

## **Making Sense of Turbidity Measurements – Advantages In Establishing Traceability Between Measurements and Technology**

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### **Biographical Sketch of Author**

Mr. Sadar has over 14 years experience in the research, development, and application of turbidity and particle analysis technologies as applied to environmental waters. He is a well-known authority on turbidity and membrane technology, has authored several papers on the science of turbidity and its applications, and serves on several American Society for the Testing of Materials (ASTM) sub-committees related to turbidity and suspended sediments measurement. Mr. Sadar received his Bachelor of Science degree in analytical chemistry from Colorado State University in 1988.

### **Abstract**

While turbidity is well recognized as a key indicator of water quality in stream and watershed monitoring, the platforms employed to detect and quantify turbidity yields diverging results. The measurement of turbidity is highly influenced by the instrument's use of radiant incident-light and scattered light detection angle. Further, the accuracy of measurement is subject to particle shape and size, its distribution in a water sample, morphology, and color. As a consequence, interpretation of turbidity values can be perplexing, leading to under- or overstating of measurement values.

Historically, the collection of turbidity data is logged and interpreted without knowledge or trace to the type of platform used and its bias to the measurement. To reconcile this problem, the USGS and ASTM D-19 technical subcommittees on high-level turbidity have begun re-structuring turbidity reporting to lend traceability to the type of platform used in performing the measurement.

The purpose of this paper is to present an overview as to the variety of turbidity measuring platforms used in stream monitoring and to categorize them into equivalent or like measuring units. The value of understanding the difference and bias for each measuring platform should lead to a better interpretation of turbidity as it is related to water quality. The traceability to the technology will provide for better data comparability from a historical perspective.