

# **ANNUAL REPORT FOR ACTIVE IDOT WETLAND MITIGATION AND HYDROLOGIC MONITORING SITES**

**September 1, 2009 through August 31, 2010**

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## 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 sites being monitored as tasked by IDOT under grants D75971 and D73381, including wetland mitigation and bank sites and potential wetland mitigation and bank sites. 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 and its online updates (Environmental Laboratory 1987), hereafter collectively referred to as the 1987 Manual, as well as areas meeting wetland hydrology criteria as outlined in the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (U.S. Army Corps of Engineers 2010), hereafter referred to as the 2010 Midwest Region supplement. Additional site 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 23 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 field instruments such as wells and stage gauges, 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, 2009 through August 31, 2010, at IDOT's request, except where noted.

## METHODS

The primary purpose of this report is to determine the area within each wetland mitigation site that satisfies the wetland hydrology criteria listed in the 1987 Manual and in the 2010 Midwest Region supplement. Areas satisfying wetland hydrology criteria are delineated using both methods because both are in use at present, and for comparative purposes. 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 mitigation 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 using the 1987 Manual, or a minimum of 14 consecutive days when using the 2010 Midwest Region supplement. 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, especially where soil and/or vegetation data are inconclusive or slow to respond after site construction activities. To assist in proper characterization of wetland mitigation sites, this report shows areas that are inundated or saturated for greater than 5% and greater than 12.5% of the growing season. Areas satisfying wetland hydrology criteria in the 2010 Midwest Region supplement (14 consecutive days during the growing season) are also shown for comparison. 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 Regional Climate Center (MRCC) provides data regarding the length and beginning date of the growing season (Midwestern Regional Climate Center 2010). In the 1987

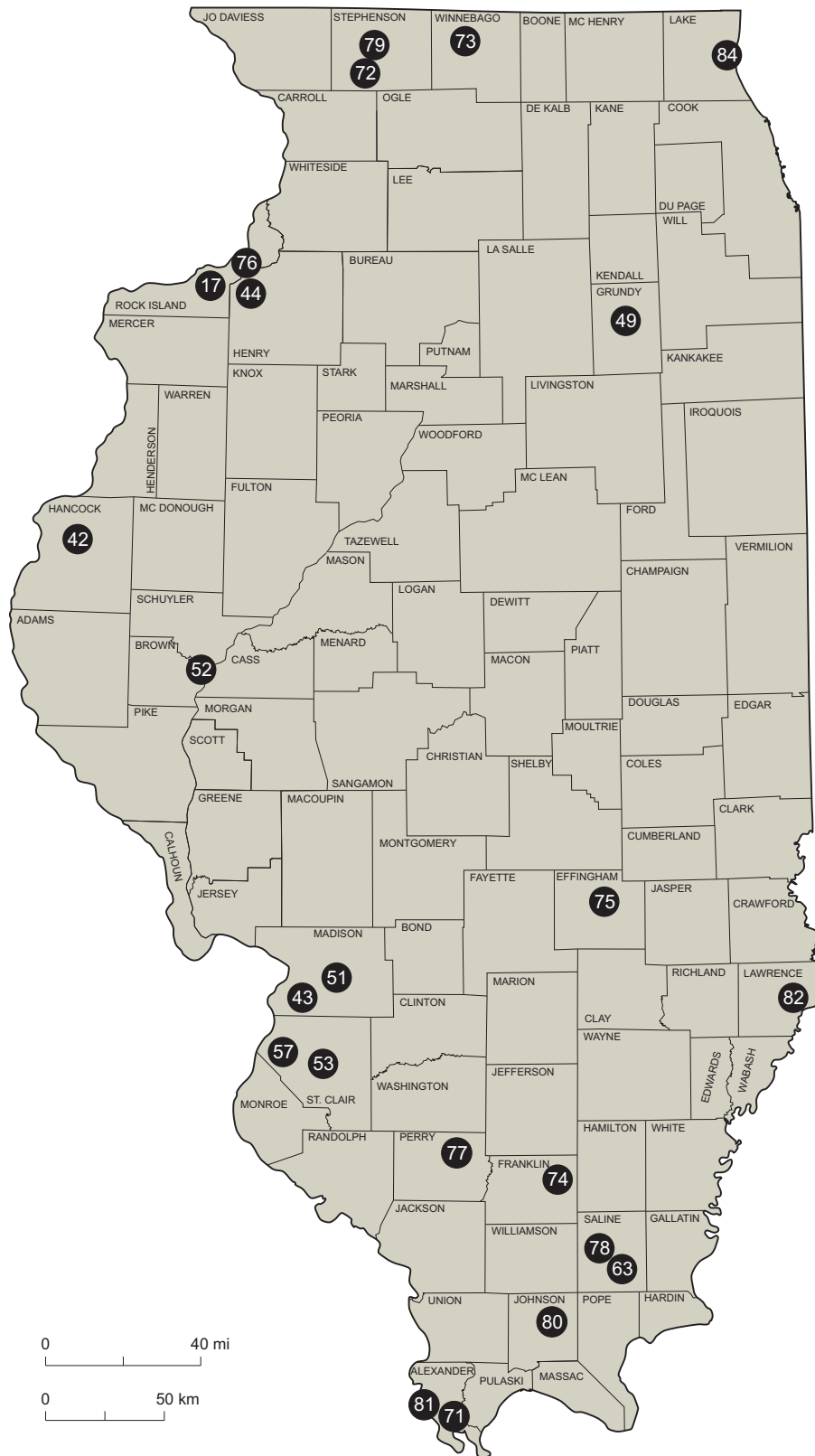


Figure 1 General locations of sites monitored by ISGS for IDOT between September 1, 2009 and August 31, 2010. Numbers indicate ISGS project numbers and are explained in Table 1.

ISGS #	Site Name Route # FAP # Sequence #	ISGS #	Site Name Route # FAP# Sequence #
17	Milan Beltway, Airport Road Wetland Mitigation Site FAU 5822 Sequence #67	73	Pecatonica River Forest Preserve Wetland Mitigation Site Harrison Avenue Extension Sequence #3746
42	Hancock County near Carthage Wetland Mitigation Site US 136 FAP 315 & 10 Sequence #235	74	Sugar Camp Creek Wetland and Stream Mitigation Bank and FAP 312 Wetland Mitigation Site IL 3 FAP 312 Sequence #9282
43	Eckmann/Bischoff New River Crossing Wetland Mitigation Site FAP 14 Sequence #27	75	Green Creek Wetland Mitigation Site IL 32/33 FAP 774 Sequence #12505
44	Milan Beltway, Green Rock Wetland Mitigation Site FAU 5822 Sequence #67	76	Milan Beltway, Rock Island Wetland Mitigation Site FAU 5822 Sequence #67
49	Morris Wetland Mitigation Bank Sequence #1306	77	Pyramid Site EC25 Wetland Mitigation Site Pyatt's Blacktop FAS 864 Sequence #9778
51	Former Luehmann Property New River Crossing Potential Wetland Mitigation Site FAP 999 Sequence #33	78	Harrisburg, Site 2 Wetland Mitigation Site IL 14 FAP 857 Sequence #547
52	La Grange Wetland Mitigation Bank Sequence #9579	79	Freeport Bypass West Former Weber Property Wetland Mitigation Site US 20 FAP 301 Sequence #10487
53	Fairmont City New River Crossing Potential Wetland Mitigation Site FAP 999 Sequence #33	80	Max Creek Wetland Mitigation Site IL 147 FAS 932 Sequence #8717A
57	Former Tiernan Property New River Crossing Potential Wetland Mitigation Site FAP 999 Sequence #33G	81	East Cape Girardeau Wetland Mitigation Site IL 146 FAP 312 Sequence #633A
63	Harrisburg Wetland Mitigation Site US 45 FAP 332 Sequence #90	82	Lawrence County Potential Wetland Mitigation Bank Sequence #14912
71	Tamms Wetland Mitigation Site IL 127 FAS 1907 Sequence #1026	84	North Chicago Wetland Mitigation Site IL 56/IL 47 FAP 326 Sequence #13406
72	Freeport Bypass West Wetland Mitigation Site 6W US 20 FAP 301 Sequence #10487		

Table 1 ISGS project numbers and active water-level sites monitored by ISGS for IDOT between September 1, 2009 and August 31, 2010.

Manual, the growing season is defined as the time period between the last occurrence of 28°F (-2.2°C) air temperatures in spring and the first occurrence of 28°F (-2.2°C) air temperatures in the fall. The median beginning date and length of growing season are calculated by the MRCC 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. This method is used when determining the areas that satisfy wetland hydrology criteria under the 1987 Manual. The 2010 Midwest Region supplement provides different methods for determining the growing season. While the above method is allowable, one of the two following site-specific methods is preferred. The first method relies on observations of vegetation growth and development, and defines the start of the growing season as when two different species of non-evergreen vascular plants begin to grow (colloquially referred to as “green-up”), as evidenced by various features such as emergence of herbaceous plants from the ground, bud burst, emergence or opening of flowers, and others. The second method relies on soil temperatures, with the growing season being the period when soil temperatures at a depth of 30 cm (1 ft) are continuously above 41°F (5°C). Site-specific observations of soil temperatures and vegetation were collected by field staff, and the earliest date when either methodology was satisfied was determined to be the beginning of the growing season, and this date was used when determining areas that satisfy wetland hydrology criteria under the 2010 Midwest Region supplement. Soil temperatures were collected by field staff using analog bimetal thermometers at a depth of 30 cm (12 in.) during site visits in 2010, and some sites were equipped with digital soil-temperature data loggers for continuous readings. Also, the Illinois State Water Survey operates climate stations throughout the state that measure soil temperatures at 20 cm (8 in.), and those data were obtained through the MRCC and used to supplement on-site readings as needed.

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 judgment is used to refine the location of this boundary, using observations of saturation, small-scale topographic features, vegetation, soils, and other site features. To measure the size of an area satisfying wetland hydrology criteria, areas were outlined in geographic information systems (GIS) computer programs, and the acreage (in hectares and acres) of the outlined area was calculated by the program. Alternatively, the area satisfying wetland hydrology criteria was plotted on the best available base map, then measured with a Tamaya Super Planix B digital planimeter.

The error of each area measurement will vary widely depending on the quality of the underlying base map, the precision in locating monitoring devices, and the precision of the planimeter or GIS at the scale of the base map. The base maps used for these determinations were most often USGS digital orthophotograph quarter-quadrangle (DOQQ) maps (Illinois State Geological Survey 2010) with site features such as wells located using survey-grade GPS devices or a total station, but may include as-built surveys (done both by IDOT and ISGS), construction plans, U.S. Geological Survey (USGS) 7.5-minute topographic maps, and unrectified aerial photographs. Given the many potential sources of error, estimates of the amount of error are difficult to calculate and are not included.

Water-level data ordinarily were collected monthly throughout the year, and biweekly during March through May, when highest water levels generally are observed in Illinois. Biweekly readings continued into June as needed or were added as early as February to help determine the beginning of the growing season, or during periods of flooding or heavy precipitation. Weekly readings were made at some sites to improve or check accuracy.

In 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 prevents measurement of any specific instrument is considered sufficient evidence of inundation for that site visit. Manual water-level measurements are often supplemented with various automated data loggers that measure daily or more frequently. These data loggers are used to determine the timing of hydrologic events such as precipitation or flooding that occur between manual measurements. One manual measurement alone is generally considered insufficient to indicate inundation or saturation for a sufficient duration without the identification of a precipitation or flooding event that would have initiated the inundation or saturation. If conflicts occur between automatic and manually recorded data, best professional judgment is used to solve any conflicts in data, and a specific note may be added to the site summary in question. No changes in methods were needed to determine duration of inundation or saturation to satisfy the 14-day requirement of the 2010 Midwest Region supplement.

Monitoring wells are given an alphanumeric designation based in part on their relative depths. Monitoring wells designated with an “S” or “VS” are shallow and are specifically constructed for measuring wetland hydrology in the soil zone. Monitoring wells designated with a “U” (upper) have varying depths but are deeper than “S” wells, and may be used to determine wetland hydrology depending on the depth of the well screen, as determined by the project manager. 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 not listed or discussed in the text of this report.

Graphs for each site show water-level elevations at wells and surface-water instruments, and depth-to-water below land surface at each well. The graphs follow the summary text for each site, and there may be multiple charts for each site. Depths are shown as negative values when water levels are above land surface. Elevations are shown relative to the North American Vertical Datum (NAVD) of 1988 unless otherwise labeled. 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 (see below).

Multiple data loggers were used to monitor water levels continuously at many sites. Several 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 identified during installation). 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 unheated and therefore are not appropriate for recording winter precipitation, monthly precipitation data obtained from MRCC are also shown from climate observation stations that are maintained year-round. The closest weather

station with an adequate period of record is used at each site, and additional stations or data collected by ISGS on site may be used to supplement the record if data from the closest station are missing. 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) (National Water and Climate Center 2010) and are all based on a 30-year period, between 1961-1990 or 1971-2000 based on a 2-parameter gamma distribution over the 30-year period (National Water and Climate Center 1995). Precipitation is classified as “above 30% threshold”, or above the normal range, when there is a 30% chance precipitation will be greater than or equal to the value shown. Precipitation is “below 30% threshold”, or below the normal range, when there is a 30% chance that precipitation will be less than or equal to the value shown. Precipitation is considered to be within the normal range when neither above nor below the 30% thresholds. Precipitation also may be described as above or below “normal” (meaning average or mean).

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

Publication of this report is authorized by the Director, Illinois State Geological Survey, Institute of Natural Resource Sustainability, University of Illinois Urbana-Champaign.

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U.S. Army Corps of Engineers, 2010, Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0): J.S. Wakeley, R.W. Lichvar, and C.V. Noble (eds.), ERDC/ELTR-10-16, U.S. Army Engineers Engineer Research and Development Center, Vicksburg, MS, 152 p.

**MILAN BELTWAY, AIRPORT ROAD  
WETLAND MITIGATION SITE**

**ISGS #17**

FAU 5822

Sequence #67

Rock Island County, near Milan, Illinois

**Primary Project Manager: Steven E. Benton**

**Secondary Project Manager: Kathleen E. Bryant**

**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. Wetland mitigation began with the excavation of the southern portion of the site. Tree planting began in Fall 2004 and was completed in Spring 2005.
- January 2005: A Level II hydrogeologic characterization report was submitted to IDOT (ISGS Open-File Series 2005–04).
- December 2005: The ISGS was tasked by IDOT to perform post-construction monitoring.

**WETLAND HYDROLOGY CALCULATION FOR 2010**

The area of the site that satisfied wetland hydrology criteria (Environmental Laboratory 1987) for more than 5% of the 2010 growing season was estimated to be 8.9 ha (22.0 ac) out of a total area of 8.9 ha (22.0 ac). The area that satisfied wetland hydrology criteria for more than 12.5% of the growing season was estimated to be 8.9 ha (22.0 ac). Using the 2010 Midwest Region supplement (U.S. Army Corps of Engineers 2010) to the 1987 Manual, we estimate that 8.9 ha (22.0 ac) satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

- According to the MRCC, the median date that the growing season begins at the nearby Quad City International Airport weather station in 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. According to methods outlined in the 2010 Midwest Region supplement, we estimate that March 18 was the starting date of the 2010 growing season based on soil temperatures observed at the wetland mitigation site.
- Total precipitation during the monitoring period as recorded at the Quad City International Airport weather station in Moline, Illinois, was 121% of normal and precipitation in Spring 2010 (March through May) was 109% of normal.
- In 2010, all the monitoring wells satisfied wetland hydrology criteria for more than 5% of the growing season and for more than 12.5% of the growing season. All of the wells satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season as per the 2010 Midwest Region supplement.
- There was an overall increase in surface-water elevation from March to July, likely due to continuing beaver activity.

- Surface-water elevations measured at SW1R were at or above 172.30 m (565.31 ft) from June 19 to July 2 (14 days), long enough to satisfy wetland hydrology criteria for 5% of the growing season. Surface-water elevation was at or above 172.28 m (565.25 ft) from June 18 to July 21 (34 days), long enough to satisfy wetland hydrology criteria for 12.5% of the growing season. Surface-water elevations measured at SW1R were at or above 172.30 m (565.31 ft) from June 19 to July 2 (14 days), long enough to satisfy wetland hydrology criteria for 14 or more consecutive days during the growing season as per the 2010 Midwest Region supplement.
- Gauges H and I, and logger SW1, were moved south in April because the increasing water depth made accessing them difficult. They are in the same water body as at their original locations, therefore, they were designated HR, IR, and SW1R. The data collected at the new locations show that water depth continued to increase after they were moved.
- On-site observations and surface-water data indicate that the surface water on the site is one continuous water body. The greatest extent of inundation (8.1 ha [20.0 ac]) occurred from June to August when surface-water elevation was at or above an elevation of 172.23 m (565.08 ft).

#### ADDITIONAL INFORMATION

- The ISGS has now completed 5 years of post-construction monitoring.

#### PLANNED FUTURE ACTIVITIES

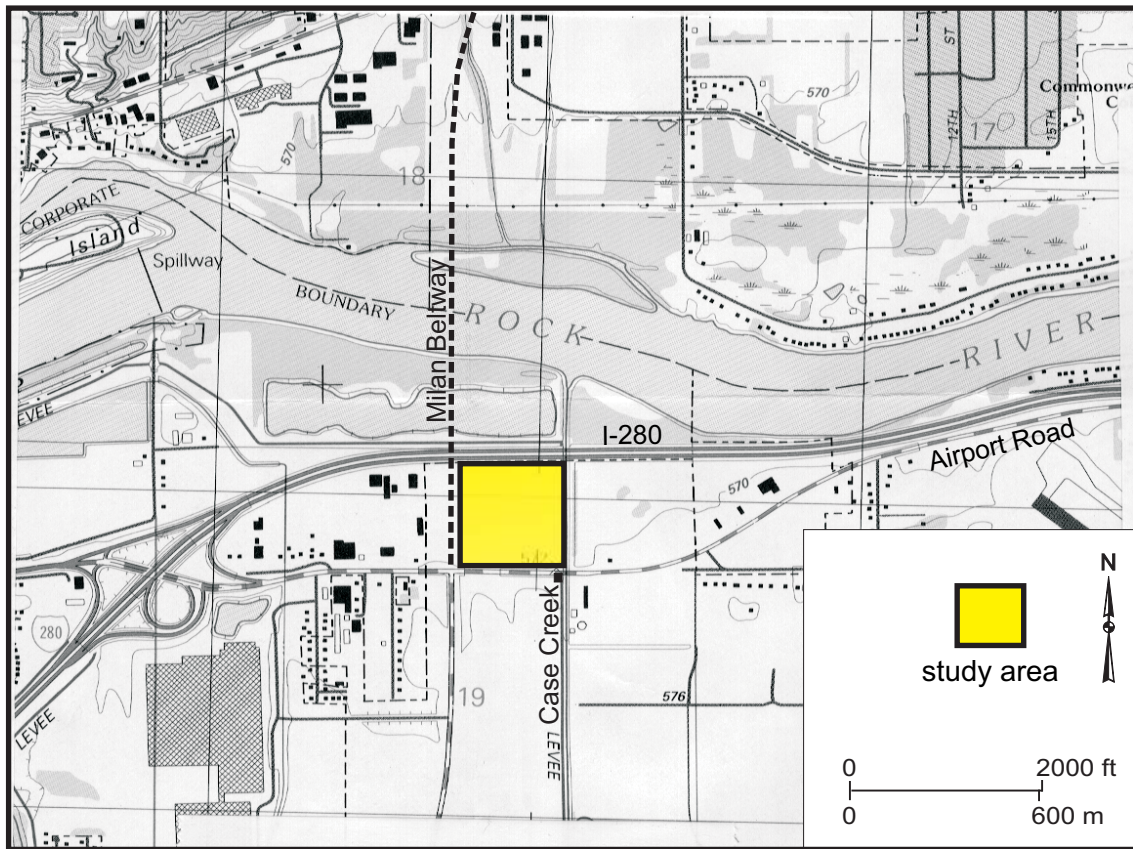
- Monitoring of the site will continue until notified otherwise by IDOT.



# Milan Beltway, Airport Road Wetland Mitigation 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

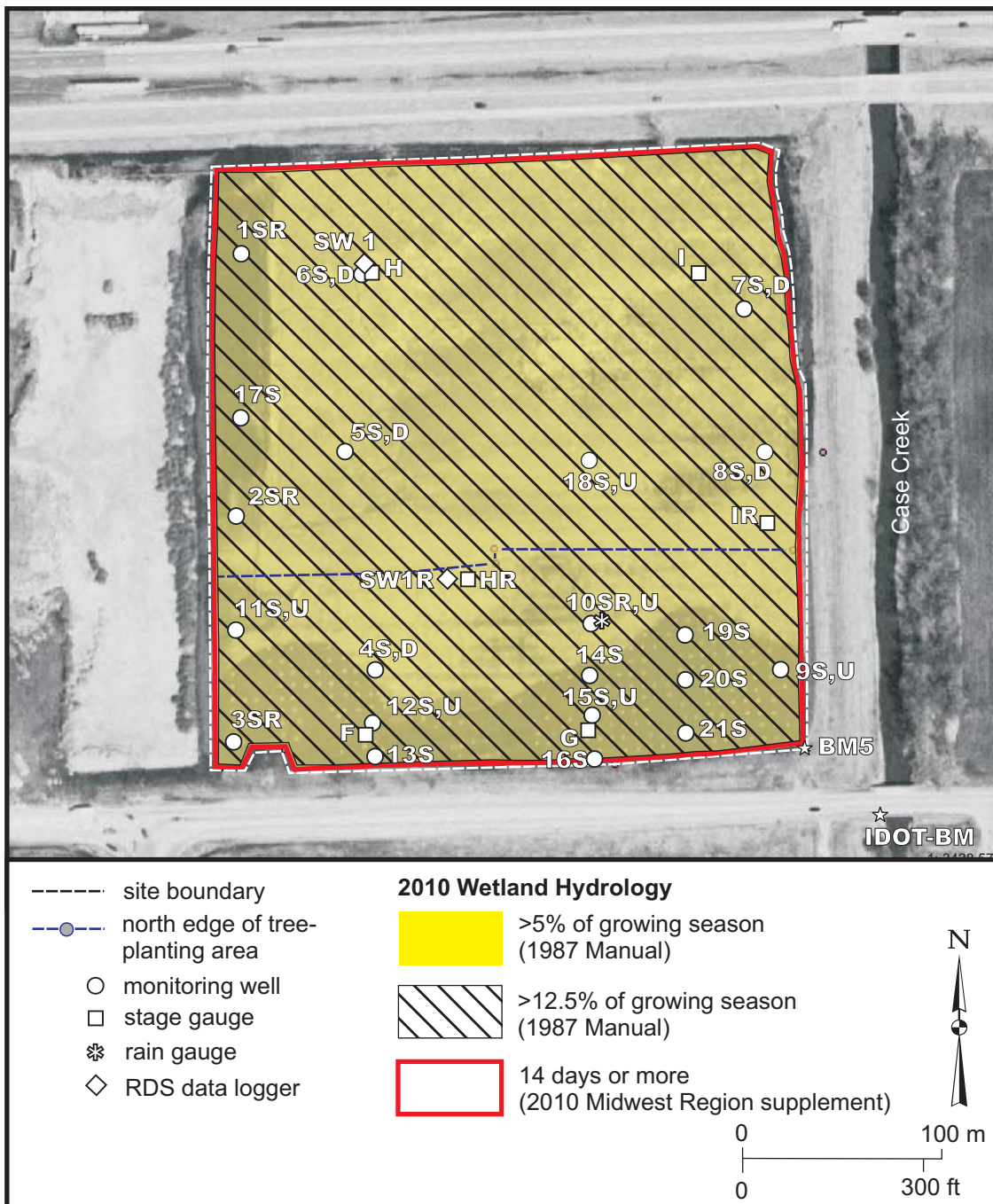


# Milan Beltway, Airport Road Wetland Mitigation Site (FAU 5822)

## Estimated Areal Extent of 2010 Wetland Hydrology

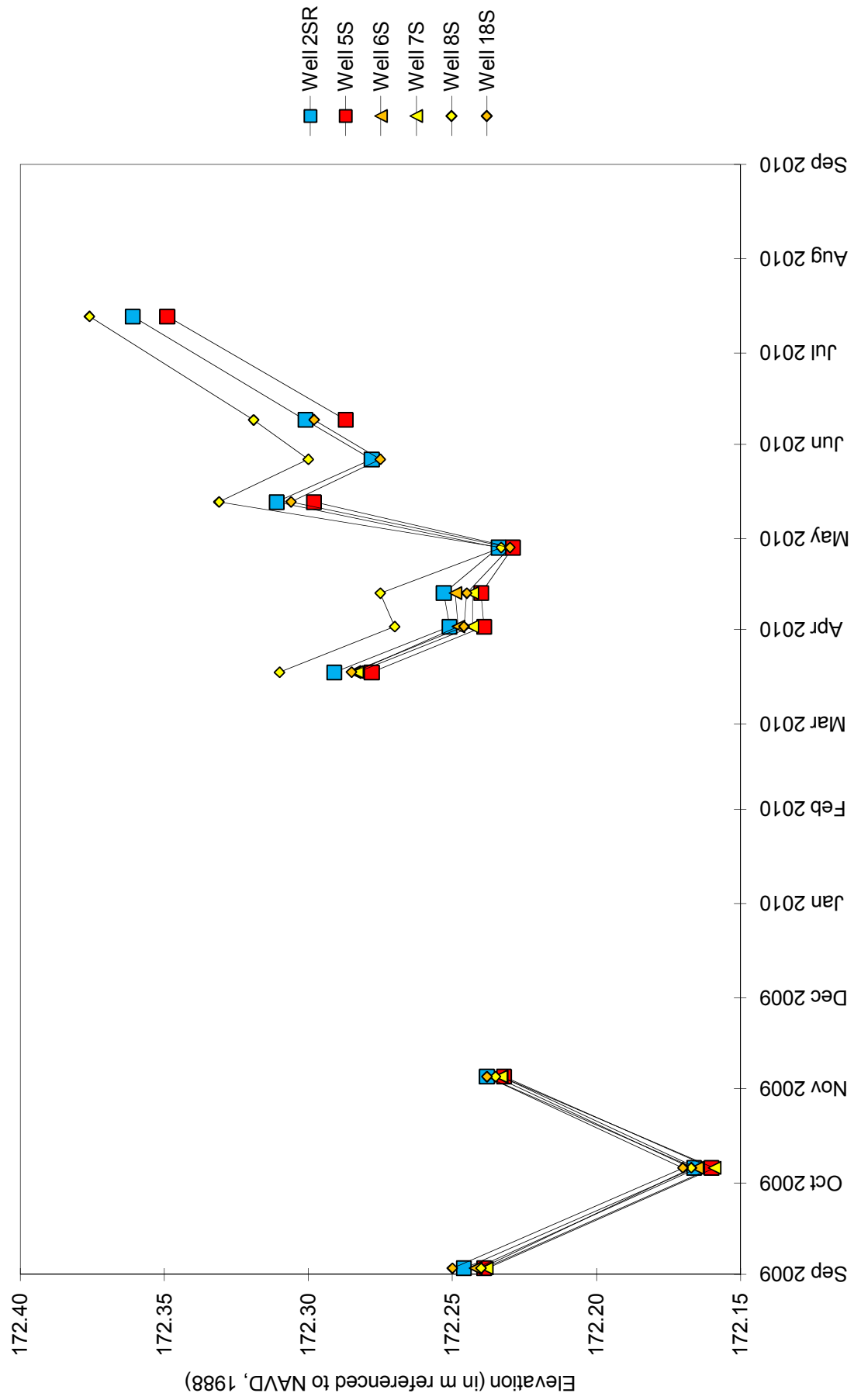
September 1, 2009 through August 31, 2010

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



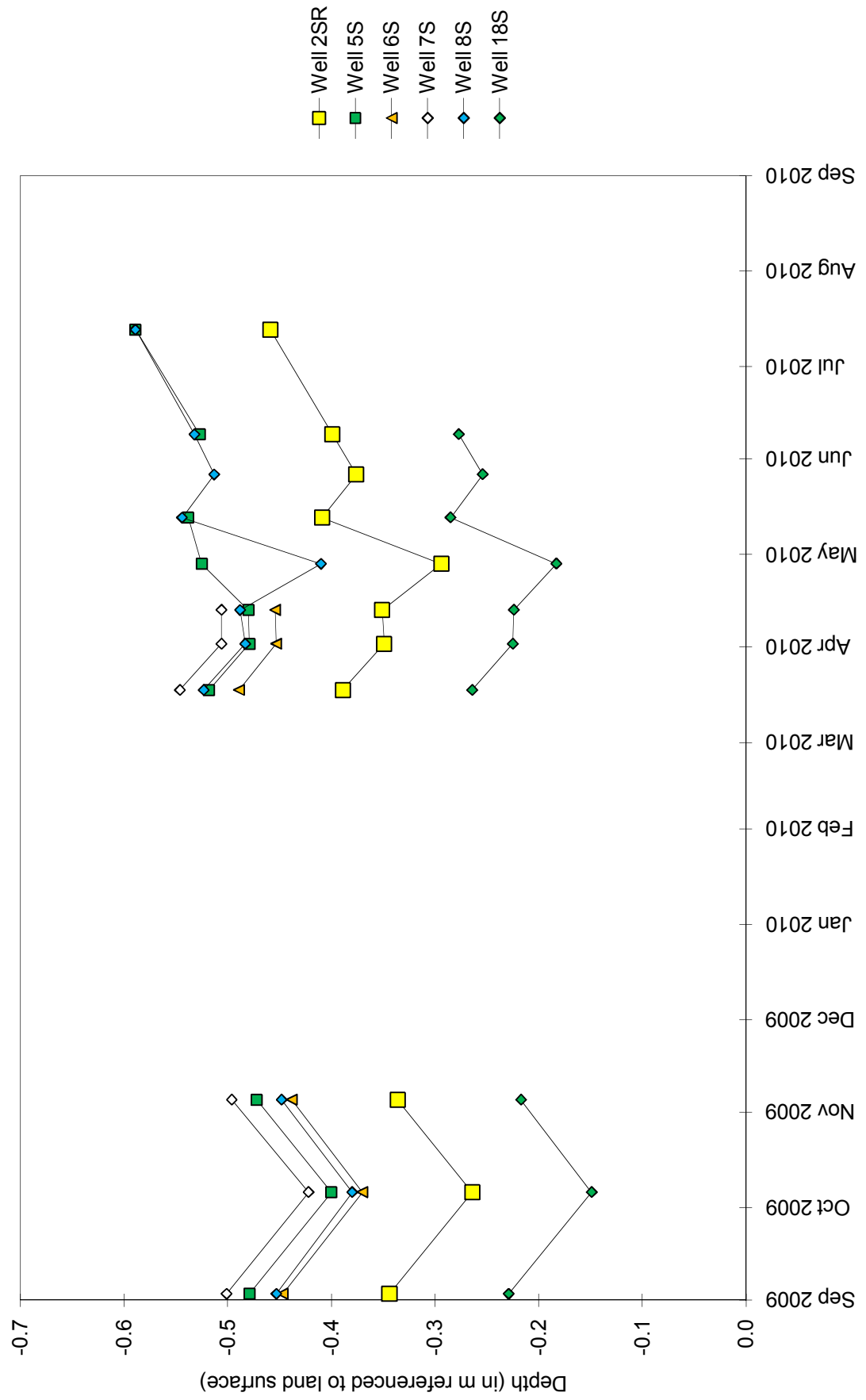
# **Milan Beltway, Airport Road Wetland Mitigation Site** **September 1, 2009 through August 31, 2010**

## **Water-Level Elevations in Soil-Zone Monitoring Wells in the Northern Portion of the Site**



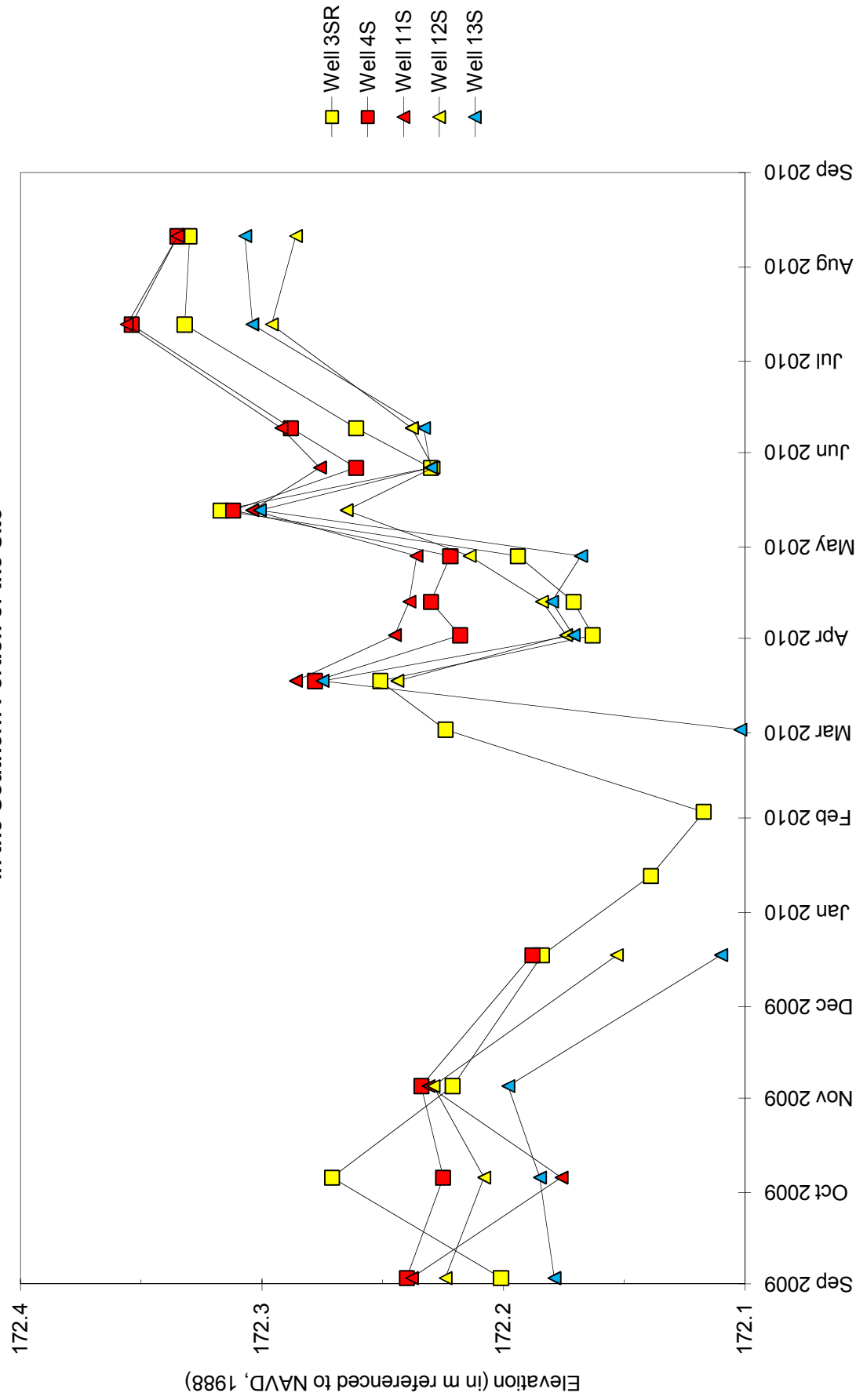
# **Milan Beltway, Airport Road Wetland Mitigation Site** **September 1, 2009 through August 31, 2010**

Depth to Water in Soil-Zone Monitoring Wells  
in the Northern Portion of the Site



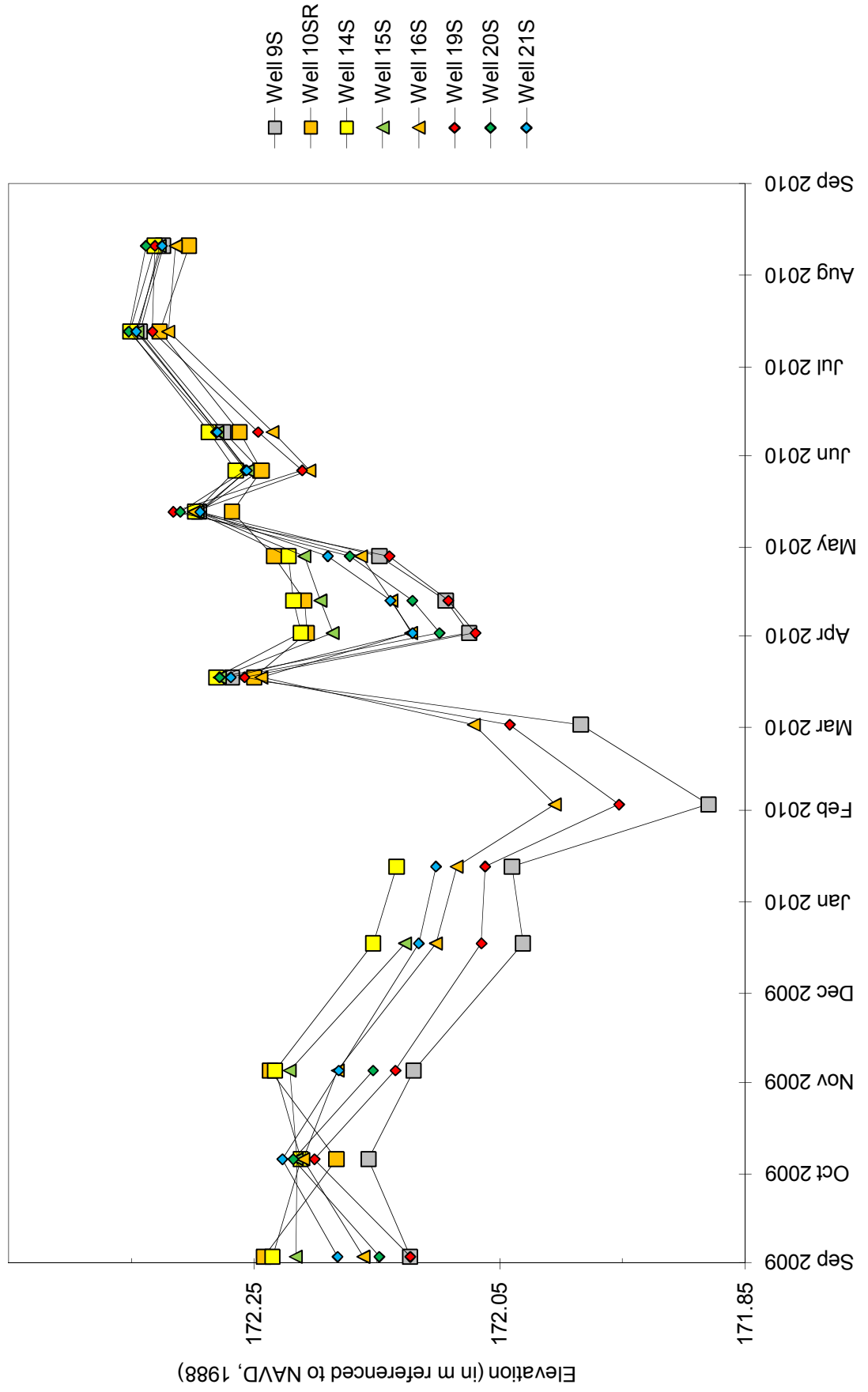
# **Milan Beltway, Airport Road Wetland Mitigation Site** **September 1, 2009 through August 31, 2010**

## **Water-Level Elevations in Soil-Zone Monitoring Wells in the Southern Portion of the Site**



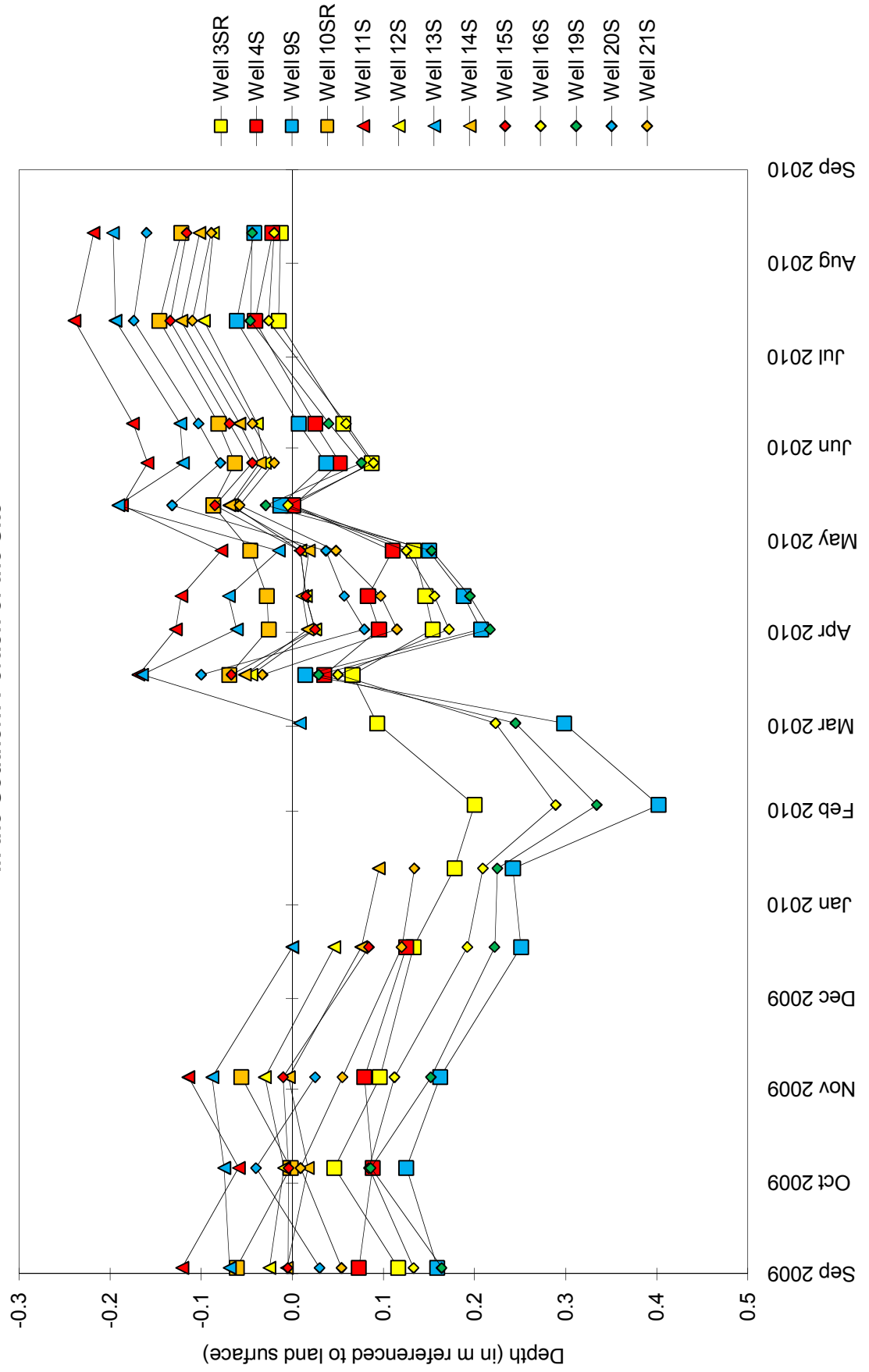
# **Milan Beltway, Airport Road Wetland Mitigation Site** **September 1, 2009 through August 31, 2010**

## **Water-Level Elevations in Soil-Zone Monitoring Wells in the Southern Portion of the Site**



# **Milan Beltway, Airport Road Wetland Mitigation Site** **September 1, 2009 through August 31, 2010**

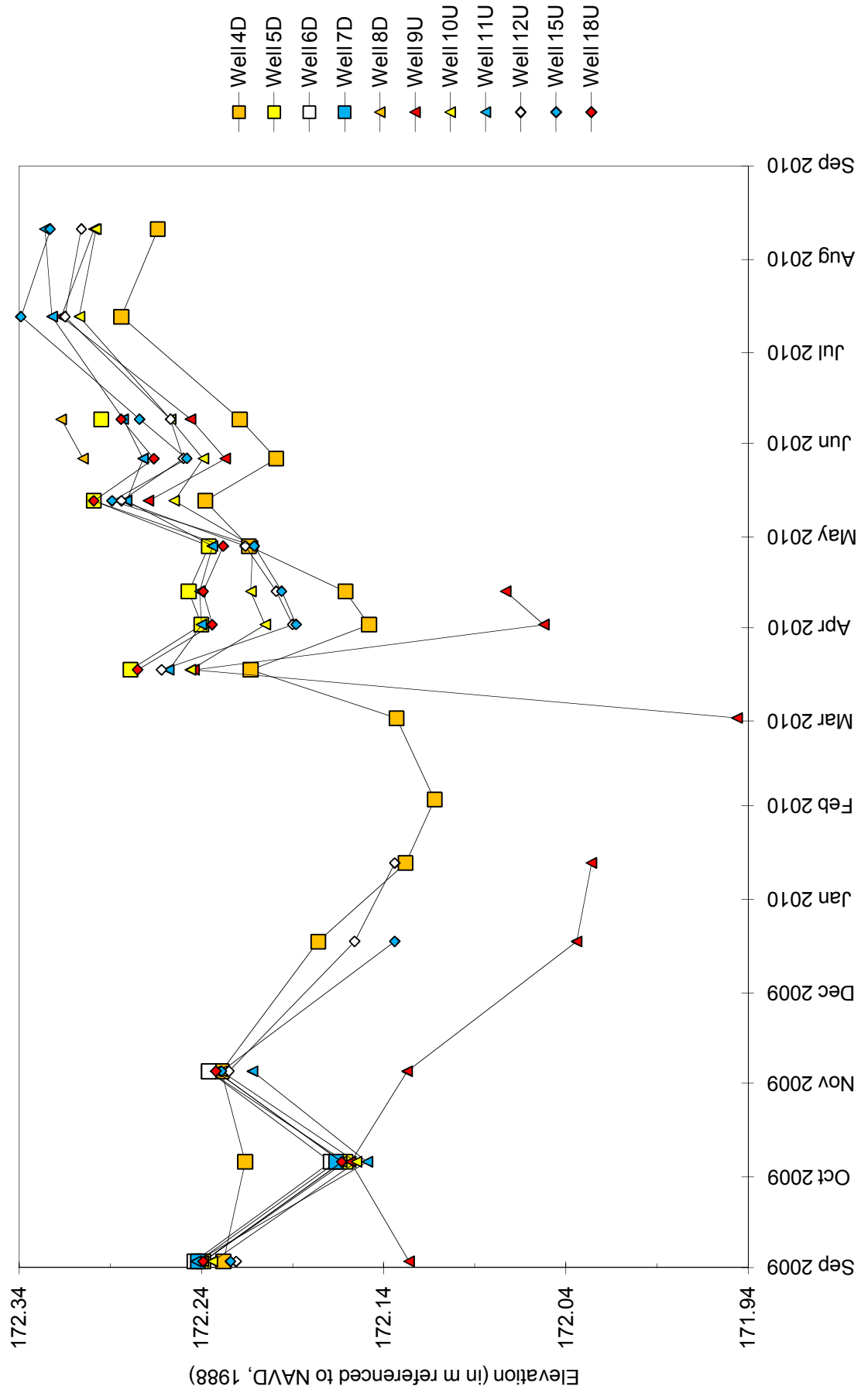
Depth to Water in Soil-Zone Monitoring Wells  
in the Southern Portion of the Site





# **Milan Beltway, Airport Road Wetland Mitigation Site** **September 1, 2009 through August 31, 2010**

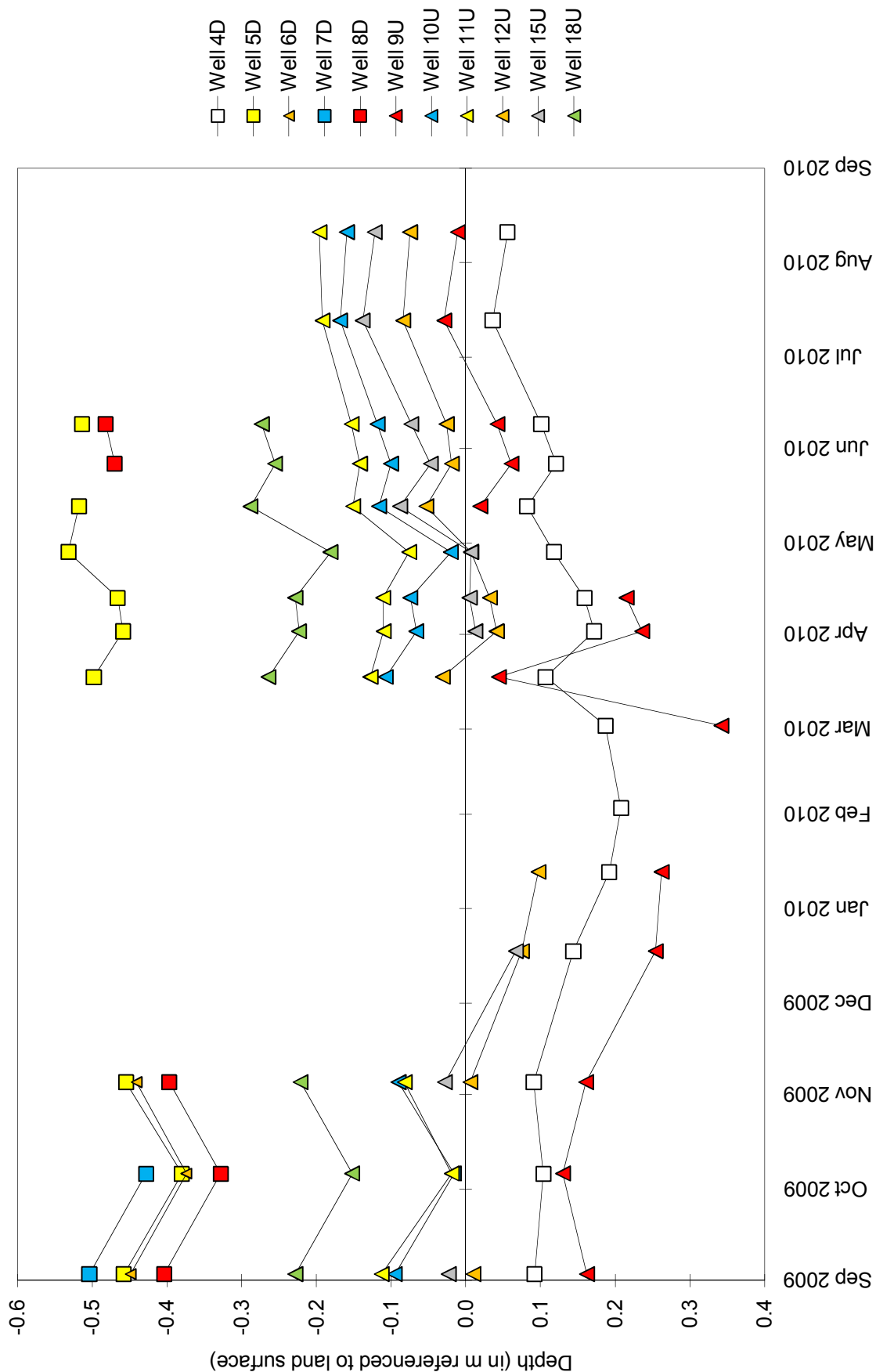
**Water-Level Elevations in Deeper Monitoring Wells**





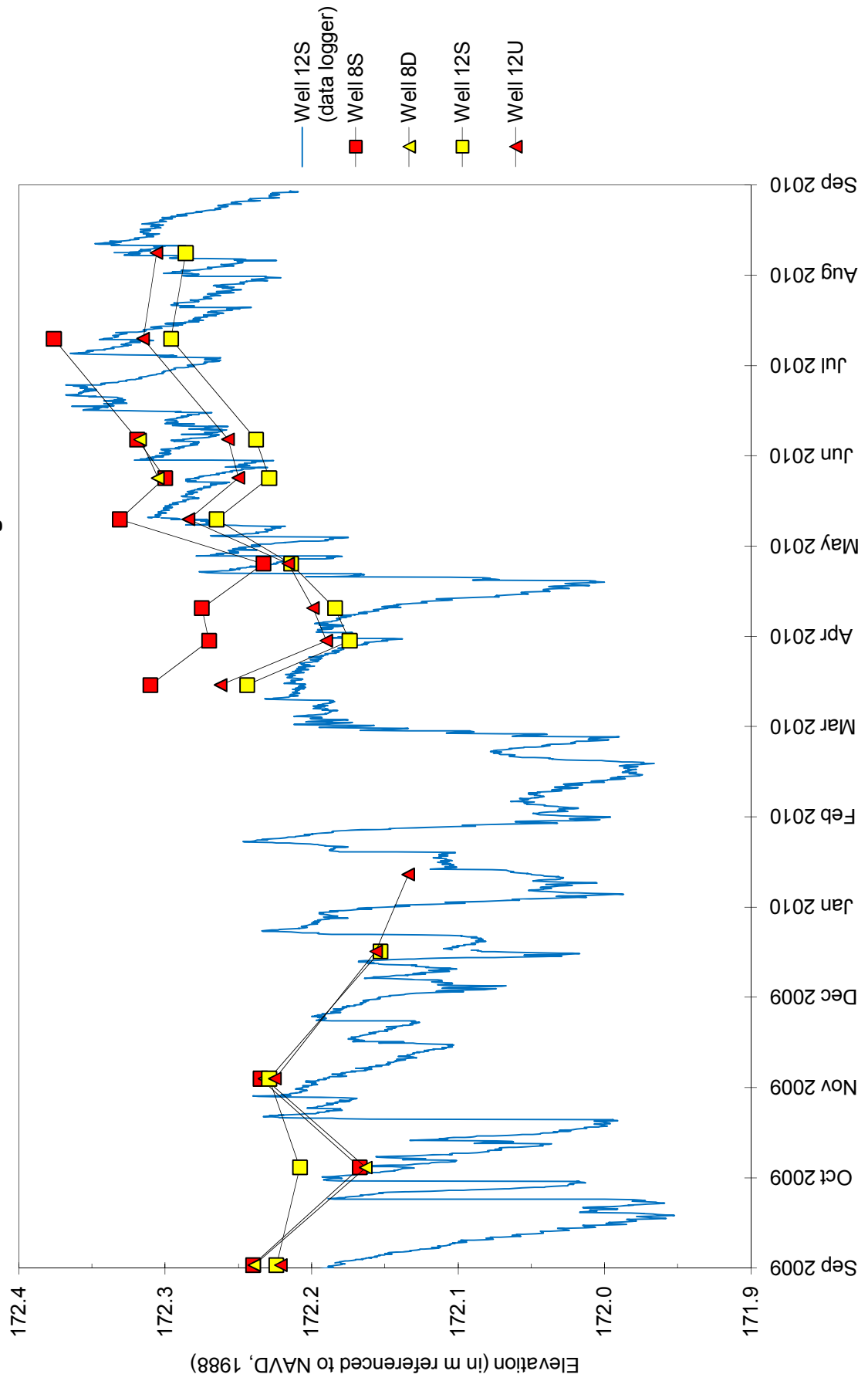
# **Milan Beltway, Airport Road Wetland Mitigation Site** September 1, 2009 through August 31, 2010

**Depth to Water in Deeper Monitoring Wells**

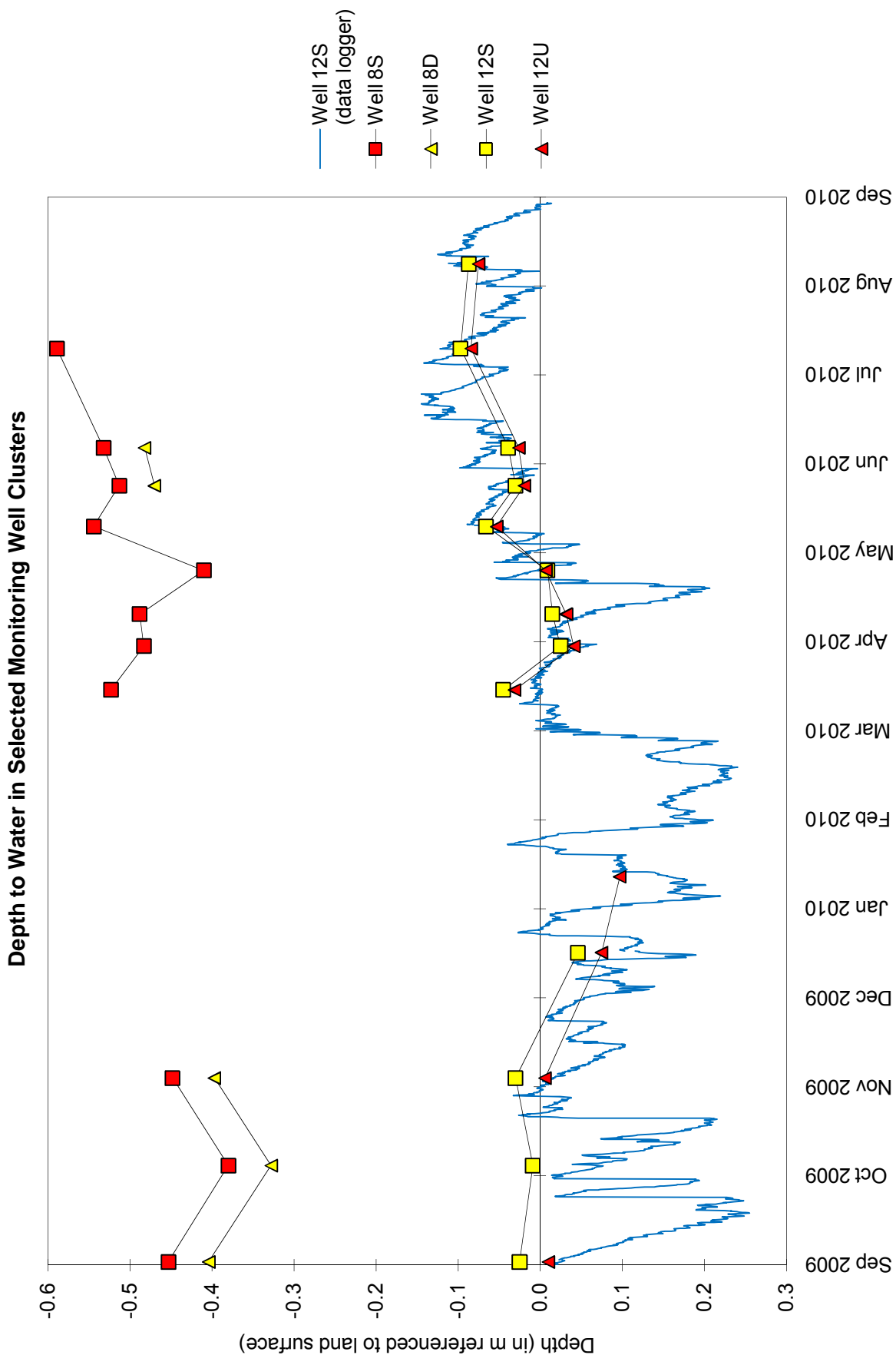


# **Milan Beltway, Airport Road Wetland Mitigation Site** **September 1, 2009 through August 31, 2010**

**Water-Level Elevations in Selected Monitoring Well Clusters**

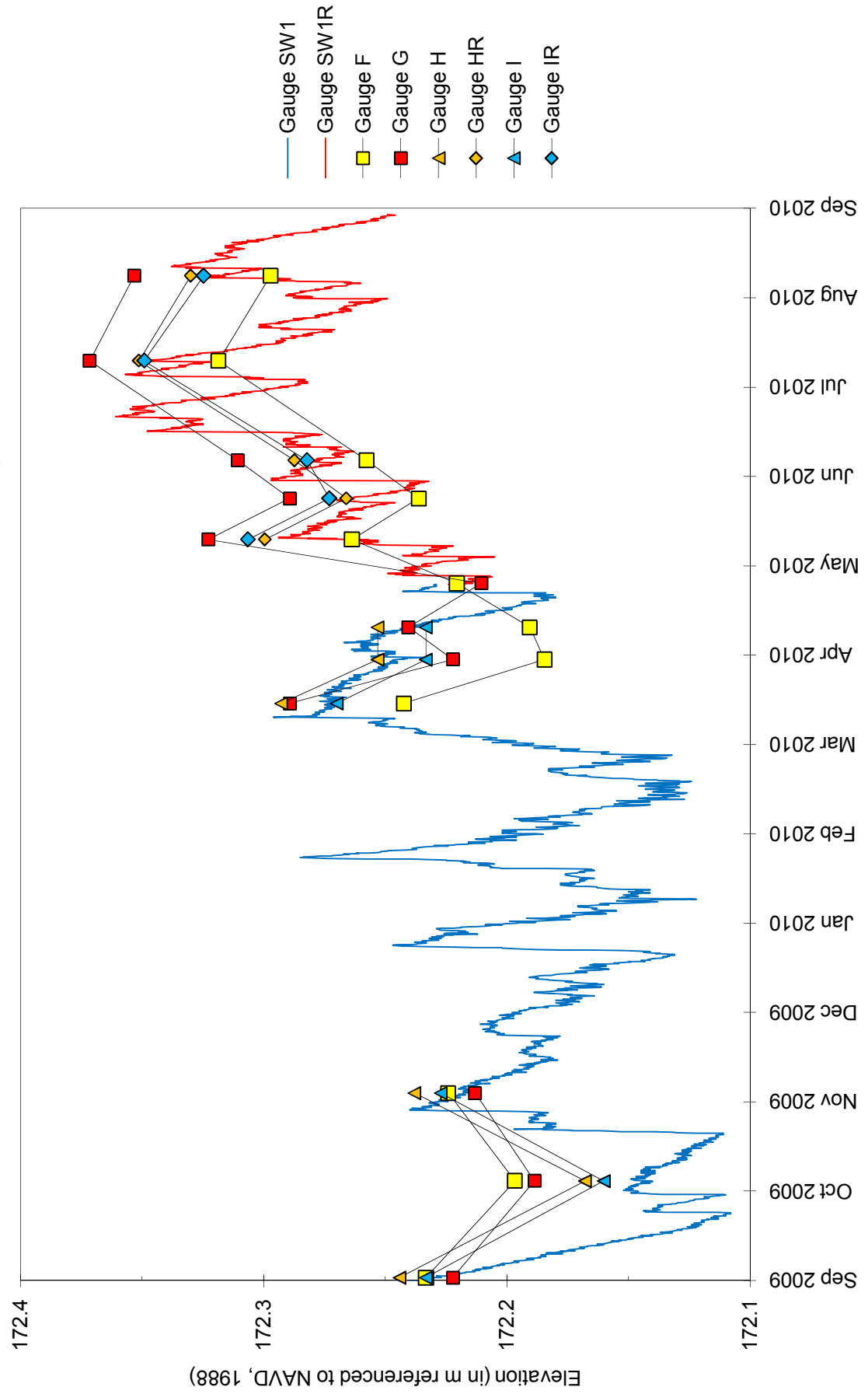


# **Milan Beltway, Airport Road Wetland Mitigation Site** September 1, 2009 through August 31, 2010

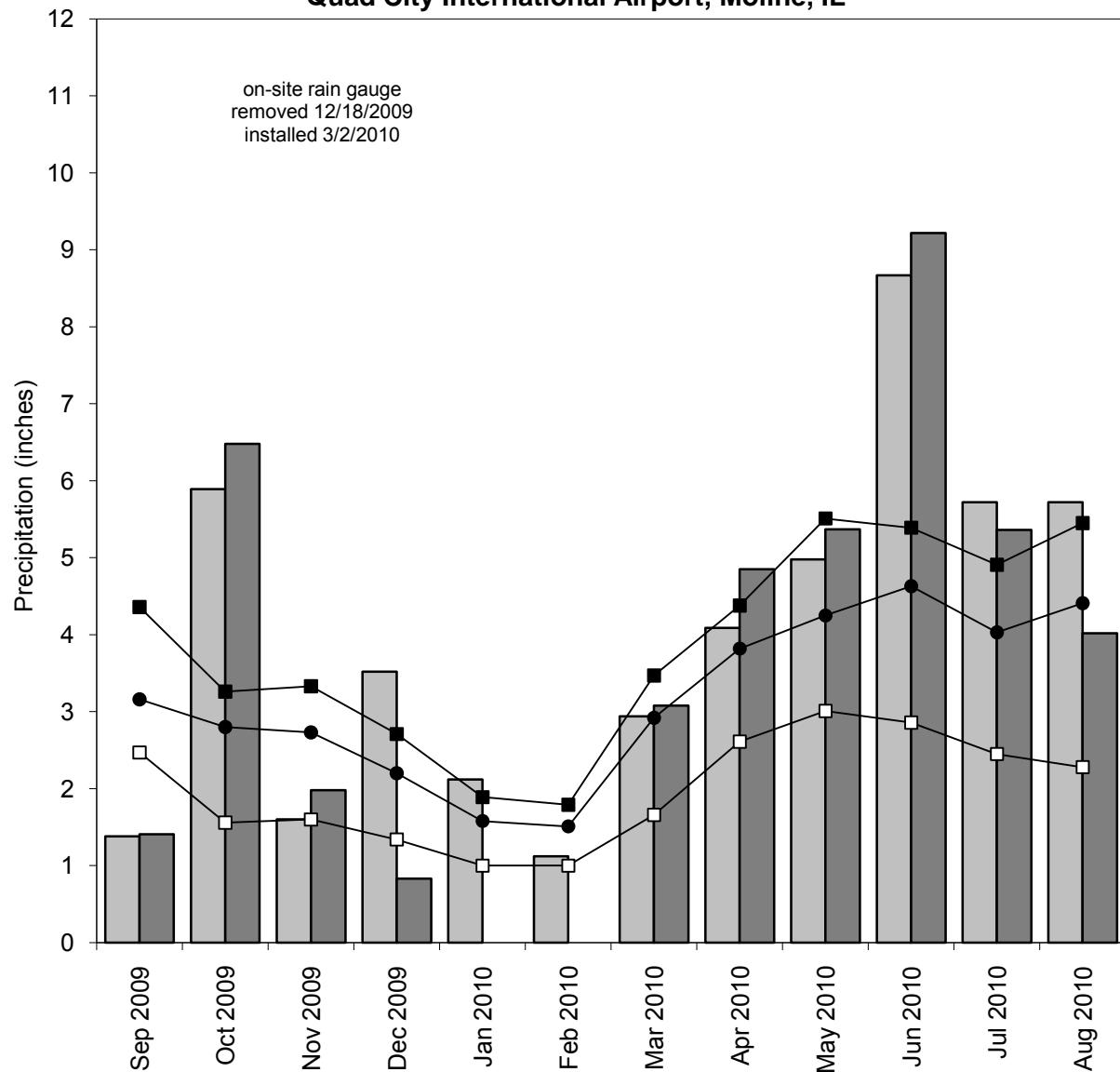


# **Milan Beltway, Airport Road Wetland Mitigation Site** **September 1, 2009 through August 31, 2010**

**Water-Level Elevations at Surface-Water Gauges**



**Milan Beltway, Airport Road  
Wetland Mitigation Site  
September 2009 through August 2010  
Total Monthly Precipitation Recorded on Site and at the  
Quad City International Airport, Moline, IL**



- monthly precipitation recorded at Moline, IL (MRCC)
- monthly precipitation recorded on site by ISGS
- 1971-2000 monthly 30% above average threshold at Moline, IL (NWCC)
- 1971-2000 monthly average precipitation at Moline, IL (NWCC)
- 1971-2000 monthly 30% below average threshold at Moline, IL (NWCC)

Graph last updated September 29, 2010

**HANCOCK COUNTY NEAR CARTHAGE  
WETLAND MITIGATION SITE**

**ISGS #42**

US 136

FAP 315 & FAP 10

Sequence #235

Hancock County, near Carthage, Illinois

**Primary Project Manager: Steven E. Benton**

**Secondary Project Manager: Kathleen E. Bryant**

**SITE HISTORY**

- March 1997: The ISGS was tasked by IDOT to monitor the site.
- August 2004: A Level II hydrogeologic characterization report was submitted to IDOT (ISGS Open-File Series 2004–13).
- July 2006: Wetland and highway construction began.
- November 2006: The ISGS was tasked by IDOT to perform post-construction monitoring.
- July 2007: Tree planting was completed.

**WETLAND HYDROLOGY CALCULATION FOR 2010**

The area of the site that satisfied wetland hydrology criteria (Environmental Laboratory 1987) in 2010 for more than 5% of the growing season was estimated to be 15.1 ha (37.4 ac) out of an area of 18.7 ha (46.1 ac). The area of the site that satisfied wetland hydrology criteria for more than 12.5% of the growing season was estimated to be 14.2 ha (35.0 ac). Using the 2010 Midwest Region supplement (U.S. Army Corps of Engineers 2010) to the 1987 Manual, we estimate that 15.0 ha (37.2 ac) satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

- According to the MRCC, the median date that the growing season begins at the La Harpe, Illinois, weather station 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. According to methods outlined in the 2010 Midwest Region supplement, we estimate that March 17 was the starting date of the 2010 growing season based on soil temperatures observed at the wetland mitigation site.
- Total precipitation recorded at Bentley, Illinois weather station during the monitoring period was 173% of normal and during Spring 2010 (March through May) it was 147% of normal. On-site precipitation in the spring was 151% of normal and the largest areas of jurisdictional wetland hydrology for all three criteria occurred during this period.
- In 2010, water levels measured in all of the soil-zone monitoring wells except 19SR, 20S, 21S, and 37S satisfied wetland hydrology criteria for more than 5% of the growing season. Water levels measured in all of the soil-zone monitoring wells except 7S, 11S, 19SR, 20S, 21S, 30S, 33S, and 37S satisfied wetland hydrology criteria for more than 12.5% of the growing season. Water levels measured in all of the soil-zone monitoring wells except 19SR, 20S, 21S, 30S, and 37S satisfied wetland hydrology criteria for 14 or

more consecutive days during the growing season as per the 2010 Midwest Region supplement.

- Surface-water elevations recorded at the gauge B data logger reveal that areas of the site at and below 165.68 m (543.60 ft) were inundated long enough to satisfy wetland hydrology criteria for more than 5% of the growing season, and that areas at and below 165.69 m (543.30 ft) were inundated long enough to satisfy wetland hydrology criteria for more than 12.5% of the growing season. Areas of the site at and below an elevation of 165.64 m (543.46 ft) were inundated for 14 or more consecutive days during the growing season as per the 2010 Midwest Region supplement.
- Surface-water elevations recorded at the gauge E data logger reveal that areas adjacent to the drainage ditch at and below 165.58 m (543.27 ft) were inundated long enough to satisfy wetland hydrology criteria for more than 5% of the growing season, and areas at and below 165.49 m (542.97 ft) were inundated long enough to satisfy wetland hydrology criteria for more than 12.5% of the growing season. Areas at and below 165.58 m (543.27 ft) were inundated for 14 or more consecutive days during the growing season per the 2010 Midwest Region supplement.

#### ADDITIONAL INFORMATION

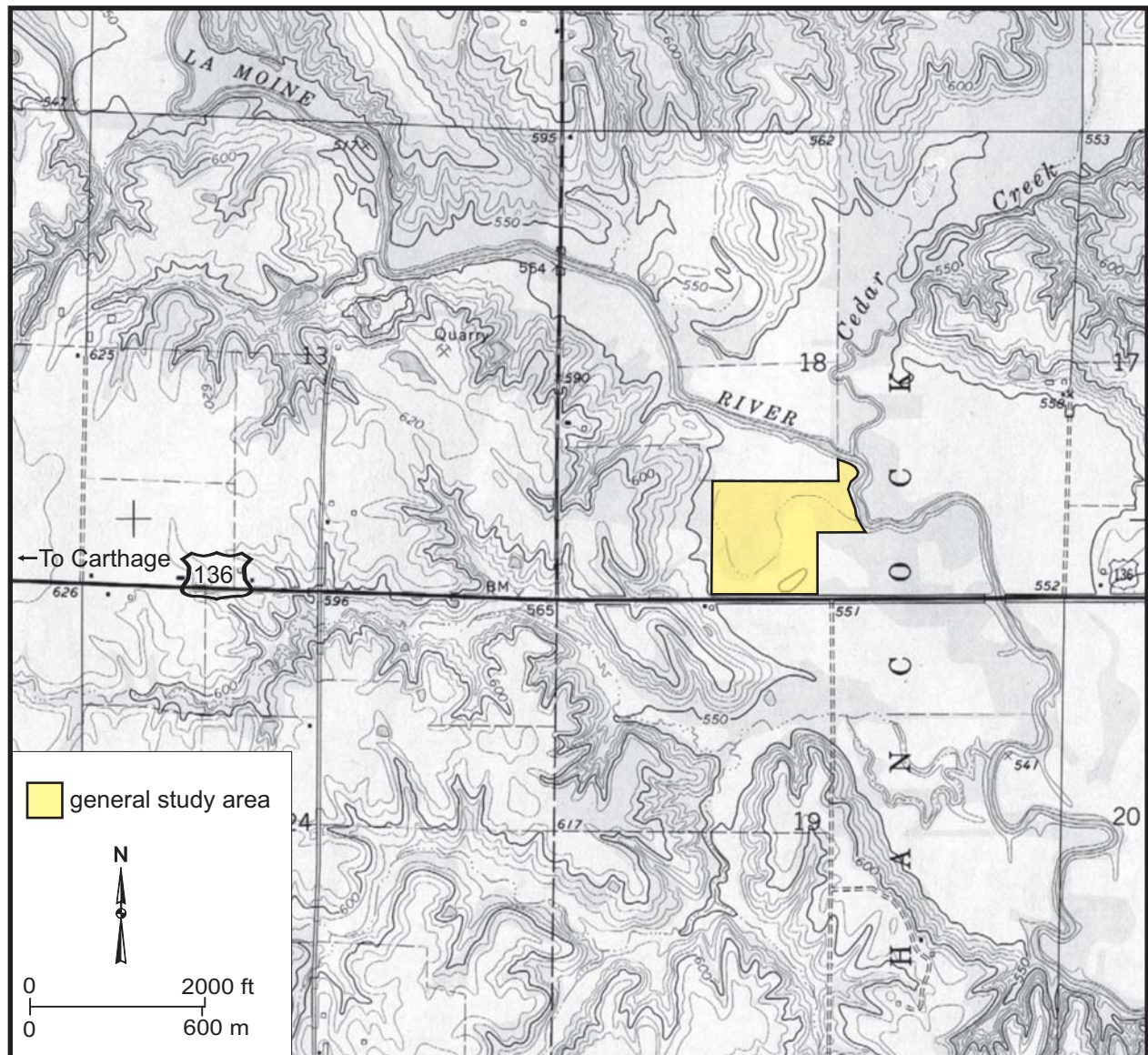
- Evidence of flooding on the site was observed as far west as monitoring wells 11S and 16S on May 24 and again on July 12, indicating that up to 90% of the site was inundated. The U.S. Geological Survey gauge at Colmar, Illinois, recorded a flood event in May that began on May 13 and ended on May 20, and a flood event in July that began on July 8 and ended on July 10. Peak stage for the May event was 7.15 m (23.46 ft) at 1:00 on May 15 which was 1.05 m (3.46 ft) above flood stage. Peak stage for the July event was 6.49 m (21.31 ft) at 15:00 on July 8 which was 0.40 m (1.31 ft) above flood stage.

#### PLANNED FUTURE ACTIVITIES

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

**Hancock County near Carthage**  
**Wetland Mitigation 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





## Wetland and Nonwetland Site Areas

Map based on USGS digital orthophotograph, Carthage East SE quarter quadrangle produced from 2005 aerial photography (ISGS 2005)

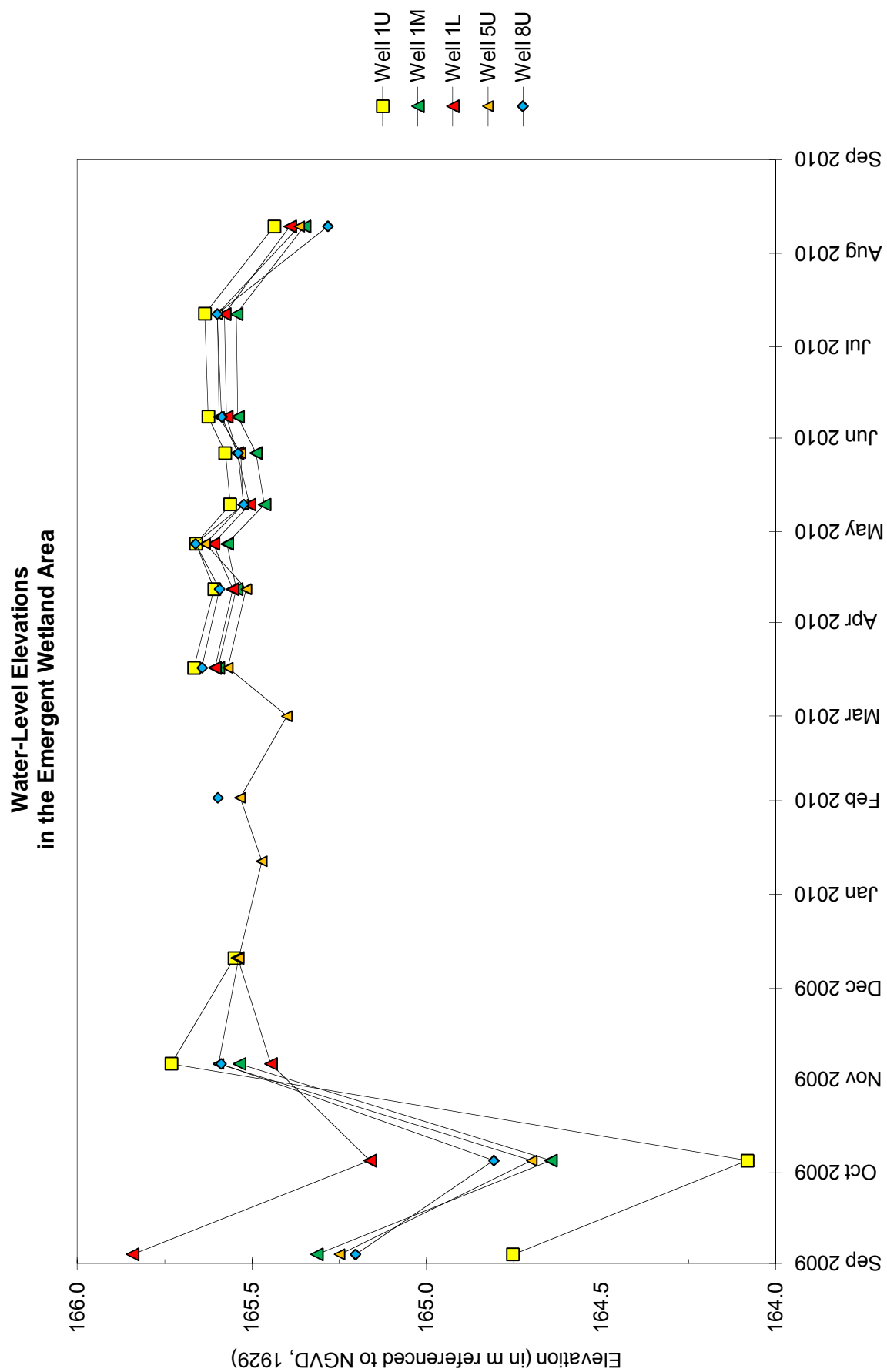


## Estimated Areal Extent of 2010 Wetland Hydrology

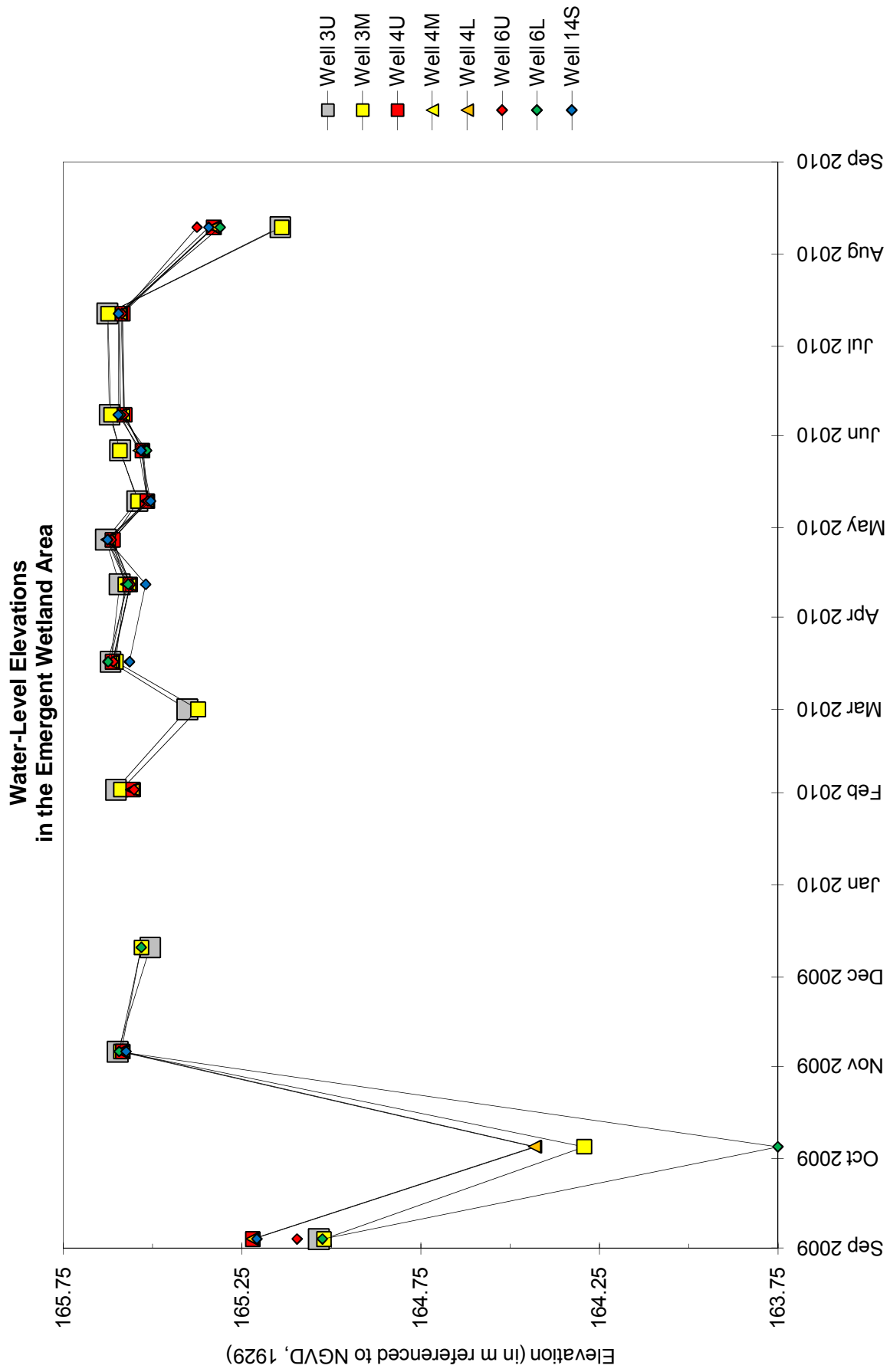
Map based on USGS digital orthophotograph, Carthage East SE quarter quadrangle produced from 2005 aerial photography (ISGS 2005)



# Hancock County near Carthage Wetland Mitigation Site September 1, 2009 through August 31, 2010

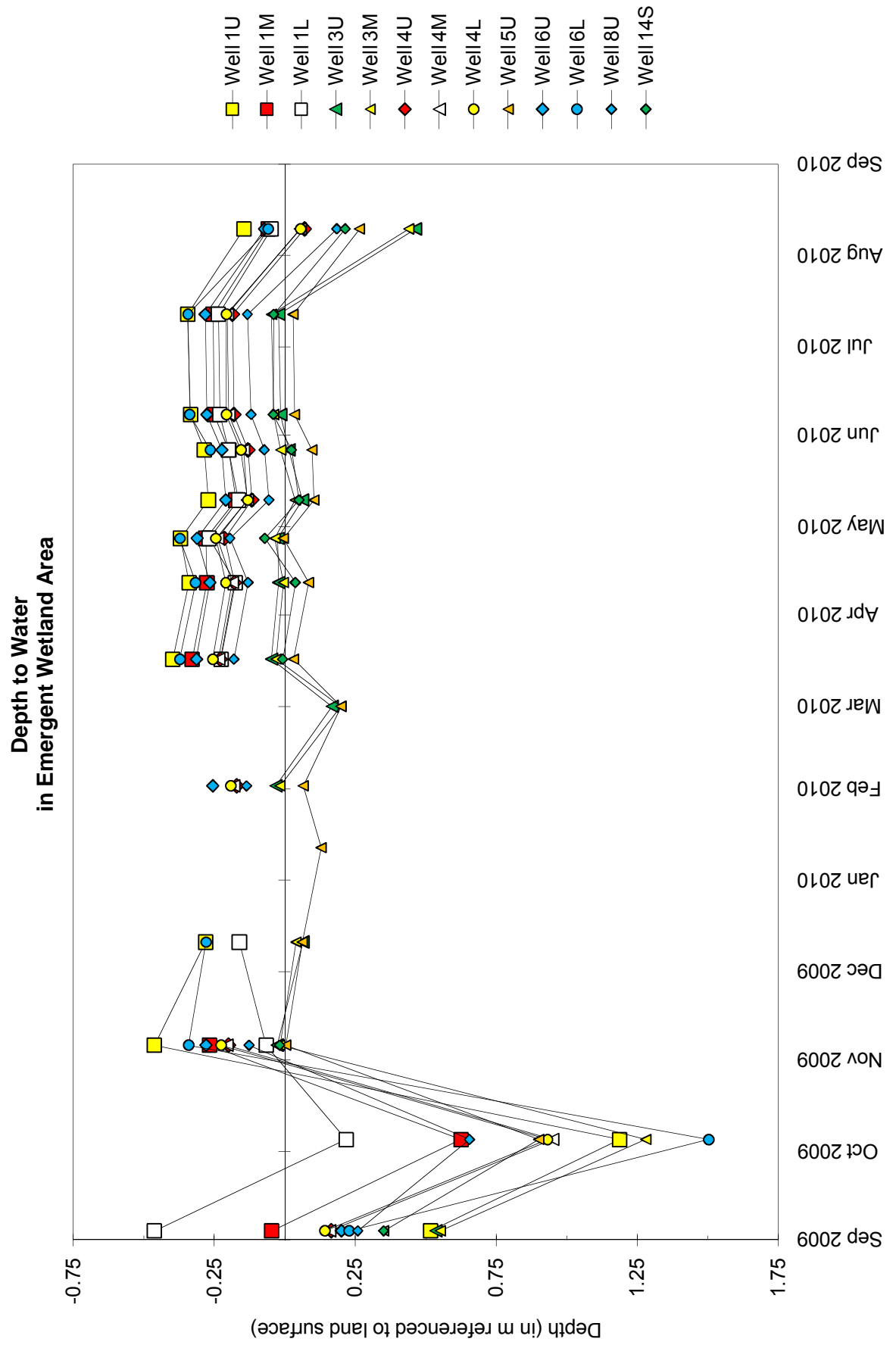


# Hancock County near Carthage Wetland Mitigation Site September 1, 2009 through August 31, 2010



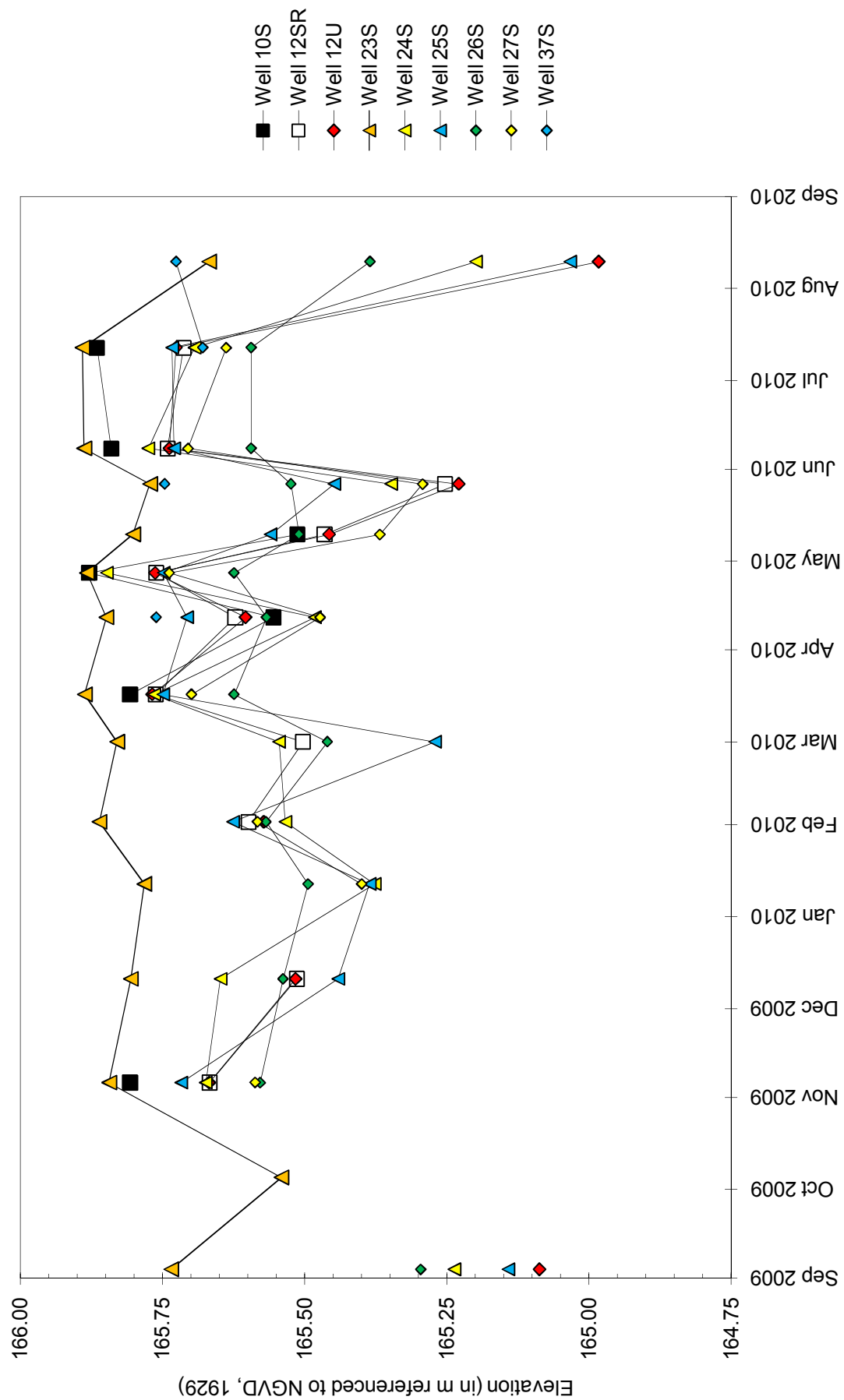


# Hancock County near Carthage Wetland Mitigation Site September 1, 2009 through August 31, 2010

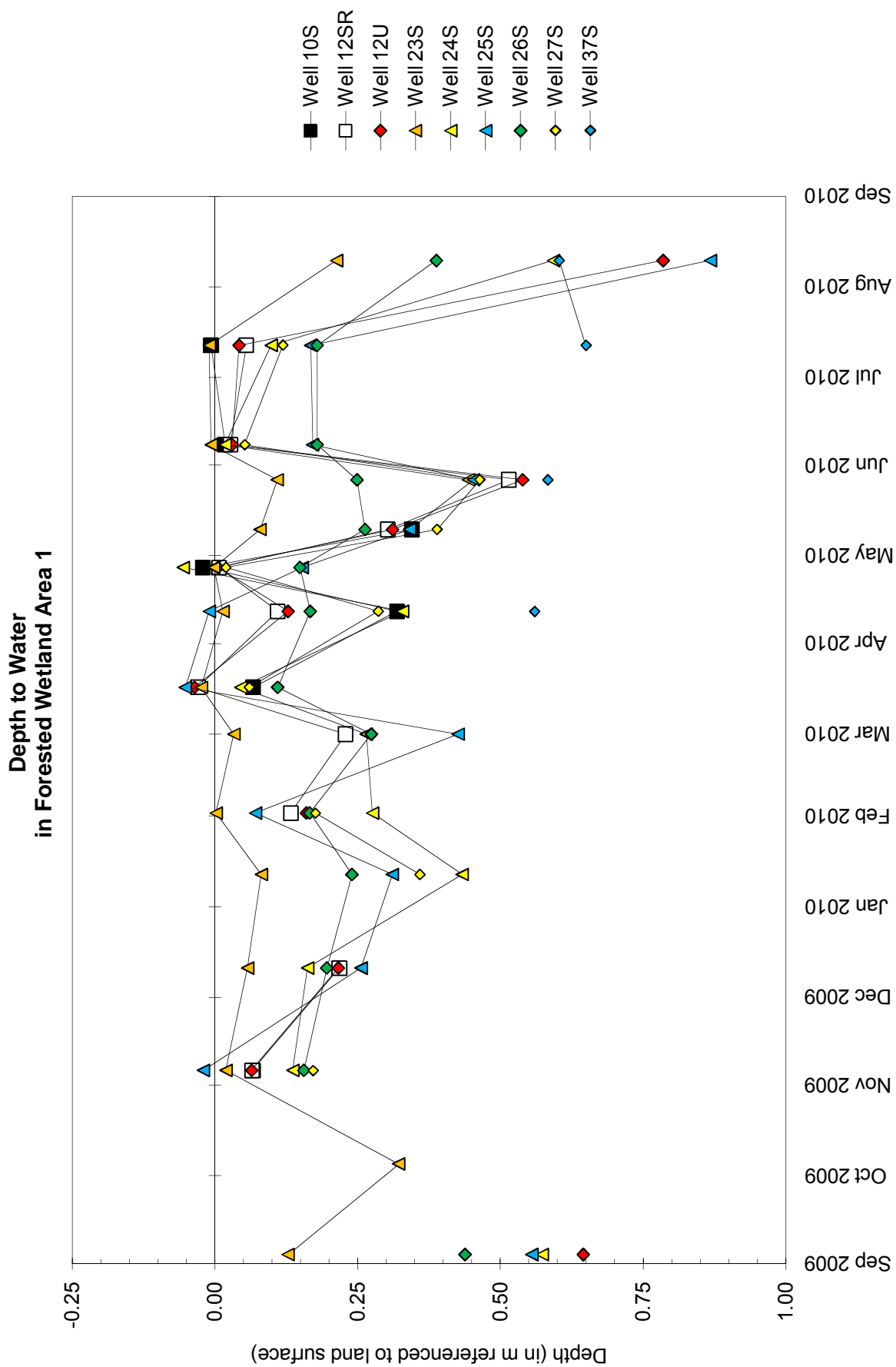


# Hancock County near Carthage Wetland Mitigation Site September 1, 2009 through August 31, 2010

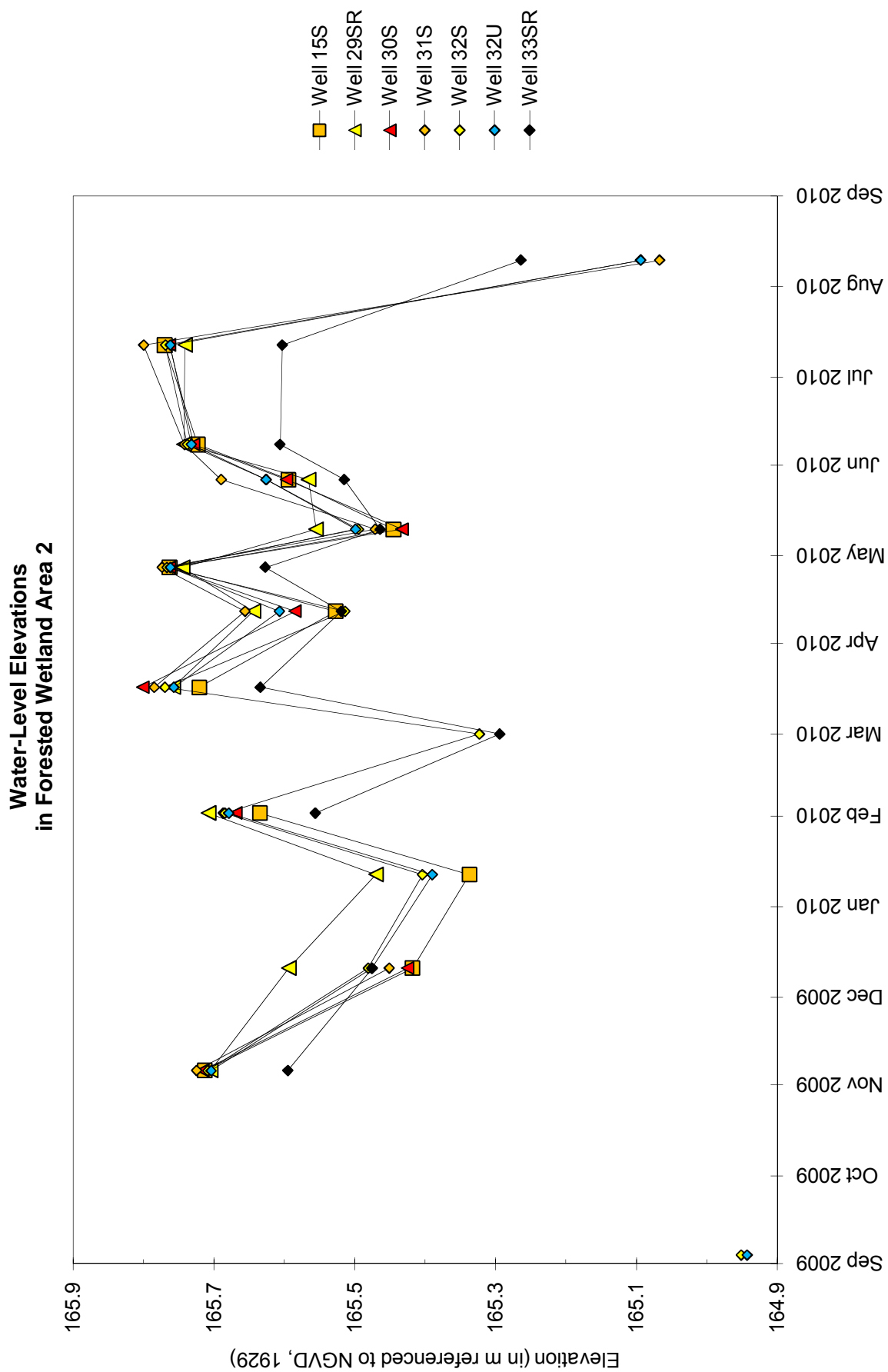
## Water-Level Elevations in Forested Wetland Area 1



# Hancock County near Carthage Wetland Mitigation Site September 1, 2009 through August 31, 2010

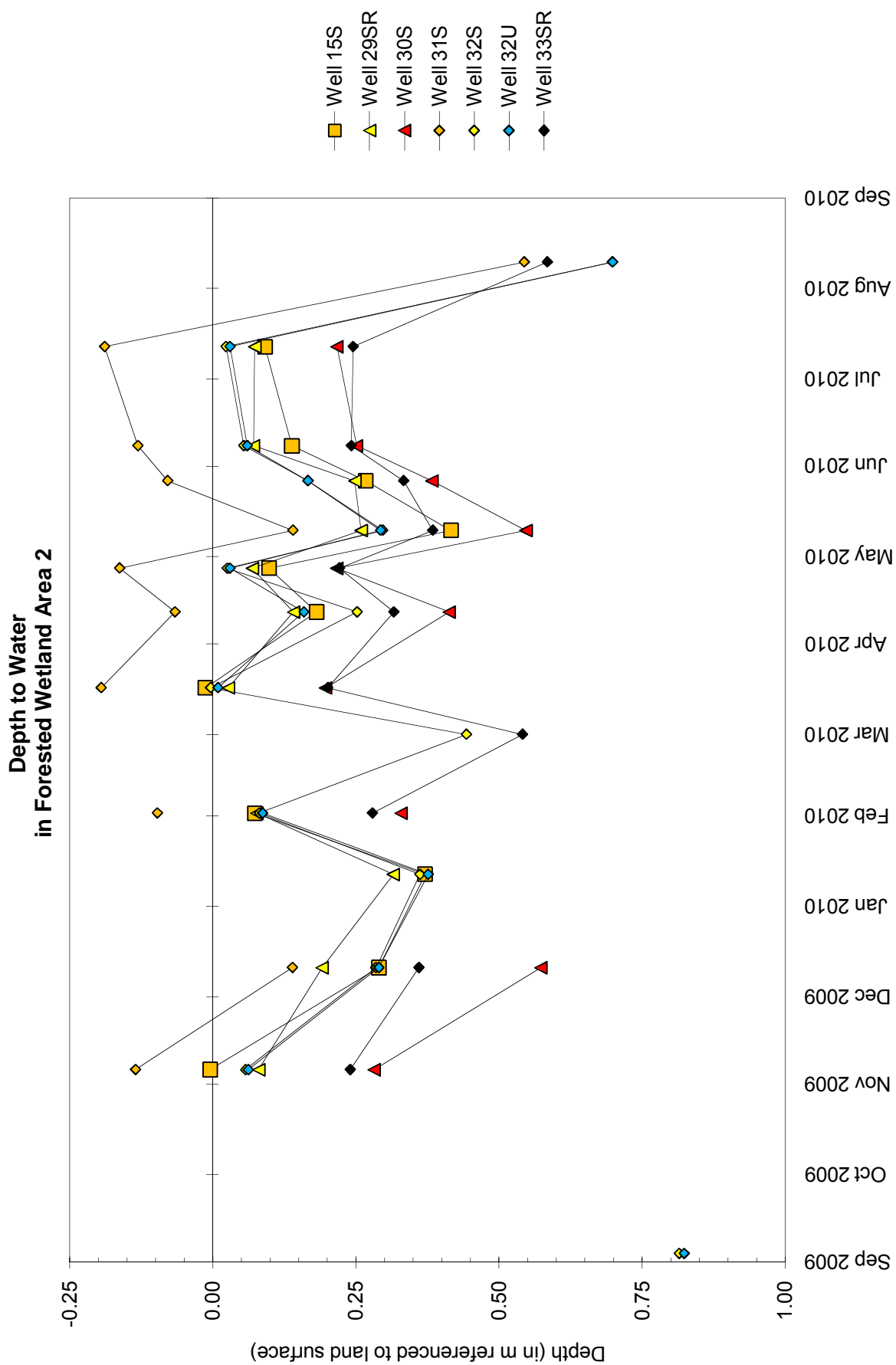


# Hancock County near Carthage Wetland Mitigation Site September 1, 2009 through August 31, 2010

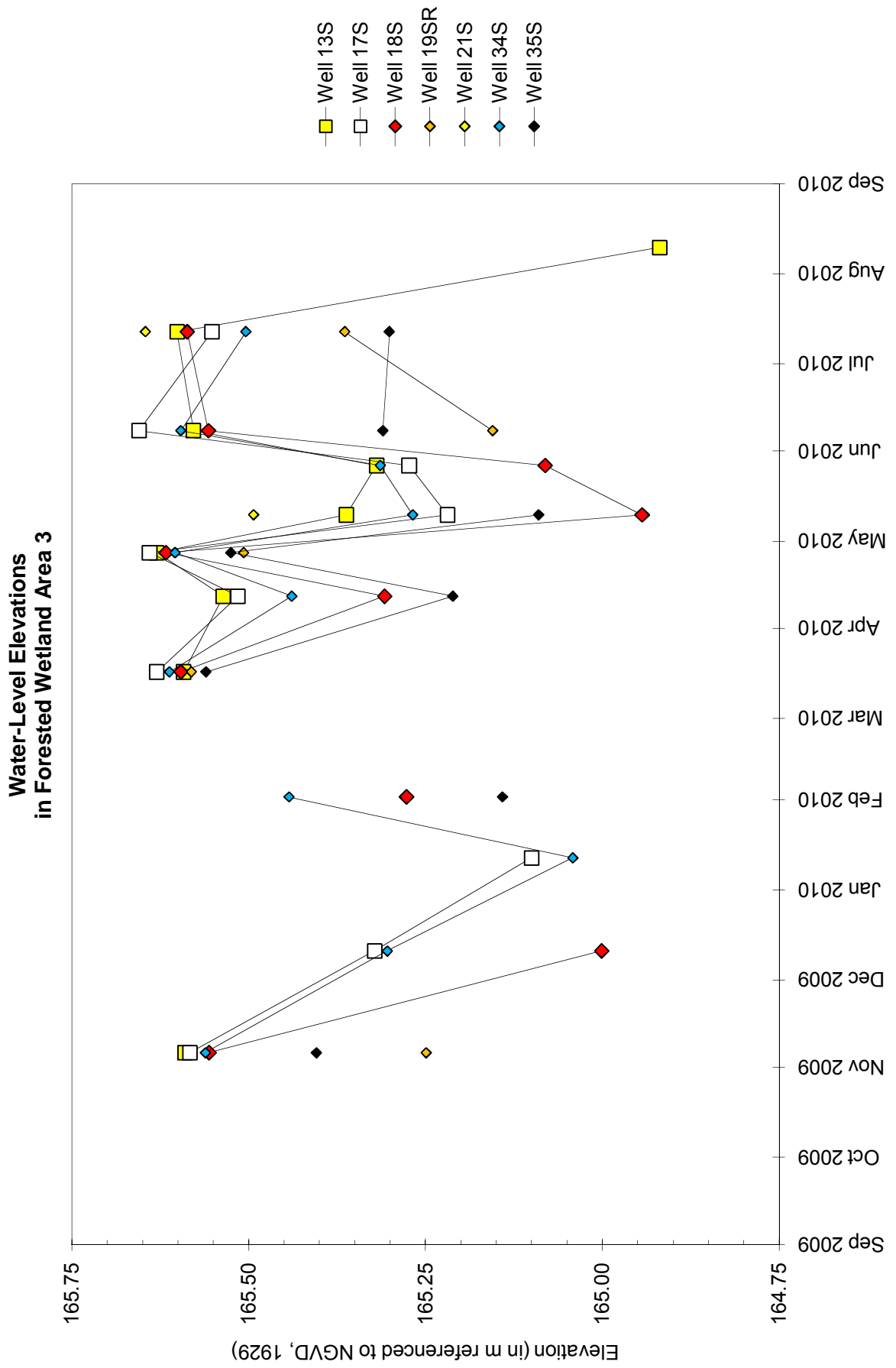




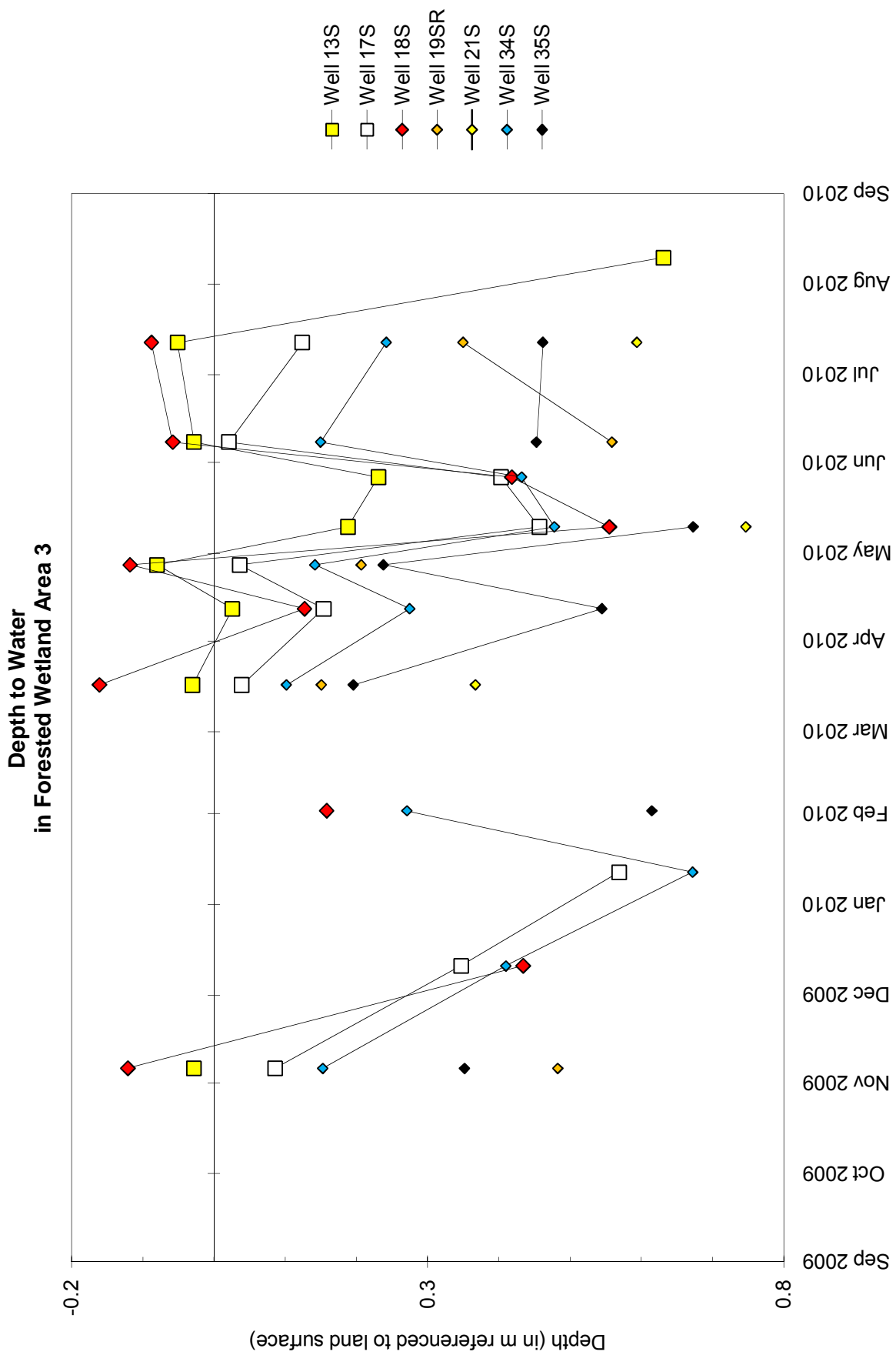
# Hancock County near Carthage Wetland Mitigation Site September 1, 2009 through August 31, 2010



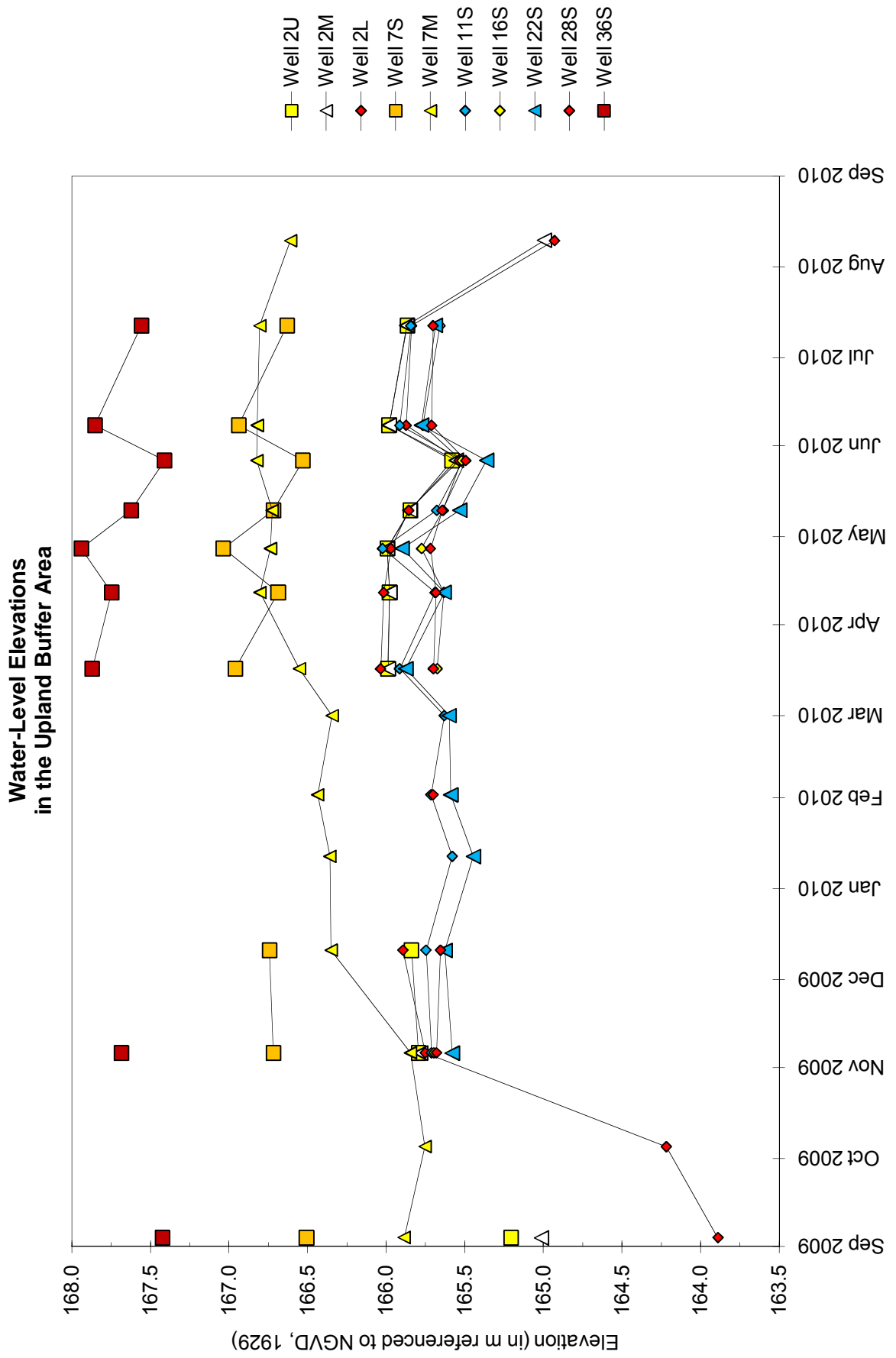
# Hancock County near Carthage Wetland Mitigation Site September 1, 2009 through August 31, 2010



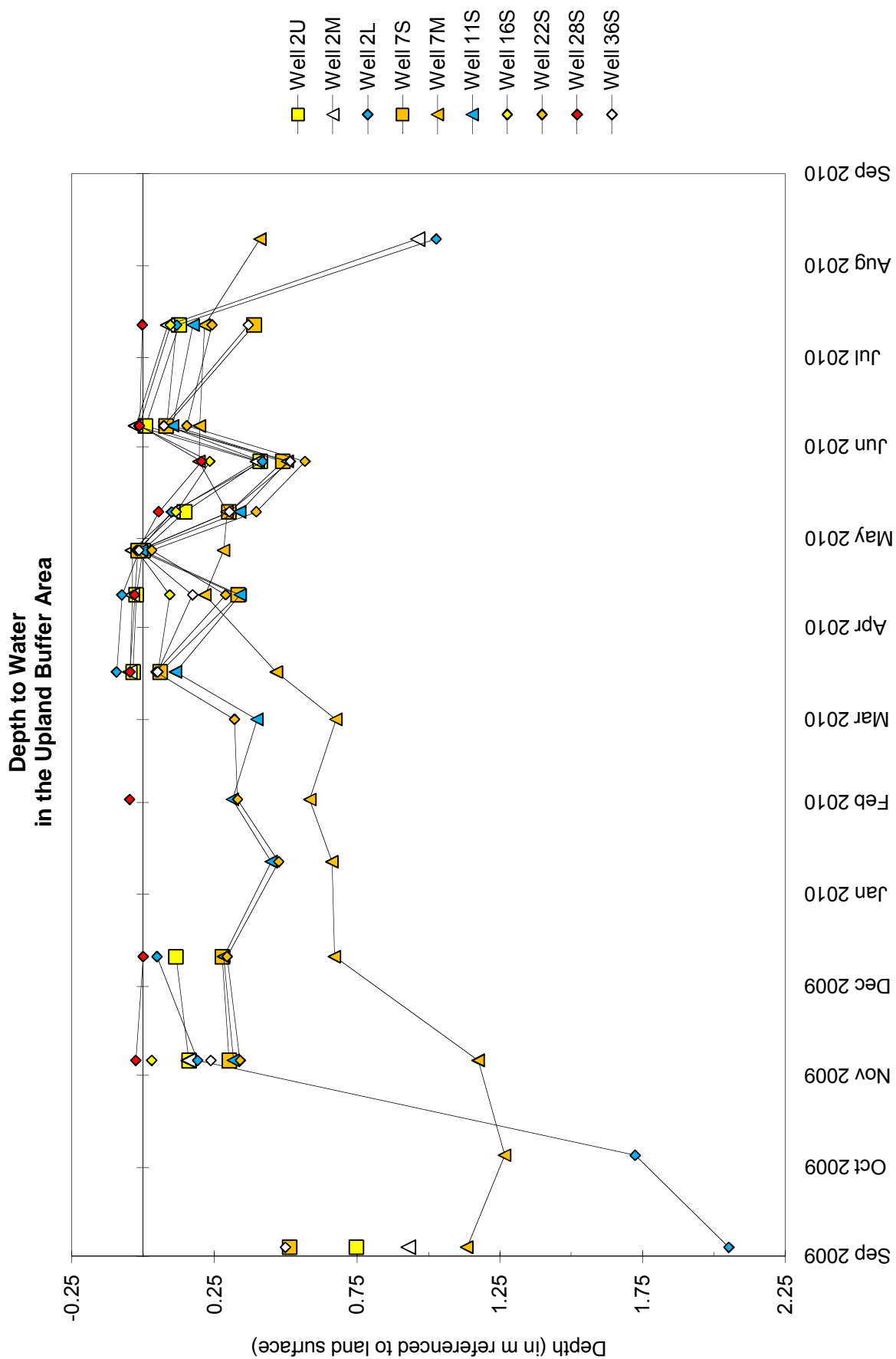
# Hancock County near Carthage Wetland Mitigation Site September 1, 2009 through August 31, 2010



# Hancock County near Carthage Wetland Mitigation Site September 1, 2009 through August 31, 2010

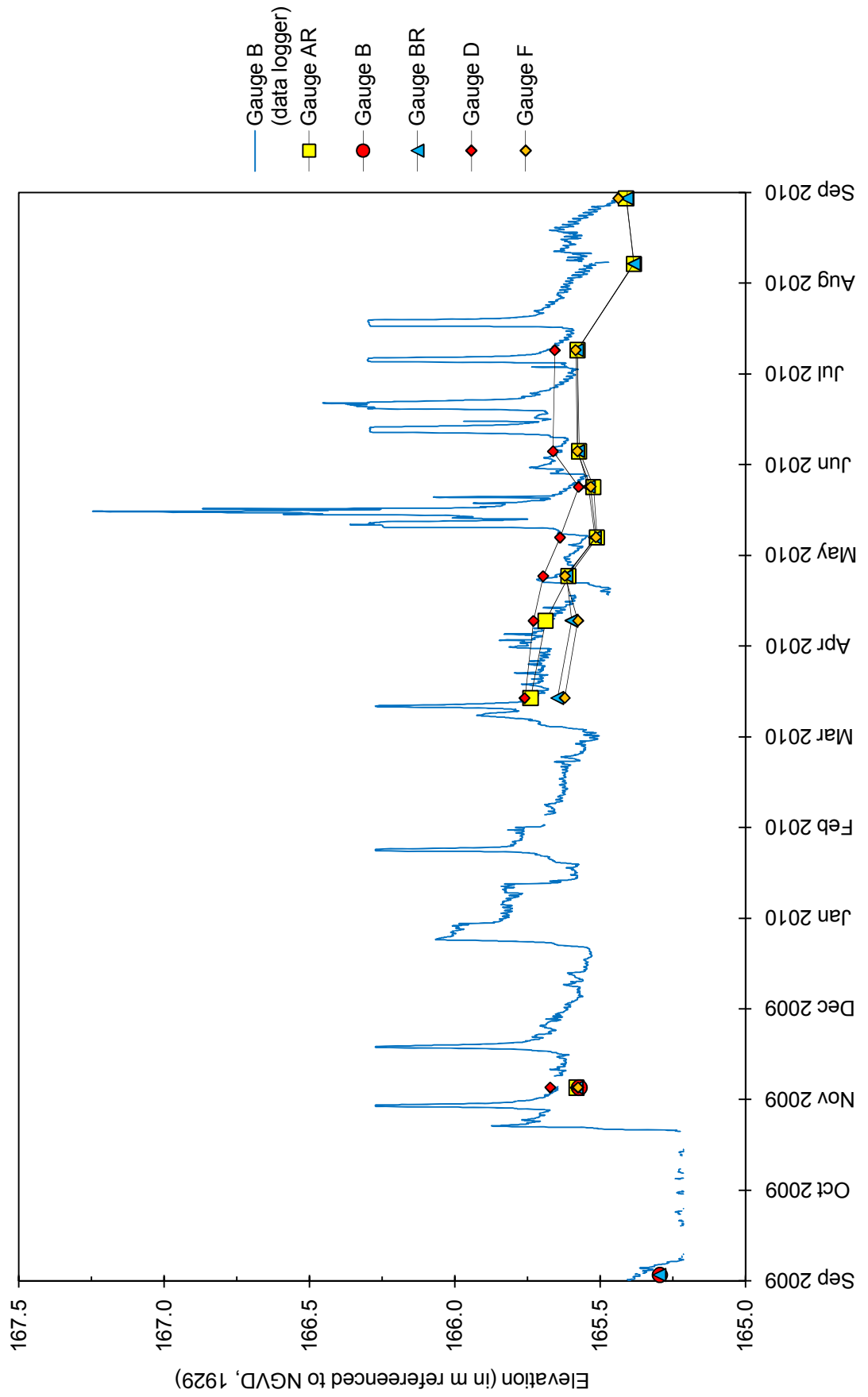


# Hancock County near Carthage Wetland Mitigation Site September 1, 2009 through August 31, 2010



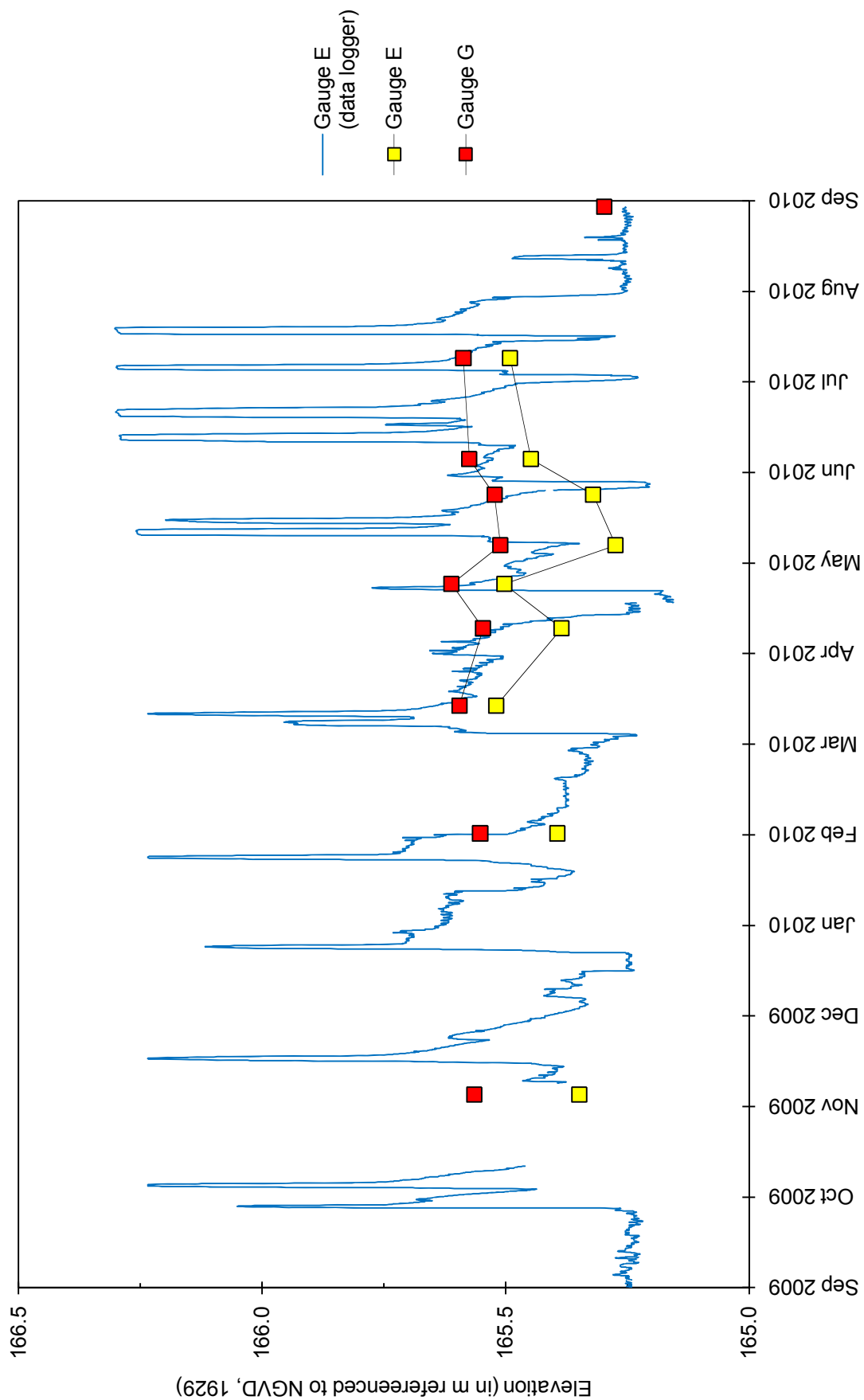
# Hancock County near Carthage Wetland Mitigation Site September 1, 2009 through August 31, 2010

Water-Level Elevations at Stage Gauges  
in the Emergent Wetland Area



# Hancock County near Carthage Wetland Mitigation Site September 1, 2009 through August 31, 2010

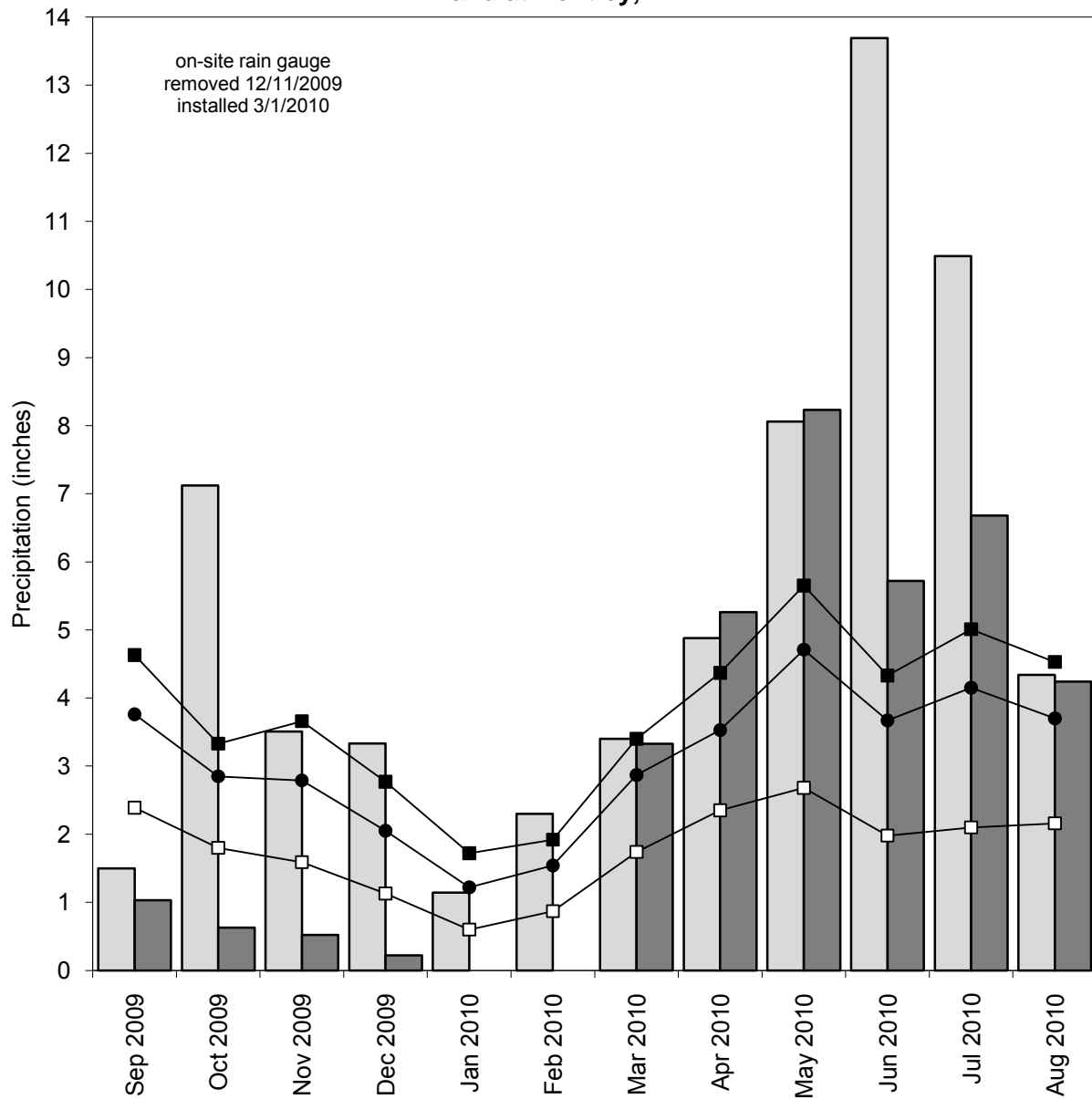
Water-Level Elevations at Stage Gauges  
in the Drainage Ditch



# Hancock County near Carthage Wetland Mitigation Site

## September 2009 through August 2010

### Total Monthly Precipitation Recorded on Site and at Bentley, IL



□ monthly precipitation recorded at Bentley, IL (MRCC)

■ monthly precipitation recorded on site by ISGS

—■— 1971-2000 monthly 30% above average threshold at Bentley, IL (NWCC)

—●— 1971-2000 monthly average precipitation at Bentley, IL (NWCC)

—□— 1971-2000 monthly 30% below average threshold at Bentley, IL (NWCC)

Graph last updated September 29, 2010



**ECKMANN/BISCHOFF, NEW RIVER CROSSING  
WETLAND MITIGATION SITE**

**ISGS #43**

FAP 14

Sequence #27

Madison County, near Collinsville, Illinois

**Primary Project Manager: Steven E. Benton**

**Secondary Project Manager: none**

**SITE HISTORY**

- March 2009: IDOT tasked the ISGS to resume monitoring of the site.
- April 2009: ISGS installed a monitoring network at the site and resumed data collection.

**WETLAND HYDROLOGY CALCULATION FOR 2010**

We estimate that the area of the site that satisfied wetland hydrology criteria (Environmental Laboratory 1987) in 2010 for greater than 5% of the growing season was 22.6 ha (55.9 ac) out of a total area of 23.1 ha (57.0 ac). The area of the site that satisfied wetland hydrology criteria for greater than 12.5% of the growing season was estimated to be 20.9 ha (51.6 ac). Using the 2010 Midwest Region supplement (U.S. Army Corps of Engineers 2010) to the 1987 Manual, we estimate that 21.8 ha (53.9 ac) satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

- According to the MRCC, 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. According to methods outlined in the 2010 Midwest Region supplement, we estimate that March 11 was the starting date of the 2010 growing season at this site based on soil temperatures measured at the nearby Fairmont City site.
- Total precipitation recorded at Belleville, Illinois weather station during the monitoring period was 130% of normal and precipitation in Spring 2010 (March through May) was 93% of normal. The largest areas of jurisdictional wetland hydrology for all three criteria occurred in April and May when on-site precipitation was 92% of normal.
- In 2010, water levels measured in soil-zone monitoring wells 2S, 3S, 4S, 5S, 6S, 7S, 8S, and 9S satisfied wetland hydrology criteria for more than 5% of the growing season. Water levels measured in soil-zone monitoring wells 3S, 4S, 5S, 7S, and 9S satisfied wetland hydrology criteria for more than 12.5% of the growing season. Water levels measured in soil-zone monitoring wells 2S, 3S, 4S, 5S, 6S, 7S, and 9S satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season as per the 2010 Midwest Region supplement.
- Surface-water elevations measured at EBSW1 reveal that areas of the site at and below an elevation of 124.10 m (407.17 ft) were inundated for more than 5% of the growing season and that areas at and below an elevation of 124.05 m (407.01 ft) were inundated for more than 12.5% of the growing season. In addition, areas of the site at and below an elevation of 124.10 m (407.17 ft) were inundated for 14 or more consecutive days during the growing season as per the 2010 Midwest Region supplement.

#### ADDITIONAL INFORMATION

- In December 2009, the beaver dam in Schneider Ditch was breached by employees of the levee district. This caused a precipitous drop in surface-water elevation on the site. In March 2010, it was observed that the beavers had repaired their dam.

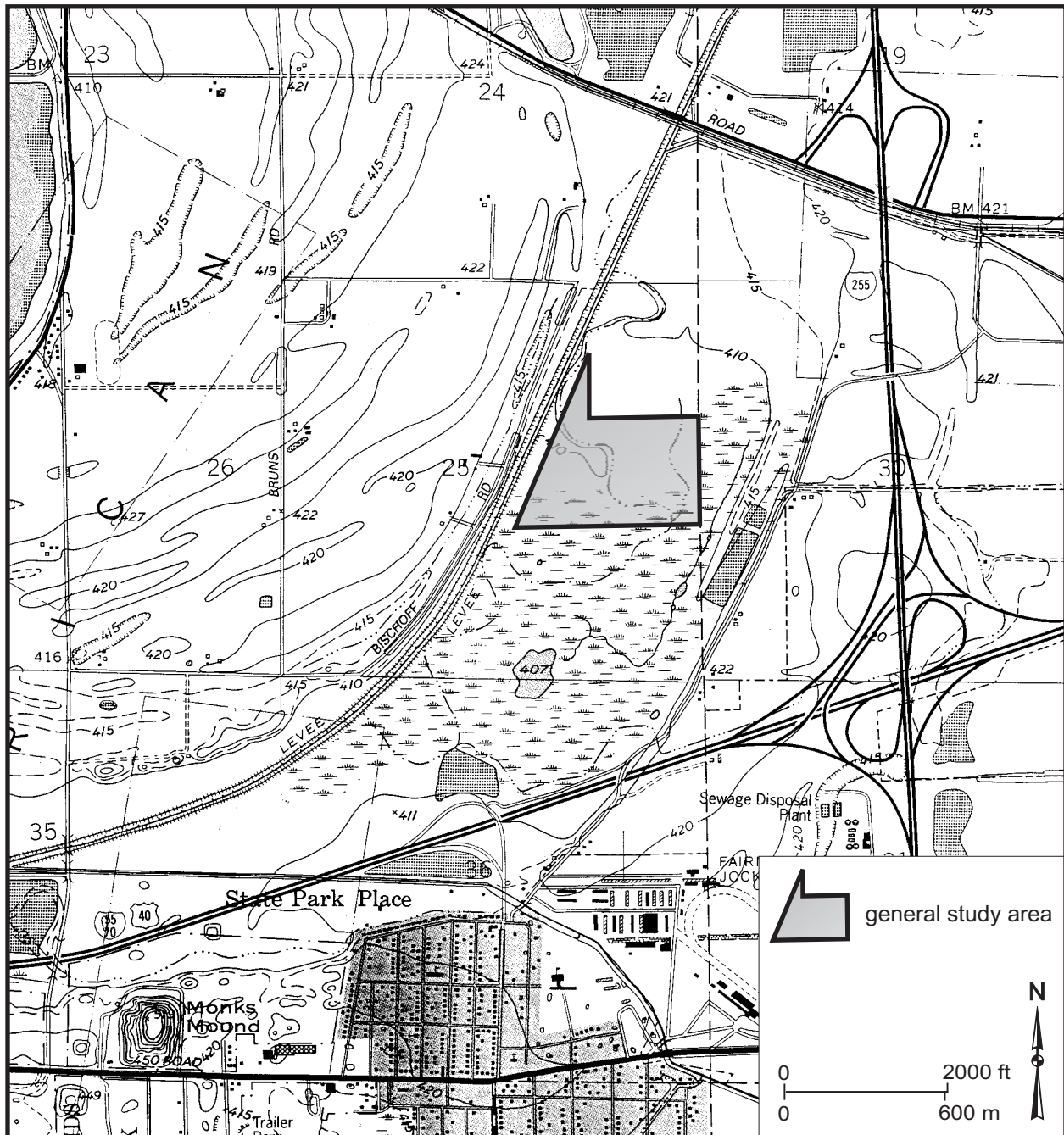
#### PLANNED FUTURE ACTIVITIES

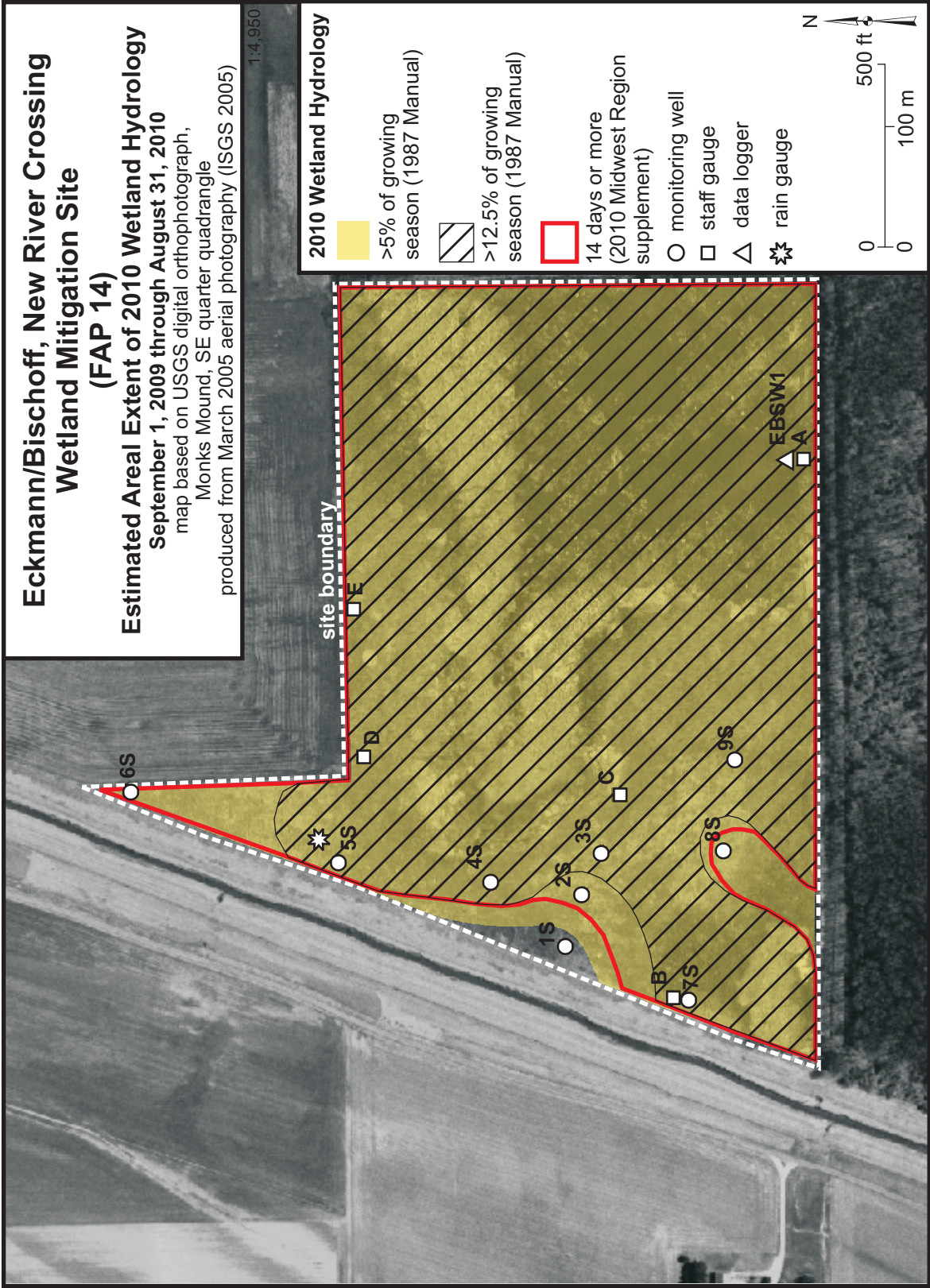
- Monitoring of the site will continue until no longer required by IDOT.

**Eckmann/Bischoff, New River Crossing  
Wetland Mitigation Site  
(FAP 14)**

**Study Area and Vicinity**

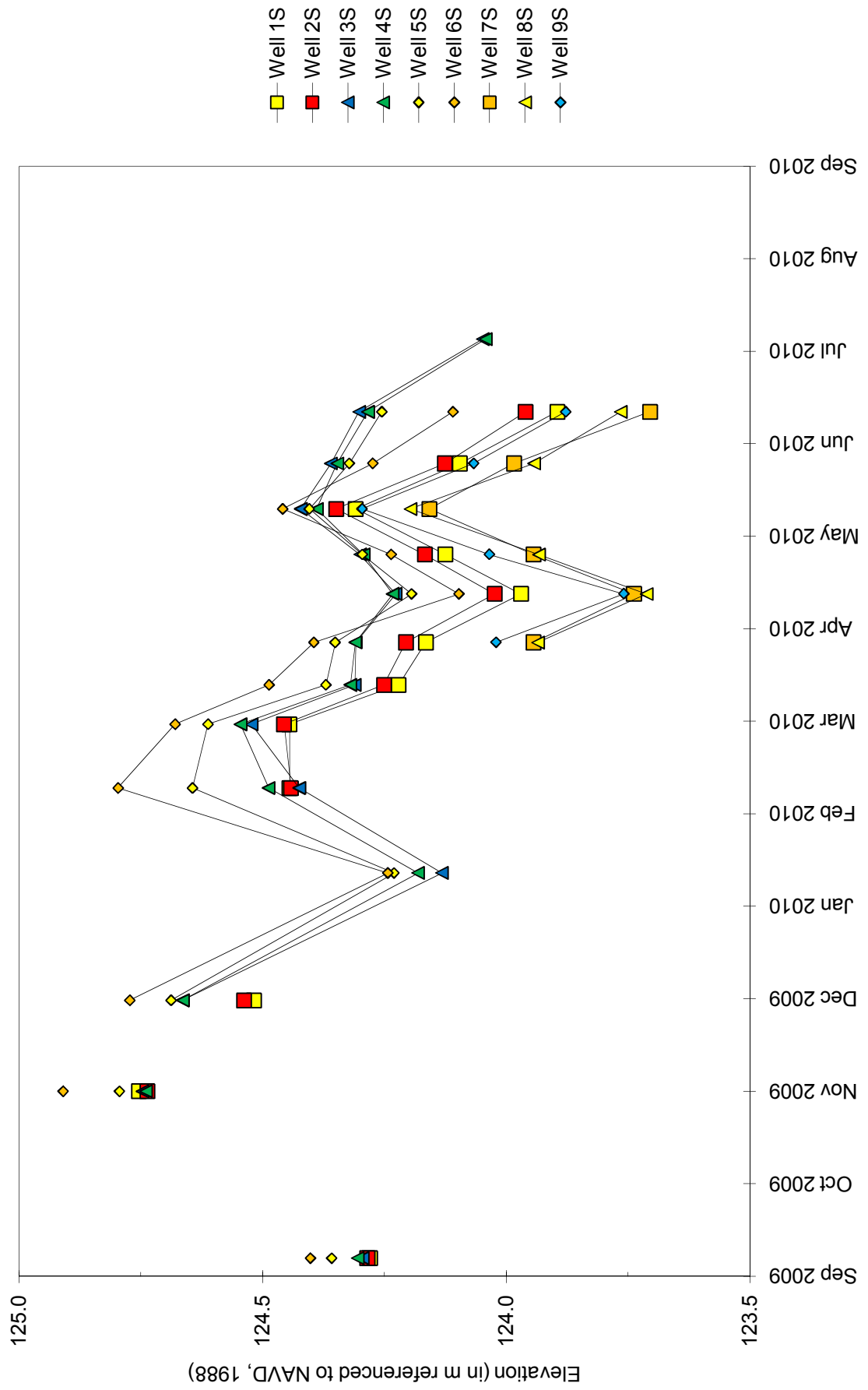
from the USGS Topographic Series, Monks Mound IL, 7.5-minute Quadrangle  
(USGS 1954, photorevised 1993)  
contour interval is 10 feet



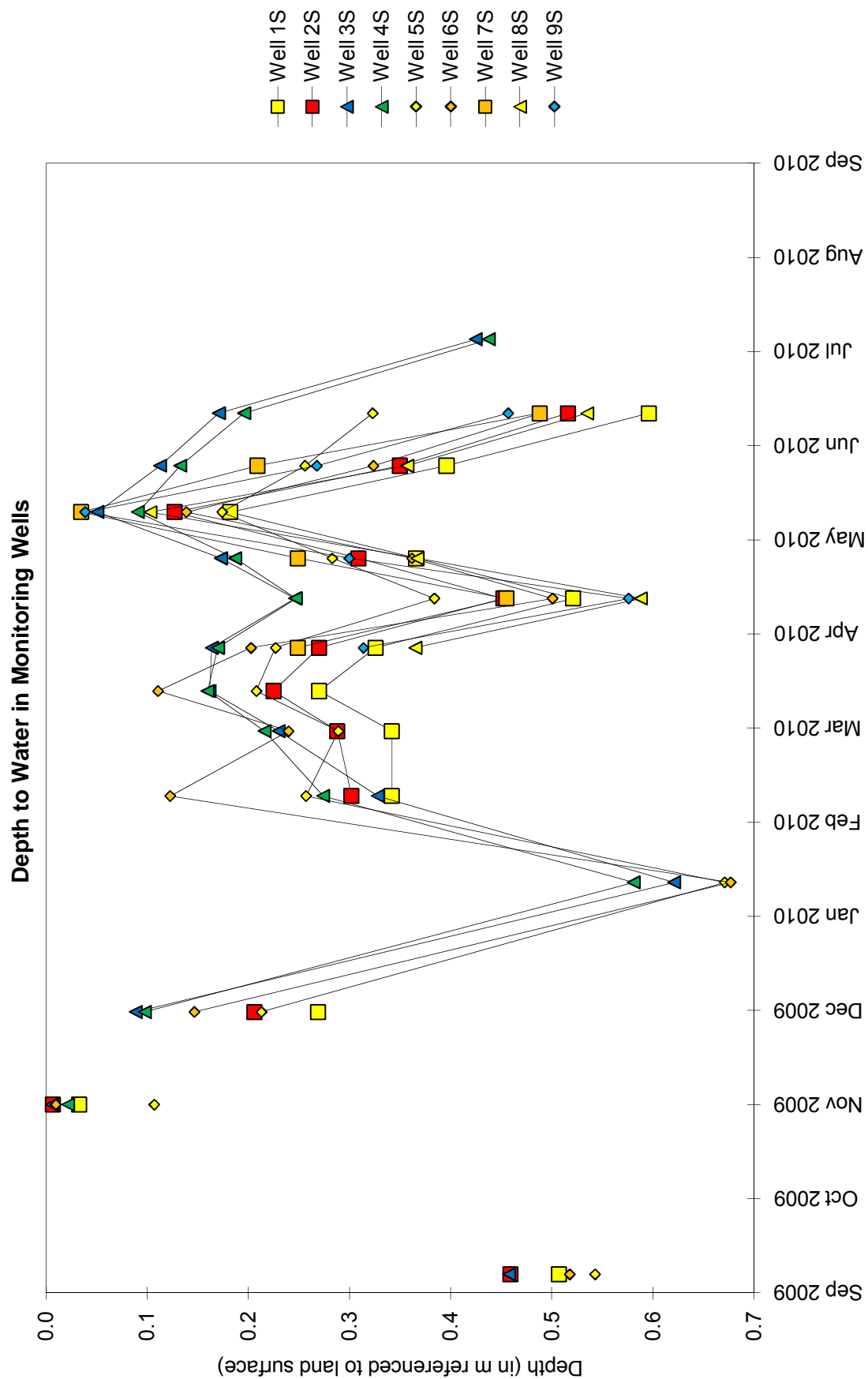


# **Eckmann/Bischoff, New River Crossing Wetland Mitigation Site** **September 1, 2009 through August 31, 2010**

**Water-Level Elevations in Monitoring Wells**

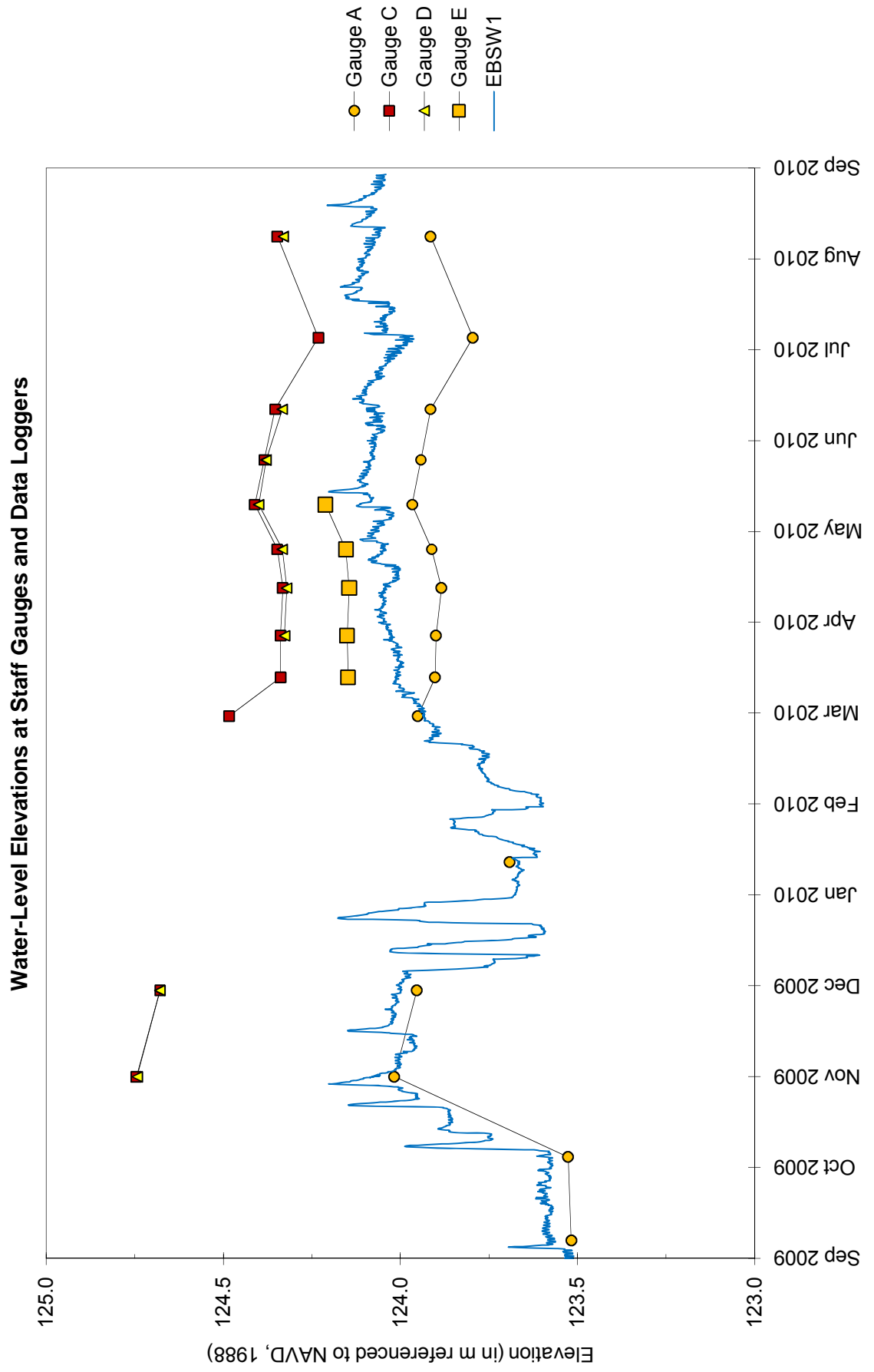


# **Eckmann/Bischoff, New River Crossing Wetland Mitigation Site** September 1, 2009 through August 31, 2010



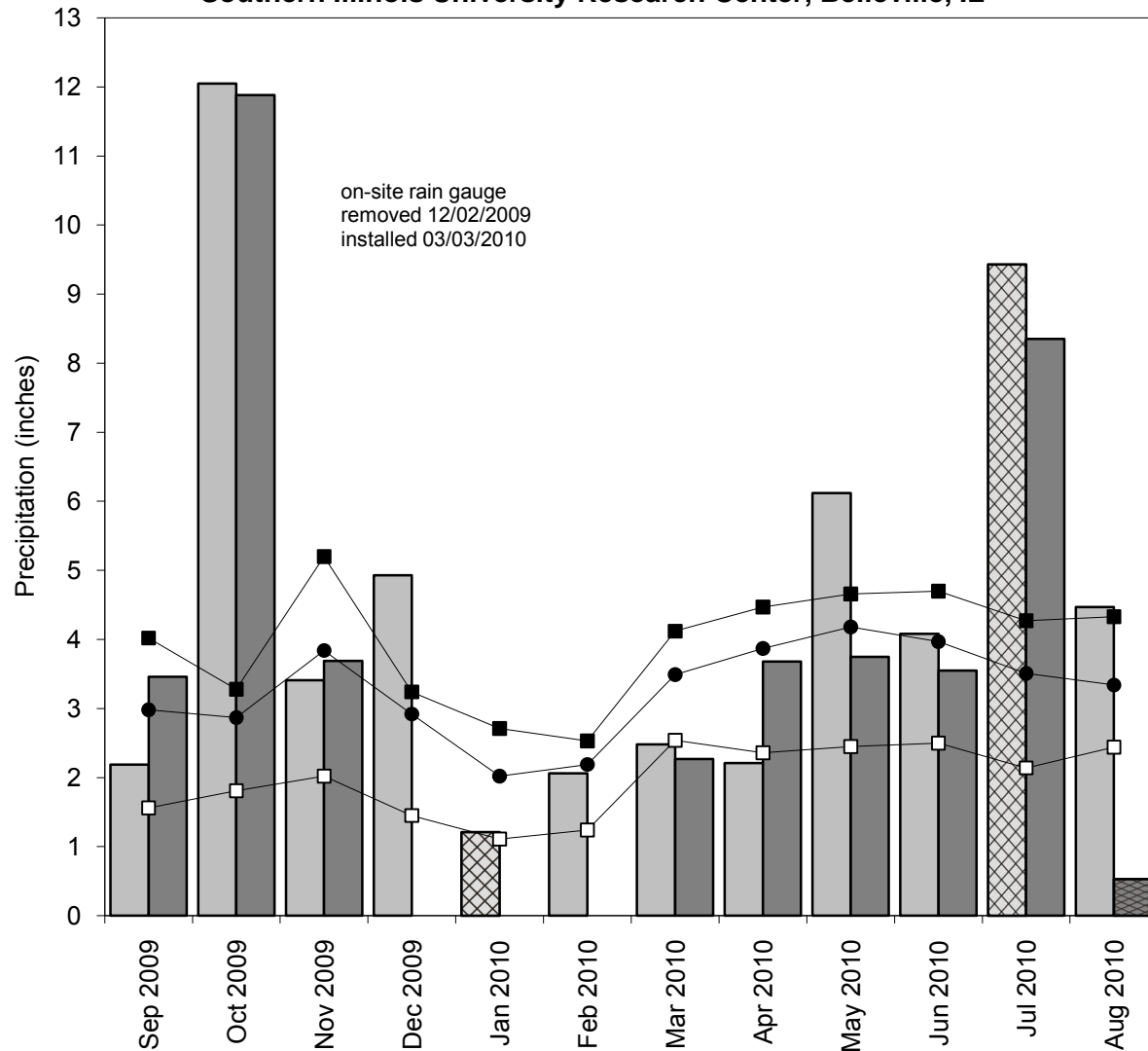


# **Eckmann/Bischoff, New River Crossing Wetland Mitigation Site** **September 1, 2009 through August 31, 2010**



# Eckmann/Bischoff, New River Crossing Wetland Mitigation Site September 2009 through August 2010

Total Monthly Precipitation Recorded on Site and at the  
Southern Illinois University Research Center, Belleville, IL



monthly precipitation recorded at Belleville, IL (MRCC)

monthly precipitation recorded onsite by ISGS

data incomplete

1971-2000 monthly 30% above average threshold at Belleville, IL (NWCC)

1971-2000 monthly average precipitation at Belleville, IL (NWCC)

1971-2000 monthly 30% below average threshold at Belleville, IL (NWCC)

Graph last updated September 29, 2010



**MILAN BELTWAY, GREEN ROCK  
WETLAND MITIGATION SITE**

**ISGS #44**

FAU 5822

Sequence #67

Henry County, near Green Rock, Illinois

**Primary Project Manager: Steven E. Benton**

**Secondary Project Manager: Kathleen E. Bryant**

**SITE HISTORY**

- December 2005: IDOT tasked the ISGS to conduct five-year performance monitoring of the Green Rock wetland mitigation site.
- March 2006: The monitoring network was installed by ISGS on Phase I of the site.
- November 2007: The monitoring network was installed by ISGS on Phase II of the site.

**WETLAND HYDROLOGY CALCULATION FOR 2010**

The site is divided into two portions, Phase I and Phase II. In 2010, 16.7 ha (41.3 ac) out of a total area of 16.7 ha (41.3 ac) in Phase I, satisfied wetland hydrology criteria for more than 5% of the growing season, and 15.9 ha (39.4 ac) satisfied wetland hydrology criteria for more than 12.5% of the growing season. Additionally, 4.3 ha (10.7 ac), out of a total area of 4.3 ha (10.7 ac) in Phase II, satisfied wetland hydrology criteria for more than 5% of the growing season, and 3.9 ha (9.7 ac) satisfied wetland hydrology criteria for more than 12.5% of the growing season. Using the 2010 Midwest Region supplement (U.S. Army Corps of Engineers 2010) to the 1987 Manual, we estimate that 16.7 ha (41.3 ac) of Phase I and 4.3 ha (10.7 ac) of Phase II satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

- According to the MRCC, the median date that the growing season begins at the nearby Quad City International Airport weather station in 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. According to methods outlined in the 2010 Midwest Region supplement, we estimate that March 18 was the starting date of the 2010 growing season based on soil temperatures measured at the mitigation site.
- Total precipitation during the monitoring period as recorded at the Quad City International Airport weather station in Moline, Illinois, was 121% of normal and total precipitation in Spring 2010 (March through May) was 109% of normal.
- In 2010, water levels measured in all of the soil-zone monitoring wells satisfied wetland hydrology criteria for more than 5% of the growing season. Water levels measured in all of the soil-zone monitoring wells except 15S, 22S, and 23S satisfied wetland hydrology criteria for more than 12.5% of the growing season. Water levels measured in all of the soil-zone monitoring wells satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season as per the 2010 Midwest Region supplement.
- Rock River stage data recorded at the U.S. Geological Survey gauge in Moline, Illinois, and surface-water data recorded by an on-site data logger (Sluice SW), reveal that the site was flooded seven times during the monitoring period, with four of these floods

(April 8-17, May 13-22, June 19-July 3, and July 25-August 12) occurring during the 2010 growing season. The longest period of inundation on the site resulted from the flood that occurred in July and August. Surface water on the site, as measured by the gauge Sluice SW, was at or above an elevation of 173.30 m (568.60 ft) long enough to satisfy the wetland hydrology criteria for more than 5% of the growing season. Additionally, surface water measured at that gauge was at or above an elevation of 173.00 m (567.61 ft) for 14 or more consecutive days during the growing season per the 2010 Midwest Region supplement. Inundation persisted in isolated depressions after flood water had receded. At gauges A and B, surface water was at or above 172.95 m (567.45 ft) for a period long enough to satisfy wetland hydrology criteria for more than 12.5% of the growing season, and at gauge D surface water was at or above 173.13 m (568.03 ft) for a period long enough to satisfy wetland hydrology criteria for more than 12.5% of the growing season.

#### ADDITIONAL INFORMATION

- A surface-water data logger (Sluice SW) was added to the site on April 27 in order to further refine analysis of Rock River stage data. The water-level data recorded by the logger reveal that the site floods when stage at Moline, Illinois, rises to about 3.3 m (11.0 ft), which is an elevation of about 171.39 m (562.34 ft).
- On-site observations reveal that surface water on the site tends to flow westward. Three surface-water outlets were seen that convey water to the Green River (marked by arrows on the attached wetland hydrology map). After water has stopped flowing through the lowest outlet, about 20 cm (8 in.) to 30 cm (12 in.) of surface water remains on most of the site. This extends the period of inundation enough to satisfy wetland hydrology criteria.
- The ISGS has now completed 5 years of post-construction monitoring of Phase I and 3 years of post-construction monitoring of Phase II.

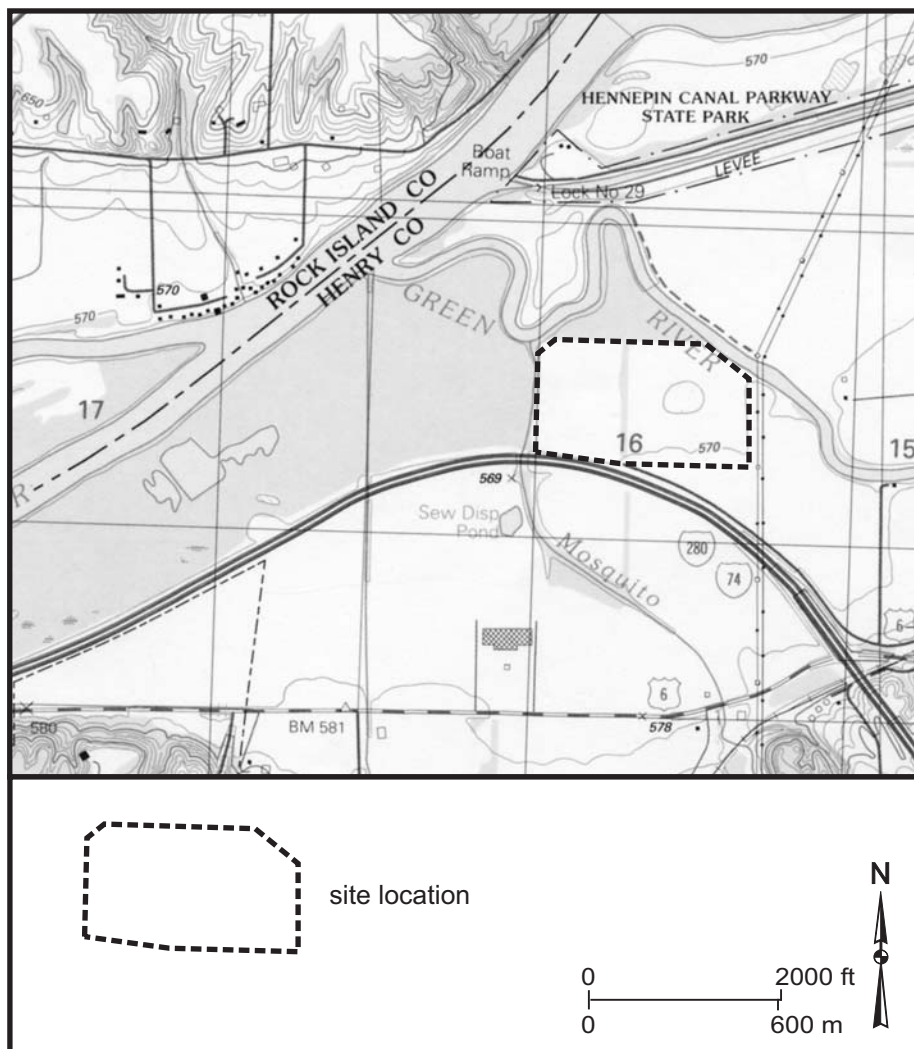
#### PLANNED FUTURE ACTIVITIES

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

# Milan Beltway, Green Rock Wetland Mitigation Site (FAU 5822)

## General Study Area and Vicinity

from the USGS Topographic Series, Coal Valley, IL (W) (USGS 1991) and  
Green Rock, IL (E) (USGS 1992) 7.5-minute Quadrangles  
contour interval is 10 feet

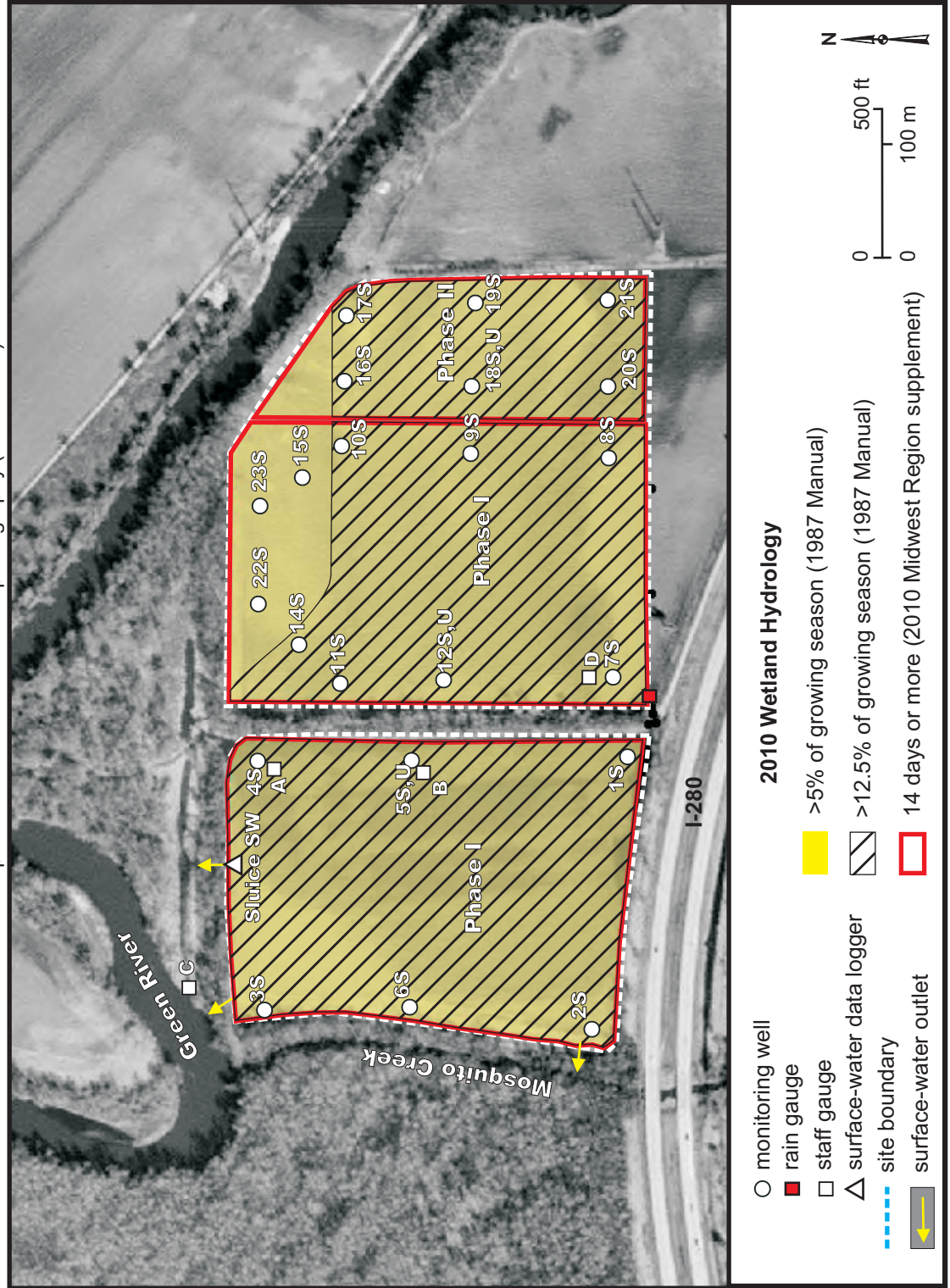


# Milan Beltway, Green Rock Wetland Mitigation Site (FAU 5822)

## Estimated Areal Extent of 2010 Wetland Hydrology

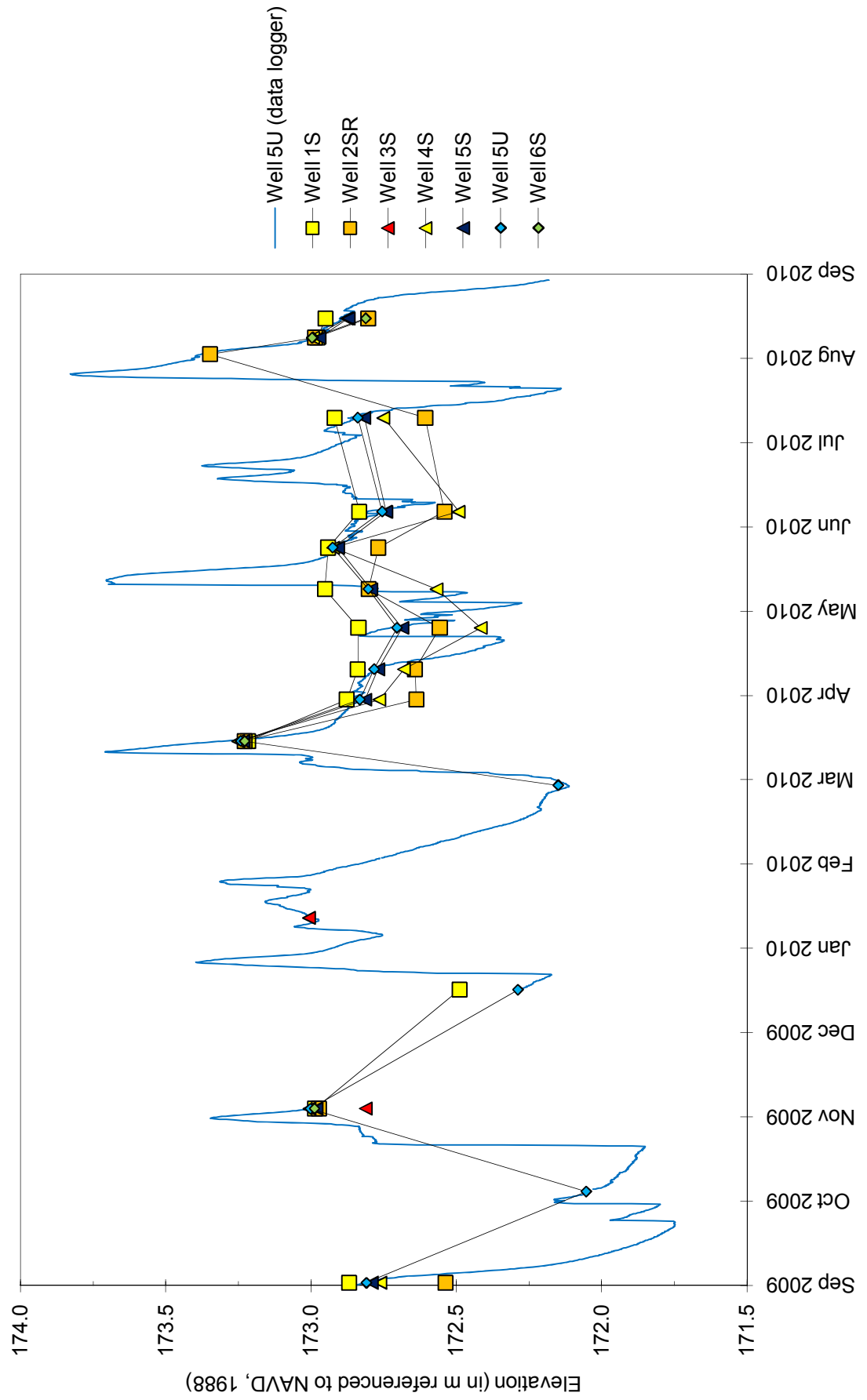
Based on data collected September 1, 2009 through August 31, 2010

Map based on USGS digital orthophotograph, Coal Valley NE quarter quadrangle  
produced from 4/14/98 aerial photography (ISGS 2006)



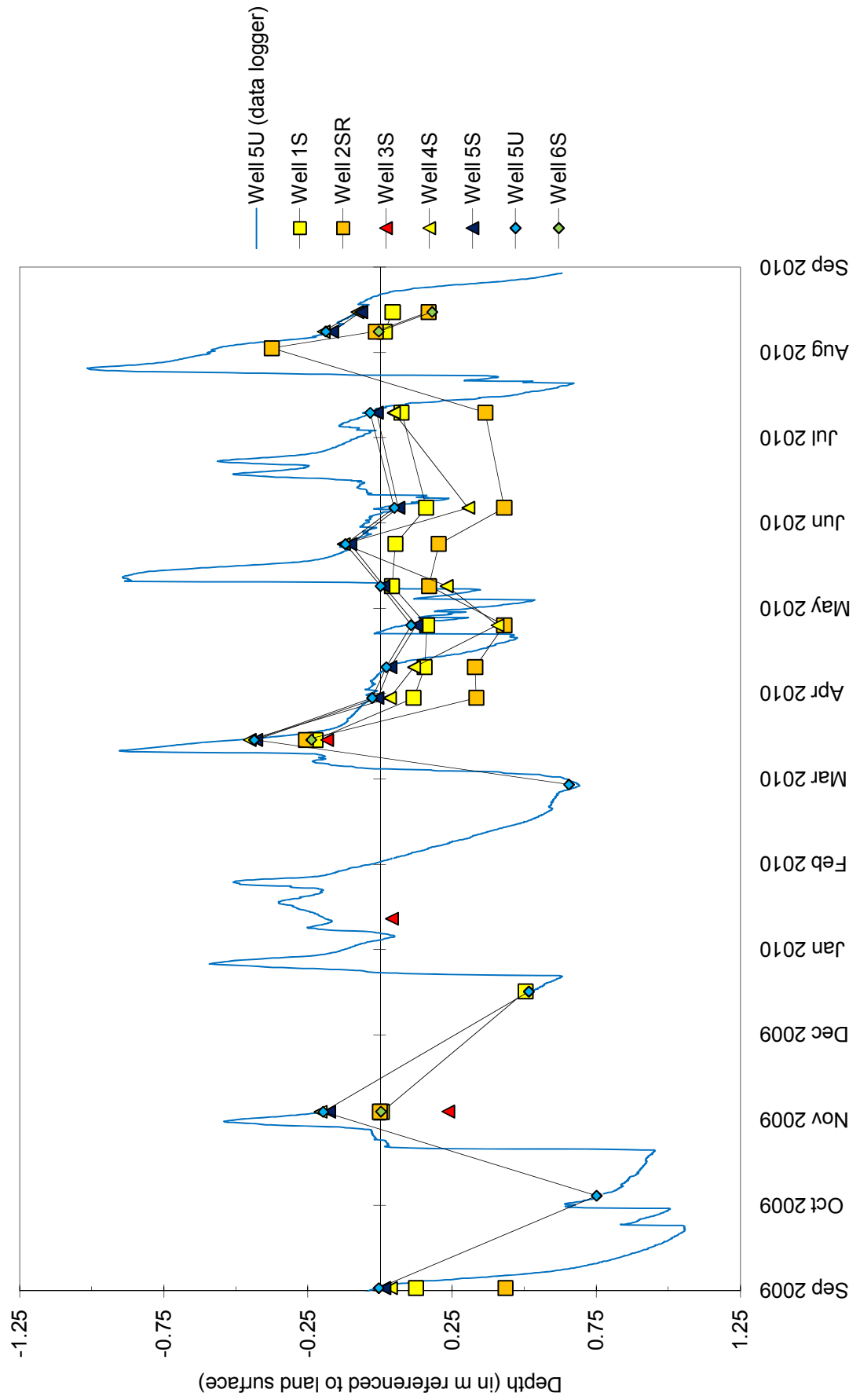
# **Milan Beltway, Green Rock Wetland Mitigation Site** **September 1, 2009 through August 31, 2010**

## **Water-Level Elevations in Monitoring Wells in the Western Portion of Phase 1**



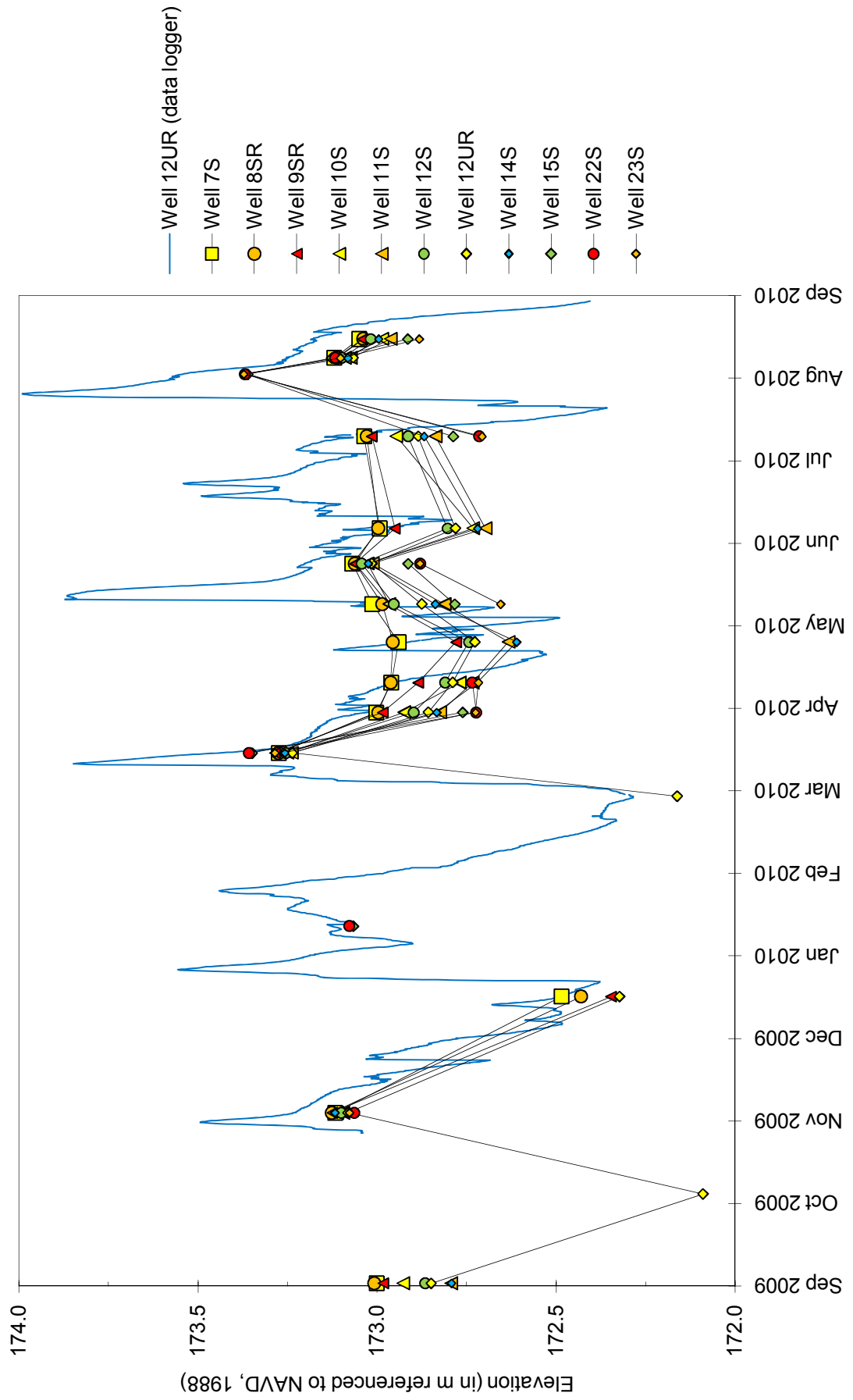
# **Milan Beltway, Green Rock Wetland Mitigation Site** **September 1, 2009 through August 31, 2010**

Depth to Water in Monitoring Wells  
in the Western Portion of Phase 1



# **Milan Beltway, Green Rock Wetland Mitigation Site** **September 1, 2009 through August 31, 2010**

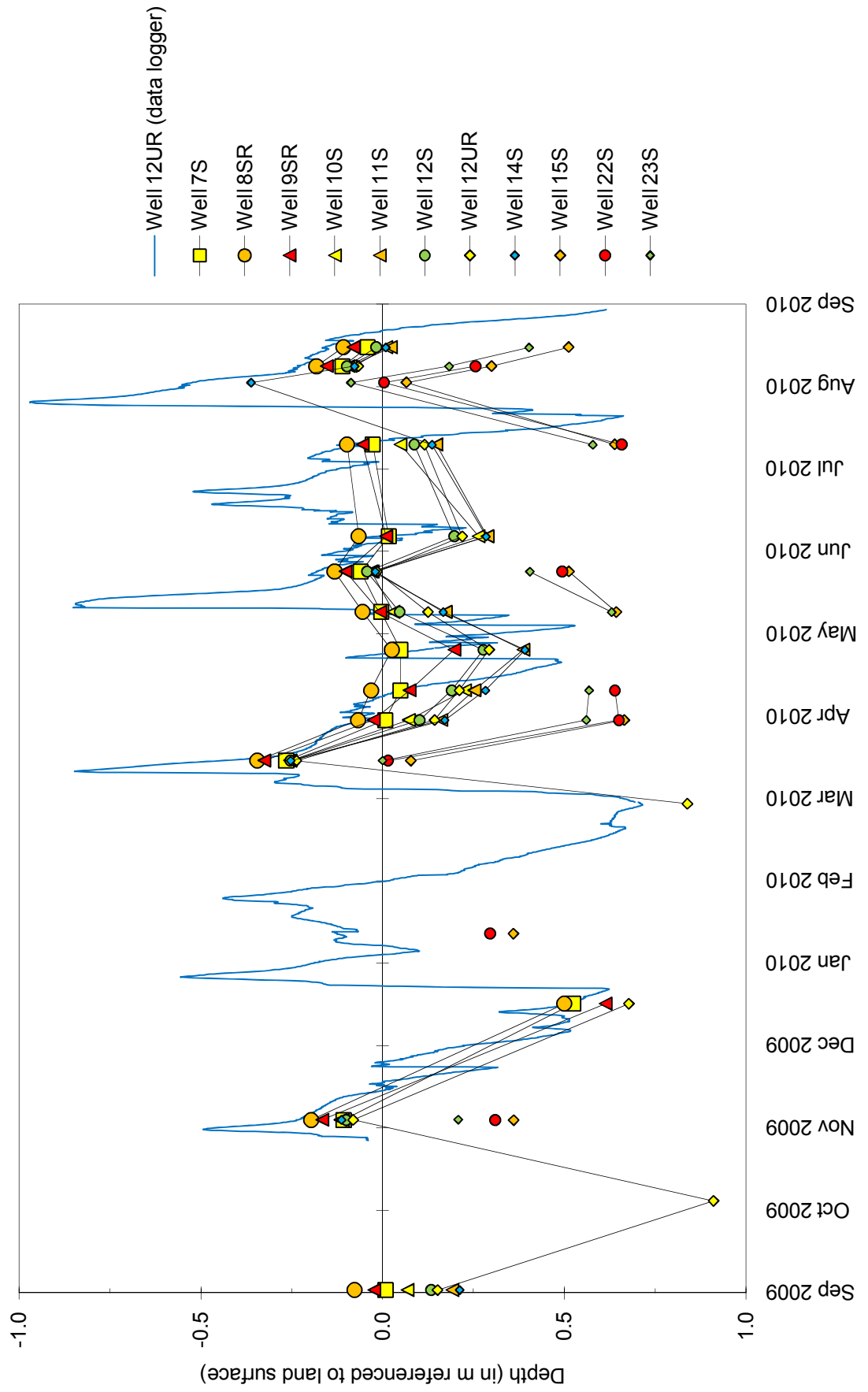
## **Water-Level Elevations in Monitoring Wells in the Eastern Portion of Phase 1**





# **Milan Beltway, Green Rock Wetland Mitigation Site** **September 1, 2009 through August 31, 2010**

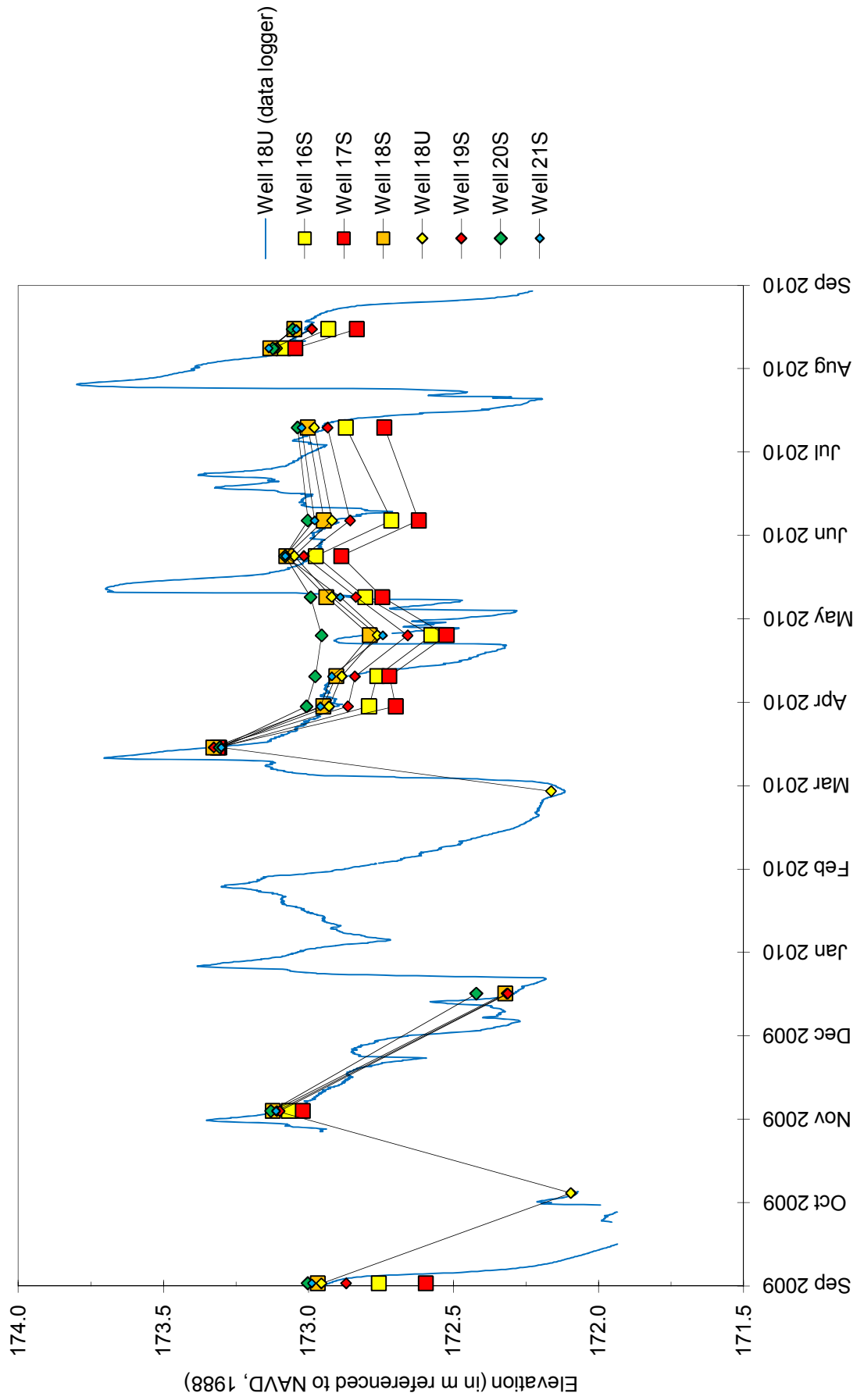
**Depth to Water in Monitoring Wells  
in the Eastern Portion of Phase 1**



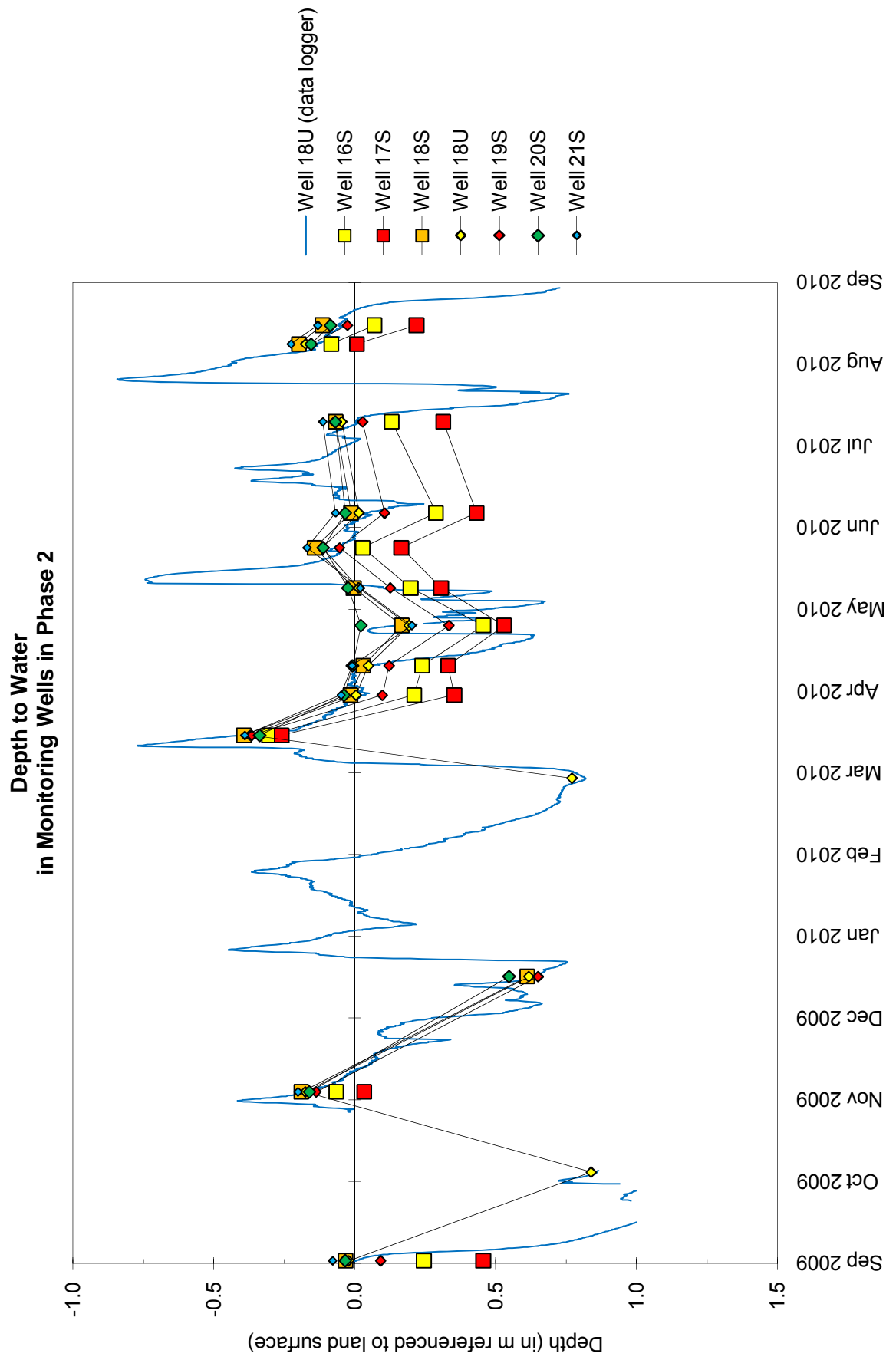


# **Milan Beltway, Green Rock Wetland Mitigation Site** **September 1, 2009 through August 31, 2010**

## **Water-Level Elevations in Monitoring Wells in Phase 2**

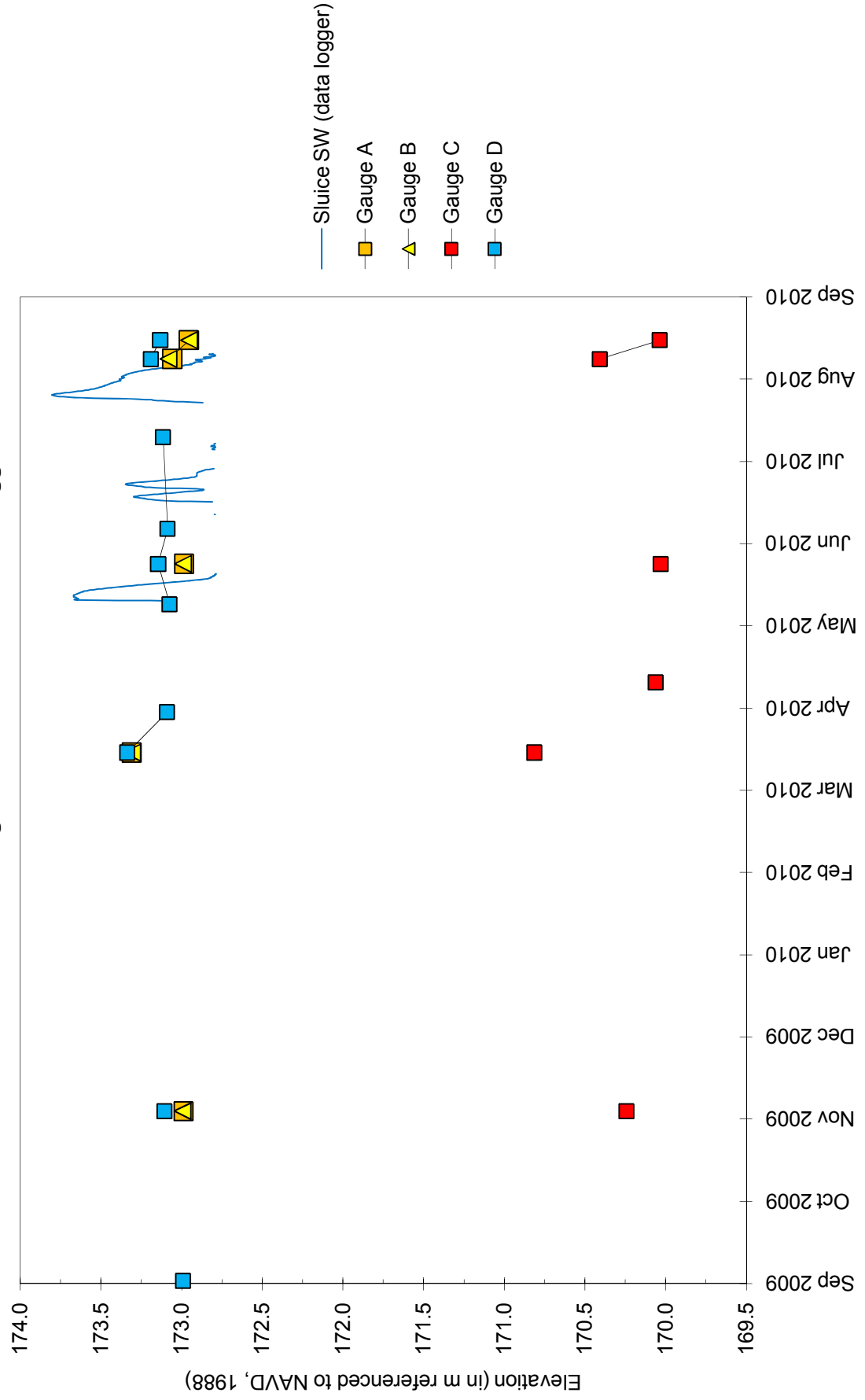


# **Milan Beltway, Green Rock Wetland Mitigation Site** **September 1, 2009 through August 31, 2010**



# **Milan Beltway, Green Rock Wetland Mitigation Site** **September 1, 2009 through August 31, 2010**

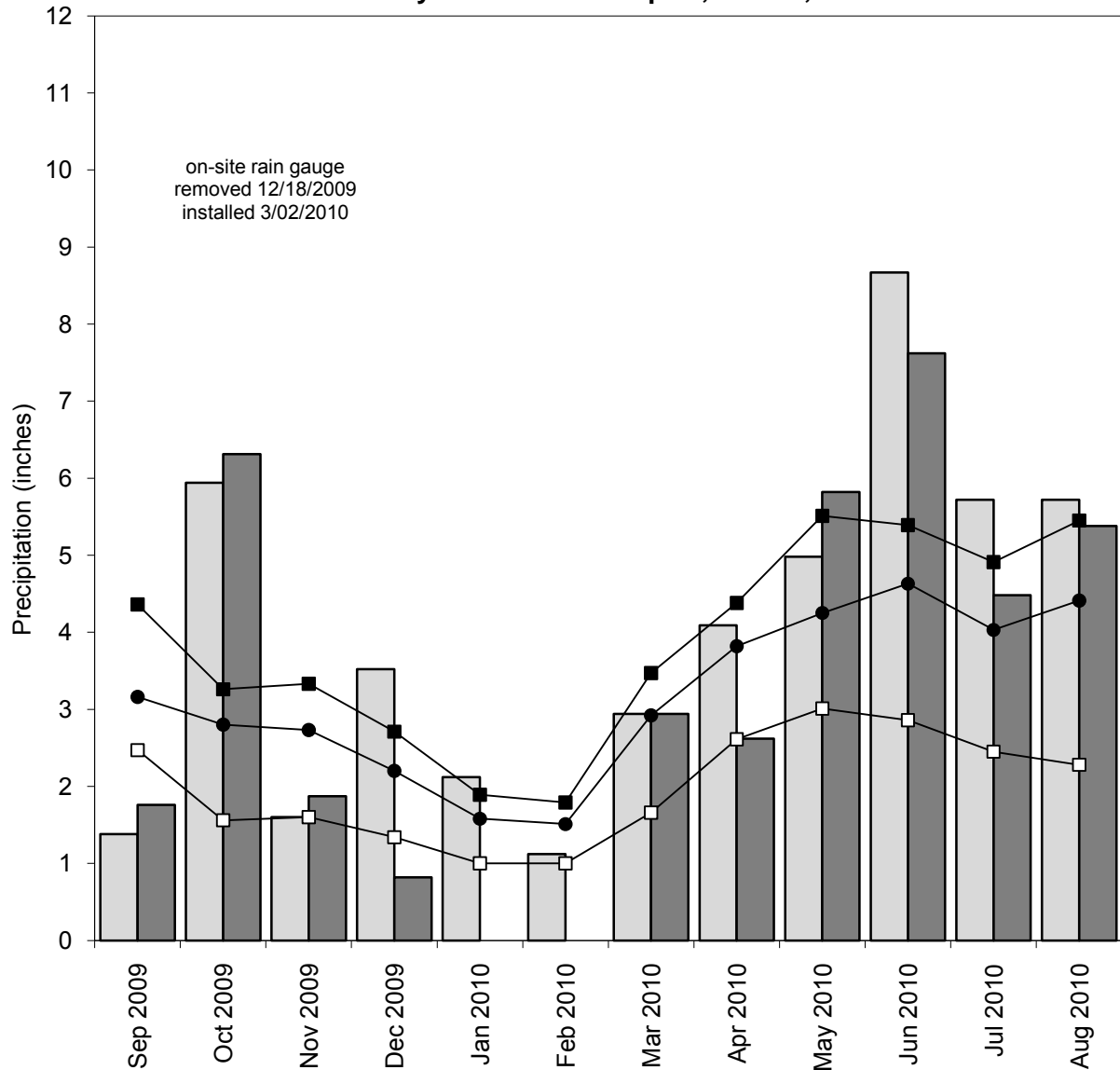
## **Water-Level Elevations at Staff Gauges and Surface-Water Data Loggers**



# Milan Beltway, Green Rock Wetland Mitigation Site

September 2009 through August 2010

Total Monthly Precipitation Recorded on Site and at the  
Quad City International Airport, Moline, IL



monthly precipitation recorded at Moline, IL (MRCC)

monthly precipitation recorded on site by ISGS

1971-2000 monthly 30% above average threshold at Moline, IL (NWCC)

1971-2000 monthly average precipitation at Moline, IL (NWCC)

1971-2000 monthly 30% below average threshold at Moline, IL (NWCC)

Graph last updated October 08, 2010

## MORRIS

ISGS #49

### WETLAND MITIGATION BANK

Sequence #1306

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.
- March 2007: A Level II hydrogeologic characterization report was submitted to IDOT (ISGS Open-File Series 2007–03).
- February 2009: IDOT specified that 2009 was to be the last year for widespread monitoring of shallow groundwater at the site. Monitoring of surface-water inundation and floodwater storage functions via an off-site USACE river gauge and two on-site data loggers would continue until no longer required by IDOT. The aim is to watch only for significant changes in wetland hydrology extent using these methods.

### WETLAND HYDROLOGY CALCULATION FOR 2010

In 2010, only a small portion of the total site area of 342 ha (844 ac) was targeted for monitoring. To this end, two data loggers were deployed in the “spider field” at the east end of the site to look for gross changes in the acreage of wetland hydrology, as this area consistently shows the largest acreage of wetlands on site in average or wetter-than-average years. Further, this field can be used as an analog for the other limited wetland areas on site as characterized in previous years.

We estimate that the total area of the “spider field” that satisfied wetland hydrology criteria (Environmental Laboratory 1987) for greater than 5% of the growing season in 2010 was 2.4 ha (5.9 ac). Further, 0.6 ha (1.4 ac) also satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Using the 2010 Midwest Region supplement (U.S. Army Corps of Engineers 2010) to the 1987 Manual, we estimate that 5.5 ha (13.7 ac) satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season.

The wetland acreages noted above are roughly comparable to the acreages determined for the “spider field” in 2007, 2008, and 2009. The site continued its role in the 2009-2010 monitoring period as a floodplain providing off-line floodwater storage as well as sediment removal from the Illinois River. According to an off-site USACE gauge and on-site ISGS data loggers, five short-duration (<6 day) floods of significant stage height flooded 90-100% of the site area during the monitoring period. As in previous years, sediment deposition was observed in some closed depressions visited on site during 2010, as well as on flat surfaces and on leafy vegetation. These observations indicate that the site continues to perform floodwater storage and sediment removal functions. Wetland hydrology estimates stated above are based on the following factors:

- According to the MRCC, 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. According to methods outlined in the 2010

Midwest Region supplement, we estimate that March 10 was the starting date of the 2010 growing season based upon a soil-temperature logger as well as vegetation growth and development observed at the wetland bank site.

- Total precipitation for the monitoring period at the Dresden Island weather station in Channahon, IL, was 102% of normal. During the March through May period of 2010, precipitation was 93% of normal, but was 197% of normal in June.
- In 2010, one active soil-zone well was equipped with a data logger. This monitoring well (43S) satisfied wetland hydrology criteria for greater than 5% of the growing season and for greater than 12.5% of the growing season. According to the 2010 Midwest Region supplement, well 43S also satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season
- A data logger in a closed depression at SW8 indicated inundation for a period greater than 5% of the growing season at an elevation of 150.48 m (493.69 ft). According to the 2010 Midwest Region supplement, the SW8 data logger also satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season at an elevation of 150.57 m (493.99 ft).

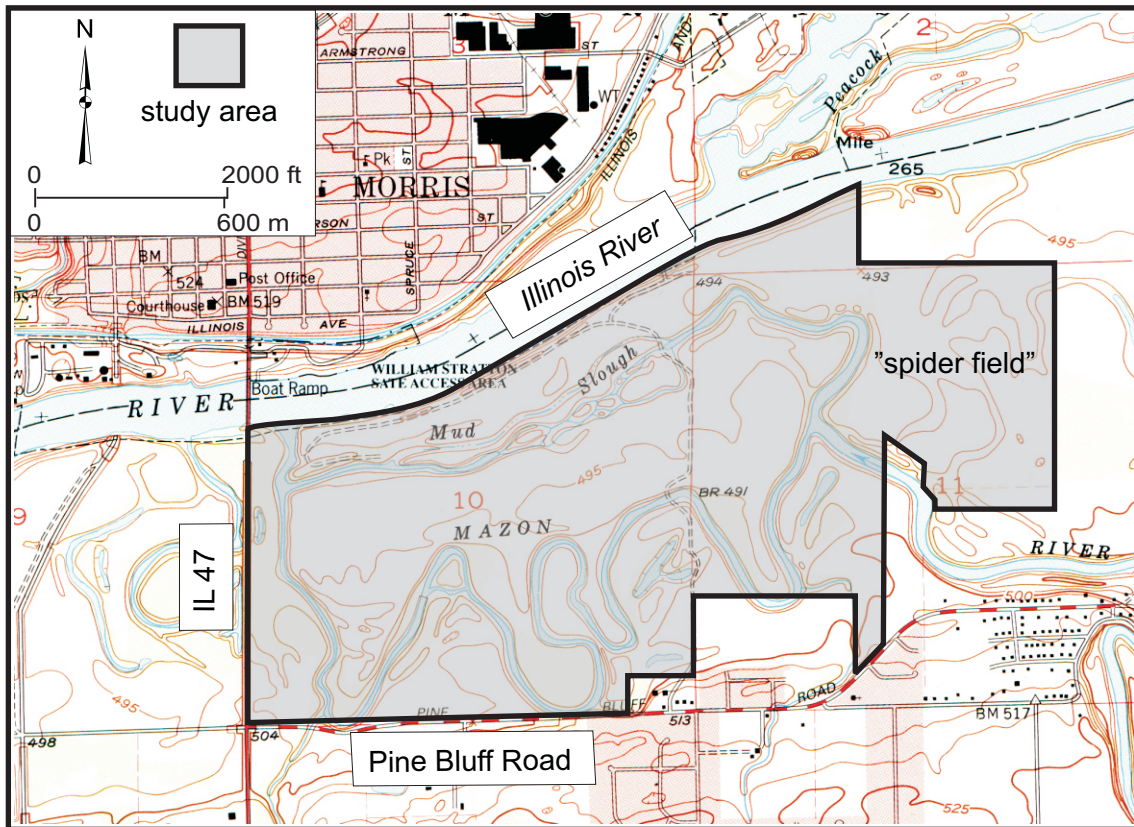
#### PLANNED FUTURE ACTIVITIES

- Monitoring of surface water via stage gauges, two data loggers, and an off-site USACE river gauge will continue in 2010-11 or until no longer required by IDOT. The continued aim will be to watch for significant changes in the on-site wetland hydrology acreage or function.

# Morris Wetland Mitigation Bank

## General Study Area and Vicinity

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



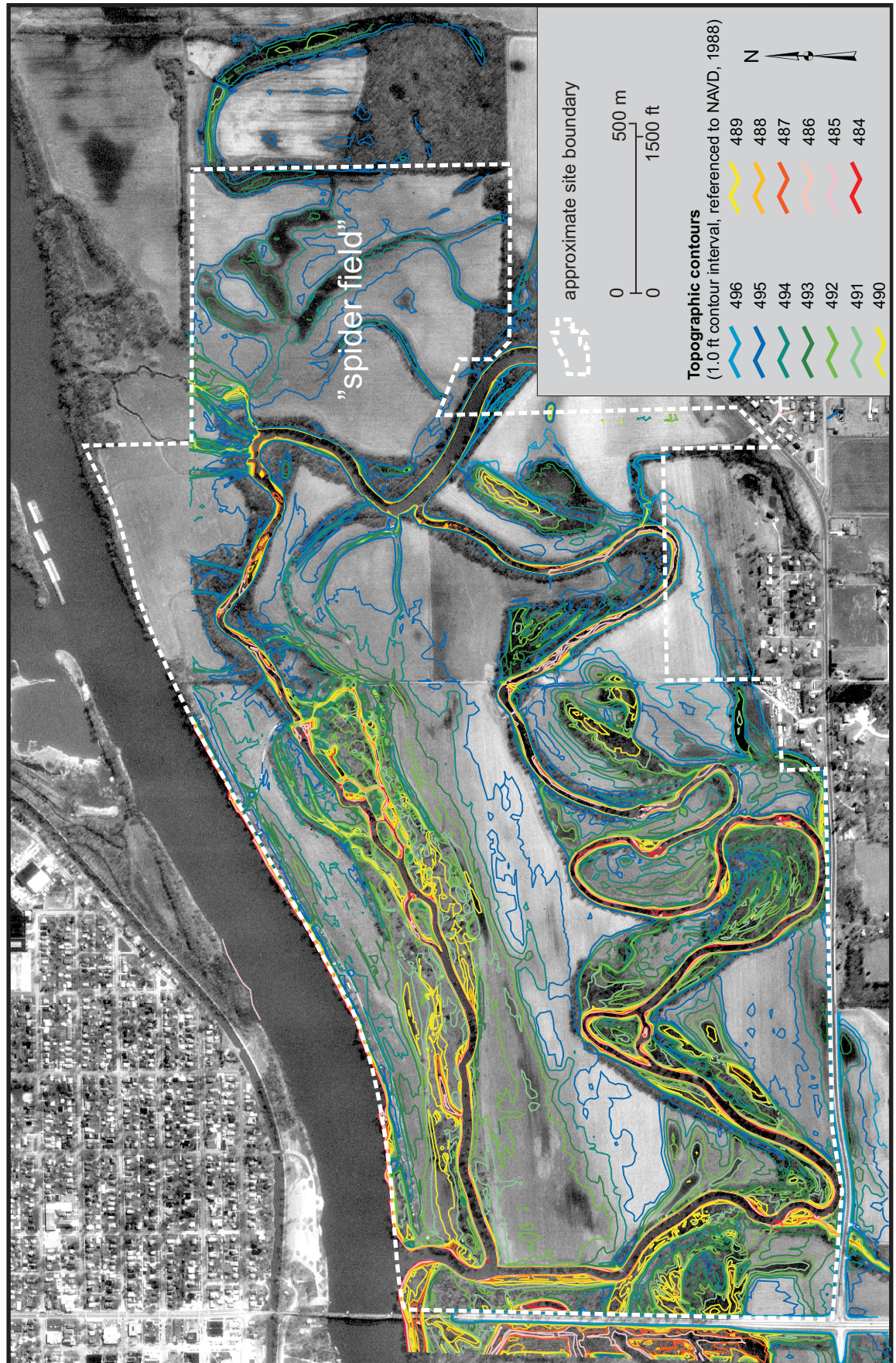


# Morris Wetland Mitigation Bank

## Site Topographic Map (IDOT/INHS)

contours prepared by Illinois Natural History Survey in May 2000, using IDOT survey data

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

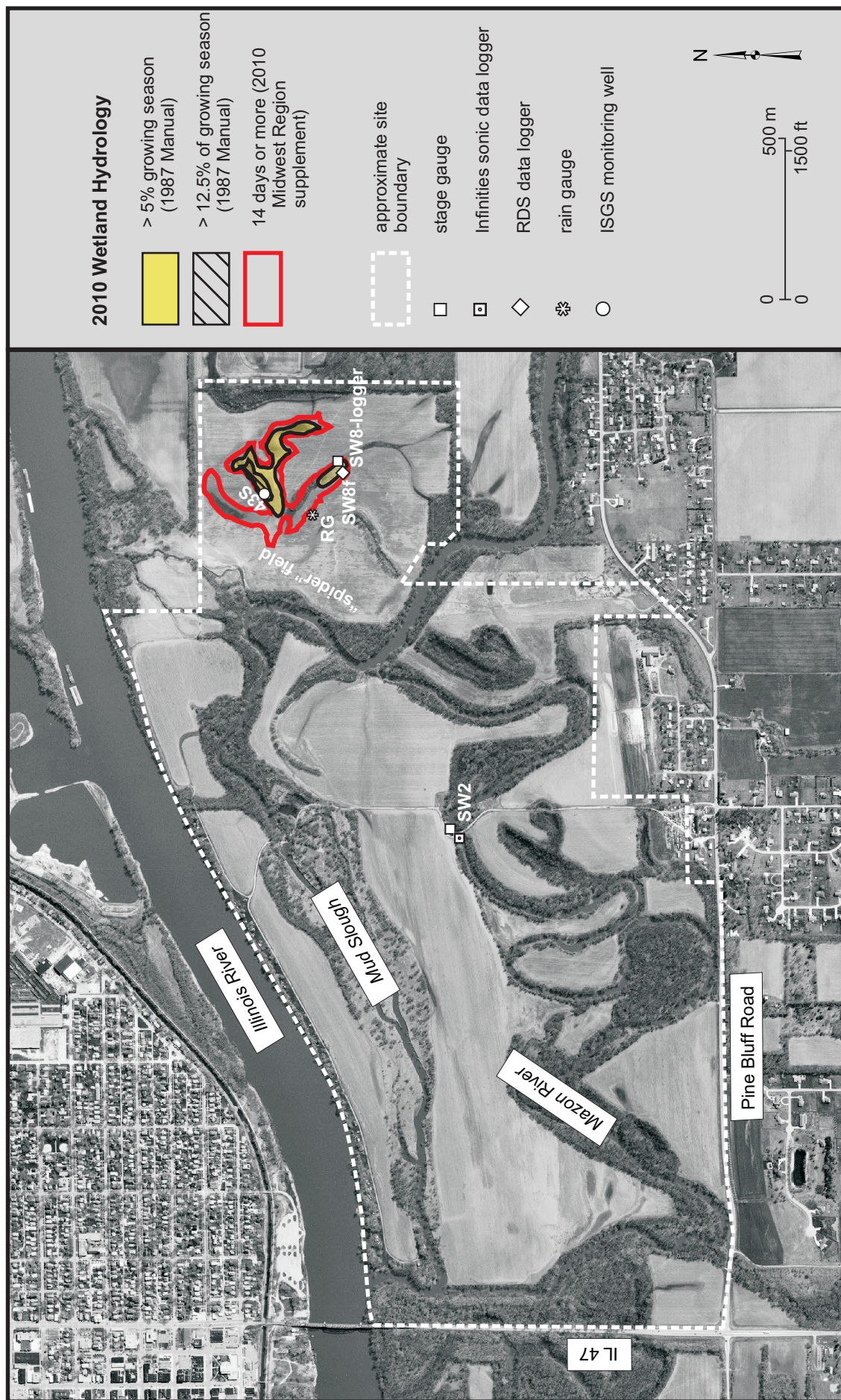




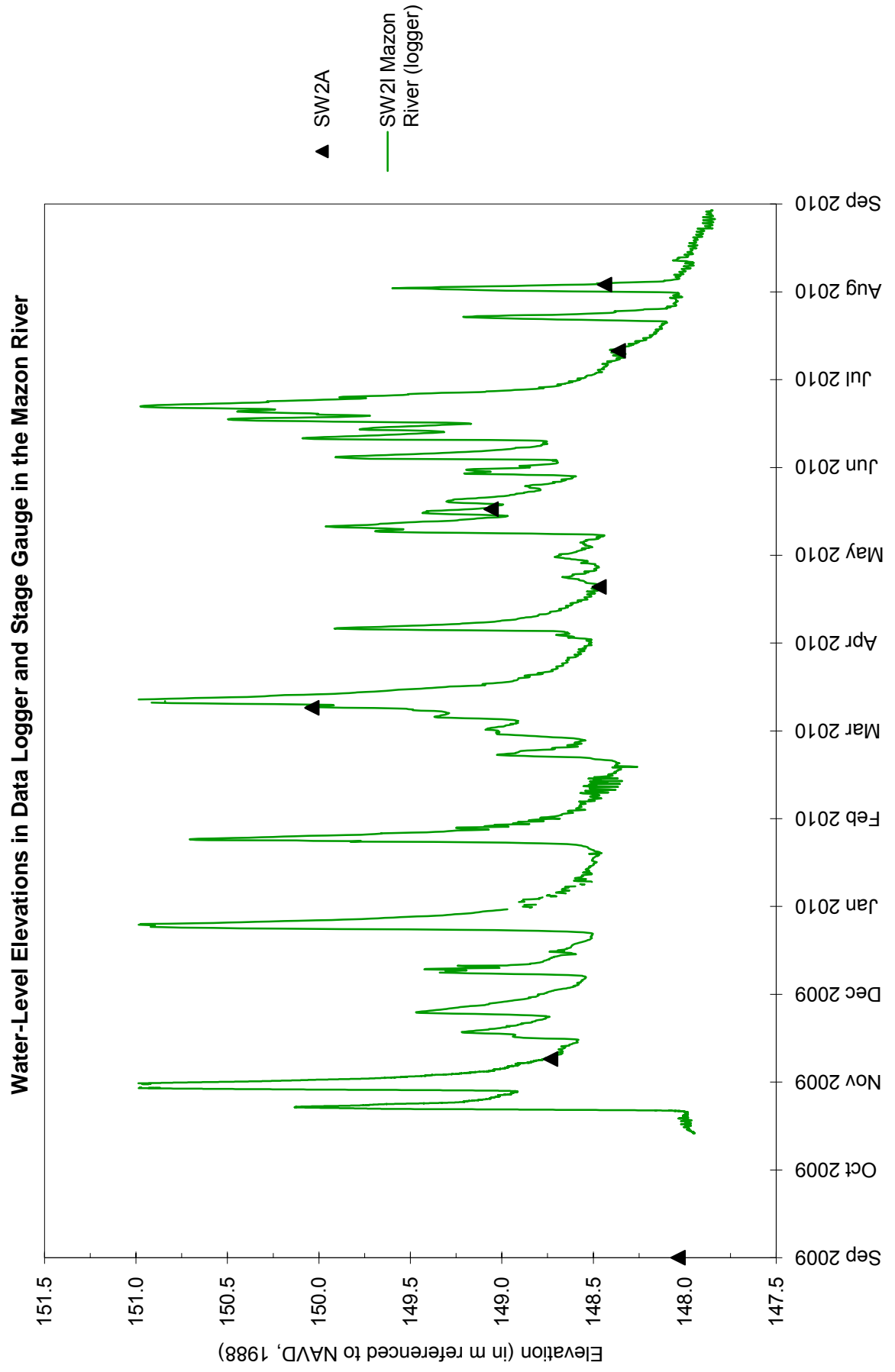
# **Morris Wetland Mitigation Bank** **Estimated Areal Extent of 2010 Wetland Hydrology**

September 1, 2009 through August 31, 2010

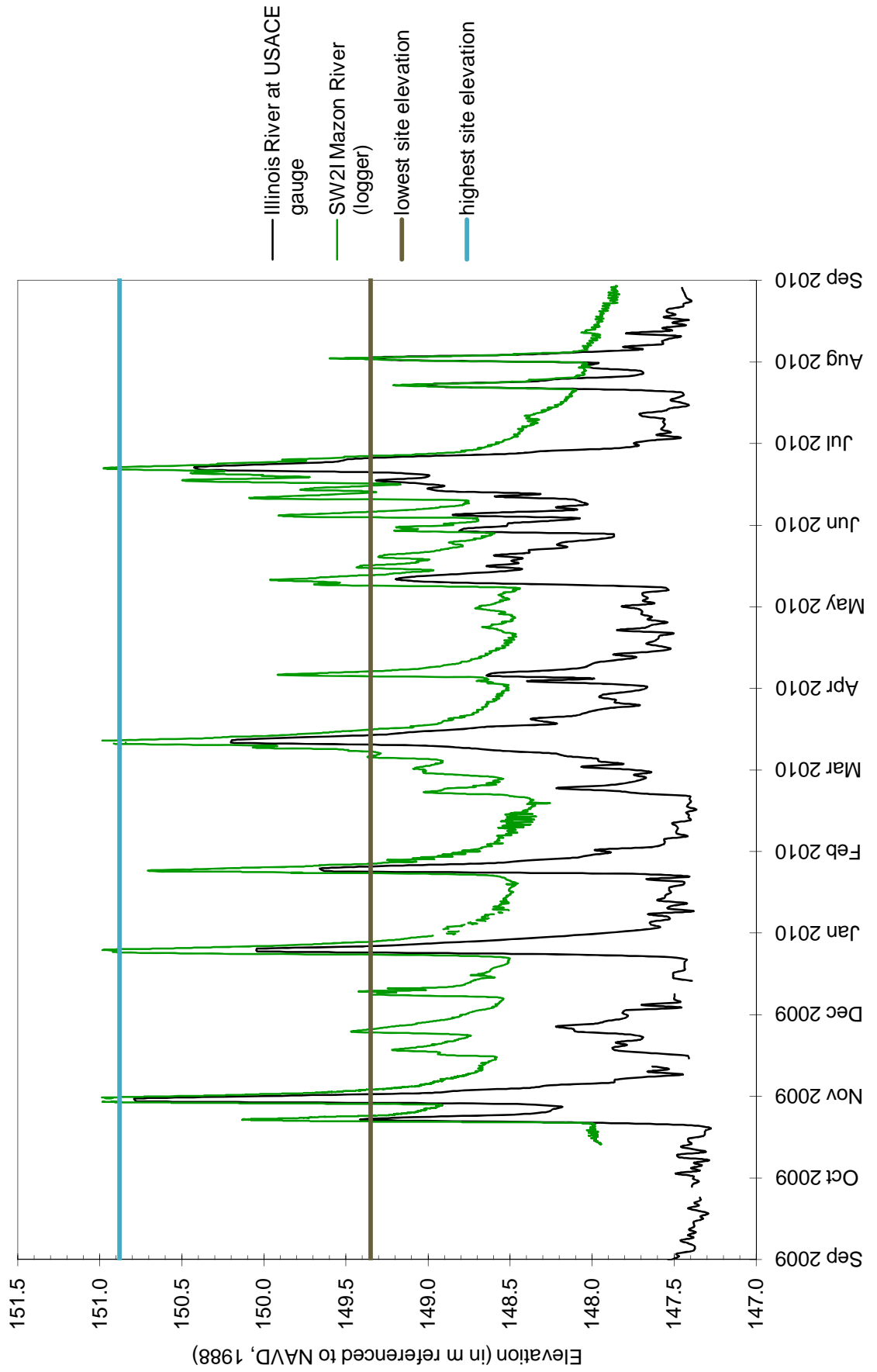
Map based on USGS digital orthophotograph, Morris NE quarter-quadrangle  
 from 4/5/1998 aerial photography (ISGS 2001)



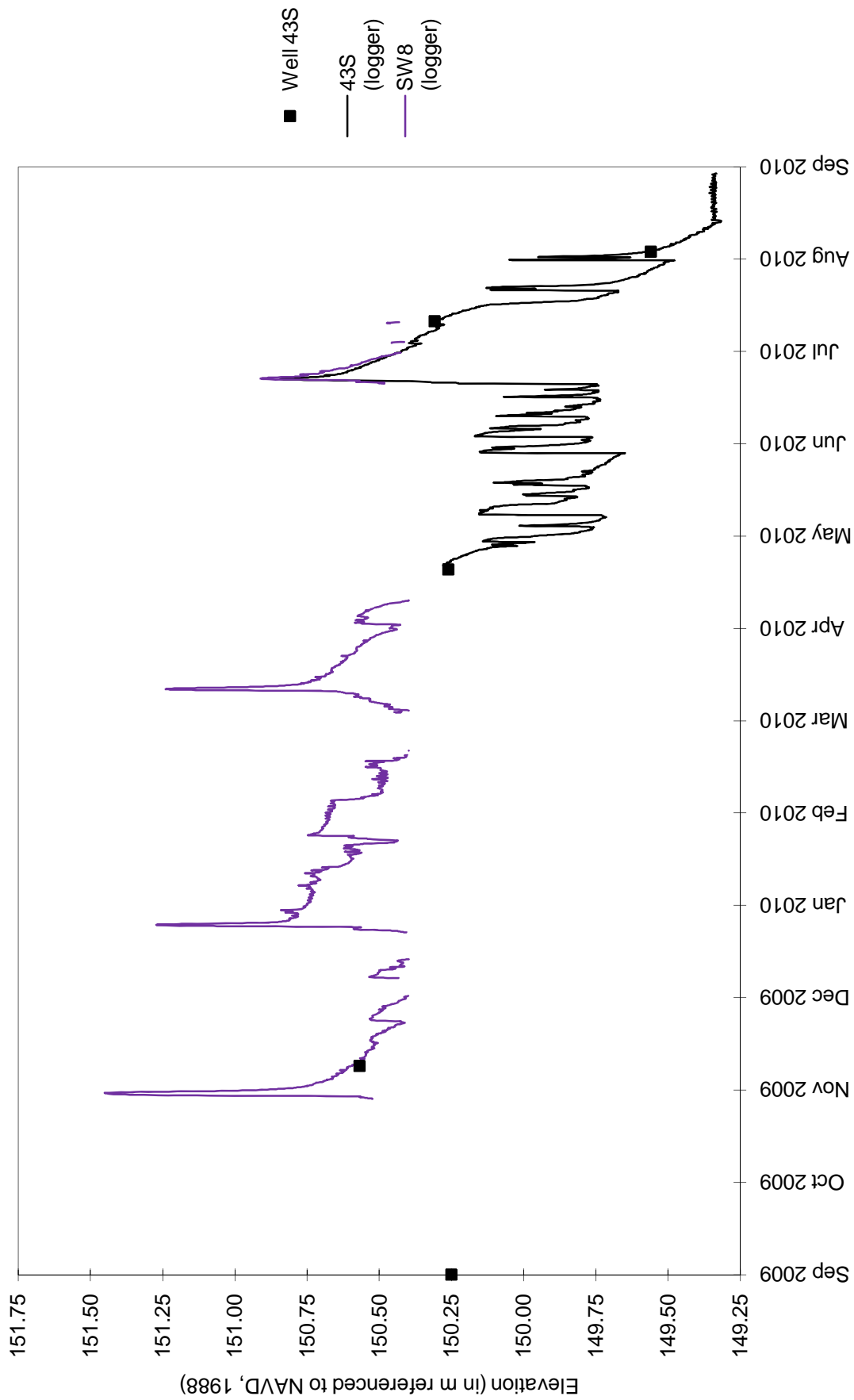
# **Morris Wetland Mitigation Bank** **September 1, 2009 through August 31, 2010**



# **Morris Wetland Mitigation Bank** **September 1, 2009 through August 31, 2010** **Water-Level Elevations in Selected Data Loggers**

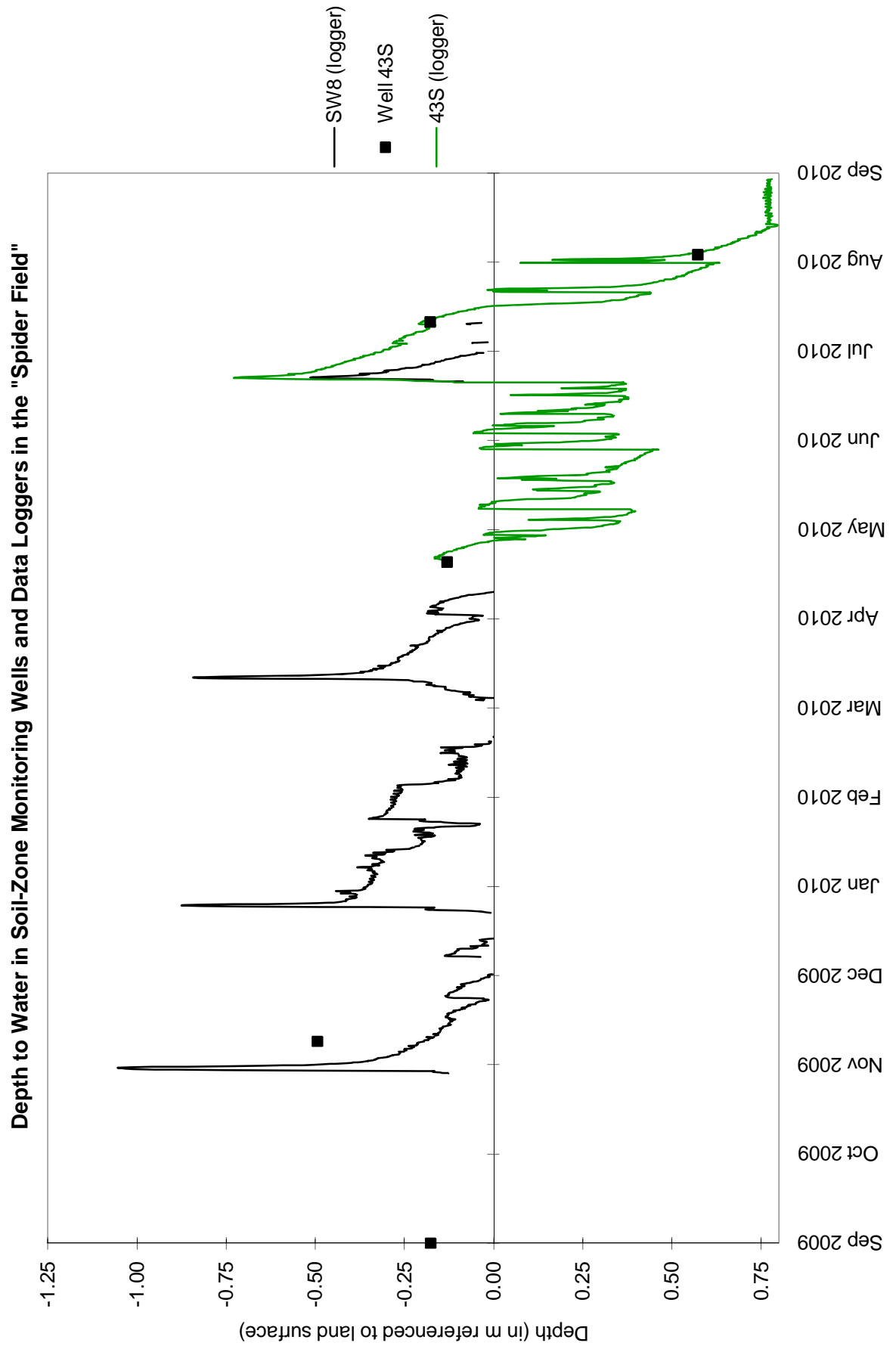


# **Morris Wetland Mitigation Bank** **September 1, 2009 through August 31, 2010** **Water-Level Elevations in Soil-Zone Monitoring Wells and Data Loggers in the "Spider Field"**





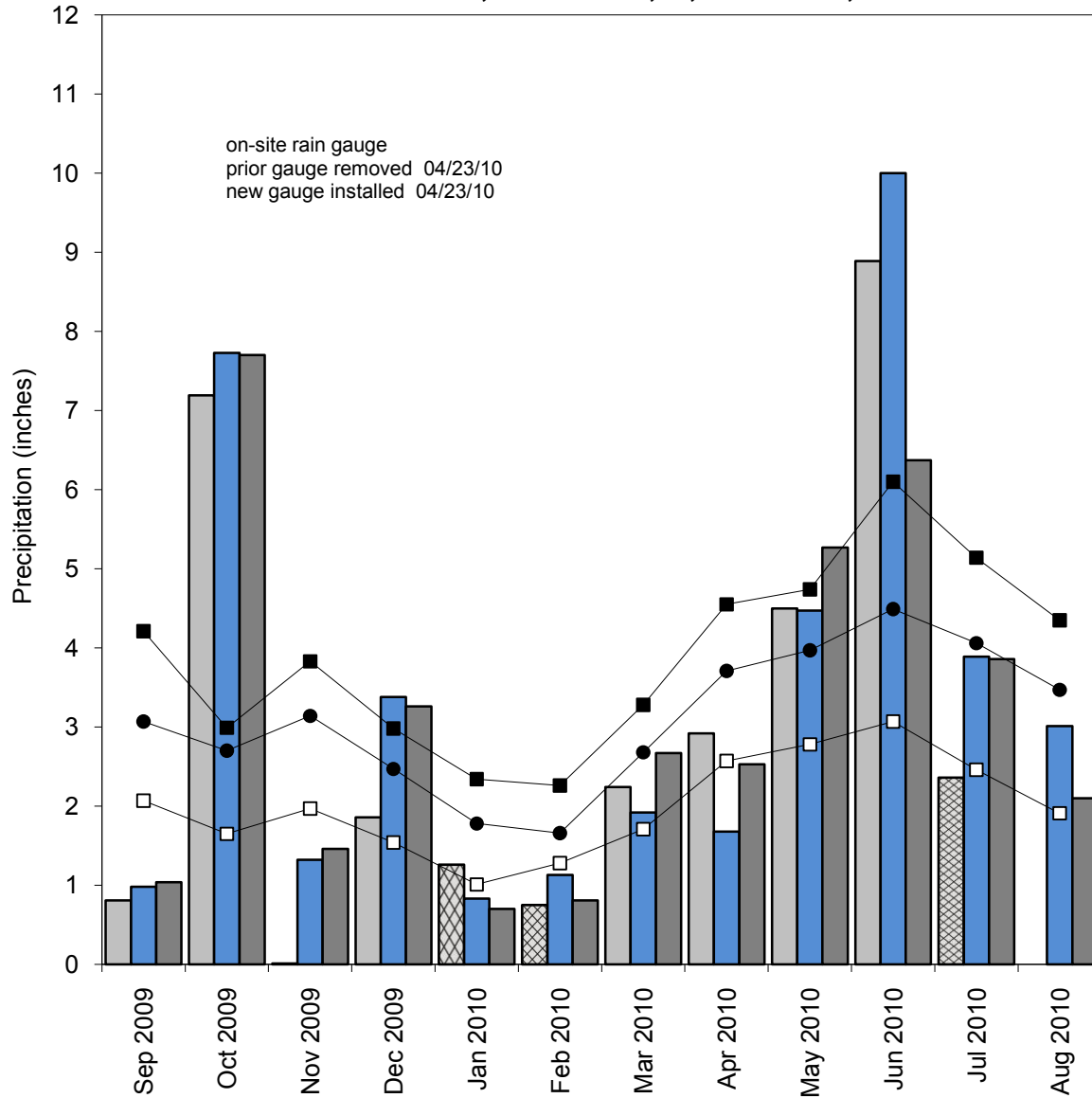
# **Morris Wetland Mitigation Bank** **September 1, 2009 through August 31, 2010**



# Morris Wetland Mitigation Bank

## September 2009 through August 2010

Total Monthly Precipitation Recorded on Site and at  
Dresden Island, Channahon, IL, and Morris, IL



monthly precipitation recorded at Channahon, IL (MRCC)

monthly precipitation recorded at Morris, IL (MRCC)

monthly precipitation recorded on site by ISGS

data incomplete

1971-2000 monthly 30% above average threshold at Channahon, IL (NWCC)

1971-2000 monthly average precipitation at Channahon, IL (NWCC)

1971-2000 monthly 30% below average threshold at Channahon, IL (NWCC)

Graph last updated September 27, 2010

**FORMER LUEHMANN PROPERTY, NEW RIVER CROSSING  
POTENTIAL WETLAND MITIGATION SITE**

**ISGS #51**

FAP 999

Sequence #33

Madison County, near Stallings, Illinois

**Primary Project Manager: Steven E. Benton**

**Secondary Project Manager: Charles W. Knight**

**SITE HISTORY**

- February 2000: The ISGS was tasked to perform a Level II hydrogeologic assessment of the site.
- 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 groundwater monitoring.
- July 2010: IDOT requested that all monitoring at this site be ended.

**SUMMARY OF 2010 EVENTS**

The total area of the site is 27.5 ha (68.0 ac). Because 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 MRCC, 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. No starting date for the growing season using methods outlined in the 2010 Midwest Region supplement was determined for this site.
- Total precipitation recorded at Edwardsville, Illinois, weather station during the monitoring period was 152% of normal and precipitation in spring 2010 (March through May) was 93% of normal.
- Measurements in the Cahokia Canal indicate that the water level exceeded 126.8 m (416.0 ft) on 10 occasions during the 2010 growing season. This is the suggested elevation of an intake culvert described in the Level II Report (ISGS Open-File Series 2003–09).

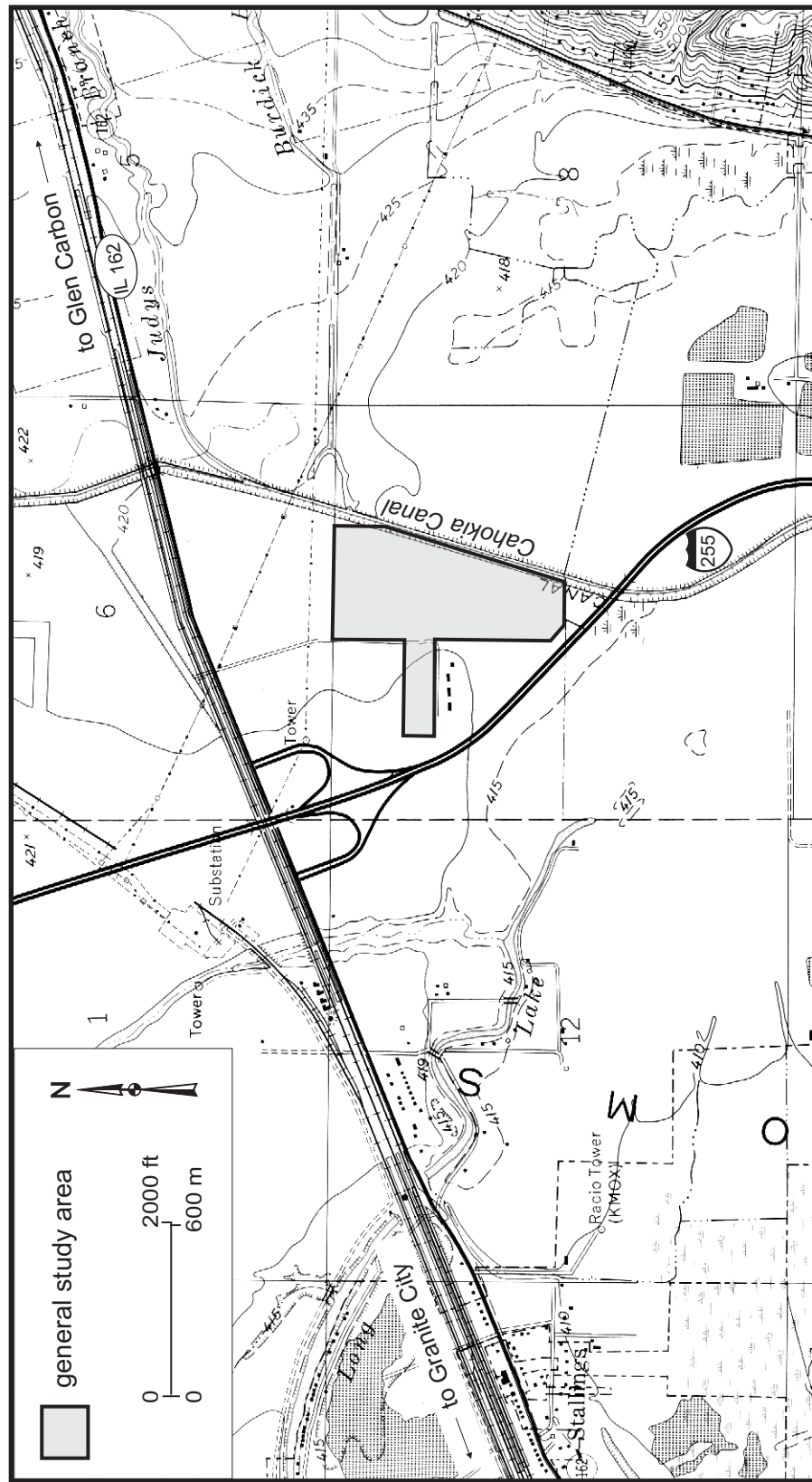
**PLANNED FUTURE ACTIVITIES**

- All remaining elements of the monitoring network will be removed or properly abandoned in Fall 2010.

**Former Luehmann Property, New River Crossing Potential Wetland Mitigation 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 3 m (10 ft)

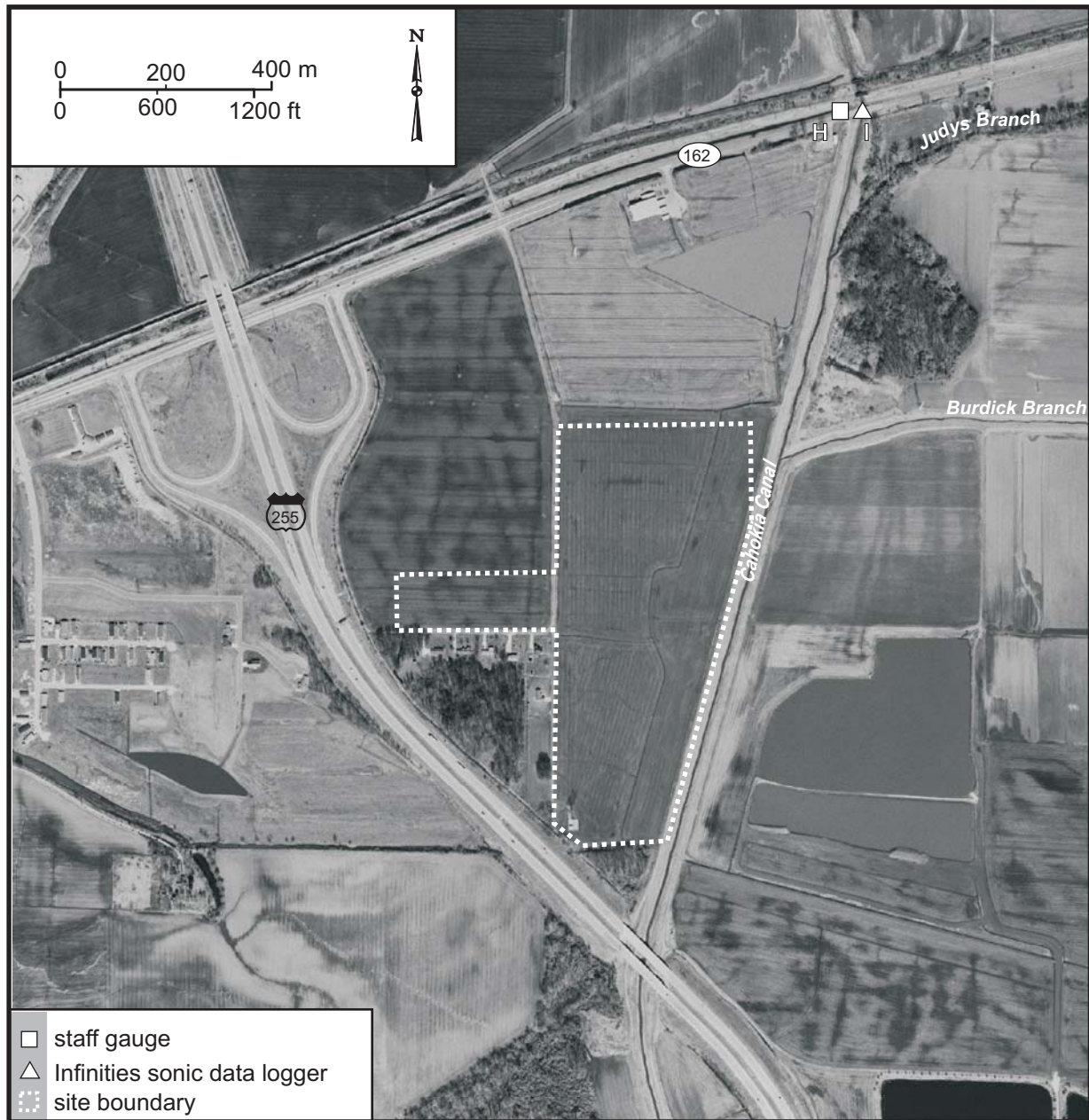




# Former Luehmann Property, New River Crossing Potential Wetland Mitigation Site (FAP 999)

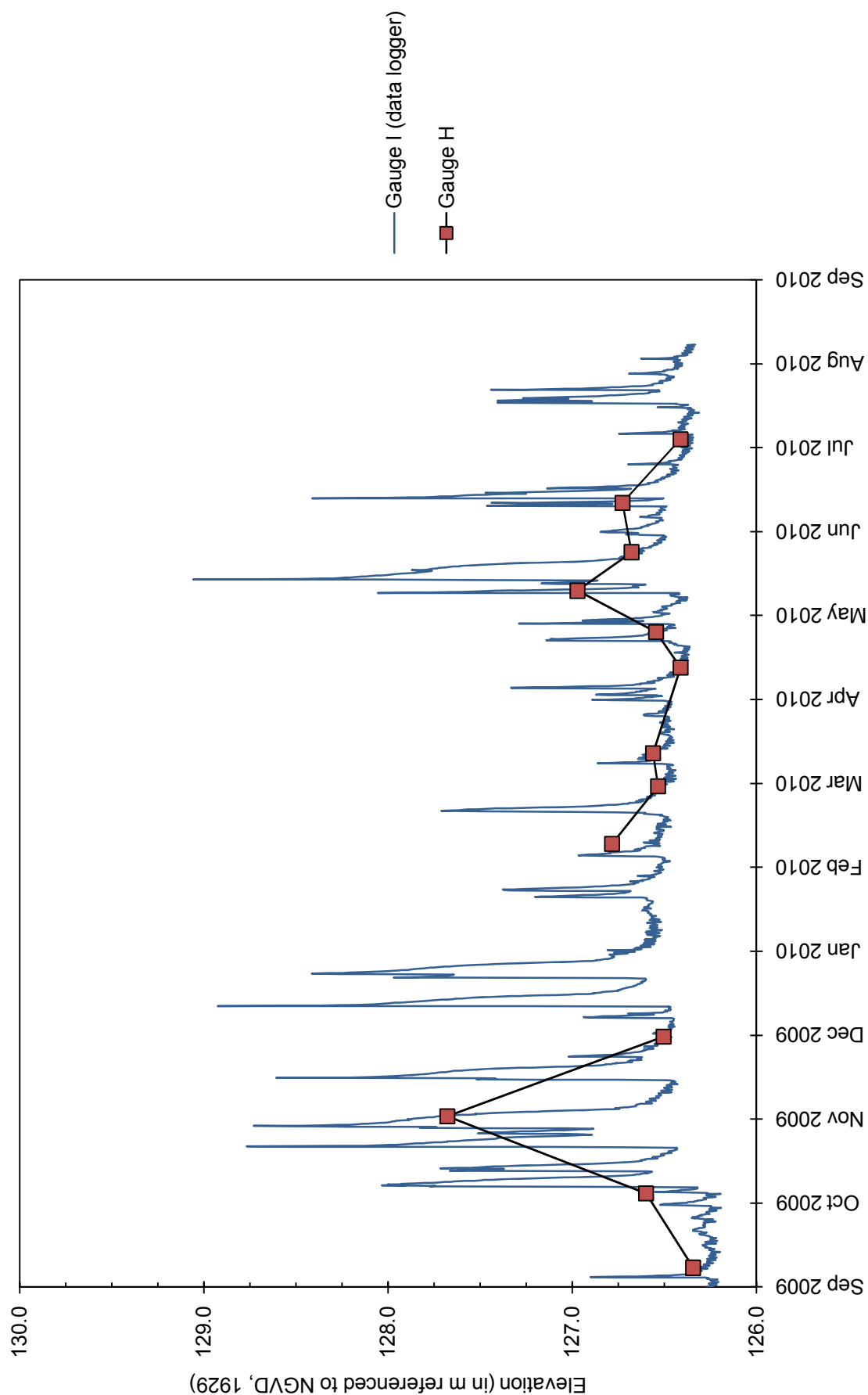
## Locations of ISGS Monitoring Instruments

Map based on USGS digital orthophotograph, Monks Mound NE quarter quadrangle  
produced from 2005 aerial photography (ISGS 2006)



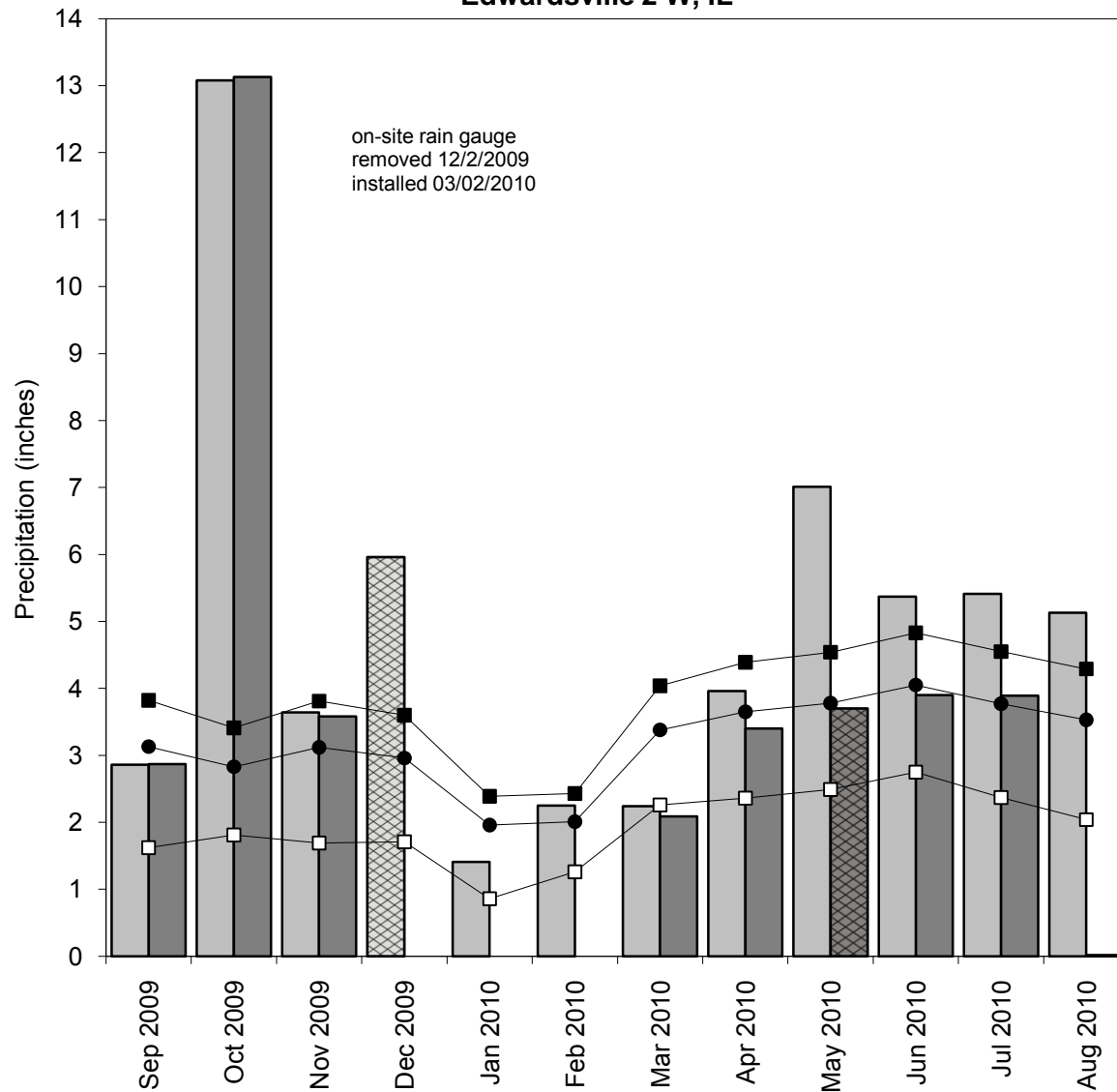
# Former Luehmann Property, New River Crossing Potential Wetland Mitigation Site September 1, 2009 through August 31, 2010

Water-Level Elevations at Staff Gauges and Surface-Water Data Loggers



# Former Luehmann Property, New River Crossing Potential Wetland Mitigation Site September 2009 through August 2010

## Total Monthly Precipitation Recorded on Site and at Edwardsville 2 W, IL



- monthly precipitation recorded at Edwardsville, IL (MRCC)
- monthly precipitation recorded on site by ISGS
- ▨ data incomplete
- 1961-1990 monthly 30% above average threshold at Edwardsville, IL (NWCC)
- 1961-1990 monthly average precipitation at Edwardsville, IL (NWCC)
- 1961-1990 monthly 30% below average threshold at Edwardsville, IL (NWCC)

Graph last updated September 29, 2010

**LA GRANGE  
WETLAND MITIGATION BANK**

**ISGS #52**

Sequence #9579

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, and began on-site activities in the Spring of 2000.
- January 2003: ISGS submitted a wetland banking instrument to IDOT.
- January 2005: A Level II hydrogeologic characterization report was submitted to IDOT (ISGS Open-File Series 2005-02).
- Fall 2005 and 2006: Extensive earthworks were undertaken by IDOT, including filling and plugging of several ditches, reshaping of the east levee, construction of a raised access road, and the excavation of a large basin in the north-central area of the site.
- Winter and Spring 2010: Further earthworks were undertaken at the site. The former basin of Amelia Barker Lake was excavated and the fill utilized for road construction in the western third of the site. Similar to 2008 and 2009, large magnitude and long-duration floods affected the site. The site remained flooded over 75-95% of its area from May to late July.

**WETLAND HYDROLOGY CALCULATION FOR 2010**

We estimate that the total area of the site that satisfied wetland hydrology criteria (Environmental Laboratory 1987) for greater than 5% of the growing season in 2010 was 582 ha (1438 ac) out of a total site area of 666 ha (1645 ac). Further, 565 ha (1395 ac) also satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Using the 2010 Midwest Region supplement (U.S. Army Corps of Engineers 2010) to the 1987 Manual, we estimate that 578 ha (1429 ac) satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

- According to the MRCC, 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. According to methods outlined in the 2010 Midwest Region supplement, we estimate that March 10 was the starting date of the 2010 growing season based on soil temperature as well as vegetation growth and development observed at the wetland bank site.
- Total precipitation for the monitoring period at the Mount Sterling, IL, weather station was 154% of normal. During the March through May period, precipitation was 118% of normal. Large precipitation events upstream in the watershed led to widespread flooding of the site during this period. For the remainder of the summer (June through August), precipitation was 209% of normal, prolonging flooding over most of the site.

- During long-duration flooding at the site, the U.S. Army Corps of Engineers gauge at the nearby lock and dam and one on-site data logger were the primary sources of water-level elevation data. Also as a result of this flooding, only four soil-zone monitoring wells were accessible above the flood line for reading or surveying for most of the spring. Of these, wells 14S, 41S, and 42S satisfied wetland hydrology criteria for greater than 5% of the growing season, and 41S and 42S for greater than 12.5% of the growing season. According to the 2010 Midwest Region supplement, wells 14S, 41S, and 42S also satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season.
- Water levels recorded via data logger at an on-site gauge (SW1B) showed surface-water inundation for a period sufficient to satisfy wetland hydrology criteria at an elevation of at least 134.75 m (442.09 ft) for greater than 5% of the growing season and at an elevation of at least 133.50 m (437.99 ft) for greater than 12.5% of the growing season. According to the 2010 Midwest Region supplement, surface-water levels at the SW1B data logger also satisfied wetland hydrology criteria at an elevation of at least 134.25 m (440.45 ft) for 14 or more consecutive days during the growing season.

#### PLANNED FUTURE ACTIVITIES

- One additional flood-resistant data logger will be added to the site in the Fall of 2010. In addition, two water-quality data loggers will be installed to help quantify site functions.
- Monitoring of hydrology will continue until no longer required by IDOT.



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

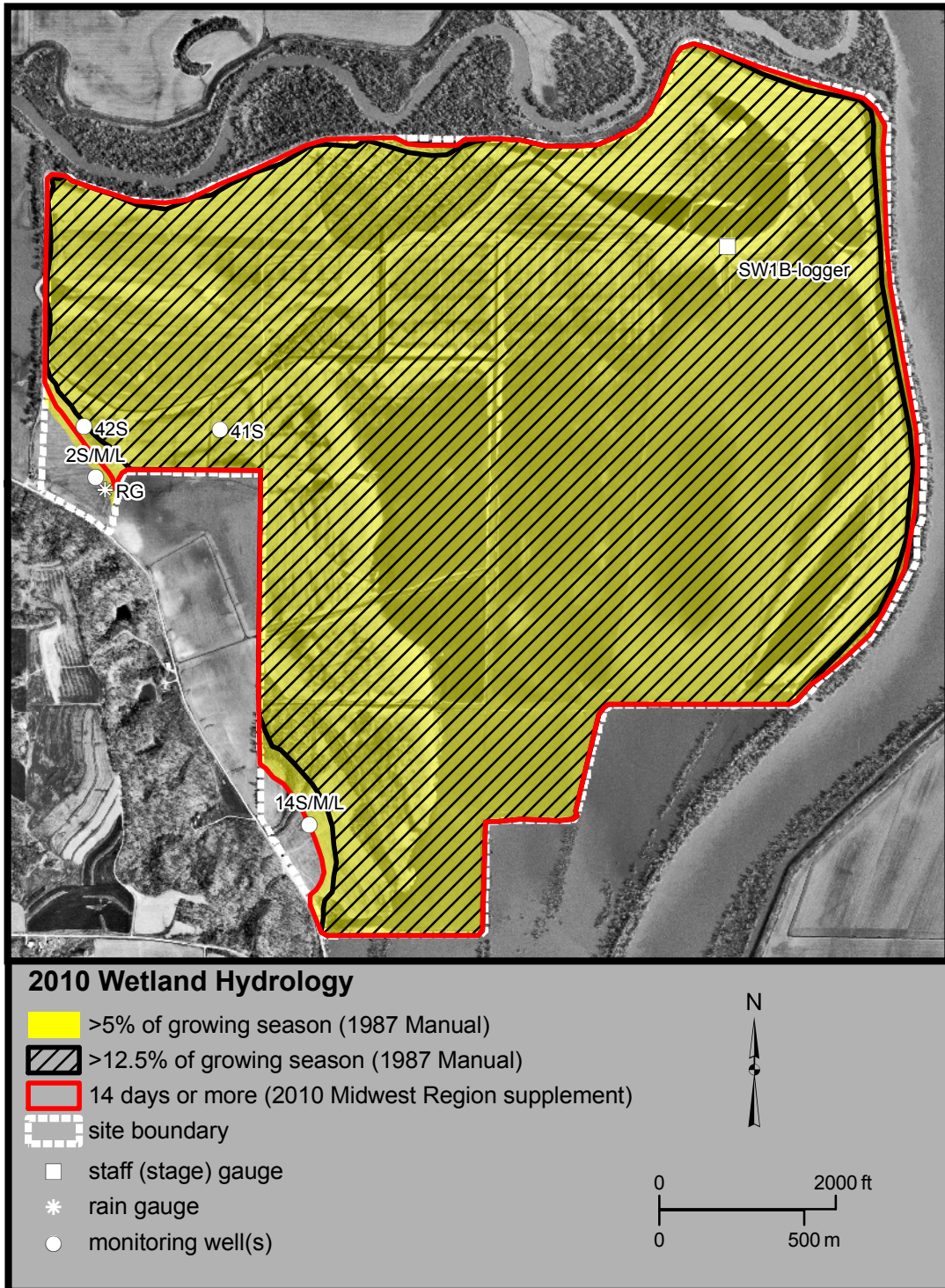


# La Grange Wetland Mitigation Bank

## Estimated Areal Extent of 2010 Wetland Hydrology

### September 1, 2009 through August 31, 2010

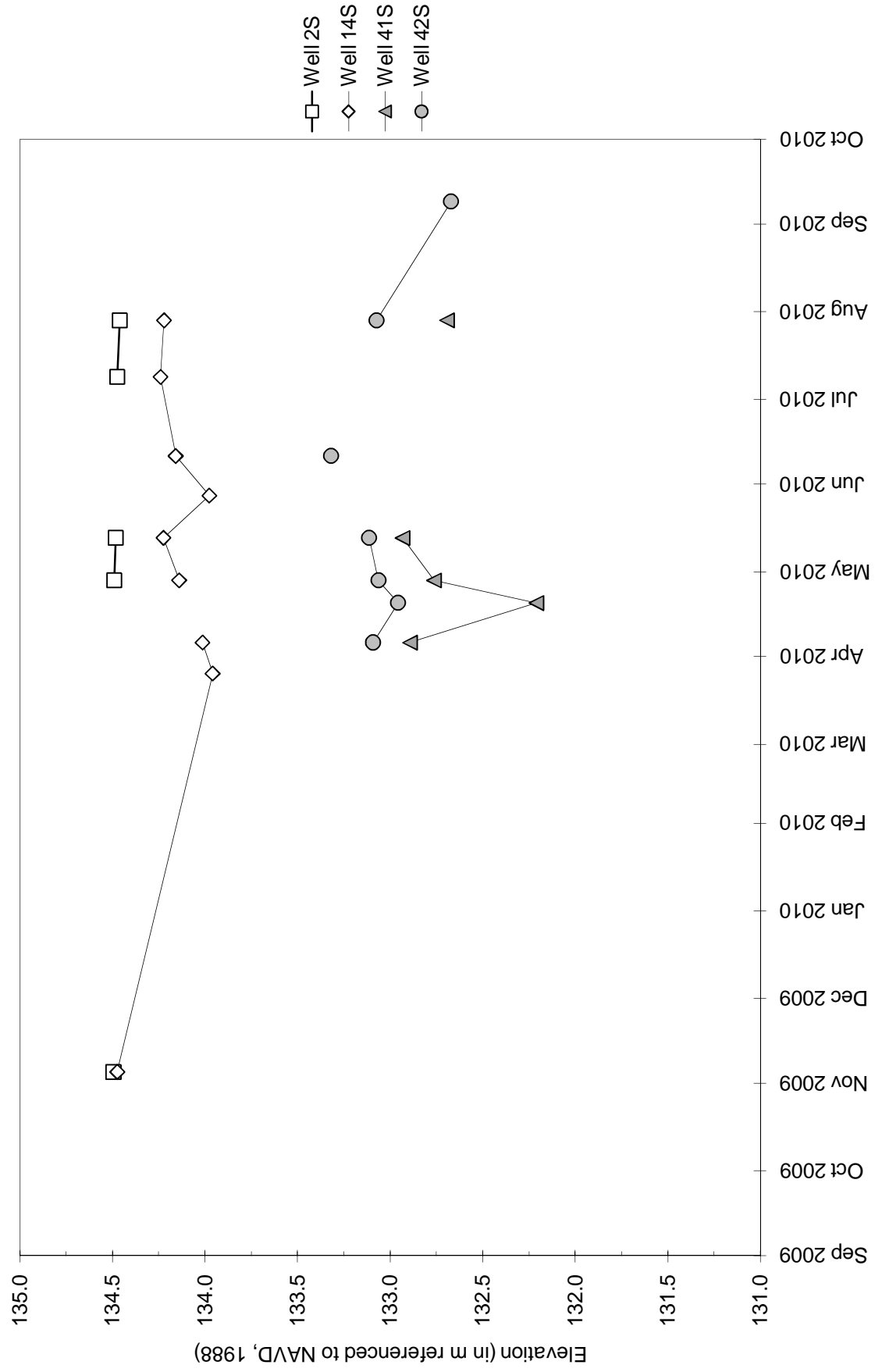
map based upon USGS digital orthophotograph, Cooperstown NE quarter-quadrangle,  
produced from 4/14/98 aerial photography (ISGS 2002)





# **La Grange Wetland Mitigation Bank** **September 1, 2009 through October 1, 2010**

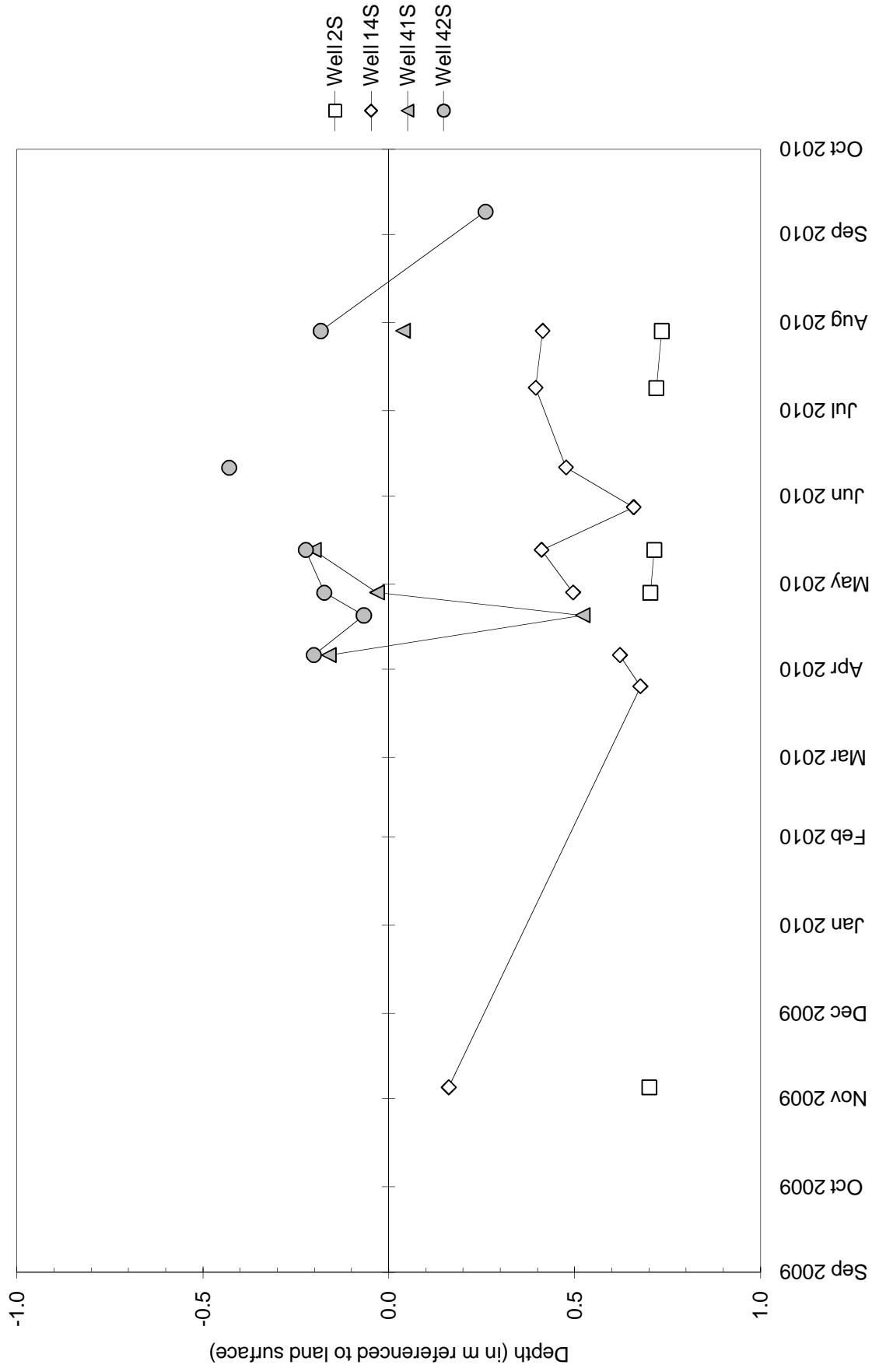
**Water-Level Elevations in Shallow Monitoring Wells in the Terrace and Fan**





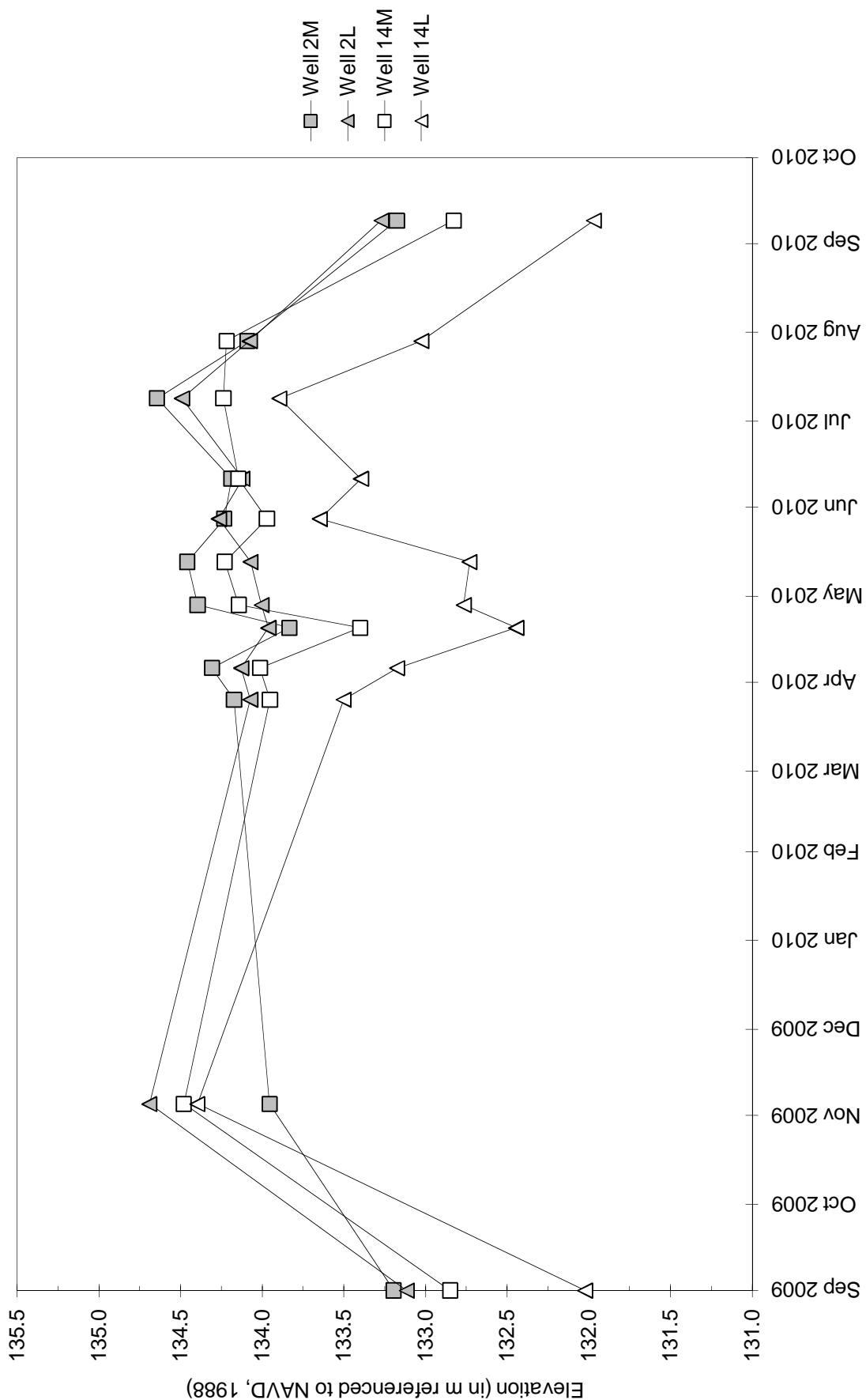
# **La Grange Wetland Mitigation Bank** **September 1, 2009 through October 1, 2010**

**Depth to Water in Shallow Monitoring Wells in the Terrace and Fan**



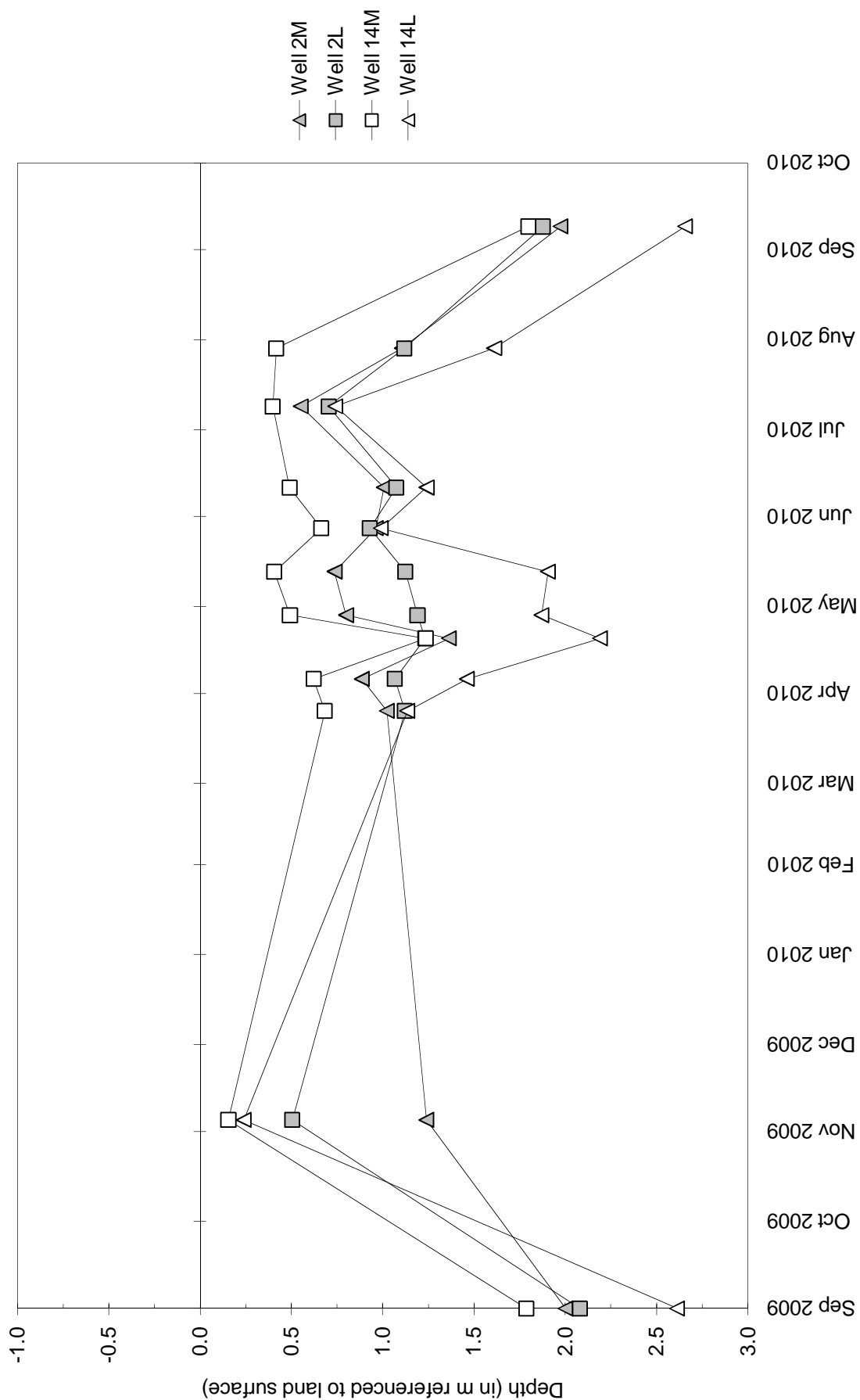
# **La Grange Wetland Mitigation Bank** **September 1, 2009 through October 1, 2010**

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



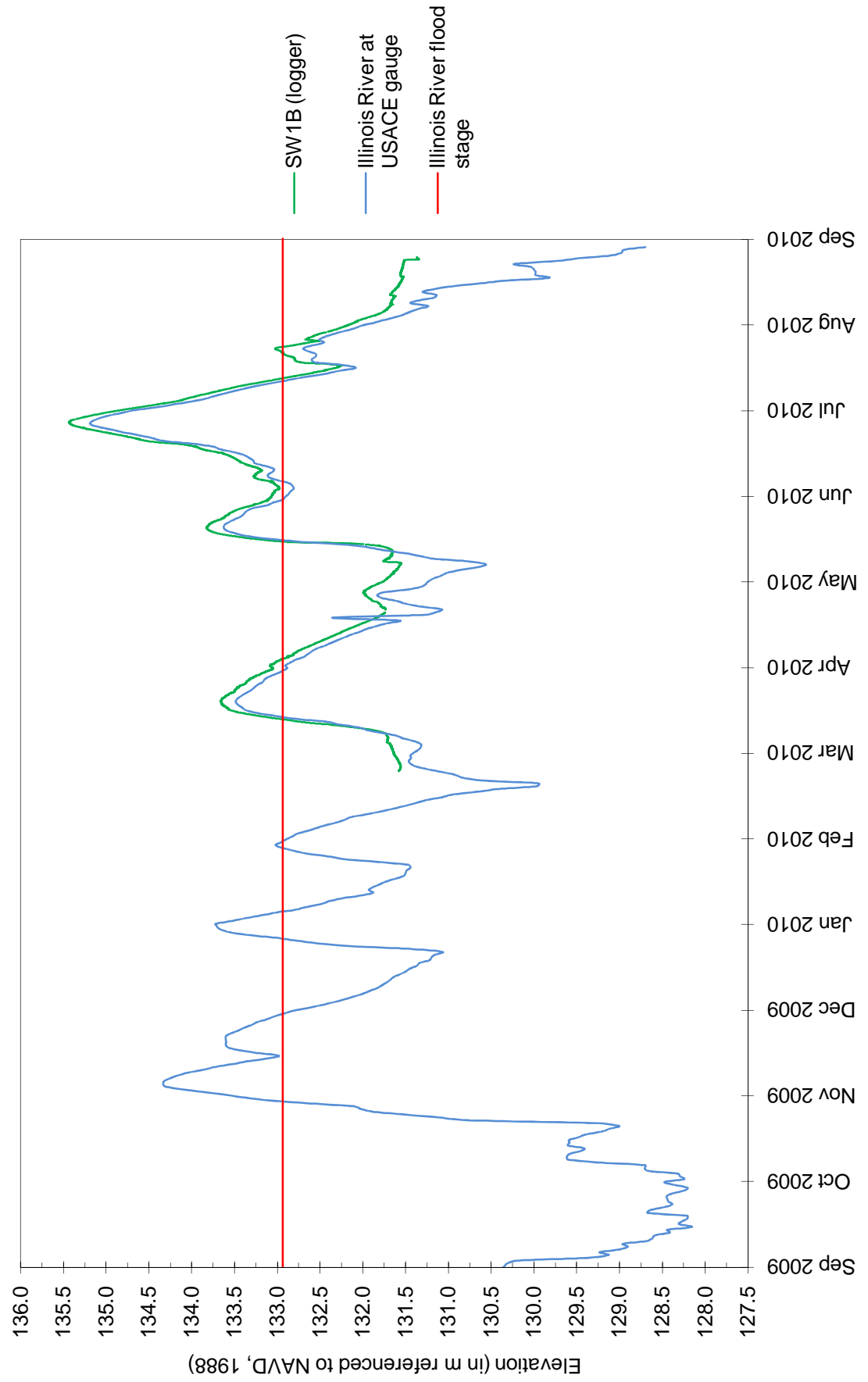
# **La Grange Wetland Mitigation Bank** **September 1, 2009 through October 1, 2010**

**Depth to Water in Deeper Monitoring Wells in the Terrace and Fan**



# **La Grange Wetland Mitigation Bank** **September 1, 2009 through August 31, 2010**

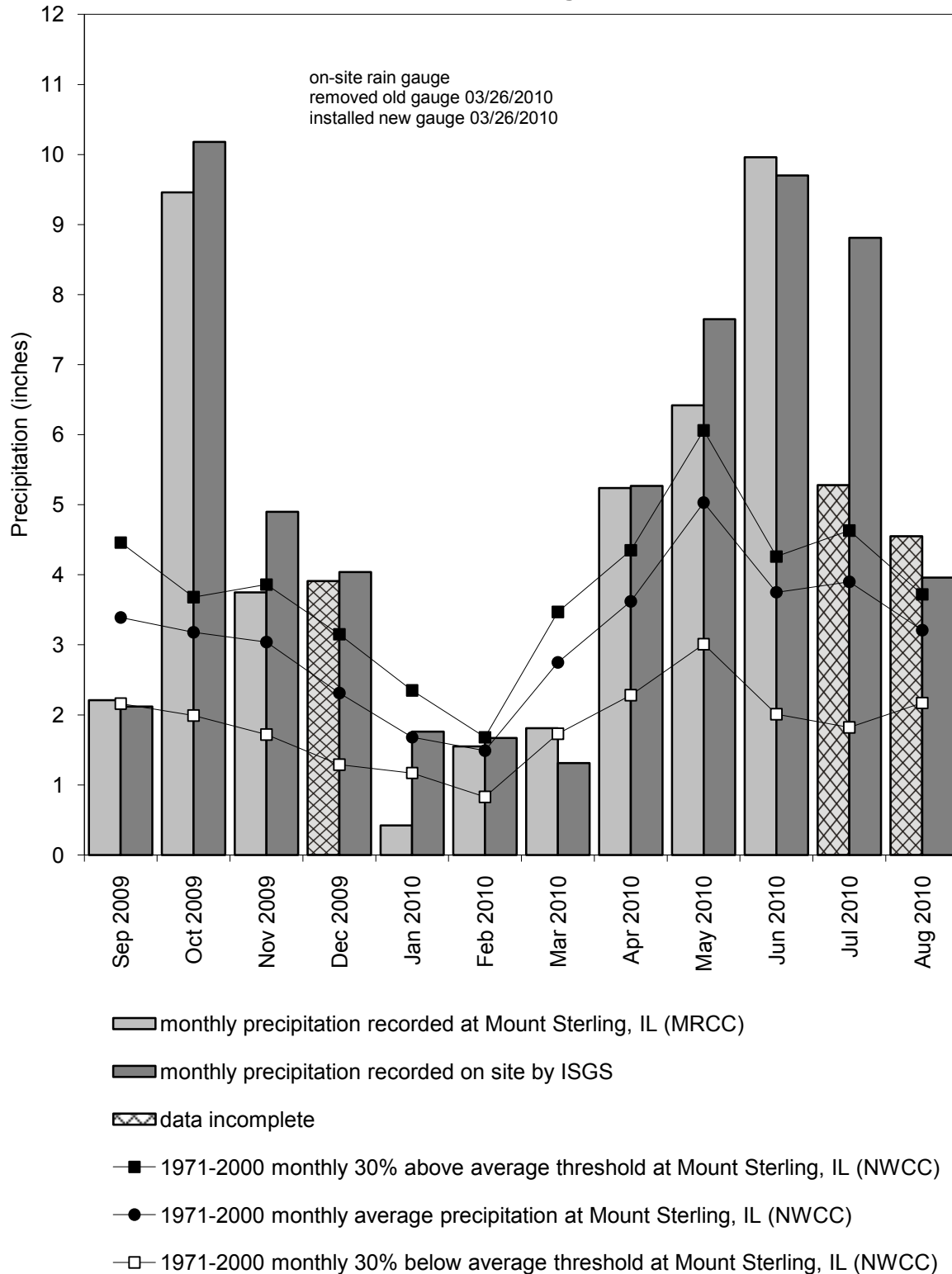
## **Water-Level Elevations at Surface-Water Gauges**



# La Grange Wetland Mitigation Bank

## September 2009 through August 2010

### Total Monthly Precipitation Recorded on Site and at Mount Sterling, IL



Graph last updated September 29, 2010

**FAIRMONT CITY, NEW RIVER CROSSING  
POTENTIAL WETLAND MITIGATION SITE**

**ISGS #53**

FAP 999

Sequence #33

Saint Clair County, near Fairmont City, Illinois

**Primary Project Manager: Steven E. Benton**

**Secondary Project Manager: Adrienne K. M. Knight**

**SITE HISTORY**

- August 1999: The ISGS conducted an initial site evaluation. The results were reported to IDOT by letter in November.
- September 2000: ISGS began monitoring groundwater and surface-water levels.
- March 2003: A Level II hydrogeologic characterization report was submitted to IDOT (ISGS Open-File Series 2003–04).

**WETLAND HYDROLOGY CALCULATION FOR 2010**

The area of the site that satisfied wetland hydrology criteria (Environmental Laboratory 1987) in 2010 for more than 5% of the growing season was estimated to be 14.1 ha (34.8 ac) out of a total area of 32.4 ha (80.0 ac). The area that satisfied wetland hydrology criteria for more than 12.5% of the 2010 growing season was estimated to be 14.1 ha (34.8 ac). Using the 2010 Midwest Region supplement (U.S. Army Corps of Engineers 2010) to the 1987 Manual, we estimate that 14.1 ha (34.8 ac) satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

- According to the MRCC, 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. According to methods outlined in the 2010 Midwest Region supplement, we estimate that March 11 was the starting date of the 2010 growing season based on both vegetation growth and development and soil temperatures measured at the wetland mitigation site.
- Total precipitation recorded at the Belleville, Illinois weather station during the monitoring period was 130% of normal and total precipitation in Spring 2010 (March through May) was 93% of normal.
- In 2010, water levels measured in all of the soil-zone monitoring wells except 6S satisfied wetland hydrology criteria for more than 5% of the growing season and for more than 12.5% of the growing season. Water levels measured in all of the soil-zone monitoring wells except 6S satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season per the 2010 Midwest Region supplement.
- Surface-water elevations measured in the pond (SW Pond, gauge AR2) and the drainage ditch along the base of the terrace (gauge BR) reveal that surface water was at or above 122.22 m (401.00 ft) for more than 5% of the growing season, and at or above 122.21 m (400.97 ft) for more than 12.5% of the growing season. At gauges D and F, on the east side of the site, surface water was above 122.35 m (401.43 ft) for more than 5% of the growing season and for more than 12.5% of the growing season. Surface-

water elevations measured in the pond (SW Pond, gauge AR2) and the drainage ditch along the base of the terrace (gauge BR) reveal that surface water was at or above 122.22 m (401.00 ft) for 14 or more consecutive days during the growing season per the 2010 Midwest Region supplement. At gauges D and F, on the east side of the site, surface water was above 122.35 m (401.43 ft) for 14 or more consecutive days during the growing season per the 2010 Midwest Region supplement.

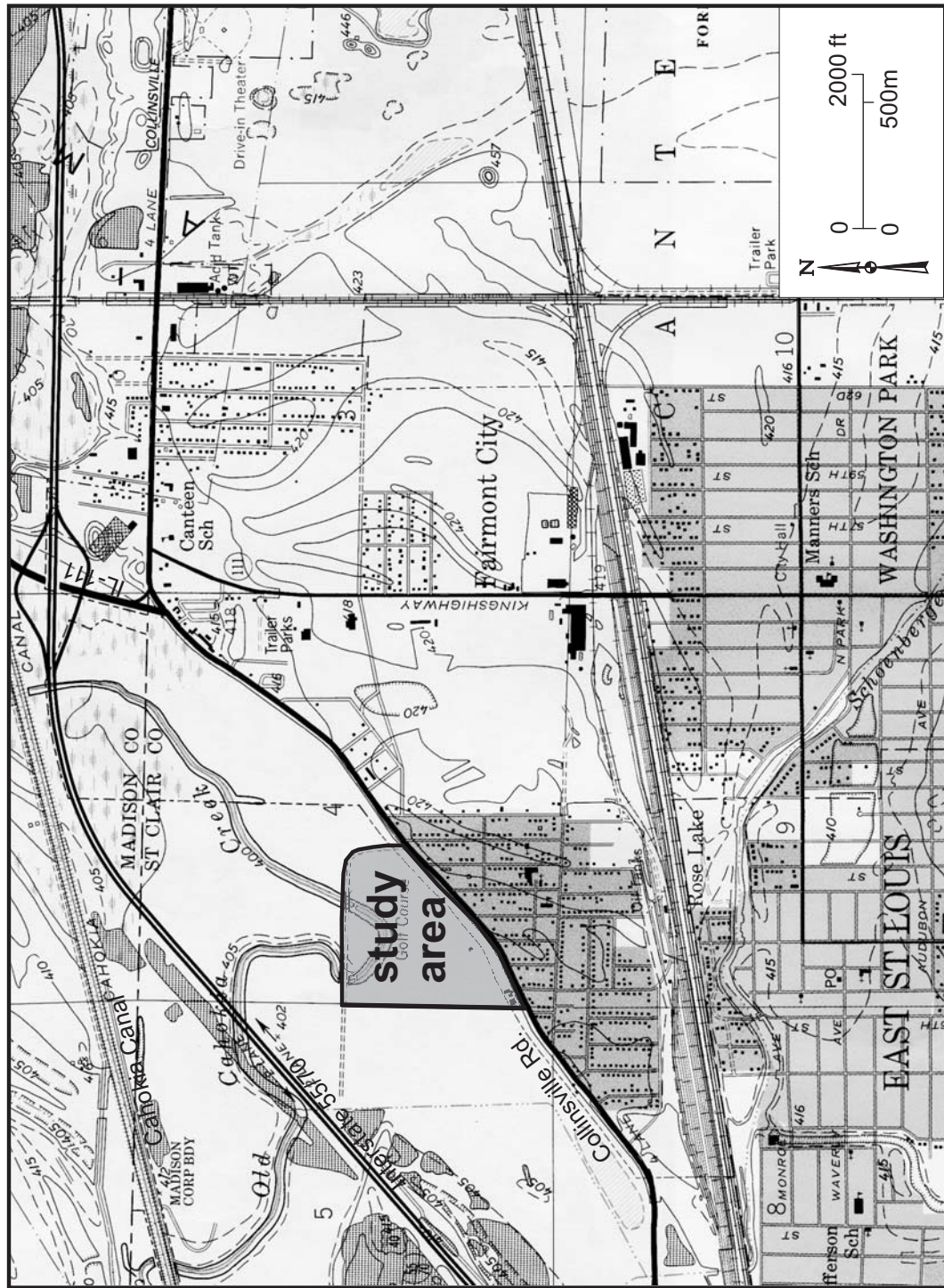
#### PLANNED FUTURE ACTIVITIES

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

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

## General Study Area and Vicinity

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

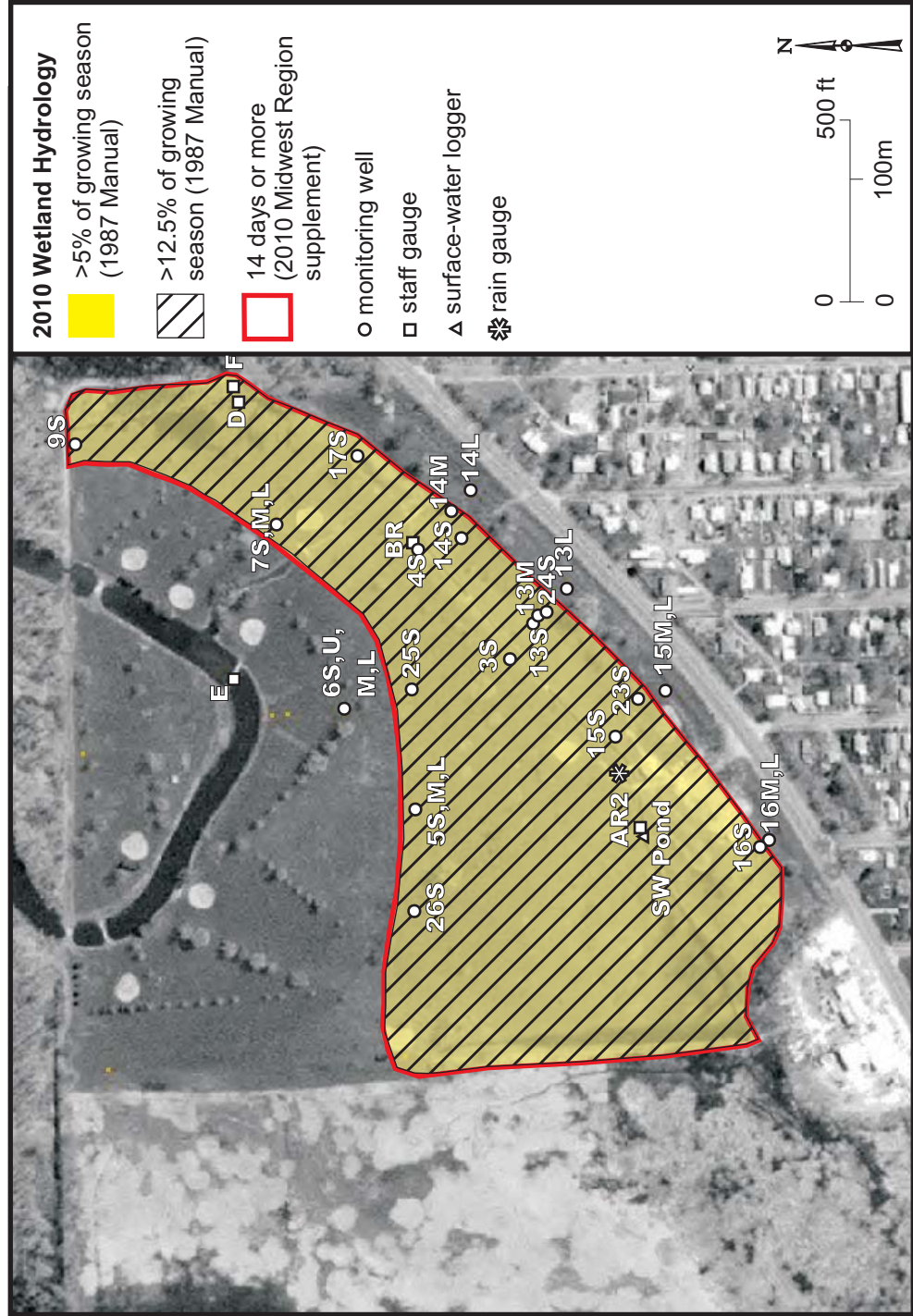




# Fairmont City, New River Crossing Potential Wetland Mitigation Site (FAP 999)

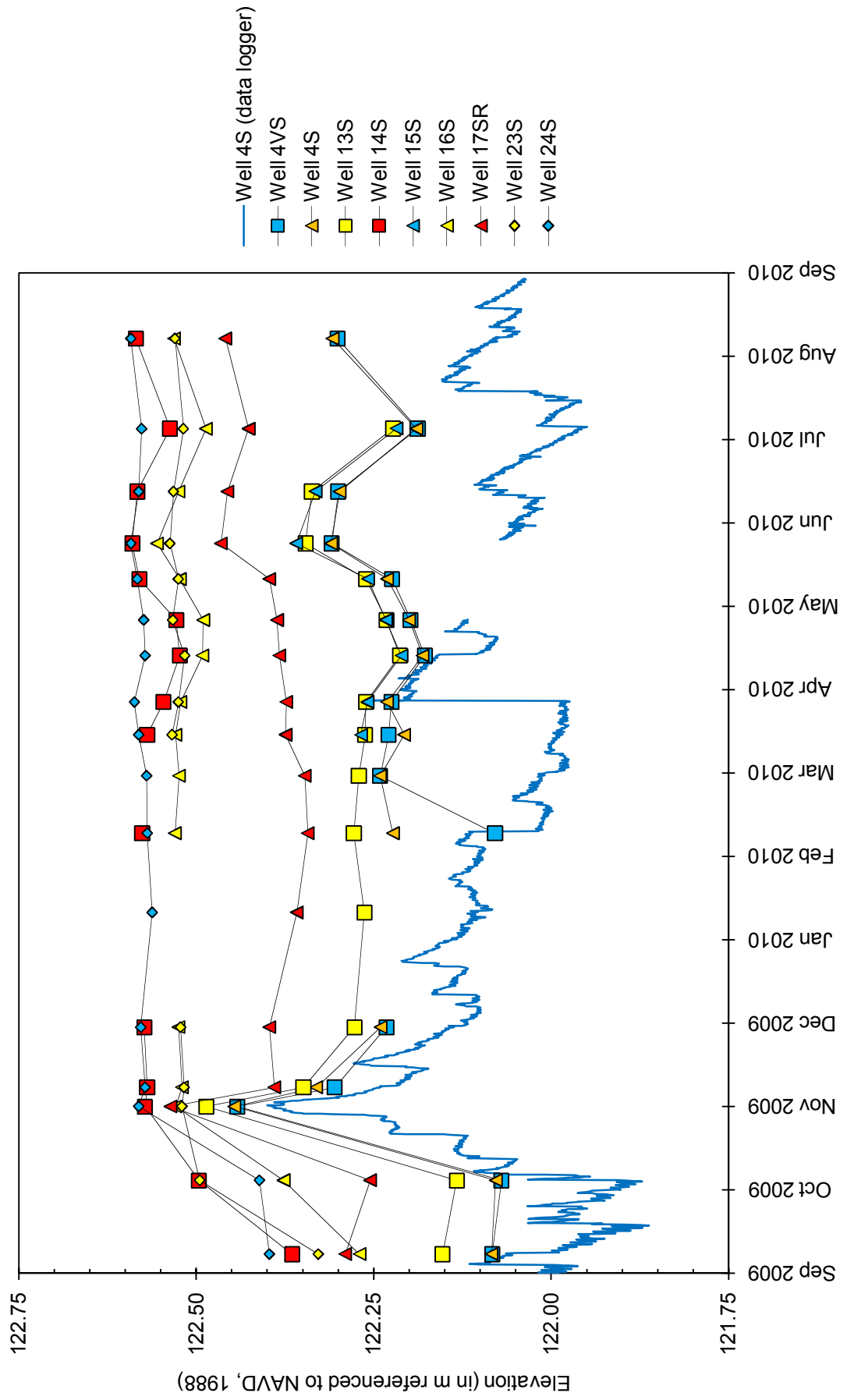
## Estimated Areal Extent of 2010 Wetland Hydrology

September 1, 2009 through August 31, 2010  
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



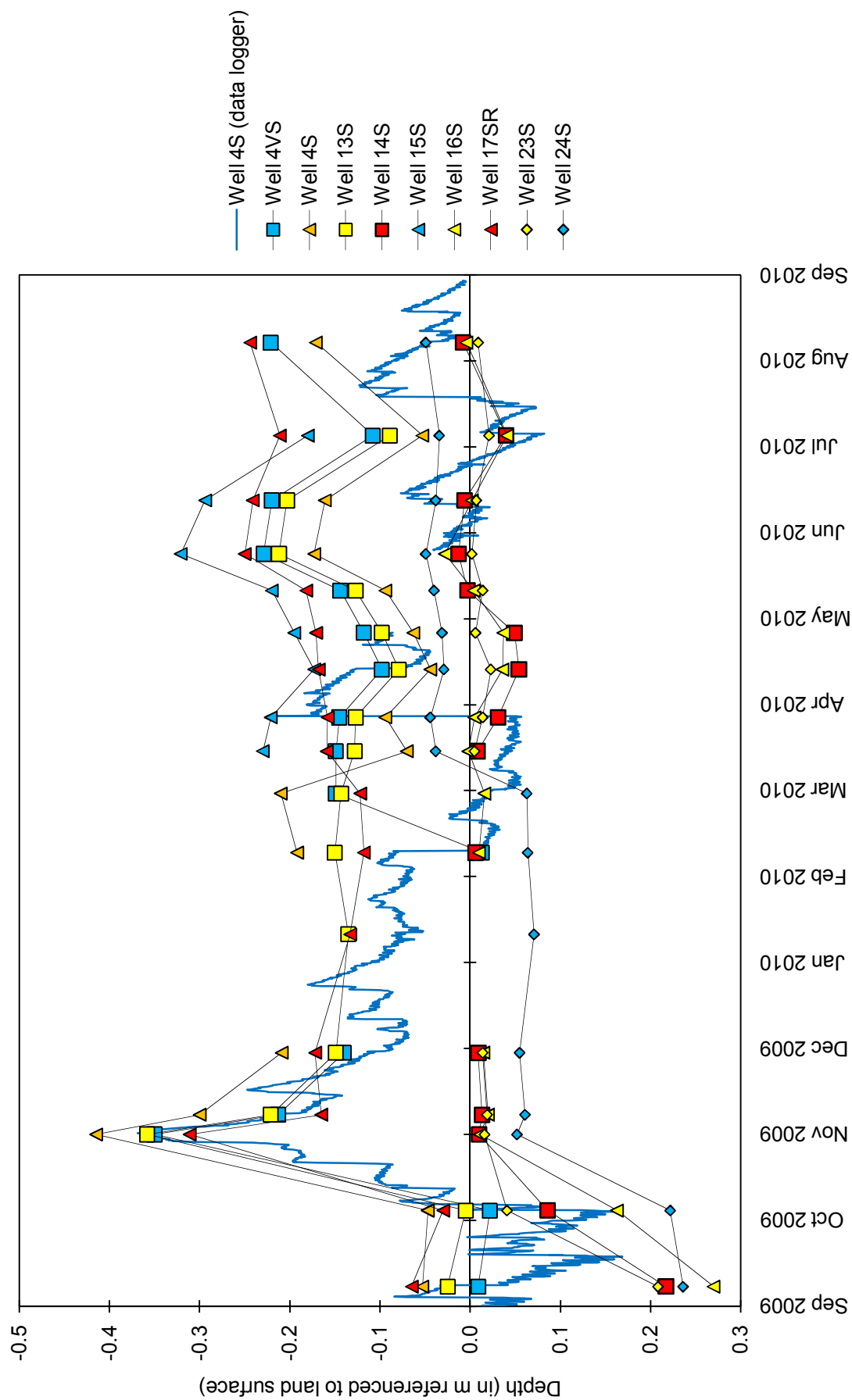
# **Fairmont City, New River Crossing Potential Wetland Mitigation Site** **September 1, 2009 through August 31, 2010**

**Water-Level Elevations in Soil-Zone and Upper Wells  
 Adjacent to the Ditch along the Base of the Terrace**



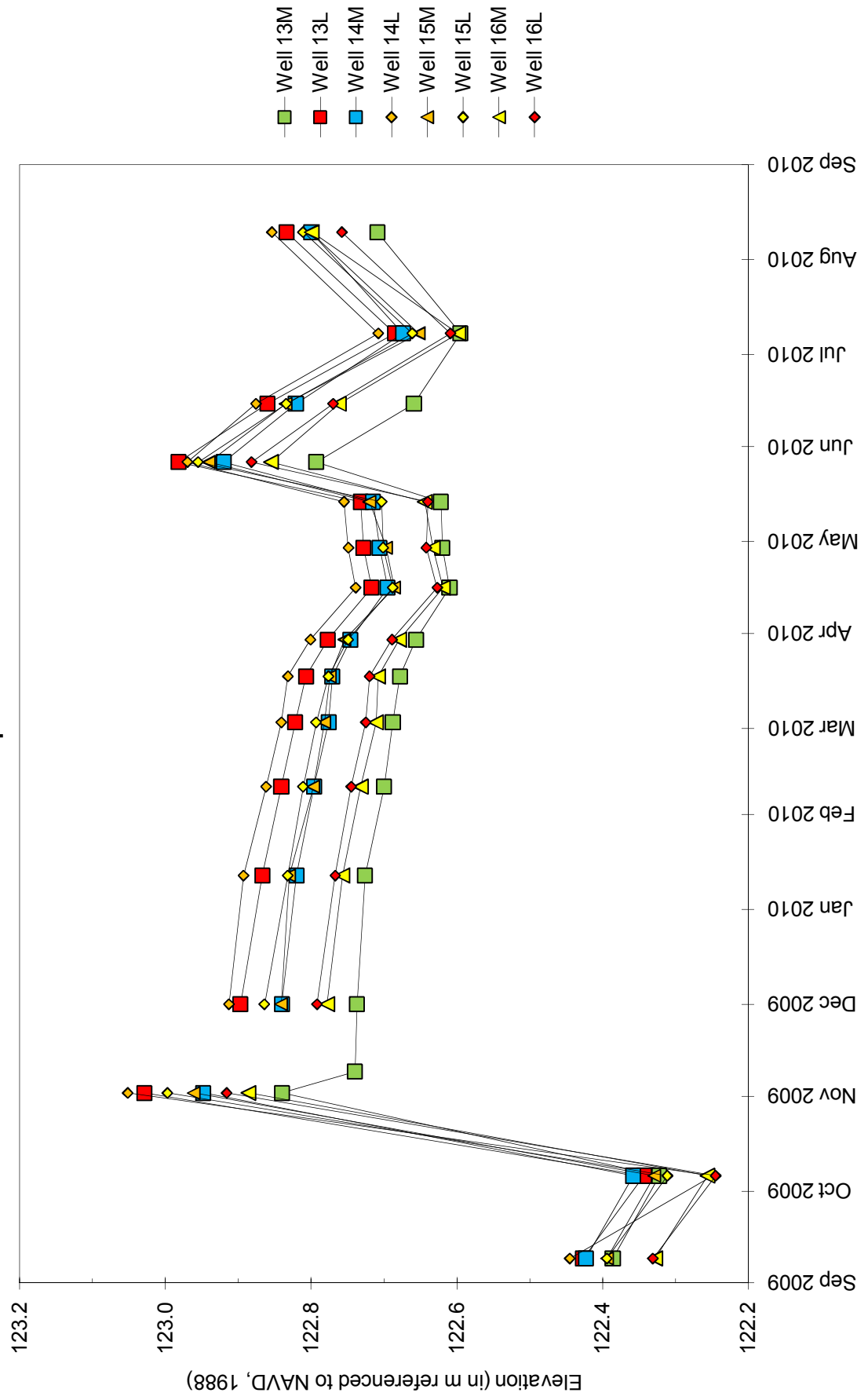
# Fairmont City, New River Crossing Potential Wetland Mitigation Site September 1, 2009 through August 31, 2010

Depth to Water in Soil-Zone and Upper Wells  
 Adjacent to the Ditch along the Base of the Terrace



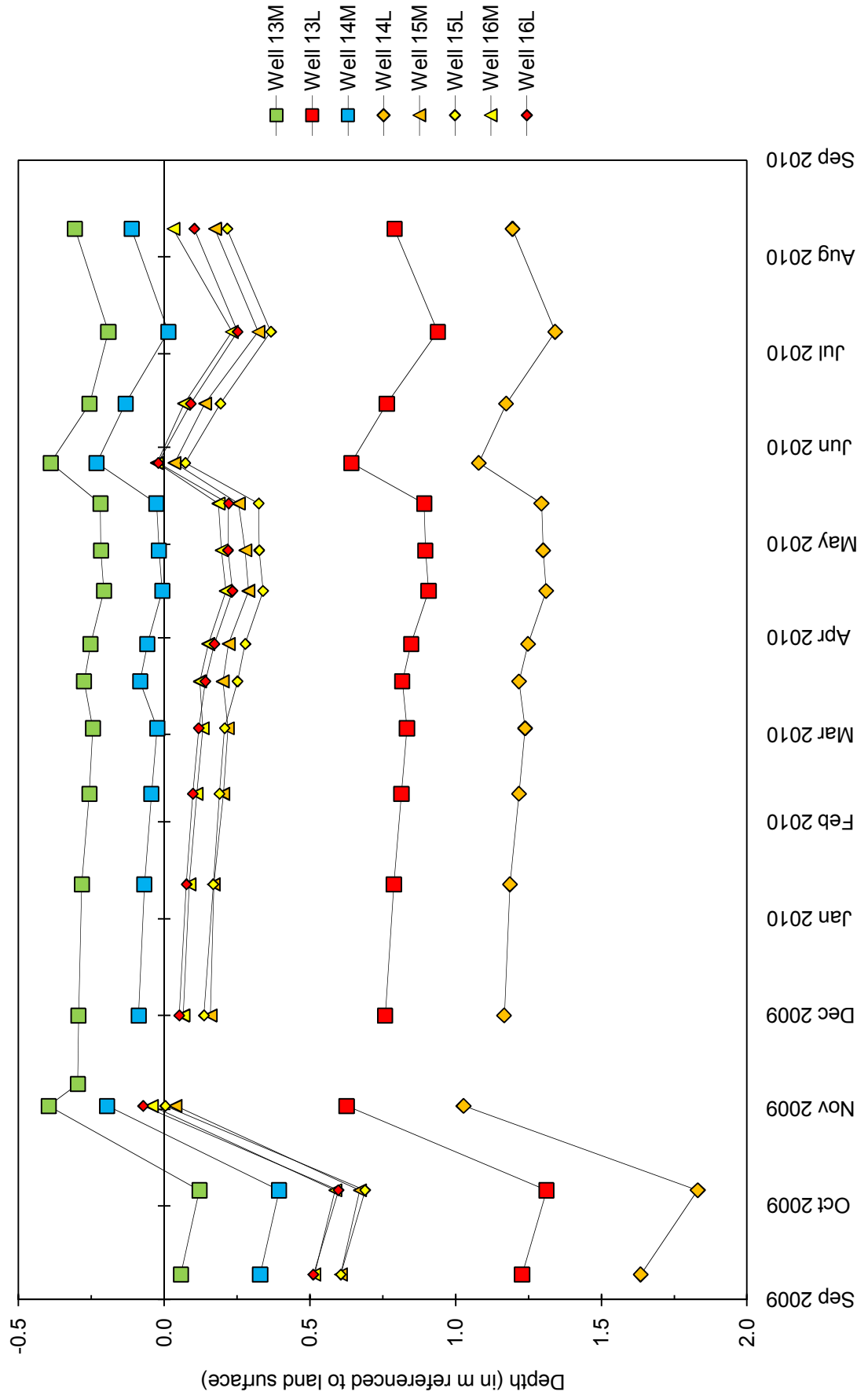
# Fairmont City, New River Crossing Potential Wetland Mitigation Site September 1, 2009 through August 31, 2010

Water-Level Elevations in Middle and Lower Wells  
 on the Slope of the Terrace



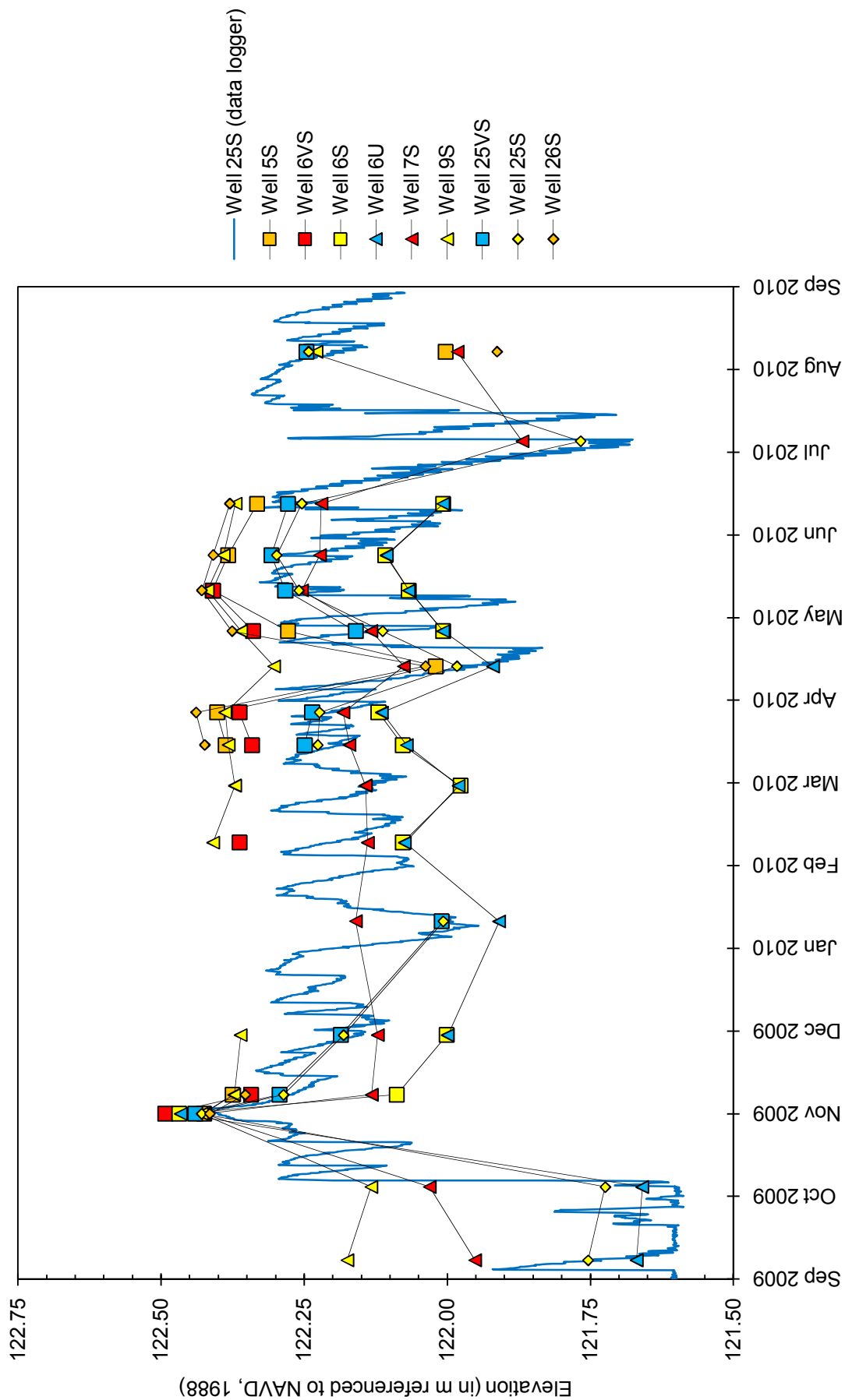
# Fairmont City, New River Crossing Potential Wetland Mitigation Site September 1, 2009 through August 31, 2010

Depth to Water in Middle and Lower Wells  
 on the Slope of the Terrace



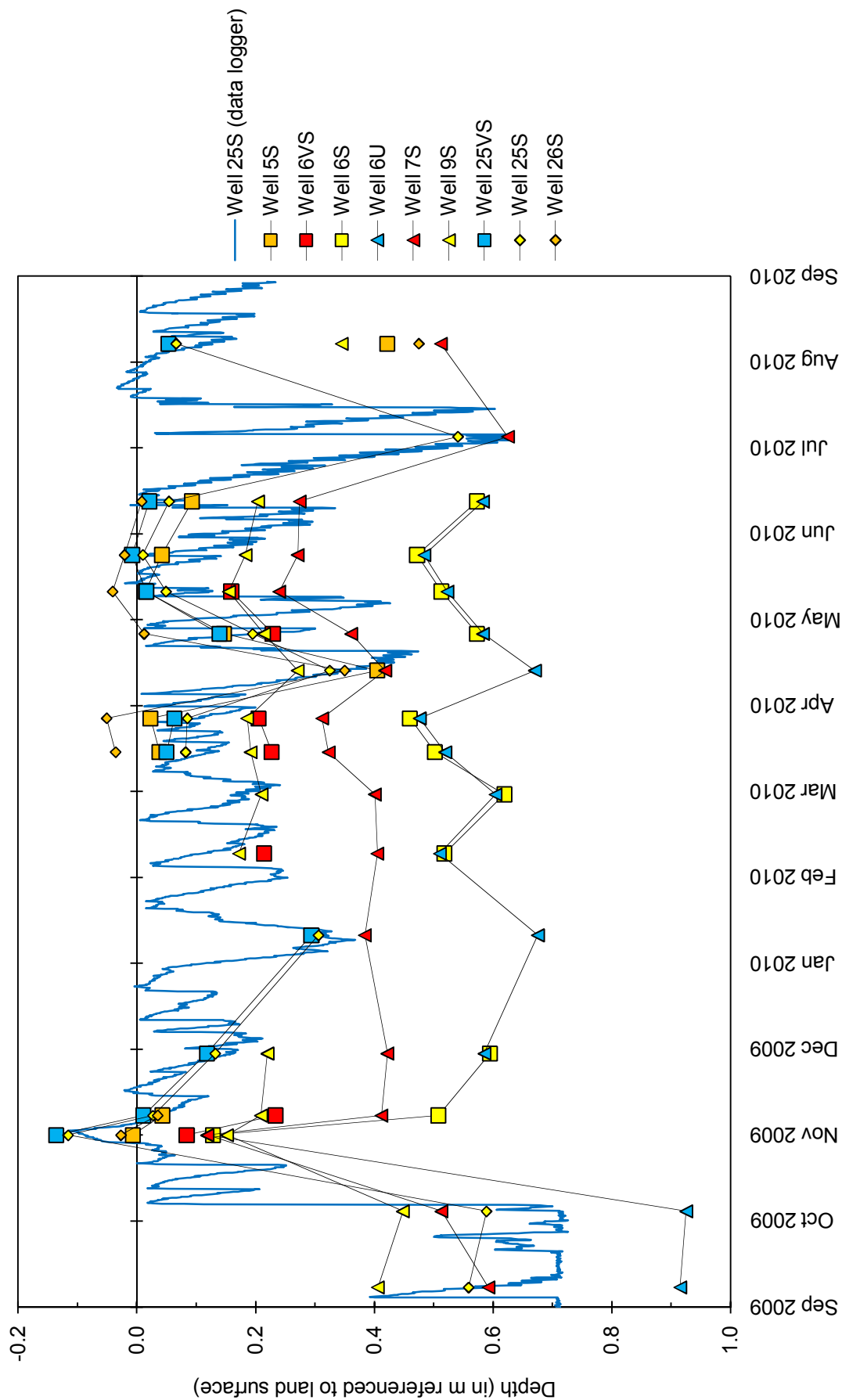
# **Fairmont City, New River Crossing Potential Wetland Mitigation Site** **September 1, 2009 through August 31, 2010**

**Water-Level Elevations in Soil-Zone and Upper Wells  
 Furthest from the Ditch Along the Base of the Terrace**



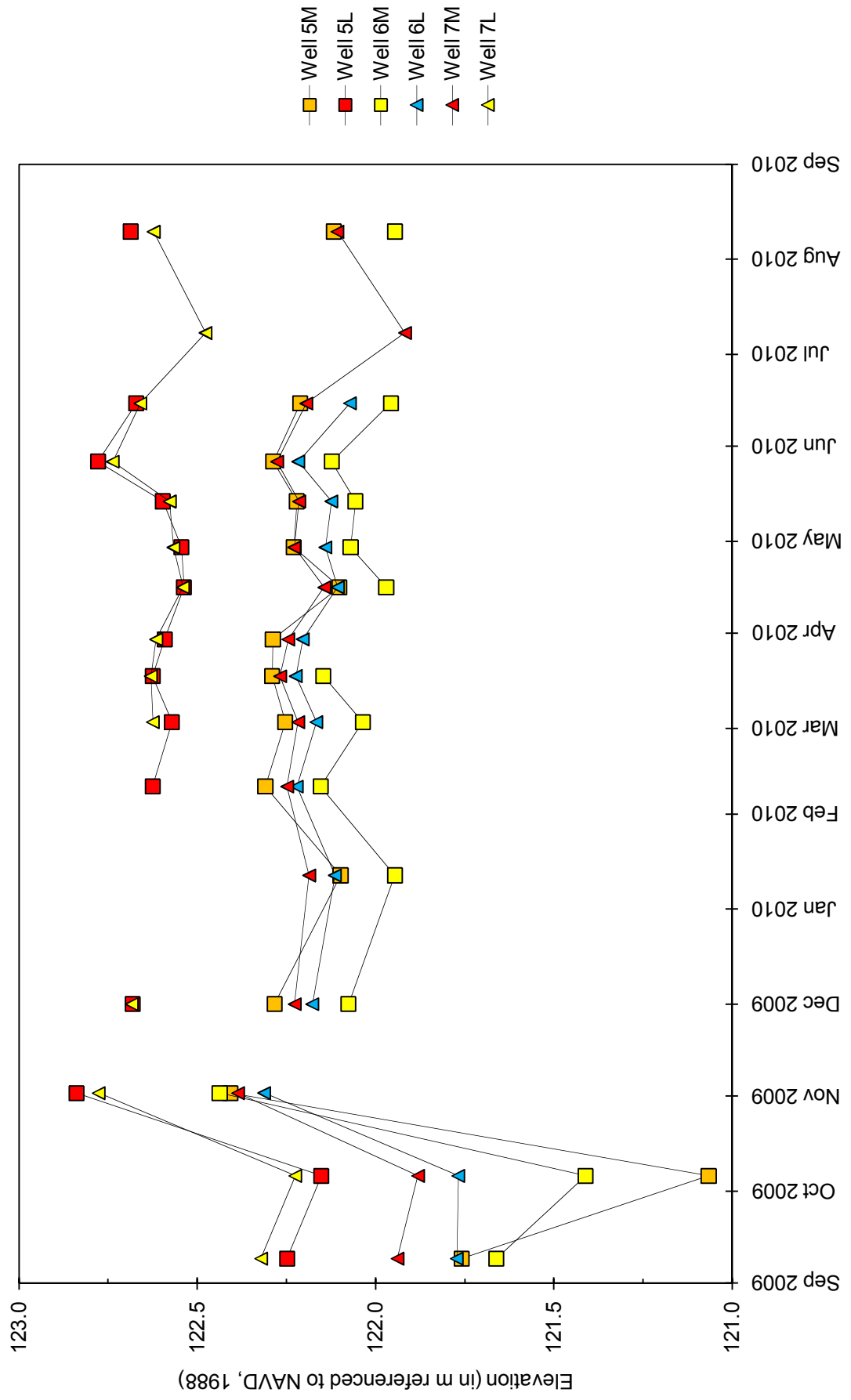
# **Fairmont City, New River Crossing Potential Wetland Mitigation Site** **September 1, 2009 through August 31, 2010**

Depth to Water in Soil-Zone and Upper Wells  
 Furthest from the Ditch Along the Base of the Terrace



# Fairmont City, New River Crossing Potential Wetland Mitigation Site September 1, 2009 through August 31, 2010

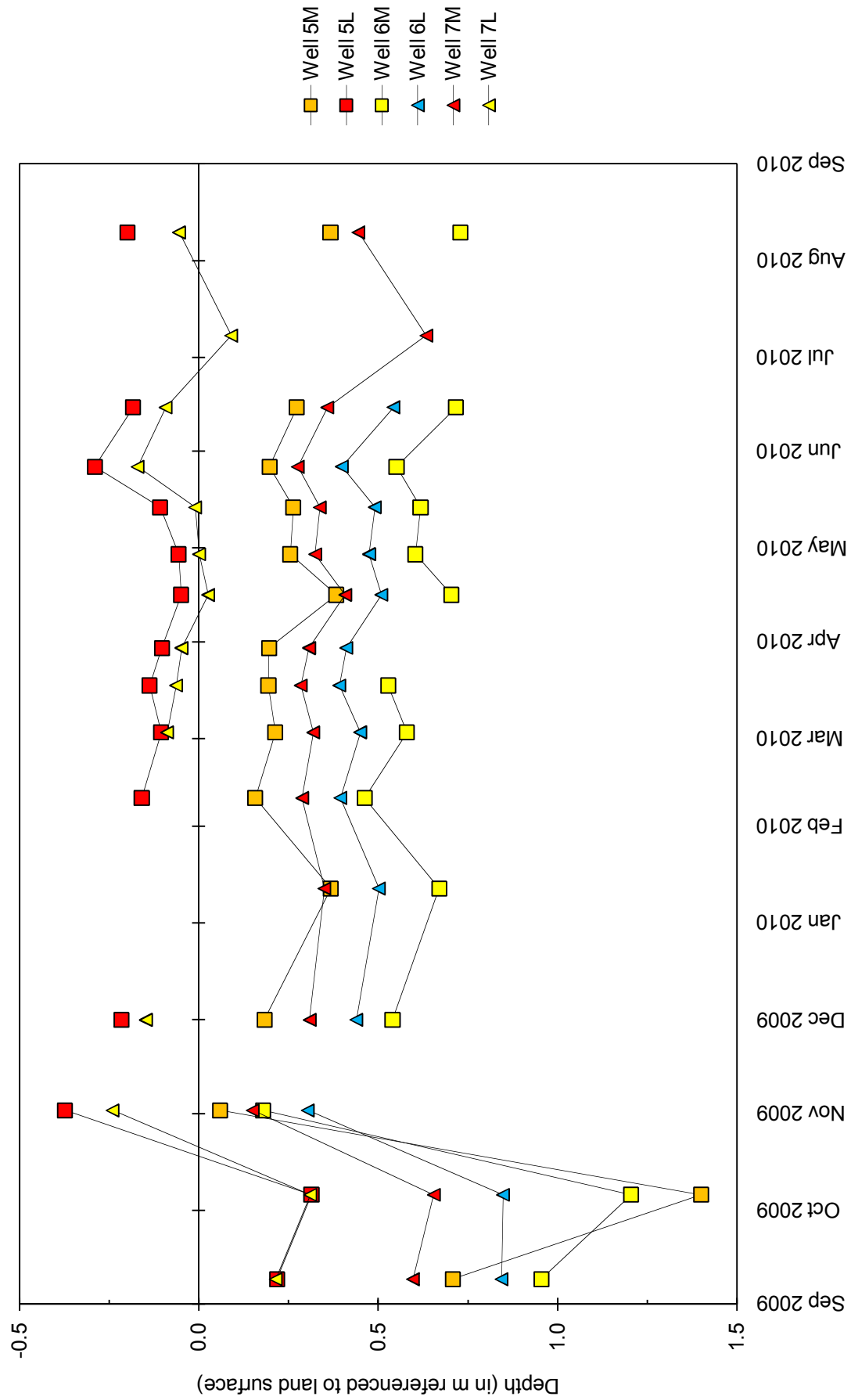
Water-Level Elevations in Middle and Lower Wells  
 Furthest from the Ditch Along the Base of the Terrace





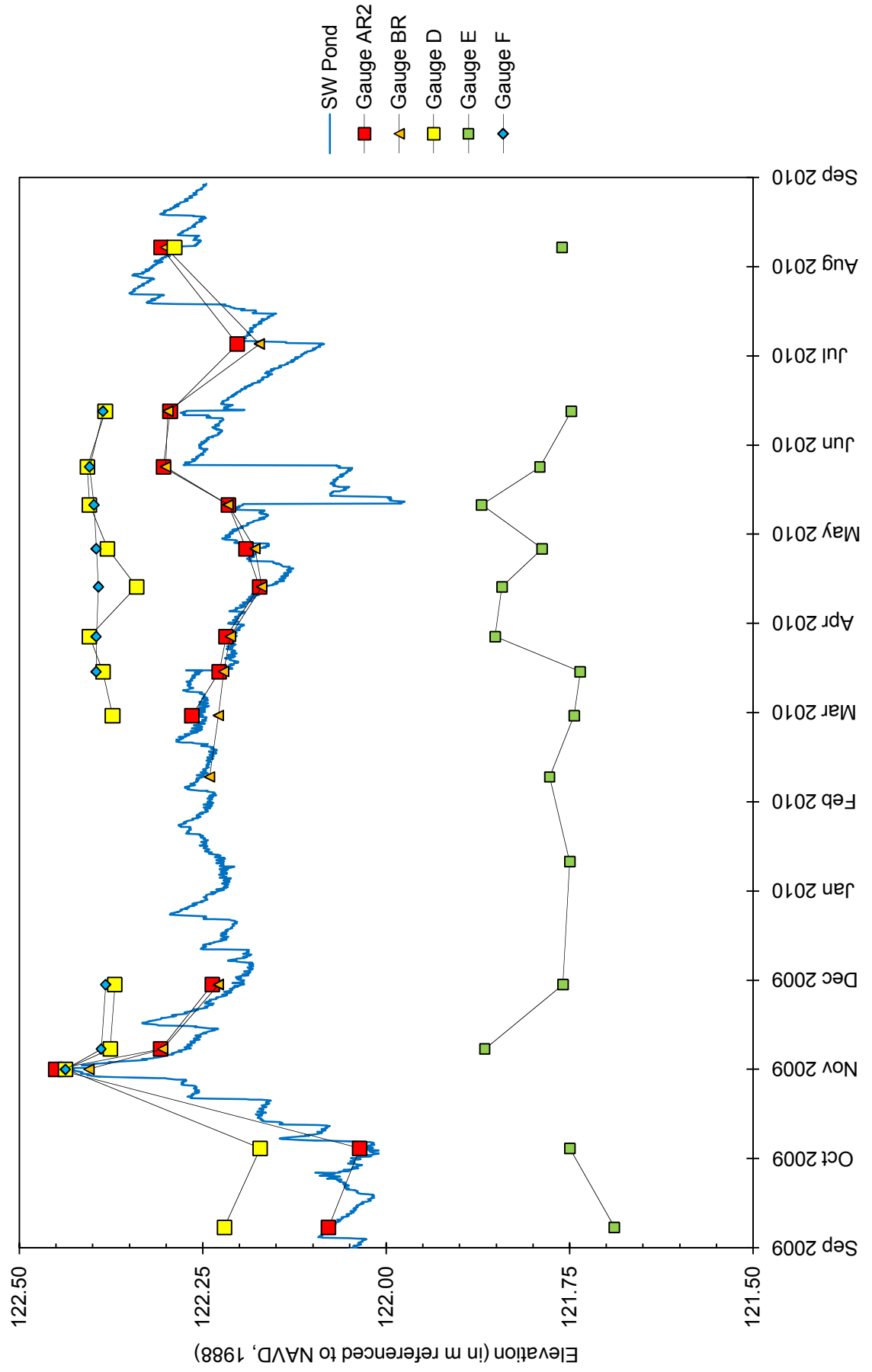
# Fairmont City, New River Crossing Potential Wetland Compensation Site September 1, 2009 through August 31, 2010

Depth to Water in Middle and Lower Wells  
 Furthest from the Ditch Along the Base of the Terrace



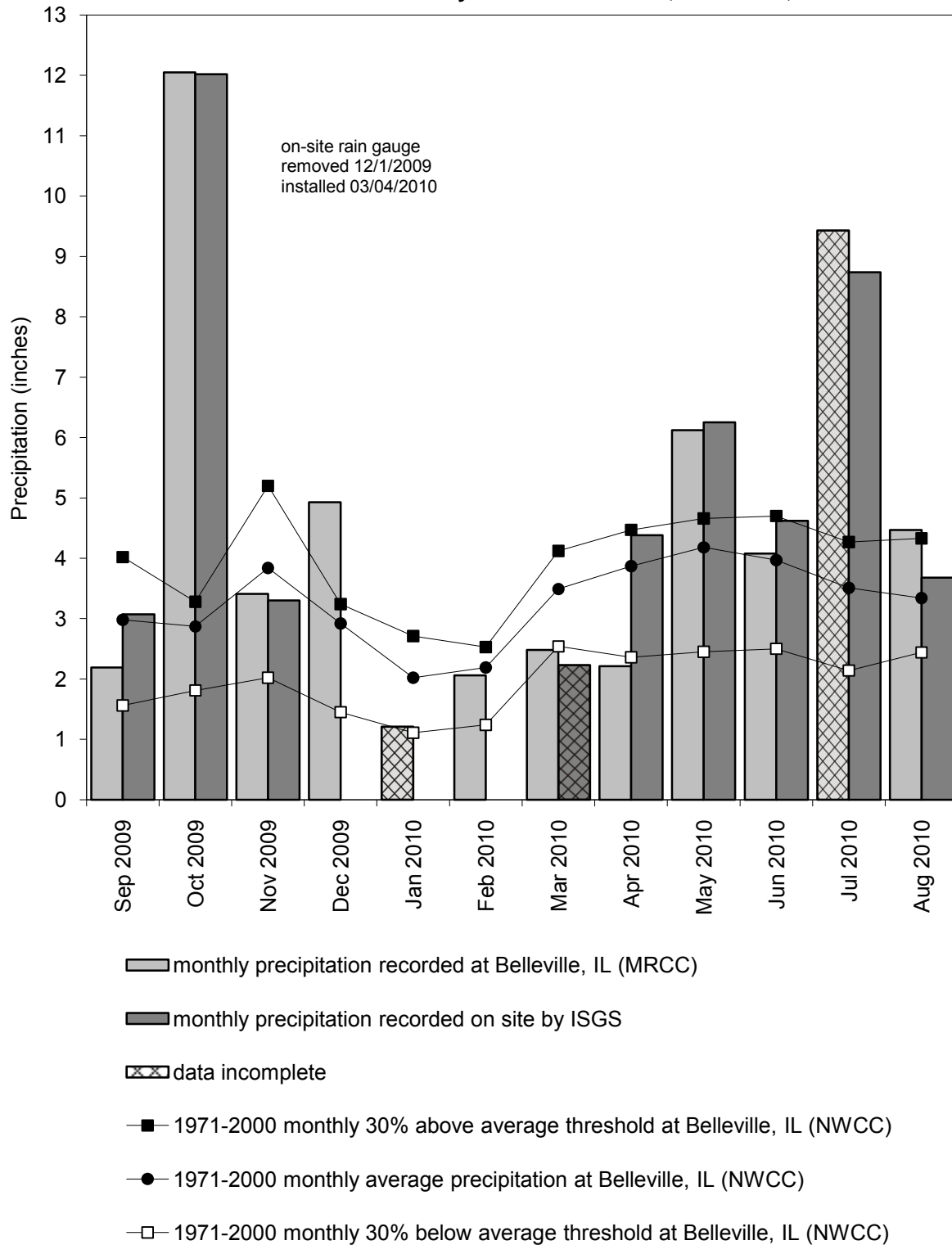
# Fairmont City, New River Crossing Potential Wetland Mitigation Site September 1, 2009 through August 31, 2010

Water-Level Elevations on Stage Gauges and Data Loggers



# Fairmont City, New River Crossing Potential Wetland Mitigation Site September 2009 through August 2010

Total Monthly Precipitation Recorded on Site and at the  
Southern Illinois University Research Center, Belleville, IL



Graph last updated September 29, 2010

**FORMER TIERNAN PROPERTY, NEW RIVER CROSSING  
POTENTIAL WETLAND MITIGATION SITE**

**ISGS #57**

FAP 999

Sequence #33G

Saint Clair County, near Cahokia, Illinois

**Primary Project Manager: Steven E. Benton**

**Secondary Project Manager: Adrianne K. M. Knight**

**SITE HISTORY**

- July 2000: The ISGS was tasked to perform a Level II hydrogeologic assessment of the site.
- July 2005: A Level II hydrogeologic characterization report was submitted to IDOT (ISGS Open-File Series 2005–11).

**WETLAND HYDROLOGY CALCULATION FOR 2010**

The area that satisfied wetland hydrology criteria (Environmental Laboratory 1987) in 2010 for greater than 5% of the growing season was estimated to be 20.7 ha (51.2 ac) out of a total site area of 26.4 ha (65.3 ac). The area that satisfied wetland hydrology criteria for greater than 12.5% of the growing season was estimated to be 20.7 ha (51.2 ac). Using the 2010 Midwest Region supplement (U.S. Army Corps of Engineers 2010) to the 1987 Manual, we estimate that 20.7 ha (51.2 ac) satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

- According to the MRCC, the median date that the growing season begins in nearby Cahokia, Illinois, is April 2 and the season lasts 214 days; 5% of the growing season is 11 days and 12.5% of the growing season is 27 days. According to methods outlined in the 2010 Midwest Region supplement, we estimate that March 9 was the starting date of the 2010 growing season based on both vegetation growth and development and soil temperatures measured at the wetland mitigation site.
- Total precipitation recorded at the Belleville, Illinois weather station during the monitoring period was 130% of normal, and total precipitation in spring 2010 (March through May) was 93% of normal.
- In 2010, water levels measured in all of the soil-zone monitoring wells, except 6S, 7S, 23VS, and 23S, satisfied wetland hydrology criteria for more than 5% of the growing season and for more than 12.5% of the growing season. According to the 2010 Midwest Region supplement, water levels measured in all of the soil-zone monitoring wells except 6S, 7S, 23VS, and 23S satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season.
- Surface water at gauge D was at or above 121.20 m (397.66 ft) for a period long enough during the growing season to satisfy jurisdictional wetland hydrology criteria for more than 5% of the growing season and for more than 12.5% of the growing season. Surface water at gauge D was also at or above 121.20 m (397.66 ft) for 14 or more consecutive days during the growing season per the 2010 Midwest Region supplement.

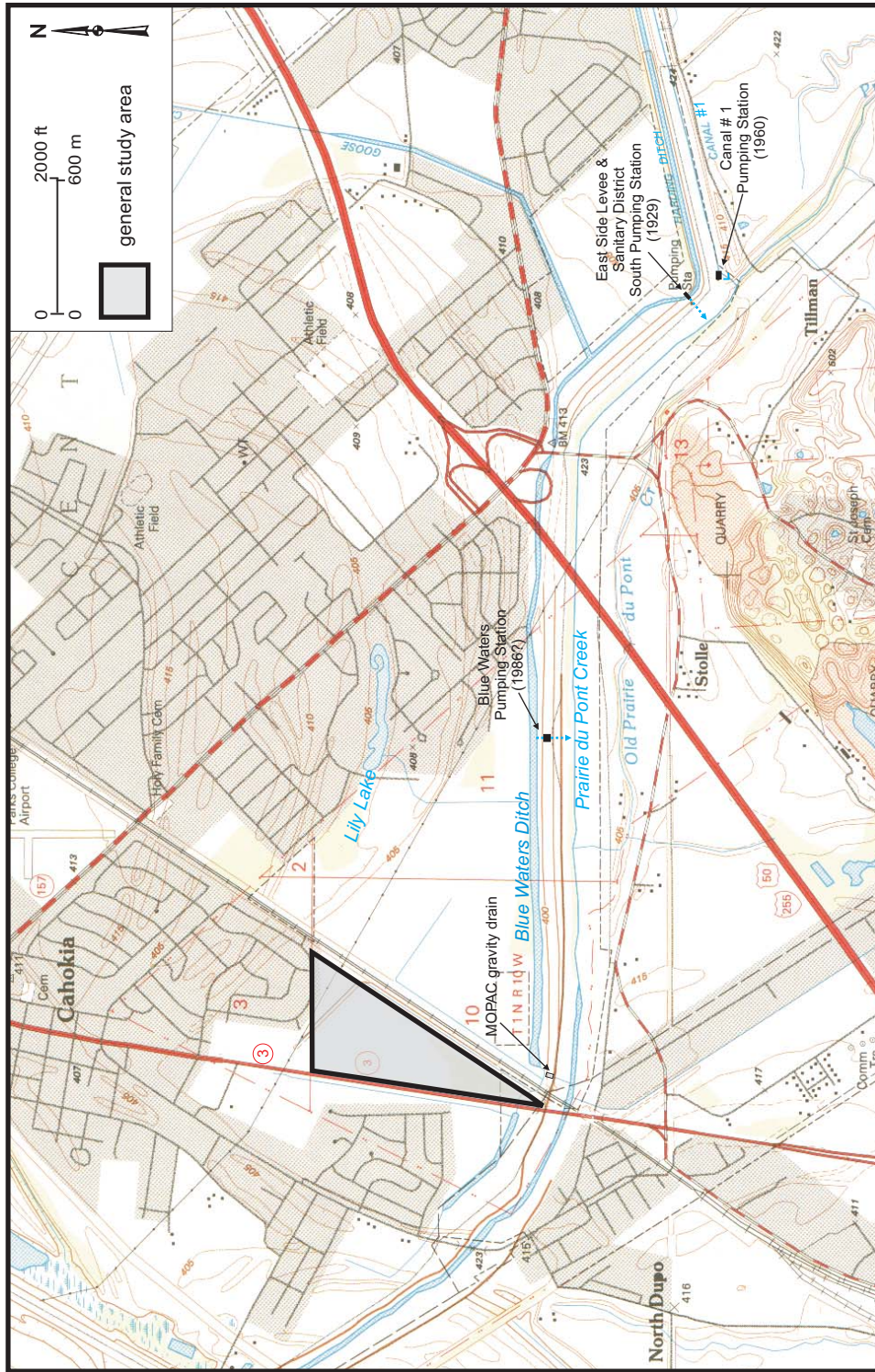
## PLANNED FUTURE ACTIVITIES

- Monitoring will continue until no longer required by IDOT.

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

## General Study Area and Vicinity

from the USGS Topographic Series, Cahokia, IL, 7.5-minute Quadrangle (USGS 1993)  
contour interval is 3 m (10 ft)



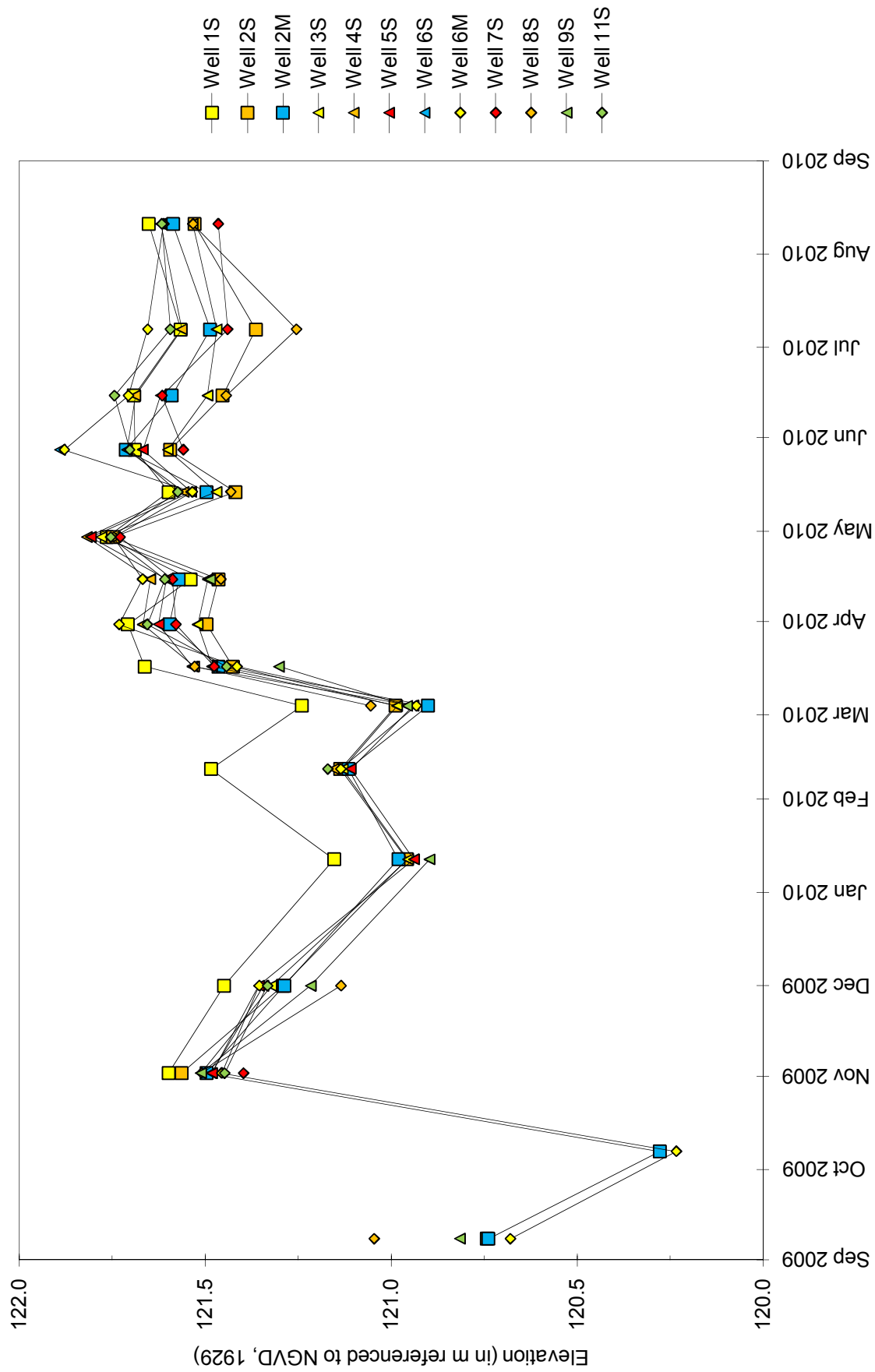




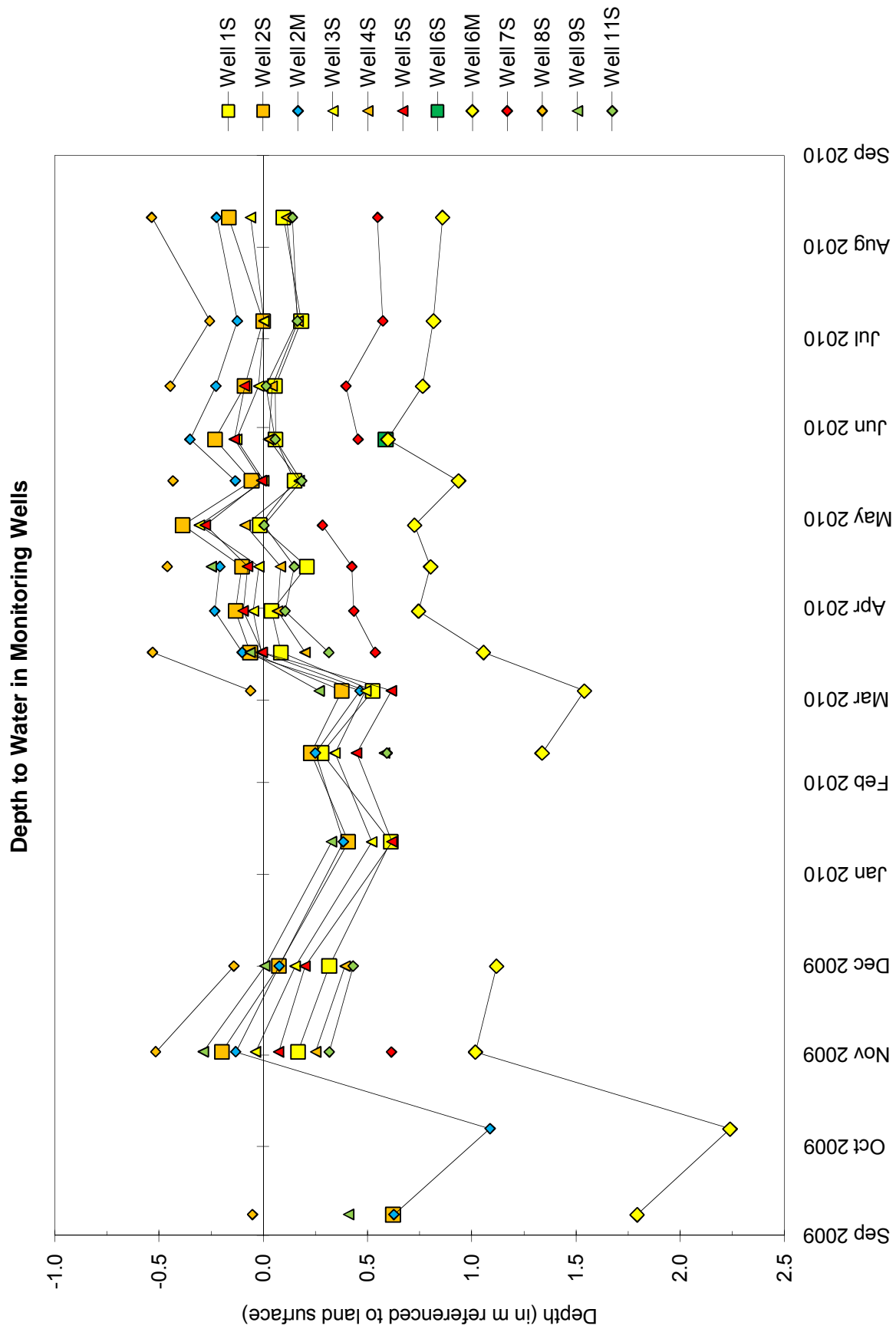


# **Former Tiernan Property, New River Crossing Potential Wetland Mitigation Site** **September 1, 2009 through August 31, 2010**

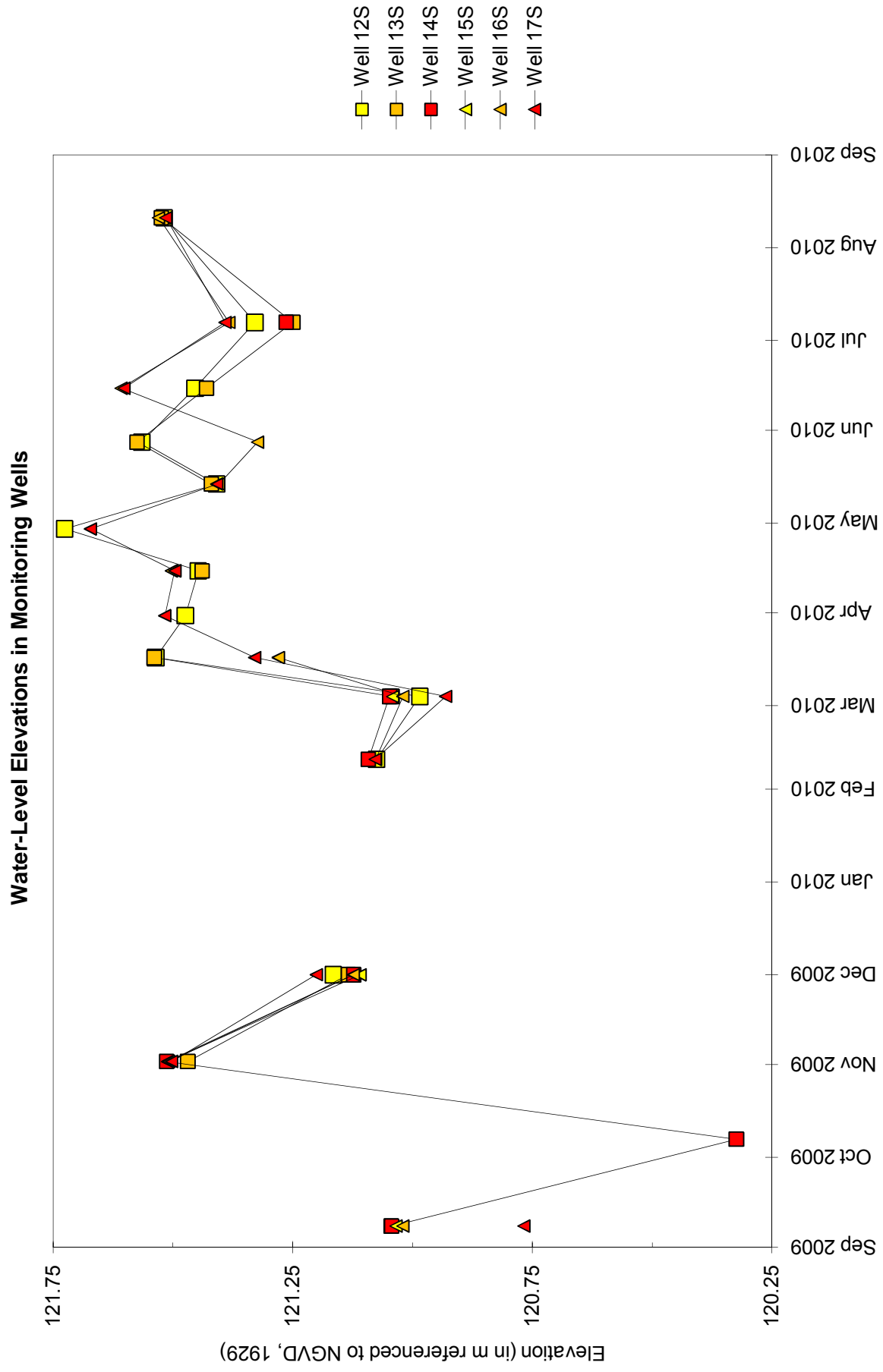
**Water-Level Elevations in Monitoring Wells**



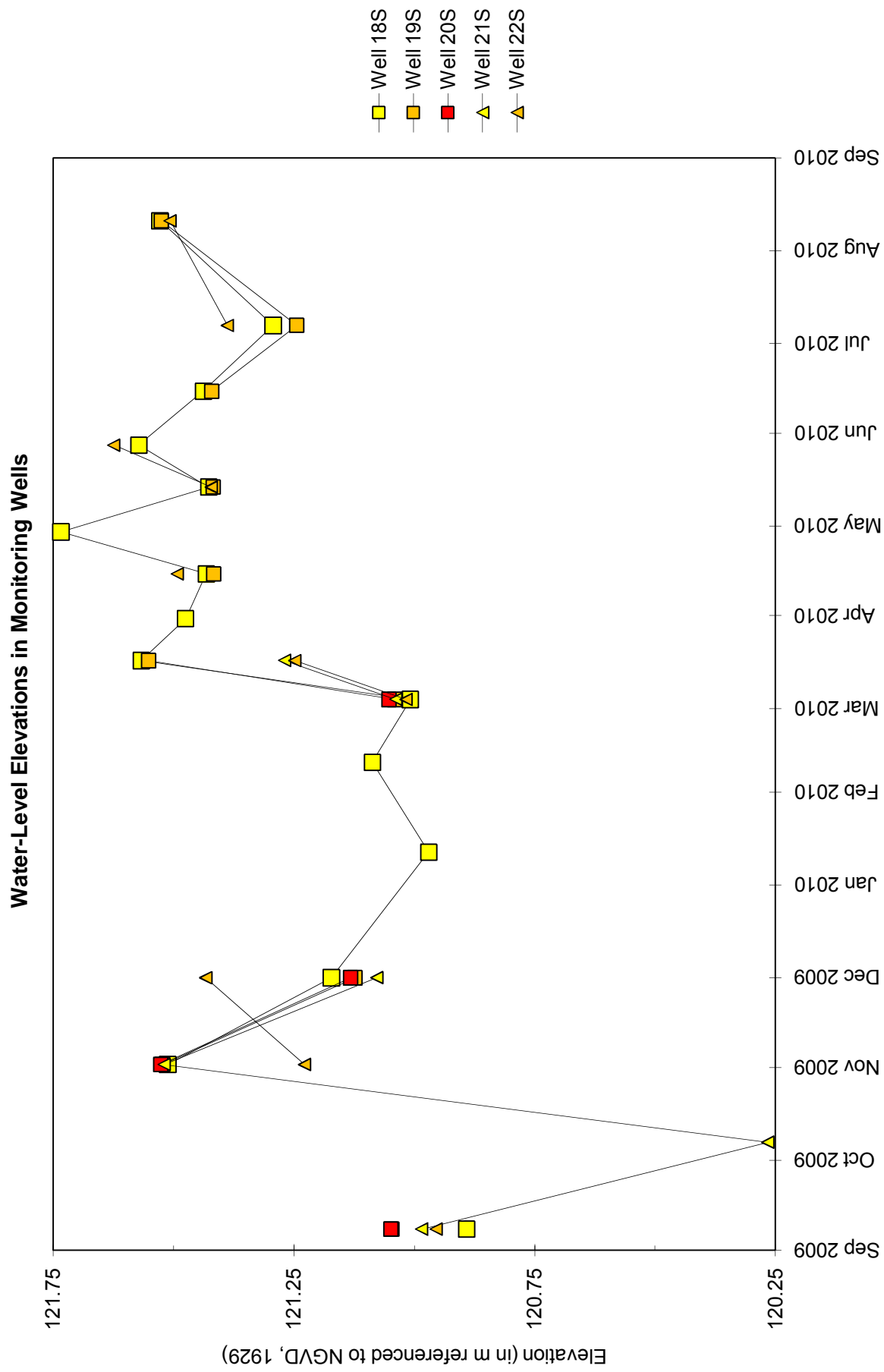
# **Former Tiernan Property, New River Crossing Potential Wetland Mitigation Site** **September 1, 2009 through August 31, 2010**



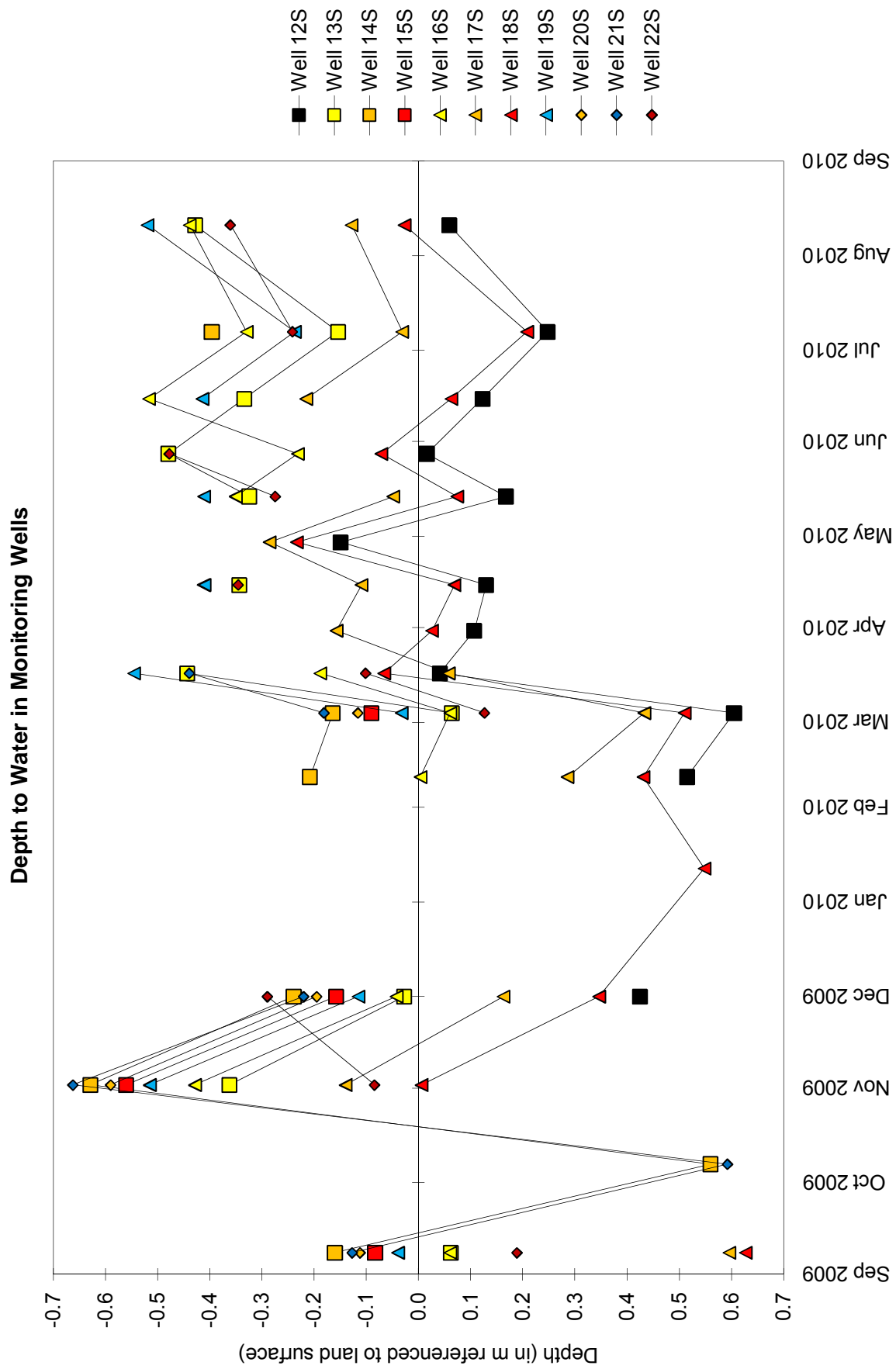
# Former Tiernan Property, New River Crossing Potential Wetland Mitigation Site September 1, 2009 through August 31, 2010



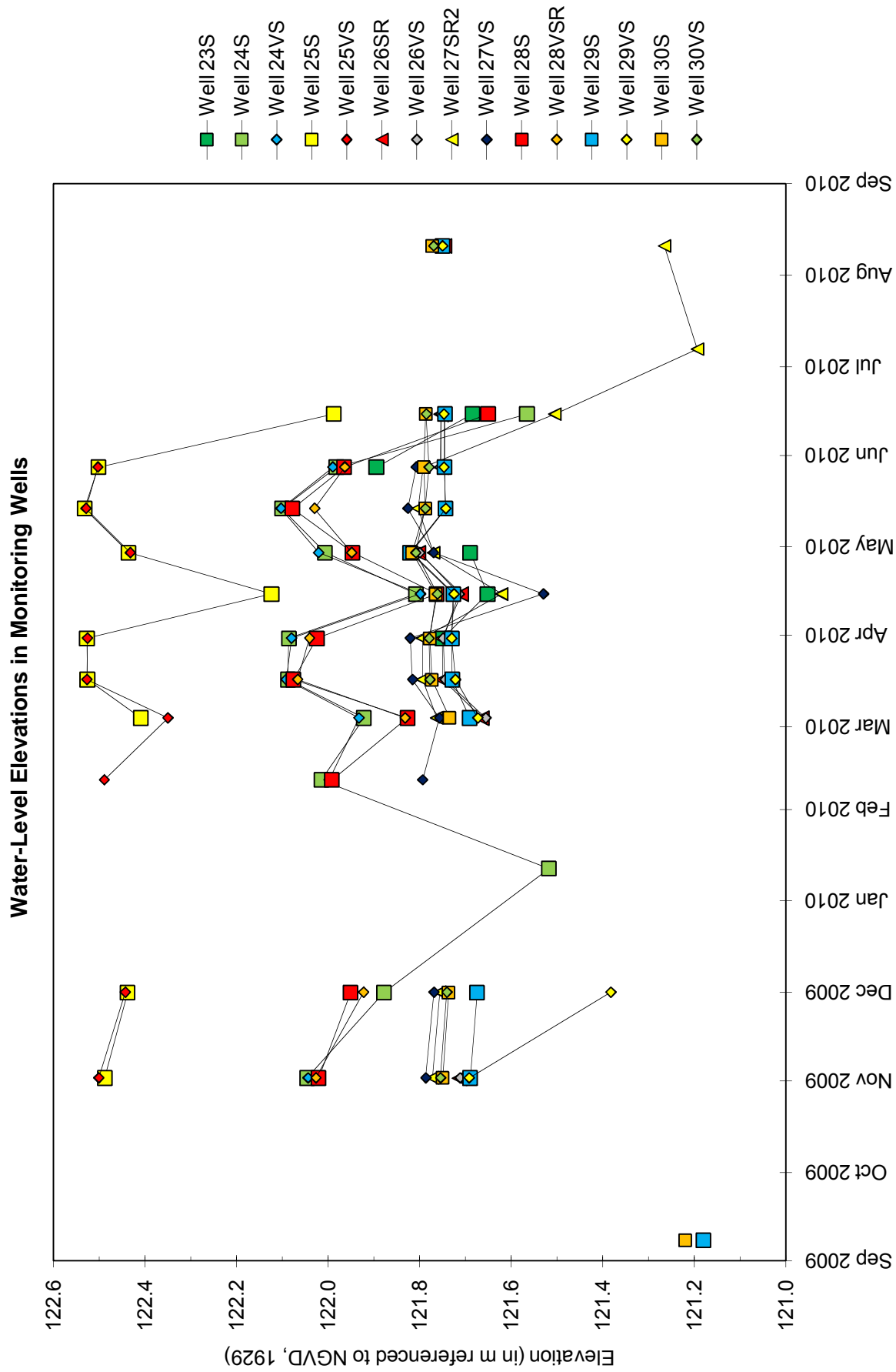
# Former Tiernan Property, New River Crossing Potential Wetland Mitigation Site September 1, 2009 through August 31, 2010



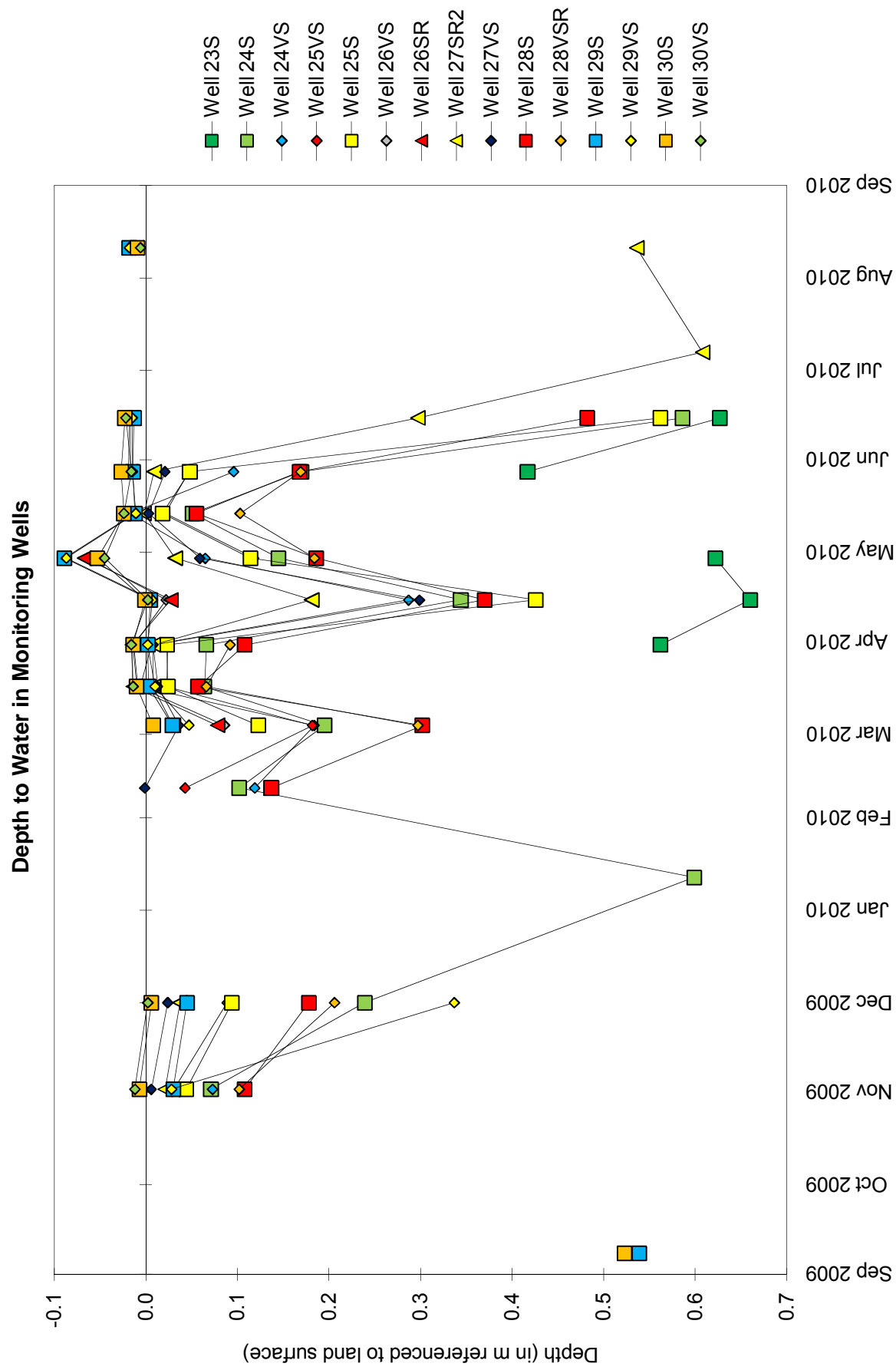
# Former Tiernan Property, New River Crossing Potential Wetland Mitigation Site September 1, 2009 through August 31, 2010



# Former Tiernan Property, New River Crossing Potential Wetland Mitigation Site September 1, 2009 through August 31, 2010



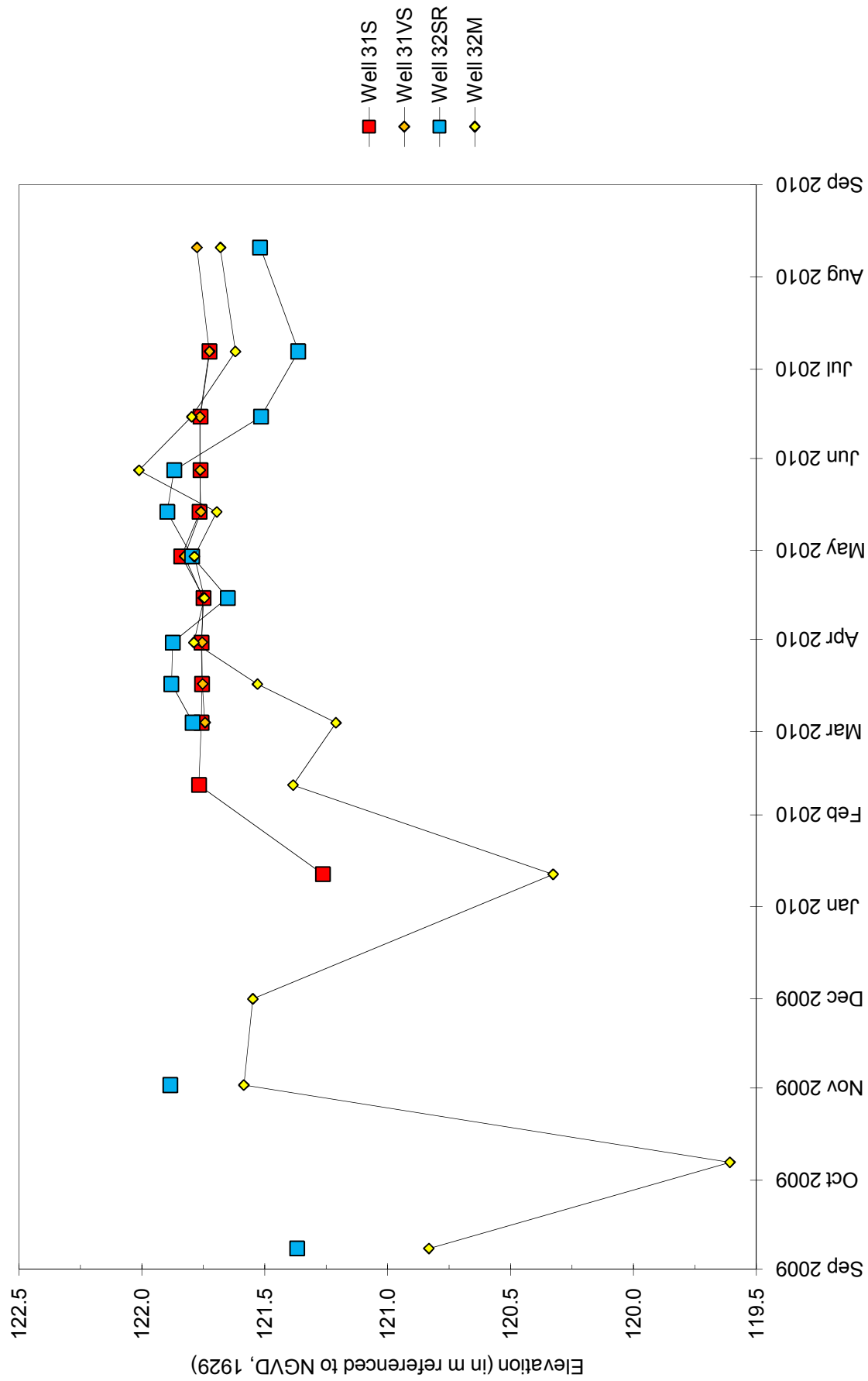
# **Former Tiernan Property, New River Crossing Potential Wetland Mitigation Site** **September 1, 2009 through August 31, 2010**



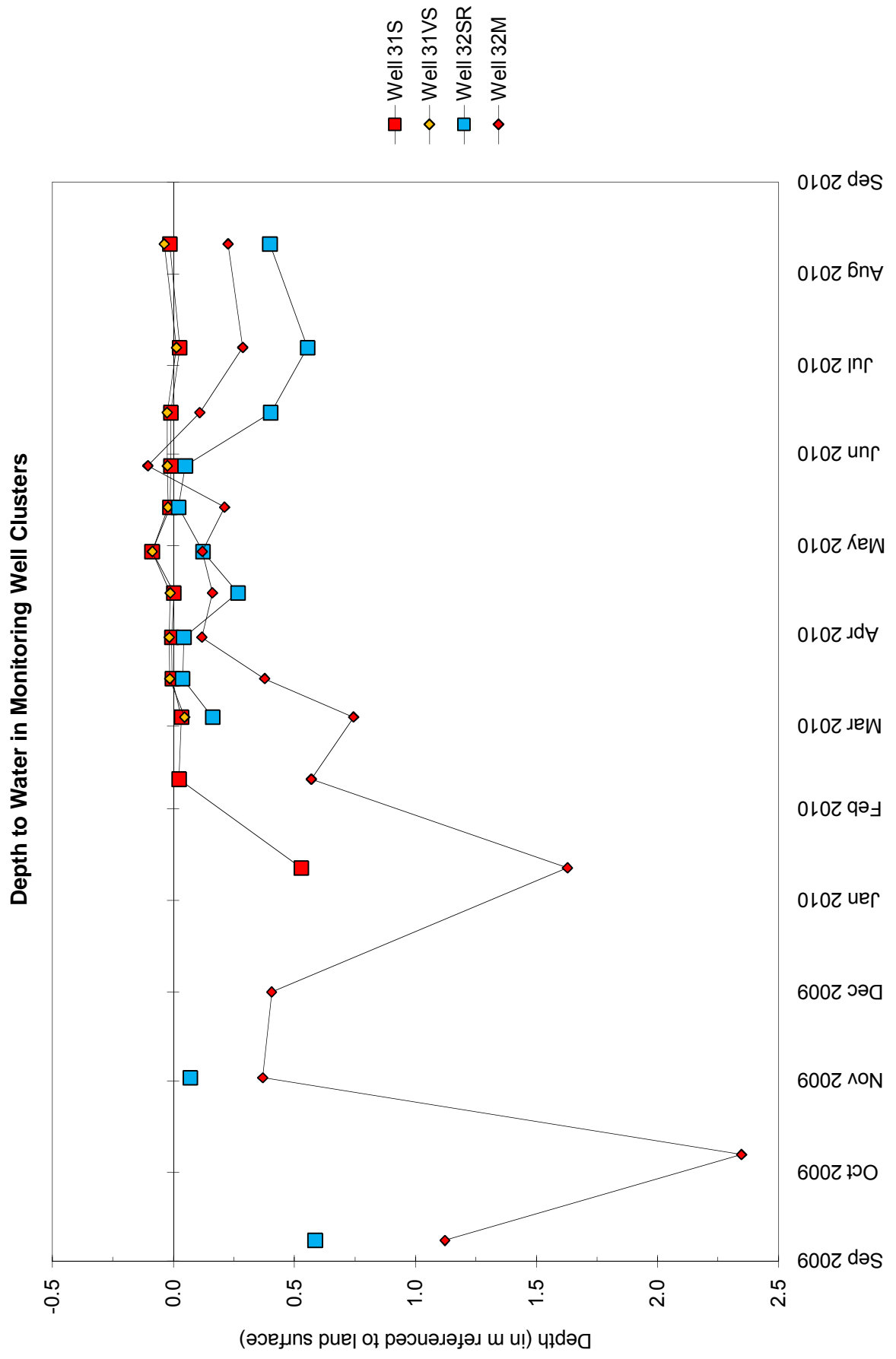


# **Former Tiernan Property, New River Crossing Potential Wetland Mitigation Site** **September 1, 2009 through August 31, 2010**

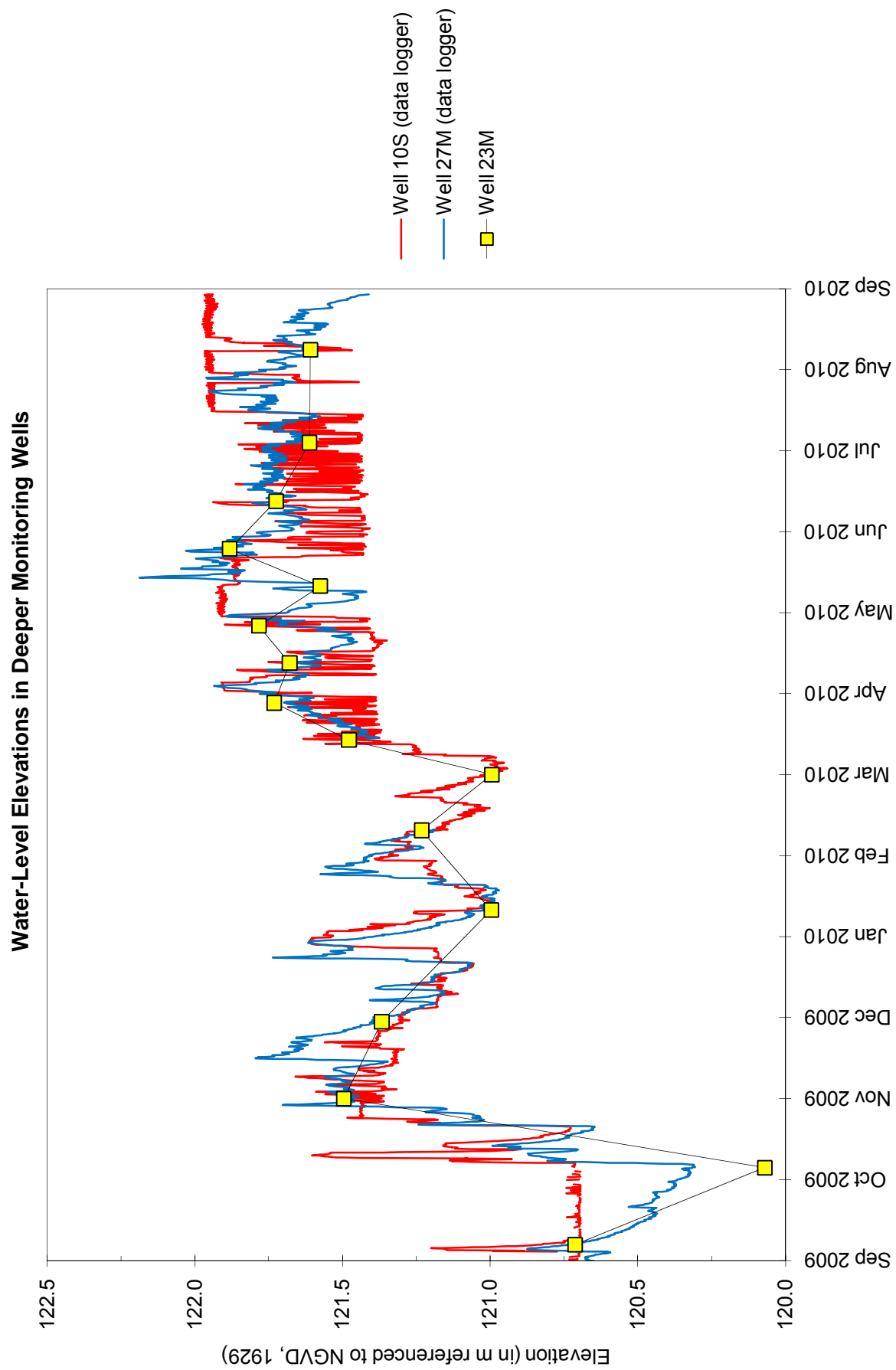
**Water-Level Elevations in Monitoring Well Clusters**



# Former Tiernan Property, New River Crossing Potential Wetland Mitigation Site September 1, 2009 through August 31, 2010

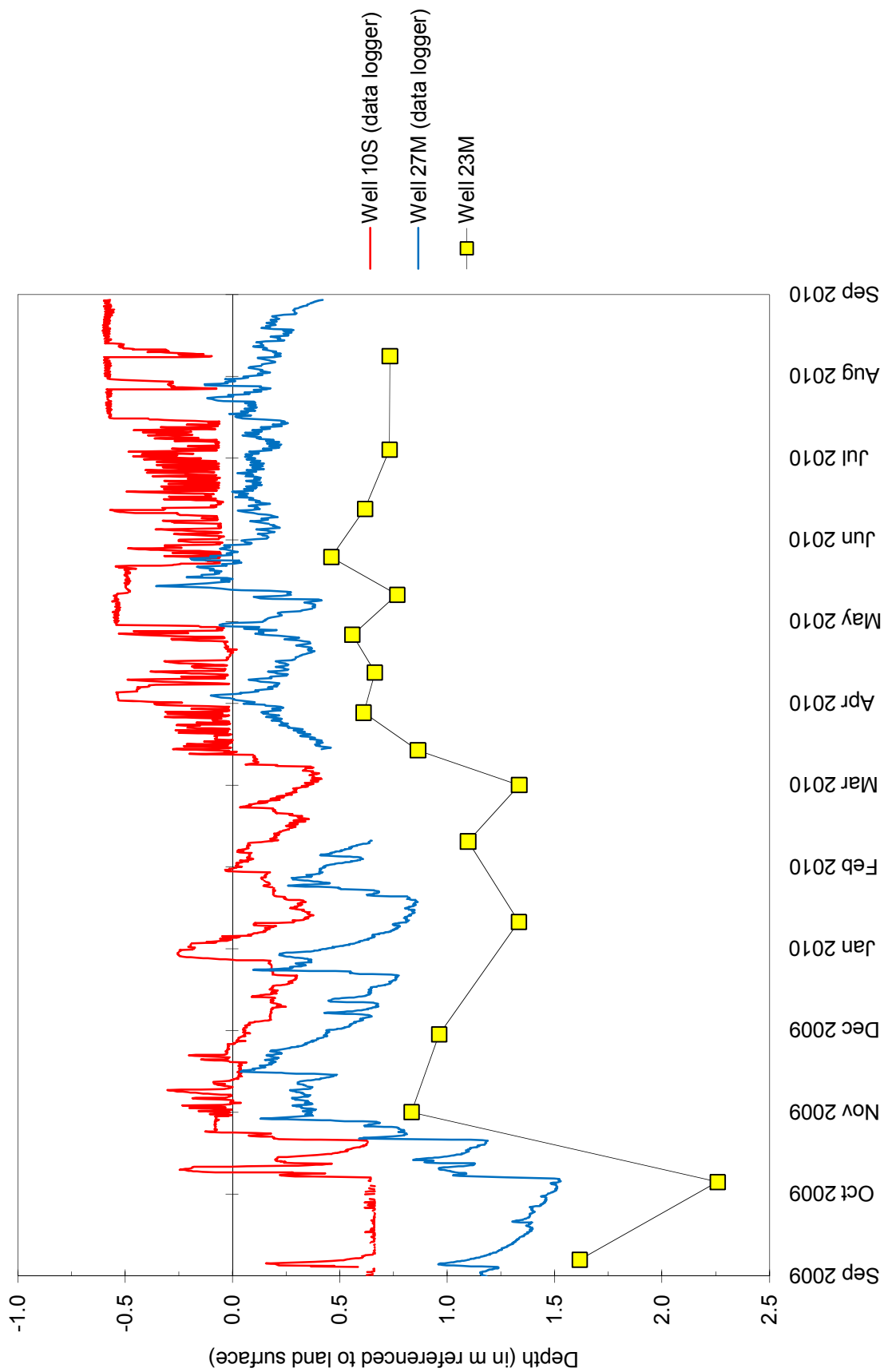


# **Former Tiernan Property, New River Crossing Potential Wetland Mitigation Site** **September 1, 2009 through August 31, 2010**



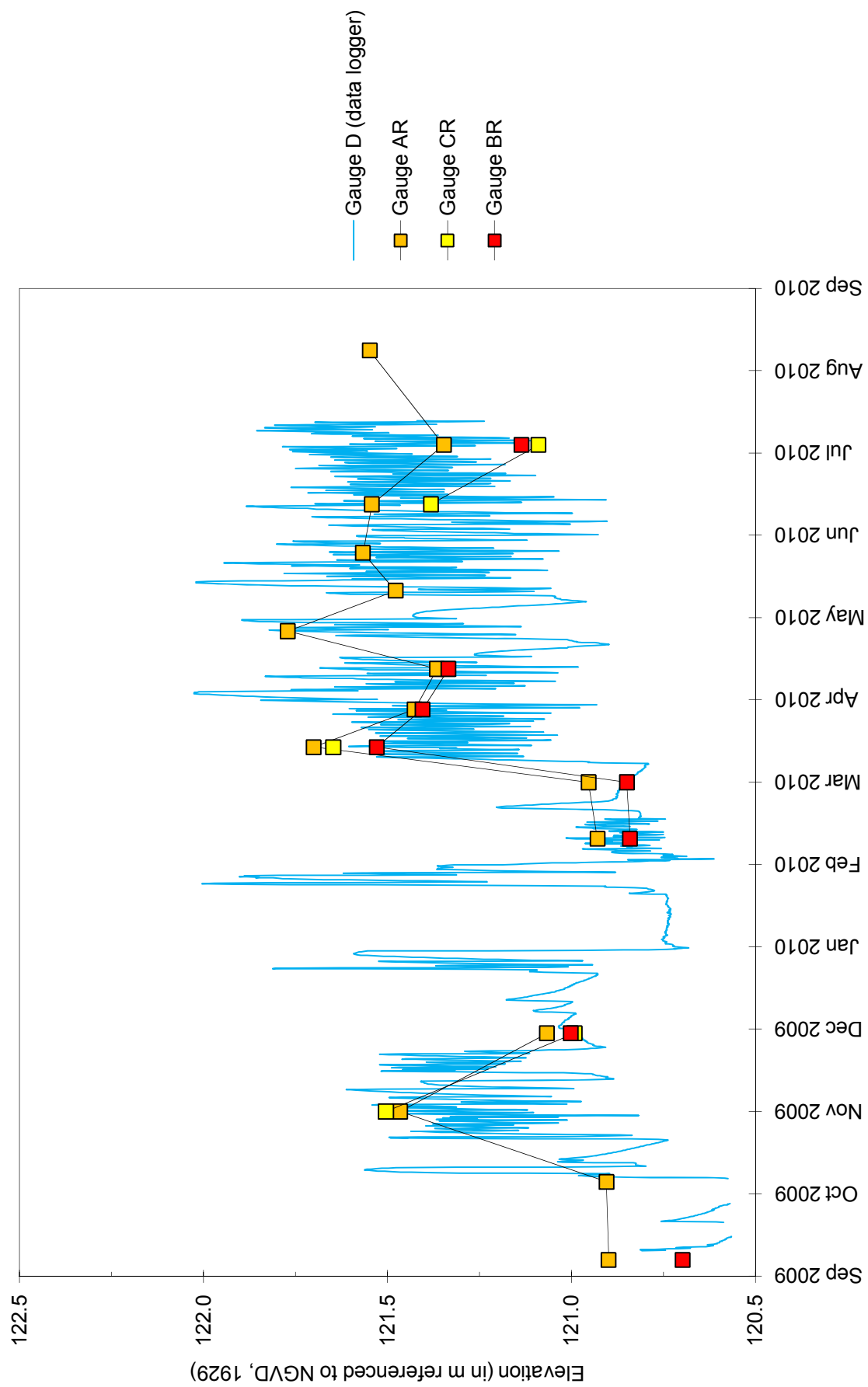
# **Former Tiernan Property, New River Crossing Potential Wetland Mitigation Site** **September 1, 2009 through August 31, 2010**

**Depth to Water in Deeper Monitoring Wells**



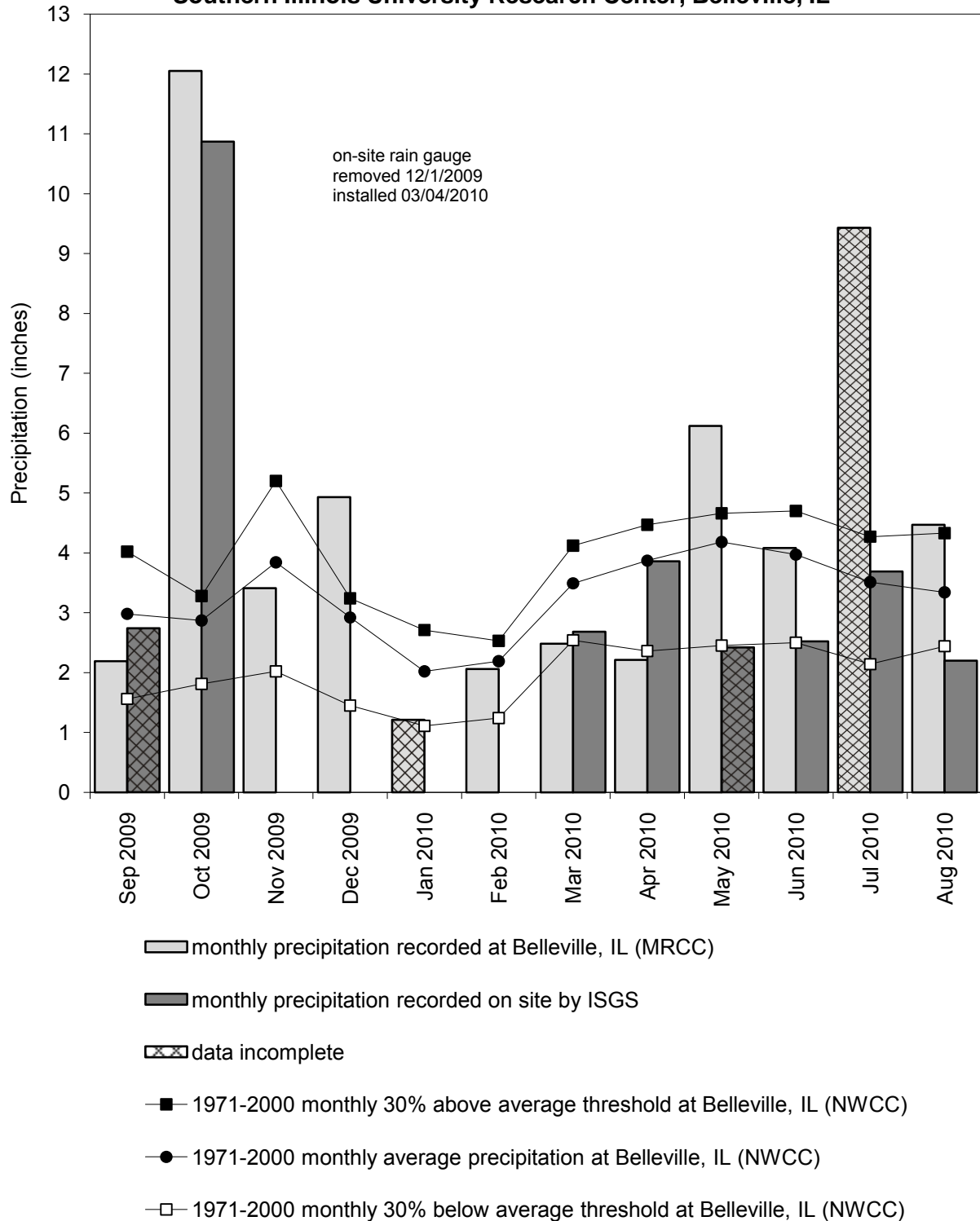
# Former Tiernan Property, New River Crossing Potential Wetland Mitigation Site September 1, 2009 through August 31, 2010

Surface-Water Elevations at Gauges



# Former Tiernan Property, New River Crossing Potential Wetland Mitigation Site September 2009 through August 2010

Total Monthly Precipitation Recorded on Site and at the  
Southern Illinois University Research Center, Belleville, IL



Graph last updated September 29, 2010

**HARRISBURG  
WETLAND MITIGATION SITE**

**ISGS #63**

US 45

FAP 332

Sequence #90

Saline County, near Harrisburg, Illinois

**Primary Project Manager: Geoffrey E. Pociask**

**Secondary Project Manager: Melinda C. Campbell**

**SITE HISTORY**

- May 2004: Construction at the wetland mitigation site was completed.
- December 2005: ISGS was tasked by IDOT to monitor post-construction water levels.
- August 2010: Road construction associated with the new alignment of Illinois Route 13 reduced wetland area at the site.

**WETLAND HYDROLOGY CALCULATION FOR 2010**

We estimate that 5.9 ha (14.6 ac) out of a total site area of 8.1 ha (20.0 ac) satisfied wetland hydrology criteria (Environmental Laboratory 1987) for greater than 5% of the growing season in 2010, whereas 2.3 ha (5.8 ac) satisfied wetland hydrology for greater than 12.5% of the growing season. Using the 2010 Midwest Region supplement (U.S. Army Corps of Engineers 2010) to the 1987 Manual, we estimate that 6.2 ha (15.4 ac) satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

- According to the MRCC, 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. According to the 2010 Midwest Region supplement, we estimate that March 7 was the starting date of the 2010 growing season based on soil temperatures and vegetation growth and development observed at the wetland mitigation site.
- Total precipitation at the Du Quoin, Illinois, weather station for the period from September 2009 through August 2010 was 118% of normal, and Spring 2010 (March through May) precipitation was 101% of normal.
- In 2010, all wells satisfied wetland hydrology criteria for greater than 5% of the growing season and wells 5S, 6S, 7S, 7VS, 8S, 8VS, 9S, 9VS, 11S, and 11VS satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Furthermore, all wells satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season according to the 2010 Midwest Region supplement.
- Gauge C showed that areas below 111.0 m (364.2 ft) satisfied wetland hydrology criteria for 5% and 12.5% of the growing season according to the 1987 Manual, and for 14 or more consecutive days according to the 2010 Midwest Region supplement.



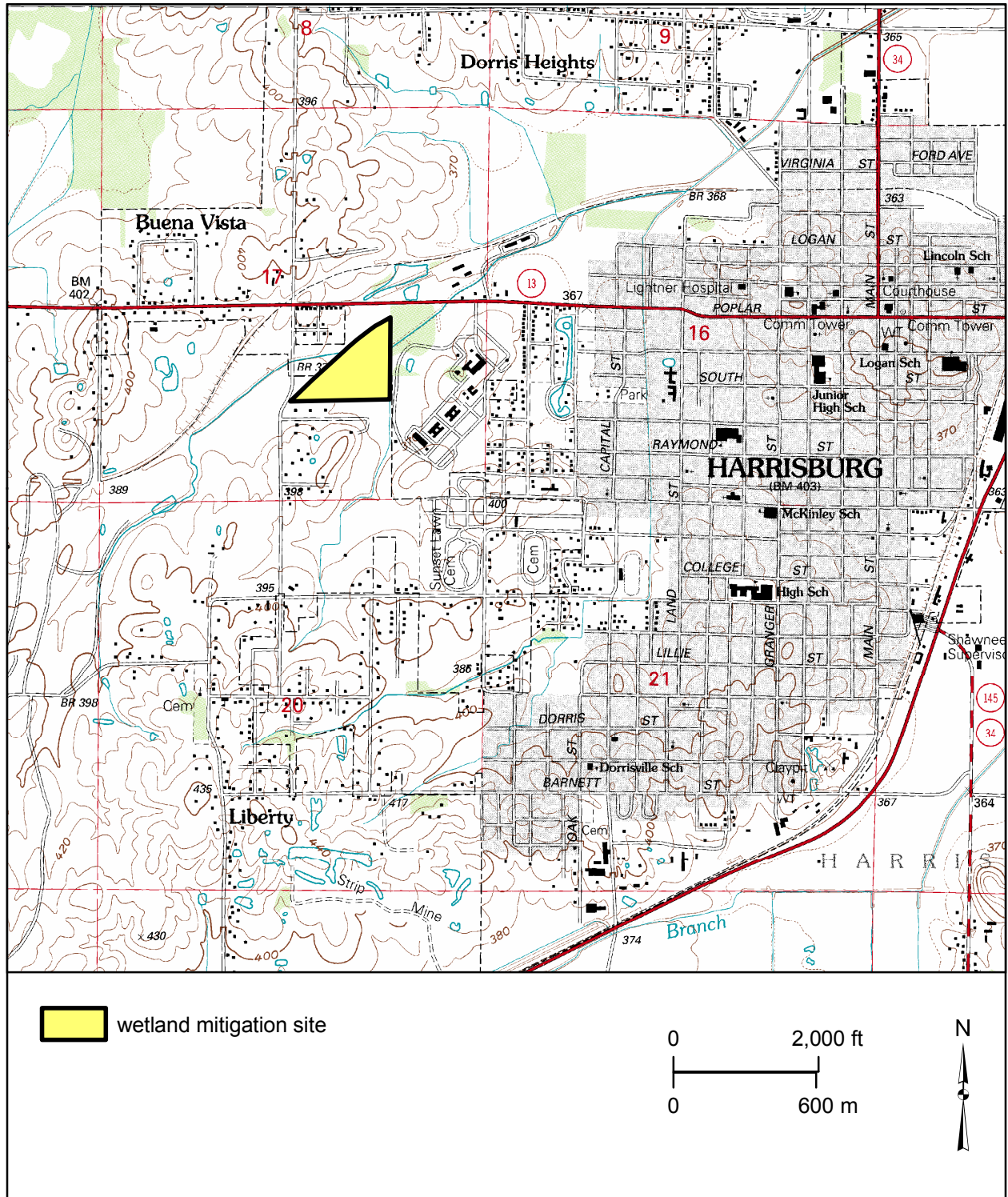
## PLANNED FUTURE ACTIVITIES

- Monitoring will continue until no longer required by IDOT.

# Harrisburg Wetland Mitigation 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

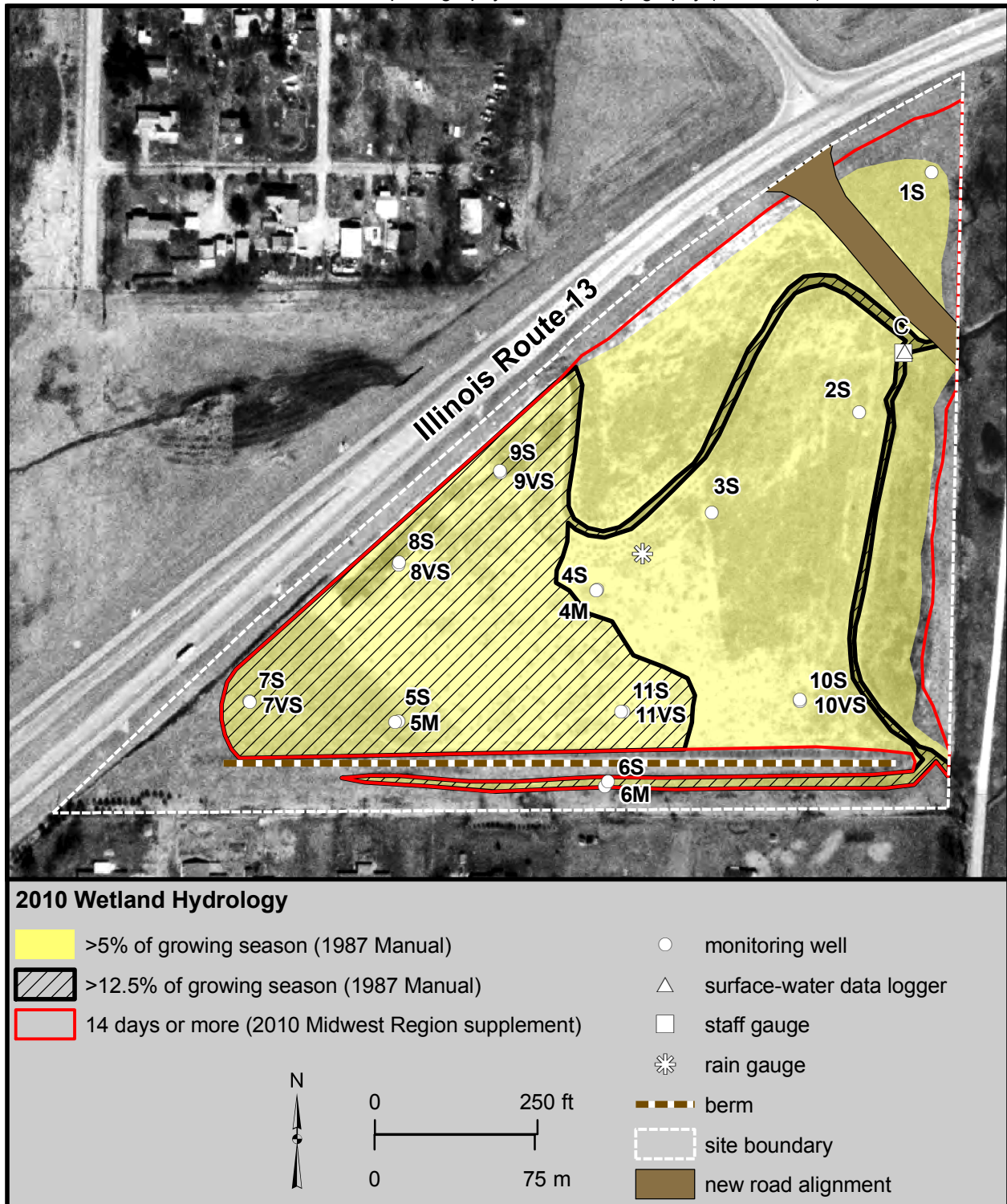


# Harrisburg Wetland Mitigation Site (FAP 332)

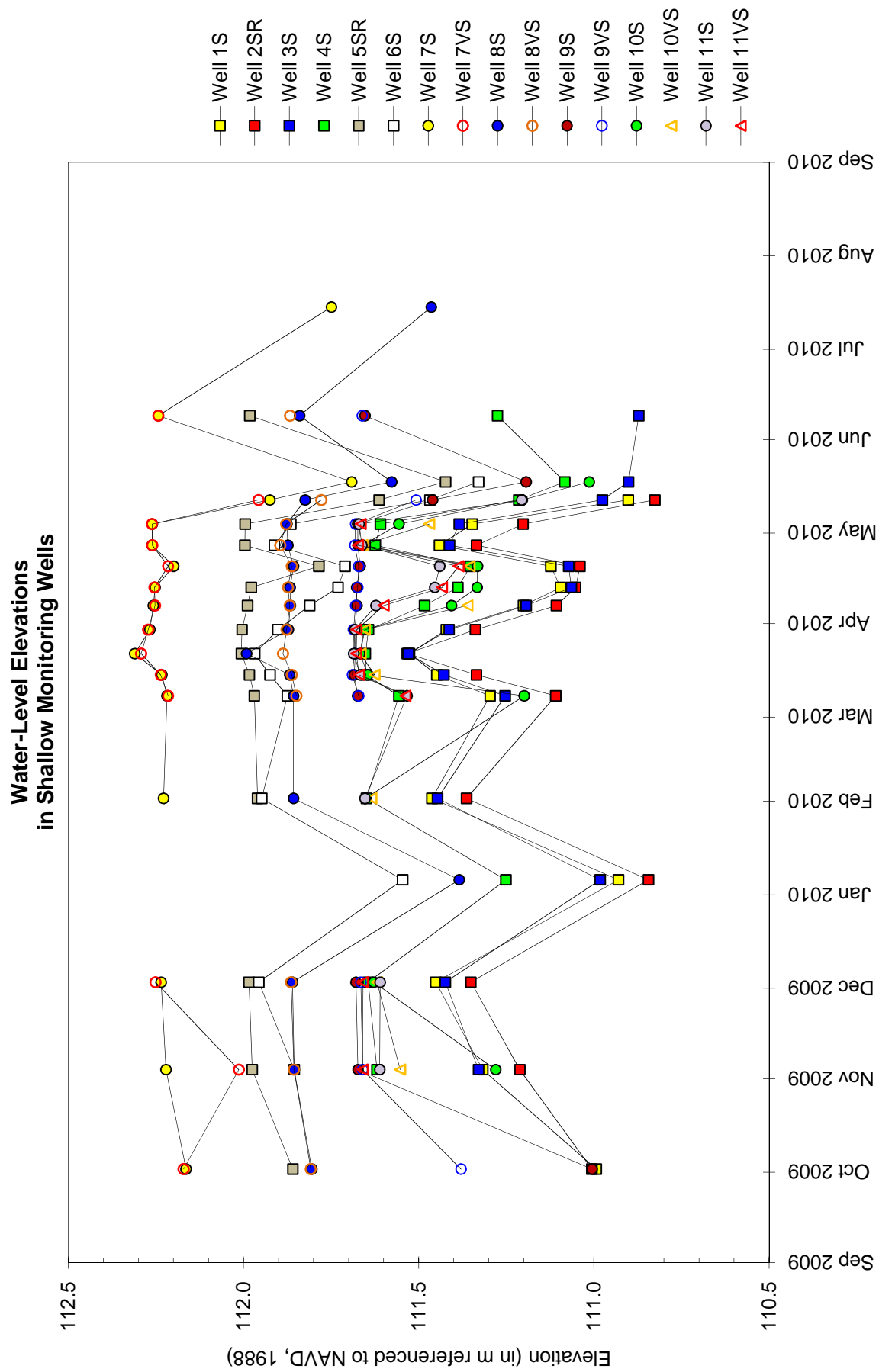
## Estimated Areal Extent of 2010 Wetland Hydrology

September 1, 2009 through August 31, 2010

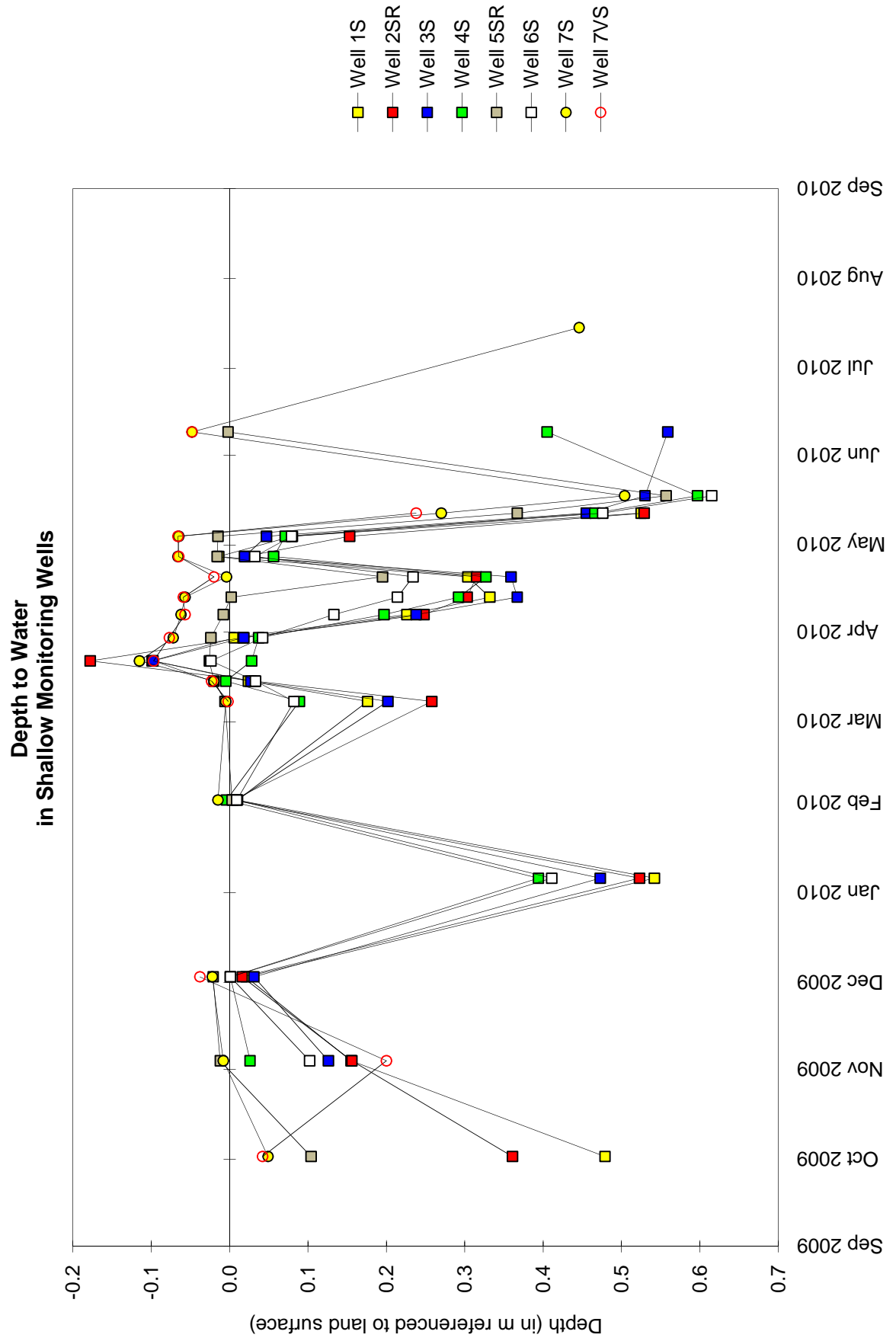
map based on USGS digital orthophotograph Harrisburg NW quarter quadrangle  
from 3/17/2005 aerial photography and ISGS topography (ISGS 2006)



# Harrisburg Wetland Mitigation Site September 1, 2009 through August 31, 2010

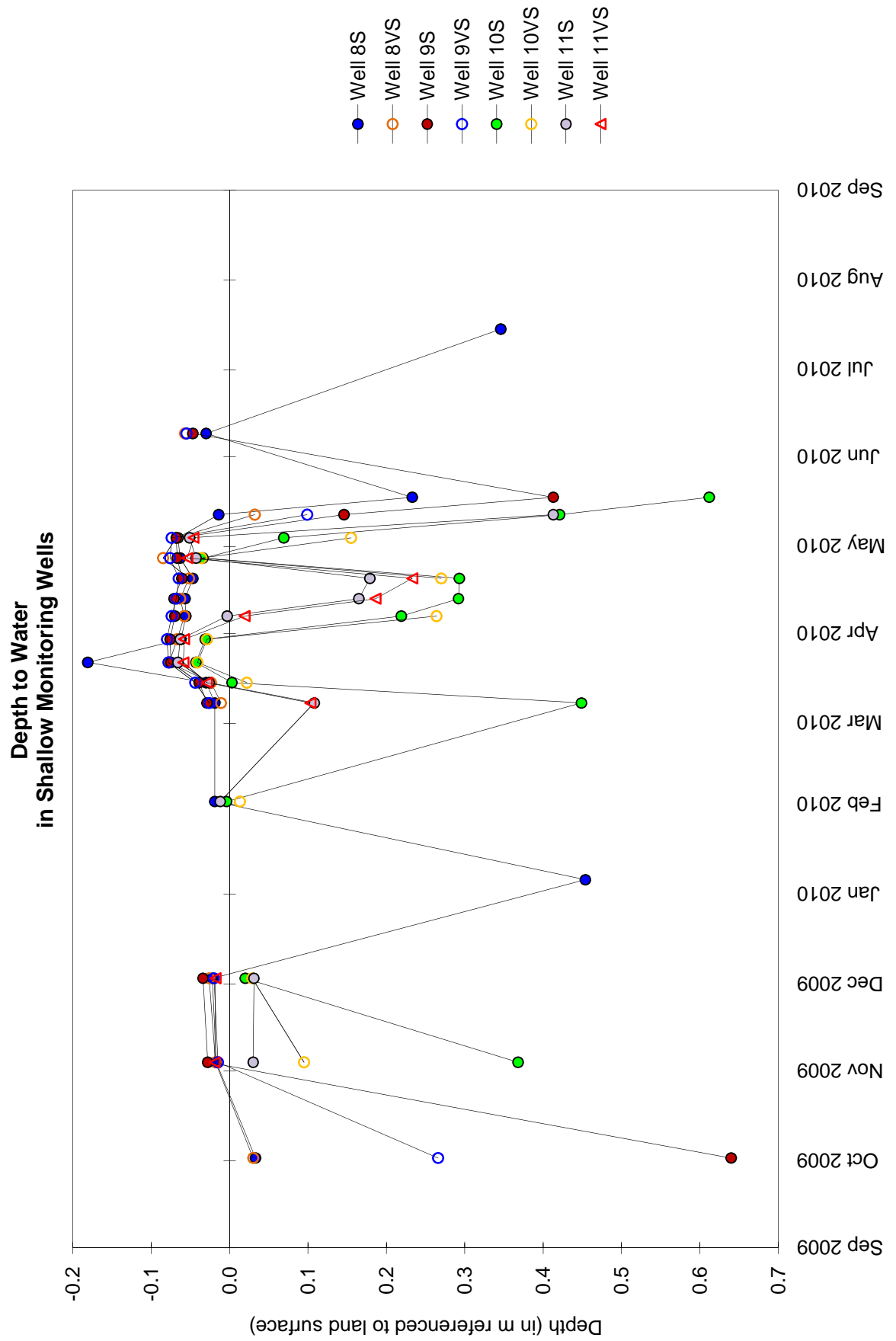


# Harrisburg Wetland Mitigation Site September 1, 2009 through August 31, 2010

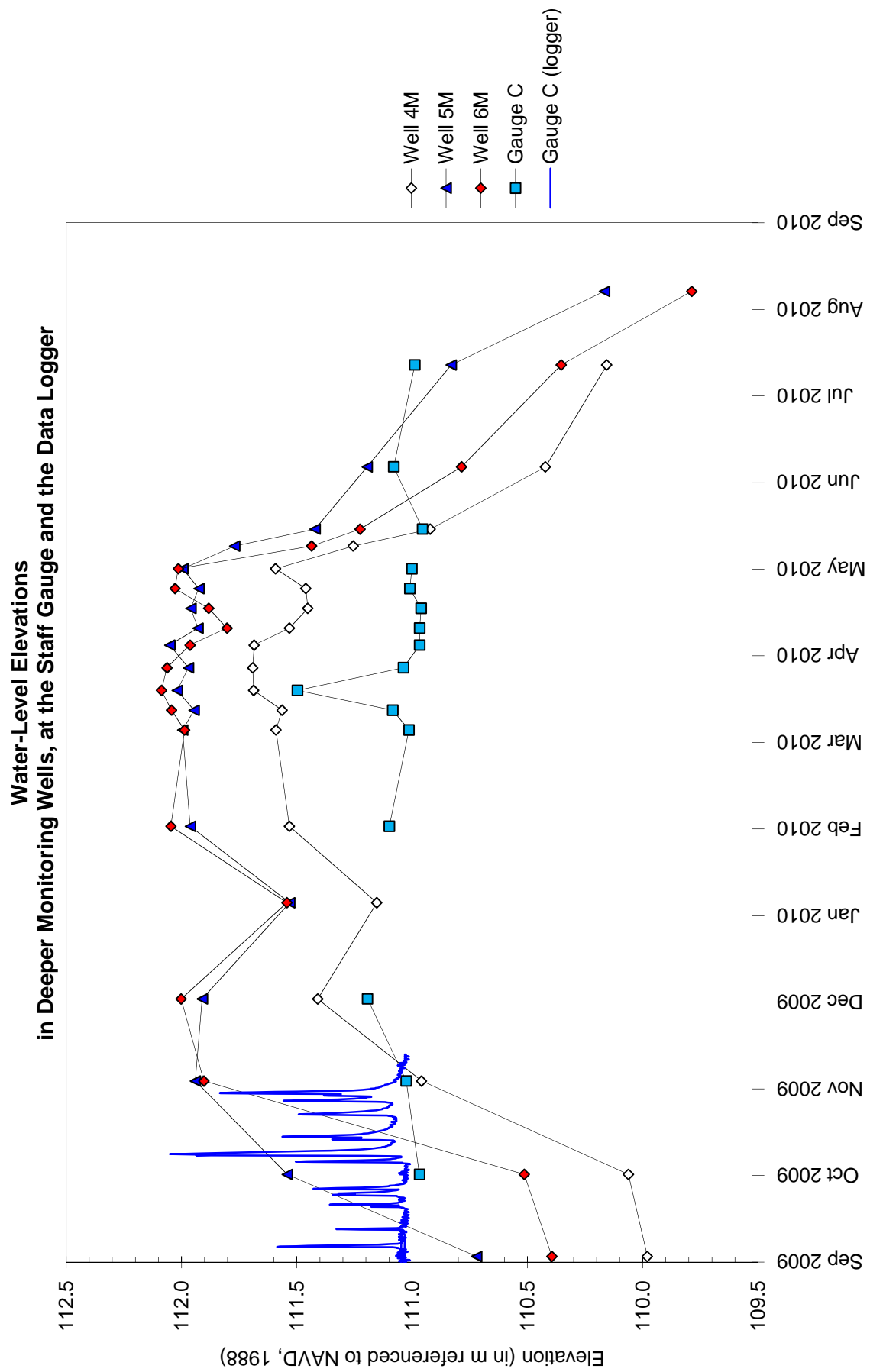




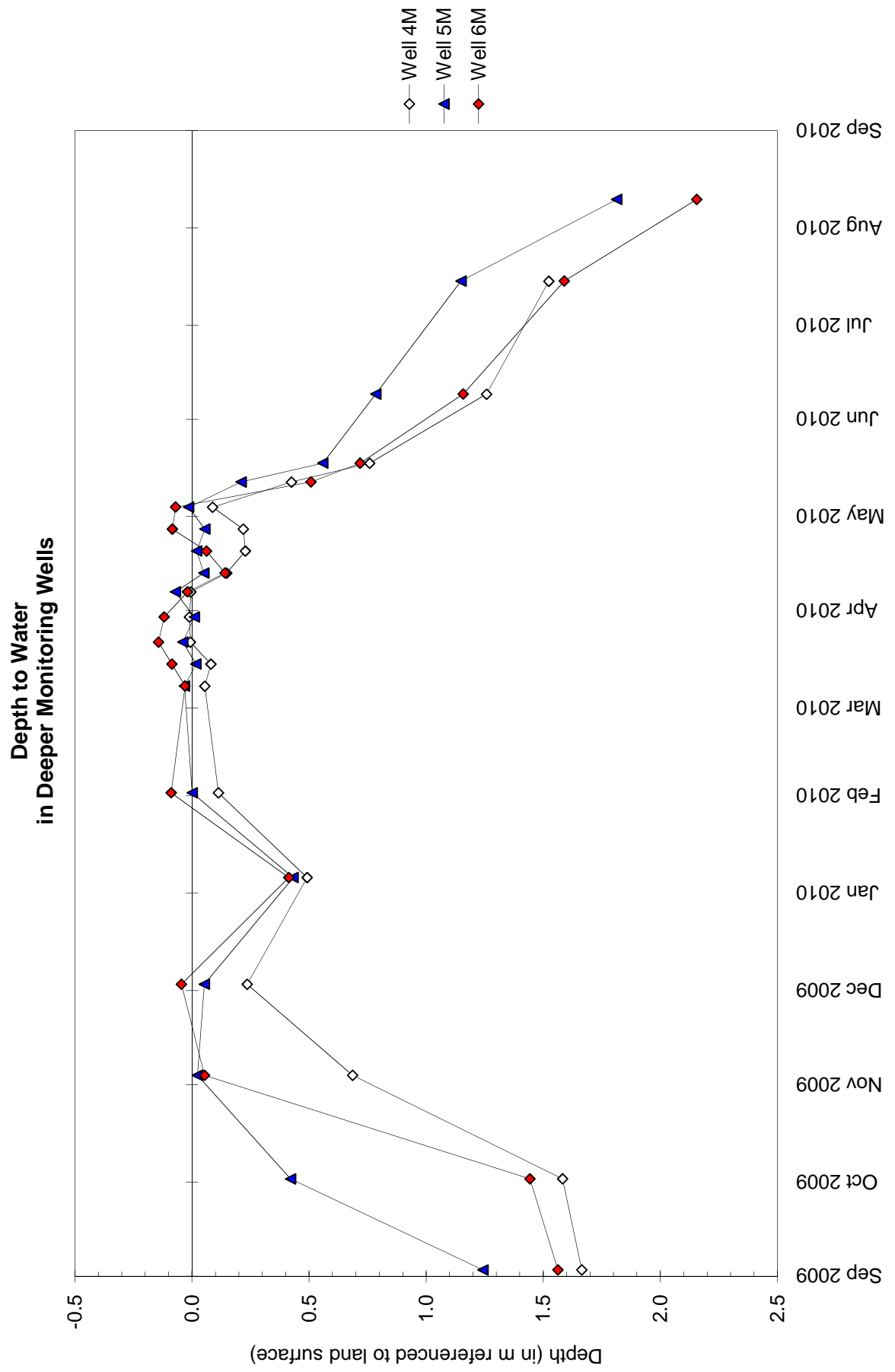
# Harrisburg Wetland Mitigation Site September 1, 2009 through August 31, 2010



# Harrisburg Wetland Mitigation Site September 1, 2009 through August 31, 2010



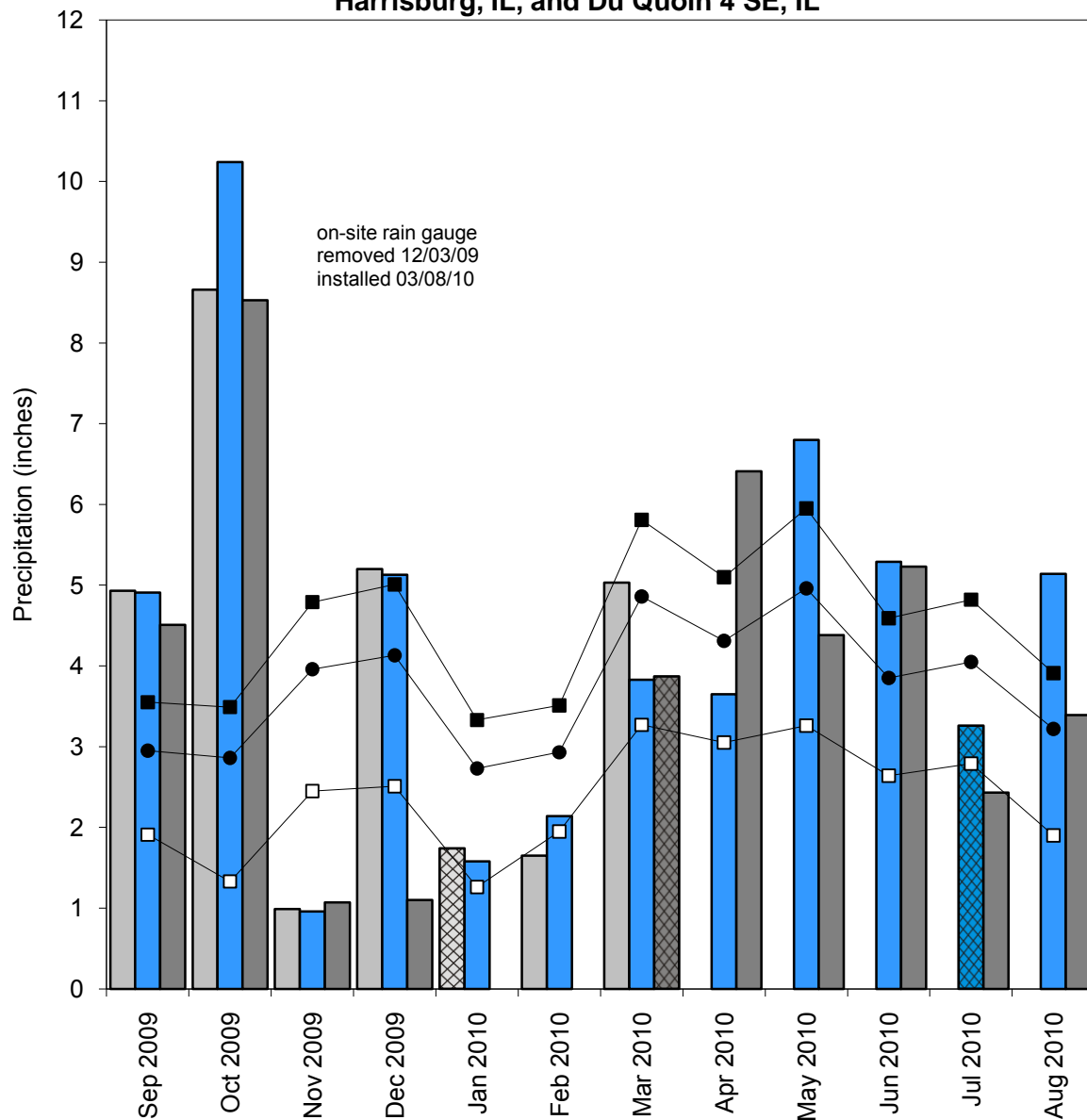
# Harrisburg Wetland Mitigation Site September 1, 2009 through August 31, 2010





# Harrisburg Wetland Mitigation Site September 2009 through August 2010

## Total Precipitation Recorded on Site and at Harrisburg, IL, and Du Quoin 4 SE, IL



- monthly precipitation recorded at Harrisburg, IL (MRCC)
- monthly precipitation recorded at Du Quoin, IL (MRCC)
- monthly precipitation recorded on site by ISGS
- data incomplete
- 1961-1990 monthly 30% above average threshold at Harrisburg, IL (NWCC)
- 1961-1990 monthly average precipitation at Harrisburg, IL (NWCC)
- 1961-1990 monthly 30% below average threshold at Harrisburg, IL (NWCC)

Graph last updated September 27, 2010

**TAMMS  
WETLAND MITIGATION SITE**

**ISGS #71**

IL 127

FAS 1907

Sequence #1026

Union County, near Tamms, Illinois

**Primary Project Manager: Geoffrey E. Pociask**

**Secondary Project Manager: Melinda C. Campbell**

**SITE HISTORY**

- Summer 2001: The wetland mitigation site was constructed.
- June 2003: ISGS was tasked by IDOT to monitor wetland hydrology.
- November 2003: Post-construction water-level monitoring was initiated.

**WETLAND HYDROLOGY CALCULATION FOR 2010**

We estimate that 2.2 ha (5.3 ac) out of the 6.3-ha (15.6-ac) site satisfied wetland hydrology criteria (Environmental Laboratory 1987) for greater than 5% of the growing season in 2010, whereas 0.9 ha (2.1 ac) satisfied wetland hydrology criteria for greater than 12.5% of the growing season. According to the 2010 Midwest Region supplement (U.S. Army Corps of Engineers 2010) to the 1987 Manual, we estimate that 2.2 ha (5.3 ac) satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

- According to the MRCC, 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. According to the 2010 Midwest Region supplement, we estimate that March 7 was the starting date of the 2010 growing season based on soil temperatures observed at the wetland mitigation site.
- Total precipitation at the Cape Girardeau, Missouri, weather station for the period from September 2009 through August 2010 was 97% of normal, and Spring 2010 (March through May) precipitation was 110% of normal.
- In 2010, wells 3S, 6S, 7S, 9S, and 10S satisfied wetland hydrology criteria for greater than 5% of the growing season and wells 7S and 10S also satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Furthermore, wells 3S, 6S, 7S, 9S, and 10S also satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season according to the 2010 Midwest Region supplement.
- Surface-water data from the Gauge A data logger showed that areas at the north end of the site below 103.13 m (338.34 ft) were inundated for greater than 5% of the growing season, areas below 102.79 m (337.23 ft) were inundated for greater than 12.5% of the growing season, and areas below 103.13 m (338.34 ft) were inundated for 14 or more consecutive days during the growing season according to the 2010 Midwest Region supplement. Surface-water data from the Gauge B data logger showed that areas at the south end of the site below 102.32 m (335.69 ft) were inundated for greater than 5% of the growing season, areas below 102.24 m (335.43 ft) were inundated for greater than

12.5% of the growing season, and areas below 102.32 m (335.69 ft) were also inundated for 14 or more consecutive days during the growing season according to the 2010 Midwest Region supplement.

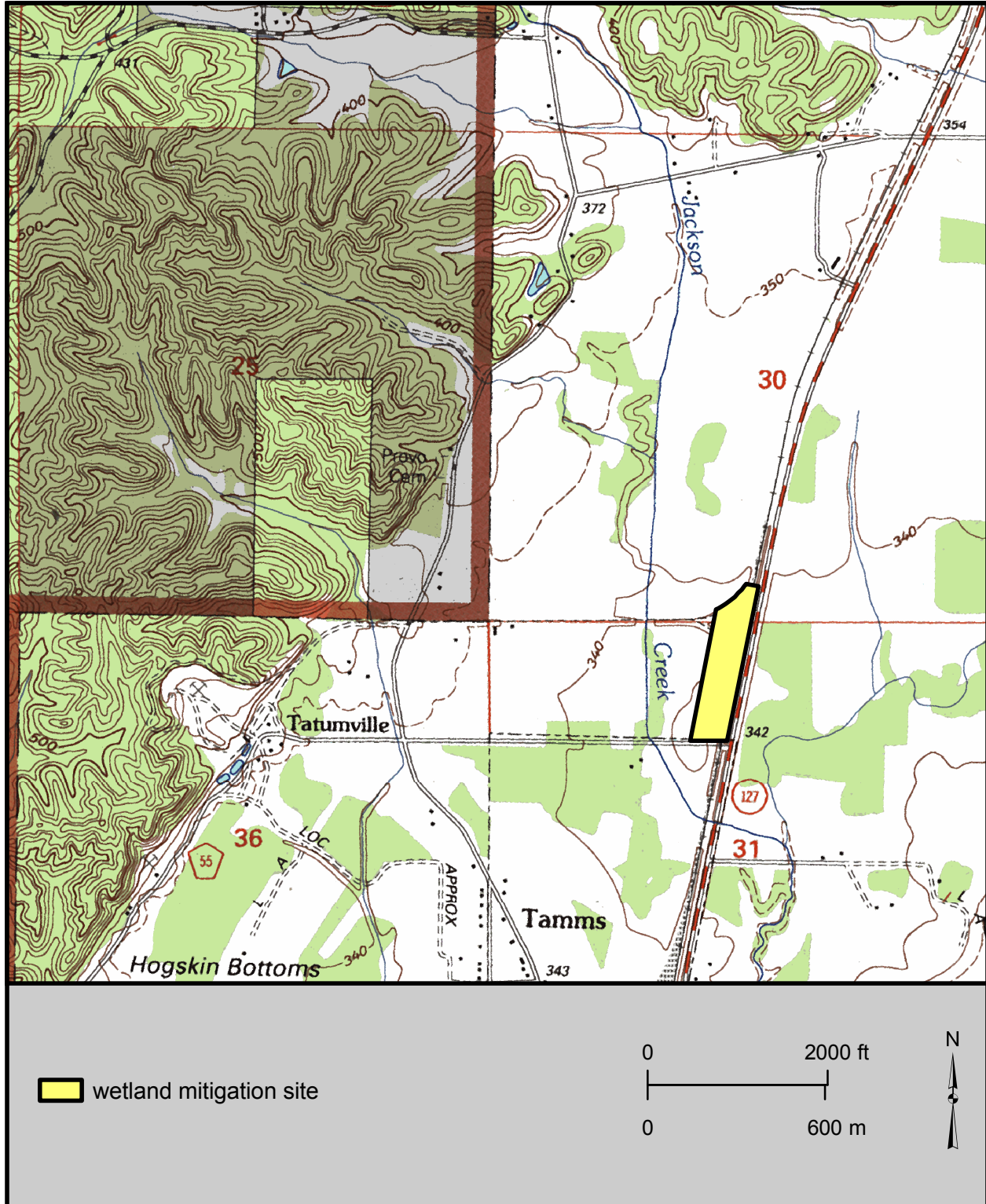
#### PLANNED FUTURE ACTIVITIES

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

# Tamms Wetland Mitigation Site (FAS 1907)

## General Study Area and Vicinity

from the Topographic Series, Mill Creek, IL, 7.5-minute Quadrangle (USGS 1996)  
contour interval is 20 feet



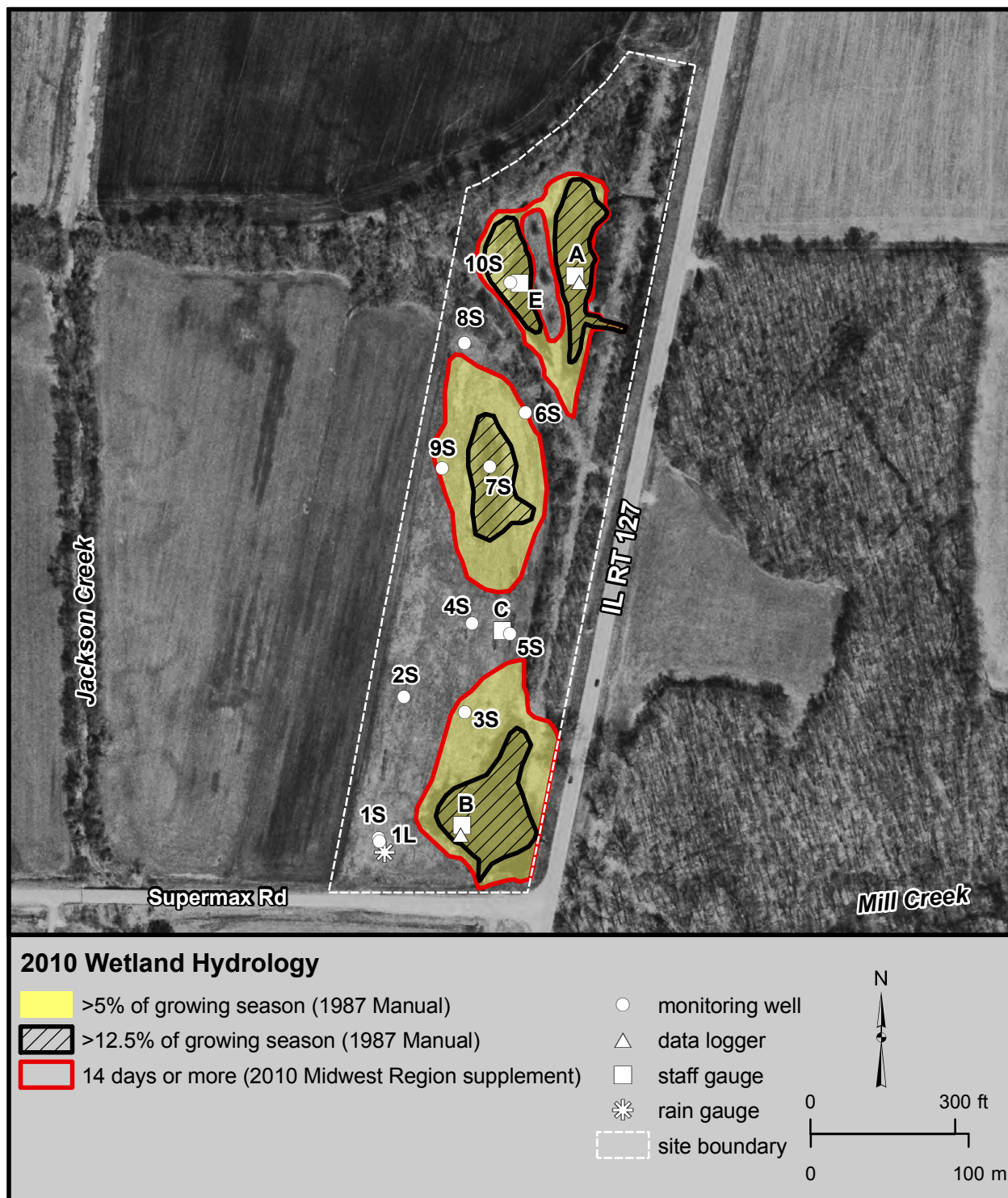


# Tamms Wetland Mitigation Site (FAS 1907)

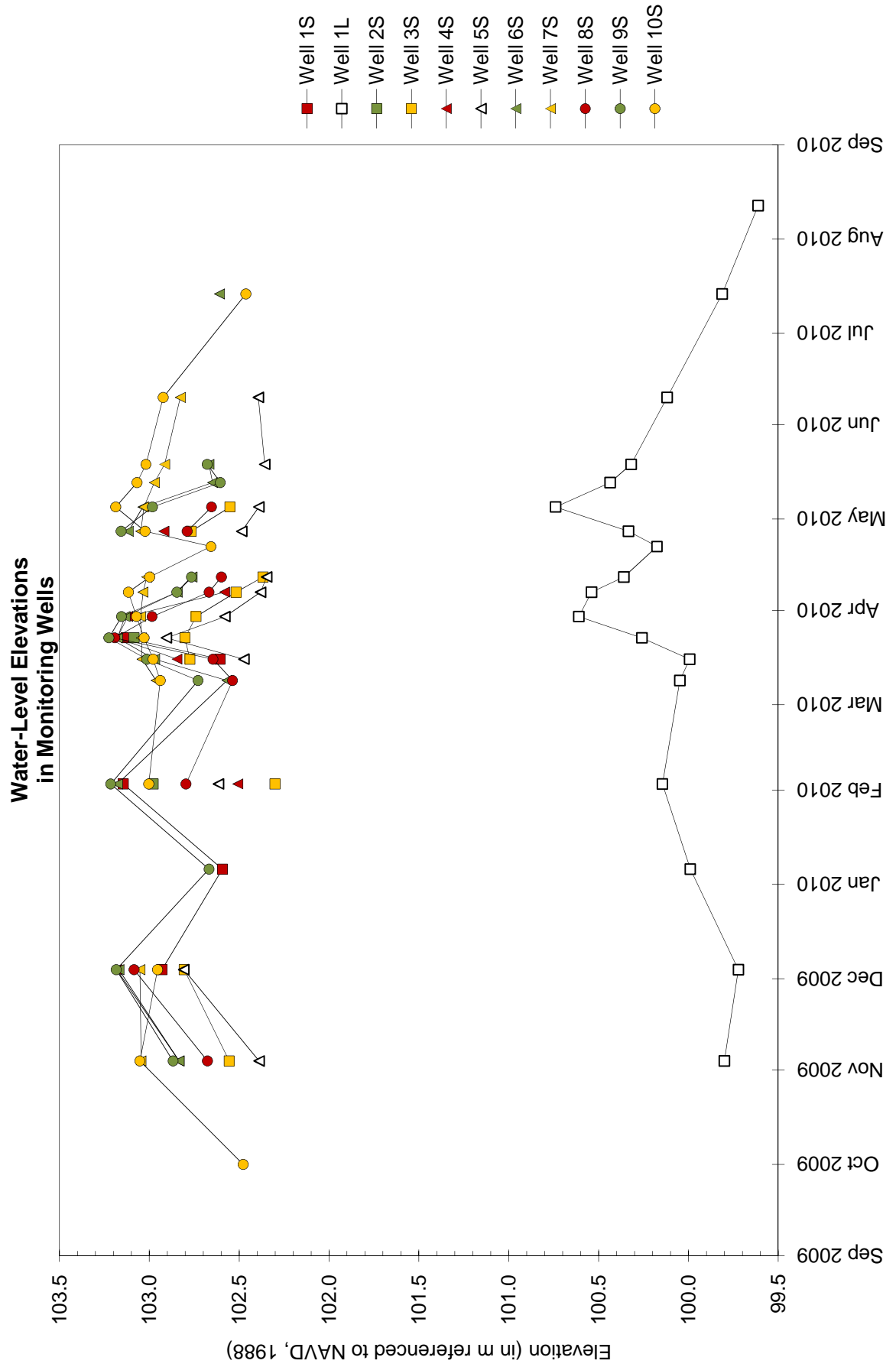
## Estimated Areal Extent of 2010 Wetland Hydrology

September 1, 2009 through August 31, 2010

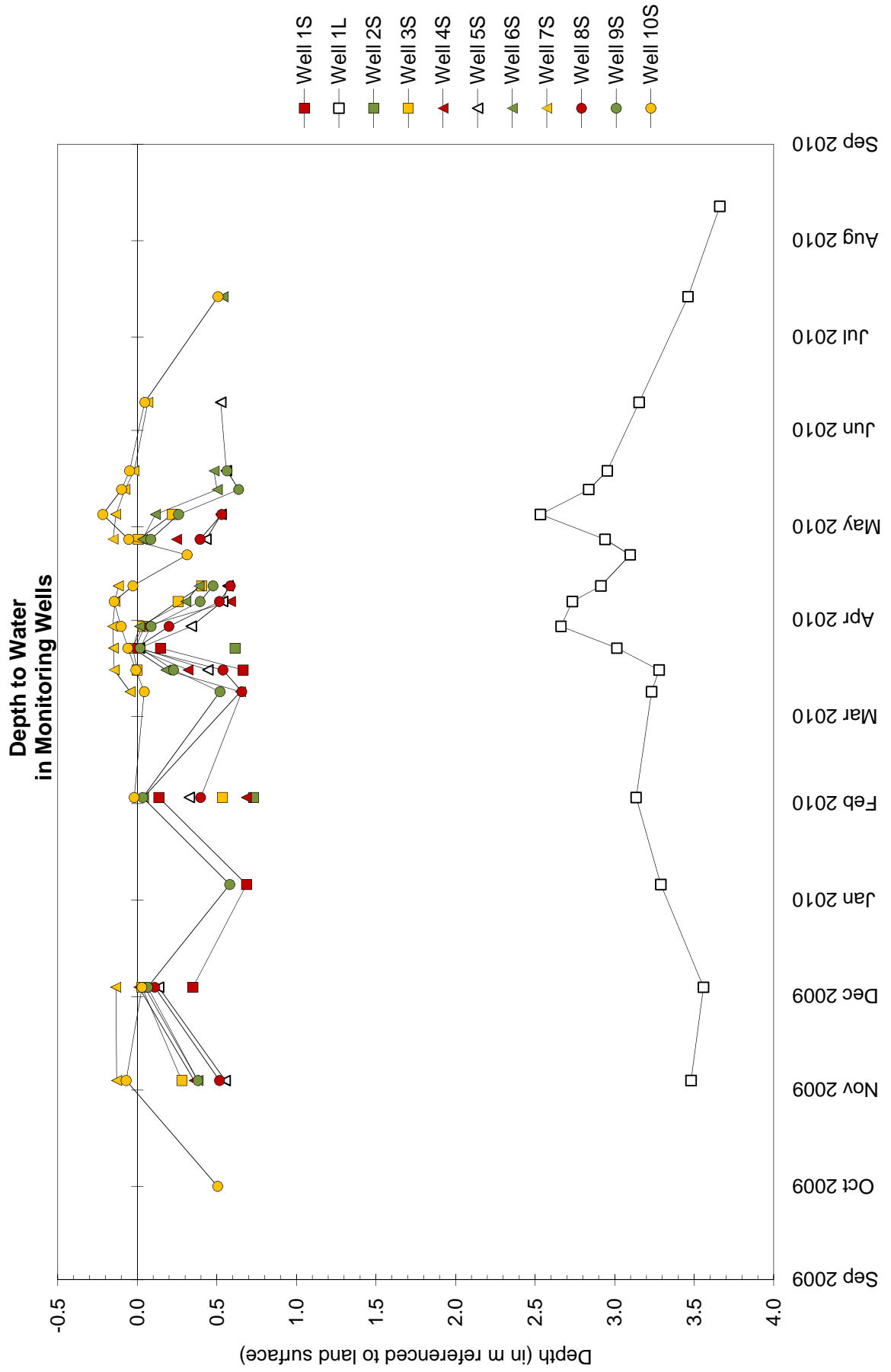
map based on USGS digital orthophotograph Mill Creek SE quarter quadrangle  
produced from 3/31/2005 aerial photography (ISGS 2006).



# **Tamms Wetland Mitigation Site** **September 1, 2009 through August 31, 2010**



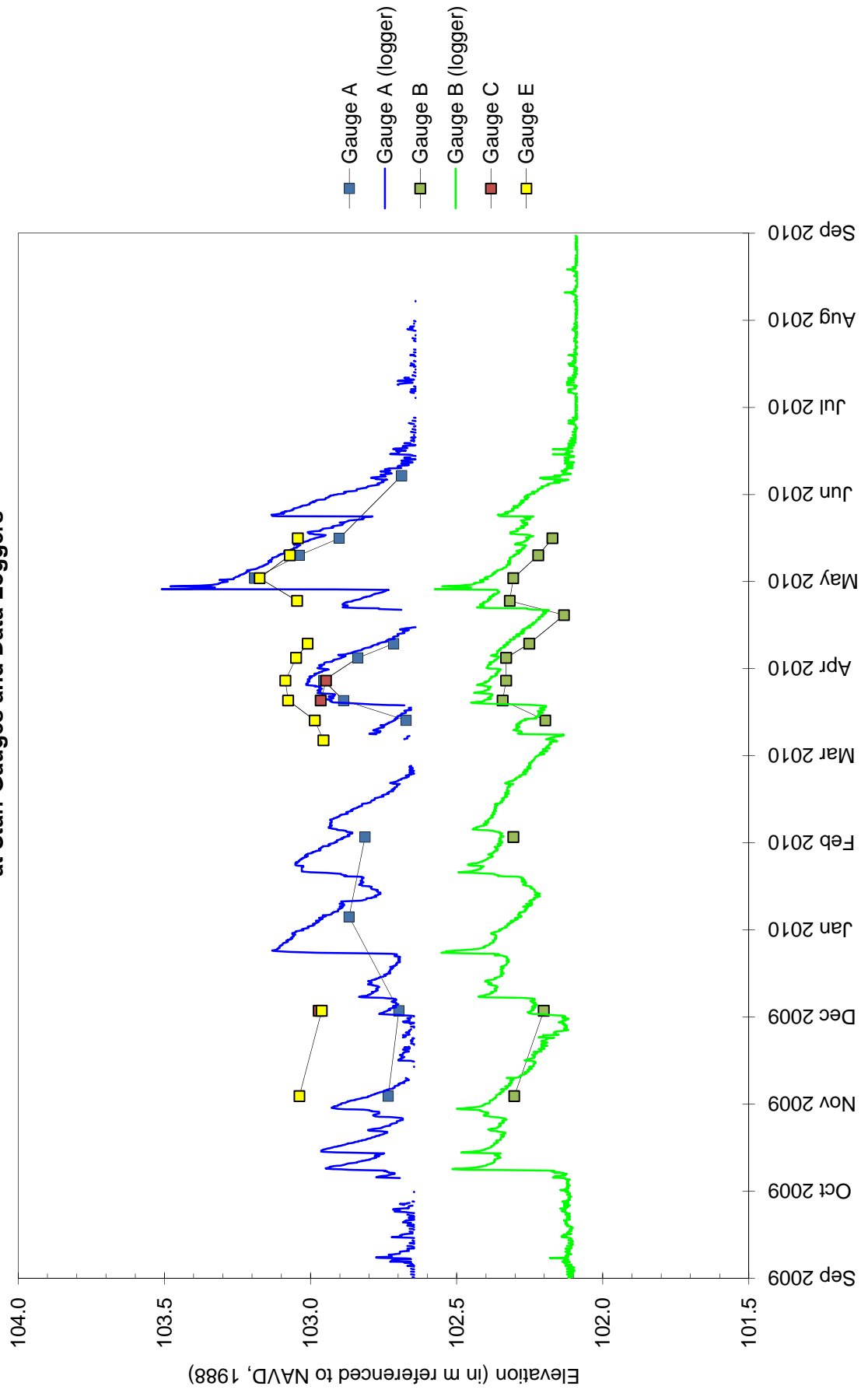
# **Tamms Wetland Mitigation Site** **September 1, 2009 through August 31, 2010**





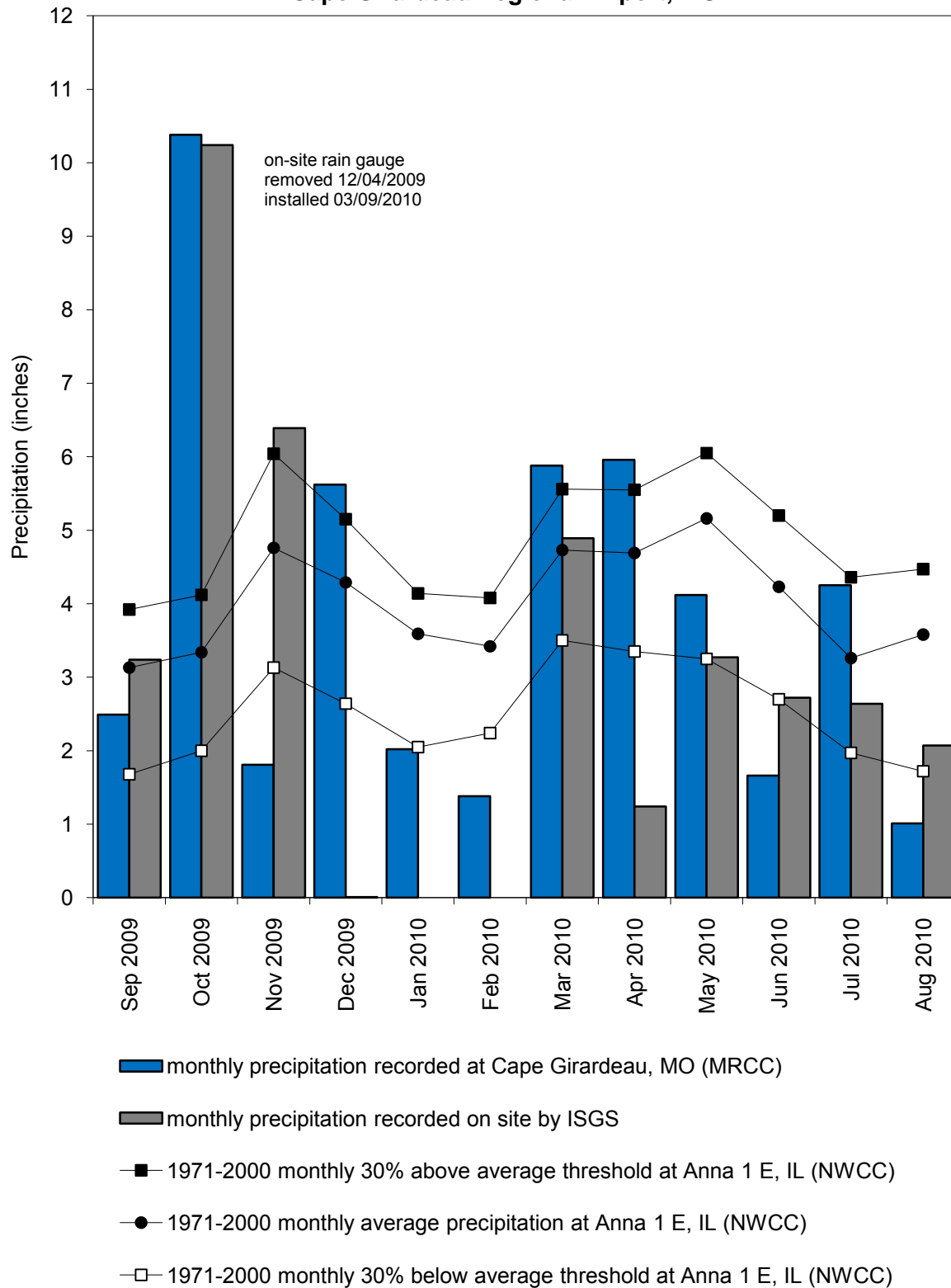
# **Tamms Wetland Mitigation Site** **September 1, 2009 through August 31, 2010**

## **Water-Level Elevations at Staff Gauges and Data Loggers**



# Tamms Wetland Mitigation Site September 2009 through August 2010

## Total Monthly Precipitation Recorded on Site and at the Cape Girardeau Regional Airport, MO



Graph last updated September 29, 2010

**FREEPORT BYPASS WEST  
WETLAND MITIGATION SITE 6W**

**ISGS #72**

US 20

FAP 301

Sequence #10487

Stephenson County, near Freeport, Illinois

**Primary Project Manager: Eric T. Plankell**

**Secondary Project Manager:** not assigned

**SITE HISTORY**

- December 2003: ISGS monitoring network was installed.
- Summer 2006: Tree planting was completed and a berm was installed at the western end of the central drainage ditch.
- February 2007: ISGS submitted a Level II hydrogeologic characterization report to IDOT (ISGS Open-File Series 2007–01).

**WETLAND HYDROLOGY CALCULATION FOR 2010**

The area that satisfied wetland hydrology criteria (Environmental Laboratory 1987) for greater than 5% of the 2010 growing season is estimated to be 9.4 ha (23.3 ac) out of a total site area of 9.6 ha (23.6 ac). The area that satisfied wetland hydrology criteria for greater than 12.5% of the 2010 growing season is estimated to be 8.1 ha (20.1 ac). Using the 2010 Midwest Region supplement (U.S. Army Corps of Engineers 2010) to the 1987 Manual, it is estimated that 9.1 ha (22.4 ac) satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

- According to the MRCC, 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. According to methods outlined in the 2010 Midwest Region supplement, it is estimated that March 16 was the starting date of the 2010 growing season based on soil temperatures observed at the mitigation site.
- Regional precipitation for the monitoring period, as recorded at the Freeport Wastewater Plant in Illinois, was 141% of normal, and was 103% of normal for the period March through May 2010. More than 13 inches of precipitation were recorded at the weather station in July 2010, and resulted in the largest flooding event to occur along the Pecatonica River during the 2010 growing season. This flood peaked on July 24, and along with additional precipitation through early August, resulted in the largest observed areas that satisfied wetland hydrology criteria for the monitoring period.
- In 2010, water levels measured in all monitoring wells satisfied wetland hydrology criteria for greater than 5% of the growing season. Water levels in all wells, except well 4S, satisfied wetland hydrology criteria for greater than 12.5% of the growing season. According to the 2010 Midwest Region supplement, all wells also satisfied wetland hydrology criteria for 14 or more consecutive days of the growing season.
- Water-level records for the data logger at Gauge C indicated on-site inundation at or above 231.51 m (759.55 ft) for greater than 5% of the growing season, and inundation at or above 230.86 m (757.41 ft) for greater than 12.5% of the growing season. Based on

the 2010 Midwest Region supplement, water-level records for the data logger at Gauge C indicated inundation at or above 230.93 m (757.64 ft) for 14 or more consecutive days of the growing season.

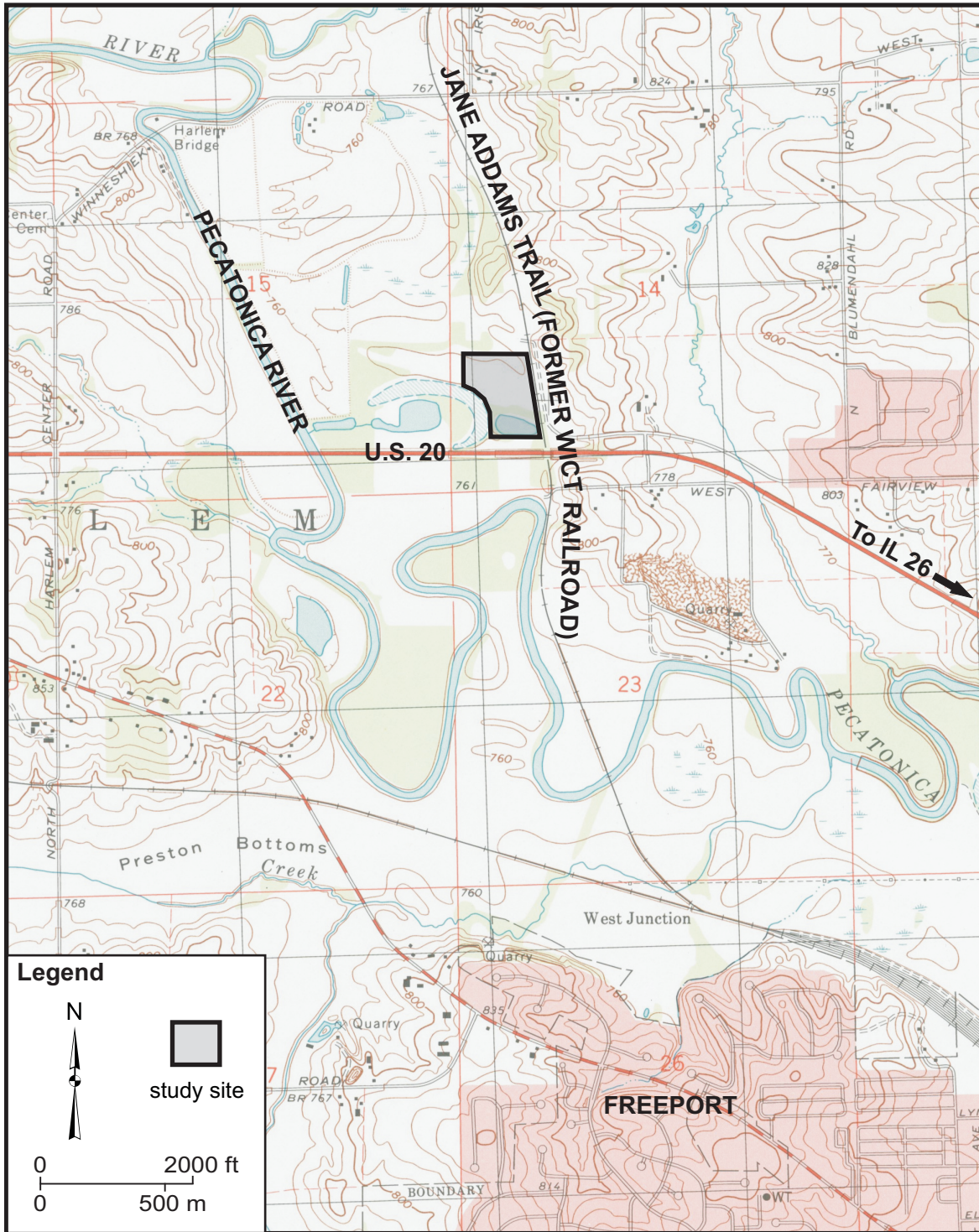
#### PLANNED FUTURE ACTIVITIES

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

**Freeport Bypass West  
Wetland Mitigation Site 6W  
(FAP 301 [US 20])**

**General Study Area and Vicinity**

from the USGS Topographic Series, Freeport West, IL, 7.5-minute Quadrangle (USGS 1998)  
contour interval is 10 feet

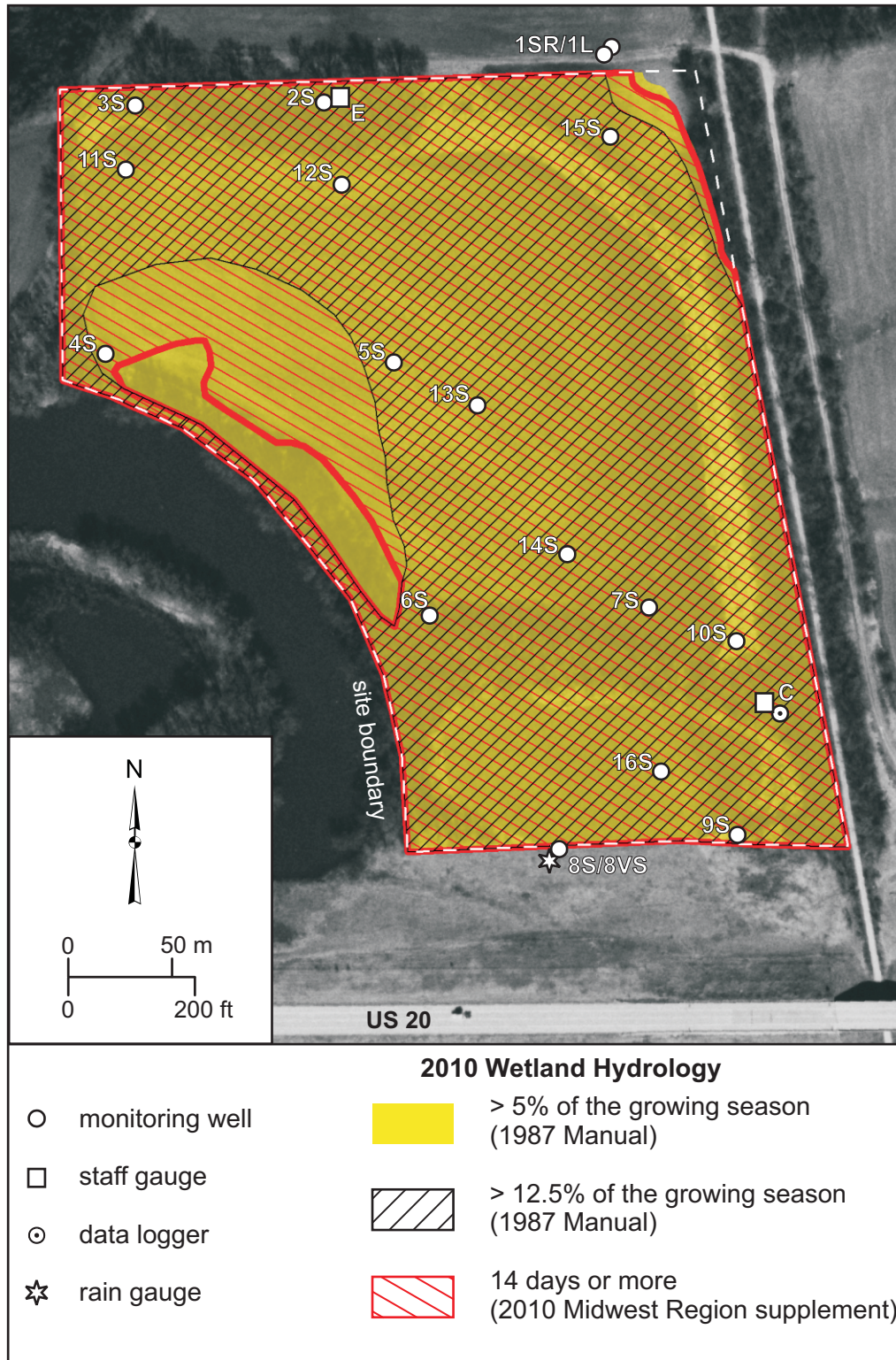




# Freeport Bypass West Wetland Mitigation Site 6W (FAP 301 [US 20])

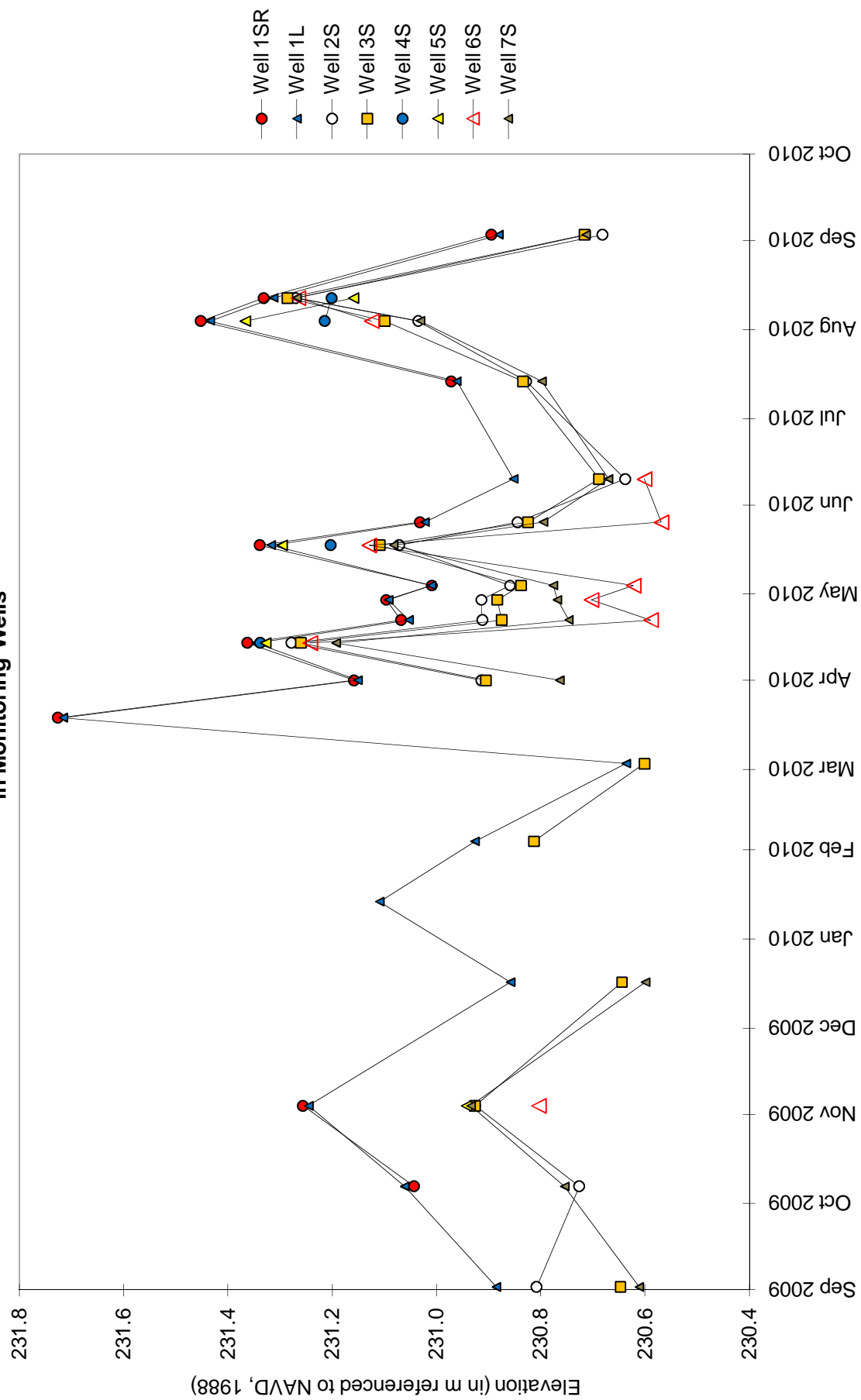
Estimated Areal Extent of 2010 Wetland Hydrology  
September 1, 2009 through October 1, 2010

Map based on USGS digital orthophotograph, Freeport West, NE quarter-quadrangle (ISGS 2005)



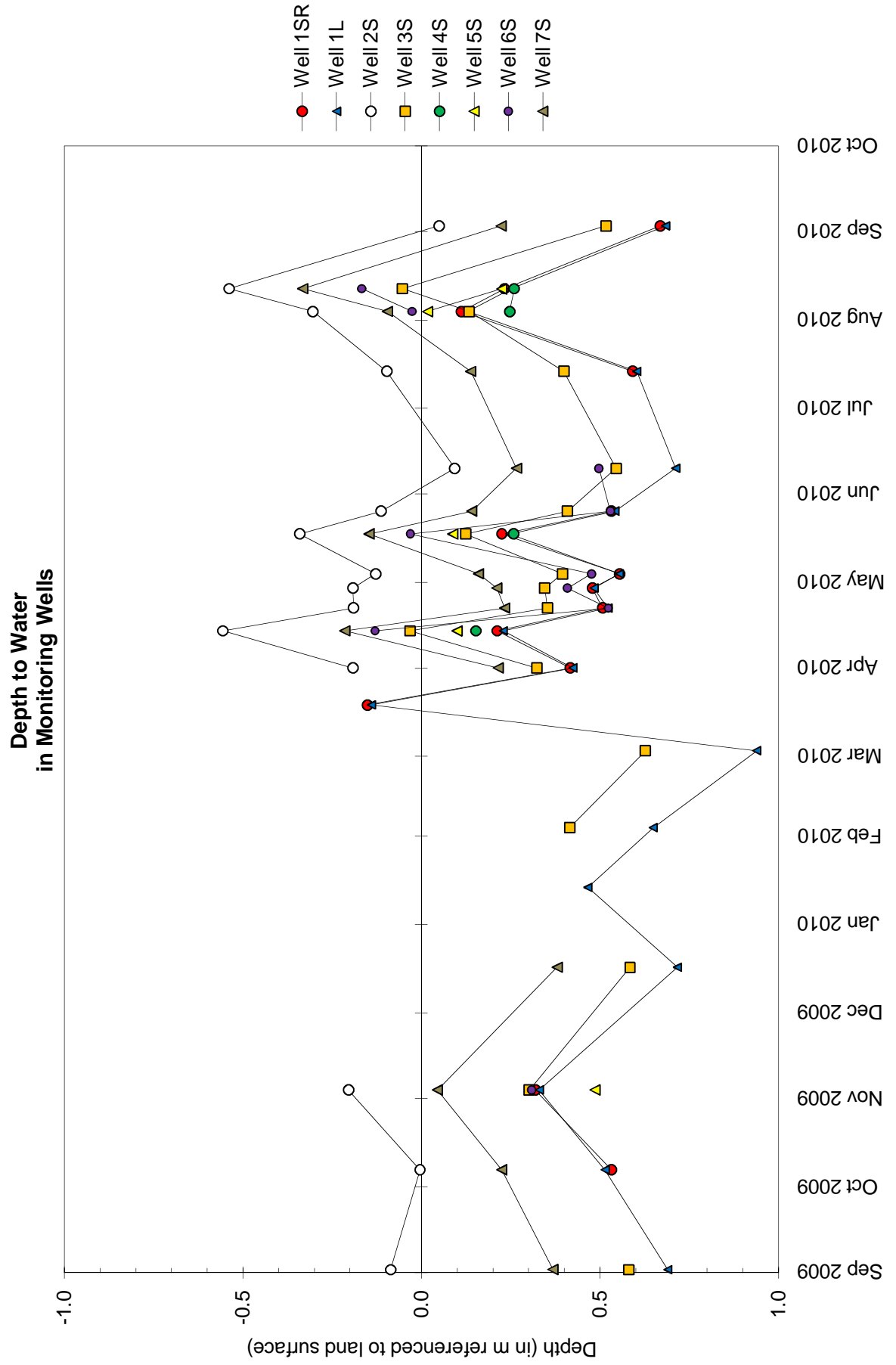
# Freeport Bypass West, Wetland Mitigation Site 6W September 1, 2009 through October 1, 2010

Water-Level Elevations  
in Monitoring Wells

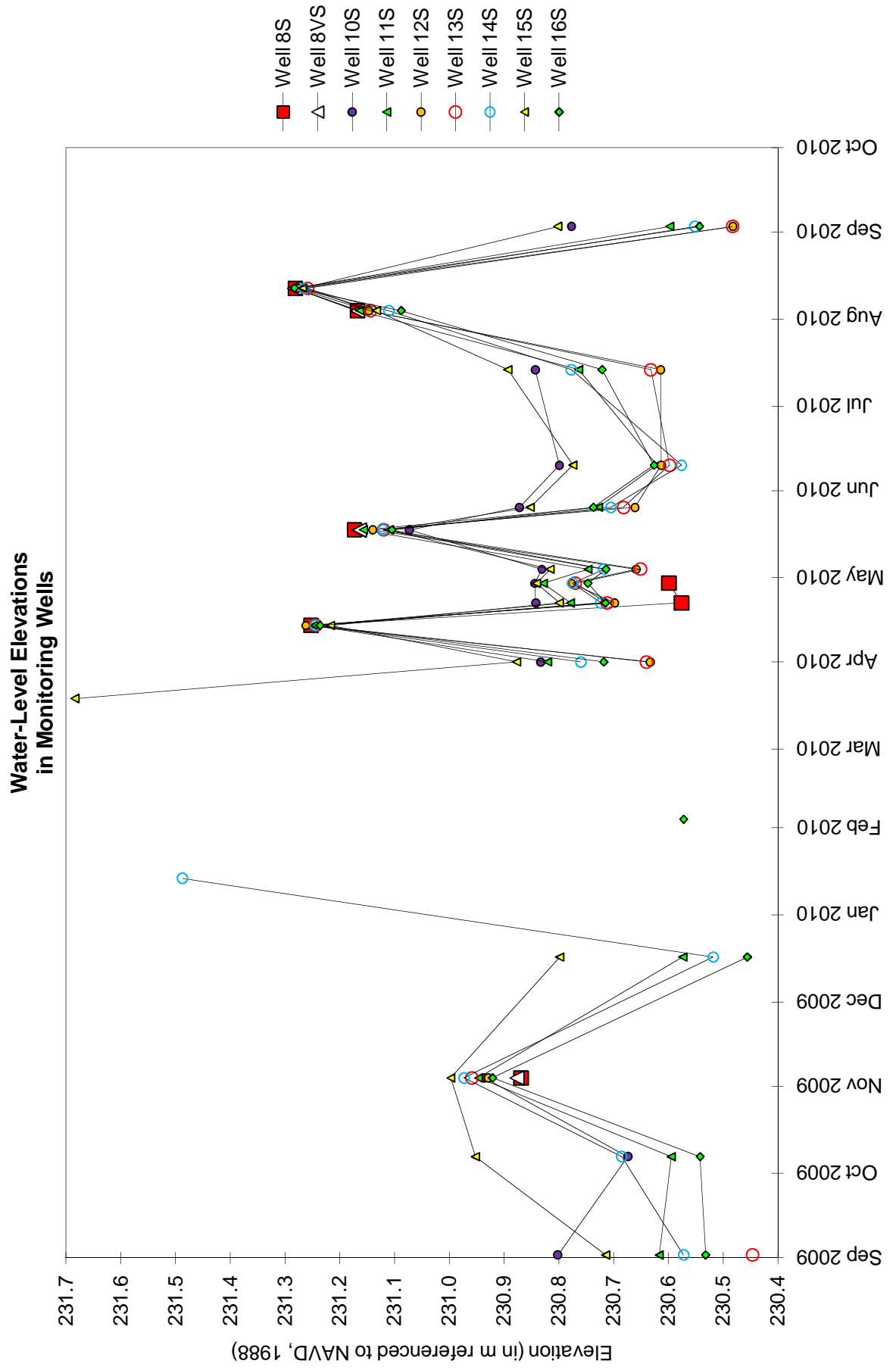




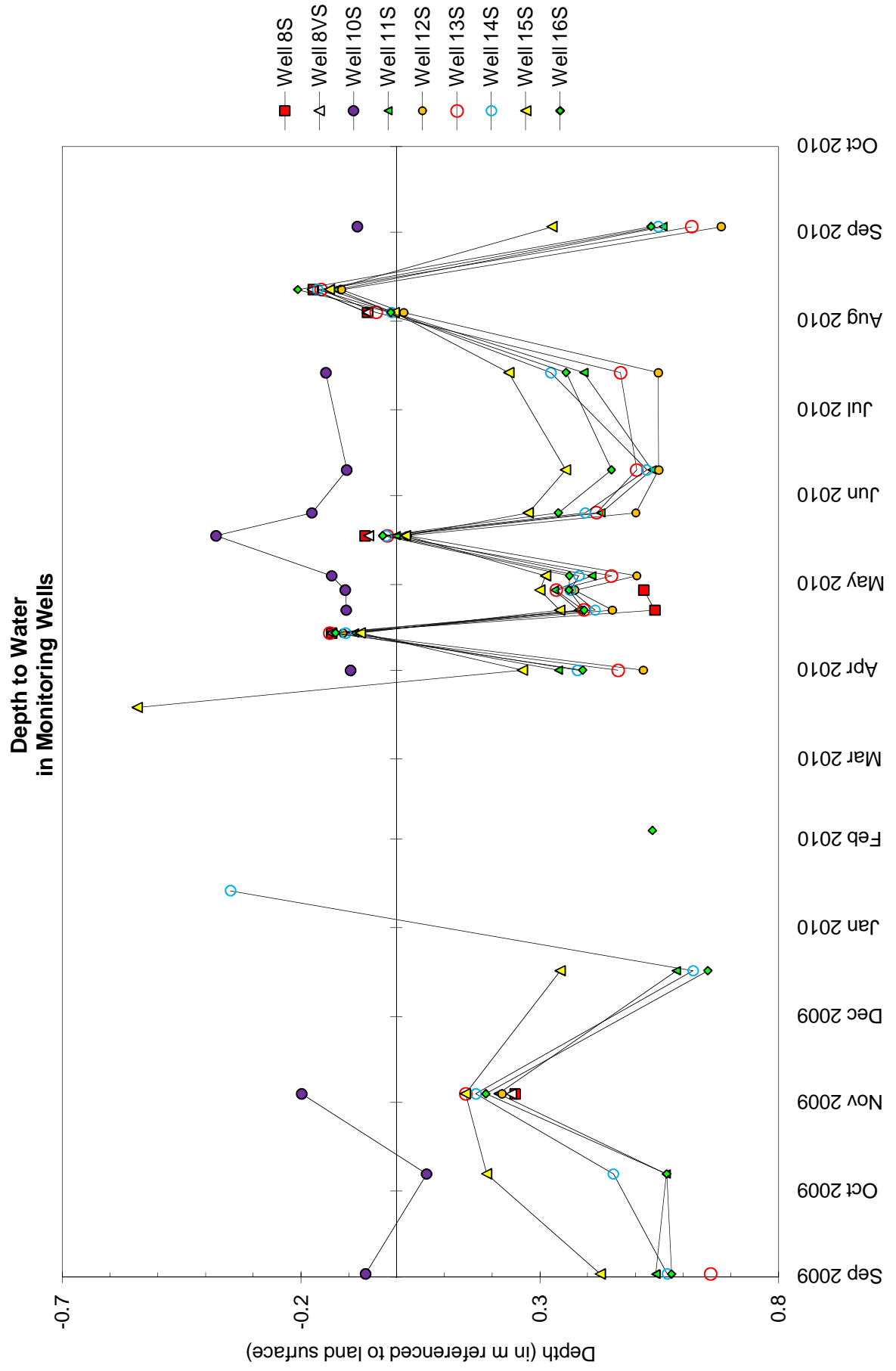
# Freeport Bypass West, Wetland Mitigation Site 6W September 1, 2009 through October 1, 2010



# Freeport Bypass West, Wetland Mitigation Site 6W September 1, 2009 through October 1, 2010

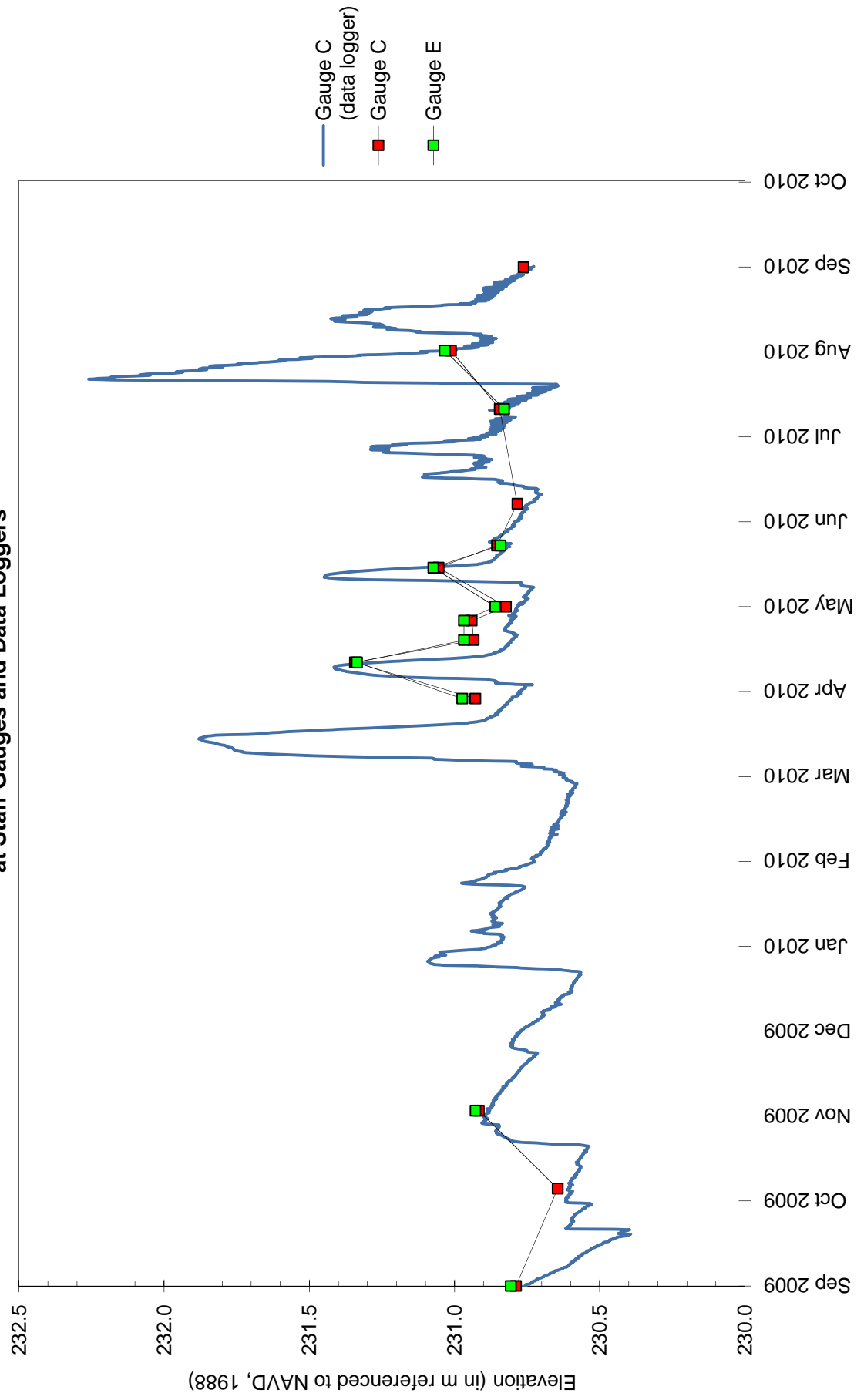


# Freeport Bypass West, Wetland Mitigation Site 6W September 1, 2009 through October 1, 2010

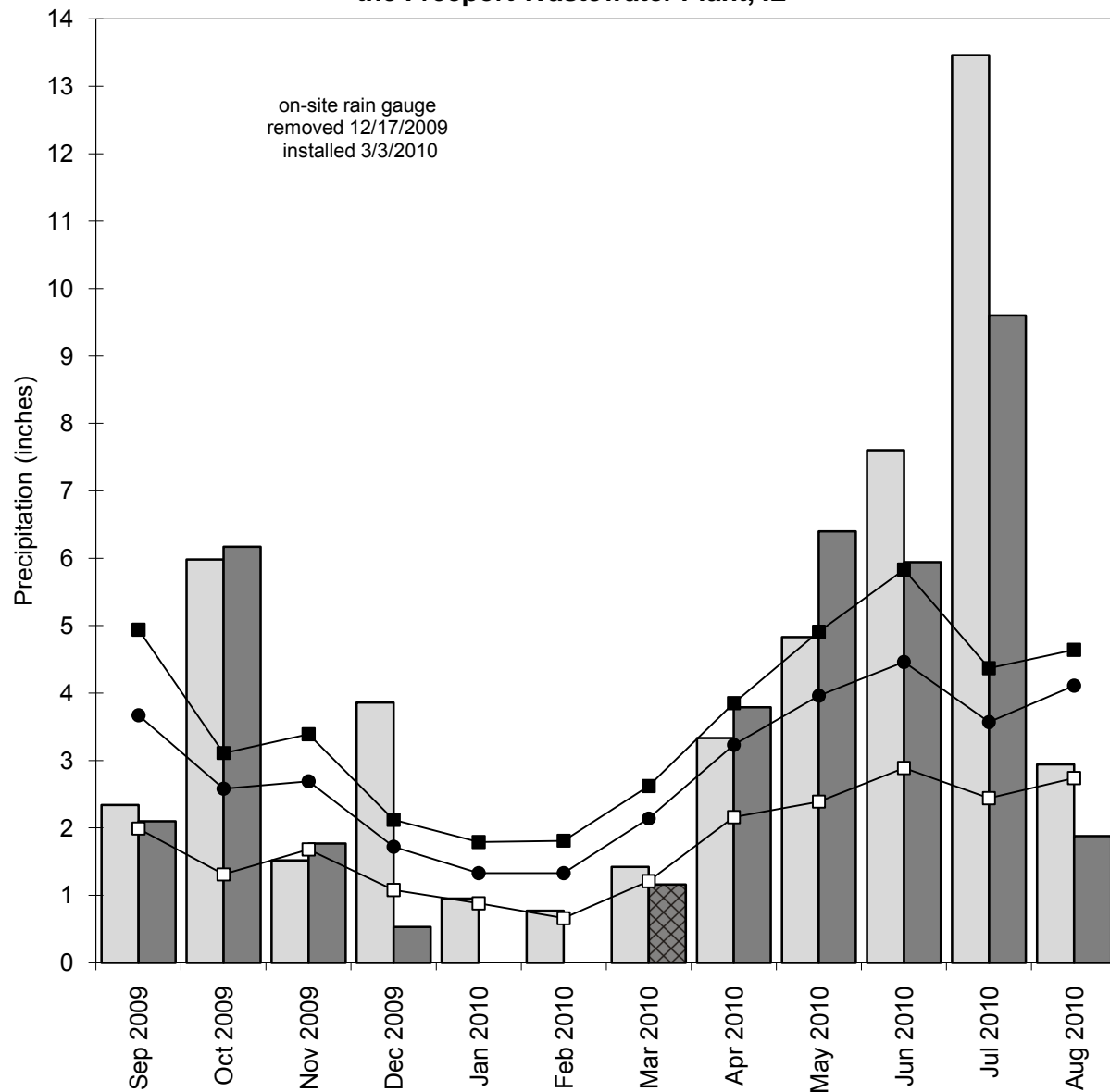


# Freeport Bypass West, Wetland Mitigation Site 6W September 1, 2009 through October 1, 2010

## Water-Level Elevations at Staff Gauges and Data Loggers



**Freeport Bypass West  
Wetland Mitigation Site 6W  
September 2009 through August 2010  
Total Monthly Precipitation Recorded on Site and at  
the Freeport Wastewater Plant, IL**



- monthly precipitation recorded at Freeport, IL (MRCC)
- monthly precipitation recorded on site by ISGS
- ▨ data incomplete
- 1971-2000 monthly 30% above average threshold at Freeport, IL (NWCC)
- 1971-2000 monthly average precipitation at Freeport, IL (NWCC)
- 1971-2000 monthly 30% below average threshold at Freeport, IL (NWCC)

Graph last updated September 29, 2010

**PECATONICA RIVER FOREST PRESERVE  
WETLAND MITIGATION SITE**

**ISGS #73**

Harrison Avenue Extension

Sequence #3746

Winnebago County, near Pecatonica, Illinois

**Primary Project Manager: Eric T. Plankell**

**Secondary Project Manager: Steven E. Benton**

**SITE HISTORY**

- April 2005: ISGS began on-site monitoring with the installation of a monitoring network.
- March 2010: IDOT notified the ISGS to discontinue monitoring at this site. However, monitoring was continued through September 2010 in order to study differences between the 2010 Midwest Region supplement and the 1987 Manual.

**WETLAND HYDROLOGY CALCULATION FOR 2010**

No estimate of the area satisfying wetland hydrology criteria is given for the 2009-2010 monitoring period due to IDOT ending monitoring in March 2010.

- According to the MRCC, 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. According to methods outlined in the 2010 Midwest Region supplement, it is estimated that March 19 was the starting date of the 2010 growing season based on vegetation growth and development at the site.
- Regional precipitation for the monitoring period, as recorded at the Freeport Wastewater Plant in Illinois, was 141% of normal, and was 103% of normal for the period March through May 2010. More than 13 inches of precipitation were recorded at the weather station in July 2010, and resulted in the largest flooding event to occur along the Pecatonica River during the 2010 growing season. This flood peaked on site on July 24.
- In 2010, water levels measured in all monitoring wells satisfied wetland hydrology criteria for greater than 5% of the growing season. Water levels in wells 1S, 2S, 4S, 6SR, 7S, 8SR, 9S, 10S, 11S, 13S, 17S, and 19S satisfied wetland hydrology criteria for greater than 12.5% of the growing season. According to the 2010 Midwest Region supplement, all wells except for well 16S satisfied wetland hydrology criteria for 14 or more consecutive days of the growing season.
- Surface-water levels at data loggers C and H indicated inundation at or above 225.82 m (740.88 ft) and 225.49 m (739.80 ft), respectively, for greater than 5% of the growing season, and inundation at or above 225.01 m (738.22 ft) and 225.14 m (738.65 ft) for greater than 12.5% of the growing season. Based on the 2010 Midwest Region supplement, surface-water levels at data loggers C and H indicated inundation at or above 225.52 m (739.90 ft) and 225.48 m (739.76 ft), respectively, for 14 or more consecutive days of the growing season. Water levels exceeded the sensor ranges of data loggers C and H for greater than 5% of the growing season and of data logger H for 14 or more consecutive days of the growing season. Therefore, the water levels recorded by these data loggers for these time periods reflect the minimum water level during those periods.

#### ADDITIONAL INFORMATION

- A beaver dam, first discovered in April 2009 and located approximately 140 m (460 ft) north of the Pecatonica River in the western ditch, is helping to sustain water levels in the northern mitigation area and along the western edge of the site (including wells 1S, 2S, 3S, 4S, 5S, 6S, 14S, 17S, 18S, 19S, and 20S) for longer than has been typically observed in previous monitoring years.

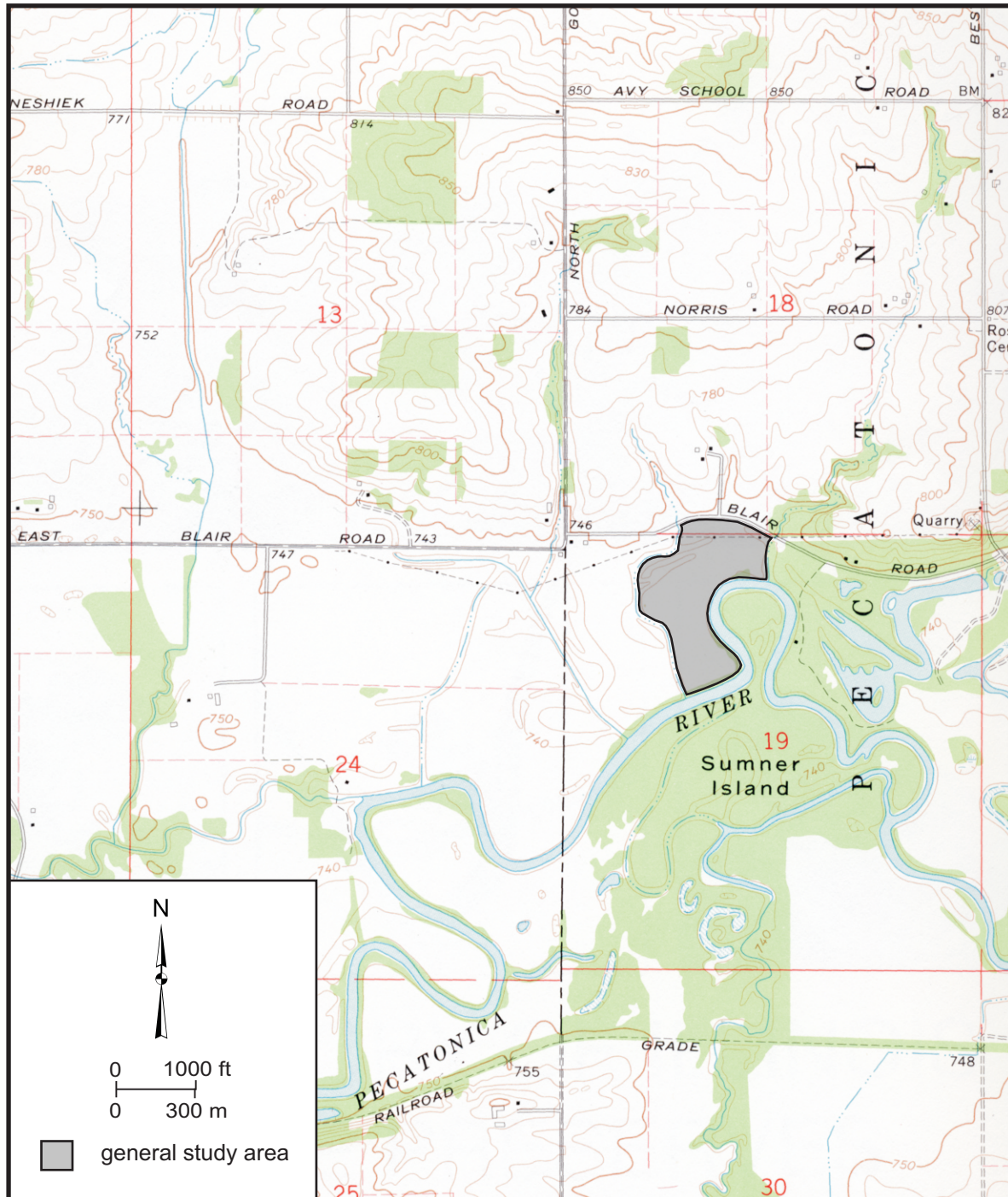
#### PLANNED FUTURE ACTIVITIES

- The site is scheduled to be decommissioned following the end of the 2010 growing season.



# Pecatonica River Forest Preserve Wetland Mitigation Site (Harrison Avenue Extension) General Study Area and Vicinity

from the USGS Topographic Series, Ridott, IL, 7.5-minute Quadrangle (USGS 1971)  
contour interval is 10 feet

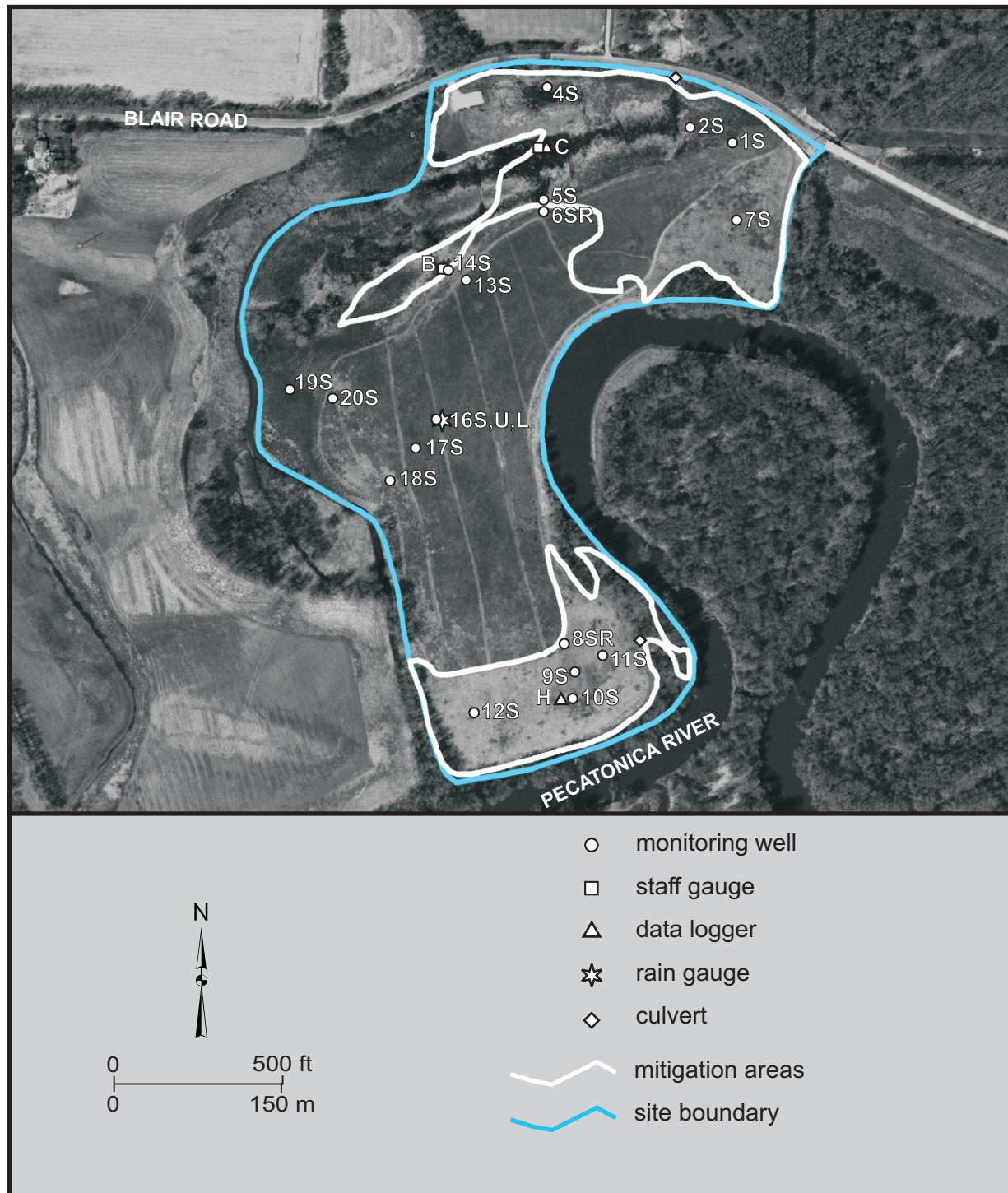


# Pecatonica River Forest Preserve Wetland Mitigation Site (Harrison Avenue Extension)

## ISGS Monitoring Network and Mitigation Areas

September 1, 2009 through October 1, 2010

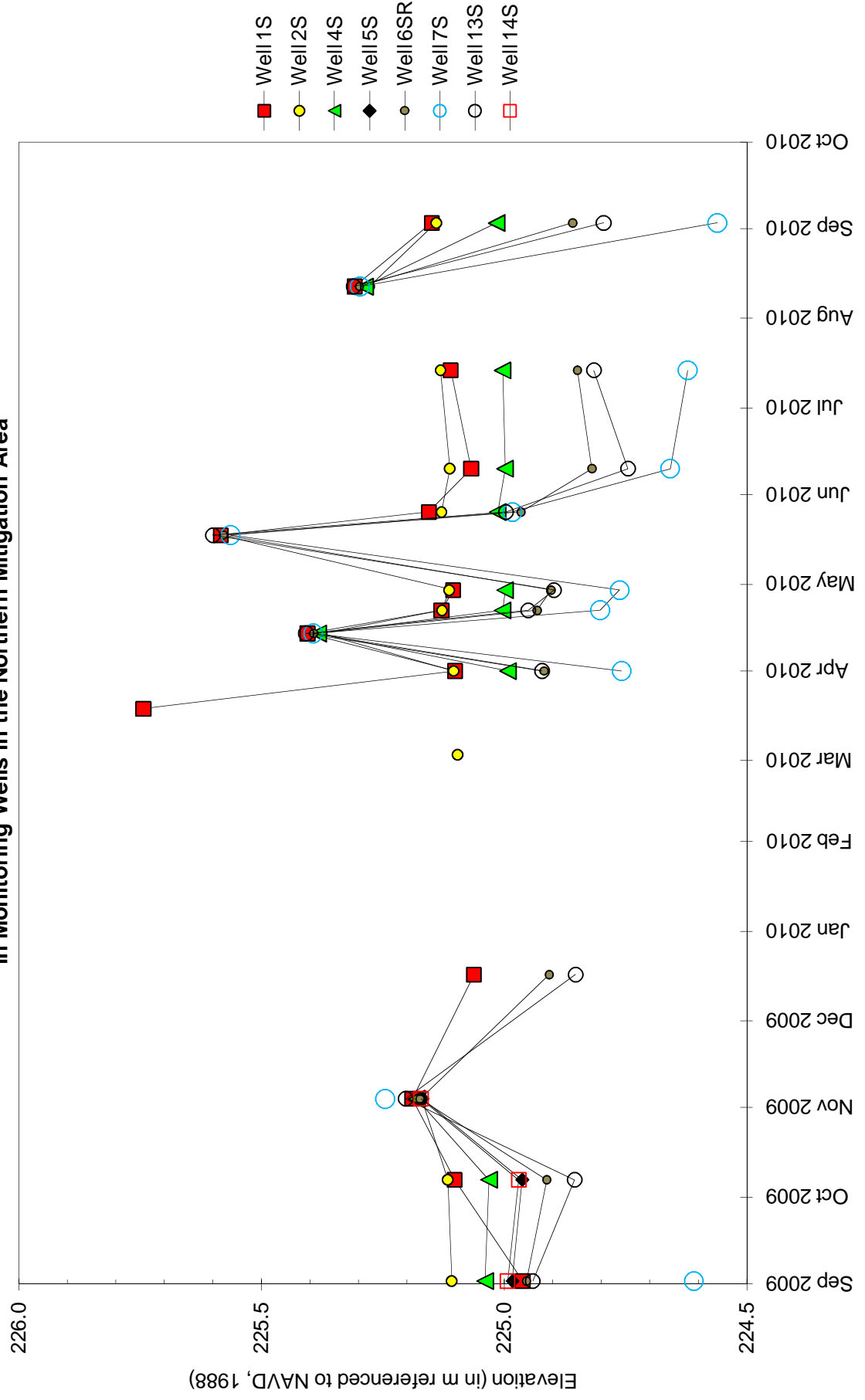
Map based on USGS digital orthophotograph Ridott, NE quarter-quadrangle  
Produced from 4/8/99 aerial photography (ISGS 2005)



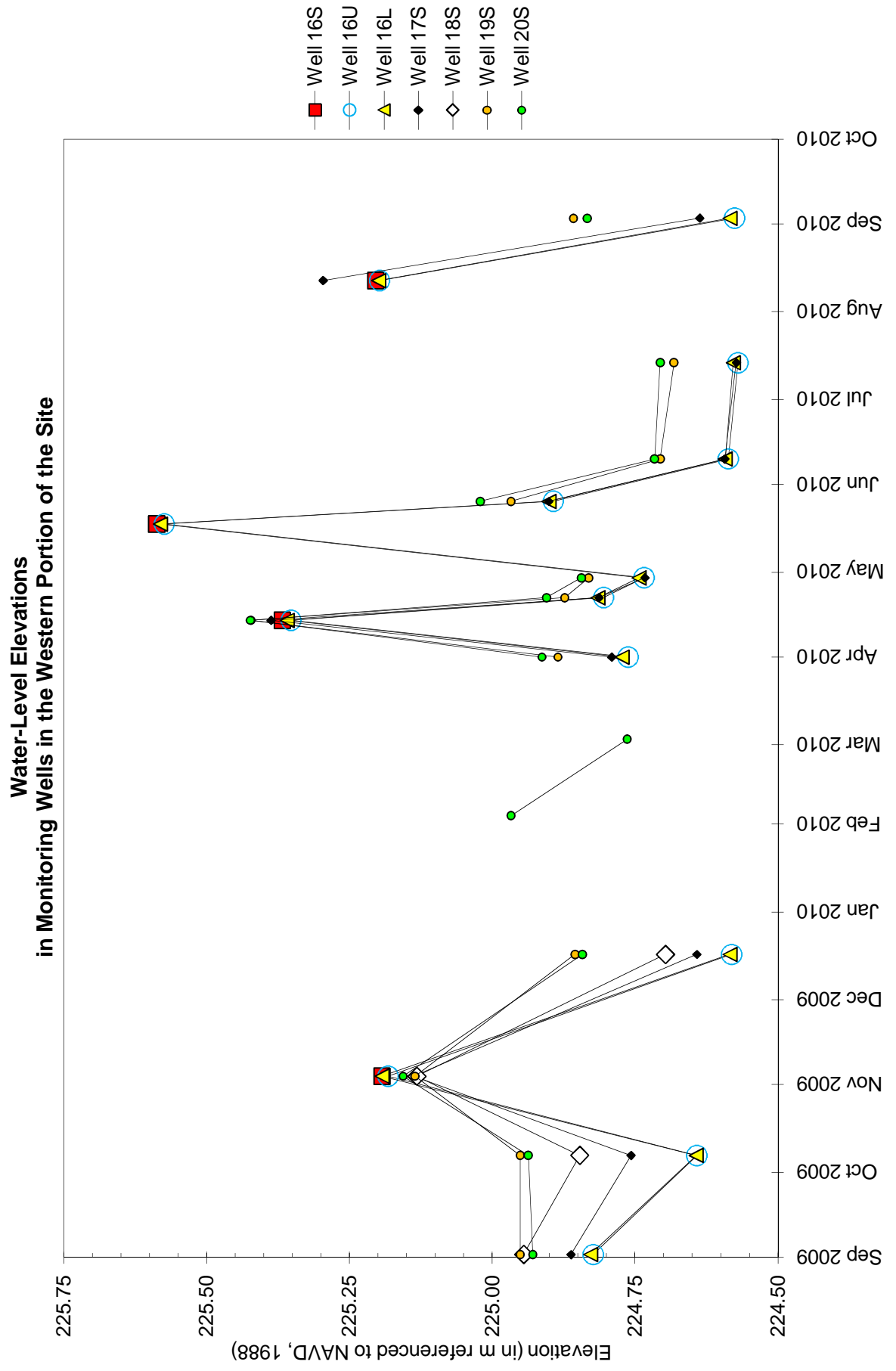


# **Pecatonica River Forest Preserve Wetland Mitigation Site** **September 1, 2009 through October 1, 2010**

**Water-Level Elevations  
in Monitoring Wells in the Northern Mitigation Area**

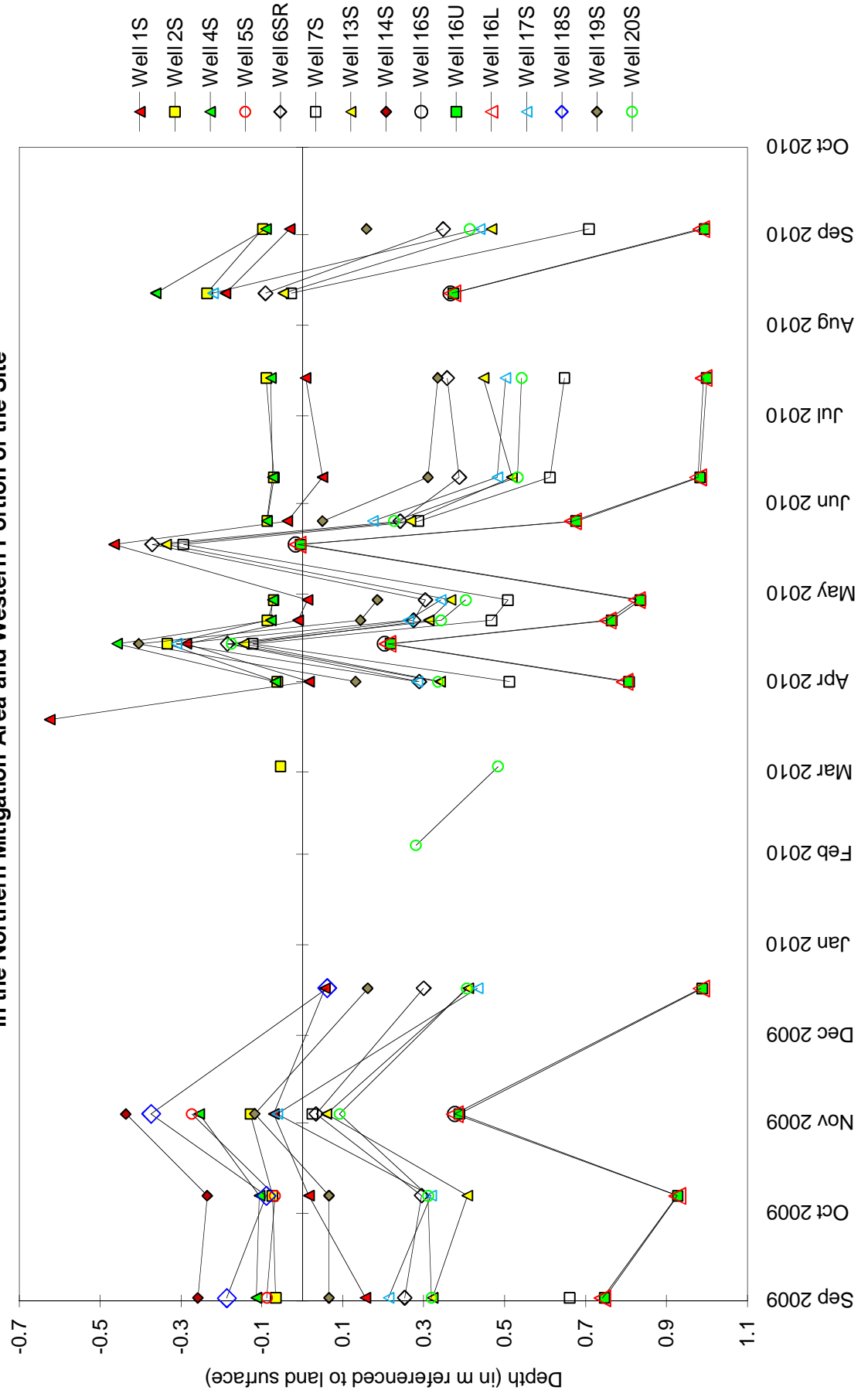


# **Pecatonica River Forest Preserve Wetland Mitigation Site** **September 1, 2009 through October 1, 2010**



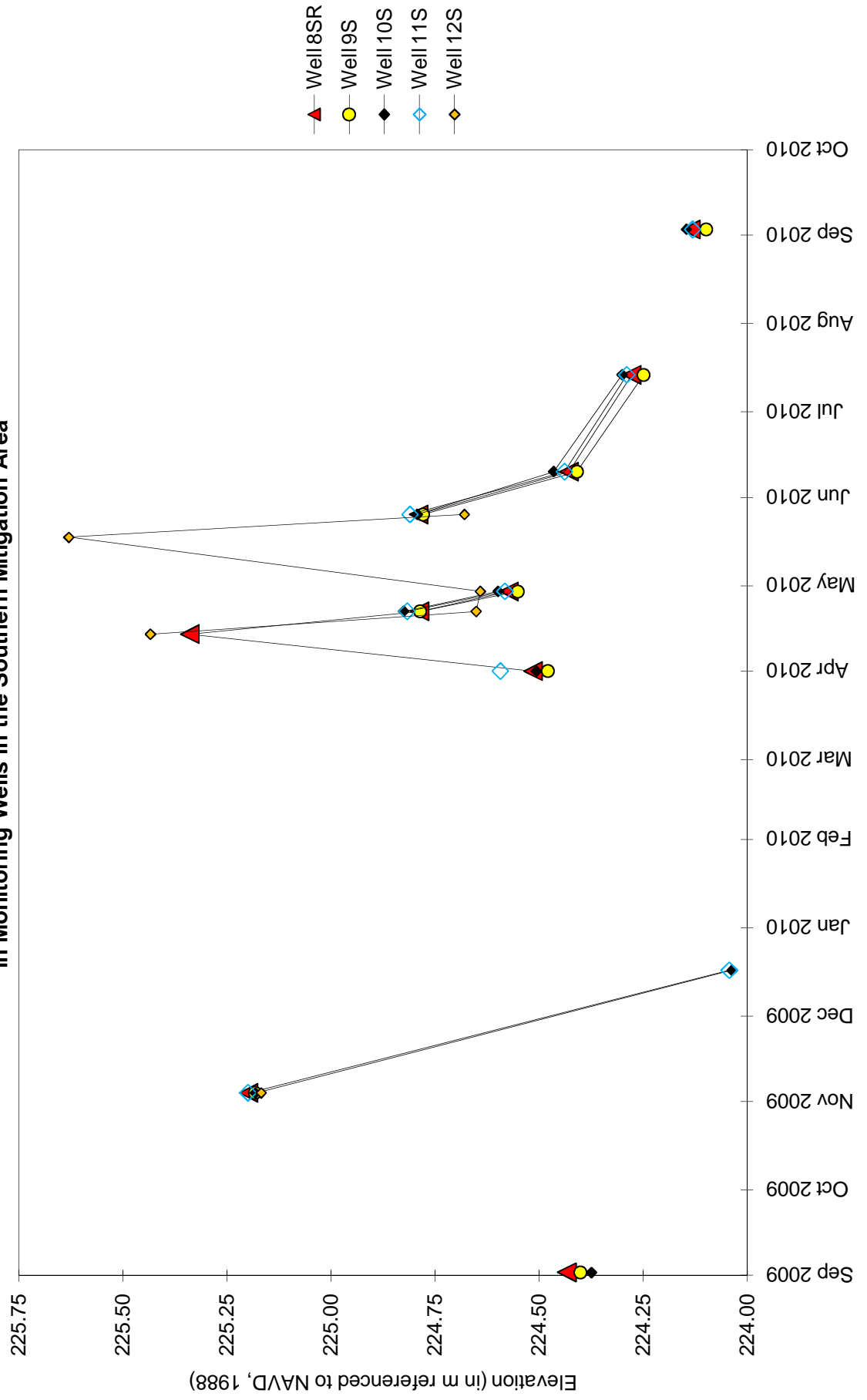
# **Pecatonica River Forest Preserve Wetland Mitigation Site** **September 1, 2009 through October 1, 2010**

**Depth to Water in Monitoring Wells  
in the Northern Mitigation Area and Western Portion of the Site**

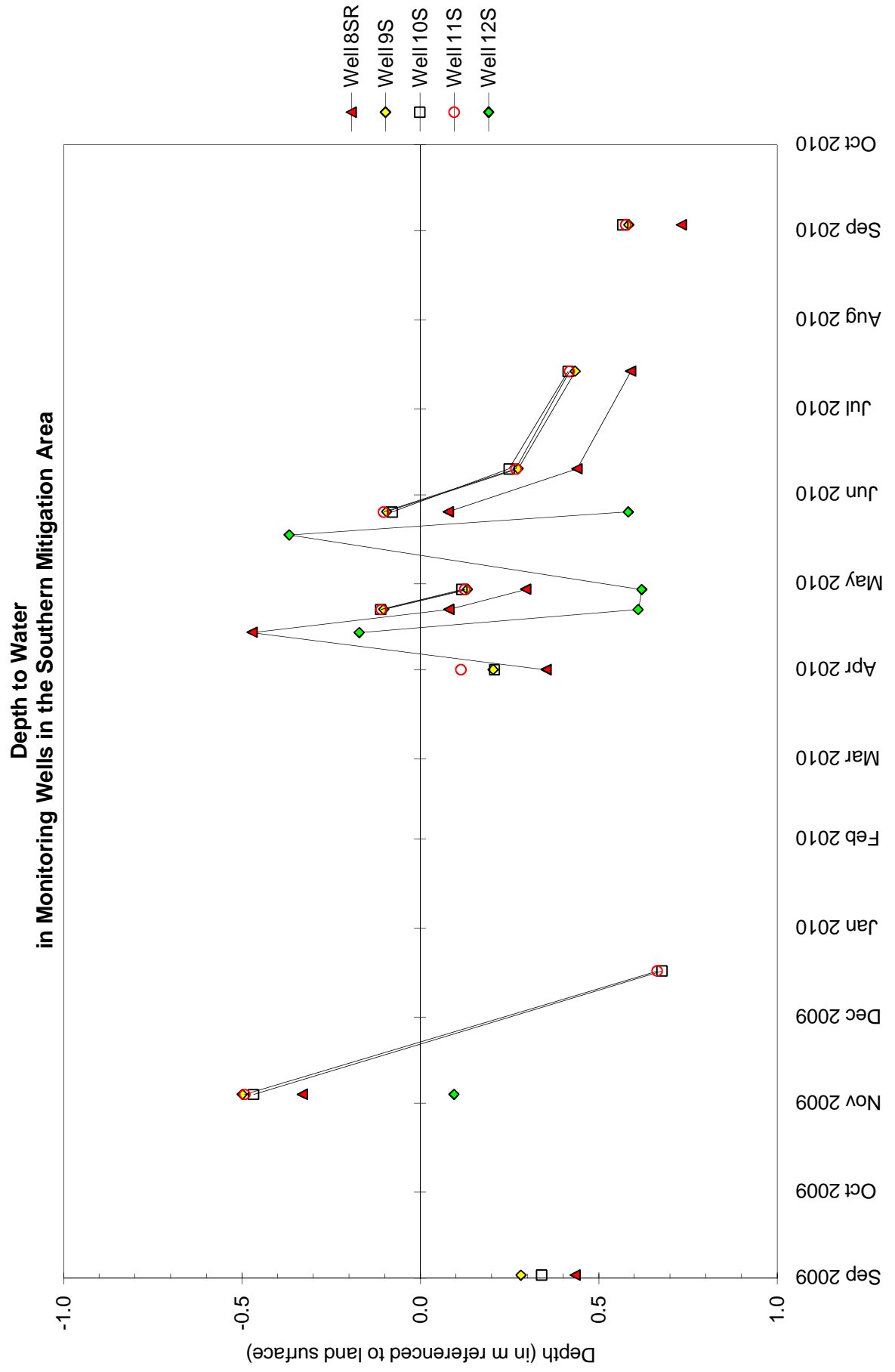


# **Pecatonica River Forest Preserve Wetland Mitigation Site** **September 1, 2009 through October 1, 2010**

**Water-Level Elevations  
in Monitoring Wells in the Southern Mitigation Area**

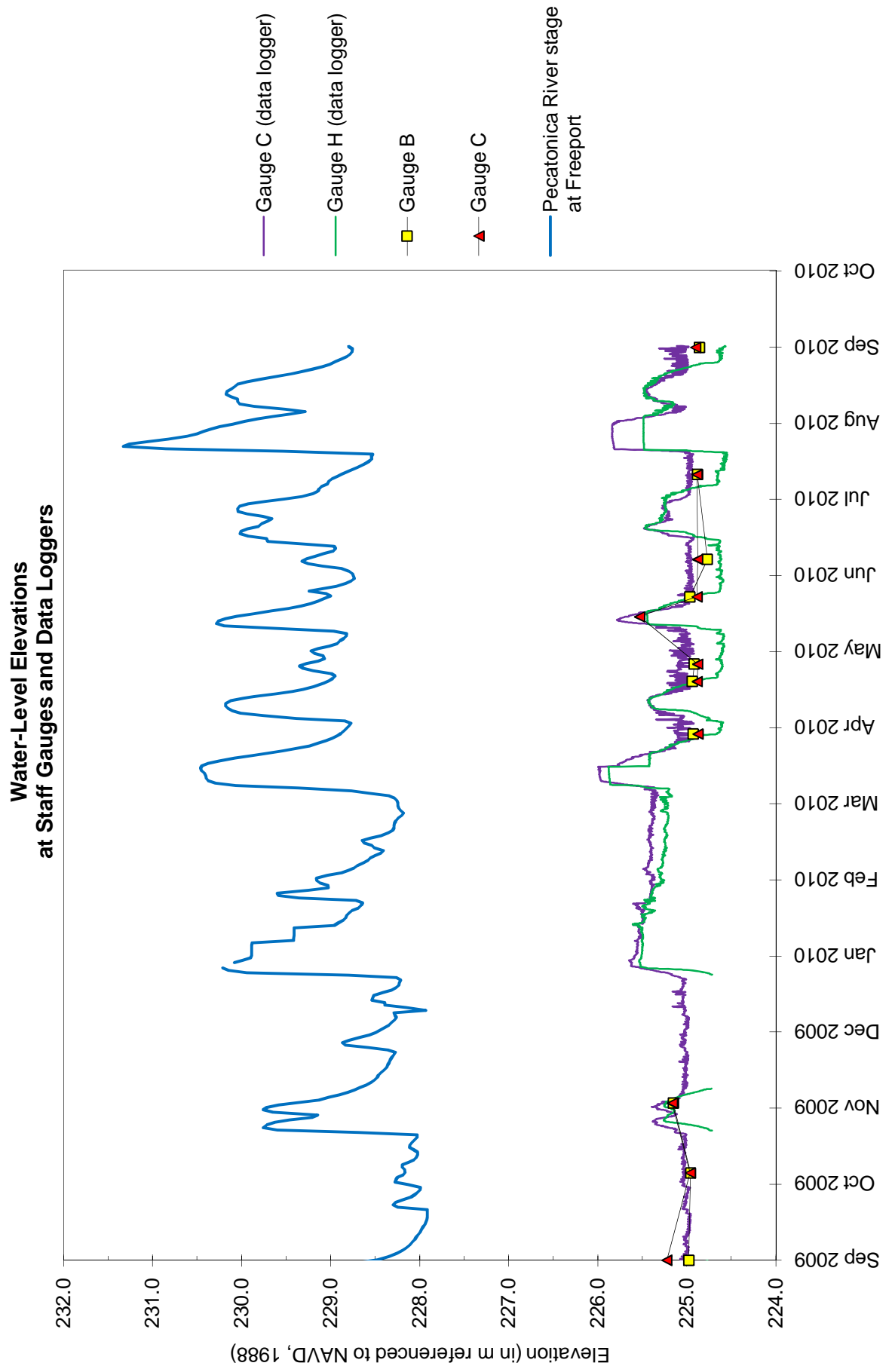


# **Pecatonica River Forest Preserve Wetland Mitigation Site** **September 1, 2009 through October 1, 2010**



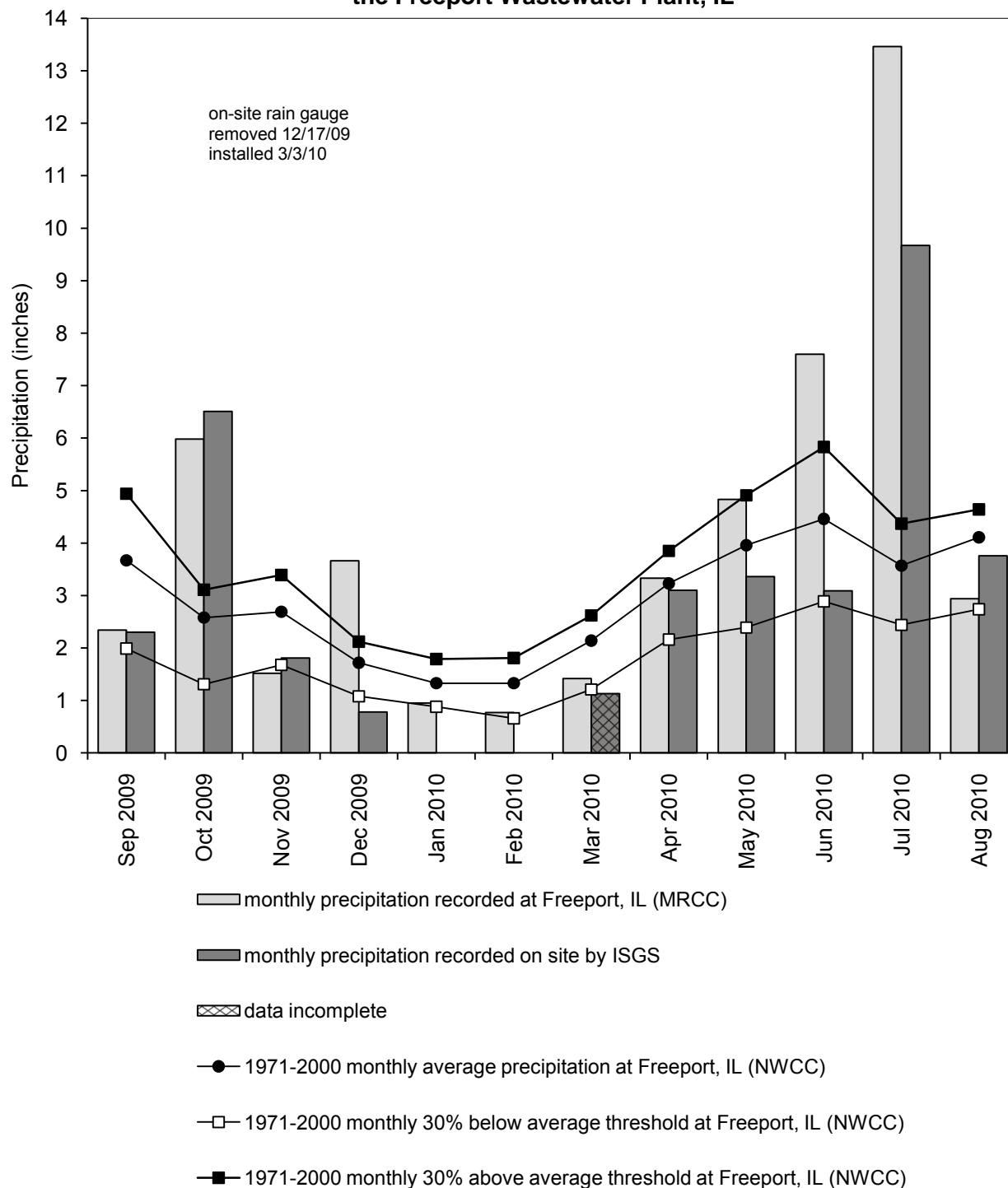


# **Pecatonica River Forest Preserve Wetland Mitigation Site** **September 1, 2009 through October 1, 2010**



# Pecatonica River Forest Preserve Wetland Mitigation Site September 2009 through August 2010

## Total Monthly Precipitation Recorded on Site and at the Freeport Wastewater Plant, IL



Graph last updated September 29, 2010

**SUGAR CAMP CREEK  
WETLAND AND STREAM MITIGATION BANK  
AND FAP 312 WETLAND MITIGATION SITE**

**ISGS #74**

IL 3

FAP 312

Sequence #9282

Franklin County, Northern Township, Illinois

**Primary Project Manager: Geoffrey E. Pociask**

**Secondary Project Manager: Melinda C. Campbell**

**SITE HISTORY**

- December 2004: ISGS submitted an initial site evaluation report to IDOT.
- Spring 2005: IDOT tasked ISGS to conduct a Level II hydrogeologic characterization of the site and to prepare a draft wetland banking instrument for the site. Water-level monitoring was initiated in March 2005.
- August 2006: ISGS submitted a draft wetland banking prospectus to IDOT.
- March 2007: ISGS submitted the Level II hydrogeologic characterization report to IDOT (ISGS Open-File Series 2007-02).
- June 2009: Wetland and stream mitigation banking instrument was approved by the Interagency Review Team.
- August 2010: IDOT received notification that mitigation was complete for the portion of the site designated for Illinois Route 3 (FAP 312) mitigation. Construction began on Phase 1 of the mitigation bank.

**WETLAND HYDROLOGY CALCULATION FOR 2010**

We estimate that 15.1 ha (37.3 ac) of the total site area of 50.9 ha (125.7 ac), including the FAP 312 wetland mitigation site, satisfied wetland hydrology criteria (Environmental Laboratory 1987) for greater than 5% of the growing season in 2010, whereas 1.0 ha (2.3 ac) satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Within the 8.3-ha (20.5-ac) FAP 312 wetland mitigation site, 6.5 ha (16.1 ac) satisfied wetland hydrology criteria for greater than 5% of the growing season, of which 0.5 ha (1.2 ac) also satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Using the 2010 Midwest Region supplement (U.S. Army Corps of Engineers 2010) to the 1987 Manual, we estimate that 36.5 ha (90.3 ac) of the entire parcel and 8.3 ha (20.4 ac) of the FAP 312 wetland mitigation site satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

- According to the MRCC, 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. According to the 2010 Midwest Region supplement, we estimate that March 7 was the starting date of the 2010 growing season based on soil temperatures observed at the wetland mitigation site.
- Total precipitation at the Du Quoin, Illinois, weather station for the period from September 2009 through August 2010 was 122% of normal, and Spring 2010 (March

through May) precipitation was 107% of normal. However, precipitation data collected on site indicated that local conditions were drier than normal during March through May.

- In 2010, wells 2S, 8S, 9S, 11S, 13S, 14S, 15S, 17S, 18S, 19S, 23S, 26S, 29S, 30S, 31S, and 32S satisfied wetland hydrology criteria for greater than 5% of the growing season, and wells 9S and 19S satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Furthermore, according to the 2010 Midwest Region supplement, all wells except 25S satisfied wetland hydrology for 14 or more consecutive days during the growing season.
- Data from gauges A and E data loggers in Sugar Camp Creek indicated that five floods inundated portions of the site during the 2010 growing season, and that the duration of inundation from each of these floods was less than 5% of the growing season.
- Surface-water data from the Gauge C data logger in the FAP 312 mitigation area showed that water-level elevation was at or above 123.29 m (404.49 ft) for greater than 5% of the growing season and was at or above 123.07 m (403.77 ft) for greater than 12.5% of the growing season. Furthermore, water-level elevation at Gauge C was at or above 123.29 m (404.49 ft) for 14 or more consecutive days during the growing season according to the 2010 Midwest Region supplement.

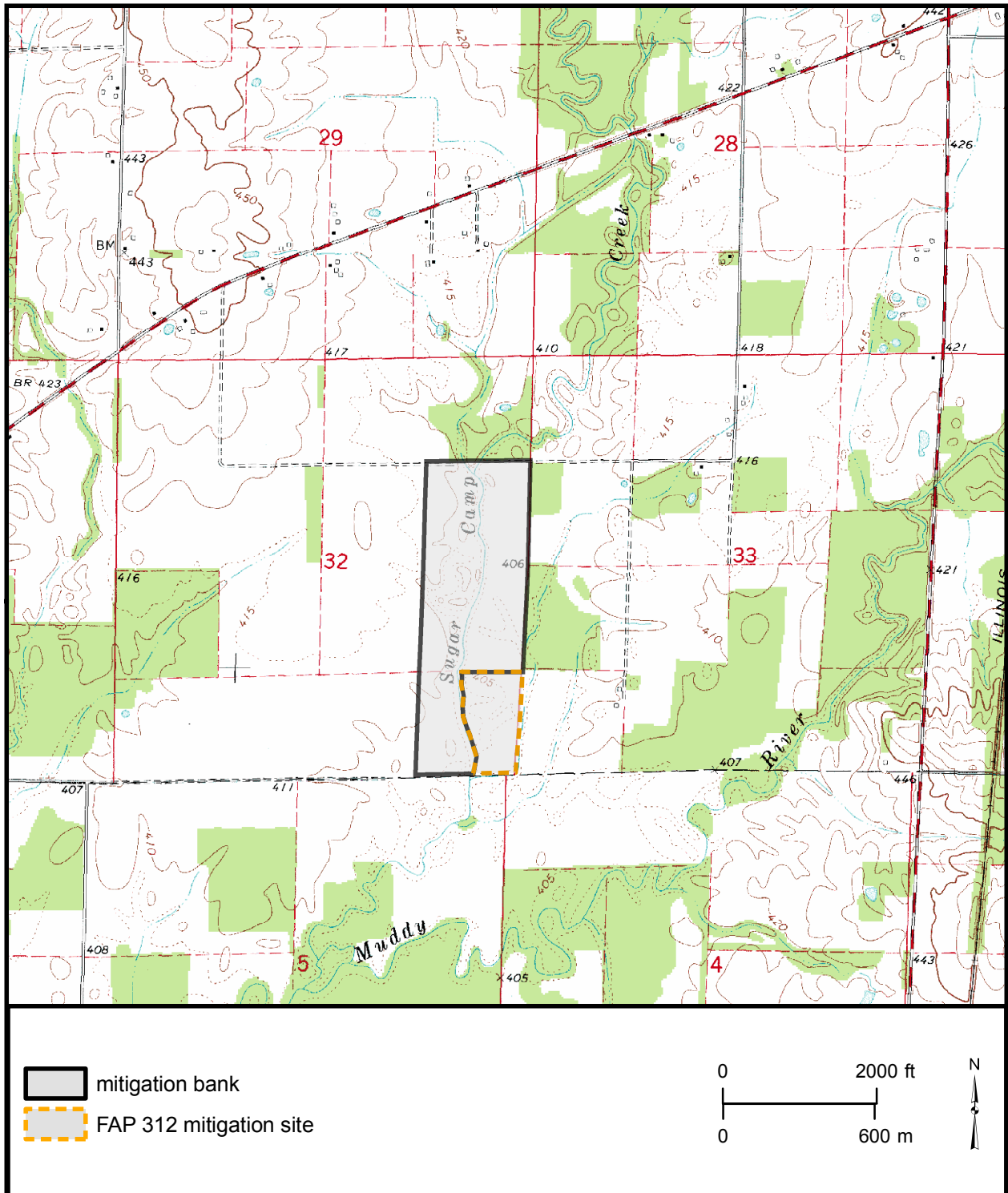
#### PLANNED FUTURE ACTIVITIES

- Monitoring activities will continue until no longer required by IDOT.

# Sugar Camp Creek Wetland and Stream Mitigation Bank (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

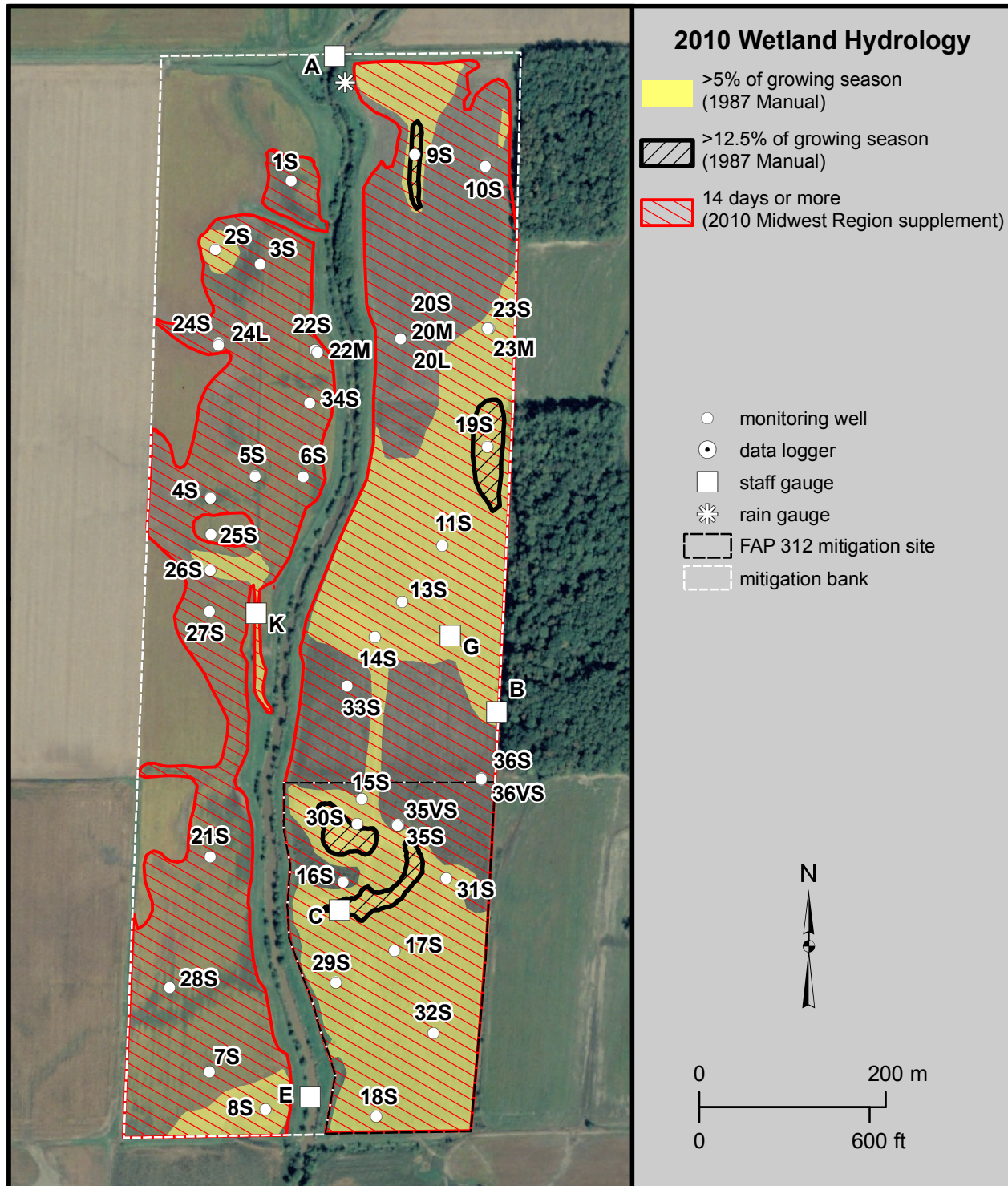


# Sugar Camp Creek Wetland and Stream Mitigation Bank (FAP 312)

## Estimated Areal Extent of 2010 Wetland Hydrology

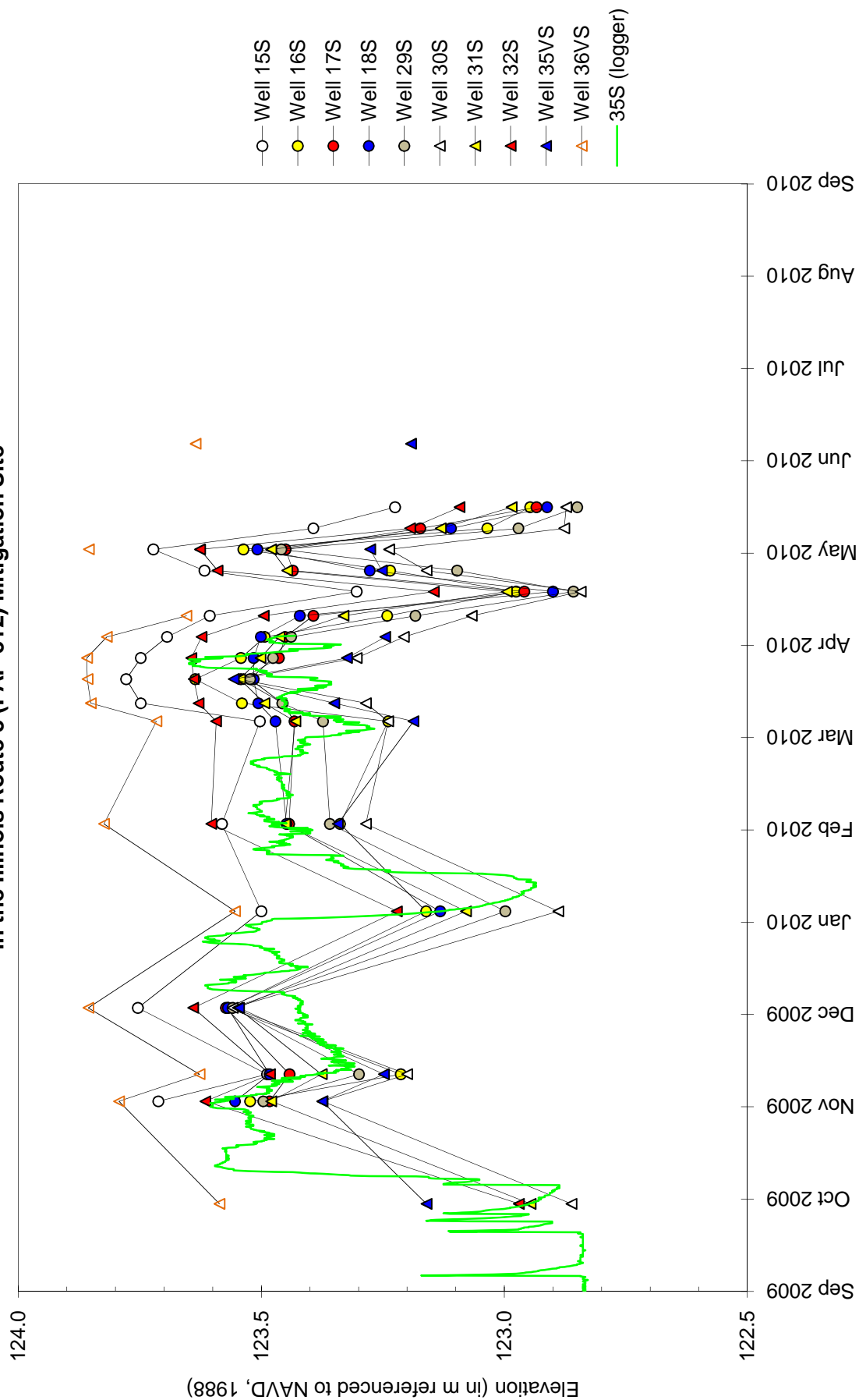
September 1, 2009 through August 31, 2010

Map based on USGS digital orthophotograph, Ewing SE quarter quadrangle,  
aerial photography from June 2009 (NAIP 2009)



# Sugar Camp Creek Wetland and Stream Mitigation Bank September 1, 2009 through August 31, 2010

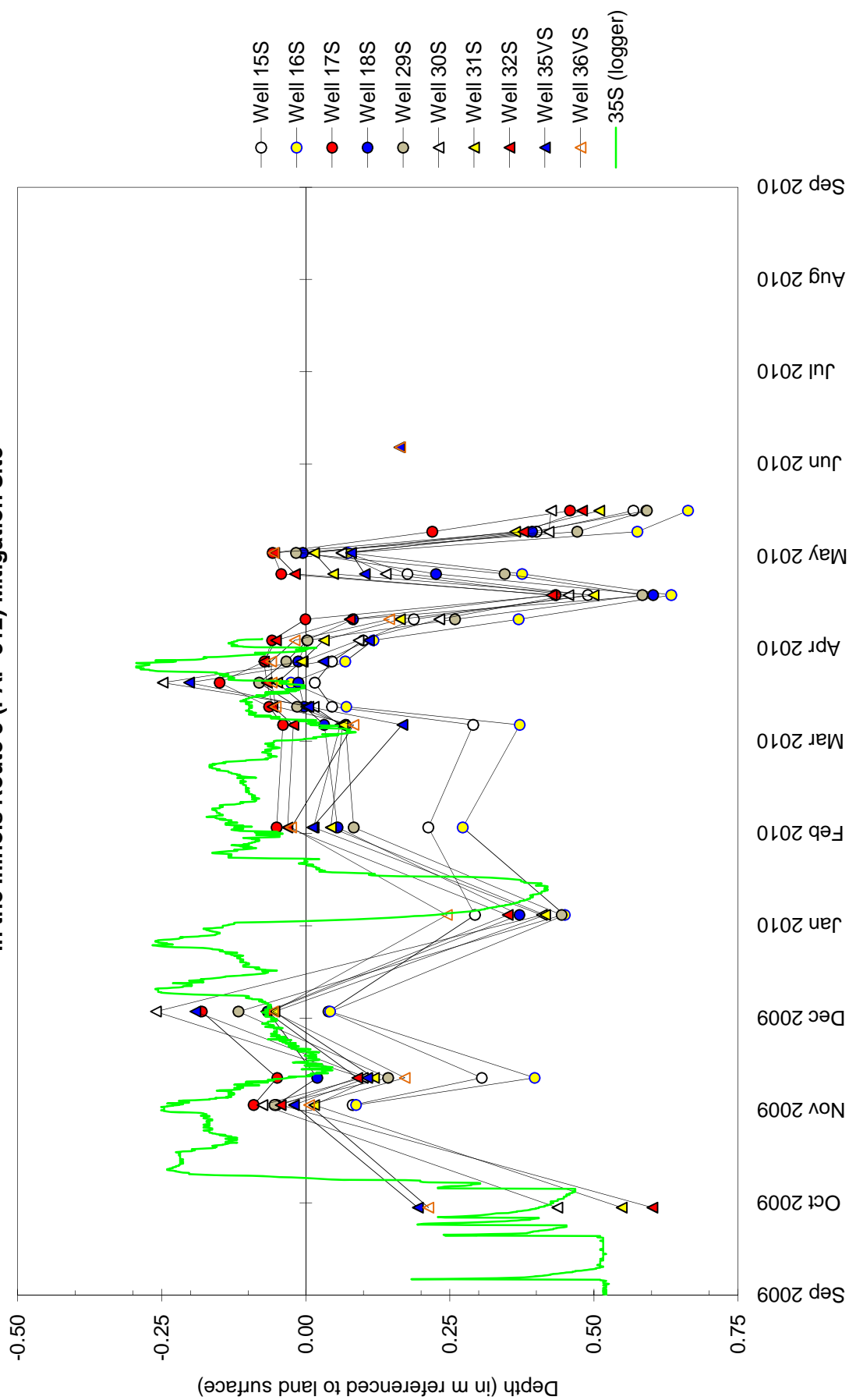
Water-Level Elevations in Monitoring Wells  
in the Illinois Route 3 (FAP 312) Mitigation Site





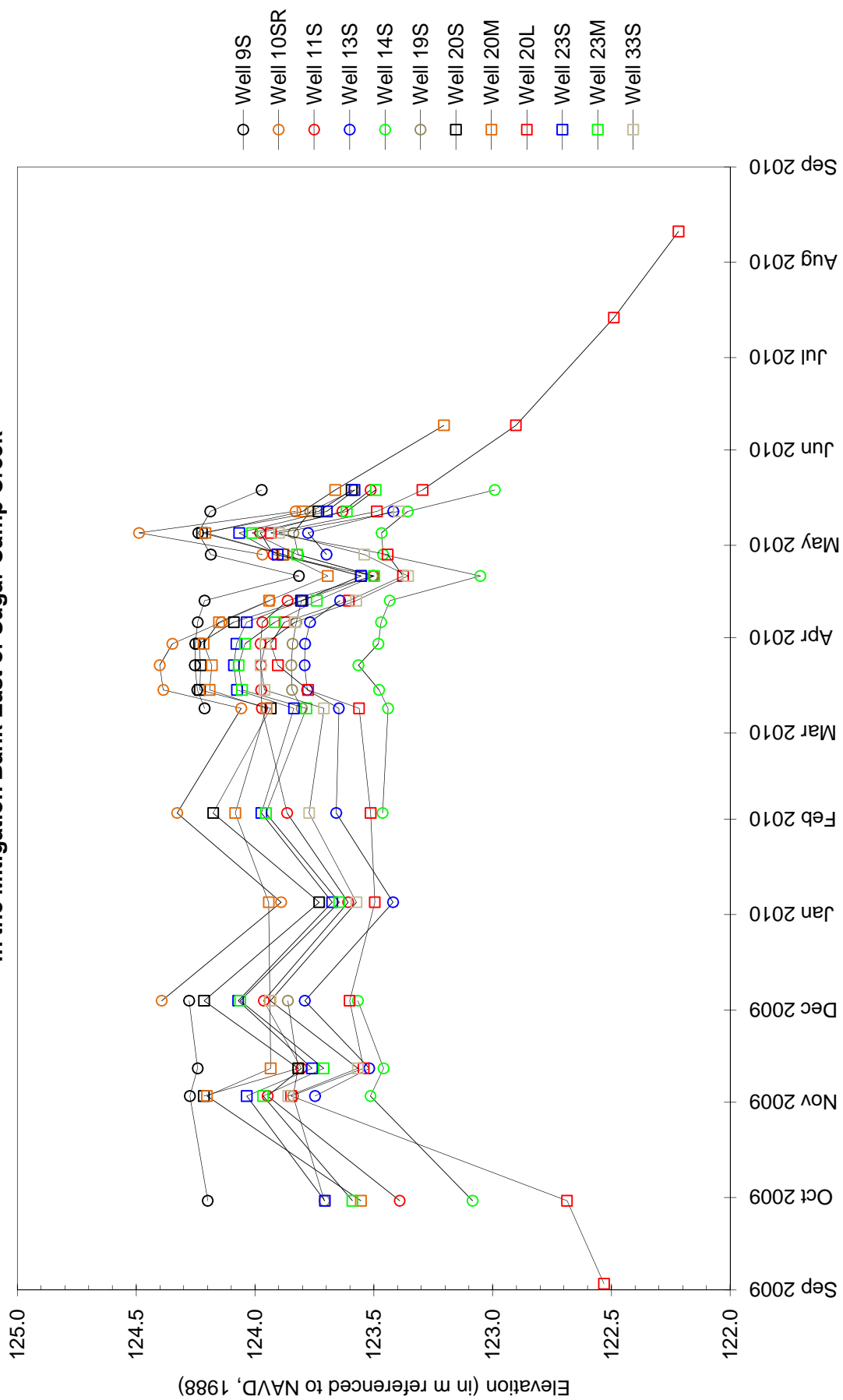
# Sugar Camp Creek Wetland and Stream Mitigation Bank September 1, 2009 through August 31, 2010

Depth to Water in Monitoring Wells  
in the Illinois Route 3 (FAP 312) Mitigation Site



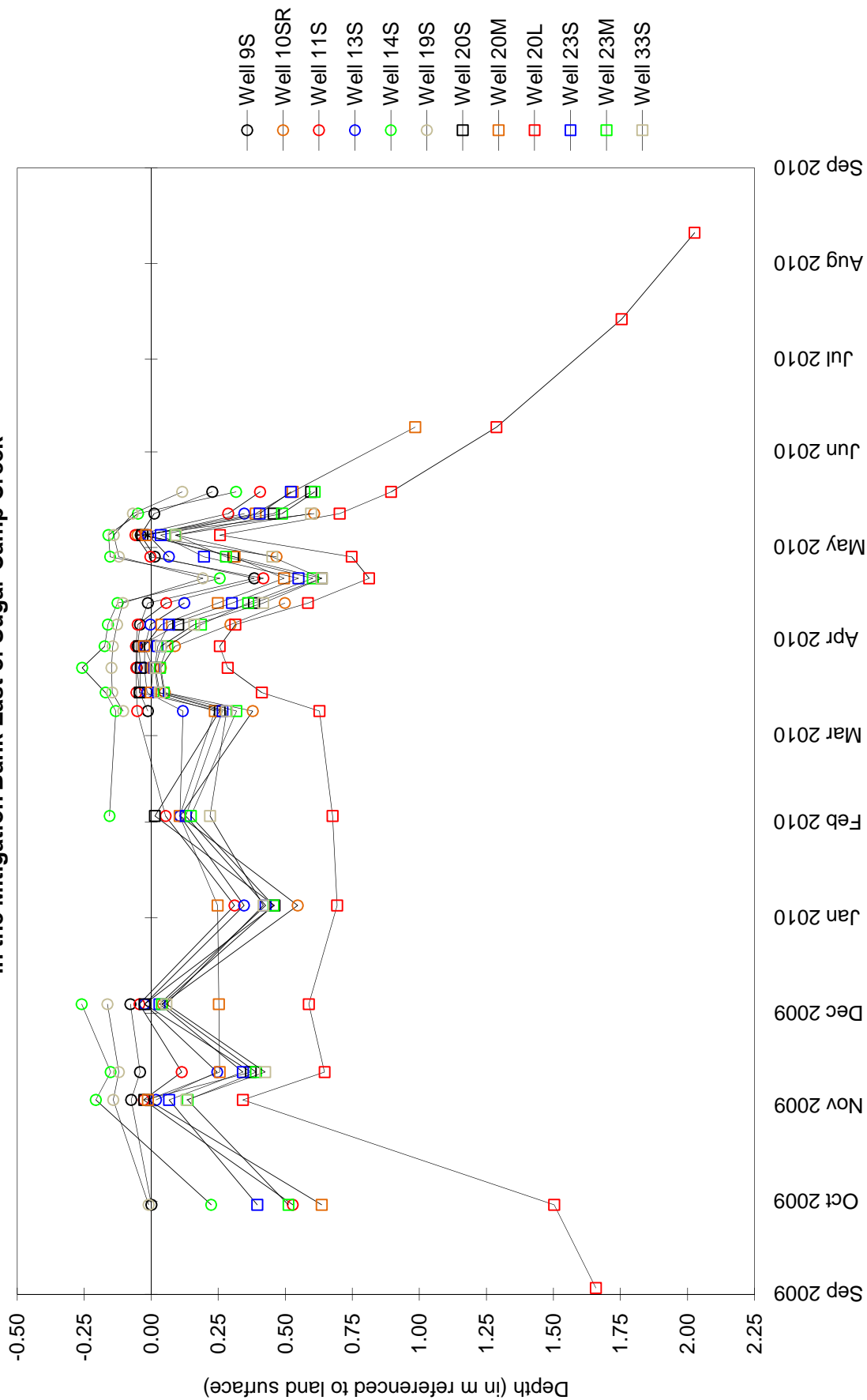
# Sugar Camp Creek Wetland and Stream Mitigation Bank September 1, 2009 through August 31, 2010

Water-Level Elevations in Monitoring Wells  
in the Mitigation Bank East of Sugar Camp Creek



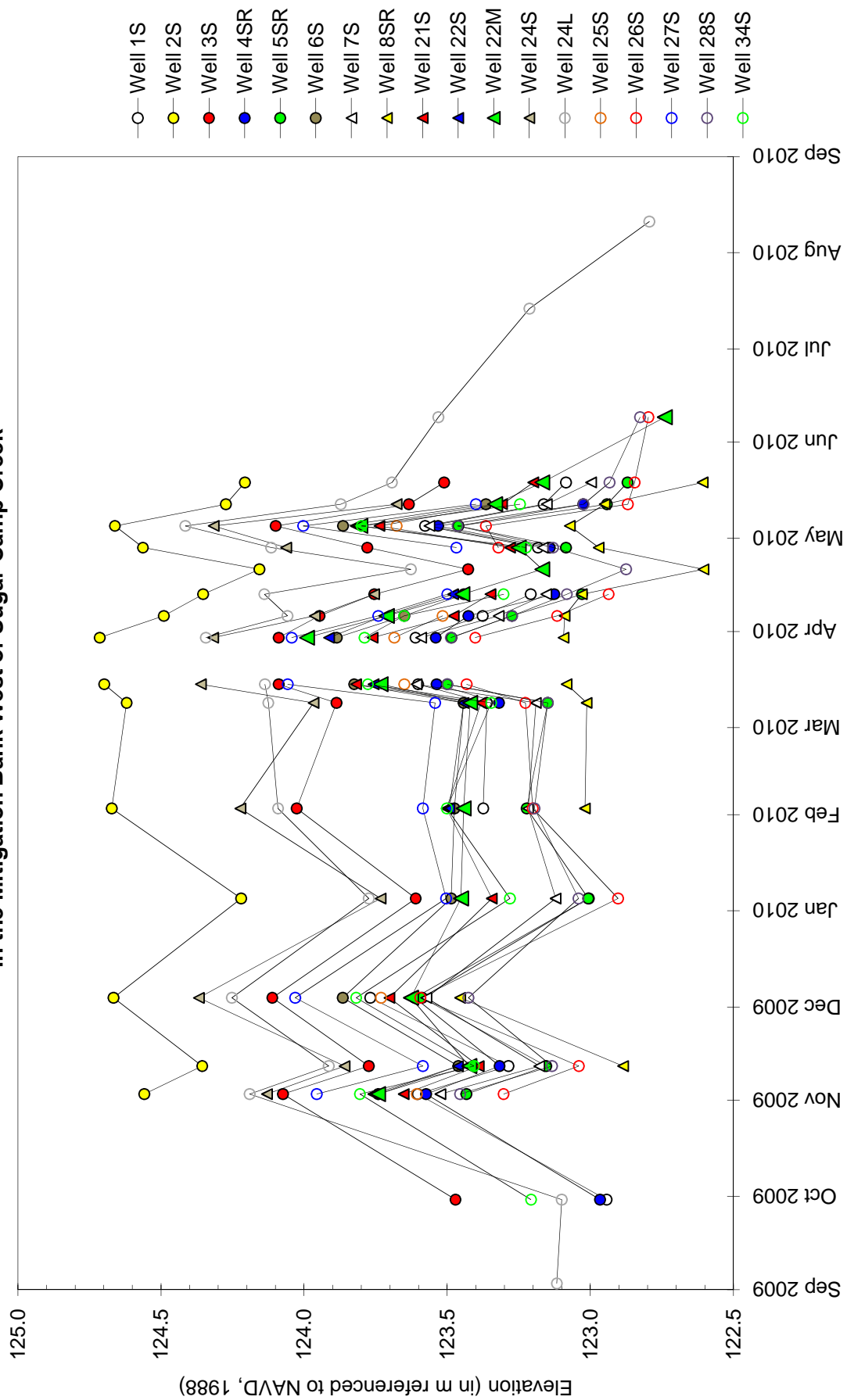
# **Sugar Camp Creek Wetland and Stream Mitigation Bank** **September 1, 2009 through August 31, 2010**

**Depth to Water in Monitoring Wells  
in the Mitigation Bank East of Sugar Camp Creek**



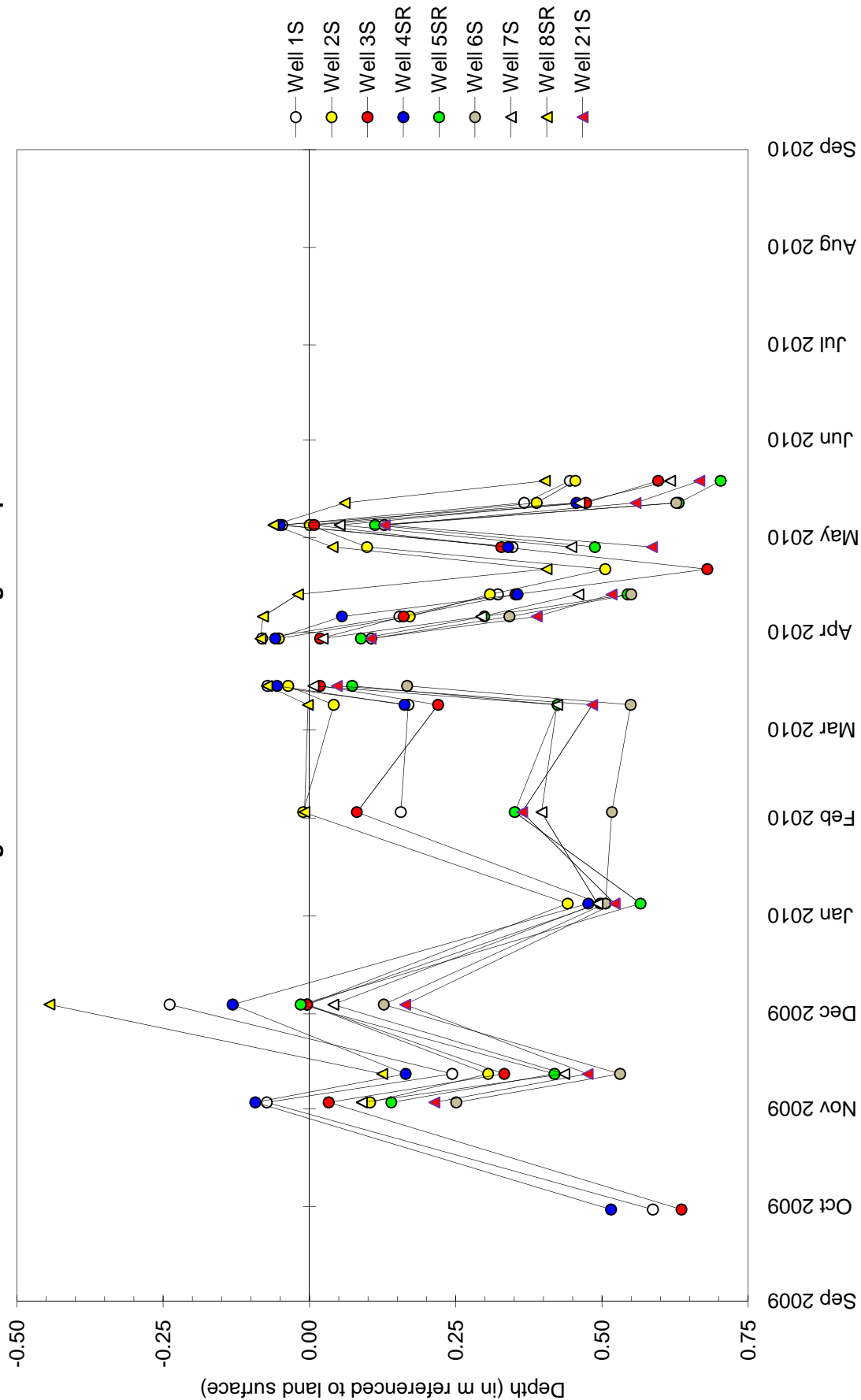
# Sugar Camp Creek Wetland and Stream Mitigation Bank September 1, 2009 through August 31, 2010

Water-Level Elevations in Monitoring Wells  
in the Mitigation Bank West of Sugar Camp Creek



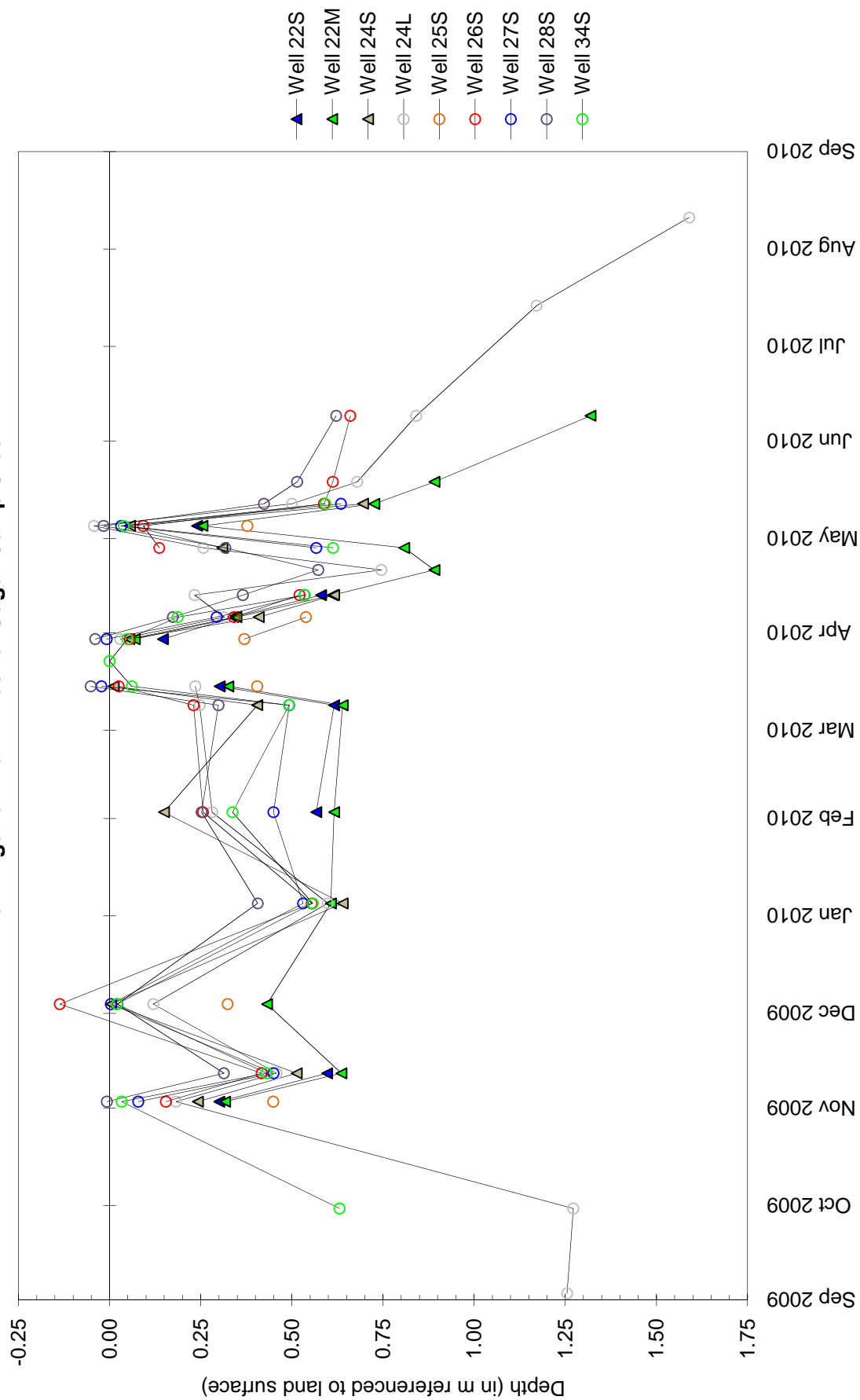
# **Sugar Camp Creek Wetland and Stream Mitigation Bank** **September 1, 2009 through August 31, 2010**

**Depth to Water in Monitoring Wells  
in the Mitigation Bank West of Sugar Camp Creek**



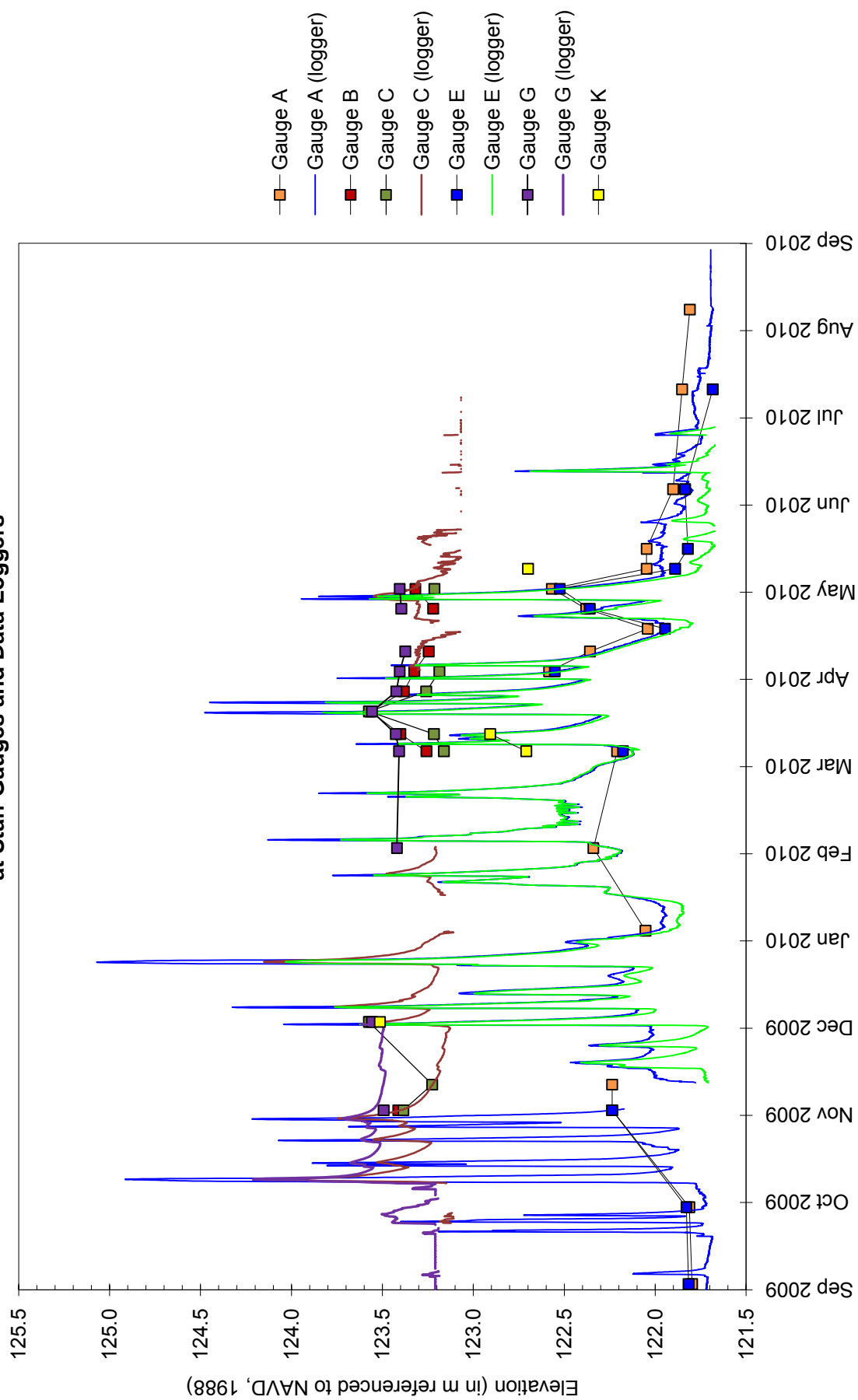
# **Sugar Camp Creek Wetland and Stream Mitigation Bank** **September 1, 2009 through August 31, 2010**

**Depth to Water in Monitoring Wells  
in the Mitigation Bank West of Sugar Camp Creek**



# Sugar Camp Creek Wetland and Stream Mitigation Bank September 1, 2009 through August 31, 2010

Water-Level Elevations  
at Staff Gauges and Data Loggers

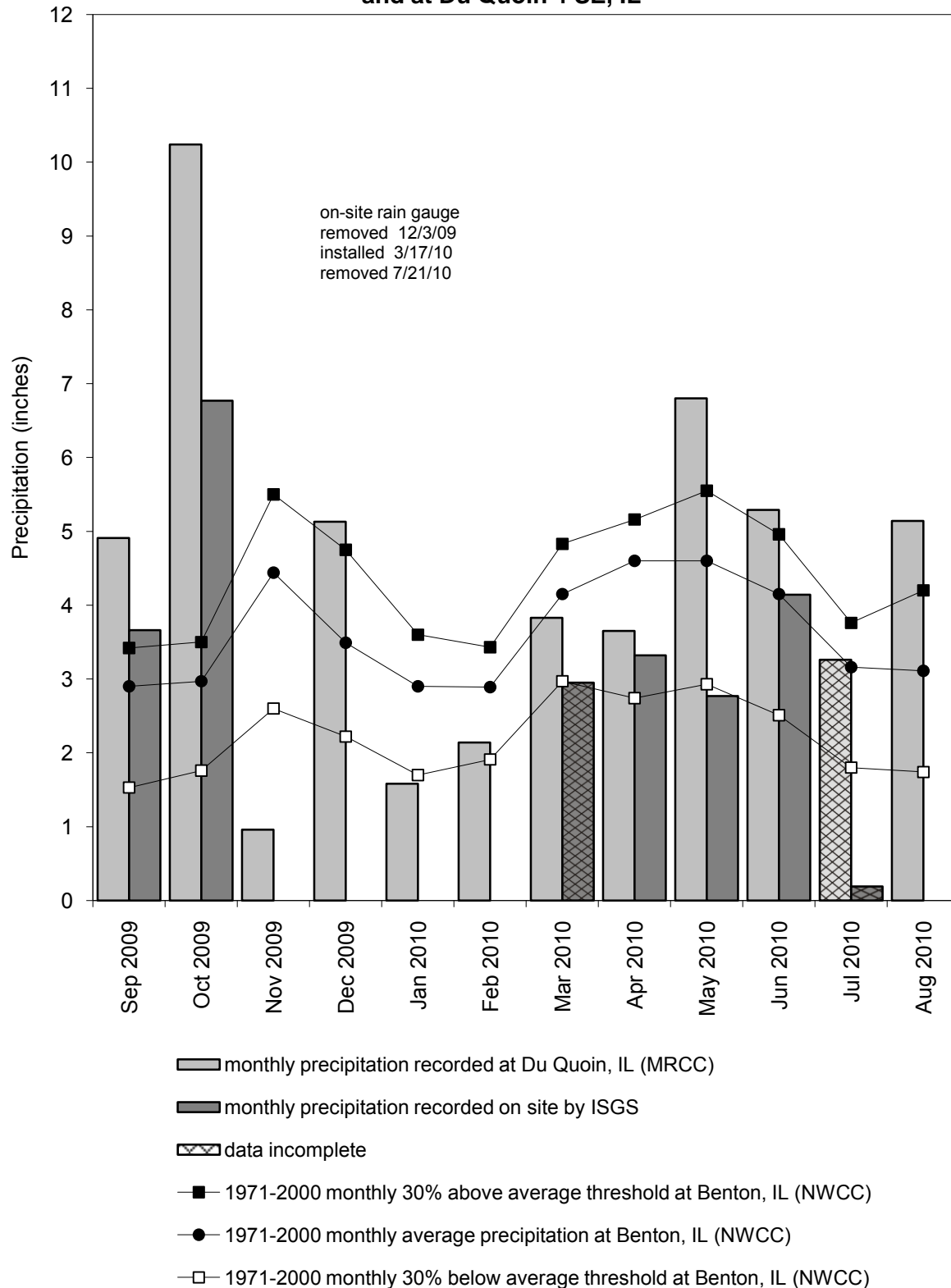




# Sugar Camp Creek Wetland and Stream Mitigation Bank

## September 2009 through August 2010

Total Monthly Precipitation Recorded on Site  
and at Du Quoin 4 SE, IL



Graph last updated September 29, 2010

**GREEN CREEK  
WETLAND MITIGATION SITE**

**ISGS #75**

IL 32/33

FAP 774

Sequence #12505

Effingham County, near Effingham, Illinois

**Primary Project Manager: Eric T. Plankell**

**Secondary Project Manager:** not assigned

**SITE HISTORY**

- September 2006: ISGS submitted a Level II hydrogeologic characterization report to IDOT (ISGS Open-File Series 2006–03).
- June 2007: Construction at the wetland mitigation site was completed.
- May 2010: Well 9S was replaced and well 15S was added.

**WETLAND HYDROLOGY CALCULATION FOR 2010**

The area that satisfied wetland hydrology criteria (Environmental Laboratory 1987) for greater than 5% of the 2010 growing season is estimated to be 2.4 ha (6.0 ac) out of a total site area of approximately 4.1 ha (10.0 ac). The area that satisfied wetland hydrology criteria for greater than 12.5% of the 2010 growing season is estimated to be 1.5 ha (3.8 ac). Using the 2010 Midwest Region supplement (U.S. Army Corps of Engineers 2010) to the 1987 Manual, it is estimated that 1.5 ha (3.8 ac) also satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

- According to the MRCC, the median date that the growing season begins in nearby Effingham, 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. According to methods outlined in the 2010 Midwest Region supplement, it is estimated that March 15 was the starting date of the 2010 growing season based on vegetation growth and development observed at the site.
- Regional precipitation for the monitoring period, as recorded in Effingham, Illinois, was 127% of normal, and was 94% of normal for the period March through May 2010.
- In 2010, water levels measured in all monitoring wells satisfied wetland hydrology criteria for greater than 5% of the growing season. Water levels measured in wells 3S, 4S, 11SR, 12SR, 13S, and 14S satisfied wetland hydrology criteria for greater than 12.5% of the growing season. According to the 2010 Midwest Region supplement, wells 3S, 4S, 11SR, 12SR, 13S, and 14S satisfied wetland hydrology criteria for 14 or more consecutive days of the growing season.
- Surface-water inundation was observed for greater than 5% of the growing season on both sides of the main north–south ditch. Water-level records for gauge B indicated inundation west of the main ditch at or above 160.53 m (526.67 ft) for greater than 5% of the growing season, while water-level records for gauge E indicated inundation east of the main ditch at or above 160.92 m (527.95 ft) for greater than 5% of the growing season. No surface-water inundation was observed west of the main ditch for greater

than 12.5% of the growing season, while water-level records for gauge E indicated inundation east of the main ditch at or above 160.76 m (527.43 ft) for greater than 12.5% of the growing season. Based on the 2010 Midwest Region supplement, surface-water inundation west of the main ditch was not recorded for 14 or more consecutive days of the growing season. However, water-level records for gauge E indicated inundation east of the main ditch at or above 160.77 m (527.46 ft) for 14 or more consecutive days of the growing season.

- According to the data logger at gauge C, water levels in Green Creek reached an elevation sufficient to flood all or most of the site four times during the 2010 growing season. These events occurred on May 16, June 15, June 25, and July 13. However, the duration of these floods was not sufficient to satisfy any wetland hydrology criteria.

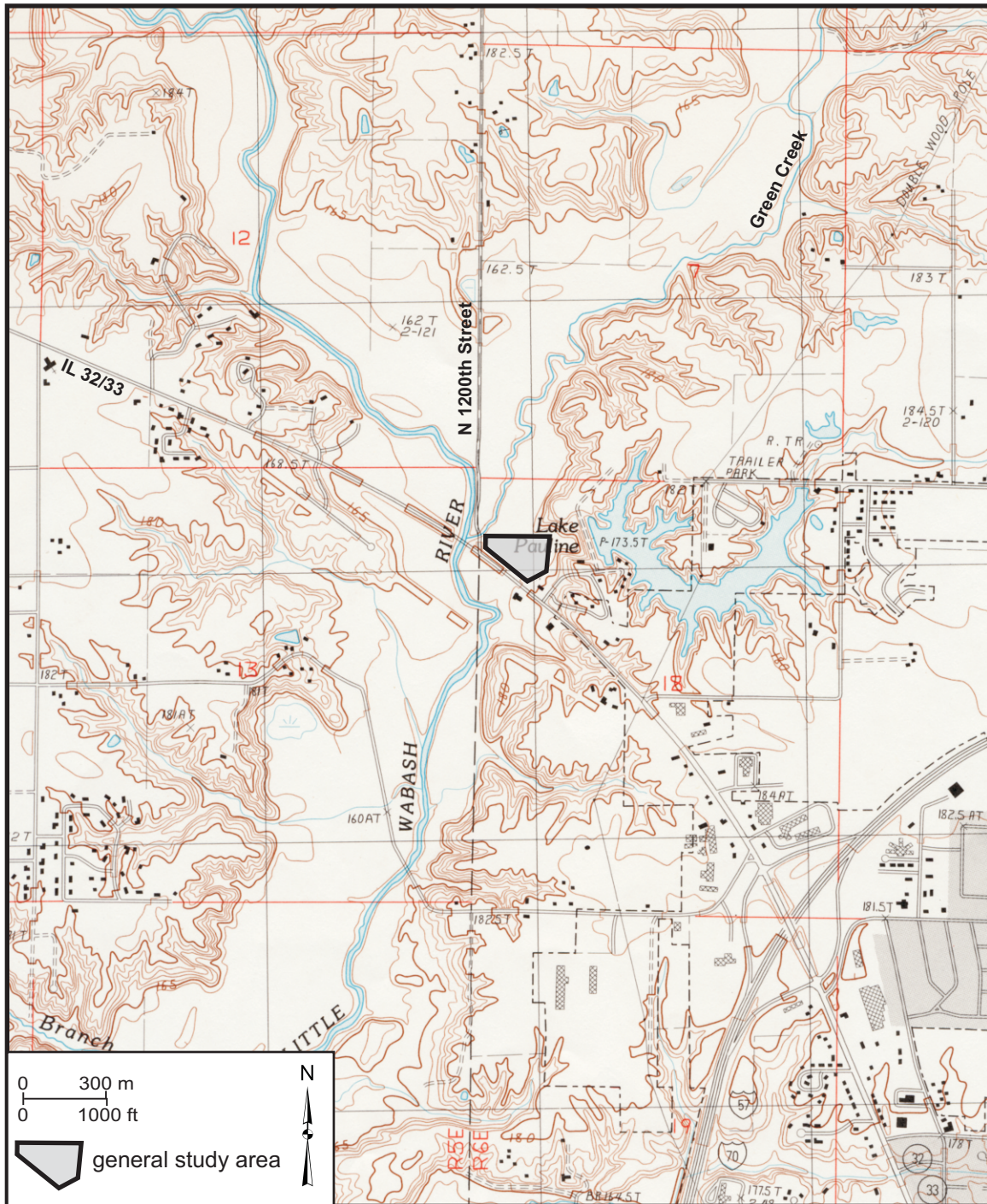
#### PLANNED FUTURE ACTIVITIES

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

# Green Creek Wetland Mitigation Site (FAP 774 [IL 32/33])

## General Study Area and Vicinity

from the USGS Topographic Series, Effingham North, IL, 7.5-minute Quadrangle (USGS 1985)  
contour interval is 3 m (10 ft)

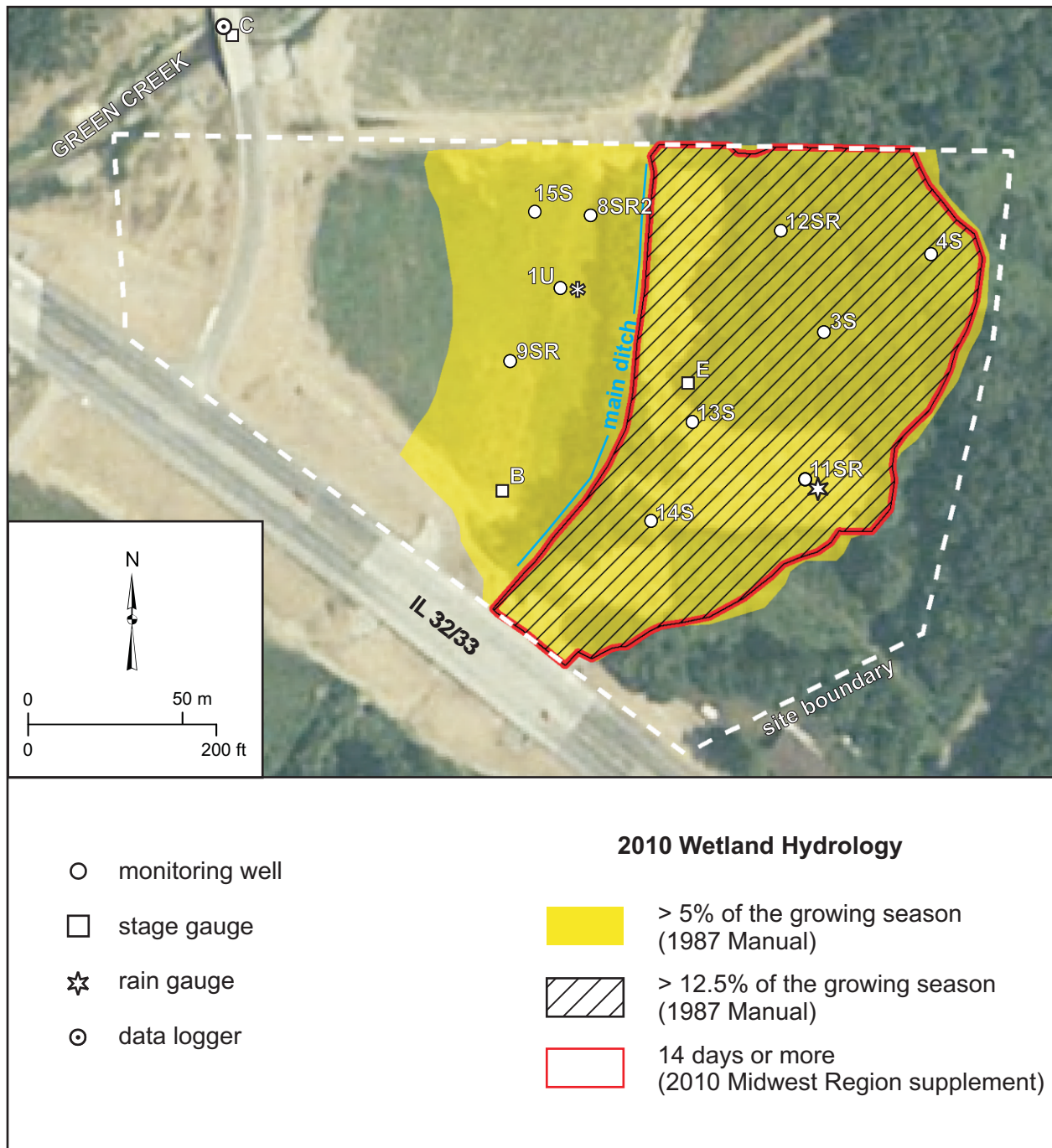




# Green Creek Wetland Mitigation Site (FAP 774 [IL 32/33])

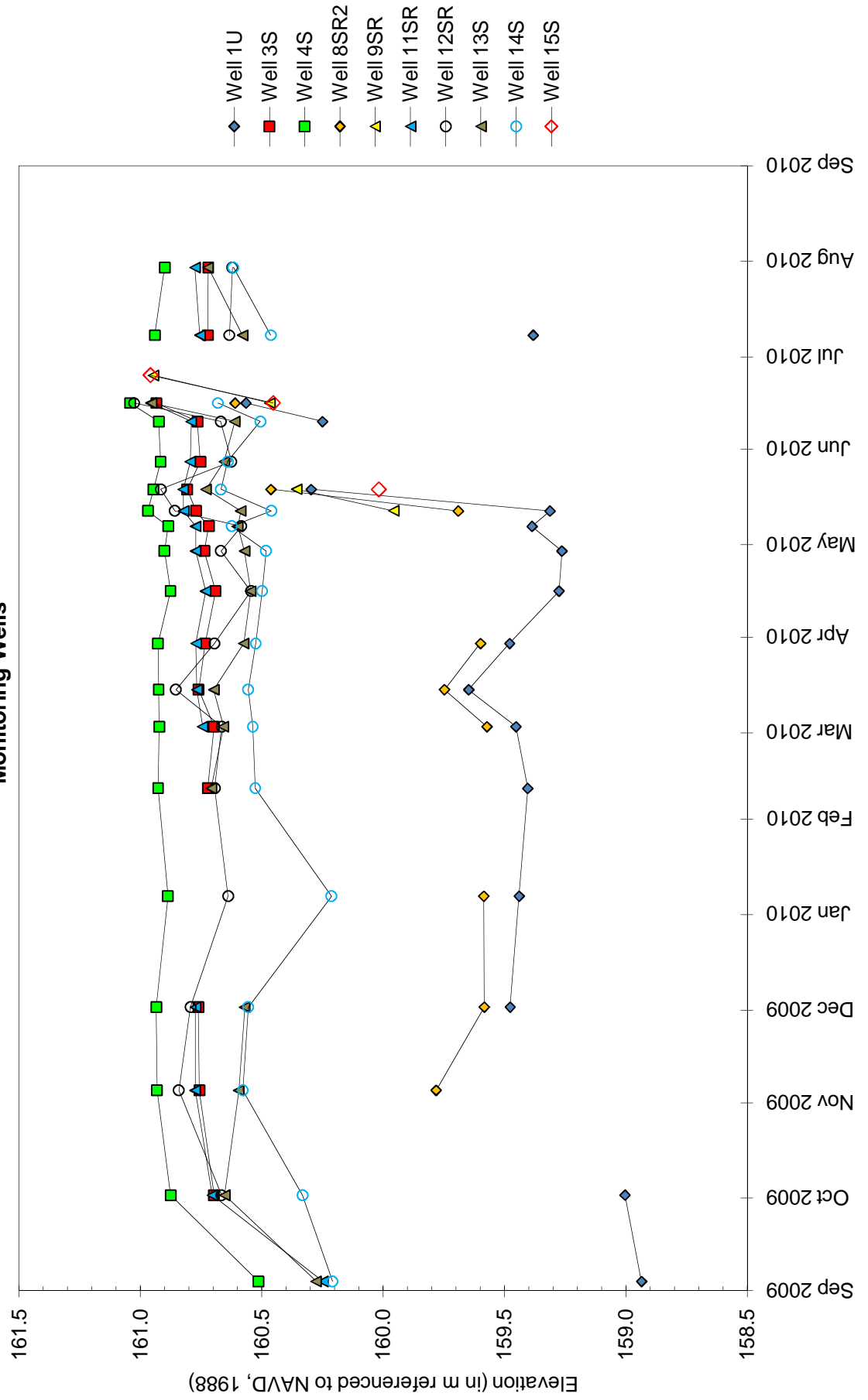
## Estimated Areal Extent of 2010 Wetland Hydrology September 1, 2009 through August 31, 2010

Map based on USDA digital orthophotograph of Effingham County, Illinois,  
produced for the National Agricultural Imagery Program (NAIP) (USDA 2007)

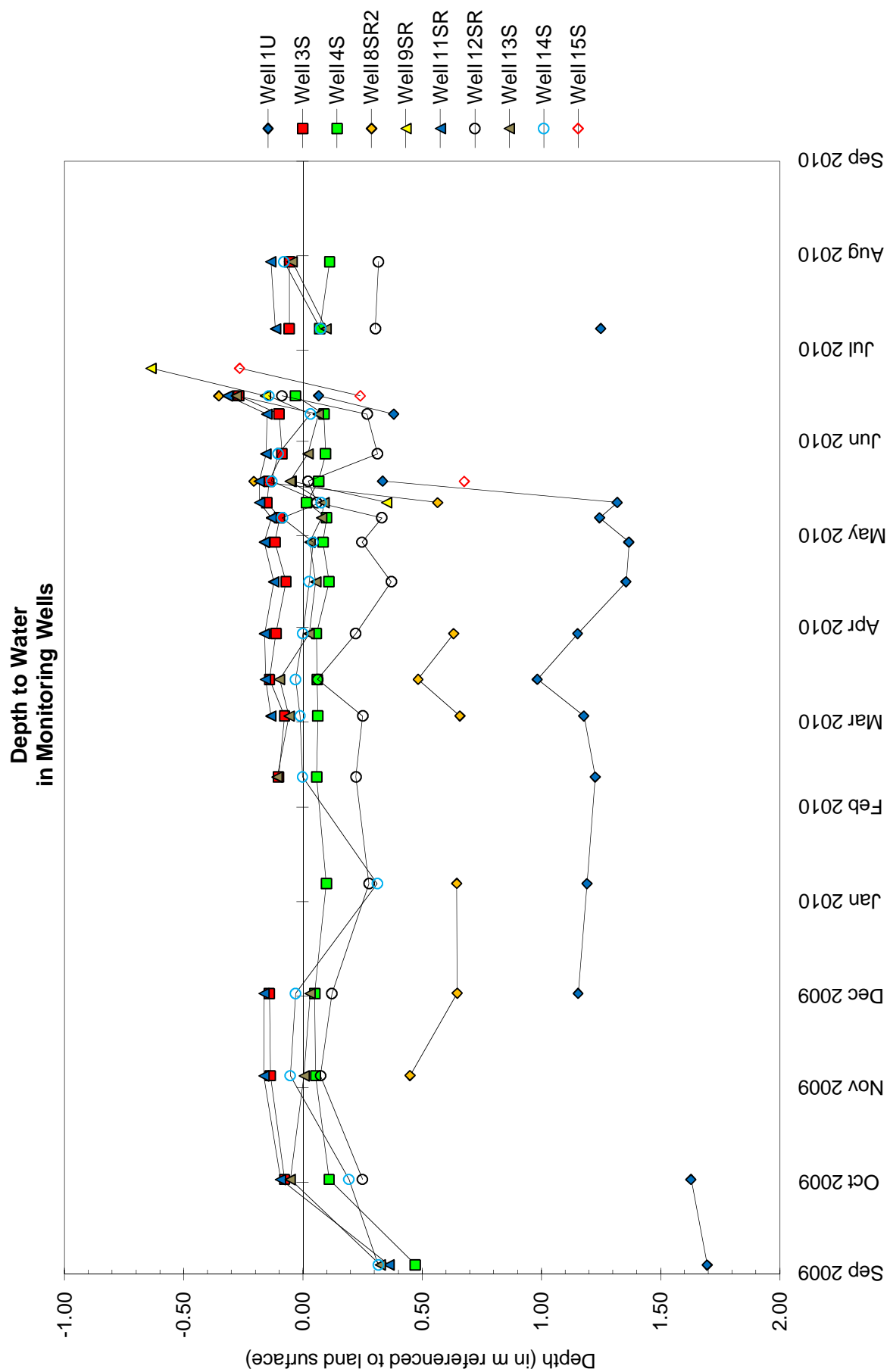


# **Green Creek Wetland Mitigation Site** **September 1, 2009 through August 31, 2010**

## **Water-Level Elevations in Monitoring Wells**



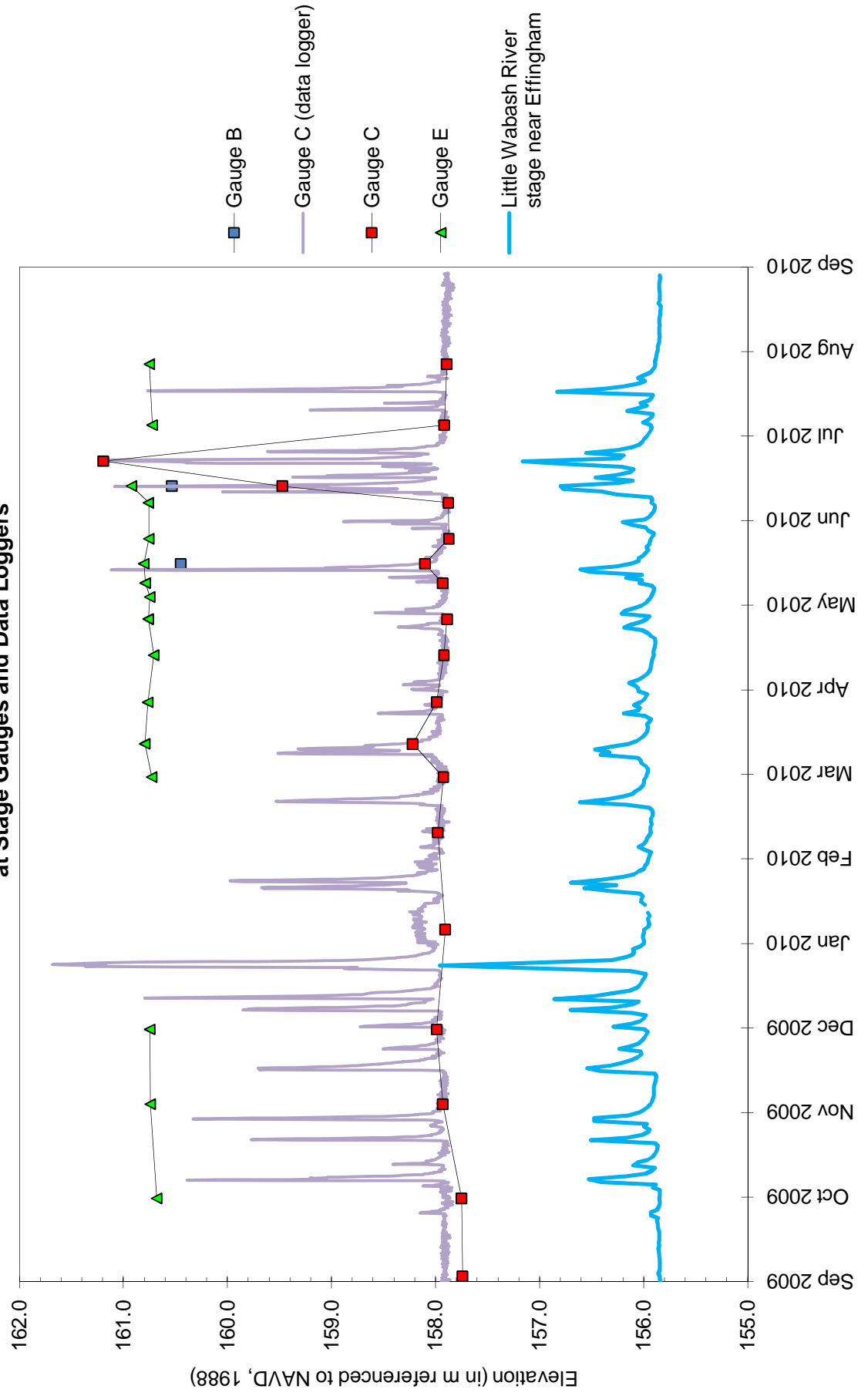
# **Green Creek Wetland Mitigation Site** **September 1, 2009 through August 31, 2010**





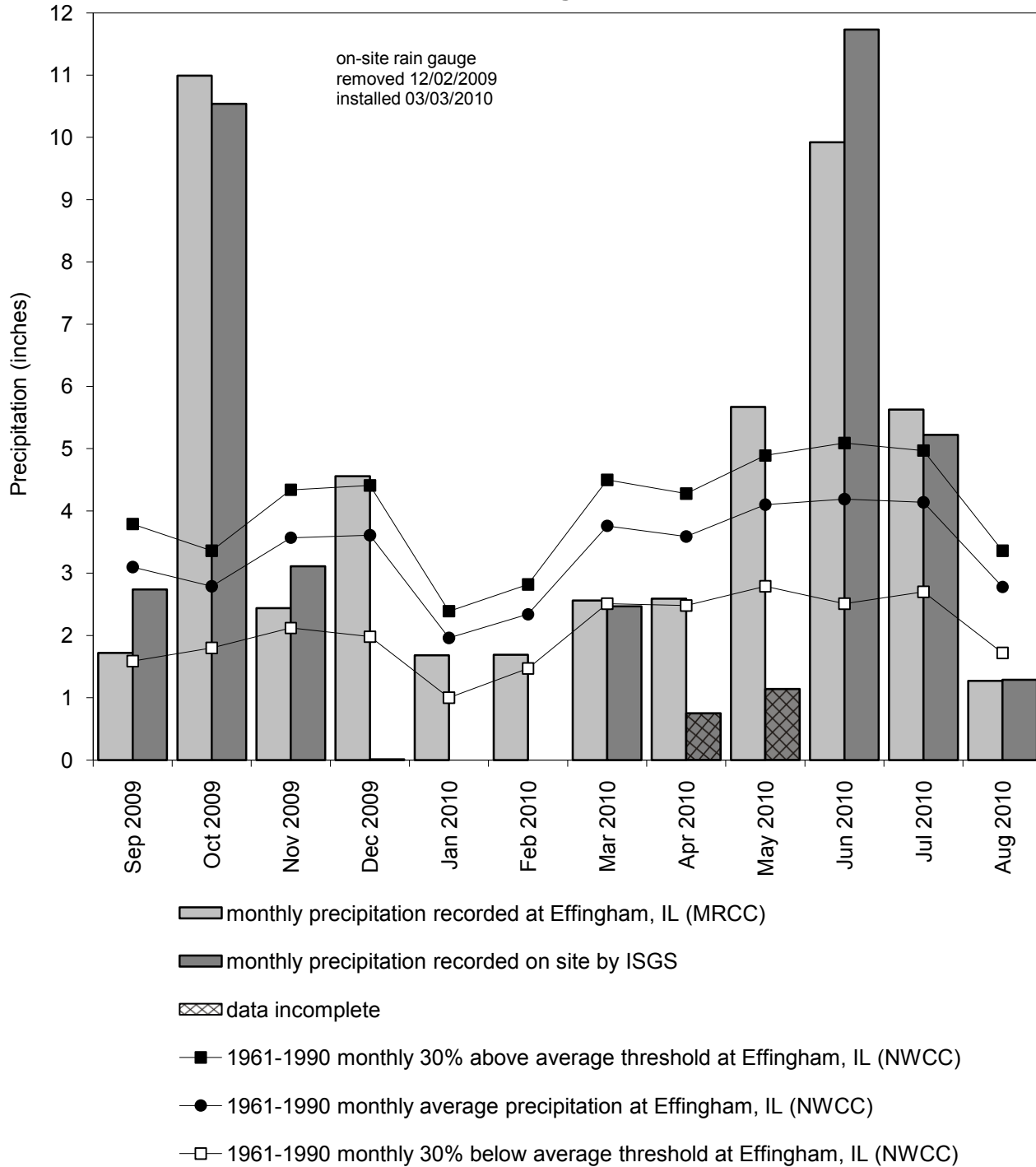
# **Green Creek Wetland Mitigation Site** **September 1, 2009 through August 31, 2010**

**Water-Level Elevations  
at Stage Gauges and Data Loggers**



# Green Creek Wetland Mitigation Site September 2009 through August 2010

## Total Monthly Precipitation Recorded on Site and at Effingham, IL



Graph last updated September 29, 2010

**MILAN BELTWAY, ROCK ISLAND  
WETLAND MITIGATION SITE**

**ISGS #76**

FAU 5822

Sequence #67

Rock Island County, near Moline, Illinois

**Primary Project Manager: Steven E. Benton**

**Secondary Project Manager: Kathleen E. Bryant**

**SITE HISTORY**

- February 2008: The ISGS was tasked by IDOT to conduct 5-year monitoring.
- March 2008: A monitoring network was installed on the site by the ISGS.
- Summer 2010: A paved bicycle/walking path was installed.

**WETLAND HYDROLOGY CALCULATION FOR 2010**

The total area of the site that satisfied wetland hydrology criteria (Environmental Laboratory 1987) for more than 5% of the 2010 growing season was estimated to be 3.8 ha (9.5 ac), and for more than 12.5% of the growing season was estimated to be 2.1 ha (5.2 ac) out of a total area of 4.1 ha (10.2 ac). Using the 2010 Midwest Region supplement (U.S. Army Corps of Engineers 2010) to the 1987 Manual, we estimate that 2.9 ha (7.2 ac), out of a total area of 4.1 ha (10.2 ac), satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. See Additional Information for individual wetland hydrology acreages in areas A, B, C, D, and E. These estimates are based on the following factors:

- According to the MRCC, the median date that the growing season begins at the nearby Quad City International Airport weather station in 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. According to methods outlined in the 2010 Midwest Region supplement, we estimate that March 18 was the start date of the 2010 growing season based on soil temperatures observed at the wetland mitigation site.
- Total precipitation during the monitoring period as recorded at the Quad City International Airport weather station in Moline, Illinois, was 121% of normal and total precipitation in Spring 2010 (March through May) was 109% of normal.
- In 2010, wetland hydrology occurred for more than 5% of the growing season at all of the monitoring wells except 17S. Wetland hydrology occurred for more than 12.5% of the growing season at monitoring wells 12S, 13S, 14S, 15S, 16S, 18S, 18VS, 19S, 20S, 21S, 21VS, 22S, and 23S. In addition, all of the monitoring wells except 1S, 2S, 4S, and 17S satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season per the 2010 Midwest Region supplement.
- Portions of area D were inundated for the entire monitoring period. Surface-water elevations measured at gauge C reveal that the portions of area D at and above an elevation of 172.49 m (565.94 ft) were inundated for periods long enough to satisfy wetland hydrology criteria for more than 5% of the growing season and for more than 12.5% of the growing season. In addition, portions of area D at and above an elevation of 172.49 m (565.94 ft) were inundated for 14 or more consecutive days during the growing season per the 2010 Midwest Region supplement. Analysis of the data

recorded by RDS1 and RDS2 reveals that the Rock River flowed into the east and west ditches 5 times during the monitoring period. However, no peak that affected the site was greater than 4 days in duration.

#### ADDITIONAL INFORMATION

- The following are acreages of jurisdictional wetland hydrology in each area of the site: 0.6 ha (1.5 ac) of area A, 0.4 ha (1.0 ac) of area B, 0.7 ha (1.9 ac) of area C, 1.2 ha (3.0 ac) of area D, and 0.8 ha (2.1 ac) of area E satisfied wetland hydrology criteria for more than 5% of the growing season; 0.04 ha (0.09 ac) of area A, 0.03 ha (0.08 ac) of area B, 1.2 ha (3.0 ac) of area D, and 0.8 ha (2.1 ac) of area E satisfied wetland hydrology criteria for more than 12.5% of the growing season; 0.02 ha (0.05 ac) of area A, 0.1 ha (0.2 ac) of area B, 0.7 ha (1.9 ac) of area C, 1.2 ha (3.0 ac) of area D, and 0.8 ha (2.1 ac) of area E satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season per the 2010 Midwest Region supplement.
- The construction of the bicycle/walking path has created an opportunity to alter the hydrology of the site and increase the duration of jurisdictional wetland hydrology in areas A and B. The path crosses the west ditch via a culvert and is raised above the surrounding landscape. Constructing a low-head dam across the ditch upstream of the culvert would inundate areas adjacent to the ditch by retaining runoff. The height of the dam would have to be determined by an elevational survey in order to maximize the area of inundation/saturation without inundating the path.

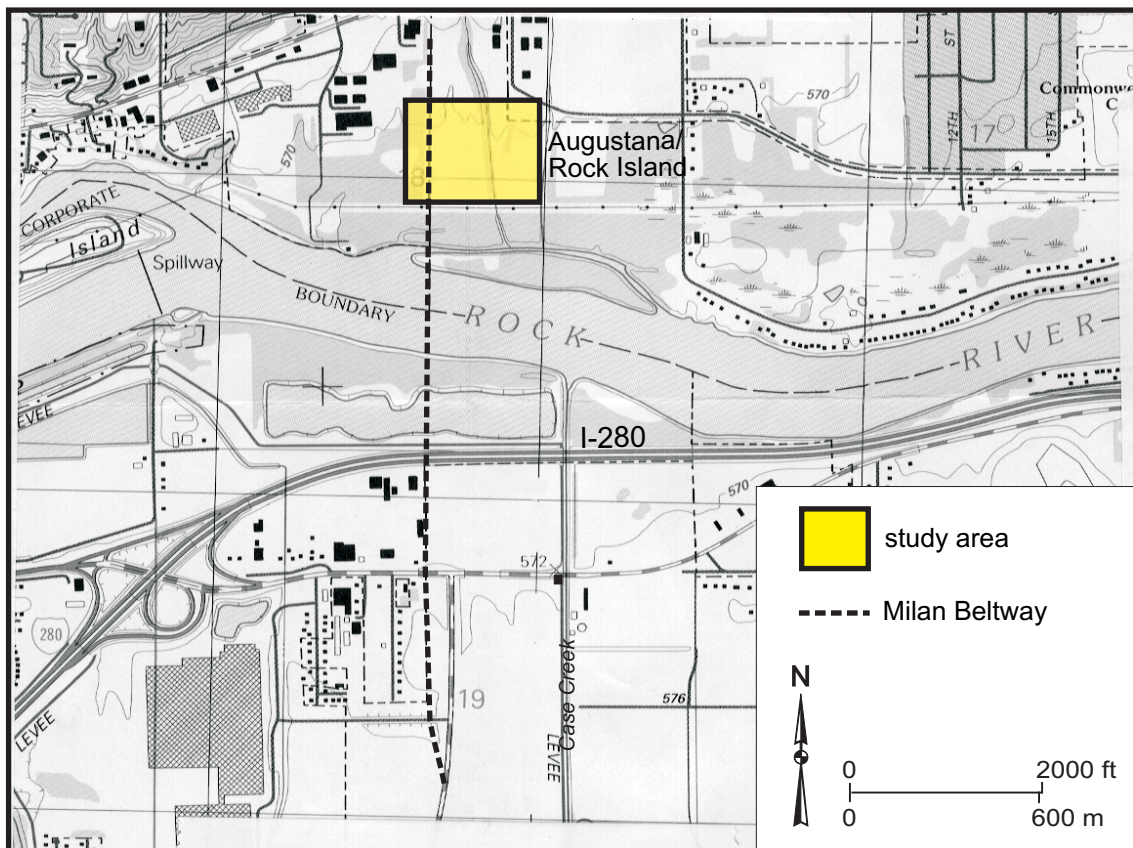
#### PLANNED FUTURE ACTIVITIES

- Monitoring activities will continue until no longer required by IDOT.

# Milan Beltway, Rock Island Wetland Mitigation 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



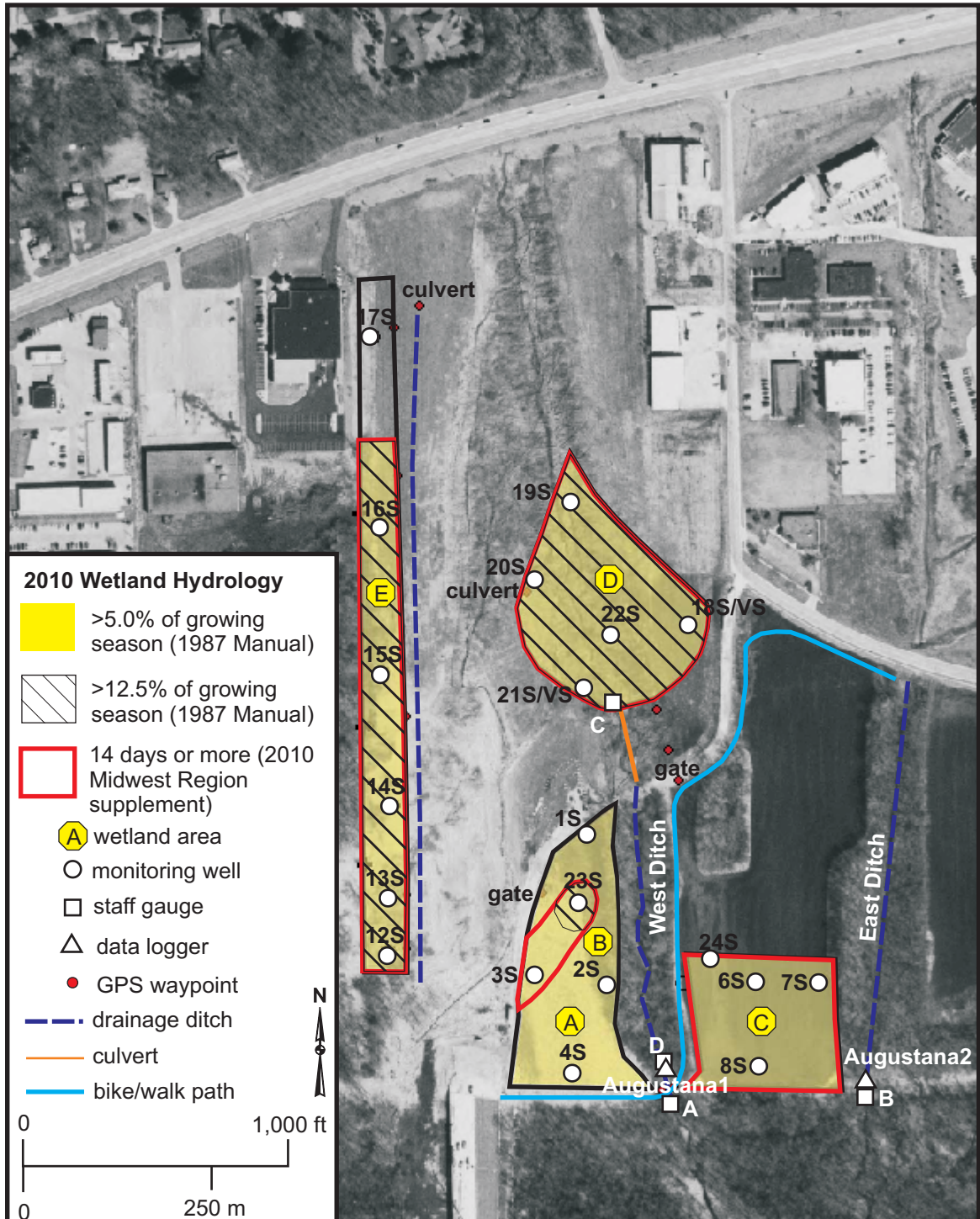


# Milan Beltway, Rock Island Wetland Mitigation Site (FAU 5822)

## Estimated Areal Extent of 2010 Wetland Hydrology

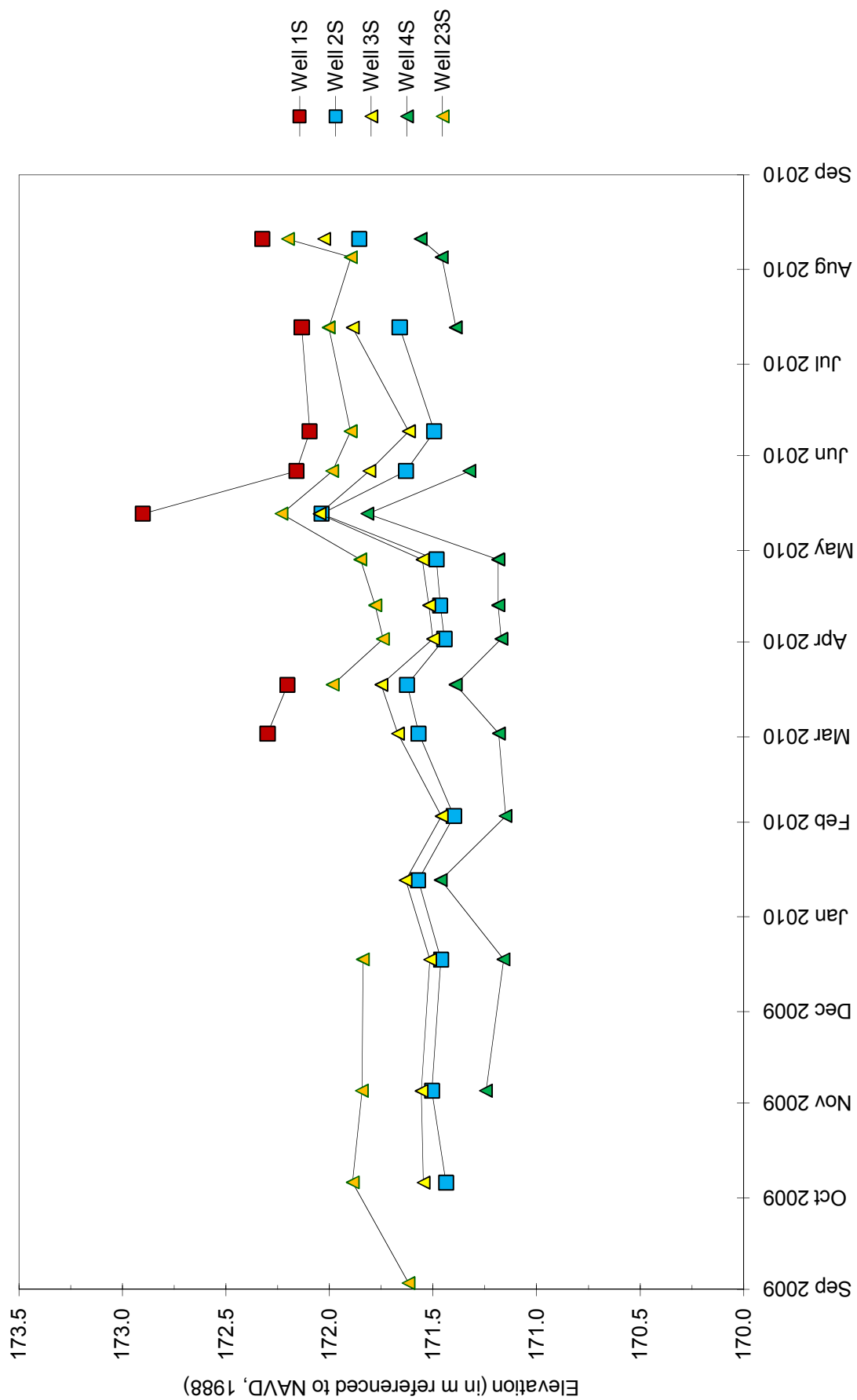
September 1, 2009 through August 31, 2010

Map base is USGS digital orthophotography, Milan NE quarter quadrangle (ISGS 2009)



# **Milan Beltway, Rock Island Wetland Mitigation Site** **September 1, 2009 through August 31, 2010**

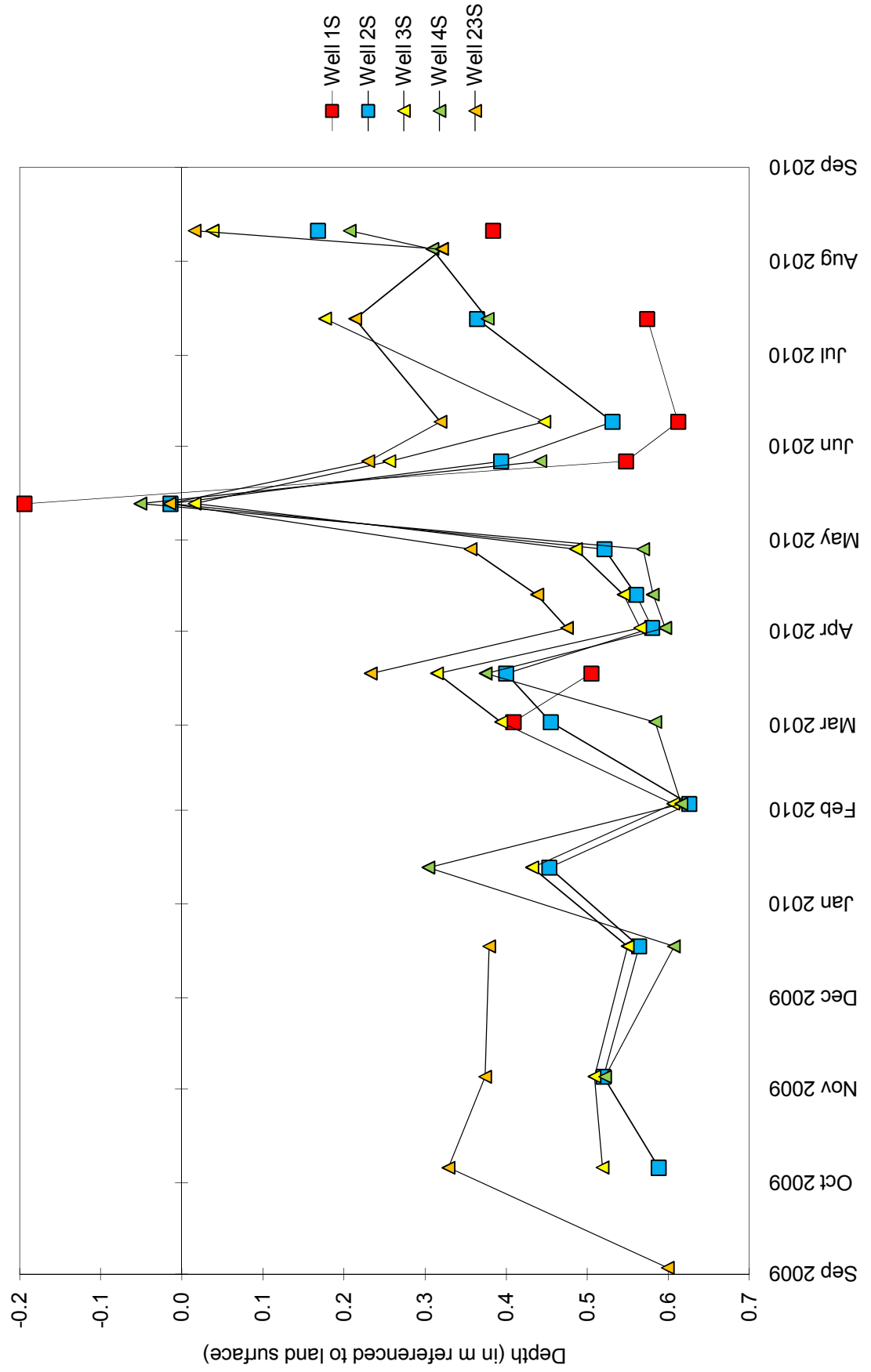
**Water-Level Elevations in Monitoring Wells  
 Areas A and B**





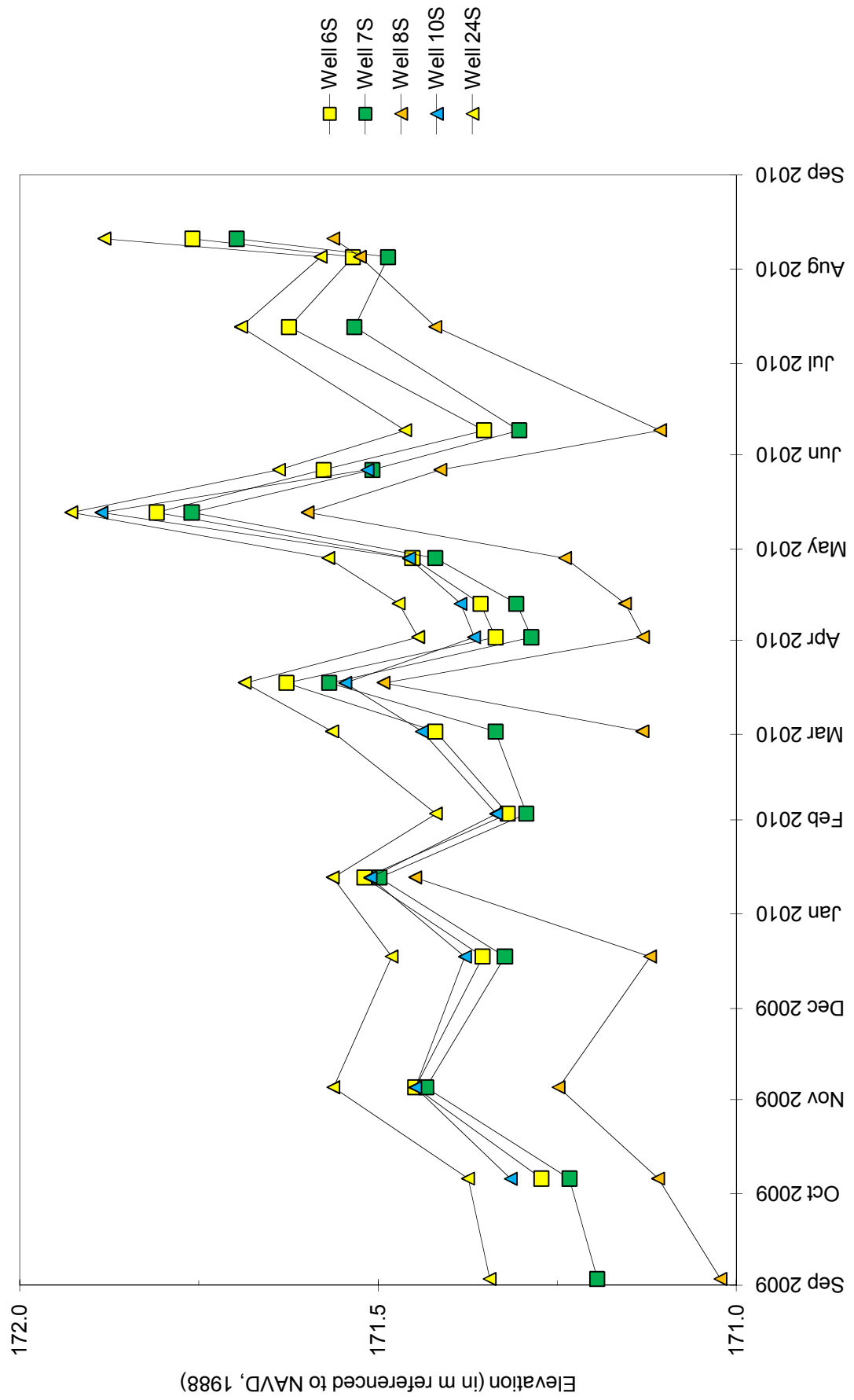
# **Milan Beltway, Rock Island Wetland Mitigation Site** **September 1, 2009 through August 31, 2010**

Depth to Water in Monitoring Wells  
 Areas A and B



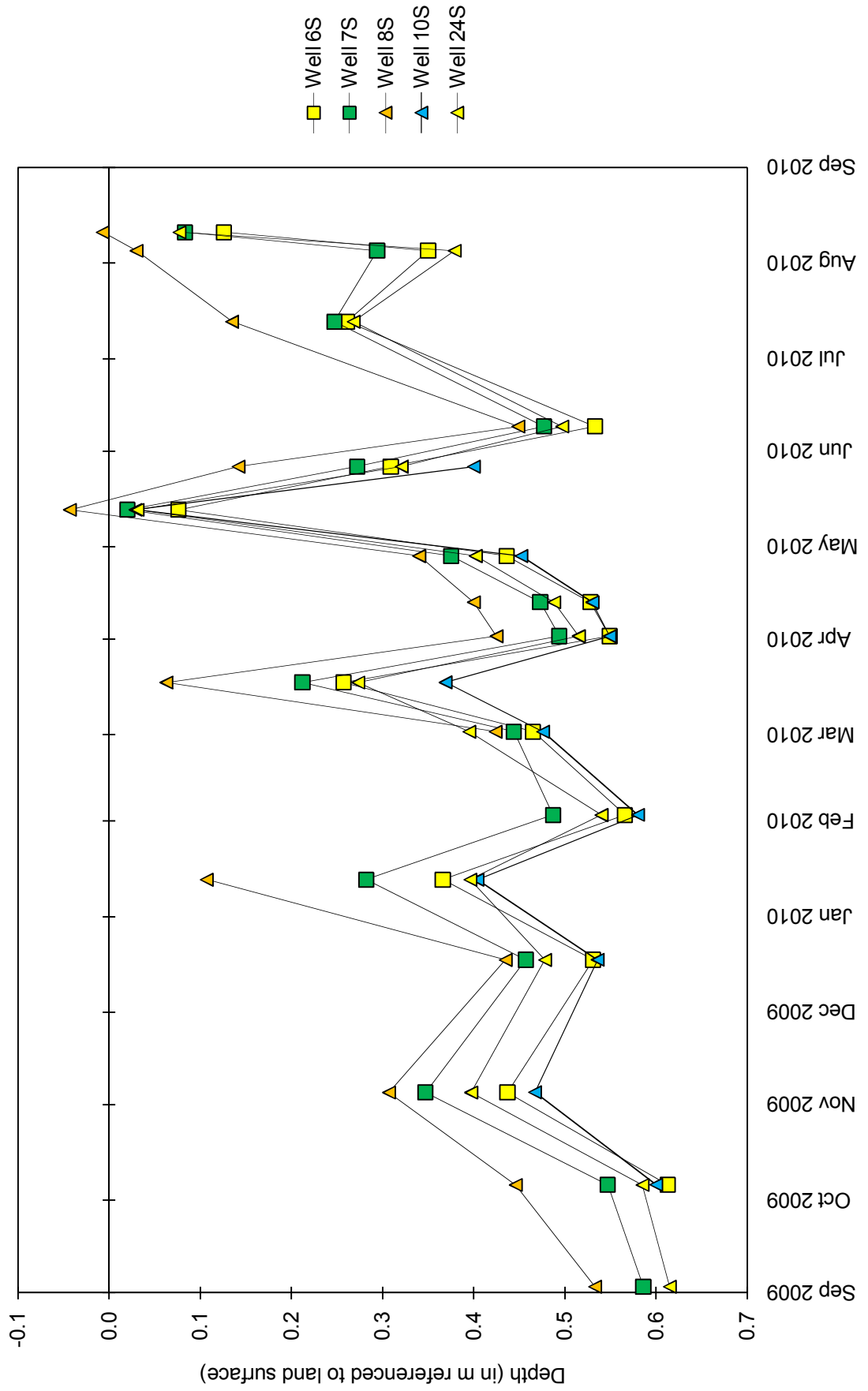
# **Milan Beltway, Rock Island Wetland Mitigation Site** **September 1, 2009 through August 31, 2010**

## **Water-Level Elevations in Monitoring Wells Area C**



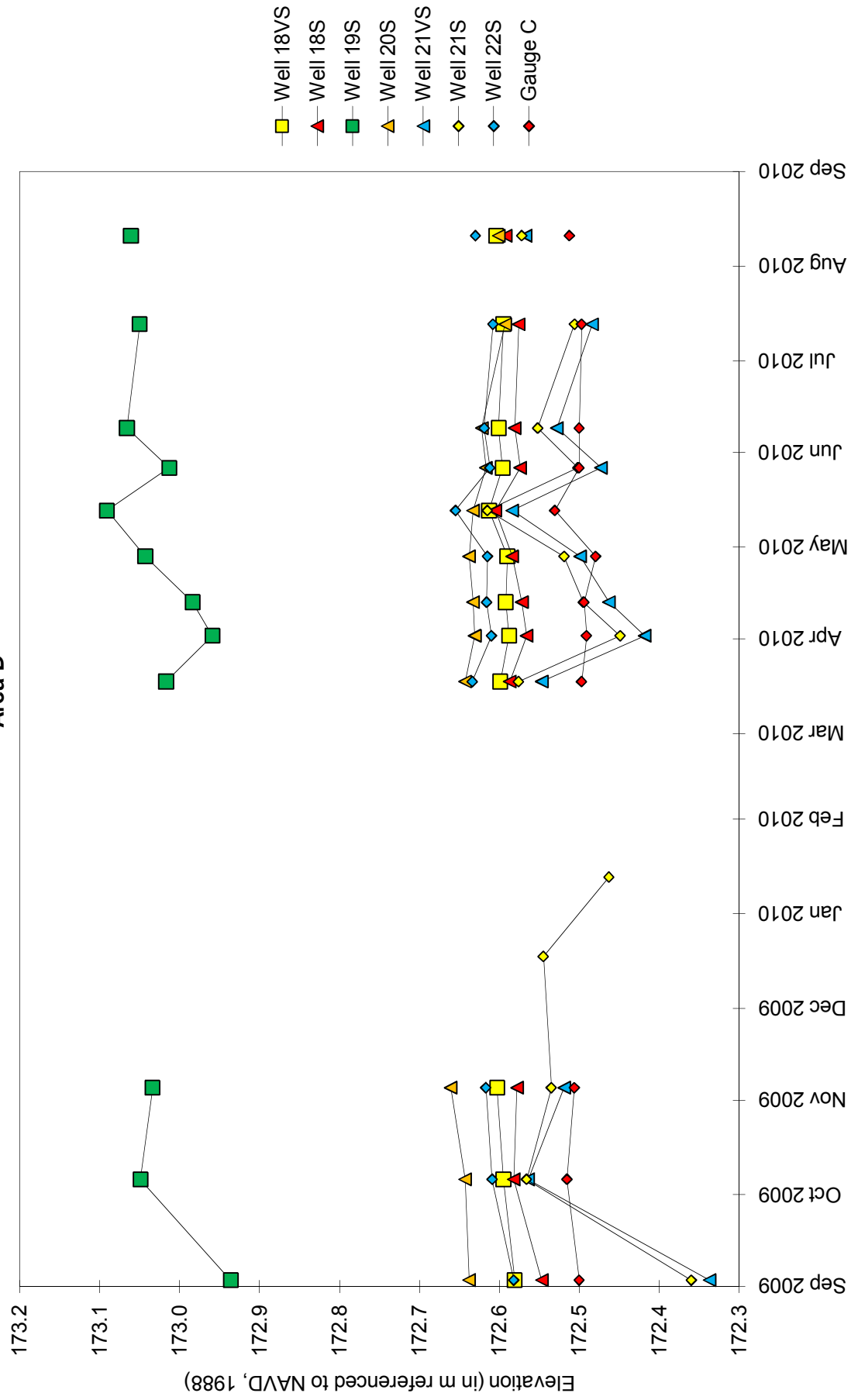
# **Milan Beltway, Rock Island Wetland Mitigation Site** **September 1, 2009 through August 31, 2010**

Depth to Water in Monitoring Wells  
Area C

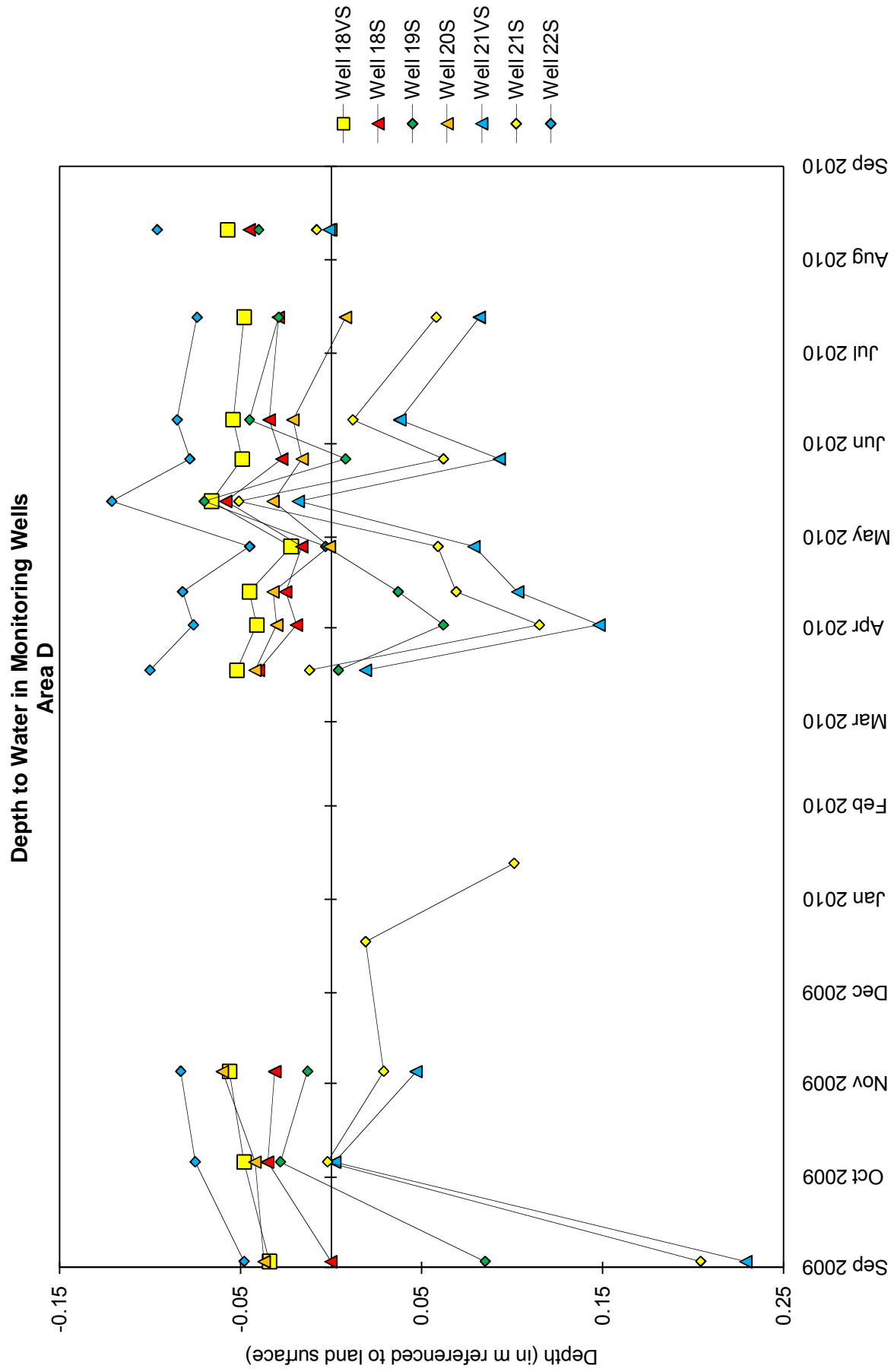


# **Milan Beltway, Rock Island Wetland Mitigation Site** **September 1, 2009 through August 31, 2010**

**Water-Level Elevations in Monitoring Wells  
Area D**

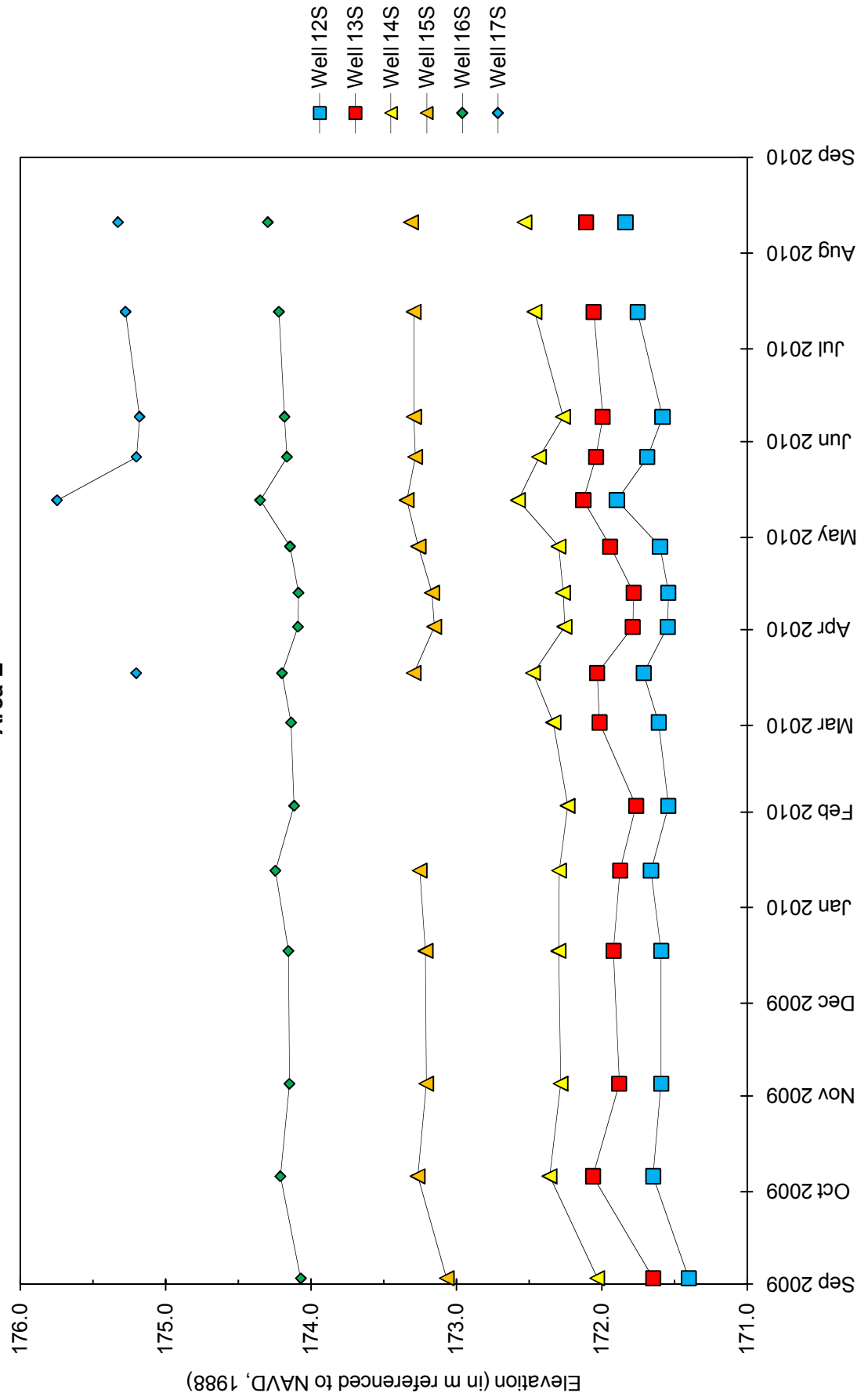


# **Milan Beltway, Rock Island Wetland Mitigation Site** **September 1, 2009 through August 31, 2010**

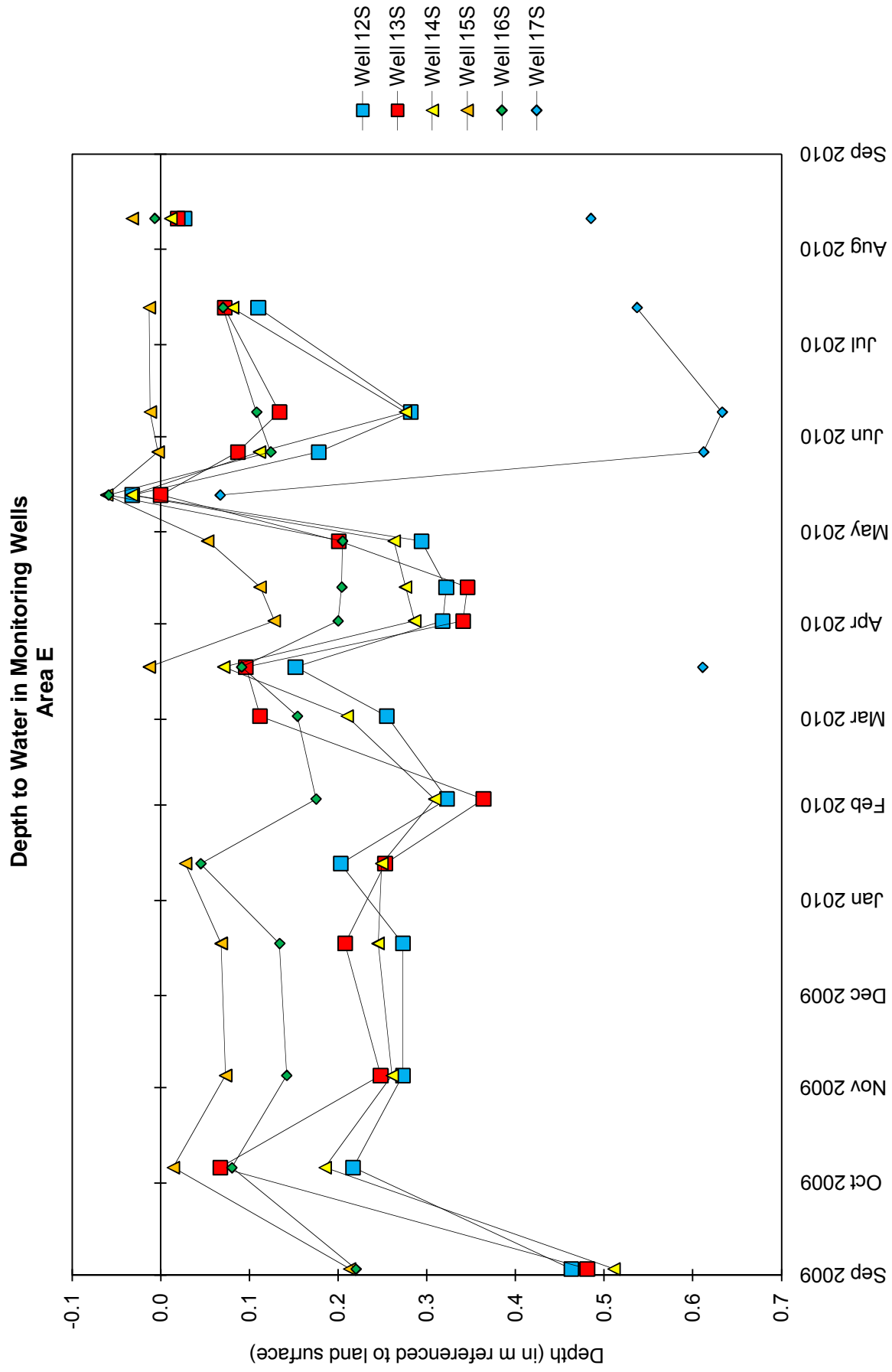


# **Milan Beltway, Rock Island Wetland Mitigation Site** **September 1, 2009 through August 31, 2010**

**Water-Level Elevations in Monitoring Wells  
Area E**



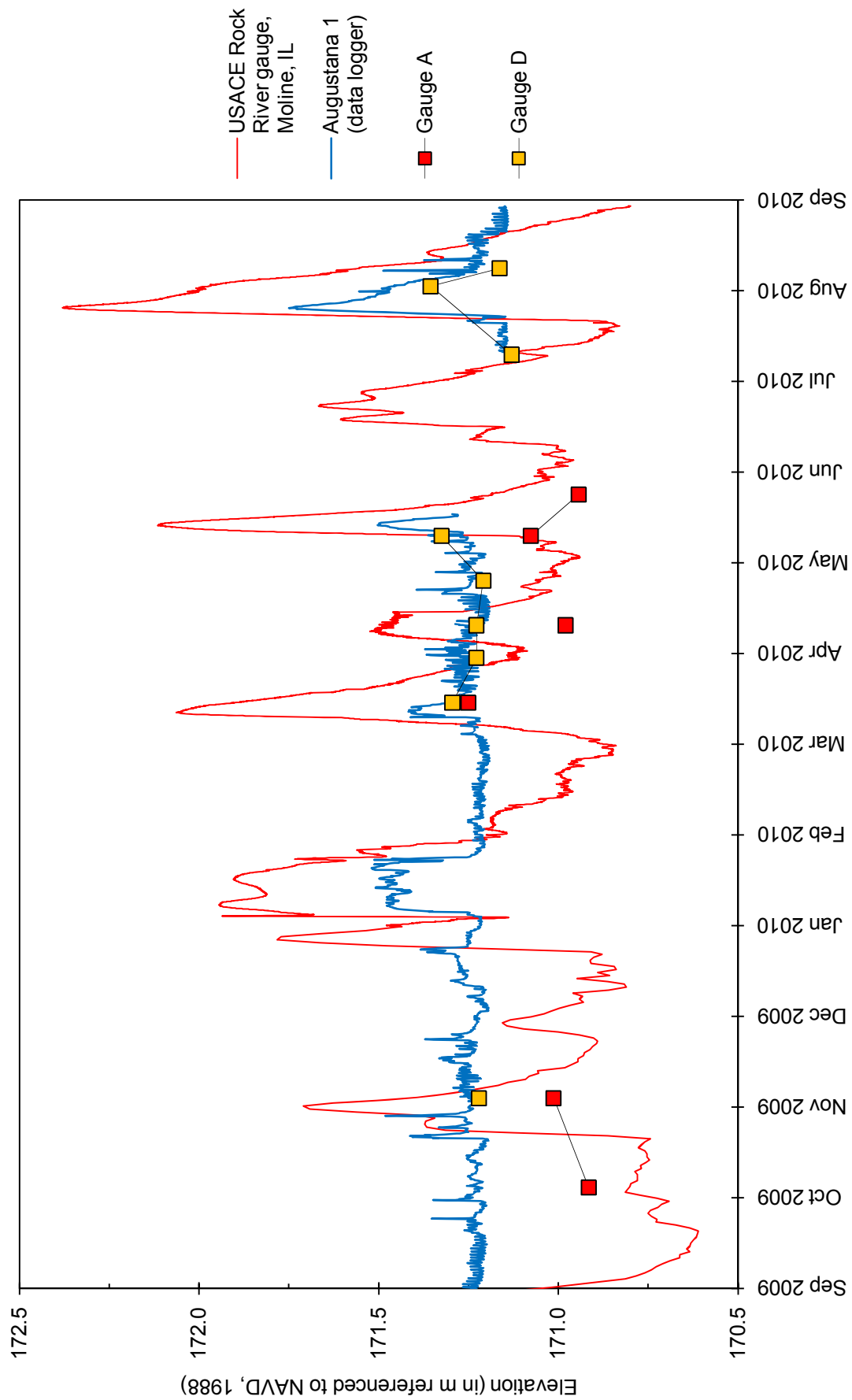
# **Milan Beltway, Rock Island Wetland Mitigation Site** **September 1, 2009 through August 31, 2010**





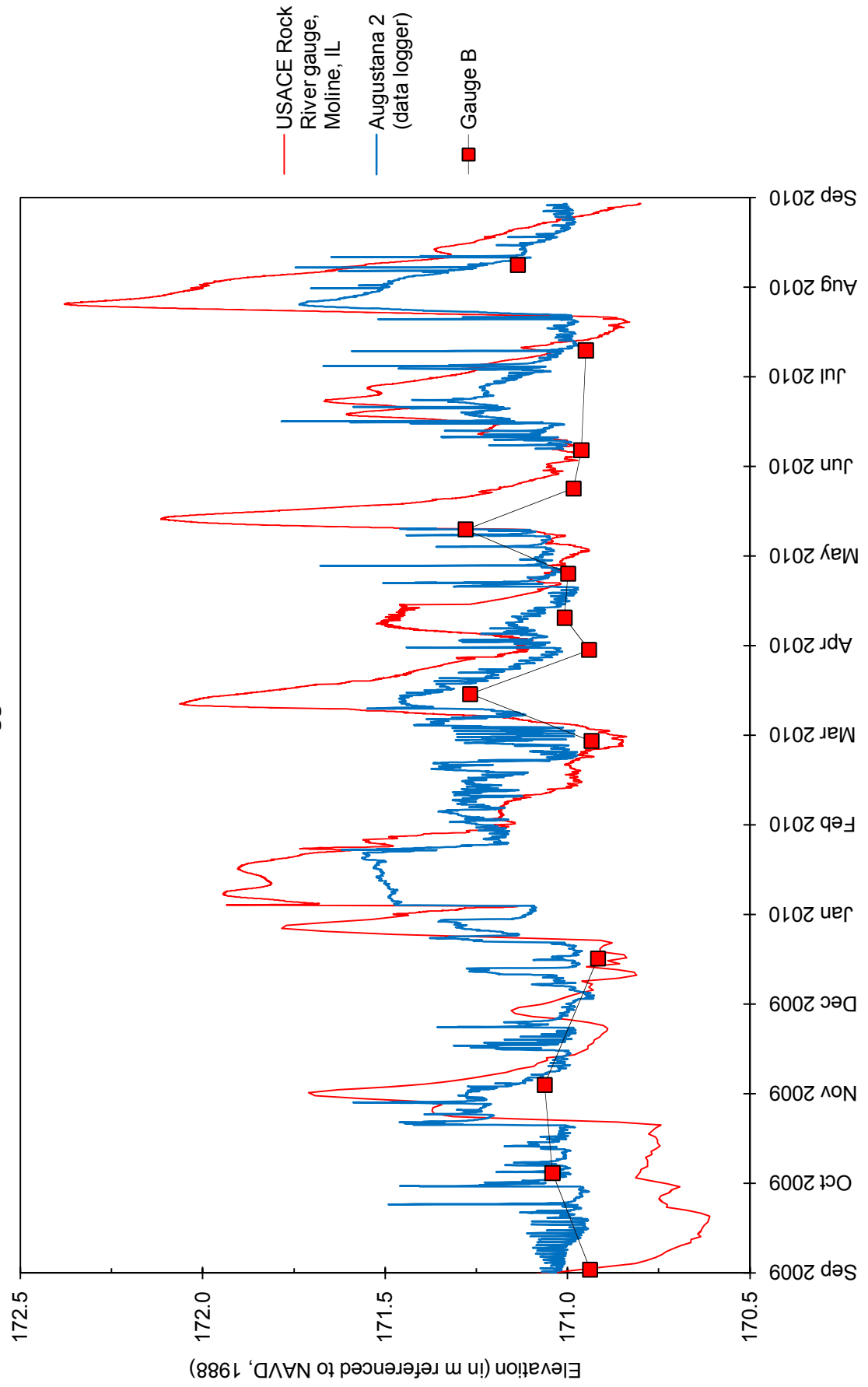
# **Milan Beltway, Rock Island Wetland Mitigation Site** **September 1, 2009 through August 31, 2010**

## **Water-Level Elevations at Staff Gauges and Data Loggers in West Ditch**

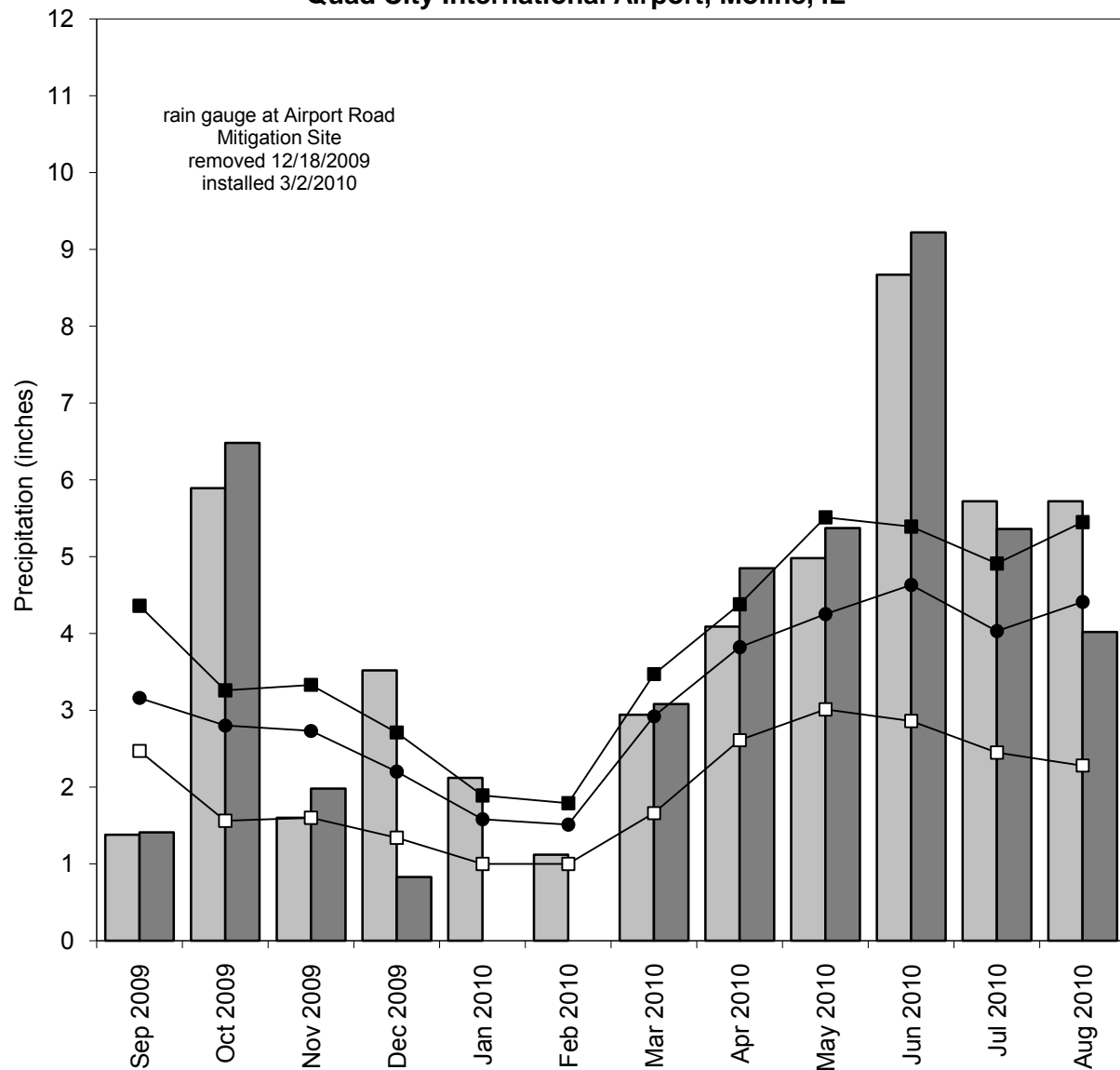


# **Milan Beltway, Rock Island Wetland Mitigation Site** **September 1, 2009 through August 31, 2010**

**Water-Level Elevations at Staff Gauges  
and Data Loggers in East Ditch**



**Milan Beltway, Rock Island  
Wetland Mitigation Site  
September 2009 through August 2010  
Total Monthly Precipitation Recorded on Site and at the  
Quad City International Airport, Moline, IL**



- monthly precipitation recorded at Moline, IL (MRCC)
- monthly precipitation recorded on site by ISGS
- 1971-2000 monthly 30% above average threshold at Moline, IL (NWCC)
- 1971-2000 monthly average precipitation at Moline, IL (NWCC)
- 1971-2000 monthly 30% below average threshold at Moline, IL (NWCC)

Graph last updated September 29, 2010

**PYRAMID SITE EC25  
WETLAND MITIGATION SITE**

**ISGS #77**

Pyatt's Blacktop  
FAS 864

Sequence #9778

Perry County, near Pinckneyville, Illinois

**Primary Project Manager: Eric T. Plankell**

**Secondary Project Manager:** not assigned

**SITE HISTORY**

- June 2007: ISGS was tasked by IDOT to monitor wetland hydrology.
- April 2008: ISGS began on-site monitoring.

**WETLAND HYDROLOGY CALCULATION FOR 2010**

The area that satisfied wetland hydrology criteria (Environmental Laboratory 1987) for greater than 5% of the 2010 growing season is estimated to be 3.3 ha (8.2 ac) out of a total site area of approximately 5.3 ha (13.1 ac). The area that satisfied wetland hydrology criteria for greater than 12.5% of the 2010 growing season is estimated to be 0.3 ha (0.8 ac). Using the 2010 Midwest Region supplement (U.S. Army Corps of Engineers 2010) to the 1987 Manual, it is estimated that 5.3 ha (13.1 ac) satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

- According to the MRCC, 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. According to methods outlined in the 2010 Midwest Region supplement, it is estimated that March 9 was the starting date of the 2010 growing season based on soil temperatures observed at the wetland mitigation site.
- Regional precipitation for the monitoring period, as recorded in Du Quoin, Illinois, was 120% of normal, and was 107% of normal for the period March through May 2010.
- In 2010, water levels measured in monitoring wells 1VS, 4S, 4VS, 7S, 7VS, 8VS, 9VS, 10VS, 11S, 12VS, 13VS, and 15VS satisfied wetland hydrology criteria for greater than 5% of the growing season. Water levels measured in wells 12VS and 13VS satisfied wetland hydrology criteria for greater than 12.5% of the growing season. According to the 2010 Midwest Region supplement, all monitoring wells satisfied wetland hydrology criteria for 14 or more consecutive days of the growing season (well 6S had not yet been installed and is not considered for the 14-day wetland hydrology criteria).

**ADDITIONAL INFORMATION**

- Gauge B, installed in Little Galum Creek, recorded several flood events throughout the 2010 growing season that inundated most or all of the site on each occasion. Although each flood lasted only a few hours, their occurrence, coupled with precipitation and lower rates of evapotranspiration in the spring months, are believed to be the primary factors resulting in wetland hydrology at this site.

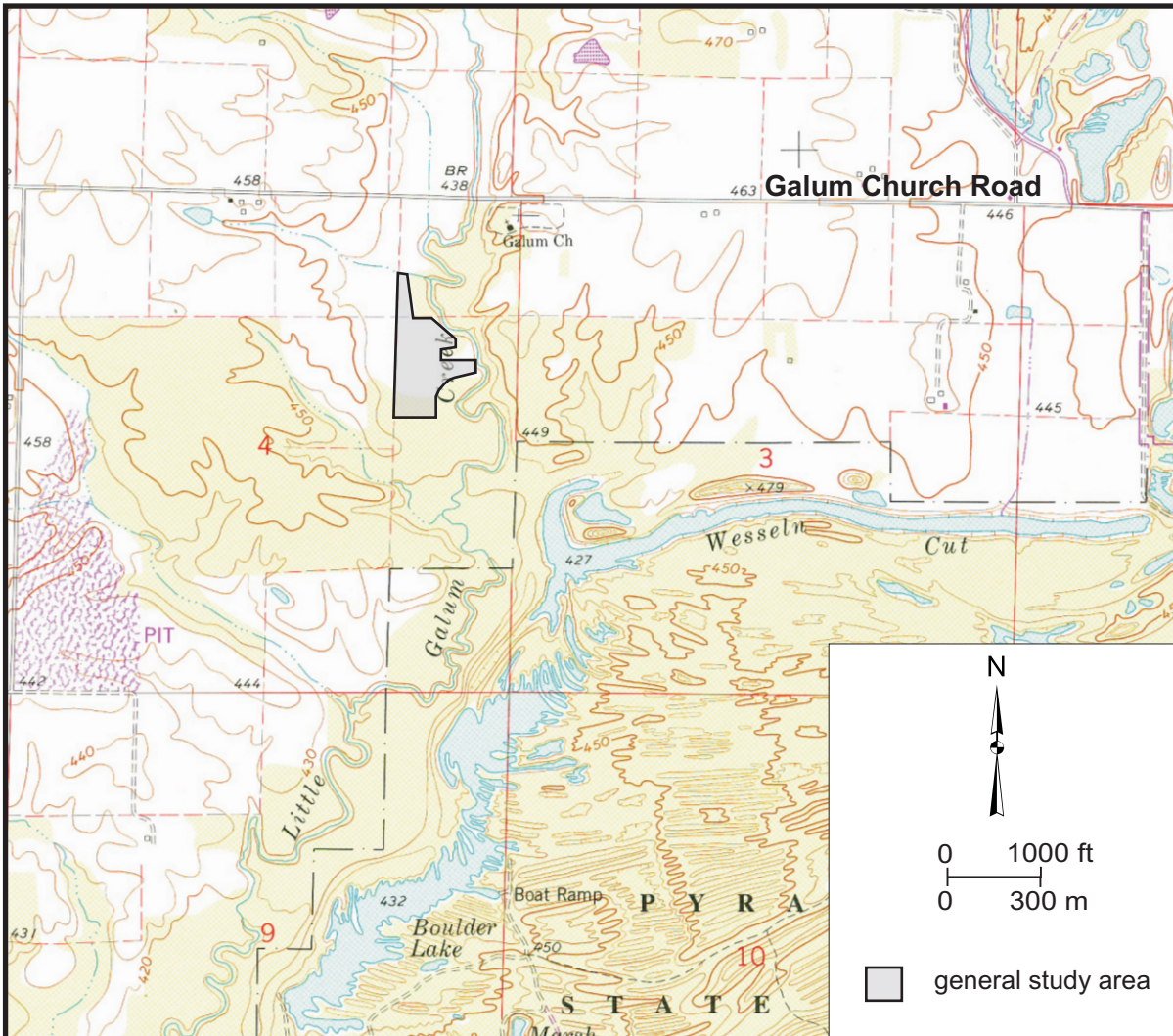
- Ditches along the western and southern edges of the site allow much of the surface water to quickly drain from the site, and thus potentially reduce the amount of acreage that will meet wetland hydrology criteria in years with more normal precipitation levels.

#### PLANNED FUTURE ACTIVITIES

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

**Pyramid Site EC25 Wetland Mitigation Site  
(FAS 864 [Pyatt's Blacktop])  
General Study Area and Vicinity**

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



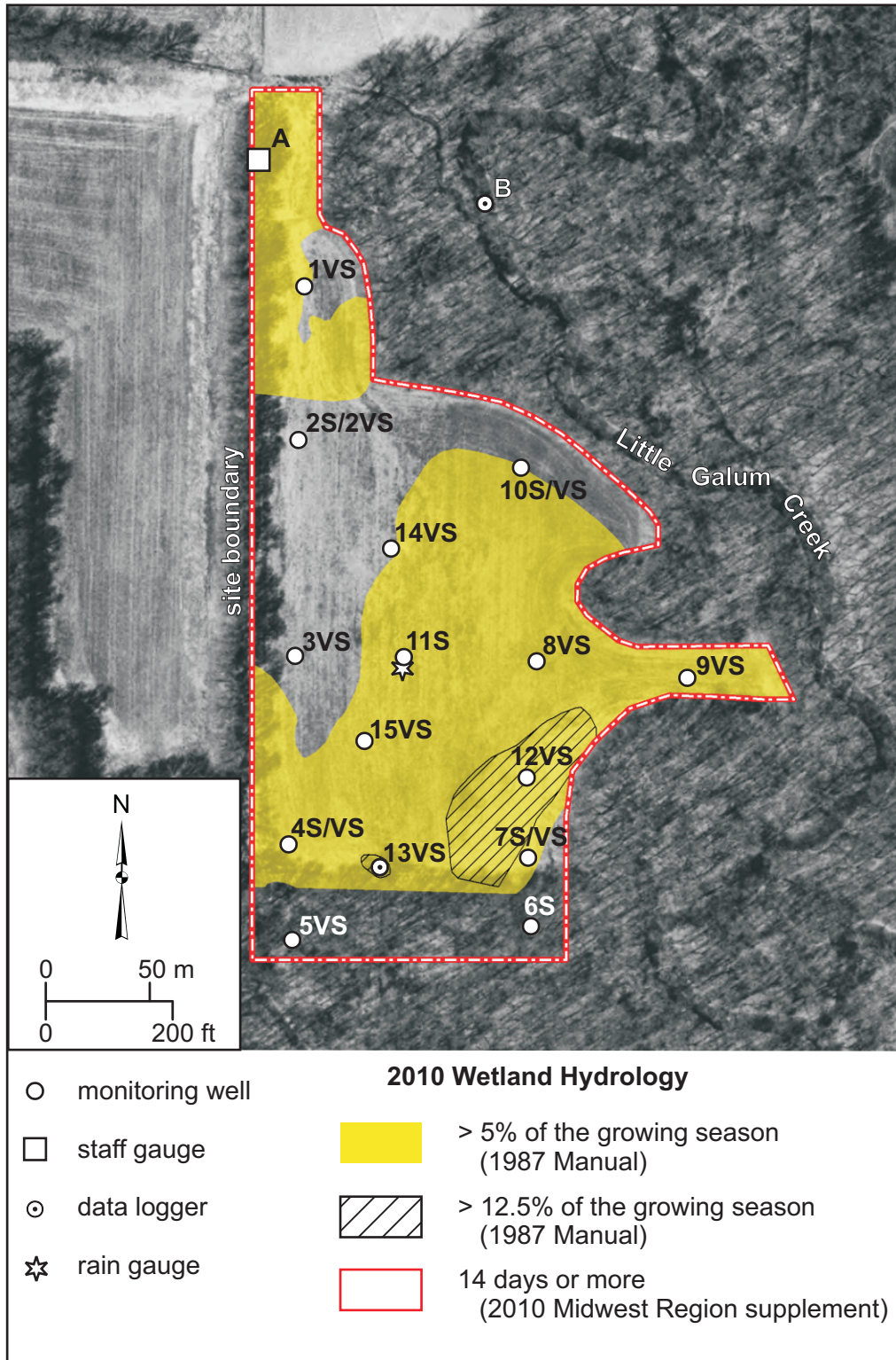


# Pyramid Site EC25 Wetland Mitigation Site (FAS 864 [Pyatt's Blacktop])

## Estimated Areal Extent of 2010 Wetland Hydrology

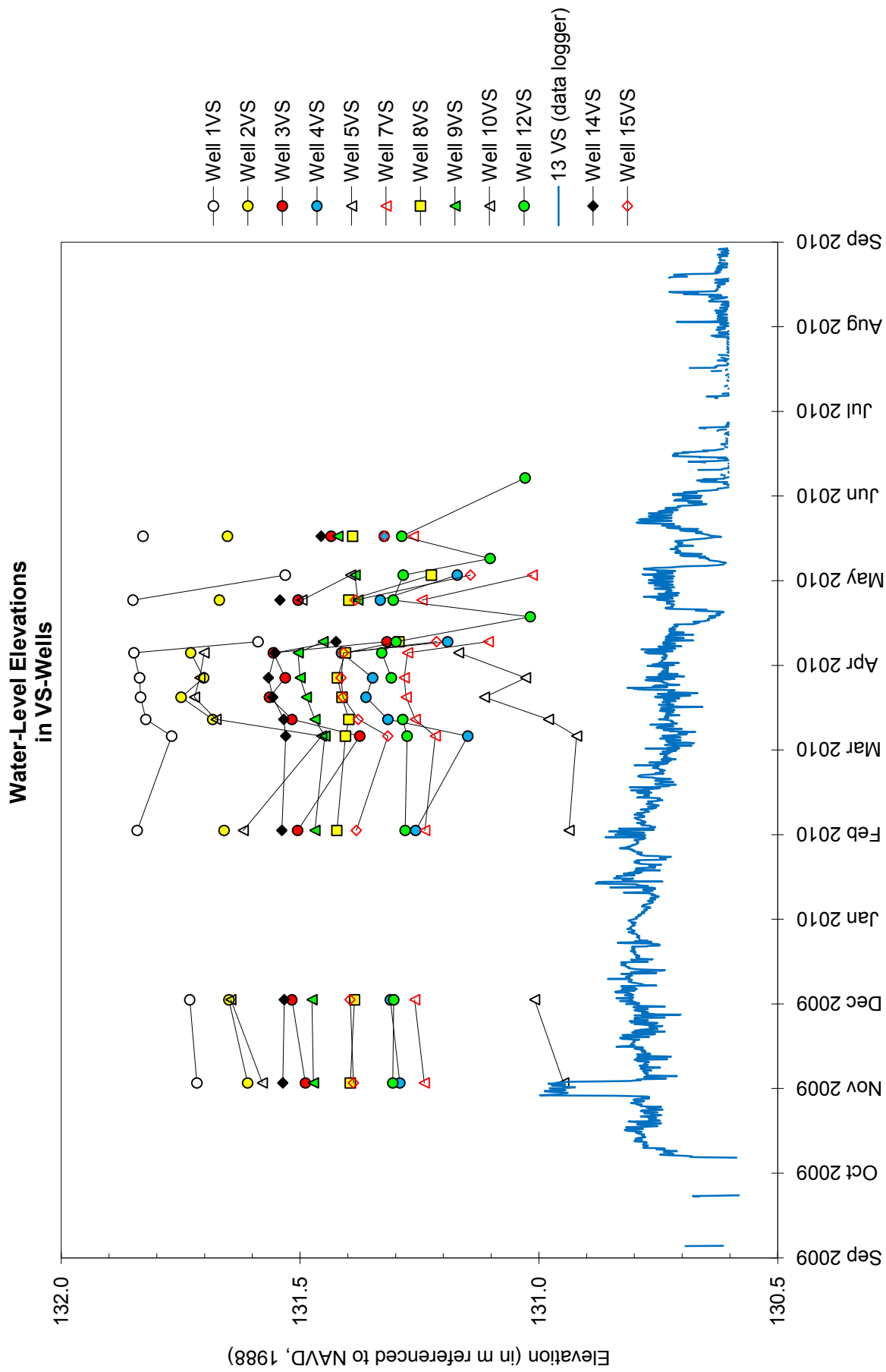
September 1, 2009 through August 31, 2010

Map based on USGS digital orthophotograph, Pinckneyville, SE quarter-quadrangle (ISGS 2005)

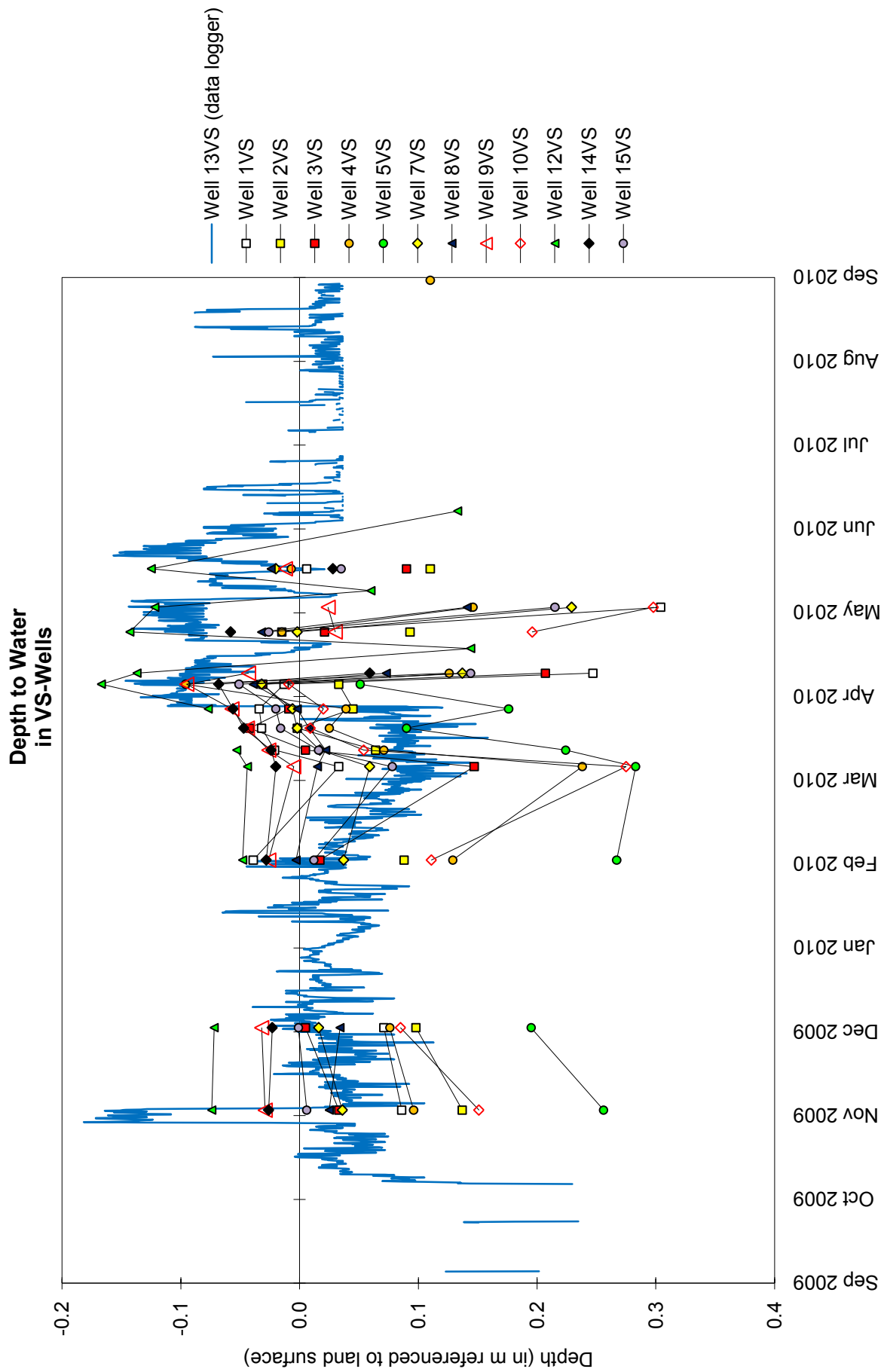




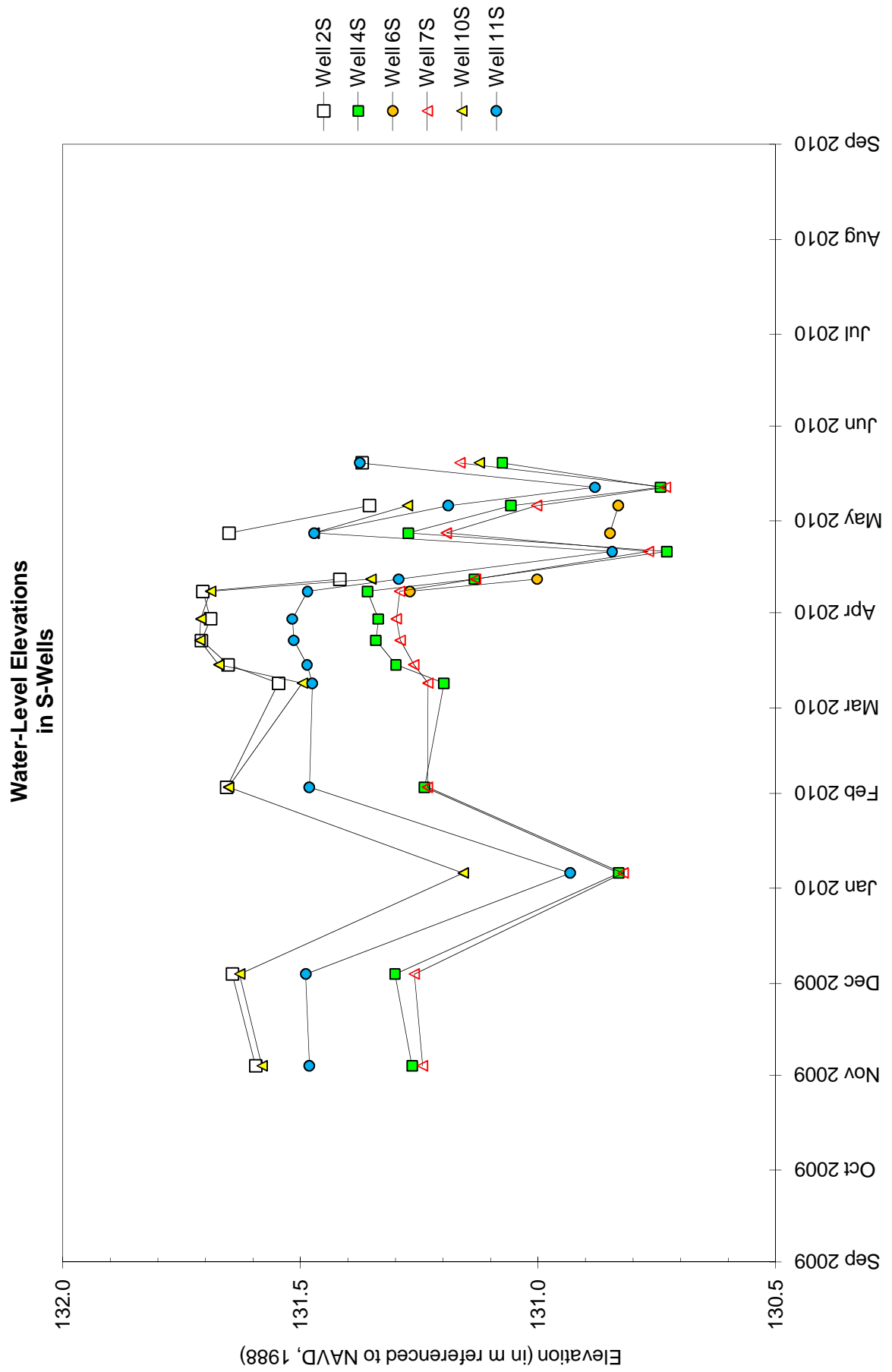
# **Pyramid Site EC25 Wetland Mitigation Site** September 1, 2009 through August 31, 2010



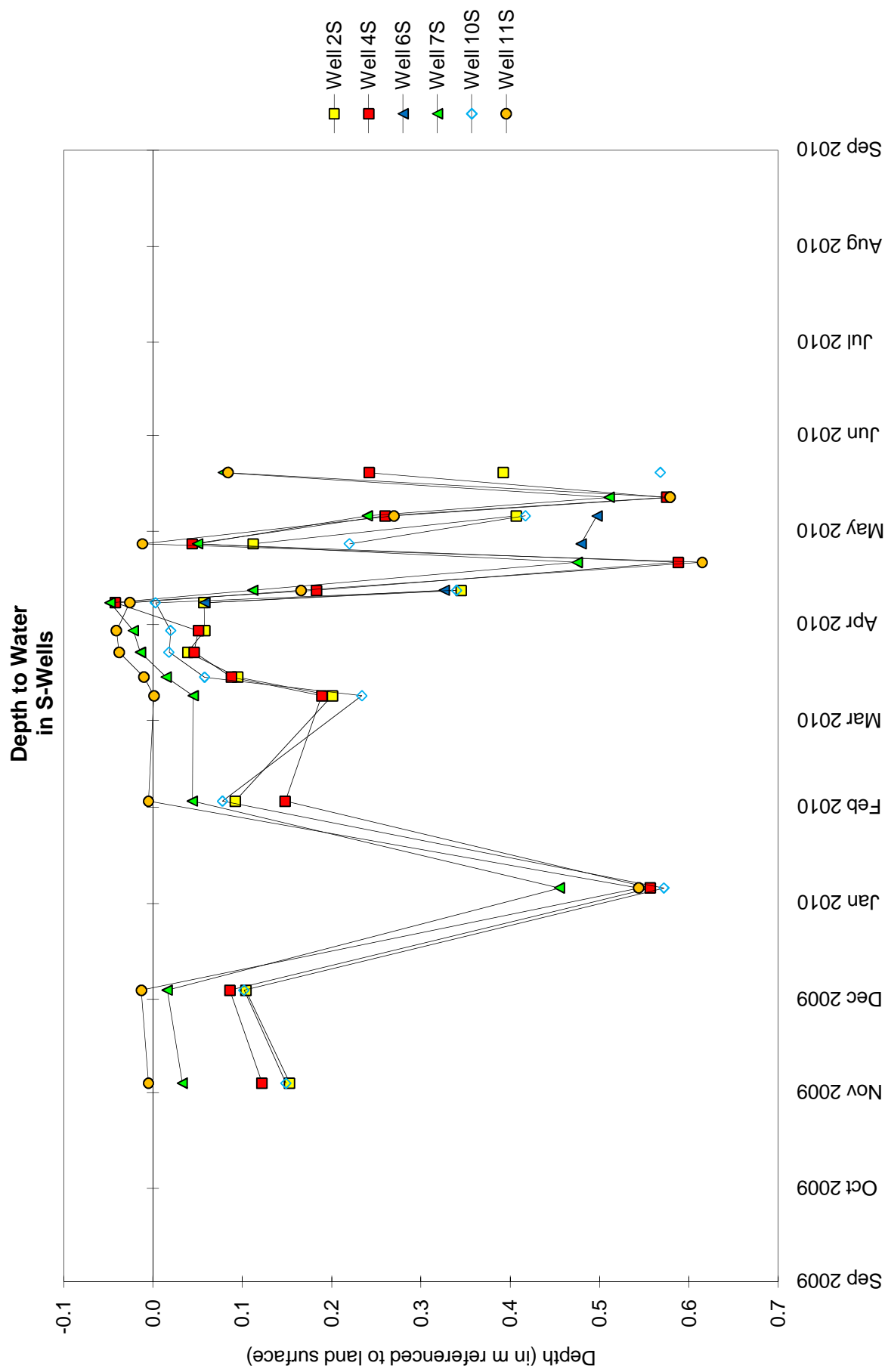
# **Pyramid Site EC25 Wetland Mitigation Site** September 1, 2009 through August 31, 2010



# Pyramid Site EC25 Wetland Mitigation Site September 1, 2009 through August 31, 2010

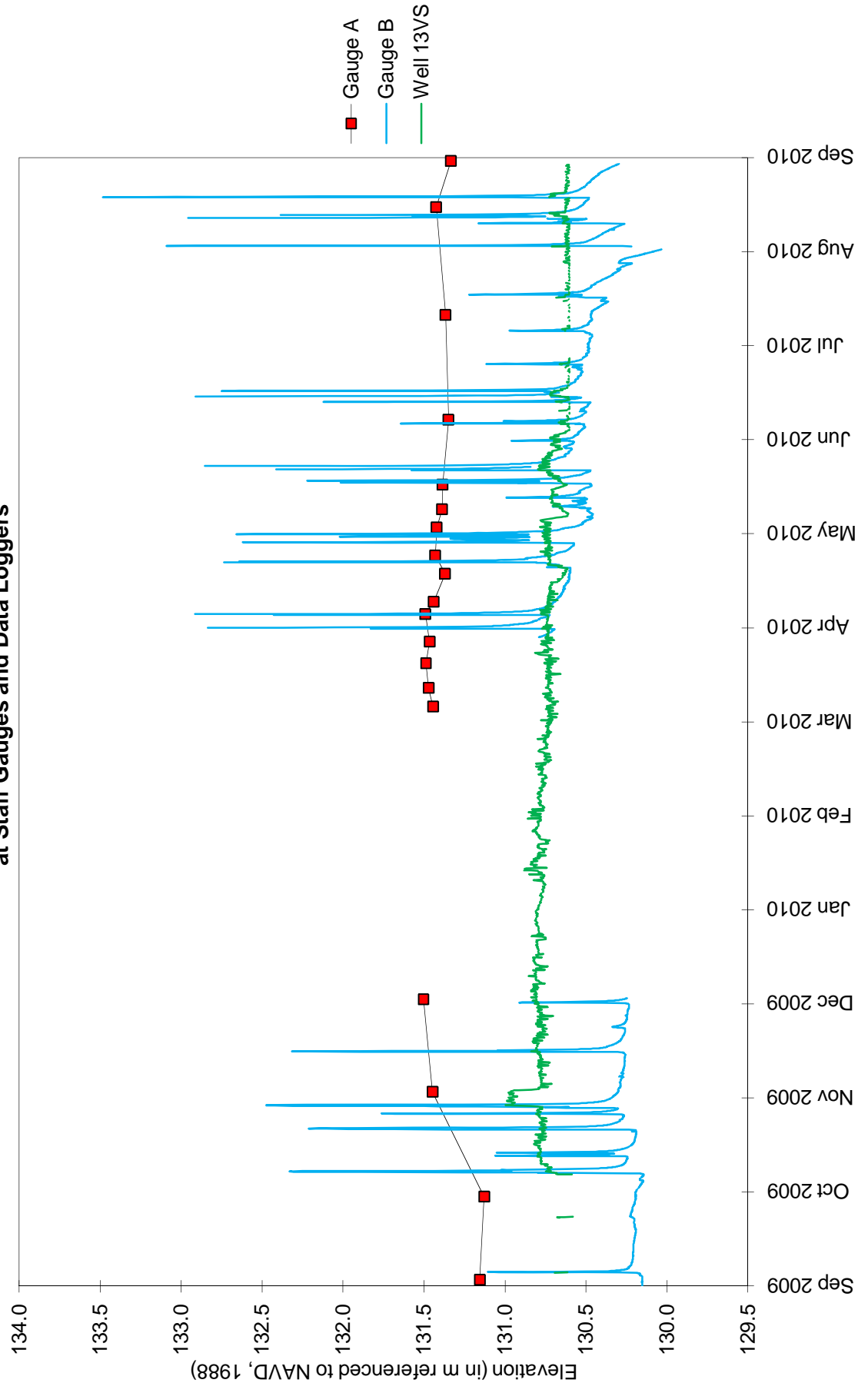


# **Pyramid Site EC25 Wetland Mitigation Site** **September 1, 2009 through August 31, 2010**



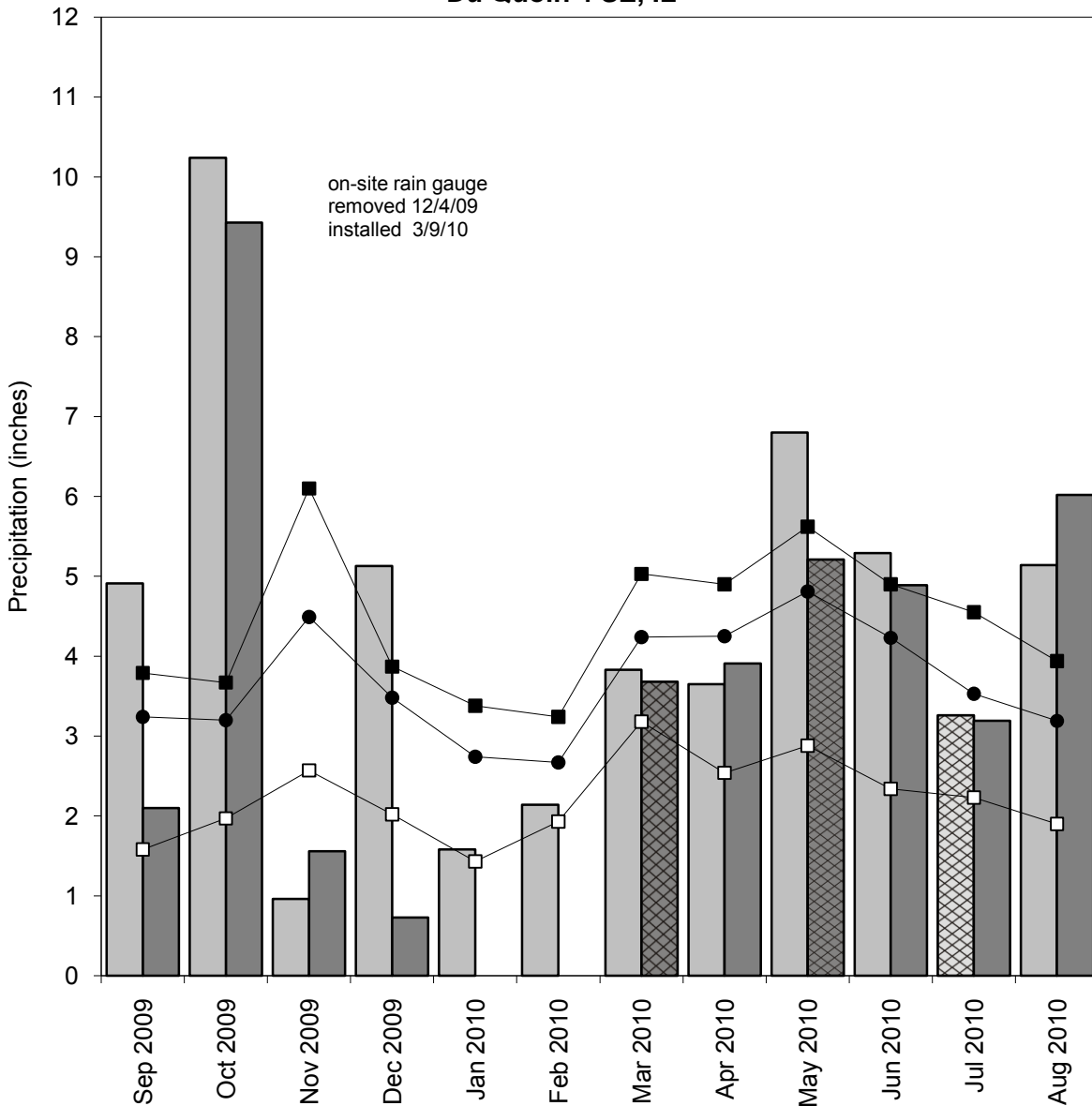
# Pyramid Site EC25 Wetland Mitigation Site September 1, 2009 through August 31, 2010

Water-Level Elevations  
at Staff Gauges and Data Loggers



# Pyramid Site EC25 Wetland Mitigation Site September 2009 through August 2010

Total Monthly Precipitation Recorded on Site and at  
Du Quoin 4 SE, IL



— monthly precipitation recorded at Du Quoin, IL (MRCC)

— monthly precipitation recorded on site by ISGS

— data incomplete

— 1971-2000 monthly 30% above average threshold at Du Quoin, IL (NWCC)

— 1971-2000 monthly average precipitation at Du Quoin, IL (NWCC)

— 1971-2000 monthly 30% below average threshold at Du Quoin, IL (NWCC)

Graph last updated September 29, 2010

**HARRISBURG, SITE 2**  
**WETLAND MITIGATION SITE**

**ISGS #78**

IL 14

FAP 857

Sequence #547

Saline County, near Harrisburg, Illinois

**Primary Project Manager: Geoffrey E. Pociask**

**Secondary Project Manager: Melinda C. Campbell**

**SITE HISTORY**

- October 2007: Construction at the wetland mitigation site began.
- March 2008: ISGS was tasked by IDOT to monitor the site for performance standards as outlined in the wetland mitigation plan, and post-construction water-level monitoring was initiated.
- May 2008: Construction at the wetland mitigation site was completed.
- March through August 2010: Bridge construction on Illinois Route 13 impounded water on the east portion of the site during the growing season and may have temporarily increased water levels and duration of flooding.

**WETLAND HYDROLOGY CALCULATION FOR 2010**

We estimate that 8.0 ha (19.7 ac) out of a total site area of approximately 14.2 ha (35.0 ac) satisfied wetland hydrology criteria (Environmental Laboratory 1987) for greater than 5% of the growing season in 2010, whereas 2.7 ha (6.7 ac) satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Using the 2010 Midwest Region supplement (U.S. Army Corps of Engineers 2010) to the 1987 Manual, we estimate that 10.1 ha (25.0 ac) satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

- According to the MRCC, 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. According to the 2010 Midwest Region supplement, we estimate that March 7 was the starting date of the 2010 growing season based on soil temperatures and vegetation growth and development observed at the wetland mitigation site.
- Total precipitation at the Du Quoin, Illinois weather station for the period from September 2009 through August 2010 was 118% of normal, and Spring 2010 (March through May) precipitation was 101% of normal.
- In 2010, wells 1S, 1VS, 2S, 2VS, 3S, 3VS, 4S, 5VS, 6S, 6VS, 7S, 8S, 9S, 10S, 11S, 12S, 13S, 14S, 15S, 16S, 22VS, 23VS, and 26VS satisfied wetland hydrology criteria for greater than 5% of the growing season and wells 2S, 3S, 4S, 6VS, 9S, 10S, 12S, 15S, 22VS and 26VS satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Furthermore, all wells satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season according to the 2010 Midwest Region supplement.



- Data from the Gauge A data logger showed that water-level elevation was at or above 113.87 m (373.58 ft) for greater than 5% and greater than 12.5% of the growing season according to the 1987 Manual, and for 14 or more consecutive days during the growing season according to the 2010 Midwest Region supplement. Gauge B showed water levels at or above 112.53 m (369.19 ft) for greater than 5% and greater than 12.5% of the growing season according to the 1987 Manual, and for 14 or more consecutive days during the growing season according to the 2010 Midwest Region supplement. Gauge E showed water levels at or above 114.75 m (376.47 ft) for greater than 5% and greater than 12.5% of the growing season according to the 1987 Manual, and for 14 or more consecutive days during the growing season according to the 2010 Midwest Region supplement. Gauge G showed water levels at or above 111.83 m (366.90 ft) for greater than 5% and greater than 12.5% of the growing season according to the 1987 Manual, and for 14 or more consecutive days during the growing season according to the 2010 Midwest Region supplement. Gauge H showed water levels at or above 113.07 m (370.96 ft) for greater than 5% and greater than 12.5% of the growing season according to the 1987 Manual, and for 14 or more consecutive days during the growing season according to the 2010 Midwest Region supplement.

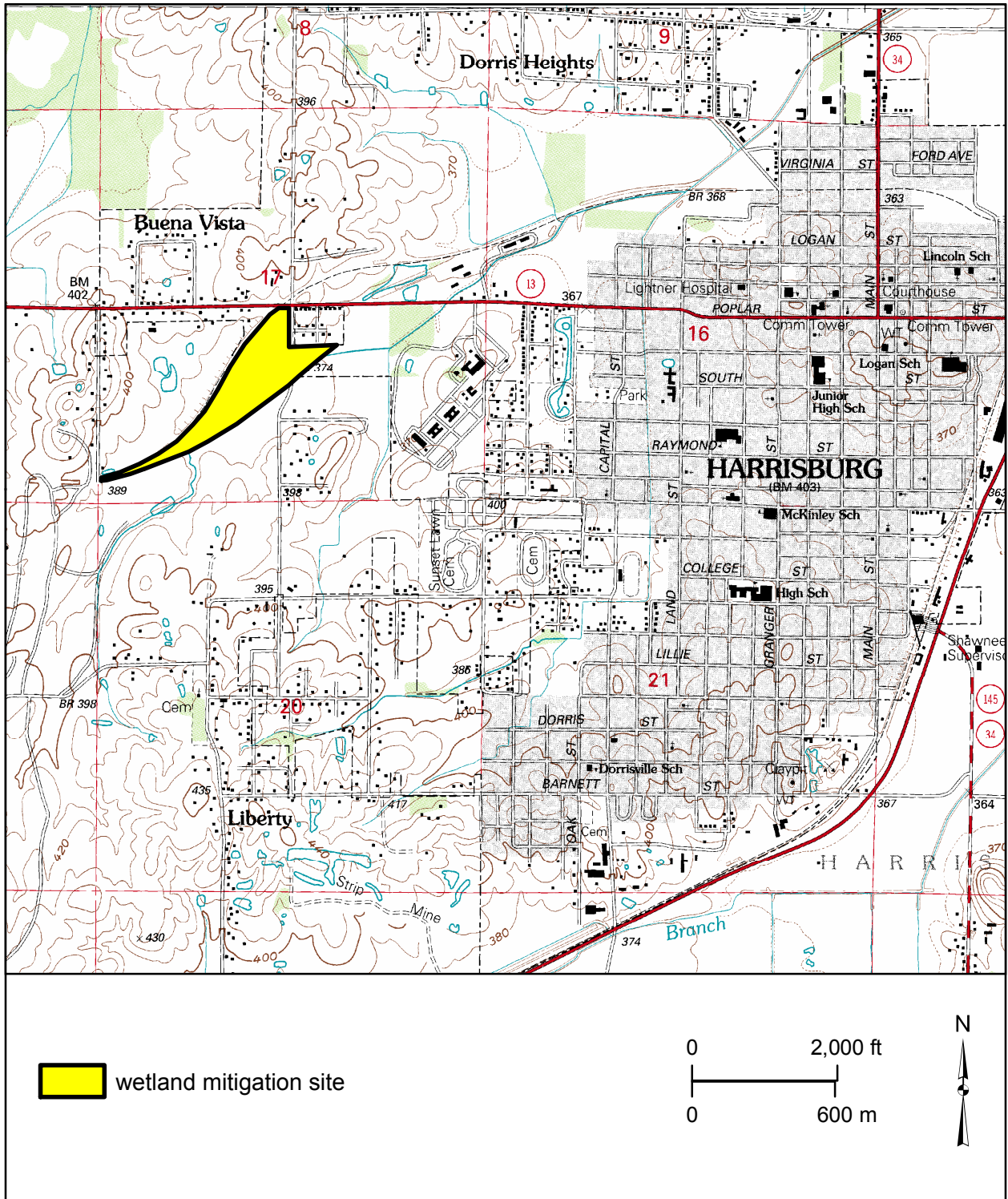
#### PLANNED FUTURE ACTIVITIES

- Water-level monitoring is expected to continue through 2013 or until no longer required by IDOT.

# Harrisburg, Site 2 Wetland Mitigation Site (FAP 857)

## General Study Area and Vicinity

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

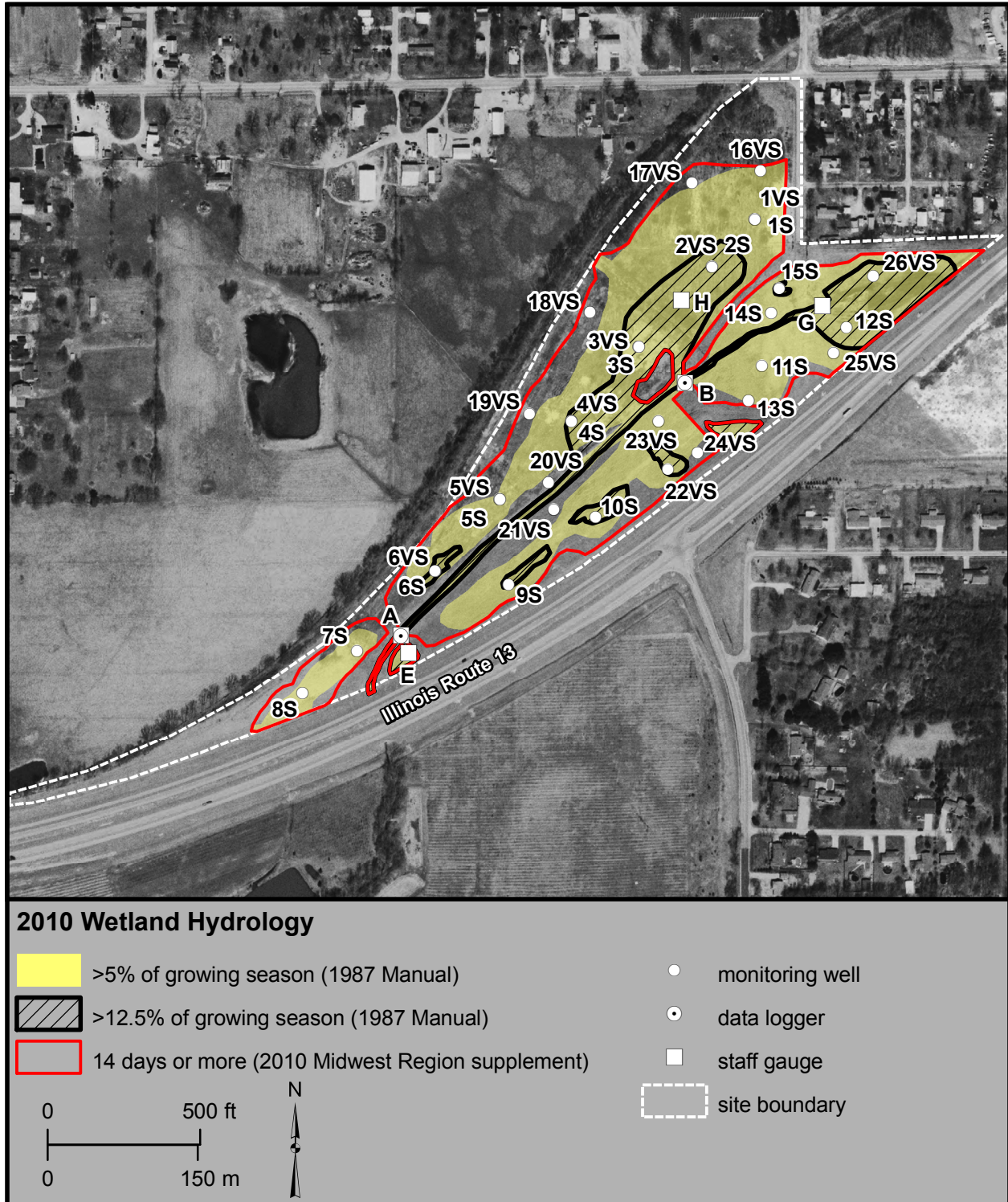


# Harrisburg, Site 2 Wetland Mitigation Site (FAP 857)

## Estimated Areal Extent of 2010 Wetland Hydrology

September 1, 2009 though August 31, 2010

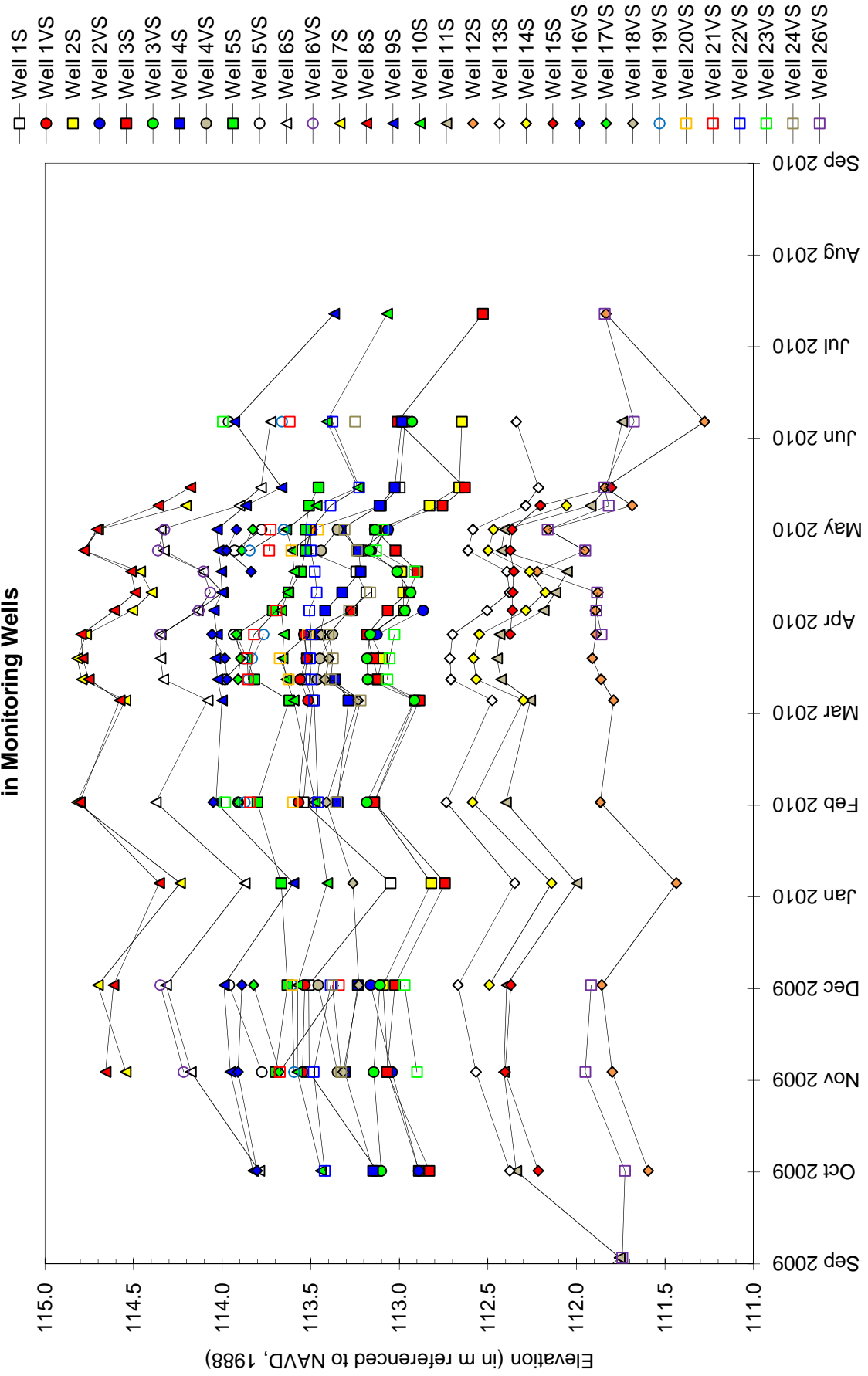
map based on USGS digital orthophotograph Harrisburg NW quarter quadrangle  
from 3/17/2005 aerial photography and ISGS topography (ISGS 2006)



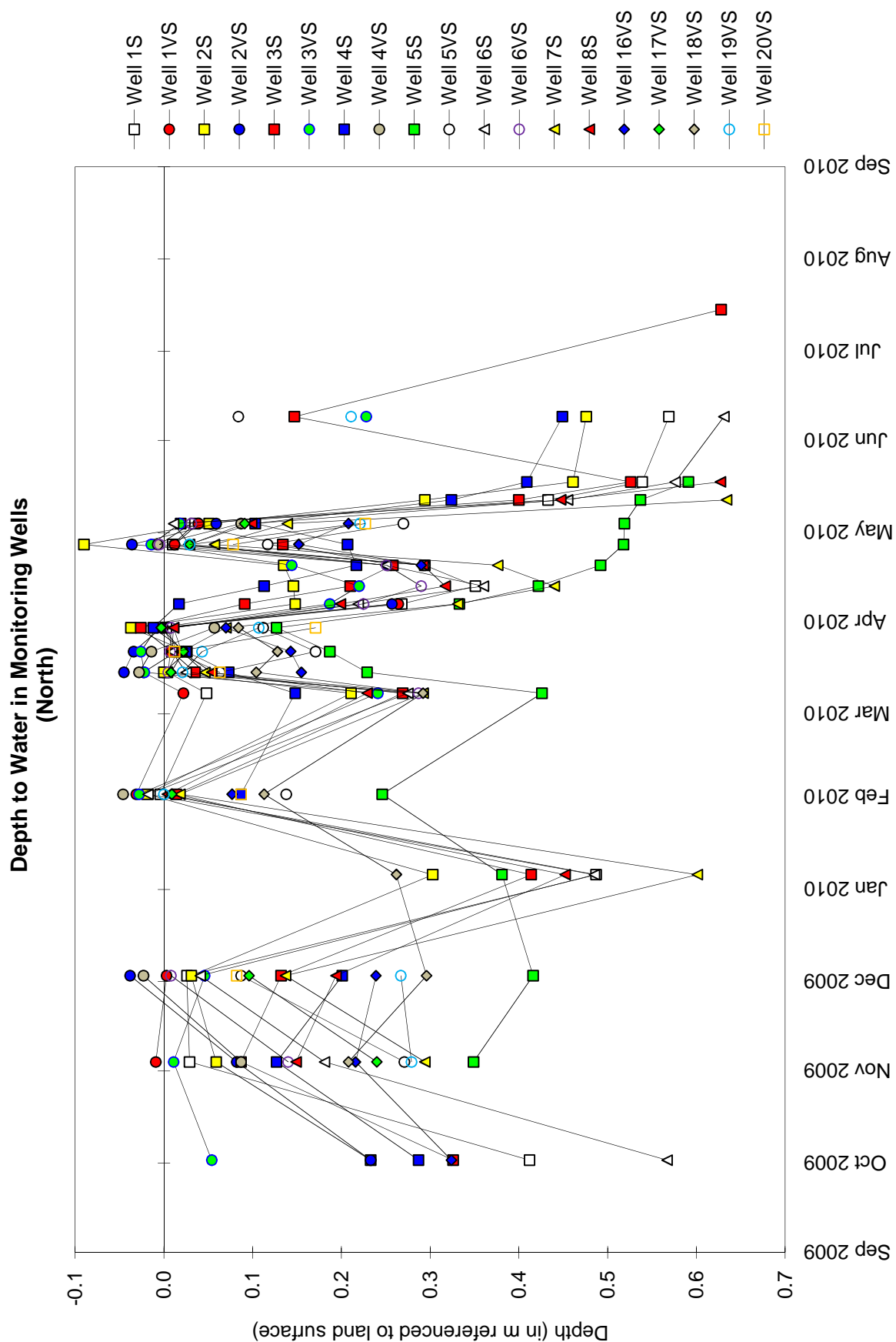


# Harrisburg, Site 2 Wetland Mitigation Site September 1, 2009 through August 31, 2010

## Water-Level Elevations in Monitoring Wells

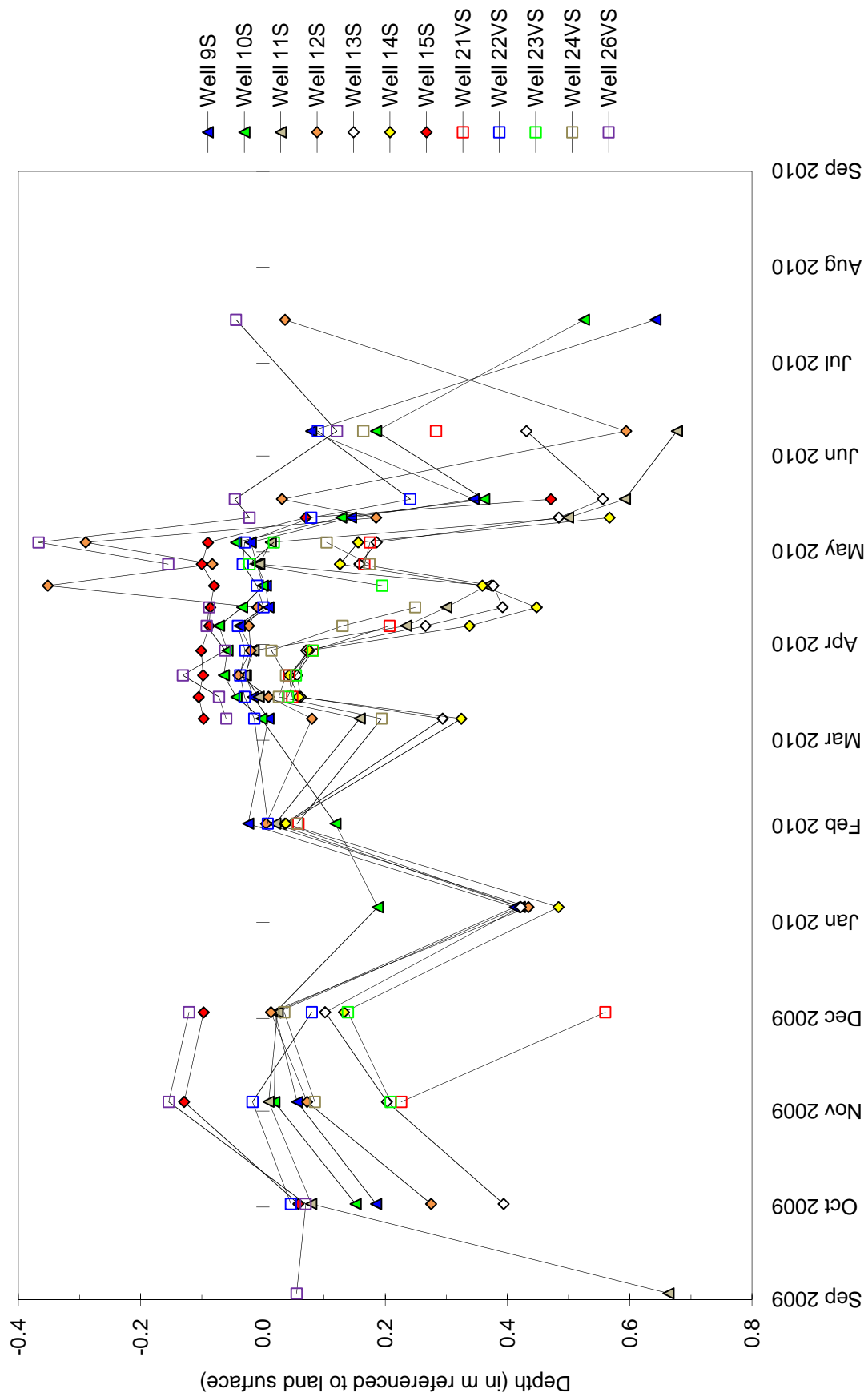


# Harrisburg, Site 2 Wetland Mitigation Site September 1, 2009 through August 31, 2010

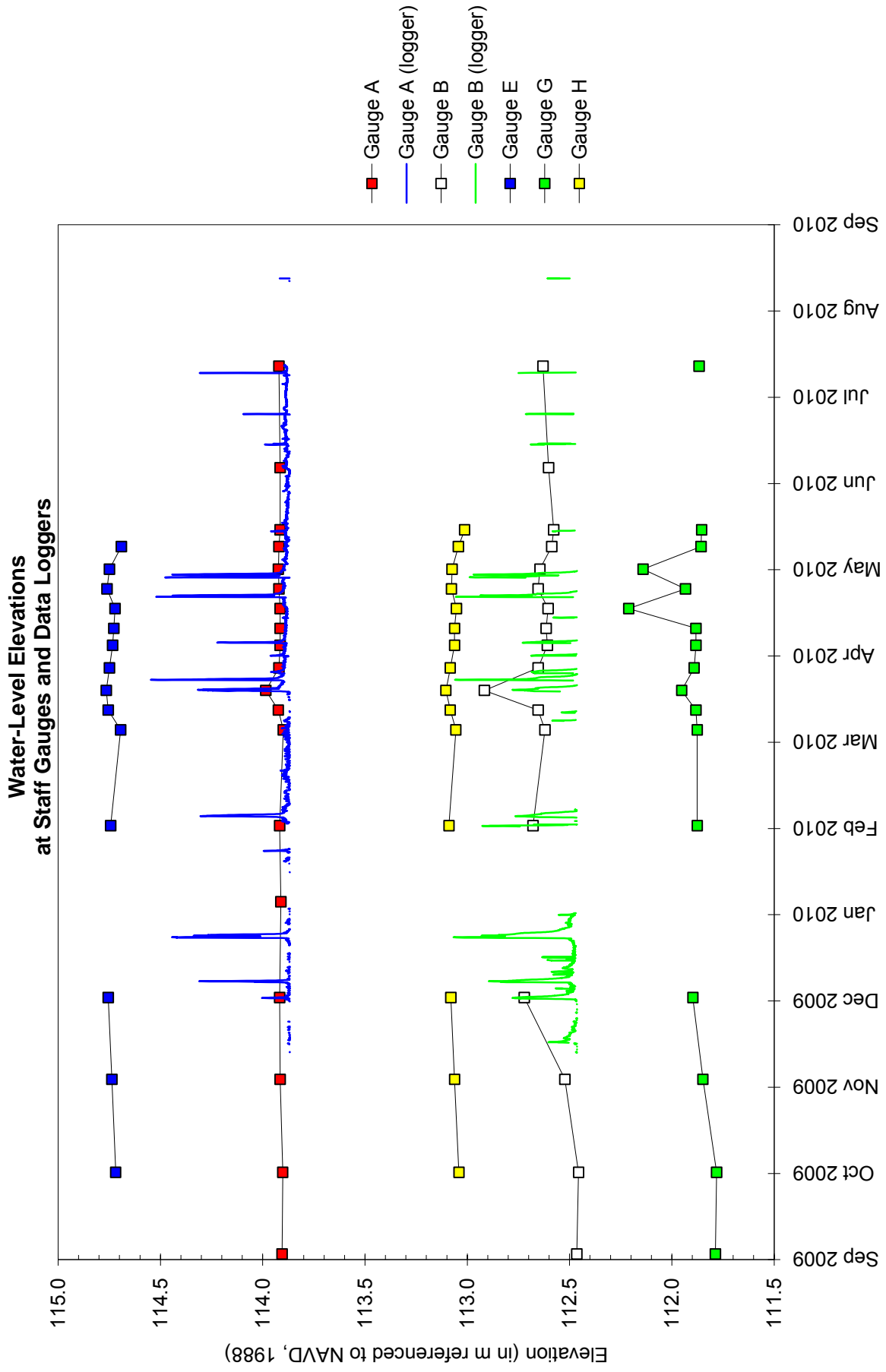


# Harrisburg, Site 2 Wetland Mitigation Site September 1, 2009 through August 31, 2010

Depth to Water in Monitoring Wells  
(South)



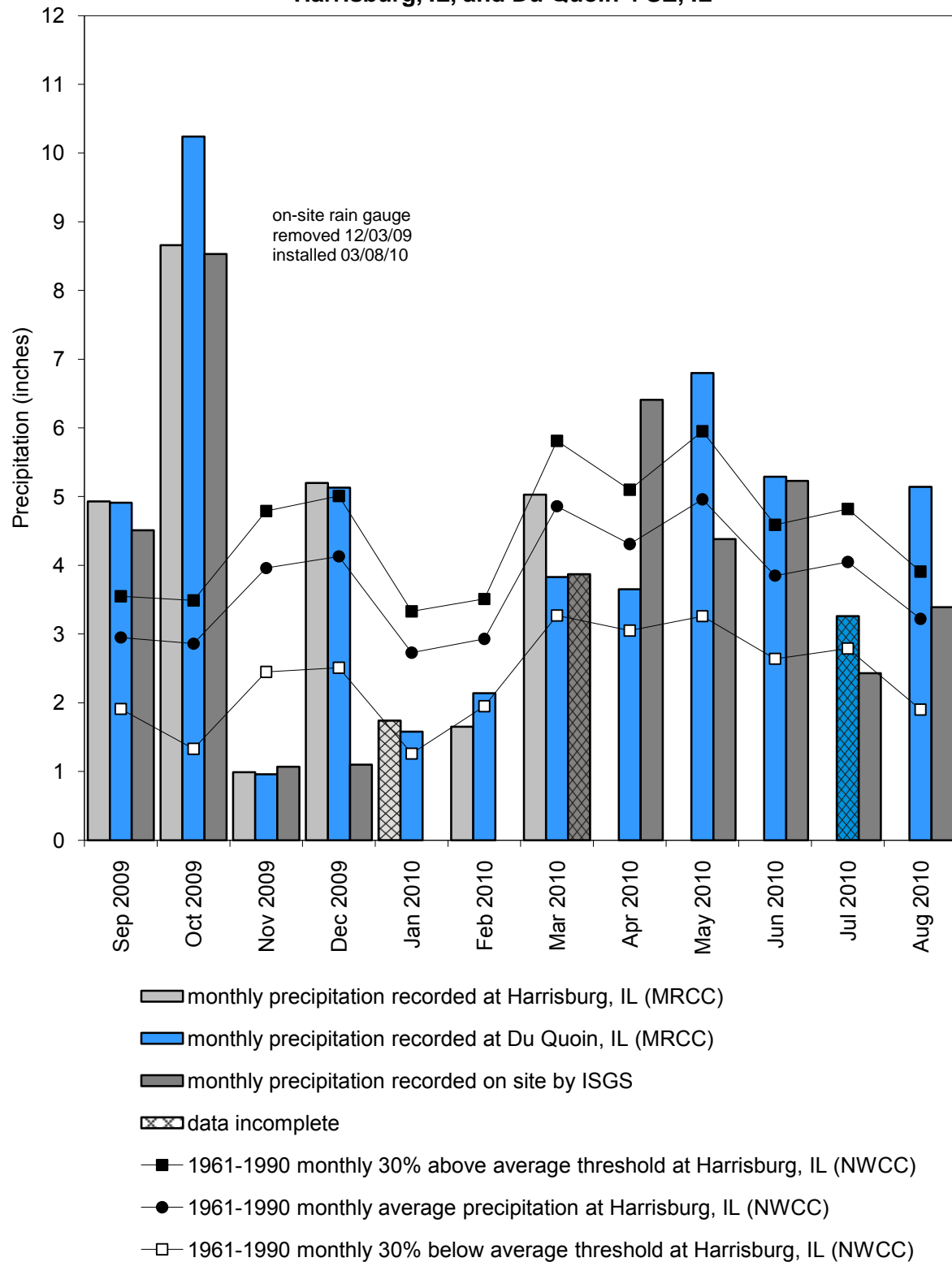
# Harrisburg, Site 2 Wetland Mitigation Site September 1, 2009 through August 31, 2010





## Harrisburg Site 2 Wetland Mitigation Site September 2009 through August 2010

### Total Precipitation Recorded on Site and at Harrisburg, IL, and Du Quoin 4 SE, IL



Graph last updated September 27, 2010

**FREEPORT BYPASS WEST  
FORMER WEBER PROPERTY  
WETLAND MITIGATION SITE**

**ISGS #79**

US 20

FAP 301

Sequence #10487

Stephenson County, near Freeport, Illinois

**Primary Project Manager: Eric T. Plankell**

**Secondary Project Manager:** not assigned

**SITE HISTORY**

- November 2008: ISGS installed a pre-construction monitoring network.
- April 2009: ISGS was tasked by IDOT to provide a plan for obtaining borrow and creating wetlands at the site.
- September 2009: ISGS provided IDOT with plans for the borrow and wetland.
- September 2010: IDOT District 2 requested revised plans for wetland creation only. Plans were provided by ISGS and approved by IDOT, and wetland construction was started.

**WETLAND HYDROLOGY CALCULATION FOR 2010**

The area that satisfied wetland hydrology criteria (Environmental Laboratory 1987) for greater than 5% of the 2010 growing season is estimated to be 5.4 ha (13.4 ac) out of a total site area of 5.8 ha (14.3 ac). The area that satisfied wetland hydrology criteria for greater than 12.5% of the 2010 growing season is estimated to be 3.2 ha (8.0 ac). Using the 2010 Midwest Region supplement (U.S. Army Corps of Engineers 2010) to the 1987 Manual, it is estimated that 4.1 ha (10.1 ac) satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

- According to the MRCC, 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. According to methods outlined in the 2010 Midwest Region supplement, it is estimated that March 16 was the starting date of the 2010 growing season based on soil temperatures observed at the adjacent Freeport Bypass West Wetland Mitigation Site 6W.
- Regional precipitation for the monitoring period, as recorded at the Freeport Wastewater Plant in Illinois, was 141% of normal, and was 103% of normal for the period March through May 2010. More than 13 inches of precipitation were recorded at the weather station in July 2010, and resulted in the largest flooding event to occur along the Pecatonica River during the 2010 growing season. This flood peaked on July 24, and along with additional precipitation through early August, resulted in the largest observed areas that satisfied wetland hydrology criteria for the 2009-2010 monitoring period.
- In 2010, water levels measured in all monitoring wells satisfied wetland hydrology criteria for greater than 5% of the growing season. Water levels measured in wells 2S, 5S, and 6S satisfied wetland hydrology criteria for greater than 12.5% of the growing season. According to the 2010 Midwest Region supplement, wells 2S, 3S, 5S, and 6S

also satisfied wetland hydrology criteria for 14 or more consecutive days of the growing season. (Note: Well 6S is located outside the site boundary, and is not considered in the areas satisfying wetland hydrology discussed above).

- Water-level records for Gauge D indicated water levels on the Pecatonica River were sustained at elevations of 231.52 m (759.58 ft) and 230.39 m (755.87 ft), respectively, for greater than 5% of the growing season and for greater than 12.5% of the growing season. Per the 2010 Midwest Region supplement, water levels of 230.91m (757.58 ft) were sustained on the Pecatonica River for 14 or more consecutive days of the growing season.

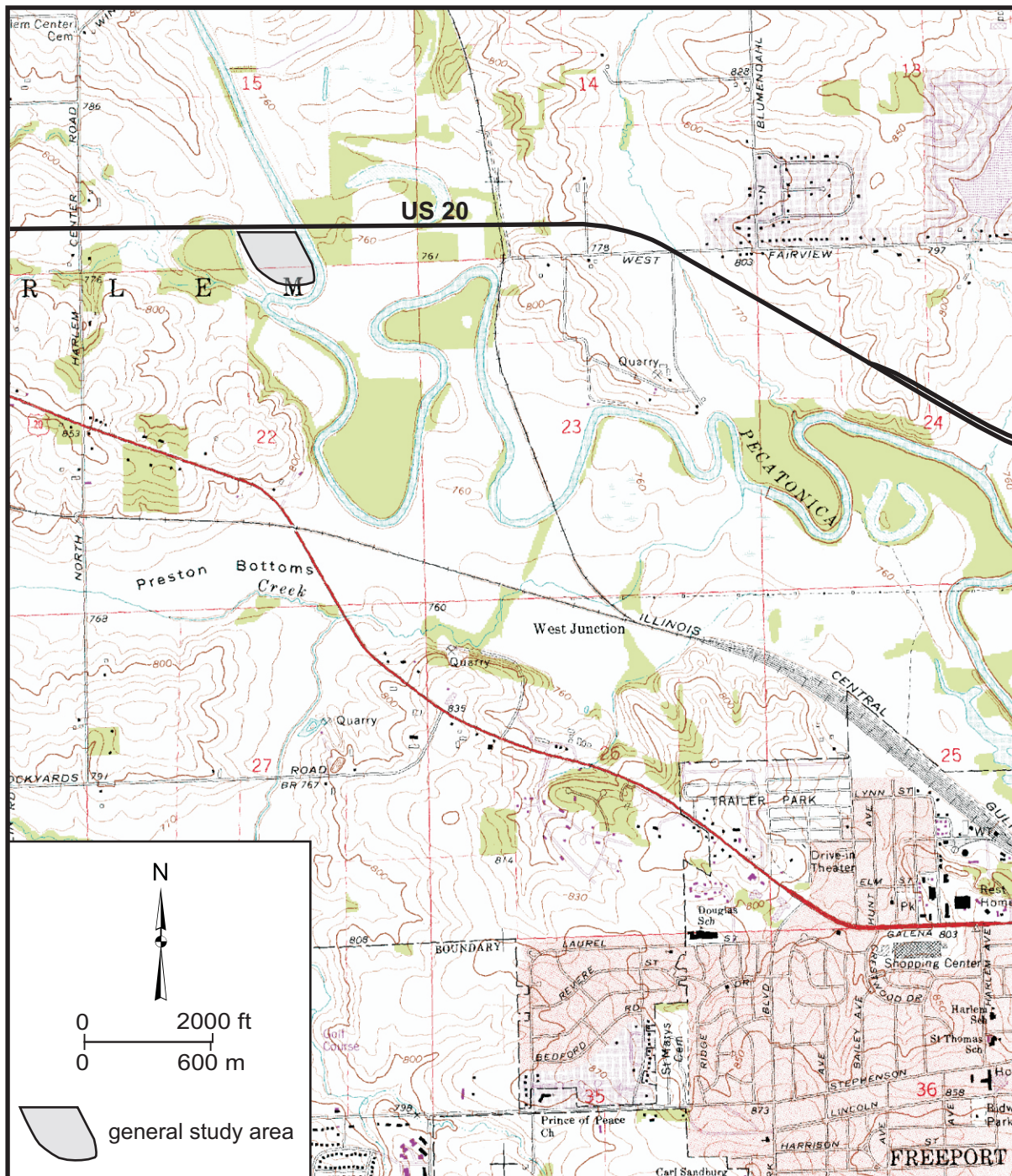
#### PLANNED FUTURE ACTIVITIES

- ISGS will install a new monitoring network and generate an “as-built” topographic map of the site following completion of construction activities.
- Monitoring will continue until no longer required by IDOT.

**Freeport Bypass West  
Former Weber Property Wetland Mitigation Site  
(FAP 301 [US 20])**

**General Study Area and Vicinity**

from the USGS Topographic Series, Freeport West, IL, 7.5-minute Quadrangle  
(USGS 1971, photorevised 1978). Contour interval is 10 feet.

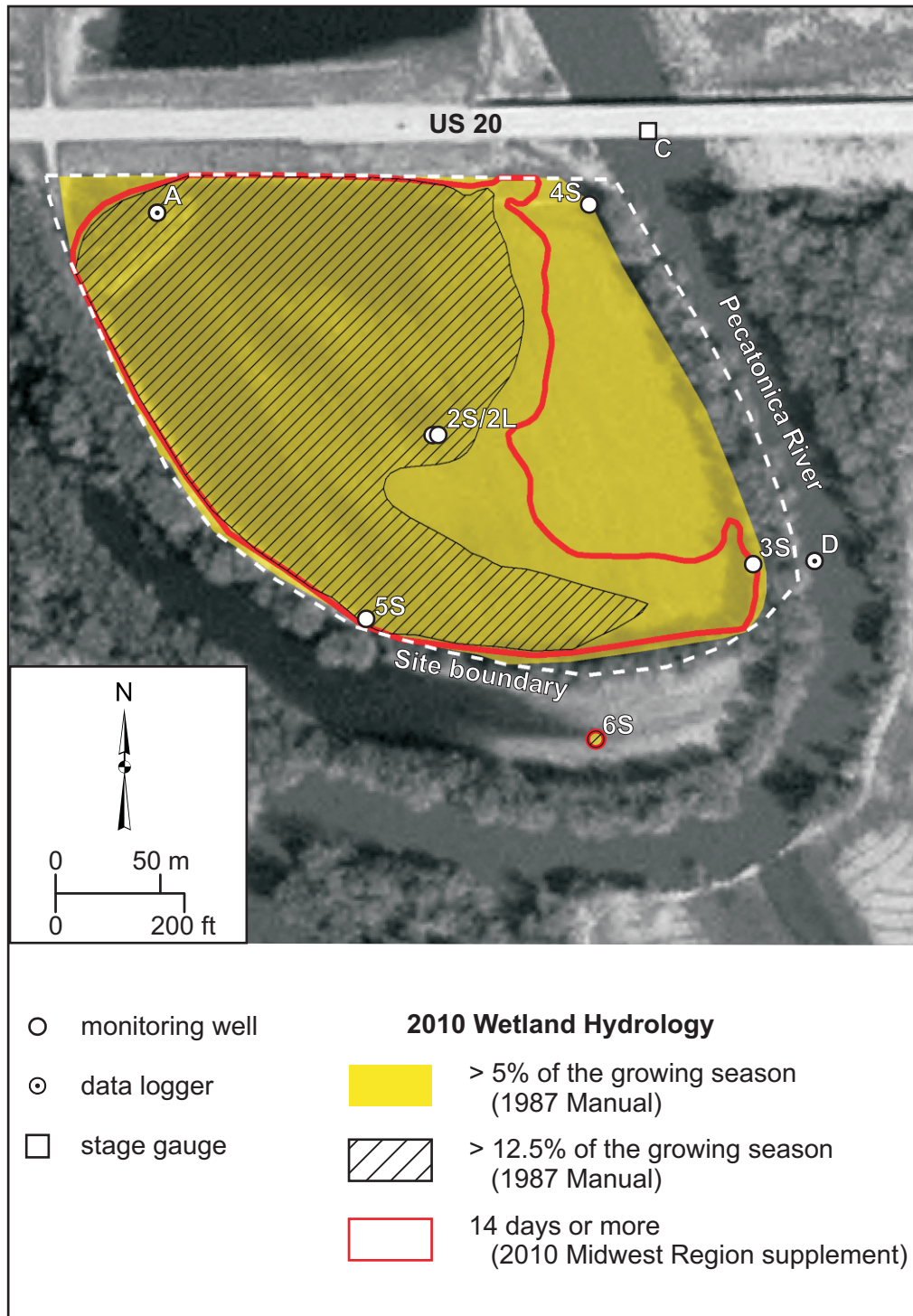




# Freeport Bypass West Former Weber Property Wetland Mitigation Site (FAP 301 [US 20])

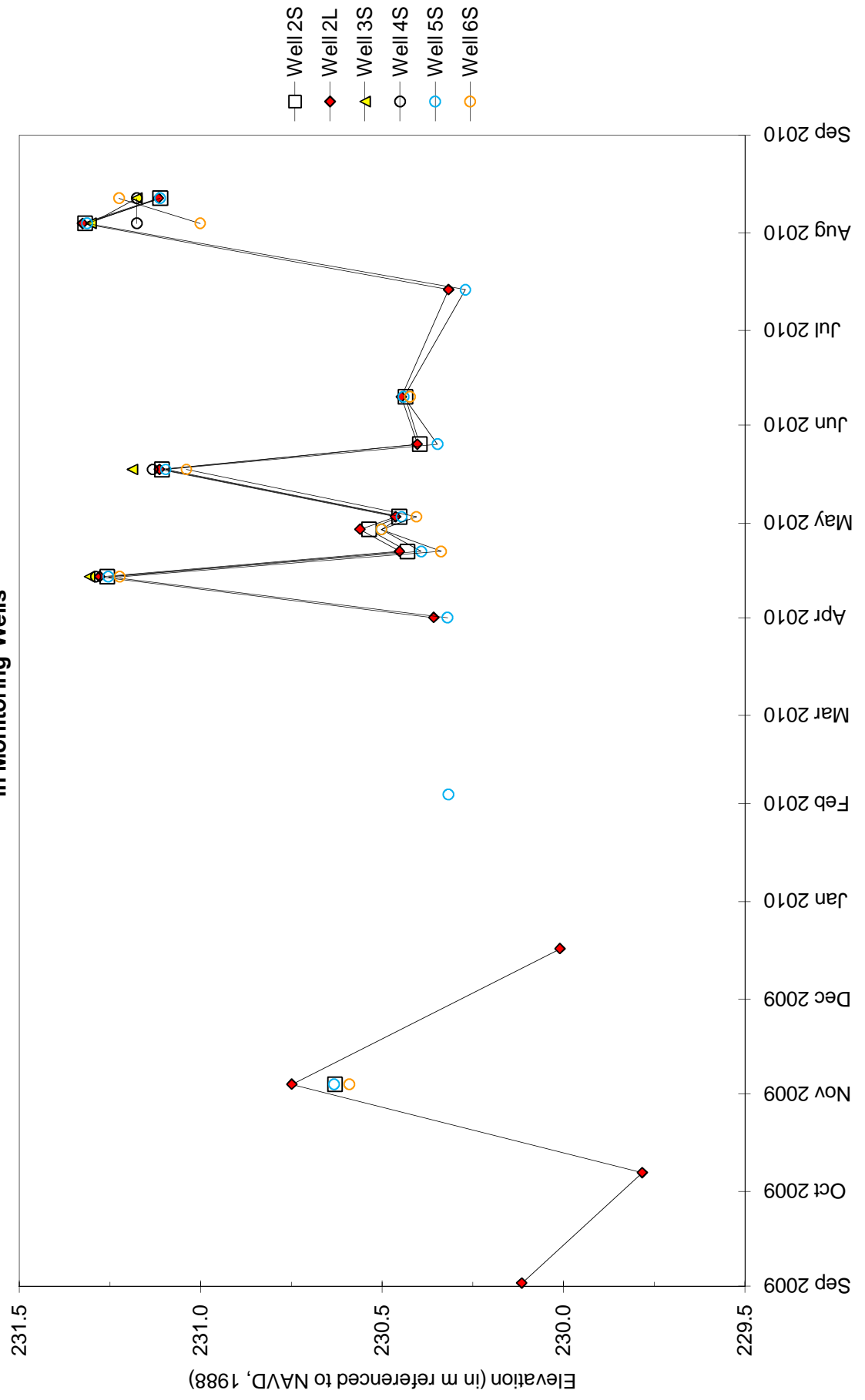
Estimated Areal Extent of 2010 Wetland Hydrology  
September 1, 2009 through August 31, 2010

Map based on USGS digital orthophotograph, Freeport West, NE quarter-quadrangle (ISGS 1998)

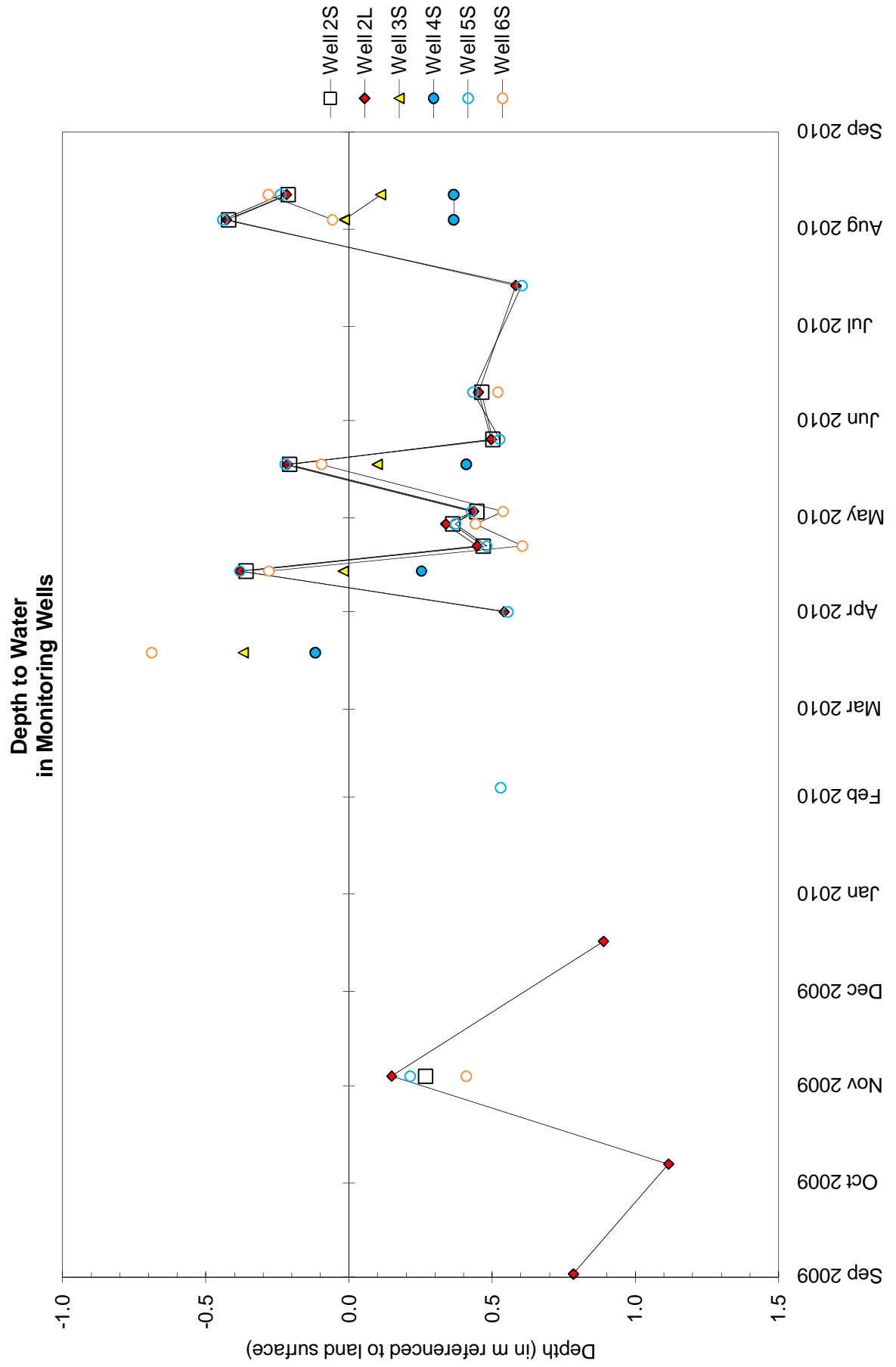


# Freeport Bypass West, Former Weber Property Wetland Mitigation Site September 1, 2009 through August 31, 2010

Water-Level Elevations  
in Monitoring Wells



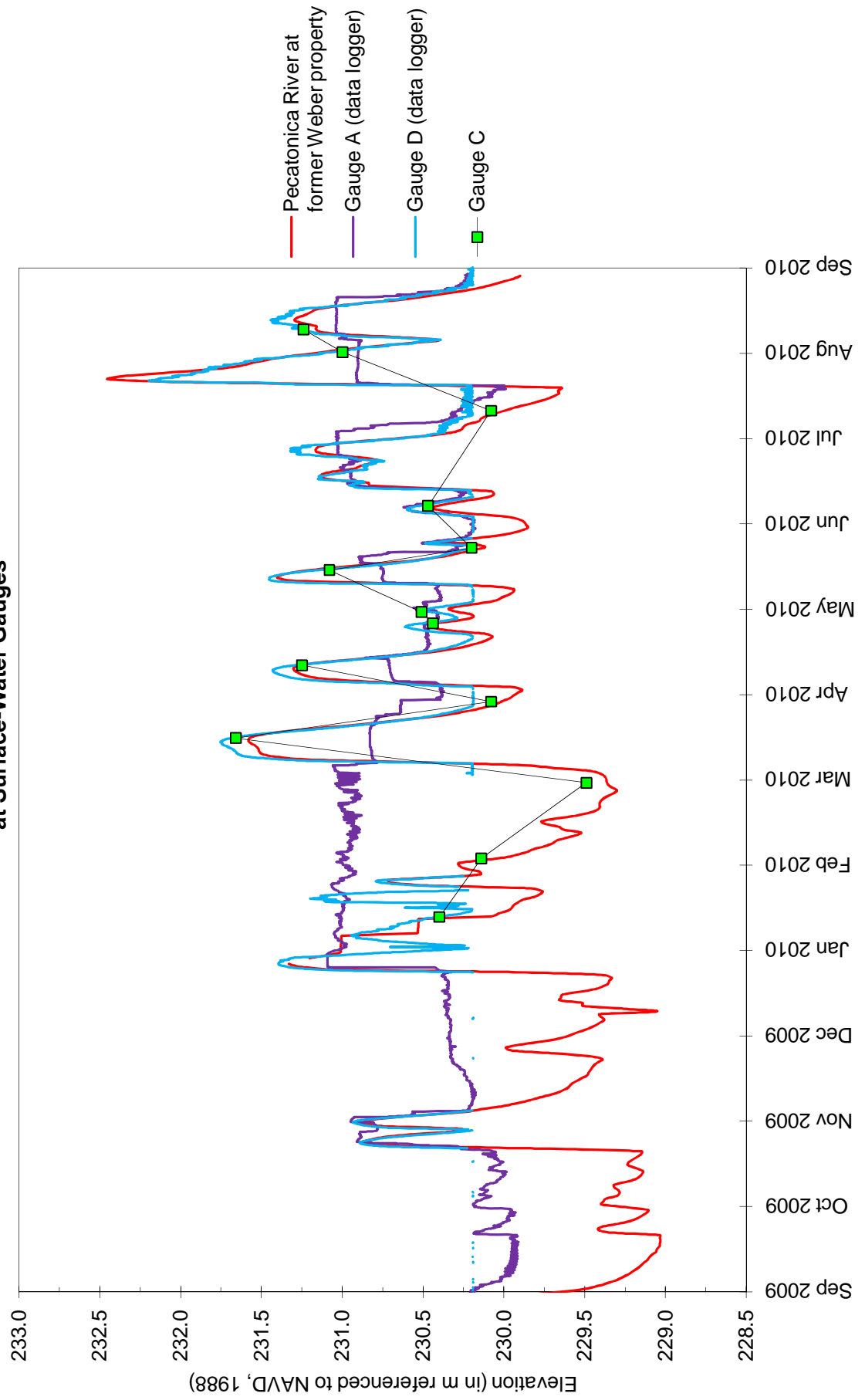
# Freeport Bypass West, Former Weber Property Wetland Mitigation Site September 1, 2009 through August 31, 2010



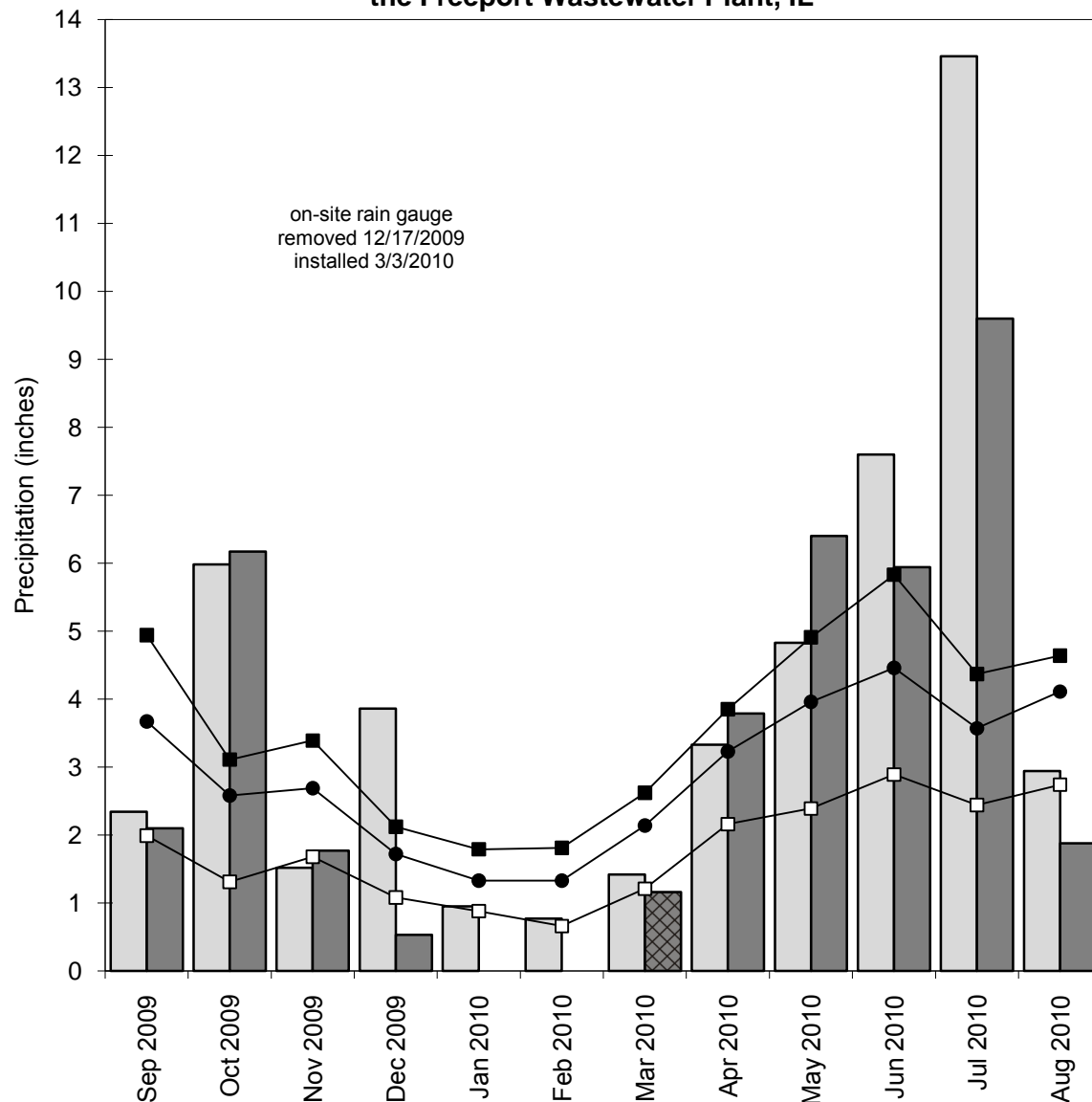


# **Freeport Bypass West, Former Weber Property Wetland Mitigation Site** **September 1, 2009 through August 31, 2010**

**Water-Level Elevations  
at Surface-Water Gauges**



**Freeport Bypass West**  
**Former Weber Property Wetland Mitigation Site**  
**September 2009 through August 2010**  
**Total Monthly Precipitation Recorded at Site 6W and at**  
**the Freeport Wastewater Plant, IL**



- monthly precipitation recorded at Freeport, IL (MRCC)
- monthly precipitation recorded at Site 6W by ISGS
- data incomplete
- 1971-2000 monthly 30% above average threshold at Freeport, IL (NWCC)
- 1971-2000 monthly average precipitation at Freeport, IL (NWCC)
- 1971-2000 monthly 30% below average threshold at Freeport, IL (NWCC)

Graph last updated September 29, 2010

**MAX CREEK  
WETLAND MITIGATION SITE**

**ISGS #80**

IL 147

FAS 932

Sequence #8717A

Johnson County, near Simpson, Illinois

**Primary Project Manager: Geoffrey E. Pociask**

**Secondary Project Manager: Melinda C. Campbell**

**SITE HISTORY**

- July 2008: An Initial Site Evaluation was submitted to IDOT.
- December 2008: Water-level monitoring was initiated.
- August 2009: Construction at the wetland mitigation site began.

**WETLAND HYDROLOGY CALCULATION FOR 2010**

We estimate that 0.8 ha (1.9 ac) out of a total site area of approximately 1.2 ha (3.0 ac) satisfied wetland hydrology criteria (Environmental Laboratory 1987) for greater than 5% of the growing season in 2010, whereas 0.4 ha (0.9 ac) satisfied wetland hydrology for greater than 12.5% of the growing season. Using the 2010 Midwest Region supplement (U.S. Army Corps of Engineers 2010) to the 1987 Manual, we estimate that 1.0 ha (2.5 ac) satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

- According to the MRCC, 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. Using the 2010 Midwest Region supplement, we estimate that March 7 was the starting date of the 2010 growing season based on vegetation growth and development observed at the wetland mitigation site.
- Total precipitation at the Cape Girardeau, Missouri, weather station for the period from September 2009 through August 2010 was 97% of normal, and Spring 2010 (March through May) precipitation was 110% of normal.
- In 2010, wells 9S, 10S, 11S, and 12S satisfied wetland hydrology criteria for greater than 5% of the growing season, and well 9S satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Furthermore, according to the 2010 Midwest Region supplement, all wells satisfied wetland hydrology for 14 or more consecutive days during the growing season.
- Data from the Gauge E data logger indicated that Max Creek flooded the site three times during the 2010 growing season. However, the duration of inundation from each of these floods was less than 5% of the growing season according to the 1987 Manual.
- The Gauge E data logger also showed that ponded surface water was at or above 115.65 m (379.43 ft) for greater than 5% and greater than 12.5% of the growing season according to the 1987 Manual, and for 14 or more consecutive days during the growing season according to the 2010 Midwest Region supplement.

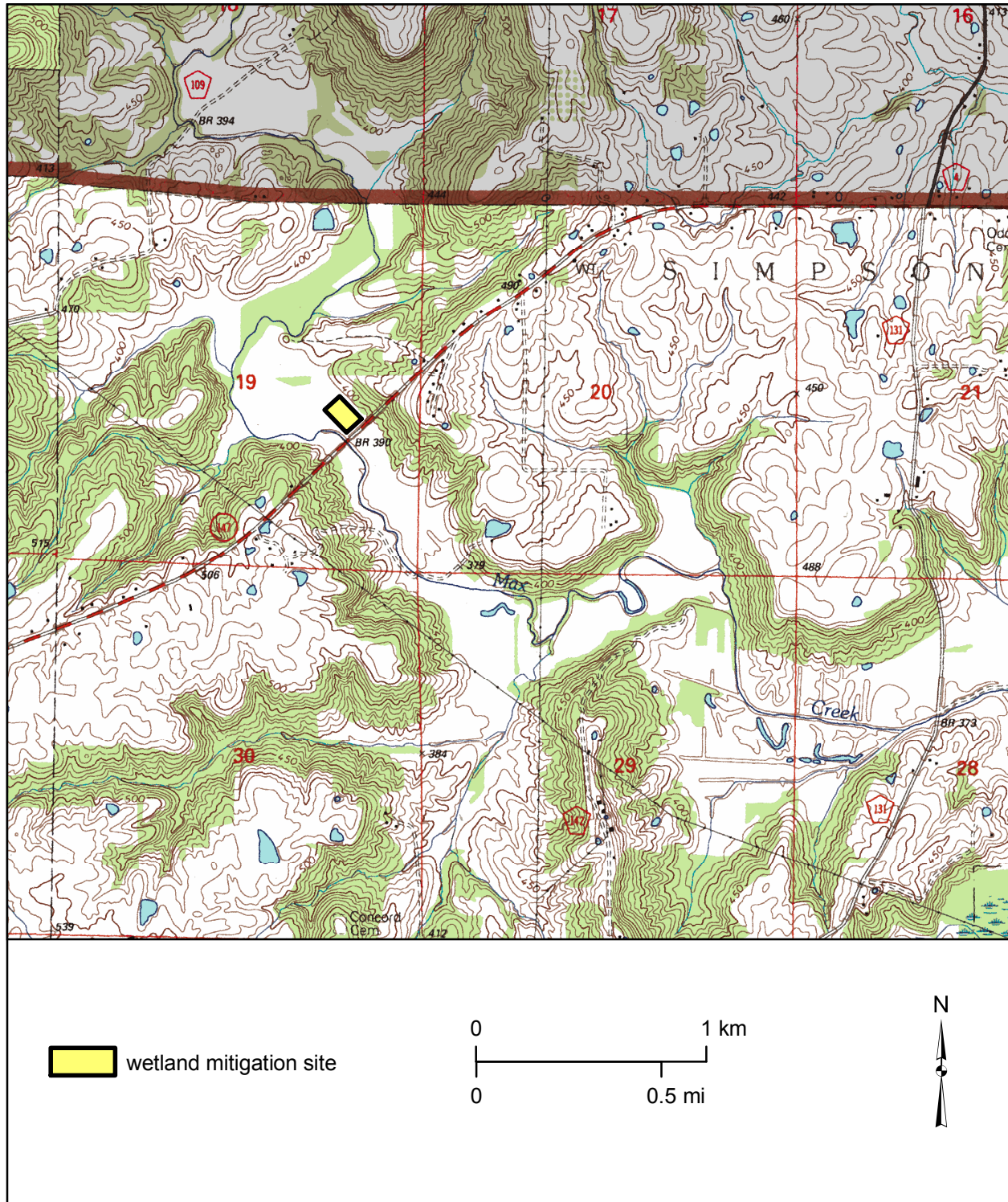
## PLANNED FUTURE ACTIVITIES

- Water-level monitoring is expected to continue through 2015 or until no longer required by IDOT.

# Max Creek Wetland Mitigation Site (FAP 932 [IL 147])

## General Study Area and Vicinity

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

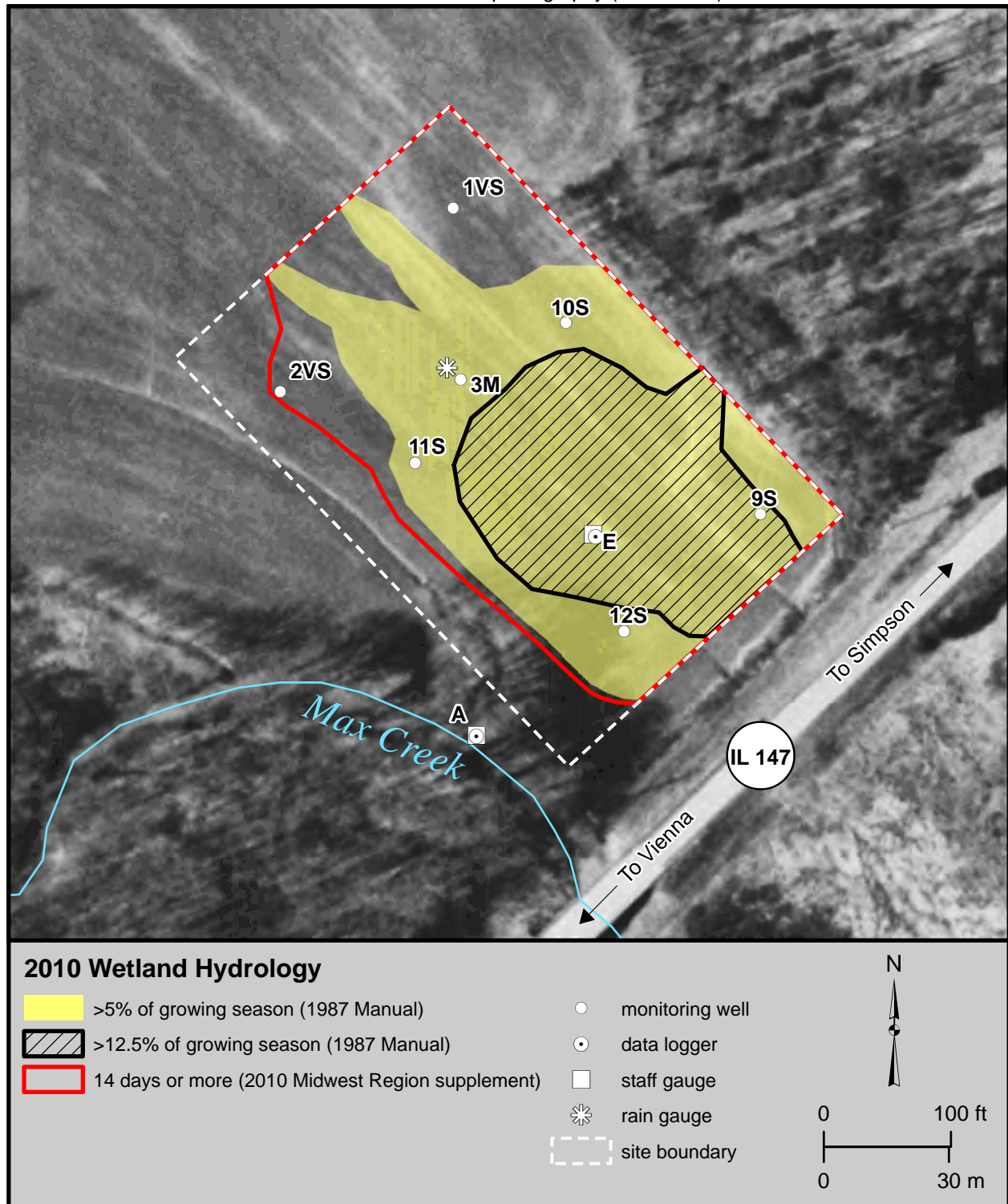




# Max Creek Wetland Mitigation Site (FAP 932 [IL 147])

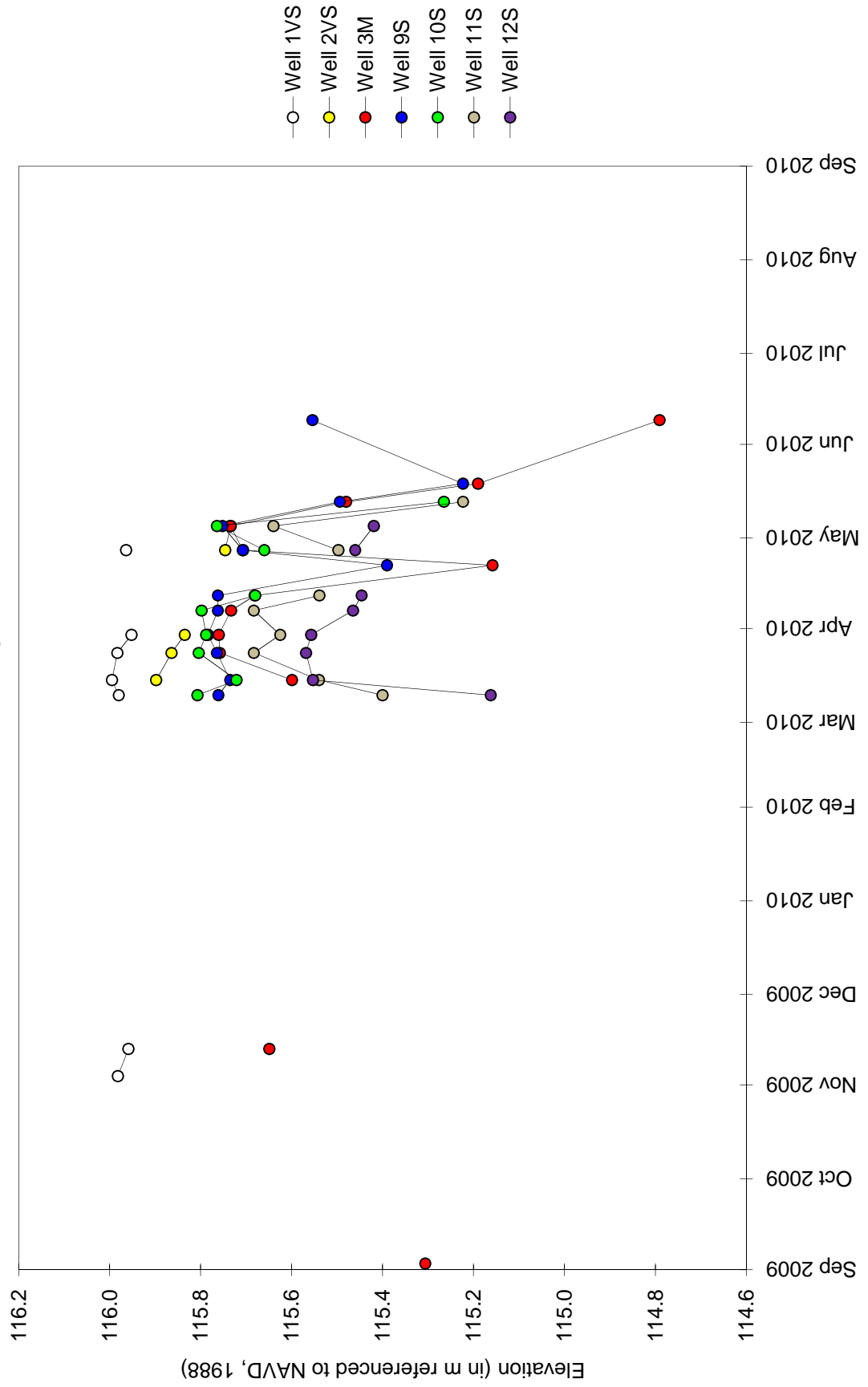
## Estimated Areal Extent of 2010 Wetland Hydrology September 1, 2009 through August 31, 2010

map based on USGS digital orthophotograph Bloomfield NE quarter quadrangle  
from 3/28/2005 aerial photography (ISGS 2006)



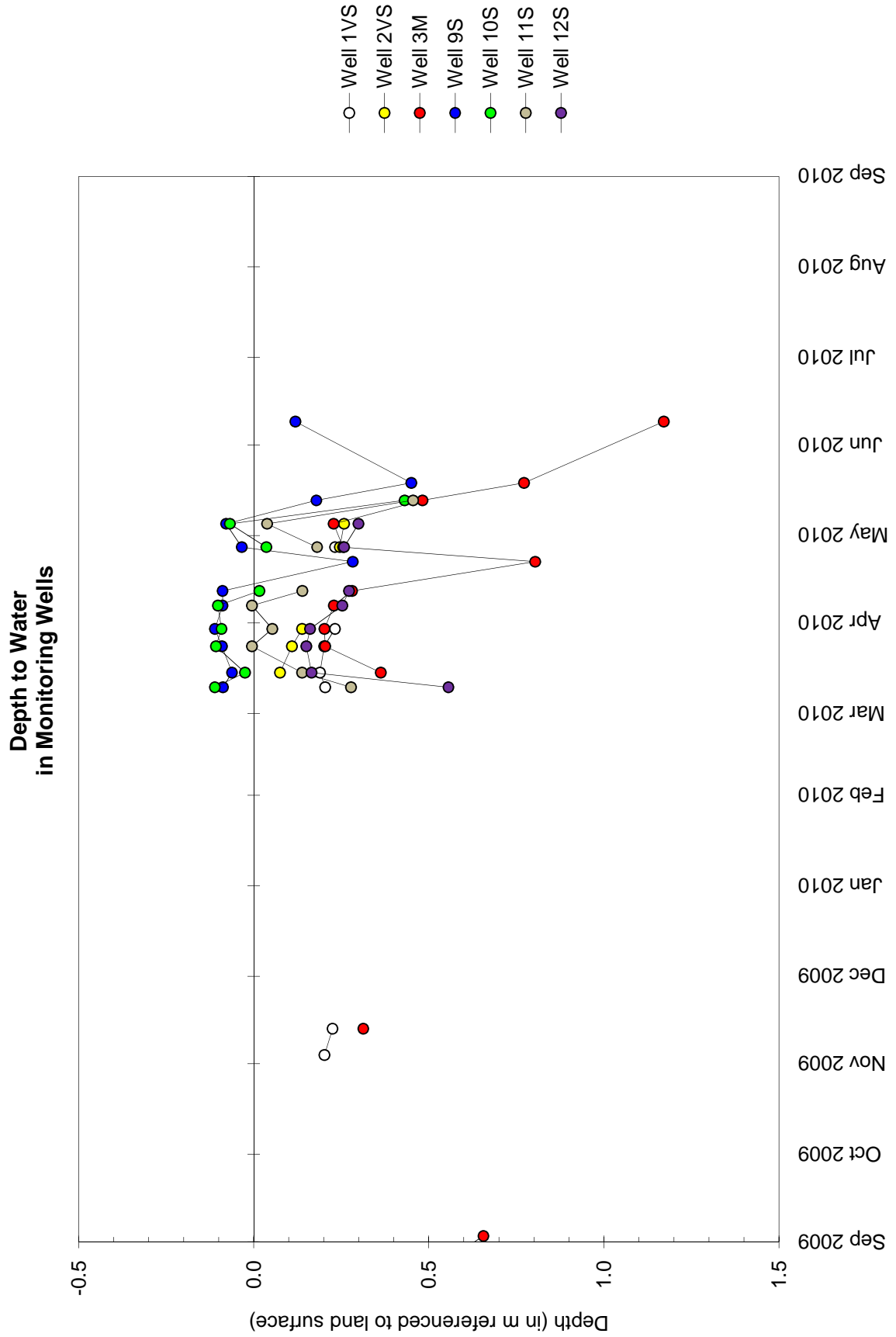
# **Max Creek Wetland Mitigation Site** **September 1, 2009 through August 31, 2010**

## **Water-Level Elevations in Monitoring Wells**



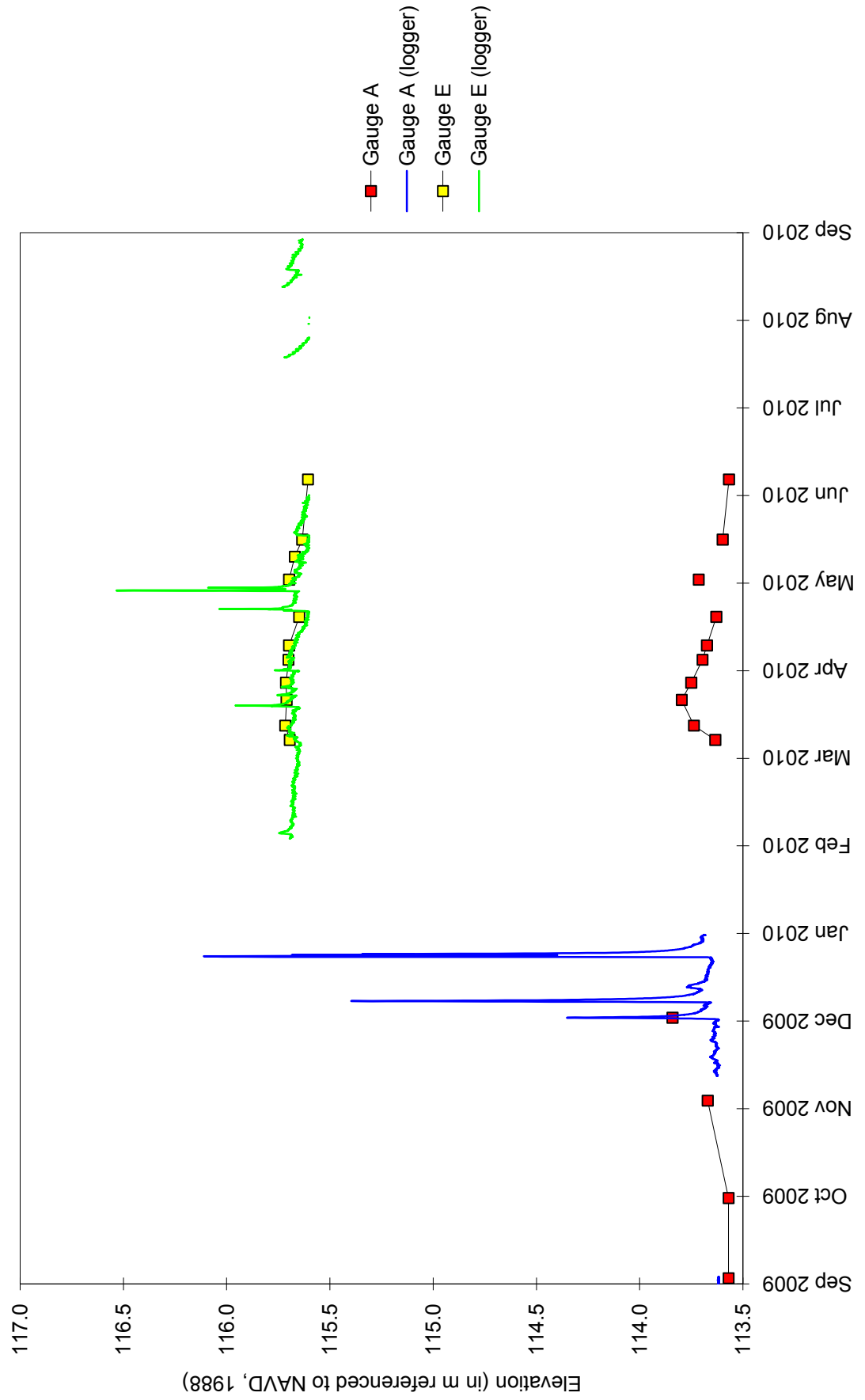


# **Max Creek Wetland Mitigation Site** **September 1, 2009 through August 31, 2010**



# Max Creek Wetland Mitigation Site September 1, 2009 through August 31, 2010

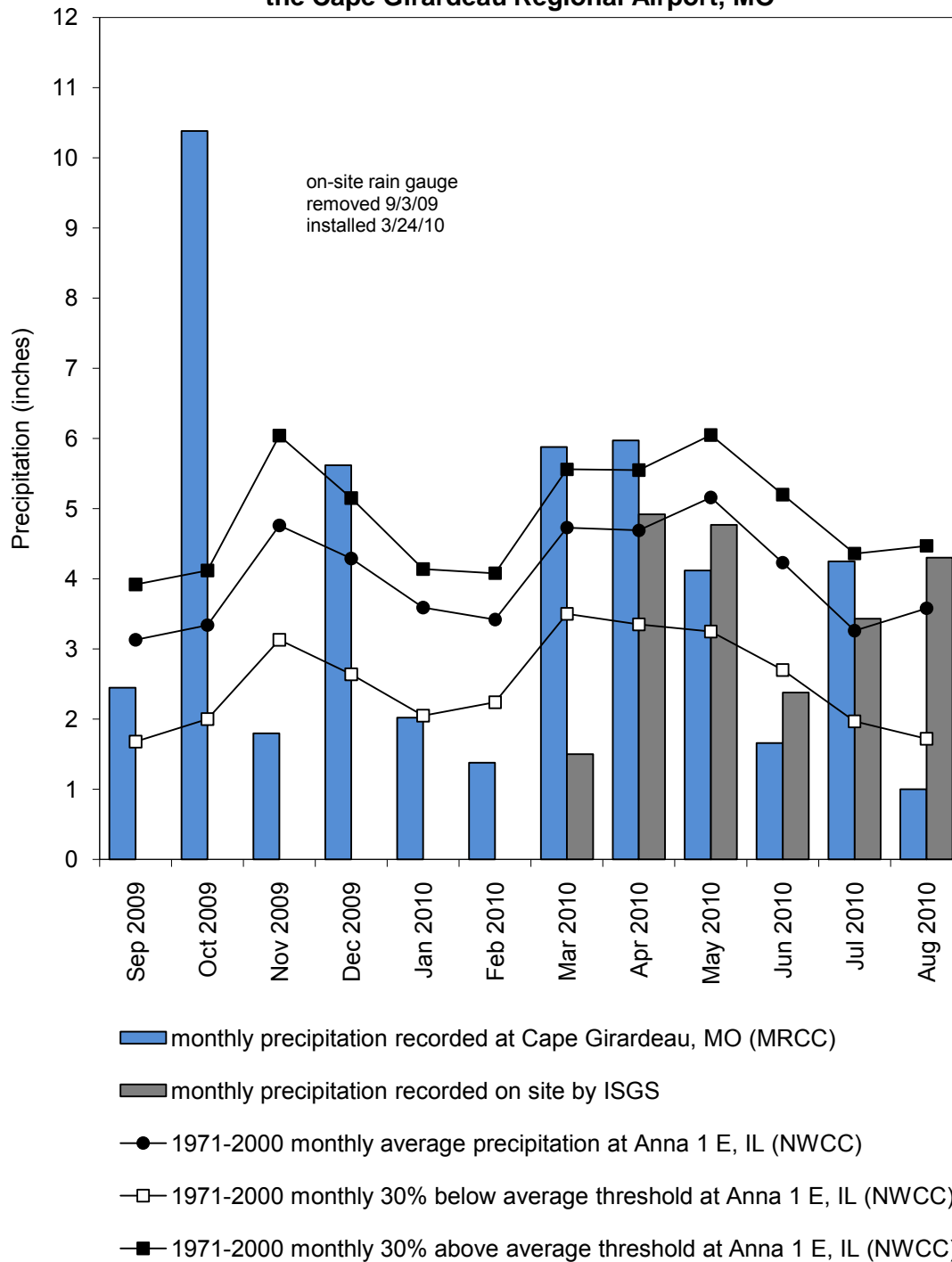
Water-Level Elevations  
at Staff Gauges and Data Loggers



# Max Creek Potential Wetland Mitigation Site

## September 2009 through August 2010

### Total Monthly Precipitation Recorded on Site and at the Cape Girardeau Regional Airport, MO



Graph last updated September 29, 2010

**EAST CAPE GIRARDEAU  
WETLAND MITIGATION SITE**

**ISGS #81**

IL 146

FAP 312

Sequence #633A

Alexander County, near East Cape Girardeau, Illinois

**Primary Project Manager: Eric T. Plankell**

**Secondary Project Manager:** not assigned

**SITE HISTORY**

- December 2008: ISGS was tasked by IDOT to conduct a Level II hydrogeologic analysis of the site.
- Fall 2009: Wetland construction was started, and is on-going.
- February 2010: ISGS installed a preliminary post-construction monitoring network.
- March 2010: ISGS submitted a Level II hydrogeologic characterization report to IDOT (ISGS Open-File Series 2010-3).

**WETLAND HYDROLOGY CALCULATION FOR 2010**

The area that satisfied wetland hydrology criteria (Environmental Laboratory 1987) for greater than 5% of the 2010 growing season is estimated to be 5.7 ha (14.2 ac) out of a total site area of approximately 5.8 ha (14.4 ac). The area that satisfied wetland hydrology criteria for greater than 12.5% of the 2010 growing season is also estimated to be 5.7 ha (14.2 ac). Using the 2010 Midwest Region supplement (U.S. Army Corps of Engineers 2010) to the 1987 Manual, it is estimated that 5.7 ha (14.2 ac) also satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

- According to the MRCC, the median date that the growing season begins in nearby Cape Girardeau, Missouri, is March 26, and the season lasts 228 days; 5% of the growing season is 11 days, and 12.5% of the growing season is 29 days. According to methods outlined in the 2010 Midwest Region supplement, it is estimated that March 5 was the starting date of the 2010 growing season based on soil temperatures measured at the site.
- Regional precipitation for the monitoring period, as recorded at the Cape Girardeau Regional Airport in Missouri, was 98% of normal, and was 110% of normal for the period March through May 2010.
- In 2010, water levels measured in all monitoring wells satisfied wetland hydrology criteria for greater than 5% of the growing season and for greater than 12.5% of the growing season. According to the 2010 Midwest Region supplement, all monitoring wells satisfied the wetland hydrology criteria for 14 or more consecutive days of the growing season.
- Surface-water levels measured by the data loggers at gauges A and B indicated inundation at or above 101.31 m and 101.10 m (332.38 ft and 331.69 ft), respectively, for greater than 5% of the growing season, and inundation at or above 101.30 m and

101.08 m (332.35 ft and 331.63 ft), respectively, for greater than 12.5% of the growing season. Per the 2010 Midwest Region supplement, surface-water levels measured by the data loggers at gauges A and B indicated inundation at or above 101.31 m and 101.09 m (332.38 ft and 331.67 ft), respectively, for 14 or more consecutive days of the growing season.

#### ADDITIONAL INFORMATION

- Beginning in March 2010, elevated water levels on the Mississippi River at Thebes, Illinois, resulted in water backing up in the East Cape Main Ditch (ECMD), thereby resulting in flooding at the site that was sustained through the end of the monitoring period.
- A soil pile, left over from construction activities, covers approximately 0.1 ha (0.2 ac) in the center of the northern end of the site. This area was not included in the areas satisfying wetland hydrology criteria for the 2009-2010 monitoring period. Had this soil pile not been present, it is expected that this area would have satisfied all wetland hydrology criteria in the 1987 Manual and the 2010 Midwest Region supplement.

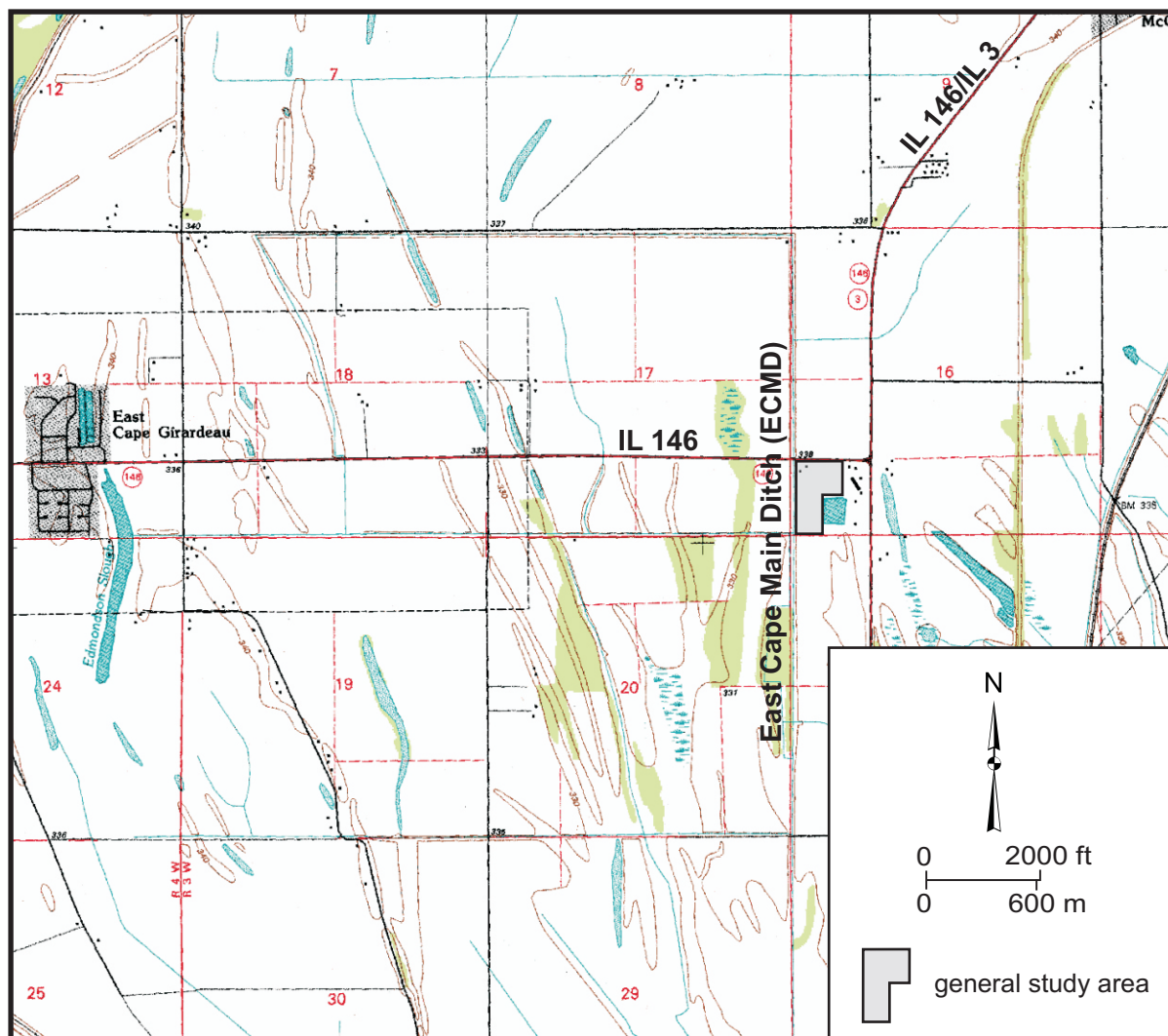
#### PLANNED FUTURE ACTIVITIES

- The ISGS will likely modify the current monitoring network at the site once wetland construction and planting activities are completed and post-construction monitoring has been tasked.
- The ISGS plans to produce a post-construction topographic map of the site once construction activities are completed.
- Monitoring will continue at the site until no longer required by IDOT.

# East Cape Girardeau Wetland Mitigation Site [FAP 312 (IL 146)]

## General Study Area and Vicinity

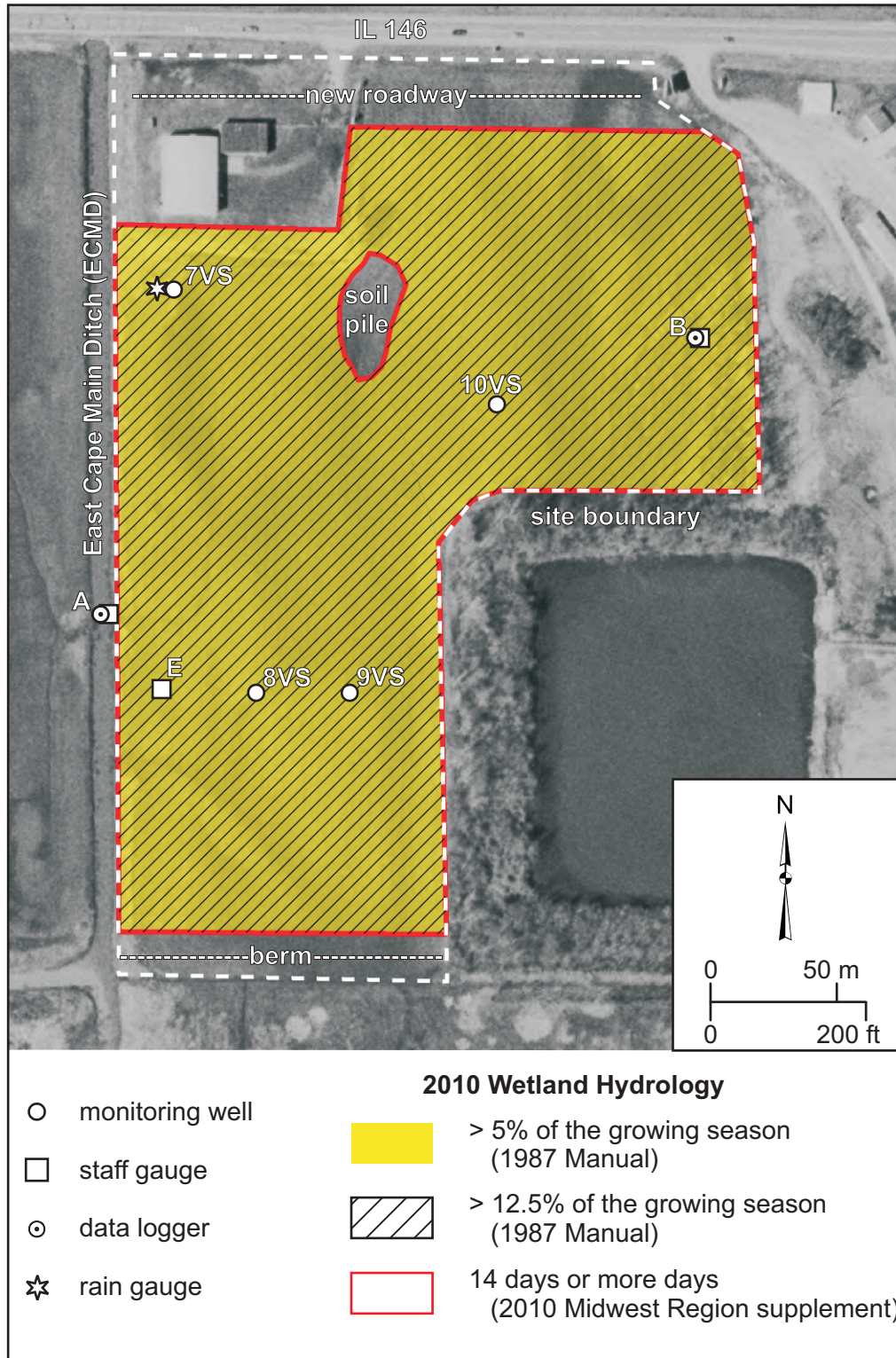
from the USGS Topographic Series, McClure, IL-MO, 7.5-minute Quadrangle (USGS 1993)  
contour interval is 20 feet, with supplementary contour interval of 10 feet



# East Cape Girardeau Wetland Mitigation Site (FAP 312 [IL 146])

Estimated Areal Extent of 2010 Wetland Hydrology  
September 1, 2009 through August 31, 2010

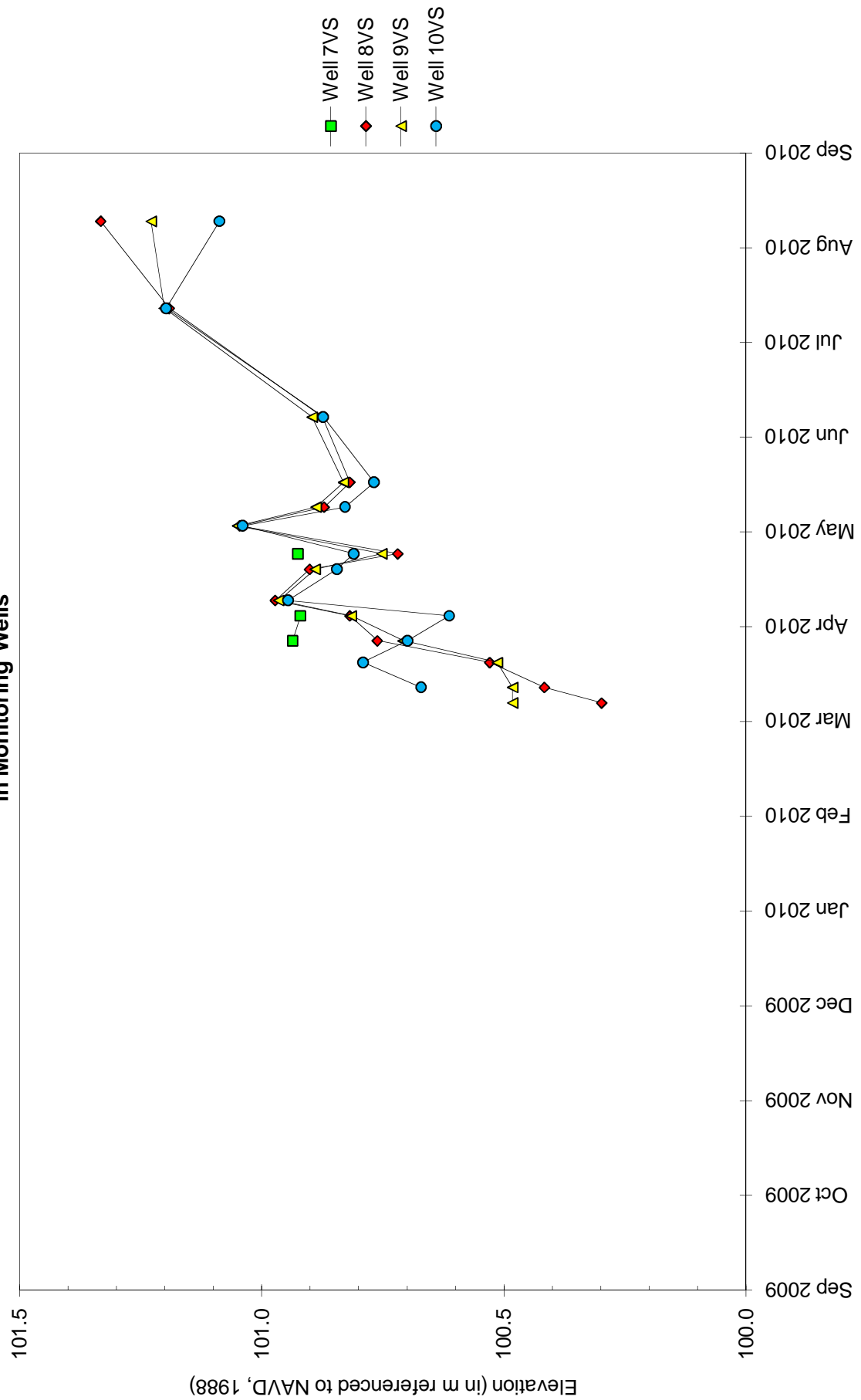
Map based on USGS digital orthophotograph, McClure, SW quarter-quadrangle (ISGS 2005)



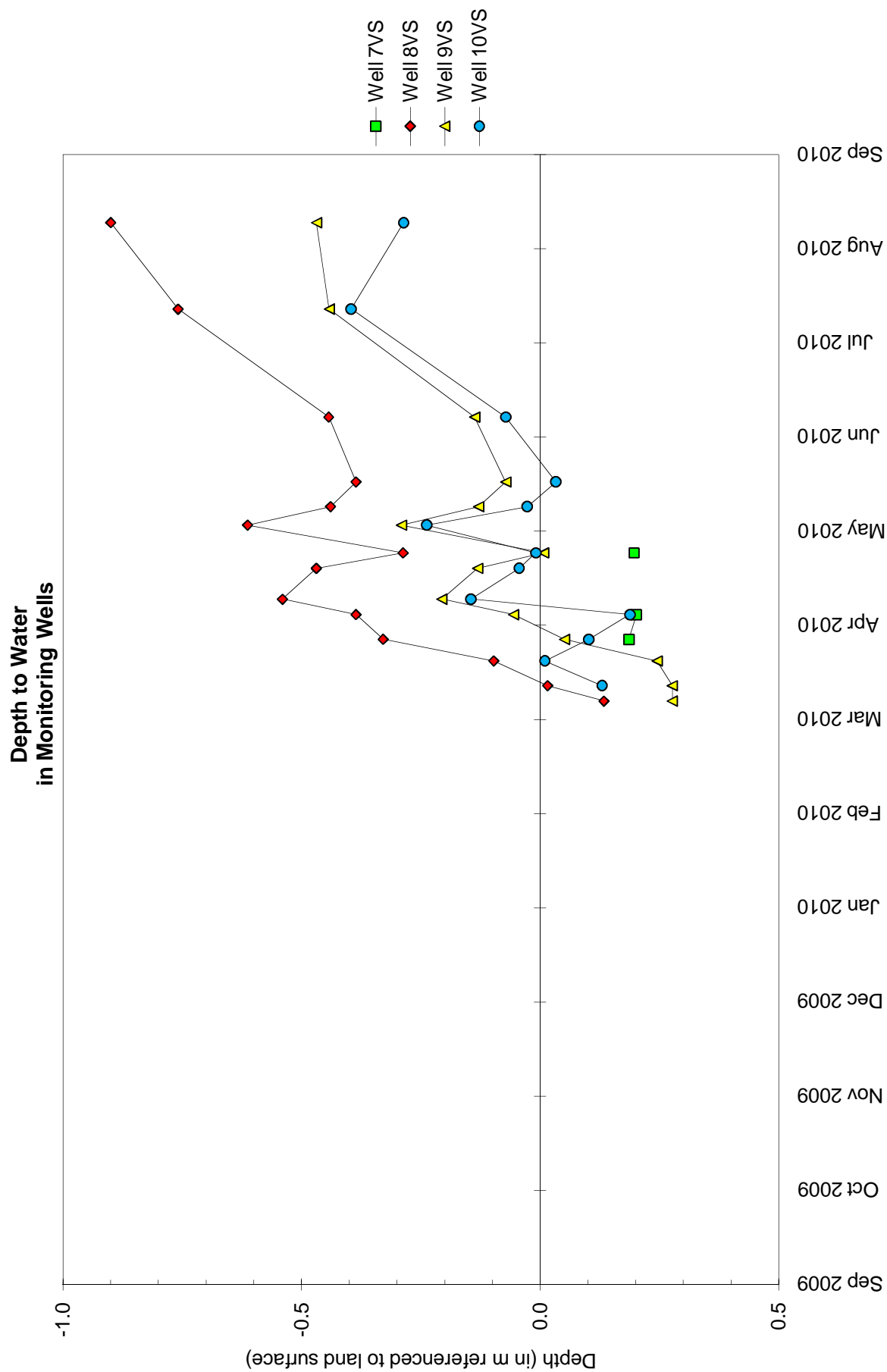


# East Cape Girardeau Wetland Mitigation Site September 1, 2009 through August 31, 2010

Water-Level Elevations  
in Monitoring Wells

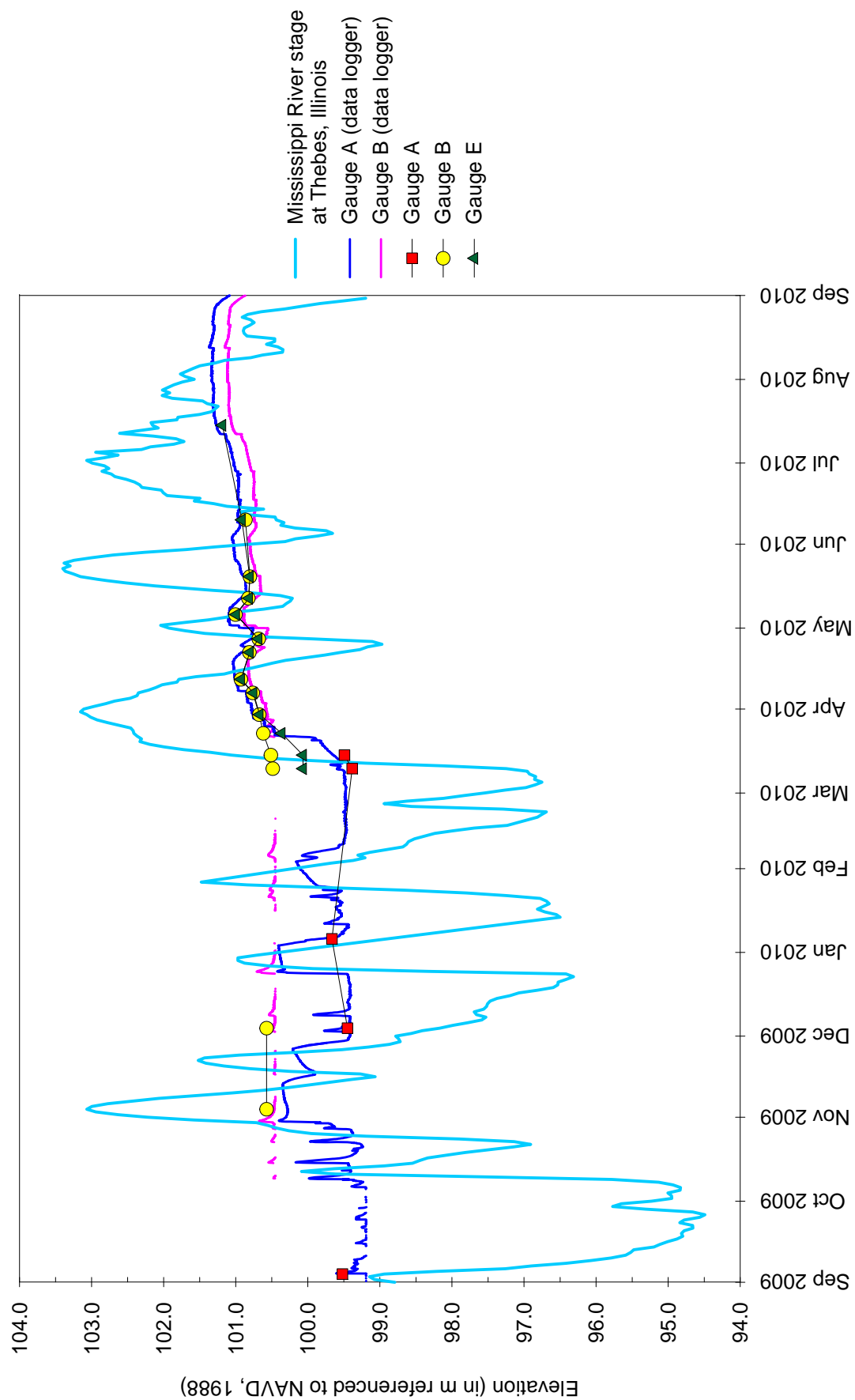


# **East Cape Girardeau Wetland Mitigation Site** **September 1, 2009 through August 31, 2010**



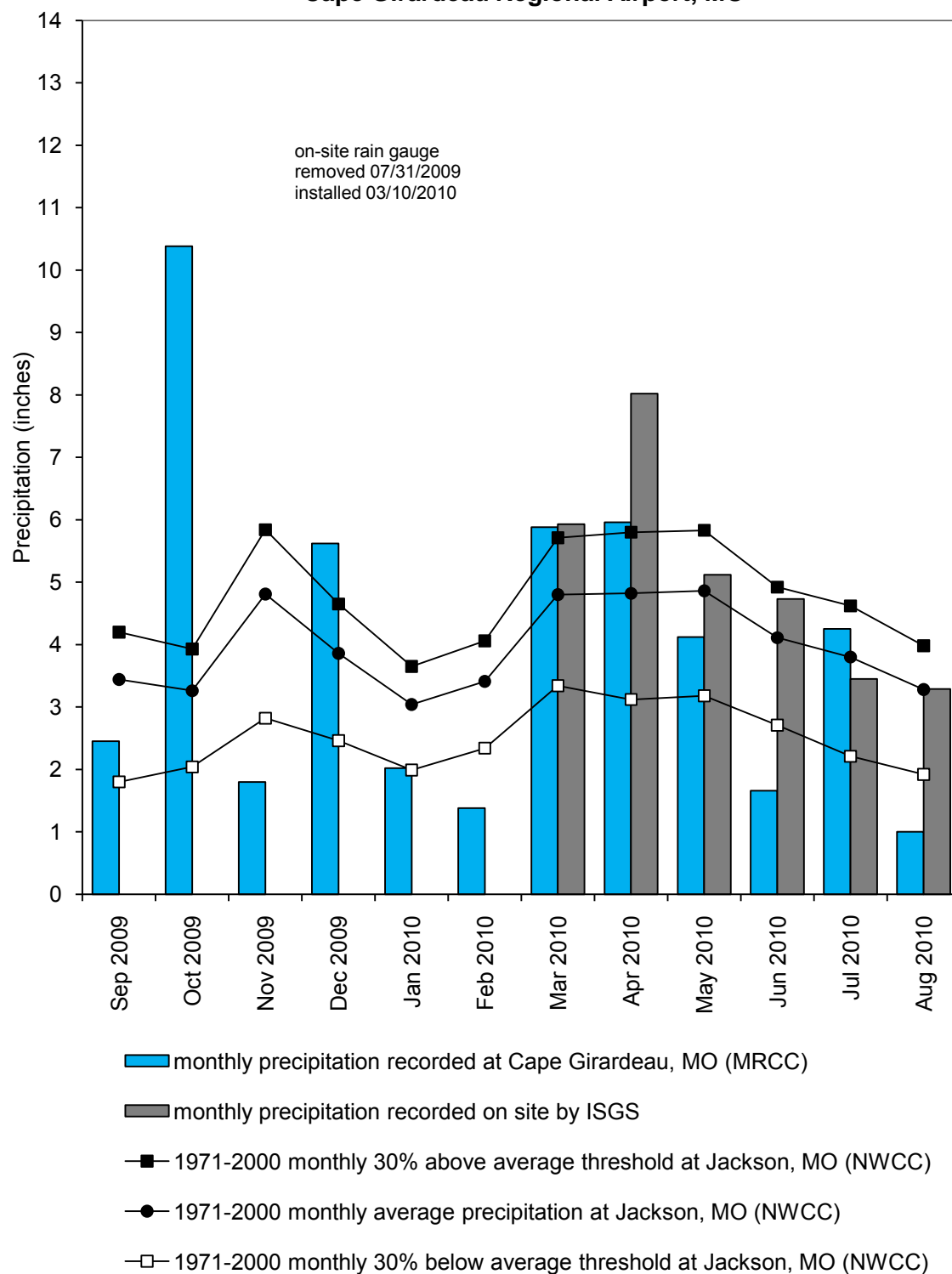
# **East Cape Girardeau Wetland Mitigation Site** **September 1, 2009 through August 31, 2010**

## **Water-Level Elevations at Surface-Water Gauges**



# East Cape Girardeau Wetland Mitigation Site September 2009 through August 2010

Total Monthly Precipitation Recorded on Site and at the  
Cape Girardeau Regional Airport, MO



Graph last updated September 29, 2010

## LAWRENCE COUNTY

ISGS #82

### POTENTIAL WETLAND MITIGATION BANK

Sequence #14912

Lawrence County, near Lawrenceville, Illinois

**Primary Project Manager: Steven E. Benton**

**Secondary Project Manager:** not assigned

### SITE HISTORY

- January 2009: The ISGS was tasked by IDOT to conduct an initial site evaluation (ISE), and the report was submitted to IDOT on June 18, 2009.
- July 2009: The ISGS was tasked by IDOT to conduct a level II hydrogeologic investigation of the site. A monitoring network was installed in October 2009.
- May 2010: The ISGS submitted a draft mitigation banking instrument to IDOT.

### WETLAND HYDROLOGY CALCULATION FOR 2010

The estimated area that satisfied wetland hydrology criteria (Environmental Laboratory 1987) for greater than 5% of the 2010 growing season is 1.5 ha (3.8 ac) out of a total area of 29.6 ha (73.1 ac). The estimated area that satisfied wetland hydrology criteria for greater than 12.5% of the 2010 growing season is 1.3 ha (3.3 ac). Using the 2010 Midwest Region supplement (U.S. Army Corps of Engineers 2010) to the 1987 Manual, we estimate that 2.4 ha (6.0 ac) also satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

- According to the MRCC, the median date that the growing season begins at the Olney, Illinois weather station is April 7, and the season lasts 209 days; 5% of the growing season is 10 days, and 12.5% of the growing season is 25 days. According to methods outlined in the 2010 Midwest Region supplement, we estimate that March 8 was the starting date of the 2010 growing season based on soil temperature measured at the site.
- Total precipitation for the monitoring period as recorded at the Lawrenceville, Illinois, weather station was 118% of normal and precipitation in spring 2010 (March through May) was 99% of normal.
- In 2010, water levels measured in monitoring wells 1S, 5S, 6S, and 7S, and gauge A satisfied wetland hydrology criteria for more than 5% of the growing season. Water levels measured in monitoring well 5S, 6S, and 7S, and gauge A satisfied wetland hydrology criteria for more than 12.5% of the growing season. In addition, water levels measured in wells 1S, 2S, 3S, 4S, 5S, 6S, 7S, and 9S, and gauge A satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season per the 2010 Midwest Region supplement.
- Surface-water levels measured by the data logger in Beaver Pond Ditch show that the water levels in the ditch overtopped the bank of the ditch 4 times during the monitoring period. Only one of these occurred during the growing season, and the duration was only about 2 days.

- During a site visit on June 22, it was observed that the Beaver Pond Ditch gravity drains were closed and one pump was running at the pumping station. The water in Beaver Pond Ditch was being maintained at a level about 0.6 m (2 ft) below the top of the bank. The culverts near the data logger in Beaver Pond Ditch were both underwater. In addition, floodwater outside the levee reached about halfway up the side of the levee. Embarras River stage data recorded by the U.S. Geological Survey gauge near Lawrenceville, Illinois, reveals that, at about the time of the site visit, the river was 0.41 m (1.34 ft) above flood stage (9.1 m [30.0 ft]). The highest stage (9.65 m [31.69 ft]) occurred on June 21, and the river was above flood stage for about 6 days.
- Inundation was observed in several areas on the site. Surface water measured at Gauge A in May was at and above an elevation of 99.11 m (325.18 ft) for more than 5%, and for more than 12.5% of the growing season. In addition, surface-water elevations measured at Gauge A in May were at and above an elevation of 99.11 m (325.18 ft) for 14 or more consecutive days of the growing season per the 2010 Midwest Region supplement.
- Inundation was observed south of monitoring well 4S and in the vicinity of monitoring well 1S. Though not monitored by wells or staff gauges, inundation was observed in these areas on successive site visits, which indicates that these areas may also have satisfied criteria for jurisdictional wetland hydrology.

#### ADDITIONAL INFORMATION

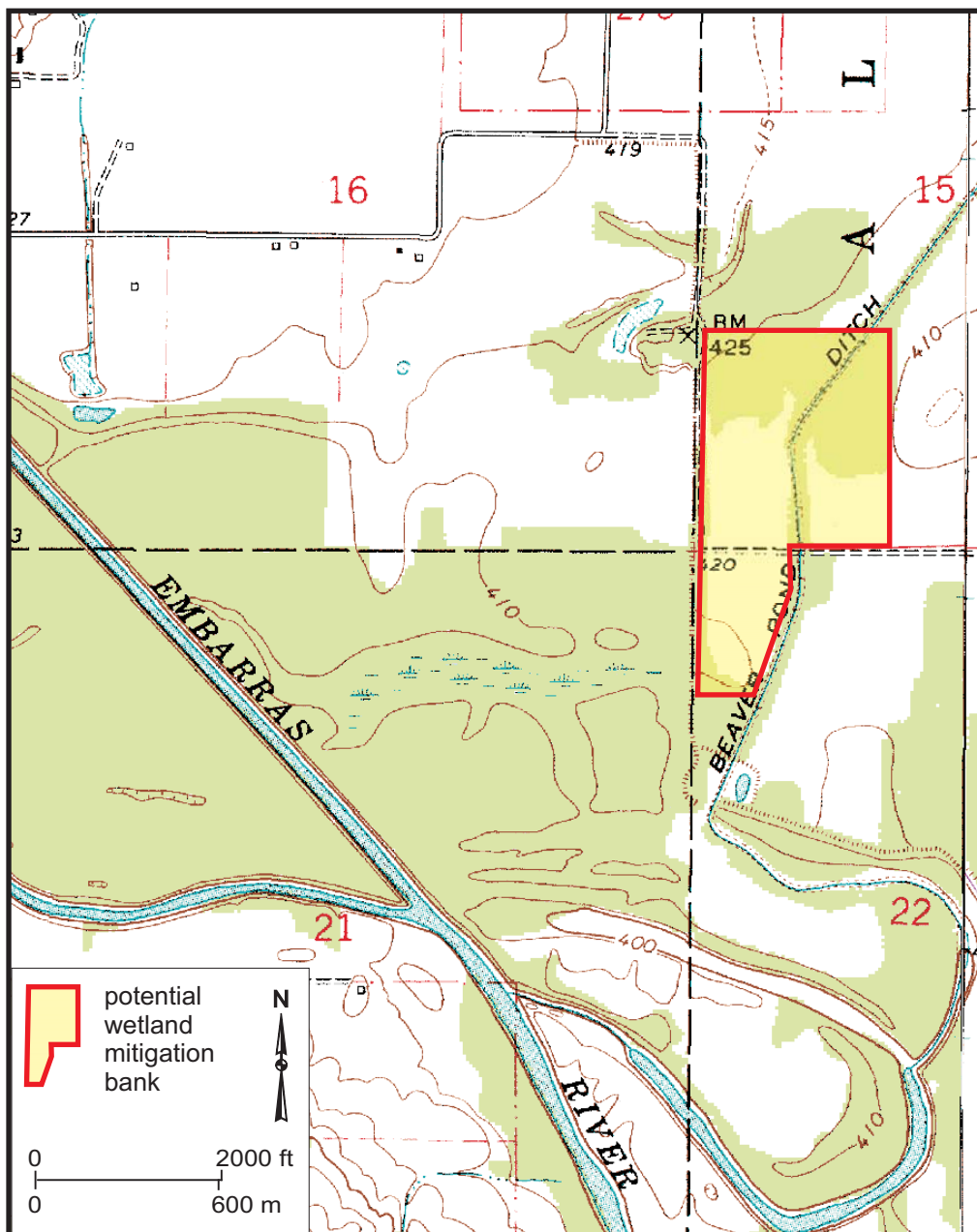
- Analysis of historic Embarras River stage data recorded at Lawrenceville, Illinois, for water-years 2002 to 2009 (October 2001 to September 2009), reveals that there have been 39 flood events during the period. April was the most flood-prone month, with a total of 8 flood events during the period, occurring in 5 out of 8 water years, with the greatest number (3) occurring in water-year 2009. The next most flood-prone months were March and May with a total of 6 flood events each during the period, occurring in 4 out of 8 water-years each. The least flood-prone months were August and September with no flood events, and October, November, and July with 1 flood event each.

#### PLANNED FUTURE ACTIVITIES

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

**Lawrence County  
Potential Wetland Mitigation Bank  
General Study Area and Vicinity**

from the USGS Topographic Series, Lawrence, IL, 7.5-minute Quadrangle (USGS 1977)  
contour interval: 10 feet

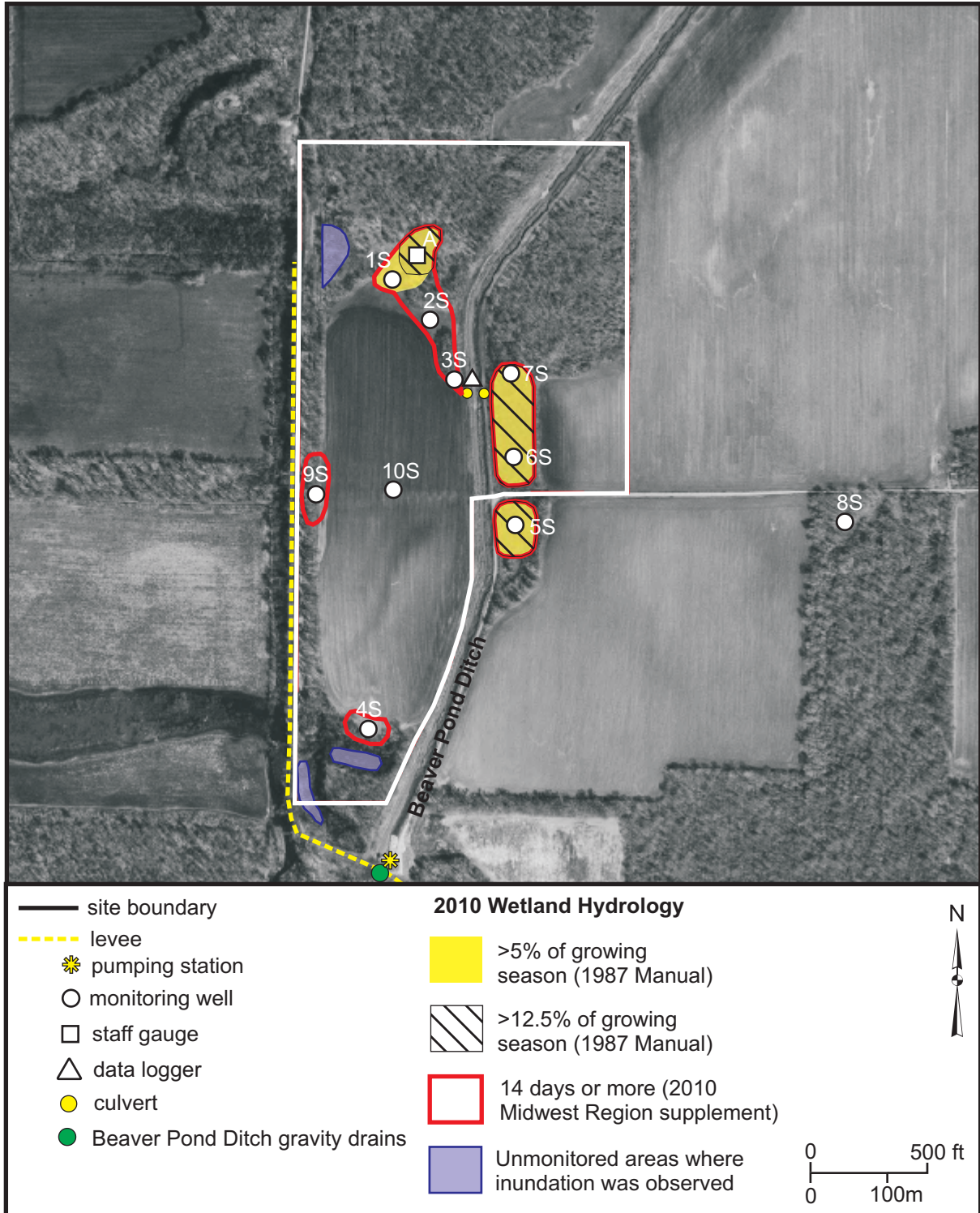




# Lawrence County Potential Wetland Mitigation Bank Estimated Areal Extent of 2010 Wetland Hydrology

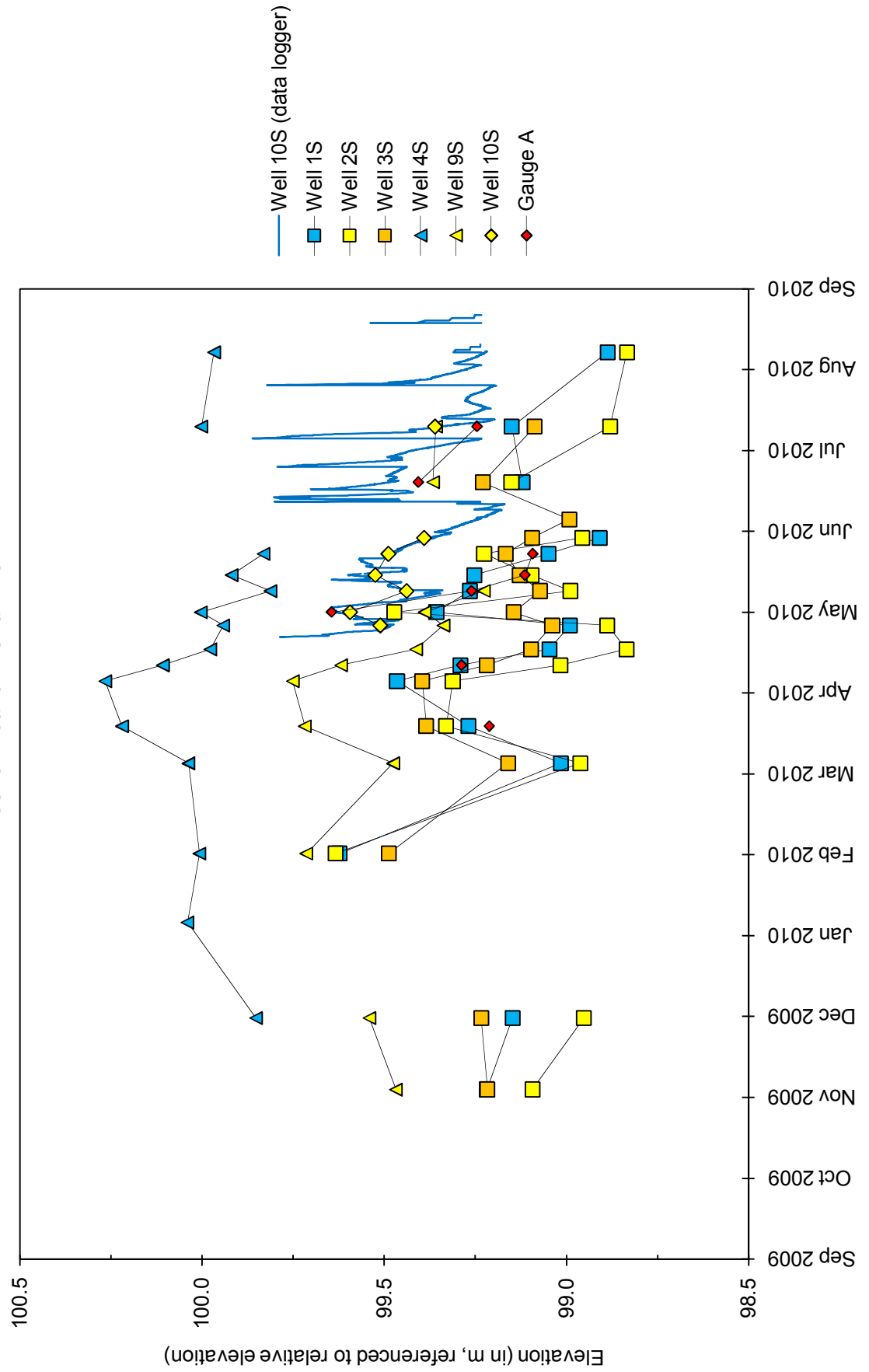
September 1, 2009 through August 31, 2010

Map based on USGS digital orthophotographs,  
Lawrenceville SE and Vincennes SW  
quarter quadrangles (ISGS 2009)

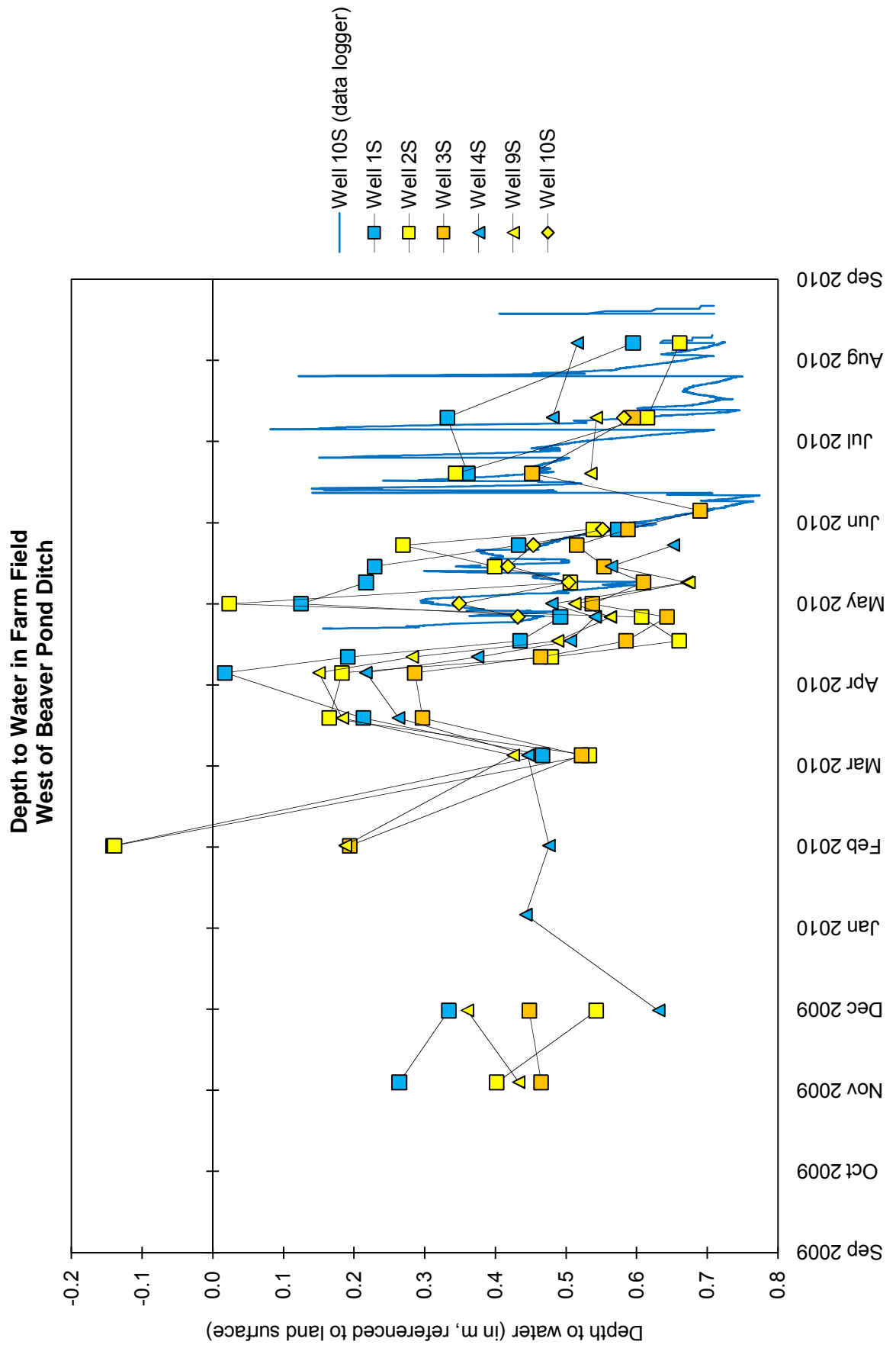


# Lawrence County Potential Wetland Mitigation Bank September 1, 2009 through August 31, 2010

Water-Level Elevations in Farm Field  
West of Beaver Pond Ditch

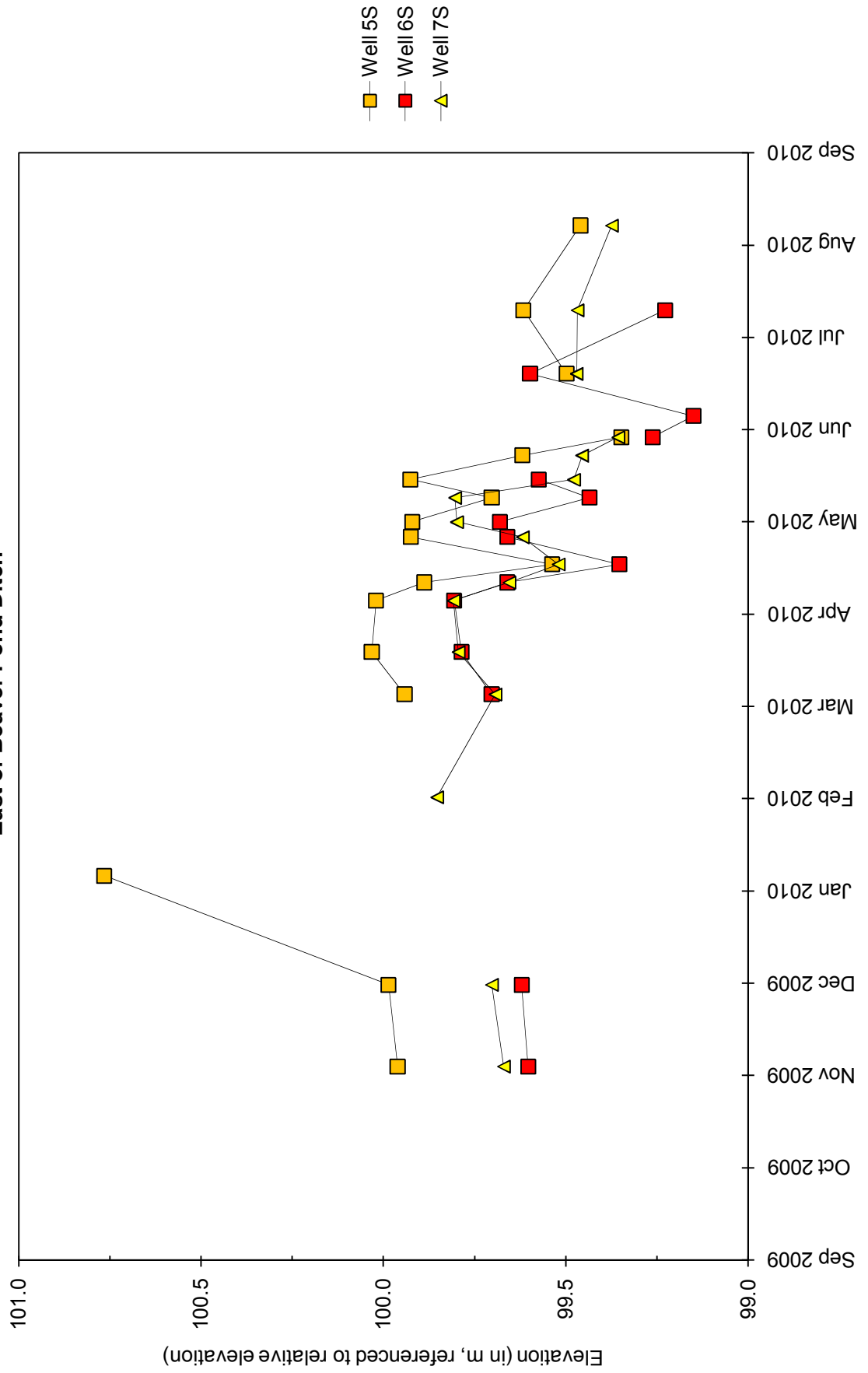


# Lawrence County Potential Wetland Mitigation Bank September 1, 2009 through August 31, 2010

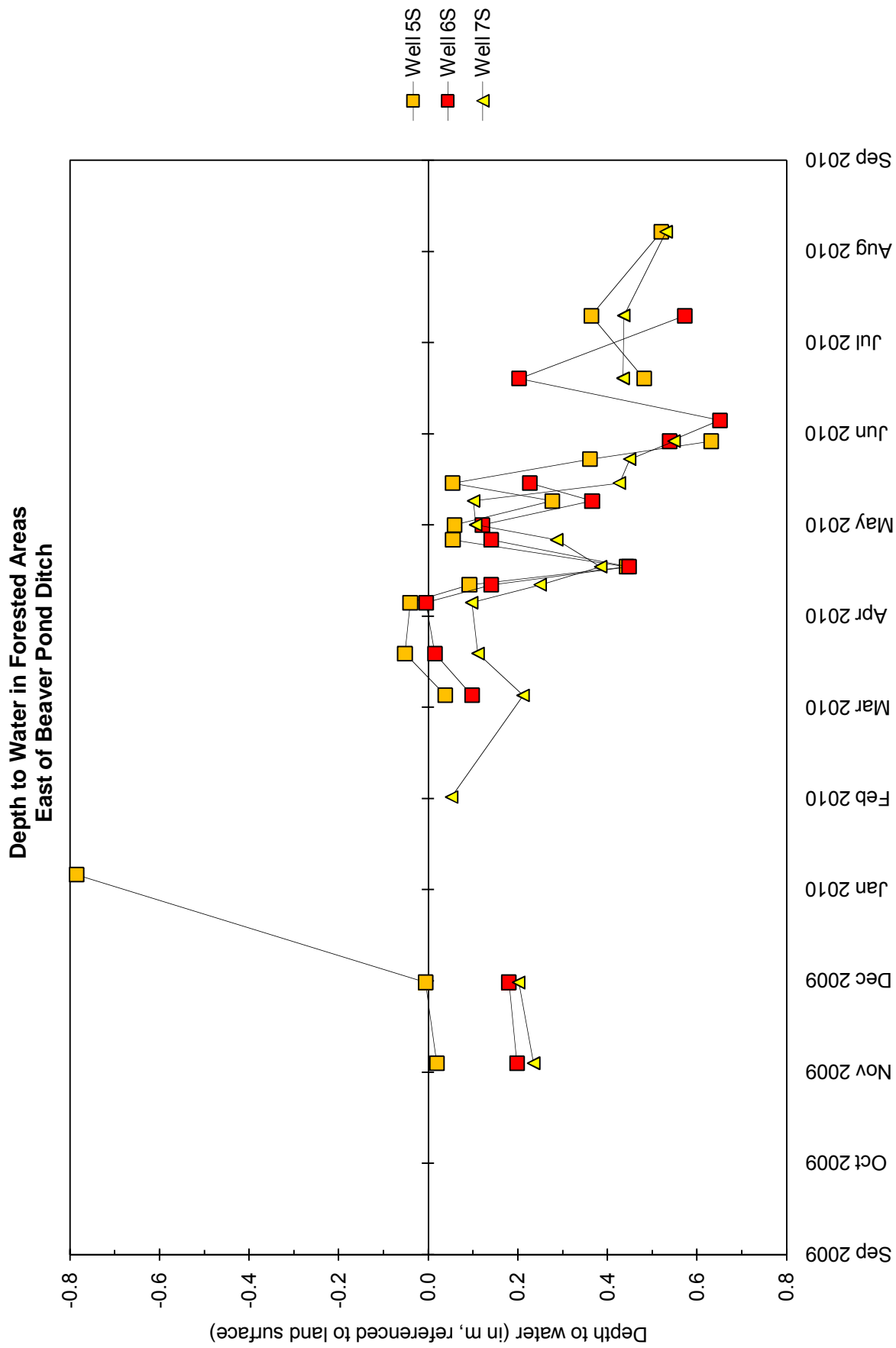


# Lawrence County Potential Wetland Mitigation Bank September 1, 2009 through August 31, 2010

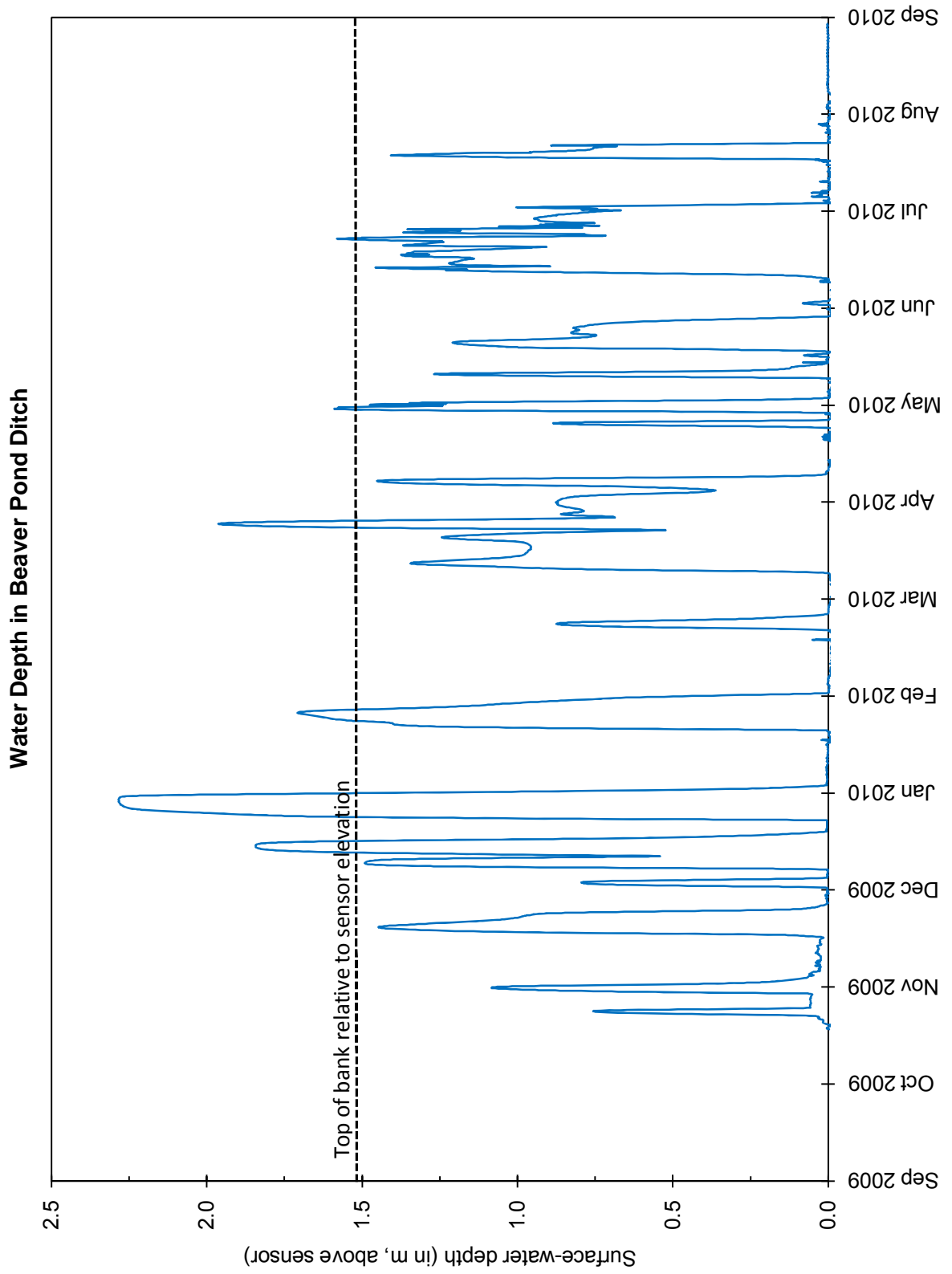
Water-Level Elevations in Forested Areas  
East of Beaver Pond Ditch



# Lawrence County Potential Wetland Mitigation Bank September 1, 2009 through August 31, 2010

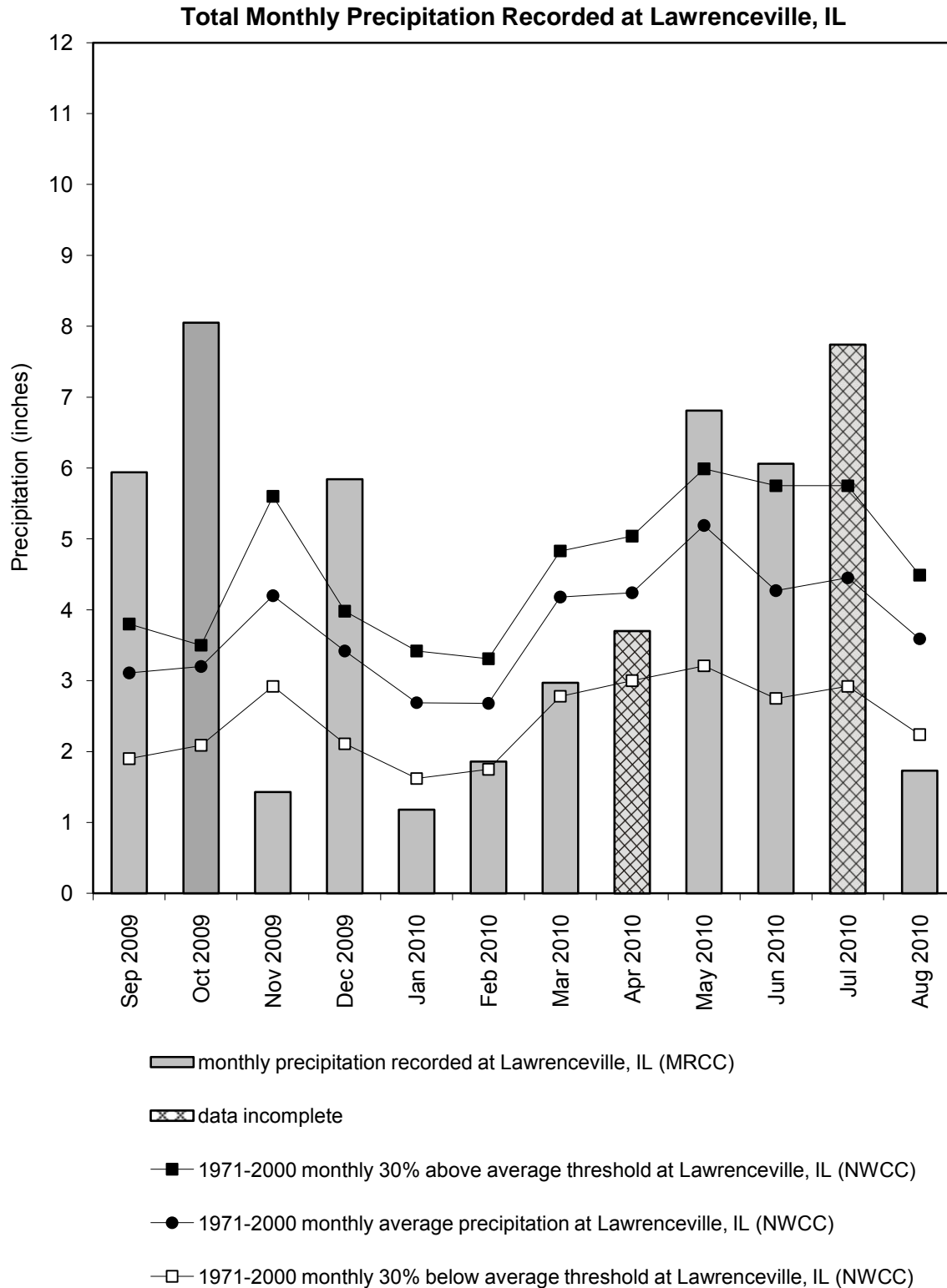


**Lawrence County Potential Wetland Mitigation Bank**  
**September 1, 2009 through August 31, 2010**



# Lawrence County, Potential Wetland Mitigation Bank

## September 2009 through August 2010



Graph last updated September 29, 2010



**NORTH CHICAGO  
WETLAND MITIGATION SITE**

**ISGS #84**

IL 56/IL 47

FAP 326

Lake County, North Chicago, Illinois

**Primary Project Manager: Keith W. Carr**

**Secondary Project Manager: James J. Miner**

**SITE HISTORY**

- 1995-2002: Previous site studies occurred during this period, prior to monitoring being suspended by IDOT in Spring 2002.
- Spring 2009: IDOT re-started monitoring. ISGS installed monitoring wells in the northernmost part of the site (where field tiles have been found) to document restoration potential associated with tile removal.
- Spring and Summer 2010: Removal and burning of buckthorn and other undesirable species was undertaken, as was drainage tile removal. ISGS also conducted an on-site elevation survey to determine potential inundation depths in the north portion of the site, depending upon restoration options.

**WETLAND HYDROLOGY CALCULATION FOR 2010**

In 2010, the northernmost part of the site was monitored by eight ISGS soil-zone monitoring wells previously installed to document hydrologic changes from tile removal. Given these limitations, we estimate that the total area monitored that satisfied wetland hydrology criteria (Environmental Laboratory 1987) in this area for greater than 5% of the growing season in 2010 was 0.2 ha (0.5 ac). Further, the same 0.2 ha (0.5 ac) also satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Using the 2010 Midwest Region supplement (U.S. Army Corps of Engineers 2010) to the 1987 Manual, we estimate that the same 0.2 ha (0.5 ac) also satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

- According to the MRCC, the median date that the growing season begins in Waukegan, Illinois, is April 14, and it lasts 195 days; 5% of the growing season is 9 days, and 12.5% of the growing season is 24 days. According to methods outlined in the 2010 Midwest Region supplement, we estimate that March 16 was the starting date of the 2010 growing season based upon soil temperature readings as well as vegetation growth and development observed at the wetland banking site.
- Total precipitation for the monitoring period at the Chicago O'Hare International Airport weather station, Chicago, IL, was 111% of normal. During the March through May period of 2010, precipitation was 97% of normal, but was 210% of normal in June and July.
- In 2010, wells 09-6 and 09-8 satisfied wetland hydrology criteria for greater than 5% of the growing season and for greater than 12.5% of the growing season. According to the 2010 Midwest Region supplement, wells 09-6 and 09-8 also satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season.

- Only selected wetlands were monitored because the scope of the study was limited to the northern portion of the site.

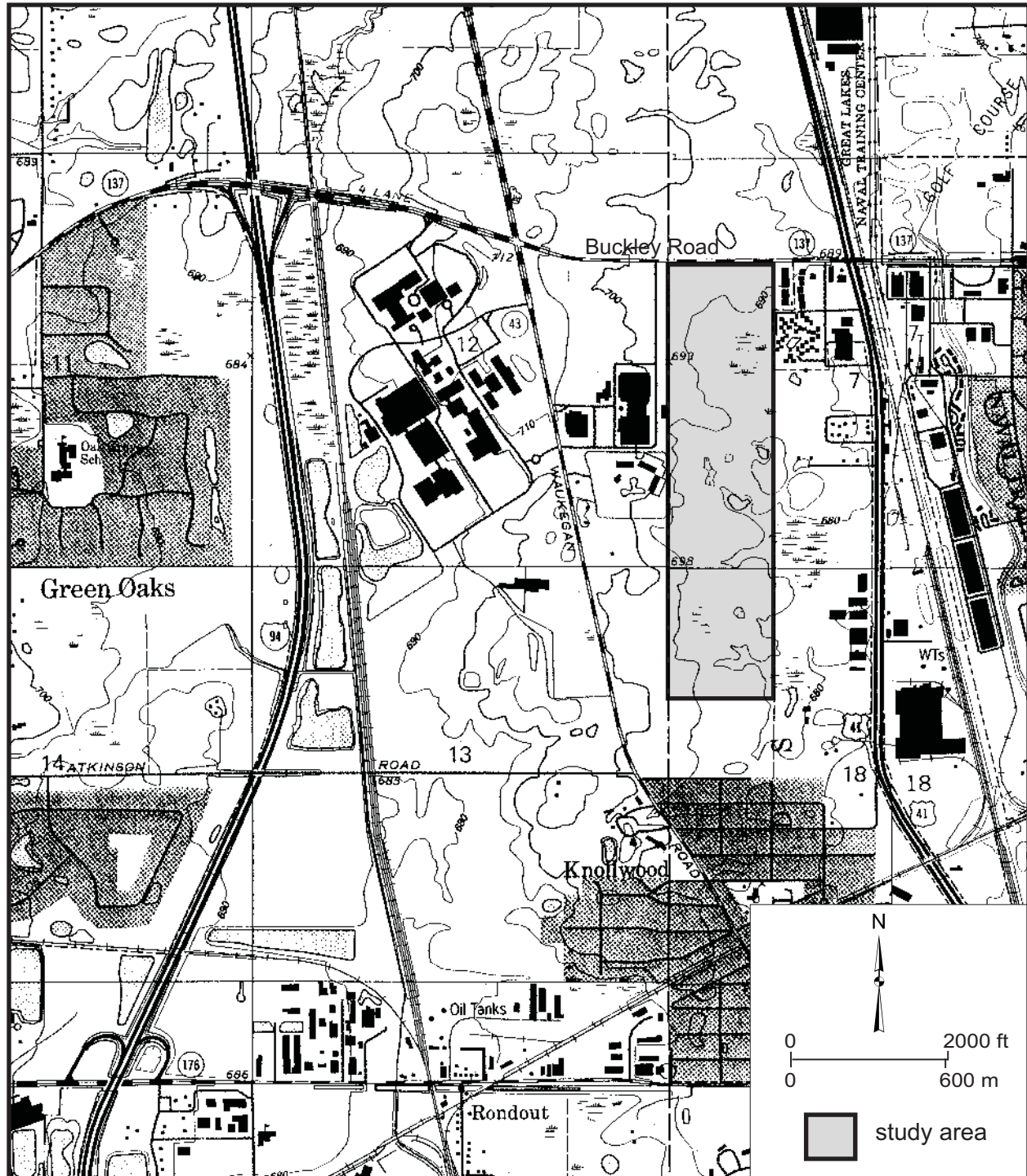
#### PLANNED FUTURE ACTIVITIES

- Two surface-water data loggers, two groundwater data loggers, and an on-site rain gauge will be added to the site in spring 2011. This will be in addition to planned wells required to monitor wetlands site-wide as recently directed by IDOT
- Monitoring of hydrology will continue until no longer required by IDOT.

# North Chicago Wetland Mitigation Site (FAP 326)

## General Study Area and Vicinity

from the USGS Topographic Series, Libertyville, IL (W) (USGS 1993) and Waukegan, IL (E) (USGS 1993)  
7.5-minute Quadrangles





# North Chicago Wetland Mitigation Site (FAP 326)

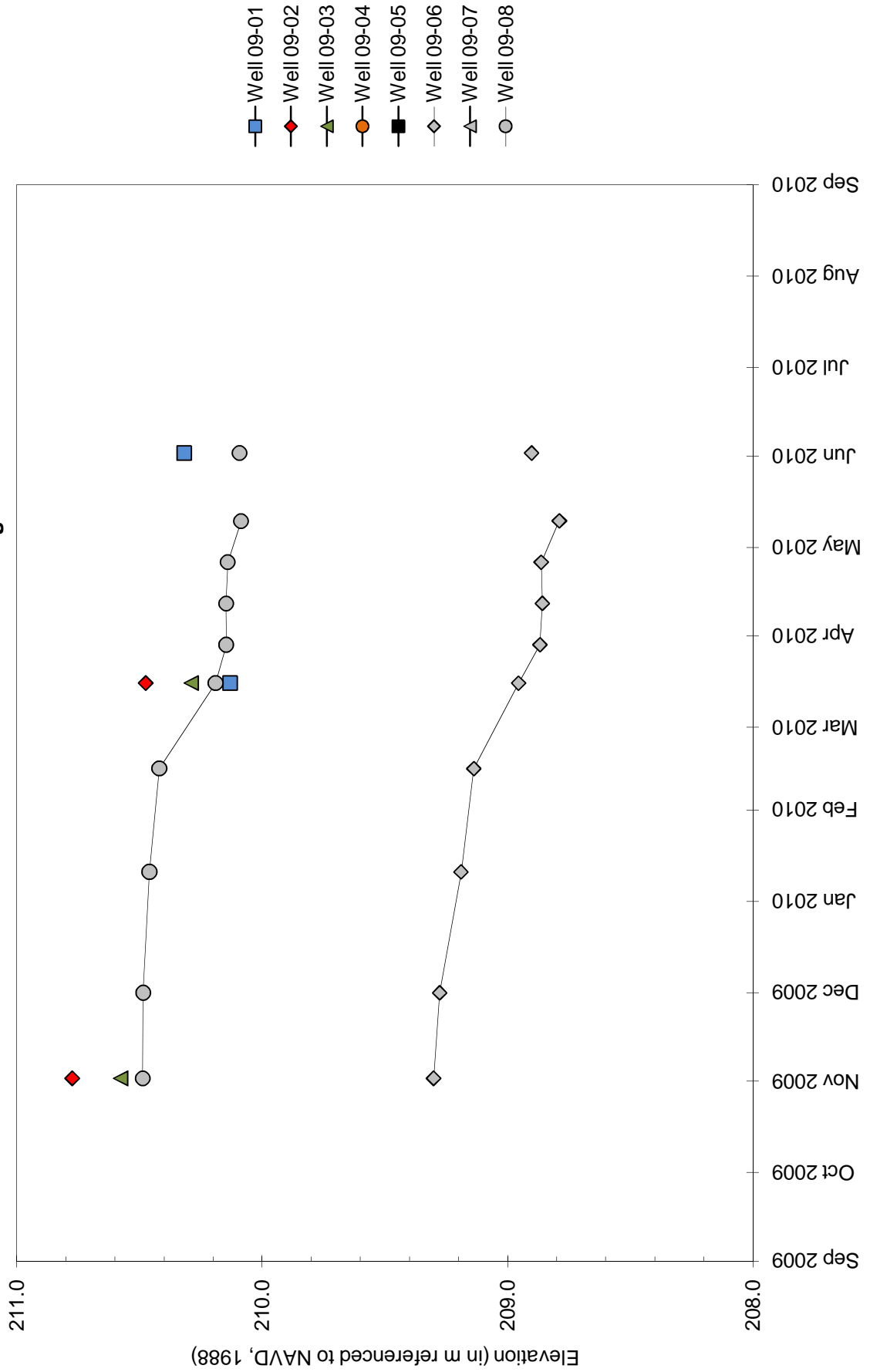
Estimated Areal Extent of 2010 Wetland Hydrology  
September 1, 2009 through August 31, 2010

Map based on USGS High Resolution Orthoimagery for the Chicago, IL, Urban Area (USGS 2005)

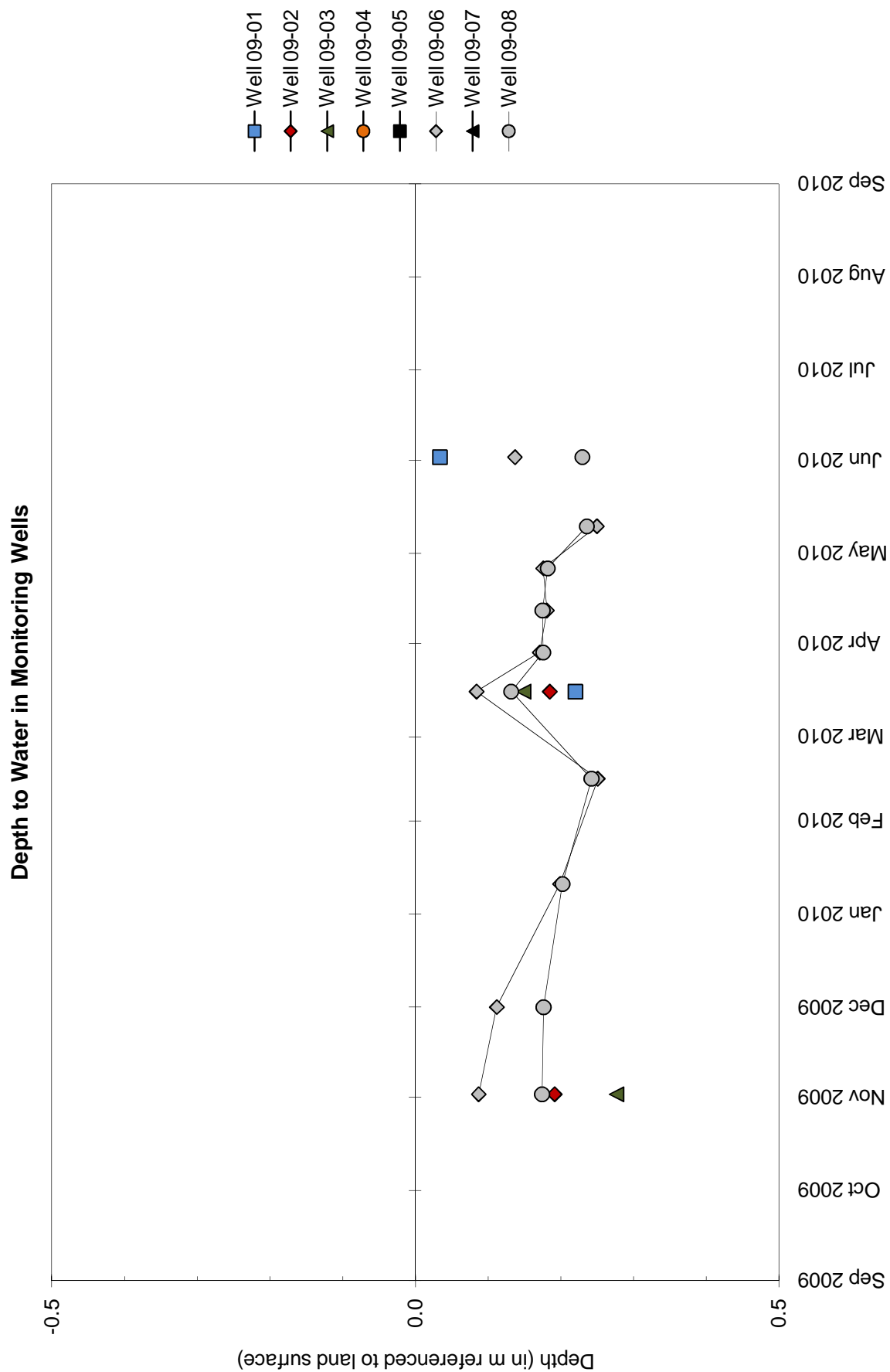


# North Chicago Wetland Mitigation Site September 1, 2009 through August 31, 2010

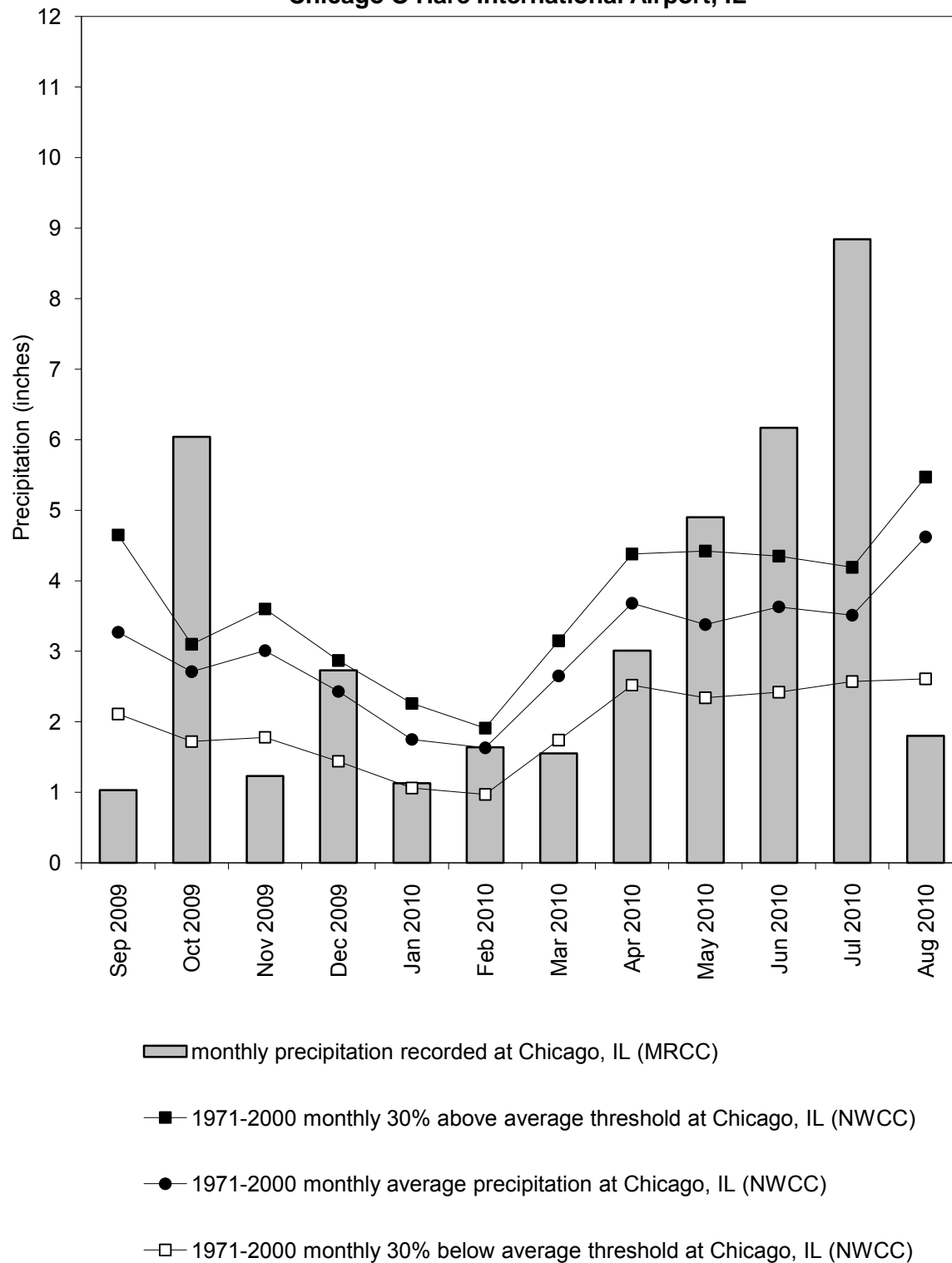
Water-Level Elevations in Monitoring Wells



# North Chicago Wetland Mitigation Site September 1, 2009 through August 31, 2010



**North Chicago Wetland Mitigation Site**  
**September 2009 through August 2010**  
**Total Monthly Precipitation Recorded at the**  
**Chicago O'Hare International Airport, IL**



Graph last updated September 29, 2010