

4.3-116

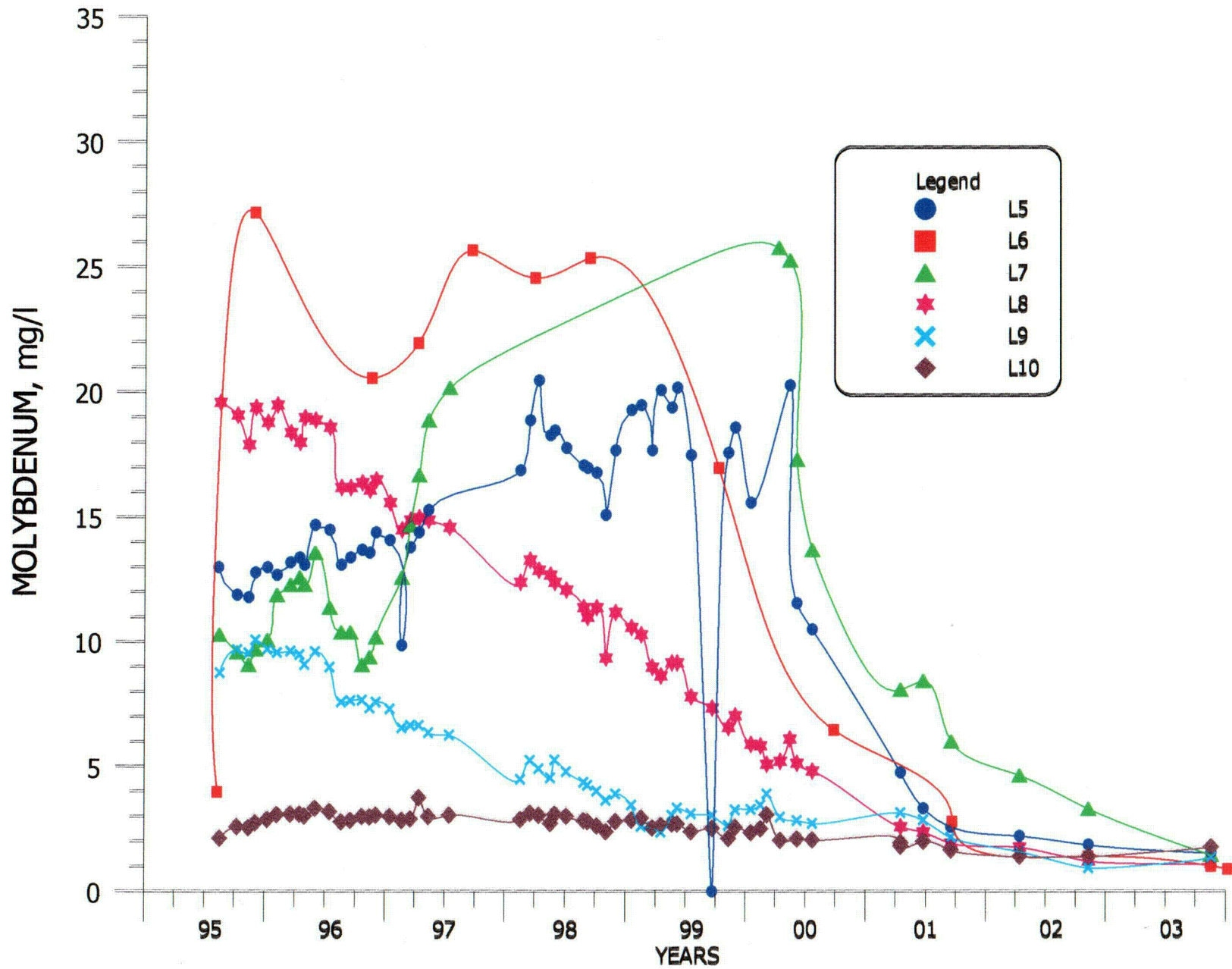


FIGURE 4.3-96. MOLYBDENUM CONCENTRATIONS FOR WELLS L5, L6, L7, L8, L9 AND L10.

4.3-117

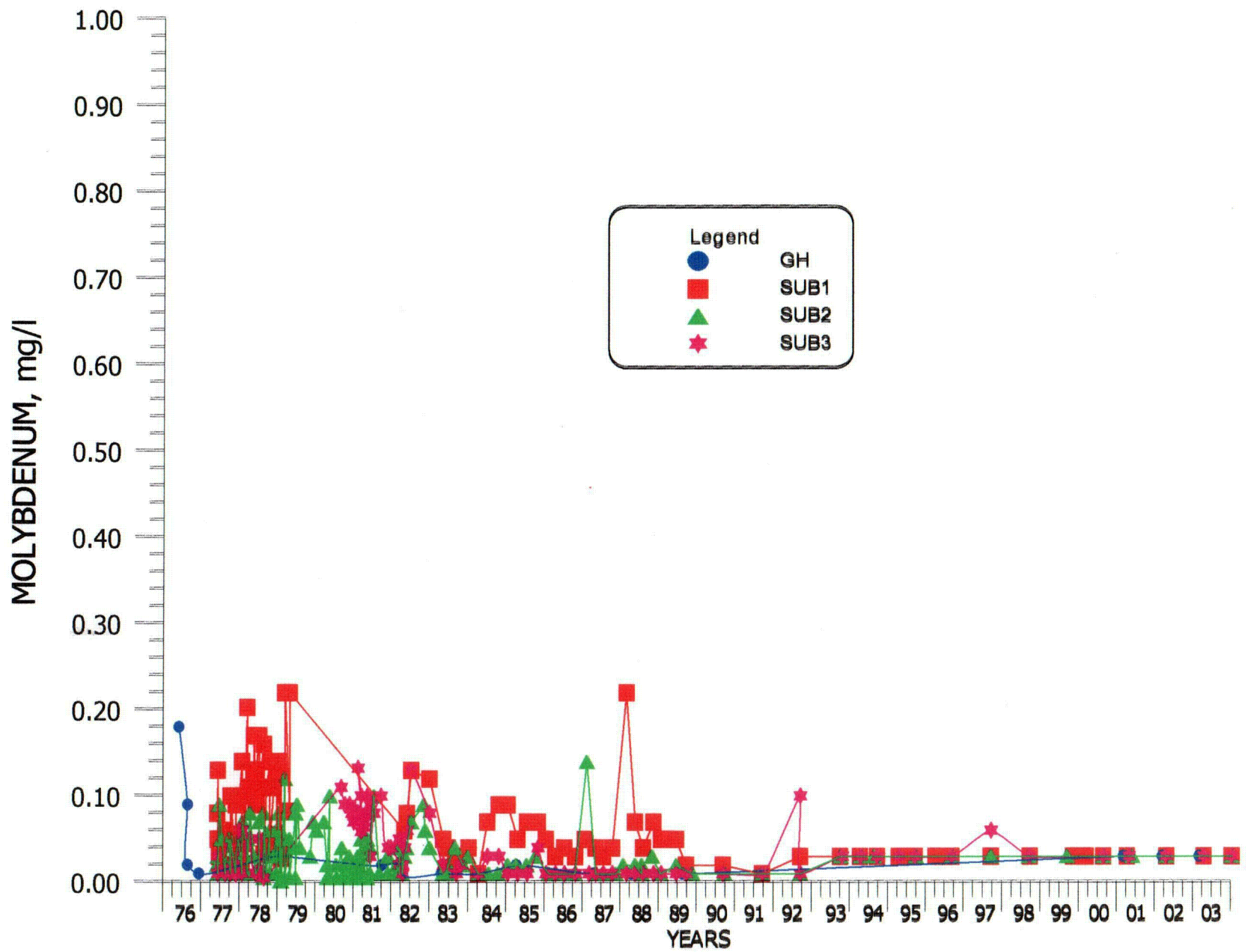


FIGURE 4.3-97. MOLYBDENUM CONCENTRATIONS FOR WELLS GH, SUB1, SUB2 AND SUB3.

4.3-118

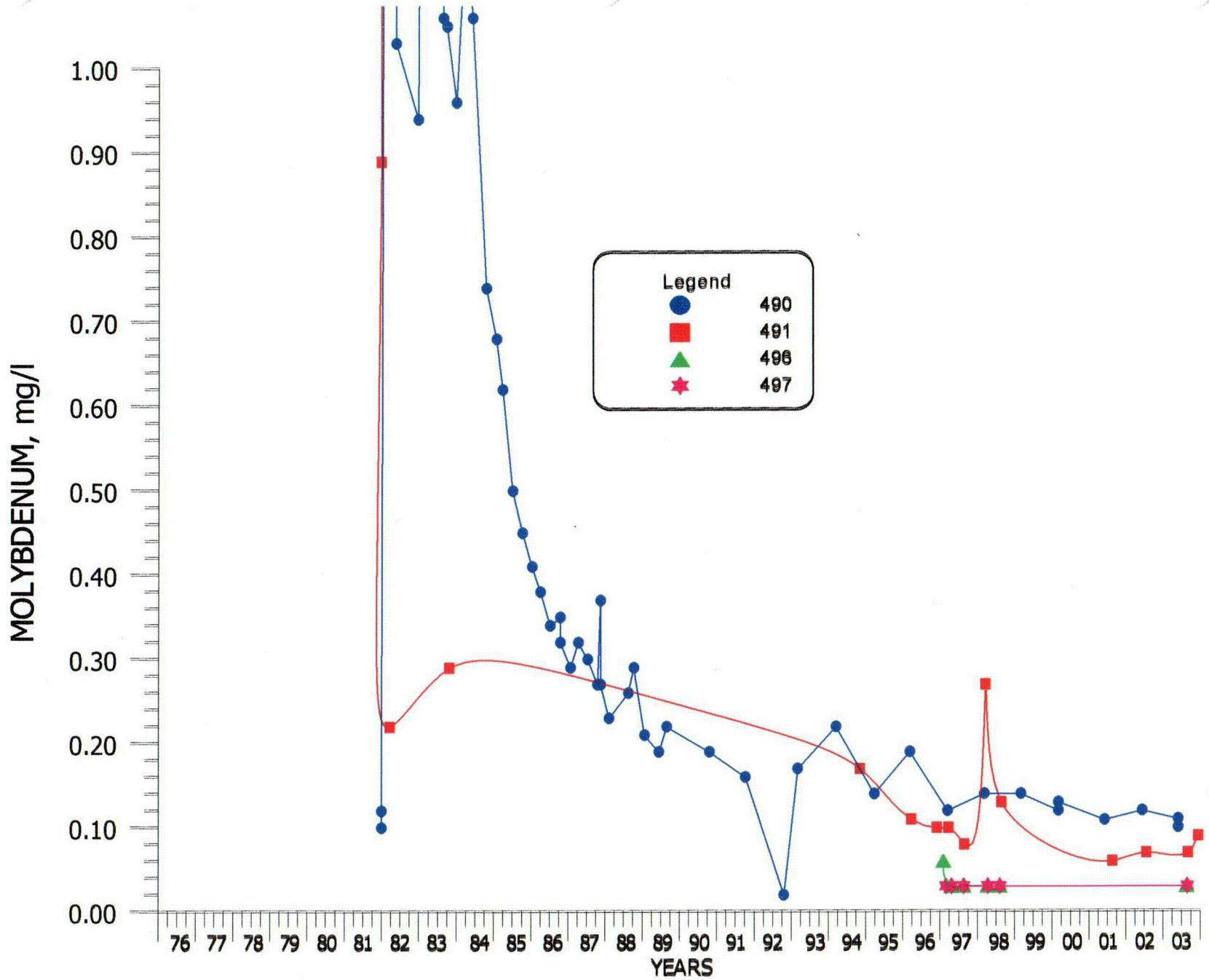


FIGURE 4.3-98. MOLYBDENUM CONCENTRATIONS FOR WELLS 490, 491, 496 AND 497.

4.3-119

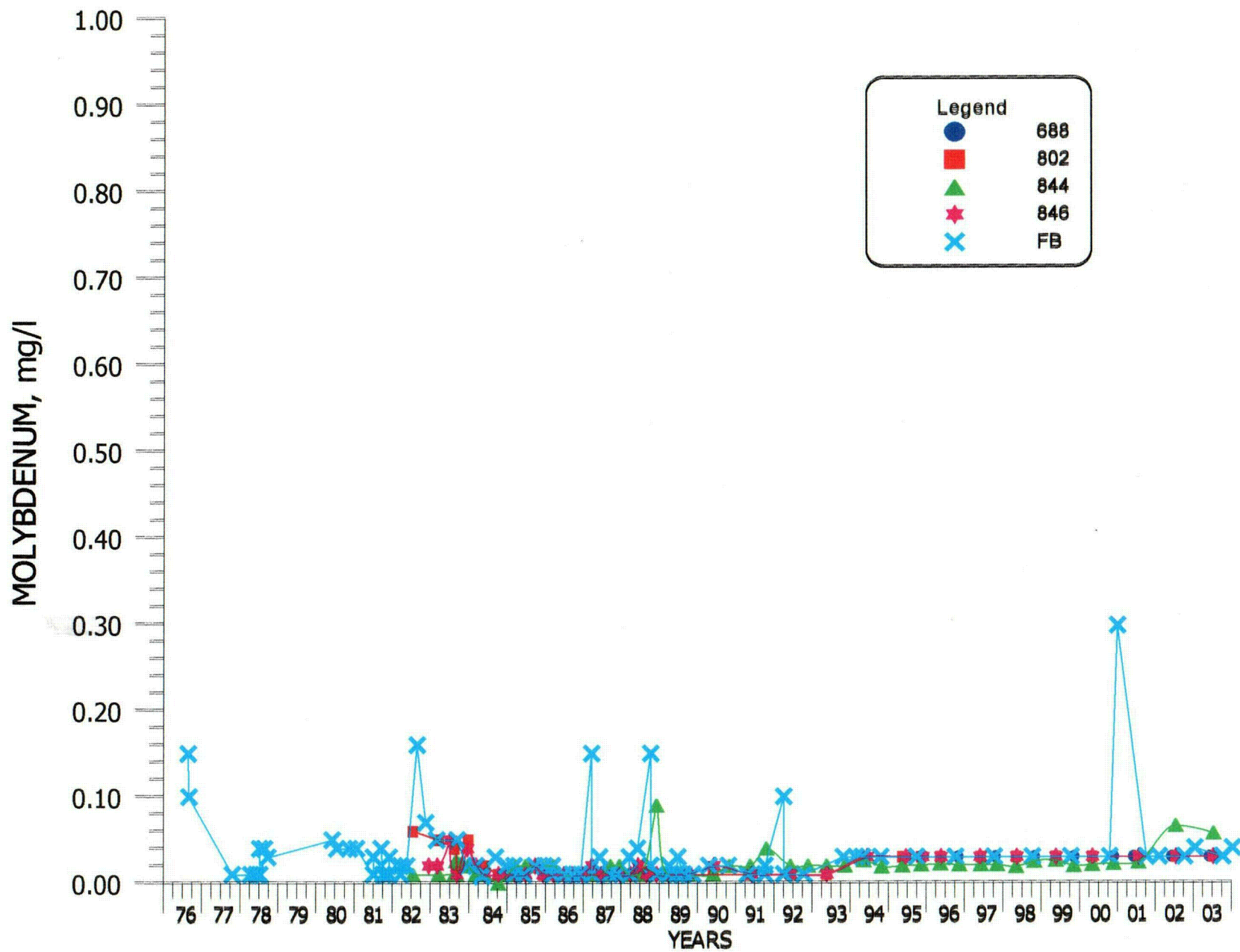


FIGURE 4.3-99. MOLYBDENUM CONCENTRATIONS FOR WELLS 688, 802, 844, 846 AND FB.

4.3-120

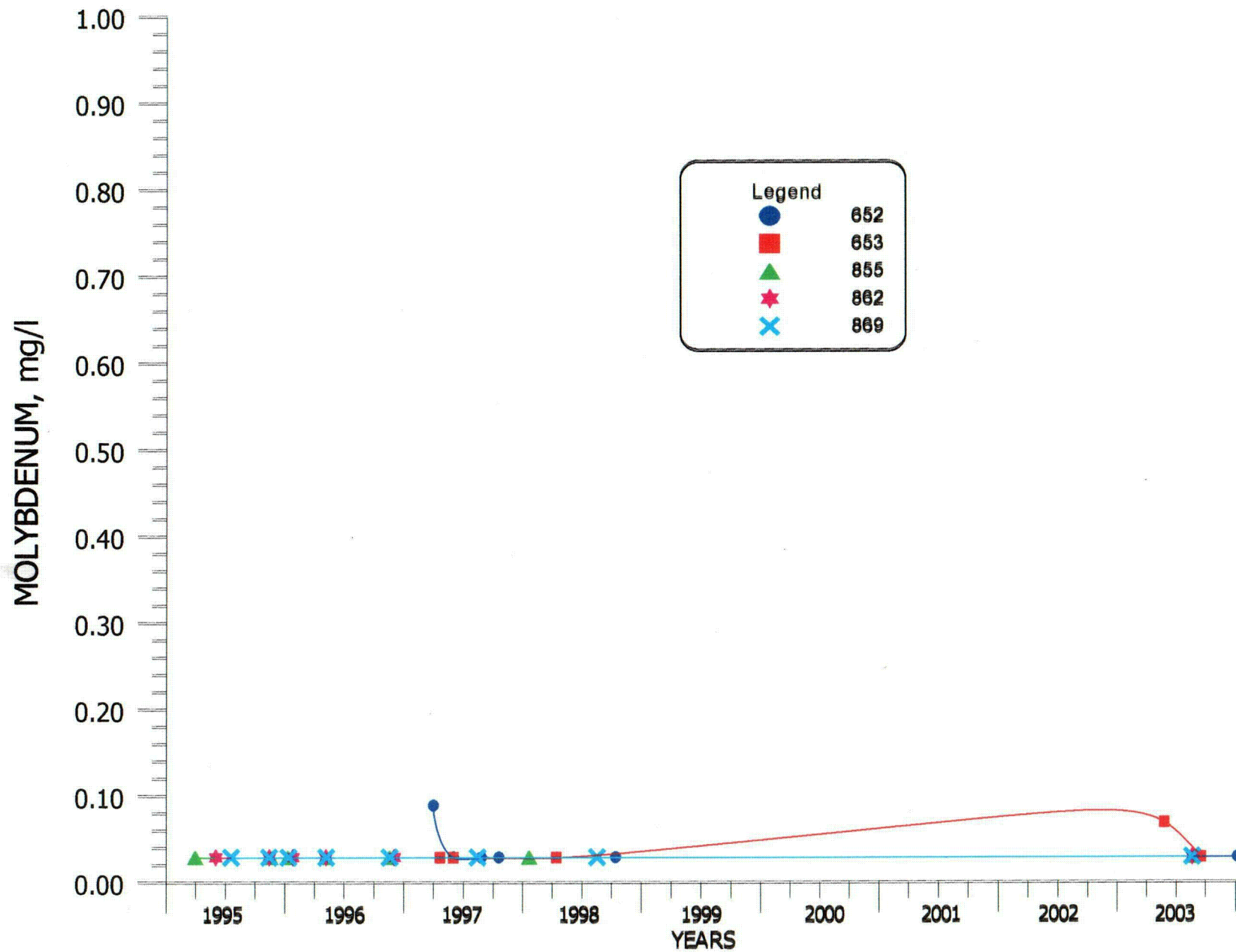


FIGURE 4.3-100. MOLYBDENUM CONCENTRATIONS FOR WELLS 652, 653, 855, 862 AND 869.

4.3-121

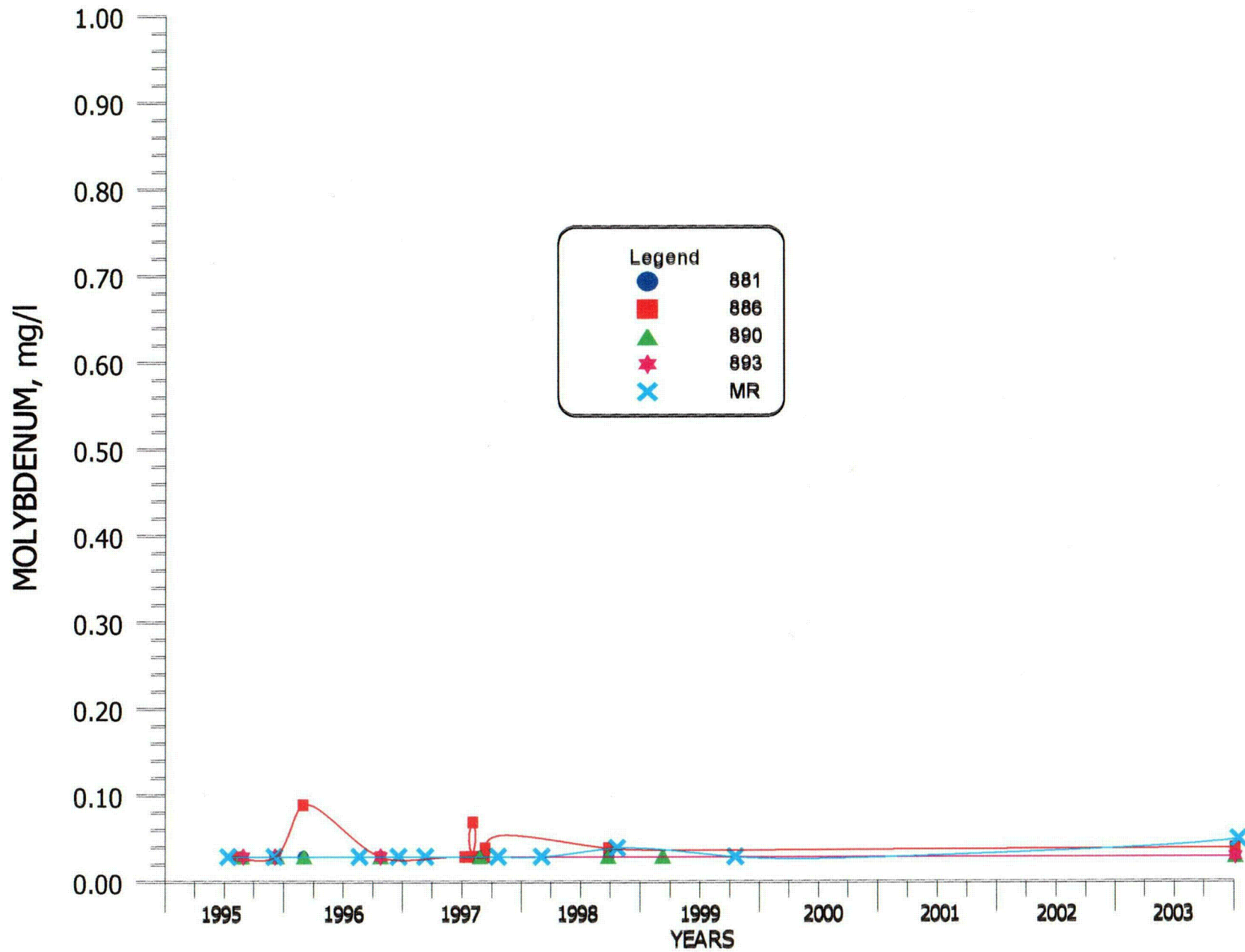


FIGURE 4.3-101. MOLYBDENUM CONCENTRATIONS FOR WELLS 881, 886, 890, 893 AND MR.

4.3-122

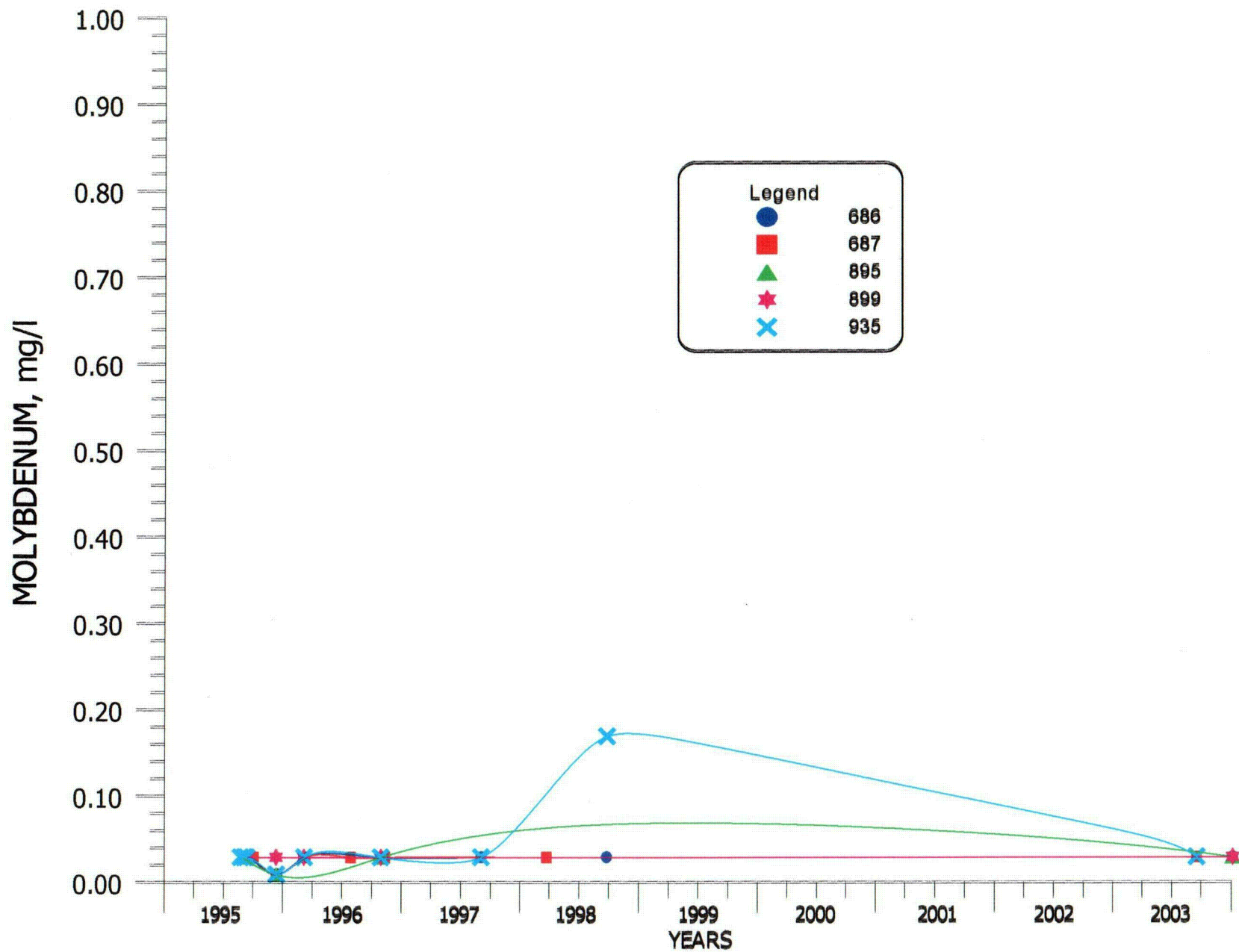


FIGURE 4.3-102. MOLYBDENUM CONCENTRATIONS FOR WELLS 686, 687, 895, 899 AND 935.

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4.3-123

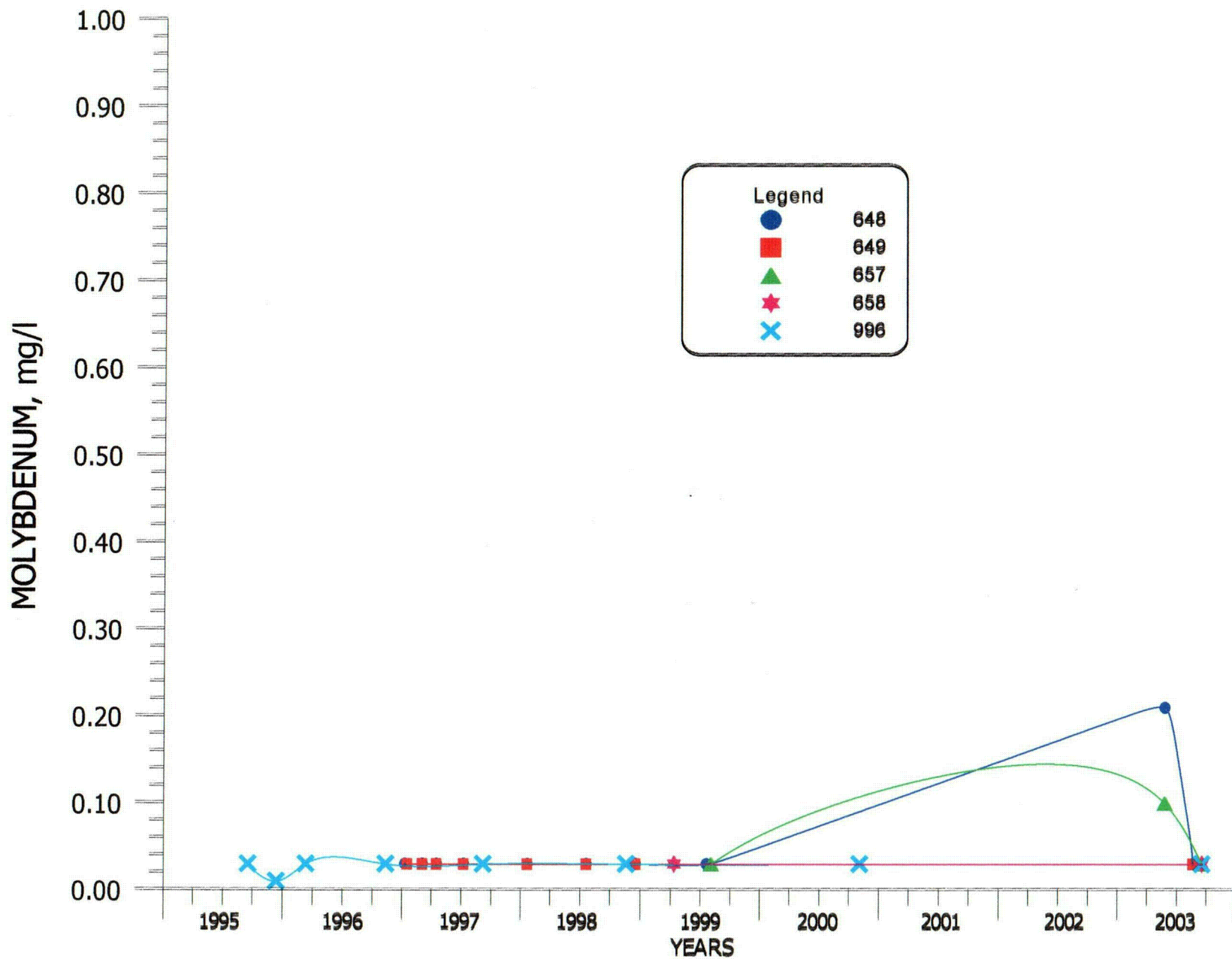
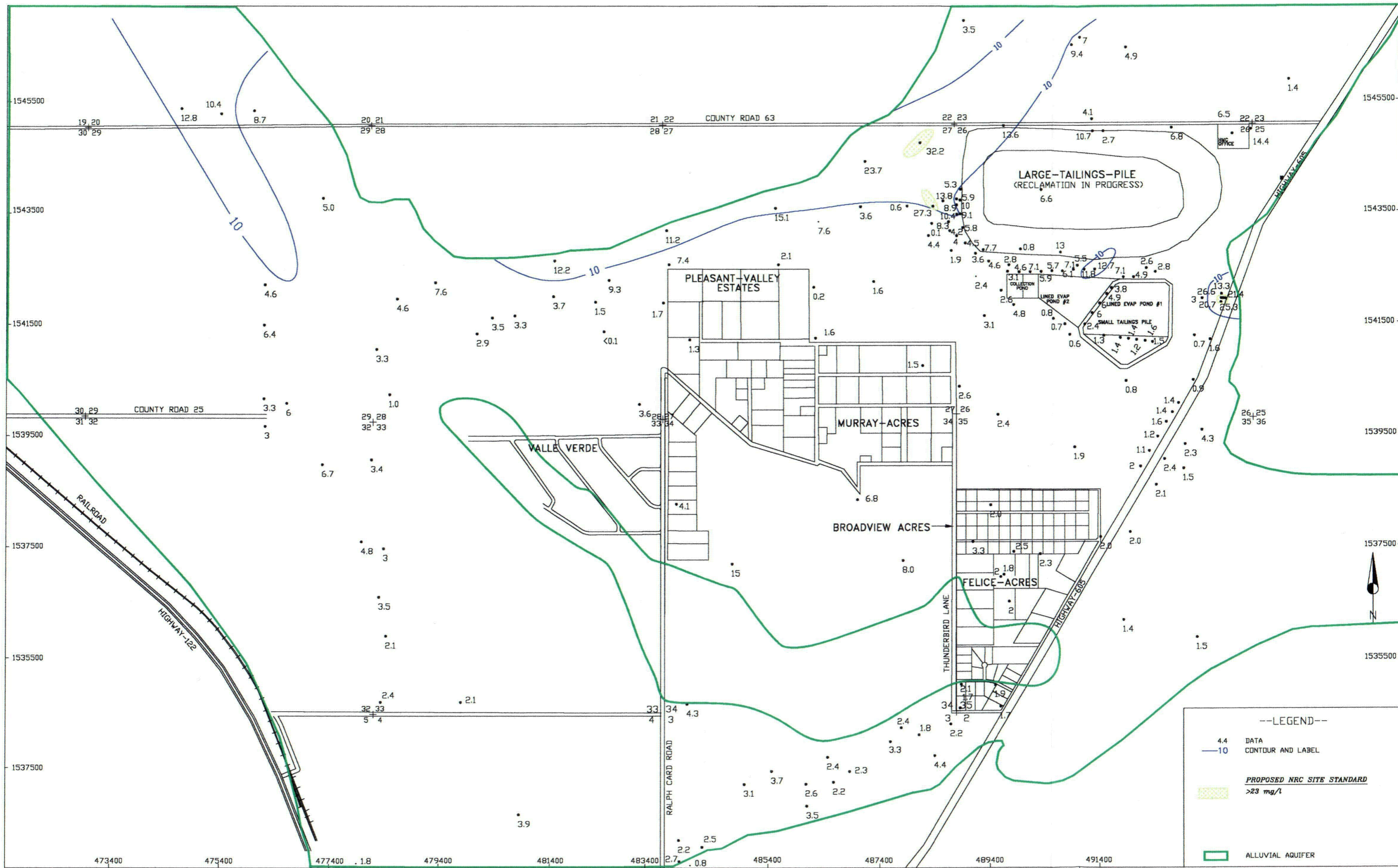


FIGURE 4.3-103. MOLYBDENUM CONCENTRATIONS FOR WELLS 648, 649, 657, 658 AND 996.



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FIGURE 4.3-104. NITRATE CONCENTRATIONS OF THE ALLUVIAL AQUIFER, 2003, mg/l

C129

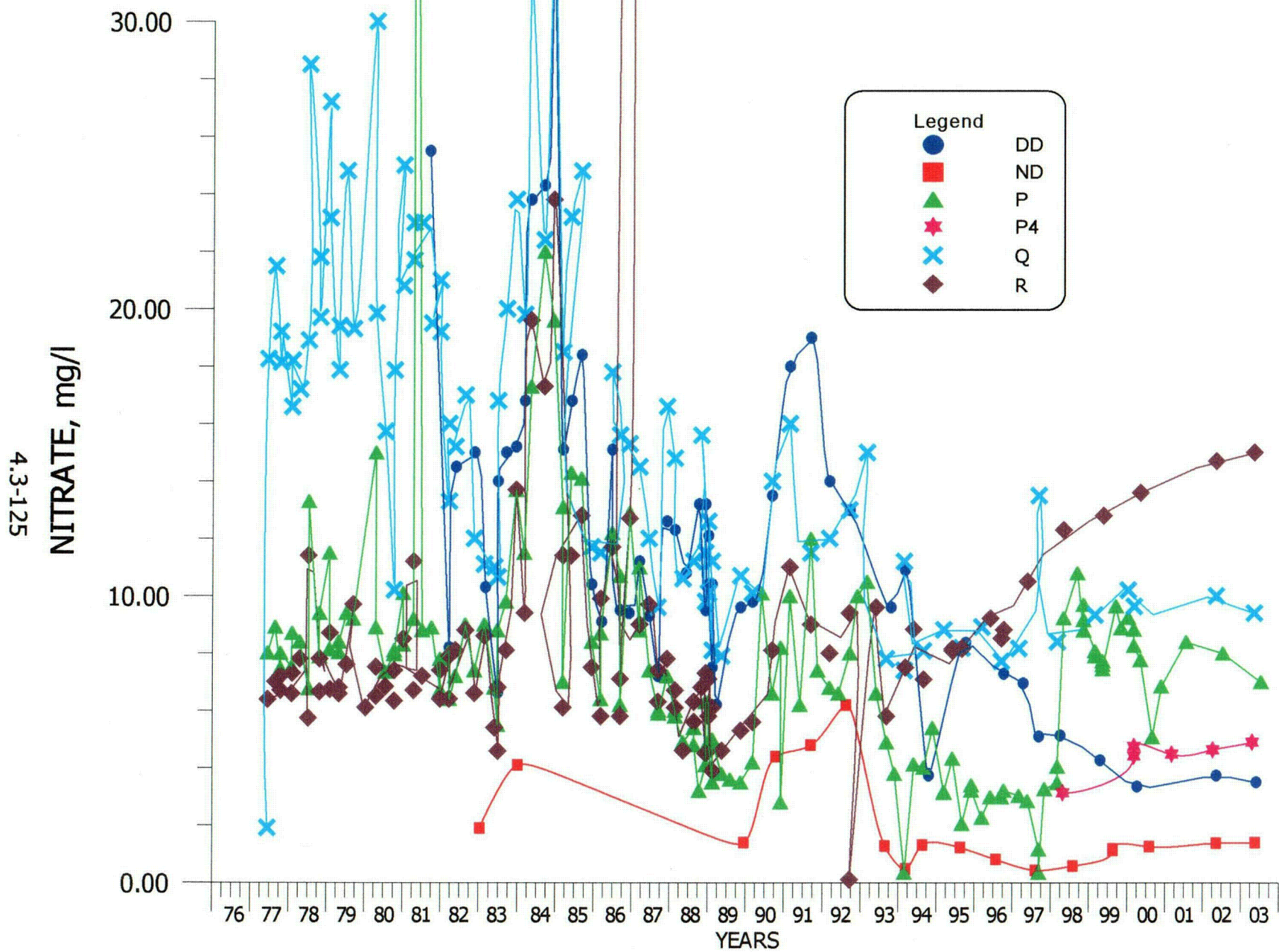


FIGURE 4.3-105. NITRATE CONCENTRATIONS FOR WELLS DD, ND, P, P4, Q AND R.

4.3-126

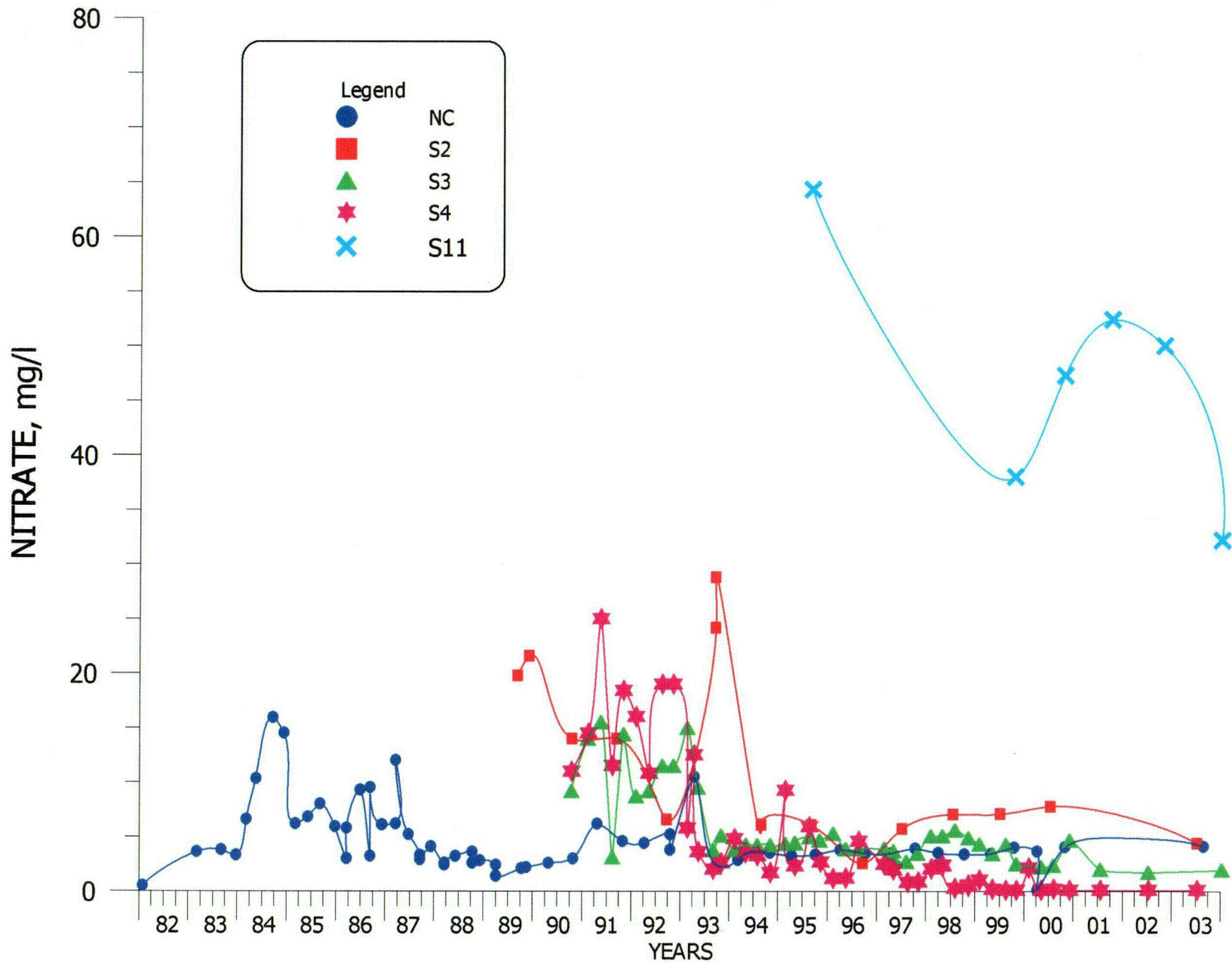


FIGURE 4.3-106. NITRATE CONCENTRATIONS FOR WELLS NC, S2, S3, S4 AND S11.

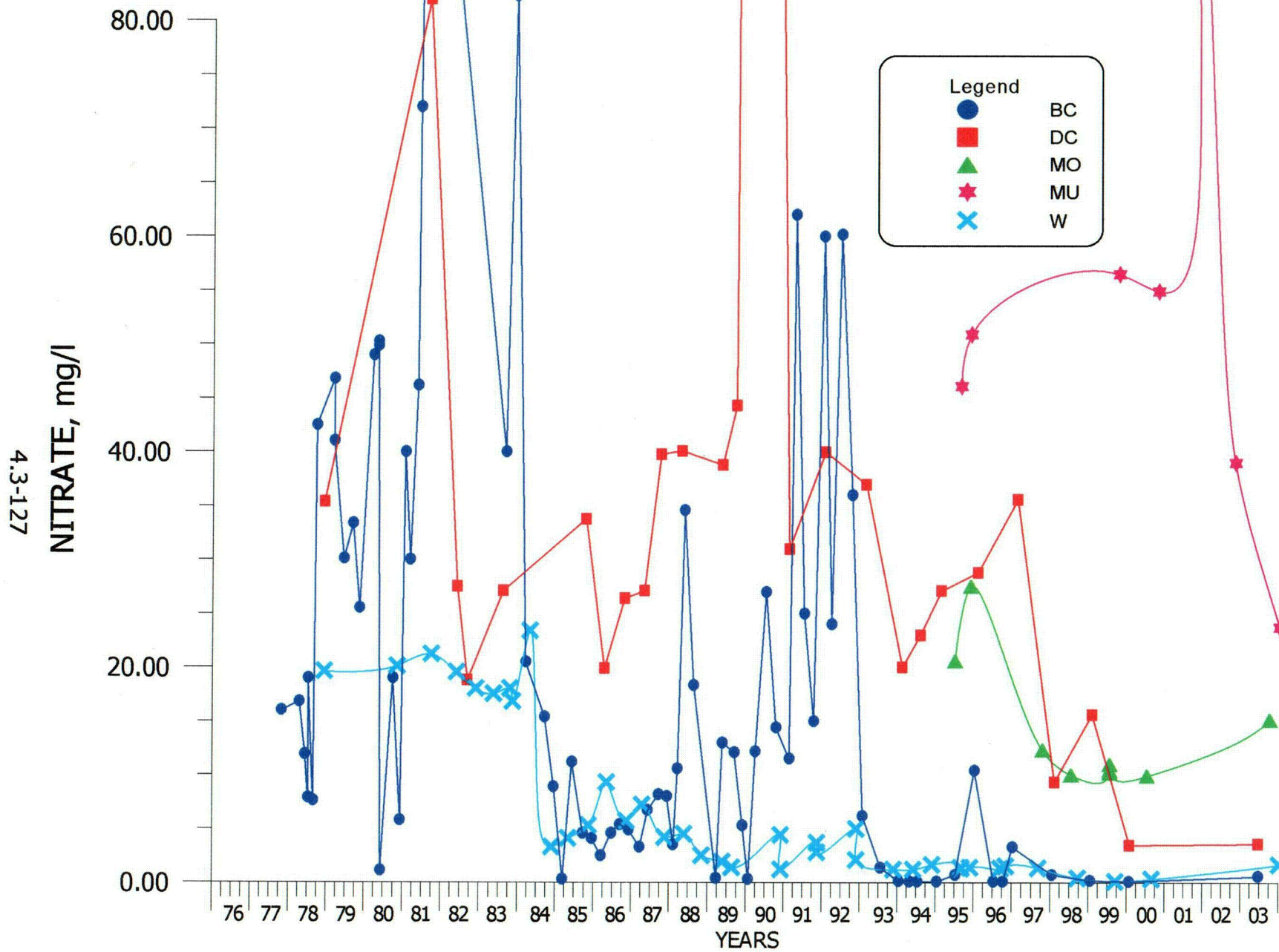


FIGURE 4.3-107. NITRATE CONCENTRATIONS FOR WELLS BC, DC, MO, MU AND W.

4.3-128

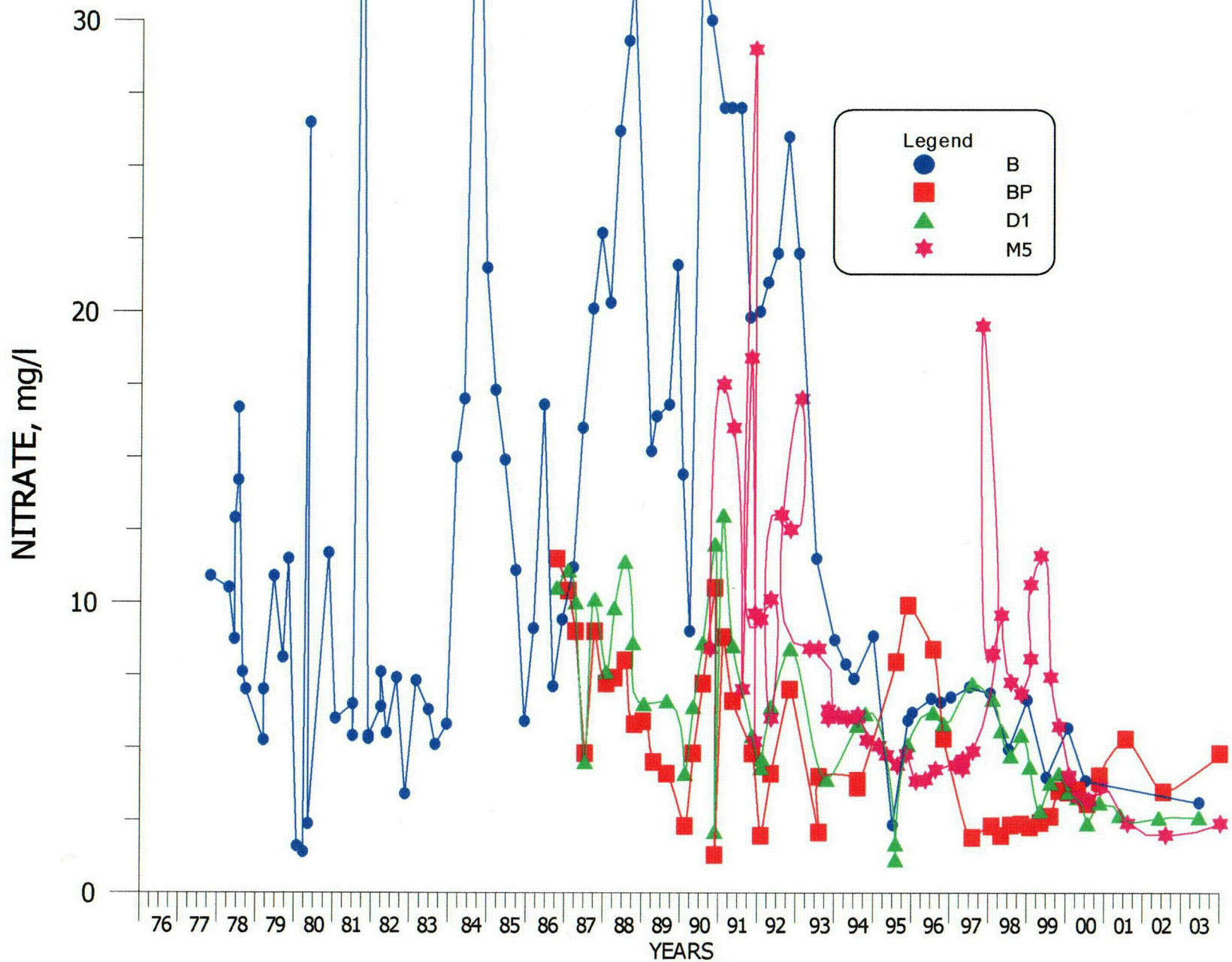


FIGURE 4.3-108. NITRATE CONCENTRATIONS FOR WELLS B, BP, D1 AND M5.

4.3-129

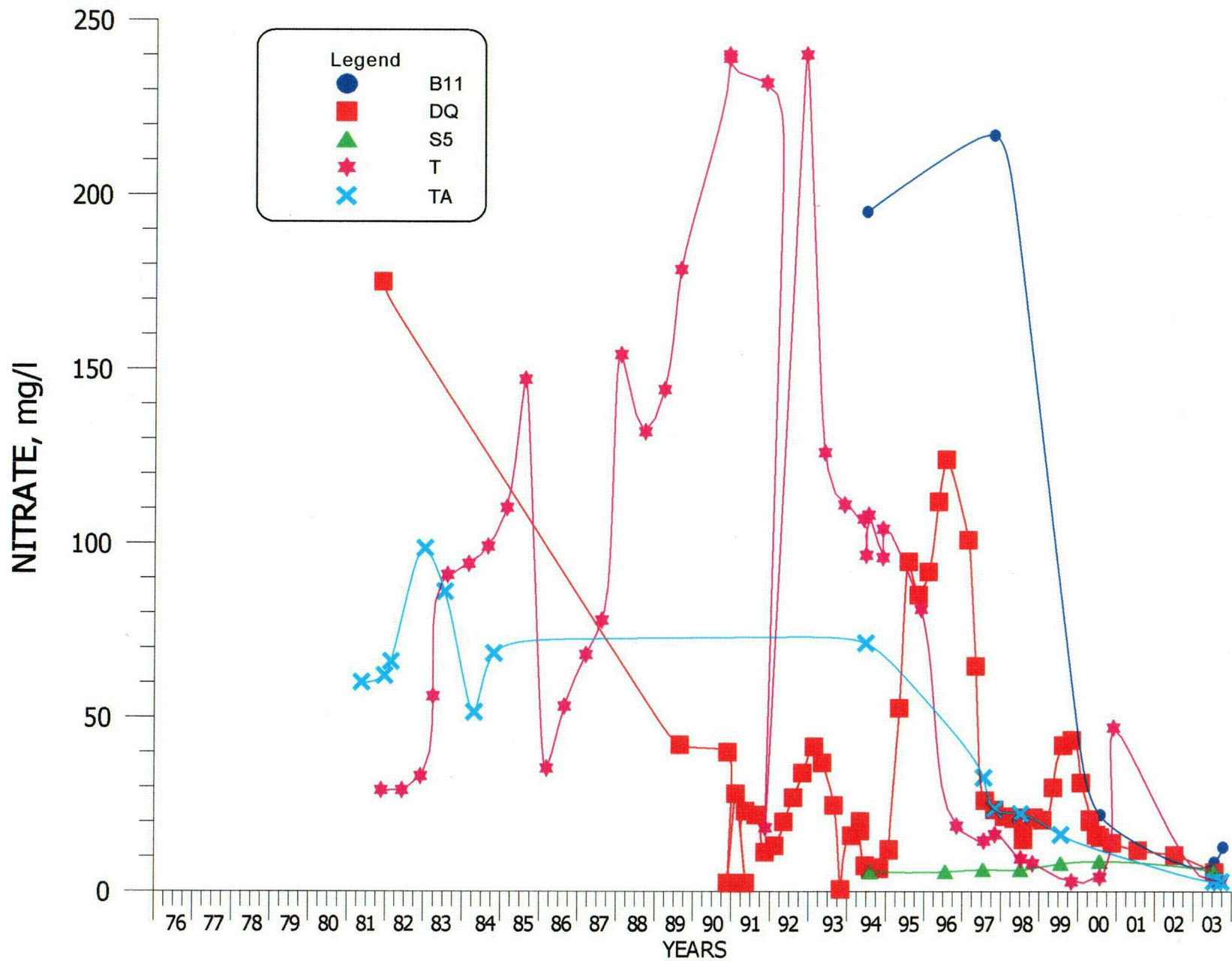


FIGURE 4.3-109. NITRATE CONCENTRATIONS FOR WELLS B11, DQ, S5, T AND TA.

4.3-130

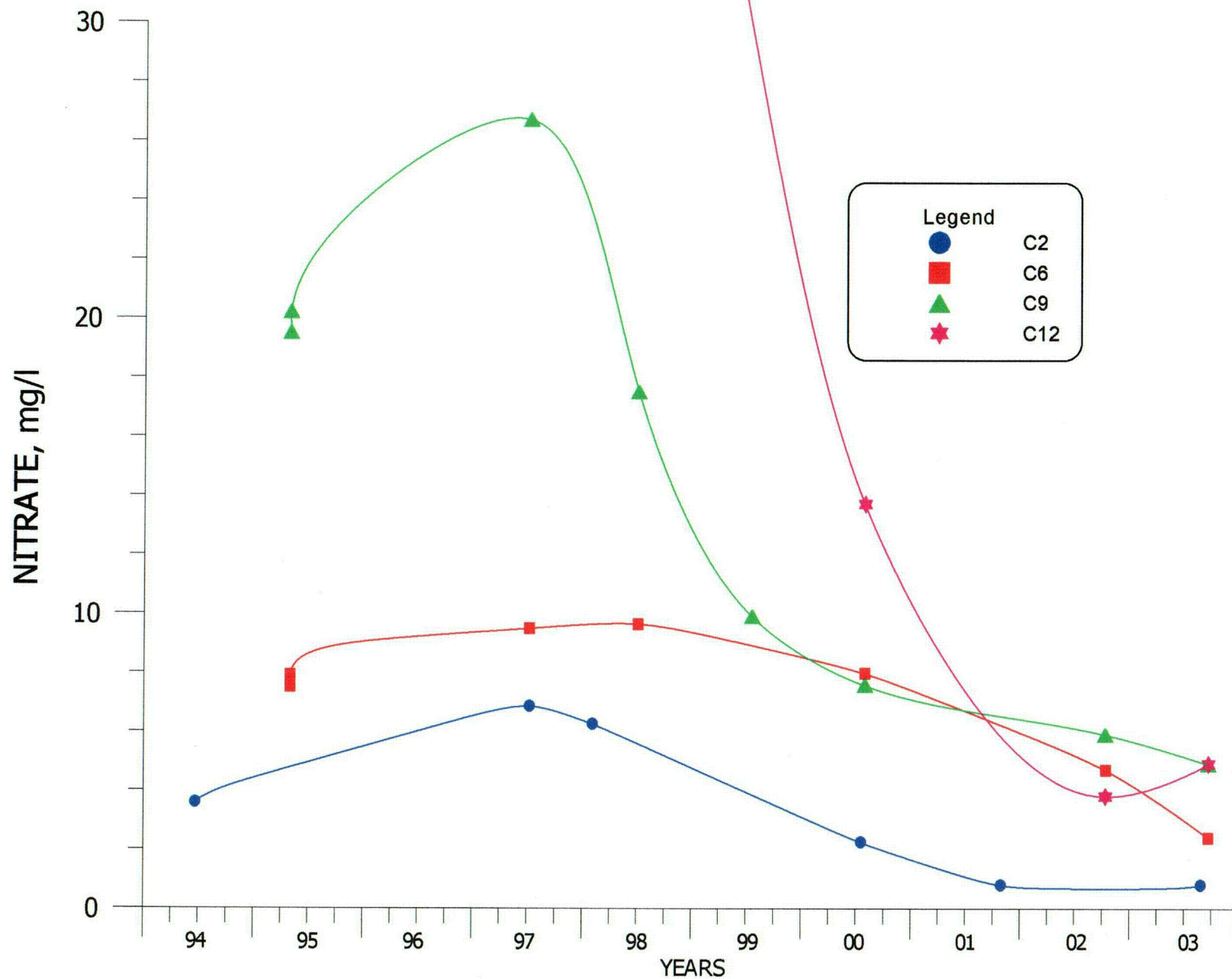


FIGURE 4.3-110. NITRATE CONCENTRATIONS FOR WELLS C2, C6, C9 AND C12.

4.3-131

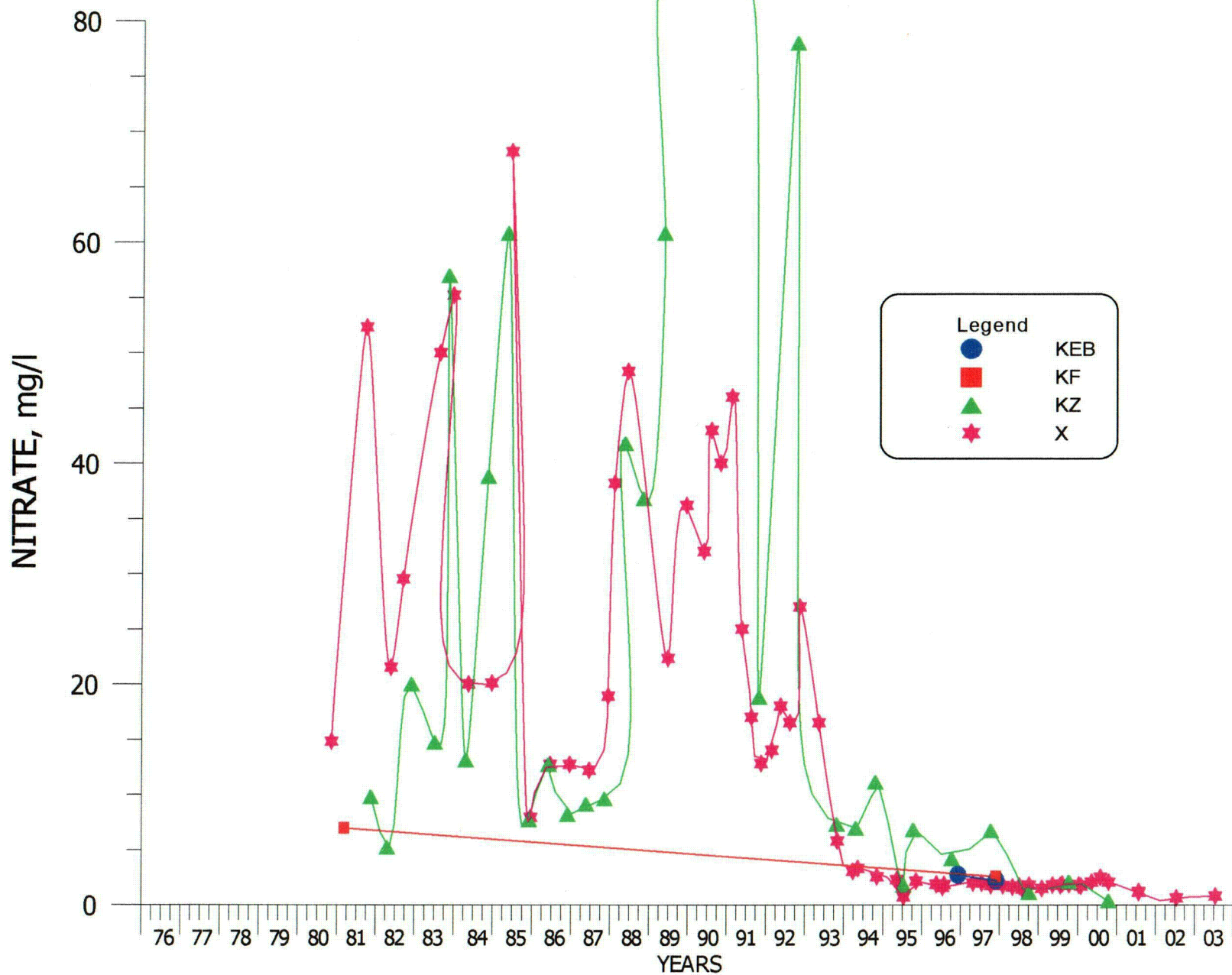


FIGURE 4.3-111. NITRATE CONCENTRATIONS FOR WELLS KEB, KF, KZ AND X.

4.3-132

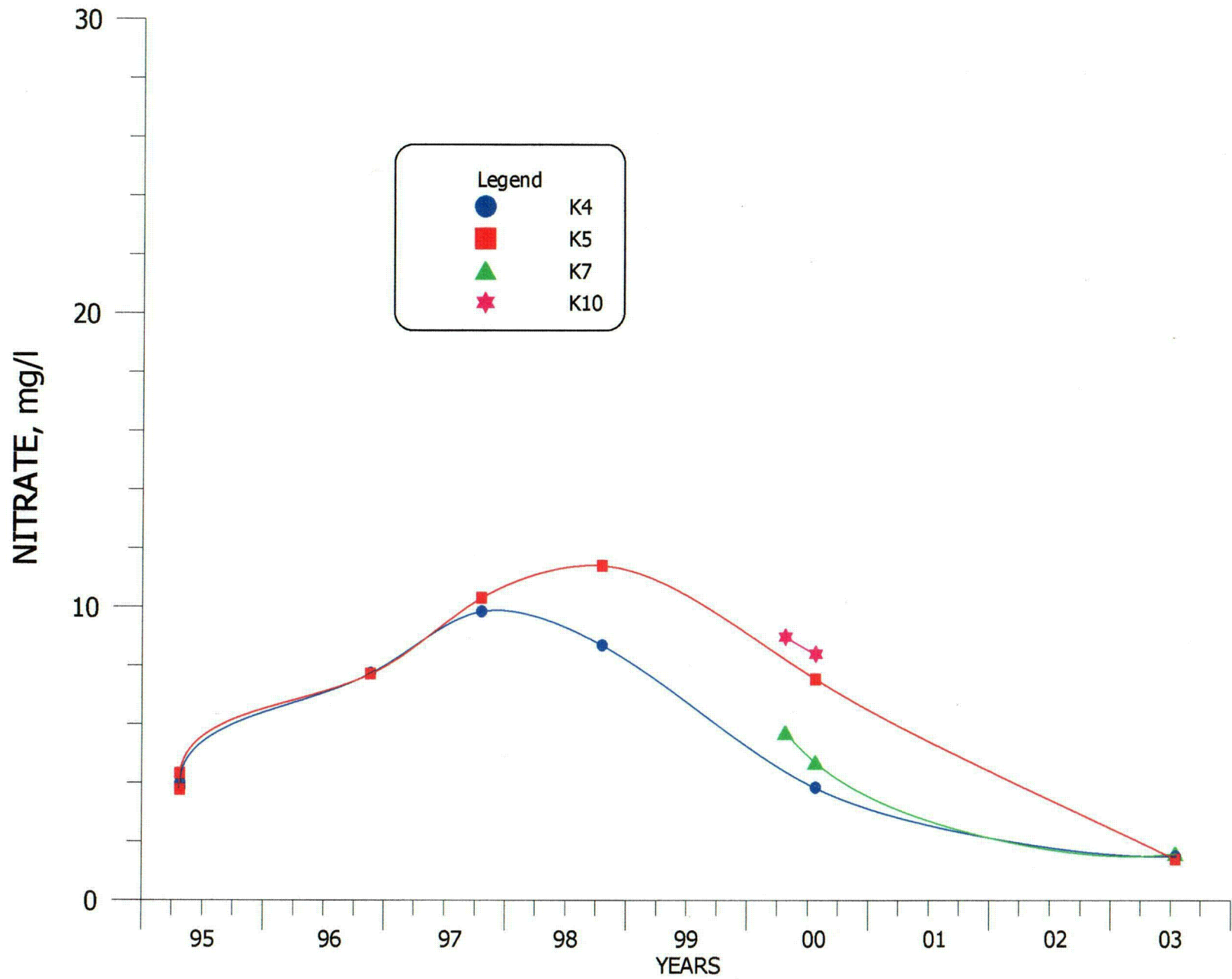


FIGURE 4.3-112. NITRATE CONCENTRATIONS FOR WELLS K4, K5, K7 AND K10.

4.3-133

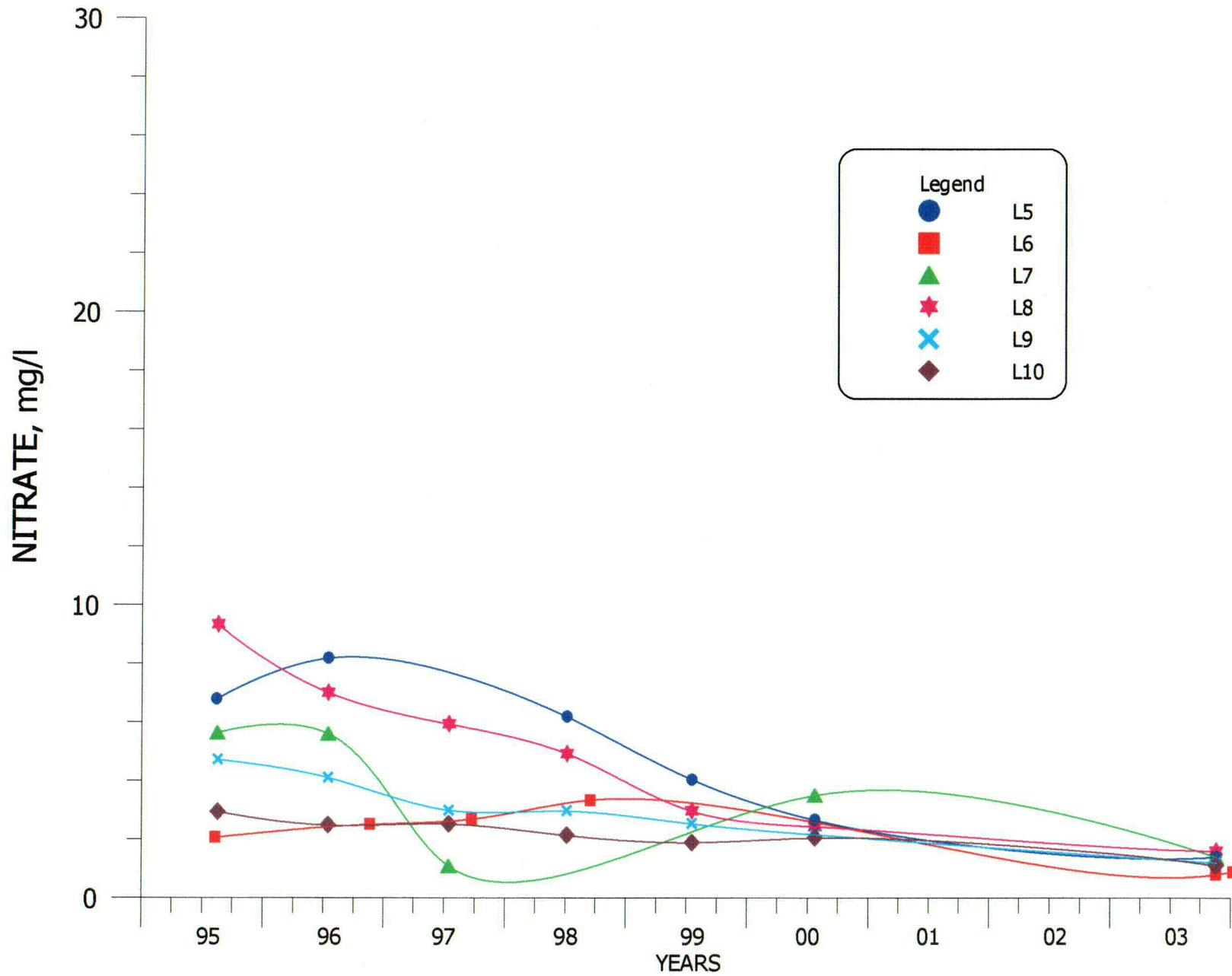


FIGURE 4.3-113. NITRATE CONCENTRATIONS FOR WELLS L5, L6, L7, L8, L9 AND L10.

4.3-134

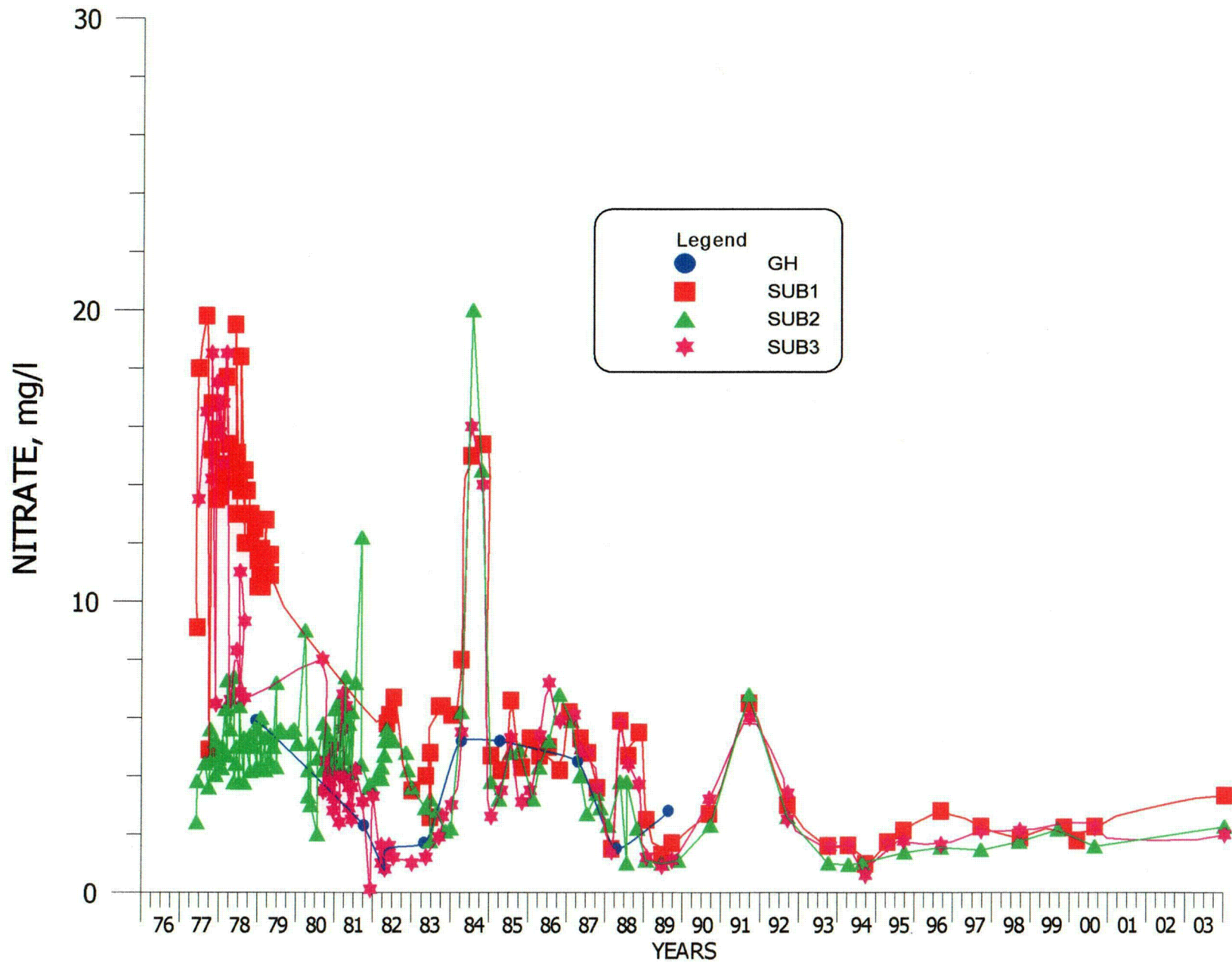


FIGURE 4.3-114. NITRATE CONCENTRATIONS FOR WELLS GH, SUB1, SUB2 AND SUB3.

4.3-135

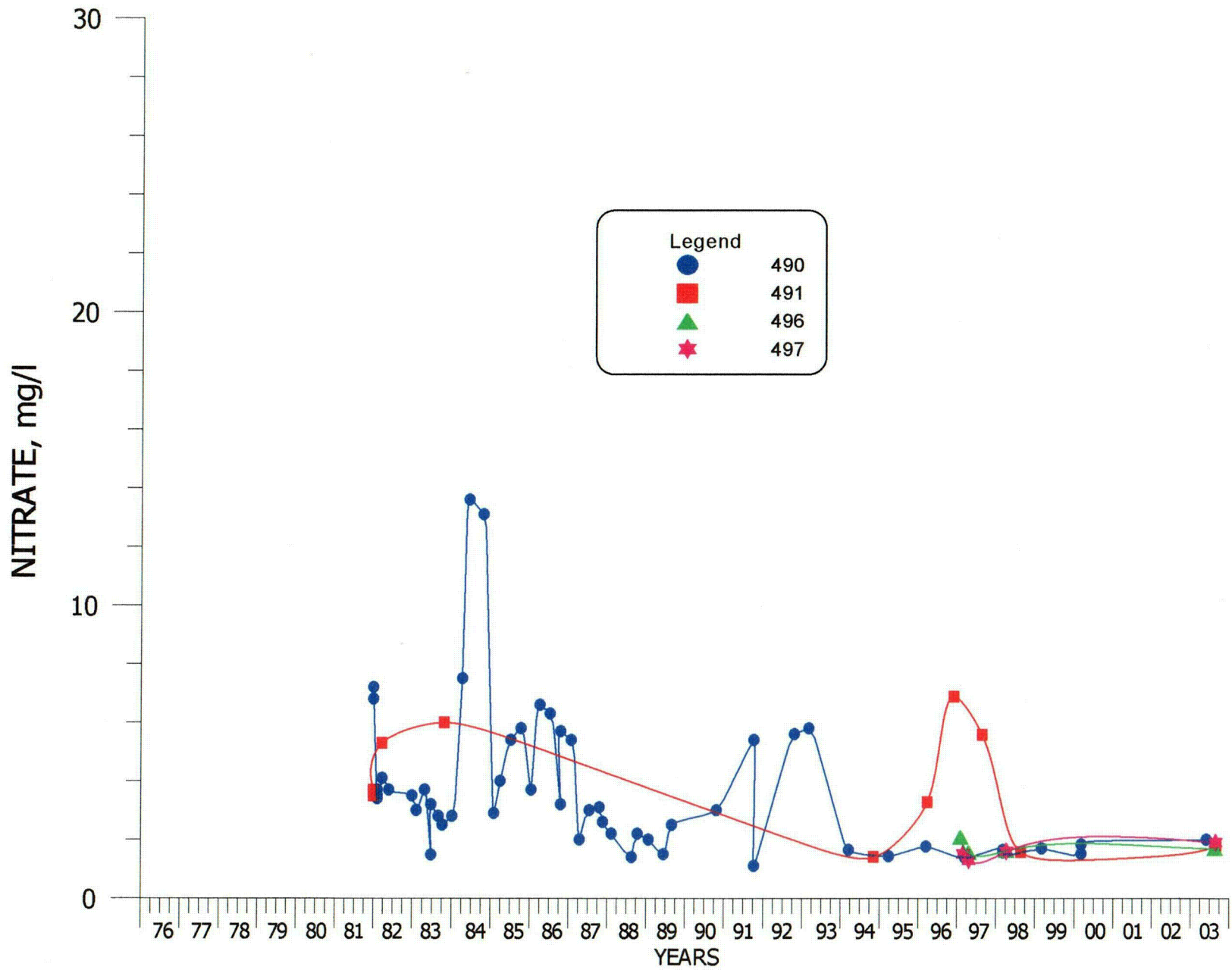


FIGURE 4.3-115. NITRATE CONCENTRATIONS FOR WELLS 490, 491, 496 AND 497.

4.3-136

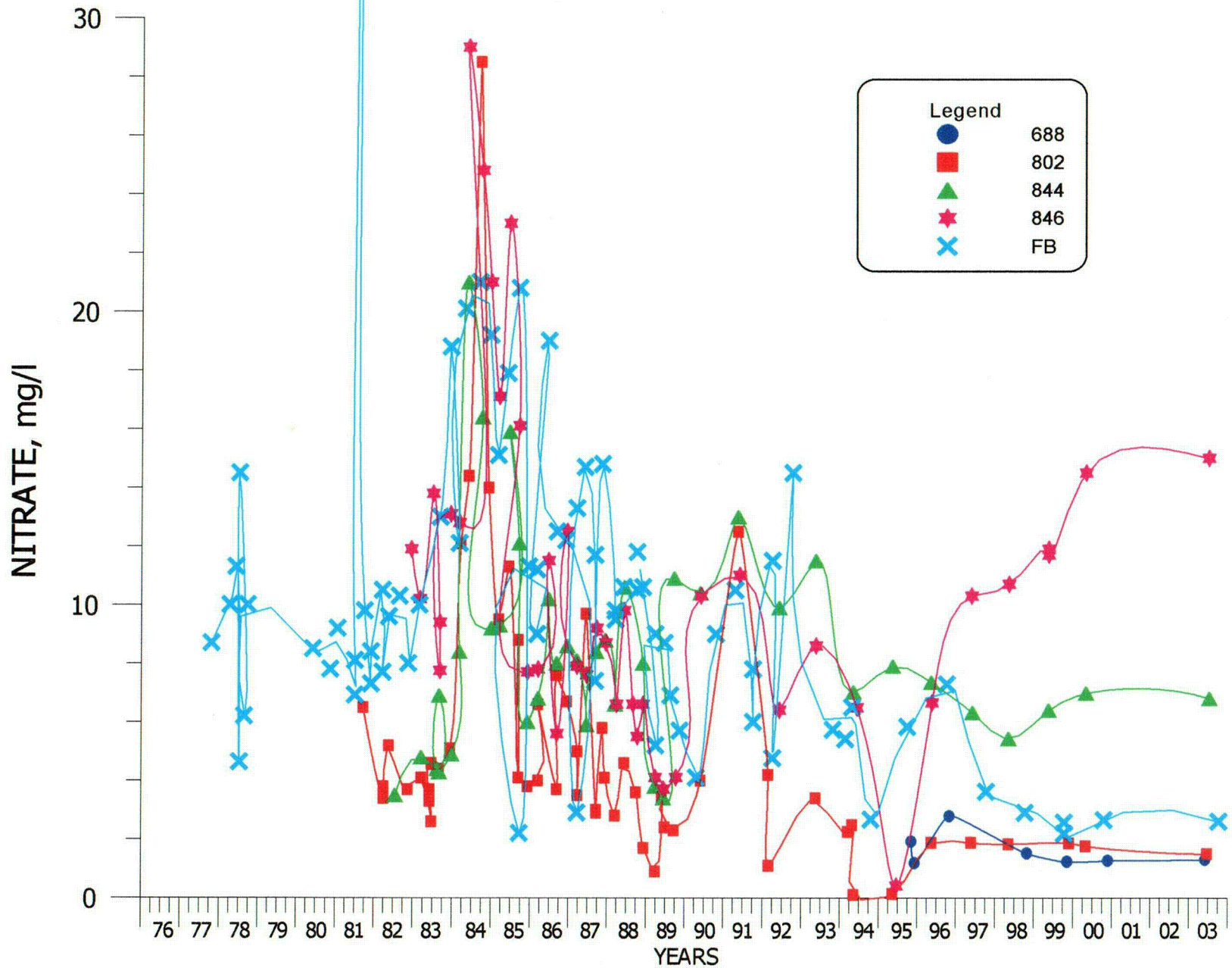


FIGURE 4.3-116. NITRATE CONCENTRATIONS FOR WELLS 688, 802, 844, 846 AND FB.

4.3-137

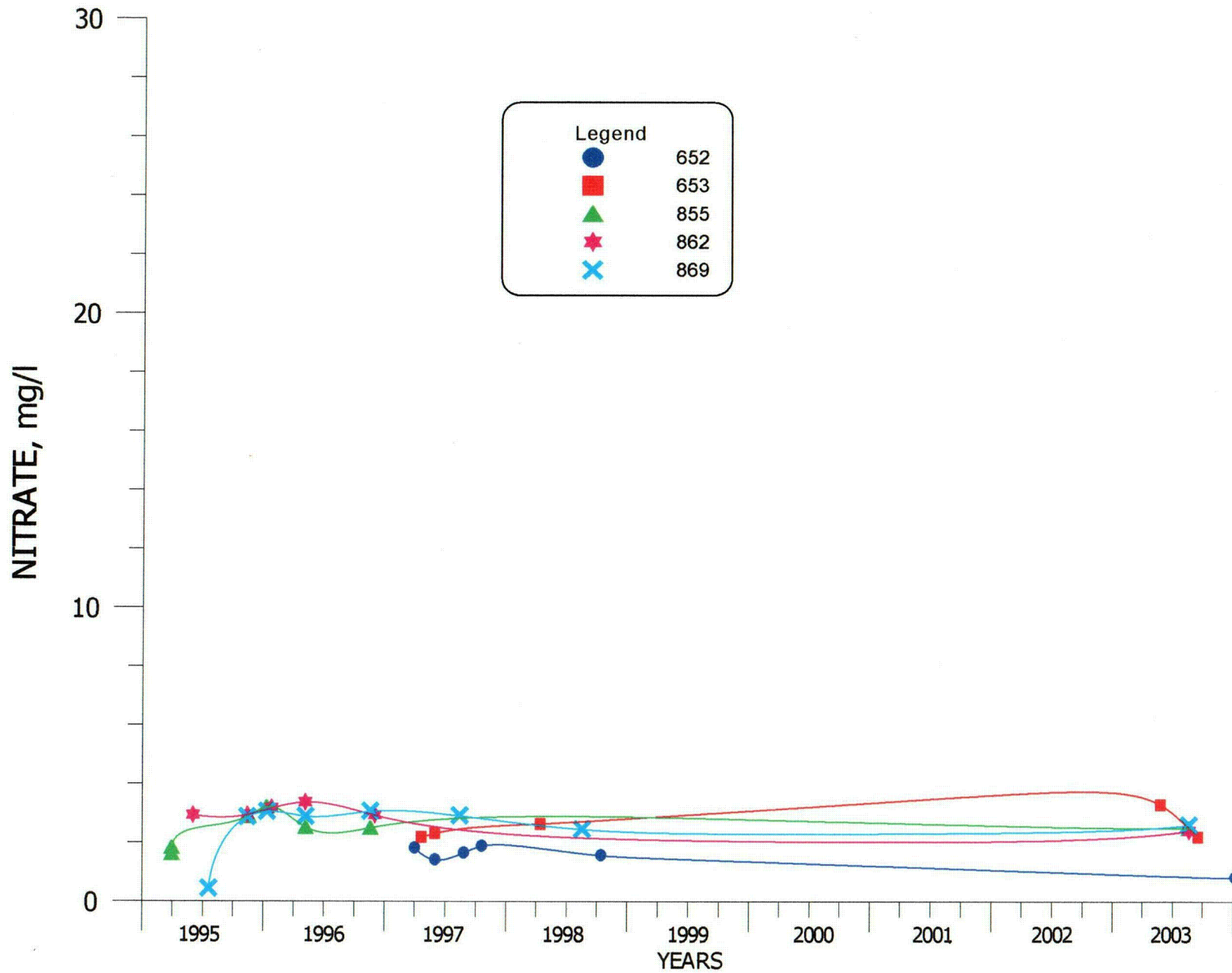


FIGURE 4.3-117. NITRATE CONCENTRATIONS FOR WELLS 652, 653, 855, 862 AND 869.

4.3-138

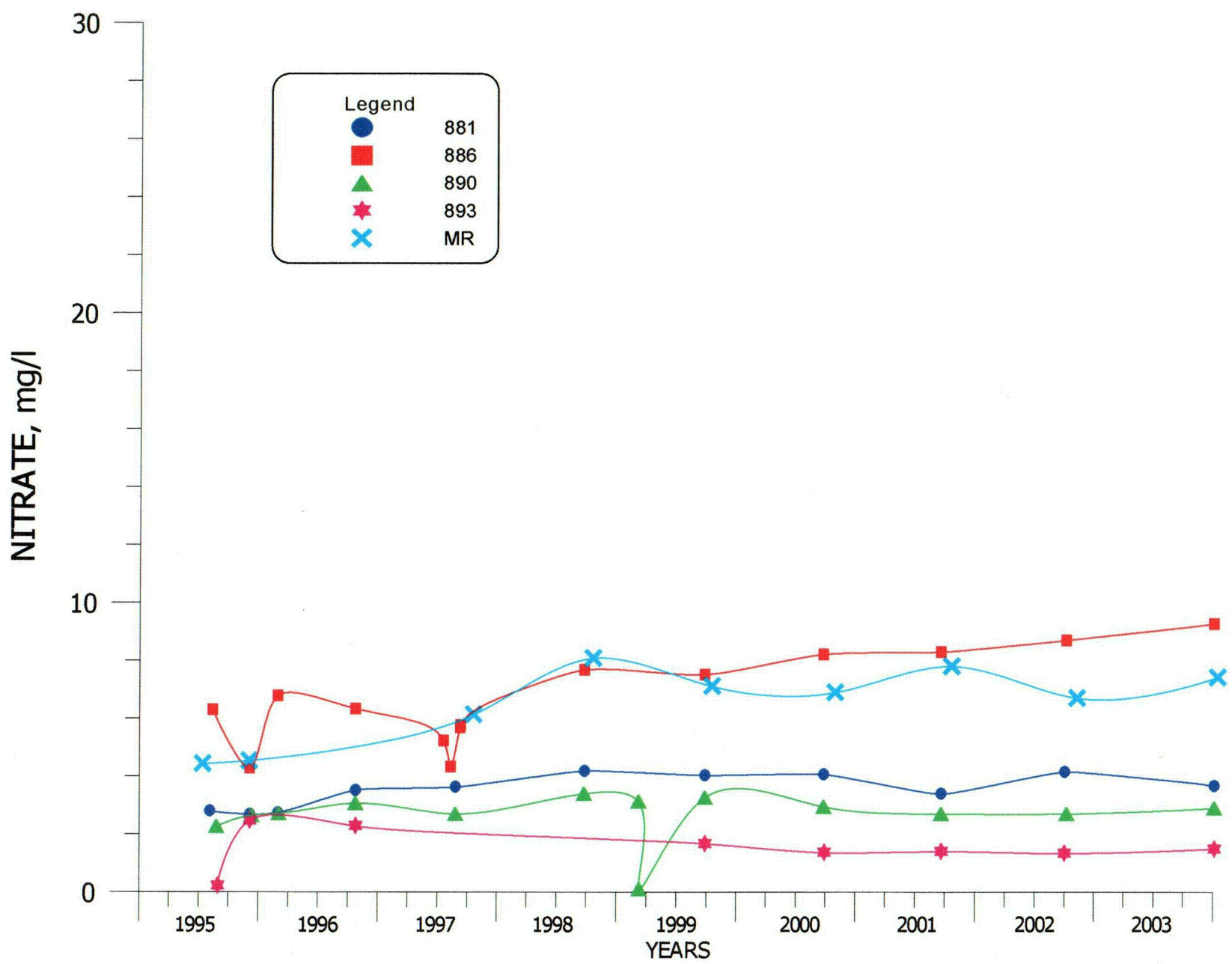


FIGURE 4.3-118. NITRATE CONCENTRATIONS FOR WELLS 881, 886, 890, 893 AND MR.

4.3-139

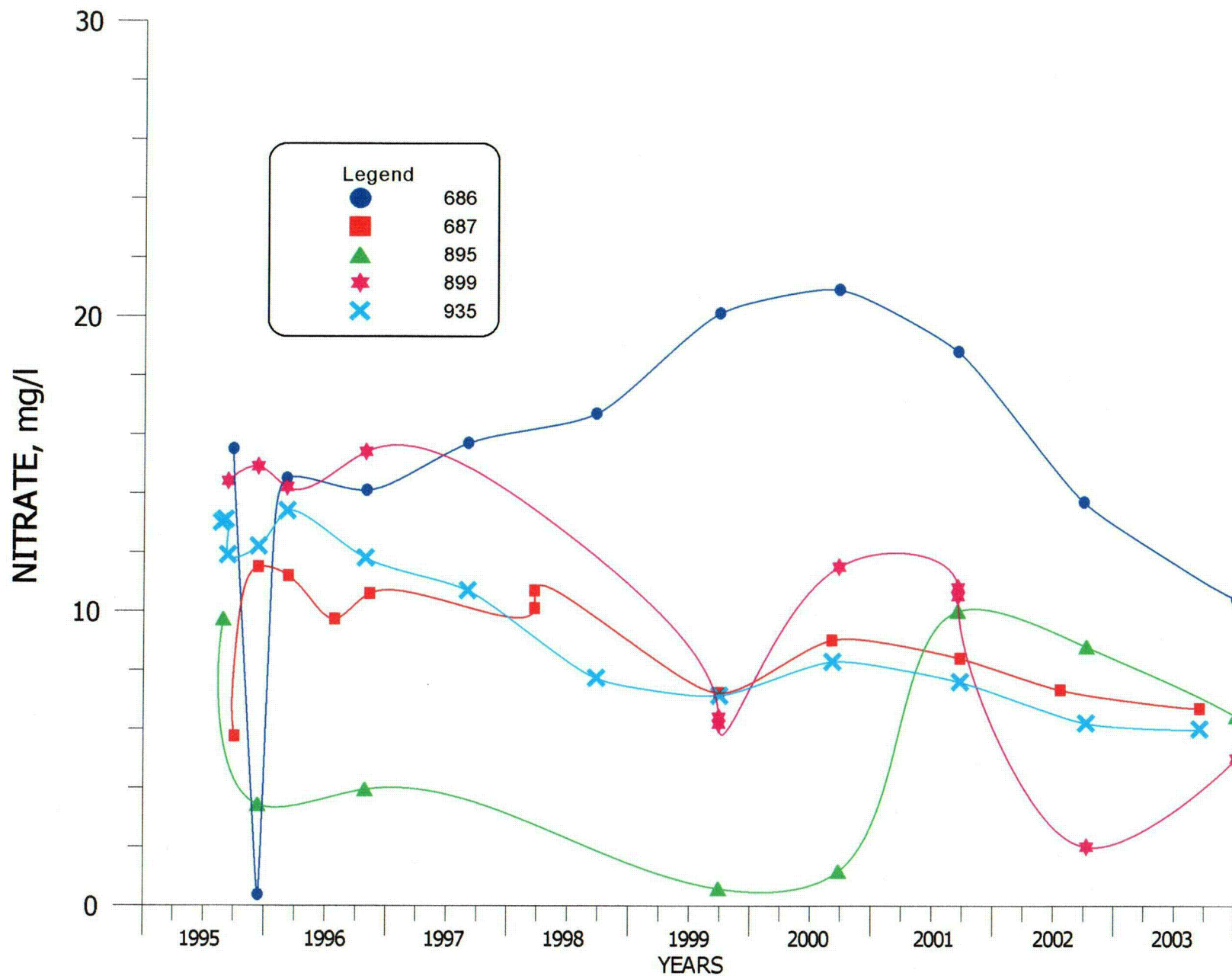


FIGURE 4.3-119. NITRATE CONCENTRATIONS FOR WELLS 686, 687, 895, 899 AND 935.

4.3-140

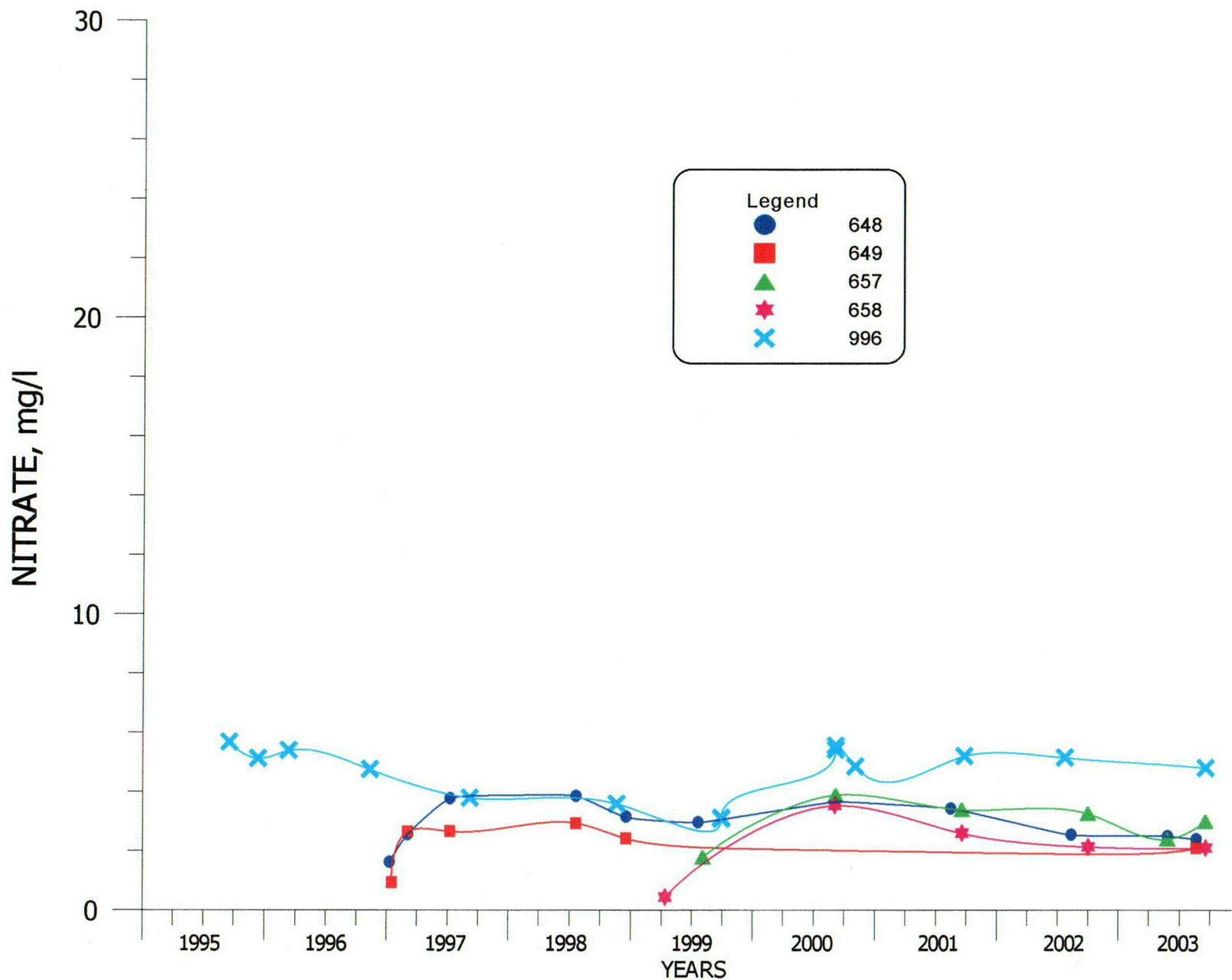
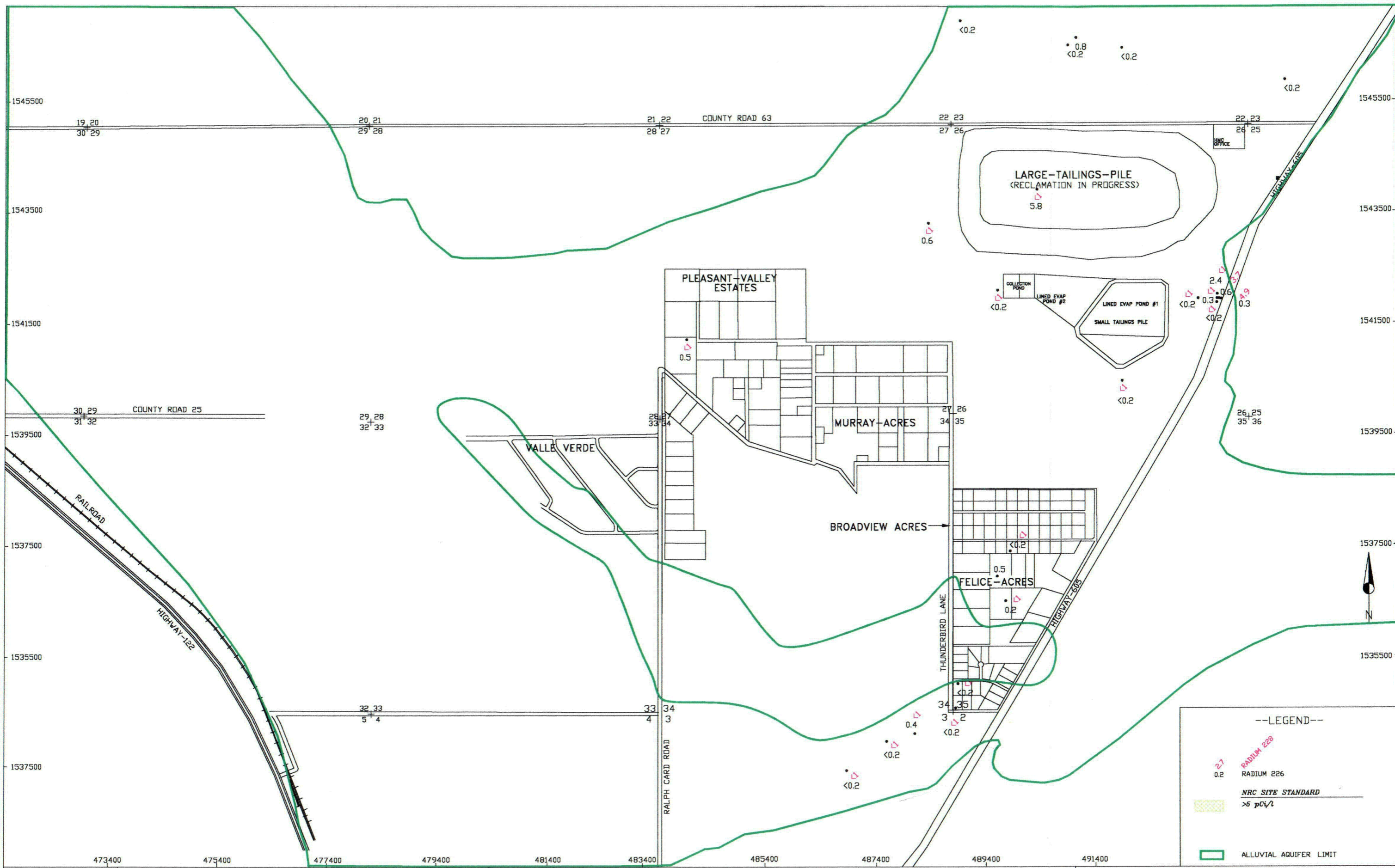


FIGURE 4.3-120. NITRATE CONCENTRATIONS FOR WELLS 648, 649, 657, 658 AND 996.

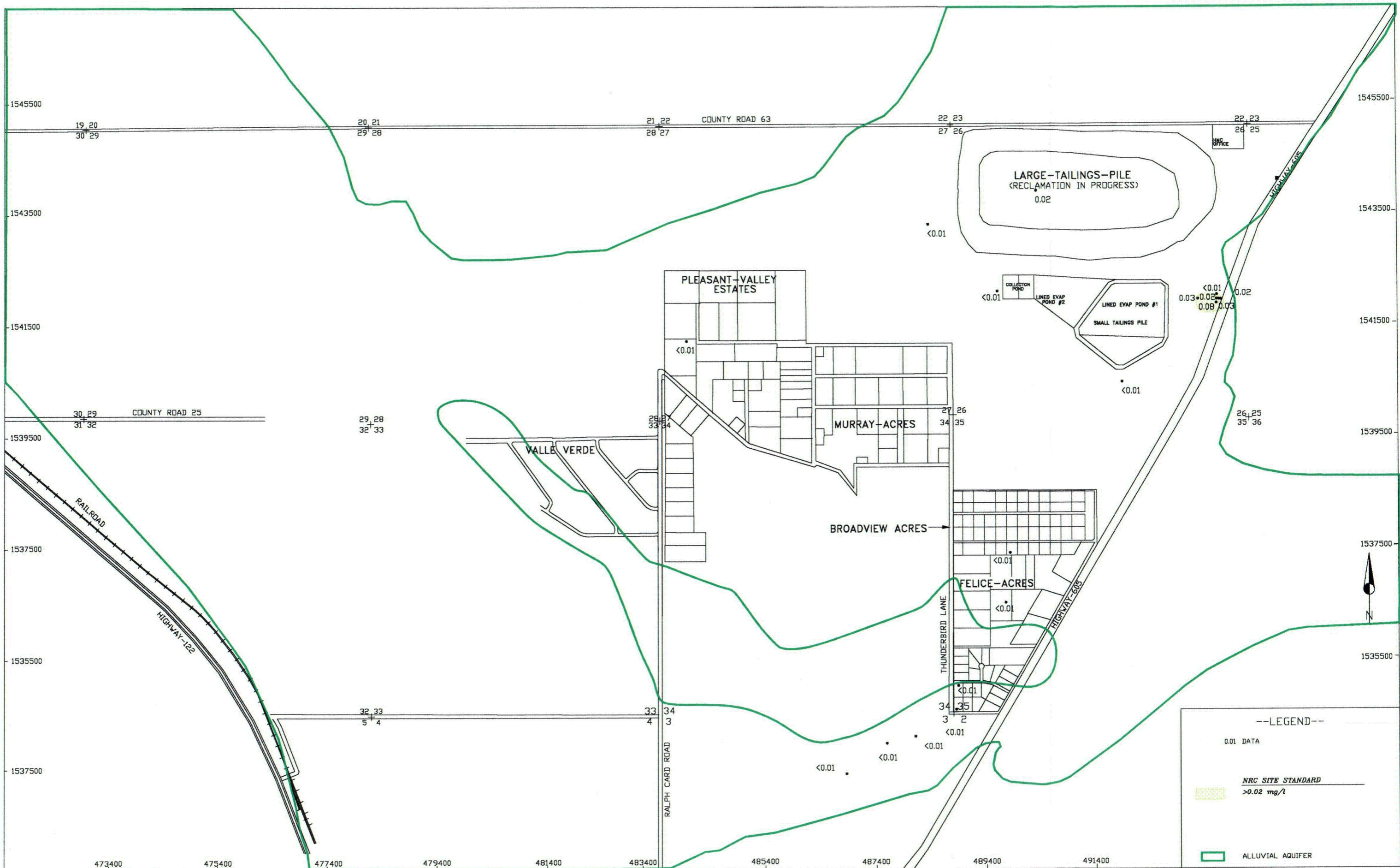


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FIGURE 4.3-121. RADIUM-226 AND RADIUM-228
 CONCENTRATIONS FOR THE ALLUVIAL AQUIFER,
 2003, pCi/l

C146

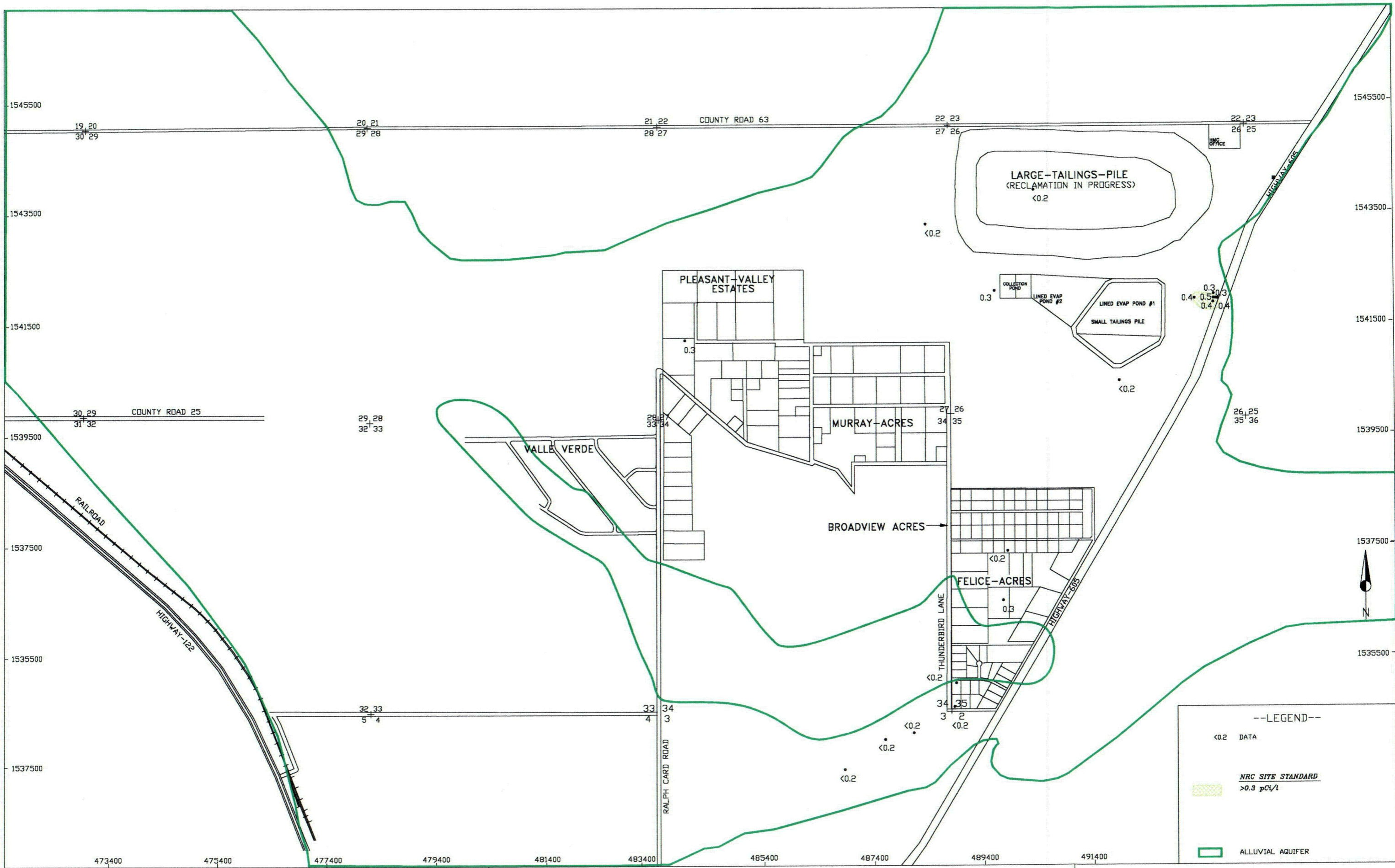


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FIGURE 4.3-122. VANADIUM CONCENTRATIONS
 of THE ALLUVIAL AQUIFER, 2003, mg/l
 page 4.3-142

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 DATE: 03/16/04

HOMESTAKE-MILL-AND-ADJACENT-PROPERTIES
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FIGURE 4.3-123. THORIUM-230 CONCENTRATIONS FOR THE ALLUVIAL AQUIFER, 2003, pCi/l
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5.0 UPPER CHINLE AQUIFER MONITORING

5.1 UPPER CHINLE WELL COMPLETION

Chinle aquifer well locations are shown on Figure 5.1-1. The Upper and Middle Chinle aquifers do not exist in the area west of Ralph Card Road. Table 5.1-1 presents basic information for the Chinle wells located on the Homestake property. This table indicates well coordinates, well depth, casing diameter, water level, measuring point in feet above land surface and elevation, and depth and elevation to the top of the Chinle aquifers. A "U" follows the elevation of the top of the Upper Chinle aquifer, and an "M" and an "L" have the same meanings for the Middle and Lower Chinle aquifers, respectively. Some of the wells have been used to define the depth to the base of the alluvium, and an "A" is presented following the elevation number to denote that these values are for the base of the alluvium. The casing perforation interval and aquifer unit are also presented in this table.

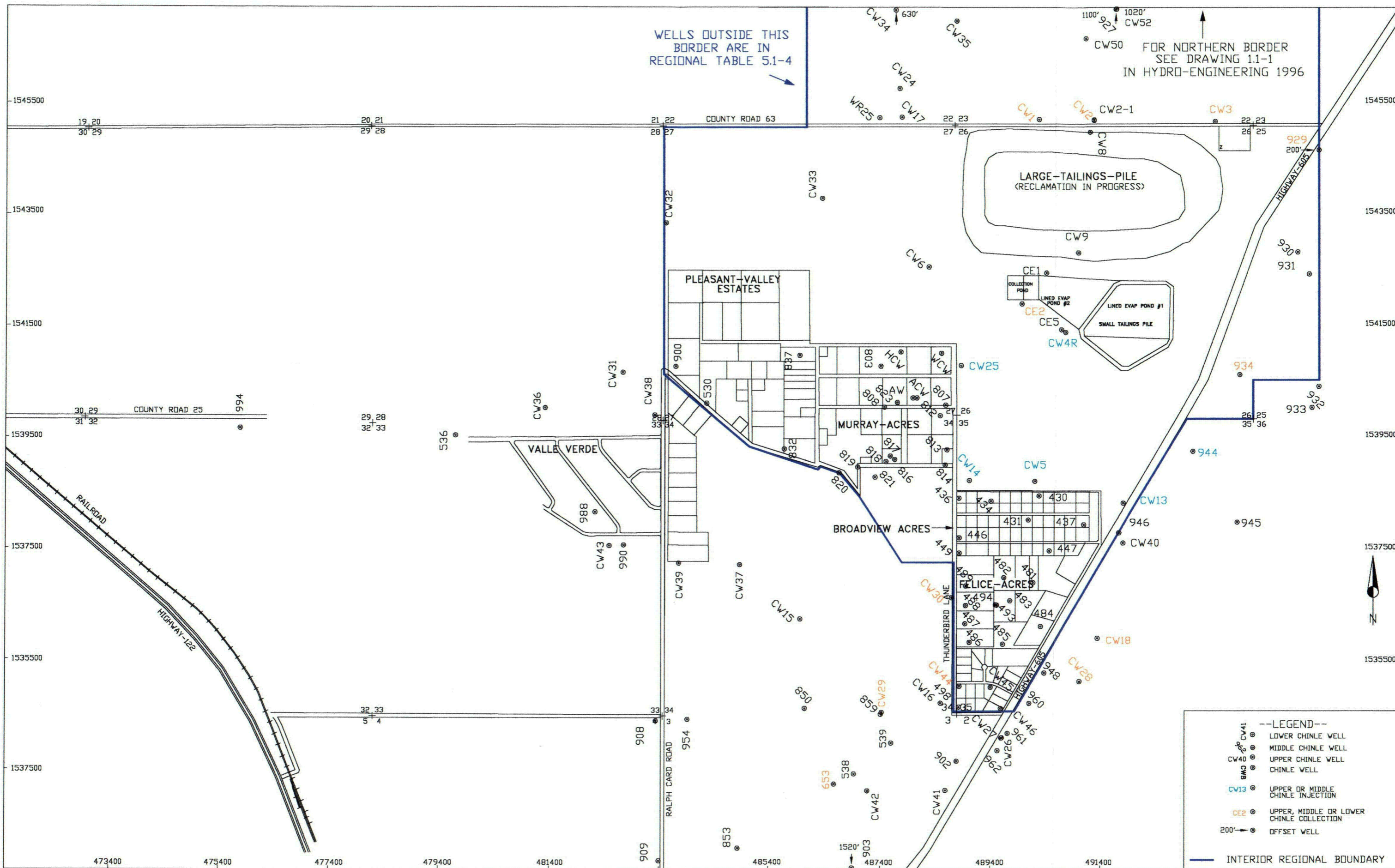
Table 5.1-2 presents basic well data for Chinle wells in Broadview Acres and Felice Acres. Table 5.1-3 presents similar data for Murray Acres and Pleasant Valley Estates Chinle wells. Wells that are not located within the immediate Grants Project property or within the four subdivision boundaries are denoted on Table 5.1-4 as the regional Chinle wells (see Figure 5.1-1 for inner regional boundary). Up-gradient Upper Chinle wells CW50 and CW52 were drilled in 2003.

An analysis of the background water quality for the Chinle aquifers was presented in Hydro-Engineering 2003b. Background values for the Chinle mixing zone and the Upper, Middle and Lower Chinle non-mixing zones were also defined in the previously cited report. These background values are listed in the title block of the water-quality figures in this report.

The location of Upper Chinle wells is shown on Figure 5.1-2, with the areal extent of the Upper Chinle aquifer at the Grants Project also shown. Upper Chinle wells CW4R, CW5, CW13, CW25 and 944 are shown in cyan to note that these are fresh-water injection wells. Upper Chinle wells CE2, CW3, 929 and 934 were pumped as a source of flushing water for the tailings in 2003 and are shown in orange. Well CW18 is also shown in orange, because this well was used as a supply for fresh-water injection starting in late September of 2002. This figure also shows the location of the West and East Faults. A blue dot pattern is used to show the limits of the Upper Chinle sandstone where Chinle shale exists between the sandstone and the

alluvium. Figure 5.1-3 presents a typical geologic cross section to show the relative position of the alluvial and Chinle aquifers (see Figure 5.1-2 for the location of this cross section).

The subcrop of the Upper Chinle sandstone where the alluvium is saturated or unsaturated above the Upper Chinle sandstone is also shown on Figure 5.1-2. The Upper Chinle aquifer does not exist to the west and south of the subcrop area. The Upper Chinle sandstone, therefore, does not exist west of the West Fault.



WELLS OUTSIDE THIS BORDER ARE IN REGIONAL TABLE 5.1-4

FOR NORTHERN BORDER SEE DRAWING 1.1-1 IN HYDRO-ENGINEERING 1996

LEGEND

- CW41 LOWER CHINLE WELL
- CW40 MIDDLE CHINLE WELL
- CW40 UPPER CHINLE WELL
- CW40 CHINLE WELL
- CW13 UPPER OR MIDDLE CHINLE INJECTION
- CE2 UPPER, MIDDLE OR LOWER CHINLE COLLECTION
- 200' OFFSET WELL

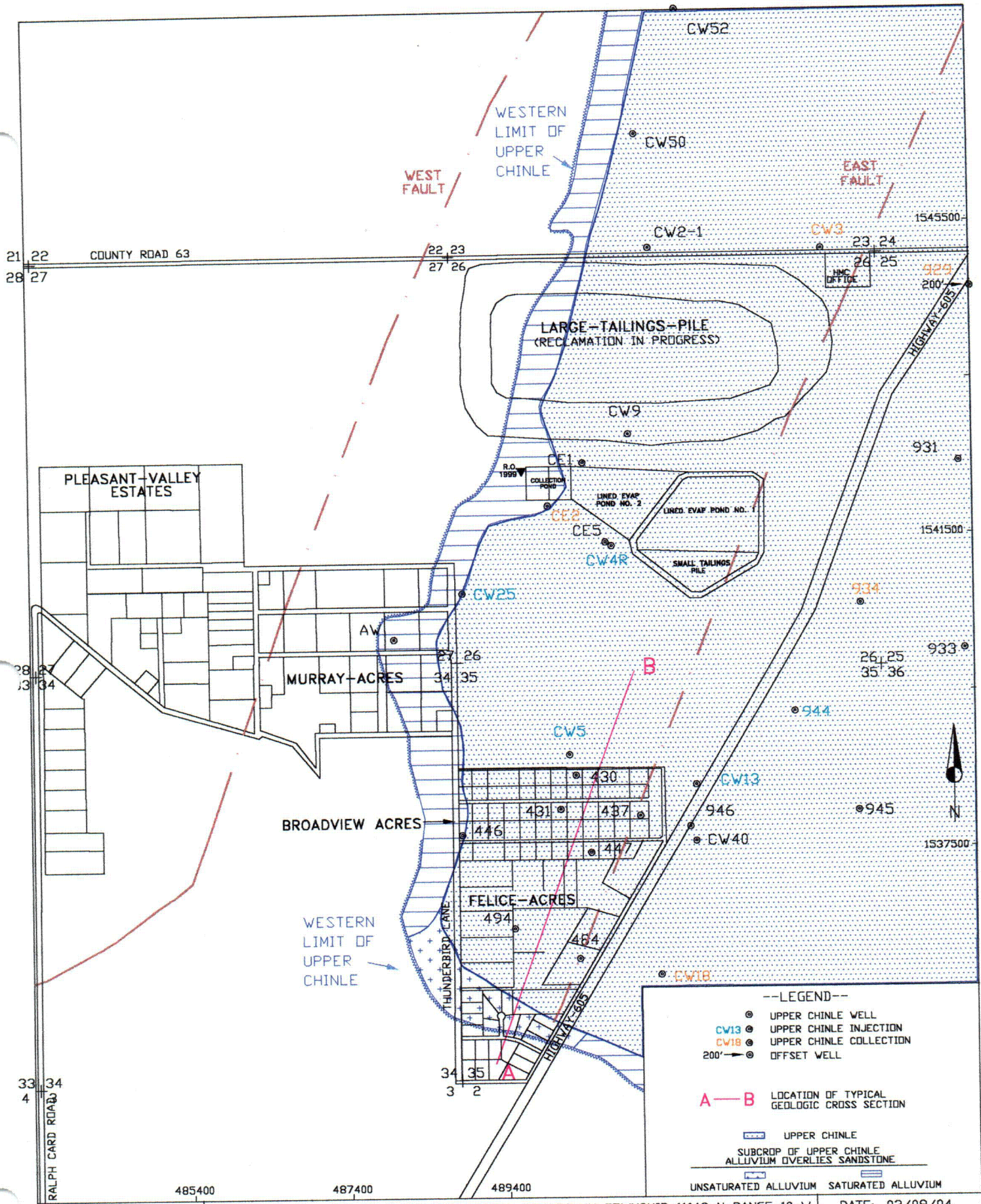
— INTERIOR REGIONAL BOUNDARY

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 DATE: 03/09/04

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FIGURE 5.1-1. CHINLE AQUIFER WELL LOCATIONS

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SCALE: 1"=1600' HOMESTEAK-MILL-AND-ADJACENT-PROPERTIES GRANTS-NM-TOWNSHIP-11&12-N-RANGE-10-W DATE: 03/09/04

FIGURE 5.1-2. LIMITS OF UPPER CHINLE AQUIFER AND WELL LOCATIONS

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