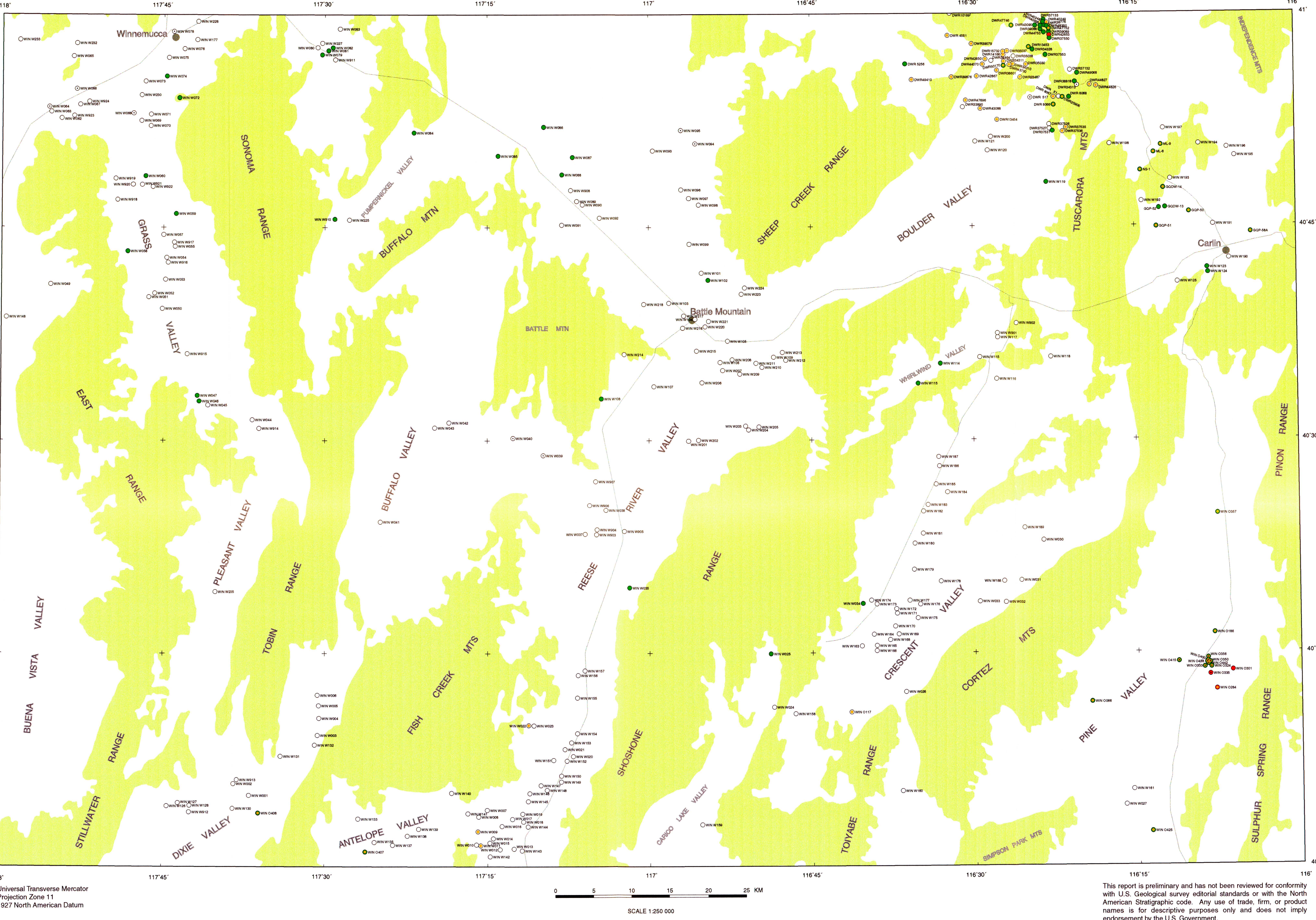


U.S. DEPARTMENT OF THE INTERIOR  
U.S. GEOLOGICAL SURVEY



Universal Transverse Mercator  
Projection Zone 11  
1927 North American Datum

DRILL-HOLE LITHOLOGY MAP OF THE WINNEMUCCA 1:250,000-SCALE QUADRANGLE, NEVADA

BY  
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INTRODUCTION

A drill-hole lithology map of the Winnemucca 1:250,000-scale quadrangle was prepared from publicly available drill-hole data as part of an interagency effort by the U.S. Geological Survey (USGS) and the Bureau of Land Management to help characterize the geology, mineral resources, and hydrology of the Humboldt River basin in north-central Nevada. The Winnemucca quadrangle is located between lat 40° and 41°N, and long 116° and 118°W. Drill-hole lithology data were derived from the most reliable of over 1,000 water, petroleum, and geothermal wells (Garside and others, 1988; Moring, 1990; State of Nevada Division of Water Resources, written commun., 1997). A digital data set of these wells are available on the World Wide Web at <http://wrgis.wr.usgs.gov/docs/gump/ponce/hrb/hrb.html>

DISCUSSION

A total of 322 wells were compiled on the Winnemucca 1:250,000-scale quadrangle (table 1), most of which bottom in Cenozoic alluvial and lacustrine deposits. Data include the following information, if available: identifier, longitude, latitude, ground elevation in ft, depth to top of basalt in ft, depth to top of volcanic rocks other than basalt in ft, depth to top of granitic rocks in ft, depth to top of pre-Cenozoic bedrock in ft, and total depth in ft. A -9 in the data field indicates lithology not penetrated or data not available. Ground elevations for most wells are approximate and were derived from a USGS digital elevation model generated from 1:250,000-scale topographic maps. Well locations were digitized from index maps or transcribed plots on USGS 7.5-minute quadrangles. Some wells are only located to the nearest section.

Drill-hole lithology is color coded into 5 generalized geology units: white, alluvium; black dot, basalt; orange, volcanic rocks; red, granitic rocks; and green, pre-Cenozoic bedrock. Drill holes with multicolored indicators indicate they penetrate more than one unit. About 207 drill holes bottom in alluvium, 19 penetrate basalt, 57 penetrate volcanic rocks, 4 penetrate granitic rocks, and 72 penetrate bedrock. Drill-hole depths range from 15 ft (4.5 m) to more than 10,250 ft (3,124 m).

Drill-hole lithology is an important and independent constraint in determining the thickness and geometry of basins in Nevada. A computer procedure, based on Jachens and Moring (1990), that utilizes drill-hole data and the inversion of gravity data was used to estimate the depth to pre-Cenozoic basement for the Winnemucca 1:250,000-scale quadrangle (Ponce, 1997). The gravity field was separated into two parts, the basement field due to observations solely on basement rocks and the basin field due to Cenozoic basin deposits. The basin field was inverted to determine the thickness of Cenozoic deposits. The effect of the basin on nearby basement gravity observations was removed by iterative corrections to the basement field until successive iterations converged. The depth-to-basement map (Ponce, 1997) reveals that Pine Valley in the southeastern part of the quadrangle is one of the deepest basins in Nevada, reaching a depth of about 6 km.

REFERENCES

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Ponce, D.A., 1997, Mapping the Humboldt River basin using gravity and magnetic methods, Winnemucca 1- by 2-degree quadrangle, northern Nevada (abs.): Geological Society of America, Abstracts with Programs, v. 29, no. 6, p. 304.

Table 1.--Drill-hole lithology  
(US, ground elevation; TB, basalt; TV, volcanic rocks;  
Gr, granitic rocks; Br, bedrock; TD, Total depth, -9, not  
penetrated or not available)

ID	Longitude deg	Latitude deg	GE ft	TB ft	TV ft	Gr ft	Br ft	TD ft
WIN 0066	-116.32096	40.19157	5610	-9	2860	-9	-9	-9
WIN 0117	-116.69078	40.18045	5000	-9	2340	-9	3116	-9
WIN 0186	-116.13294	40.27153	5298	-9	3100	-9	10250	-9
WIN 0284	-116.13049	40.20546	5458	-9	2645	4749	-9	-9
WIN 0301	-116.11074	40.22754	5425	-9	-9	4350	-9	-9
WIN 0324	-116.11860	40.23120	5316	3304	5346	-9	6450	-9
WIN 0333	-116.14870	40.23120	5298	3440	5870	-9	7303	-9
WIN 0335	-116.14022	40.22282	5368	3371	-9	7415	-9	-9
WIN 0350	-116.14040	40.23660	5300	3311	5340	-9	6710	-9
WIN 0356	-116.14340	40.24200	5298	3440	5870	-9	7303	-9
WIN 0357	-116.14053	40.41156	-9	-9	4410	-9	-9	-9
WIN 0407	-117.43781	40.01749	4992	-9	592	-9	2938	-9
WIN 0408	-117.60143	40.06283	3916	-9	2600	-9	3050	-9
WIN 0415	-116.13044	40.24715	5298	2475	3378	-9	4465	-9
WIN 0425	-116.23098	40.03928	5800	-9	2018	-9	3848	-9
WIN 0442	-116.14320	40.23450	5299	3993	5208	-9	6524	-9
WIN 0450	-116.14417	40.23660	5300	3311	5340	-9	6710	-9
WIN 0458	-116.14500	40.23650	5298	3608	5496	-9	6634	-9
WIN 0501	-117.61567	40.08342	3777	-9	-9	-9	400	-9
WIN 0502	-117.64024	40.09720	3754	-9	-9	-9	400	-9
WIN 0503	-117.51064	40.15399	4124	-9	-9	-9	500	-9
WIN 0504	-117.50827	40.17398	4109	-9	-9	-9	429	-9
WIN 0505	-117.50884	40.18874	4223	-9	-9	-9	429	-9
WIN 0546	-117.18546	40.09516	4898	-9	-9	-9	400	-9
WIN 0547	-117.16830	40.09517	4898	-9	-9	-9	400	-9
WIN 0548	-117.15903	40.08963	4898	-9	-9	-9	245	-9
WIN 0549	-117.15926	40.08474	4830	-9	-9	-9	200	-9
WIN 0549	-117.13724	40.09945	4905	-9	-9	-9	215	-9
WIN 0550	-117.13703	40.10649	4898	-9	-9	-9	226	-9
WIN 0551	-117.14806	40.10649	4898	-9	-9	-9	200	-9
WIN 0552	-117.12849	40.12396	4890	-9	-9	-9	305	-9
WIN 0553	-117.12160	40.14543	4859	-9	-9	-9	250	-9
WIN 0554	-117.11850	40.15614	4841	-9	-9	-9	250	-9
WIN 0555	-117.11239	40.17993	4799	-9	-9	-9	123	-9
WIN 0556	-117.11118	40.22431	4795	-9	-9	-9	84	-9
WIN 0557	-117.10085	40.22970	4794	-9	-9	-9	20	-9
WIN 0558	-116.77703	40.17870	5044	-9	-9	-9	39	-9
WIN 0559	-116.70090	40.04896	5155	-9	-9	-9	210	-9
WIN 0560	-116.61352	40.08784	5679	-9	-9	-9	20	-9
WIN 0611	-116.28993	40.08874	5656	-9	-9	-9	231	-9
WIN 0613	-116.47470	40.09720	3754	-9	-9	-9	250	-9
WIN 0616	-116.45146	40.25228	4808	-9	-9	-9	122	-9
WIN 0618	-116.63108	40.26516	4799	-9	-9	-9	150	-9
WIN 0619	-116.61779	40.27169	4793	-9	-9	-9	100	-9
WIN 0620	-116.62315	40.28098	4799	-9	-9	-9	100	-9
WIN 0621	-116.62016	40.28608	4814	-9	-9	-9	100	-9

LEGEND

- WIN 0066 Drill hole, bottoms in alluvium
- WIN 0068 Drill hole, penetrates basalt
- WIN 0017 Drill hole, penetrates volcanic rocks, other than basalt
- WIN 0001 Drill hole, penetrates granitic rocks
- WIN 0002 Drill hole, penetrates pre-Cenozoic bedrock
- WIN 0003 Drill hole, example, penetrates volcanic rocks and bedrock
- Outcrops

Table 1.--Drill-hole lithology--Continued

ID	Longitude deg	Latitude deg	GE ft	TB ft	TV ft	Gr ft	Br ft	TD ft
WIN 0007	-117.25073	40.06624	4905	-9	-9	-9	-9	500
WIN 0008	-117.26376	40.05843	4898	-9	-9	-9	-9	483
WIN 0009	-117.26487	40.04119	4925	-9	216	-9	-9	296
WIN 0010	-117.26711	40.02573	4967	-9	-9	-9	-9	310
WIN 0011	-117.26711	40.02573	4967	-9	-9	-9	-9	310
WIN 0012	-117.26711	40.02009	4960	-9	-9	-9	-9	500
WIN 0013	-117.26711	40.02081	4917	-9	-9	-9	-9	500
WIN 0014	-117.26711	40.02081	4917	-9	-9	-9	-9	500
WIN 0015	-117.20496	40.02789	4958	-9	-9	-9	-9	500
WIN 0016	-117.22188	40.04739	4909	-9	-9	-9	-9	400
WIN 0017	-117.22188	40.04739	4909	-9	-9	-9	-9	400
WIN 0018	-117.19505	40.05260	4898	-9	-9	-9	-9	515
WIN 0019	-117.19328	40.06176	4898	-9	-9	-9	-9	450
WIN 0020	-117.19328	40.06176	4898	-9	-9	-9	-9	450
WIN 0021	-117.13167	40.13752	4873	-9	-9	-9	-9	190
WIN 0022	-117.18709	40.16561	4904	-9	-9	-9	-9	460
WIN 0023	-117.18709	40.16561	4904	-9	-9	-9	-9	460
WIN 0024	-116.80147	40.18640	5084	-9	-9	-9	-9	625
WIN 0025	-116.80147	40.18640	5084	-9	-9	-9	-9	625
WIN 0026	-116.67034	40.20406	4940	-9	-9	-9	-9	400
WIN 0027	-116.27068	40.07061	5644	-9	-9	-9	-9	400
WIN 0028	-116.27068	40.07061	5644	-9	-9	-9	-9	400
WIN 0029	-116.45258	40.33444	4911	-9	-9	-9	-9	500
WIN 0030	-116.45258	40.33444	4911	-9	-9	-9	-9	500
WIN 0031	-116.42838	40.30875	5075	-9	-9	-9	-9	516
WIN 0032	-116.42838	40.30875	5075	-9	-9	-9	-9	516
WIN 0033	-116.07181	40.32687	5133	-9	-9	-9	-9	250
WIN 0034	-116.07181	40.32687	5133	-9	-9	-9	-9	250
WIN 0035	-117.61040	40.40368	4678	-9	-9	-9	-9	15
WIN 0036	-117.61040	40.40368	4678	-9	-9	-9	-9	15
WIN 0037	-117.64670	40.41815	4072	-9	-9	-9	-9	400
WIN 0038	-117.64670	40.41815	4072	-9	-9	-9	-9	400
WIN 0039	-117.04703	40.48261	4735	420	-9	-9	-9	135
WIN 0040	-117.04703	40.48261	4735	420	-9	-9	-9	135
WIN 0041	-117.41496	40.40038	4678	-9	-9	-9	-9	190
WIN 0042	-117.41496	40.40038	4678	-9	-9	-9	-9	190
WIN 0043	-117.33086	40.51500	4689	-9	-9	-9	-9	790
WIN 0044	-117.61117	40.52456	4835	-9	-9	-9	-9	401
WIN 0045	-117.61117	40.52456	4835	-9	-9	-9	-9	401
WIN 0046	-116.69545	40.56391	4991	-9	-9	-9	-9	140
WIN 0047	-117.79743	40.55292	4956	-9	-9	-9	-9	100
WIN 0048	-117.79743	40.55292	4956	-9	-9	-9	-9	100
WIN 0049	-116.75160	40.65448	4907	-9	-9	-9	-9	500
WIN 0050	-116.75160	40.65448	4907	-9	-9	-9	-9	500
WIN 0051	-117.74621	40.66828	4468	-9	-9	-9	-9	500
WIN 0052	-117.74621	40.66828	4468	-9	-9	-9	-9	500
WIN 0053	-117.74621	40.68894	4568	-9	-9	-9	-9	625
WIN 0054	-117.74890	40.71459	4499	-9	-9	-9	-9	600
WIN 0055	-117.74890	40.71459	4499	-9	-9	-9	-9	600
WIN 0056	-117.74890	40.71459	4499	-9	-9	-9	-9	600
WIN 0057	-117.74890	40.74146	4400	-9	-9	-9	-9	515
WIN 0058	-117.80554	40.72453	4593	-9	-9	-9	-9	554
WIN 0059	-117.80554	40.72453	4593	-9	-9	-9	-9	554
WIN 0060	-117.81178	40.81029	4376	-9	-9	-9	-9	241
WIN 0061	-117.81178	40.81029	4376	-9	-9	-9	-9	241
WIN 0062	-117.92462	40.89537	4368	-9	-9	-9	-9	610
WIN 0063	-117.92462	40.89537	4368	-9	-9	-9	-9	610
WIN 0064	-117.92462	40.89537	4368	-9	-9	-9	-9	610
WIN 0065	-117.88554	40.91258	4515	374	-9	-9	-9	410
WIN 0066	-117.88554	40.91258	4515	374	-9	-9	-9	410
WIN 0067	-118.08021	40.94200	4292	-9	-9	-9	-9	400
WIN 0068	-118.08021	40.94200	4292	-9	-9	-9	-9	400
WIN 0069	-117.78496	40.87537	4323	-9	-9	-9	-9	631
WIN 0070	-117.78496	40.87537	4323	-9	-9	-9	-9	631
WIN 0071	-117.78496	40.87537	4323	-9	-9	-9	-9	631
WIN 0072	-117.72616	40.90225	4272	-9	-9	-9	-9	150
WIN 0073	-117.72616	40.92171	4307	-9	-9	-9	-9	200
WIN 0074	-117.72616	40.92171	4307	-9	-9	-9	-9	200
WIN 0075	-117.74270	40.94953	4346	-9	-9	-9	-9	431
WIN 0076	-117.74270	40.94953	4346	-9	-9	-9	-9	431
WIN 0077	-117.73520	40.98026	4298	495	-9	-9	-9	521
WIN 0078	-117.73520	40.98026	4298	495	-9	-9	-9	521
WIN 0079	-117.50447	40.95305	4435	-9	-9	-9	-9	334
WIN 0080	-117.50447	40.95305	4435	-9	-9	-9	-9	334
WIN 0081	-119.49455	40.95790	4398	-9	-9	-9	-9	55
WIN 0082	-117.36502	40.96133	4399	-9	-9	-9	-9	350
WIN 0083	-117.36502	40.96133	4399	-9	-9	-9	-9	350
WIN 0084	-117.45870	40.96133	4403	-9	-9	-9	-9	401
WIN 0085	-117.23136	40.83408	4511	-9	-9	-9	-9	504
WIN 0086	-117.23136	40.83408	4511	-9	-9	-9	-9	504
WIN 0087	-117.11818	40.83247	4497	-9	-9	-9	-9	97
WIN 0088	-117.11818	40.83247	4497	-9	-9	-9	-9	97
WIN 0089	-117.11818	40.83247	4497	-9	-9	-9	-9	97
WIN 0090	-117.13407	40.81208	4498	-9	-9	-9	-9	203
WIN 0091	-117.13407	40.81208	4498	-9	-9	-9	-9	203
WIN 0092	-117.13407	40.81208	4498	-9	-9	-9	-9	203
WIN 0093	-117.10375	40.77675	4506	-9	-9	-9	-9	95
WIN 0094	-117.10375	40.77675	4506	-9	-9	-9	-9	95
WIN 0095	-117.10375	40.77675	4506	-9	-9	-9	-9	95
WIN 0096	-117.07864	40.76120	4501	-9	-9	-9	-9	52
WIN 0097	-117.07864	40.76120	4501	-9	-9	-9	-9	52
WIN 0098	-116.99337	40.83992	4501	-9	-9	-9	-9	85
WIN 0099	-116.99337	40.83992	4501	-9	-9	-9	-9	85
WIN 0100	-116.99337	40.83992	4501	-9	-9	-9	-9	85
WIN 0101	-116.94886	40.86383	4591	457	-9	-9	-9	75
WIN 0102	-116.94886	40.86383	4591	457	-9	-9	-9	75
WIN 0103	-116.94886	40.86383	4591	457	-9	-9	-9	75
WIN 0104	-116.94886	40.86383	4591	457	-9	-9	-9	75
WIN 0105	-116.94886	40.86383	4591	457	-9	-9	-9	75
WIN 0106	-116.94886	40.86383	4591	457	-9	-9	-9	75
WIN 0107	-116.94886	40.86383	4591	457	-9	-9	-9	75
WIN 0108	-116.94886	40.86383	4591	457	-9	-9	-9	75
WIN 0109	-116.94886	40.86383	4591	457	-9	-9	-9	75
WIN 0110	-116.94886	40.86383	4591	457	-9	-9	-9	75
WIN 0111	-116.94886	40.86383	4591	457	-9	-9	-9	75
WIN 0112	-116.94886	40.86383	4591	457	-9	-9	-9	75
WIN 0113	-116.94886	40.86383	4591	457	-9	-9	-9	75
WIN 0114	-116.94886	40.86383	4591	457	-9	-9	-9	75
WIN 0115	-116.94886	40.86383	4591	457	-9	-9	-9	75
WIN 0116	-116.94886	40.86383	4591	457	-9	-9	-9	75
WIN 0117	-116.94886	40.86383	4591	457	-9	-9	-9	75
WIN 0118	-116.94886	40.86383	4591	457	-9	-9	-9	75
WIN 0119	-116.94886	40.86383	4591	457	-9	-9	-9	75
WIN 0120	-116.94886	40.86383	4591	457	-9	-9	-9	75
WIN 0121	-116.94886	40.86383	4591	457	-9	-9	-9	75
WIN 0122	-116.94886	40.86383	4591	457	-9	-9	-9	75
WIN 0123	-116.94886	40.86383	4591	457	-9	-9	-9	75
WIN 0124	-116.94886	40.86383	4591	457	-9	-9	-9	75
WIN 0125	-116.94886	40.86383	4591	457	-9	-9	-9	75
WIN 0126	-116.94886	40.86383	4591	457	-9	-9	-9	75
WIN 0127	-116.94886	40.86383	4591	457	-9	-9	-9	75
WIN 0128	-116.94886	40.86383	4591	457	-9	-9	-9	75
WIN 0129	-116.94886	40.86383	4591	457	-9	-9	-9	75
WIN 0130	-116.94886	40.86383	4591	457	-9	-9	-9	75
WIN 0131	-116.94886	40.86383	4591	457	-9	-9	-9	75
WIN 0132	-116.94886	40.86383	4591	457	-9	-9	-9	75
WIN 0133	-116.94886	40.86383	4591	457	-9	-9	-9	75
WIN 0134	-116.94886	40.86383	4591	457	-9	-9	-9	75
WIN 0135	-116.94886	40.86383	4591	457	-9	-9	-9	75
WIN 0136	-116.94886	40.86383	4591	457	-9	-9	-9	75
WIN 0137	-116.94886	40.86383	4591	457	-9	-9	-9	75
WIN 0138	-116.94886	40.86383	4591	457	-9	-9	-9	75
WIN 0139	-116.94886	40.86383	4591	457	-9	-9	-9	75
WIN 0140	-116.94886	40.86383	4591	457	-9	-9	-9	75
WIN 0141	-117.20200	40.06222	4929	-9	-9	-9	-9	25
WIN 0142	-117.20200	40.06222	4929	-9	-9	-9	-9	25
WIN 0143	-117.17817	40.01871	4987	-9	-9	-9	-9	25
WIN 0144	-117.17817	40.01871	4987	-9	-9	-9	-9	25
WIN 0145	-117.17817	40.01871	4987	-9	-9	-9	-9	25
WIN 0146	-117.18545	40.08576	4898	-9	-9	-9	-9	36
WIN 0147	-117.18545	40.08576	4898	-9	-9	-9	-9	36
WIN 0148	-117.18545	40.08576	4898	-9	-9	-9	-9	36
WIN 0149	-117.15903	40.09863	4898	-9	-9	-9	-9	36
WIN 0150	-117.15903	40.09863	4898	-9	-9	-9	-9	36
WIN 0151	-117.99202	40.64434	4430	-9	-9	-9	-9	25
WIN 0152	-117.99202	40.64434	4430	-9	-9	-9	-9	25
WIN 0153	-117.99202	40.64434	4430	-9	-9	-9	-9	25
WIN 0154	-117.12100	40.14545	4859	-9	-9	-9	-9	