

Formula to convert NAVD 88 to Local Datum

Prior to the doing the survey work this spring, there were at least two formulas in existence for converting elevations in NAVD88 to Local Datum, so there was always some debate about the 1941 Order "normal" in NAVD 88 terms. Heart of the North surveyed two Public Service Commission Benchmarks, one at the Carlson Road Dam and one where Osprey Creek crosses Highway NN, with the following results:

- Benchmark 1127-C at Carlson Road was surveyed to be 1353.42 NAVD 88. This benchmark was recorded in Sawyer County documents to have been set at 85.34 Local Datum. The difference is therefore **1268.08**.
- Benchmark 1127-E on County Highway NN was surveyed to be 1350.71 NAVD 88. This benchmark was recorded to have been set at 82.56 Local Datum. The difference is therefore **1268.15**.

Given the tolerance for the accuracy of survey instruments when these benchmarks were set, combined with the tolerances of the modern GPS equipment used by Heart of the North, it is not unexpected that there is a slight difference in the conversion factors at these two benchmarks. It seems reasonable to pick a number between the two and since **1268.10** is a "nice round number" we will be recommending to the DNR and county that we all adopt it to be the "official datum conversion factor"

The county's book in which the Local Datum elevations for these benchmarks was recorded also has data for each benchmark's elevation in NGVD 29 terms (the precursor to NAVD 88) hand written and dated 1961. This data is consistent with our recommendation to use **1268.10** as a conversion factor.

As you may recall, we have been using SEH's conversion factor of 1267.75, as our basis for converting NAVD 88 to local datum. Therefore we've learned that the 1941 ordered "normal" is actually about 4 1/4 inches higher than we previously thought. Based on the new conversion factor:

- 1941 Order "Normal" = **1345.10**
- 1941 Order "Maximum" = **1345.35**