

# **ATTACHMENT B**

# **Data Tampering in Cal Am's Water Supply Project**

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## **SOME BACKGROUND INFORMATION**

**According to a CONCUR, Inc. study commissioned by the Coastal Commission in 2014, regarding slant wells, “the long-term performance of the technology has yet to be confirmed.”**

Because of the CDO deadline at the end of this year, **we do not have the time for long-term testing.**

Hired by Cal Am, Geoscience has used a model to **estimate** the long-term performance of slant wells **and** to **evaluate** the accuracy of the model.

WRAMP has discovered **data tampering** in that evaluation.

**Geoscience used relevant information in its model to estimate **water elevation**.**

**Water elevation is important because lowering water elevation near the shore increases **saltwater intrusion**.**

**Error** is the difference between an actual measurement and an estimate of it.

**Tampering with data** means manipulating the data to **reduce the error variation** beyond what the model itself is able to do in order to make a bad model look better.

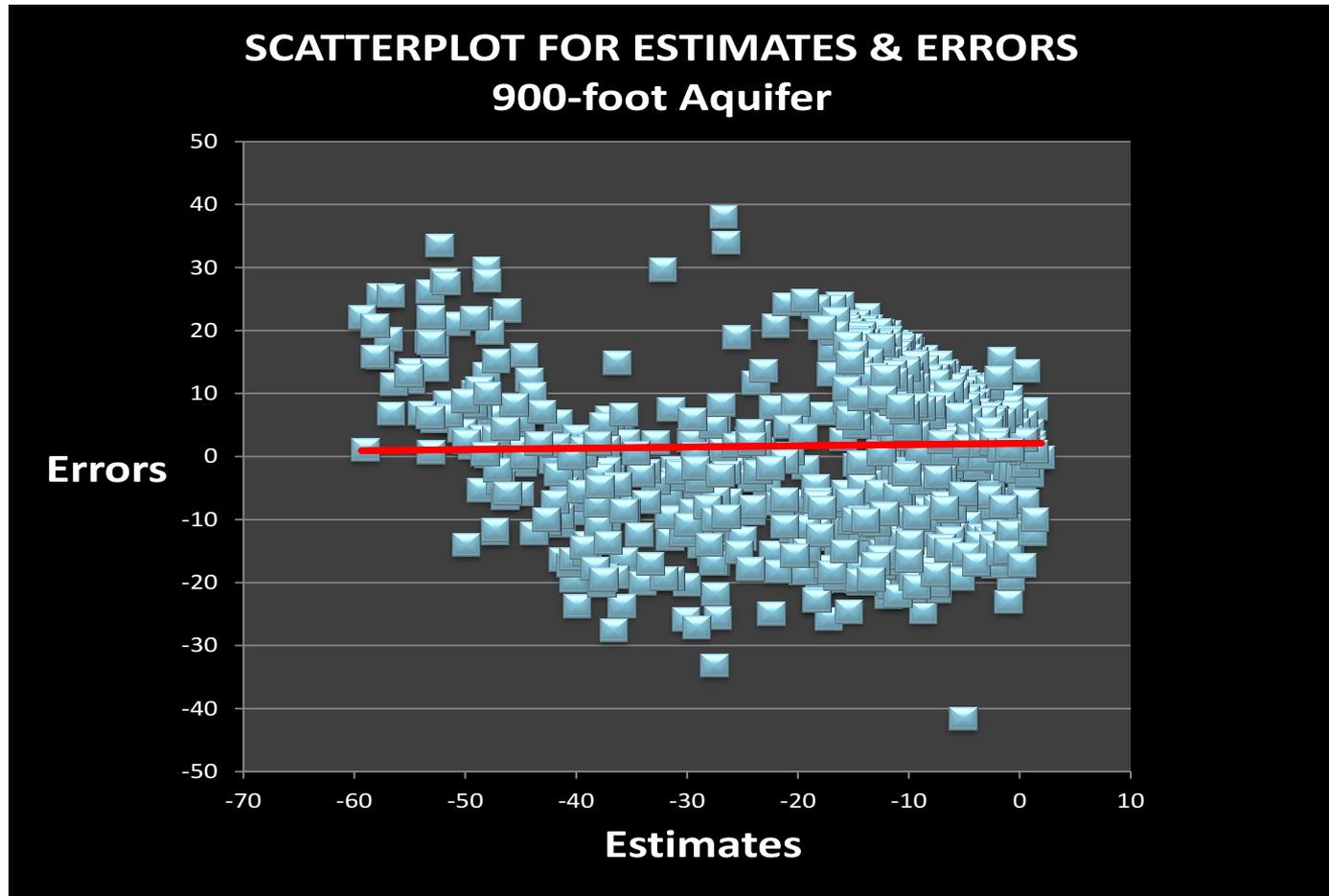
Unless someone tampers with the data, the errors will have **zero correlation** with the estimates, no matter how good or bad the estimates are.

The California Public Utilities Commission provided me data showing Geoscience estimates and errors of over 5,000 actual **water elevation measurements from the 180-, 400- and 900-foot aquifers.**

Cal Am's test well draws its water from the **180-foot and the Dune Sand aquifers.**

We are now going to look at the data for the **180-foot and the 900-foot aquifers**, the 900-foot aquifer first.

# The 900-foot Aquifer Shows No Data Tampering

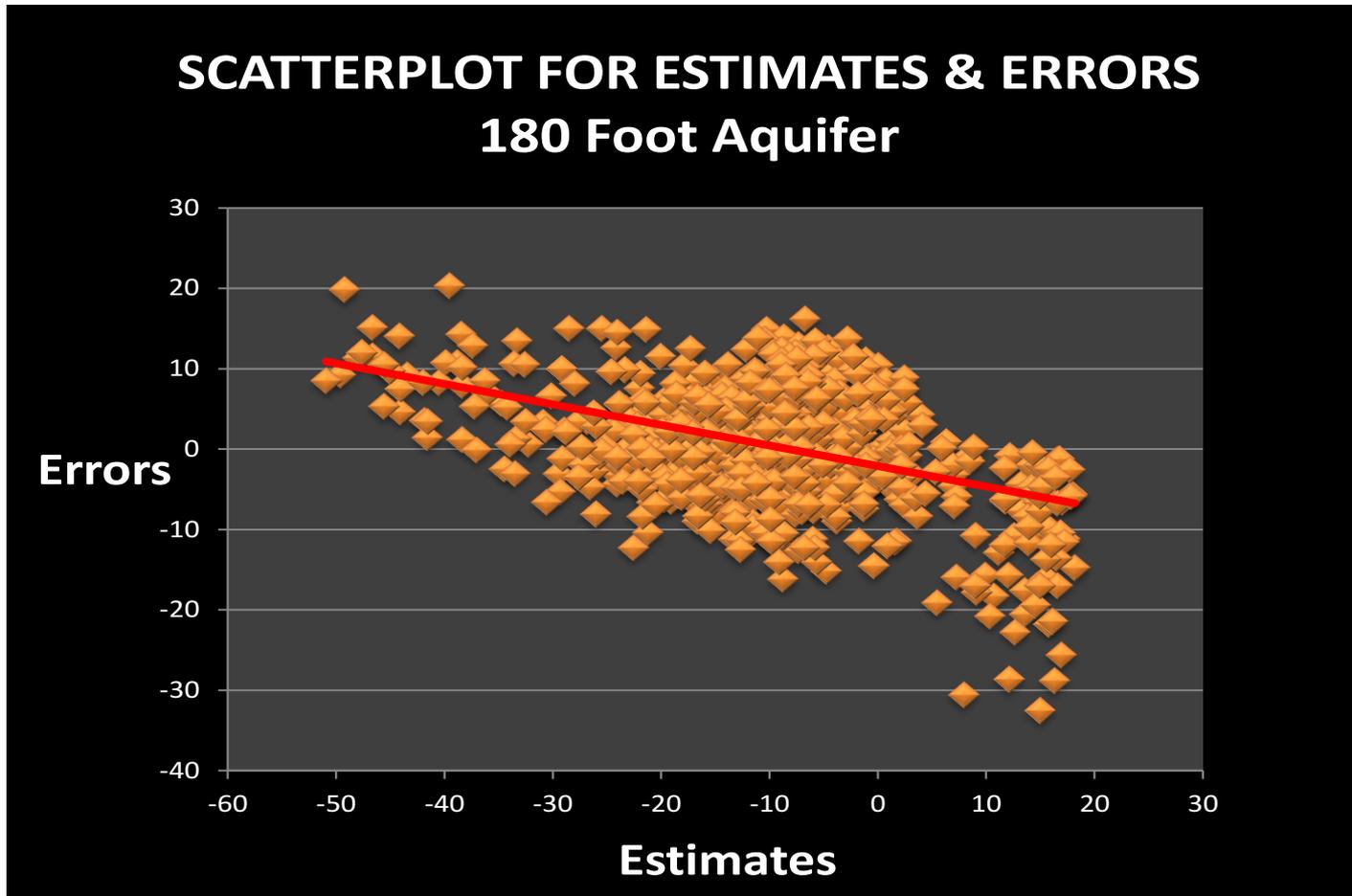


Correlation = 0.02

Relative Error = **14.6 Percent**

Note. Hydrogeologists consider a model to be good if the Relative Error is less than 10.0 Percent.

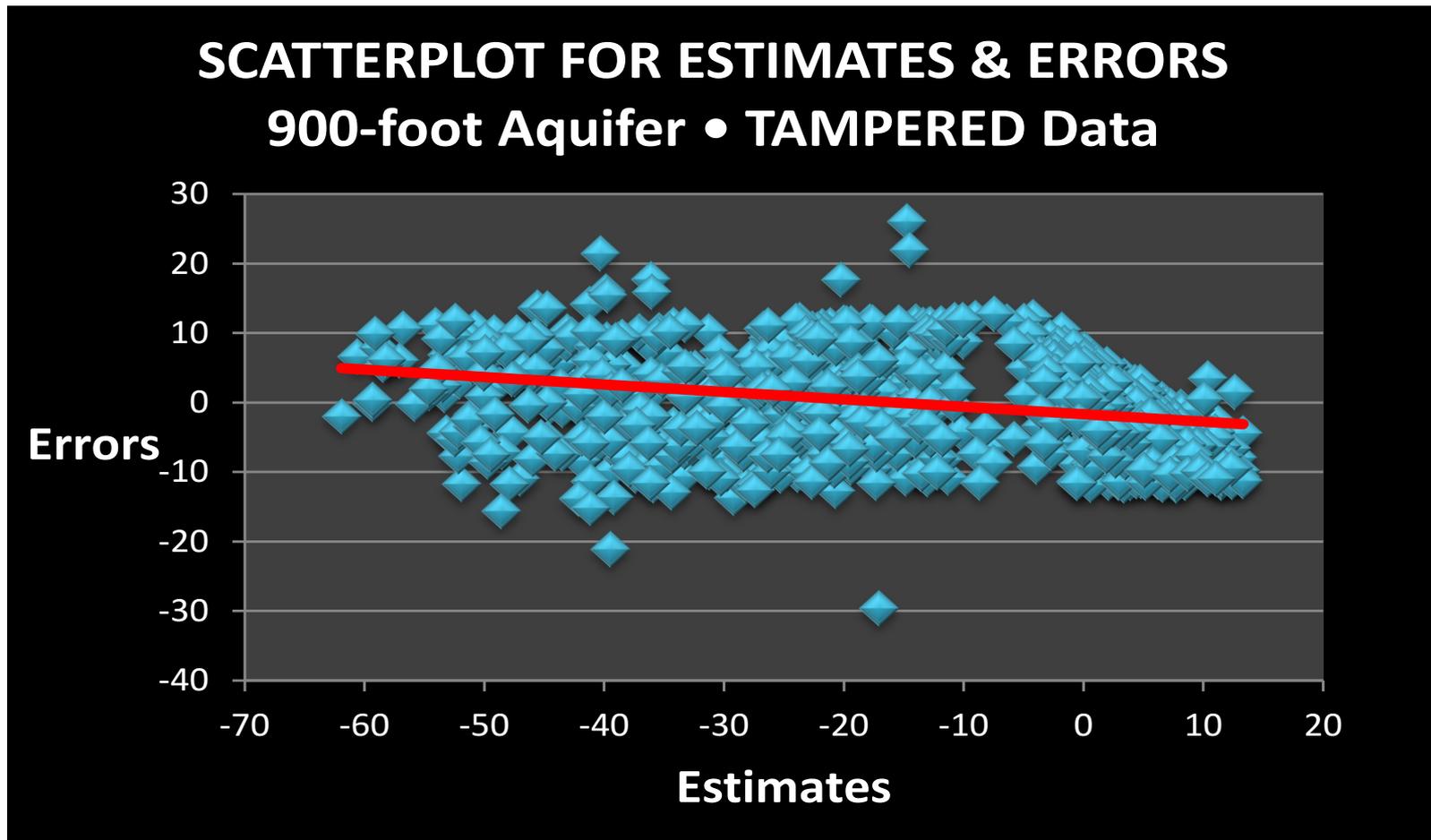
# What Does the 180-foot Aquifer Show?



Correlation = -0.45      Relative Error = **11.2 Percent**

If no data tampering exists, a correlation as far from zero as -0.45 can occur by chance **once in 444 trillion trillion trillion trillion times.**

# Tampering with the 900-foot Aquifer Data Makes a Bad Model Look Good



Correlation = -0.30

Relative Error = 8.5 Percent

Note. Hydrogeologists consider a model to be good  
if the Relative Error is less than 10.0 Percent.