ATTACHMENT III

Addendum to Review of 2000-2004 Ozone Episodes in the Maricopa County Eight-Hour Ozone Nonattainment Area

MARICOPA ASSOCIATION OF GOVERNMENTS

OFFICE MEMO

August 24, 2005

TO: Cathy Arthur, Air Quality Modeling Program Manager

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SUBJECT: ADDENDUM TO REVIEW OF 2000-2004 OZONE EPISODES IN THE MARICOPA COUNTY 8-HOUR OZONE NONATTAINMENT AREA

An additional trajectory analysis has been performed to support ENVIRON's recommendations for the size of the regional grid for 8-hour ozone SIP modeling. This analysis is focused on transportation issue during the three potential ozone modeling periods including July 8-14, 2002 (Episode 1), June 3-7, 2002 (Episode 2), and August 5-11, 2001 (Episode 3). MAG's Air Quality and Meteorological Monitoring Database System archiving trajectory data generated by HYSPLIT has been used to conduct this analysis. Major configurations for trajectories are as follows:

- Type: 36-hour backward trajectory
- Start height: 10, 100, and 800-m
- Start time: 11:00 am (LST)
- Start location: The Phoenix Encanto site (Latitude: 33.47 and Longitude: -112.09)

Figures 1.1-3, 2.1-3, and 3.1-3 show back trajectories and their distances from the origin (36-hour back) for the Episode 1, 2, and 3, respectively. Each figure has trajectories for the whole episode days. Tables 1 through 3 summarize the distances from the origin for the Episode 1, 2, and 3, respectively, by their start height. As the characteristics of transport, "farther than 100 miles", Episode 1 is mostly local, Episode 2 is absolutely transport, and Episode 3 is mixed with local and transport. Although Episodes 2 and 3 have characteristics of transport, trajectories in these episodes are entirely covered by the 12-km domain recommended by ENVIRON. Therefore the 8-hour ozone SIP modeling grid system for the MNA could be simplified to a 12/4-km configuration that covers the immediate vicinity around Arizona.

Table 1. Distances from the origin (36-hour back) for the whole episode days (Episode 1) at 11:00 am (unit: mile)

Date	Start Height: 10-m	Start Height: 100-m	Start Height: 800-m
July 8, 2002	121	32	216
July 9, 2002	49	47	59
July 10, 2002	66	62	262
July 11, 2002	225	183	227
July 12, 2002	96	96	71
July 13, 2002	53	48	61
July 14, 2002	33	55	93

Table 2. Distances from the origin (36-hour back) for the whole episode days (Episode 2) at 11:00 am (unit: mile)

Date	Start Height: 10-m	Start Height: 100-m	Start Height: 800-m
June 3, 2002	331	398	414
June 4, 2002	320	354	553
June 5, 2002	175	177	240
June 6, 2002	176	168	250
June 7, 2002	147	143	171

Table 3. Distances from the origin (36-hour back) for the whole episode days (Episode 3) at 11:00 am (unit: mile)

Date	Start Height: 10-m	Start Height: 100-m	Start Height: 800-m
August 5, 2001	188	144	172
August 6, 2001	239	261	87
August 7, 2001	97	117	122
August 8, 2001	91	99	162
August 9, 2001	85	83	271
August 10, 2001	66	258	148
August 11, 2001	93	106	140

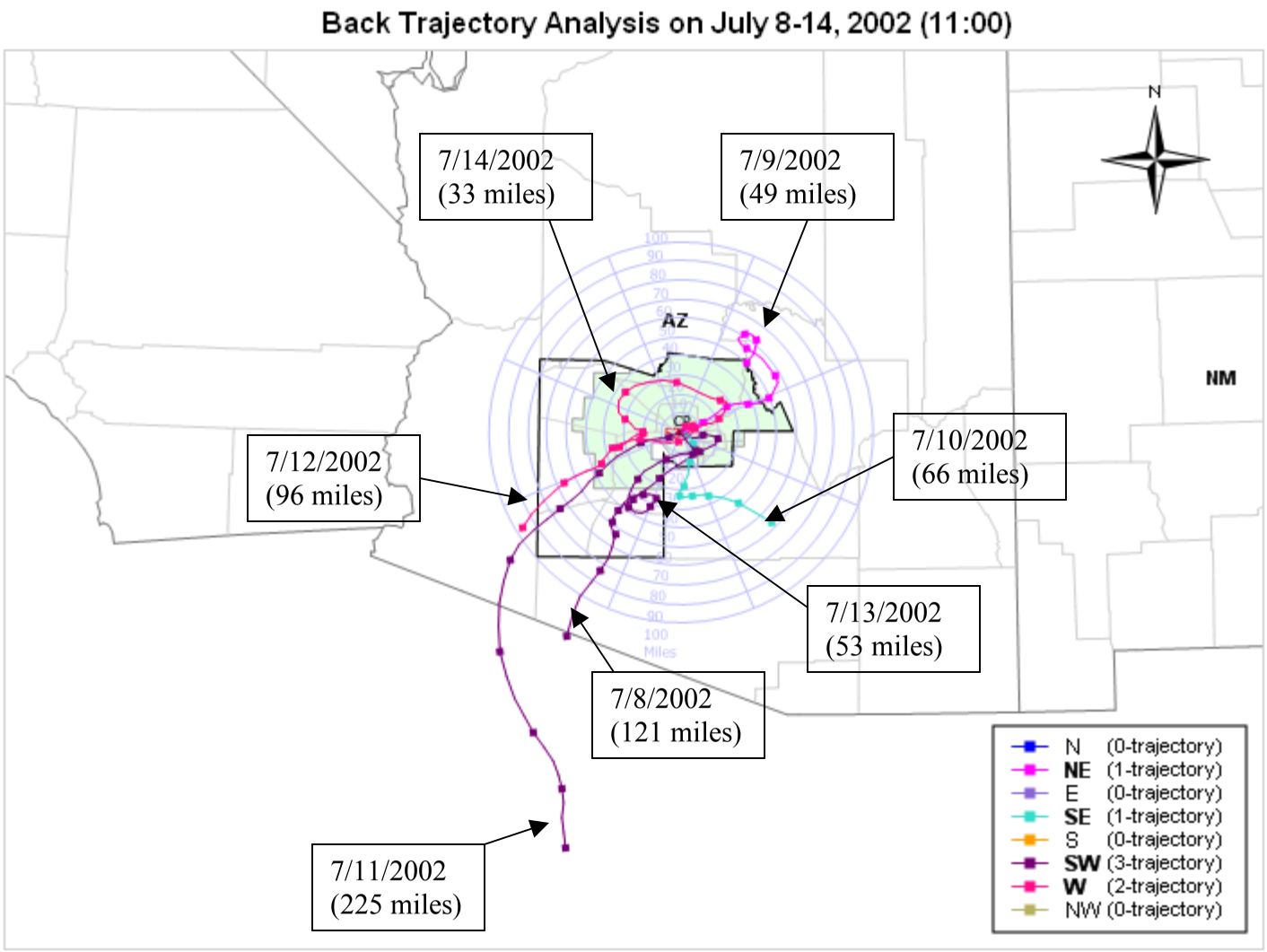

Figure 1.1 Backward trajectory for the July 8-14, 2002 episode (start height: 10-m)

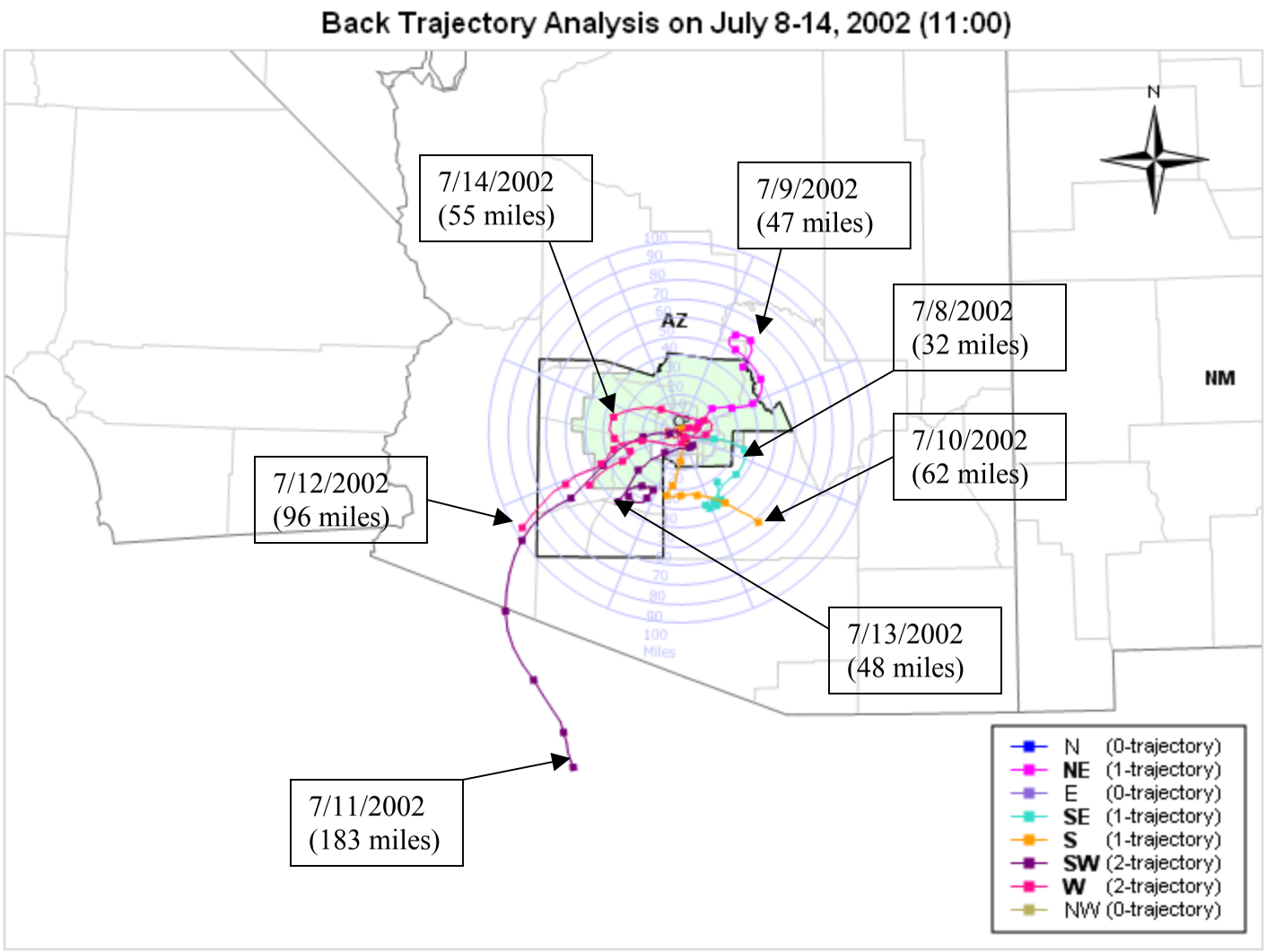

Figure 1.2 Backward trajectory for the July 8-14, 2002 episode (start height: 100-m)

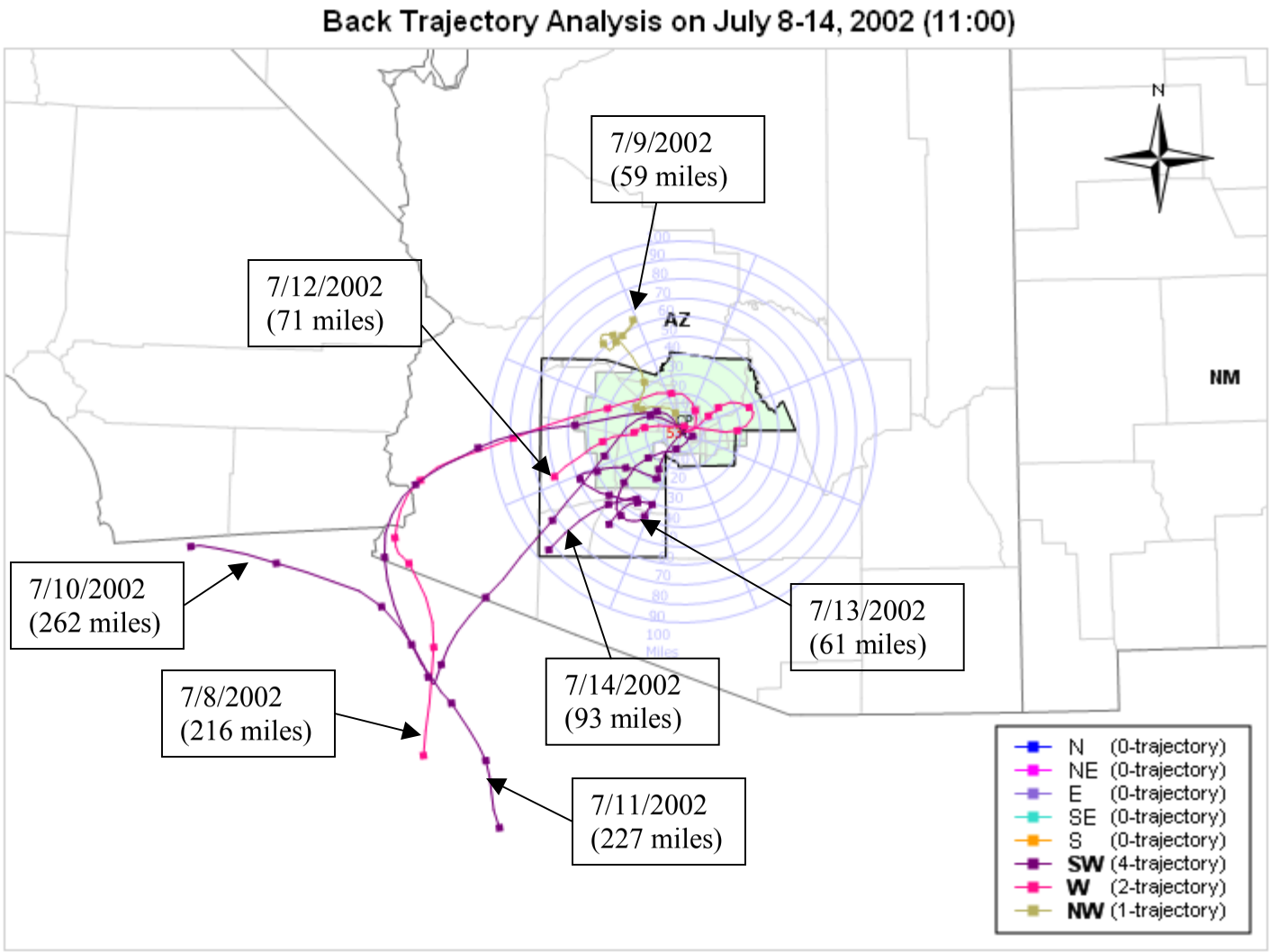

Figure 1.3 Backward trajectory for the July 8-14, 2002 episode (start height: 800-m)

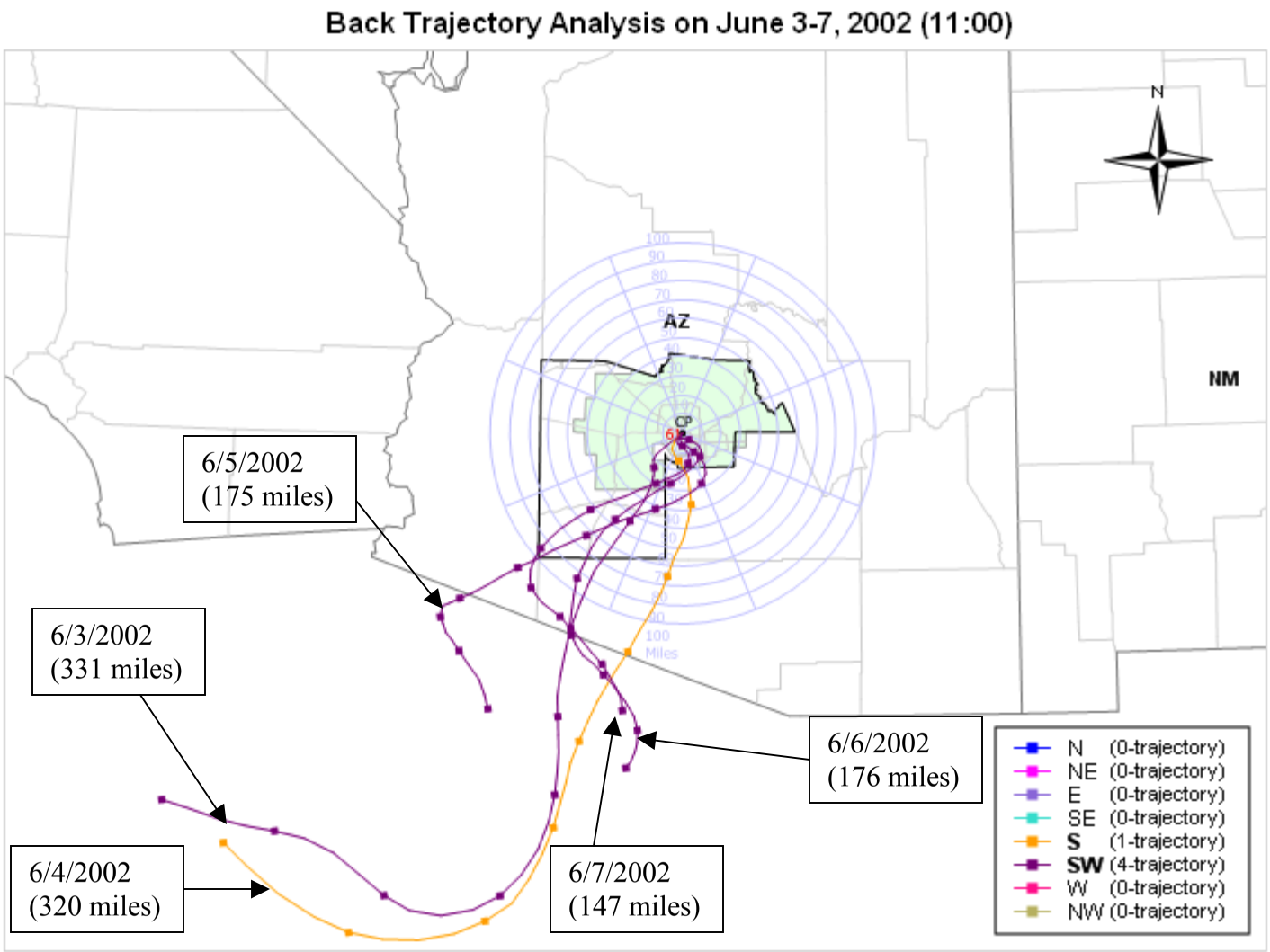

Figure 2.1 Backward trajectory for the June 3-7, 2002 episode (start height: 10-m)

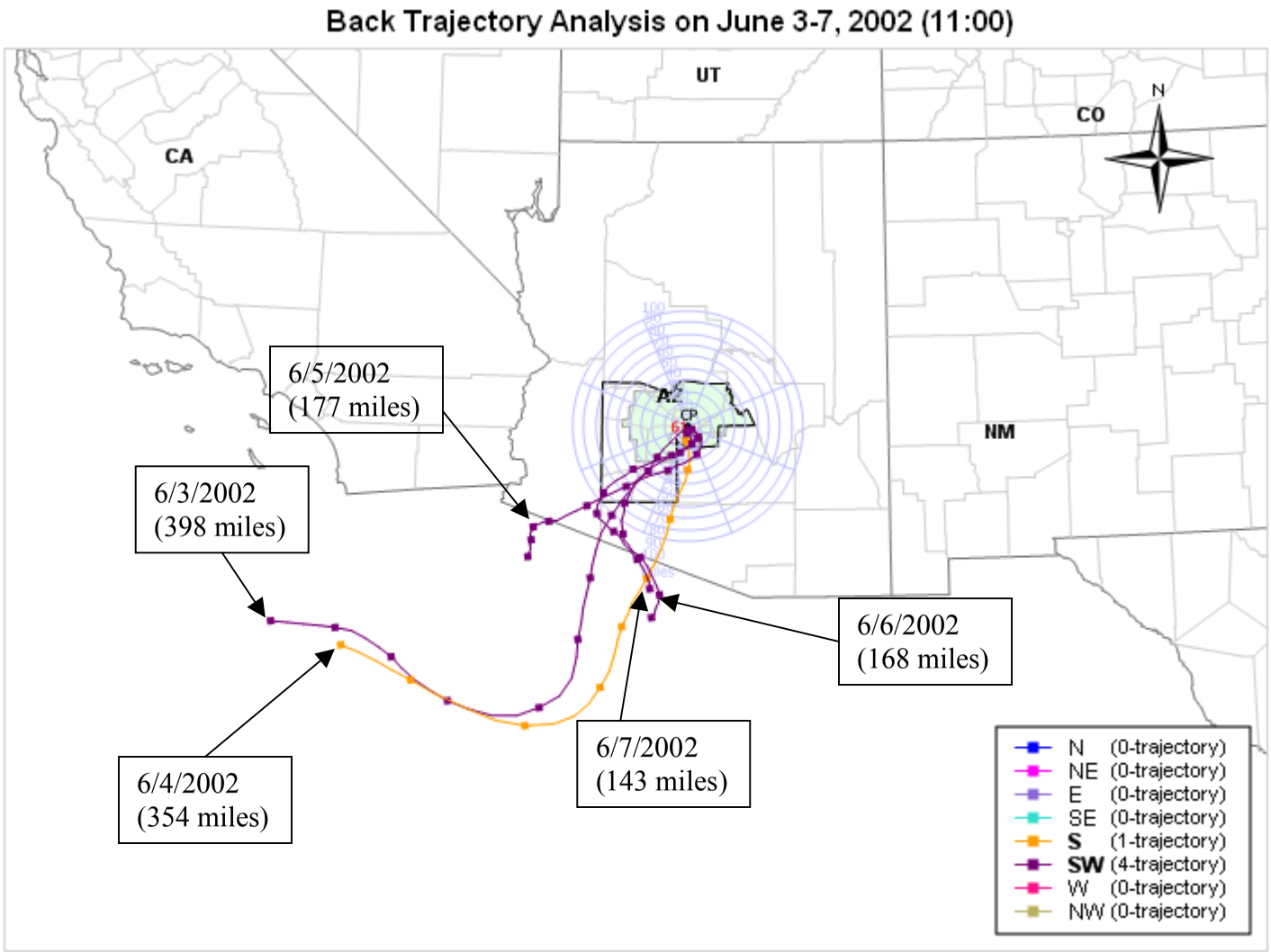

Figure 2.2 Backward trajectory for the June 3-7, 2002 episode (start height: 100-m)

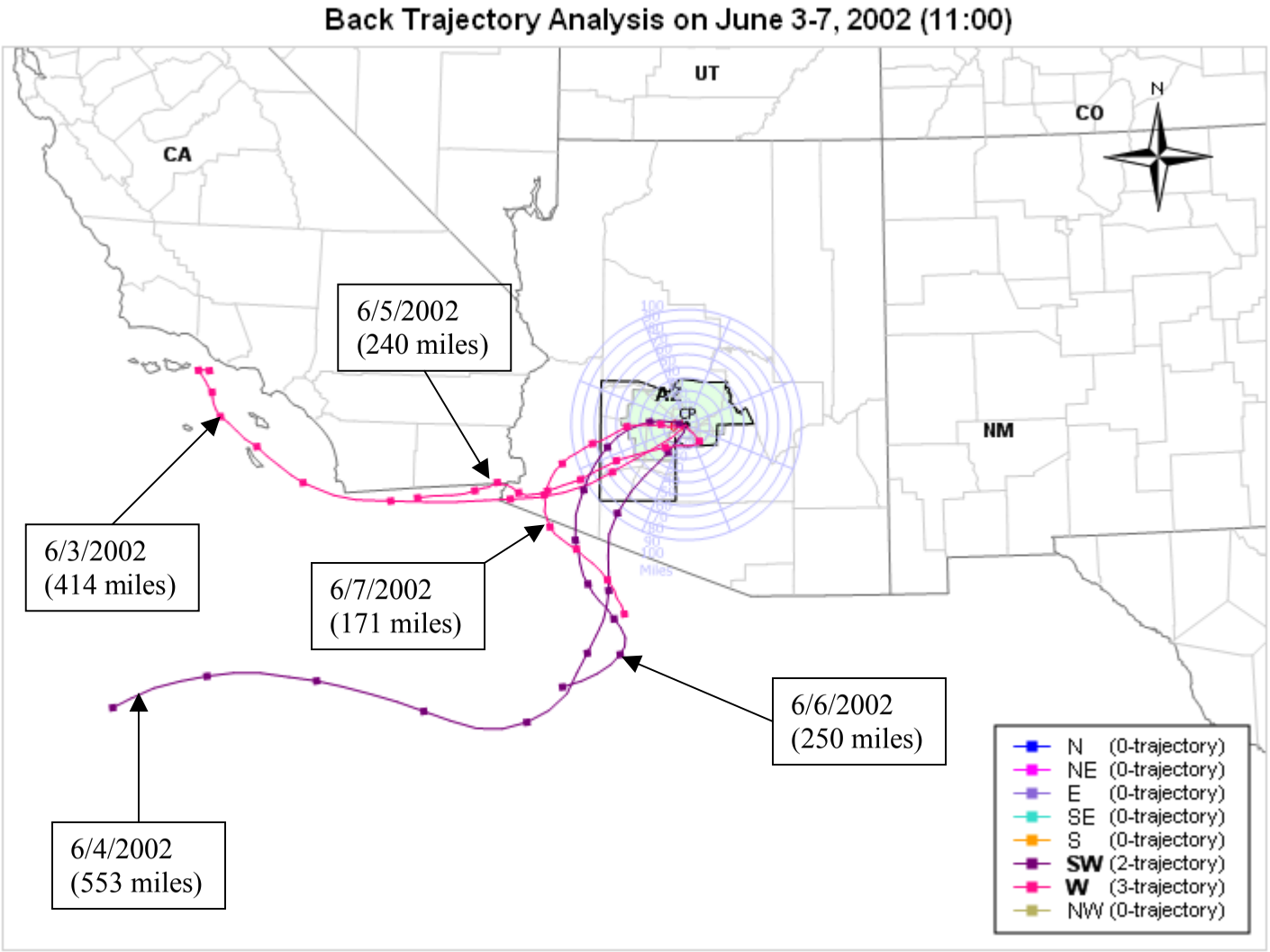

Figure 2.3 Backward trajectory for the June 3-7, 2002 episode (start height: 800-m)

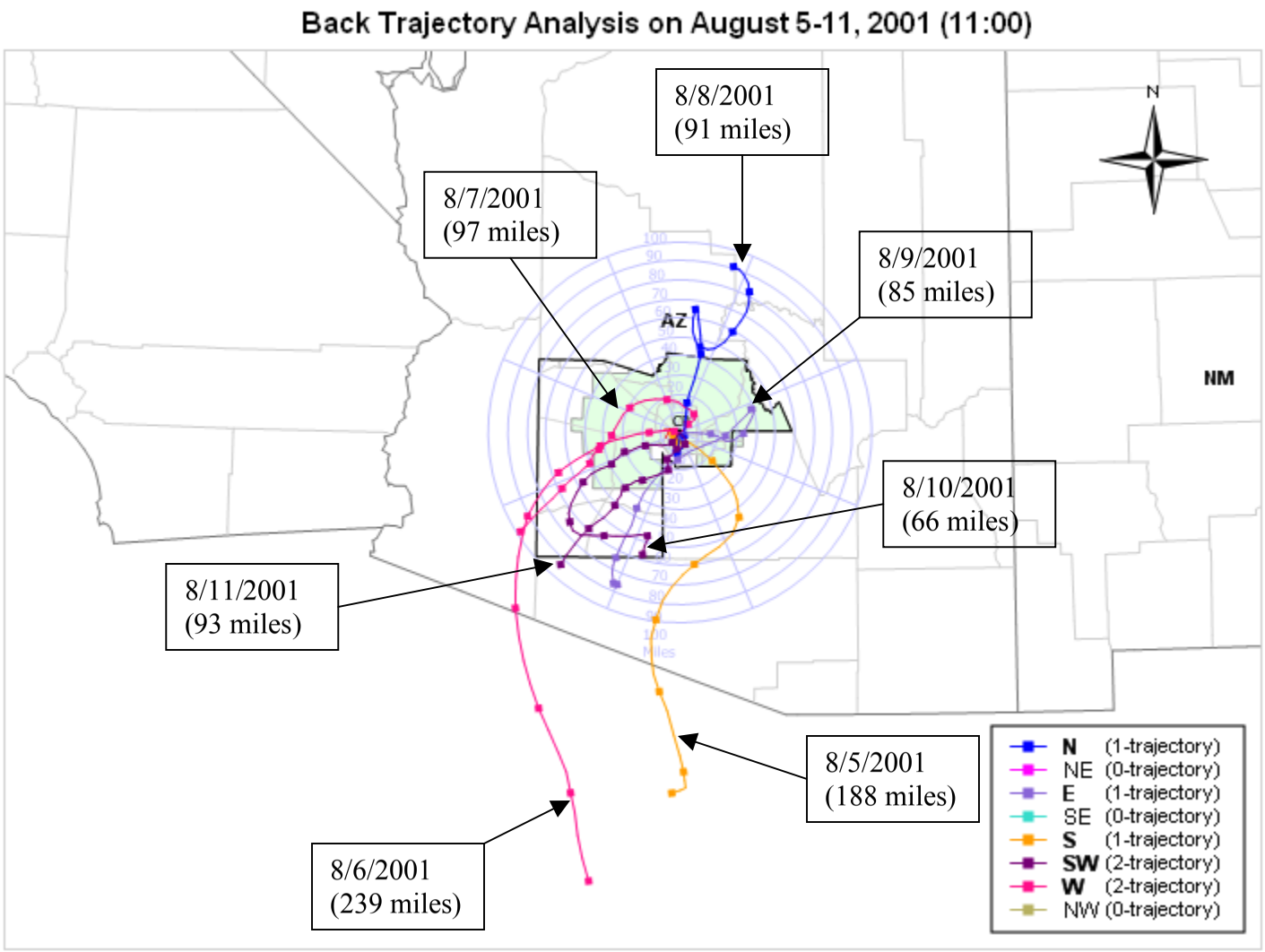

Figure 3.1 Backward trajectory for the August 5-11, 2001 episode (start height: 10-m)

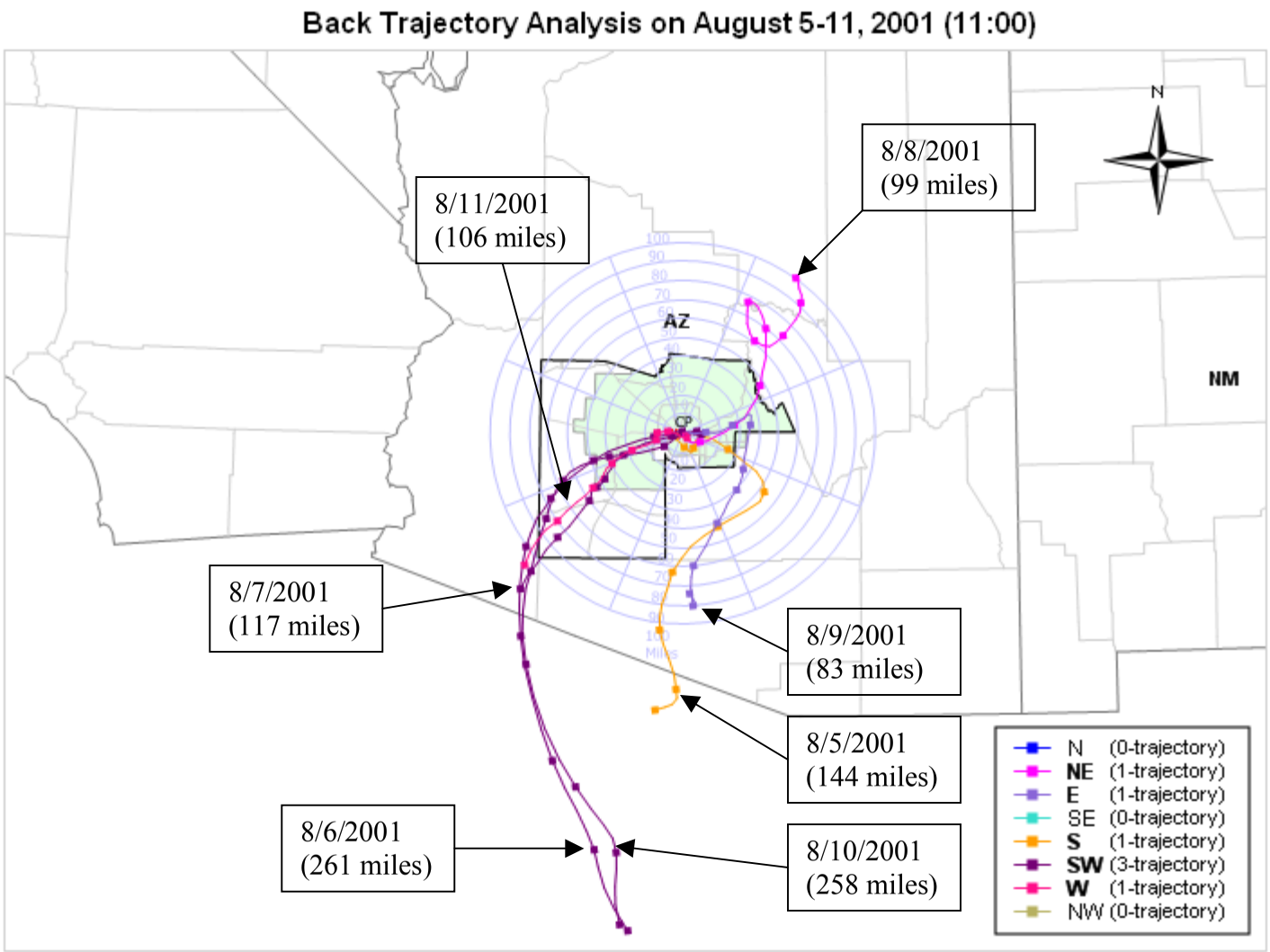

Figure 3.2 Backward trajectory for the August 5-11, 2001 episode (start height: 100-m)

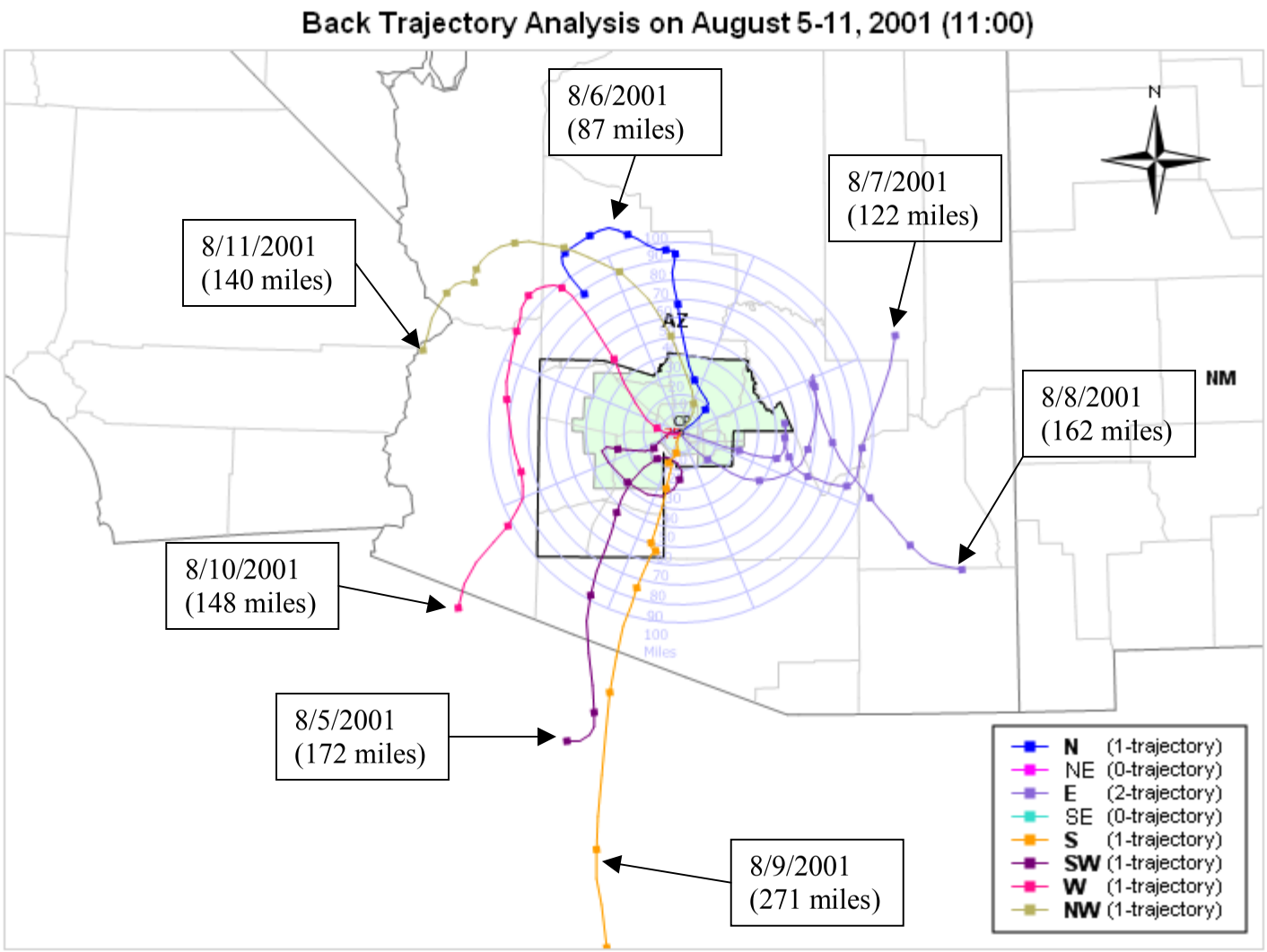

Figure 3.3 Backward trajectory for the August 5-11, 2001 episode (start height: 800-m)