

## MEASURED August 2007

NAD83/98 from VRS Stations Spokane, Latah, Koot, & Grouse Creek  
 Two 30 minute observations with a different satellite constellation were used for controlling benches.  
 Two 3 minute observations with a different satellite constellation were used for FEMA Benches.  
 GEOID 03 was used to convert HAE to NAVD 88  
 Corpscon 6.0.1 (Vertcon) was used to convert from NAVD 88 to NGVD 29  
 NGVD 29 datum is the 1947 adjustment.  
 Offsets were used when actual bench could not be occupied by GPS.

Measured Values					Published Data		Vertcon Converted			VERTCON	Difference	
Name	North	East	NAVD 88	Description	NAVD 88	NGVD 29	NAVD 88 from Published	NGVD 29 from Published	NGVD 29 from Measured	NGVD 29 to NAVD 88	Published to measured	
<b>1st Order NGS Benches</b>												
A 71	268404.448	2447096.158	2252.427	BRASS CAP	2252.41			2248.558	2248.575	3.852	-0.017	
C 265	369547.322	2472467.641	2195.678	BRASS CAP	2195.75			2191.843	2191.771	3.907	0.072	
D 485	278355.538	2481917.716	2069.424	BRASS CAP	2069.45			2065.654	2065.628	3.796	0.026	
H 265	307567.747	2494511.268	1897.752	BRASS CAP	1897.94			1894.128	1893.94	3.812	0.188	
M 35	210239.497	2540711.637	2593.66	BRASS CAP	2593.63			2589.749	2589.779	3.881	-0.03	
S 506	247766.797	2476639.428	1809.37	STEEL ROD	1809.38			1805.584	1805.574	3.796	0.01	
Y 70	251158.78	2425560.843	2421.944	BRASS CAP	2421.94			2418.042	2418.046	3.898	-0.004	
<b>3rd Order NGS Benches</b>												
19WS1948 Offset	304151.926	2461329.491	1593.54	SPIKE ACROSS ROAD								
19WS1948	correction		0.32	1593.86 Brass Cap (destroyed)		1590.31		1594.172		1589.998	3.862	0.312
20WS1948 Offset	300917.931	2469081.196	1751.167	SPIKE ACROSS ROAD								
20WS1948	correction		1.96	1753.127 Brass Cap		1749.24		1753.098		1749.269	3.858	-0.029
21WS1948 Offset	297436.706	2474378.906	1708.905	MAG Nail								
21WS1948	correction		-3.22	1705.685 Brass Cap		1701.8		1705.652		1701.833	3.852	-0.033
<b>WSDOT Benches</b>												
GP 32090-190	257974.6	2502358.328	1943.552	BRASS CAP	1943.58			1939.781	1939.753	3.799	0.028	
GP 32090-54	276337.213	2572598.654	2064.483	BRASS CAP	2064.58			2060.764	2060.667	3.816	0.097	
NINE MILE	302670.155	2451687.239	1550.234	BRASS CAP		1546.55		1550.372		1546.412	0.138	
PRN 32-15	216105.617	2519117.506	2502.901	BRASS CAP	2502.895			2499.07	2499.076	3.825	-0.006	
PRN 32-16	215288.525	2487978.64	2334.791	BRASS CAP	2334.72			2330.914	2330.985	3.806	-0.071	
<b>Little Spokane Basin</b>												
from Spokane Country Club to the mouth of Little Spokane												
RM 1	SFNF Found possible tree but no spike											
RM 2	No Search											
RM 3	No Search											
RM 5 Offset	304151.926	2461329.491	1593.54	SPIKE ACROSS ROAD								
RM 5	correction		0.32	1593.86 Destroyed Brass Cap		1590.31		1594.172		1589.998	3.862	0.312
RM 5	Bench Destroyed measured to concrete socket and height of granite rail											
RM 6	No Search											
RM 7	No Search											
RM 8	No Search											
RM 9	SFNF											
RM 10	SFNF											

The bench circuit run by Tallamy, Vankuren, Gertis, and Thielman for these benches was presumed to be performed using proper field procedures. This study was done to verify the datum for each basin.

**Hangman Basin**

RM 39 Offset	229563.093	2489931.611	1881.98	MAG Nail					
RM 39	correction	2.23	1884.21	Spike in PP. Not same bench	1882.09	1885.889	1880.411	3.799	1.679
RM 40	SFNF								
RM 41	SFNF								
RM 42	SFNF								
RM 43	220473.22	2495743.095	1910.238	ROCK	1906.5	1910.283	1906.455	3.783	0.045
RM 44 Offset	219852.312	2495503.973	1922.086	MAG Nail					
RM 44	correction	2.31	1924.396	Gate Post has been moved	1919.71	1923.493	1920.613	3.783	-0.903
RM 45	Bench Destroyed Gate has been rebuilt								
RM 46	216808.714	2493094.452	1881.501	X ON CONC	1877.53	1881.319	1877.712	3.789	-0.182

**Country Homes Basin**

RM 58	Bench Destroyed Intersection has been rebuilt								
RM 59	291328.033	2480665.011	1932.035	X ON CONC	1928.42	1932.245	1928.21	3.825	0.21
RM 60	290039.403	2480412.549	1937.496	X ON CONC	1933.87	1937.695	1933.671	3.825	0.199
RM 61	289241.523	2480068.801	1945.705	X ON CONC	1942.04	1945.865	1941.88	3.825	0.16
RM 62	288837.701	2480088.399	1945.785	X ON CONC	1942.22	1946.042	1941.963	3.822	0.257
RM 63 Offset	288541.792	2480013.058	1949.676	MAG Nail					
RM 63	correction	2.78	1952.456	X ON CONC	1948.8	1952.622	1948.631	3.822	0.169
RM 64	287367.956	2479293.819	1962.267	X ON EAST WING WALL	1958.69	1962.512	1958.445	3.822	0.245
RM 65	285947.59	2478983.546	1967.804	PAINT DOT	1964.26	1968.082	1963.982	3.822	0.278
RM 66	284855.76	2478270.134	1980.093	PAINT DOT	1976.53	1980.352	1976.271	3.822	0.259
RM 67	284152.09	2478051.775	1983.841	PAINT DOT	1980.23	1984.049	1980.022	3.819	0.208
RM 68	283950.78	2478000.435	1984.745	PAINT DOT	1981.19	1985.009	1980.926	3.819	0.264

**Saltese Basin**

RM 69	SFNF								
RM 70 Offset	259134.4	2542988.77	2052.096	MAG Nail					
RM 70	correction	1.59	2053.686	Fire Hydrant	2049.95	2053.736	2049.9	3.786	0.05
RM 71	259211.369	2541086.172	2032.674	BENT NAIL	2028.87	2032.653	2028.891	3.783	-0.021
RM 72	SFNF								
RM 73	255579.841	2548134.05	2084.719	ROCK	2081.18	2084.989	2080.91	3.809	0.27
RM 74	SFNF								

**Little Spokane Basin**

from Spokane north to Milan

An office review of this basin verified existing first order NGS benches were used to control the elevations. Additional measurements were considered unnecessary.

**Chester Creek Basin**

A new study is being done on this basin at this time. The basin is being constrained to existing first order benches. Additional measurements are considered unnecessary.



<b>Control Stations</b>	<b>North</b>	<b>East</b>	<b>HAE</b>
Grouse Creek	433070.194	2413821.459	2198.728
Koot	307004.56	2629421.524	2251.371
Latah	124731.934	2550909.715	2414.858
Spokane	246721.755	2461477.007	2280.294

THIS REPORT CORRECTLY  
REPRESENTS A SURVEY MADE BY  
ME OR UNDER MY DIRECT  
SUPERVISION IN AUGUST 2007.

## **Conclusion**

- 1) Little Spokane, Hangman, and Saltese basins are constrained to the 1947 adjustment of NGVD 29 datum.
- 2) Conversions between NGVD 29 and NAVD 88 can be done using the NGS Vertcon program or using the values shown on this report.
- 3) Country Homes Basin is reported to be on NGVD 29, however, this study found it to be on its own local datum.  
0.22 foot must be subtracted from this local datum to equal NGVD 29 datum.
- 4) The conversion of datum from WWP (Avista) datum to NGVD at Long Lake Dam according to their records is based on USGS bench H48 having an elevation of 1370.063.  
A review of NGS Wellpinit Quadrangle third order leveling showed this to be the 1947 adjustment of the NGVD 29 Datum.  
The report from WWP shows WWP datum = NGVD 29 + 1.55.