ANNUAL REPORT FOR ACTIVE IDOT WETLAND COMPENSATION AND HYDROLOGIC MONITORING SITES

September 1, 2000 to September 1, 2001

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Illinois State Geological Survey
Open File Series 2001–5

INTRODUCTION

This report was prepared by the Illinois State Geological Survey (ISGS) to provide the Illinois Department of Transportation (IDOT) with hydrogeologic data collected from wetland compensation sites and potential wetland compensation sites being monitored under contract (IDOT SW WIP FY02 ANT). Where appropriate, this report also includes a determination of areas meeting wetland hydrology criteria listed in the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual (U.S. Army Corps of Engineers 1987). Additional activities performed under this contract, such as water-quality monitoring, are not included in this report. Other site observations are included where appropriate.

Summaries of 30 sites are included in this report. Most summaries contain a location map, a site map showing monitoring wells and other field instruments, hydrographs for selected monitoring wells, and local precipitation data for the period. Sites where wetland compensation activities have been performed include a map showing the extent of areas satisfying wetland hydrology criteria. A list of all sites and their locations is included in Figure 1. All data included in this report are from September 1, 2000 to September 1, 2001 at IDOT's request.

METHODS

Determination of the area within each wetland compensation site that satisfies the wetland hydrology criteria of the U.S. Army Corps of Engineers Wetland Delineation Manual (U.S. Army Corps of Engineers 1987) is a main focus of the work summarized in this report, and the following criteria were used. An area that conclusively satisfies wetland hydrology criteria will be inundated or saturated for no less than 12.5% of the growing season. Inundation occurs when surface water is present at depths no greater than 2 meters (m) (6.6 feet) (ft). Saturation occurs when the water table is no deeper than 30 centimeters (cm) (1 ft) below land surface. Inundation or saturation for 5% to 12.5% of the growing season may satisfy wetland hydrology criteria but is not considered conclusive. For the purposes of this report, only areas that conclusively satisfy the criteria are included in calculations and shown on maps.

The Midwestern Climate Center (MCC) provides data regarding the length and beginning date of the growing season (Midwestern Climate Center 2001). The growing season is defined as the time period between the last occurrence of 28°F air temperatures in spring to the first occurrence of 28°F air temperatures in the fall. The median beginning date and length of growing season are calculated by the MCC for individual climate observation stations throughout the state. Data from the nearest observation station with an adequate period of record are used for each site.

Wells and stage gauges where water levels satisfied wetland hydrology criteria are listed in the text for each site. Interpolation between measuring points and/or extrapolation are used to locate the boundary of the area that satisfies wetland hydrology criteria. Best professional judgement is used to refine the location of this boundary, using small-scale topographic features, vegetation, soils, and other features. To measure the size of an area satisfying wetland hydrology criteria, the boundaries were plotted on the best available base map, then measured with a Tamaya Super Planix B digital planimeter and listed in acres (ac) and hectares (ha). Boundaries shown on the maps are dashed to indicate a larger uncertainty where data are scarce. If other methods were used to measure this area, they are noted in the site summaries.

The accuracy of each area measurement will vary significantly depending on the accuracy of the underlying base map, the accuracy in locating monitoring devices, and the accuracy of the

Active IDOT Water-Level Monitoring Sites September 1, 2000 to September 1, 2001

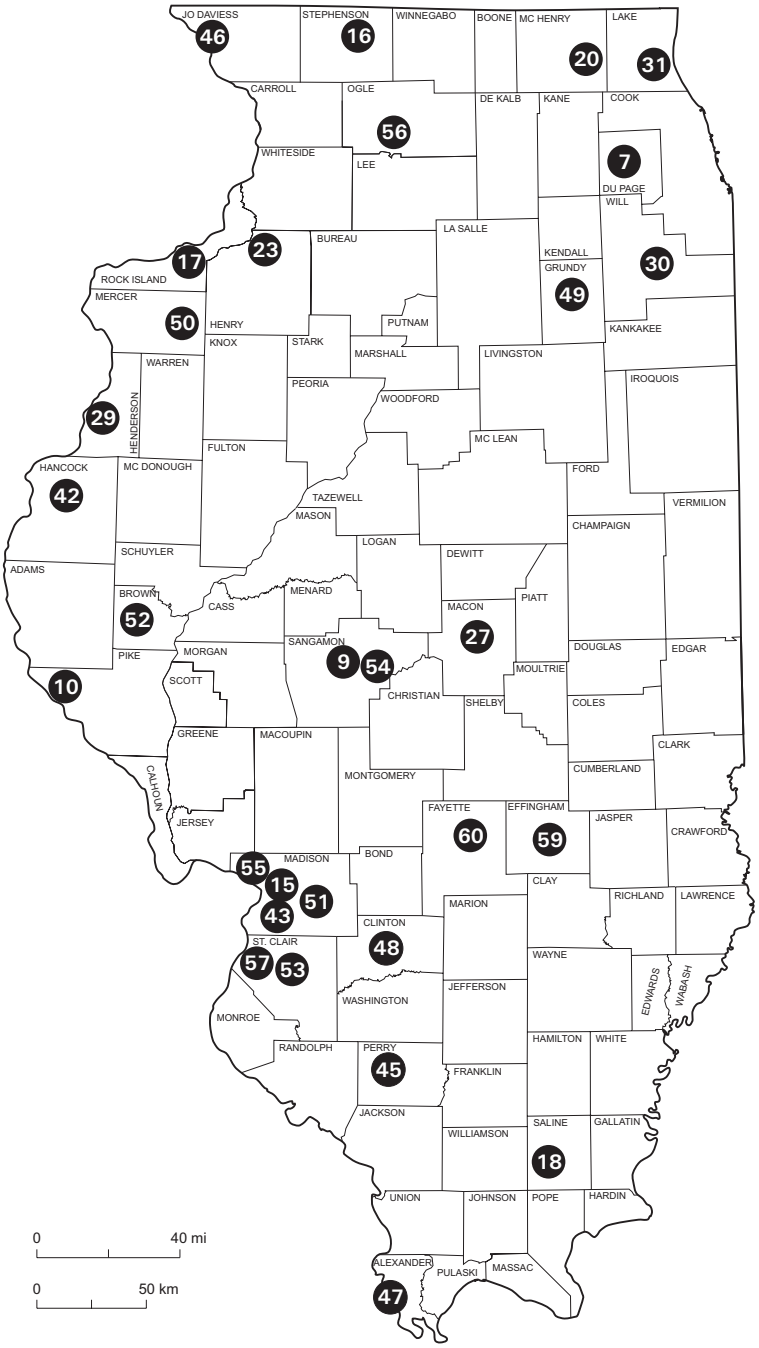

Figure 1 General locations of active water-level monitoring sites between September 1, 1999 and September 1, 2000.

ISGS #	Site Name Route and FAP #
7	Klein Creek IL 64 FAP 307
9	Veteran's Parkway, Springfield FAP 662
10	Hannibal Bridge US 36 FAP 319
15	Sand Road US 267 FAP 310
16	Orangeville IL 26 FAP 316
17	Milan Beltway, Airport Road FAU 5822
18	Saline County IL 13 FAP 331
20	Hickory Grove US 14 FAP 305
23	Joslin IL 92 FAP 585
27	Decatur US 51 FAP 322
29	Gulfport US 34 FAP 313
30	Spring Creek I-355 FAP 340
31	North Chicago US 41/IL 137 FAP 120
42	Hancock County near Carthage US 136 FAP 315 & 10
43	Former Eckmann & Bischoff Properties IL 3 FAP 14
45	Perry County Pyatt's Blacktop FAS 864
46	Galena River Bridge West Stagecoach Trail FAS 67
47	Alexander County IL 146 FAP 312
48	Sugar Creek, Clinton County FAS 783
49	Morris, Illinois River Potential Wetland Bank
50	Edwards River, Mercer County US 67 FAP 310
51	Luehmann Property New River Crossing FAP 999
52	Former Wessel Property, District 6 Potential Wetland Bank
53	Fairmont City New River Crossing FAP 999
54	Springfield IL 29 FAP 658
55	South Roxana New River Crossing FAP 999
56	Grand Detour IL 2 FAP 742
57	Tiernan Property New River Crossing FAP 999
59	Effingham County US 45 FAP 328
60	Potter Property, Fayette County, District 7 Potential Wetland Bank

planimeter at the scale of the base map. The base maps used for these determinations include as-built surveys (done both by IDOT and ISGS), construction plans, U.S. Geological Survey (USGS) 7.5-minute topographic maps, unrectified aerial photographs, and USGS digital orthophotograph quarter quadrangles (ISGS 2001). It is expected that in no case is the error of the acreage calculation less than ±1.5% and could be much greater. Given the many potential sources of error, estimates of the amount of error are difficult to calculate and are not included. However, measurements at each site are given with appropriate numbers of significant digits to reflect the precision in the base map and other sources of error in the calculation.

Water-level data were collected monthly throughout the year, and biweekly during April and May when highest water levels are generally observed. However, this year many sites required biweekly readings through June, because high water levels continued due to heavy summer rains.

Given that 12.5% of the growing season ranges from about 22 days to 28 days in different parts of Illinois, three consecutive biweekly measurements are generally required to conclusively satisfy wetland hydrology criteria. If only two consecutive measurements were collected that indicated wetland hydrology criteria, interpolation of the water levels was performed to determine total number of days of inundation or saturation. In no case will one measurement be considered sufficient to indicate that a site satisfies wetland hydrology criteria. Flooding that prevents measurement of a site is considered sufficient evidence of inundation for that period of measurement. Manual collection of water-level measurements is often supplemented with various automated data logging devices that measure daily or more frequently. These data loggers are used to determine the timing of hydrologic events that are not recorded in manual measuring.

Monitoring wells are given an alphanumeric designation based in part on their relative depths. Monitoring wells designated with an "S" or "VS" are the most shallow type and are specifically constructed for measuring wetland hydrology. Monitoring wells designated with a "U" (upper) are deeper than "S" wells, and may be used to determine wetland hydrology depending on the depth of the well screen. In larger sites, "U" wells used to determine wetland hydrology are graphed with "S" and "VS" wells. Other types of wells, including "M", "L", and "D", are deeper wells used to collect other hydrogeologic data and cannot be used to determine wetland hydrology. They are included only to document ISGS activities at the site, and they are discussed in other types of ISGS contract reports to IDOT. Graphs with each site report show water-level elevations at wells and surface-water instruments, and depth-to-water below land surface at each well. Depths are shown as negative when water levels are above land surface. Elevations at most sites are shown relative to the National Geodetic Vertical Datum (NGVD) of 1929; any variations to this are clearly labeled.

The water levels recorded during the year are shown in the charts accompanying each site summary. For small sites, all measurements will be shown on the same chart. For sites with more instruments, similar types of instruments are grouped on individual charts, for example all "S" wells may be on a single chart. For the largest sites, there may be several charts for a single type of instrument.

Multiple data loggers are used to continuously monitor water levels at many sites. Three main types of instruments are being used, each type made by a different manufacturer. Therefore, each type of instrument has different behaviors and default values. We have removed or labeled any false readings that result when the instrument is dry (e.g. "0" or other default values) by making observations of the readings of the instrument prior to deployment. Other spurious readings occur due to data logger malfunction or natural conditions that cause inaccuracies (e.g. vegetation growth

or debris accumulation beneath the logger), and these readings have been removed after interpretation by ISGS scientists.

On-site precipitation data were collected by ISGS using several types of tipping-bucket rain gauges. Because all ISGS gauges are nonheated and must be removed in the winter, monthly precipitation data are also shown from climate observation stations maintained by the MCC (MCC 2001). The closest weather station with an adequate period of record is used at each site. Normal (or mean, or average) precipitation values, and the above and below normal-range threshold values are calculated by the National Water and Climate Center (NWCC) (NWCC 2001) and are all based on the 30-year period between 1961 and 1990. Precipitation is classified as being within the normal range when the level recorded is within a 30% probability above or below the mean based on a 2-parameter gamma distribution over the 30-year period (NWCC 1995). Precipitation is classified as above or below the normal range when the recorded level is not within the normal range as defined above. "Above 30% threshold" refers to the value at which there is a 30% chance precipitation will be greater than or equal to the value shown. "Below 30% threshold" refers to the value at which there is a 30% chance precipitation will be less than or equal to the value shown.

It is expected that accuracy will be improved in the 2002 report. Global Positioning System (GPS) data and digital orthophotograph quadrangles (DOQ) have been included in base maps where possible, but these data are not yet available from every site. As these tools become available for each site they will be incorporated, leading to more accurately located site boundaries, instruments, and other important features and producing more accurate area measurements at all sites.

This document is intended to be a summary of all data collected under this contract during the reporting period, and some detail is omitted. For example, not all gaps in data are explained. There may be many reasons for such a gap, including instrument failure, lack of water, frozen conditions, no reading, or others. We expect that questions may arise from an examination of data at each site, and that detailed explanations will be required. We also expect that detailed discussion or reference to other types of ISGS reports on each site will be required prior to using the included data. Any questions that arise should be directed to the primary project manager listed in the report for each site.

REFERENCES

Illinois State Geological Survey, 2001, Illinois Natural Resources Geospatial Data Clearinghouse, 1998/1999 Illinois Digital Orthophoto Quadrangle Data: Illinois State Geological Survey, Champaign, Illinois, available on line at http://www.isgs.uiuc.edu/nsdihome/webdocs/doqs/.

Midwestern Climate Center, 2001, Midwestern Climate Information System: Illinois State Water Survey, Champaign, Illinois, available on line at http://www.mcc.sws.uiuc.edu.

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Nugteren, A.K., J.E. Olson, and T. Brooks, 1991, FAP 307 Wetland Determination and Delineation, Mitigation Site Assessment: Illinois Natural History Survey, Champaign, unpublished report to Illinois Department of Transportation, 3 p.

U.S. Army Corps of Engineers, 1987, Corps of Engineers Wetlands Delineation Manual: U. S. Army Corps of Engineers Technical Report Y-87-1, Washington, D.C., 100 p.

Wilm, B.W., S. Wiesbrook, R.L. Larimore, and B. Zercher, 1999, 1999 Wetland Monitoring Report for the Illinois Department of Transportation Wetland Mitigation Site, Perry County, Illinois: Illinois Natural History Survey unpublished contract report, Champaign, IL, 29 p.

KLEIN CREEK **ISGS #07**
POTENTIAL WETLAND COMPENSATION SITE
FAP 307
Du Page County, near Carol Stream, Illinois
Primary Project Manager: James J. Miner
Secondary Project Manager: Christine S. Fucciolo

SITE HISTORY

- Spring 1993: ISGS began to measure surface- and ground-water levels at the site.

- December 1994: ISGS submitted a final hydrogeologic characterization report to IDOT (ISGS Open File Series 1994–8).

- January 1998: Additional monitoring wells were installed to measure perched water-table elevations.

- Summer 1998: Huddleston-McBride Co. searched the site for drainage tile, and submitted a map to IDOT.

- May 2000: ISGS received permission from IDOT to discontinue water-level monitoring in the field west of Klein Creek. Data collection in the west field ended on May 23, 2000. ISGS installed an Infinities sonic data logger over Klein Creek at Kuhn Road to evaluate using the creek as a water source for wetland creation in the field east of the creek.

- July 2001: Proposed wetland compensation basin is excavated by contractor, destroying the last monitoring well east of the creek. Wells will be reinstalled after grading is complete. Cut and fill stakes suggest approximately 15 cm (0.5 ft) was planned for excavation; in 2000, ISGS suggested that approximately 30 cm (1 ft) of excavation was needed to create wetland hydrology in the compensation basin.

WETLAND HYDROLOGY CALCULATION FOR 2001

Because wetland construction is not complete, no calculation of the area that satisfies wetland hydrology criteria is possible. However, the following information is presented for planning purposes.

- According to the Midwestern Climate Center, the median date that the growing season begins in Wheaton is April 28 and the season lasts 182 days; 12.5% of the growing season is 23 days.

- Precipitation during the monitoring period was 101% of normal. Precipitation was generally within to slightly above the normal range in September and November 2000, and February, April, and May 2001. The remaining months were relatively dry, with precipitation below or nearly below normal.

- In 2001, only well 12SR was operational during the growing season, and water levels measured in it did not conclusively satisfy the wetland hydrology criteria of the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual. Excavation of 35 cm (1.1 ft)

would likely have created wetland hydrology in the vicinity of well 12SR.

PLANNED FUTURE ACTIVITIES

- Monitoring of Klein Creek and the field to the east of Klein Creek will continue for 5 years after construction or until no longer required by IDOT.

- After construction of the compensation area, ISGS will install instruments to monitor the areal extent of wetland hydrology.

Klein Creek Potential Wetland Compensation Site
(FAP 307)

General Study Area and Vicinity

from the USGS Topographic Series, West Chicago, IL 7.5-minute Quadrangle (USGS 1993)

contour interval is 10 feet

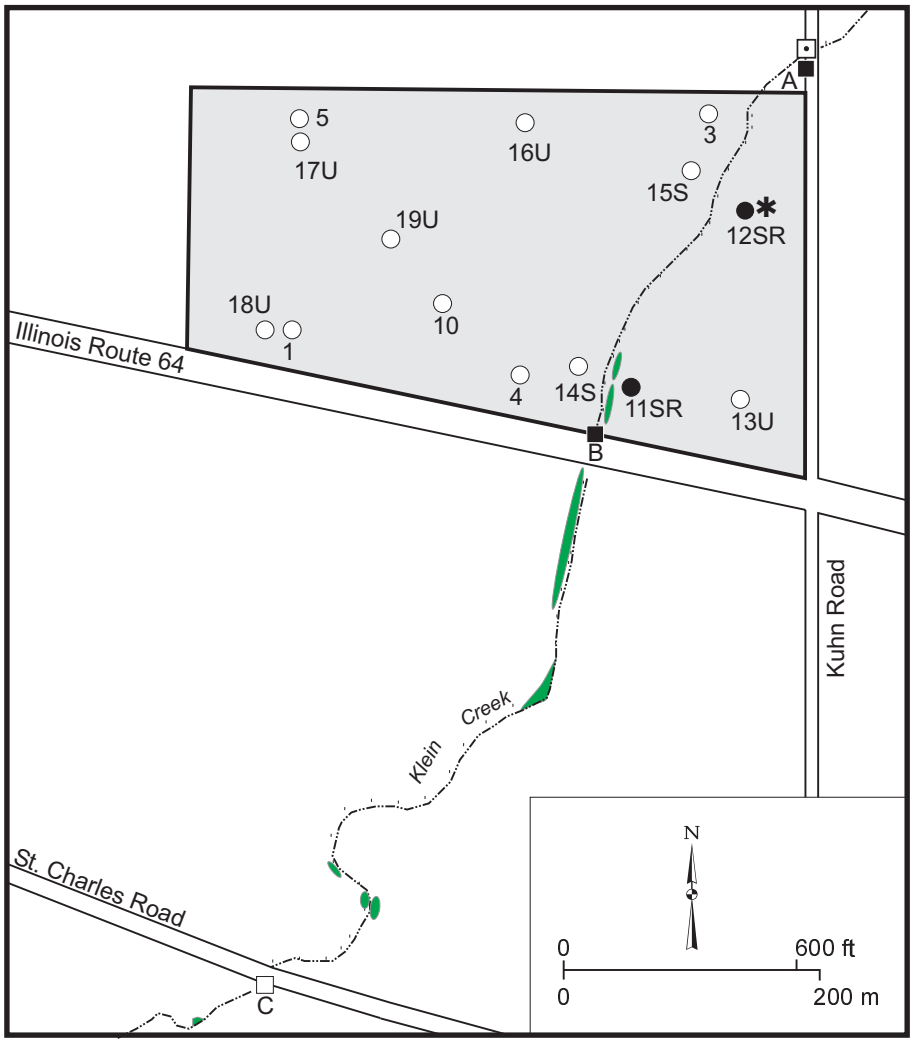
general study area

Klein Creek Potential Wetland Compensation Site
(FAP 307)

Estimated Areal Extent of 2001 Wetland Hydrology

based on data collected between September 1, 2000 and September 1, 2001

map based on West Chicago, IL 7.5-minute Quadrangle (USGS 1962)
and wetland delineations from Nugteren et al. (1991)



pre-existing wetland

estimated areal extent of 2001 wetland hydrology

potential compensation site

● active monitoring well

■ active stage gauge

○ inactive monitoring well

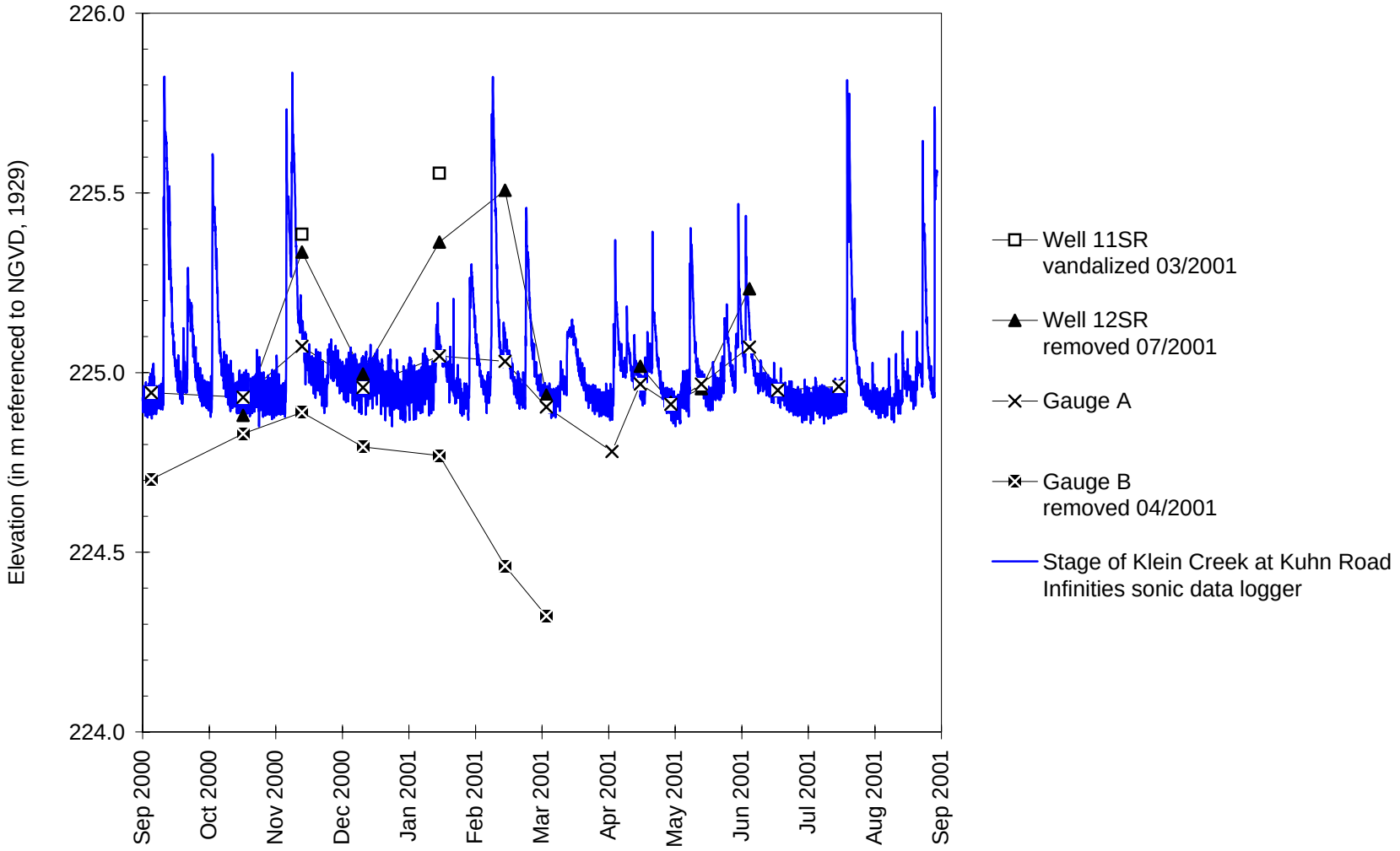
□ inactive stage gauge

✱ rain gauge

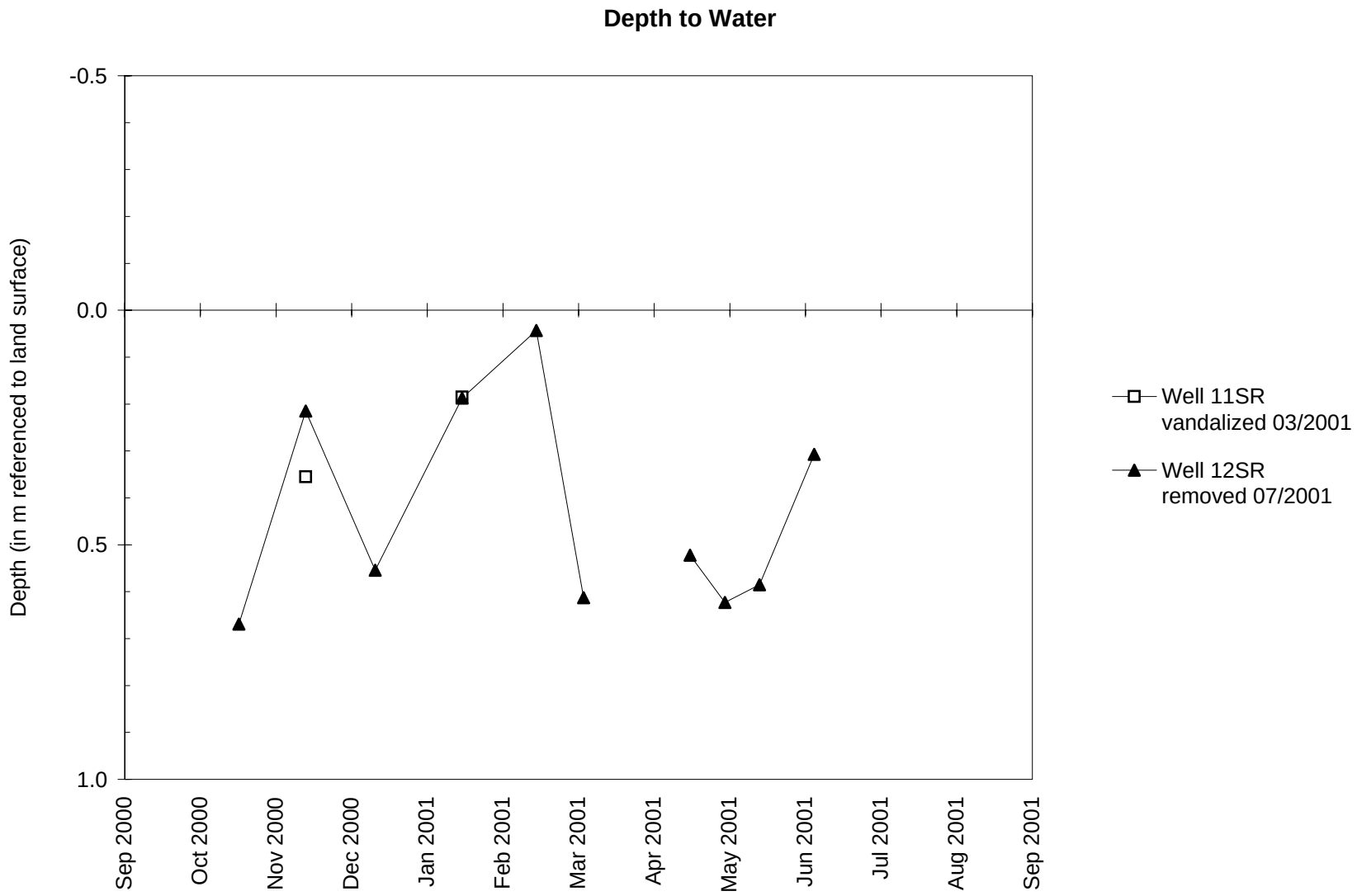
⊡ Infinities sonic data logger

Klein Creek Potential Wetland Compensation Site
September 1, 2000 to September 1, 2001

Water-Level Elevations

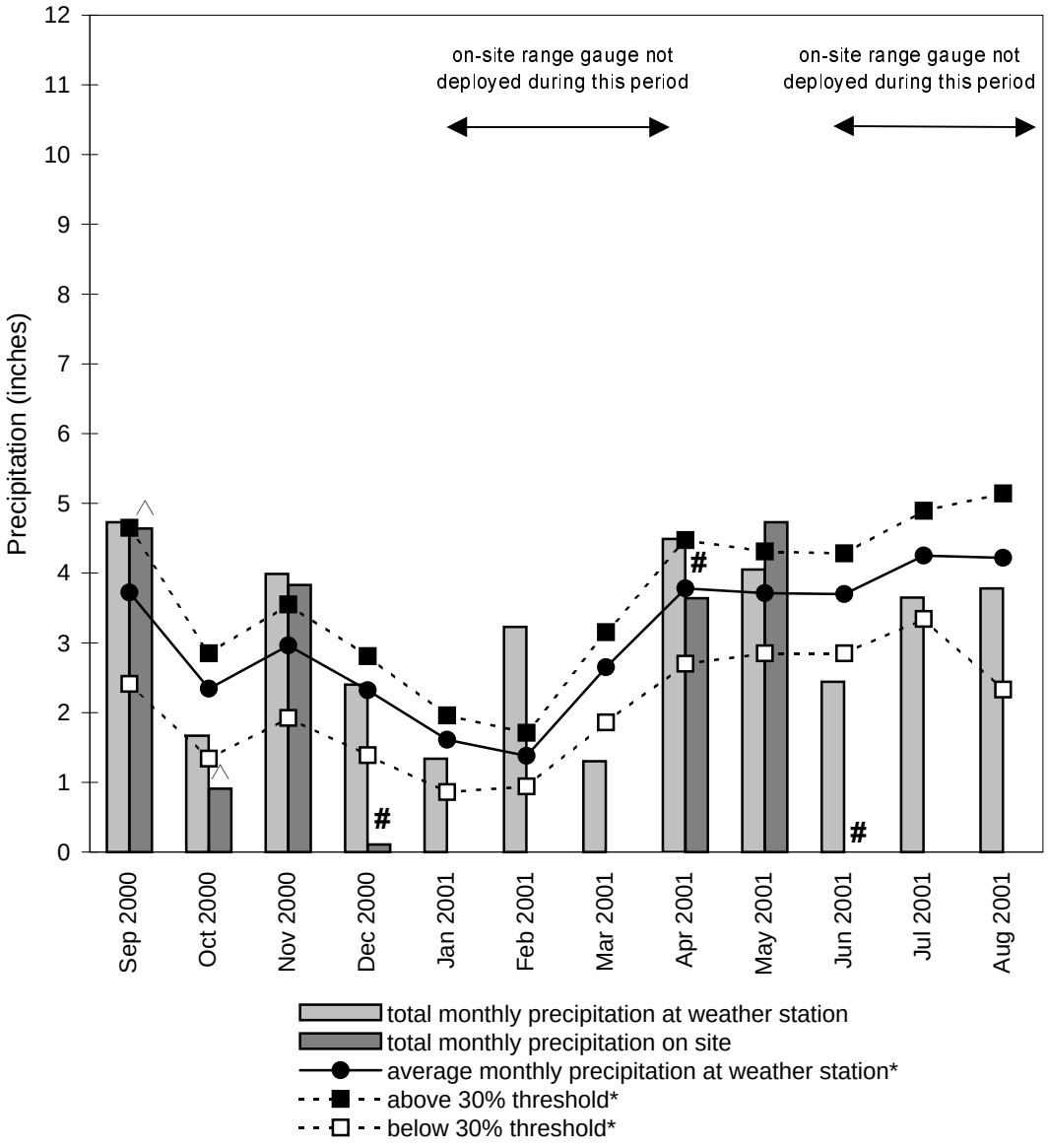


Klein Creek Potential Wetland Compensation Site
September 1, 2000 to September 1, 2001



Klein Creek Potential Wetland Compensation Site
September 2000 through August 2001

Total Monthly Precipitation Recorded On Site and at the Wheaton, IL Weather Station



on-site rain gauge not deployed for entire month
△ suspect data: rain collector clogged, represents minimum value for the month
* see text for explanation

Graph last updated October 4, 2001

VETERAN'S PARKWAY, SPRINGFIELD **ISGS #09**
WETLAND COMPENSATION SITE
FAP 662
Sangamon County, near Springfield, Illinois
Primary Project Manager: Geoffrey E. Pociask
Secondary Project Manager: Blaine A. Watson

SITE HISTORY

- Spring 1997: ISGS initiated water-level monitoring to determine pattern of water-level fluctuation in the ponded area. Water in the ponded area was monitored throughout most of the growing season in 1997. Water-level increases were strongly associated with storm events. Upon determining the relationship between water levels in the pond and the adjacent creek, monitoring of the pond was discontinued in Fall 1997.

- July 1999: Water-level monitoring for the purpose of determining the extent of wetland hydrology was initiated at the request of IDOT. Three "S" wells were installed in the shallow exposed shelf in the northwestern corner of the excavation. A surface-water data logger was installed to monitor pond water levels.

WETLAND HYDROLOGY CALCULATION FOR 2001

Based on construction design plans provided by IDOT and ground surface-elevations surveyed by ISGS, we estimate that the total area of created wetland that conclusively satisfied wetland hydrology criteria in 2001 is 4.9 ac (2.0 ha) out of an excavation of 7.1 ac (2.8 ha). This is comparable to an area of 16.0 ac (6.5 ha) in the previous year. This year's estimate is based on the following factors.

- According to the Midwestern Climate Center, the median date that the growing season begins in Springfield is April 6 and the season lasts 209 days; 12.5% of the growing season is 26 days.

- Precipitation was below the normal range in December 2000 and in March and April 2001. Precipitation was within or above the normal range from September through November 2000, in January and February 2001, and from May through August 2001. Total precipitation for the reporting period from September 2000 through August 2001 was 91% of normal. This is compared to 81% of normal for the period from September 1999 through August 2000.

- In 2001, only well 3S conclusively satisfied the wetland hydrology criteria of the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual.

- Limitations of the wetland hydrology determination are as follows:

    - The wetland hydrology calculation was based on unrectified, post-construction aerial photography, design plans provided by IDOT, and digital orthophotography. Photo-identifiable points were used to fit the area of wetland hydrology traced from unrectified aerial photography onto a figure based on digital orthophotography.

- Lack of as-built topography information limits the accuracy of the estimate of the wetland hydrology acreage determination.

- Instrument locations were determined using GPS in July 2000. The positions of instrument and photo-identification points determined via GPS were superimposed on digital orthophotography.

- Wetland acreage was measured planimetrically on digital orthophotography with topography interpreted from a construction design drawing and spot elevations surveyed by ISGS.

- The surface-water data logger and staff gauge C were destroyed in February of 2001 so no continuous on-site surface-water data were available for the 2001 growing season. Therefore, the elevation 156.6 m (514.8 ft) below which wetland hydrology criteria were met was estimated by interpolating the ground-surface elevations at wells 2S and 3S.

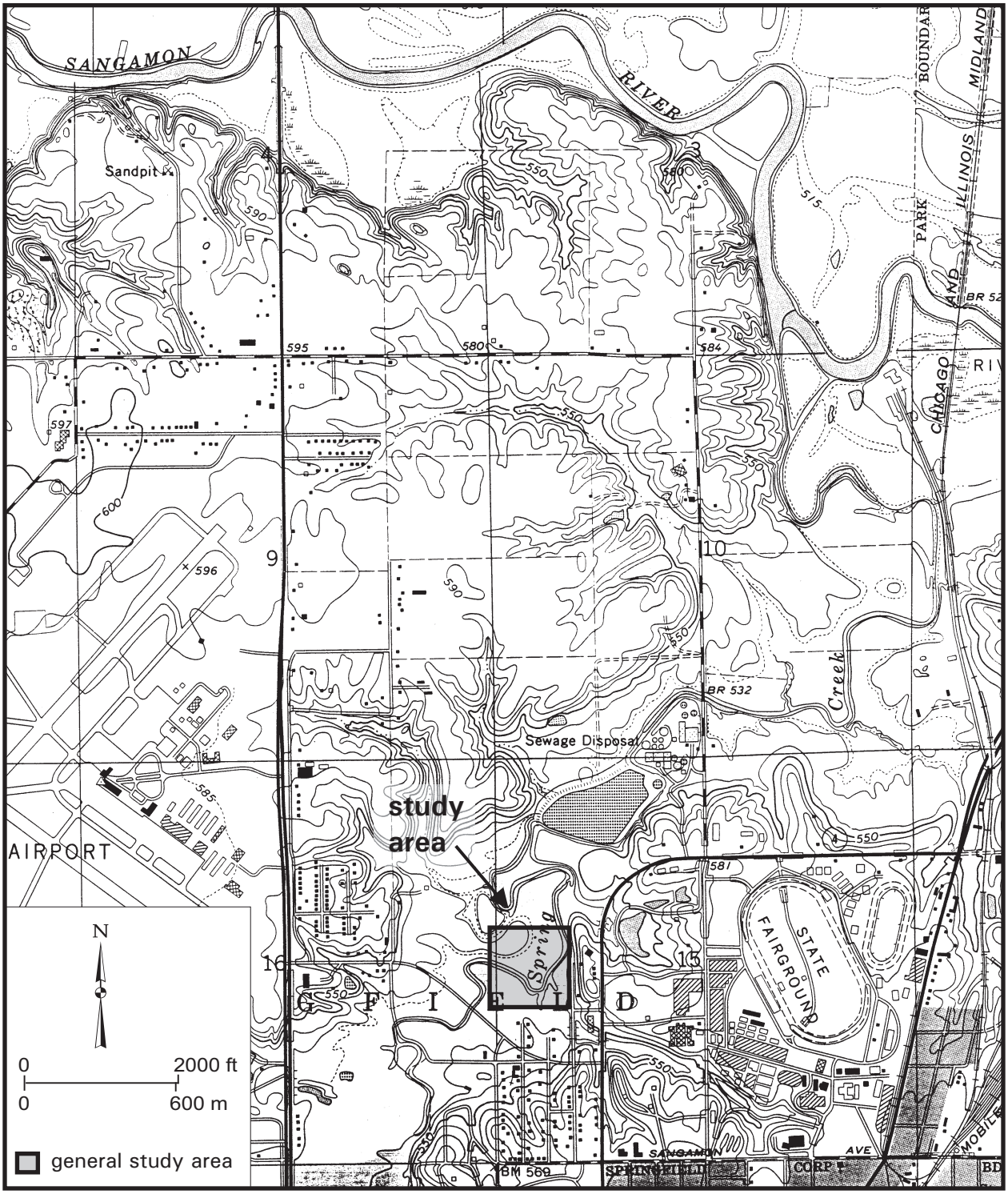
PLANNED FUTURE ACTIVITIES

- The current monitoring strategy will be continued in 2002. Additionally replacements for the surface-water data logger and staff gauge will be installed in Fall 2001. Monitoring will continue until September 2004 or until no longer required by IDOT.

Veteran's Parkway, Springfield Wetland Compensation Site
(FAP 662)

General Study Area and Vicinity

from the USGS Topographic Series, Springfield West, IL 7.5-minute Quadrangle (USGS 1965)
contour interval is 10 feet

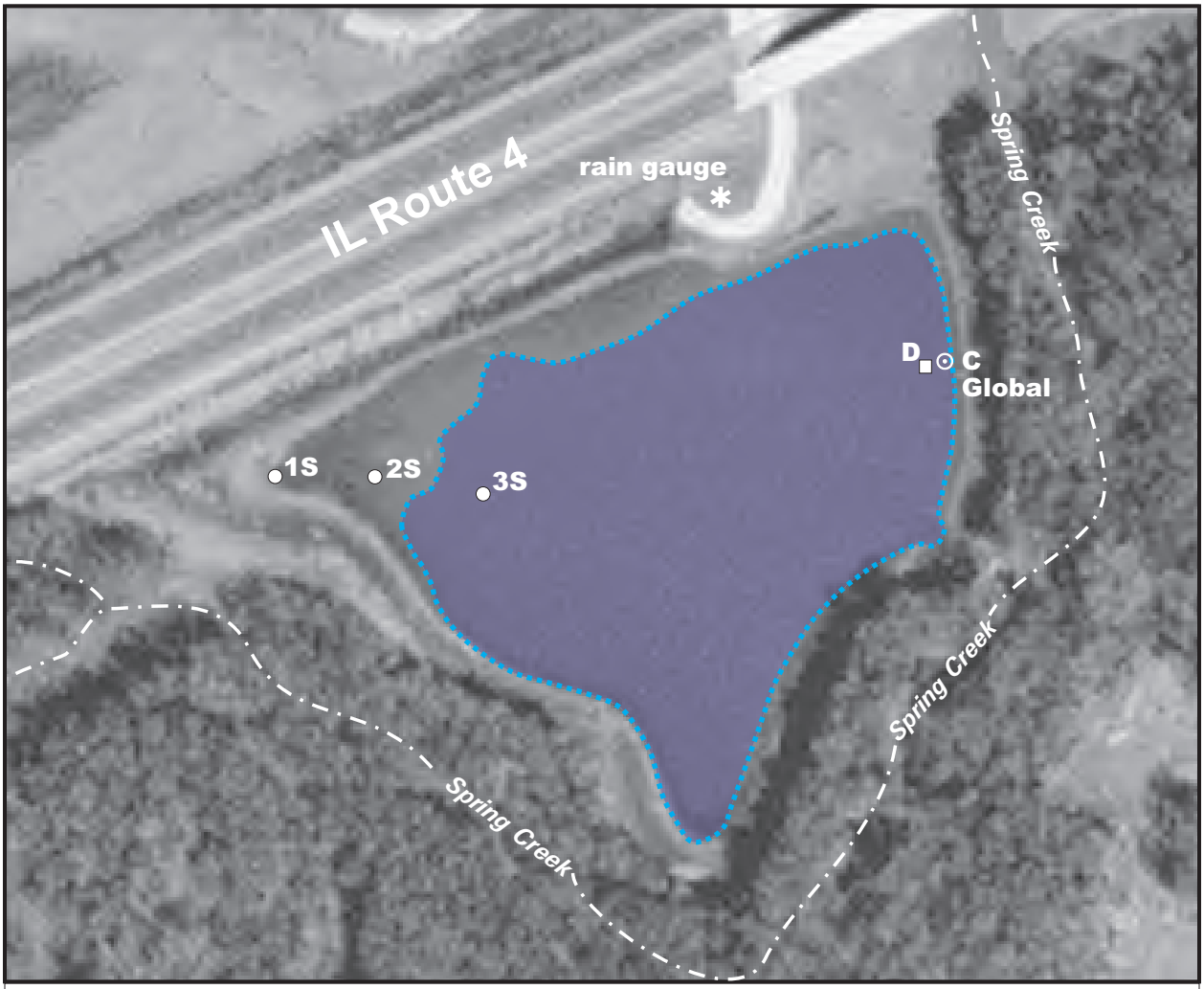


Veteran's Parkway, Springfield Wetland Compensation Site
(FAP 662)

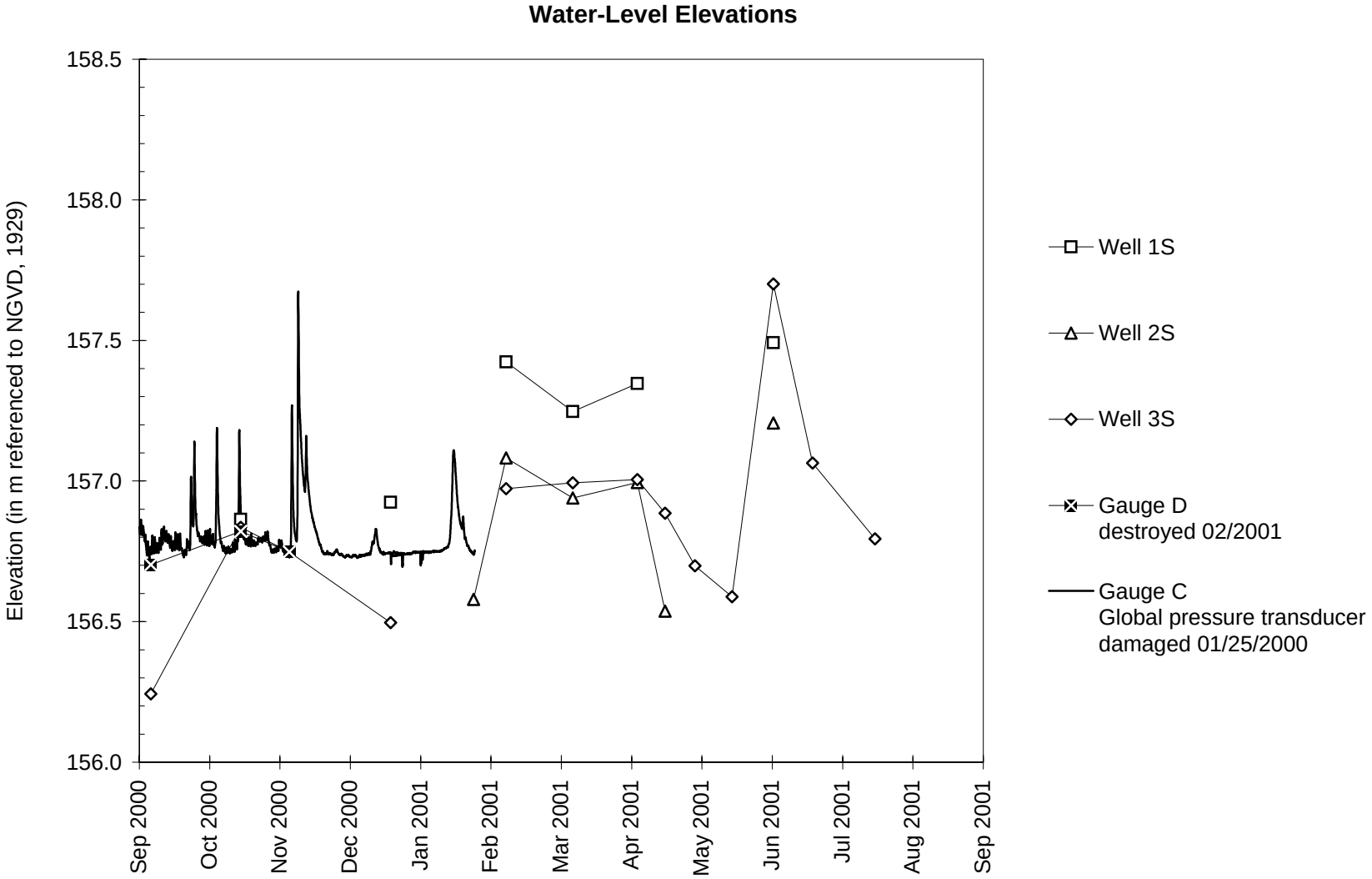
Estimated Areal Extent of 2001 Wetland Hydrology

based on data collected between September 1, 2000 and September 1, 2001

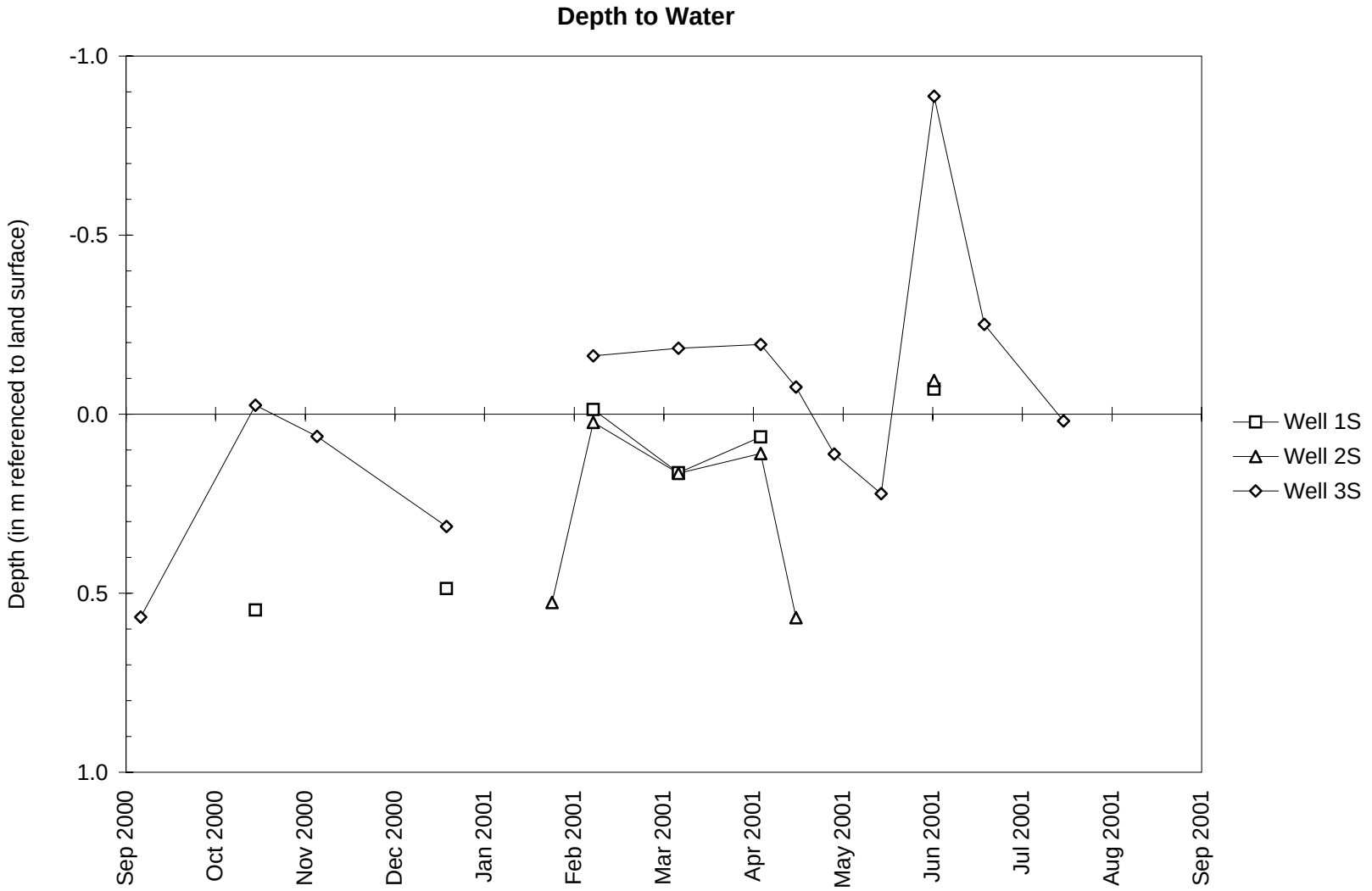
map based on USGS digital orthophotograph Springfield West, NE quarter quadrangle
produced form 04/14/98 aerial photography (ISGS 2001)



Veteran's Parkway, Springfield Wetland Compensation Site
September 1, 2000 to September 1, 2001

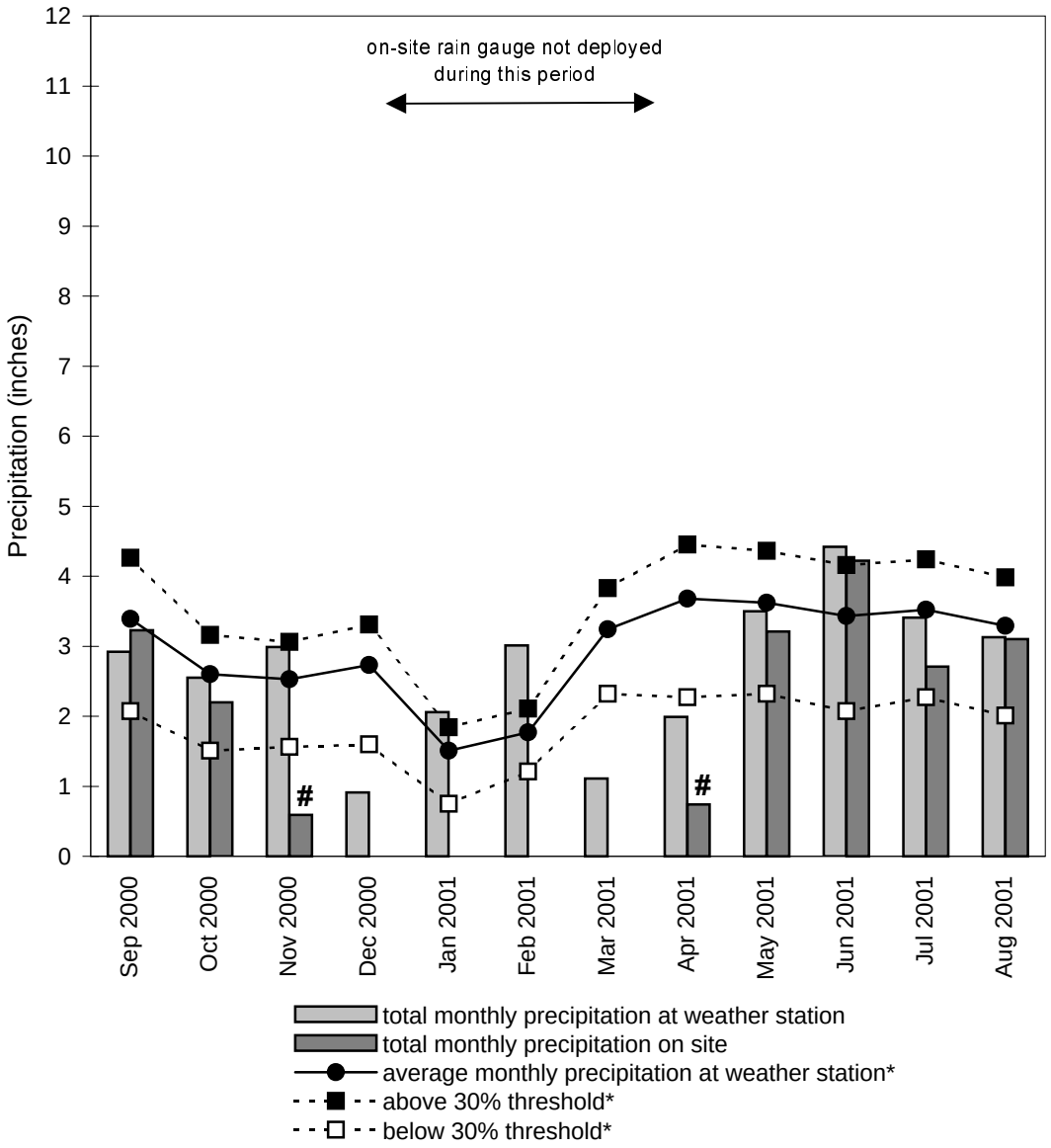


Veteran's Parkway, Springfield Wetland Compensation Site
September 1, 2000 to September 1, 2001



Veteran's Parkway, Springfield
Wetland Compensation Site
September 2000 through August 2001

Total Monthly Precipitation Recorded On Site and at the Capital Airport Weather Station, Springfield IL



on-site rain gauge not deployed for entire month
* see text for explanation

Graph last updated October 4, 2001

HANNIBAL BRIDGE **ISGS #10**
WETLAND COMPENSATION SITE
FAP 319
Pike County, near East Hannibal, Illinois
Project Manager: Blaine A. Watson
Secondary Project Manager: Geoffrey E. Pociask

SITE HISTORY

- October 1992: ISGS installed monitoring wells and began a hydrogeologic characterization.
- June 1995: ISGS submitted a draft final hydrogeologic characterization report to IDOT.
- July 1997: IDOT completed construction of the created wetland by excavating a basin.
- March 1998: ISGS submitted the final hydrogeologic characterization report to IDOT (ISGS Open File Series 1998–2).

WETLAND HYDROLOGY CALCULATION FOR 2001

We estimate that the total area of created wetland that conclusively satisfied wetland hydrology criteria in 2001 is 17.4 ac (7.0 ha) out of an excavation of 17.4 ac (7.0 ha). This is comparable to an area of 16.0 ac (6.5 ha) in the previous year. This year's estimate is based on the following factors.

- According to the Midwestern Climate Center, the median date that the growing season begins in Hannibal, Missouri, is April 7 and the season lasts 211 days; 12.5% of the growing season is 26 days.
- Overall precipitation was below the normal range in September and December 2000 and in March, April, and July 2001. Precipitation was at or above the normal range during October 2000 and January, February, May, June, and August 2001. During the period from September 2000 through August 2001, total precipitation at the Hannibal weather station was 94% of normal. This is compared to 87% of normal for the period from September 1999 through September 2000.
- In 2001, water levels measured in all "U" and "S" wells within the excavation conclusively satisfied the wetland hydrology criteria of the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual. This is corroborated by water levels measured at RDS 2, where a relatively static water level of approximately 139.9 m (459.0 ft) was recorded from early May until late June 2001. Water levels recorded at RDS 1 exhibited the same fluctuations, but higher values than those at RDS 2.
- Limitations of the wetland hydrology determination are as follows:
  - The calculation does not include any area attributable to the natural, pre-existing wetland along the west-central border of the site.
  - A portion of the site outside the excavated wetland's boundaries also likely met wetland hydrology during the 2001 growing season (as evidenced by readings taken at well 7S and field observations of surface inundation north of well 9U). We did not

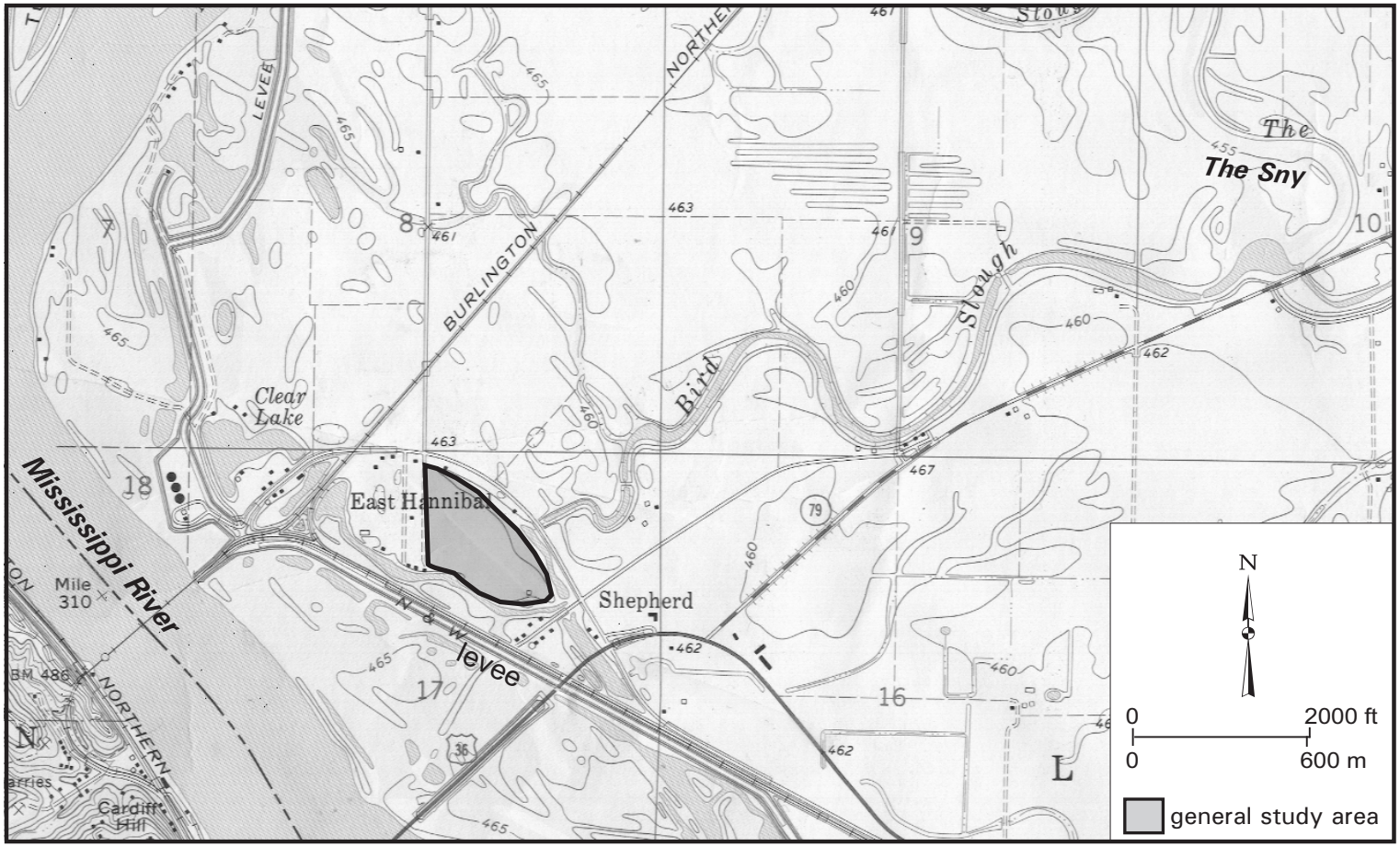
have the necessary monitoring instruments to accurately quantify these areas, so they have not been included.

PLANNED FUTURE ACTIVITIES

- Monitoring will follow the existing protocol through July 2002 or until no longer required by IDOT.

Hannibal Bridge Wetland Compensation Site
(FAP 319)
General Study Area and Vicinity

from the USGS Topographic Series, Hannibal East, IL-MO 7.5-minute Quadrangle (USGS 1971)
contour interval is 5 feet east of the Mississippi River and 20 feet west of the Mississippi River

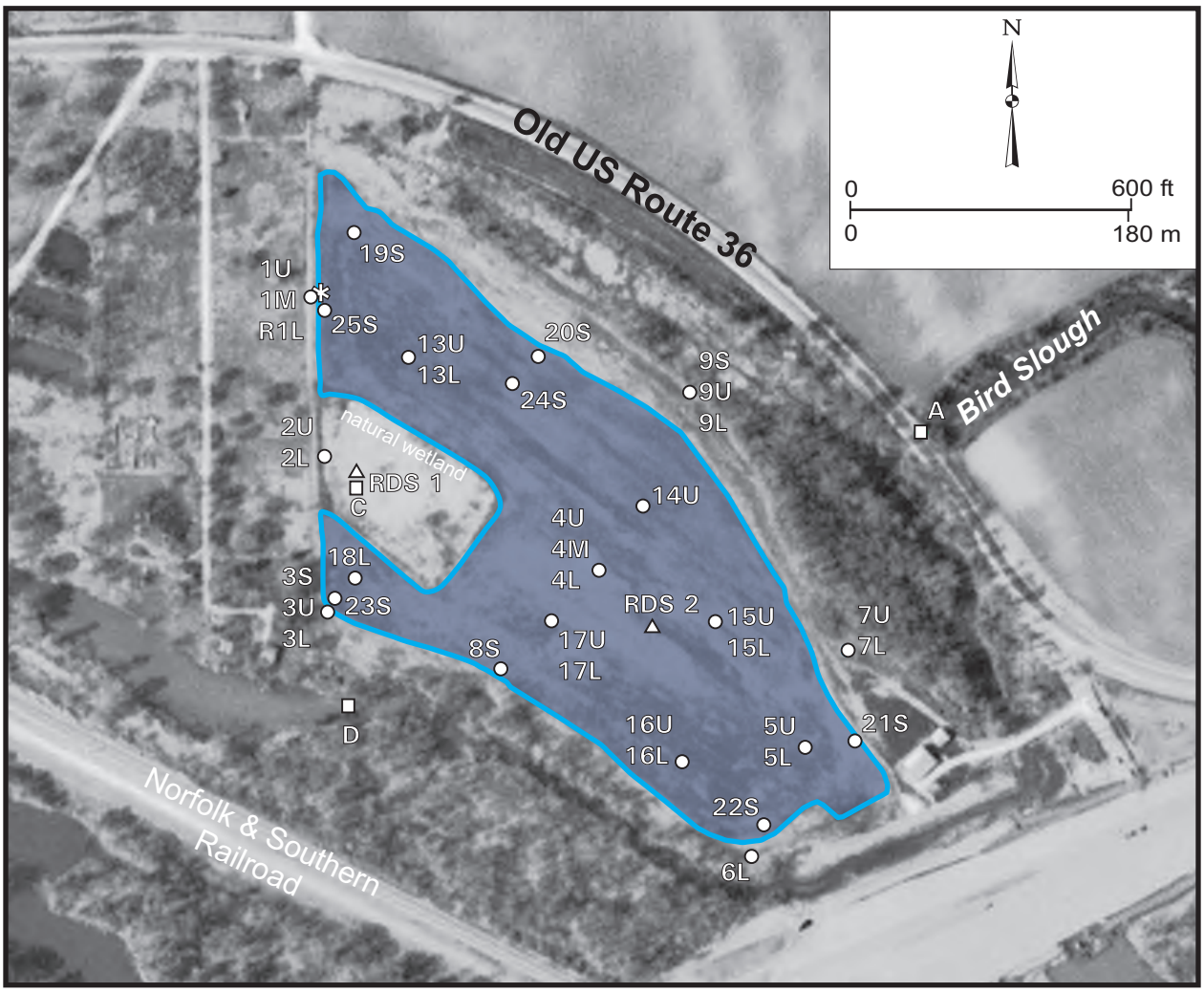


Hannibal Bridge Wetland Compensation Site

(FAP 319)

Estimated Areal Extent of 2001 Wetland Hydrology

map based on USGS digital orthophotograph Hannibal East, NW quarter quadrangle
produced from 4/12/99 aerial photography (ISGS 2001)

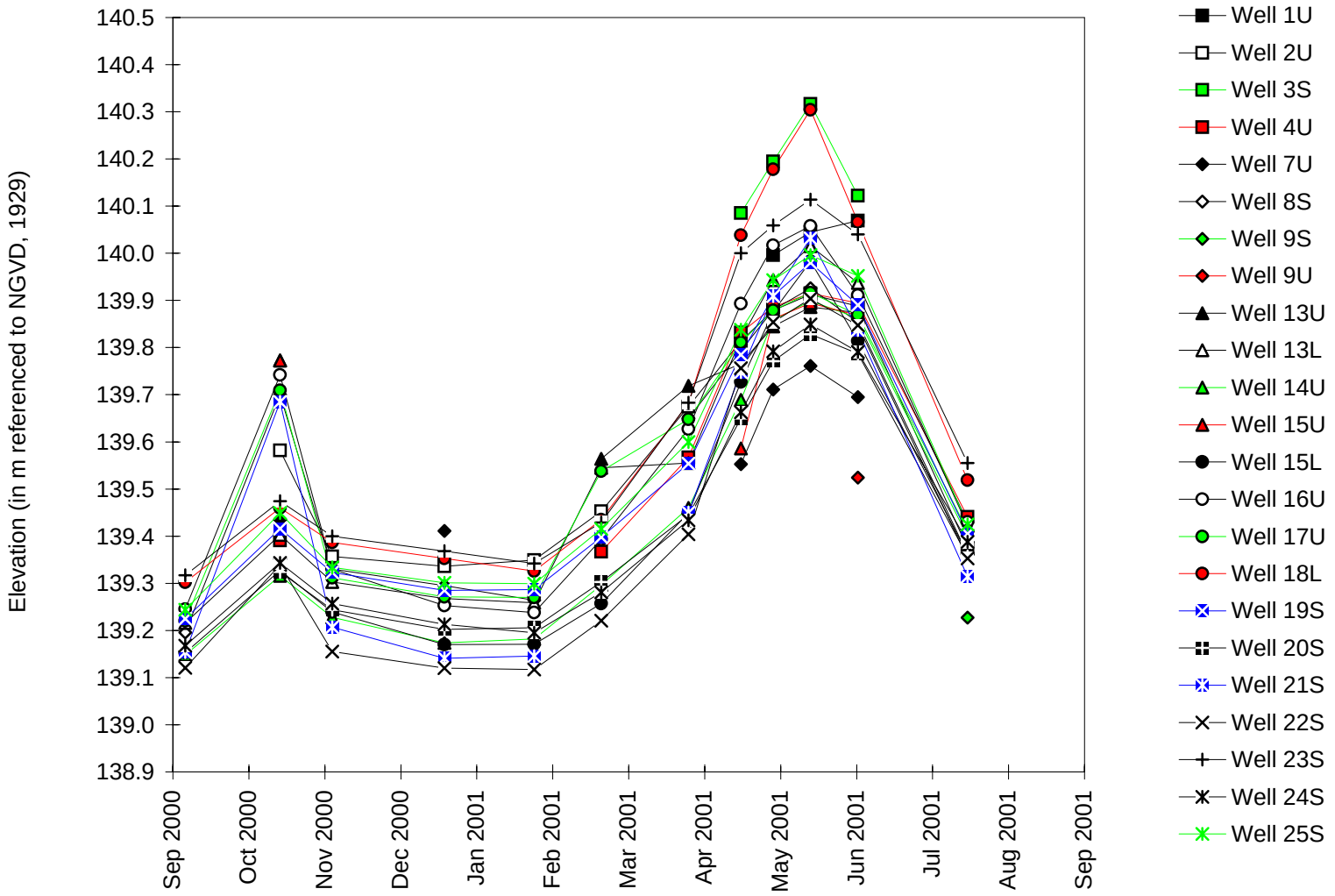


estimated areal extent of 2001 wetland hydrology within excavated area

- ○ monitoring well
- □ stage gauge
- △ RDS data logger
- ❄ rain gauge

Hannibal Bridge Wetland Compensation Site
September 1, 2000 to September 1, 2001

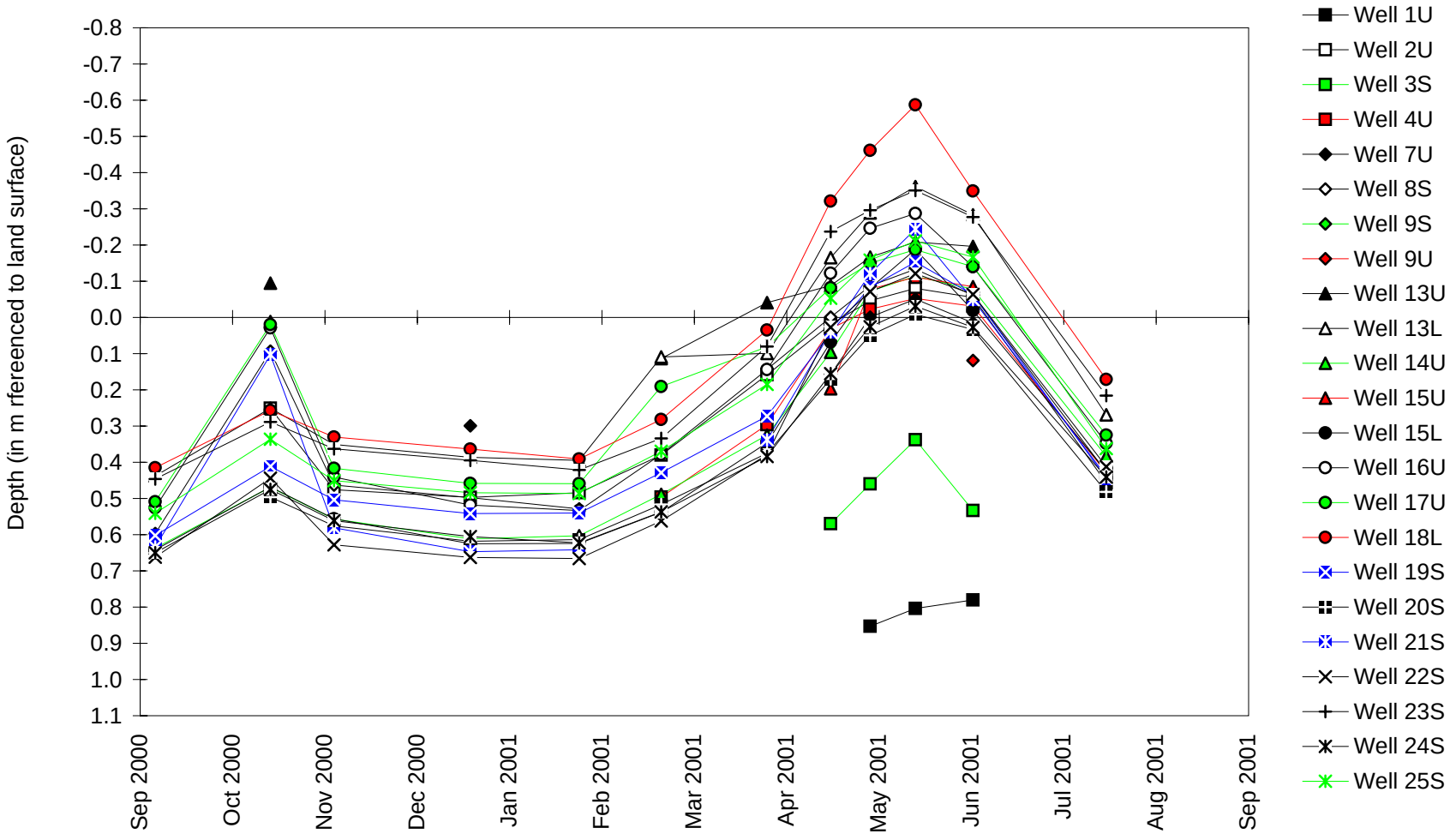
Water-Level Elevations
in Wells used to Determine Areas Satisfying Wetland Hydrology Criteria



Hannibal Bridge Wetland Compensation Site

September 1, 2000 to September 1, 2001

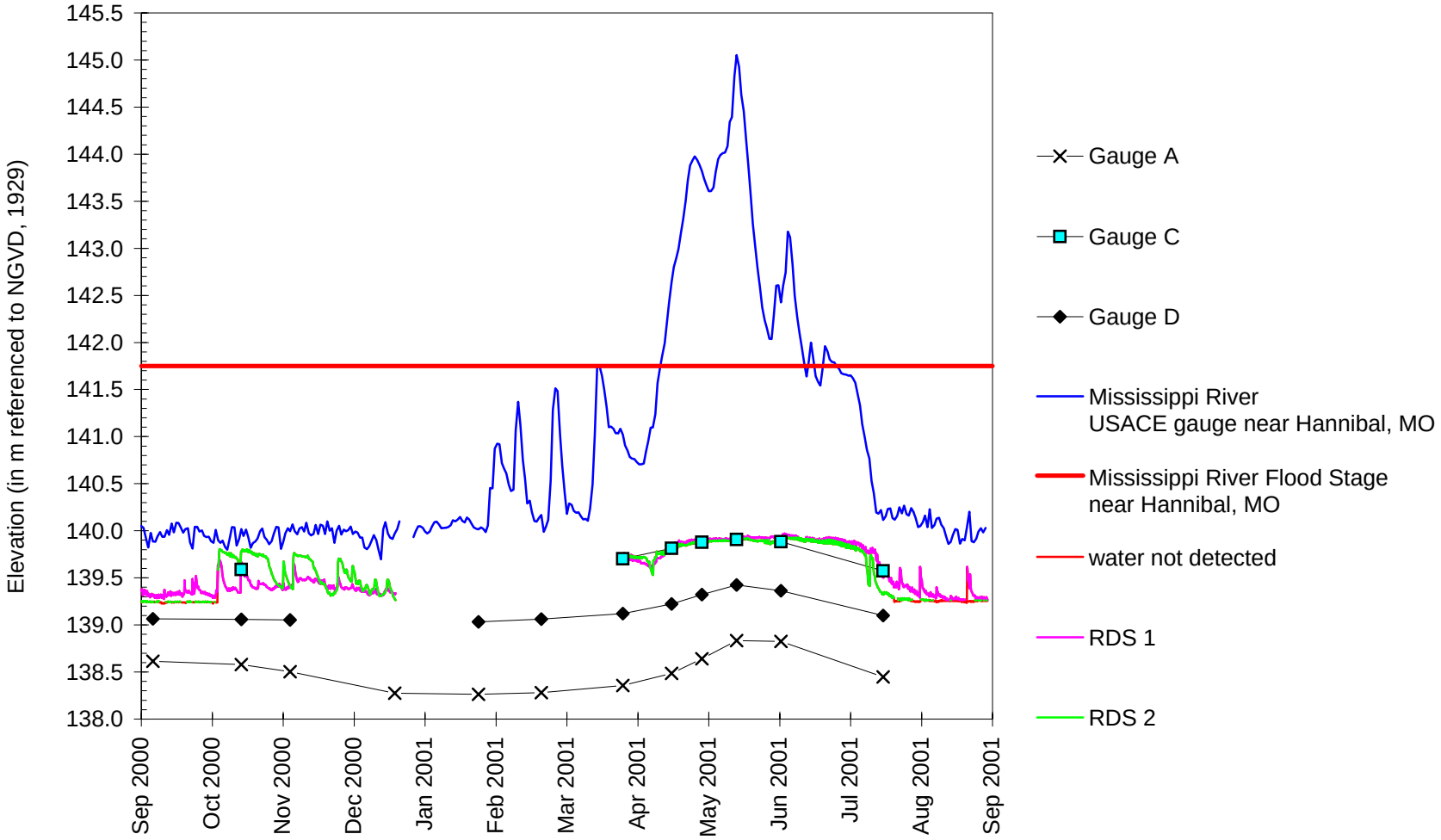
Depth to Water
in Wells Used to Determine Areas Satisfying Wetland Hydrology Criteria



Hannibal Bridge Wetland Compensation Site

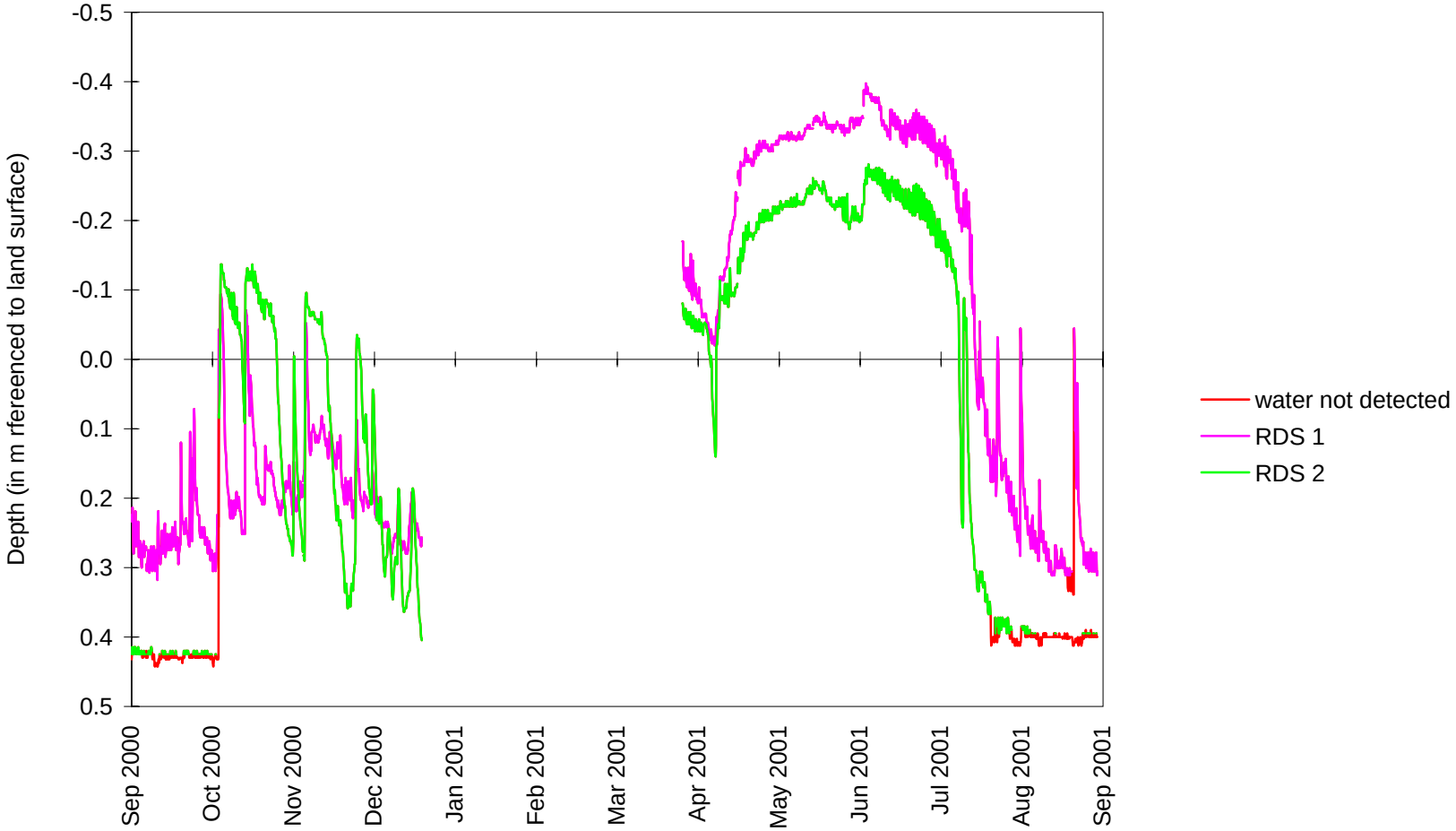
September 1, 2000 to September 1, 2001

Water-Level Elevations in RDS Data Loggers and on Stage Gauges



Hannibal Bridge Wetland Compensation Site
September 1, 2000 to September 1, 2001

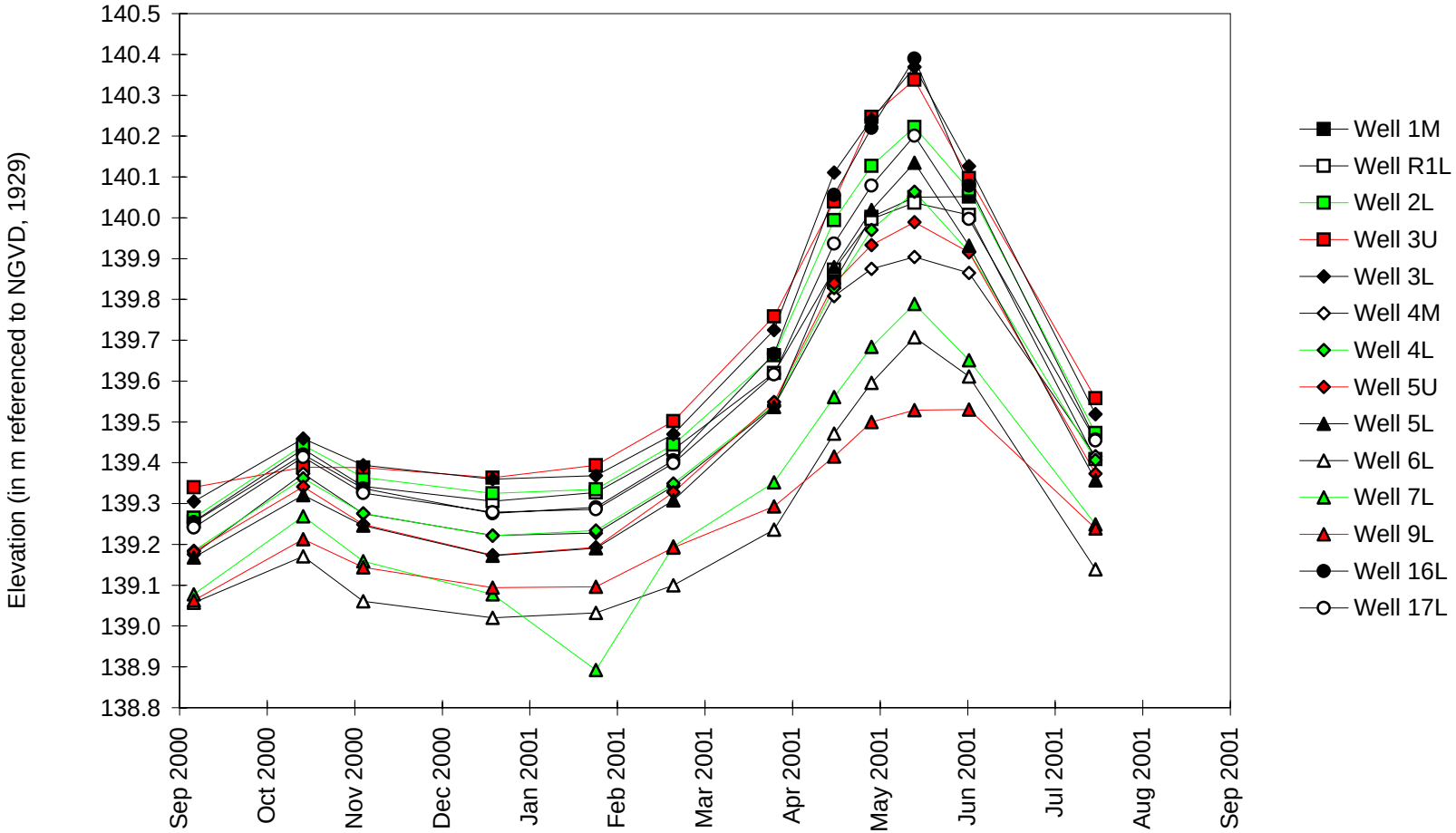
Depth to Water
in RDS Data Loggers



Hannibal Bridge Wetland Compensation Site

September 1, 2000 to September 1, 2001

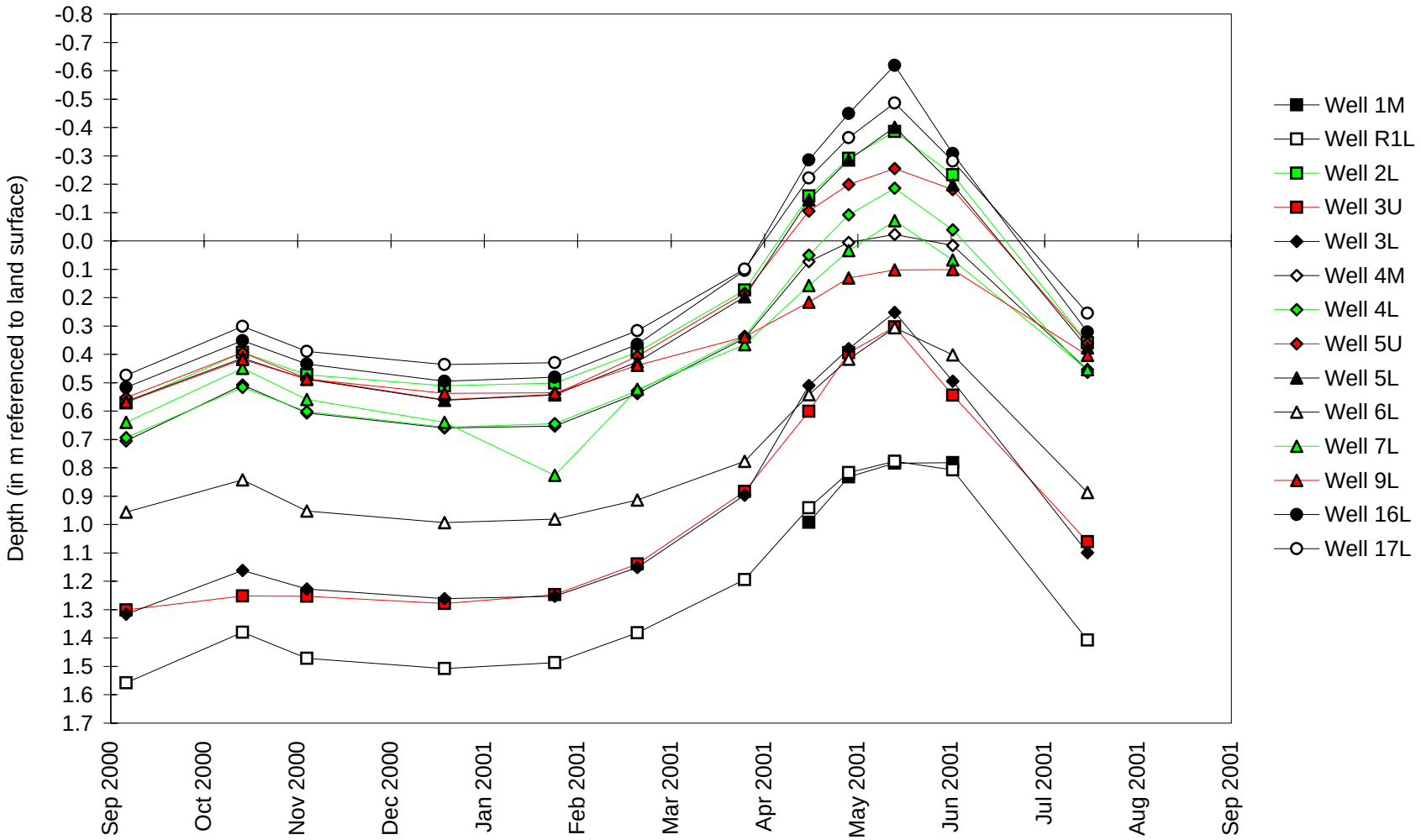
Water-Level Elevations in Deeper Monitoring Wells



Hannibal Bridge Wetland Compensation Site

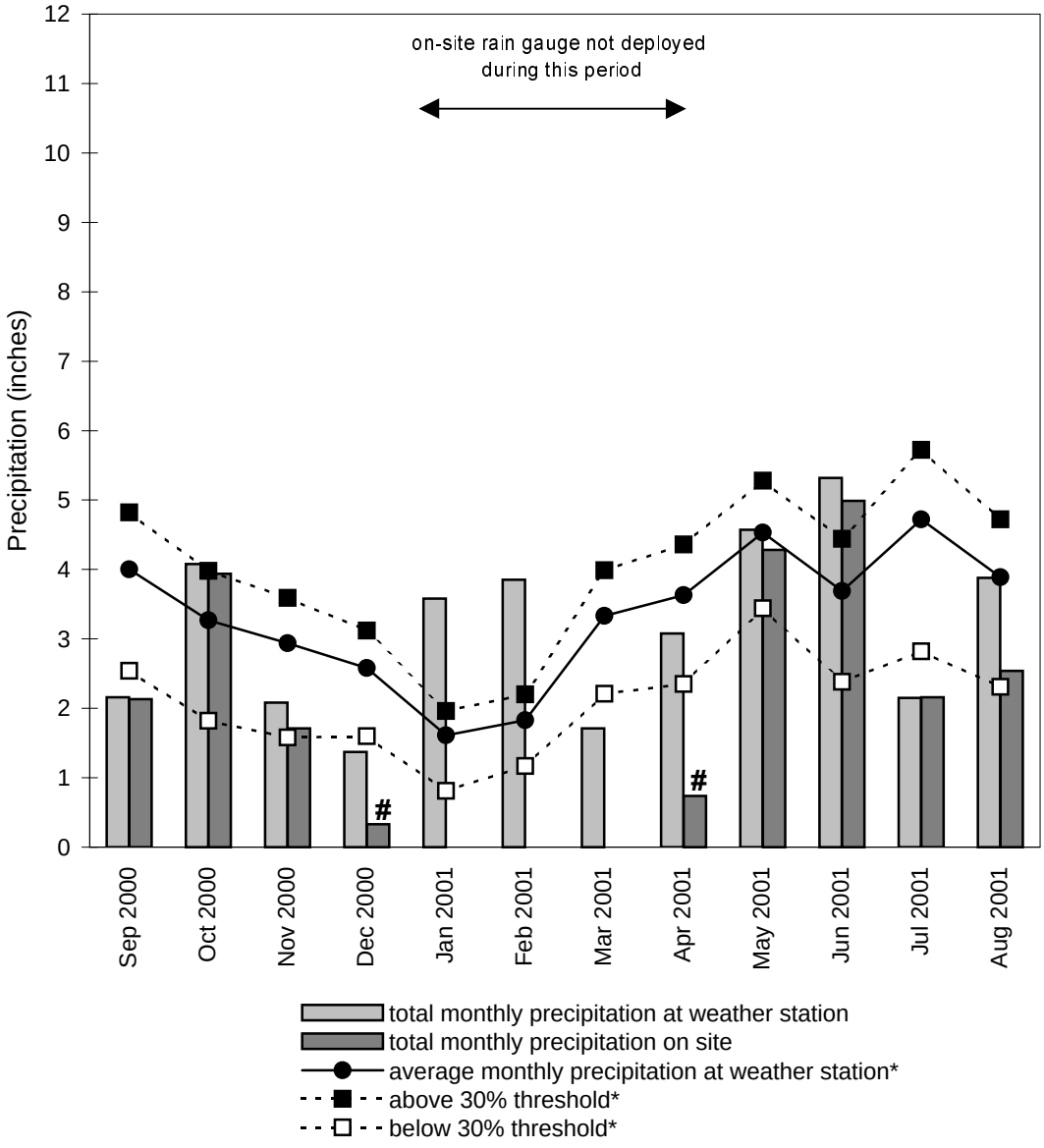
September 1, 2000 to September 1, 2001

Depth to Water
in Deeper Monitoring Wells



Hannibal Bridge Wetland Compensation Site
September 2000 through August 2001

Total Monthly Precipitation Recorded On Site and at the Hannibal Water Works Weather Station, Hannibal, MO



on-site rain gauge not deployed for entire month

* see text for explanation

Graph last updated October 3, 2001

SAND ROAD **ISGS #15**
WETLAND COMPENSATION SITE
FAP 310
Madison County, near Poag, Illinois
Primary Project Manager: Bonnie J. Robinson
Secondary Project Manager: Steven E. Benton

SITE HISTORY

- April 1996: IDOT issued a task order to the ISGS to conduct a detailed mitigation site assessment.

- August 1996: The hydrogeologic characterization of the site was initiated with the installation of monitoring wells and staff gauges.

- July 1997: An interim hydrogeologic characterization report was submitted to IDOT.

- Fall 1998: A berm, incorporating a water control structure, was built along the south margin of the site.

- March 1999, November 1999, May 2000: Twelve soil-zone (S) monitoring wells were installed. Six of the wells (2S, 5S, 7S, 8S, 14S, 16S) were used to better define the area of wetland hydrology. The other six wells (17S, 18S, 19S, 20S, 21S, 22S) were used to determine the nature of the transition zone from wetland to non-wetland hydrology along the slope of the sand terrace.

- December 2000: Four soil-zone (S) monitoring wells were installed to better define the area of wetland hydrology.

WETLAND HYDROLOGY CALCULATION FOR 2001

The area that conclusively satisfied the wetland hydrology criteria in 2001 is estimated to be 6.42 ac (2.6 ha). This is about 3.28 ac (1.3 ha) less than in 2000, and is probably due to below normal precipitation during the spring of 2001. This estimate is based on the following factors.

- According to the Midwestern Climate Center, the median length of the growing season, as measured at the Belleville SIU Research Station, is 203 days (April 5 to October 24); 12.5% of the growing season is 25 days.

- Precipitation was below the normal range in December 2000, and in March, April, and June 2001, resulting in dry conditions at the beginning of the growing season. Precipitation was at or above the normal range during September, October and November 2000 and January, February, May, July and August 2001. Total precipitation for the period from September 2000 to August 2001 was 99% of normal.

- In 2001, water levels measured in the following wells conclusively satisfied the wetland hydrology criteria of the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual: 3U, 19S and 21S.

- Surface-water levels measured by the RDS data logger indicated that inundation occurred to an elevation of about 128.25 m (420.76 ft) for a duration sufficient to satisfy wetland hydrology criteria. The area defined by this elevation was within the area determined to have wetland hydrology based on ground-water levels.

- With the exception of the period between June 19 and July 19, 2001, surface-water levels were at or above the normal elevation of 128.0 m (420 ft) as specified in the IDOT Conceptual Wetland and Illinois Chorus Frog Compensation Plan.

- Limitations of the wetland hydrology determination are as follows:
  - The wetland acreage determination contains pre-existing wetland.

PLANNED FUTURE ACTIVITIES

- Monitoring will continue through the spring of 2003.

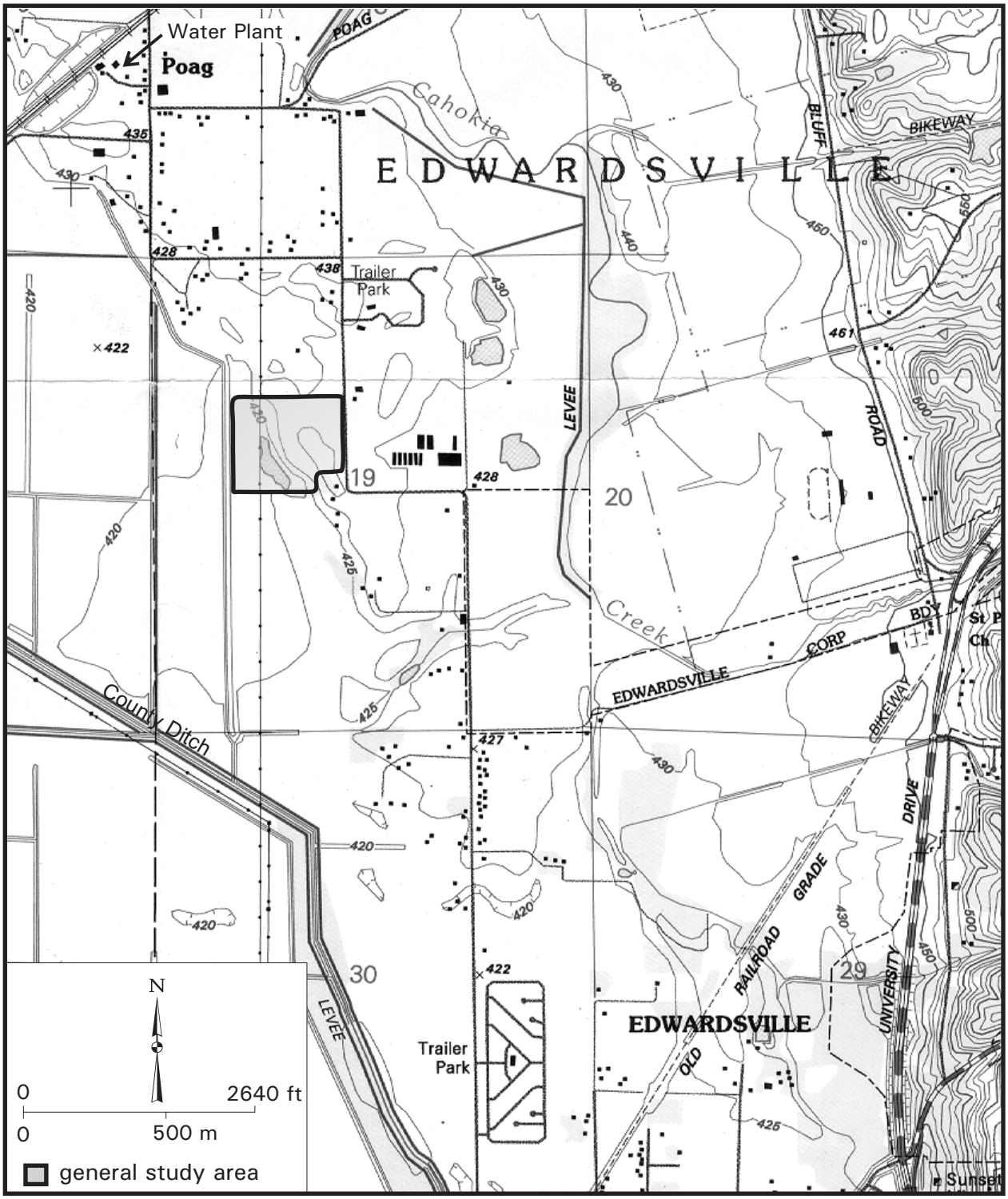
Sand Road Wetland Compensation Site

(FAP 310)

General Study Area and Vicinity

from the USGS Topographic Series, Wood River, IL-MO 7.5-minute Quadrangle (USGS 1994)

contour interval is 10 feet



Sand Road Wetland Compensation Site

(FAP 310)

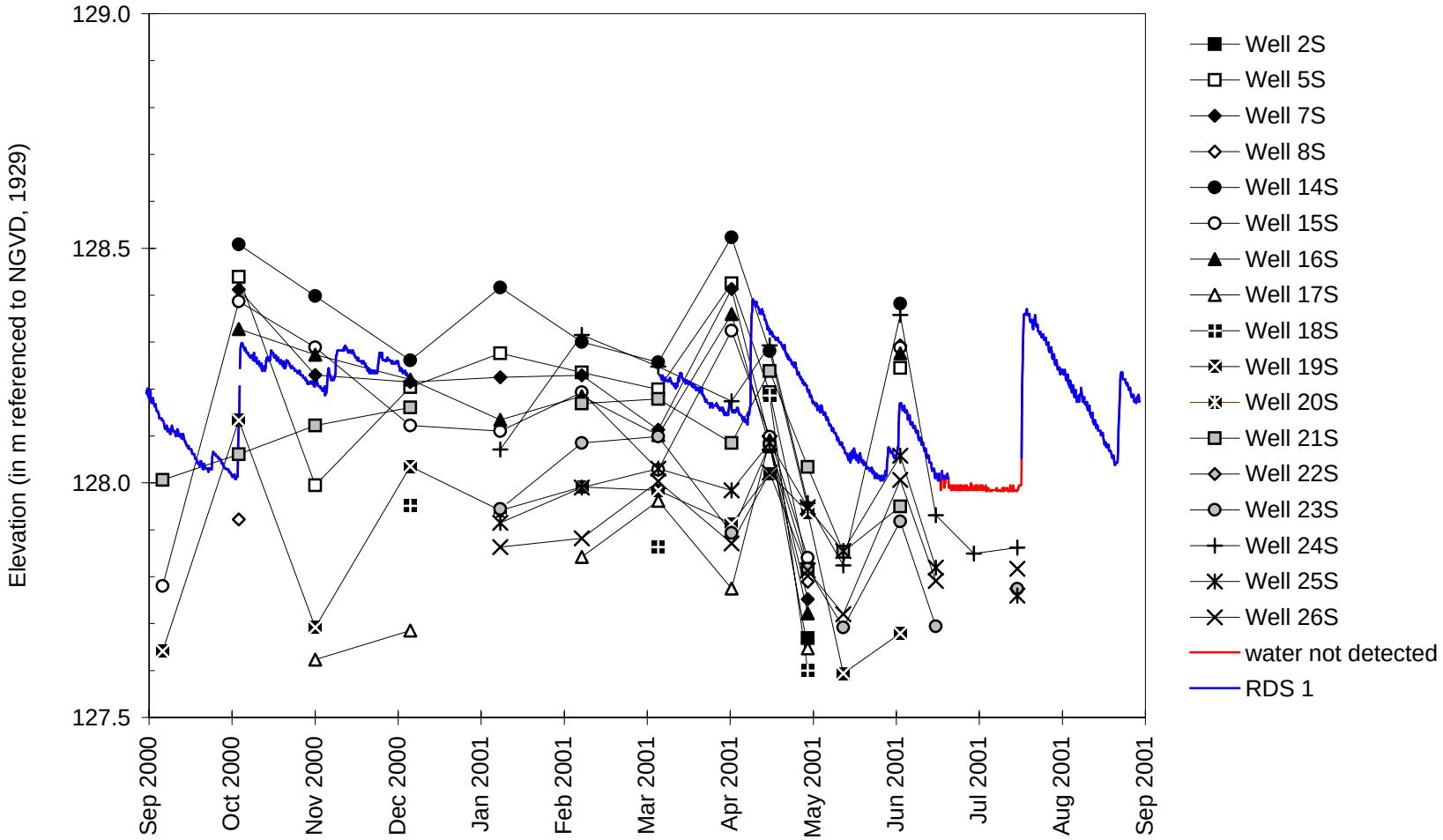
Estimated Areal Extent of 2001 Wetland Hydrology

based on data collected between September 1, 2000 and September 1, 2001

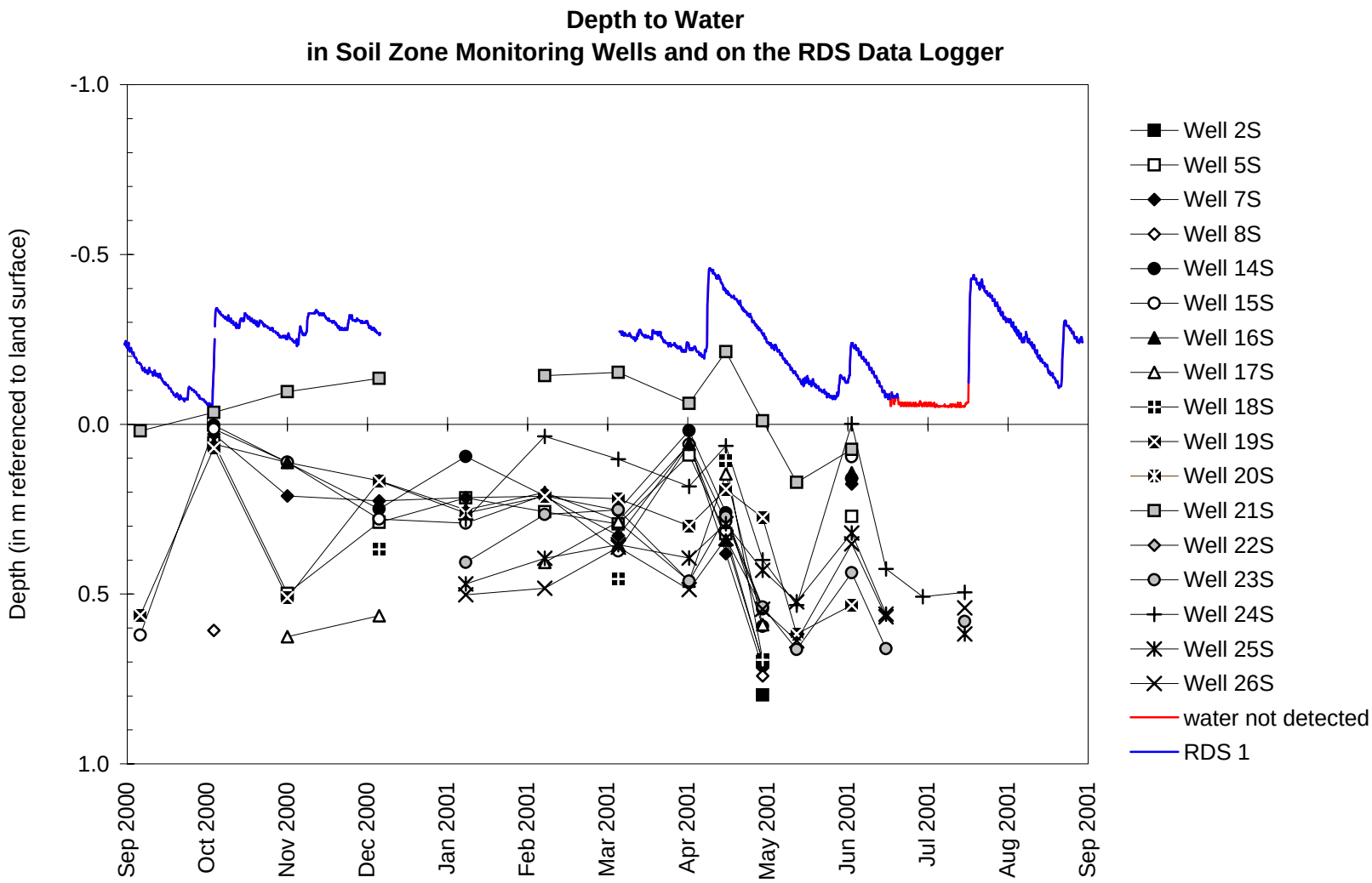
map based on USGS digital orthophotograph, Wood River, SE quarter quadrangle produced from 4/2/1998 aerial photography (ISGS 2001)

Sand Road Wetland Compensation Site
September 1, 2000 to September 1, 2001

Water-Level Elevations
in Soil Zone Monitoring Wells and on the RDS Data Logger

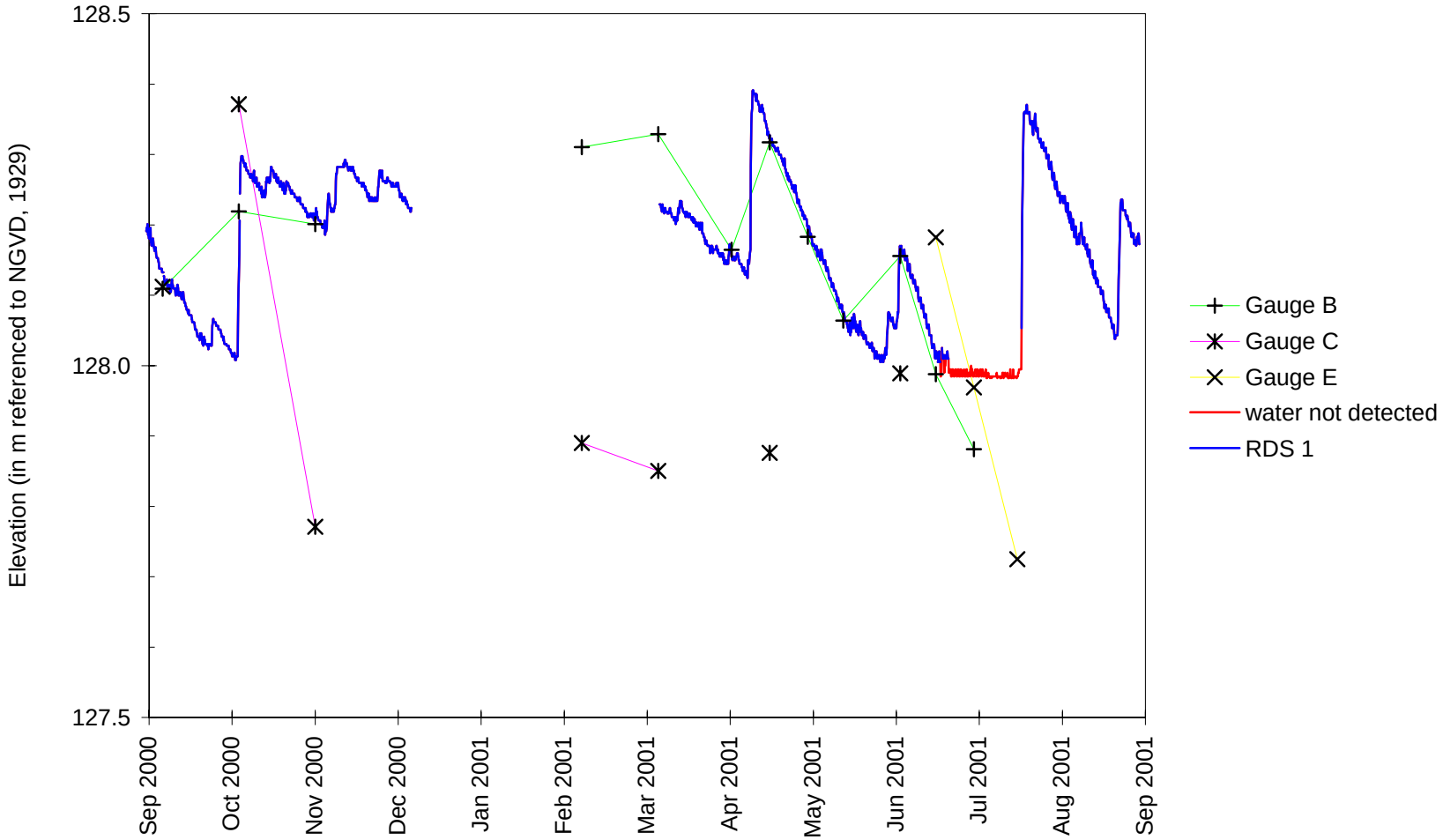


Sand Road Wetland Compensation Site
September 1, 2000 to September 1, 2001



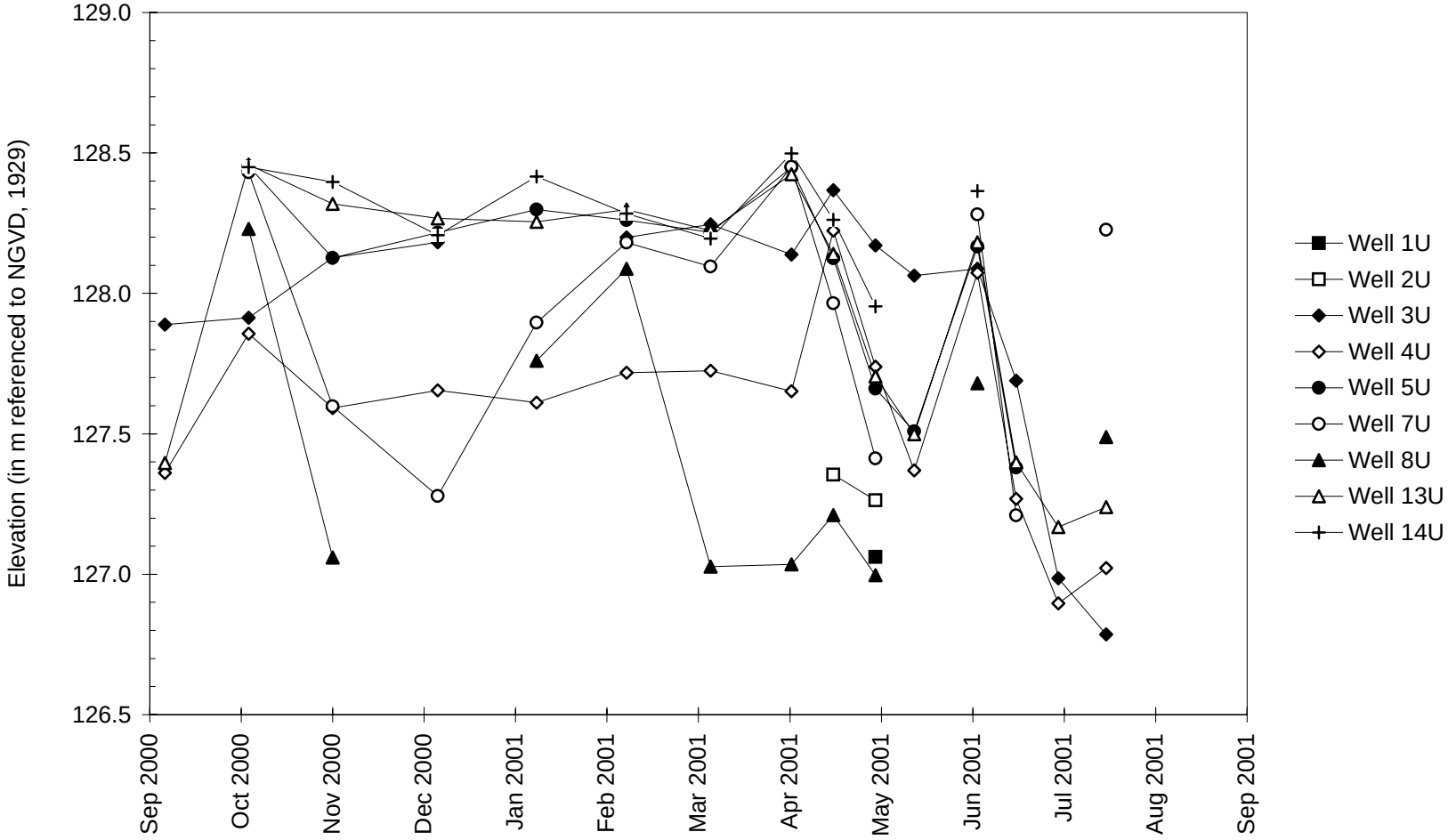
Sand Road Wetland Compensation Site
September 1, 2000 to September 1, 2001

Water-Level Elevations
on Stage Gauges and the RDS Data Logger

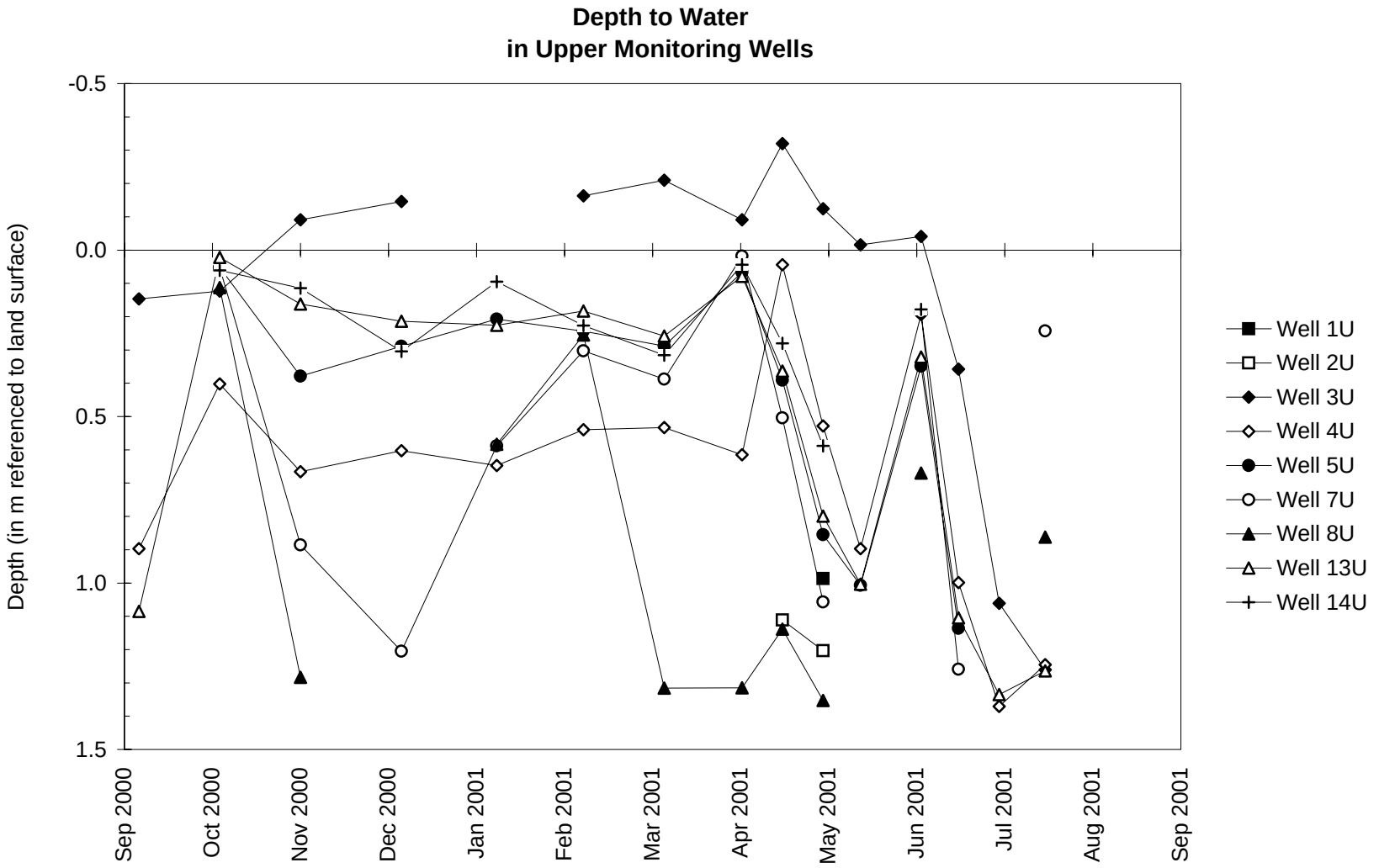


Sand Road Wetland Compensation Site
September 1, 2000 to September 1, 2001

Water-Level Elevations in Upper Monitoring Wells

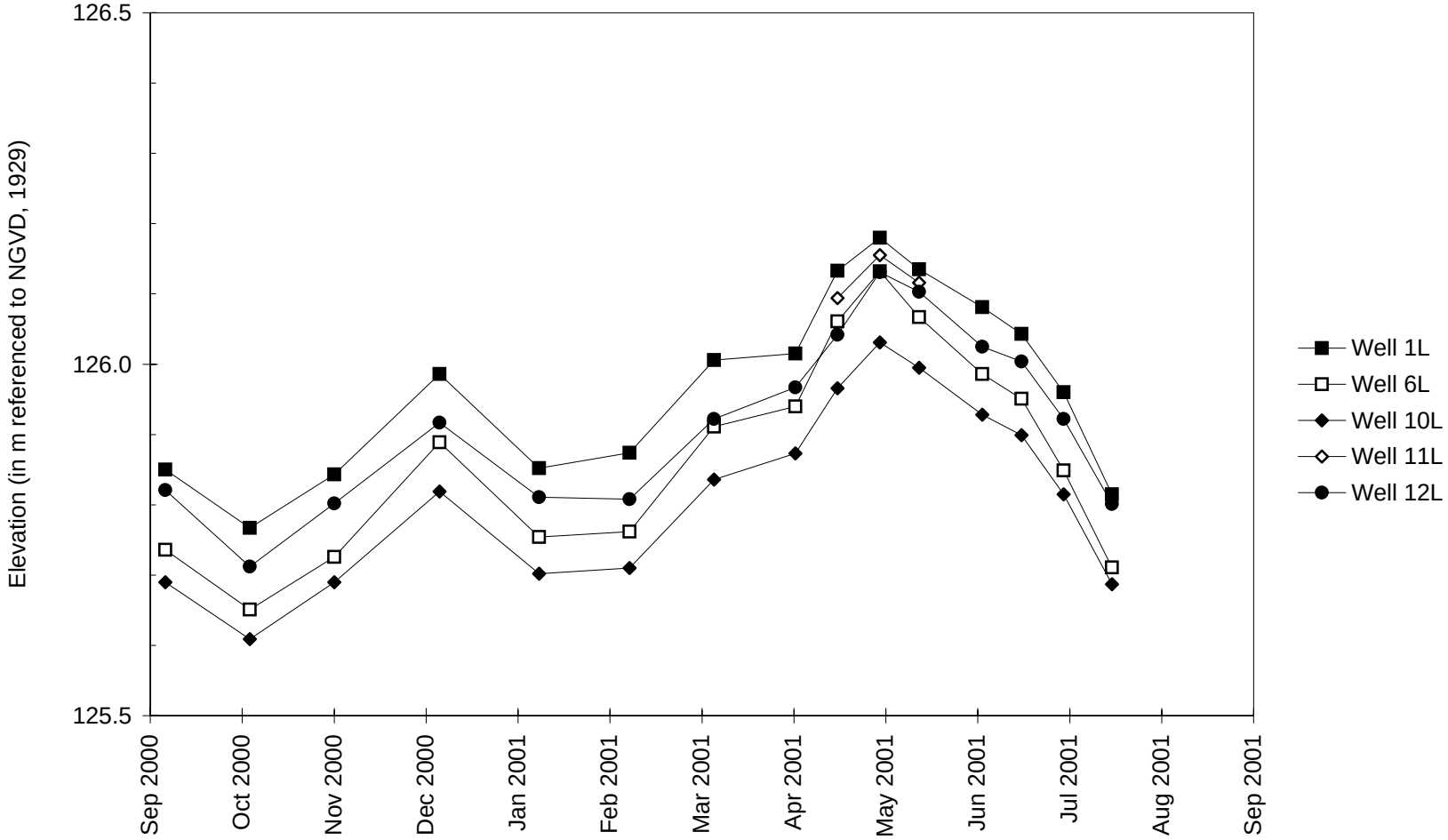


Sand Road Wetland Compensation Site
September 1, 2000 to September 1, 2001



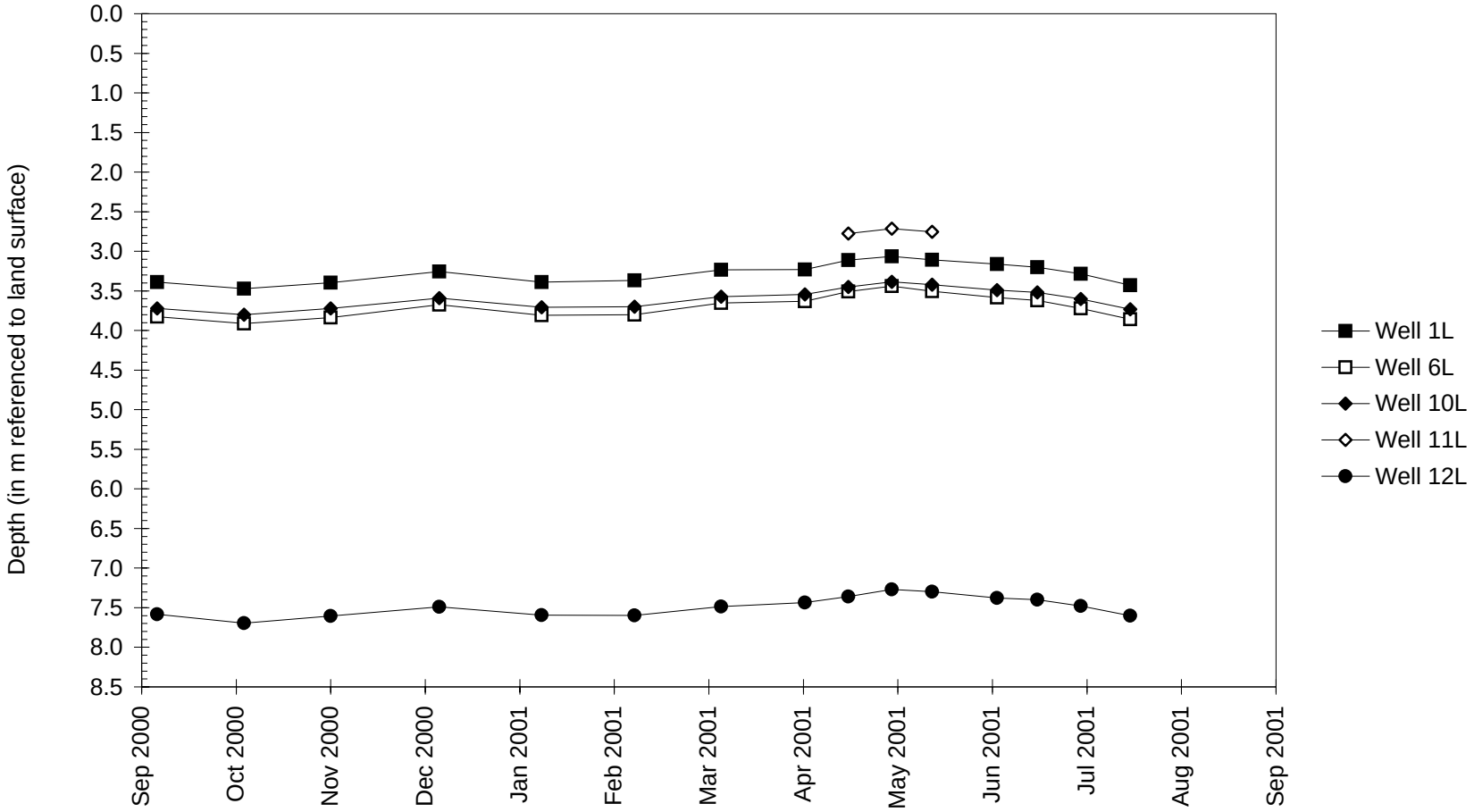
Sand Road Wetland Compensation Site
September 1, 2000 to September 1, 2001

Water-Level Elevations
in Lower Monitoring Wells on the Sand Terrace



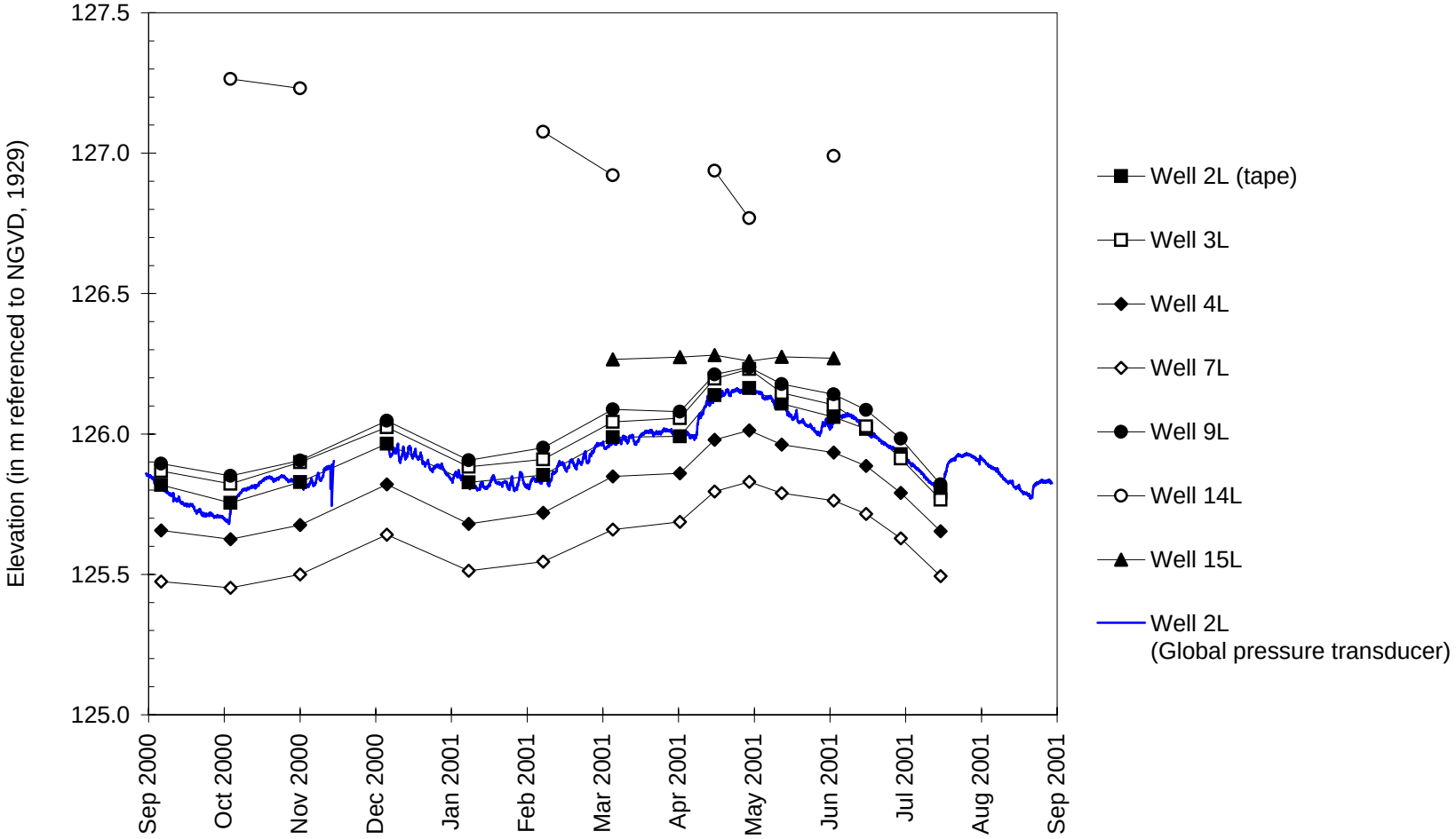
Sand Road Wetland Compensation Site
September 1, 2000 to September 1, 2001

Depth to Water
in Lower Monitoring Wells on the Sand Terrace



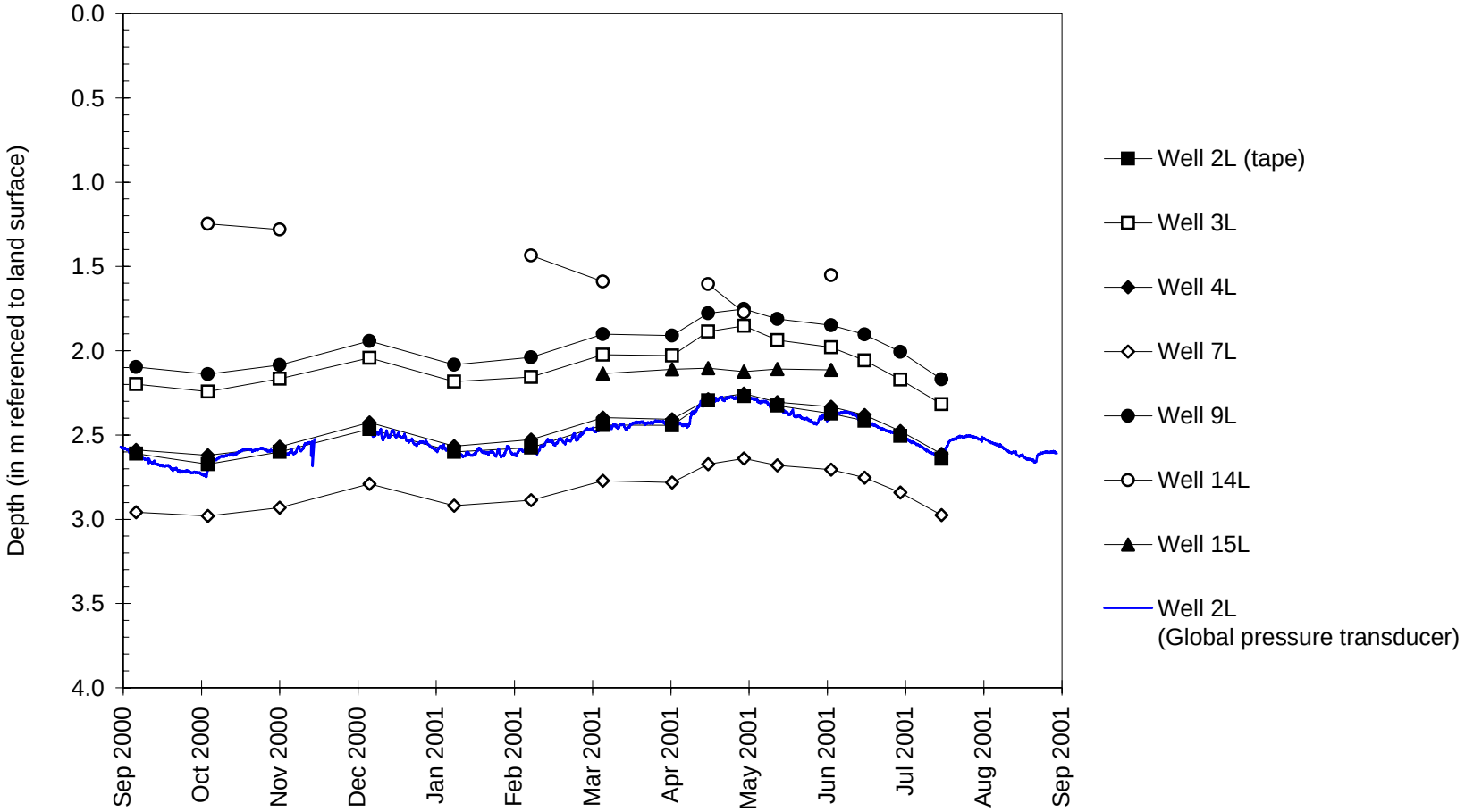
Sand Road Wetland Compensation Site
September 1, 2000 to September 1, 2001

Water-Level Elevations
in Lower Monitoring Wells on the Alluvial Plain



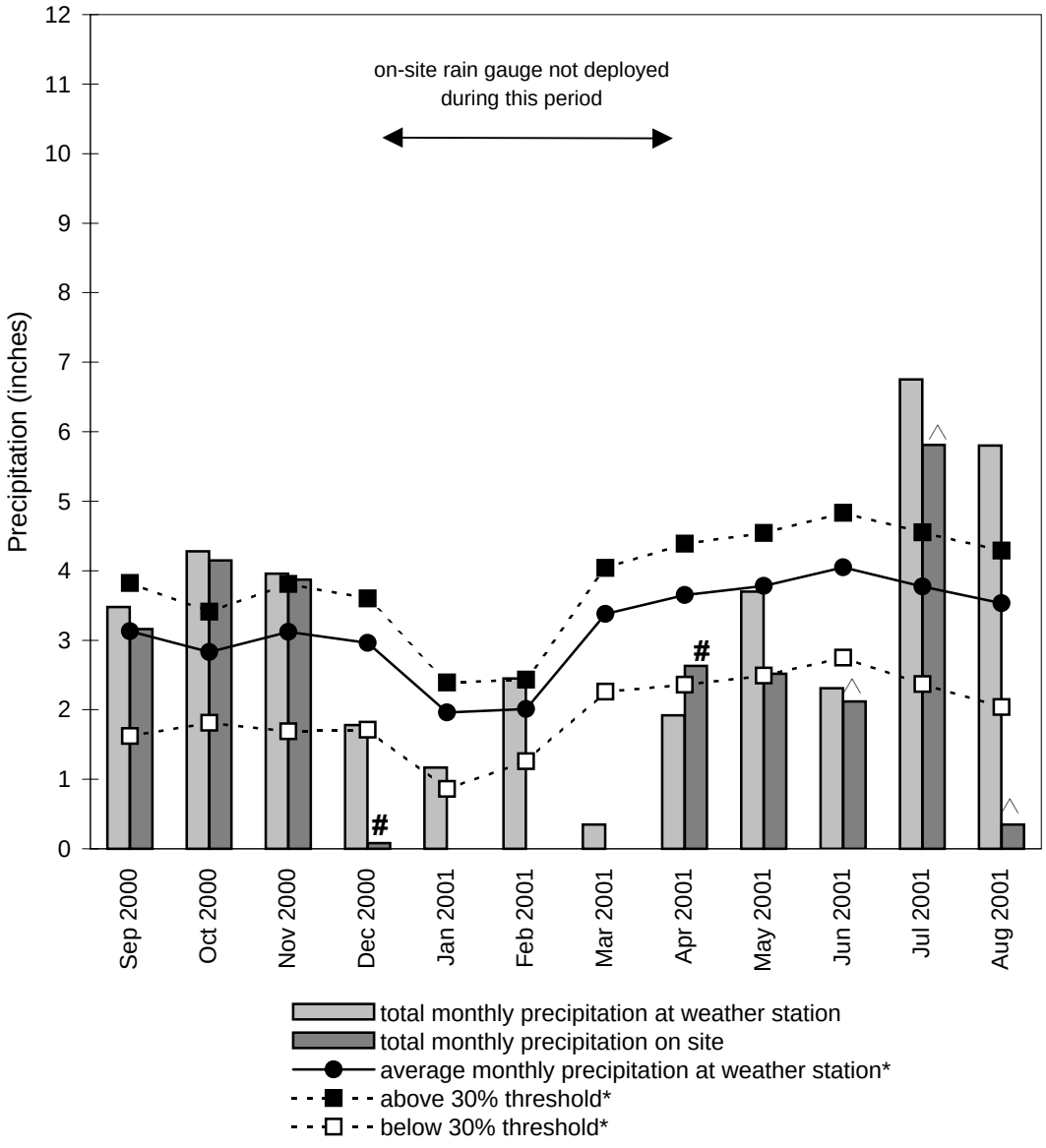
Sand Road Wetland Compensation Site
September 1, 2000 to September 1, 2001

Depth to Water
in Lower Monitoring Wells on the Alluvial Plain



Sand Road Wetland Compensation Site
September 2000 through August 2001

Total Monthly Precipitation Recorded On Site and at the Edwardsville, IL Weather Station



on-site rain gauge not deployed for entire month

△ suspect data: rain collector clogged, represents minimum value for the month

* see text for explanation

Graph last updated October 9, 2001

ORANGEVILLE **ISGS #16**
WETLAND COMPENSATION SITE
FAP 316
Stephenson County, near Orangeville, Illinois
Primary Project Manager: Kelli D. Weaver
Secondary Project Manager: Keith W. Carr

SITE HISTORY

- March 1993: IDOT tasked ISGS to determine ground-water levels on the site.

- February 1994: ISGS data collection was initiated with the installation of nested monitoring wells and a staff gauge.

- December 1996: ISGS received notification from IDOT that all monitoring at the site was to cease as of January 1, 1997.

- March 1997: A final hydrogeologic characterization report was submitted to IDOT (ISGS Open File Series, 1997–3). One finding of the ISGS report was a suggested excavation depth of 75 cm (30 in) which would likely produce wetland hydrology on the site.

- June 2000: IDOT issued a task order for ISGS to monitor two newly constructed wetland compensation sites and delineate the area of wetland hydrology for each. The two sites will subsequently be known as Site 1 (most northerly) and Site 2 (most southerly).

- April 2001: ISGS data collection was resumed with the installation of soil-zone monitoring wells (9), stage gauges (3), a rain gauge, a sonic water-level data logger, and an RDS water-level data logger. Two of the original five monitoring well nests installed in 1994 were eventually located and re-activated, while the rest were determined to have been destroyed during construction.

WETLAND HYDROLOGY CALCULATION FOR 2001

The area that conclusively satisfied wetland hydrology criteria in 2001 is estimated to be 8.03 ac (3.25 ha) at Site 1, and 8.1 ac (3.28 ha) at Site 2, with the following qualifiers:

- The base maps being utilized for the two sites are pre-construction plans provided by IDOT, which include pre-excavation topographic contours and target elevations for the two planned excavations (Sites 1 and 2). The wetland basin at Site 1 was to be excavated to an elevation range of 788.30 to 789.30 ft (240.28 to 240.58 m). The wetland enhancement areas at Site 2 were to be excavated to a target elevation of roughly 789.0 ft (240.49 m). The surveyed elevations of the ground surface adjacent to ISGS wells are consistent with the target elevations as shown by the IDOT plans, suggesting planned excavation depths were attained in at least some of the area.

- IDOT "excavation limits" shown on the pre-construction plans were used by ISGS to determine the acreages of the planned basins (measured with a digital planimeter). Site 1 has a planned area of 8.03 ac (3.25 ha) below an elevation of 789.30 ft (240.58 m). Site 2 has a planned area of 8.1 ac (3.28 ha) at or around an elevation of 789.0 ft (240.49 m).

- Limited ISGS instrumentation indicates that areas at and below these planned elevations likely satisfied wetland hydrology criteria, in the vicinity of the wells, staff gauges, and data loggers. Photo documentation, on-site observations, and hydrologic indicators all support long-term surface saturation and ponding over wide areas of both sites. The above estimated acreages assume that all areas of the basins were accurately excavated to these target elevations. An ISGS topographic survey is planned for 2001–2002 to establish the final contours of the excavated basins. It is possible that some areas within the basin which appear to have been left at slightly higher elevations than planned may not meet wetland hydrology criteria. Additional instrumentation will target these areas.

The above wetland hydrology estimate is based on the following factors.

- According to the Midwestern Climate Center, the median date that the growing season begins in Freeport, Illinois is April 20 and the season lasts 182 days; 12.5% of the growing season is 23 days.

- Total precipitation for the period from September 2000 to March 2001 was 134% of normal, resulting in wetter conditions entering the growing season. In April and May 2001 precipitation continued above normal, but totals returned to normal in June and August, and below normal in July. Total precipitation for the monitoring period from September 2000 to August 2001 was 115% of normal.

- In 2001 at Site 1, water levels measured in wells 2S and 3S, gauge SW-B, and at SWB-RDS conclusively satisfied the wetland hydrology criteria in the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual. In 2001 at Site 2, water levels measured in wells 4S, 5S, 6S, 8S, and 9S, and at gauge SW-C conclusively satisfied the wetland hydrology criteria in the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual.

- Photographs and observations support prolonged inundation and saturation of both sites.

- Limitations of the wetland hydrology determination are as follows:
  - The results of this year's monitoring indicate that a wider spread of instrumentation is required, especially at Site 2.
  - The DOQ for the site is based upon an aerial photograph taken prior to wetland basin construction, and due to a lack of photo-recognizable points, can not easily be used as a base map for areal calculations.
  - The base maps utilized for wetland hydrology calculations are IDOT pre-construction plans with an unknown level of topographic accuracy.

PLANNED FUTURE ACTIVITIES

- ISGS topographic surveys of both sites are planned for 2001–2002 to provide a suitable base map and to determine if post-excavation topographic contours reflect the planned target excavation depths of the basins.

- A number of additional soil-zone monitoring wells will be installed in both Sites 1 and 2 to further delineate the area of wetland hydrology on the site.

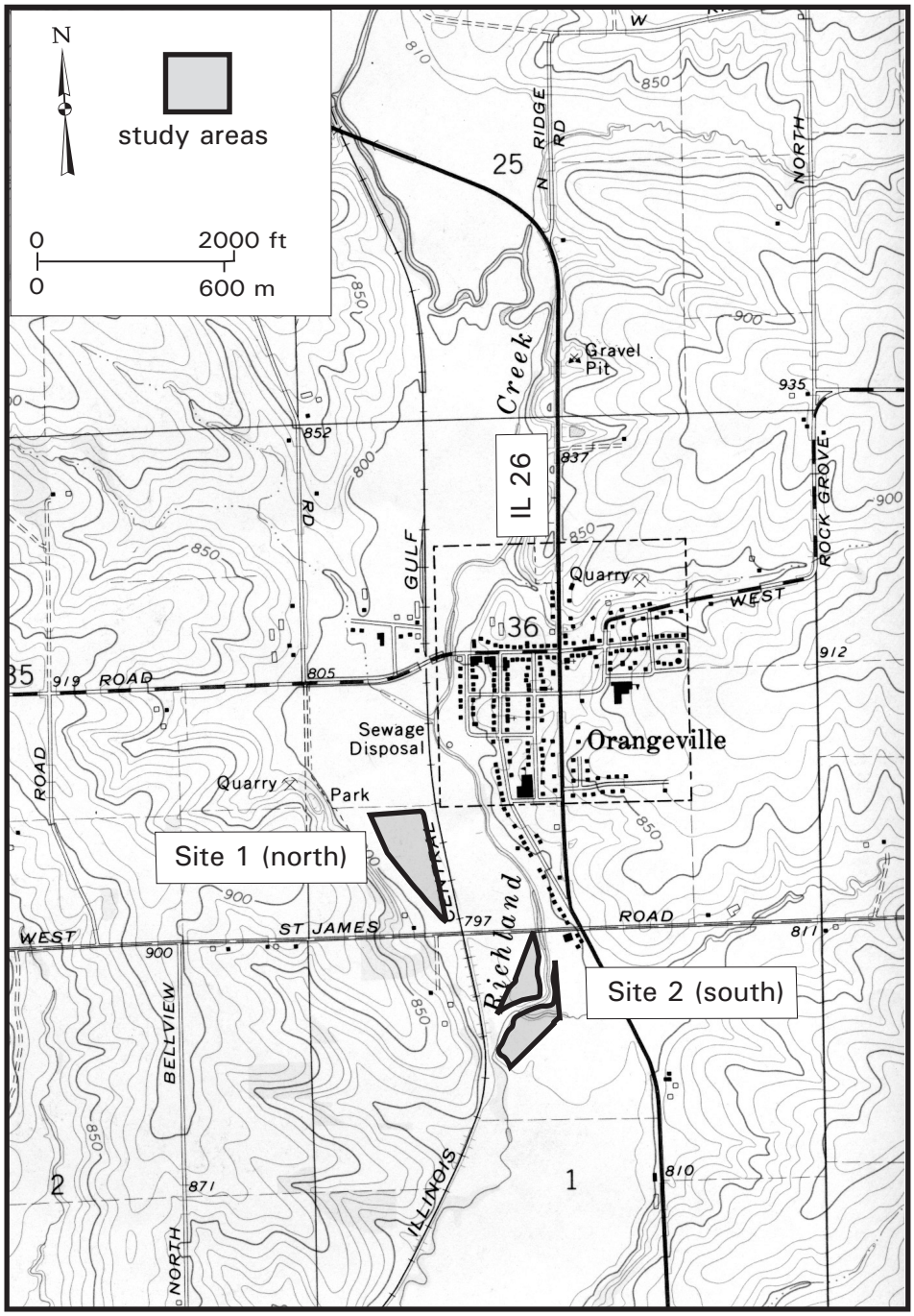
Orangeville Wetland Compensation Site

(FAP 316)

General Study Area and Vicinity

from the USGS Topographic Series, Orangeville, IL 7.5-minute Quadrangle (USGS 1971)

contour interval is 10 feet

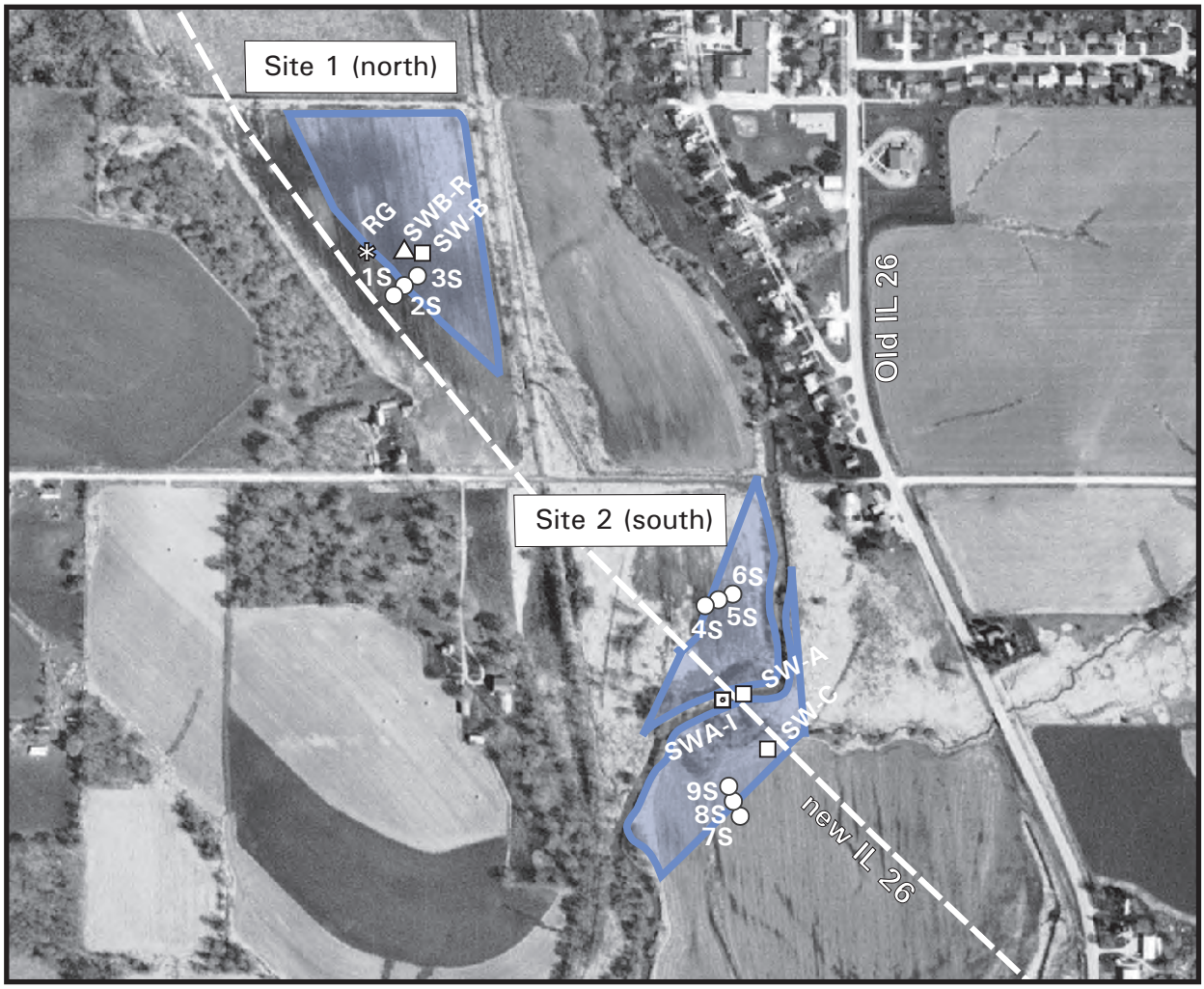


Orangeville Wetland Compensation Site
(FAP 316)

Estimated Areal Extent of 2001 Wetland Hydrology

based on data collected between September 1, 2000 and September 1, 2001

map based on USGS digital orthophotograph, Orangeville NE quarter quadrangle
from 04/17/1998 aerial photography (ISGS 2001)



0 300 m
0 500 ft

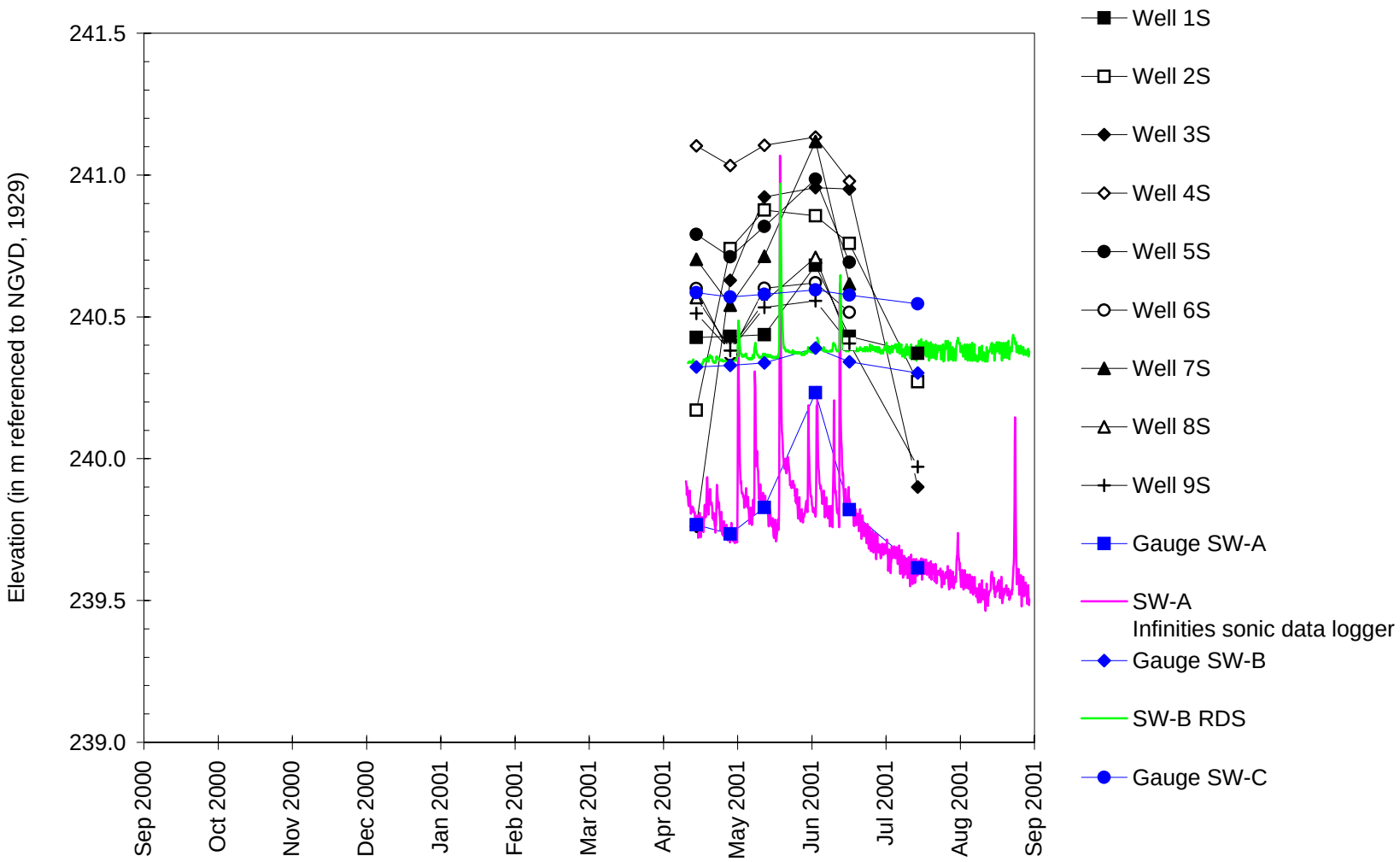
N

estimated areal extent of 2001 wetland hydrology

- ISGS monitoring well
- rain gauge
- RDS data logger
- Infinities sonic data logger
- stage gauge

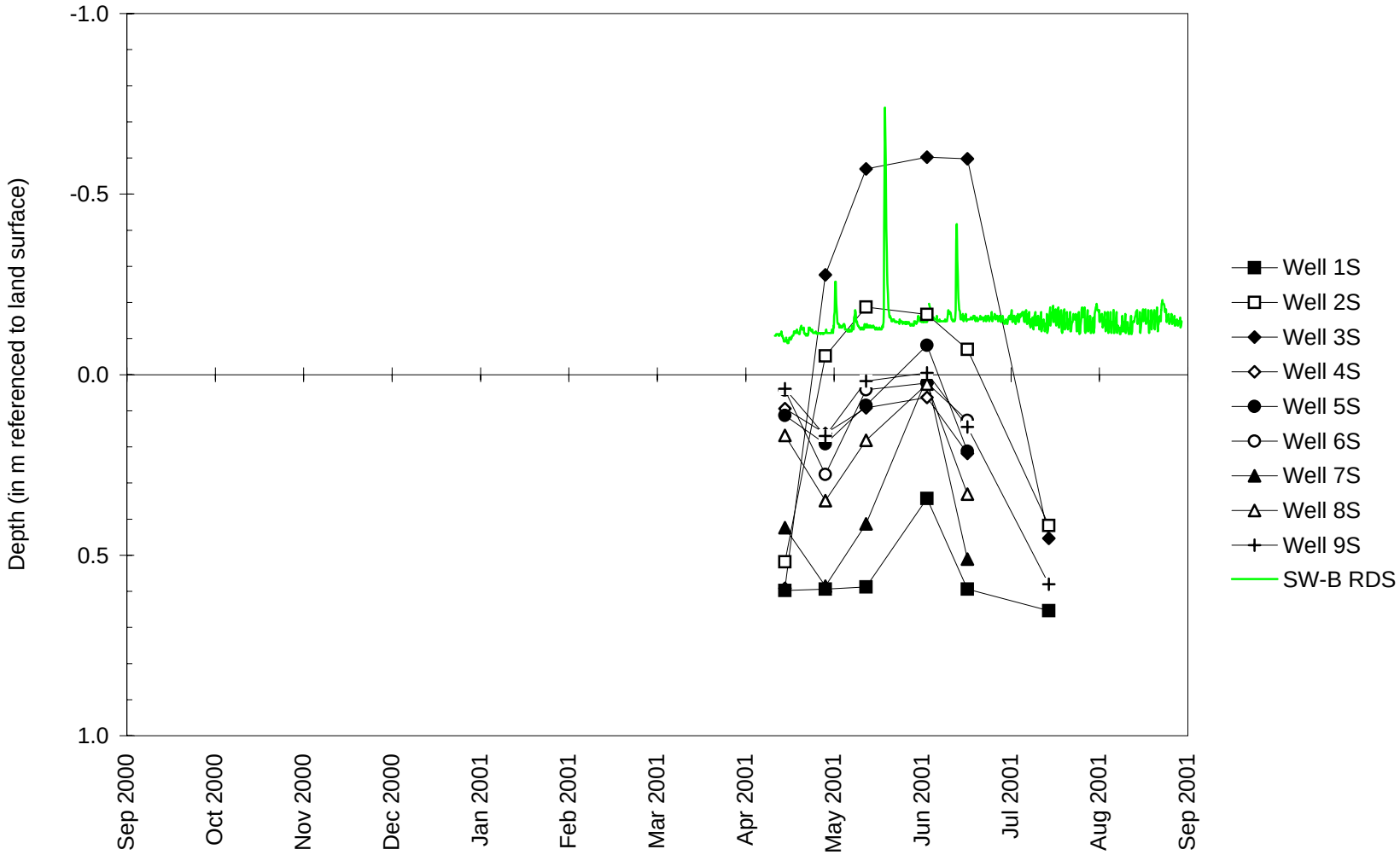
Orangeville Wetland Compensation Site
September 1, 2000 to September 1, 2001

Water-Level Elevations



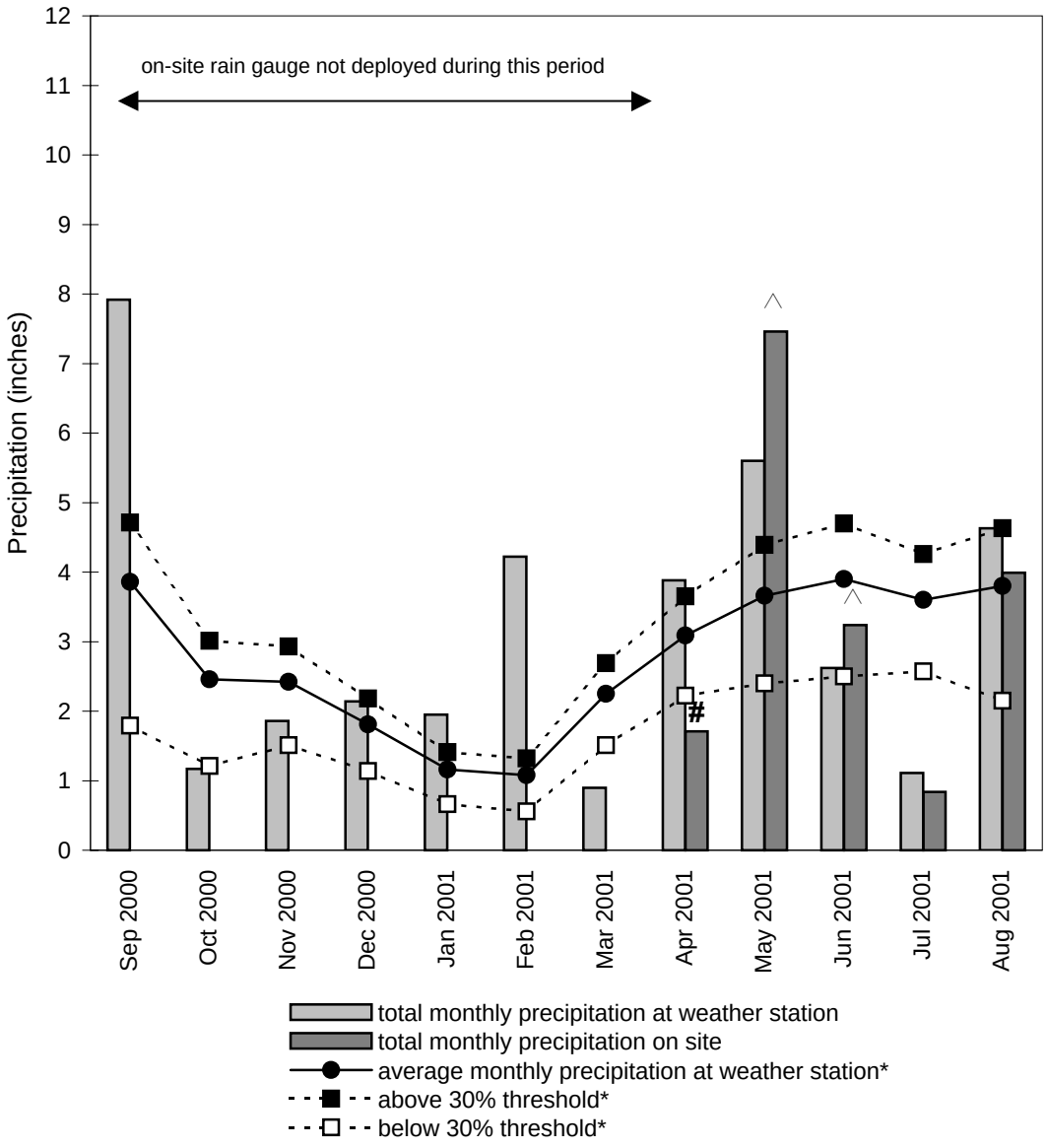
Orangeville Wetland Compensation Site
September 1, 2000 to September 1, 2001

Depth to Water



Orangeville Wetland Compensation Site
September 2000 through August 2001

Total Monthly Precipitation Recorded On Site and at the Freeport Wastewater Treatment Plant Weather Station, Freeport, IL



on-site rain gauge not deployed for entire month

△ suspect data: rain collector clogged, represents minimum value for the month

* see text for explanation

Graph last updated October 4, 2001

MILAN BELTWAY, AIRPORT ROAD **ISGS #17**
WETLAND COMPENSATION SITE
FAU 5822
Rock Island County, near Milan, Illinois
Primary Project Manager: Keith W. Carr
Secondary Project Manager: Steven E. Benton

SITE HISTORY

- July 1996: ISGS submitted an Initial Site Evaluation Report to IDOT.
- February 1997: IDOT issued a task order for a hydrologic characterization of the site.
- August 1997: ISGS data collection was initiated with the installation of monitoring wells and staff gauges.
- August 2000: ISGS sent a letter to IDOT recommending approximate excavation depths required to attain wetland hydrology in the southern third of the site.
- November 2000: ISGS sent a fax to IDOT to provide a data logger record showing two instances where the wetland was inadvertently drained by earth-moving activities.
- November 2000: ISGS sent a letter to IDOT to formalize documentation of the two drainage events (see preceding item). The letter also served to provide updated hydrological information for potential site excavation planning.
- May 2001: At IDOT's request, ISGS reviewed a mitigation plan for the site.

WETLAND HYDROLOGY CALCULATION FOR 2001

The area that conclusively satisfied wetland hydrology criteria in 2001 is estimated to be 24.0 ac (9.7 ha). The entire site is roughly 31.6 ac (12.8 ha), leaving approximately 7.6 ac (3.1 ha) that did not conclusively satisfy wetland hydrology in 2001. This is in contrast to 19.6 ac (7.9 ha) which satisfied wetland hydrology criteria in 2000, a year with precipitation which was 90% of normal.

This estimate is based on the following factors.

- According to the Midwestern Climate Center, the median date that the growing season begins at the Quad City International Airport, Moline, Illinois is April 13 and the season lasts 192 days; 12.5% of the growing season is 24 days.
- Total precipitation for the period from September 2000 to March 2001 was normal, resulting in typical moisture conditions entering the growing season. In April, July, and August, 2001 precipitation was normal, while precipitation was below normal in June. Precipitation was more than twice normal in May 2001, bringing total precipitation for the monitoring period from September 2000 to August 2001 to 104% of normal.
- In 2001, ground-water levels measured at wells RDS 1, 1S, 2S, 3S, 5S, 6S, 7S, and 8S, as well as surface-water levels at gauges A and B conclusively satisfied the wetland

hydrology criteria in the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual. Water levels measured at wells RDS 2, RDS 3, 4S and 9S, as well as at gauge C may also have satisfied the wetland hydrology criteria.

- In contrast to mapping in previous years where well locations were estimated from landmarks, GPS positions for all wells were obtained in 2001. As no DOQ is available for this site, the GPS-derived well positions were superimposed on the existing unrectified aerial photograph. Good agreement with photo-identifiable points suggests that this mapping is reasonably accurate.

- Starting in April 2000, water levels were measured in Case Creek to investigate the potential of this drainageway as a water source for the site. Analysis of the hydrograph indicates that if the site were opened to Case Creek during the spring of 2001, the creek would only have inundated roughly 10% of the site area twice during the growing season. One larger magnitude flood did occur in 2001 which would have inundated roughly 95% of the site, however, it occurred in early February, roughly two months before the start of the growing season. If the site was open to the creek, it is not known how long this water would have persisted on the surface. This flood, the largest ISGS recorded since monitoring began in April 2000, peaked roughly 2.5 m (8.2 ft) below the top of the Case Creek levee.

- Limitations of the wetland hydrology determination are as follows:
  - The base map used is derived from an unrectified aerial photograph with an unknown level of accuracy.

PLANNED FUTURE ACTIVITIES

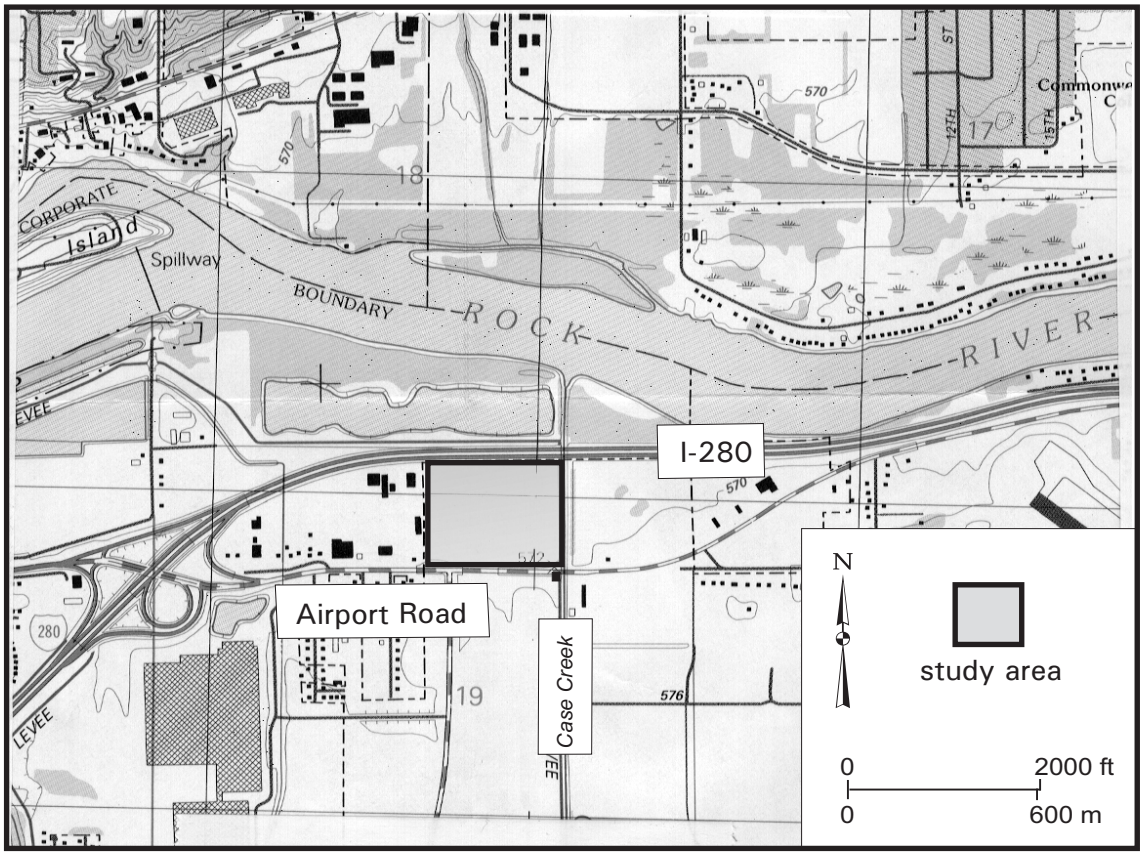
- If previously planned IDOT excavation on the site is undertaken, several wells and data loggers will have to be removed prior to this excavation and re-deployed afterwards.

- If a DOQ for the site does not become available during the upcoming monitoring period, a survey of the site may be undertaken in order to provide a more accurate base map. This, in addition to the recently-determined GPS locations of wells and other instruments, will enhance accuracy in determining the area satisfying wetland hydrology criteria.

Milan Beltway, Airport Road Wetland Compensation Site
(FAU 5822)

General Study Area and Vicinity

from the USGS Topographic Series, Milan IL-IA 7.5-minute Quadrangle (USGS 1992)
contour interval is 10 feet



Milan Beltway, Airport Road Wetland Compensation Site
(FAU 5822)

Estimated Areal Extent of 2001 Wetland Hydrology

based on data collected between September 1, 2000 and September 1, 2001

map based on unrectified aerial photography from IDOT (date and frame number unknown)

estimated areal extent of 2001 wetland hydrology

○ monitoring well

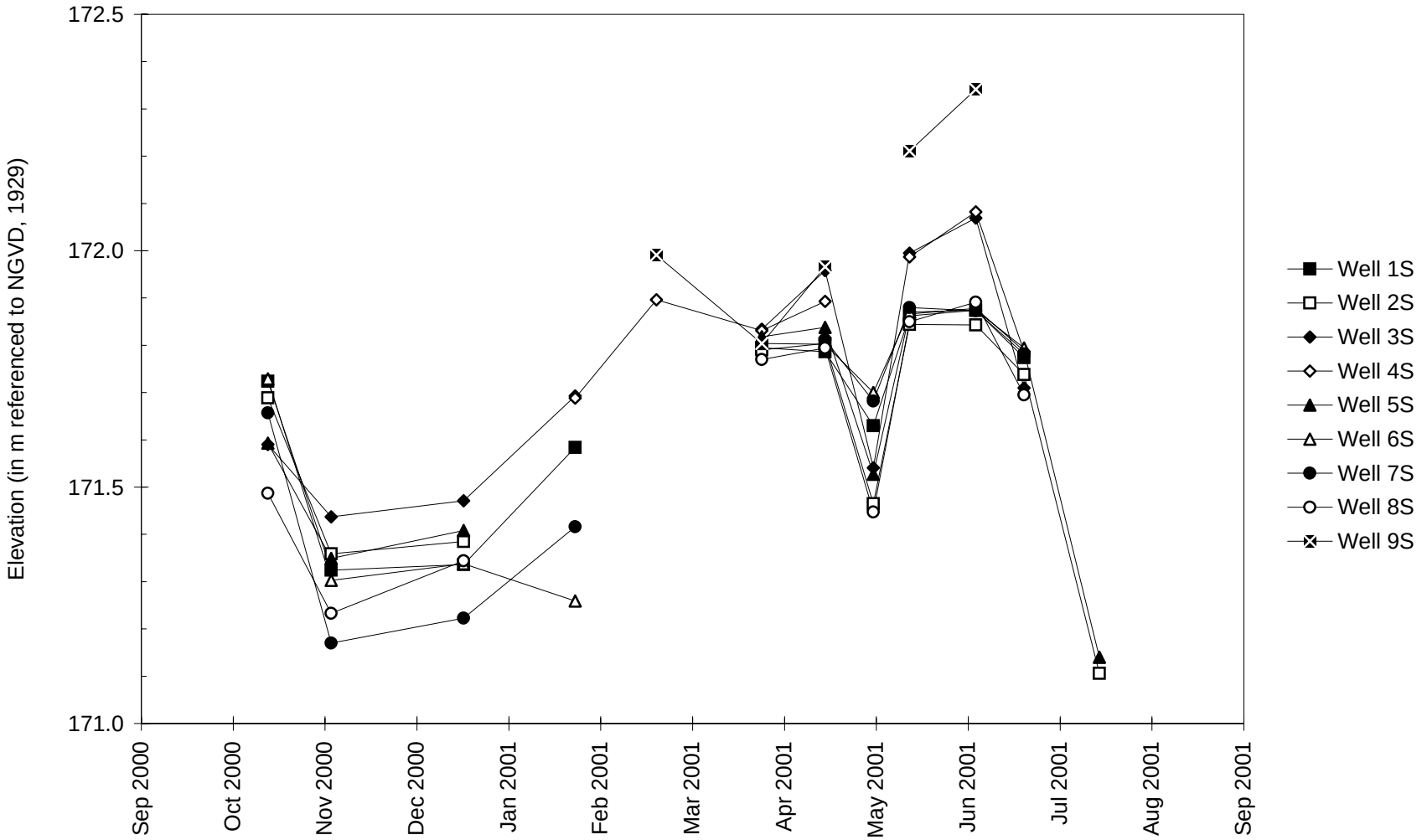
□ stage gauge

△ RDS data logger

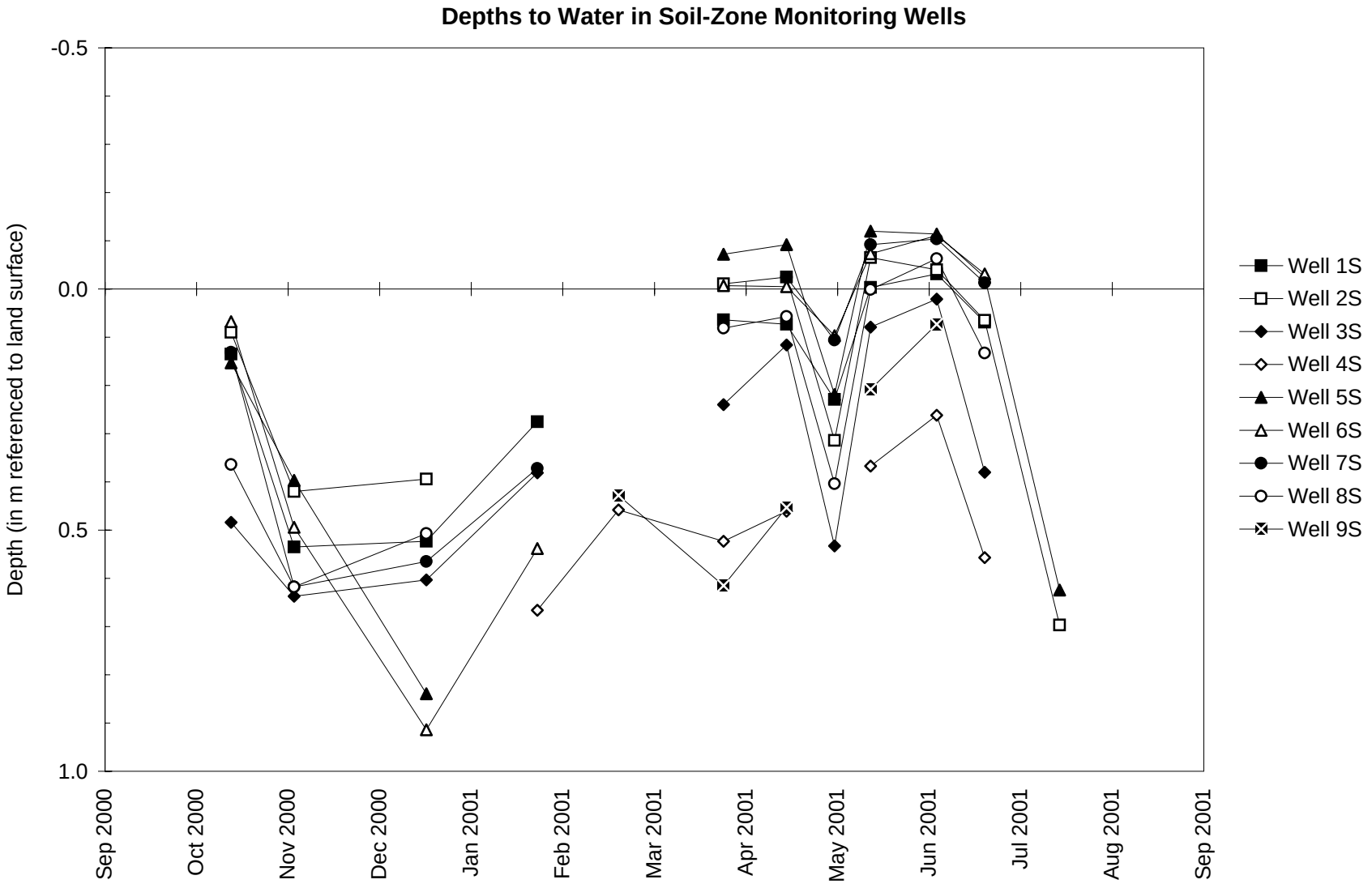
⊙ Global data logger

Milan Beltway, Airport Road Wetland Compensation Site
September 1, 2000 to September 1, 2001

Water-Level Elevations in Soil-Zone Monitoring Wells

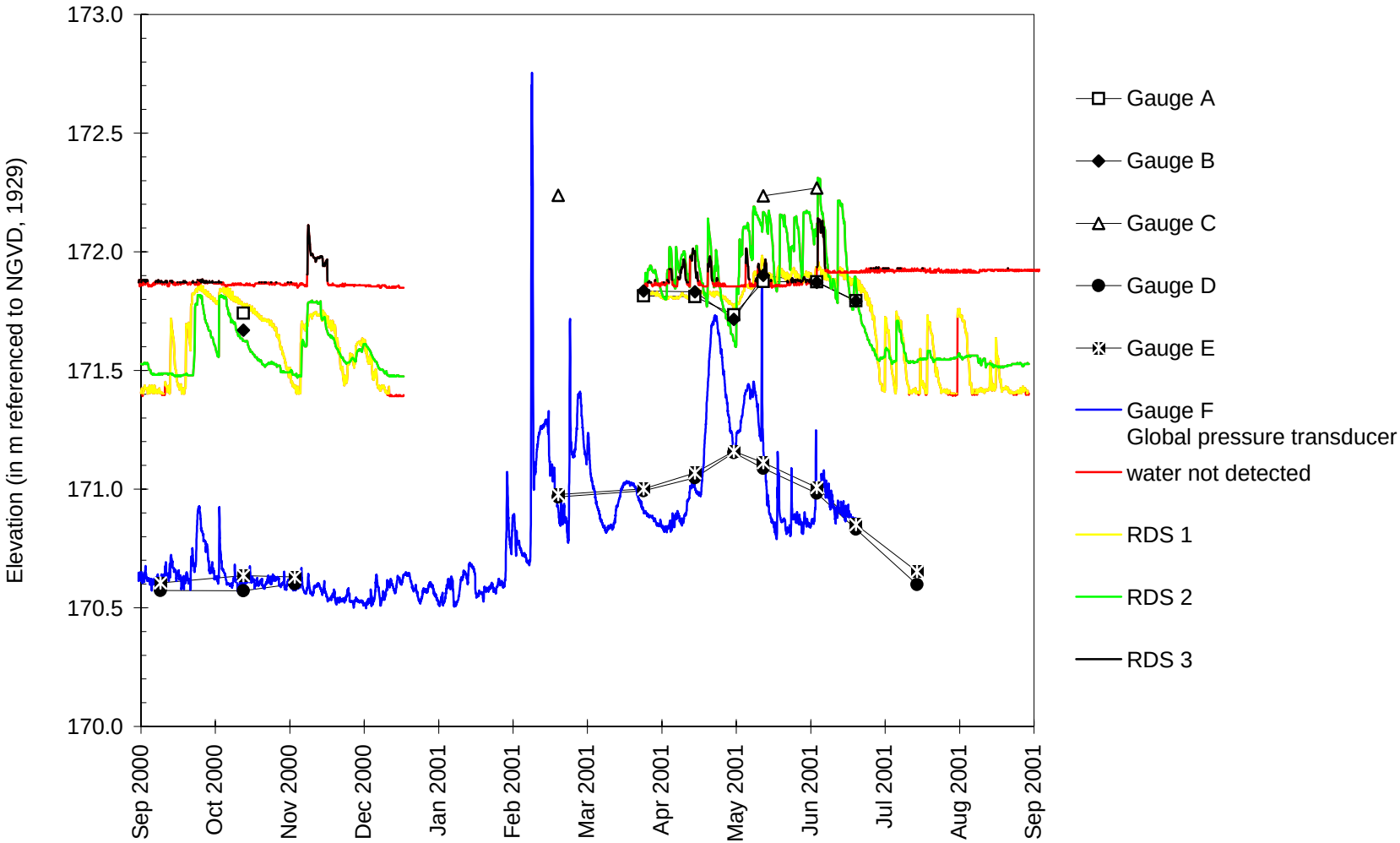


Milan Beltway, Airport Road Wetland Compensation Site
September 1, 2000 to September 1, 2001

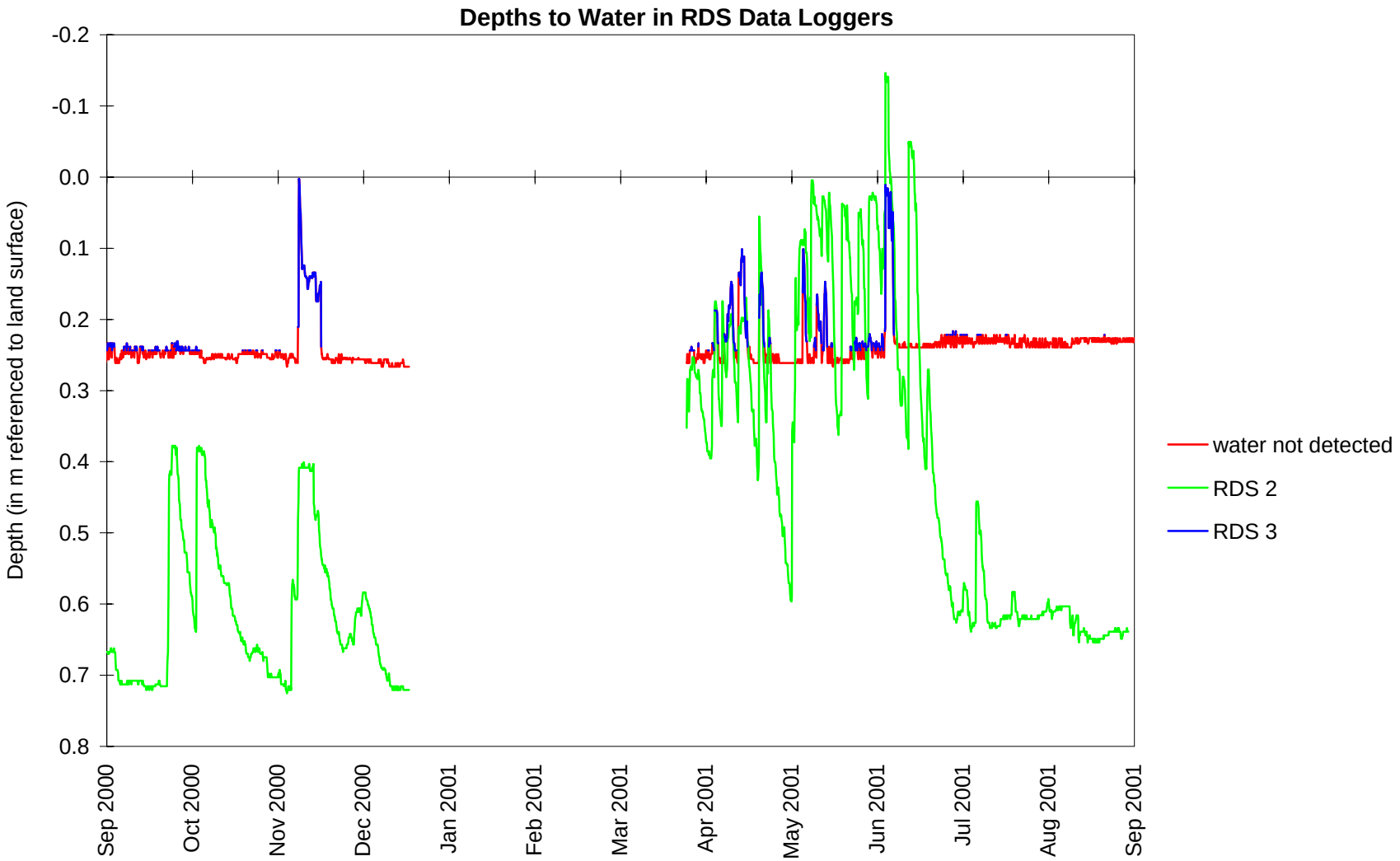


Milan Beltway, Airport Road Wetland Compensation Site
September 1, 2000 to September 1, 2001

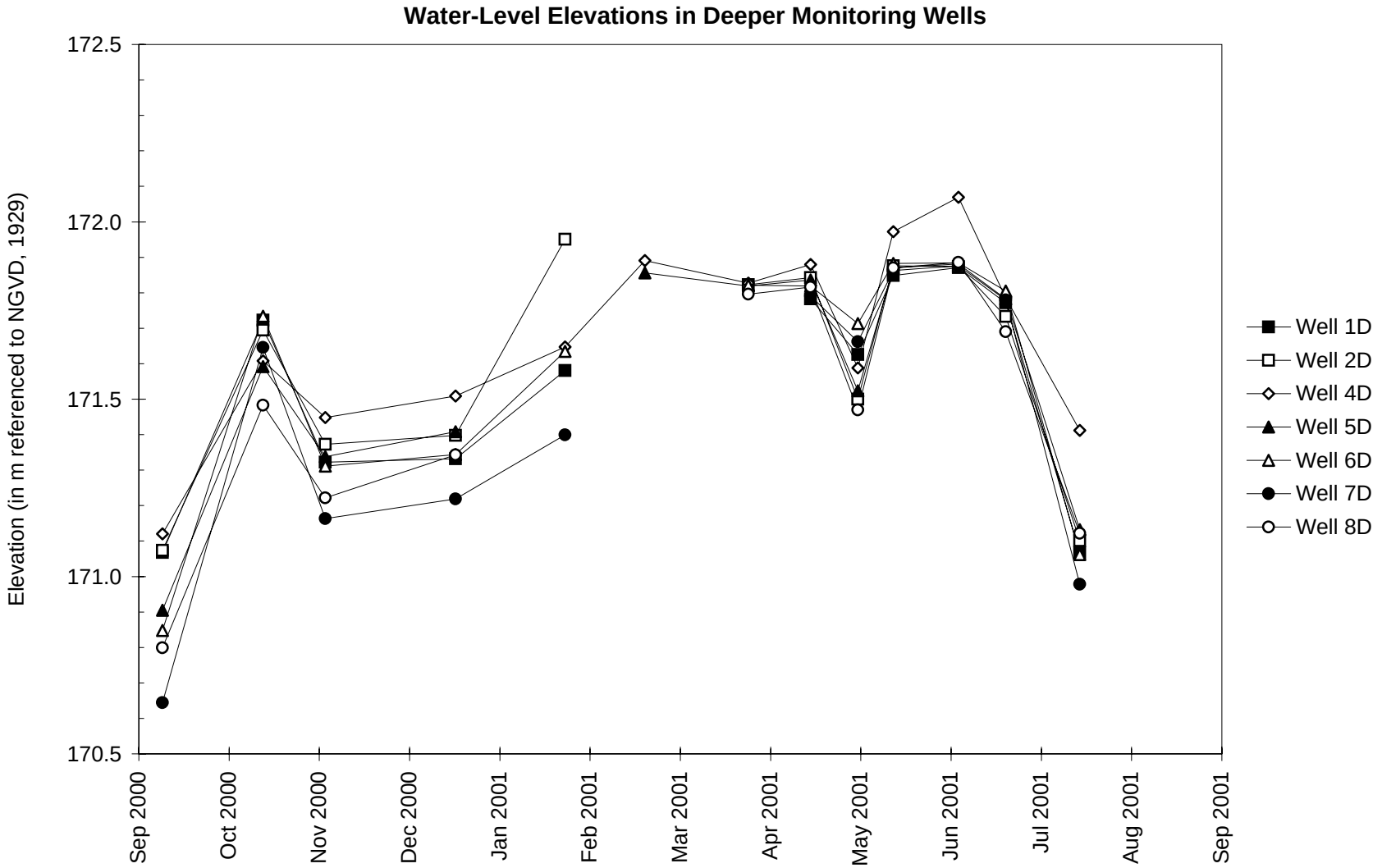
Water-Level Elevations
on Stage Gauges and RDS Data Loggers



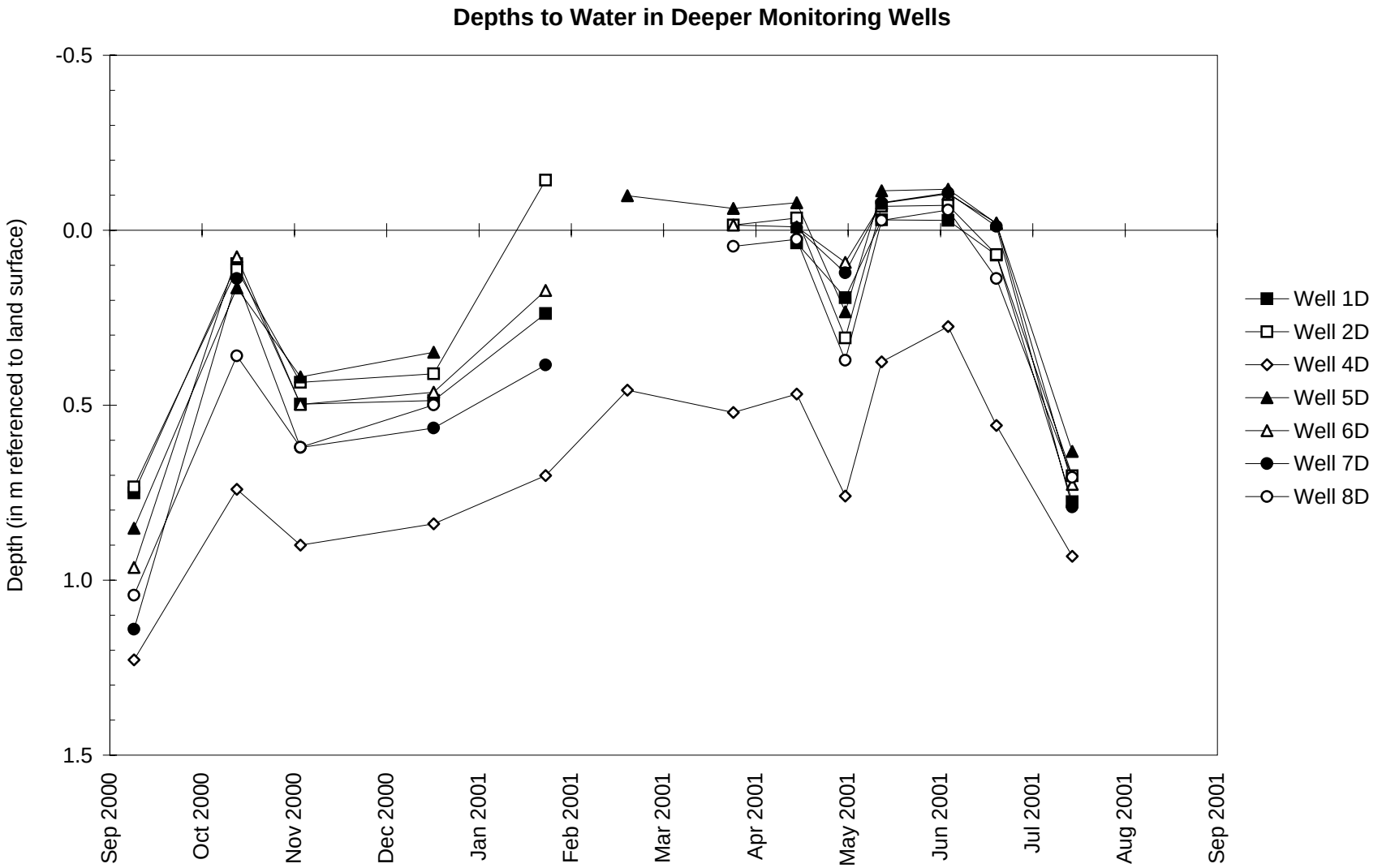
Milan Beltway, Airport Road Wetland Compensation Site
September 1, 2000 to September 1, 2001



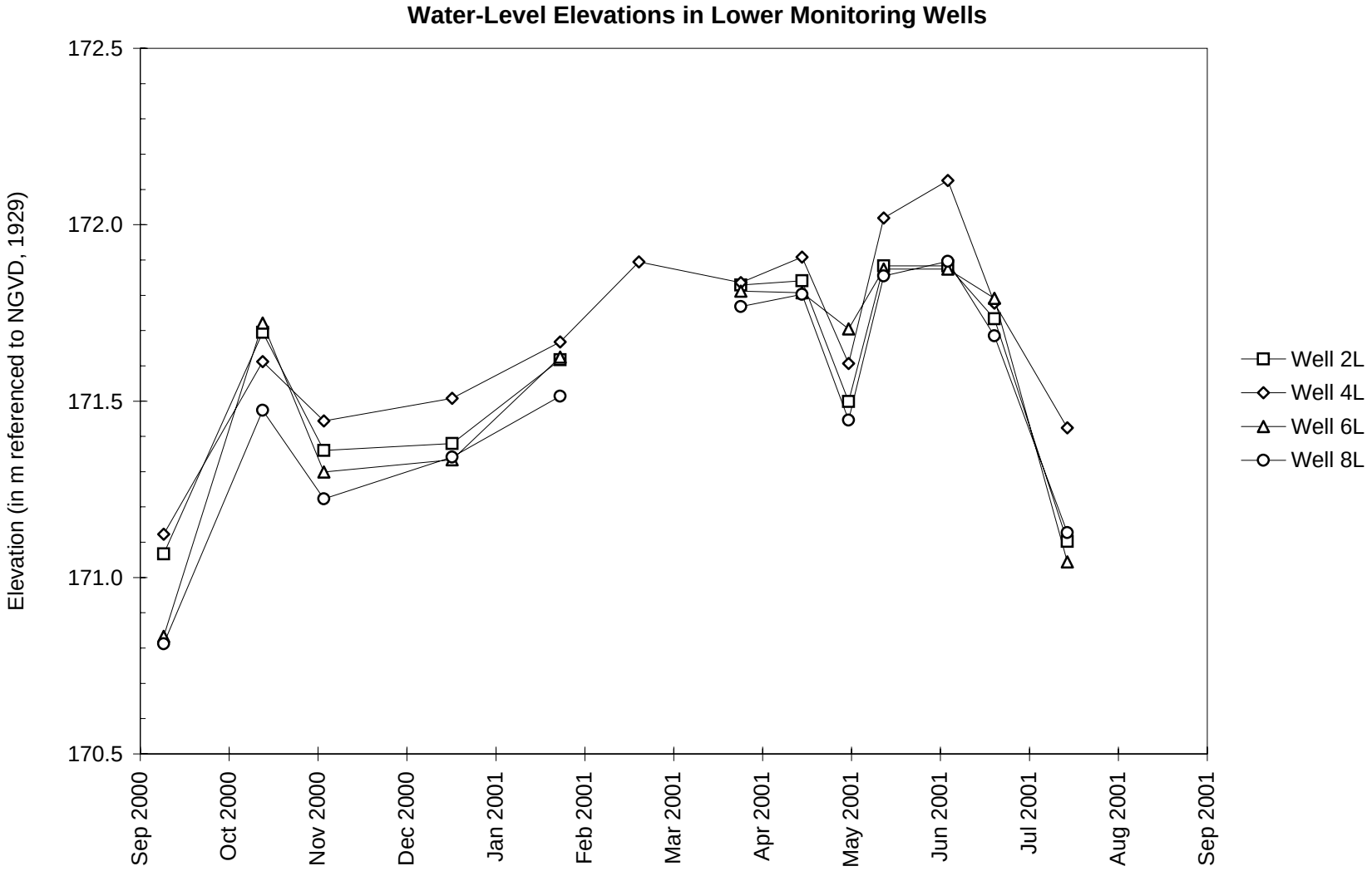
Milan Beltway, Airport Road Wetland Compensation Site
September 1, 2000 to September 1, 2001



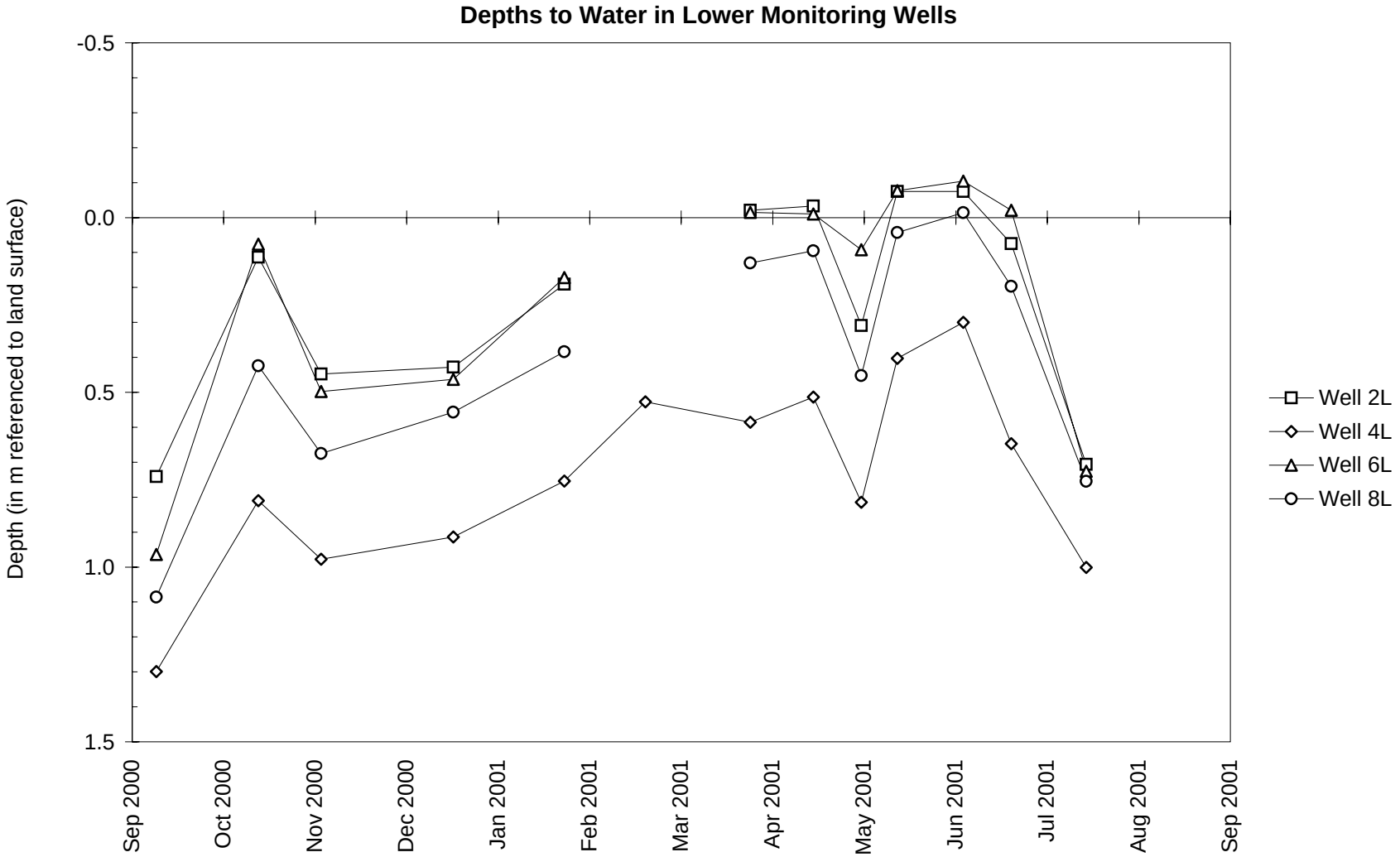
Milan Beltway, Airport Road Wetland Compensation Site
September 1, 2000 to September 1, 2001



Milan Beltway, Airport Road Wetland Compensation Site
September 1, 2000 to September 1, 2001

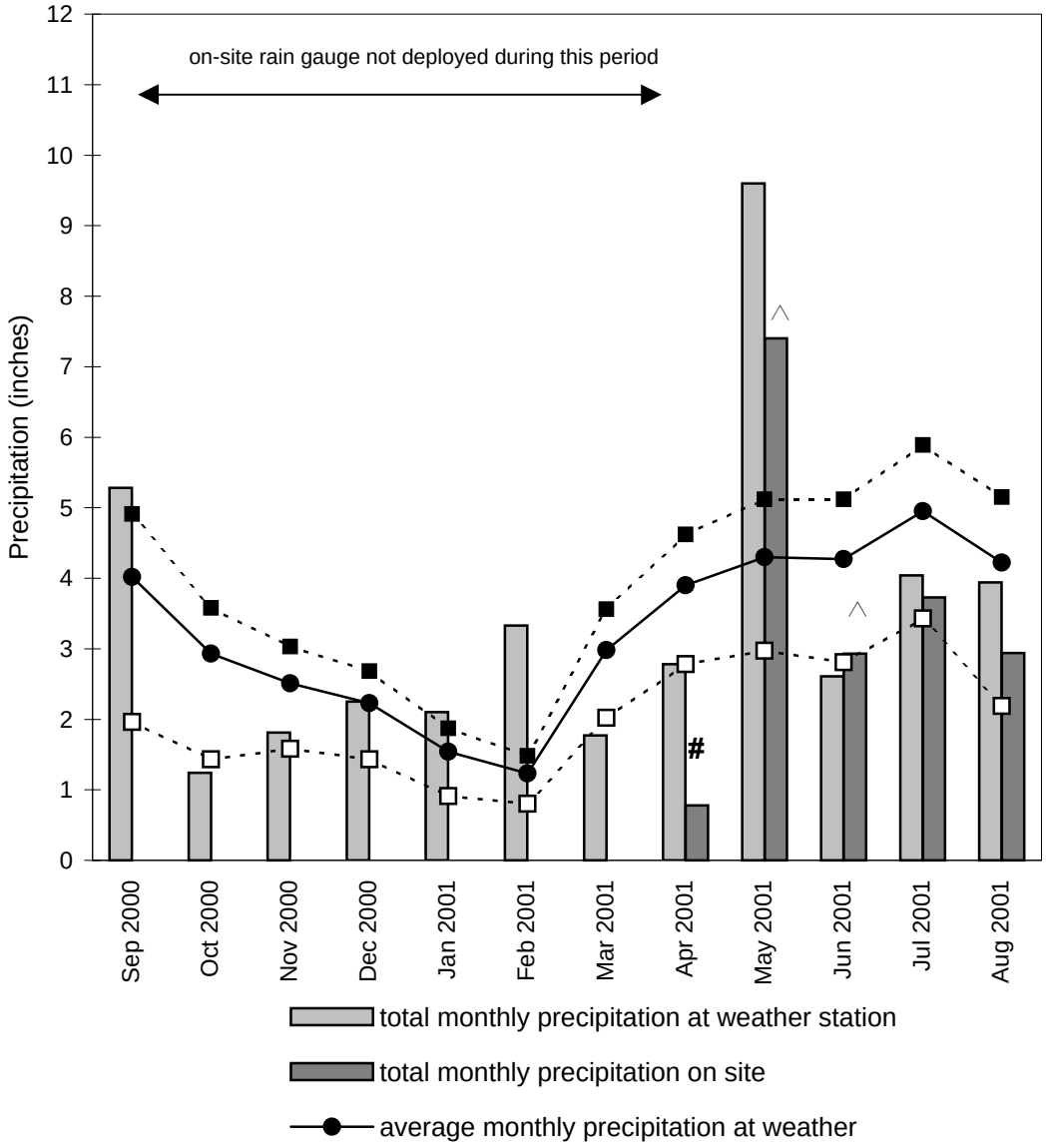


Milan Beltway, Airport Road Wetland Compensation Site
September 1, 2000 to September 1, 2001



Milan Beltway, Airport Road Wetland Compensation Site
September 2000 through August 2001

Total Monthly Precipitation Recorded On Site and at the Quad City International Airport Weather Station, Moline, IL



on-site rain gauge not deployed for entire month
△ suspect data: rain collector clogged, represents minimum value for the month
* see text for explanation

Graph last updated October 4, 2001

SALINE COUNTY **ISGS #18**
WETLAND COMPENSATION SITE
FAP 331
Saline County, near Harrisburg, Illinois
Primary Project Manager: D. Bradley Ketterling
Secondary Project Manager: Bonnie J. Robinson

SITE HISTORY

- May 1994: The ISGS began a hydrogeologic characterization of the site.
- June 1995: An interim hydrogeologic characterization report was submitted to IDOT.
- October 1996: An area of the site was excavated as part of the wetland mitigation.
- August 1997: The construction of the berm around the new wetland was completed.
- March 1998: A draft final characterization report was completed.
- March 1999–April 2000: Fourteen additional soil-zone monitoring wells and one staff gauge were installed.
- April 2001: Seven additional soil-zone monitoring wells were installed, one in the northwest corner of the site housing a water level logger.
- September 2001: A "close-out" meeting was held on site with representatives from the U.S. Army Corps of Engineers, IDOT, IDNR, ISGS, INHS, SIUC, and USF&W. The Corps representative indicated that the site would be accepted for mitigation and that a letter indicating such would be drafted.

WETLAND HYDROLOGY CALCULATION FOR 2001

Using well coordinates derived via GPS and a mathematical interpolation of the shallow groundwater surface, the total area that satisfied wetland hydrology criteria in 2001 was determined to be 16.4 ac (6.6 ha). Of this amount, approximately 2.0 ac (0.8 ha) were classified as wetland by the INHS prior to site construction. In 2000, 9.9 ac (4.0 ha) met the criteria for wetland hydrology, 1.7 ac (0.7 ha) of which was pre-existing wetland. The figure for 2001 is based on the following factors.

- According to the Midwestern Climate Center, the median length of the growing season at Harrisburg, Illinois is 212 days, starting March 26 and ending October 27. Therefore, 12.5% of the growing season is 26 days.
- Wetland hydrology was most widespread at the very beginning of the growing season, prompted by above-normal precipitation in November 2000 and normal precipitation in February 2001. However, below-normal precipitation in March and April caused the site to dry out steadily. Heavy rainfall in May recharged the wetland, but below-normal rainfall in both June and July caused the emergent area to dry out by July 9. In summary, precipitation during the monitoring period was 75% of normal. Precipitation during the

previous monitoring period was 94% of normal.

- Water levels in wells 2U, 3U, 4S, 9S, 10U, 11S through 21S, and 23S through 26S were observed above or within 30 cm (1 ft) of the surface for more than 12.5% of the growing season, thereby satisfying the wetland hydrology criteria outlined in the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual. Wells 1U, 2S, 5S, 7S, and 22S did not satisfy the criteria for wetland hydrology.

- Because wetland hydrology was most widespread early in the year, acreage calculations were carried out using water levels on April 20. This date marks the end of the 26 required days that represent 12.5% of the growing season. Well records were converted to a measurement relative to ground surface. 24 individual measurements were used to mathematically contour the water surface over the entire site. Contour values of 0.3 m (1 ft) represent the boundary between wetland and non-wetland areas.

- The limitations of the above method include:

    - There is substantial topographic variability over the site. As such, localized ditches and depressions may be under-represented whereas berms and other topographic highs may be over-represented. With regards to the former, field indicators and previous wetland delineations were used to outline areas of wetland hydrology missed by the interpolation. With regards to the latter, the limit of wetland hydrology was hand-contoured around the berm along the eastern perimeter of the site.

PLANNED FUTURE ACTIVITIES

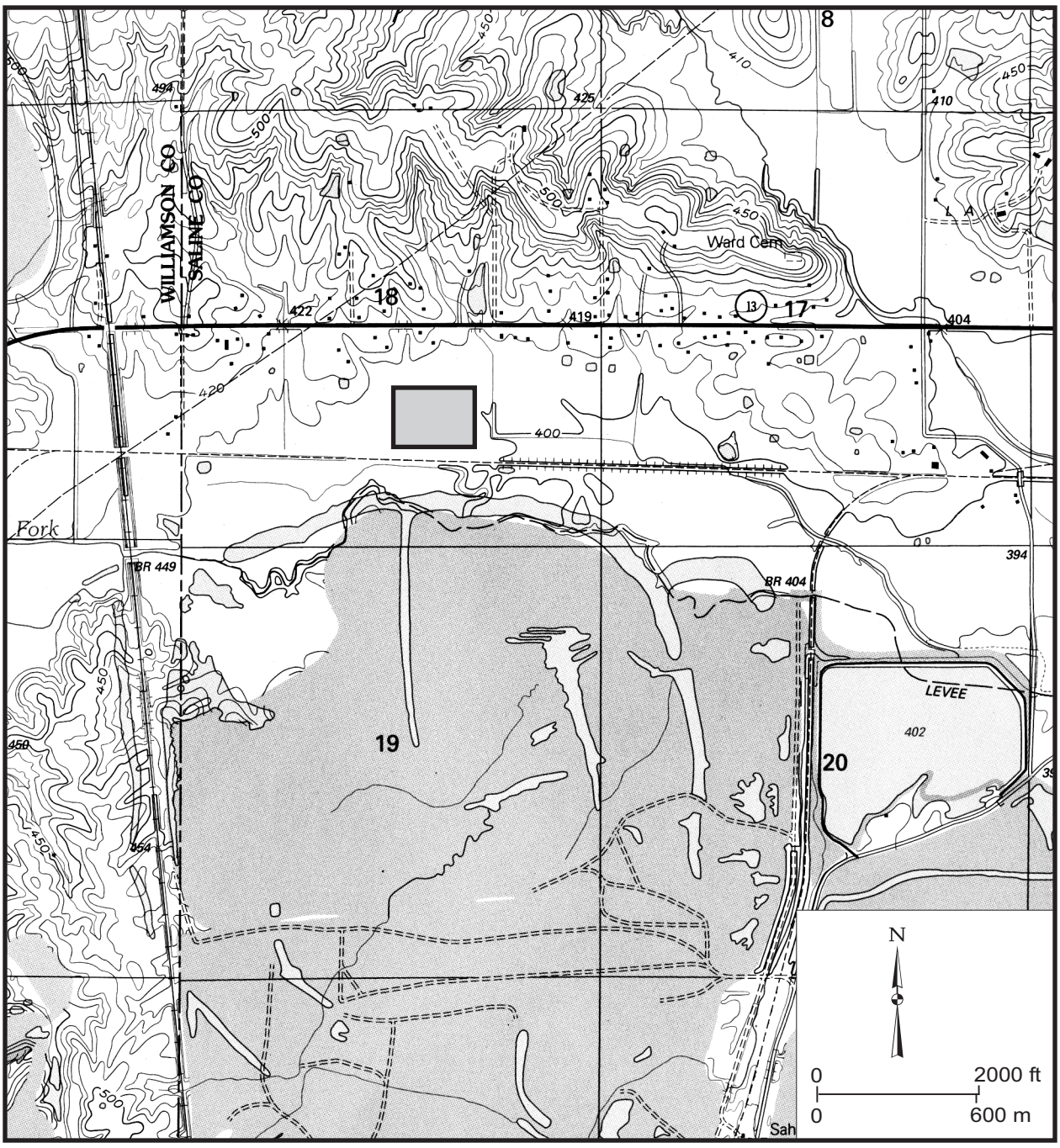
- A contour map of the site would allow more detailed mapping of on-site flooding and wetland hydrology. A request was placed for any photogrammetrically-derived maps that may have been generated in the past. However, no maps were received. A land-based survey of the site would be difficult due to the density of the vegetation.

- Monitoring for wetland hydrology will continue at this site through 2002 or until no longer required by IDOT.

Saline County Wetland Compensation Site
(FAP 331)

General Study Area and Vicinity

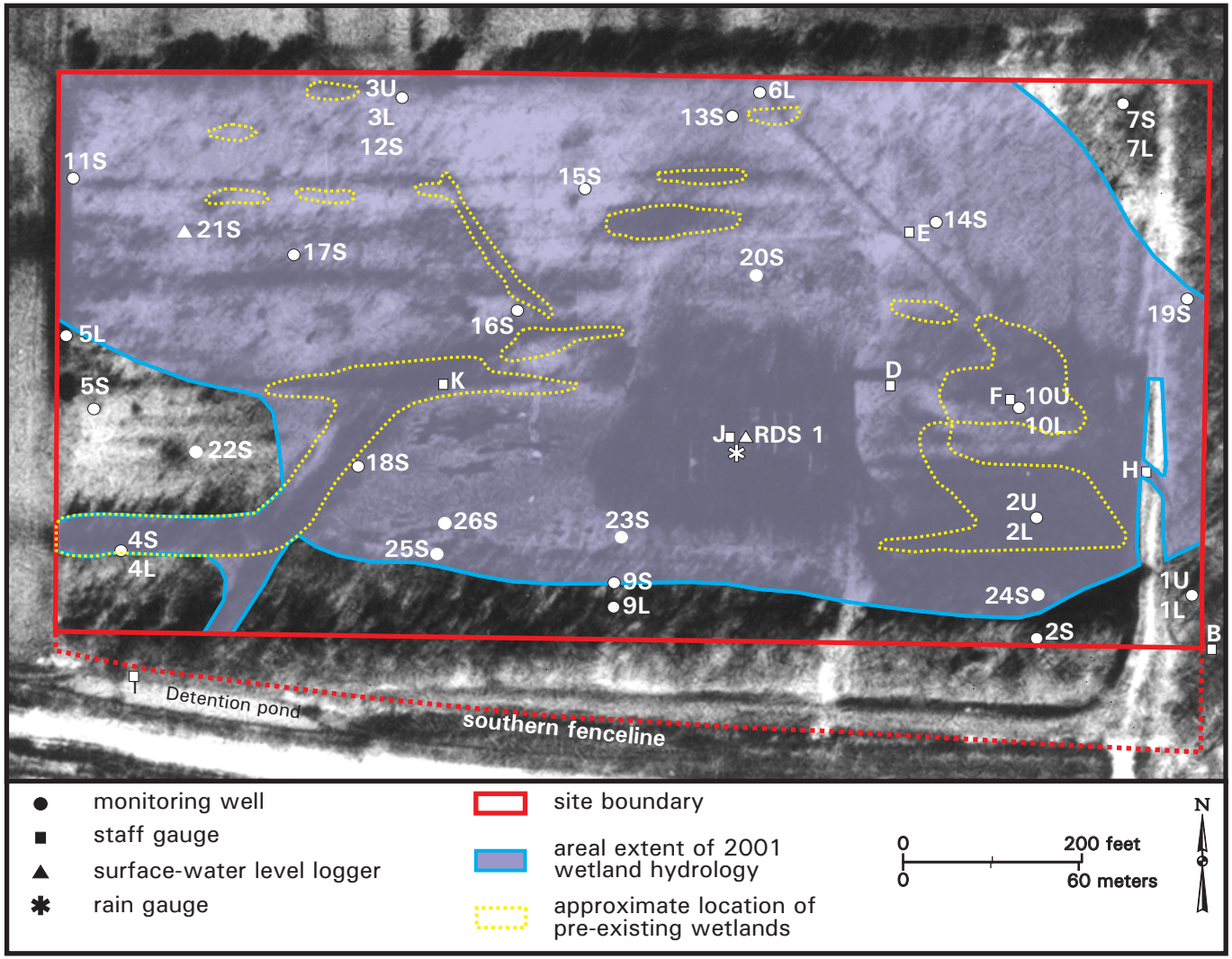
from the USGS Topographic Series, Carrier Mills, IL 7.5-minute Quadrangle (USGS 1996)
contour interval is 10 feet



general study area

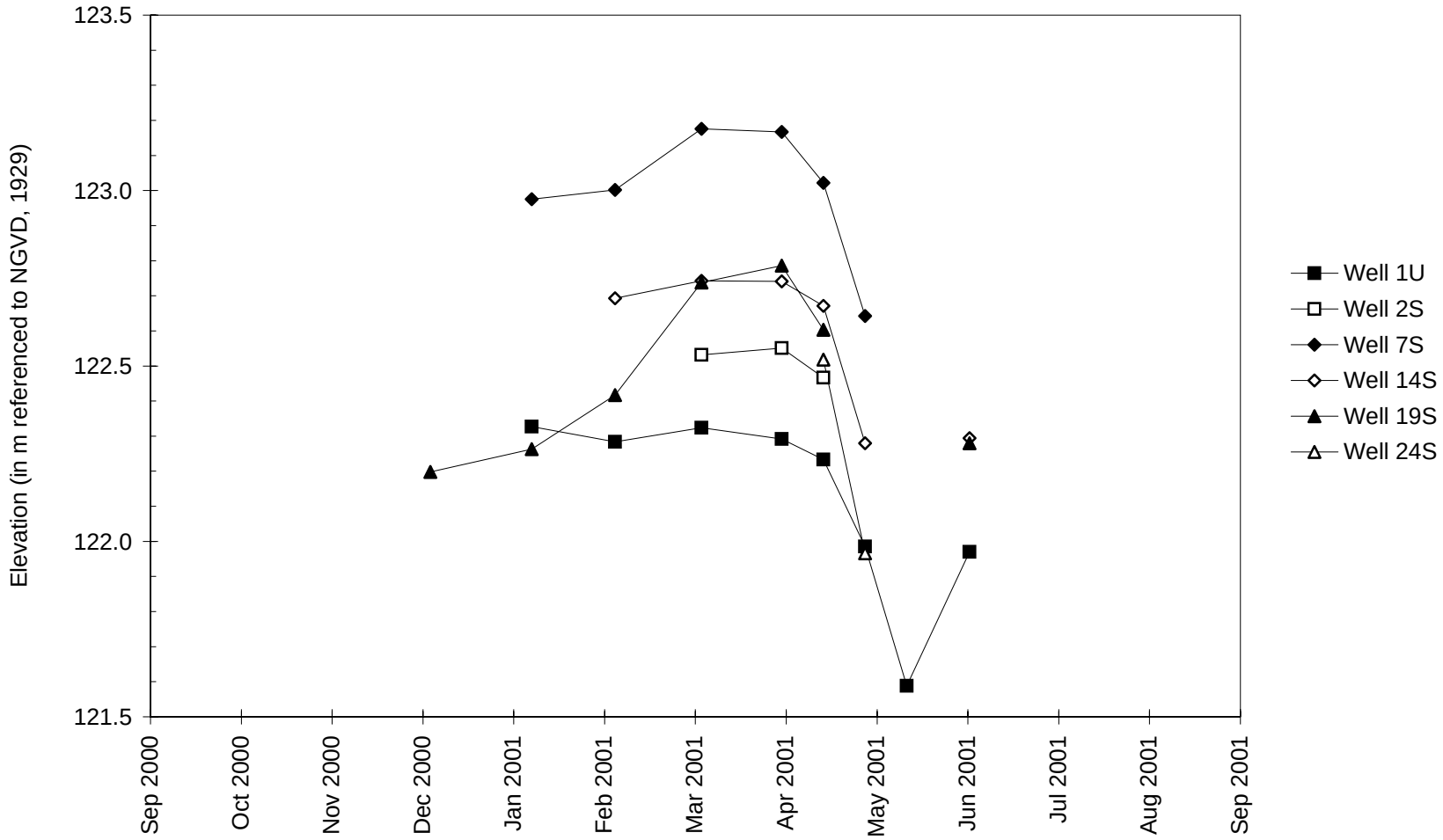
Saline County Wetland Compensation Site
(FAP 331)
Estimated Areal Extent of 2001 Wetland Hydrology
based on data collected between September 1, 2000 and September 1, 2001

map based on unrectified aerial photography from IDOT (1998, NAPP 22-441)



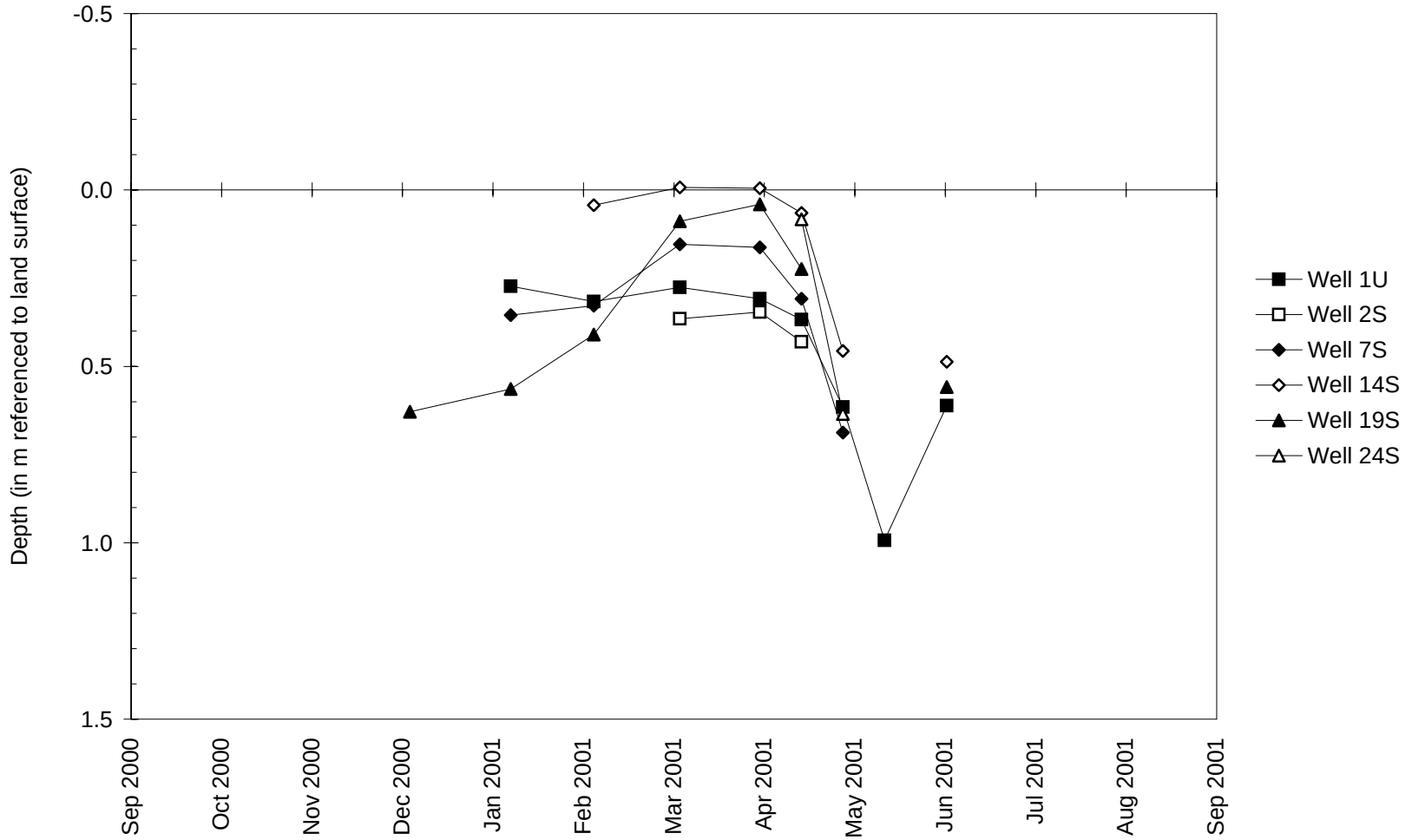
Saline County Wetland Compensation Site
September 1, 2000 to September 1, 2001

Water-Level Elevations
in Wells used to Determine Areas Satisfying Wetland Hydrology Criteria
in the Eastern Portion of the Site



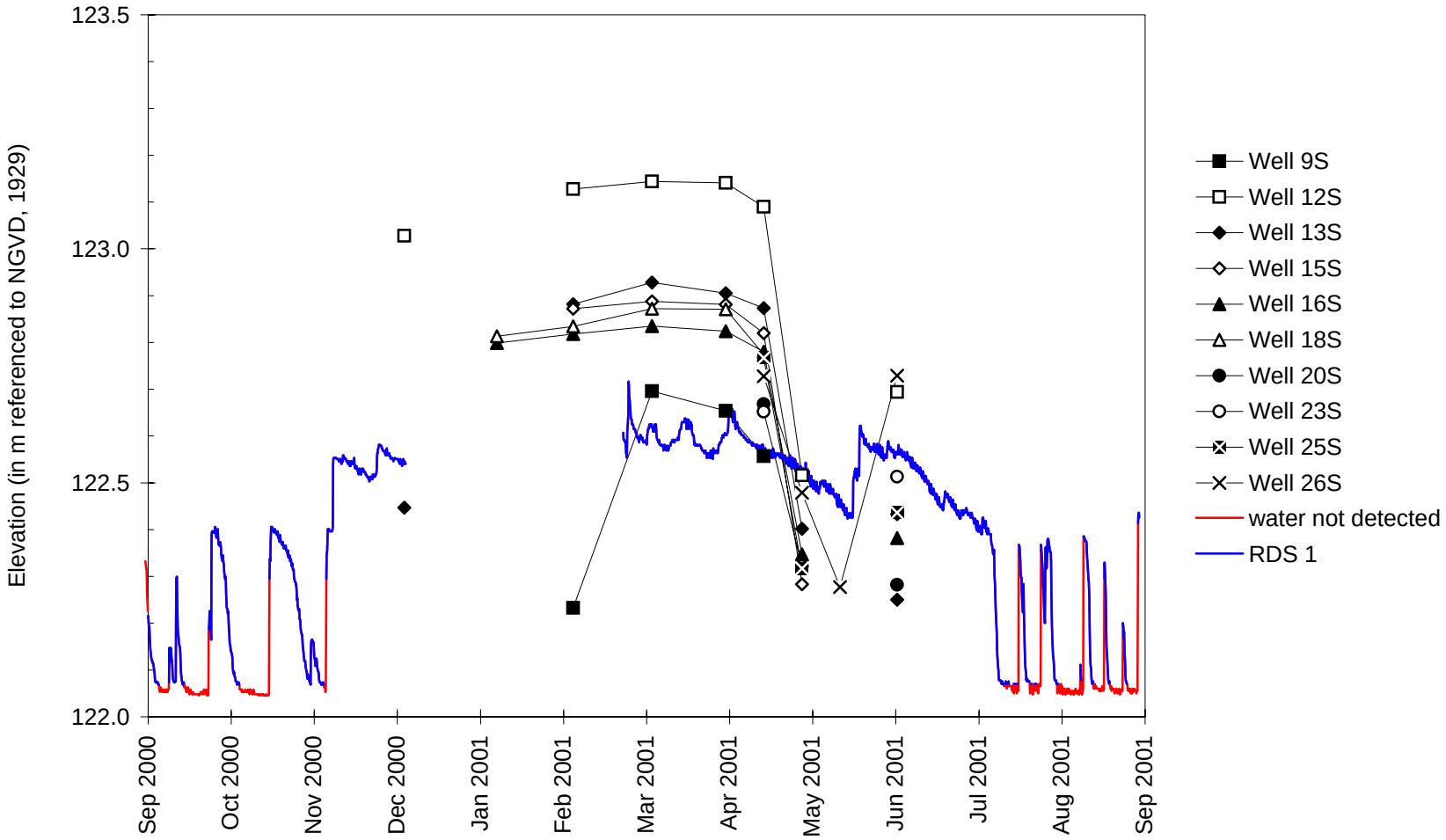
Saline County Wetland Compensation Site
September 1, 2000 to September 1, 2001

Depth to Water
in Wells used to Determine Areas Satisfying Wetland Hydrology Criteria
in the Eastern Portion of the Site



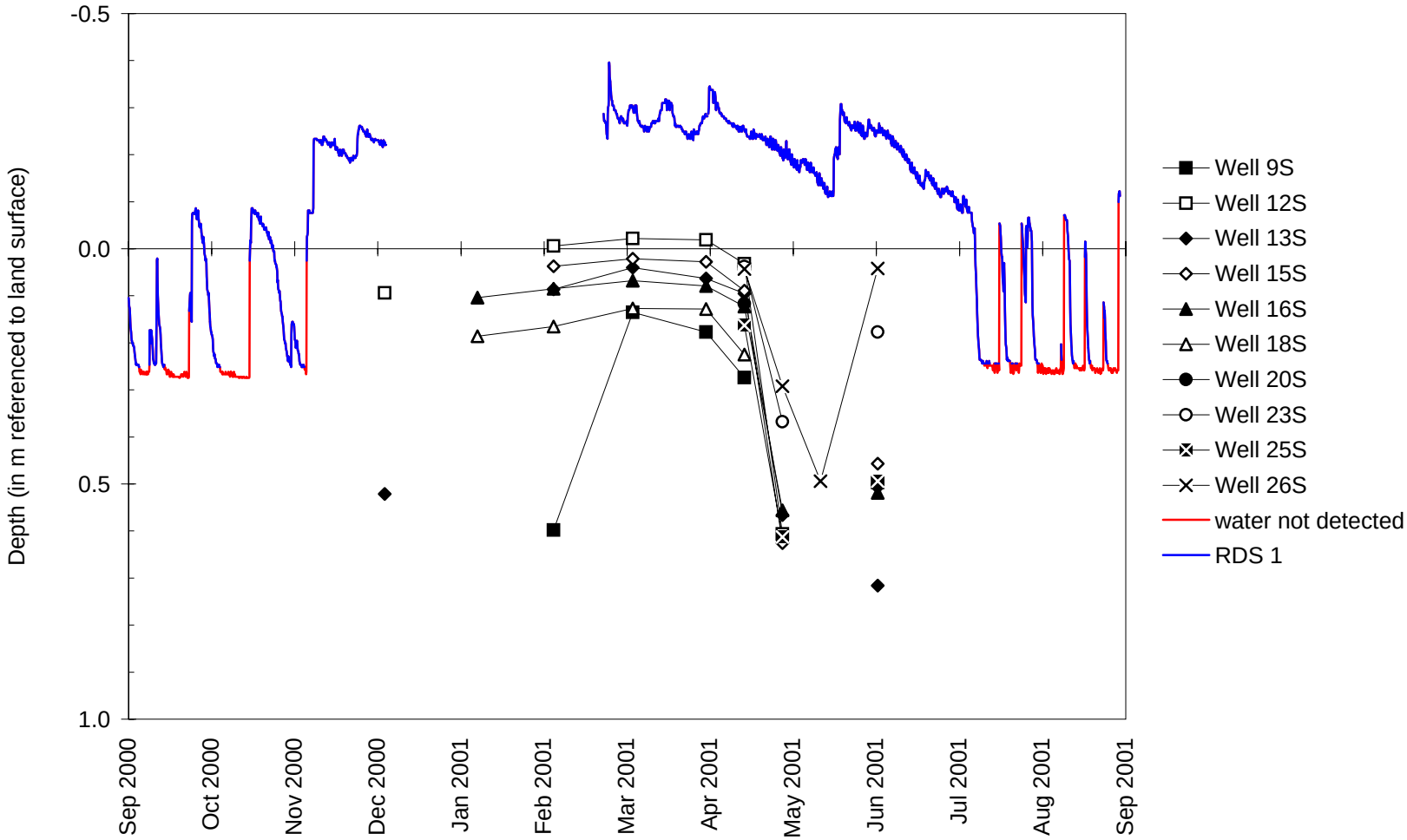
Saline County Wetland Compensation Site
September 1, 2000 to September 1, 2001

Water-Level Elevations
in Wells used to Determine Areas Satisfying Wetland Hydrology Criteria
in the Central Portion of the Site



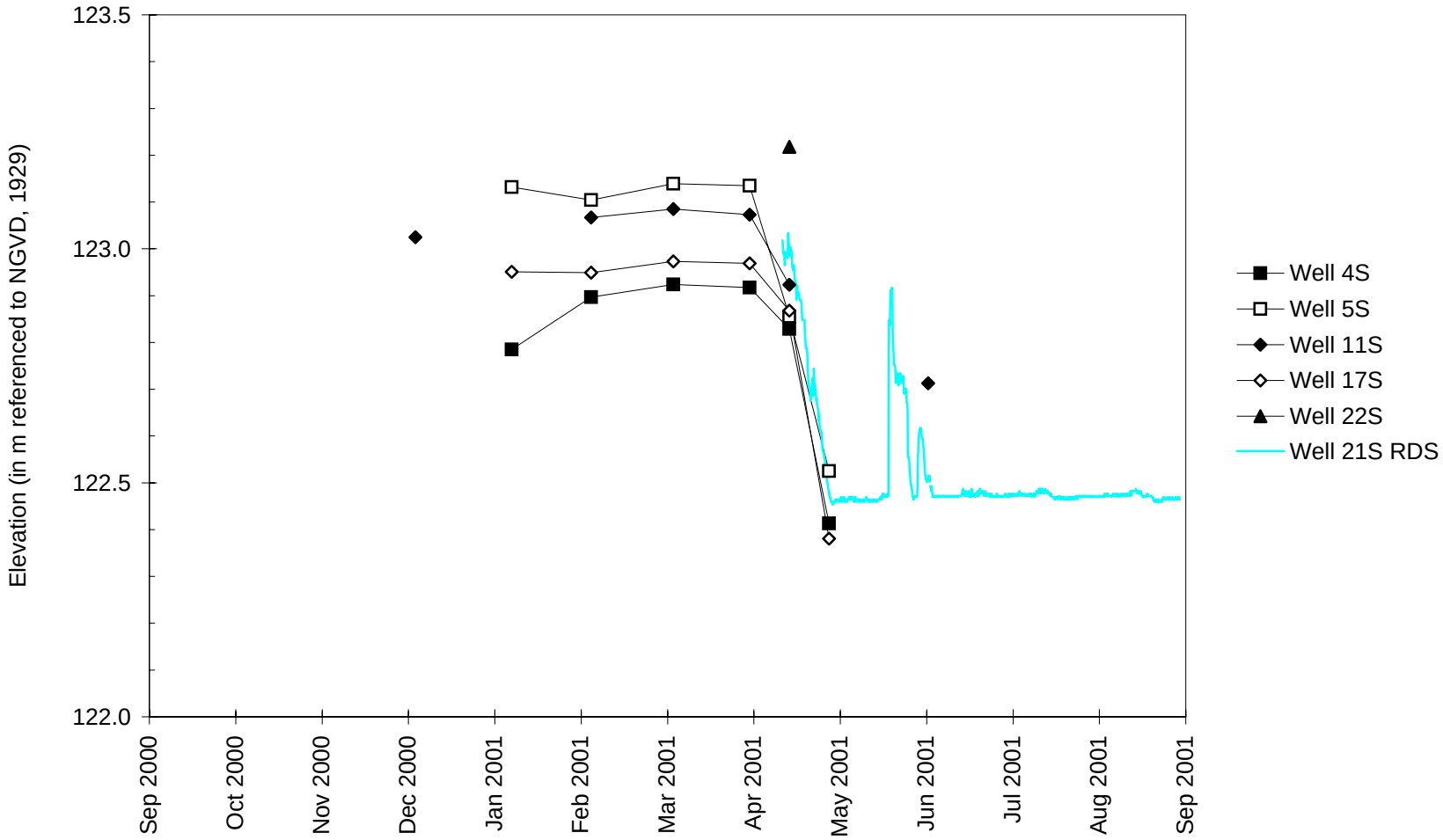
Saline County Wetland Compensation Site
September 1, 2000 to September 1, 2001

Depth to Water
in Wells used to Determine Areas Satisfying Wetland Hydrology Criteria
in the Central Portion of the Site



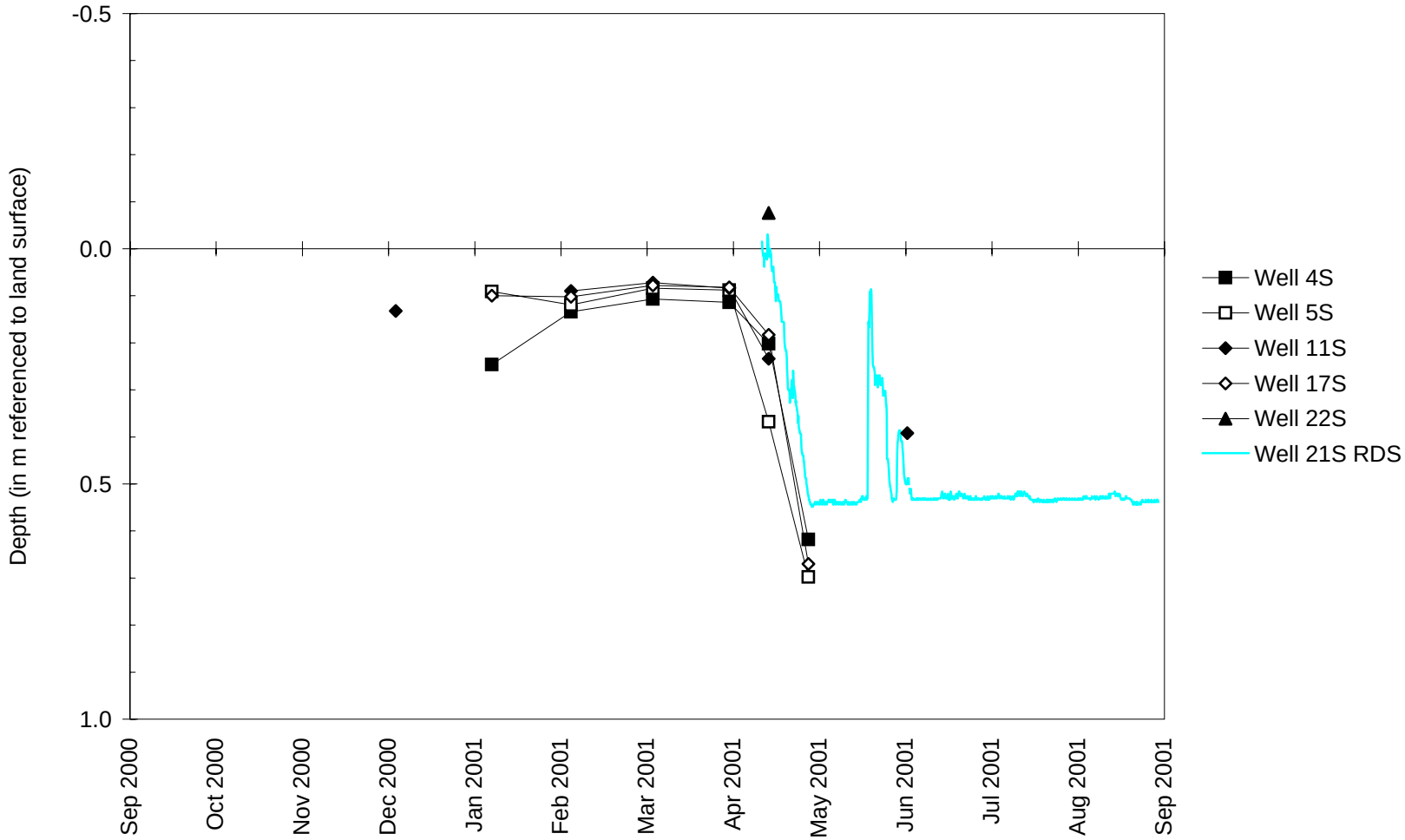
Saline County Wetland Compensation Site
September 1, 2000 to September 1, 2001

Water-Level Elevations
in Wells used to Determine Areas Satisfying Wetland Hydrology Criteria
in the Western Portion of the Site



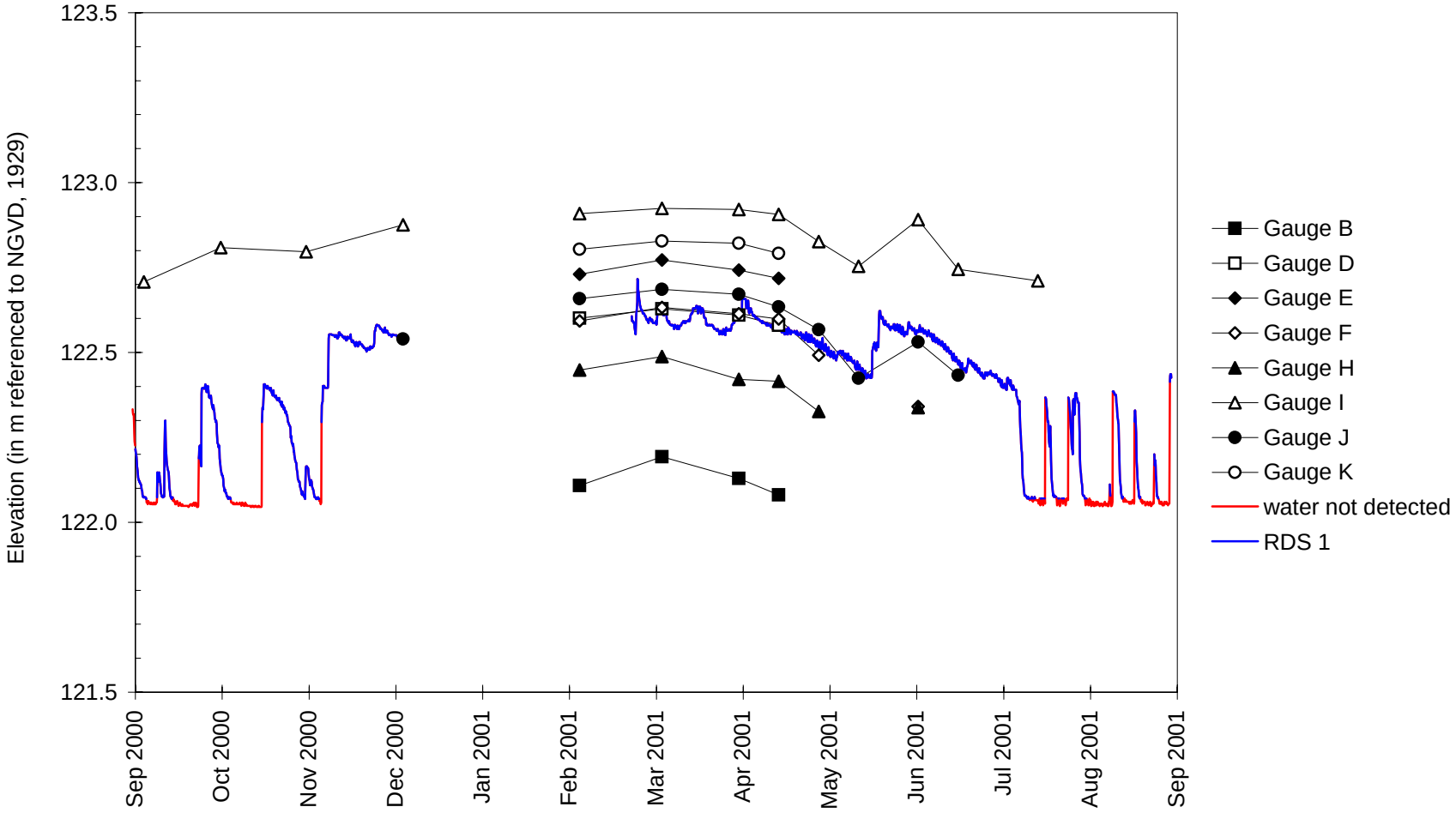
Saline County Wetland Compensation Site
September 1, 2000 to September 1, 2001

Depth to Water
in Wells used to Determine Areas Satisfying Wetland Hydrology Criteria
in the Western Portion of the Site



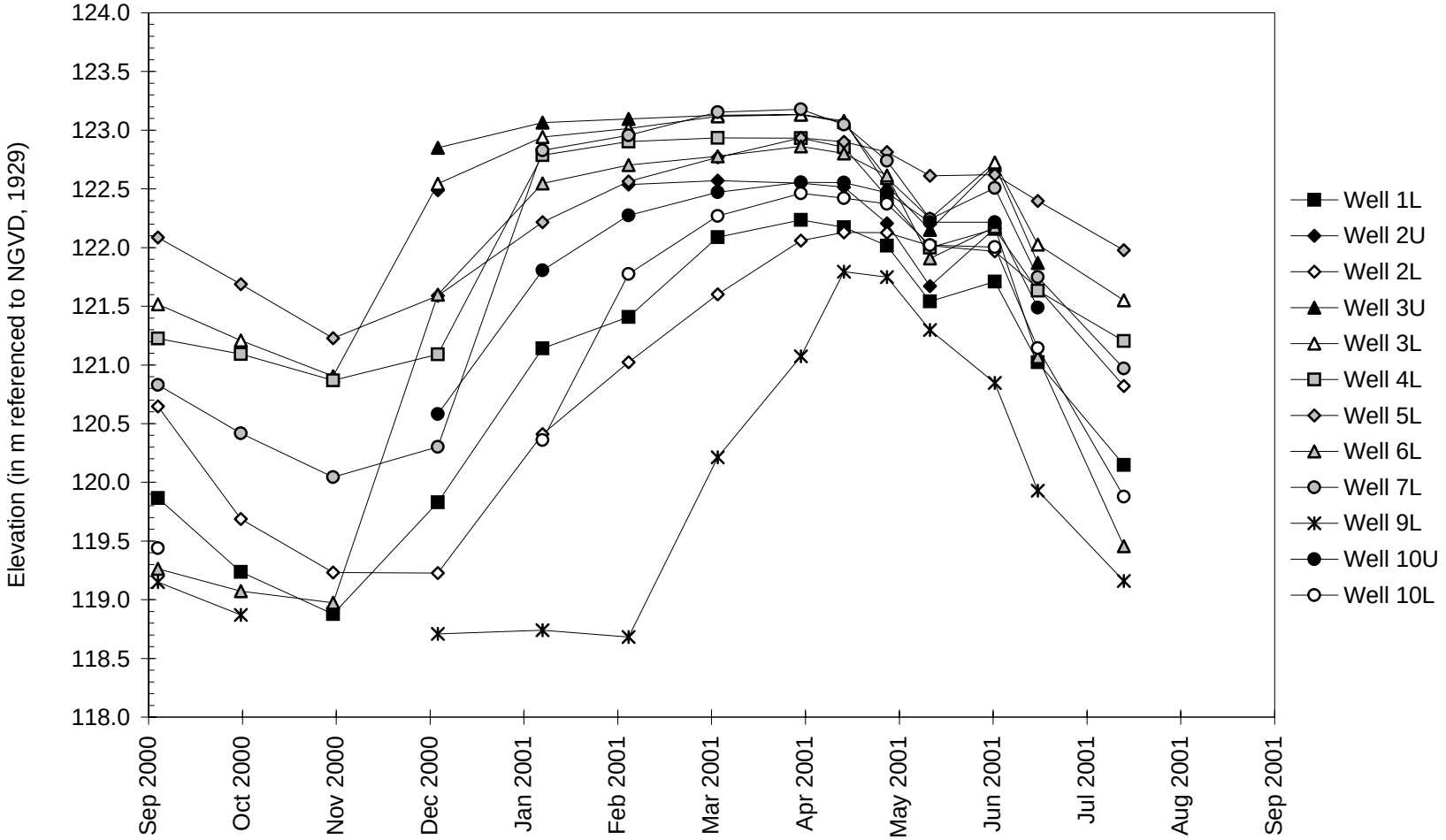
Saline County Wetland Compensation Site
September 1, 2000 to September 1, 2001

Water-Level Elevations on Stage Gauges



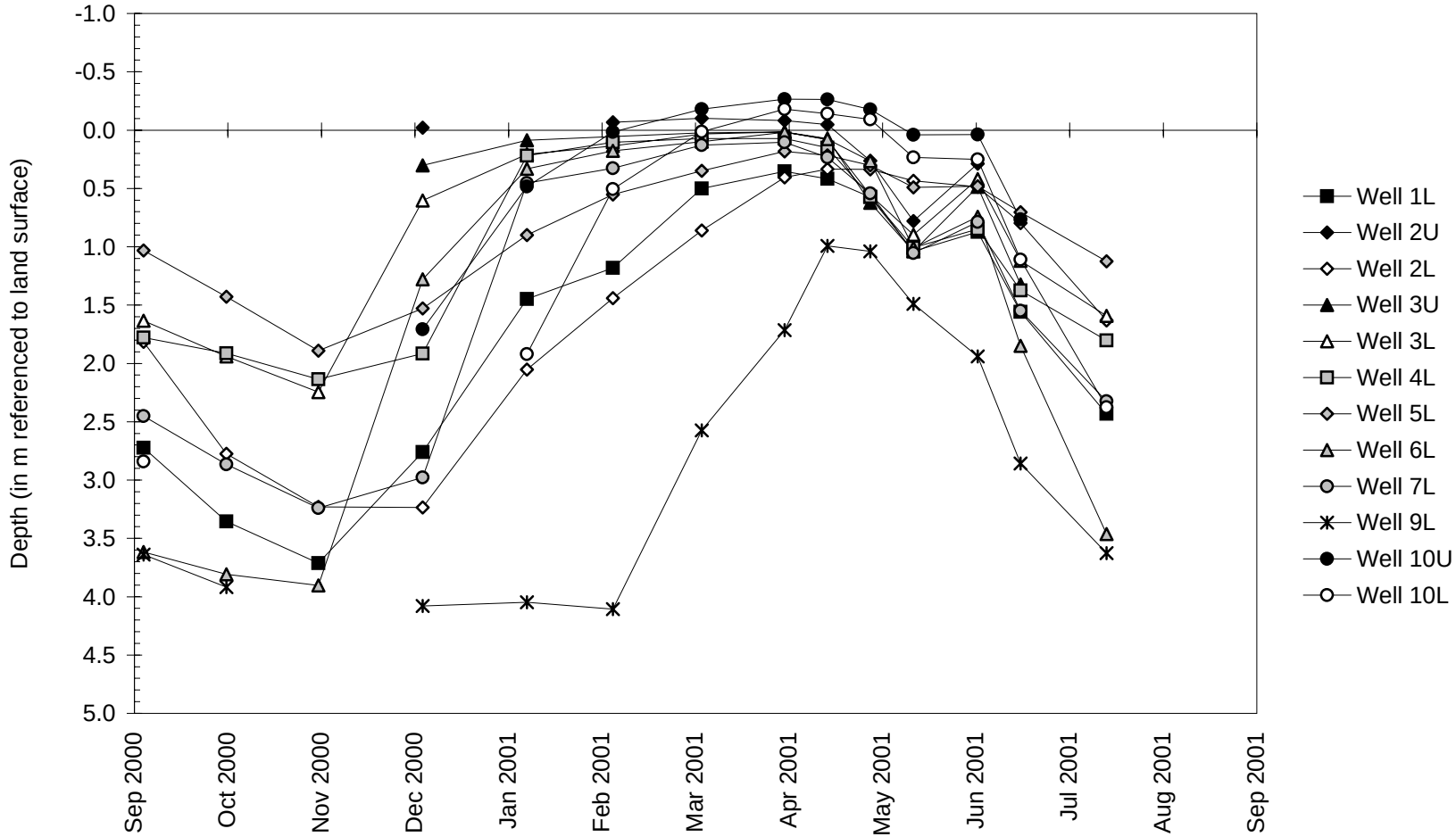
Saline County Wetland Compensation Site
September 1, 2000 to September 1, 2001

Water-Level Elevations
in Upper and Lower Monitoring Wells



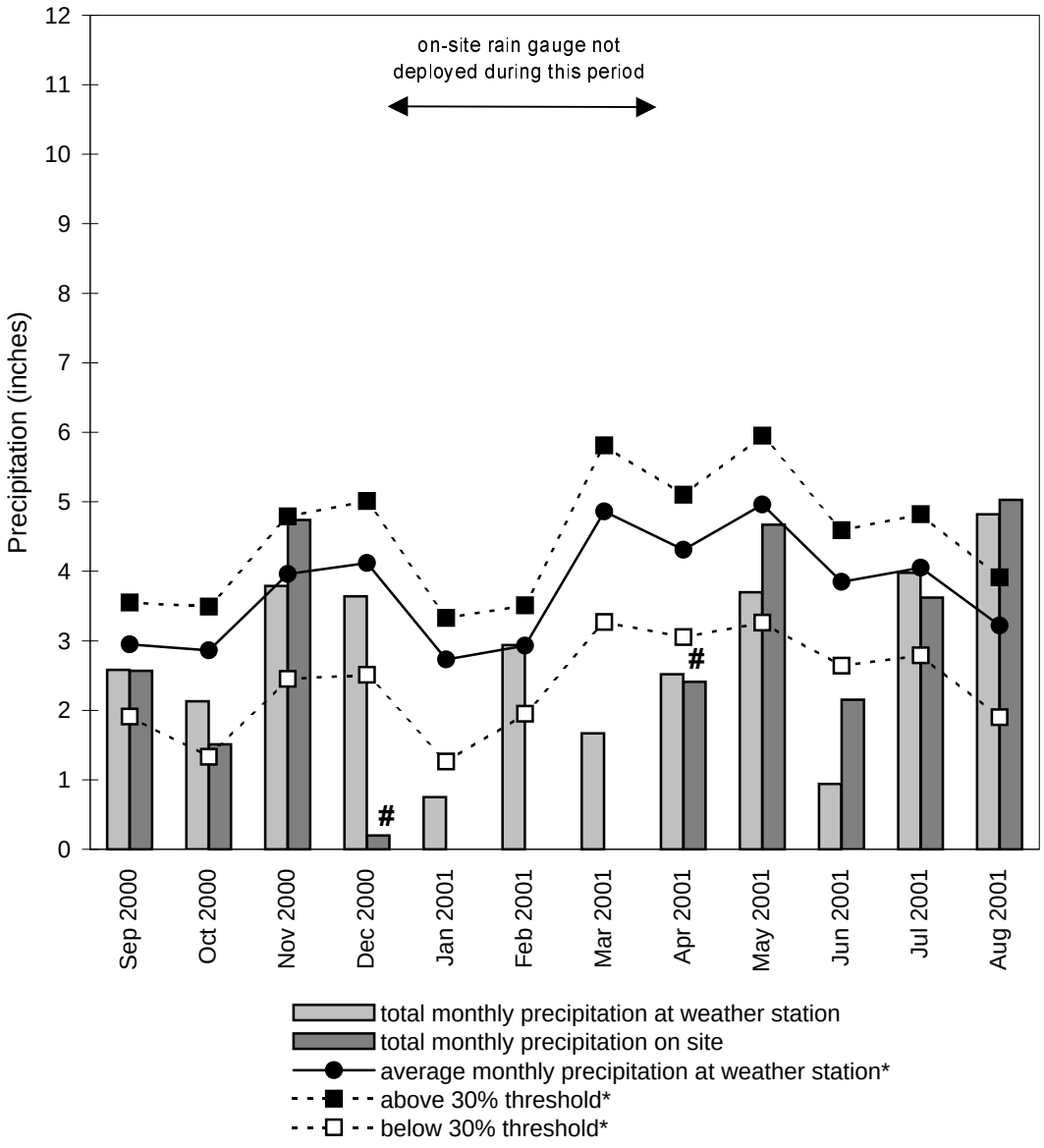
Saline County Wetland Compensation Site
September 1, 2000 to September 1, 2001

Depth to Water
in Upper and Lower Monitoring Wells



Saline County Wetland Compensation Site
September 2000 through August 2001

Total Monthly Precipitation Recorded On Site and at the Harrisburg, IL Weather Station



on-site rain gauge not deployed for entire month

* see text for explanation

Graph last updated October 4, 2001

HICKORY GROVE **ISGS #20**
WETLAND COMPENSATION SITE
FAP 305
McHenry County, near Cary, Illinois
Primary Project Manager: James J. Miner
Secondary Project Manager: Christine S. Fucciolo

SITE HISTORY

- Fall 1993: ISGS began to examine the hydrogeology of this site.
- August 1996: ISGS submitted a final hydrogeologic characterization report to IDOT (ISGS Open File Series 1996–7).
- February 1996: IDOT began restoration of the drained wetlands by filling the ditch west of the spring run and removing field tile and woody vegetation.
- Spring 1997: McHenry County Conservation District removed additional field tile, cut down large trees, and filled the remainder of the ditch.
- May 2001: ISGS led a field trip to the site for the Society of Wetland Scientists.
- June 6, 2001: All ISGS monitoring of the site ceased.

WETLAND HYDROLOGY CALCULATION FOR 2001

We estimate that the total area of created and restored wetland that conclusively satisfied wetland hydrology criteria in 2001 is 4.3 ac (1.7 ha) out of a formerly drained area of 9.4 ac (3.8 ha). This is slightly larger than the area delineated in 2000 (3.9 ac), but is more likely to be representative given the drier spring in 2000. This estimate is based on the following factors.

- According to the Midwestern Climate Center, the median date that the growing season begins in Barrington is April 24 and the season lasts 178 days; 12.5% of the growing season is 22 days.
- During the monitoring year, precipitation was 111% of normal. March and July 2001 were below the normal range. September and November 2000 and February 2001 were above the normal range. Springtime precipitation was above or nearly above normal .
- In 2001, water levels measured in the following wells conclusively satisfied the wetland hydrology criteria of the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual: wells 5U, 8U, 9S, 17S, 18S, 21S, and 22S. Well 19S may have satisfied the criteria. This list does not include wells that were installed in parts of the site that satisfied wetland hydrology criteria prior to restoration activities.
- Limitations of the wetland hydrology determination are as follows:
  - The positions of several wells were estimated rather than surveyed.
  - The water table is poorly defined at the apex of the peat mound where drier areas are found (*e.g.* near well 15S)

- The area for 2001 was calculated using the following method. The originally drained area was delineated and measured in 1999 using GPS methods, then transferred to an unrectified aerial photo that was used as a figure in the 2001 report, causing a shift in scale. The area for 2001 was calculated by adjusting the area measured with the GPS based on 2001 water levels, then measuring the area using the digital planimeter. The area was then adjusted for the changed scale in the figure by measuring the unadjusted drained area shown on the 2001 map with the digital planimeter and comparing that to the 1999 GPS calculation of the same area, thus producing a percent difference in scale, which was used to adjust the 2001 calculated area.

PLANNED FUTURE ACTIVITIES

- Monitoring wells will be abandoned or released to the McHenry County Conservation District in the near future.

- A 5-year monitoring report is expected to be produced at this site when time allows.

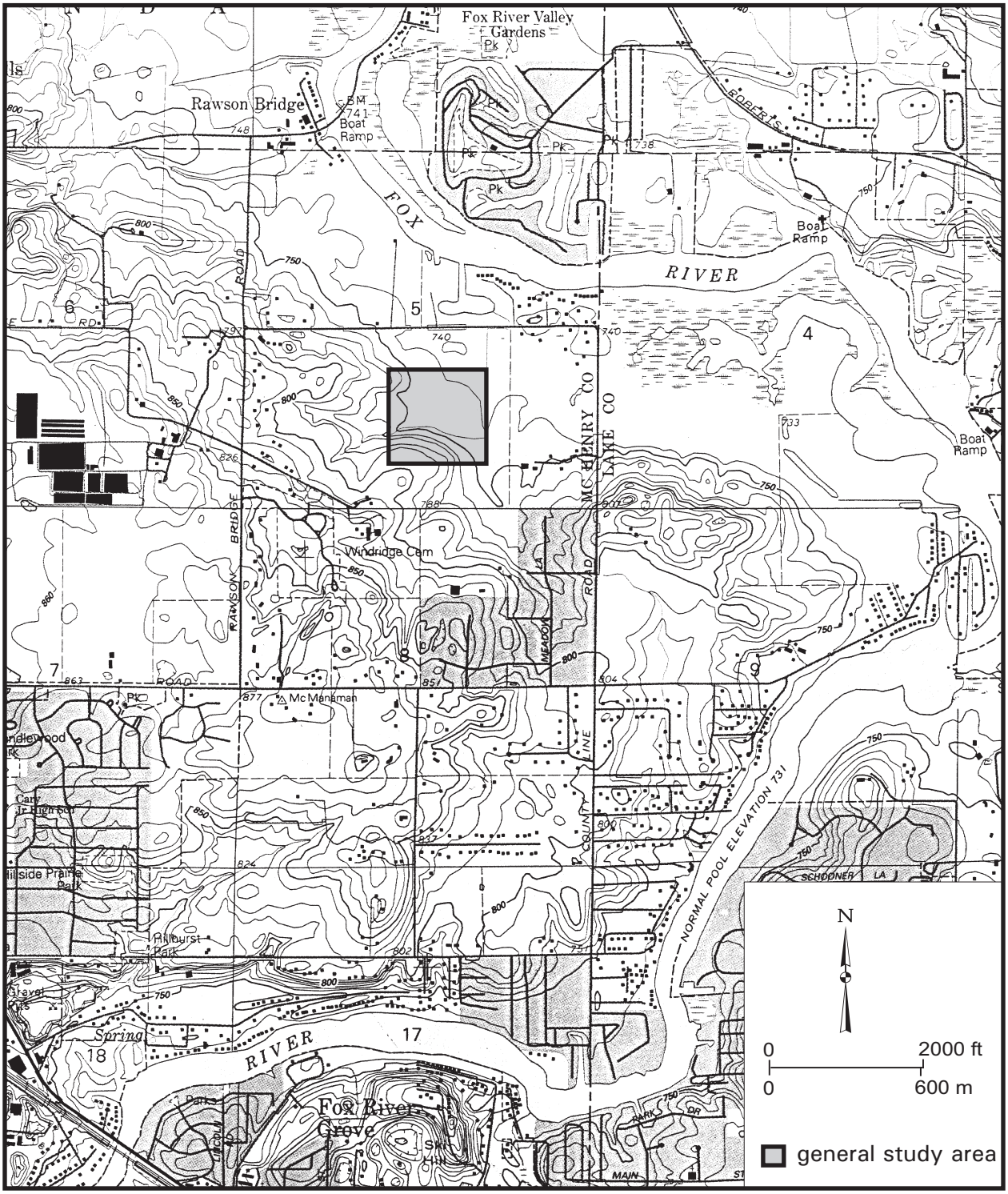
Hickory Grove Wetland Compensation Site

(FAP 305)

General Study Area and Vicinity

from the USGS Topographic Series, Barrington, IL 7.5-minute Quadrangle (USGS 1993)

contour interval is 10 feet



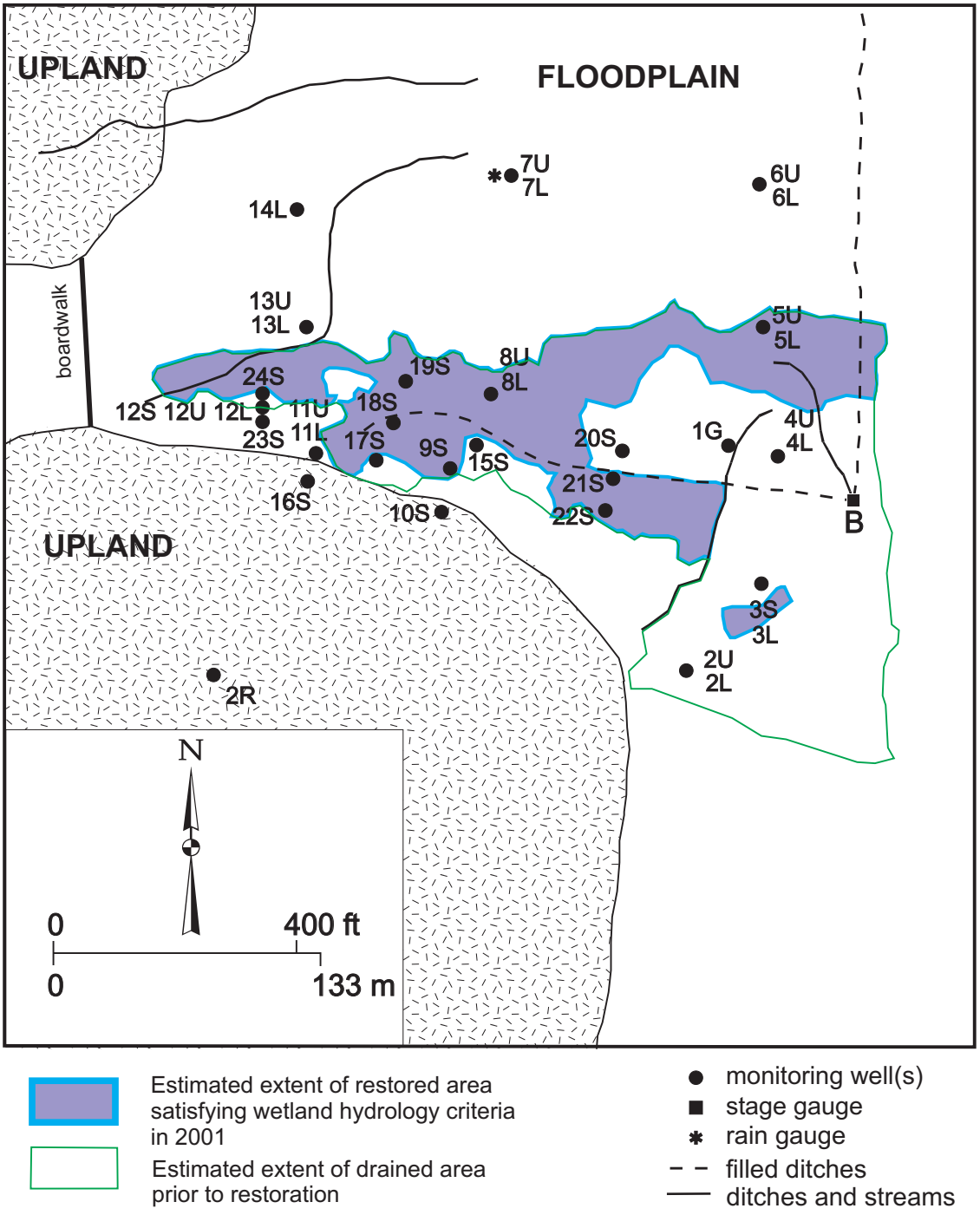
Hickory Grove Wetland Compensation Site

(FAP 305)

Estimated Extent of Restored and Created Area Satisfying Wetland Hydrology Criteria in 2001

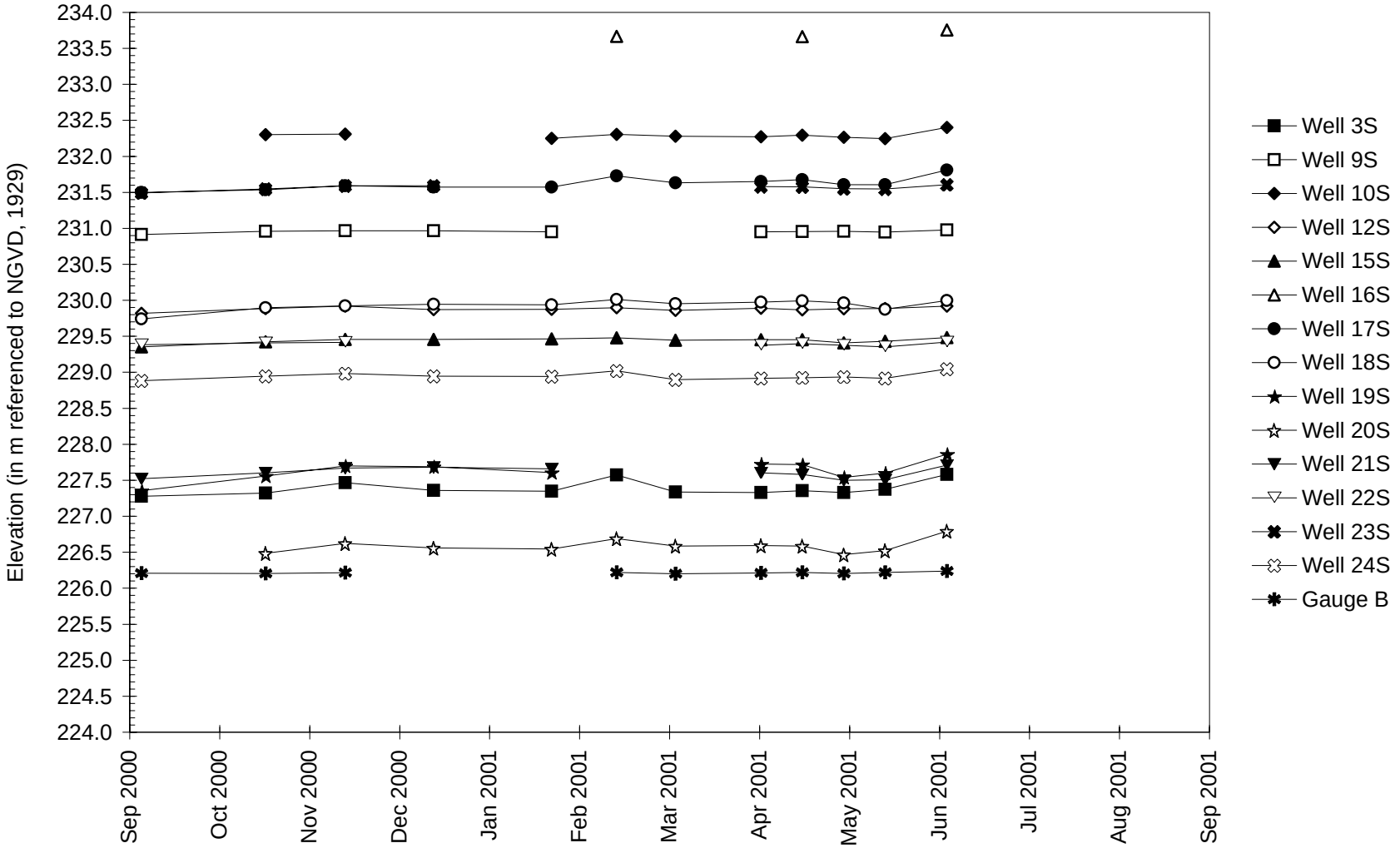
based on data collected between September 1, 2000 and September 1, 2001

map based on unrectified aerial photography from IDOT (date unknown) and a 1999 GPS survey

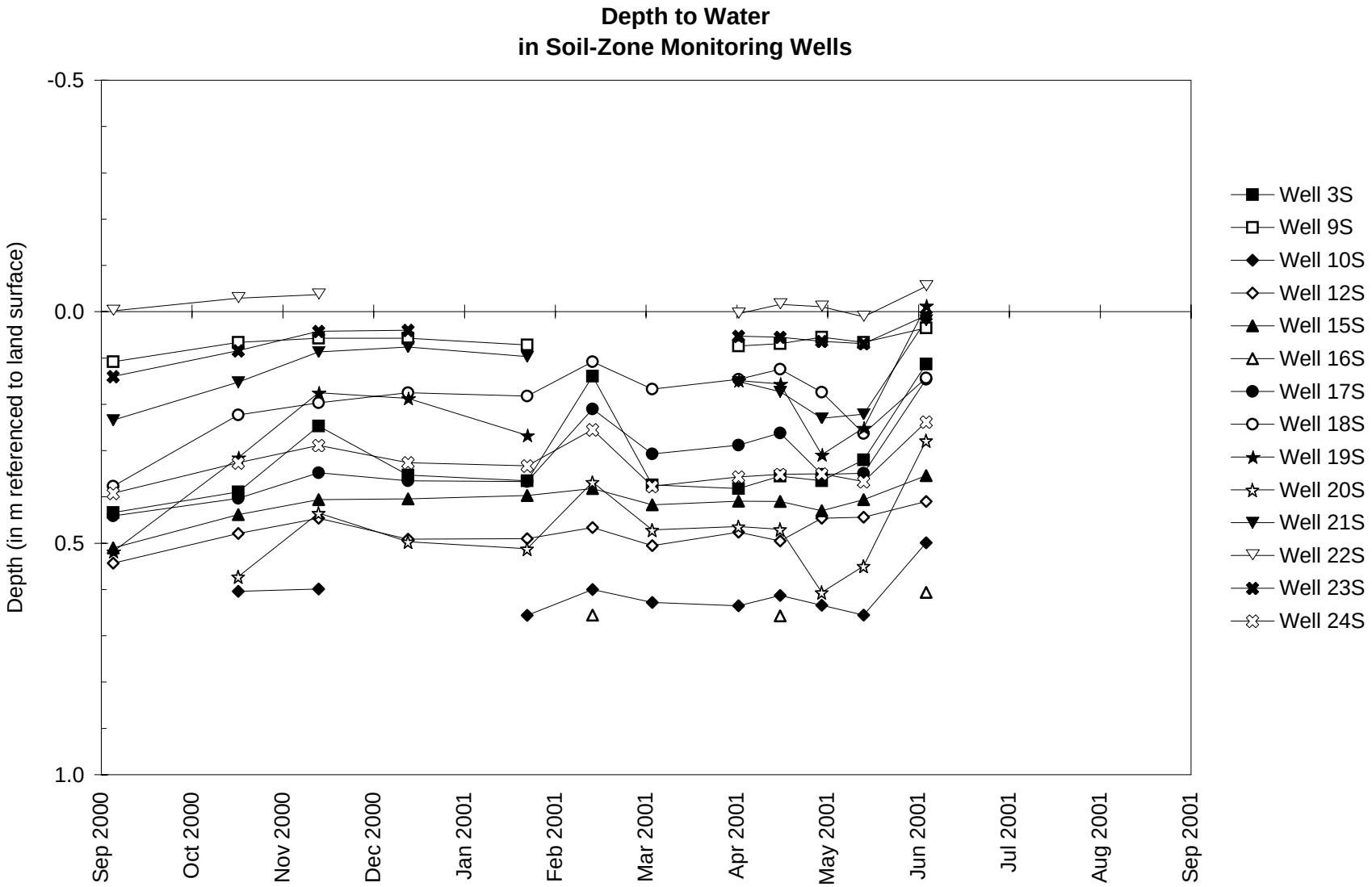


Hickory Grove Wetland Compensation Site
September 1, 2000 to September 1, 2001

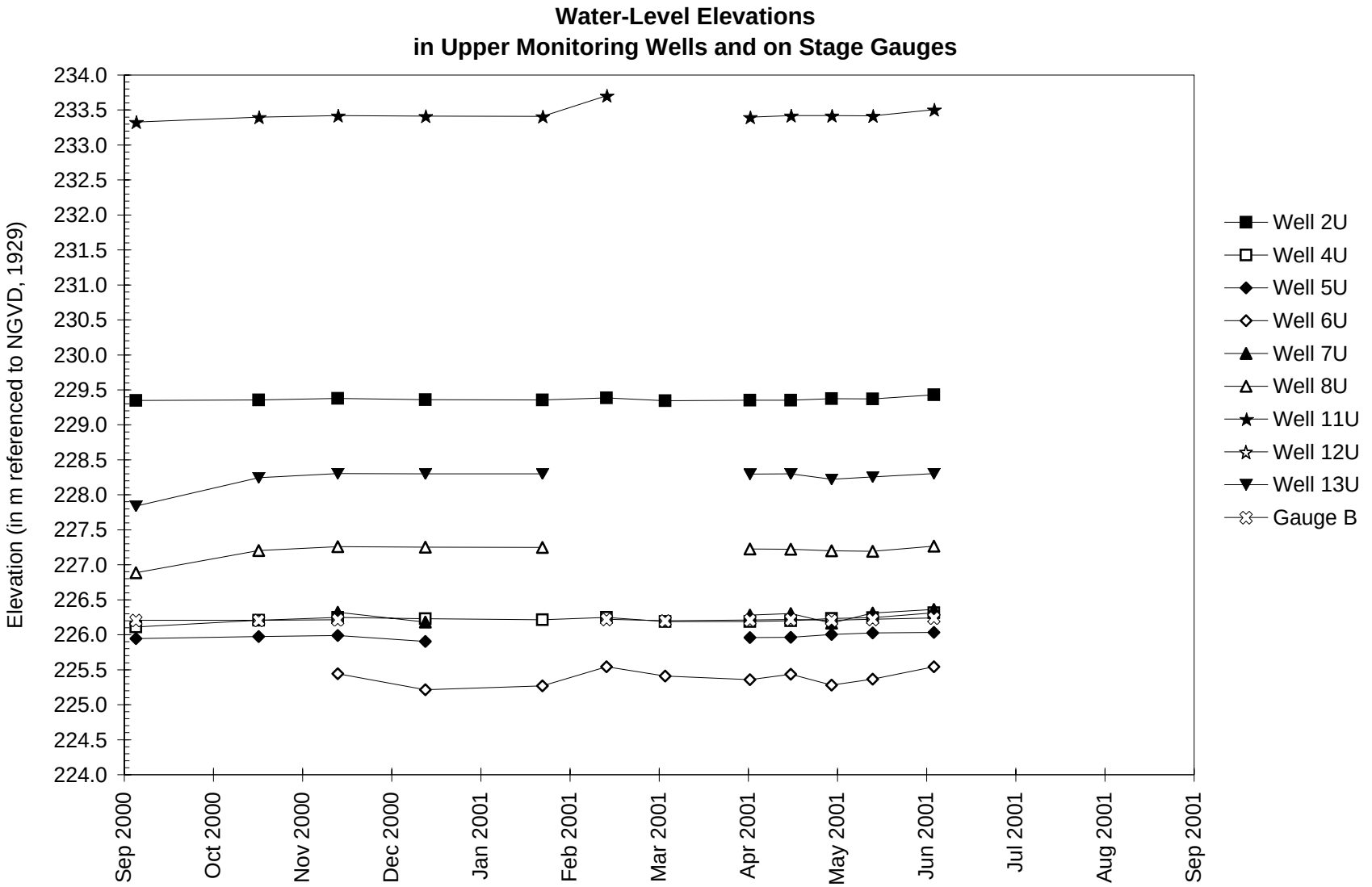
Water-Level Elevations
in Soil-Zone Monitoring Wells and on Stage Gauges



Hickory Grove Wetland Compensation Site
September 1, 2000 to September 1, 2001

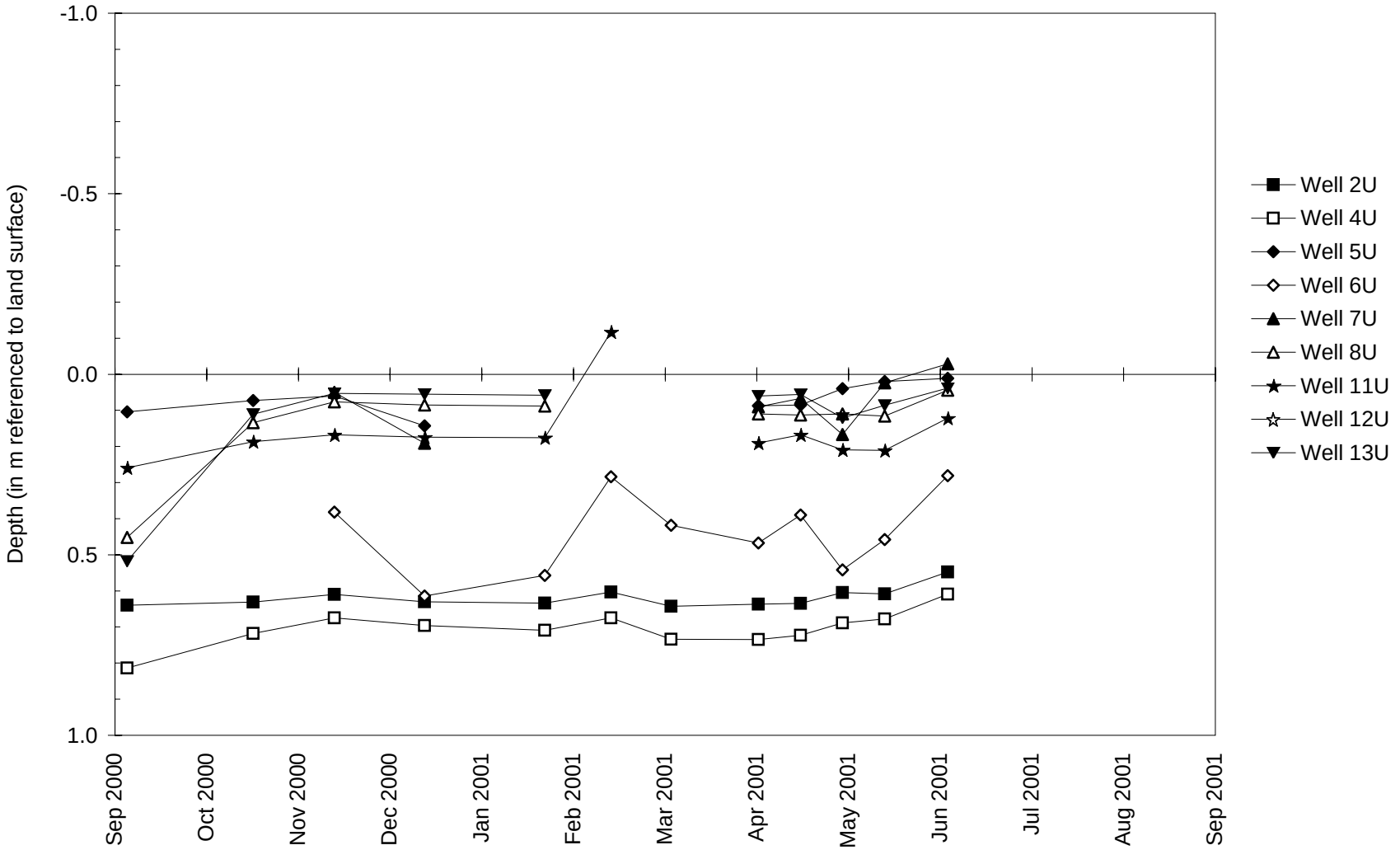


Hickory Grove Wetland Compensation Site
September 1, 2000 to September 1, 2001



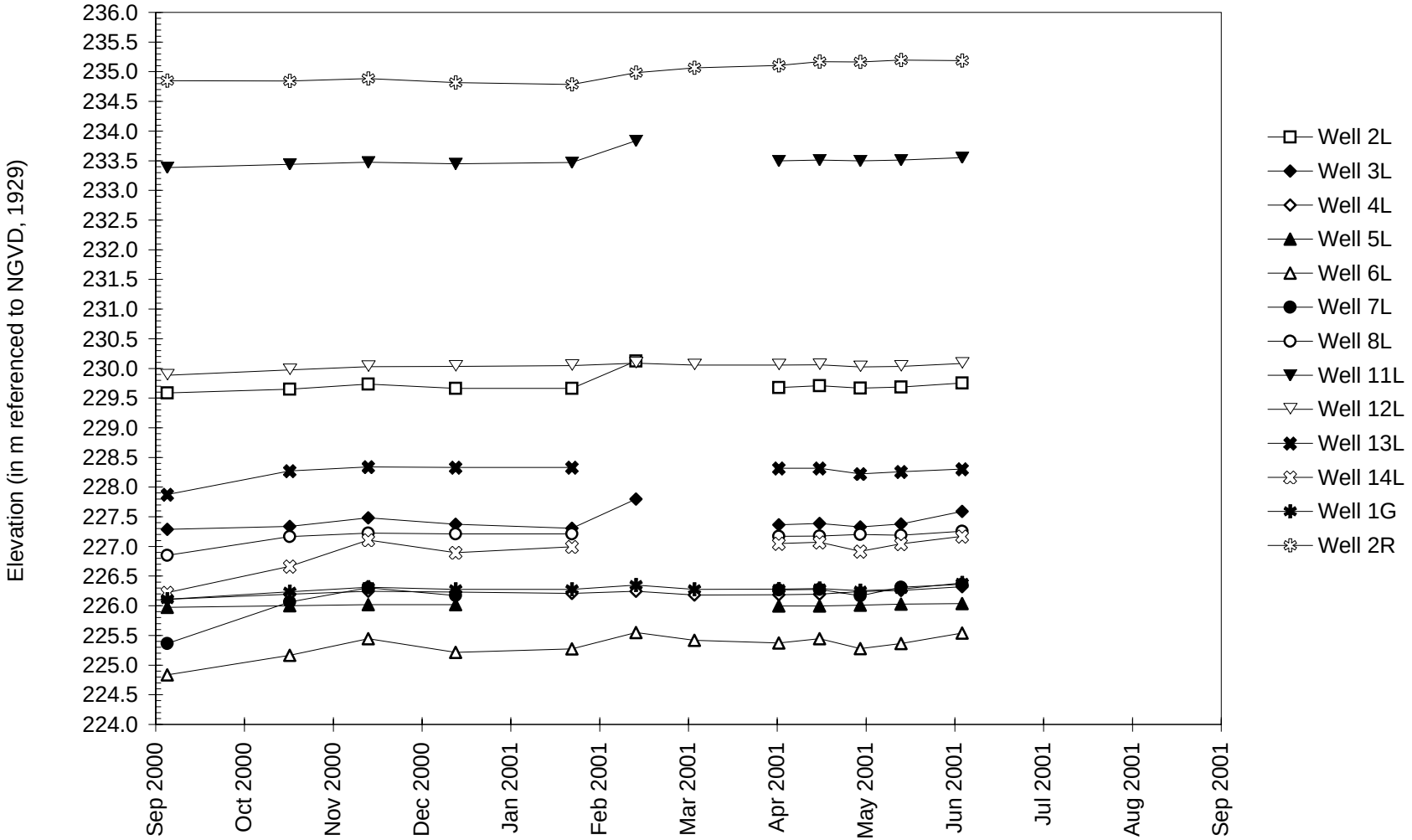
Hickory Grove Wetland Compensation Site
September 1, 2000 to September 1, 2001

Depths to Water
in Upper Monitoring Wells



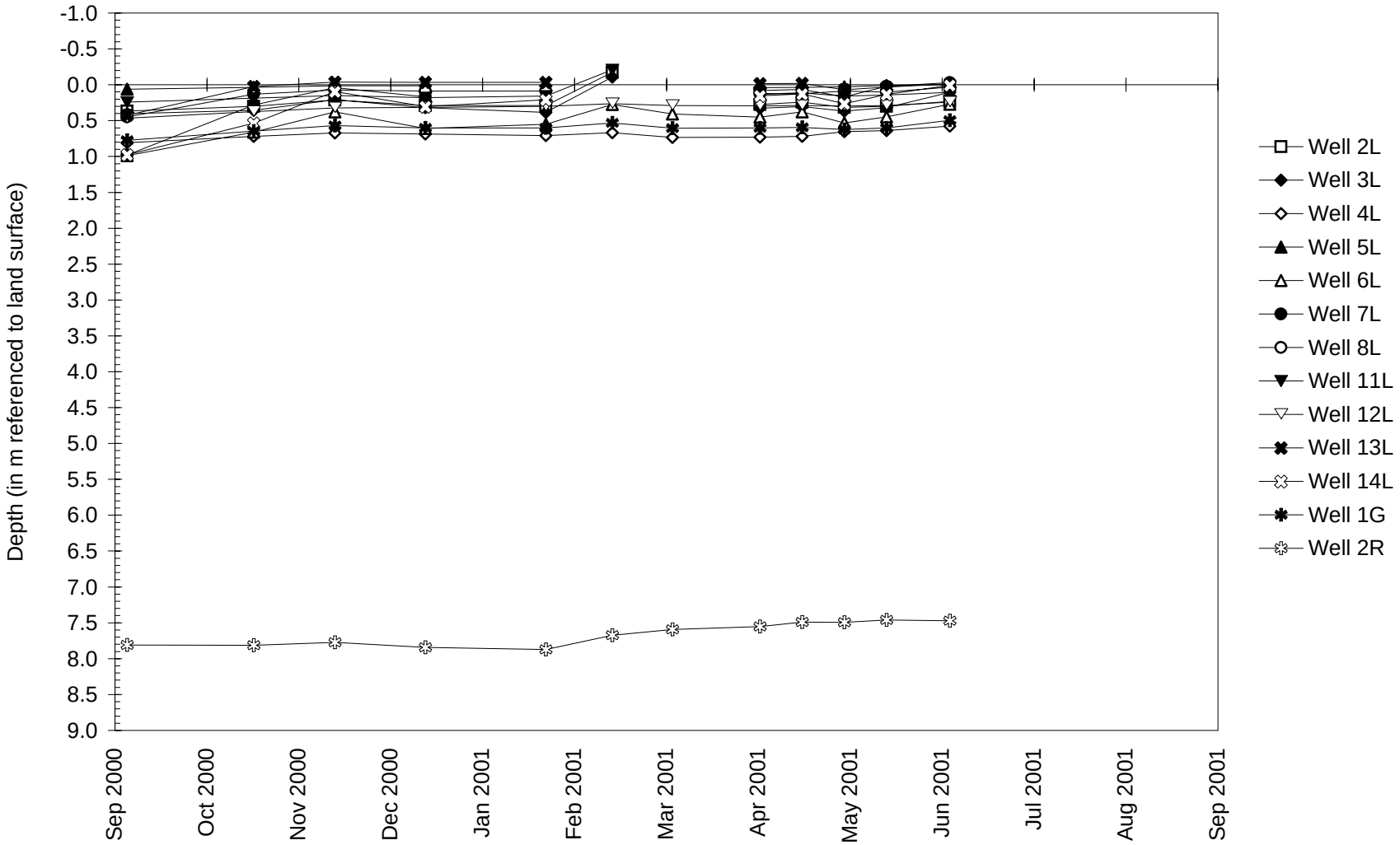
Hickory Grove Wetland Compensation Site
September 1, 2000 to September 1, 2001

Water-Level Elevations in Lower Monitoring Wells



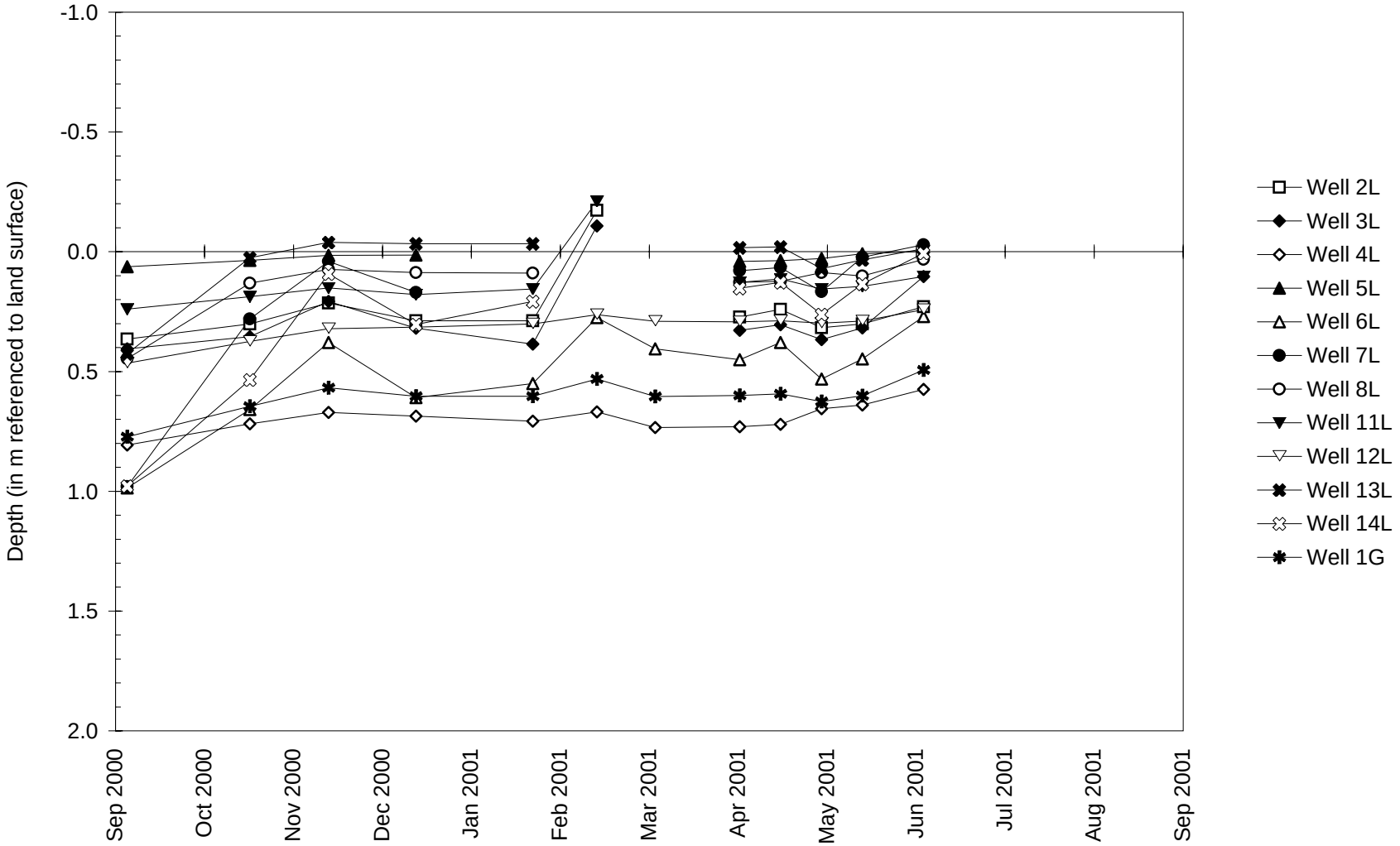
Hickory Grove Wetland Compensation Site
September 1, 2000 to September 1, 2001

Depths to Water
in Lower Monitoring Wells



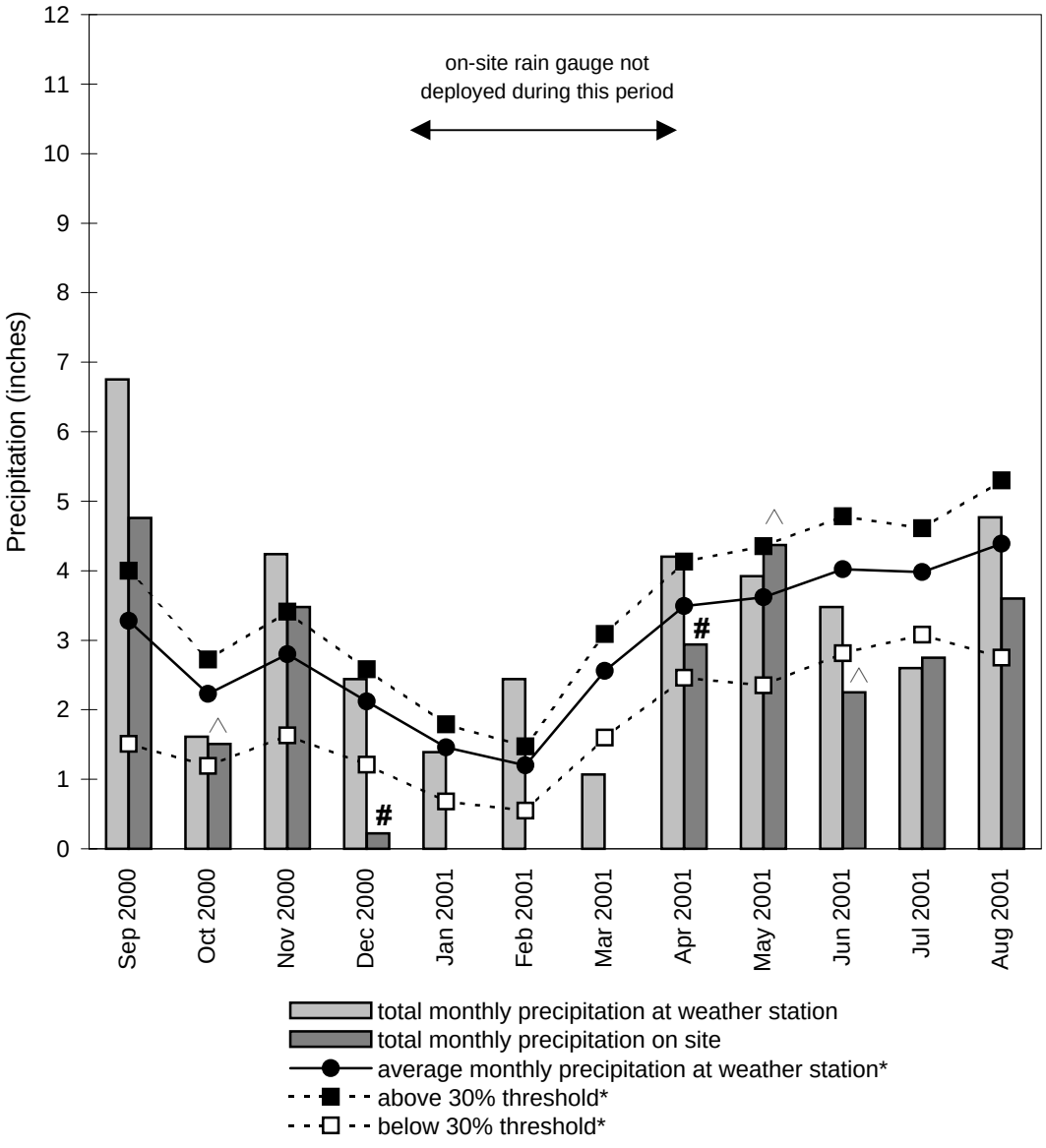
Hickory Grove Wetland Compensation Site
September 1, 2000 to September 1, 2001

Depths to Water
in Lower Monitoring Wells (excluding Well 2R)



Hickory Grove Wetland Compensation Site
September 2000 through August 2001

Total Monthly Precipitation Recorded On Site and at the Barrington, IL Weather Station



on-site rain gauge not deployed for entire month

△ suspect data: collector clogged, represents minimum value for the month

* see text for explanation

Graph last updated October 4, 2001

JOSLIN **ISGS #23**
WETLAND COMPENSATION SITE
FAP 585
Henry County, near Joslin, Illinois
Primary Project Manager: Kelli D. Weaver
Secondary Project Manager: Keith W. Carr

SITE HISTORY

- January 1995: An initial ISGS topographic survey and hydrologic analysis was sent to IDOT.

- Summer 1998: ISGS installed 18 soil-zone monitoring wells.

- April 2001: ISGS installed an RDS data logger to monitor surface-water and a stage gauge. This station monitors a backwater slough that communicates with the Rock River and that parallels the eastern site margin.

WETLAND HYDROLOGY CALCULATION FOR 2001

We estimate that the total area of created wetland that conclusively satisfied wetland hydrology criteria in 2001 is 0.15 ac (0.06 ha). The site, as defined by a boundary line drawn on an IDOT tree-planting plan, is roughly 14.2 ac (5.75 ha) in size. This is in contrast to 14.3 ac (5.79 ha) that satisfied wetland hydrology criteria in 2000, a year with precipitation which was 96% of normal, but also a year which exhibited a long-duration flood in the adjacent Rock River. This estimate is based on the following factors.

- According to the Midwestern Climate Center, the median date that the growing season begins in Geneseo, Illinois is April 10 and the season lasts 201 days; 12.5% of the growing season is 25 days.

- Total precipitation for the period from September 2000 to March 2001 was 113% of normal, resulting in slightly wetter than typical conditions entering the growing season. In April, June, July, and August, 2001, precipitation was either normal or below normal. The only month during the 2001 growing season with precipitation above normal was May 2001. Total precipitation for the monitoring period from September 2000 to August 2001 was 98% of normal.

- The primary source of water for this site is floodwater from the adjacent Rock River. During this monitoring period, the site did not experience a long-duration, high-magnitude flood as in previous years. In 2001, the average site elevation was exceeded by flood waters during only one event for a period of less than one day. In contrast, average site elevation was continuously exceeded for a period approaching one month in 2000.

- In 2001, water levels measured in well 12S conclusively satisfied the wetland hydrology criteria of the1987 U.S. Army Corps of Engineers Wetland Delineation Manual. Water levels in well 15S may have satisfied the wetland hydrology criteria, but did not do so conclusively.

- In addition, surface-water levels measured by the RDS data logger on site indicate that inundation occurred to an elevation of 174.58 m (572.76 ft) for a duration sufficient to conclusively satisfy wetland hydrology criteria. Hence, a small area just south of the main entrance road with an IDOT-mapped elevation of less than 174.65 m (573 ft) was also judged to have conclusively satisfied wetland hydrology criteria. On-site ISGS observations support extended periods of inundation and ground-surface saturation in this area.

- Limitations of the wetland hydrology determination are as follows:
  - The map used to determine the acreage of wetland hydrology in 2001 is an IDOT mitigation site plan for tree plantings on the site. The map is contoured, but the level of accuracy of the elevations and site boundary line are unknown.
  - Ground-surface elevations of the wells were re-surveyed in May 2001 and the GPS coordinates of all instruments were determined during June 2001. However, because a DOQ for the site is not available, the IDOT planting map was used as a base. Positions of instruments determined via GPS were plotted at the same approximate scale as the base map and were overlain based on best-fit visual reference to identifiable points on the topographic map.

PLANNED FUTURE ACTIVITIES

- Monitoring is expected to continue through 2003 or until no longer required by IDOT.

- A topographic survey of the basin may also be undertaken by ISGS if time permits.

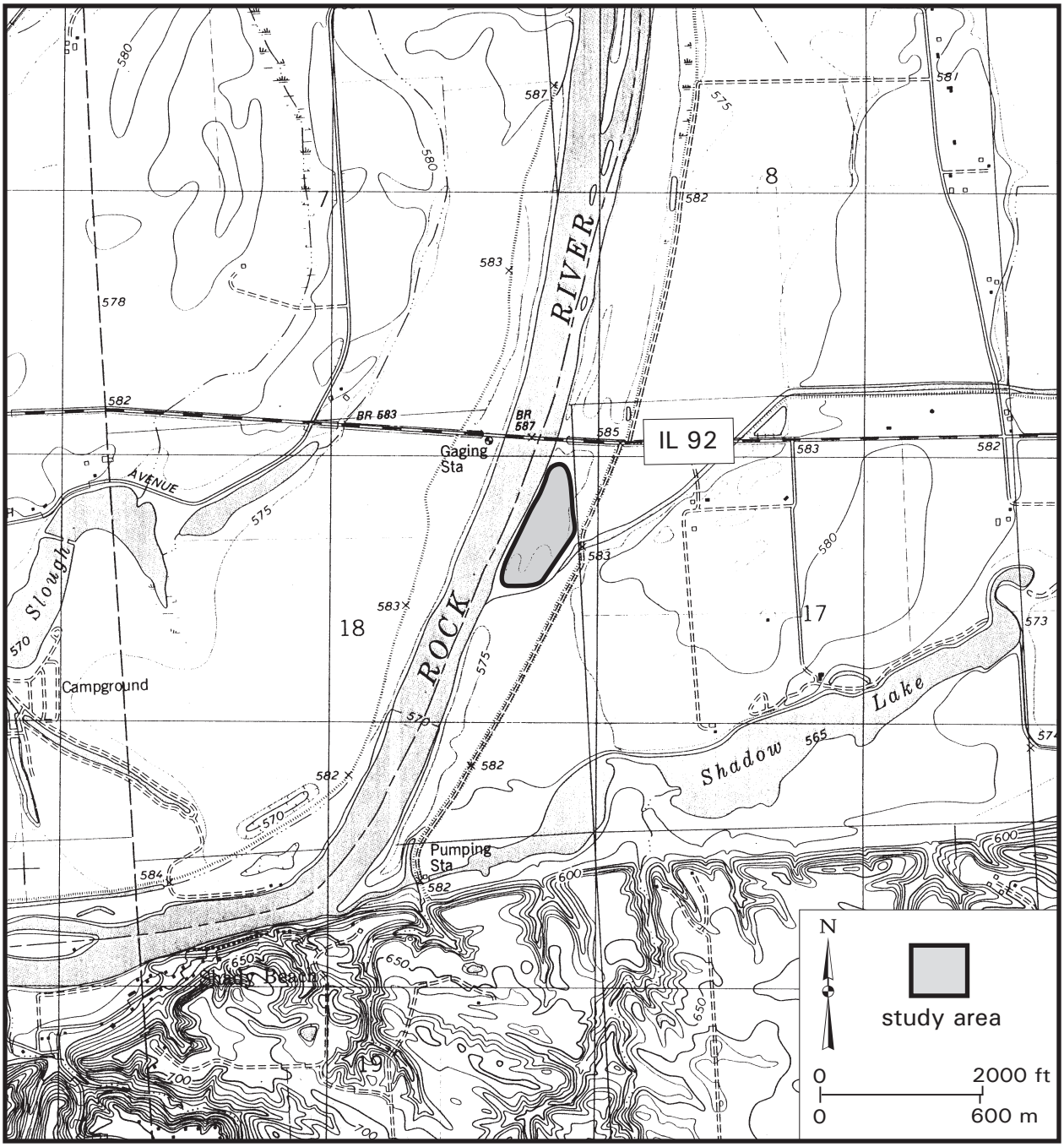
- If it can be suitably flood-proofed, a Global data logger may be installed in a specially constructed soil-zone well to provide a continuous record of shallow ground-water levels on the site.

Joslin Wetland Compensation Site

(FAP 585)

General Study Area and Vicinity

from the USGS Topographic Series, Hillsdale, IL 7.5-minute Quadrangle (USGS 1982)
contour interval is 10 feet



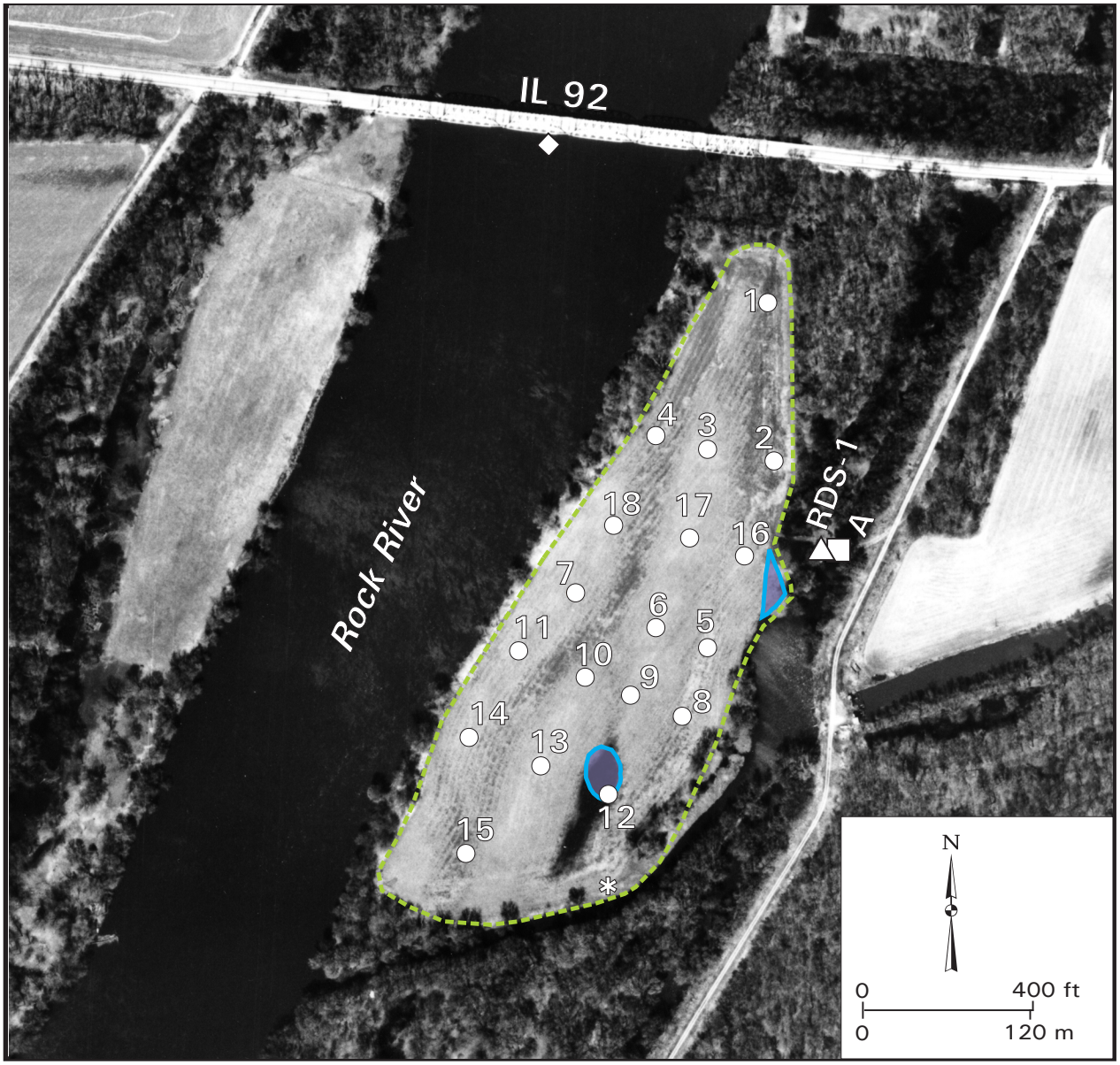
Joslin Wetland Compensation Site

(FAP 585)

Estimated Areal Extent of 2001 Wetland Hydrology

based on data collected between September 1, 2000 and September 1, 2001

map based on unrectified aerial photography from IDOT (April 15, 1988, MH-88 45-563)



approximate site boundary

estimated areal extent of 2001 wetland hydrology

soil-zone monitoring well

rain gauge

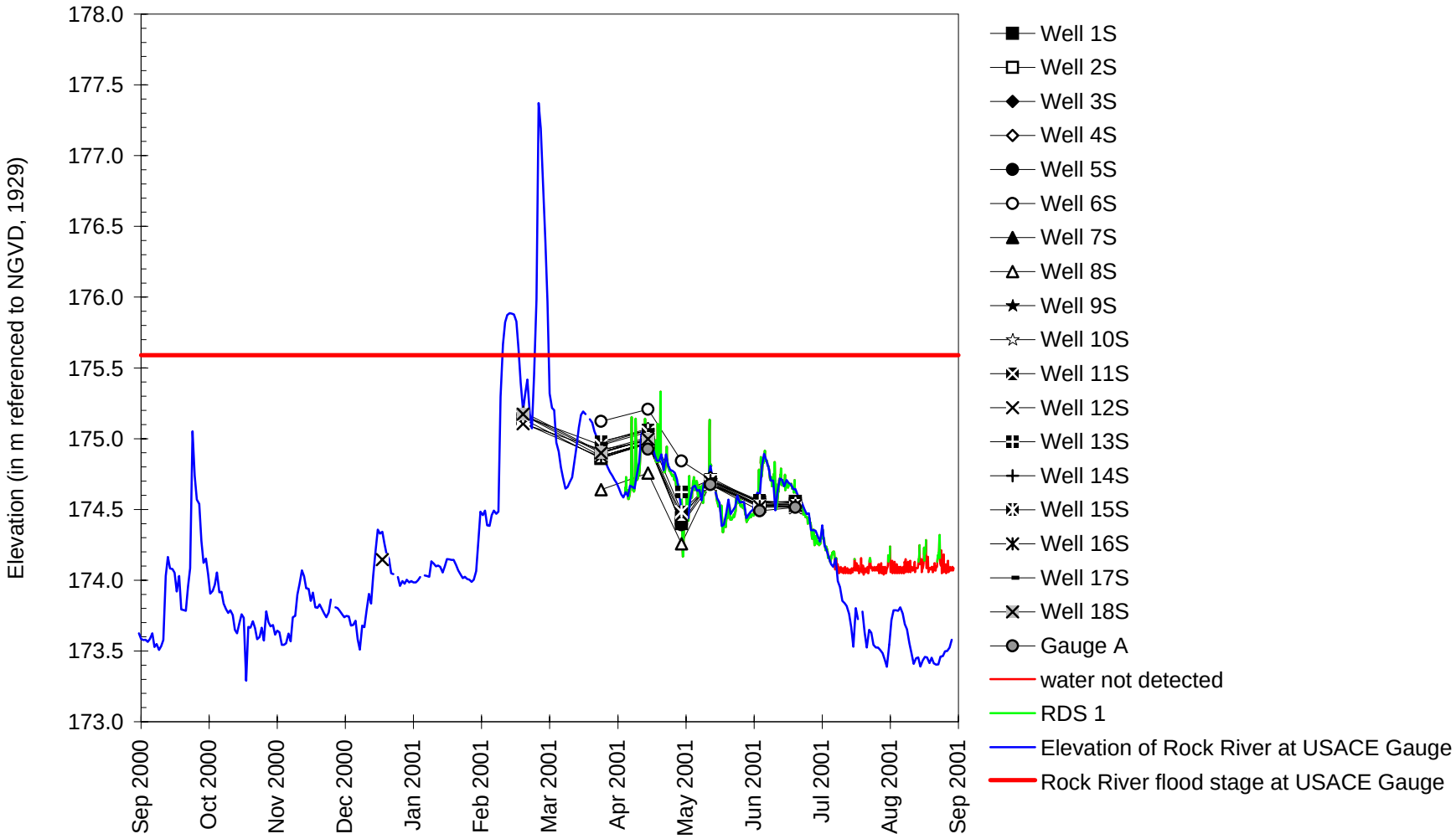
USACE gauging station

RDS data logger

stage gauge

Joslin Wetland Compensation Site
September 1, 2000 to September 1, 2001

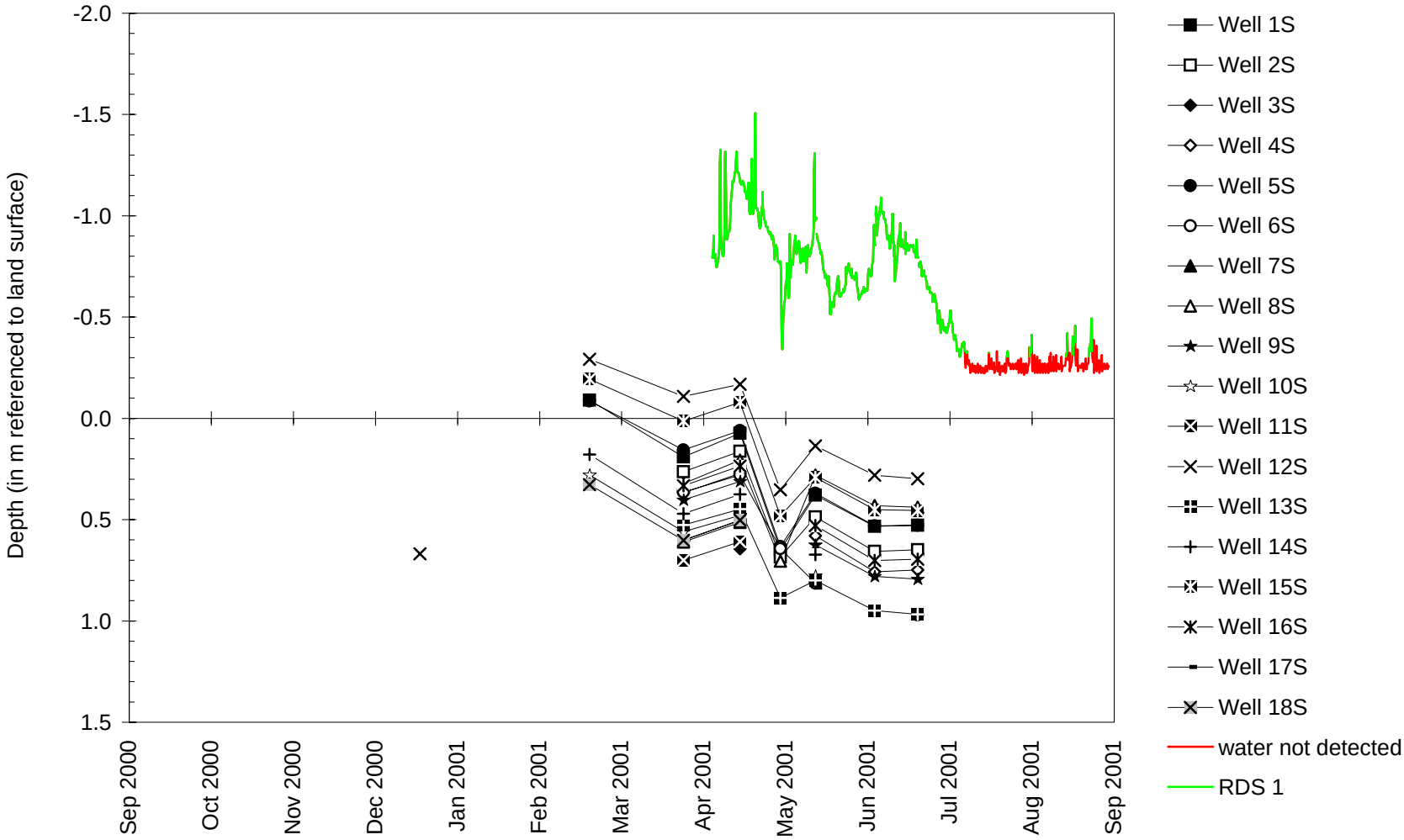
Water-Level Elevations



Joslin Wetland Compensation Site

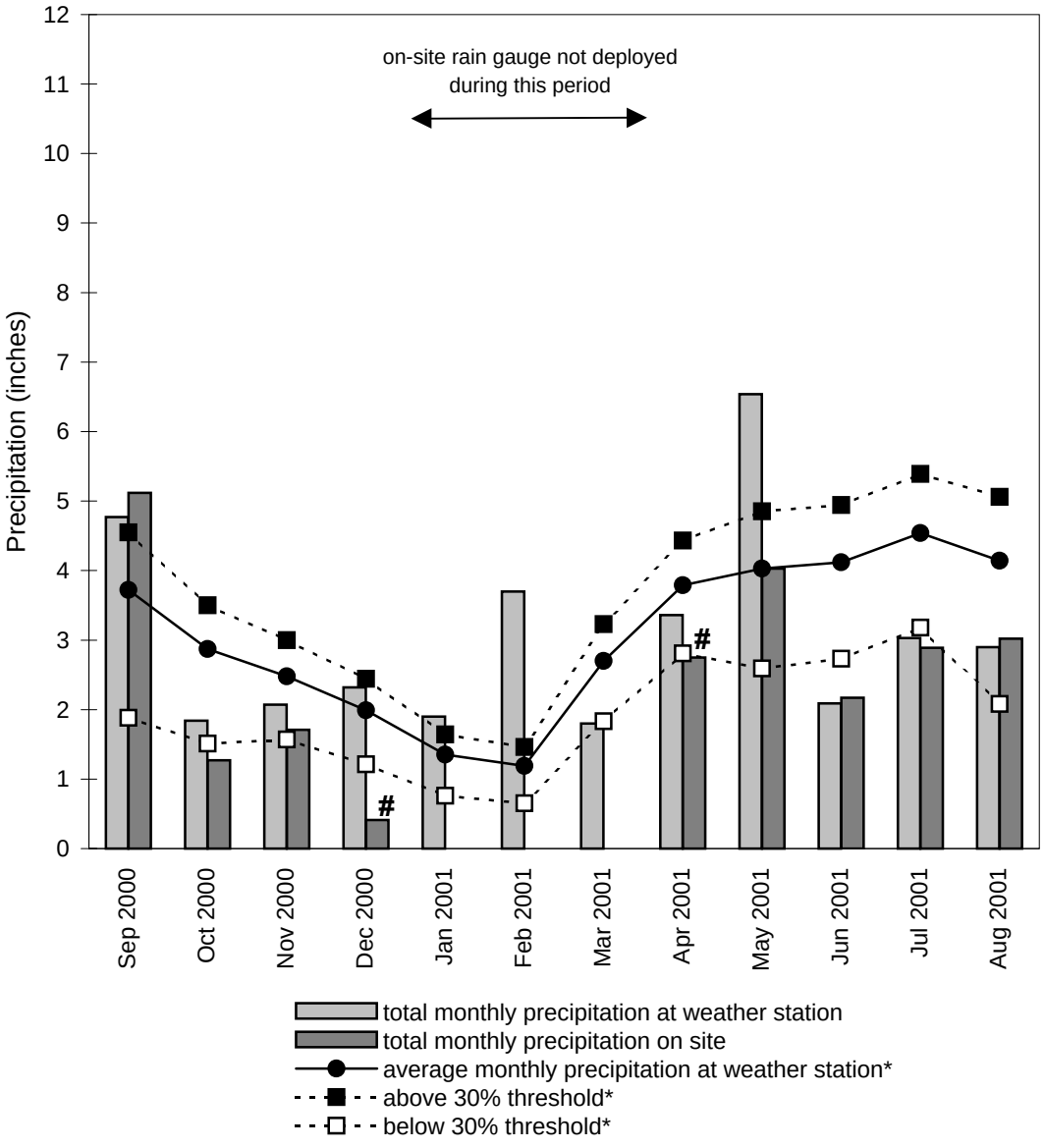
September 1, 2000 to September 1, 2001

Depth to Water



Joslin Wetland Compensation Site
September 2000 through August 2001

Total Monthly Precipitation Recorded On Site and at the Geneseo, IL Weather Station



on-site rain gauge not deployed for entire month
* see text for explanation

Graph last updated October 4, 2001

DECATUR, U.S. ROUTE 51 **ISGS #27**
WETLAND COMPENSATION SITE
FAP 322
Macon County, near Elwin, Illinois
Primary Project Manager: Blaine A. Watson
Secondary Project Manager: Geoffrey E. Pociask

SITE HISTORY

- May 1999: ISGS was tasked to conduct hydrologic monitoring for a Level I mitigation site assessment.

- March 2000: Due to delays in IDOT's construction schedule, ISGS only installed a surface-water monitoring station (RDS 1) and a rain gauge.

- May 2000: ISGS completed several shallow soil borings to investigate the presence and condition of a shallow confined aquifer across the site.

- June 2000: ISGS conducted an on-site meeting with IDOT Central Office and the District 5 engineer to present a letter report outlining the soil-boring investigation and other potential water/construction issues identified at the site.

- June 2001: Construction of the wetland was completed.

WETLAND HYDROLOGY CALCULATION FOR 2001

Based on post-construction topographic surveying conducted by ISGS, we estimate that the total area of created wetland that conclusively satisfied wetland hydrology criteria in 2001 is 5.2 ac (2.1 ha) out of a total site area of approximately 11.6 ac (4.6 ha). This year's estimate is based on the following factors.

- According to the Midwestern Climate Center, the median date that the growing season begins in Decatur is April 10 and the season lasts 196 days; 12.5% of the growing season is 25 days.

- Precipitation on-site or in the vicinity was within or above the normal range during most of the period from September 2000 through August 2001. Precipitation was below the normal range in December 2000, and in March and July 2001. During the period from September 2000 to August 2001, total precipitation at the Decatur weather station was 96% of normal. This is compared to 68% of normal for the period from September 1999 to August 2000.

- The on-site RDS data logger recorded both pre- and post-construction surface-water inundation events. Analysis of the data recorded by this unit identifies a surface-water inundation event beginning on September 3, 2001 and persisting for 25 days at an elevation of 220.96 m (724.93 ft). Inundation for this period of time would conclusively satisfy the wetland hydrology criteria of the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual for the inundated areas.

- Limitations of the wetland hydrology determination are as follows:
  - The calculation assumes that surface water inundation at an elevation of 220.96 m (724.93 ft) recorded by the on-site RDS data logger for a period exceeding 25 days during the growing season also equates to surface inundation at all other on-site points at or below 220.96 m (724.93 ft) for the same time period.
  - The ground-surface elevation of the RDS was resurveyed in Spring 2001 and its GPS coordinates were also recorded. This information was then plotted on a geo-referenced digital orthophotograph. However, at this time, there is no geo-referenced data for the surveyed topographic contours which were placed on the orthophotograph based on best visual reference. The topographic contours were created by plotting and contouring x, y, z coordinates collected via total station in *Surfer*, v. 7.0 by Golden Software

PLANNED FUTURE ACTIVITIES

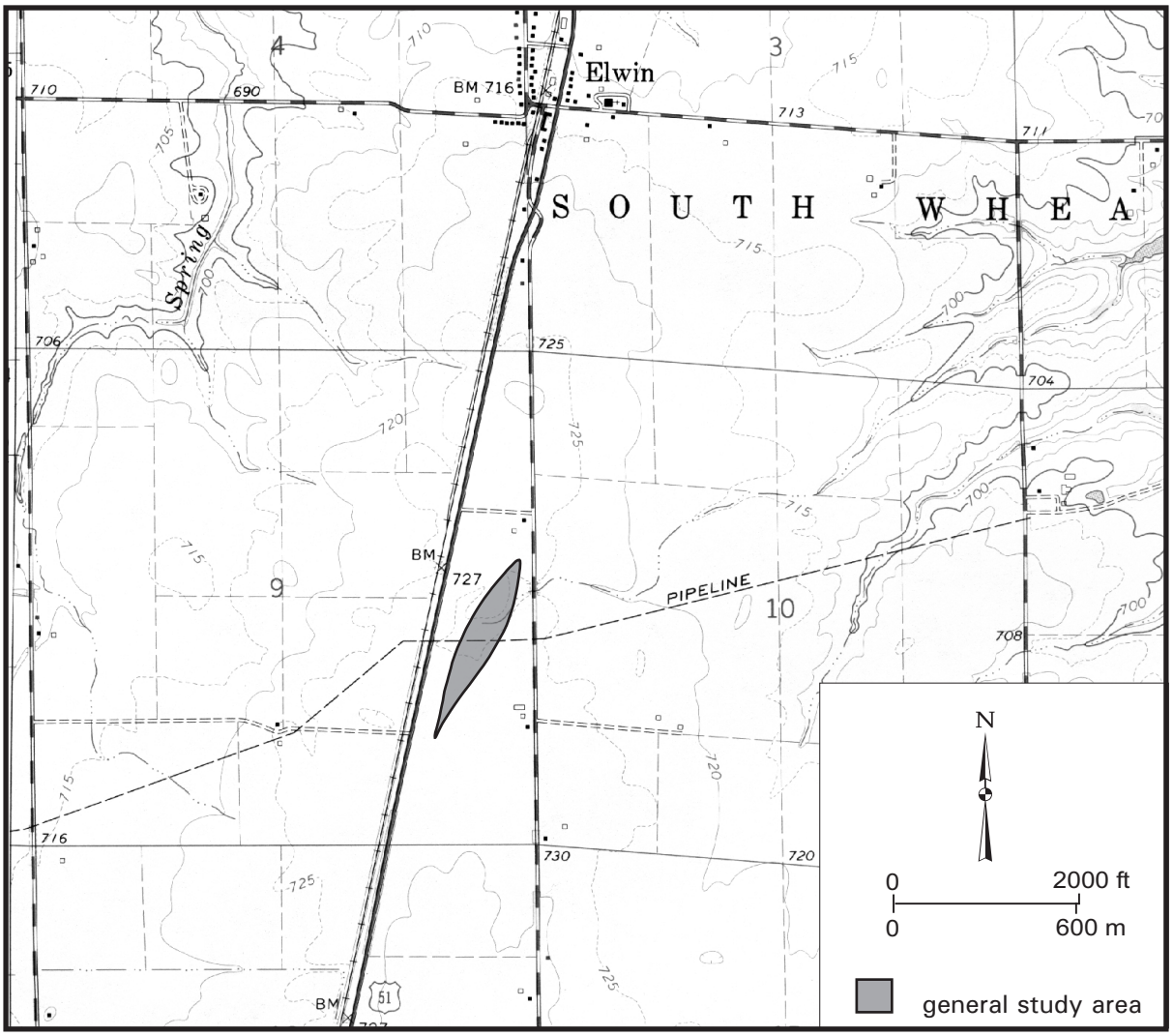
- The current monitoring scheme will be expanded to include a series of "S" wells and additional data loggers that will complement the existing surface-water data logger for evaluating the status of wetland hydrology across the entire site.

- Monitoring of the site will continue until July 2006, or until no longer required by IDOT.

Decatur, U.S. Route 51 Wetland Compensation Site
(FAP 322)

General Study Area and Vicinity

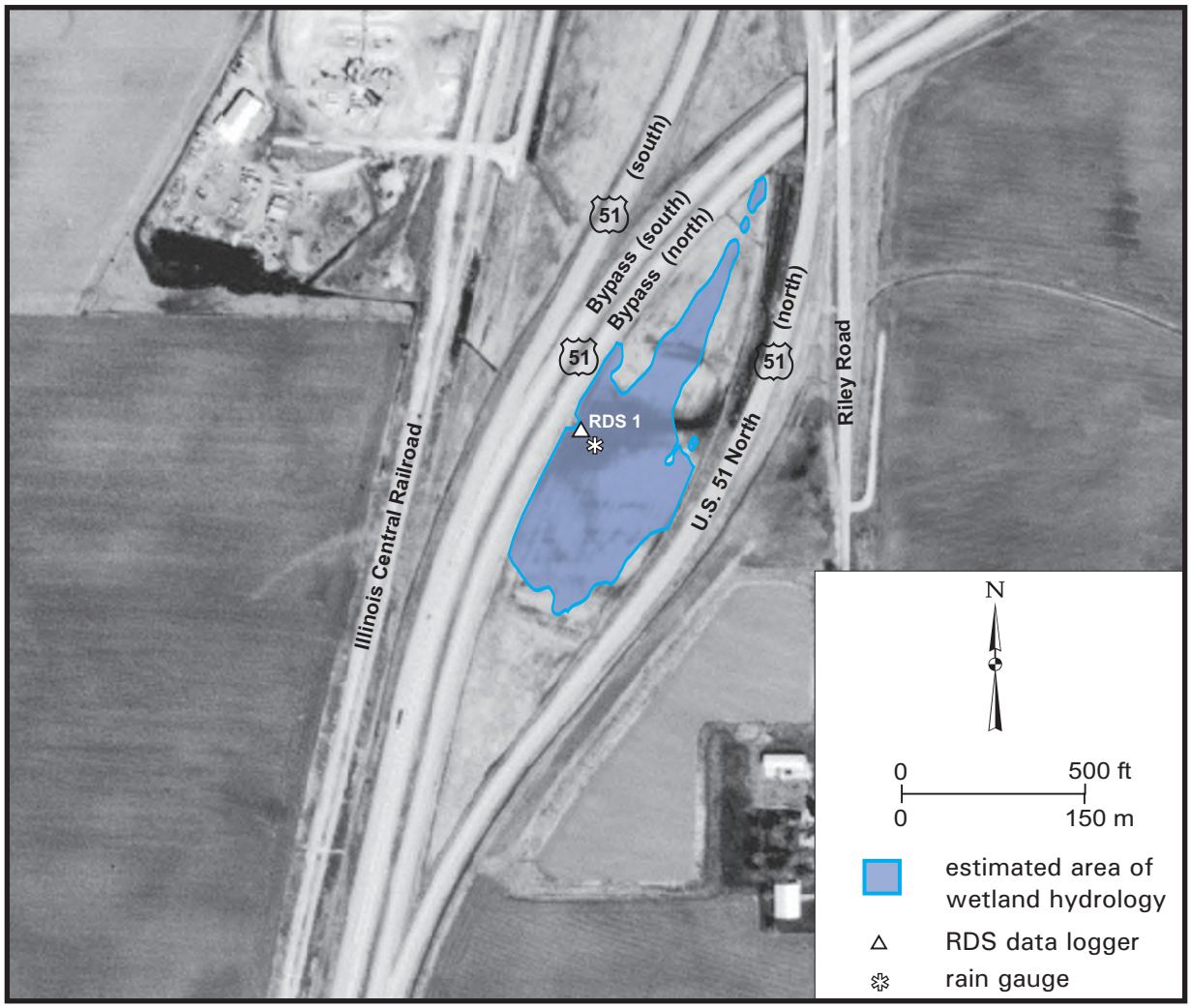
from the USGS Topographic Series, Decatur, IL 7.5-minute Quadrangle (USGS 1967; photorevised 1975)
contour interval is 10 feet



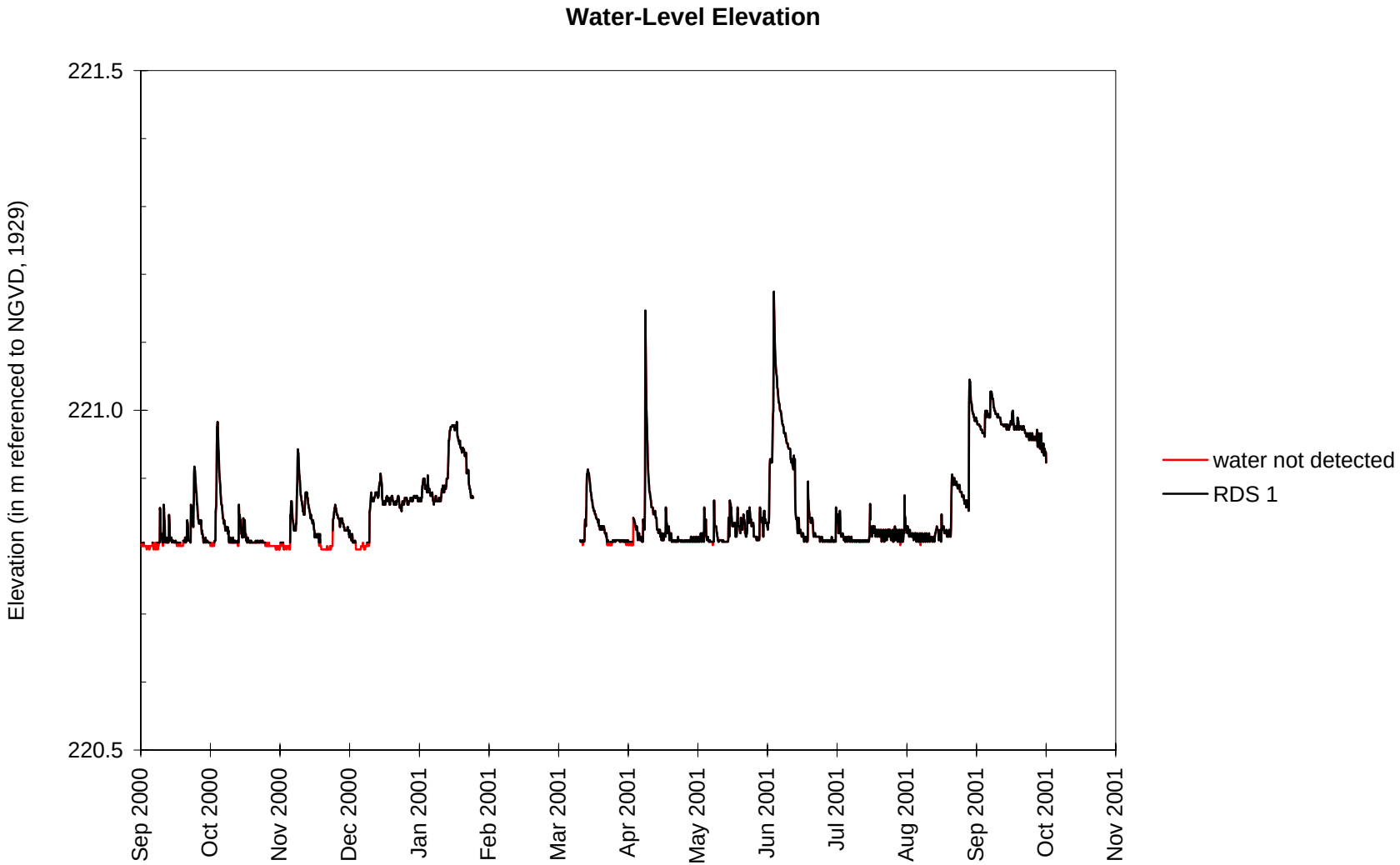
Decatur, U.S. Route 51 Wetland Compensation Site
(FAP 322)

Estimated Areal Extent of 2001 Wetland Hydrology

map based on USGS digital orthophotograph Decatur, SW quarter quadrangle
produced from 4/14/98 aerial photography (ISGS 2001)

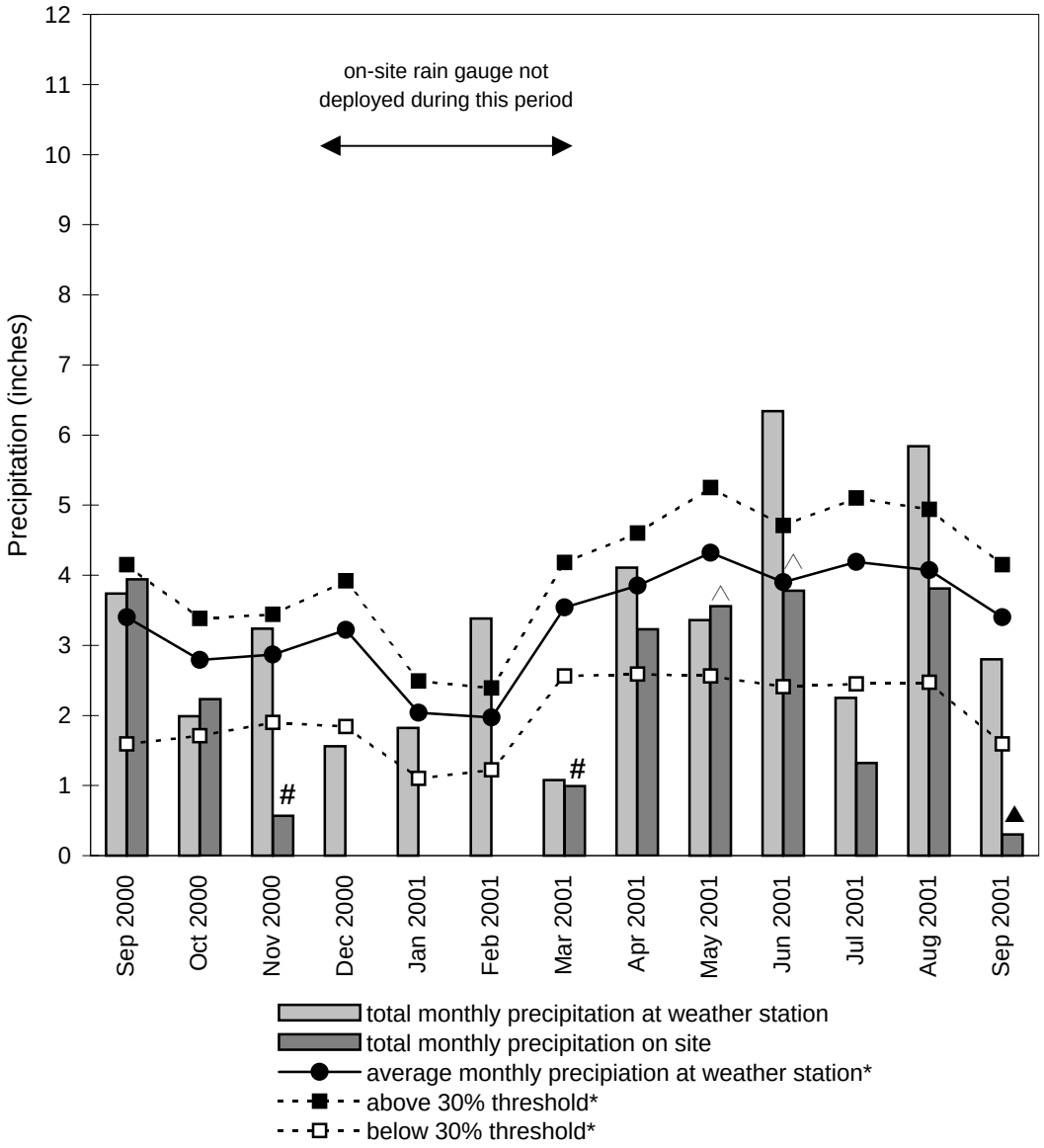


Decatur, U.S. Route 51 Wetland Compensation Site
September 1, 2000 to October 3, 2001



Decatur, U.S. Route 51
Wetland Compensation Site
September 2000 through September 2001

Total Monthly Precipitation Recorded On Site and at the Decatur, IL Weather Station



on-site rain gauge not deployed for entire month
△ suspect data: rain collector clogged, represents minimum value for the month
▲ suspect data: rain collector malfunction
* see text for explanation

Graph last updated October 9, 2001

GULFPORT **ISGS #29**
WETLAND COMPENSATION SITE
FAP 313
Henderson County, near Gulfport, Illinois
Primary Project Manager: Keith W. Carr
Secondary Project Manager: Kelli D. Weaver

SITE HISTORY

- September 1994: ISGS submitted an Initial Site Evaluation Report to IDOT.
- Fall 1997: IDOT completed excavation of the wetland basin.
- January 1998: ISGS began surface-water elevation monitoring at the site.
- April 1999: ISGS installed soil-zone wells for ground-water elevation monitoring at the site.
- April 2001: ISGS installed four very shallow (VS) soil-zone wells at the four corners of the excavated wetland basin for the purpose of further defining the extent of wetland hydrology.

WETLAND HYDROLOGY CALCULATION FOR 2001

We estimate that the total area of created wetland that conclusively satisfied wetland hydrology criteria in 2001 is 8.4 ac (3.4 ha). The site, as defined by the area inside a line labeled "construction limits" on an IDOT site plan, is roughly 10.54 ac (4.27 ha) in size. This is in contrast to 6.8 ac (2.75 ha) that satisfied wetland hydrology criteria in 2000, a year with precipitation which was 89% of normal. This estimate is based on the following factors.

- According to the Midwestern Climate Center, the median date that the growing season begins in Burlington, Iowa, is April 7 and the season lasts 206 days; 12.5% of the growing season is 26 days.
- Total precipitation for the period from September 2000 to March 2001 was 110% of normal, resulting in slightly wetter conditions entering the growing season. In April and May 2001, precipitation continued above normal, but totals returned to normal between June and August. Total precipitation for the monitoring period from September 2000 to August 2001 was 115% of normal.
- In 2001, water levels measured in wells 2S, 3S, 4S, 5S, 6VS, 7VS, 9VS, 10VS, 11VS, and 12VS conclusively satisfied the wetland hydrology criteria of the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual. Wells 1S and 8VS did not satisfy wetland hydrology criteria. In addition, surface-water levels measured by the RDS data logger indicated that inundation occurred to an elevation of 157.53 m (516.82 ft) for a duration sufficient to conclusively satisfy wetland hydrology criteria. The acreage determination was therefore based upon a combination of the RDS record and monitoring-well data, which are in agreement with one another.

- Limitations of the wetland hydrology determination are as follows:
  - The base map used in the calculation is an IDOT plan of the proposed wetland basin prior to construction, because no as-built topographic survey of the site has been completed.

PLANNED FUTURE ACTIVITIES

- Monitoring will continue through January 2003 or until no longer required by IDOT.

- A topographic survey of the basin may also be undertaken by ISGS if time permits.

Gulfport Wetland Compensation Site

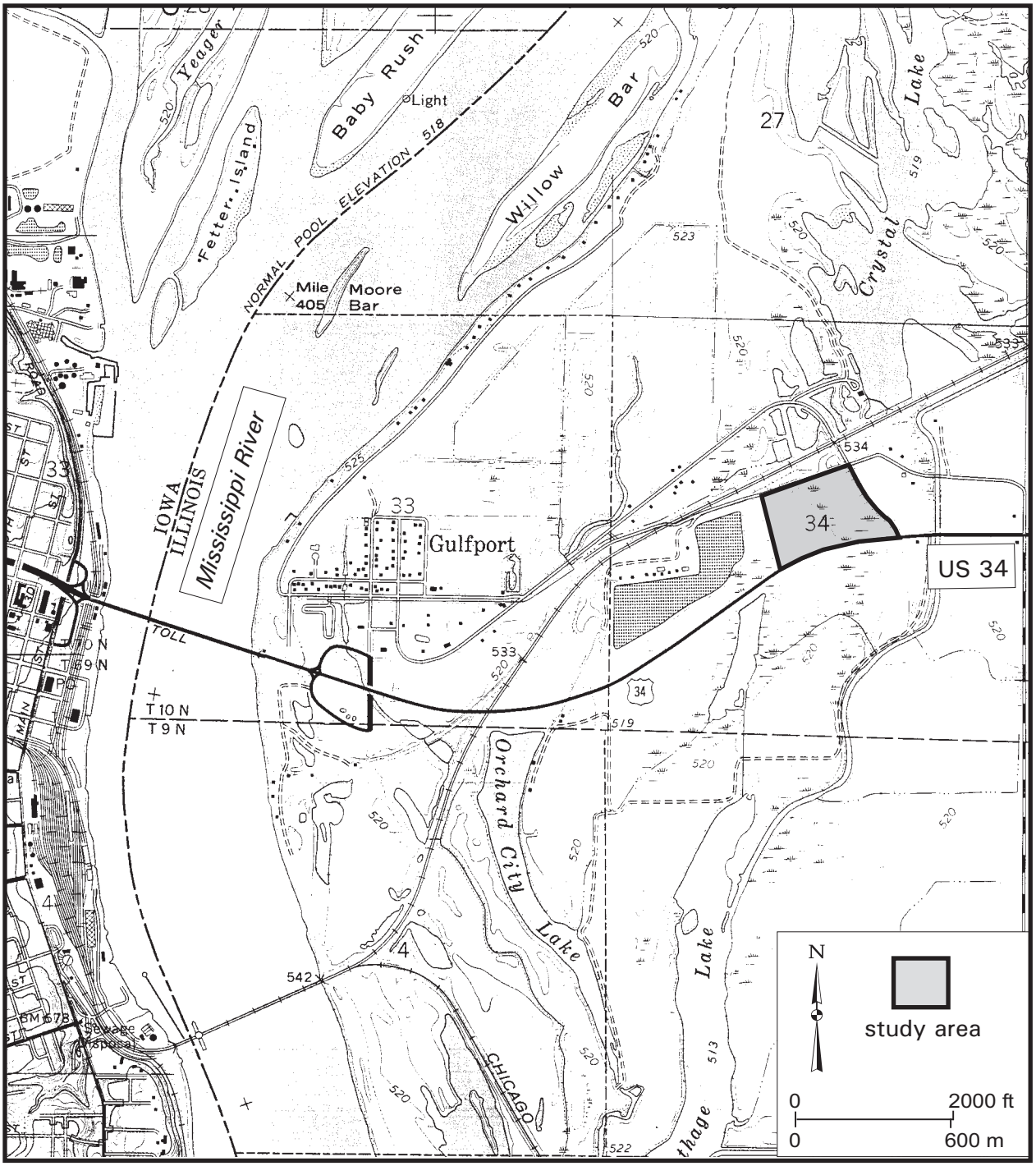
(FAP 313)

General Study Area and Vicinity

from the USGS Topographic Series, Burlington, IA-IL 7.5-minute Quadrangle

(USGS 1964, photorevised 1976)

contour interval is 10 feet



Gulfport Wetland Compensation Site
(FAP 313)
Estimated Areal Extent of 2001 Wetland Hydrology
based on data collected between September 1, 2000 and September 1, 2001

map based on USGS digital orthophotograph, Burlington NW quarter quadrangle
from 04/14/1998 aerial photography (ISGS 2001)

○ soil-zone monitoring well

❄ rain gauge

△ RDS data logger

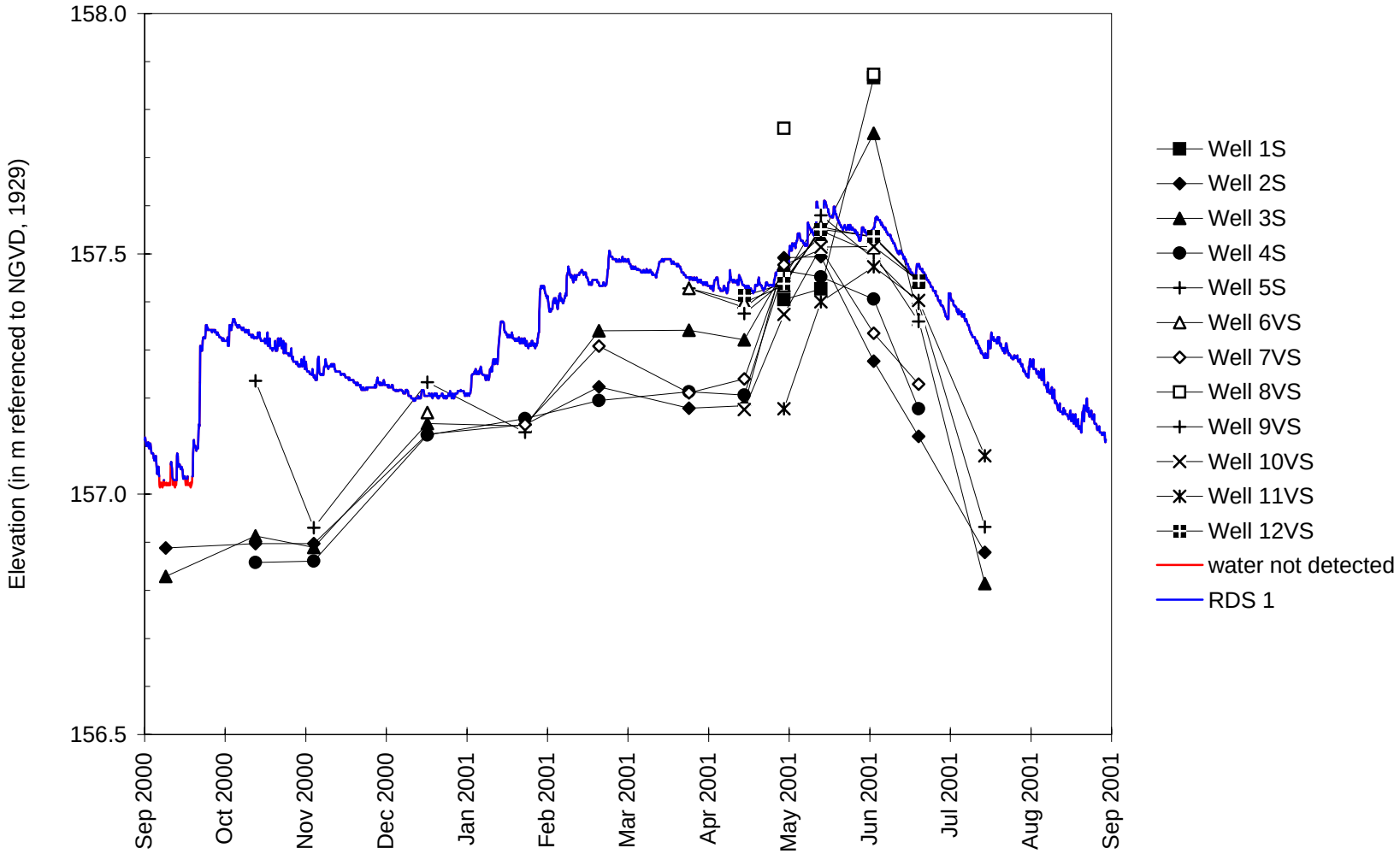
estimated areal extent of 2001 wetland hydrology

0 400 ft
100 m

N

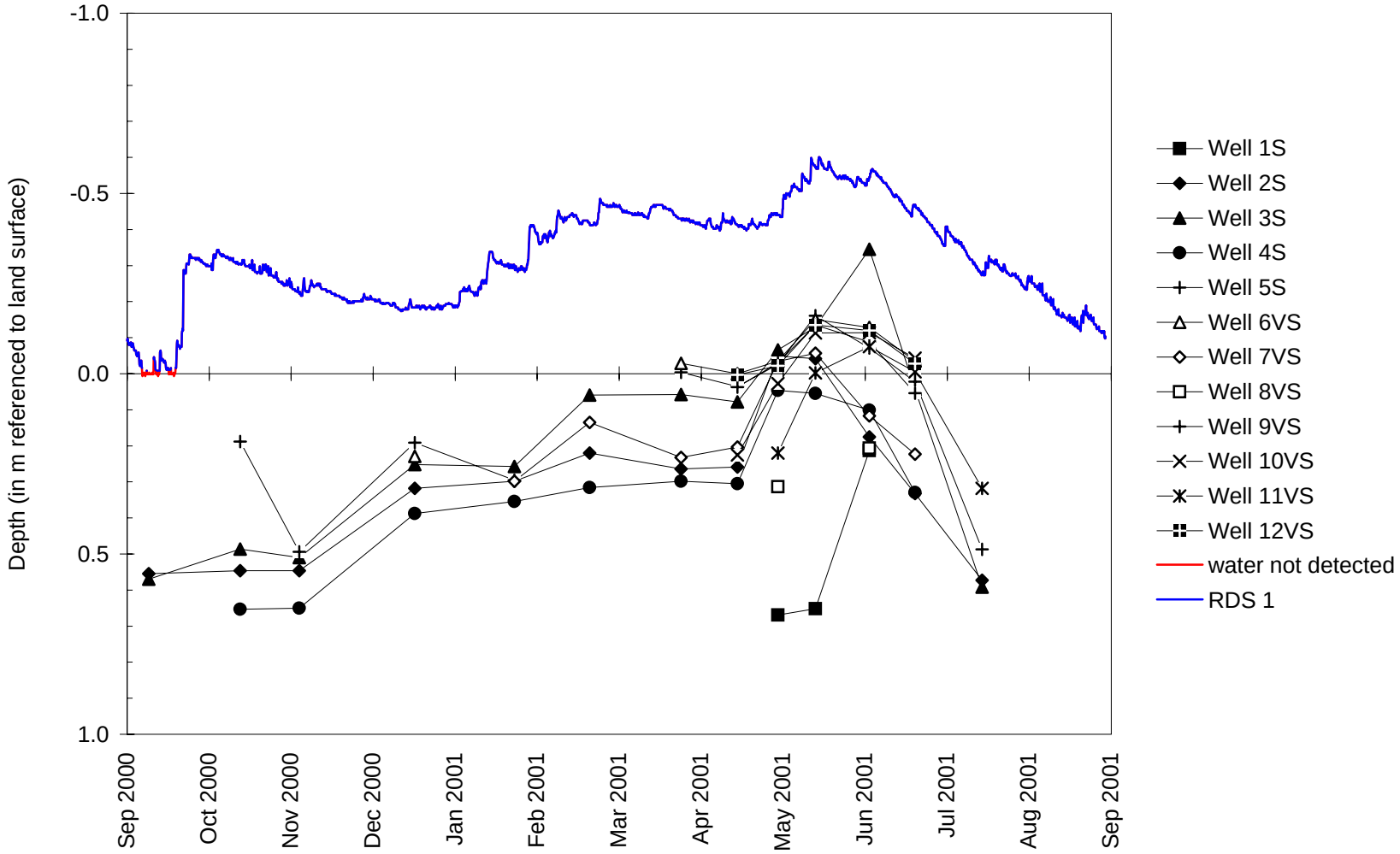
Gulfport Wetland Compenstion Site
September 1, 2000 to September 1, 2001

Water-Level Elevations



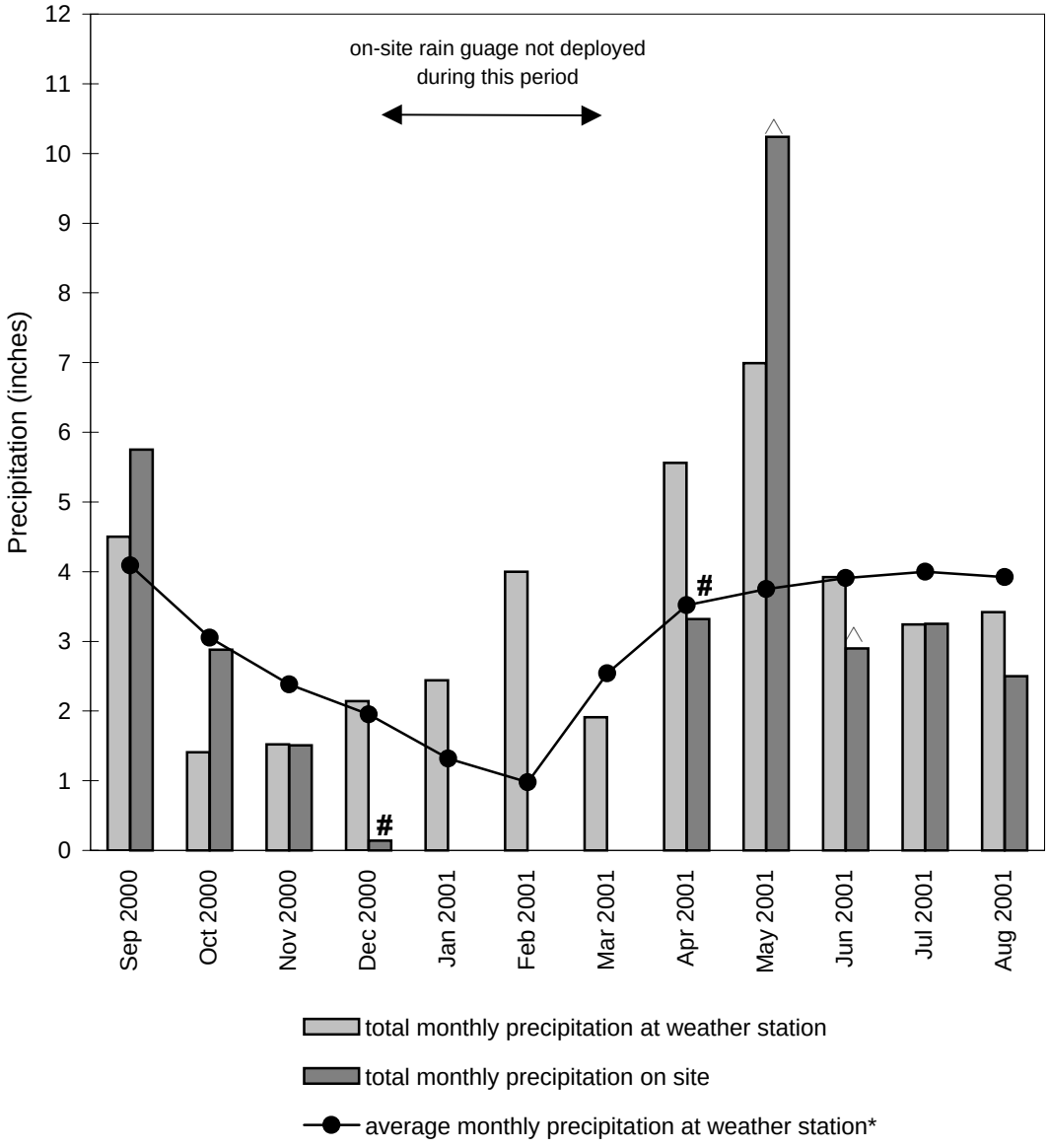
Gulfport Wetland Compenstion Site
September 1, 2000 to September 1, 2001

Depth to Water in Wells



Gulfport Wetland Compensation Site
September 2000 through August 2001

Total Monthly Precipitation Recorded On Site and at the Lock & Dam 18 Weather Station, Gladstone, IL



on-site rain gauge not deployed for entire month
△ suspect data: rain collector clogged, represents minimum value for the month
* see text for explanation
30% above and 30% below normal-range threshold values are not available for this weather station

Graph last updated October 4, 2001

SPRING CREEK **ISGS #30**
POTENTIAL WETLAND BANKING SITE
FAP 340
Will County, near New Lenox, Illinois
Primary Project Manager: Steven E. Benton
Secondary Project Manager: Blaine A. Watson

SITE HISTORY

- January 1995: An access agreement to install monitoring wells in right-of-way along Gouger Road was agreed to by the New Lenox Township Highway Commission.

- October 1995: The ISGS began an investigation of surface- and ground-water levels in the valley of Spring Creek with the installation of monitoring wells and staff gauges along Gouger Road.

- January 1998: The results of the investigation were reported by letter to IDOT.

- 1998–1999: Surface-water and ground-water data were collected pending the start of a Level II Assessment.

- March 2000: IDOT requested that monthly data collection be suspended.

- November 2000: A copy of the letter report and all data collected during the Level I Assessment were sent to Zambrana Engineering, consultants for IDOT District 1, who were conducting a feasibility study of Spring Creek.

SUMMARY OF 2001 EVENTS

- No estimate of the area of wetland hydrology was made at this site because the data collected were limited to fluctuations in stream depth and elevation.

- Total precipitation recorded at the Brandon Road Dam weather station in Joliet, IL during the study period was 27.24 inches. No precipitation was recorded in November 2000, therefore, the total recorded underestimated the actual total. However, the amount recorded (27.24 in) was 82% of normal (35.97 in) less the 30-year average for November (2.80 in). Except for February 2001 and July 2001, every month in which precipitation was recorded, was within the normal range.

- A data logger was installed in Spring Creek near the Gouger Road bridge. The logger was programmed to record water depth in 60 minute intervals. The logger was surveyed to an absolute elevation in order to also determine surface-water elevation. The attached figure is a hydrograph of surface-water elevation in Spring Creek for the period June 27 to August 31.

PLANNED FUTURE ACTIVITIES

- The depth and elevation data collected from Spring Creek will be used as a baseline for a possible Level II Assessment.

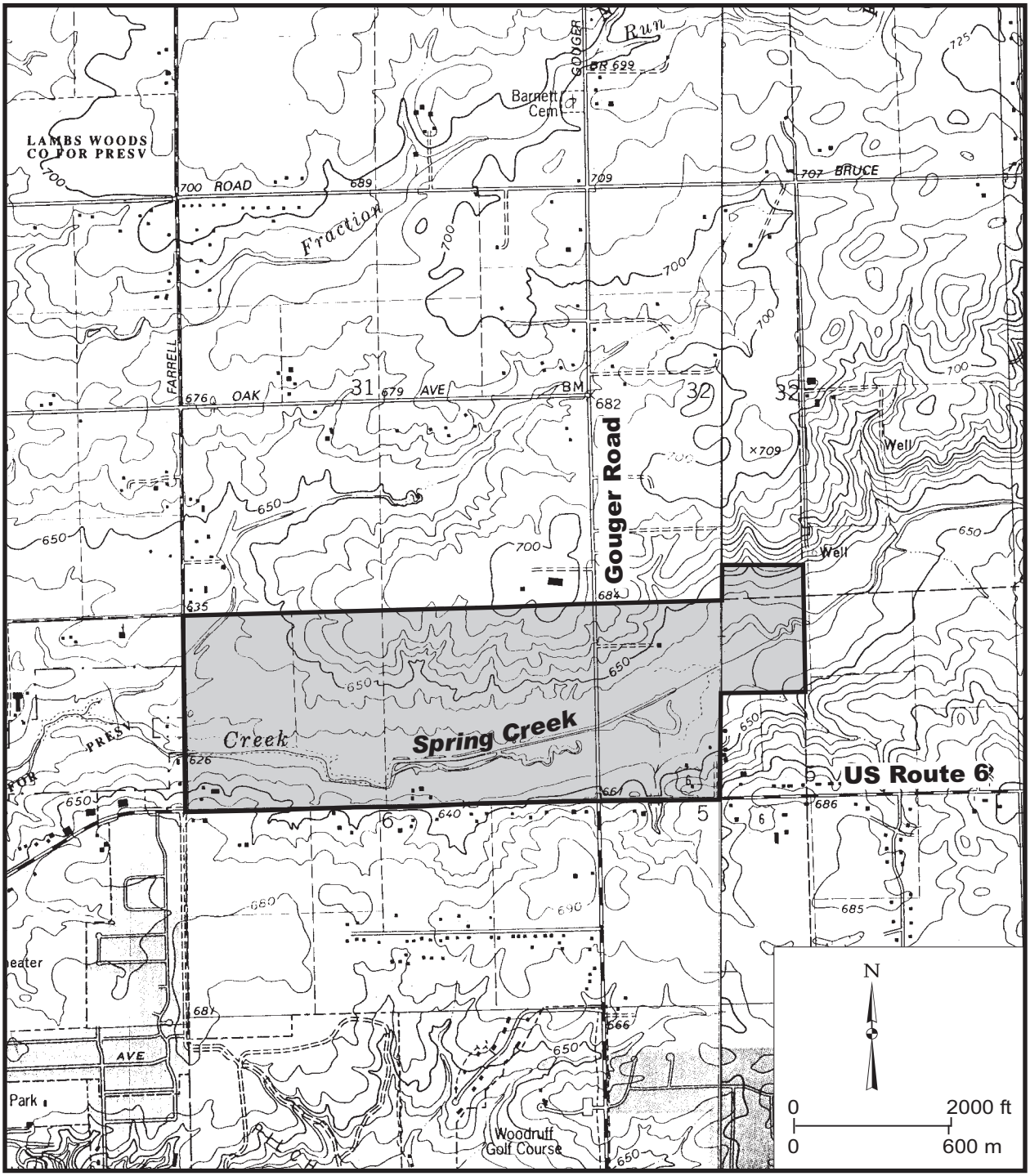
Spring Creek Potential Wetland Banking Site

(FAP 340)

General Study Area and Vicinity

from the USGS Topographic Series, Joliet, IL 7.5-minute Quadrangle (USGS 1993)

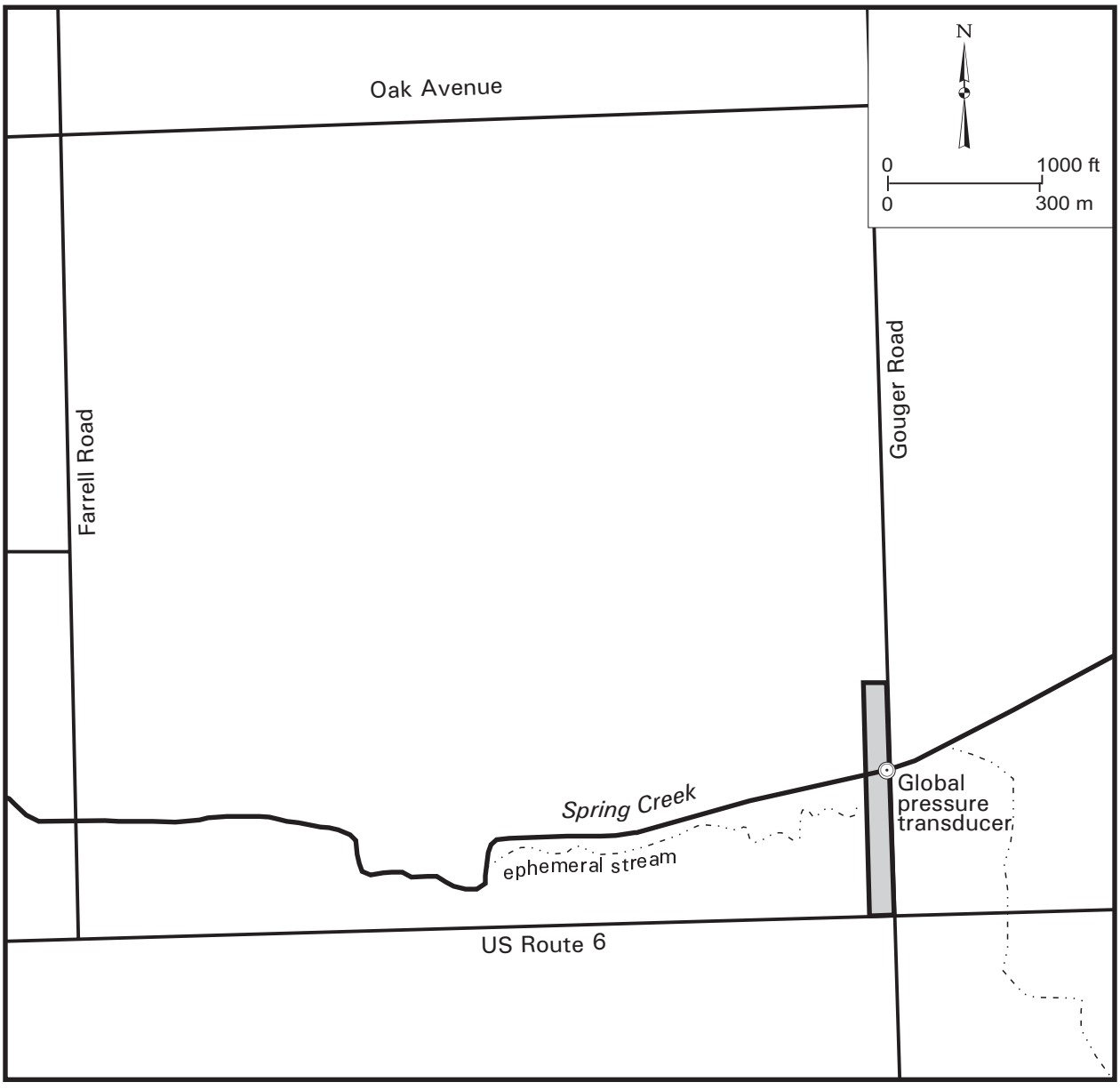
contour interval is 10 feet



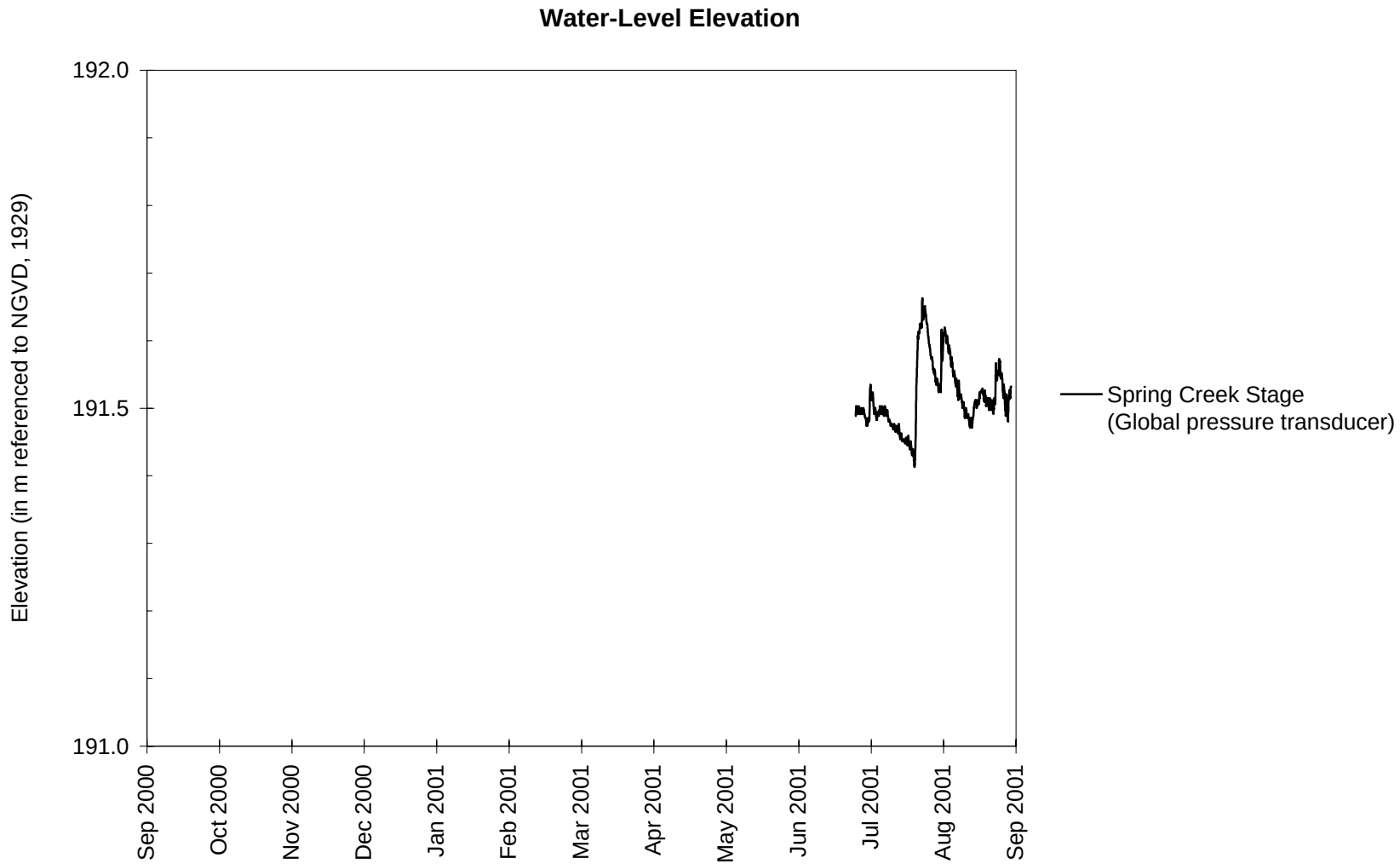
general study area

Spring Creek Potential Wetland Banking Site
(FAP 340)
Approximate Location of the ISGS Global Pressure Transducer

map based on Joliet, IL 7.5-minute Quadrangle (USGS 1993)

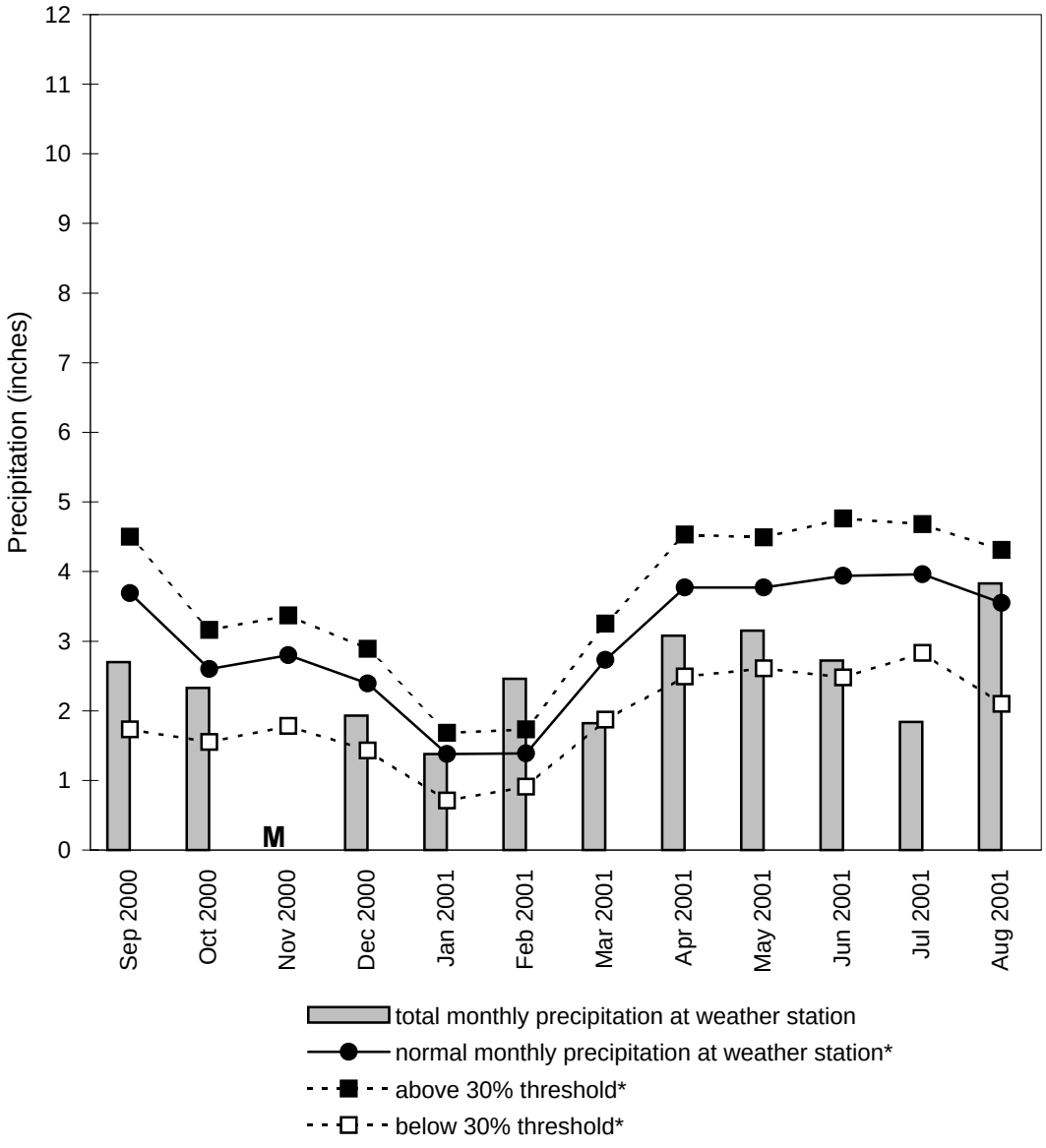


Spring Creek Potential Wetland Banking Site
September 1, 2000 to September 1, 2001



Spring Creek Potential Wetland Banking Site
September 2000 through August 2001

Total Monthly Precipitation Recorded at the
Brandon Road Dam Weather Station, Joliet, IL
(no rain gauge deployed on site)



* see text for explanation
M missing data at weather station

Graph last updated October 4, 2001

NORTH CHICAGO **ISGS #31**
POTENTIAL WETLAND BANKING SITE
FAP 120
Lake County, near North Chicago, Illinois
Primary Project Manager: James J. Miner
Secondary Project Manager: Keith W. Carr

SITE HISTORY

- Spring 1995: ISGS submitted an Initial Site Evaluation Report to IDOT.

- Summer and Fall 1998: ISGS installed monitoring wells and surface-water data loggers, and began a geochemical characterization.

- January 2000: A letter report containing initial observations and recommendations was transmitted to IDOT.

- Spring 2001: Twenty-nine additional soil-zone wells were installed throughout the site to monitor the hydrogeologic conditions in areas that were identified by Christopher B. Burke Engineering, LTD., as containing drained hydric soils. These wells will help evaluate the impacts of proposed restoration of the site by buckthorn removal.

WETLAND HYDROLOGY CALCULATION FOR 2001 AND SUMMARY OF 2001 EVENTS

Wetland and drained wetland areas at this site have been mapped by Christopher B. Burke Engineering, LTD. However, an electronic copy of this map has not yet been received by ISGS. When it is received, hydrologic data collected by ISGS can be superimposed on the map polygons and a comparison can be made between the mapped wetland status and the hydrologic conditions measured in each mapped area, thus allowing for review of the restoration plans for the site. Until that time, it is not possible to delineate the area of the site that satisfies wetland hydrology criteria using monitoring wells alone due to the complex intermingling of wetland and nonwetland areas.

- According to the Midwestern Climate Center, the median date that the growing season begins in Waukegan is April 14 and the season lasts 195 days; 12.5% of the growing season is 24 days.

- During the monitoring year, precipitation was 97% of normal. Most months were below or nearly below normal, with the exception of September and November 2000, and February and May 2001, which had precipitation above or nearly above the normal range.

- In 2001, water levels measured in the following wells conclusively satisfied the wetland hydrology criteria of the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual: wells 1S, 2S, 3S, 4S, 5S, 6S, 7S, 14S, 16S, 17S, 21S, 23S, 25S, 29S, 32S, 33S, 34S, 37S, 39S, 40S, 41S, and 42S.

- In 2001, surface-water levels were measured at 8 locations within the site.

ADDITIONAL INFORMATION

- No aquifers have been identified that may supply sufficient ground water to any potential wetland compensation area. Surface water and precipitation are likely the primary water sources for any wetland compensation activities. Clay-rich sediments will likely perch surface water in an efficient manner.

- The berm located on the east side of the site is being breached at outlet O-3 by surface water during spring, and erosion may eventually cut completely through the berm and drain several acres of wetlands that rely on the berm to produce flooding.

- High levels of chloride, silt, and other anthropogenic additions are noted in inputs on the north and west sides of the site. Therefore, it may be useful to create settling ponds and/or treatment wetlands adjacent to each inlet where impacts were found.

- Well data show that some of the areas proposed for wetland restoration by cutting woody vegetation met wetland hydrology criteria in 2001. The location of some of the wells that did not meet wetland hydrology criteria suggest that drainage tile may be present in parts of the site, especially in the south part. A search for tile by a professional may be advisable.

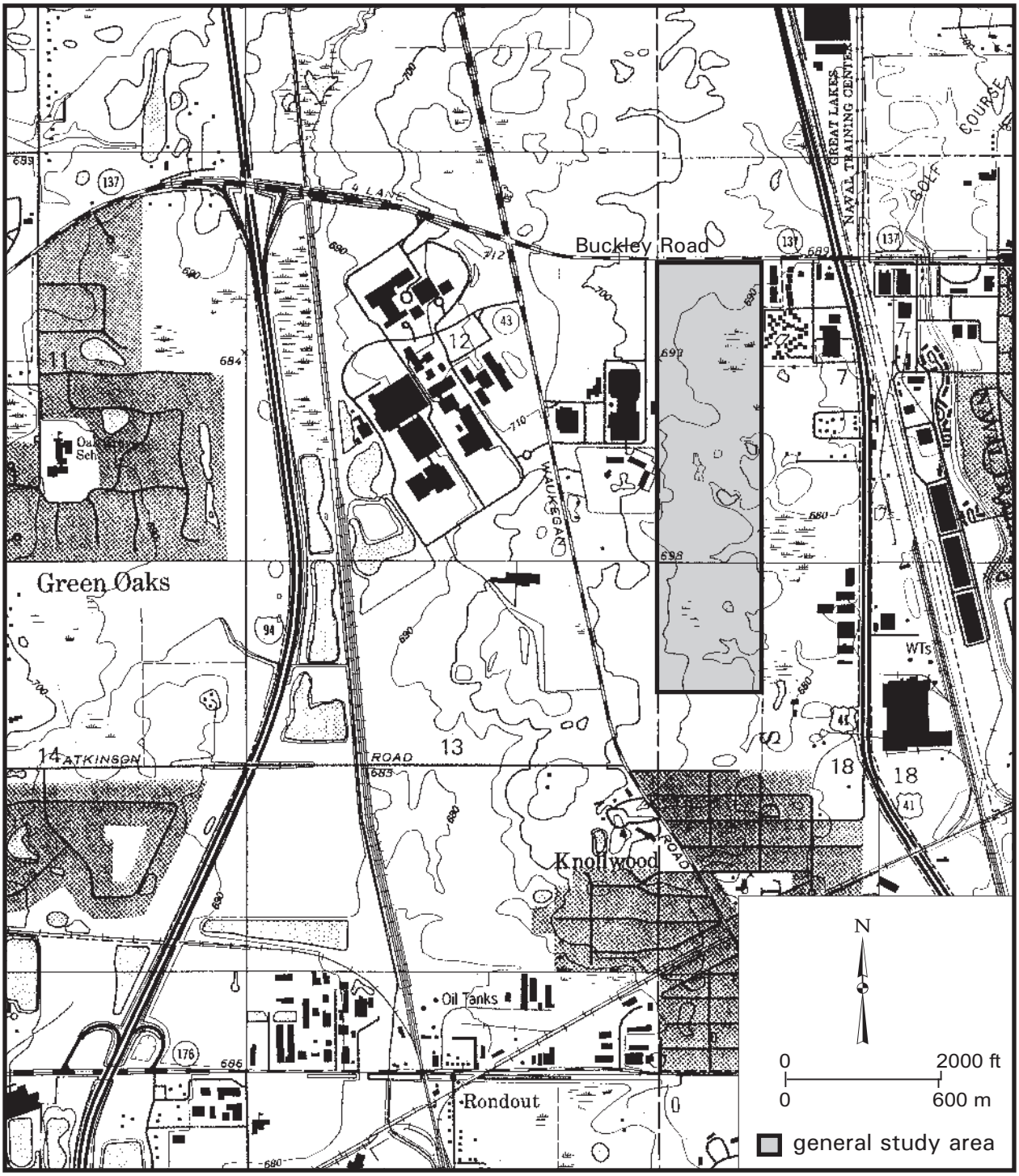
PLANNED FUTURE ACTIVITIES

- Water-level monitoring will continue until no longer required by IDOT.

North Chicago Potential Wetland Banking Site
(FAP 120)

General Study Area and Vicinity

from the USGS Topographic Series, Libertyville, IL (W) (USGS 1993) and Waukegan, IL (E) (USGS 1993)
7.5-minute Quadrangles
contour interval is 10 ft

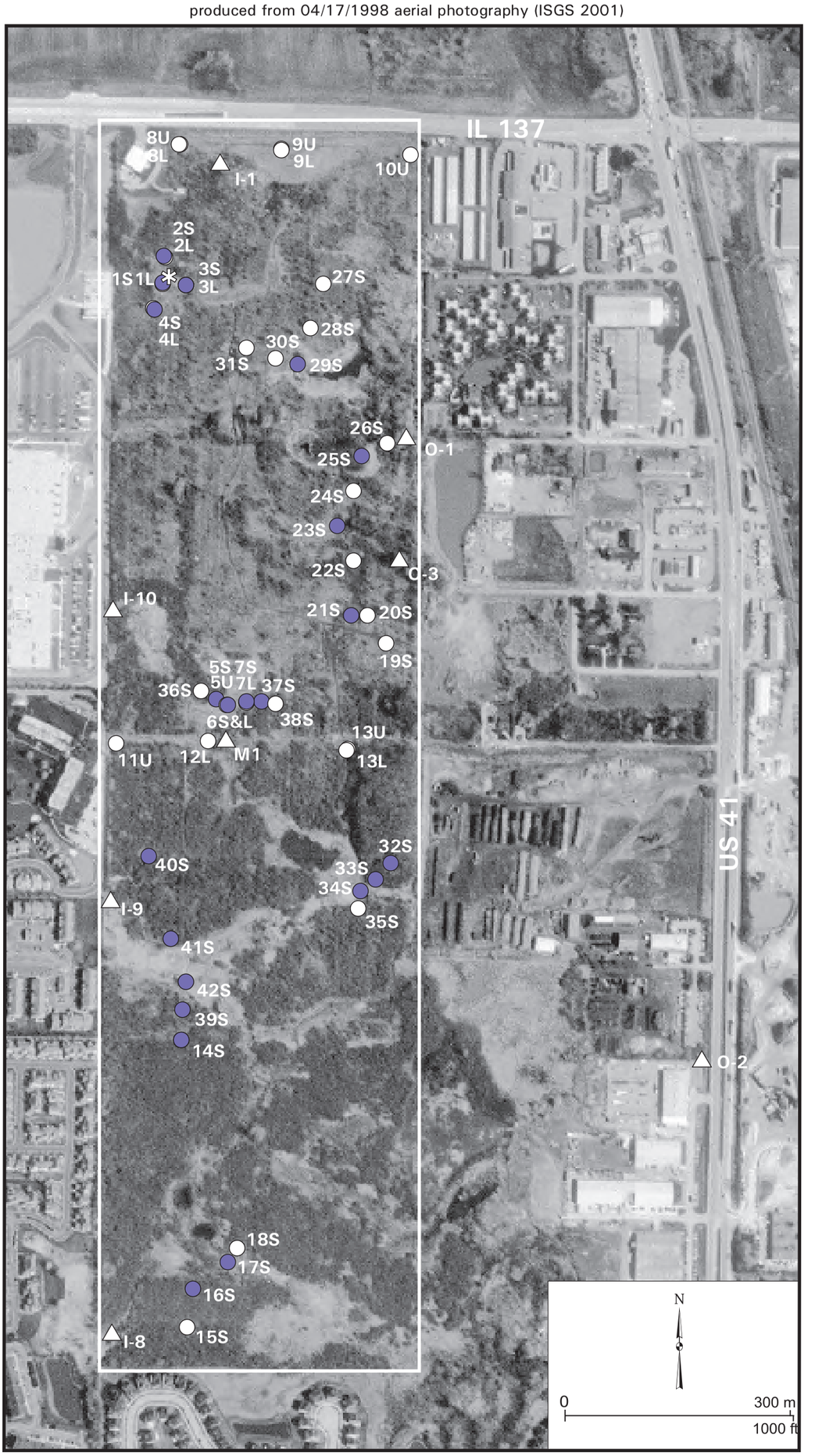


North Chicago Potential Wetland Banking Site

(FAP 120)

Approximate Locations of ISGS Monitoring Instruments

map based on USGS digital orthophotograph, Waukegan, NW quarter quadrangle,
produced from 04/17/1998 aerial photography (ISGS 2001)



monitoring wells that met wetland hydrology criteria in 2001

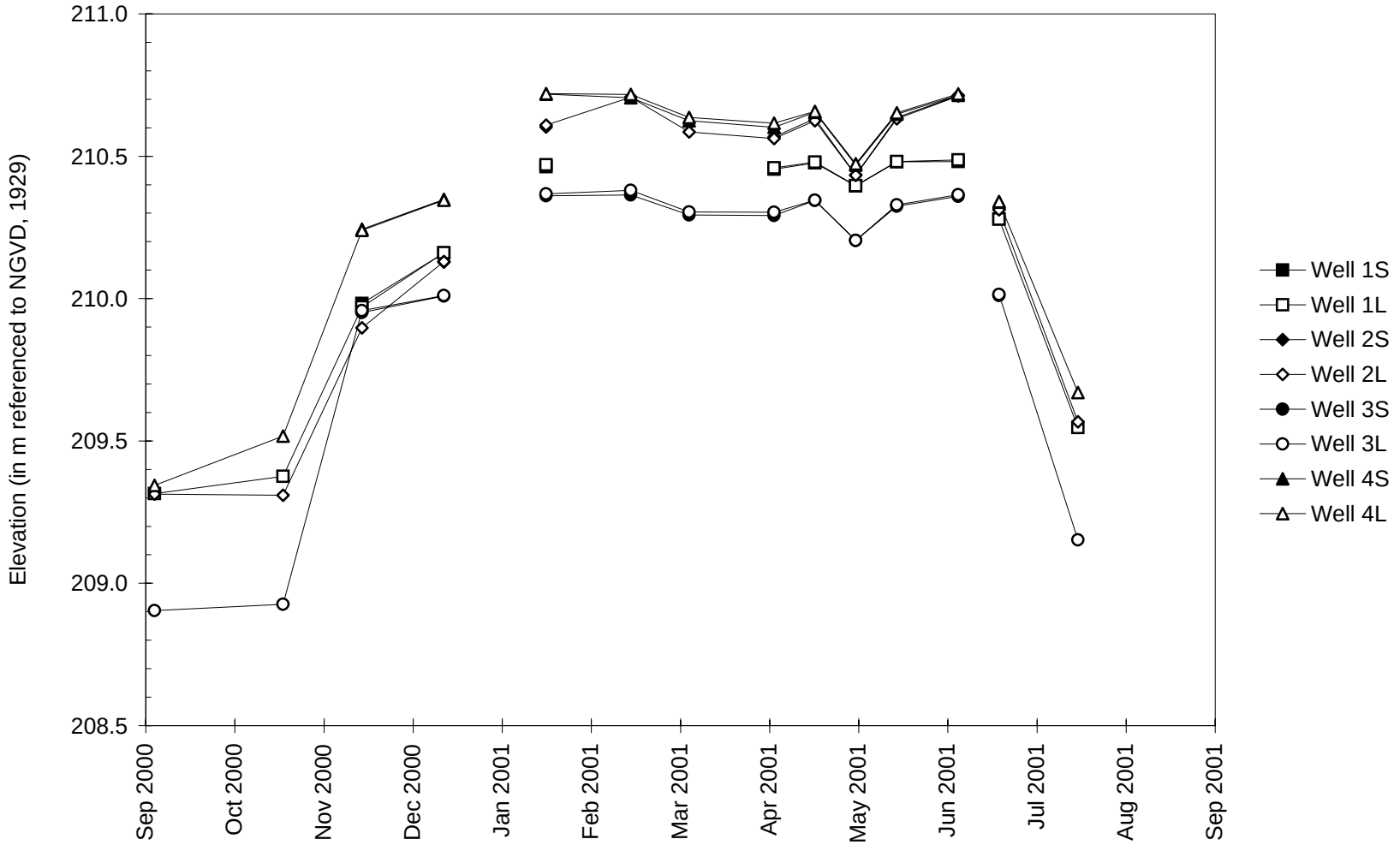
other monitoring wells

RDS data logger

rain gauge

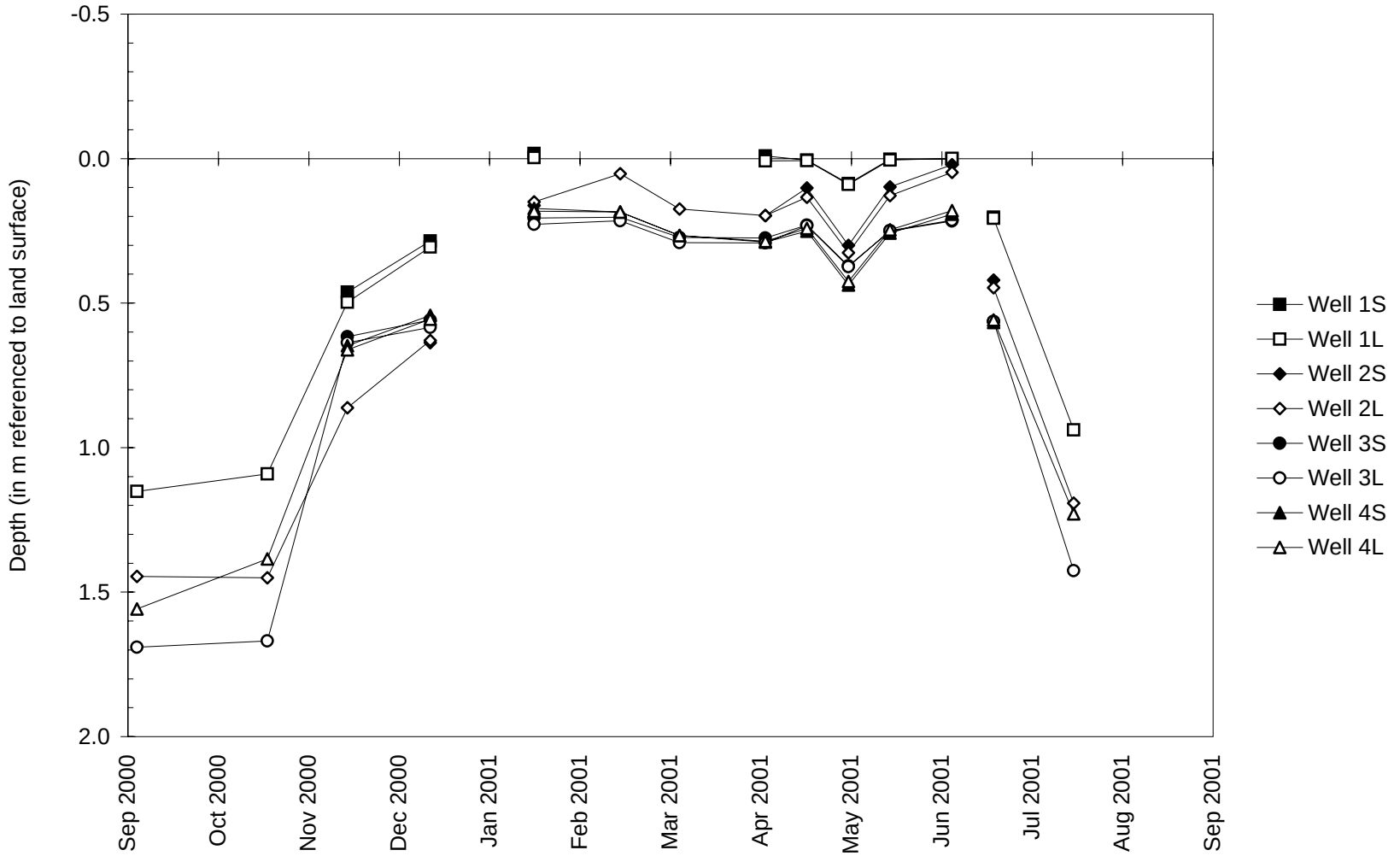
North Chicago Potential Wetland Banking Site
September 1, 2000 to September 1, 2001

Water-Level Elevations



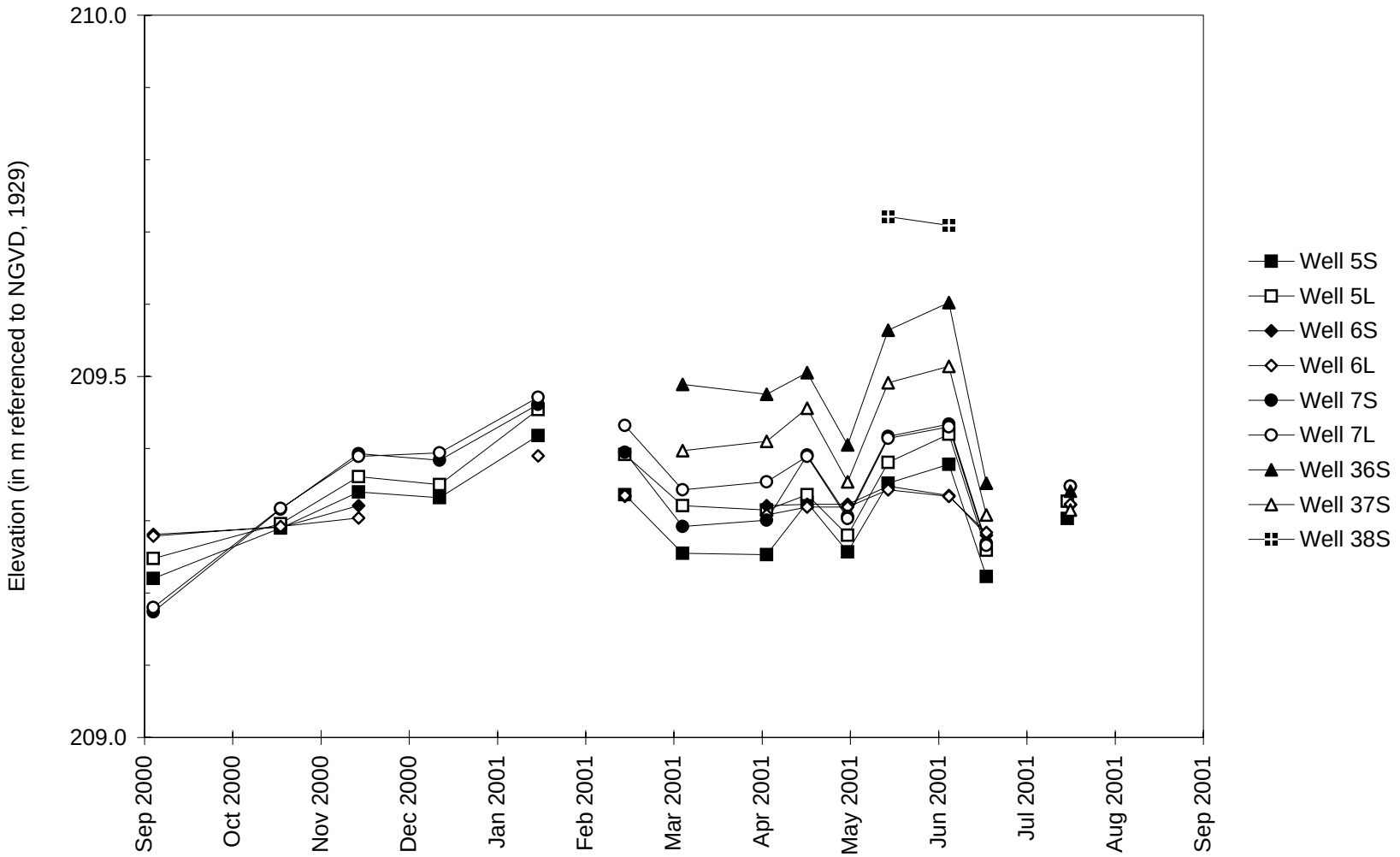
North Chicago Potential Wetland Banking Site
September 1, 2000 to September 1, 2001

Depth to Water



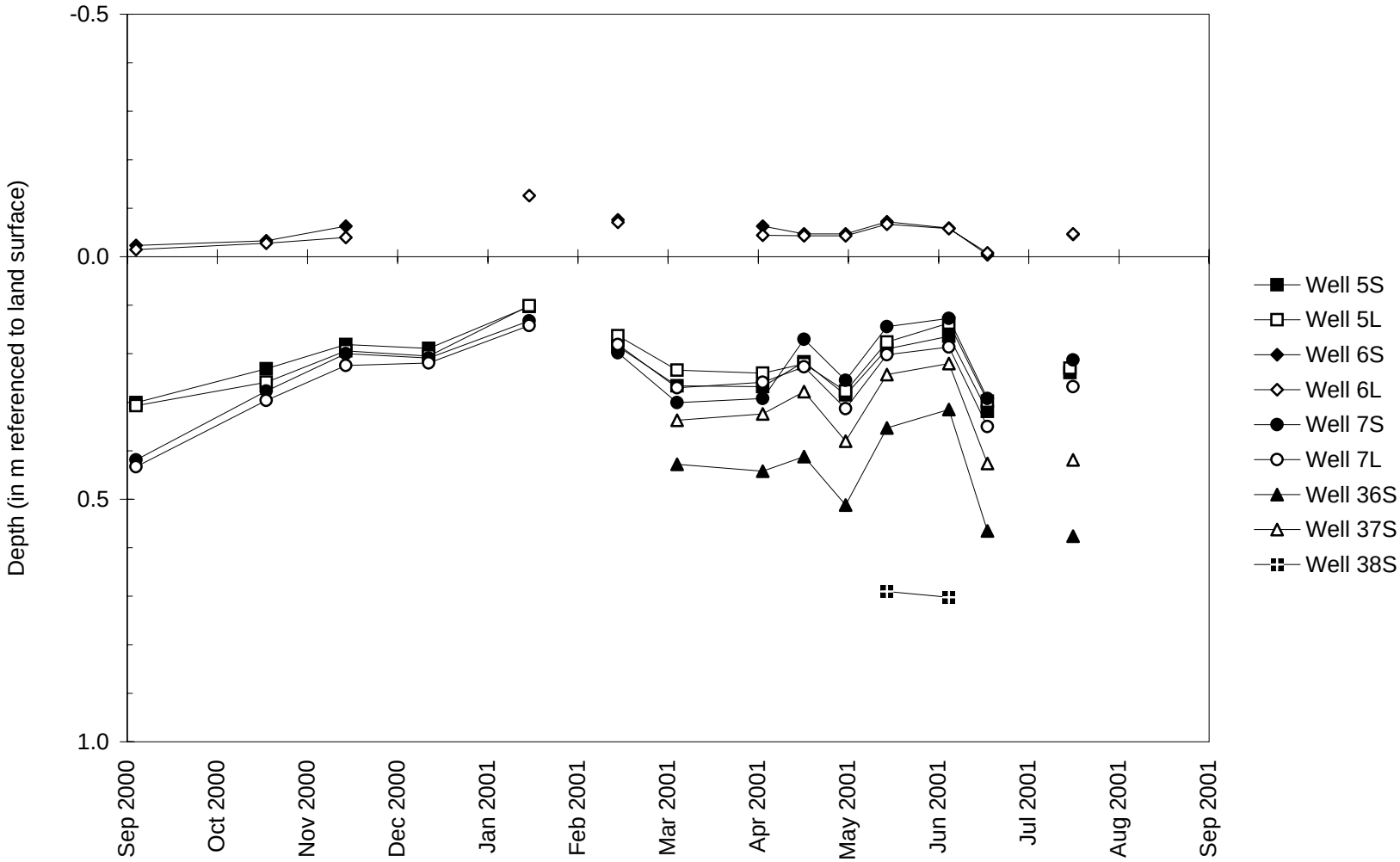
North Chicago Potential Wetland Banking Site
September 1, 2000 to September 1, 2001

Water-Level Elevations



North Chicago Potential Wetland Banking Site
September 1, 2000 to September 1, 2001

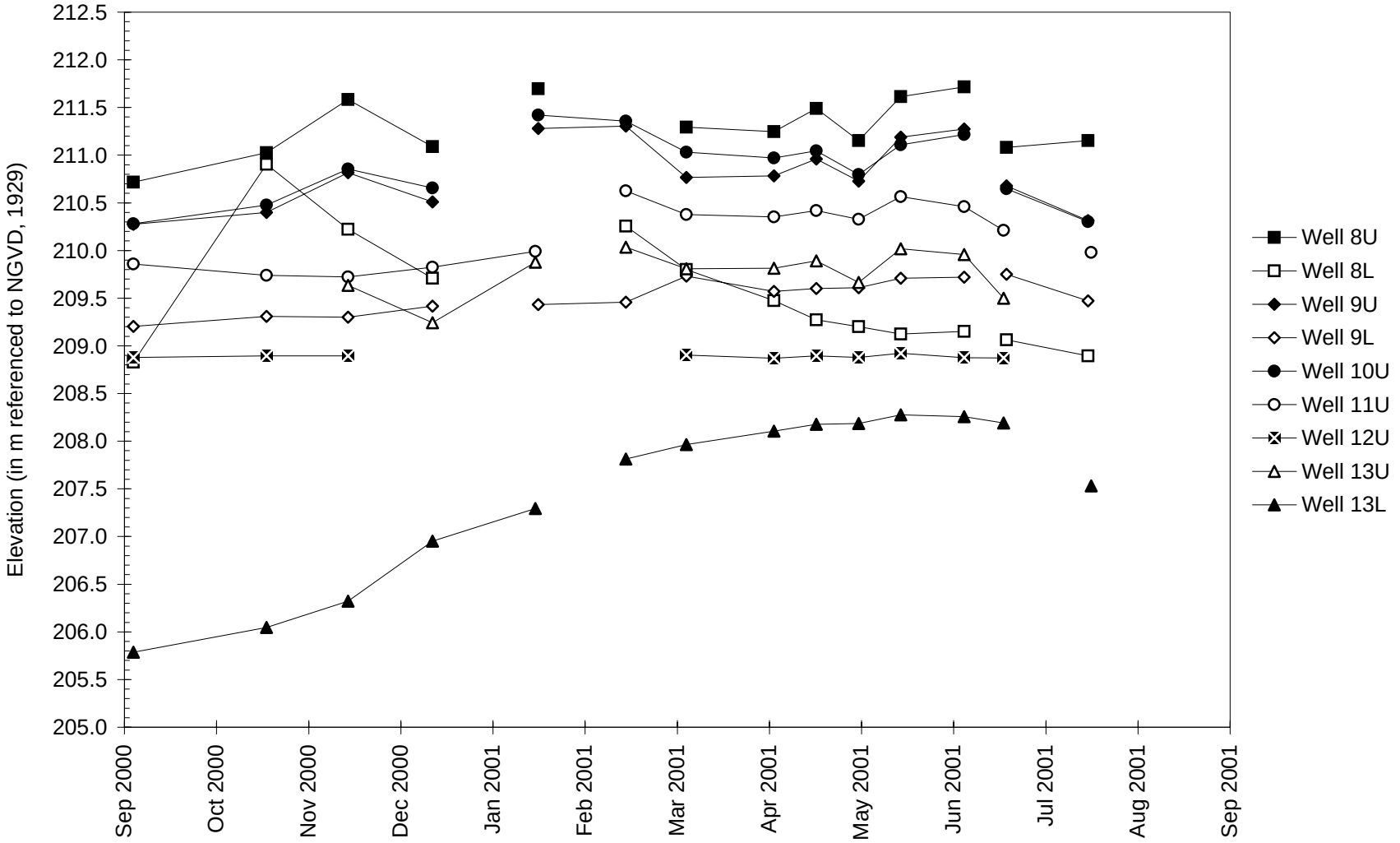
Depth to Water



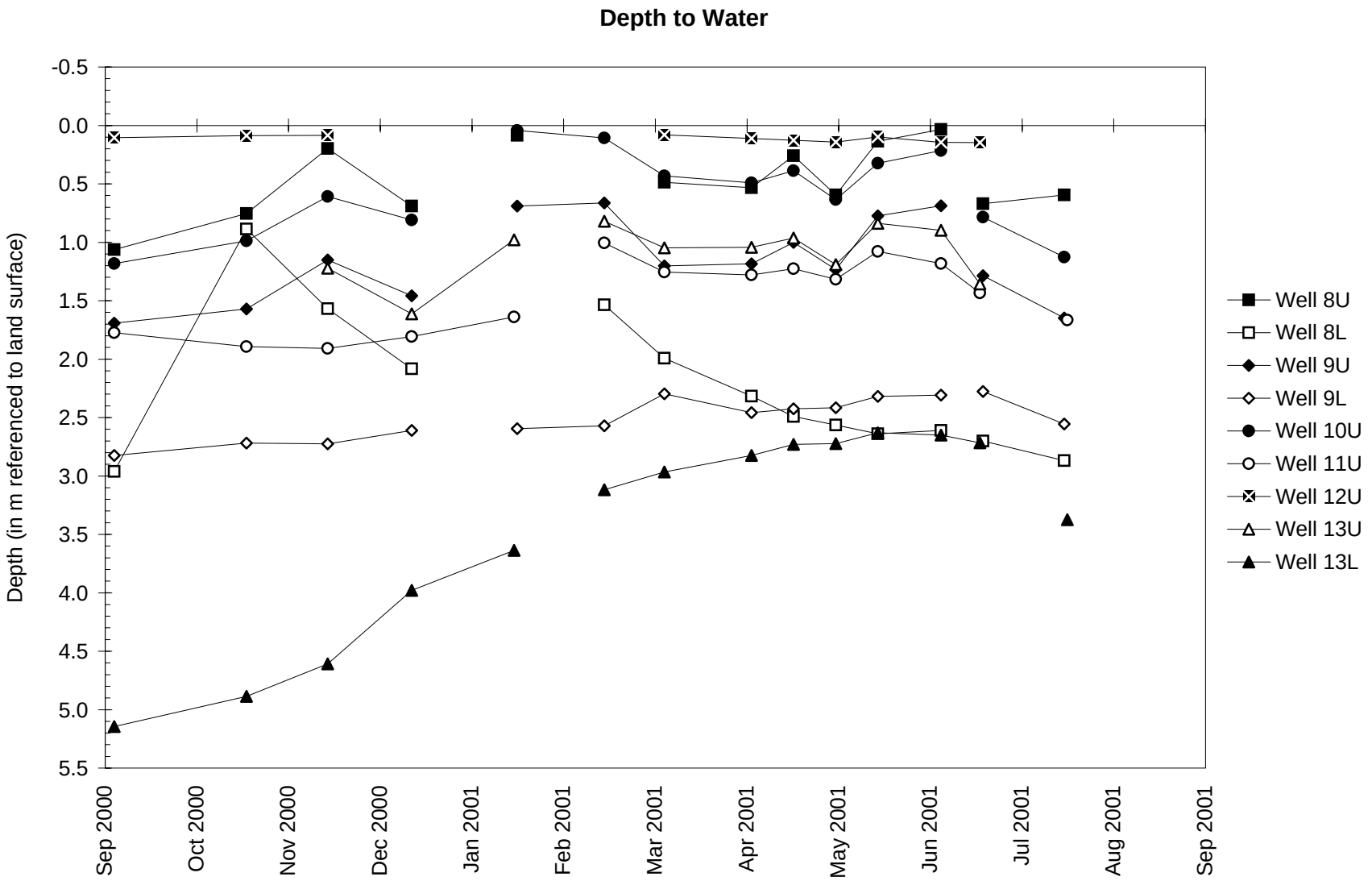
North Chicago Potential Wetland Banking Site

September 1, 2000 to September 1, 2001

Water-Level Elevations

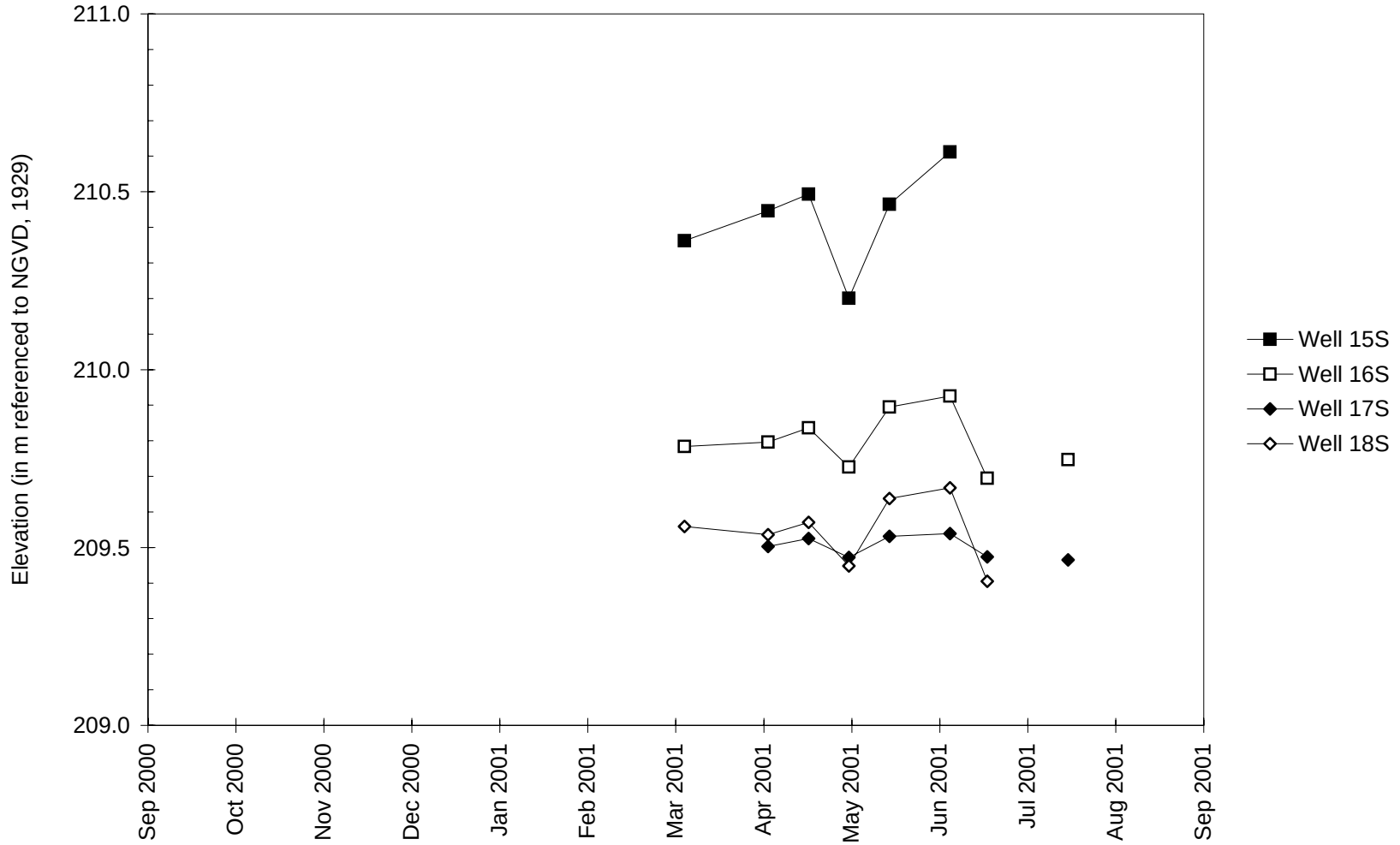


North Chicago Potential Wetland Banking Site
September 1, 2000 to September 1, 2001



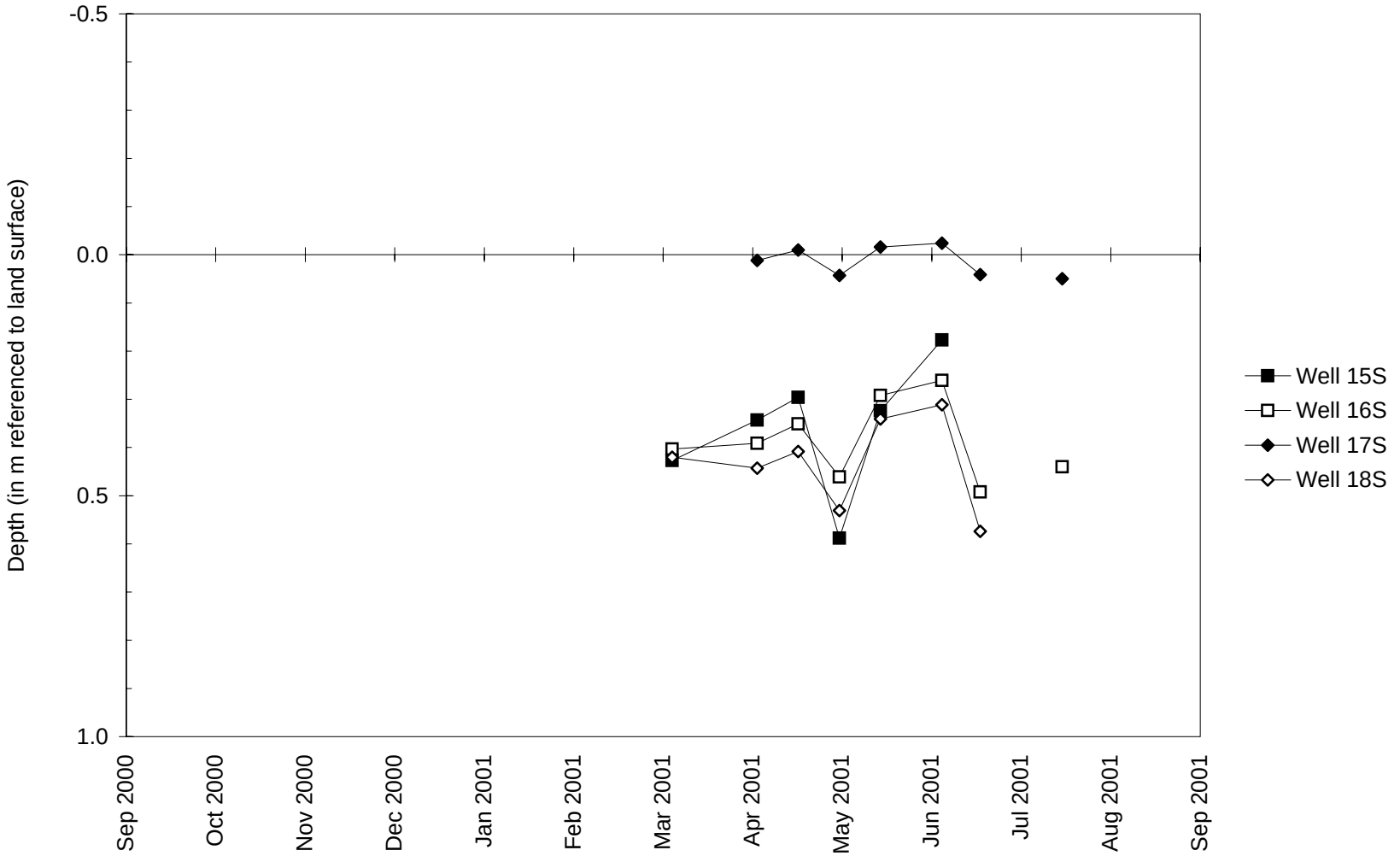
North Chicago Potential Wetland Banking Site
September 1, 2000 to September 1, 2001

Water-Level Elevations



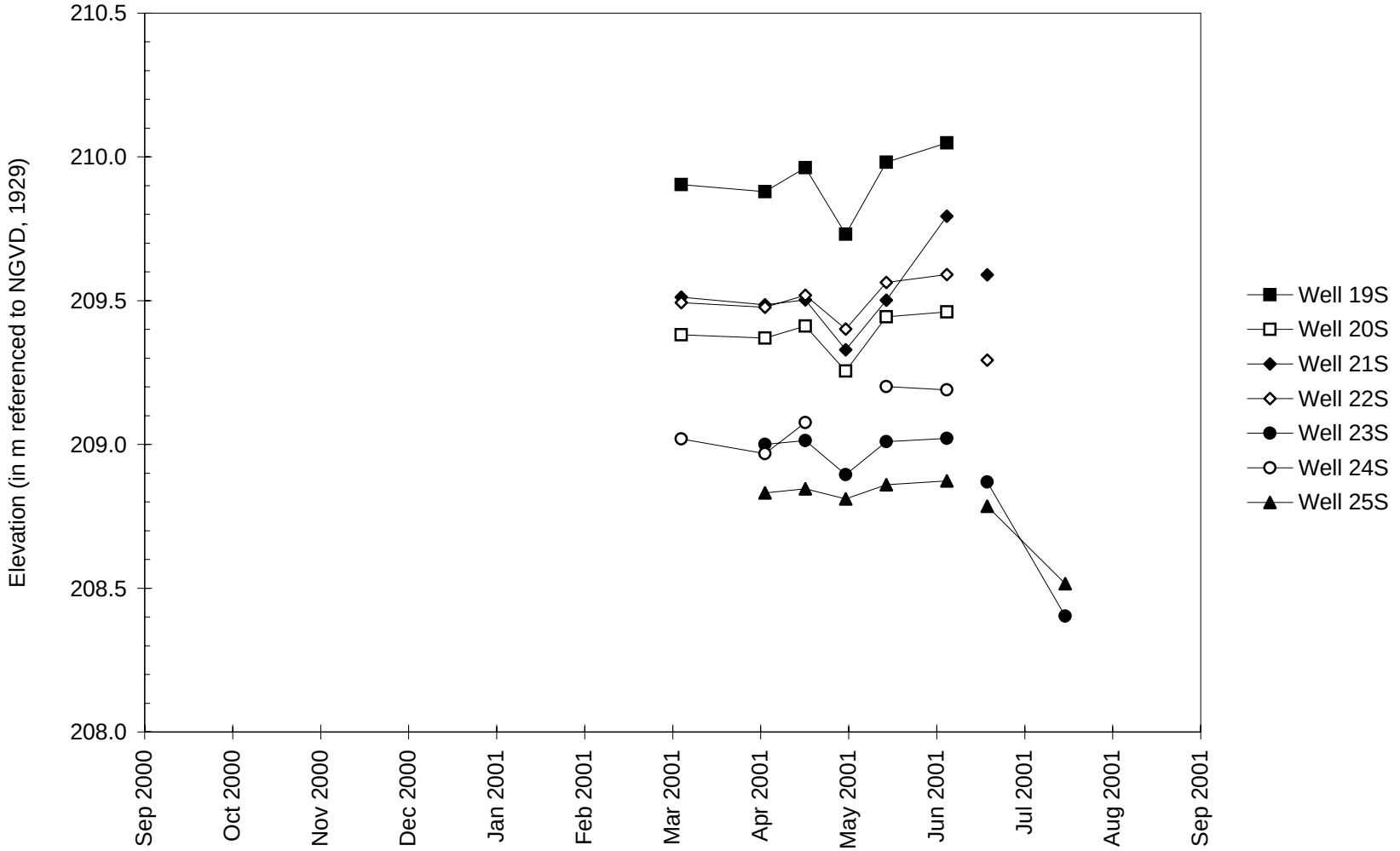
North Chicago Potential Wetland Banking Site
September 1, 2000 to September 1, 2001

Depth to Water



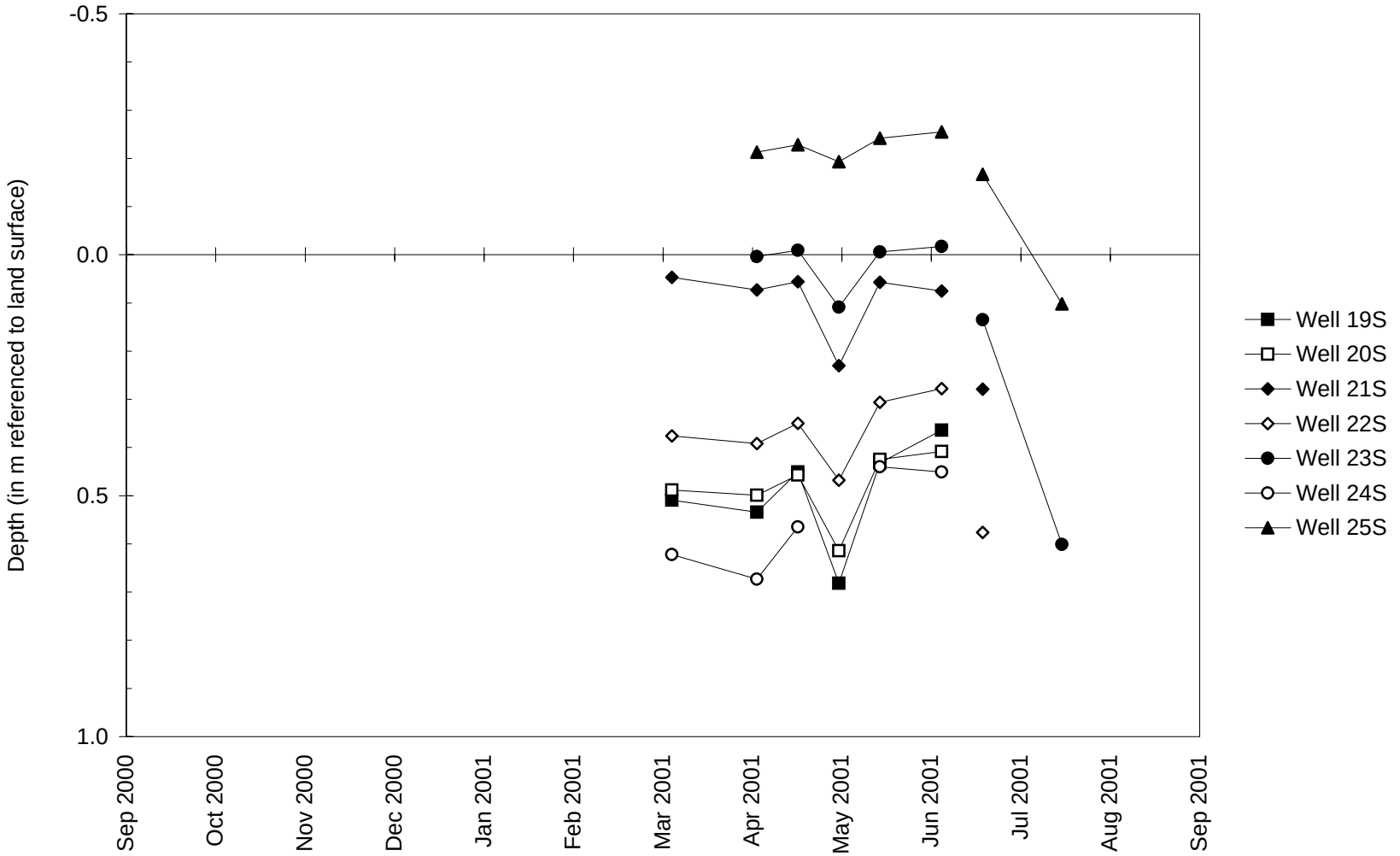
North Chicago Potential Wetland Banking Site
September 1, 2000 to September 1, 2001

Water-Level Elevations



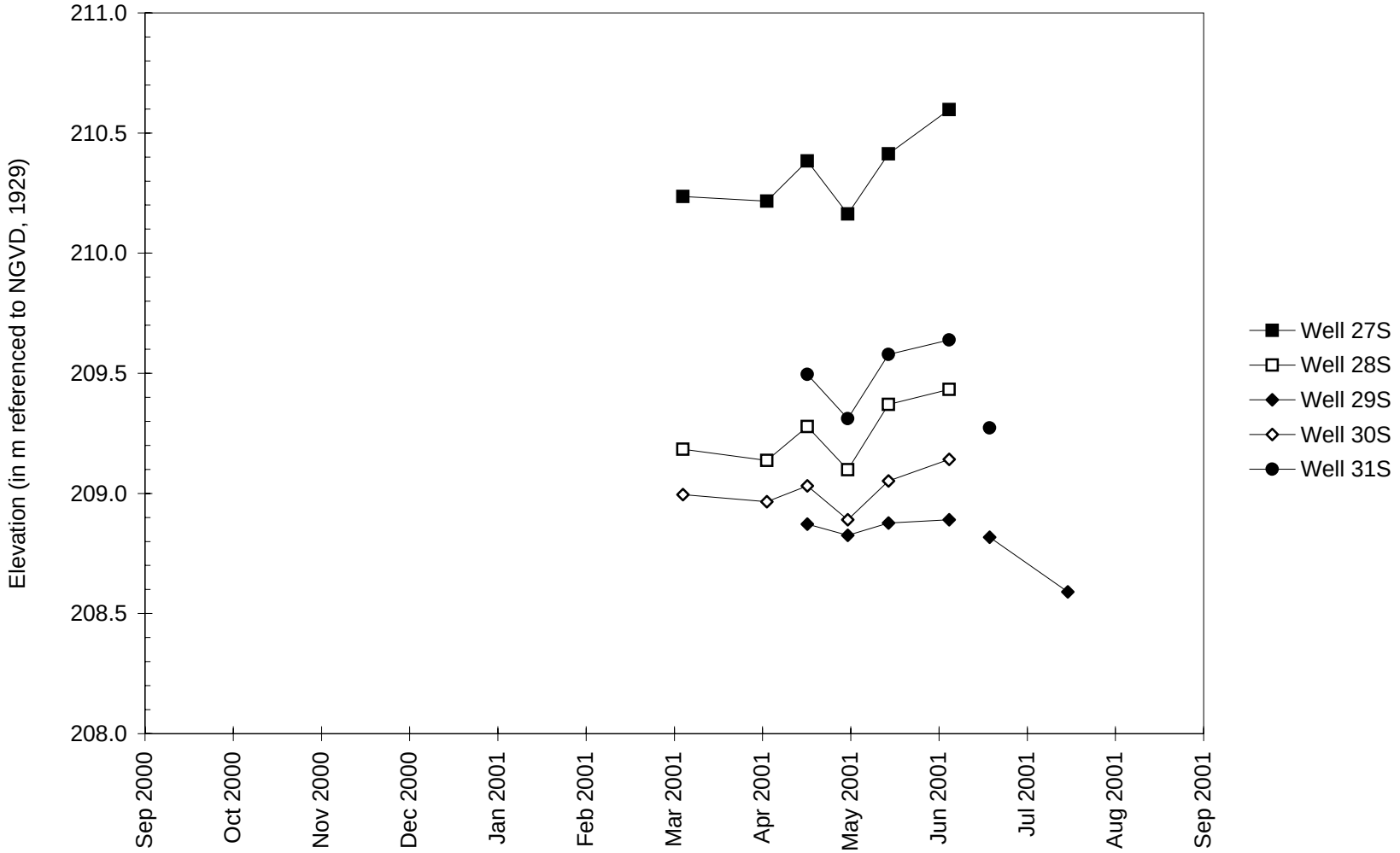
North Chicago Potential Wetland Banking Site
September 1, 2000 to September 1, 2001

Depth to Water



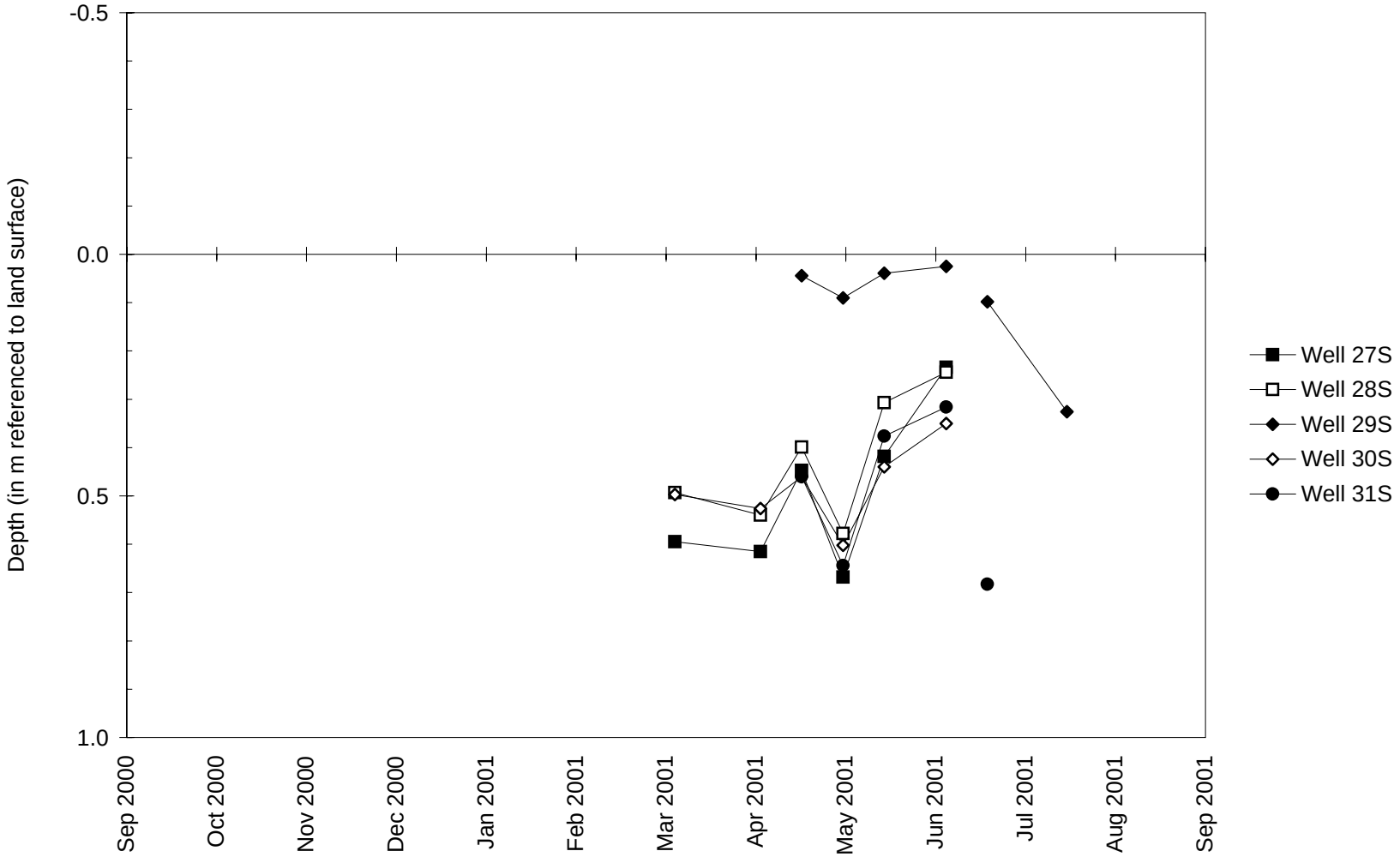
North Chicago Potential Wetland Banking Site
September 1, 2000 to September 1, 2001

Water-Level Elevations



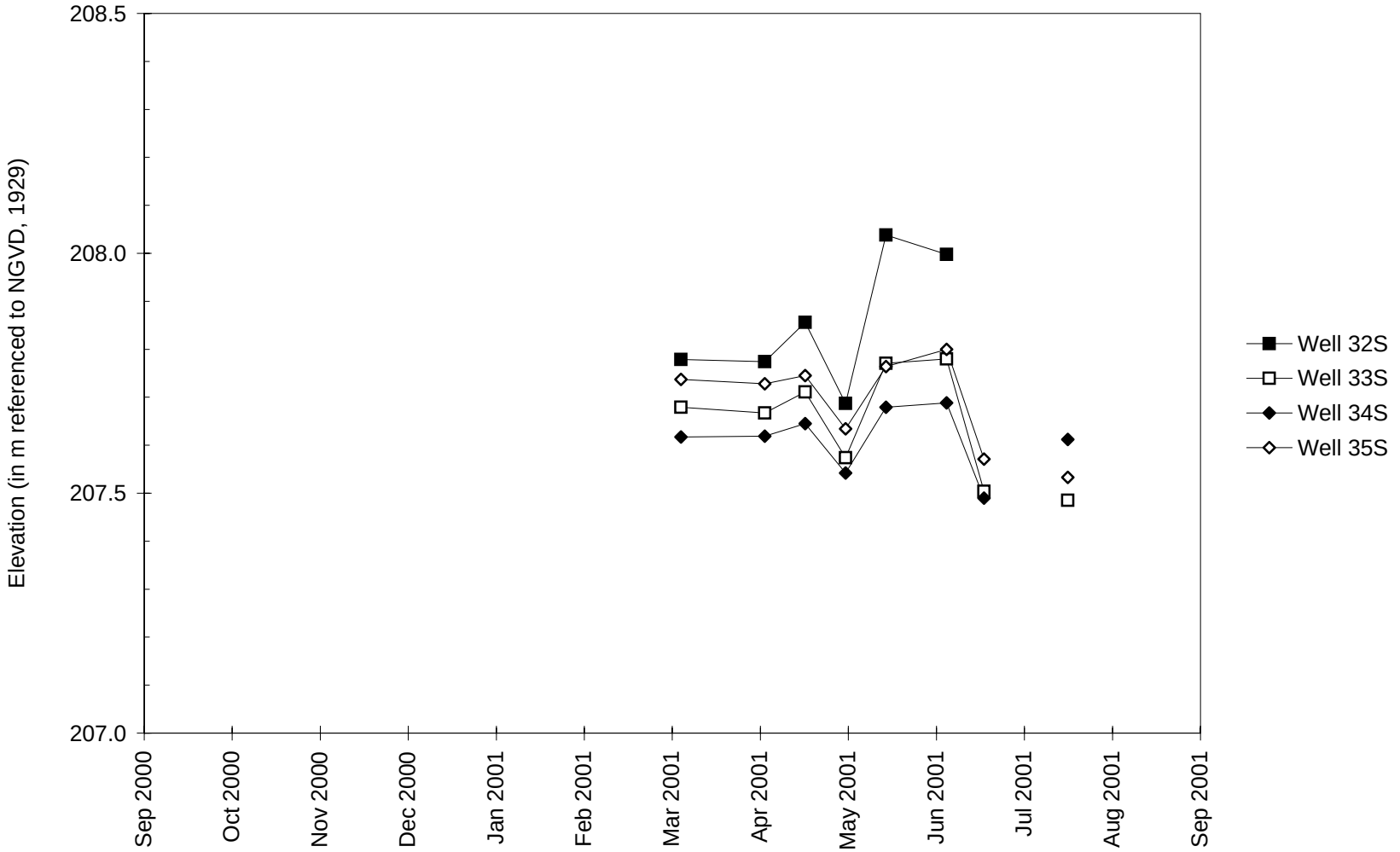
North Chicago Potential Wetland Banking Site
September 1, 2000 to September 1, 2001

Depth to Water



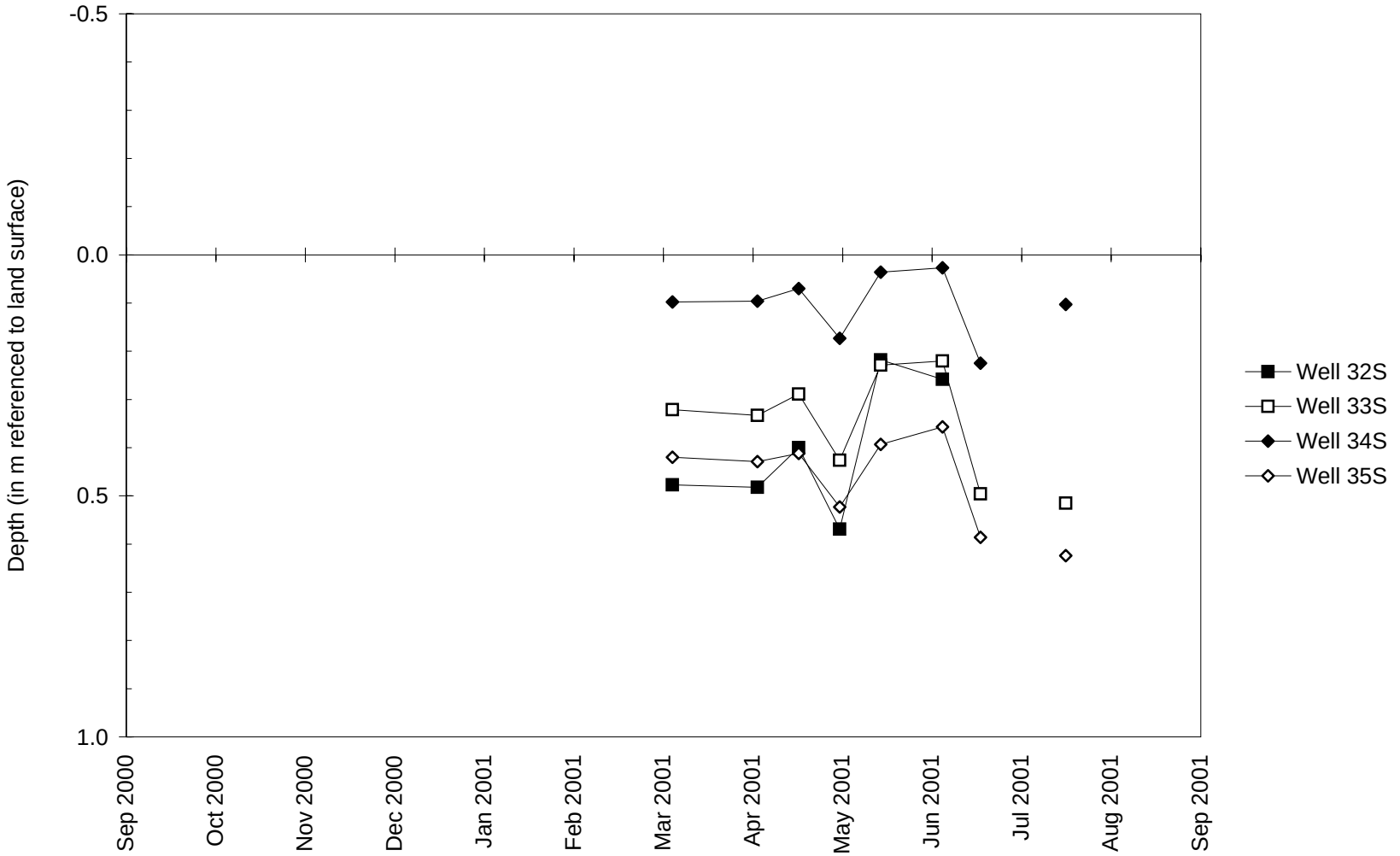
North Chicago Potential Wetland Banking Site
September 1, 2000 to September 1, 2001

Water-Level Elevations



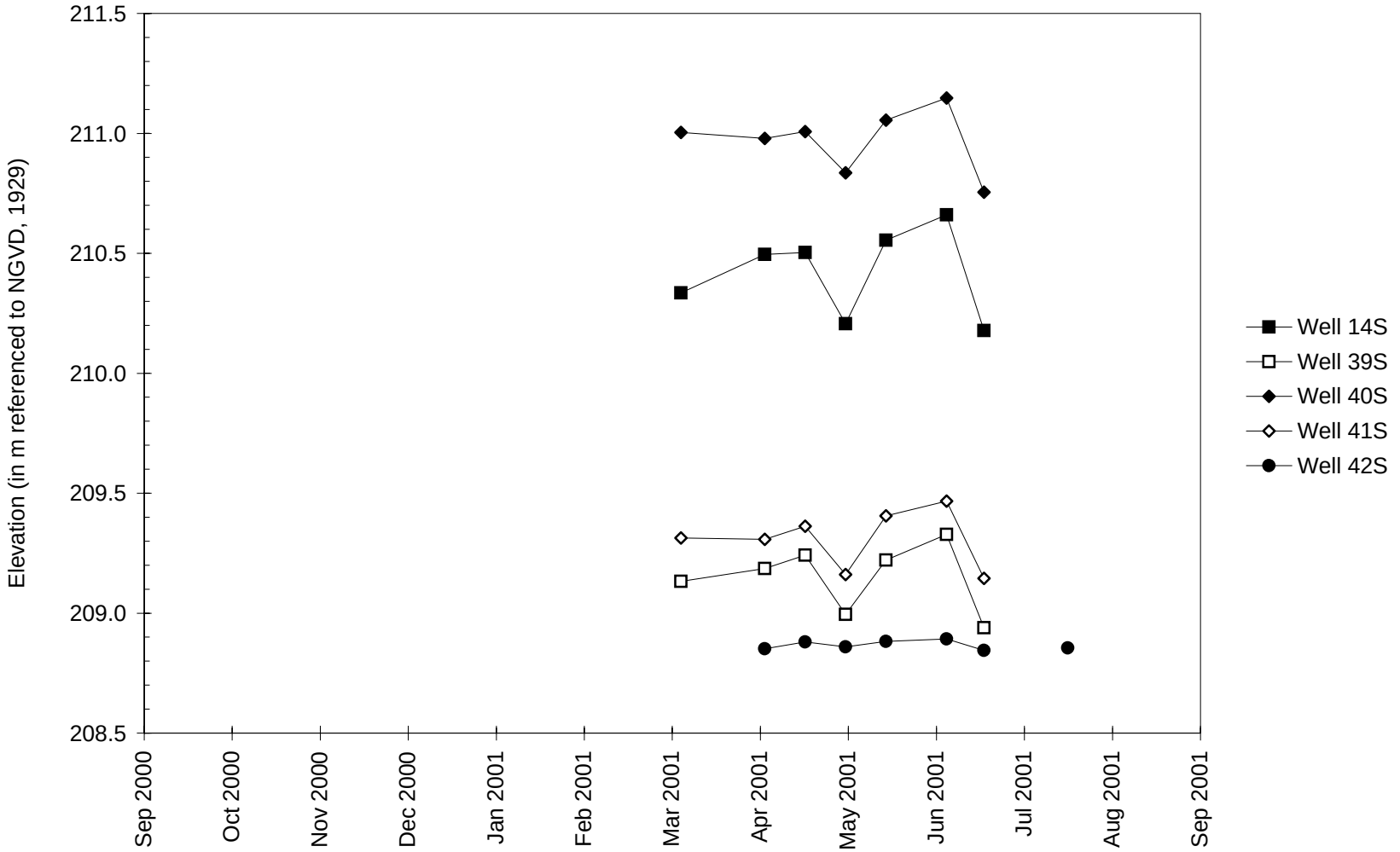
North Chicago Potential Wetland Banking Site
September 1, 2000 to September 1, 2001

Depth to Water



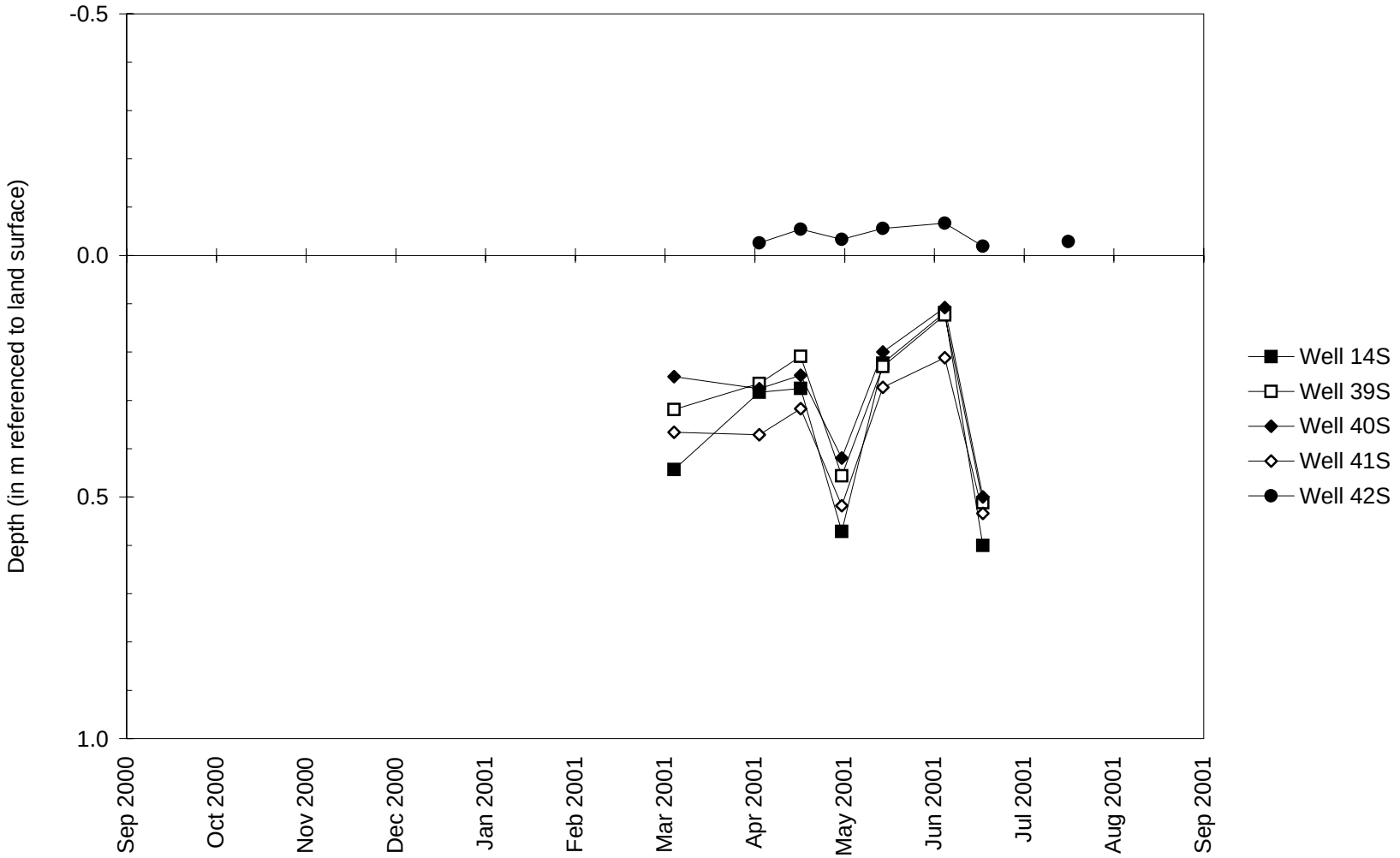
North Chicago Potential Wetland Banking Site
September 1, 2000 to September 1, 2001

Water-Level Elevations

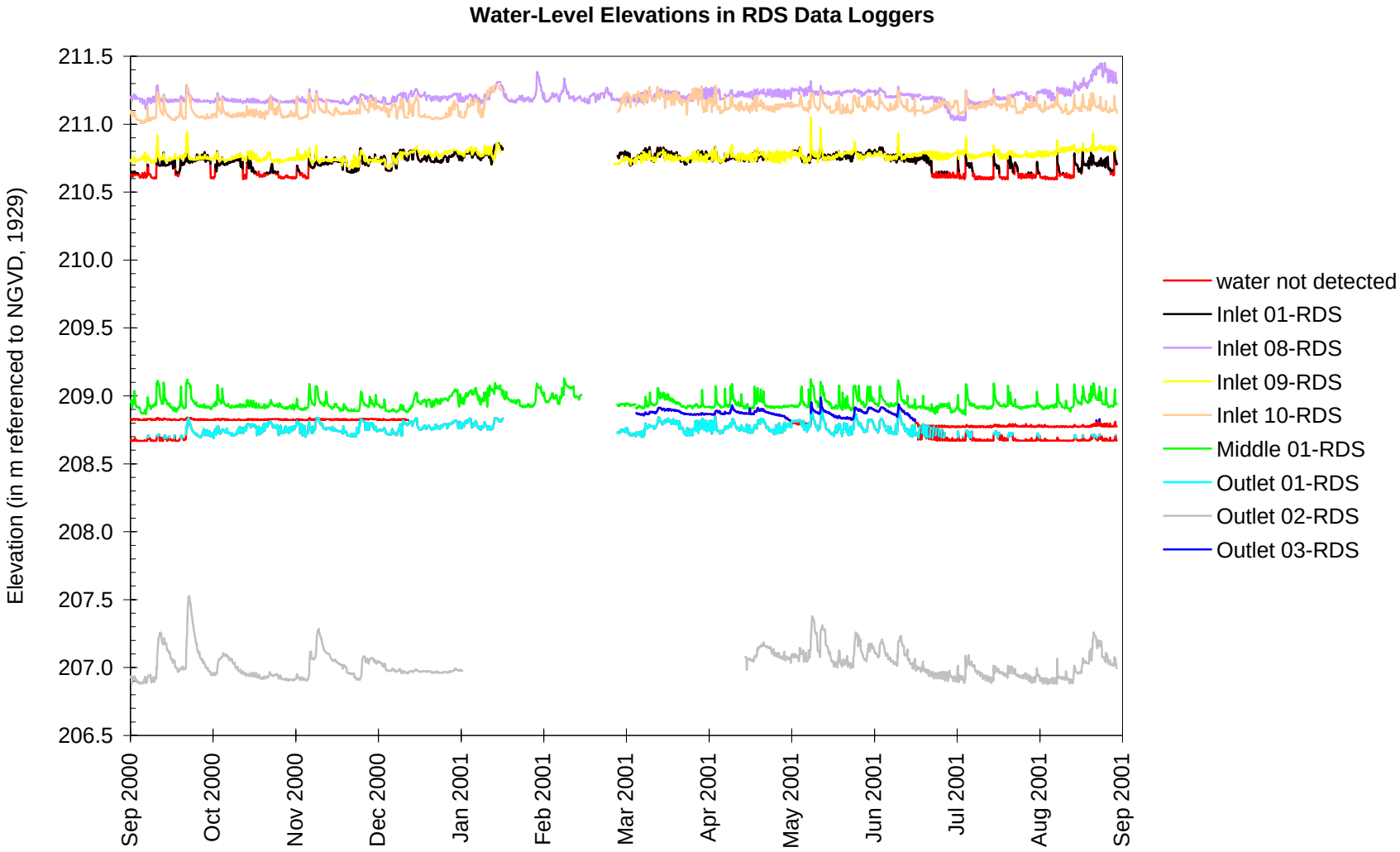


North Chicago Potential Wetland Banking Site
September 1, 2000 to September 1, 2001

Depth to Water

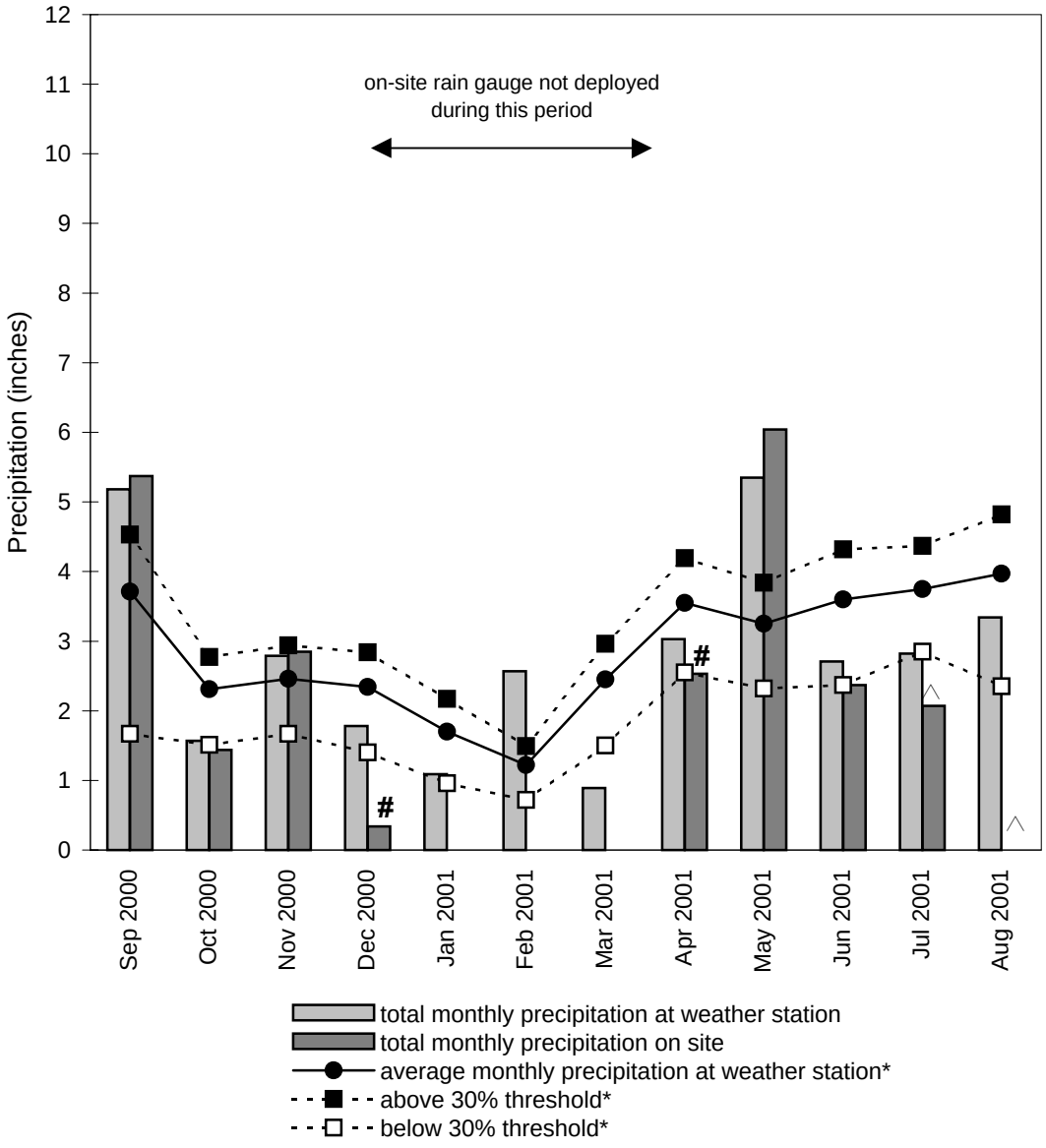


North Chicago Potential Wetland Banking Site
September 1, 2000 to September 1, 2001



North Chicago Potential Wetland Banking Site
September 2000 through August 2001

Total Monthly Precipitation Recorded On Site and at the Waukegan, IL Weather Station



on-site rain gauge not deployed for entire month
△ suspect data: collector clogged, represents minimum value for the month
* see text for explanation

Graph last updated October 4, 2001

HANCOCK COUNTY NEAR CARTHAGE **ISGS #42**
POTENTIAL WETLAND COMPENSATION SITE
FAP 315 & 10
Hancock County, near Carthage, Illinois
Primary Project Manager: Blaine A. Watson
Secondary Project Manager: James J. Miner

SITE HISTORY

- October 1997: IDOT obtained landowner permission for the ISGS to begin work.
- February 1998: ISGS installed monitoring wells and began a hydrogeologic characterization of the site.
- September 1999: ISGS installed a surface-water data logger (Infinities sonic) to record stage fluctuations of the La Moine River.
- May 2000: ISGS collected GPS data on locations of all site instruments.
- August 2000: ISGS presented a summary of hydrologic data gathered to-date and participated in general site discussion at a planning meeting with IDOT and Christopher B. Burke Engineering, Ltd. The meeting included discussion of wetland design concerns and construction ideas for the final compensation plan at the site.

WETLAND HYDROLOGY CALCULATION FOR 2001

We estimate that the total area of the site that conclusively satisfied wetland hydrology criteria in 2001 is 23.0 ac (9.2 ha) out of an area of 40 ac (16.2 ha). By comparison, the area of wetland hydrology in 2000 was approximately 8.5 ac (3.4 ha). This year's estimate is based on the following factors:

- According to the Midwestern Climate Center, the median date that the growing season begins in La Harpe is April 11 and the season lasts 192 days; 12.5% of the growing season is 24 days.
- With the exception of December (gauge not deployed entire month), on-site precipitation in 2000 was within the normal range. During January, February, April, May, June, and July 2001, precipitation at the site or in the site vicinity was within or above the normal range. During March 2001, precipitation was below the normal range. During the period from September 2000 to August 2001, total precipitation at the site was 93% of normal (August 2001 climate station data was not available and isn't included in this value). This is compared to 98% of normal for the period from September 1999 through August 2000.
- In 2001, water levels measured in the following wells conclusively satisfied the wetland hydrology criteria of the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual: wells 1U, 2U, 3U, 4U, 5U, 6U, 8U, 10S, 11S, 12S, 13S, 14S, and 16S. Water levels in wells 7S, 9S, and 15S may have satisfied the wetland hydrology criteria, but did not do so conclusively.

- Limitations of the wetland hydrology determination are as follows:
  - There is a small area of upland between wells 6U, 10S, 12S, and 13S that was excluded on the basis of topographic elevation. It is at a higher ground-surface elevation than wells 12S and 13S, both of which met wetland hydrology criteria as a result of data extrapolation.
  - The wetland hydrology boundary north of well 3U is also based on topographic elevation. This area has ground-surface elevations similar to that of well 15S and has been excluded from the area meeting wetland hydrology criteria.

PLANNED FUTURE ACTIVITIES

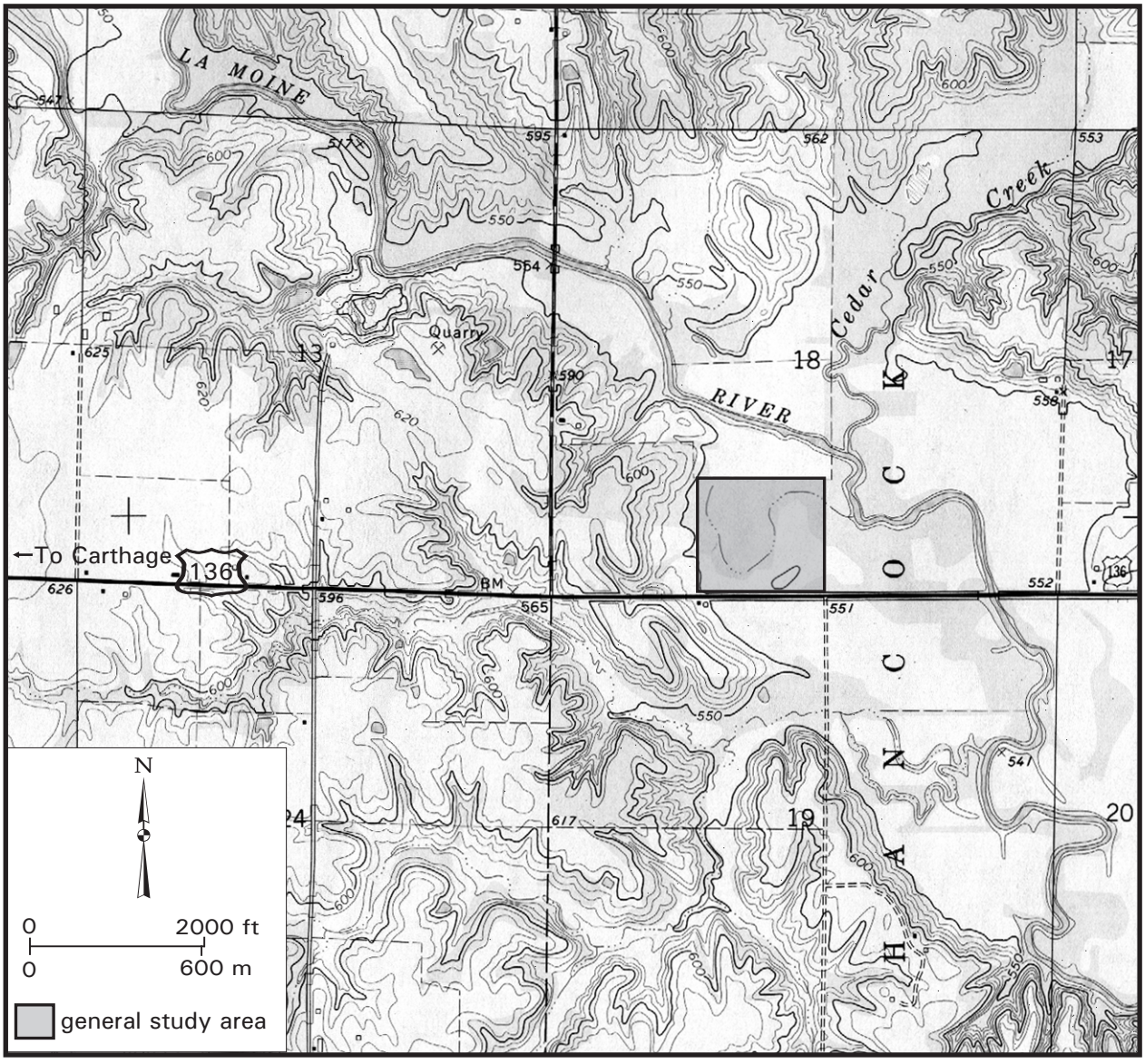
- Monitoring of the site will continue until no longer required by IDOT.

- Installation of additional monitoring wells along wetland/non-wetland boundaries will serve to further define the extent of wetland hydrology.

Hancock County near Carthage
Potential Wetland Compensation Site
(FAP 315 and FAP 10)

General Study Area and Vicinity

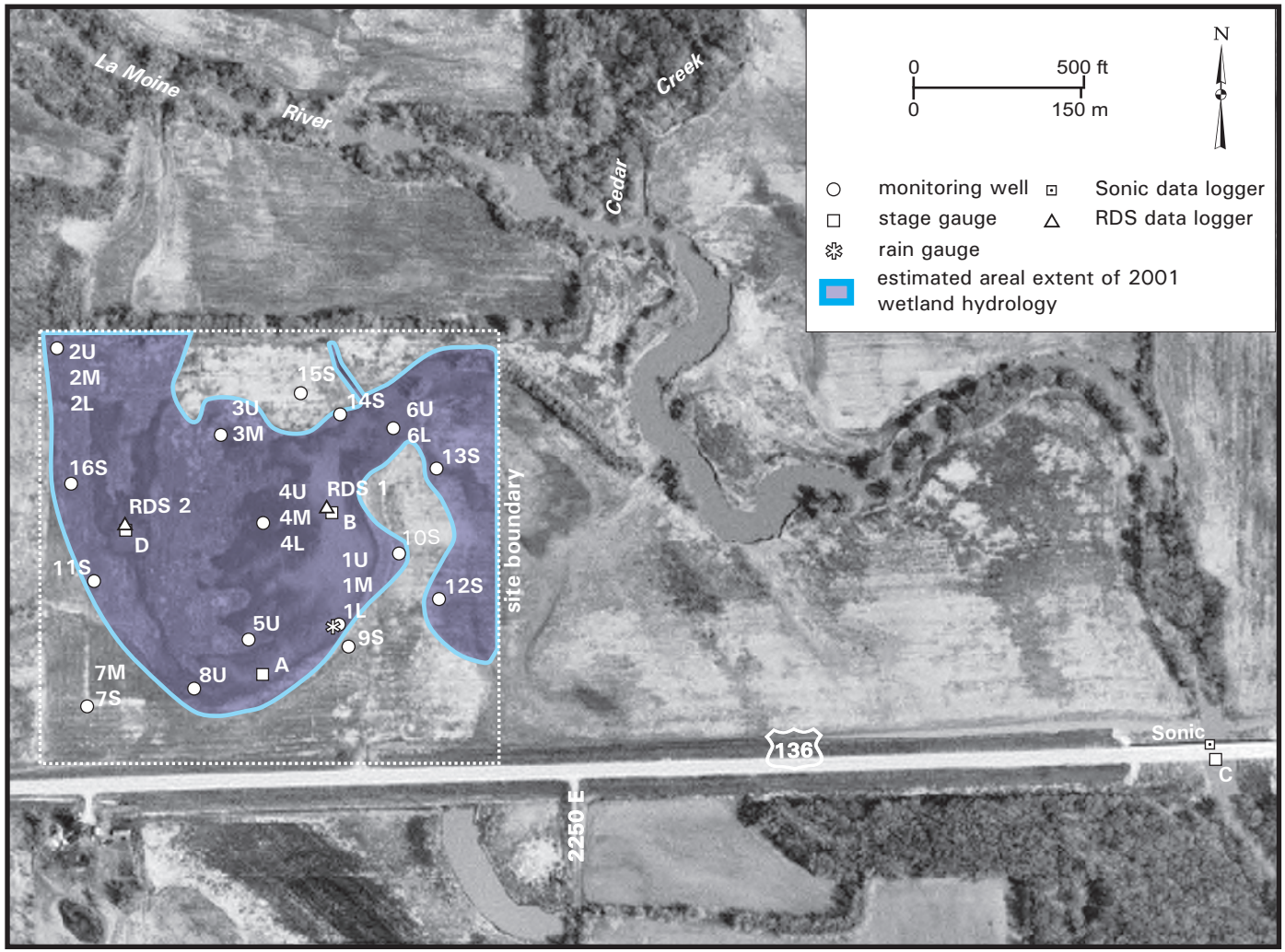
from the USGS Topographic Series, Carthage East, IL 7.5-minute Quadrangle (USGS 1974)
contour interval is 10 feet



Hancock County near Carthage Potential Wetland Compensation Site (FAP 315 and FAP 10)

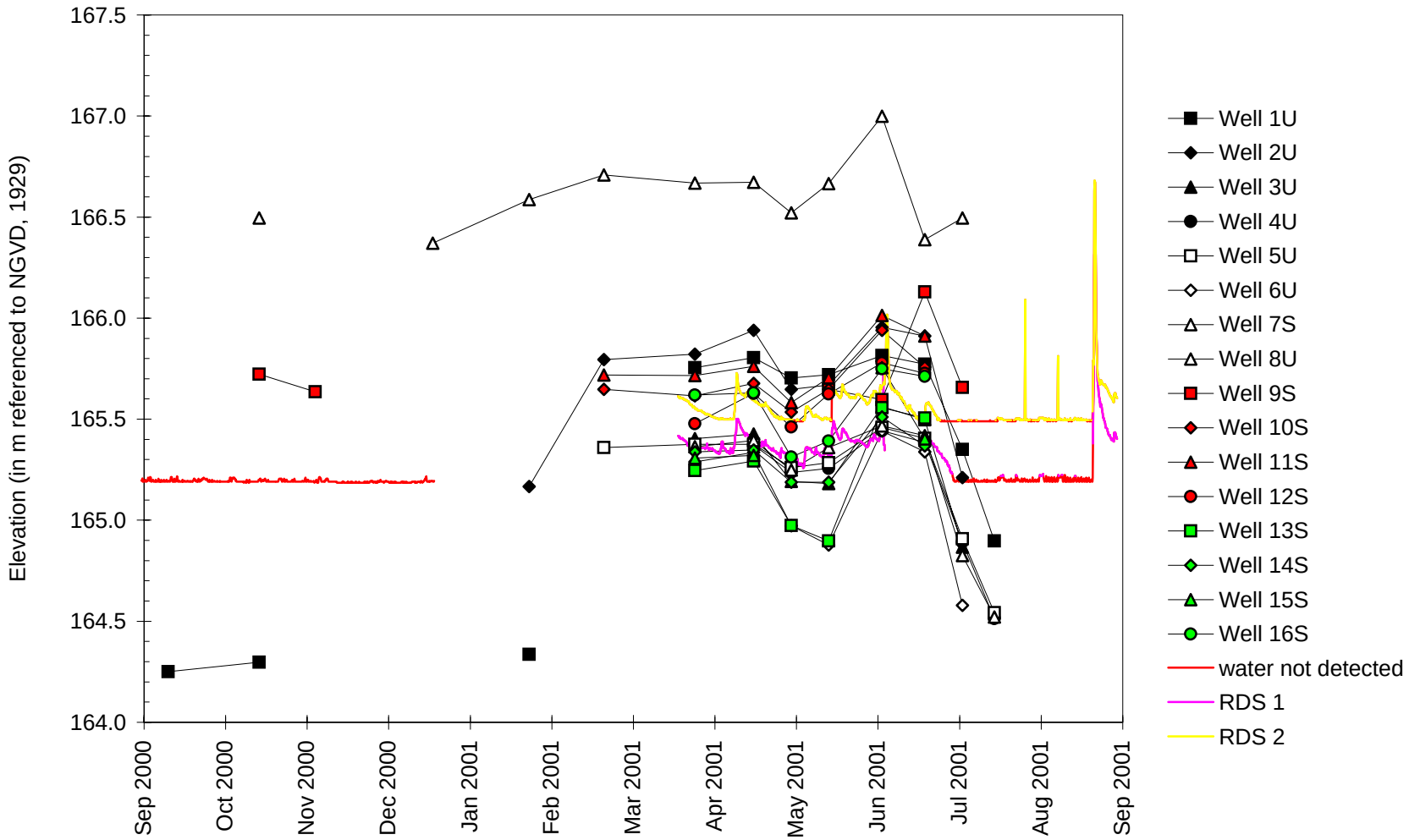
Estimated Areal Extent of 2001 Wetland Hydrology

map based on USGS digital orthophotograph Carthage East, SE quarter quadrangle
produced from 4/14/98 aerial photography (ISGS 2001)



Hancock County near Carthage Potential Wetland Compensation Site
September 1, 2000 to September 1, 2001

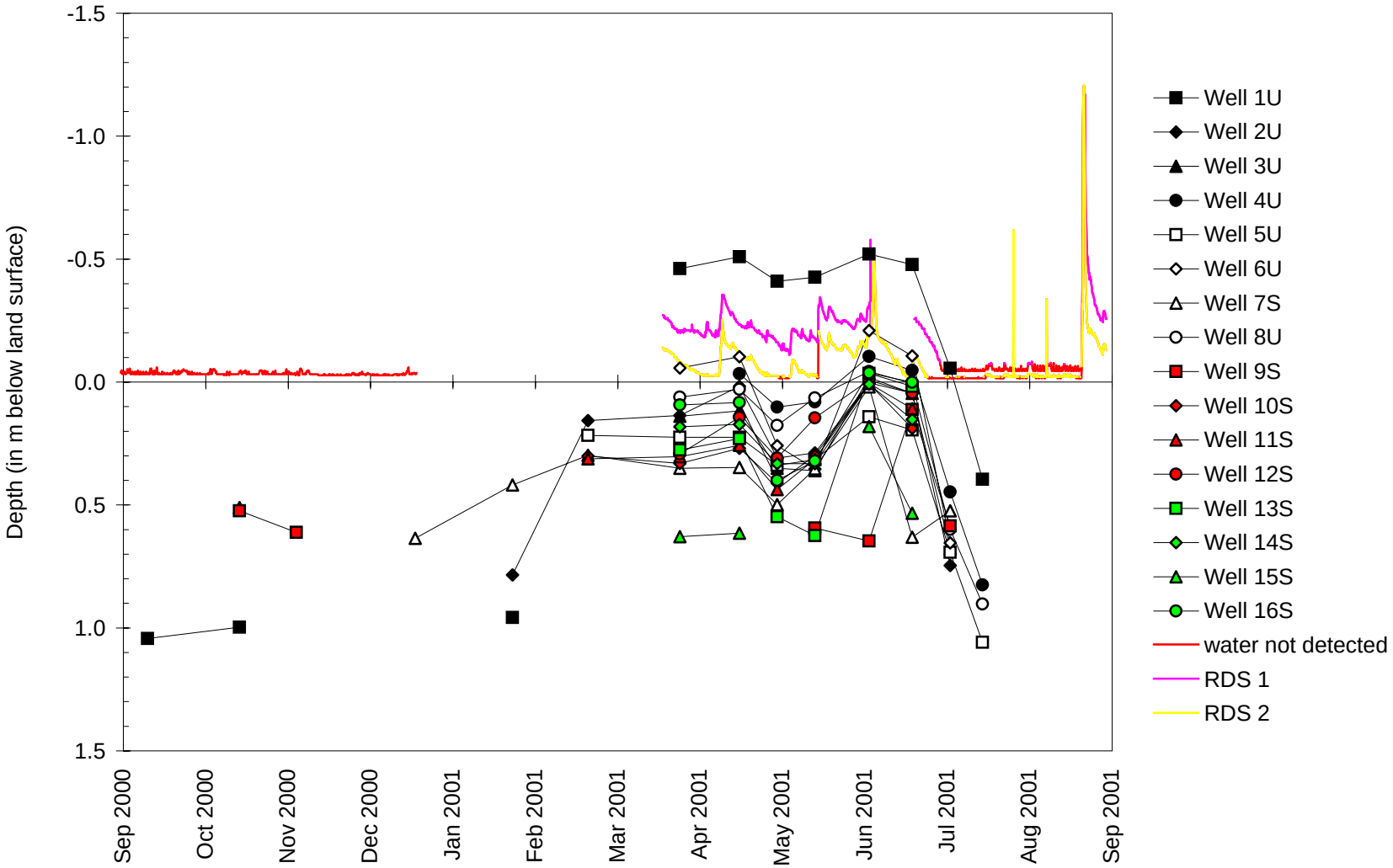
Water-Level Elevations
in Wells used to Determine Areas Satisfying Wetland Hydrology Criteria



Hancock County near Carthage Potential Wetland Compensation Site

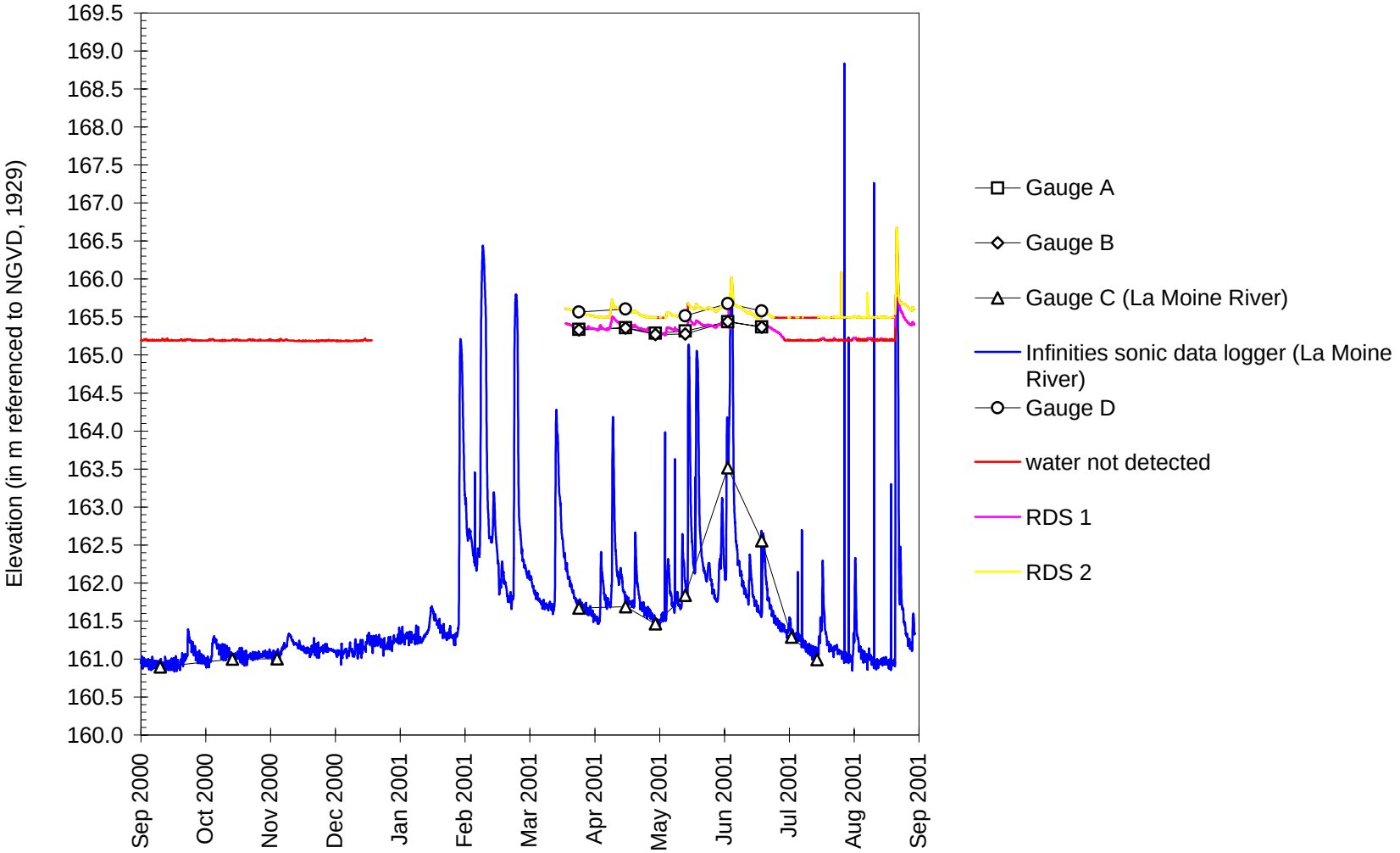
September 1, 2000 to September 1, 2001

Depth to Water
in Wells used to Determine Areas Satisfying Wetland Hydrology Criteria



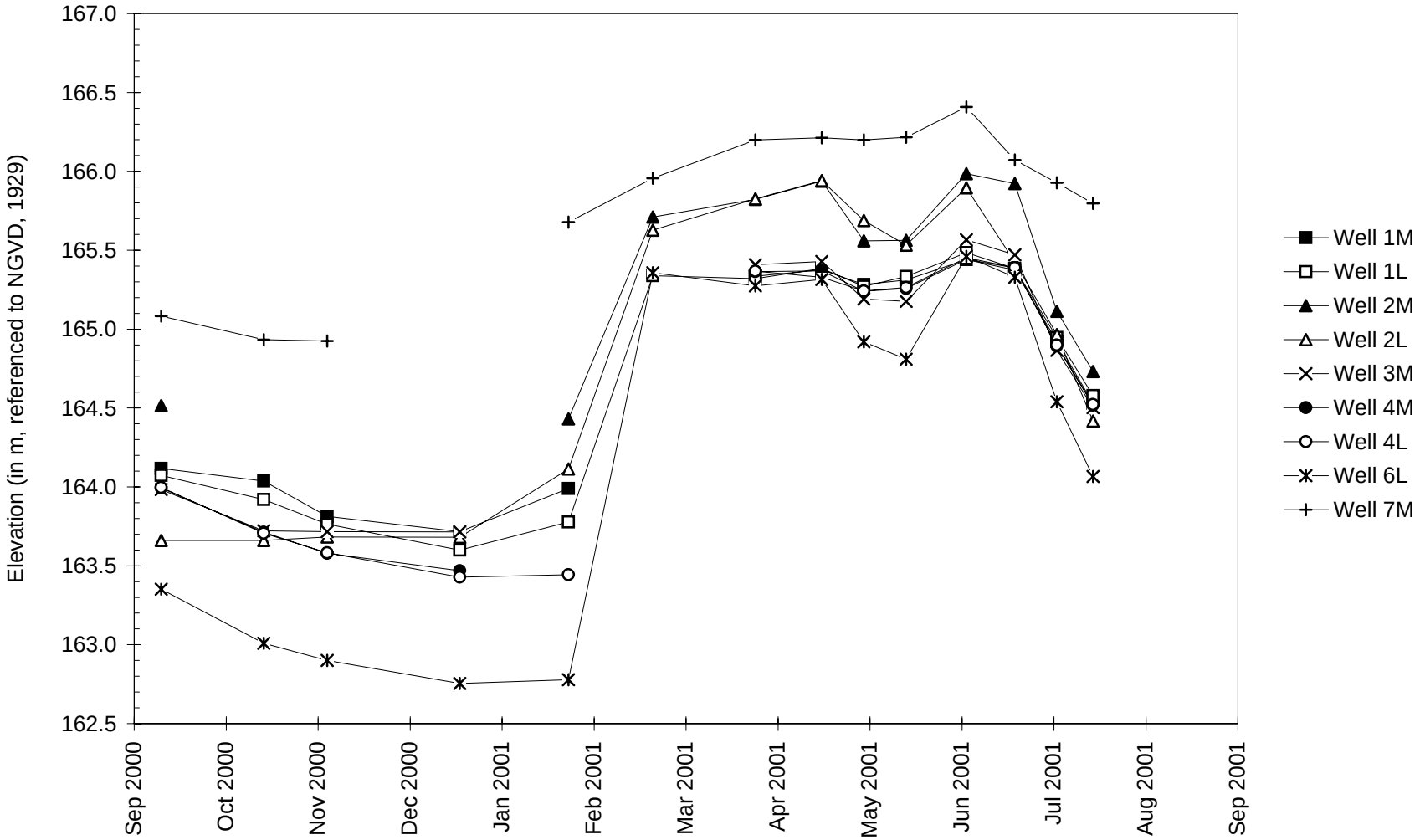
Hancock County near Carthage Potential Wetland Compensation Site
September 1, 2000 to September 1, 2001

Water-Level Elevations
on Stage Gauges and at Data Loggers

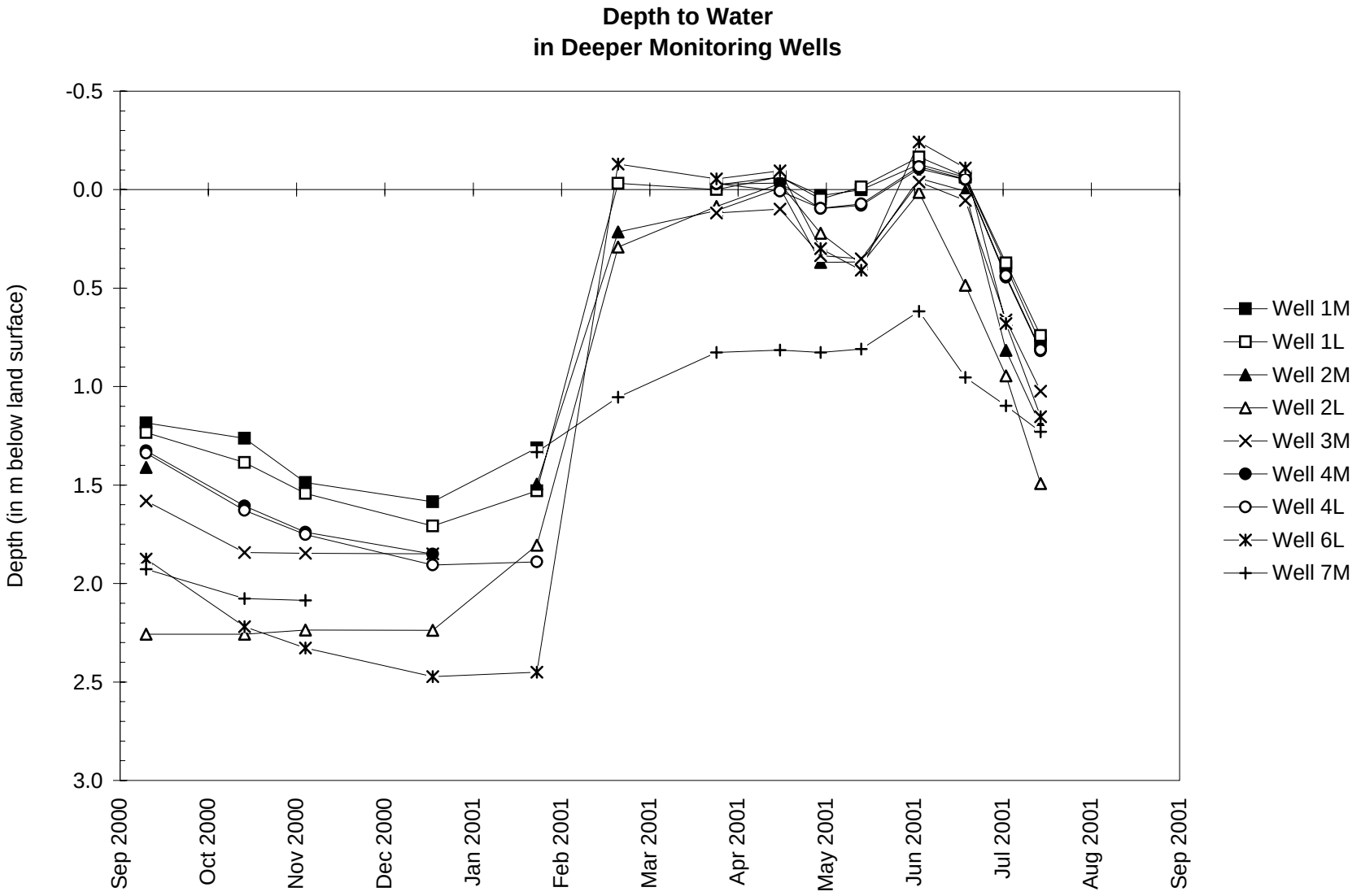


Hancock County near Carthage Potential Wetland Compensation Site
September 1, 2000 to September 1, 2001

Water-Level Elevations
in Deeper Monitoring Wells

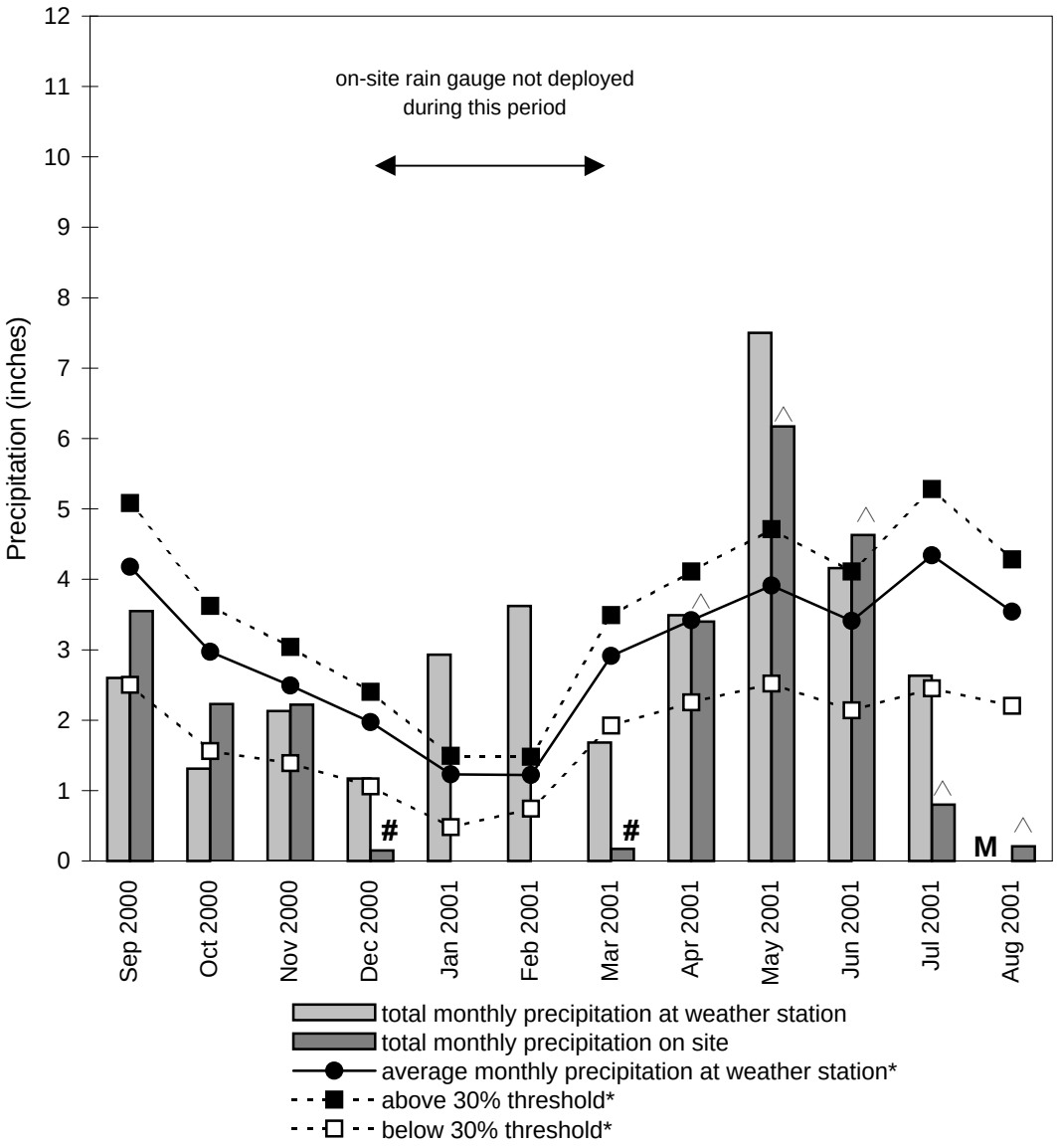


Hancock County near Carthage Potential Wetland Compensation Site
September 1, 2000 to September 1, 2001



Hancock County near Carthage
Potential Wetland Compensation Site
September 2000 through August 2001

Total Monthly Precipitation Recorded On Site and at the Bentley, IL Weather Station



on site rain gauge not deployed for entire month
△ suspect data: rain collector clogged, represents minimum value for month
* see text for explanation
M missing data at weather station

Graph last updated October 12, 2001

FORMER ECKMANN AND BISCHOFF PROPERTIES **ISGS #43**
POTENTIAL WETLAND COMPENSATION SITE
FAP 14
Madison County, near Collinsville, Illinois
Primary Project Manager: D. Bradley Ketterling
Secondary Project Manager: Bonnie J. Robinson

SITE HISTORY

- November 1994: The ISGS submitted an Initial Site Evaluation Report to IDOT.

- February and March 1997: A hydrogeologic characterization of the site was initiated with the installation of monitoring wells and staff gauges.

- October 1998: A draft characterization report was submitted to IDOT.

- March, April, and July 2000: Four soil-zone monitoring wells were installed in the Eckmann property and nine soil-zone monitoring wells were installed in the former Bischoff property.

- May 2001: A site meeting was held with representatives of the IDOT and the Metro East Sanitary District to discuss replacing the gravity drain in the Cahokia Canal levee with a new culvert having a flapper valve where it opens into the canal.

WETLAND HYDROLOGY CALCULATION FOR 2001

Using well coordinates derived via GPS and a mathematical interpolation of the shallow groundwater surface, the total area that satisfied wetland hydrology criteria in 2001 was determined to be 31.4 ac (12.7 ha). This acreage is contained primarily within the former Eckmann property. In 2000, 32.7 ac (13.2 ha) of the Eckmann property alone met the criteria for wetland hydrology. The figure for 2001 is based on the following factors.

- According to the Midwestern Climate Center, the median length of the growing season at Belleville, Illinois is 203 days, starting April 5 and ending October 24. Therefore, 12.5% of the growing season is 25 days.

- Above-normal precipitation in November, 2000 caused widespread flooding on the site. High-water levels persisted through mid-April when evapotranspiration began to deplete the stored water. In the first four months of 2001, precipitation was below normal at the Belleville SIU research station. In summary, precipitation during the monitoring period was 84% of normal. Precipitation during the previous monitoring period was 102% of normal.

- Most of the Eckmann property except for the northwest and southwest corners conclusively met the criteria for wetland hydrology as outlined in the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual. Limited portions of the former Bischoff property met the criteria for wetland hydrology: a small, depressional area at the southeast corner of the former Bischoff property (near well 24S), and the area around well 23S.

- Because wetland hydrology was most widespread early in the year, acreage calculations were carried out using water levels measured May 1. This date is just two days beyond

the end of the 25 required days that represent 12.5% of the growing season. Twenty-four individual measurements were used to mathematically contour the water table over the entire site. The interpolated water table was then compared to a topographic map of the site, producing a map of the depth to water over the site. Those areas having a depth less than 30 cm (1 ft) were considered to have met the conditions for wetland hydrology.

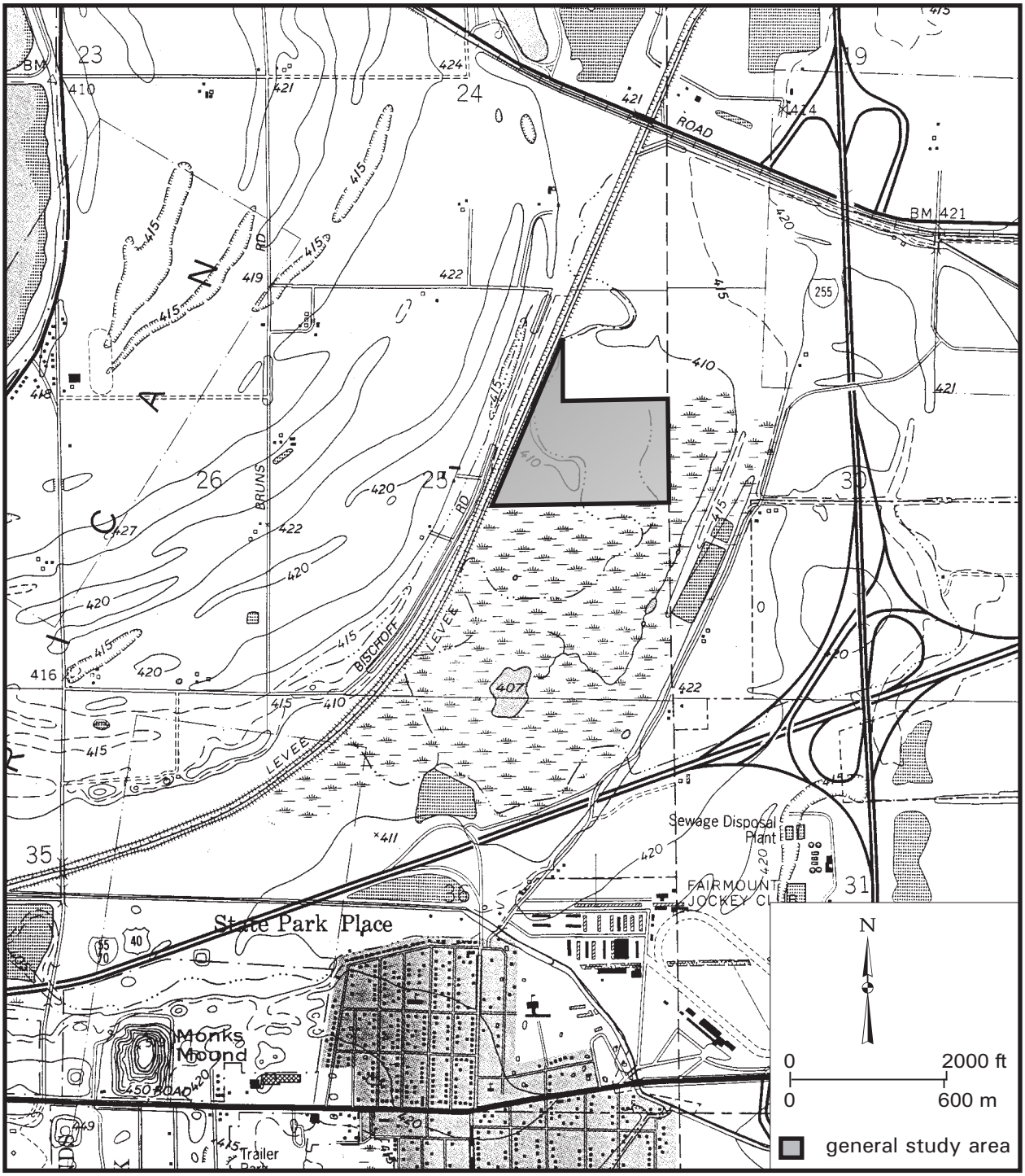
PLANNED FUTURE ACTIVITIES

- Monitoring for wetland hydrology will continue at this site through 2003 or until no longer required by IDOT.

Former Eckmann and Bischoff Properties
Potential Wetland Compensation Site
(FAP 14)

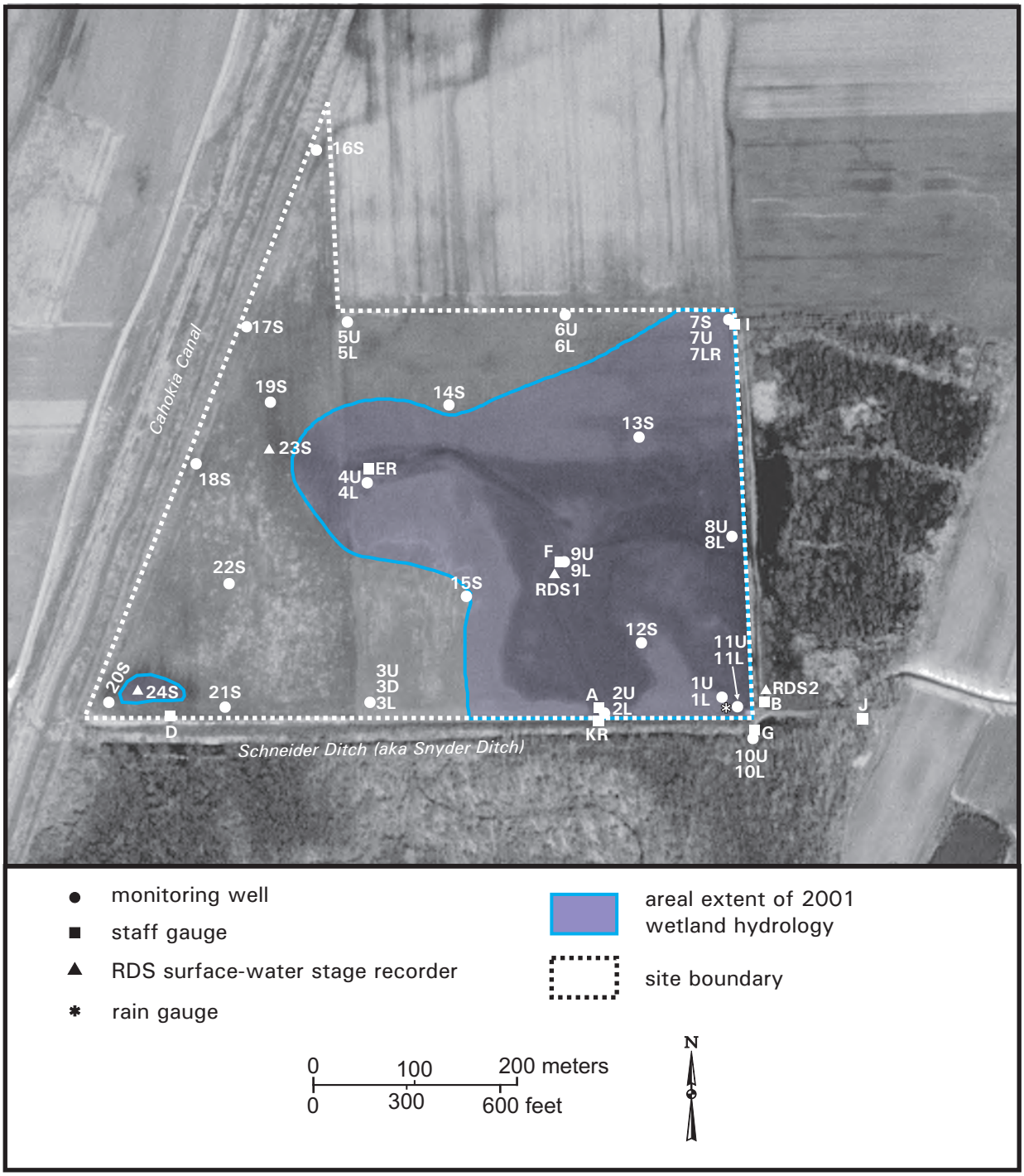
Study Area and Vicinity

from the USGS Topographic Series, Monks Mound IL 7.5-minute Quadrangle (USGS 1954, revised 1993)
contour interval is 10 feet



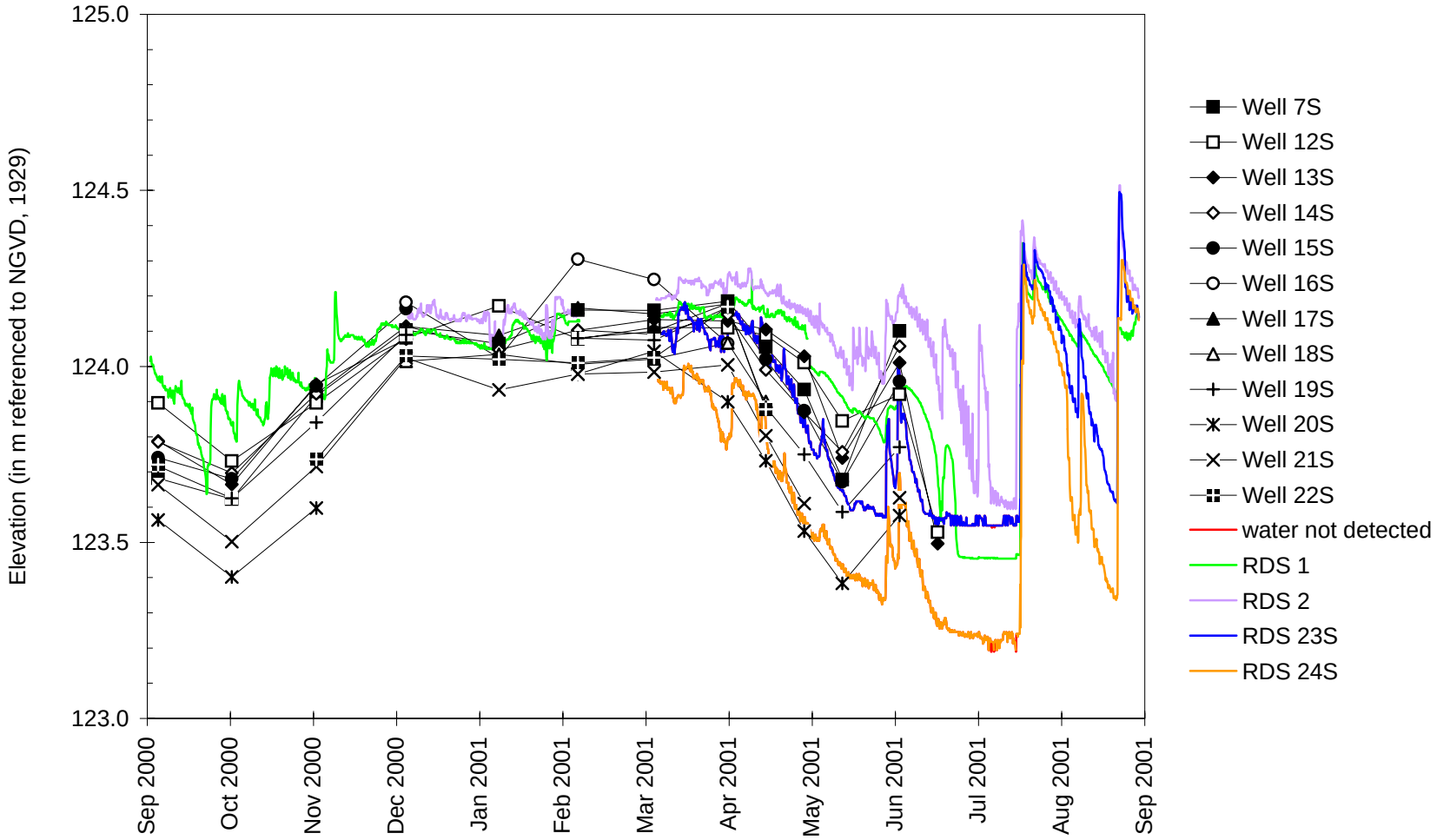
Former Eckmann and Bischoff Properties
Potential Wetland Compensation Site
(FAP 14)
Estimated Areal Extent of 2001 Wetland Hydrology
based on data collected between September 1, 2000 and September 1, 2001

map based on USGS digital orthophotograph, Monk's Mound, SE quarter quadrangle
produced from 4/2/98 aerial photography (ISGS 2001)

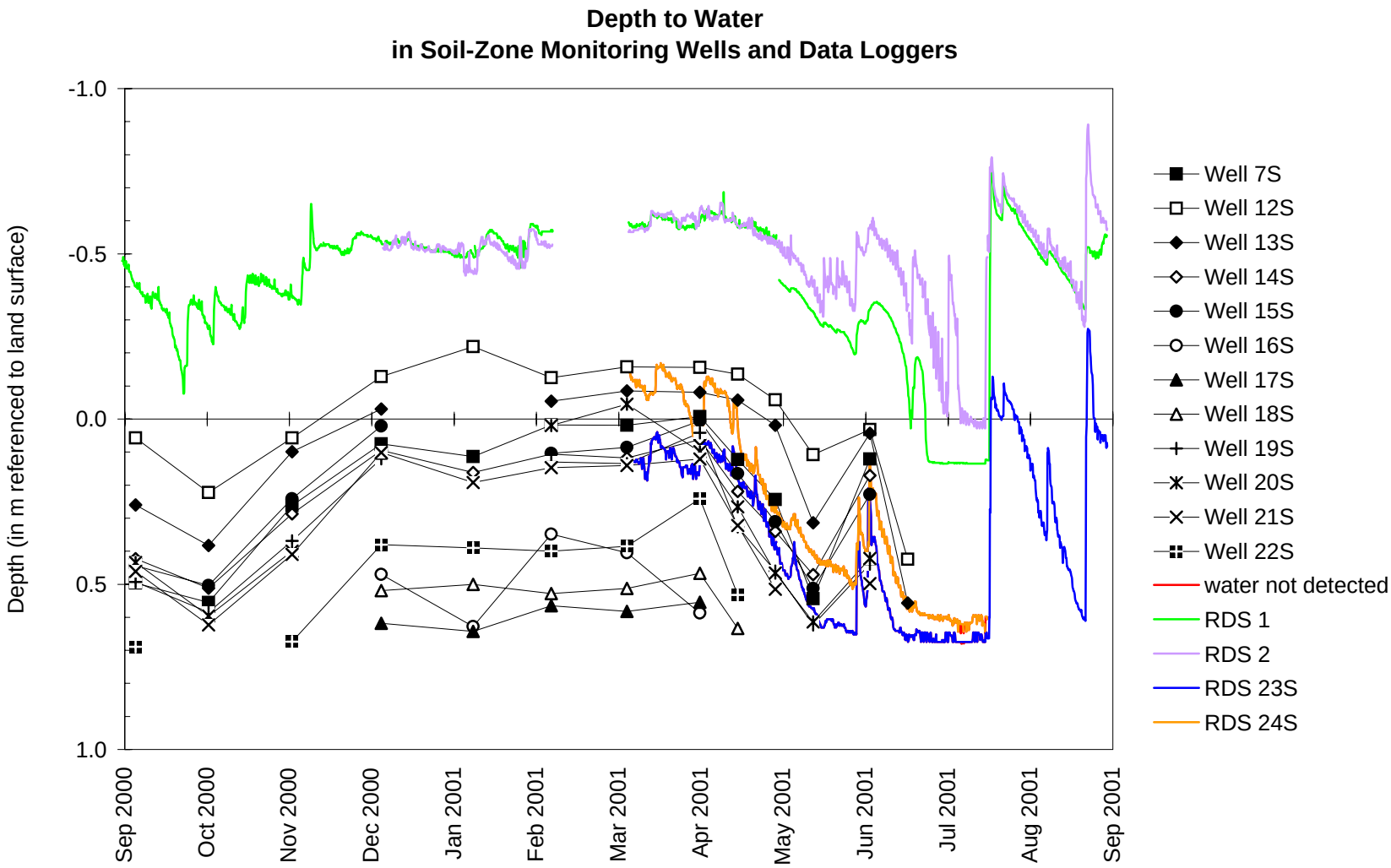


Former Eckmann and Bischoff Properties Potential Wetland Compensation Site
September 1, 2000 to September 1, 2001

Water-Level Elevations
in Soil-Zone Monitoring Wells and Data Loggers

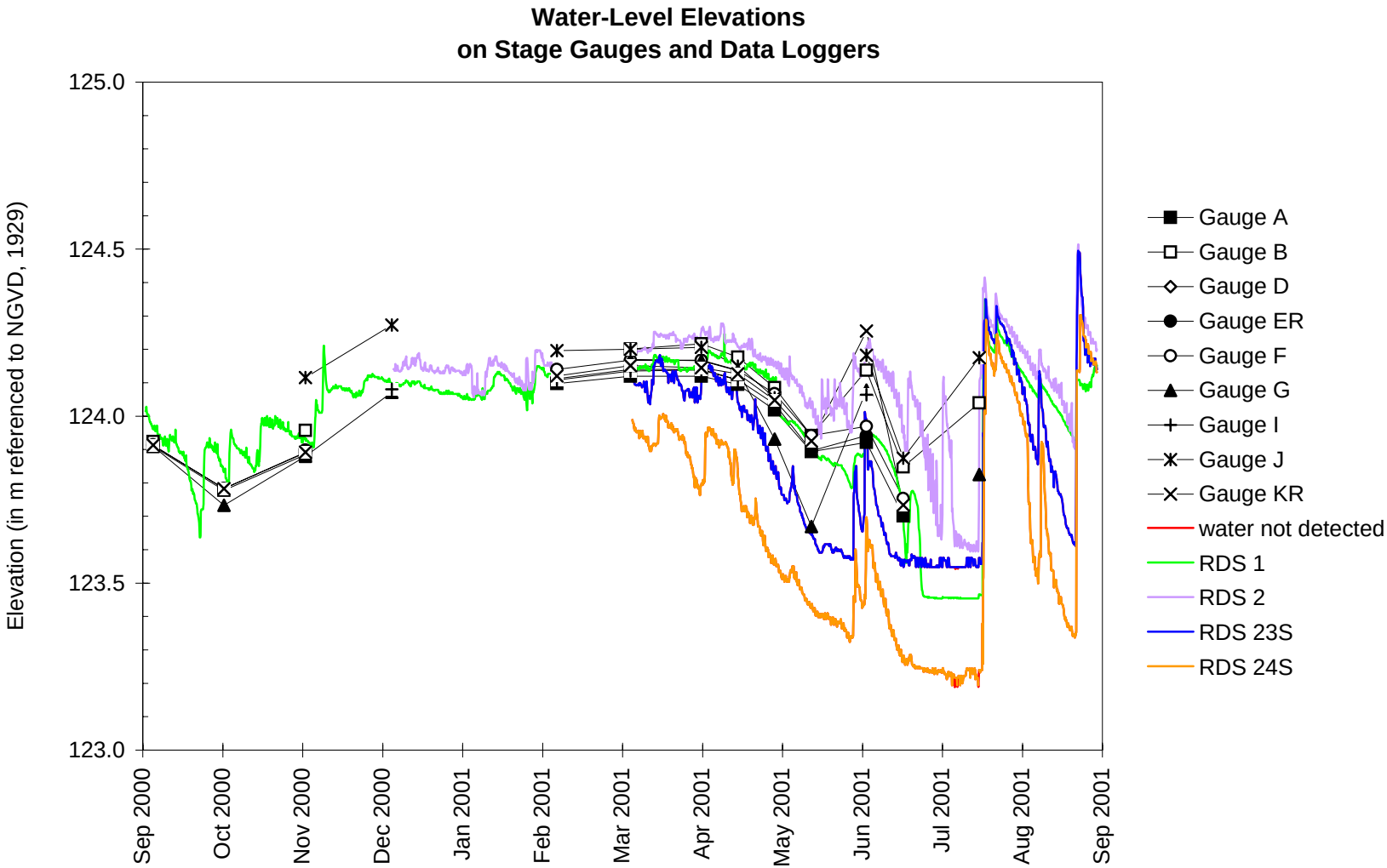


Former Eckmann and Bischoff Properties Potential Wetland Compensation Site
September 1, 2000 to September 1, 2001

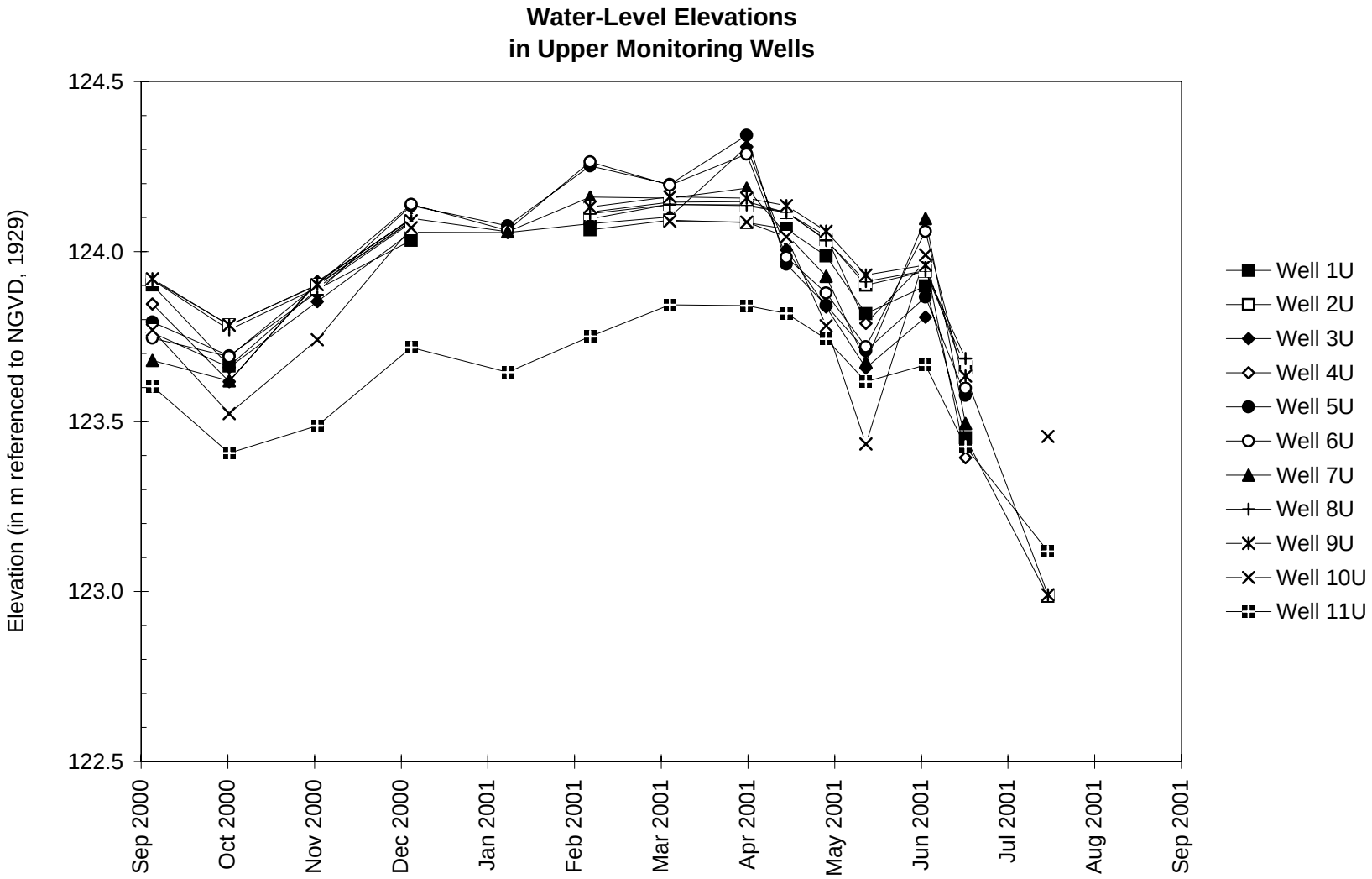


Former Eckmann and Bischoff Properties Potential Wetland Compensation Site

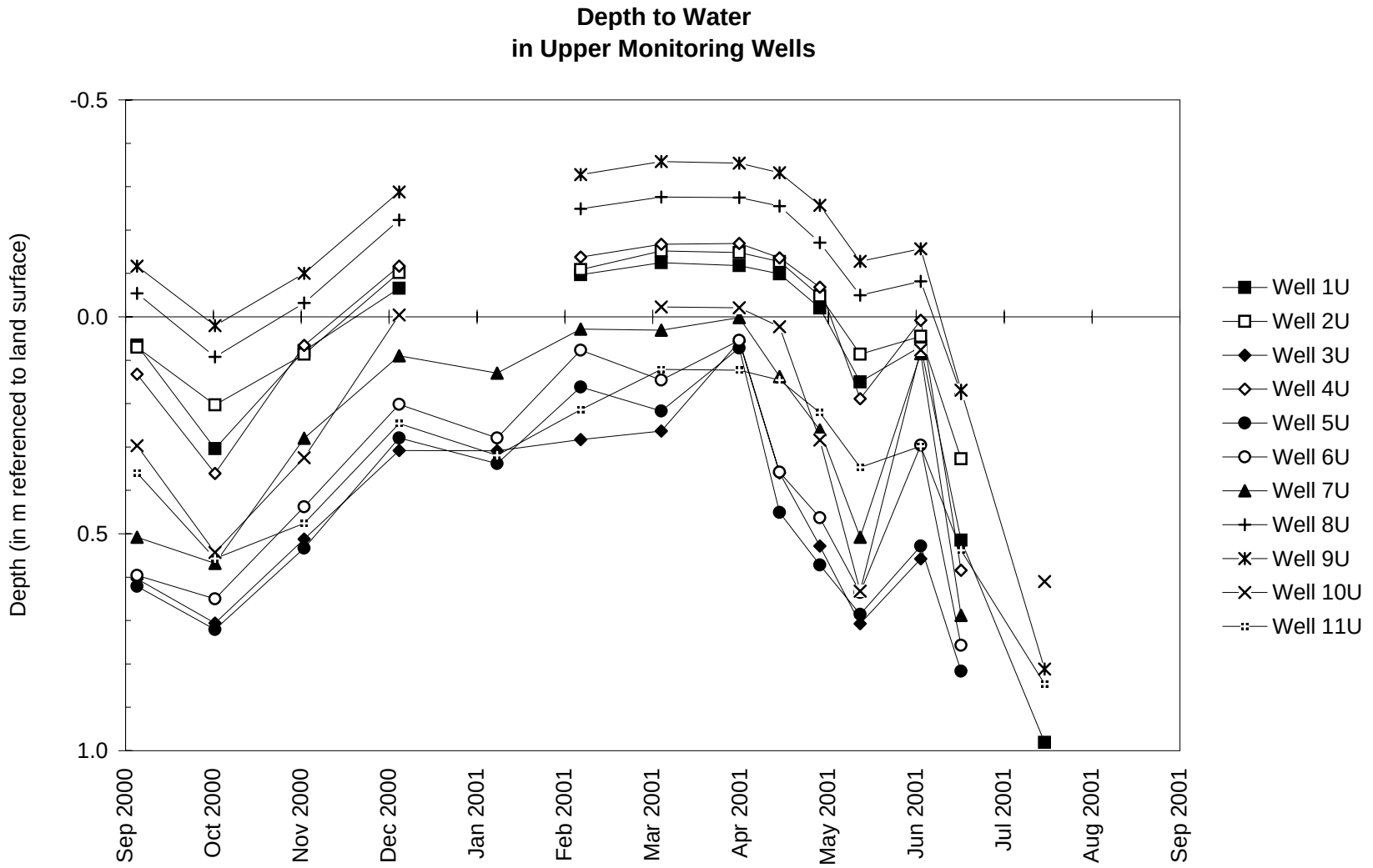
September 1, 2000 to September 1, 2001



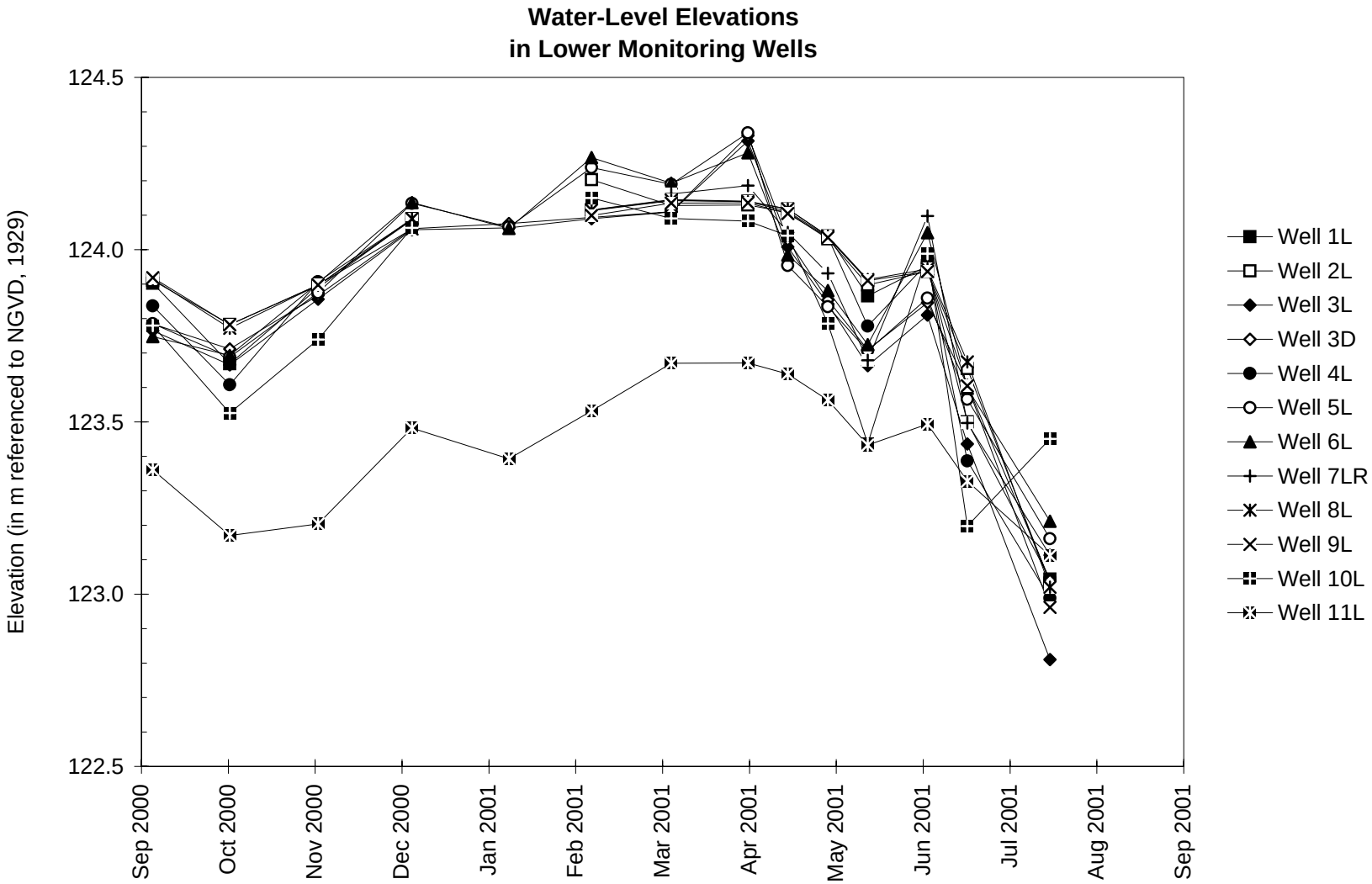
Former Eckmann and Bischoff Properties Potential Wetland Compensation Site
September 1, 2000 to September 1, 2001



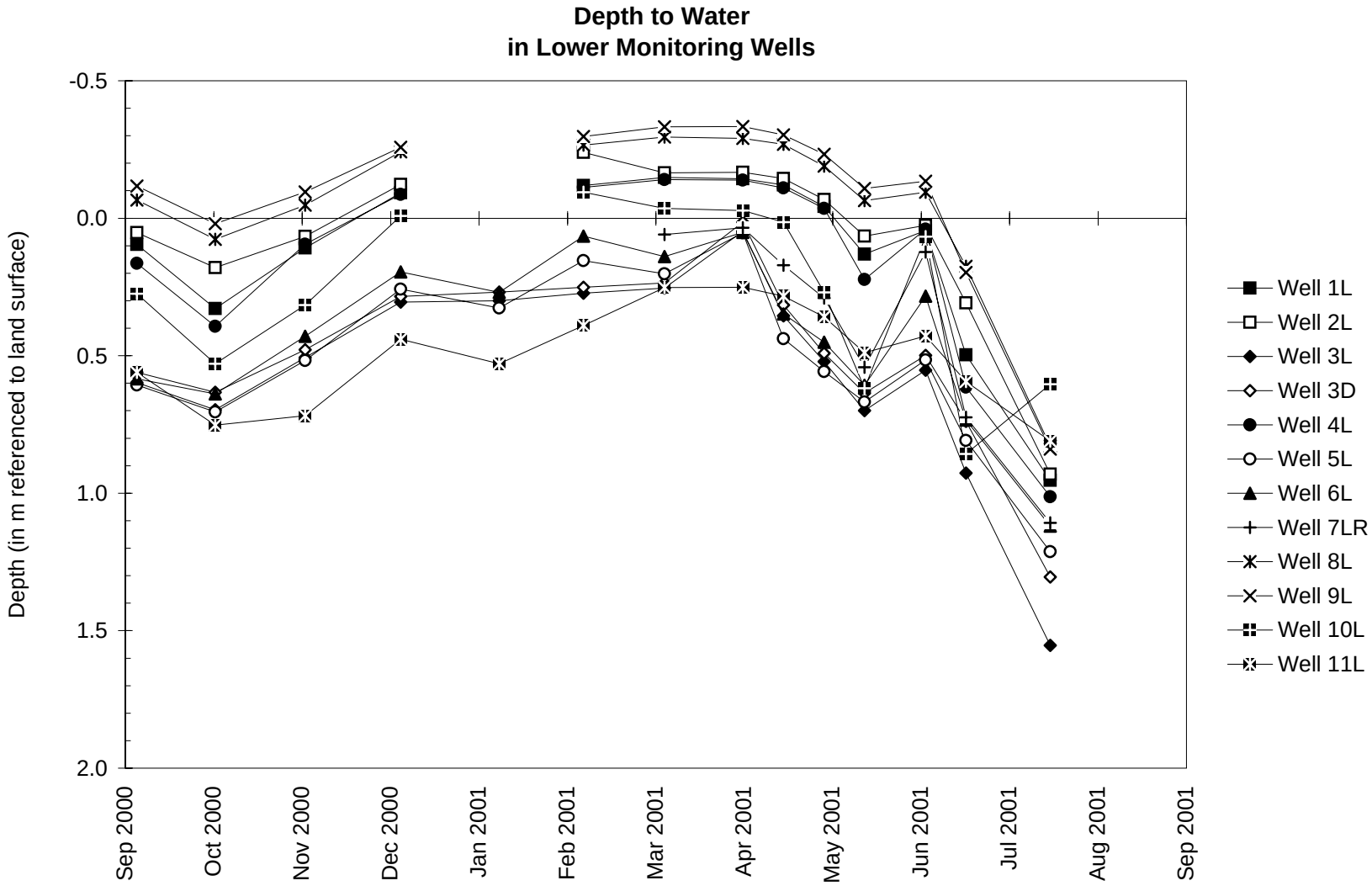
Former Eckmann and Bischoff Properties Potential Wetland Compensation Site
September 1, 2000 to September 1, 2001



Former Eckmann and Bischoff Properties Potential Wetland Compensation Site
September 1, 2000 to September 1, 2001

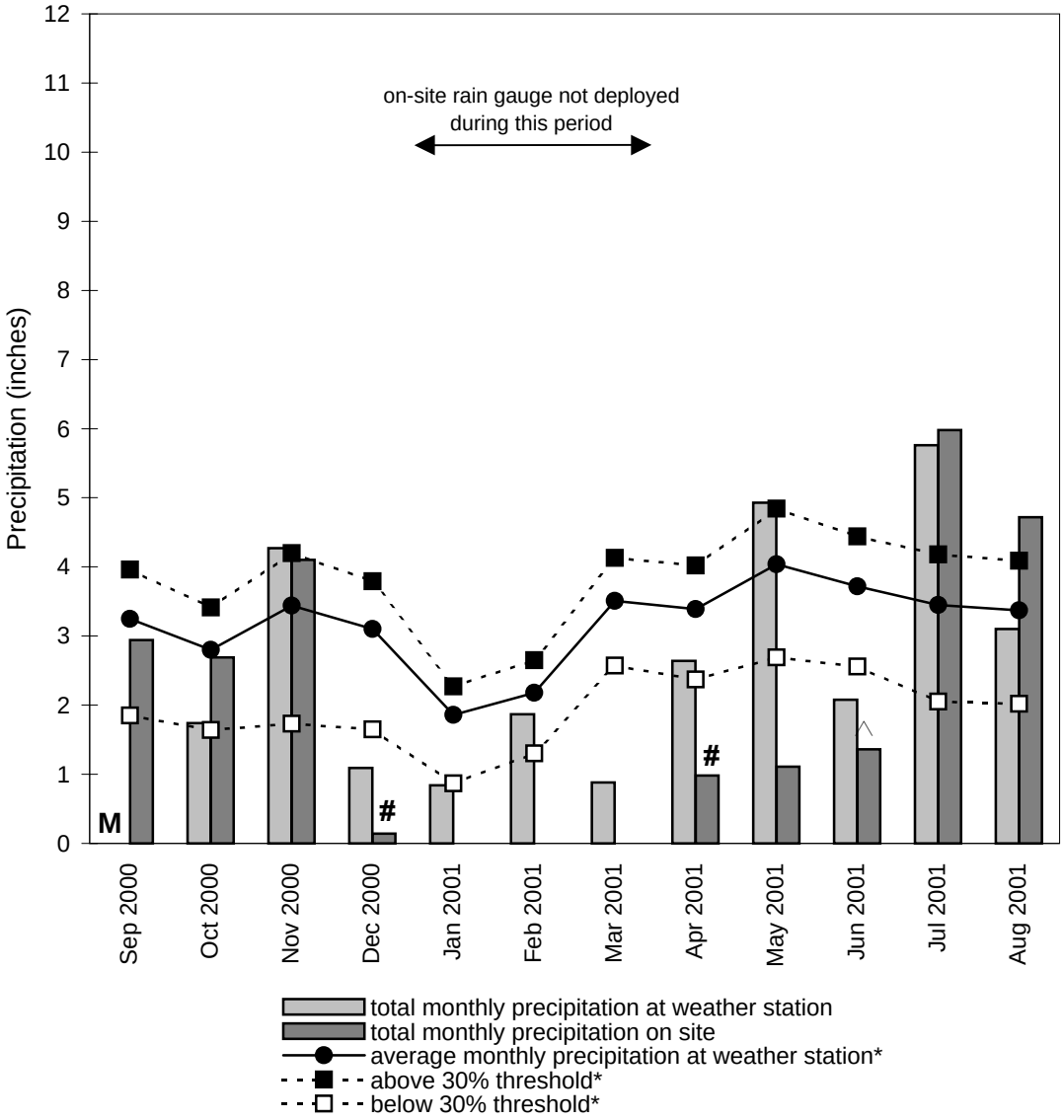


Former Eckmann and Bischoff Properties Potential Wetland Compensation Site
September 1, 2000 to September 1, 2001



Former Eckmann and Bischoff Properties
Potential Wetland Compensation Site
Septmeber 2000 through August 2001

Total Monthly Precipitation Recorded On Site and at the SIU Weather Station, Belleville, IL



on-site rain gauge not deployed for entire month

△ suspect data: rain collector clogged, represents minimum value for the month

* see text for explantion

M missing data at weather station

Graph last updated October 4, 2001

PERRY COUNTY **ISGS #45**
WETLAND COMPENSATION SITE
FAS 864
Perry County, near Pinckneyville, Illinois
Primary Project Manager: D. Bradley Ketterling
Secondary Project Manager: Bonnie J. Robinson

SITE HISTORY

- Winter 1998–1999: Monitoring wells were installed above and adjacent to the longwall mining panels prior to impending mining. Locations were chosen by the Illinois Natural History Survey (INHS) to coincide with soil test plots. Mining and subsidence occurred during 1999, so that preexisting conditions could not be documented.

- April 1999: The INHS observed that two ponds had been created by mine subsidence. One and one half panels were subsided in 1999 prior to the end of mining.

- November 2000: RDS water-level loggers were deployed in both Depression 1 and Depression 2 (as designated in Wilm et al. 1999) to record surface-water fluctuations.

- February 2001: Ten additional soil-zone monitoring wells were installed in the area referred to as Depression 1 (Wilm et al. 1999). Fifteen soil-zone monitoring wells were installed in Depression 2.

- April 2001: A topographic survey of both depressions was conducted.

WETLAND HYDROLOGY CALCULATION FOR 2001

Based on a topographic survey of the site and a mathematical interpolation of the shallow groundwater surface, the total area that satisfied the criteria for wetland hydrology in 2001 was determined to be 0.26 ac (0.10 ha) in Depression 1 and 0.41 ac (0.17 ha) in Depression 2.

- According to the Midwestern Climate Center, the median length of the growing season at Du Quoin, Illinois is 214 days, starting April 2 and ending November 27. Therefore 12.5% of the growing season is 27 days.

- Wetland hydrology was most widespread at the very beginning of the growing season, prompted by above-normal precipitation in November 2000 and February 2001. However, below-normal precipitation in March and April caused both depressions to dry out steadily. Depression 2 dried out first on May 28, after which time surface water was only recorded in response to individual rain events. Depression 1 exhibited similar behavior, but dried out far later, on June 29. In summary, precipitation during the monitoring period was 85% of normal. Precipitation during the previous monitoring period was 98% of normal.

- Water levels in wells 2S, 6S, 9S, 10S, 12S and 13S in Depression 1 were above or within 30 cm (1 ft) of the surface for more than 12.5% of the growing season, thereby satisfying the wetland hydrology criteria outlined in the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual. In Depression 2, wells 18S, 19S, 21S, 22S, 23S, and 27S satisfied the criteria for wetland hydrology. Well 3S, installed outside of the area of anticipated

subsidence, did not manifest wetland hydrology.

- Because wetland hydrology was most widespread early in the year, acreage calculations were carried out using water levels on April 28. This date marks the end of the 27 required days that represent 12.5% of the growing season. The water table at both depressions was contoured mathematically and compared with the corresponding topographic map. Where the water table was above or within 30 cm (1 ft) of the surface, wetland hydrology was deemed to be present.

PLANNED FUTURE ACTIVITIES

- No other instruments are required on site. A rain gauge will be installed near the site.

- Monitoring for wetland hydrology will continue at this site through 2005 or until no longer required by IDOT.

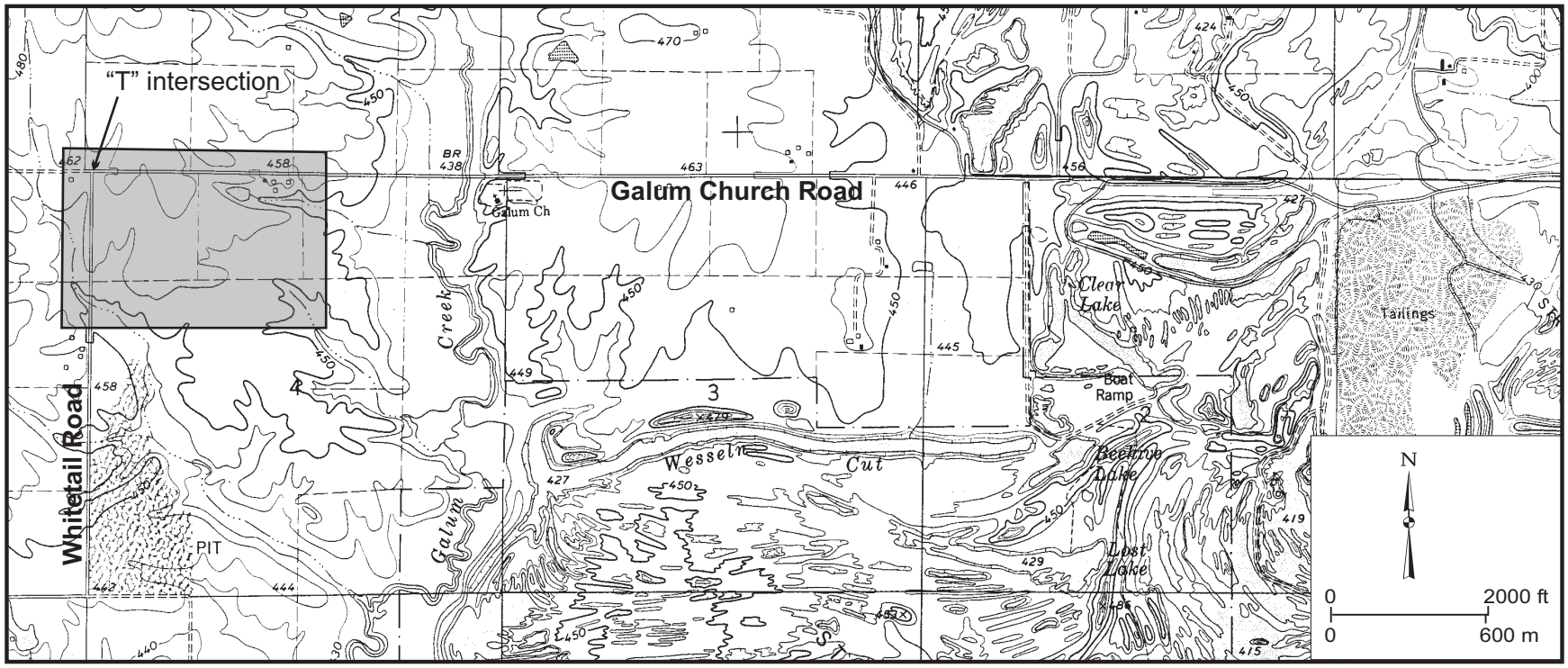
Perry County Wetland Compensation Site

(FAS 864)

General Study Area and Vicinity

from the USGS Topographic Series, Pinckneyville, IL 7.5-minute Quadrangle (USGS 1981)

contour interval is 10 feet



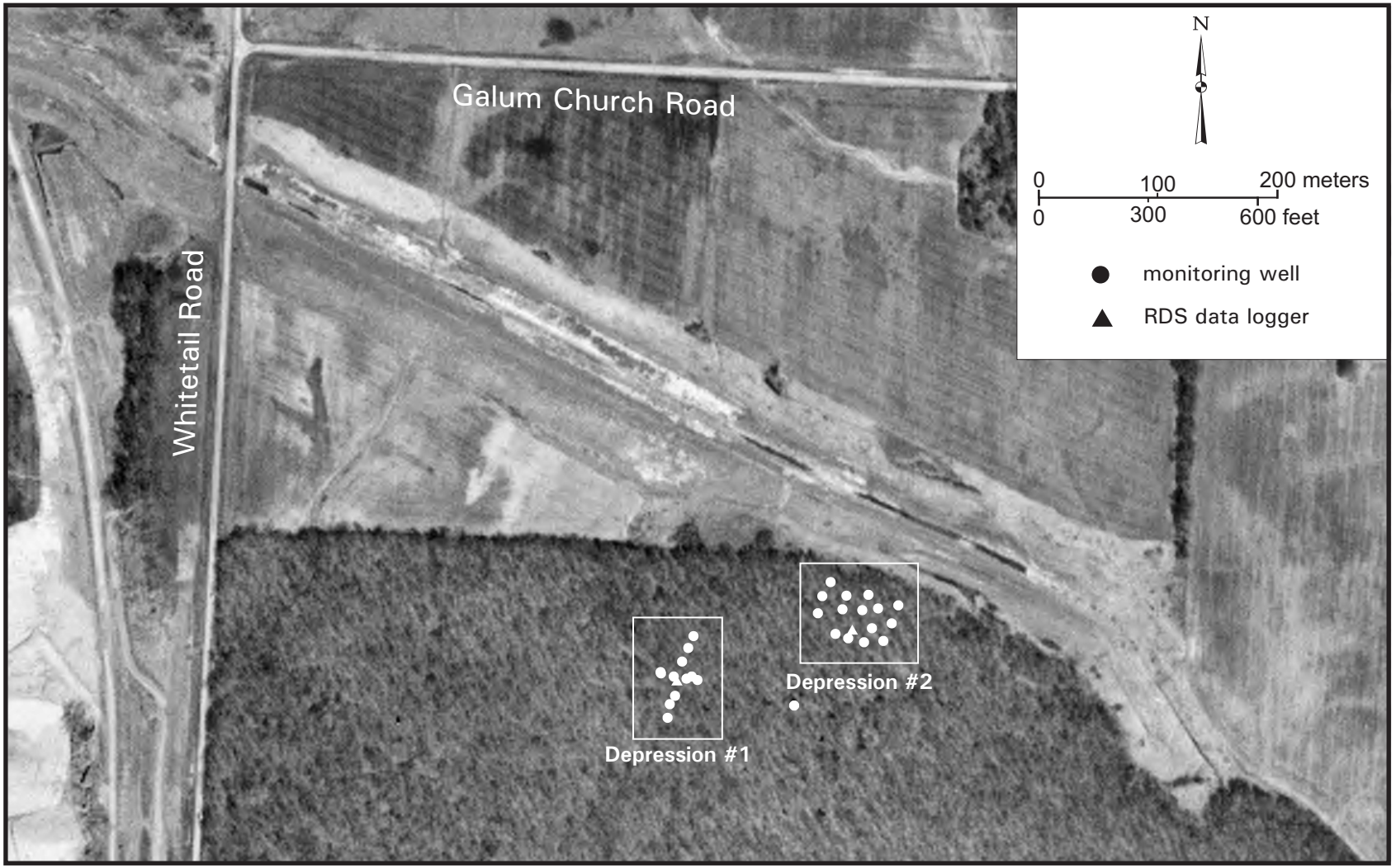
general study area

Perry County Wetland Compensation Site

(FAS 864)

General Study Area and Vicinity

map based on USGS digital orthophotograph, Pinckneyville SW quadrangle produced from 04/06/98 aerial photography (ISGS 2001)

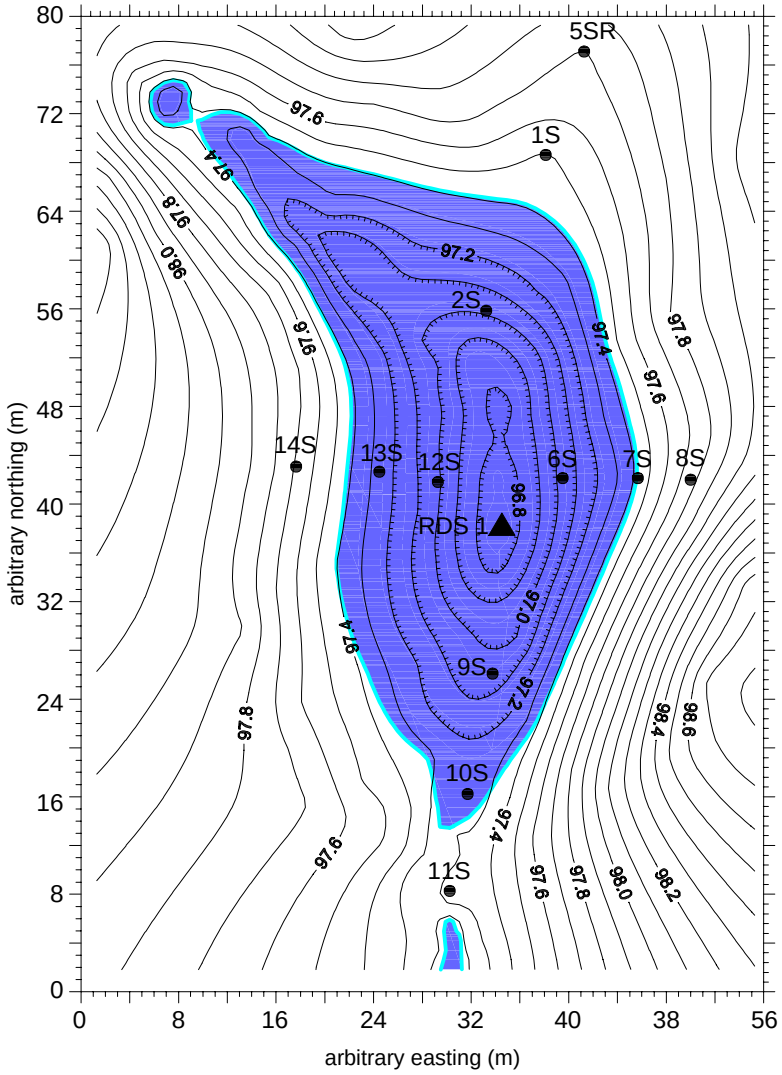


Perry County Wetland Compensation Site: Depression 1 (FAS 864)

Estimated Areal Extent of 2001 Wetland Hydrology

based on data collected between September 1, 2000 and September 1, 2001

contour map based on topographic survey conducted by ISGS, 04/12/01



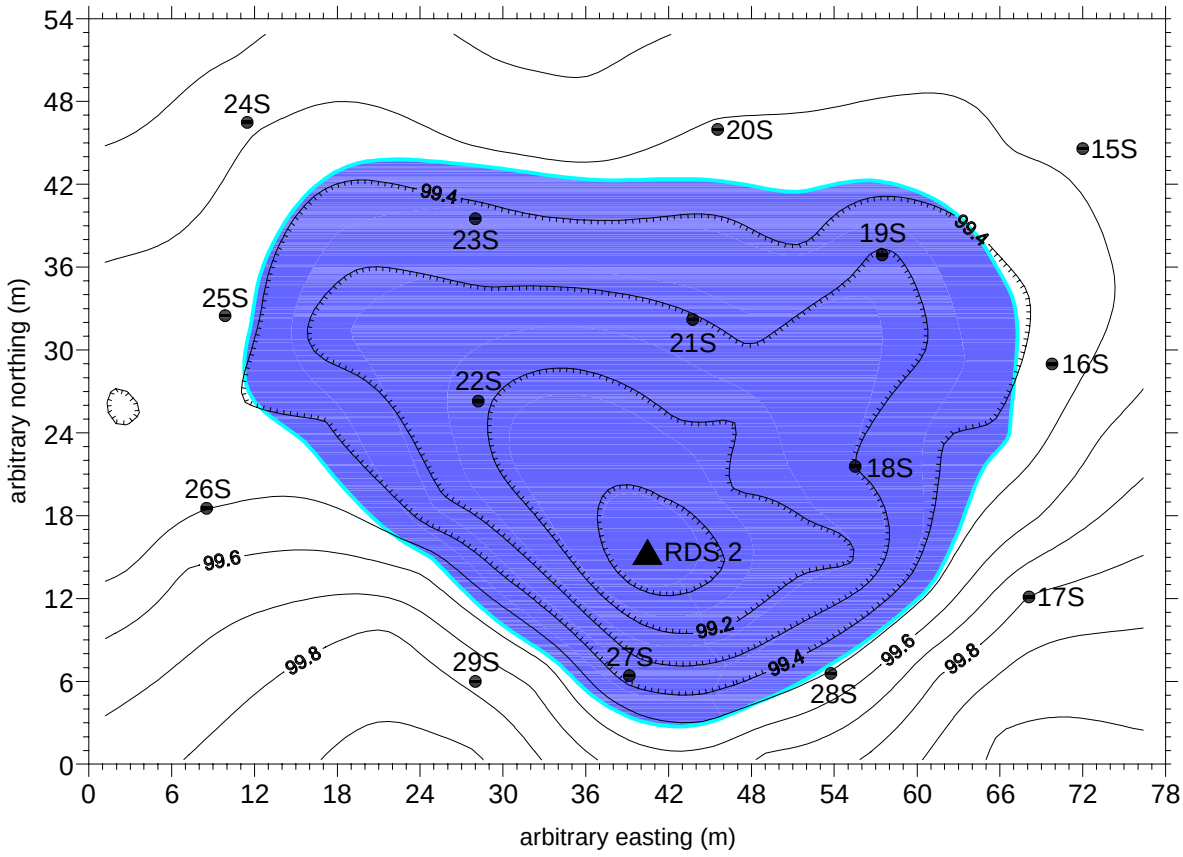
This topographic map of Depression 1 at the Perry County wetland compensation site was interpolated using 171 surveyed elevations. The contours are mapped on an arbitrary grid oriented roughly north-south. Due to the lack of a nearby benchmark, the vertical datum is also arbitrary.

Perry County Wetland Compensation Site: Depression 2 (FAS 864)

Estimated Areal Extent of 2001 Wetland Hydrology

based on data collected between September 1, 2000 and September 1, 2001

contour map based on topographic survey conducted by ISGS, 04/12/01



monitoring well

surface-water level logger

estimated areal extent of 2001 wetland hydrology

0 20 40 meters

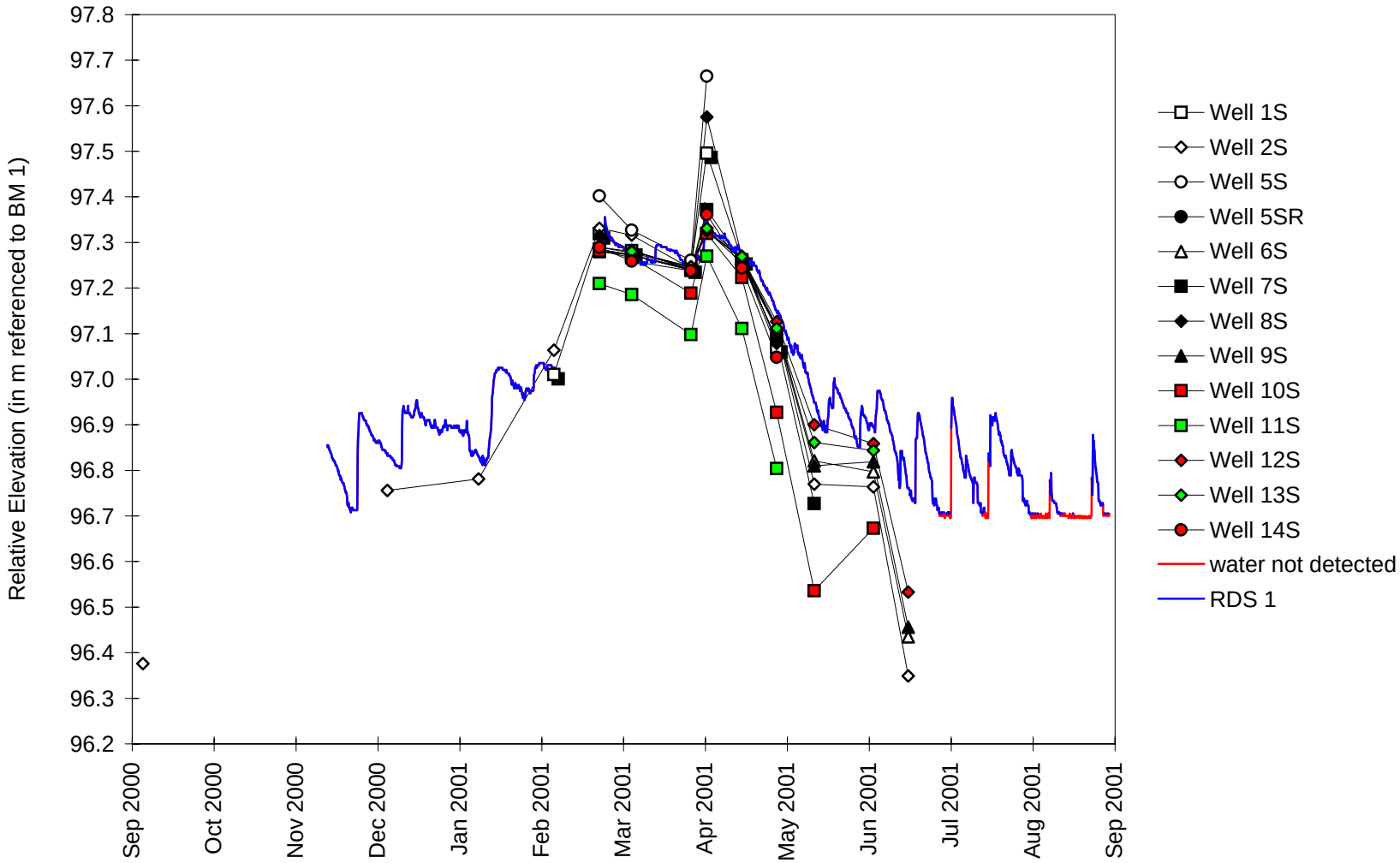
0 60 120 feet

contour interval 0.1 m
arbitrary vertical datum

This topographic map of Depression 2 at the Perry County wetland compensation site was interpolated using 85 surveyed elevations. The contours are mapped on an arbitrary grid oriented roughly north-south. Due to the lack of a nearby benchmark, the vertical datum is also arbitrary.

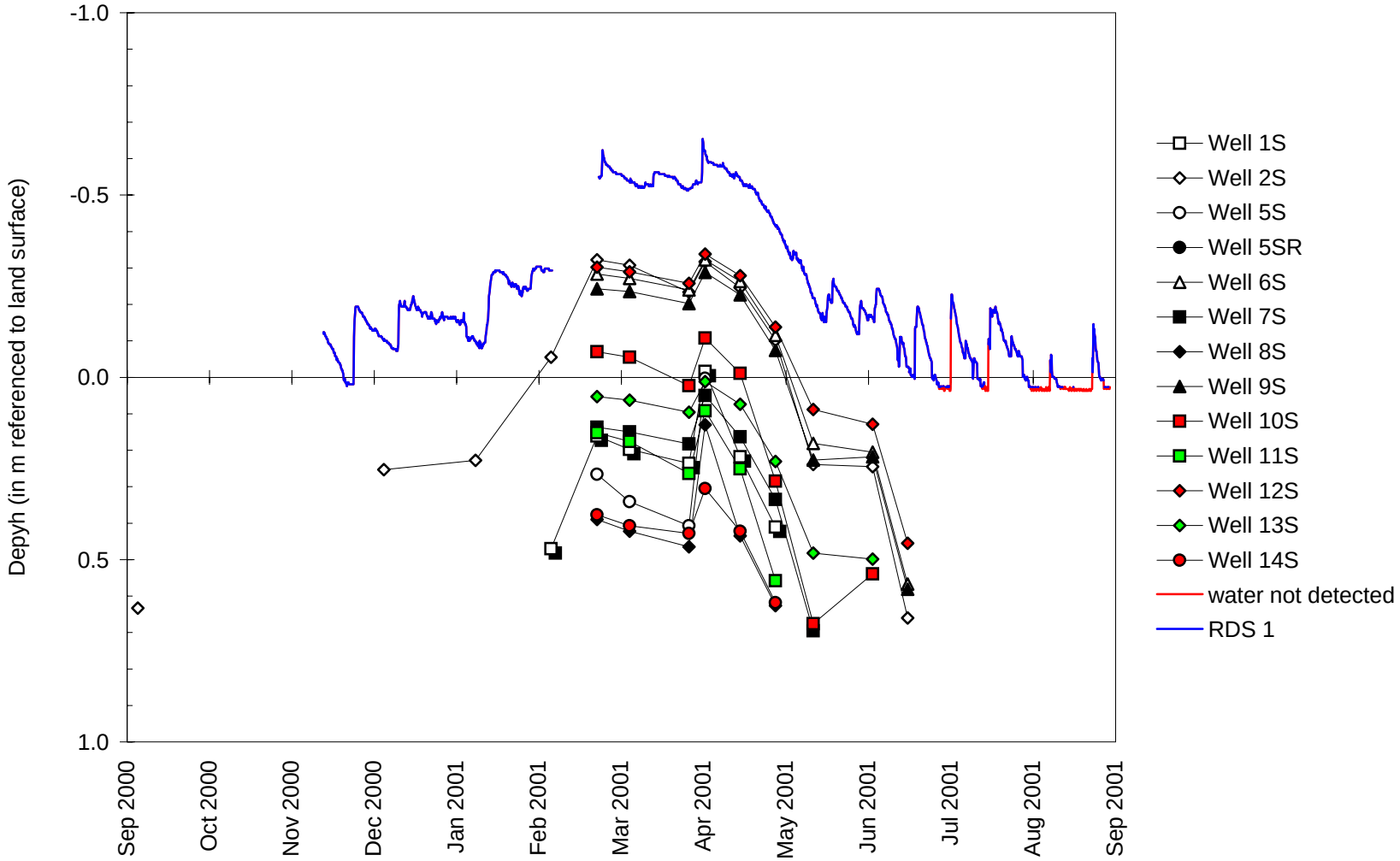
Perry County Wetland Compensation Site
September 1, 2000 to September 1, 2001

Water-Level Elevations in Wells near Depression 1



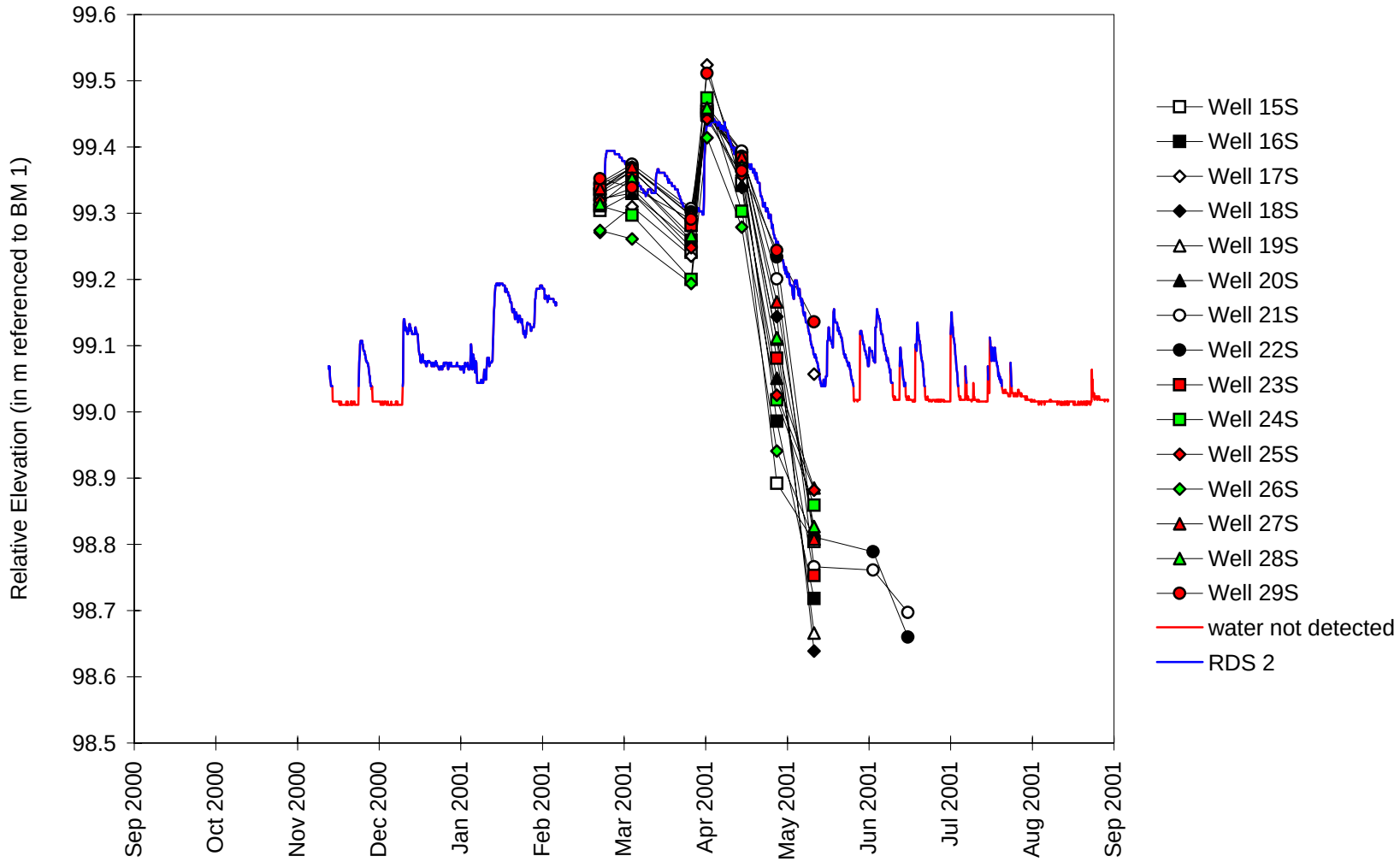
Perry County Wetland Compensation Site
September 1, 2000 to September 1, 2001

Depth to Water in Wells near Depression 1

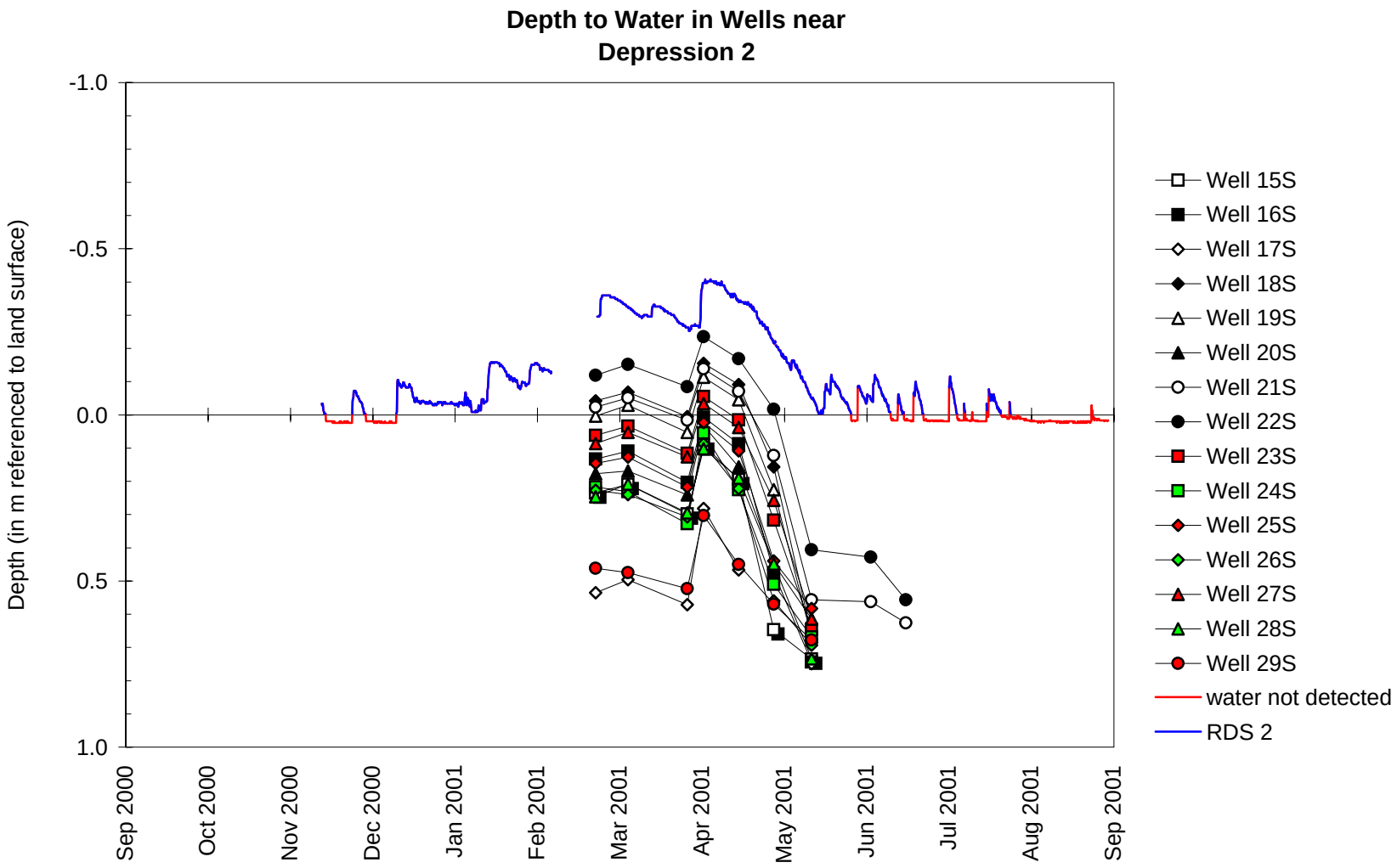


Perry County Wetland Compensation Site
September 1, 2000 to September 1, 2001

Water-Level Elevations in Wells near Depression 2

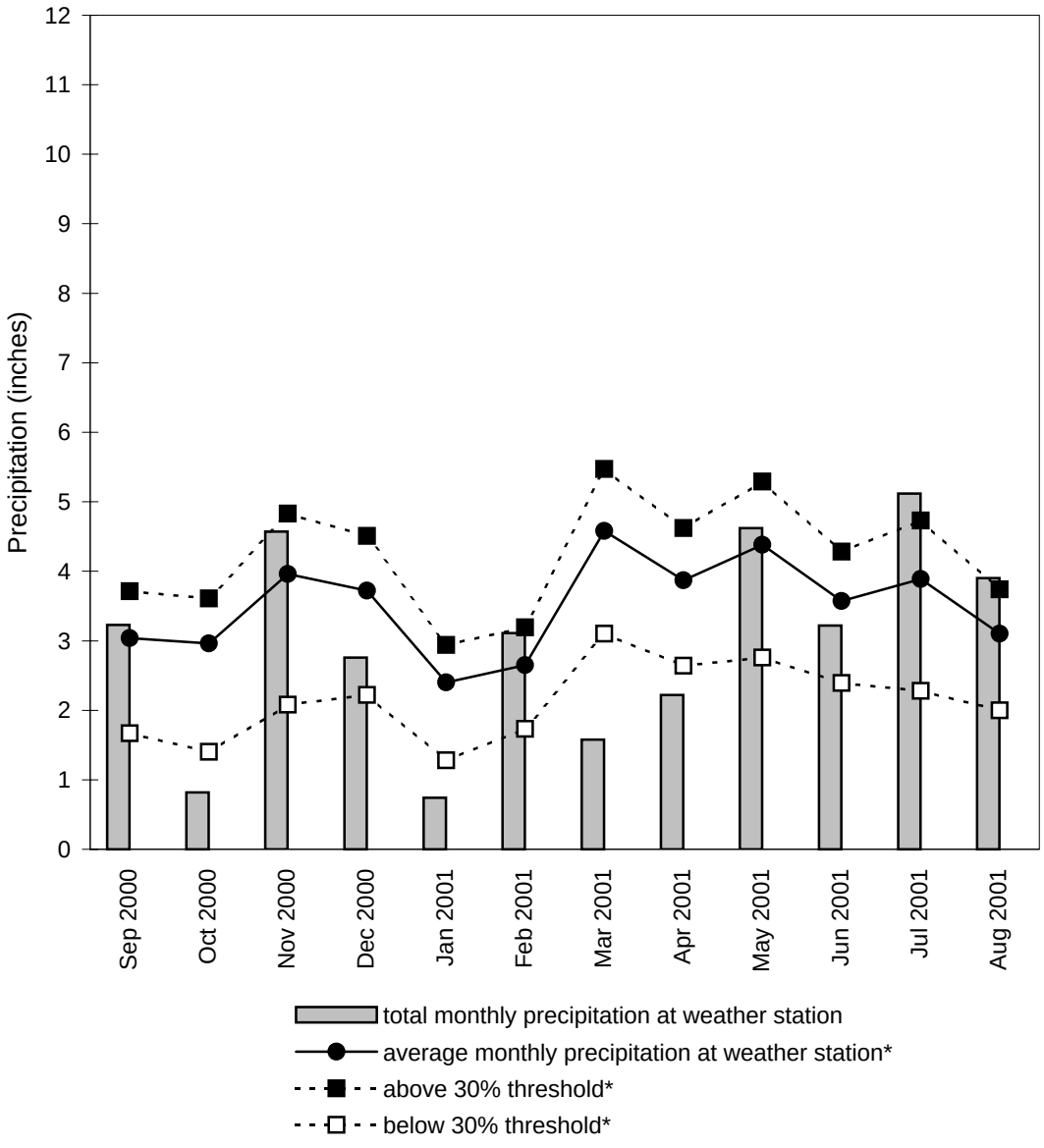


Perry County Wetland Compensation Site
September 1, 2000 to September 1, 2001



Perry County Wetland Compensation Site
September 2000 through August 2001

Total Monthly Precipitation at the Du Quoin, IL Weather Station
(no rain gauge deployed on site)



* see text for explanation

Graph last updated October 5, 2001

GALENA RIVER BRIDGE **ISGS #46**
WETLAND COMPENSATION SITE
FAS Route 67
Jo Davies County, near Galena, Illinois
Primary Project Manager: Kelli D. Weaver
Secondary Project Manager: Keith W. Carr

SITE HISTORY

- Spring and Fall 1999: ISGS began monitoring surface- and ground-water at the site.

- September 2000: An Infinities sonic data logger was added on a telescoping mount to catch the often substantial flood peaks common to the site. The rain gauge was also relocated to this apparatus for flood protection purposes.

- October 2000: ISGS relocated one RDS data logger and added a second one to the site. Two very shallow (VS) soil-zone wells and one standard soil-zone well were also added at this time.

WETLAND HYDROLOGY CALCULATION FOR 2001

We estimate that the total area of created wetland that conclusively satisfied wetland hydrology criteria in 2001 is 6.9 ac (2.8 ha). The site is roughly 7.4 ac (3.0 ha) in size. This is in contrast to 4.5 ac (1.8 ha) which satisfied wetland hydrology criteria in 2000, a year with precipitation which was 85% of normal. This estimate is based on the following factors.

- According to the Midwestern Climate Center, the median date that the growing season begins in Dubuque, Iowa, is April 16 and the season lasts 183 days; 12.5% of the growing season is 23 days.

- Total precipitation for the period from September 2000 to March 2001 was 90% of normal, resulting in slightly drier than typical conditions entering the growing season. In April, June, July, and August 2001, precipitation was either normal or below normal. The only month during the growing season with precipitation above normal was May 2001. Total precipitation for the monitoring period from September 2000 to August 2001 was 93% of normal.

- In 2001, water levels measured in wells 1S, 1VS, 2S, 2VS, 3S, 4S, 5S, 7S, 8S, 9S, 10S, 12S, 13S, RDS 3, and at surface-water stations Gauge A and RDS 2 conclusively satisfied the wetland hydrology criteria in the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual. Also, surface-water levels at Gauge B (sonic data logger) may have satisfied wetland hydrology criteria. Surface-water levels measured by the RDS loggers also indicated that inundation occurred to an elevation of 183.5 m (602.0 ft) for a duration sufficient to satisfy wetland hydrology criteria. There was good agreement between the hydroperiod derived from RDS data and the extent of wetland hydrology as defined by monitoring-well data.

- Limitations of the wetland hydrology determination are as follows:
  - At various times during the year, water levels may have been artificially drawn down or augmented for some purpose by the site managers. The mechanisms by which this is done appear to be threefold: 1) water is being piped onto the site from the northeast, possibly from a spring, 2) occasionally, water is diverted onto the site from a small stream adjacent to the south site margin by damming the channel with sandbags, and 3) via manipulation of a control structure along the north site margin. These manipulations suggest that the site hydrology is not self-sustaining.

PLANNED FUTURE ACTIVITIES

- RDS 3, installed in a soil-zone well configuration, will be replaced by a more flood-resistant Global data logger on a telescoping mount. The Global logger will monitor shallow groundwater, as RDS 3 did.

- Monitoring will continue through Spring 2004 or until no longer required by IDOT.

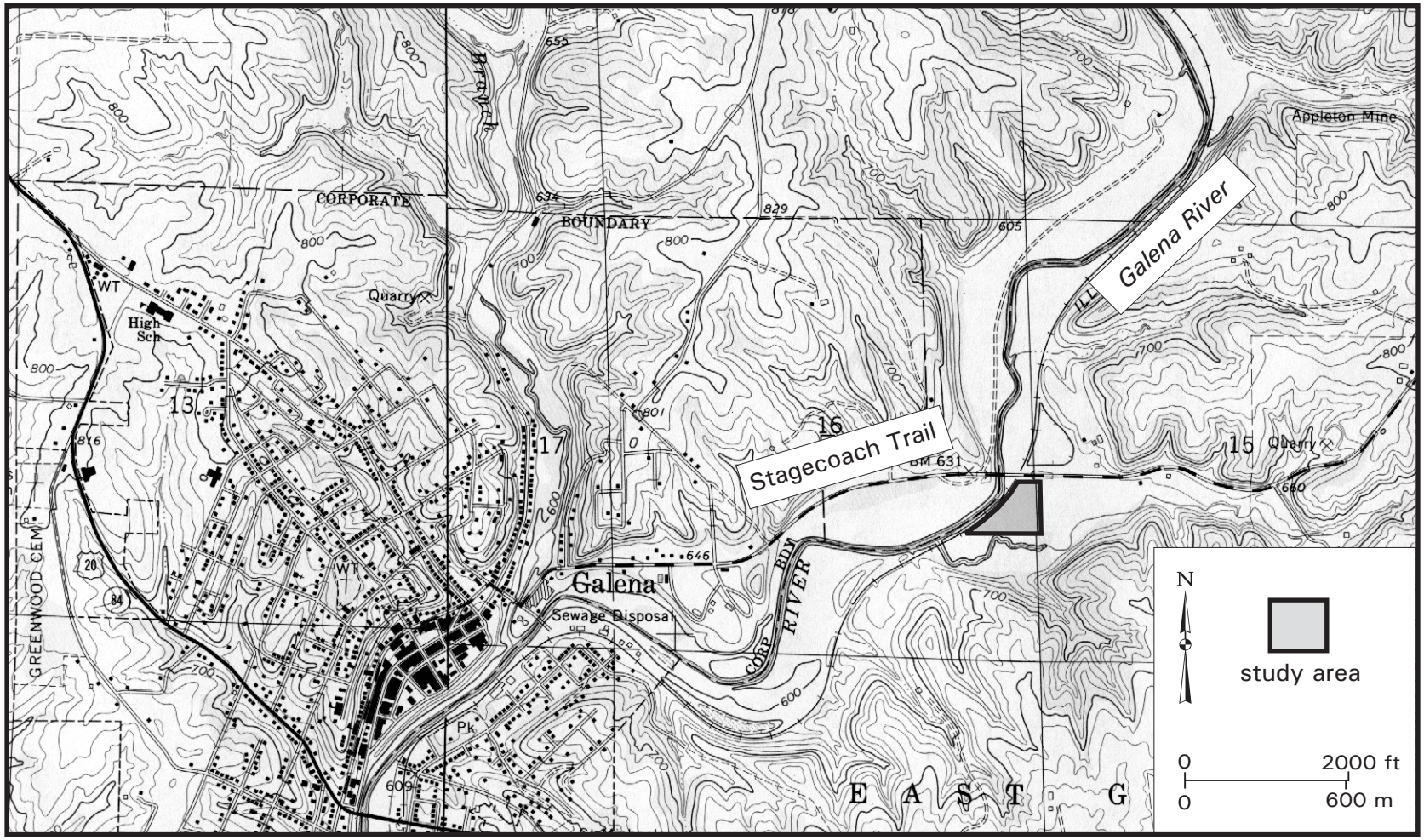
Galena River Bridge Wetland Compensation Site

(FAS Route 67)

General Study Area and Vicinity

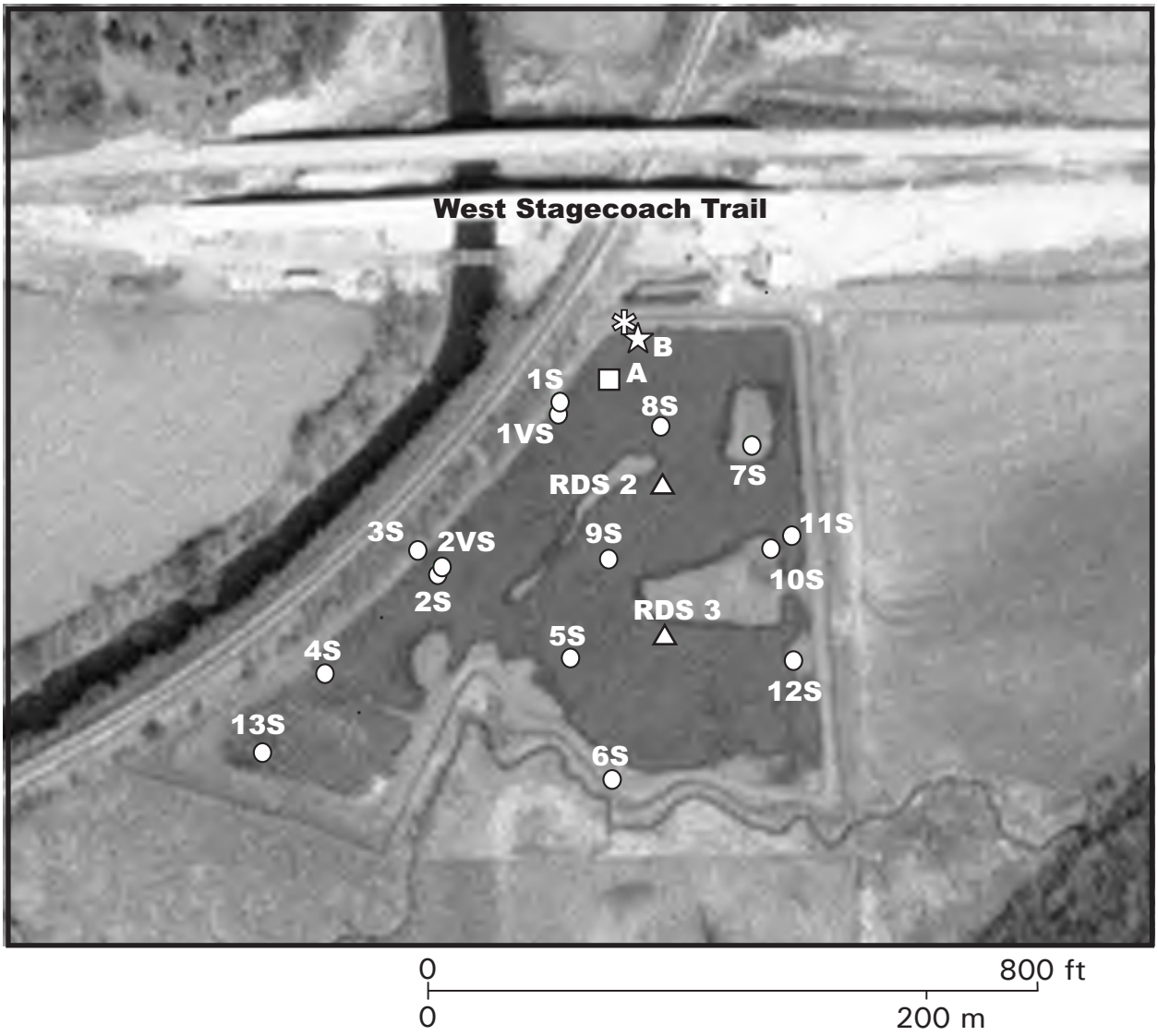
from the USGS Topographic Series, Galena, IL-Iowa 7.5 minute Quadrangle (USGS 1988)

contour interval is 10 feet



Galena River Bridge Wetland Compensation Site
(FAS Route 67)
ISGS Monitoring Instruments
based on data collected between September 1, 2000 and September 1, 2001

map based on USGS digital orthophotograph, Galena SE quarter quadrangle
from 03/29/1998 aerial photography (ISGS 2001).



Galena River Bridge Wetland Compensation Site

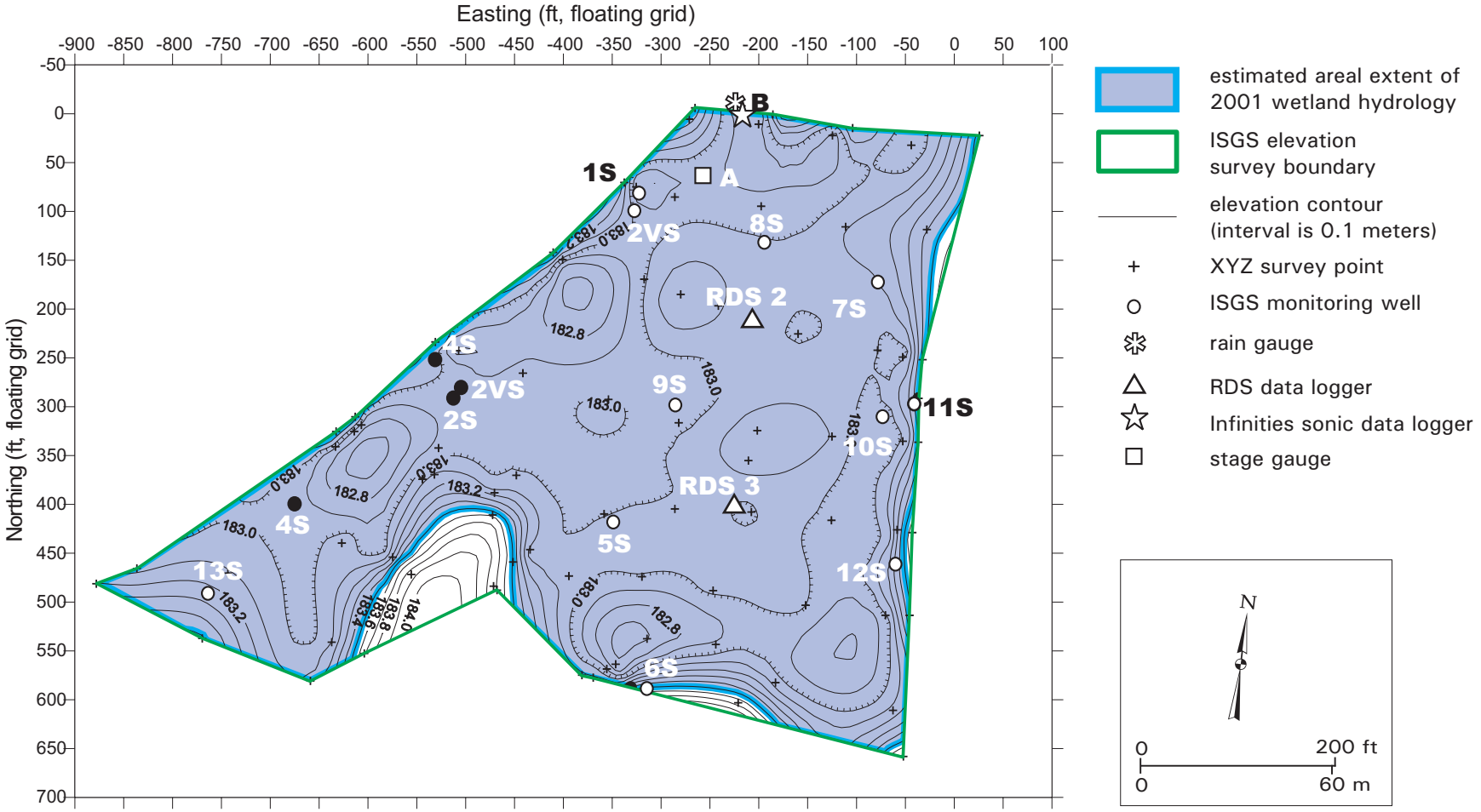
(FAS Route 67)

Estimated Areal Extent of 2001 Wetland Hydrology

based on data collected between September 1, 2000 and September 1, 2001

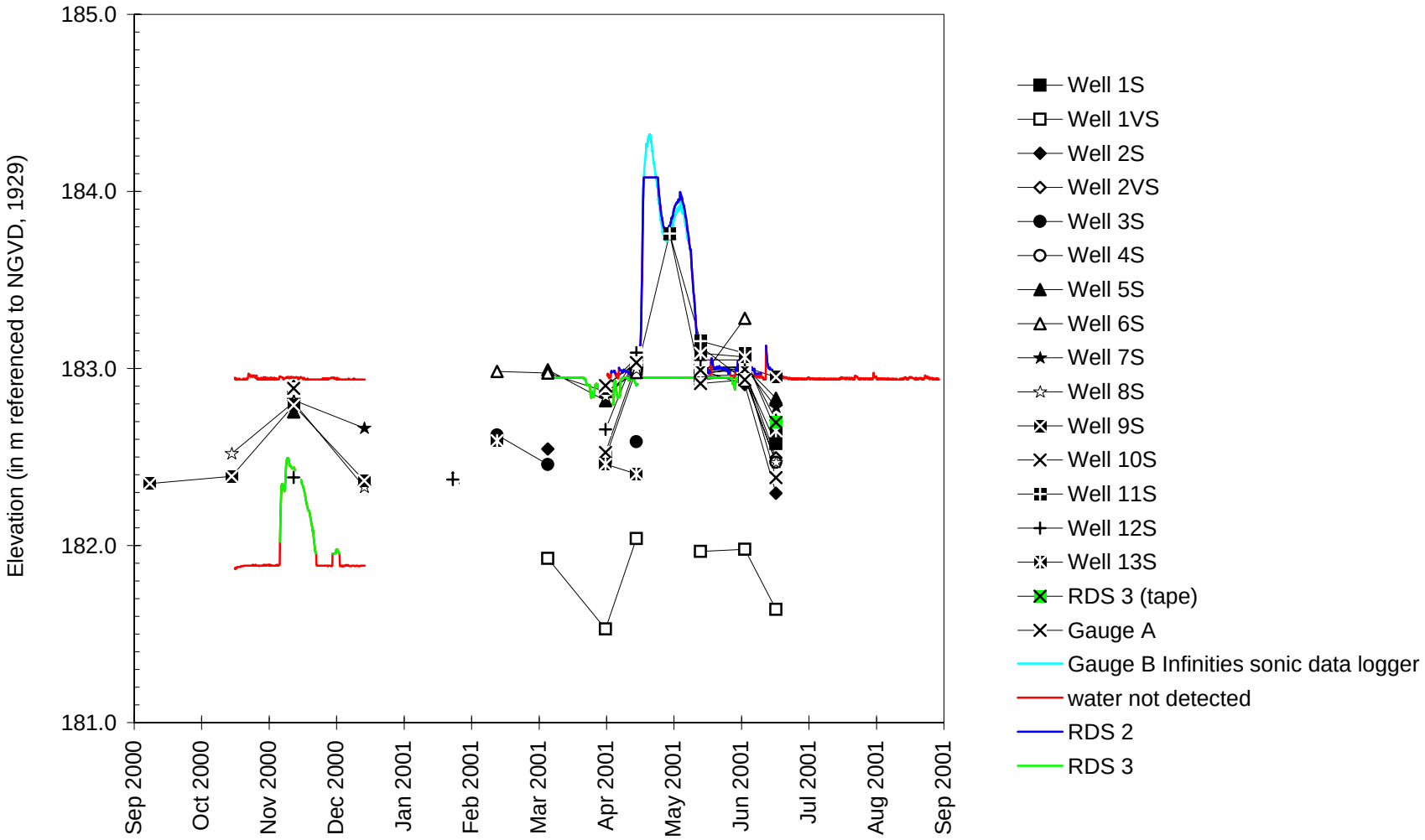
map based on 1999 ISGS elevation survey referenced to NGVD, 1929

contour interval is 0.1 meters



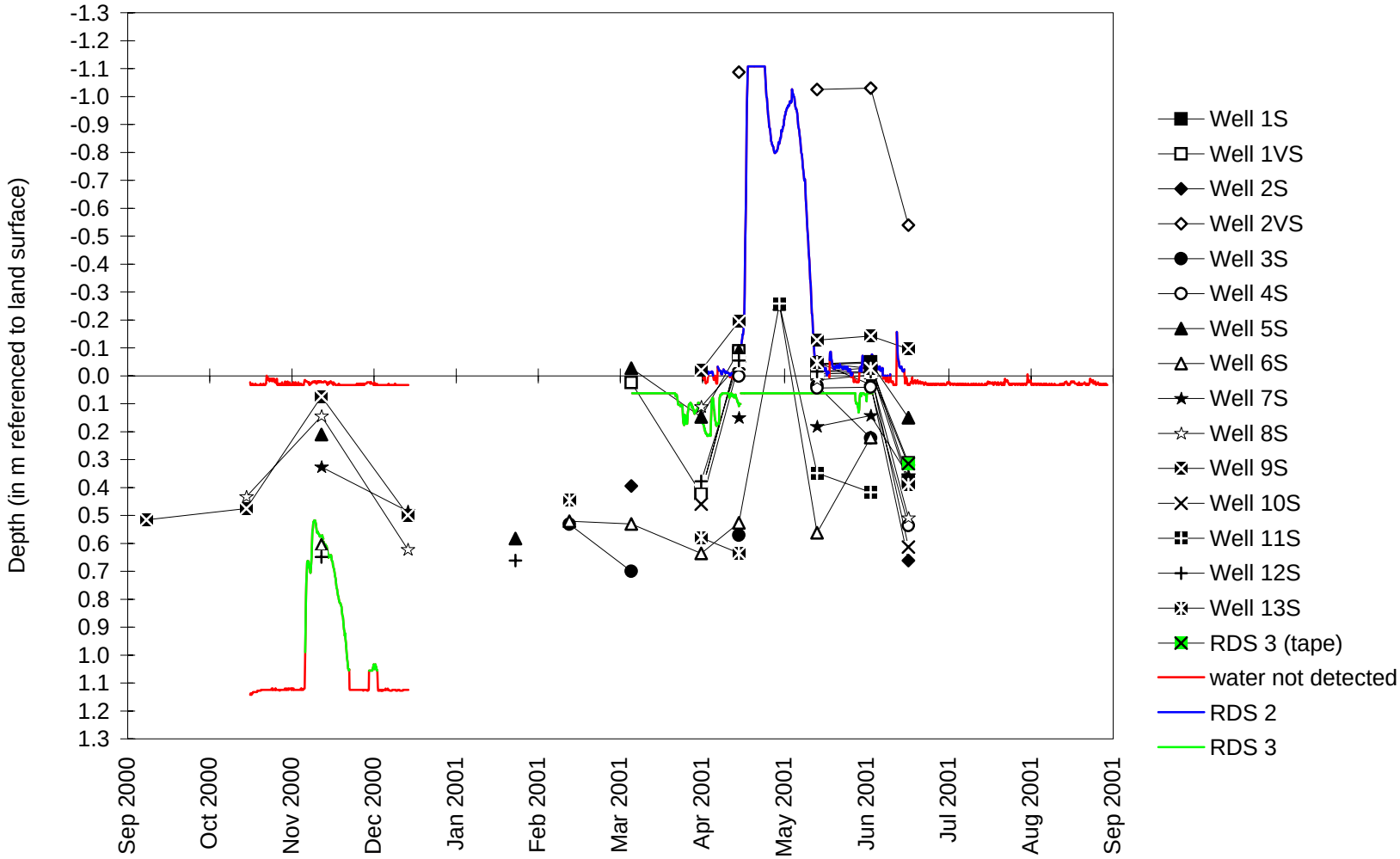
Galena River Bridge Wetland Compensation Site
September 1, 2000 to September 1, 2001

Water-Level Elevations



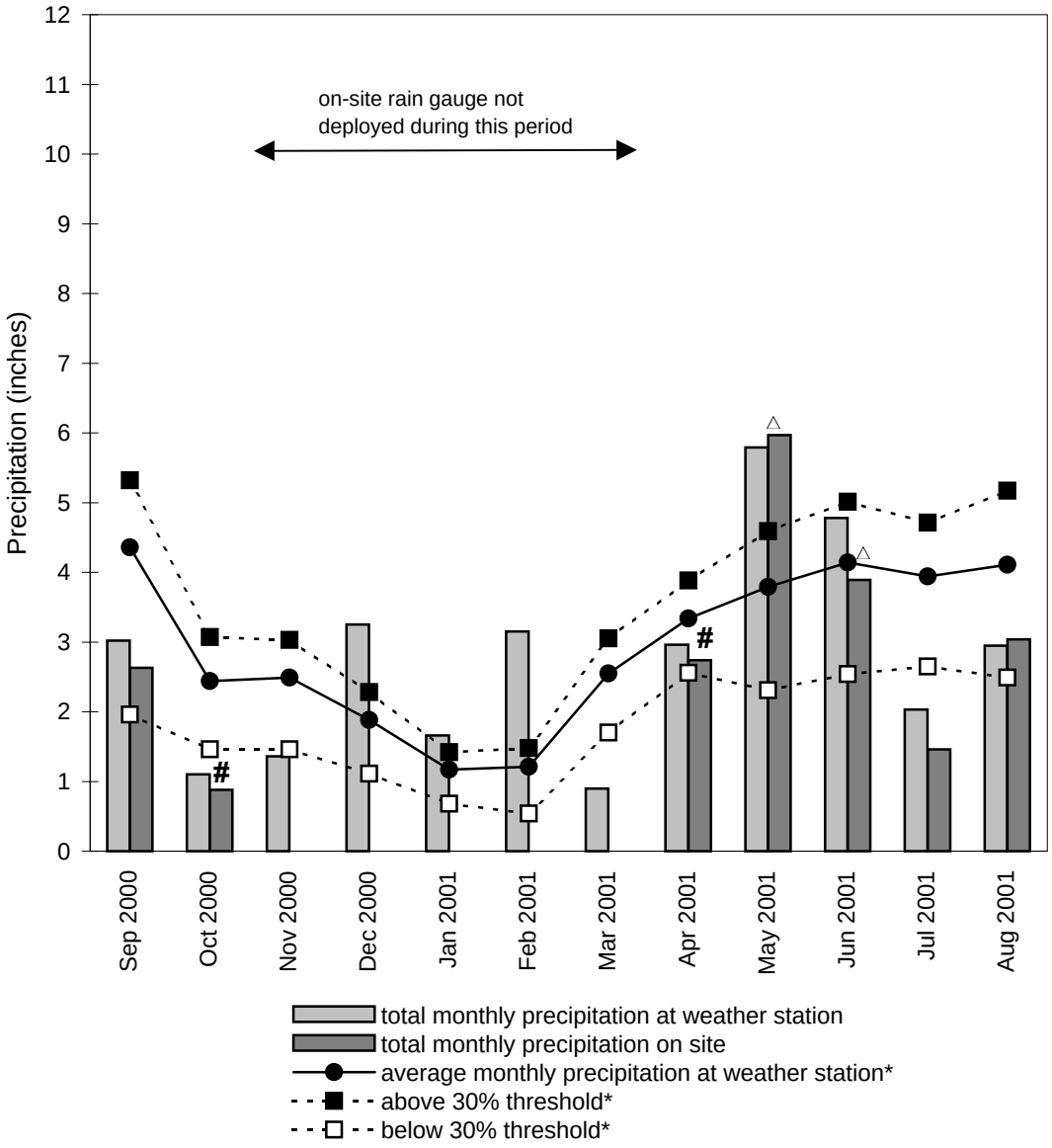
Galena River Bridge Wetland Compensation Site
September 1, 2000 to September 1, 2001

Depth to Water



Galena River Bridge Wetland Compensation Site
September 2000 through August 2001

Total Monthly Precipitation Recorded On Site and at the Galena, IL Weather Station



* see text for explanation

△ suspect data: rain collector clogged, represents minimum value for the month

\# on-site rain gauge not deployed for entire month

Graph last updated October 5, 2001

ALEXANDER COUNTY, CAPE GIRARDEAU BRIDGE WETLAND COMPENSATION SITE **ISGS #47**

FAP 312
Alexander County, near East Cape Girardeau, Illinois
Primary Project Manager: D. Bradley Ketterling
Secondary Project Manager: Bonnie J. Robinson

SITE HISTORY

- August 1998: The ISGS installed monitoring wells.
- November 1999: Wells damaged during flooding in the summer of 1999 were removed and replaced with new monitoring wells. A transducer was added to the southern excavation.
- February 2000: A rain gauge was installed on site.
- August 2000: A topographic survey (arbitrary grid) was conducted using a total station.
- February 2001: The pressure transducer in well 13S was moved to a new location in the deepest part of the site (well 14S), just west of well 9S. A second transducer (gauge E) was deployed adjacent to well 14S to record surface water flooding.

WETLAND HYDROLOGY CALCULATION FOR 2001

Based on a topographic survey of the site, the entire area of the site, 18 ac (7.3 ha), satisfied the criteria for wetland hydrology in 2001. In 2000, no part of the site met the criteria for wetland hydrology. The determination for 2001 is based on the following factors.

- According to the Midwestern Climate Center, the median length of the growing season in Cape Girardeau, Missouri is 223 days, beginning March 26 and ending November 5. Therefore, 12.5% of the growing season is 28 days.
- Precipitation during the monitoring period was 90% of normal. Disregarding a record summer rainfall event of 5.81 inches (14.76 cm) on July 19, 2001, precipitation would be 84% of normal. Regardless of the somewhat drier year, widespread flooding along the Mississippi River occurred in the spring due to a heavy snow pack and considerable rainfall in the upper Mississippi River basin.
- Based on the transducer records from gauge E and well 14S as well as stage data from the USACE gauge at Cape Girardeau, the entire site was flooded from April 26 to May 29 (34 days) and from June 5 to June 30 (26 days). At peak stage in the latter flood event, the highest parts of the site were covered by greater than 2 meters (6.6 feet) of water.

ADDITIONAL OBSERVATIONS:

- Based on measurements of well stickups, an average of 9.6 cm (3.8 in) of sediment were deposited on site during the spring floods.

PLANNED FUTURE ACTIVITIES

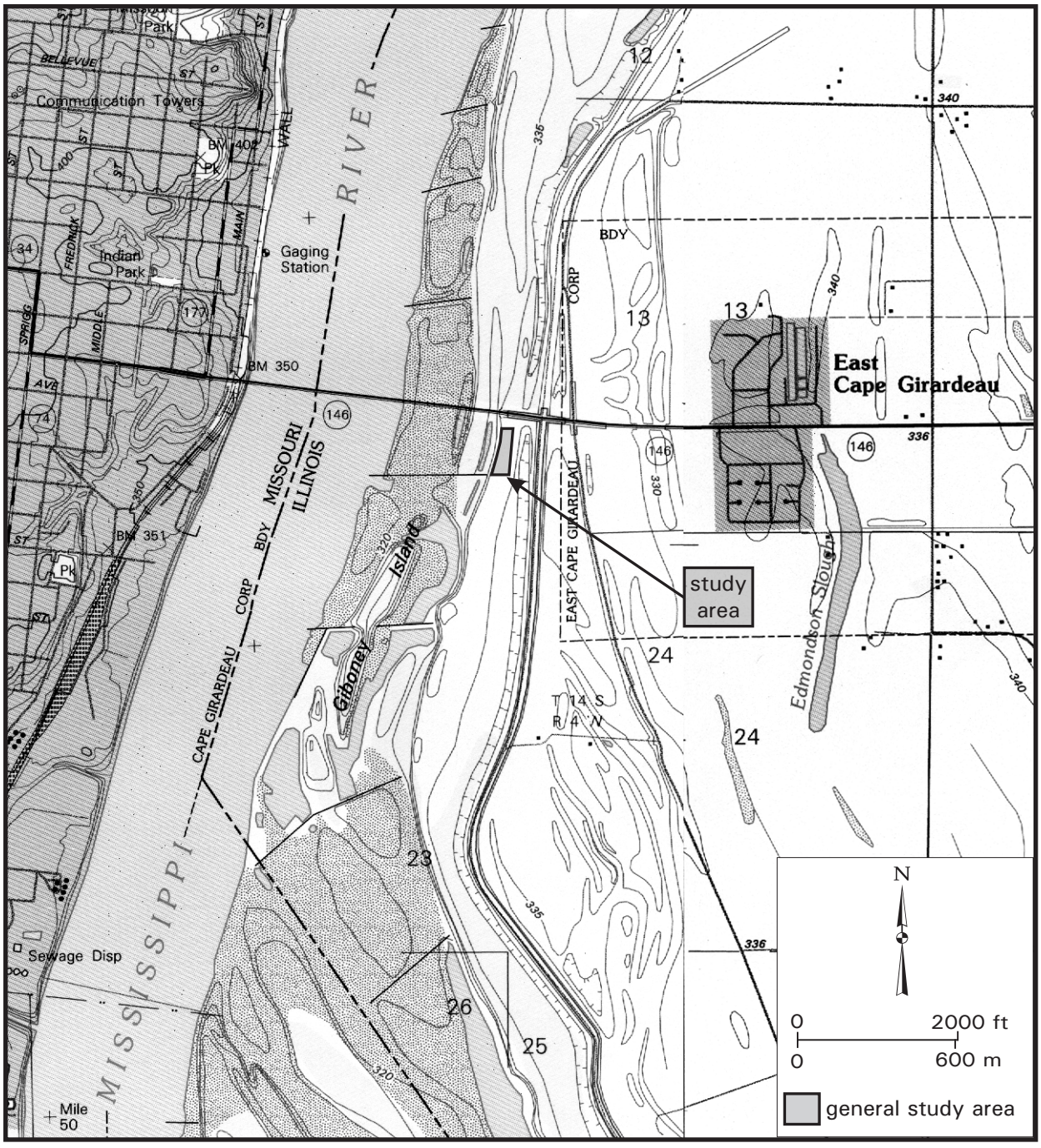
- Some wells will be replaced due to silt deposition within the well itself. In addition, more flood-resistant instrumentation may be installed so that water-level records are not interrupted by high stage in the Mississippi River.

- Monitoring will continue through August 2003 or until no longer required by IDOT.

Alexander County, Cape Girardeau Bridge Wetland Compensation Site (FAP 312)

General Study Area and Vicinity

from the USGS Topographic Series, Cape Girardeau, MO-IL and Mc Clure, IL-MO (USGS 1993)
contour interval is 10 feet

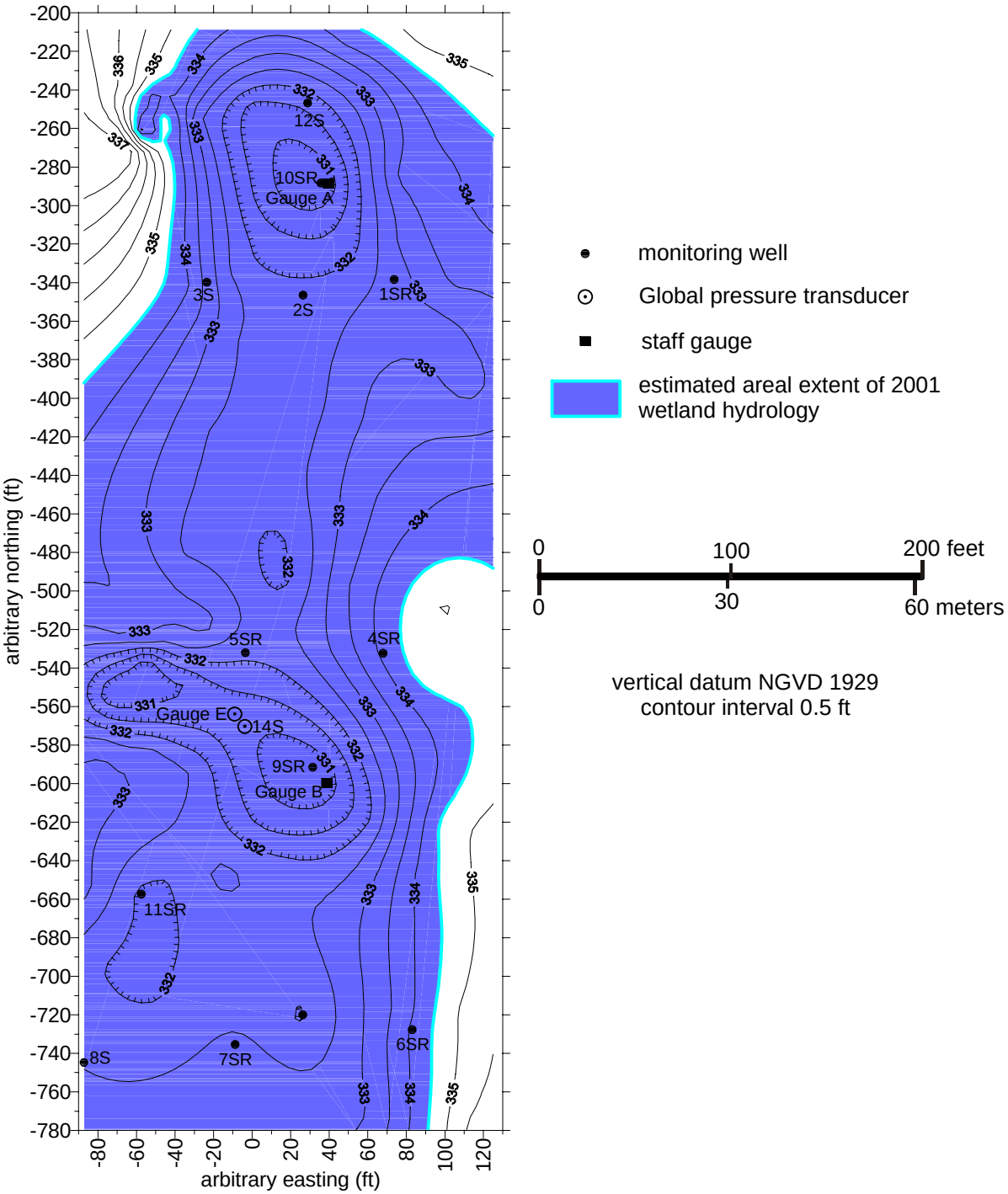


Alexander County, Cape Girardeau Bridge Wetland Compensation Site (FAP 312)

Estimated Areal Extent of 2001 Wetland Hydrology

based on data collected between September 1, 2000 and September 1, 2001

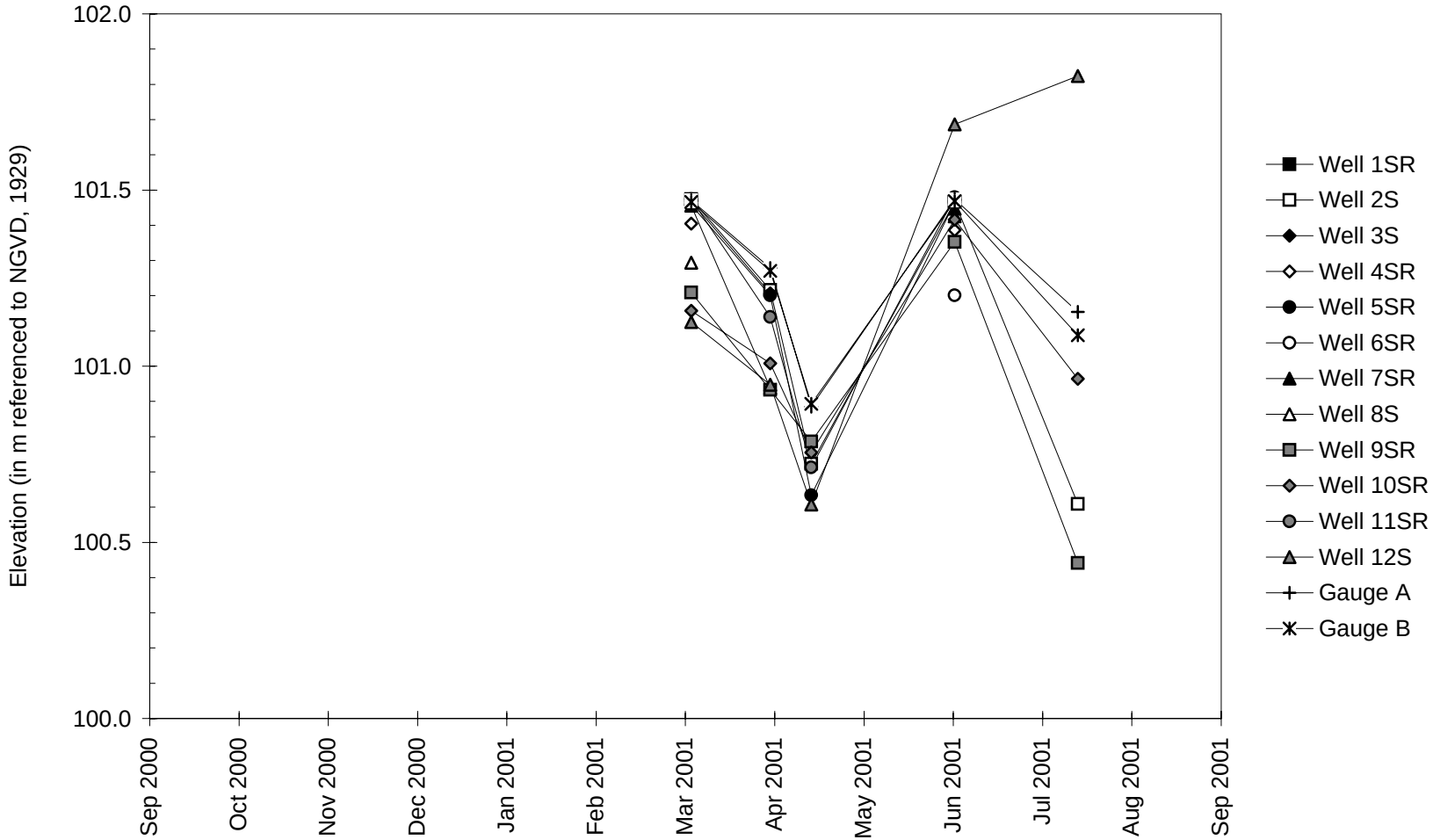
contour map based on topographic survey conducted by the ISGS 08/08/00



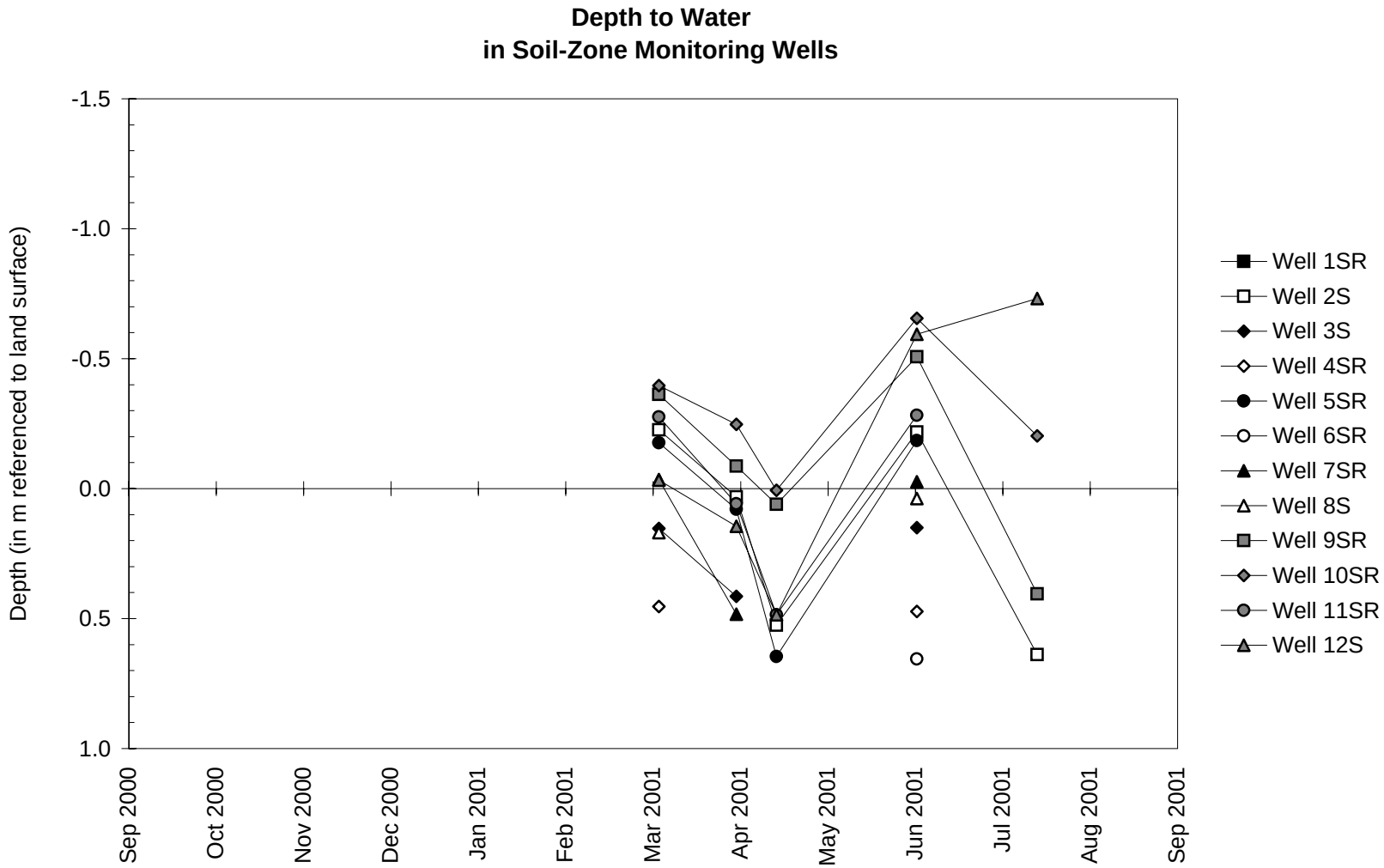
This topographic map of the Alexander County wetland compensation site was interpolated using 122 points surveyed in August 2000. The contours are mapped on an arbitrary grid oriented roughly north-south. This map represents an approximation of the 2001 topography. Prolonged flooding in 2001 deposited an average of ~ 9.6 cm (~3.8 in) of sediment over the site.

Alexander County, Cape Girardeau Bridge Wetland Compensation Site
September 1, 2000 to September 1, 2001

Water-Level Elevations
in Soil-Zone Monitoring Wells and on Stage Gauges

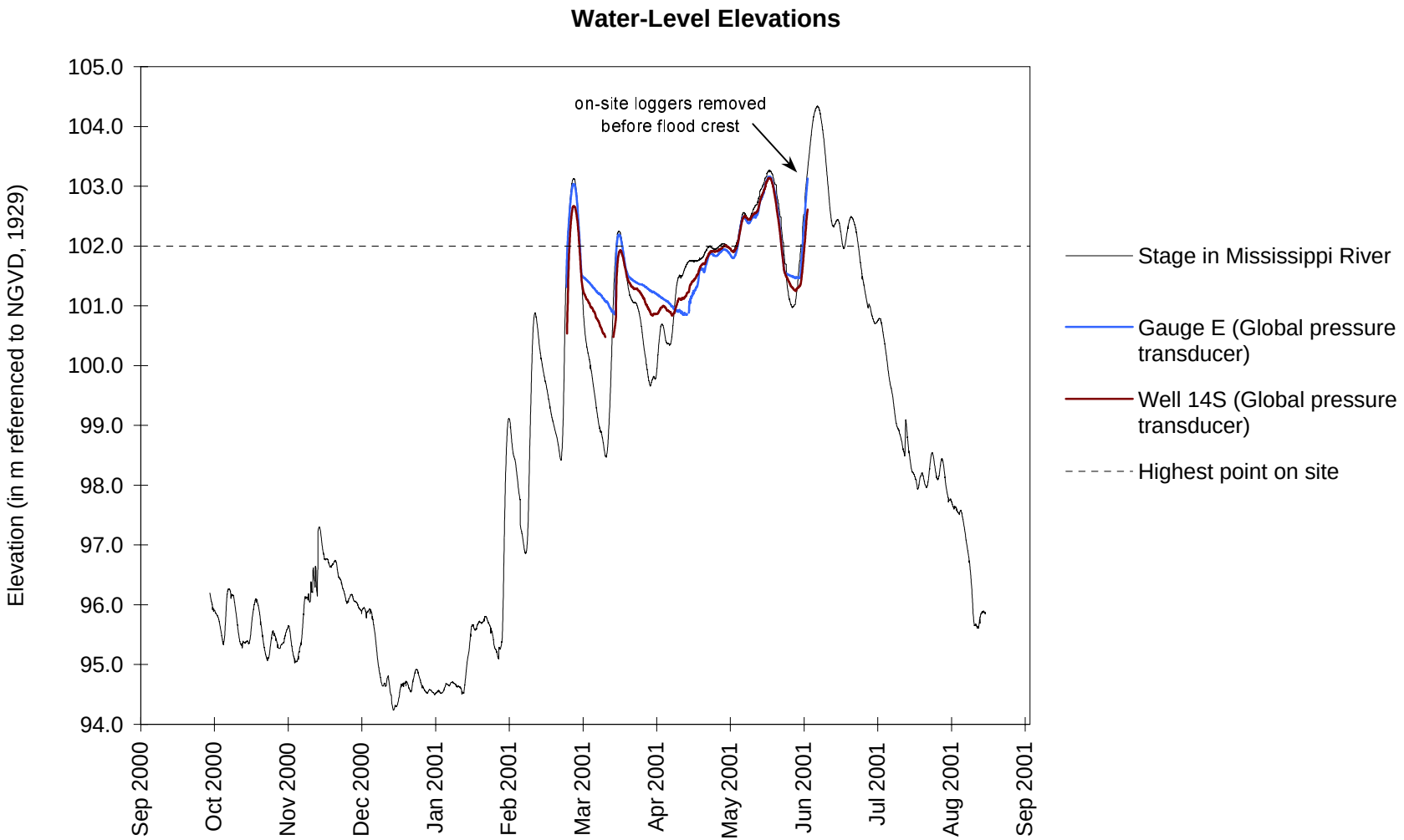


Alexander County, Cape Girardeau Bridge Wetland Compensation Site
September 1, 2000 to September 1, 2001



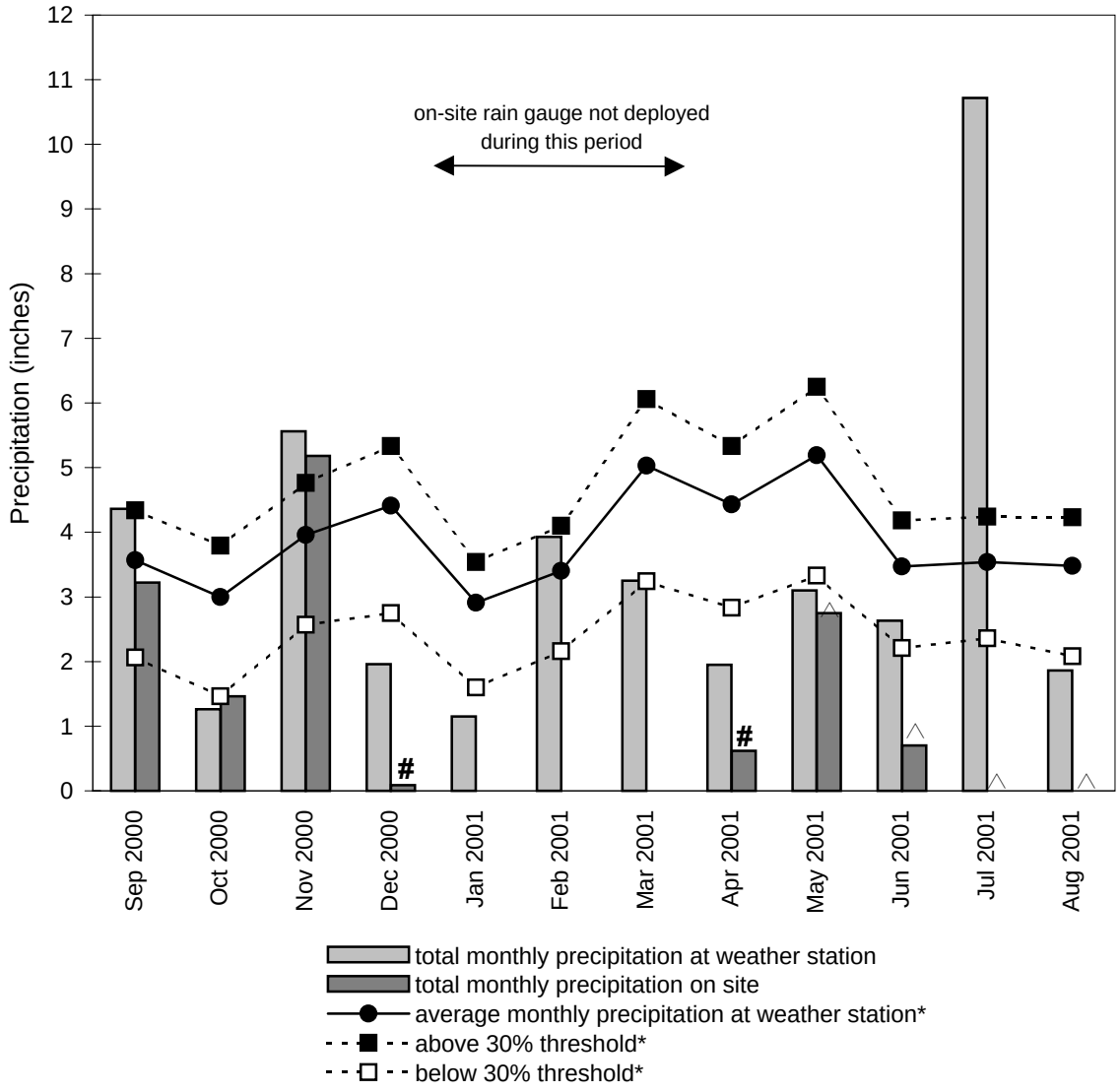
Alexander County, Cape Girardeau Bridge Wetland Compensation Site

September 1, 2000 to September 1, 2001



Alexander County, Cape Girardeau Bridge
Wetland Compensation Site
September 2000 through August 2001

Total Monthly Precipitation Recorded On Site and at the Regional Airport Weather Station, Cape Girardeau, MO



on-site rain gauge not deployed for entire month
△ suspect data: rain gauge malfunction, represents minimum value for the month
* see text for explanation

Graph last updated October 5, 2001

SUGAR CREEK, CLINTON COUNTY **ISGS #48**
WETLAND COMPENSATION SITE
FAS 783
Clinton County, near Damiansville, Illinois
Primary Project Manager: D. Bradley Ketterling
Secondary Project Manager: Bonnie J. Robinson

SITE HISTORY

- Fall 1998: The ISGS began water-level monitoring.
- April 1999: Two additional monitoring wells were installed.
- April 2000: An Infinities sonic data logger was installed on the bridge over Sugar Creek and a rain gauge was installed on site.
- December 2000: A "close-out" meeting was held on site with representatives from the U.S. Army Corps of Engineers, IDOT, IDNR, ISGS, INHS, and the Clinton County Highway Department. The site was accepted as compensation in advance of the impact.

WETLAND HYDROLOGY CALCULATION FOR 2001

In December, 2000, IDOT asked the ISGS to discontinue monitoring the hydrology of the site. As such, no wetland hydrology calculation was carried out for 2001.

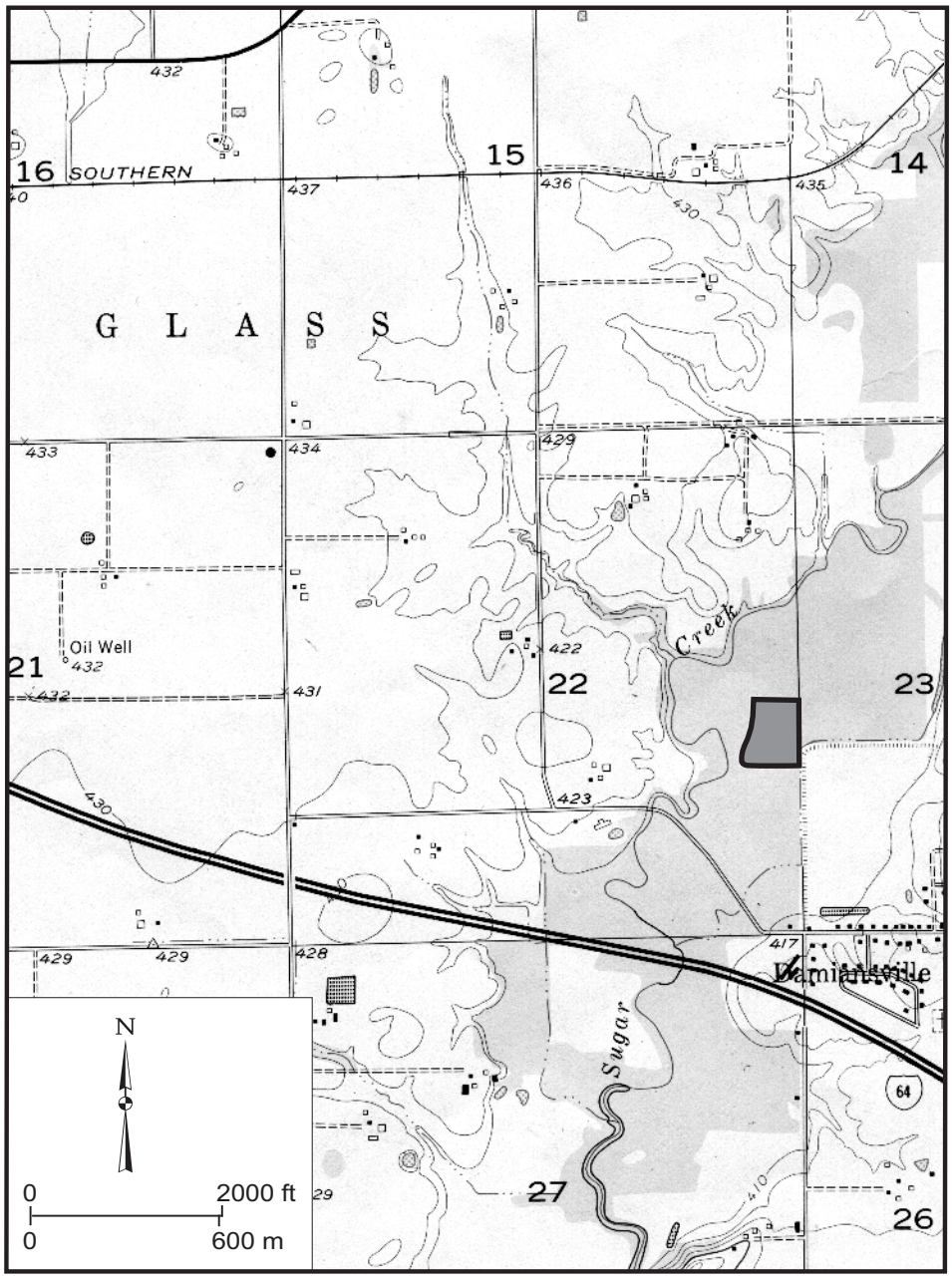
PLANNED FUTURE ACTIVITIES

- Although no future activities are planned, ISGS wells remain on site by request of the Clinton County Highway Department. They will be removed by same once an agreement can be reached with the landowner to enter the property.

Sugar Creek, Clinton County Wetland Compensation Site (FAS 783)

General Study Area and Vicinity

from the USGS Topographic Series, Trenton, IL 7.5-minute Quadrangle (USGS 1981)
contour interval is 10 feet



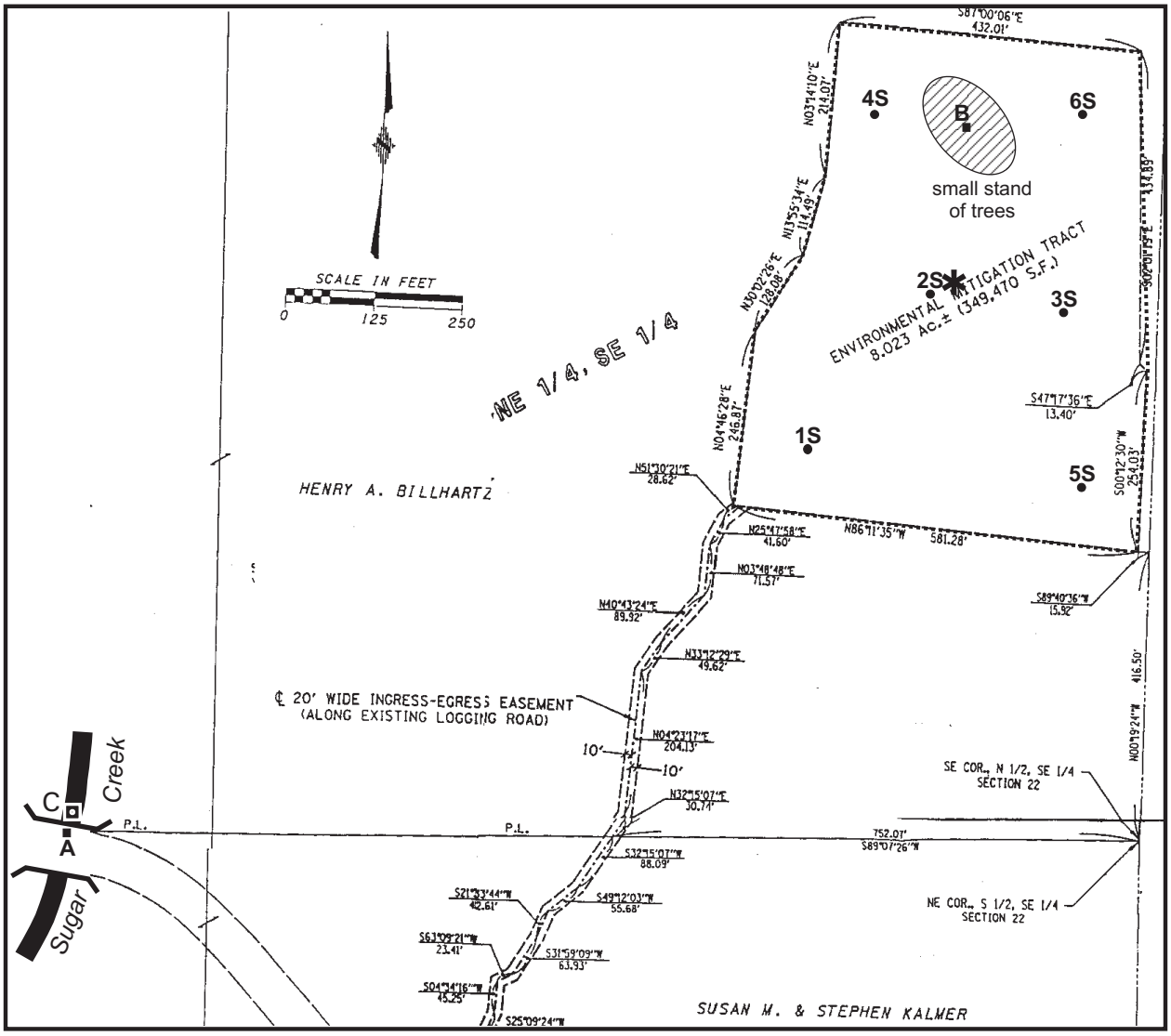
general study area

Sugar Creek, Clinton County Wetland Compensation Site
(FAS 783)

Approximate Locations of ISGS Monitoring Instruments

map based on plat of mitigation, Clinton County, IL

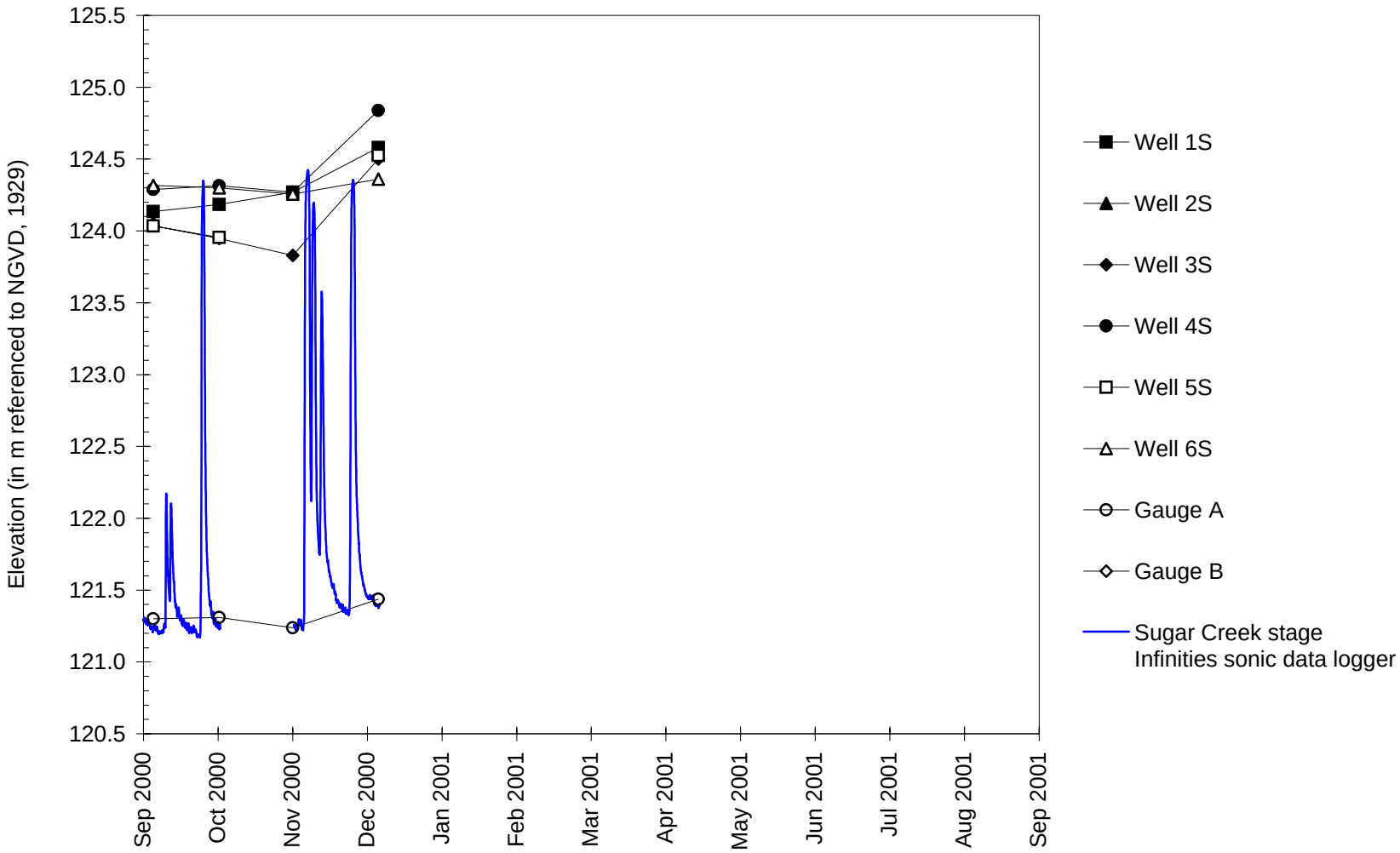
produced by Henry, Meisenheimer & Gende, Inc. Consulting Engineers



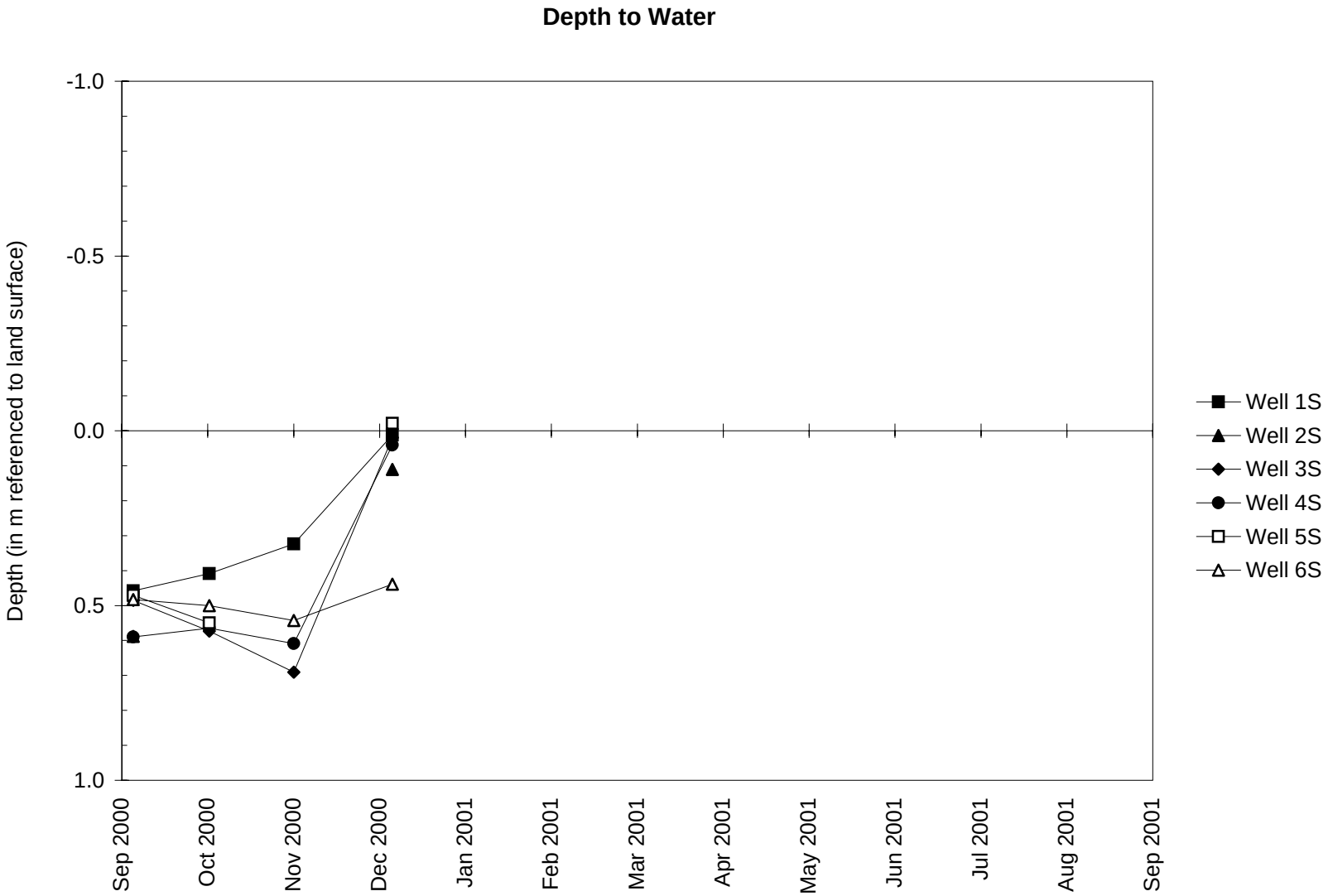
- ● monitoring well
- ■ stage gauge
- ✱ rain gauge
- ⊡ Infinities sonic data logger (gauge C)
- ▭ site boundary

Sugar Creek, Clinton County Wetland Compensation Site
September 1, 2000 to September 1, 2001

Water-Level Elevations

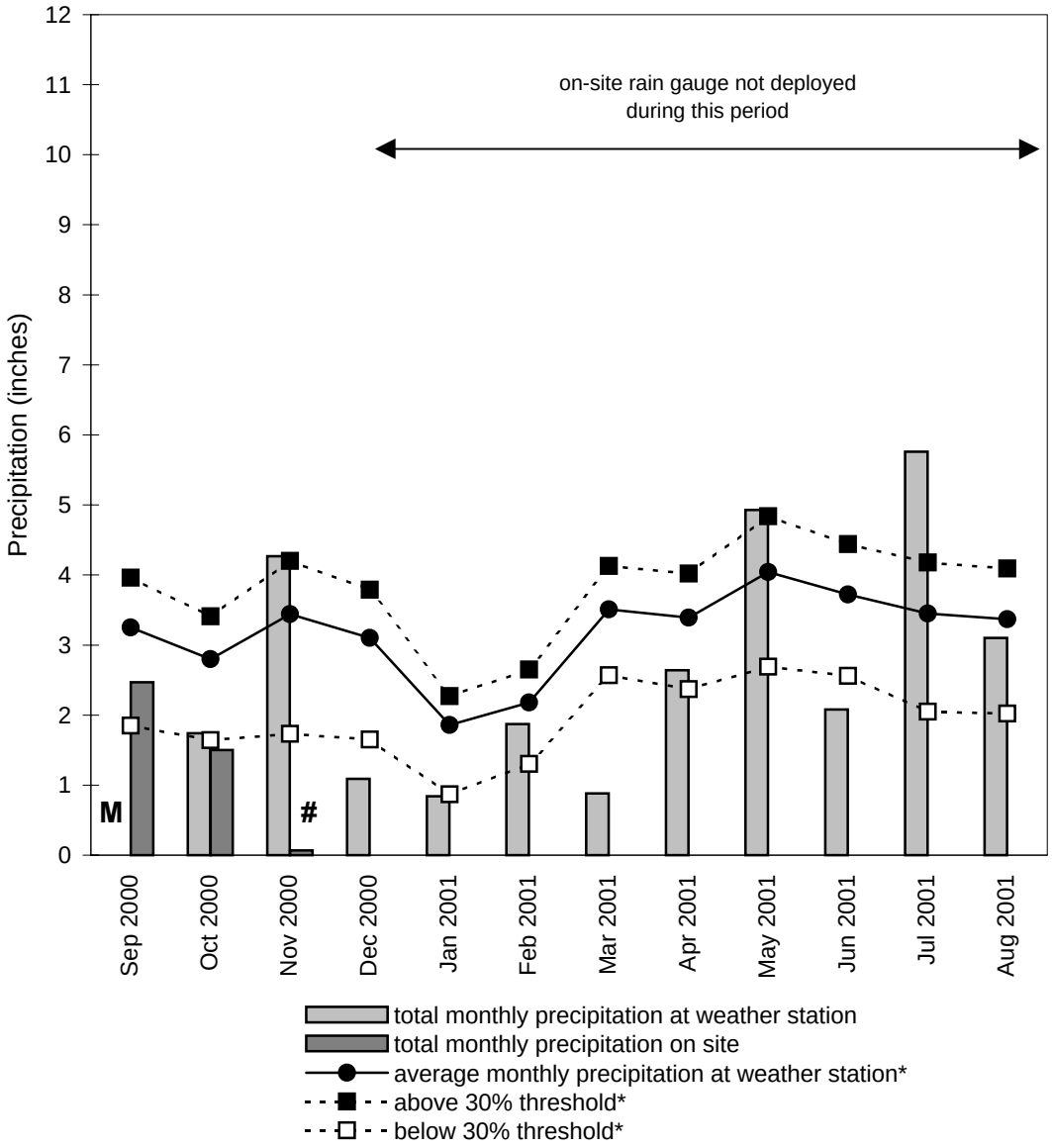


Sugar Creek, Clinton County Wetland Compensation Site
September 1, 2000 to September 1, 2001



Sugar Creek, Clinton County Wetland Compensation Site
September 2000 through August 2001

Total Monthly Precipitation Recorded On Site and at the SIU Weather Station, Belleville, IL



on-site rain gauge not deployed for entire month
M missing data at weather station
* see text for explanation

Graph last updated October 5, 2001

MORRIS, ILLINOIS RIVER **ISGS #49**
POTENTIAL WETLAND BANKING SITE
Grundy County, near Morris, Illinois
Primary Project Manager: Keith W. Carr
Secondary Project Manager: James J. Miner

SITE HISTORY

- March 1999: ISGS was tasked by IDOT to perform a Level II hydrogeologic assessment of the potential banking site.

- August 1999: ISGS began monitoring ground- and surface-water levels at the site.

- February 2001: Two new RDS data loggers, one staff gauge and nine soil-zone monitoring wells were installed at the site.

- March 2001: Two letters were sent by ISGS to IDOT Central Office. The first was a review of a wetland mitigation plan proposed by IDOT. The second letter provided general information regarding site hydrological conditions.

- July 2001: Six nests of two soil-moisture probes each were installed next to six existing soil-zone wells to investigate the degree of agreement between the two types of instruments.

WETLAND HYDROLOGY CALCULATION FOR 2001

Based on ground-water level measurements collected on site, none of the 48 soil-zone monitoring wells satisfied wetland hydrology criteria in 2001. However, an extremely limited portion of the site, approximately 0.78 ac (0.31 ha), exhibited surface-water elevations that conclusively satisfied wetland hydrology criteria (not including perennial water bodies). This is a similar result to 2000, during which "a limited portion of the site exhibited surface-water elevations that satisfied wetland hydrology criteria". Precipitation in 2000 was normal at the Morris site. This estimate is based on the following factors.

- According to the Midwestern Climate Center, the median date that the growing season begins in Morris, Illinois is April 16 and the season lasts 188 days; 12.5% of the growing season is 24 days.

- Total precipitation for the period from September 2000 to March 2001 was 88% of normal, and March was atypically dry, resulting in drier than normal conditions entering the growing season. During the period from April to August 2001, precipitation was 86% of normal, and during no individual month of the 2001 growing season was the precipitation higher than the normal range. Total precipitation for the monitoring period from September 2000 to August 2001 was 87% of normal.

- In 2001, water levels measured in none of the 48 wells conclusively satisfied wetland hydrology criteria as outlined in the 1987 U.S. Army Corp of Engineers Wetland Delineation Manual. Water levels measured at wells 42S, 43S, 44S, and 21S may have satisfied the criteria for wetland hydrology. In addition, surface-water levels may have satisfied wetland

hydrology criteria at RDS data loggers SW7-R and SW8-R.

- Surface-water levels at staff gauge SW5-F conclusively satisfied wetland hydrology criteria. It is located within a small area subject to ponding located near the main site entrance. An area of approximately 0.78 ac (0.31 ha) was likely inundated for longer than 12.5% of the growing season.

- During the 2001 growing season, site elevations less than 147.50 m (483.9 ft) were inundated by floodwaters for a period sufficient to conclusively satisfy wetland hydrology criteria. Further, only elevations below 147.83 m (485.0 ft) were inundated for a period which may satisfy, but did not conclusively satisfy, wetland hydrology criteria. These water levels would not overtop the bank-full elevation of the Mazon River and Mud Slough, and would therefore not flood a significant portion of the site. According to INHS mapping, this within-stream area of the site totals roughly 57.9 ac (23.4 ha), although it is likely that some portion of this area is deep-water habitat.

- One flood with a stage value greater than 151.18 m (496 ft), sufficient to inundate most of the site, occurred during the 2001 monitoring period, but outside the growing season. As in previous years, the flood duration was less than 3 days, and therefore was not significant. Although, longer ponding likely occurred in some closed depressions.

ADDITIONAL INFORMATION

- In the fall of 2000, ISGS contracted with a local drainage firm to determine the extent of the tile system in the east field. The contractor was able to trace the tile over a large portion of this field. In one instance, the tile was traced to the south site margin, although it was discovered to be plugged and inoperable at that point. It is the opinion of the contractor that at the extremities of the system, the tile network is likely plugged, thus limiting the likelihood of any off-site impacts should the tile be de-activated. On several occasions, the tile outlet into the creek was seen to be flowing, indicating that the tile is performing some role in dewatering the field. Because four soil-zone wells and one RDS data logger in the field may have satisfied, but did not conclusively satisfy, wetland hydrology criteria, any dewatering occurring via the tile system is counterproductive. Removal of the tile, however, will not guarantee wetland hydrology will be attained over large areas of the east field, because the wells are generally positioned in the lower-lying areas. Also, the east field requires an overbank flood event from the Mazon River to deliver water and recharge the field. No significant complementary water source exists should a flood fail to occur during the growing season. Soil-moisture gauges were also added at three soil-zone well locations in this field in the summer of 2001.

- At the Morris site, significant areas of floodplain forest exhibiting predominantly hydrophytic vegetation seem to be present at elevations above those that are inundated for 12.5% of the growing season. It is therefore possible that on this site, areas that are inundated for less than 12.5% of the growing season may exhibit characteristics of jurisdictional wetlands. Prior to the start of the growing season in 2001, four new soil-zone monitoring wells were installed in the floodplain forest immediately east of IL 47 (wells 45S–48S). This area is mapped as having hydric soils by the NRCS, is indicated to be a jurisdictional wetland on NWI mapping, and is mapped by INHS as satisfying the three-parameter description of a wetland. This floodplain forest, according to ISGS monitoring data, did not exhibit wetland

hydrology criteria in 2001, even at the level of 5% of the growing season. Soil-moisture gauges were installed in the summer of 2001 at three of the four well locations in the floodplain forest to aid in determining if the soil-zone wells were under-representing the period of saturation.

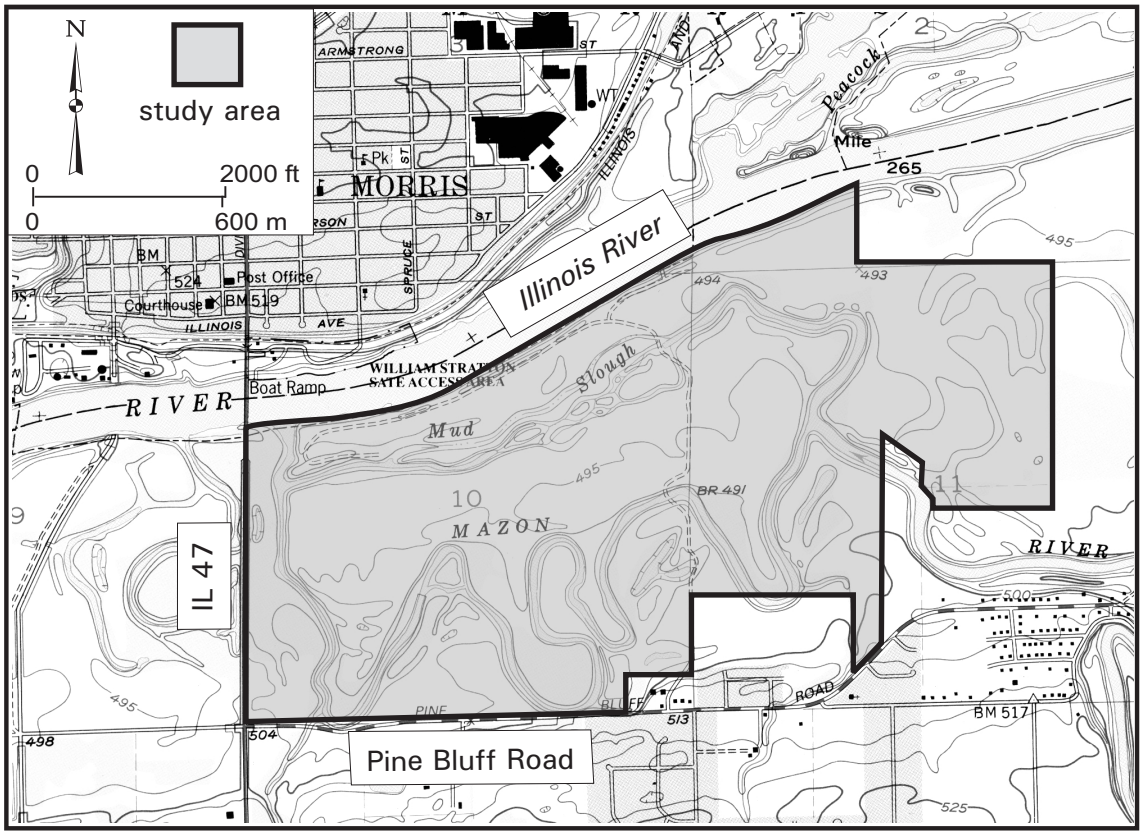
PLANNED FUTURE ACTIVITIES

- Depending upon IDOT construction activities, several soil-zone wells and a surface-water data logger may be added within the IDOT ROW on the west side of IL 47, outside the bank site. These instruments will further aid in the determination of the presence or absence of wetland hydrology in the areas mapped as floodplain forest wetlands.

Morris, Illinois River Potential Wetland Banking Site

General Study Area and Vicinity

from the USGS Topographic Series, Morris, IL 7.5-minute Quadrangle (USGS 1993)
contour interval is 5 feet



Morris, Illinois River Potential Wetland Banking Site

Estimated Areal Extent of 2001 Wetland Hydrology

based on data collected between September 1, 2000 and September 1, 2001

map based on USGS digital orthophotograph, Morris NE quarter quadrangle
from 4/5/1998 aerial photography (ISGS 2001)

0 500 m
0 1500 ft.

N

estimated areal extent of 2001 wetland hydrology

approximate site boundary

▽ soil-moisture probe

□ stage gauge

⊡ Infinities sonic data logger

△ RDS data logger

❄ rain gauge

○ ISGS monitoring well

⊙ Global data logger

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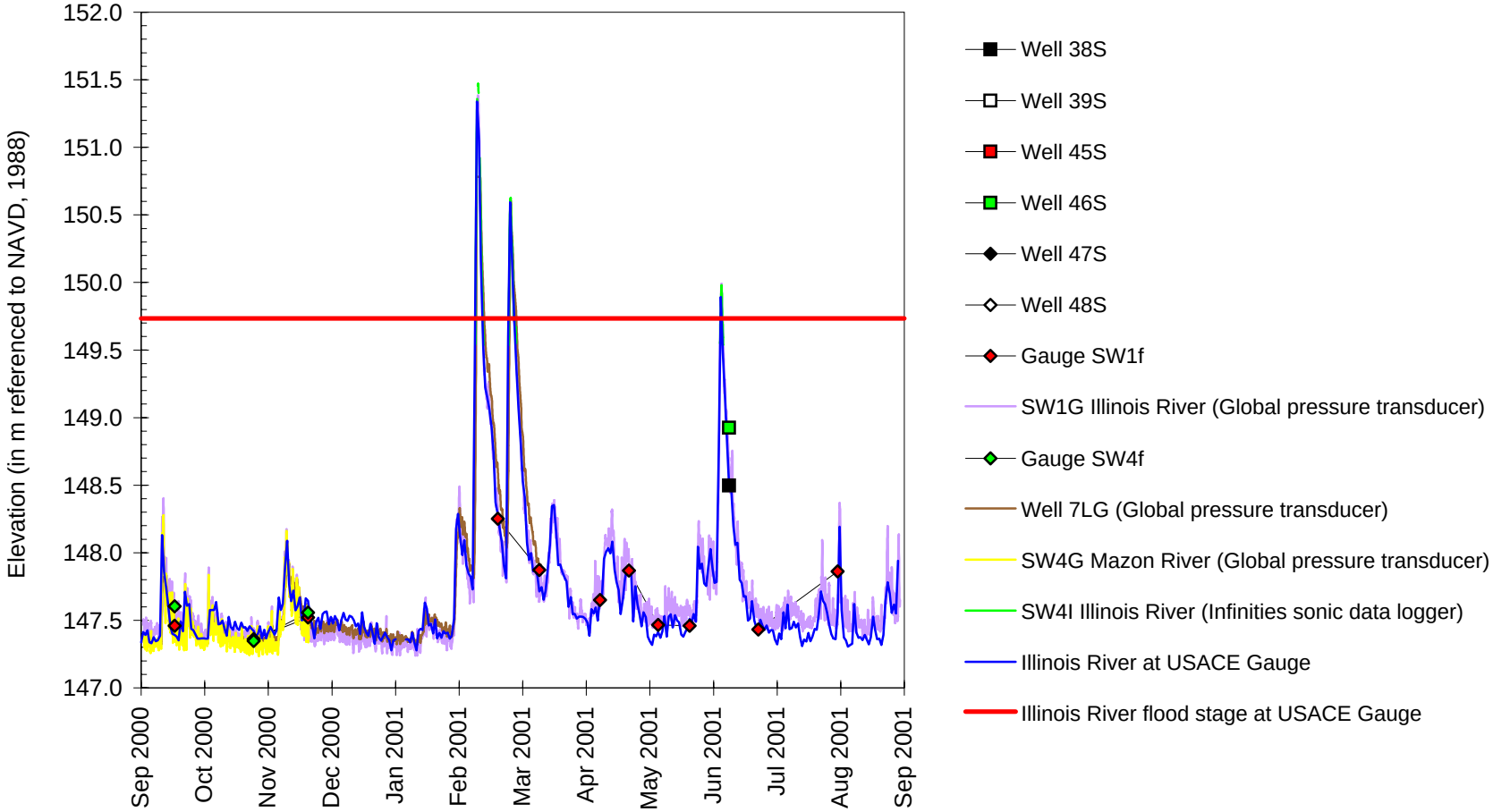
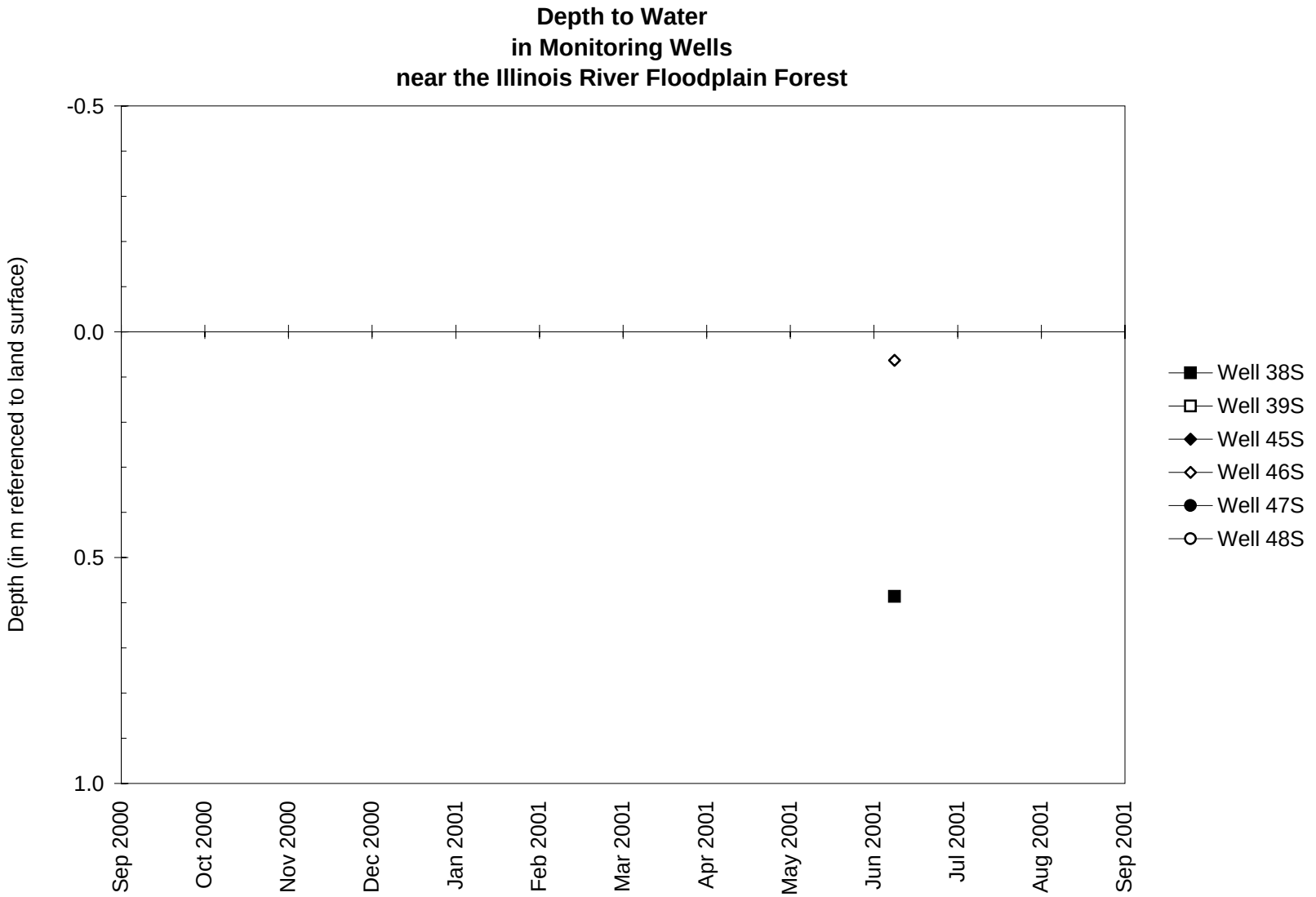
Morris, Illinois River Potential Wetland Banking Site
September 1, 2000 to September 1, 2001

Water-Level Elevations
in Monitoring Wells, Data Loggers, and Stage Gauges
near the Illinois River Floodplain Forest



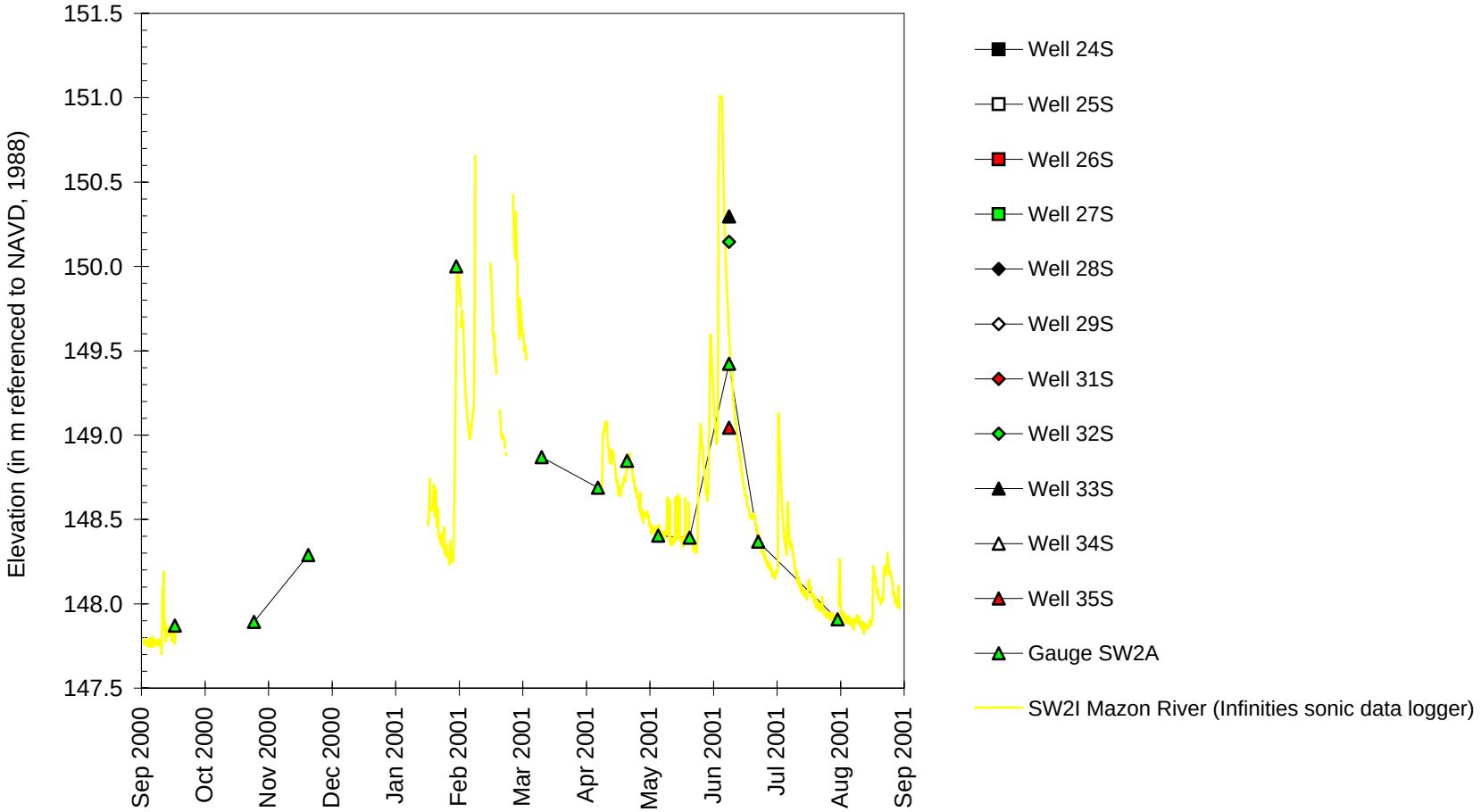
Morris, Illinois River Potential Wetland Banking Site

September 1, 2000 to September 1, 2001

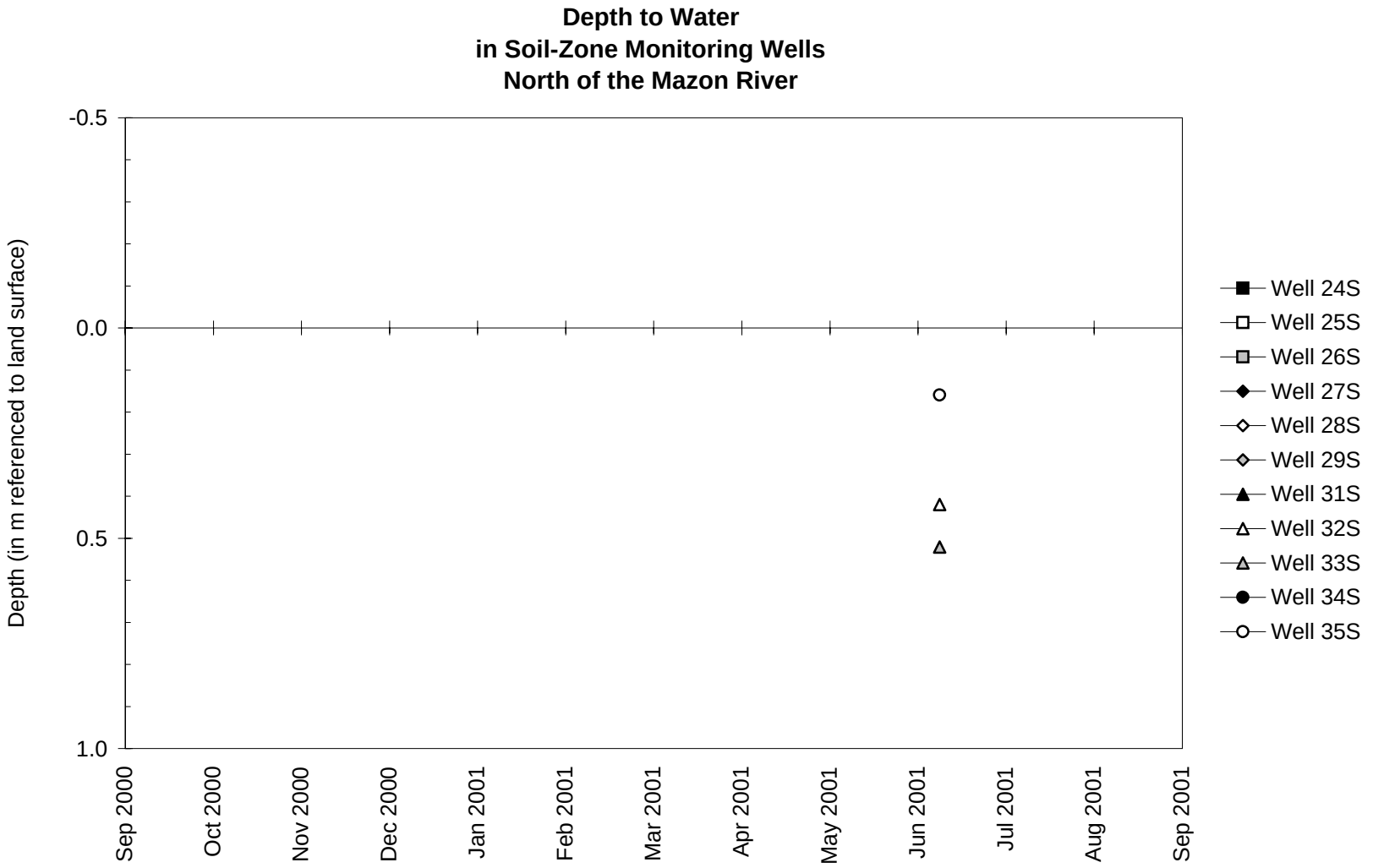


Morris, Illinois River Potential Wetland Banking Site
September 1, 2000 to September 1, 2001

Water-Level Elevations
in Soil-Zone Monitoring Wells, Data Loggers, and Stage Gauges
North of the Mazon River

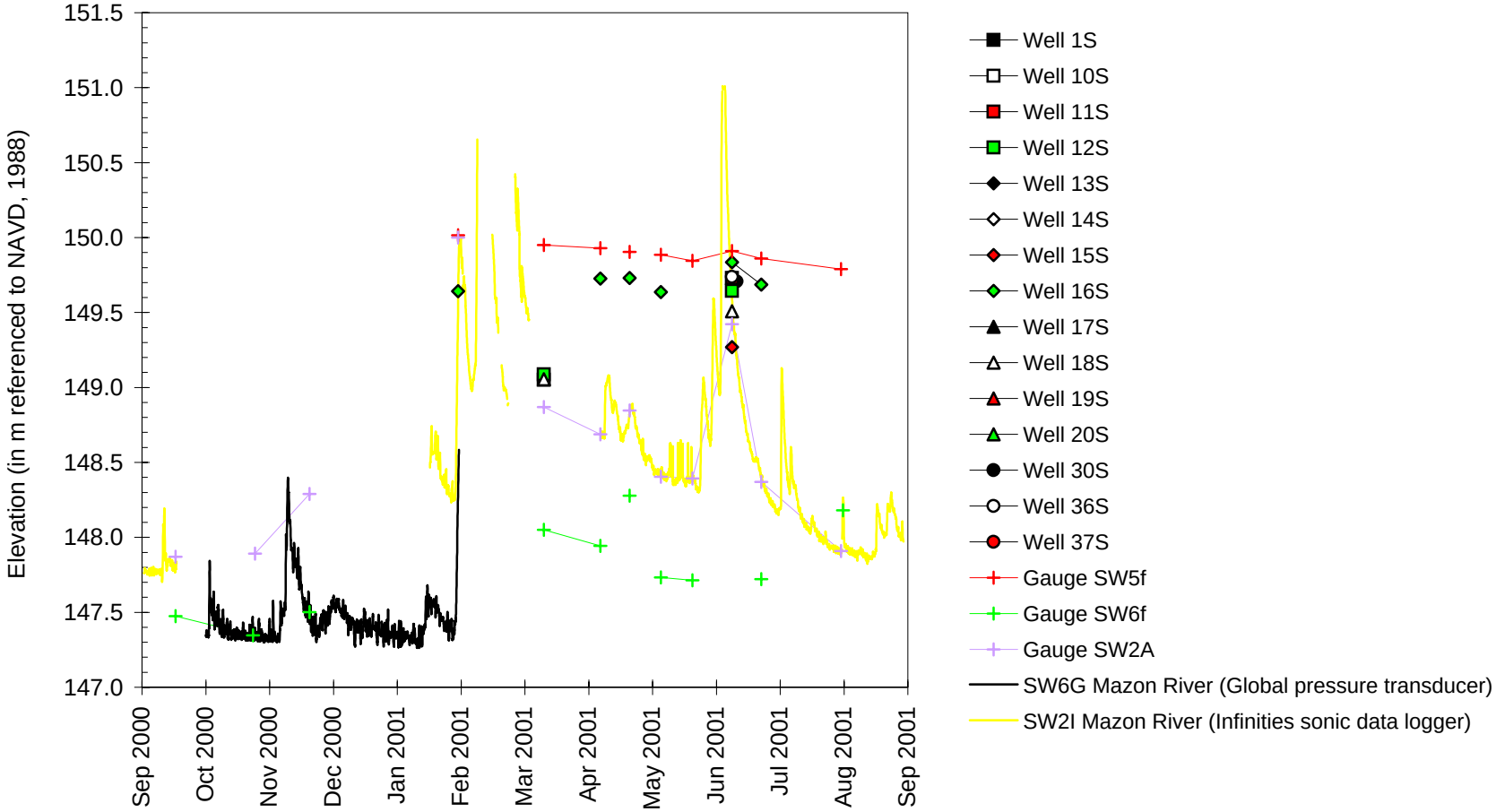


Morris, Illinois River Potential Wetland Banking Site
September 1, 2000 to September 1, 2001

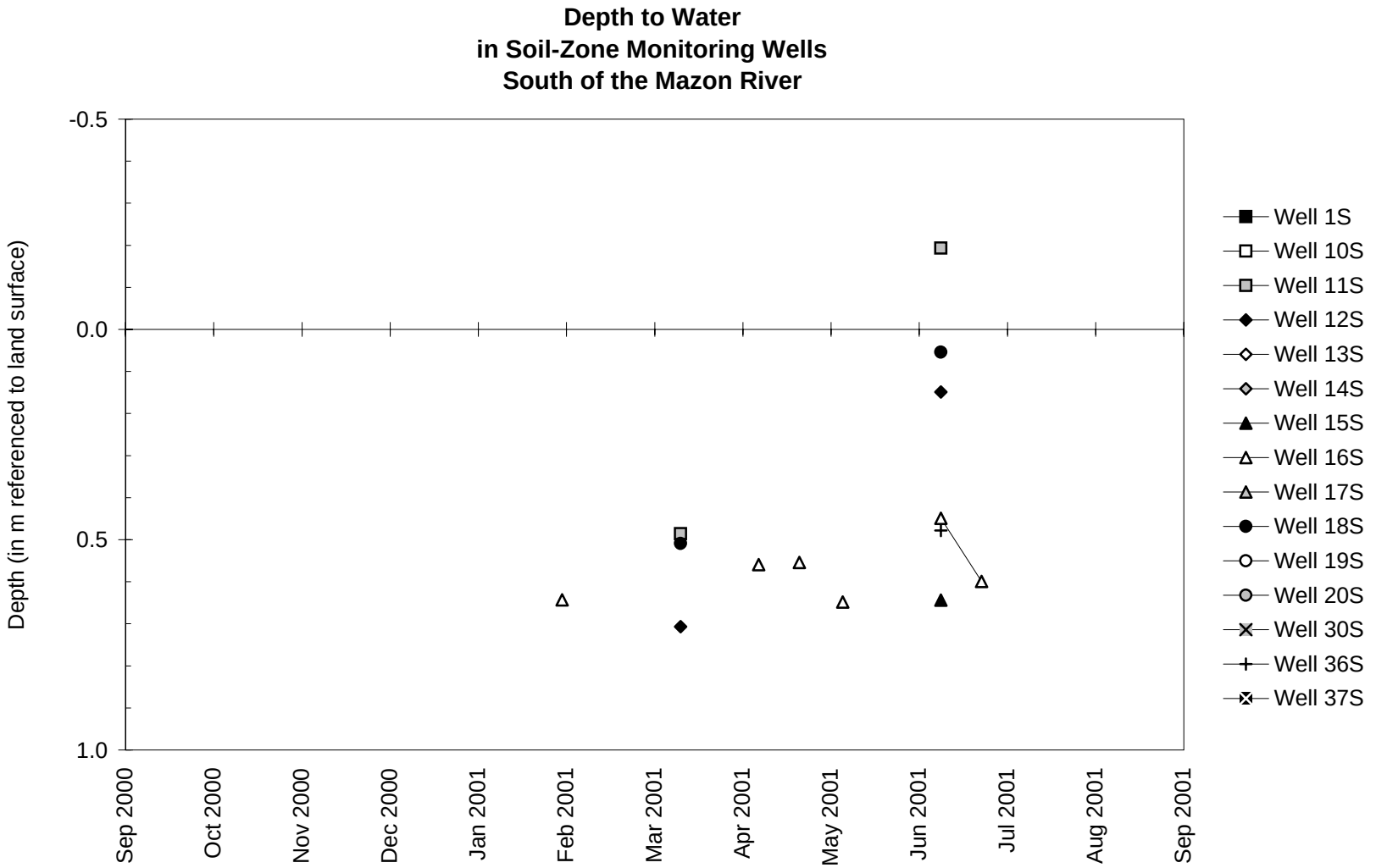


Morris, Illinois River Potential Wetland Banking Site
September 1, 2000 to September 1, 2001

Water-Level Elevations
in Soil-Zone Monitoring Wells, Data Loggers, and Stage Gauges
South of the Mazon River

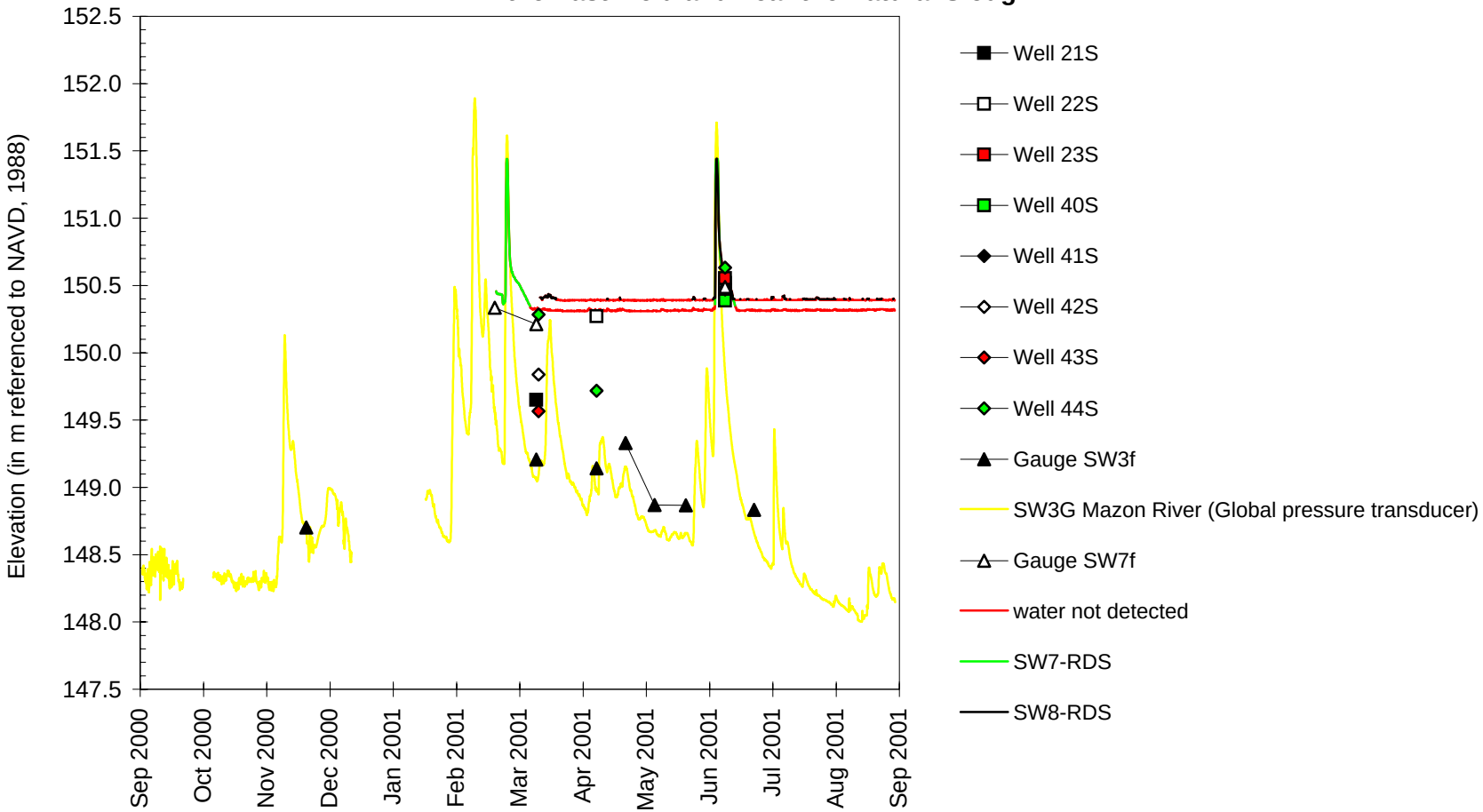


Morris, Illinois River Potential Wetland Banking Site
September 1, 2000 to September 1, 2001



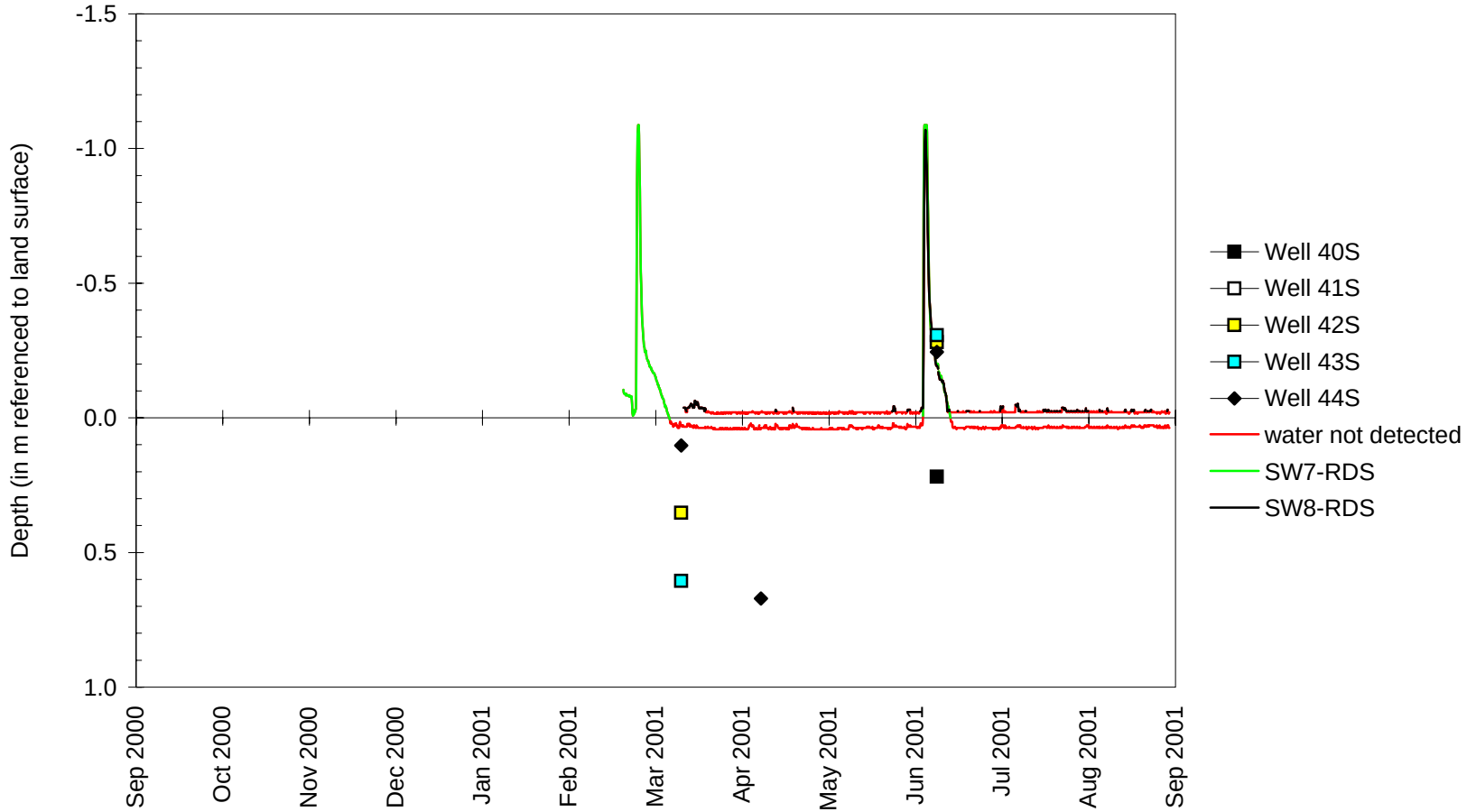
Morris, Illinois River Potential Wetland Banking Site
September 1, 2000 to September 1, 2001

Water-Level Elevations
in Soil-Zone Monitoring Wells, Data Loggers, and Stage Gauges
in the East Field and near the Natural Slough



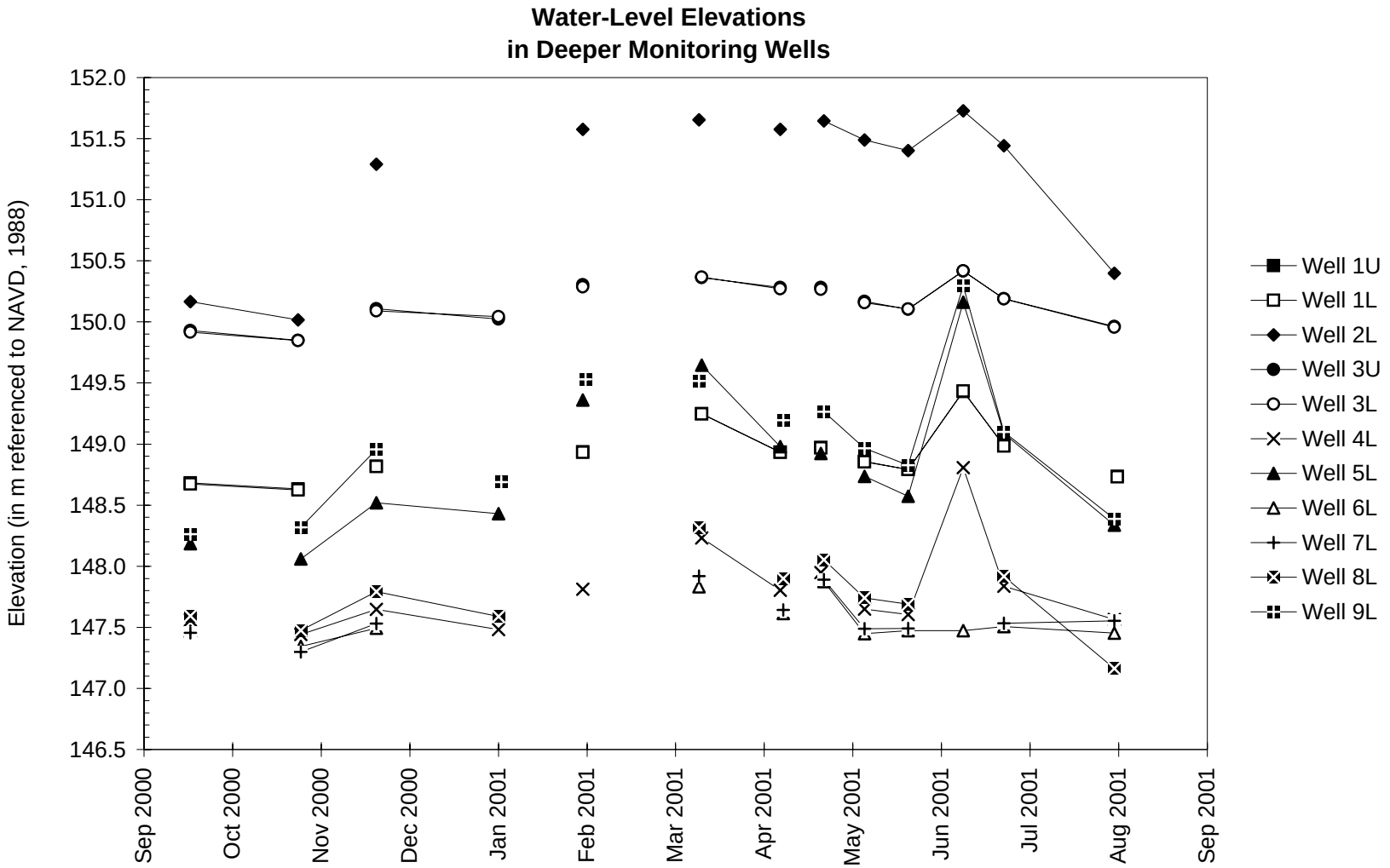
Morris, Illinois River Potential Wetland Banking Site
September 1, 2000 to September 1, 2001

Depth to Water
in Soil-Zone Monitoring Wells and Data Loggers
in the East Field and near the Natural Slough

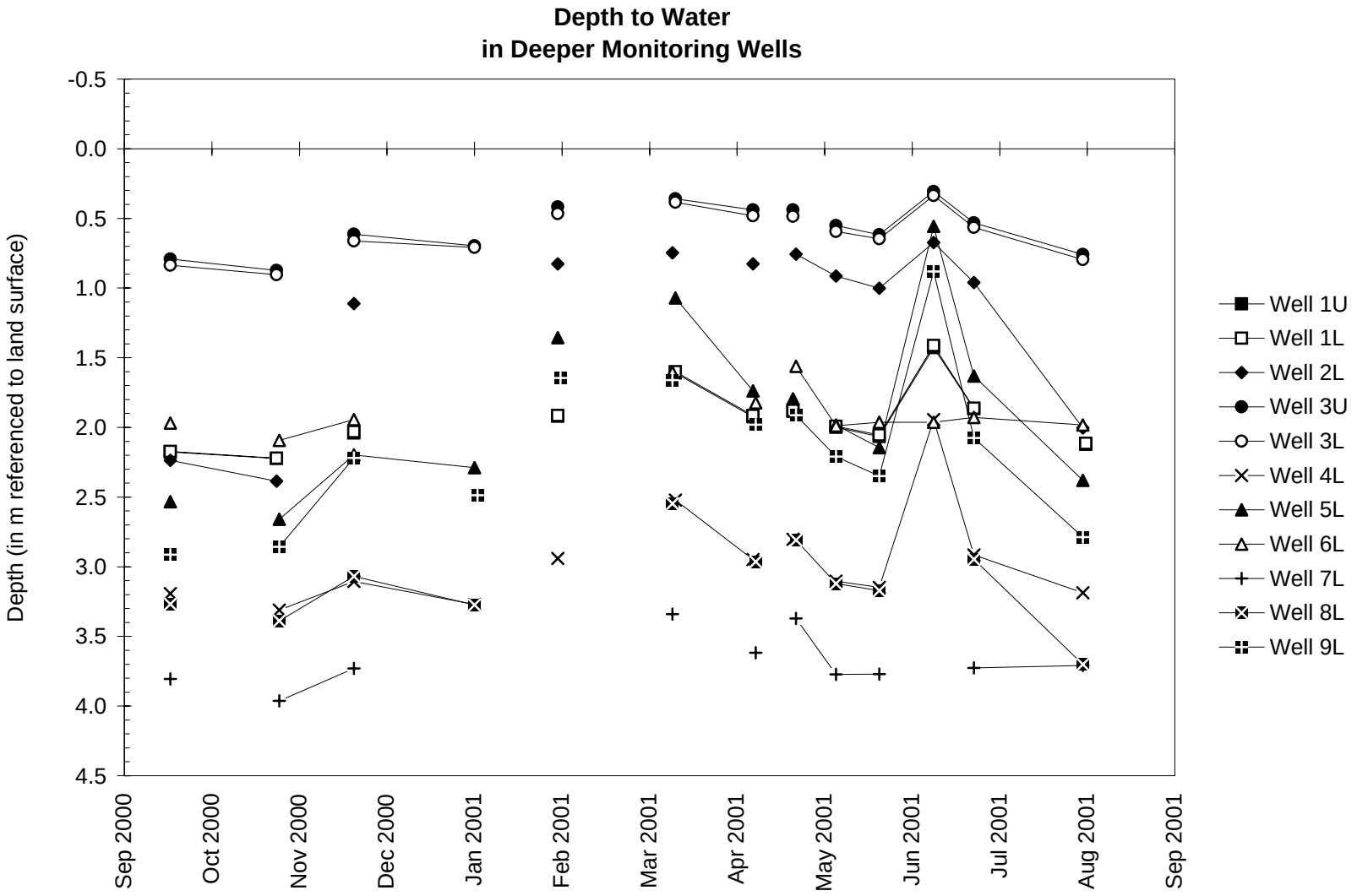


Morris, Illinois River Potential Wetland Banking Site

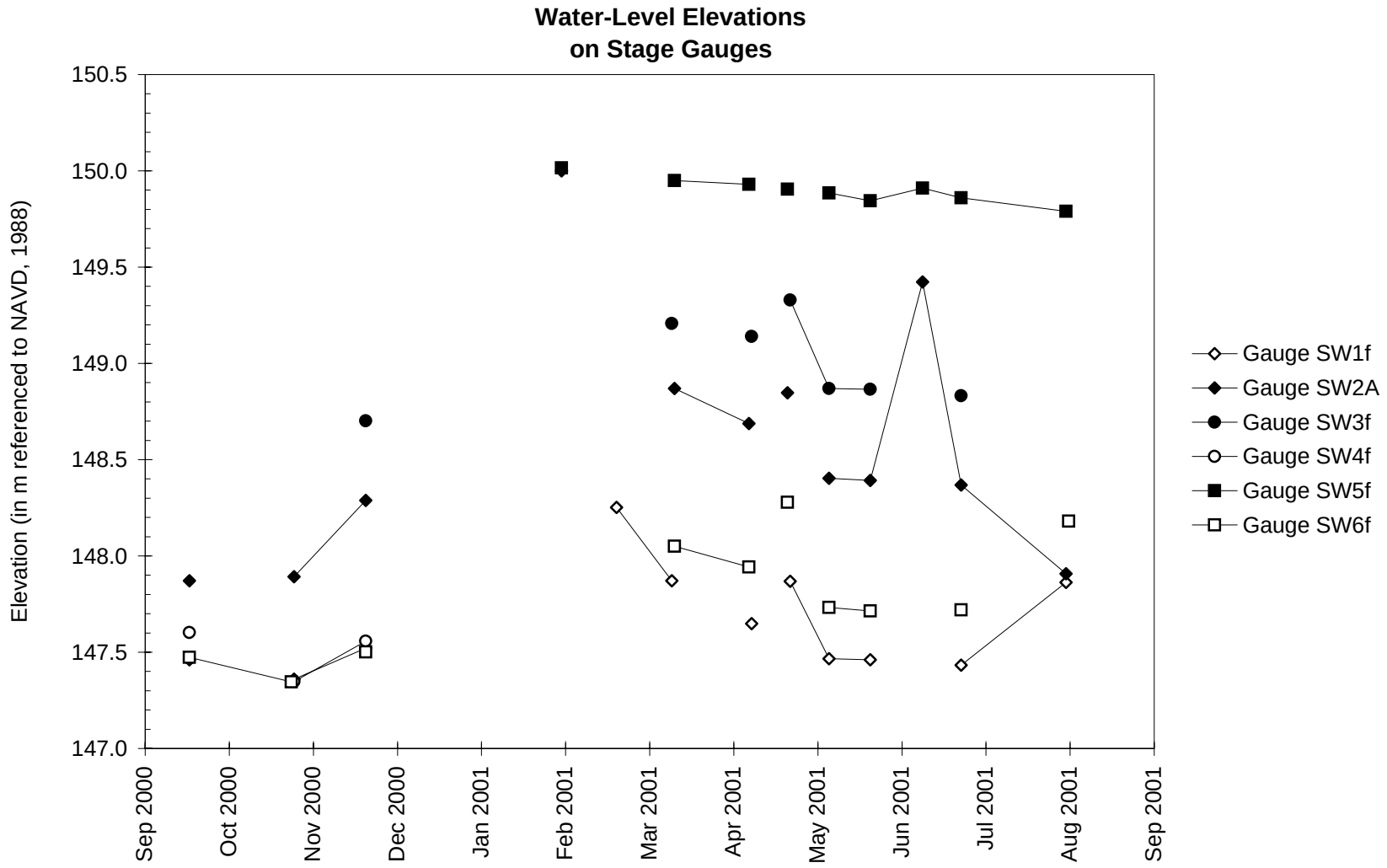
September 1, 2000 to September 1, 2001



Morris, Illinois River Potential Wetland Banking Site
September 1, 2000 to September 1, 2001

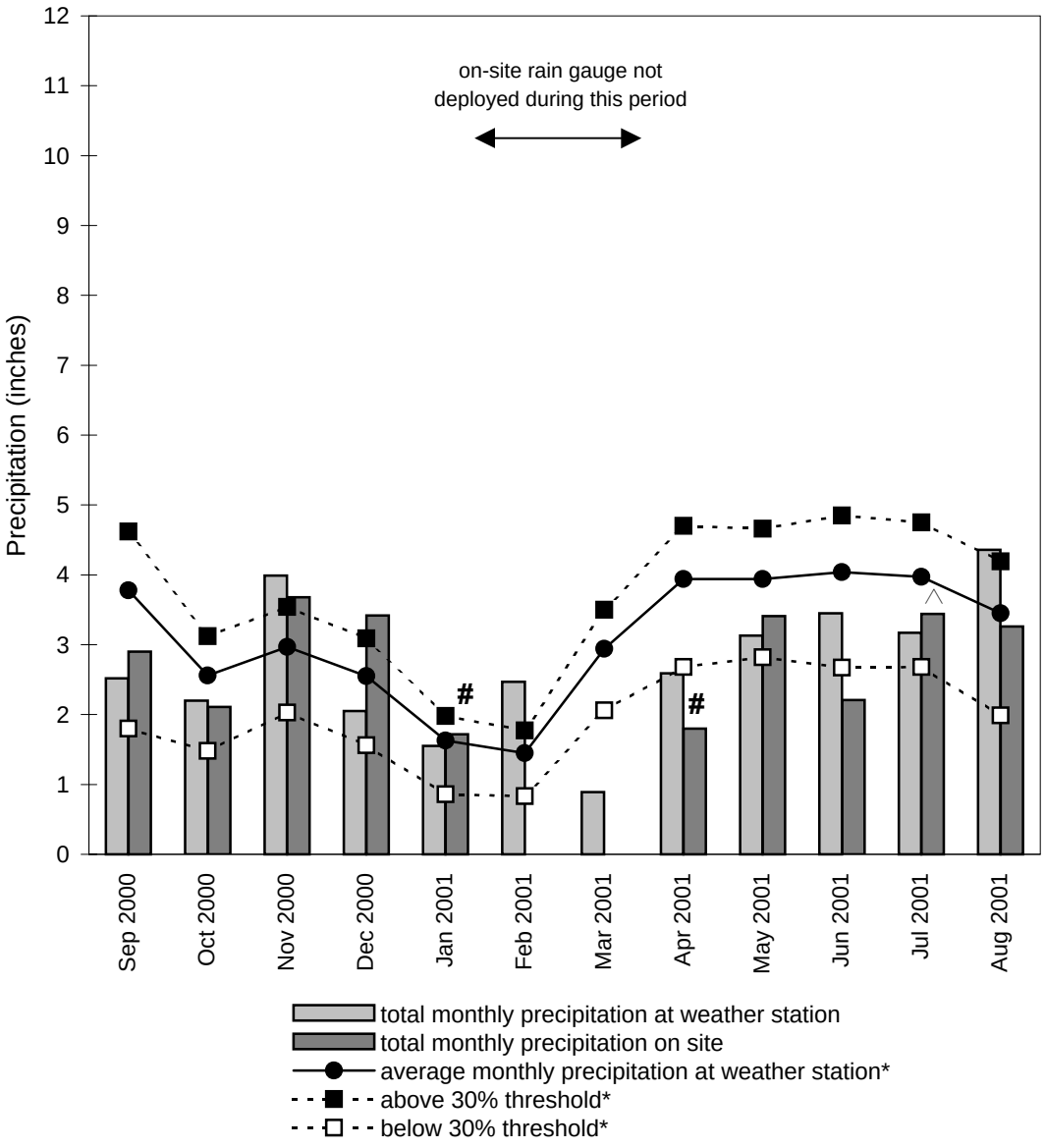


Morris, Illinois River Potential Wetland Banking Site
September 1, 2000 to September 1, 2001



Morris, Illinois River
Potential Wetland Banking Site
September 2000 through August 2001

Total Monthly Precipitation Recorded On Site and at the Channahon, IL Weather Station



on-site rain gauge not deployed for entire month

△ suspect data: rain collector clogged, represents minimum value for the month

* see text for explanation

Graph last updated October 5, 2001

EDWARDS RIVER, MERCER COUNTY **ISGS #50**
WETLAND COMPENSATION SITE
FAP 310
Mercer County, near Boden, Illinois
Primary Project Manager: Kelli D. Weaver
Secondary Project Manager: Keith W. Carr

SITE HISTORY

- May 1996: ISGS submitted an Initial Site Evaluation Report to IDOT.
- Spring 1999: ISGS began water-level monitoring with seven soil-zone monitoring wells.
- September 1999: Surface-water monitoring of the Edwards River began with an Infinities sonic data logger. A total of 12 sediment traps were also added at nine locations site-wide.
- April 2001: One RDS surface-water data logger, one stage gauge, and three very shallow (VS) soil-zone wells were added to the wetland basin.

WETLAND HYDROLOGY CALCULATION FOR 2001

We estimate that the entire excavated basin, approximately 1.6 ac (0.65 ha), conclusively satisfied the criteria for wetland hydrology in 2001. This is in contrast to "no significant portion of the basin" satisfying wetland hydrology criteria in 2000, a year with precipitation which was 104% of normal. This estimate is based on the following factors.

- According to the Midwestern Climate Center, the median date that the growing season begins in Aledo, Illinois is April 11 and the season lasts 194 days; 12.5% of the growing season is 24 days.
- Total precipitation for the period from September 2000 to March 2001 was essentially normal, resulting in average moisture conditions entering the growing season. During the period from April to August 2001, precipitation was 120% of normal, although most of the extra rainfall came in May, when precipitation was 320% of normal. The summer was atypically dry with both July and August below average. Total precipitation for the monitoring period from September 2000 to August 2001 was 111% of normal.
- In 2001, water levels measured in wells 1S, 2S, 3S, 3VS, 4S, 5S, 5VS, 6S, and 8VS conclusively satisfied wetland hydrology criteria as outlined in the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual. Water levels in well 7S did not satisfy wetland hydrology criteria.
- The elevation and duration of surface-water inundation events were recorded within the Edwards River channel, via sonic data logger, and within the wetland basin, via RDS data logger. The excavated basin was inundated during the spring of 2001 on four separate occasions, although the duration of the inundation was limited to three events of less than two days duration and one of approximately five days duration. Also, in all events, a comparison of the sonic logger record and the RDS record showed that the hydroperiod within the excavated basin virtually mimics that of the river. Floodwaters in 2001 only

stayed in the basin for about an extra 3 to 8 hours after the river stage had dropped below the site inlet.

- Limitations of the wetland hydrology determination are as follows:
  - The base map used to determine the extent of wetland hydrology in 2001 is based on an IDOT as-built grading plan, which contains only minimal topographic data. Further, as the base map has not been rectified or geo-referenced, the positions of instruments, determined via GPS, were plotted and overlain on the base map at the same approximate scale based on a best-fit visual reference.

ADDITIONAL INFORMATION

- A total of 12 sediment traps were installed on September 30, 1999 and examined on July 13 and September 10, 2000. A thin film of sediment (<1.0 mm) was noted in most of the traps on both dates. The traps were removed from the site and their contents examined in January 2001. Thus, sediment totals reported here are from a period between September 30, 1999 and January 24, 2001. On average, each trap held between 2.0 and 2.5 mm of material, which consisted of an estimated 80 to 90% organic matter (leaf litter, muck), less than 10% silt, and in several cases a trace of fine sand. According to stage records, the preceding sediment totals represent a total period (on average) of 2.7 days with flood waters above the inlet elevation of the sediment traps. The traps were re-installed on April 17, 2001 and were re-examined on June 11, 2001. On this date, 2.0 to 4.0 mm of fresh silt was noted on the ground surface and on ISGS instruments. Silt was also noted in the sediment traps but was unmeasurable due to water in the collectors . The sediment will be quantified when the traps are removed at winter freeze-up. According to stage records, the sediment currently in the traps represent a total period (on average) of 5.2 days with flood waters above the inlet elevation of the sediment traps. Once measured, the sediment trap contents for this period will be reported in the 2002 annual report.

- Due to the design of the wetland basin and general flashiness of the Edwards River flood response, water velocity through the site may be too rapid to deposit significant sediment in the basin.

PLANNED FUTURE ACTIVITIES

- Monitoring of hydrology and sediment deposition will continue through Spring 2004 or until no longer required by IDOT.

- A topographic survey will be undertaken by ISGS to provide a more accurate base map for wetland hydrology determinations.

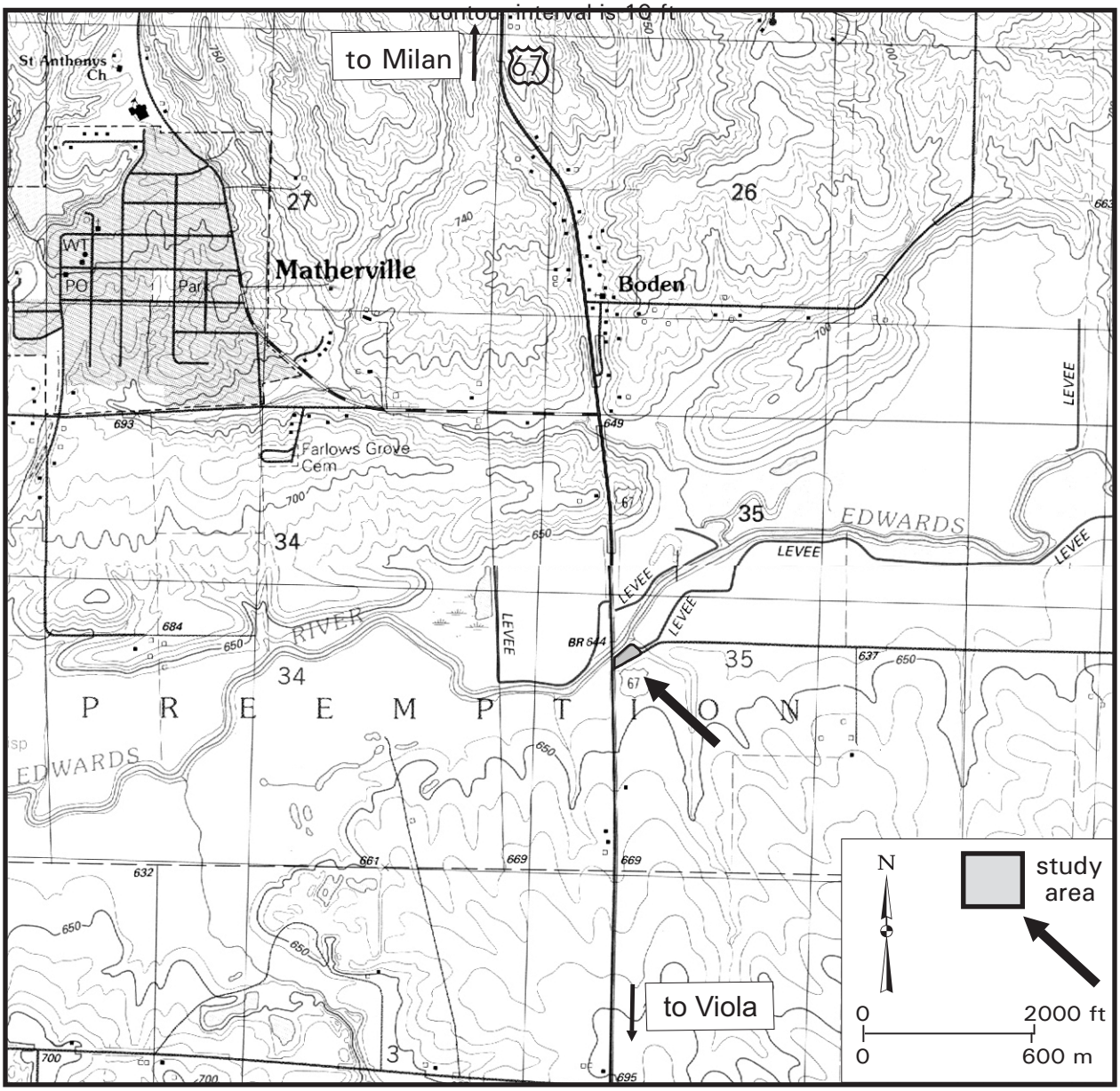
- Two additional soil-zone (S) wells will be installed to better delineate the wetland hydrology along base of the US 67 embankment, the western site margin, and near the site inlet/ outlet at the northwest corner of the basin.

- In conjunction with IDOT, the role of this site inlet/outlet will be assessed this year. It is possible that the site is being drained too efficiently, and that a raising of the elevation of this inlet/outlet would cause longer-term retention of surface water in the excavated basin. This may also enhance sediment deposition due to the longer floodwater residence time.

Edwards River, Mercer County Wetland Compensation Site
(FAP 310)

General Study Area and Vicinity

from the USGS Topographic Series, Viola, IL (USGS 1992) and
Matherville, IL (USGS 1991) 7.5 Minute Quadrangles

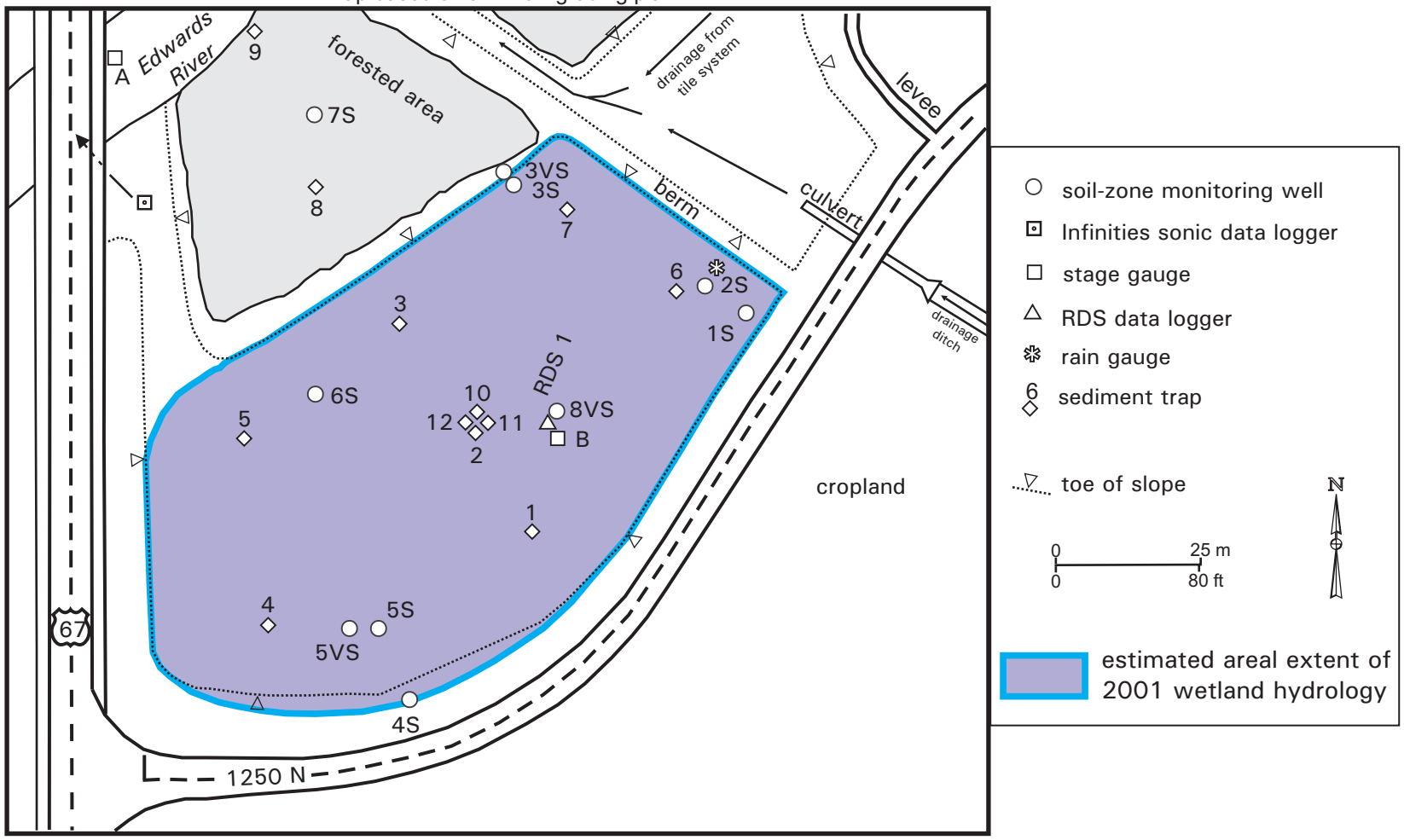


Edwards River, Mercer County Wetland Compensation Site
(FAP 310)

Estimated Areal Extent of 2001 Wetland Hydrology

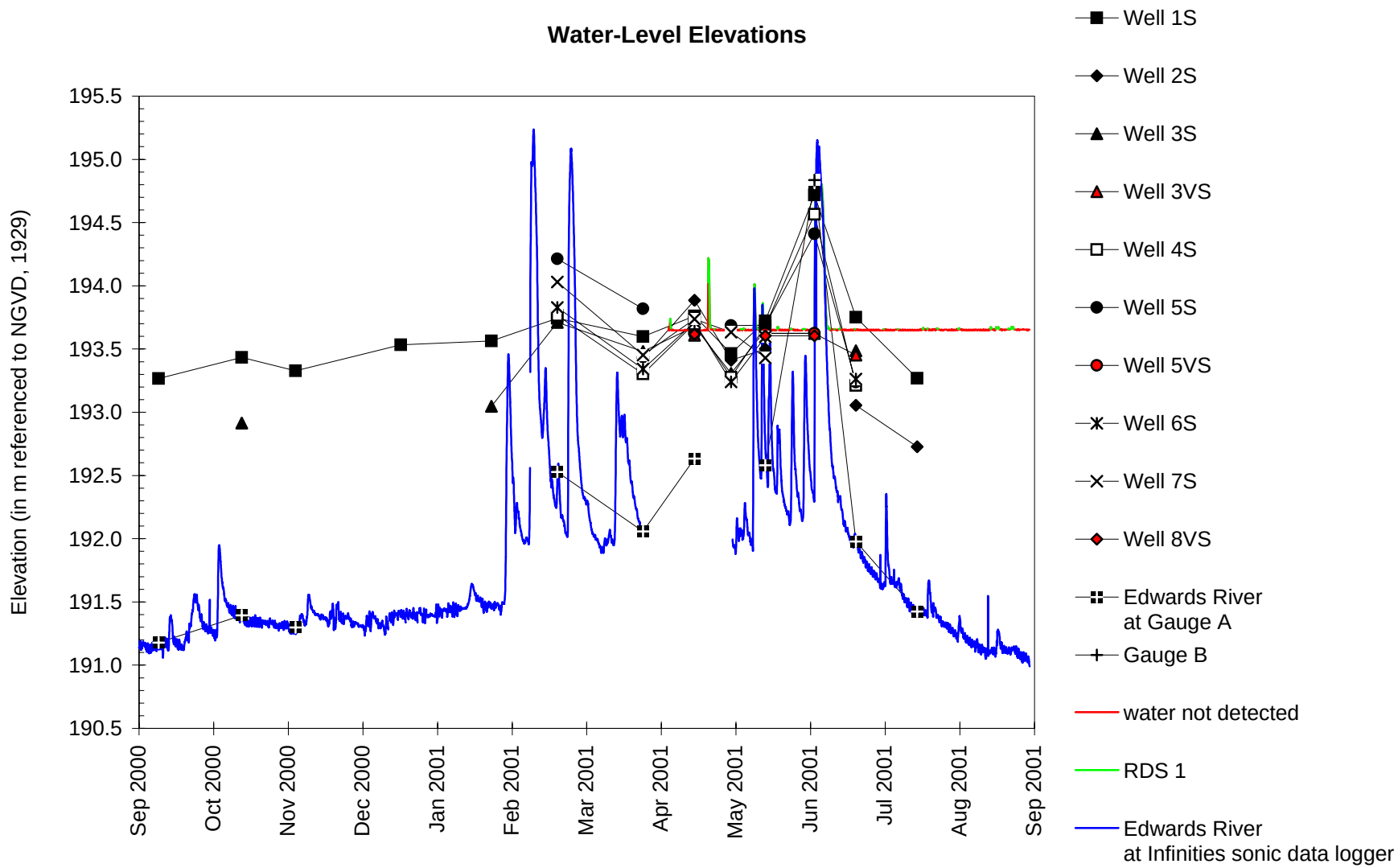
based on data collected between September 1, 2000 and September 1, 2001

map based on an IDOT grading plan



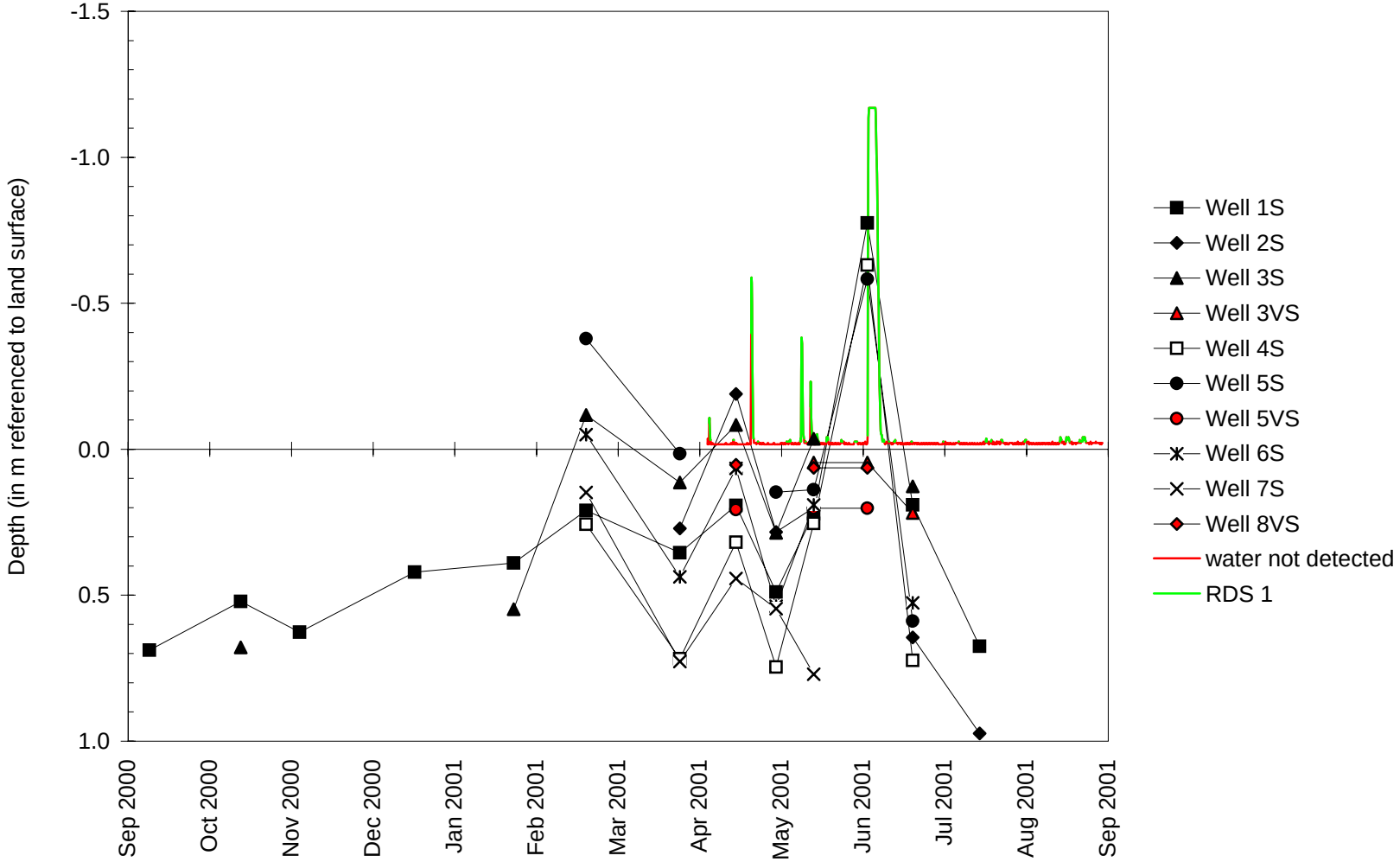
Edwards River, Mercer County Wetland Compensation Site

September 1, 2000 to September 1, 2001



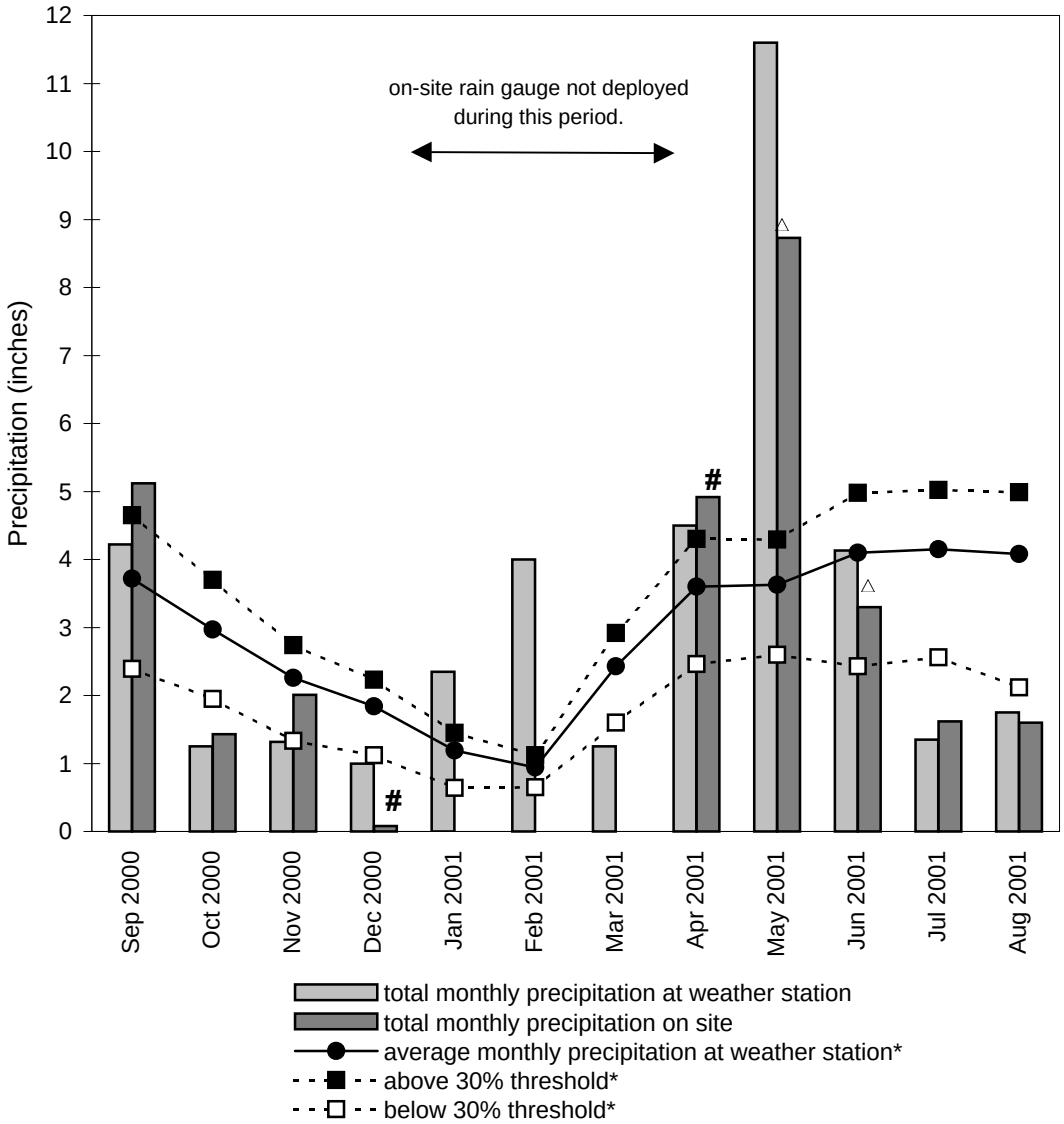
Edwards River, Mercer County Wetland Compensation Site
September 1, 2000 to September 1, 2001

Depth to Water



Edwards River, Mercer County
Wetland Compensation Site
September 2000 through August 2001

Total Monthly Precipitation Recorded On Site and at the Aledo, IL Weather Station



on-site rain gauge not deployed for entire month
△ suspect data: rain collector clogged, represents minimum value for the month
* see text for explanation

Graph last updated October 5, 2001

LUEHMANN PROPERTY, NEW RIVER CROSSING **ISGS #51**
POTENTIAL WETLAND COMPENSATION SITE
FAP 999
Madison County, near Stallings, Illinois
Primary Project Manager: D. Bradley Ketterling
Secondary Project Manager: Keith W. Carr

SITE HISTORY

- February 2000: The ISGS was tasked to perform a Level II hydrogeologic assessment of the site.

- March, April, and June 2000: Nine well clusters, one staff gauge, one rain gauge and three water-level loggers were installed on site.

- November 2000: A Starflow flow-velocity meter was installed in the box culvert at the southern tip of the site to measure the volume of water discharged from the site.

- February 2001: Two staff gauges were added to the ditch running along the south side of Illinois Route 162.

SUMMARY OF 2001 EVENTS

Because this site is a potential compensation site, an estimate of the areas satisfying the criteria for wetland hydrology is not required for this report.

- According to the Midwestern Climate Center, the median length of the growing season at Belleville, Illinois is 203 days, starting April 5 and ending October 24. Therefore 12.5% of the growing season is 25 days.

- Precipitation during the monitoring period was 99% of normal. However, rainfall was not evenly distributed. Above-normal precipitation fell in September and November of 2000 and in July and August of 2001. Below-normal precipitation was recorded from December 2000 through June 2001, with the exception of February 2001, resulting in drier than normal conditions at the start of the growing season.

- Since May 2000, water levels have been measured in 27 wells and piezometers. The water level in the borrow-pit lake is also being monitored both manually and electronically. Flow velocity and the volume of discharge through the box culvert at the southern tip of the site have been recorded since November of 2000.

- No areas of the site other than the riparian zone around the perimeter of the lake and perhaps a small area near the entrance to the box culvert met the criteria for wetland hydrology. Although water was recorded in the soil-zone monitoring wells, these observations are thought to be occurrences of trapped water and do not represent fluctuations in the water table. This water percolates from the surface into the well during precipitation events and slowly drains into the surrounding soil.

ADDITIONAL INFORMATION

- No near-surface source of ground water has been identified that would act as a source of water for the potential compensation area. Precipitation is likely the primary source of water for wetland creation due to the fact that the site is isolated from other sources of surface water. The clayey nature of the sediments does promote on-site ponding, particularly in the spring months. Wetland creation efforts would probably entail both disrupting the current network of drainage ditches and performing some shallow excavation to encourage more widespread inundation.

PLANNED FUTURE ACTIVITIES

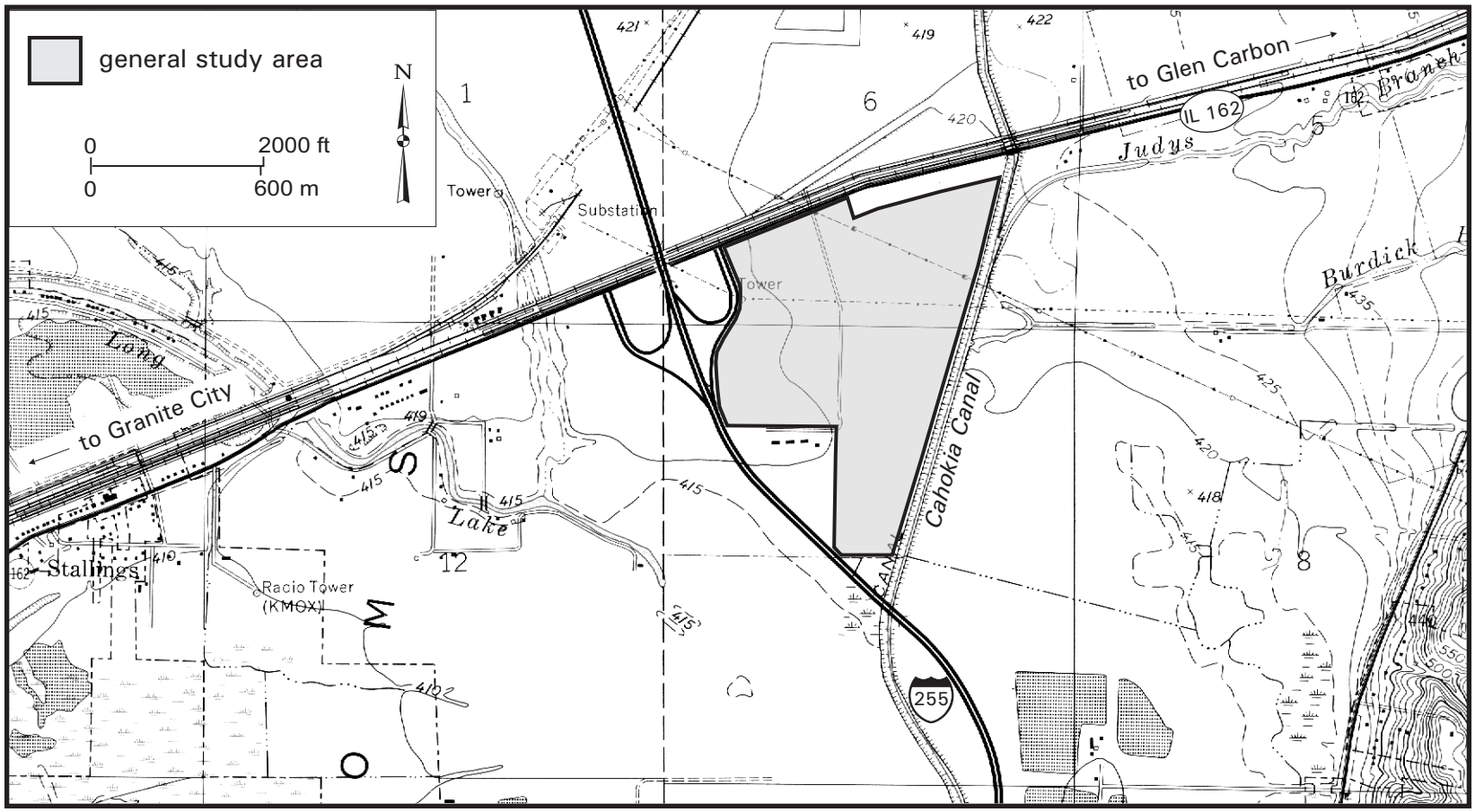
- Soil-moisture probes may be installed adjacent to existing well clusters to complement the measurements taken from the soil-zone wells.

- Additional soil-zone monitoring wells may be installed.

Luehmann Property, New River Crossing Potential Wetland Compensation Site (FAP 999)

General Study Area and Vicinity

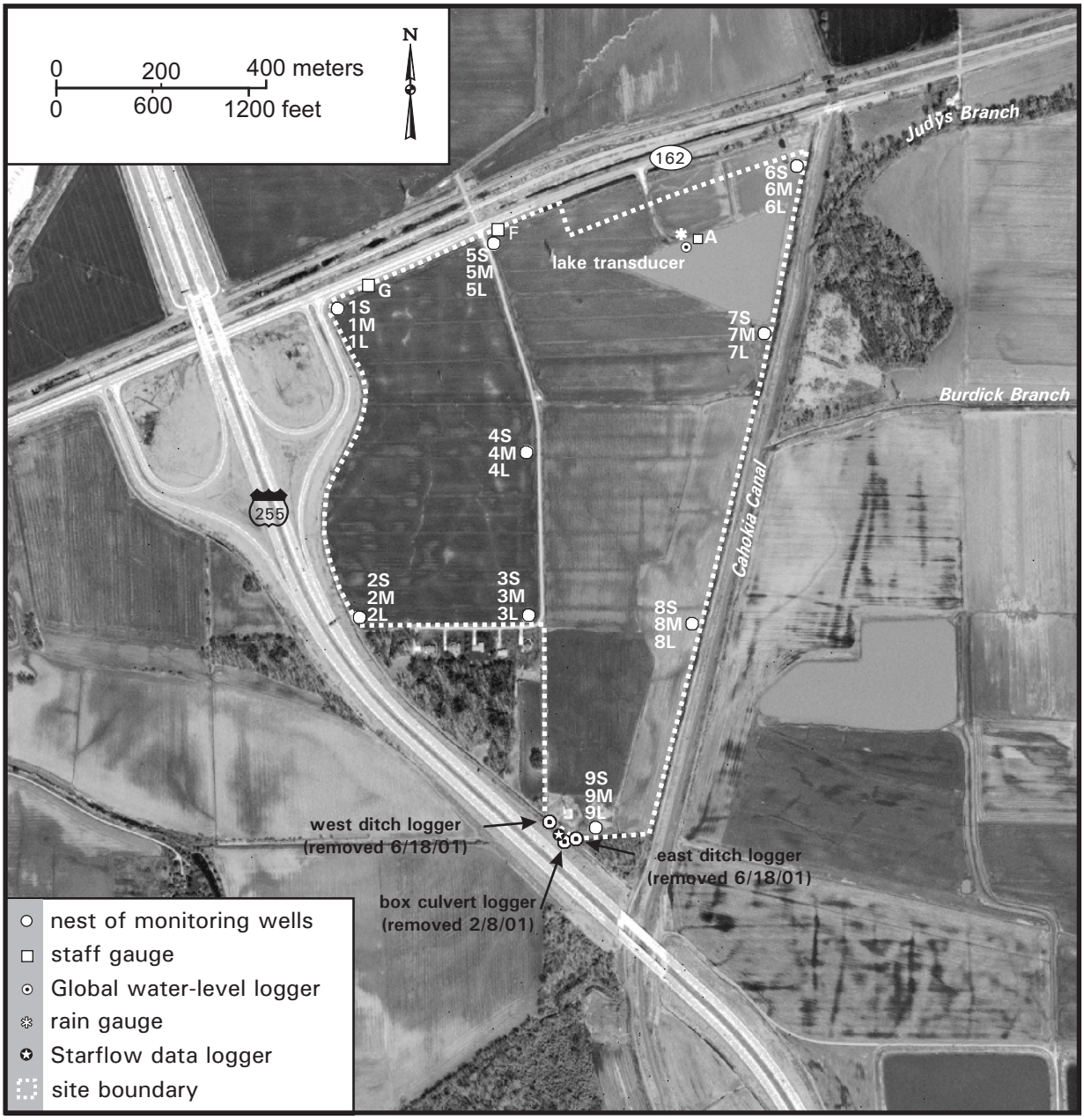
from the USGS Topographic Series, Monks Mound, IL 7.5-minute Quadrangle (USGS 1993)
contour interval is 10 feet



Luehmann Property, New River Crossing
Potential Wetland Compensation Site
(FAP 999)

Locations of ISGS Monitoring Instruments

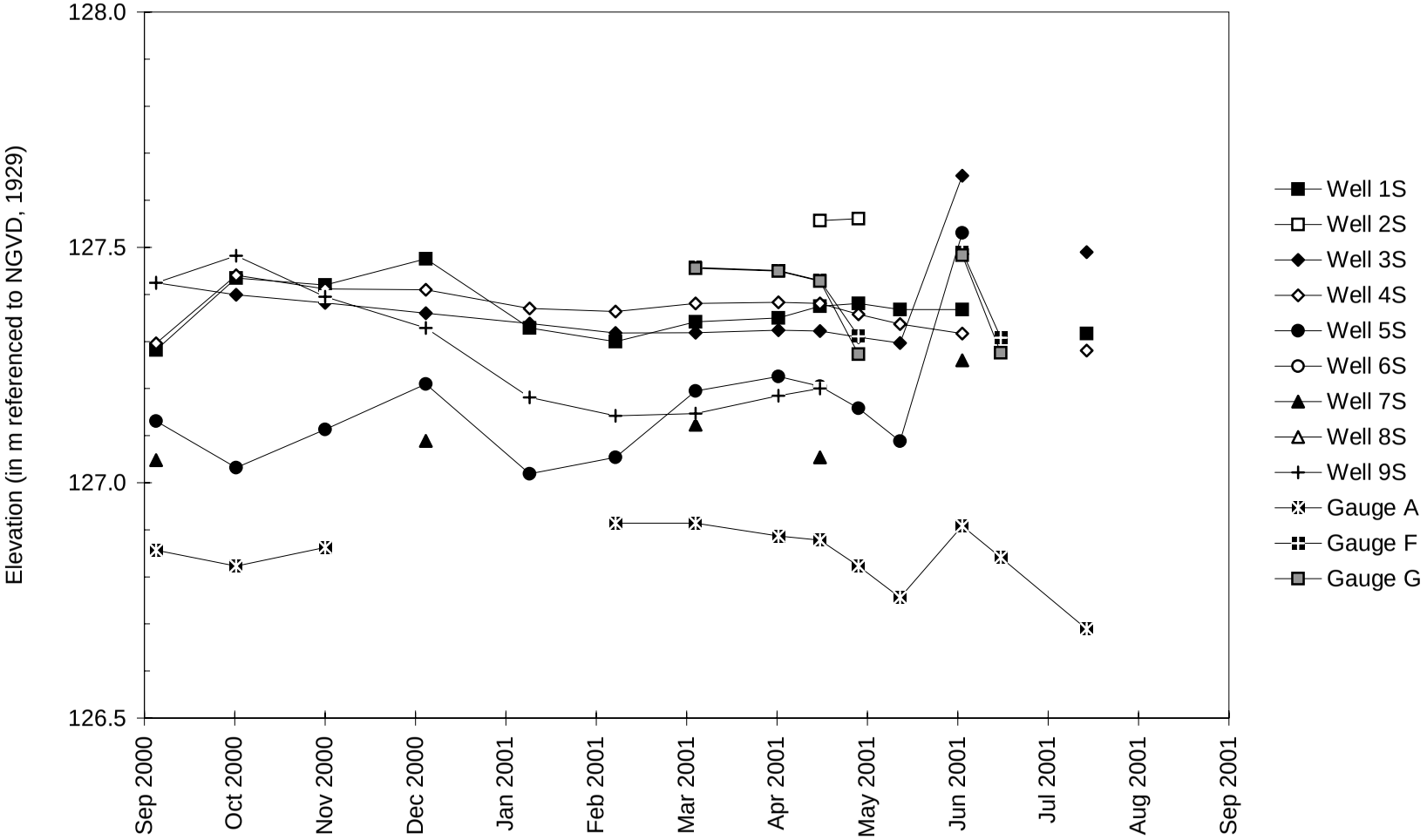
map based on USGS digital orthophotograph, Monk's Mound NE quarter quadrangle
produced from 4/2/98 aerial photography (ISGS 2001)



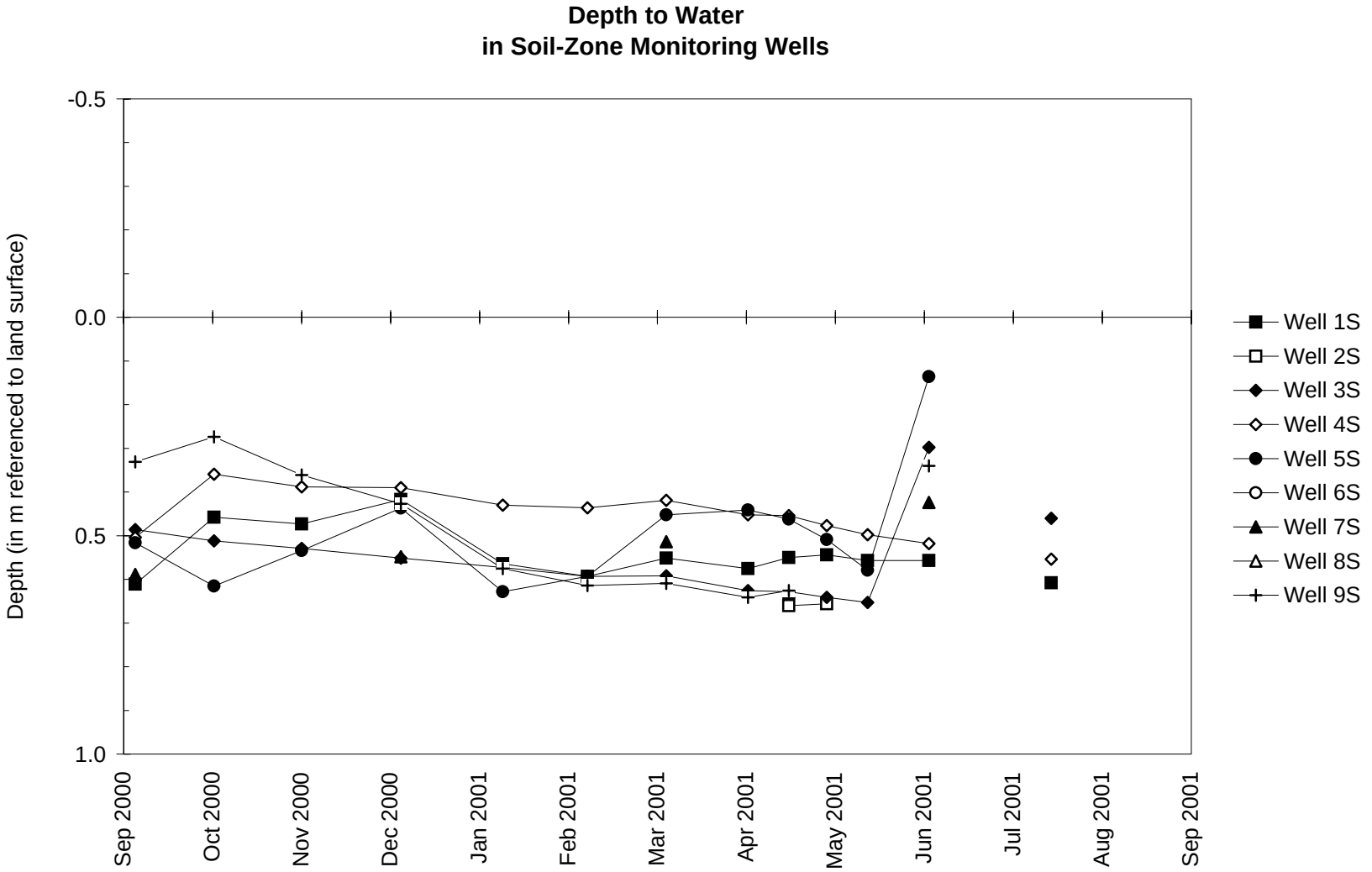
Luehmann Property, New River Crossing Potential Wetland Compensation Site

September 1, 2000 to September 1, 2001

Water-Level Elevations in Soil-Zone Monitoring Wells and on Stage Gauges



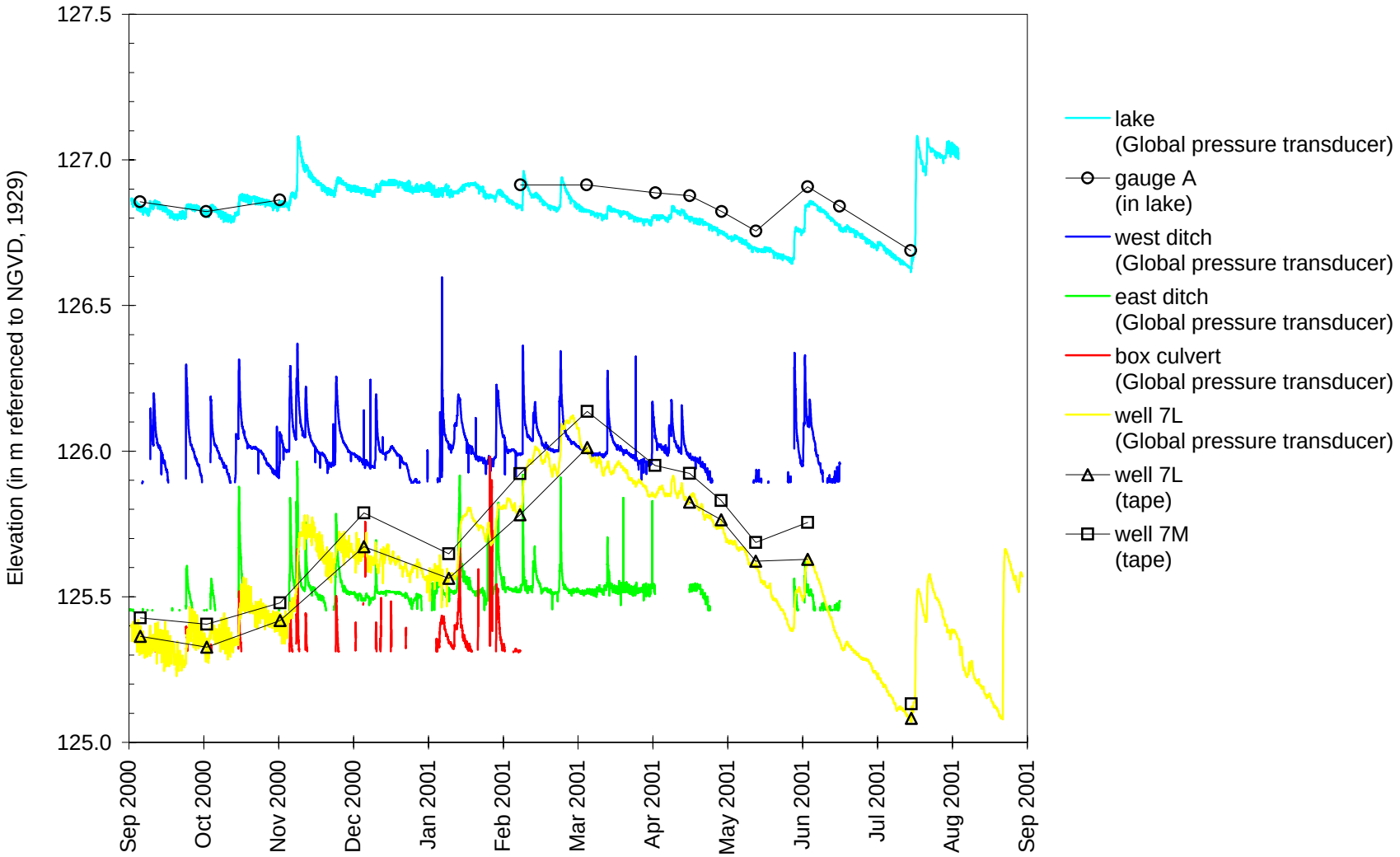
Luehmann Property, New River Crossing Potential Wetland Compensation Site
September 1, 2000 to September 1, 2001



Luehmann Property, New River Crossing Potential Wetland Compensation Site

September 1, 2000 to September 1, 2001

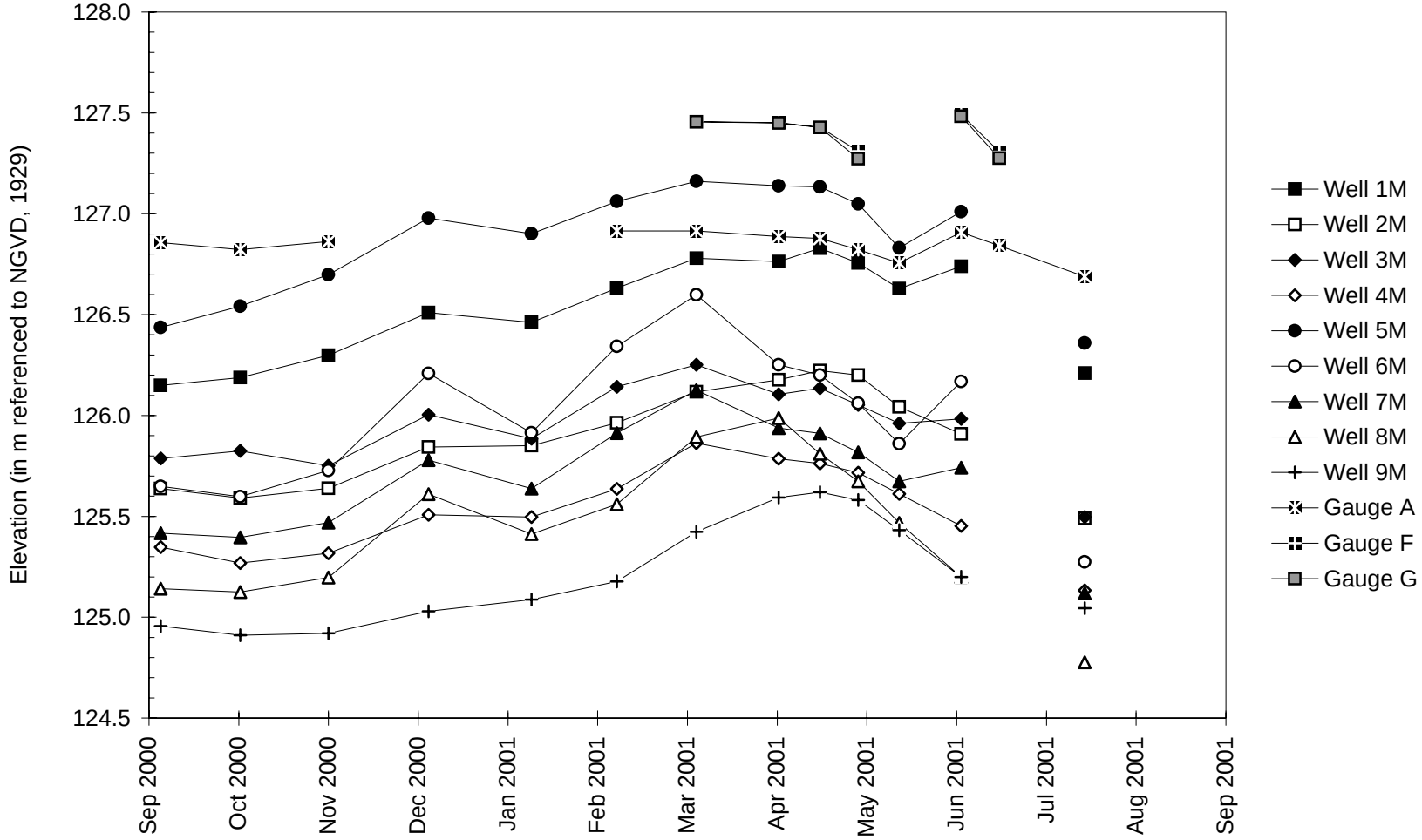
Water-Level Elevations



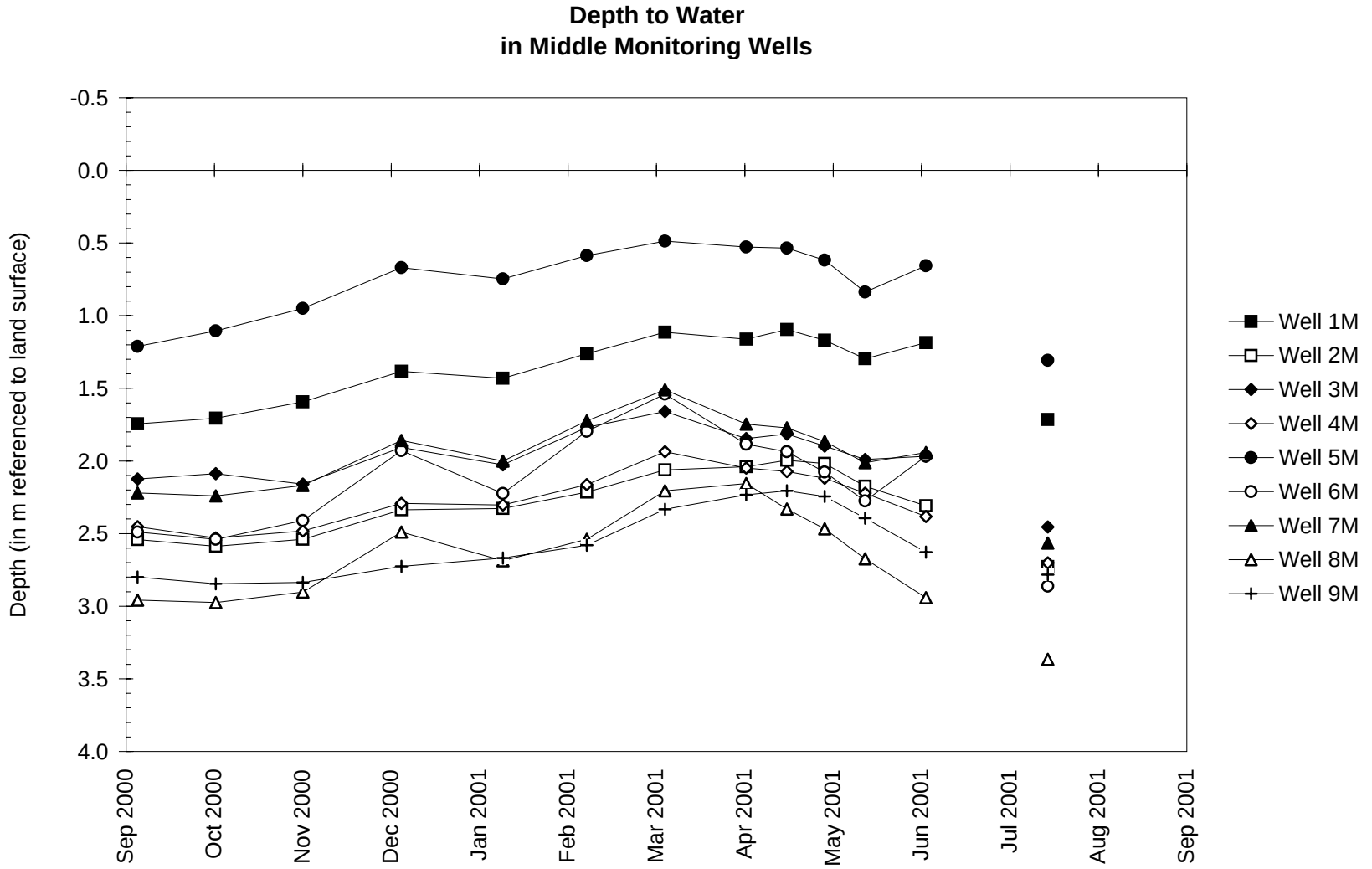
Luehmann Property, New River Crossing Potential Wetland Compensation Site

September 1, 2000 to September 1, 2001

Water-Level Elevations
in Middle Monitoring Wells and on Stage Gauges



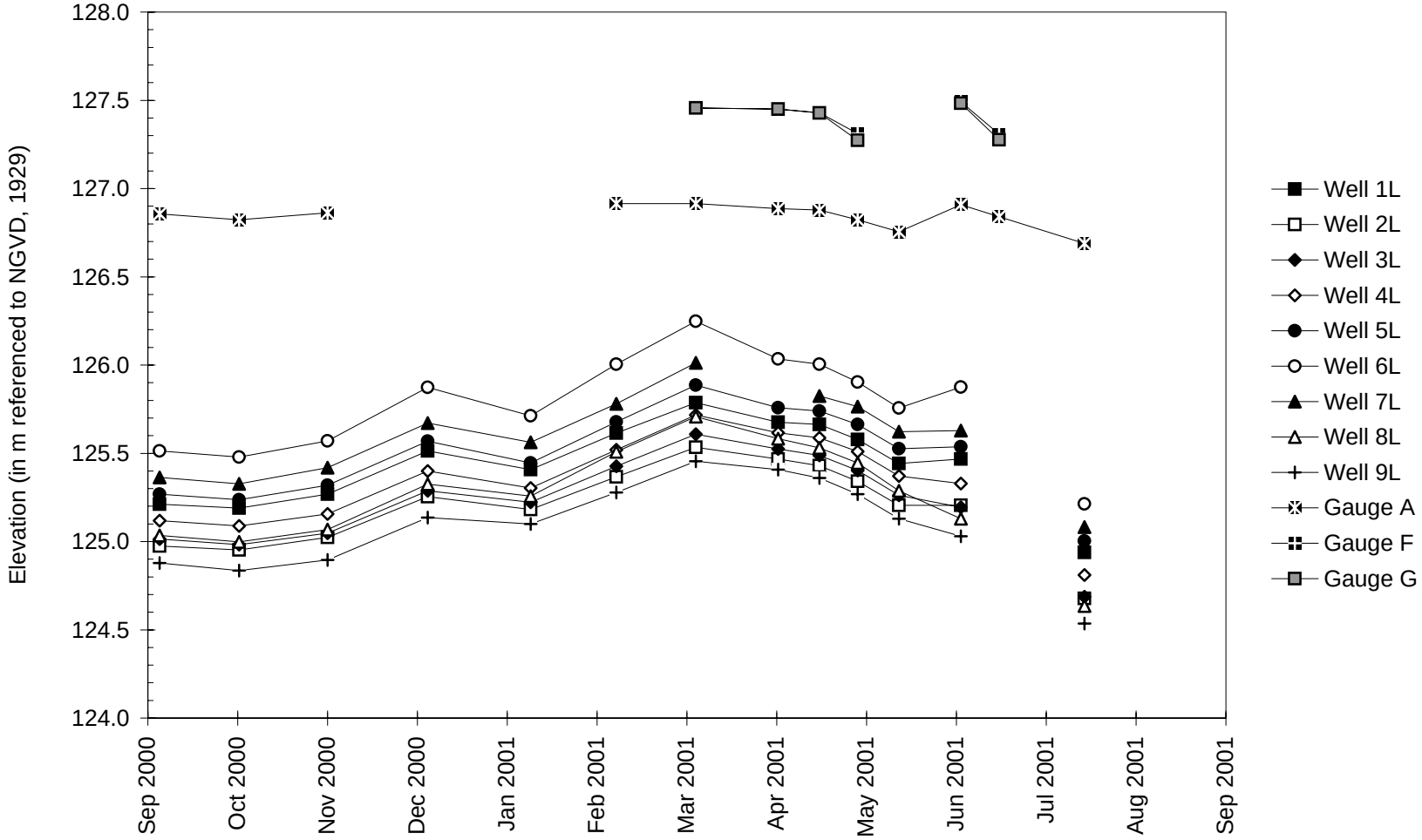
Luehmann Property, New River Crossing Potential Wetland Compensation Site
September 1, 2000 to September 1, 2001



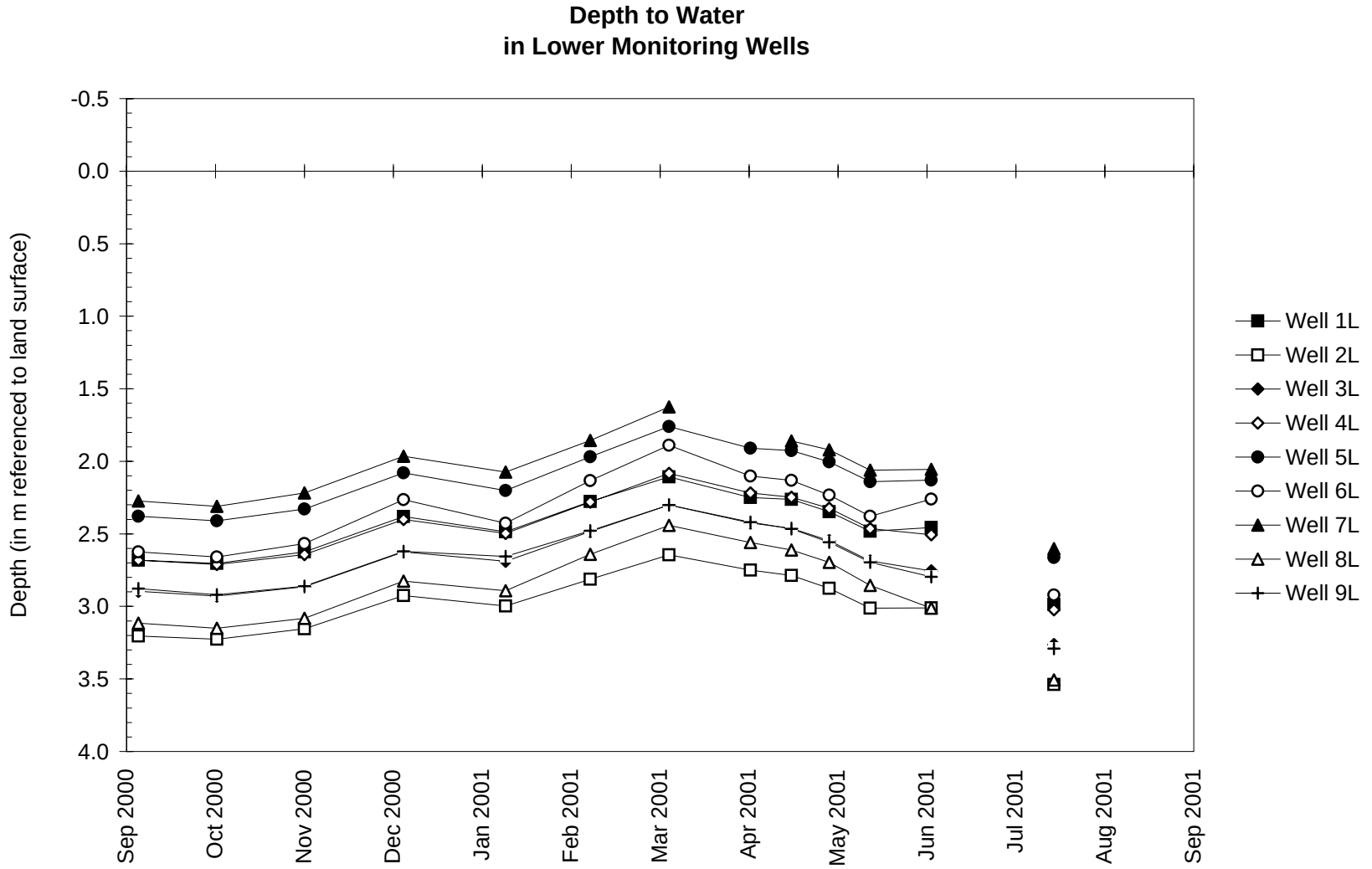
Luehmann Property, New River Crossing Potential Wetland Compensation Site

September 1, 2000 to September 1, 2001

Water-Level Elevations in Lower Monitoring Wells and on Stage Gauges

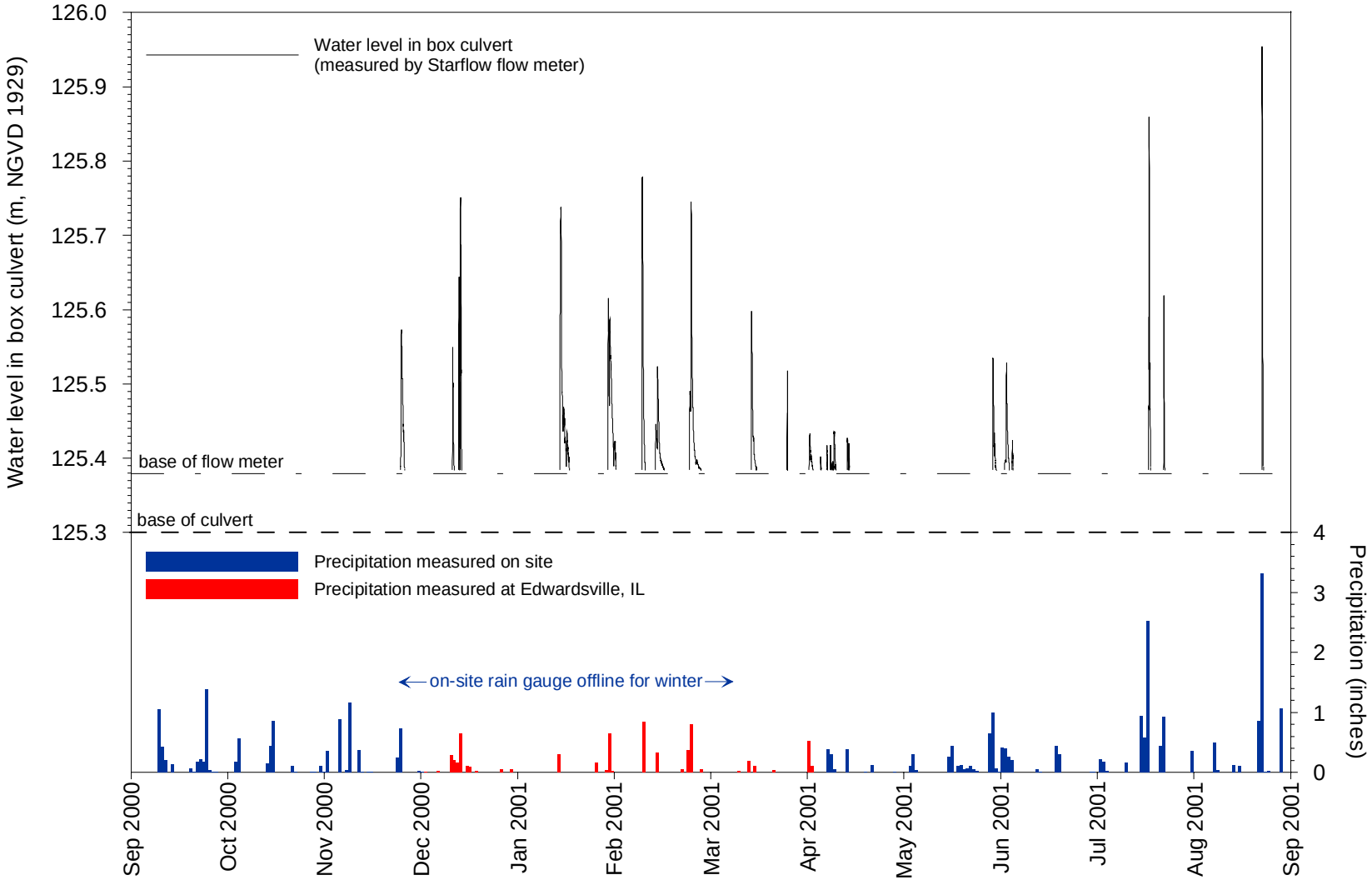


Luehmann Property, New River Crossing Potential Wetland Compensation Site
September 1, 2000 to September 1, 2001



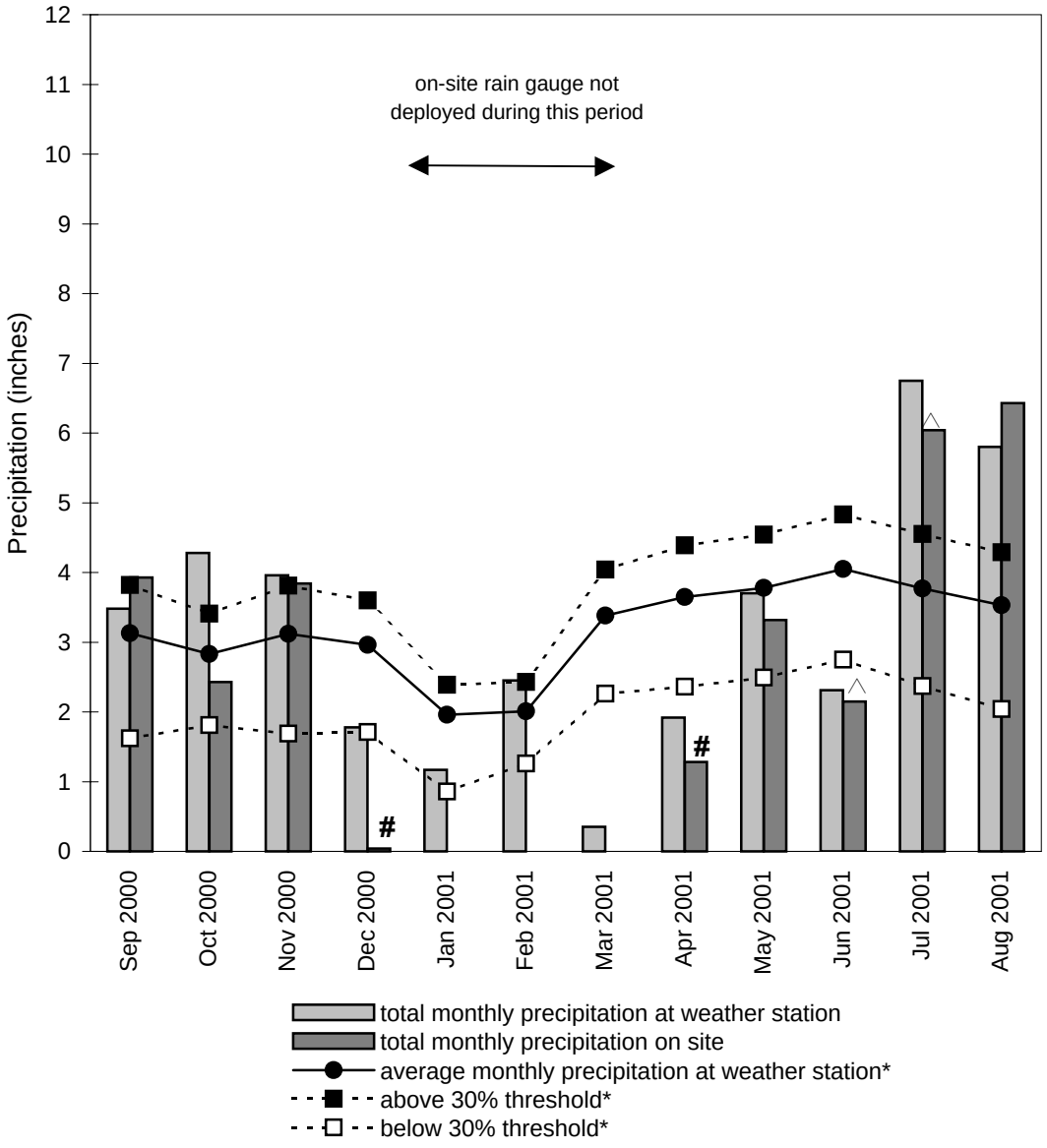
Luehmann Property Potential Wetland Compensation Site
September 1, 2000 to September 1, 2001

Water level in box culvert and precipitation on site and at Edwardsville, IL



Luehmann Property, New River Crossing
Potential Wetland Compensation Site
September 2000 through August 2001

Total Monthly Precipitation Recorded On Site and at the Edwardsville, IL Weather Station



rain gauge not deployed for entire month

△ suspect data rain collector clogged, represents the minimum value for the month

* see text for explanation

Graph last updated October 9, 2001

FORMER WESSEL PROPERTY **ISGS #52**
DISTRICT 6 POTENTIAL WETLAND BANKING SITE
Brown County, near Meredosia, Illinois
Primary Project Manager: Blaine A. Watson
Secondary Project Manager: Keith W. Carr

SITE HISTORY

- February 2000: ISGS was tasked by IDOT to conduct a Level II hydrogeologic assessment of the site.

- Spring 2000: ISGS began on-site activities with the installation of surface-water monitoring equipment and two monitoring wells in selected areas.

- May 2001: ISGS began monitoring wetland hydrology with 16 'S' wells at locations across the site.

- Summer 2001: IDOT completed a preliminary topographic survey of the site based on data acquired during the summer of 2000.

- July 2001: ISGS, INHS, and IDOT District 6 personnel met to discuss a preliminary banking plan for the site. ISGS requested discontinuation of the pumping and water-level manipulation at the site starting in October 2001. IDOT agreed to evaluate this as an option.

WETLAND HYDROLOGY CALCULATION FOR 2001

We estimate that the total area of the site that conclusively satisfied wetland hydrology criteria in 2001 is 492.3 ac (196.9 ha). This year's estimate is based on the following factors:

- According to the Midwestern Climate Center, the median date that the growing season begins in Rushville is April 7 and the season lasts 207 days; 12.5% of the growing season is 26 days.

- Precipitation in December 2000, March 2001, and July 2001 was below the normal range. Precipitation either on-site or in the site vicinity was within the normal range in September, October, and November 2000 and in April, May, and June 2001. The months of January, February, and August 2001 were above the normal range as based on either on-site data or data from the site vicinity. During the period from September 2000 to August 2001, total precipitation at the site was 85% of normal. This is compared to 68% of normal for the period from September 1999 through August 2000.

- In 2001, water levels measured in the following wells conclusively satisfied the wetland hydrology criteria of the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual: wells 6S and 16S. Water levels in well 13S may have satisfied the wetland hydrology criteria, but did not do so conclusively.

- Water levels recorded by a Global water-level data logger monitoring the level of Big Lake indicate that the free-surface elevation of water in Big Lake was persistent for a period

equal to 26 days at an elevation of 131.12 m (430.2 ft) between April 7 and May 3, 2001. This information was used to select a topographic contour elevation of 430.5 ft from the site topographic map provided by IDOT as the reasonable extent of wetland hydrology directly related to surface inundation of Big Lake. Areas of the site with a ground-surface elevation below 430.5 ft are assumed to have conclusively met the wetland hydrology criteria. This estimate closely approximates the extent of wetland hydrology based on data from monitoring wells and field observations made at the site during April and May 2001 site visits.

- Other areas at slightly higher ground-surface elevation (such as the burned swamp monitored by well 6S, the scour pond gauged by SW2, and the site drainage ditches monitored by RDS units) have also been assumed to meet the wetland hydrology criteria based on the records of the instruments directly monitoring those areas.

PLANNED FUTURE ACTIVITIES

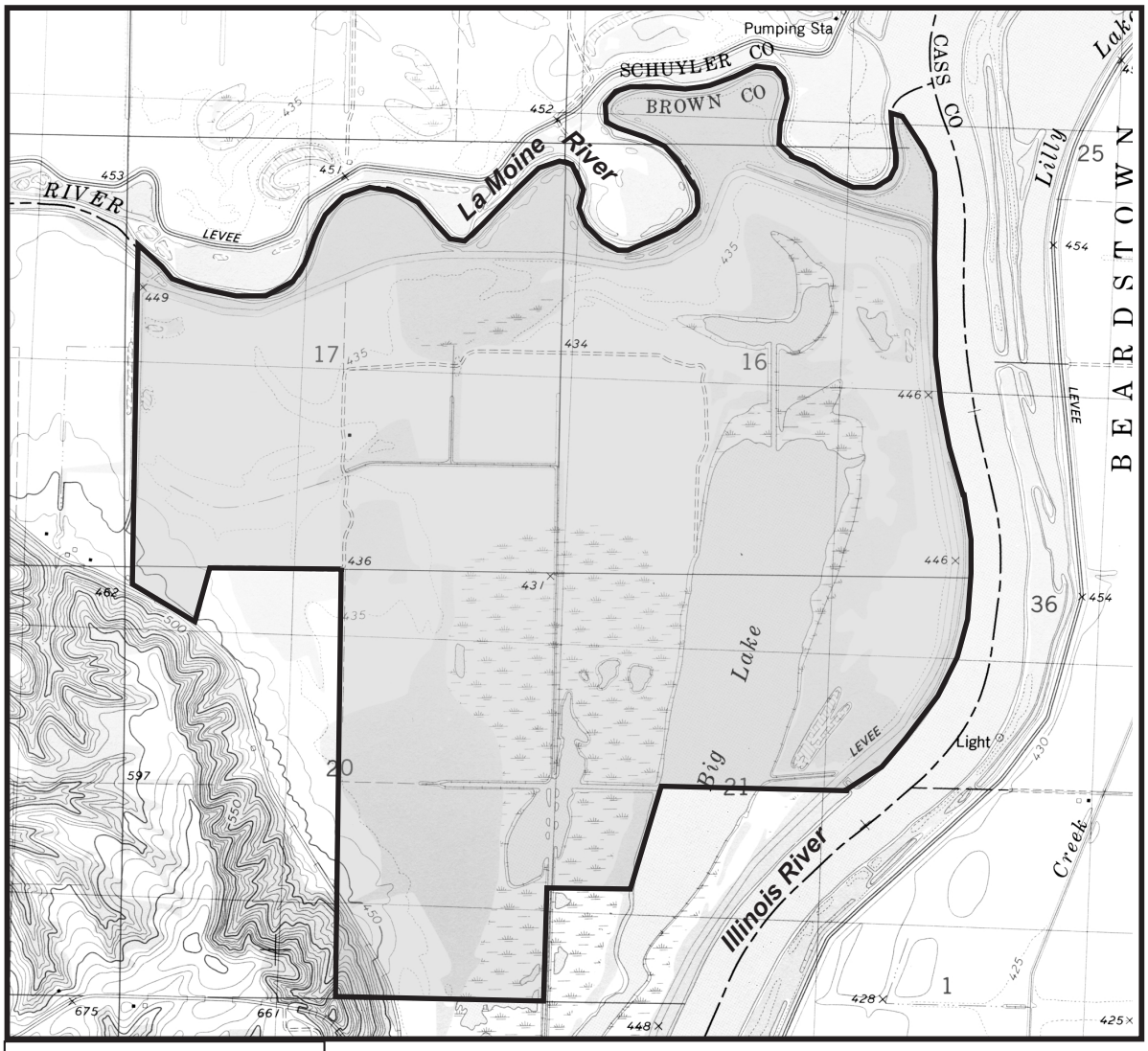
- Monitoring of hydrology will continue until no longer required by IDOT.

- Additional monitoring wells for determining geologic and hydrogeologic control will be installed during Fall 2001.

Former Wessel Property, District 6 Potential Wetland Banking Site

General Study Area and Vicinity

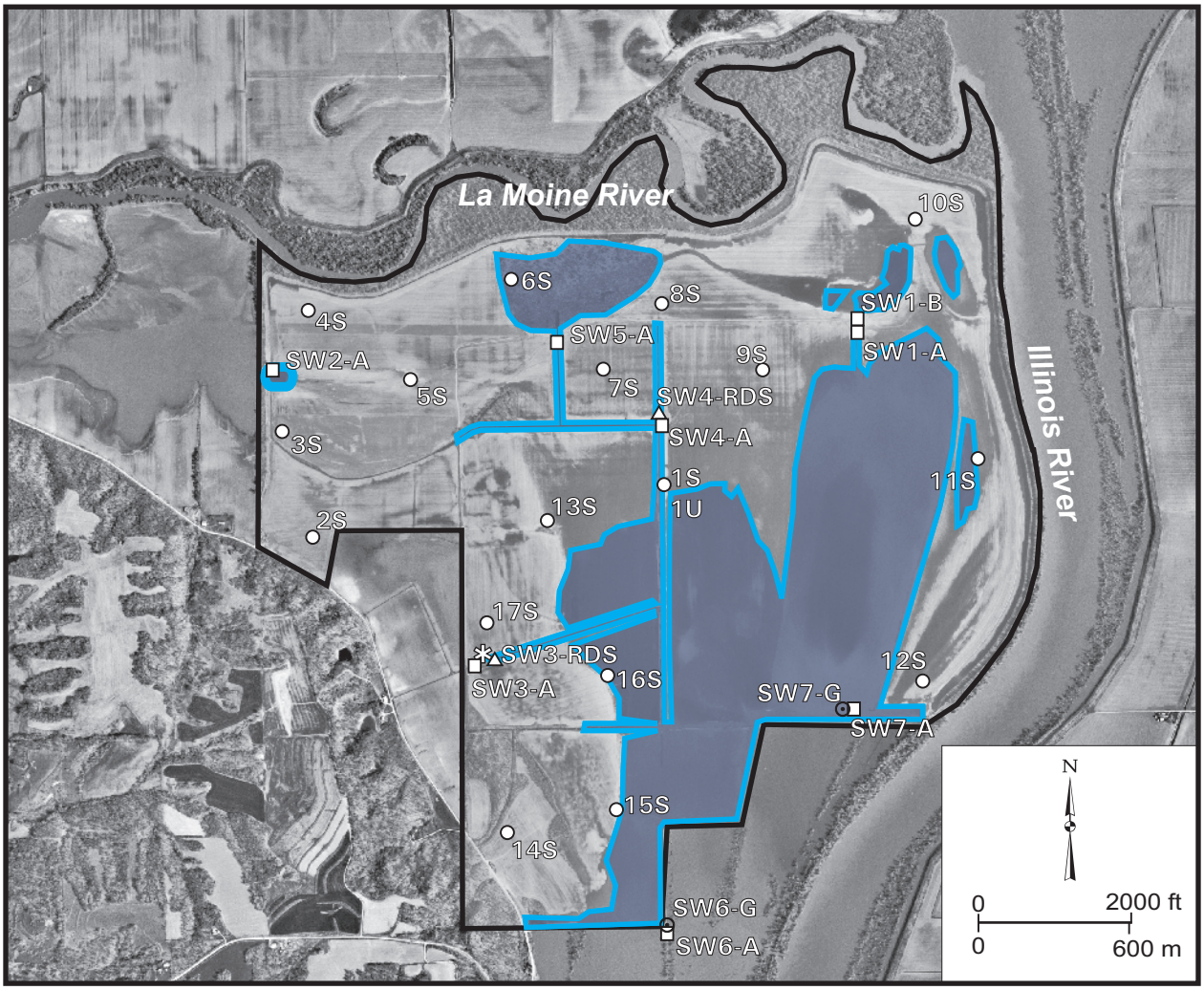
from the USGS Topographic Series, Cooperstown, IL 7.5-minute Quadrangle (USGS 1980)
contour interval is 10 feet



Former Wessel Property, District 6 Potential Wetland Banking Site

Estimated Areal Extent of 2001 Wetland Hydrology

map based on USGS digital orthophotograph Cooperstown, NE quarter quadrangle
produced from 4/14/98 aerial photography (ISGS 2001)



estimated areal extent of 2001 wetland hydrology

monitoring well

RDS data logger

stage gauge

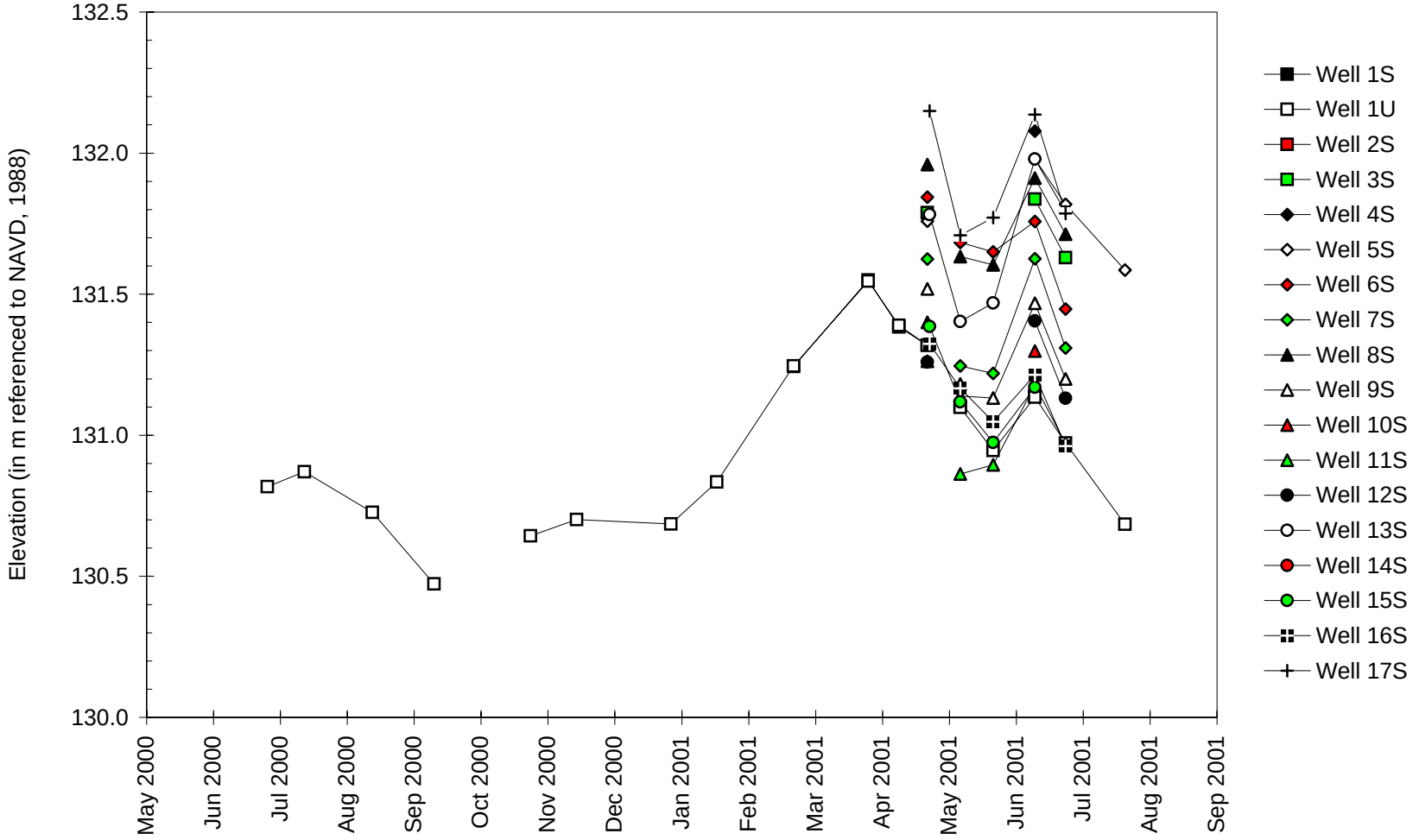
rain gauge

Global pressure transducer

Former Wessel Property, District 6 Potential Wetland Banking Site

May 1, 2000 to September 1, 2001

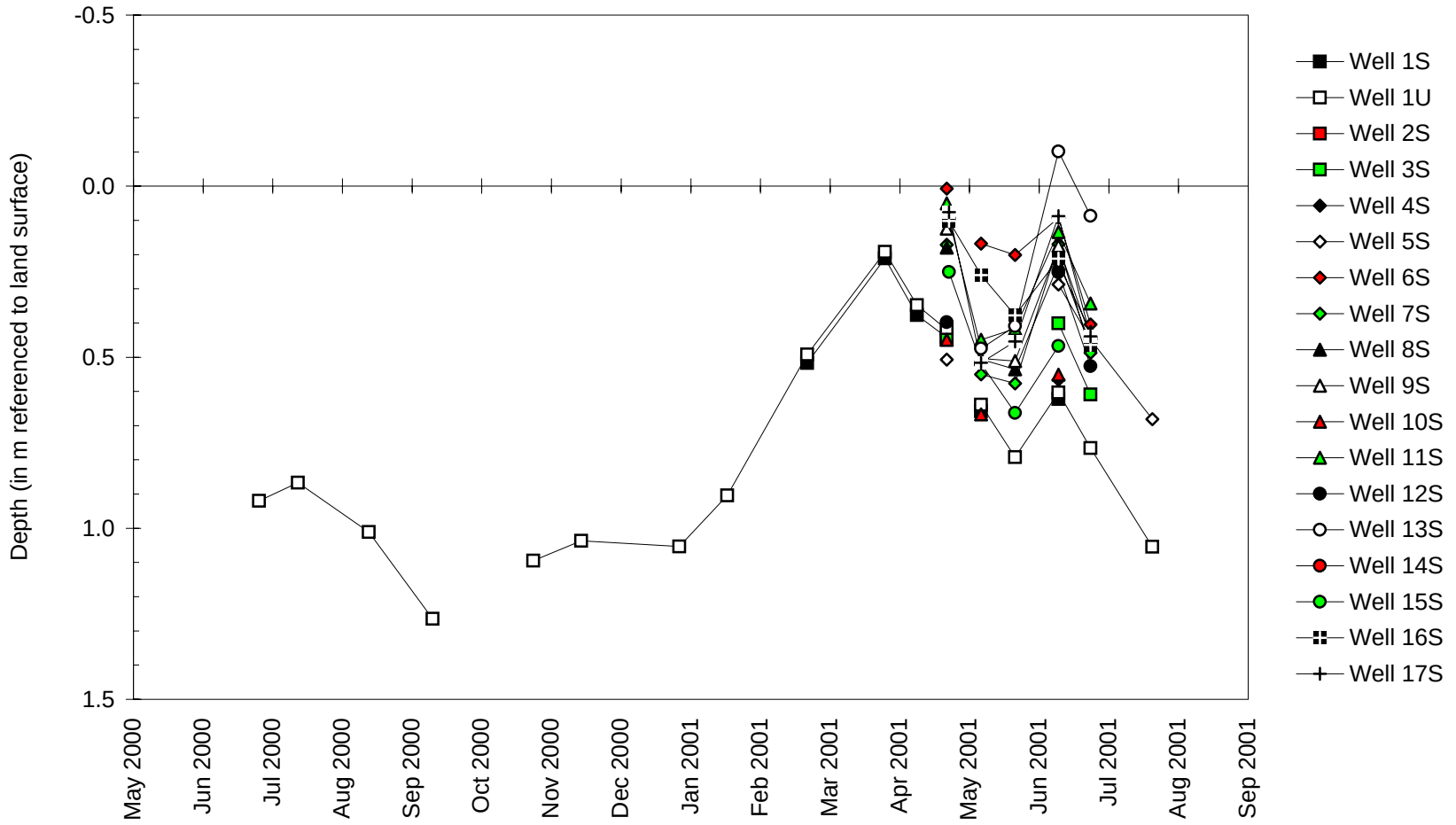
Water-Level Elevations in Monitoring Wells



Former Wessel Property, District 6 Potential Wetland Banking Site

May 1, 2000 to September 1, 2001

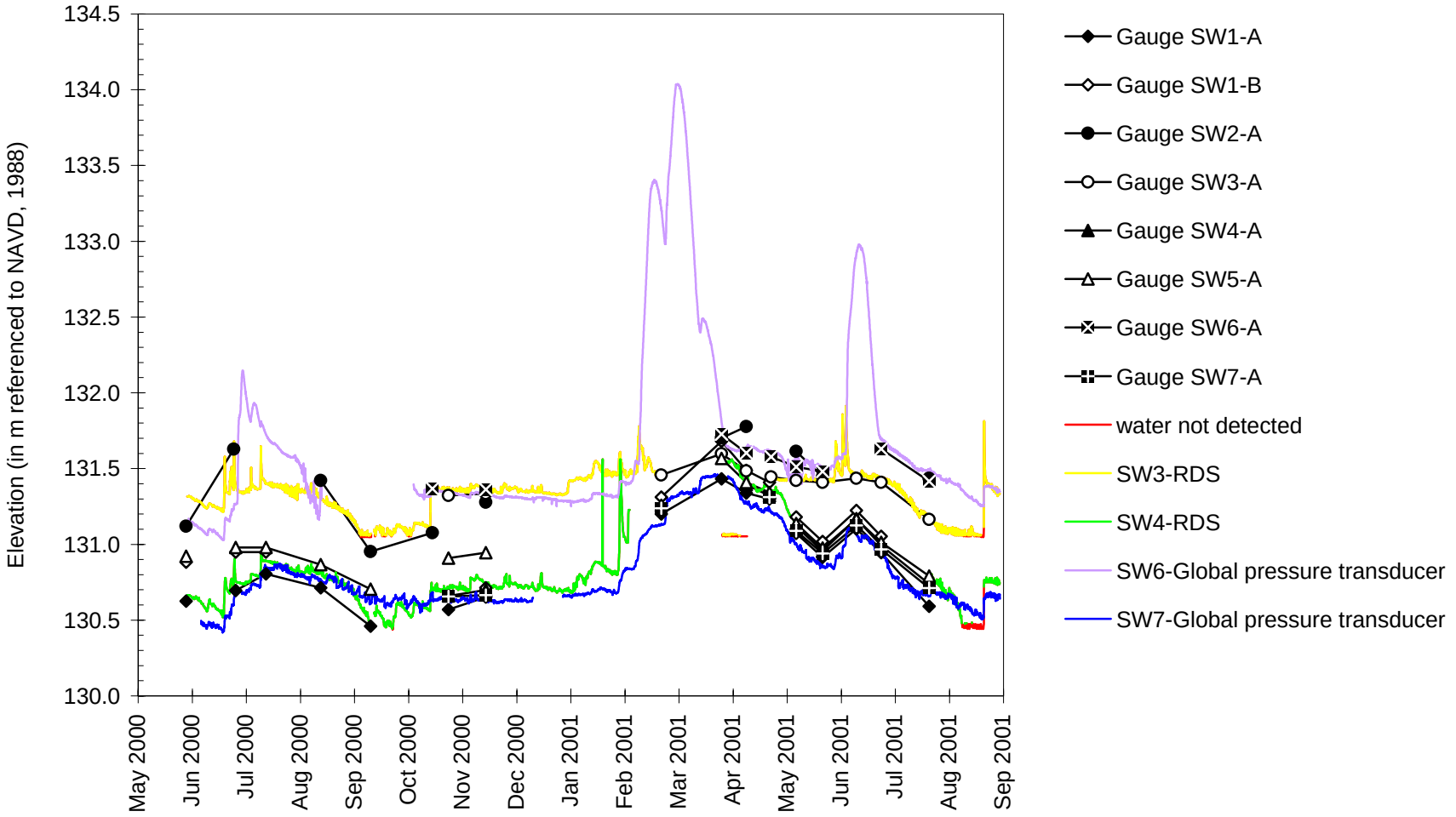
Depth to Water in Monitoring Wells



Former Wessel Property, District 6 Potential Wetland Banking Site

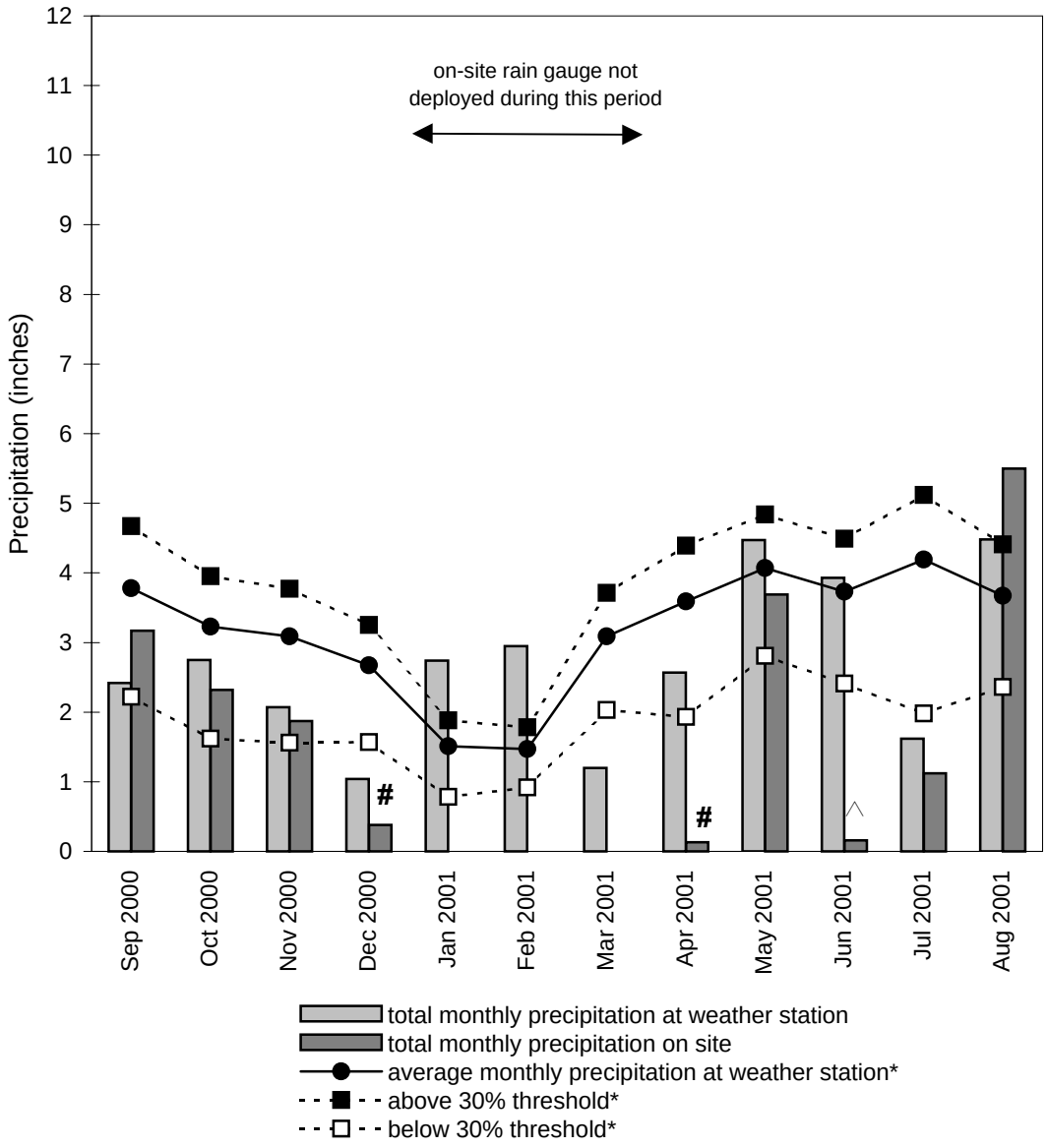
May 1, 2000 to September 1, 2001

Water-Level Elevations on Stage Gauges and Data Loggers



Former Wessel Property, District 6
Potential Wetland Banking Site
September 2000 through August 2001

Total Monthly Precipitation Recorded On Site and at the Beardstown, IL Weather Station



on-site rain gauge not deployed for entire month
△ suspect data: rain collector clogged, represents minimum value for the month
*see text for explanation

Graph last updated October 5, 2001

FAIRMONT CITY **ISGS #53**
POTENTIAL WETLAND COMPENSATION SITE
FAP 999
St. Clair County, near Fairmont City, Illinois
Primary Project Manager: Steven E. Benton
Secondary Project Manager: Blaine A. Watson

SITE HISTORY

- August 1999: The ISGS conducted an initial site evaluation of the proposed compensation site. The results were reported to IDOT by letter in November.

- June 2000: IDOT requested that the ISGS perform a level II investigation of the proposed compensation site.

- September 2000: Field work commenced at the site with the installation of a ground-water and surface-water monitoring network.

SUMMARY OF 2001 EVENTS

Because this site is a potential compensation site, an estimate of the areas satisfying the criteria for wetland hydrology is not needed.

- According to the Midwestern Climate Center, the median length of the growing season at Belleville, Illinois is 203 days, starting April 5 and ending October 24. Therefore, 12.5% of the growing season is 25 days.

- Total precipitation recorded at the Belleville, Illinois weather station during the monitoring period was 32.30 inches which was 85% of normal. Some data from September 2000 were missing, therefore, the total recorded probably underestimates the actual total. Four months, October 2000 and February, April, and August 2001 were within the normal range, three months, November 2000 and May and July 2001 were above the normal range, and the remaining months were below the normal range.

- Several monitoring wells (1S, 2S, 3S, 4S, 8S, and 12S) satisfied the criteria for wetland hydrology per the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual. Generally, these wells were located in areas identified as wetland on the National Wetland Inventory. Shallow (S) wells outside these areas did not satisfy the criteria and generally only had ground-water levels within 30 cm of ground surface on one or two occasions.

- The middle (M) and lower (L) monitoring wells indicate that ground-water flow was generally toward the west-northwest and the nested wells reveal the presence of a vertically upward gradient throughout most of the monitoring period.

- Surface water data from RDS data loggers and staff gauges indicate that the southwest corner of the site and areas adjacent to the ditch along the base of the bluff may be inundated for a sufficient period during the growing season to result in wetland hydrology.

PLANNED FUTURE ACTIVITIES

- Monitoring wells will be installed near Cahokia Canal in order to determine the effect of the canal on shallow ground-water hydrology.

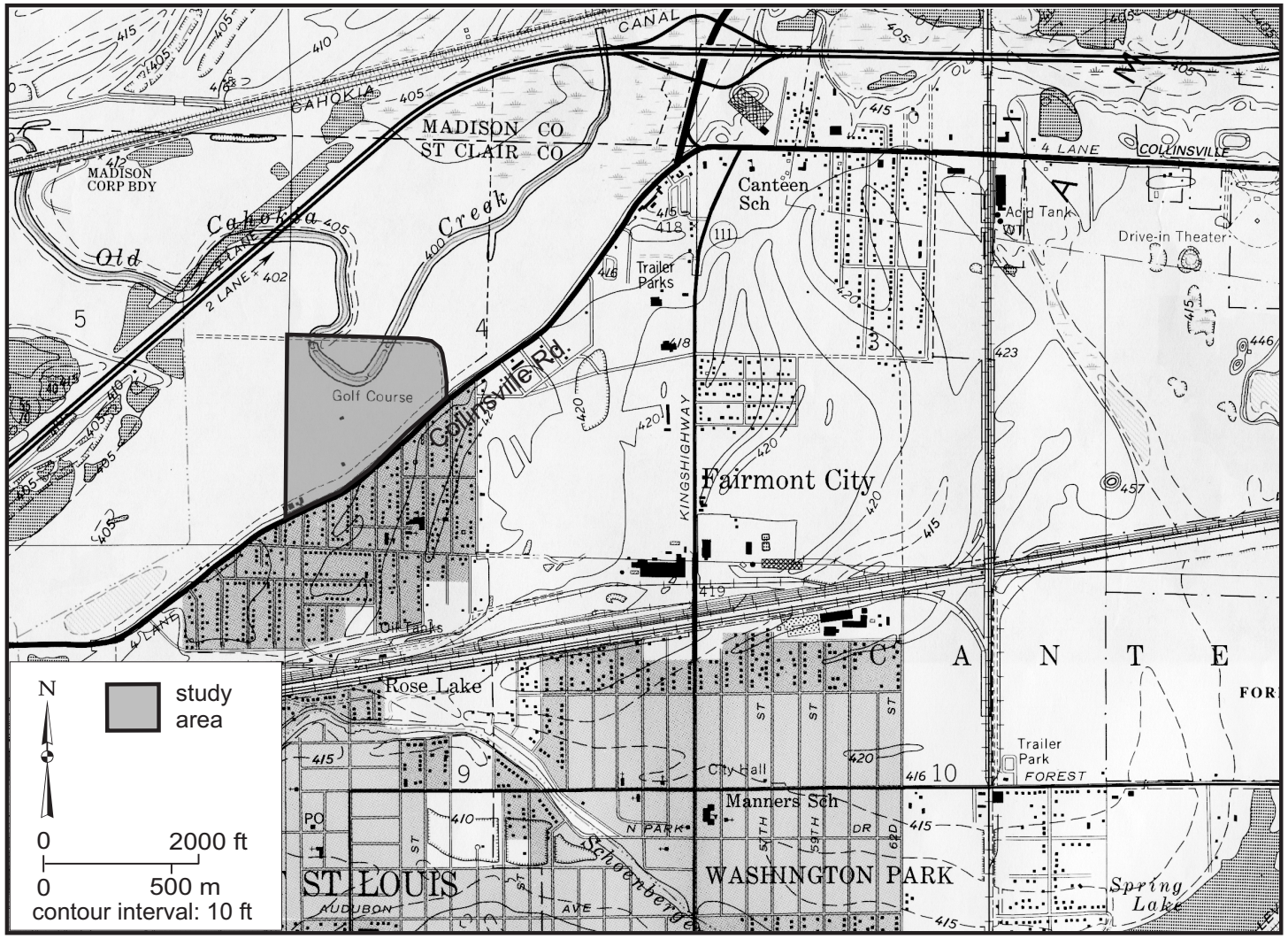
- Monitoring wells will also be installed in order to better define the current area of wetland hydrology and to more accurately define the direction and gradient of horizontal and vertical ground-water flow.

- A topographic survey of the site will be performed. The results of the survey will be used to determine the area of wetland hydrology and the changes that can be made to the site which might increase the area of wetland hydrology.

Fairmont City, New River Crossing Potential Wetland Compensation Site (FAP 999)

General Study Area and Vicinity

from the USGS Topographic Series, Monks Mound, IL 7.5-minute Quadrangle (USGS 1993)



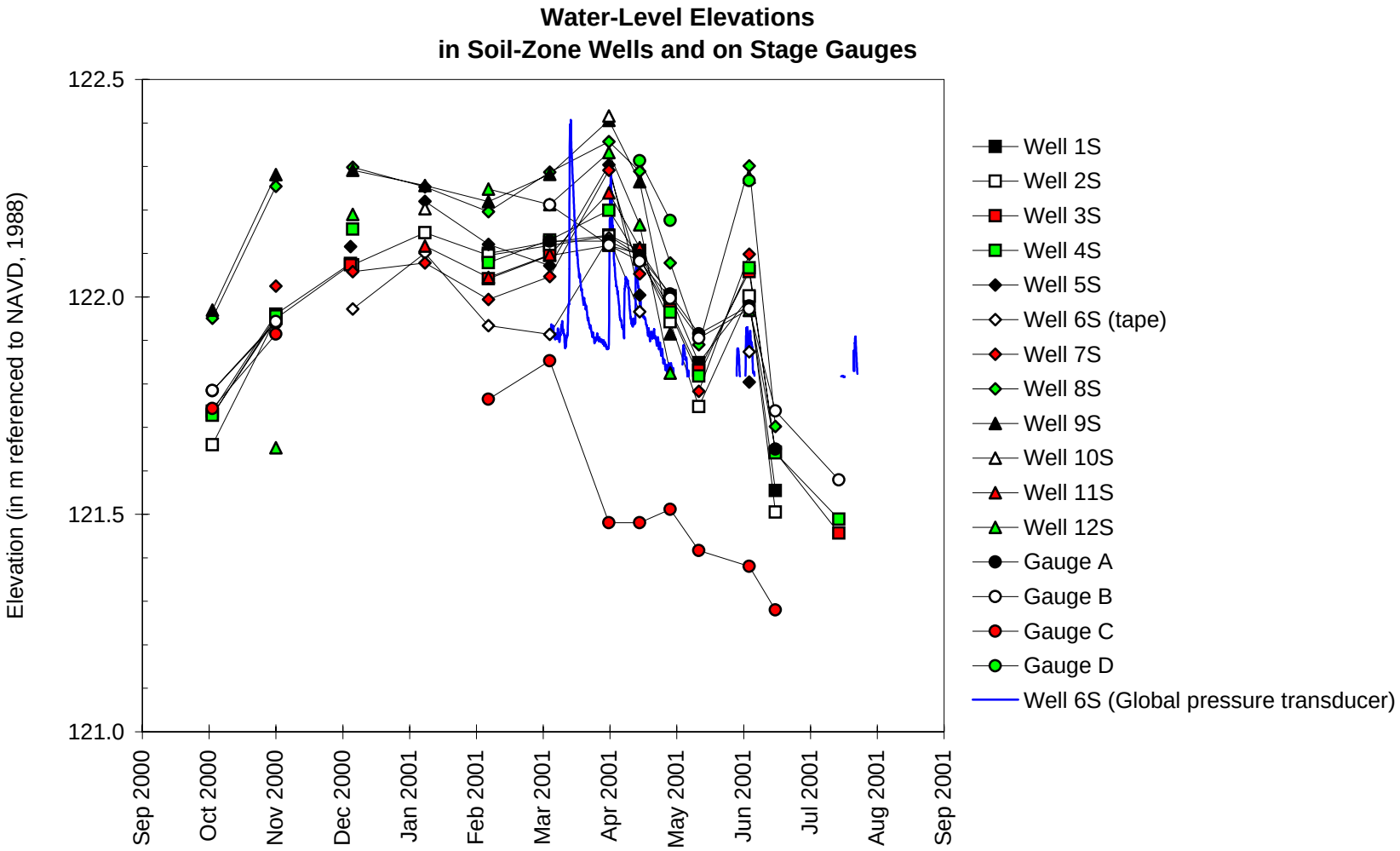
Fairmont City, New River Crossing Potential Wetland Compensation Site (FAP 999)

Monitoring Network

map based on USGS digital orthophotography, Monks Mound, SW quarter quadrangle
produced from 04/08/99 areal photography (ISGS 2001)
monitoring well, staff gauge and data logger locations from GPS survey

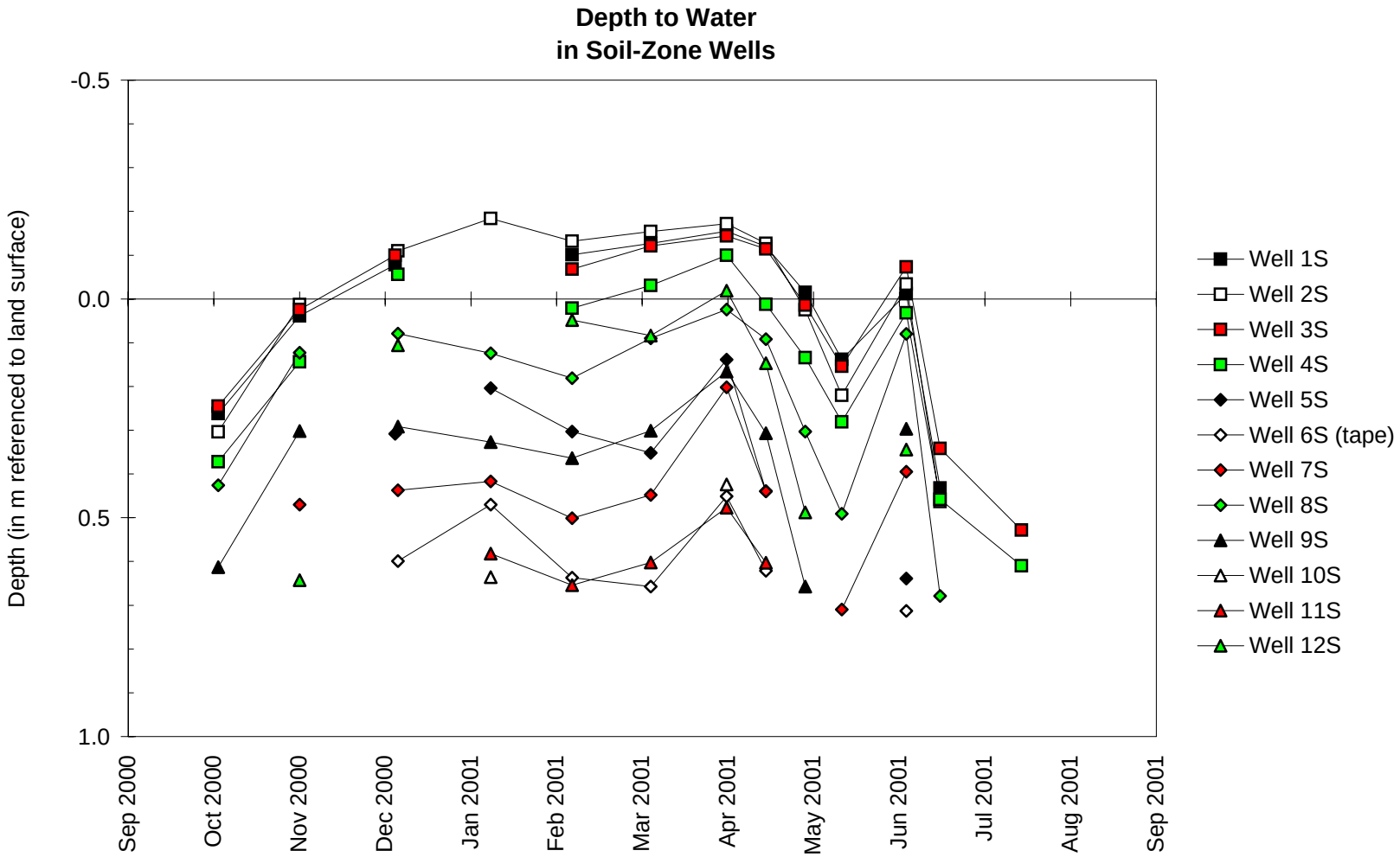
Fairmont City, New River Crossing Potential Wetland Compensation Site

September 1, 2000 to September 1, 2001



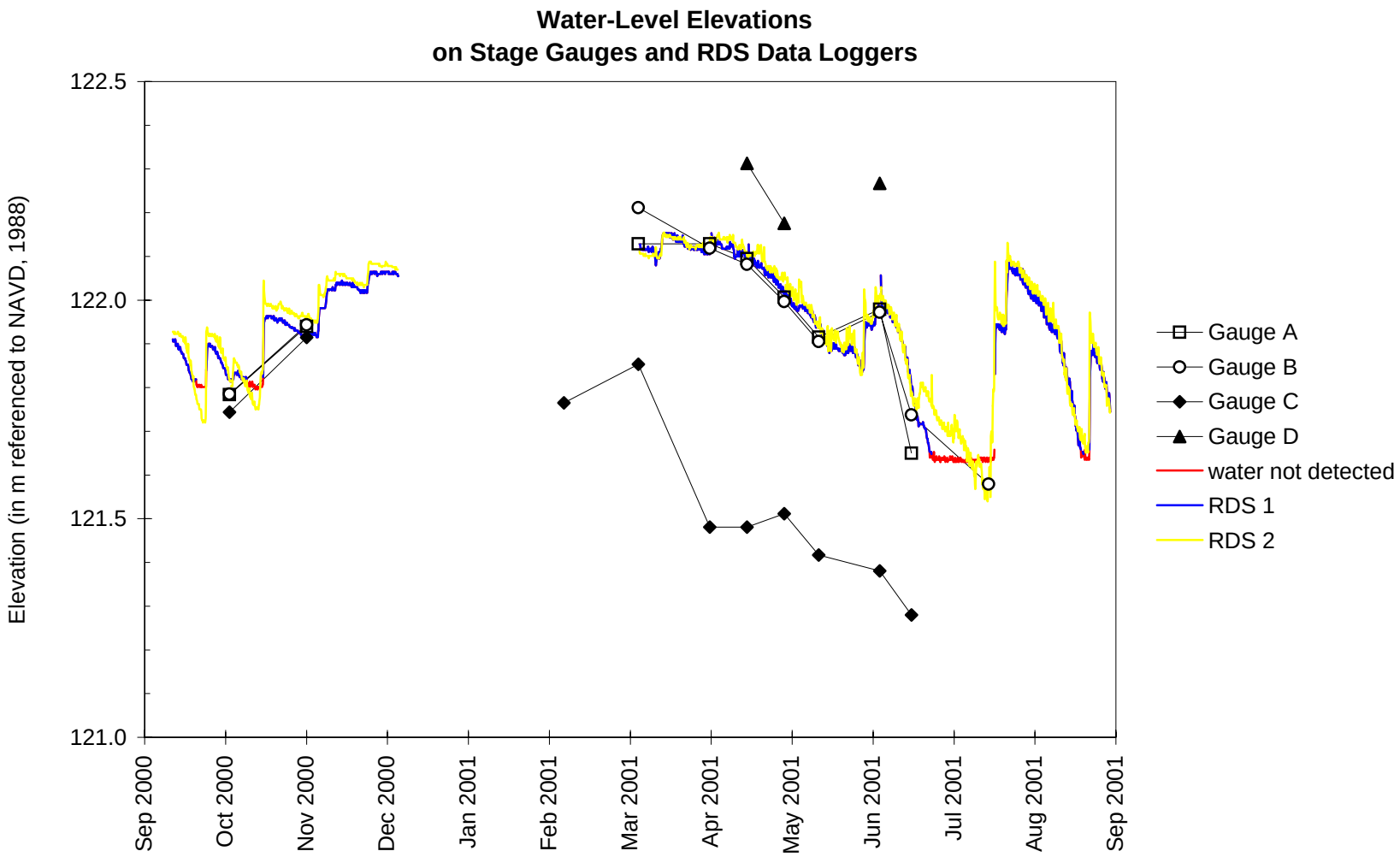
Fairmont City, New River Crossing Potential Wetland Compensation Site

September 1, 2000 to September 1, 2001



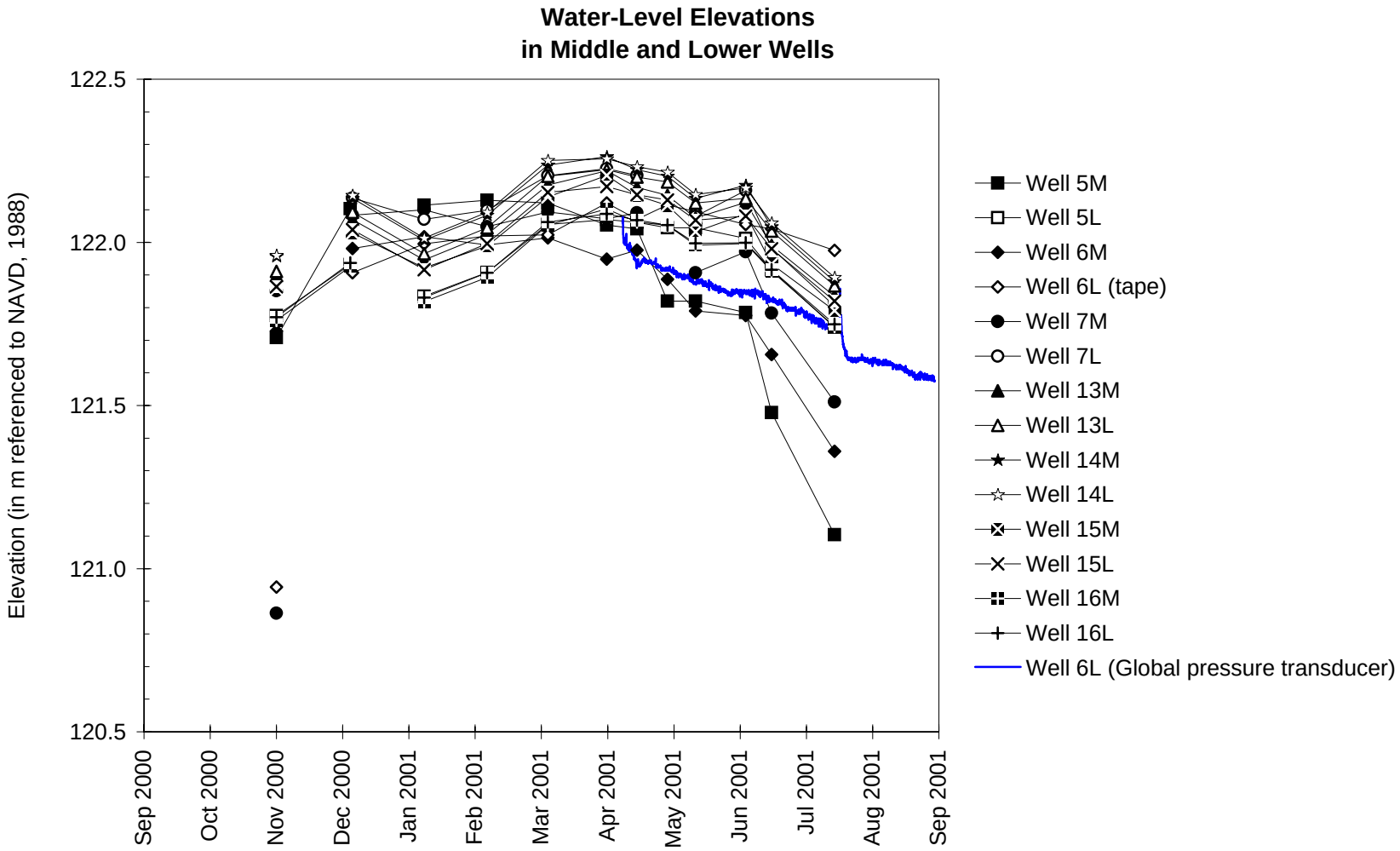
Fairmont City, New River Crossing Potential Wetland Compensation Site

September 1, 2000 to September 1, 2001



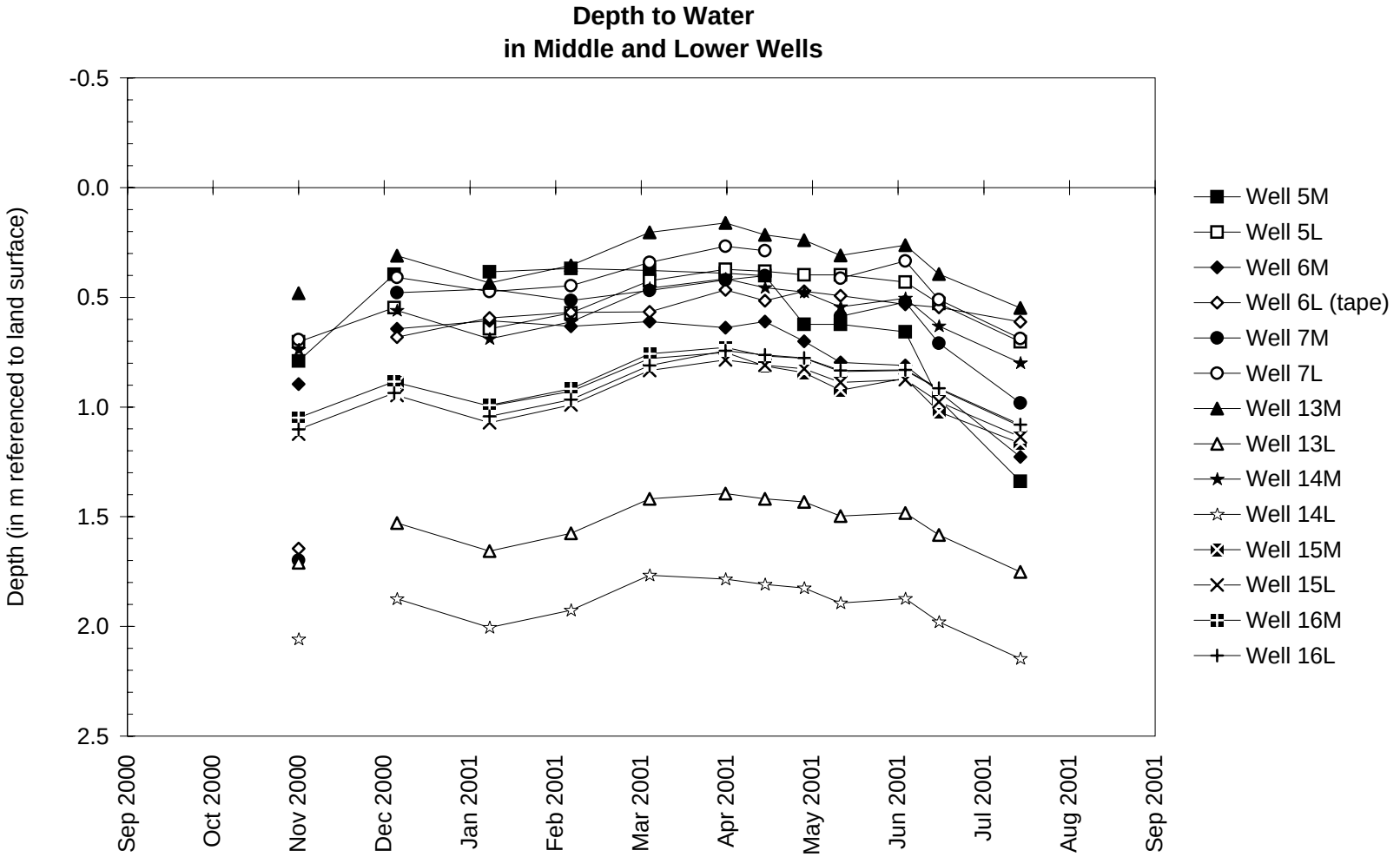
Fairmont City, New River Crossing Potential Wetland Compensation Site

September 1, 2000 to September 1, 2001



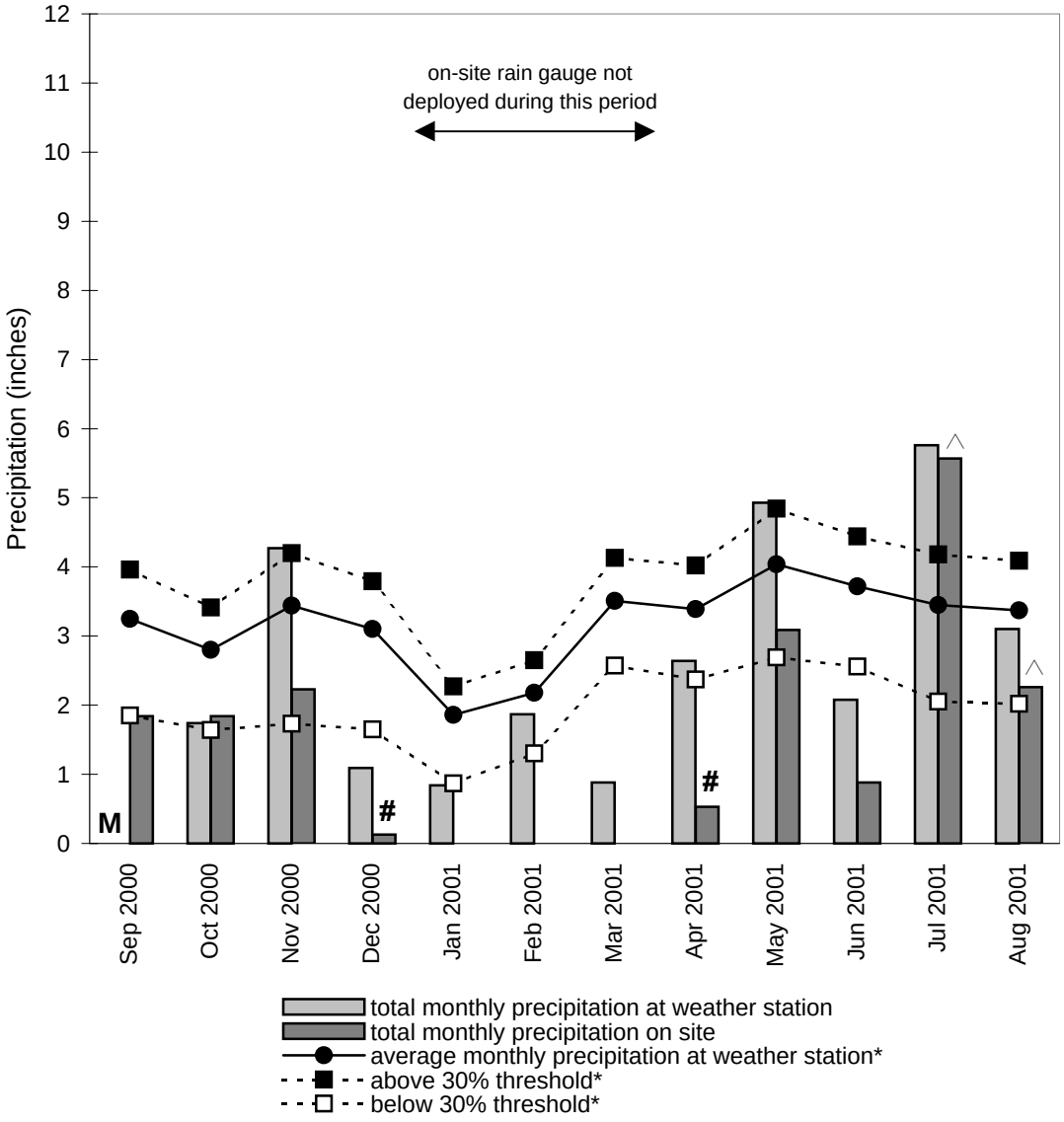
Fairmont City, New River Crossing Potential Wetland Compensation Site

September 1, 2000 to September 1, 2001



Fairmont City, New River Crossing
Potential Wetland Compensation Site
Septmeber 2000 through August 2001

Total Monthly Precipitation Recorded On Site and at the SIU Weather Station, Belleville, IL



on-site rain gauge not deployed for entire month

△ suspect data: rain collector clogged, represents minimum value for the month

* see text for explantion

M missing data at weather station

Graph last updated October 5, 2001

SPRINGFIELD, IL ROUTE 29 **ISGS #54**
WETLAND COMPENSATION SITE
FAP 658
Sangamon County near Springfield, Illinois
Primary Manager: Geoffrey E. Pociask
Secondary Manager: Blaine A. Watson

SITE HISTORY

- September 1996: ISGS conducted an initial site evaluation of the proposed compensation site and reported findings to IDOT.

- June 2000: ISGS was tasked by IDOT to monitor wetland hydrology for the north portion of the compensation site (Area B).

- September 2000: ISGS began water-level monitoring activities.

WETLAND HYDROLOGY CALCULATION FOR 2001

Based on a topographic map and ground-surface elevations surveyed by ISGS, we estimate that the total area of created wetland that conclusively satisfied wetland hydrology criteria in 2001 is 0.41ac (0.17ha) out of an excavation of 3.00 ac (1.20 ha) for Area B. This estimate is based on the following factors.

- According to the Midwestern Climate Center, the median date that the growing season begins in Springfield is April 6 and the season lasts 209 days; 12.5% of the growing season is 26 days.

- Precipitation was below the normal range in December 2000 and during March through April 2001. Precipitation was within or above the normal range from September through November 2000, from January through February 2001 and from May through August 2001. Total precipitation for the reporting period from September 2000 through August 2001 was 91% of normal. This is compared to 81% of normal for the period from September 1999 through August 2000.

- In 2001, no monitoring wells satisfied the wetland hydrology criteria of the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual.

- The RDS data logger, located at the north end of area B, indicated that surface-water inundation occurred below 156.55 m (513.61 ft) for a duration sufficient to satisfy wetland hydrology criteria. Portions of Area B with ground-surface elevations lower than 156.55m were included in the wetland hydrology calculation for 2001.

- Portions of Area B met wetland hydrology criteria due only to a flood event during June 2001. The flood entered the site through a levee valve at the south end of the site (near gauges A and B). We presume that this valve was left open unintentionally by the adjacent landowner. If the levee valve had remained closed, the flood would not have entered the site and no acreage would have conclusively met wetland hydrology criteria.

- Portions of Area A may also have met wetland hydrology criteria, however Area A was not monitored for the 2001 growing season so this area was not included in the calculation. Hydrology for Area A will be monitored in 2002.

- Limitations of the wetland hydrology determination are as follows:

  - Ground-surface elevations of the wells were surveyed in Spring 2001 and the GPS coordinates of all instruments were determined during September 2000. However, the topographic map used as a base map was produced using an arbitrary coordinate system. Therefore, the determined GPS positions of instruments were overlain on the topographic map based on best-fit visual reference to surveyed instrument locations.

  - Since none of the monitoring wells showed water levels that conclusively satisfied wetland hydrology criteria, only surface-water inundation as indicated by the RDS data logger was considered in calculating wetland hydrology. Areas lower than elevation 156.55m, but not hydrologically connected with the area encompassing the RDS data logger at the 156.55m contour, were considered in the calculation. An exception to this is the south end of the monitored area (contour encompassing wells 6S, 7S, 8S and gauge D) which is drained to the south by a small drainage feature connecting Area B to Area A.

PLANNED FUTURE ACTIVITIES

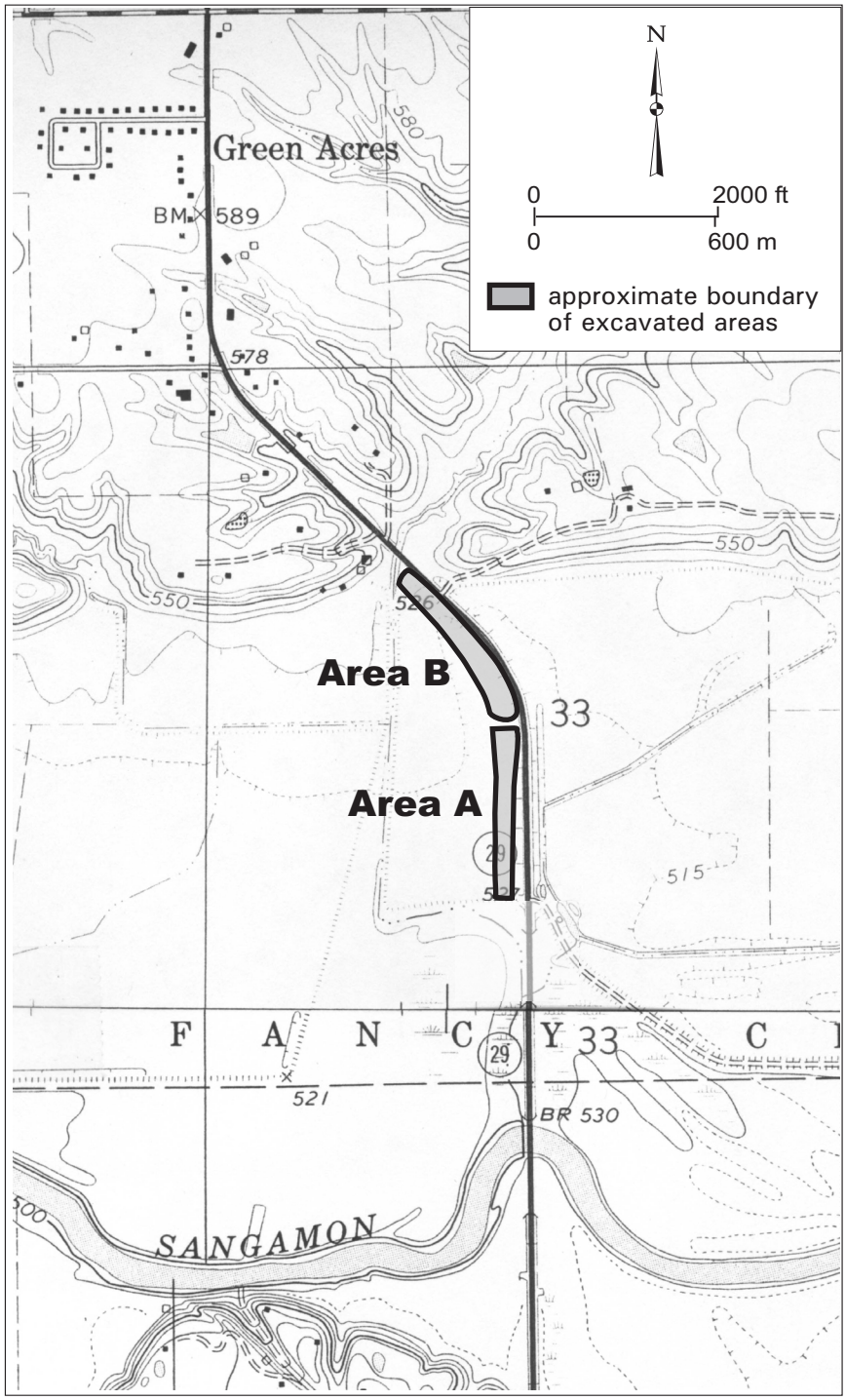
- The current monitoring strategy for Area B (planted north area) will continue in 2002. Area A (directly south of area B) will be monitored with a surface-water data logger and shallow monitoring wells beginning in Fall 2001. Monitoring will continue until September 2005 or until no longer required by IDOT.

- The two stage gauges (A and B) located on the gate valve culvert through the levee south of the site are inaccessible. These gauges are actually located on an adjacent property not owned by IDOT. The owner of the adjacent property has requested that ISGS personnel stay off his property. If the property owner will grant access, ISGS intends to remove these gauges in the future.

Springfield, IL Route 29 Wetland Compensation Site
(FAP 658)

General Study Area and Vicinity

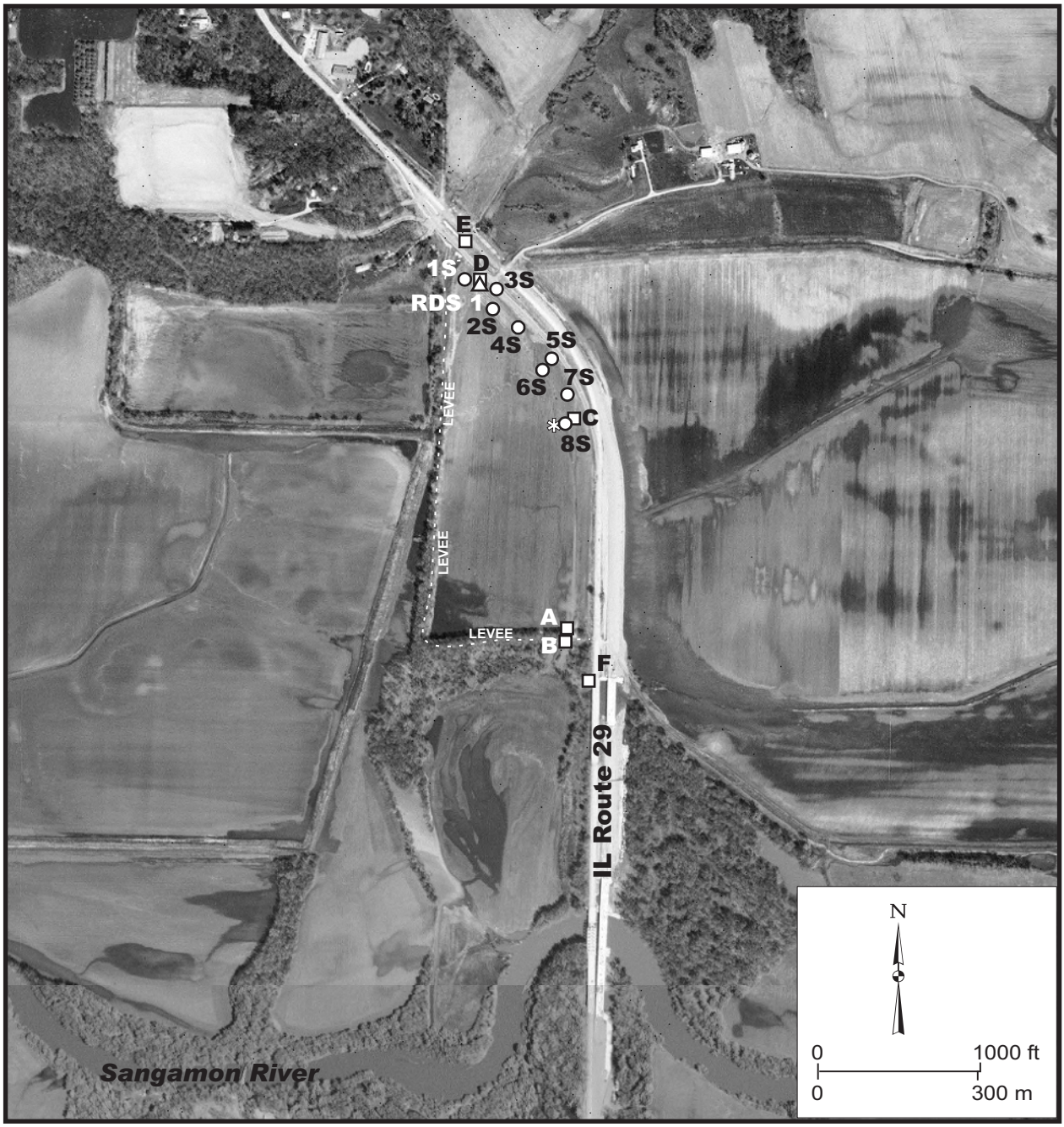
from the USGS Topographic Series, Athens, IL (USGS 1966; photorevised 1971 and 1976) and Springfield West, IL (USGS 1965; photorevised 1971 and 1976) 7.5-minute Quadrangles
contour interval is 10 feet



Springfield, IL Route 29 Wetland Compensation Site
(FAP 658)

Approximate Locations of ISGS Monitoring Instruments

map based on USGS digital orthophotographs,
Athens, SE quarter quadrangle and Springfield West, NE quarter quadrangle
produced from 04/14/1998 aerial photography (ISGS 2001)



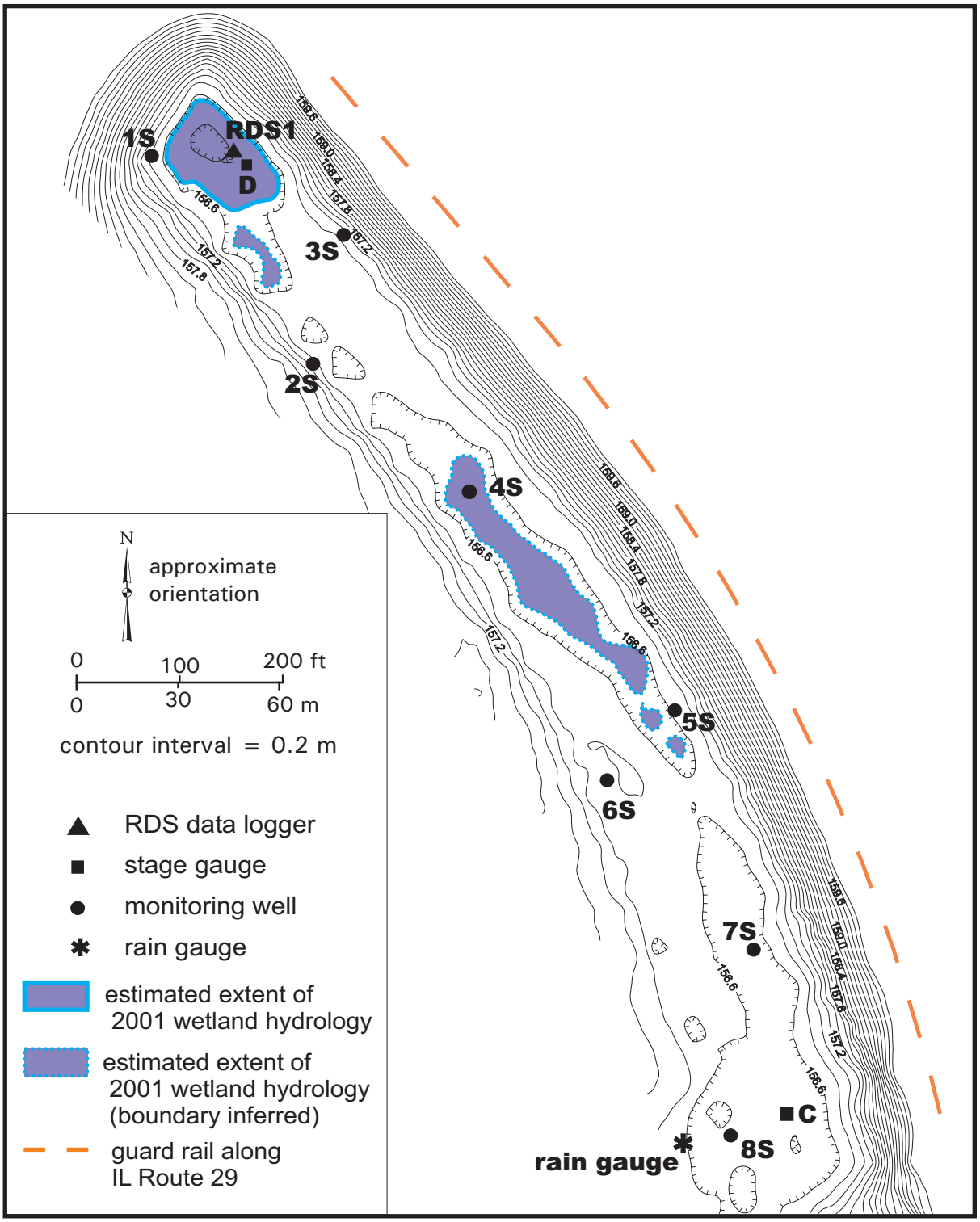
○ monitoring well
△ RDS data logger
□ stage gauge
❄ rain gauge

Springfield, IL Route 29 Wetland Compensation Site
(FAP 658)

Estimated Areal Extent of 2001 Wetland Hydrology in Area B

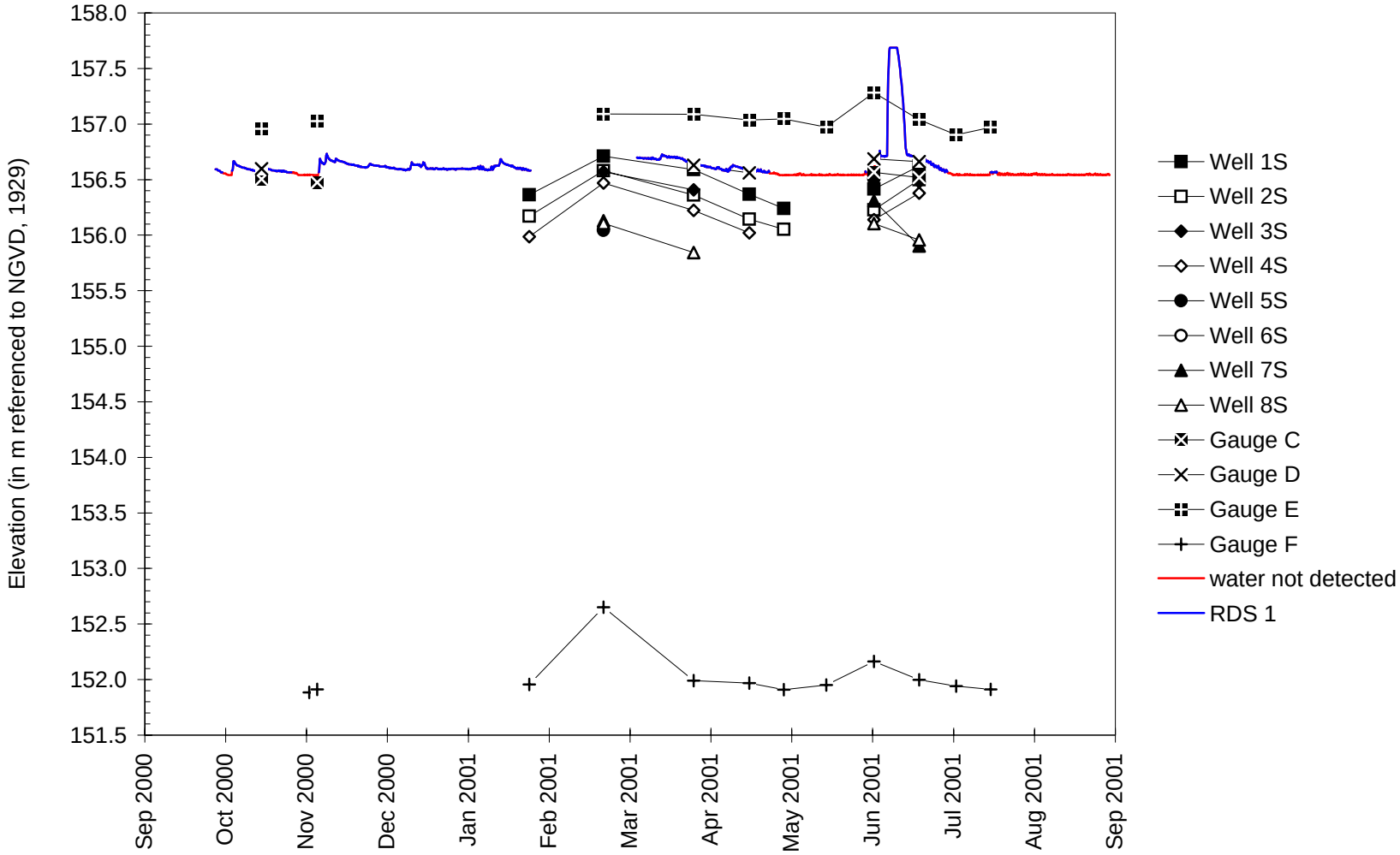
based on data collected between September 1, 2000 and September 1, 2001

topographic map produced from survey data collected by ISGS, September 2001



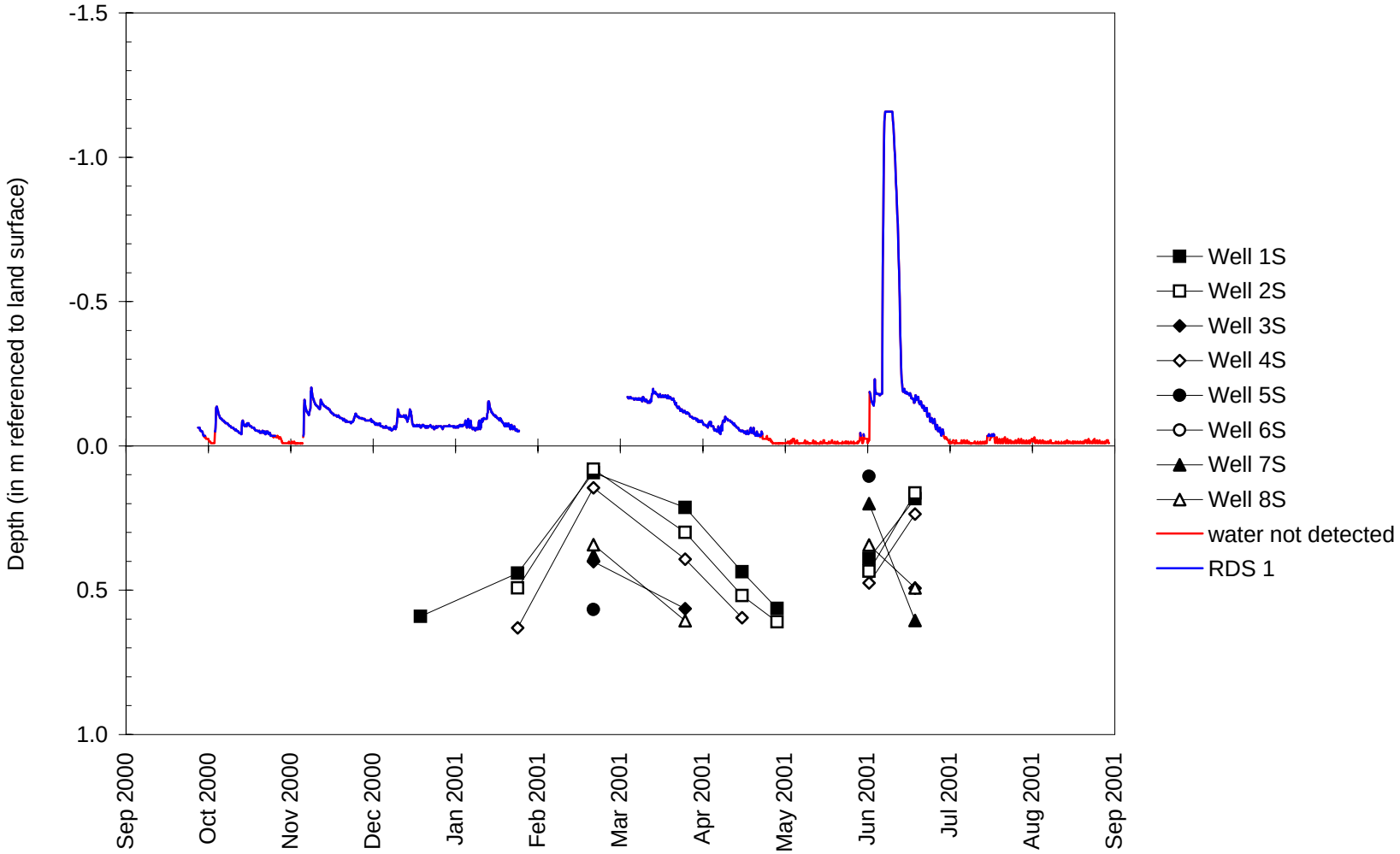
Springfield, IL Route 29 Wetland Compensation Site
September 1, 2000 to September 1, 2001

Water-Level Elevations



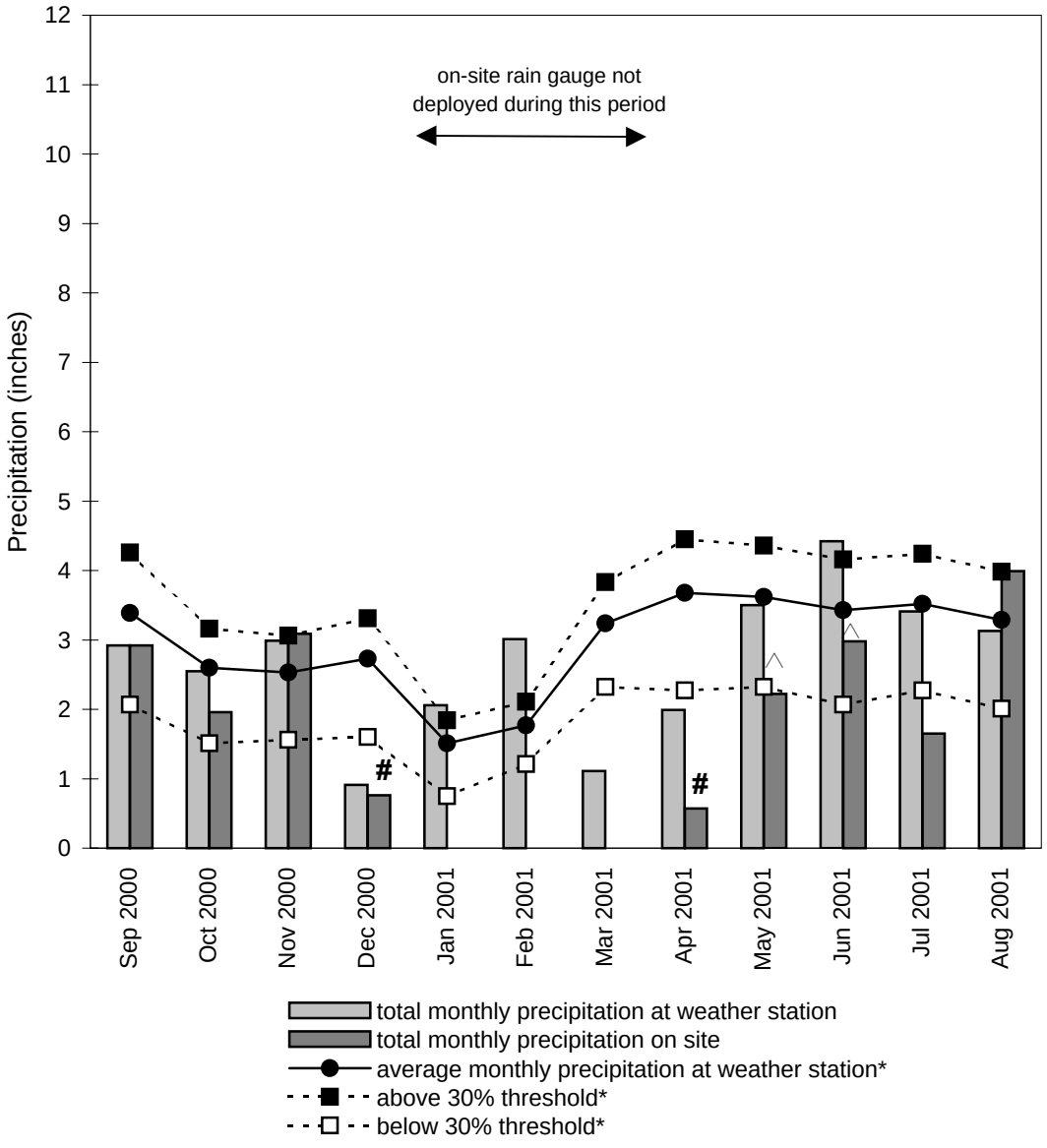
Springfield, IL Route 29 Wetland Compensation Site
September 1, 2000 to September 1, 2001

Depth to Water



Springfield, IL Route 29
Wetland Compensation Site
September 2000 through August 2001

Total Monthly Precipitation Recorded On Site and at the Capital Airport Weather Station, Springfield, IL



on-site rain gauge not deployed for entire month

△ suspect data: rain collector clogged, represents minimum value for the month

* see text for explanation

Graph last updated October 5, 2001

SOUTH ROXANA, NEW RIVER CROSSING **ISGS #55**
POTENTIAL WETLAND COMPENSATION SITE
Madison County, near South Roxana, Illinois
FAP 999
Primary Project Manager: Keith W. Carr
Secondary Project Manager: Blaine A. Watson

SITE HISTORY

- June 2000: ISGS submitted a draft Initial Site Evaluation Report to IDOT.
- July 2000: ISGS was tasked by IDOT to conduct a Level II hydrogeologic assessment of the site.
- October 2000: ISGS received notification from IDOT that the site was to be used for tree mitigation only and that all hydrological monitoring was to cease as of October 2, 2000.
- April 2001: ISGS was tasked by IDOT to re-activate the site and conduct a Level II hydrogeologic assessment of the site.
- May 2001: ISGS began limited on-site activities with the installation of a single RDS water-level data logger in an area near the southwest corner of the site which is a focal point for surface-water collection.
- July 2001: ISGS received notification from IDOT that the site had again been removed from consideration for wetland mitigation and that all monitoring at the site was to cease as of July 27, 2001.
- August 2001: ISGS ceased all on-site activities and removed the RDS water-level data logger from the site.

WETLAND HYDROLOGY CALCULATION FOR 2001

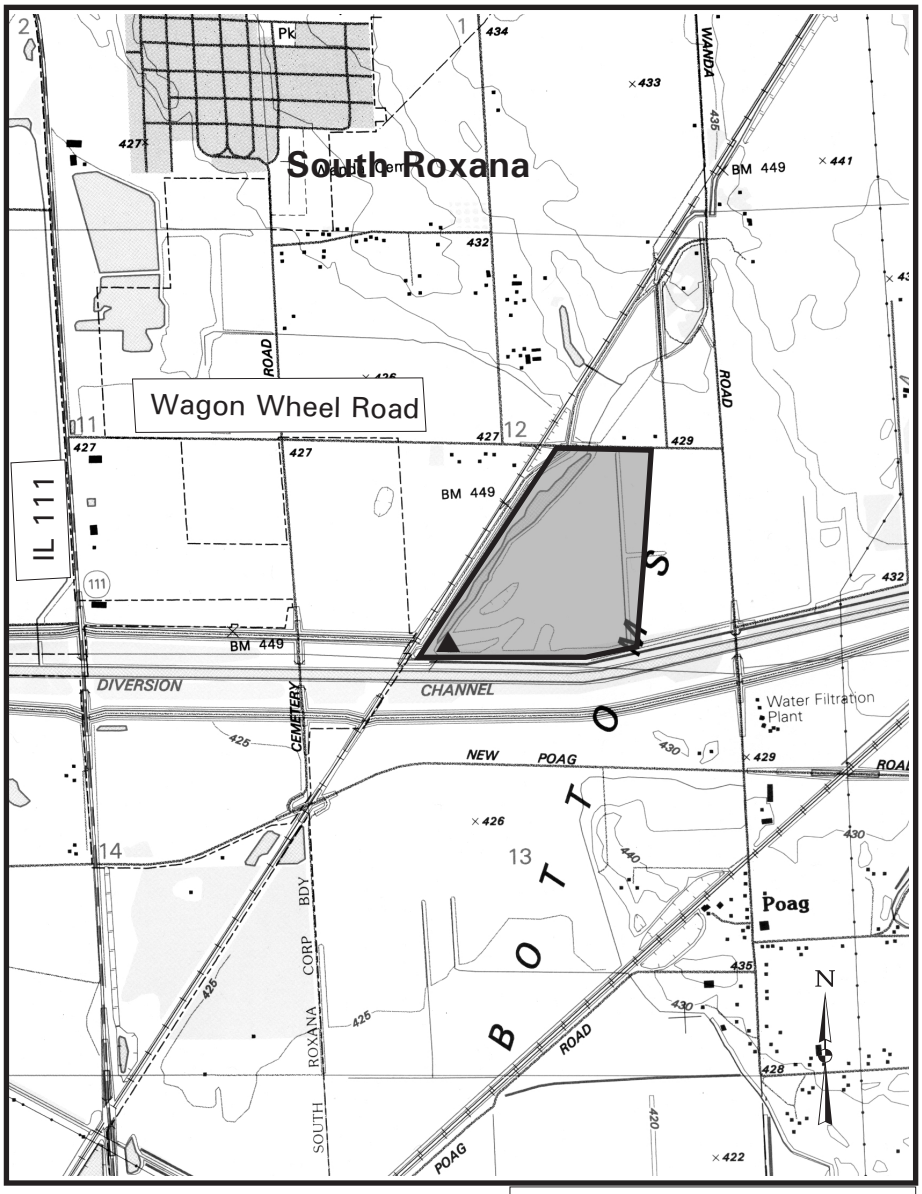
No wetland hydrology calculation has been made for this monitoring period, as the single RDS data logger deployed on site between May and August 2001 recorded surface-water inundation for a single location only. This RDS data did show, however, that this area was inundated for a period of up to 1.5 months. The estimated area of inundation is relatively small, however, encompassing less than 5% of the site.

- According to the Midwestern Climate Center, the median date that the growing season begins in Belleville, Illinois is April 5 and the season lasts 203 days; 12.5% of the growing season is 25 days.
- Total precipitation for the period from September 2000 to March 2001 was 90% of normal, although March was atypically dry, with precipitation only 10% of normal. During the period from April to August 2001, precipitation was 109% of normal, although in July, precipitation was 179% of normal. Total precipitation for the monitoring period from September 2000 to August 2001 was essentially normal.

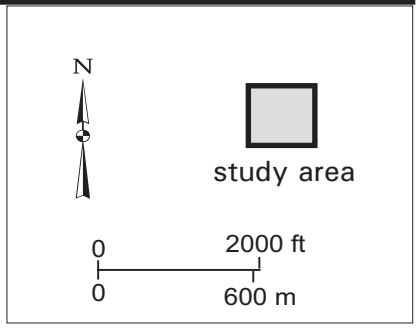
South Roxana, New River Crossing Potential Wetland Compensation Site

General Study Area and Vicinity

from the USGS Topographic Series, Wood River, IIL-MO, 7.5 minute Quadrangle (USGS 1994)
contour interval is 5 feet



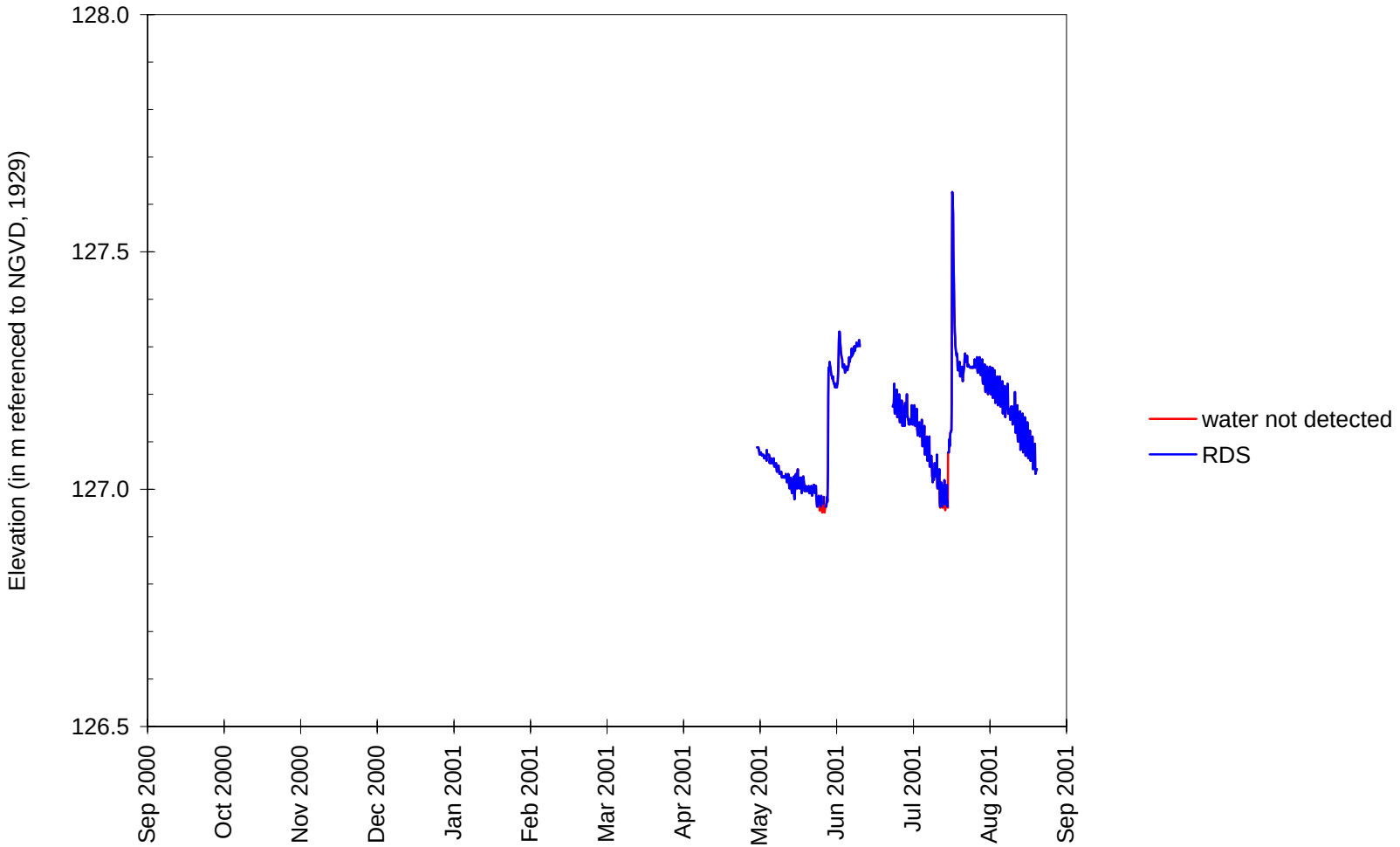
▲ RDS data logger



South Roxana, New River Crossing Potential Wetland Compensation Site

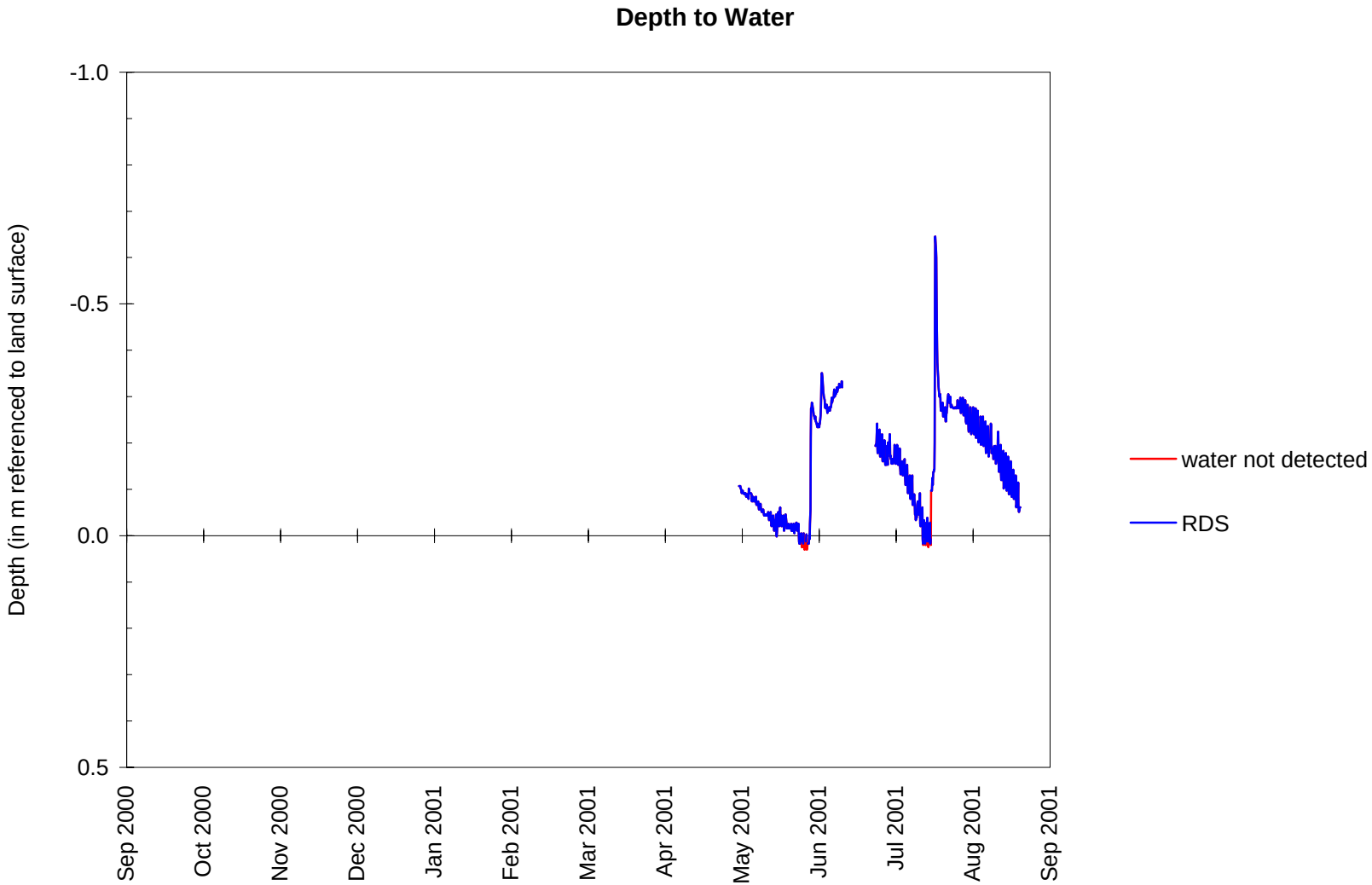
September 1, 2000 to September 1, 2001

Water-Level Elevation



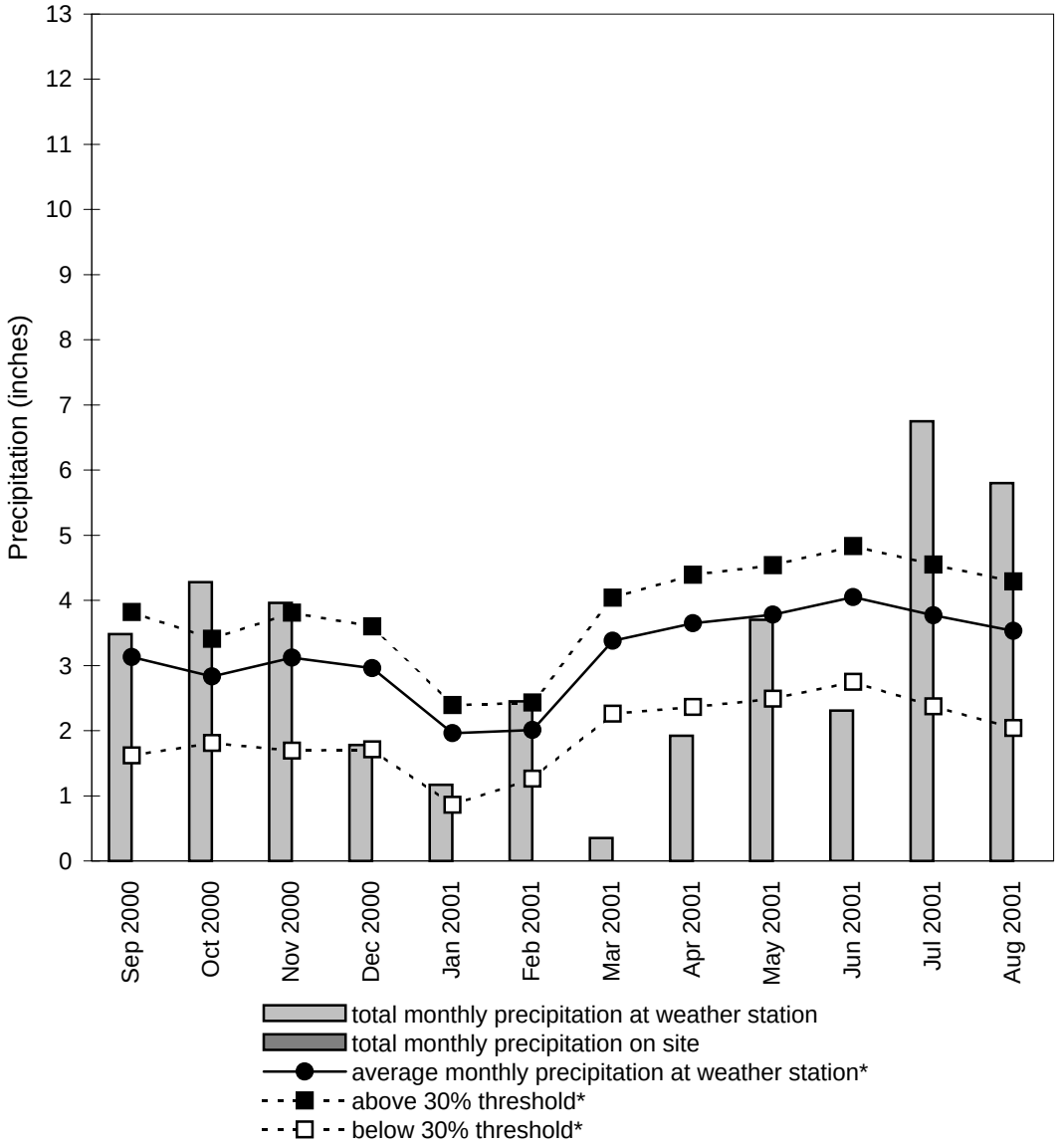
South Roxana, New River Crossing Potential Wetland Compensation Site

September 1, 2000 to September 1, 2001



South Roxana, New River Crossing
Potential Wetland Compensation Site
September 2000 through August 2001

Total Monthly Precipitation at the Edwardsville, IL Weather Station
(no rain gauge deployed on site)



* See text for explanation

Graph last updated October 9, 2001

GRAND DETOUR **ISGS #56**
POTENTIAL WETLAND COMPENSATION SITE
FAP 742
Ogle County, near Grand Detour, Illinois
Primary Project Manager: Steven Benton
Secondary Project Manager: Kelli D. Weaver

SITE HISTORY

- March 2000: The ISGS conducted an initial site evaluation of the site.
- June 2000: The ISGS was tasked to perform a Level II hydrogeologic assessment of the site.
- August–October 2000: Four S-wells, four M-wells and two staff gauges were installed on the site.
- March 2001: A data logger was installed in the Rock River in order to monitor river stage.

SUMMARY OF 2001 EVENTS

Because this site is a potential compensation site, an estimate of the areas satisfying the criteria for wetland hydrology is not needed.

- Ground-water levels in all of the monitoring wells were deeper than 30 cm throughout the monitoring period. Therefore, wetland hydrology, per the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual, did not occur at this site.
- Total precipitation for the monitoring period as recorded at the Dixon, IL weather station was 35.45 inches or 99.94% of average. Except for October 2000 and February 2001, monthly precipitation was within the normal range.
- Ground-water flow was generally from northwest to southeast. The highest ground-water elevations were at well cluster 3 and the lowest at well cluster 1.
- Comparison of ground-water and Rock River elevations revealed that there was a relationship between fluctuations in river stage and in ground-water elevations. The hydrograph (see attached) shows that when river stage went up, ground-water elevations increased, and when river stage dropped, ground-water elevations decreased.
- Ground-surface elevations surveyed at the monitoring wells ranged from 199.26 m to 199.86 m. Comparison of ground-surface elevations and river stage indicated that during the period in which river stage was being monitored the study site was not flooded by the Rock River.

PLANNED FUTURE ACTIVITIES

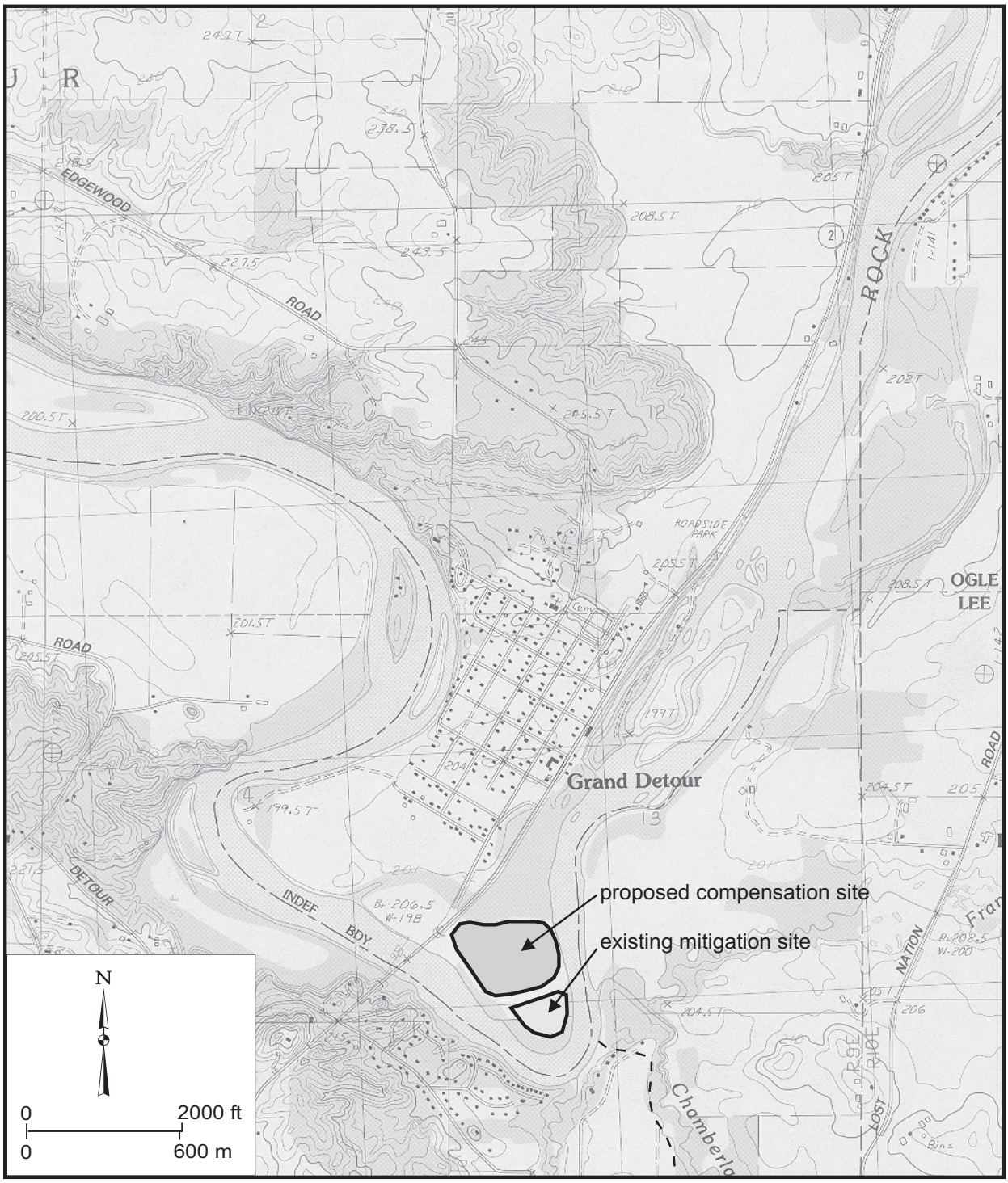
- Additional monitoring wells will be installed in areas adjacent to the study site that are lower in elevation. Ground-water data collected from these wells will be compared to data

collected from the wells in the study site and used to determine what changes need to be made to the study site in order to create wetland hydrology. Well clusters will be installed in the existing mitigation site, north of the study site, and south of the study site. These areas are generally 2 ft to 4 ft lower than the study site.

- A topographic survey of the study site will be performed. The resulting map will be used to determine the area of wetland hydrology and/or flooding in the study site.

Grand Detour Potential Wetland Compensation Site
(FAP 742)
General Study Area and Vicinity

from the USGS Topographic Series, Grand Detour, IL 7.5-minute Quadrangle (USGS 1994)
contour interval: 3 meters



Grand Detour Potential Wetland Compensation Site
(FAP 742)
Monitoring Network

map based on USGS digital orthophotograph, Grand Detour, SE quarter quadrangle
produced from 04/08/99 areal photography (ISGS 2001)
monitoring well, staff gauge and data logger locations from GPS survey

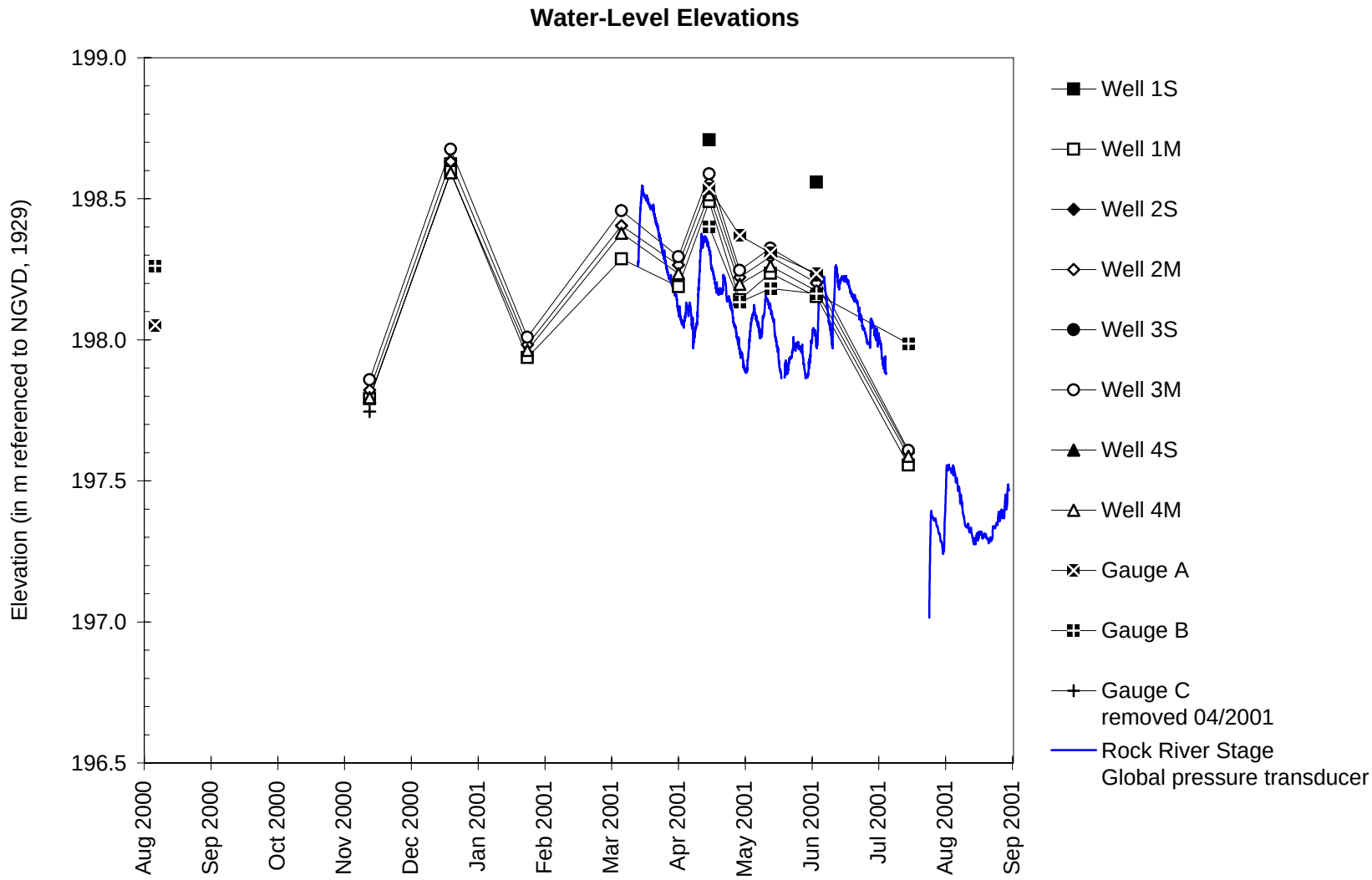
● monitoring well
■ staff gauge
▲ Global data logger
✱ rain gauge
◆ benchmark

N

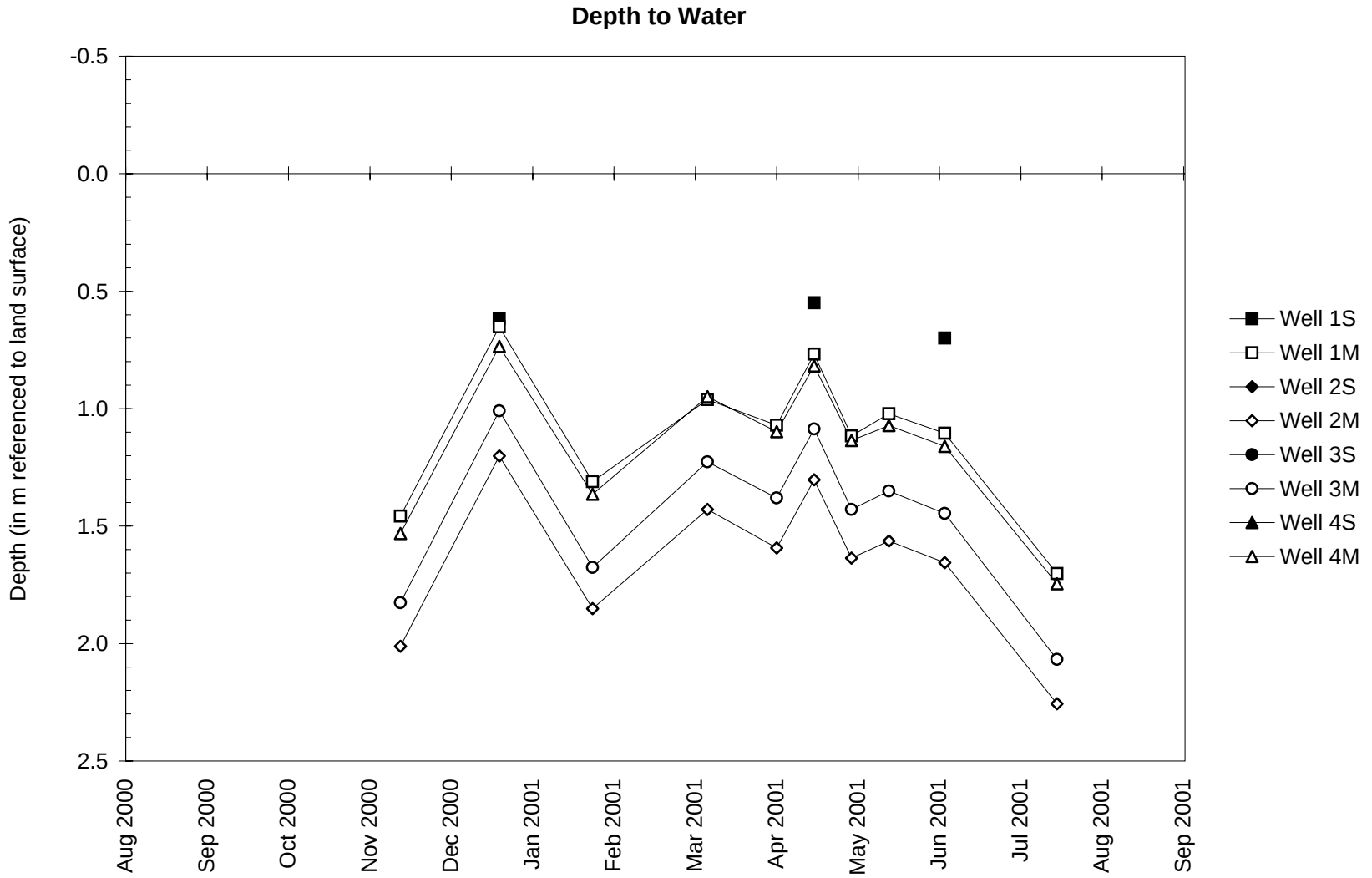
0 400 meters
0 1000 feet

proposed compensation site

Grand Detour Potential Wetland Compensation Site
August 1, 2000 to September 1, 2001

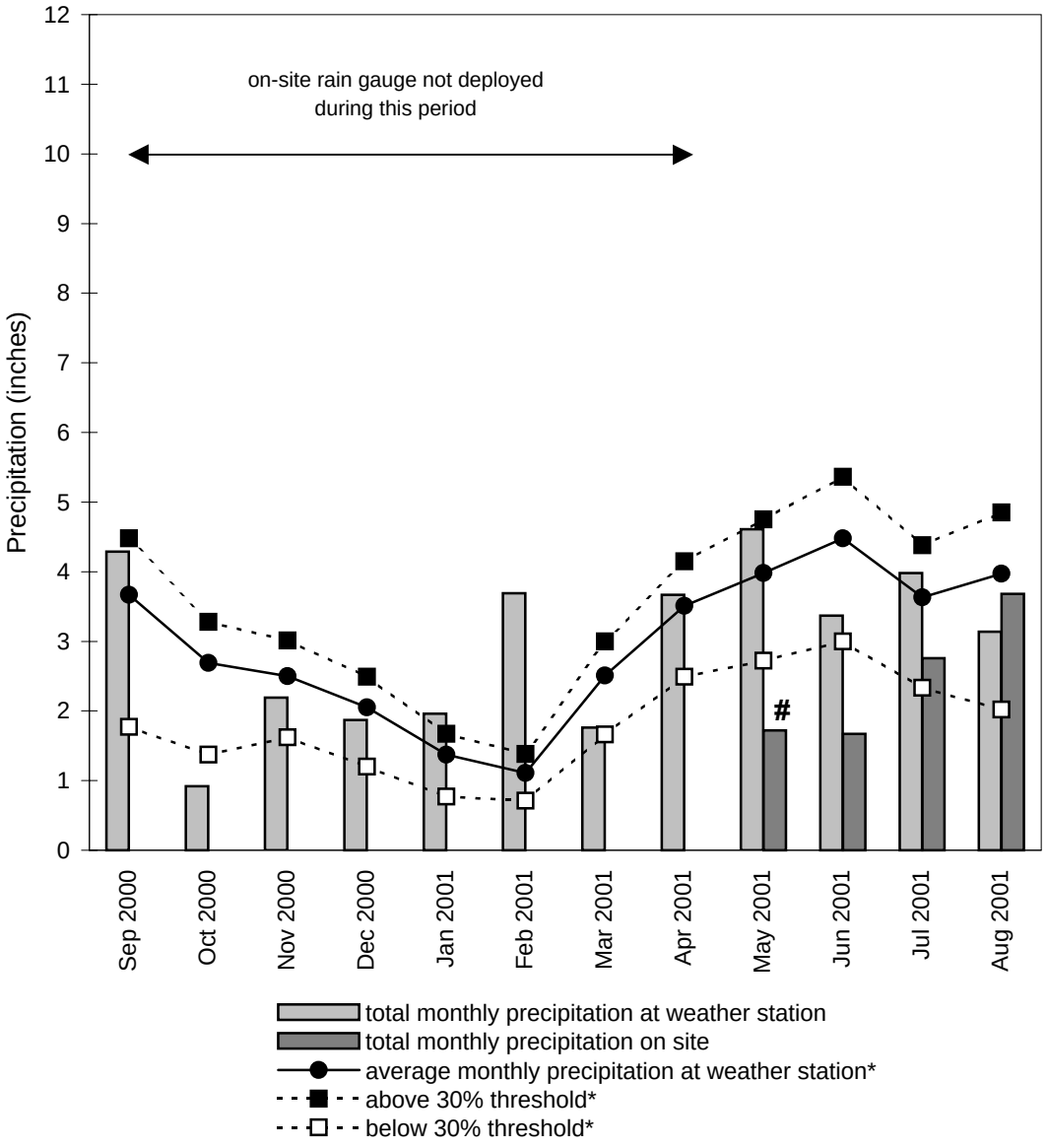


Grand Detour Potential Wetland Compensation Site
August 1, 2000 to September 1, 2001



Grand Detour Potential Wetland Compensation Site
September 2000 through August 2001

Total Monthly Precipitation Recorded On Site and at the Dixon, IL Weather Station



on-site rain gauge not deployed for entire month

* see text for explanation

Graph last updated October 5, 2001

TIERNAN PROPERTY, NEW RIVER CROSSING **ISGS #57**
POTENTIAL WETLAND COMPENSATION SITE
FAP 999
St. Clair County, near Cahokia, Illinois
Primary Project Manager: D. Bradley Ketterling
Secondary Project Manager: Bonnie J. Robinson

SITE HISTORY

- July 2000: The ISGS was tasked to perform a Level II hydrogeologic assessment of the site.

- March 2001: Forty-two S- and VS-wells installed. Water-quality sampling commenced.

- April 2001: Six benchmarks installed and surveyed, all wells surveyed, and x, y, and z positions determined via GPS.

- May 2001: Six soil-moisture probes installed in three, two-probe clusters in the northern former farm field. Two staff gauges added to the main ditches. Water-quality sampling terminated because no quality standards were exceeded in any of the samples.

- August 2001: One deep well was added to center of former farm field to investigate deep ground-water fluctuations.

SUMMARY OF 2001 EVENTS

The former Tiernan Property is a potential wetland compensation site. No calculation of the area satisfying wetland hydrology criteria is needed, but was carried out for planning purposes and because a substantial amount of wetland already exists on site.

Using well coordinates derived via GPS and a mathematical interpolation of the shallow ground-water surface, the total area that satisfied wetland hydrology criteria in 2001 was determined to be approximately 13.6 ac (5.5 ha). The figure for 2001 is based on the following factors.

- According to the Midwestern Climate Center, the median length of the growing season at Belleville, Illinois is 203 days, starting April 5 and ending October 24. Therefore, 12.5% of the growing season is 25 days.

- Most of the southern half of the site (borrow pit) is a pre-existing wetland area. Although ground-water discharge was observed at the southern tip of the site in March, the hydrology of the wetland seems to be controlled primarily by the water level in Blue Waters Ditch southeast of the site.

- Blue Waters Ditch accepts runoff from a large area north and east of the site and from Centreville. The water levels in the ditch are controlled by a pumping station and gravity drain. After heavy rainstorms, the pumping station operates and/or the gravity drain is opened to alleviate interior flooding. This drawdown directly affects water levels on the proposed mitigation site.

- Precipitation during the monitoring period was 82% of normal. In the first four months of 2001, precipitation was below normal. Site reconnaissance in February found ground-water levels in the southern wetland area to be generally greater than 0.6 m (2 ft) below ground surface. However, with precipitation returning to normal levels in May and June, the water level in Blue Waters Ditch rose to an elevation at which widespread inundation occurred in the southern one-fifth of the site. Even though pumping and/or draining was undertaken to discharge storm-water runoff on a number of occasions, water levels in the ditch remained high enough to promote wetland hydrology over 13.6 ac (5.5 ha) of the site.

- The extent of wetland hydrology was determined using water levels measured during the longest period of sustained high-water levels (roughly the month of June and early July). Well records from June 18, 2001 were considered most representative and were converted to a measurement relative to ground surface. Twenty-five individual measurements were used to mathematically contour the water surface over the southern half of the site. Contour values of 30 cm (1 ft) represent the boundary between wetland and non-wetland areas.

- The limitations of the above method include:

    - There is some topographic variability over the site. As such, localized ditches and depressions may be under-represented whereas berms and other topographic highs may be over-represented. With regards to the former, field indicators were used to outline areas of wetland hydrology missed by the interpolation (*e.g.* the orientation of the wetland-hydrology boundary north of well 2S was modified to match the topography). The latter point is less applicable because good control was achieved by installing closely-spaced wells along the steeper, eastern perimeter.

PLANNED FUTURE ACTIVITIES

- A number of geologic borings will be logged to determine the depth and areal extent of near-surface sediments.

- Two to four additional deep wells or piezometers will be added to the northern half of the site and will be screened in the underlying sand to monitor ground-water levels.

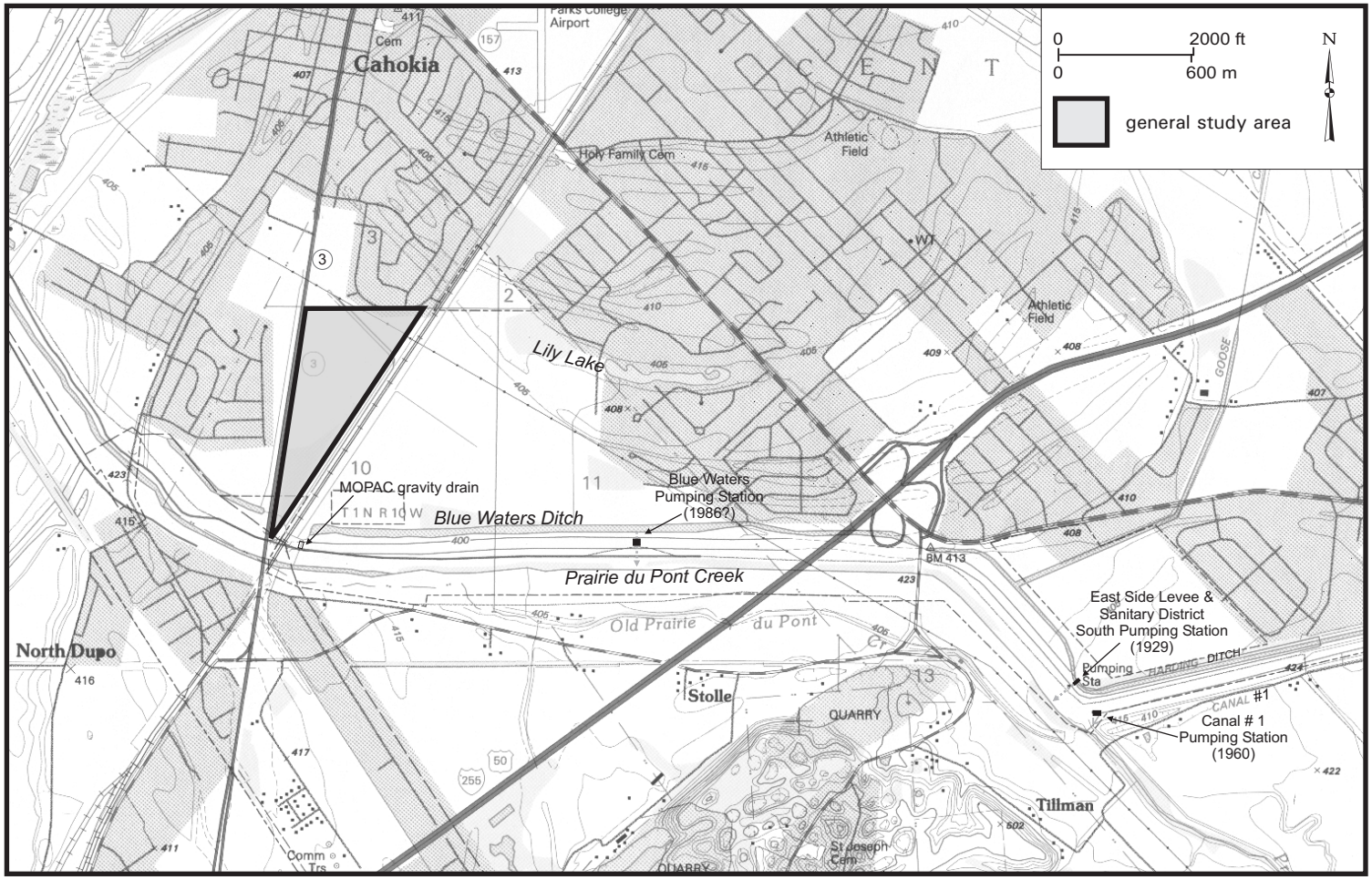
- Officials operating the Blue Waters pumping station will be asked to provide information on the date and duration of pumping events and operation of the gravity drain at the terminus of the ditch.

- Extensive surface-water ponding was observed on the north half of the site in early April (see map). Soil-moisture probes were installed in this area in 2001 and will be repositioned to obtain more accurate readings. Data loggers may be added to these probes to help better determine the extent and duration of subsequent flooding.

Tiernan Property (Cahokia) Potential Wetland Compensation Site
(FAP 999)

General Study Area and Vicinity

from the USGS Topographic Series, Cahokia, IL 7.5-minute Quadrangle (USGS 1993)
contour interval is 10 feet

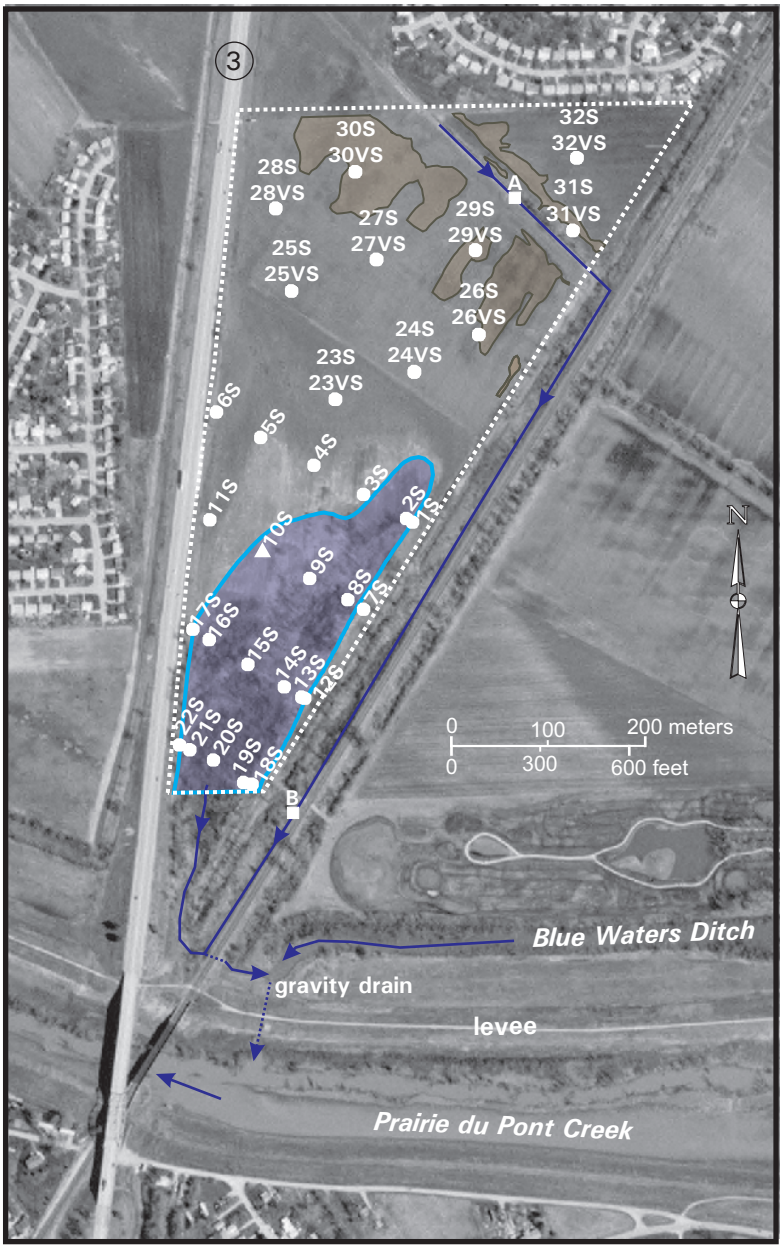


Tiernan Property, New River Crossing
Potential Wetland Compensation Site
(FAP 999)

Estimated Areal Extent of 2001 Wetland Hydrology

based on data collected between September 1, 2000 and September 1, 2001

map based on USGS digital orthophotograph, Cahokia, SW quarter quadrangle
produced from 4/2/98 aerial photography (ISGS, 2000)

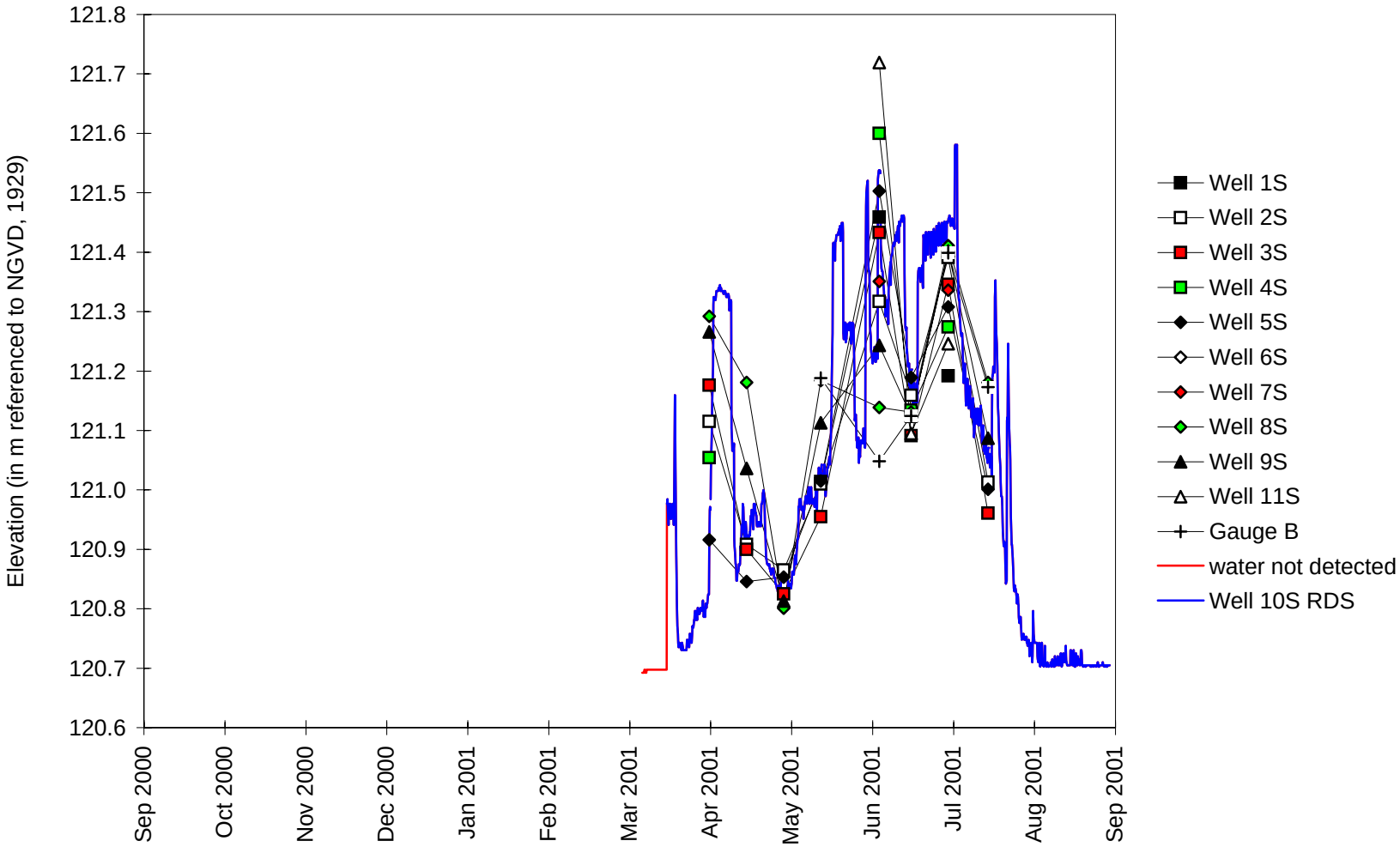


- ● monitoring well
- ■ staff gauge
- ▲ RDS water-level recorder
- ✱ rain gauge

- extent of 2001 wetland hydrology
- site boundary
- areas ponded in spring (GPS survey)
- flow direction

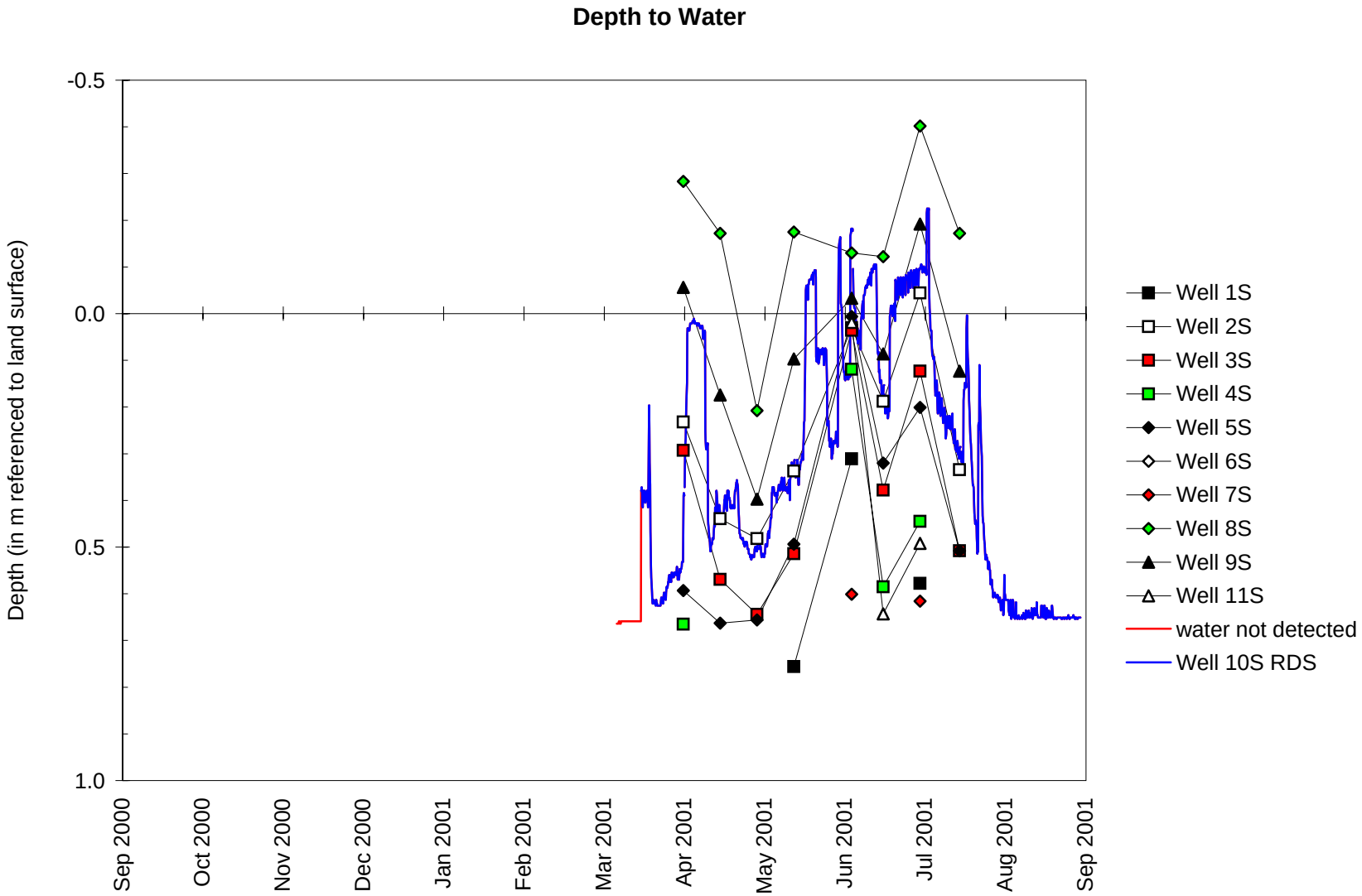
Tiernan Property, New River Crossing Potential Wetland Compensation Site
September 1, 2000 to September 1, 2001

Water-Level Elevations



Tiernan Property, New River Crossing Potential Wetland Compensation Site

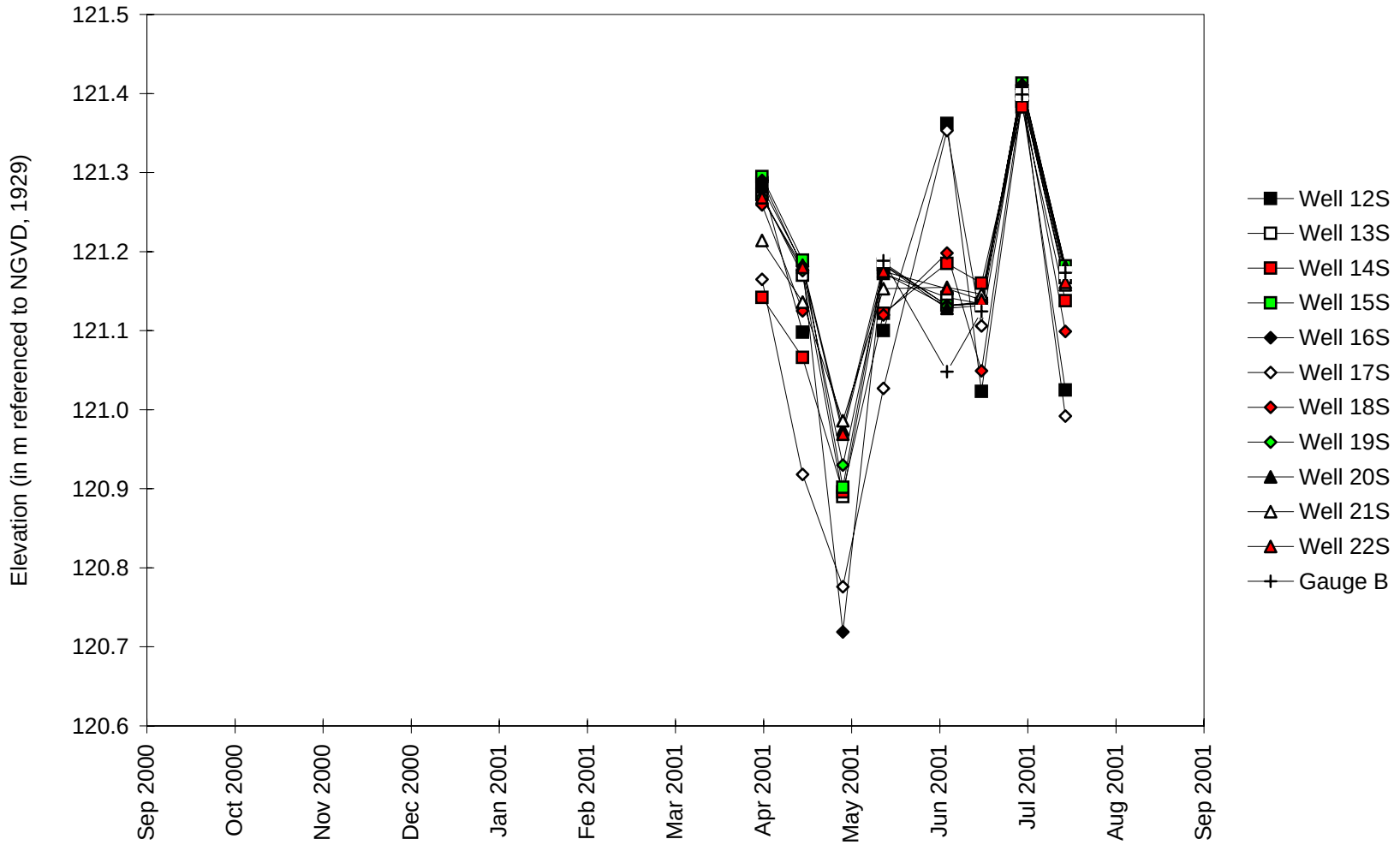
September 1, 2000 to September 1, 2001



Tiernan Property, New River Crossing Potential Wetland Compensation Site

September 1, 2000 to September 1, 2001

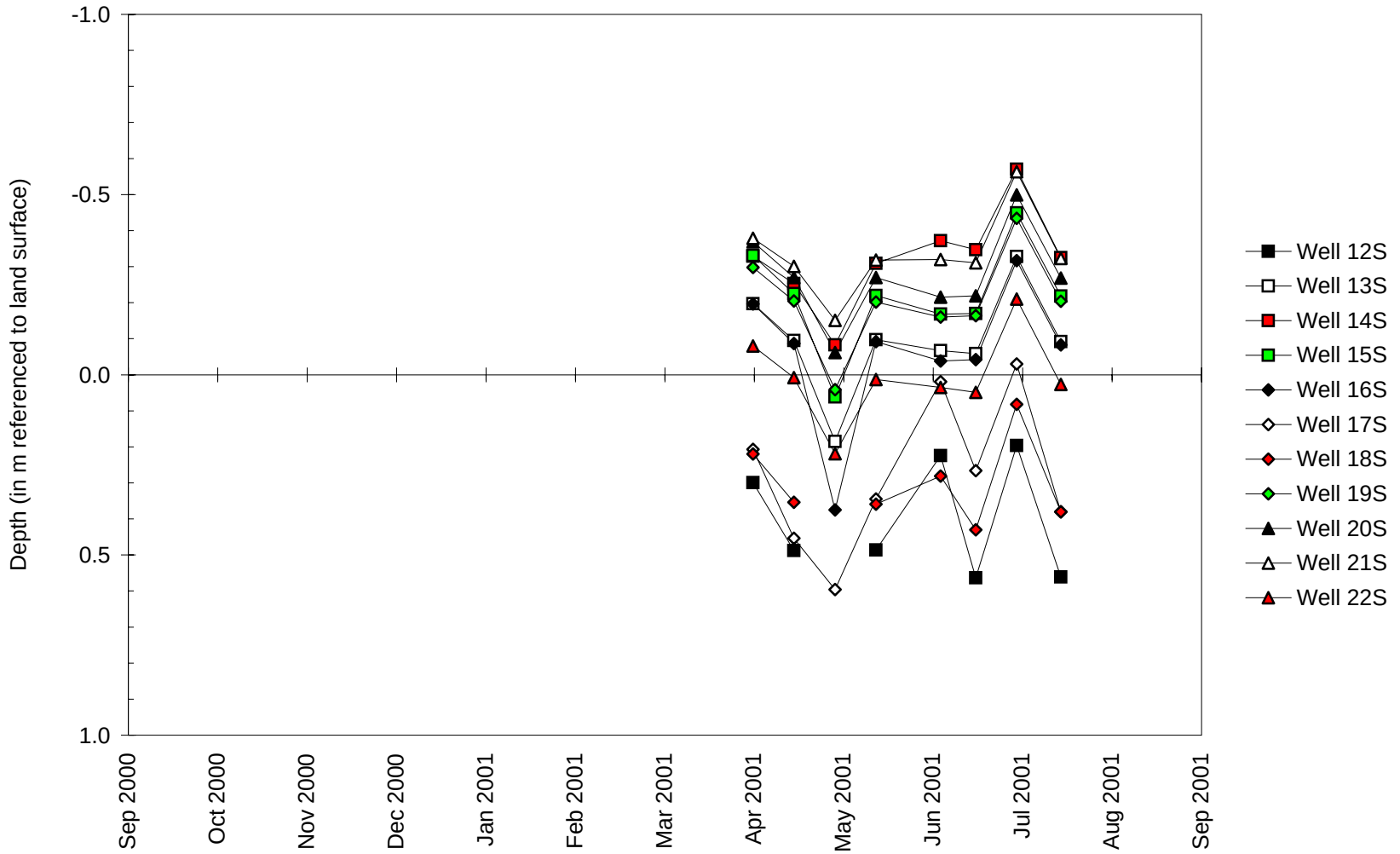
Water-Level Elevations



Tiernan Property, New River Crossing Potential Wetland Compensation Site

September 1, 2000 to September 1, 2001

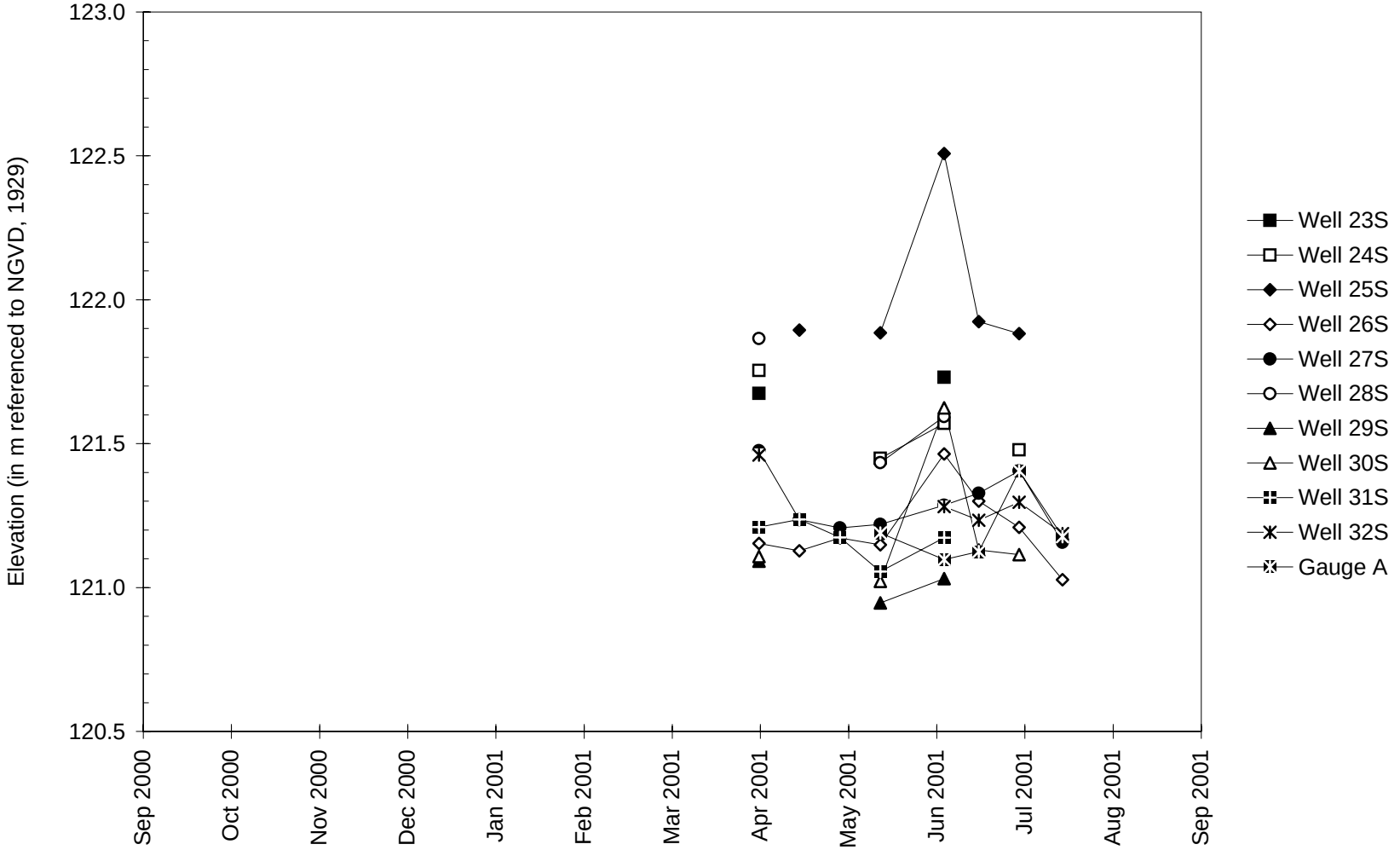
Depth to Water



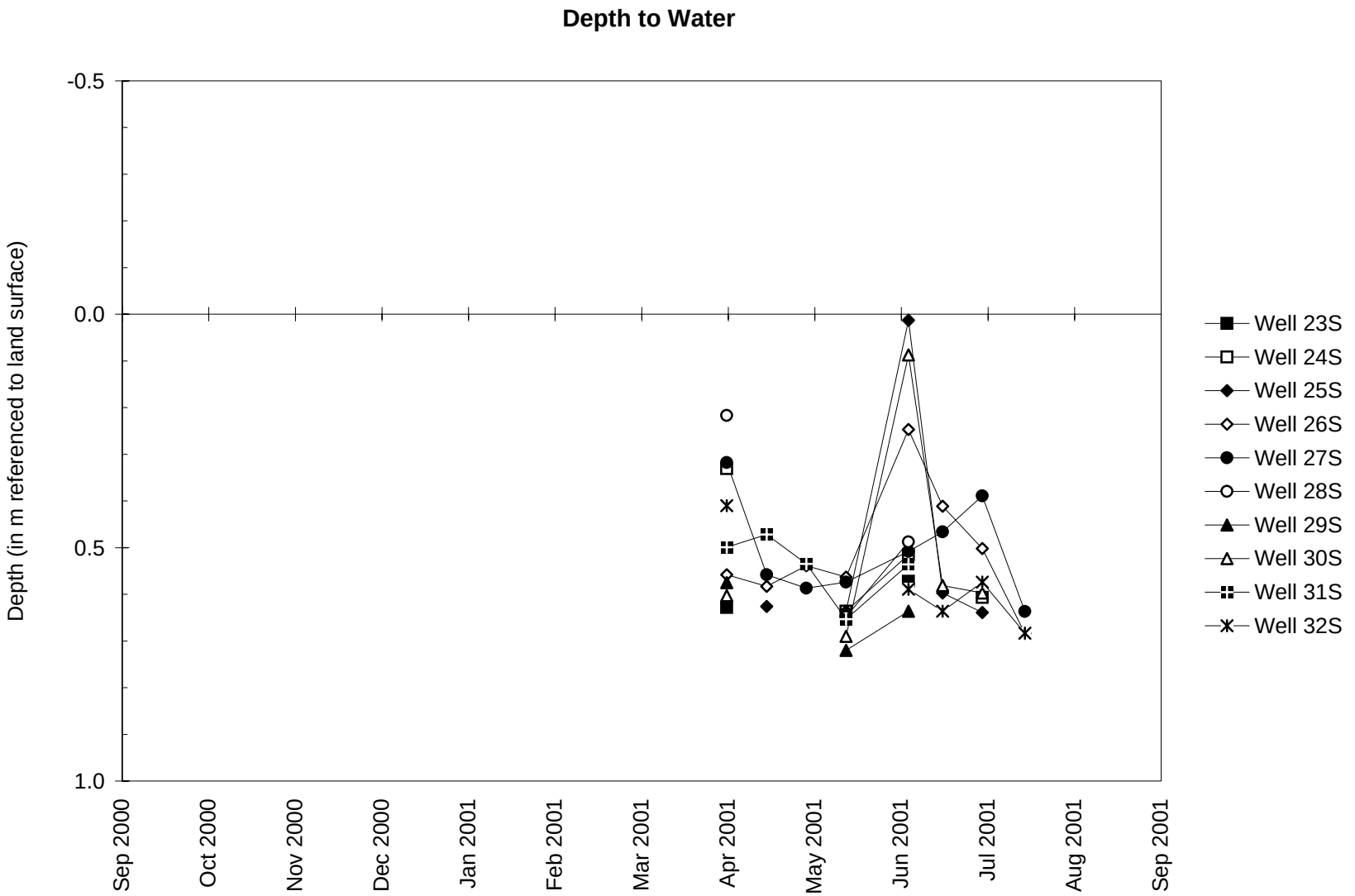
Tiernan Property, New River Crossing Potential Wetland Compensation Site

September 1, 2000 to September 1, 2001

Water-Level Elevations

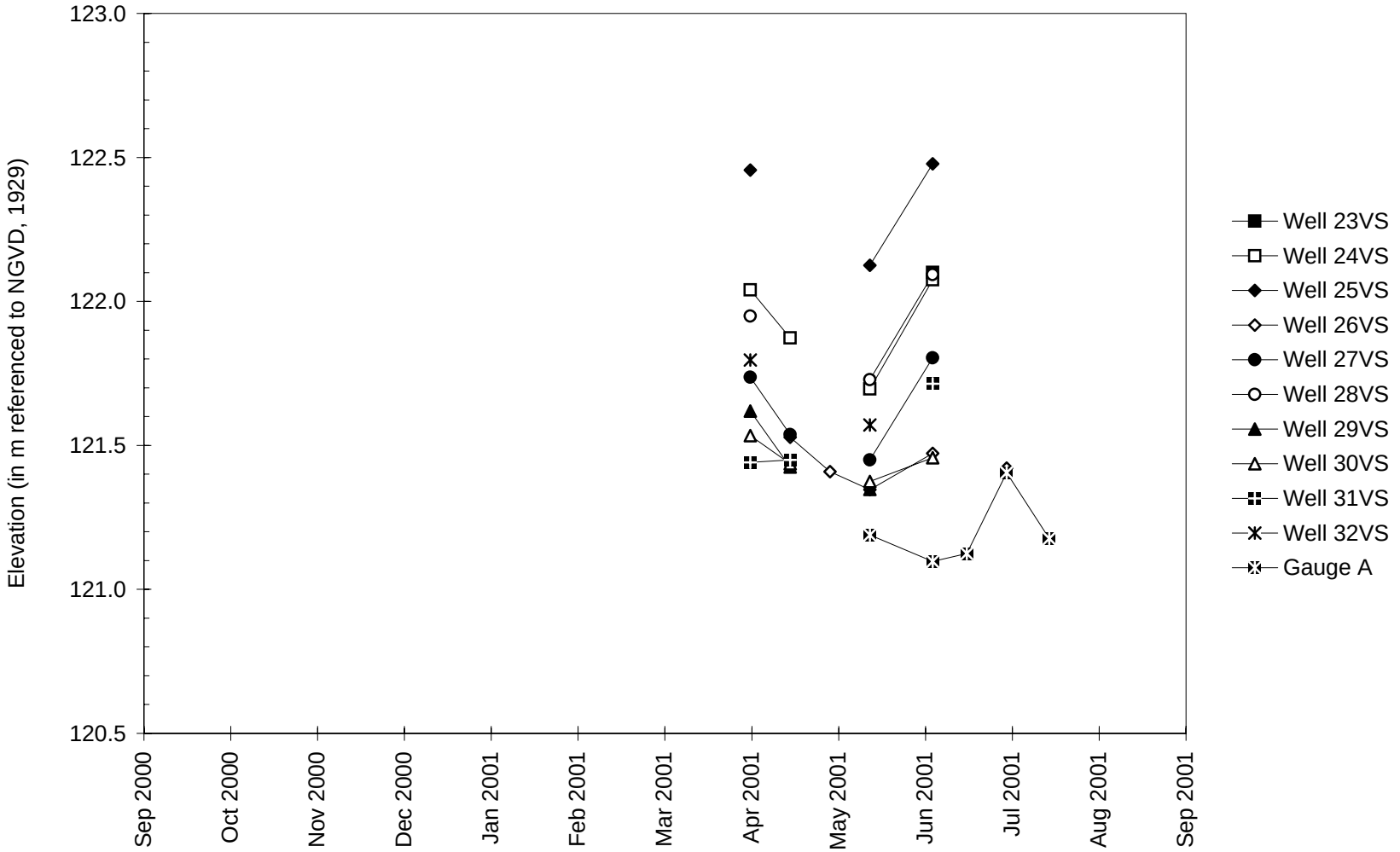


Tiernan Property, New River Crossing Potential Wetland Compensation Site
September 1, 2000 to September 1, 2001

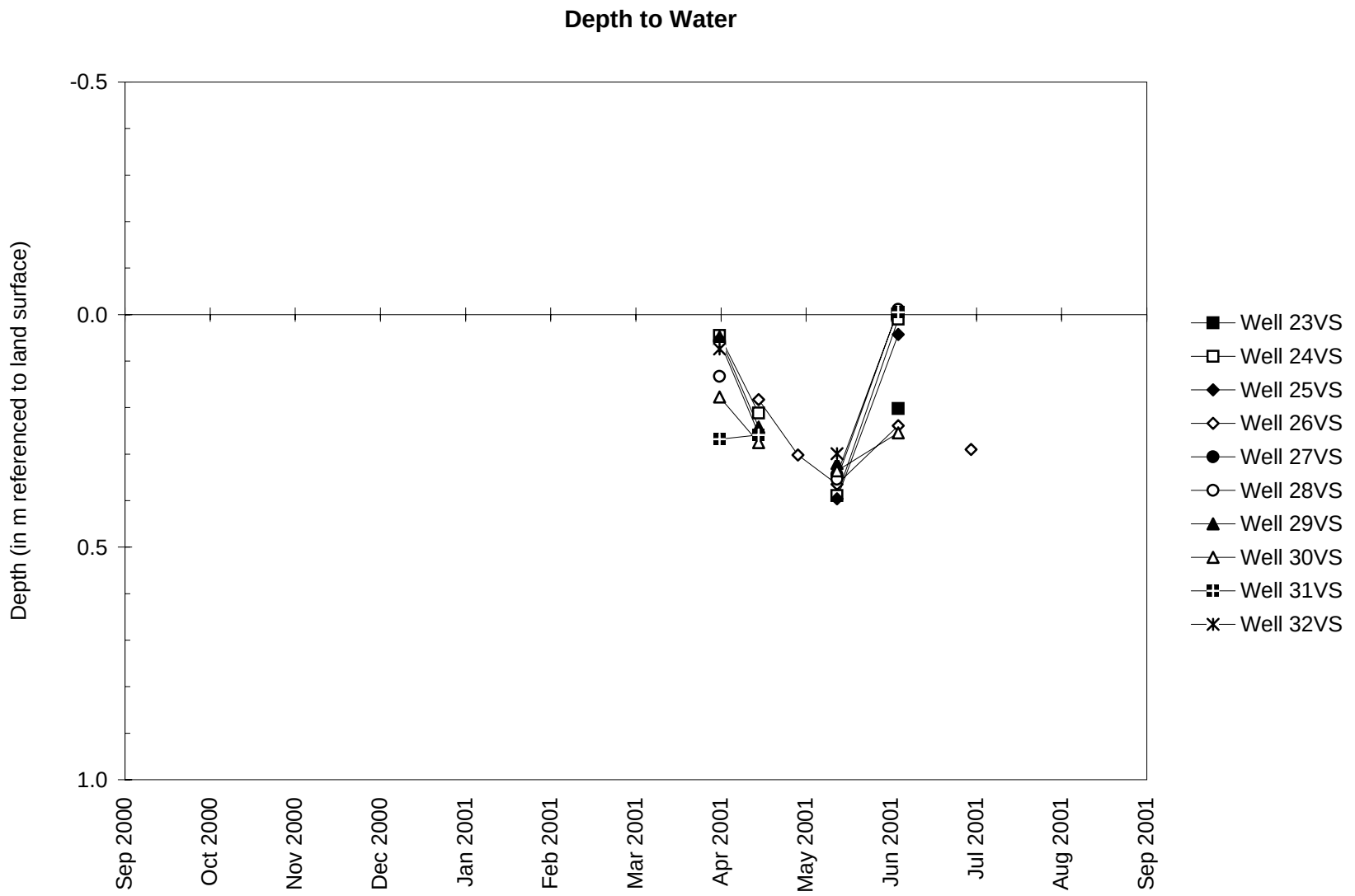


Tiernan Property, New River Crossing Potential Wetland Compensation Site
September 1, 2000 to September 1, 2001

Water-Level Elevations

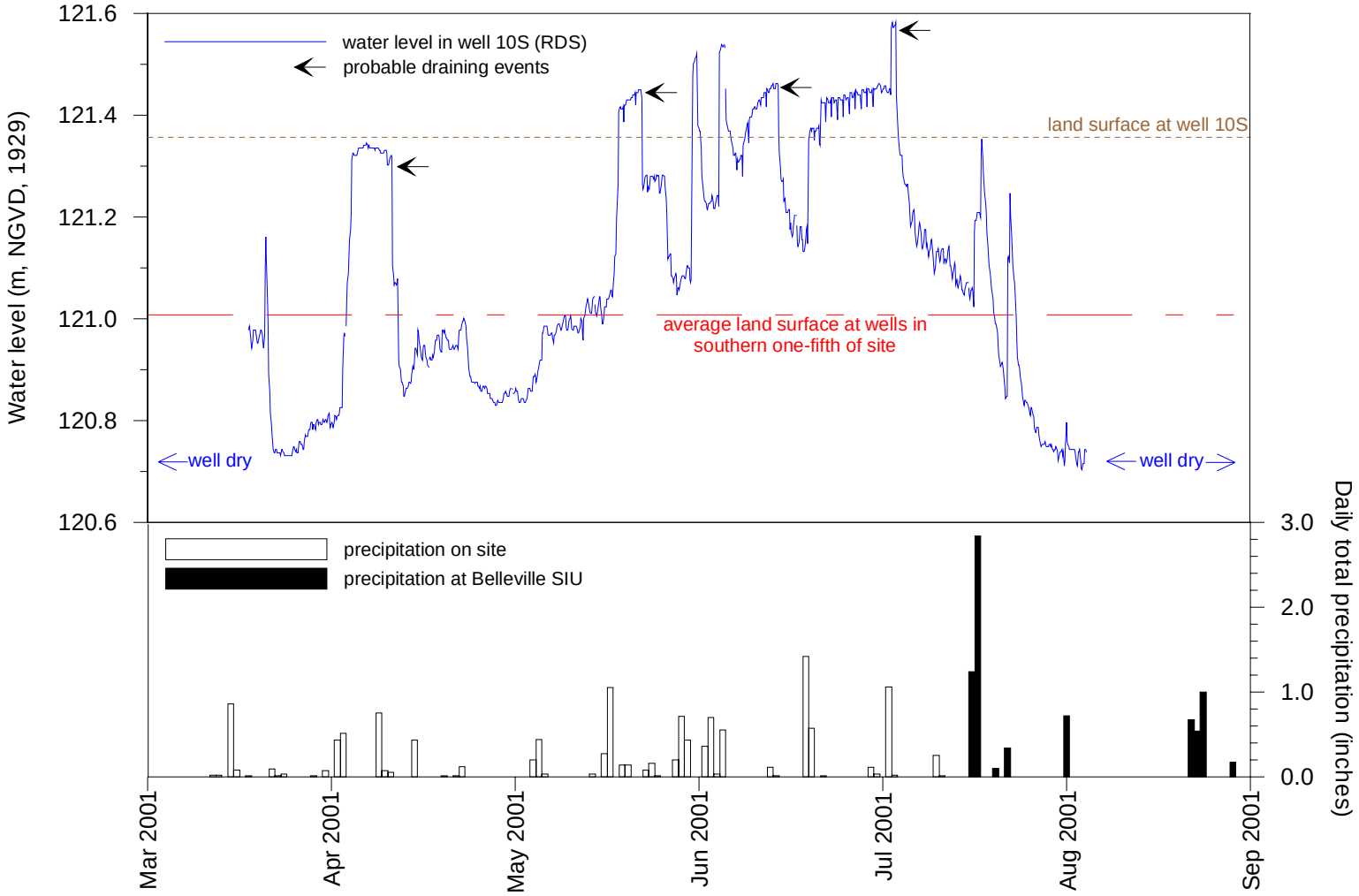


Tiernan Property, New River Crossing Potential Wetland Compensation Site
September 1, 2000 to September 1, 2001



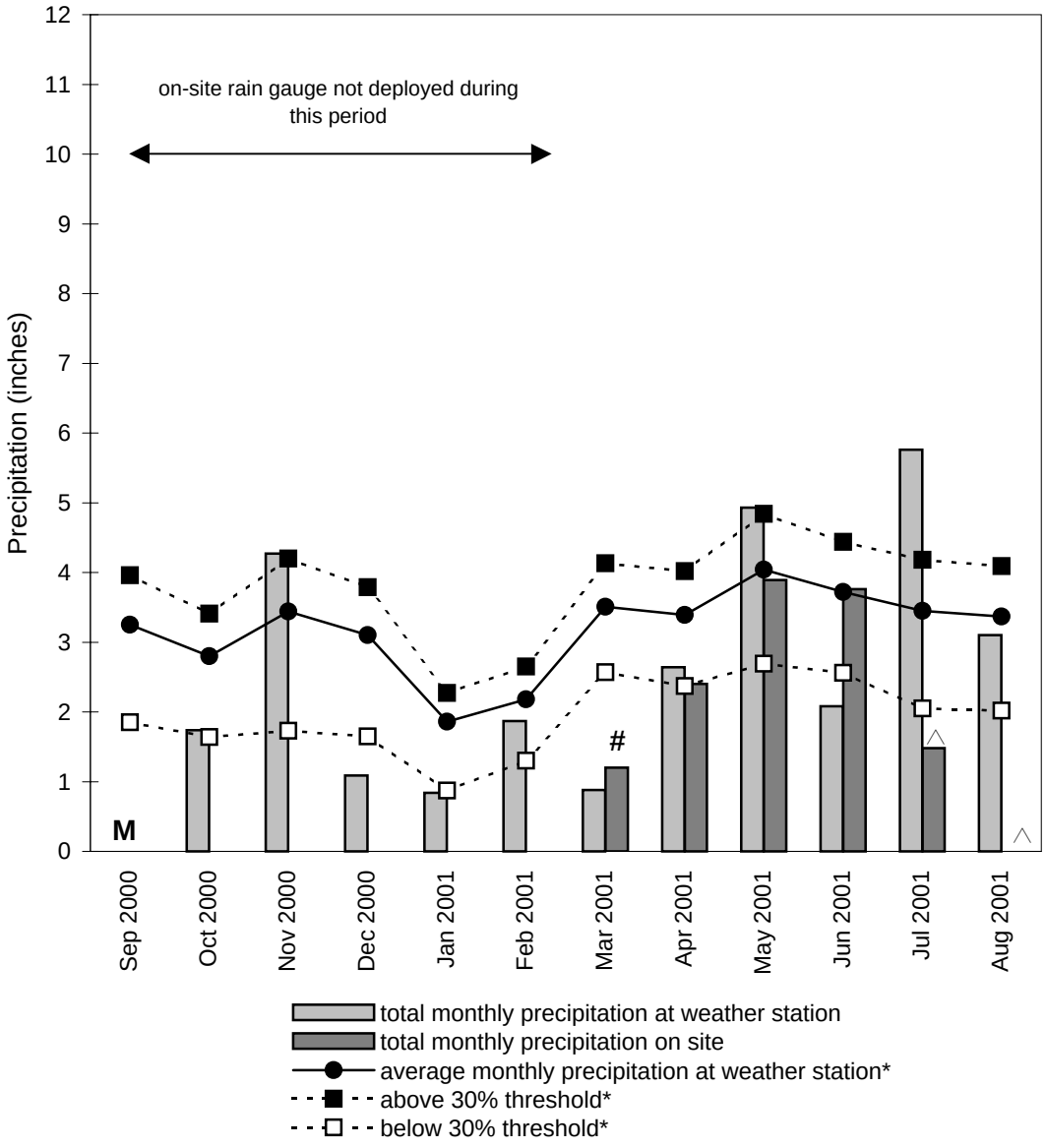
Tiernan Property Potential Wetland Compensation Site
March 1, 2001 to September 1, 2001

Water level in well 10S (RDS) and precipitation on site and at Belleville SIU



Tiernan Property, New River Crossing
Potential Wetland Compensation Site
September 2000 through August 2001

Total Monthly Precipitation Recorded On Site and at the SIU Weather Station, Belleville, IL



on-site rain gauge not deployed for entire month
△ suspect data: rain collector clogged, represents minimum value for the month
* see text for explanation
M missing data at weather station

Graph last updated October 5, 2001

EFFINGHAM COUNTY **ISGS #59**
POTENTIAL WETLAND COMPENSATION SITE
Effingham County, near Mason, Illinois
FAP 328
Primary Project Manager: Keith W. Carr
Secondary Project Manager: Geoffrey E. Pociask

SITE HISTORY

- September 2000: ISGS was tasked by IDOT to perform an Initial Site Assessment of the proposed wetland compensation site.
- December 2000: ISGS submitted an Initial Site Evaluation Report to IDOT.
- January 2001: ISGS was tasked by IDOT to provide a proposed well location plan for the tenant farmer, prior to initiating a Level II hydrogeologic assessment of the site.
- March 2001: IDOT forwarded a copy of an NRCS evaluation of the site to ISGS.
- March 2001: Permission was given by the County Engineer (through IDOT Central Office) via e-mail for ISGS to initiate monitoring activities at the site.
- March 2001: ISGS began monitoring ground- and surface-water levels at the site. Equipment installed included 13 soil-zone monitoring wells, three stage gauges, one rain gauge, one Infinities sonic data logger, two Global data loggers, and an on-site benchmark.

WETLAND HYDROLOGY CALCULATION FOR 2001

Based on ground-water level measurements collected on site, none of the monitoring wells conclusively satisfied wetland hydrology criteria in 2001. However, a limited portion of the site exhibited surface-water elevations that satisfied wetland hydrology criteria (see below). We estimate that the total area that conclusively satisfied wetland hydrology criteria in 2001 is 1.1 ac (0.4 ha) of a total site area of 23.2 ac (9.4 ha). This estimate is based on the following factors.

- According to the Midwestern Climate Center, the median date that the growing season begins in Effingham, Illinois is April 2 and the season lasts 210 days; 12.5% of the growing season is 26 days.
- Total precipitation for the period from September 2000 to March 2001 was only slightly below normal, although March was atypically dry, with precipitation in that month only 25% of normal. During the period from April to August 2001, precipitation was 97% of normal, although in May, precipitation was 120% of normal. Total precipitation for the monitoring period from September 2000 to August 2001 was 96% of normal.
- In 2001, water levels measured in none of the wells conclusively satisfied wetland hydrology criteria as outlined in the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual. Water levels measured at wells 3S, 5S, 5VS, 5S (Global), 8S, and 11S may have satisfied wetland hydrology criteria. Also, surface-water inundation as

determined by staff gauges and data loggers conclusively satisfied wetland hydrology criteria at SW-A, SW-B, and SW-B (Global). This wetland hydrology via inundation was limited to two semi-permanent ponds in the northwest portion of the site which together cover 1.1 ac (0.4 ha).

- Limitations of the wetland hydrology determination are as follows:
  - A topographic map of the site with a contour interval of 0.3 m (1 ft) or less would aid in determining the areal extent of surface water inundation as recorded by the data loggers on site.

PLANNED FUTURE ACTIVITIES

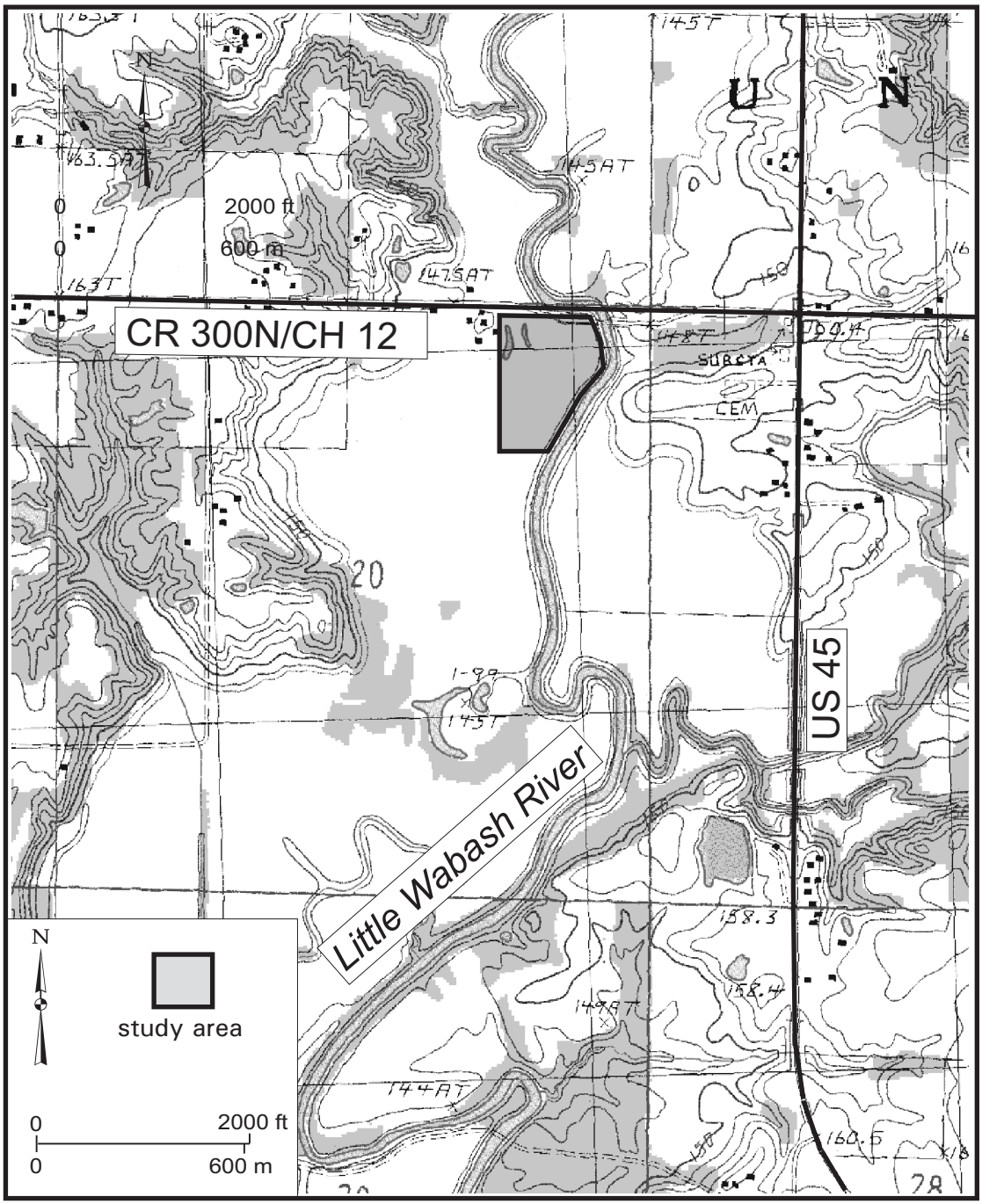
- Monitoring will continue until no longer required by IDOT.

- A topographic survey of the site may be undertaken by ISGS if time permits.

Effingham County Potential Wetland Compensation Site (FAP 328)

General Study Area and Vicinity

from the USGS Topographic Series, Hord, IL 7.5-minute Quadrangle (USGS 1985-provisional)
contour interval is 10 feet

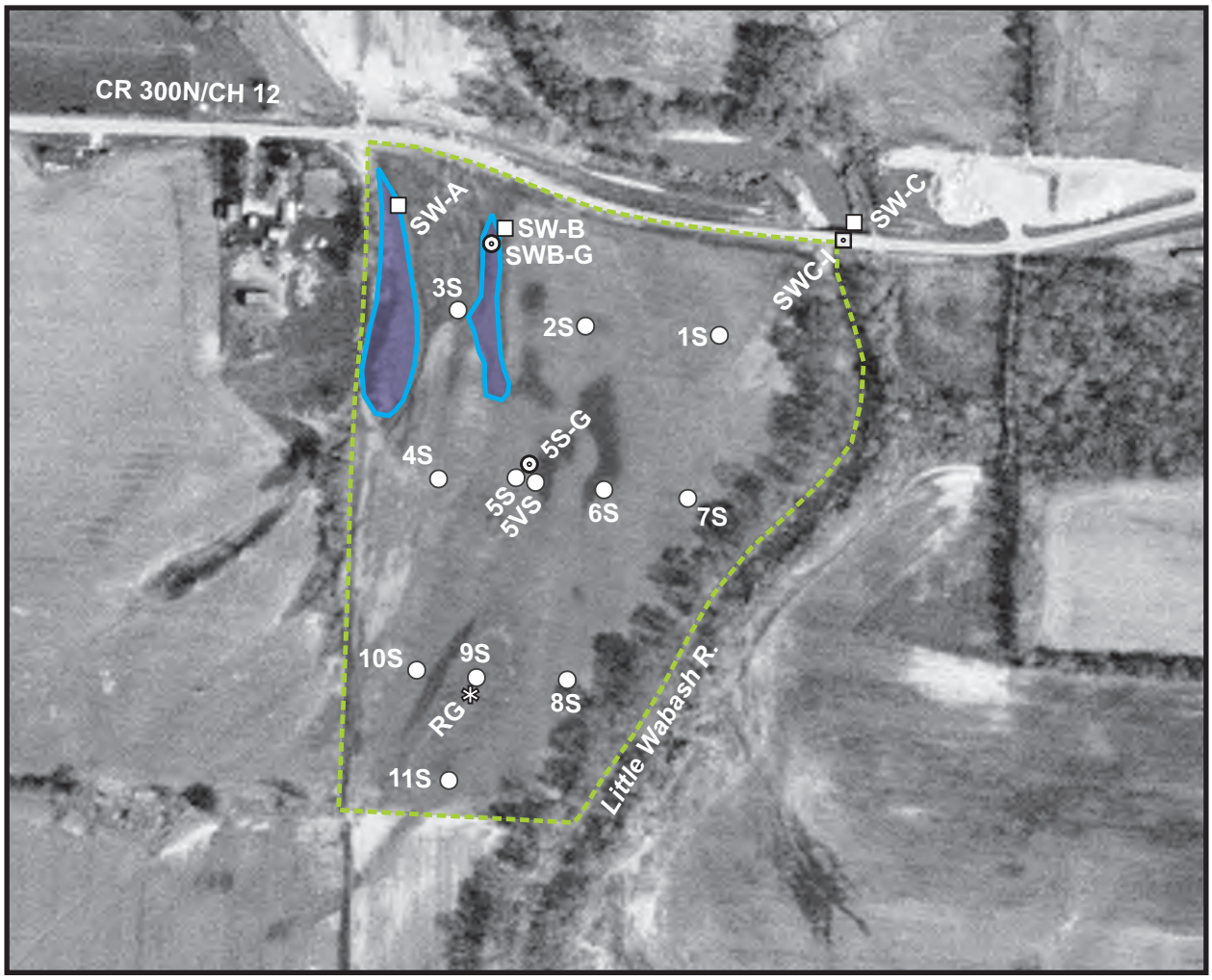


Effingham County Potential Wetland Compensation Site (FAP 328)

Estimated Areal Extent of 2001 Wetland Hydrology

based on data collected between September 1, 2000 and September 1, 2001

map based on USGS digital orthophotograph, Hord NE quarter quadrangle
from 04/12/1998 aerial photography (ISGS 2001)



0 100 m
0 300 ft

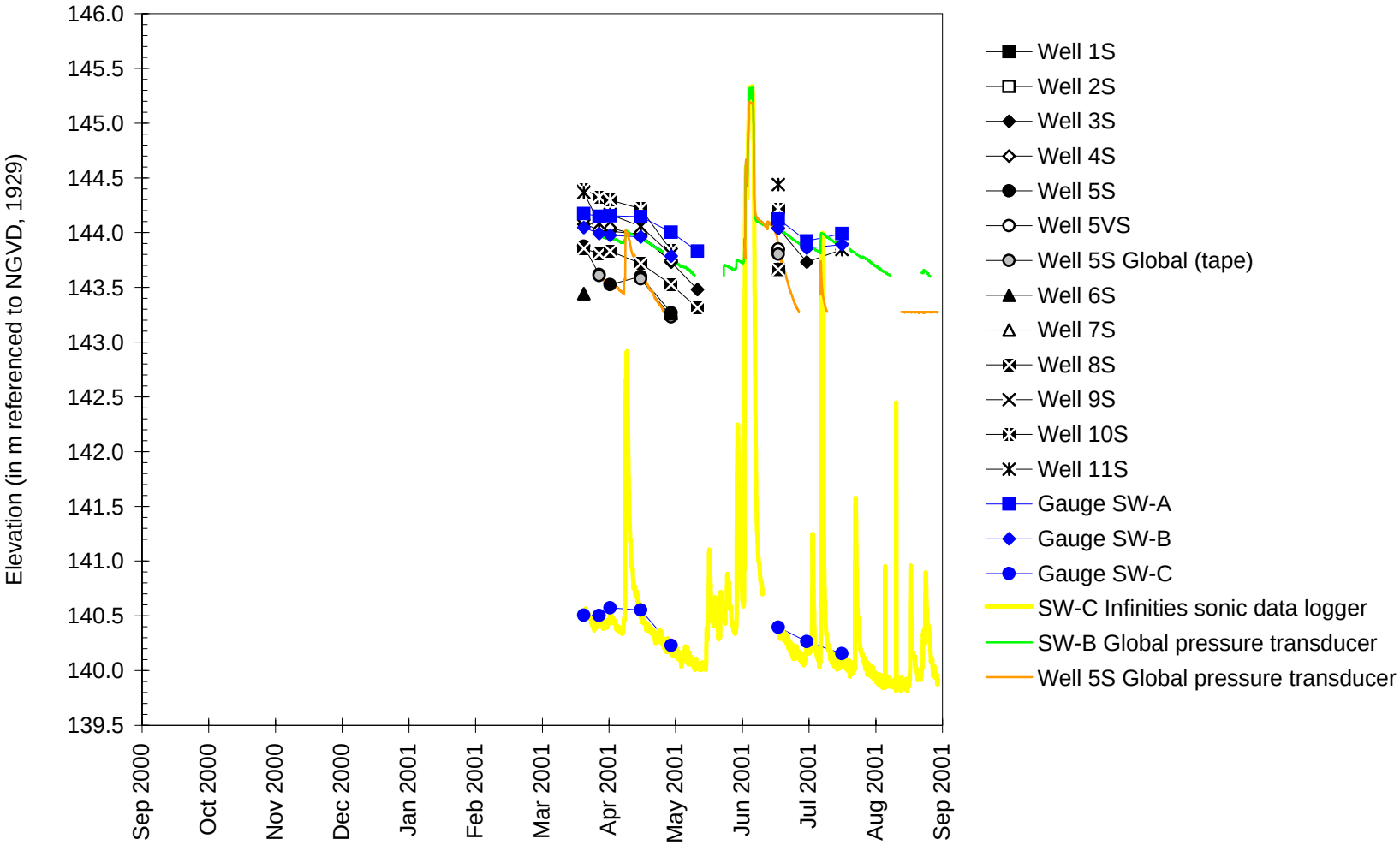
N

- soil-zone monitoring well
- rain gauge
- Global water level logger
- Infinities sonic data logger
- stage gauge

- approximate site boundary
- estimated areal extent of 2001 wetland hydrology

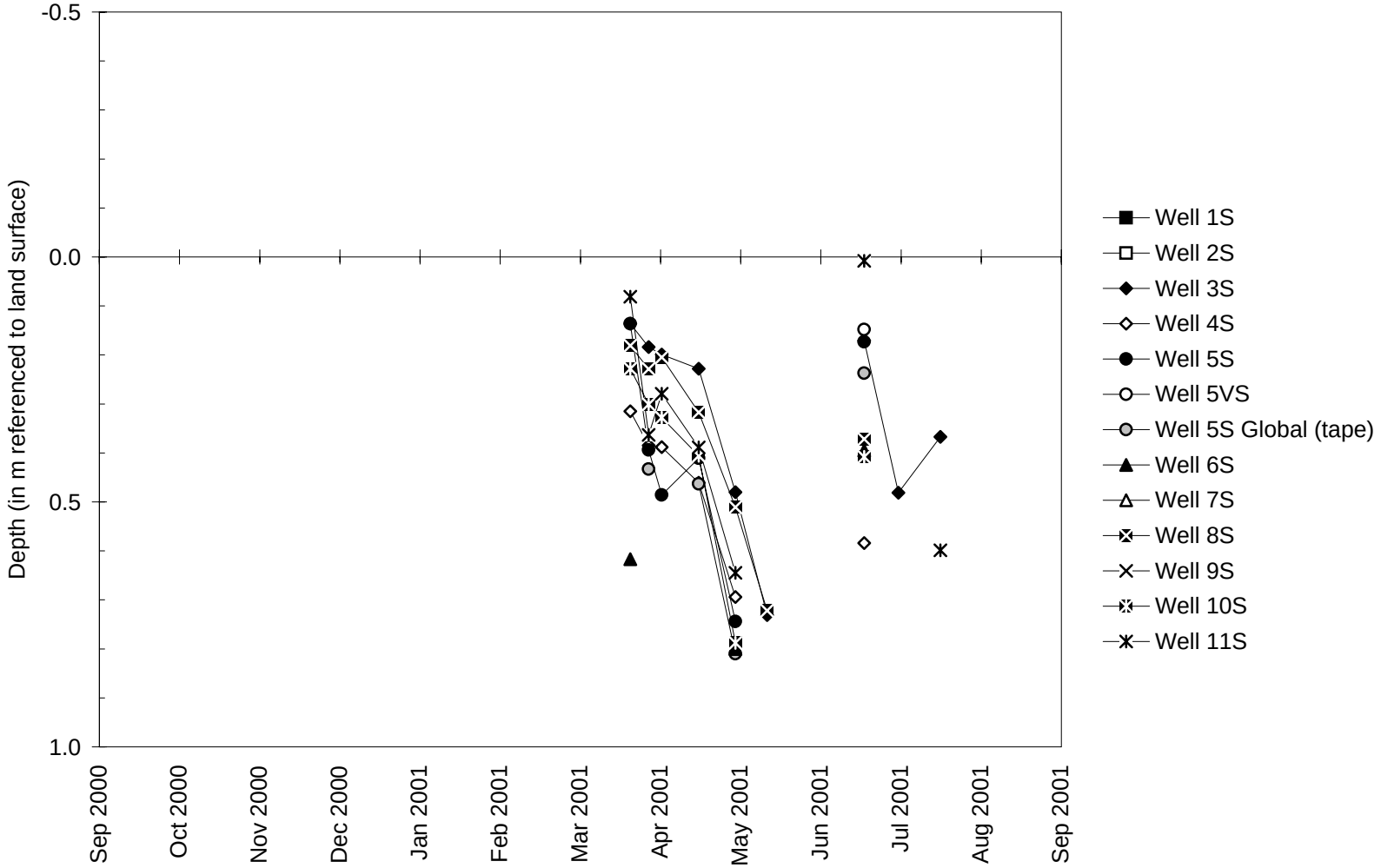
Effingham County Potential Wetland Compensation Site
September 1, 2000 to September 1, 2001

Water-Level Elevations



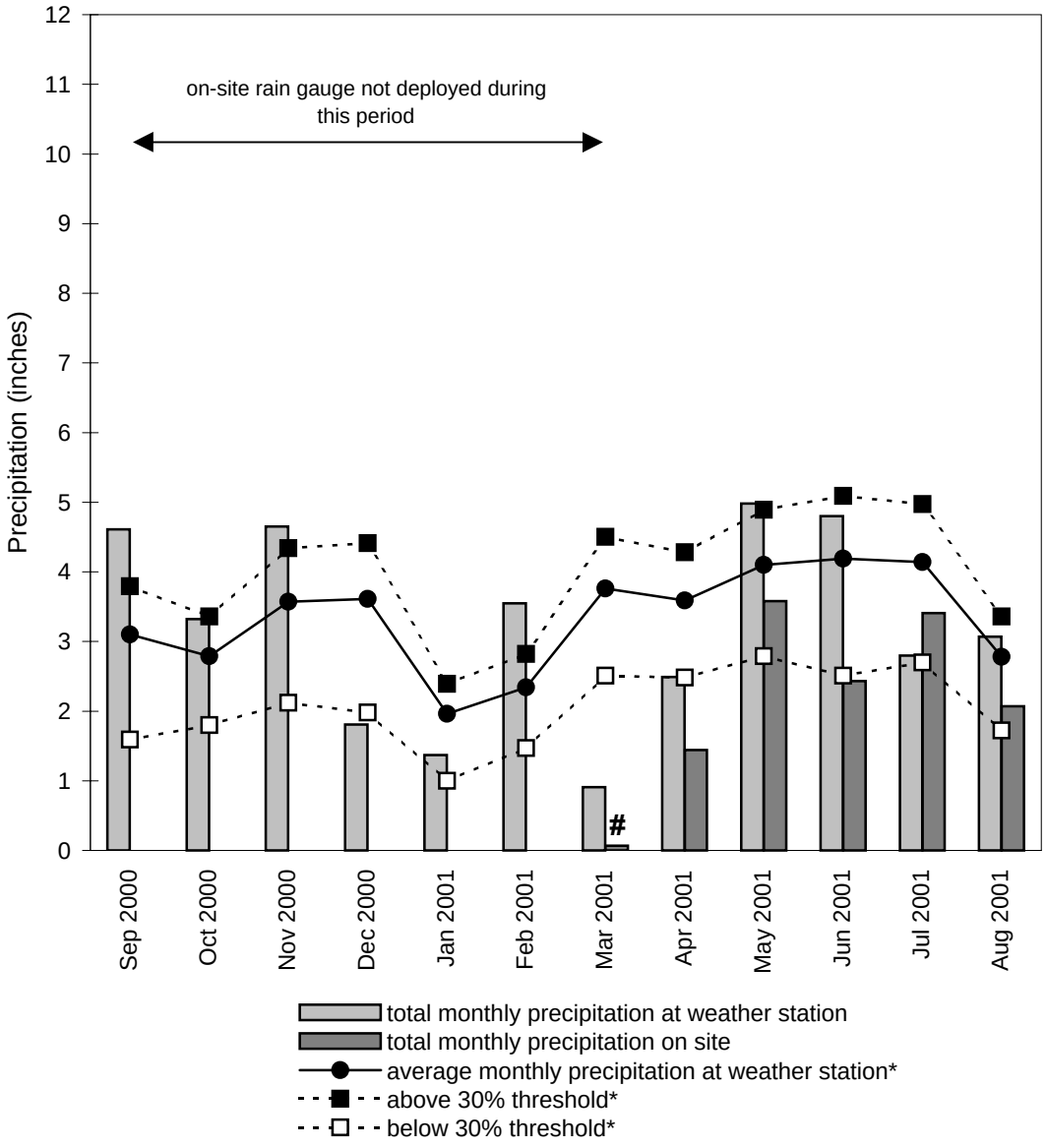
Effingham County Potential Wetland Compensation Site
September 1, 2000 to September 1, 2001

Depth to Water



Effingham County Potential Wetland Compensation Site
September 2000 through August 2001

Total Monthly Precipitation Recorded On Site and at the Effingham, IL Weather Station



on-site rain gauge not deployed for entire month
* see text for explanation

Graph last updated October 5, 2001

POTTER PROPERTY **ISGS #60**
DISTRICT 7 POTENTIAL WETLAND BANKING SITE
Fayette County, near Ramsey, Illinois
Primary Project Manager: Blaine A. Watson
Secondary Project Manager: Keith W. Carr

SITE HISTORY

- June 2000: ISGS was tasked by IDOT to conduct an Initial Site Evaluation of the site.
- October 2000: ISGS submitted Initial Site Evaluation report identifying the site as having high potential for wetland restoration in selected areas.
- February 2001: ISGS, INHS, IDOT District 7, and IDOT Central Office personnel met with current site owner to discuss project potential and identify information needed prior to proceeding with IDOT purchase.
- May–June 2001: ISGS initiated partial monitoring of the site. Additional wells will be required for full coverage of the site.
- July 2001: A second meeting involving the participants of the February 2001 meeting was held to discuss the available data gathered at the site during Spring 2001 monitoring conducted by INHS and ISGS. Consensus was reached that IDOT can likely develop wetlands on the site, dependent upon the level of effort they wish to expend in doing so.

WETLAND HYDROLOGY CALCULATION FOR 2001

No wetland hydrology calculation was made for this monitoring period for the following reasons:

- The instrumentation currently deployed on site was not recording for the early portion (April–May) of the 2001 growing season.
- During the period between June and September 2001, only one on-site well (5S) conclusively satisfied wetland hydrology criteria as outlined in the 1987 U.S. Army Corp of Engineers Wetland Delineation Manual. This well is situated in a localized depression representative of less than 1 ac (0.4 ha) of the site.

PRELIMINARY INFORMATION

- According to the Midwestern Climate Center, the median date that the growing season begins in Effingham is April 2 and it lasts 210 days; 12.5% of the growing season is 26 days.
- On-site precipitation was within or above the normal range from May through August 2001. Precipitation in the site vicinity was below the normal range in December 2000 and March and April 2001. Precipitation in the site vicinity was within or above the normal range from September through November 2000, as well as January and February 2001. During the period from September 2000 to August 2001, total precipitation at the site was 96% of normal. This is compared to 128% of normal for the period from September 1999 through

August 2000.

PLANNED FUTURE ACTIVITIES

- The current monitoring scheme will continue until no longer required by IDOT.
- Pending the status of the site, nested monitoring wells or other monitoring instrumentation useful for geologic and hydrogeologic understanding of the site may be installed.

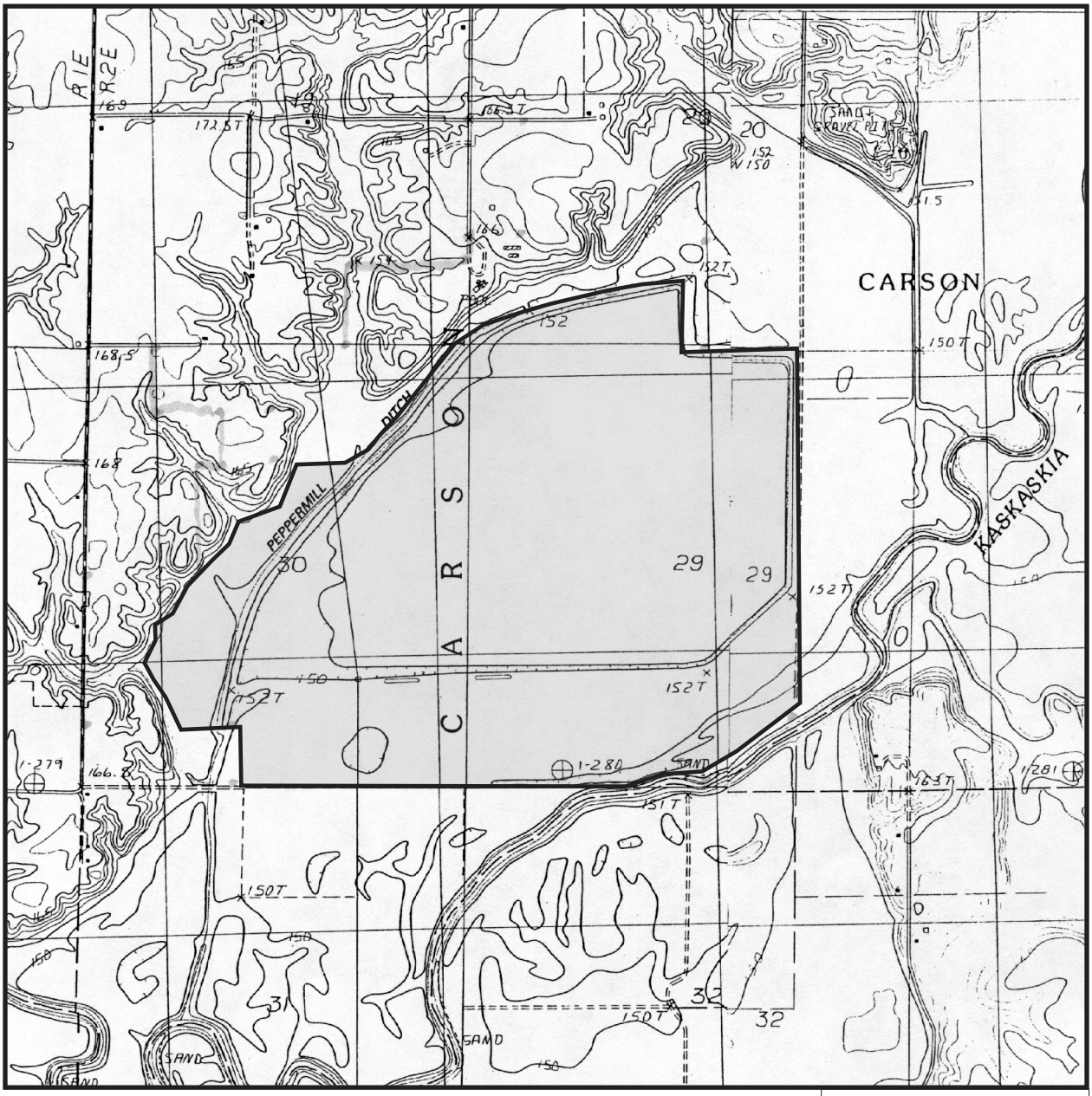
Potter Property, District 7 Potential Wetland Banking Site

General Study Area and Vicinity

from the USGS Topographic Series, Avena (USGS 1982) and Vera (USGS 1982), IL

7.5-minute Quadrangles

contour interval is 10 feet

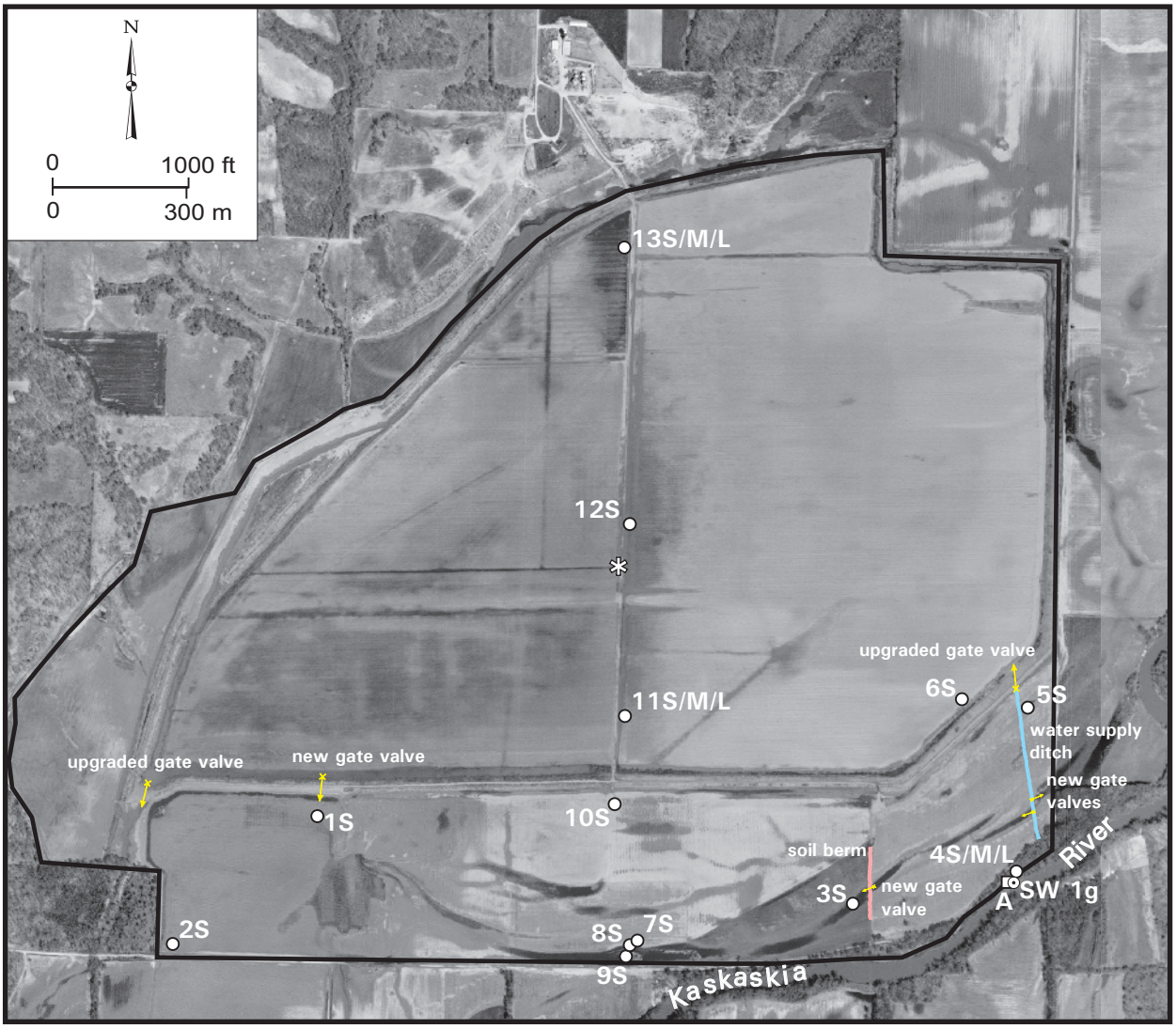


location of proposed site

Potter Property, District 7 Potential Wetland Banking Site

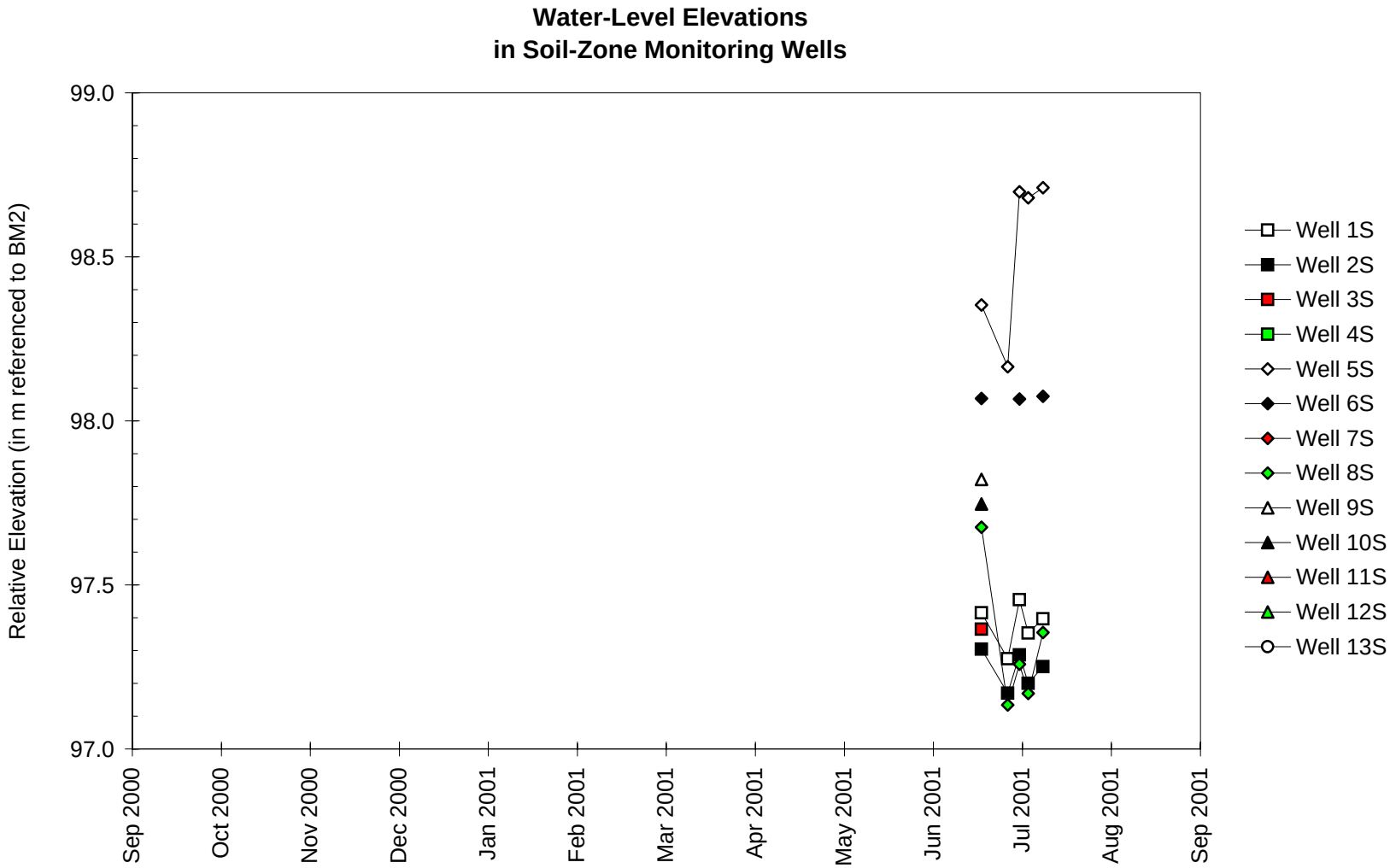
Locations of ISGS Monitoring Equipment

based on USGS digital orthophotograph Vera, NE and Avena, NW quarter quadrangles
produced from 4/12/98 aerial photography (ISGS 2001)



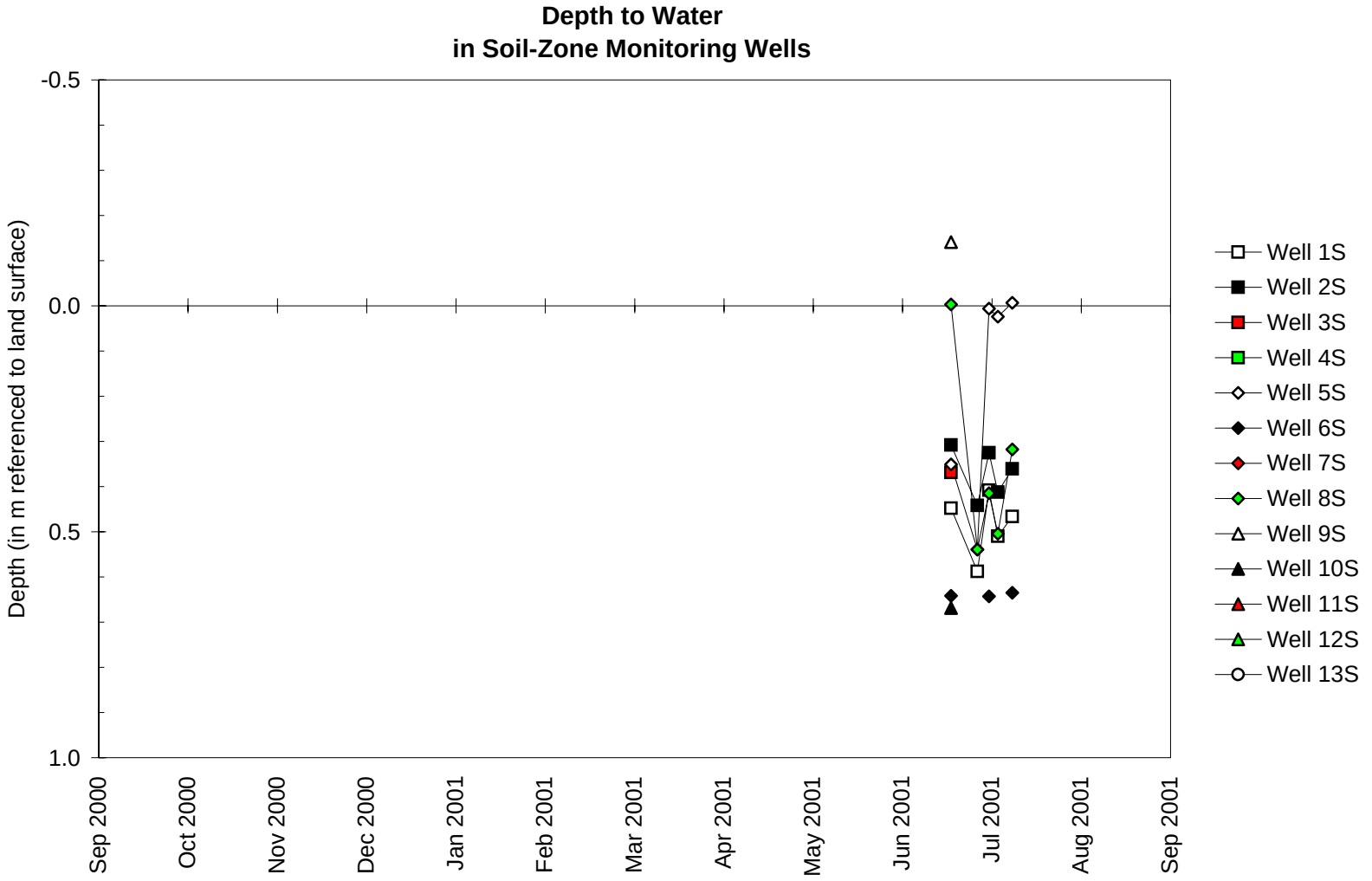
❄	rain gauge	○	monitoring well
⊙	Global pressure transducer	□	stage gauge
			culvert with gate valve

Potter Property, Fayette County District 7 Potential Wetland Banking Site
September 1, 2000 to September 1, 2001



Potter Property, Fayette County District 7 Potential Wetland Banking Site

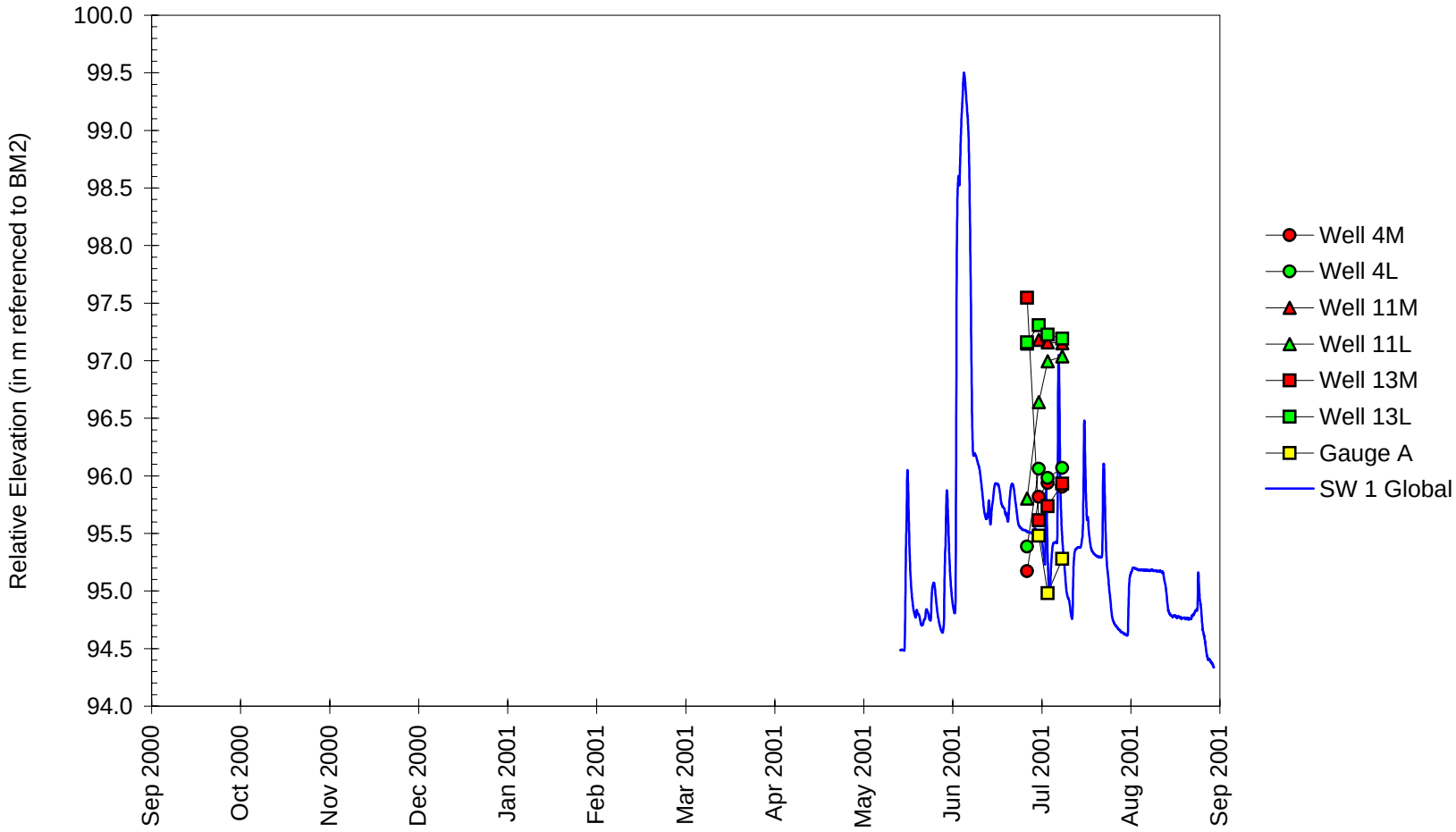
September 1, 2000 to September 1, 2001



Potter Property, Fayette County District 7 Potential Wetland Banking Site

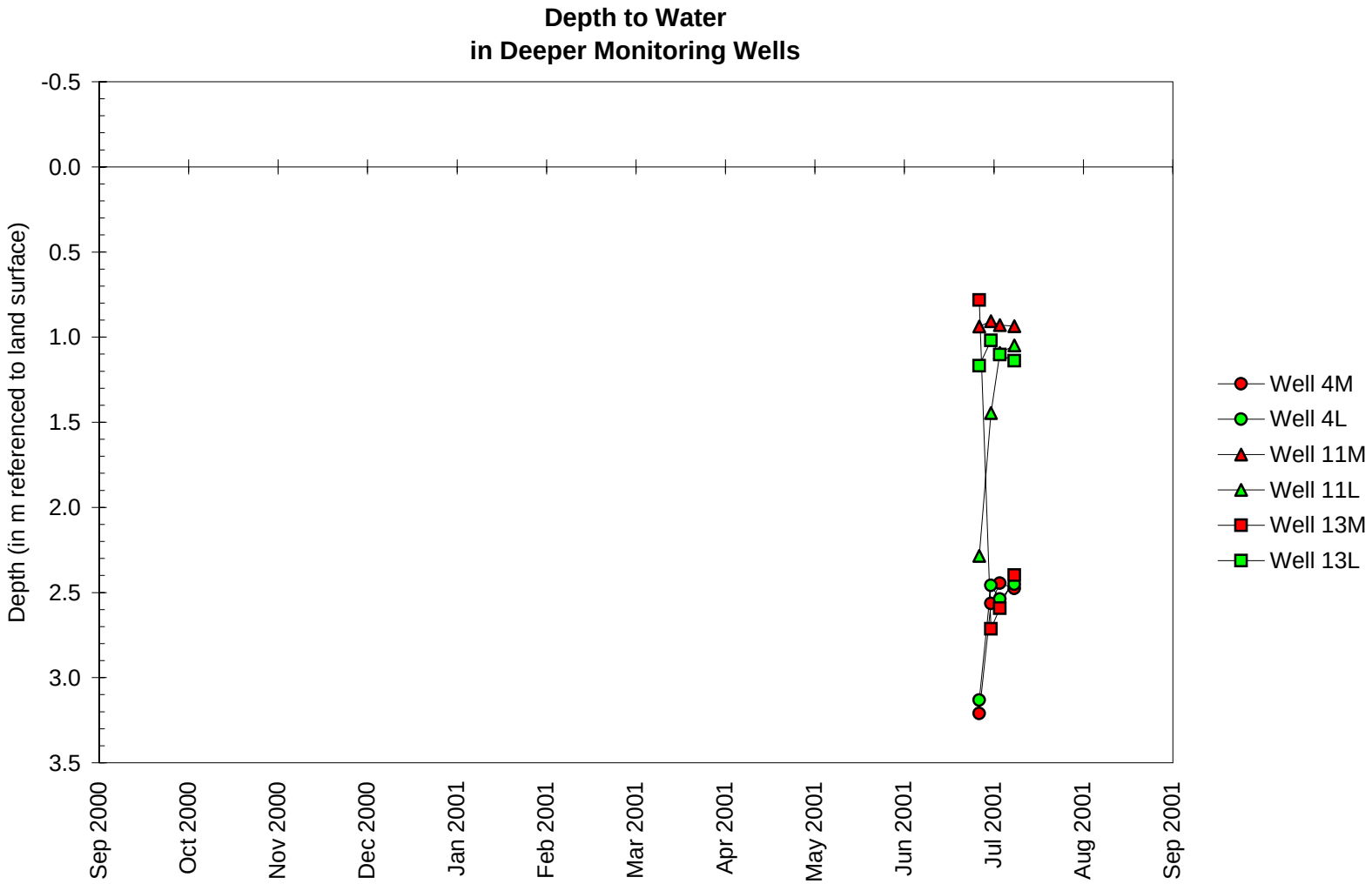
September 1, 2000 to September 1, 2001

Water-Level Elevations
Deeper Monitoring Wells and on the Stage Gauge and Data Logger



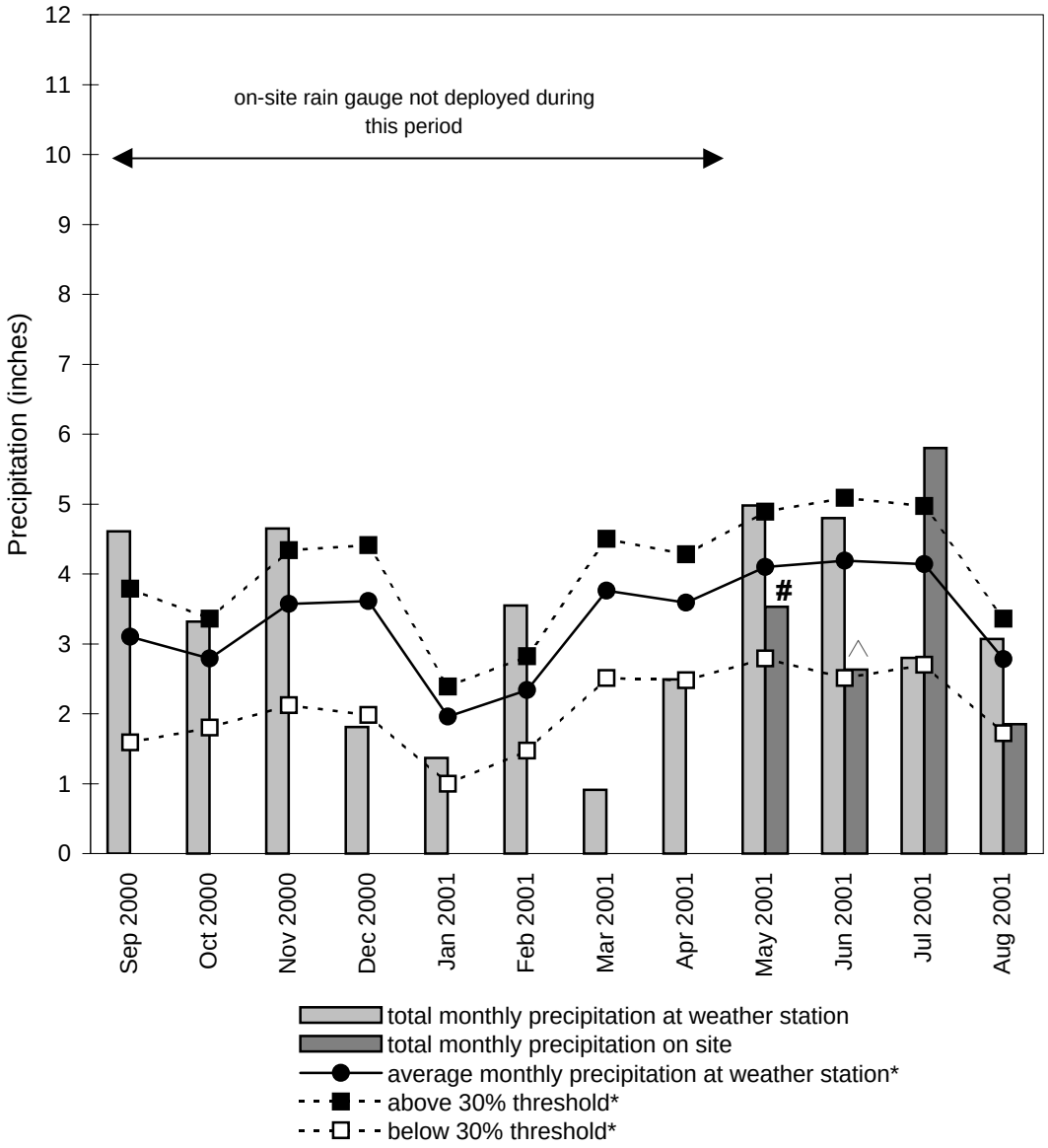
Potter Property, Fayette County District 7 Potential Wetland Banking Site

September 1, 2000 to September 1, 2001



Potter Property, Fayette County
District 7 Potential Wetland Banking Site
September 2000 through August 2001

Total Monthly Precipitation Recorded On Site and at the Effingham, IL Weather Station



on-site rain gauge not deployed for entire month

△ supsect data: rain collector clogged, represents minimum value for the month

* see text for explanation

Graph last updated October 4, 2001