

## ATTACHMENT 3

STATE OF CALIFORNIA  
CENTRAL COAST REGIONAL WATER QUALITY CONTROL BOARD  
895 Aerovista Place, Suite 101  
San Luis Obispo, CA 93401-7906

### PUBLIC COMMENTS AND STAFF RESPONSES FOR

#### Amending the Water Quality Control Plan for the Central Coastal Basin to Update the Turbidity Water Quality Objective Units of Measurement from Jackson Turbidity Units (JTU) to Nephelometric Turbidity Units (NTU), Resolution No. R3-2017-0014

Central Coast Regional Water Quality Control Board (Central Coast Water Board) staff posted for public comment the proposed amendment to the Water Quality Control Plan for the Central Coastal Basin (Basin Plan) to update the turbidity water quality objective units of measurement from Jackson Turbidity Units (JTU) to Nephelometric Turbidity Units (NTU). Public notice of this proposed amendment to the Basin Plan provided interested parties a public comment opportunity preceding a Central Coast Water Board hearing regarding this matter. The public comment period for the proposed Basin Plan Amendment commenced on April 19, 2017, and extended through May 19, 2017.

Central Coast Water Board staff received one comment letter from Ms. Sarah G. Lopez, Technical Program Manager, Central Coast Water Quality Preservation Inc., in an email attachment received May 19, 2017. The "Comments and Staff Responses" section below provides responses to Ms. Lopez's comments. Note that we reproduced direct transcriptions of the comments and inserted staff responses using **bold**, **blue**, **italic text**.

Central Coast Water Board staff discussed the comments with Ms. Lopez via conference call and email exchange. Central Coast Water Board staff appreciates the comments provided by Ms. Lopez. The comments have prompted us to clarify and improve the Staff Report and Basin Plan Amendment Technical Memo. Staff revised the Staff Report and the Basin Plan Amendment Technical Memo sections 1, 6, and 8 as noted herein.

#### Comments and Staff Responses

##### **Ms. Sarah G. Lopez, Technical Program Manager, Central Coast Water Quality Preservation Inc.,**

##### **1. Ms. Sarah G. Lopez, Central Coast Water Quality Preservation Inc.**

Thank you for the opportunity to comment on the proposed Basin Plan Amendment: Updating the Basin Plan Turbidity Water Quality Objective Units of Measurement.

We concur with the Staff Report statement that "JTU measurement methods are outdated and less accurate than NTU measurement methods," and we support the effort being made to

update the turbidity water quality objective to a modern unit of measurement. We also support the selection of "NTU" as the new unit.

***Staff Response: Thank you for reviewing the Basin Plan amendment and your support for the updating the turbidity water quality objective to NTU, a more modern unit of measurement.***

**2. Ms. Sarah G. Lopez, Central Coast Water Quality Preservation Inc.**

We are concerned, however, with the conclusion that this is a "non-substantive change." In short, we feel this conclusion has not been sufficiently documented.

More specifically, we are concerned about changing "JTU" to "NTU" without adequate citation of literature demonstrating the comparability between the two units. On page 11, the Technical Memo attachment mentions that, "The statement by USEPA in the 1983 publication that JTU and NTU are comparable units of turbidity measurement is central to the staff finding that the recommended Basin Plan amendment is a non-substantive change." In fact, the 1983 USEPA publication cited does not discuss similarities or differences between NTU's and JTU's. Nor does it discuss or cite any research supporting the statement that NTU's and JTU's are similar. It merely states in a note (without providing any citation), that "NTU's are considered comparable to the previously reported Formazin Turbidity Units (FTU) and Jackson Turbidity Units (JTU)."

We feel strongly that the comparability (and indeed, interchangeability) of JTU's and NTU's must be rigorously documented via citation of supporting scientific literature. Absent this, we feel there is nothing to support the conclusion that this is a non-substantive change. We suggest that additional citations and discussion be added to the Technical Memo to address this.

***Staff Response: In her comment, Ms. Lopez states that the Central Coast Water Board has not sufficiently documented (via citation of supporting scientific literature) the comparability (and interchangeability) between JTU and NTU and therefore has not documented the conclusion that the Basin Plan amendment is a "non-substantive change." In response to this comment, staff has added additional clarifying language to the Staff Report as well as the Basin Plan Amendment Technical Memo sections 1, 6, and 8.***

***Staff's did not base their conclusion that the proposed Basin Plan amendment is a change without regulatory effect on an assertion that measurements taken with a Jackson candle turbidity meter (reported as JTU) and measurements taken with a nephelometric turbidity meter (reported as NTU) are interchangeable. Staff bases their conclusion on historical evidence that shows that the switch in USEPA standardized methods from using a Jackson candle turbidity meter to a nephelometric turbidity meter occurred prior to 1971 (even though the standardized methods continued to call the output JTU until 1983) and our Basin Plan and permits that utilize turbidity objectives were all developed after 1971. As described in more detail below, we therefore conclude that replacing the JTU terminology in the Basin Plan to NTU is a non-substantive change.***

*The 1971 USEPA standard methods (see Attachment A) prescribed the use of nephelometric meters, which are the basis of NTU, to measure turbidity but stated the reporting of units of measurement as JTU (USEPA, 1971). Subsequently In 1983, USEPA updated the turbidity methods (see Attachment B) requiring the use of the same nephelometric meters and methods but changing the units of measurement to NTU (USEPA, 1983). As noted by Ms. Lopez, USEPA states in its 1983 monitoring protocol that NTU are considered comparable to the previously reported JTU. Both the 1971 and 1983 USEPA monitoring methods prescribe the use of identical nephelometric meters and nearly identical procedures but have different names for the outputs and reporting (reported as JTU in 1971 and as NTU in 1983).*

*In relation to water quality standards, the Central Coast Water Board established the turbidity objectives in the original 1975 Basin Plan, which was when USEPA recommended NPDES (National Pollutant Discharge Elimination System) permittees (through the 1971 USEPA standard methods) to monitor turbidity using nephelometric meters but report the units as JTU. The use of JTU to assess turbidity water quality in 1975 was consistent with permit requirements. Inconsistencies arose however, in 1983 when USEPA changed the unit of measurement from JTU to NTU but the Central Coast Water Board did not update the turbidity objective in the Basin Plan from JTU to NTU. Although the Central Coast Water Board did not update the turbidity objective from JTU to NTU, the Central Coast Water Board moved forward with adopting permits and orders that required turbidity limits, monitoring, and reporting as NTU. NTU is still the current regulatory standard and updating the turbidity objective to NTU will have no regulatory effect on existing permits and orders. Even though the Central Coast Water Board did not update the turbidity objectives from JTU to NTU, most other regions in the state did, and since the regulated community has been using NTUs for decades as applied to the turbidity objective as currently written, the issue of JTU versus NTU is moot. That is, the regulated community will experience no difference.*

## References

Central Coast Regional Water Quality Control Board. 1975. Water Quality Control Plan Report, Central Coastal Basin.

U.S. Environmental Protection Agency (USEPA). 1971. Methods for Chemical Analysis of Water and Wastes.

U.S. Environmental Protection Agency (USEPA). 1983. Methods for Chemical Analysis of Water and Wastes.

United States Geologic Survey (USGS). 2006. National Field Manual for the Collection of Water-Quality Data (TWRI Book 9). Chapter A6 Field Measurements, Conversion Factors. <https://water.usgs.gov/owq/FieldManual/Chapter6/conversion.html>

World Health Organization (WHO). Turbidity Measurement - The importance of measuring turbidity, Fact Sheet 2.33. [www.who.int/water\\_sanitation\\_health/hygiene/emergencies/fs2\\_33.pdf](http://www.who.int/water_sanitation_health/hygiene/emergencies/fs2_33.pdf)

**Attachments:**

- A. USEPA 1971 Methods for Chemical Analysis of Water and Wastes – Turbidity Methods (excerpt)
- B. USEPA 1983 Methods for Chemical Analysis of Water and Wastes – Method 180.1: Determination of Turbidity by Nephelometry (excerpt)