STATE OF NEW MEXICO
COUNTY OF SAN JUAN
ELEVENTH JUDICIAL DISTRICT COURT

STATE OF NEW MEXICO, *ex rel.*
THE STATE ENGINEER,

Plaintiff,

vs.

THE UNITED STATES OF AMERICA, *et al.*,

Defendants.

AB-07-1
Claims of Navajo Nation

No. CV 75-184
Honorable James J. Wechsler
Presiding Judge

DESCRIPTIVE SUMMARY: The court and all the parties need a convenient table of agreed water measurements and conversion factors.

NUMBER OF PAGES: 2 + 3 pages of exhibits

DATE OF FILING: April 29, 2013

REPLY ON REQUEST FOR ADMISSION CONCERNING WATER UNITS OF MEASUREMENT

The State of New Mexico, the Navajo Nation, and the United States refuse to admit recognized water units of measurement which are in common use and useful to the court and the parties in this litigation. *See* Exhibit 1.

The need for an agreed set of measurements was demonstrated during the deposition of Mr. Lionel Haskie on March 26, 2013. Haskie Dep. at 17-18, attached as Exhibit 2. Mr. Haskie was explaining that the canal system at NIIP includes siphons which are pressurized by the weight of water. So he was asked about the approximate weight of a cubic foot of water. He responded as follows:

Q. . . . And so what's the approximate weight of, say, a cubic foot of –
A. I don't know.
Q. Okay.
A. I don't know. I'd have to use my cheat sheets, and I don't have my cheat sheets here with me.

Like Mr. Haskie, the court and the parties need a "cheat sheet" with units of measurement and conversion factors for use in this case.

Respectfully submitted,

VICTOR R. MARSHALL & ASSOCIATES, P.C.

By /s/ Victor R. Marshall

Victor R. Marshall
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CERTIFICATE OF SERVICE

I hereby certify that on April 29, 2013, a true and correct copy of the foregoing was served on the parties and claimants by attaching a copy of said document to an email sent to the following list server: wrnavajointerse@nmcourts.gov and to the filing list referred to in the Notice of Amended Service List filed February 25, 2013.

/s/ Victor R. Marshall
Victor R. Marshall, Esq.

WATER UNITS OF MEASUREMENT

A. 1 cubic foot of water = 7.48 U.S. fluid gallon
= 62.3 pounds (varies slightly depending on pressure, temperature, etc.)

B. 1 acre = 43,560 square feet

C. 1 acre-foot of water = 43,560 cubic feet of water (enough water to cover 1 acre to a depth of 1 foot)
= 325,829 gallons
= 2,713,788 pounds

D. 1 cubic foot per second = 60 cubic feet per minute = 3,600 cubic feet per hour
= 86,400 cubic feet per day = 1.983 acre-feet per day

E. 1 year = 365.25 days = 31,557,600 seconds (A common "year" unit in scientific practice is a year of exactly 365.25 days, based on a day of exactly 86,400 seconds.)

F. 1 cfs per year = 724.46 acre-feet per year
= 31,557,600 cubic feet per year = 236,050,848 gallons per year

G. Miner's inch – unit of flow per unit of time

1/50 cubic foot per second (566 milliliters per second) in southern California, Idaho, Kansas, Nebraska, New Mexico, North Dakota, South Dakota, Utah, Washington.
1/40 cubic foot per second (708 milliliters per second) in Arizona, northern California, Montana, Nevada, Oregon.
1/38 cubic foot per second (745 milliliters per second) in Colorado.

EXHIBIT
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Kendra Tellez Court Reporting, Inc.

IN THE MATTER OF:

STATE OF NEW MEXICO, ex rel. THE STATE ENGINEER v. THE UNITED STATES OF AMERICA, ET AL.

LIONEL HASKIE

March 26, 2013

EXHIBIT 2

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It's an open channel, but it's rectangular in geometry and it's designed to measure the flow of water.
Q. Okay.
A. And that flow is measured and transmitted by radio to the Bureau of Reclamation office, the Navajo Unit, and it's also transmitted to the NAPI control center at the NAPI headquarters.
Q. Okay.
A. And the measurement of flow is recorded hourly by both entities.
Q. After it goes through that measurement, what happens to the water?
A. Oh, well, it continues -- continues downstream. It crosses Gobernador Wash through a siphon and then it enters a short length of open canal, approximately 400 feet, and then it goes into Tunnel 2.
Q. Okay. Now, what's a siphon?
A. A siphon is a pressurized pipe that -- it's just a circular pipe and it's -- it -- we use it to cross washes and it's designed to be pressurized. The head pressure on the upstream pushes the water through to the downstream.
Q. Is that the pressure of gravity at this point on this siphon?
A. Yes, pressure of --

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Q. Okay.
A. -- head pressure. It's the weight of water.
Q. Okay. What is the weight of water, approximately?
A. I -- I've always used 1. It depends on the temperature, of course.
Q. What measure have you used usually in your work?
A. The room temperature, 76 degrees, and I've always used a factor of 1. So...
Q. Okay. A factor of 1 meaning?
A. That's a -- it's a unit. It's a unit -- the unit weight of water.
Q. Okay. So you do it at room temperature. And so what's the approximate weight of, say, a cubic foot of --
A. I don't know.
Q. Okay.
A. I don't know. I'd have to use my cheat sheets, and I don't have my cheat sheets here with me.
Q. Let me make a note. I'm going to make a note of things that we'd appreciate getting. And I'd like to see your cheat sheets just to probably use the figures that you used.
Okay. What happens -- after the siphon across Gobernador Wash, what happens to it generally?

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A. Well, it goes -- like I said, it goes through approximately 400 linear feet of open canal, concrete canal into Tunnel 2.
Q. And how long is Tunnel 2 approximately?
A. Approximately six miles.
Q. All right.
A. And that takes us about a mile-and-a-half upstream of Cutter Reservoir.
Q. Okay.
A. From the outlet of Tunnel 2, water is conveyed through a -- an unlined channel, and it doesn't have a specific -- any specific geometry to it. It's unlined. And that goes for about a mile-and-a-half.
Q. All right.
A. Approximately a mile-and-a-half into Cutter Reservoir. Then downstream of Cutter Reservoir is the --
Q. What does Cutter Reservoir consist of, and what does it do?
A. Cutter Reservoir is a regulating reservoir, a secondary regulating reservoir. It's used to provide the daily -- the daily to weekly uses of water downstream.
Q. And what's its approximate usable storage capacity?

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A. There's -- there's several different types of usable. There's dead storage, there's full storage, and I -- it varies and I don't know.
Q. Yeah, okay.
A. I don't want to pick out any of those numbers that I don't know.
Q. I've got some documents that describe some of this in more detail, so I wouldn't hold you to that.
Okay. How is it regulated coming out of Cutter Reservoir?
A. There are two -- two structures on the downstream side of Cutter Reservoir; one is the Cutter Dam; the second structure is the NIIP Main Canal inlet, and it's the Cutter headworks.
Q. Okay. If you could -- if you could label that on the diagram.
A. Cutter Dam. And Cutter Dam has an emergency spillway attached to it and the Main Canal inlet, Cutter headworks. And the Cutter headworks consist of one gate. I believe it's a affixed gate.
Q. Okay.
A. I believe it's an affixed gate.
Q. Are there any measuring devices at the NIIP Headworks?
A. Excuse me. The gate at Cutter Reservoir, I'd