CA 94553
   925.228.2152
   info@AlertingSolutions.com
   www.alertingsolutions.com/welcome.html
4. http://www.waterboards.ca.gov/waterrights//board_decisions/adopted_orders/orders/1989/wro89-07.pdf
5. Stetson Engineers, Inc.
   San Rafael, CA
   http://www.stetsonengineers.com/project/san-gregorio-creek-watermaster/

1. Adjudicated water rights for the watershed for which the Superior Court of San Mateo County decree mandated the following bypass flows[6].

   May 1 – June 15: 10 cubic feet per second (cfs) when the sand bar at the mouth of San Gregorio Creek is open and 2 cfs when the sand bar is closed.

   June 16 – November 30: 2 cfs or the entire stream flow if the streamflow is less than 2 cfs.

2. Populations of Coho Salmon (*Oncorhynchus kisutch*) and Steelhead Trout (*Oncorhynchus mykiss*) are known to exist in the San Gregorio watershed. The former is listed as endangered under the Federal Endangered Species Act, the latter threatened.

3. Designated by NOAA Fisheries Service as a recovery watershed for the Coho Salmon, and likely the Steelhead Trout when the recovery plan for the latter species is finalized.[7]

4. Designated as non-point source coliform bacteria and sedimentation/siltation impaired under mandate of the Federal Clean Water Act, Section 303(d). Per the Act a Total Maximum Daily Load (TMDL) analysis and regulatory oversight is forthcoming from the State of California, San Francisco Bay Regional Water Quality Control Board.[8]

5. The subject of an extensive study, San Gregorio Creek Watershed Management Plan[9], funded by the State Water Resources Control Board, Consolidated Grants Program.

6. A "Critical Coastal Area (CCA) by the California Coastal Commission. Of the 101 CCAs in California, San Gregorio Creek is one of the ten highest priority watersheds based on existing water quality conditions, value and sensitivity of coastal resources, new or expanding threats to beneficial uses, and degree of local support for watershed-based planning efforts."[10]

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6. Dynamic Water Resources Needs in California's Central Coast Watersheds: An Assessment of the Physical and Institutional Challenges of Managing Surface Water Flows While Balancing Human and Environmental Uses
   by Christine Amanada Alford
   Masters Thesis
   University of California at Berkeley, Spring 2010
7. http://www.westcoast.fisheries.noaa.gov/protected_species/salmon_steelhead/recovery_planning_and_implementation/north_central_california_coast/north_central_california_coast_salmon_and_steelhead_recovery_plans.html
8. http://www.waterboards.ca.gov/water_issues/programs/tmdl/2010state_ir_reports/category5_report.shtml
9. http://www.sanmateorcd.org/SanGregorioWMP_final.pdf
10. State of the Critical Coastal Areas, Report 26, January 2006

7. Declared by the State Water Resources Control Board to be a Fully Appropriated stream.[11]
8. A relatively small watershed with easy access to the main stem channels from California State Highway 84.

Moving Forward

At the time I write this letter the discharge value registered by the San Gregorio gage is approximately 2.9 cfs. The attached table illustrates the temporal position of this value relative to the mean of daily mean values for each day of the 35 to 37 year period of record. The mean of daily values for April 22nd for the period of record is 21 cfs, highlighted in dark grey. The mean for 2.9 cfs occurs on July 16th, highlighted in light grey. The present discharge should statistically not occur until July 16th, nearly three months from today, April 22, 2014. This early low stream discharge rate reasonably infers that the discharge will trend asymptotically terminating in zero discharge registered by the gage far earlier in the water year than normally occurs.

A stream discharge of zero will result in adverse affects to beneficial uses of waters of the State. Affects will likely be severe to biological species and their integrated function in ecosystems. Aquatic species, in particular Coho Salmon and Steelhead Trout are of special concern as water chemistry and temperature change with lower discharge. It is possible that these species will be extirpated from the San Gregorio watershed and other watersheds south of the Golden Gate. Affects to the human endeavor will likewise be adverse, include dewatering of domestic, commercial and agricultural groundwater wells, and diminishment of agriculture as riparian water rights are effectively voided due to smaller quantities of water in the channel network. It is noteworthy that if stream discharge declines to zero attempts to test the mechanism may not be possible as illegal diversions may cease owing to a lack of water. As such moving forward expeditiously on the mechanism is of critical importance.

The State of California needs to enable a significantly stronger effort at locating illegal diversion of waters of the State. To this end the mechanism could be applied to other Pacific Ocean draining watersheds that are instrumented with a U.S. Geological Survey telemetered stream discharge gage and;

- have been adjudicated,
- contain critical biological species,
- designated for recovery of critical species,

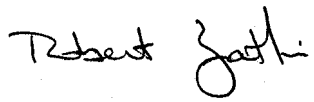
11.http://www.waterboards.ca.gov/waterrights/board_decisions/adopted_orders/orders/1998/wro98-08.pdf
http://www.waterboards.ca.gov/waterrights/water_issues/programs/fully_appropriated_streams/docs/fas_list.pdf and
http://www.waterboards.ca.gov/waterrights/water_issues/programs/fully_appropriated_streams/docs/fas_maps/san_mateo.jpg

- designated a Critical Coastal Area,
- declared a Fully Appropriated stream,
- other criteria.

The State of California is now confronted with great obstacles — the present drought, affects from climate change in particular increased aridity and decreased snow reservoirs, and continual growth of the human population. I believe these obstacles will not be overcome as the most important resource in the State, water will eventually constrain and limit the human enterprise. Though a bleak future may well await us the act of wiser stewardship and use of the water resource – to the benefit of ecosystems, their services and the human enterprise – will to a degree lessen the affects of these converging realities.

Thank you for considering my ideas. I look forward to feedback from the California State Water Resources Control Board.

Sincerely,



Robert Zatkin
Geologist

P.O. Box 139
San Carlos, CA 94070

650.599.9936
robertzatkin@gmail.com