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Victoria Whitney
Chief, Division of Water Rights
State Water Resources Control Board
P.O. Box 100
1001 I Street
Sacramento , CA 95812-0100

RE: Mono Basin draft instream flow recommendations

Dear Ms. Whitney,
The Mono stream scientists are to be commended for the thoroughness of their draft report. Below I raise a few matters that I think should be considered prior to release of the final version. Most of these comments concern certain historic and geomorphic misconceptions; a few address matters of syntax that I think will improve the readability of the text. I offer all of these as constructive criticism, and will be more than happy to discuss them in greater detail with the stream scientists or other interested parties.

Sincerely,

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Re. matters of fact:
Pg. 4, para. 1 says, "Since 1941, the salinity, alkalinity, and water surface elevation [which should be "water-surface elevation," or simply "surface elevation"] of Mono Lake have also been affected by the export of water..." Alkalinity is not like salinity, which concentrates/dilutes in near-direct proportion to changes in lake volume. Mono Lake is buffered at a pH of about 9.8, and so pH changes very little in response to fluctuations in lake volume. Remove the word "alkalinity."

Pg. 11, para. 1, refers to the bottomlands being "braided." By modern definition, the bottomlands channel system is not braided, but rather anabranched. A braided channel tends to be highly dynamic, with position shifts common at the annual (and even sub-annual) time scale. Here is the definition of anabranch (from ESPL Water Resources Res): "A distributary channel which leaves the main channel, sometimes running parallel to it for several kilometers, and then rejoins it; a channel 'separated by vegetated semi-permanent alluvial islands, excised from an existing floodplain, or

formed by within-channel or deltaic accretion' (Nanson and Knighton (1998) *ESPL* **21**, 3)."

Pg. 19, para. 4: This paragraph seems to stem from an incorrect premise--that "at the lake's fringe a delta morphology forms with a network of multiple dominant stream channels." The problem is that deltaic sedimentation, and the formation of a network of anabranching deltaic channels, is not restricted to the lake fringe. Deposition of a delta "at the lake fringe" (such a form is called the "exterior delta") necessitates agradation of the stream and its floodplain--not just at the lake fringe, but headward for a considerable distance (this agraded material constitutes the "interior delta"--its length is typically about 4.5 times that of the exterior delta). Rush Creek's exterior delta extends from just above the county road crossing to the lake; its interior delta extends from just above the county road crossing to the narrows. Importantly, creation of the Rush Creek bottomlands (i.e. the interior delta) did not require that Mono Lake rise into the bottomlands. As long as Mono Lake stood above an elevation of approximately 6400 feet (see below for the significance of that elevation), the Rush Creek exterior delta was prograding, and so the Rush Creek interior delta was agrading.

Pg. 83, Premise No. 3. The opening sentence ("A multiple channel network will not evolve upstream of the Rush Creek County Road") is misleading. I would find it less so if it were written as follows: "The multiple-channel network that presently exists above the county road evolved as a self-sustaining system during times when Mono Lake stood at moderate and high levels (i.e. above 6400 feet). At the relatively low lake levels mandated by the State Water Board, the multi-channel system of the bottomlands will not continue to evolve" (or something along those lines).

Near the end of the paragraph you say that "downcutting precipitated by the downstream shift in delta (during periods of Mono Lake recession) also affects channels ... This was likely happening under pre-1941 conditions." These sentences reflect a misunderstanding of deltaic processes (and their meaning is muddled by the phrase "a downstream shift in delta"). Rush Creek's gently inclined "delta plain" extends lakeward to an elevation of 6400 feet (that number is a measurement, not an estimate). As long as the Mono shoreline (Rush Creek's base level) occupies a position on the delta plain, rises and falls in lake level do not induce channel incision. Such rises and falls do make the stream shorter or longer, but they do not increase the stream gradient. A drop in lake level induces stream incision only when the Mono shoreline drops below the delta plain, thereby exposing the abrupt nickpoint that exists where the delta plain meets the steep "delta front." Mono Lake did not drop below the Rush Creek delta plain (ele. 6400 feet) until 1959. Appreciable stream incision did not come until the high-runoff year of 1967, when LADWP ceased diverting, and Grant Lake spilled.

P. 122, the subsection called "Side-channel maintenance": I think that this should be called "Maintenance of the multiple-channel systems." My reason for thinking this is that a "side channel" of today could easily be the "main channel" tomorrow, just as Rush Creek Channel 10 (today's main channel) used to be a side channel. Distinguishing between side channels and main channels is not important. What is important is that multiple channels be maintained. I would suggest that the terms "side channel" and

"main channel" be scrapped, and that individual bottomlands channels simply be referred to by number.

P. 123 refers to "catastrophic bedload mobilization ... as occurred in the 1960s." The problem in the 1960s was not that the walls or beds of the channels in the bottomlands were mobilized (though clearly this did occur low-down in the bottomlands, due to wholesale incision). The problem was that the Marzano quarry operation had piled thousands of cubic meters of quarry waste into the middle of the Rush Creek channel a few hundred meters upstream of the narrows. When the flood waters of 1967 poured down Rush Creek they carried all that quarry waste through the narrows and into the bottomlands. It is that quarry waste that plugged the entrances to, and in some cases completely filled, the bottomlands channels. (Deprived of access to these previously-existing channels, the flood waters carved a new "main channel" immediately below the narrows; and it was that same quarry waste that effaced the existing channel immediately above the narrows.)

Additionally:
Overall, the report is quite well written. A few places could use a little help:

There are many two-word adjectives that, without being hyphenated, are ambiguous. Just a few of the instances include "runoff year types" (change to "runoff-year types"); "multiple channel network" (change to "multiple-channel network); "desert patch types" (I'm not sure if this should be desert-patch types, or desert patch-types); "low water column velocity" (I'm not sure whether this should be "low-water column velocity," "low water-column velocity," low-water-column velocity," or low-water column-velocity"); "large wood transport experiments" (change to "large-wood transport experiments," or to "large wood-transport experiments" if it was the experiments that were large); and greenhouse gas concentration (change to "greenhouse-gas concentration).

The word "comprised" is used three times in the report. In all instances it should be changed to "composed." Sorry.

Pg. 31, last para. in column 1: "... supporting large brown trout [insert such as] Order 98-05 desires..."

Pg. 37, last para: "Parker and Walker creeks will remain unimpaired below the LV conduit." This needs to be clarified. Specifically, are they, or will they be, impaired above the LVCon?