ANNUAL REPORT FOR ACTIVE IDOT WETLAND COMPENSATION AND HYDROLOGIC MONITORING SITES

September 1, 2004 to September 1, 2005

Christine S. Fucciolo
Steven E. Benton
Keith W. Carr
Michael V. Miller
James J. Miner
Eric T. Plankell
Geoffrey E. Pociask
Bonnie J. Robinson
Gregory A. Shofner
Kelli D. Weaver

Illinois State Geological Survey
Wetlands Geology Section
615 East Peabody Drive
Champaign, IL 61820-6964

Submitted Under Contract Number IDOT SW PESA SIP B FY06 to
Illinois Department of Transportation
Bureau of Design and Environment, Wetlands Unit
2300 South Dirksen Parkway
Springfield, IL 62764-0002

November 1, 2005

Illinois State Geological Survey
Open File Series 2005–14

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 contracts IDOT SW WIP FY05 and IDOT SW PESA SIP B FY06. 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 (Environmental Laboratory 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 25 sites are included in this report. Most summaries contain a location map, a site map showing field instruments and the extent of area satisfying wetland hydrology criteria, hydrographs for selected monitoring wells, and local precipitation data for the period. Site locations are shown on Figure 1 and a list of site names is presented in Table 1. All data included in this report are from September 1, 2004 to September 1, 2005 at IDOT's request, except where noted.

METHODS

The primary purpose of this report is to determine the area within each wetland compensation site that satisfies the wetland hydrology criteria listed in the U.S. Army Corps of Engineers Wetland Delineation Manual (Environmental Laboratory 1987). However, to be a wetland, an area must also satisfy soils and vegetation criteria that are assessed by the Illinois Natural History Survey (INHS). INHS will combine the hydrologic data presented in this report with vegetation and soils data they collect, determine the total wetland area of each compensation site, and report it under separate cover. The total wetland area determined by INHS may differ from the areas that satisfy the wetland hydrology criteria shown in this report.

An area must be inundated or saturated for no less than 5% of the growing season in order to satisfy wetland hydrology criteria. These areas will be determined to be jurisdictional wetlands if vegetation and soils criteria mentioned above are also met. Areas that are inundated or saturated for greater than 12.5% of the growing season satisfy wetland hydrology criteria in a conclusive manner, and strongly indicate wetland conditions regardless of soils and vegetation. To assist in proper characterization of wetland compensation sites where soils or vegetation data may be inconclusive, this report shows areas that are inundated or saturated for greater than 5% of the growing season as well as areas that are inundated or saturated for greater 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.

The Midwestern Climate Center (MCC) provides data regarding the length and beginning date of the growing season (Midwestern Climate Center 2005). 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,

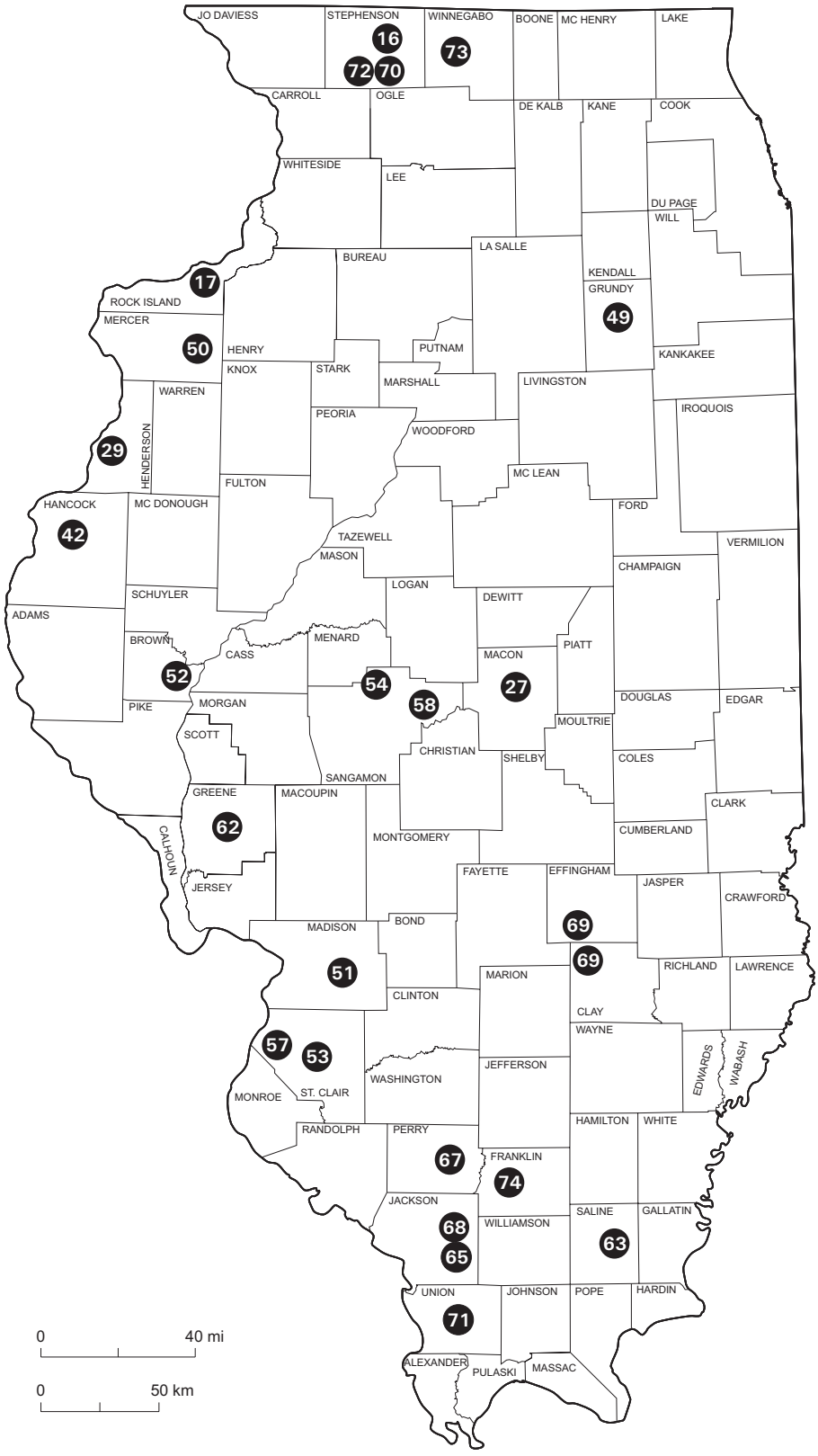


Figure 1 General locations of active water-level sites monitored by ISGS for IDOT between September 1, 2004 and September 1, 2005. Numbers indicate ISGS project numbers and are explained in Table 1.

Active IDOT Water-Level Monitoring Sites
September 1, 2004 to September 1, 2005

ISGS #	Site Name Route # FAP # Sequence #
16	Orangeville IL 26 FAP 316
17	Milan Beltway, Airport Road FAU 5822
27	Decatur US 51 FAP 322
29	Gulfport US 34 FAP 313
42	Hancock County near Carthage US 136 FAP 315 & 10
49	Morris, Illinois River Potential Wetland Bank
50	Edwards River, Mercer County US 67 FAP 310
51	Former Luehmann Property New River Crossing FAP 999
52	Former Wessel Property, La Grange Wetland Bank
53	Fairmont City New River Crossing FAP 999
54	Springfield IL 29 FAP 658
57	Former Tiernan Property New River Crossing FAP 999 Sequence #33G
58	Buckhart TR 478 FAS 1637
62	Apple Creek near Belltown US 67 FAP 310 Sequence #32
63	Harrisburg US 45 FAP 332
65	Carbondale US 51 FAP 322 Sequence #9780
67	Pyatts Blacktop IL 13 & 127 FAP 42 Sequence #409
68	De Soto US 51 FAP 322 Sequence #264
69	Edgewood, Effingham County US 45 FAP 328 Sequence #391
69	Larkinsburg, Clay County US 45 FAP 328 Sequence #391
70	Freeport Bypass East Site 4E US 20 FAP 301
71	Tamms IL 127 FAS 1907 Sequence #1026
72	Freeport Bypass West Site 6W US 20 FAP 301 Sequence #10487
73	Pecatonica River Forest Preserve Harrison Avenue Extension Sequence #3746
74	Sugar Camp Creek IL 3 FAP 312 Sequence #9282

Table 1 ISGS project numbers and active water-level sites monitored by ISGS for IDOT between September 1, 2004 and September 1, 2005.

and other site 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 hectares (ha) and acres (ac). 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 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-quadrangle (DOQQ) maps (ISGS 2005). In no case is the error of the acreage calculation expected to be less than ±1.5%, and it 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, area measurements for each site may differ in the number of significant digits, reflecting the expected accuracy in the base map and the methods.

Water-level data were collected monthly throughout the year, and biweekly during April and May when highest water levels are generally observed. Biweekly readings can continue into June on a site-by-site basis.

In different parts of Illinois, 5% of the growing season ranges from about 9 to 11 days, and 12.5% of the growing season ranges from about 23 days to 29 days. Therefore, two consecutive biweekly measurements are required to satisfy wetland hydrology criteria at 5% of the growing season, and three readings are required at 12.5% of the growing season. If fewer readings suggest wetland hydrology, then interpolation of the water levels is performed to determine total number of days of inundation or saturation. Interpolation between two dates is not performed if a water level is not recorded for both dates. Flooding that prevented measurement of a site was considered sufficient evidence of inundation for that site visit. Manual water-level measurements were often supplemented with various automated data logging devices that measured daily or more frequently. These data loggers were used to determine the timing of hydrologic events such as precipitation or flooding that were not recorded in manual measurements. One manual measurement alone is generally considered not sufficient to indicate inundation or saturation for a sufficient duration without a known precipitation or flooding event.

Monitoring wells were 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 were 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. 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 ISGS contract reports to IDOT.

Graphs for each site 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 values 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 from this are 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. If no data are shown on the charts for any specific well, then the well was either dry or not read, or the data were removed for quality control purposes. Charts lacking any well data were not included in this report.

Multiple data loggers are used to monitor water levels continuously at many sites. Three main types of instruments are being used, each made by a different manufacturer. Each type of instrument has different operations and default values. We have removed or labeled any incorrect 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 that occurred due to data logger malfunction or natural conditions that cause inaccuracies (e.g. vegetation growth or debris accumulation beneath the logger) were removed after interpretation by ISGS scientists.

On-site precipitation data were collected by ISGS using several types of tipping-bucket rain gauges. Due to inherent difficulties in maintaining rain gauges (e.g., clogging, equipment malfunction, timing of deployments), actual precipitation for each month may be greater than the recorded value. Because all ISGS gauges are nonheated and must be removed in the winter, monthly precipitation data are also shown from climate observation stations maintained year-round by the MCC (MCC 2005). The closest weather station with an adequate period of record is used at each site. Normal (i.e. mean, average) precipitation values, and the above and below normal-range threshold values are calculated by the National Water and Climate Center (NWCC) (NWCC 2005) and are all based on a 30-year period, between either 1961 and 1990 or 1971 and 2000. 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. Precipitation may be described relative to "normal" values or the "normal range", depending on the intent of the project manager.

This document is intended to be a summary of all data collected under this contract during the reporting period. Therefore, some details have been omitted that may be necessary for other uses of the data. The primary project manager listed for each site should be contacted for additional information.

REFERENCES

Environmental Laboratory, 1987, Corps of Engineers Wetlands Delineation Manual: U. S. Army Corps of Engineers Technical Report Y-87-1, Washington, D.C., 100 p. Available online at http://www.saj.usace.army.mil/permit/documents/87manual.pdf.

Illinois State Geological Survey, 2005, Illinois Natural Resources Geospatial Data Clearinghouse, Illinois Digital Orthophoto Quarter Quadrangle Data: Illinois State Geological Survey, Champaign, Illinois, available online at http://www.isgs.uiuc.edu/nsdihome/webdocs/doqs/.

Midwestern Climate Center, 2005, Midwestern Climate Information System: Illinois State Water Survey, Champaign, Illinois, available online at http://mcc.sws.uiuc.edu/.

National Water and Climate Center, Natural Resources Conservation Service, 2005, Climate Analysis for Wetlands by County, available online at http://www.wcc.nrcs.usda.gov/climate/wetlands.html.

National Water and Climate Center, Natural Resources Conservation Service, 1995, WETS Table Documentation, available online at http://www.wcc.nrcs.usda.gov/climate/wets_doc.html.

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

SITE HISTORY

- March 1993: IDOT tasked ISGS to determine ground-water levels on the site.
- March 1997: A final hydrogeologic characterization report was submitted to IDOT (ISGS Open File Series 1997–3).
- June 2000: IDOT requested that ISGS monitor two newly constructed wetland compensation sites. The two sites are labeled Site 1, to the north, and Site 2, to the south.
- May 2005: Site monitoring was discontinued at IDOT's request. The site will be decommissioned in Autumn 2005.

WETLAND HYDROLOGY CALCULATION FOR 2005

No wetland hydrology calculation was made for this site because monitoring was halted in May 2005, at IDOT's request.

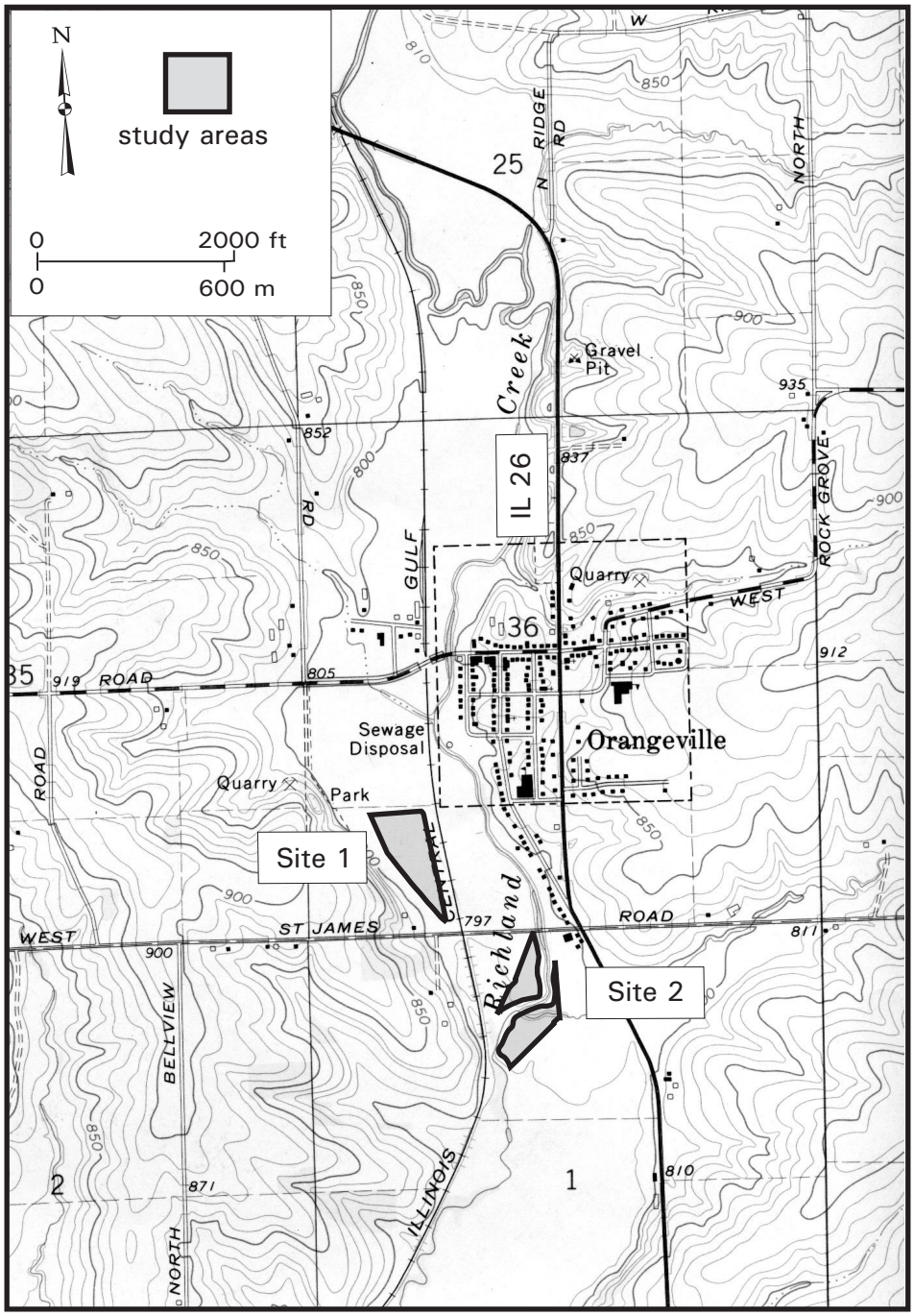
Orangeville Wetland Compensation Site

(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



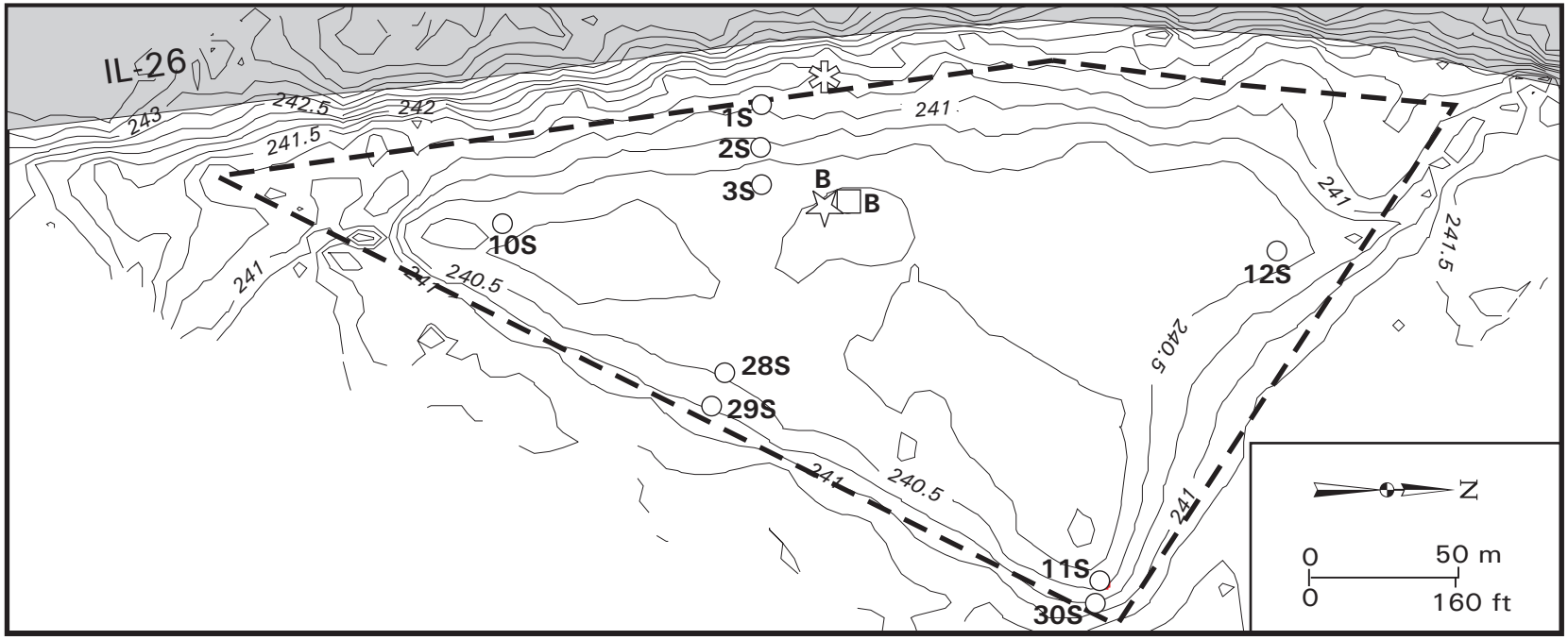
Orangeville Wetland Compensation Site

(FAP 316)

ISGS Instrument Locations at Site 1

Map based on 2002 ISGS topographic survey referenced to NGVD, 1929

contour interval is 0.25 meters



○ ISGS monitoring well

❄ rain gauge

□ RDS level logger

☆ stage gauge

– – Approximate site boundary

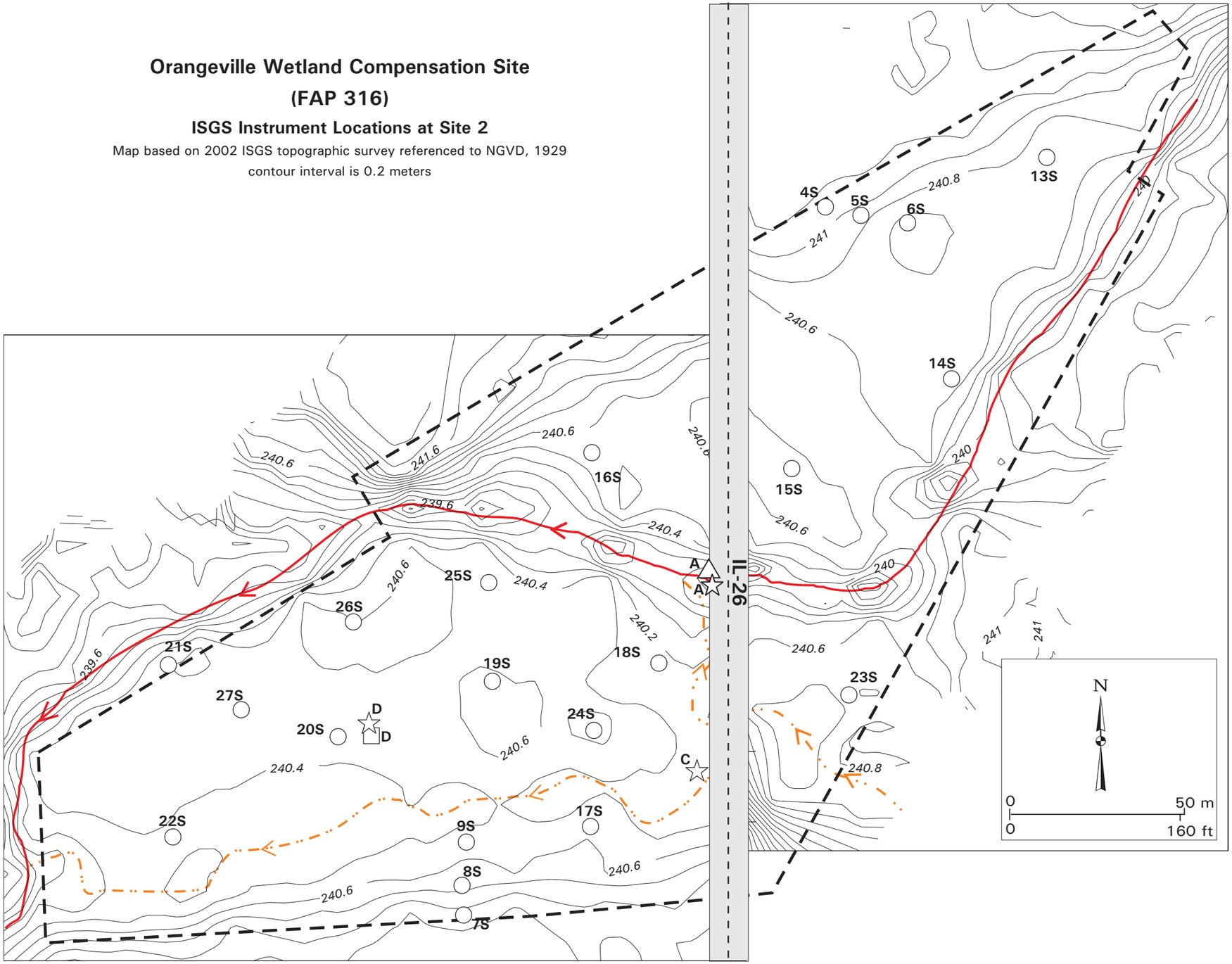
elevation contour
(contour interval is 0.25 meters)

Orangeville Wetland Compensation Site

(FAP 316)

ISGS Instrument Locations at Site 2

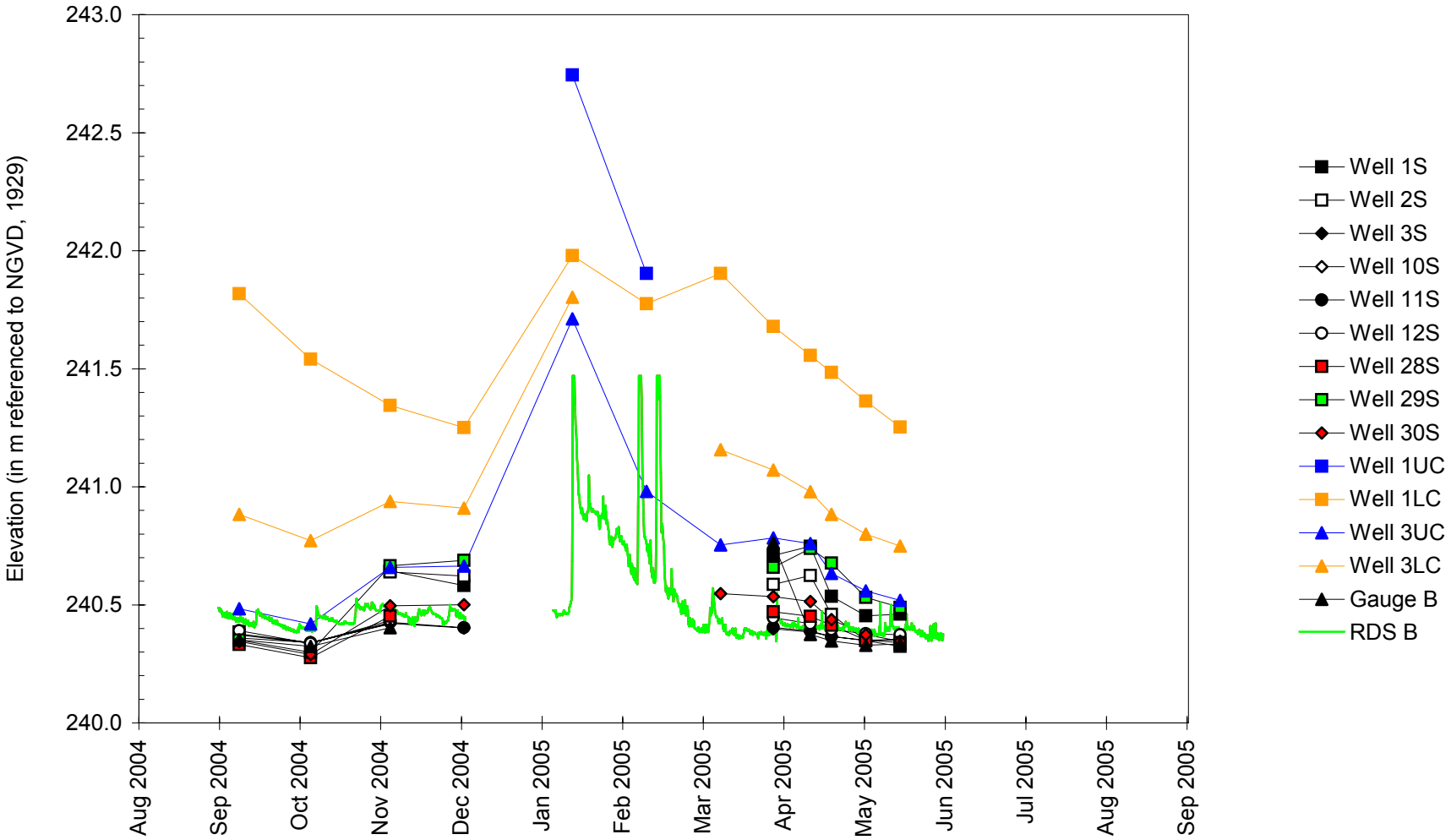
Map based on 2002 ISGS topographic survey referenced to NGVD, 1929
contour interval is 0.2 meters



- approximate site boundary
- elevation contour (contour interval is 0.20 meters)
- Richland Creek
- diverted rivulet
- ISGS monitoring well
- RDS level logger
- Infinities sonic data recorder
- stage gauge

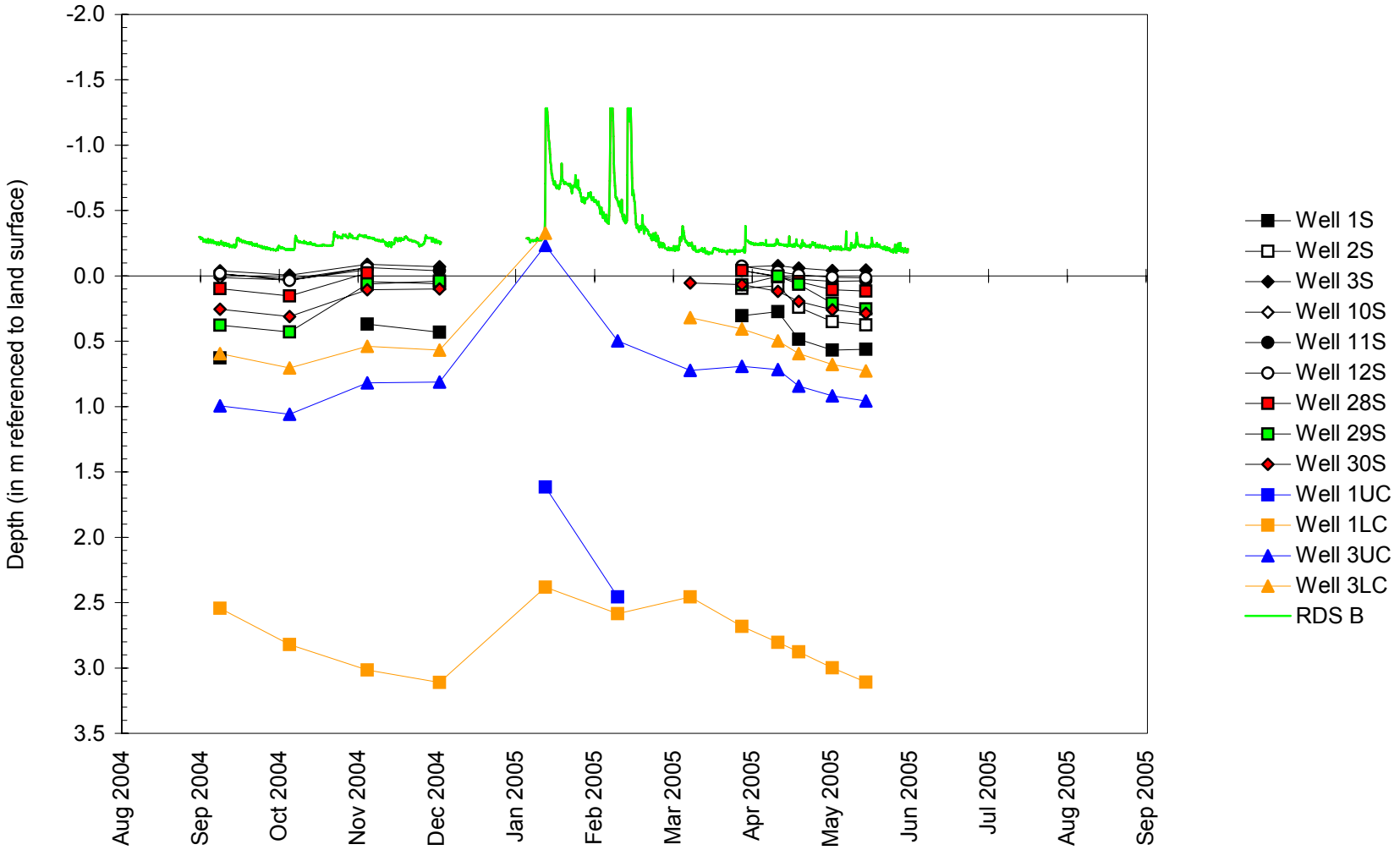
Orangeville Wetland Compensation Site
September 1, 2004 to September 1, 2005

Water-Level Elevations at Site 1



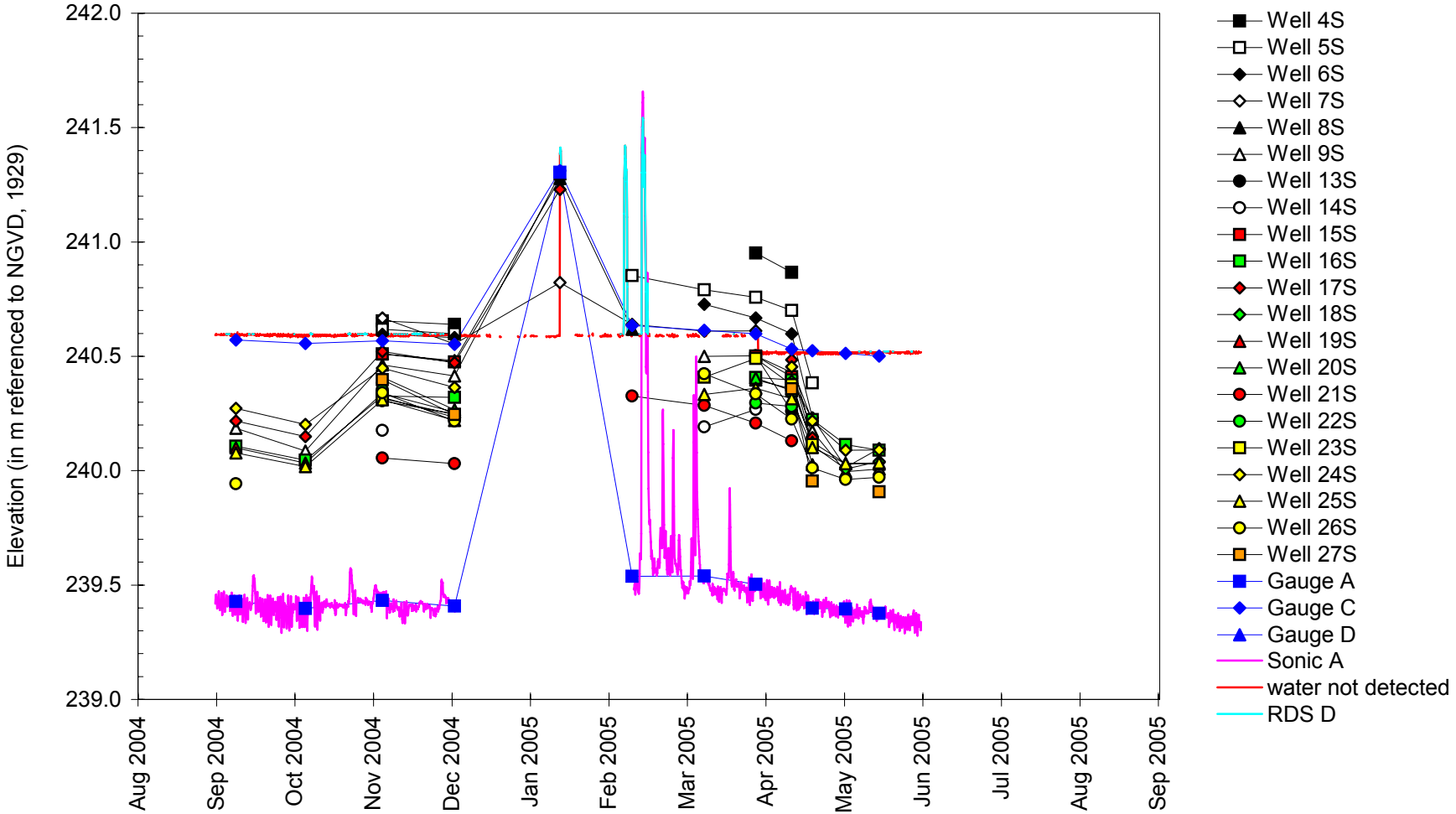
Orangeville Wetland Compensation Site
September 1, 2004 to September 1, 2005

Depth to Water at Site 1



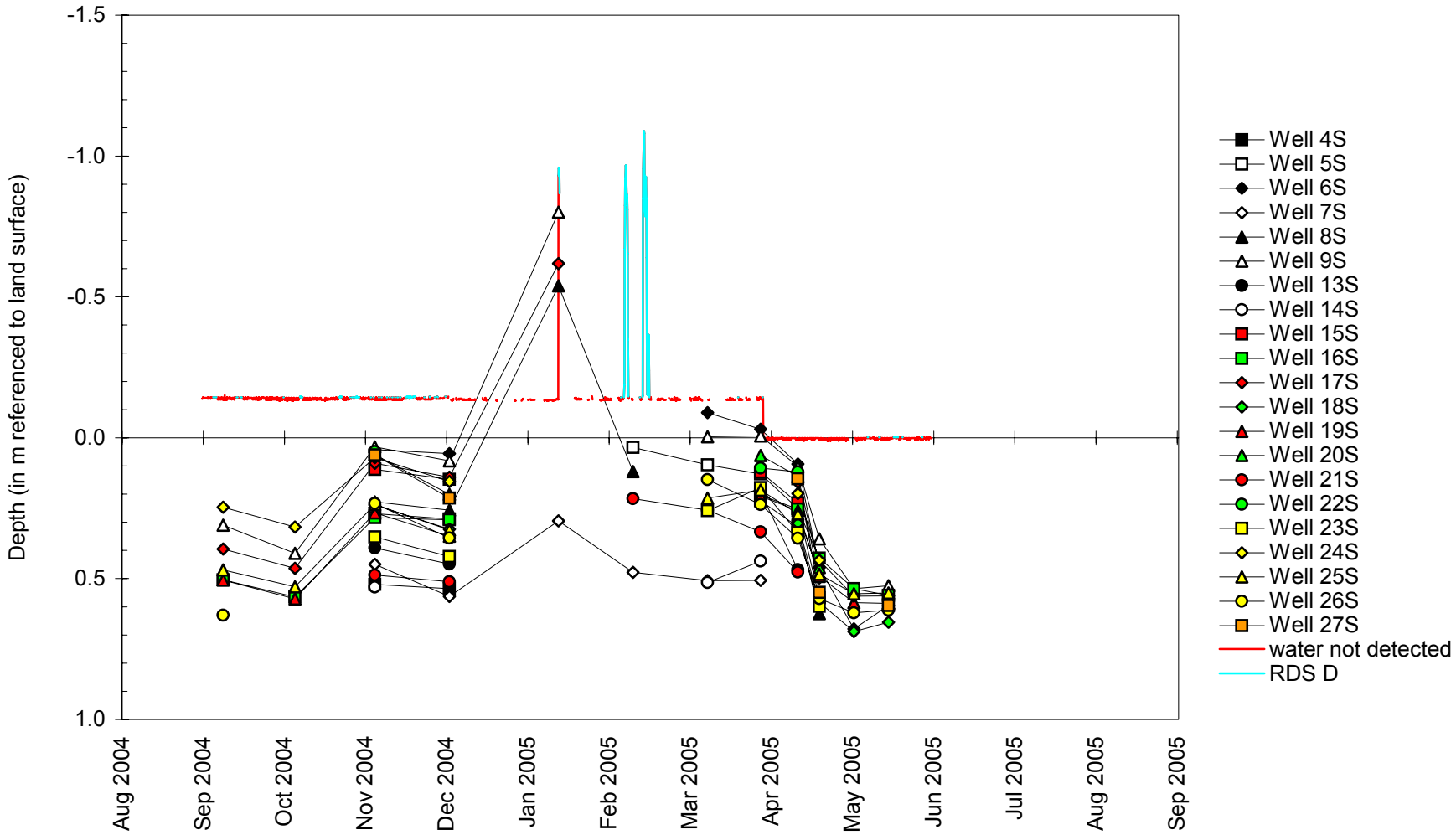
Orangeville Wetland Compensation Site
September 1, 2004 to September 1, 2005

Water-Level Elevations at Site 2



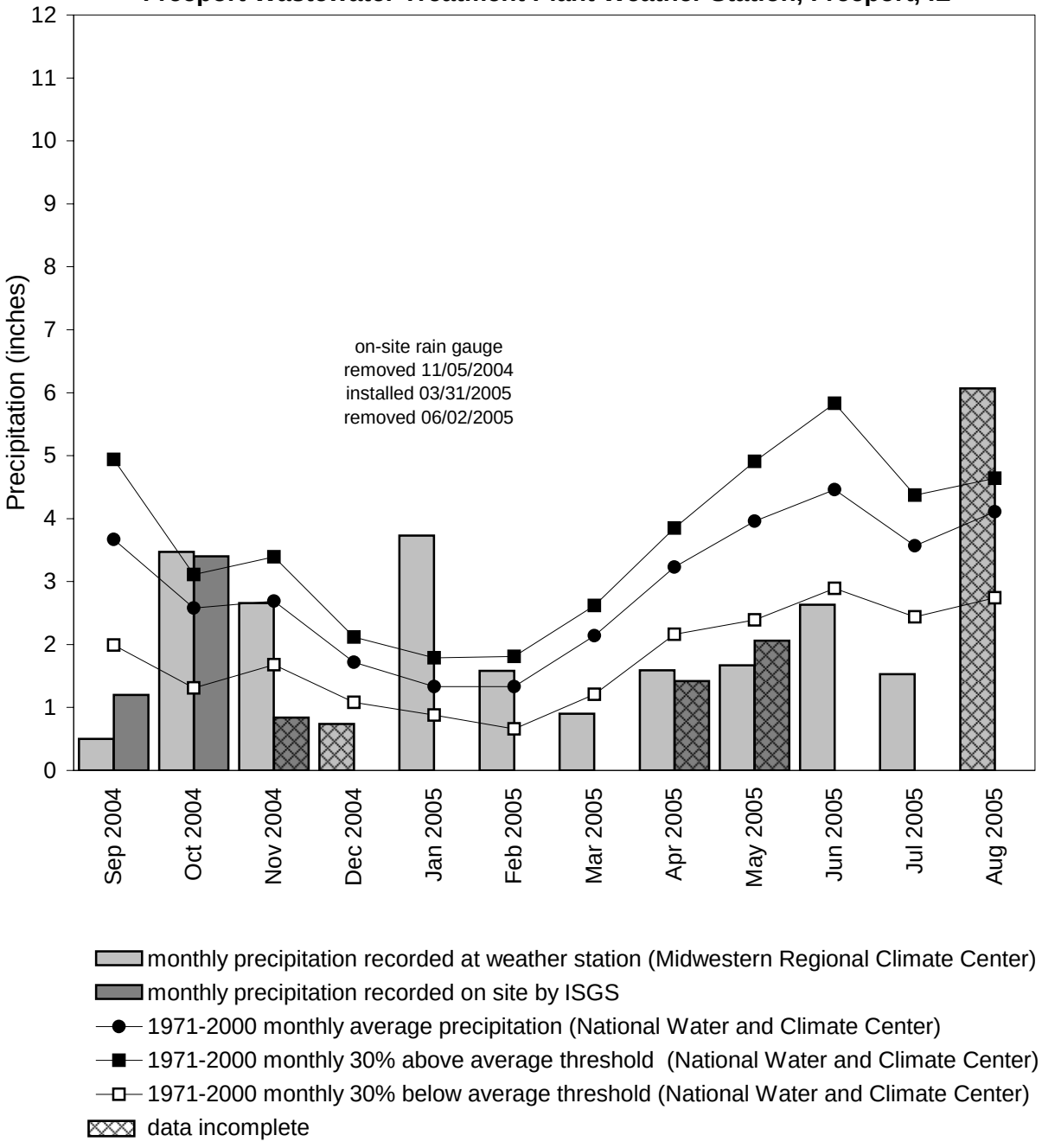
Orangeville Wetland Compensation Site
September 1, 2004 to September 1, 2005

Depth to Water at Site 2



Orangeville Wetland Compensation Site
September 2004 through August 2005

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



Graph last updated October 24, 2005

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

SITE HISTORY

- August 1997: ISGS data collection was initiated with the installation of monitoring wells and staff gauges.

- August 2004: Construction of the Milan Bypass began. A portion of the site was excavated to create wetland.

- January 2005: A Level II hydrogeologic characterization report was submitted to IDOT (ISGS Open File Series 2005–04).

- March 2005: Monitoring wells and staff gauges were installed in the created wetland.

WETLAND HYDROLOGY CALCULATION FOR 2005

The area of the site that satisfied wetland hydrology criteria (Environmental Laboratory 1987) for more than 5% of the 2005 growing season was estimated to be 2.3 ha (5.7 ac) out of an area of 11.5 ha (28.4 ac). The area that satisfied wetland hydrology criteria for more than 12.5% of the growing season was estimated to be 0.0 ha (0.0 ac). These estimates are 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 in nearby Moline, Illinois, is April 13 and the season lasts 196 days; 5% of the growing season is 10 days and 12.5% of the growing season is 25 days.

- Total precipitation during the monitoring period was 21.77 inches, which was only 57% of normal. Only three months during the period (October 2004, November 2004, and January 2005) were at or above normal. Precipitation from February 2005 to August 2005 was only 38% of normal.

- In 2005, ground-water levels measured in wells 5S, 6S, and 7S satisfied the wetland hydrology criteria for more than 5% of the growing season. No wells satisfied wetland hydrology criteria for greater than 12.5% of the growing season.

- Surface-water was observed on the site at the start of the growing season, however, the duration of inundation was insufficient to satisfy the wetland hydrology criteria for either 5% or 12.5% of the growing season.

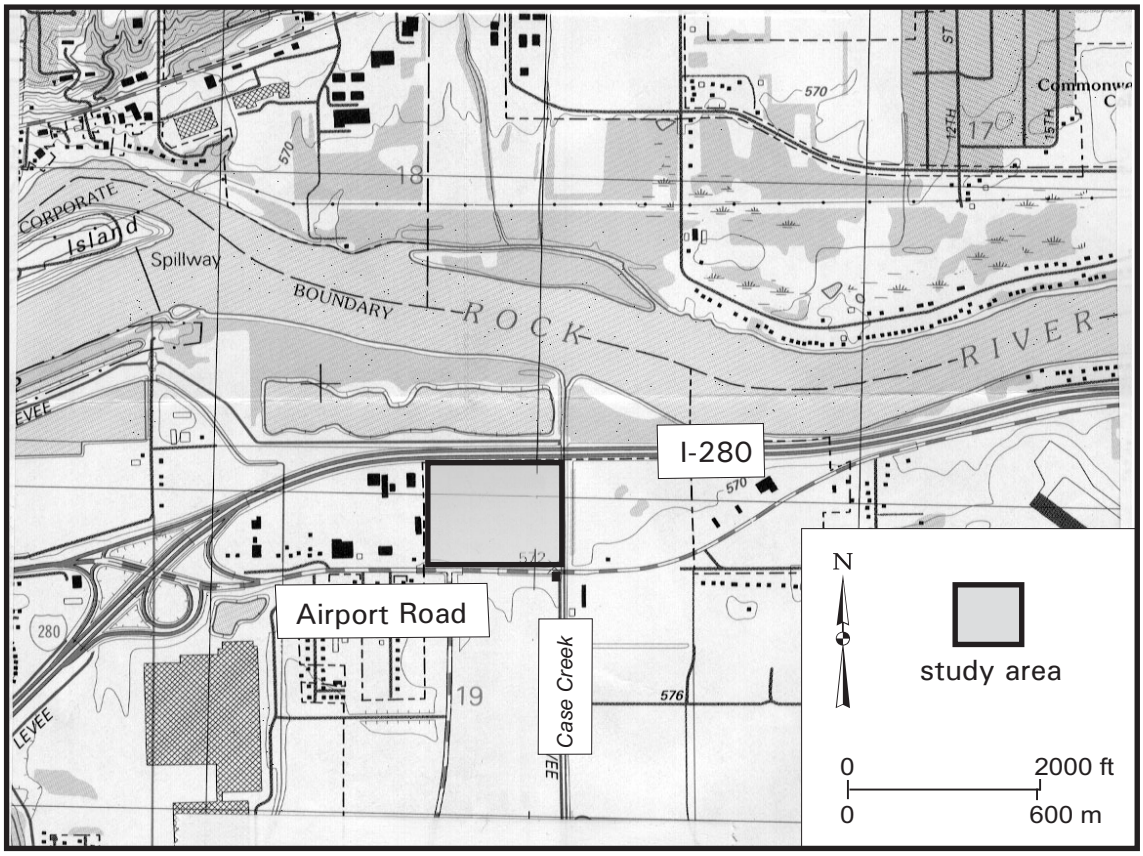
PLANNED FUTURE ACTIVITIES

- Monitoring of the site will continue until notified otherwise by IDOT.

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

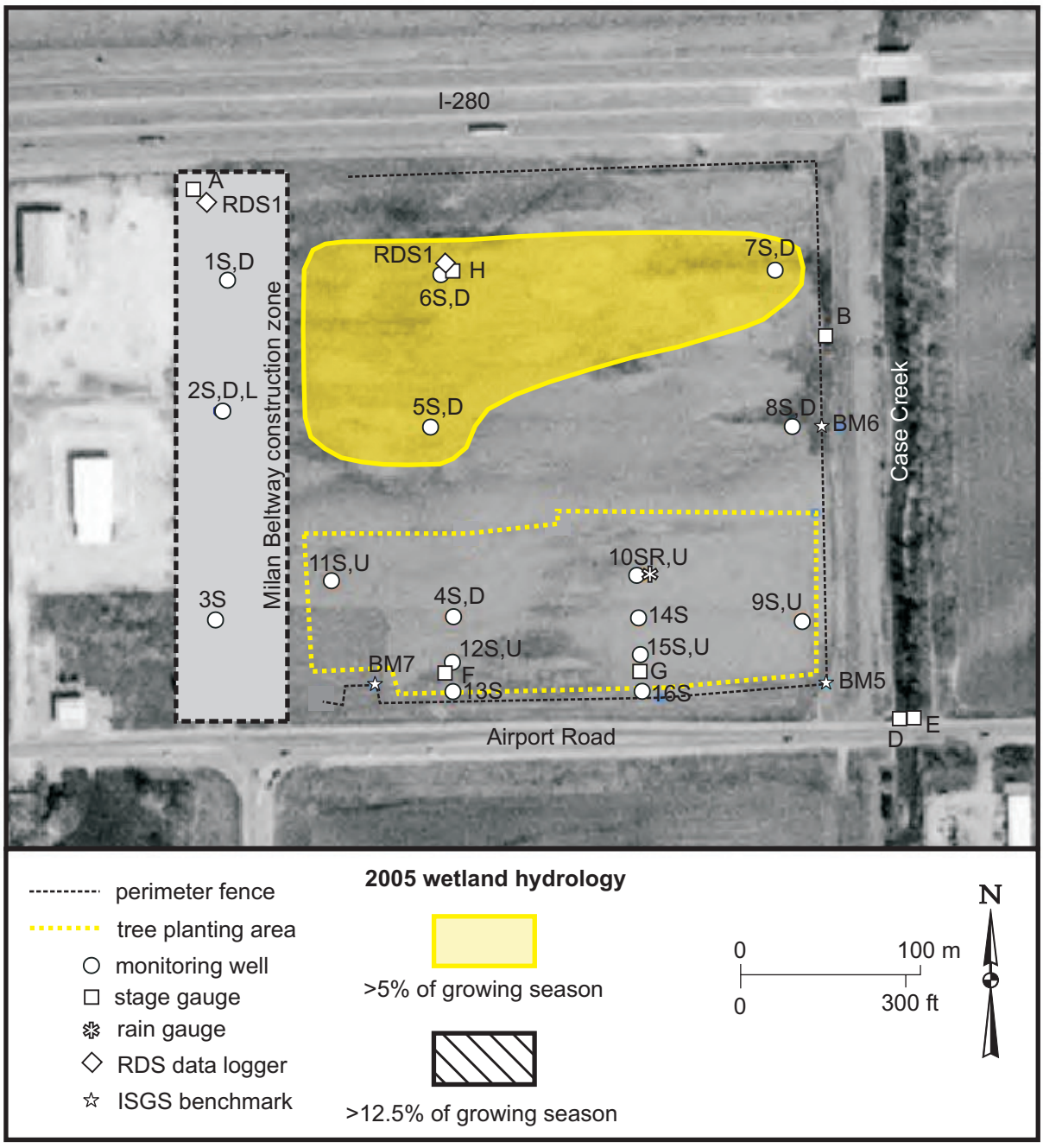


Milan Beltway, Airport Road Wetland Compensation Site (FAU 5822)

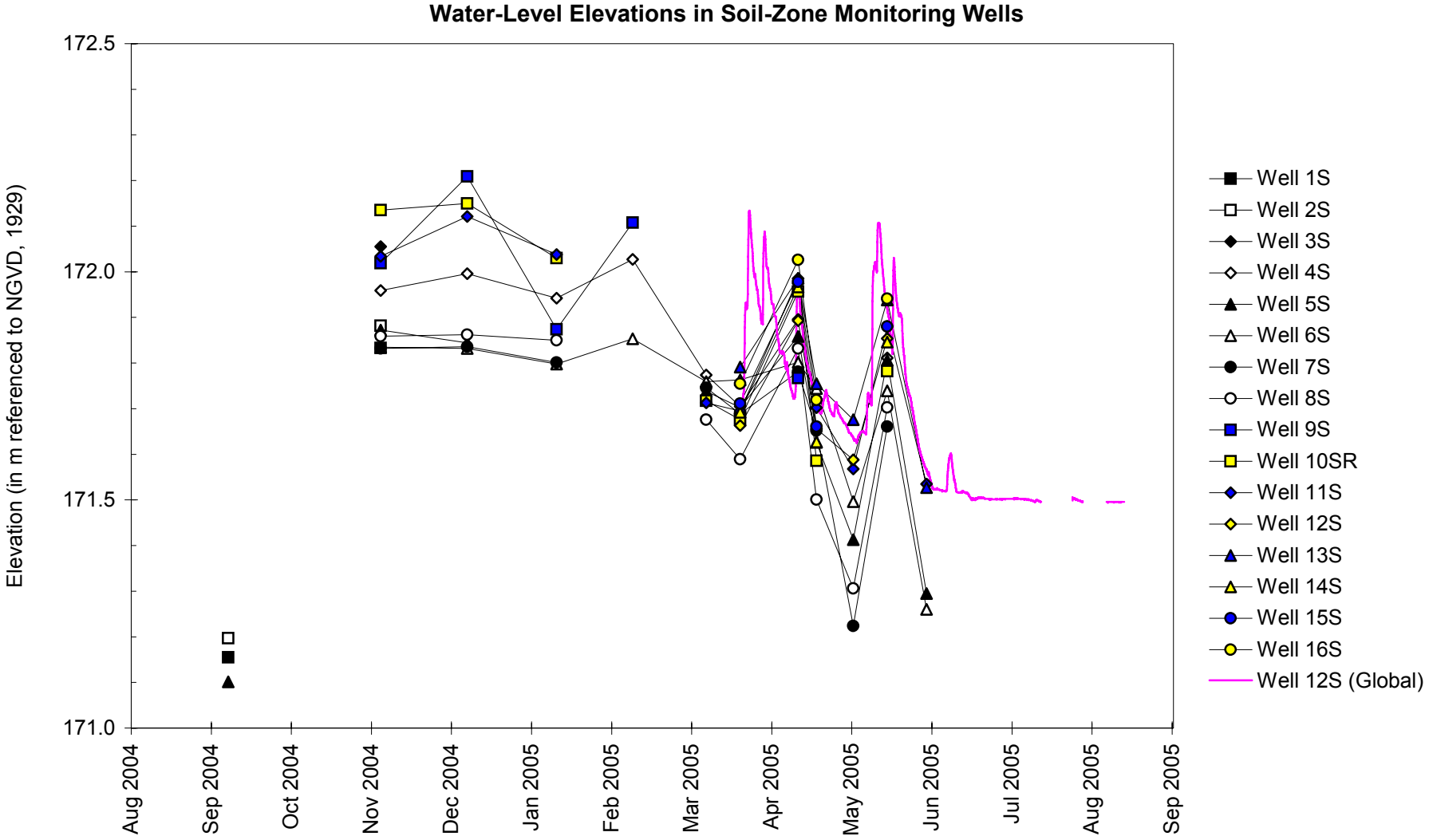
Estimated Areal Extent of 2005 Wetland Hydrology

based on data collected between September 1, 2004 and September 1, 2005

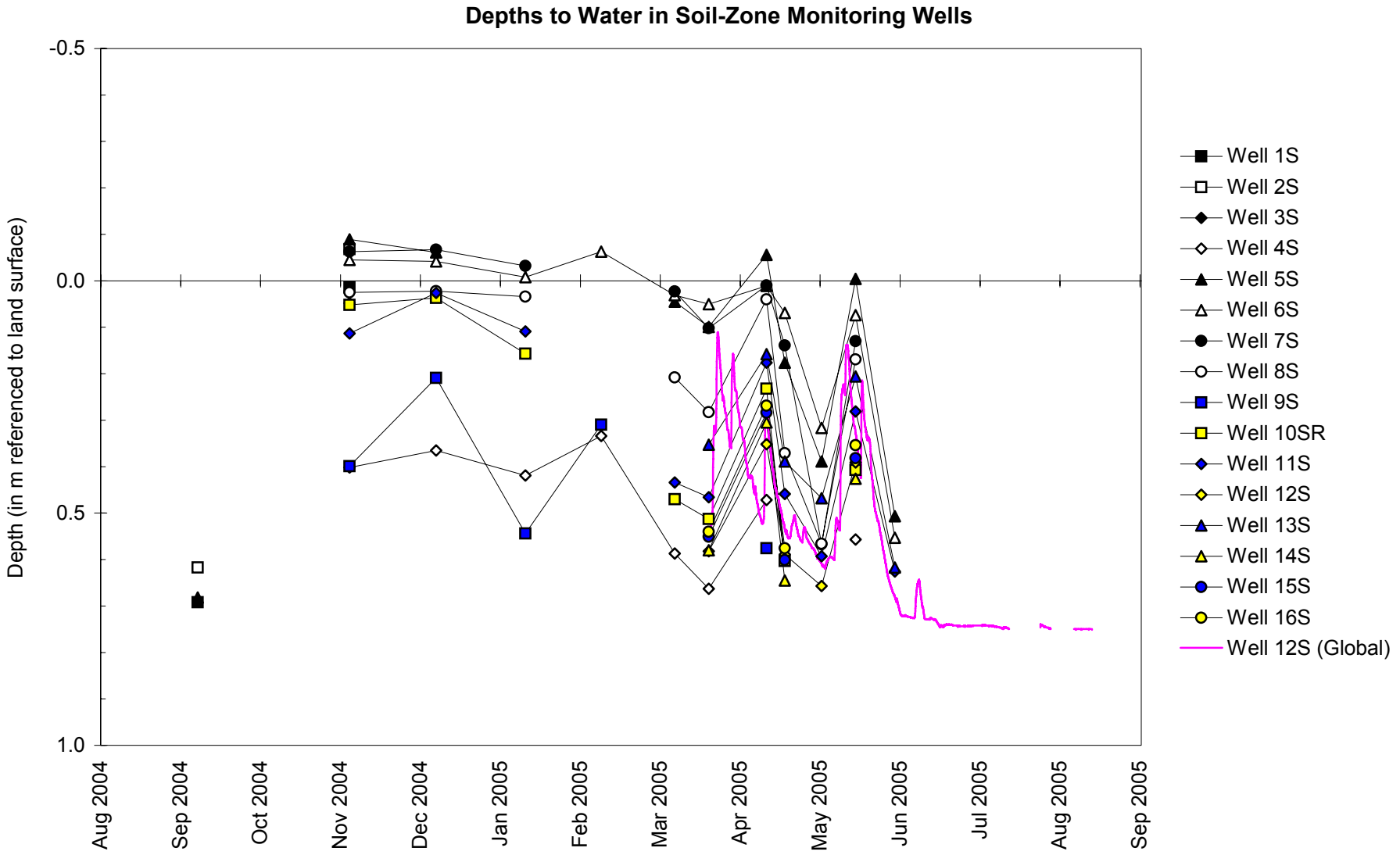
Map based on USGS digital orthophotograph, Milan SW quarter quadrangle
from 03/30/2000 aerial photography (ISGS 2005)



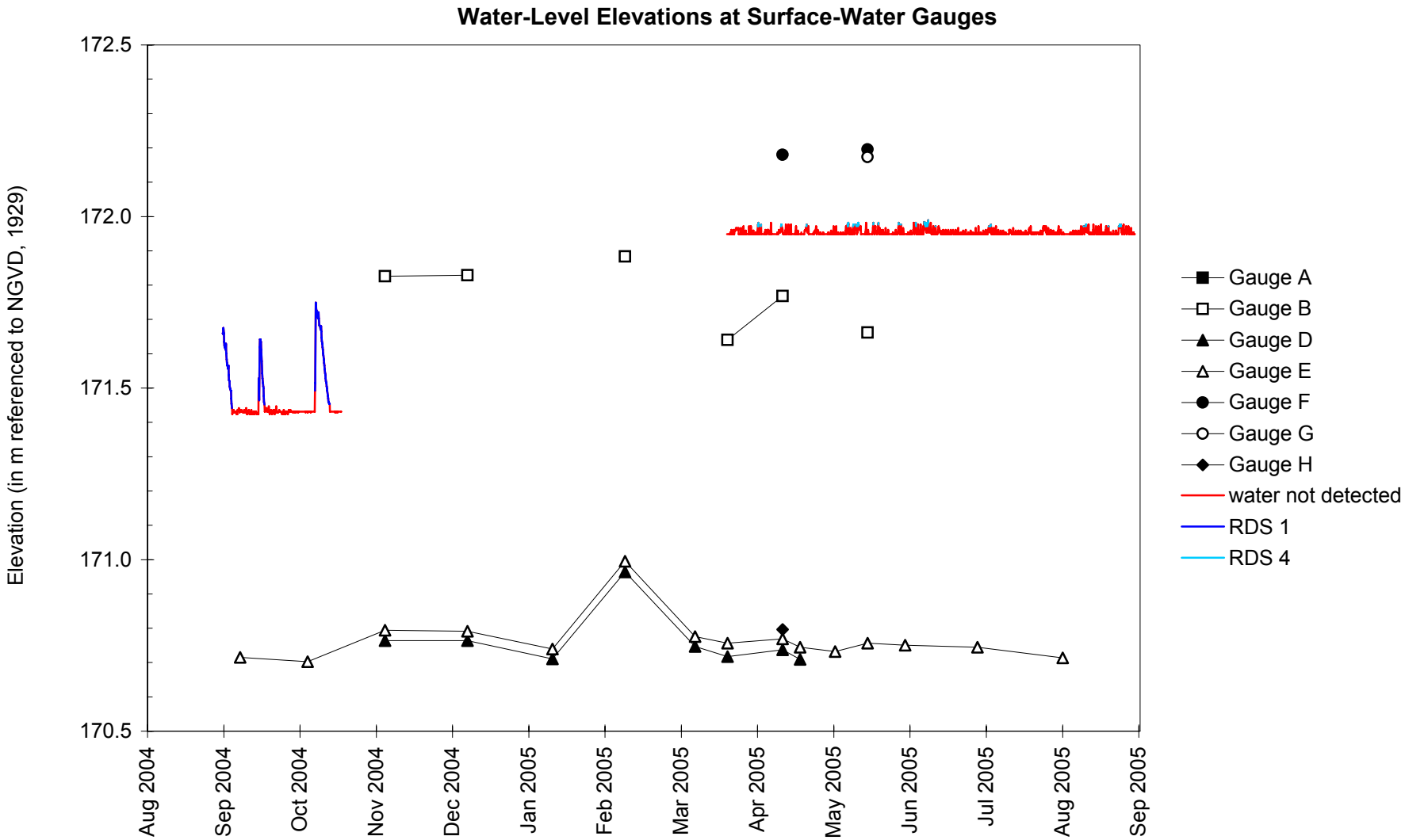
Milan Beltway, Airport Road Wetland Compensation Site
September 1, 2004 to September 1, 2005



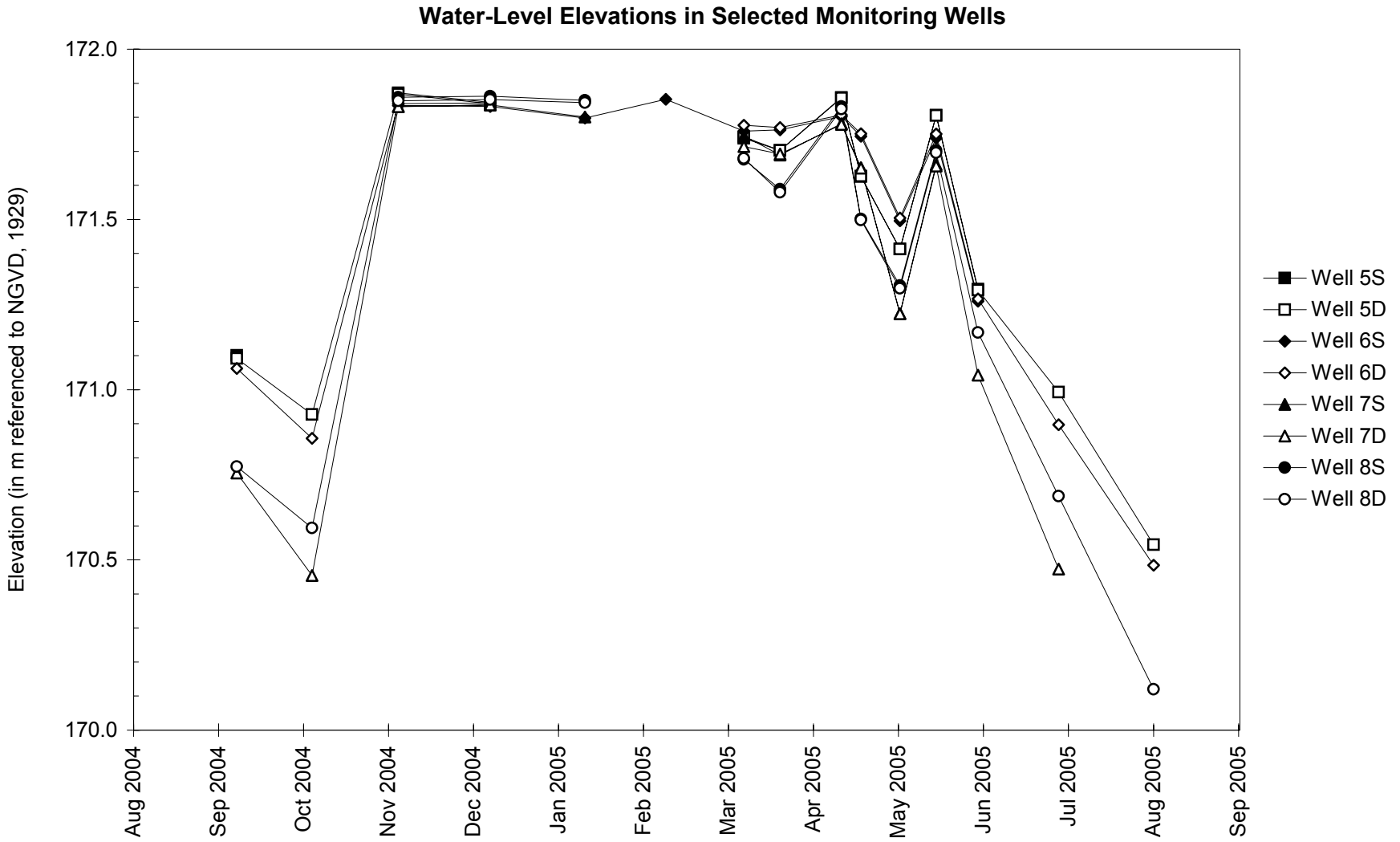
Milan Beltway, Airport Road Wetland Compensation Site
September 1, 2004 to September 1, 2005



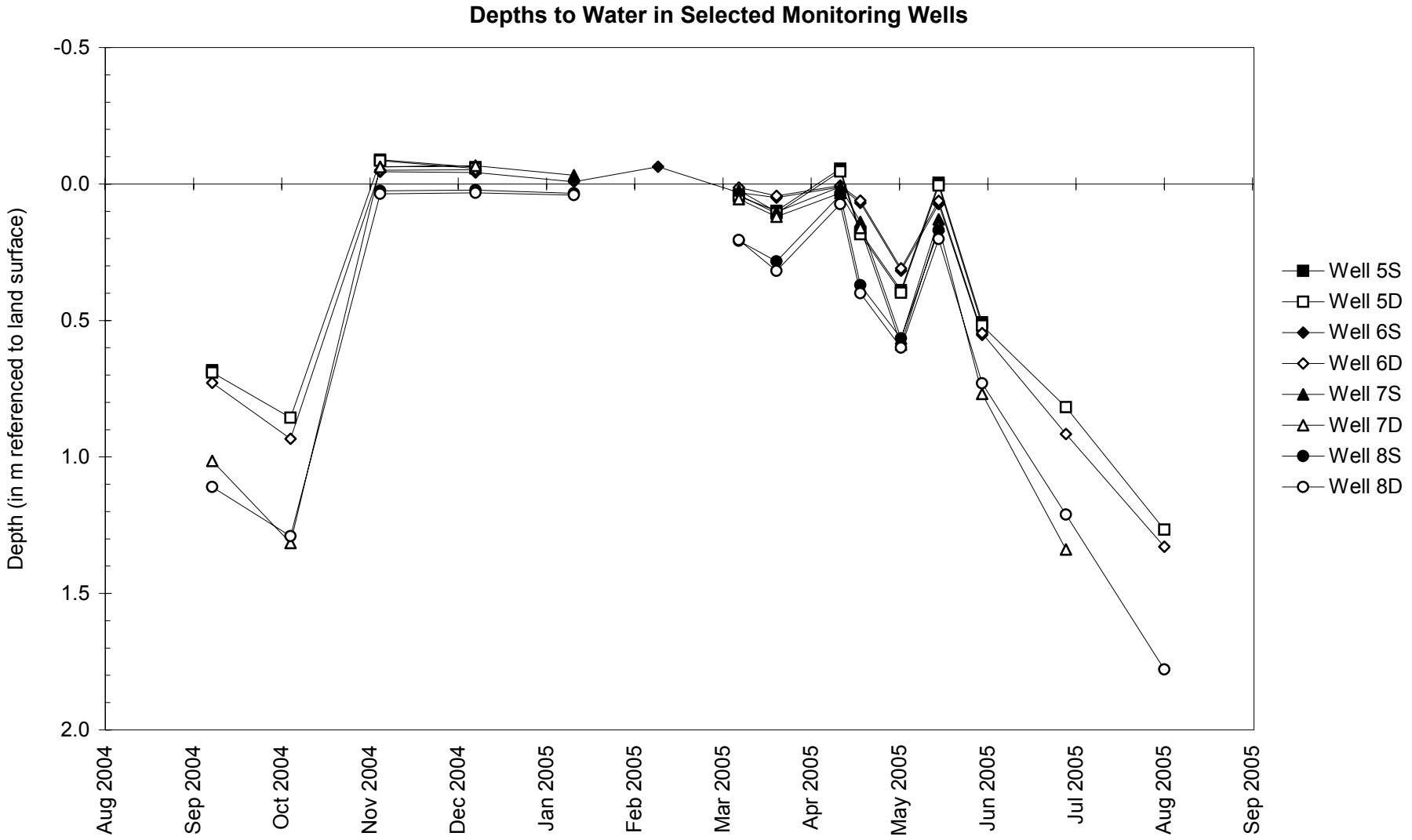
Milan Beltway, Airport Road Wetland Compensation Site
September 1, 2004 to September 1, 2005



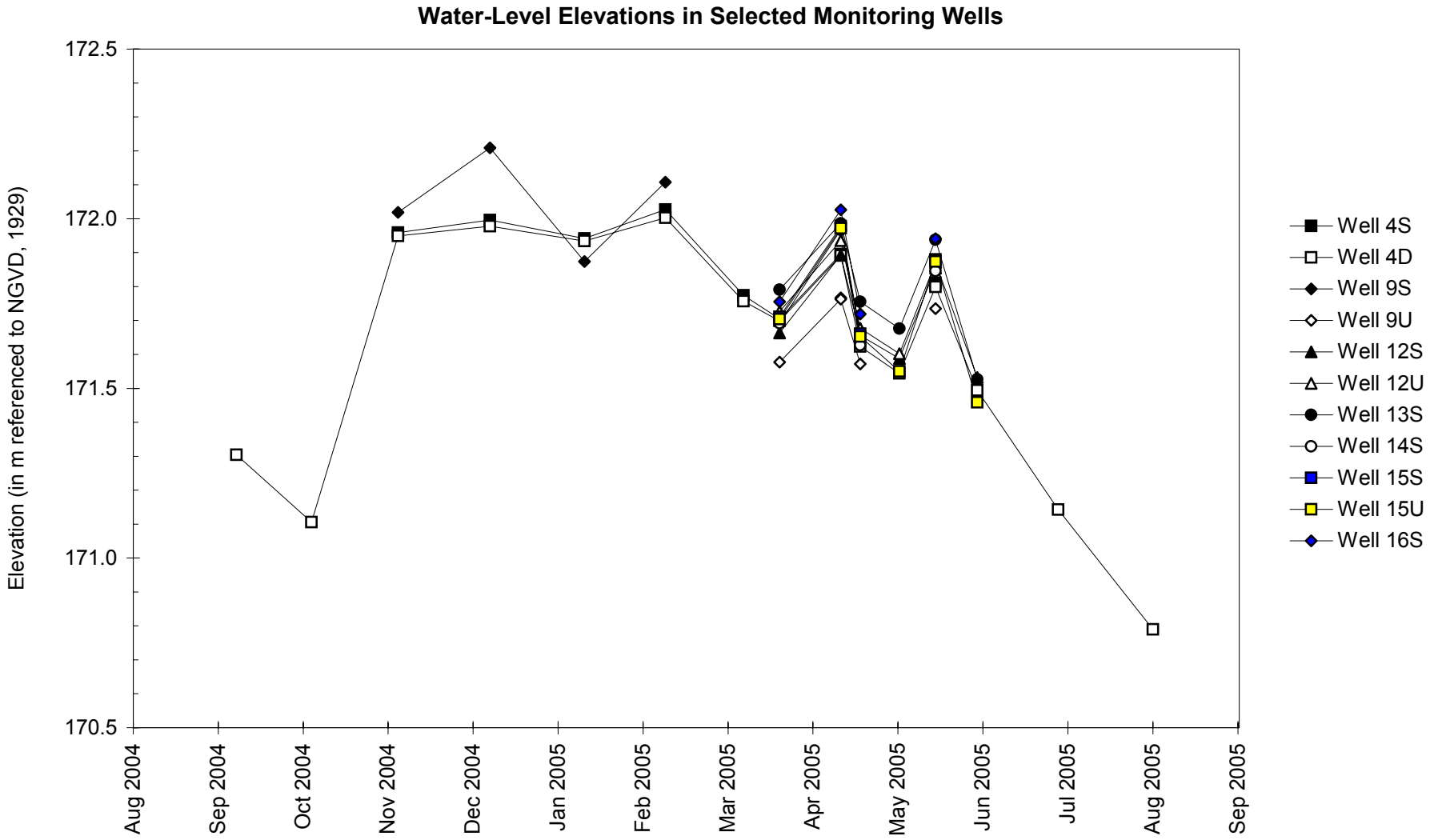
Milan Beltway, Airport Road Wetland Compensation Site
September 1, 2004 to September 1, 2005



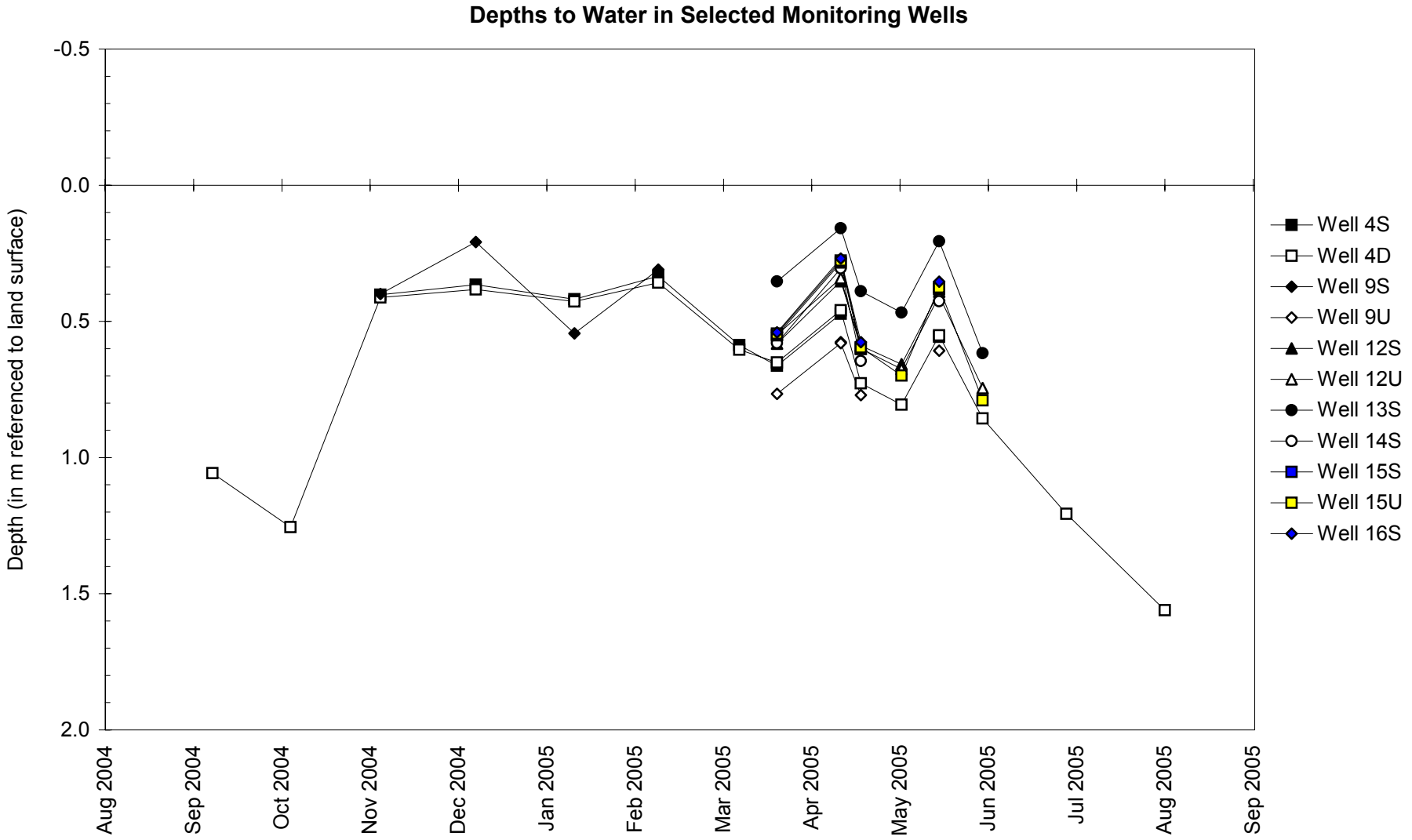
Milan Beltway, Airport Road Wetland Compensation Site
September 1, 2004 to September 1, 2005



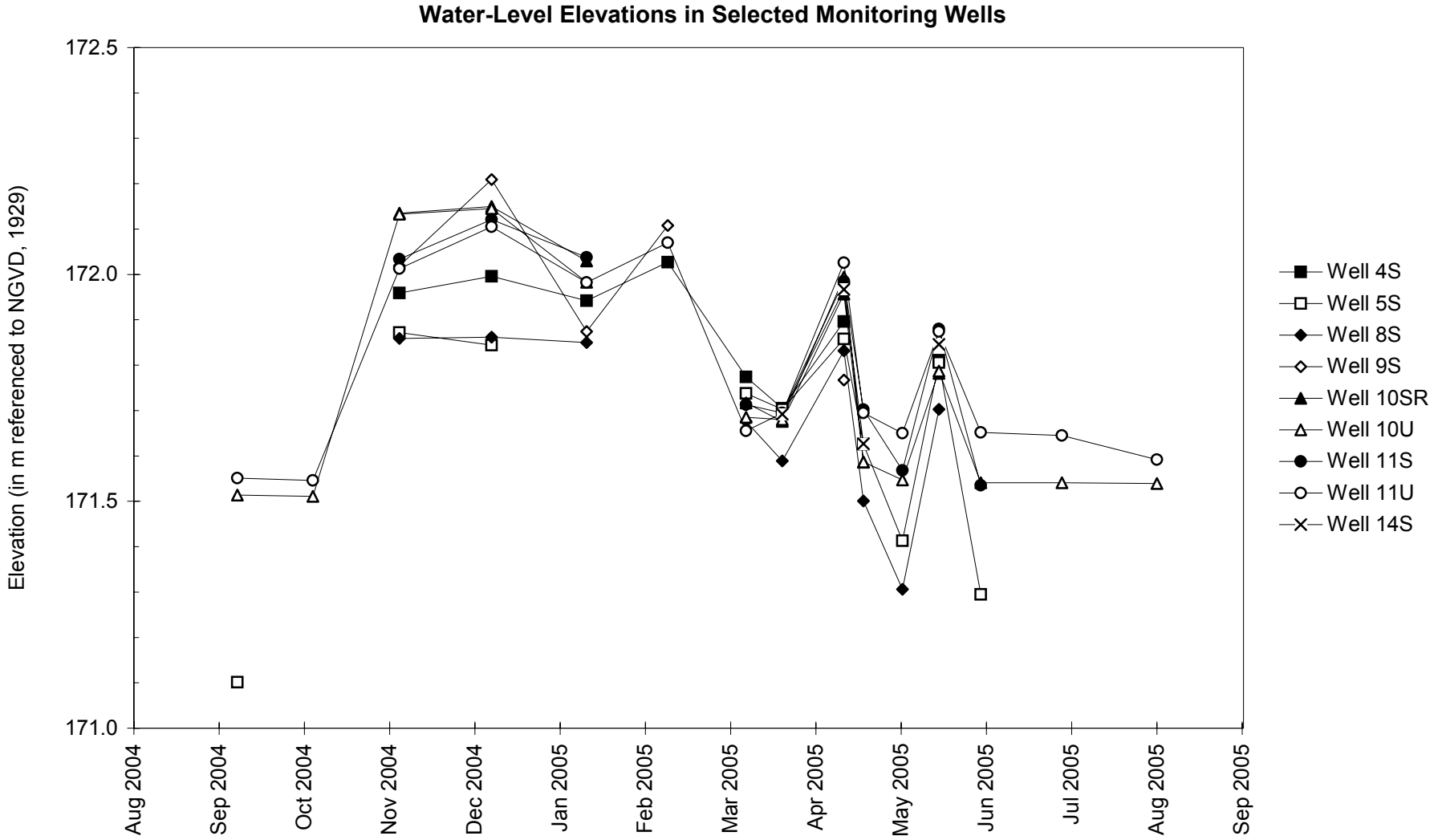
Milan Beltway, Airport Road Wetland Compensation Site
September 1, 2004 to September 1, 2005



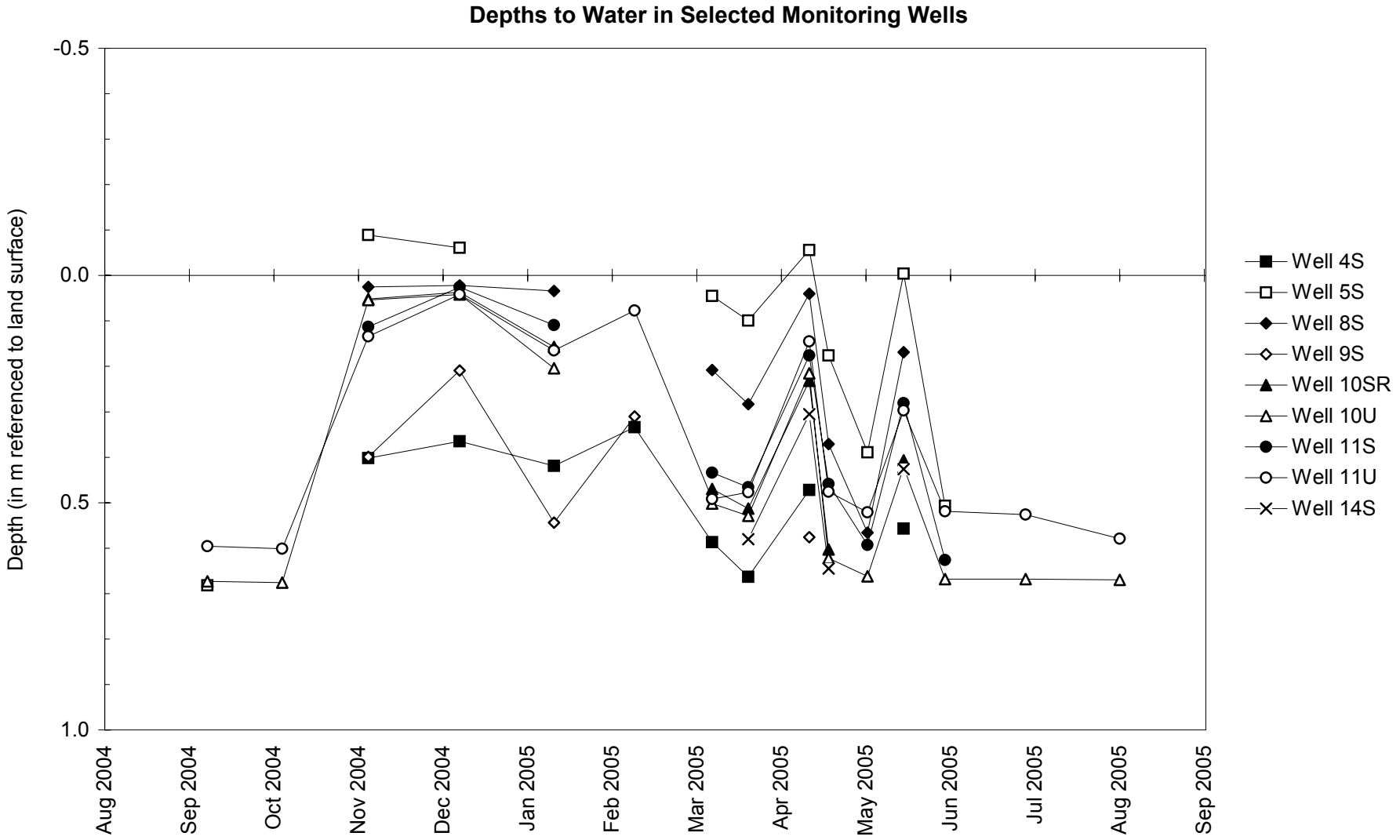
Milan Beltway, Airport Road Wetland Compensation Site
September 1, 2004 to September 1, 2005



Milan Beltway, Airport Road Wetland Compensation Site
September 1, 2004 to September 1, 2005

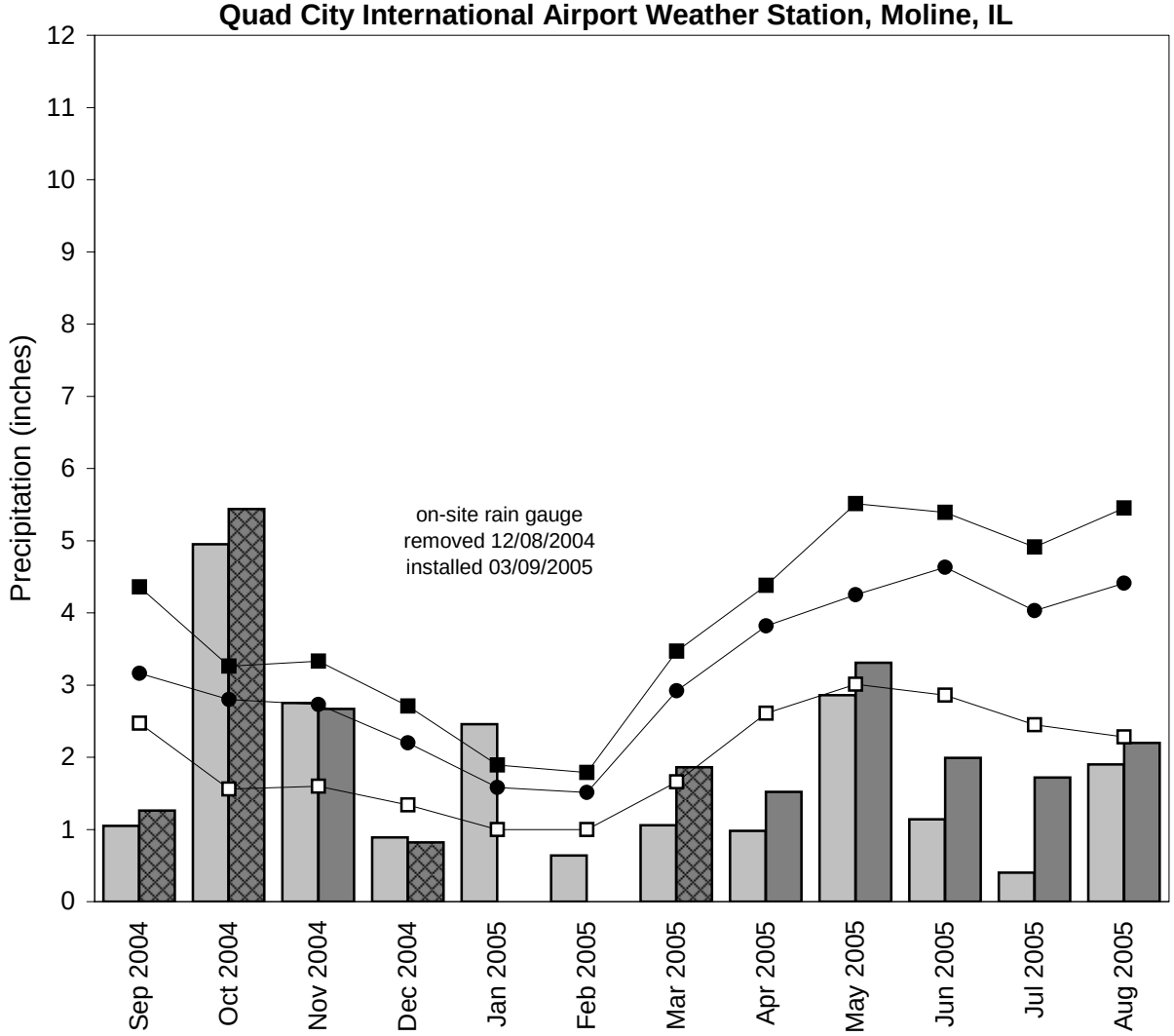


Milan Beltway, Airport Road Wetland Compensation Site
September 1, 2004 to September 1, 2005



Milan Beltway, Airport Road
Wetland Compensation Site
September 2004 through August 2005

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



monthly precipitation recorded at weather station (Midwestern Regional Climate Center)

monthly precipitation recorded on site by ISGS

1971-2000 monthly average precipitation (National Water and Climate Center)

1971-2000 monthly 30% above average threshold (National Water and Climate Center)

1971-2000 monthly 30% below average threshold (National Water and Climate Center)

data incomplete

Graph last updated October 24, 2005

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

SITE HISTORY

- May 1999: ISGS was tasked to conduct hydrologic monitoring.

- March and May 2000: ISGS installed a surface-water data logger (RDS 1) and a rain gauge, then later completed several shallow soil borings to investigate the presence and condition of a shallow confined aquifer across the site.

- June 2001: Construction of the wetland was completed.

- December 2001: ISGS installed eleven S-wells (1S–8S and 10S–12S), two surface-water staff gauges (A and B), and one additional surface-water data logger (RDS 2) at the site.

WETLAND HYDROLOGY CALCULATION FOR 2005

We estimate that the total area of created wetland that satisfied wetland hydrology criteria (Environmental Laboratory 1987) for greater than 5% of the 2005 growing season was 2.1 ha (5.2 ac). These estimates are out of a total site area of approximately 4.7 ha (11.6 ac). The total area that satisfied wetland hydrology criteria for greater than 12.5% of the growing season was also 2.1 ha (5.2 ac). These estimates are based on the following factors:

- According to the Midwestern Climate Center, the median date that the growing season begins in Decatur, Illinois, is April 9 and the season lasts 193 days; 5% of the growing season is 10 days and 12.5% of the growing season is 24 days.

- During the period from September 2004 through August 2005, total precipitation at the Decatur weather station was 89% of normal. Precipitation on site or in the vicinity was below normal for the months of September and December 2004 and February to May 2005, and July to August 2005. Precipitation from February through August 2005 was 60% of normal, while precipitation amounts were above normal for the remaining months of the monitoring period.

- In 2005, water levels in wells 6S, 8S, 10S, 11SR, and 12S satisfied the wetland hydrology criteria for greater than 12.5% of the growing season. No additional wells satisfied the wetland hydrology criteria for greater than 5% of the growing season.

- Water-level records for data loggers RDS 1 and RDS 2 indicated inundation at elevations below approximately 221.00 m (725.07 ft) and 220.98 m (725.00 ft), respectively, for a duration that satisfied the wetland hydrology criteria for greater than 5% of the growing season. Water-level records for data loggers RDS 1 and RDS 2 indicated inundation at elevations below approximately 220.98 m (725.00 ft) and 220.96 m (724.93 ft), respectively, for a duration that satisfied the wetland hydrology criteria for greater than 12.5% of the growing season.

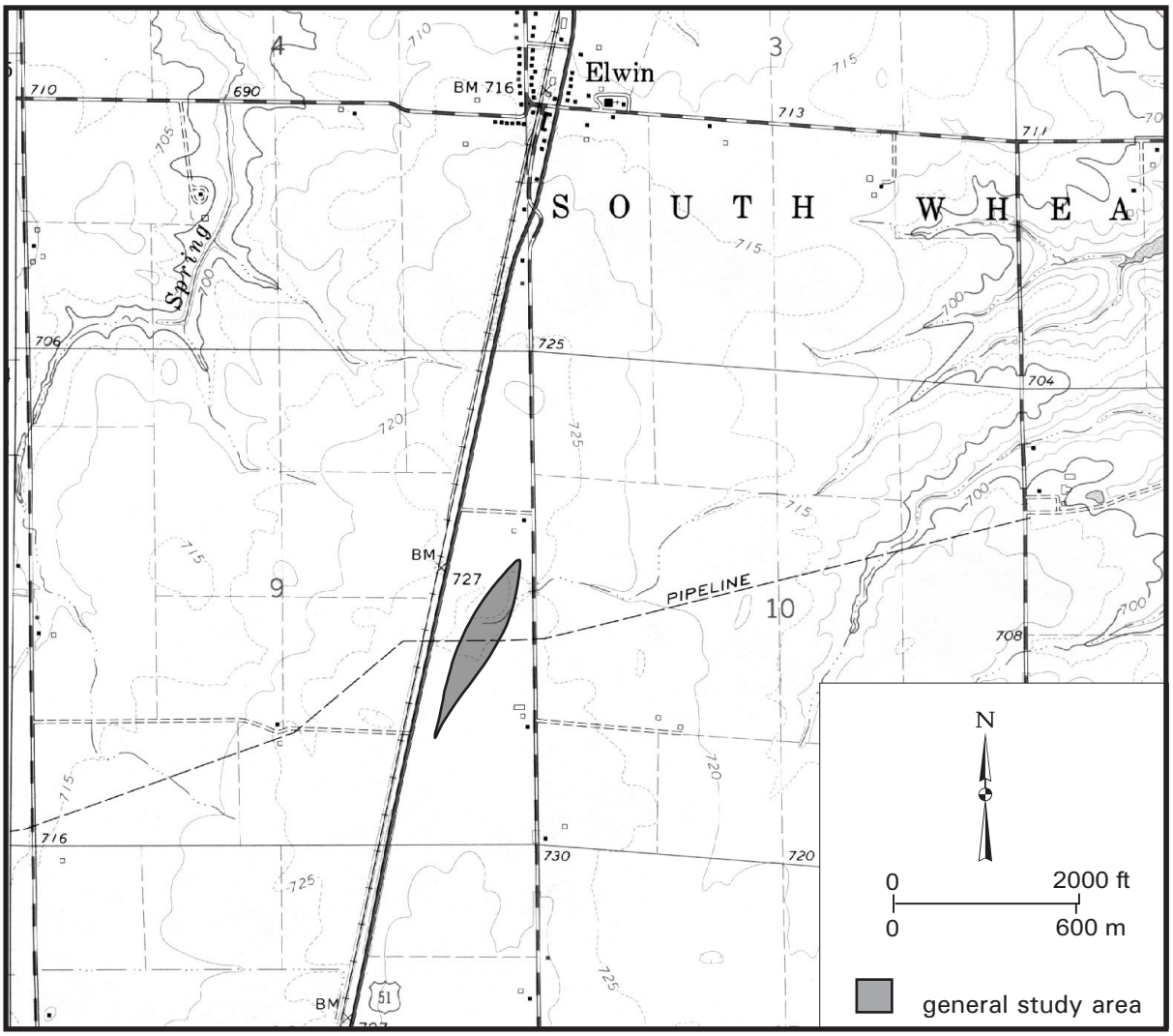
PLANNED FUTURE ACTIVITIES

- The current monitoring scheme 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

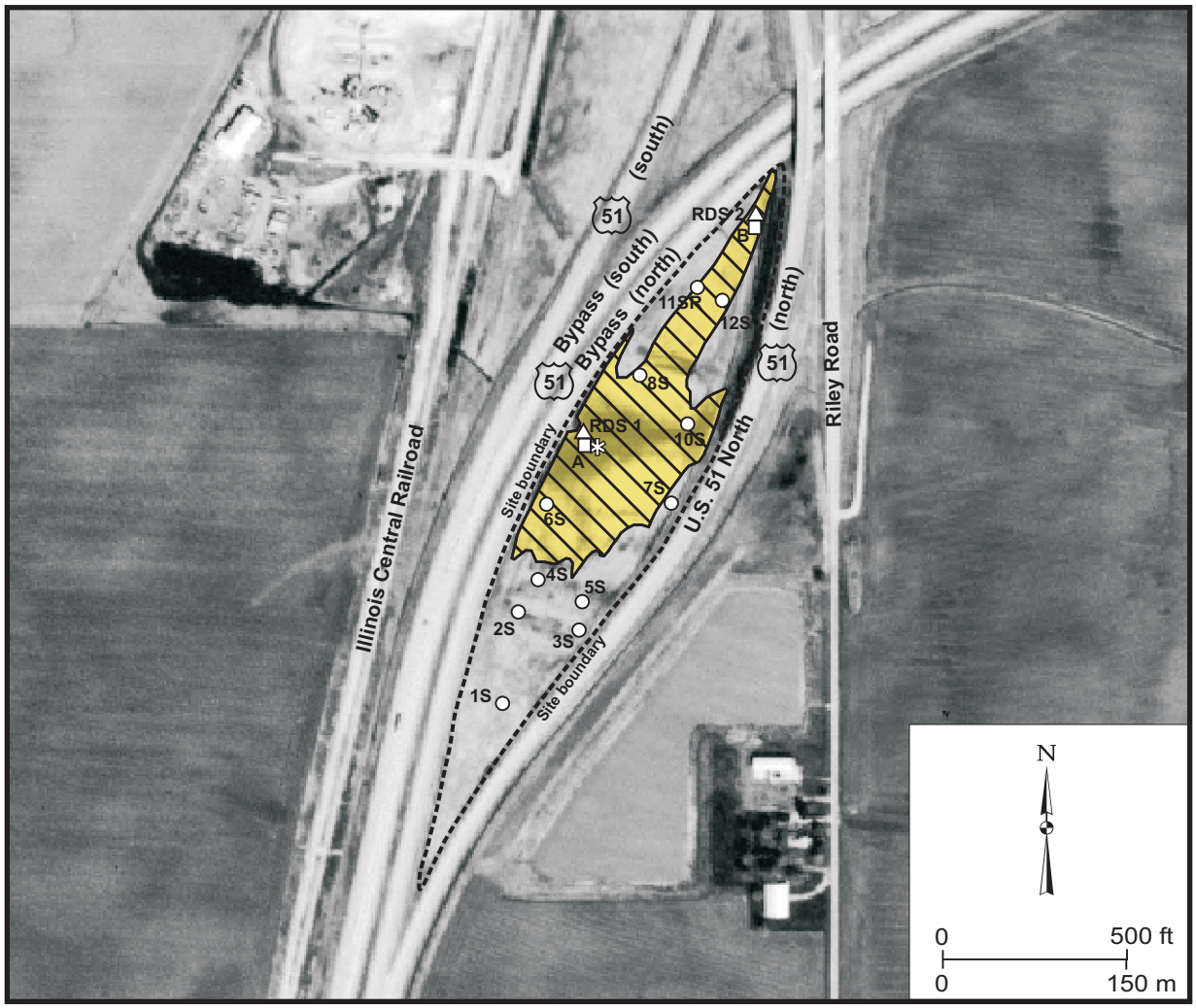


Decatur, U.S. Route 51 Wetland Compensation Site
(FAP 322)

Estimated Areal Extent of 2005 Wetland Hydrology

based on data collected between September 1, 2004 and September 1, 2005

Map based on USGS digital orthophotograph Decatur, SW quarter quadrangle
produced from 4/14/98 aerial photography (ISGS 2000)



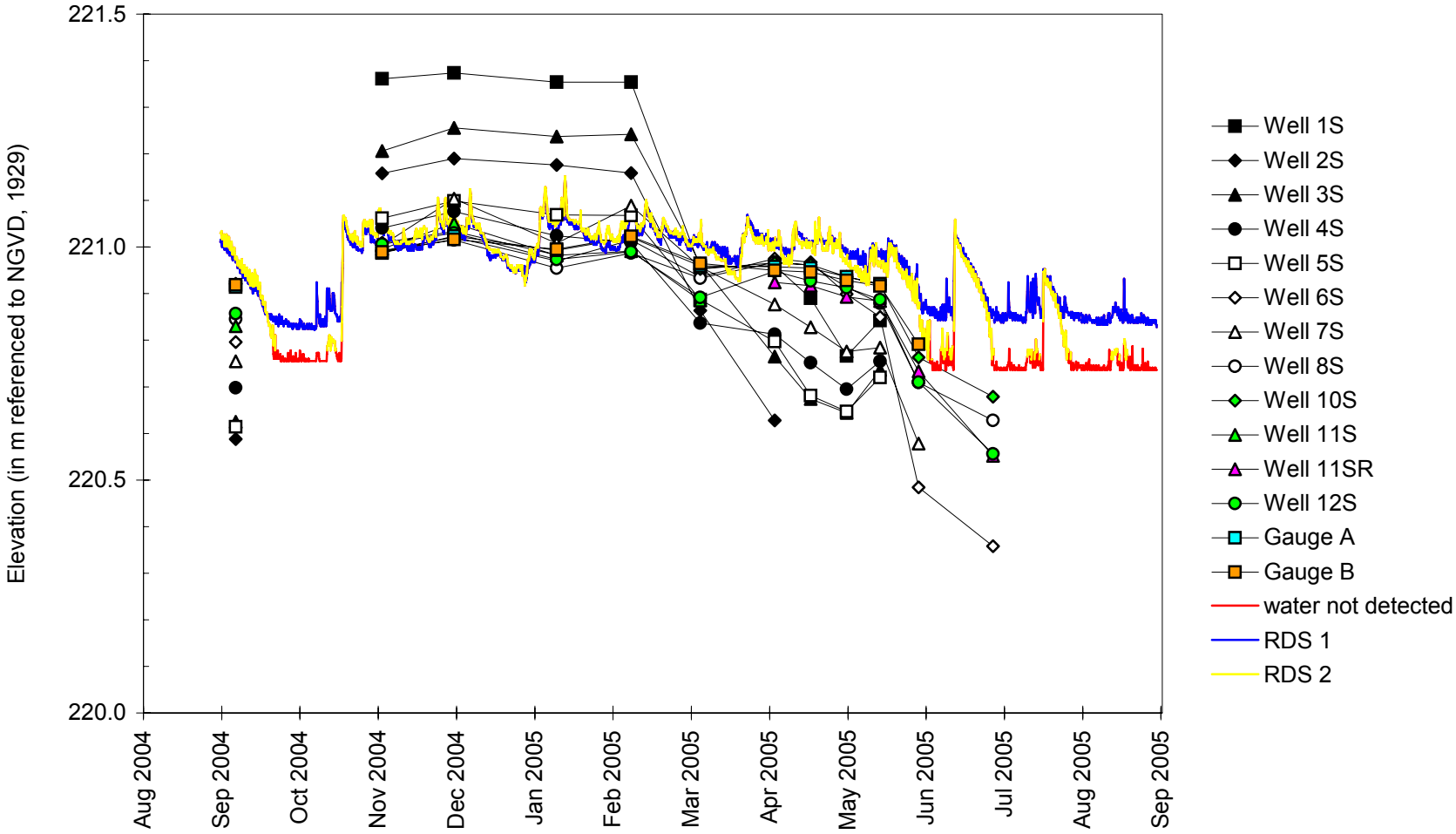
2005 Wetland Hydrology

- >12.5% of the growing season
- >5% of the growing season

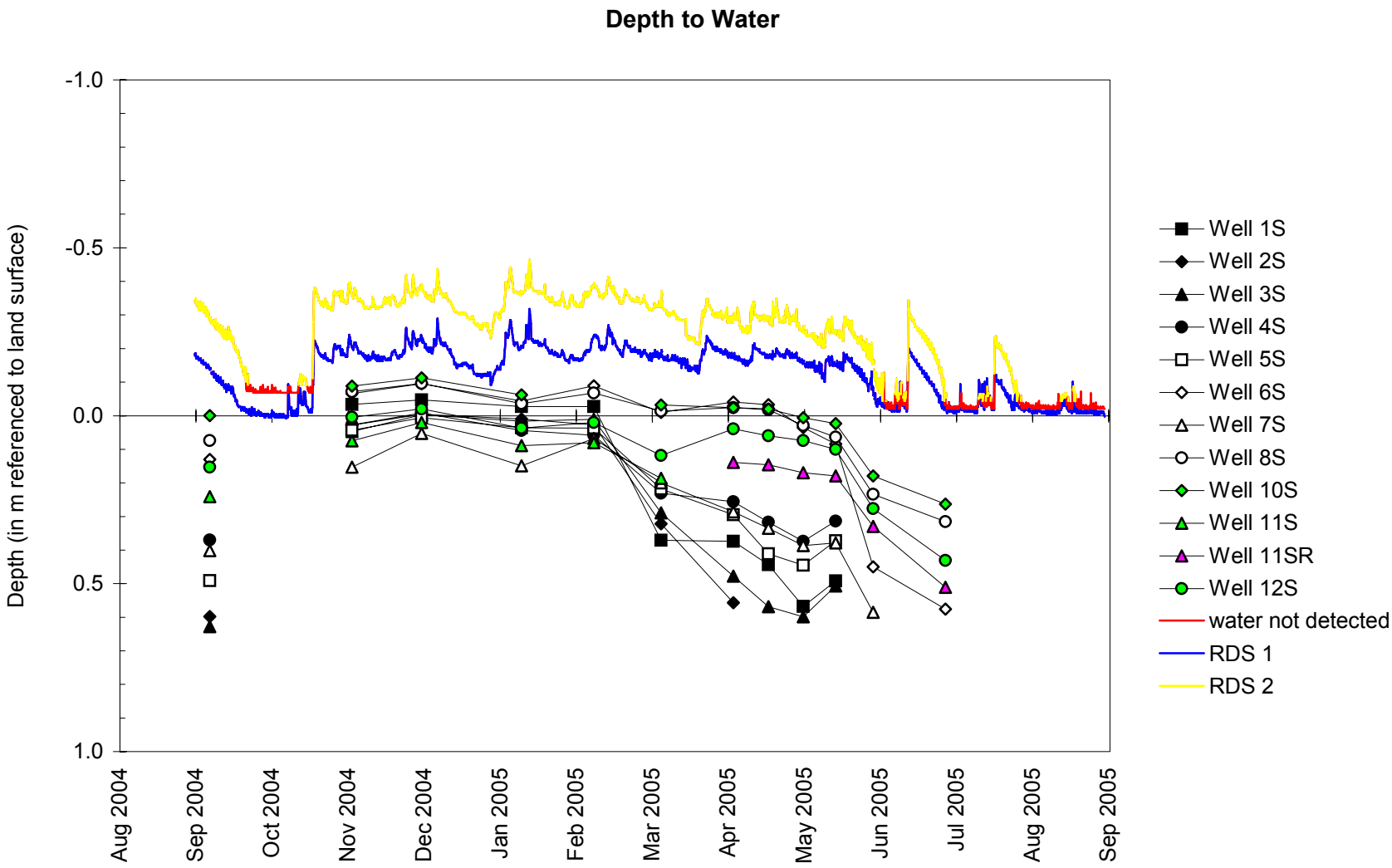
- ○ monitoring well
- □ stage gauge
- △ RDS data logger
- ❄ rain gauge

Decatur, U.S. Route 51 Wetland Compensation Site
September 1, 2004 to September 1, 2005

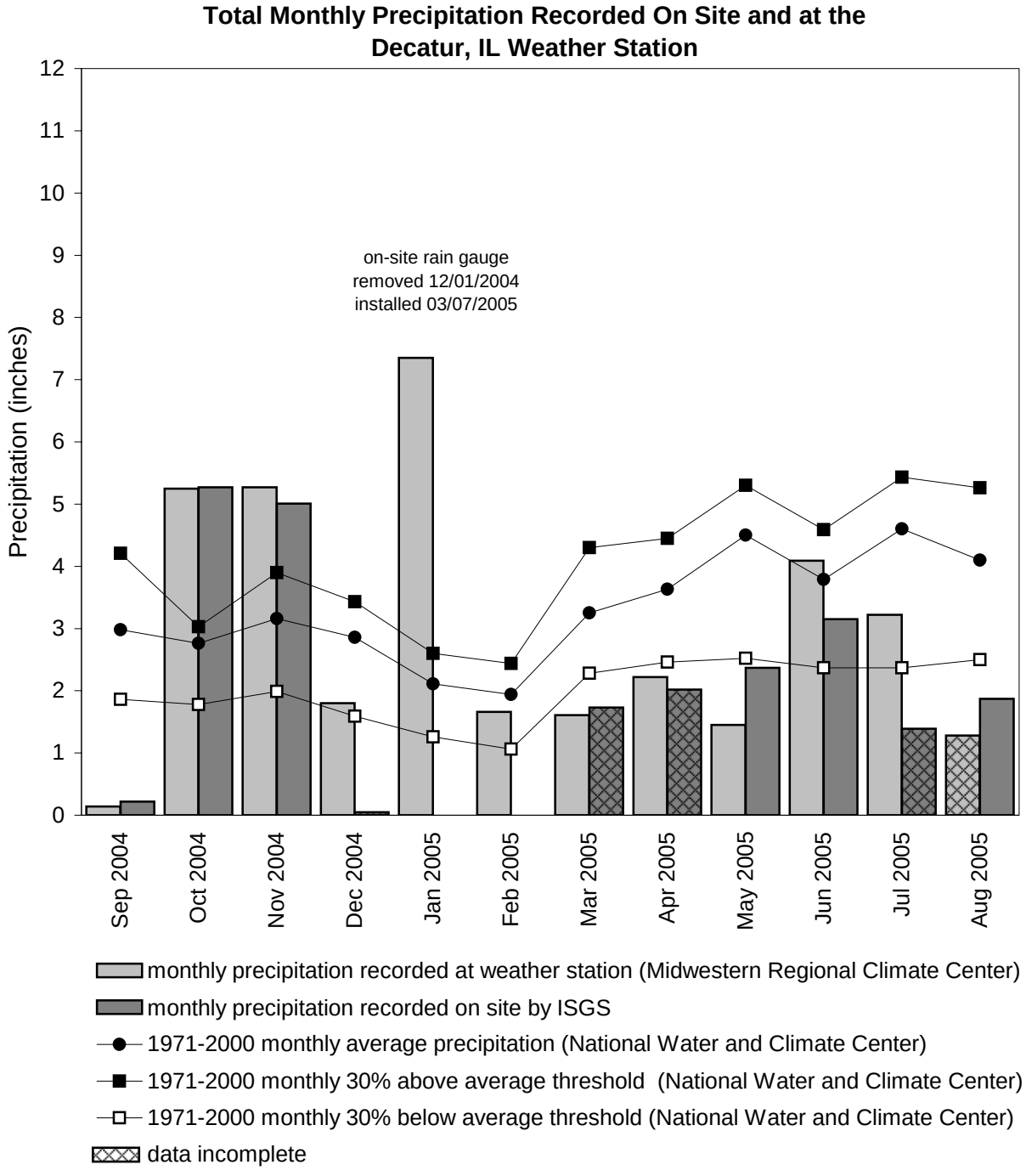
Water-Level Elevation



Decatur, U.S. Route 51 Wetland Compensation Site
September 1, 2004 to September 1, 2005



Decatur Wetland Compensation Site
September 2004 through August 2005



Graph last updated October 24, 2005

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

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 additional soil-zone wells for further definition of the extent of wetland hydrology.

WETLAND HYDROLOGY CALCULATION FOR 2005

We estimate that the total area that satisfied wetland hydrology criteria (Environmental Laboratory 1987) for greater than 5% of the 2005 growing season was 1.9 ha (4.7 ac) out of a site area of 4.3 ha (10.5 ac). In addition, the area that satisfied wetland hydrology criteria for greater than 12.5% of the growing season in 2005 was 1.8 ha (4.6 ac). These estimates are based on the following factors:

- According to the Midwestern Climate Center, the median date that the growing season begins in nearby Burlington, Iowa, is April 7 and the season lasts 206 days; 5% of the growing season is 10 days, and 12.5% of the growing season is 26 days.
- Total precipitation for the period September 2004 to August 2005 was 27.57 inches, which was 93% of normal. Precipitation in October 2004, November 2004, January 2005, February 2005, and April 2005 was at or above normal, although total precipitation from March 2005 to June 2005 was only 75% of normal.
- In 2005, water levels in wells 5S, 6VS, 10VS, 11VS, and 12VS satisfied wetland hydrology criteria for greater than 5% of the growing season. With the exception of well 11VS, these wells also satisfied the criteria for more than 12.5% of the growing season.
- Surface-water levels measured at RDS 1 reveal that inundation occurred at an elevation of 157.36 m (516.27 ft) for more than 5% of the growing season, and at 157.35 m (516.24 ft) for more than 12.5% of the growing season.
- Limitations of the wetland hydrology determination are as follows:
  - The base map used to determine the acreage of the wetland hydrology is an IDOT construction plan of the proposed wetland basin prior to construction. No as-built topographic survey of the site was provided by IDOT.

- The area of wetland hydrology was measured planimetrically on the construction plan. The construction plan was then overlain and adjusted to match the digital orthophotography to produce the figure shown in this report.

PLANNED FUTURE ACTIVITIES

- Post-construction monitoring has been performed for a total of eight years at this site. Monitoring will continue until no longer required by IDOT.

Gulfport Wetland Compensation Site

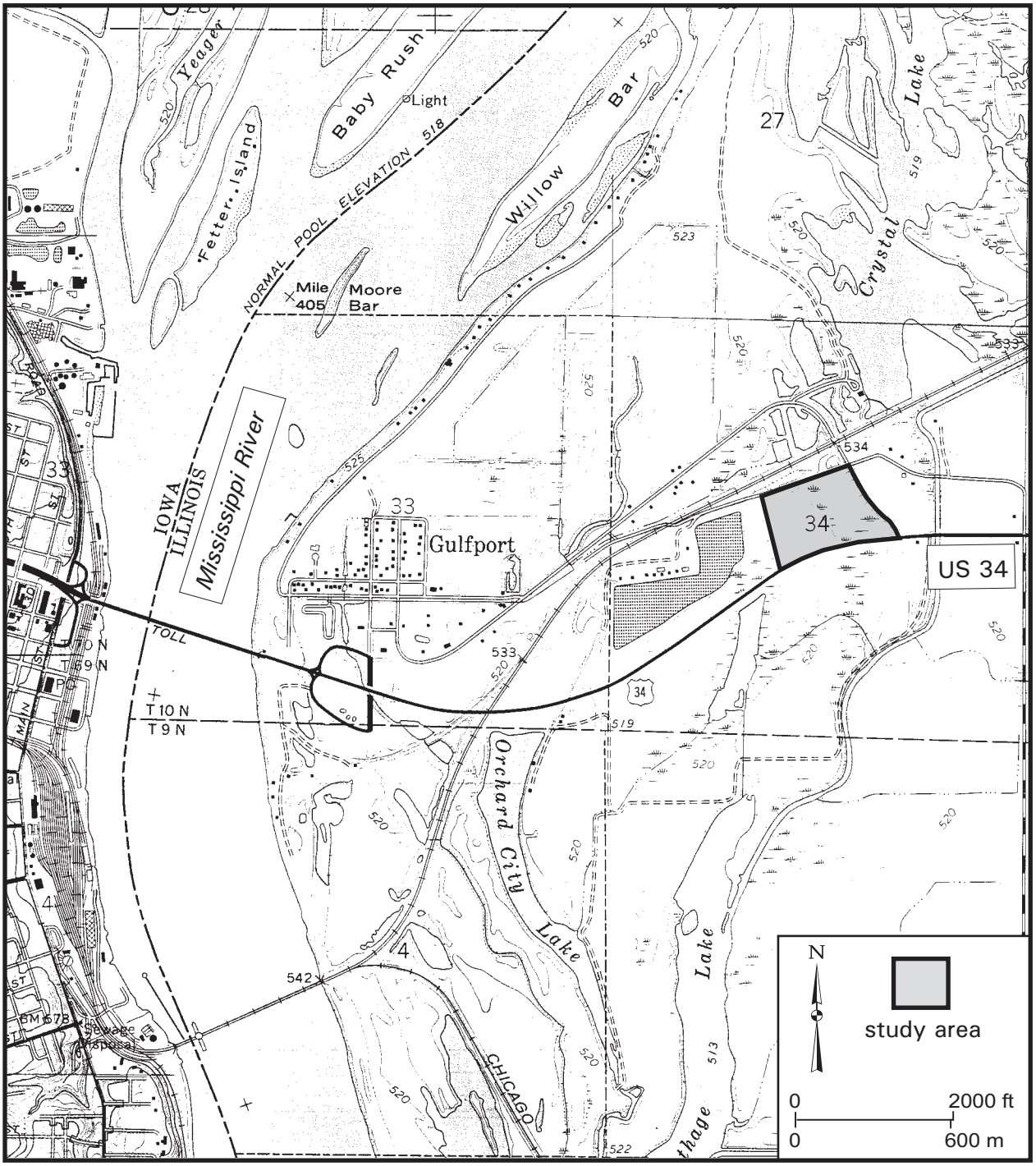
(FAP 313)

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 2005 Wetland Hydrology
based on data collected between September 1, 2004 and September 1, 2005

Map based on USGS digital orthophotograph, Burlington NW quarter quadrangle
produced from 04/14/1998 aerial photography (ISGS 1999)

soil-zone monitoring well

rain gauge

RDS data logger

IDOT construction limits

2005 Wetland Hydrology

>12.5% of growing season

>5% of growing season

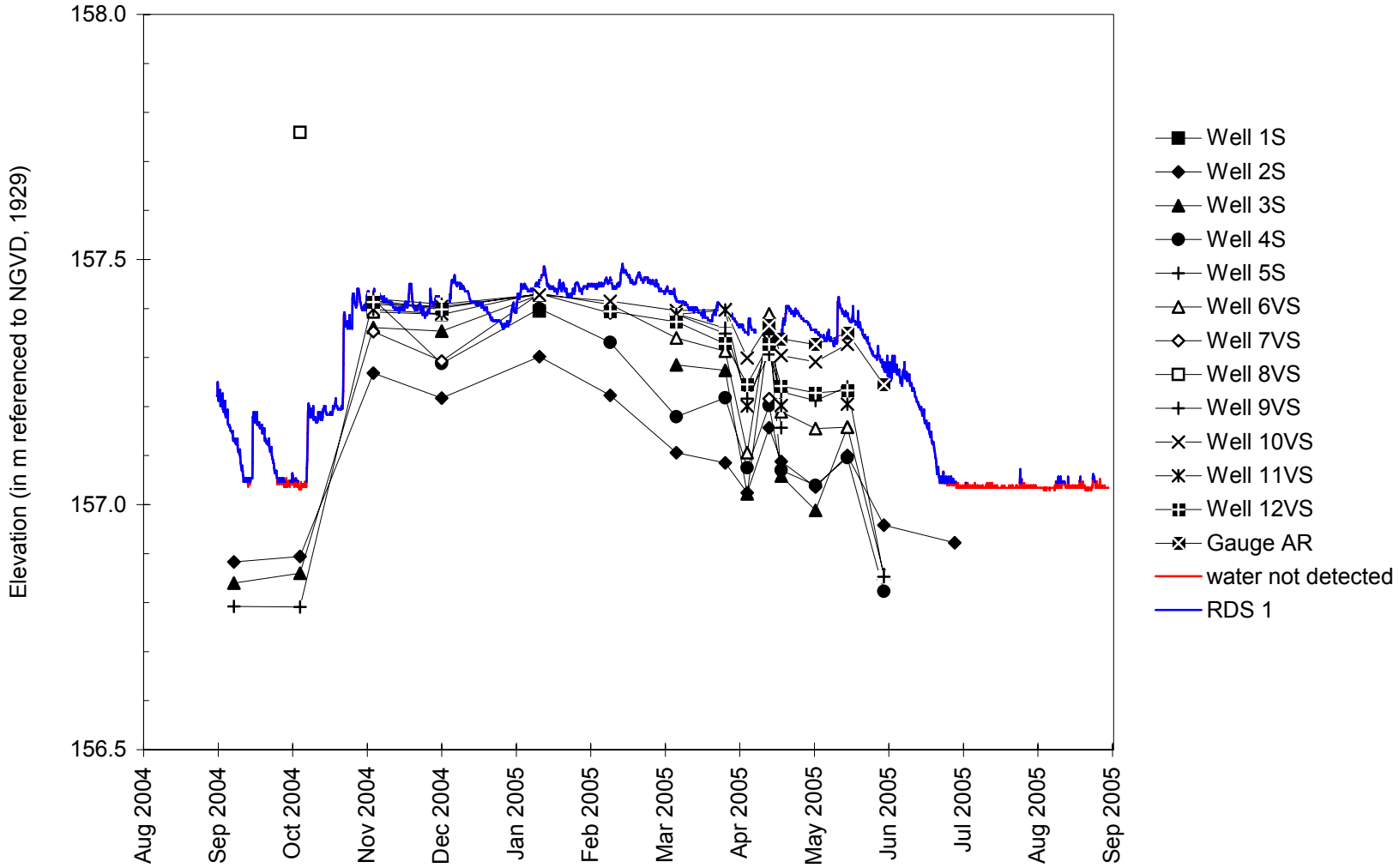
0 200 ft

0 50 m

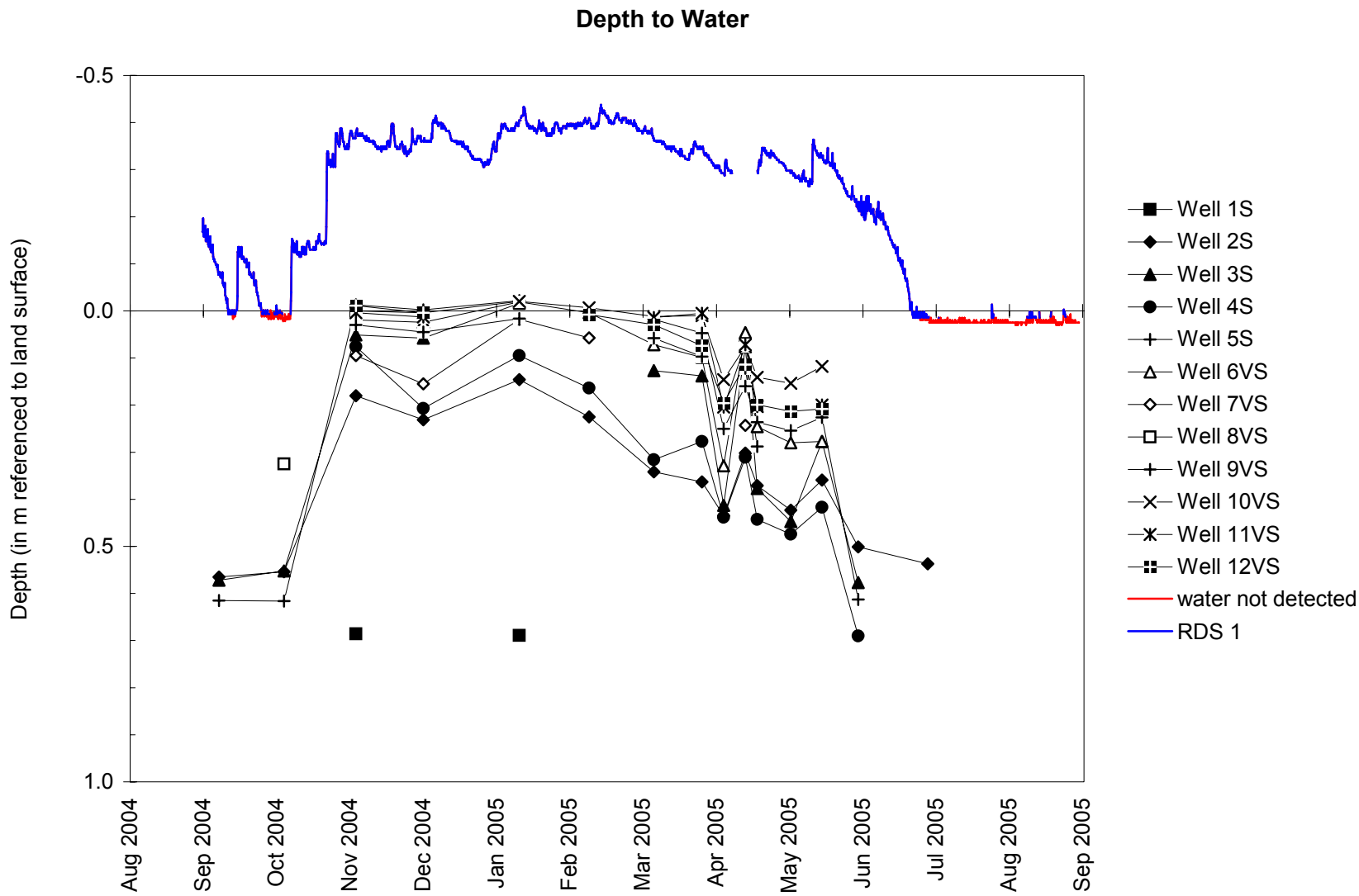
N

Gulfport Wetland Compensation Site
September 1, 2004 to September 1, 2005

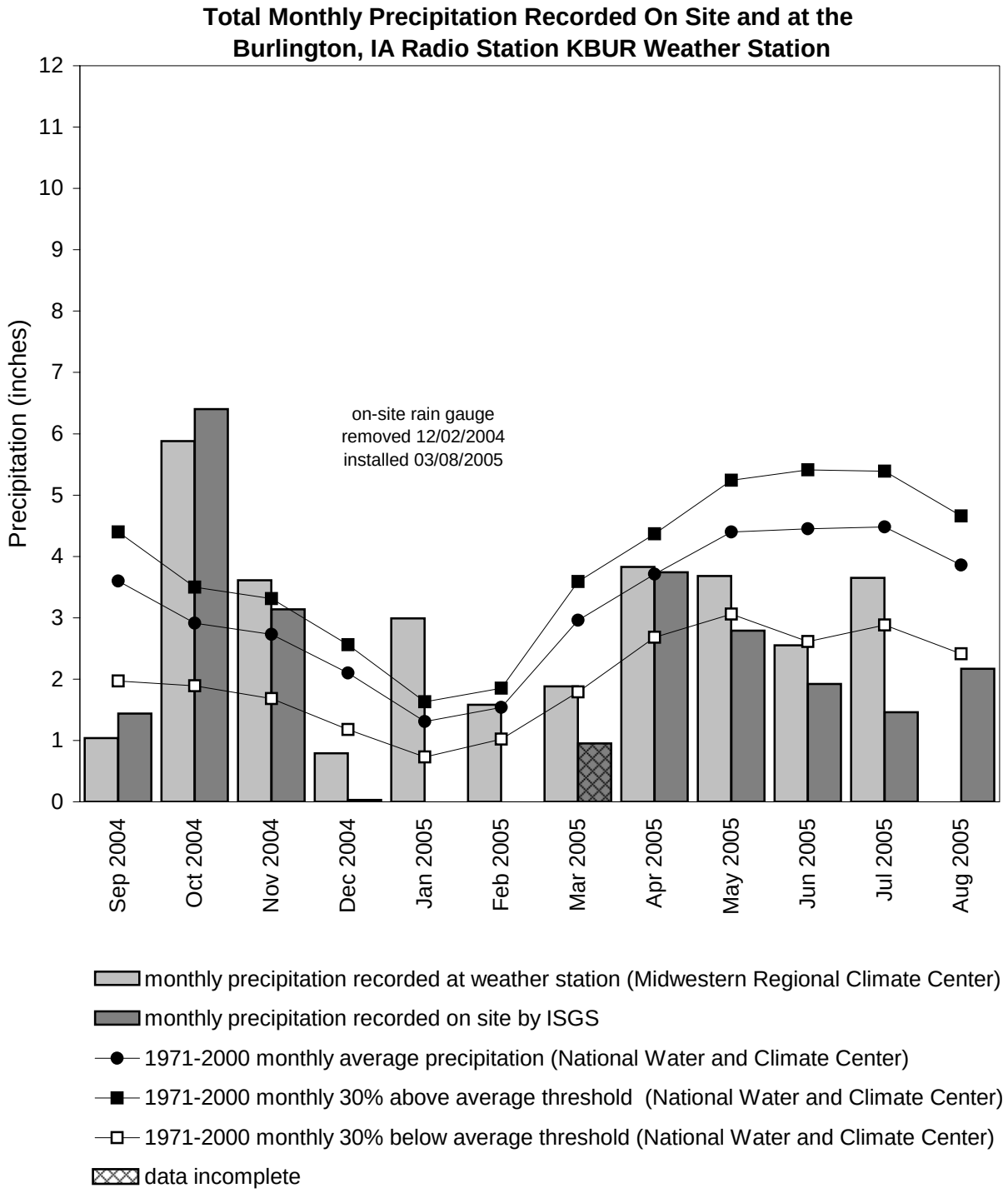
Water-Level Elevations



Gulfport Wetland Compensation Site
September 1, 2004 to September 1, 2005



Gulfport Wetland Compensation Site
September 2004 through August 2005



Graph last updated October 24, 2005

HANCOCK COUNTY NEAR CARTHAGE **ISGS #42**
POTENTIAL WETLAND COMPENSATION SITE
FAP 315 & 10
Hancock County, near Carthage, Illinois
Primary Project Manager: Steven E. Benton
Secondary Project Manager: not assigned

SITE HISTORY

- March 1997: IDOT tasked ISGS to monitor the site.

- February 1998: ISGS installed monitoring wells and began a Level II hydrogeologic characterization of the site.

- 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.

- August 2004: A Level II hydrogeologic characterization report was submitted to IDOT (ISGS Open File Series 2004–13).

WETLAND HYDROLOGY CALCULATION FOR 2005

The area of the site that satisfied wetland hydrology criteria (Environmental Laboratory 1987) for more than 5% of the 2005 growing season was estimated to be 6.0 ha (14.9 ac) out of an area of 17.9 ha (44.3 ac). The area of the site that satisfied wetland hydrology criteria for more than 12.5% of the growing season was estimated to be 5.7 ha (14.1 ac). These estimates are based on the following factors:

- According to the Midwestern Climate Center, the median date that the growing season begins in nearby La Harpe, Illinois, is April 9 and the season lasts 196 days; 5% of the growing season is 10 days and 12.5% of the growing season is 25 days.

- Total precipitation recorded at Bentley, Illinois during the 2005 monitoring period was 35.88 inches, which was 97% of normal. Precipitation in October 2004, November 2004, January 2005, February 2005, April 2005, and August 2005 was at or above normal, although precipitation for the period of March 2005 to August 2005 was only 72% of normal.

- In 2005, water levels measured in wells 1U, 2U, 3U, 4U, 5U, 6U, 7S, 8U, 14S, and 16S satisfied the wetland hydrology criteria for more than 5% of the growing season, and, except for 7S, water levels measured in these wells also satisfied the wetland hydrology criteria for more than 12.5% of the growing season.

- Surface-water elevations measured at RDS 1 reveal that inundation occurred at an elevation of 165.35 m (542.49 ft) for more than 12.5% of the growing season, and at 165.37 m (542.55 ft) for more than 5% of the growing season. At RDS 2, inundation occurred at an elevation of 165.57 m (543.21 ft) for more than 12.5% of the growing

season, and at an elevation of 165.65 m (543.47 ft) for more than 5% of the growing season. At RDS 3, inundation did not occur for any significant period of time.

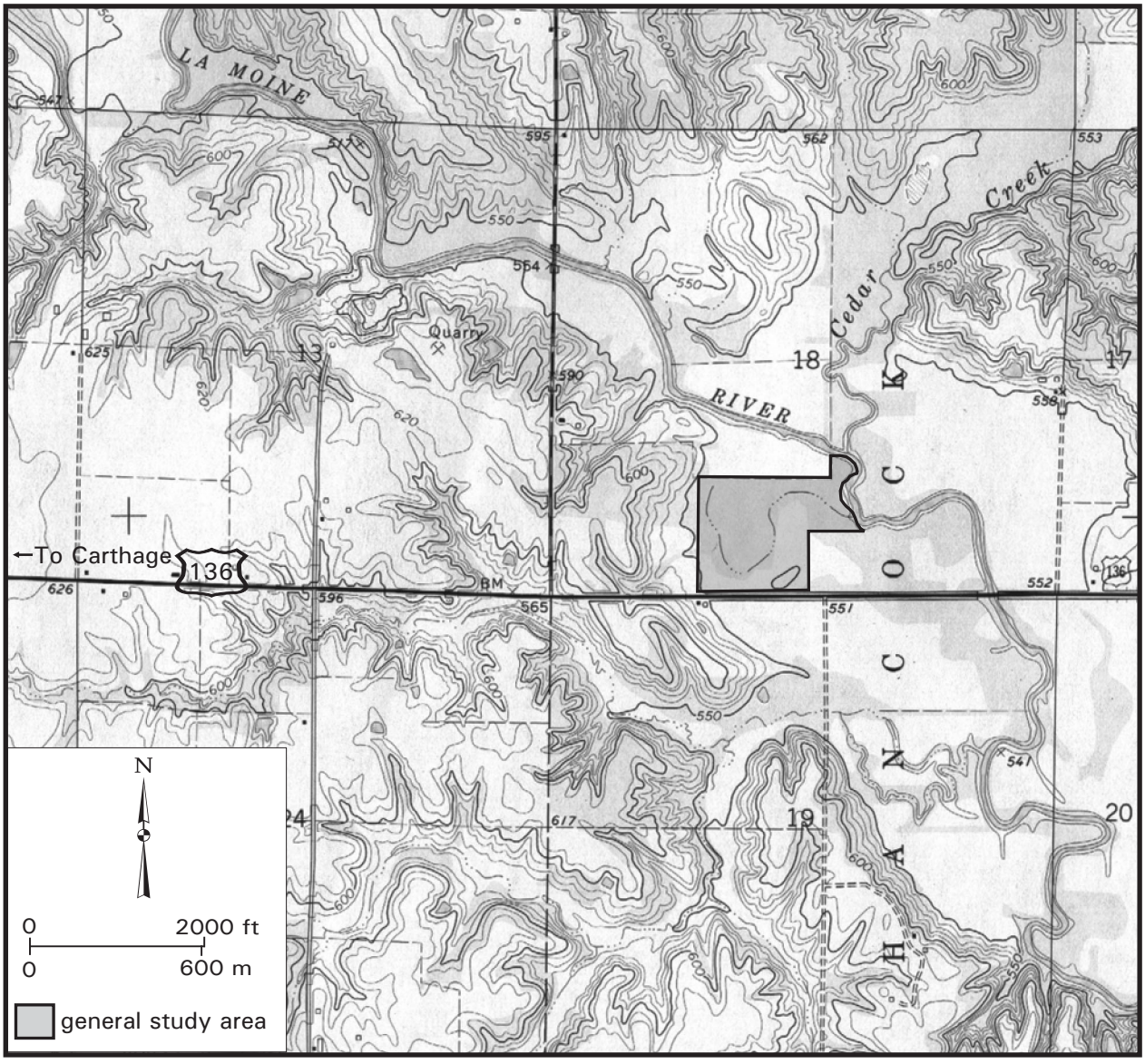
PLANNED FUTURE ACTIVITIES

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

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

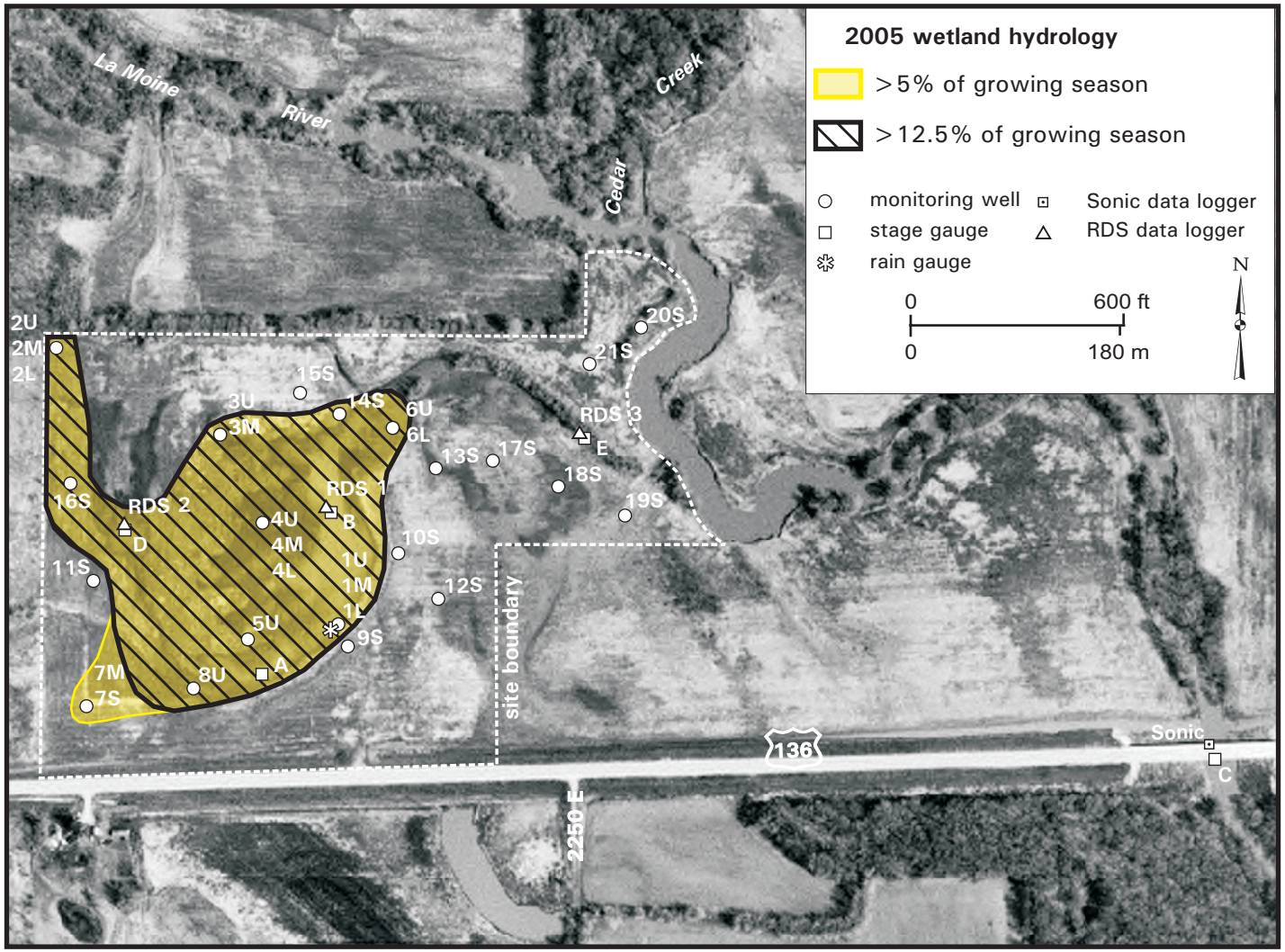


Hancock County near Carthage Potential Wetland Compensation Site (FAP 315 and FAP 10)

Extent of 2005 Wetland Hydrology

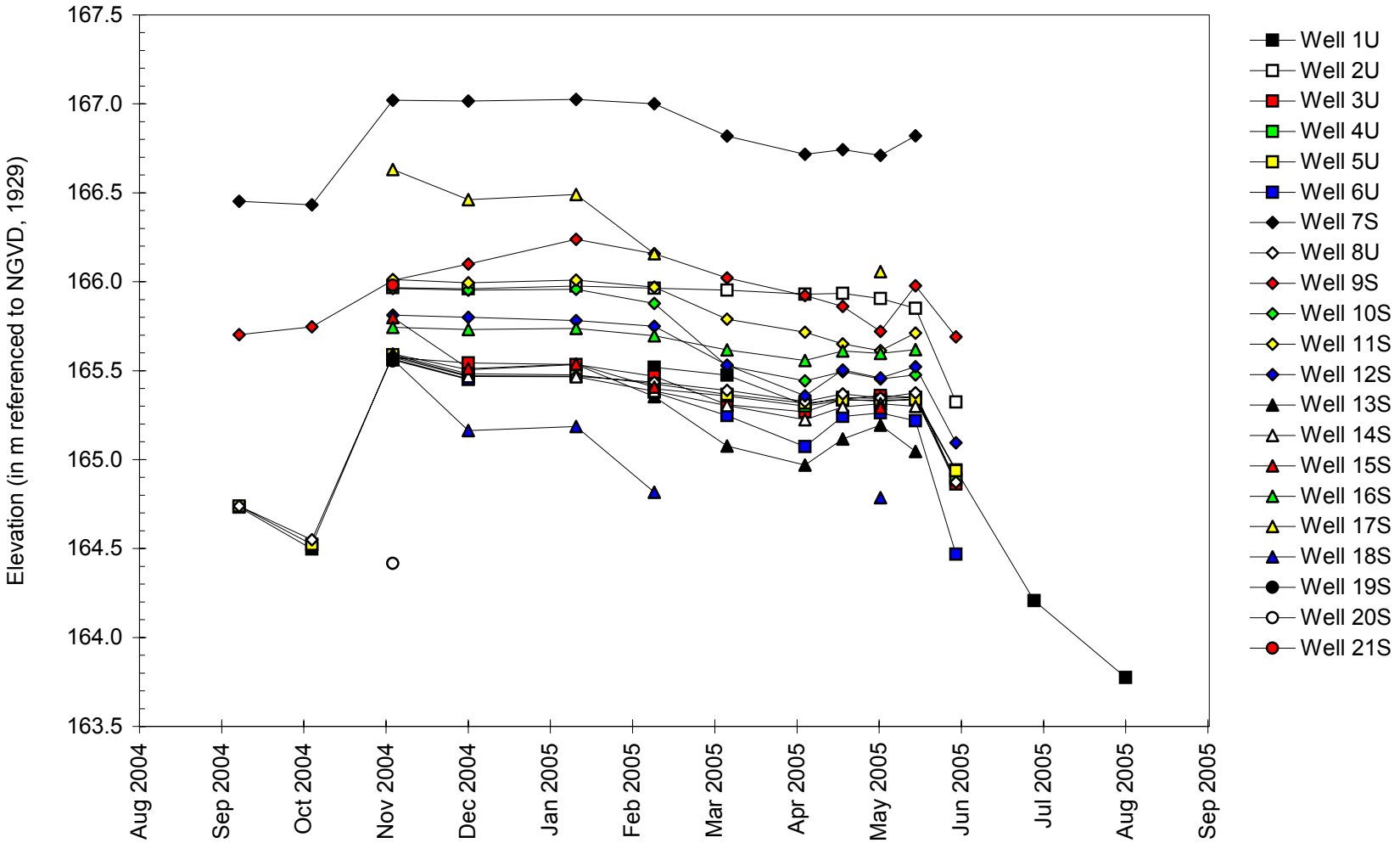
based on data collected between September 1, 2004 and September 1, 2005

Map based on USGS digital orthophotograph Carthage East, SE quarter quadrangle
produced from 4/14/98 aerial photography (ISGS 2002)



Hancock County near Carthage Potential Wetland Compensation Site
September 1, 2004 to September 1, 2005

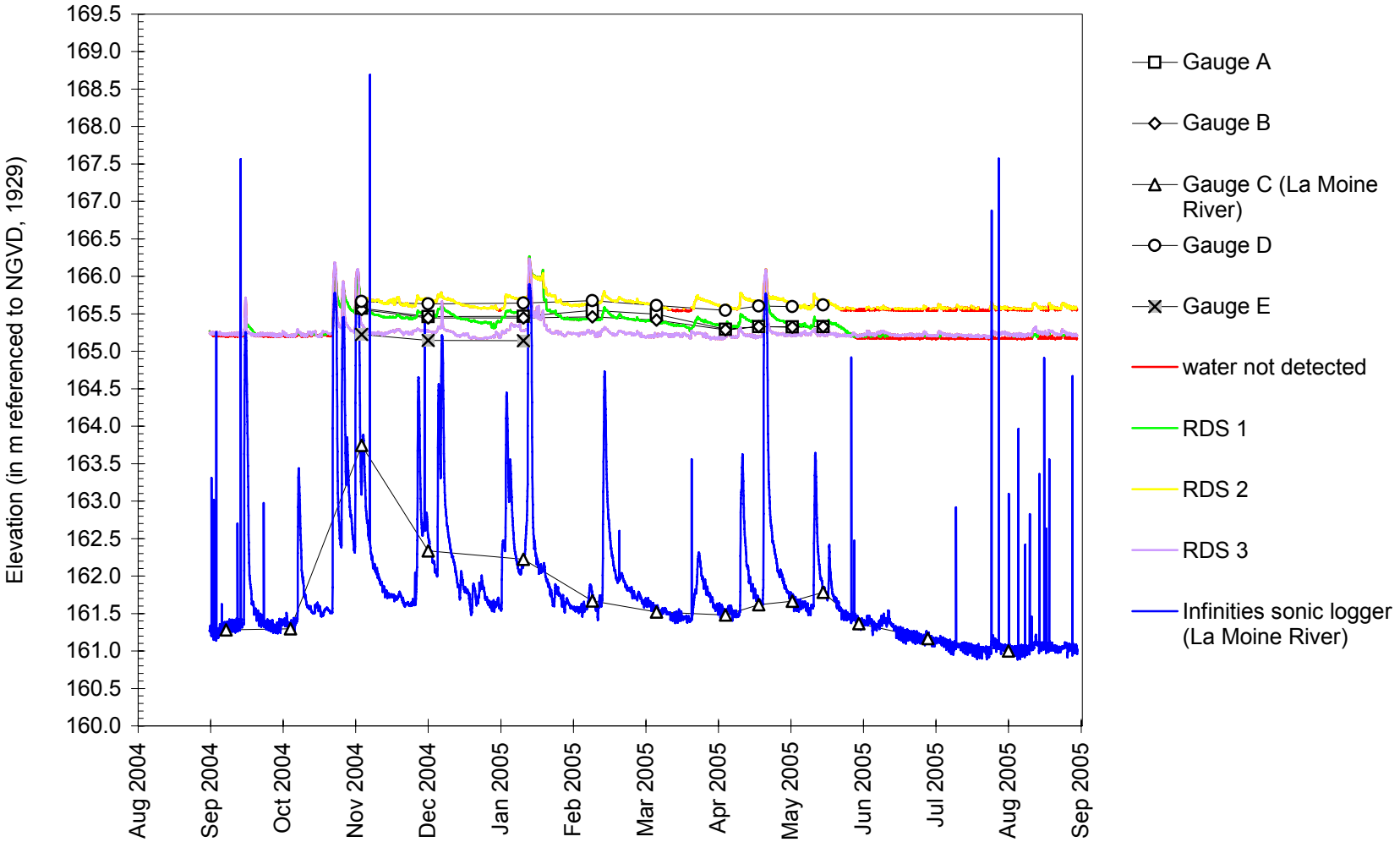
Water-Level Elevations
in Wells Used to Determine Areas Satisfying Wetland Hydrology Criteria



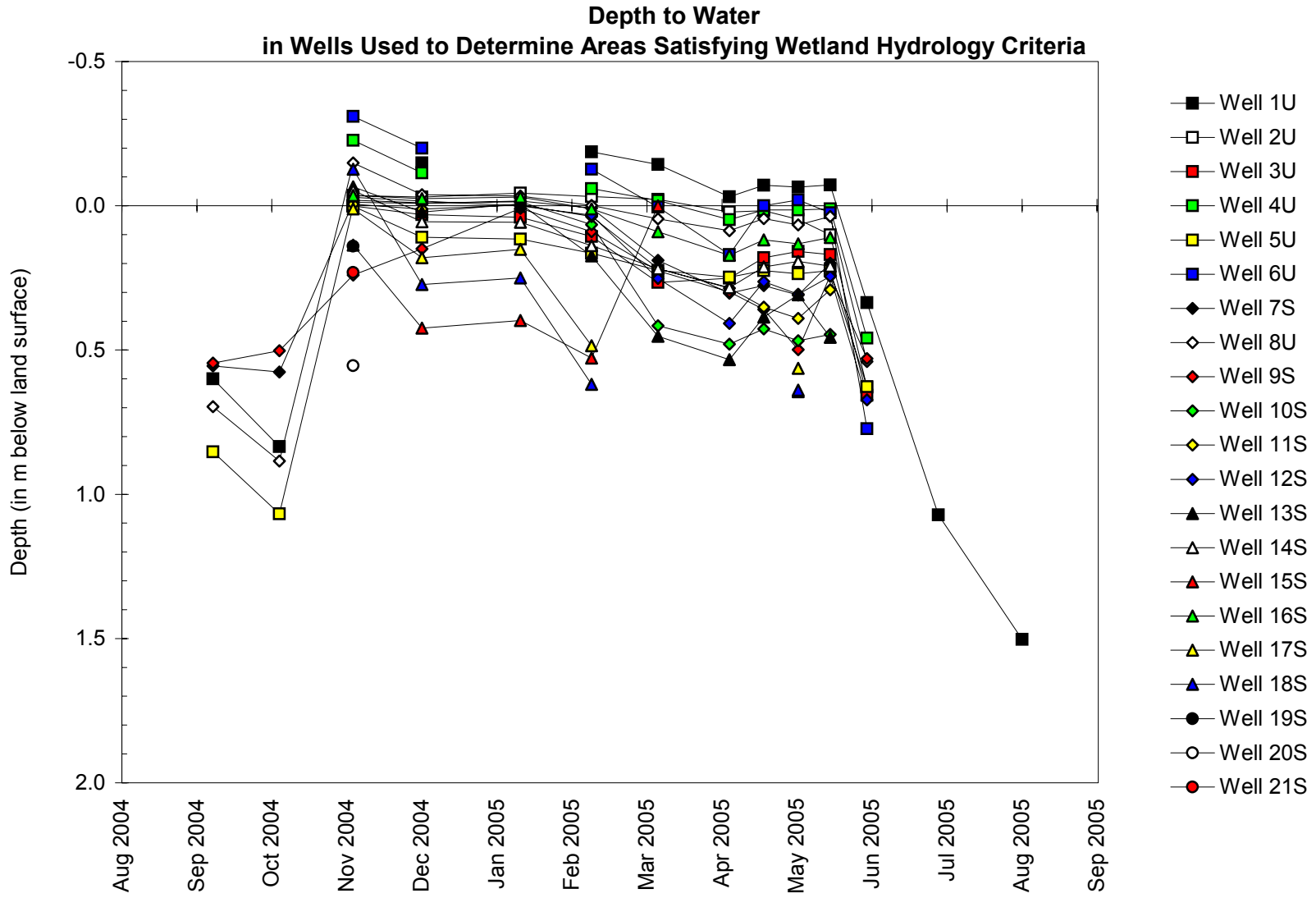
Hancock County near Carthage Potential Wetland Compensation Site

September 1, 2004 to September 1, 2005

Water-Level Elevations on Stage Gauges and at Data Loggers

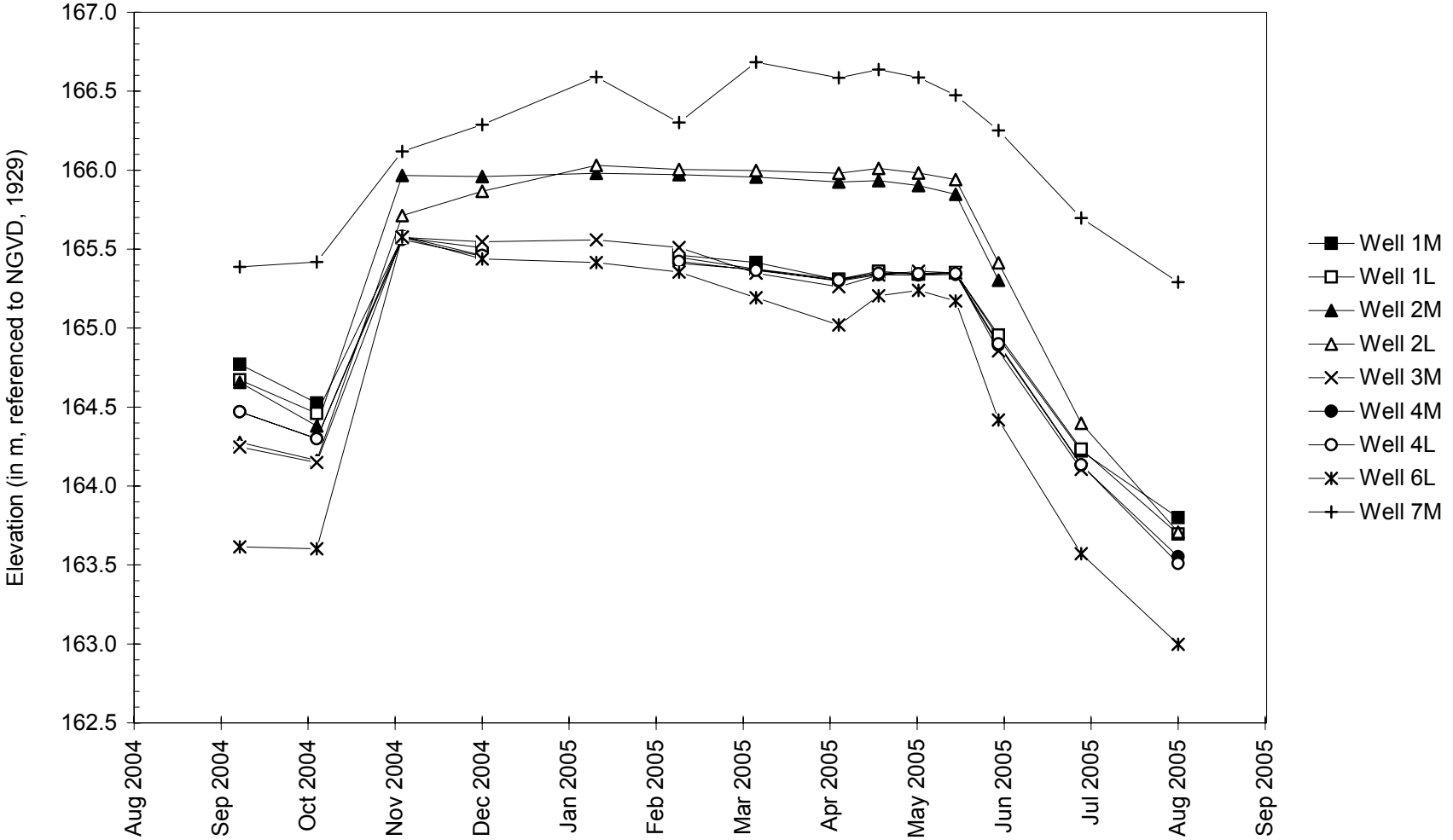


Hancock County near Carthage Potential Wetland Compensation Site
September 1, 2004 to September 1, 2005

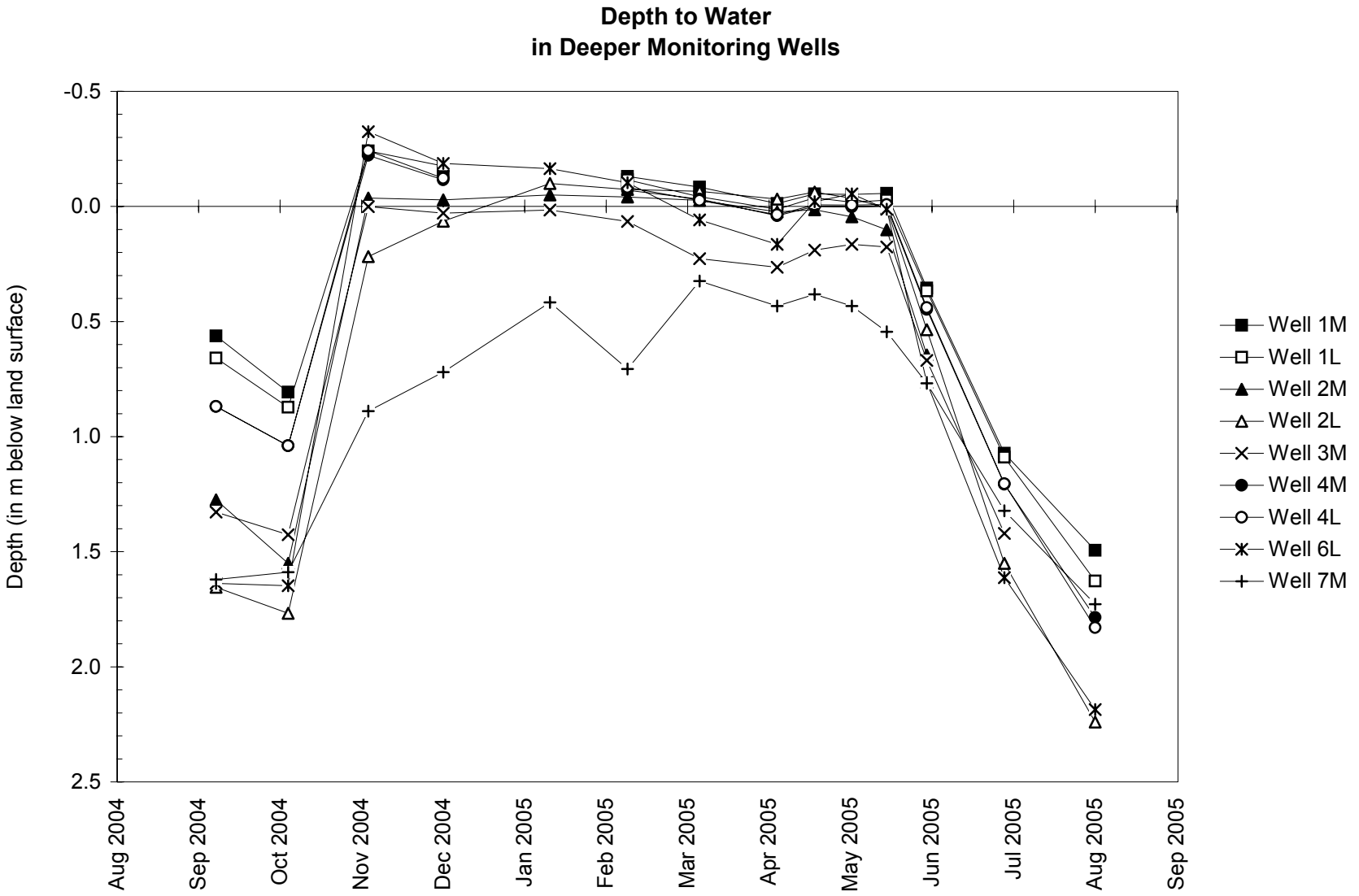


Hancock County near Carthage Potential Wetland Compensation Site
September 1, 2004 to September 1, 2005

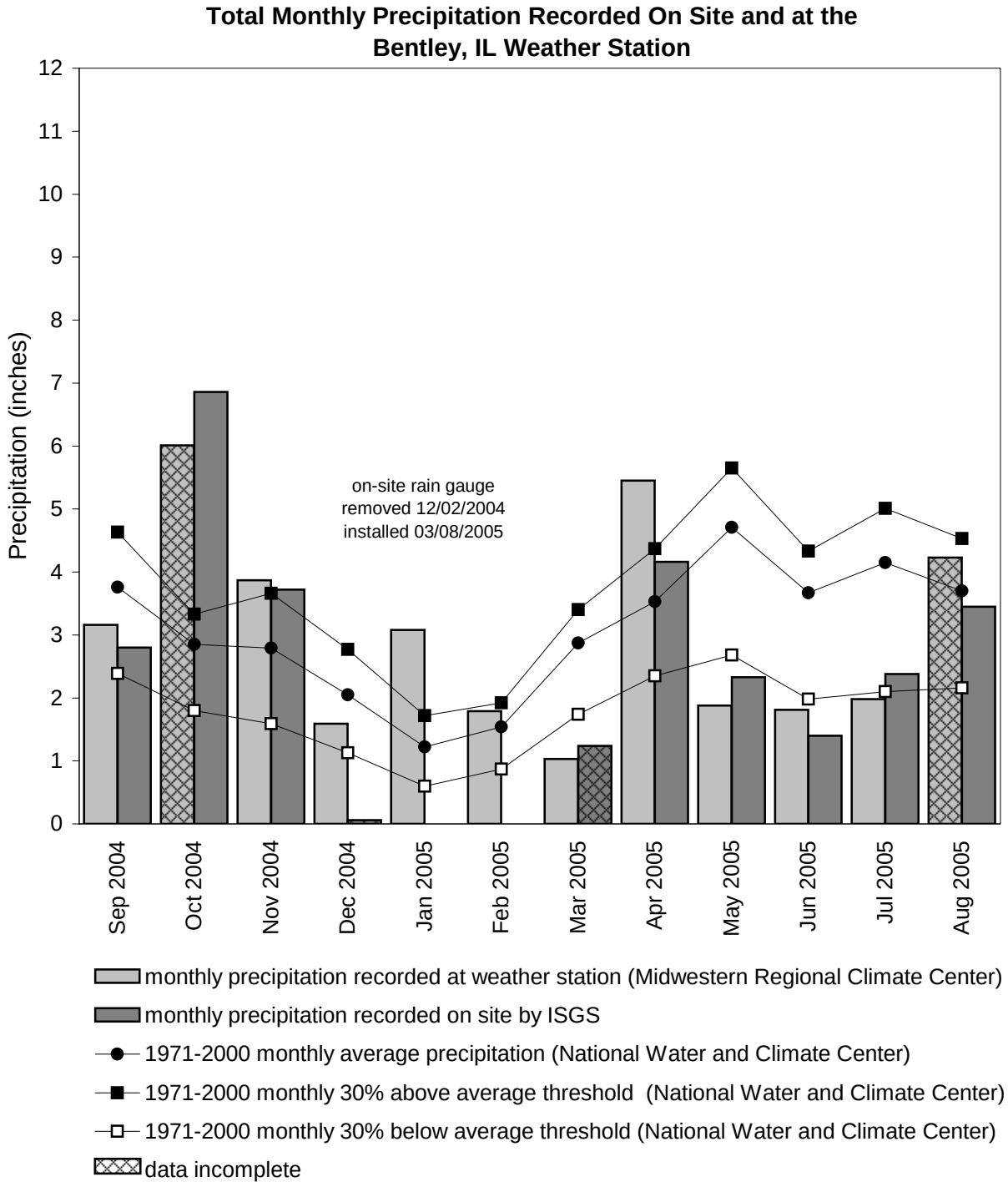
Water-Level Elevations
in Deeper Monitoring Wells



Hancock County near Carthage Potential Wetland Compensation Site
September 1, 2004 to September 1, 2005



Hancock County near Carthage
Potential Wetland Compensation Site
September 2004 through August 2005



Graph last updated October 24, 2005

MORRIS, ILLINOIS RIVER **ISGS #49**
WETLAND BANK SITE
Grundy County, near Morris, Illinois
Primary Project Manager: Keith W. Carr
Secondary Project Manager: Geoffrey E. Pociask

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.

- March 2001: ISGS reviewed a wetland mitigation plan proposed by IDOT and provided general information regarding site hydrological conditions.

- April 2003: During this month, drainage tile removal activities began in the east field, an area also known as the "spider" field. A second segment of tile was removed from this field during December of 2003. This concluded tile removal work at the bank site.

- Spring 2004: Trees were planted over large areas of the site. These areas, generally within soil units mapped by the NRCS and INHS as hydric, are fields slated for wetland restoration in the IDOT banking instrument.

WETLAND HYDROLOGY CALCULATION FOR 2005

We estimate that the total area of the site that satisfied the wetland hydrology criteria (Environmental Laboratory 1987) for greater than 5% of the growing season in 2005 was 1.75 ha (4.32 ac). Also in 2005, 1.13 ha (2.78 ac) satisfied wetland hydrology criteria for greater than 12.5% of the growing season. These estimates are based on the following factors:

- According to the Midwestern Climate Center, the median date that the growing season begins in Morris, Illinois, is April 13 and the season lasts 187 days; 5% of the growing season is 9 days and 12.5% of the growing season is 23 days.

- Total precipitation for the monitoring period was 83% of normal. Further, in the critical April to June period, precipitation dropped off sharply to only 51% of normal.

- In 2005, water levels measured in 3 of the 49 soil-zone monitoring wells (21S, 43S, and 43VS) satisfied wetland hydrology criteria for a period greater than 5% of the growing season, yielding a total acreage of 0.62 ha (1.54 ac) which satisfied wetland hydrology criteria in the "spider" field (also known as the "east" field). No wells satisfied wetland hydrology criteria for a period greater than 12.5% of the growing season. This portion of the site is a designated area of wetland restoration in the banking instrument.

- In the 2004–2005 season, two flood events from the Illinois and Mazon Rivers reached a peak stage value sufficient to inundate areas at or below 150.27 m (493 ft), an elevation encompassing the most extensive of the areas of the site undergoing wetland restoration. These two floods, however, occurred in December 2004 and January 2005 and were

therefore outside of the growing season. Thus, the major source of water delivery to the site, overland flooding, was entirely absent during the growing season.

- According to staff gauge data, a closed depression at SW5 with an area of 0.33 ha (0.82 ac) was inundated for a period greater than 5% of the growing season to a level of 150.42 m (493.51 ft). The same acreage of 0.33 ha (0.82 ac) was also inundated for a period greater than 12.5% of the growing season to a level of 150.40 m (493.43 ft). Also, a second closed depression near SW7 with an area of 0.79 ha (1.96 ac) was inundated for a period greater than 5% of the growing season to a level of 149.84 m (491.60 ft). The same acreage of 0.79 ha (1.96 ac) was inundated for a period greater than 12.5% of the growing season to a level of 149.74 m (491.27 ft). Both of these locations are designated areas of wetland preservation in the banking instrument.

- As in previous years, perennial water bodies such as the creek channels were not included in areas having met wetland hydrology criteria.

PLANNED FUTURE ACTIVITIES

- Monitoring will continue until no longer required by IDOT.

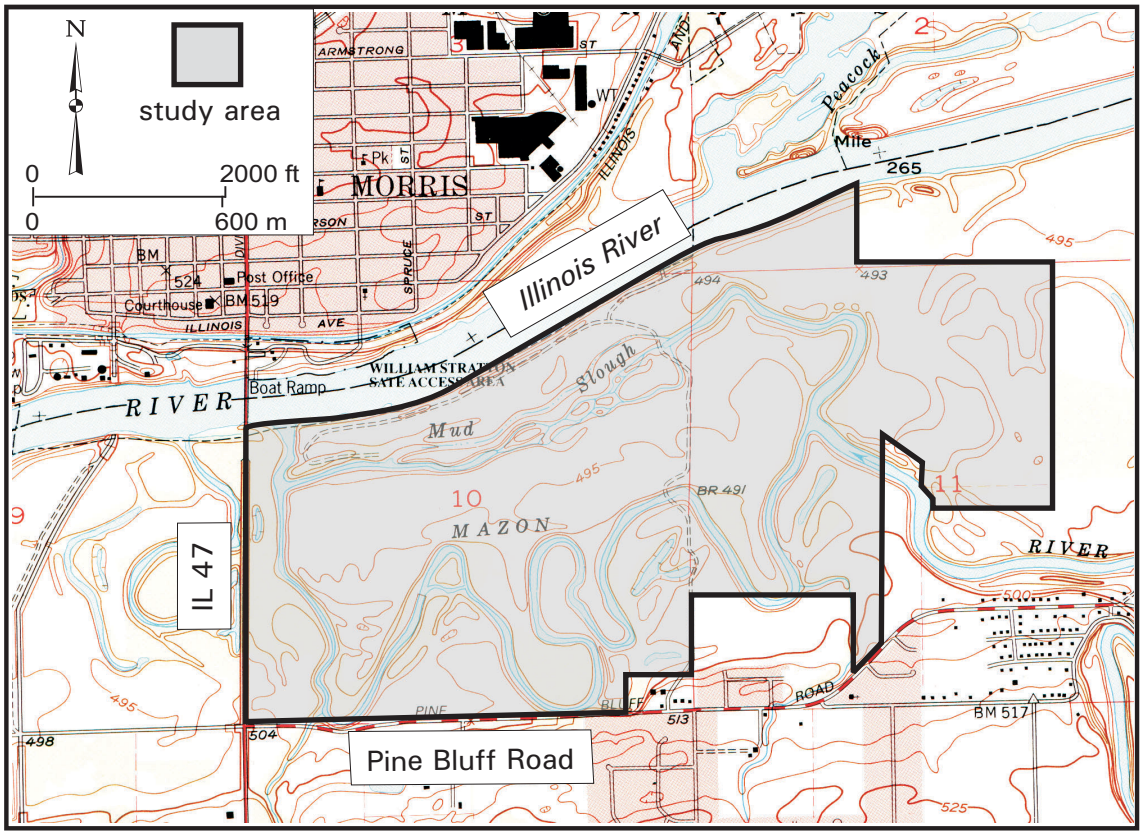
- Site instrumentation will be altered in the spring of 2006. A number of soil zone wells will be removed in areas not slated for wetland preservation, enhancement, or restoration.

- A Level II hydrogeological characterization report is under preparation for submission to IDOT.

Morris, Illinois River Wetland Bank Site

General Study Area and Vicinity

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

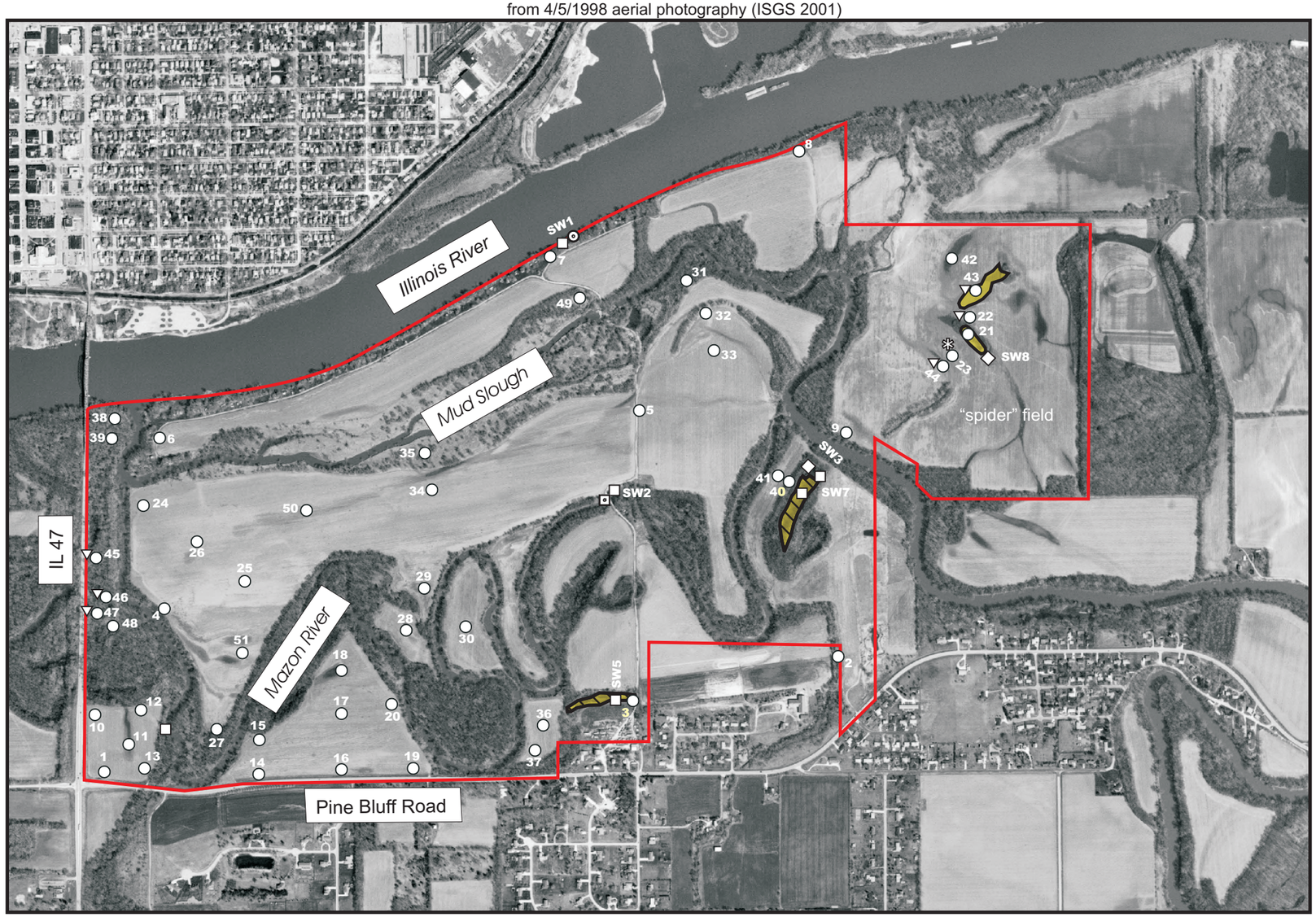


Morris, Illinois River Wetland Bank Site

Estimated Areal Extent of 2005 Wetland Hydrology

based on data collected between September 1, 2004 and September 1, 2005

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



LEGEND

2005 WETLAND HYDROLOGY

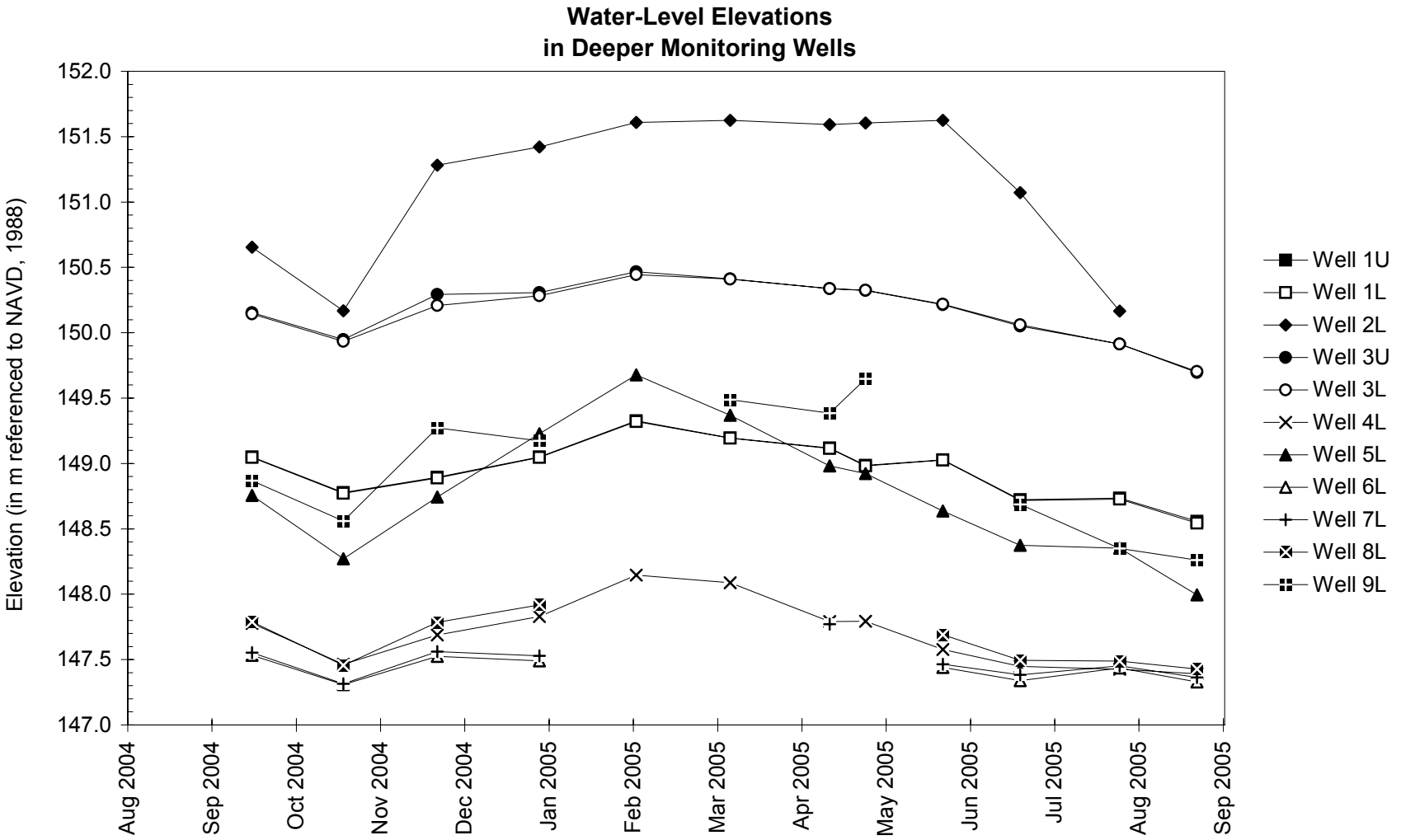
- > 5% of the growing season
- > 12.5% of the growing season
- approximate site boundary

- ▽ soil-moisture probe
- □ stage gauge
- ⊡ Infinities sonic data logger
- ◇ RDS data logger
- ❄ rain gauge
- ○ ISGS monitoring well
- ⊙ Global data logger

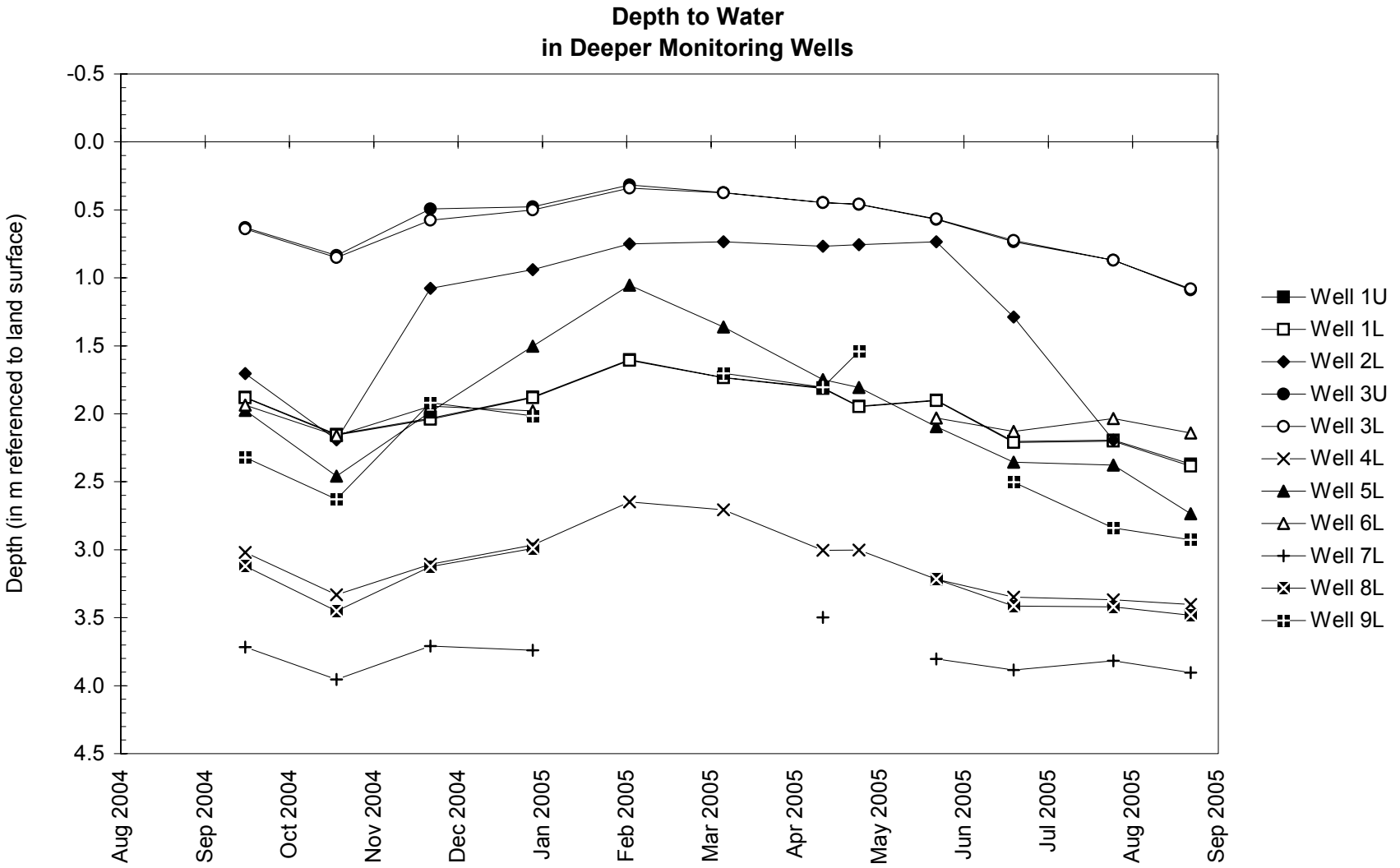
0 500 m
0 1500 ft

N

Morris, Illinois River Potential Wetland Banking Site
September 1, 2004 to September 1, 2005

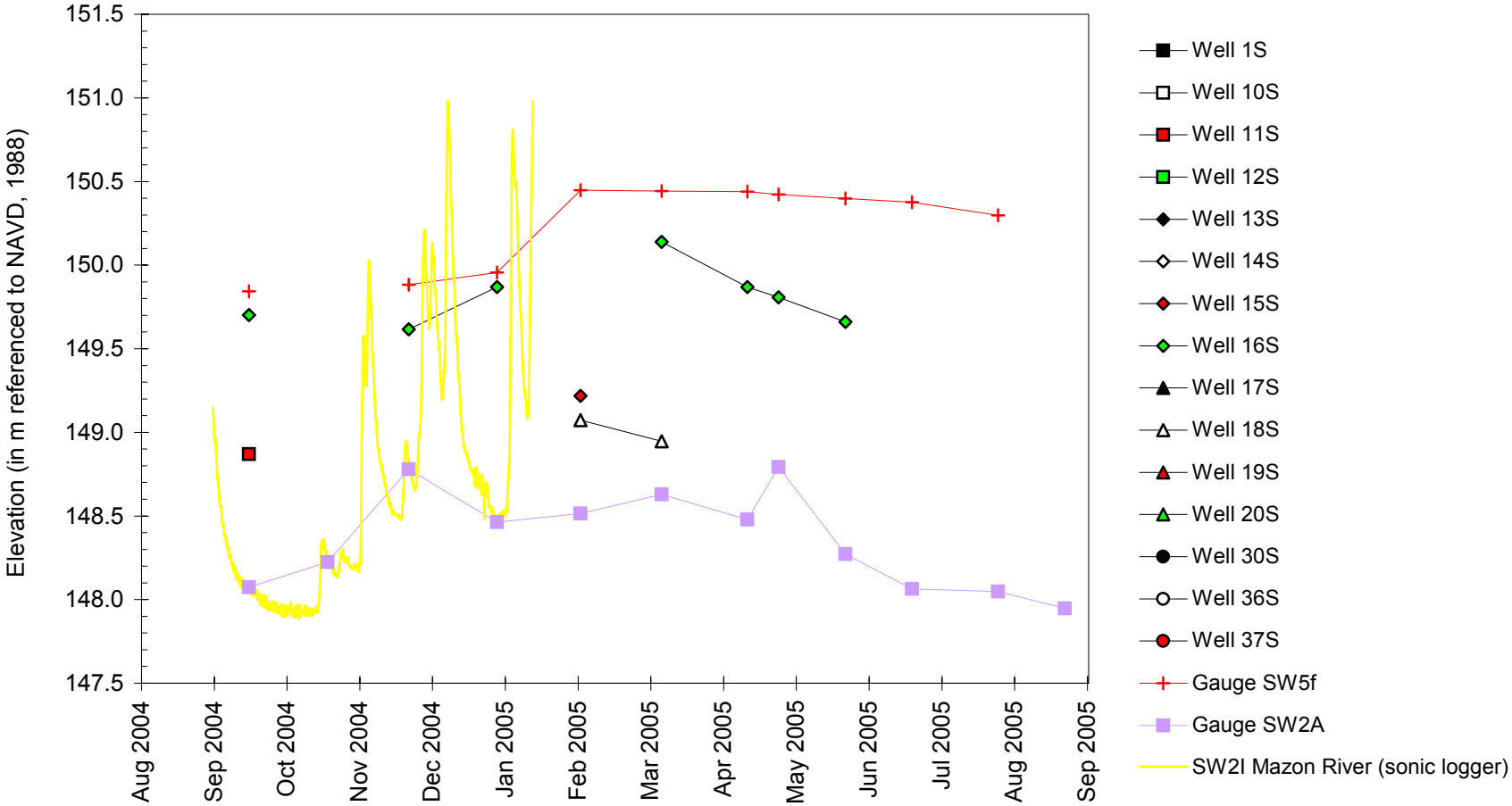


Morris, Illinois River Potential Wetland Banking Site
September 1, 2004 to September 1, 2005

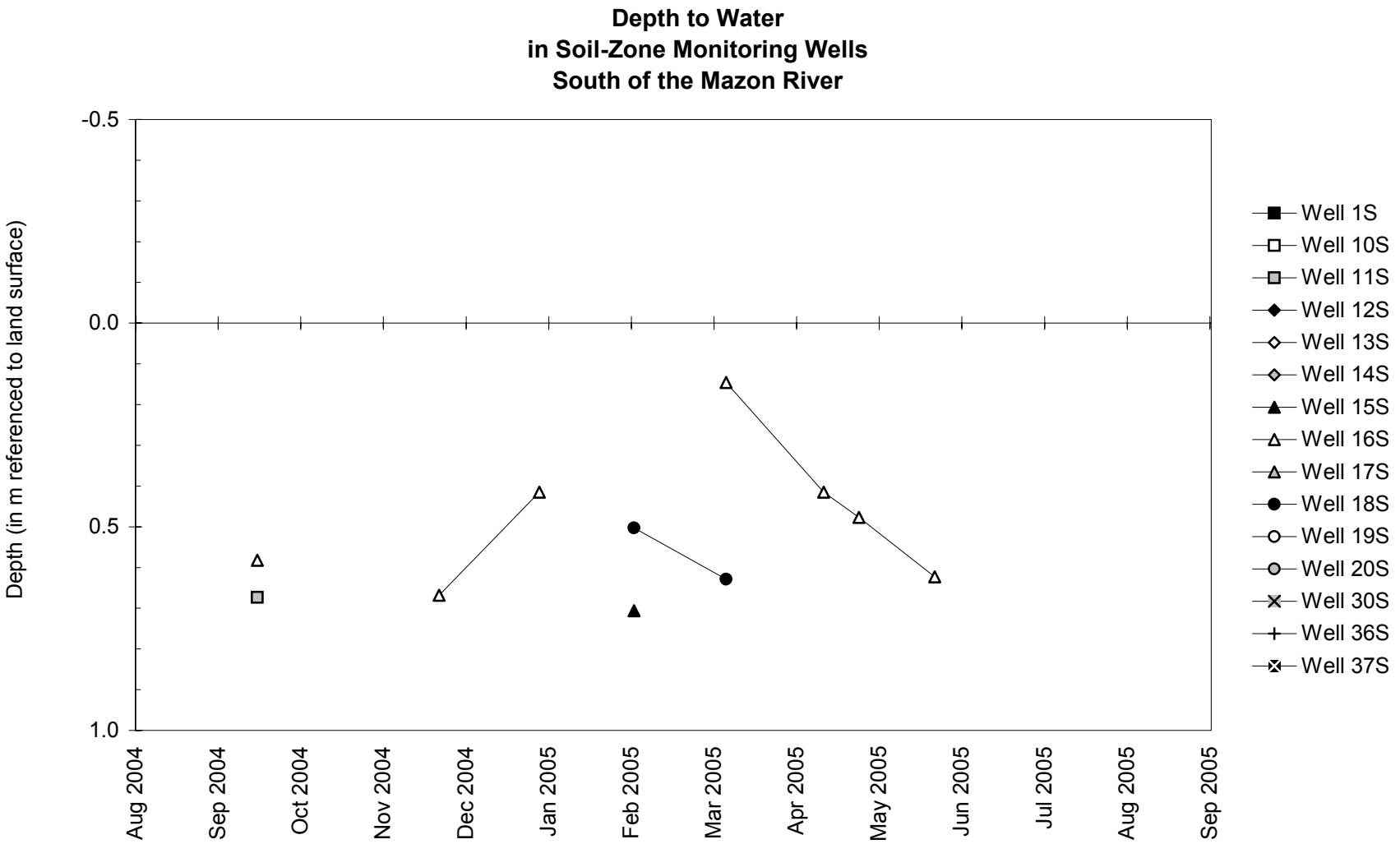


Morris, Illinois River Potential Wetland Banking Site
September 1, 2004 to September 1, 2005

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

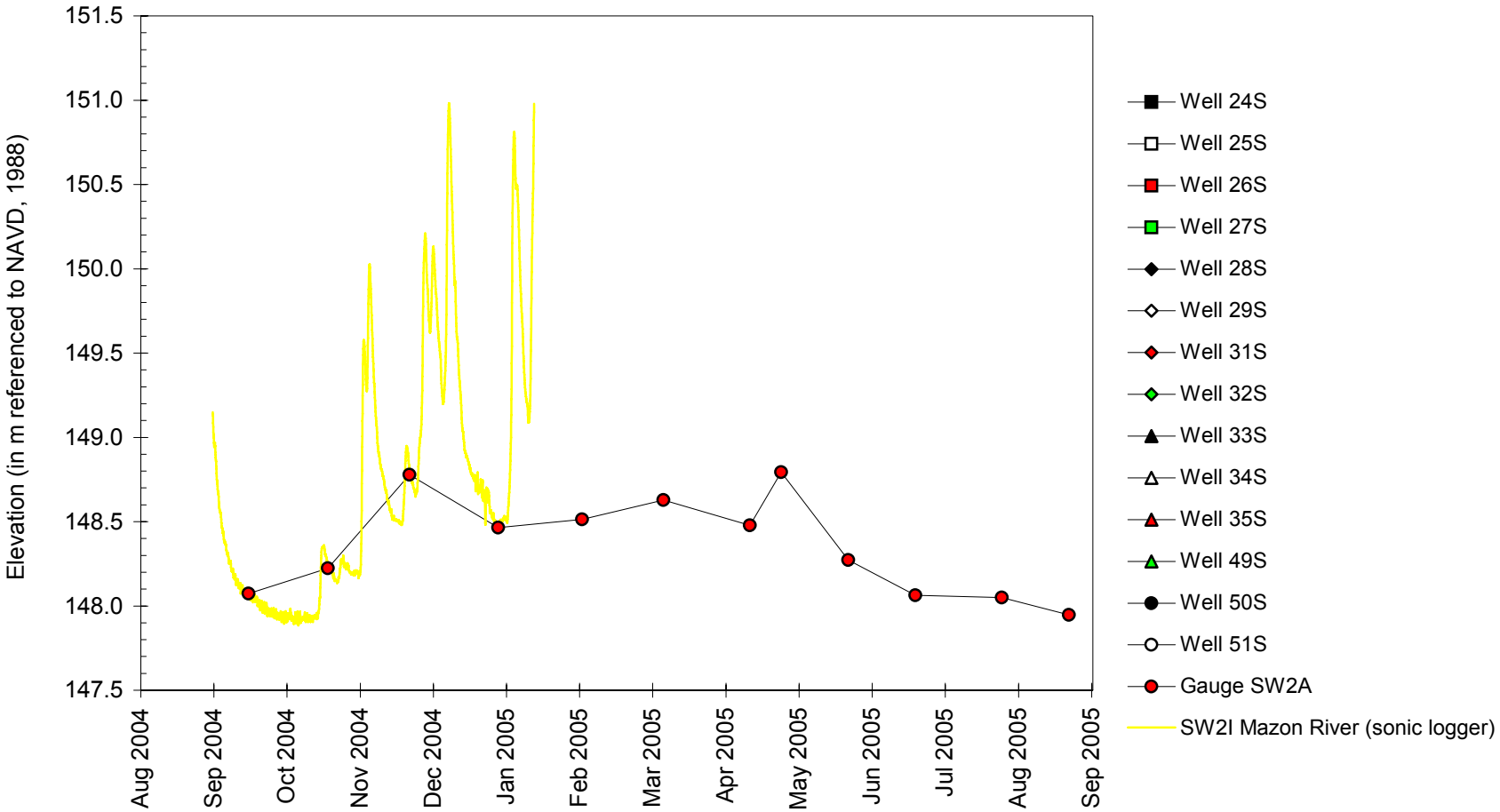


Morris, Illinois River Potential Wetland Banking Site
September 1, 2004 to September 1, 2005



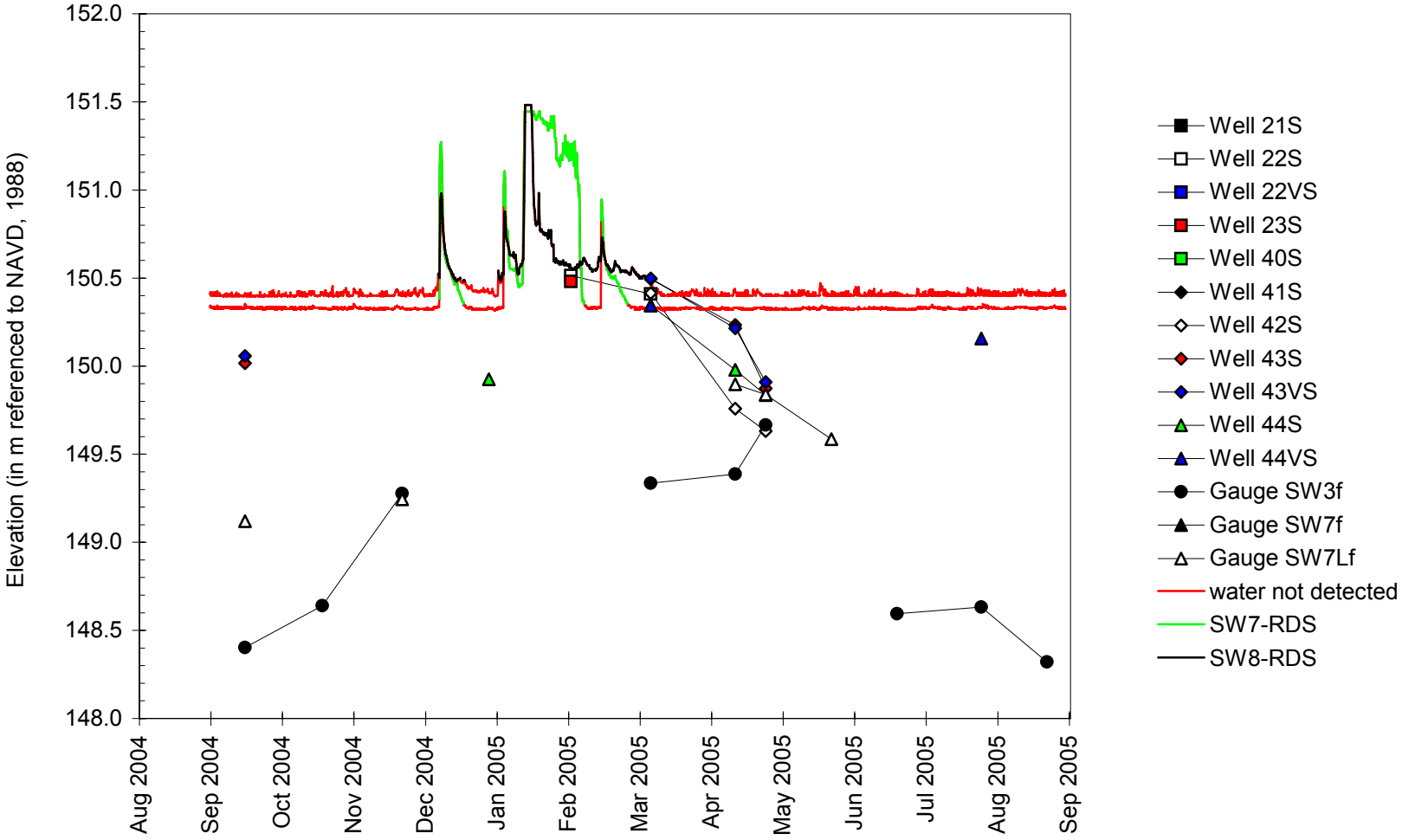
Morris, Illinois River Potential Wetland Banking Site
September 1, 2004 to September 1, 2005

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



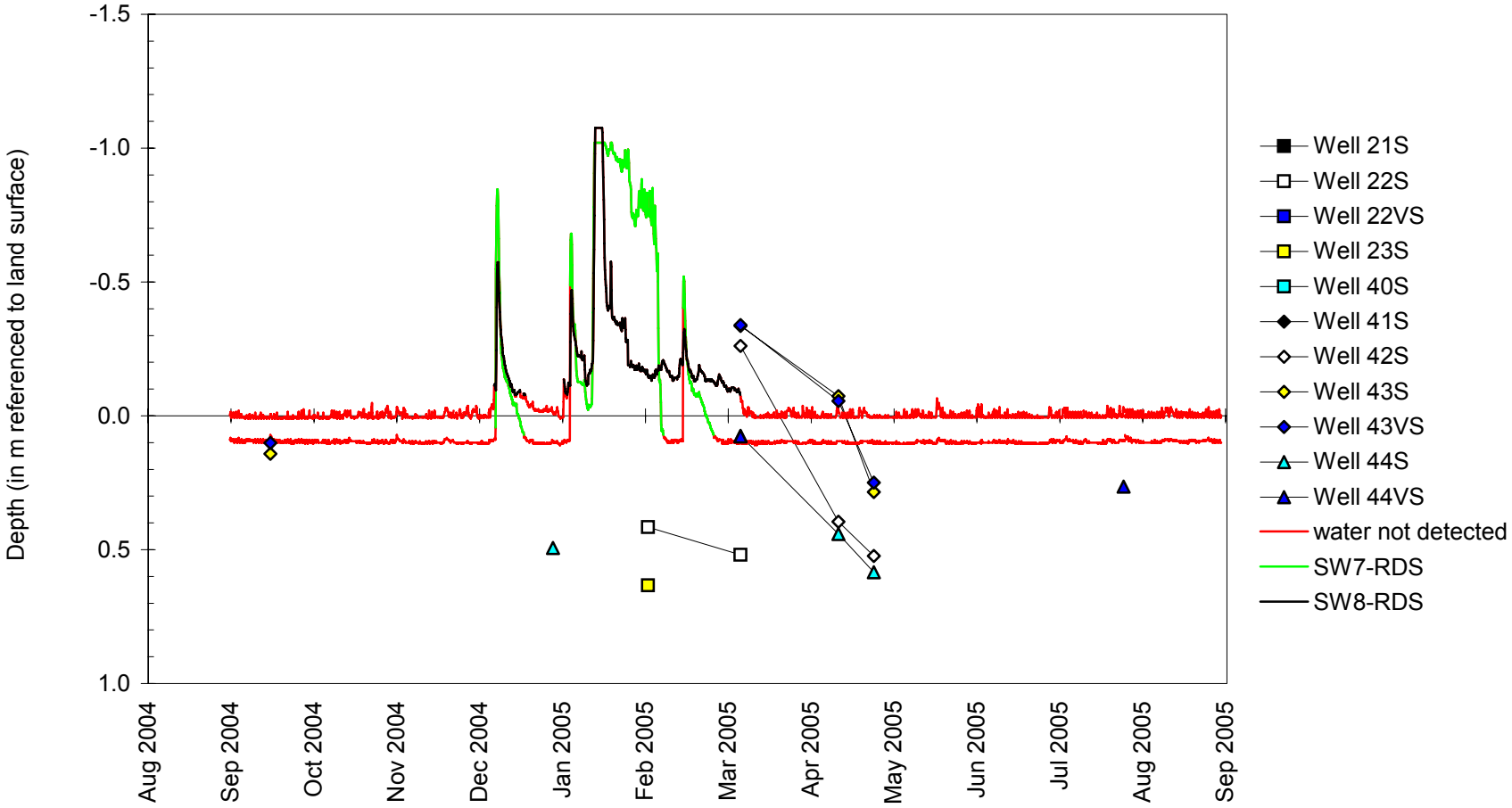
Morris, Illinois River Potential Wetland Banking Site
September 1, 2004 to September 1, 2005

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, 2004 to September 1, 2005

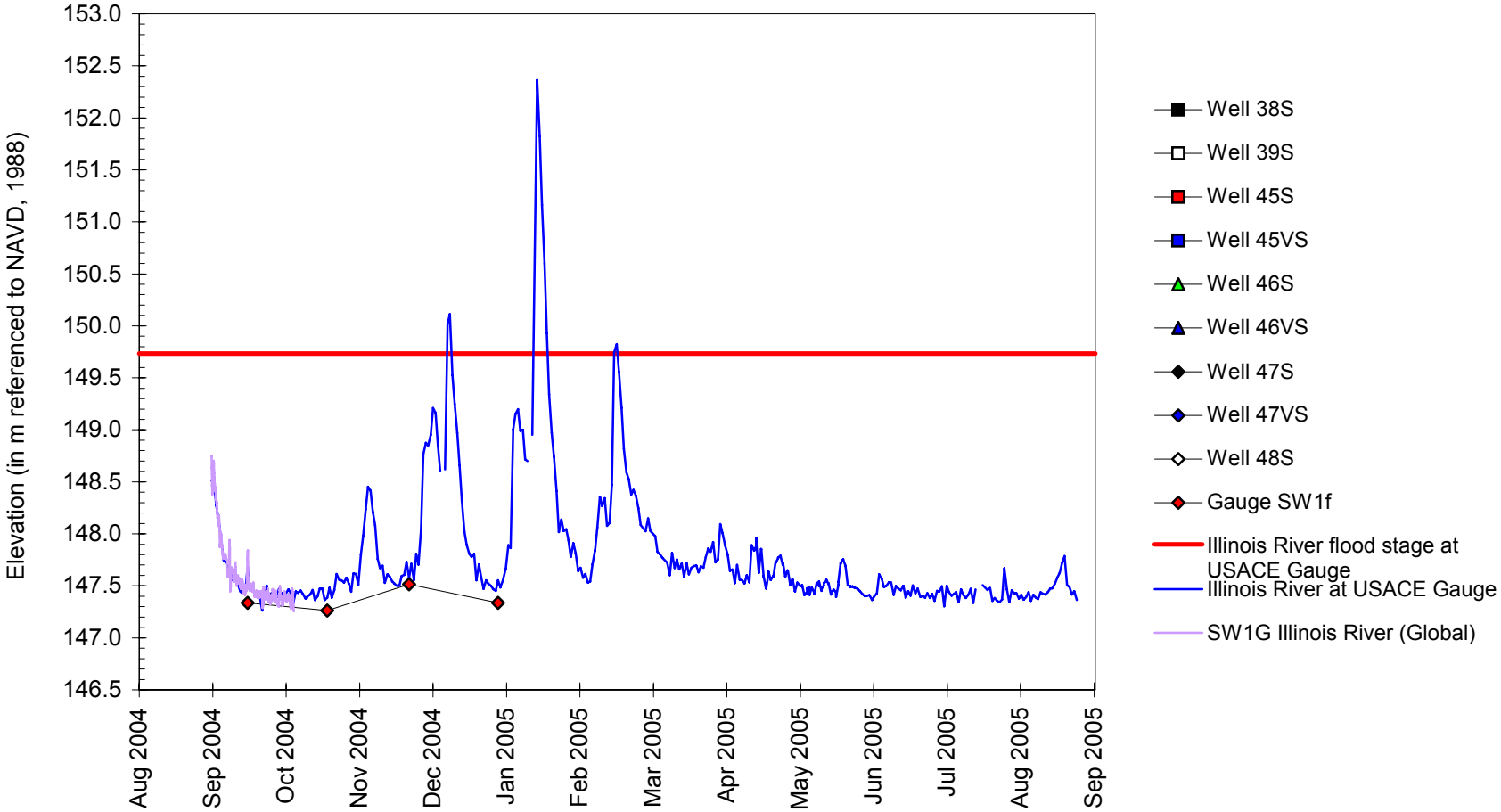
Depth to Water
in Soil-Zone Monitoring Wells and Data Loggers
in the East Field and near the Natural Slough



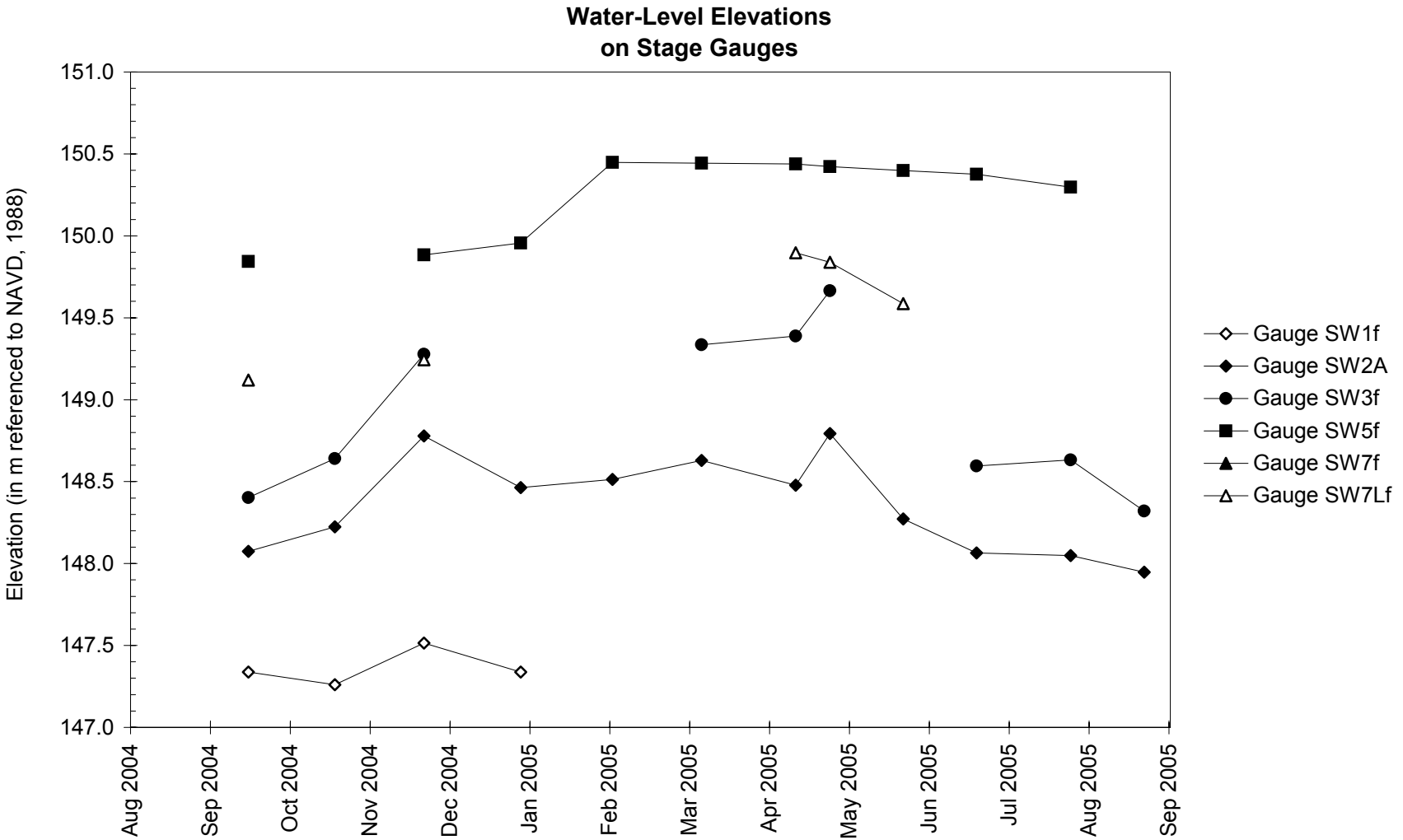
Morris, Illinois River Potential Wetland Banking Site

September 1, 2004 to September 1, 2005

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

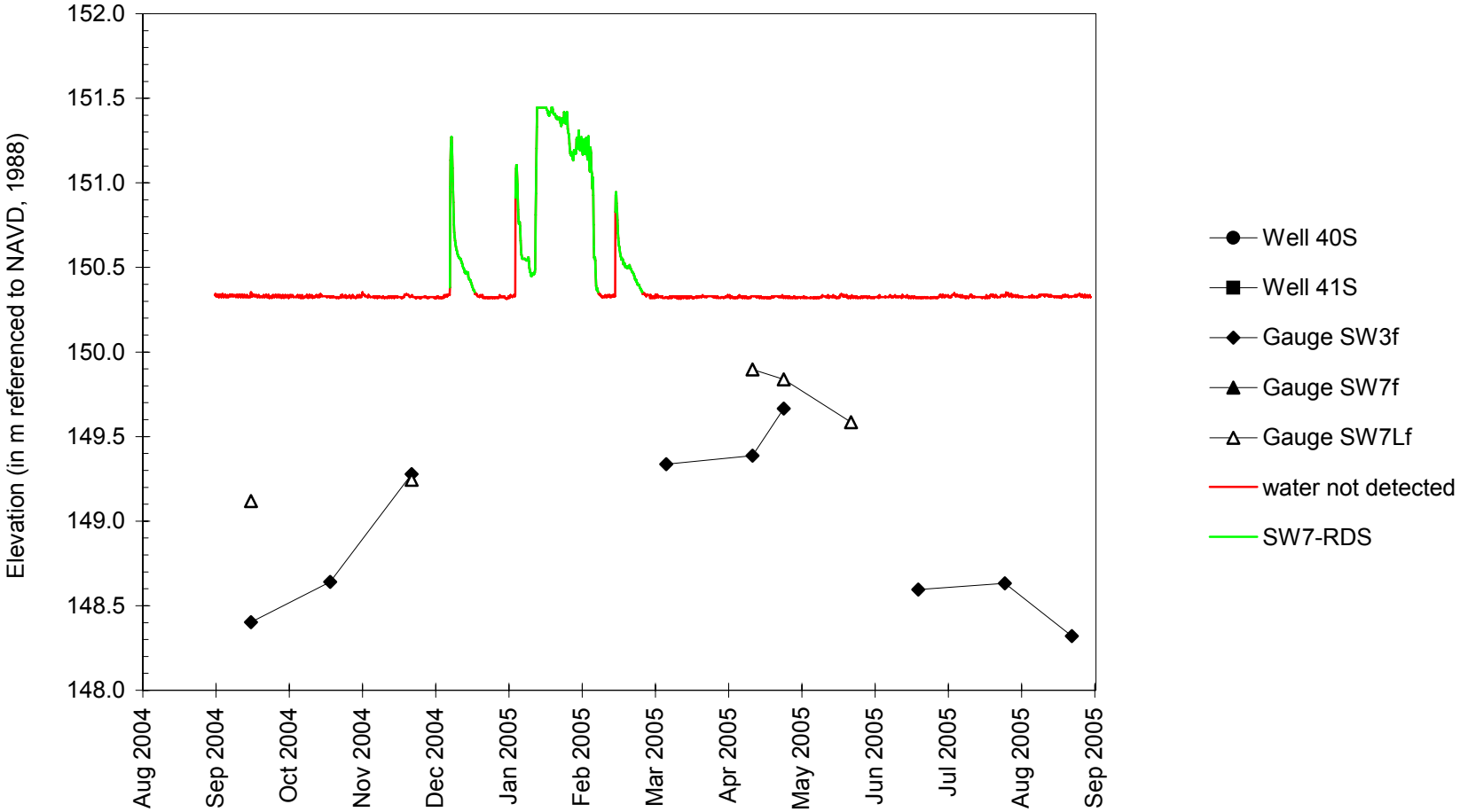


Morris, Illinois River Potential Wetland Banking Site
September 1, 2004 to September 1, 2005

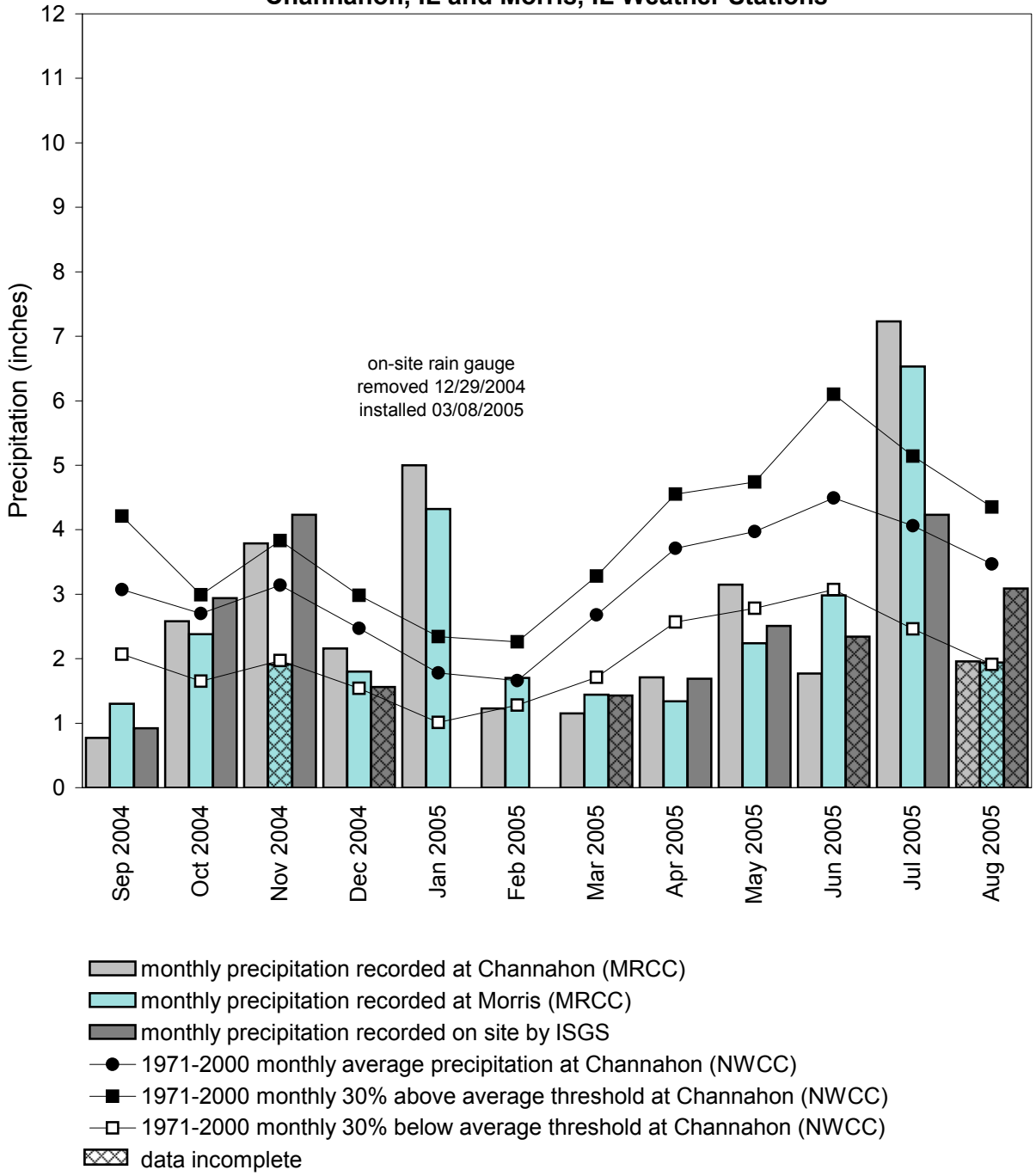


Morris, Illinois River Potential Wetland Banking Site
September 1, 2004 to September 1, 2005

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



Morris, Illinois River
Potential Wetland Banking Site
September 2004 through August 2005
Total Monthly Precipitation Recorded On Site and at the Channahon, IL and Morris, IL Weather Stations



Graph last updated October 24, 2005

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

SITE HISTORY

- May 1996: ISGS submitted an Initial Site Evaluation Report to IDOT.

- Spring 1999: ISGS began monitoring ground- and surface-water levels, and in Fall 1999, a total of 11 sediment traps were added to the site.

- April 2005: A berm was constructed at the northwest corner of the site by IDOT in order to increase the amount of water retention.

WETLAND HYDROLOGY CALCULATION FOR 2005

We estimate that the total area that satisfied wetland hydrology criteria (Environmental Laboratory 1987) for greater than 5% of the growing season was 0.0 ha (0.0 ac). In addition, the area that satisfied wetland hydrology criteria for greater than 12.5% of the growing season in 2005 was 0.0 ha (0.0 ac). These estimates are based on the following factors:

- According to the Midwestern Climate Center, the median date that the growing season begins in nearby Aledo, Illinois, is April 11 and the season lasts 195 days; 5% of the growing season is 10 days and 12.5% of the growing season is 24 days.

- Total precipitation for the monitoring period was 30.54 inches, which was 85% of normal. Precipitation in October 2004, November 2004, January 2005, and February 2005 was at or above normal, although precipitation from March 2005 to August 2005 was only 61% of normal.

- In 2005, water levels measured in the monitoring wells did not satisfy wetland hydrology criteria for either 5% or 12.5% of the growing season.

- Inundation on the site occurred for only an insufficient period at the start of the growing season. Data collected by RDS 2 reveal that surface water was present on the site from April 12 to April 15. Also, stage data collected from Edwards River reveal that the river did not rise enough at any time during the growing season to flood the site.

ADDITIONAL INFORMATION

- Once a year, the sediment is removed from 12 sediment traps (T1 through T12) and is quantified in an ISGS laboratory. From May 6, 2004 to March 29, 2005, the traps on the site accumulated an average thickness of 0.70 cm (0.27 inches) of sediment, which was less than half the average thickness of 1.80 cm (0.70 inches) that accumulated the previous year. The traps that accumulated the greatest thickness of sediment were T7 with 1.35 cm (0.53 inches) and T12 with 1.67 cm (0.65 inches), located in the lower parts of the site. The traps that accumulated the least thickness of sediment were T1 with 0.22 cm

(0.09 inches) and T4 with 0.20 cm (0.08 inches), located on the higher portions of the site, and T8 with 0.33 cm (0.13 inches), located on the natural levee between the site and Edwards River. Calculations for sediment thickness are based on personal communication with Richard Cahill, ISGS Sediment Geochemist.

- A berm was constructed in April 2005 in order to increase the duration of surface-water retention on the site, and thereby increase the area satisfying wetland hydrology criteria. However, the lack of a flood event on Edwards River during the 2005 growing season made it impossible to determine the effect of the berm on the hydrology of the site.

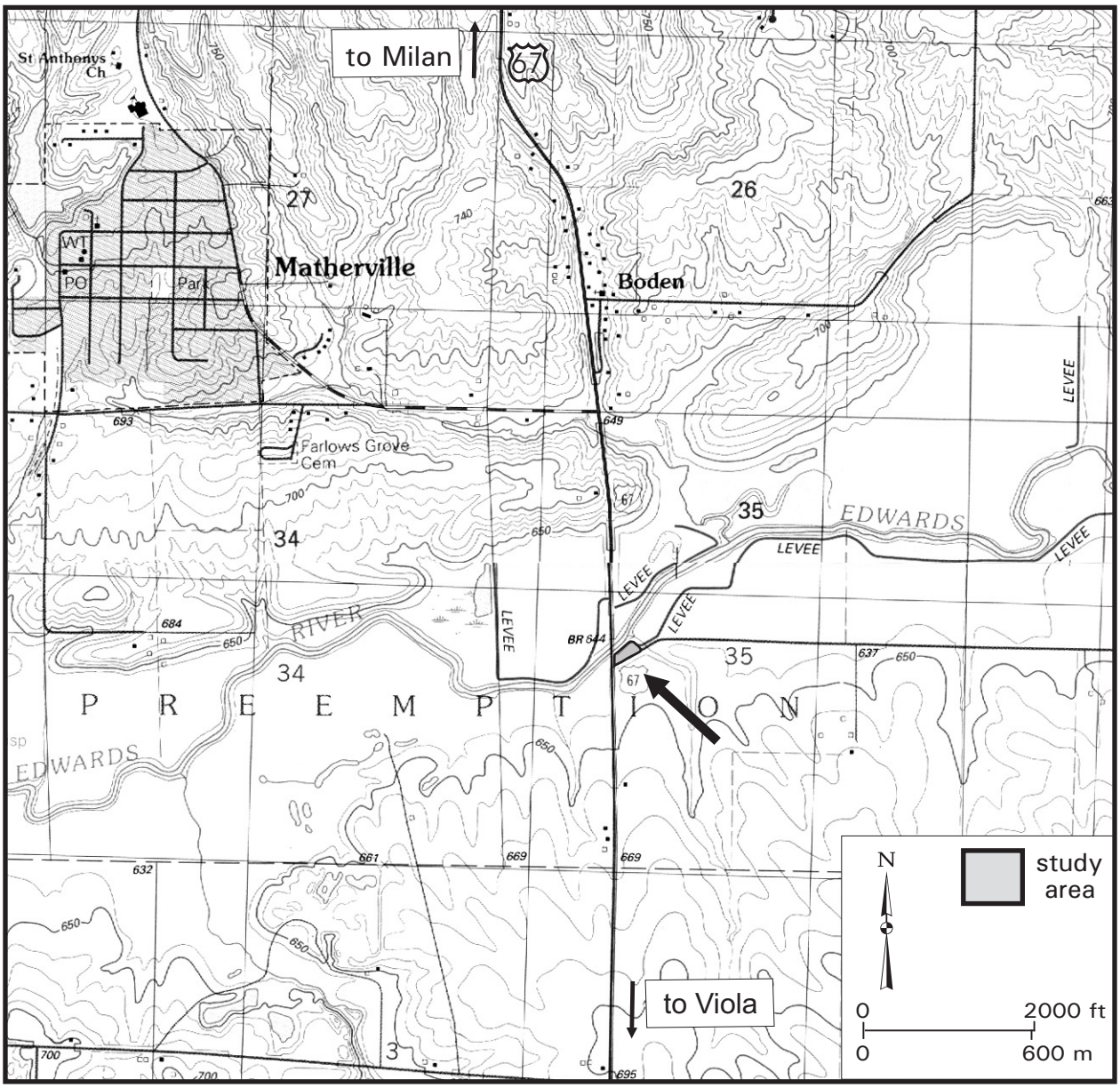
PLANNED FUTURE ACTIVITIES

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

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
contour interval is 10 ft



Edwards River, Mercer County Wetland Compensation Site

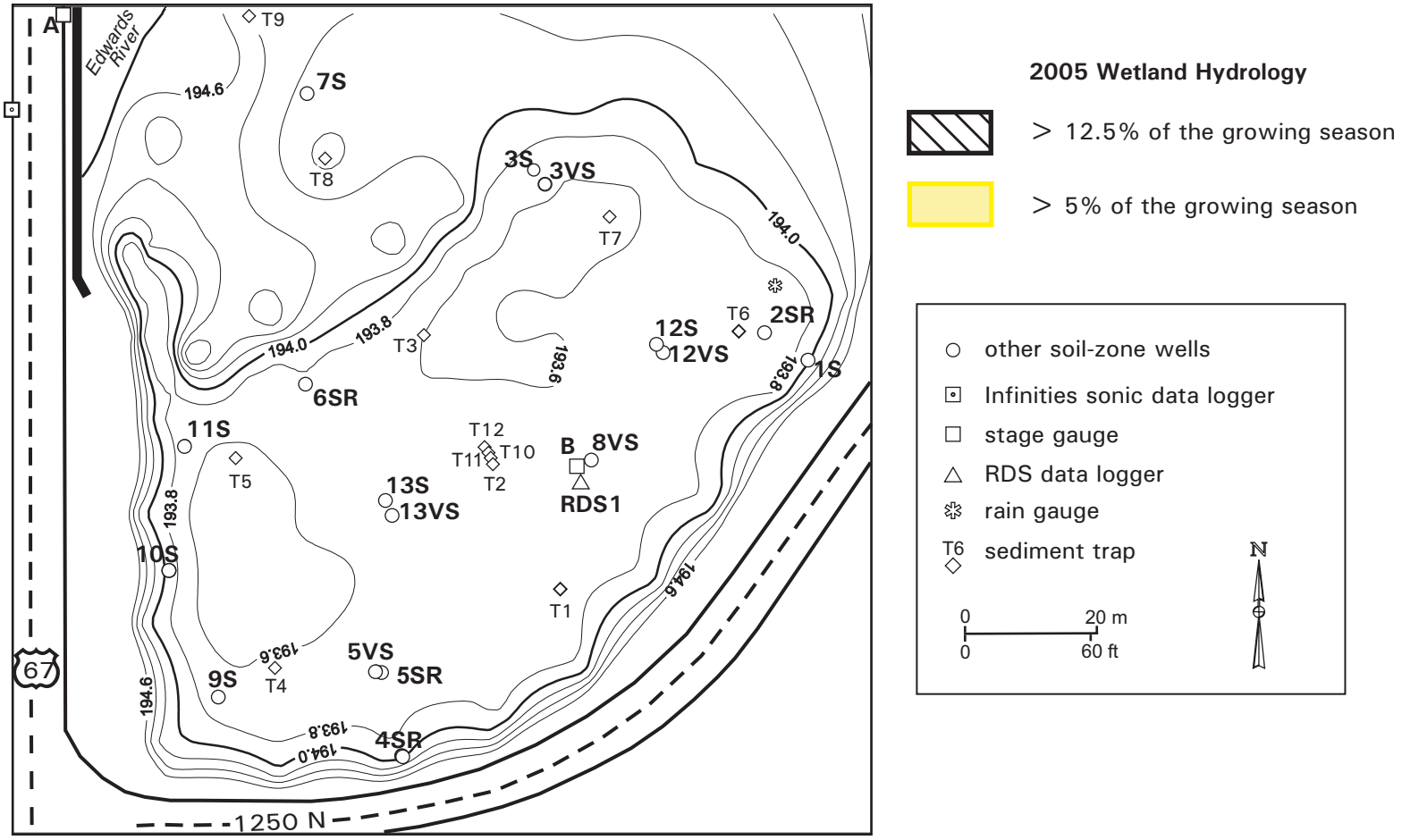
(FAP 310)

Estimated Areal Extent of 2005 Wetland Hydrology

based on data collected between September 1, 2004 and September 1, 2005

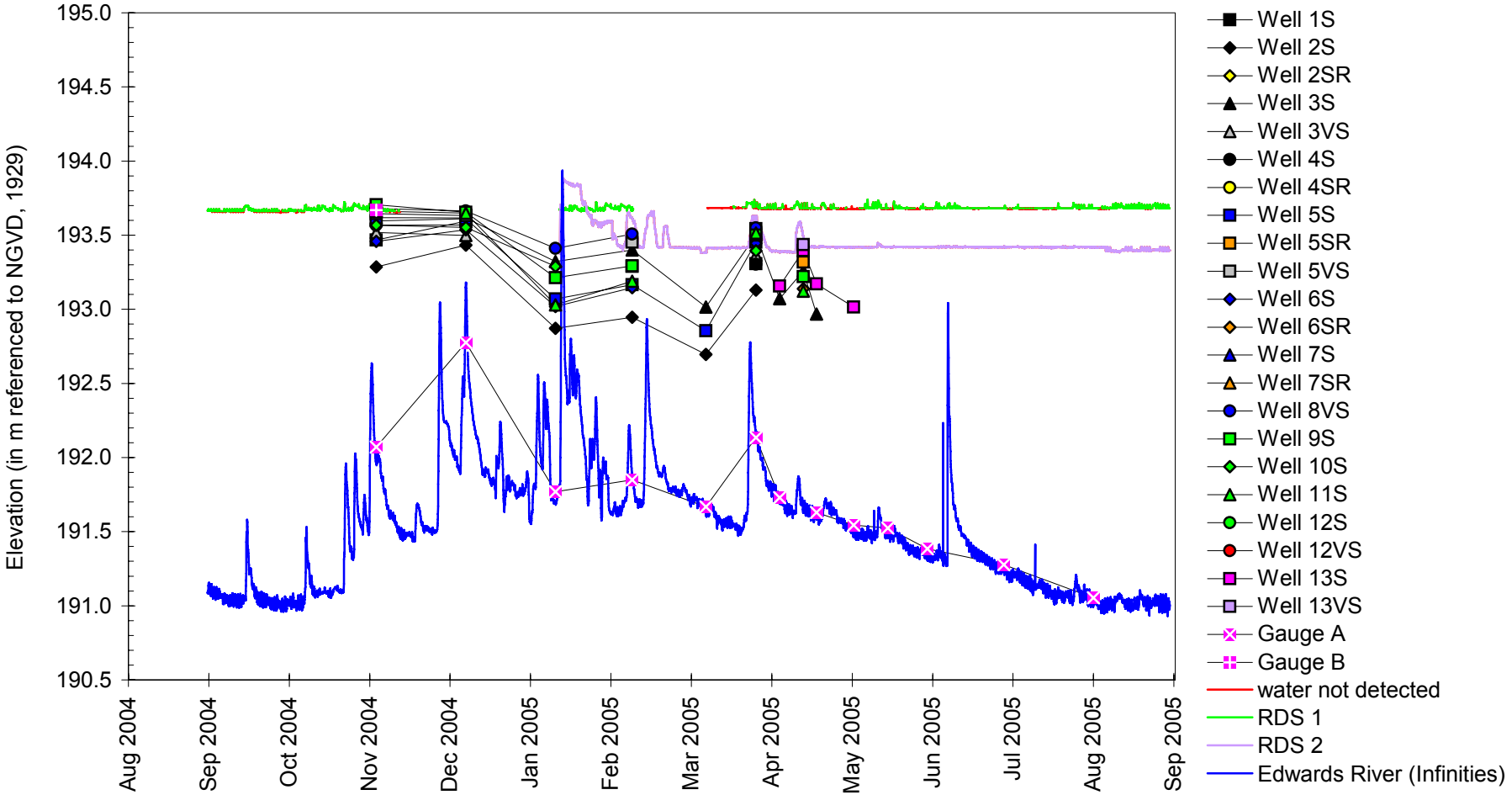
Map based on 2002 ISGS elevation survey referenced to NGVD, 1929

contour interval is 0.2 meters



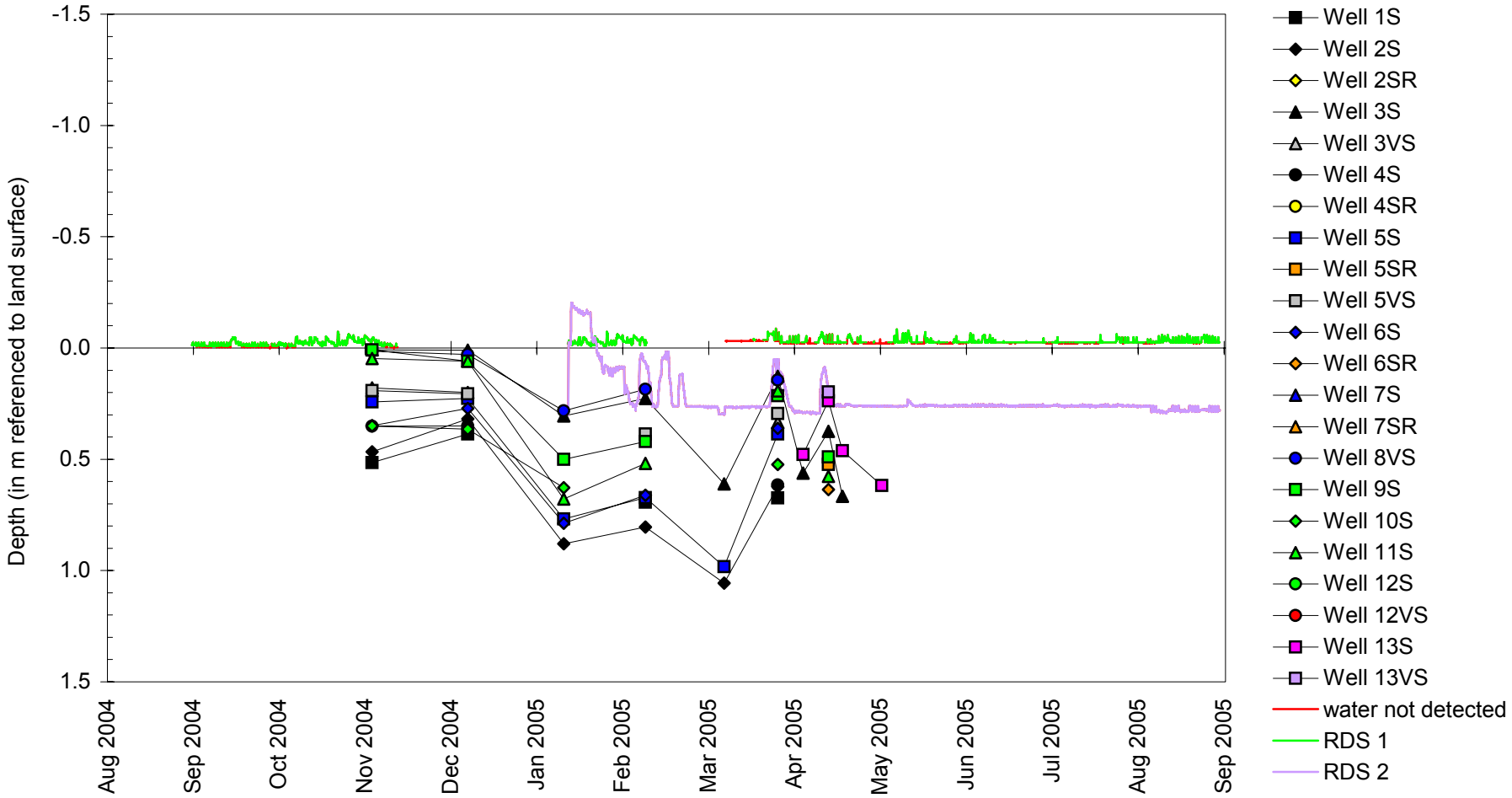
Edwards River, Mercer County Wetland Compensation Site
September 1, 2004 to September 1, 2005

Water-Level Elevations

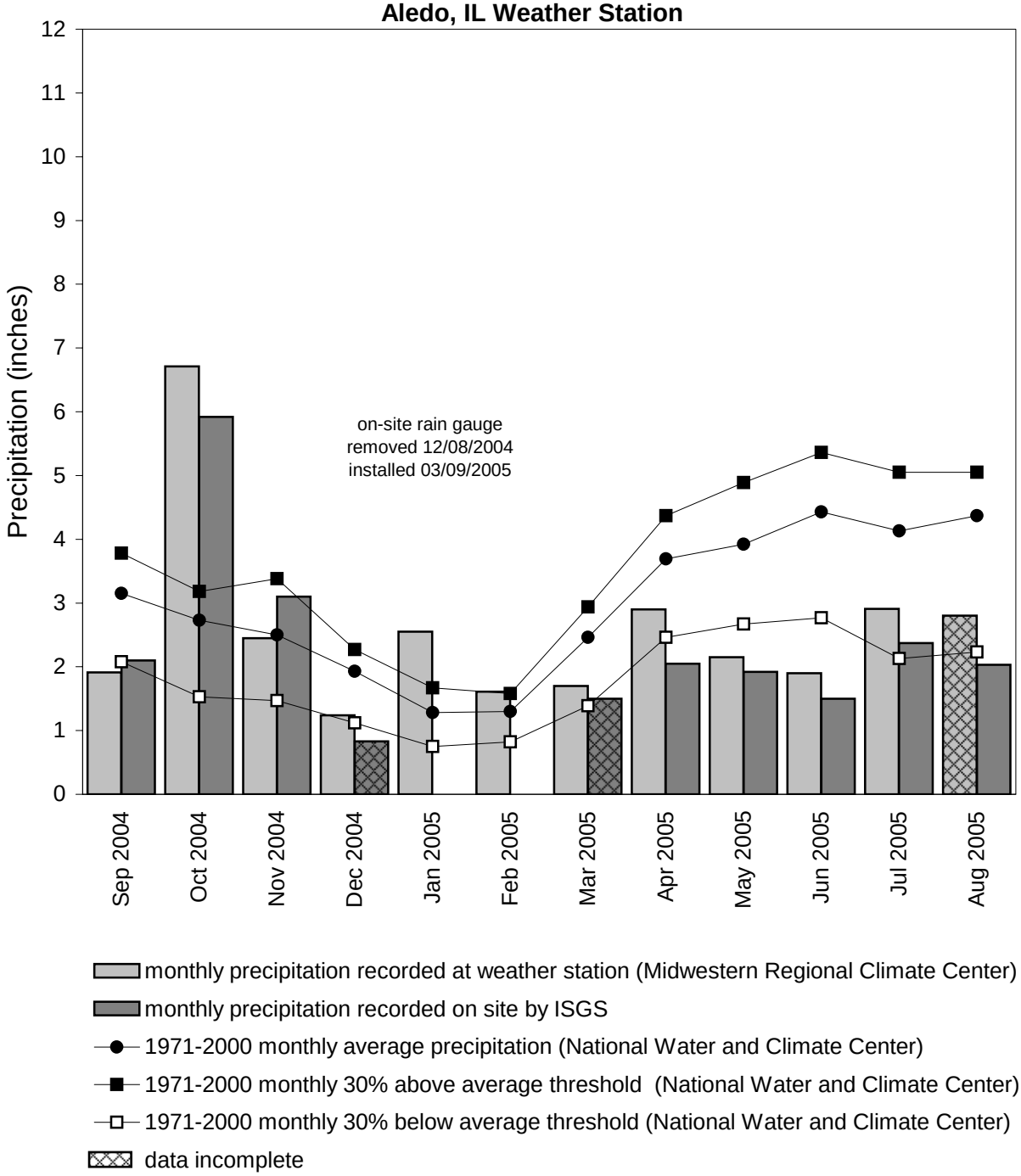


Edwards River, Mercer County Wetland Compensation Site
September 1, 2004 to September 1, 2005

Depth to Water



Edwards River, Mercer County
Wetland Compensation Site
September 2004 through August 2005
Total Monthly Precipitation Recorded On Site and at the Aledo, IL Weather Station



Graph last updated October 24, 2005

FORMER LUEHMANN PROPERTY, NEW RIVER CROSSING **ISGS #51**
POTENTIAL WETLAND COMPENSATION SITE
FAP 999
Madison County, near Stallings, Illinois
Primary Project Manager: Bonnie J. Robinson
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–June 2000: Nine well clusters, one staff gauge, one rain gauge and three water-level loggers were installed on site.

- August 2002: All wells located outside the new site boundaries were abandoned. A Starflow flow-velocity meter was installed in the east ditch NNE of well cluster nine.

- May 2003: A Level II hydrogeological characterization report was submitted to IDOT (ISGS Open File Series 2003-09).

- June 2003: IDOT requested the suspension of ground-water monitoring. The collection of data from surface-water instruments is ongoing.

SUMMARY OF 2005 EVENTS

Because ground-water monitoring was suspended at this site, an estimate of the area satisfying the criteria for wetland hydrology was not prepared for this report.

- According to the Midwestern Climate Center, the median date that the growing season begins in nearby Belleville, Illinois, is April 6 and the season lasts 199 days; 5% of the growing season is 10 days and 12.5% of the growing season is 25 days.

- Precipitation at the nearby Edwardsville weather station during the monitoring period was 112% of normal. Precipitation values from October 2004 through February 2005 were unusually high (205% of normal). Below normal precipitation was reported through the remainder of the monitoring period, with extremely low precipitation, 50% of normal, in March through May 2005.

- During the growing season, the largest surface-water flow recorded in the ditch at the south end of the site discharged 0.02 ac-ft on April 11–12, 2005, although several discharge events as large as 15 ac-ft occurred during fall and winter. If this runoff could be retained on site into the spring, it could be used for wetland mitigation activities.

- Measurements in the Cahokia Canal indicate that the water level exceeded 127.0 m NGVD, 1929 (416 ft NAVD, 1988) on several occasions during the growing season, including June 8 and June 13–14th, 2005. This is the suggested elevation of an intake culvert described in the Level II Report (ISGS Open File Series 2003-09).

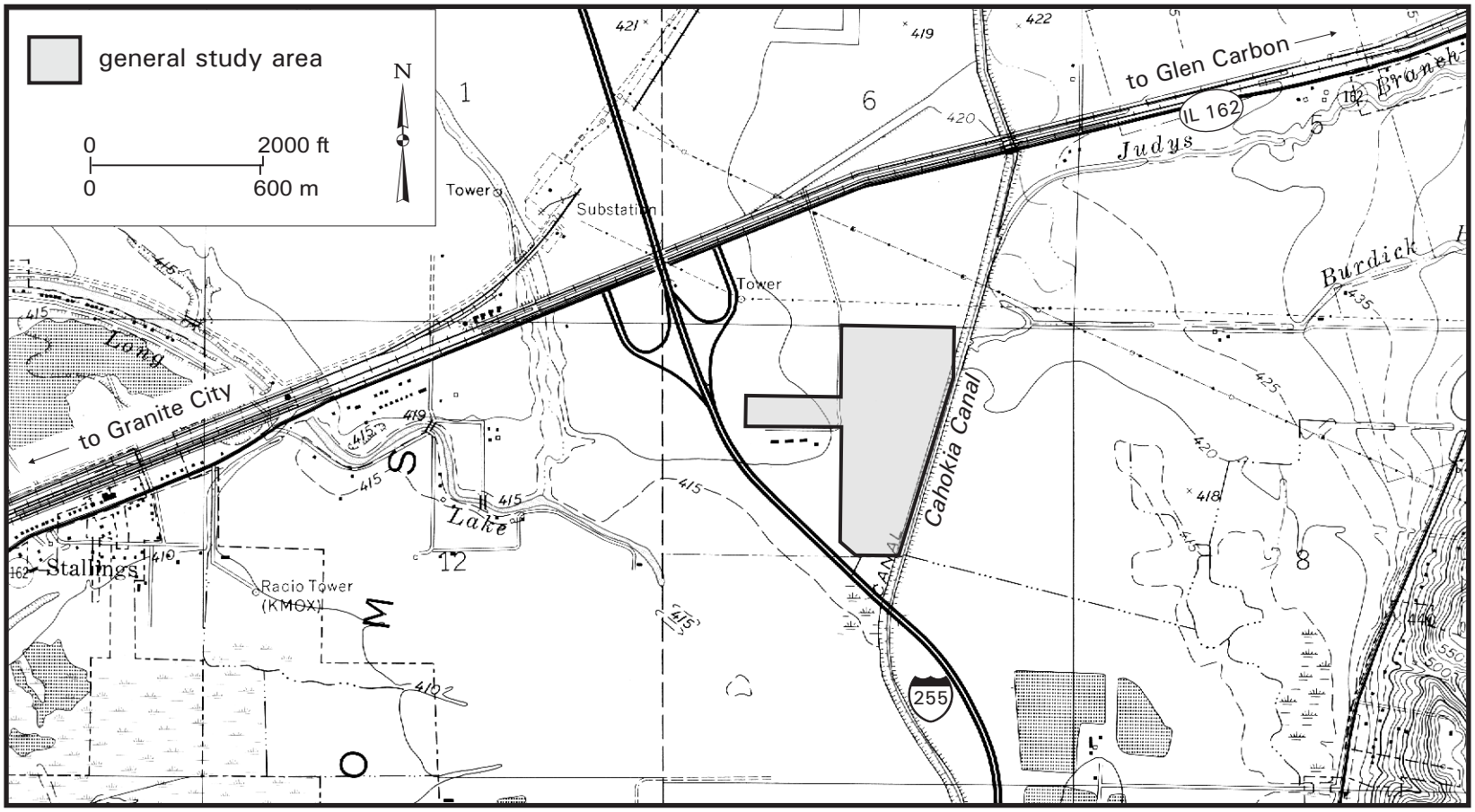
PLANNED FUTURE ACTIVITIES

- Collection of surface-water data will continue at this site until no longer required by IDOT.

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

General Study Area and Vicinity

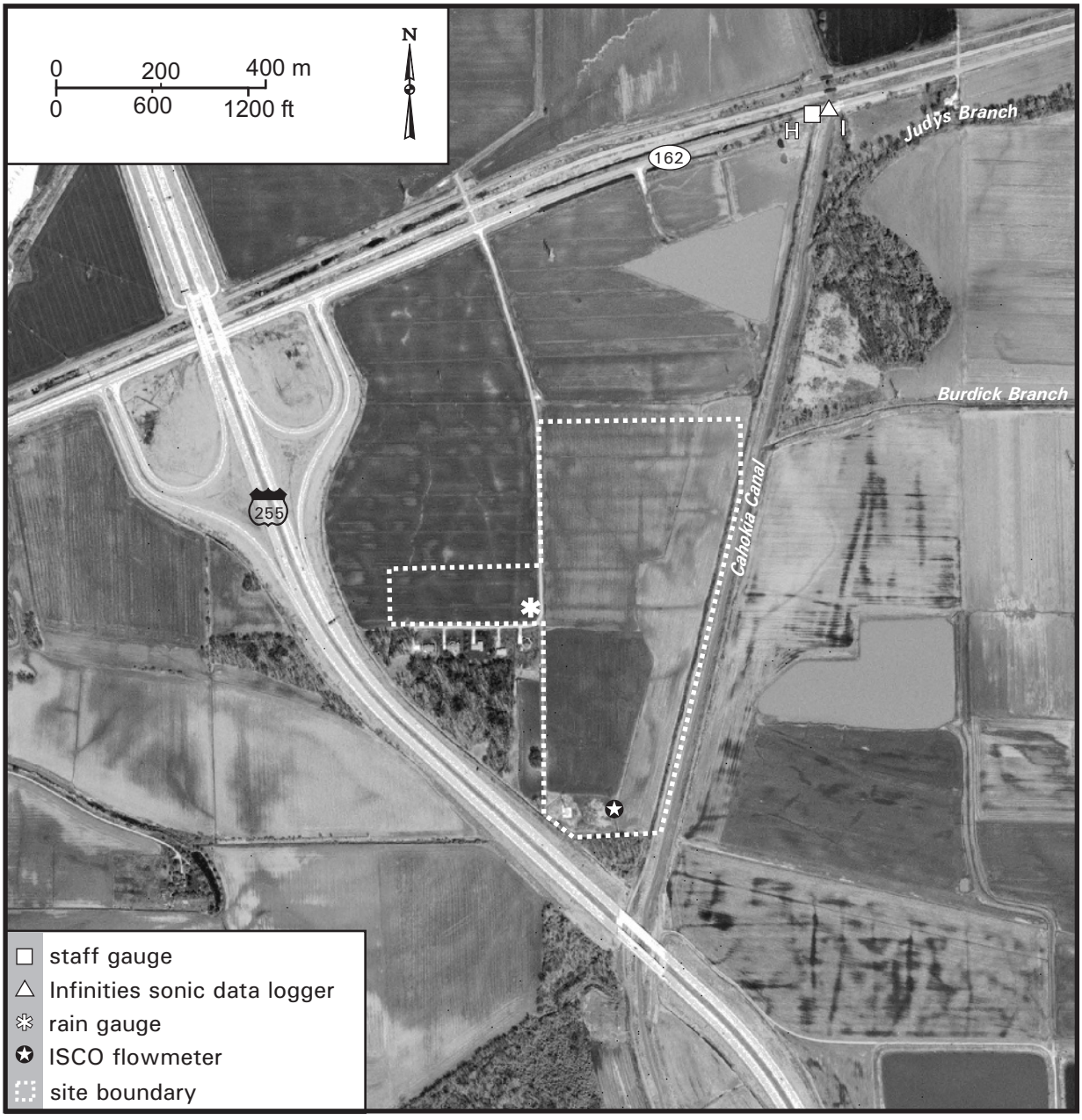
from the USGS Topographic Series, Monks Mound, IL 7.5-minute Quadrangle (USGS 1993)
contour interval is 10 feet



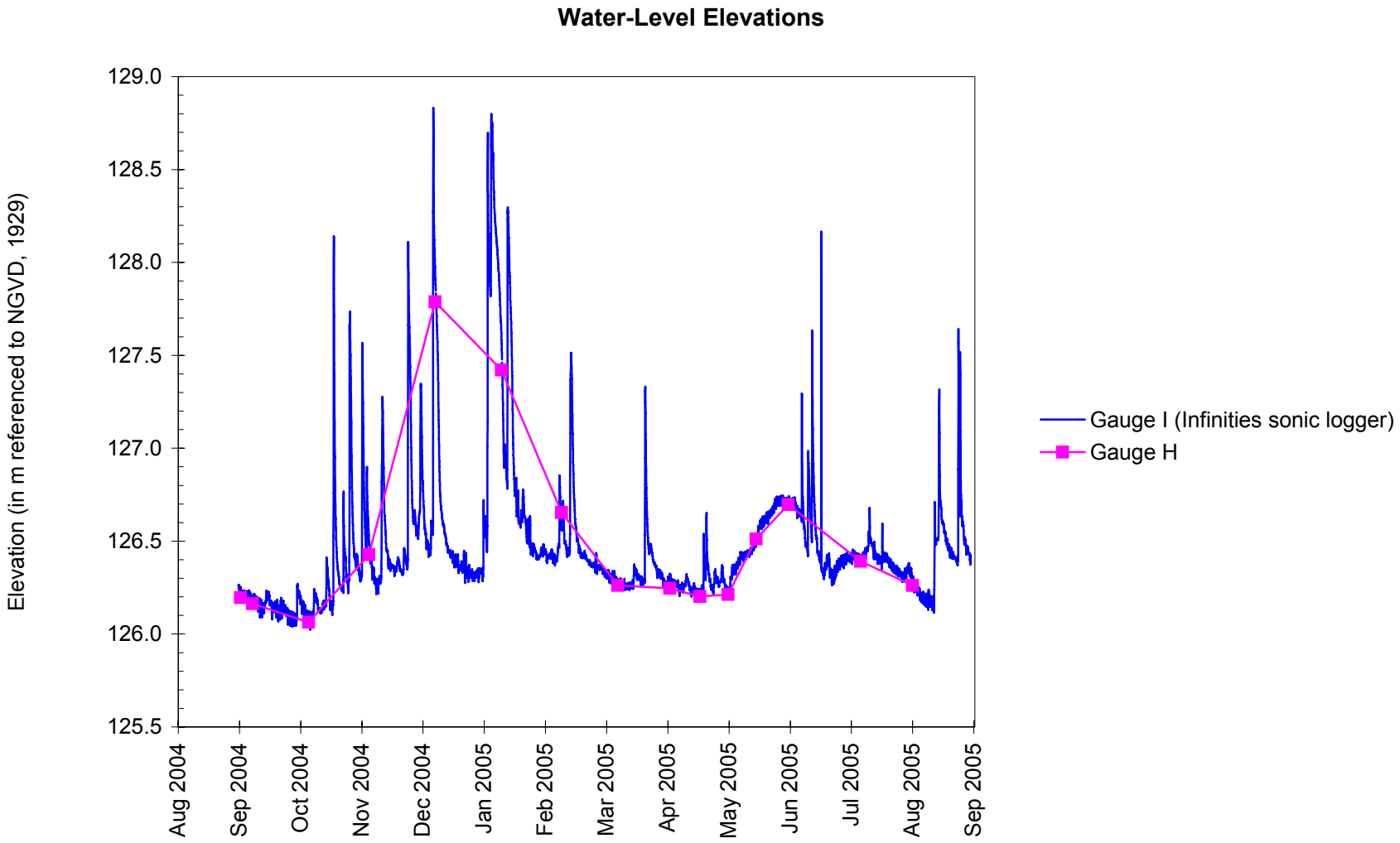
Former Luehmann Property, New River Crossing
Potential Wetland Compensation Site
(FAP 999)

Locations of ISGS Monitoring Instruments

Map based on USGS digital orthophotograph, Monks Mound NE quarter quadrangle
produced from 4/2/98 aerial photography (ISGS 2001)

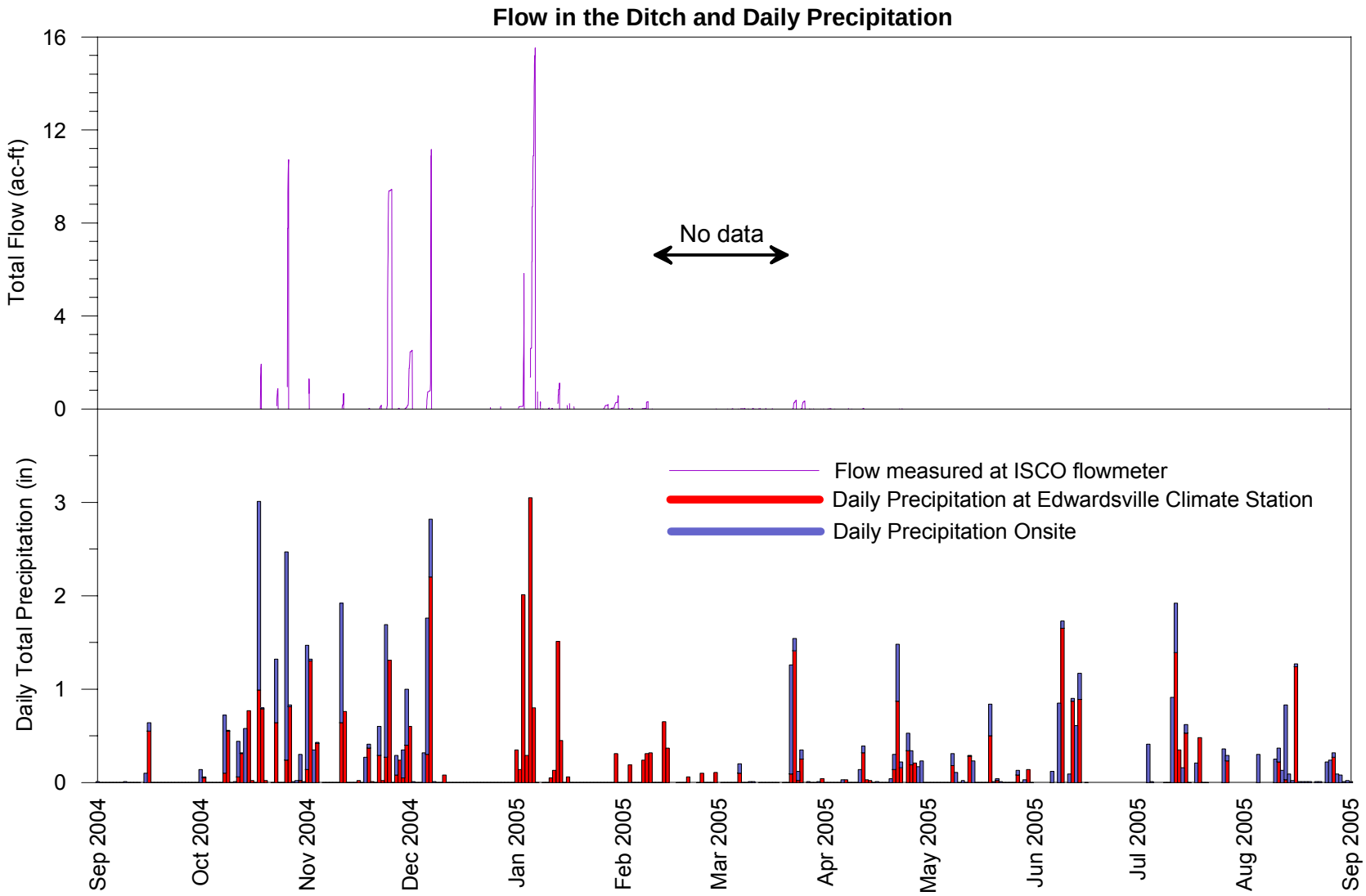


Former Luehmann Property, New River Crossing Potential Wetland Compensation Site
September 1, 2004 to September 1, 2005



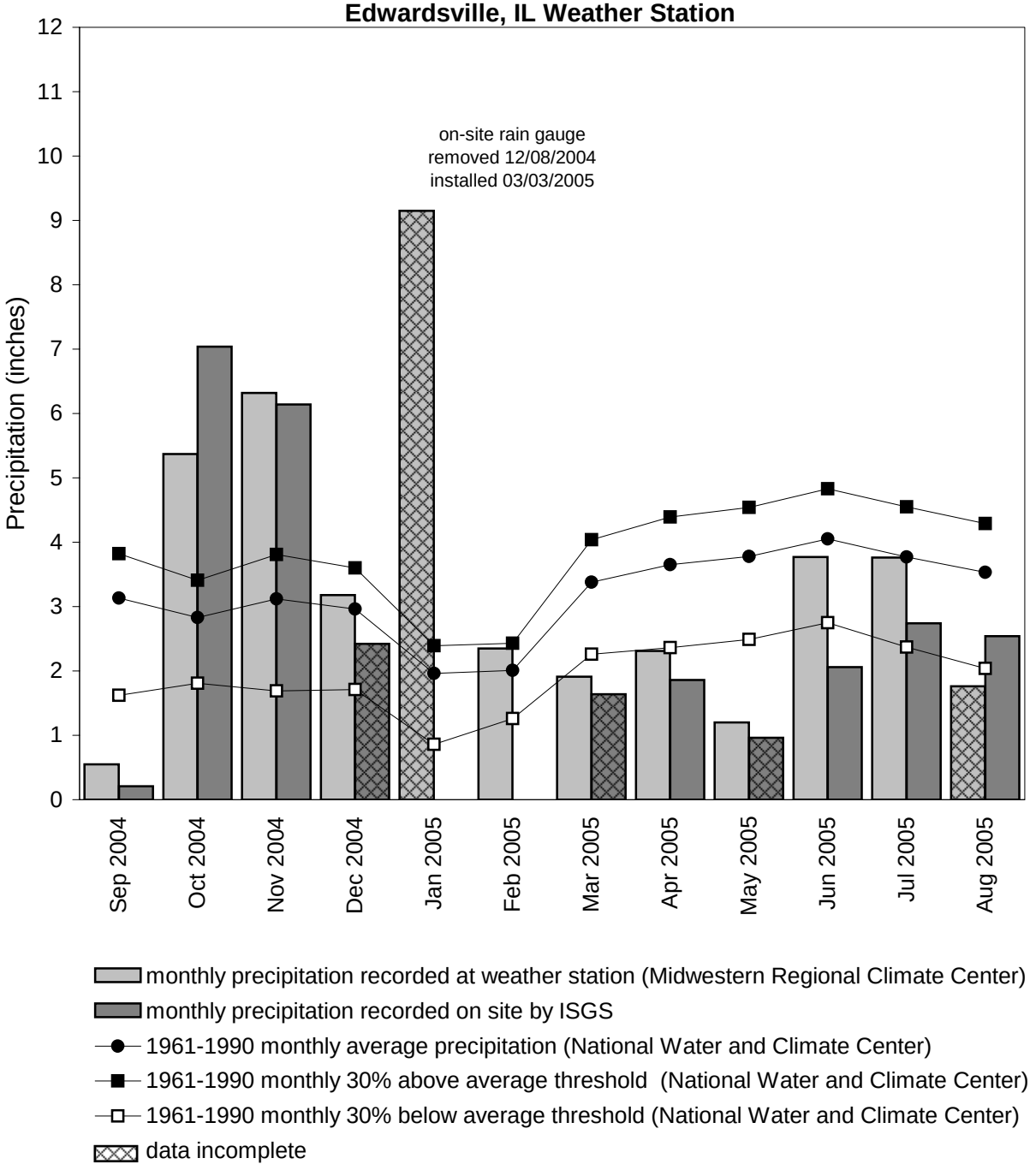
Former Luehmann Property, New River Crossing Potential Wetland Compensation Site

September 1, 2004 to September 1, 2005



Former Luehmann Property, New River Crossing
Potential Wetland Compensation Site
September 2004 through August 2005

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



Graph last updated October 24, 2005

FORMER WESSEL PROPERTY **ISGS #52**
LA GRANGE WETLAND BANK SITE
Brown County, near La Grange, Illinois
Primary Project Manager: Keith W. Carr
Secondary Project Manager: Geoffrey E. Pociask

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 monitoring wells in selected areas. Additional instruments have been added annually.

- August 2002: IDOT tasked ISGS and INHS to prepare a draft wetland banking instrument, which was submitted to IDOT in January 2003.

- December 2004: The bank site was declared an Exemplary Ecosystem Initiative by the Federal Highway Administration.

- January 2005: A Level II report on the site was submitted to IDOT on January 7, 2005 (ISGS Open File Series 2005–2).

- January 2005: A large Illinois River flood inundated most of the site in late January of 2005. Wave and ice action destroyed 16 of the 25 soil-zone wells on the site, as well as several staff gauges and data loggers. These wells were replaced in late May of 2005, and an additional 10 new soil-zone wells were added. An additional six soil-zone wells were found to have been pushed down by the ice and will be replaced in the spring of 2006.

WETLAND HYDROLOGY CALCULATION FOR 2005

We estimate that the total area of the site that satisfied the wetland hydrology criteria (Environmental Laboratory 1987) for greater than 5% of the growing season in 2005 was 85.2 ha (210.6 ac). In addition, 38.1 ha (94.1 ac) satisfied wetland hydrology criteria for greater than 12.5% of the growing season. These estimates are based on the following factors:

- According to the Midwestern Climate Center, the median date that the growing season begins in nearby Rushville, Illinois, is April 6 and the season lasts 208 days; 5% of the growing season is 10 days and 12.5% of the growing season is 26 days.

- Total precipitation for the monitoring period was 74% of normal. Further, in the critical April to July period, precipitation dropped off sharply to only 36% of normal.

- In 2005, water levels measured in none of the soil-zone wells satisfied wetland hydrology criteria for greater than 5% of the growing season.

- Also in 2005, on-site data loggers indicated surface-water inundation in the Big Lake basin to an elevation of at least 131.09 m (430.12 ft) for a period greater than 5% of the growing season. The same suite of loggers and gauges also showed surface-water inundation in

the Big Lake basin to an elevation of at least 130.8 m (429.1 ft) for a period greater than 12.5% of the growing season.

- Limitations of the wetland hydrology determination are as follows:
  - Many of the wells that may have shown wetland hydrology this year, generally those within the area below the break in slope, were damaged or destroyed during the flooding. A total of 16 damaged wells have since been replaced and 10 more added for the upcoming monitoring year.

PLANNED FUTURE ACTIVITIES

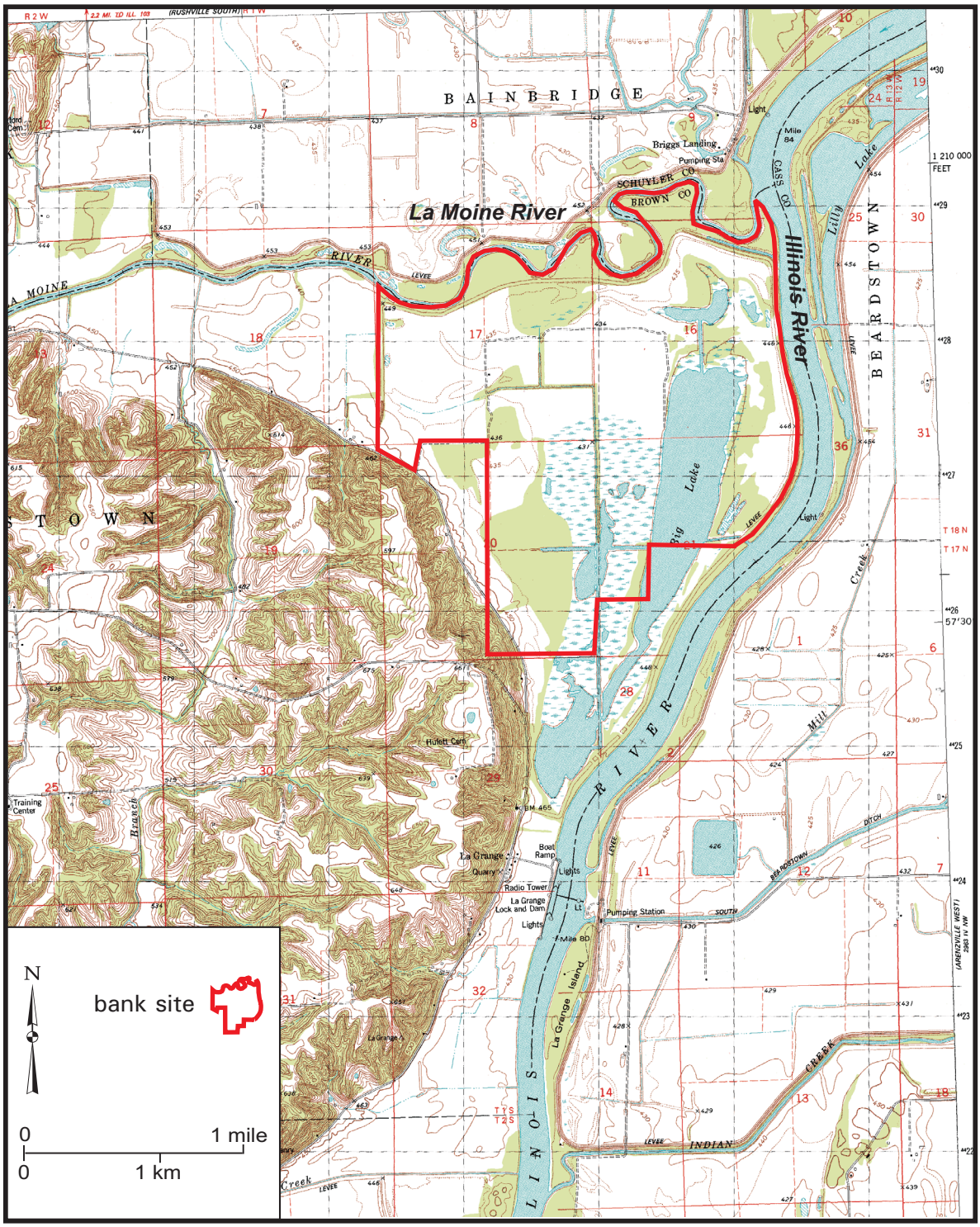
- Six more wells which were pushed down will also be replaced in the spring of 2006.
- Monitoring of hydrology will continue until no longer required by IDOT.

- Construction related to development of the bank site may require the relocation of several monitoring stations in the spring of 2006. Flood-tolerant data loggers will also be installed in the southeast corner of the site in 2006.

Former Wessel Property, La Grange Wetland Bank Site

General Study Area and Vicinity

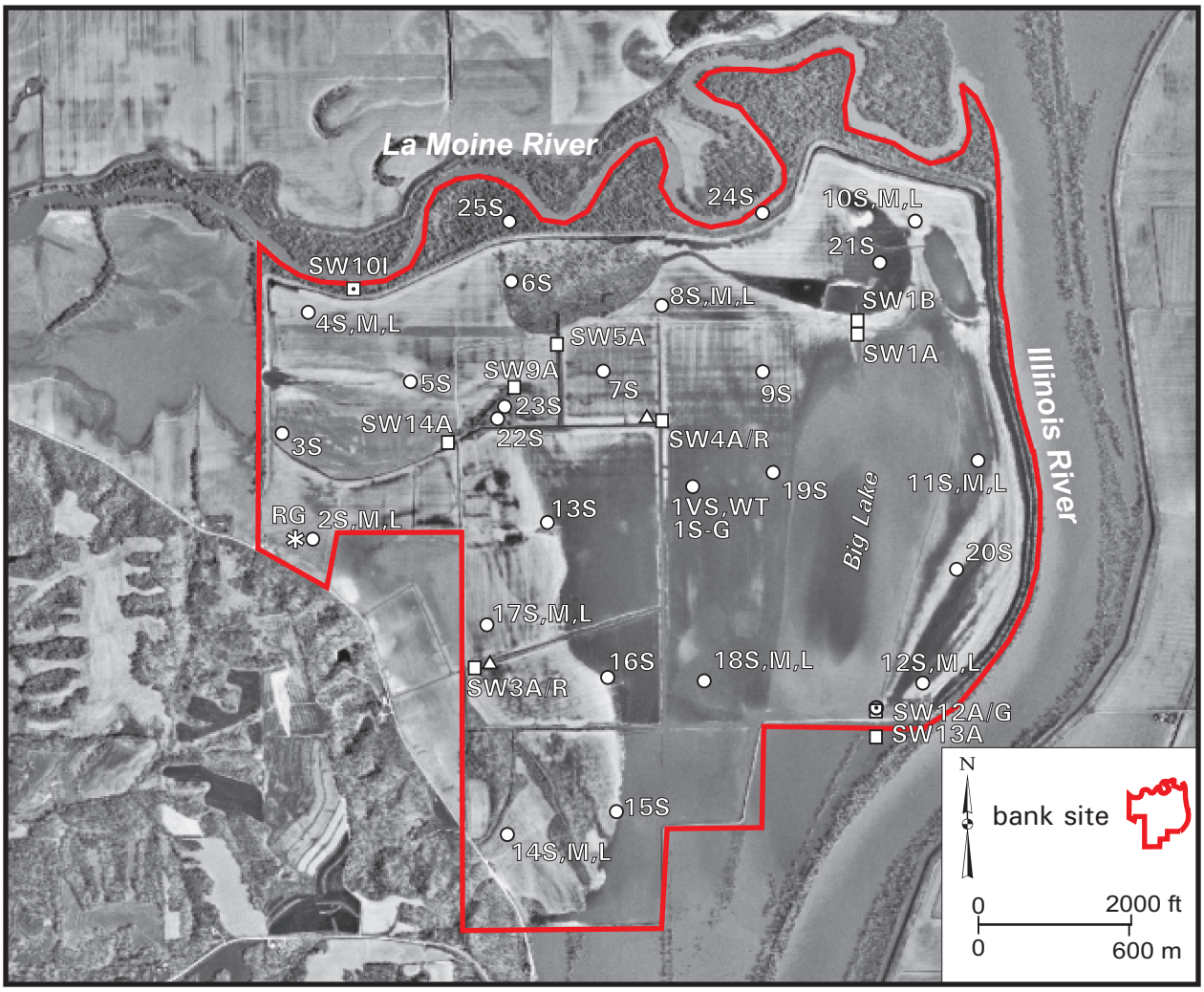
from the USGS Topographic Series, Cooperstown, IL 7.5-minute Quadrangle (USGS 1980)
contour interval is 10 feet



Former Wessel Property, La Grange Wetland Bank Site

Locations of ISGS Monitoring Equipment

Map based on USGS digital orthophotograph Cooperstown, NE quarter quadrangle
produced from 4/14/98 aerial photography (ISGS 2002)



△ RDS data logger

○ monitoring well

❄ rain gauge

□ staff (stage) gauge

⊙ Global data logger

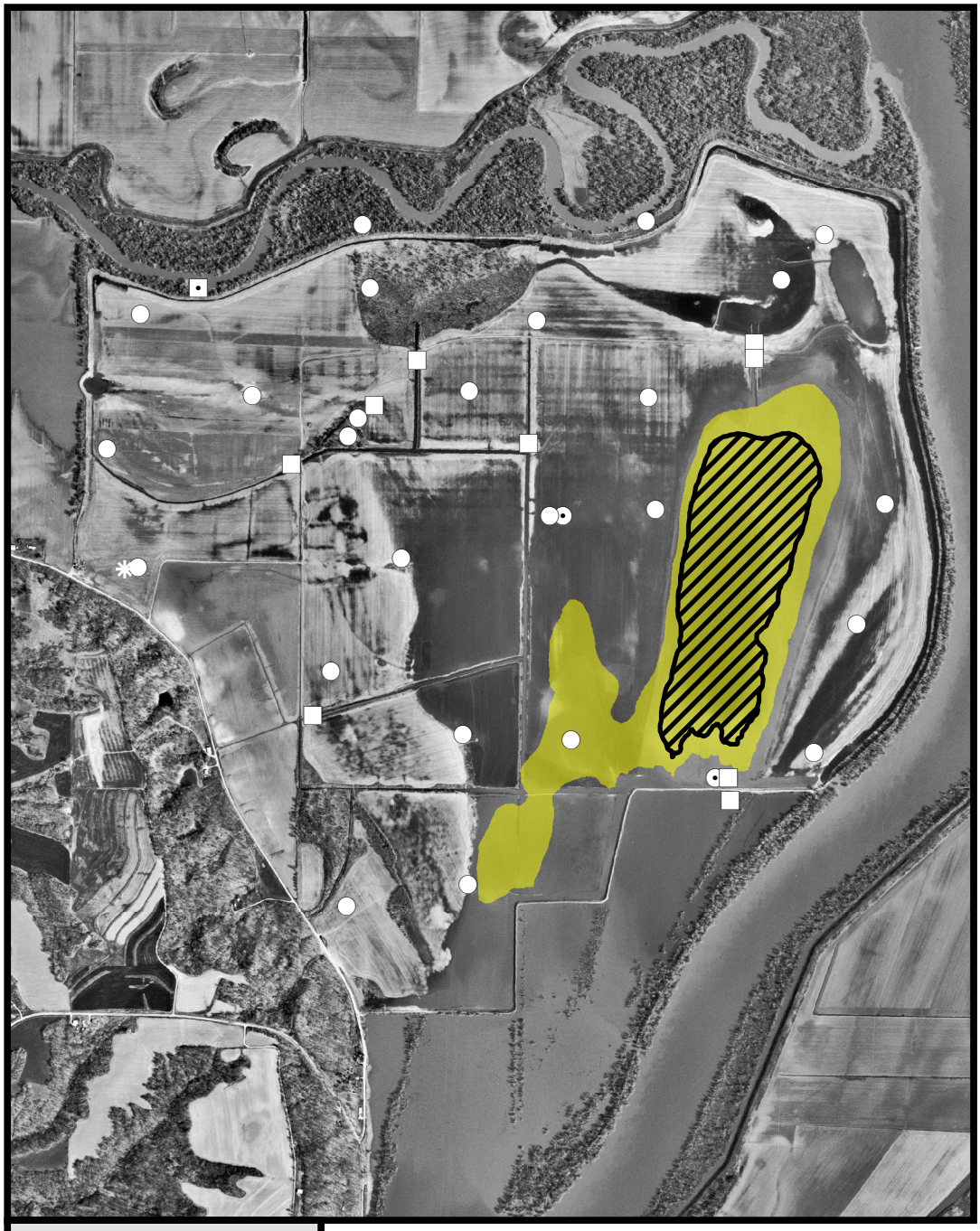
⊡ Sonic data logger

Former Wessel Property, La Grange Wetland Bank Site

Estimated Areal Extent of 2005 Wetland Hydrology

based on data collected between September 1, 2004 and September 1, 2005

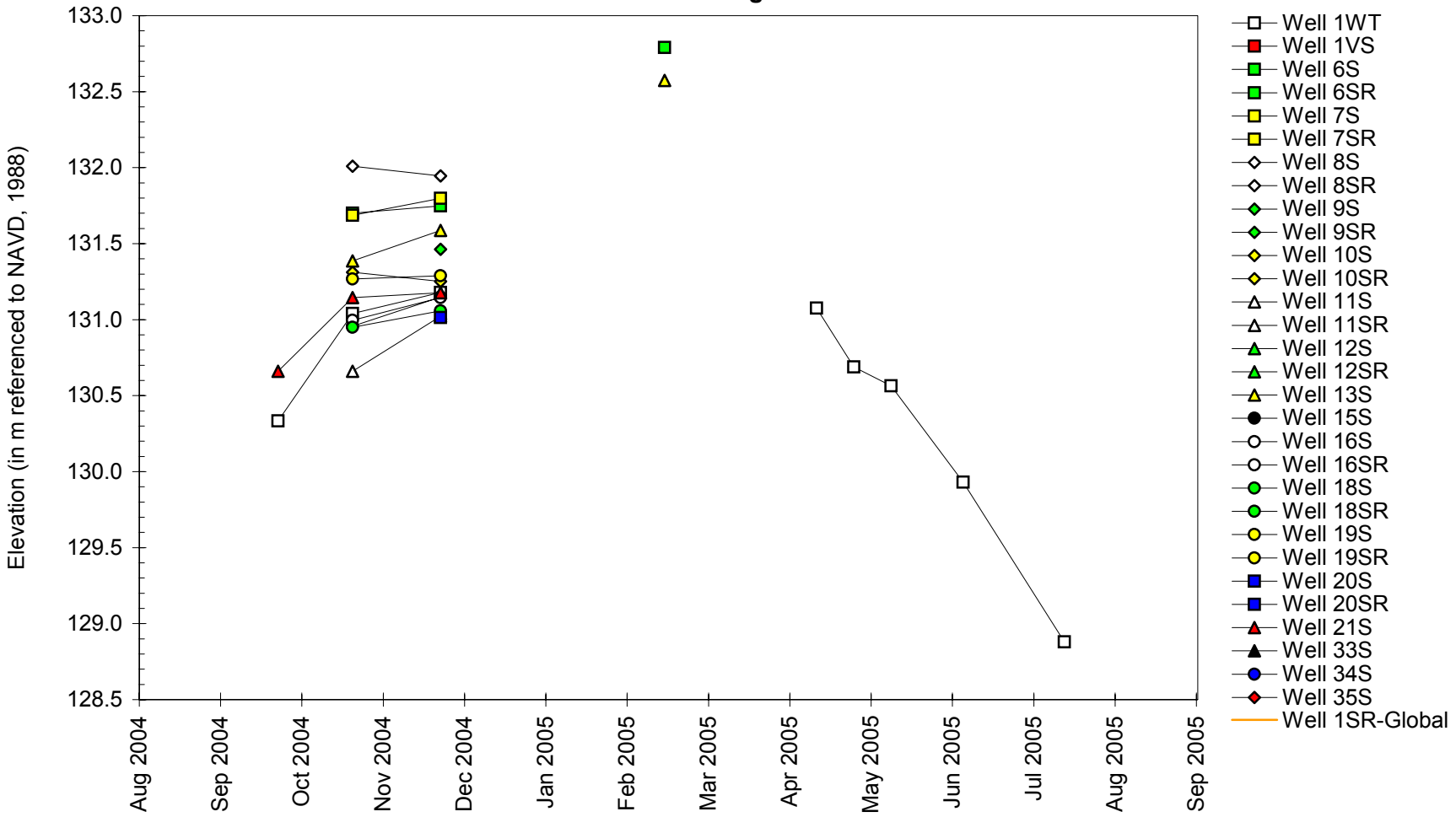
Map based upon USGS digital orthophotograph, Cooperstown, NE quarter quadrangle produced from 4/14/98 aerial photography (ISGS 2002)



Former Wessel Property, La Grange Wetland Bank Site

September 1, 2004 to September 1, 2005

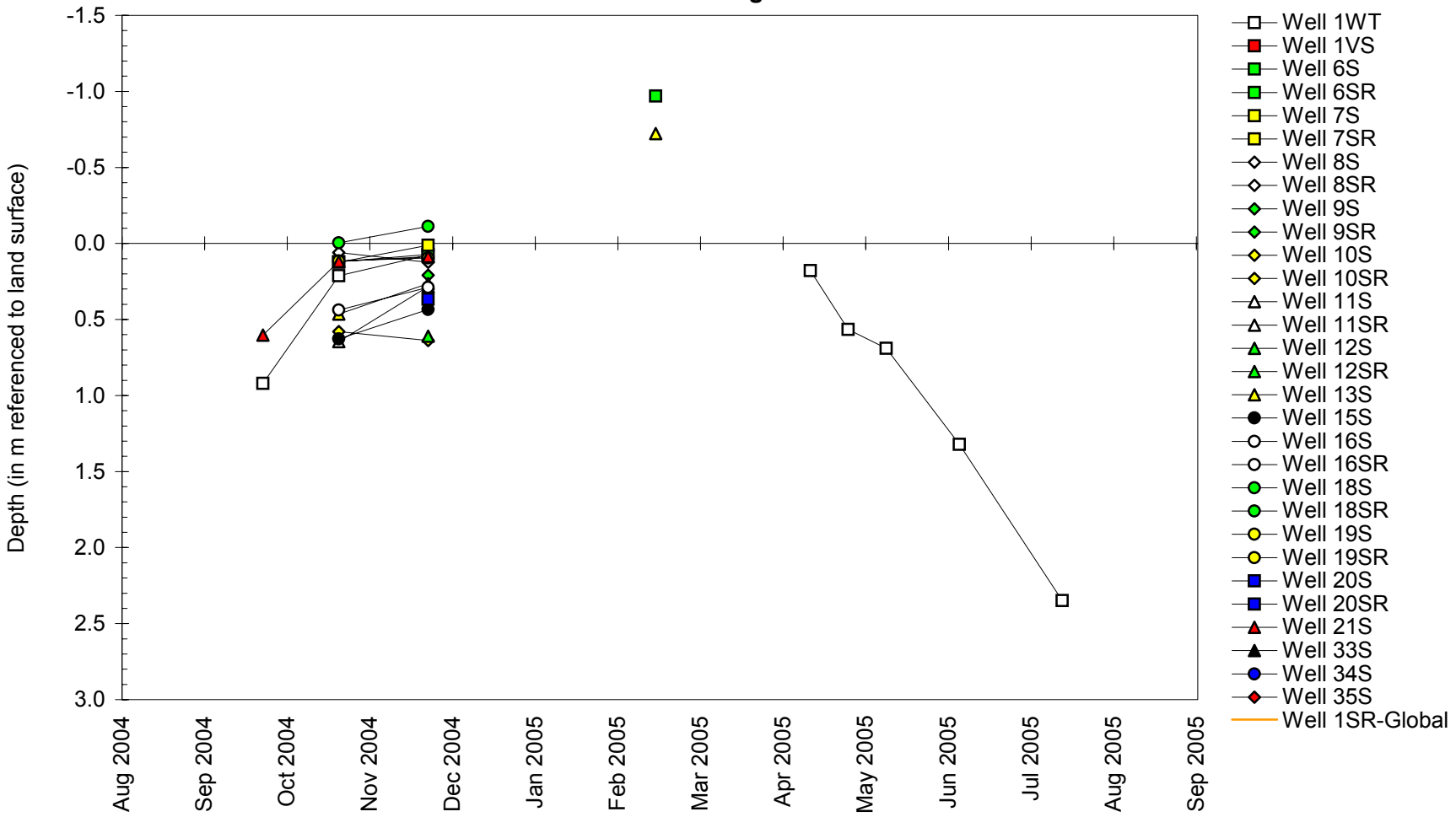
Water-Level Elevations in Shallow Monitoring Wells in the Basin of Big Lake



Former Wessel Property, La Grange Wetland Bank Site

September 1, 2004 to September 1, 2005

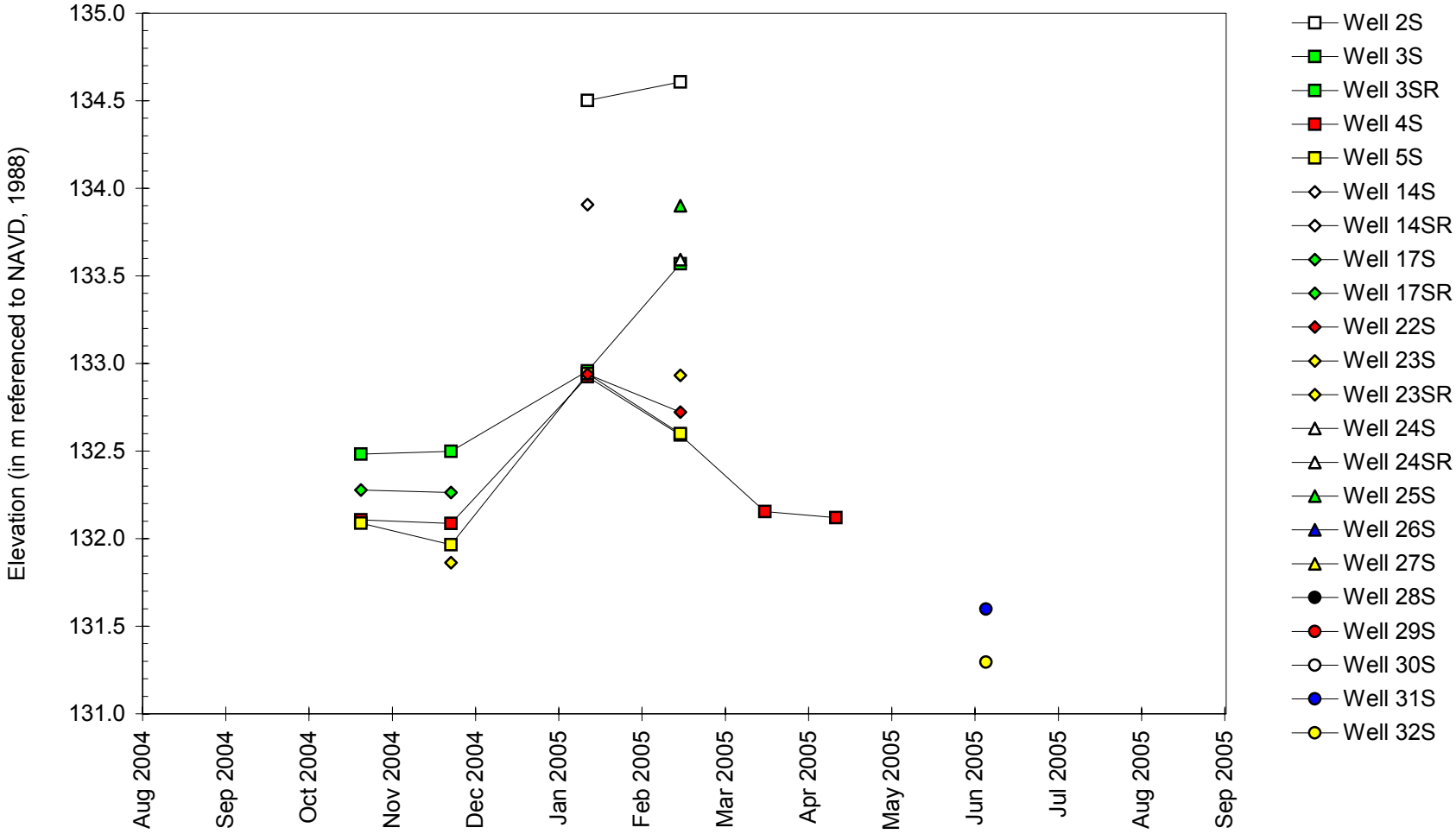
Depth to Water
in Shallow Monitoring Wells
in the Basin of Big Lake



Former Wessel Property, La Grange Wetland Bank Site

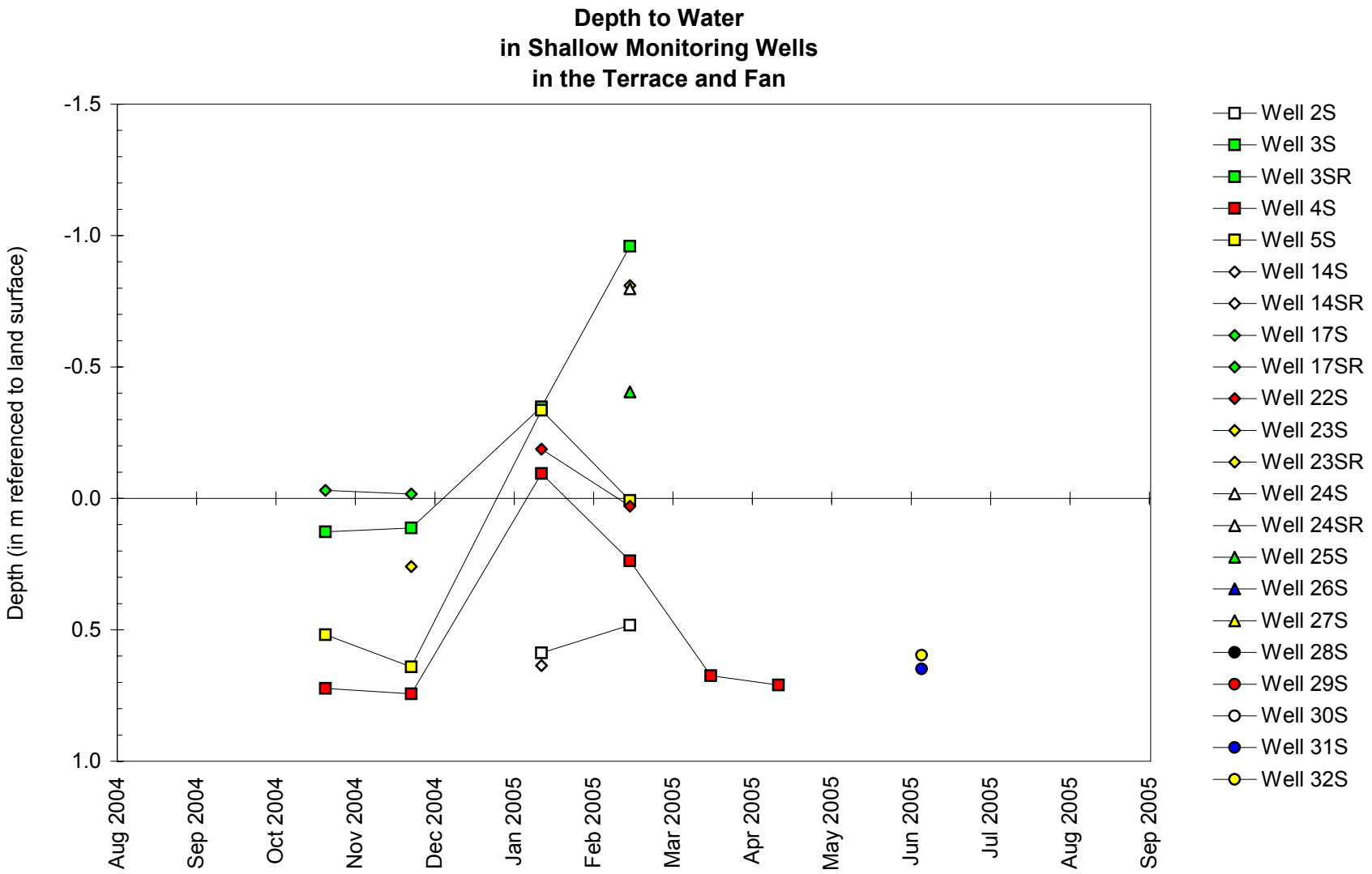
September 1, 2004 to September 1, 2005

Water-Level Elevations in Shallow Monitoring Wells in the Terrace and Fan



Former Wessel Property, La Grange Wetland Bank Site

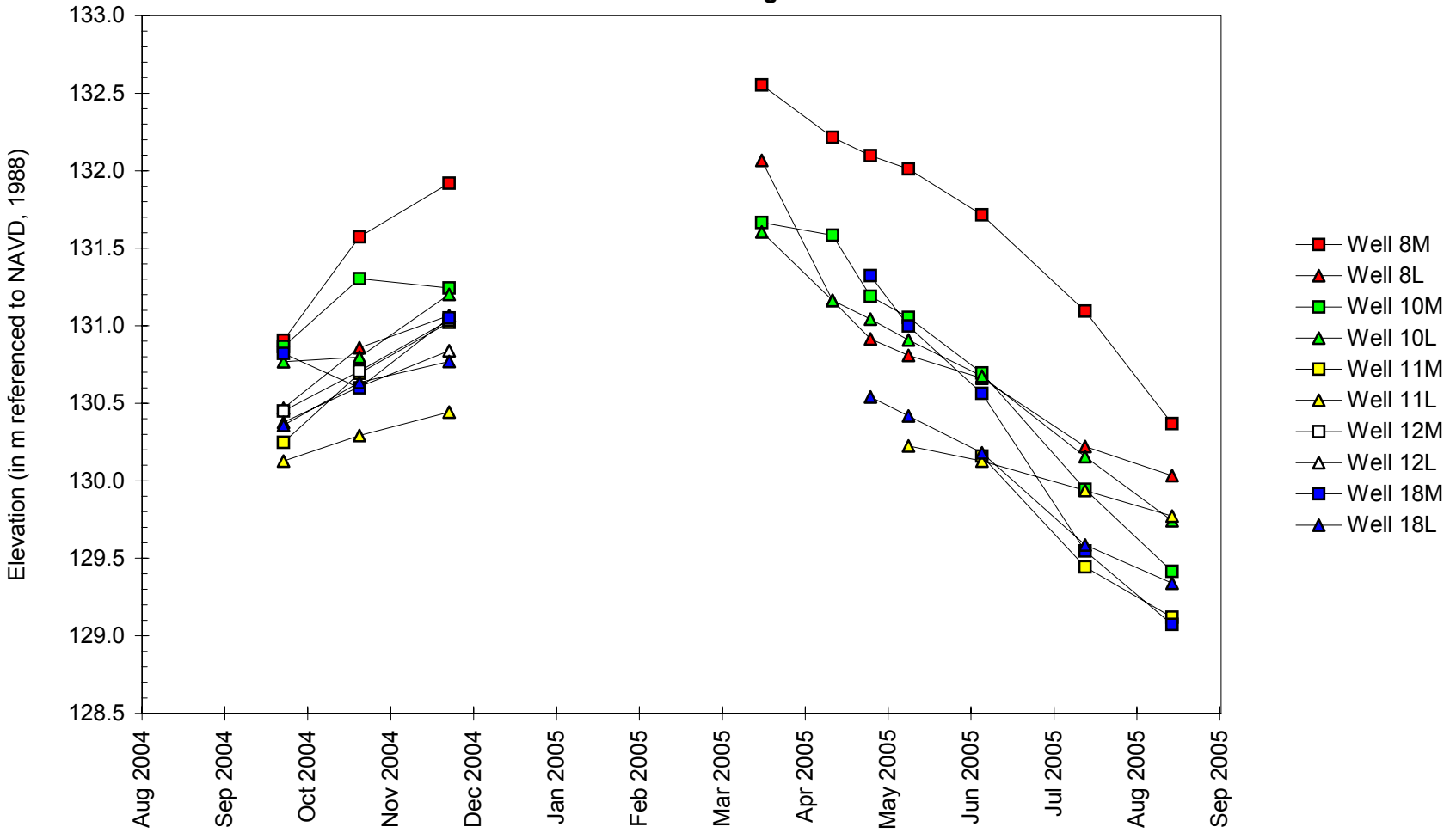
September 1, 2004 to September 1, 2005



Former Wessel Property, La Grange Wetland Bank Site

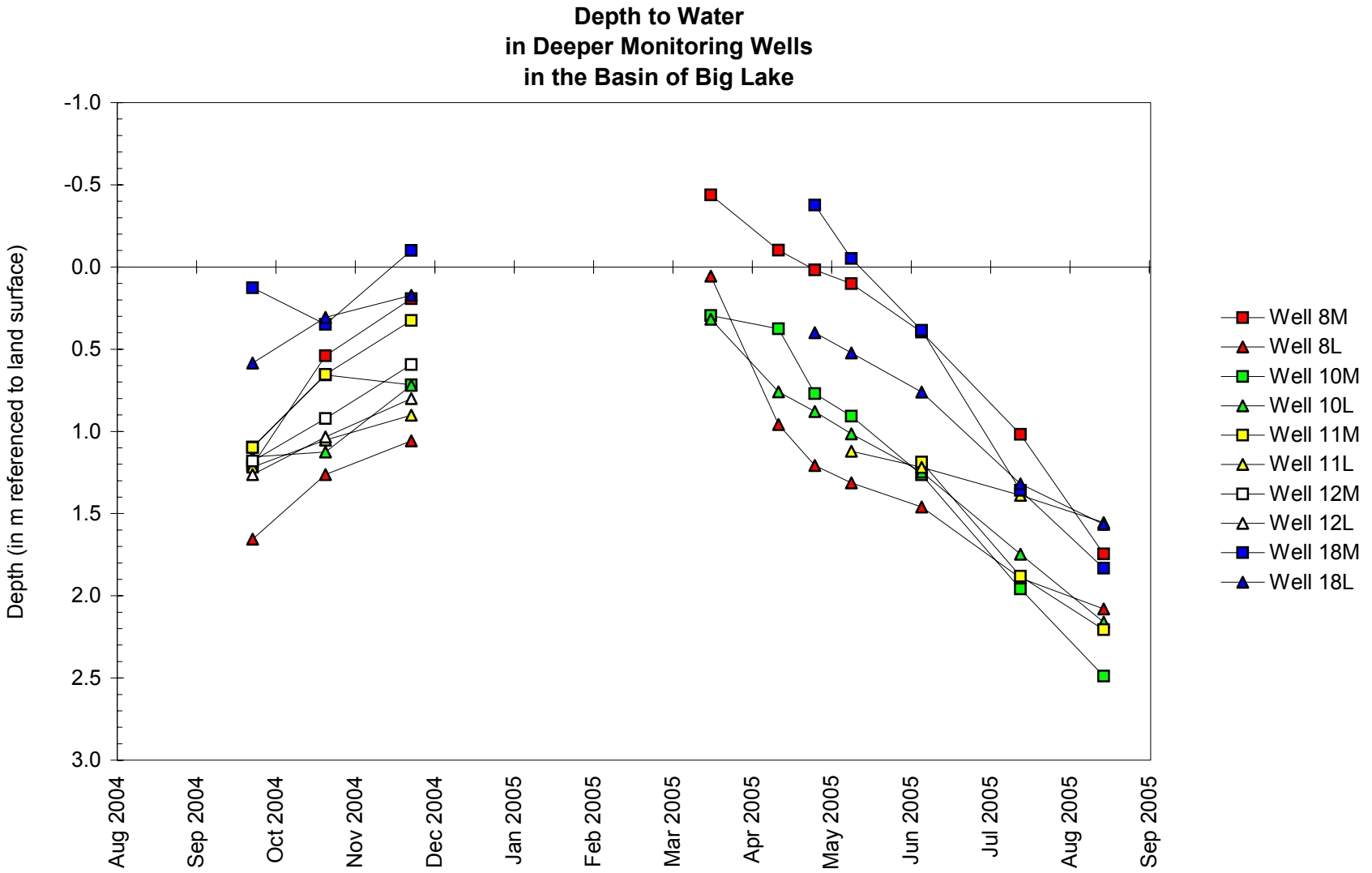
September 1, 2004 to September 1, 2005

Water-Level Elevations in Deeper Monitoring Wells in the Basin of Big Lake



Former Wessel Property, La Grange Wetland Bank Site

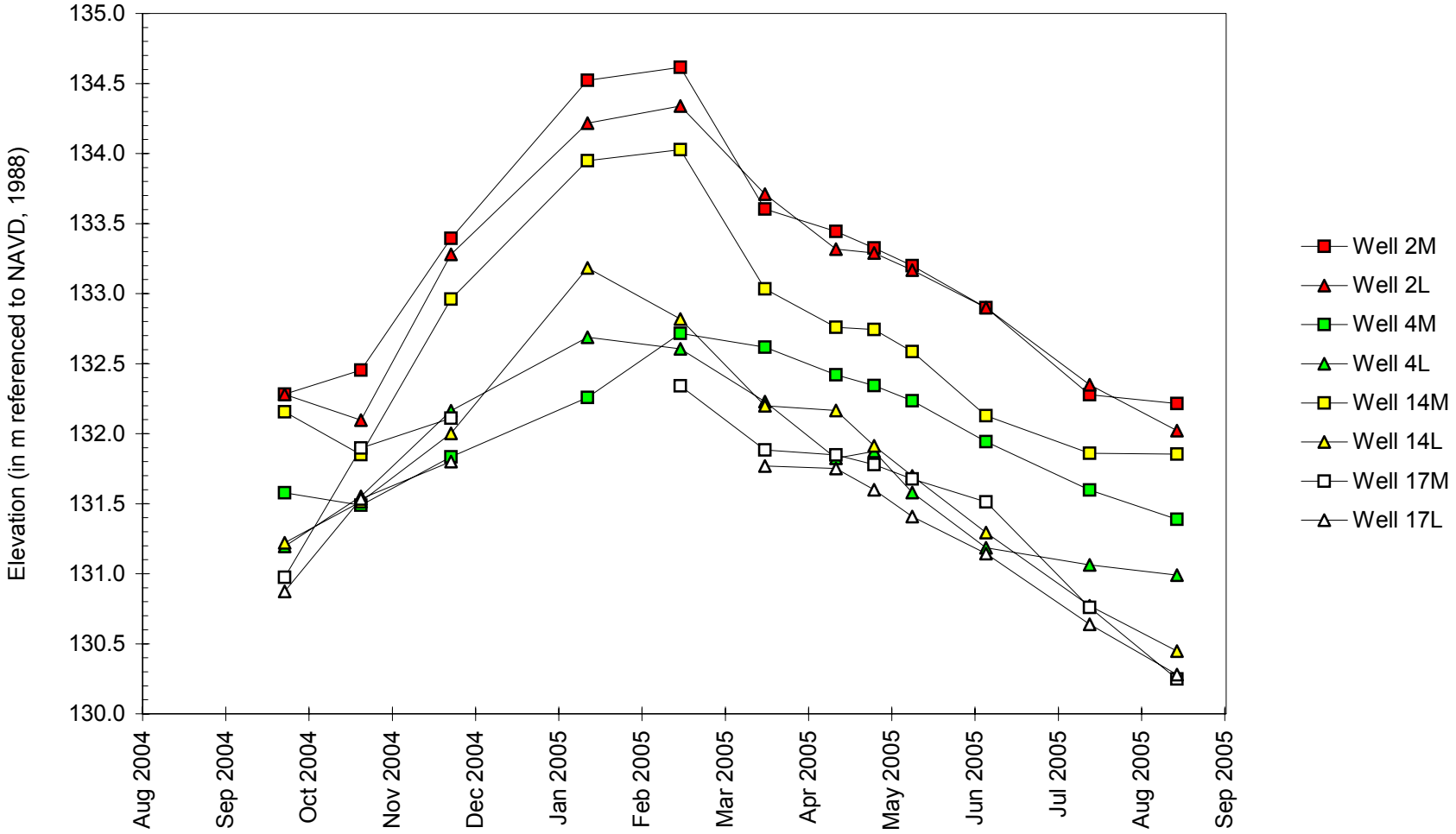
September 1, 2004 to September 1, 2005



Former Wessel Property, La Grange Wetland Bank Site

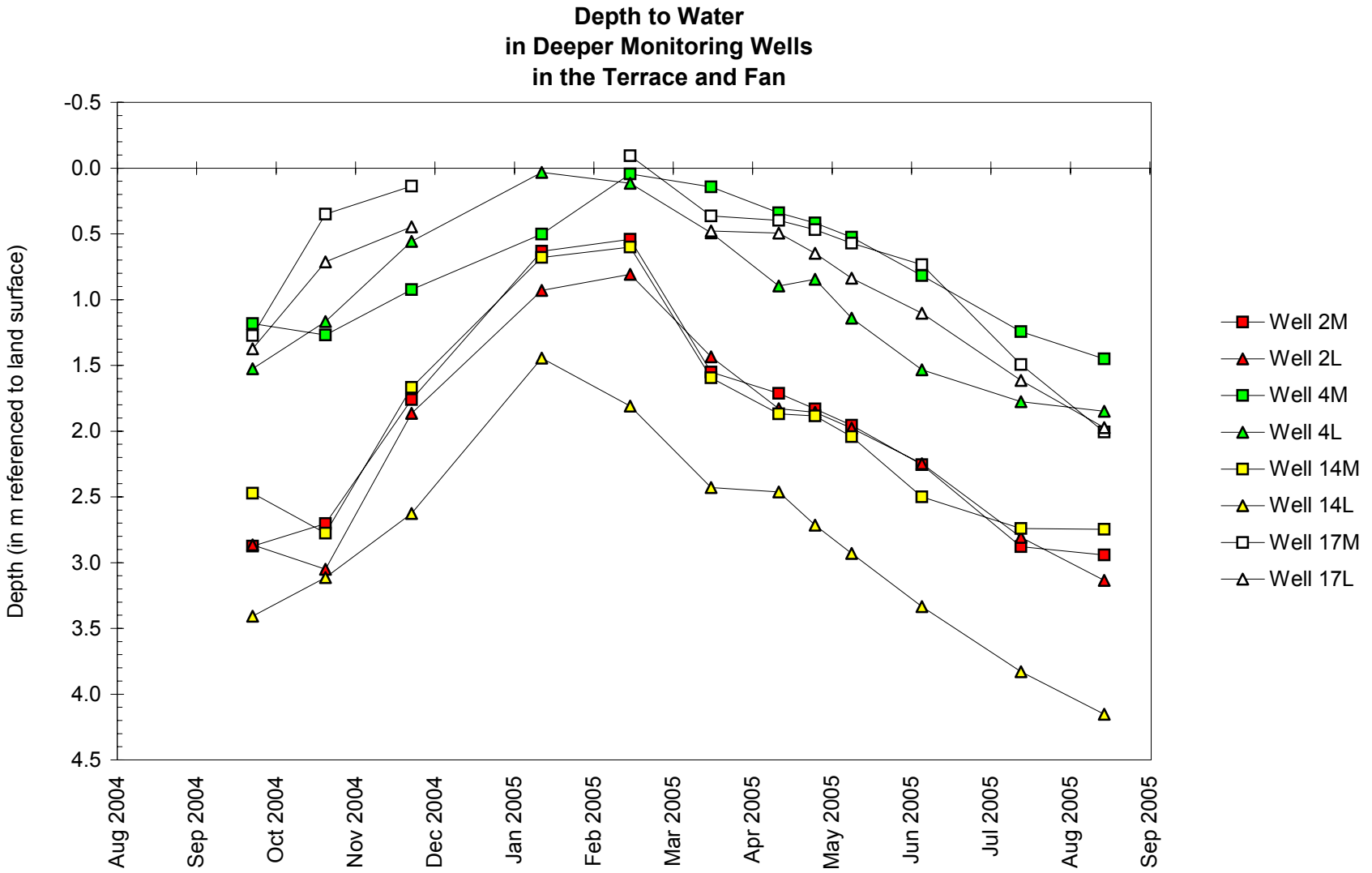
September 1, 2004 to September 1, 2005

Water-Level Elevations in Deeper Monitoring Wells in the Terrace and Fan



Former Wessel Property, La Grange Wetland Bank Site

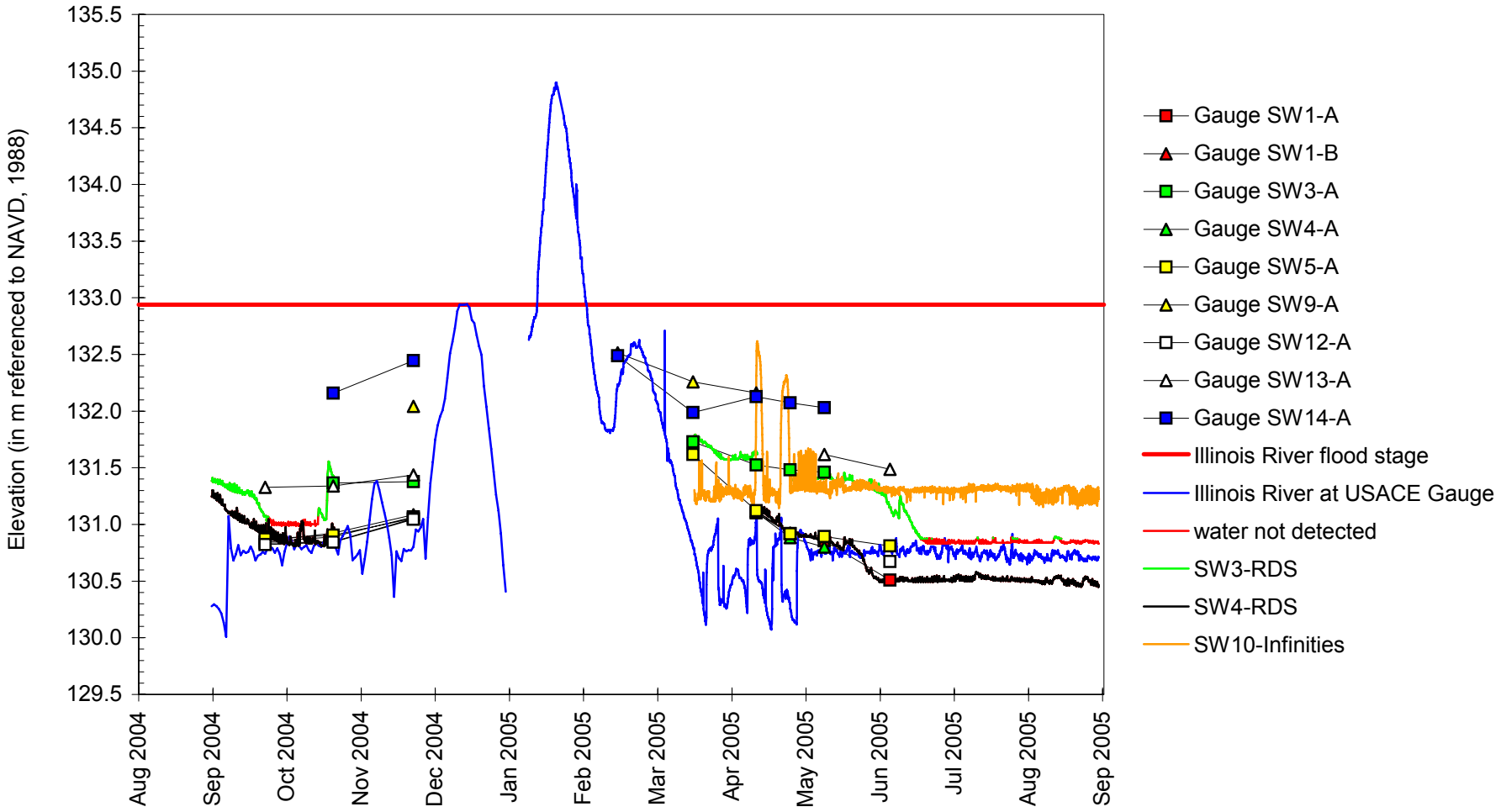
September 1, 2004 to September 1, 2005



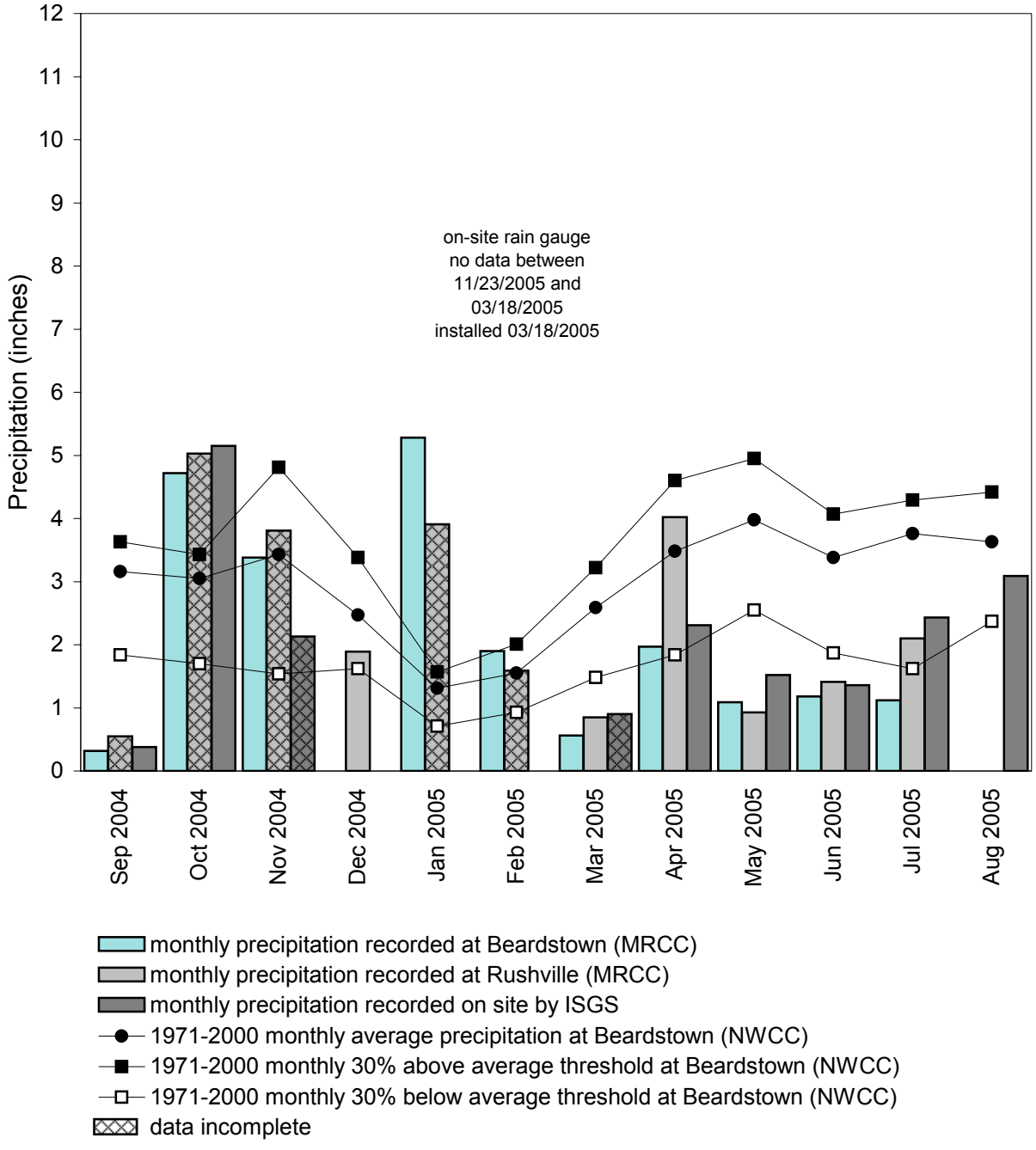
Former Wessel Property, La Grange Wetland Bank Site

September 1, 2004 to September 1, 2005

Water-Level Elevations on Surface Water Gauges



Former Wessel Property,
La Grange Wetland Bank Site
September 2004 through August 2005
Total Monthly Precipitation Recorded On Site and at the Beardstown, IL and Rushville, IL Weather Stations



Graph last updated October 24, 2005

FAIRMONT CITY, NEW RIVER CROSSING **ISGS #53**
POTENTIAL WETLAND COMPENSATION SITE
FAP 999
St. Clair County, near Fairmont City, Illinois
Primary Project Manager: Steven E. Benton
Secondary Project Manager: not assigned

SITE HISTORY

- August 1999: The ISGS conducted an Initial Site Evaluation. The results were reported to IDOT by letter in November.
- June 2000: IDOT requested that the ISGS perform a Level II investigation.
- September 2000: ISGS began monitoring ground- and surface-water levels.
- March 2003: A Level II report was submitted to IDOT (ISGS Open File Series 2003–04).

WETLAND HYDROLOGY CALCULATION FOR 2005

The area of the site that satisfied wetland hydrology criteria (Environmental Laboratory 1987) for more than 5% of the 2005 growing season was estimated to be 9.9 ha (24.5 ac). The area that satisfied wetland hydrology criteria for more than 12.5% of the 2005 growing season was estimated to be 9.1 ha (22.6 ac). These estimates are based on the following factors:

- According to the Midwestern Climate Center, the median date that the growing season begins in nearby Belleville, Illinois, is April 6 and the season lasts 199 days; 5% of the growing season is 10 days and 12.5% of the growing season is 25 days.
- Total precipitation recorded at the Belleville, Illinois weather station during the 2005 monitoring period was 36.29 inches, which was 93% of normal. Precipitation in October 2004, November 2004, January 2005, July 2005, and August 2005 was at or above normal, although precipitation was only 49% of normal from February 2005 to June 2005.
- In 2005, water levels in monitoring wells 3S, 4S, 8S, 12S, 13S, 14S, 15S, 16S, 17S, 23S, and 24S satisfied the wetland hydrology criteria for more than 5% of the growing season. These wells, with the exception of 16S, also satisfied the wetland hydrology criteria for more than 12.5% of the growing season.
- Surface-water data recorded by RDS 1, and staff gauges AR, BR, and D show that the portions of the site below an elevation of 122.1 m (400.6 ft) were inundated for more than 12.5% of the growing season, and areas below an elevation of about 122.2 m (400.9 ft) were inundated for more than 5% of the growing season.

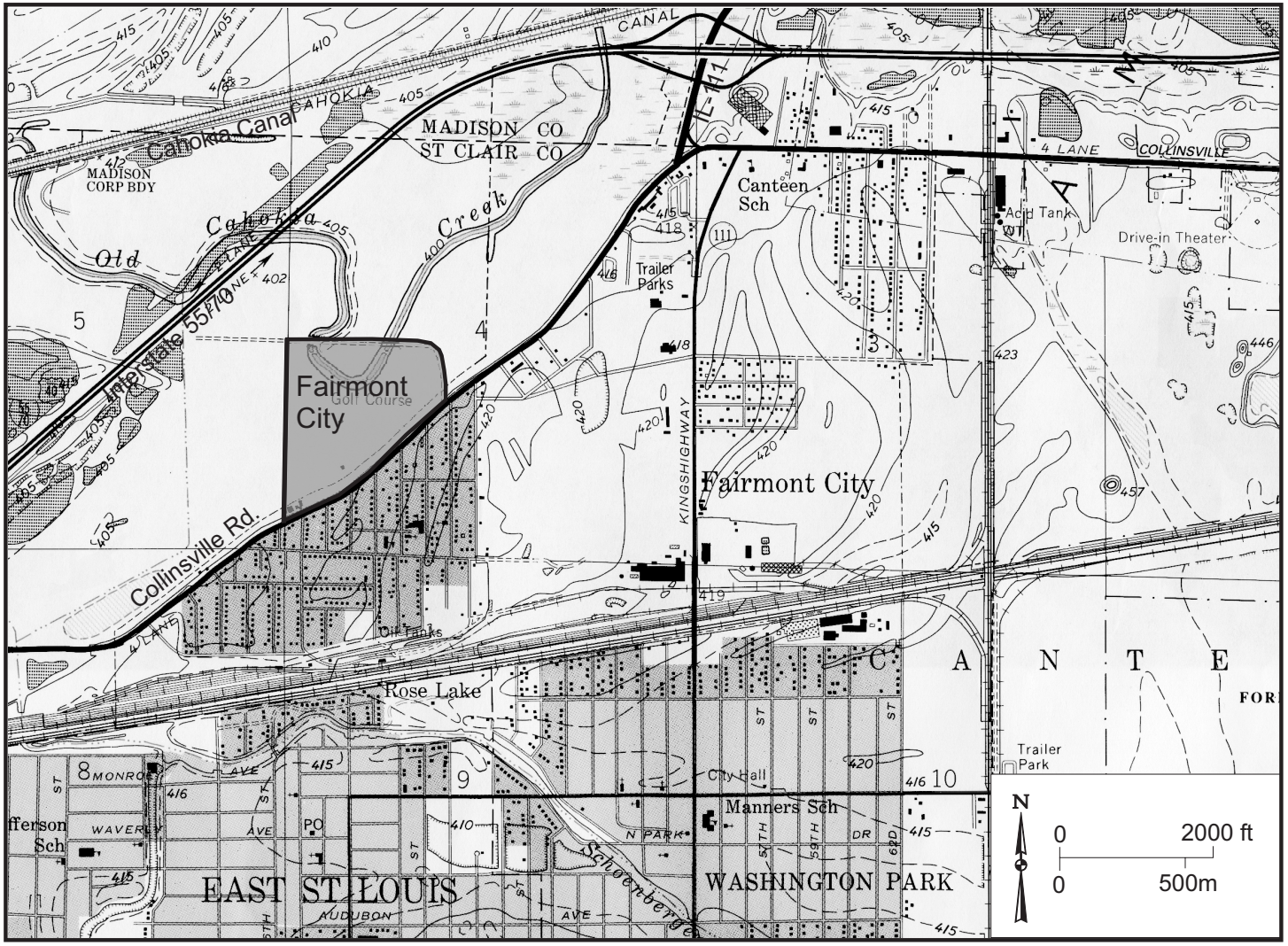
PLANNED FUTURE ACTIVITIES

- Monitoring will continue at this site until notified otherwise by IDOT.

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

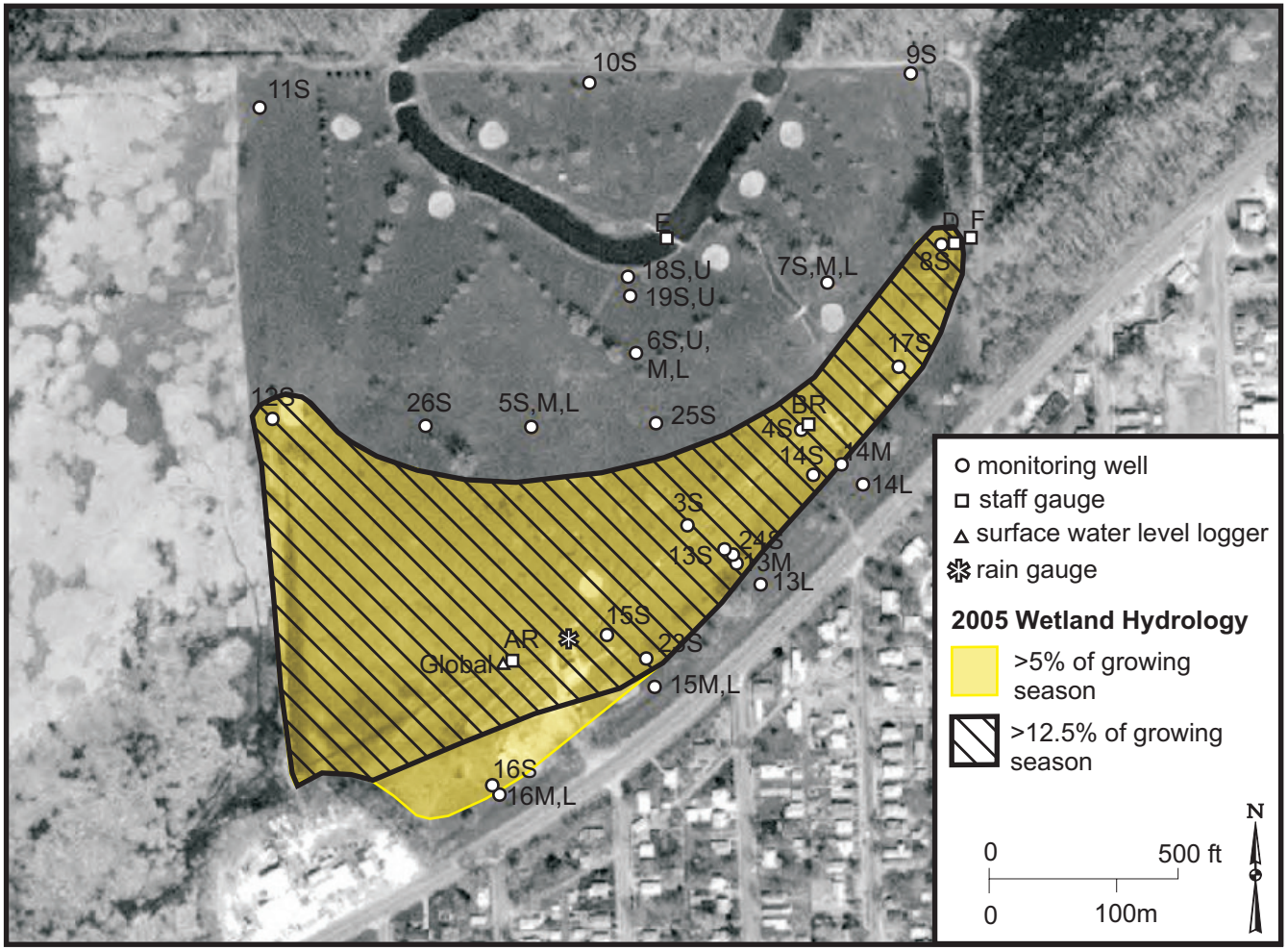
General Study Area and Vicinity

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



Fairmont City Potential Wetland Compensation Site
(FAP 999)
Estimated Areal Extent of 2005 Wetland Hydrology
based on data collected between September 1, 2004 and September 1, 2005

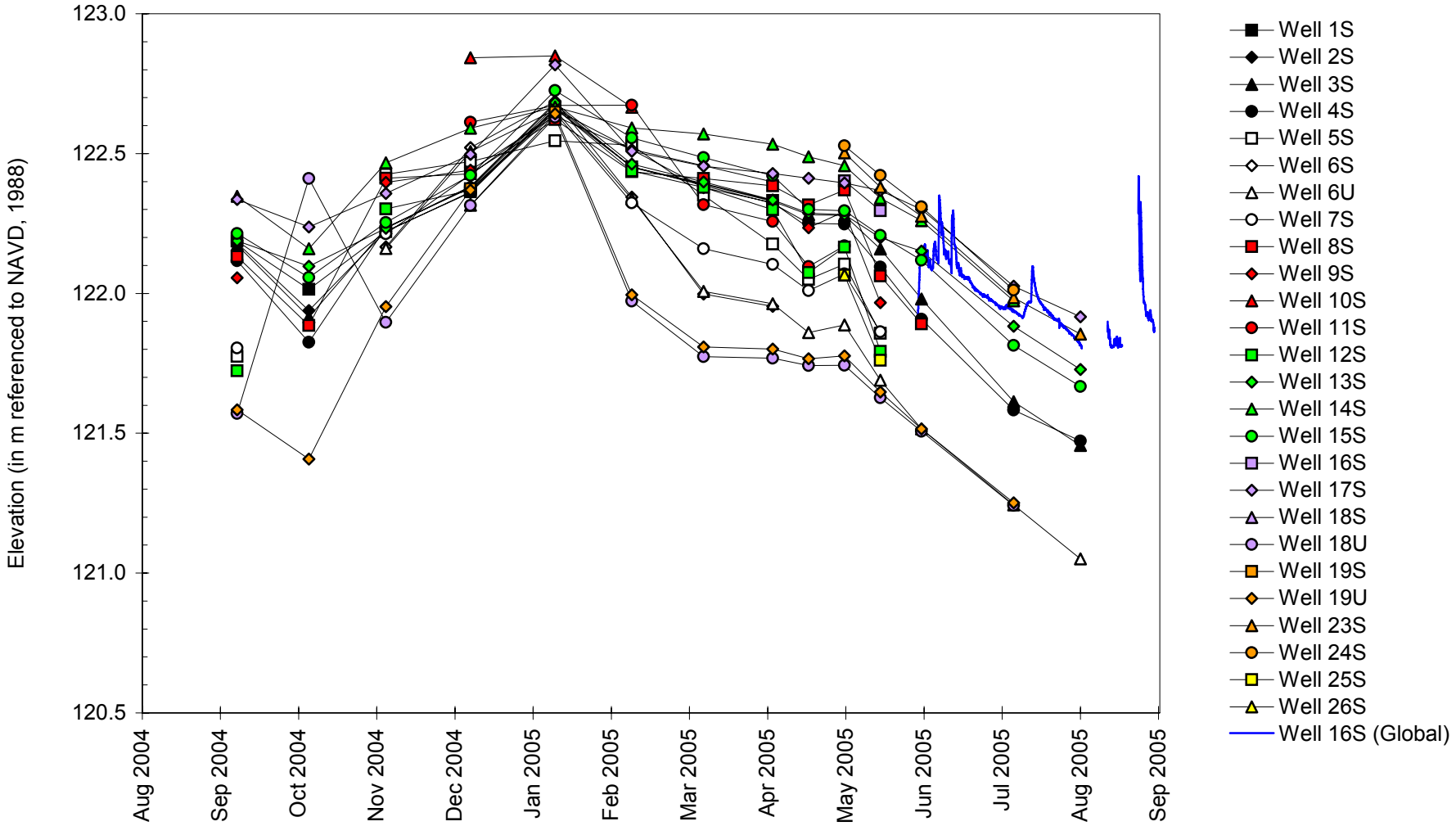
Map based on USGS digital orthophotograph, Monks Mound SW, quarter quadrangle
produced from 04/08/1999 aerial photography (ISGS 2001)
monitoring well, staff gauge and data logger locations from GPS survey



Fairmont City, New River Crossing Potential Wetland Compensation Site

September 1, 2004 to September 1, 2005

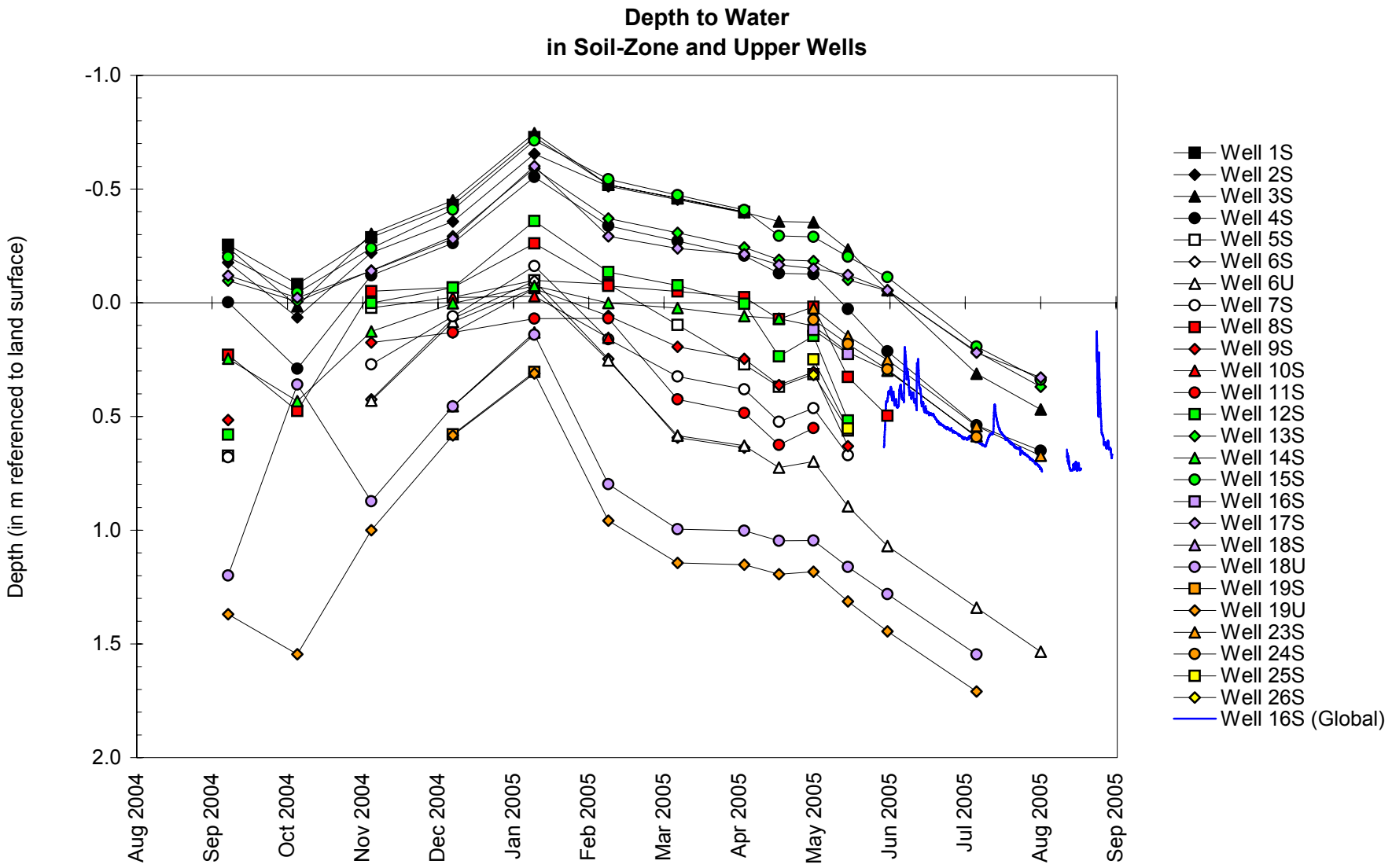
Water-Level Elevations in Soil-Zone and Upper Wells



100

Fairmont City, New River Crossing Potential Wetland Compensation Site

September 1, 2004 to September 1, 2005

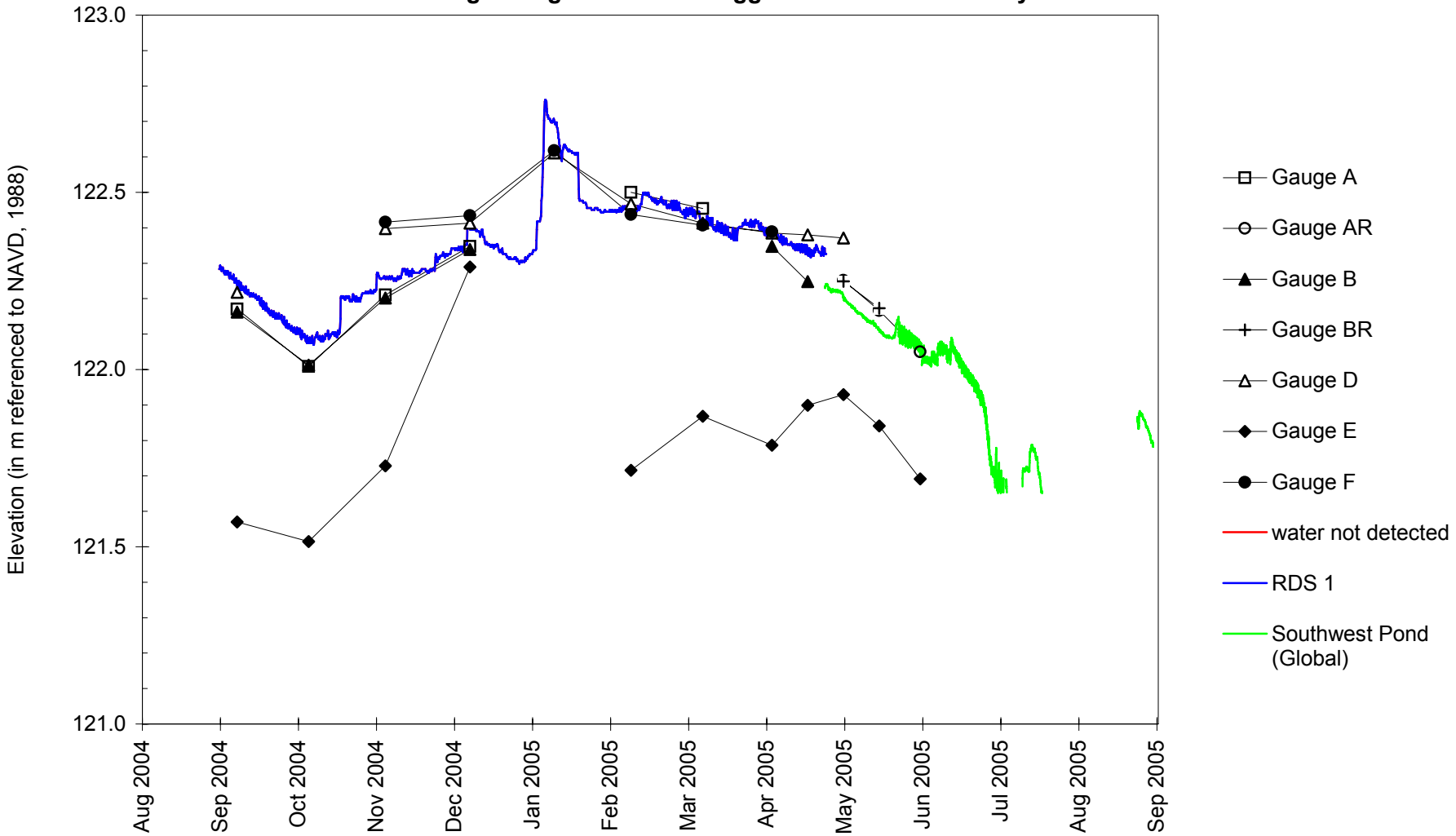


101

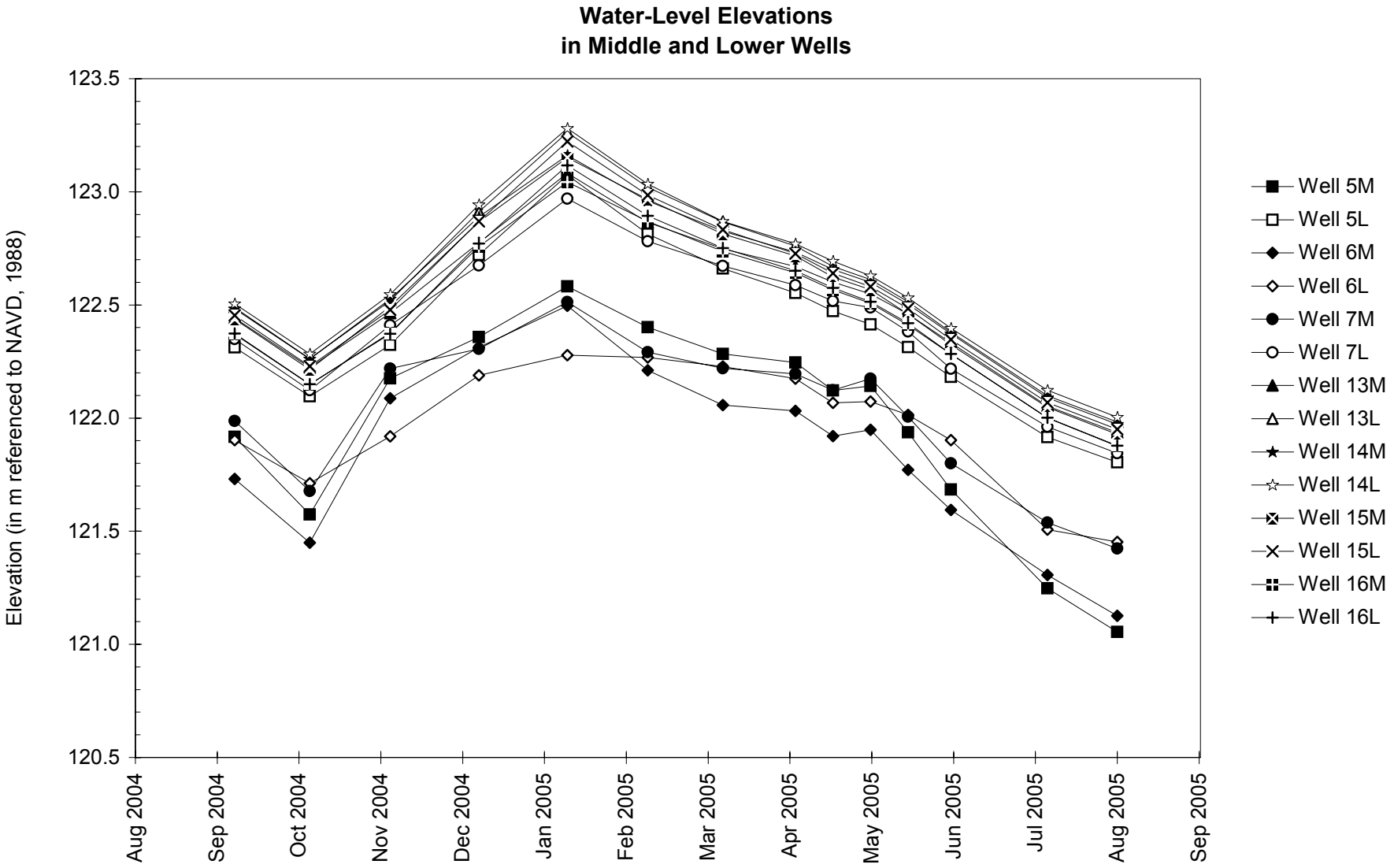
Fairmont City, New River Crossing Potential Wetland Compensation Site

September 1, 2004 to September 1, 2005

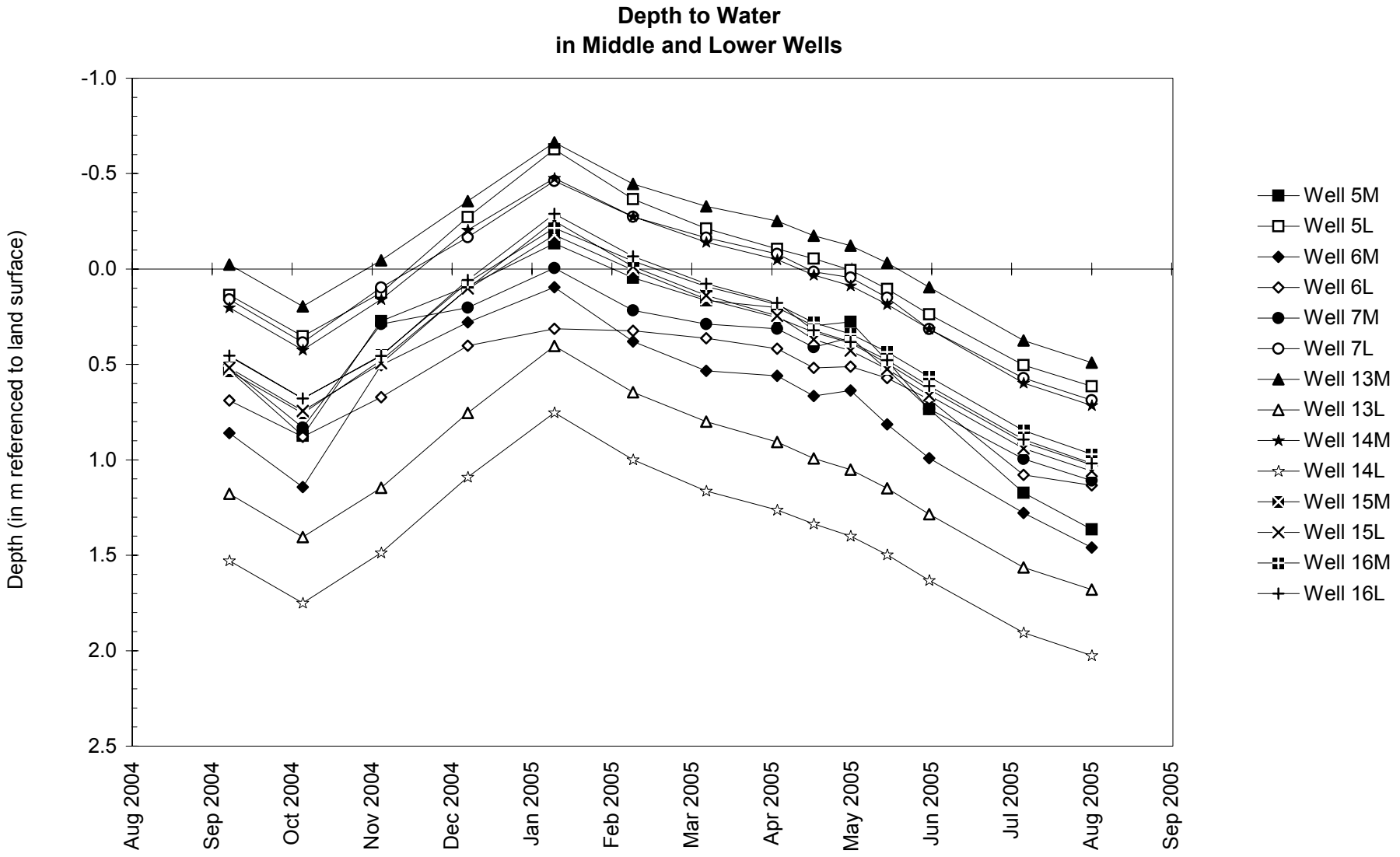
Water-Level Elevations
on Stage Gauges and Data Loggers in the Fairmont City 1 Site



Fairmont City, New River Crossing Potential Wetland Compensation Site
September 1, 2004 to September 1, 2005

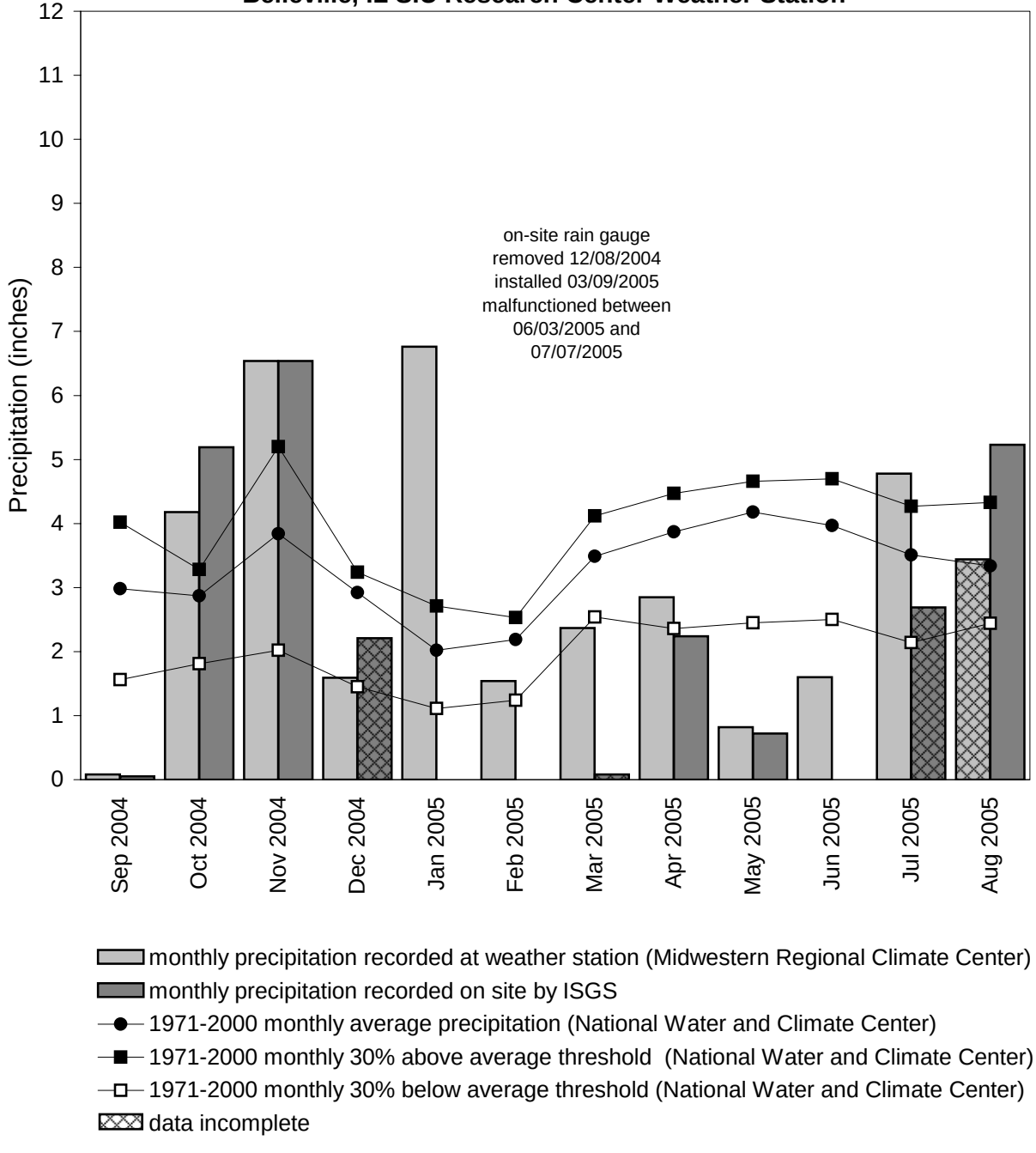


Fairmont City, New River Crossing Potential Wetland Compensation Site
September 1, 2004 to September 1, 2005



Fairmont City, New River Crossing
Potential Wetland Compensation Site
September 2004 through August 2005

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



Graph last updated October 24, 2005

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

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. Monitoring activities began September 2000.

- September 2001: ISGS was tasked by IDOT to monitor wetland hydrology for the south portion of the compensation site. Monitoring activities began December 2001.

- April 2005: ISGS received a transmittal from IDOT to continue monitoring through 2007.

WETLAND HYDROLOGY CALCULATION FOR 2005

We estimate that 0.63 ha (1.6 ac) out of an excavation of 2.2 ha (5.4 ac) satisfied wetland hydrology criteria (Environmental Laboratory 1987) for greater than 5% of the growing season in 2005, whereas the area that satisfied wetland hydrology criteria for greater than 12.5% of the growing season was 0.57 ha (1.4 ac). The 2005 estimates are based on the following factors:

- According to the Midwestern Climate Center, the median date that the growing season begins in Springfield, Illinois, is April 6 and the season lasts 205 days; 5% of the growing season is 10 days and 12.5% of the growing season is 26 days.

- Total precipitation for the reporting period from September 2004 through August 2005 was 87% of normal. Drier than normal conditions prevailed in September and December 2004 and February through August 2005. Conditions during March through June 2005 were particularly dry with only 46% of normal precipitation. Precipitation amounts were at or above normal for October and November 2004 and January 2005.

- Wells 13S, 14S, 15S, and 16S satisfied wetland hydrology criteria for greater than 5% of the growing season. Furthermore, these wells also satisfied the wetland hydrology criteria for greater than 12.5% of the growing season.

- The surface-water data logger, RDS 1, indicated that surface-water inundation occurred to 156.6 m (513.8 ft) for a duration sufficient to satisfy wetland hydrology criteria for greater than 5% of the growing season in the closed depression in the north end of the site. No area was inundated for greater than 12.5% of the growing season.

- Limitations of the wetland hydrology determination are as follows:
  - The area of wetland hydrology was calculated using GIS methods. The wetland-hydrology polygon was drawn from an ISGS topographic map (0.2-meter contour interval) rectified to GPS positions of water-level instruments and point features identifiable from digital orthophotography.

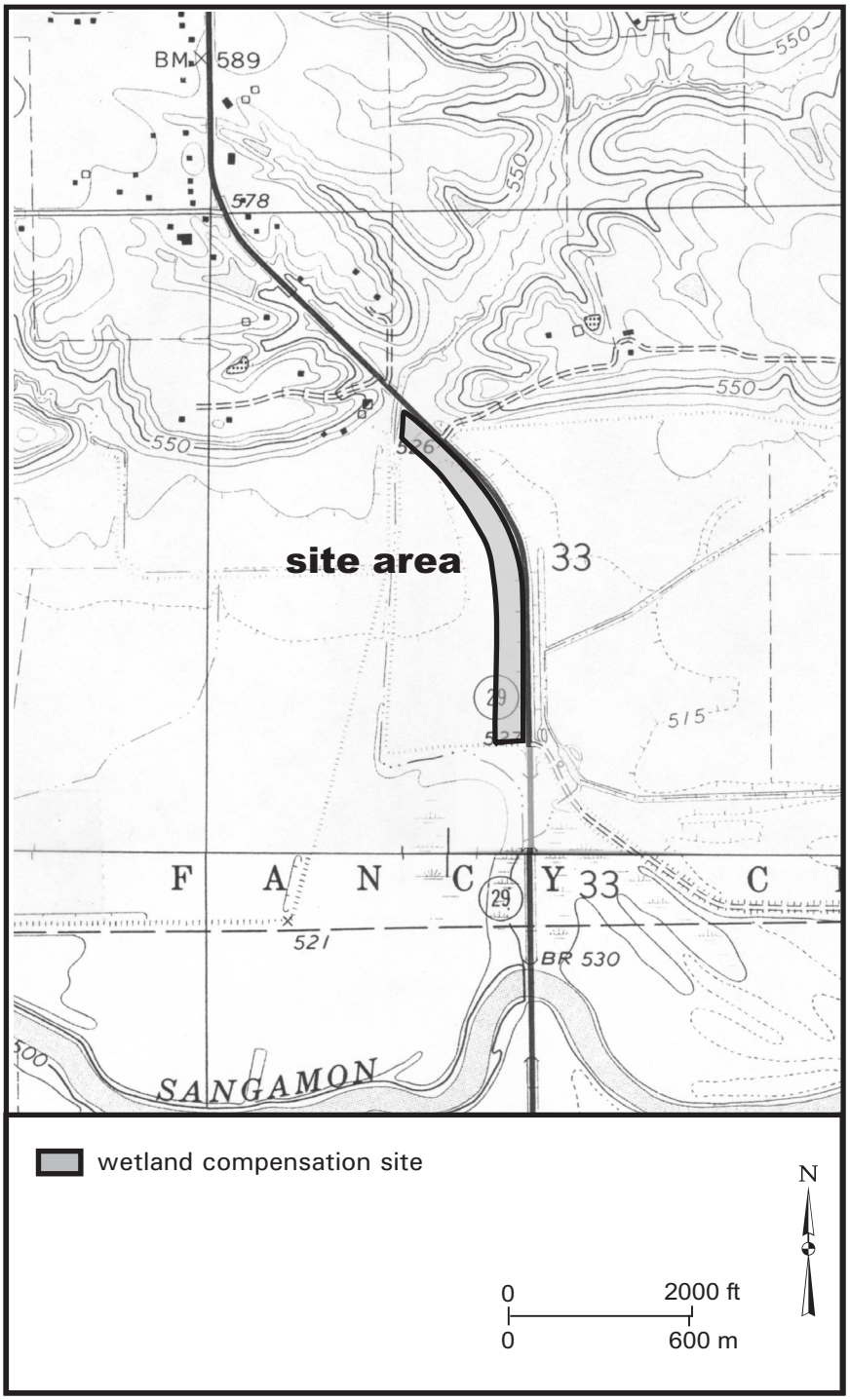
PLANNED FUTURE ACTIVITIES

- Monitoring will continue through 2007 or until no longer required by IDOT.

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

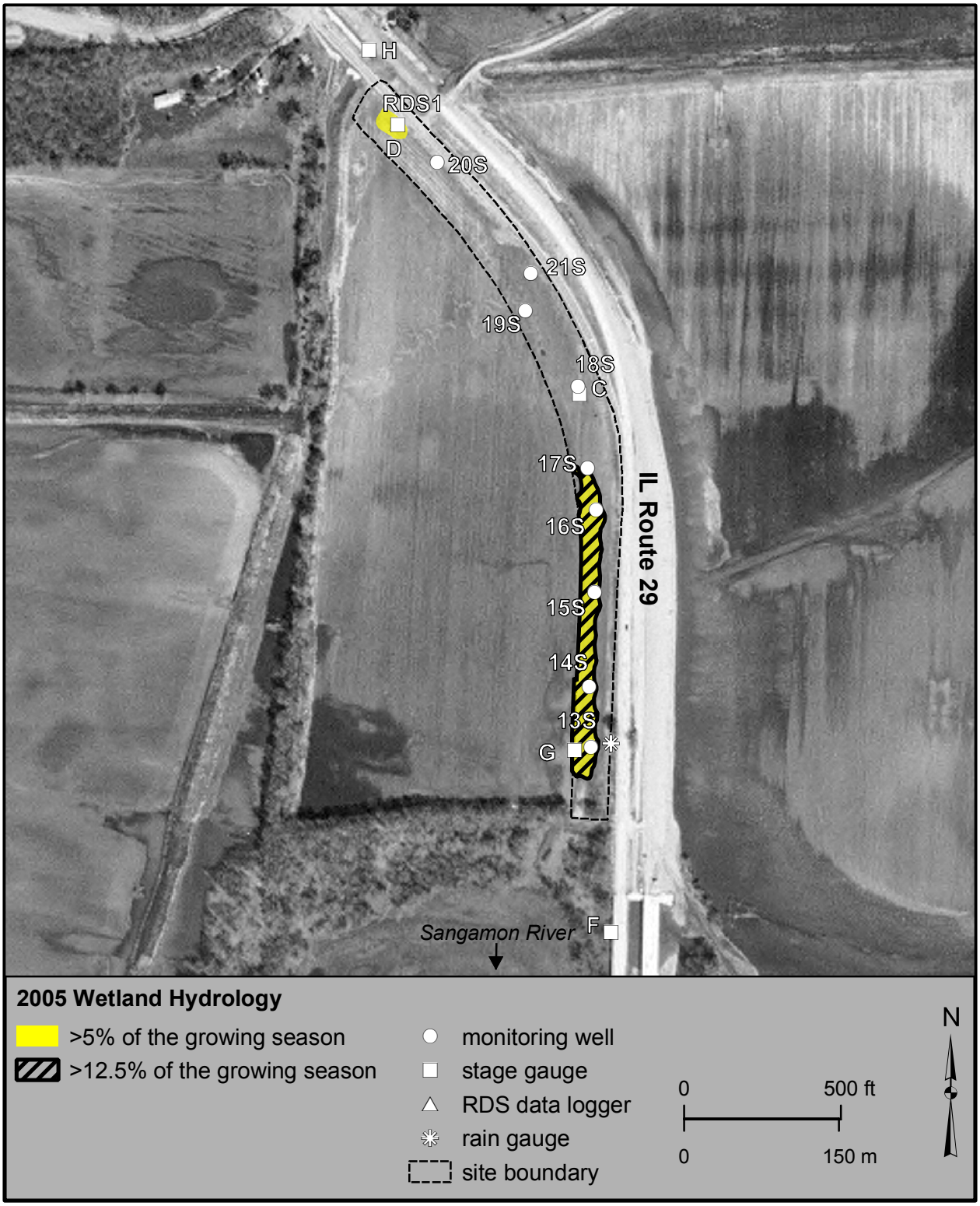


Springfield, IL Route 29 Wetland Compensation Site (FAP 658)

Estimated Areal Extent of 2005 Wetland Hydrology

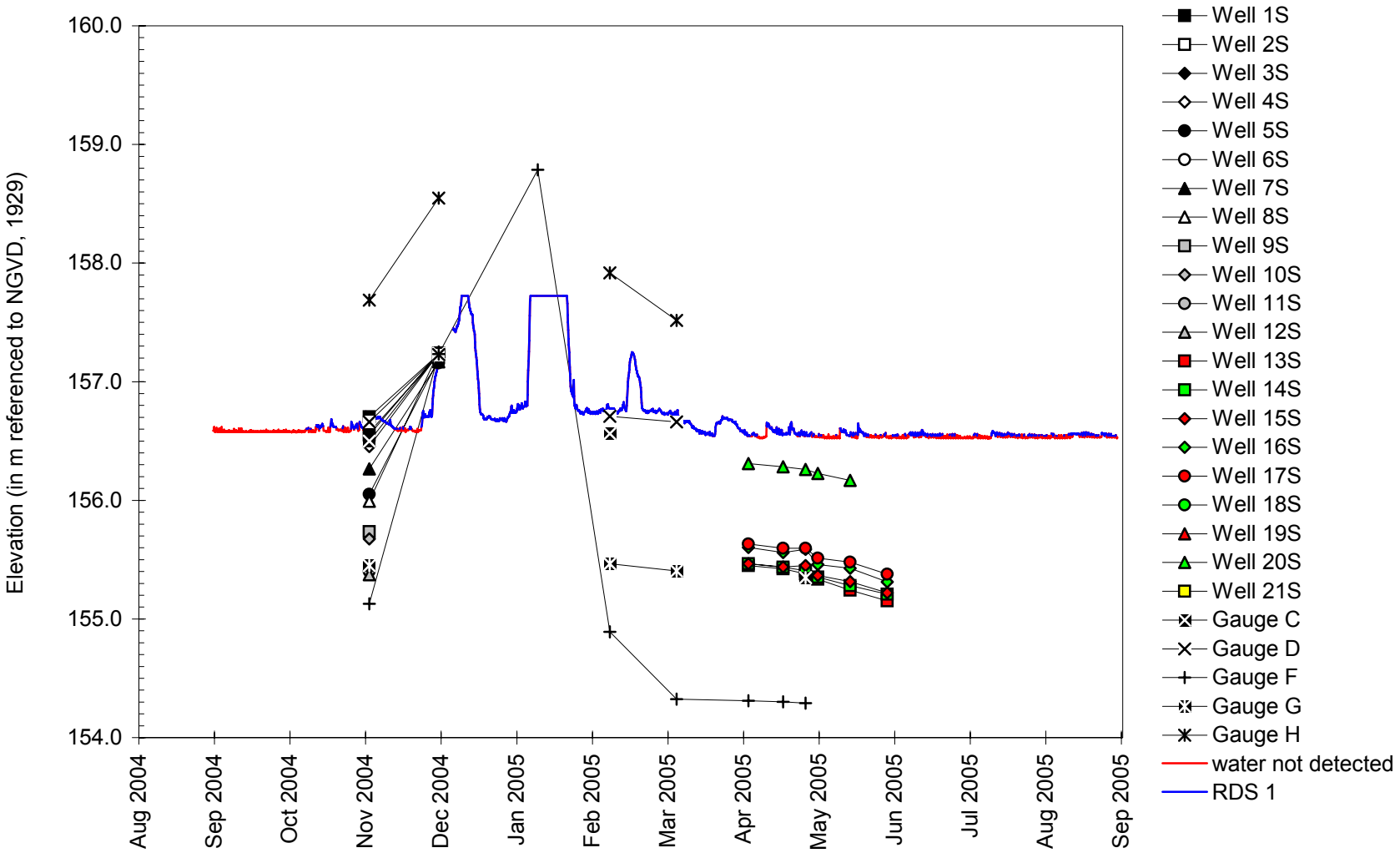
based on data collected between September 1, 2004 and September 1, 2005

Map based on IDOT design plans and ISGS topography rectified to USGS digital orthophotograph Athens SW quarter quadrangle from 03/29/1998 aerial photography (ISGS 2001)

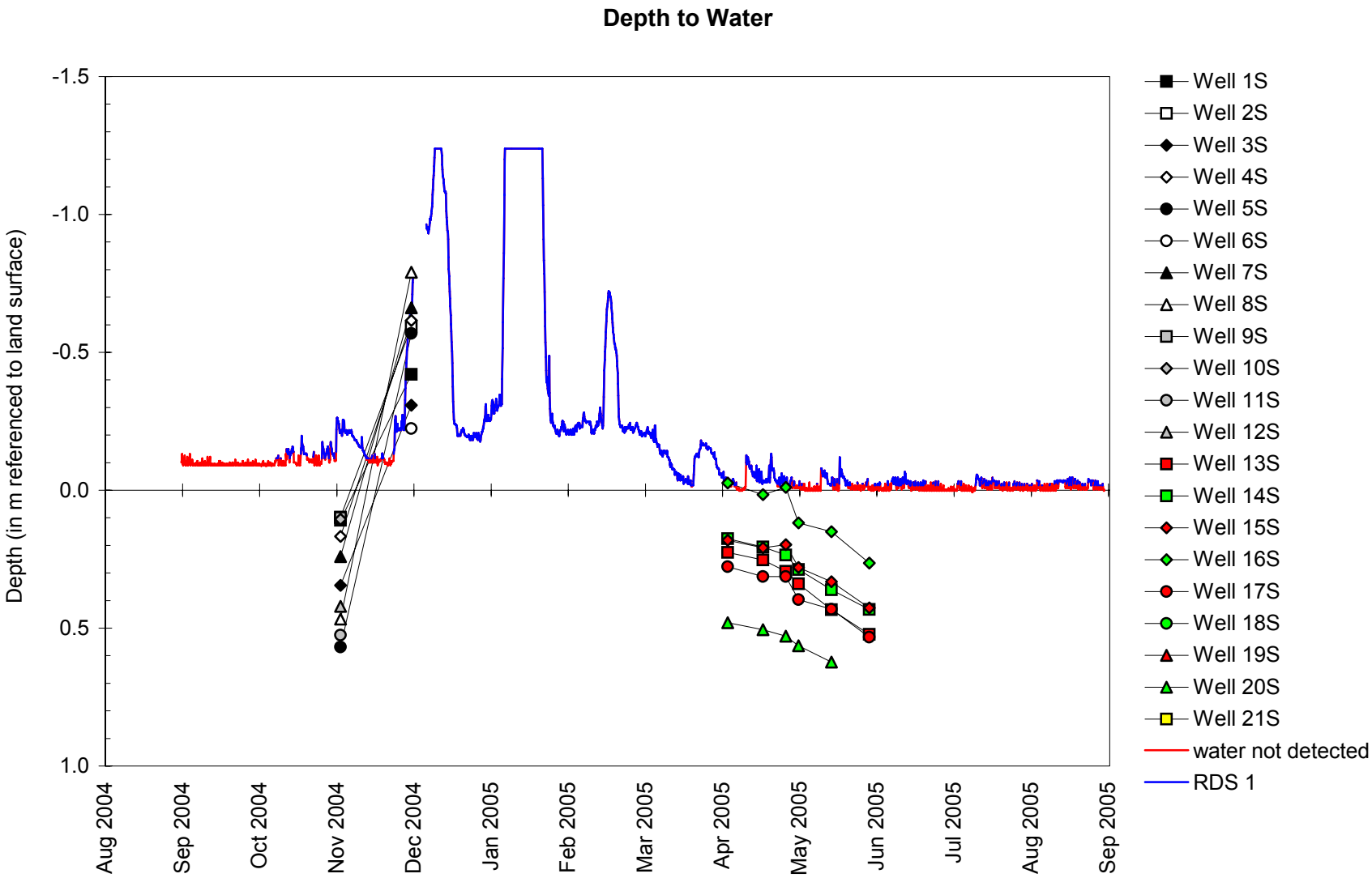


Springfield, IL Route 29 Wetland Compensation Site
September 1, 2004 to September 1, 2005

Water-Level Elevations



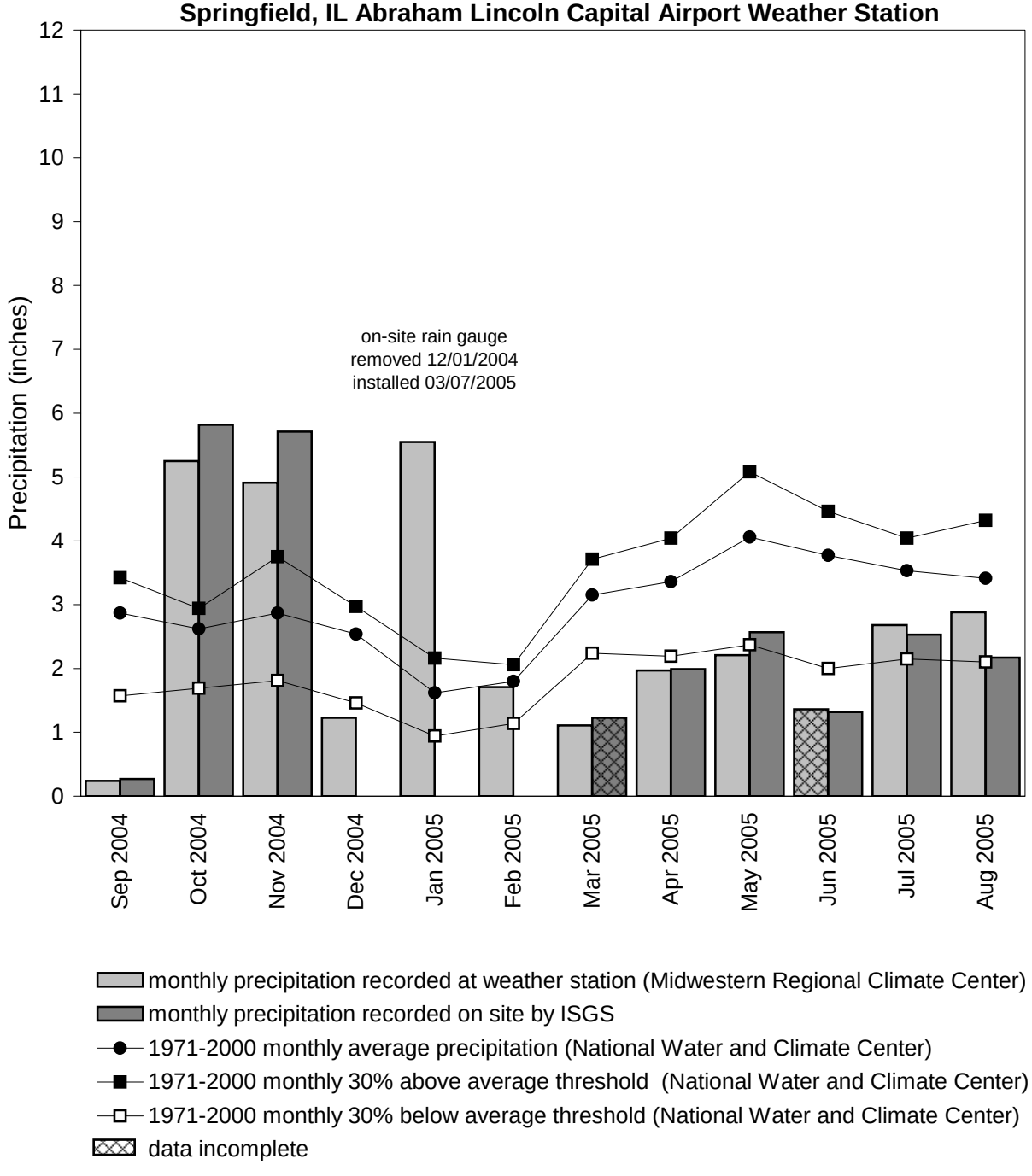
Springfield, IL Route 29 Wetland Compensation Site
September 1, 2004 to September 1, 2005



111

Springfield, IL Route 29
Wetland Compensation Site
September 2004 through August 2005

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



Graph last updated October 24, 2005

FORMER TIERNAN PROPERTY, NEW RIVER CROSSING **ISGS #57**
POTENTIAL WETLAND COMPENSATION SITE
FAP 999
Sequence #33G
St. Clair County, near Cahokia, Illinois
Primary Project Manager: Bonnie J. Robinson
Secondary Project Manager: not assigned

SITE HISTORY

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

- March–November 2001: Thirty-two S wells, ten VS wells, 5 M wells, two staff gauges, and six benchmarks were installed and surveyed. Six soil-moisture probes were installed in three clusters in the northern field. Water-quality sampling was terminated because no quality standards were exceeded in any of the initial samples.

- July 2005: A Level II hydrogeologic characterization report was submitted to IDOT (ISGS Open File Series 2005–11).

WETLAND HYDROLOGY CALCULATION FOR 2005

The area that satisfied wetland hydrology criteria (Environmental Laboratory 1987) for greater than 5% of the growing season was estimated to be 10.1 ha (25.0 ac), and was identical to the area that satisfied the criteria for greater than 12.5% of the growing season. The estimates for 2005 are based on the following factors:

- According to the Midwestern Climate Center, the median date that the growing season begins in nearby Belleville, Illinois, is April 6 and the season lasts 199 days; 5% of the growing season is 10 days and 12.5% of the growing season is 25 days.

- Precipitation during the monitoring period was 92% of normal. Water levels rose over the fall and winter months with above normal precipitation in October and November 2004 and January 2005. Following a peak in early January, water levels steadily decreased as a result of below average precipitation from February through June 2005.

- In 2005, water levels measured in wells 14S, 21S, 25VS, 27S, 27VS, 28VS, 29S, 29VS, 30S, 30VS, 31S and 31VS satisfied the wetland hydrology criteria for greater than 12.5% of the growing season. No additional wells satisfied wetland hydrology criteria for greater than 5% of the growing season. Surface-water stage data from Gauge D indicate that inundation occurred to an elevation of 120.97 m (396.88 ft) for a period sufficient to satisfy wetland hydrology criteria for greater than 5% of the growing season and to an elevation of 120.80 m (396.34 ft) for 12.5% of the growing season.

- Most of the southern half of the site (the former borrow pit) is mapped as pre-existing wetland, the hydrology of which is controlled primarily by the water level in Blue Waters Ditch southeast of the site. Above normal precipitation through the winter months resulted in widespread flooding in the southern half of the site in January and early February.

However, this water receded by the beginning of the growing season in April as a result of the precipitation deficit.

- The hydrology of the northern half of the site (the former farm field) is dominated by precipitation ponding on land surface. Identification of saturated conditions in the northern half of the site was augmented using data from soil-moisture probes deployed at well clusters 26, 27, and 28. Data from all the probes indicate saturated conditions in the upper 0.30 m (1 ft) of the soil column for nearly the entire period from early January to late May, confirming the water level readings in the adjacent wells.

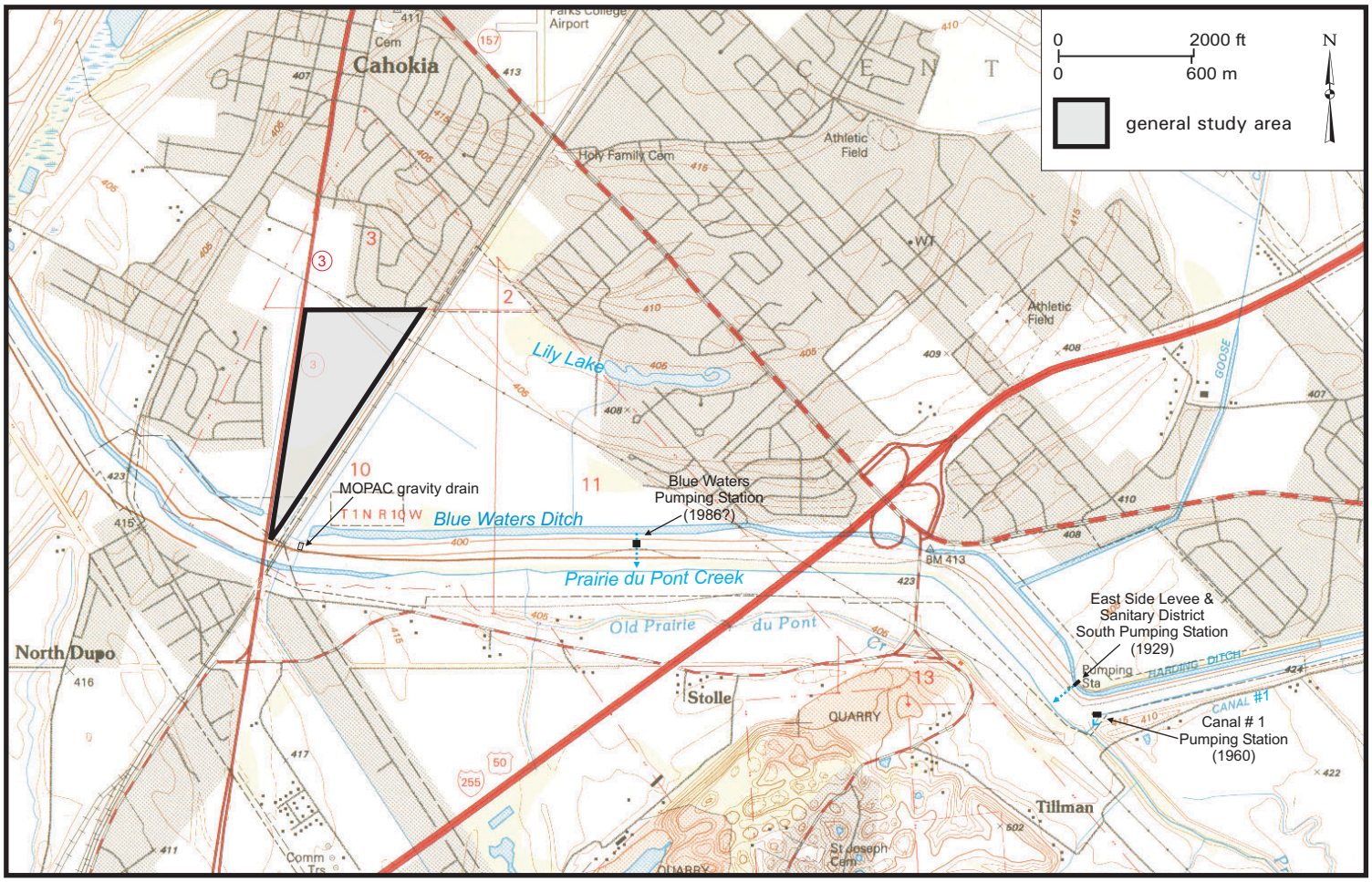
PLANNED FUTURE ACTIVITIES

- Monitoring will continue until no longer required by IDOT.

Former Tiernan Property, New River Crossing
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 is10 feet

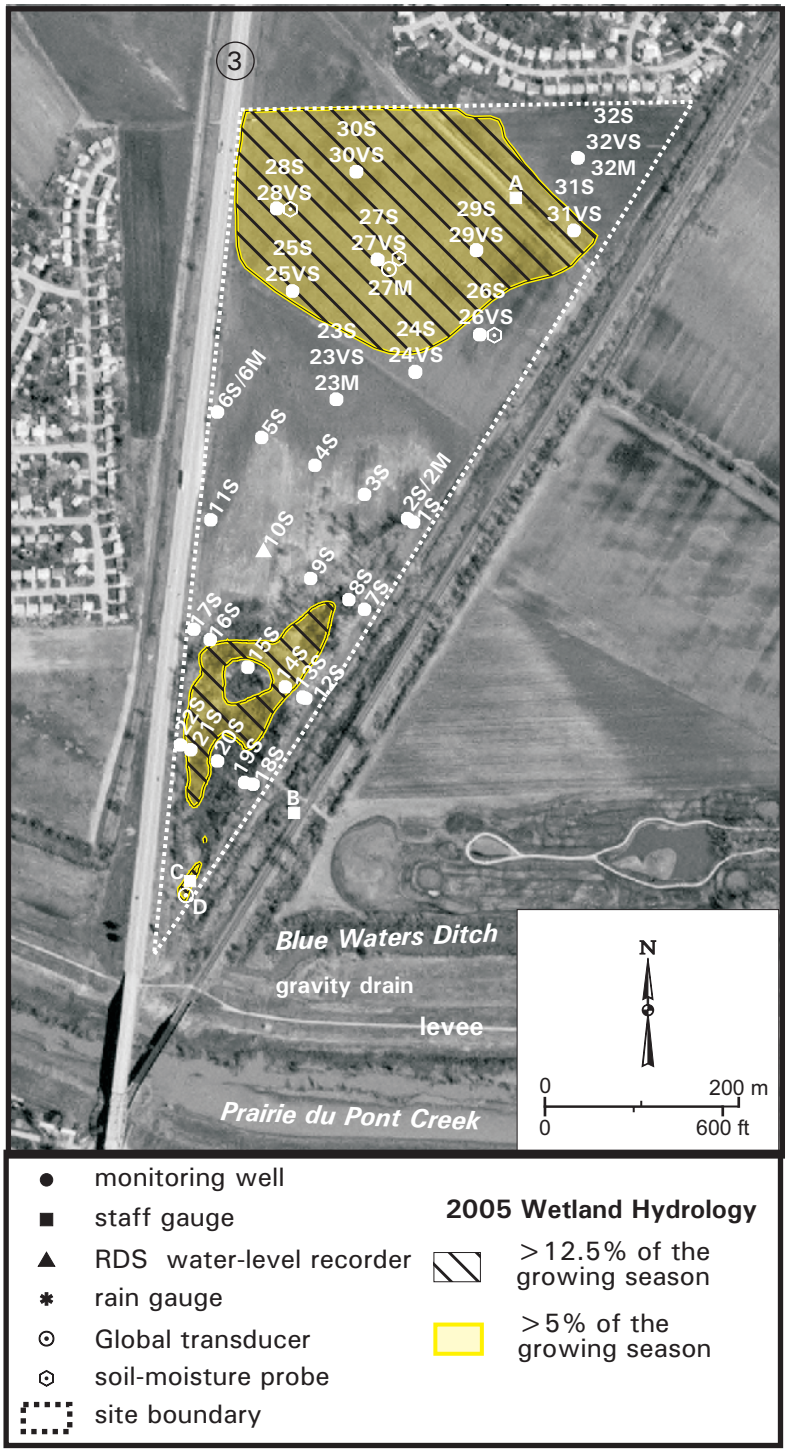


Former Tiernan Property, New River Crossing
Potential Wetland Compensation Site
(FAP 999)

Estimated Areal Extent of 2005 Wetland Hydrology

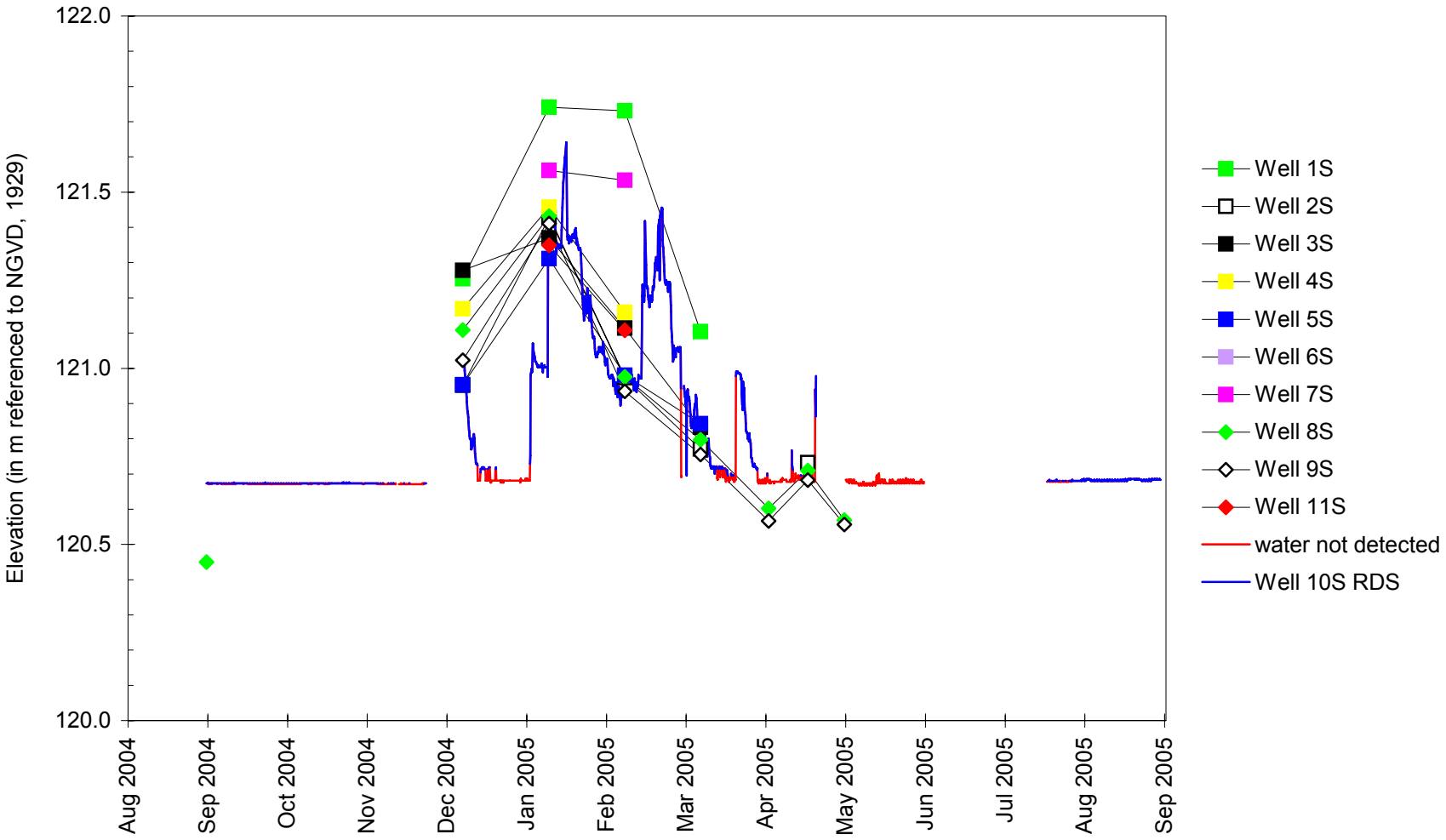
based on data collected between September 1, 2004 and September 1, 2005

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



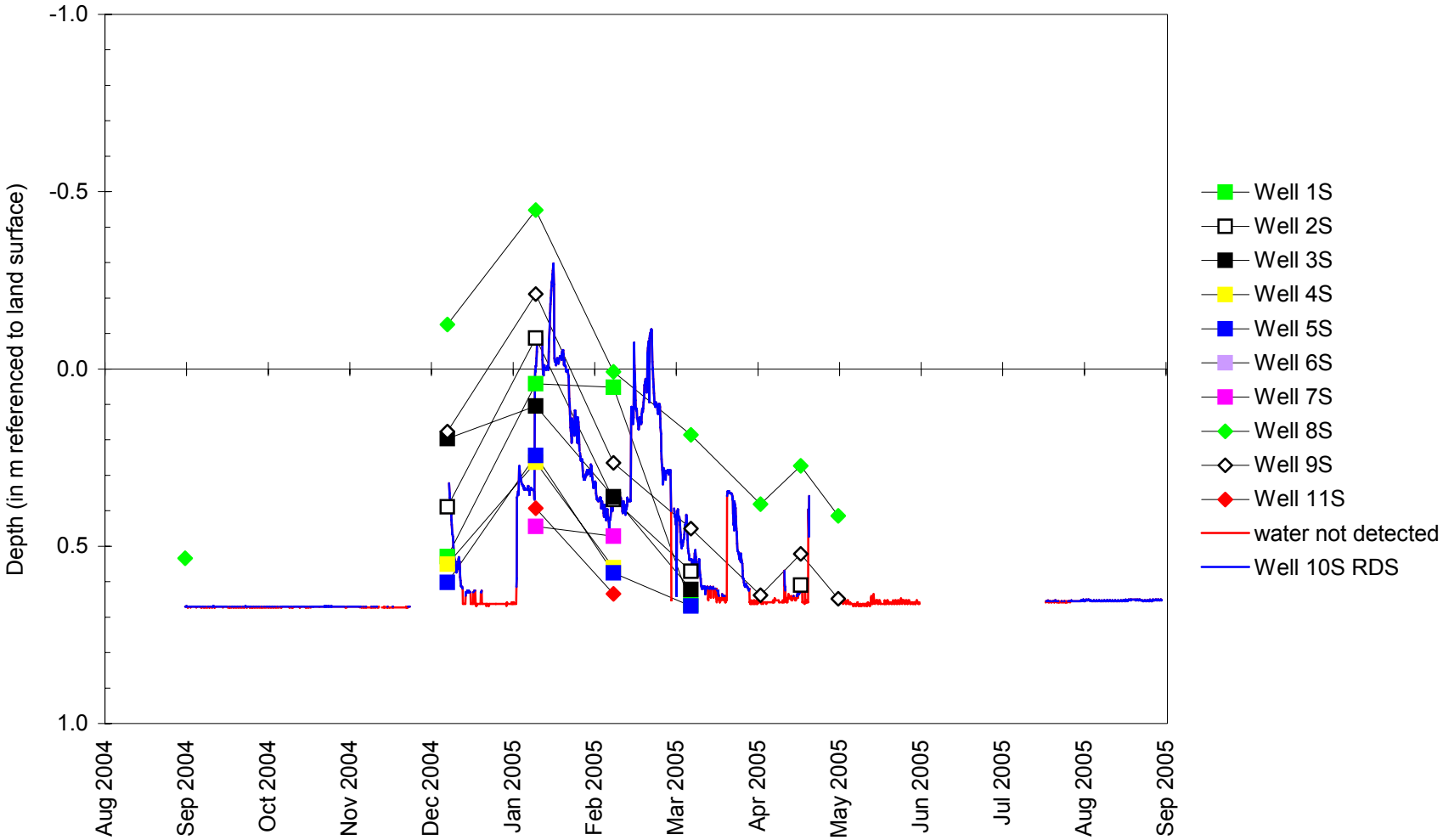
Former Tiernan Property, New River Crossing Potential Wetland Compensation Site
September 1, 2004 to September 1, 2005

Water-Level Elevations



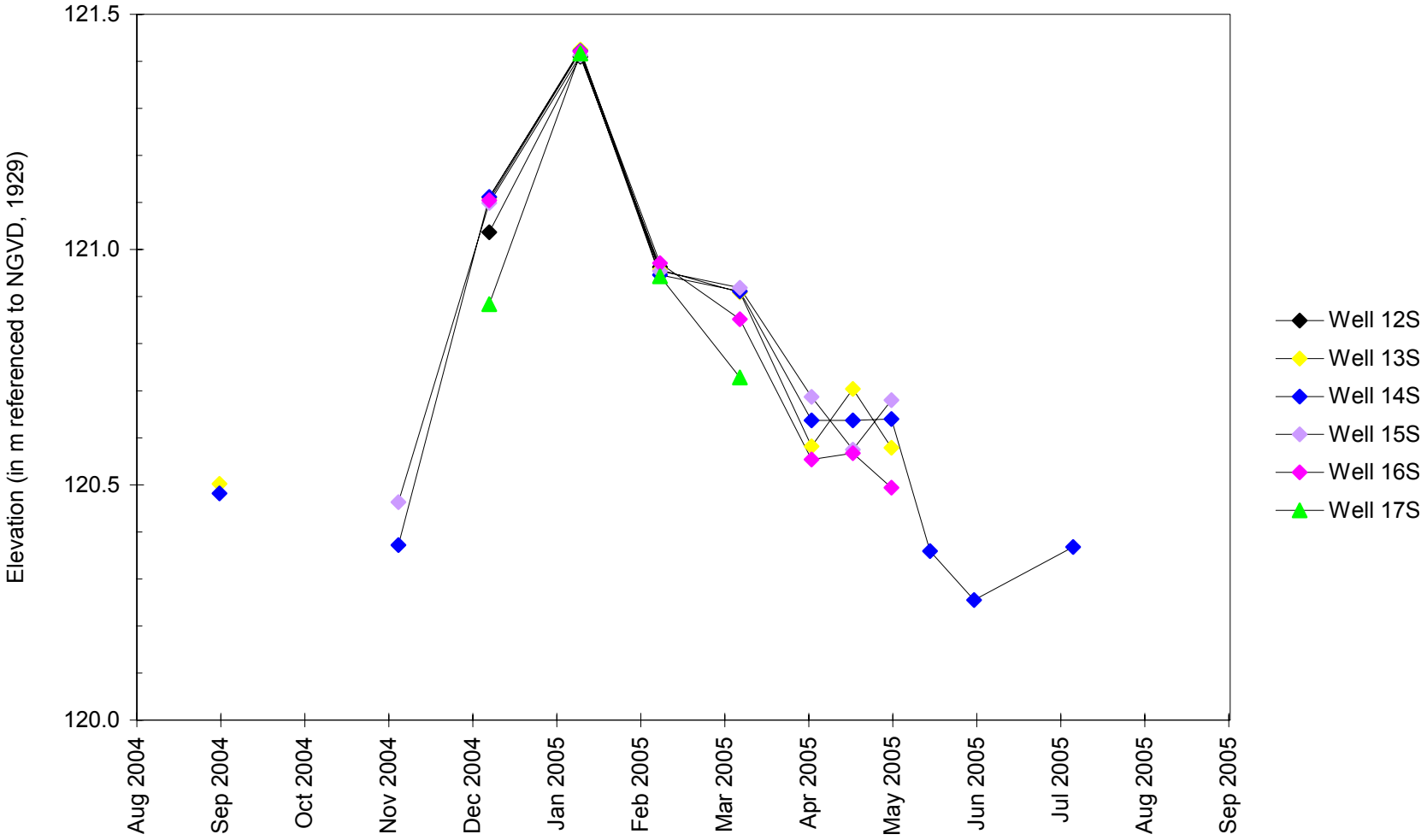
Former Tiernan Property, New River Crossing Potential Wetland Compensation Site
September 1, 2004 to September 1, 2005

Depth to Water



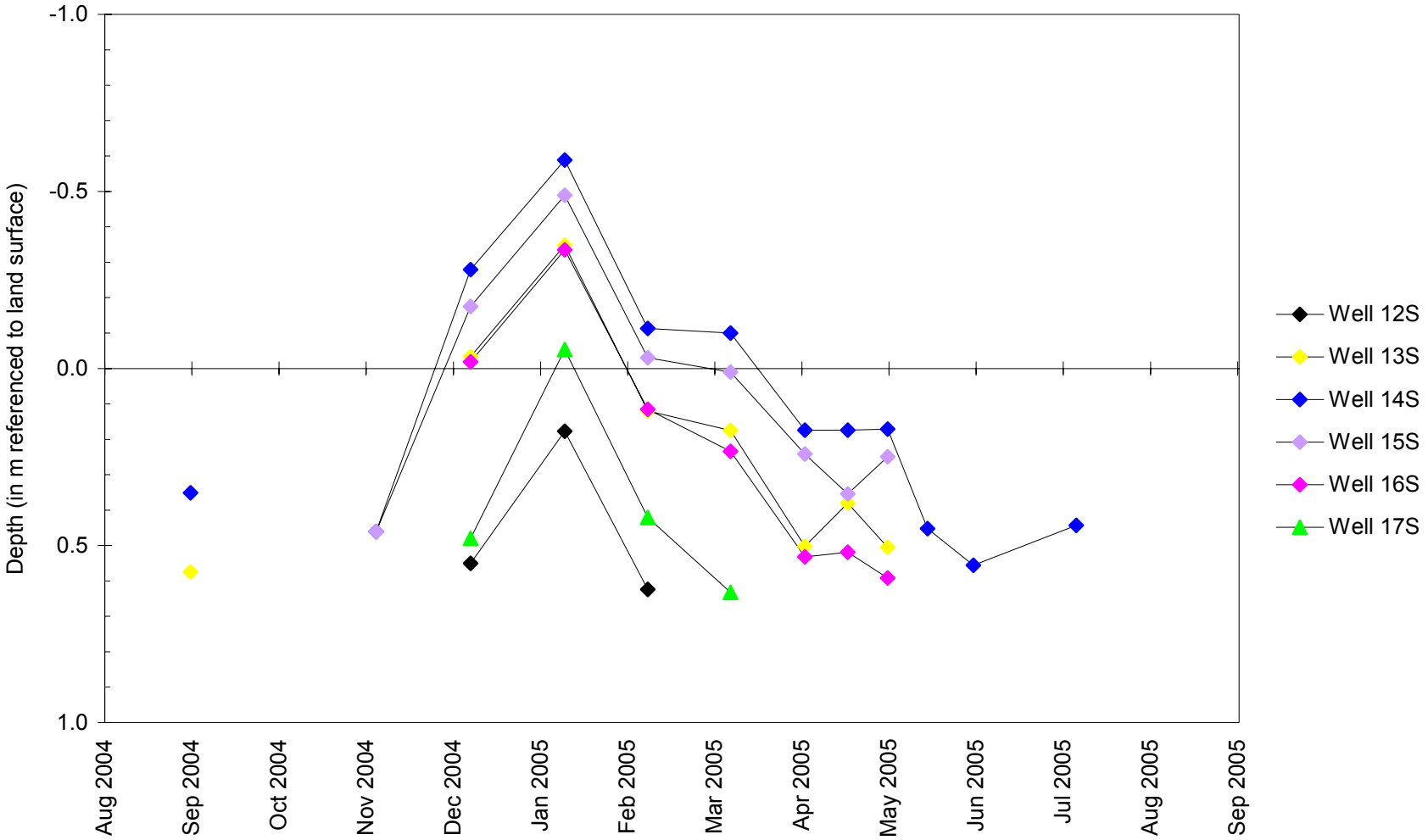
Former Tiernan Property, New River Crossing Potential Wetland Compensation Site
September 1, 2004 to September 1, 2005

Water-Level Elevations



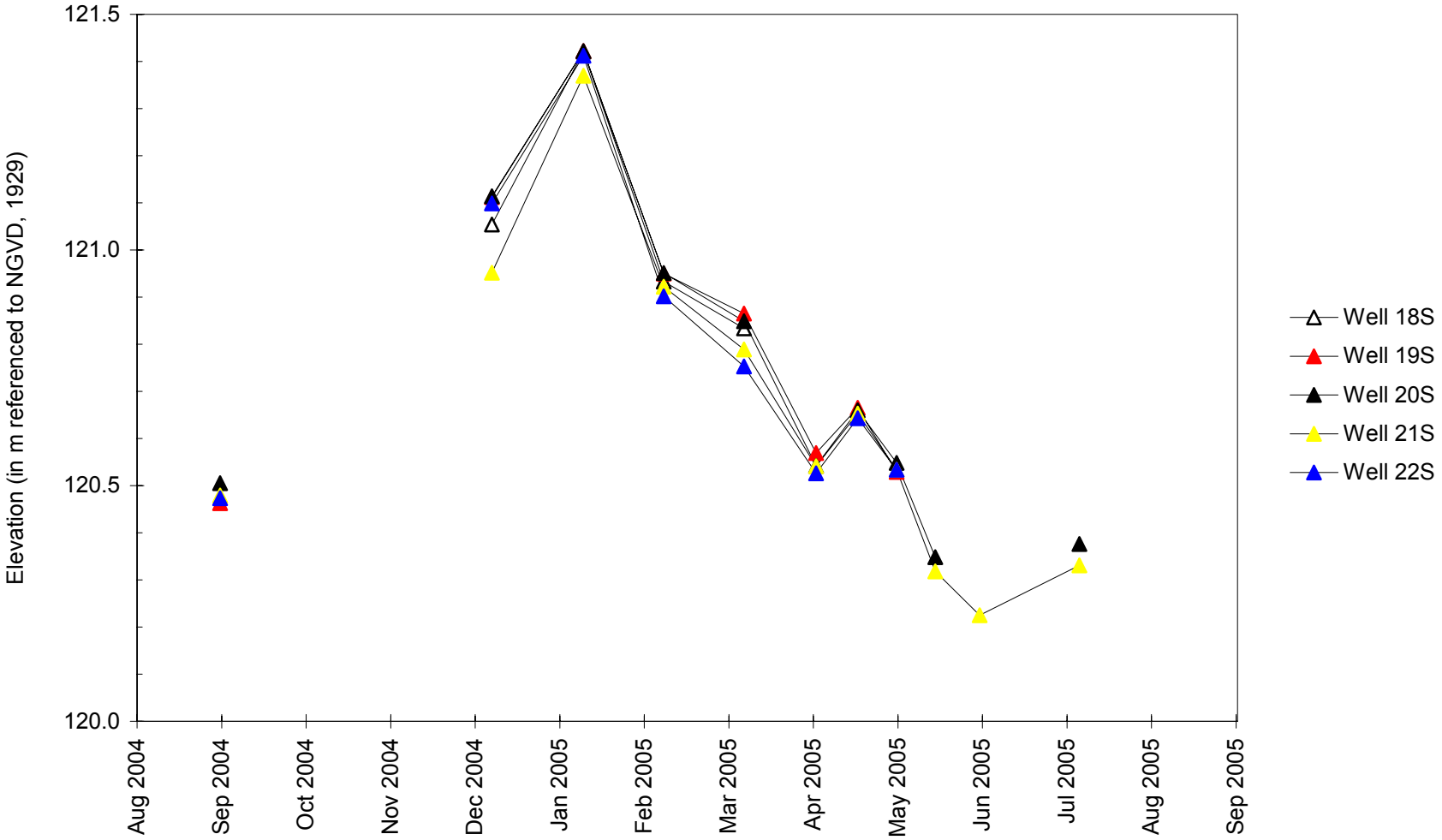
Former Tiernan Property, New River Crossing Potential Wetland Compensation Site
September 1, 2004 to September 1, 2005

Depth to Water



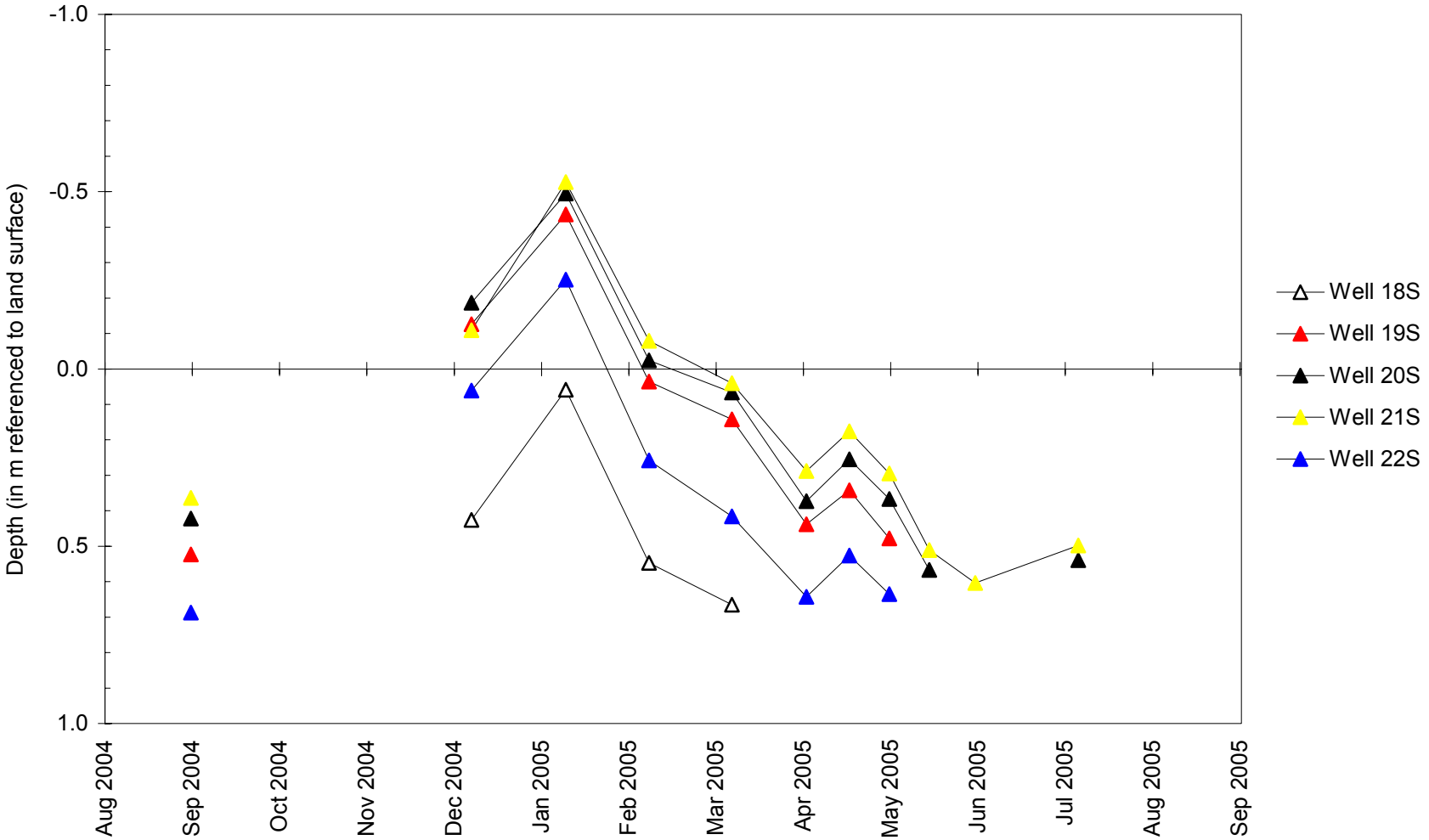
Former Tiernan Property, New River Crossing Potential Wetland Compensation Site
September 1, 2004 to September 1, 2005

Water-Level Elevations



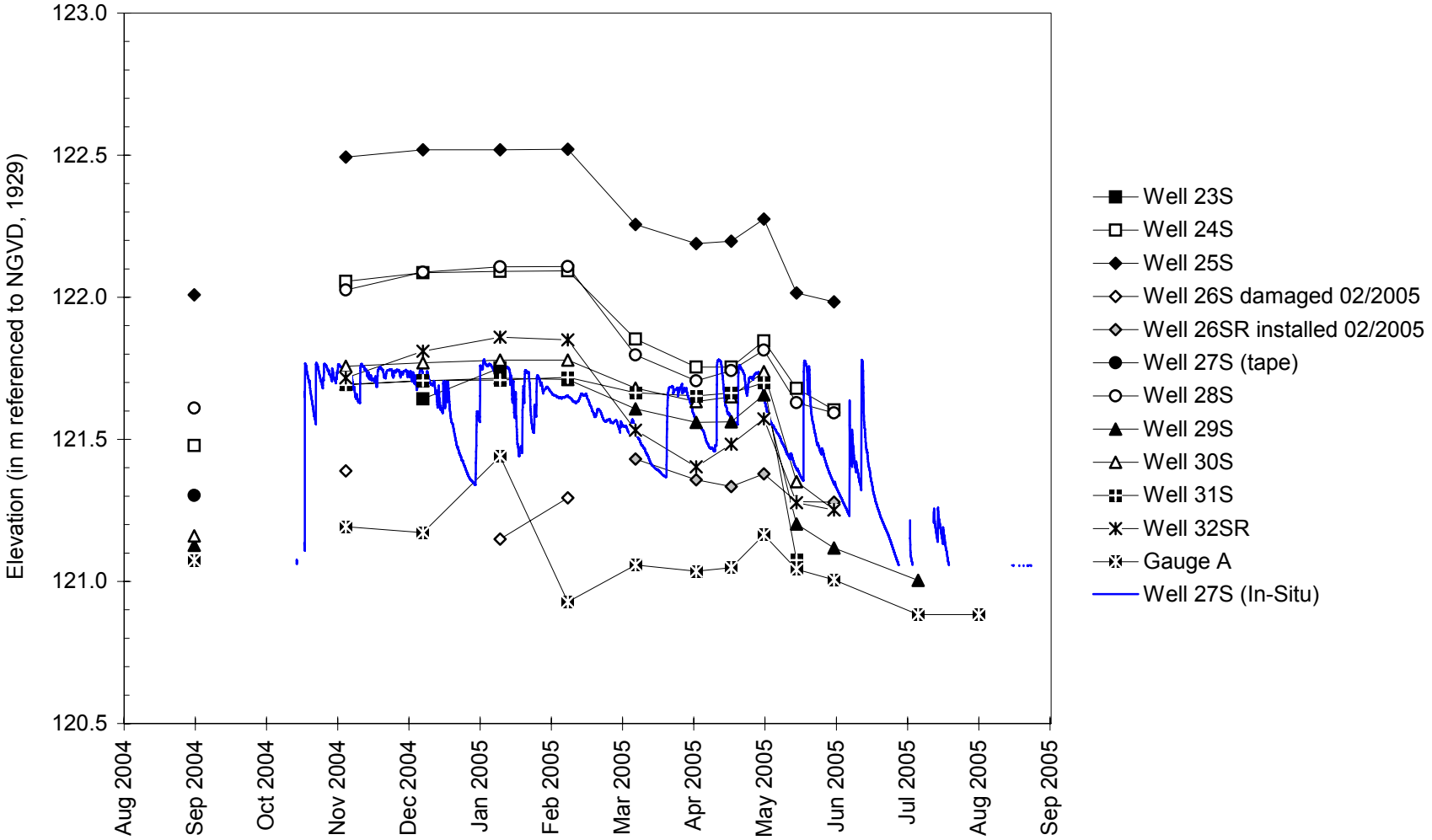
Former Tiernan Property, New River Crossing Potential Wetland Compensation Site
September 1, 2004 to September 1, 2005

Depth to Water

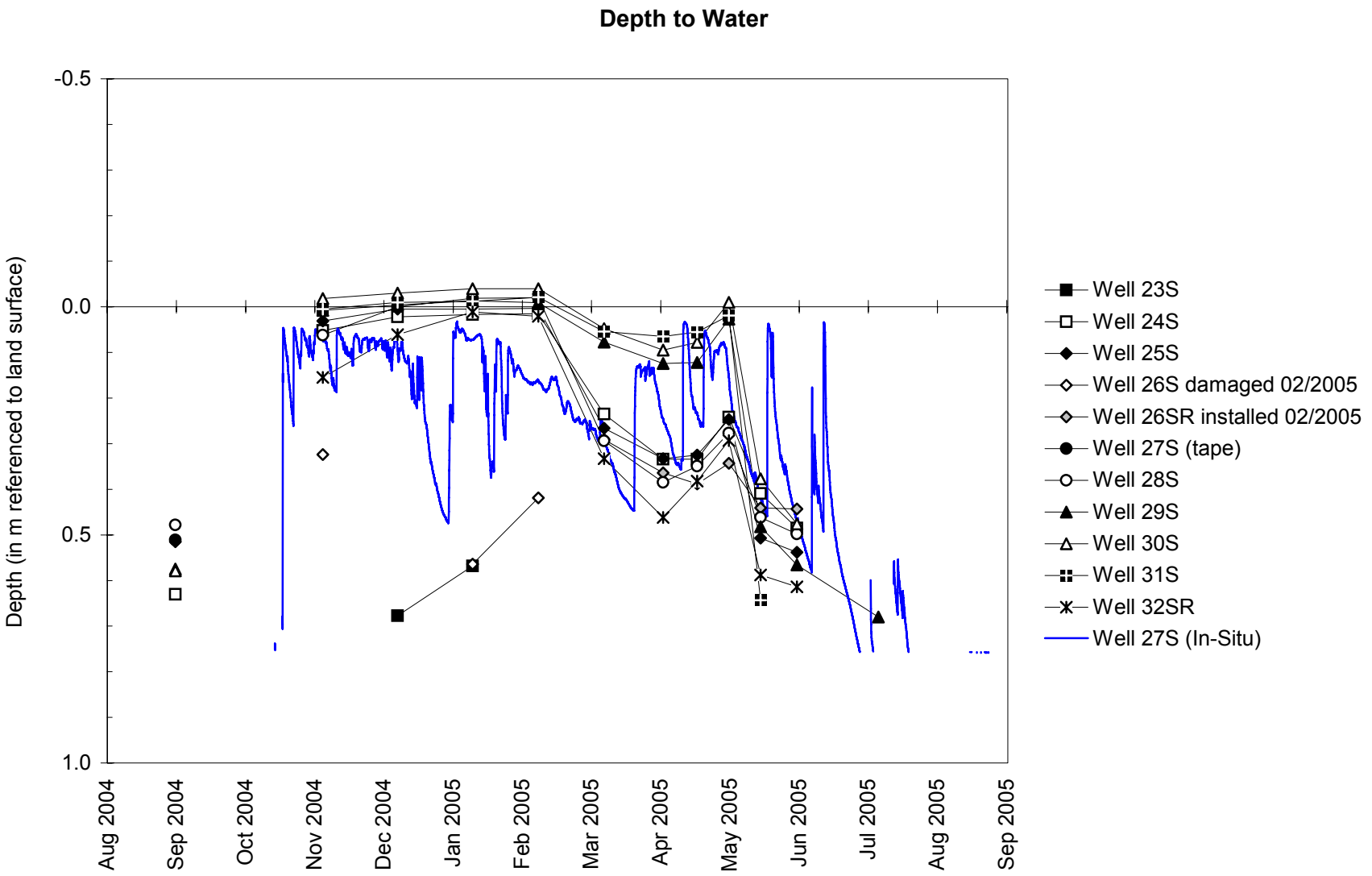


Former Tiernan Property, New River Crossing Potential Wetland Compensation Site
September 1, 2004 to September 1, 2005

Water-Level Elevations

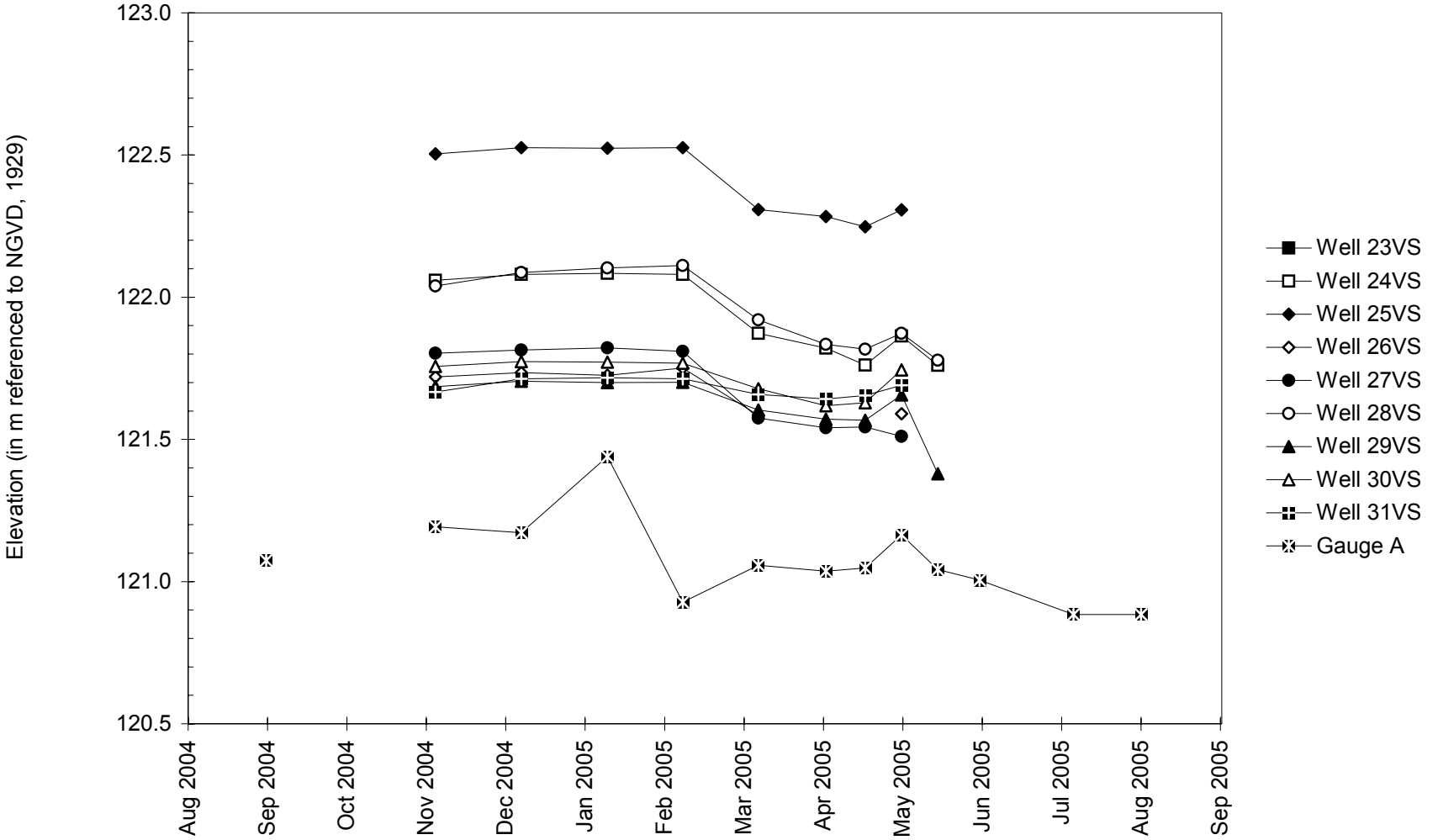


Former Tiernan Property, New River Crossing Potential Wetland Compensation Site
September 1, 2004 to September 1, 2005

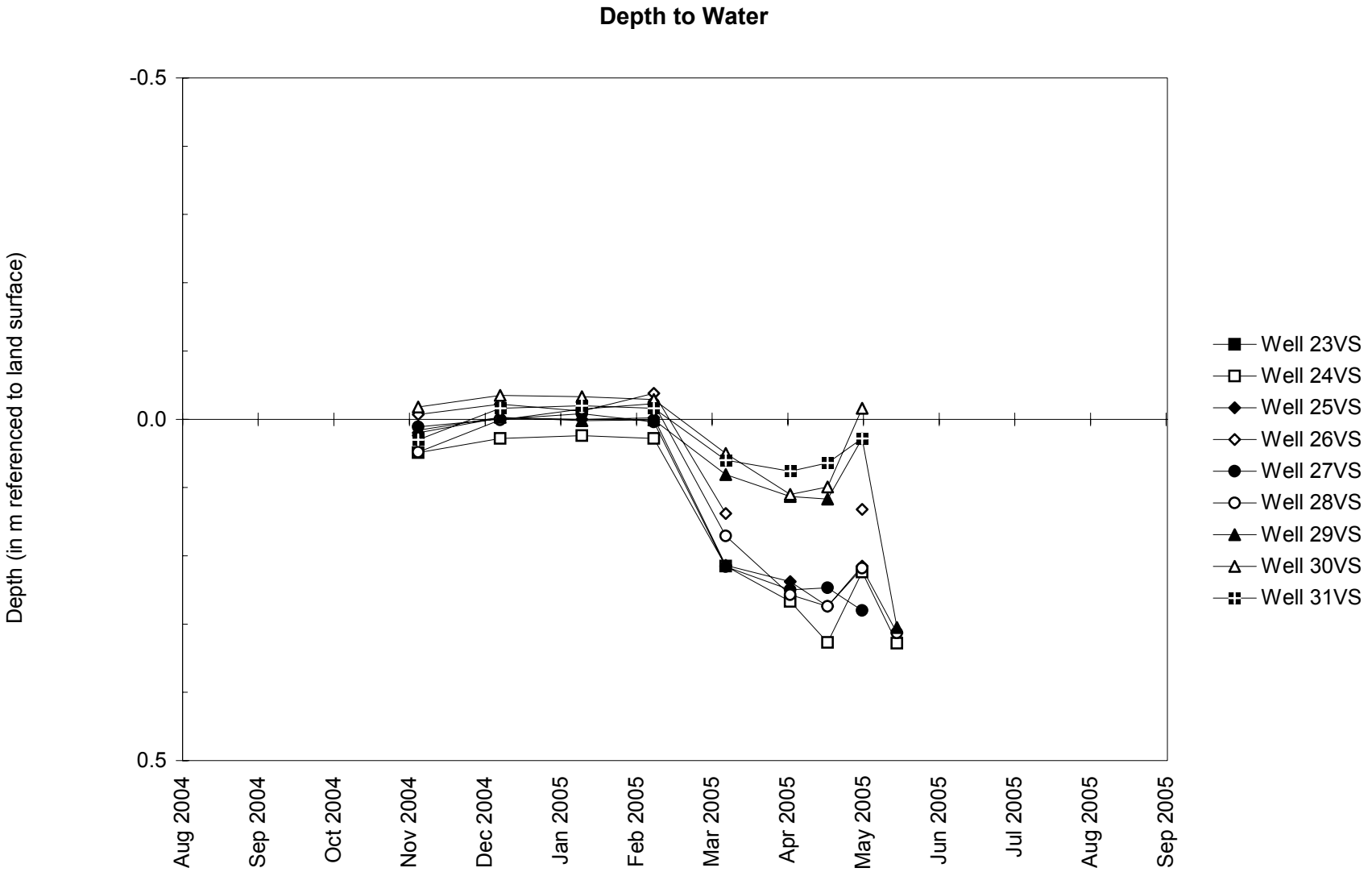


Former Tiernan Property, New River Crossing Potential Wetland Compensation Site
September 1, 2004 to September 1, 2005

Water-Level Elevations

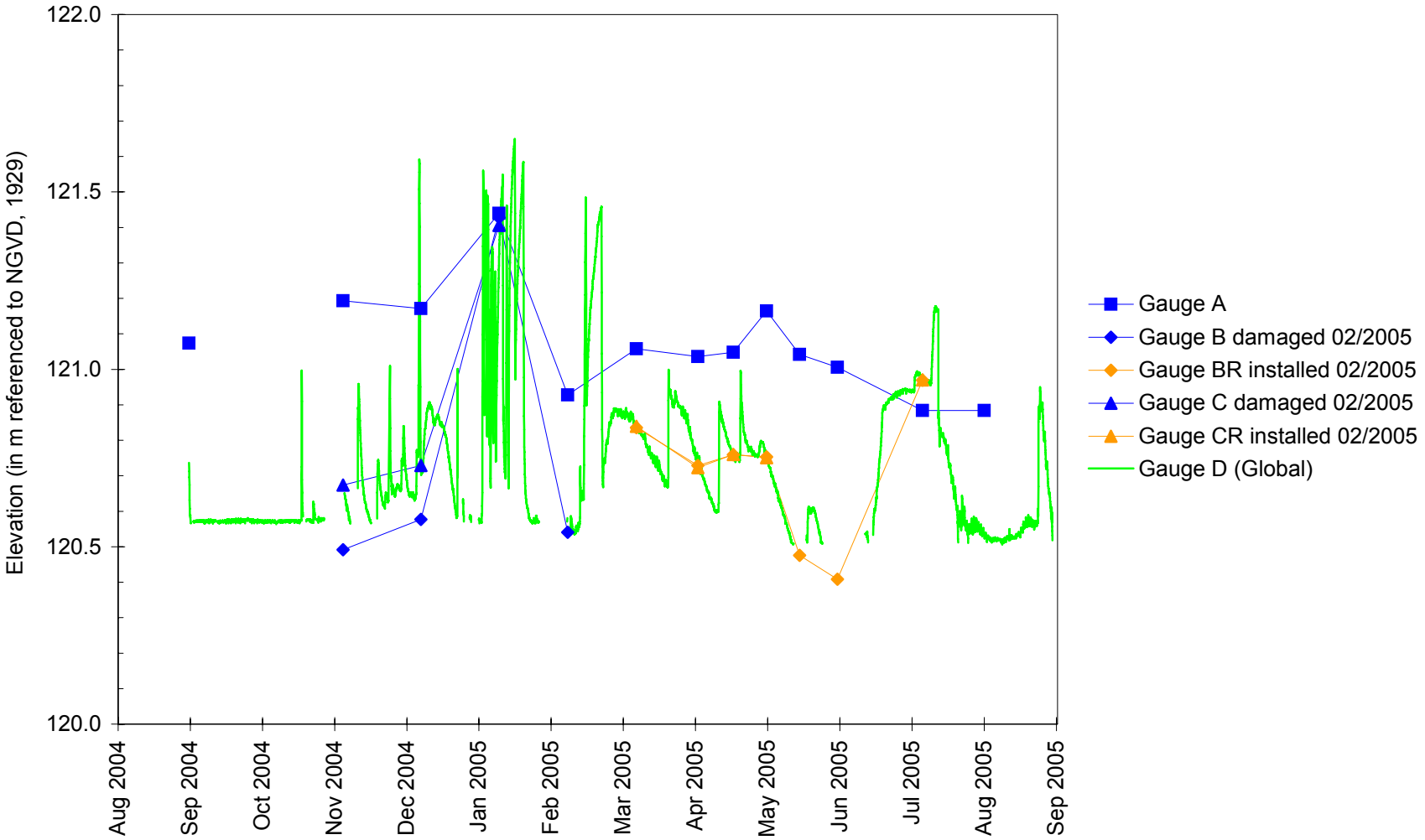


Former Tiernan Property, New River Crossing Potential Wetland Compensation Site
September 1, 2004 to September 1, 2005



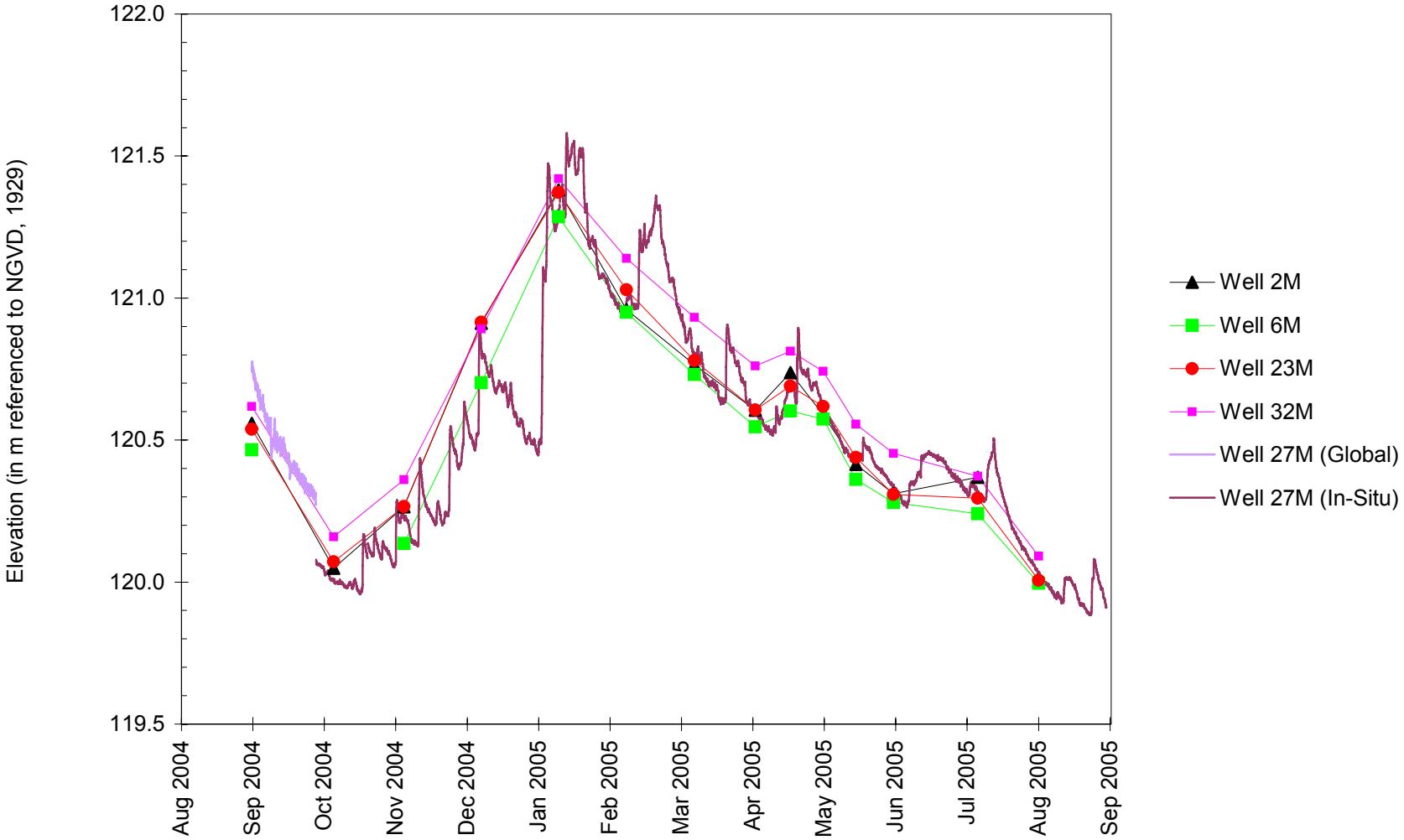
Former Tiernan Property, New River Crossing Potential Wetland Compensation Site
September 1, 2004 to September 1, 2005

Water-Level Elevations

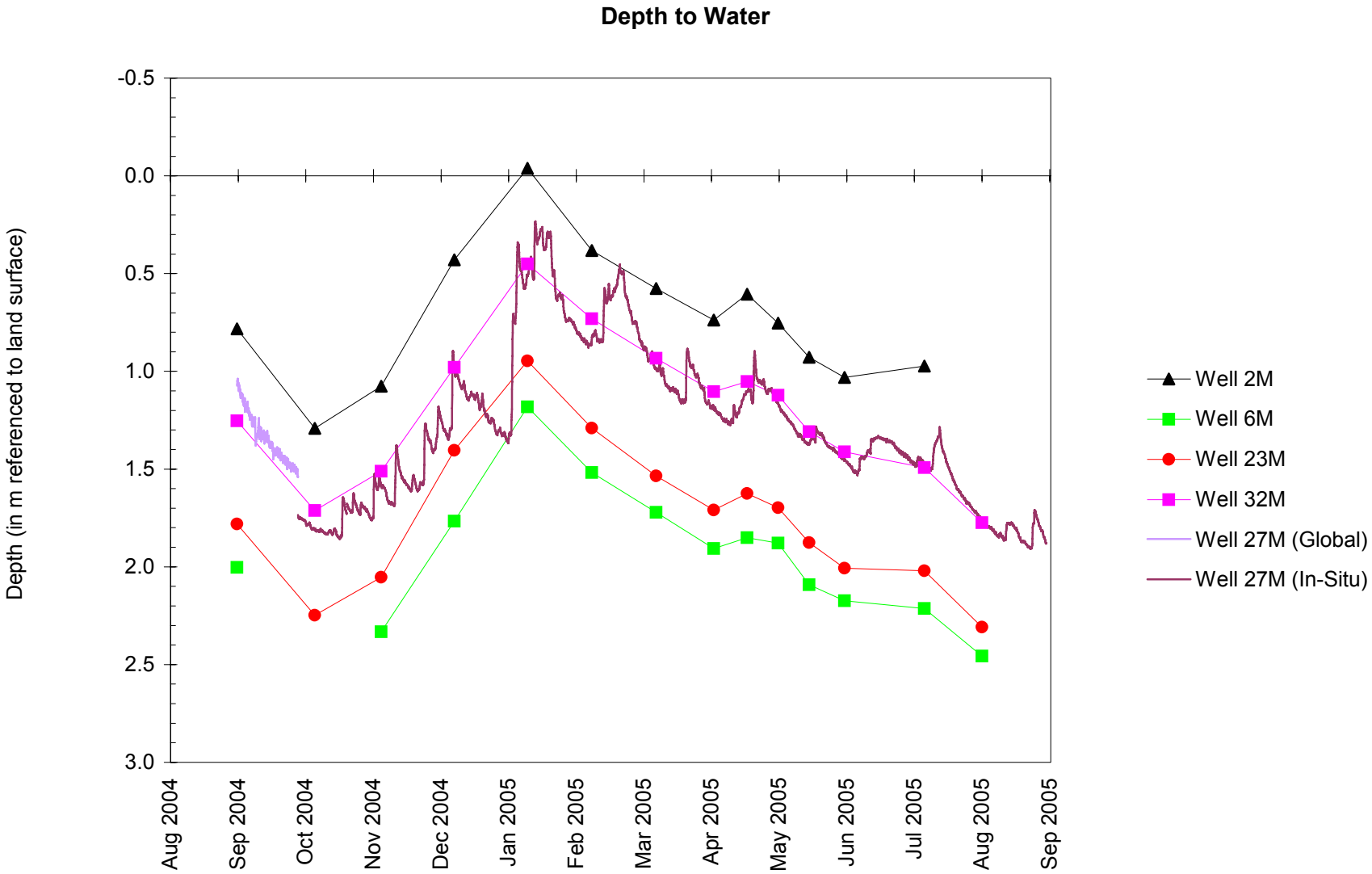


Former Tiernan Property, New River Crossing Potential Wetland Compensation Site
September 1, 2004 to September 1, 2005

Water-Level Elevations

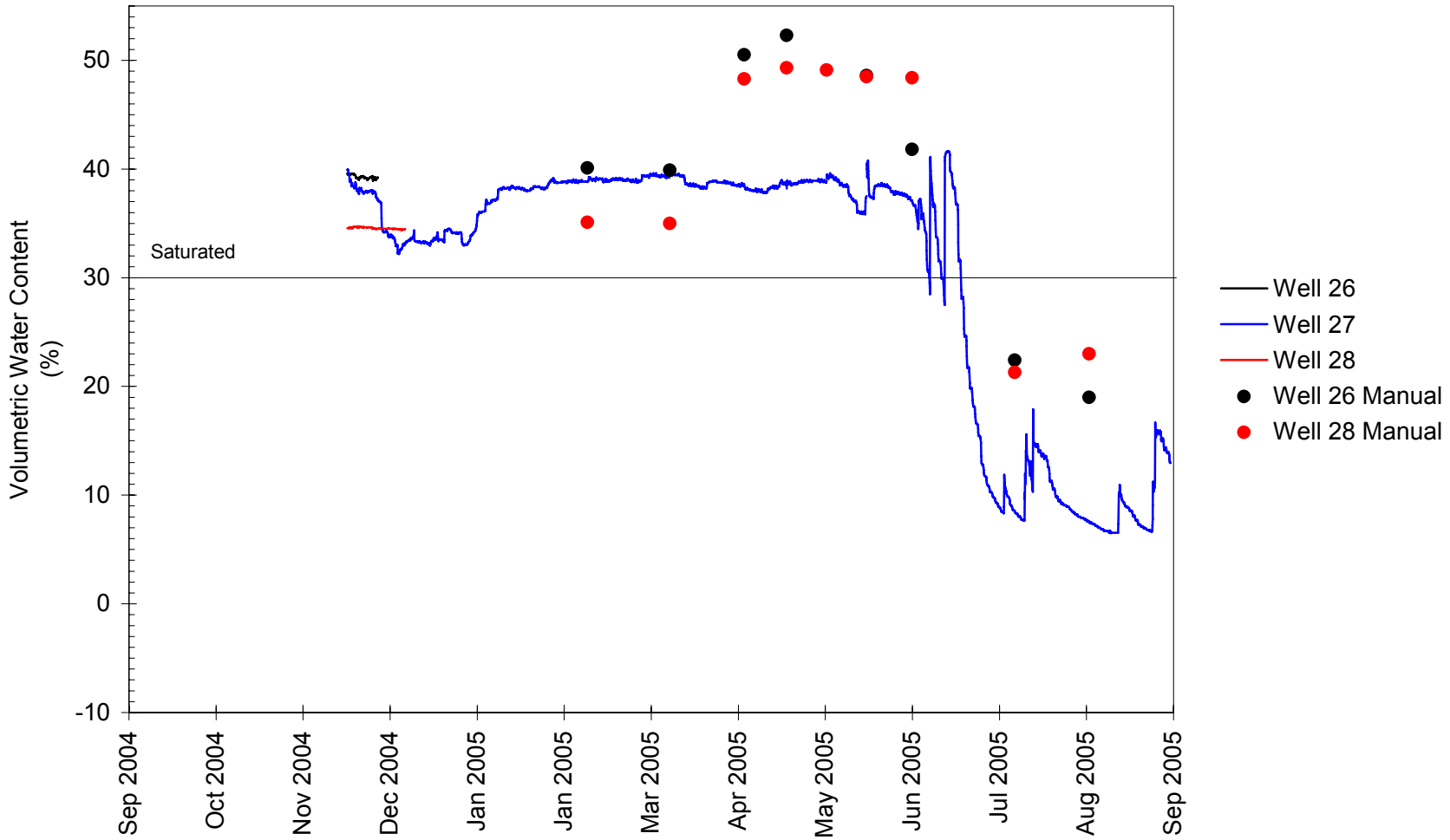


Former Tiernan Property, New River Crossing Potential Wetland Compensation Site
September 1, 2004 to September 1, 2005



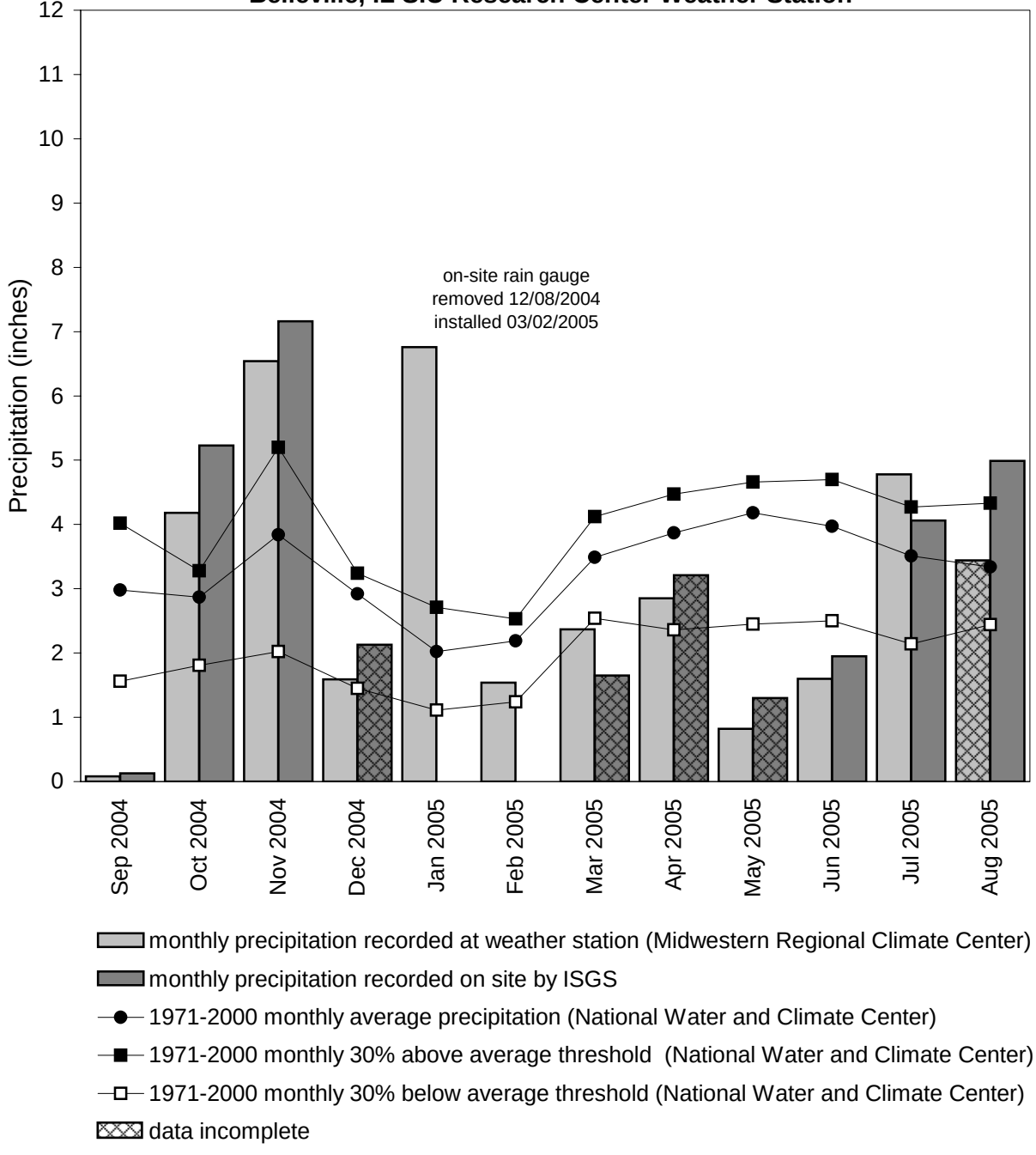
Former Tiernan Property, New River Crossing Potential Wetland Compensation Site
September 1, 2004 to Septermber 1, 2005

Soil Moisture Content at Wells 26, 27 and 28



Former Tiernan Property, New River Crossing
Potential Wetland Compensation Site
September 2004 through August 2005

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



Graph last updated October 24, 2005

BUCKHART **ISGS #58**
WETLAND COMPENSATION SITE
FAS 1637
Sangamon County, near Buckhart, Illinois
Primary Project Manager: Eric T. Plankell
Secondary Project Manager: Keith W. Carr

SITE HISTORY

- 1996: Young Road was realigned and a new bridge was constructed over the Sangamon River. Construction of wetland mitigation areas was subsequently completed.

- July 2000: ISGS was tasked to conduct hydrologic monitoring for the presence and extent of wetland hydrology. Prior to the installation of any monitoring instruments at the site, monitoring was halted by IDOT.

- April 2004: ISGS was again tasked to conduct hydrologic monitoring at the site.

- May–August 2004: ISGS installed a number of instruments at the site. All instrument locations were then determined using a Trimble XR Pro GPS unit. In addition, a topographic survey of the site was completed using a Leica TC 702 Total Station.

WETLAND HYDROLOGY CALCULATION FOR 2005

We estimate that the total area of created wetland that satisfied the wetland hydrology criteria (Environmental Laboratory 1987) for greater than 5% of the 2005 growing season is 0.2 ha (0.5 ac) out of a total area of 2.3 ha (5.8 ac). The area that satisfied wetland hydrology criteria for greater than 12.5% of the 2005 growing season is 0.1 ha (0.3 ac). These estimates are based on the following factors:

- According to the Midwestern Climate Center, the median date that the growing season begins in nearby Springfield, Illinois, is April 6 and the season lasts 205 days; 5% of the growing season is 10 days and 12.5% of the growing season is 26 days.

- Total precipitation at the nearby Abraham Lincoln Capital Airport Weather Station in Springfield, Illinois, was 87% of normal for the period from September 2004 through August 2005. Precipitation at this station was below normal in September and December 2004 and also in the period from February through August 2005, when it was 60% of normal. Precipitation amounts were above normal for the remaining months of the monitoring period.

- In 2005, water levels in well 8S satisfied the wetland hydrology criteria for greater than 5% of the growing season. No wells at the site satisfied the wetland hydrology criteria for a period exceeding 12.5% of the growing season.

- In 2005, surface-water Gauge A, located within a closed depression in Mitigation Area 2, recorded inundation to a depth of 163.3 m (535.8 ft) for greater than 5% of the growing season. Gauge A also recorded inundation to a depth of 163.2 m (535.4 ft) for greater than 12.5% of the growing season.

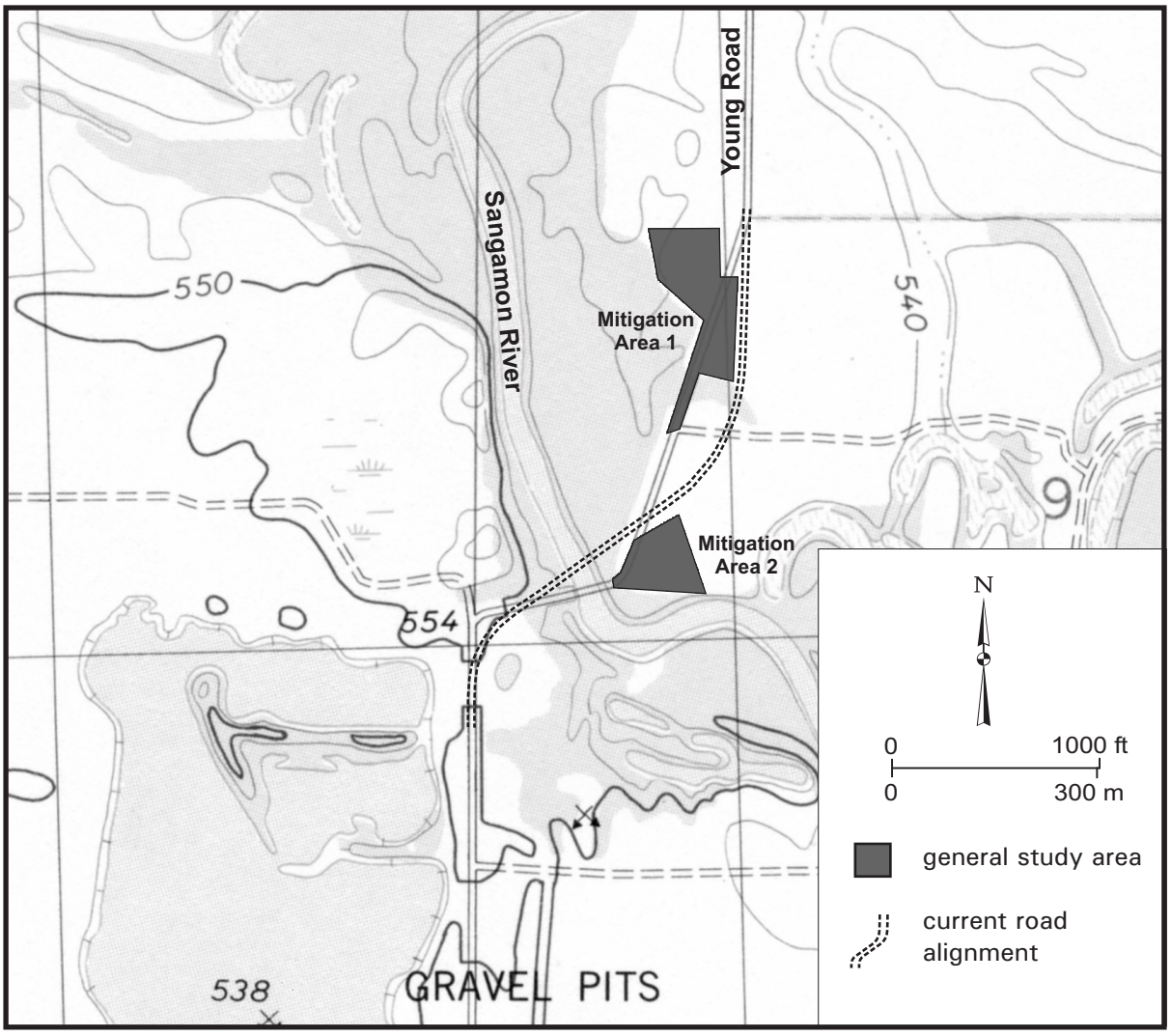
- No over-bank flooding from the Sangamon River is known to have occurred at the site during the 2005 growing season. However, over-bank flooding from the Sangamon River did occur in December 2004, January 2005, and February 2005. The areas that met wetland hydrology criteria for the 2005 growing season did so primarily as a result of the water retained in Mitigation Area 2 after these flood events.

PLANNED FUTURE ACTIVITIES

- Monitoring will continue until no longer required by IDOT.

Buckhart Wetland Compensation Site
(FAS 1637, TR 478)
General Study Area and Vicinity

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



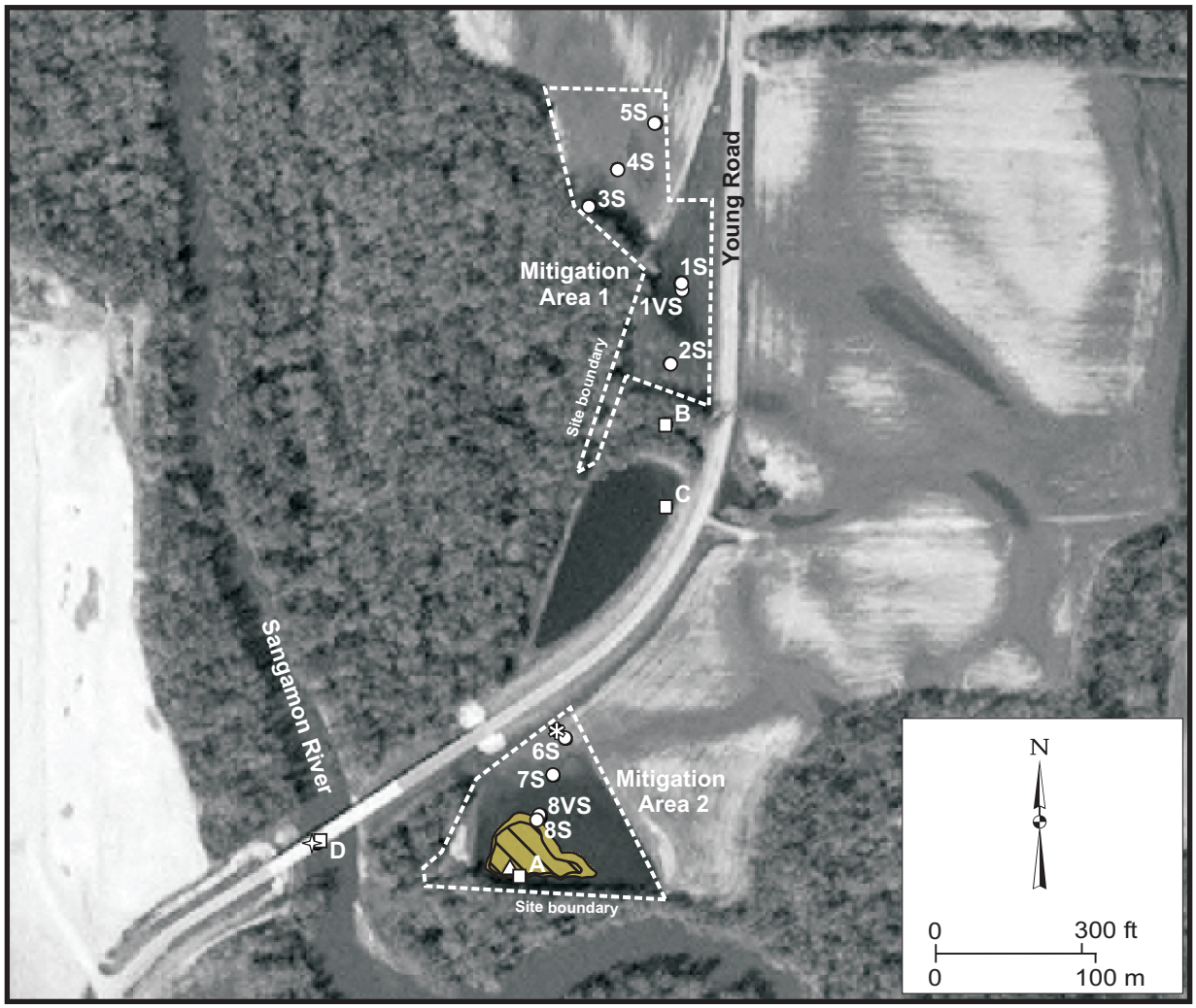
Buckhart Wetland Compensation Site

[FAS 1637 (TR 478)]

Estimated Areal Extent of 2005 Wetland Hydrology

based on data collected between September 1, 2004 and September 1, 2005

Map based on USGS digital orthophotographs, Mechanicsburg, SE and SW quarter quadrangles produced from 4/12/98 aerial photography (ISGS 2004)



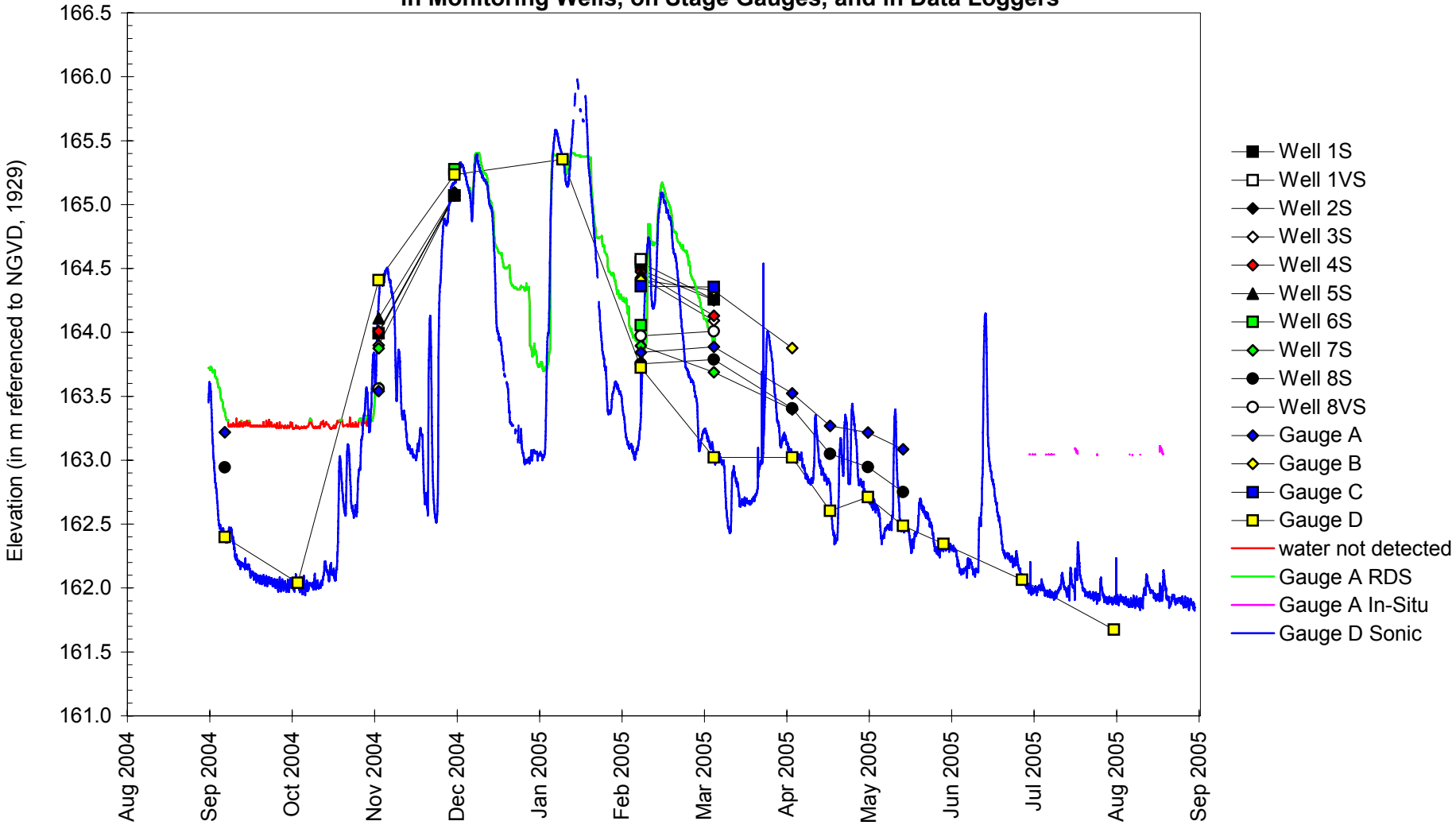
2005 Wetland Hydrology

- >12.5% of the growing season
- >5% of the growing season

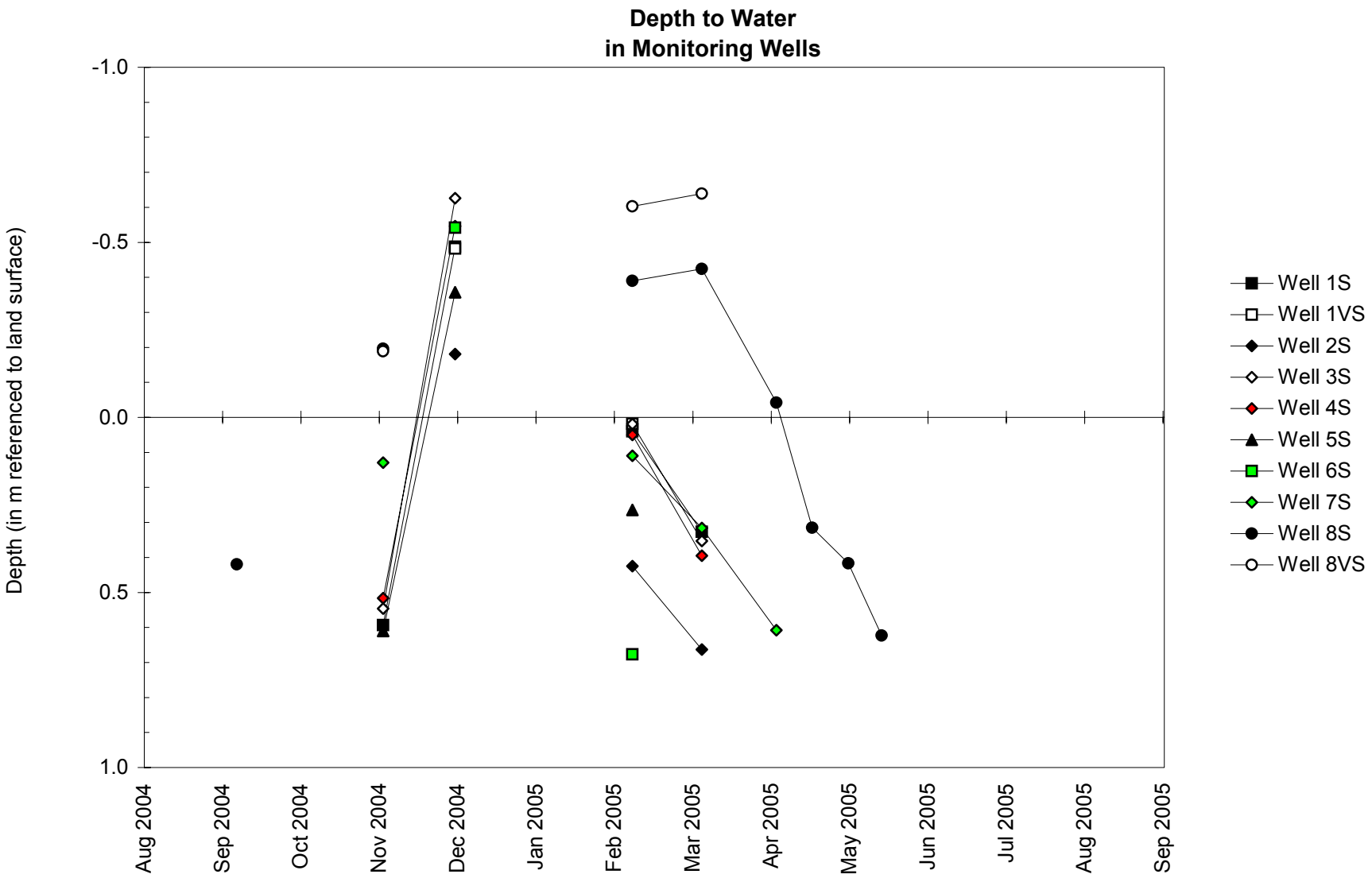
- ○ monitoring well
- □ stage gauge
- △ RDS data logger/In-Situ data logger
- ❄ rain gauge
- ✧ Sonic data logger

Buckhart Wetland Compensation Site
September 1, 2004 to September 1, 2005

Water-Level Elevations
in Monitoring Wells, on Stage Gauges, and in Data Loggers

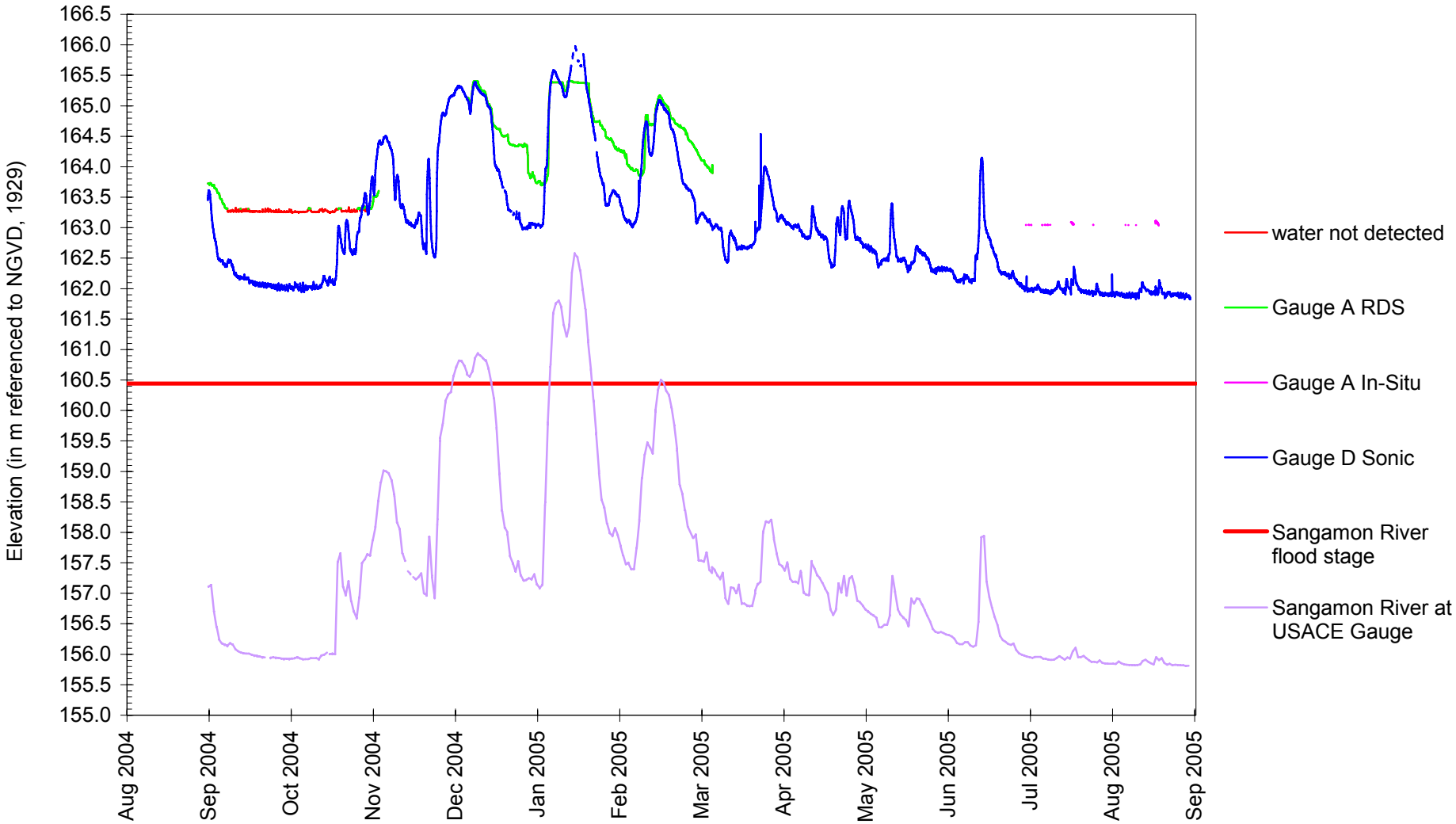


Buckhart Wetland Compensation Site
September 1, 2004 to September 1, 2005

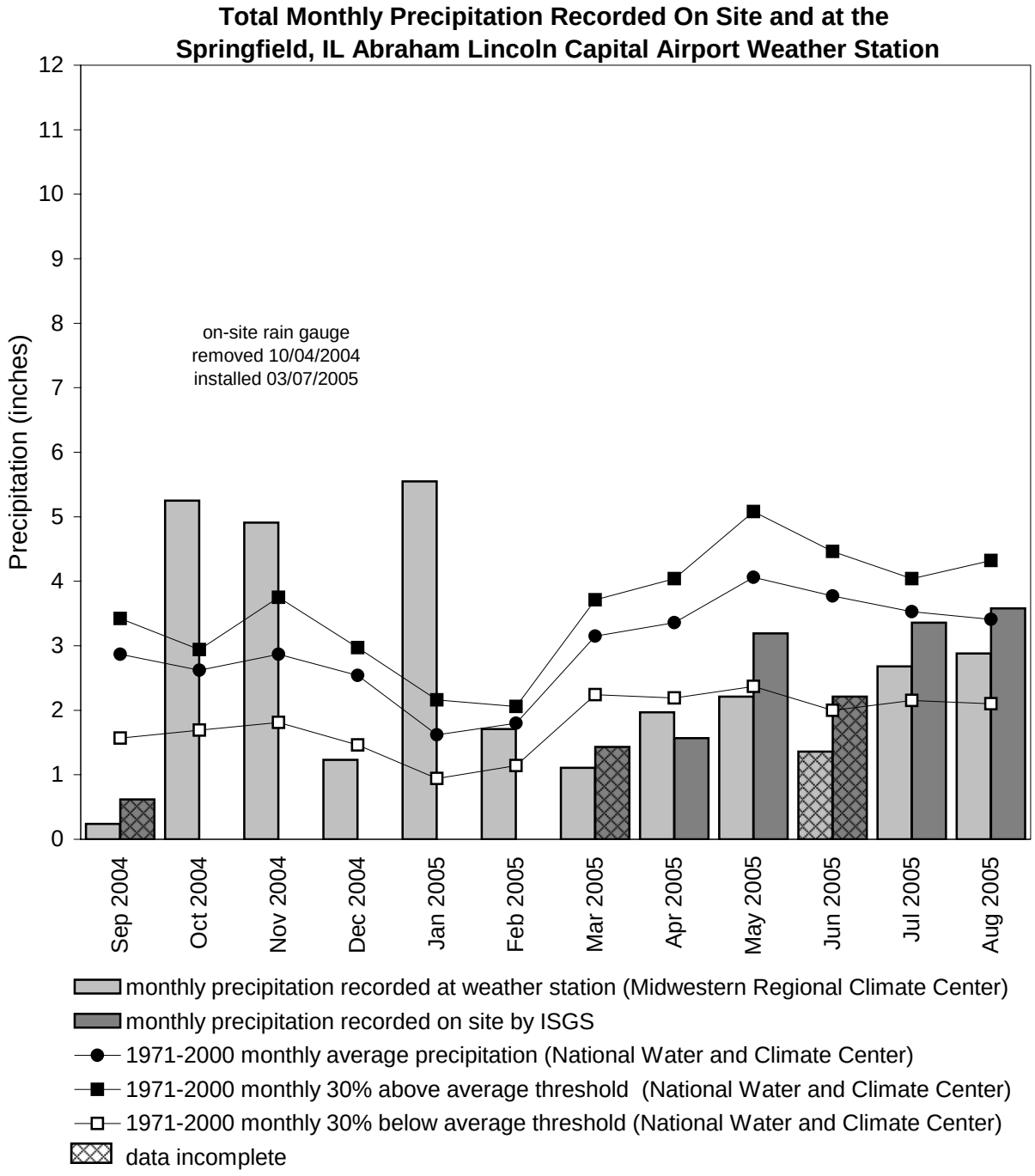


Buckhart Wetland Compensation Site
September 1, 2004 to September 1, 2005

Water-Level Elevations



Buckhart Wetland Compensation Site
September 2004 through August 2005



Graph last updated October 24, 2005

APPLE CREEK NEAR BELLTOWN **ISGS #62**
POTENTIAL WETLAND COMPENSATION SITE
FAP 310
Sequence #32
Greene County, Illinois
Primary Project Manager: Bonnie J. Robinson
Secondary Project Manager: not assigned

SITE HISTORY

- October 2001: ISGS submitted an Initial Site Evaluation report.

- December 2001: ISGS was tasked by IDOT to conduct a Level II hydrogeologic assessment of the site.

- April–August 2002: Eighteen shallow wells, two surface-water level loggers, two staff gauges and one rain gauge were installed on site.

- February 2004: A Level II hydrogeological characterization report was submitted to IDOT (ISGS Open File Series 2004–05).

WETLAND HYDROLOGY CALCULATION FOR 2005

The total area that satisfied wetland hydrology criteria (Environmental Laboratory 1987) for greater than 5% of the growing season was estimated to be 3.7 ha (9.1 ac), whereas the area that satisfied wetland hydrology criteria for greater than 12.5% of the growing season in 2005 was estimated to be 2.5 ha (6.3 ac). The estimates for 2005 are based on the following factors:

- According to the Midwestern Climate Center, the median date that the growing season begins in nearby White Hall, Illinois, is April 6 and the season lasts 210 days; 5% of the growing season is 11 days and 12.5% of the growing season is 26 days.

- Total precipitation at the nearby White Hall, Illinois weather station was 94% of normal during the monitoring period. High precipitation in October and November 2004 resulted in ground-water levels rising and widespread interior flooding. Above-normal precipitation in January and February 2005 again resulted in rising ground-water levels and interior flooding. Water levels subsequently dropped from March through July 2005 in response to abnormally low precipitation (41% of normal during this period).

- In 2005, water levels measured in wells 3S, 6S, 8S, and 10S satisfied the criteria for wetland hydrology for greater than 5% of the growing season. Only wells 3S and 6S had water levels that satisfied the criteria for wetland hydrology for a period greater than 12.5% of the growing season. Surface-water levels inside the levee at RDS 1 indicate that surface inundation occurred to an elevation of 136.11 m (446.54 ft) for greater than 5% of the growing season and greater than 136.09 m (446.49 ft) for 12.5% of the growing season.

- The water level in Apple Creek did not reach an elevation sufficient to overtop the levee during the entire monitoring period. Measurements in the creek indicate that the water level exceeded 138.0 m (450.8 ft), on two occasions, January 5 through 8, 2005 and

January 13 through 15, 2005. This is the suggested elevation of the notch in the southern levee after restoration as proposed in the Level II report (ISGS Open File Series 2004–05).

- Limitations of the wetland hydrology determination are as follows:
  - The area meeting wetland hydrology criteria was derived from a mathematical interpolation of the shallow ground-water surface derived from water level readings at the monitoring wells.

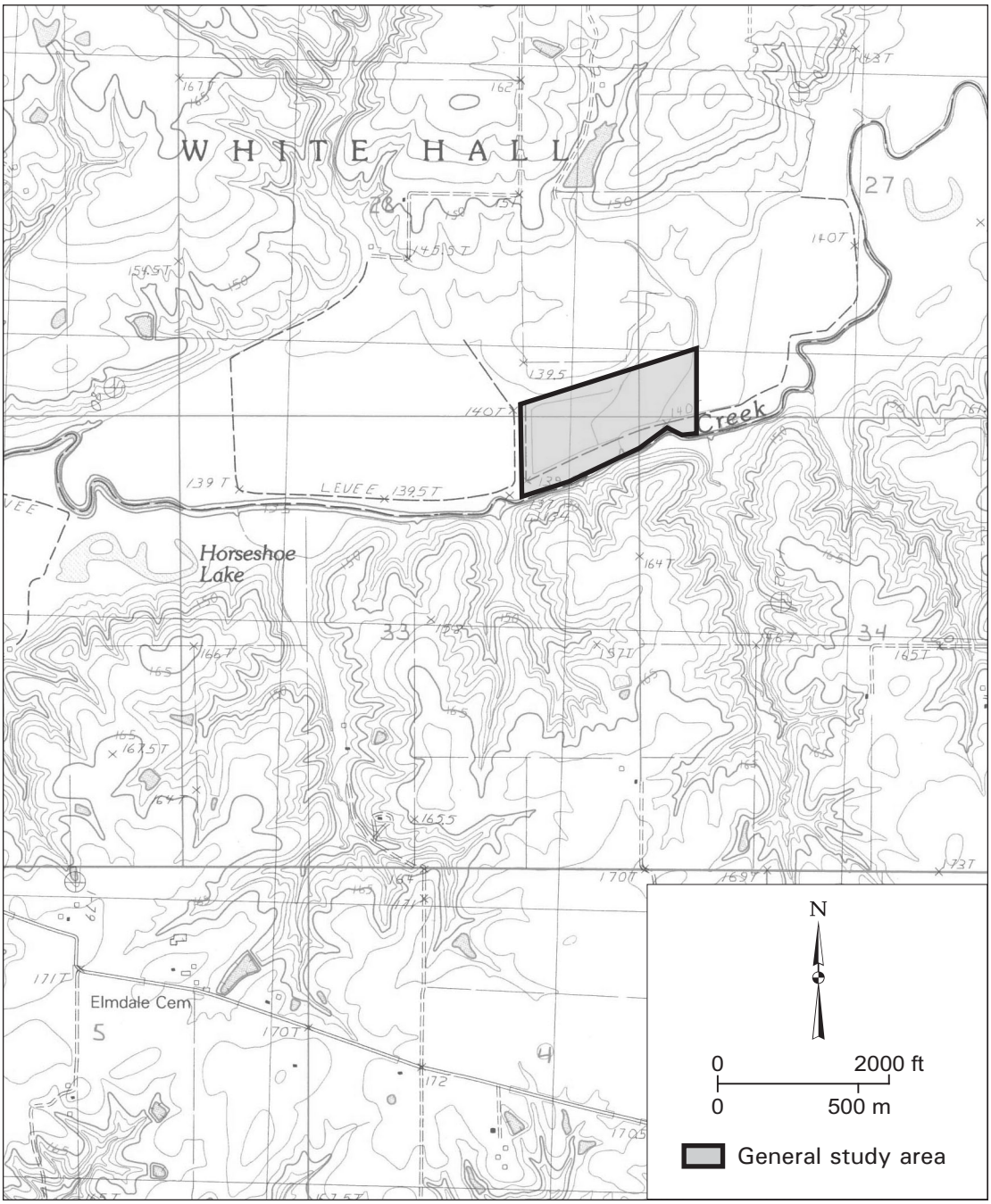
PLANNED FUTURE ACTIVITIES

- Monitoring will continue until no longer required by IDOT.

Apple Creek Potential Wetland Compensation Site
(FAP 310, US 67)

General Study Area and Vicinity

from the USGS Topographic Series, Carrollton, IL 7.5-minute Quadrangle (USGS 1983)
contour interval is 10 feet



Apple Creek Potential Wetland Compensation Site

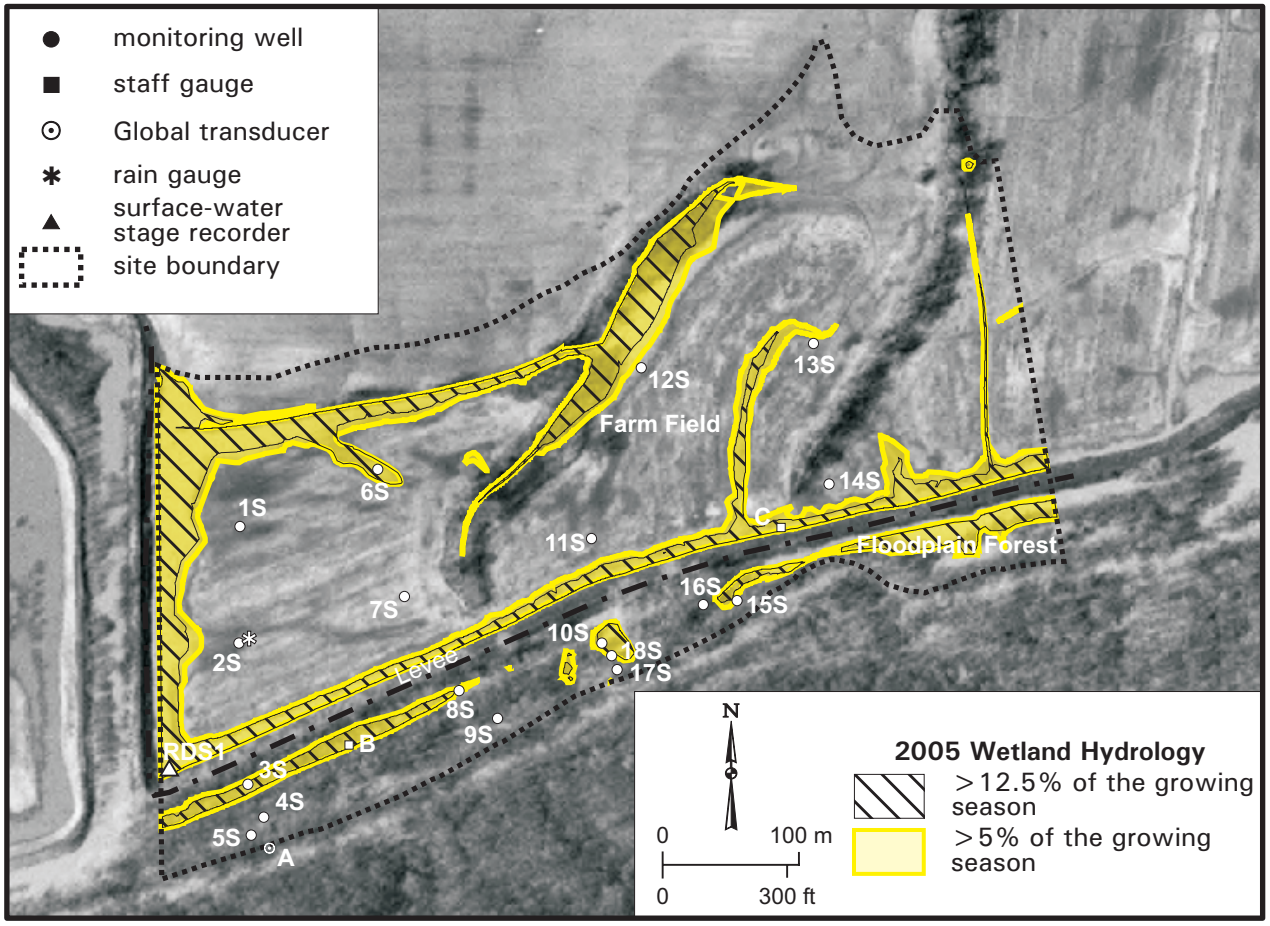
(US 67, FAP 310)

Estimated Areal Extent of 2005 Wetland Hydrology

based on data collected between September 1, 2004 and September 1, 2005

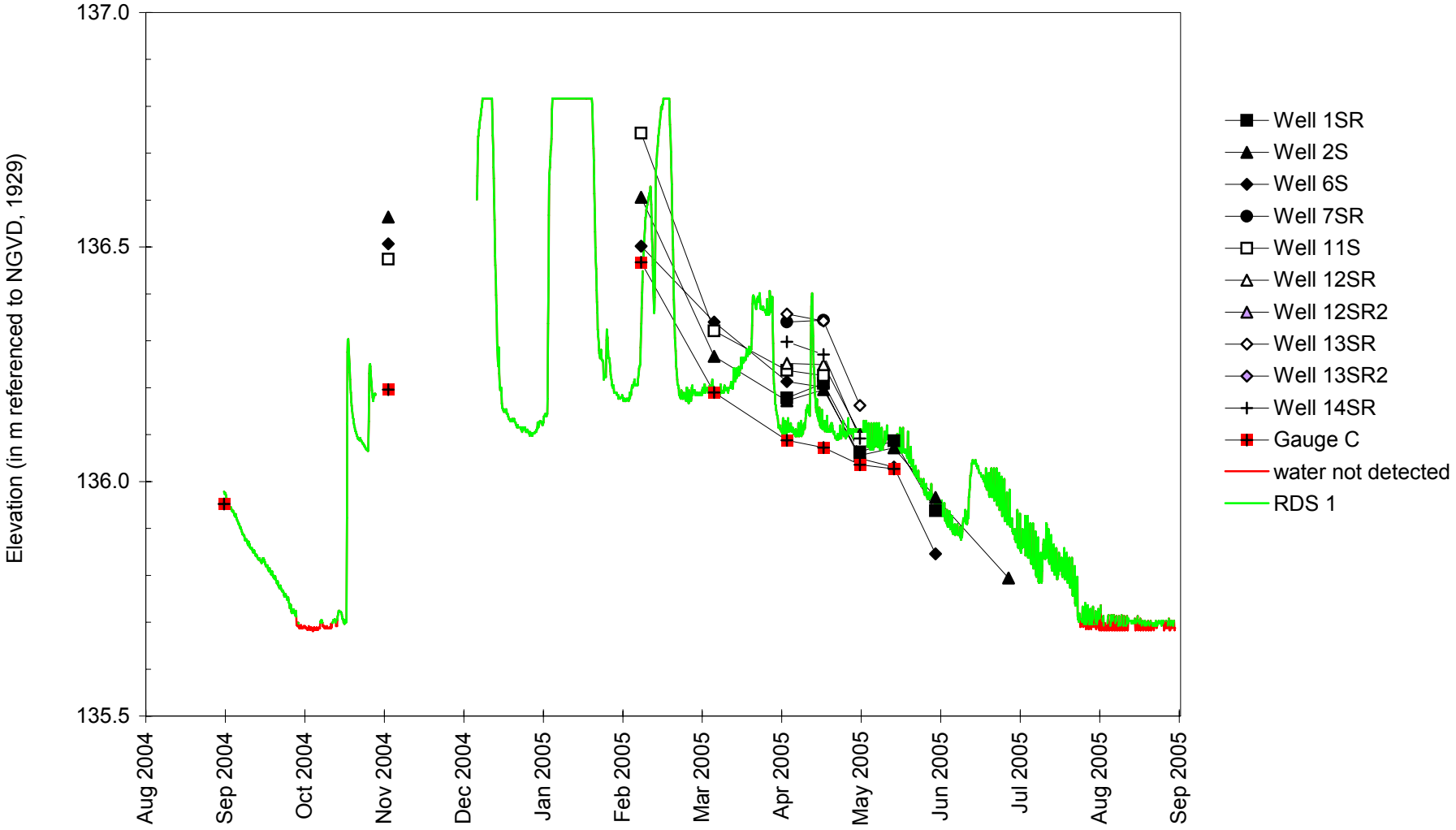
Map based on USGS digital orthophotograph, Carrollton NE quarter quadrangle

quadrangle produced from 4/5/1998 aerial photography (ISGS 2001)

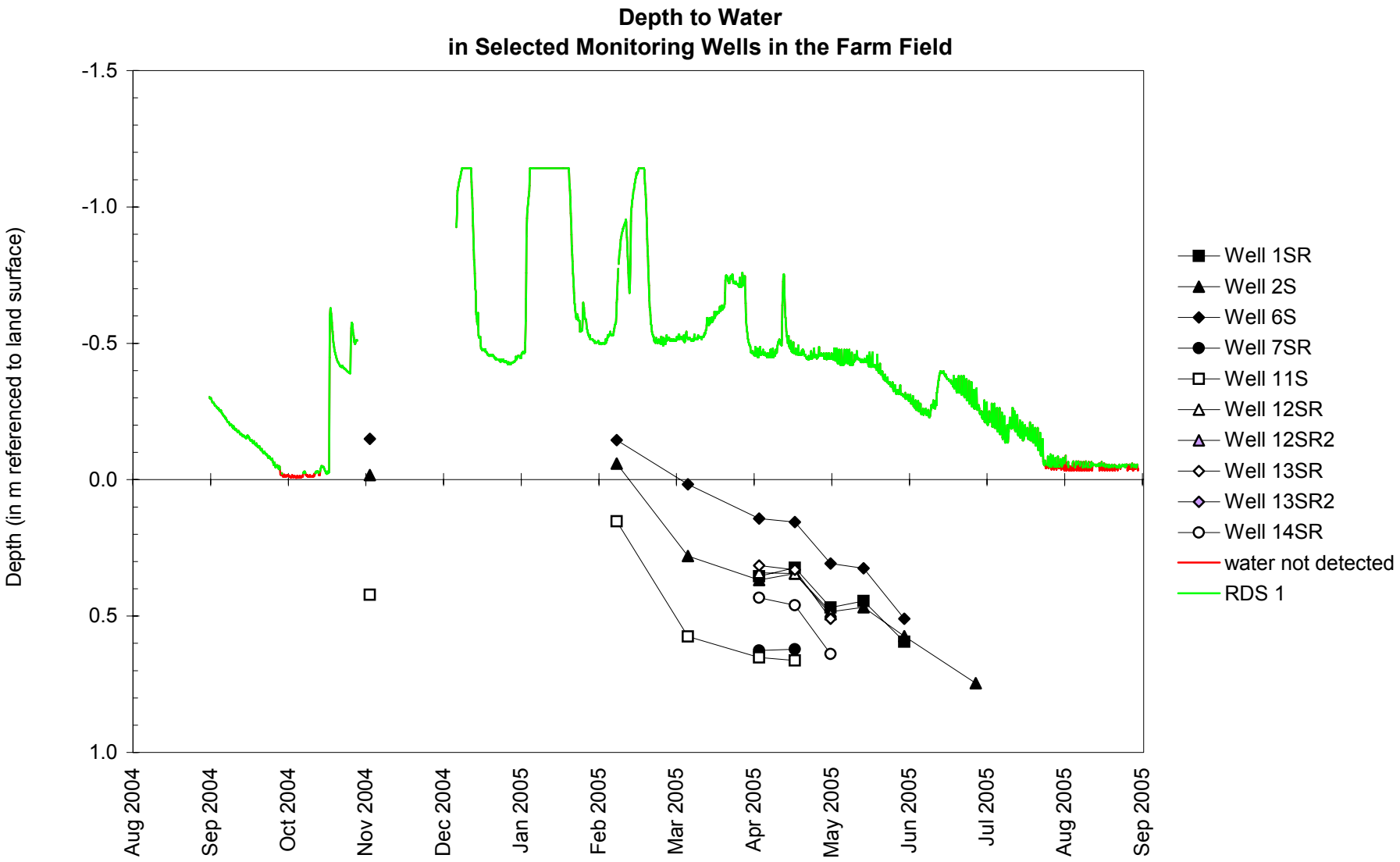


Apple Creek Potential Wetland Compensation Site
September 1, 2004 to September 1, 2005

Water-Level Elevations
in Selected Monitoring Wells in the Farm Field

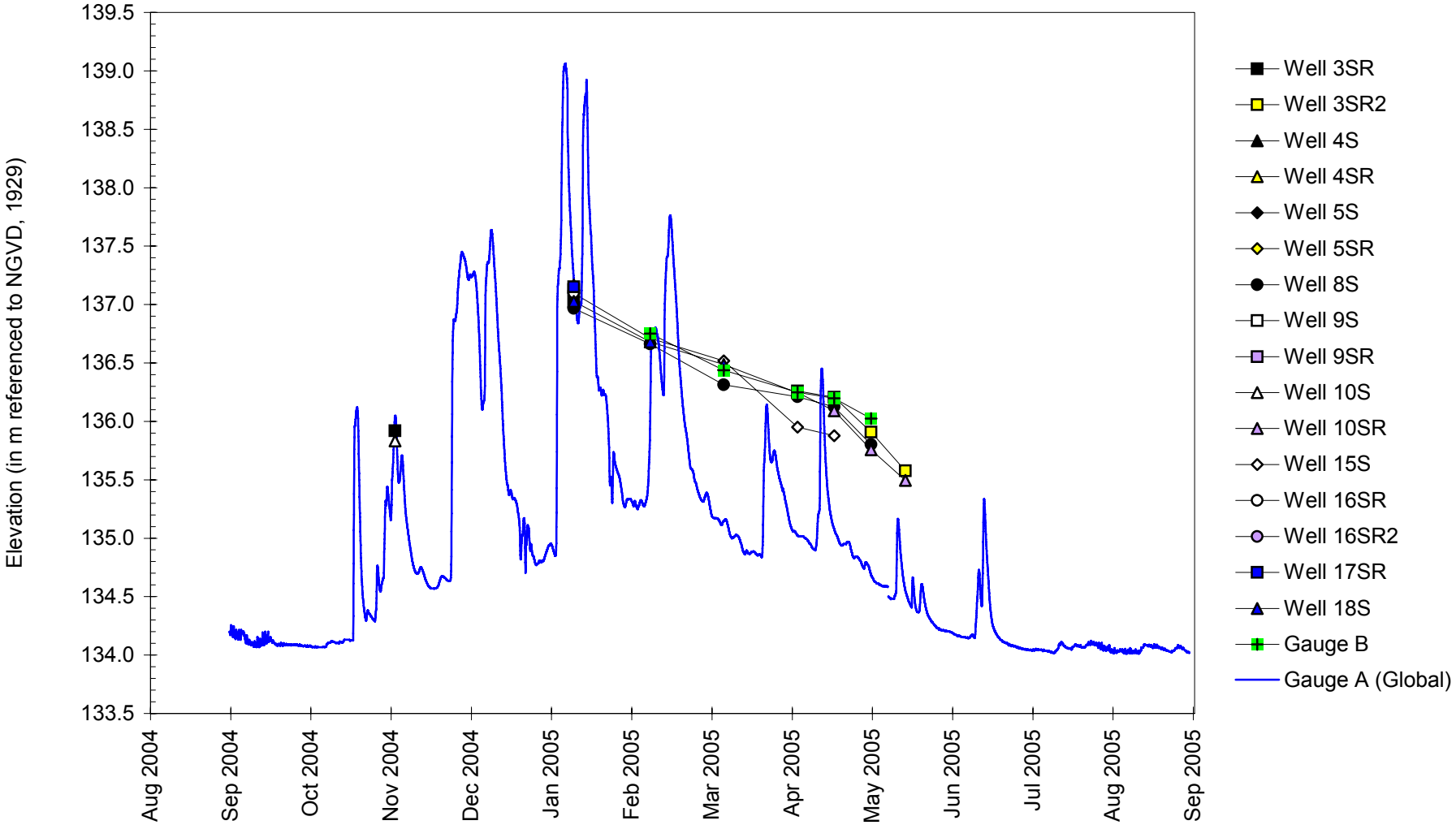


Apple Creek Potential Wetland Compensation Site
September 1, 2004 to September 1, 2005



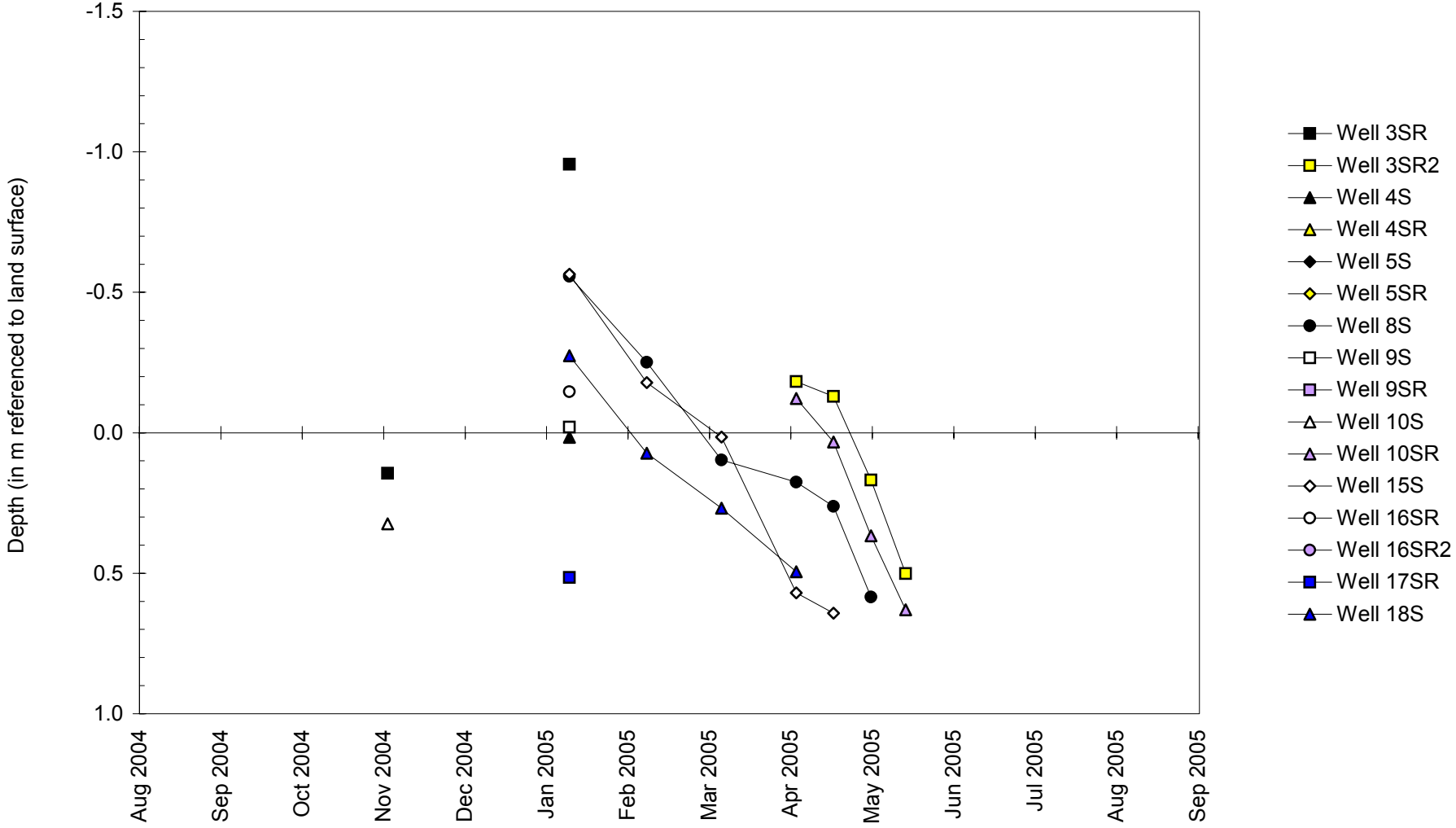
Apple Creek Potential Wetland Compensation Site
September 1, 2004 to September 1, 2005

Water-Level Elevations
in Selected Monitoring Wells in the Floodplain Forest



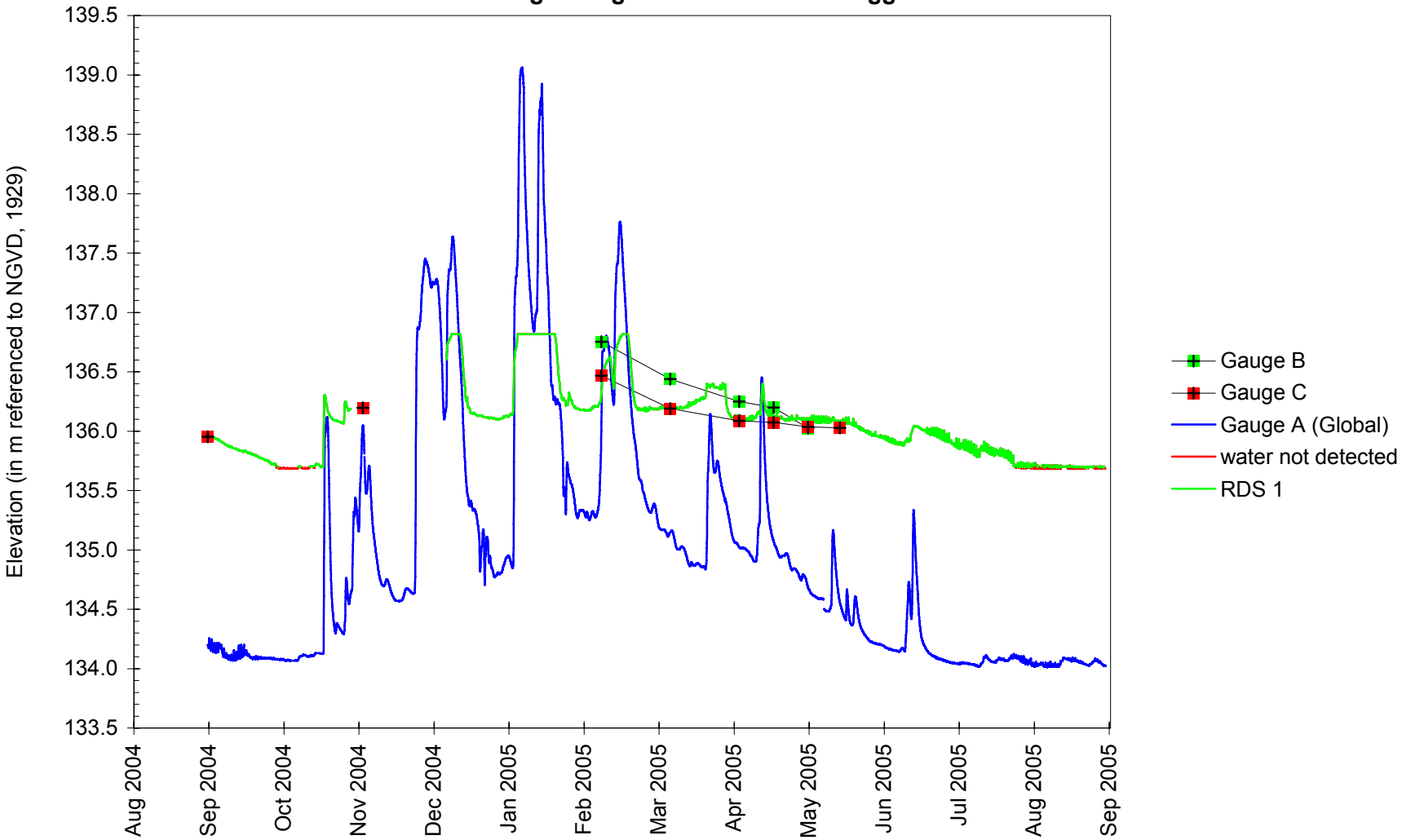
Apple Creek Potential Wetland Compensation Site
September 1, 2004 to September 1, 2005

Depth to Water
in Selected Monitoring Wells in the Floodplain Forest

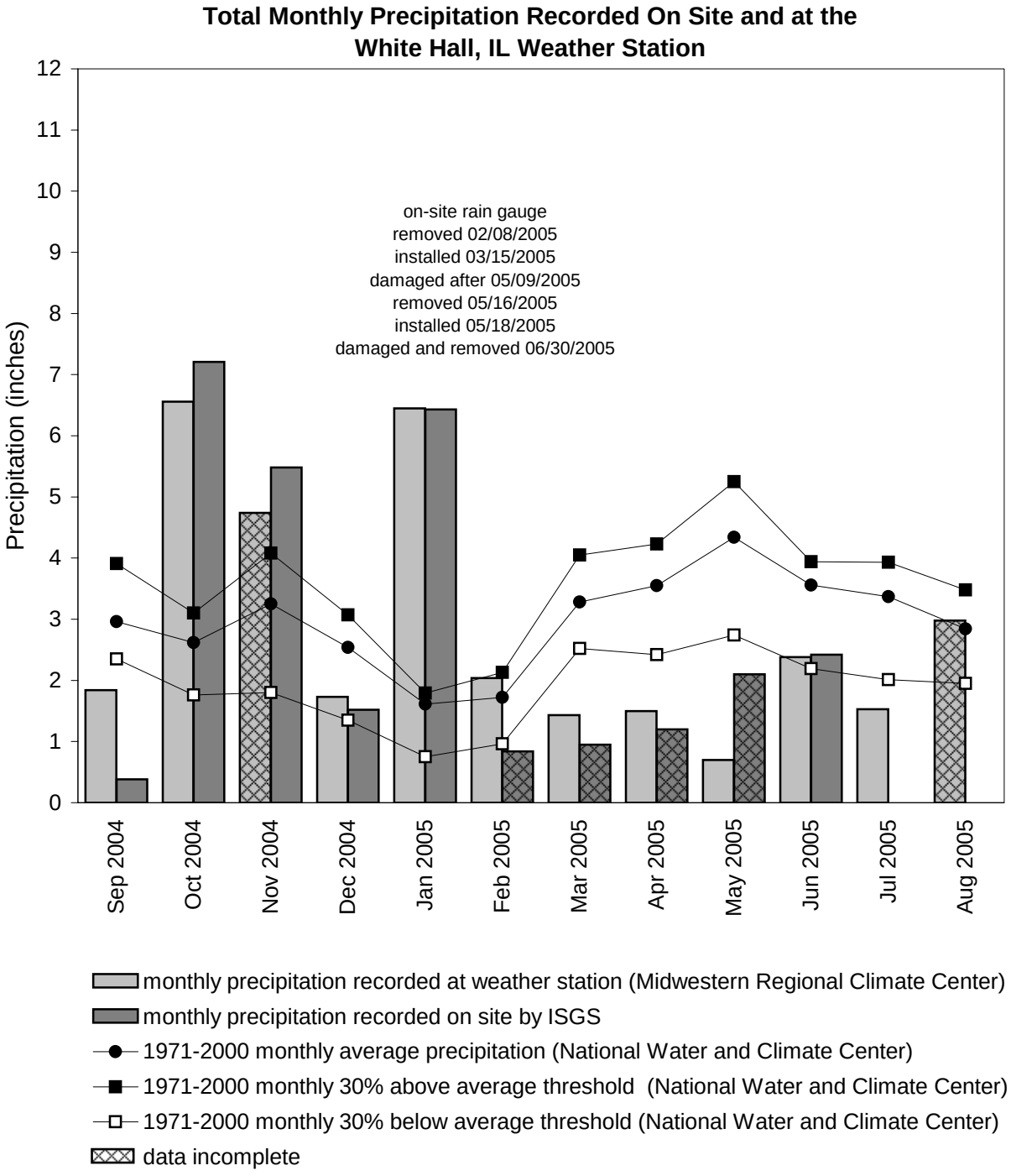


Apple Creek Potential Wetland Compensation Site
September 1, 2004 to September 1, 2005

Water-Level Elevations
on the Stage Gauges and at the Data Loggers



Apple Creek Potential Wetland Compensation Site
September 2004 through August 2005



Graph last updated October 24, 2005

HARRISBURG **ISGS #63**
POTENTIAL WETLAND COMPENSATION SITE
FAP 332
Saline County, near Harrisburg, Illinois
Primary Project Manager: Geoffrey E. Pociask
Secondary Project Manager: Gregory A. Shofner

SITE HISTORY

- January 2000: ISGS was tasked by IDOT to conduct an Initial Site Evaluation of the site.
- April 2000: ISGS submitted an Initial Site Evaluation report identifying the site as having low–moderate potential for wetland restoration.
- December 2001: ISGS was tasked by IDOT to conduct a Level II hydrogeologic characterization of the site.
- March 2002: ISGS initiated monitoring activities at the site.
- April 2004: Level II hydrologic characterization report was submitted to IDOT (ISGS Open File Series 2004–07).
- May 2004: Construction at the wetland compensation site was completed.

WETLAND HYDROLOGY CALCULATION FOR 2005

We estimate that 4.3 ha (10.7 ac) out of an excavation of 8.1 ha (20.0 ac) satisfied wetland hydrology criteria (Environmental Laboratory 1987) for greater than 5% of the growing season in 2005, whereas 1.6 ha (4.0 ac) satisfied wetland hydrology for greater than 12.5% of the growing season. These estimates are based on the following factors:

- According to the Midwestern Climate Center, the median date that the growing season begins in Harrisburg, Illinois, is April 1 and the season lasts 211 days; 5% of the growing season is 11 days and 12.5% of the growing season is 26 days.
- Total precipitation for the period from September 2004 through August 2005 was 94% of normal. Drier than normal conditions prevailed in September and December 2004 and during February and April through July 2005. Precipitation amounts were at or above normal for October and November 2004 and in January, March, and August 2005.
- In 2005, monitoring wells 2S, 5S, 6S, 7S, 8S, 9S, and 11S satisfied wetland hydrology criteria for greater than 5% of the growing season. Furthermore, wells 2S, 8S, 9S, and 11S satisfied the wetland hydrology criteria for greater than 12.5% of the growing season.
- The data logger RDS 1, located at the confluence of the drainage ditches at the east end of the site, indicated that surface-water inundation occurred below 111.10 m (364.50 ft) for greater than 5% of the growing season. Furthermore, observations of surface water at Gauge B showed this area was inundated for greater than 12.5% of the growing season below an elevation of 111.31 m (365.19 ft).

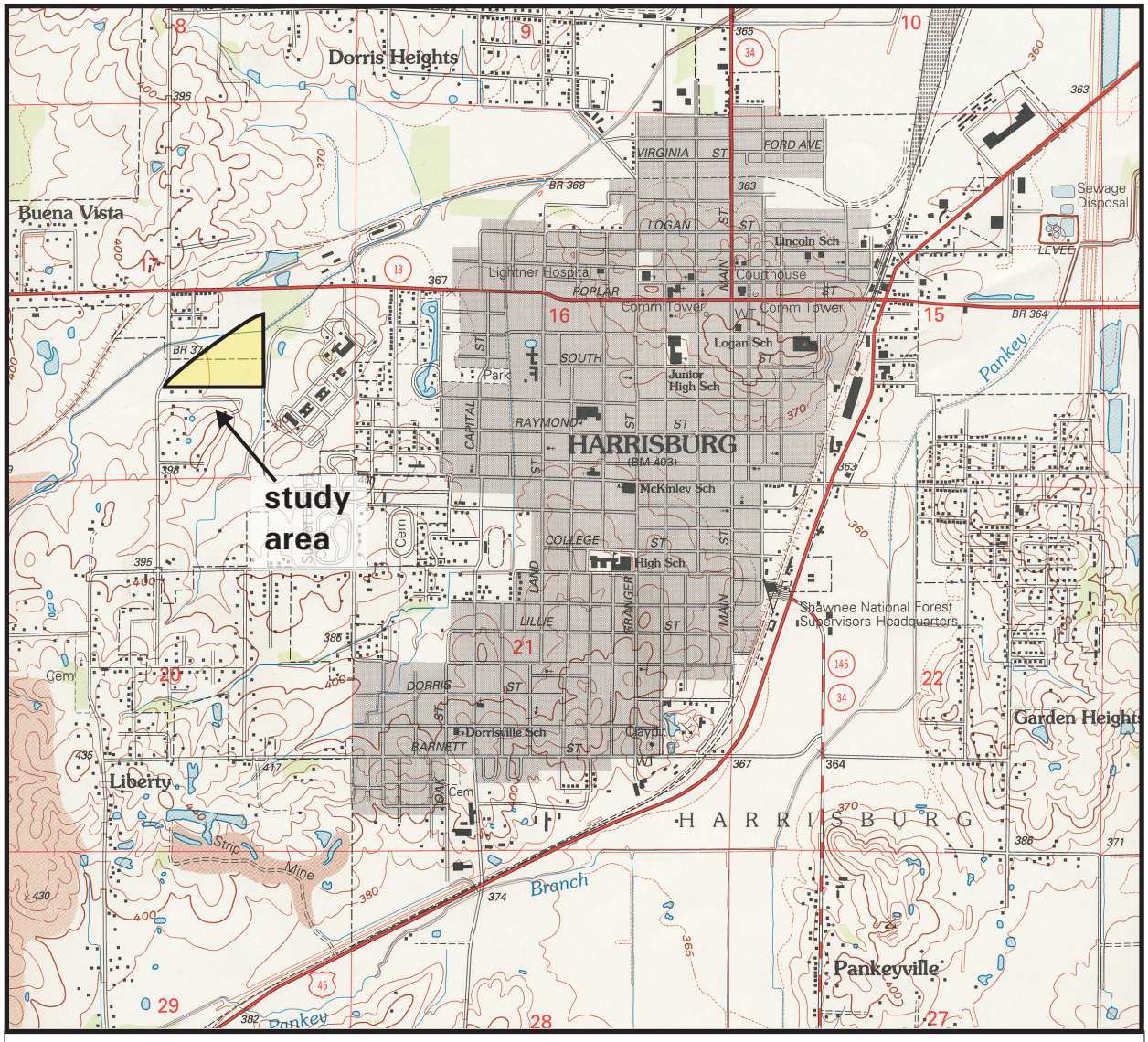
- Limitations of the wetland hydrology determination are as follows:
  - The area of wetland hydrology was calculated using GIS methods. The wetland-hydrology polygon was drawn from an ISGS topographic map (0.1-meter contour interval) rectified to GPS locations of water-level instruments.

PLANNED FUTURE ACTIVITIES

- Monitoring will continue through 2009 or until no longer required by IDOT.

Harrisburg Potential Wetland Compensation Site
(FAP 332)
General Study Area and Vicinity

from the USGS Topographic Series, Harrisburg, IL 7.5-minute Quadrangle (USGS 1996)
contour interval is 5 feet



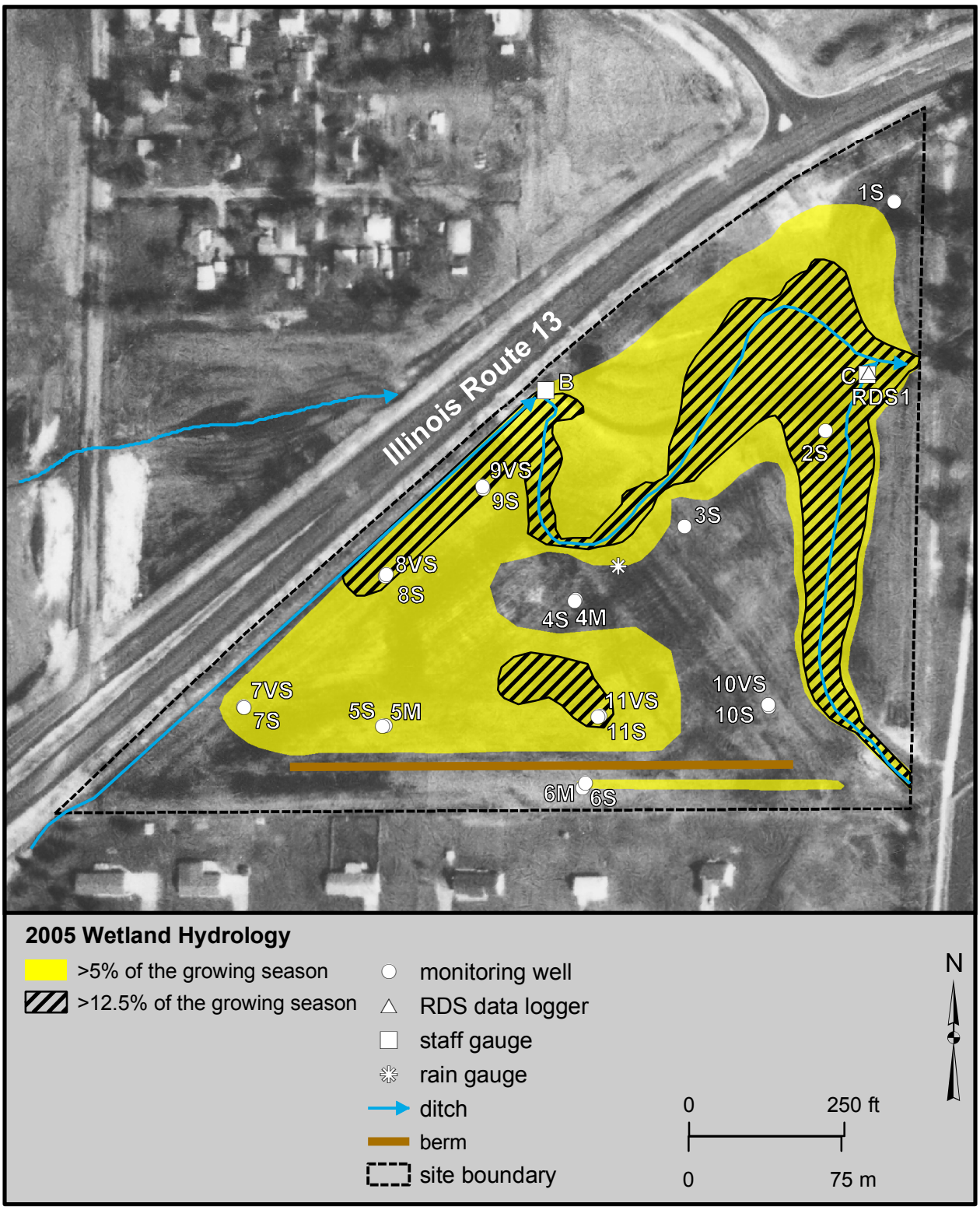
wetland compensation site

0 2000 ft
0 600 m

N

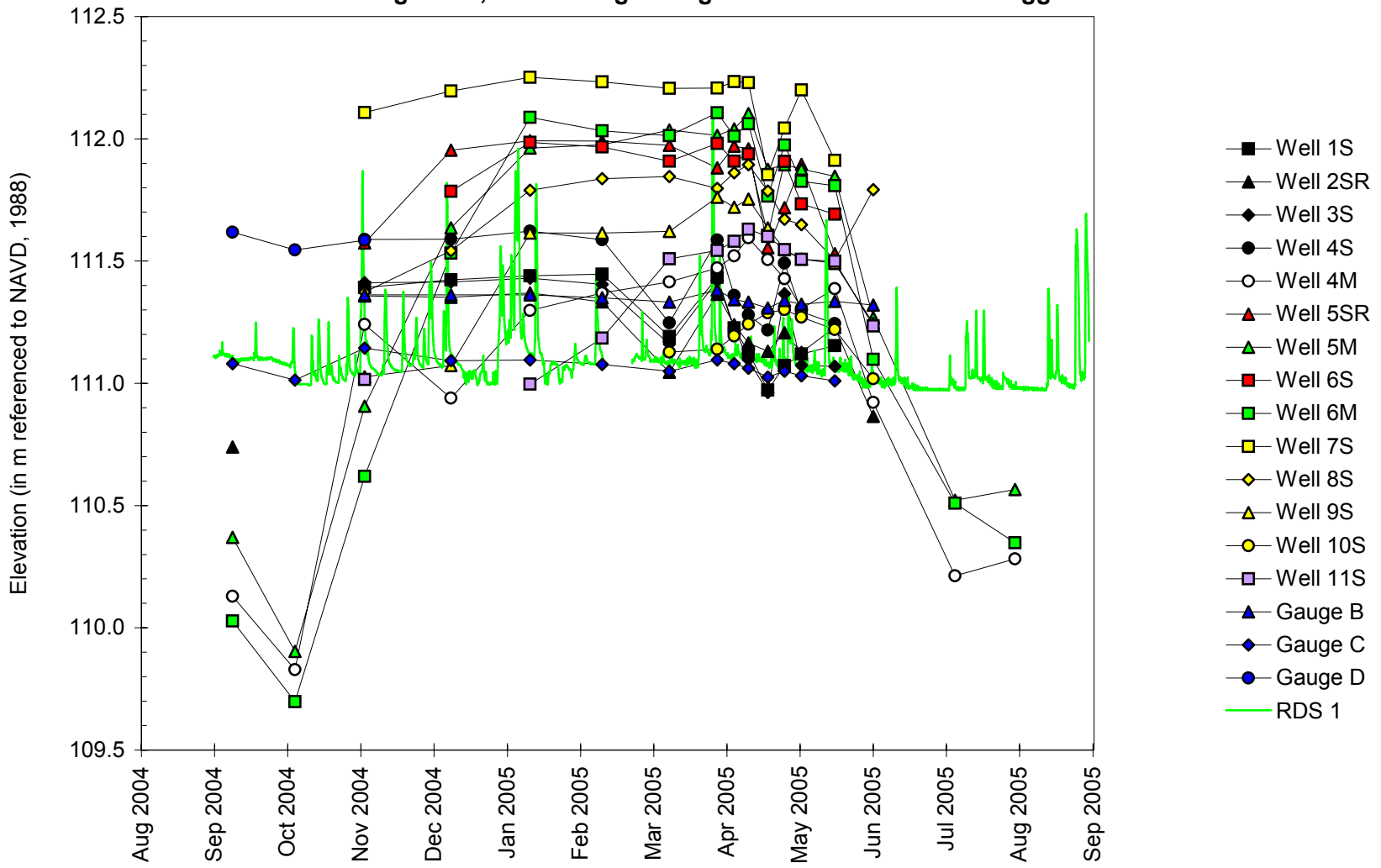
Harrisburg Wetland Compensation Site
(FAP 332)
Estimated Areal Extent of 2005 Wetland Hydrology
based on data collected between September 1, 2004 and September 1, 2005

Base map generated from IDOT aerial photography rectified to USGS digital orthophotograph
Harrisburg, NW quarter quadrangle (ISGS 2002)

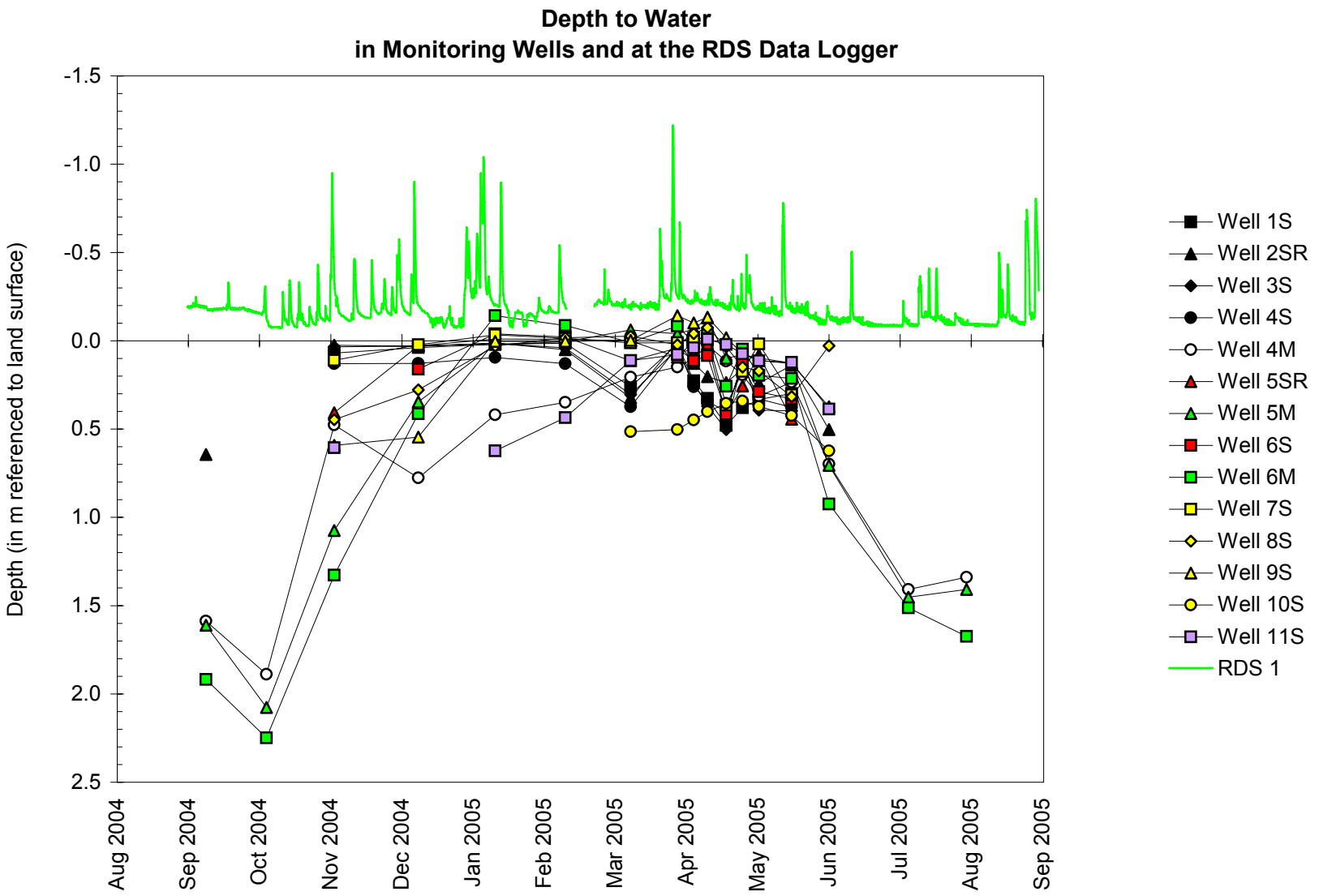


Harrisburg Potential Wetland Compensation Site
September 1, 2004 to September 1, 2005

Water-Level Elevations
in Monitoring Wells, on the Stage Gauges and at the RDS Data Logger

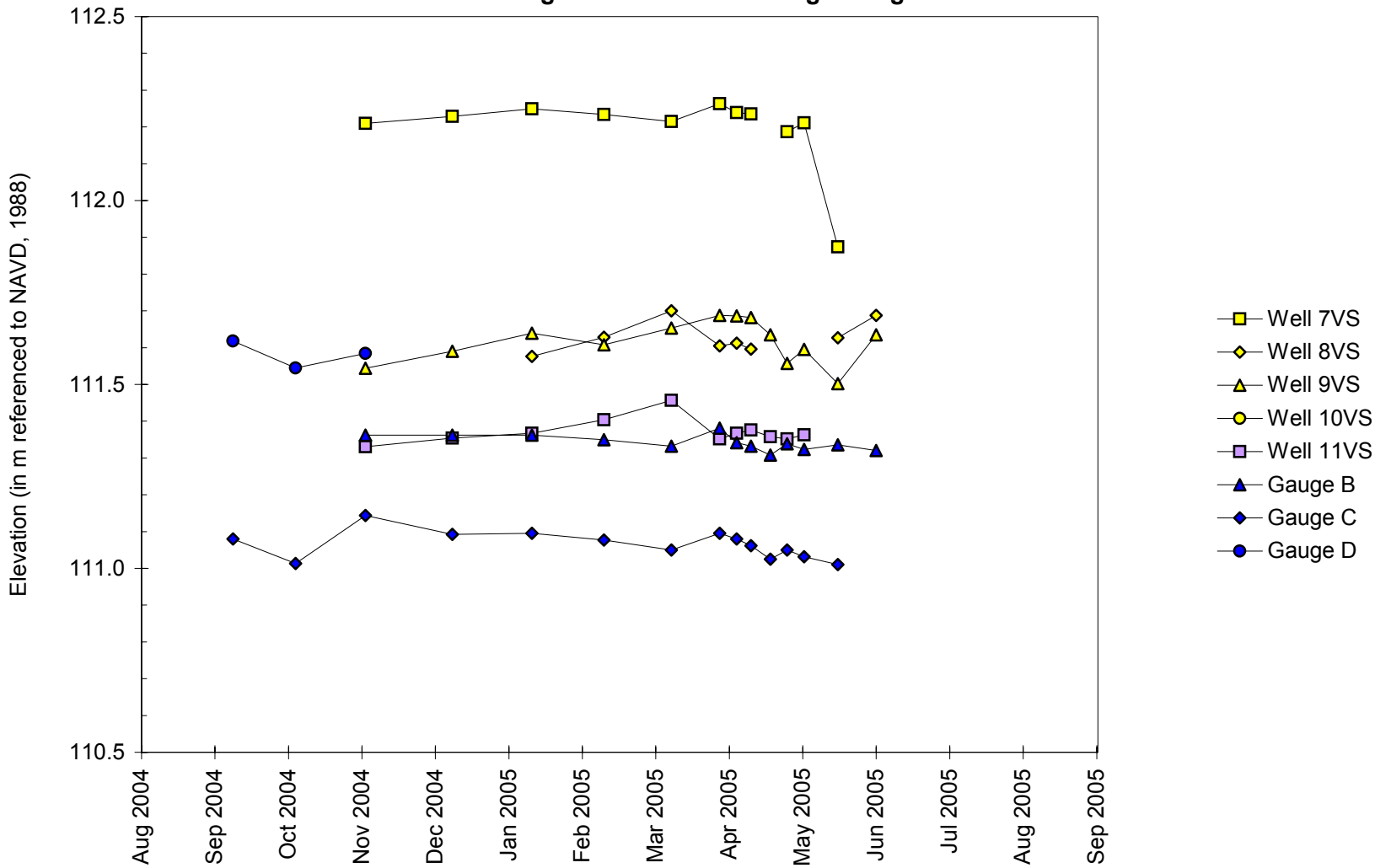


Harrisburg Potential Wetland Compensation Site
September 1, 2004 to September 1, 2005

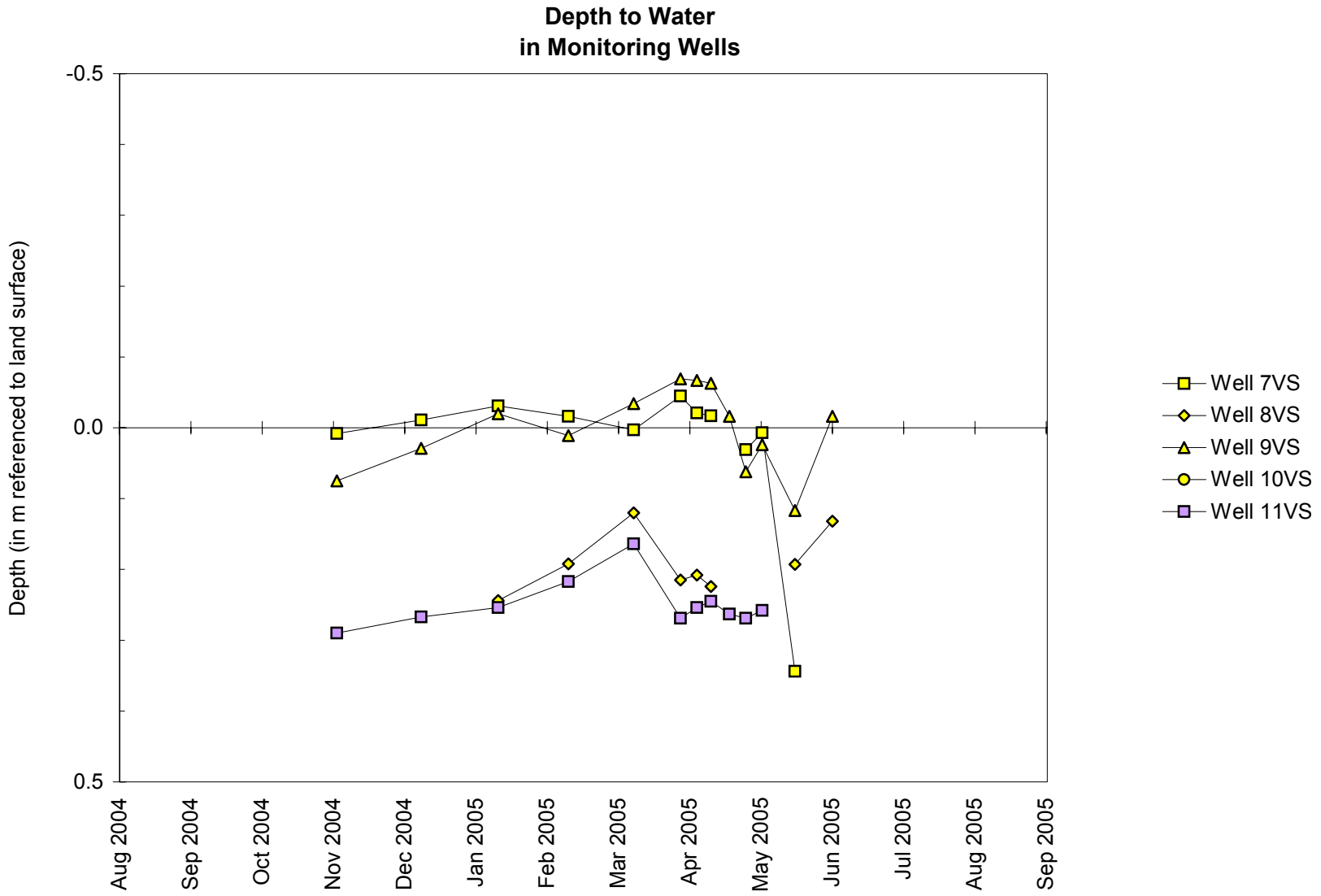


Harrisburg Potential Wetland Compensation Site
September 1, 2004 to September 1, 2005

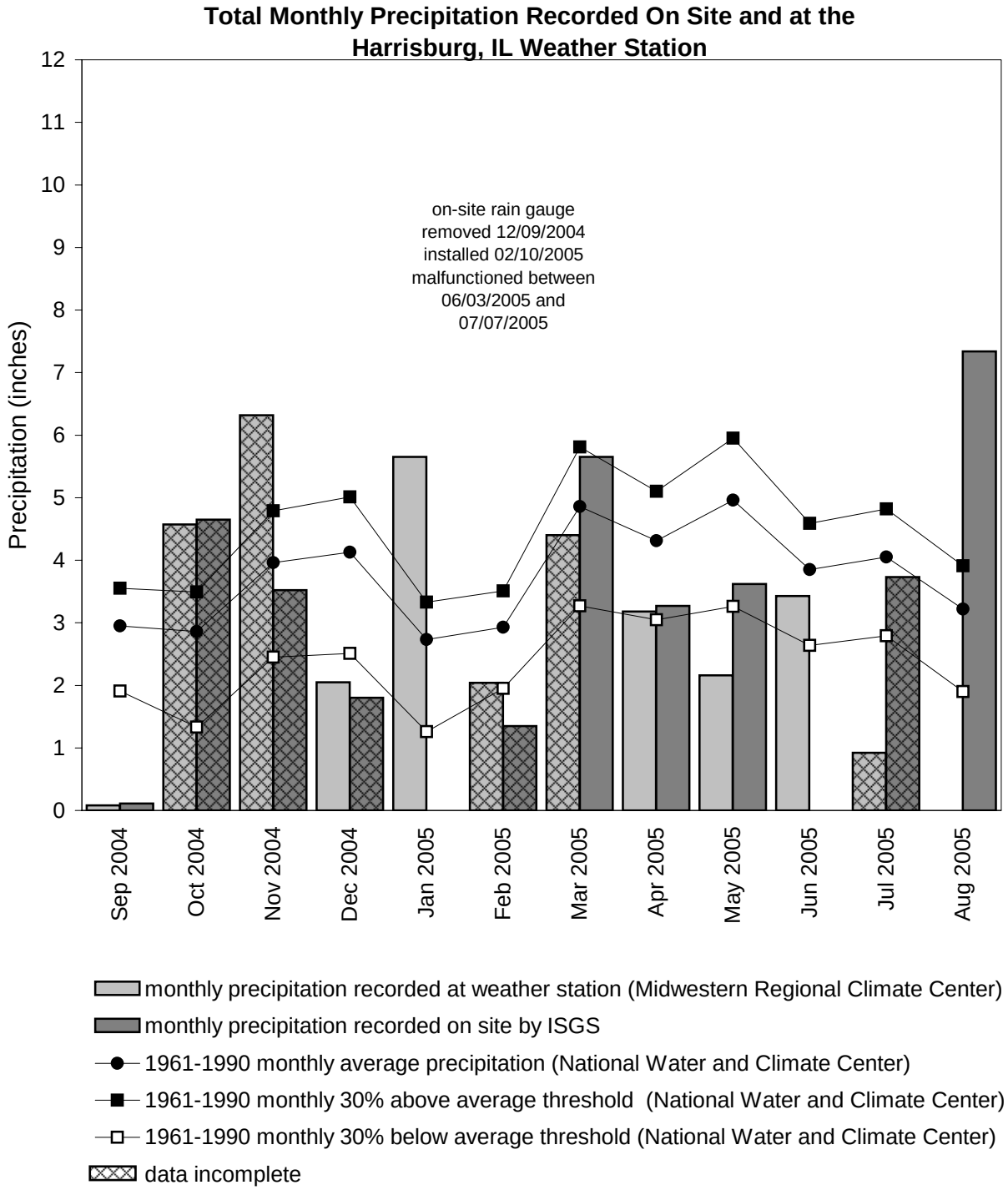
Water-Level Elevations
in Monitoring Wells and on the Stage Gauges



Harrisburg Potential Wetland Compensation Site
September 1, 2004 to September 1, 2005



Harrisburg Potential Wetland Compensation Site
September 2004 through August 2005



Graph last updated October 24, 2005

CARBONDALE **ISGS #65**
WETLAND COMPENSATION SITE
FAP 322
Sequence #9780
Jackson County, near Carbondale, Illinois
Primary Project Manager: Geoffrey E. Pociask
Secondary Project Manager: Gregory A. Shofner

SITE HISTORY

- March 2002: ISGS was tasked by IDOT to monitor wetland hydrology for this compensation site.

- April 2002: ISGS initiated water-level monitoring activities.

WETLAND HYDROLOGY CALCULATION FOR 2005

We estimate that 0.3 ha (0.6 ac) out of a total of 4.0 ha (9.9 ac) satisfied wetland hydrology criteria (Environmental Laboratory 1987) for greater than 5% of the growing season in 2005, whereas 0.2 ha (0.5 ac) satisfied wetland hydrology for greater than 12.5% of the growing season. These estimates are based on the following factors:

- According to the Midwestern Climate Center, the median date that the growing season begins in Carbondale, Illinois, is April 4 and the season lasts 203 days; 5% of the growing season is 10 days and 12.5% of the growing season is 25 days.

- Total precipitation for the reporting period from September 2004 through August 2005 was 85% of normal. Drier than normal conditions prevailed in September and December 2004 and in February through June and August 2005, with precipitation in February through June 2005 at only 52% of normal precipitation. Precipitation was at or above normal in October and November 2004 and in January and July 2005.

- In 2005, monitoring wells 2S, 4S, 5S, and 8S satisfied the wetland hydrology criteria for greater than 5% of the growing season. Furthermore, these wells also satisfied the wetland hydrology criteria for greater than 12.5% of the growing season.

- The water levels recorded at data loggers RDS 1 and Gauge A show that flood events from Piles Fork supply surface water to the created wetland areas. The area in the basin surrounding RDS 1 below approximately 123.2 m (403.8 ft) was inundated for greater than 5% of the growing season and therefore satisfied wetland hydrology criteria. An unmeasured small area below approximately 123.0 m (404.2 ft) was inundated for greater than 12.5% of the growing season.

- Limitations of the wetland hydrology determination are as follows:
  - The wetland hydrology estimate includes the entire IDOT parcel. Therefore, areas planned for wetland preservation and enhancement are included in the wetland hydrology acreage estimate.
  - The area of wetland hydrology was calculated using GIS methods. The wetland-hydrology polygon was drawn from an ISGS topographic map (0.1-meter contour

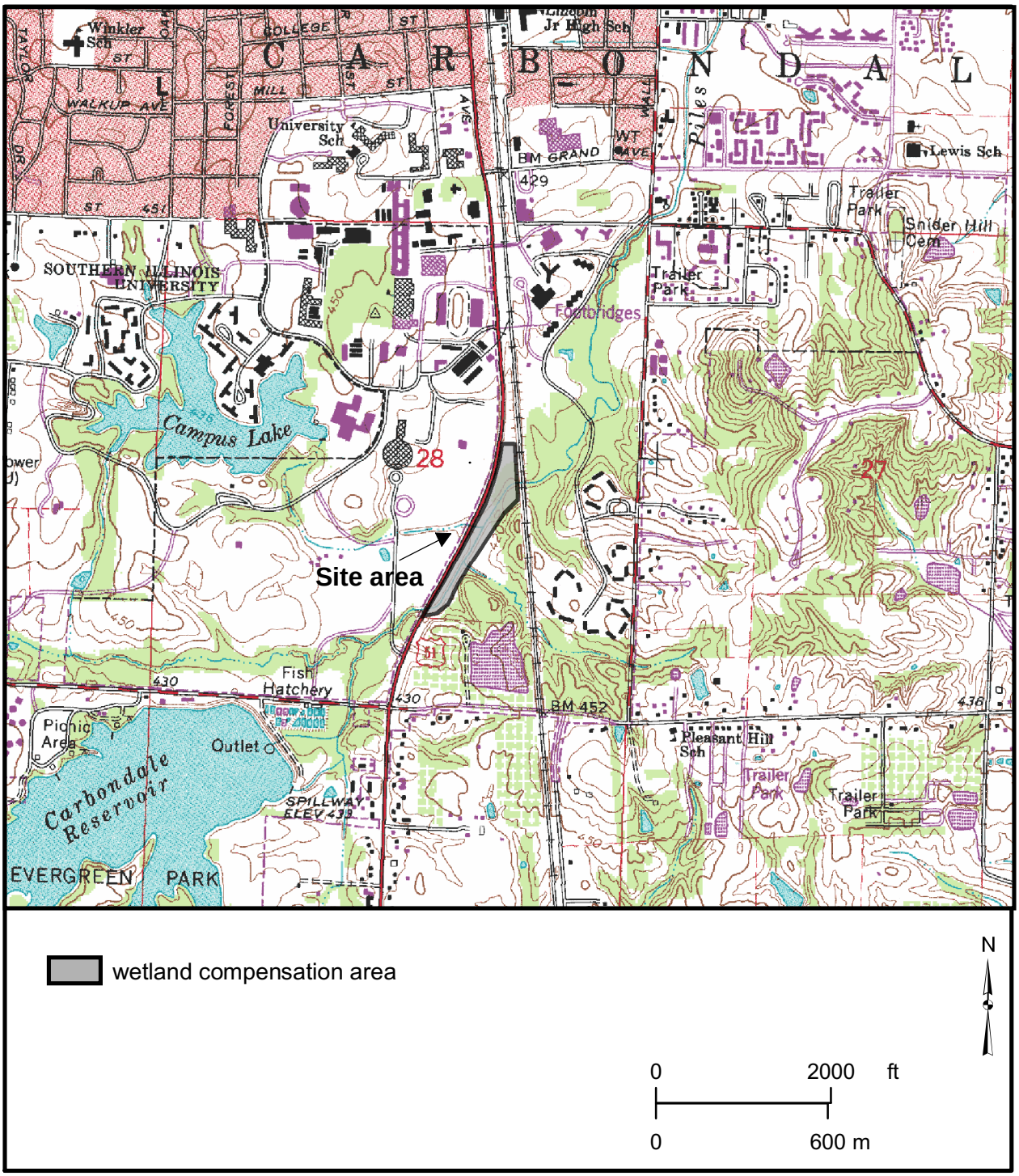
interval) rectified to GPS positions of water-level instruments and point features identifiable from digital orthophotography.

PLANNED FUTURE ACTIVITIES

- Water-level monitoring activities will continue through 2007 or until no longer required by IDOT.

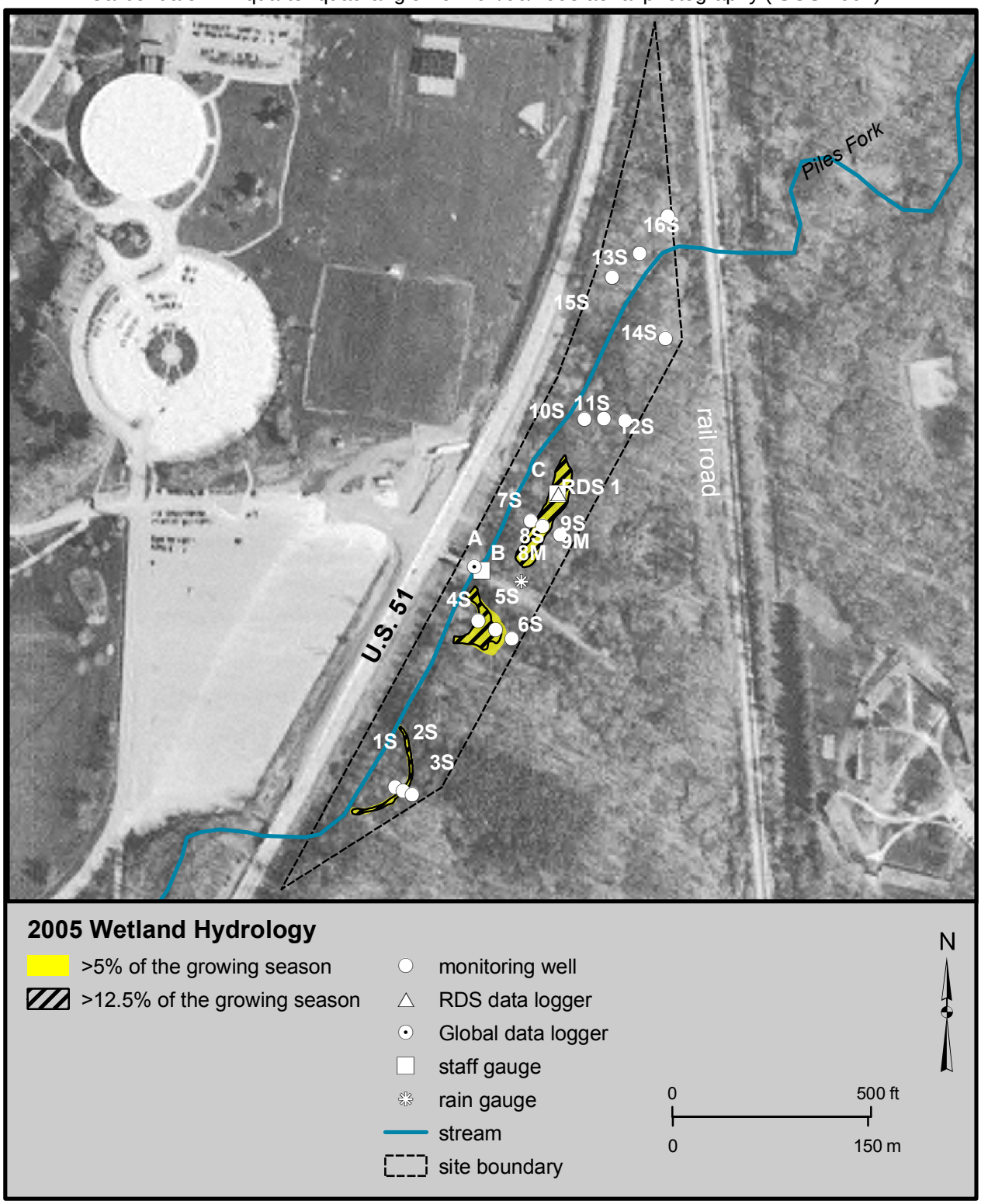
Carbondale Wetland Compensation Site
(FAP 322)
Site and Vicinity

from the USGS Topographic Series, Carbondale, IL 7.5-minute Quadrangle
(USGS 1966; photorevised 1990)
contour interval is 10 feet



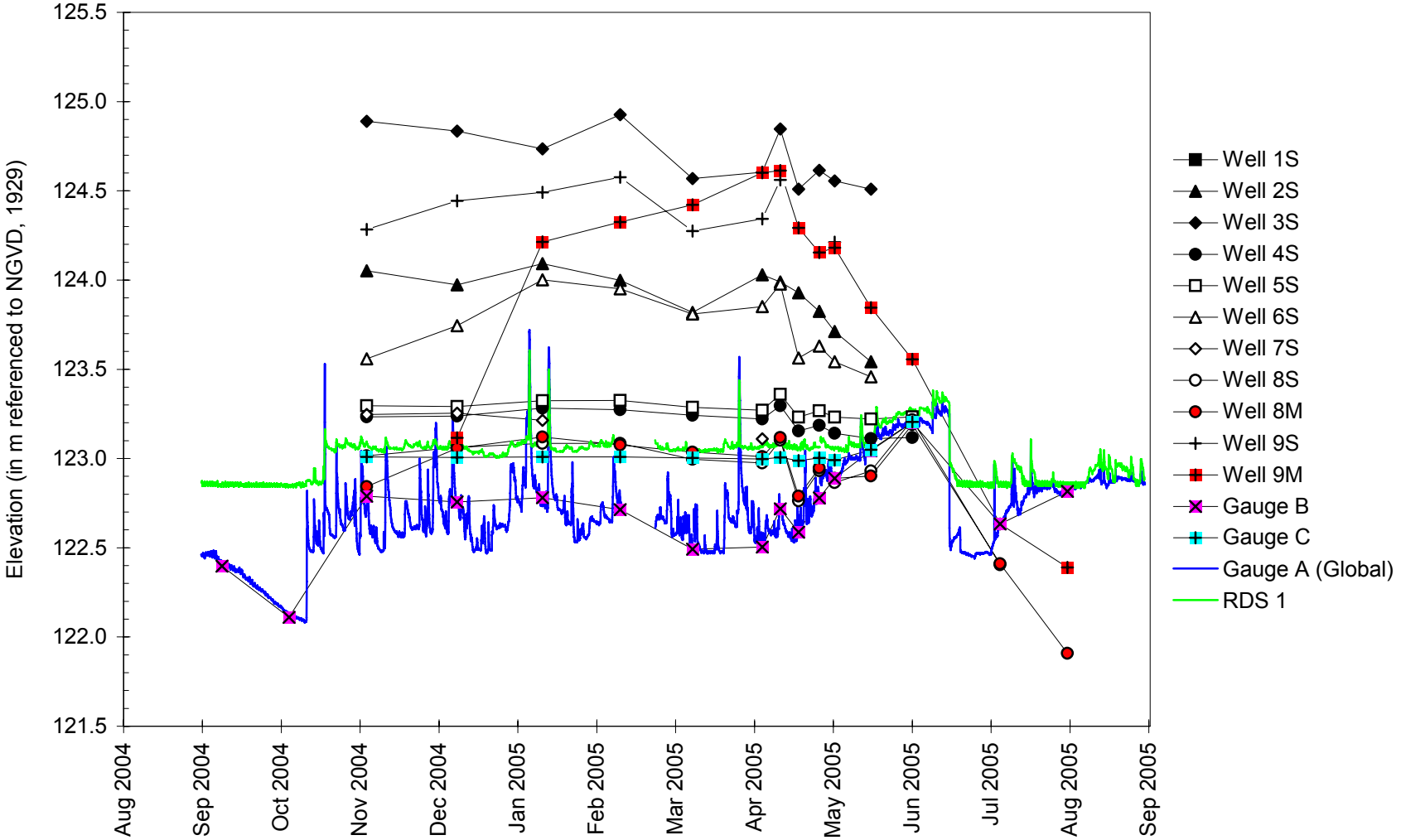
Carbondale Wetland Compensation Site
(FAP 322)
Estimated Areal Extent of 2005 Wetland Hydrology
based on data collected between September 1, 2004 and September 1, 2005

Map based on IDOT mitigation design plan rectified to USGS digital orthophotograph
Carbondale NW quarter quadrangle from 04/06/1998 aerial photography (ISGS 2002)



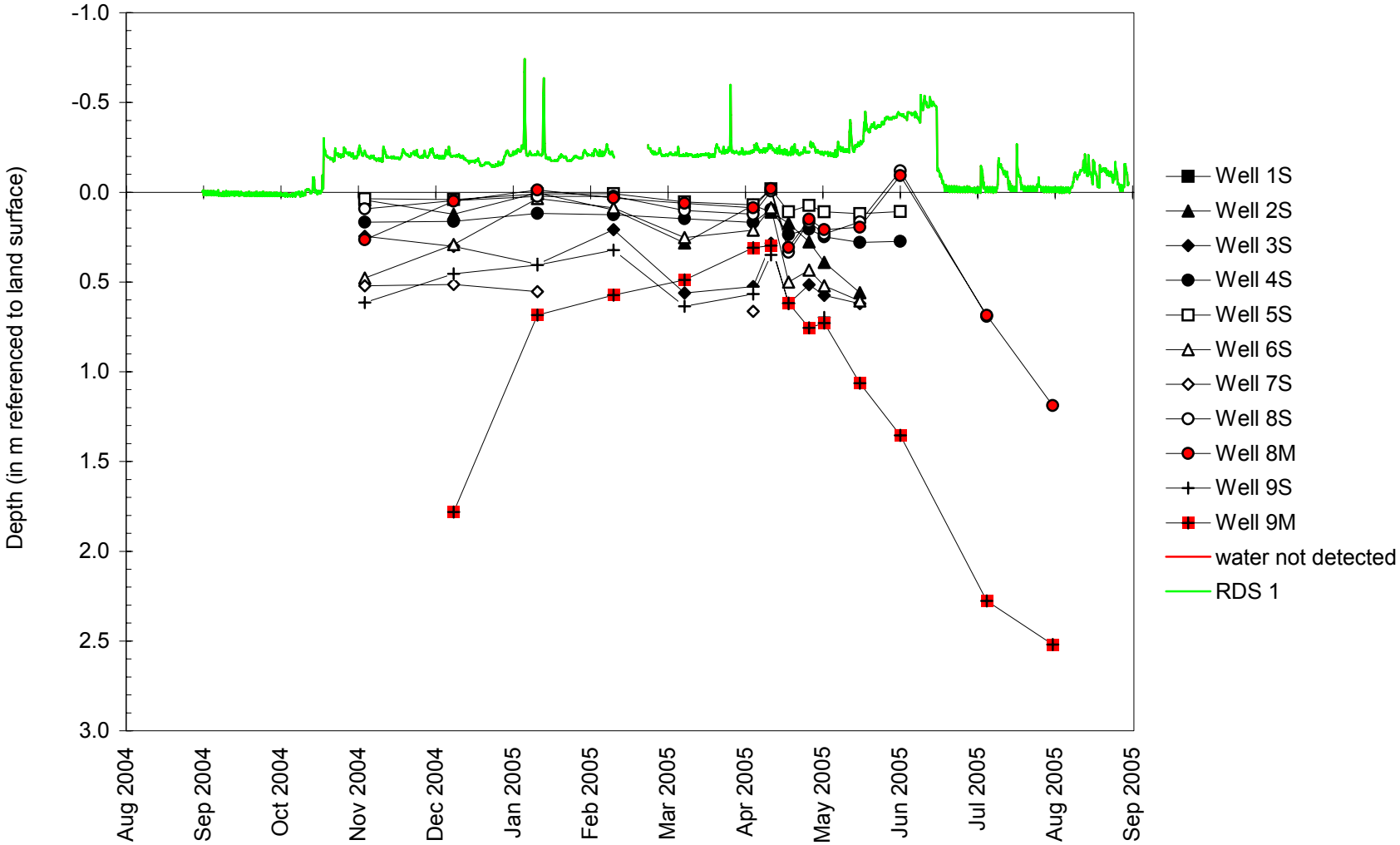
Carbondale Wetland Compensation Site
September 1, 2004 to September 1, 2005

Water-Level Elevations
in Selected Monitoring Wells, on the Stage Gauge, and at the Data Loggers



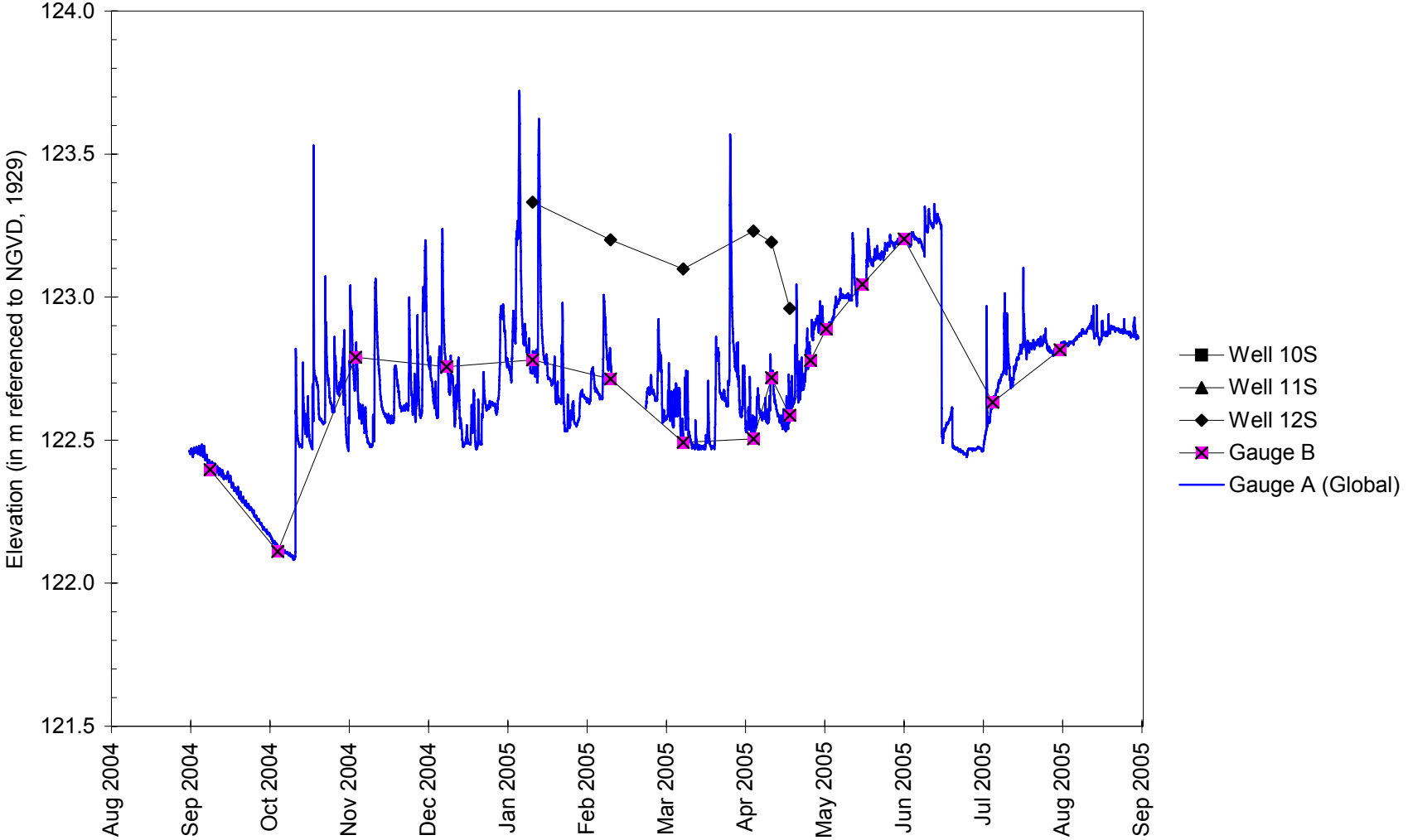
Carbondale Wetland Compensation Site
September 1, 2004 to September 1, 2005

Depth to Water
in Selected Monitoring Wells and at the RDS Data Logger

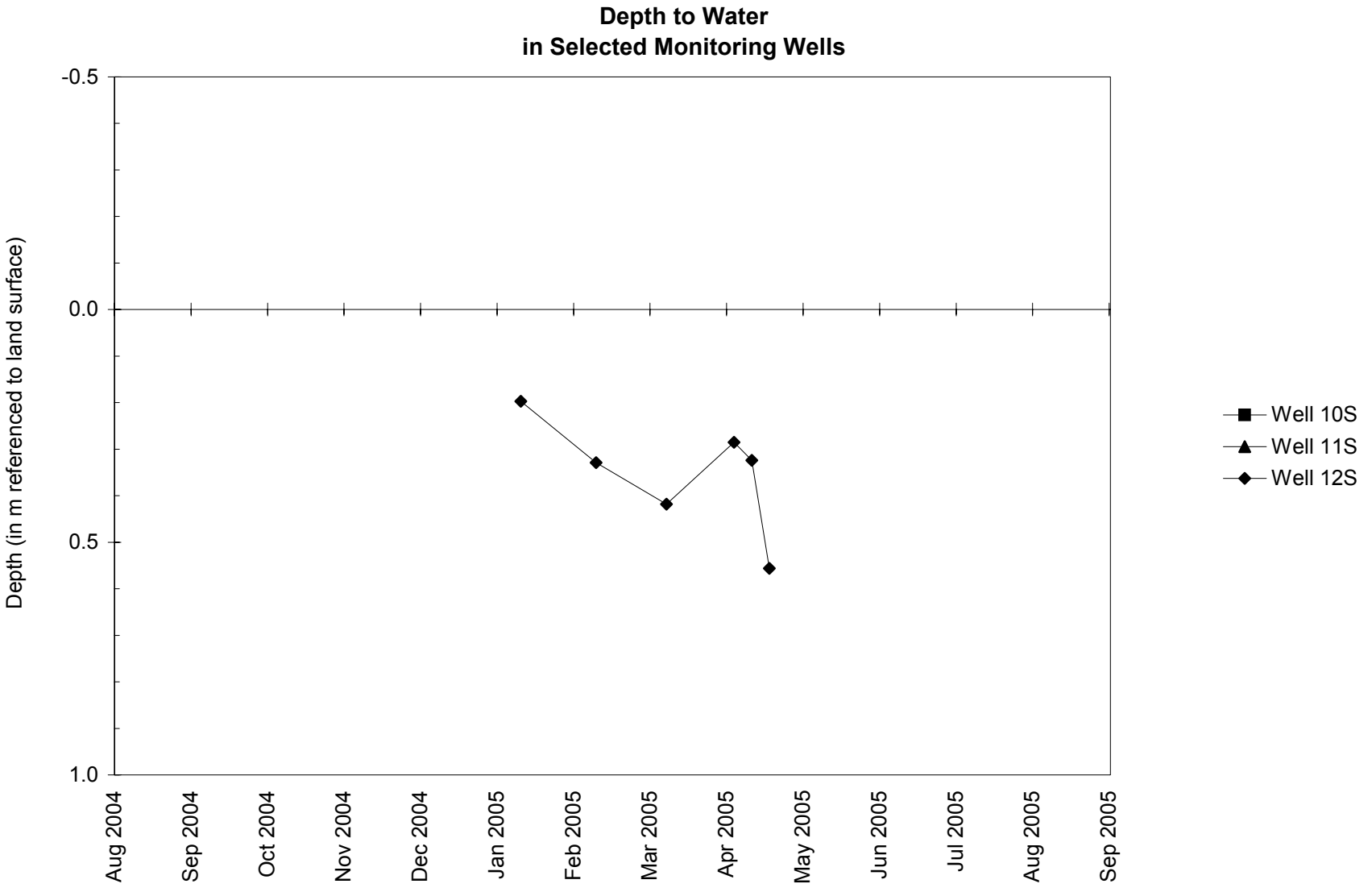


Carbondale Wetland Compensation Site
September 1, 2004 to September 1, 2005

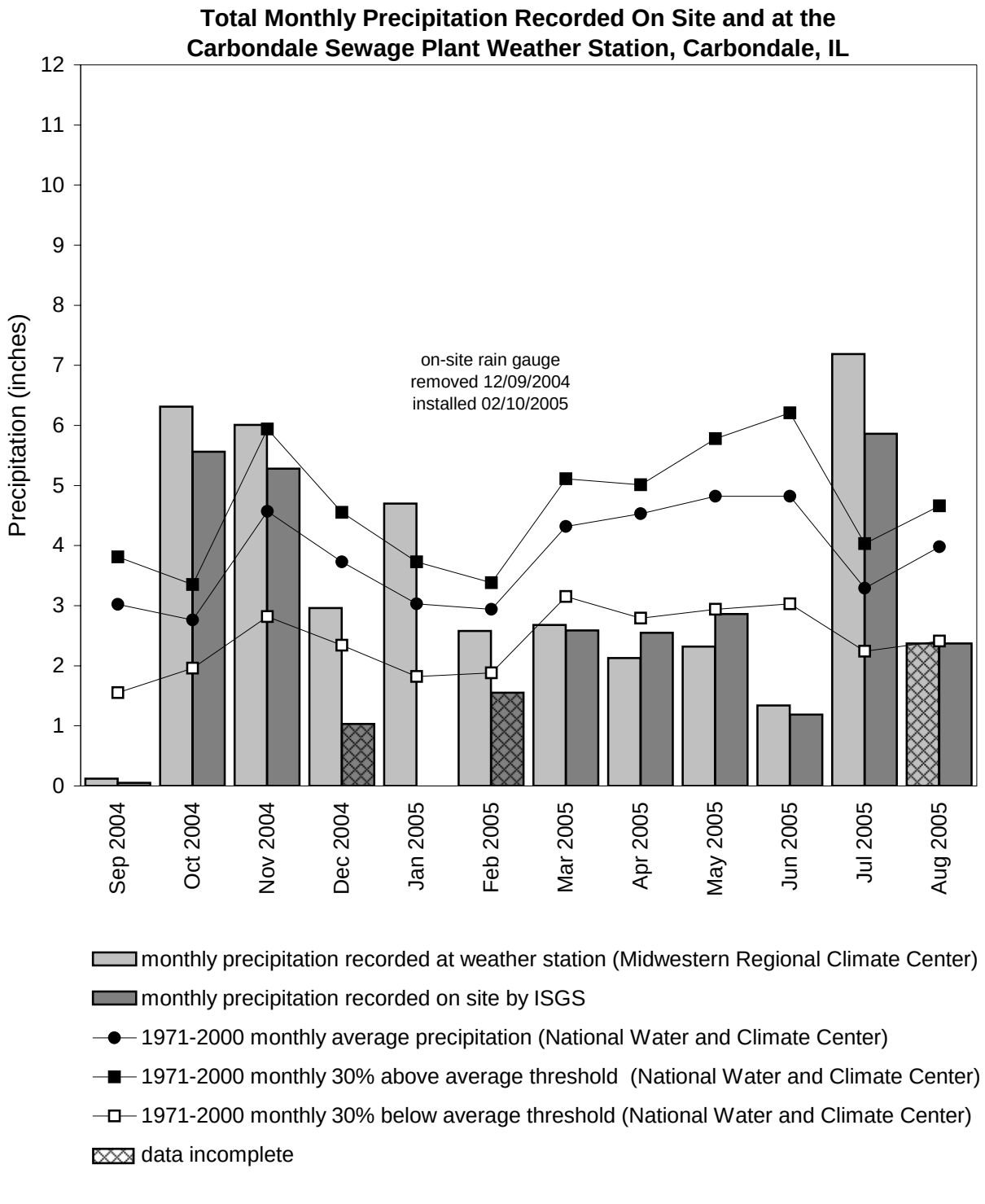
Water-Level Elevations
in Selected Monitoring Wells, on the Stage Gauge, and at the Global Data Logger



Carbondale Wetland Compensation Site
September 1, 2004 to September 1, 2005



Carbondale Wetland Compensation Site
September 2004 through August 2005



Graph last updated October 24, 2005

PYATTS BLACKTOP **ISGS #67**
WETLAND COMPENSATION SITE
FAP 42
Sequence #409
Perry County, near Pyatts, Illinois
Primary Project Manager: Geoffrey E. Pociask
Secondary Project Manager: Gregory A. Shofner

SITE HISTORY

- April 2002: ISGS was tasked by IDOT to monitor wetland hydrology.
- May 2002: ISGS initiated monitoring of the site.

WETLAND HYDROLOGY CALCULATION FOR 2005

We estimate that the total area that satisfied wetland hydrology criteria (Environmental Laboratory 1987) for greater than 5% of the growing season in 2005 was 2.6 ha (6.4 ac) out of 6.7 ha (16.4 ac), whereas 1.4 ha (3.4 ac) satisfied wetland hydrology for greater than 12.5% of the growing season. These estimates are based on the following factors:

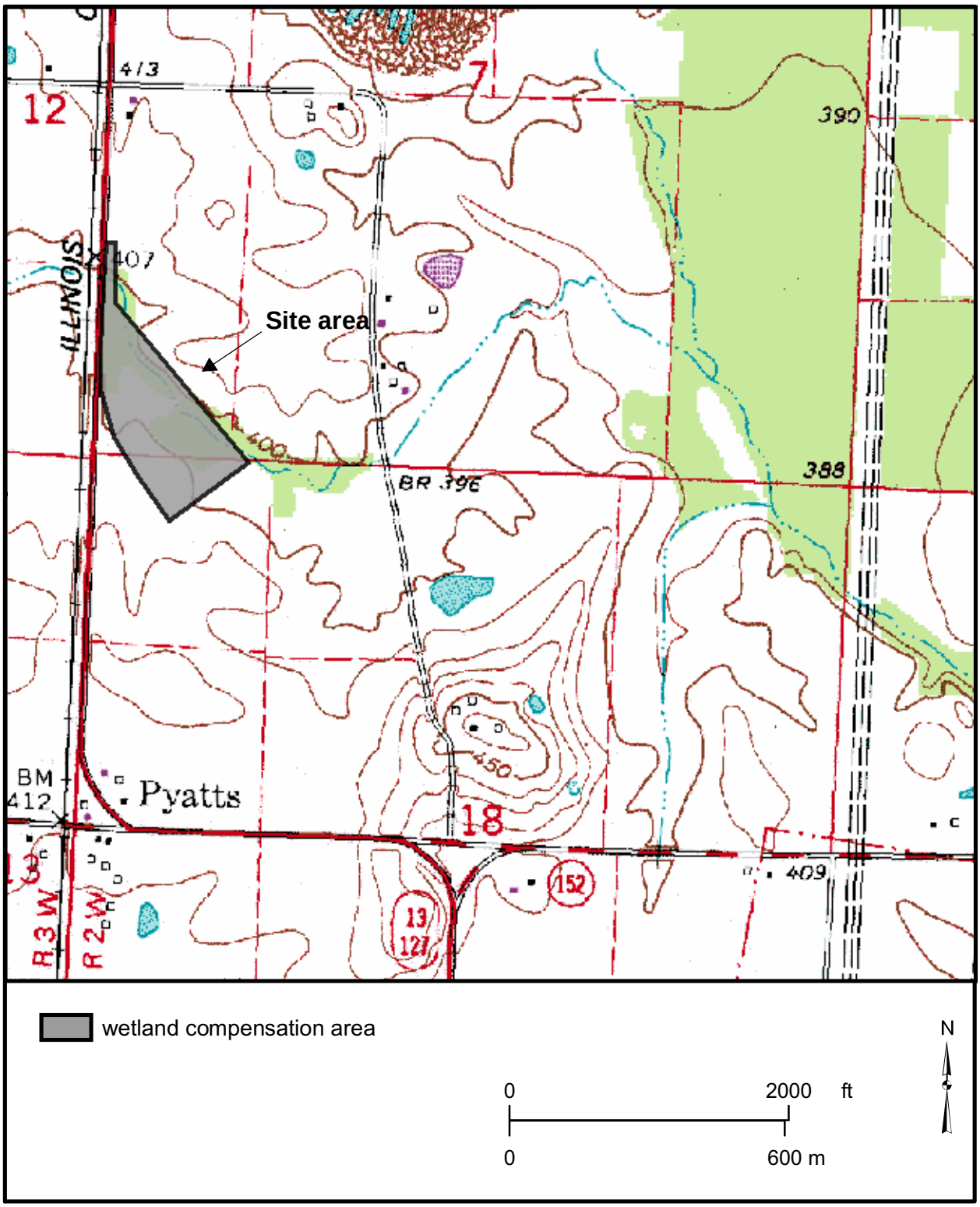
- According to the Midwestern Climate Center, the median date that the growing season begins in nearby Du Quoin, Illinois, is April 5 and the season lasts 207 days; 5% of the growing season is 10 days and 12.5% of the growing season is 26 days.
- Total precipitation for the reporting period from September 2004 through August 2005 was 87% of normal. Drier that normal conditions prevailed in September and December 2004, and in February through June 2005, with precipitation in April through June 2005 at only 47% of normal. Precipitation was at or above normal in October and November 2004 and in January, July, and August 2005.
- Wells 1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S and 12S satisfied the wetland hydrology criteria for 5% of the growing season. Furthermore, wells 1S, 2S, 3S, 4S, 7S, 8S, and 12S also satisfied wetland hydrology criteria for greater than 12.5% of the growing season.
- The surface-water levels recorded at Gauge C indicated that the stream did not flood the site during the 2005 growing season.
- Limitations of the wetland hydrology determination are as follows:
  - The wetland hydrology estimate includes some areas of the IDOT parcel that were planned for wetland preservation and enhancement.
  - The area of wetland hydrology was calculated using GIS methods. The wetland-hydrology polygon was drawn from an ISGS topographic map (0.1-meter contour interval) rectified to GPS positions of water-level instruments and point features identifiable from digital orthophotography.

PLANNED FUTURE ACTIVITIES

- Monitoring will continue at the site through 2007 or until no longer required by IDOT.

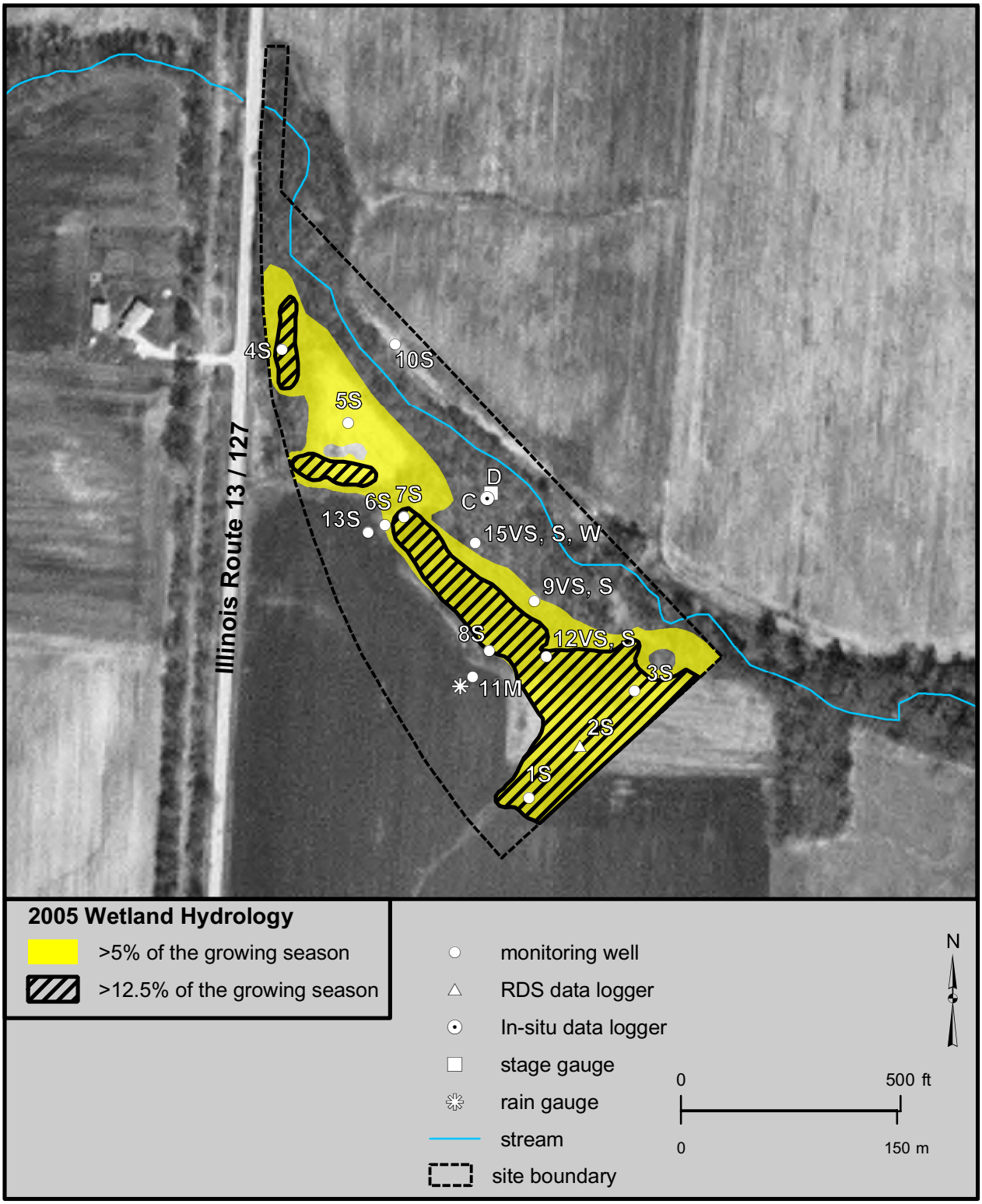
Pyatts Blacktop Wetland Compensation Site
(FAP 42)
Site and Vicinity

from the USGS Topographic Series, Pyatts, IL (USGS 1974; photorevised 1982) 7.5-minute Quadrangle
contour interval is 10 feet



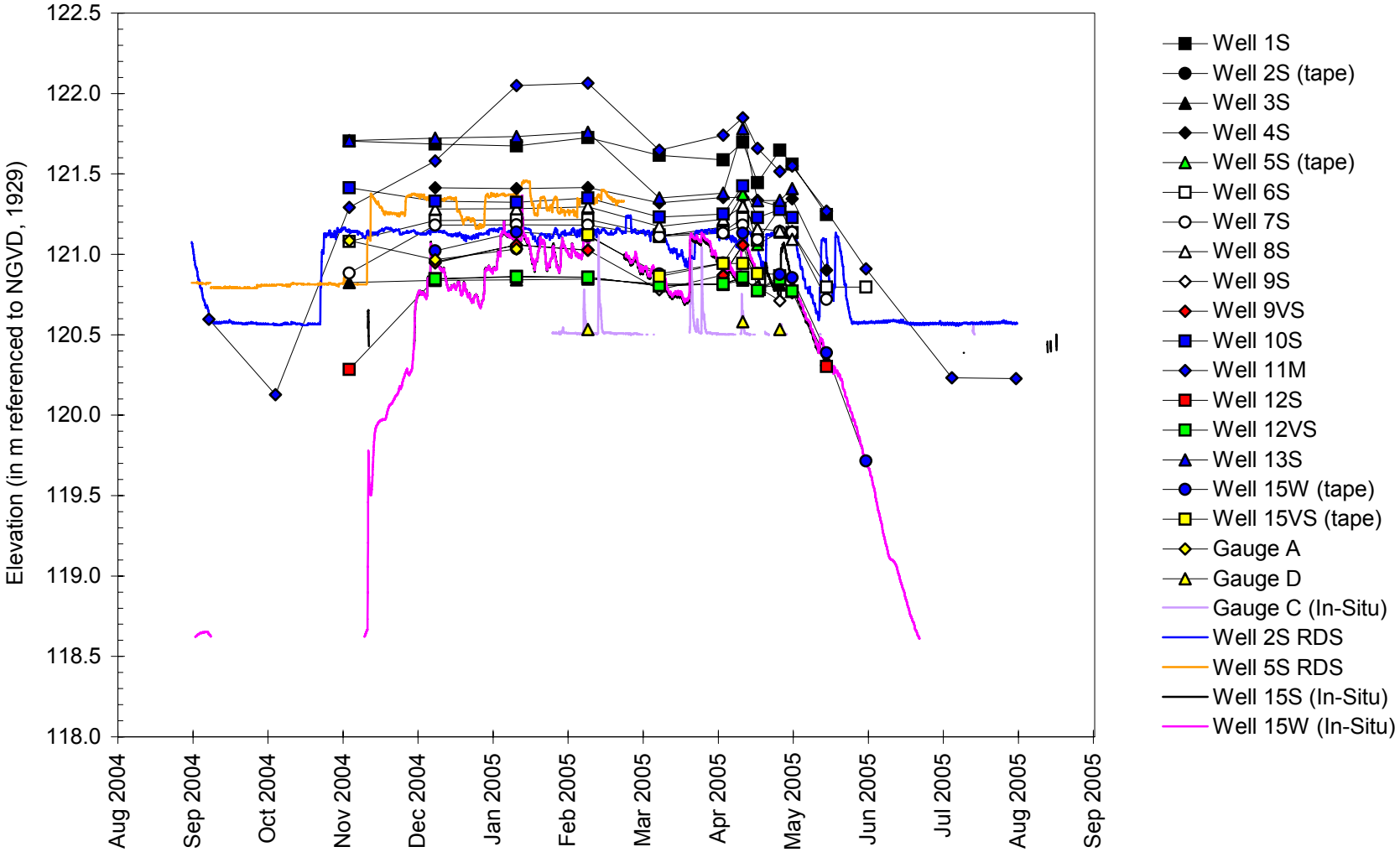
Pyatts Blacktop Wetland Compensation Site
(FAP 42)
Estimated Areal Extent of 2005 Wetland Hydrology
based on data collected between September 1, 2004 and September 1, 2005

Map produced by rectifying IDOT design plans to USGS digital orthophotograph
Pinckneyville, SE quarter quadrangle, aerial photography from 04/06/1998 (ISGS 2002)



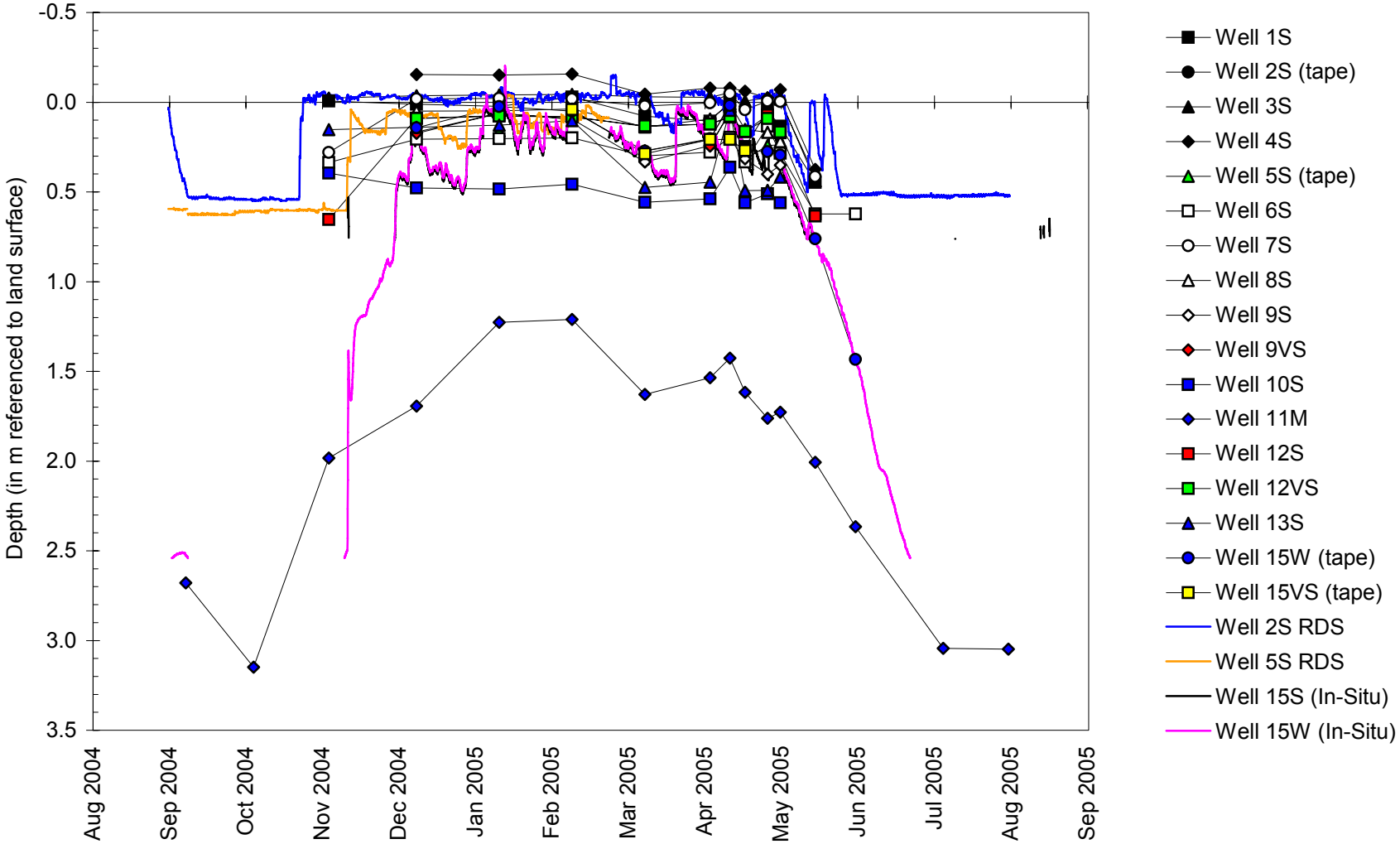
Pyatts Blacktop Wetland Compensation Site
September 1, 2004 to September 1, 2005

Water-Level Elevations

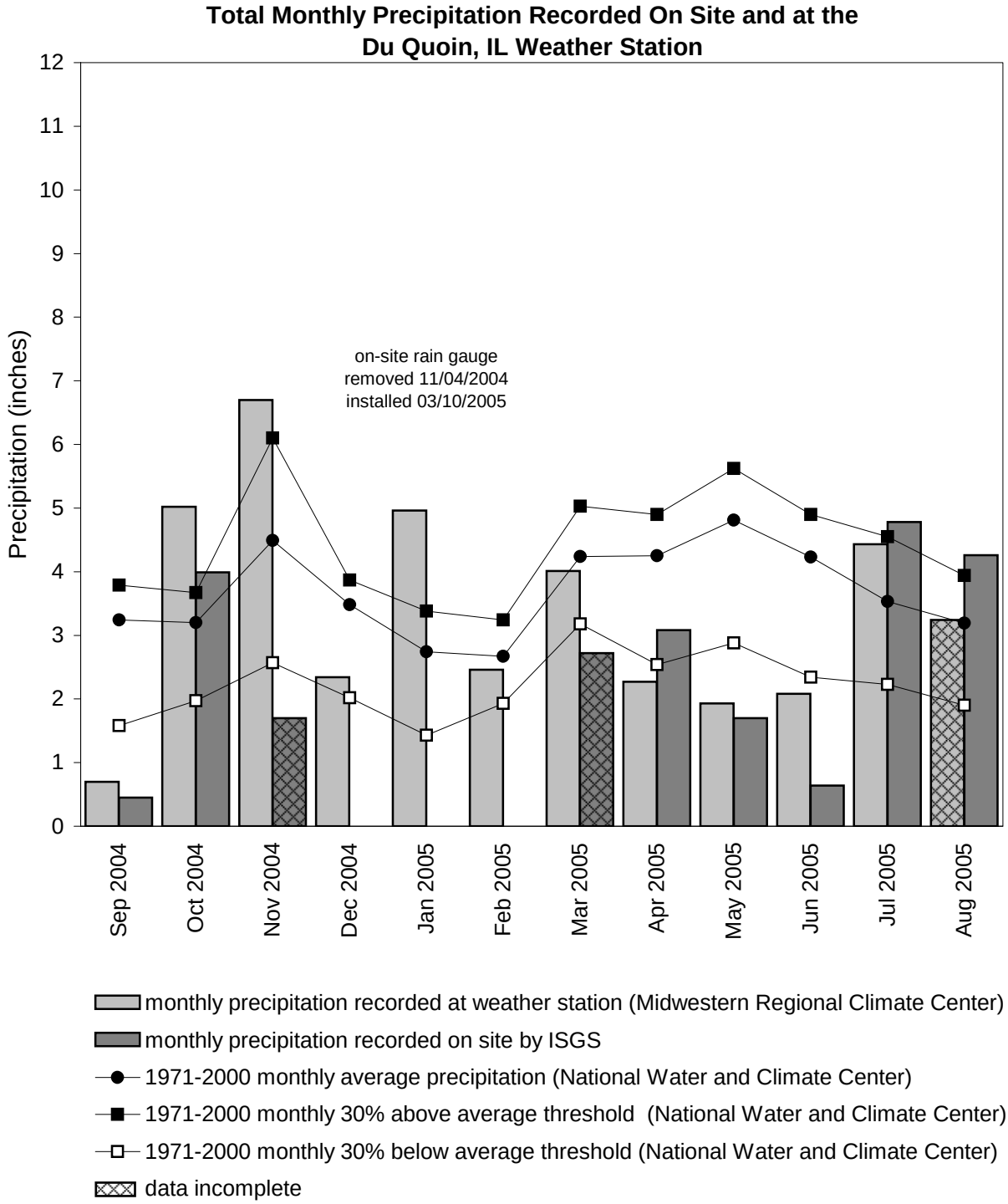


Pyatts Blacktop Wetland Compensation Site
September 1, 2004 to September 1, 2005

Depth to Water



Pyatts Blacktop Wetland Compensation Site
September 2004 through August 2005



Graph last updated October 24, 2005

DE SOTO **ISGS #68**
WETLAND COMPENSATION SITE
FAP 322
Sequence #264
Jackson County, near De Soto, Illinois
Primary Project Manager: Geoffrey E. Pociask
Secondary Project Manager: Gregory A. Shofner

SITE HISTORY

- August 2002: ISGS was tasked by IDOT to monitor wetland hydrology.
- November 2002: ISGS initiated monitoring activities at the compensation site.

WETLAND HYDROLOGY CALCULATION FOR 2005

We estimate that 1.6 ha (3.9 ac) out of an excavation of 2.4 ha (6.0 ac) satisfied wetland hydrology criteria (Environmental Laboratory 1987) for greater than 5% of the growing season in 2005, whereas 1.1 ha (2.8 ac) satisfied wetland hydrology for greater than 12.5% of the growing season. These estimates are based on the following factors:

- According to the Midwestern Climate Center, the median date that the growing season begins in nearby Carbondale, Illinois, is April 4 and the season lasts 203 days; 5% of the growing season is 10 days and 12.5% of the growing season is 25 days.
- Total precipitation for the reporting period from September 2004 through August 2005 was 85% of normal. Drier than normal conditions prevailed in September and December 2004 and in February through June and August 2005, with precipitation in February through June 2005 at only 52% of normal. Precipitation was at or above normal in October and November 2004 and in January and July 2005.
- In 2005, wells 1S, 2S, 3S, 5S, 6S, 8S, and 9S satisfied wetland hydrology criteria for greater than 5% of the growing season. Furthermore, wells 2S, 3S, 5S, and 8S satisfied the wetland hydrology criteria for greater than 12.5% of the growing season.
- The water levels recorded at Gauges A and B show that areas below approximately 110.5 m (362.5 ft) were inundated for greater than 5% of the growing season and therefore satisfy wetland hydrology criteria. Areas below 110.5 m (362.5 ft) were also inundated for greater than 12.5% of the growing season.
- Limitations of the wetland hydrology determination are as follows:
  - The area of wetland hydrology was calculated using GIS methods. The wetland-hydrology polygon was drawn from an ISGS topographic map (0.1-meter contour interval) rectified to GPS positions of water-level instruments and point features identifiable from a digital orthophotograph.

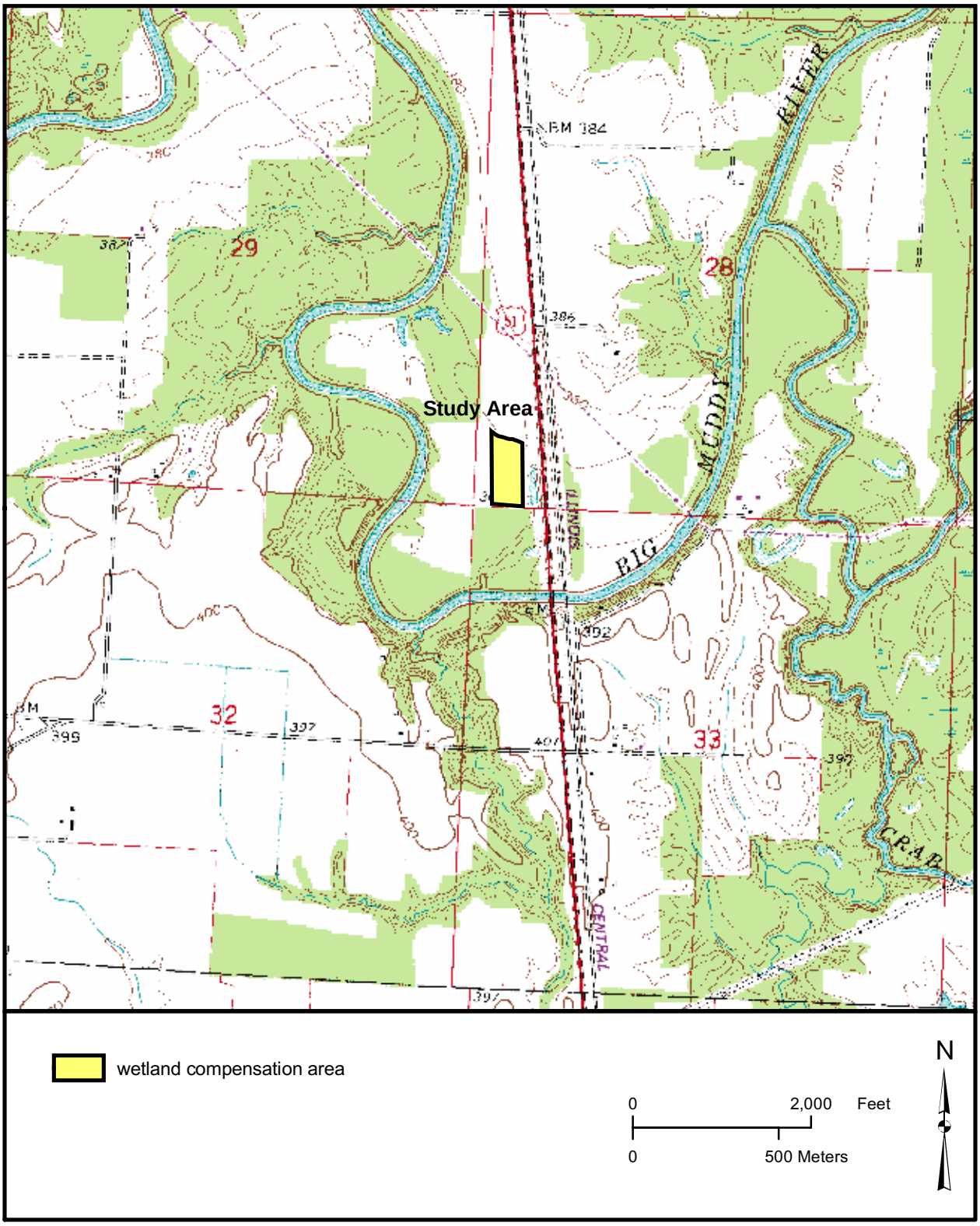
PLANNED FUTURE ACTIVITIES

- Monitoring will continue until September 2007 or until no longer required by IDOT.

De Soto Wetland Compensation Site
(FAP 322)

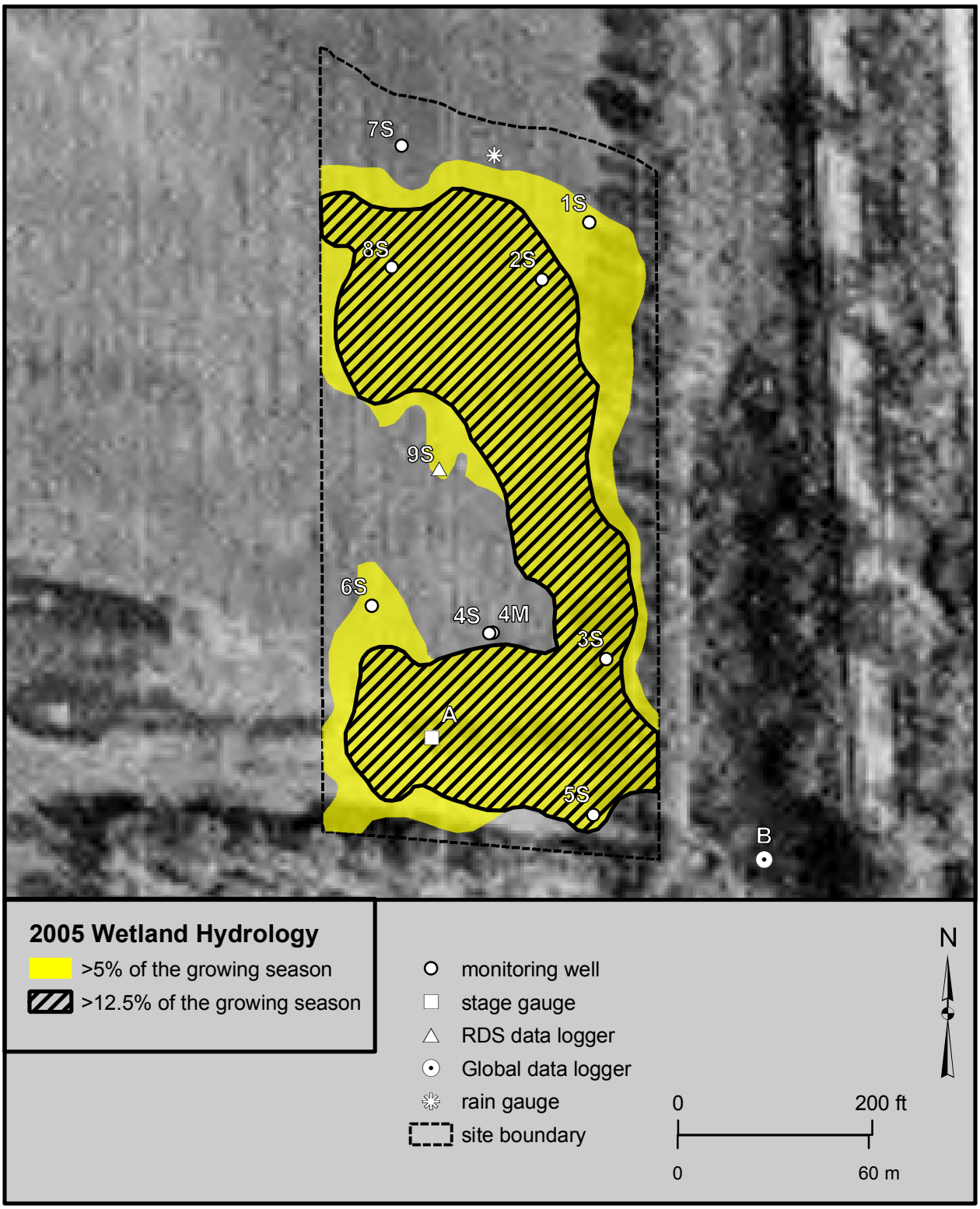
General Study Area and Vicinity

from the USGS Topographic Series, Carbondale, IL 7.5-Quadrangle (USGS 1968; photorevised 1978)
contour interval is 10 feet



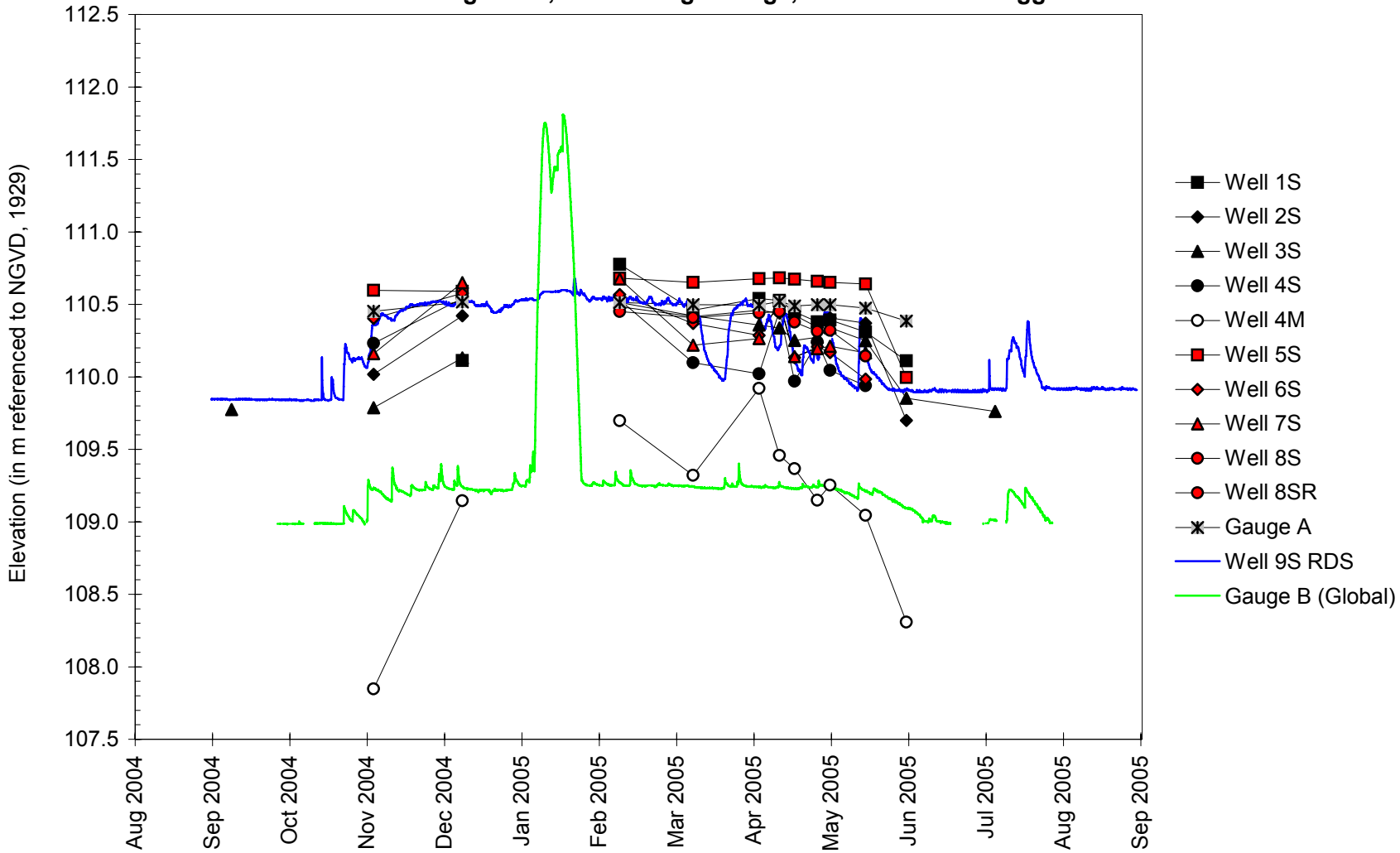
De Soto Wetland Compensation Site
(FAP 322)
Estimated Areal Extent of 2005 Wetland Hydrology
based on data collected between September 1, 2004 and September 1, 2005

Map produced by rectifying IDOT as-built plans and ISGS topography to USGS digital orthophotograph
De Soto, NW quarter quadrangle from 04/06/1998 aerial photography (ISGS 2001)

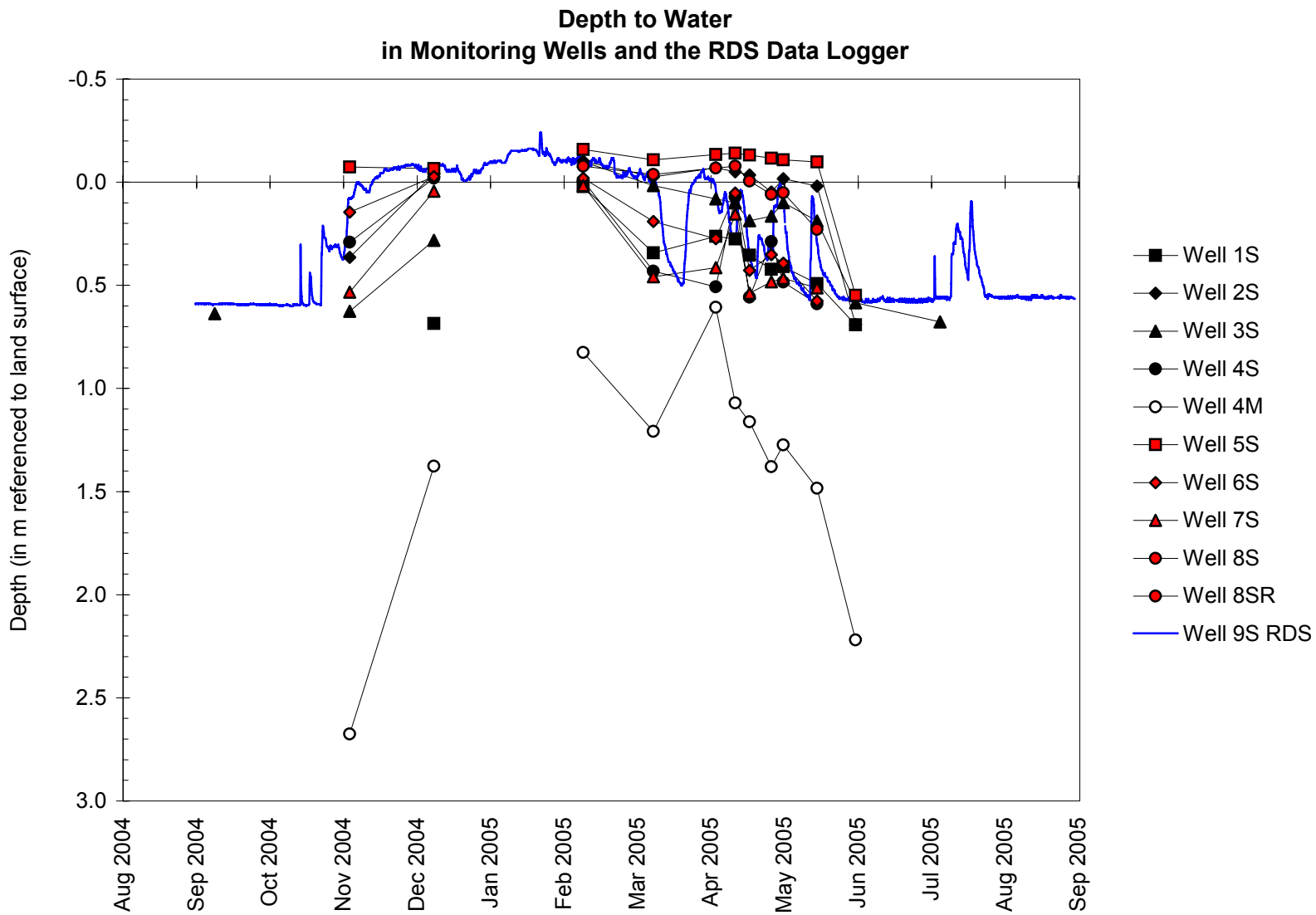


De Soto Wetland Compensation Site
September 1, 2004 to September 1, 2005

Water-Level Elevations
in Monitoring Wells, on the Stage Gauge, and at the Data Loggers

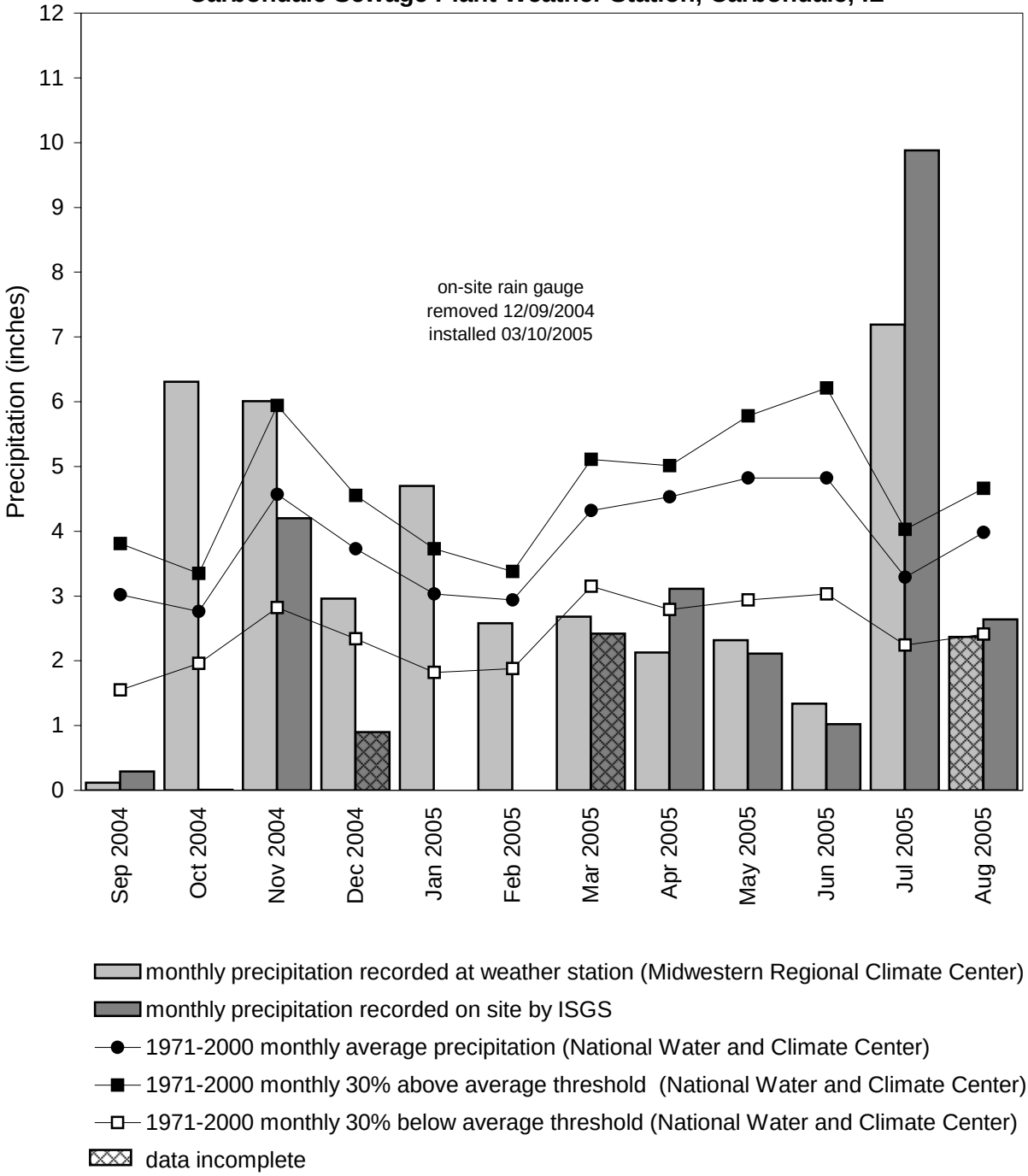


De Soto Wetland Compensation Site
September 1, 2004 to September 1, 2005



De Soto Wetland Compensation Site
September 2004 through August 2005

Total Monthly Precipitation Recorded On Site and at the Carbondale Sewage Plant Weather Station, Carbondale, IL



Graph last updated October 24, 2005

EDGEWOOD **ISGS #69A**
POTENTIAL WETLAND COMPENSATION SITE
FAP 328
Sequence #391
Effingham County, Mason Township, near Edgewood, Illinois
Primary Project Manager: Gregory A. Shofner
Secondary Project Manager: Keith W. Carr

SITE HISTORY

- August 2002: ISGS submitted an Initial Site Evaluation Report to IDOT.
- September 2002: IDOT issued a task order for a Level II hydrogeologic characterization.
- March–April 2003: ISGS data collection was initiated.
- June 2005: ISGS submitted a Level II Report to IDOT (ISGS Open File Series 2005–10).
- July 2005: ISGS discontinued site monitoring at the request of IDOT.

WETLAND HYDROLOGY CALCULATION FOR 2005

We estimate that 0.6 ha (1.6 ac) of the total site area of 5.2 ha (12.8 ac) satisfied wetland hydrology criteria (Environmental Laboratory 1987) for greater than 5% of the growing season in 2005, and no areas satisfied wetland hydrology criteria for greater than 12.5% of the growing season. This estimate is based on the following factors:

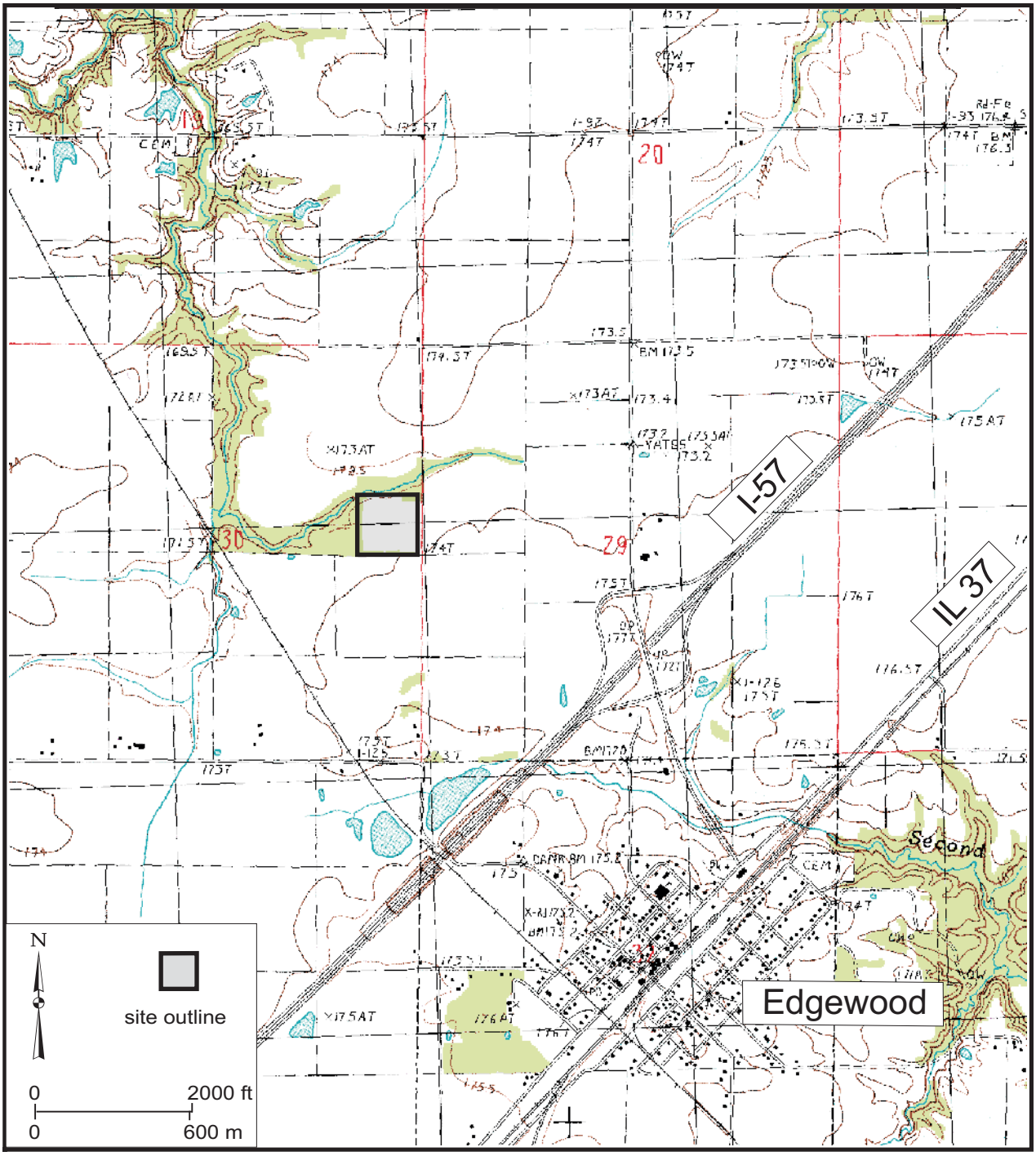
- According to the Midwestern Climate Center, the median date that the growing season begins in nearby Vandalia, Illinois, is April 4 and the season lasts 211 days; 5% of the growing season is 10 days, and 12.5% of the growing season is 26 days.
- Precipitation was 106% of normal for the monitoring period. January to March precipitation ranged from above normal to normal, but the spring was dry due to unusually low precipitation from April through June, when precipitation was 44% of normal.
- Wells 1S, 2S, 5S, 6S, 10S, and 12S satisfied wetland hydrology criteria for greater than 5% of the growing season. No wells satisfied wetland hydrology criteria for greater than 12.5% of the growing season.
- Crest-gauge data (CG 1) show that in 2005 the unnamed tributary of Limestone Creek attained a maximum stage of 170.40 m (559.05 ft), which was insufficient to inundate any portion of the site.

PLANNED FUTURE ACTIVITIES

- Site instrumentation will be removed during the Fall of 2005.

Edgewood Potential Wetland Compensation Site
(FAP 328)
General Study Area and Vicinity

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

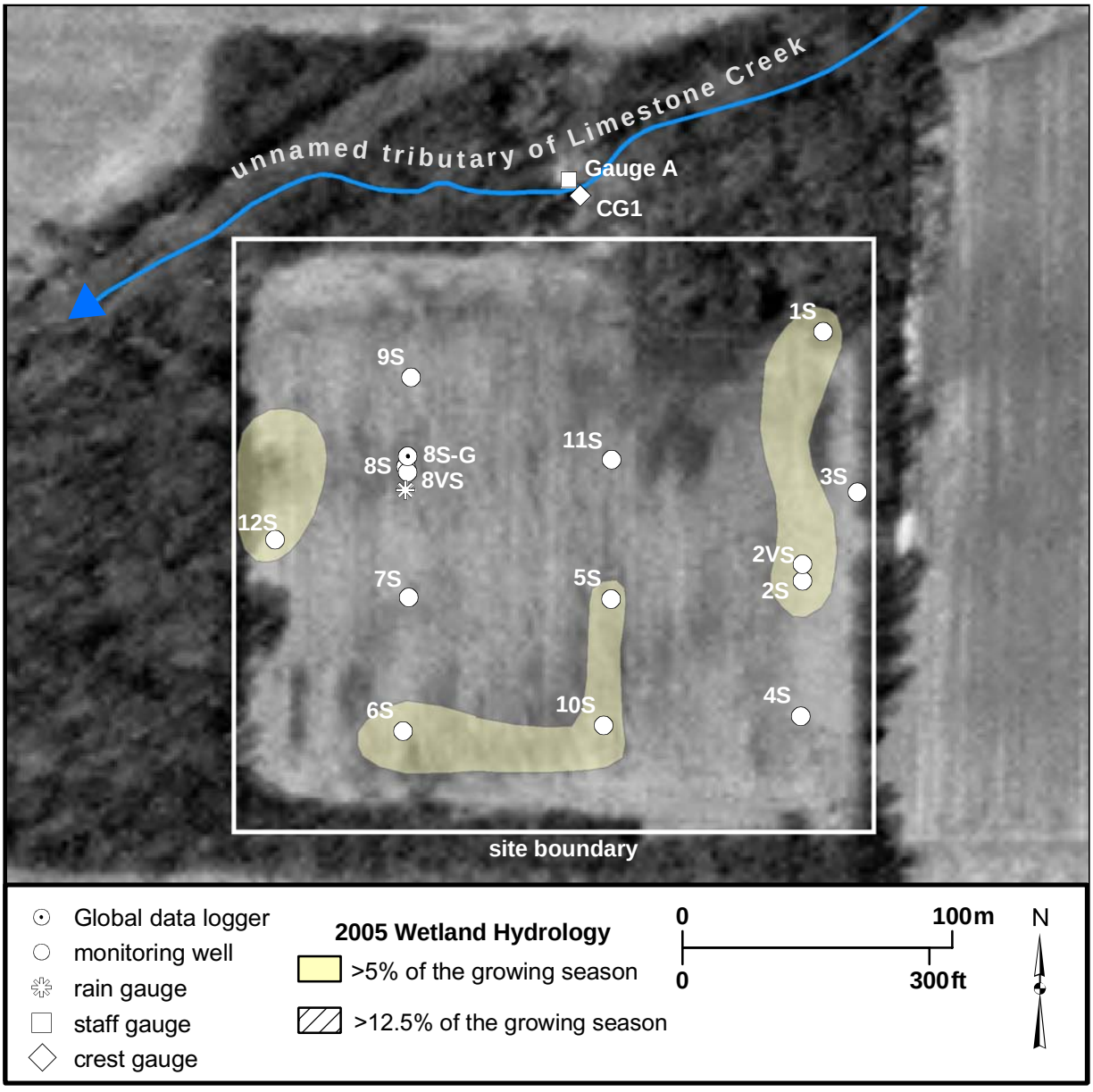


Edgewood Potential Wetland Compensation Site (FAP 328)

Estimated Areal Extent of 2005 Wetland Hydrology

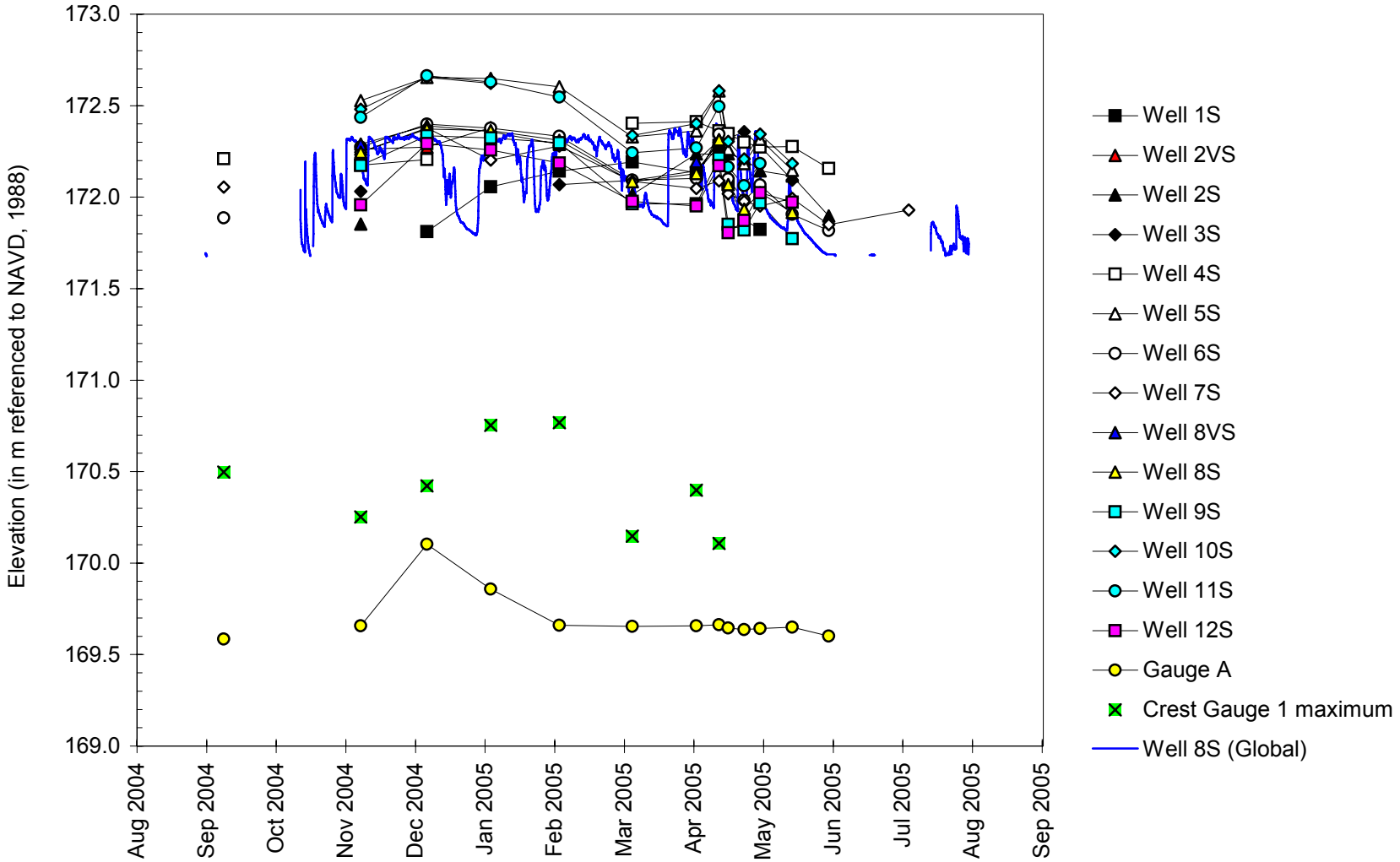
based on data collected between September 1, 2004 and September 1, 2005

Map based on USGS digital orthophotograph, Edgewood SE quarter quadrangle from April 1998 aerial photography (ISGS 2000)



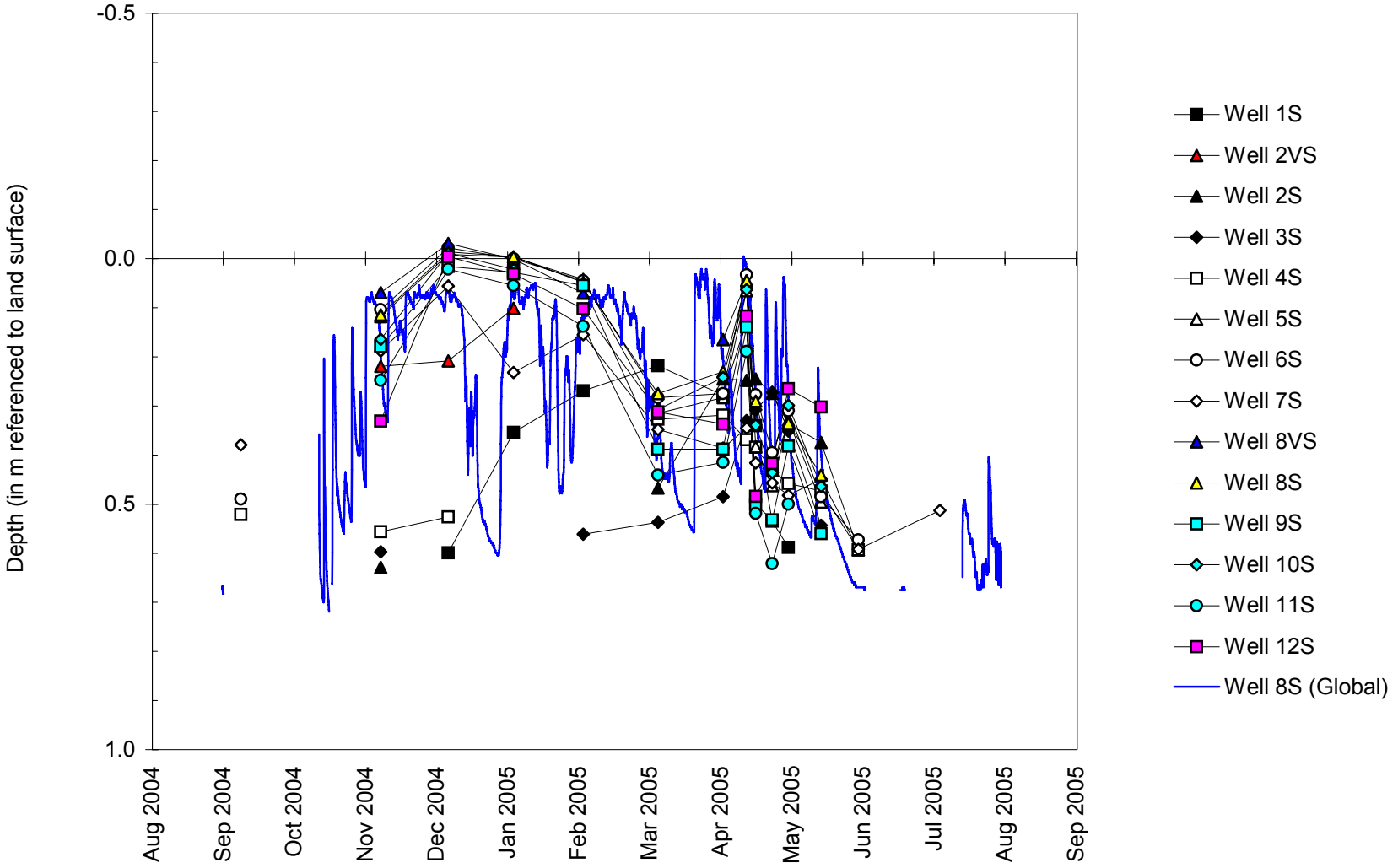
Edgewood Potential Wetland Compensation Site
September 1, 2004 to September 1, 2005

Water-Level Elevations
in Monitoring Wells, on the Stage Gauge, and at the Global Data Loggers

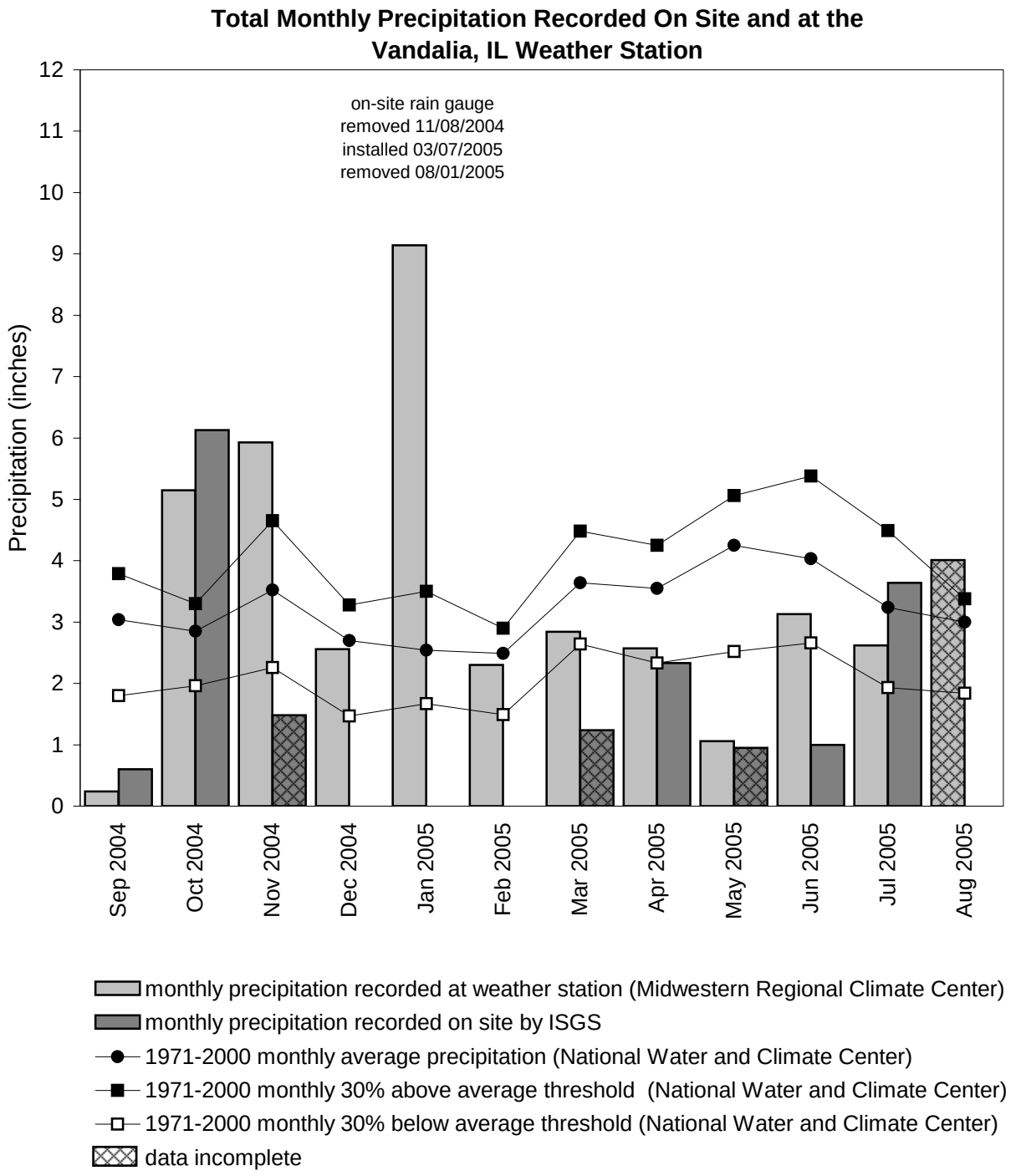


Edgewood Potential Wetland Compensation Site
September 1, 2004 to September 1, 2005

Depth to Water
in Monitoring Wells and at the Global Data Loggers



Edgewood Potential Wetland Compensation Site
September 2004 through August 2005



Graph last updated October 24, 2005

LARKINSBURG **ISGS #69B**
POTENTIAL WETLAND COMPENSATION SITE
FAP 328
Sequence #391
Clay County, Larkinsburg Township, near Edgewood, Illinois
Primary Project Manager: Gregory A. Shofner
Secondary Project Manager: Keith W. Carr

SITE HISTORY

- August 2002: ISGS submitted an Initial Site Evaluation Report to IDOT.
- September 2002: IDOT issued a task order for a Level II hydrogeologic characterization.
- March–April 2003: ISGS data collection was initiated.
- June 2005: ISGS submitted a Level II Report to IDOT (ISGS Open File Series 2005–10).
- July 2005: ISGS discontinued site monitoring at the request of IDOT.

WETLAND HYDROLOGY CALCULATION FOR 2005

We estimate that 0.2 ha (0.4 ac) of the total site area of 18.3 ha (45.3 ac) satisfied wetland hydrology criteria (Environmental Laboratory 1987) for greater than 5% of the growing season in 2005. The same area of 0.2 ha (0.4 ac) also satisfied wetland hydrology criteria for greater than 12.5% of the growing season. This estimate is based on the following factors:

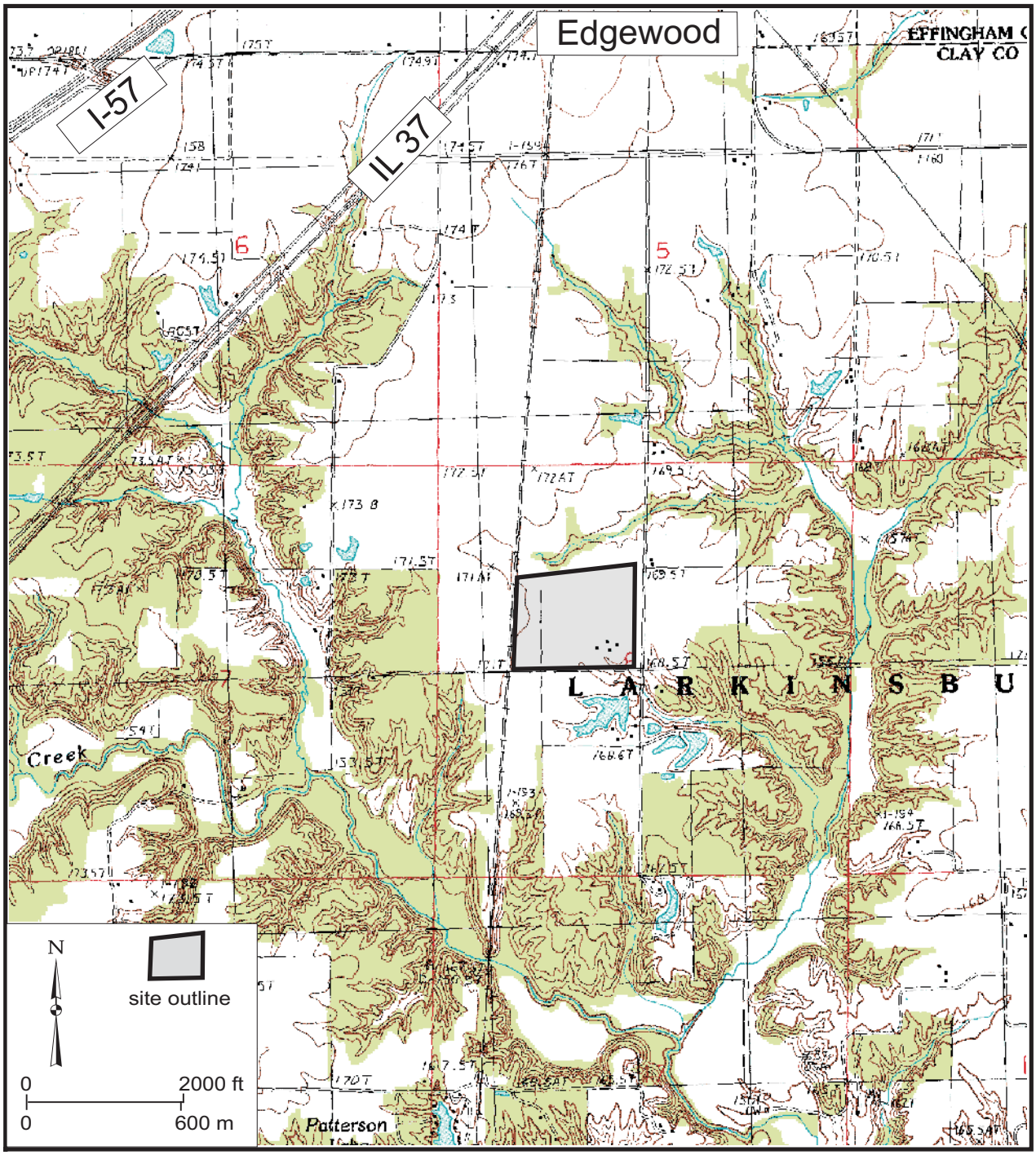
- According to the Midwestern Climate Center, the median date that the growing season begins in nearby Vandalia, Illinois, is April 4 and the season lasts 211 days; 5% of the growing season is 10 days, and 12.5% of the growing season is 26 days.
- Precipitation was 106% of normal for the monitoring period. January to March precipitation ranged from above normal to normal, but the spring was dry due to unusually low precipitation from April through June, when precipitation was 44% of normal.
- Wells 2S, 4VS, and 4S satisfied wetland hydrology criteria for greater than 5% of the growing season. Wells 2S, 4VS, and 4S also satisfied wetland hydrology criteria for greater than 12.5% of the growing season. All wells that satisfied wetland hydrology criteria are located at elevations of 1.6 to 1.7 m (5.2 to 5.6 ft) below the average site elevation. Additionally, well 2S is located outside of the site boundary.
- Crest-gauge data (CG 1) show that in 2005 the unnamed tributary of Dismal Creek attained a maximum stage of 167.31 m (548.92 ft), which was insufficient to provide flood water to the site.

PLANNED FUTURE ACTIVITIES

- Site instrumentation will be removed during the Fall of 2005.

Larkinsburg Potential Wetland Compensation Site
(FAP 328)
General Study Area and Vicinity

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

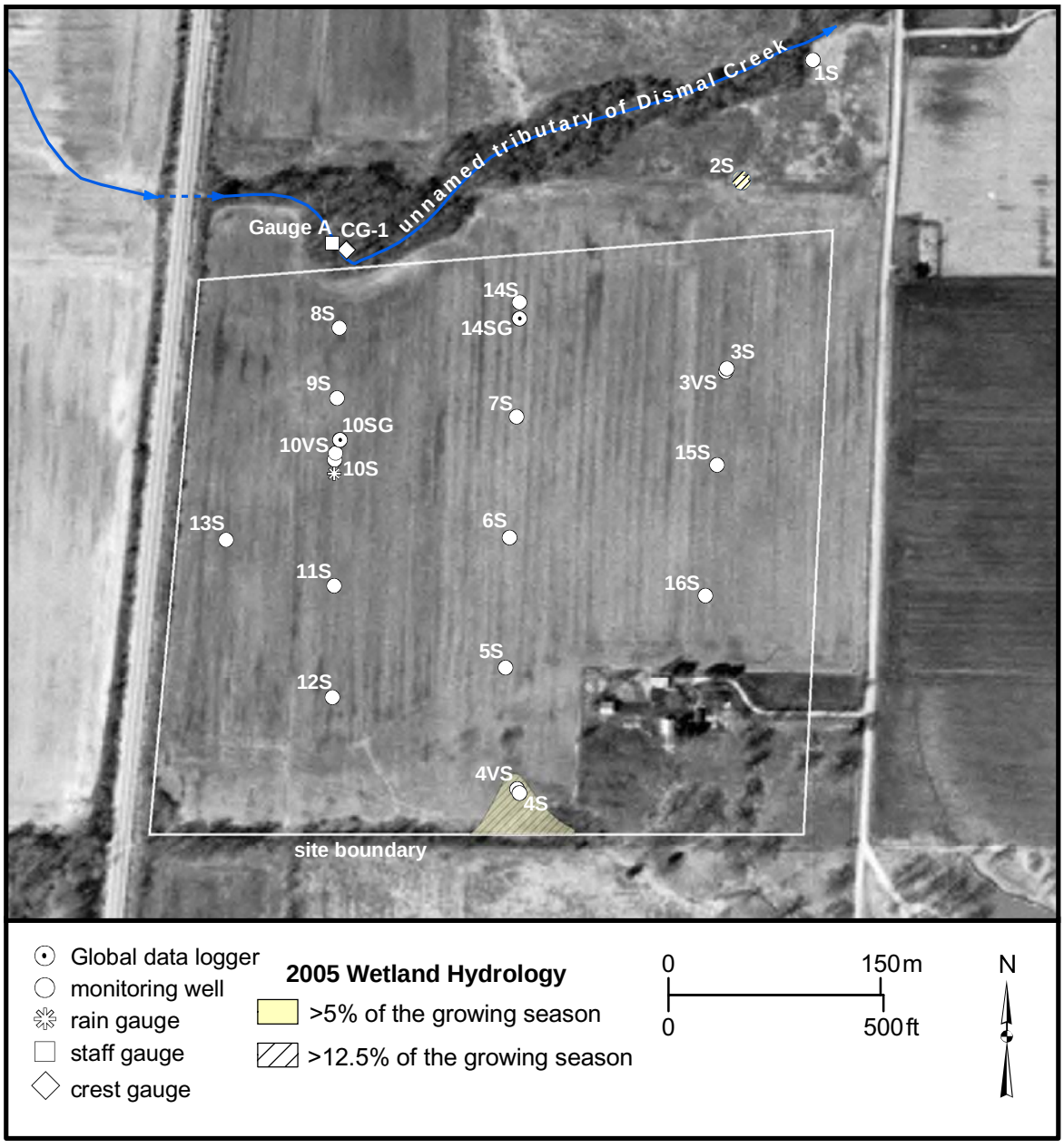


Larkinsburg Potential Wetland Compensation Site (FAP 328)

Estimated Areal Extent of 2005 Wetland Hydrology

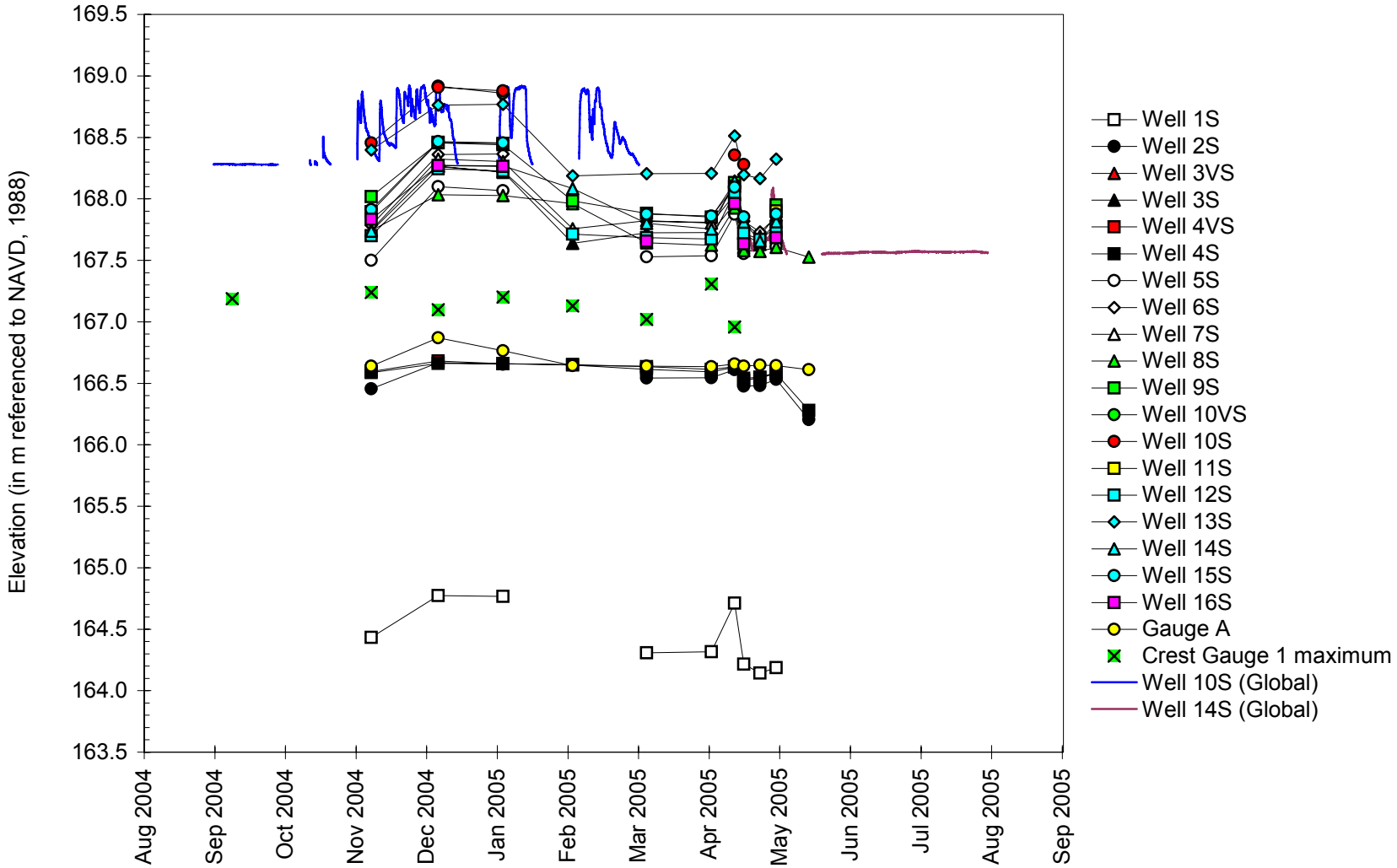
based on data collected between September 1, 2004 and September 1, 2005

Map based on USGS digital orthophotograph, Edgewood SE quarter quadrangle from April 1998 aerial photography (ISGS 2000)

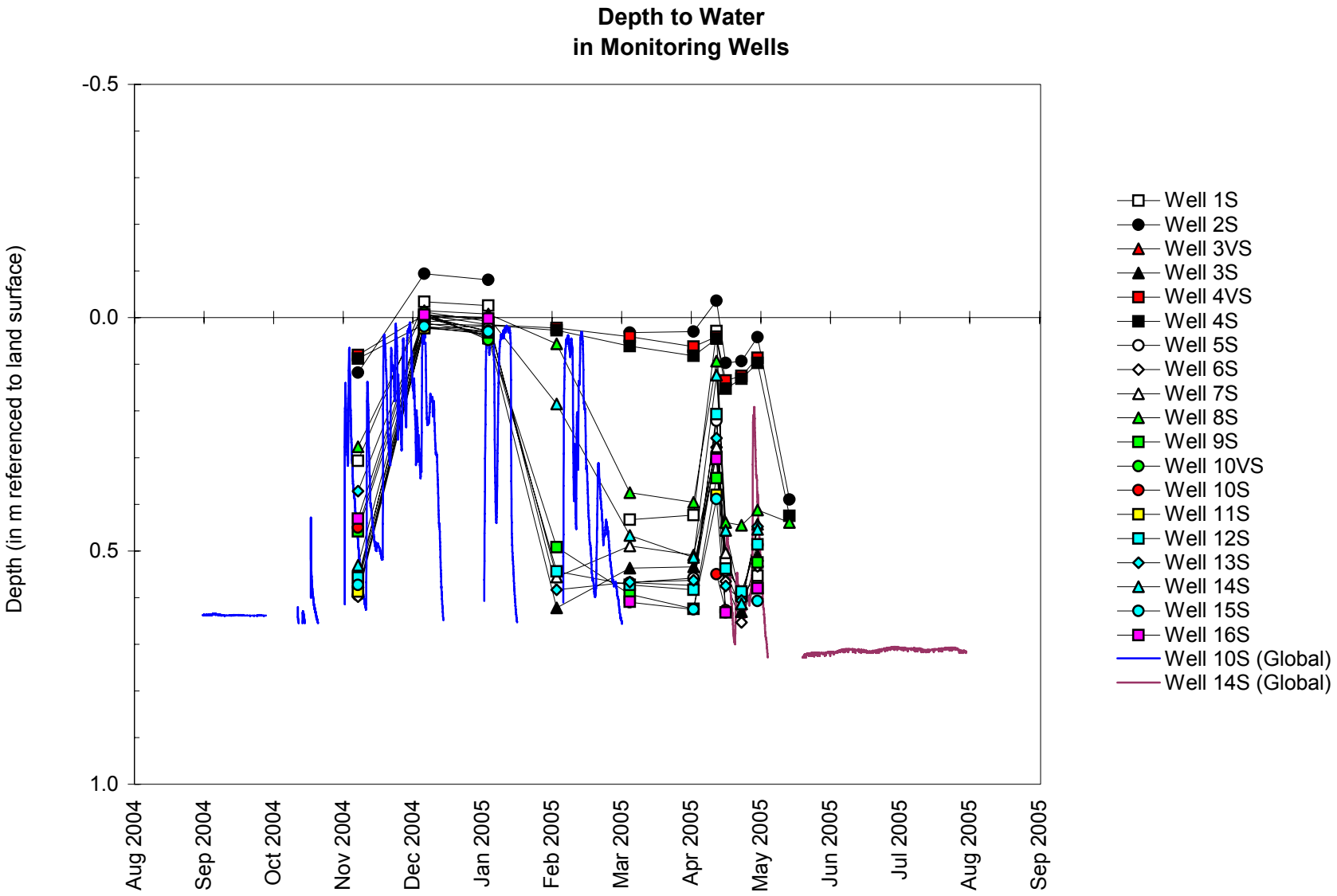


Larkinsburg Potential Wetland Compensation Site
September 1, 2004 to September 1, 2005

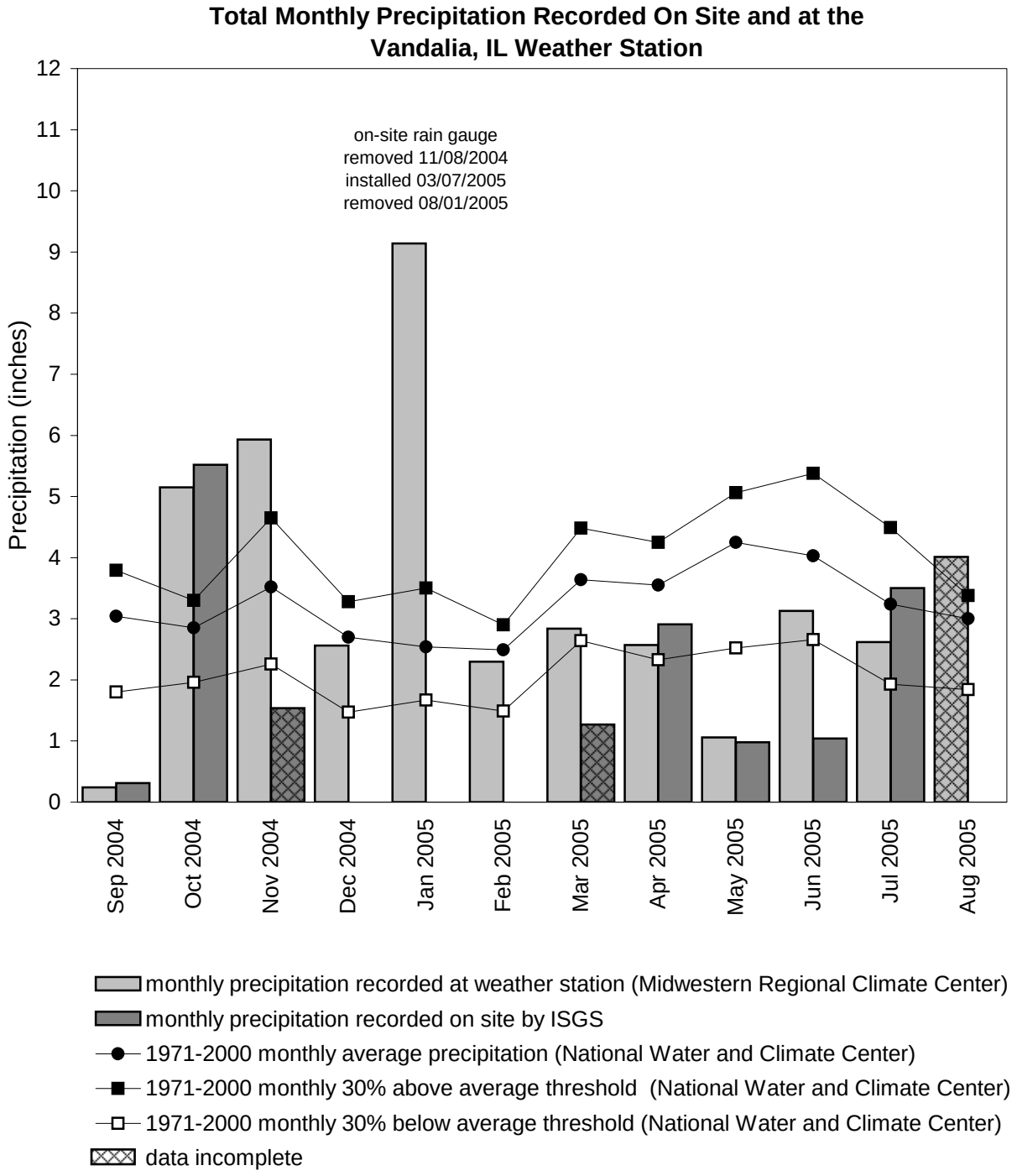
Water-Level Elevations
in Monitoring Wells, on the Stage Gauge, and at the Global Data Logger



Larkinsburg Potential Wetland Compensation Site
September 1, 2004 to September 1, 2005



Larkinsburg Potential Wetland Compensation Site
September 2004 through August 2005



Graph last updated October 24, 2005

FREEPORT BYPASS EAST **ISGS #70**
POTENTIAL WETLAND COMPENSATION SITE 4E
FAP 301
Stephenson County, near Freeport, Illinois
Primary Project Manager: James J. Miner
Secondary Project Manager: not assigned

SITE HISTORY

- January 2003: ISGS was tasked by IDOT to monitor wetland hydrology at this site.
- March 2003: ISGS installed 9 soil-zone monitoring wells, a staff gauge and an Ecotone data logger. Locations of monitoring wells and the data logger were determined with a GPS unit by ISGS, and a topographic survey of the site was conducted by IDOT during well installation.
- May 2003: ISGS was tasked by IDOT to perform a Level II hydrogeologic assessment of the potential wetland mitigation site.
- July 2005: IDOT requested monitoring at Site 4E be discontinued.
- August 2005: A draft Level II Hydrogeologic Characterization Report was sent to IDOT at their request.

WETLAND HYDROLOGY CALCULATION FOR 2005

Because work at the site has been cancelled by IDOT, no calculation of acreage satisfying wetland hydrology criteria was made.

PLANNED FUTURE ACTIVITIES

- Monitoring instruments will be removed shortly.

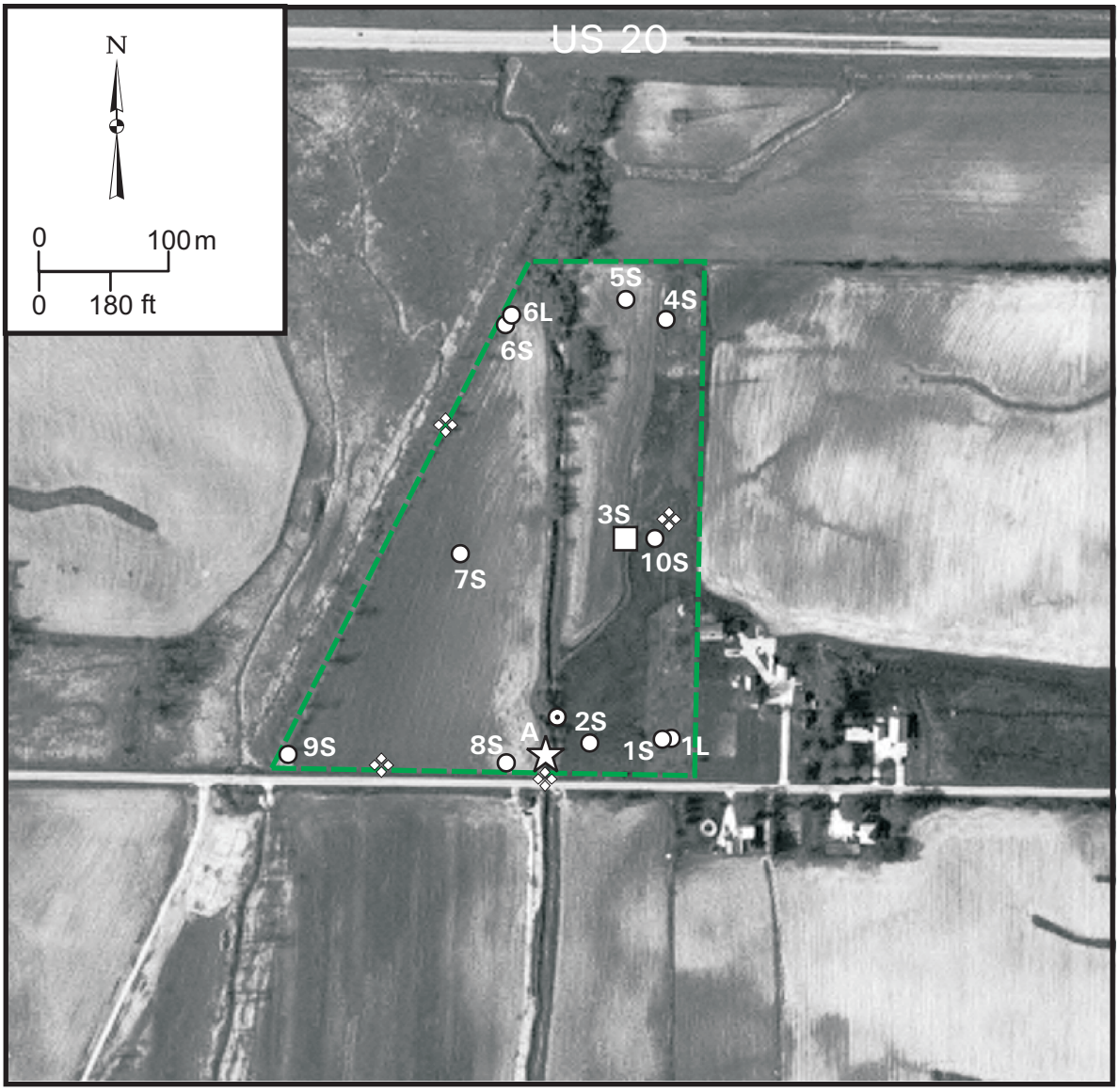
Freeport Bypass East Wetland Compensation Site 4E (FAS 301)

General Study Area and Vicinity

from the USGS Topographic Series, Freeport East, Il 7.5-minute Quadrangle (USGS 1999)
contour interval is 10 feet.

Freeport Bypass East Site 4E
Potential Wetland Compensation Site
(FAS 301)
Locations of ISGS Monitoring Instruments

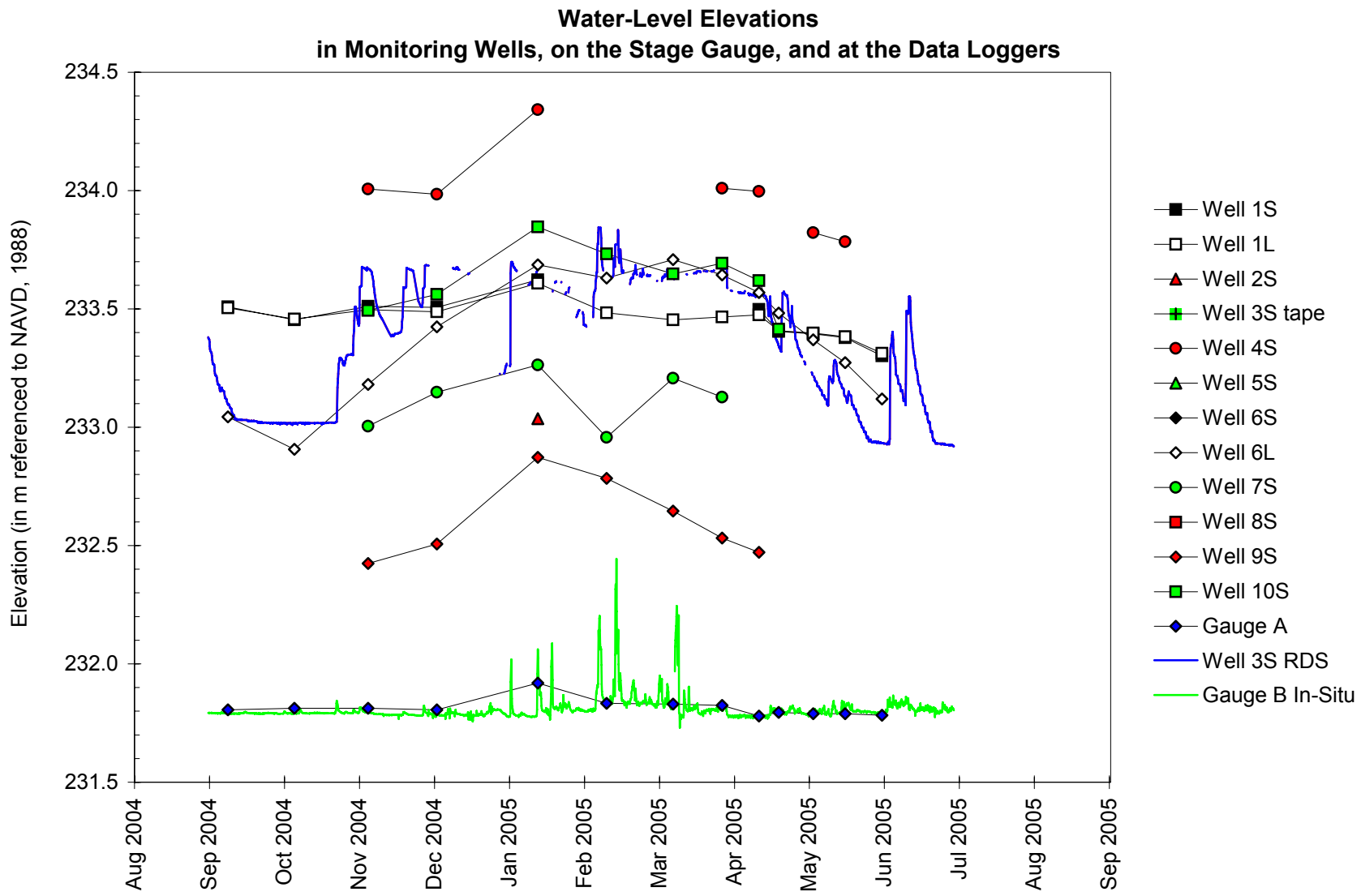
Map based on USGS digital orthophotograph, Freeport East NW quarter quadrangle
produced from 04/17/1998 aerial photography (ISGS 2003)



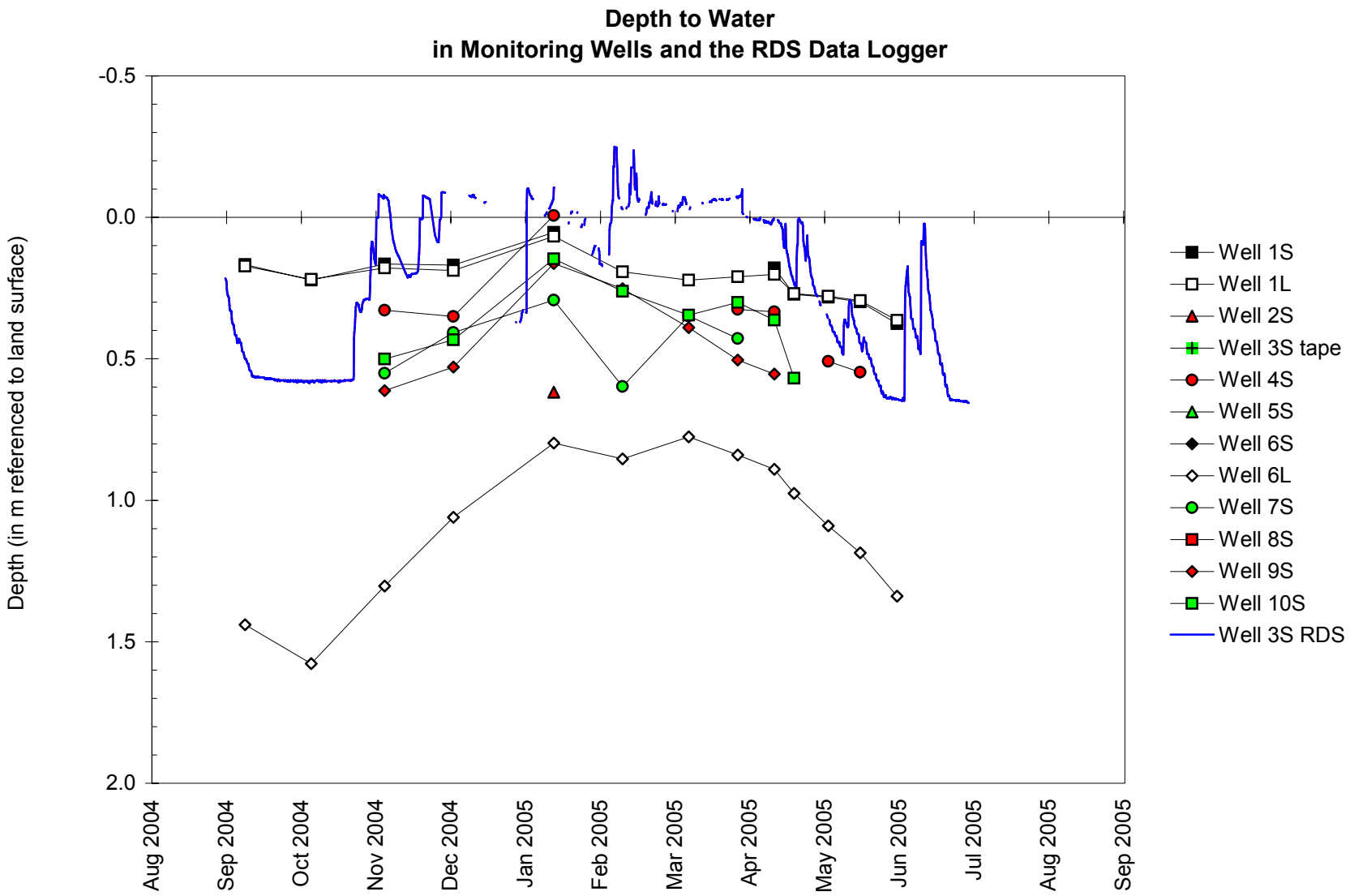
- ISGS monitoring well
- RDS data logger
- stage gauge
- ISGS benchmark
- Global pressure transducer
- estimated areal extent of site boundary

Freeport Bypass East Potential Wetland Compensation Site 4E

September 1, 2004 to September 1, 2005

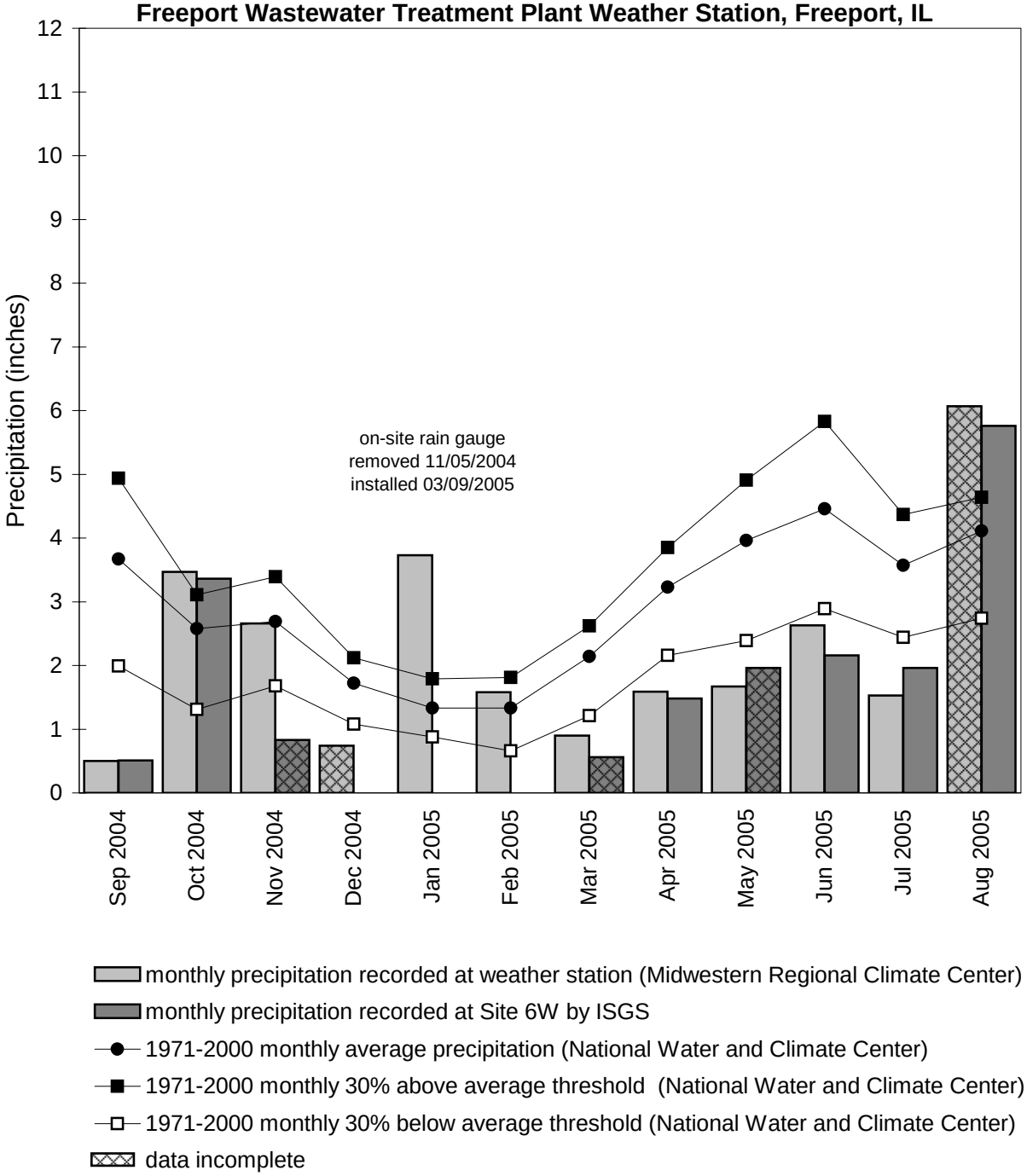


Freeport Bypass East Potential Wetland Compensation Site 4E
September 1, 2004 to September 1, 2005



Freeport Bypass East
Potential Wetland Compensation Site 4E
September 2004 through August 2005

Total Monthly Precipitation Recorded At Site 6W and at the Freeport Wastewater Treatment Plant Weather Station, Freeport, IL



Graph last updated October 24, 2005

TAMMS **ISGS #71**
WETLAND COMPENSATION SITE
FAS 1907
Sequence #1026
Union County, near Tamms, Illinois
Primary Project Manager: Geoffrey E. Pociask
Secondary Project Manager: Gregory A. Shofner

SITE HISTORY

- June 2003: ISGS was tasked by IDOT to monitor wetland hydrology.
- November 2003: ISGS initiated monitoring activities at the compensation site.

WETLAND HYDROLOGY CALCULATION FOR 2005

We estimate that 0.7 ha (1.8 ac) out of 6.3 ha (15.6 ac) satisfied wetland hydrology criteria (Environmental Laboratory 1987) for greater than 5% of the growing season in 2005, whereas 0.5 ha (1.3 ac) satisfied wetland hydrology criteria for greater than 12.5% of the growing season. These estimates are based on the following factors:

- According to the Midwestern Climate Center, the median date that the growing season begins in nearby Anna, Illinois, is March 31 and the season lasts 225 days; 5% of the growing season is 11 days and 12.5% of the growing season is 28 days.
- Total precipitation for the reporting period from September 2004 through August 2005 was 95% of normal. Drier than normal conditions prevailed in September and December 2004, and in February through June and August 2005, and precipitation during April through June 2005 was particularly dry at only 57% of normal. Precipitation was at or above normal in October and November 2004 and in January and July 2005.
- In 2005, well 7S satisfied the wetland hydrology criteria for greater than 5% of the growing season. Well 7S also satisfied wetland hydrology criteria for greater than12.5% of the growing season.
- Surface-water data loggers RDS 1 and Gauge D showed that ponding occurred in various portions of the site. Data from RDS 1 showed that the northernmost portion of the site below 102.9 m (337.6 ft) was inundated for greater than 5% of the growing season, and areas below 102.8 m (337.3 ft) were inundated for greater than 12.5% of the growing season. Data from Gauge D showed that the southernmost portion of the site below 102.3 m (335.6 ft) was inundated for greater than 5% of the growing season, and areas below 102.2 m (335.3 ft) were inundated for greater than 12.5% of the growing season.
- Limitations of the wetland hydrology determination are as follows:
  - The area of wetland hydrology was calculated using GIS methods. The wetland-hydrology polygon was drawn from an ISGS topographic map (0.1-meter contour interval) rectified to GPS positions of water-level instruments and point features identifiable from a digital orthophotograph.

PLANNED FUTURE ACTIVITIES

- Monitoring is expected to continue through 2008 or until no longer required by IDOT.

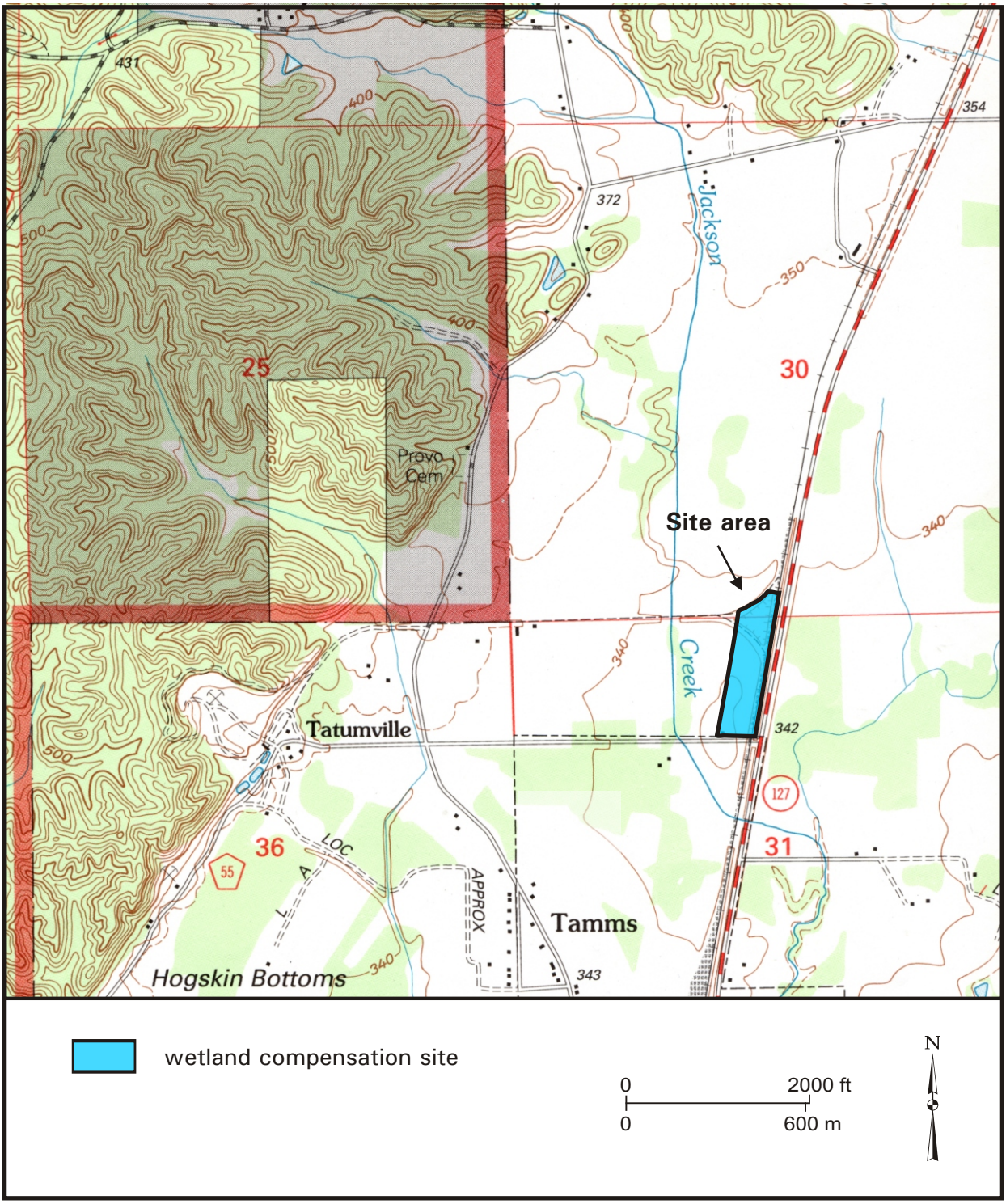
Tamms Wetland Compensation Site

(FAS 1907)

Site and Vicinity

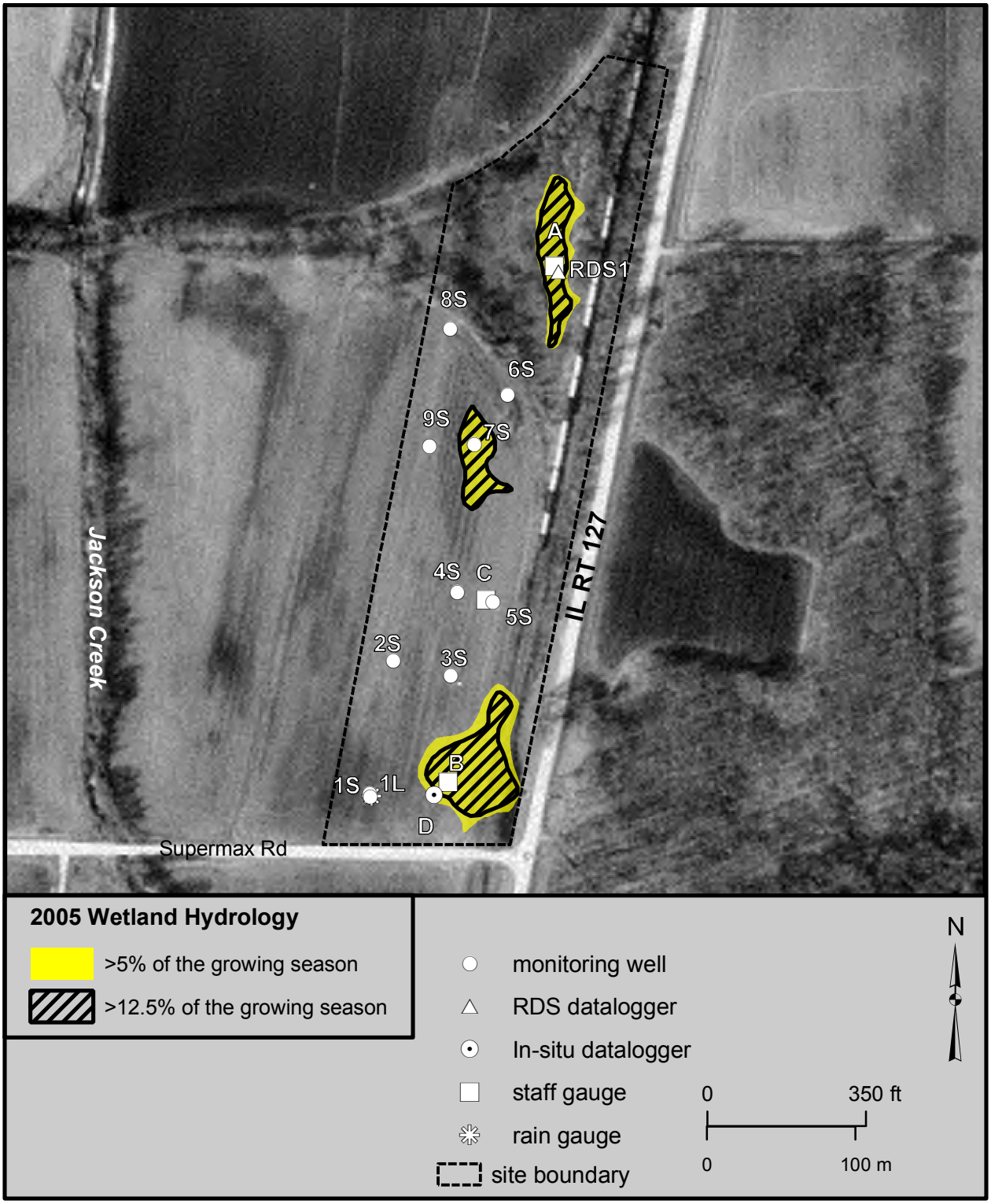
from the USGS Topographic Series, Mill Creek, IL 7.5-minute Quadrangle (USGS 1996).

contour interval is 20 feet



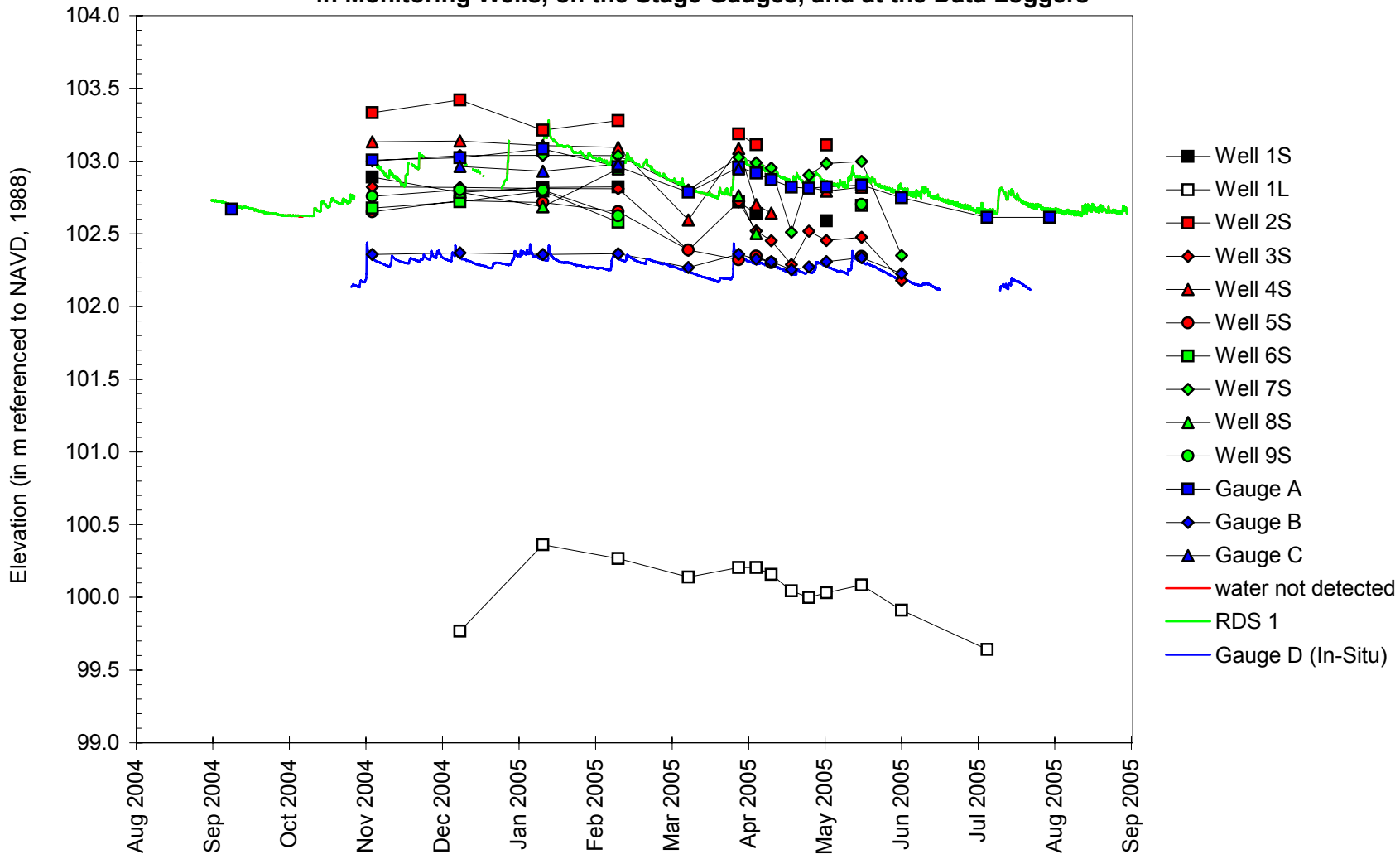
Tamms Wetland Compensation Site
(FAS 1907)
Estimated Areal Extent of 2005 Wetland Hydrology
based on data collected between September 1, 2004 and September 1, 2005

Map based on IDOT design plans and ISGS topography recitfied to USGS digital orthophotograph
Mill Creek SE quarter quadrangle from 03/28/1998 aerial photography (ISGS 2004)

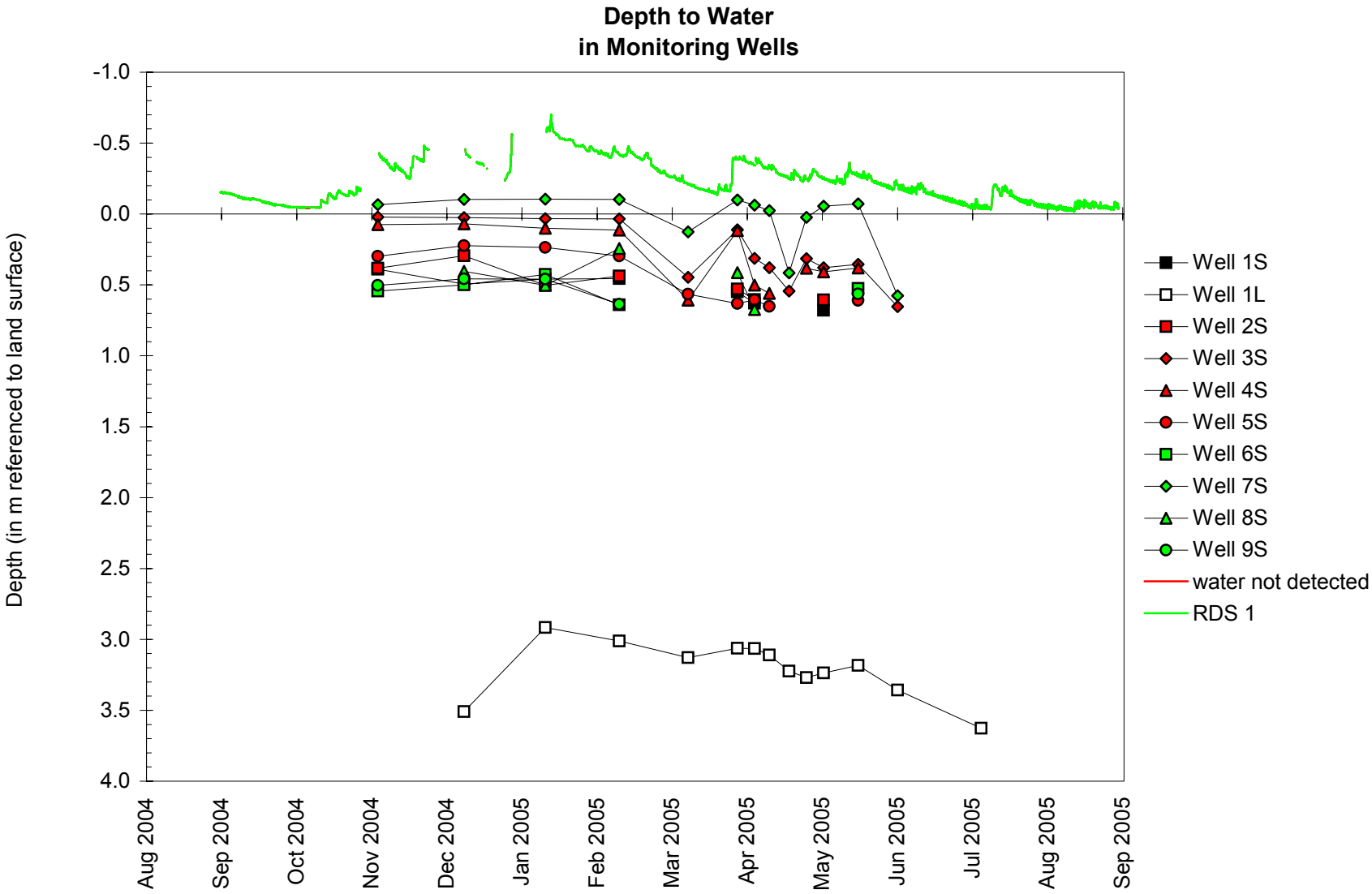


Tamms Wetland Compensation Site
September 1, 2004 to September 1, 2005

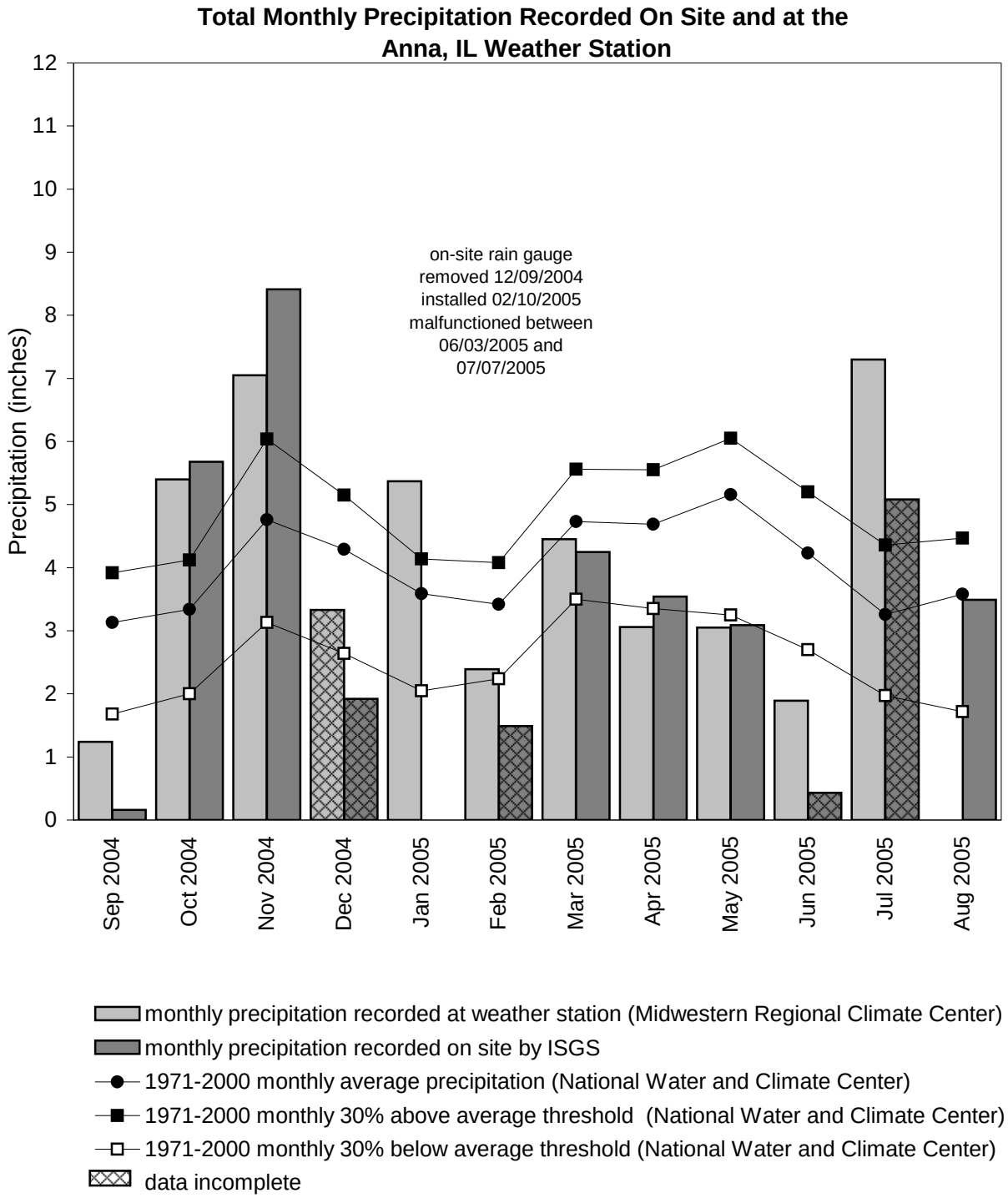
Water-Level Elevations
in Monitoring Wells, on the Stage Gauges, and at the Data Loggers



Tamms Wetland Compensation Site
September 1, 2004 to September 1, 2005



Tamms Wetland Compensation Site
September 2004 through August 2005



Graph last updated October 24, 2005

FREEPORT BYPASS WEST **ISGS #72**
POTENTIAL WETLAND COMPENSATION SITE 6W
FAP 301
Sequence #10487
Stephenson County, near Freeport, Illinois
Primary Project Manager: Eric T. Plankell
Secondary Project Manager: not assigned

SITE HISTORY

- Fall 2003: ISGS was tasked by IDOT to monitor wetland hydrology, and to perform a Level II hydrogeologic assessment of the potential wetland mitigation at this site.

- December 2003: ISGS installed 12 soil-zone monitoring wells, one deep monitoring well, a staff gauge, and two surface-water data loggers. Locations of monitoring wells and the data loggers were determined with a GPS unit by ISGS, and a topographic survey of the site was conducted by IDOT during the fall of 2003.

WETLAND HYDROLOGY CALCULATION FOR 2005

We estimate that the total area that satisfied wetland hydrology criteria (Environmental Laboratory 1987) for greater than 5% of the 2005 growing season was 0.4 ha (1.0 ac) out of a total site area of 10.9 ha (27 ac). No areas satisfied wetland hydrology criteria for greater than 12.5% of the 2005 growing season. These estimates are based on the following factors:

- According to the Midwestern Climate Center, the median date that the growing season begins in Freeport, Illinois, is April 13, and the season lasts 183 days; 5% of the growing season is 9 days, and 12.5% of the growing season is 23 days.

- Total precipitation at the nearby Wastewater Treatment Plant Weather Station in Freeport, Illinois, was approximately 78% of normal for the monitoring period of September 2004 through August 2005. Precipitation at this station was below normal in September and December 2004 and also during the period from March through July 2005, when it was approximately 48% of normal. Precipitation amounts were at or above normal for the remaining months of the monitoring period.

- In 2005, water levels measured in soil-zone wells 2S, 2VS, and 9S satisfied the wetland hydrology criteria for greater than 5% of the growing season. No wells at the site satisfied the wetland hydrology criteria for a period exceeding 12.5% of the growing season.

- Water-level records for the data logger at Gauge C (RDS) indicated inundation for an elevation below approximately 230.59 m (756.53 ft) for a duration that satisfied the wetland hydrology criteria for greater than 5% of the growing season.

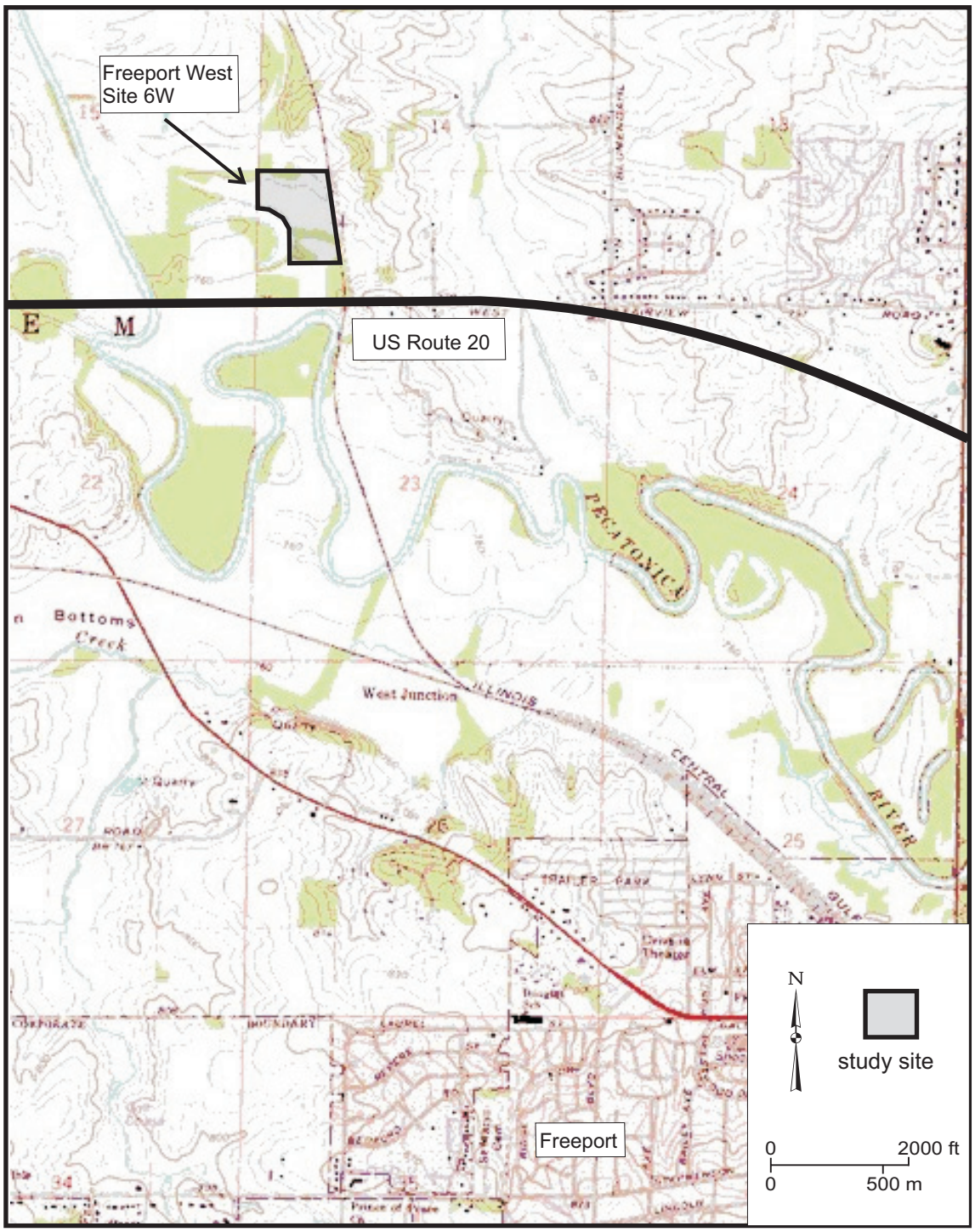
PLANNED FUTURE ACTIVITIES

- A Level II hydrogeological characterization report is in preparation.
- A GPS and topographic survey of potential ditch check locations at the site will be carried out in Fall 2005.
- Monitoring is expected to continue until no longer required by IDOT.

Freeport Bypass West Wetland Compensation Site 6w
(FAS 301)

General Study Area and Vicinity

from the USGS Topographic Series, Freeport West, IL 7.5-minute Quadrangle (USGS 1978)
contour interval is 10 feet

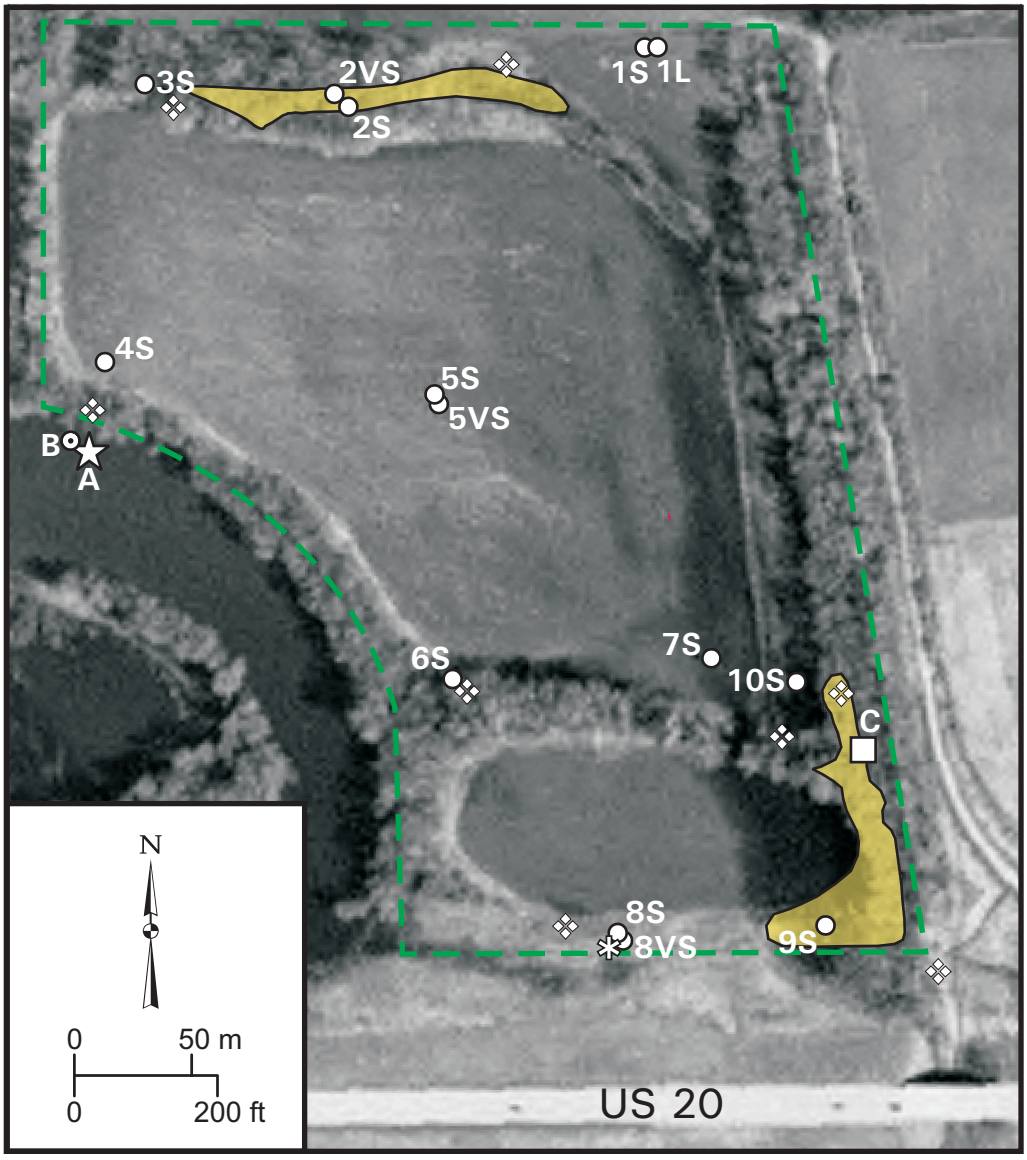


Freeport Bypass West Wetland Compensation Site 6W (FAS 301)

Estimated Areal Extent of 2005 Wetland Hydrology

based on data collected between September 1, 2004 and September 1, 2005

Map based on USGS digital orthophotograph, Freeport West, NE quarter quadrangle produced from 4/17/98 aerial photography (ISGS 2004)



ISGS monitoring well

RDS data logger

Stage gauge

In-Situ pressure transducer

ISGS benchmark

2005 Wetland Hydrology

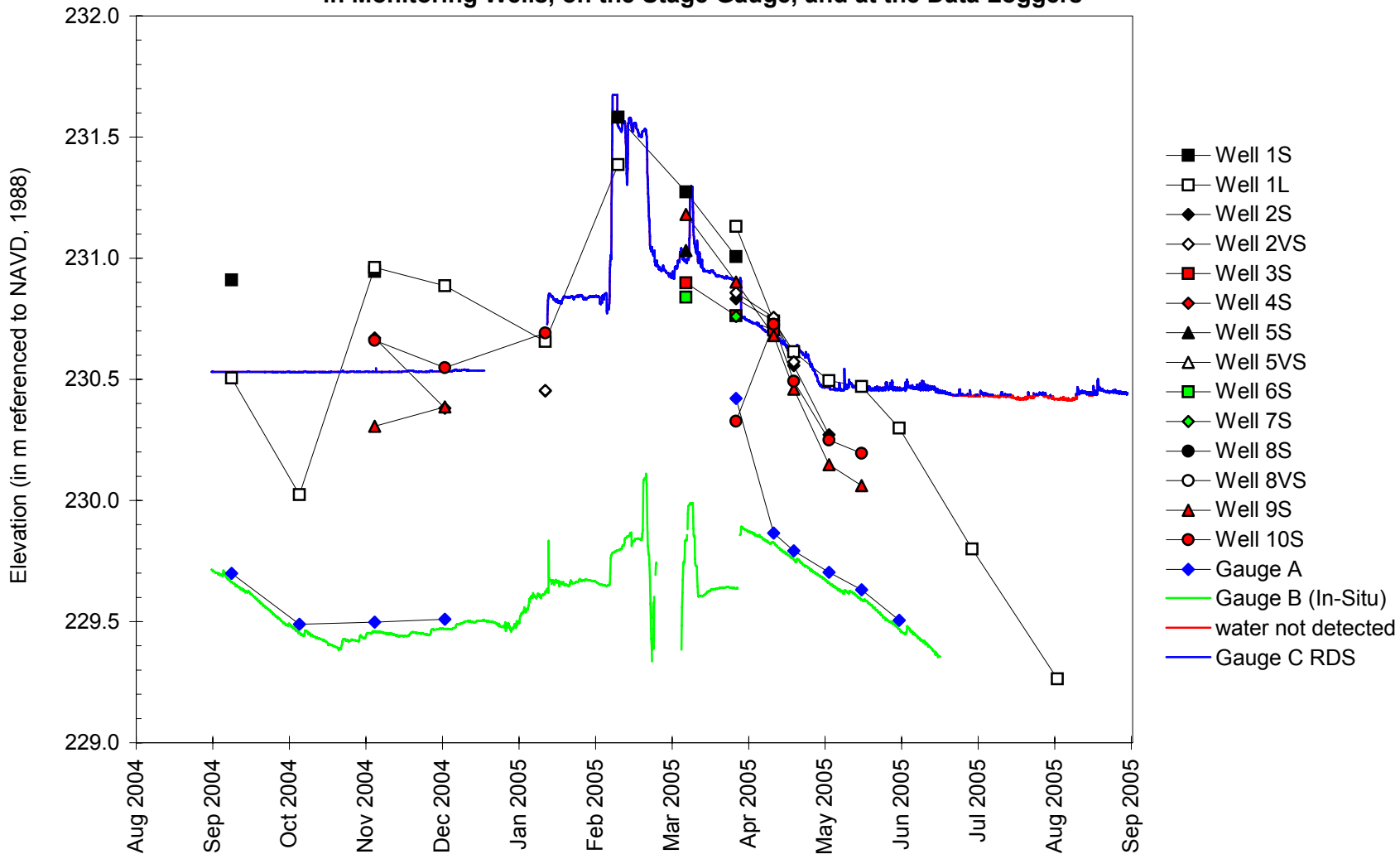
> 5% of the growing season

estimated areal extent of site boundary

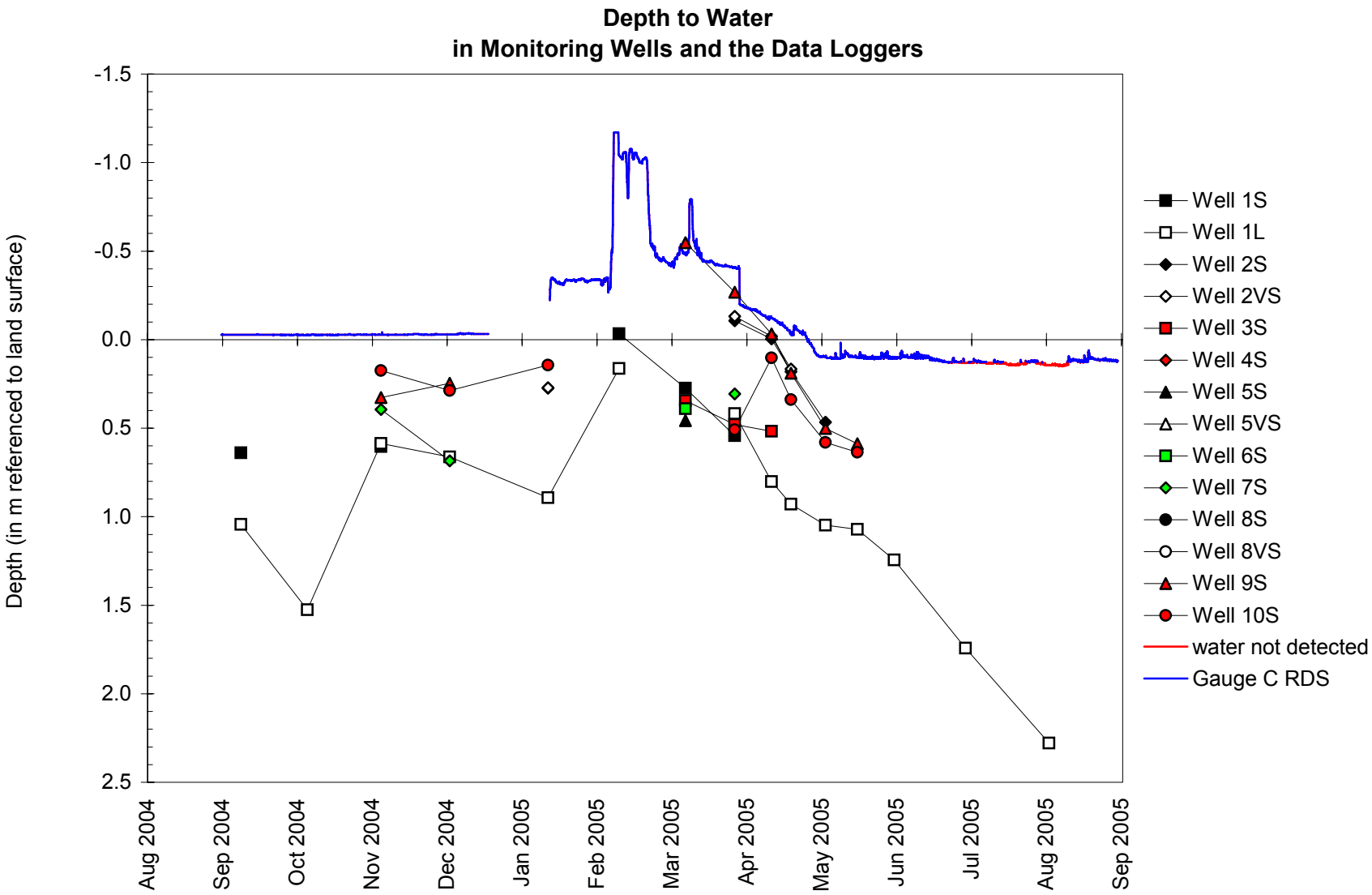
Freeport Bypass West Potential Wetland Compensation Site 6W

September 1, 2004 to September 1, 2005

Water-Level Elevations
in Monitoring Wells, on the Stage Gauge, and at the Data Loggers

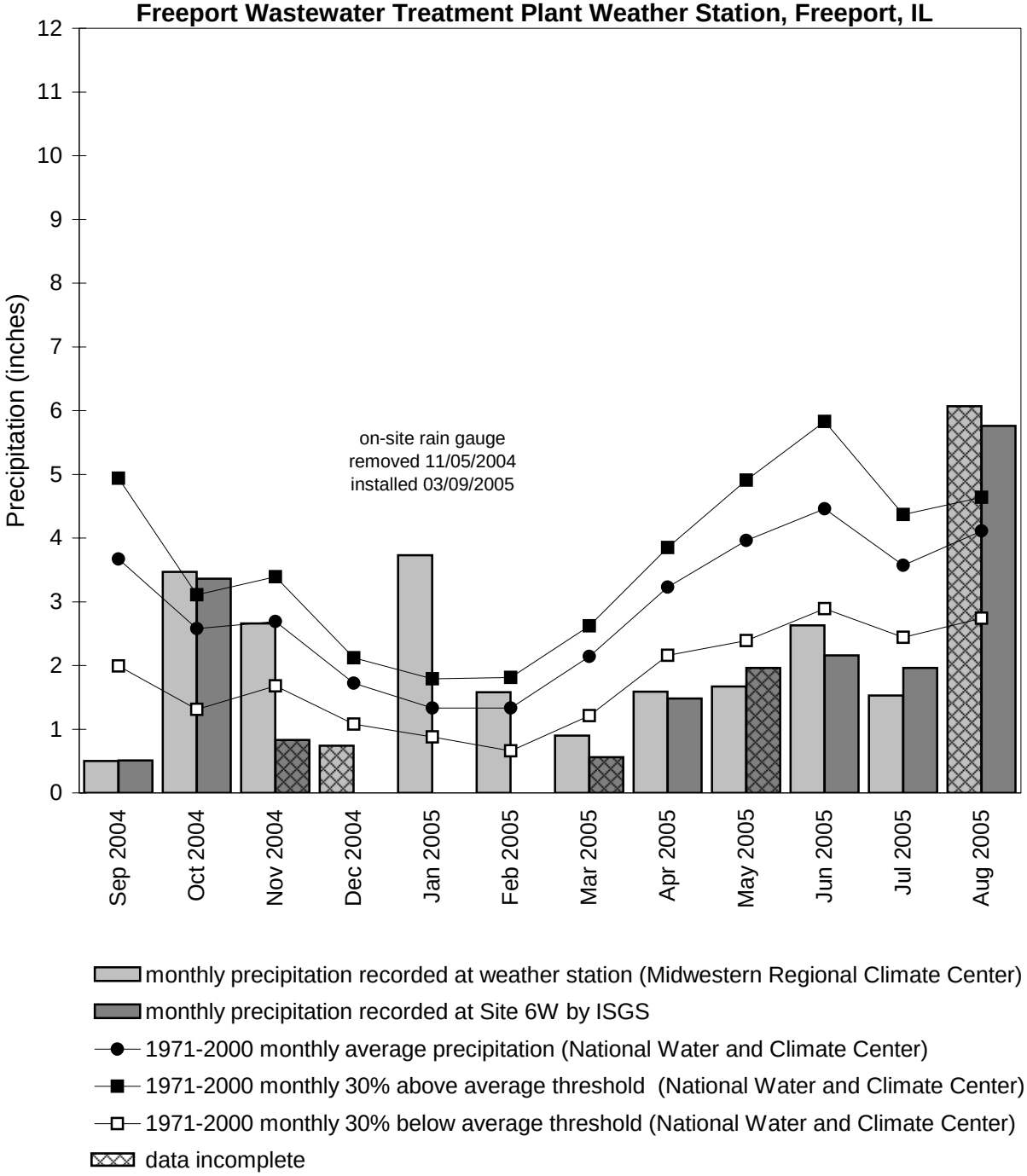


Freeport Bypass West Potential Wetland Compensation Site 6W
September 1, 2004 to September 1, 2005



Freeport Bypass West
Potential Wetland Compensation Site 6W
September 2004 through August 2005

Total Monthly Precipitation Recorded At Site 6W and at the Freeport Wastewater Treatment Plant Weather Station, Freeport, IL



Graph last updated October 24, 2005

PECATONICA RIVER FOREST PRESERVE **ISGS #73**
WETLAND COMPENSATION SITE
Harrison Avenue Extension
Sequence #3746
Winnebago County, near Pecatonica, Illinois
Primary Project Manager: Eric T. Plankell
Secondary Project Manager: Steven E. Benton

SITE HISTORY

- Summer 2003: Wetland construction was completed, including 4.27 ha (10.54 ac) of emergent marsh/wet prairie at the north end of the site and 2.64 ha (6.52 ac) of wooded wetland at the south end of the site.

- February 2005: ISGS was tasked by IDOT to monitor wetland hydrology.

- April 2005: ISGS began on-site monitoring with the installation of a monitoring network. Instrument locations were determined using a Trimble XR Pro GPS unit.

- August 2005: ISGS completed a topographic survey of the site using a Leica TC 702 Total Station.

WETLAND HYDROLOGY CALCULATION FOR 2005

The total area that satisfied wetland hydrology criteria (Environmental Laboratory 1987) for greater than 5% of the 2005 growing season is estimated to be 1.7 ha (4.1 ac) out of a total site area of 6.9 ha (17.1 ac). In addition, the area that satisfied wetland hydrology criteria for greater than 12.5% of the 2005 growing season is estimated to be 1.3 ha (3.3 ac). These estimates are based on the following factors:

- According to the Midwestern Climate Center, the median date that the growing season begins in nearby Freeport, Illinois, is April 13 and the season lasts 183 days; 5% of the growing season is 9 days and 12.5% of the growing season is 23 days.

- Total precipitation at the nearby Wastewater Treatment Plant Weather Station in Freeport, Illinois, was 78% of normal for the monitoring period of September 2004 through August 2005. Precipitation during the period from March through July 2005 was only 48% of normal.

- In 2005, water levels measured in wells 2S, 3S, 4S and 5S satisfied wetland hydrology criteria for greater than 12.5% of the growing season. No other wells at the site satisfied the wetland hydrology criteria for a period exceeding either 5% or 12.5% of the growing season.

- Surface-water data from Gauge C indicated that inundation occurred in those portions of the site below an elevation of approximately 224.87 m (737.76 ft) for a duration that satisfied the wetland hydrology criteria for greater than 5% of the growing season. Additionally, data from Gauge C indicated inundation for an elevation below approximately 224.85 m (737.69 ft) for a duration that satisfied the wetland hydrology criteria for greater than 12.5% of the growing season. Surface-water data from Gauges D, E, and F showed

that flooding from the Pecatonica River did not occur following deployment of the stations on April 15, 2005. Therefore, surface-water flooding did not affect water levels at the site during the monitoring period.

PLANNED FUTURE ACTIVITIES

- Hydrogeologic monitoring will continue at the site until no longer required by IDOT.

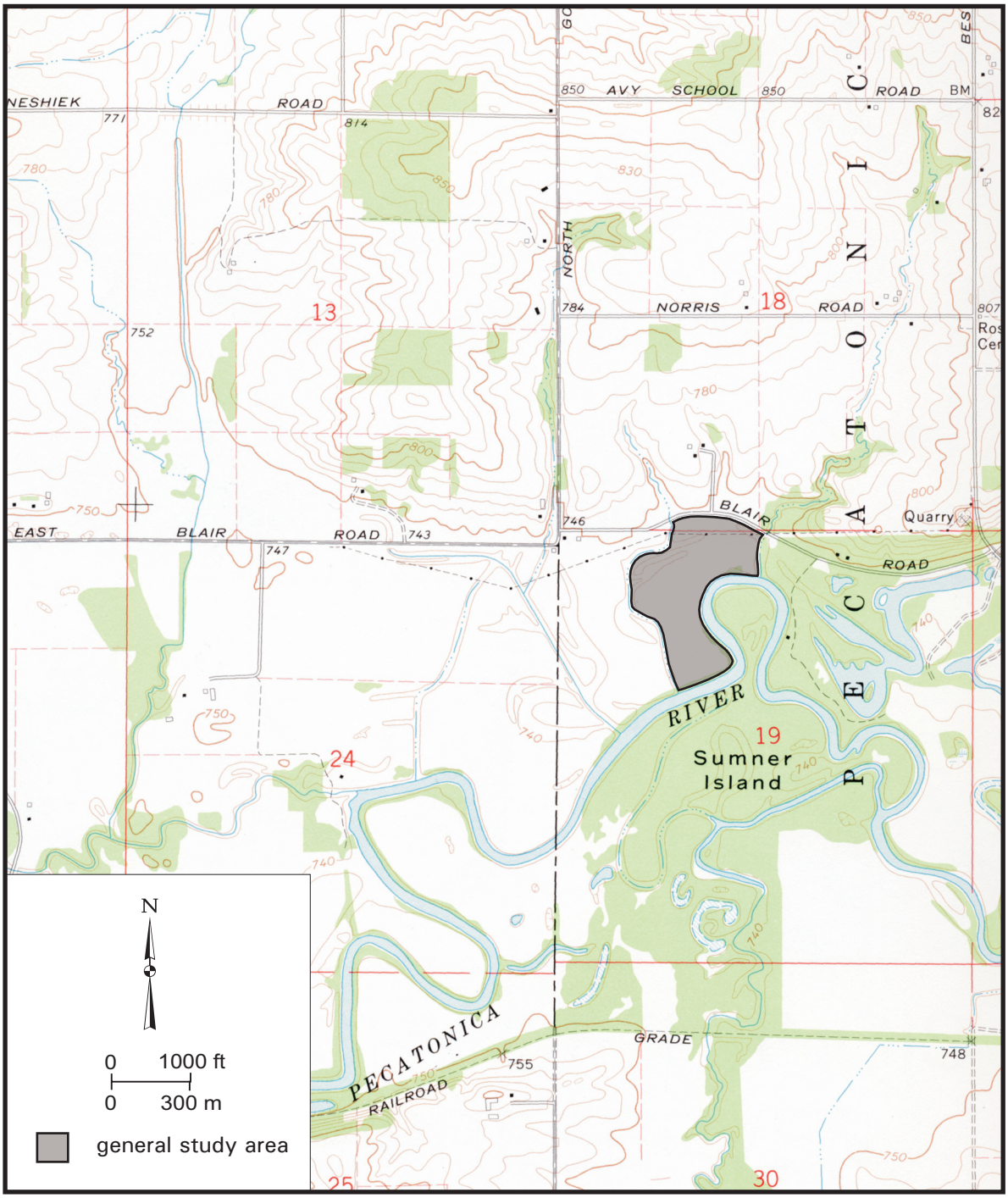
Pecatonica River Forest Preserve Wetland Compensation Site

[Sequence #3746]

General Study Area and Vicinity

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

contour interval is 10 feet

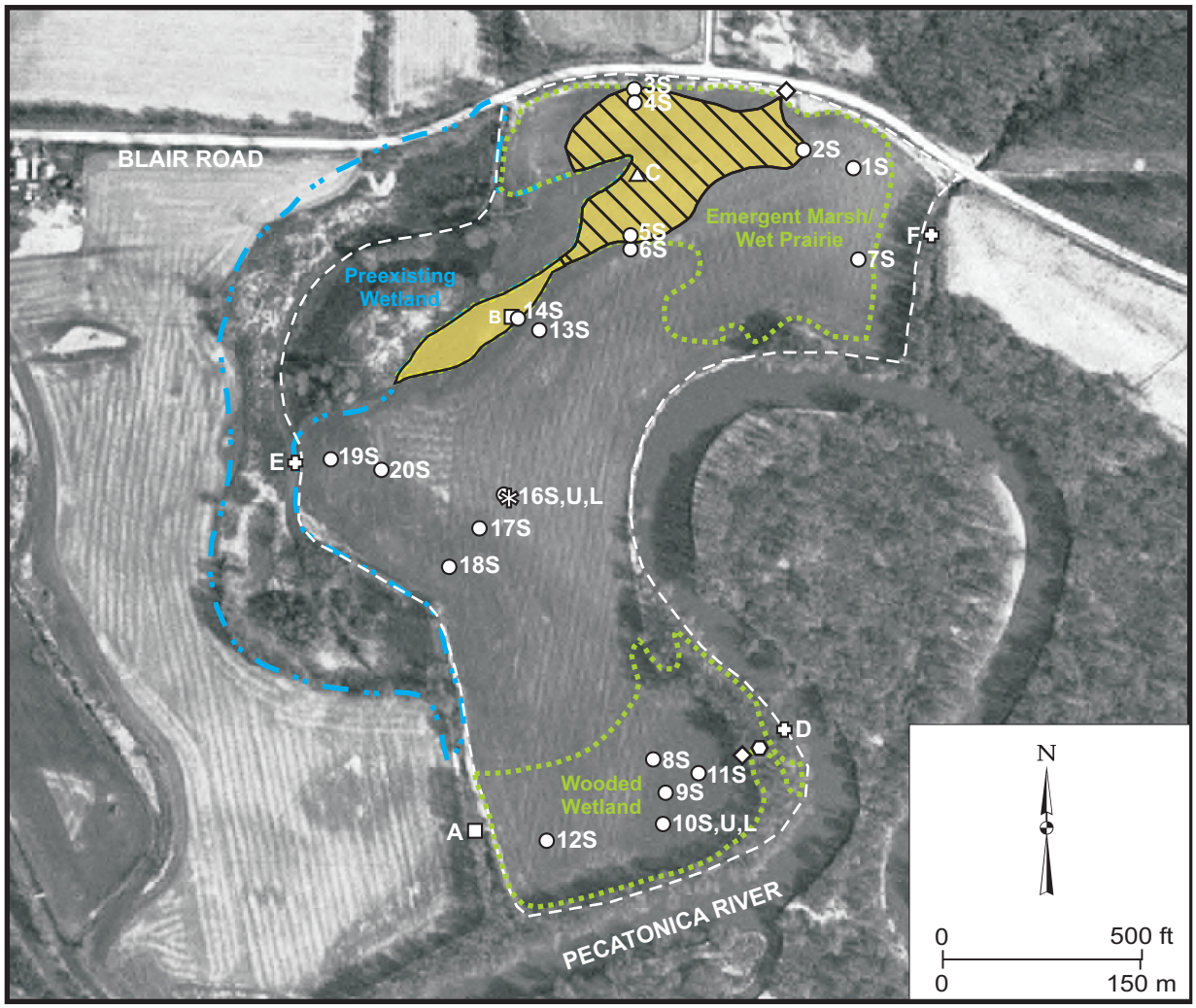


Pecatonica River Forest Preserve Wetland Compensation Site (Sequence #3746)

Estimated Areal Extent of 2005 Wetland Hydrology

based on data collected between April 21, 2005 and September 1, 2005

Map based on USGS digital orthophotograph Ridott, NE quarter quadrangle
produced from 4/8/99 aerial photography (ISGS 2005)



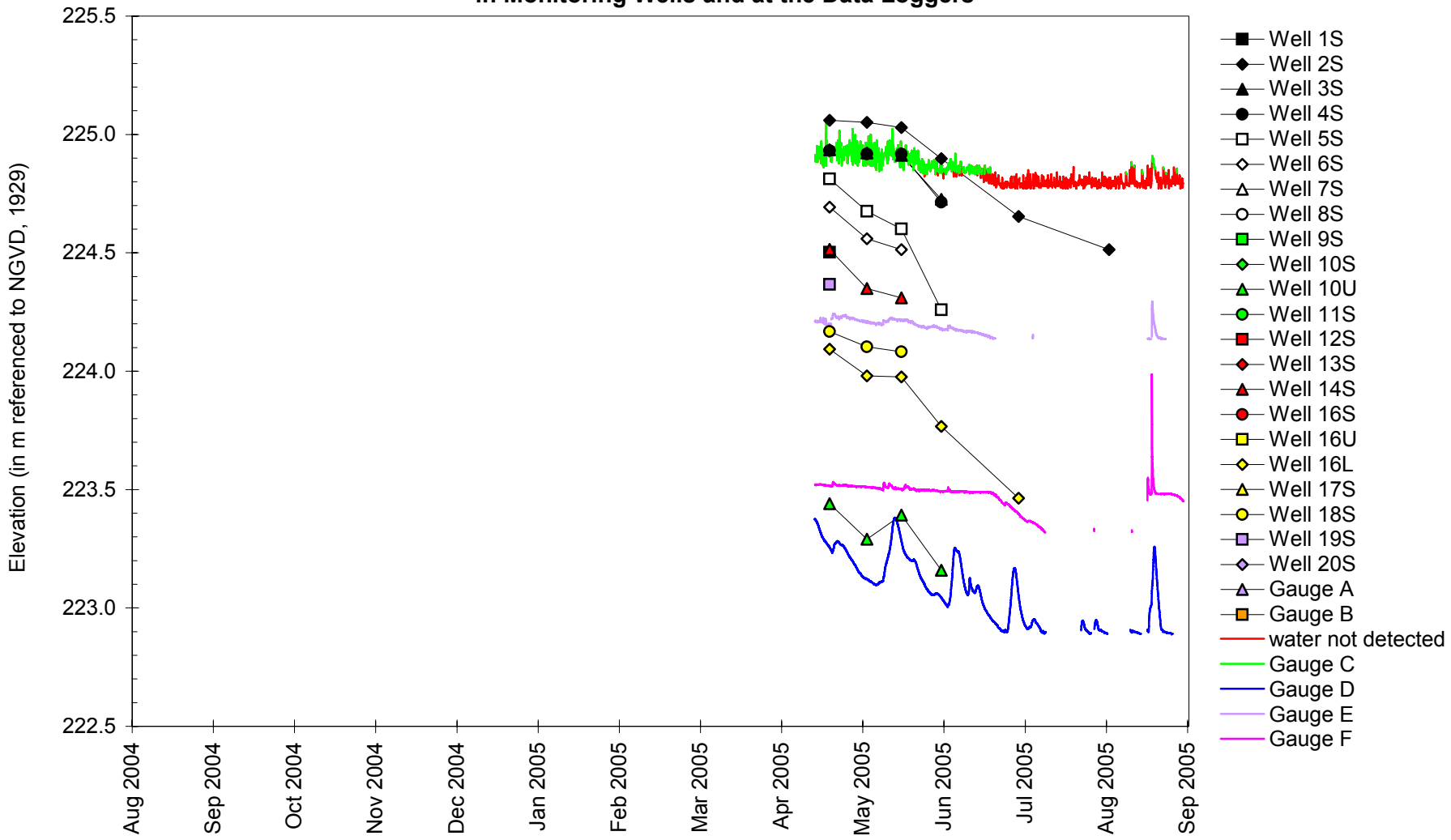
2005 Wetland Hydrology

- >12.5% of the growing season
- >5% of the growing season
- preexisting wetland (IDOT)
- mitigation areas (IDOT)
- site boundary (IDOT)

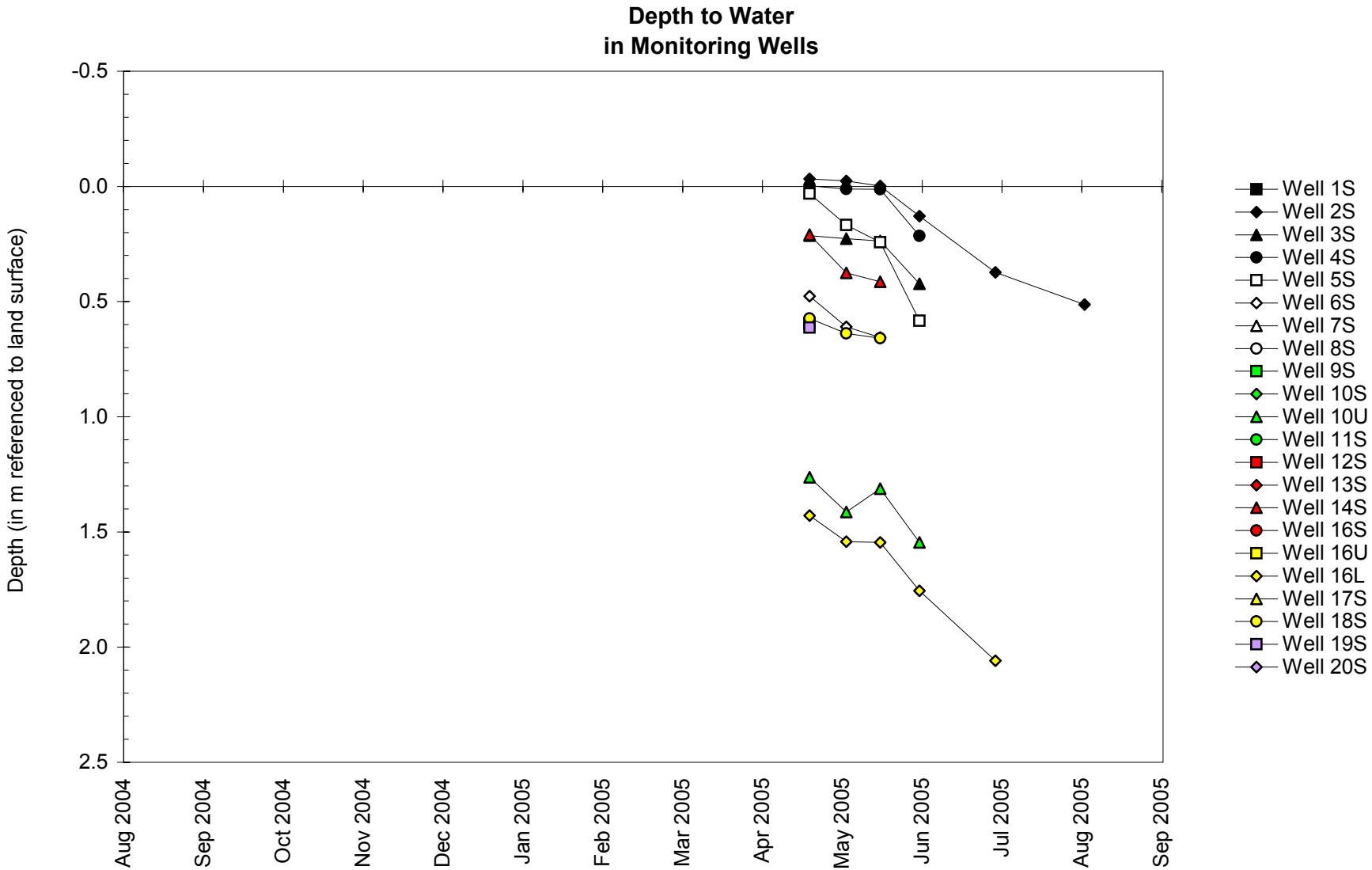
- monitoring well
- 4.0' staff gauge
- RDS WL-40 data logger
- Davis Rain Collector II rain gauge
- In-Situ MiniTROLL data logger
- ISGS benchmark
- culvert

Pecatonica River Forest Preserve Wetland Compensation Site
September 1, 2004 to September 1, 2005

Water-Level Elevations
in Monitoring Wells and at the Data Loggers

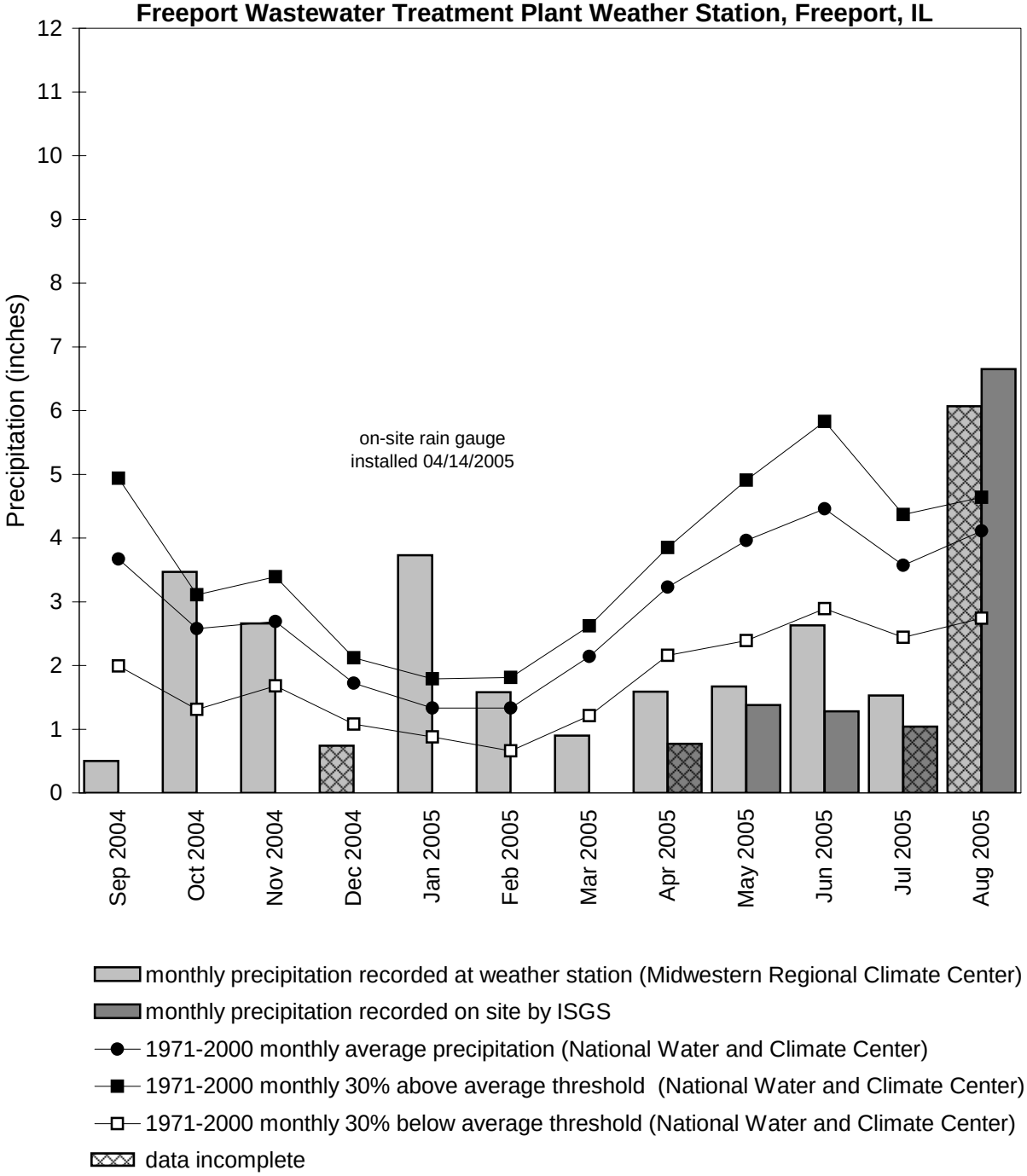


Pecatonica River Forest Preserve Wetland Compensation Site
September 1, 2004 to September 1, 2005



Pecatonica River Forest Preserve
Wetland Compensation Site
September 2004 through August 2005

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



Graph last updated October 24, 2005

SUGAR CAMP CREEK **ISGS #74**
WETLAND COMPENSATION SITE
FAP 312
Sequence #9282
Franklin County, Northern Township, Illinois
Primary Project Manager: Gregory A. Shofner
Secondary Project Manager: Geoffrey E. Pociask

SITE HISTORY

- December 2004: ISGS submitted an Initial Site Evaluation Report to IDOT.

- March–April 2005: IDOT issued a task order for a Level II hydrogeologic characterization of the site, and ISGS data collection was initiated with installation of wells, stage gauges, and data loggers.

- May 2005: IDOT constructed an earthen dam, approximately 30 m (100 ft) southeast of RDS 2, in the north/south ditch within Area A.

- July 2005: IDOT issued a separate task order for hydrologic monitoring of a 7.9-ha (19.5-ac) wetland mitigation area in the southeast portion of the site, called Area A in this report. Area A is considered to be in post-construction monitoring.

WETLAND HYDROLOGY CALCULATION FOR 2005

We estimate that 4.4 ha (10.9 ac) of the total site area of 50.6 ha (125 ac), including Area A, satisfied wetland hydrology criteria (Environmental Laboratory 1987) for greater than 5% of the growing season in 2005, whereas 1.3 ha (3.1 ac) satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Within Area A, 1.1 ha (2.8 ac) satisfied wetland hydrology criteria for greater than 5% of the growing season, of which 0.9 ha (2.2 ac) satisfied wetland hydrology criteria for greater than 12.5% of the growing season. This estimate is based on the following factors:

- According to the Midwestern Climate Center, the median date that the growing season begins in nearby Du Quoin, Illinois, is April 5 and the season lasts 207 days; 5% of the growing season is 10 days, and 12.5% of the growing season is 26 days.

- Precipitation was 87% of normal for the monitoring period. January to March precipitation ranged from above normal to normal, but the early growing season was dry due to unusually low precipitation from April through June, when it was 47% of normal. Precipitation during late August to mid September produced more extensive wetland hydrology within Area A, but not elsewhere on the site.

- Wells 2S, 4S, 8S, 9S, 12S, 14S, and 19S satisfied wetland hydrology criteria for greater than 5% of the growing season. Wells 4S, 12S, 14S, and 19S satisfied wetland hydrology criteria for greater than 12.5% of the growing season.

- In Sugar Camp Creek, logger data from Gauge A showed a maximum stage of 123.6 m (405.7 ft), which was not sufficient to inundate any portion of the site.

- In the northern part of Area A, RDS 2 recorded surface-water levels at or above 123.28 m elevation (404.46 ft) for greater than 5% of the growing season, and at or above 123.23 m (404.30 ft) elevation for greater than 12.5% of the growing season.

- Active drainage ditches in the southeastern and western parts of the site promoted drainage of those areas, likely restricting the extent of wetland hydrology in the vicinity of the ditches, including Area A. An exception is in the northwestern part of Area A, where surface water was retained in low areas north of the earthen dam after construction in May 2005.

- Areas satisfying wetland hydrology criteria were calculated using GIS methods, and wetland hydrology polygons were drawn on an IDOT topographic map (0.1-m contour interval). Instrument locations were determined using GPS.

PLANNED FUTURE ACTIVITIES

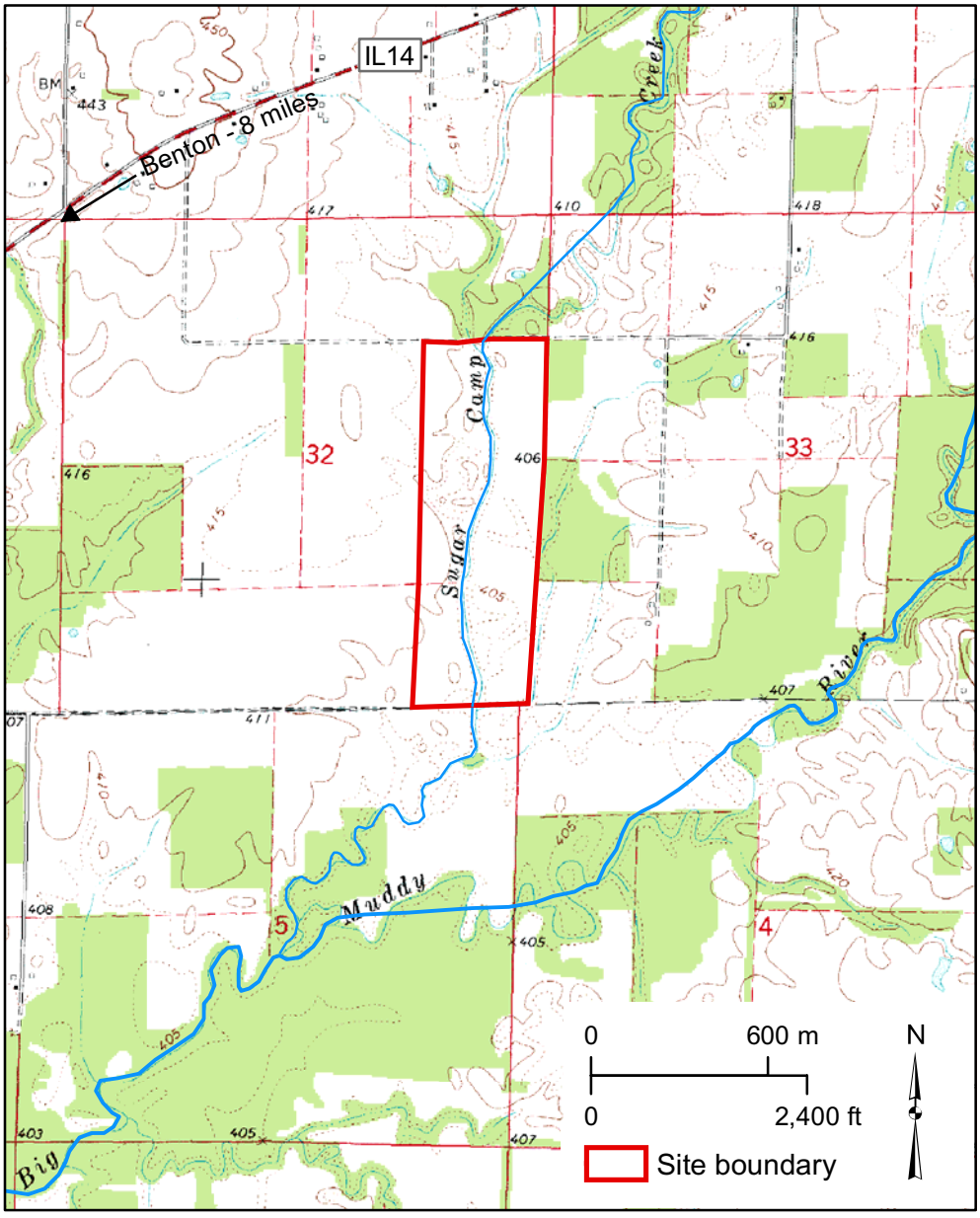
- Additional monitoring instruments will be deployed within Area A, and at other locations on the site.

- A Level II hydrogeologic characterization report is in preparation.

Sugar Camp Creek Wetland Compensation Site
(FAP 312)

General Study Area and Vicinity

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

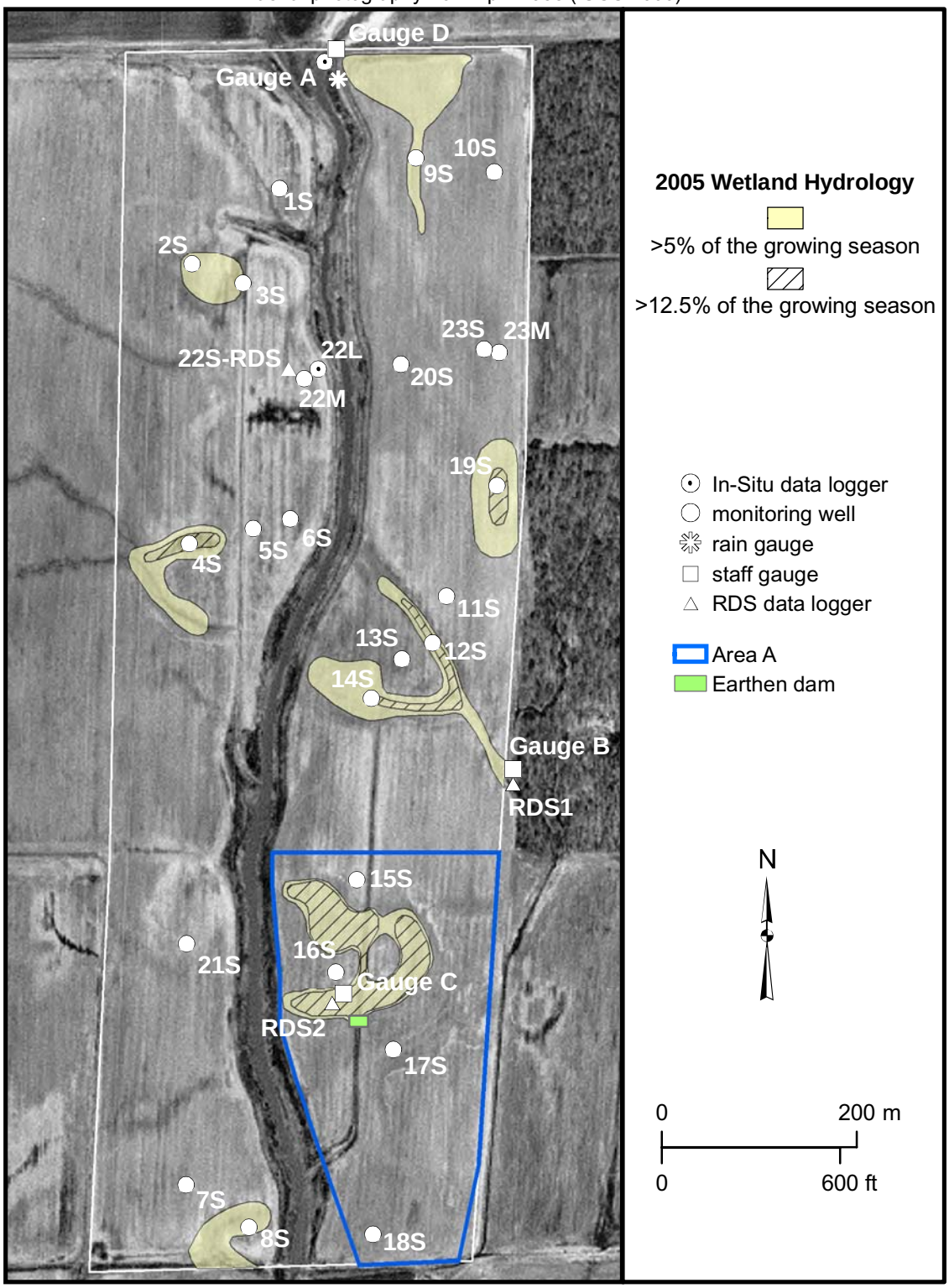


Sugar Camp Creek Wetland Compensation Site (FAP 312)

Estimated Areal Extent of 2005 Wetland Hydrology

based on data collected between March 30, 2005 and September 20, 2005

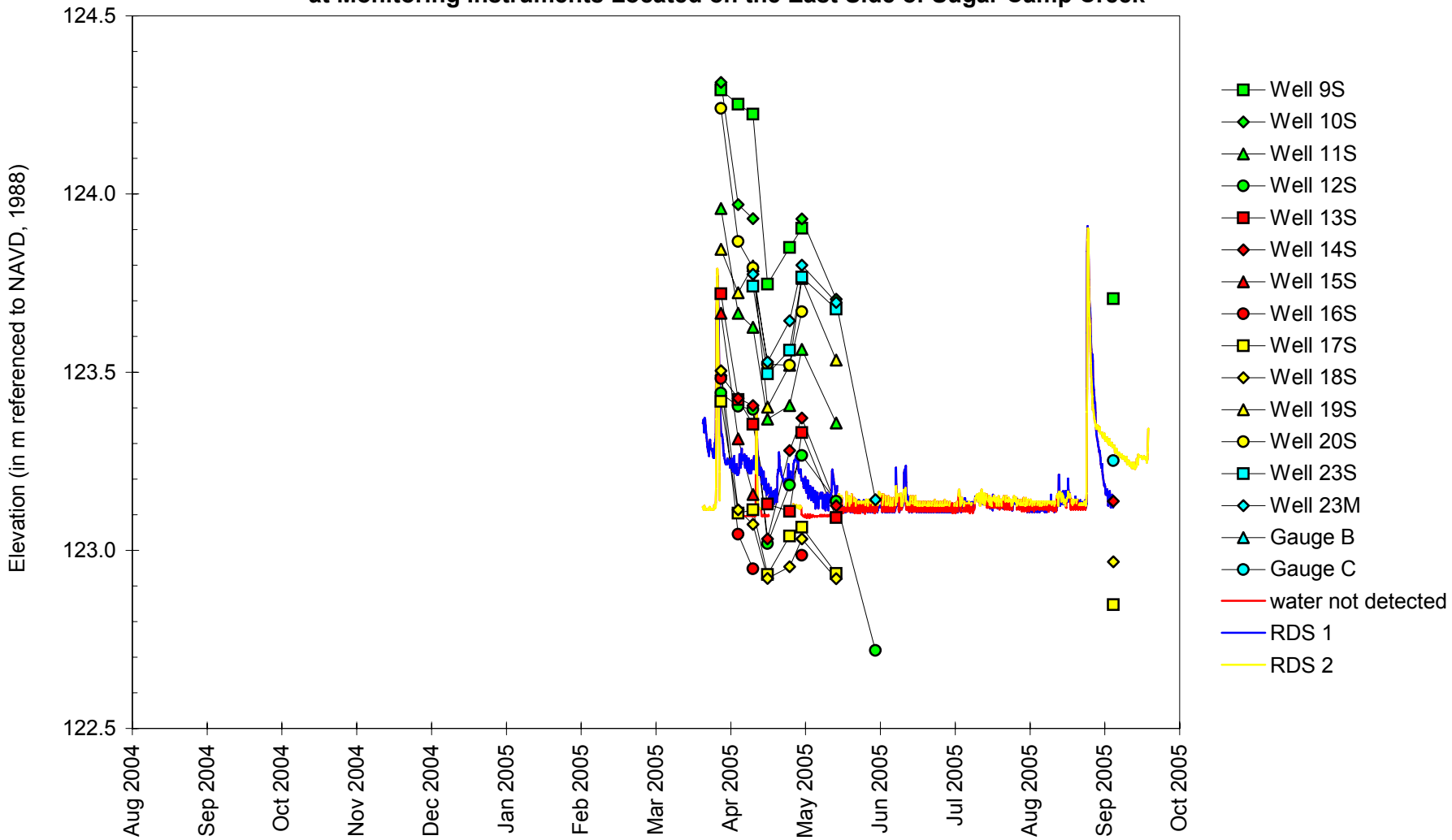
Map based on USGS digital orthophotograph, Ewing SE quarter quadrangle, aerial photography from April 1988 (ISGS 2000)



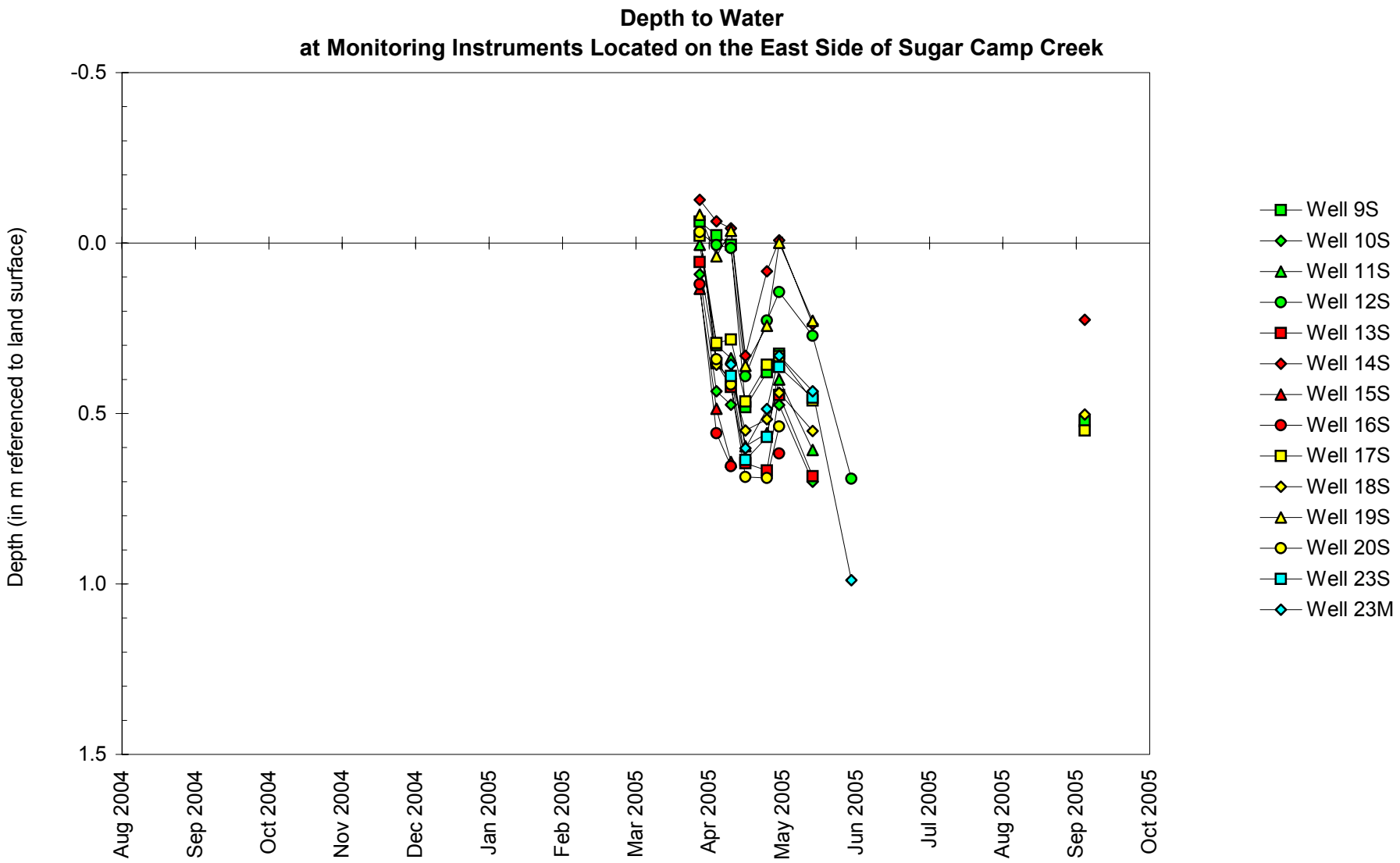
Sugar Camp Creek Wetland Compensation Site

September 1, 2004 to September 20, 2005

Water-Level Elevations
at Monitoring Instruments Located on the East Side of Sugar Camp Creek



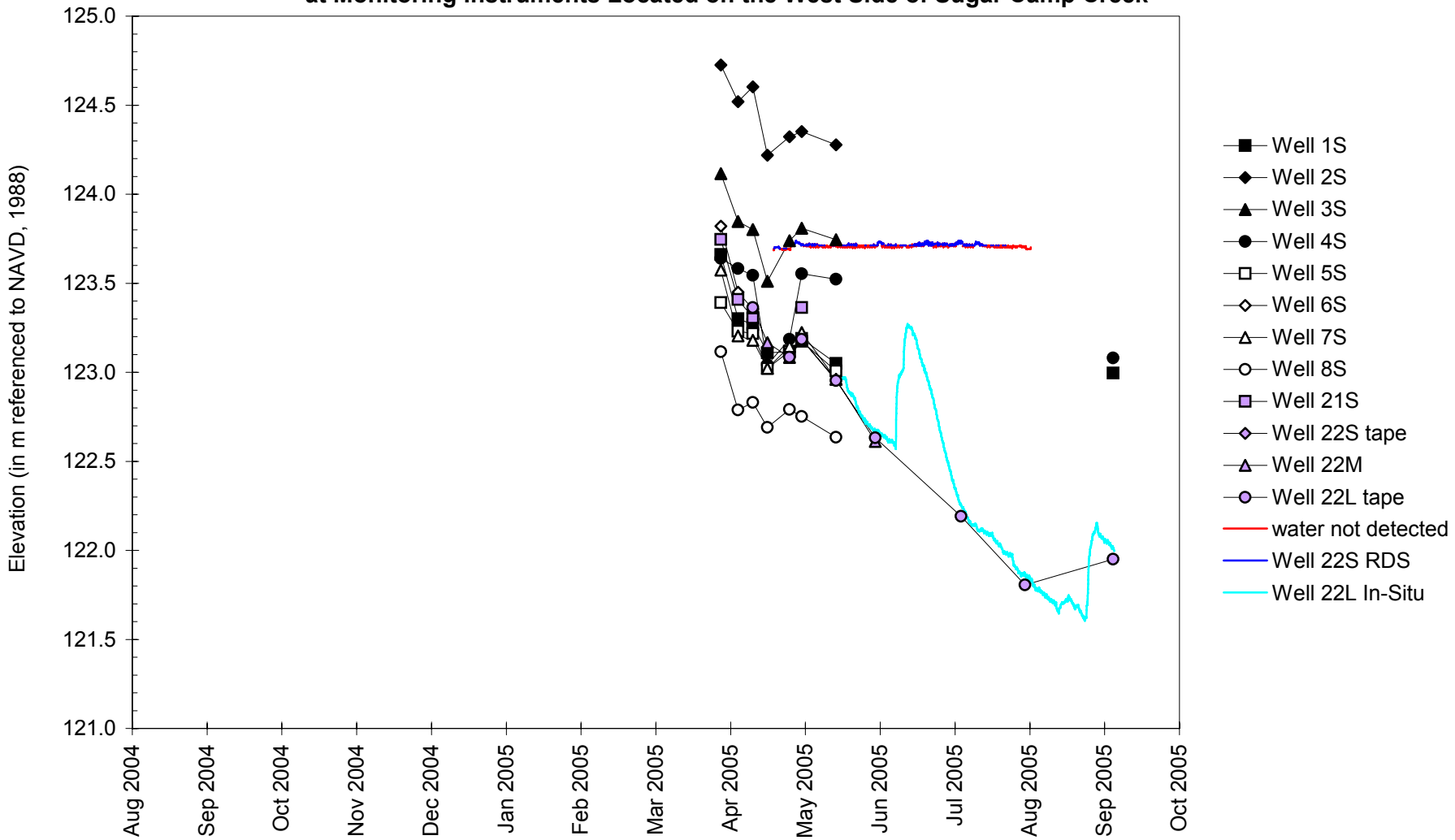
Sugar Camp Creek Wetland Compensation Site
September 1, 2004 to September 6, 2005



Sugar Camp Creek Wetland Compensation Site

September 1, 2004 to September 6, 2005

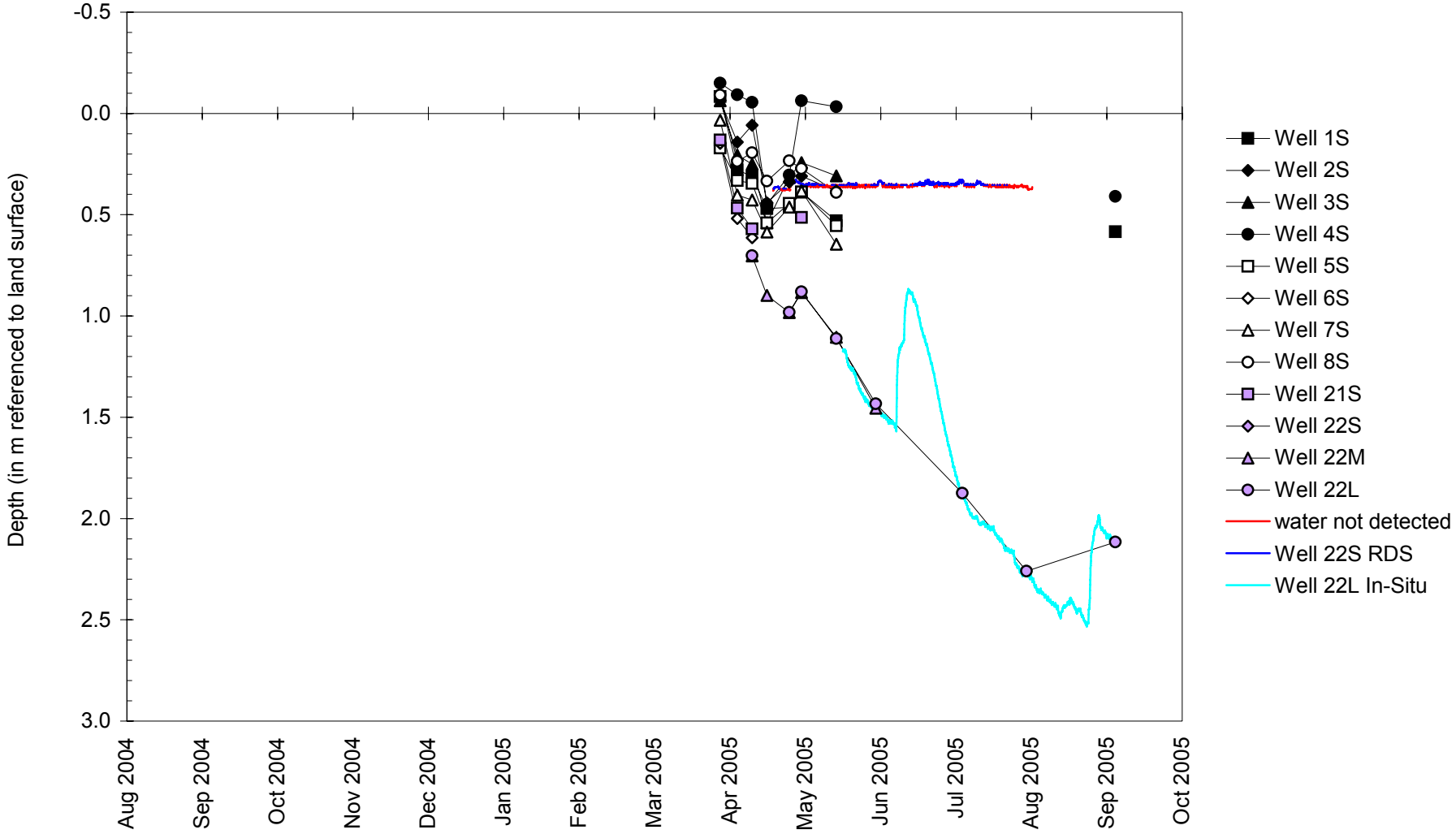
Water-Level Elevations
at Monitoring Instruments Located on the West Side of Sugar Camp Creek



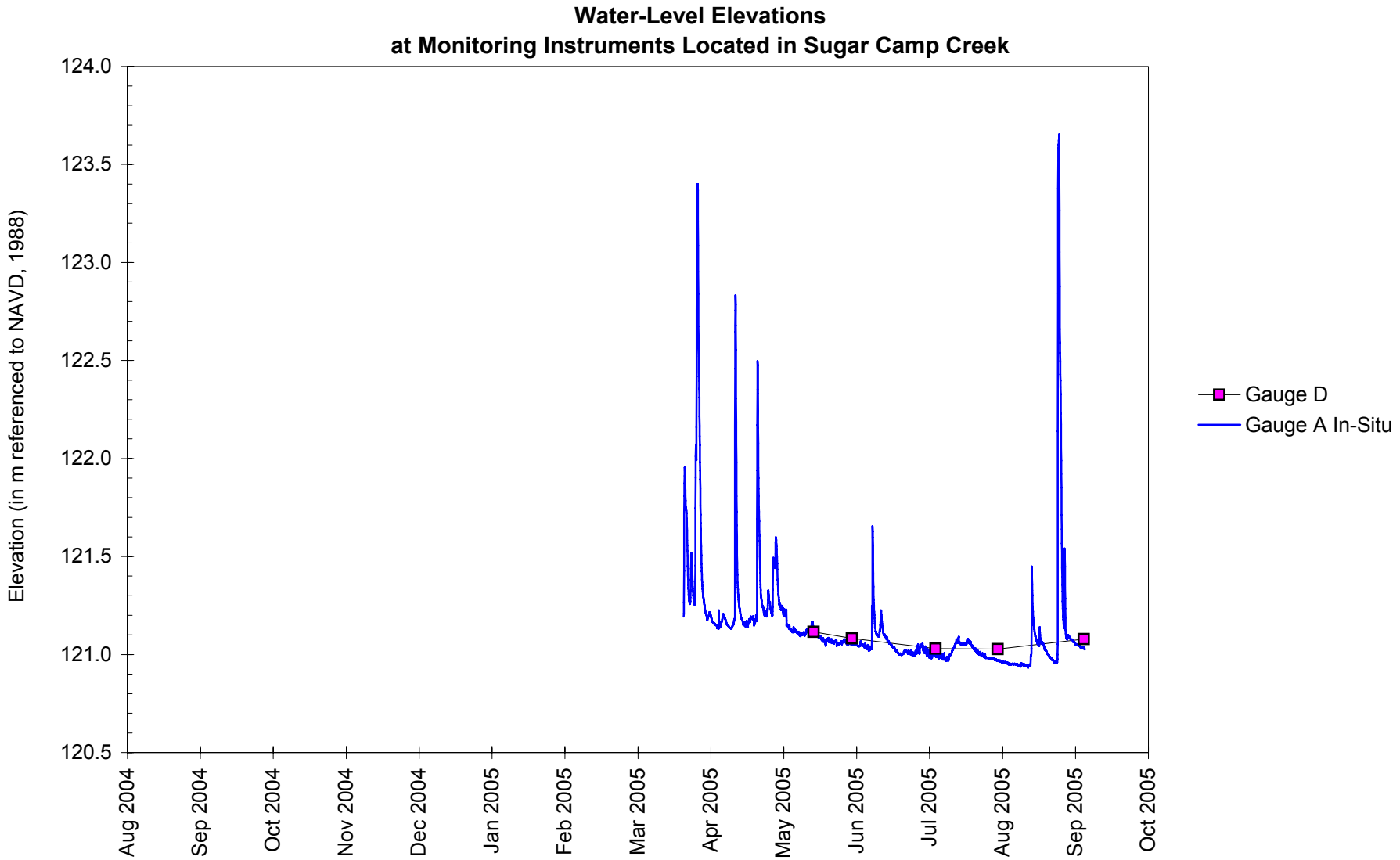
Sugar Camp Creek Wetland Compensation Site

September 1, 2004 to September 6, 2005

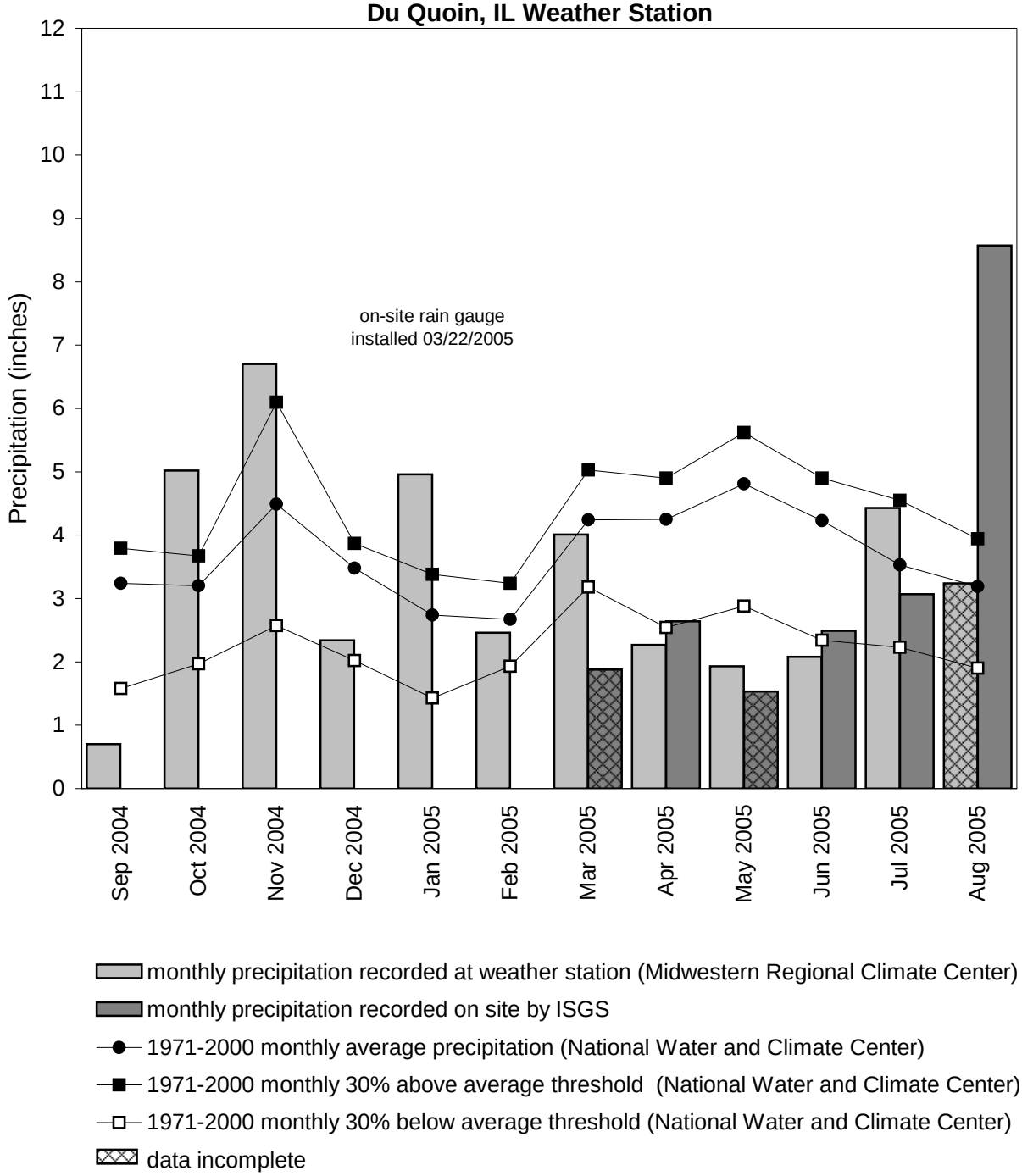
Depth to Water
at Monitoring Instruments Located on the West Side of Sugar Camp Creek



Sugar Camp Creek Wetland Compensation Site
September 1, 2004 to September 6, 2005



Sugar Camp Creek
Wetland Compensation Site
September 2004 through August 2005
Total Monthly Precipitation Recorded On Site and at the Du Quoin, IL Weather Station



Graph last updated October 24, 2005