

# NGS OPUS SOLUTION REPORT

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All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <https://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: DATE: May 20, 2019  
RINEX FILE: 0003135q.19o TIME: 20:07:39 UTC

SOFTWARE: page5 1603.24 master70.pl 160321 START: 2019/05/15 16:34:00  
EPHEMERIS: igr20533.eph [rapid] STOP: 2019/05/15 20:45:00  
NAV FILE: brdc1350.19n OBS USED: 11180 / 12518 : 89%  
ANT NAME: SOK\_GSR2700ISX NONE # FIXED AMB: 76 / 84 : 90%  
ARP HEIGHT: 1.505 OVERALL RMS: 0.015(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2019.3692)

X: -1094383.381(m) 0.008(m) -1094384.302(m) 0.008(m)  
Y: -4470956.607(m) 0.004(m) -4470955.326(m) 0.004(m)  
Z: 4403485.830(m) 0.006(m) 4403485.751(m) 0.006(m)

Note: This OPUS solution is for the drill hole in rock where the GPS receiver was placed for unobscured coverage. From this elevation, 1.190 feet was added to determine the elevation of the bench mark in the trees.

LAT: 43 55 24.59194 0.002(m) 43 55 24.61314 0.002(m)  
E LON: 256 14 44.88475 0.008(m) 256 14 44.83100 0.008(m)  
W LON: 103 45 15.11525 0.008(m) 103 45 15.16900 0.008(m)  
EL HGT: 2180.701(m) 0.008(m) 2179.908(m) 0.008(m)  
ORTHO HGT: **2193.501(m)** 0.016(m) [NAVD88 (Computed using GEOID12B)]  
**7196.511(feet)**

UTM COORDINATES STATE PLANE COORDINATES  
UTM (Zone 13) SPC (4002 SD S)  
Northing (Y) [meters] 4864130.260 182311.735  
Easting (X) [meters] 600009.572 325372.471  
Convergence [degrees] 0.86428056 -2.35989167  
Point Scale 0.99972302 0.99992102  
Combined Factor 0.99938128 0.99957922

**Elevation of Bench Mark**  
**7196.511 + 1.190 = 7197.701**

US NATIONAL GRID DESIGNATOR: 13TFJ0000964130(NAD 83)

### BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DH3858	P042 WHEATLAND_WY2004 CORS ARP	N420305.400	W1045438.096	228397.9
DI2260	P054 TEREKALAKAMT2006 CORS ARP	N455046.833	W1042629.062	220520.0
DI2251	P043 NEWCASTLE_WY2006 CORS ARP	N435252.101	W1041108.484	34999.8

### NEAREST NGS PUBLISHED CONTROL POINT

AC7997 FOUR CORNERS N435501.737 W1034937.668 5899.7