

# Annual Report for Active IDOT Wetland Mitigation and Hydrologic Monitoring Sites: September 1, 2011 through August 31, 2012

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*Photo credit: Jessica L. B. Monson*

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Bureau of Design and Environment, Wetlands Unit  
2300 South Dirksen Parkway  
Springfield, Illinois 62764-0002

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ILLINOIS STATE  
GEOLOGICAL SURVEY  
PRAIRIE RESEARCH INSTITUTE



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## **Open File Series 2012-7**

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## TABLE OF CONTENTS

INTRODUCTION..	1
METHODS. ....	1
Figure 1..	2
Table 1. ....	3
Table 2. ....	4
REFERENCES. ....	7
SITE SUMMARIES	
42 Hancock County near Carthage..	9
43 Eckmann/Bischoff. ....	20
44 Milan Beltway, Green Rock. ....	28
49 Morris. ....	35
52 La Grange. ....	41
53 Fairmont City. ....	52
57 Former Tiernan Property. ....	64
63 Harrisburg. ....	78
71 Tamms. ....	87
74 Sugar Camp Creek. ....	96
75 Green Creek. ....	111
76 Milan Beltway, Rock Island. ....	119
77 Pyramid Site EC25..	134
78 Harrisburg, Site 2..	144
79 Former Weber Property. ....	156
80 Max Creek. ....	164
81 East Cape Girardeau. ....	172
82 Lawrence County..	182
84 North Chicago. ....	194
85 Coles County. ....	204
86 Swan Road. ....	212
87 Harrisburg, Site 3..	218
88 Grant Creek North. ....	225

## 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 for IDOT under grants D71291 and D71292, including current 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 [USACE] 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 wetland mitigation 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 from selected wells and surface-water 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. Also, a summary of areas meeting wetland hydrology criteria for each site is provided in Table 2. Except where noted, all data included in this report are from September 1, 2011 through August 31, 2012, at IDOT's request.

## METHODS

The primary purpose of this report is to present 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 to compare methodologies. However, to be a wetland, an area must also satisfy soils and vegetation criteria that are assessed by the Illinois Natural History Survey (INHS), who 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 identified as 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 at least 5% or 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.



Table 1 IGS project numbers and active IDOT wetland mitigation sites monitored by IGS between September 1, 2011 and August 31, 2012.

IGS Number	Site Name	Site Type	Project	FA #	Sequence #	County
42	Hancock County near Carthage	Wetland Mitigation Site	IL 336	FAP 315	235	Hancock
43	Eckmann/Bischoff	Wetland Mitigation Site	New River Crossing	FAP 14	27	Madison
44	Milan Beltway, Green Rock	Wetland Mitigation Site	Milan Beltway	FAU 5822	67	Henry
49	Morris	Wetland Mitigation Bank	N/A	N/A	1306	Grundy
52	La Grange	Wetland Mitigation Bank	N/A	N/A	9579	Brown
53	Fairmont City	Potential Wetland Mitigation Site	New River Crossing	FAP 14	27	St. Clair
57	Former Tieman Property	Potential Wetland Mitigation Site	New River Crossing	FAP 14	27	St. Clair
63	Harrisburg	Wetland Mitigation Site	US 45	FAP 332	90	Saline
71	Tamms	Wetland Mitigation Site	IL 127	FAS 1907	1026	Alexander
74	Sugar Camp Creek	Wetland and Stream Mitigation Bank	N/A	N/A	9282	Franklin
75	Green Creek	Wetland Mitigation Site	IL 32/33	FAP 774	12505	Effingham
76	Milan Beltway, Rock Island	Wetland Mitigation Site	Milan Beltway	FAU 5822	67	Rock Island
77	Pyramid Site EC25	Wetland Mitigation Site	Pyatts Blacktop	FAS 864	9778	Perry
78	Harrisburg, Site 2	Wetland Mitigation Site	IL 14	FAP 857	547	Saline
79	Former Weber Property	Wetland Mitigation Site	US 20	FAP 301	10487	Stephenson
80	Max Creek	Wetland Mitigation Site	IL 147	FAS 932	8717A	Johnson
81	East Cape Girardeau	Wetland Mitigation Site	IL 146	FAP 312	633A	Alexander
82	Lawrence County	Potential Wetland Mitigation Bank	N/A	N/A	14912	Lawrence
84	North Chicago	Wetland Mitigation Site	IL 56/47	FAP 326	13406	Lake
85	Coles County	Wetland Mitigation Site	TR 1000N and TR 41	N/A	1273	Coles
86	Swan Road	Wetland Mitigation Site	TR 222	N/A	12315	Perry
87	Harrisburg, Site 3	Wetland Mitigation Site	US 45	FAP 332	N/A	Saline
88	Grant Creek North	Wetland Mitigation Site	I-55	FAI 55	N/A	Will

Table 2 Summary of wetland hydrology area estimates for the 2012 growing season for active IDOT wetland mitigation sites monitored by ISGS between September 1, 2011 and August 31, 2012.

ISGS Number	Site Name	Target Compensation Area		>5% of growing season (1987 Manual)		>12.5% of growing season (1987 Manual)		14 days or more (2010 Midwest Region Supplement)	
		ha	ac	ha	ac	ha	ac	ha	ac
42	Hancock County near Carthage	13.76	34.00	--	--	--	--	--	--
43	Eckmann/Bischoff	17.20	42.50	25.50	63.00	16.44	40.62	17.13	42.33
44	Milan Beltway, Green Rock	3.01	7.45	--	--	--	--	--	--
49	Morris	44.11	109.00	6.18	15.28	0.46	1.13	4.27	10.56
52	La Grange	414.40	1024.00	283.06	699.45	38.96	96.27	283.06	699.45
53	Fairmont City	10.93	27.00	14.27	35.27	14.17	35.01	14.27	35.27
57	Former Tieman Property	17.04	42.10	16.58	40.98	16.19	40.00	16.53	40.84
63	Harrisburg	2.02	5.00	--	--	--	--	--	--
71	Tamms	1.75	4.33	0.32	0.80	0.00	0.00	0.86	2.12
74	Sugar Camp Creek*	28.00	69.20	9.91	24.50	6.19	15.30	14.45	35.70
75	Green Creek	0.34	0.83	1.49	3.67	1.46	3.60	1.49	3.67
76	Milan Beltway, Rock Island	3.61	8.92	2.74	6.76	1.28	3.16	1.66	4.10
77	Pyramid Site EC25	4.57	11.30	4.35	10.76	0.00	0.00	5.18	12.79
78	Harrisburg, Site 2	4.13	10.20	2.63	6.49	1.02	2.51	7.24	17.88
79	Former Weber Property	1.21	3.00	0.74	1.82	0.26	0.65	0.39	0.96
80	Max Creek	0.49	1.20	0.34	0.84	0.00	0.00	0.77	1.90
81	East Cape Girardeau	3.08	7.60	2.55	6.29	1.45	3.58	3.95	9.75
82	Lawrence County*	N/A	N/A	0.38	0.94	0.38	0.94	1.83	4.52
84	North Chicago	N/A	N/A	--	--	--	--	--	--
85	Coles County	1.86	4.60	1.06	2.61	0.96	2.38	1.06	2.61
86	Swan Road	0.29	0.72	0.10	0.24	0.00	0.00	0.32	0.78
87	Harrisburg, Site 3*	0.69	1.70	0.00	0.00	0.00	0.00	0.00	0.00
88	Grant Creek North*	5.99	14.80	9.48	23.43	0.00	0.00	2.34	5.78

\* - Project construction not yet complete--see the project summary for details regarding wetland hydrology area.

N/A - denotes that the target compensation area for the mitigation project is not available.



The Midwestern Regional Climate Center (MRCC) provides data regarding the length and beginning date of the growing season (MRCC 2012). In the 1987 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 the 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 at least two different species of non-evergreen vascular plants begin to grow (colloquially referred to as “green-up”), as indicated 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. The earliest date when either methodology was satisfied was determined to be the beginning of the growing season, and was used when determining areas that satisfy wetland hydrology criteria under the 2010 Midwest Region Supplement. Soil temperatures were collected using analog bimetal thermometers at a depth of 30 cm (12 inches [in.]) during site visits, 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 Water and Atmospheric Resources Monitoring Program (WARM) website and used to supplement on-site readings as needed (WARM 2012).

Wells and surface-water 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. The areas that satisfied wetland hydrology criteria were mapped and calculated (in hectares [ha] and acres [ac]) using ESRI's ArcGIS geographic information systems software.

The error of each area measurement will vary depending on the quality, precision, scale of the topographic map, and the precision in locating monitoring devices. The base maps used for these determinations are orthorectified aerial imagery from the U.S. Department of Agriculture-Farm Service Agency (USDA-FSA) National Agricultural Imagery Program (NAIP). For most sites, detailed site topography was collected by IDOT (GPS or photogrammetry) or by ISGS (total station or GPS measurements) and is used for mapping wetland hydrology areas. Where detailed topographic data are not available, as-built plans, construction plans, and/or U.S. Geological Survey (USGS) 7.5-minute topographic maps are used. Monitoring instruments were located using GPS devices or a total station. 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. As needed, biweekly readings were begun as early as February and/or extended into June and collected outside of the spring period 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 to 29 days using the methods of the 1987 Manual. 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. The same methods, including a minimum of two consecutive biweekly manual readings, were used 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 well construction and hydrogeologic setting, 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 of 1988 (NAVD, 1988) unless otherwise labeled. If no data are shown on the charts for any specific well or gauge, then the well or gauge was either dry or not read, or the data were removed for quality-control purposes (see below).

At most sites, data loggers were used to monitor water levels at regular intervals ranging from daily to hourly. Various types of loggers were used and 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 caused inaccuracies (e.g., vegetation growth or debris accumulation beneath the logger) were removed after interpretation by ISGS scientists. For some sites, stage data from gauges operated by the USGS, USACE, or the U.S. Forest Service (USFS) were obtained from online sources (USGS 2012, USACE 2012, USFS 2012) and used to supplement ISGS data in evaluations of hydrologic conditions.

On-site precipitation data were collected by ISGS using 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 above- and below-normal range threshold values were calculated by the National Water and Climate Center (NWCC 2012). Normals and range threshold values were based on a 30-year period, between either 1961-1990 or 1971-2000. Above- and below-normal thresholds were calculated using a 2-parameter gamma distribution over the 30-year period (NWCC 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 simply as above or below normal, where the above- and below-normal range threshold values are not shown.

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.

This material is based upon work supported by the Illinois Department of Transportation under grants D71291 and D71292. Any opinions, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the views of the Illinois Department of Transportation. Publication of this report is authorized by the Director, Illinois State Geological Survey, Prairie Research Institute, University of Illinois at Urbana-Champaign.

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**HANCOCK COUNTY NEAR CARTHAGE  
WETLAND MITIGATION SITE**

**ISGS #42**

FAP 315

IL 336

Sequence #235

Hancock County, near Carthage, Illinois

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

**Secondary Project Manager: Jessica R. Ackerman**

**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.
- March 2012: The site was approved by the U.S. Army Corps of Engineers and the Illinois Department of Natural Resources, and IDOT informed the ISGS that post-construction monitoring was no longer required.

**WETLAND HYDROLOGY CALCULATION FOR 2012**

No estimate was made of the area of the site that satisfied jurisdictional wetland hydrology criteria in 2012.

**PLANNED FUTURE ACTIVITIES**

- A portion of the monitoring network was removed in 2012, and the remainder will be removed as time allows.

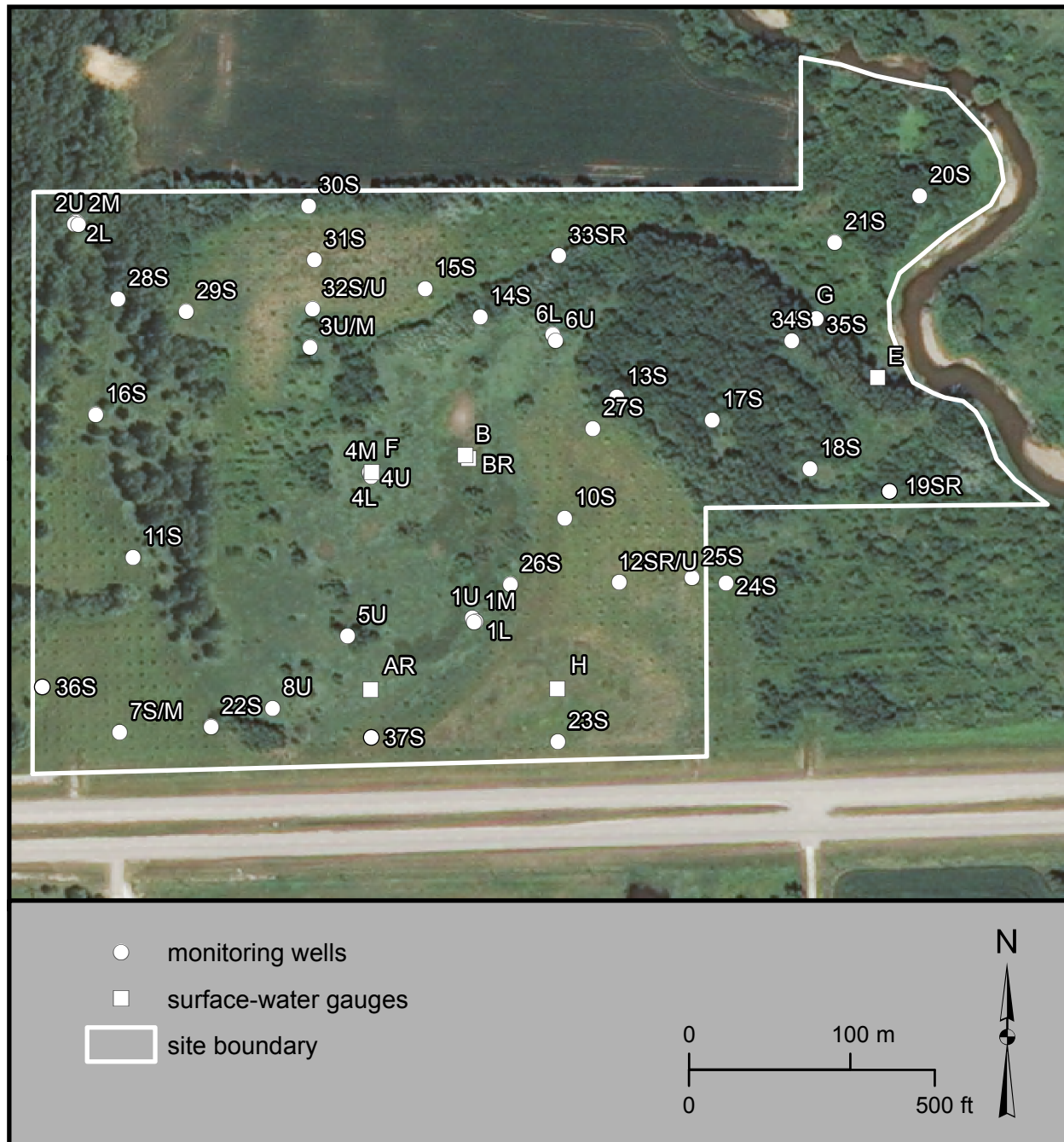
from the USGS Topographic Series, Carthage East, IL, 7.5-minute Quadrangle (USGS 1974)  
contour interval is 10 feet



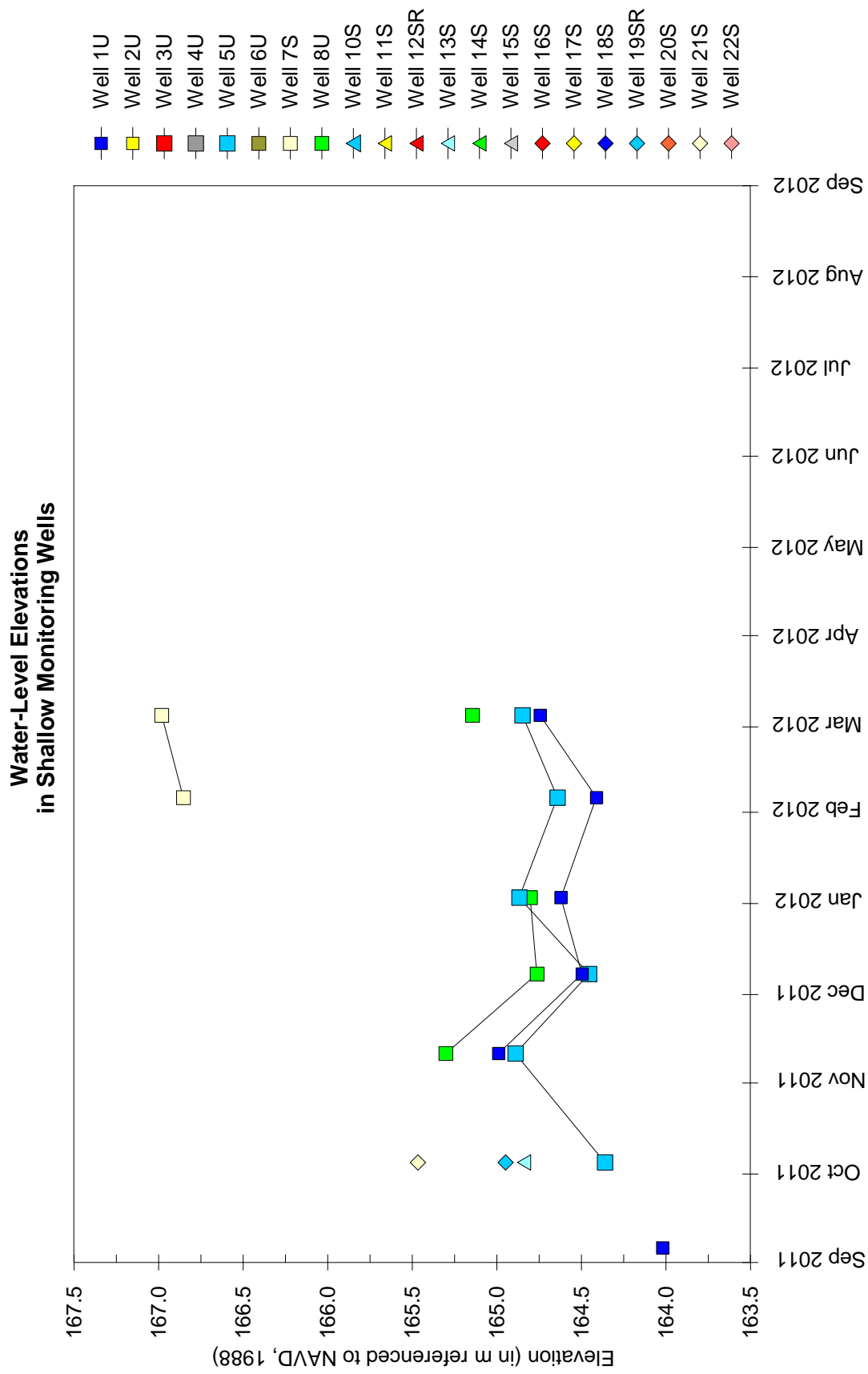


# Hancock County near Carthage Wetland Mitigation Site (IL336, FAP 315) Monitoring Network

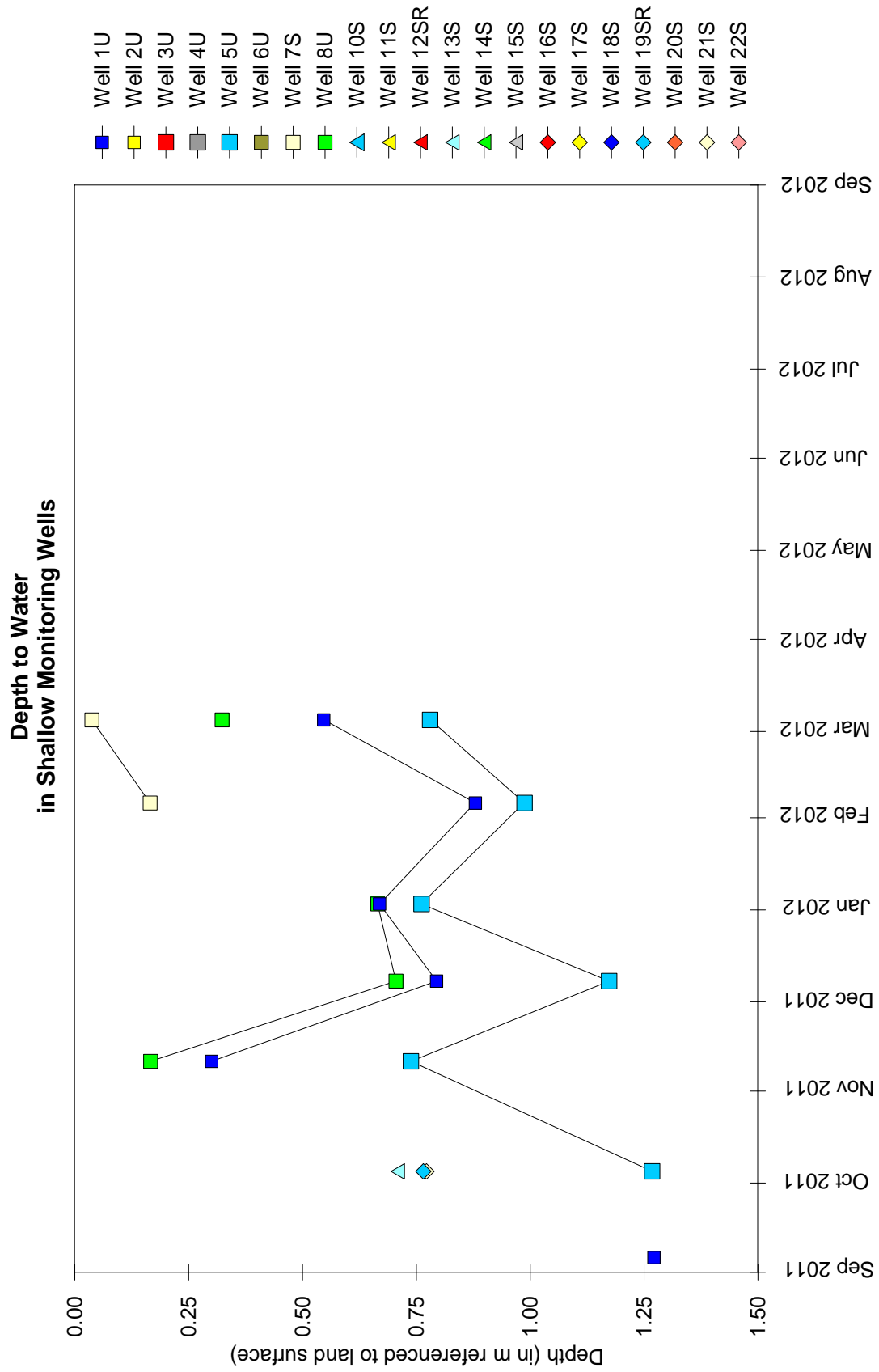
Map based on 2012 Farm Service Agency digital orthophotography, Hancock County, Illinois (USDA-FSA 2012)



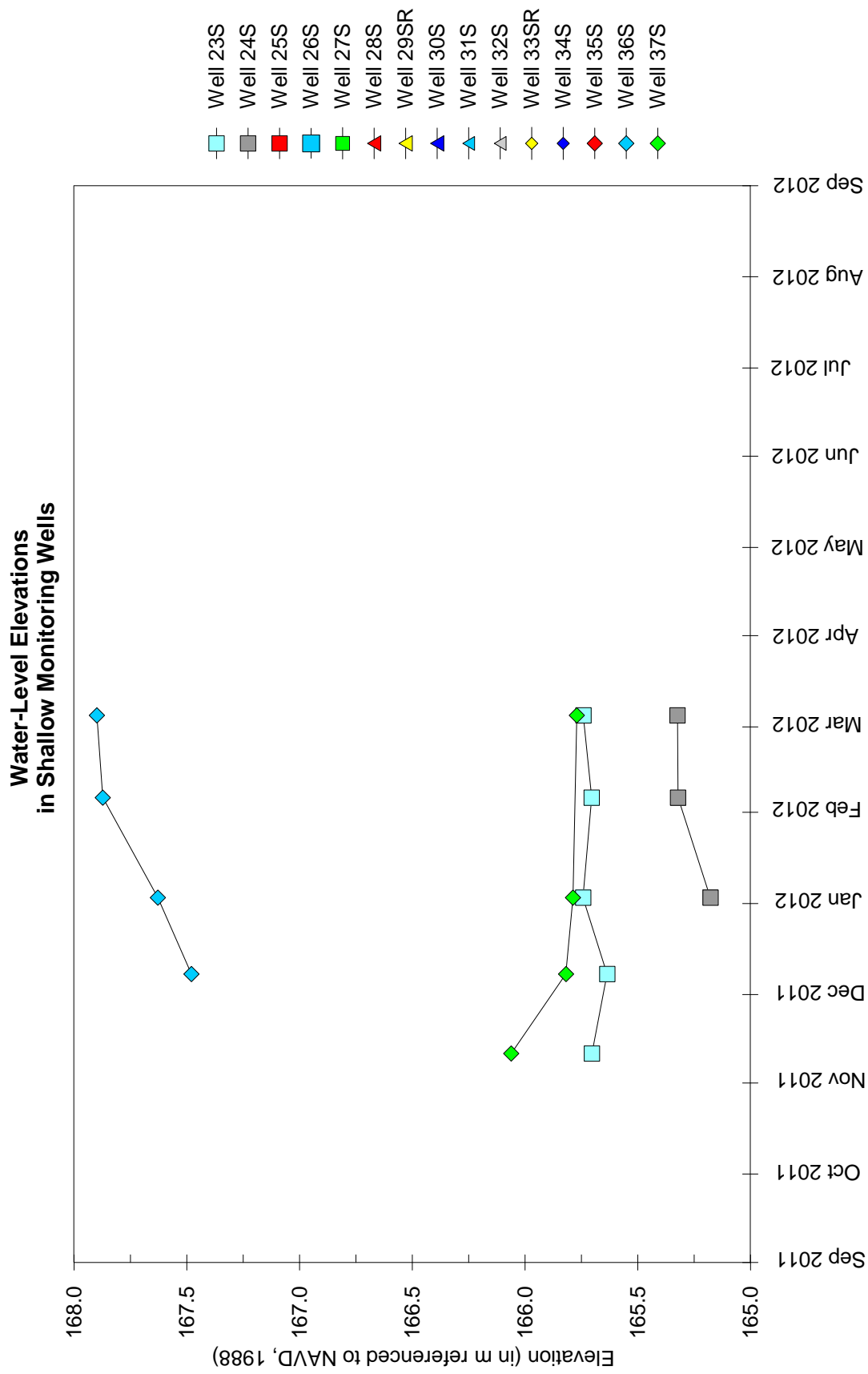
# **Hancock County near Carthage Wetland Mitigation Site** **September 1, 2011 through March 5, 2012**



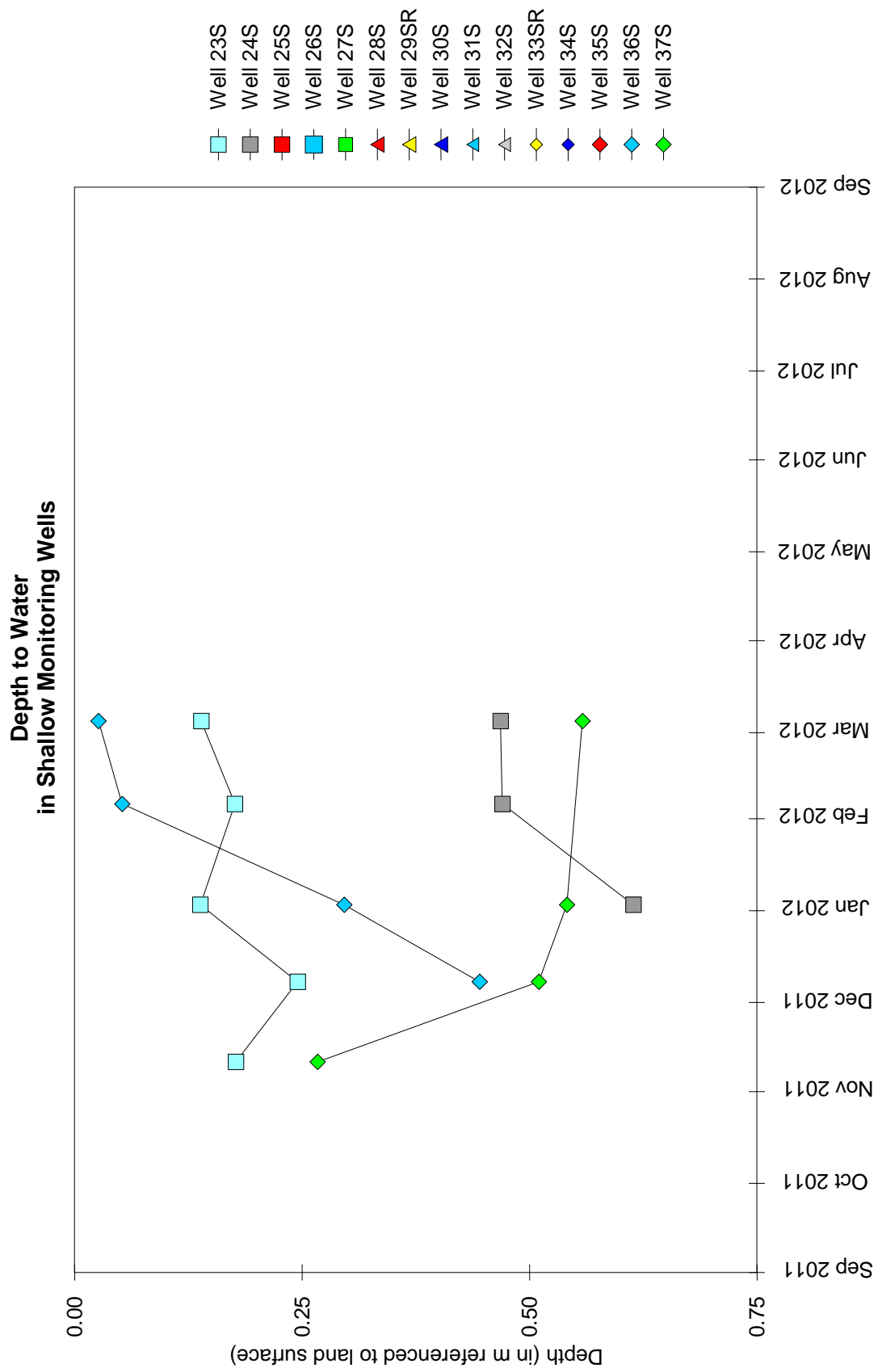
# **Hancock County near Carthage Wetland Mitigation Site** **September 1, 2011 through March 5, 2012**



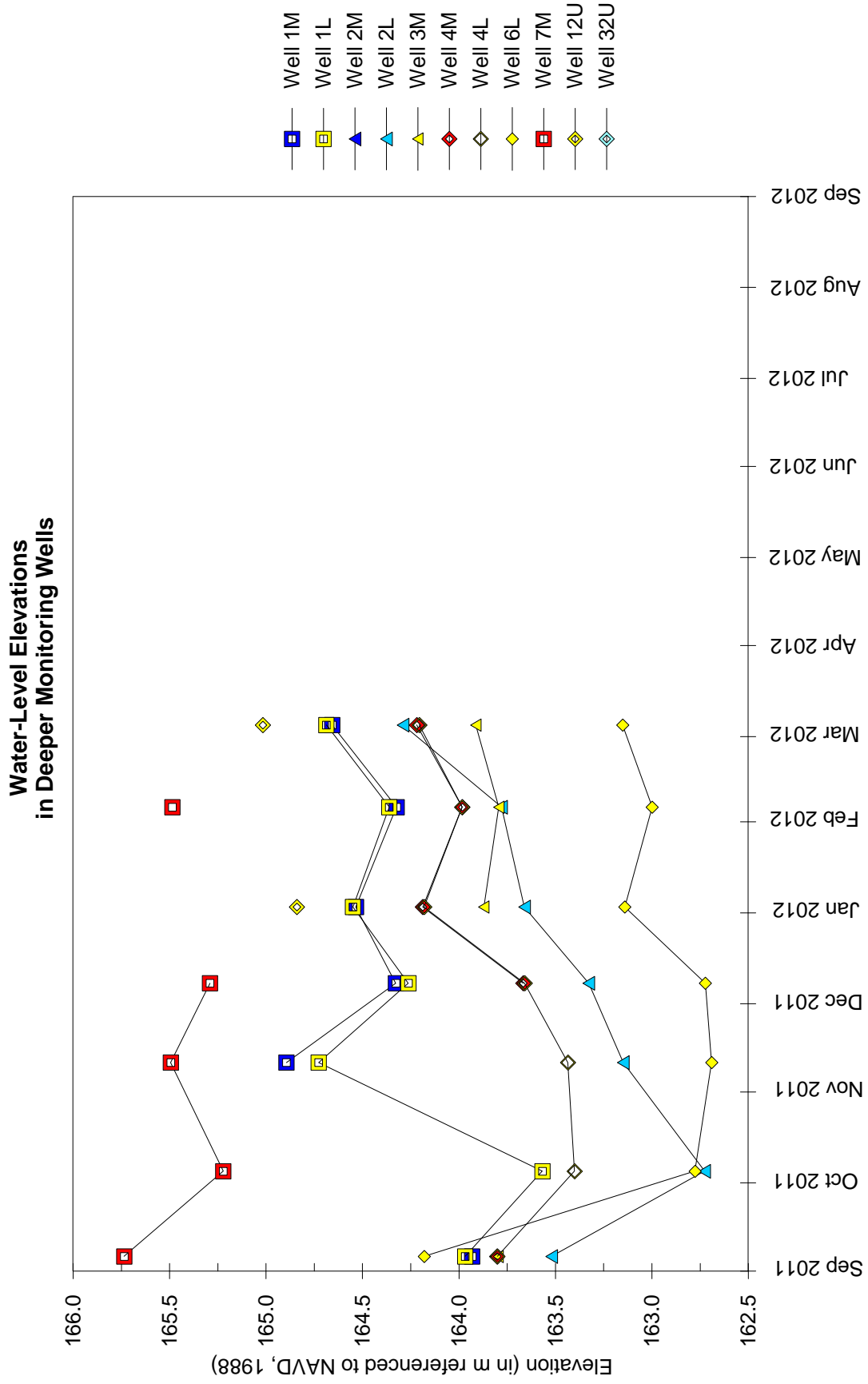
# **Hancock County near Carthage Wetland Mitigation Site** September 1, 2011 through March 5, 2012



# Hancock County near Carthage Wetland Mitigation Site September 1, 2011 through March 5, 2012

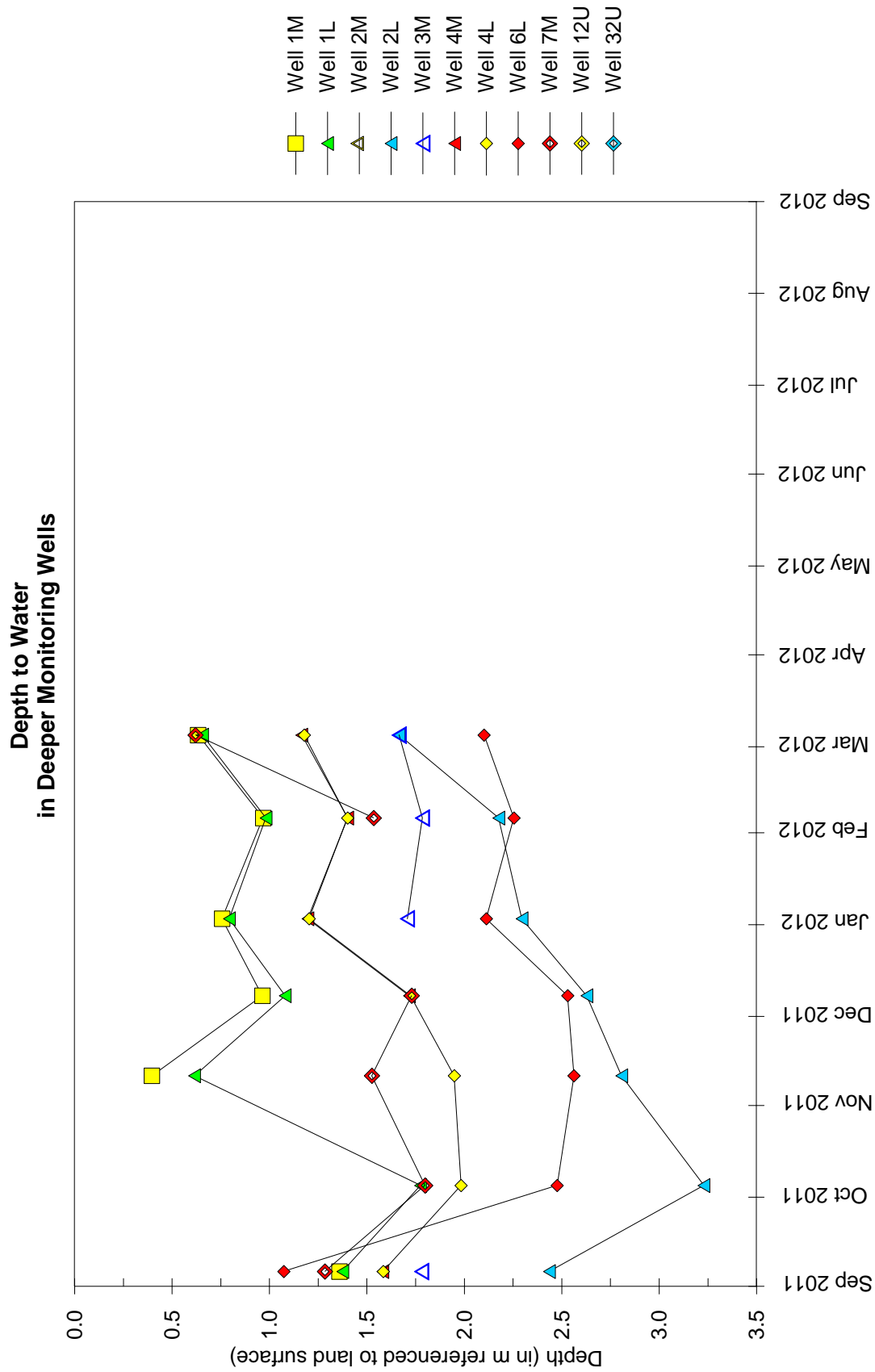


# **Hancock County near Carthage Wetland Mitigation Site** **September 1, 2011 through March 5, 2012**

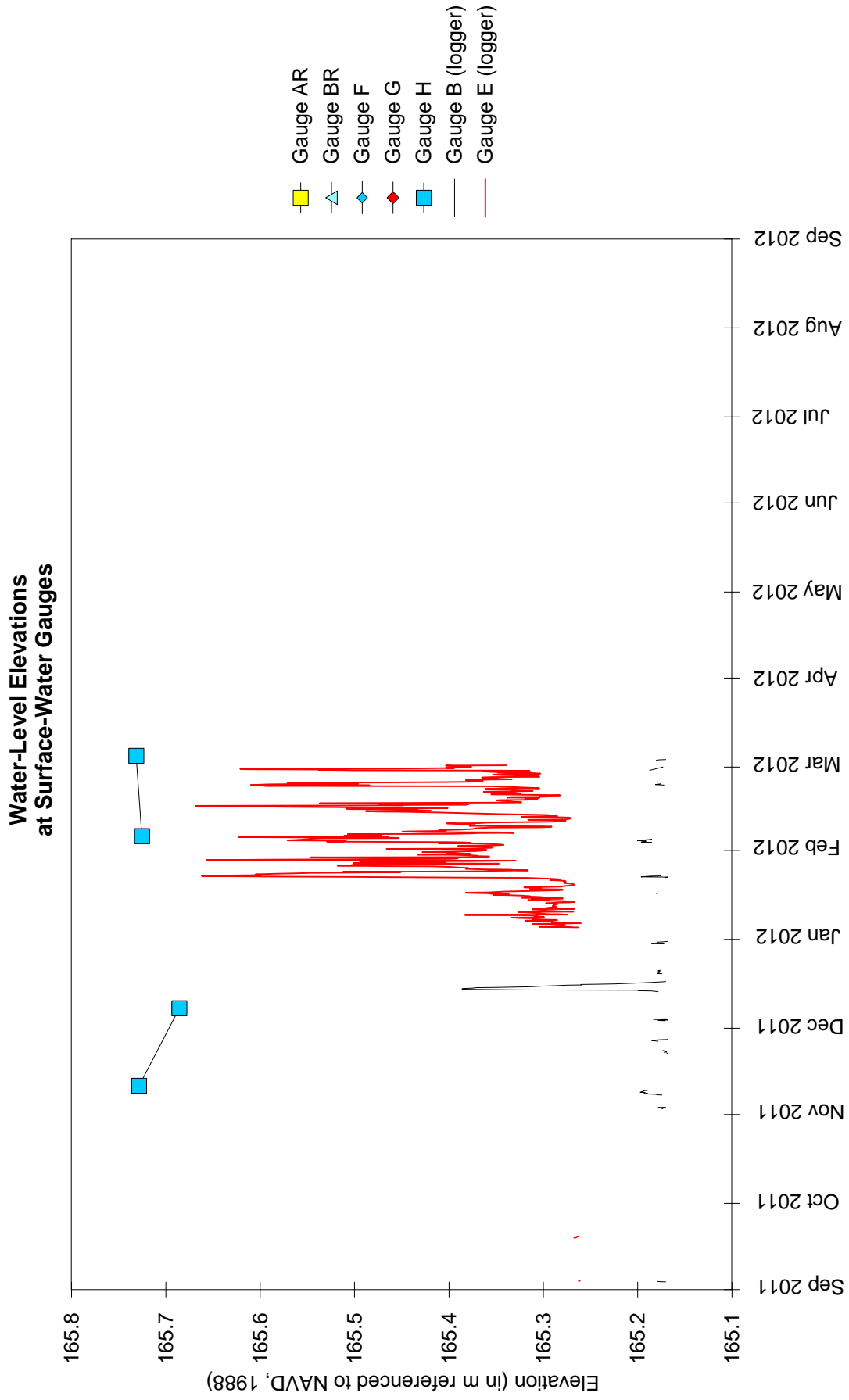




# Hancock County near Carthage Wetland Mitigation Site September 1, 2011 through March 5, 2012



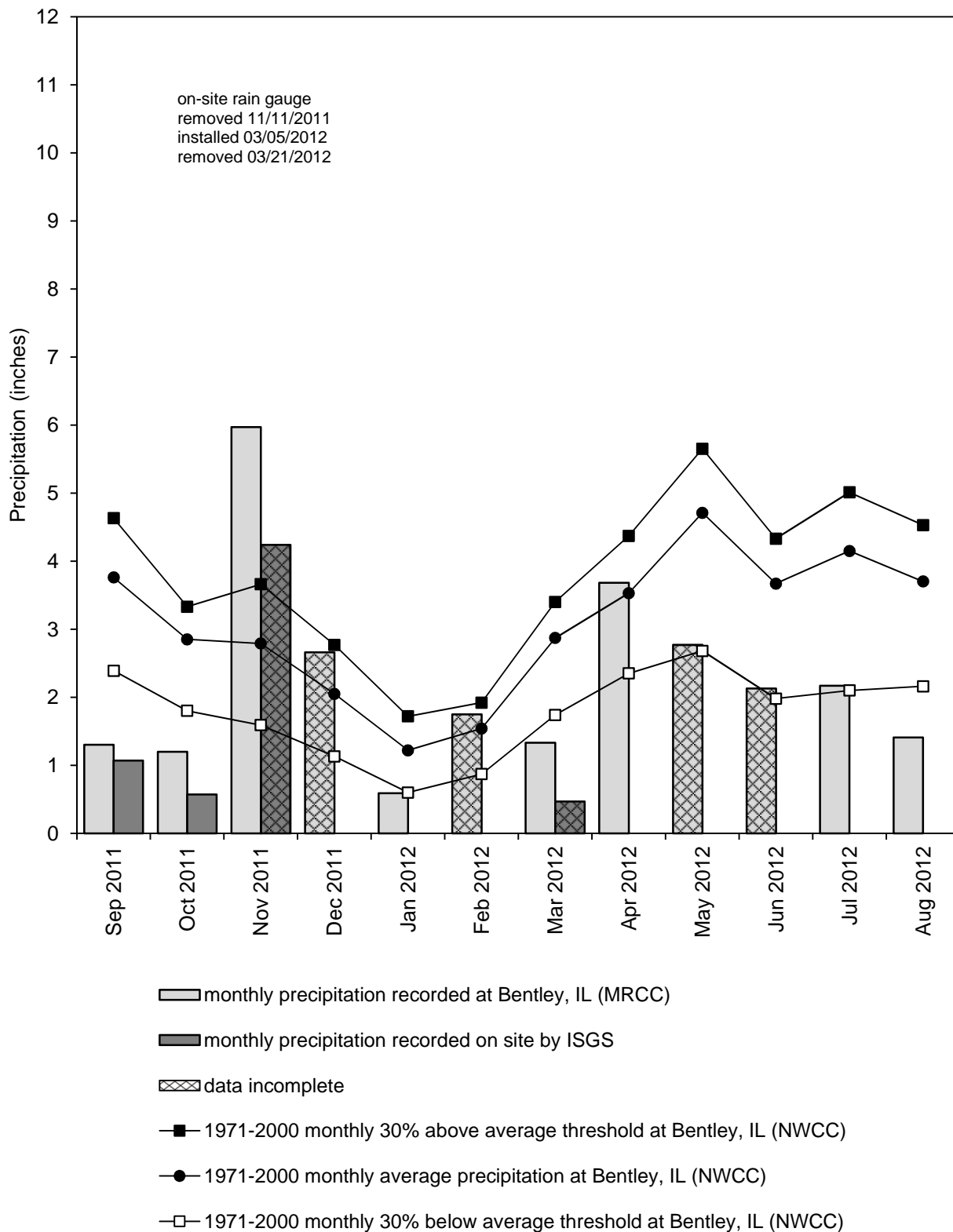
# **Hancock County near Carthage Wetland Mitigation Site** **September 1, 2011 through March 5, 2012**



# Hancock County near Carthage Wetland Mitigation Site

## September 2011 through August 2012

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



**ECKMANN/BISCHOFF  
WETLAND MITIGATION SITE**

**ISGS #43**

FAP 14

Sequence #27

Madison County, near Collinsville, Illinois

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

**Secondary Project Manager: Jessica L. B. Monson**

**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 2012**

The target compensation area for the Eckmann/Bischoff wetland mitigation site is 17.20 ha (42.50 ac). Using the 1987 Manual (Environmental Laboratory 1987), 25.50 ha (63.00 ac) of the total site area of 25.50 ha (63.00 ac) satisfied wetland hydrology criteria for greater than 5% of the 2012 growing season, and 16.44 ha (40.62 ac) satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Using the 2010 Midwest Region Supplement (USACE 2010) to the 1987 Manual, 17.13 ha (42.33 ac) satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

- The median date that the growing season begins in nearby Belleville, Illinois, is April 6 and the season lasts 199 days (MRCC 2012); 5% of the growing season is 10 days and 12.5% of the growing season is 25 days, according to the 1987 Manual. According to the 2010 Midwest Region Supplement, March 9 was the starting date of the 2012 growing season based soil temperatures measured at this site.
- Total precipitation recorded at the Belleville, Illinois weather station during the monitoring period was 93% of normal. Precipitation in Spring 2012 (March through May) was 109% of normal.
- In 2012, water levels measured in all soil-zone monitoring wells satisfied wetland hydrology criteria for greater than 5% of the growing season. Water levels measured in none of the soil-zone monitoring wells satisfied wetland hydrology criteria for greater than 12.5% of the growing season, according to the 1987 Manual, or for 14 or more consecutive days during the growing season according to the 2010 Midwest Region Supplement.
- Water levels measured by data loggers in monitoring wells 6S and 8S revealed that the longest periods of saturation during the monitoring period occurred in March and April 2012, but the longest periods lasted < 13 days. Periods of saturation in the other monitoring wells were likely similar to these two wells.
- Surface-water elevations measured at the SW1 data logger reveal that areas of the site at and below an elevation of 124.34 m (407.93 ft) were inundated for greater than 5% of the growing season, and that areas at and below an elevation of 124.25 m (407.64 ft) were inundated for greater than 12.5% of the growing season, according to

the 1987 Manual. In addition, areas of the site at and below an elevation of 124.30 m (407.80 ft) were inundated for 14 or more consecutive days during the growing season according to the 2010 Midwest Region Supplement.

#### ADDITIONAL INFORMATION

- The areas of the site that satisfied the criteria for jurisdictional wetland hydrology for more than 12.5% of the growing season and for 14 or more consecutive days during the growing season were areas that were inundated for periods long enough to satisfy those two criteria. The boundaries of these areas were plotted using the topographic contour map of the site created by the IDOT in 1987.

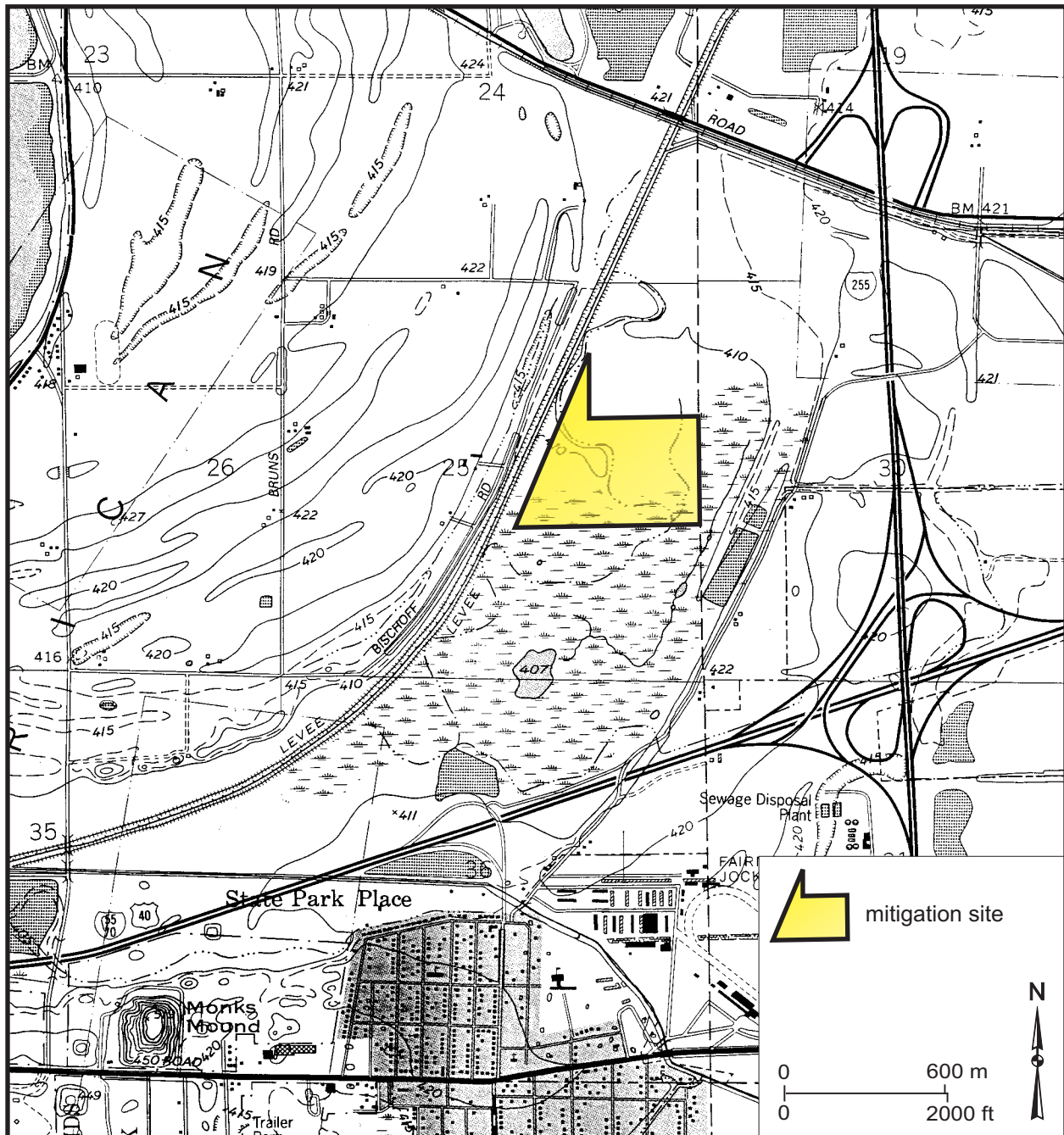
#### PLANNED FUTURE ACTIVITIES

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

# Eckmann/Bischoff 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



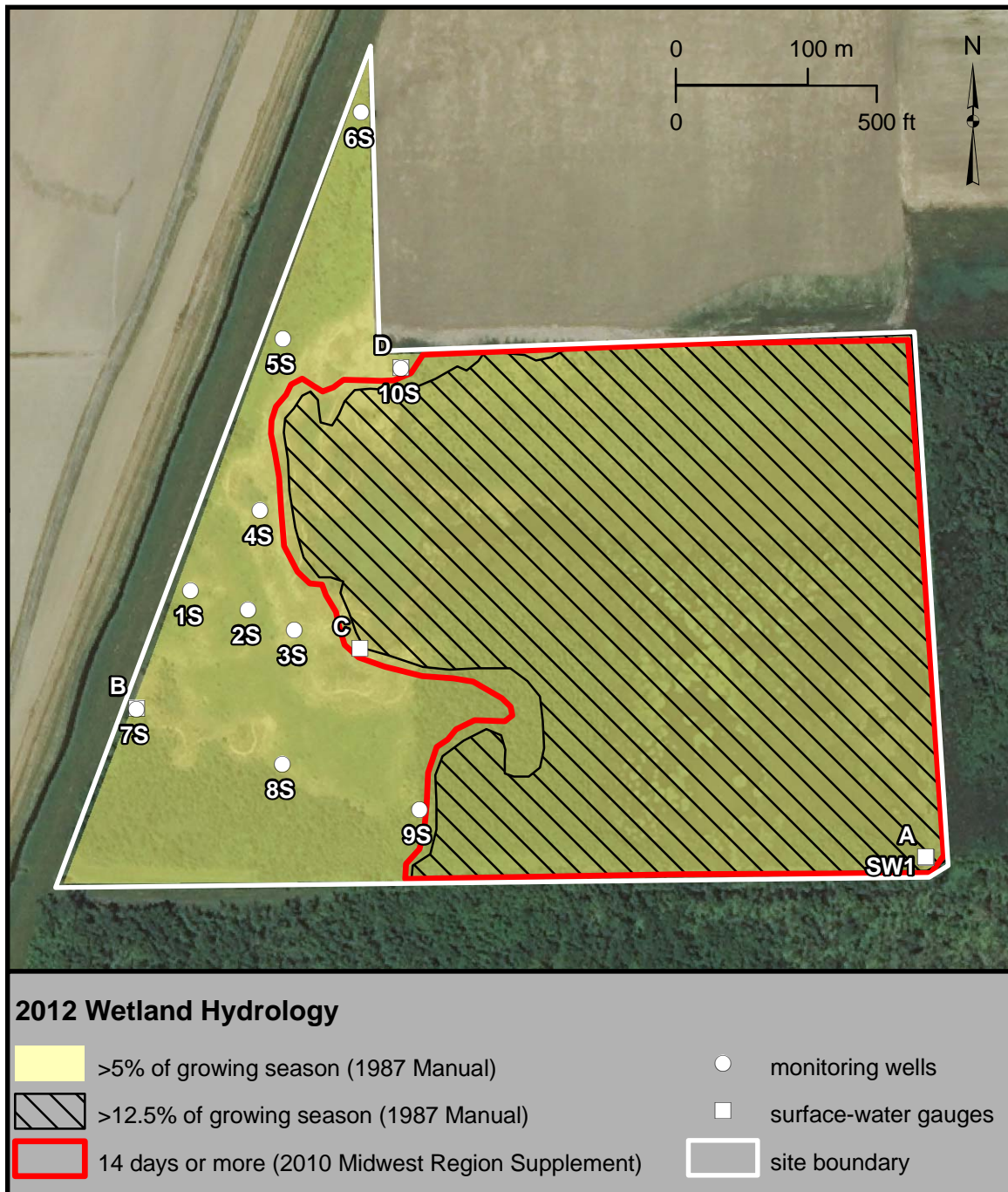


# Eckmann/Bischoff Wetland Mitigation Site (FAP 14)

## Estimated Areal Extent of 2012 Wetland Hydrology

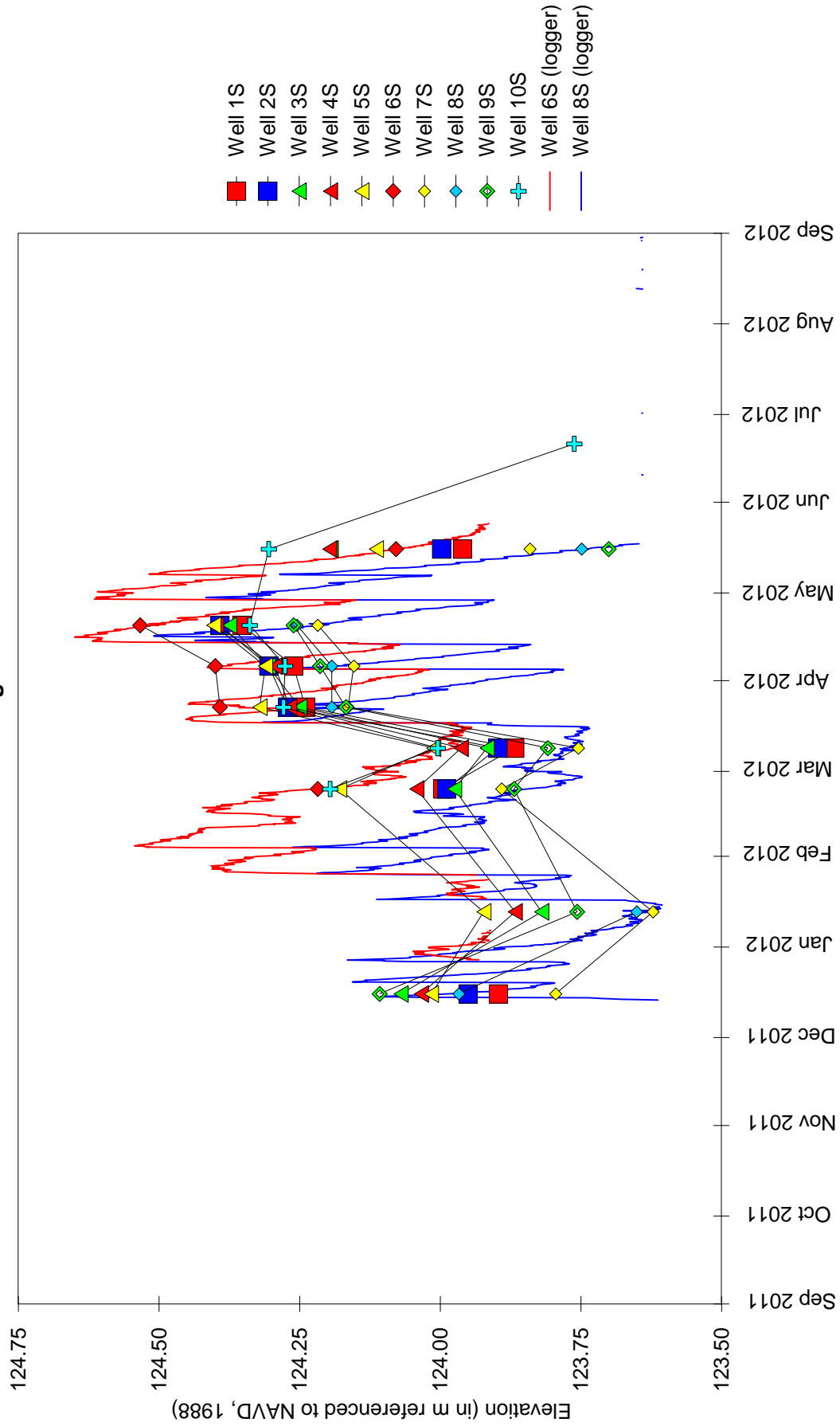
September 1, 2011 through August 31, 2012

Map based on 2012 Farm Service Agency  
digital orthophotography, Madison County, Illinois (USDA-FSA 2012)

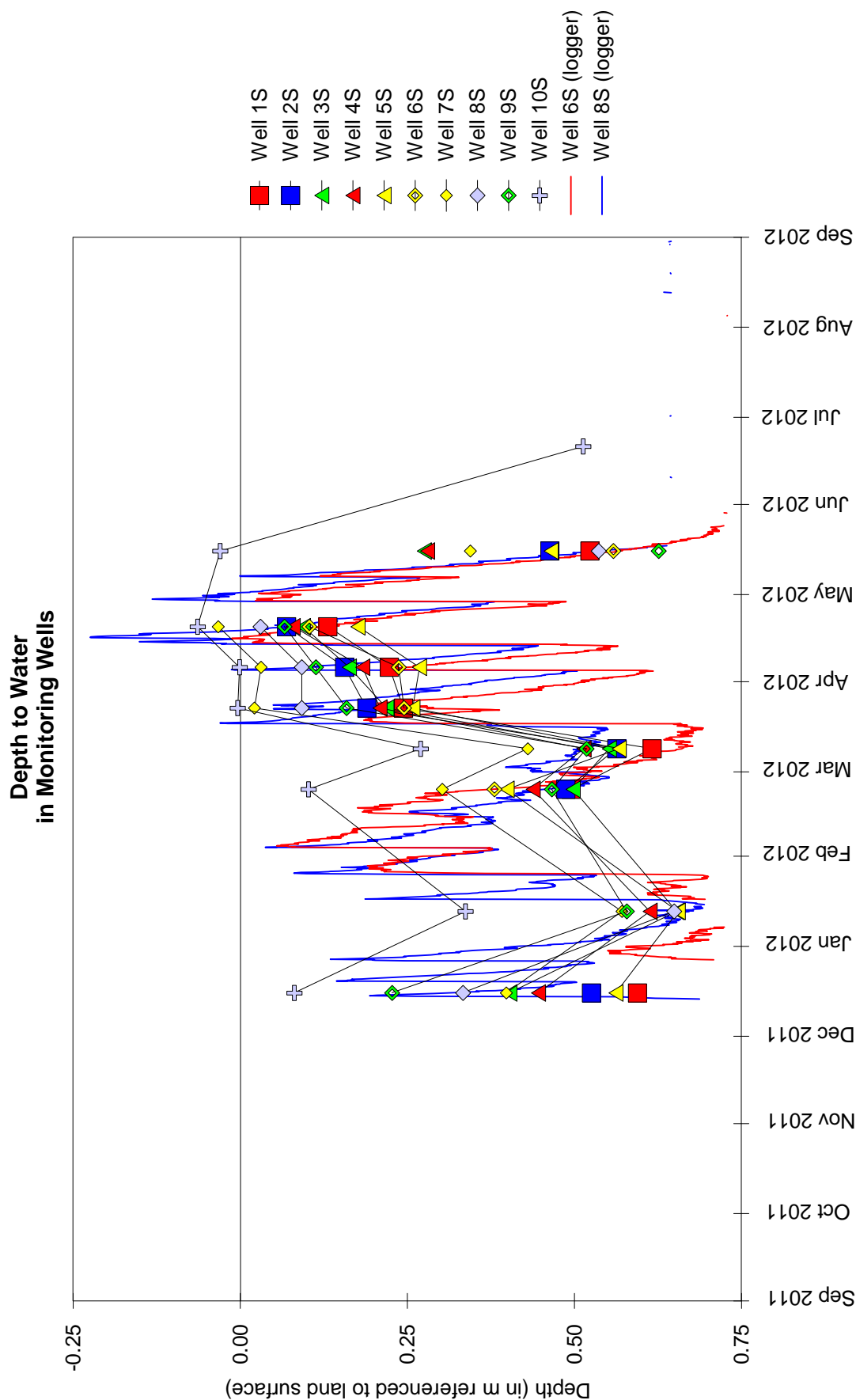


# **Eckmann/Bischoff Wetland Mitigation Site** **September 1, 2011 through August 31, 2012**

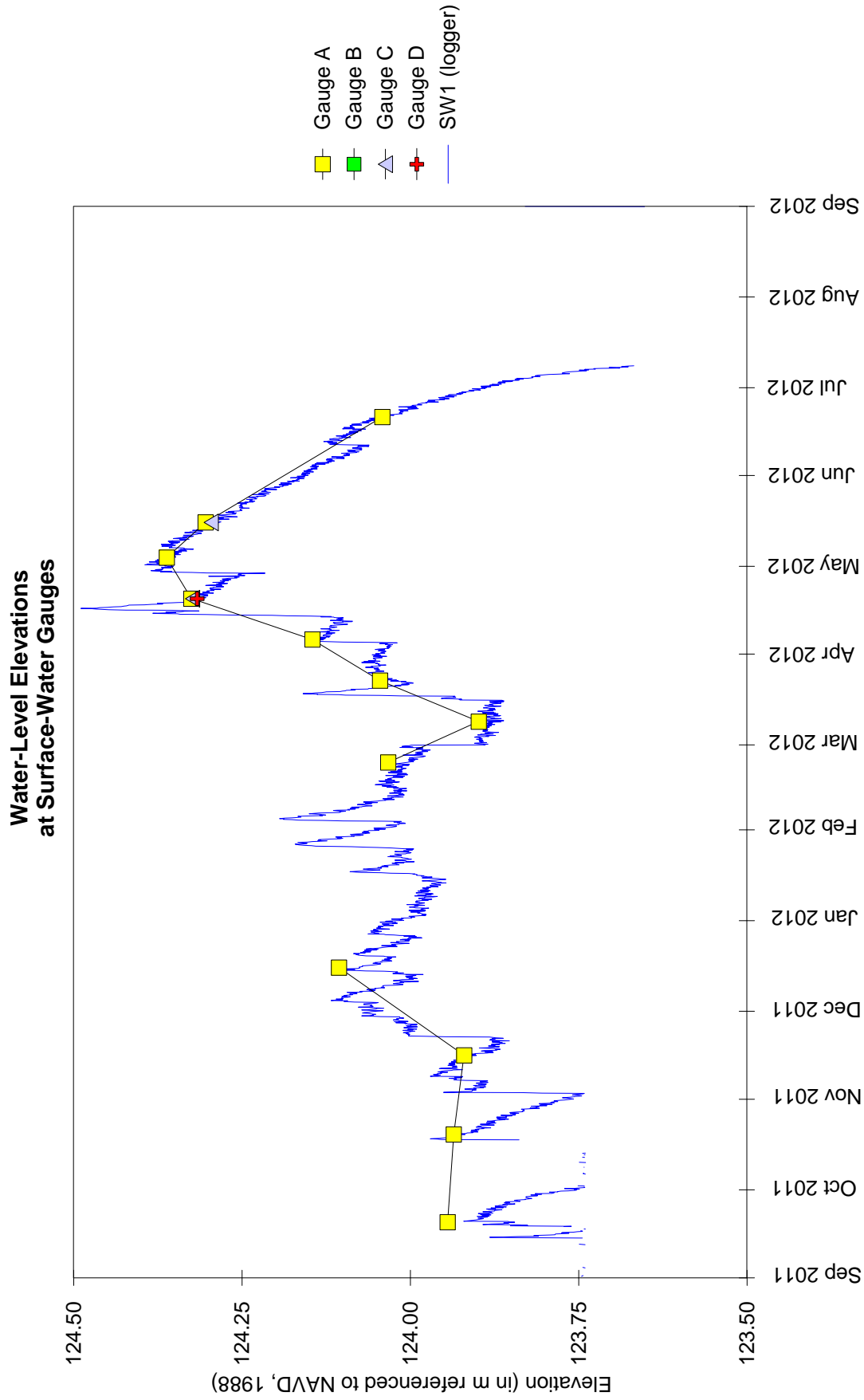
## **Water-Level Elevations in Monitoring Wells**



# **Eckmann/Bischoff Wetland Mitigation Site** September 1, 2011 through August 31, 2012



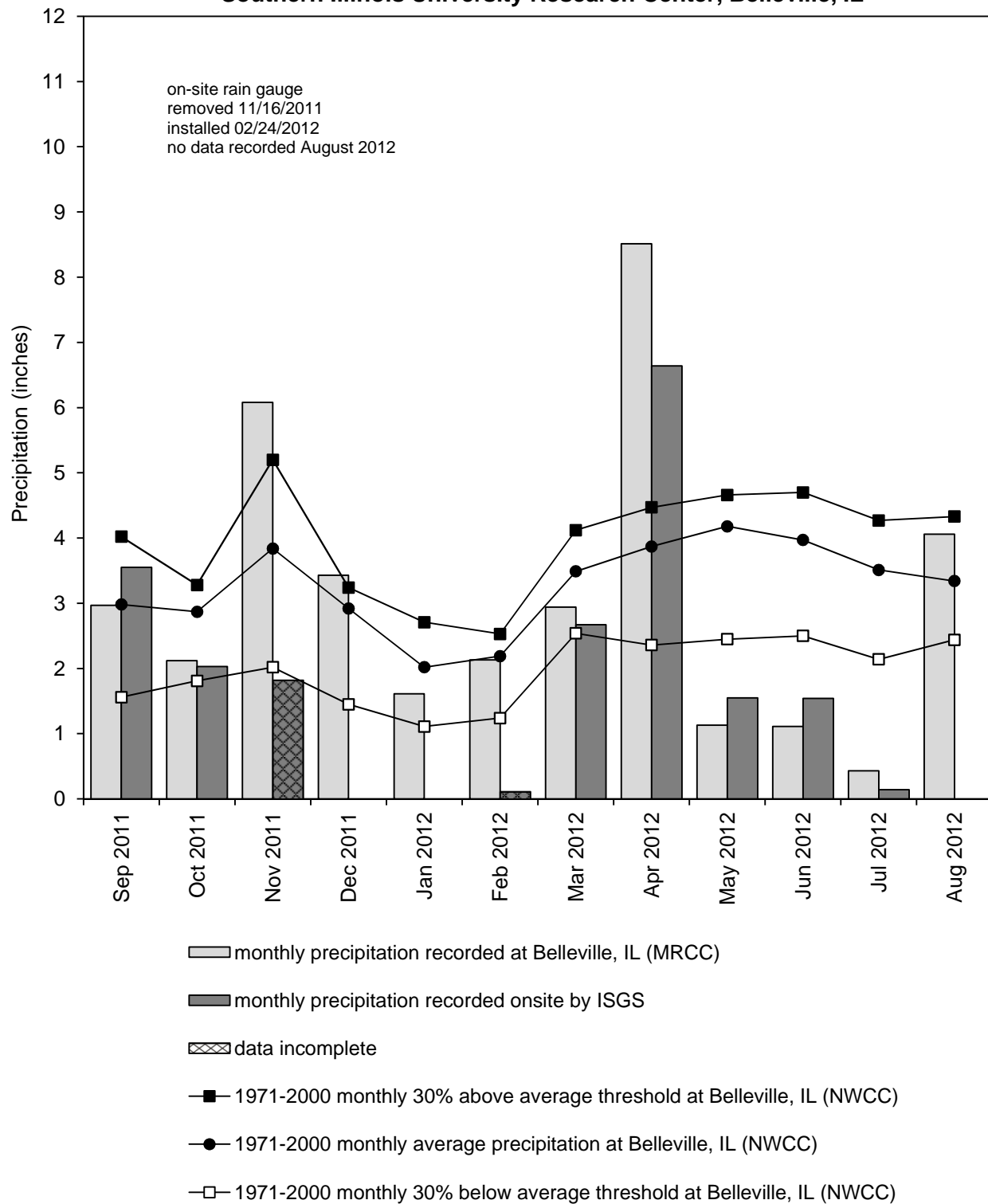
# **Eckmann/Bischoff Wetland Mitigation Site** **September 1, 2011 through August 31, 2012**



# Eckmann/Bischoff Wetland Mitigation Site

## September 2011 through August 2012

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



**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: Jessica R. Ackerman**

**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.
- April 2011: Monitoring of Phase I of the site was completed.
- June 2012: The site was approved by the USACE and the Illinois Department of Natural Resources, and IDOT informed the ISGS that post-construction monitoring was no longer required.

**WETLAND HYDROLOGY CALCULATION FOR 2012**

No estimate was made of the area of the site that satisfied jurisdictional wetland hydrology criteria in 2012.

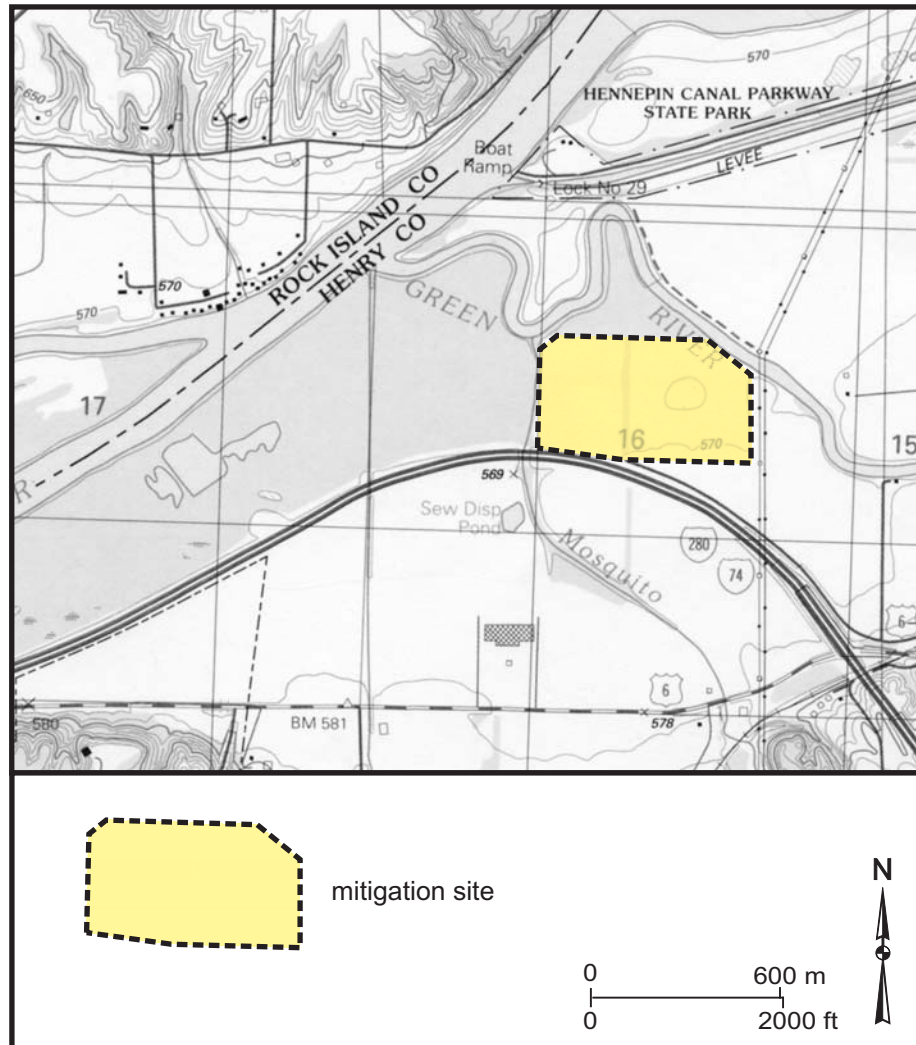
**PLANNED FUTURE ACTIVITIES**

- The monitoring network at the site will be removed as time allows.

# 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

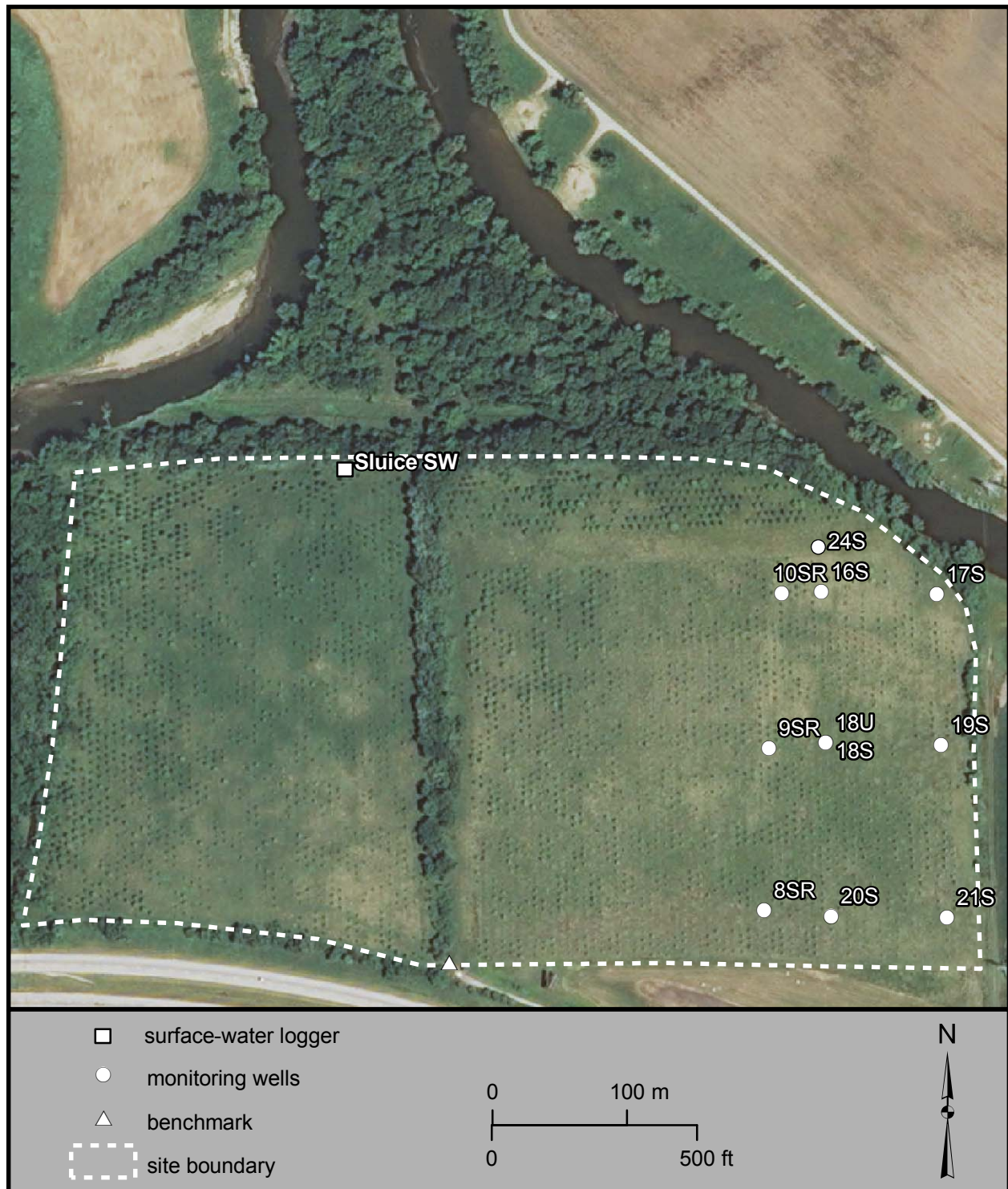




# Milan Beltway, Green Rock Wetland Mitigation Site (FAU 5822)

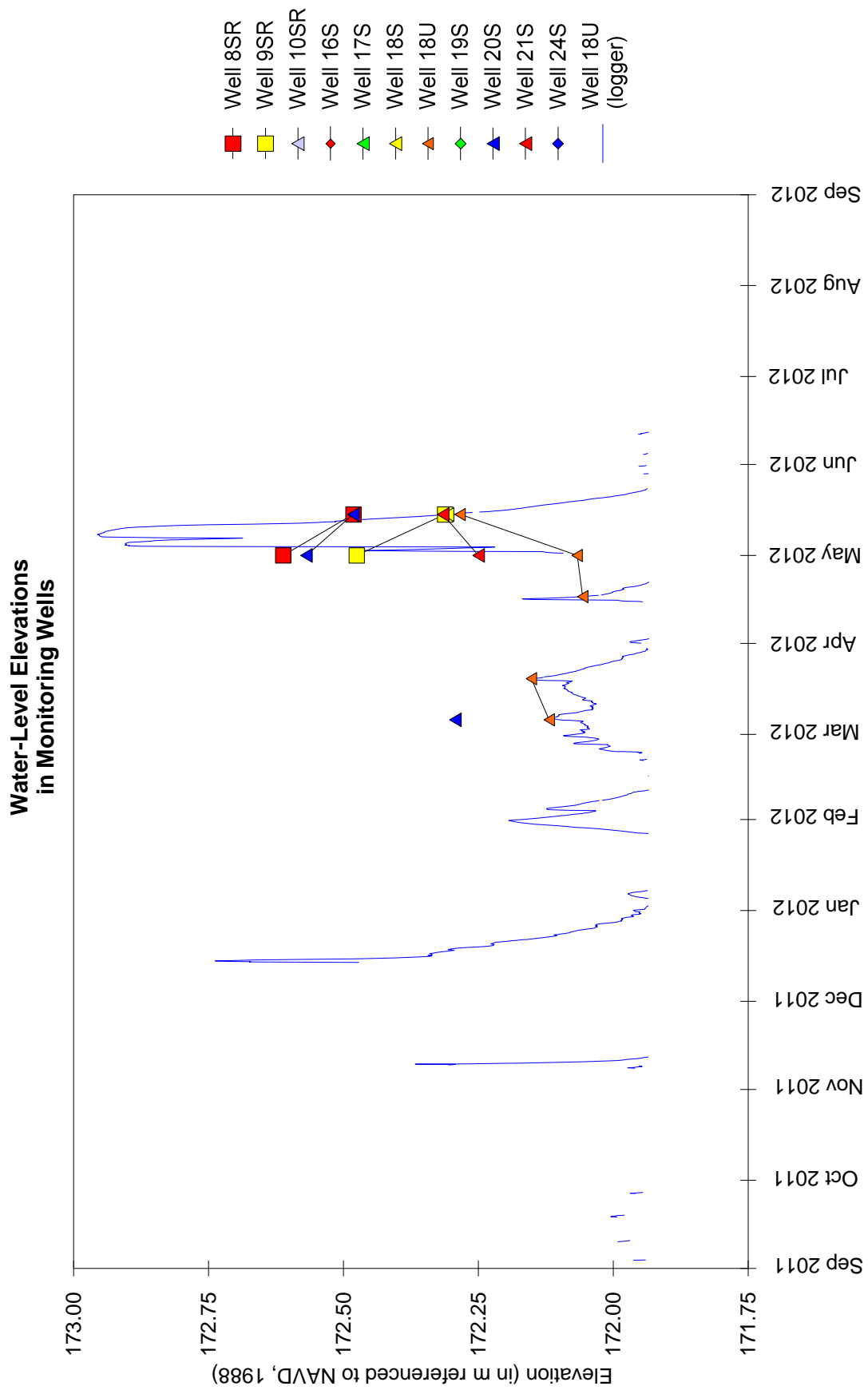
## Monitoring Network

Map based on 2012 Farm Service Agency digital orthophotography, Henry County, Illinois (USDA-FSA 2012)

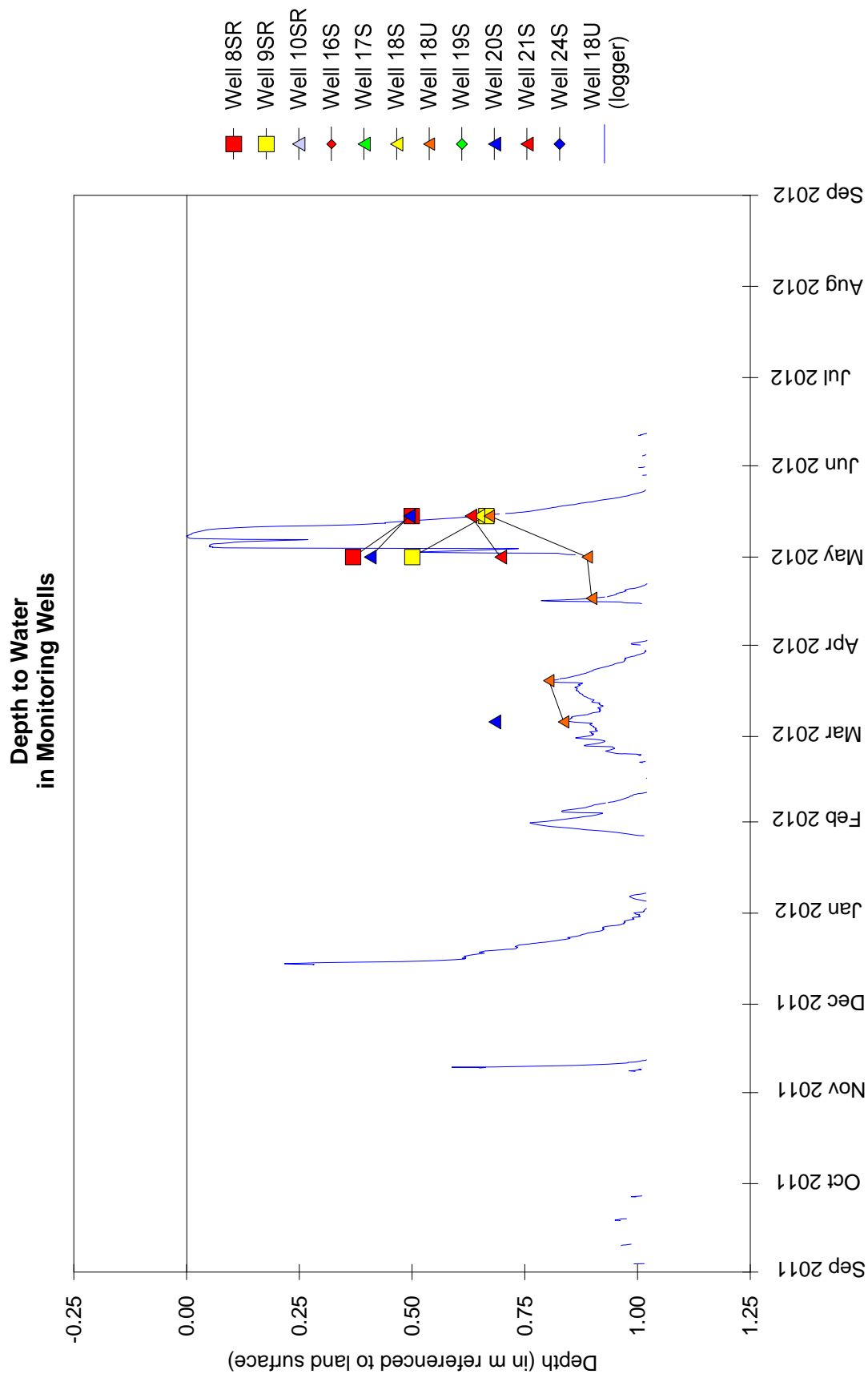




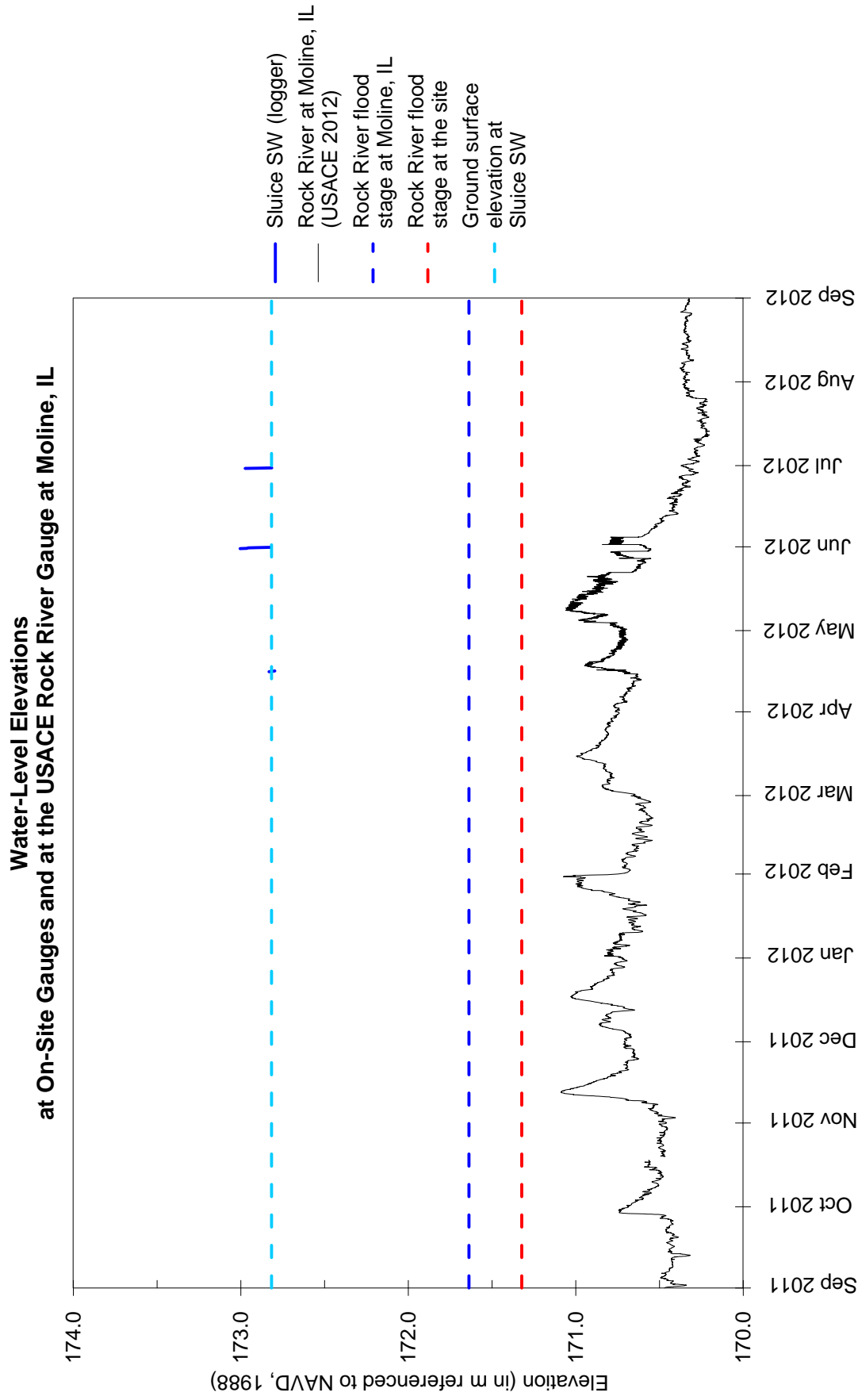
# **Milan Beltway, Green Rock Wetland Mitigation Site** **September 1, 2011 through July 12, 2012**



# **Milan Beltway, Green Rock Wetland Mitigation Site** **September 1, 2011 through July 12, 2012**



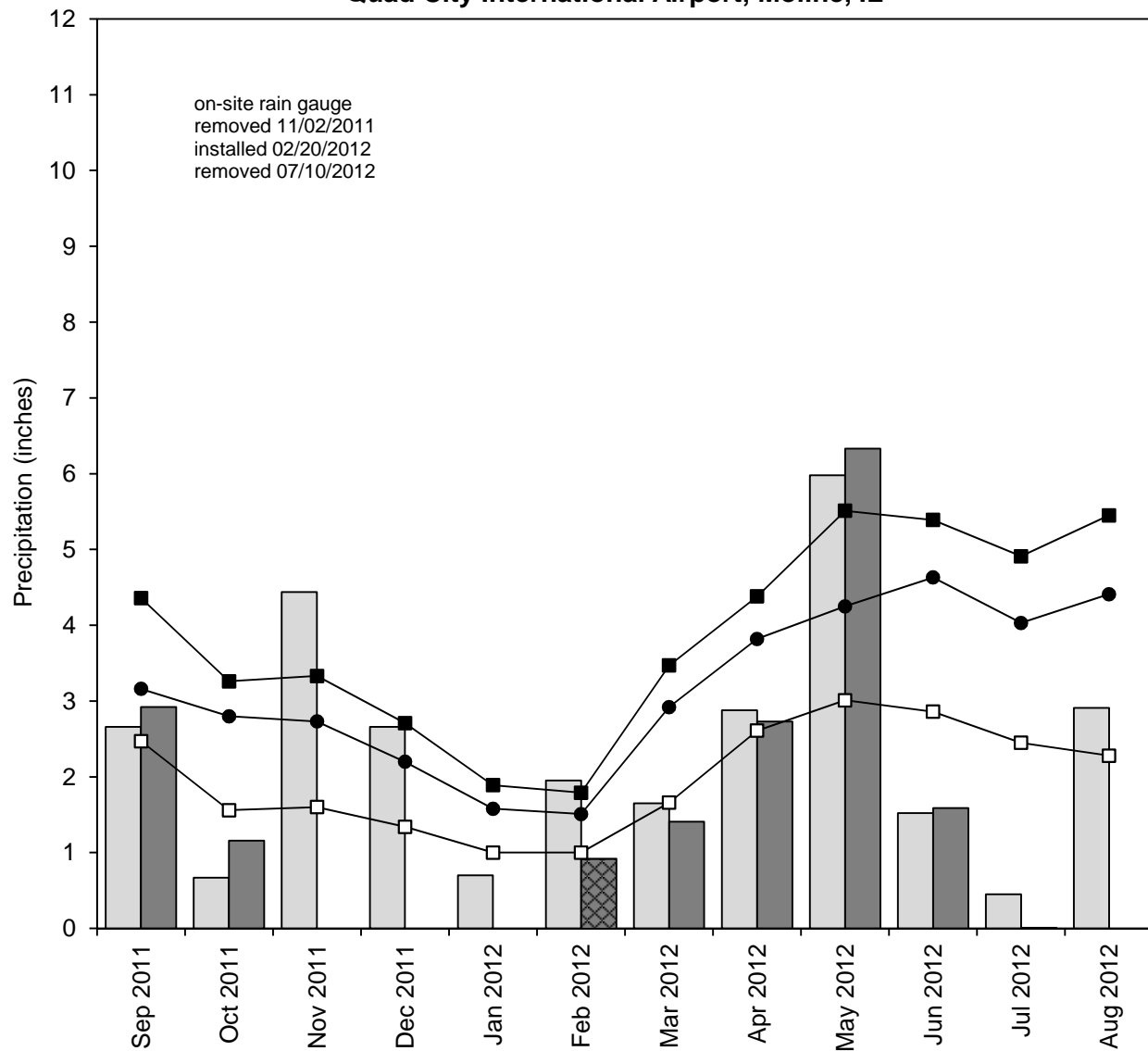
# **Milan Beltway, Green Rock Wetland Mitigation Site** **September 1, 2011 through July 12, 2012**



# Milan Beltway, Green Rock Wetland Mitigation Site

## September 2011 through August 2012

### 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

data incomplete

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)

**MORRIS  
WETLAND MITIGATION BANK**

**ISGS #49**

Sequence #1306

Grundy County, near Morris, Illinois

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

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

**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 monitoring of surface-water inundation and floodwater storage functions would be limited to an off-site USACE river gauge and two on-site data loggers.

**WETLAND HYDROLOGY CALCULATION FOR 2012**

The target compensation area for the Morris Wetland Mitigation Bank is 44.11 ha (109 ac). Using the 1987 Manual (Environmental Laboratory 1987), 6.18 ha and 0.46 ha (15.28 ac and 1.13 ac) of the total site area of 342 ha (844 ac) satisfied wetland hydrology criteria for greater than 5% and 12.5%, respectively, of the 2012 growing season. Using the 2010 Midwest Region Supplement (USACE 2010) to the 1987 Manual, 4.27 ha (10.56 ac) satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

- The median date that the growing season begins in nearby Ottawa, Illinois, is April 10, and the season lasts 204 days (MRCC 2012); 5% of the growing season is 10 days, and 12.5% of the growing season is 26 days, according to the 1987 Manual. According to the 2010 Midwest Region Supplement, March 6 was the starting date of the 2012 growing season based on measurements from an on-site soil-temperature data logger.
- Total precipitation for the monitoring period at the Morris, IL, weather station was 80% of normal. During Spring 2012 (March through May), precipitation was 66% of normal. Over 4 inches of precipitation was measured on site between April 28 and May 7, resulting in the only flood event that impacted the site during the 2012 growing season.
- Surface-water levels measured at Gauges SW8 and SW43 indicated inundation at or below 150.55 m and 150.53 m (493.93 ft and 493.86 ft), respectively, for greater than 5% of the growing season, and inundation at or below 150.20 m (492.78 ft) at Gauge SW43 for greater than 12.5% of the growing season, according to the 1987 Manual. Surface-water levels measured at Gauge SW8 did not satisfy wetland hydrology criteria for greater than 12.5% of the growing season, according to the 1987 Manual. Per the 2010 Midwest Region Supplement, surface-water levels measured at Gauges SW8 and SW43 indicated inundation at or below 150.37 m and 150.45 m (493.34 ft and 493.60 ft), respectively, for 14 or more consecutive days of the growing season. Gauge SW2I over the Mazon River was destroyed by the May 7th flood, and therefore could not be used to evaluate wetland hydrology at the site.

## PLANNED FUTURE ACTIVITIES

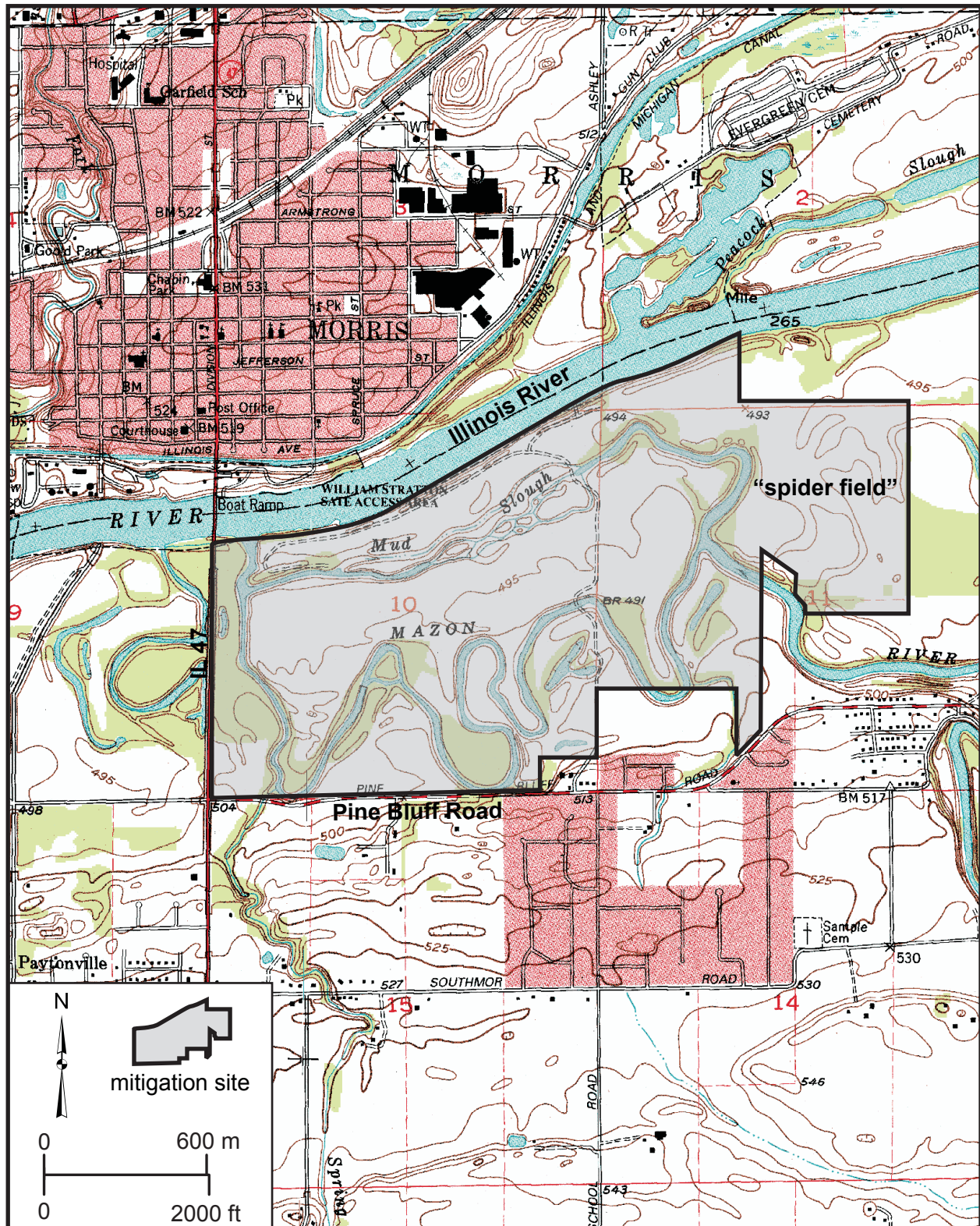
- Monitoring of surface water via three on-site ISGS data loggers and one off-site USACE river gauge will continue until no longer required by IDOT. The continued aim will be to watch for significant changes in the on-site wetland hydrology acreage or site functions.

# Morris Wetland Mitigation Bank

## General Study Area and Vicinity

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

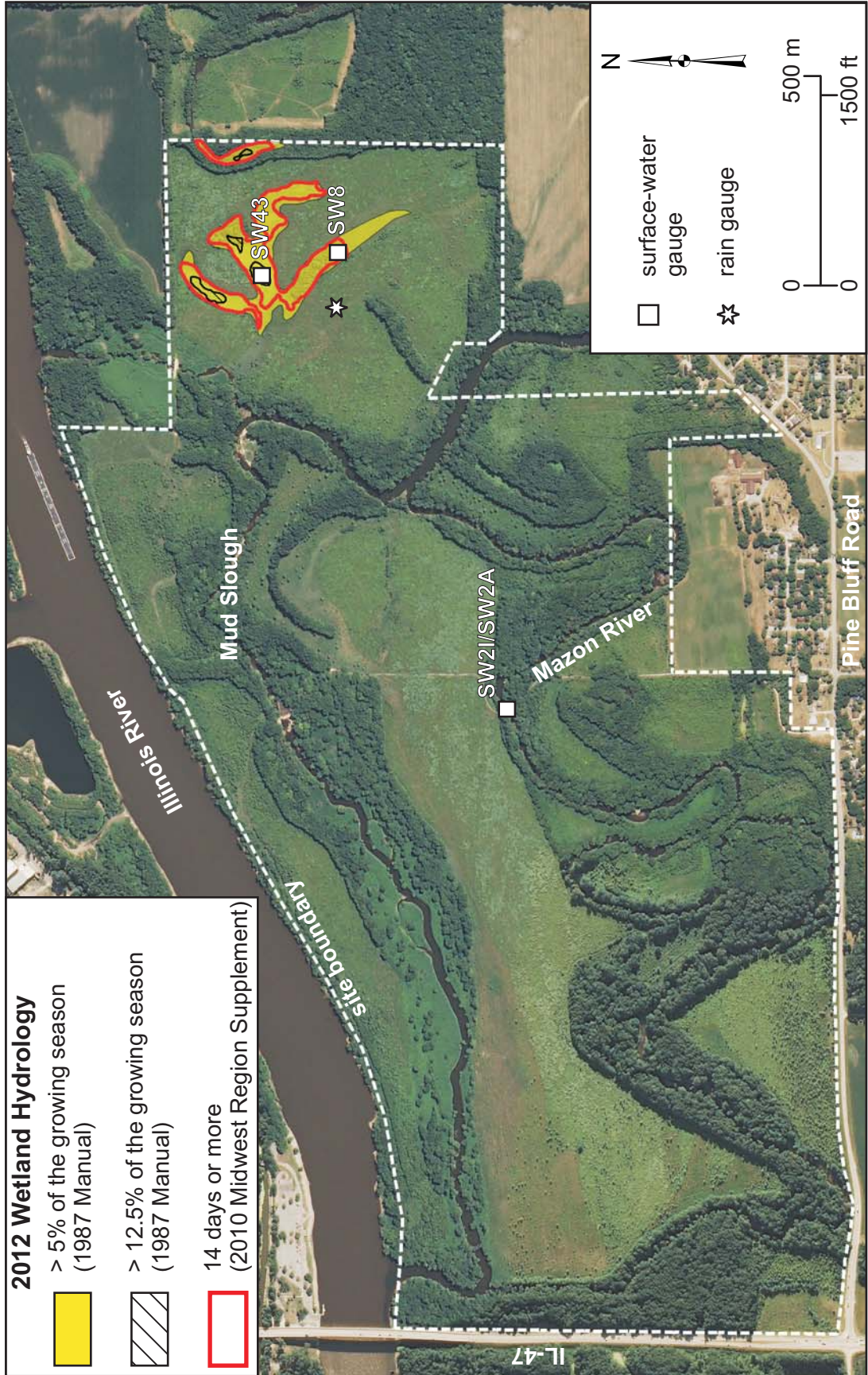
contour interval is 5 feet





# **Morris Wetland Mitigation Bank** **Estimated Areal Extent of 2012 Wetland Hydrology** **September 1, 2011 through August 31, 2012**

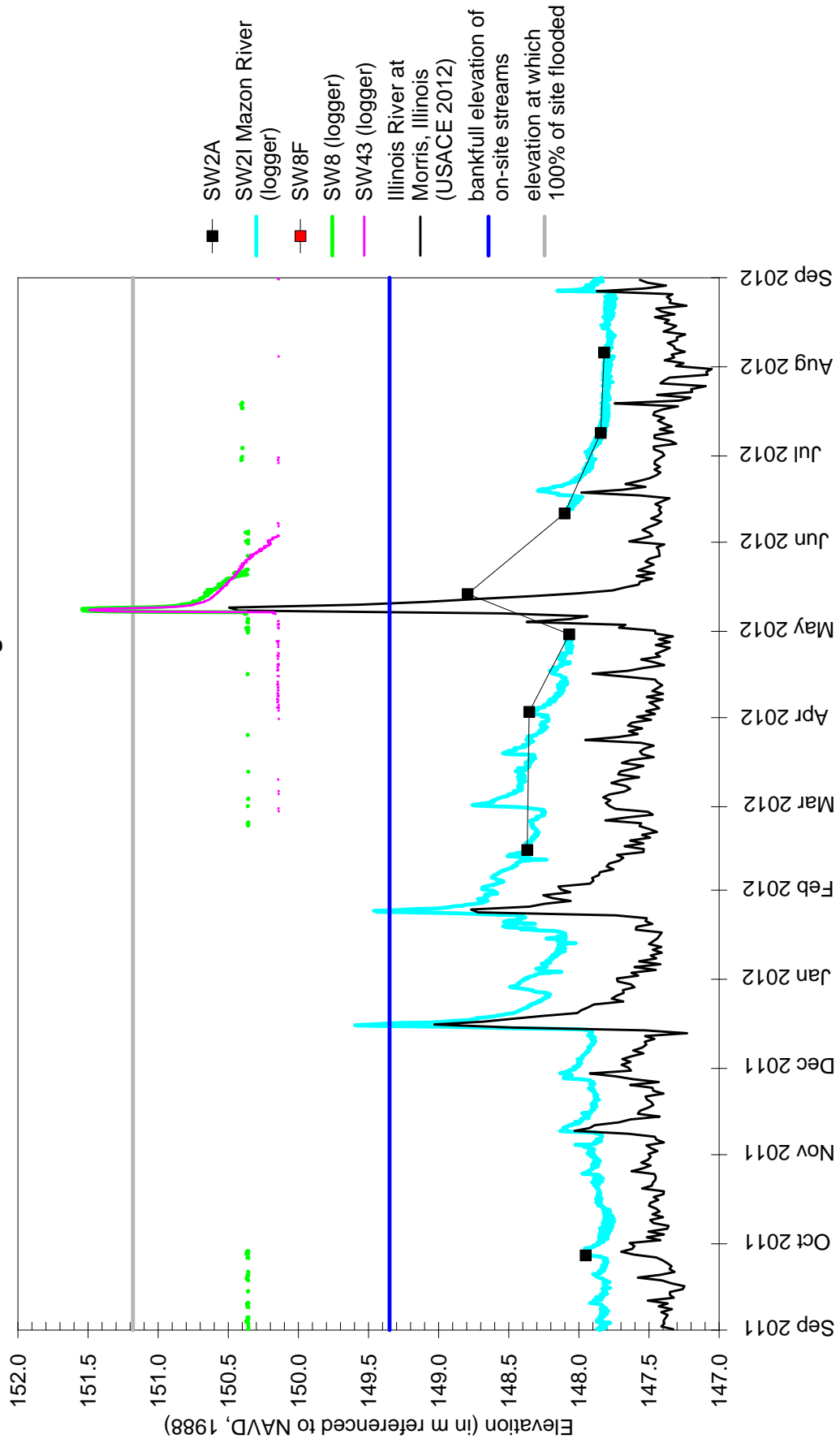
Map based on 2012 Farm Service Agency digital orthophotography, Coles County, Illinois (USDA-FSA 2012)





# **Morris Wetland Mitigation Bank** September 1, 2011 through August 31, 2012

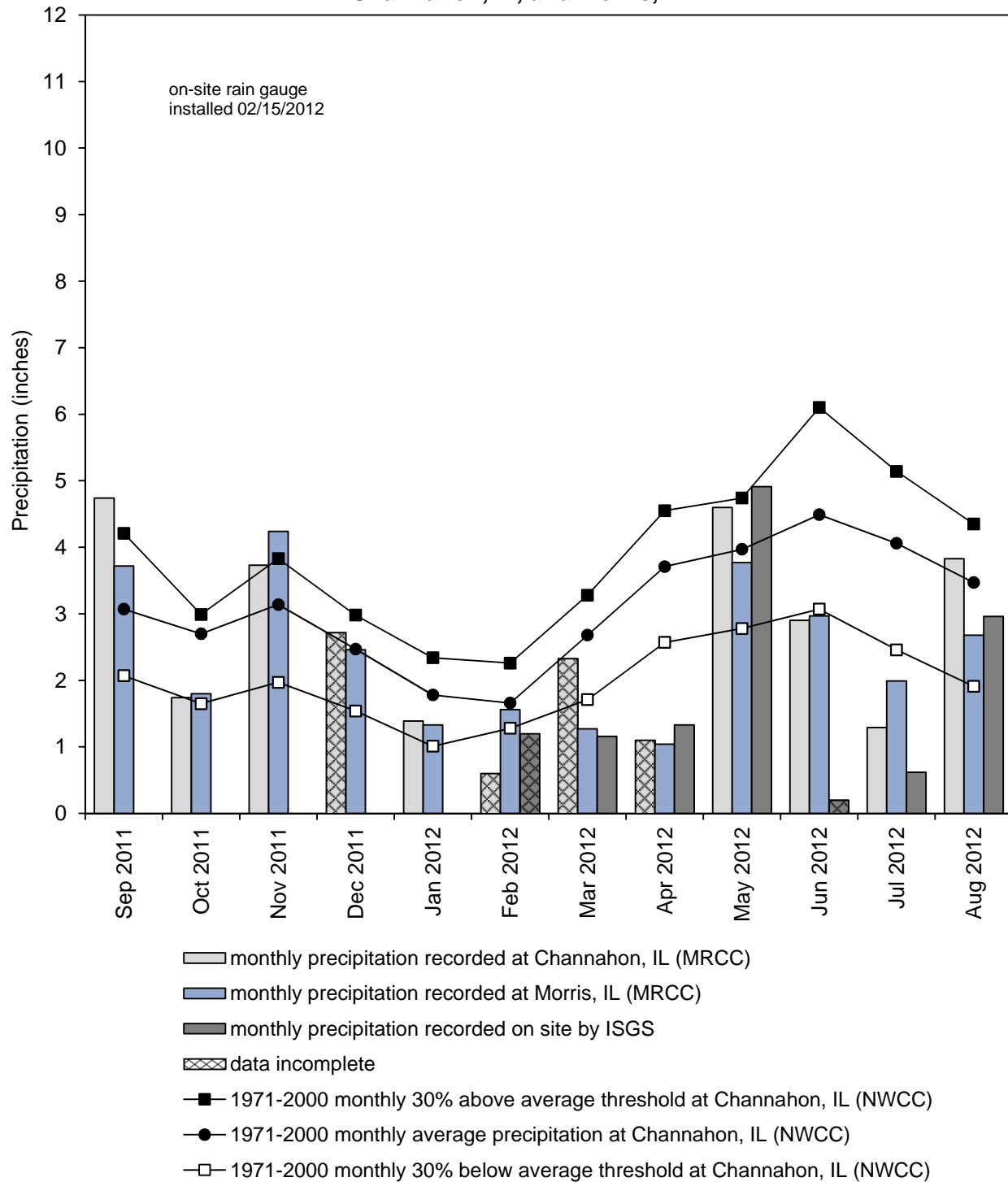
**Water-Level Elevations  
at Surface-Water Gauges**



# Morris Wetland Mitigation Bank

## September 2011 through August 2012

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



## **LA GRANGE**

**ISGS #52**

### **WETLAND MITIGATION BANK**

Sequence #9579

Brown County, near La Grange, Illinois

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

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

### **SITE HISTORY**

- February 2000: ISGS was tasked by IDOT to conduct a Level II hydrogeologic assessment of the site.
- 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, constructing a raised access road, and excavating a large basin in the north-central area of the site.
- Summer 2011: Further earthworks were undertaken at the site. The former basin of Amelia Barker Lake was widened and the fill utilized for road construction.
- Fall 2011: Trees were planted in portions of Fields 12, 13, 14, and 15 and in areas surrounding Amelia Barker Lake.

### **WETLAND HYDROLOGY CALCULATION FOR 2012**

The target compensation area for the La Grange Wetland Mitigation Bank is 414.40 ha (1024.00 ac). Using the 1987 Manual (Environmental Laboratory 1987), 283.06 ha (699.45 ac) of the total site area of 665.72 ha (1645.0 ac) satisfied wetland hydrology criteria for greater than 5% of the growing season and 38.96 ha (96.27 ac) satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Using the 2010 Midwest Region Supplement (USACE 2010) to the 1987 Manual, 283.06 ha (699.45 ac) satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

- The median date that the growing season begins in nearby Rushville, Illinois, is April 6, and the season lasts 208 days (MRCC 2012); 5% of the growing season is 10 days, and 12.5% of the growing season is 26 days, according to the 1987 Manual. According to the 2010 Midwest Region Supplement, March 6 was the starting date of the 2012 growing season based on soil temperatures measured at the wetland mitigation bank.
- Total precipitation for the monitoring period at the Rushville, IL, weather station was 63% of normal. During Spring 2012 (March to May), precipitation was 48% of normal.
- In 2012, wells 45S and 50S satisfied wetland hydrology criteria for greater than 5% of the growing season; however, water-levels indicated that no wells satisfied wetland

hydrology criteria for greater than 12.5% of the growing season, according to the 1987 Manual. According to the 2010 Midwest Region Supplement, wells 45S and 50S also satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season.

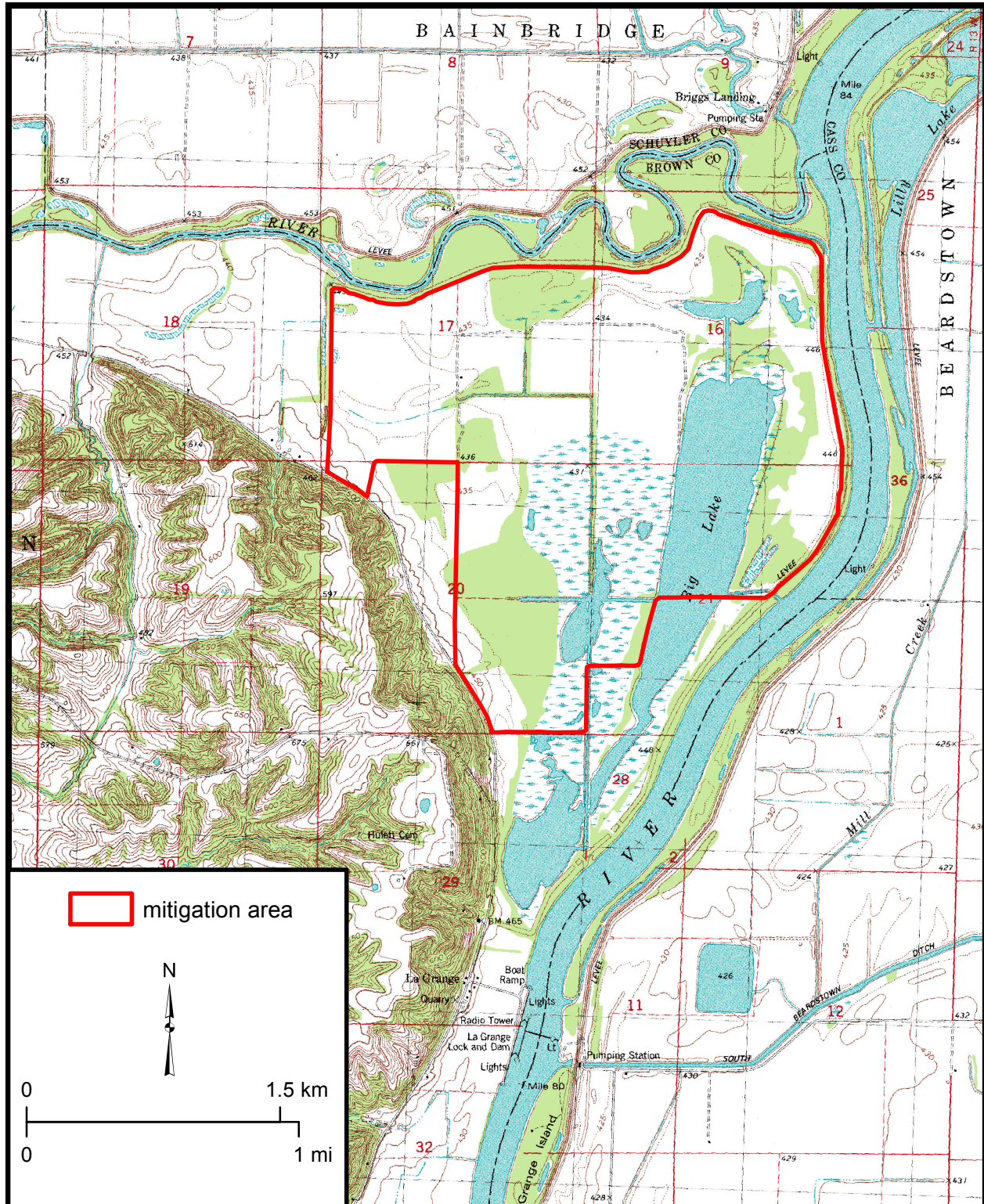
- Data from the river gauge at the La Grange Lock and Dam (USACE 2012) indicated that an Illinois River flood during late May caused minor back-flooding into Big Lake.
- Data from Gauge SW15 in the swale at the north portion of the site showed dry readings for the entire 2012 growing season. Data from Gauge SW17 in Big Lake showed water-level elevation at or above 130.97 m (429.69 ft) for greater than 5% of the growing season according to the 1987 Manual and at or above 130.93 m (429.56 ft) for 14 consecutive days during the growing season, according to the 2010 Midwest Regional Supplement. Field observations indicated that lesser areas of Big Lake below the base elevation of Gauge SW17 were inundated for greater than 12.5% of the growing season, according to the 1987 Manual.

#### PLANNED FUTURE ACTIVITIES

- Additional wells will be added to the northern portion of the site in the Fall of 2012.
- Monitoring of hydrology will continue until no longer required by IDOT.

# La Grange Wetland Mitigation Bank General Study Area and Vicinity

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



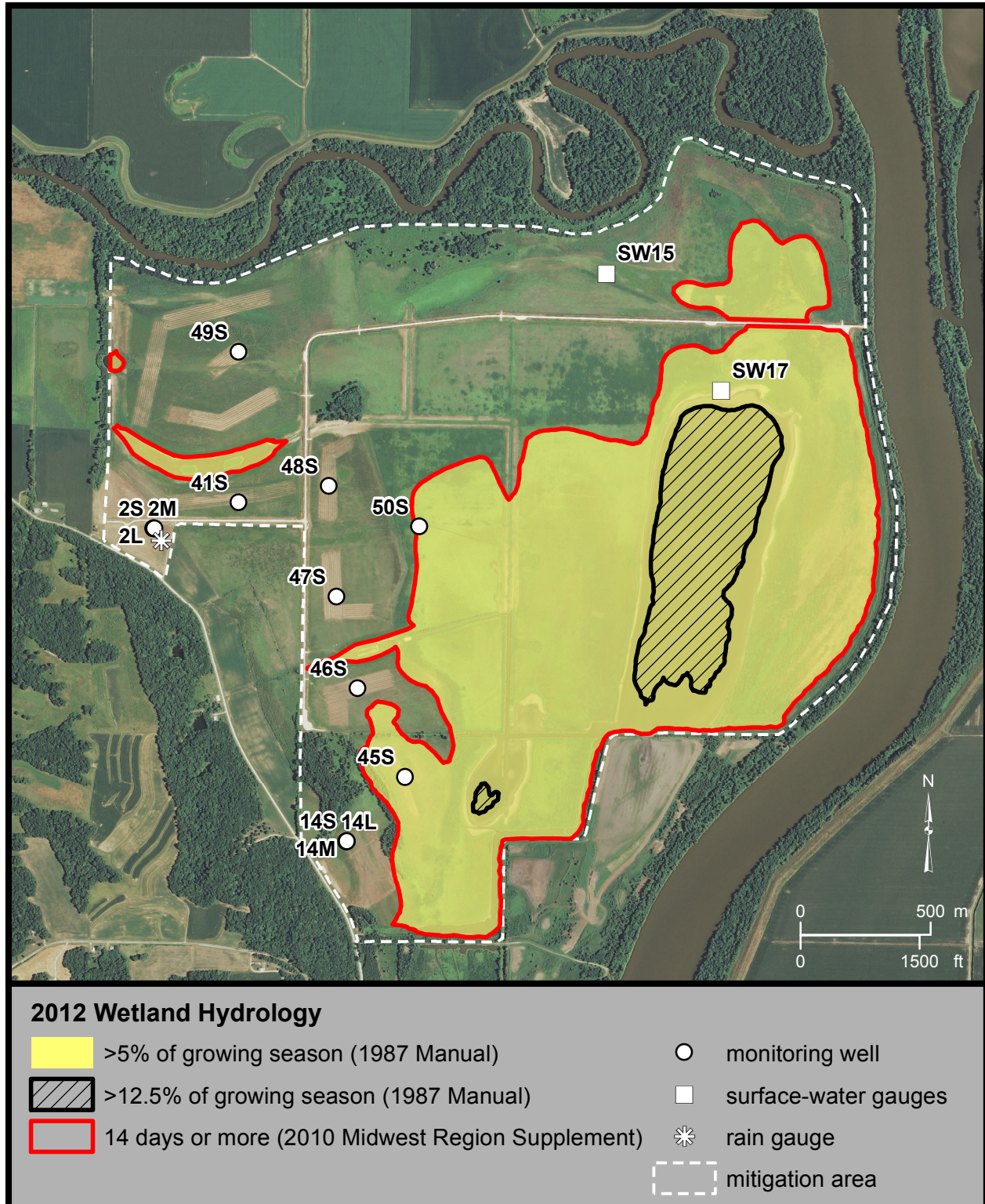


# La Grange Wetland Mitigation Bank

## Estimated Areal Extent of 2012 Wetland Hydrology

September 1, 2011 through August 31, 2012

Map based on 2012 Farm Service Agency digital orthophotography, Brown County, Illinois (USDA-FSA 2012)





# La Grange Wetland Mitigation Bank

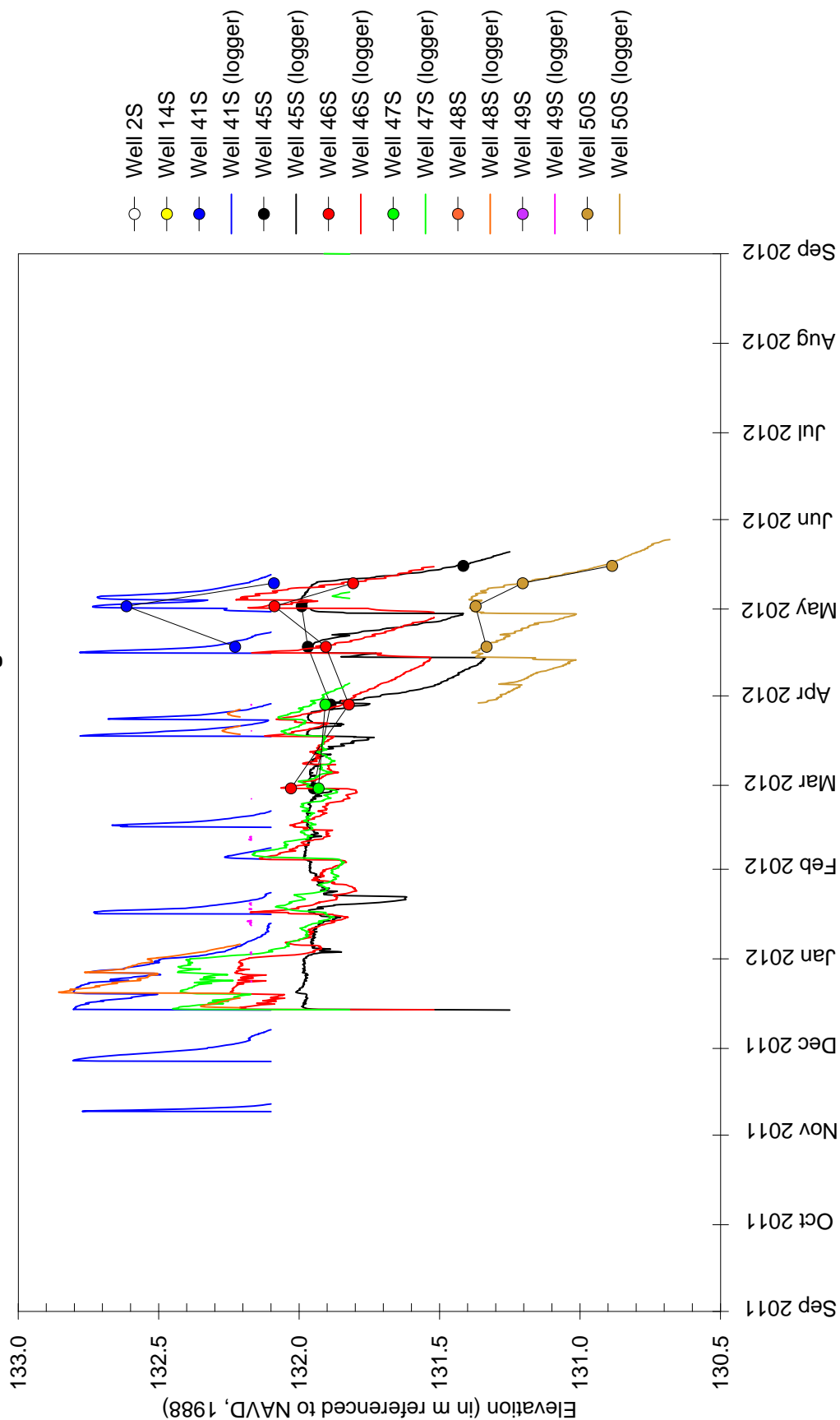
## Management Areas

Map based on 2012 Farm Service Agency digital orthophotography, Brown County, Illinois (USDA-FSA 2012)



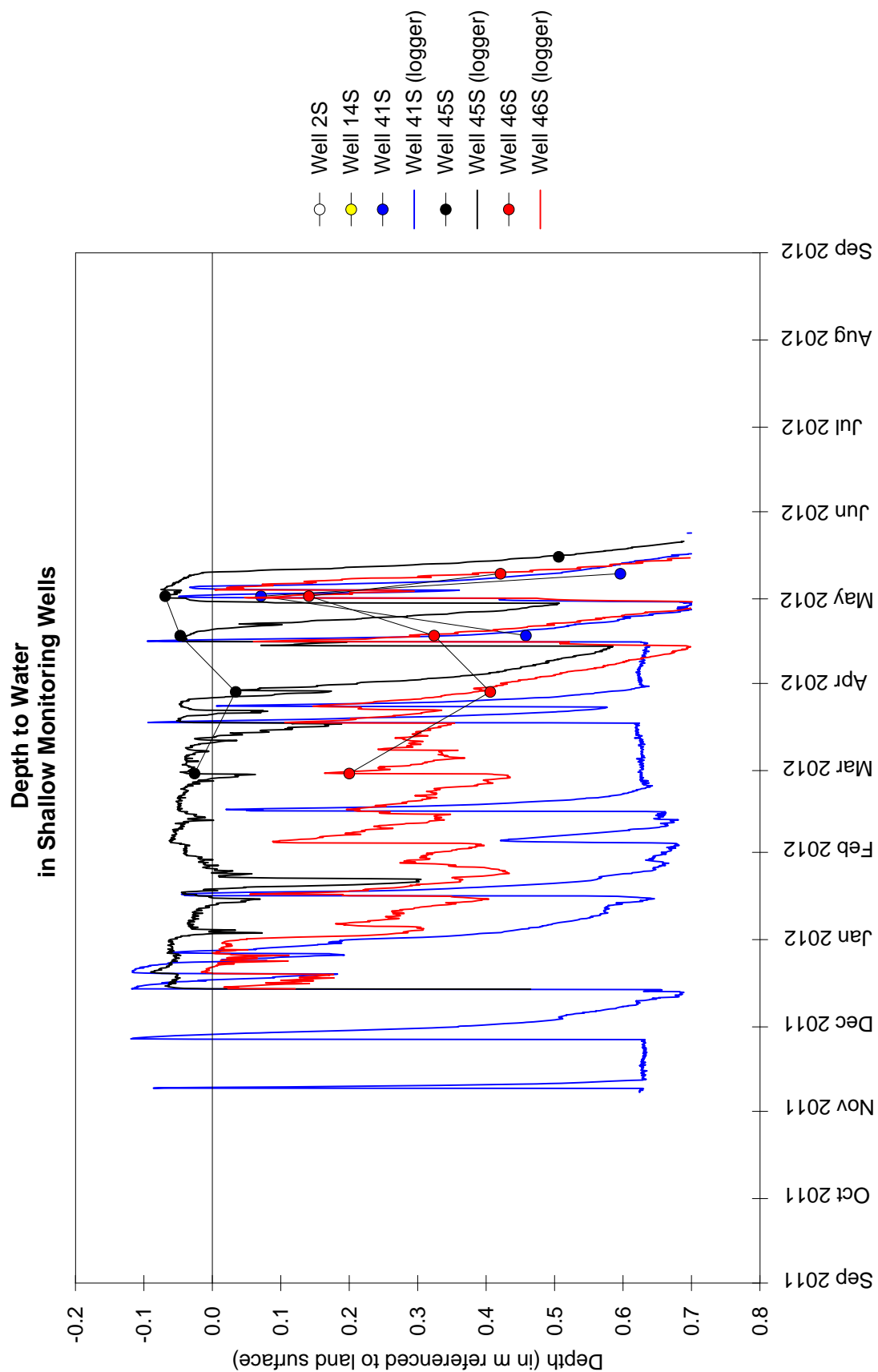
# **La Grange Wetland Mitigation Bank** September 1, 2011 through August 31, 2012

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

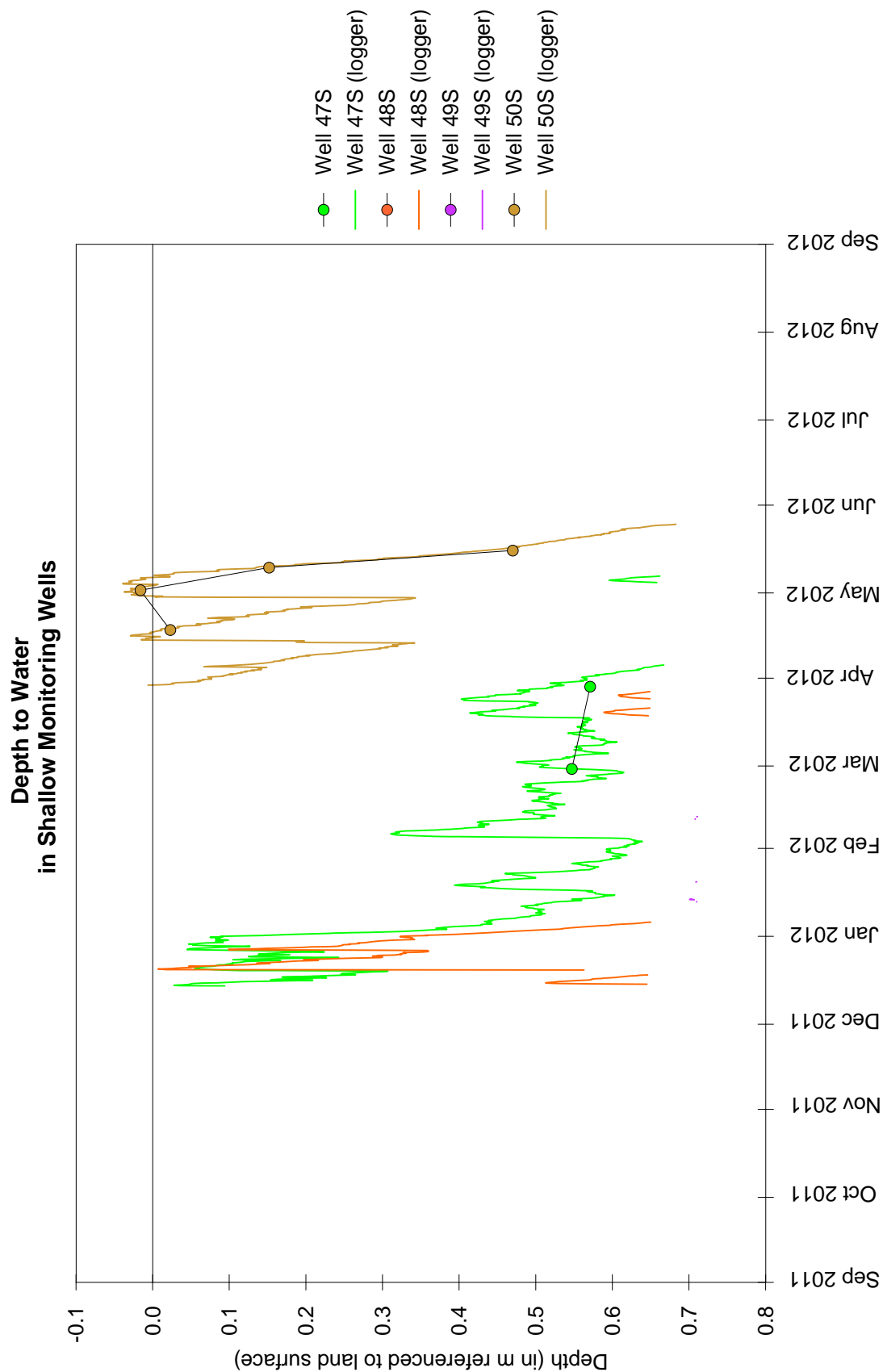




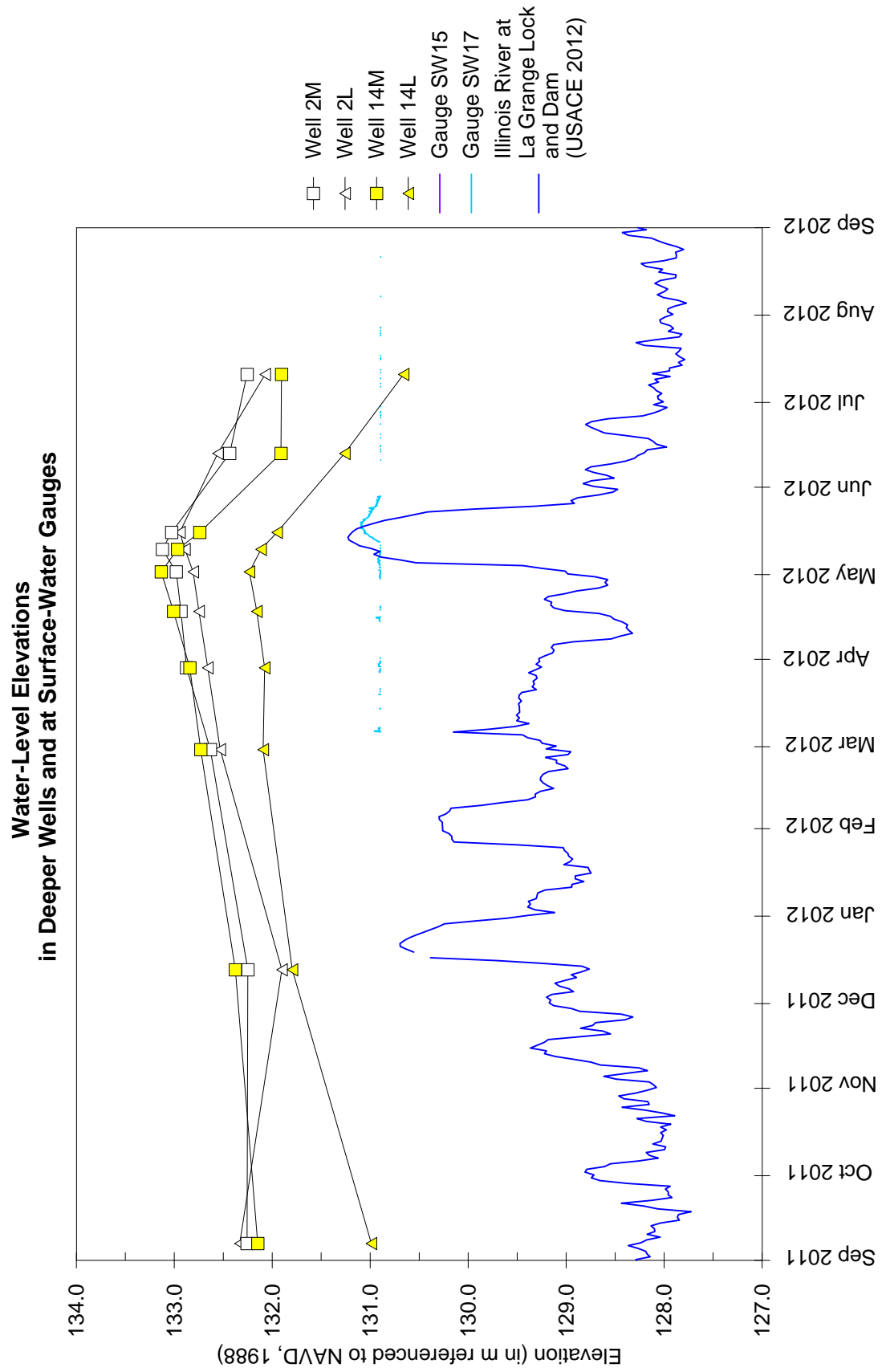
# **La Grange Wetland Mitigation Bank** September 1, 2011 through August 31, 2012



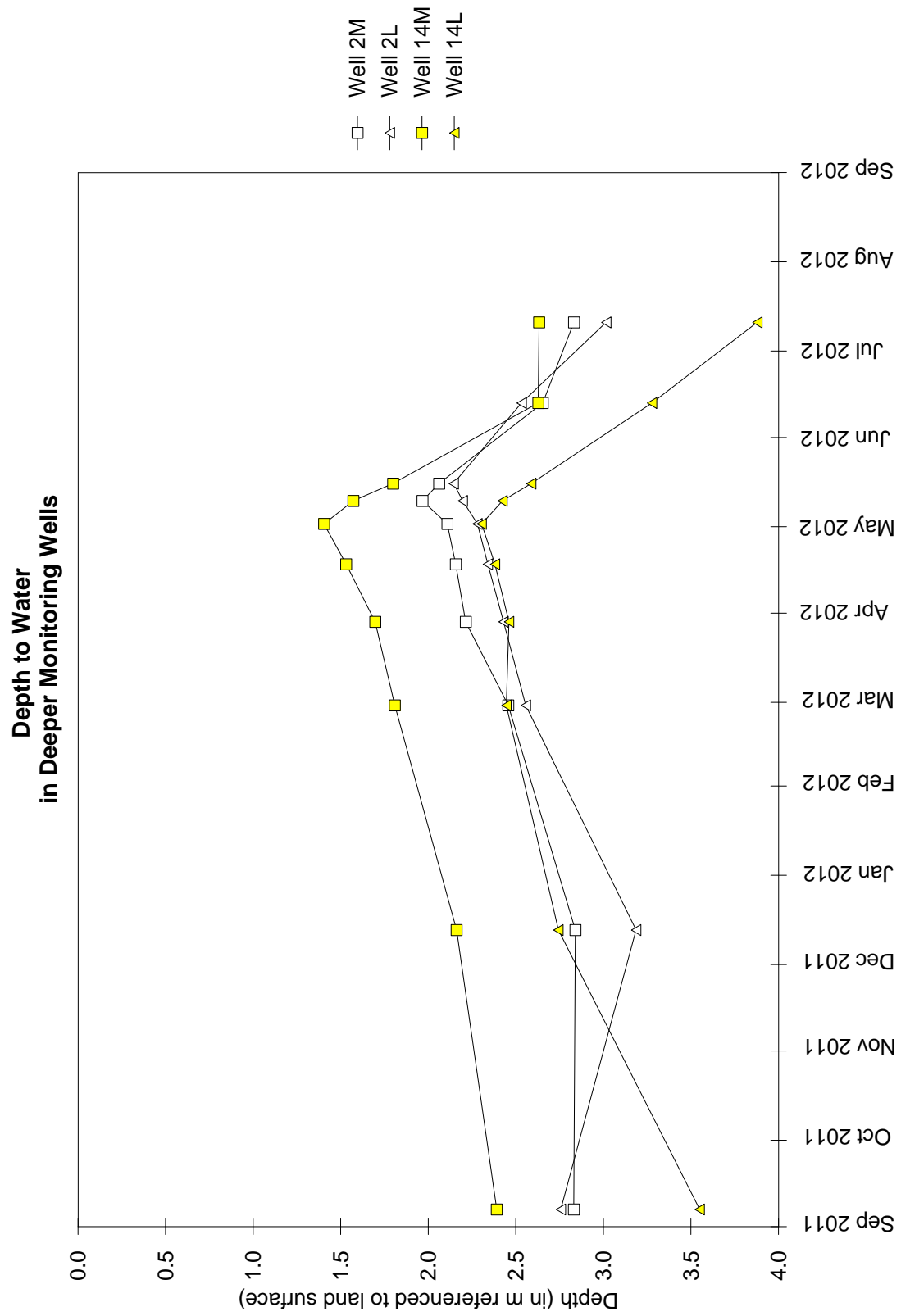
# **La Grange Wetland Mitigation Bank** September 1, 2011 through August 31, 2012



# **La Grange Wetland Mitigation Bank** September 1, 2011 through August 31, 2012

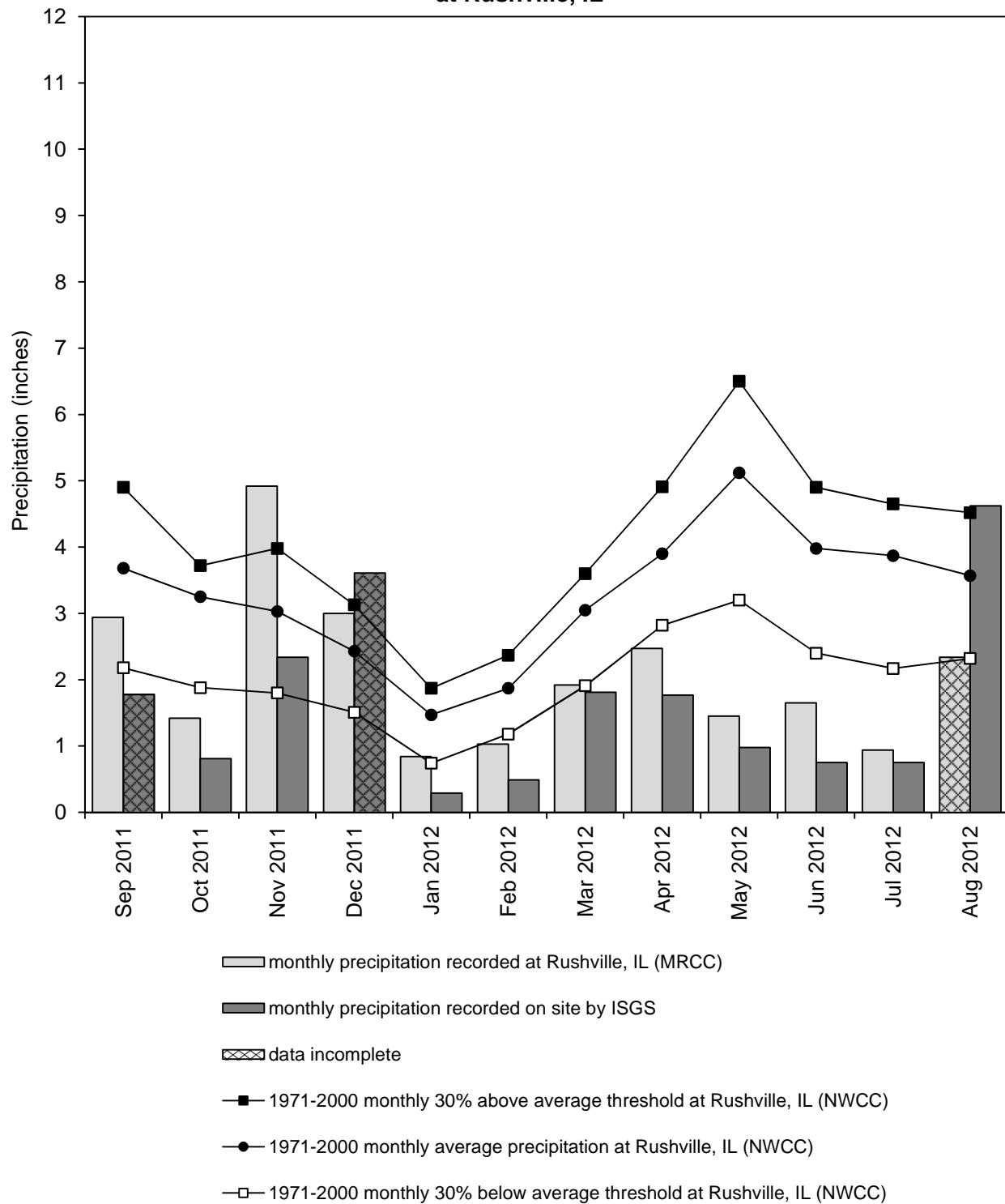


# **La Grange Wetland Mitigation Bank** September 1, 2011 through August 31, 2012



# **La Grange Wetland Mitigation Bank** **September 2011 through August 2012**

## **Total Monthly Precipitation Recorded on Site and at Rushville, IL**



**FAIRMONT CITY  
POTENTIAL WETLAND MITIGATION SITE**

**ISGS #53**

FAP 14

Sequence #27

St. Clair County, near Fairmont City, Illinois

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

**Secondary Project Manager: Jessica L. B. Monson**

**SITE HISTORY**

- August 1999: The ISGS conducted an initial site evaluation.
- 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).
- August 2012: Ownership of the site was transferred from IDOT to Fairmont City, Illinois.

**WETLAND HYDROLOGY CALCULATION FOR 2012**

The target compensation area for the Fairmont City wetland mitigation site is 10.93 ha (27.00 ac). Using the 1987 Manual (Environmental Laboratory 1987), 14.27 ha (35.27 ac) of the total site area of 32.38 ha (80.00 ac) satisfied wetland hydrology criteria for greater than 5% of the 2012 growing season and 14.17 ha (35.01 ac) satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Using the 2010 Midwest Region Supplement (USACE 2010) to the 1987 Manual, 14.27 ha (35.27 ac) satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

- The median date that the growing season begins in nearby Belleville, Illinois, is April 6 and the season lasts 199 days (MRCC 2012); 5% of the growing season is 10 days and 12.5% of the growing season is 25 days, according to the 1987 Manual. According to the 2010 Midwest Region Supplement, February 28 was the starting date of the 2012 growing season based on soil temperatures measured at the wetland mitigation site.
- Total precipitation recorded at the Belleville, Illinois weather station during the monitoring period was 93% of normal. Precipitation in Spring 2012 (March through May) was 109% of normal.
- In 2012, water levels measured in all of the soil-zone monitoring wells, except well 28S, satisfied wetland hydrology criteria for greater than 5% of the growing season, and all of the soil-zone monitoring wells, except wells 6S, 6VS, and 28S, satisfied wetland hydrology criteria for greater than 12.5% of the growing season, according to the 1987 Manual. Water levels measured in all of the soil-zone monitoring wells, except well 28S, 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 [data logger], 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 (400.98 ft) for greater than 5% of the growing season and at or above 122.20 m (400.91 ft) for greater than 12.5% of the growing season, according to the 1987 Manual. In addition, these gauges reveal that surface-water was at or above 122.20 m (400.91 ft) for 14 or more consecutive days during the growing season per the 2010 Midwest Region Supplement.

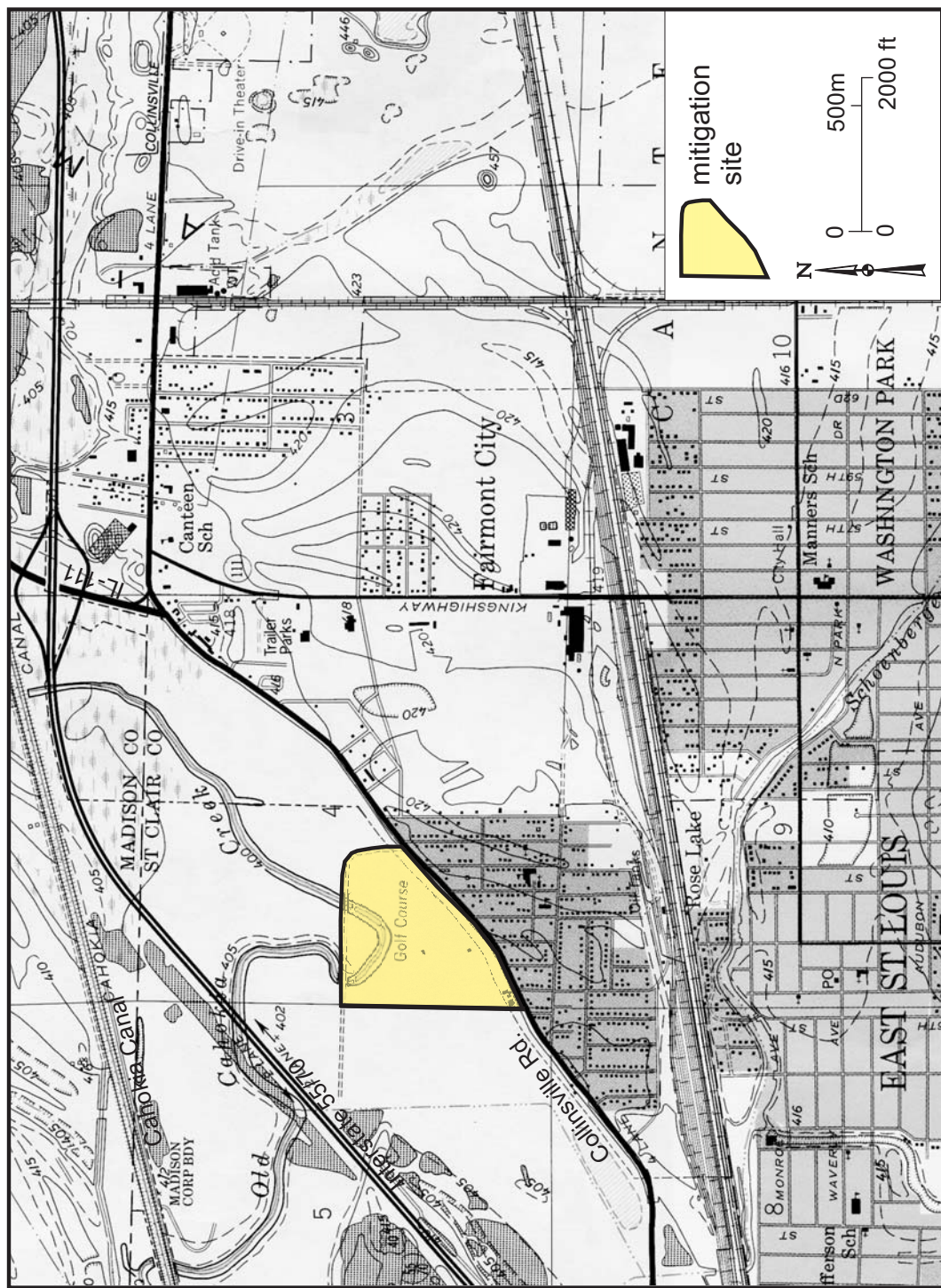
#### PLANNED FUTURE ACTIVITIES

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

# **Fairmont City Potential Wetland Mitigation Site (FAP 14)**

## **General Study Area and Vicinity**

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



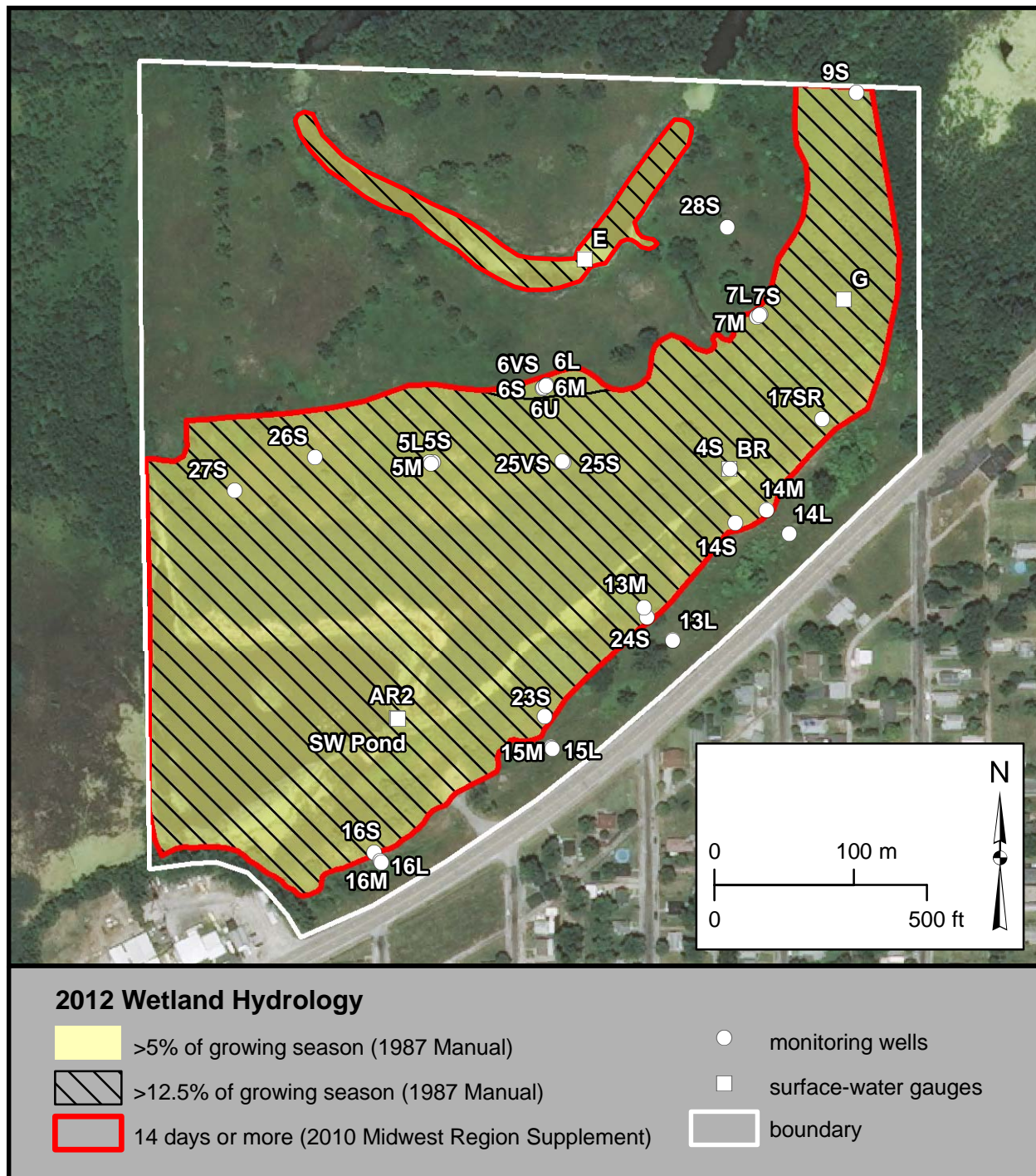


# Fairmont City Potential Wetland Mitigation Site (FAP 14)

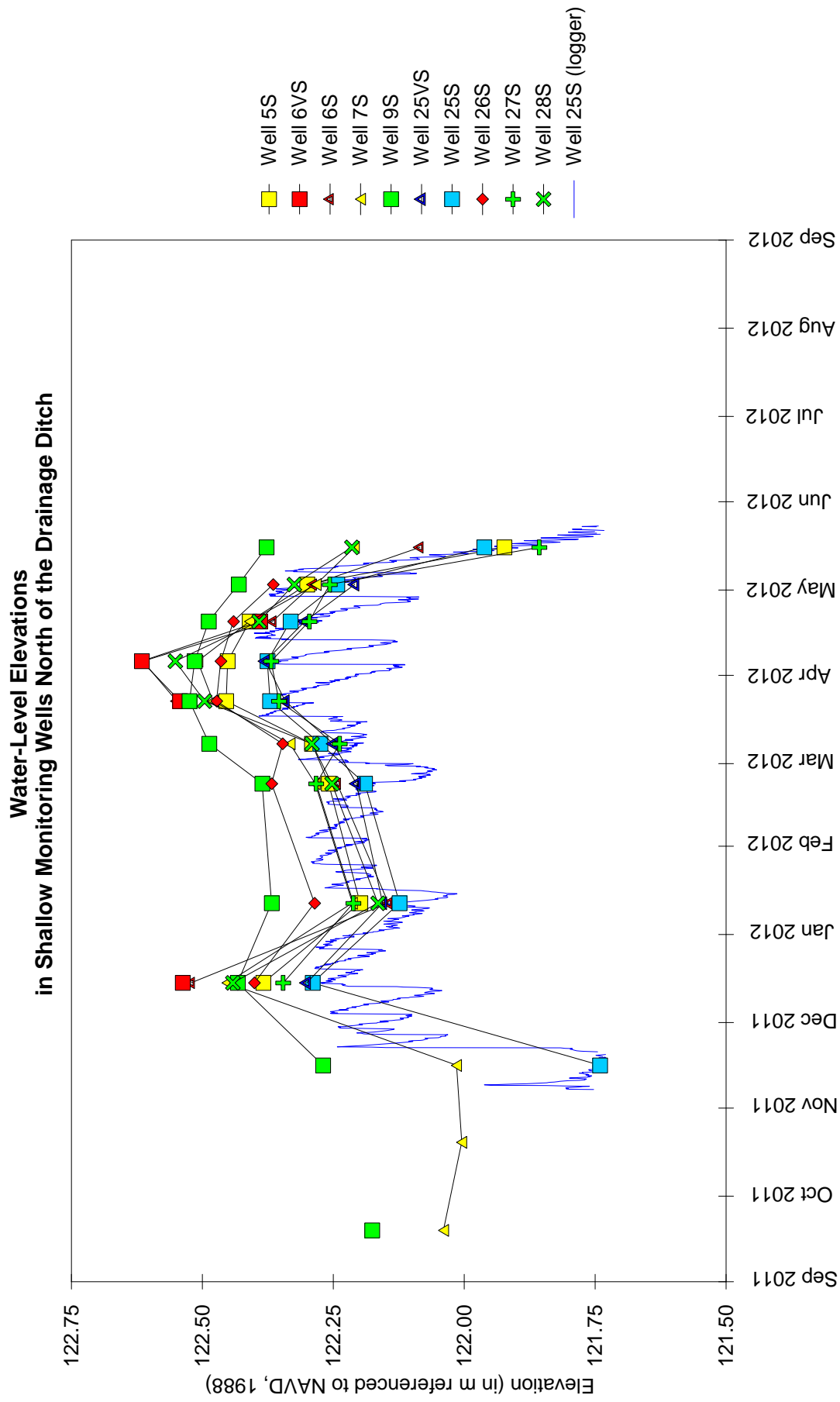
## Estimated Areal Extent of 2012 Wetland Hydrology

September 1, 2011 through August 31, 2012

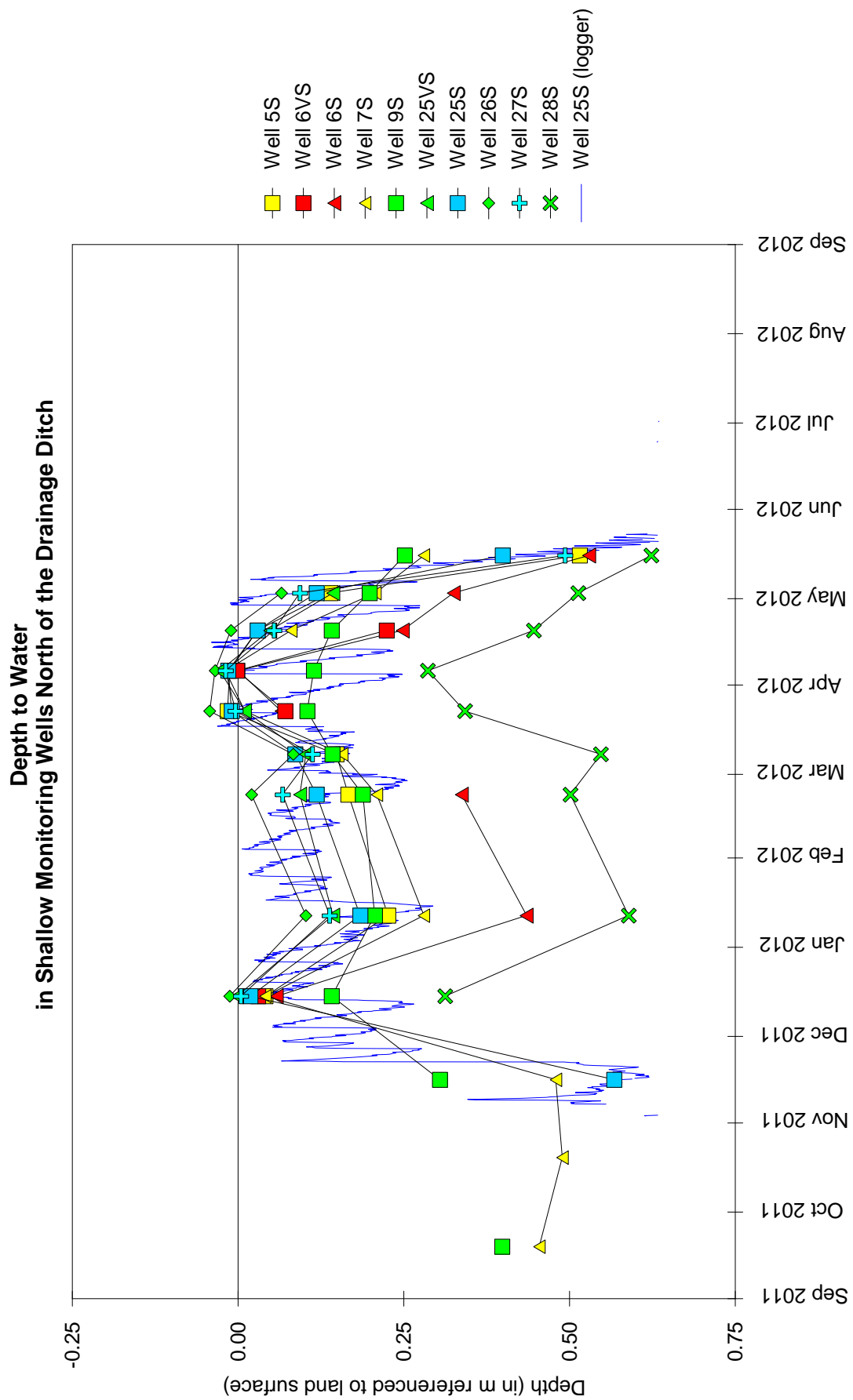
Map based on 2012 Farm Service Agency digital orthophotography, St. Clair County, Illinois (USDA-FSA 2012)



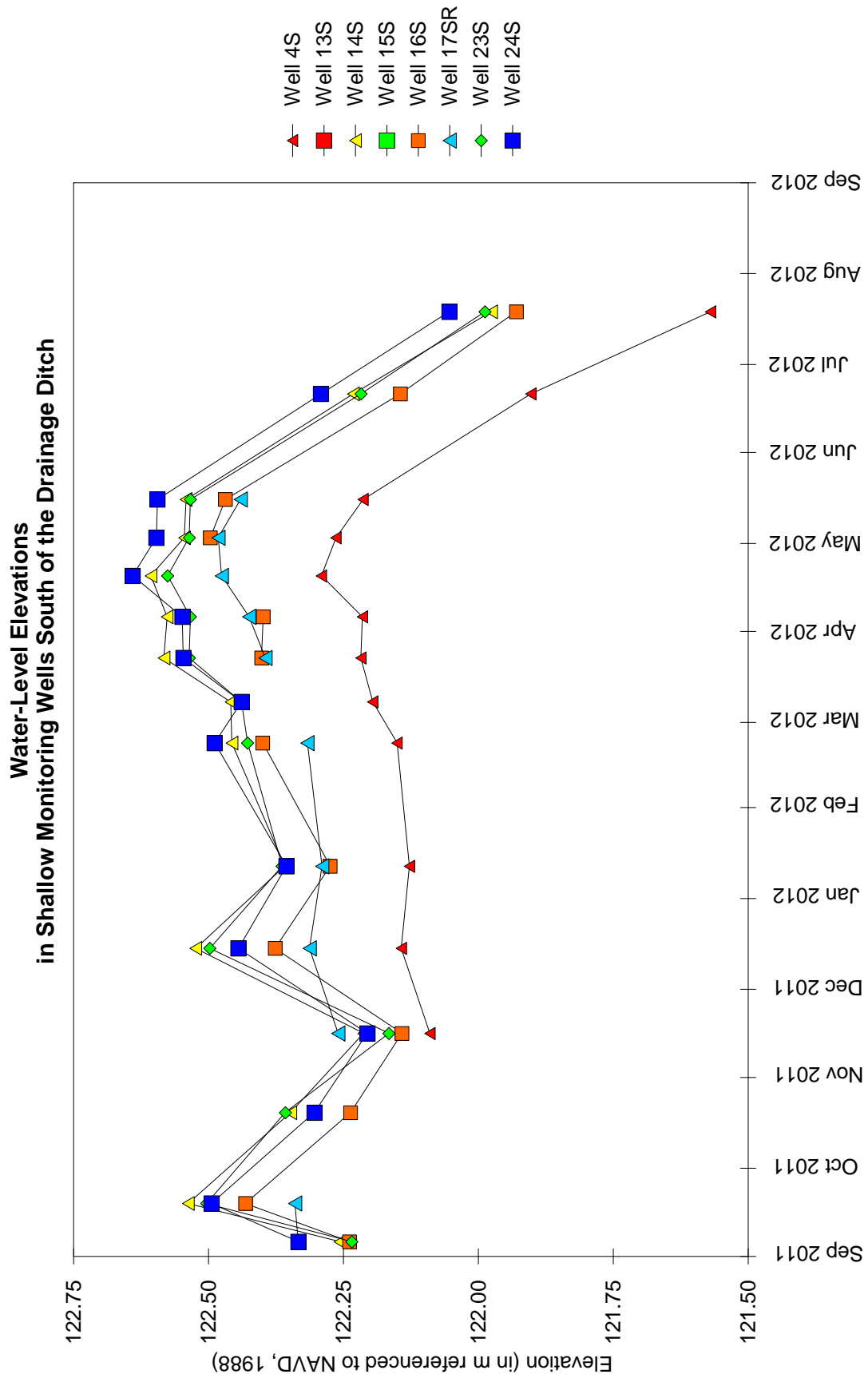
# **Fairmont City Potential Wetland Mitigation Site** **September 1, 2011 through August 31, 2012**



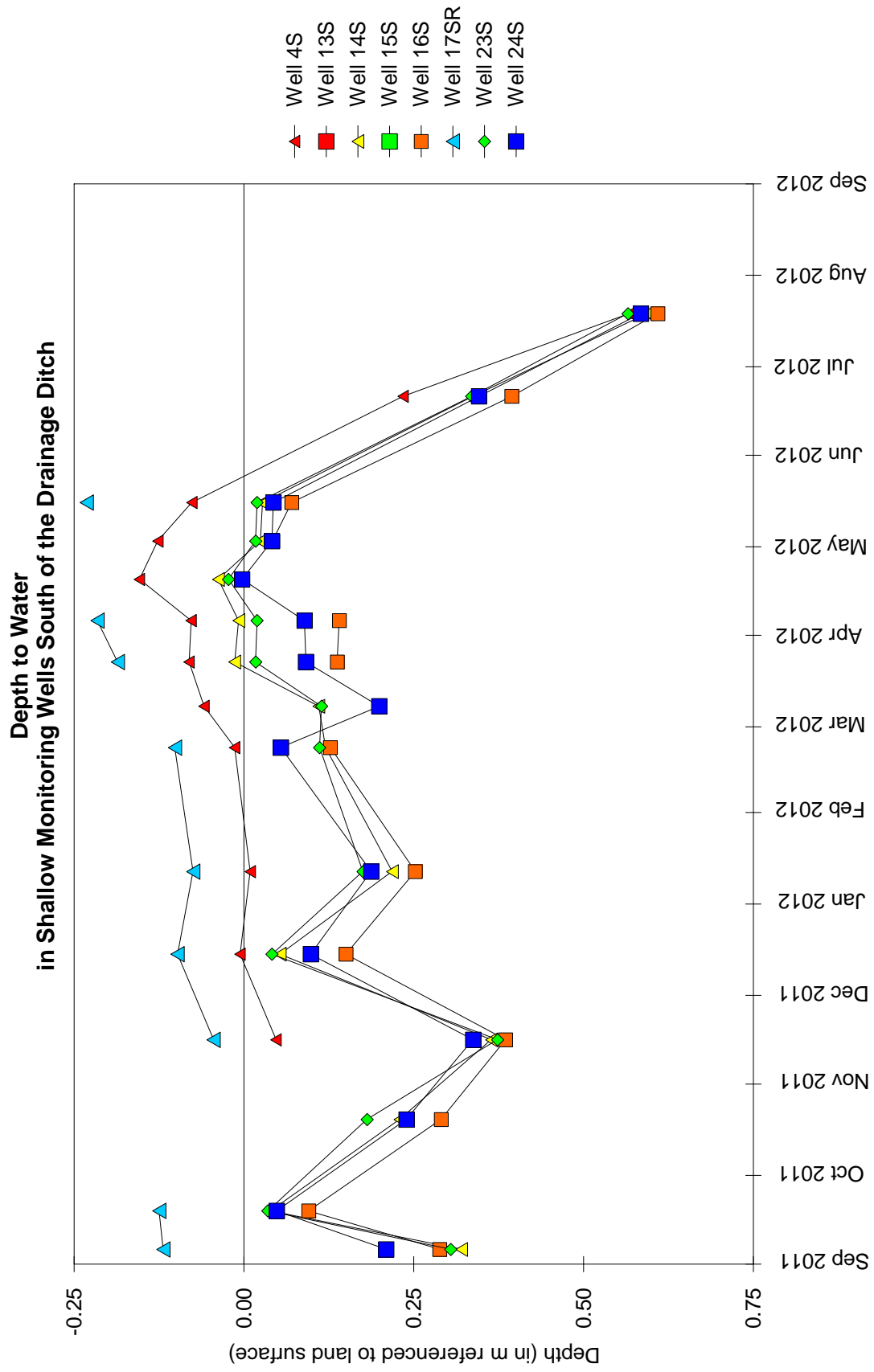
# **Fairmont City Potential Wetland Mitigation Site** **September 1, 2011 through August 31, 2012**



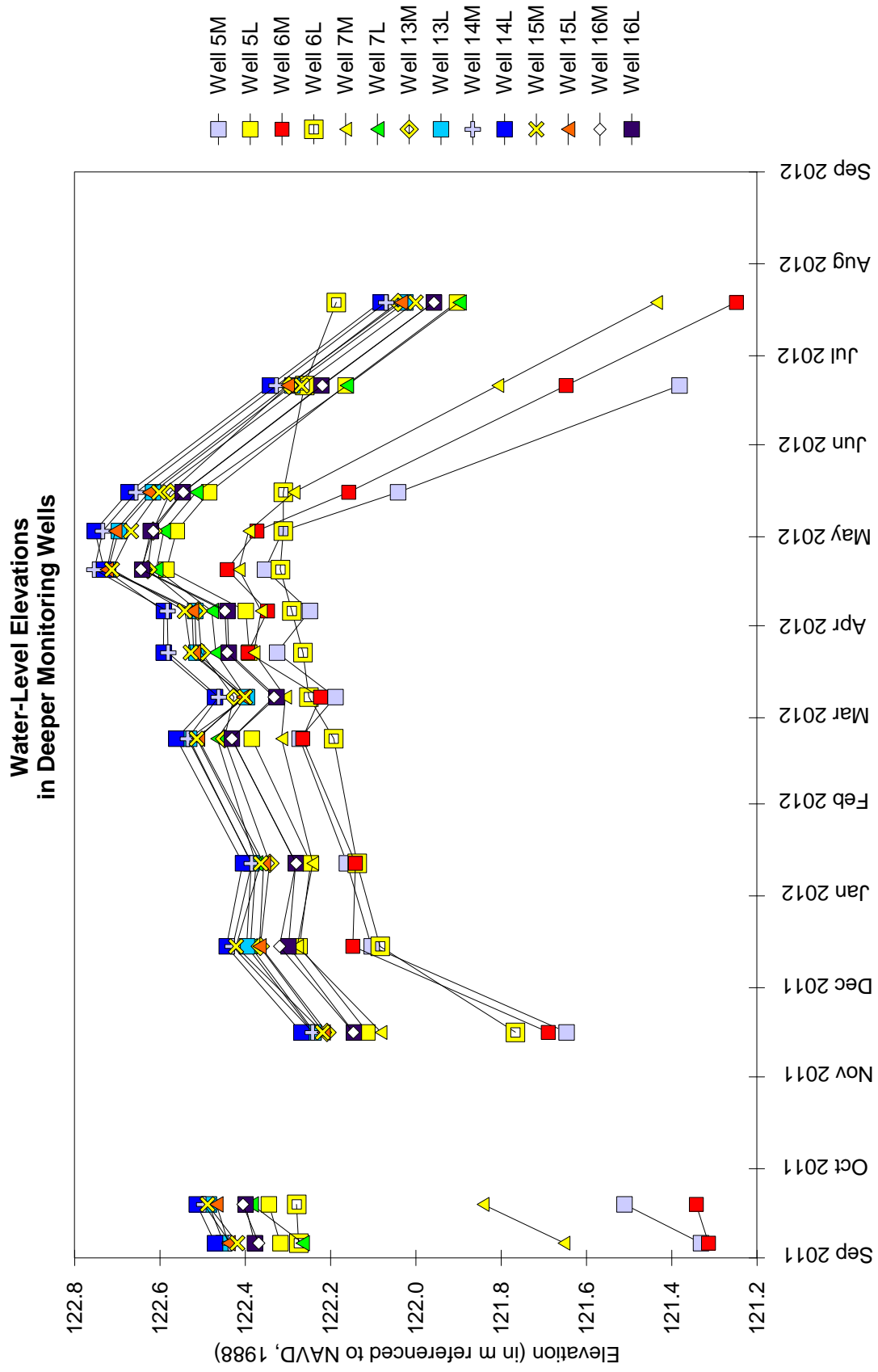
# **Fairmont City Potential Wetland Mitigation Site** **September 1, 2011 through August 31, 2012**



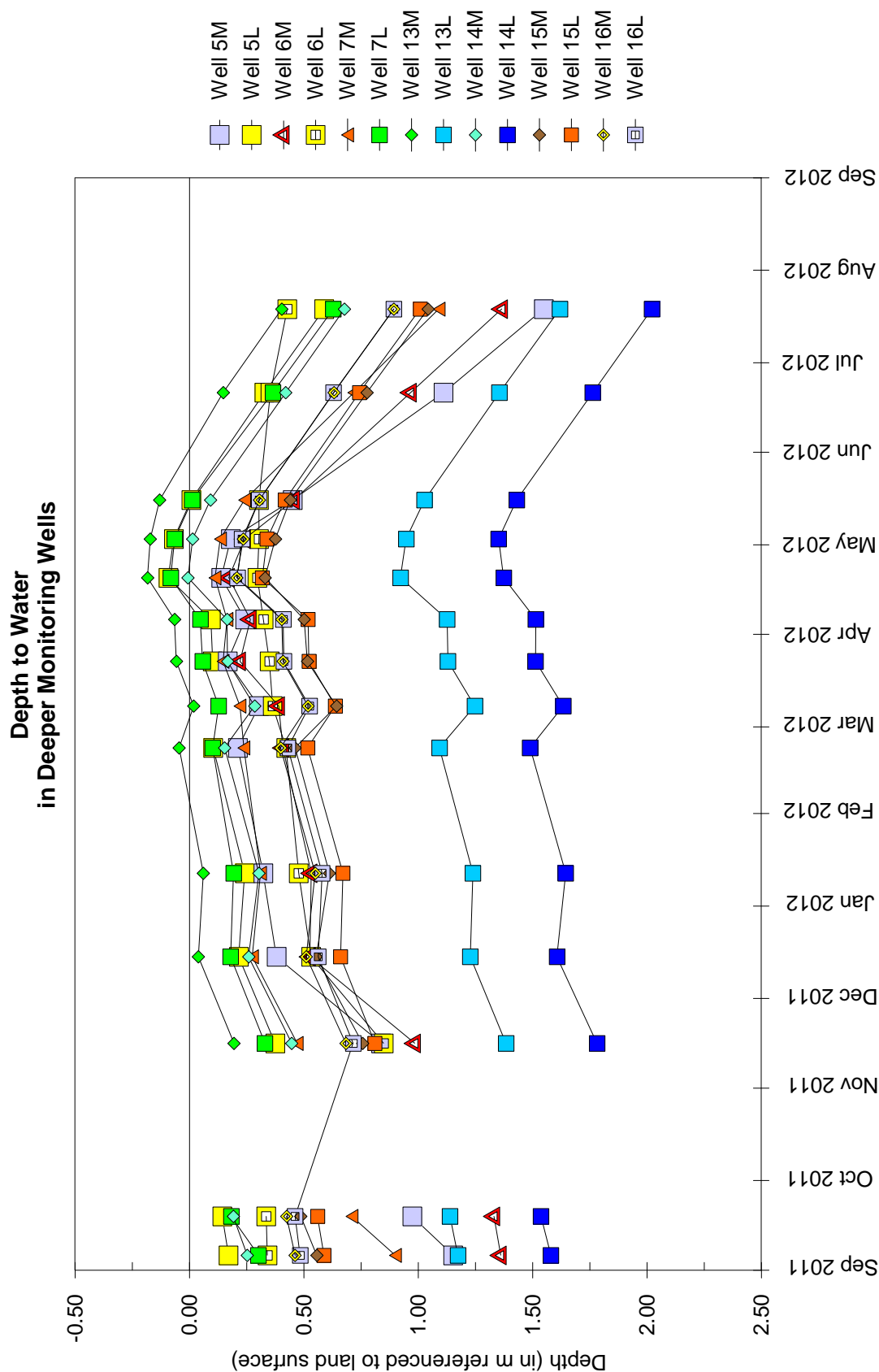
# **Fairmont City Potential Wetland Mitigation Site** **September 1, 2011 through August 31, 2012**



# **Fairmont City Potential Wetland Mitigation Site** **September 1, 2011 through August 31, 2012**



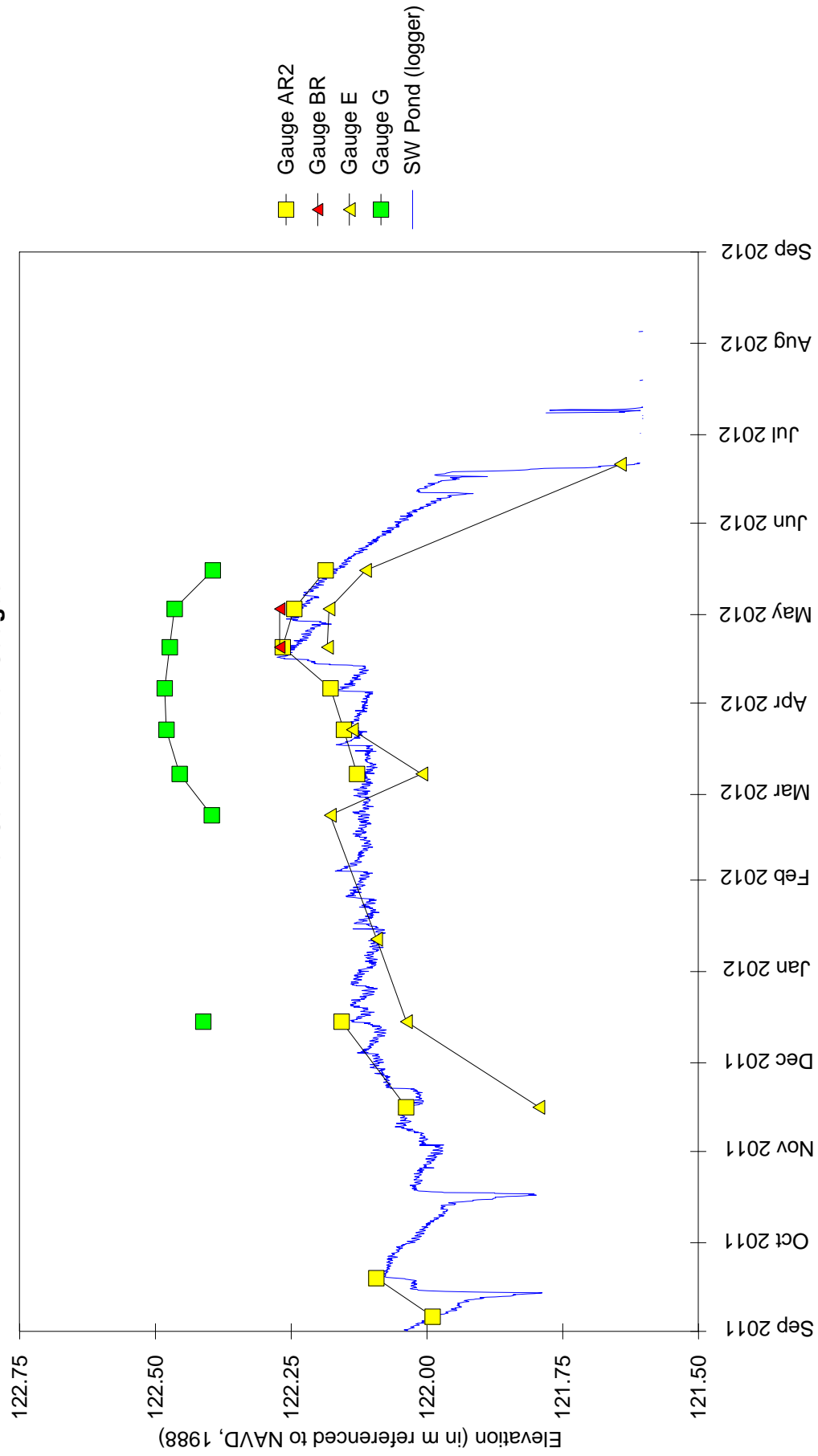
# **Fairmont City Potential Wetland Mitigation Site** **September 1, 2011 through August 31, 2012**





# **Fairmont City Potential Wetland Mitigation Site** **September 1, 2011 through August 31, 2012**

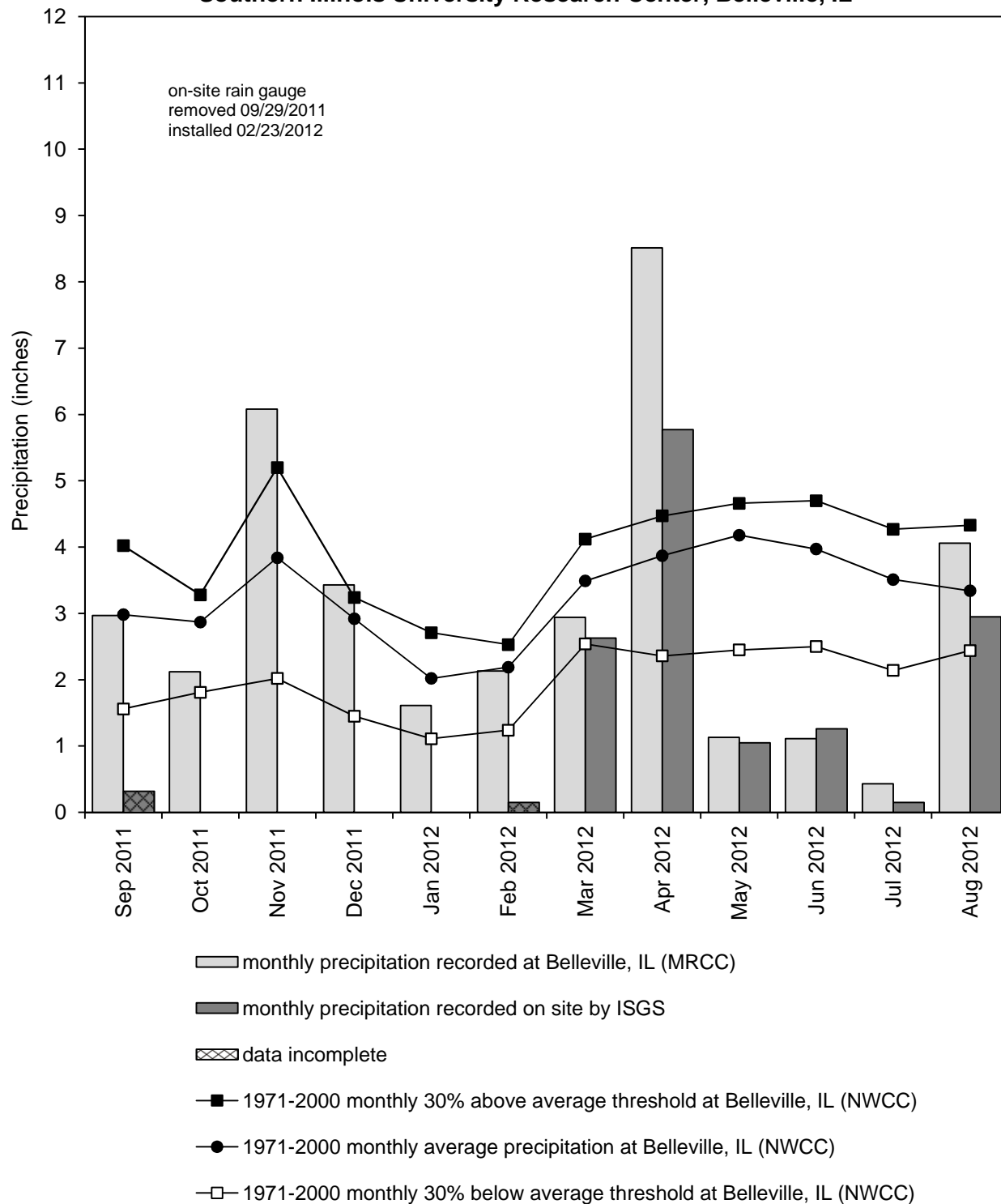
**Water-Level Elevations  
at Surface-Water Gauges**



# Fairmont City Potential Wetland Mitigation Site

## September 2011 through August 2012

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



**FORMER TIERNAN PROPERTY  
POTENTIAL WETLAND MITIGATION SITE**

**ISGS #57**

FAP 14

Sequence #27

Saint Clair County, near Cahokia, Illinois

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

**Secondary Project Manager: Jessica L. B. Monson**

**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 2012**

The target compensation area for the Former Tiernan Property wetland mitigation site is 17.04 ha (42.10 ac). Using the 1987 Manual (Environmental Laboratory 1987), 16.58 ha (40.98 ac), out of a total site area of 26.43 ha (65.30 ac), satisfied wetland hydrology criteria for greater than 5% of the 2012 growing season and 16.19 ha (40.00 ac) satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Using the 2010 Midwest Region Supplement (USACE 2010) to the 1987 Manual, 16.53 ha (40.84 ac) satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

- The median date that the growing season begins in nearby Cahokia, Illinois, is April 2 and the season lasts 214 days (MRCC 2012); 5% of the growing season is 11 days and 12.5% of the growing season is 27 days, according to the 1987 Manual. According to the 2010 Midwest Region Supplement, March 8 was the starting date of the 2012 growing season based on soil temperatures measured at the potential wetland mitigation site.
- Total precipitation recorded at the Belleville, Illinois weather station during the monitoring period was 93% of normal. Precipitation in Spring 2012 (March through May) was 109% of normal.
- In 2012, water levels measured in all of the soil-zone monitoring wells, except 4S, 6S, 7S, 11S, 18S, 23VS, and 23S, satisfied wetland hydrology criteria for greater than 5% of the growing season, and water levels measured in all of the soil-zone monitoring wells, except 1S, 4S, 5S, 6S, 7S, 11S, 12S, 18S, 23VS, 23S, and 33S satisfied wetland hydrology criteria for greater than 12.5% of the growing season, according to the 1987 Manual. According to the 2010 Midwest Region Supplement, water levels measured in all of the soil-zone monitoring wells except 1S, 4S, 6S, 7S, 11S, 18S, 23VS, and 23S satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season.

- Surface water was present on the site for periods too brief to satisfy either the 14-day or the 12.5% criteria for jurisdictional wetland hydrology. However, in the southern portion of the site (gauges E, F, and G), areas at and below an elevation of 121.11 m (397.34 ft), and in the northern portion of the site (Gauge H), areas at and below an elevation of 121.60 m (398.95 ft), were inundated for 10 days in April, long enough to satisfy wetland hydrology criteria at 5% of the growing season according to the 1987 Manual (Environmental Laboratory 1987).

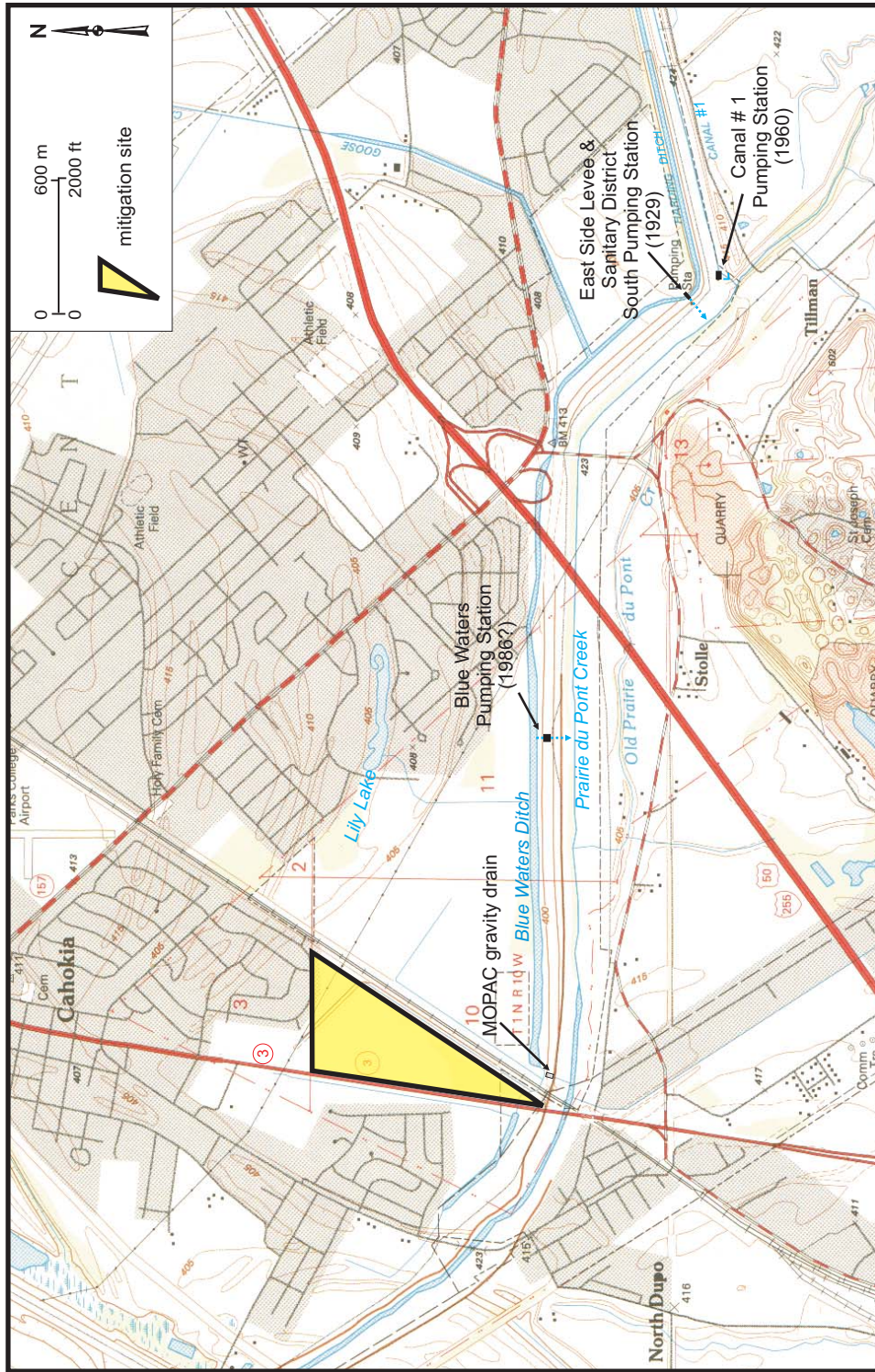
#### PLANNED FUTURE ACTIVITIES

- Monitoring will continue until no longer required by IDOT.

# Former Tiernan Property Potential Wetland Mitigation Site (FAP 14)

## 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)



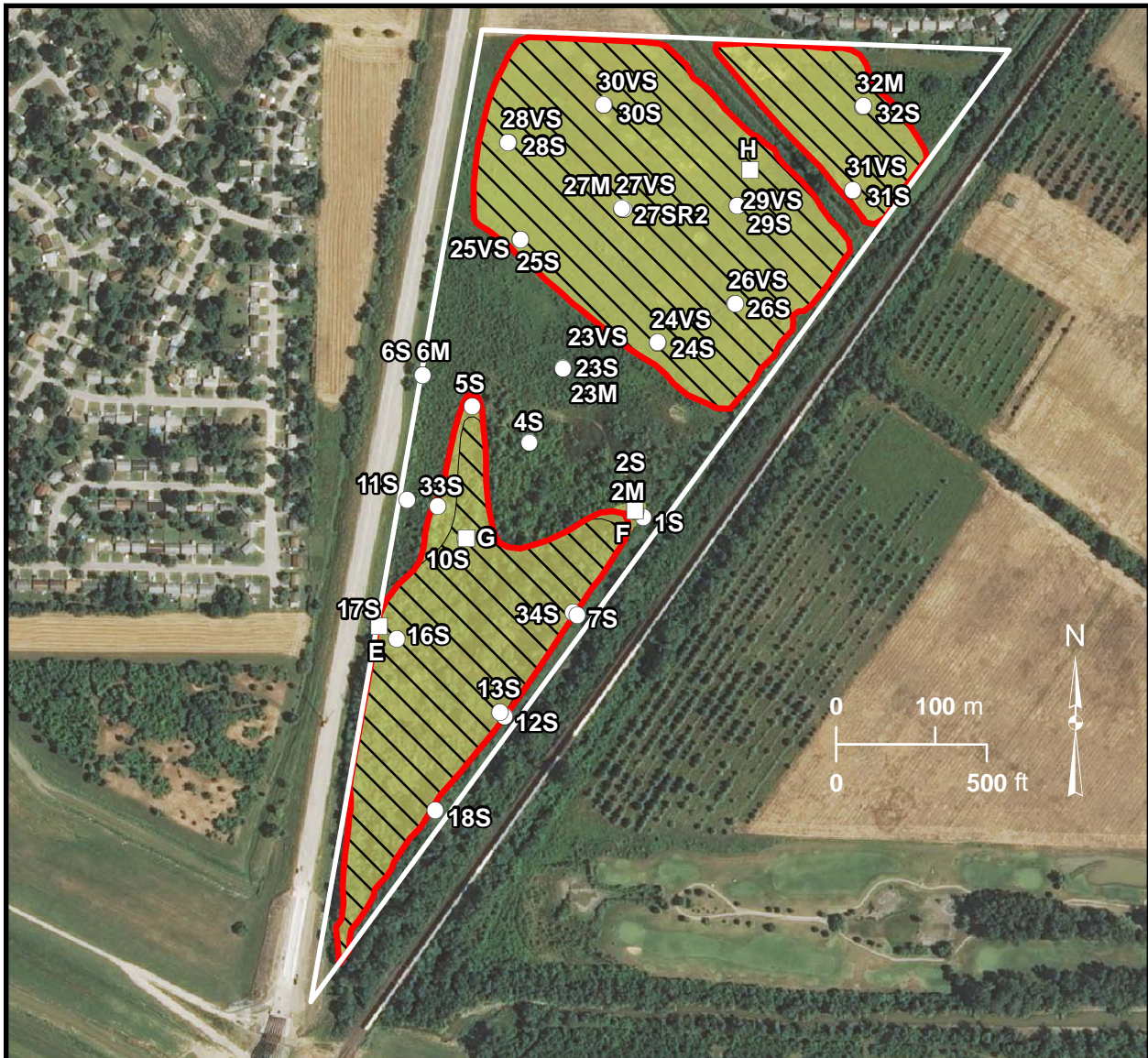


# Former Tiernan Property, Potential Wetland Mitigation Site (FAP 999)







## Estimated Areal Extent of 2012 Wetland Hydrology

September 1, 2011 through August 31, 2012

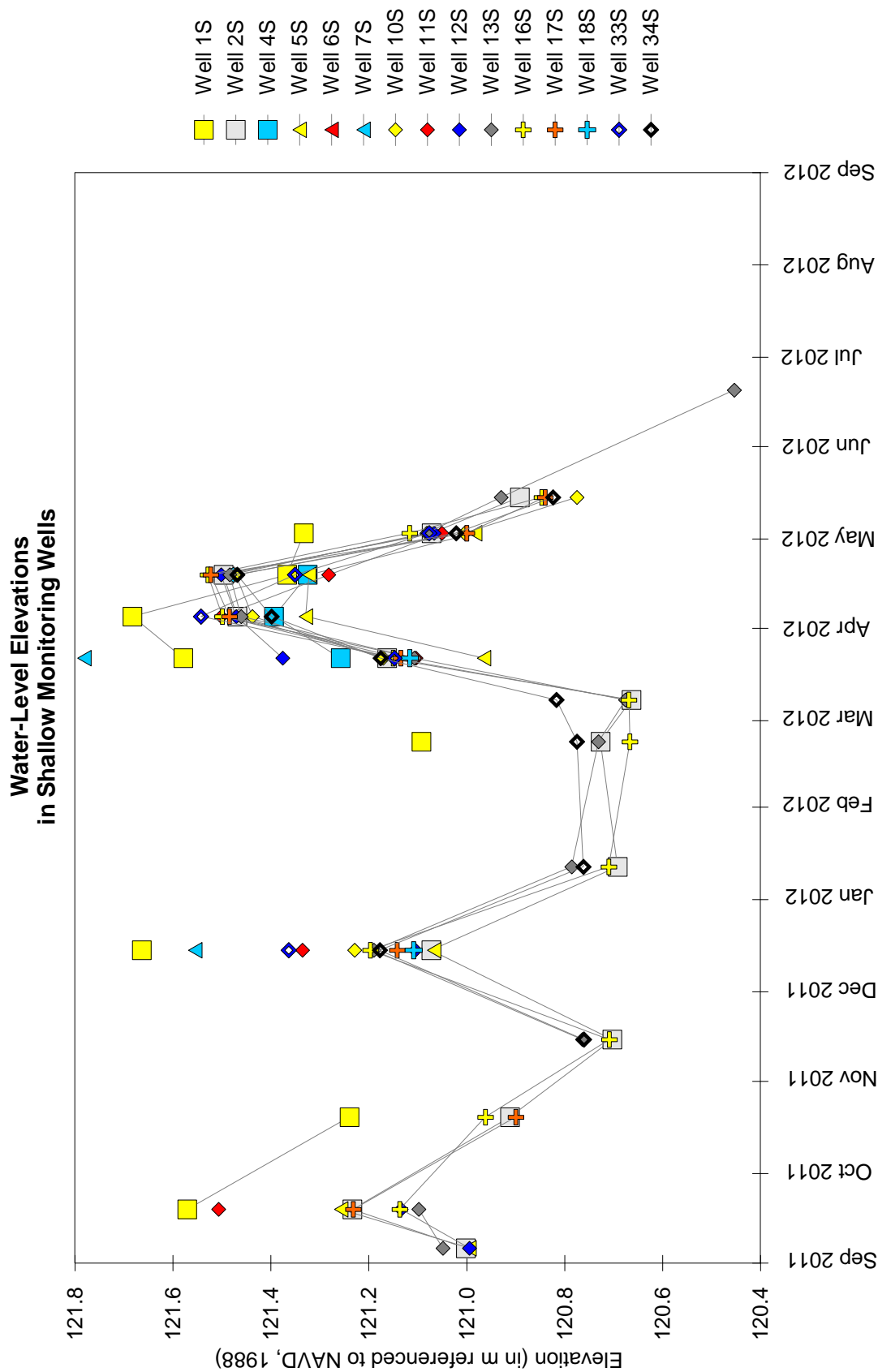
Map based on 2012 Farm Service Agency digital orthophotography, St. Clair County, Illinois (USDA-FSA 2012)



### 2012 Wetland Hydrology

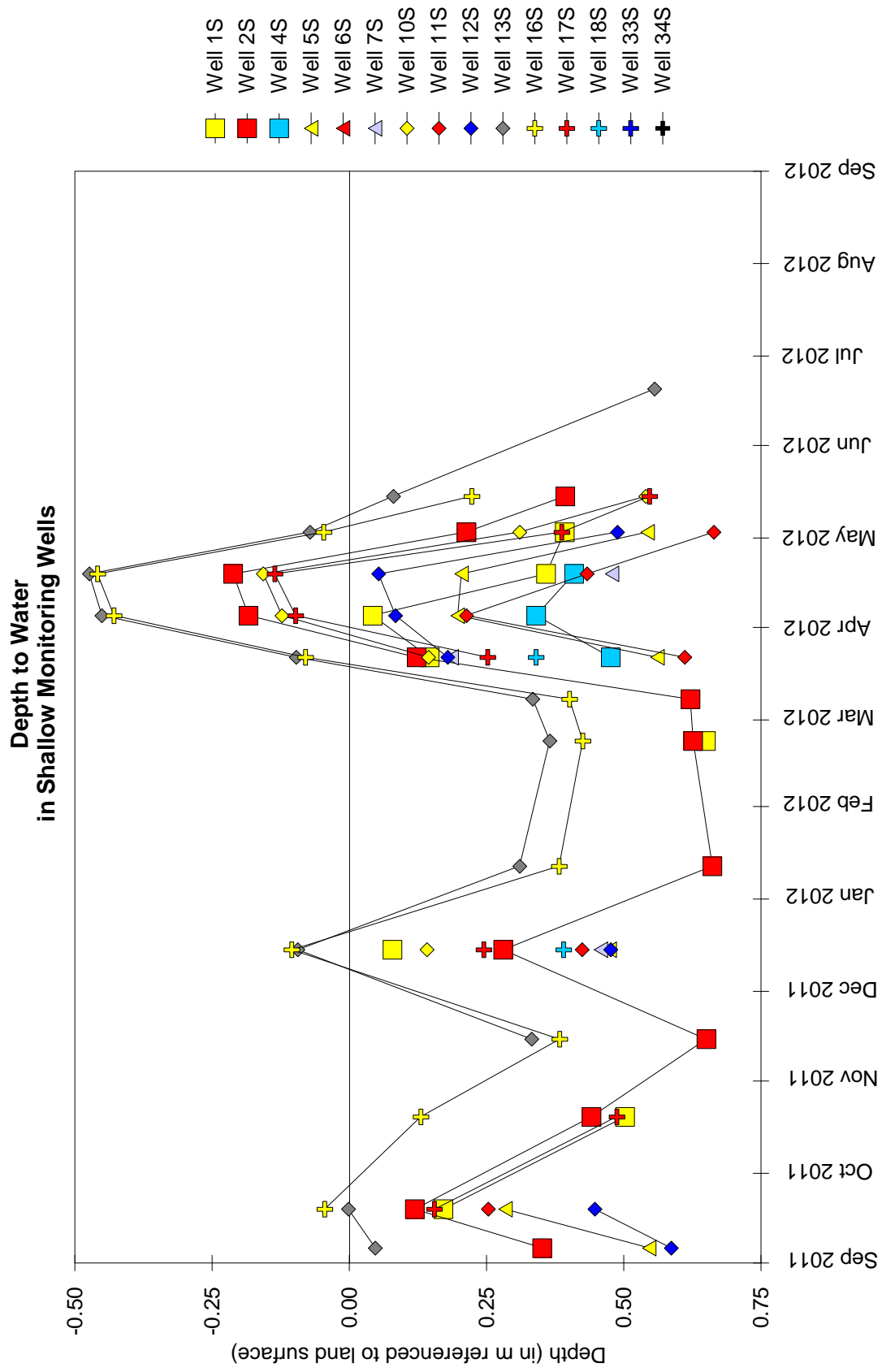
- |   |  |   |                      |
|---|--|---|----------------------|
|  | >5% of growing season (1987 Manual)              |  | monitoring wells     |
|  | >12.5% of growing season (1987 Manual)           |  | surface-water gauges |
|  | 14 days or more (2010 Midwest Region Supplement) |   | site boundary        |

# Former Tiernan Property Potential Wetland Mitigation Site September 1, 2011 through August 31, 2012

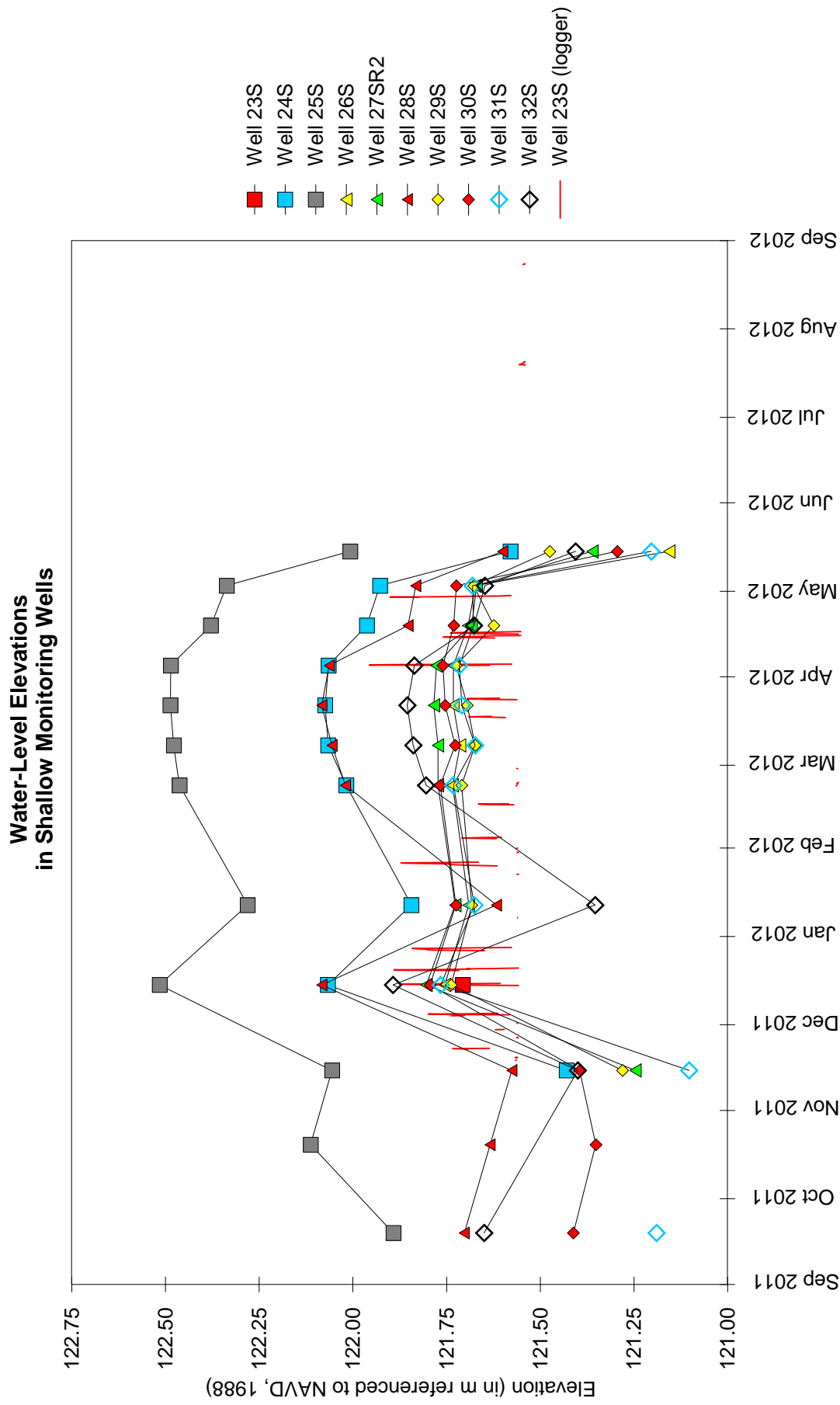




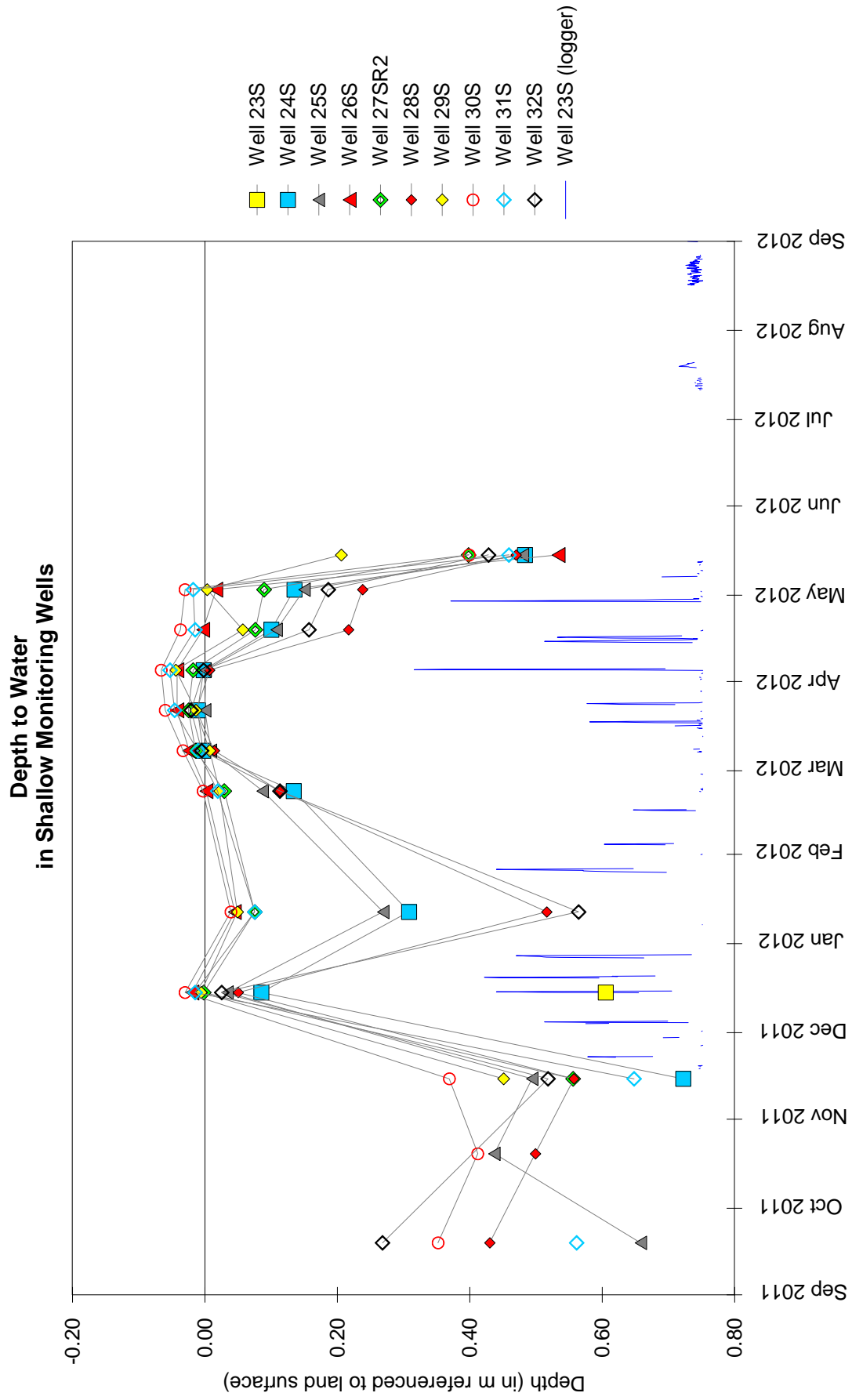
# Former Tiernan Property Potential Wetland Mitigation Site September 1, 2011 through August 31, 2012



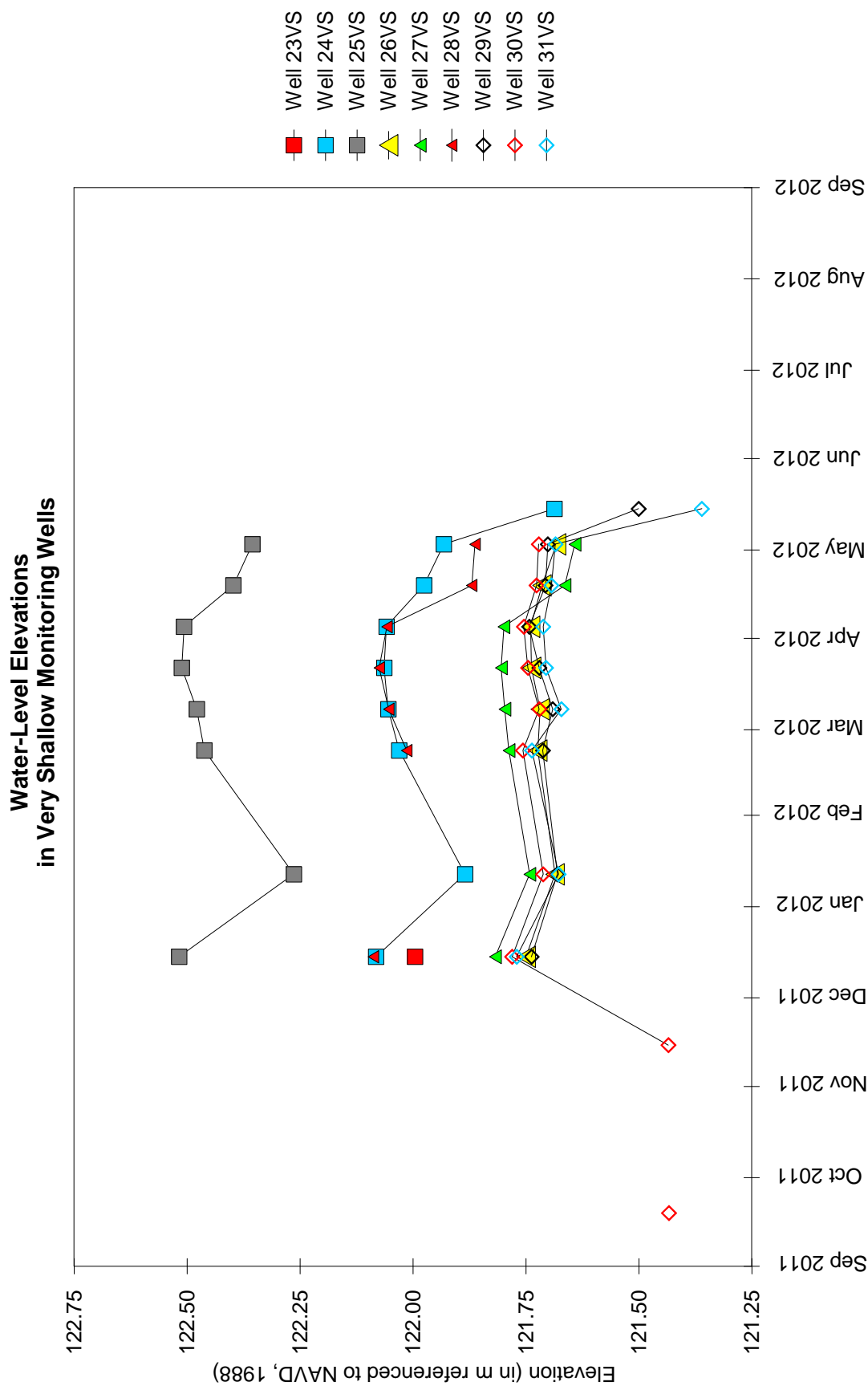
# **Former Tiernan Property Potential Wetland Mitigation Site** **September 1, 2011 through August 31, 2012**



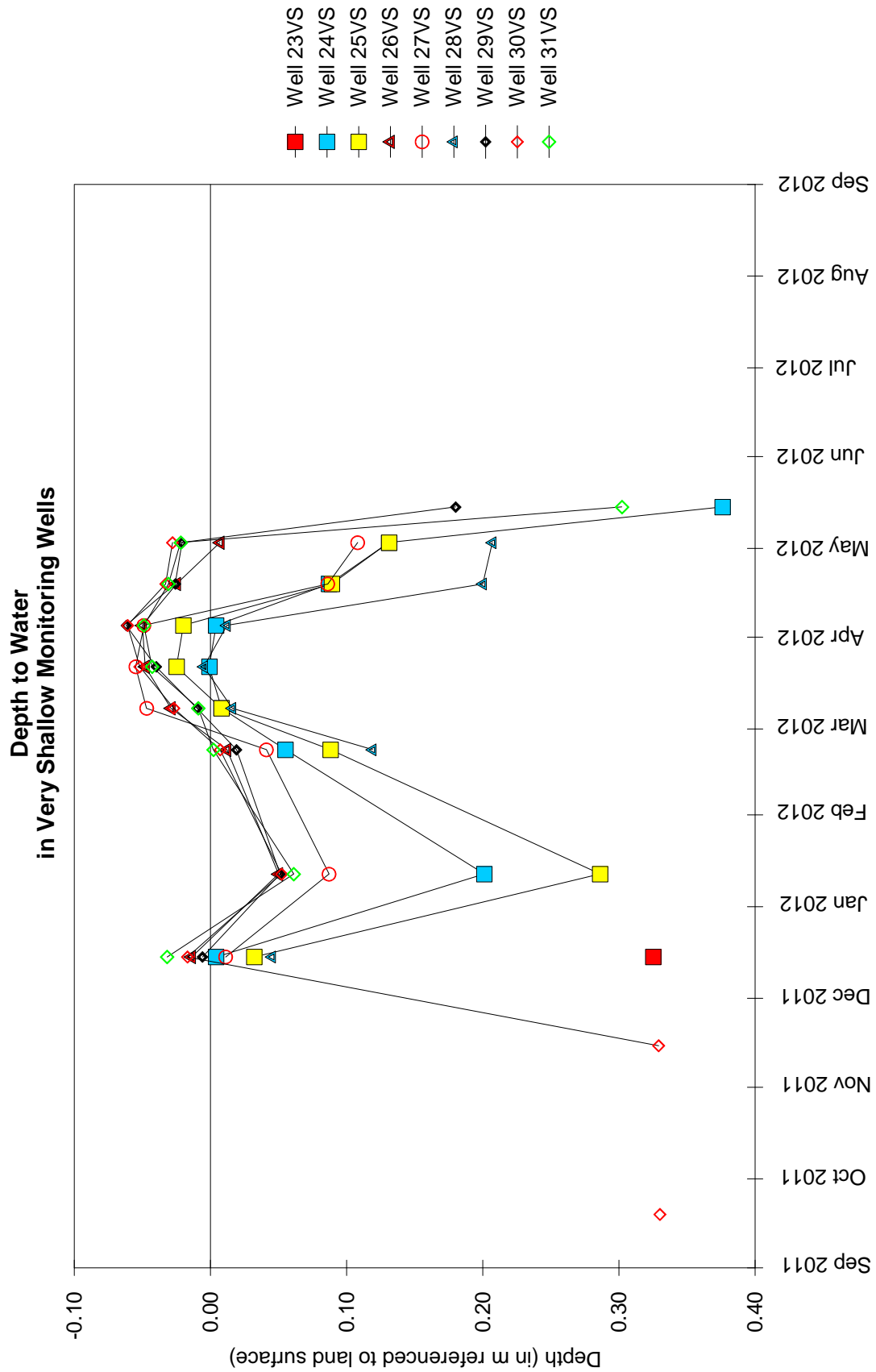
# **Former Tiernan Property Potential Wetland Mitigation Site** **September 1, 2011 through August 31, 2012**



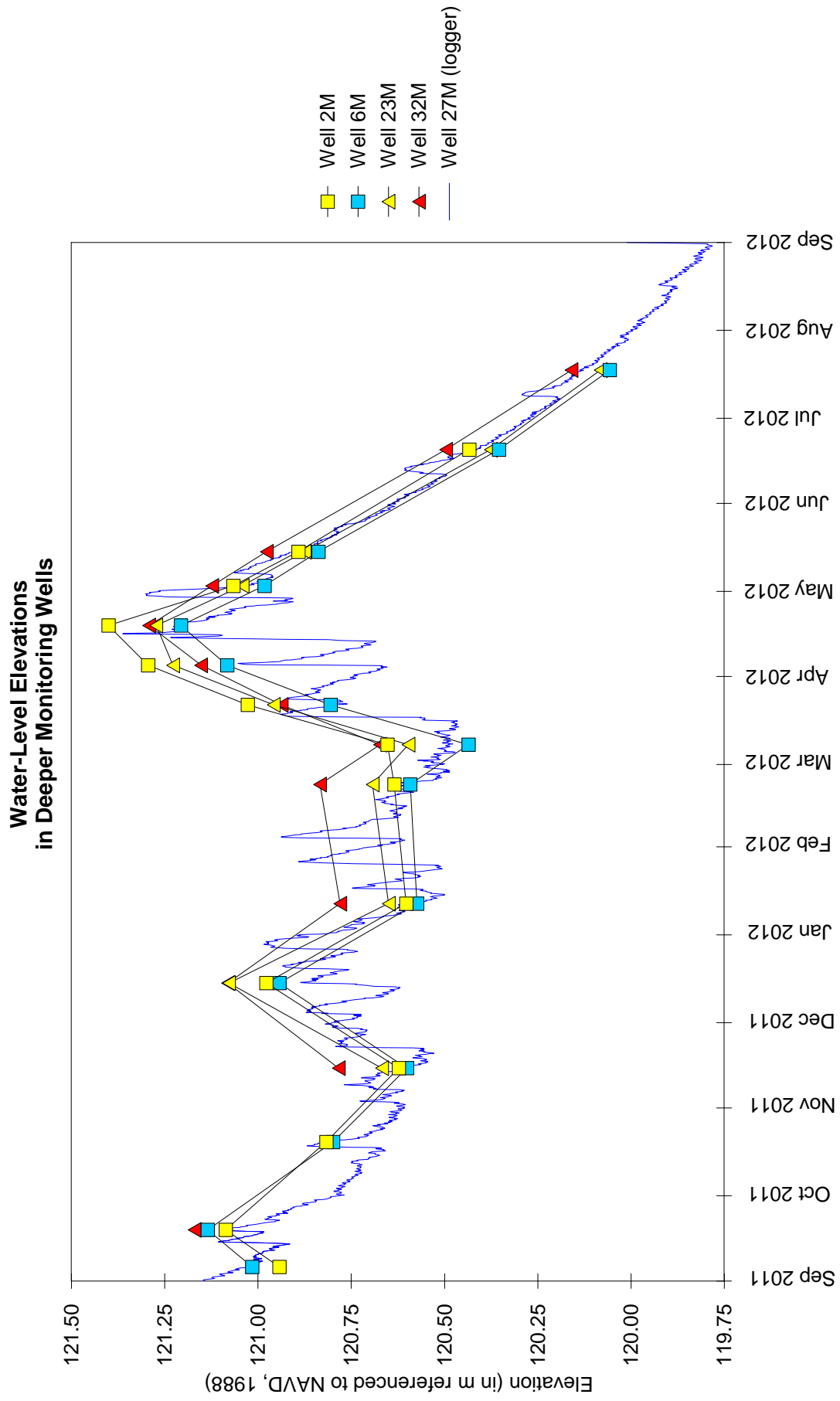
# **Former Tiernan Property Potential Wetland Mitigation Site** **September 1, 2011 through August 31, 2012**



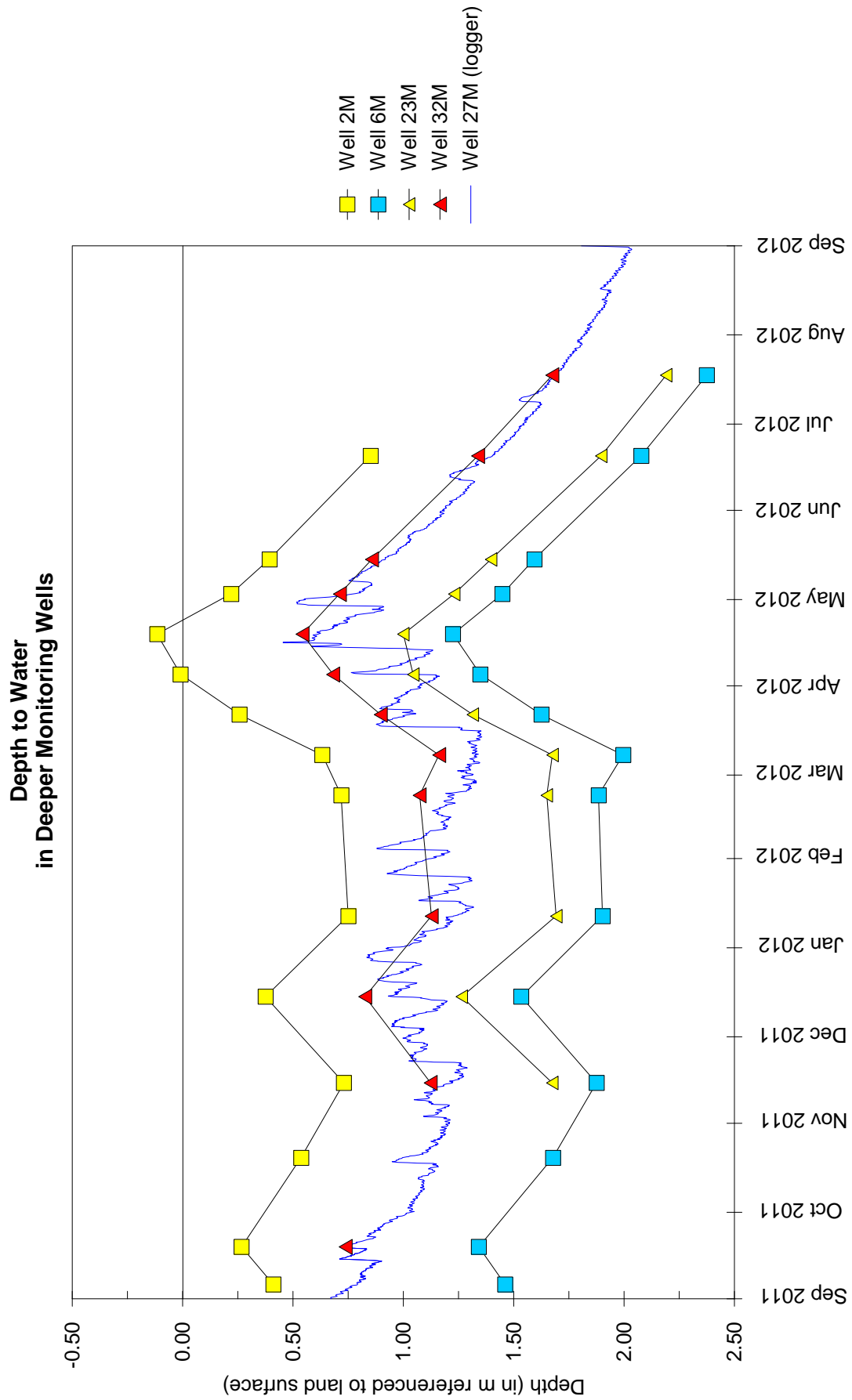
# **Former Tiernan Property Potential Wetland Mitigation Site** **September 1, 2011 through August 31, 2012**



# Former Tiernan Property Potential Wetland Mitigation Site September 1, 2011 through August 31, 2012



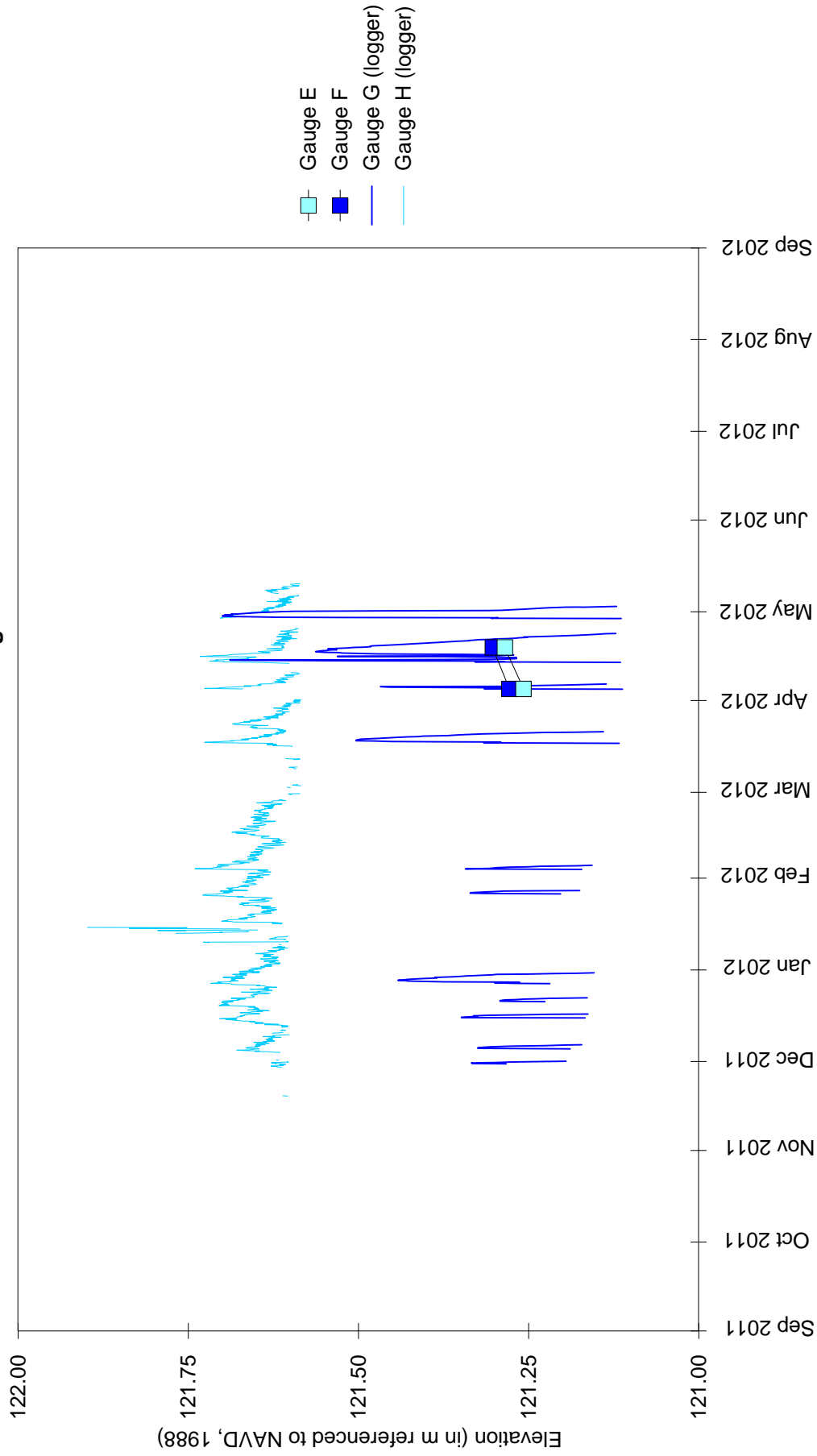
# **Former Tiernan Property Potential Wetland Mitigation Site** **September 1, 2011 through August 31, 2012**





# **Former Tiernan Property Potential Wetland Mitigation Site** **September 1, 2011 through August 31, 2012**

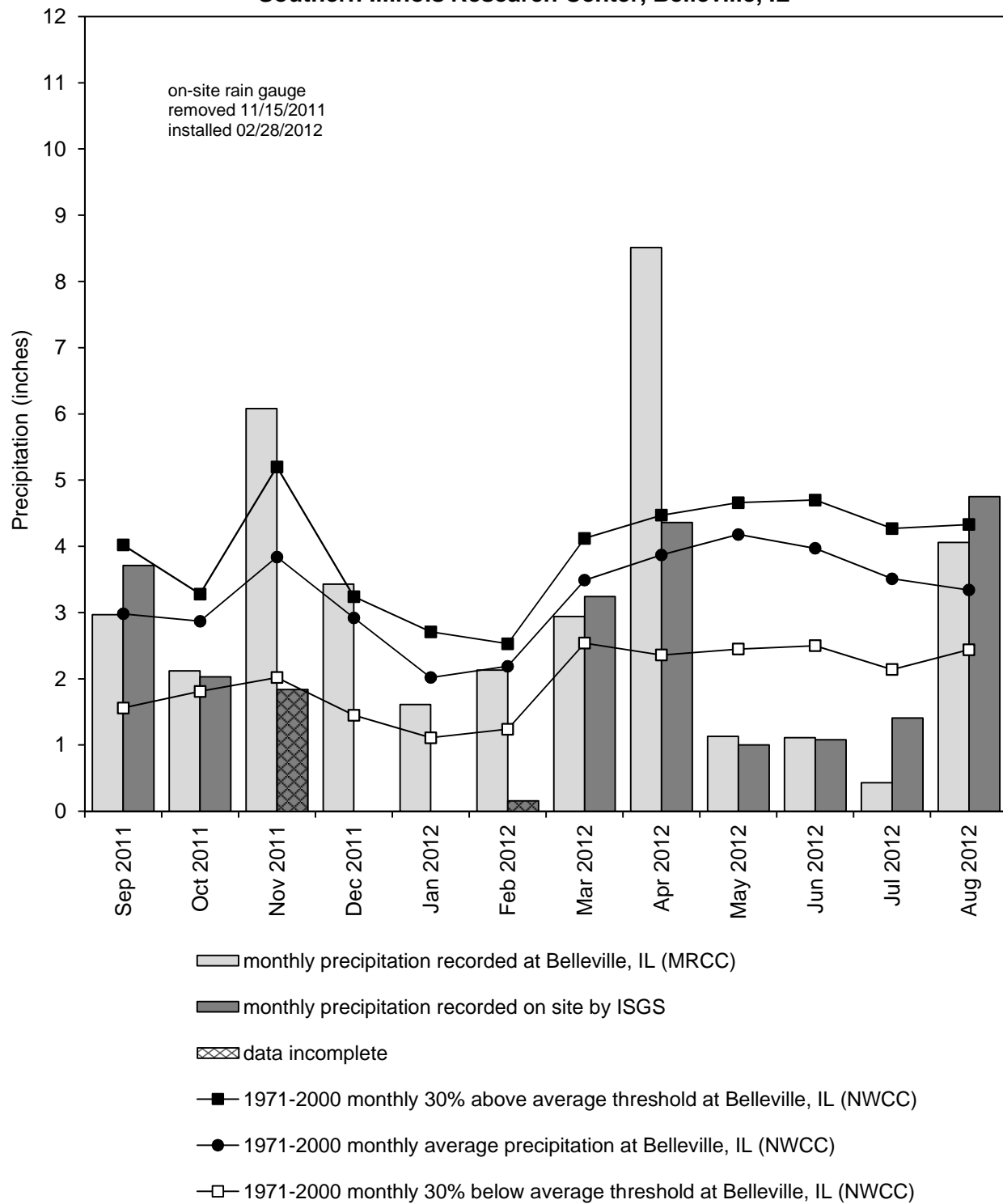
## **Water-Level Elevation at Surface-Water Gauges**



# Former Tiernan Property Potential Wetland Mitigation Site

## September 2011 through August 2012

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



**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: Jessica L. B. Monson**

**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-August 2011: Road construction associated with the new alignment of Illinois Route 13 reduced wetland area at the site.
- February 2012: The IDOT received approval notifications from the U.S. Army Corps of Engineers and Illinois Department of Natural Resources and notified the ISGS to discontinue monitoring.

**WETLAND HYDROLOGY CALCULATION FOR 2012**

No wetland hydrology estimate was calculated because agency sign-off occurred prior to the 2012 growing season.

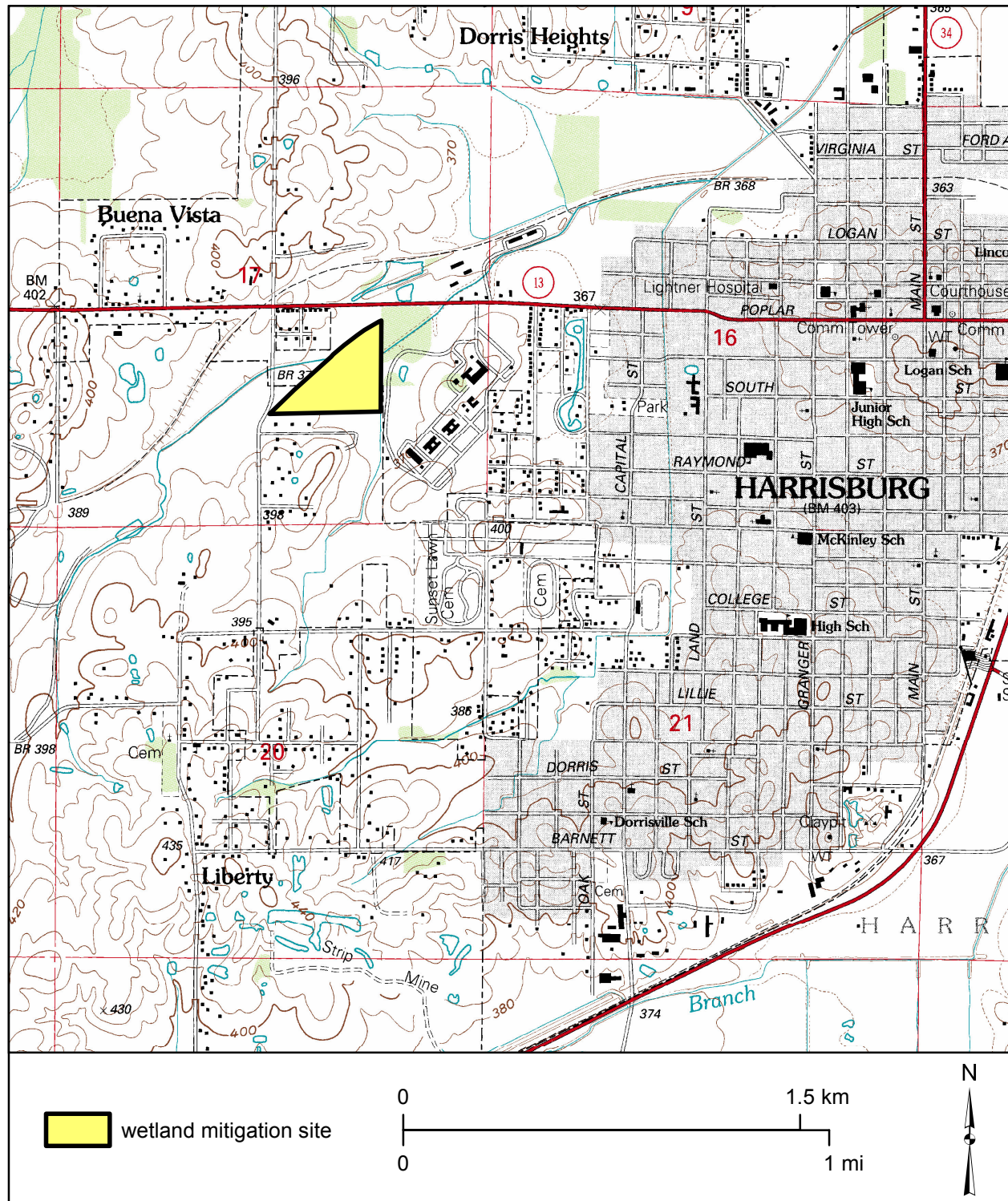
**PLANNED FUTURE ACTIVITIES**

- Monitoring has been discontinued and monitoring equipment will be removed from the site during Fall 2012.

# Harrisburg Wetland Mitigation Site (US 45, 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



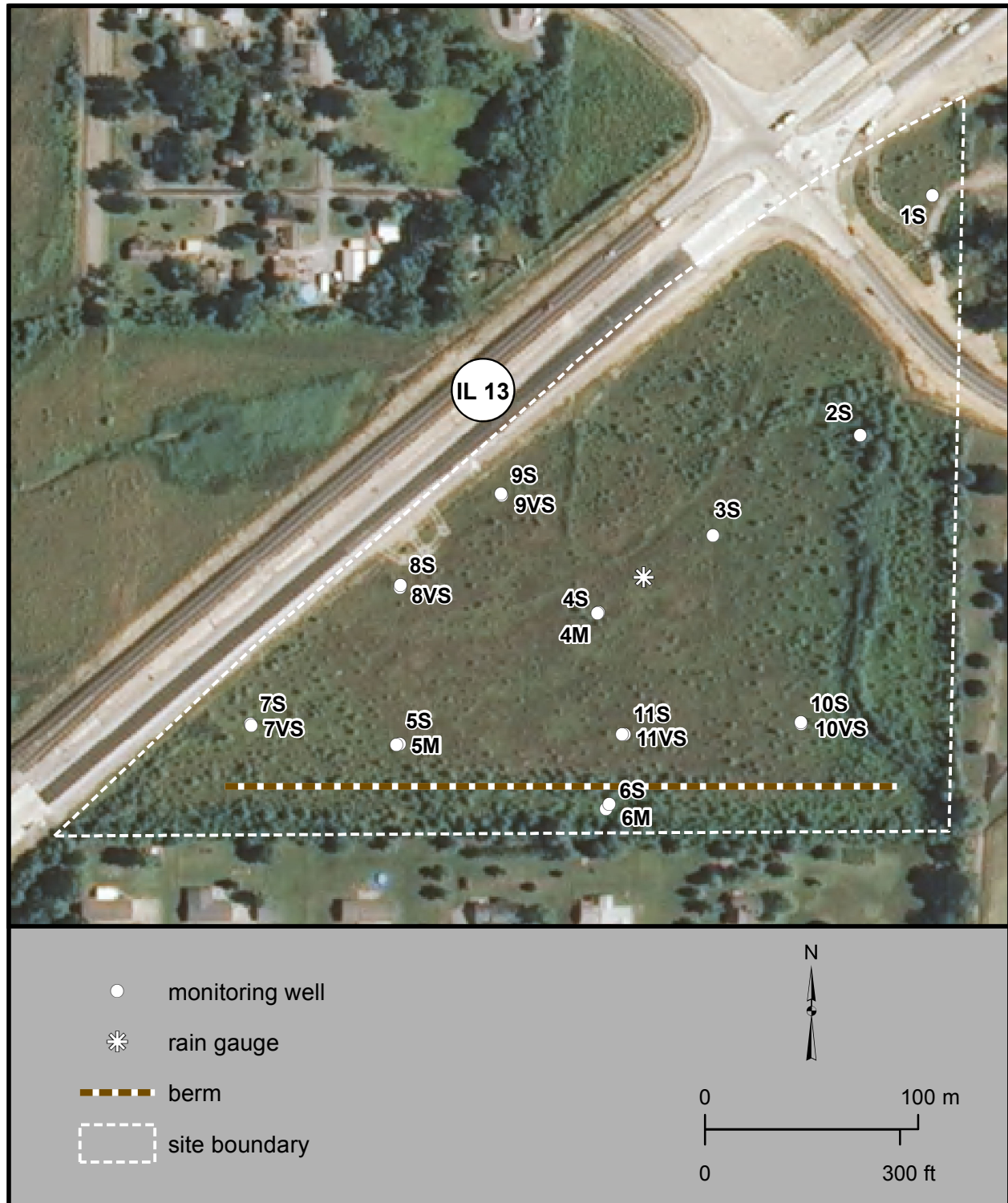


# Harrisburg Wetland Mitigation Site (US 45, FAP 332)

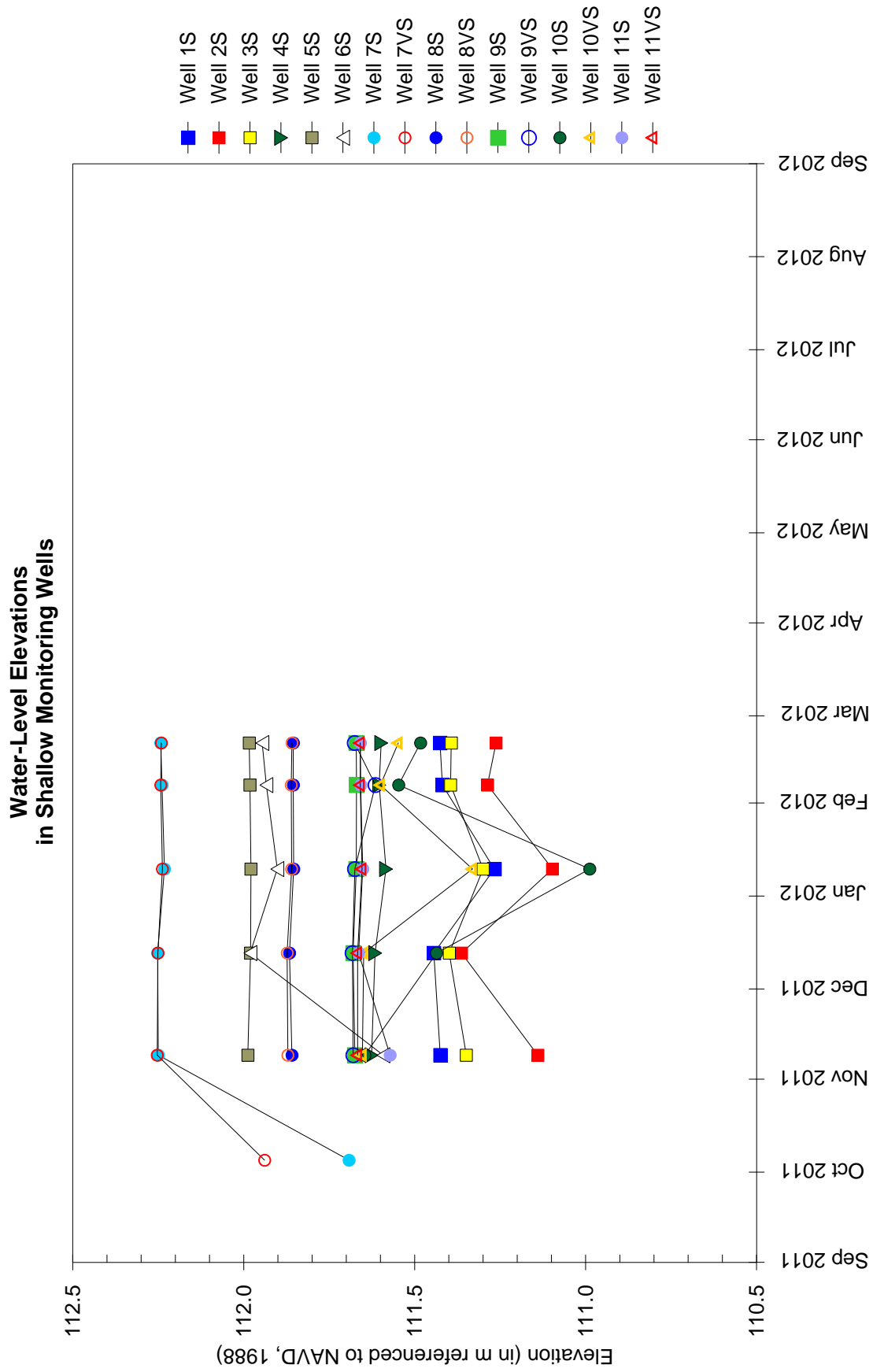
## Monitoring Network

September 1, 2011 through February 29, 2012

Map based on 2012 Farm Service Agency digital orthophotograph, Saline County, Illinois (USDA-FSA 2012)

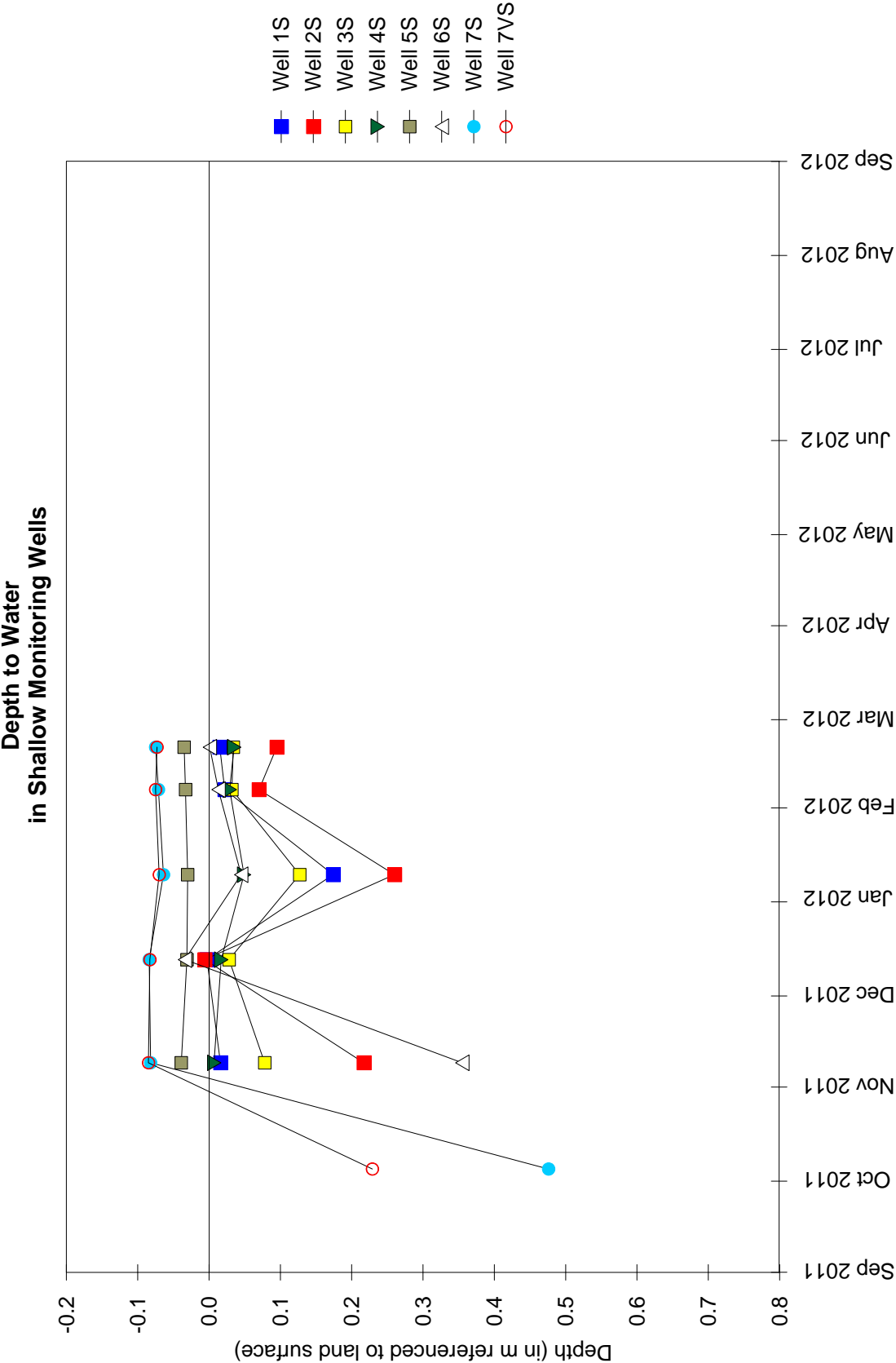


# Harrisburg Wetland Mitigation Site September 1, 2011 through February 29, 2012

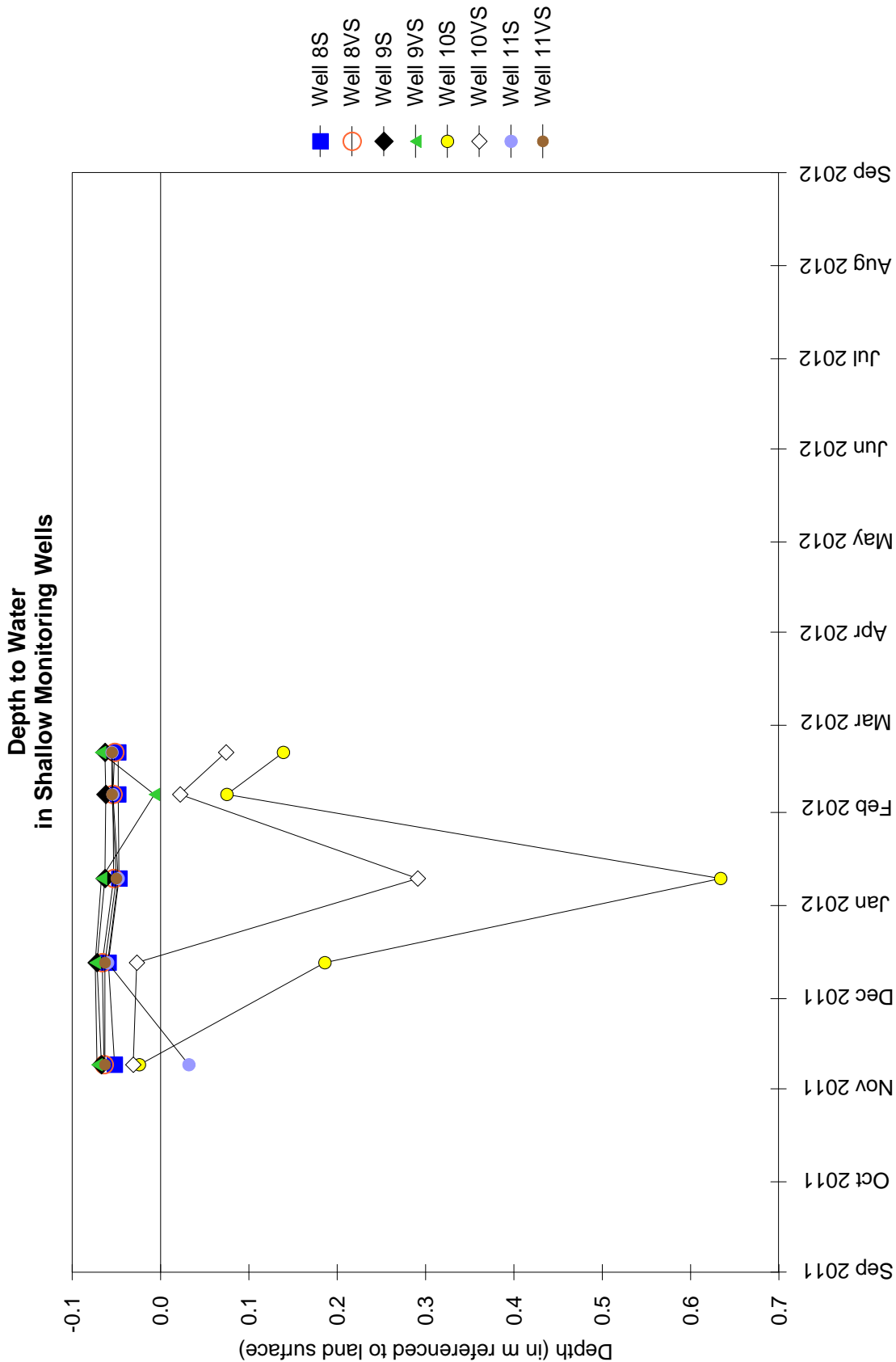




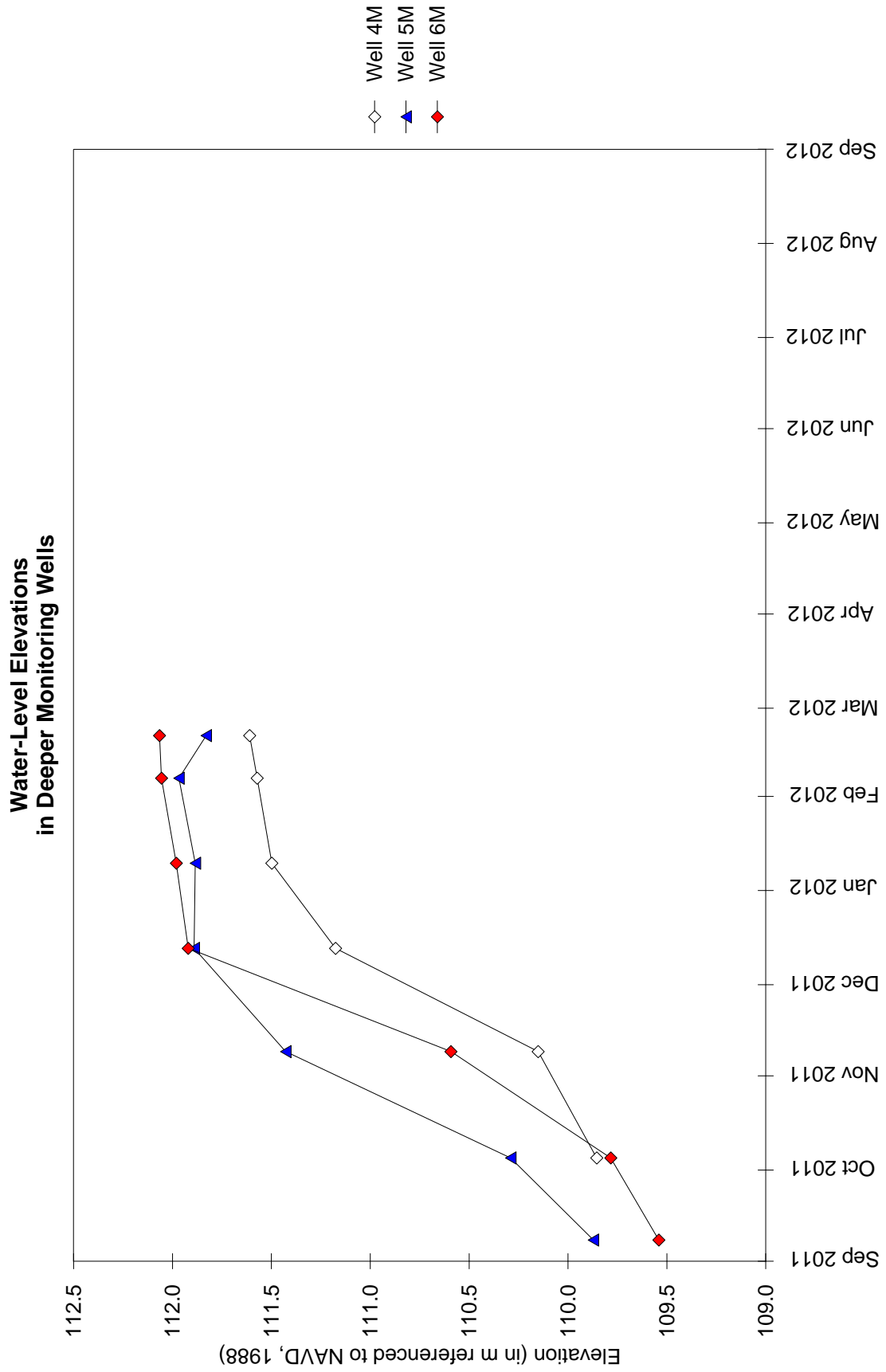
# Harrisburg Wetland Mitigation Site September 1, 2011 through February 29, 2012



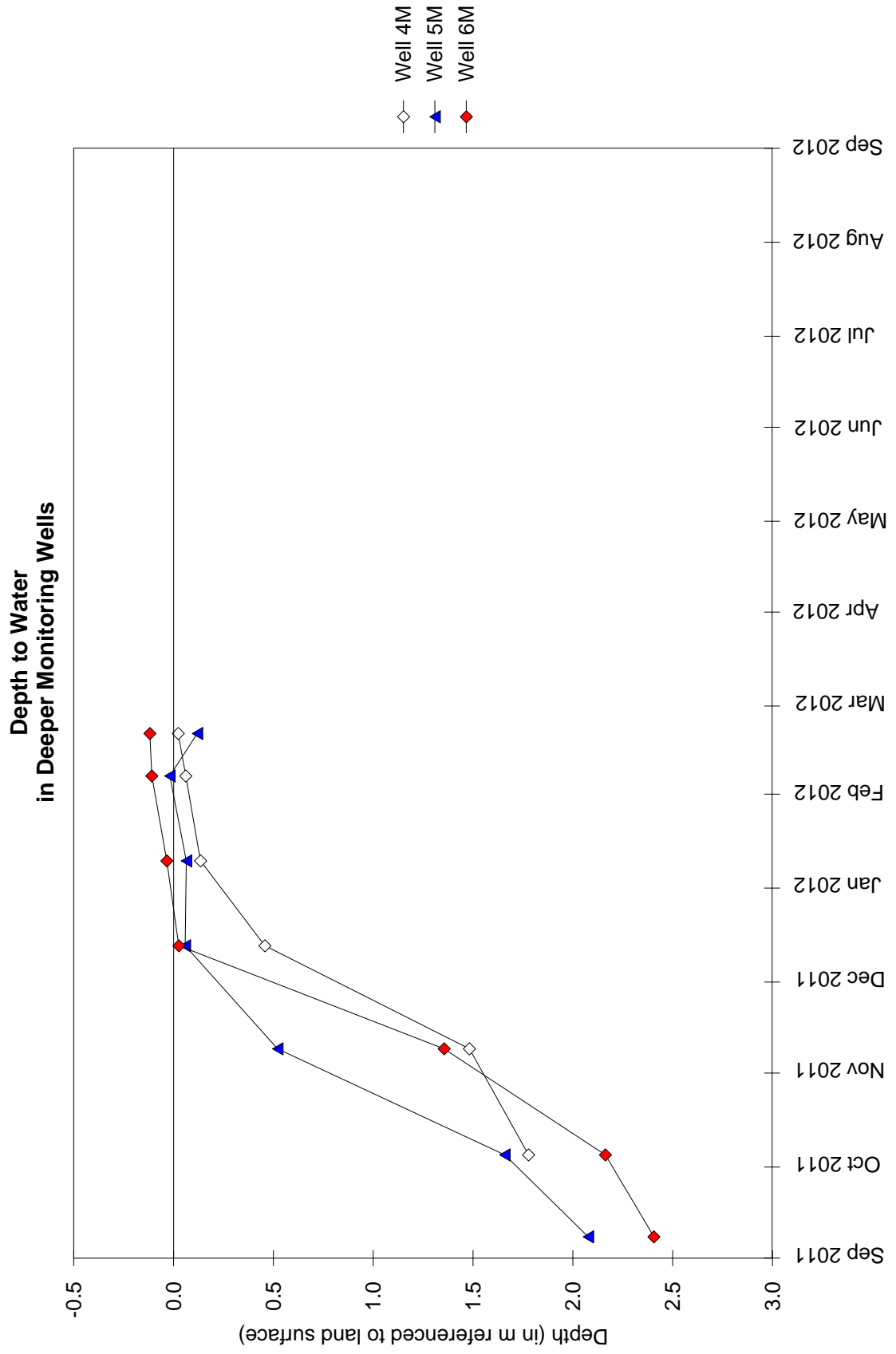
# Harrisburg Wetland Mitigation Site September 1, 2011 through February 29, 2012



# **Harrisburg Wetland Mitigation Site** September 1, 2011 through February 29, 2012



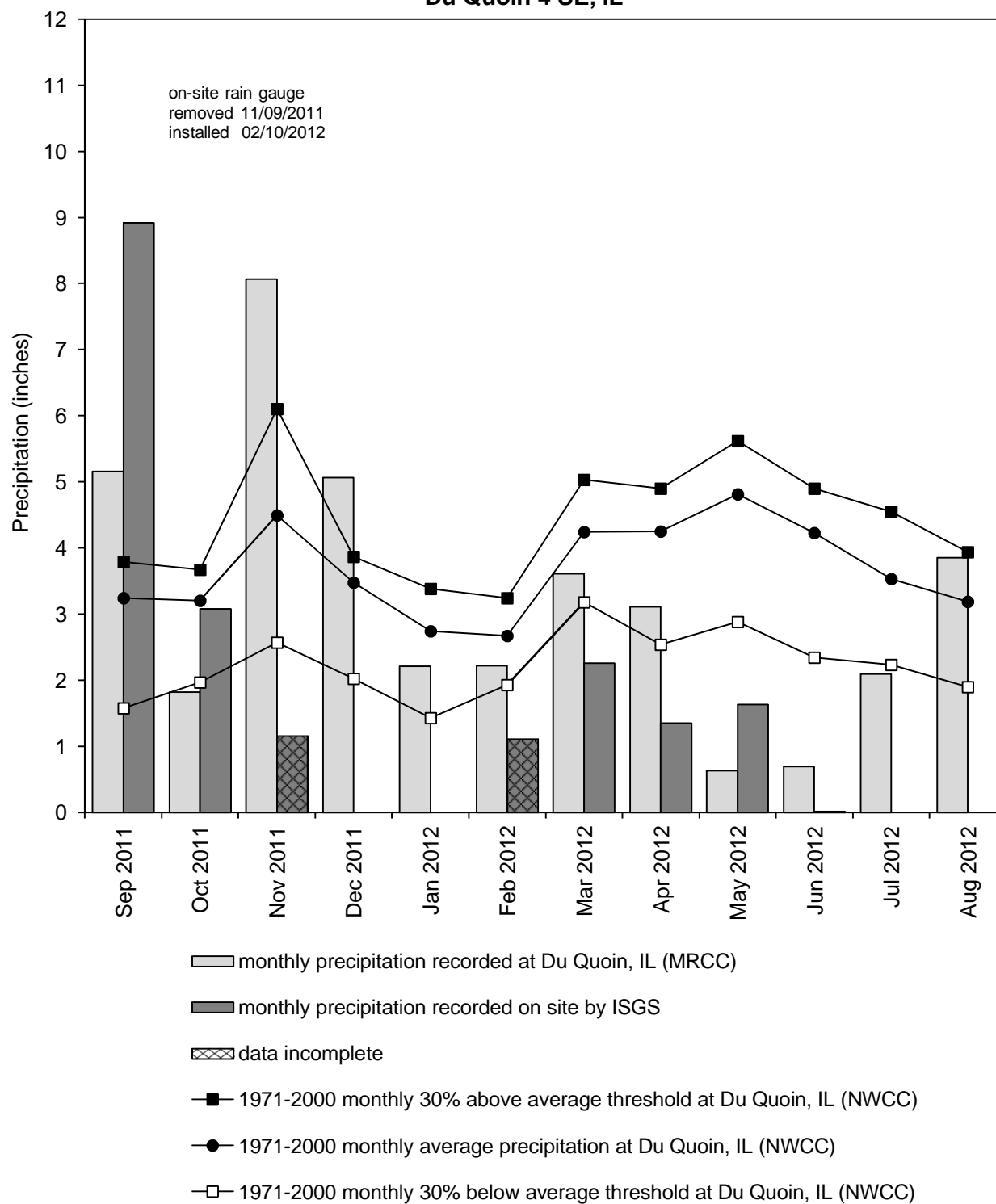
# Harrisburg Wetland Mitigation Site September 1, 2011 through February 29, 2012



# Harrisburg Wetland Mitigation Site

## September 2011 through August 2012

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



**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: Jessica L. B. Monson**

**SITE HISTORY**

- Summer 2001: The wetland mitigation site was constructed.
- November 2003: Post-construction water-level monitoring was initiated by ISGS.

**WETLAND HYDROLOGY CALCULATION FOR 2012**

The target compensation area for the Tamms wetland mitigation site is 1.75 ha (4.33 ac). Using the 1987 Manual (Environmental Laboratory 1987), 0.32 ha (0.80 ac) out of the 6.3-ha (15.6-ac) site satisfied wetland hydrology criteria for greater than 5% of the growing season in 2012, whereas none of the site satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Using the 2010 Midwest Region Supplement (USACE 2010) to the 1987 Manual, 0.86 ha (2.12 ac) satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

- The median date that the growing season begins in nearby Anna, Illinois, is March 31 and the season lasts 220 days (MRCC 2012). According to the 1987 Manual, 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, February 16 was the starting date of the 2012 growing season based on soil temperatures measured at the wetland mitigation site.
- Total precipitation at the Cape Girardeau, Missouri, weather station for the period from September 2011 through August 2012 was 91% of normal, and Spring 2012 (March through May) precipitation was 36% of normal.
- In 2012, only well 7S satisfied wetland hydrology criteria for greater than 5% of the growing season, and no wells satisfied wetland hydrology criteria for greater than 12.5% of the growing season according to the 1987 Manual. According to the 2010 Midwest Region Supplement, wells 7S and 10S satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season.
- Surface water gauges showed that no areas on the site were inundated for greater than 5% or greater than 12.5% of the growing season, according to the 1987 Manual. According to the 2010 Midwest Region Supplement, data from gauges A, B, and E showed that the area surrounding each of these gauges at or below 102.67 m (336.83 ft), 102.26 m (335.50 ft) and 103.00 m (337.92 ft), respectively, were inundated for 14 or more consecutive days during the growing season.

#### PLANNED FUTURE ACTIVITIES

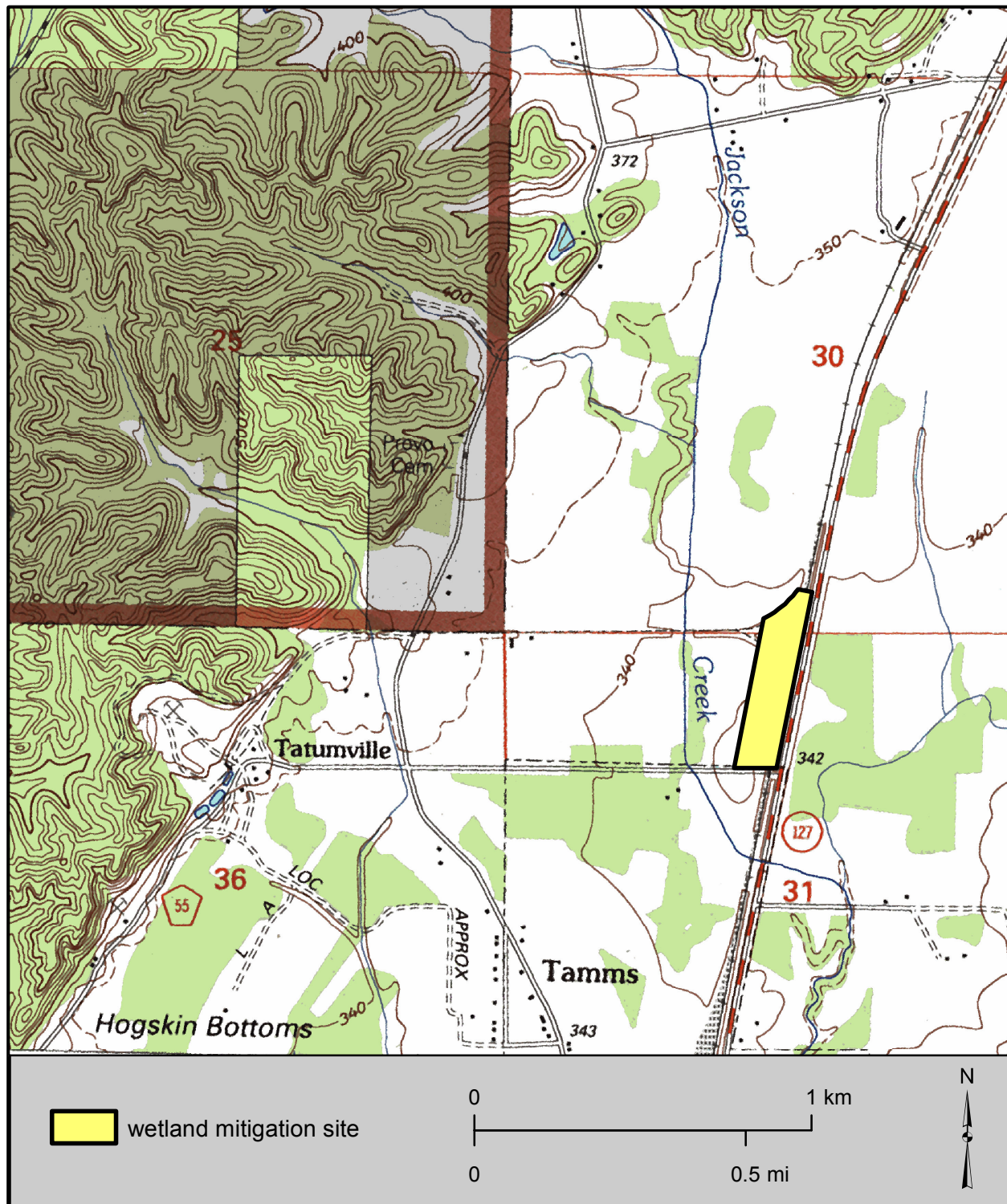
- Water-level monitoring will continue until no longer required by IDOT.



# Tamms Wetland Mitigation Site (IL 127, FAS 1907)

## General Study Area and Vicinity

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

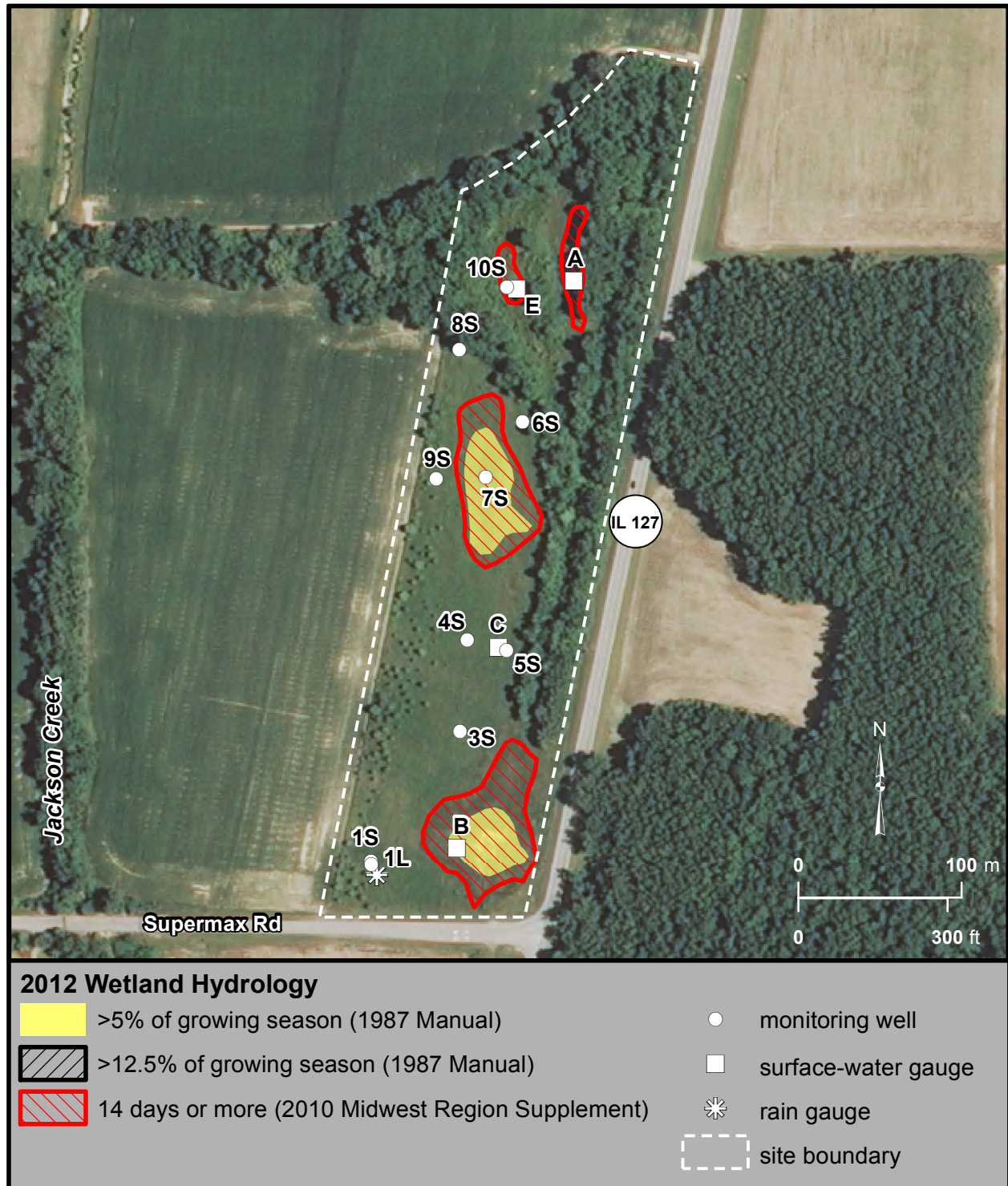




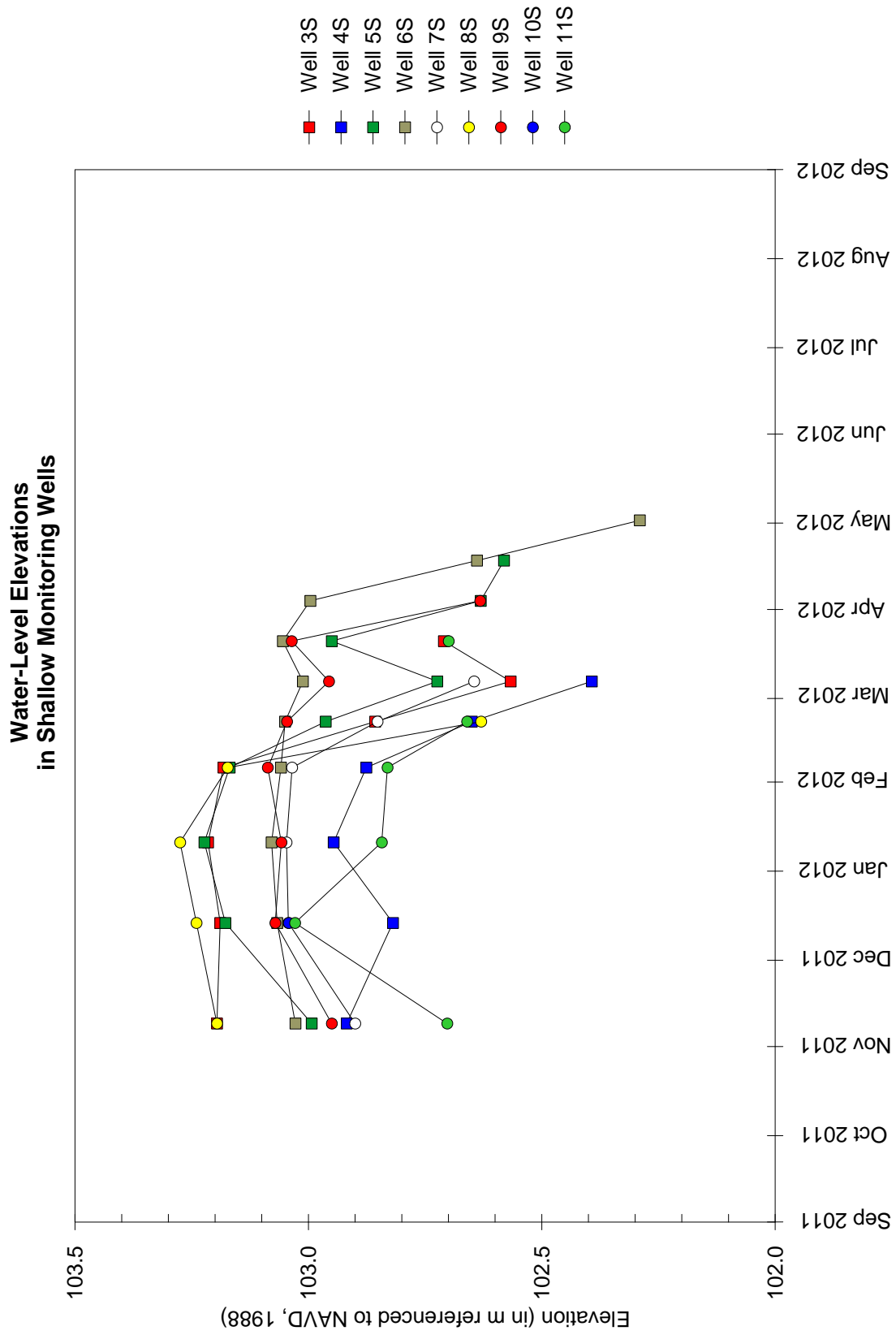
# Tamms Wetland Mitigation Site (IL 127, FAS 1907)

## Estimated Areal Extent of 2012 Wetland Hydrology September 1, 2011 through August 31, 2012

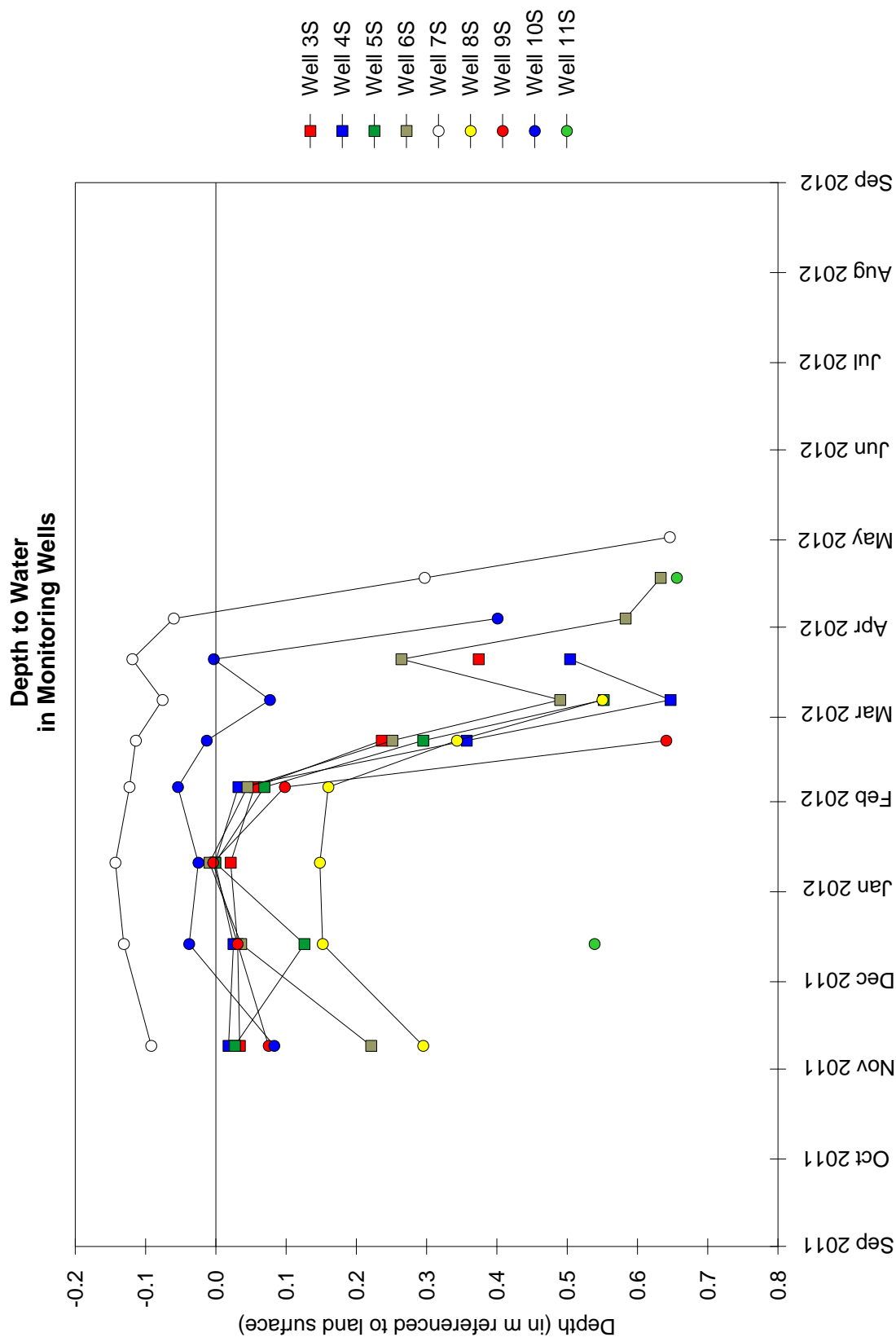
Map based on 2012 Farm Service Agency digital orthophotography,  
Alexander County, Illinois (USDA-FSA 2012)



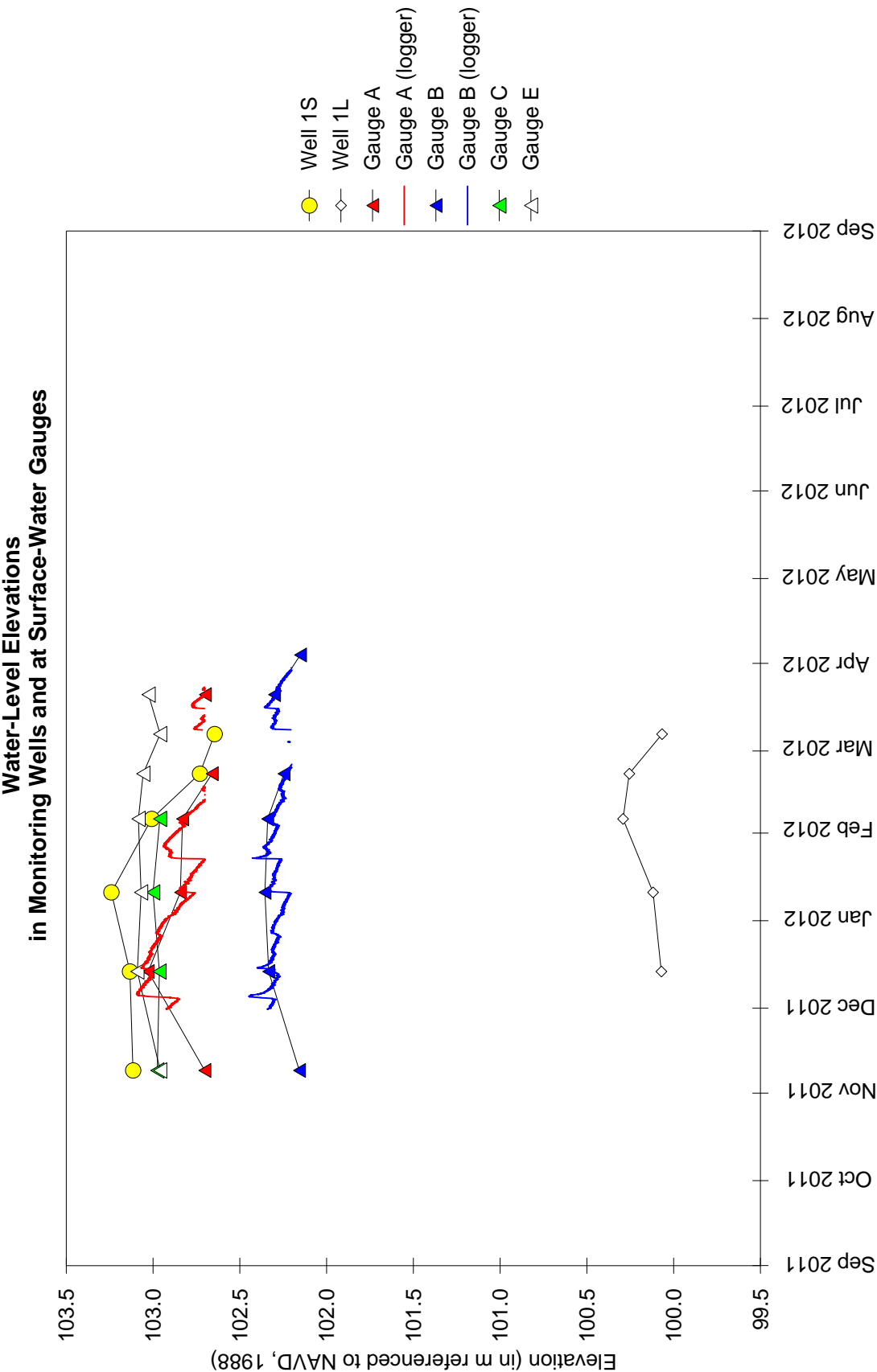
# **Tamms Wetland Mitigation Site** **September 1, 2011 through August 31, 2012**



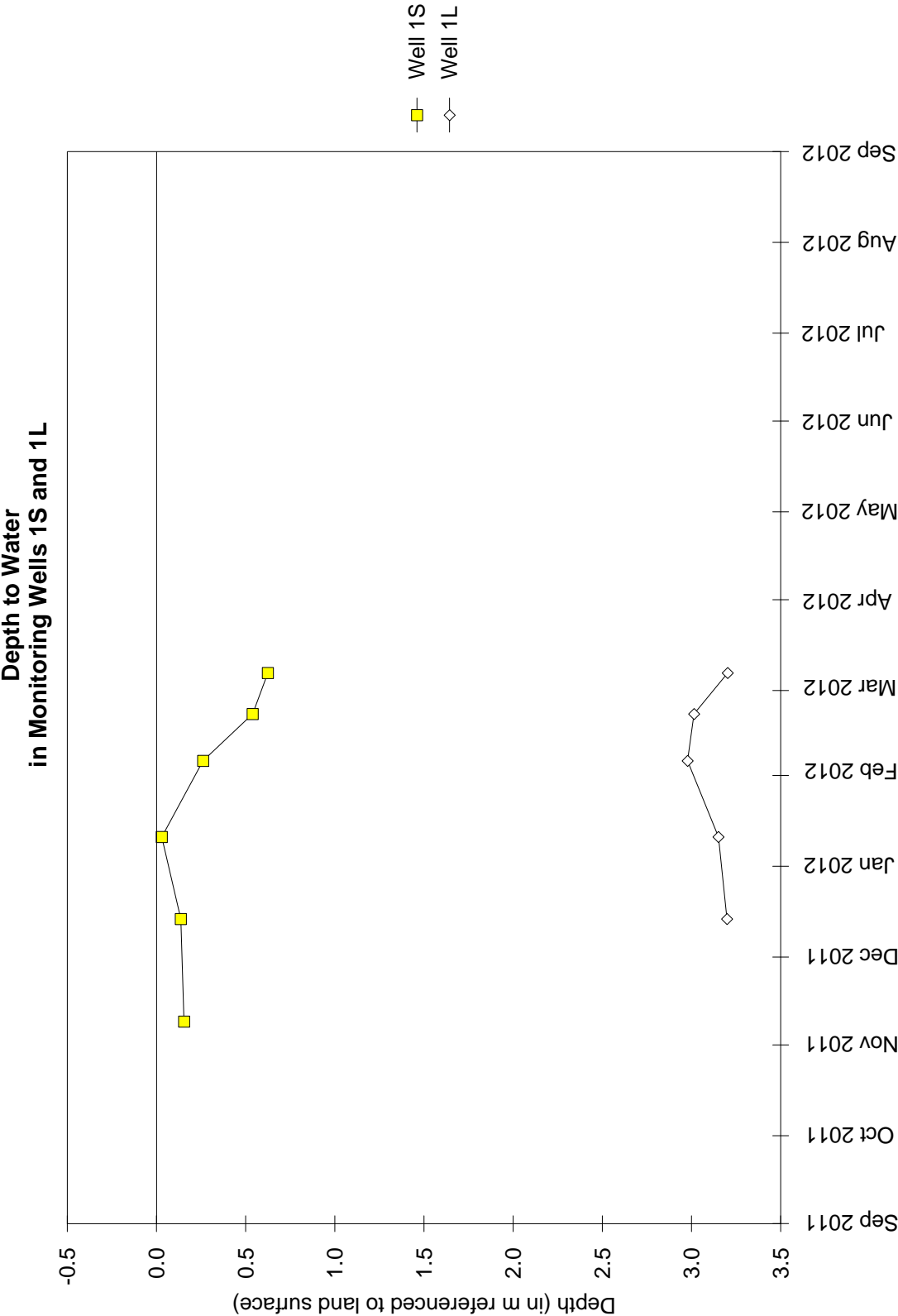
# **Tamms Wetland Mitigation Site** September 1, 2011 through August 31, 2012



# **Tamms Wetland Mitigation Site** **September 1, 2011 through August 31, 2012**



**Tamms Wetland Mitigation Site**  
**September 1, 2011 through August 31, 2012**

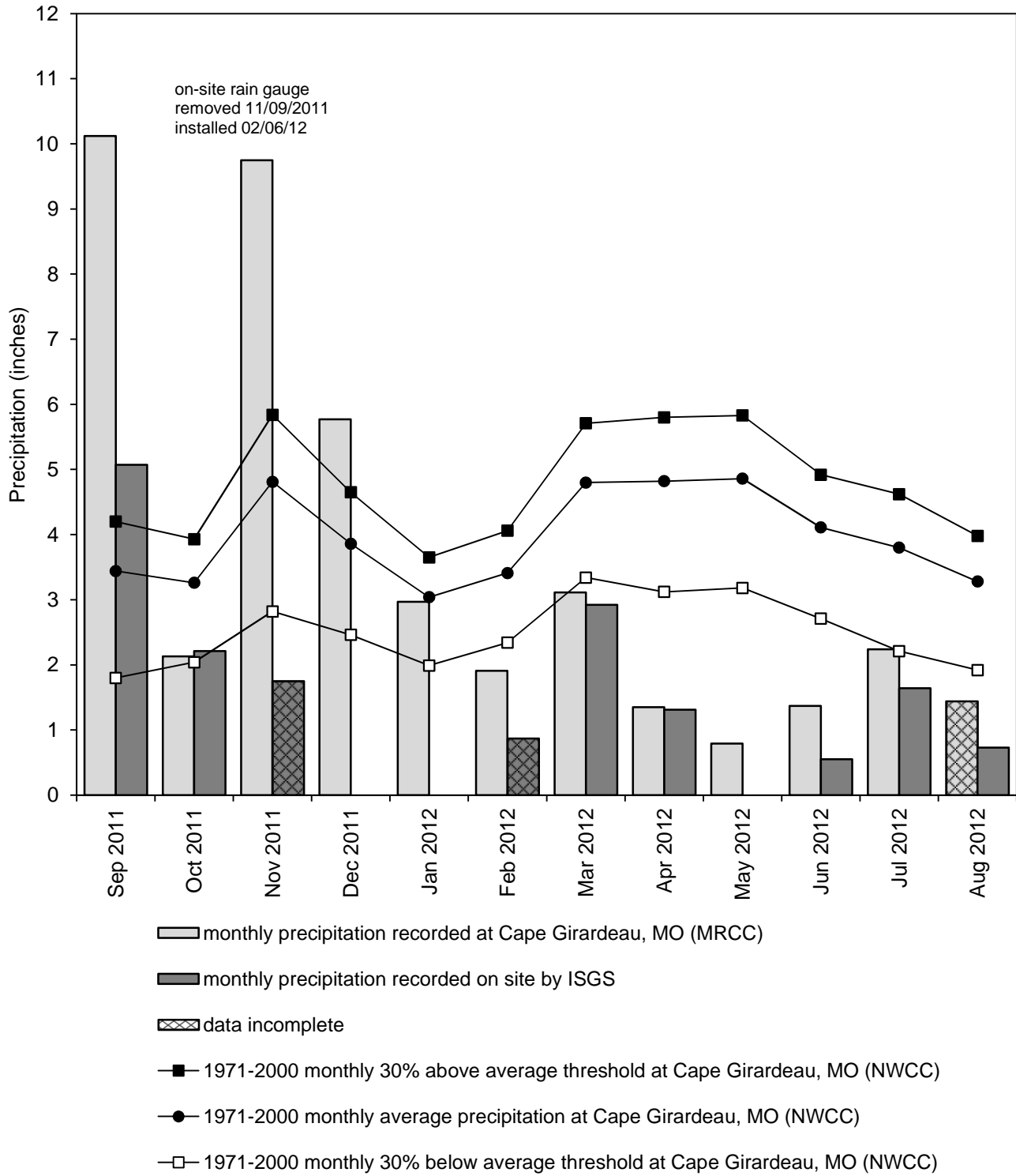




# Tamms Wetland Mitigation Site

## September 2011 through August 2012

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



## **SUGAR CAMP CREEK**

**ISGS #74**

### **WETLAND AND STREAM MITIGATION BANK**

Sequence #9282

Franklin County, Northern Township, Illinois

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

**Secondary Project Manager: Jessica L. B. Monson**

### **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 2011: IDOT tasked ISGS to monitor Phase I of the Sugar Camp Creek Wetland and Stream Mitigation Bank for performance standards.

### **WETLAND HYDROLOGY CALCULATION FOR 2012**

The target compensation area for the Sugar Camp Creek Wetland Mitigation Bank is 28.00 ha (69.20 ac). Using the 1987 Manual (Environmental Laboratory 1987), 9.91 ha (24.50 ac) of the total bank area of 42.57 ha (105.20 ac) satisfied wetland hydrology criteria for greater than 5% of the growing season in 2012, and 6.19 ha (15.30 ac) satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Within Phase 1 of the wetland mitigation bank, 9.13 ha (22.56 ac) satisfied wetland hydrology criteria for greater than 5% of the growing season, of which 6.01 ha (14.84 ac) also satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Using the 2010 Midwest Region Supplement (USACE 2010) to the 1987 Manual, 14.45 ha (35.70 ac) of the entire wetland bank and 13.20 ha (32.62 ac) of Phase 1 satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

- The median date that the growing season begins in nearby Du Quoin, Illinois, is April 5 and the season lasts 207 days (MRCC 2012). According to the 1987 Manual, 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, February 26 was the starting date of the 2012 growing season based on soil temperatures measured at the wetland mitigation site.

- Total precipitation at the Du Quoin, Illinois, weather station for the period from September 2011 through August 2012 was 87% of normal, and Spring 2012 (March through May) precipitation was 55% of normal.
- In 2012, wells 1S, 2S, 4S, 8S, 11S, 13S, 15S, 19S, 36VS, 38S, 39S, 42S, and 45S satisfied wetland hydrology criteria for greater than 5% of the growing season, and wells 8S, 13S, 15S, 19S, 38S, 39S and 42S satisfied wetland hydrology criteria for greater than 12.5% of the growing season according to the 1987 Manual. Furthermore, according to the 2010 Midwest Region Supplement, wells 1S, 2S, 4S, 8S, 11S, 13S, 15S, 19S, 33S, 36VS, 37S, 38S, 39S, 40S, 42S, 43S, 44S, and 45S satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season.
- Data from gauges A and E in Sugar Camp Creek indicated that one flood inundated portions of the site during the 2012 growing season but the duration of inundation was not sufficient to satisfy any wetland hydrology criteria.
- Surface-water readings at Gauge G showed that water-level elevation was at or above 123.90 m (406.49 ft) for greater than 5% of the growing season and was at or above 123.87 m (406.39 ft) for greater than 12.5% of the growing season according to the 1987 Manual. Furthermore, water-level elevation at Gauge G was at or above 123.93 m (406.59 ft) for 14 or more consecutive days during the growing season according to the 2010 Midwest Region Supplement. Surface-water readings at Gauge K showed that water-level elevation did not satisfy wetland hydrology criteria for greater than 5% of the growing season or for greater than 12.5% of the growing season according to the 1987 Manual. However, water-level elevation at Gauge K was at or above 122.80 m (402.88 ft) for 14 or more consecutive days during the growing season according to the 2010 Midwest Region Supplement. Surface-water readings at Gauge L showed that water-level elevation was at or above 123.99 m (406.79 ft) for greater than 5% and for greater than 12.5% of the growing season according to the 1987 Manual. Furthermore, water-level elevation at Gauge L was at or above 124.01 m (406.85 ft) for 14 or more consecutive days during the growing season according to the 2010 Midwest Region Supplement.

#### ADDITIONAL INFORMATION

- A beaver dam in the spillway at the southeast corner of the parcel caused elevated water levels in Phase 1 of the mitigation bank during late Winter and Spring 2012 despite much-below-normal precipitation during this period. Although the area of wetland hydrology was larger than expected under the dry conditions, we recommend removing the beaver dam to reduce the potential for erosion during floods that are expected to occur during periods of normal or above normal precipitation.

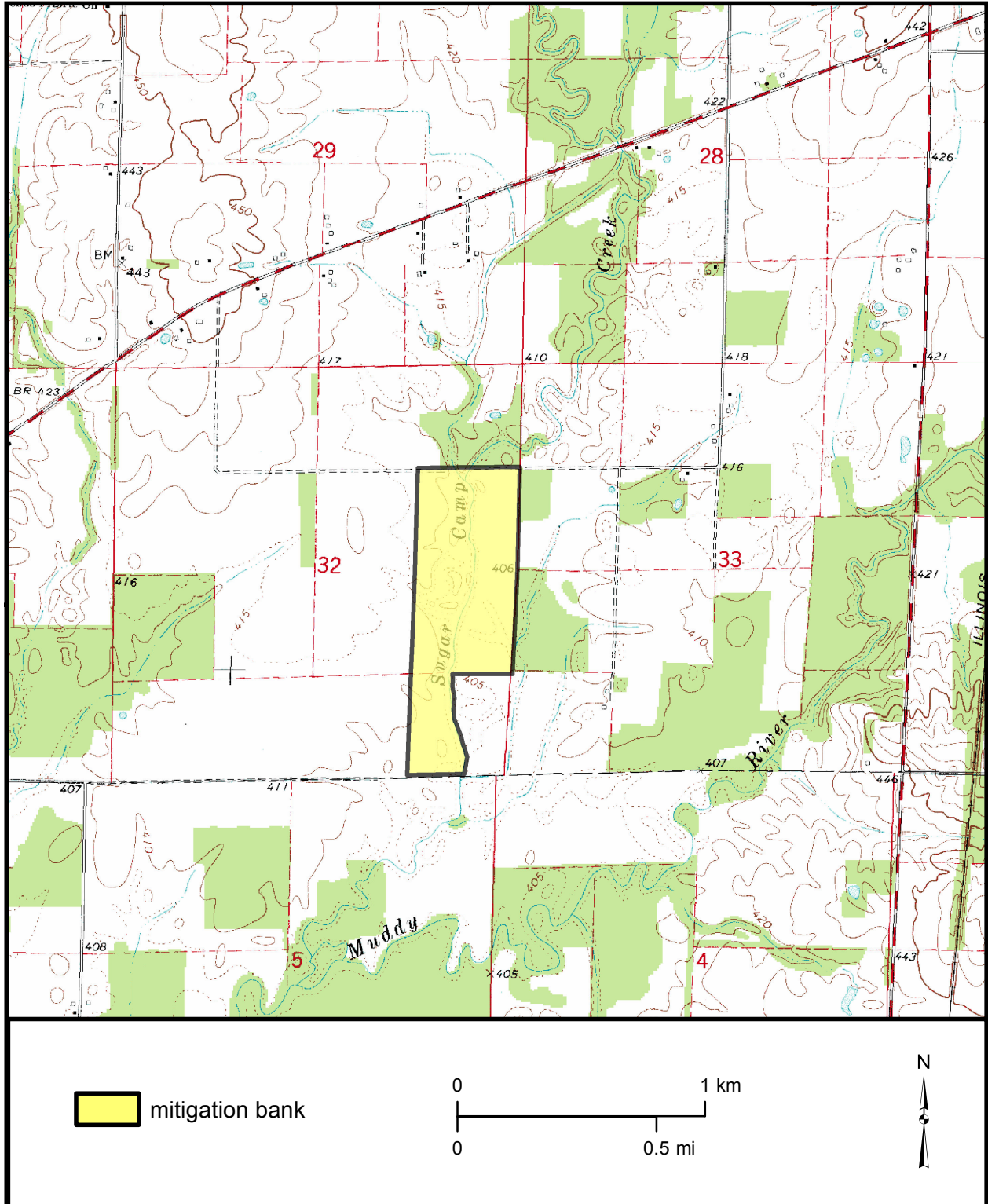
#### PLANNED FUTURE ACTIVITIES

- Replacement wells will be installed after construction of Phase 2 of the mitigation bank.
- Monitoring activities will continue until no longer required by IDOT.

# Sugar Camp Creek Wetland and Stream Mitigation Bank

## General Study Area and Vicinity

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

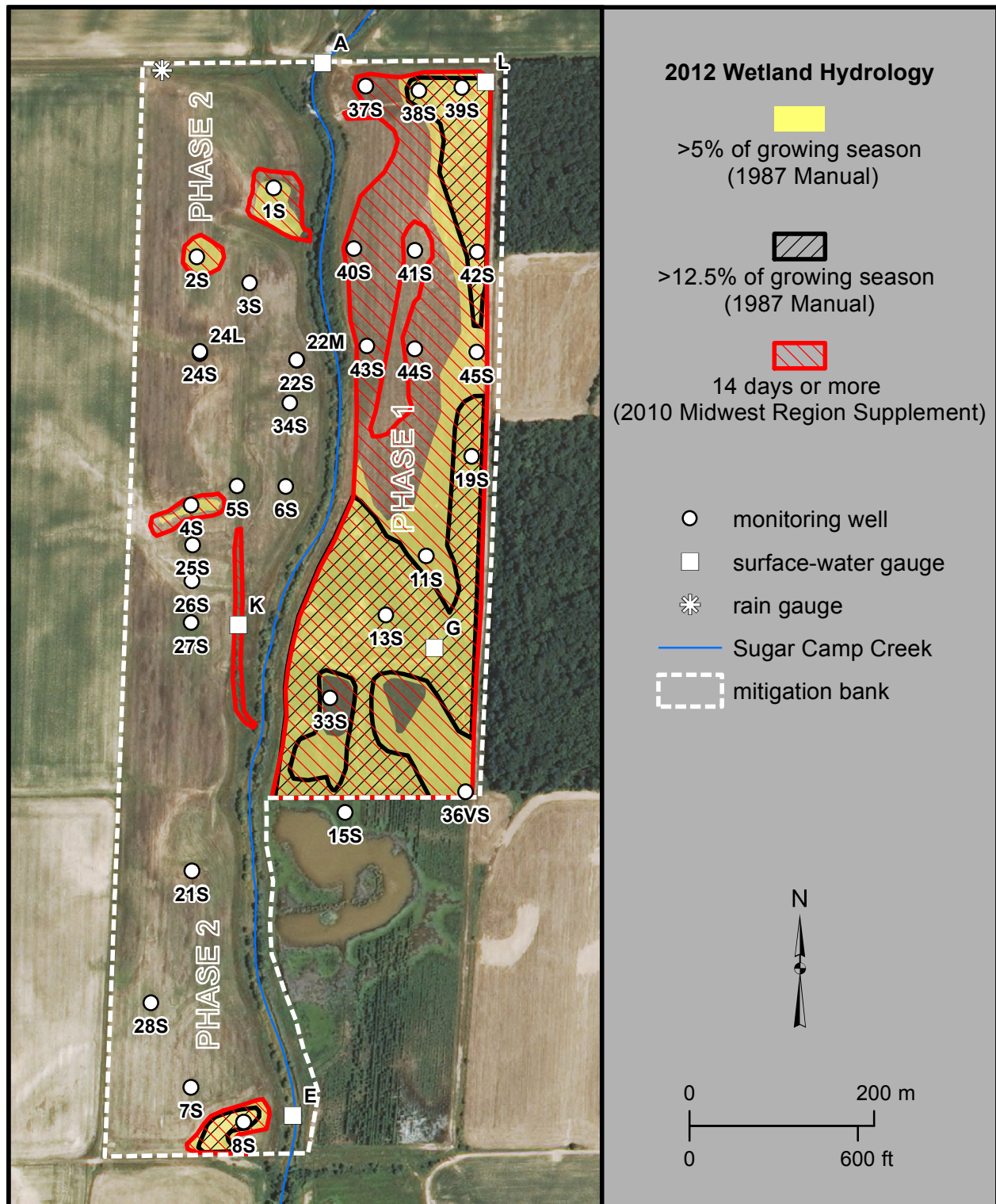


# Sugar Camp Creek Wetland and Stream Mitigation Bank (FAP 312)

## Estimated Areal Extent of 2012 Wetland Hydrology

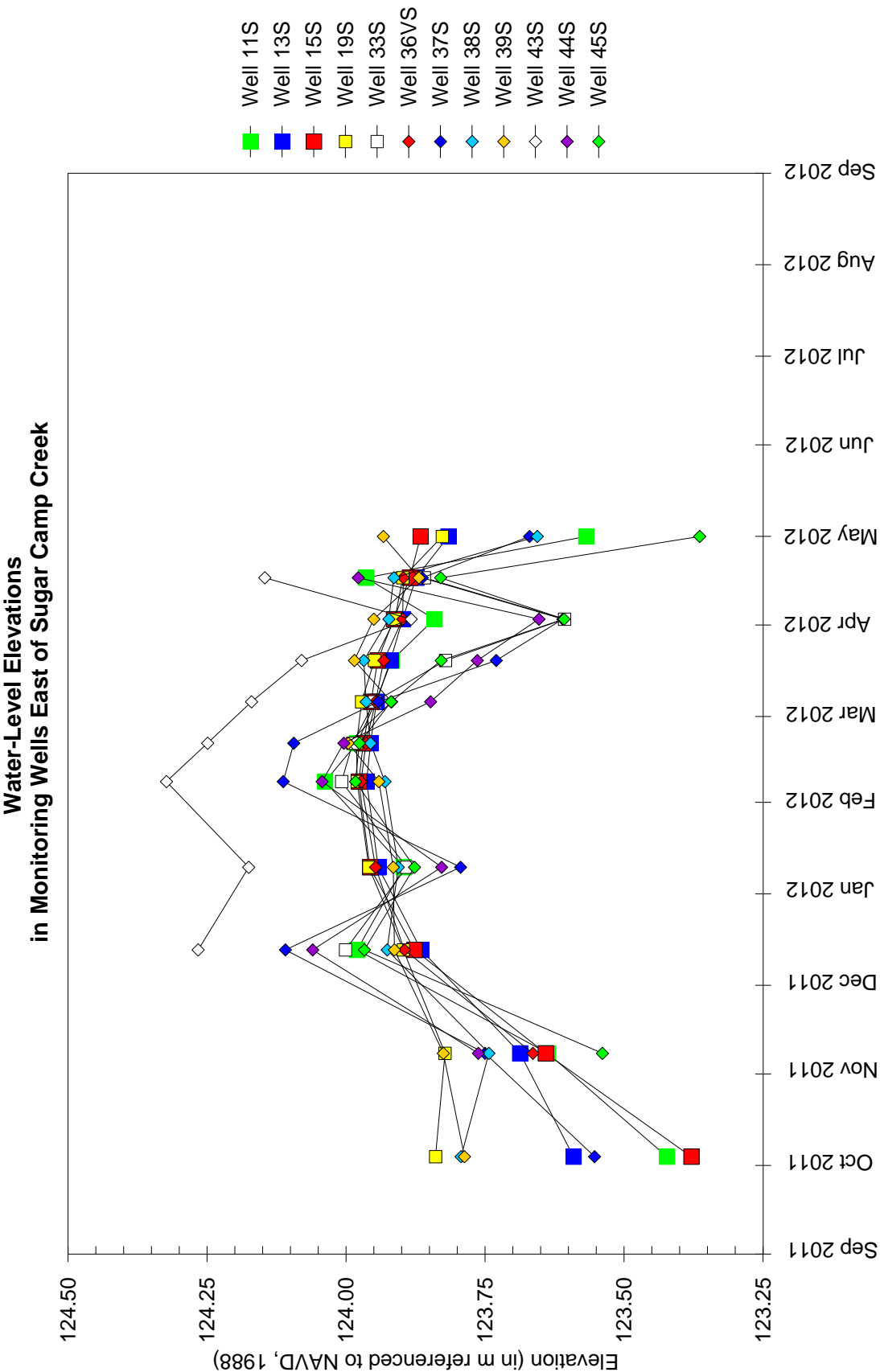
September 1, 2011 through August 31, 2012

Map based on 2012 Farm Service Agency digital orthophotography, Franklin County, Illinois (USDA-FSA 2012)



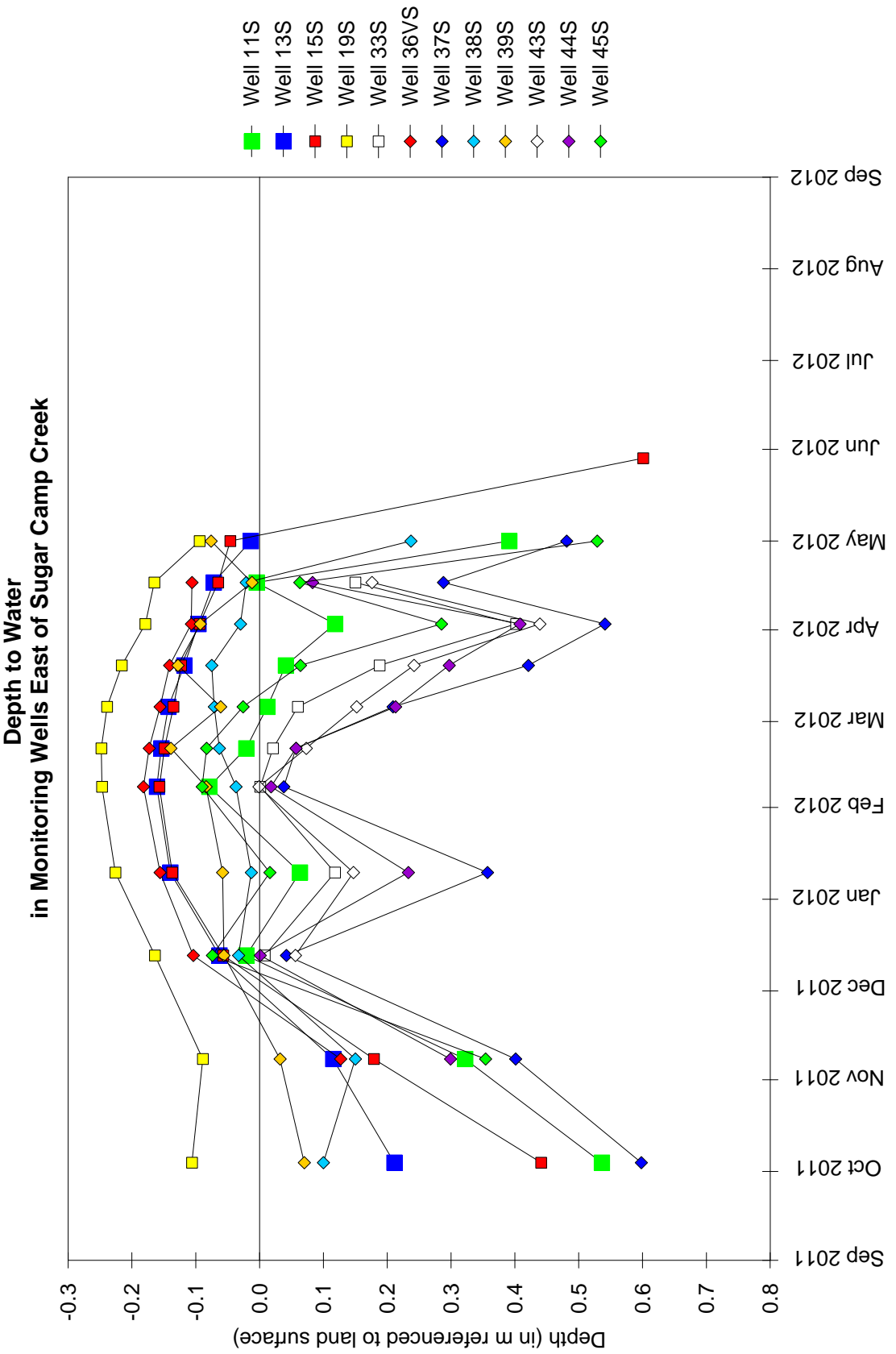


# Sugar Camp Creek Wetland and Stream Mitigation Bank September 1, 2011 through August 31, 2012

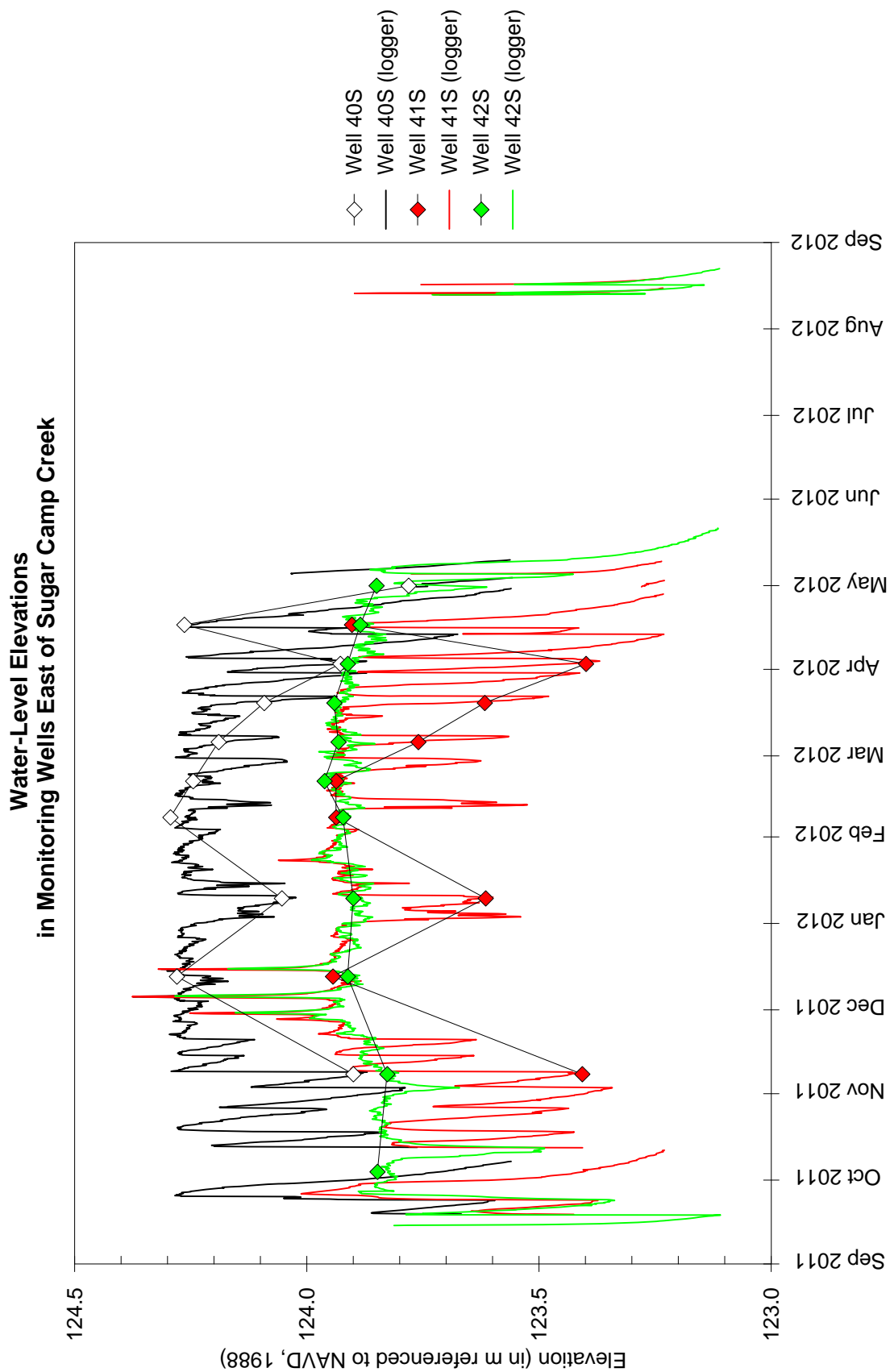




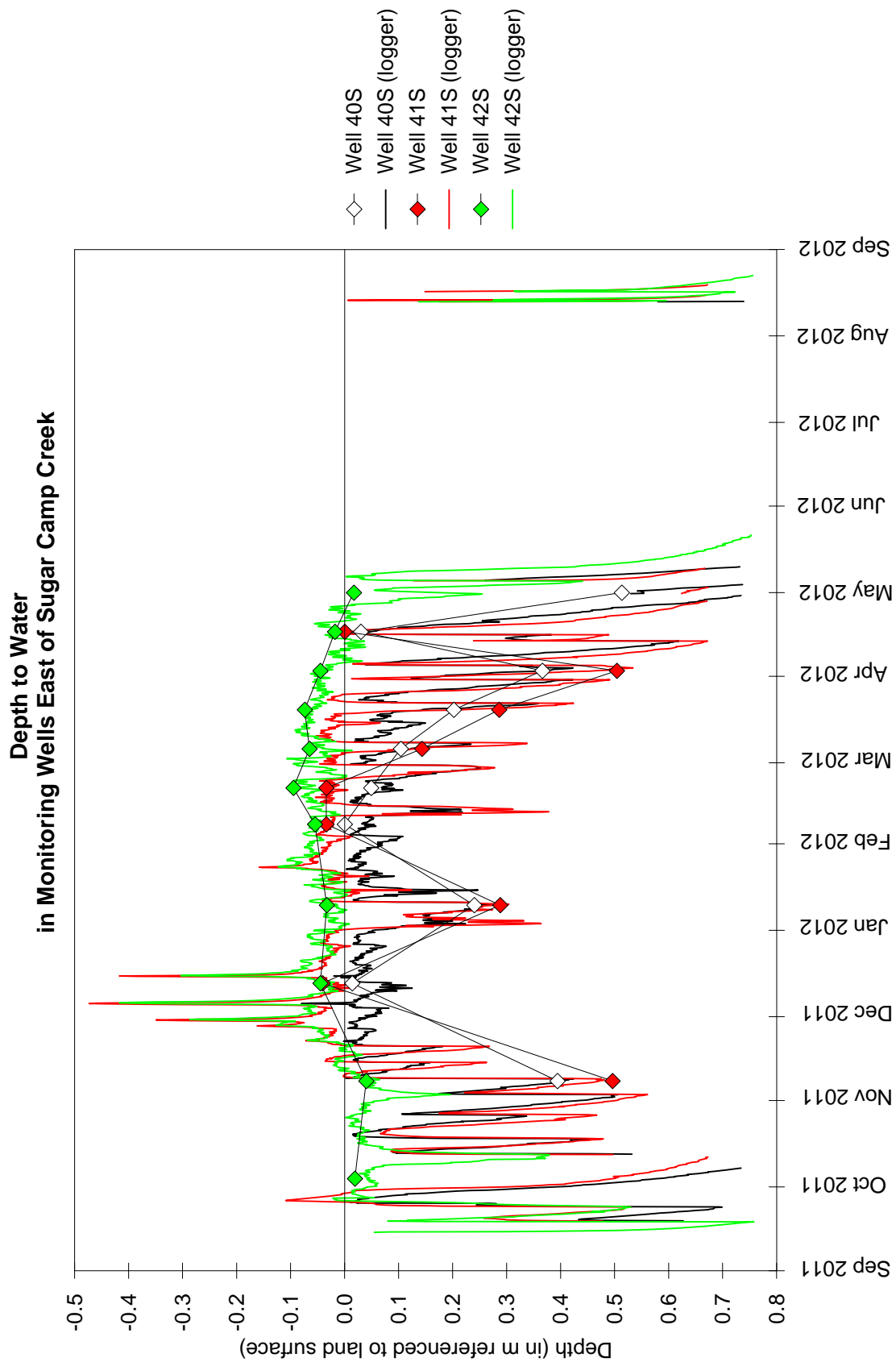
# Sugar Camp Creek Wetland and Stream Mitigation Bank September 1, 2011 through August 31, 2012



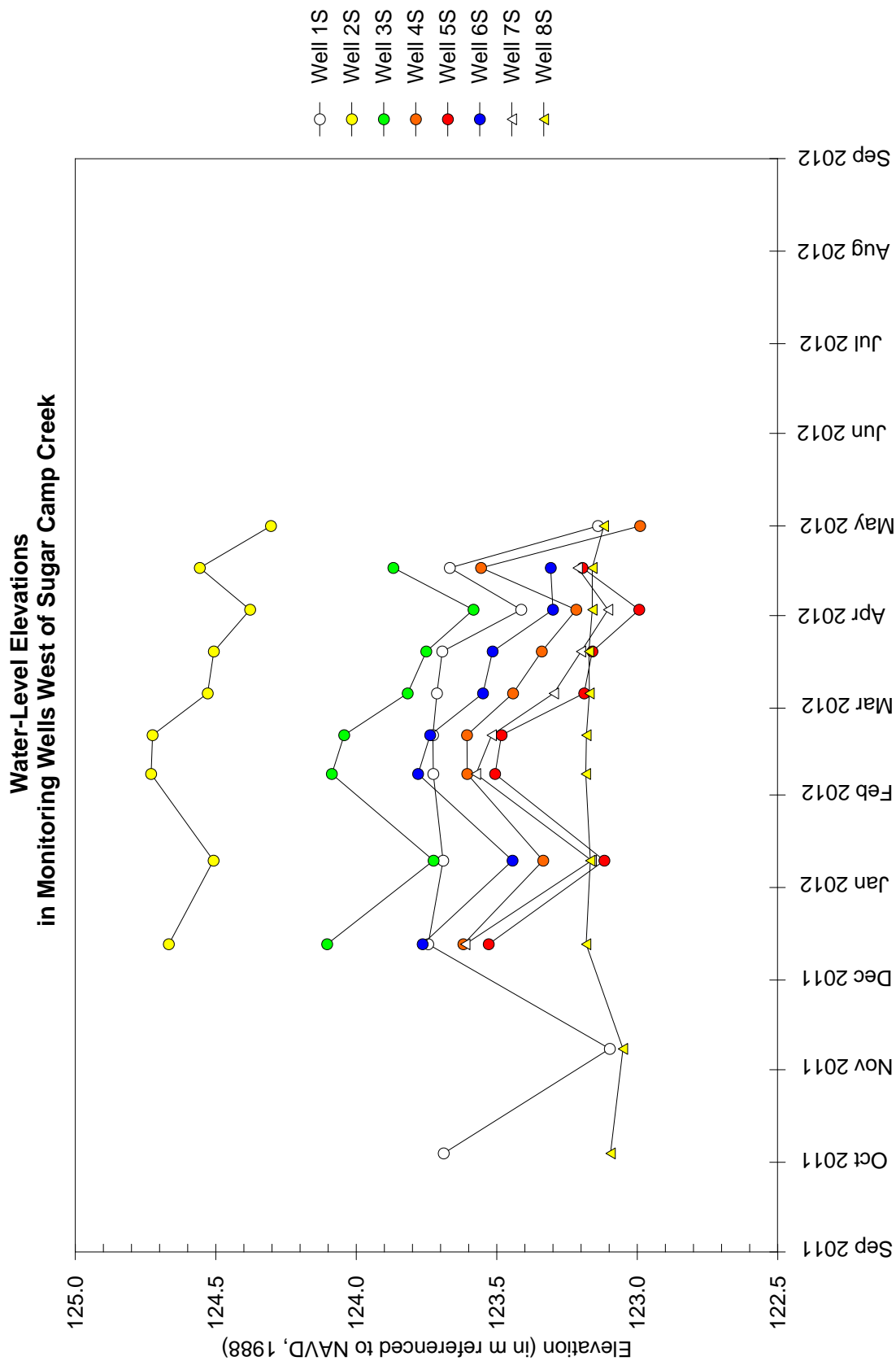
# Sugar Camp Creek Wetland and Stream Mitigation Bank September 1, 2011 through August 31, 2012



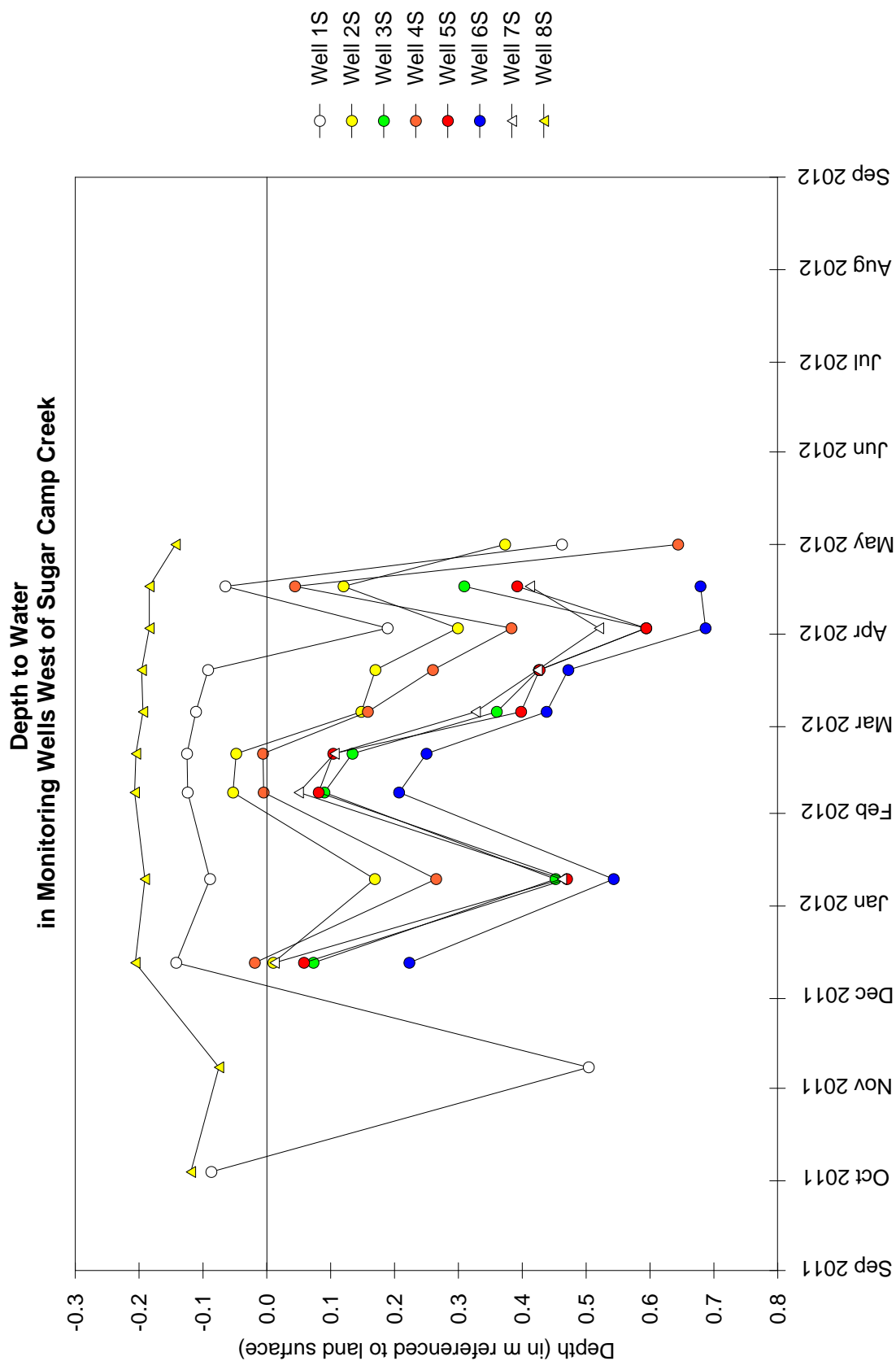
# **Sugar Camp Creek Wetland and Stream Mitigation Bank** September 1, 2011 through August 31, 2012



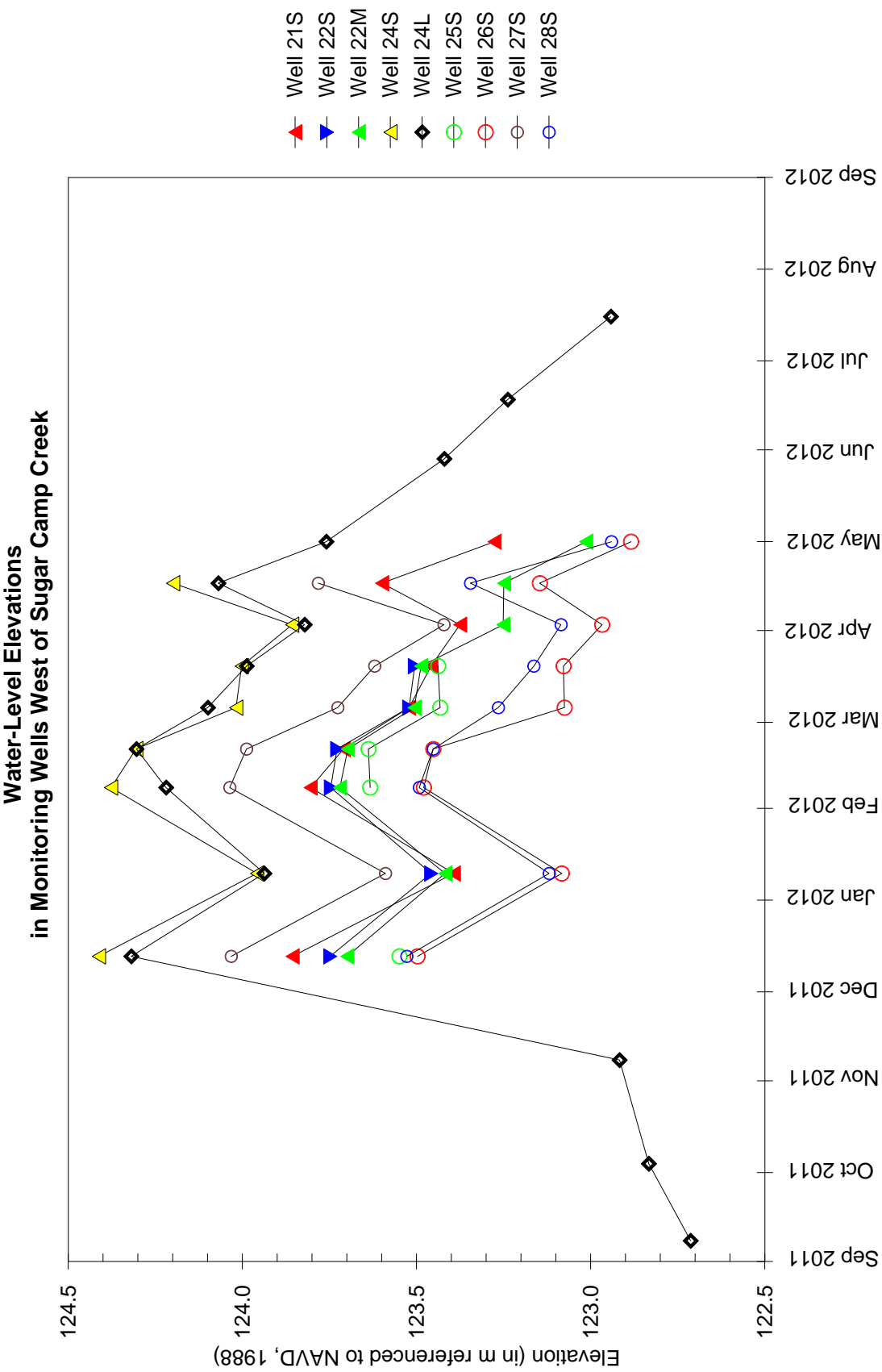
# **Sugar Camp Creek Wetland and Stream Mitigation Bank** September 1, 2011 through August 31, 2012



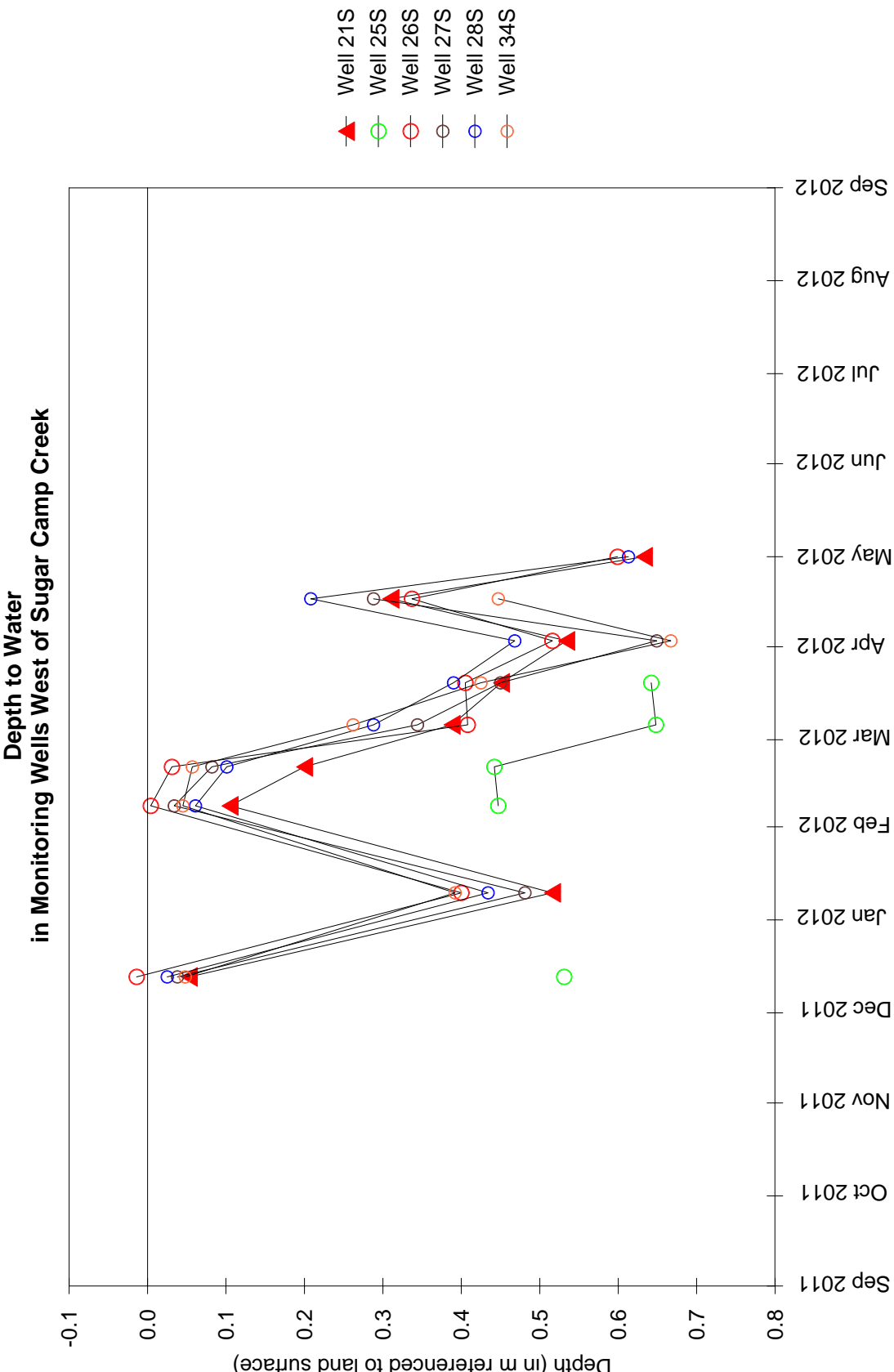
# Sugar Camp Creek Wetland and Stream Mitigation Bank September 1, 2011 through August 31, 2012



**Sugar Camp Creek Wetland and Stream Mitigation Bank**  
September 1, 2011 through August 31, 2012

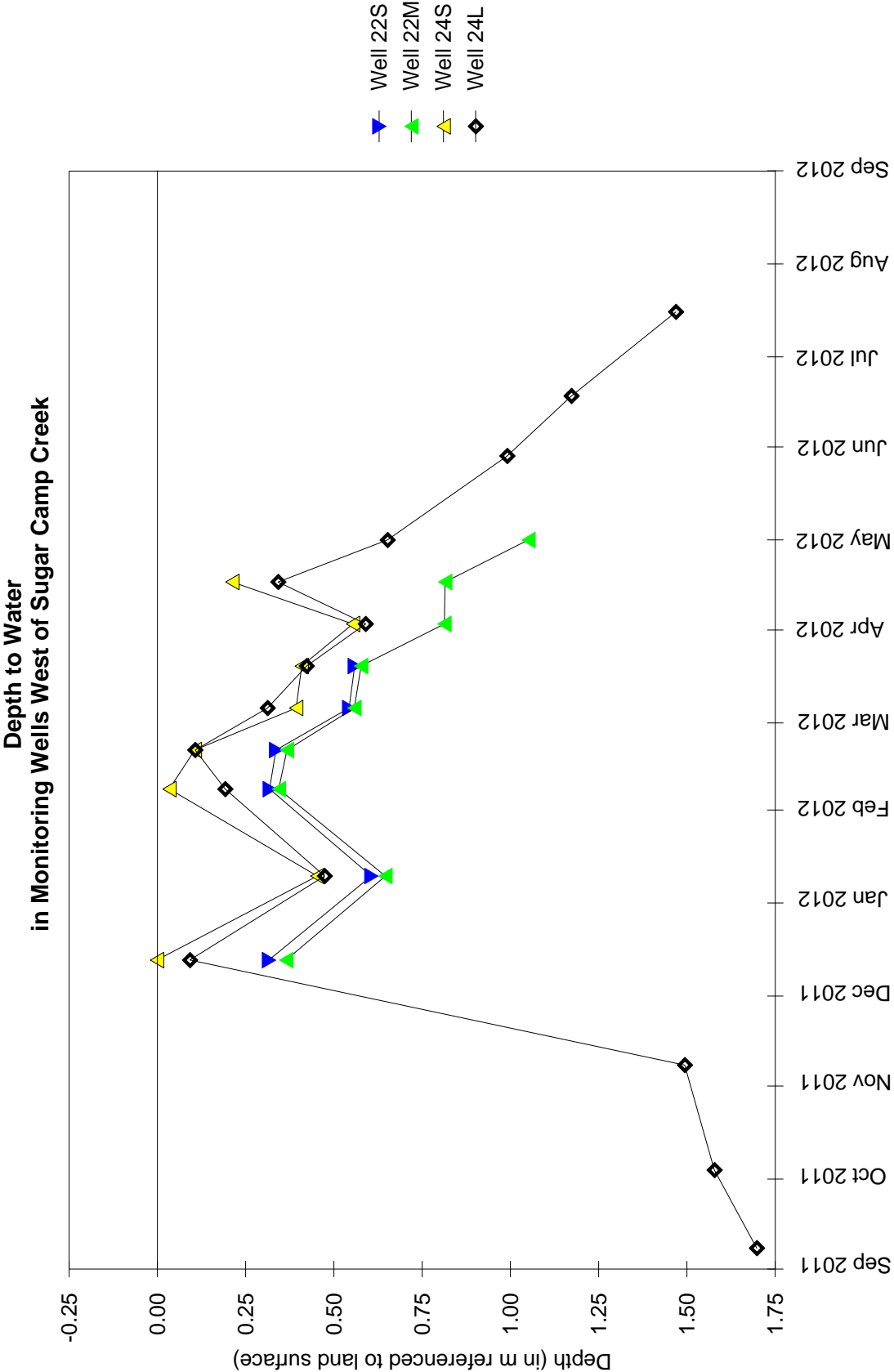


# Sugar Camp Creek Wetland and Stream Mitigation Bank September 1, 2011 through August 31, 2012

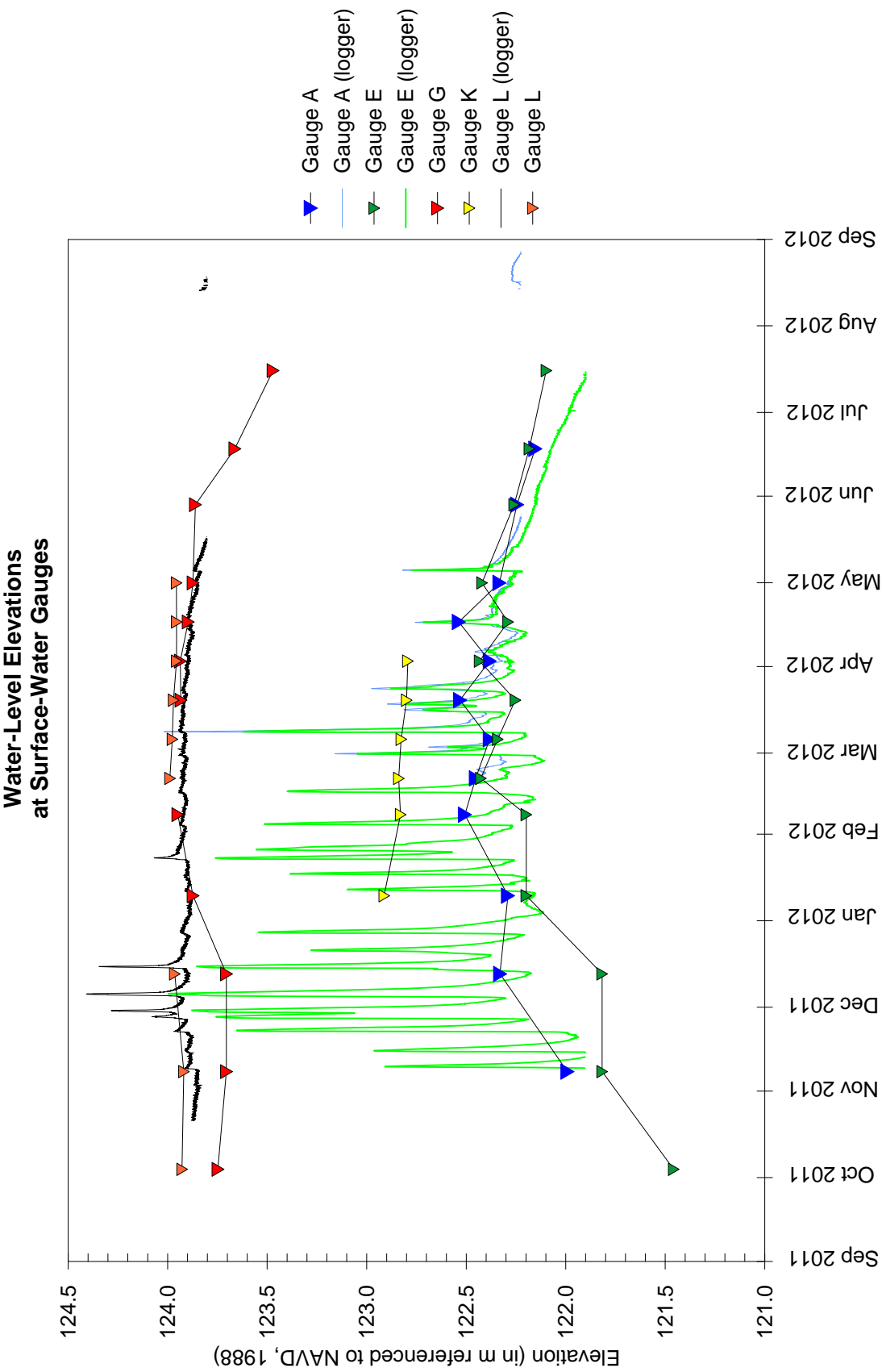




# Sugar Camp Creek Wetland and Stream Mitigation Bank September 1, 2011 through August 31, 2012



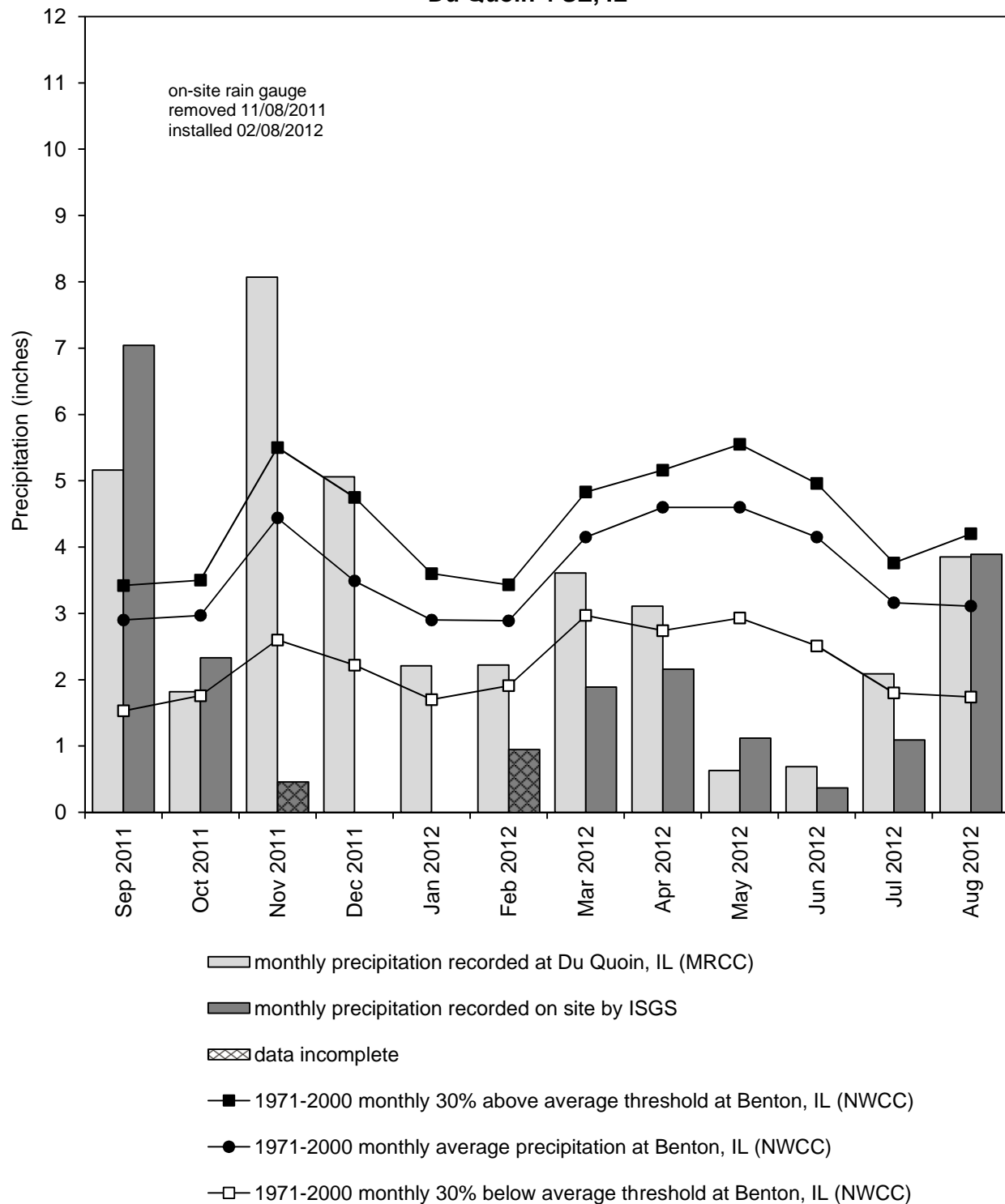
Sugar Camp Creek Wetland and Stream Mitigation Bank  
September 1, 2011 through August 31, 2012



# Sugar Camp Creek Wetland and Stream Mitigation Bank

## September 2011 through August 2012

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



**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: Jessica L. B. Monson**

**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.
- November 2007: Additional post-construction monitoring instruments were installed.

**WETLAND HYDROLOGY CALCULATION FOR 2012**

The target compensation area for the Green Creek wetland mitigation site is 0.34 ha (0.83 ac). Using the 1987 Manual (Environmental Laboratory 1987), 1.49 ha (3.67 ac) of the total site area of 4.1 ha (10.0 ac) satisfied wetland hydrology criteria for greater than 5% of the 2012 growing season and 1.46 ha (3.60 ac) satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Using the 2010 Midwest Region Supplement (USACE 2010) to the 1987 Manual, 1.49 ha (3.67 ac) satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

- The median date that the growing season begins in nearby Effingham, Illinois, is April 6, and the season lasts 210 days (MRCC 2012). According to the 1987 Manual, 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, March 12 was the starting date of the 2012 growing season based on soil temperatures measured at the site and data from the Illinois Climate Network station at Brownstown, Illinois (WARM 2012).
- Total precipitation for the monitoring period at the Effingham, Illinois, weather station was 90% of normal. During Spring 2012 (March through May), precipitation was 62% of normal.
- In 2012, water levels measured in monitoring wells 3S, 4S, 7SR2, 11SR, 12SR, and 14SR satisfied wetland hydrology criteria for greater than 5% and greater than 12.5% of the growing season, according to the 1987 Manual. According to the 2010 Midwest Region Supplement, wells 3S, 4S, 7SR2, 11SR, 12SR, and 14SR also satisfied wetland hydrology criteria for 14 or more consecutive days of the growing season.
- Surface-water levels measured at Gauge ER2 indicated inundation east of the main ditch at or below 160.77 m and 160.69 m (527.46 ft and 527.20 ft) for greater than 5% and greater than 12.5% of the growing season, respectively, according to the 1987

Manual. According to the 2010 Midwest Region Supplement, surface-water levels measured at Gauge ER2 indicated inundation east of the main ditch at or below 160.77 m (527.46 ft) for 14 or more consecutive days of the growing season. Surface-water levels measured at Gauge B did not satisfy any wetland hydrology criteria during the 2012 growing season per the 1987 Manual or the 2010 Midwest Region Supplement.

- According to the data logger at Gauge C, water levels in Green Creek never reached an elevation sufficient to flood any part of the site during the 2012 growing season.

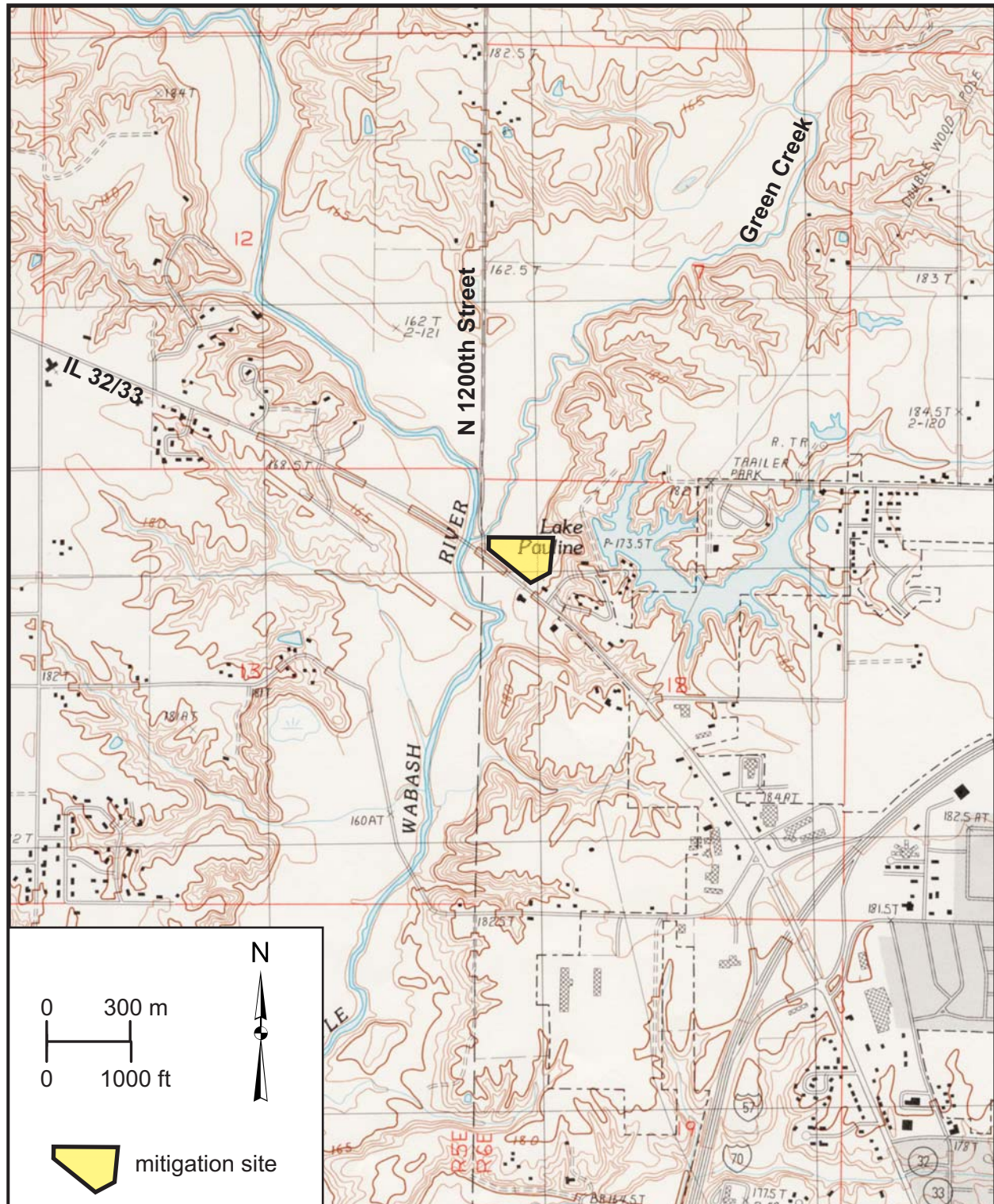
#### PLANNED FUTURE ACTIVITIES

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

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

## 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)



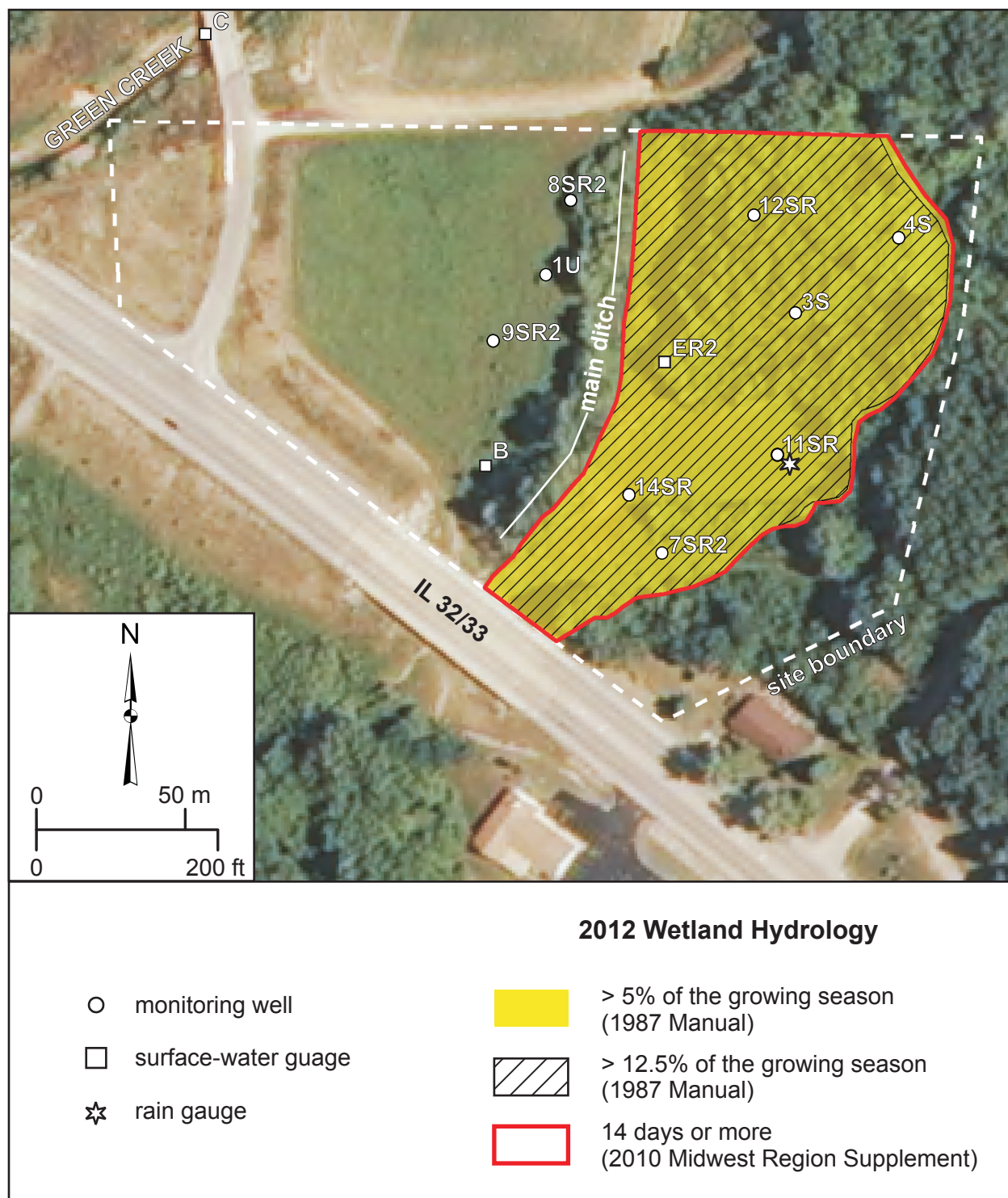


# Green Creek Wetland Mitigation Site (IL 32/33, FAP 774)

## Estimated Areal Extent of 2012 Wetland Hydrology

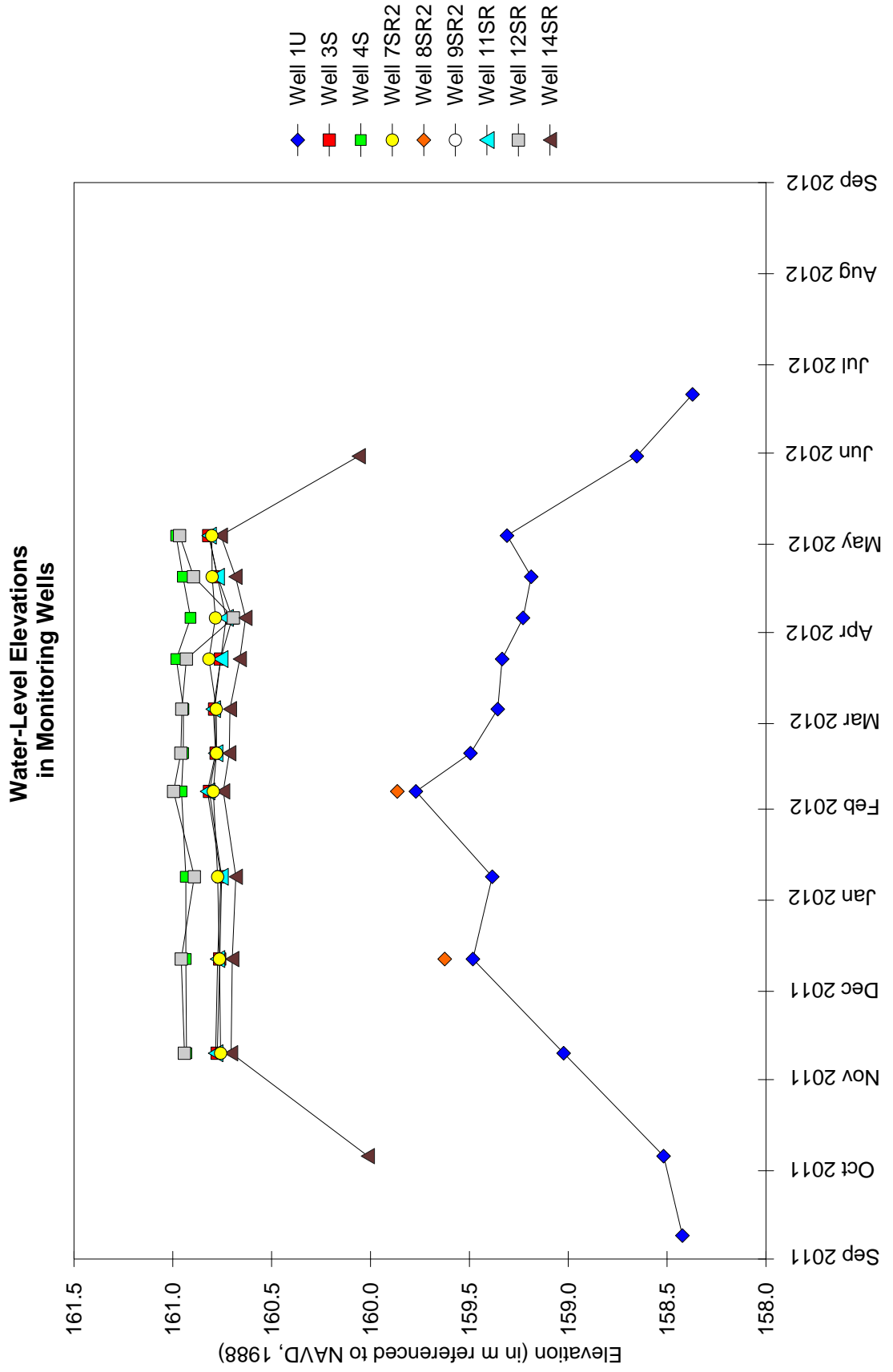
September 1, 2011 through August 31, 2012

Map based on 2012 Farm Service Agency digital orthophotography, Effingham County, Illinois  
(USDA-FSA 2012)

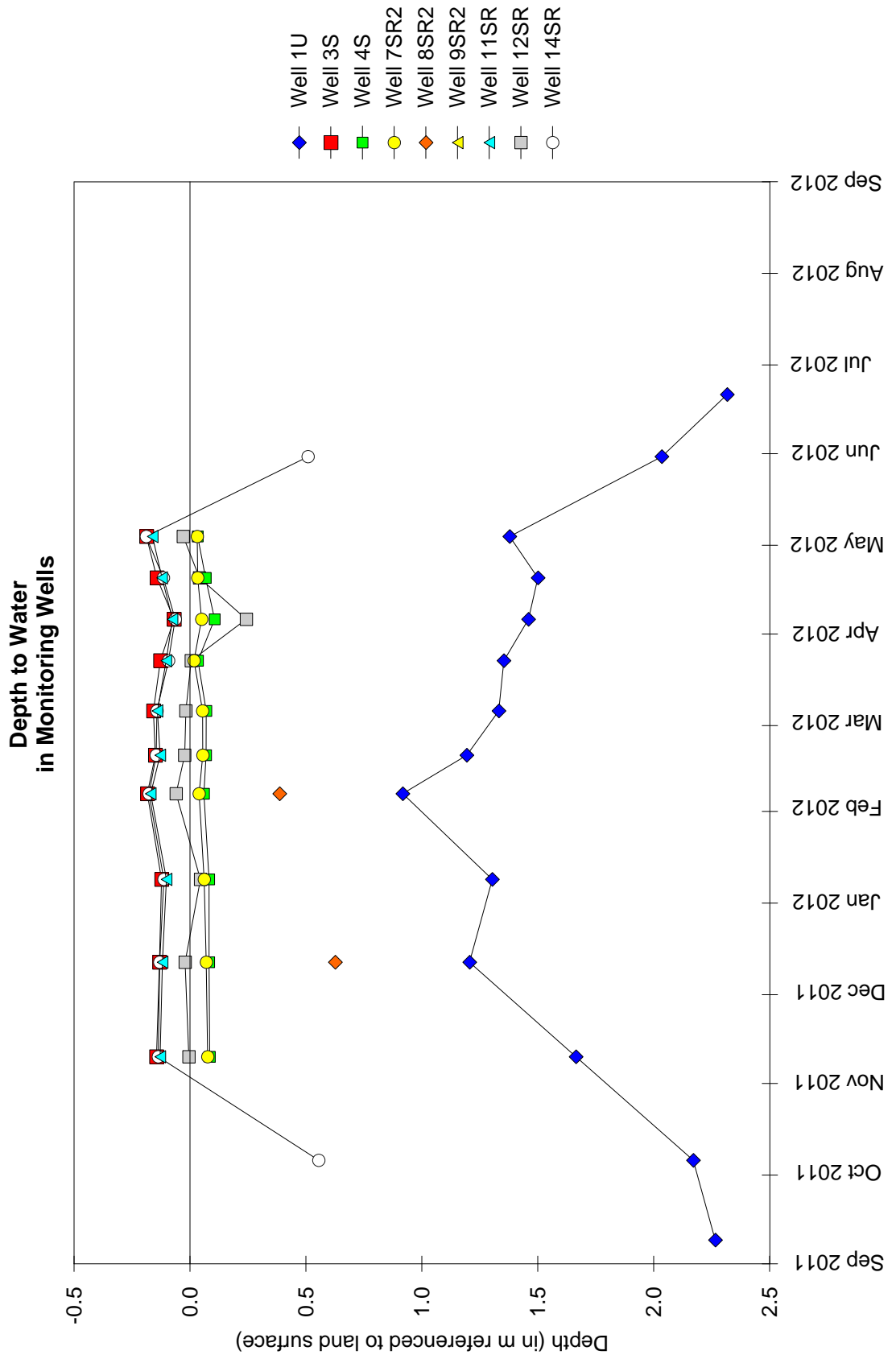




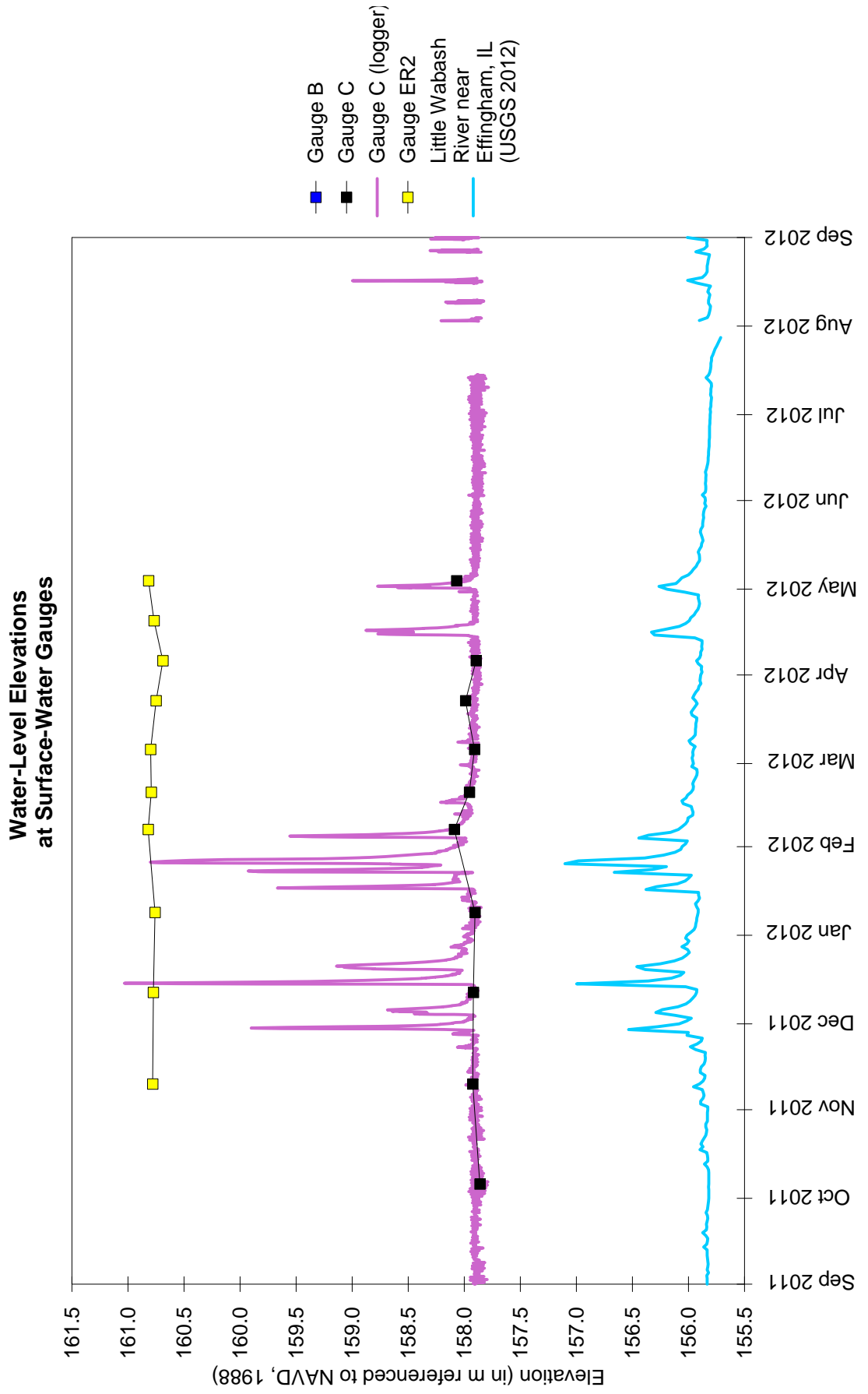
# Green Creek Wetland Mitigation Site September 1, 2011 through August 31, 2012



# **Green Creek Wetland Mitigation Site** September 1, 2011 through August 31, 2012



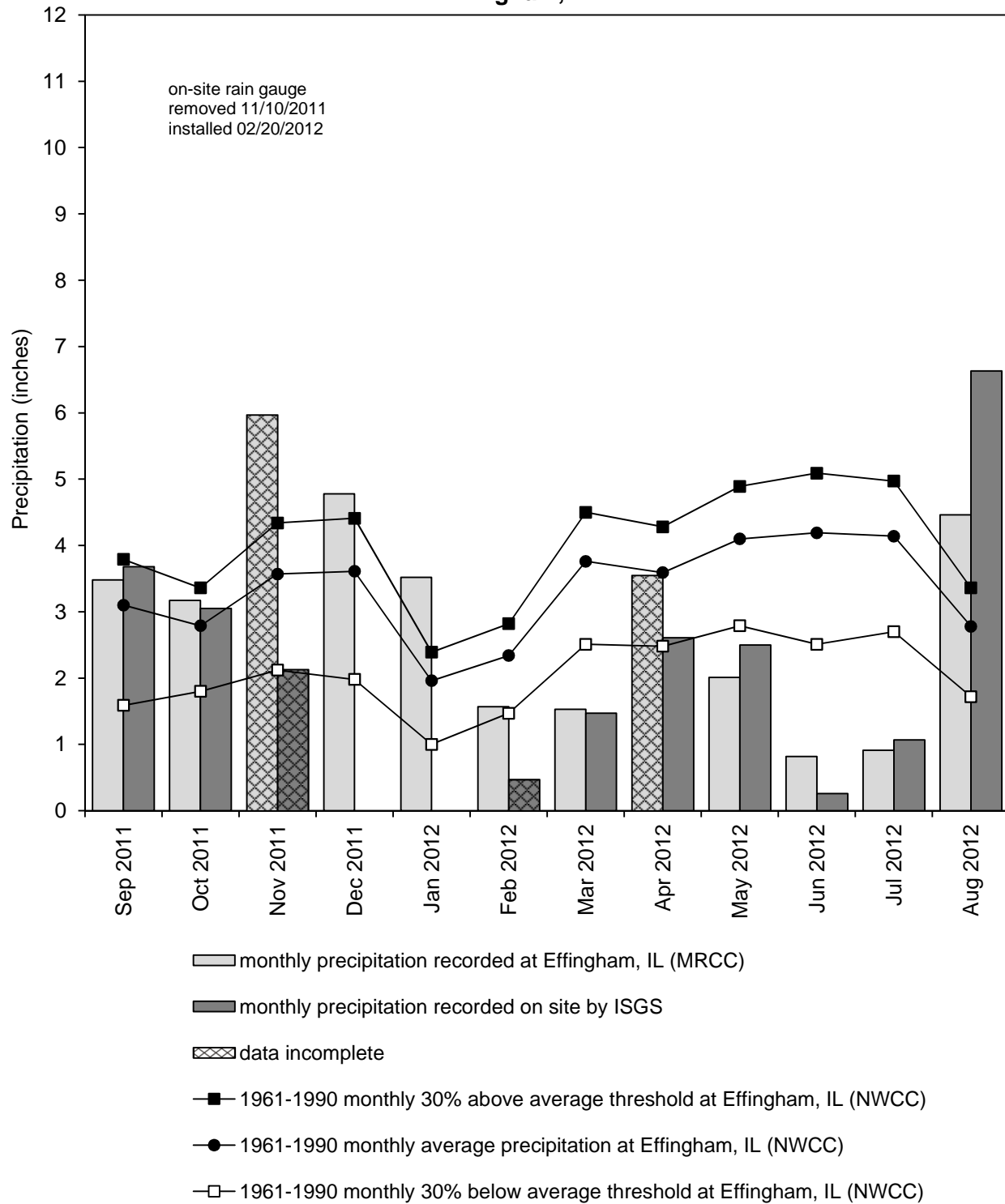
# **Green Creek Wetland Mitigation Site** **September 1, 2011 through August 31, 2012**



# Green Creek Wetland Mitigation Site

## September 2011 through August 2012

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



**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: Jessica R. Ackerman**

**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 ISGS.

**WETLAND HYDROLOGY CALCULATION FOR 2012**

The target compensation area for the Milan Beltway, Rock Island wetland mitigation site is 3.61 ha (8.92 ac). Using the 1987 Manual (Environmental Laboratory 1987), 2.74 ha (6.76 ac), of a total site area of 4.13 ha (10.20 ac), satisfied wetland hydrology criteria for greater than 5% of the 2012 growing season, and 1.28 ha (3.16 ac) satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Using the 2010 Midwest Region Supplement (USACE 2010) to the 1987 Manual, 1.66 ha (4.10 ac) satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. See Additional Information below for individual wetland hydrology acreages in areas A, B, C, D, and E. These estimates are based on the following factors:

- 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 (MRCC 2012); 5% of the growing season is 10 days, and 12.5% of the growing season is 25 days, according to the 1987 Manual. According to the 2010 Midwest Region Supplement, March 21 was the start date of the 2012 growing season based on plant growth observed at the site.
- Total precipitation during the monitoring period as recorded at the Quad City International Airport weather station in Moline, Illinois, was 75% of normal, and total precipitation in Spring 2012 (March through May) was 96% of normal.
- In 2012, water levels satisfied wetland hydrology criteria for greater than 5% of the growing season at soil-zone monitoring wells 3S, 6S, 7S, 8S, 12S, 13S, 14S, 15S, 16S, 18S, 18VS, 19S, 20S, 21S, 21VS, 22S, 23S, and 24S, and for greater than 12.5% of the growing season at monitoring wells 15S, 18S, 18VS, 19S, 20S, 21S, 21VS, and 22S, according to the 1987 Manual. In addition, wells 13S, 15S, 16S, 18S, 18VS, 19S, 20S, 21S, 21VS, and 22S, 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 below an elevation of 172.51 m (565.97 ft) were inundated for periods long enough to satisfy

wetland hydrology criteria for greater than 5% of the growing season and for more than 12.5% of the growing season, according to the 1987 Manual. In addition, portions of Area D at and below an elevation of 172.51 m (565.97 ft) were inundated for 14 or more consecutive days during the growing season per the 2010 Midwest Region Supplement.

- Surface-water elevations recorded by data loggers SW1 and SW2, and by the USACE, Rock River gauge at Moline (USACE 2012), revealed that the Rock River did not flood the site. Numerous, brief peaks, resulting from storm-water runoff in the drainage basins of the ditches, were recorded by the on-site loggers, but only portions of Area D were inundated long enough to satisfy wetland hydrology criteria.

#### ADDITIONAL INFORMATION

- The following are acreages of jurisdictional wetland hydrology in each area of the site: 0.02 ha (0.06 ac) of Area A, 0.10 ha (0.25 ac) of Area B, 0.71 ha (1.75 ac) of Area C, 1.21 ha (2.99 ac) of Area D, and 0.70 ha (1.72 ac) of Area E satisfied wetland hydrology criteria for greater than 5% of the growing season (Environmental Laboratory 1987); 0.00 ha (0.00 ac) of Area A, 0.00 ha (0.00 ac) of Area B, 0.00 ha (0.00 ac) of Area C, 1.21 ha (2.99 ac) of Area D, and 0.07 ha (0.17 ac) of Area E satisfied wetland hydrology criteria for more than 12.5% of the growing season (Environmental Laboratory 1987); 0.00 ha (0.00 ac) of Area A, 0.00 ha (0.00 ac) of Area B, 0.00 ha (0.00 ac) of Area C, 1.21 ha (2.99 ac) of Area D, and 0.45 ha (1.12 ac) of Area E satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season per the 2010 Midwest Region Supplement.

#### PLANNED FUTURE ACTIVITIES

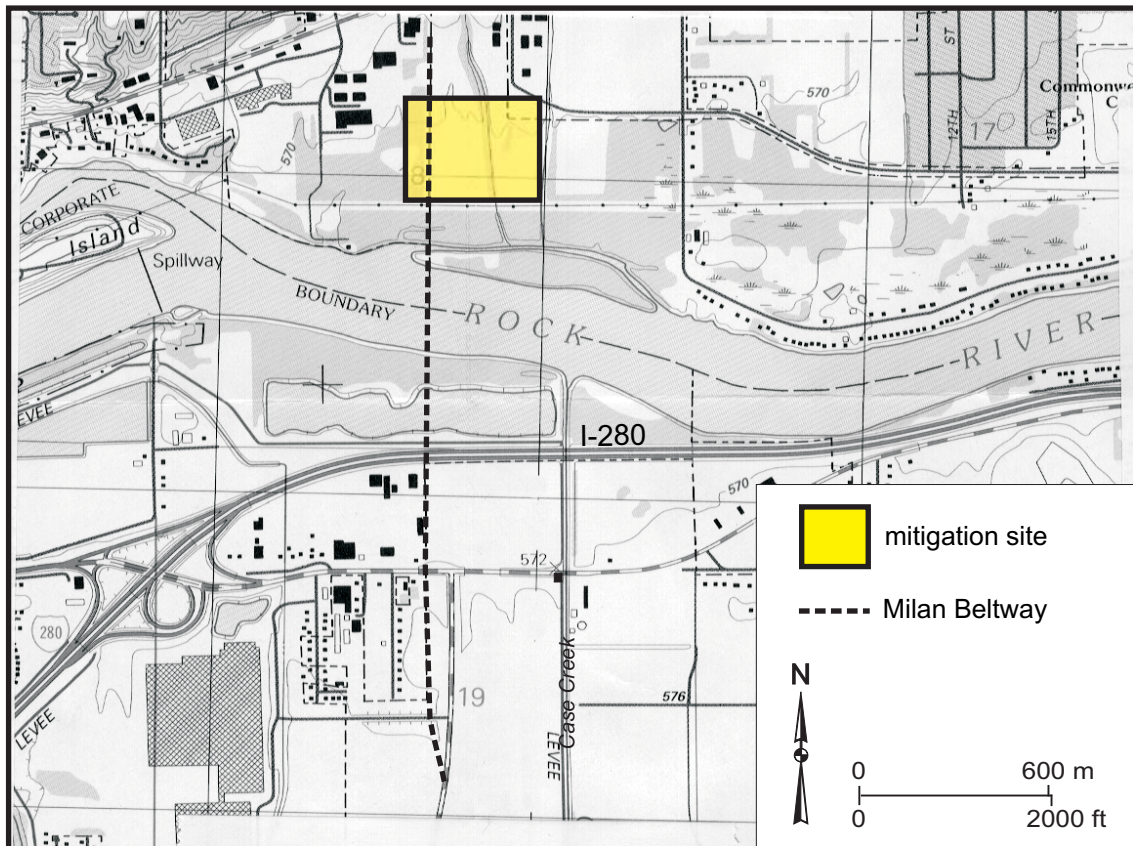
- Monitoring activities will continue until no longer required by IDOT.



# 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

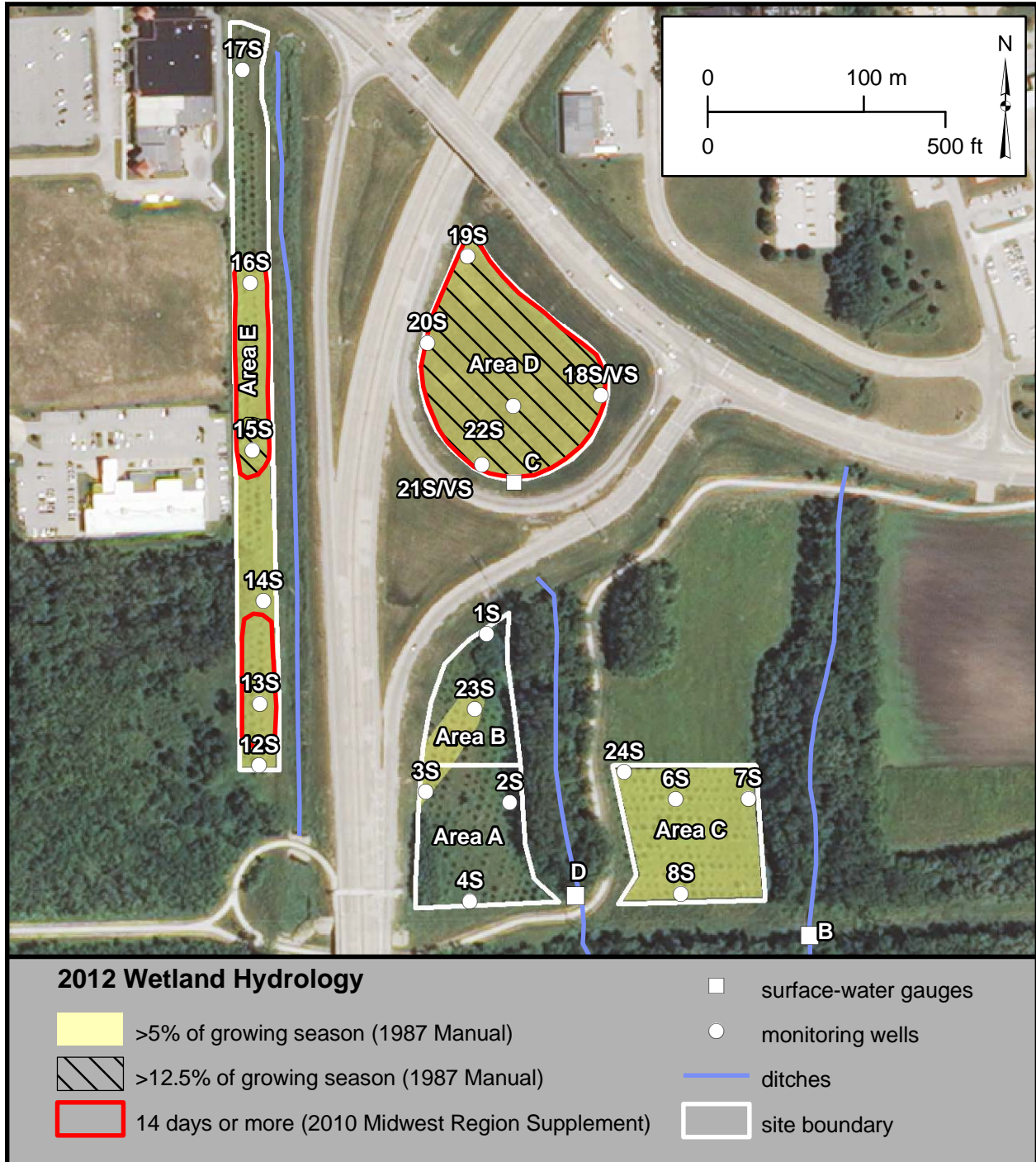


# Milan Beltway, Rock Island Wetland Mitigation Site (FAU 5822)

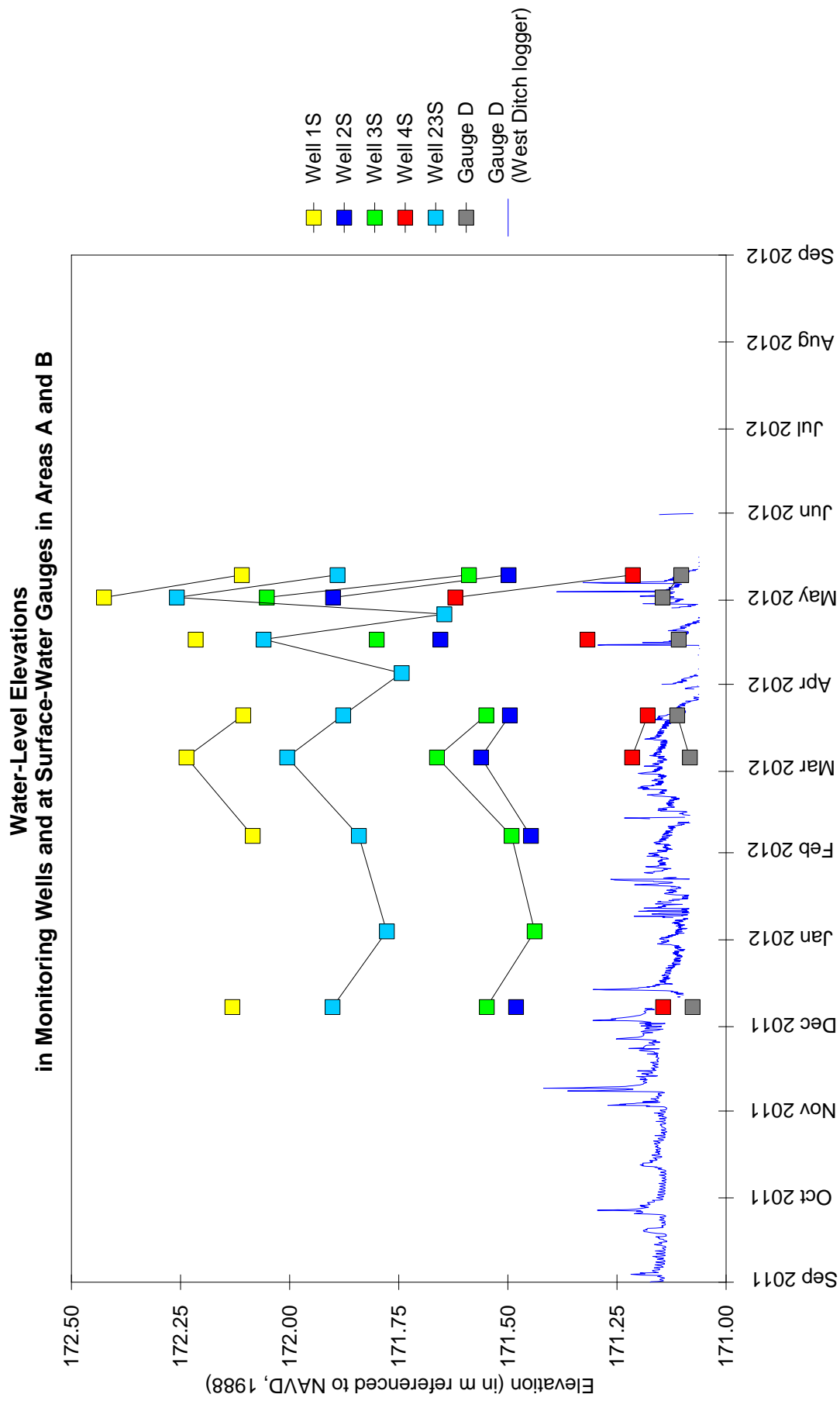
## Estimated Areal Extent of 2012 Wetland Hydrology

September 1, 2011 through August 31, 2012

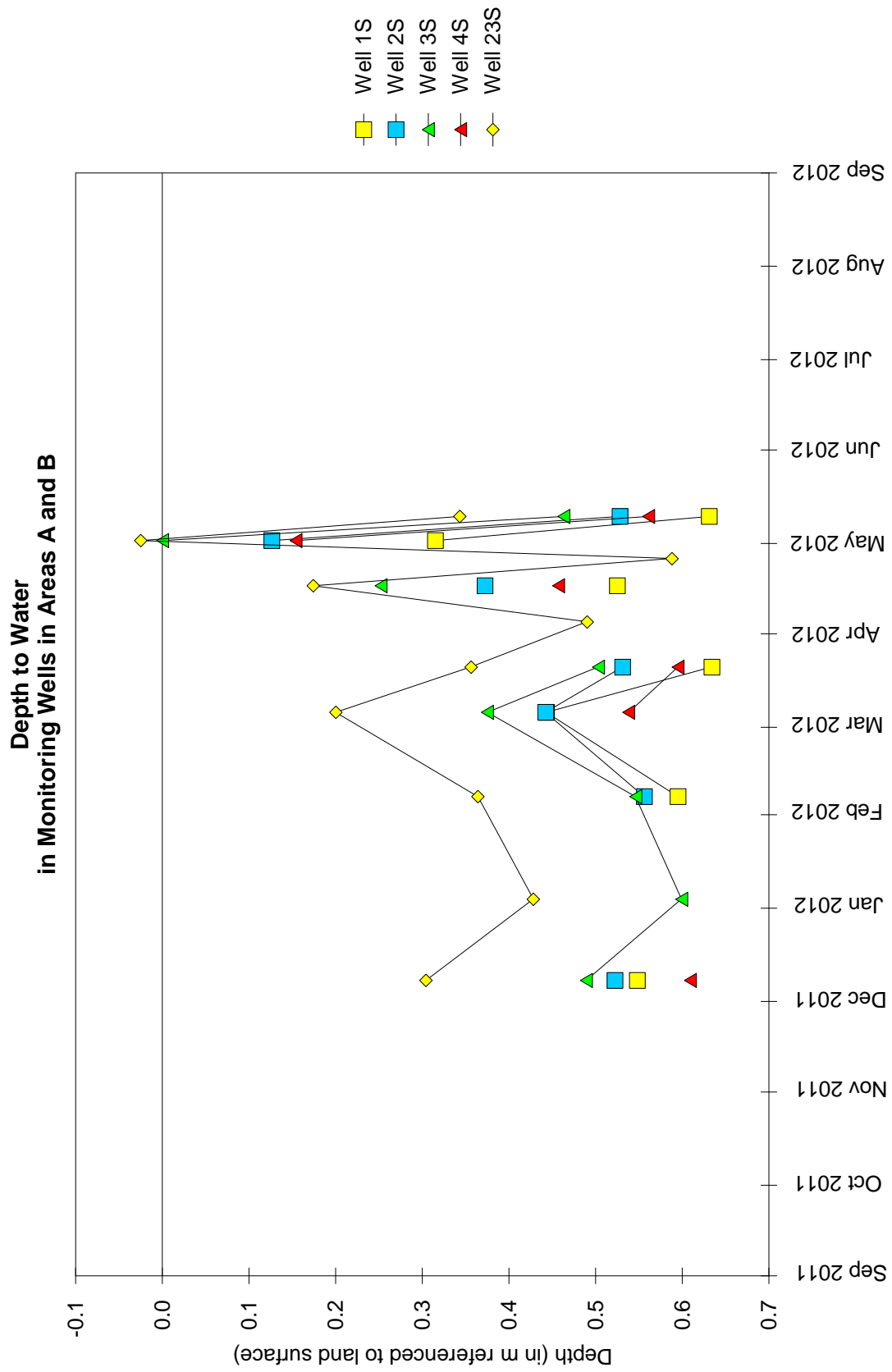
Map based on 2012 Farm Service Agency digital orthophotography, Rock Island County, Illinois (USDA-FSA 2012)



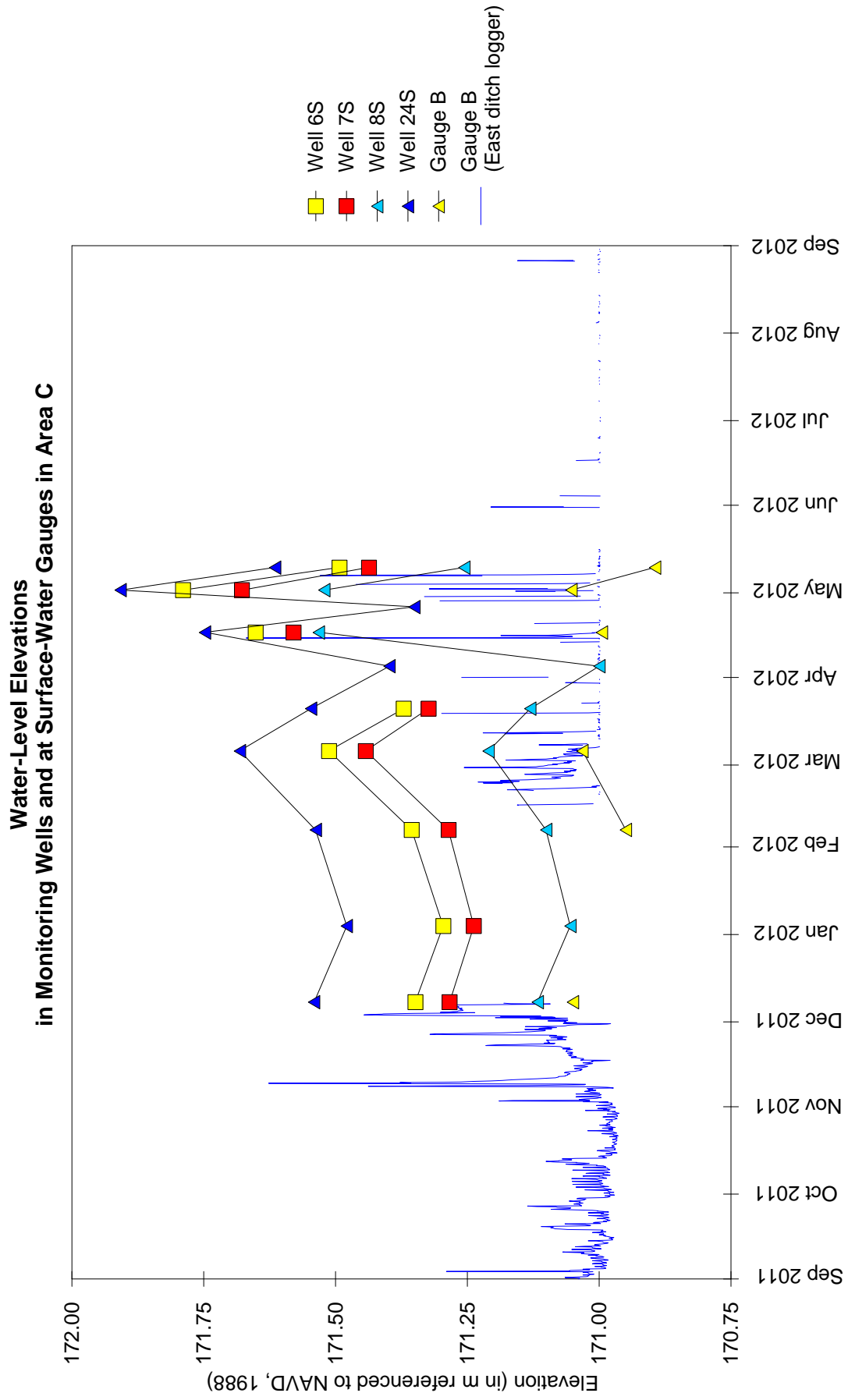
# **Milan Beltway, Rock Island Wetland Mitigation Site** **September 1, 2011 through August 31, 2012**



# **Milan Beltway, Rock Island Wetland Mitigation Site** **September 1, 2011 through August 31, 2012**

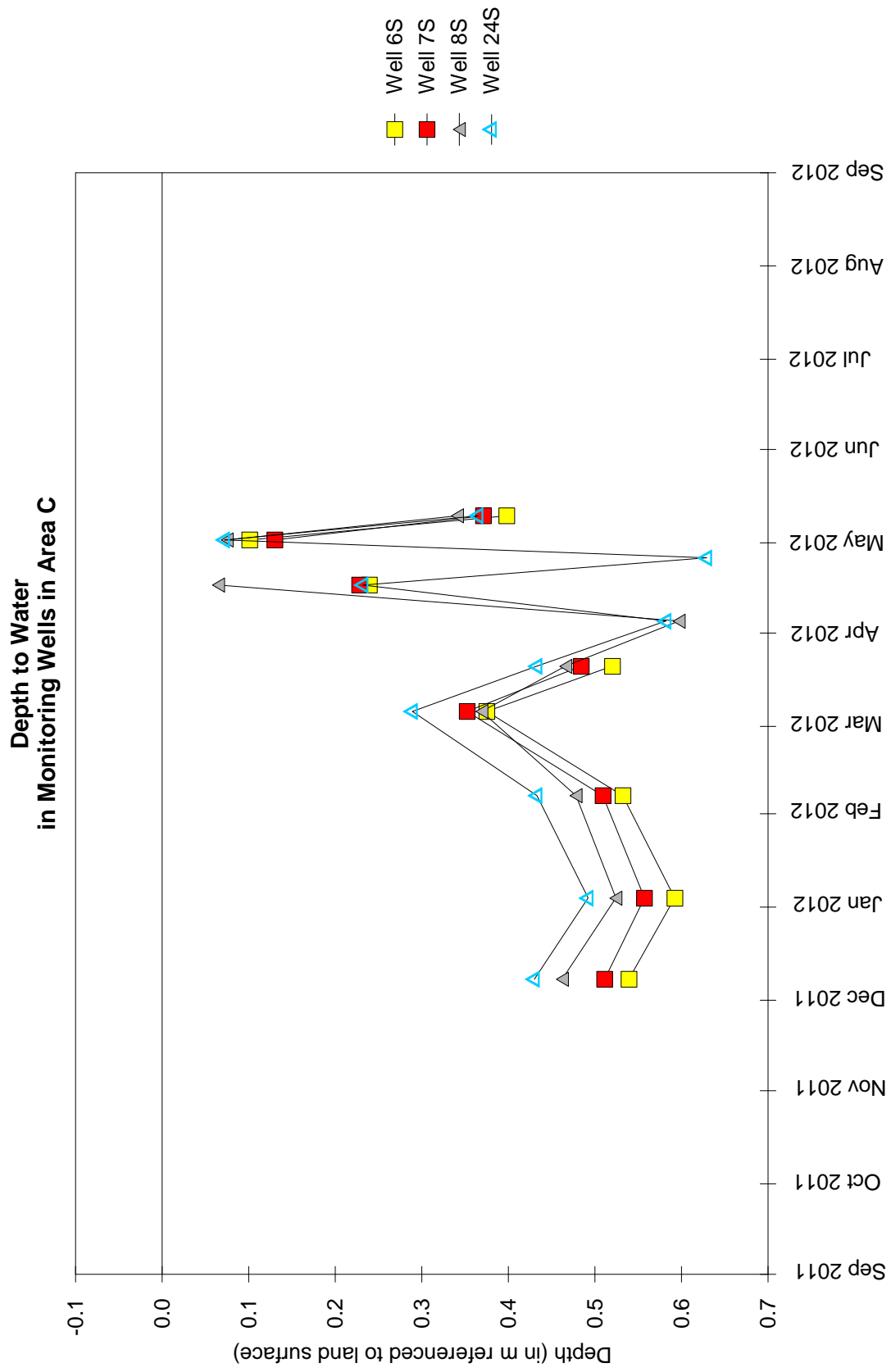


# **Milan Beltway, Rock Island Wetland Mitigation Site** **September 1, 2011 through August 31, 2012**



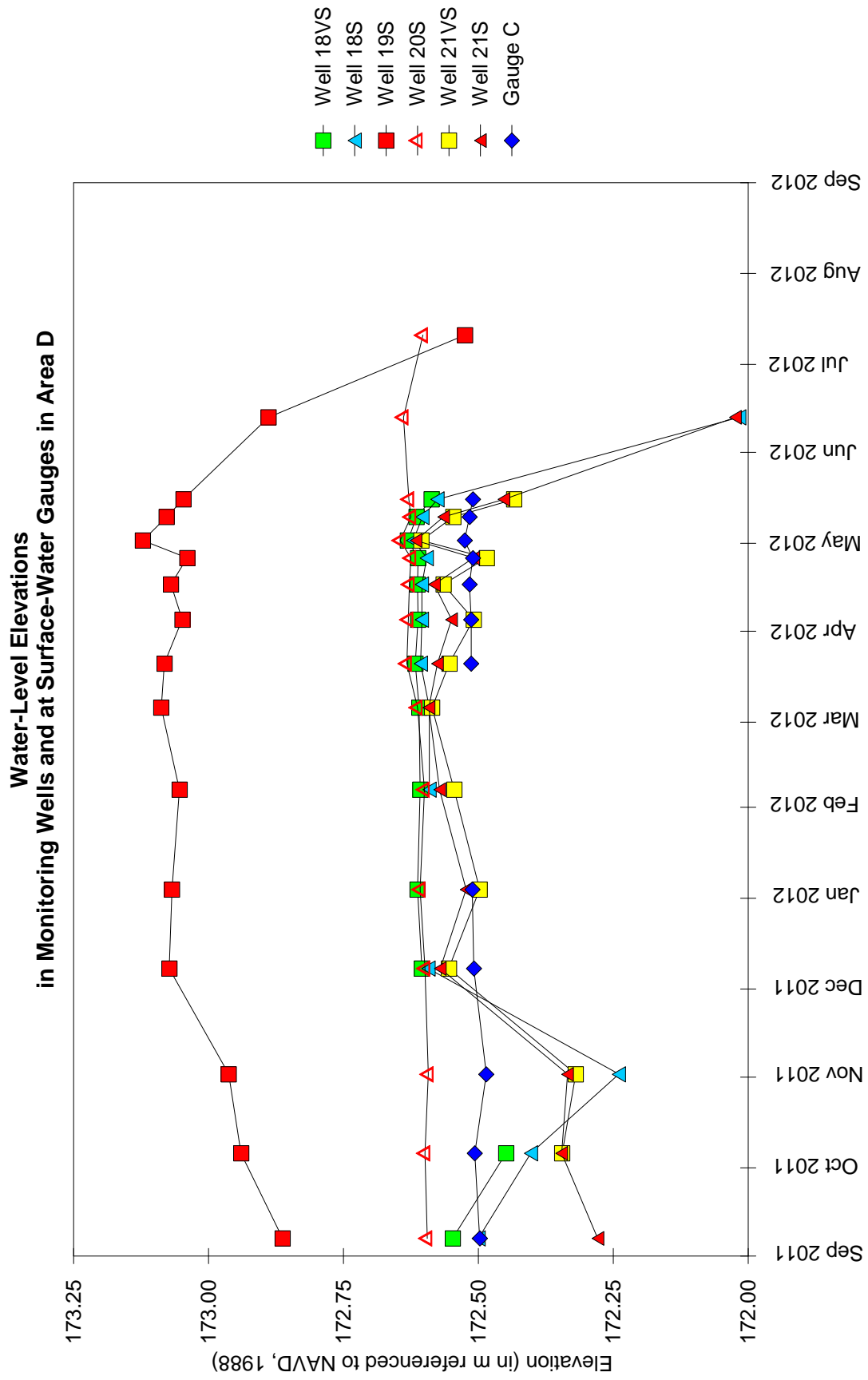


# **Milan Beltway, Rock Island Wetland Mitigation Site** **September 1, 2011 through August 31, 2012**

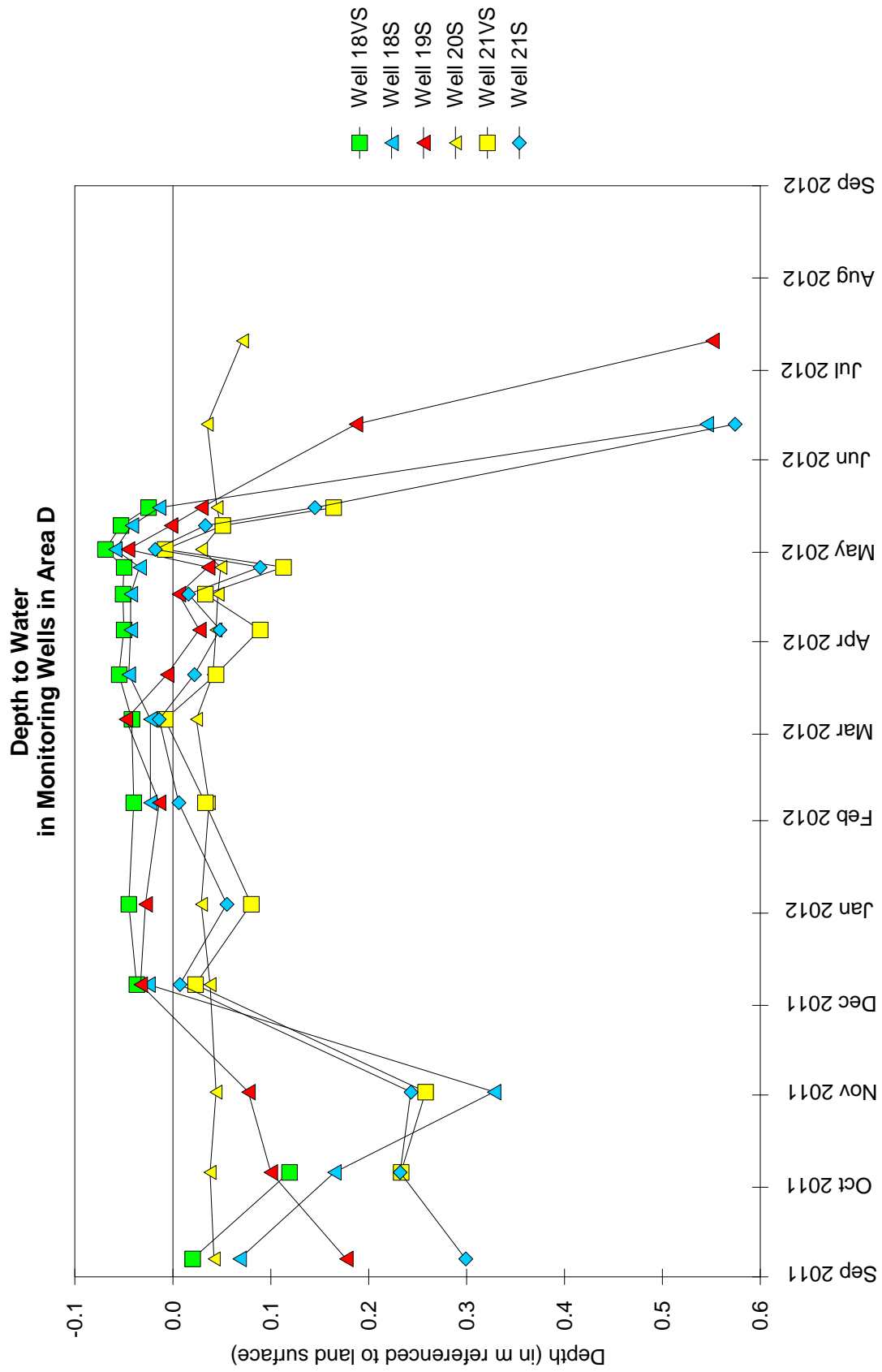




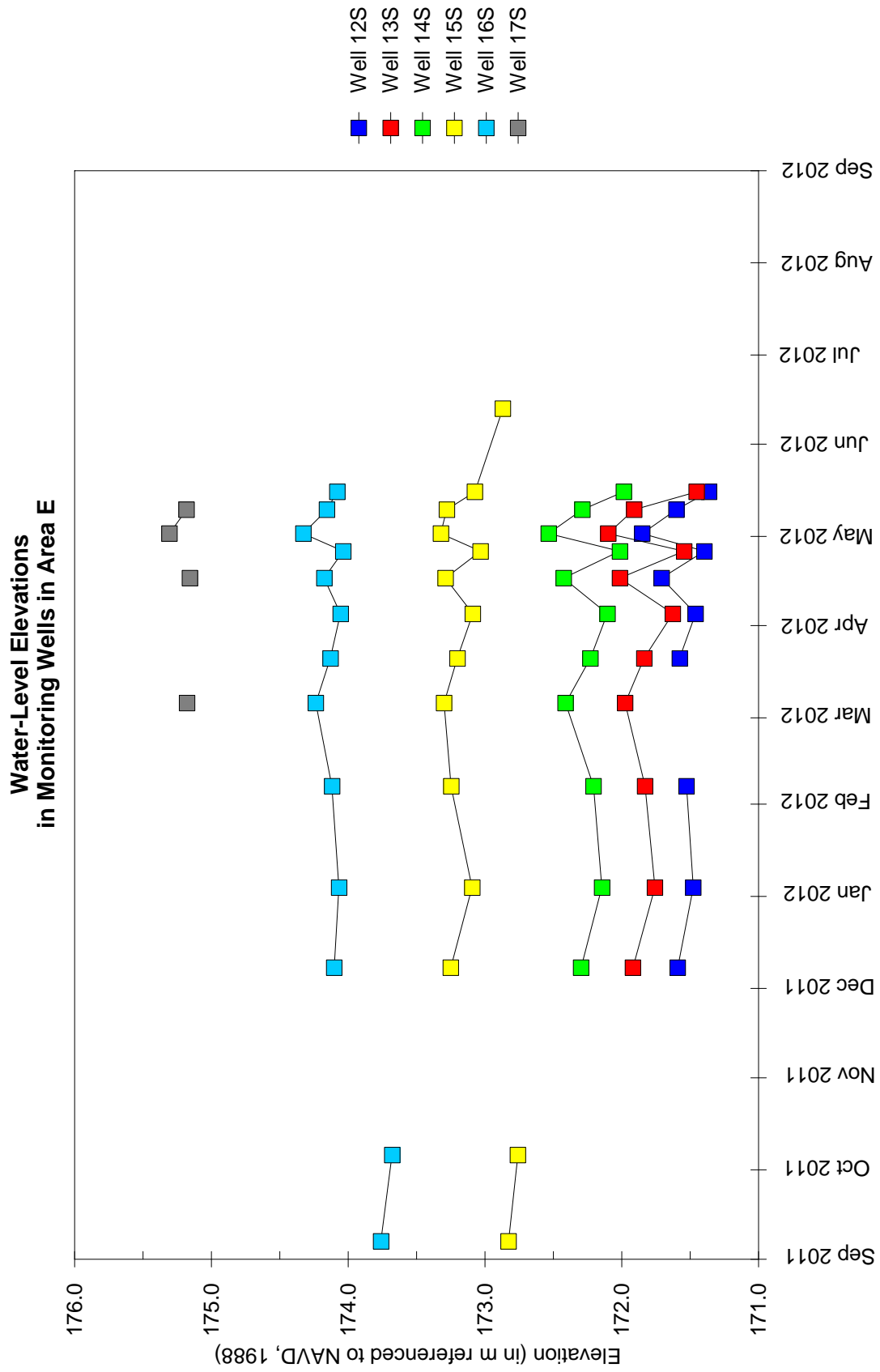
# **Milan Beltway, Rock Island Wetland Mitigation Site** September 1, 2011 through August 31, 2012



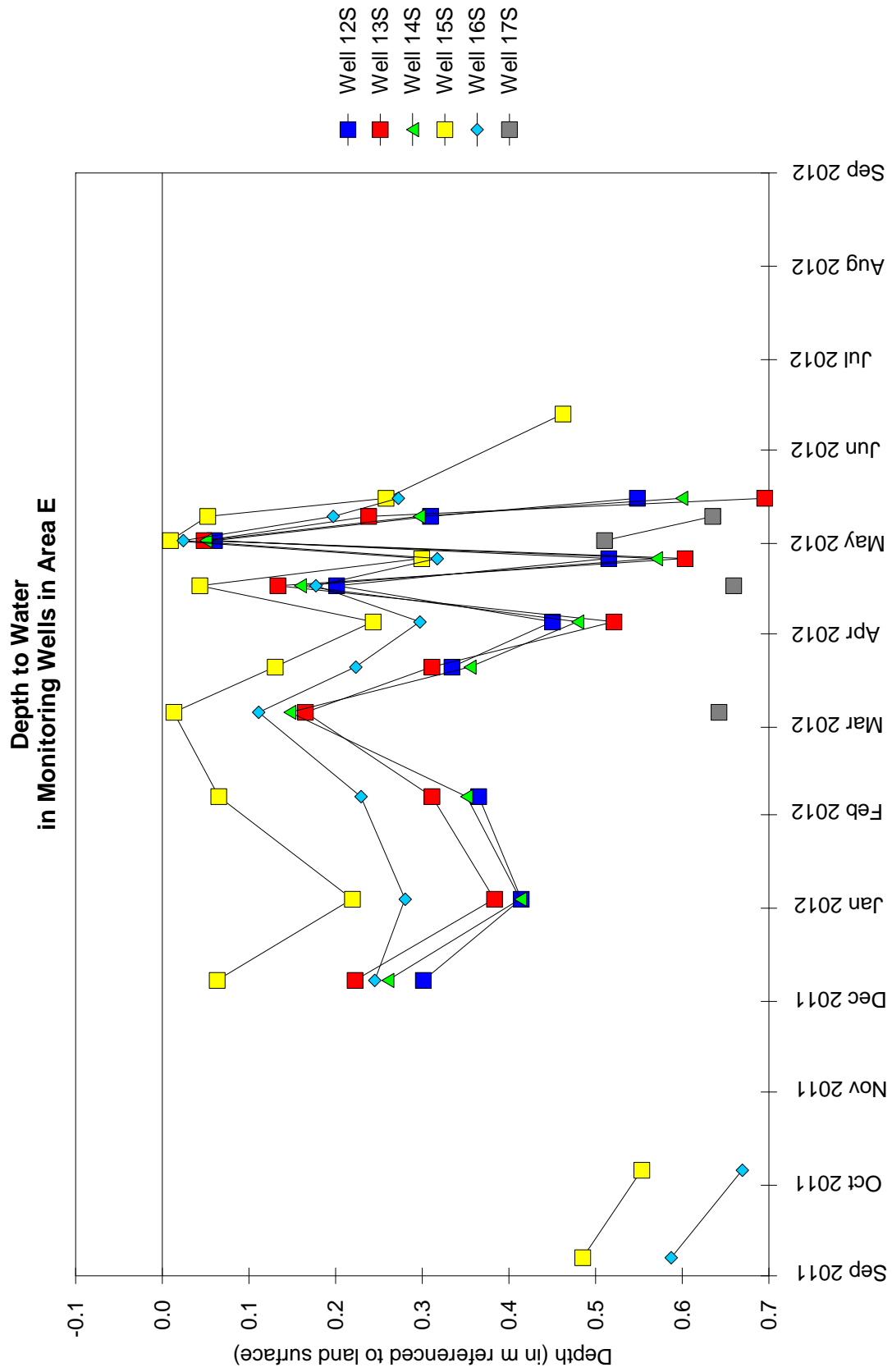
# **Milan Beltway, Rock Island Wetland Mitigation Site** September 1, 2011 through August 31, 2012



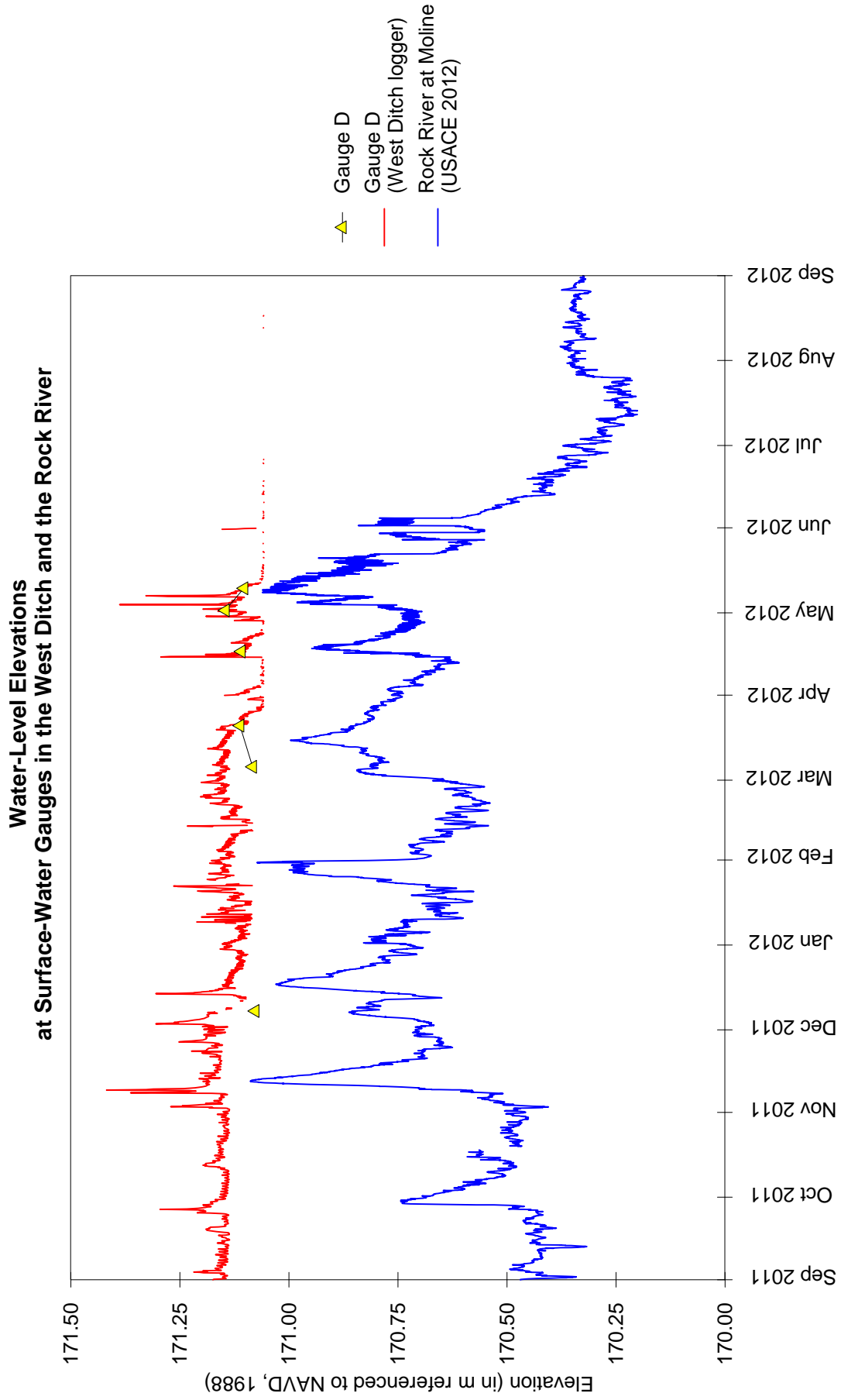
# **Milan Beltway, Rock Island Wetland Mitigation Site** **September 1, 2011 through August 31, 2012**



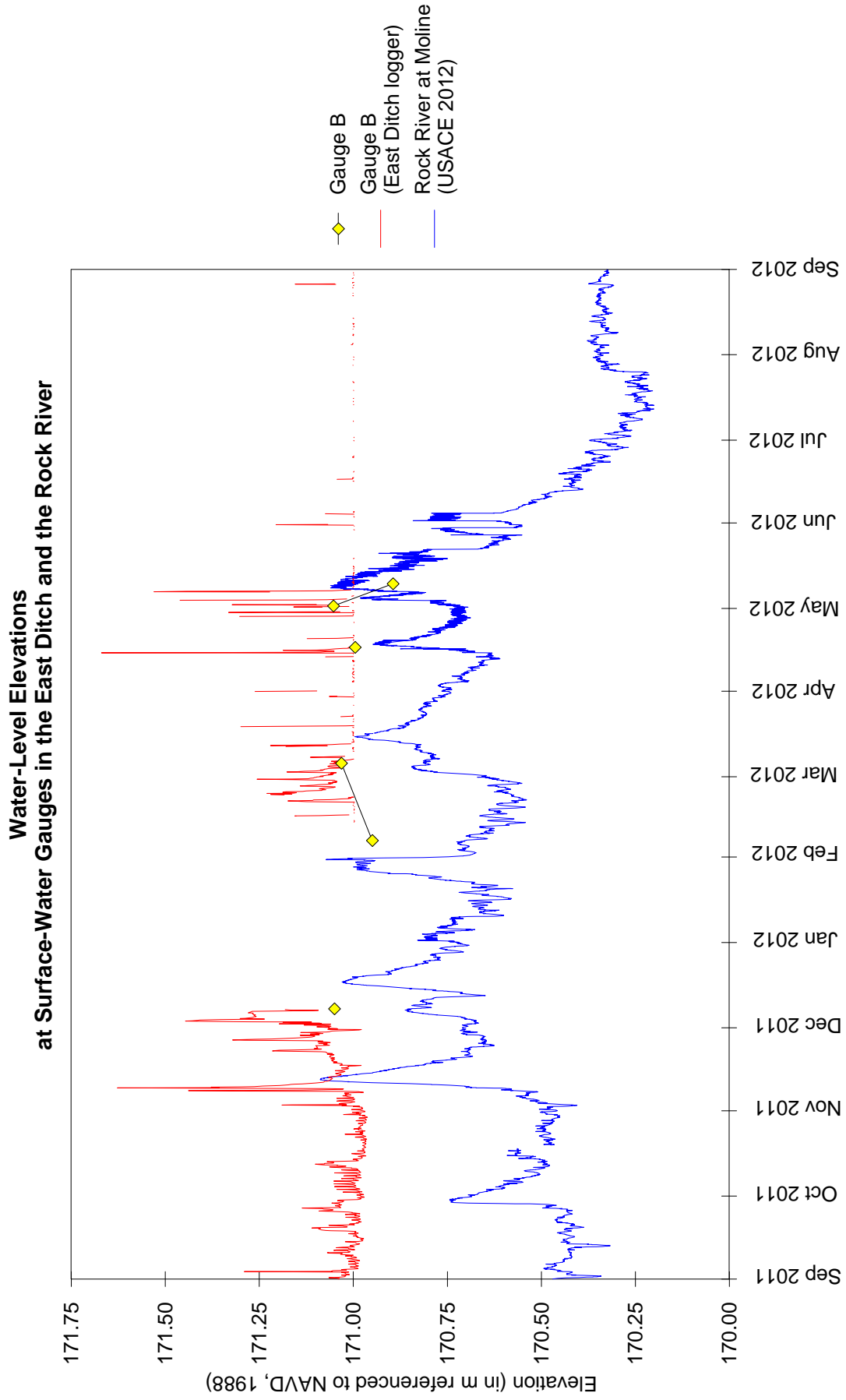
# **Milan Beltway, Rock Island Wetland Mitigation Site** September 1, 2011 through August 31, 2012



# **Milan Beltway, Rock Island Wetland Mitigation Site** **September 1, 2011 through August 31, 2012**



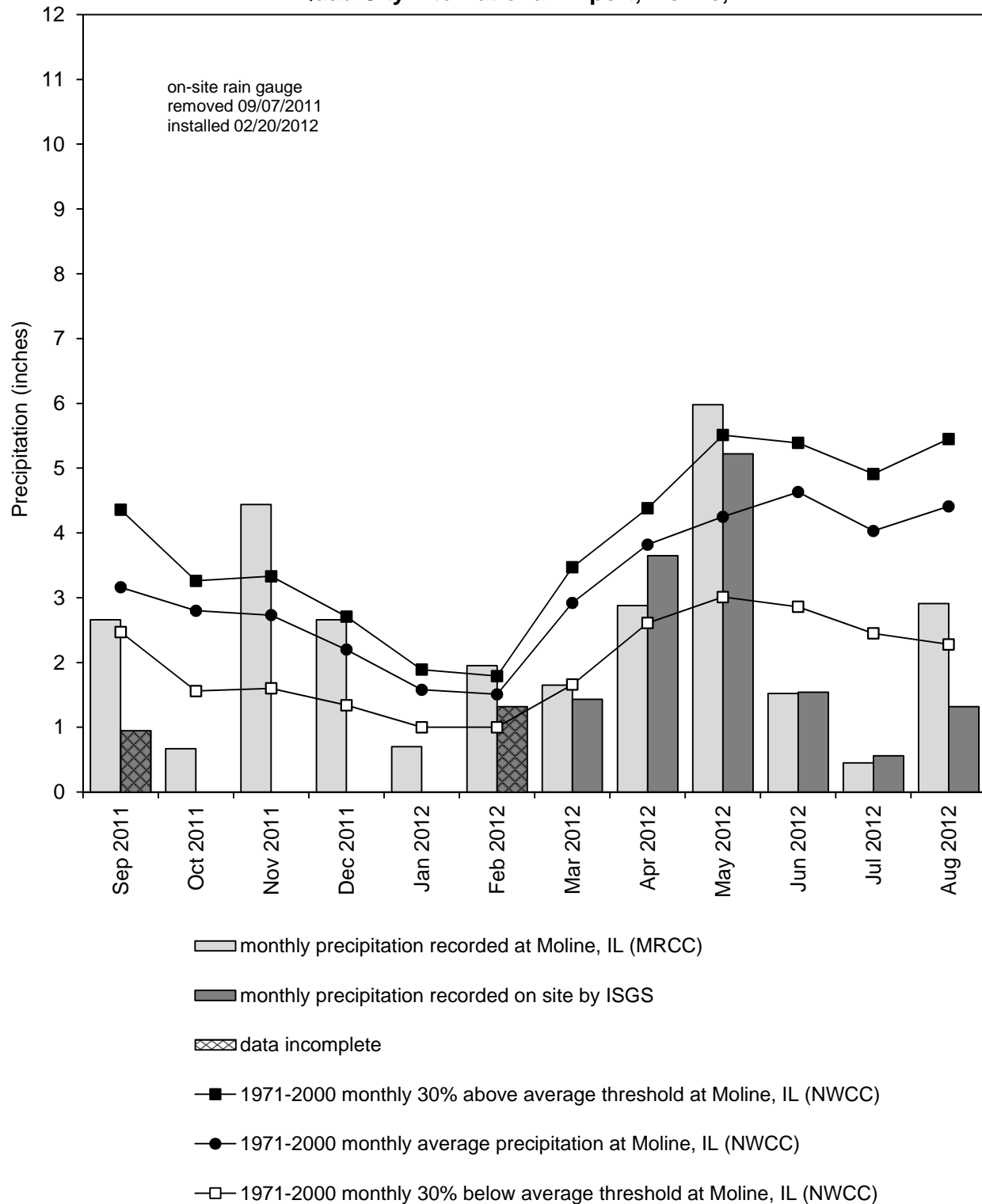
# **Milan Beltway, Rock Island Wetland Mitigation Site** **September 1, 2011 through August 31, 2012**



# Milan Beltway, Rock Island Wetland Mitigation Site

## September 2011 through August 2012

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





**PYRAMID SITE EC25  
WETLAND MITIGATION SITE**

**ISGS #77**

Pyatts Blacktop  
FAS 864

Sequence #9778

Perry County, near Pinckneyville, Illinois

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

**Secondary Project Manager: Jessica L. B. Monson**

**SITE HISTORY**

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

**WETLAND HYDROLOGY CALCULATION FOR 2012**

The target compensation area for the Pyramid Site EC25 wetland mitigation site is 4.57 ha (11.30 ac). Using the 1987 Manual (Environmental Laboratory 1987), 4.35 ha (10.76 ac) of the total site area of 5.3 ha (13.1 ac) satisfied wetland hydrology criteria for greater than 5% of the growing season, while no wells satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Using the 2010 Midwest Region Supplement (USACE 2010) to the 1987 Manual, 5.18 ha (12.79 ac) satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season.

- The median date that the growing season begins in nearby Du Quoin, Illinois, is April 5, and the season lasts 207 days (MRCC 2012). According to the 1987 Manual, 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, February 28 was the starting date of the 2012 growing season based on soil temperatures measured at the mitigation site.
- Total precipitation for the monitoring period at the Du Quoin, Illinois, weather station was 87% of normal. During Spring 2012 (March through May), precipitation was 55% of normal.
- In 2012, water levels measured in monitoring wells 1VS, 2S, 2VS, 3VS, 4S, 4VS, 7S, 7VS, 8VS, 9VS, 11S, 12VS, 14VS, and 15VS satisfied wetland hydrology criteria for greater than 5% of the growing season, according to the 1987 Manual. No wells satisfied wetland hydrology criteria for greater than 12.5% of the growing season, according to the 1987 Manual. According to the 2010 Midwest Region Supplement, all monitoring wells satisfied wetland hydrology criteria for 14 or more consecutive days of the growing season.
- Surface-water levels measured at Gauge BR (installed on 4/18/2012, after the beginning of the growing season) indicated inundation at or below 131.50 m (431.43 ft) for greater than 5% of the growing season, while surface-water did not persist at Gauge BR for greater than 12.5% of the growing season, according to the 1987 Manual. Per the 2010 Midwest Region Supplement, surface-water levels measured at

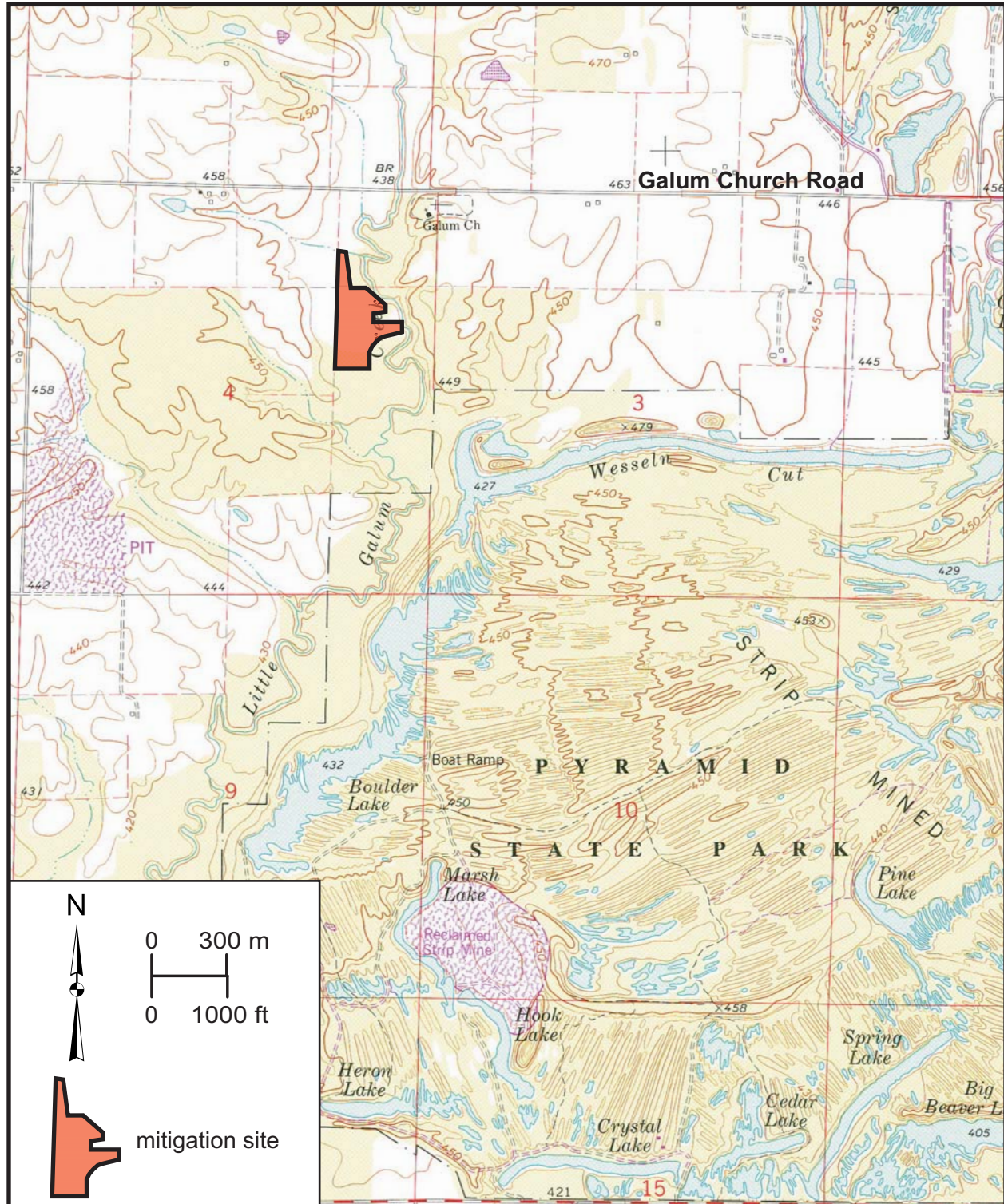
Gauge BR indicated inundation at or below 131.46 m (431.30 ft) for 14 or more consecutive days of the growing season.

#### PLANNED FUTURE ACTIVITIES

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

**Pyramid Site EC25 Wetland Mitigation Site  
(Pyatts Blacktop, FAS 864)  
General Study Area and Vicinity**

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



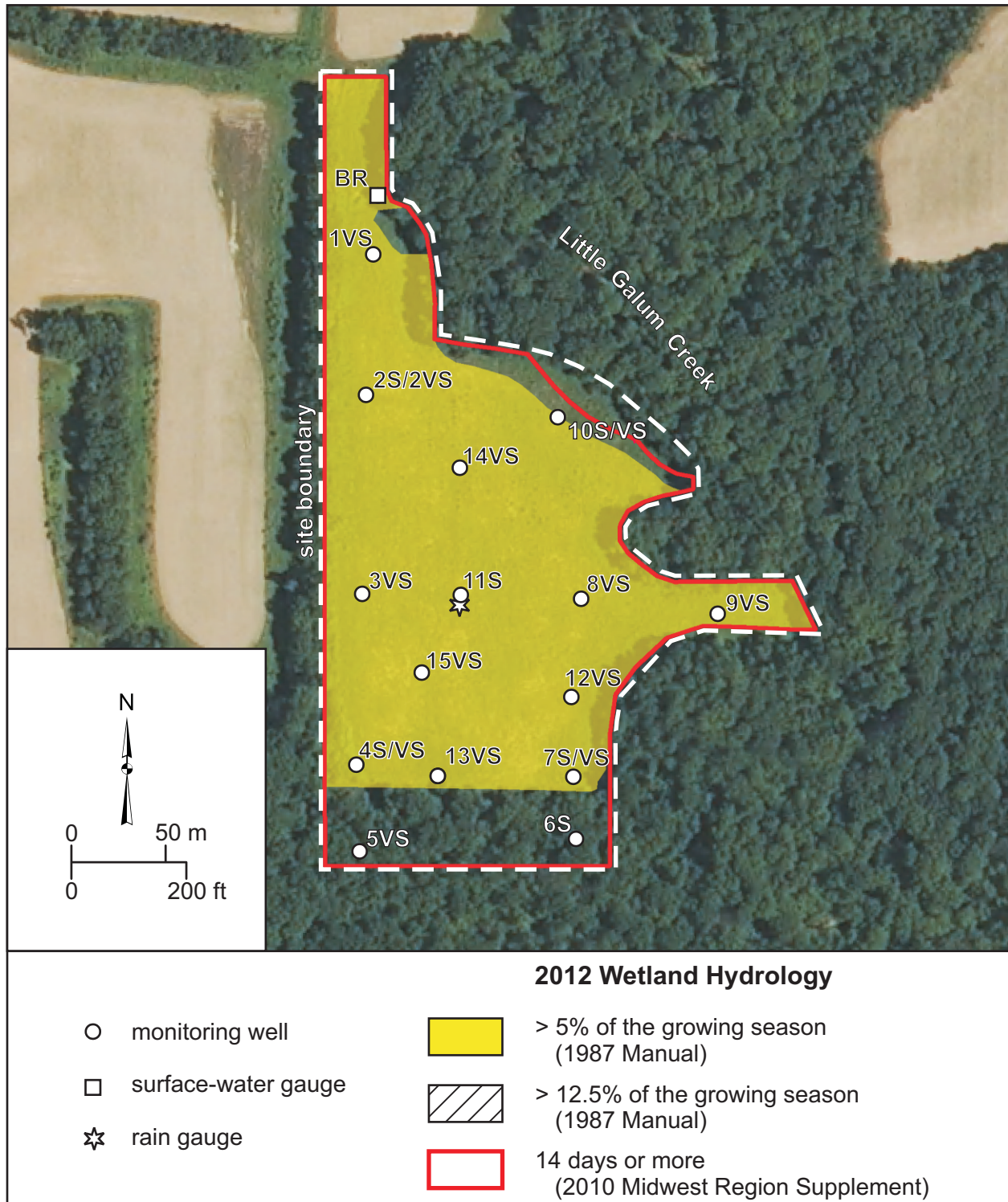


# Pyramid Site EC25 Wetland Mitigation Site (Pyatts Blacktop, FAS 864)

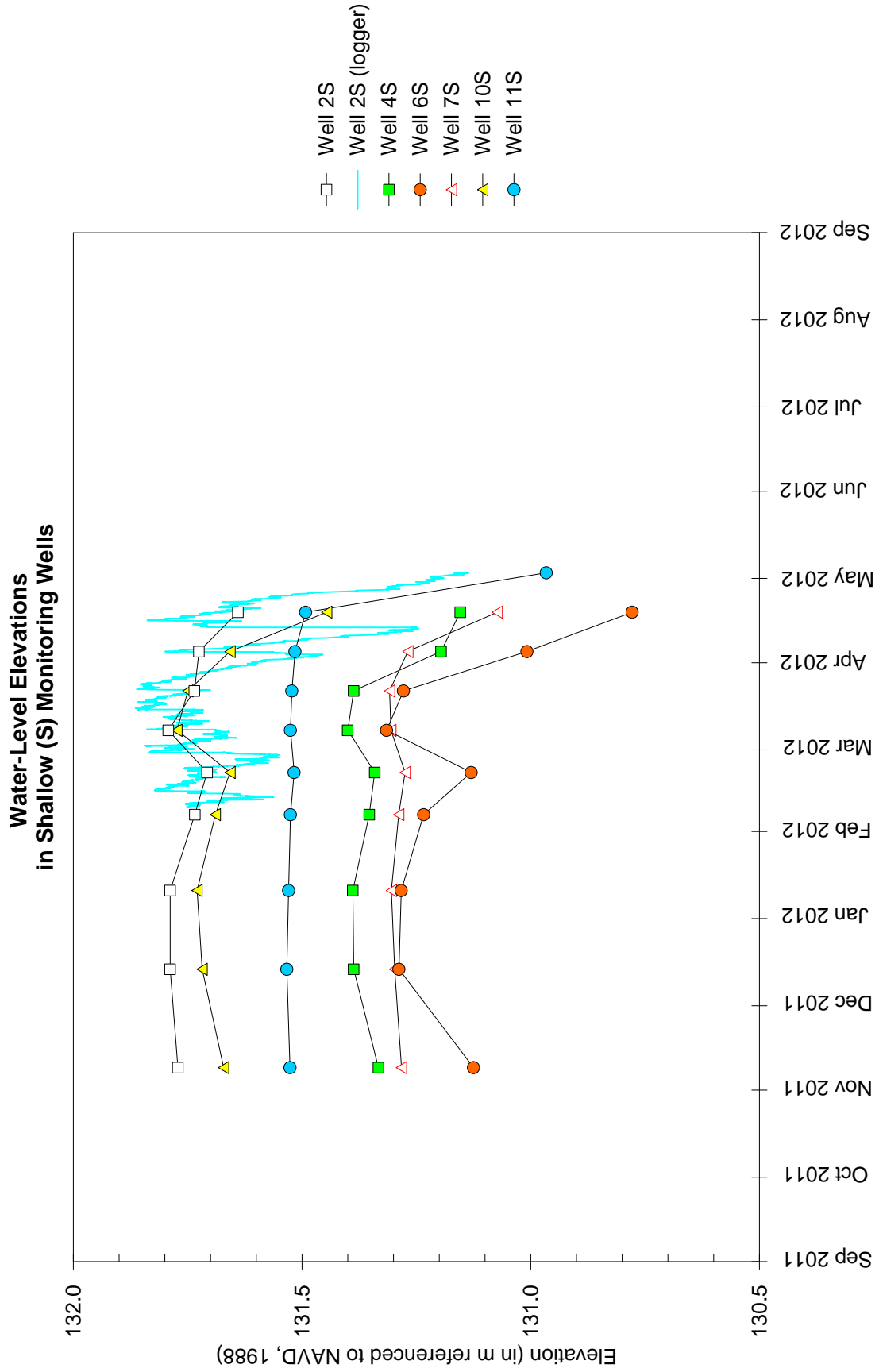
## Estimated Areal Extent of 2012 Wetland Hydrology

September 1, 2011 through August 31, 2012

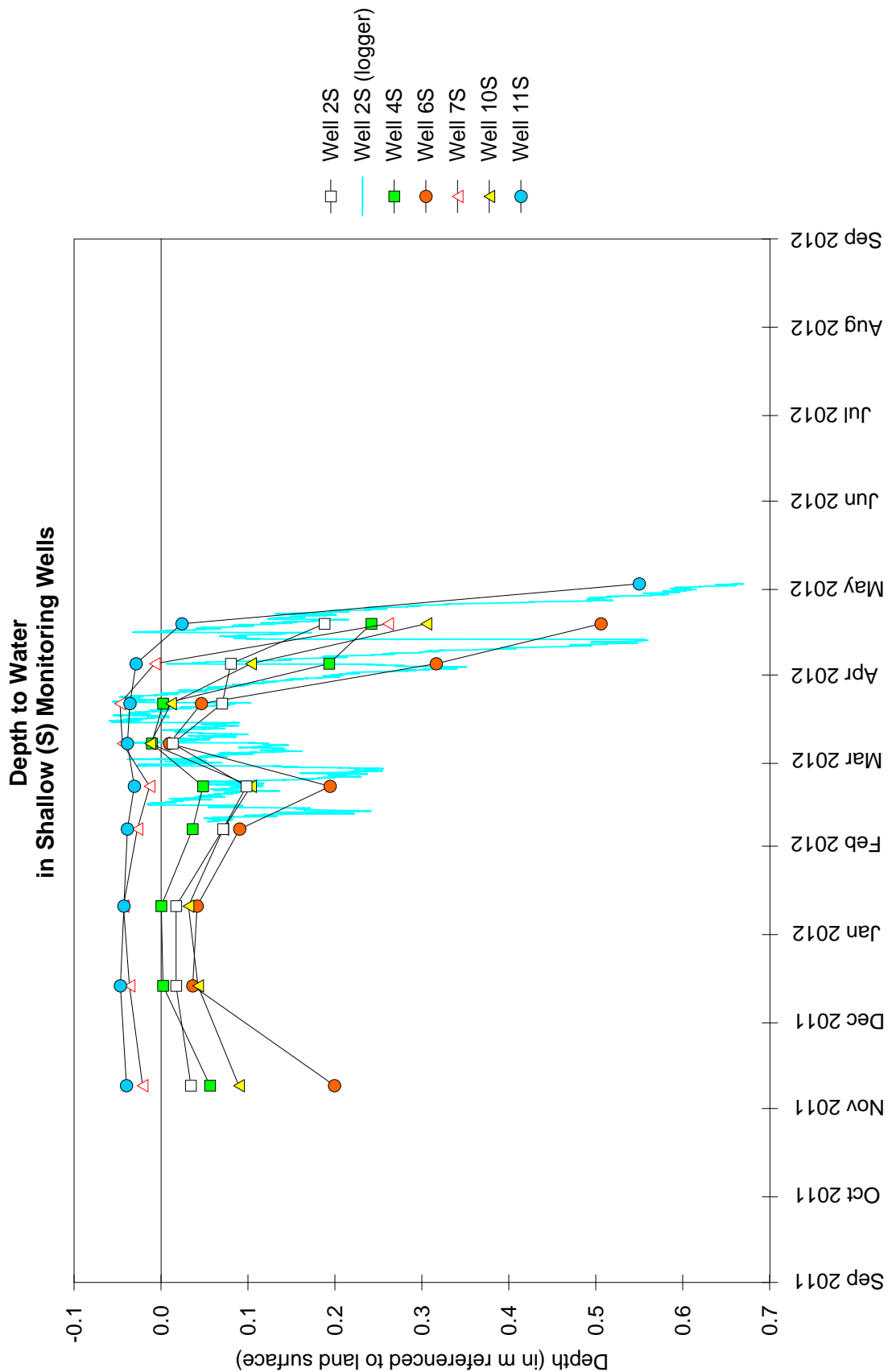
Map based on 2012 Farm Service Agency digital orthophotography, Perry County, Illinois (USDA-FSA 2012)



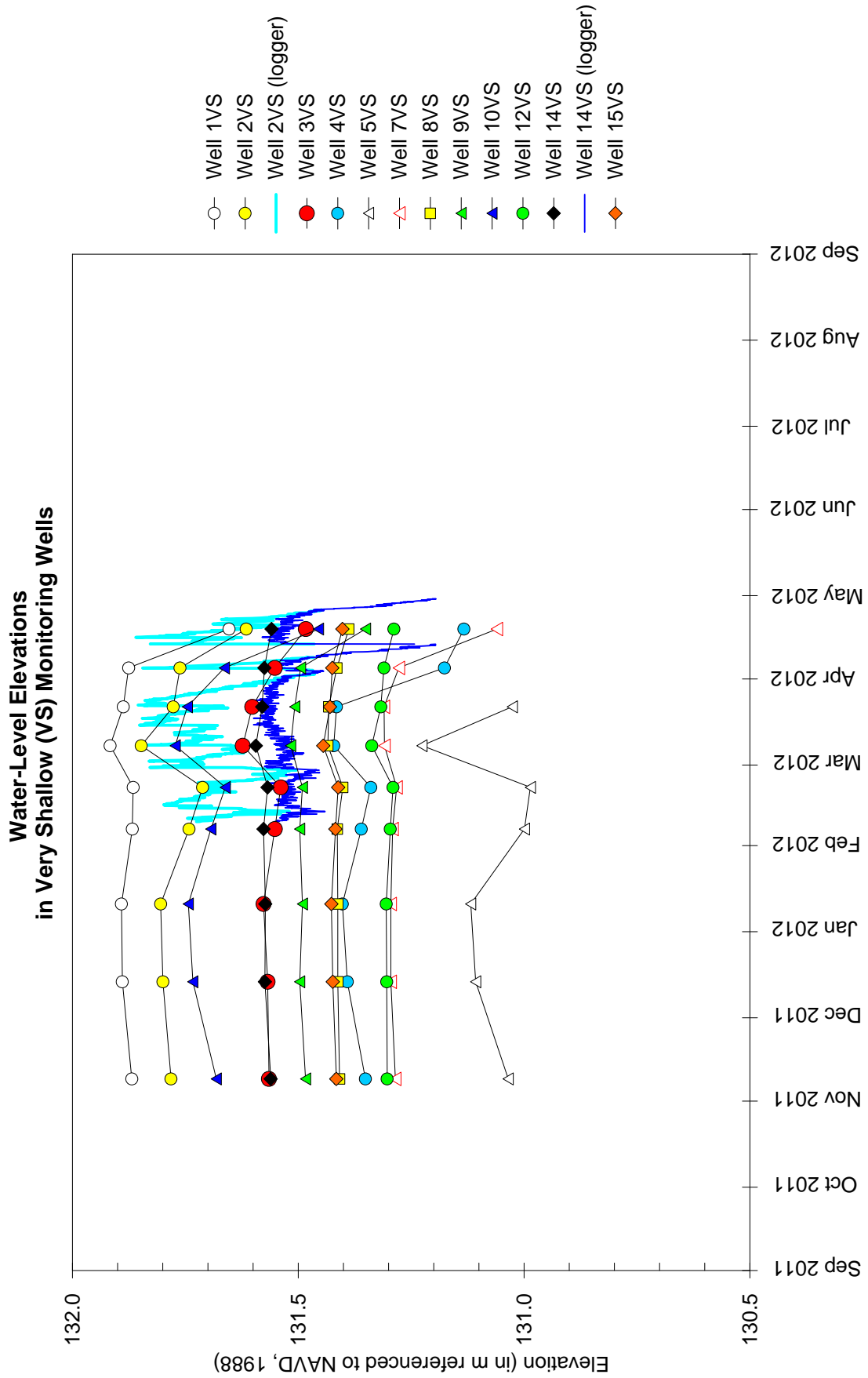
# **Pyramid Site EC25 Wetland Mitigation Site** **September 1, 2011 through August 31, 2012**



# **Pyramid Site EC25 Wetland Mitigation Site** **September 1, 2011 through August 31, 2012**

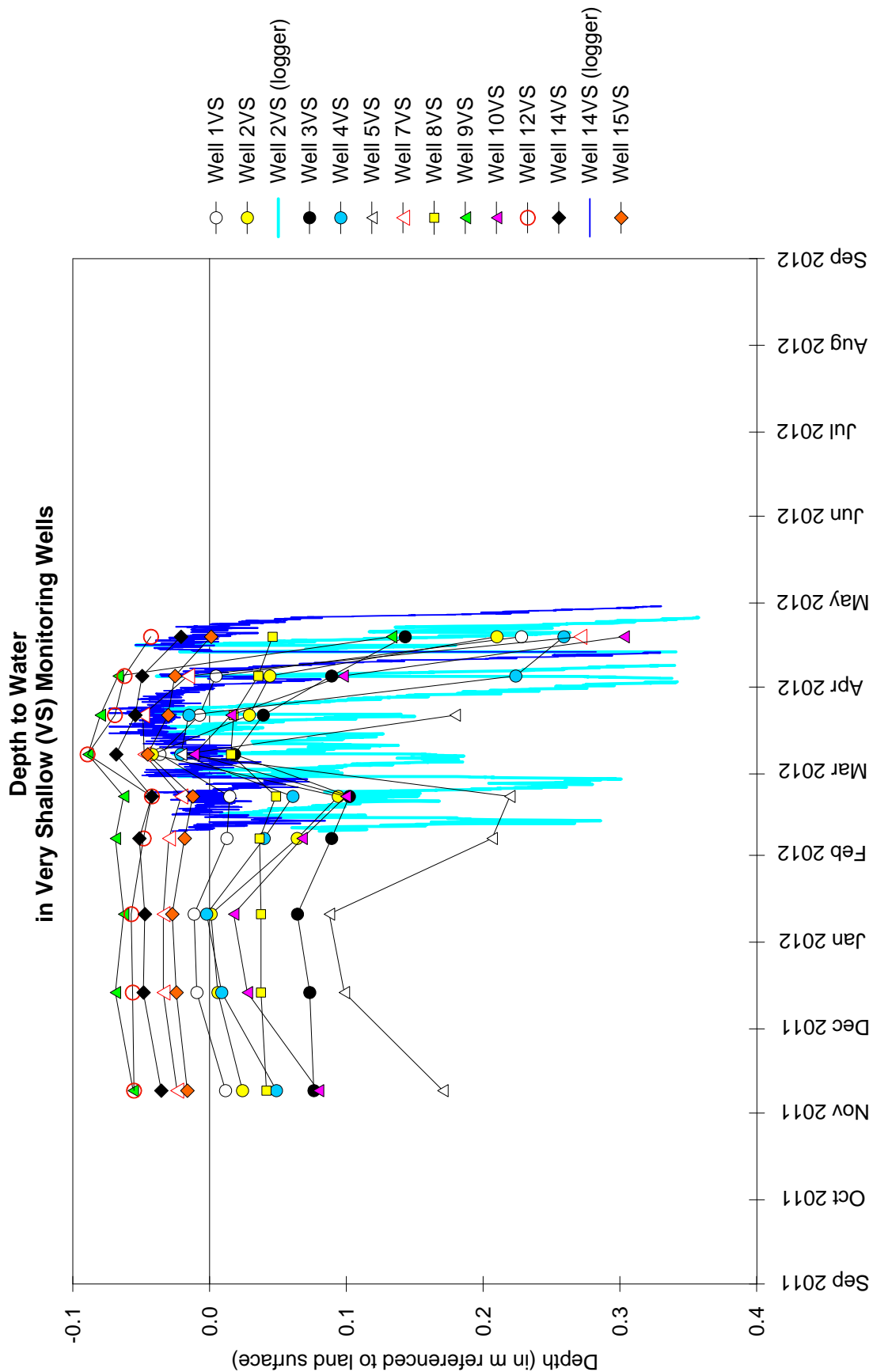


# **Pyramid Site EC25 Wetland Mitigation Site** **September 1, 2011 through August 31, 2012**



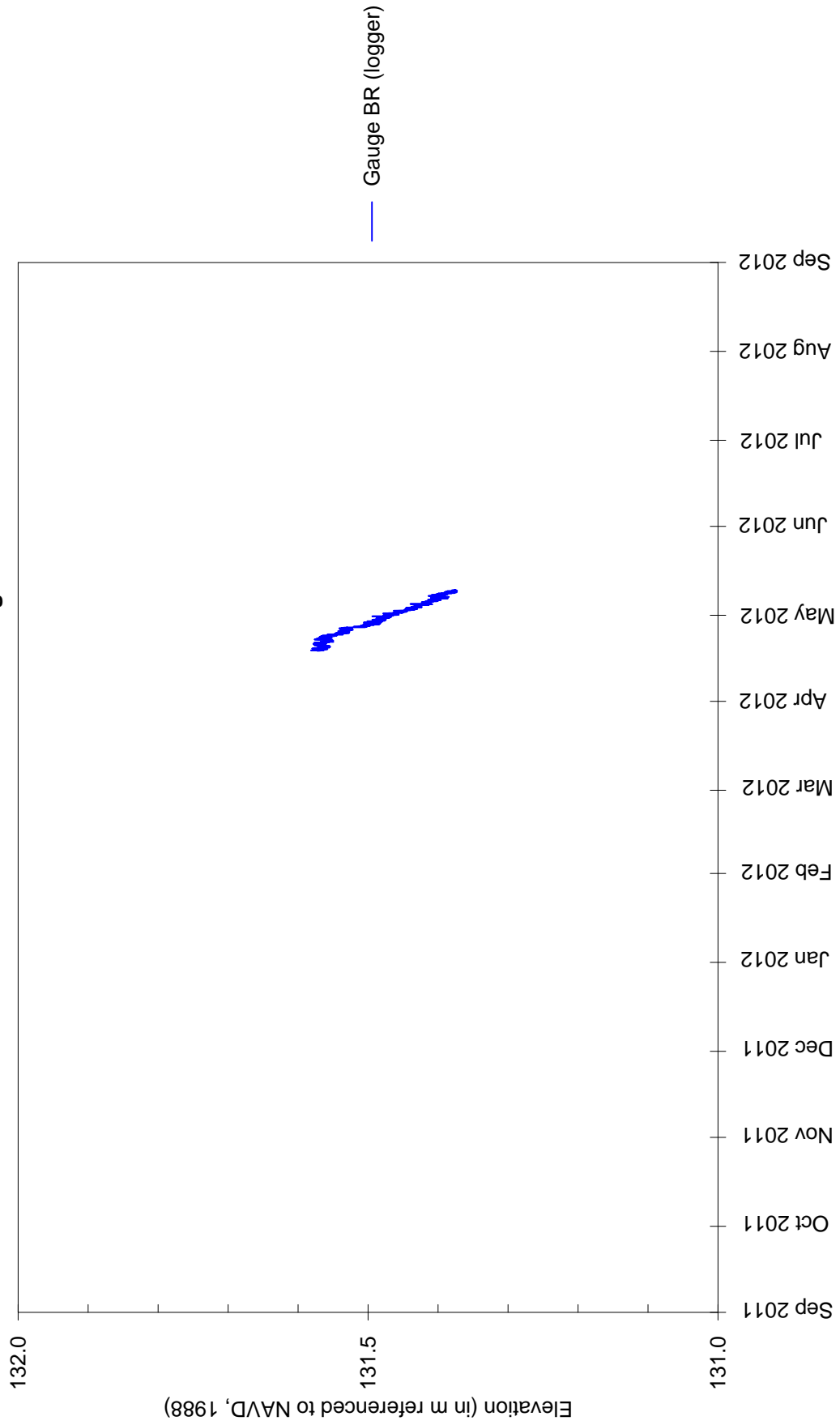


# **Pyramid Site EC25 Wetland Mitigation Site** **September 1, 2011 through August 31, 2012**



**Pyramid Site EC25 Wetland Mitigation Site**  
**September 1, 2011 through August 31, 2012**

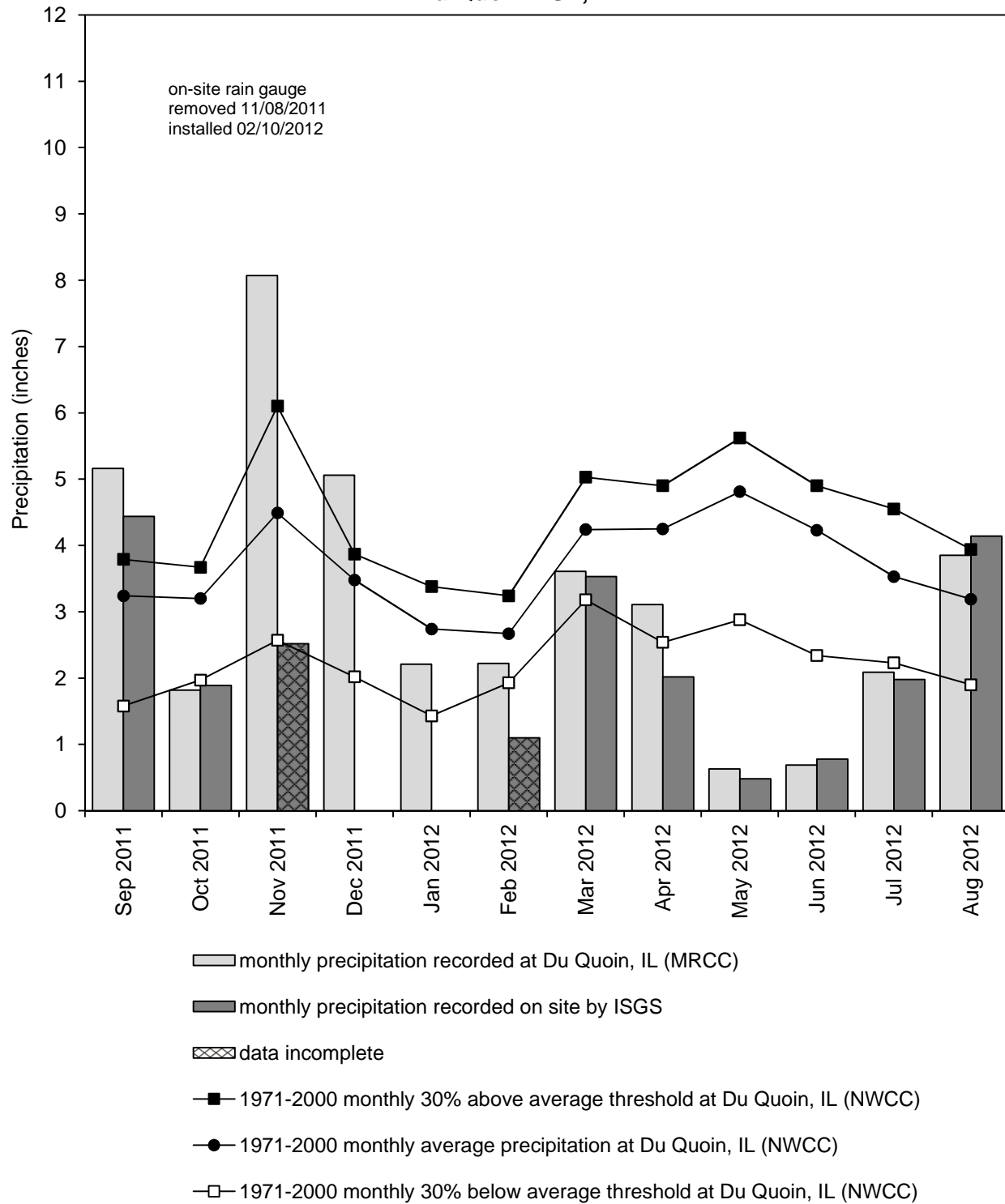
**Water-Level Elevations  
at the Surface-Water Gauge**



# Pyramid Site EC25 Wetland Mitigation Site

## September 2011 through August 2012

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



**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: Jessica L. B. Monson**

**SITE HISTORY**

- October 2007: Construction began at the wetland mitigation site.
- 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.

**WETLAND HYDROLOGY CALCULATION FOR 2012**

The target compensation area for the Harrisburg, Site 2 wetland mitigation site is 4.13 ha (10.20 ac). Using the 1987 Manual (Environmental Laboratory 1987), 2.63 ha (6.49 ac) out of a total site area of approximately 14.2 ha (35.0 ac) satisfied wetland hydrology criteria for greater than 5% of the growing season, whereas 1.02 ha (2.51 ac) satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Using the 2010 Midwest Region Supplement (USACE 2010) to the 1987 Manual, 7.24 ha (17.88 ac) satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

- The median date that the growing season begins in Harrisburg, Illinois, is April 1 and the season lasts 211 days (MRCC 2012). According to the 1987 Manual, 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, February 16 was the start date of the 2012 growing season based on soil temperatures measured at the site and data from the Illinois Climate Network station at Dixon Springs, Illinois (WARM 2012).
- Total precipitation at the Du Quoin, Illinois, weather station for the period from September 2011 through August 2012 was 87% of normal, and Spring 2012 (March through May) precipitation was 55% of normal.
- In 2012, wells 9S, 10S, 12S, 13S, 14S, 15S, 21S, 22VS, and 26VS satisfied wetland hydrology criteria for greater than 5% and wells 9S, 10S, 12S, and 22VS satisfied wetland hydrology criteria for greater than 12.5% of the growing season, according to the 1987 Manual. Furthermore, all wells except 5S, 6S, 6VS, 7S, 8S, 17VS, 19VS, and 20VS satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season according to the 2010 Midwest Region Supplement.

- Gauges B, E, G, and H showed water levels at or above 112.45 m (368.93 ft), 114.67 m (376.41 ft), 111.85 m (366.96 ft), and 113.06 m (370.73 ft) respectively, for greater than 5% of the growing season, whereas surface water at Gauge A did not persist long enough to satisfy wetland hydrology criteria for greater than 5%, according to the 1987 Manual. Gauge G showed surface water levels at or above 111.73 m (366.56 ft) greater than 12.5% of the growing season, whereas surface water at Gauges A, B, E, and H did not persist long enough to satisfy wetland hydrology criteria for greater than 12.5% of the growing season, according to the 1987 Manual. Gauges B, E, G, and H showed water levels at or above 112.50 m (369.09 ft), 114.74 m (376.44 ft), 111.89 m (367.09 ft), and 113.08 m (371.0 ft), respectively, for 14 or more consecutive days during the growing season, whereas water levels at Gauge A did not persist long enough to satisfy wetland hydrology criteria for 14 or more days during the growing season, according to the 2010 Midwest Region Supplement.

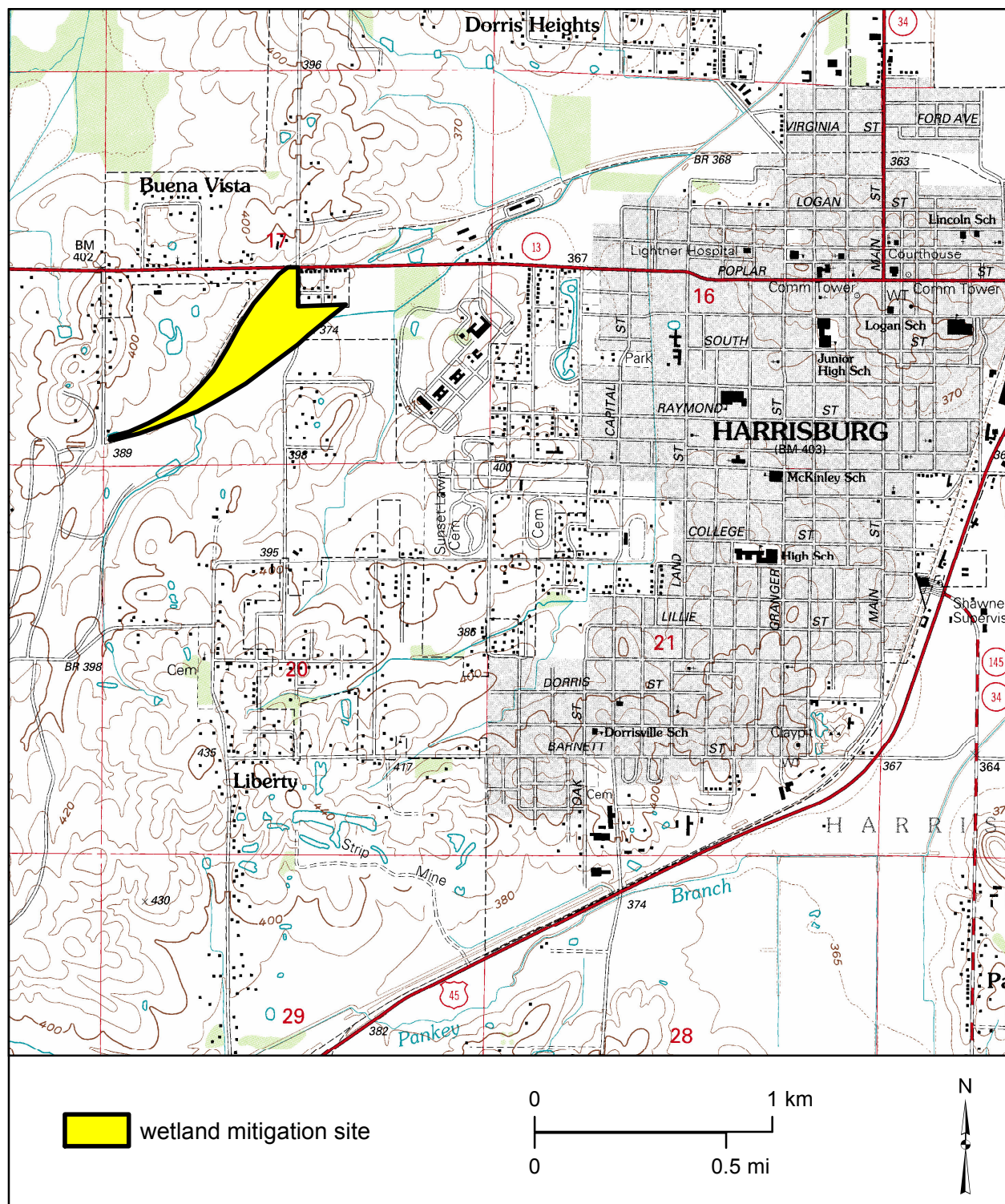
#### PLANNED FUTURE ACTIVITIES

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

# Harrisburg, Site 2 Wetland Mitigation Site (IL 14, 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



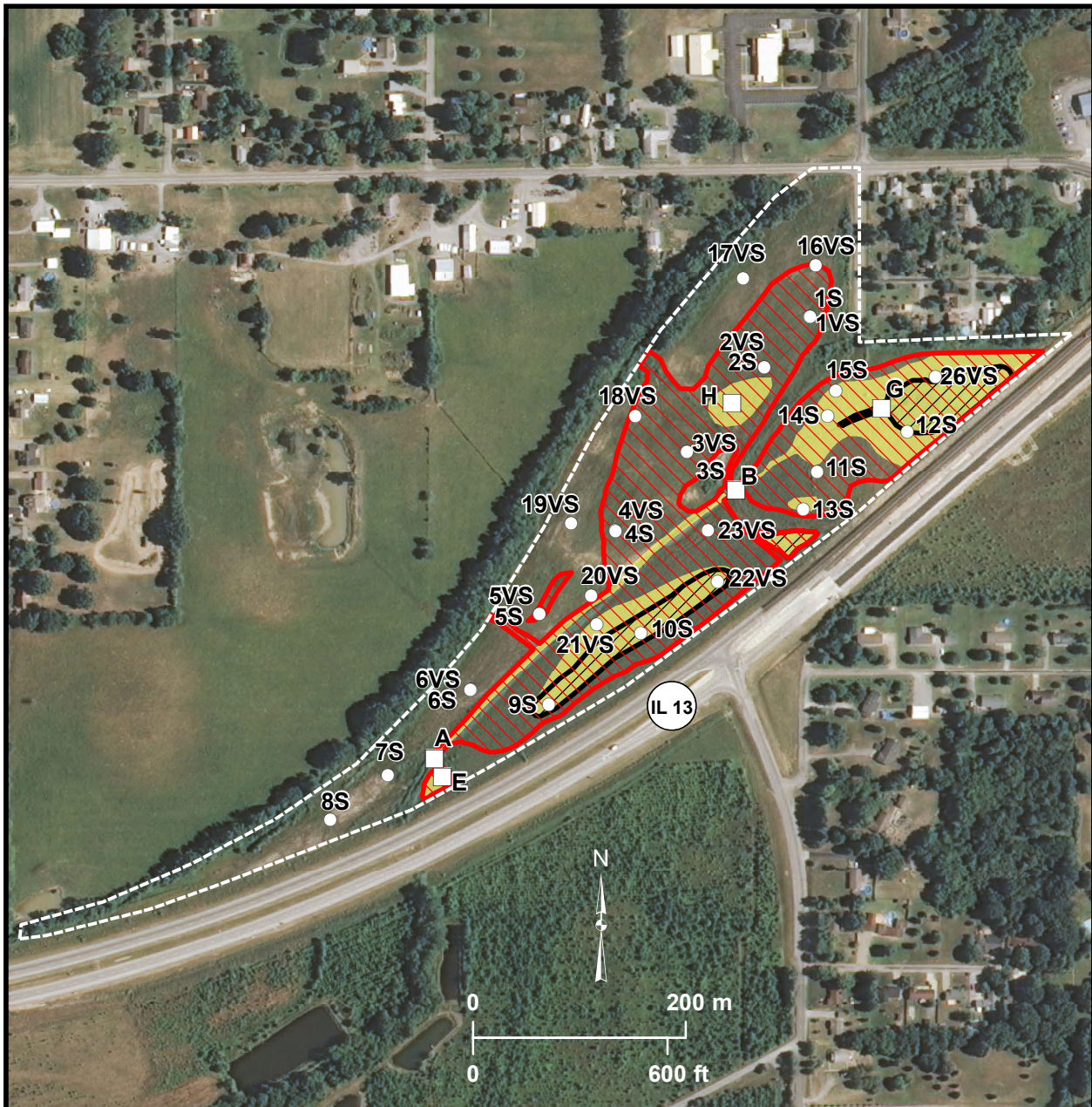


# Harrisburg, Site 2 Wetland Mitigation Site (IL 14, FAP 857)

## Estimated Areal Extent of 2012 Wetland Hydrology

September 1, 2011 though August 31, 2012

Map based on 2012 Farm Service Agency digital orthophotography, Saline County, Illinois (USDA-FSA 2012)

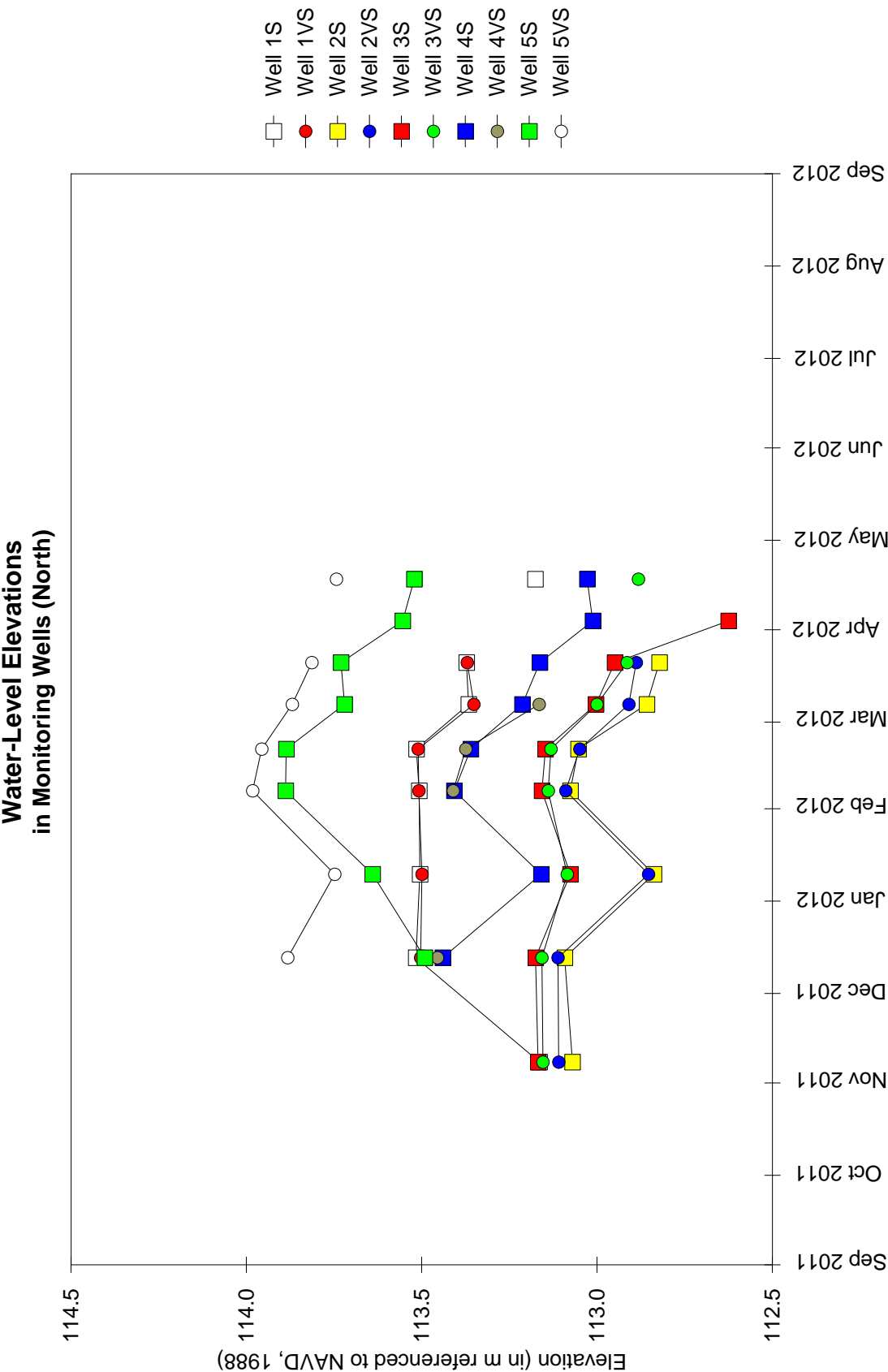


### 2012 Wetland Hydrology

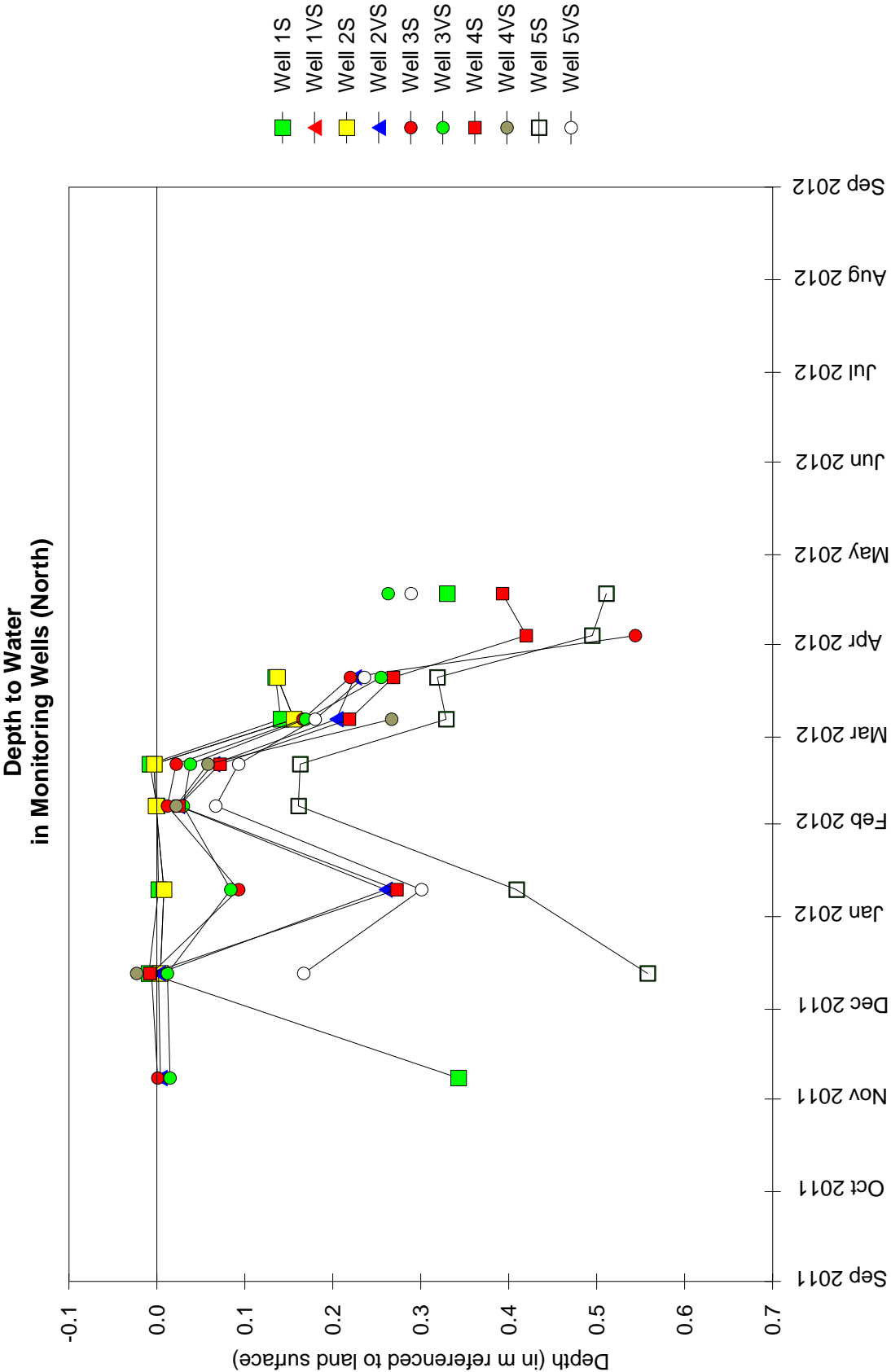
- |  |   |
|--|---|
| <span style="display: inline-block; width: 20px; height: 10px; background-color: yellow; border: 1px solid black;"></span> >5% of growing season (1987 Manual)   | <span style="display: inline-block; width: 10px; height: 10px; border: 1px solid black; border-radius: 50%;"></span> monitoring well          |
| <span style="display: inline-block; width: 20px; height: 10px; background: repeating-linear-gradient(45deg, transparent, transparent 2px, black 2px, black 4px); border: 1px solid black;"></span> >12.5% of growing season (1987 Manual)      | <span style="display: inline-block; width: 10px; height: 10px; background-color: white; border: 1px solid black;"></span> surface-water gauge |
| <span style="display: inline-block; width: 20px; height: 10px; background: repeating-linear-gradient(-45deg, transparent, transparent 2px, red 2px, red 4px); border: 1px solid red;"></span> 14 days or more (2010 Midwest Region Supplement) | <span style="display: inline-block; width: 20px; height: 10px; border: 1px dashed white;"></span> site boundary                               |



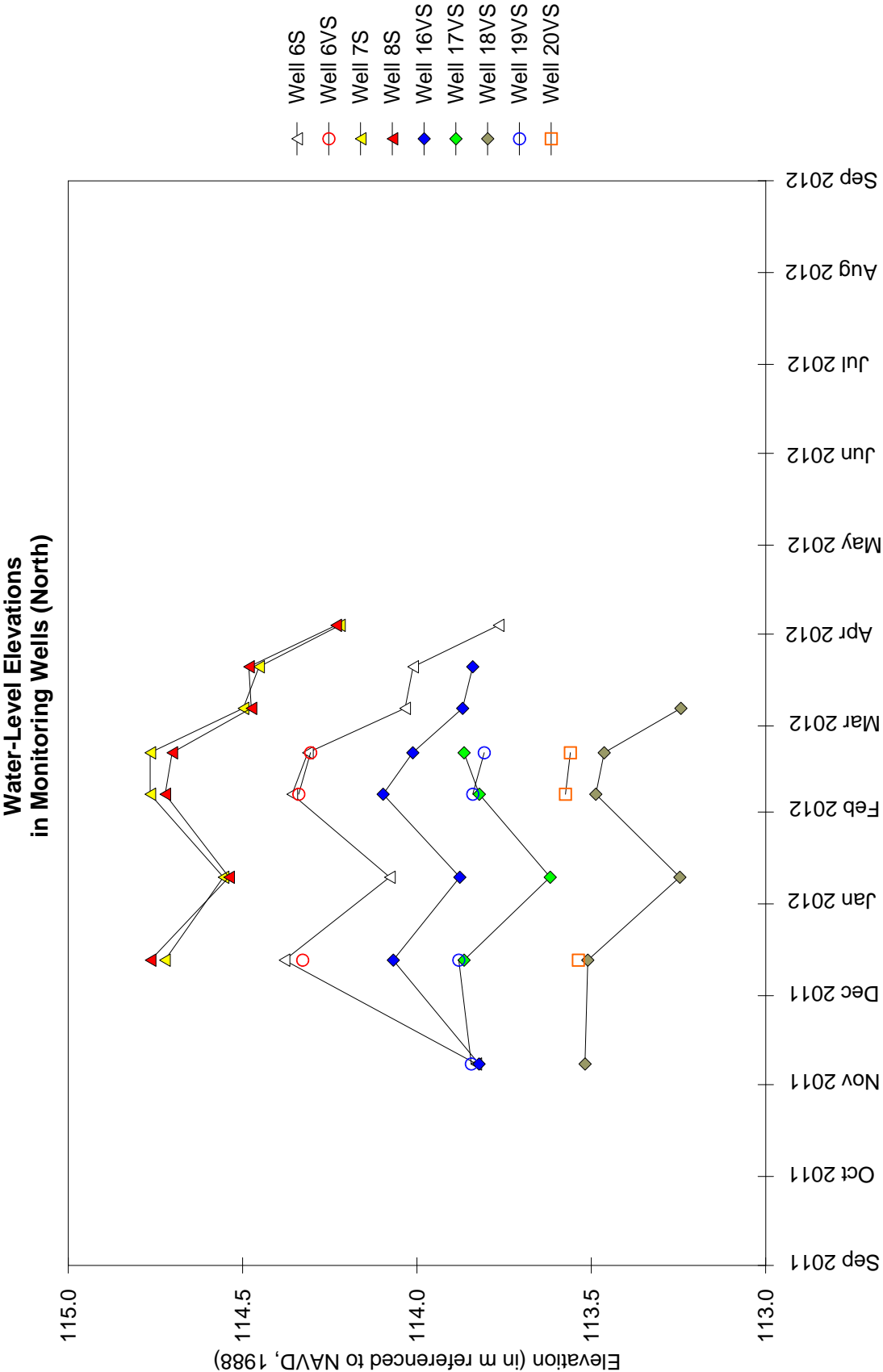
# Harrisburg, Site 2 Wetland Mitigation Site September 1, 2011 through August 31, 2012



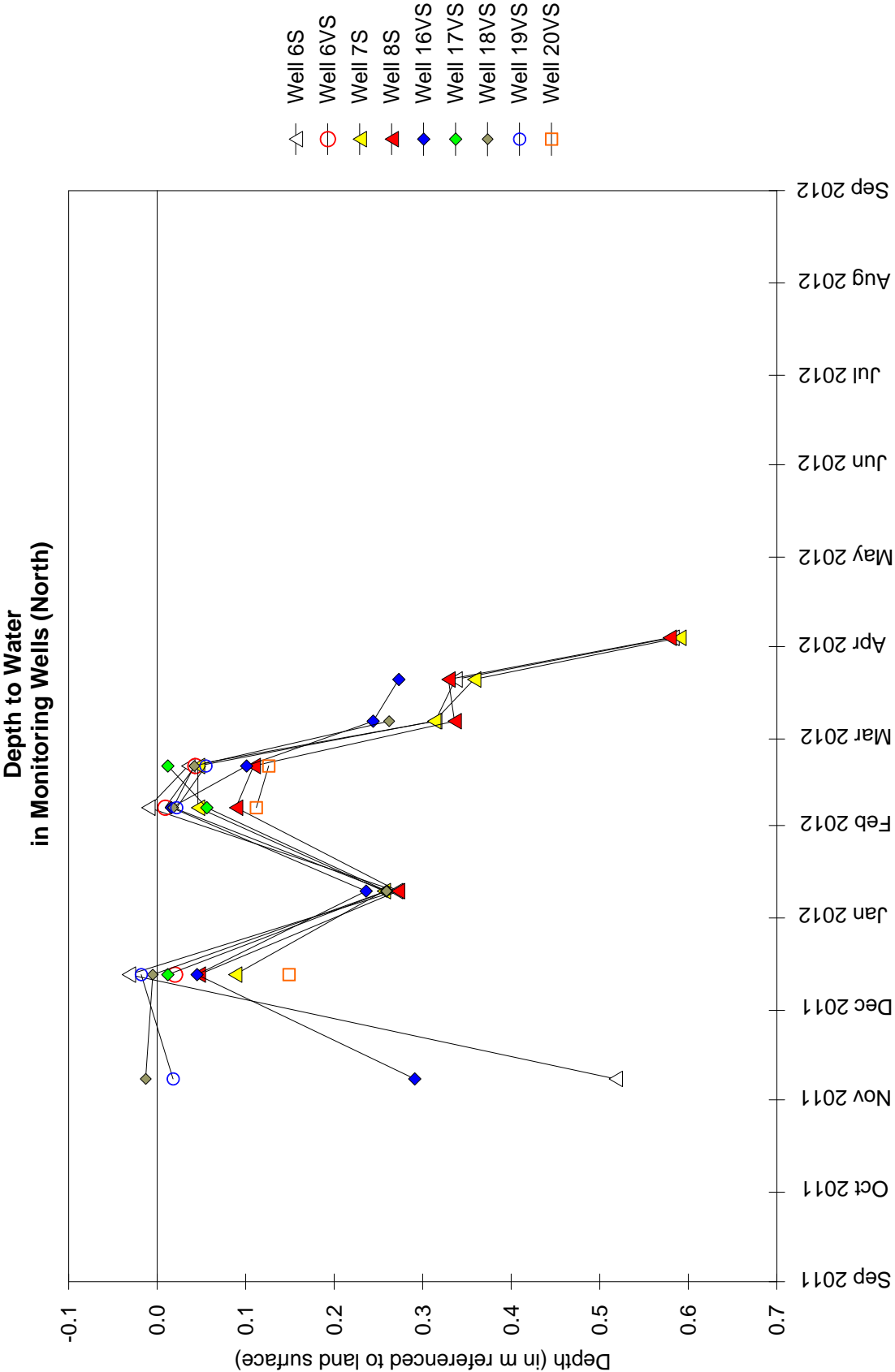
# Harrisburg, Site 2 Wetland Mitigation Site September 1, 2011 through August 31, 2012



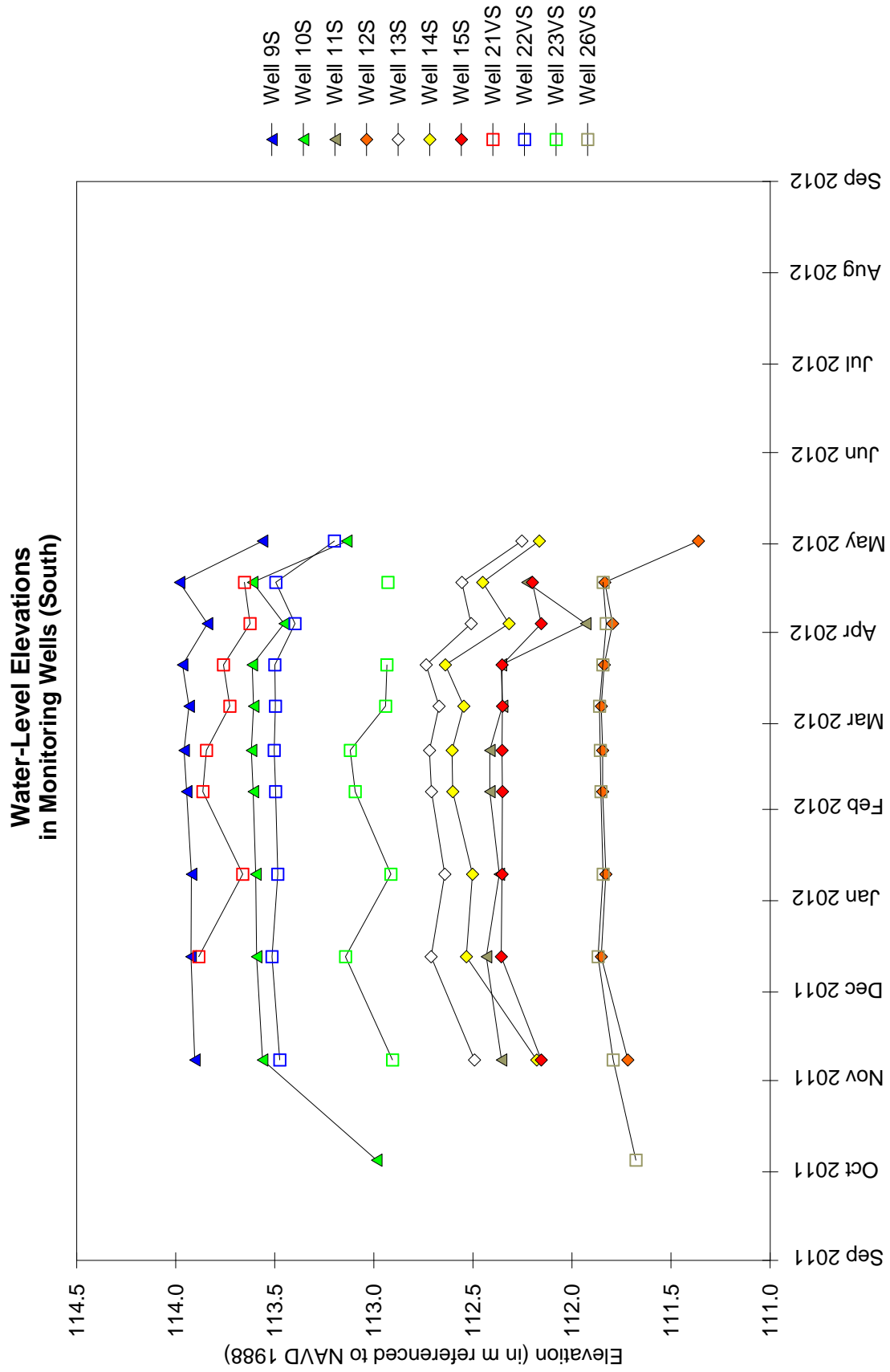
# Harrisburg, Site 2 Wetland Mitigation Site September 1, 2011 through August 31, 2012



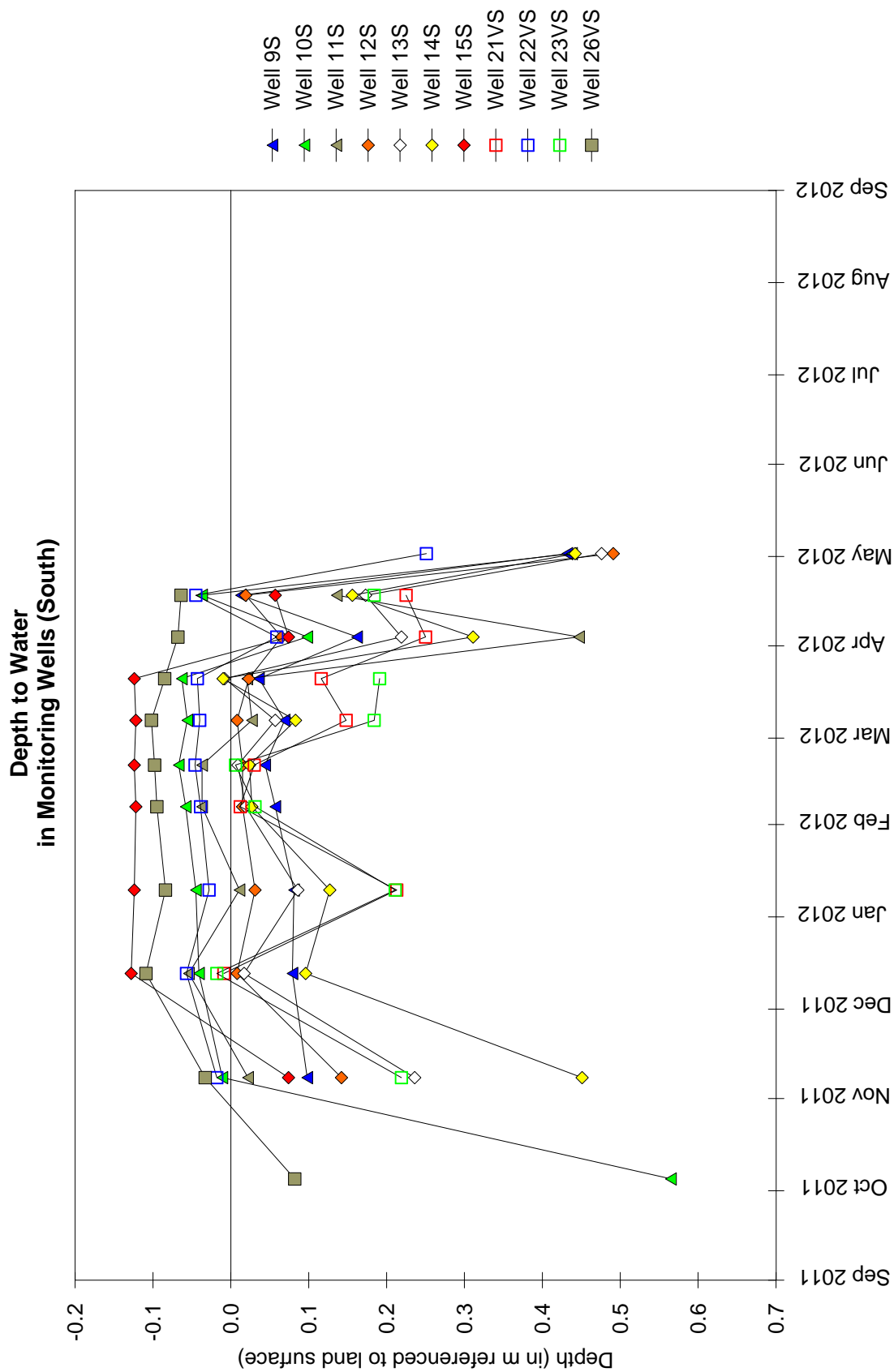
# Harrisburg, Site 2 Wetland Mitigation Site September 1, 2011 through August 31, 2012



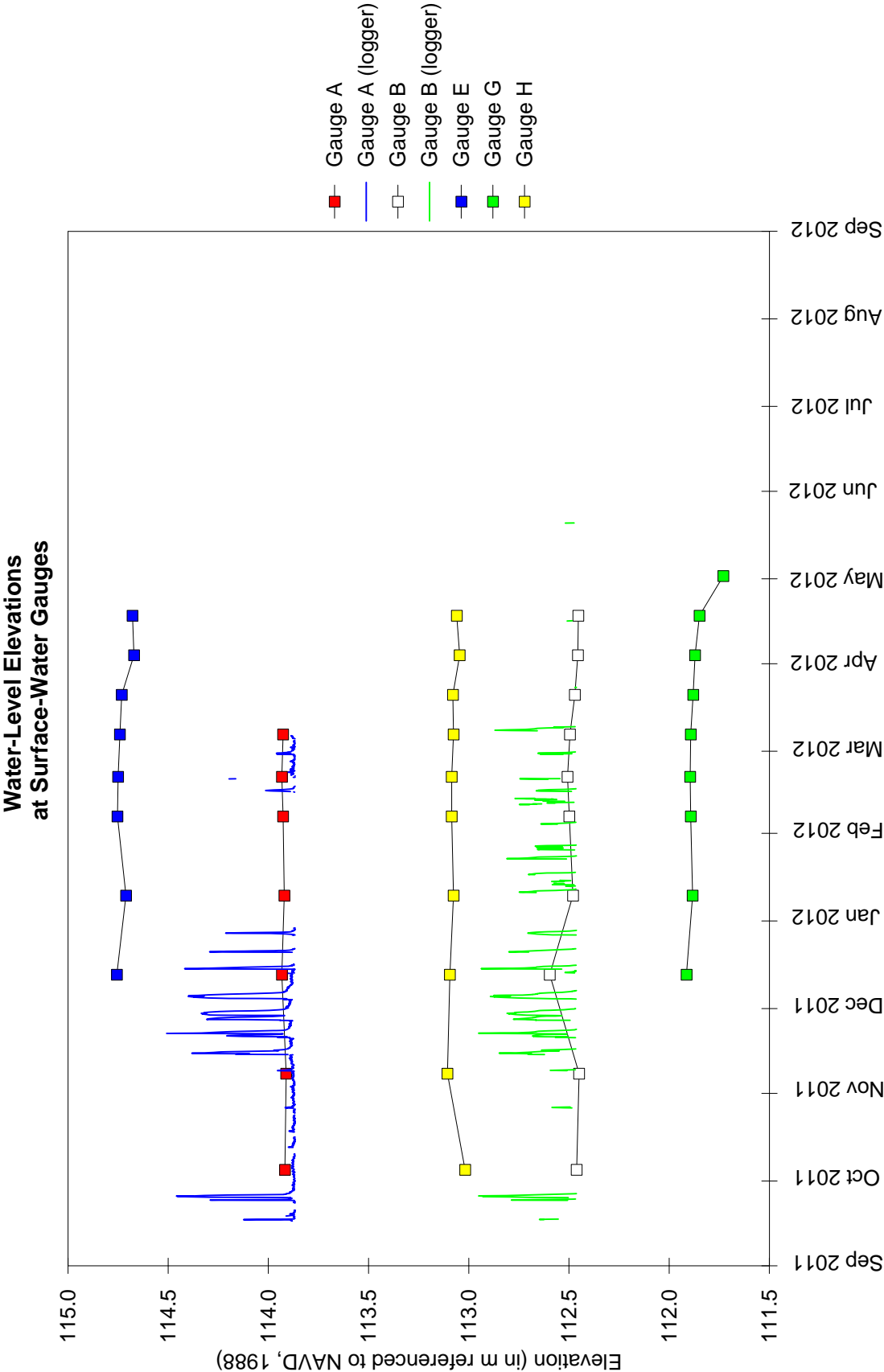
# Harrisburg, Site 2 Wetland Mitigation Site September 1, 2011 through August 31, 2012



# Harrisburg, Site 2 Wetland Mitigation Site September 1, 2011 through August 31, 2012



**Harrisburg, Site 2 Wetland Mitigation Site**  
September 1, 2011 through August 31, 2012

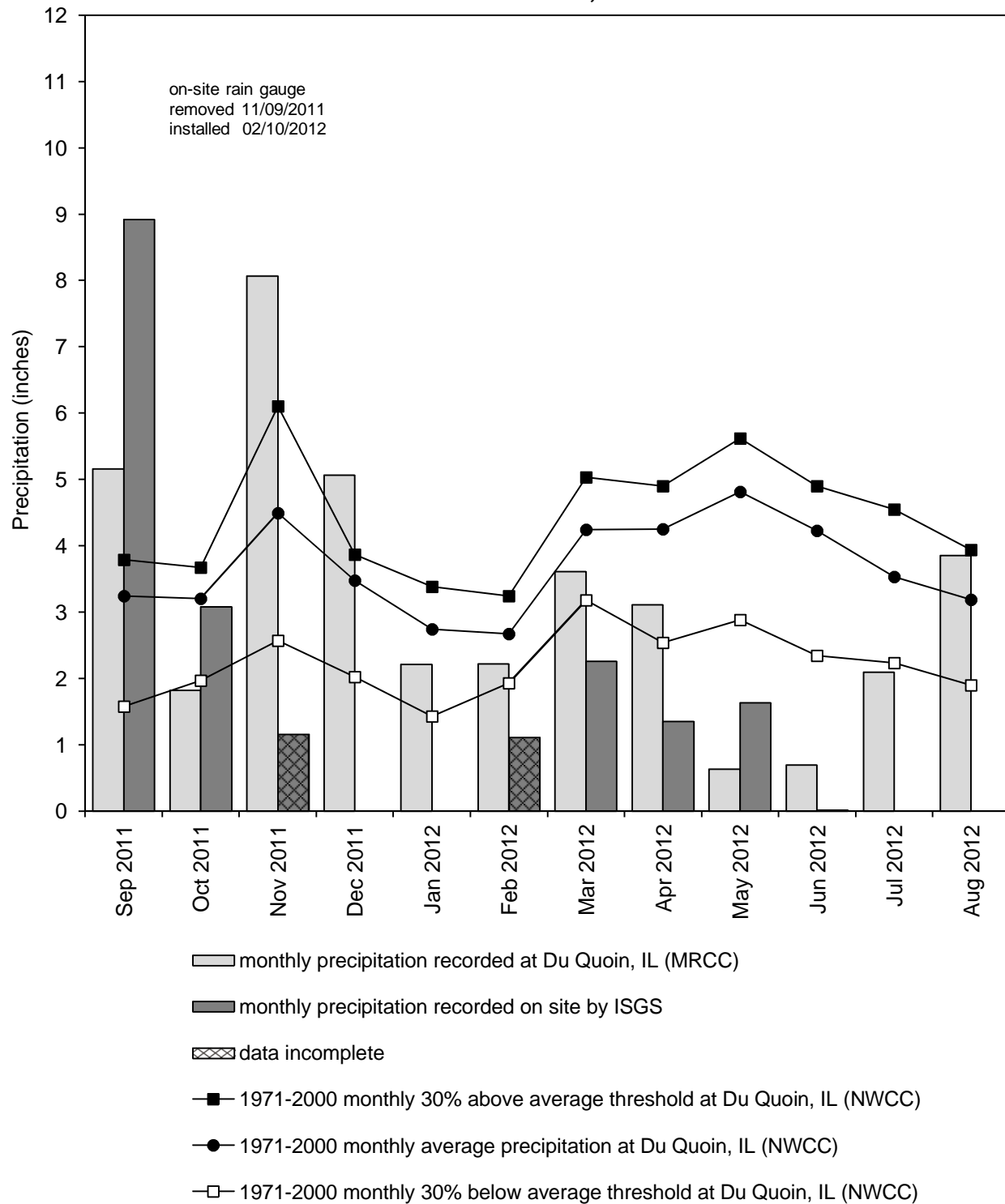




# Harrisburg, Site 2 Wetland Mitigation Site

## September 2011 through August 2012

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



**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: Jessica R. Ackerman**

**SITE HISTORY**

- September 2010: IDOT District 2 requested that ISGS prepare conceptual plans for wetland creation, and plans were provided by ISGS.
- November 2010: Wetland construction was completed, and ISGS was tasked by IDOT to monitor wetland hydrology.
- May 2011: ISGS installed a post-construction monitoring network.

**WETLAND HYDROLOGY CALCULATION FOR 2012**

The target compensation area for the Former Weber Property wetland mitigation site is 1.21 ha (3.00 ac). Using the 1987 Manual (Environmental Laboratory 1987), 0.74 ha (1.82 ac) of the total site area of 5.8 ha (14.3 ac) satisfied wetland hydrology criteria for greater than 5% of the 2012 growing season, while 0.26 ha (0.65 ac) satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Using the 2010 Midwest Region Supplement (USACE 2010) to the 1987 Manual, 0.39 ha (0.96 ac) satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

- The median date that the growing season begins in nearby Freeport, Illinois, is April 13, and the season lasts 183 days (MRCC 2012). According to the 1987 Manual, 5% of the growing season is 9 days, and 12.5% of the growing season is 23 days. According to the 2010 Midwest Region Supplement, March 12 was the starting date of the 2012 growing season based on soil temperatures measured at the former Freeport Bypass West Wetland Mitigation Site 6W (ISGS site #72).
- Total precipitation for the monitoring period at the Freeport Wastewater Plant weather station was 74% of normal. During Spring 2012 (March through May), precipitation was 95% of normal.
- In 2012, water levels measured in monitoring wells 8S and 9S satisfied wetland hydrology criteria for greater than 5% and greater than 12.5% of the growing season, according to the 1987 Manual. According to the 2010 Midwest Region Supplement, wells 8S and 9S also satisfied wetland hydrology criteria for 14 or more consecutive days of the growing season.
- Surface-water levels measured at Gauges E and F indicated inundation at or below 230.03 m and 231.14 m (754.69 ft and 758.33 ft), respectively, for greater than 5% of

the growing season, according to the 1987 Manual. Surface-water levels measured at Gauge F indicated inundation at or below 231.10 m (758.20 ft) for greater than 12.5% of the growing season, while surface-water levels at Gauge E did not satisfy wetland hydrology criteria for greater than 12.5% of the growing season, according to the 1987 Manual. Additionally, surface-water levels measured at Gauge A did not satisfy any wetland hydrology criteria during the 2012 growing season per the 1987 Manual. Per the 2010 Midwest Region Supplement, surface-water levels measured at Gauges A and F indicated inundation at or below 230.07 m and 231.20 m (754.82 ft and 758.53 ft) for 14 or more consecutive days of the growing season, while Gauge E did not satisfy wetland hydrology criteria according to this method.

#### ADDITIONAL INFORMATION

- During the 2012 growing season, water levels on the Mississippi River at Thebes, Illinois, never reached an elevation sufficient to back up water in the East Cape Main Ditch (ECMD) which parallels the western border of the East Cape Girardeau wetland mitigation site.

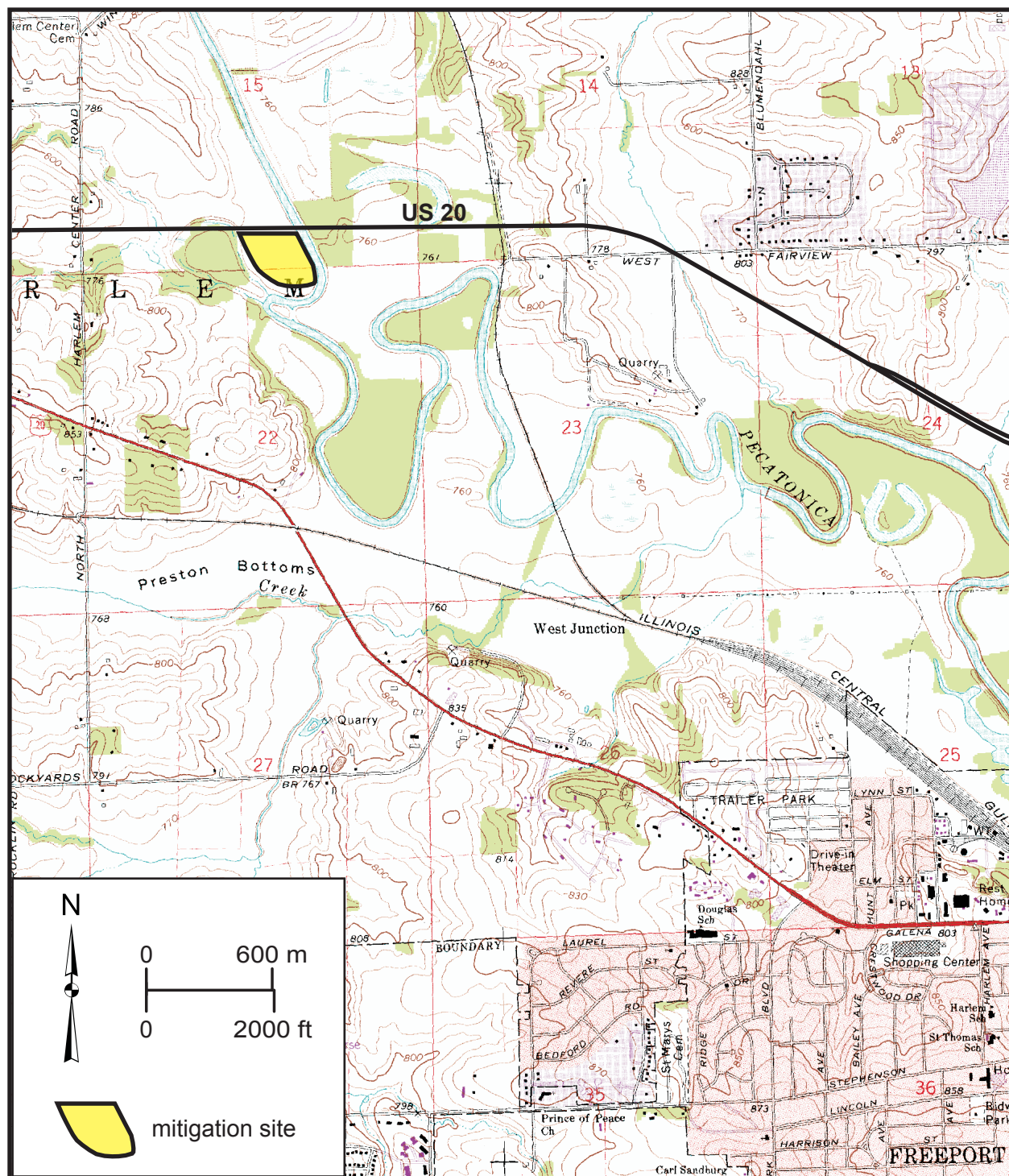
#### PLANNED FUTURE ACTIVITIES

- Monitoring will continue until no longer required by IDOT.

# Former Weber Property Wetland Mitigation Site (US 20, FAP 301)

## General Study Area and Vicinity

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

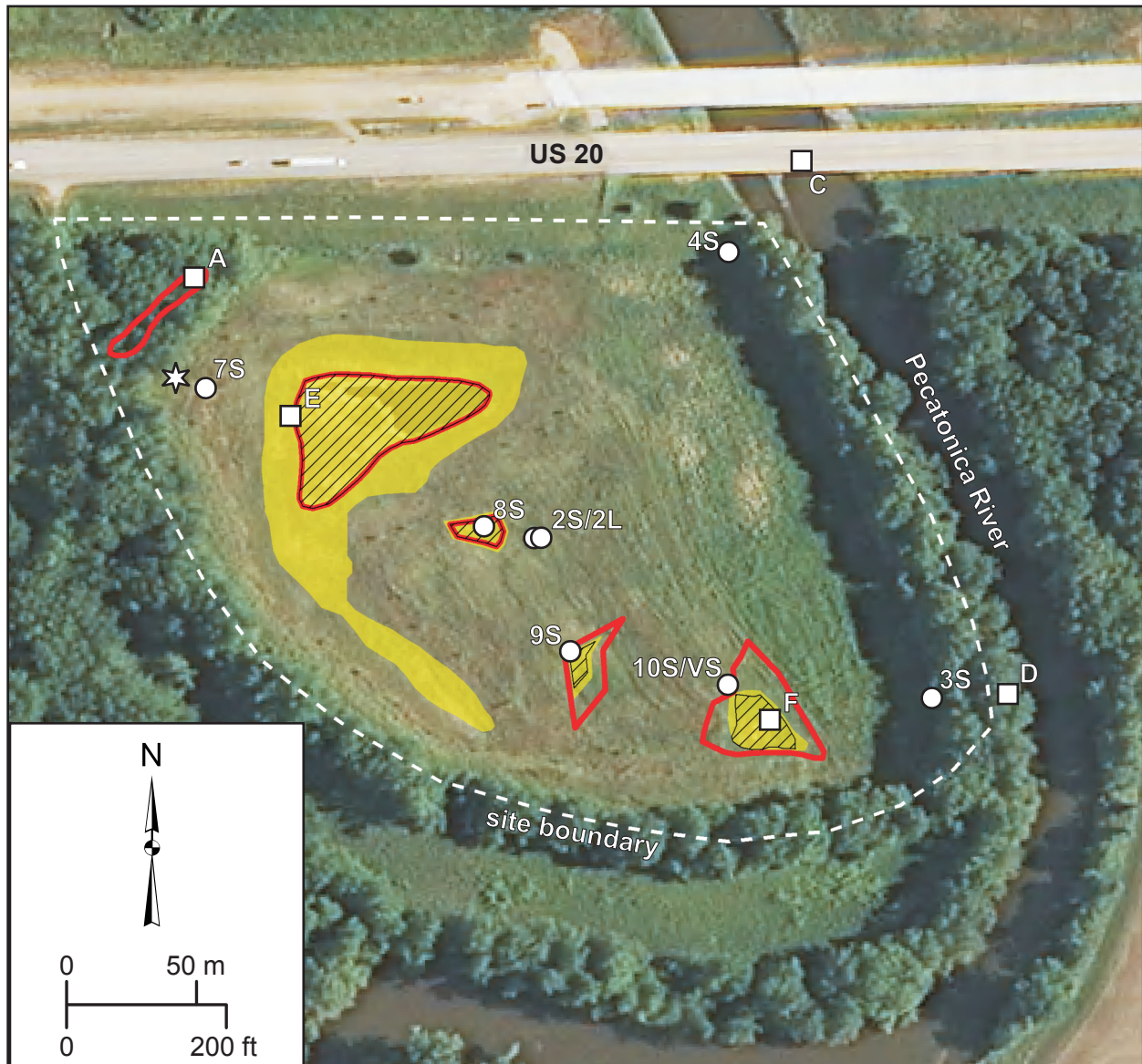


# Former Weber Property Wetland Mitigation Site (US 20, FAP 301)

## Estimated Areal Extent of 2012 Wetland Hydrology

September 1, 2011 through August 31, 2012

Map based on 2012 Farm Service Agency digital orthophotography, Stephenson County, Illinois  
(USDA-FSA 2012)

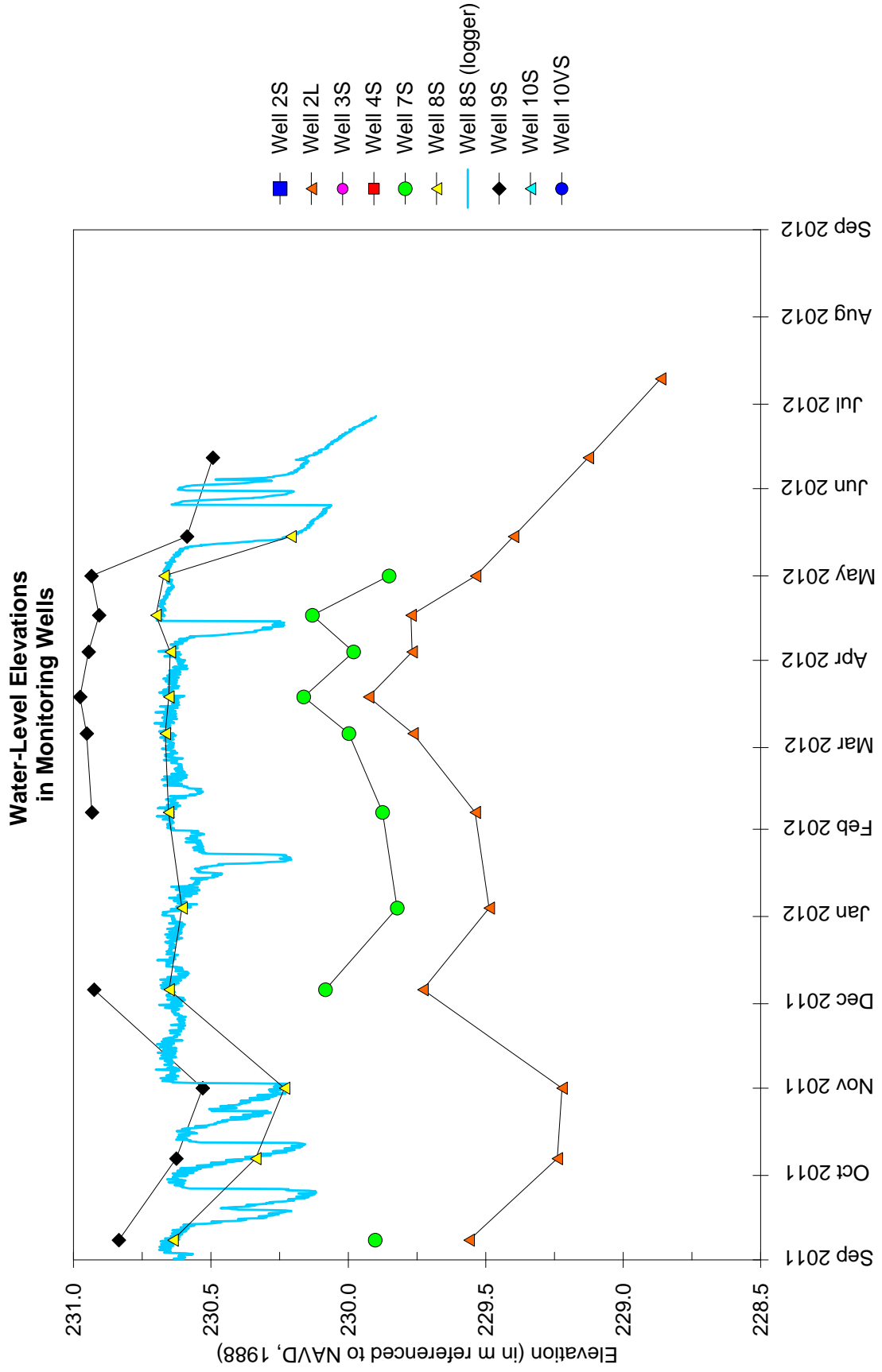


### 2012 Wetland Hydrology

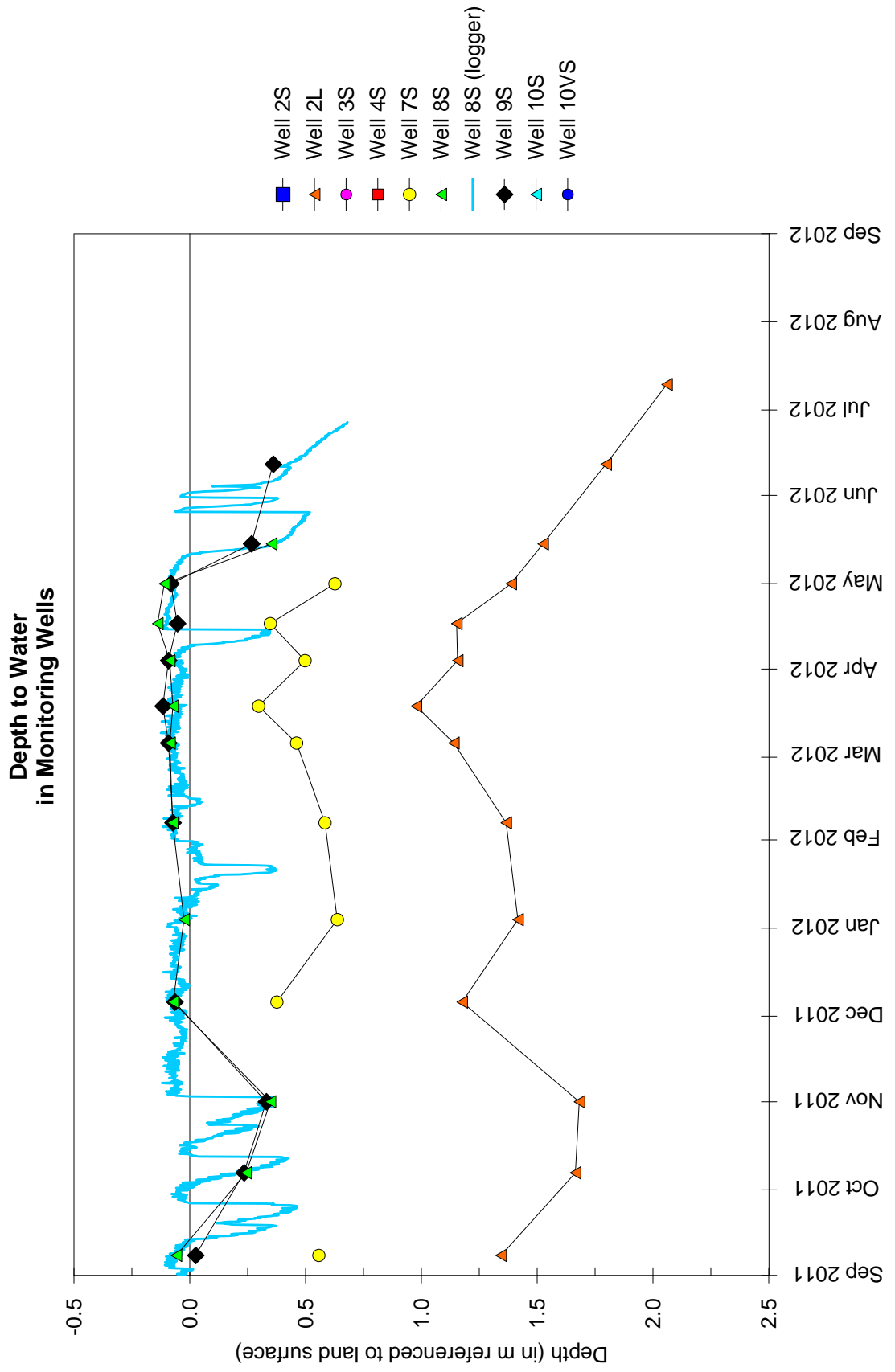
- |                       |   |
|-----------------------|---|
| ○ monitoring well     | <span style="display: inline-block; width: 20px; height: 10px; background-color: yellow; border: 1px solid black;"></span> > 5% of the growing season<br>(1987 Manual)  |
| □ surface-water gauge | <span style="display: inline-block; width: 20px; height: 10px; background: repeating-linear-gradient(45deg, transparent, transparent 2px, black 2px, black 4px); border: 1px solid black;"></span> > 12.5% of the growing season<br>(1987 Manual) |
| ☆ rain gauge          | <span style="display: inline-block; width: 20px; height: 10px; border: 2px solid red;"></span> 14 days or more<br>(2010 Midwest Region Supplement)  |



# **Former Weber Property Wetland Mitigation Site** September 1, 2011 through August 31, 2012



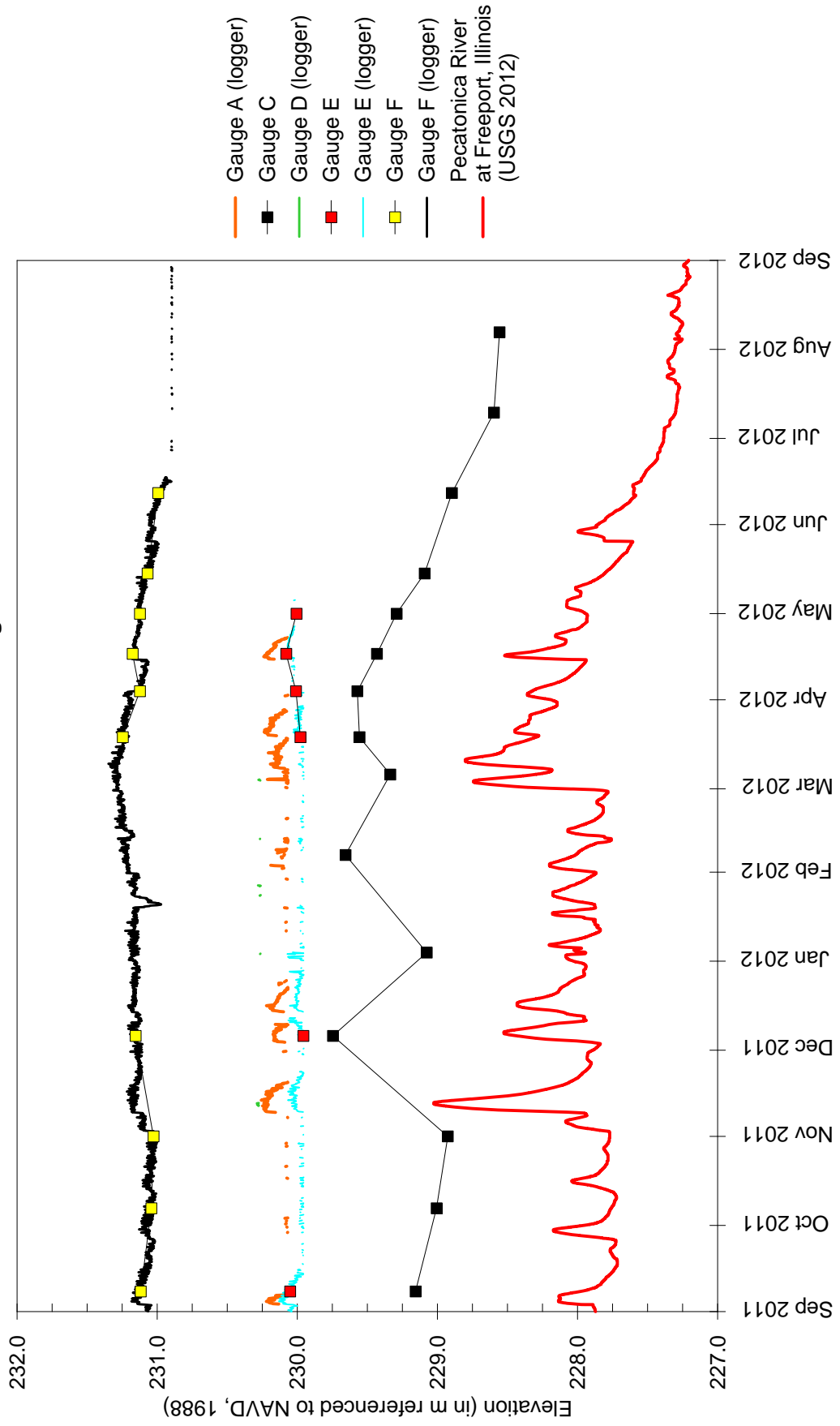
# Former Weber Property Wetland Mitigation Site September 1, 2011 through August 31, 2012





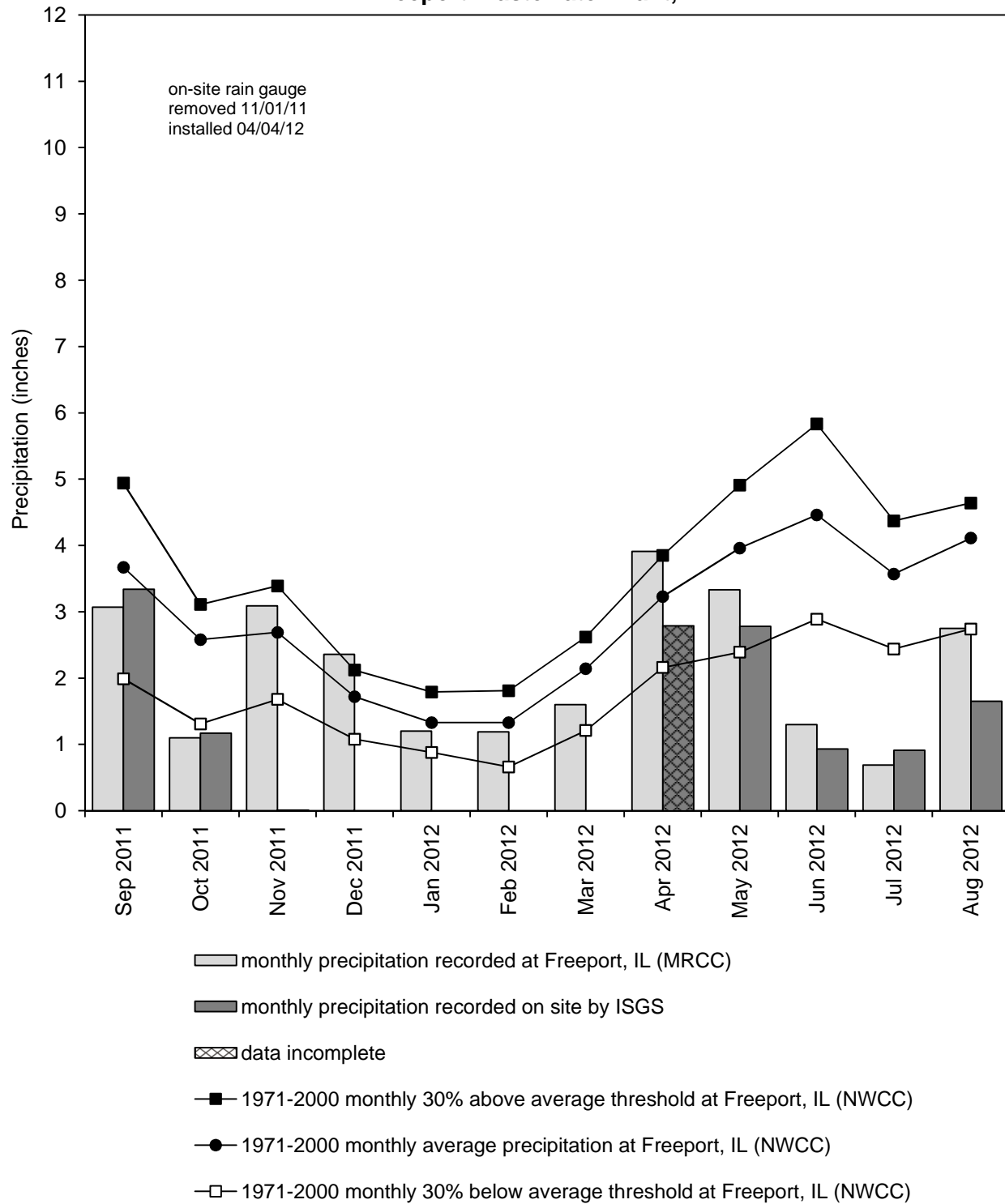
# Former Weber Property Wetland Mitigation Site September 1, 2011 through August 31, 2012

Water-Level Elevations  
at Surface-Water Gauges



# Former Weber Property Wetland Mitigation Site September 2011 through August 2012

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



**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: Jessica L. B. Monson**

**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.
- Spring 2011: ISGS was notified by IDOT to begin post-construction monitoring.

**WETLAND HYDROLOGY CALCULATION FOR 2012**

The target compensation area for the Max Creek wetland mitigation site is 0.49 ha (1.20 ac). Using the 1987 Manual (Environmental Laboratory 1987), 0.34 ha (0.84 ac) out of a total site area of approximately 1.20 ha (3.00 ac) satisfied wetland hydrology criteria for greater than 5% of the growing season, and none of the site satisfied wetland hydrology for greater than 12.5% of the growing season. Using the 2010 Midwest Region Supplement (USACE 2010) to the 1987 Manual, 0.77 ha (1.90 ac) satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

- The median date that the growing season begins in nearby Anna, Illinois, is March 31 and the season lasts 225 days (MRCC 2012); According to the 1987 Manual, 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, February 16 was the starting date of the 2012 growing season based on soil temperatures measured at the wetland mitigation site.
- Total precipitation at the Cape Girardeau, Missouri, weather station for the period from September 2011 through August 2012 was 89% of normal, and Spring 2012 (March through May) precipitation was 36% of normal.
- In 2012, wells 9S and 10S satisfied wetland hydrology criteria for greater than 5% of the growing season but no wells satisfied wetland hydrology criteria for greater than 12.5% of the growing season, according to the 1987 Manual. According to the 2010 Midwest Region Supplement, wells 9S, 10S, 11S, and 12S satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season.
- Gauge A showed that Max Creek flooded the site once during the 2012 growing season. However, the duration of inundation from this flood did not satisfy any wetland hydrology criteria.

- Gauge E showed that ponded surface water in the mitigation area was at or above 115.61 m (379.29 ft) for greater than 5% of the growing season but did not persist for greater than 12.5% of the growing season, according to the 1987 Manual. Water level at Gauge E was at or above 115.68 m (379.52 ft) for 14 or more consecutive days during the growing season, according to the 2010 Midwest Region Supplement.

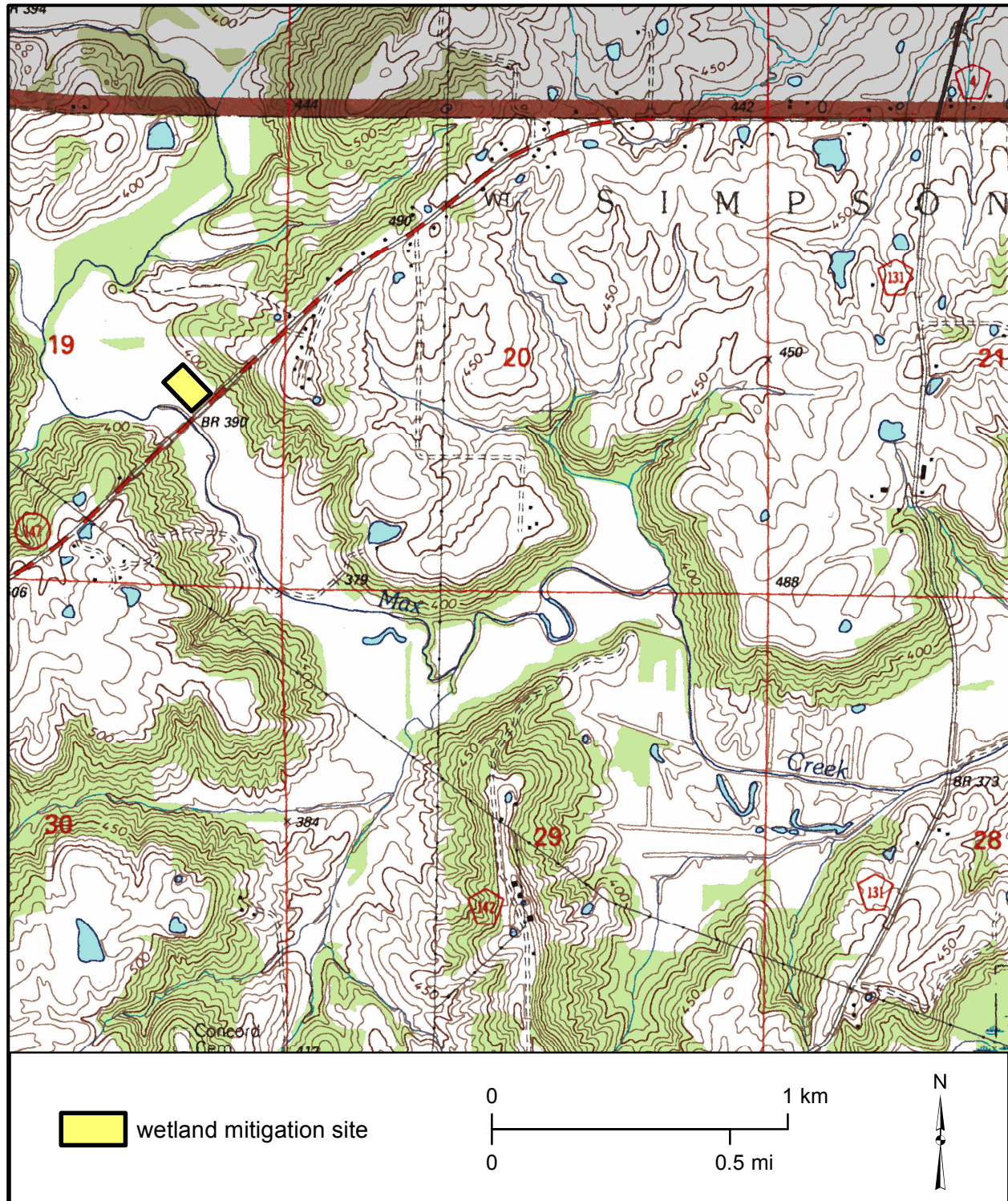
#### PLANNED FUTURE ACTIVITIES

- Water-level monitoring is expected to continue through 2016 or until no longer required by IDOT.

# Max Creek Wetland Mitigation Site (IL 147, FAS 932)

## General Study Area and Vicinity

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





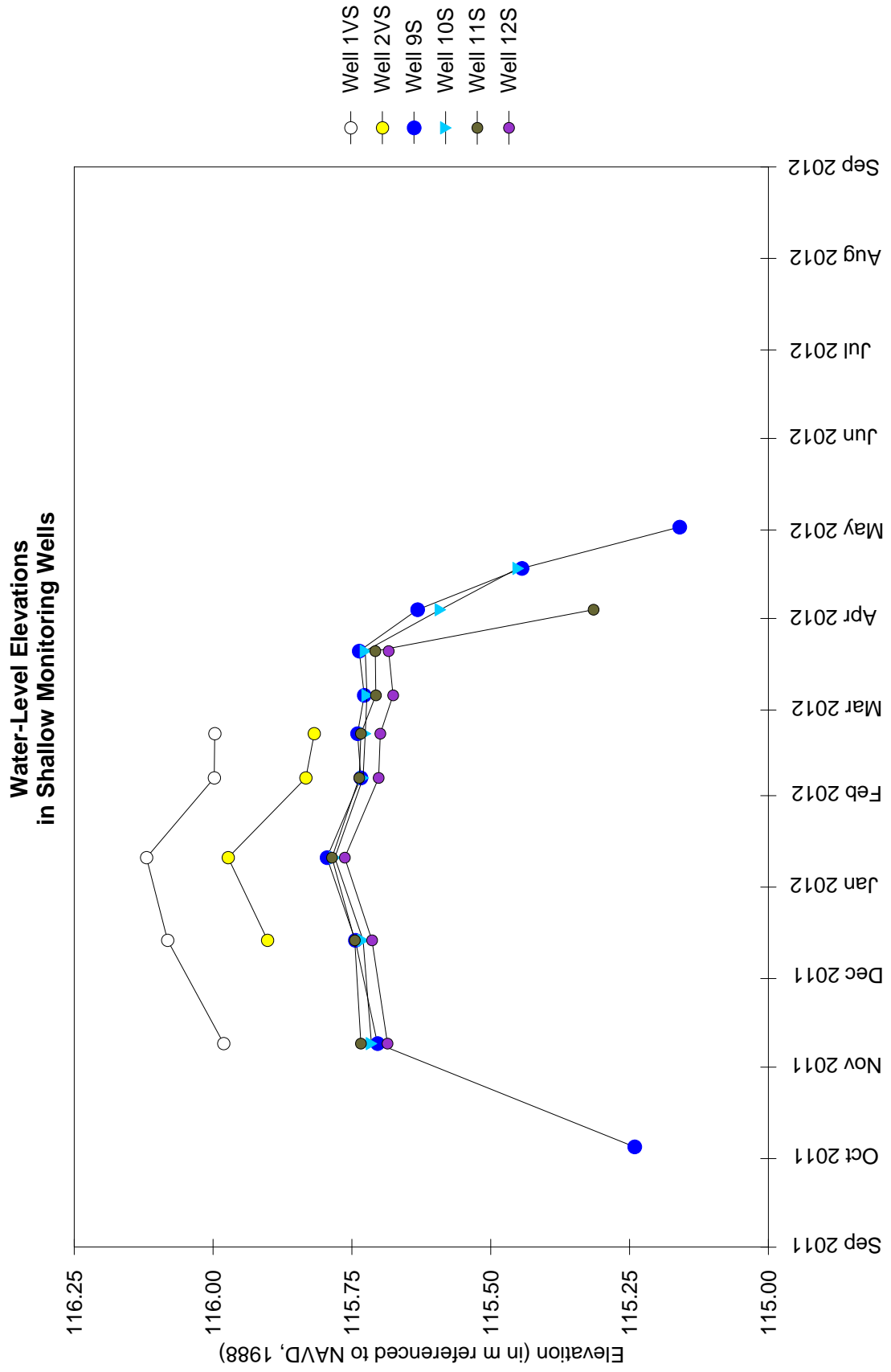
# **Max Creek Wetland Mitigation Site (IL 147, FAS 932)**

**Estimated Areal Extent of 2012 Wetland Hydrology**  
September 1, 2011 through August 31, 2012

Map based on 2012 Farm Service Agency digital orthophotography, Johnson County, Illinois (USDA-FSA 2012)

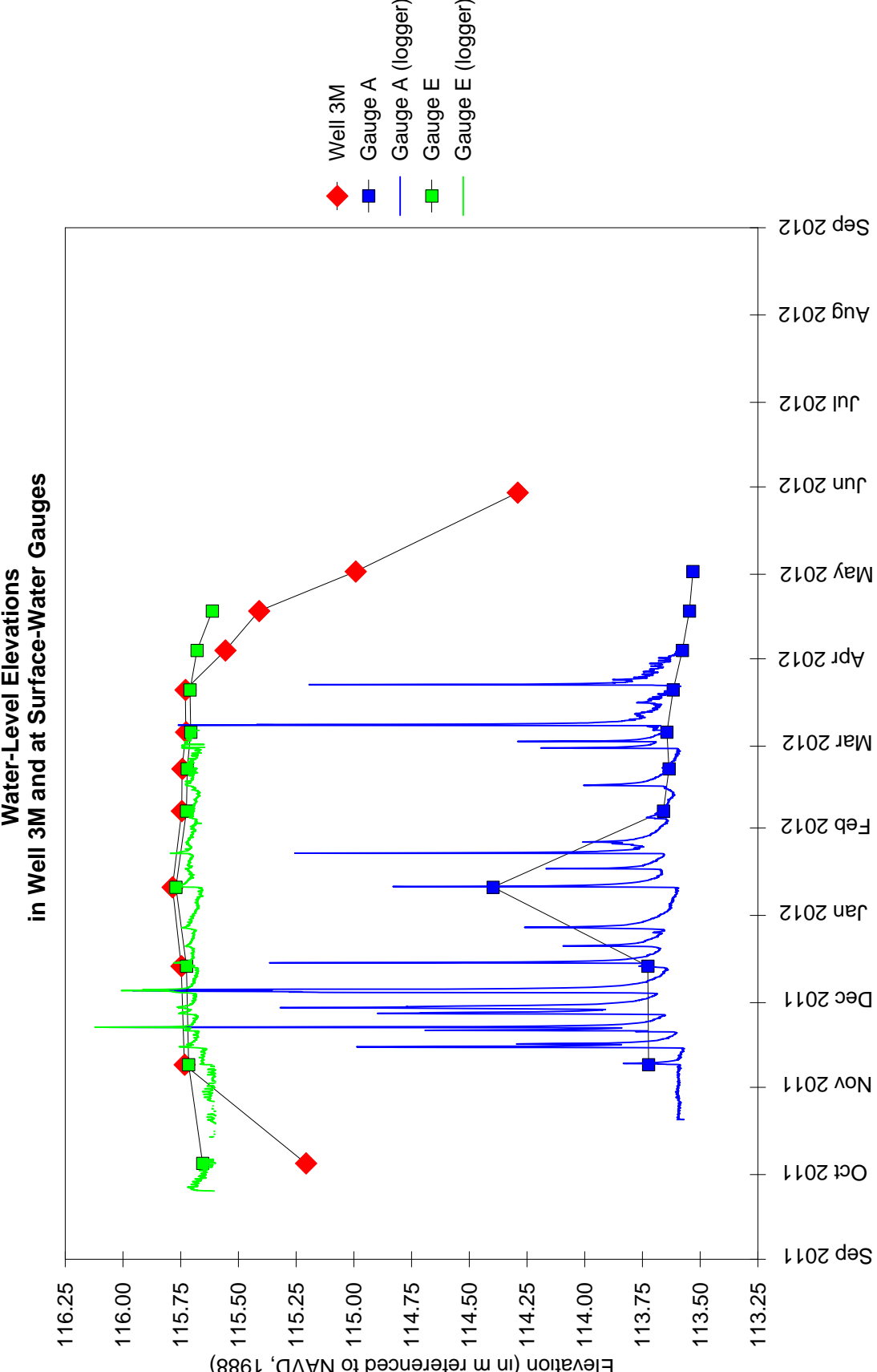


# **Max Creek Wetland Mitigation Site** September 1, 2011 through August 31, 2012

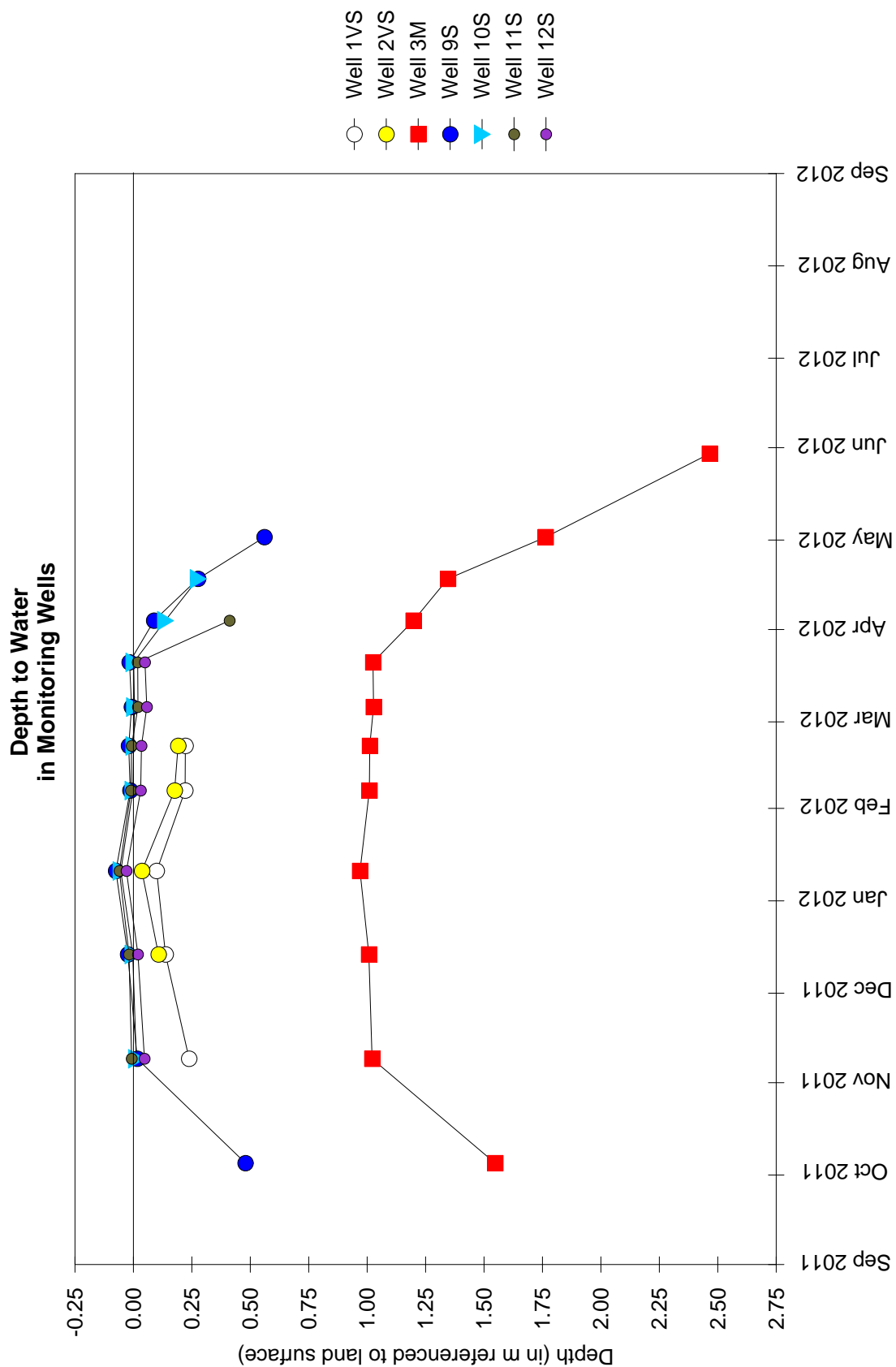




# Max Creek Wetland Mitigation Site September 1, 2011 through August 31, 2012

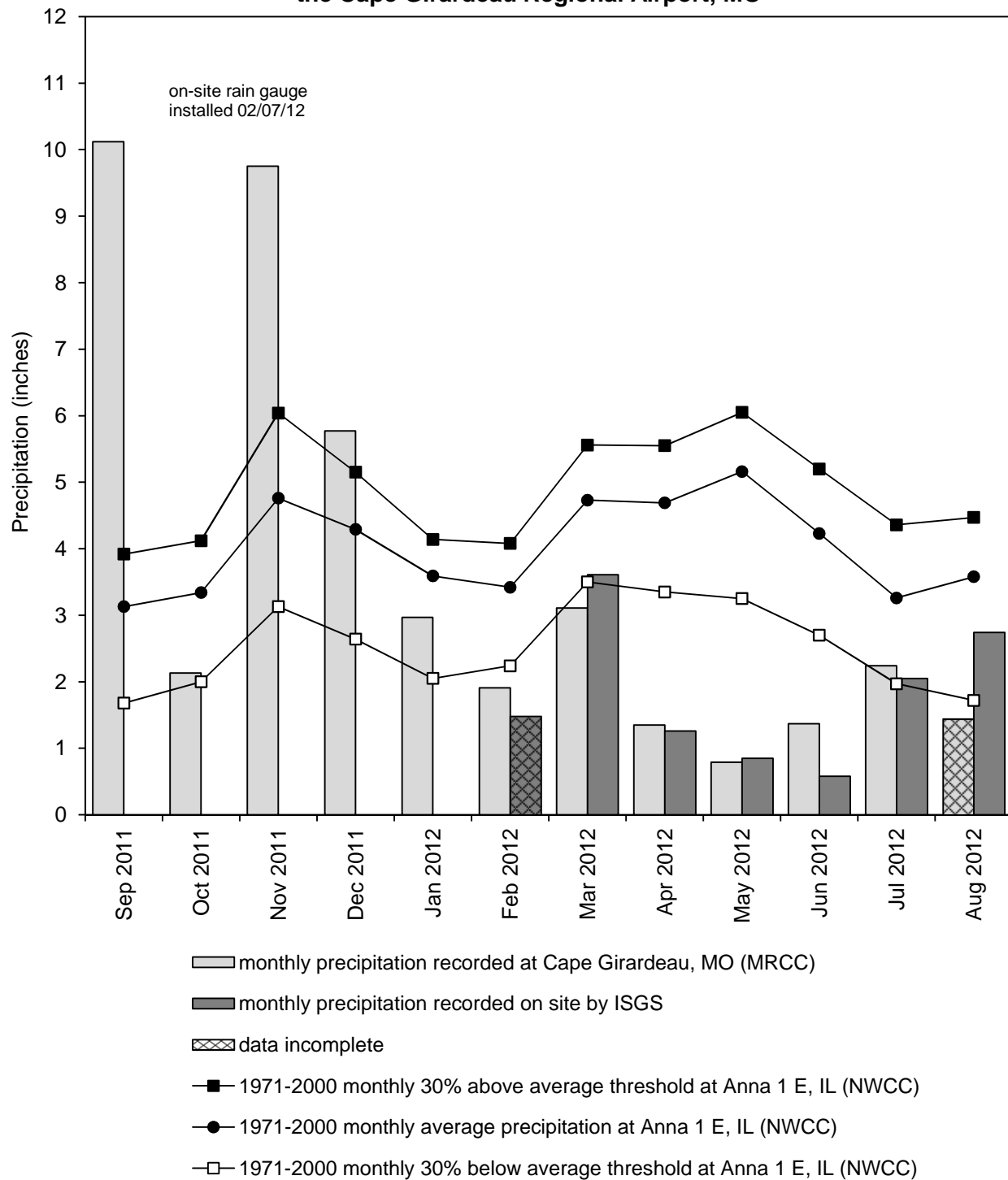


# Max Creek Wetland Mitigation Site September 1, 2011 through August 31, 2012



# **Max Creek Wetland Mitigation Site** **September 2011 through August 2012**

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



**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: Jessica L. B. Monson**

**SITE HISTORY**

- Fall 2009: Wetland construction was started.
- March 2010: ISGS submitted a Level II hydrogeologic characterization report to IDOT (ISGS Open-File Series 2010-3).
- August 2011: IDOT reported the site had been graded and drainage control structures were completed. ISGS was tasked by IDOT to monitor the site for performance criteria outlined in the wetland compensation plan, and post-construction water-level monitoring was initiated.
- September 2011: A levee was constructed along the north portion of the eastern edge of the site.
- October 2011: Trees and a cover crop were planted at the site.

**WETLAND HYDROLOGY CALCULATION FOR 2012**

The target compensation area for the East Cape Girardeau wetland mitigation site is 3.08 ha (7.60 ac). Using the 1987 Manual (Environmental Laboratory 1987), 2.55 ha (6.29 ac) of the total site area of 6.20 ha (15.20 ac) satisfied wetland hydrology criteria for greater than 5% of the 2012 growing season and 1.45 ha (3.58 ac) satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Using the 2010 Midwest Region Supplement (USACE 2010) to the 1987 Manual, 3.95 ha (9.75 ac) satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

- The median date that the growing season begins in nearby Cape Girardeau, Missouri, is March 26, and the season lasts 228 days (MRCC 2012). According to the 1987 Manual, 5% of the growing season is 11 days, and 12.5% of the growing season is 29 days. According to the 2010 Midwest Region Supplement (USACE 2010), February 15 was the starting date of the 2012 growing season based on soil temperatures measured at the site and at the nearby Tamms wetland mitigation site (ISGS site #71).
- Total precipitation for the monitoring period at the Cape Girardeau, Missouri, Regional Airport, weather station was 91% of normal. During Spring 2012 (March through May), precipitation was 36% of normal.

- In 2012, water levels measured in monitoring wells 12VS, 16VS, and 16S satisfied wetland hydrology criteria for greater than 5% of the growing season, while no wells satisfied wetland hydrology criteria for greater than 12.5% of the growing season, according to the 1987 Manual. According to the 2010 Midwest Region Supplement, water levels measured in monitoring wells 11VS, 12VS, 13VS, 16VS, 16S, 17VS, and 18VS satisfied the wetland hydrology criteria for 14 or more consecutive days of the growing season.
- Surface-water levels measured at Gauge E indicated inundation at or below 100.55 m (329.89 ft) for greater than 5% of the growing season, and inundation at or below 100.49 m (329.68 ft) for greater than 12.5% of the growing season, according to the 1987 Manual. Surface-water levels measured at Gauge B did not show inundation for greater than 5% of the growing season, according to the 1987 Manual. Per the 2010 Midwest Region Supplement, surface-water levels measured at Gauges B and E indicated inundation at or below 100.43 m and 100.60 m (329.50 ft and 330.06 ft), respectively, for 14 or more consecutive days of the growing season.

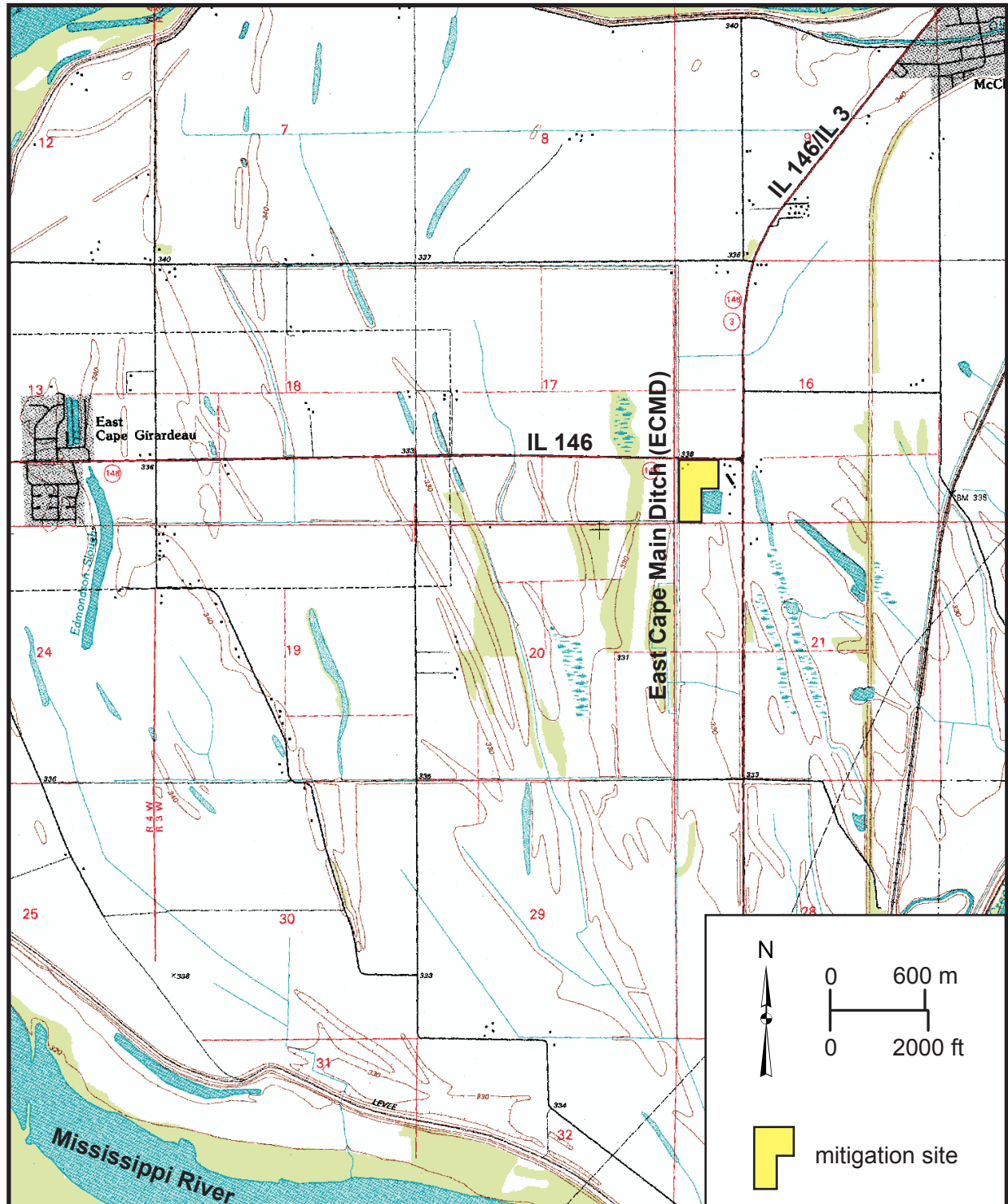
#### PLANNED FUTURE ACTIVITIES

- The ISGS plans to produce a post-construction topographic map of the site.
- Monitoring will continue at the site until no longer required by IDOT.

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

## 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

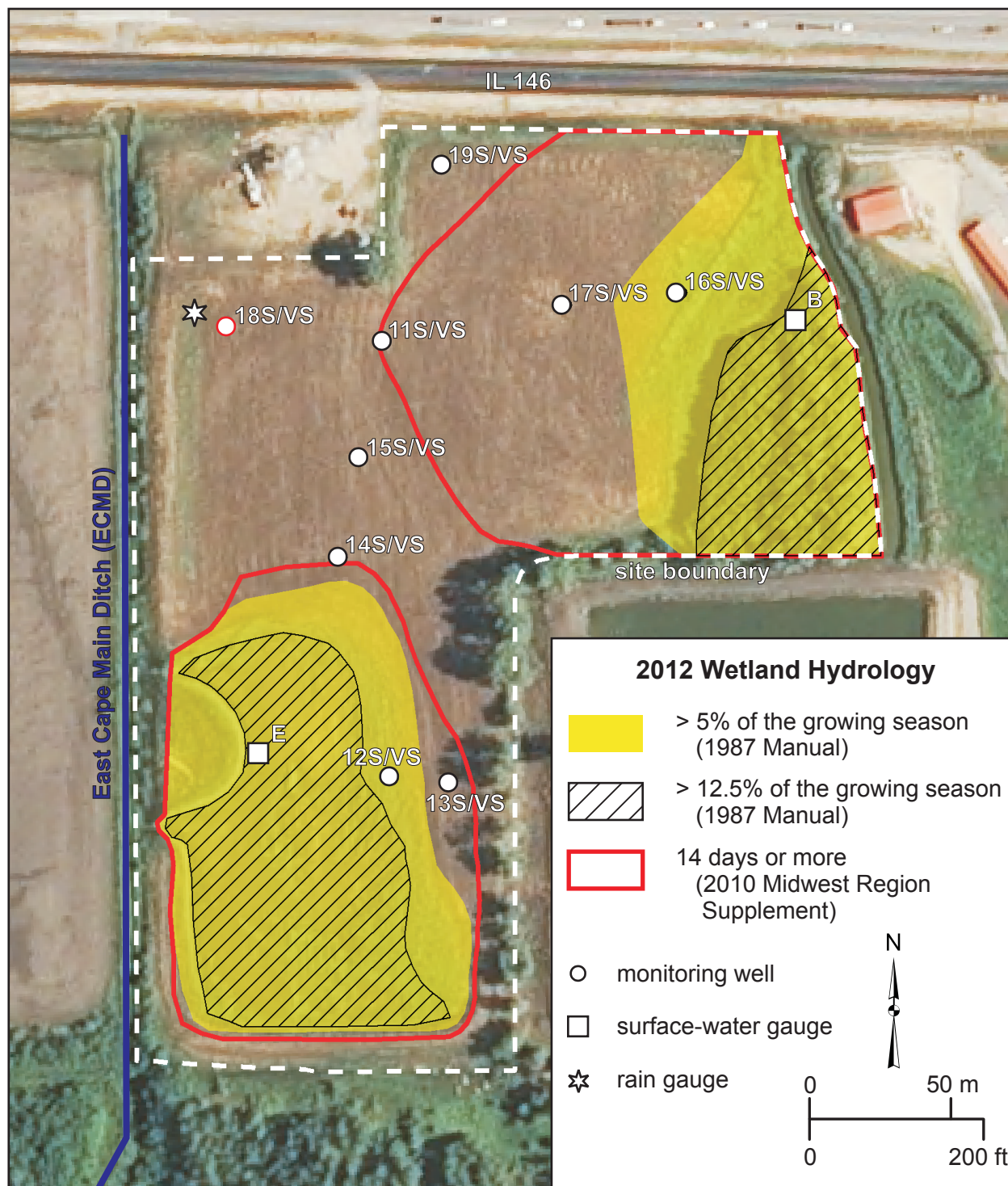


# East Cape Girardeau Wetland Mitigation Site (IL 146, FAP 312)

## Estimated Areal Extent of 2012 Wetland Hydrology

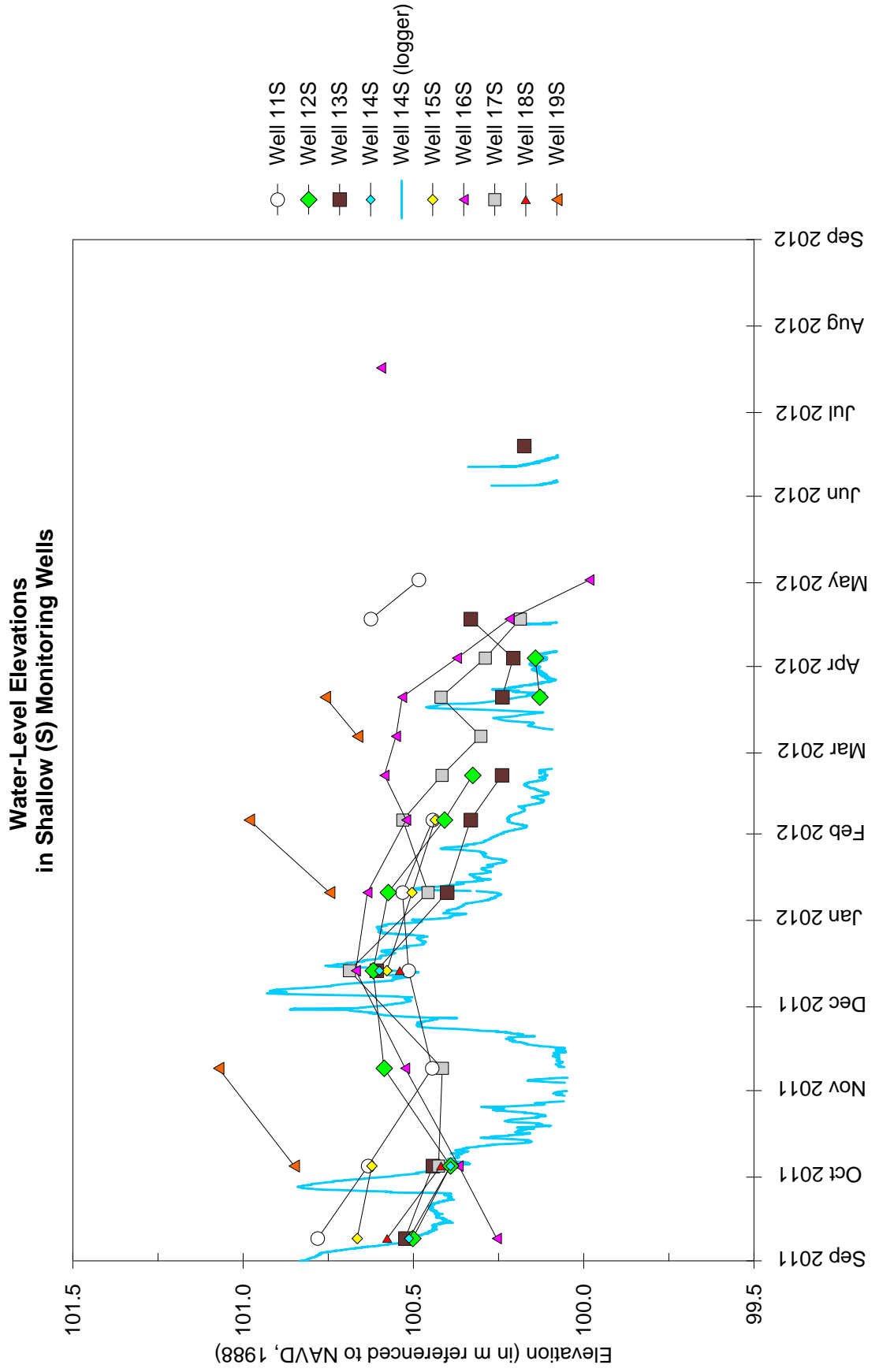
September 1, 2011 through August 31, 2012

Map based on 2012 Farm Service Agency digital orthophotography, Alexander County, Illinois  
(USDA-FSA 2012)

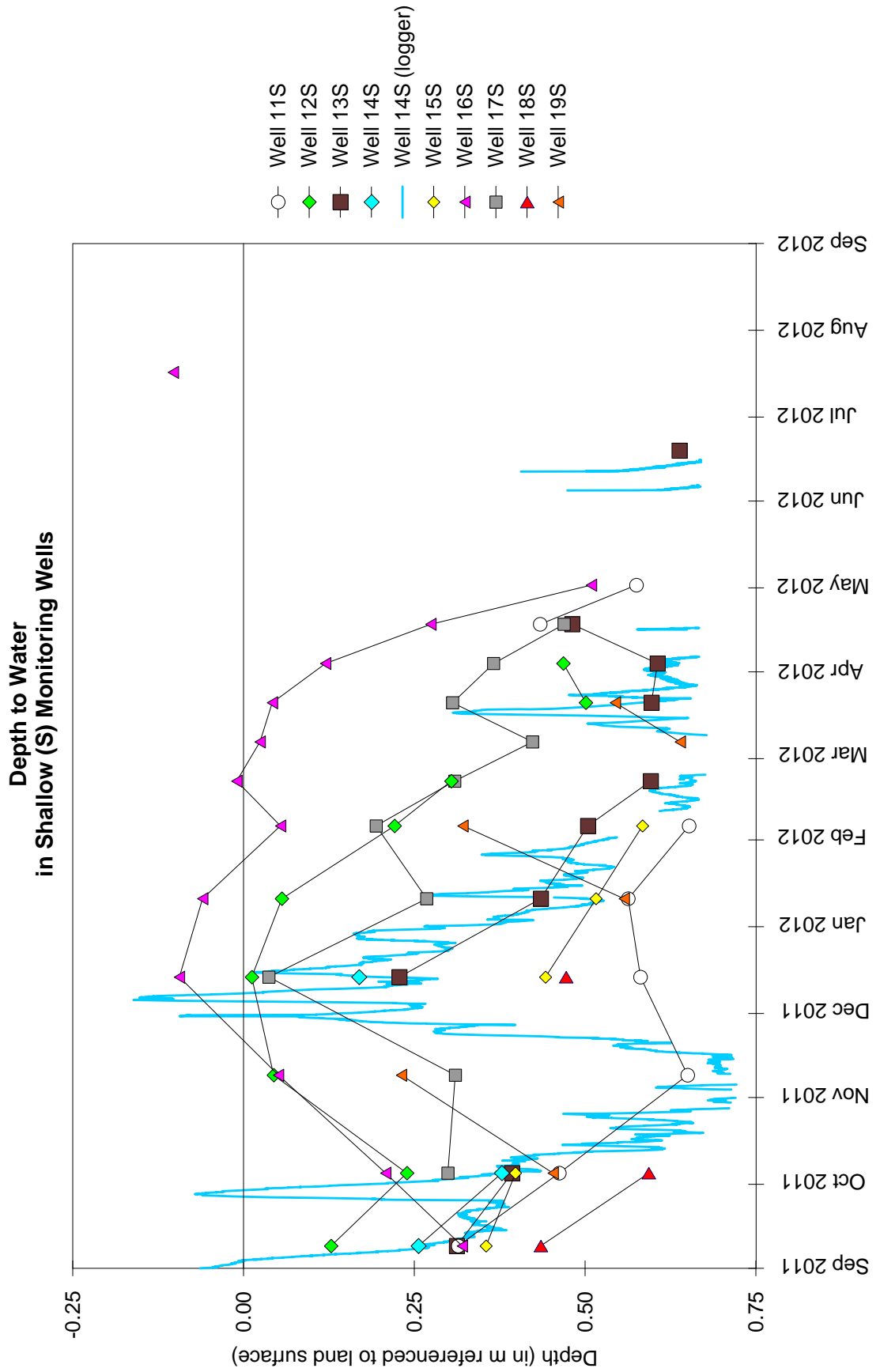




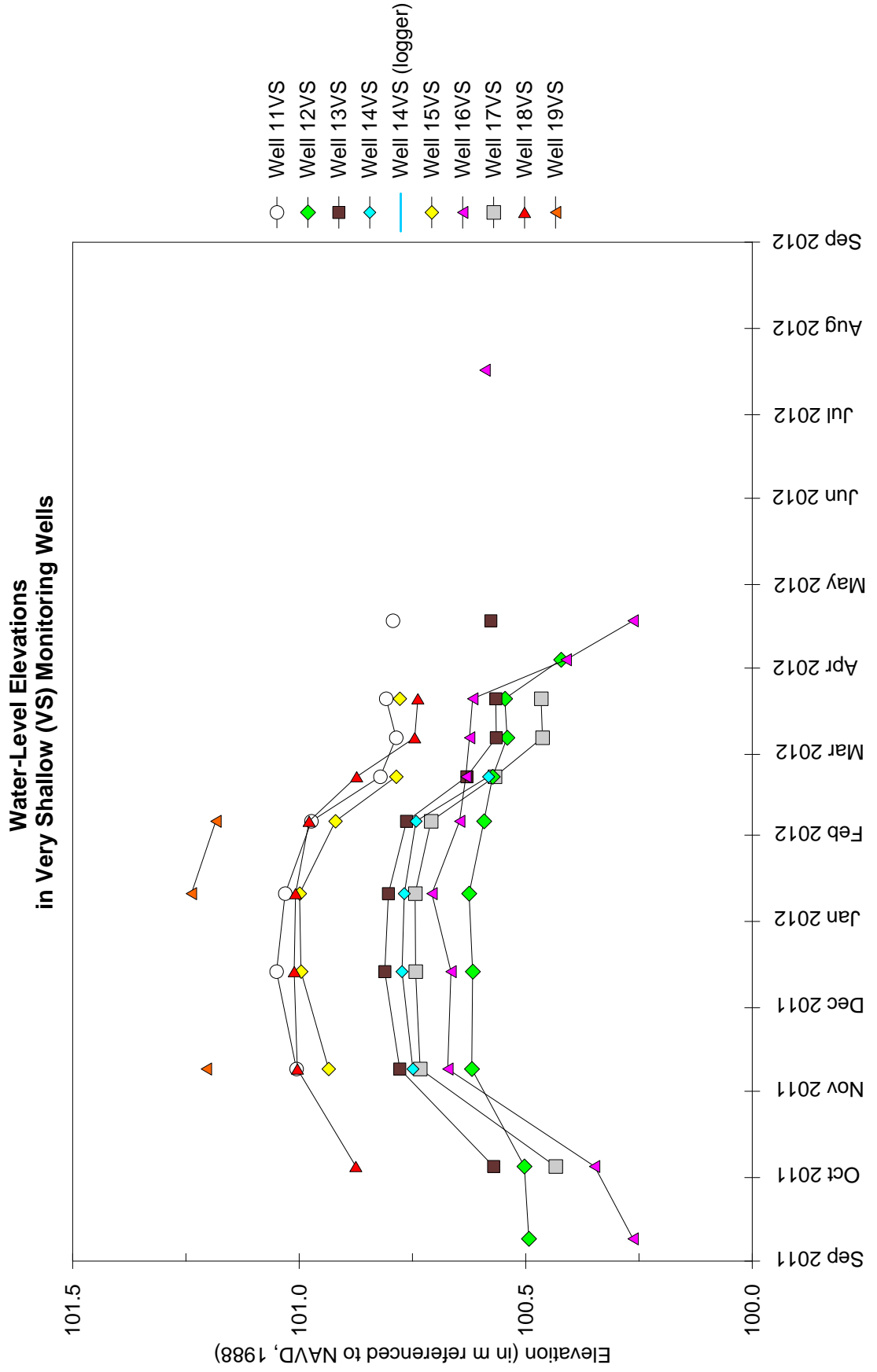
# **East Cape Girardeau Wetland Mitigation Site** **September 1, 2011 through August 31, 2012**



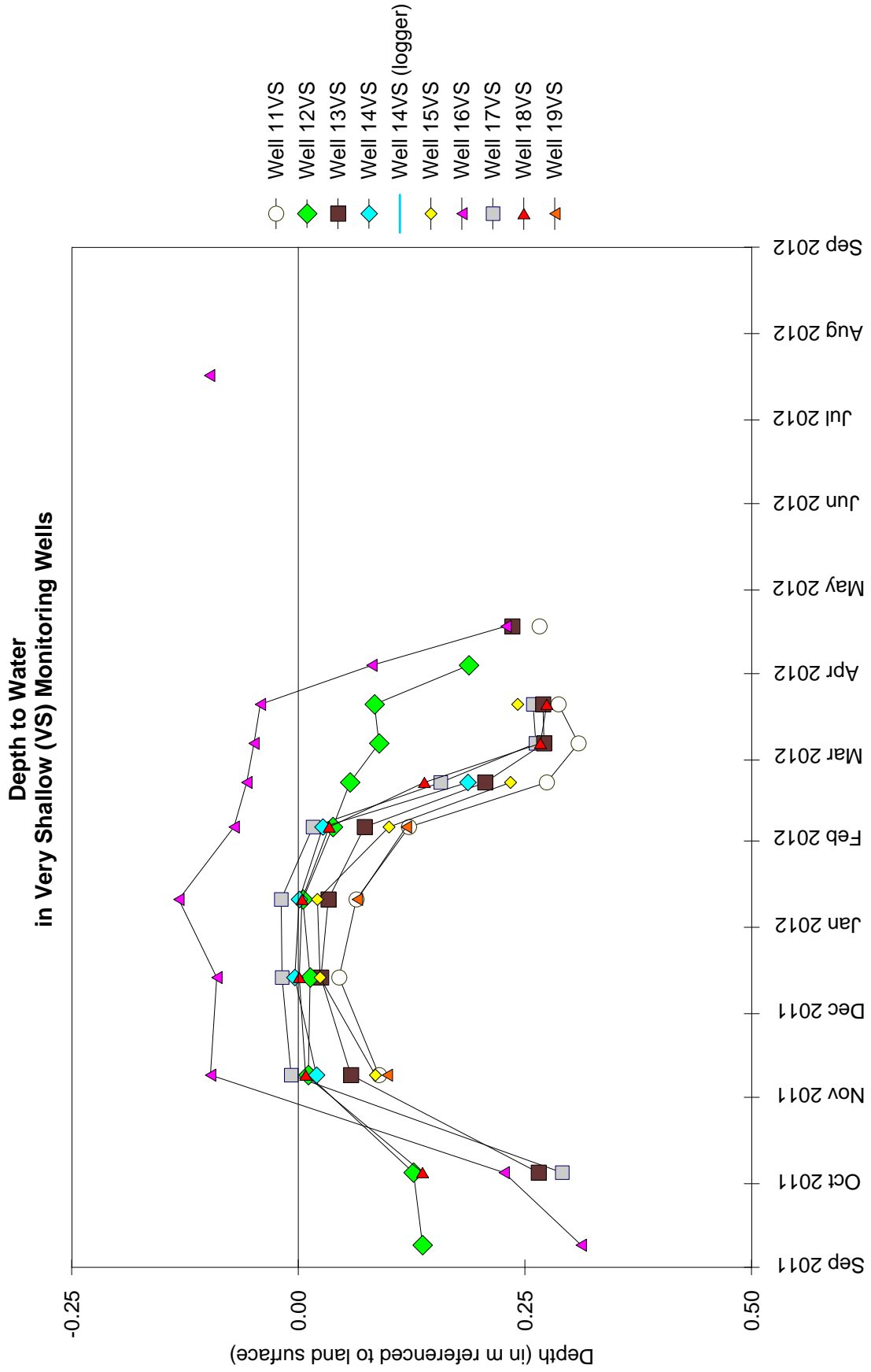
# **East Cape Girardeau Wetland Mitigation Site** **September 1, 2011 through August 31, 2012**



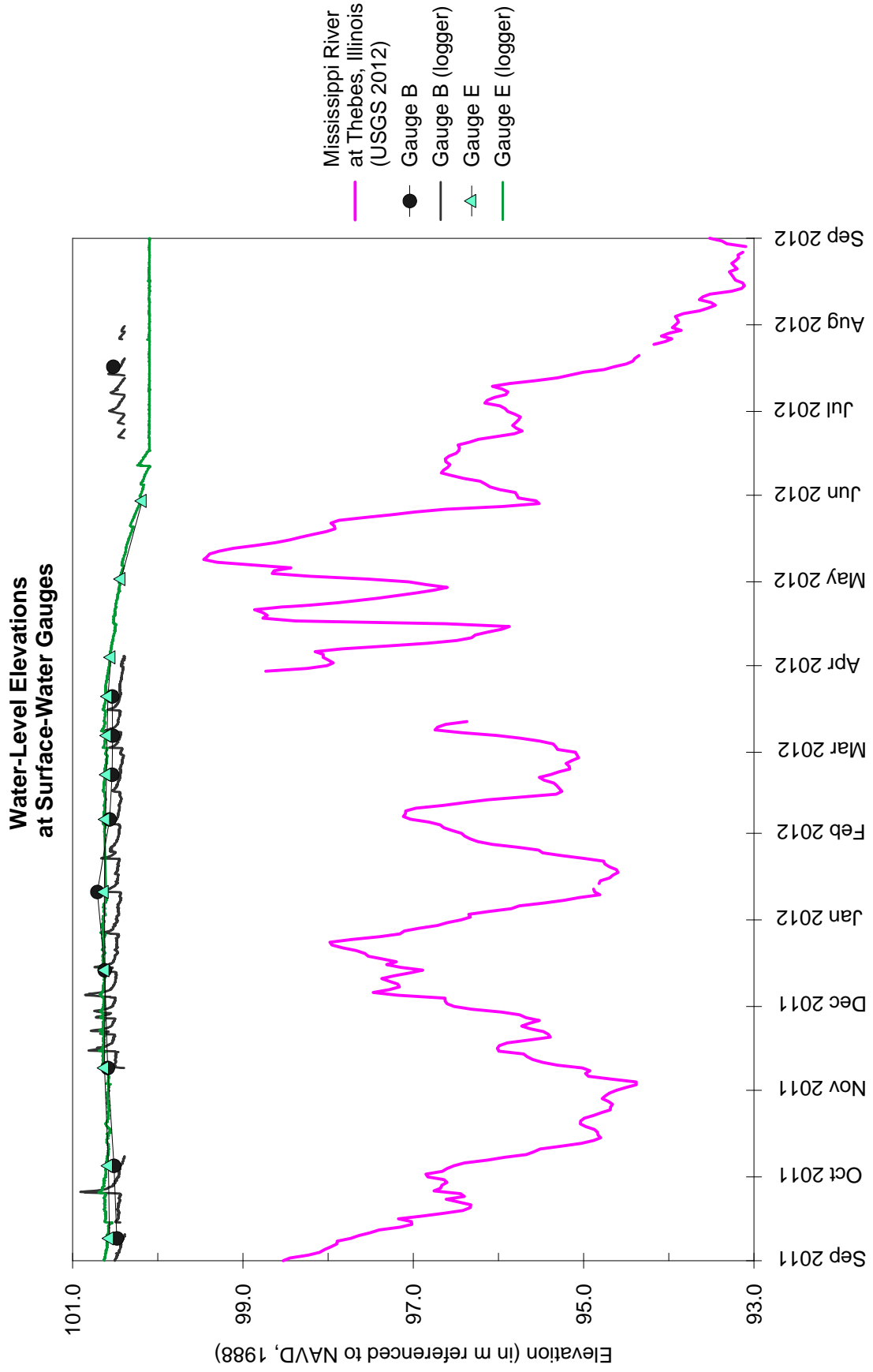
# **East Cape Girardeau Wetland Mitigation Site** **September 1, 2011 through August 31, 2012**



# **East Cape Girardeau Wetland Mitigation Site** September 1, 2011 through August 31, 2012

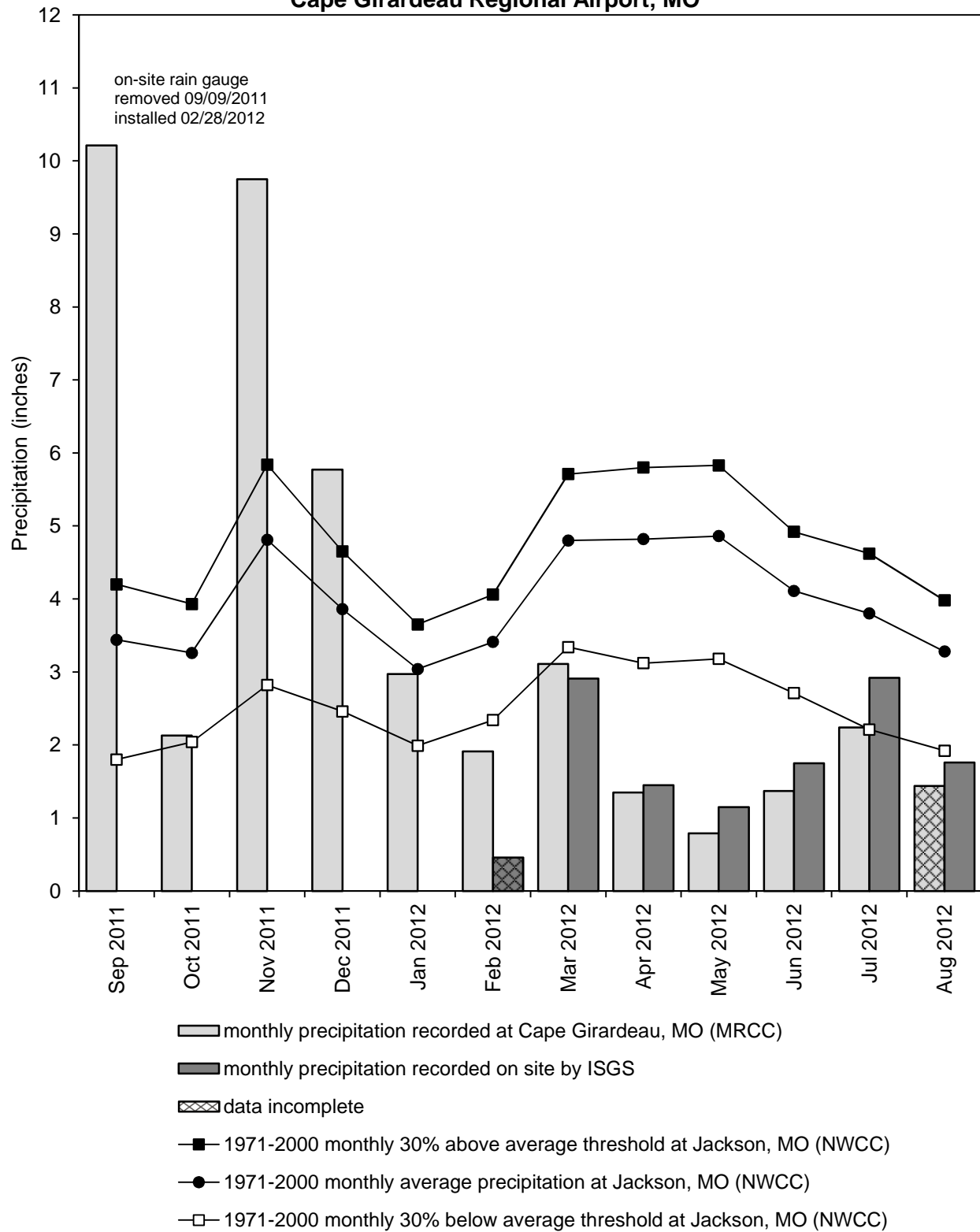


# **East Cape Girardeau Wetland Mitigation Site** **September 1, 2011 through August 31, 2012**



# **East Cape Girardeau Wetland Mitigation Site** **September 2011 through August 2012**

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



**LAWRENCE COUNTY  
POTENTIAL WETLAND MITIGATION BANK**

**ISGS #82**

Sequence #14912

Lawrence County, near Lawrenceville, Illinois

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

**Secondary Project Manager: Jessica L. B. Monson**

**SITE HISTORY**

- June 2009: An Initial Site Evaluation 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.
- December 2011: A Level II hydrologic characterization report (Open File Series 2011-4) was submitted to IDOT.

**WETLAND HYDROLOGY CALCULATION FOR 2012**

Using the 1987 Manual (Environmental Laboratory 1987), 0.38 ha (0.94 ac), of a total site area of 29.58 ha (73.10 ac), satisfied wetland hydrology criteria for greater than 5% of the 2012 growing season, and 0.38 ha (0.94 ac) satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Using the 2010 Midwest Region Supplement (USACE 2010) to the 1987 Manual, 1.83 ha (4.52 ac) satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

- The median date that the growing season begins at the Olney, Illinois, weather station is April 7, and the season lasts 209 days (MRCC 2012); 5% of the growing season is 10 days, and 12.5% of the growing season is 26 days, according to the 1987 Manual. According to the 2010 Midwest Region Supplement, March 6 was the starting date of the 2012 growing season based on soil temperatures measured at the site.
- Total precipitation for the monitoring period as recorded at the Lawrenceville, Illinois, weather station was 77% of normal, and precipitation in Spring 2012 (March through May) was 28% of normal.
- In 2012, water levels measured in none of the soil-zone monitoring wells satisfied wetland hydrology criteria for greater than 5% of the growing season, or for greater than 12.5% of the growing season, according to the 1987 Manual. In addition, water levels measured in wells 1S, 4S, 6S, and 7S, satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season per the 2010 Midwest Region Supplement.
- Surface-water levels measured at Gauge B reveal that surface water in the depression there was at or above an elevation of 123.80 m (406.16 ft) for at least 5% of the growing season, and at or above 124.00 m (406.82 ft) for at least 12.5% of the growing



season, according to the 1987 Manual, and surface water was at or above 124.20 m (407.47 ft) for 14 or more consecutive days during the growing season per the 2010 Midwest Region Supplement.

#### ADDITIONAL INFORMATION

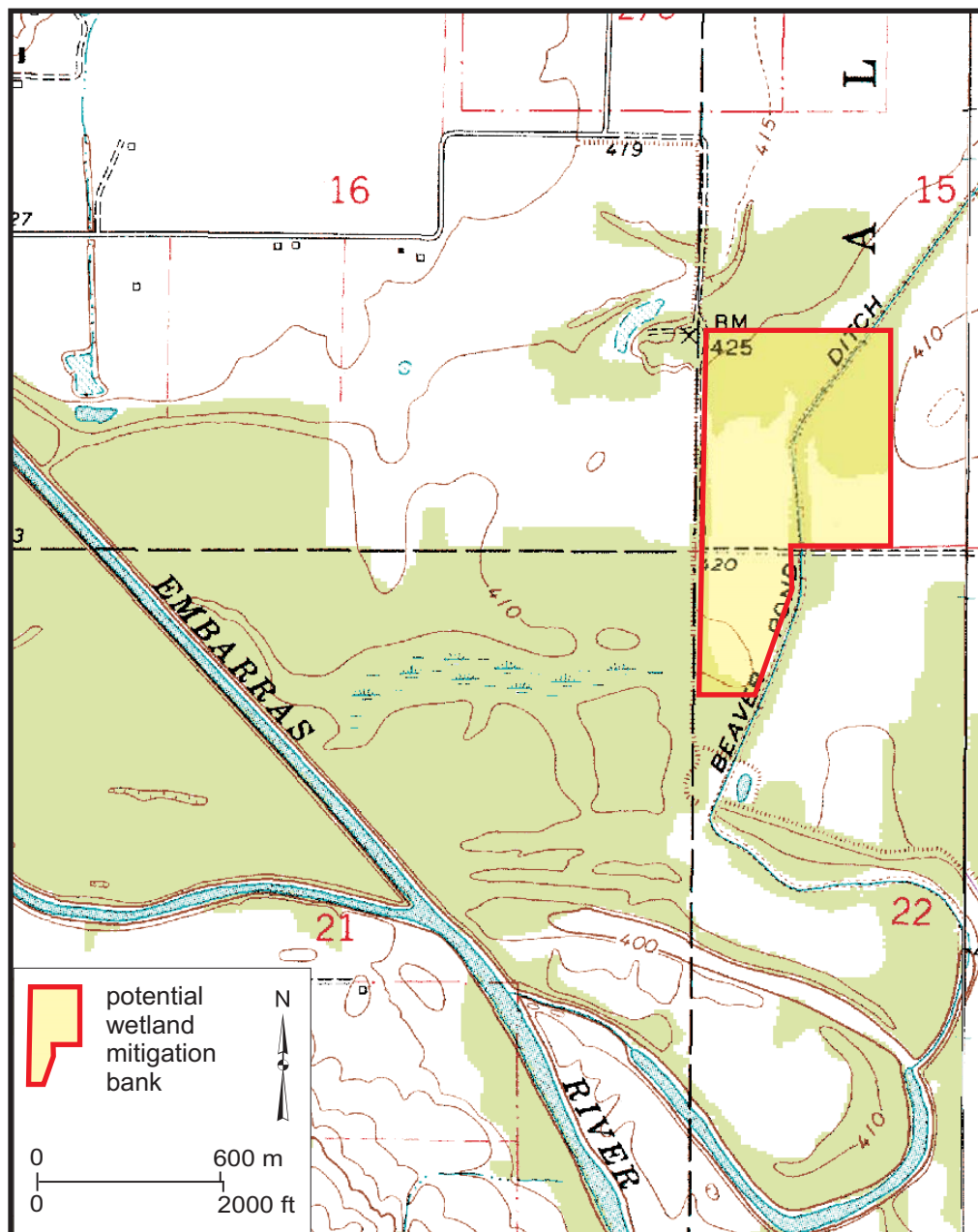
- No flood-stage or action-stage events occurred on the Embarras River during the growing season portion of the monitoring period. Events in April and May likely caused bank-full conditions in Beaver Pond Ditch, but did not cause inundation on the site.

#### 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

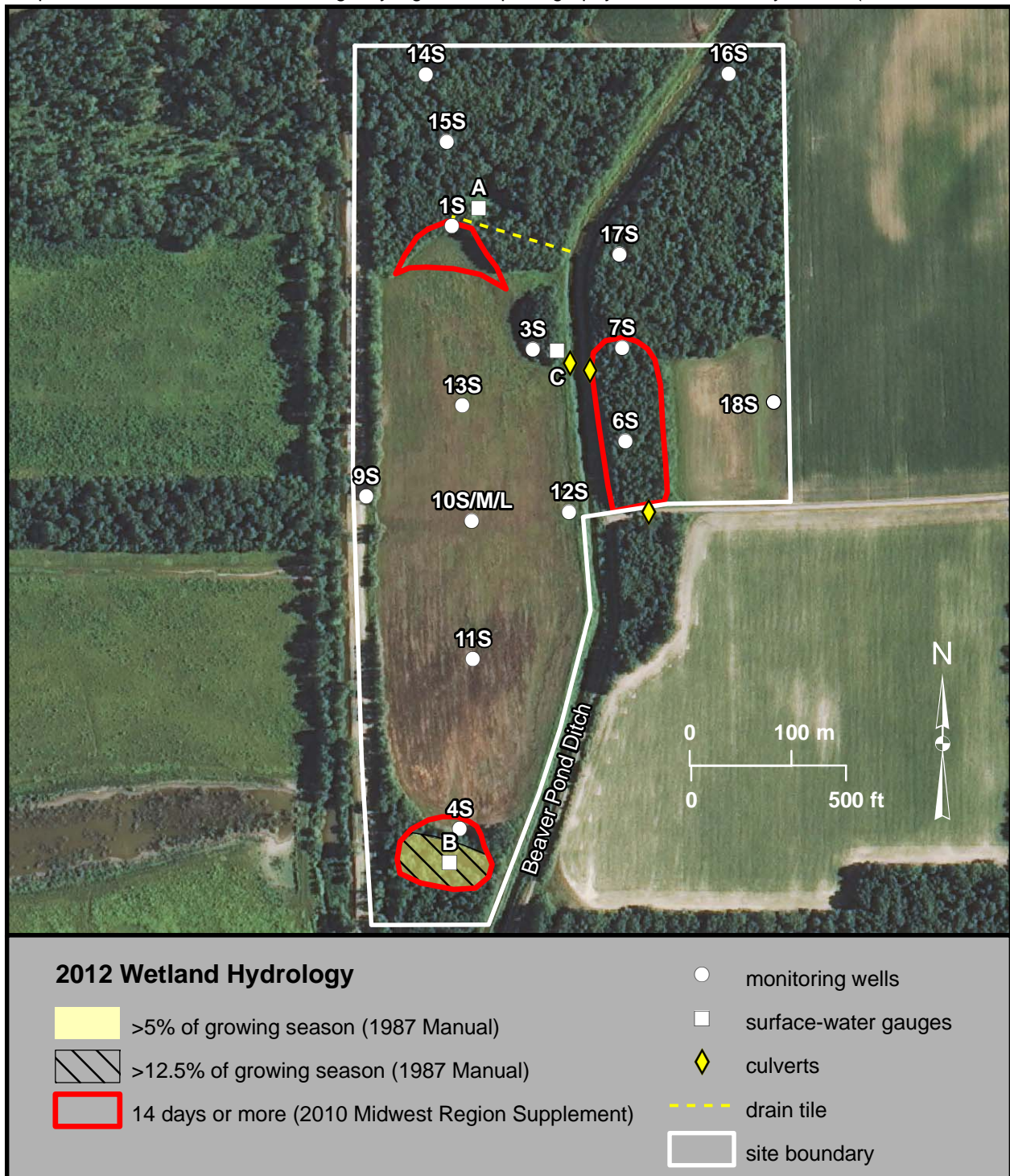


# Lawrence County Potential Wetland Mitigation Bank

## Estimated Areal Extent of 2012 Wetland Hydrology

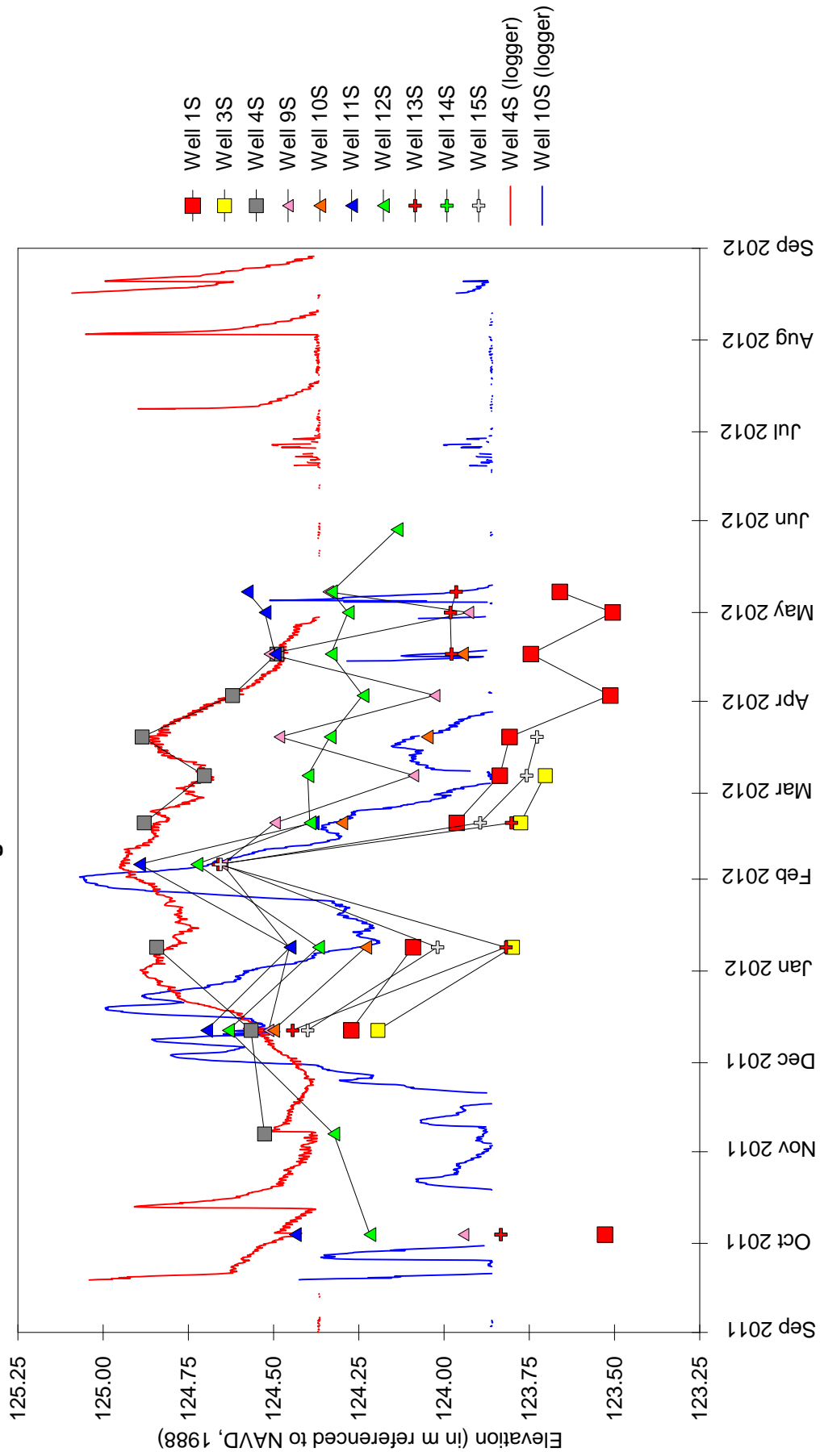
September 1, 2011 through August 31, 2012

Map based on 2012 Farm Service Agency digital orthophotography, Lawrence County, Illinois (USDA-FSA 2012)



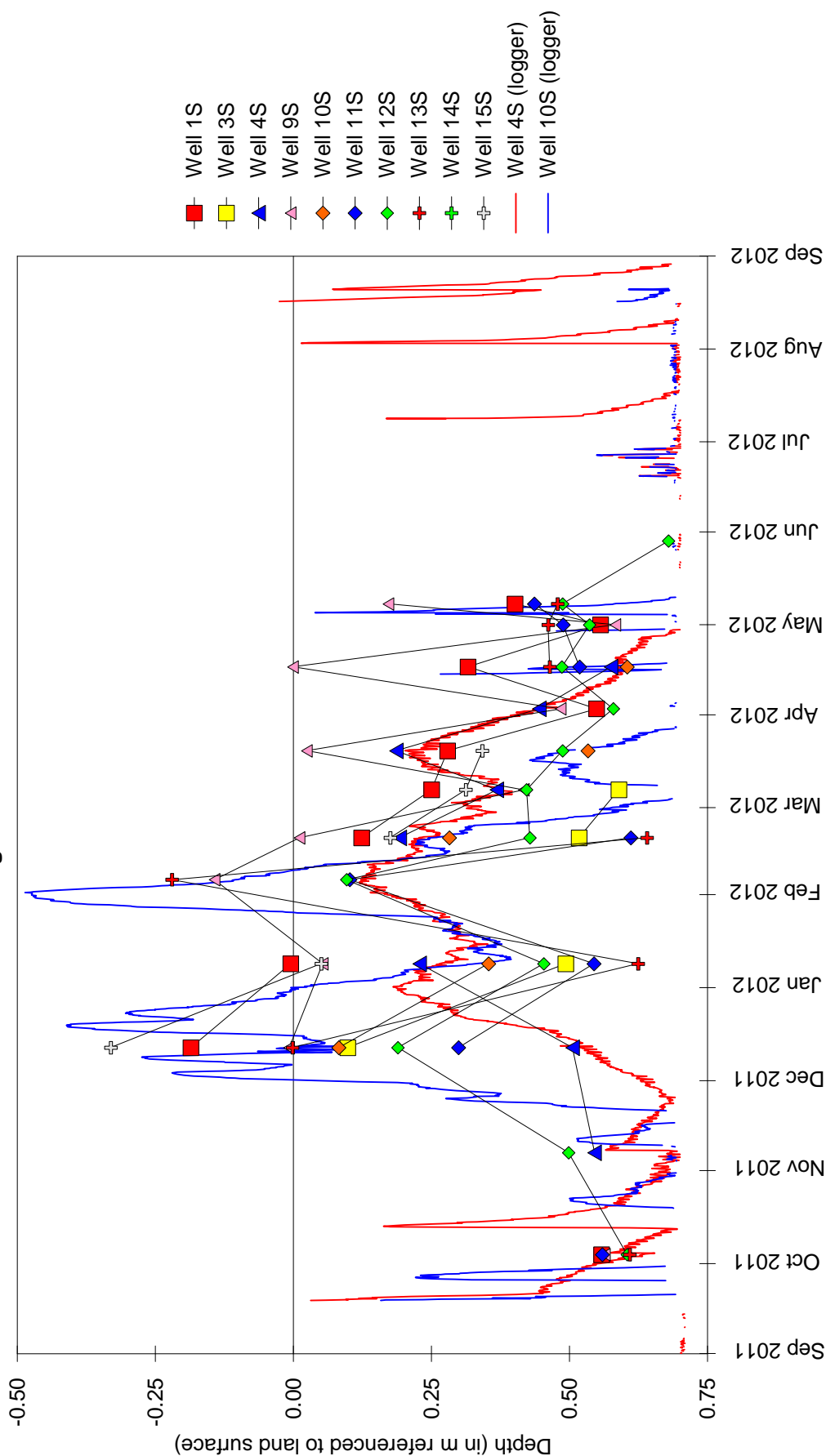
# Lawrence County Potential Wetland Mitigation Bank September 1, 2011 through August 31, 2012

## Water-Level Elevations in Monitoring Wells West of Beaver Pond Ditch

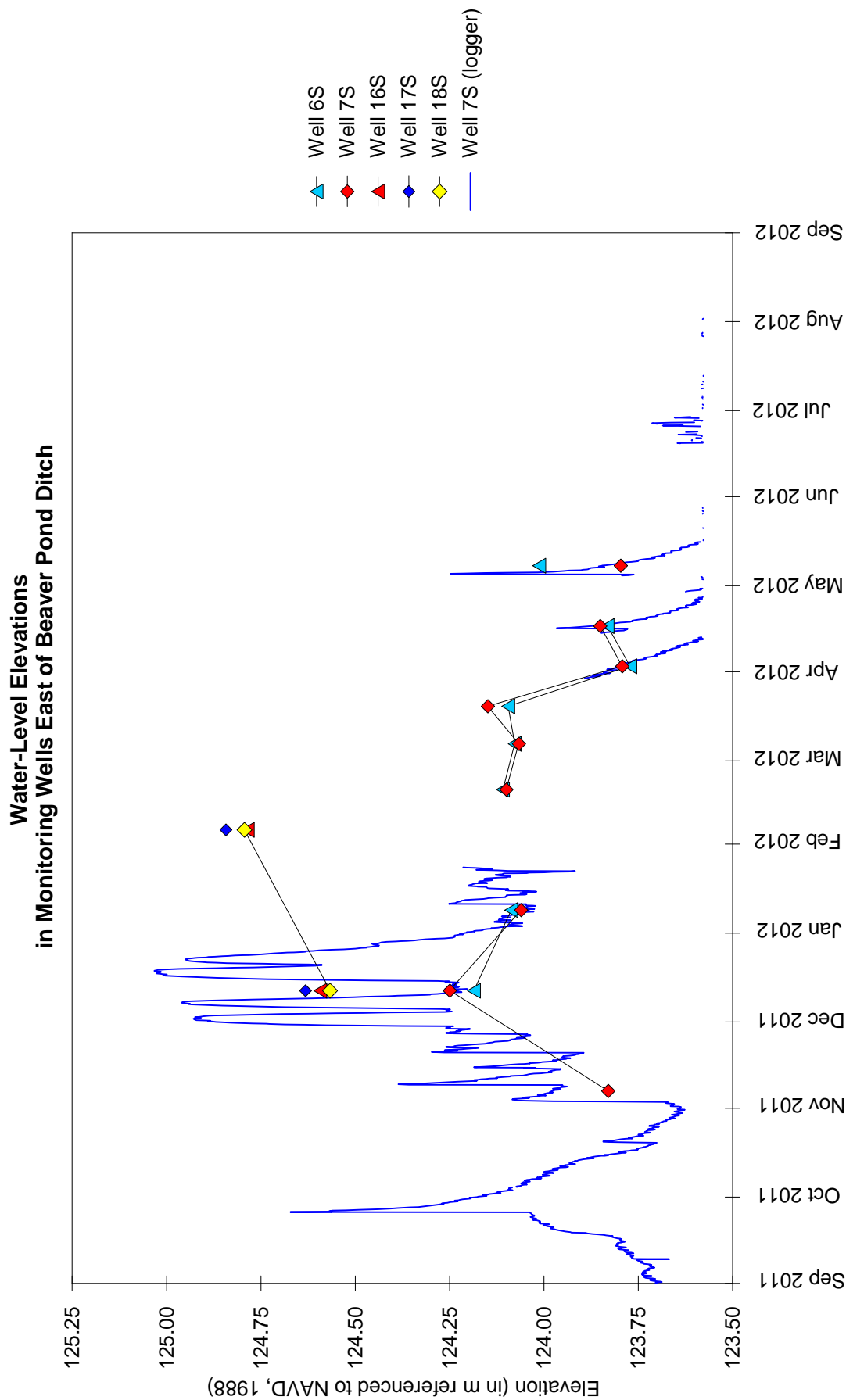


# Lawrence County Potential Wetland Mitigation Bank September 1, 2011 through August 31, 2012

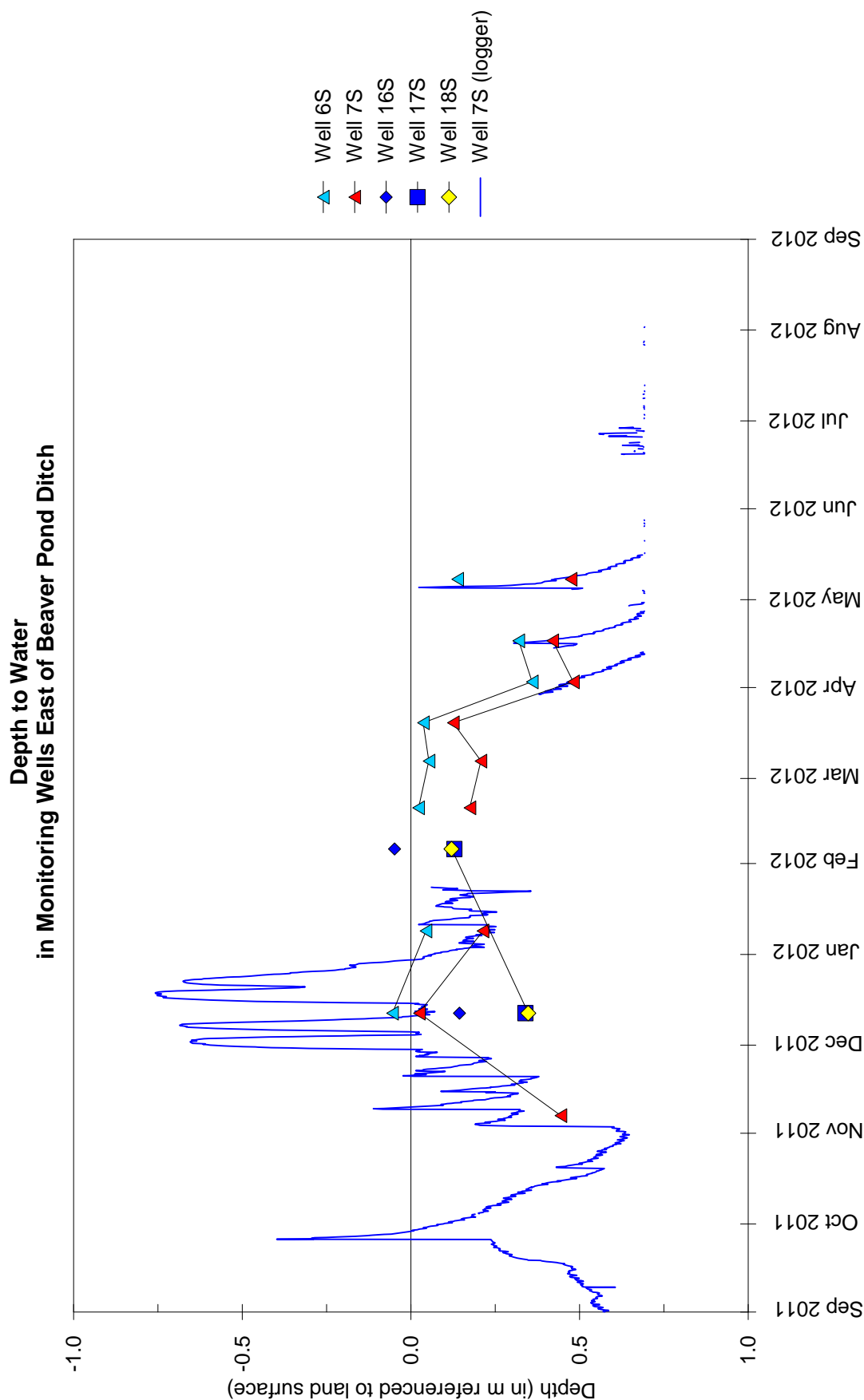
Depth to Water  
in Monitoring Wells West of Beaver Pond Ditch



# Lawrence County Potential Wetland Mitigation Bank September 1, 2011 through August 31, 2012



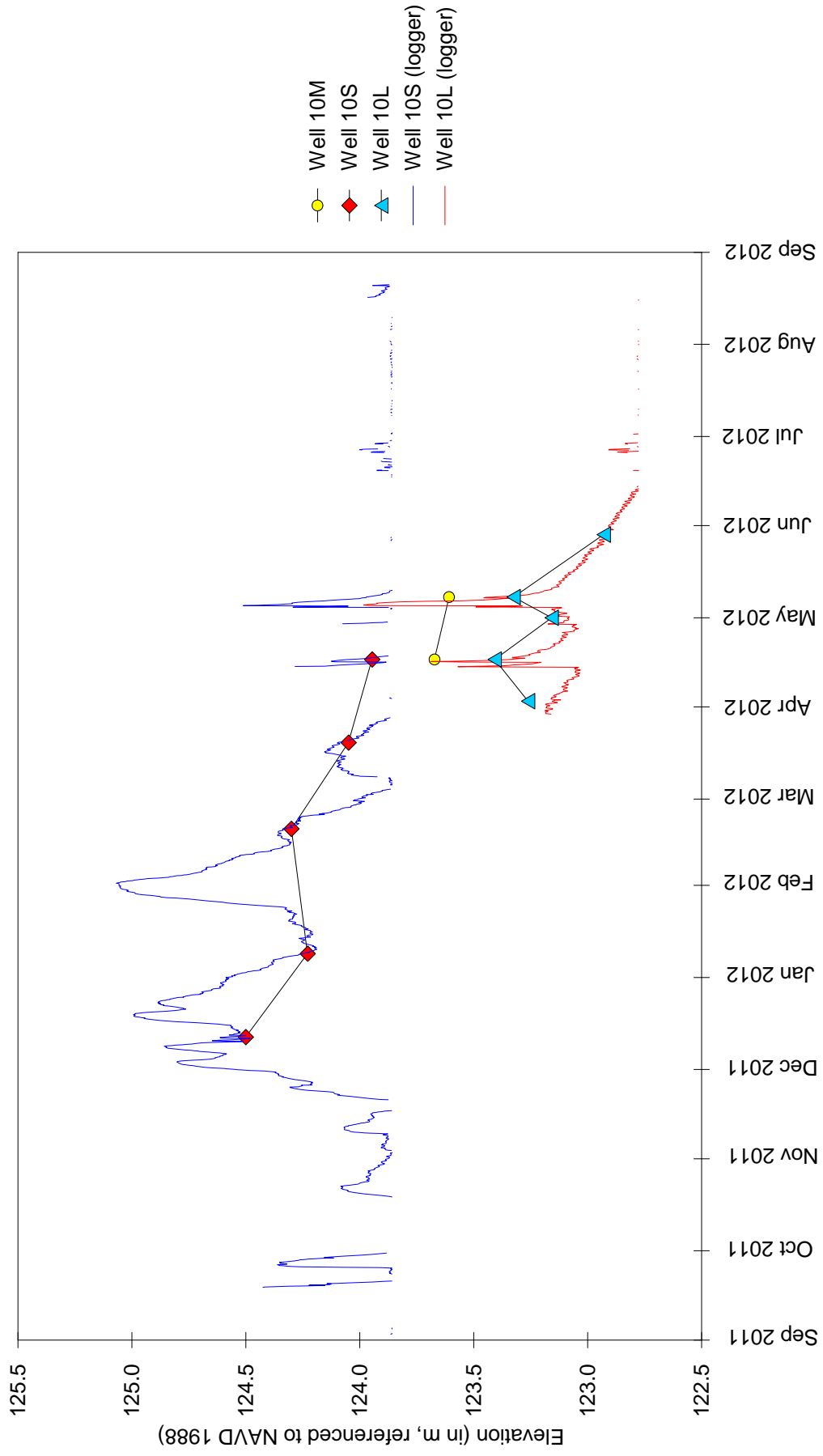
# Lawrence County Potential Wetland Mitigation Bank September 1, 2011 through August 31, 2012



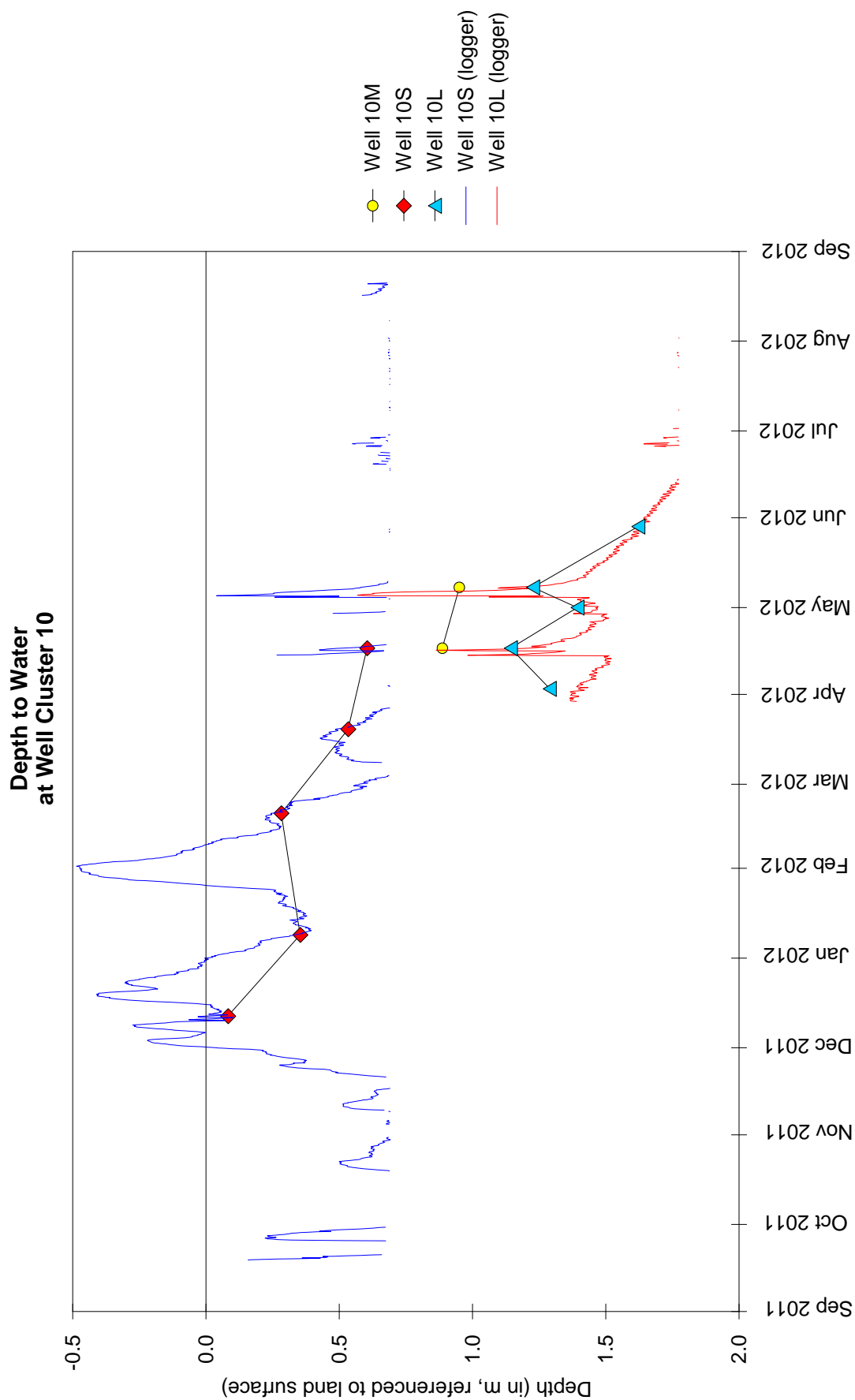


# Lawrence County Potential Wetland Mitigation Bank September 1, 2011 through August 31, 2012

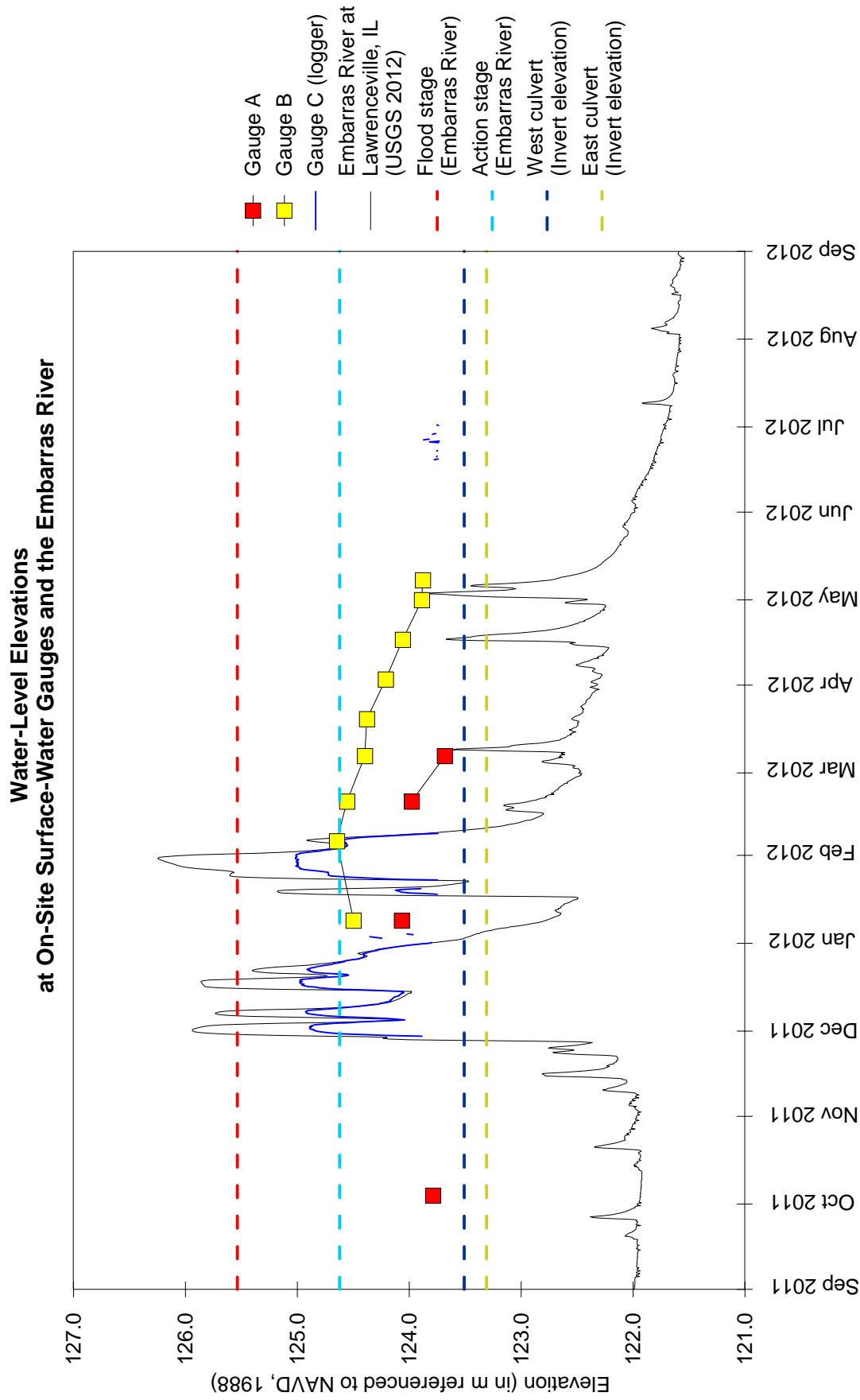
Water-Level Elevations  
at Well Cluster 10



# Lawrence County Potential Wetland Mitigation Bank September 1, 2011 through August 31, 2012



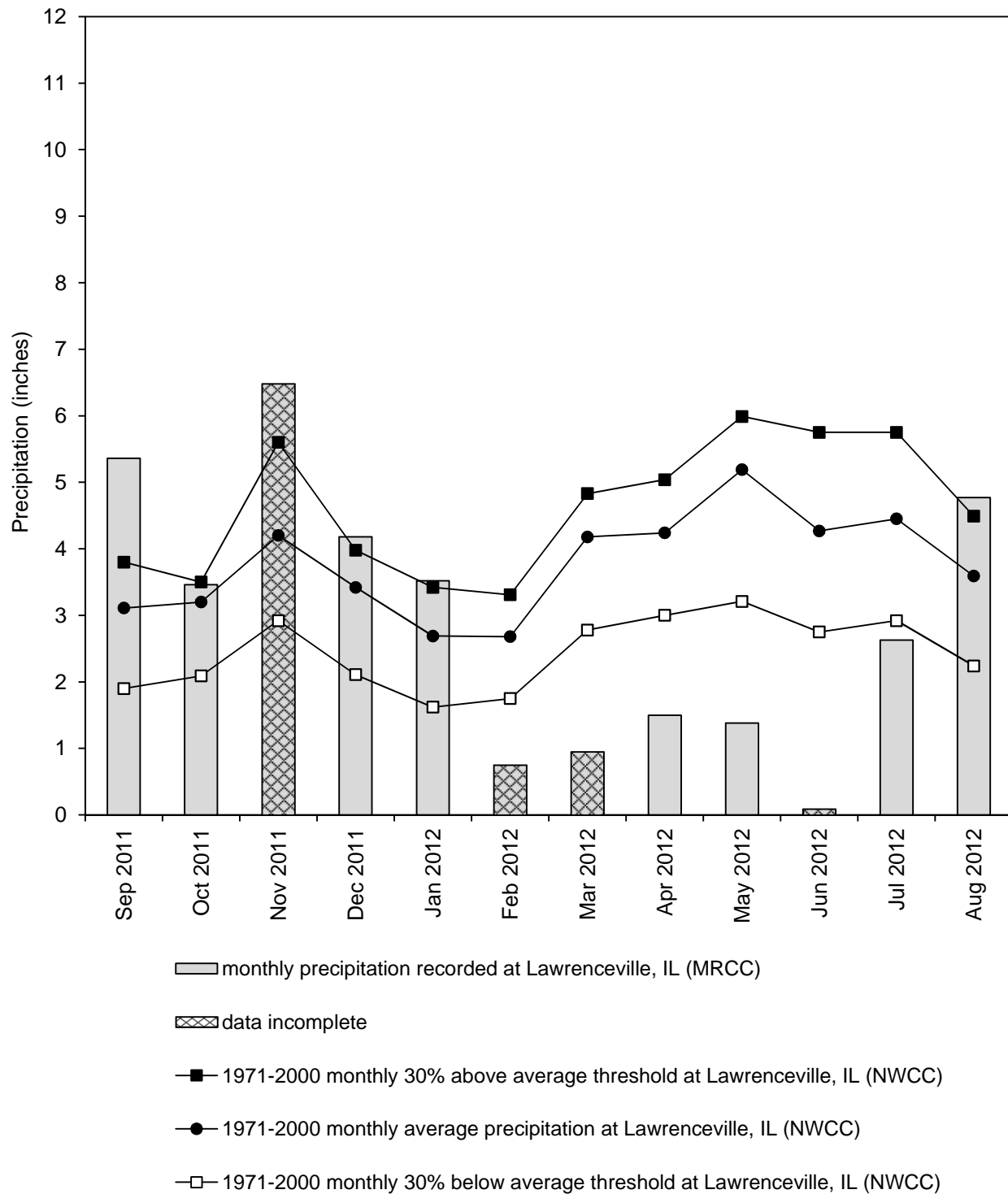
# Lawrence County Potential Wetland Mitigation Bank September 1, 2011 through August 31, 2012



# Lawrence County Potential Wetland Mitigation Bank

## September 2011 through August 2012

### Total Monthly Precipitation Recorded at Lawrenceville, IL



**NORTH CHICAGO  
WETLAND MITIGATION SITE**

**ISGS #84**

IL 56/IL 47

FAP 326

Sequence #13406

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; monitoring was suspended by IDOT in Spring 2002.
- Spring 2009: IDOT tasked ISGS to resume targeted monitoring. Eight monitoring wells were installed in the northernmost part of the site to document restoration potential associated with tile removal in that area.
- Spring and Summer 2010: Drain tiles and invasive vegetation were removed.
- August 2011: ISGS added 14 soil-zone monitoring wells and one surface-water gauge to monitor various wetlands throughout the site.

**WETLAND HYDROLOGY CALCULATION FOR 2012**

Wetland acreage is not calculated for this site due to the limited scope of monitoring. In 2012, 15 locations on site were monitored to document hydrologic changes from restoration, including one surface-water gauge and 14 very-shallow (VS) wells equipped with data loggers. Only the wetland hydrology status at each of these point locations is presented.

In 2012, 11 of the 14 monitoring wells satisfied wetland hydrology criteria for greater than 5% of the growing season, and 10 of the 14 wells satisfied wetland hydrology criteria for greater than 12.5% of the growing season, according to the 1987 Manual. Using the 2010 Midwest Region Supplement (USACE 2010) to the 1987 Manual, 11 of the 14 wells also satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

- The median date that the growing season begins in Waukegan, Illinois, is April 13, and it lasts 196 days (MRCC 2012); 5% of the growing season is 10 days, and 12.5% of the growing season is 25 days, according to the 1987 Manual. According to the 2010 Midwest Region Supplement, March 12 was the starting date of the 2012 growing season based on soil-temperature readings recorded on site with an ISGS data logger.
- Total precipitation for the monitoring period at the Chicago O'Hare International Airport weather station, Chicago, IL, was 84% of normal. During the March through May period of 2012, precipitation was 90% of normal, leading to typical on-site water levels in the early part of the growing season. However, during June through August, precipitation was only 56% of normal, resulting in a significant dry-down of the site.

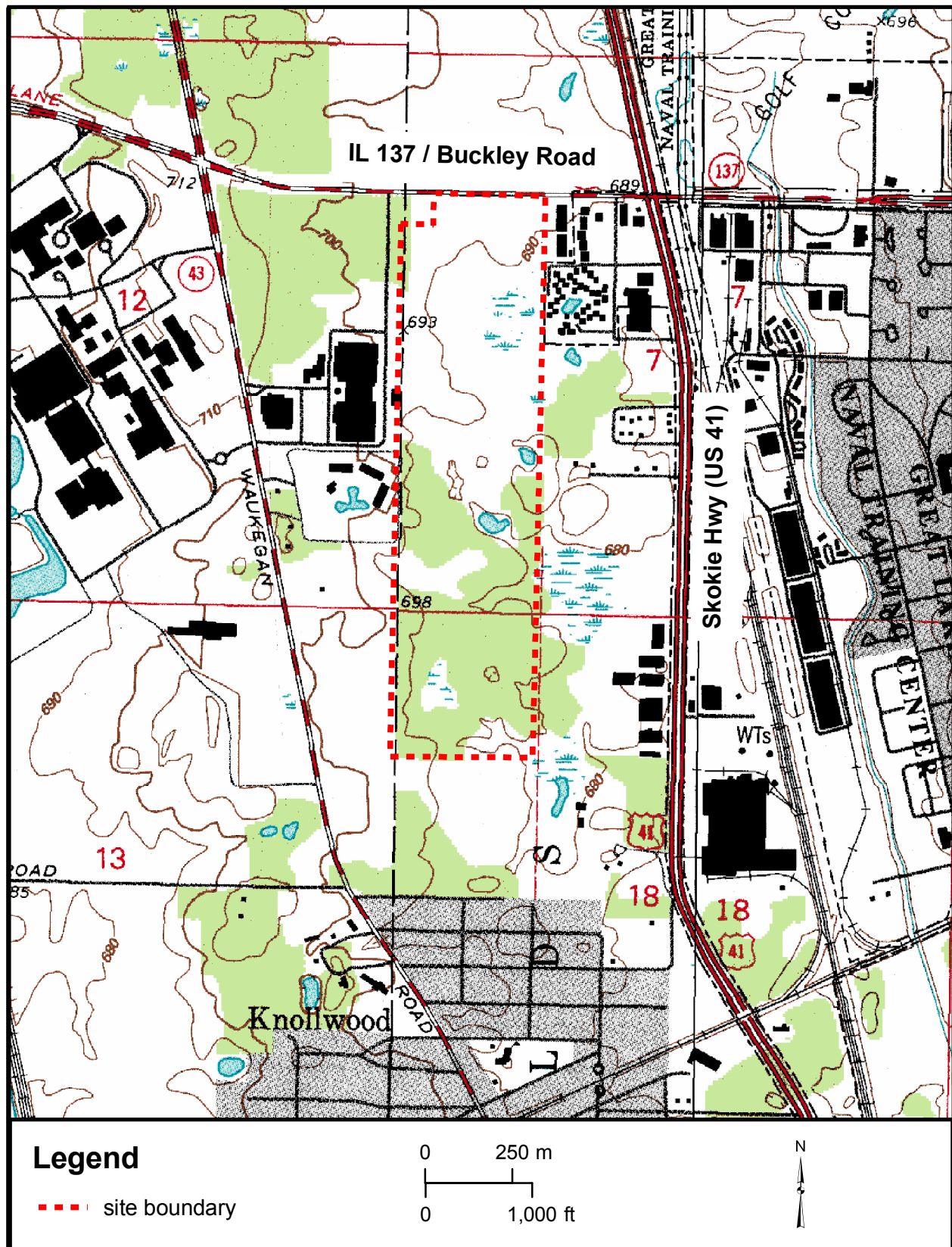
- In 2012, wells 09-01VS, 09-02VS, 09-05VS, 09-06VS, 09-07VS, 11-1VS, 11-2VS, 11-3VS, 11-4VS, 11-5VS, and 11-6VS satisfied wetland hydrology criteria for greater than 5% of the growing season, according to the 1987 Manual, and for 14 or more consecutive days during the growing season according to the 2010 Midwest Region Supplement. Further, wells 09-01VS, 09-02VS, 09-05VS, 09-06VS, 11-1VS, 11-2VS, 11-3VS, 11-4VS, 11-5VS, and 11-6VS satisfied wetland hydrology criteria for greater than 12.5% of the growing season.
- Gauge A also satisfied wetland hydrology criteria at an elevation of 209.55 m (687.50 ft) for greater than 5% as well as 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

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

# North Chicago Wetland Mitigation Site (IL 56/IL47, FAP 326) General Study Area and Vicinity

from the USGS Topographic Series, Libertyville, IL (USGS 1998) and Waukegan, IL (USGS 1998)  
7.5-minute quadrangles





# North Chicago Wetland Mitigation Site (IL 56/IL47, FAP 326)

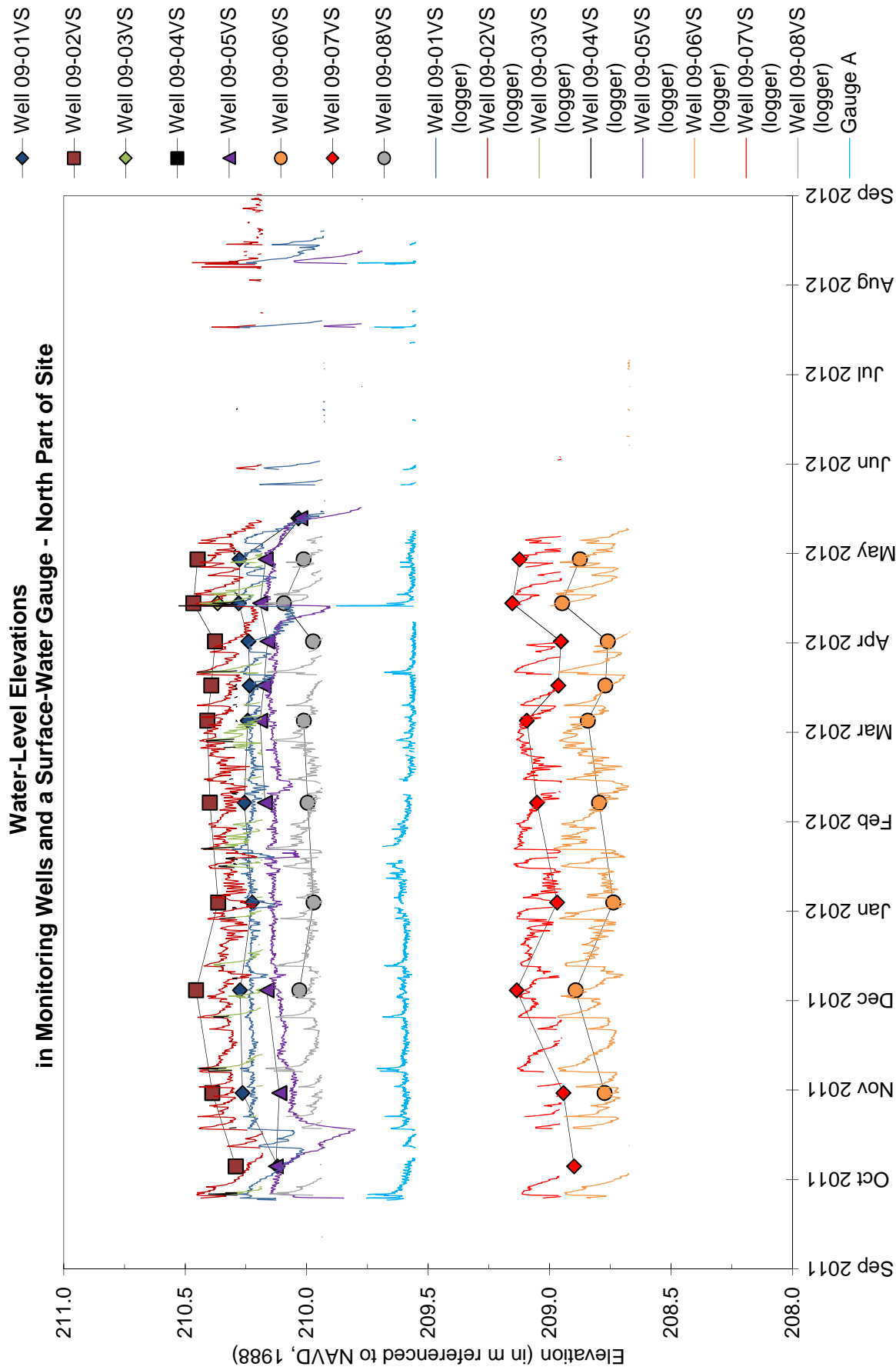
## Wells Meeting Wetland Hydrology Criteria

September 1, 2011 through August 31, 2012

Map based on 2012 Farm Service Agency digital orthophotography, Lake County, Illinois (USDA-FSA 2012)

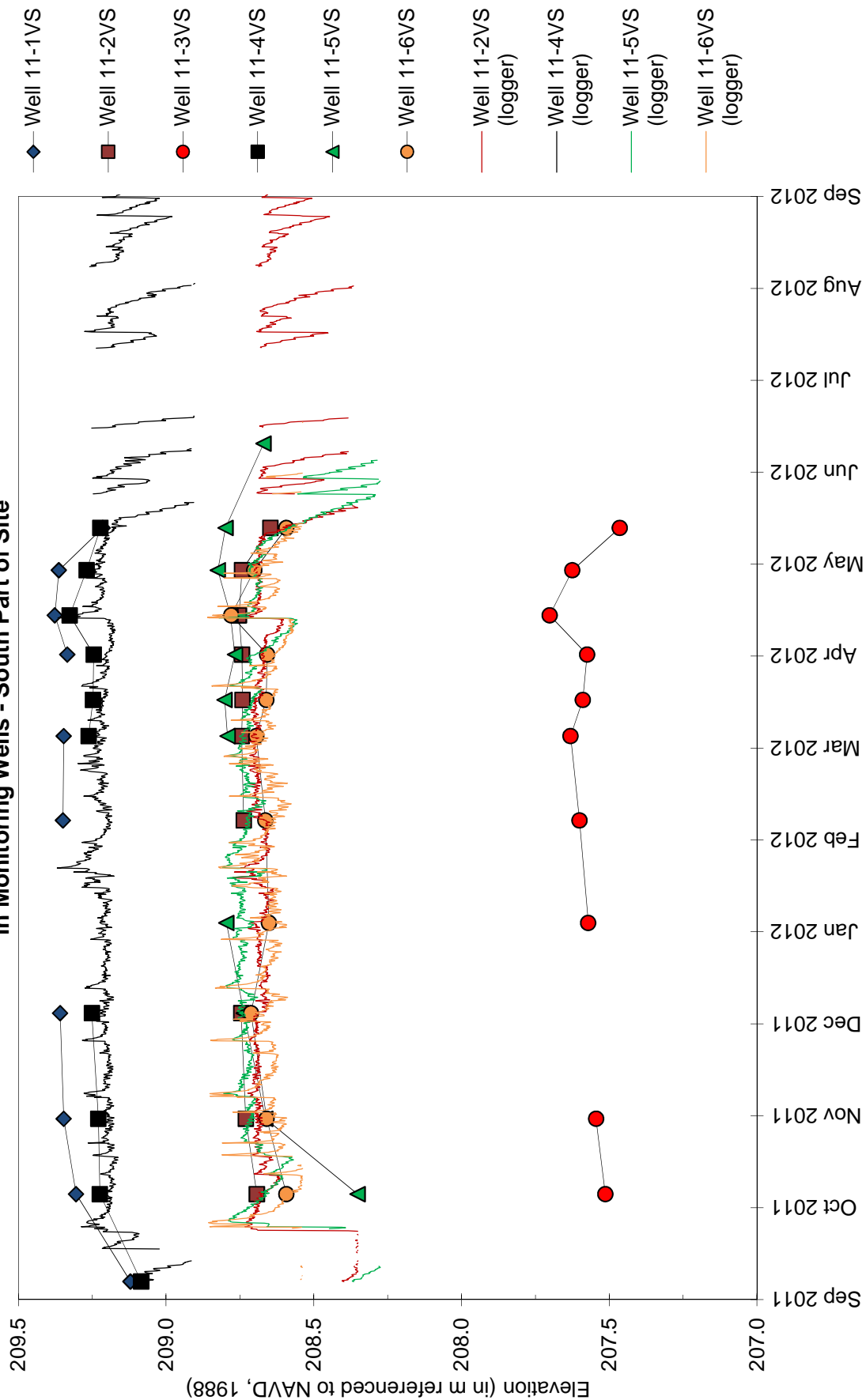


# North Chicago Wetland Mitigation Site September 1, 2011 through August 31, 2012



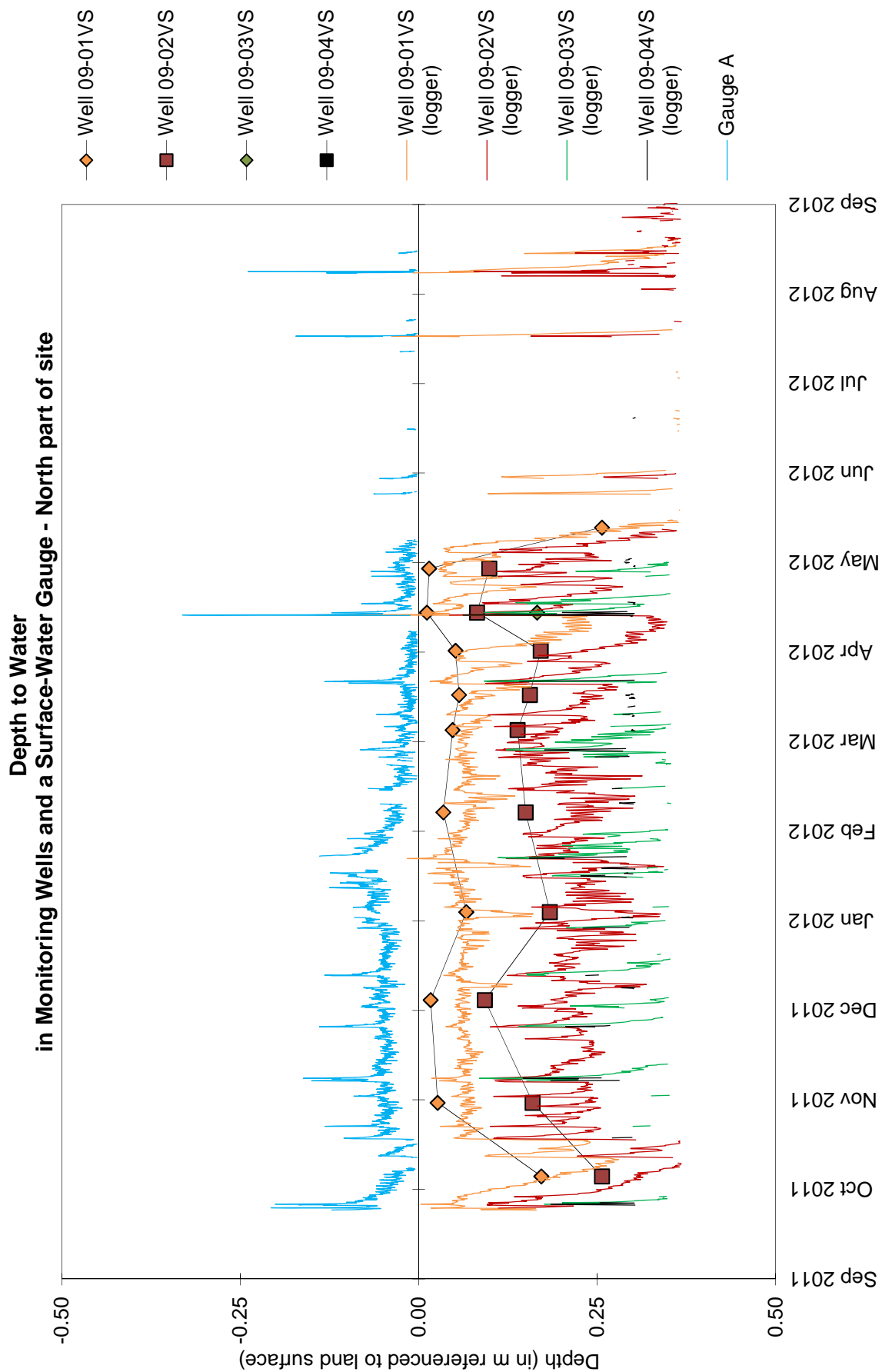
# **North Chicago Wetland Mitigation Site** **September 1, 2011 through August 31, 2012**

## **Water-Level Elevations in Monitoring Wells - South Part of Site**



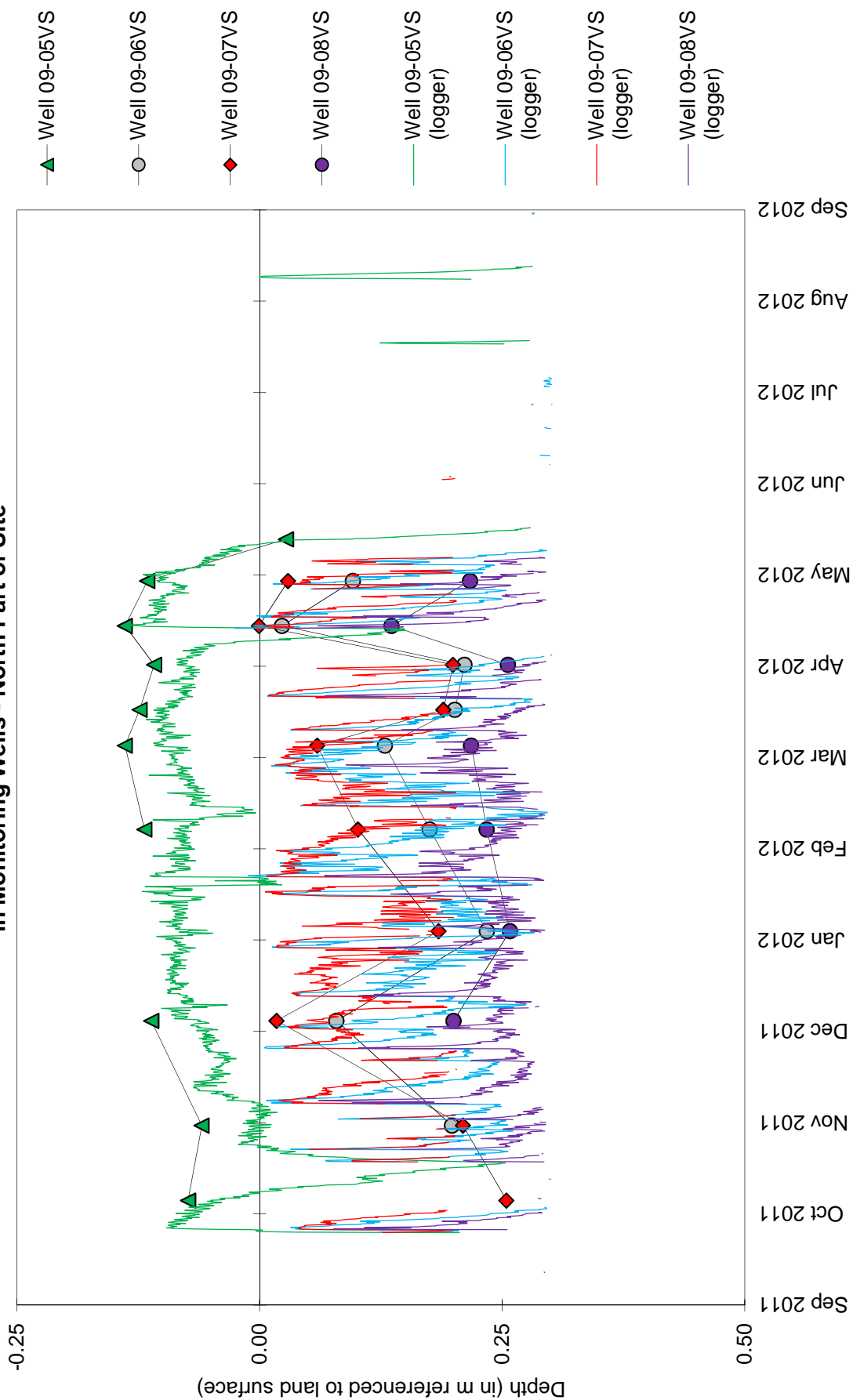


# North Chicago Wetland Mitigation Site September 1, 2011 through August 31, 2012



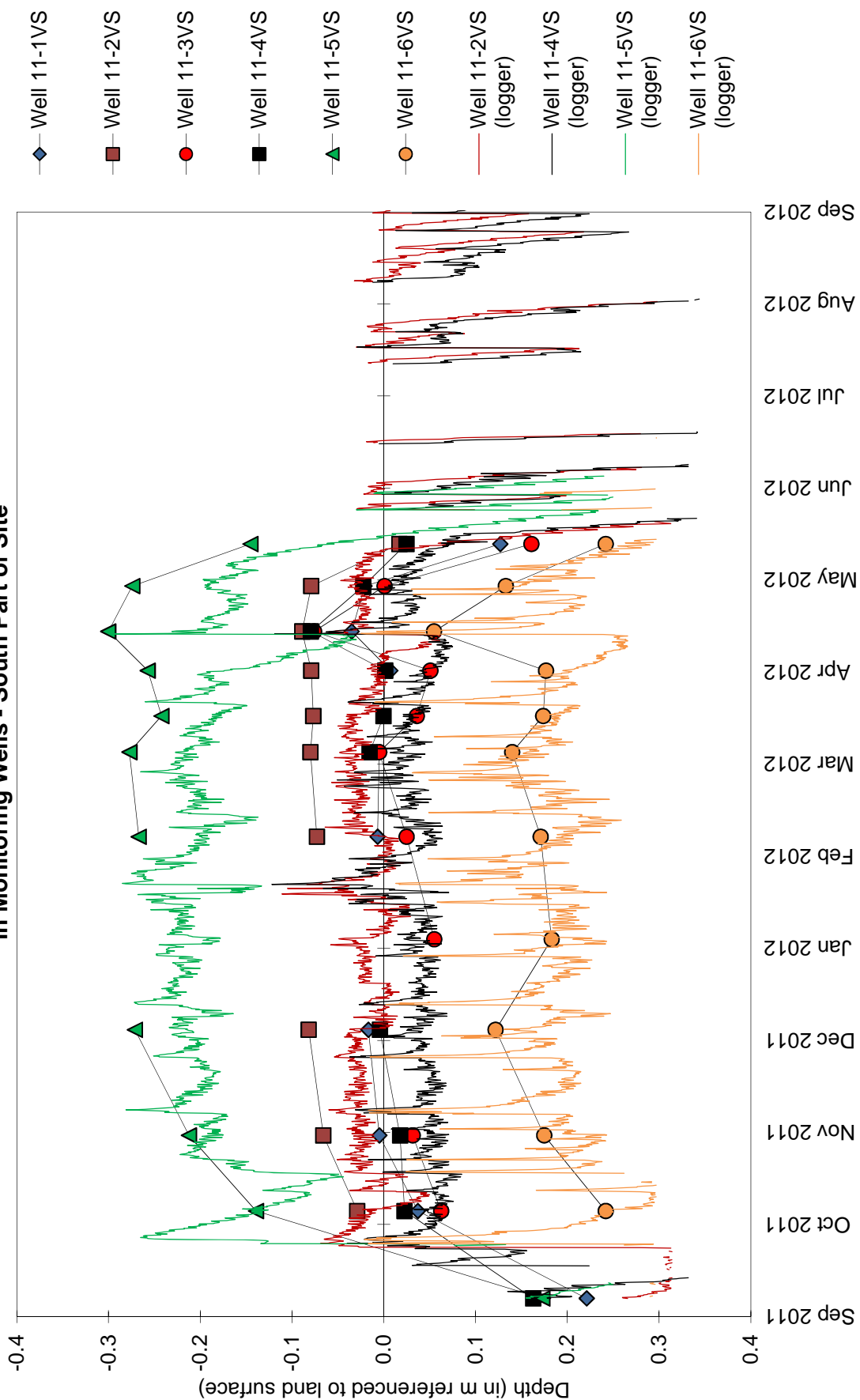
# **North Chicago Wetland Mitigation Site** **September 1, 2011 through August 31, 2012**

**Depth to Water  
in Monitoring Wells - North Part of Site**



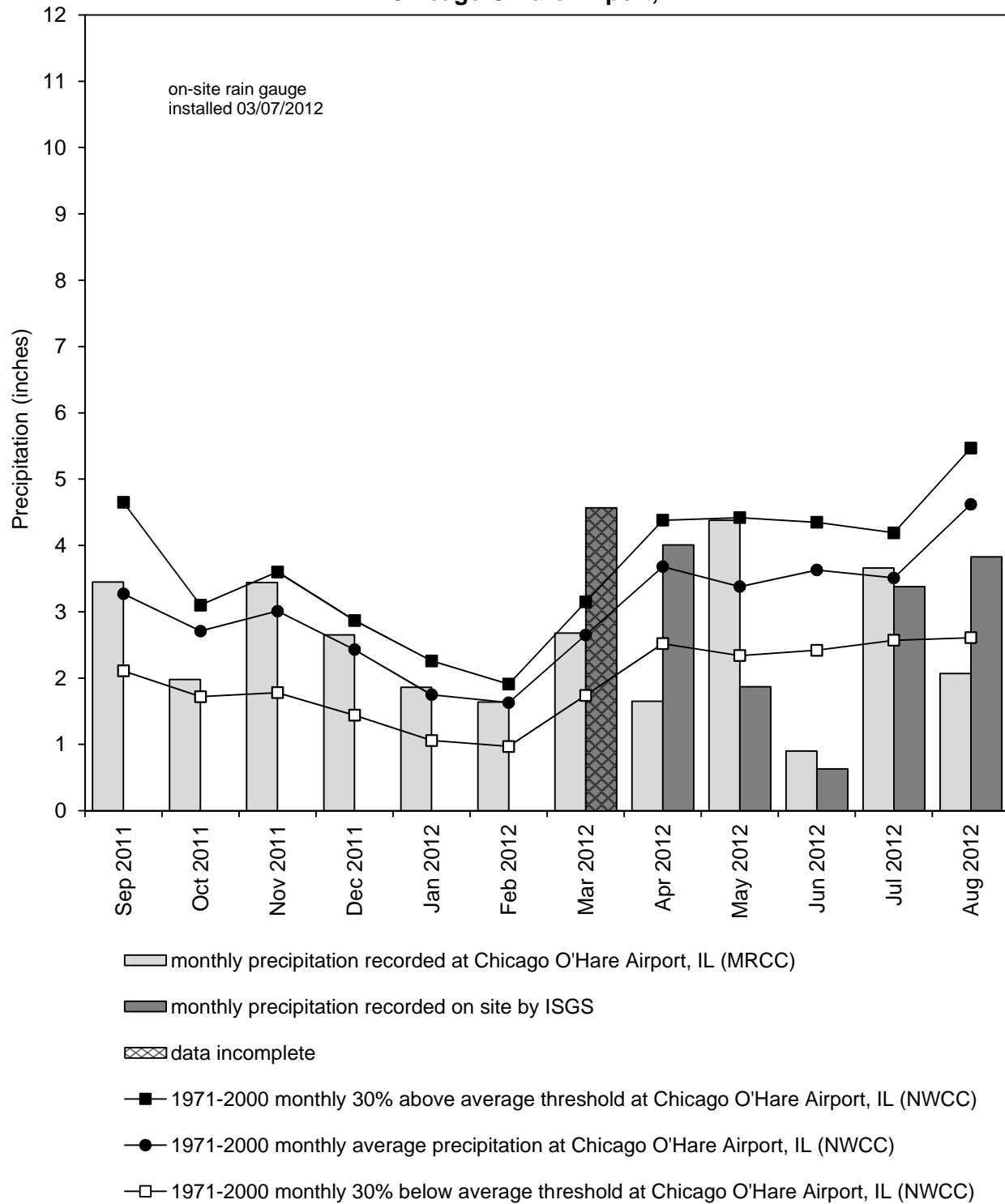
# **North Chicago Wetland Mitigation Site** **September 1, 2011 through August 31, 2012**

**Depth to Water  
in Monitoring Wells - South Part of Site**



# **North Chicago Wetland Mitigation Site** **September 2011 through August 2012**

## **Total Monthly Precipitation Recorded on Site and at the Chicago O'Hare Airport, IL**





**COLES COUNTY  
WETLAND MITIGATION SITE**

**ISGS #85**

TR 1000N and TR 41

Sequence #1273

Coles County, near Mattoon, Illinois

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

**Secondary Project Manager: Jessica L. B. Monson**

**SITE HISTORY**

- March 2008: Wetland construction was completed.
- August 2010: ISGS was tasked by IDOT to monitor the site for performance criteria outlined in the wetland compensation plan.
- March 2011: ISGS installed a monitoring network.

**WETLAND HYDROLOGY CALCULATION FOR 2012**

The target compensation area for the Coles County wetland mitigation site is 1.86 ha (4.60 ac). Using the 1987 Manual (Environmental Laboratory 1987), 1.06 ha (2.61 ac) of the total site area of 2.1 ha (5.1 ac) satisfied wetland hydrology criteria for greater than 5% of the 2012 growing season, and 0.96 ha (2.38 ac) satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Using the 2010 Midwest Region Supplement (USACE 2010) to the 1987 Manual, 1.06 ha (2.61 ac) satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season.

- The median date that the growing season begins in nearby Mattoon, Illinois, is April 8, and the season lasts 207 days (MRCC 2012). According to the 1987 Manual, 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, March 9 was the starting date of the 2012 growing season based on plant growth and development and soil temperatures measured at the site.
- Total precipitation for the monitoring period at the Mattoon, Illinois, weather station was 101% of normal. During Spring 2012 (March through May), precipitation was 91% of normal.
- In 2012, water levels measured in monitoring wells 2S and 5S satisfied wetland hydrology criteria for greater than 5% of the growing season, and water levels measured in well 5S satisfied wetland hydrology criteria for greater than 12.5% of the growing season, according to the 1987 Manual. According to the 2010 Midwest Region Supplement, water levels measured in monitoring wells 2S and 5S satisfied wetland hydrology criteria for 14 or more consecutive days of the growing season.
- Surface-water levels measured at Gauge A indicated inundation at or below 207.05 m (679.29 ft) for greater than 5% of the growing season, and inundation at or below 207.01 m (679.16 ft) for greater than 12.5% of the growing season, according to the 1987 Manual. Per the 2010 Midwest Region Supplement, surface-water levels

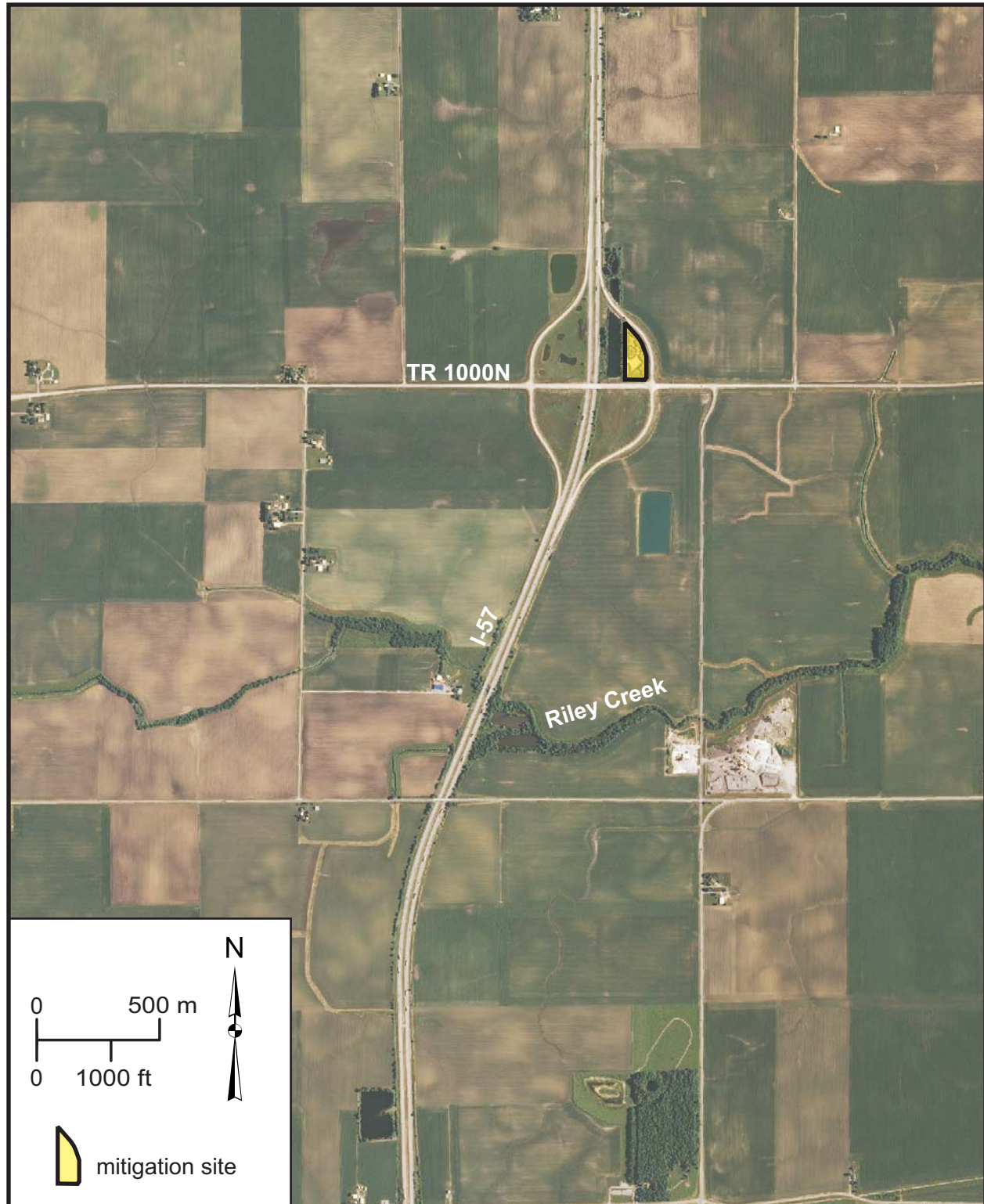
measured at Gauge A indicated inundation at or below 207.03 m (679.23 ft) for 14 or more consecutive days of the growing season.

#### PLANNED FUTURE ACTIVITIES

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

**Coles County Wetland Mitigation Site  
(TR 1000N and TR 41)  
General Study Area and Vicinity**

Map based on 2012 Farm Service Agency digital orthophotography, Coles County, Illinois (USDA-FSA 2012)

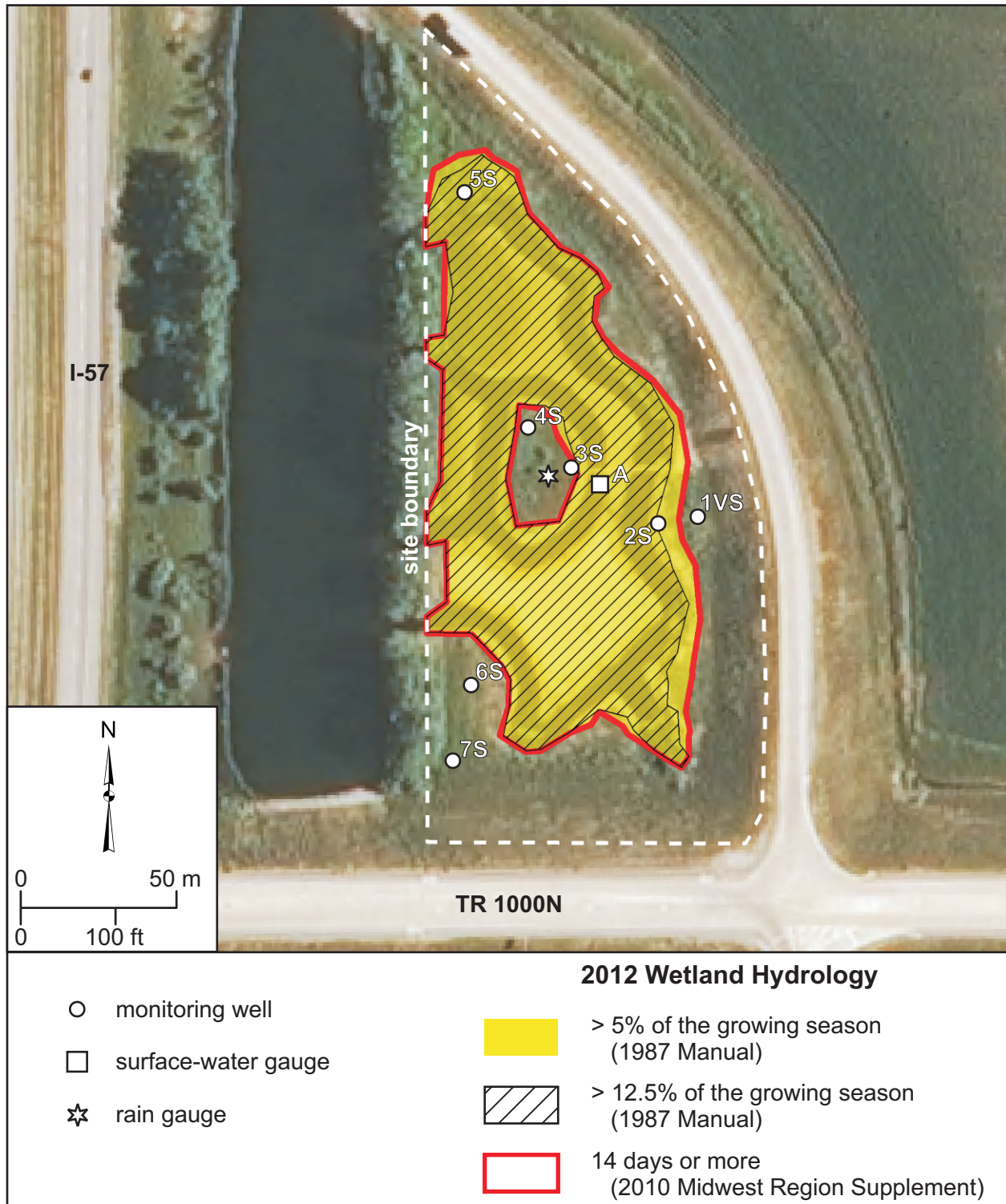


# Coles County Wetland Mitigation Site (TR 1000N and TR 41)

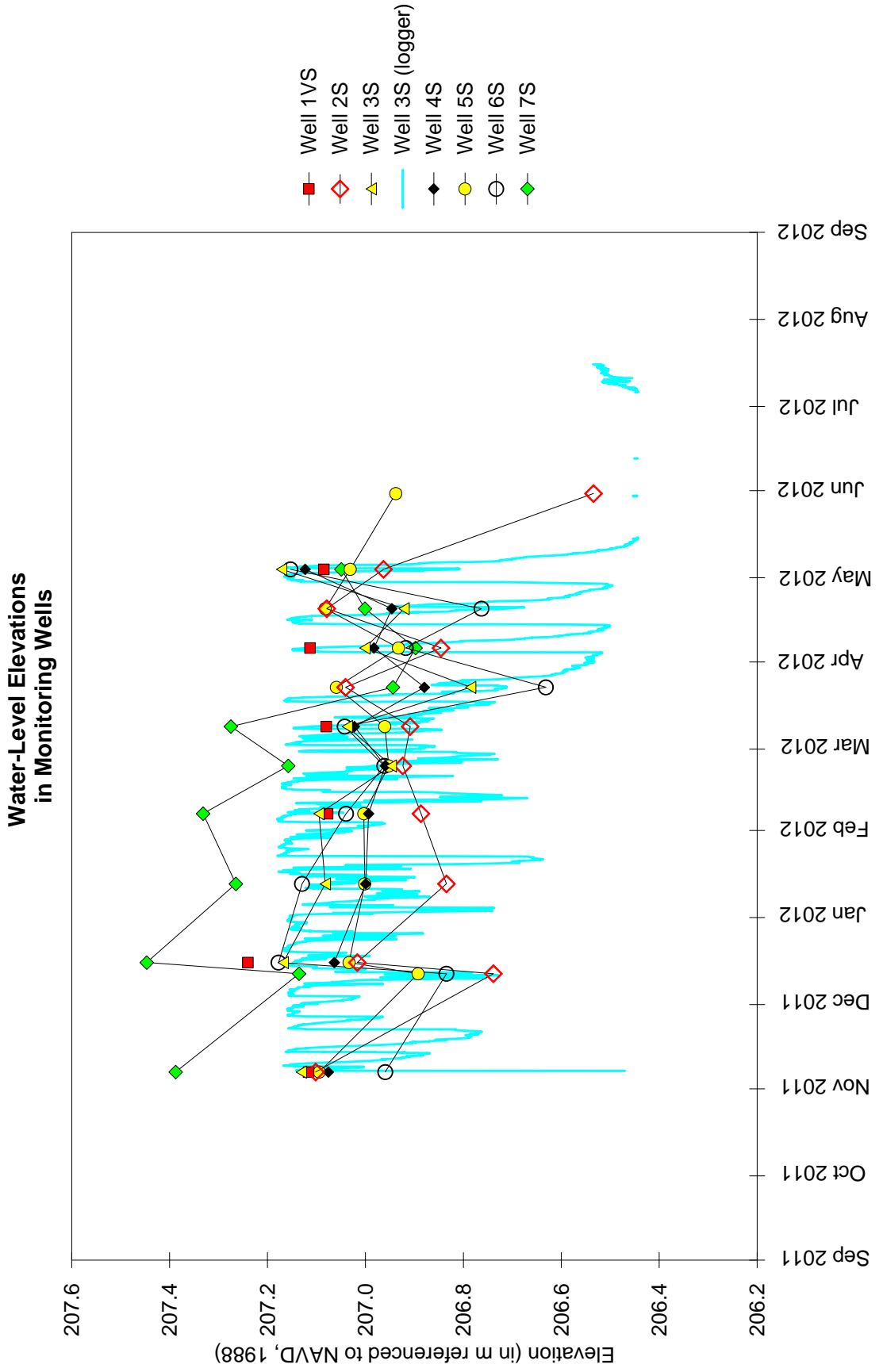
## Estimated Areal Extent of 2012 Wetland Hydrology

September 1, 2011 through August 31, 2012

Map based on 2012 Farm Service Agency digital orthophotography, Coles County, Illinois (USDA-FSA 2012)

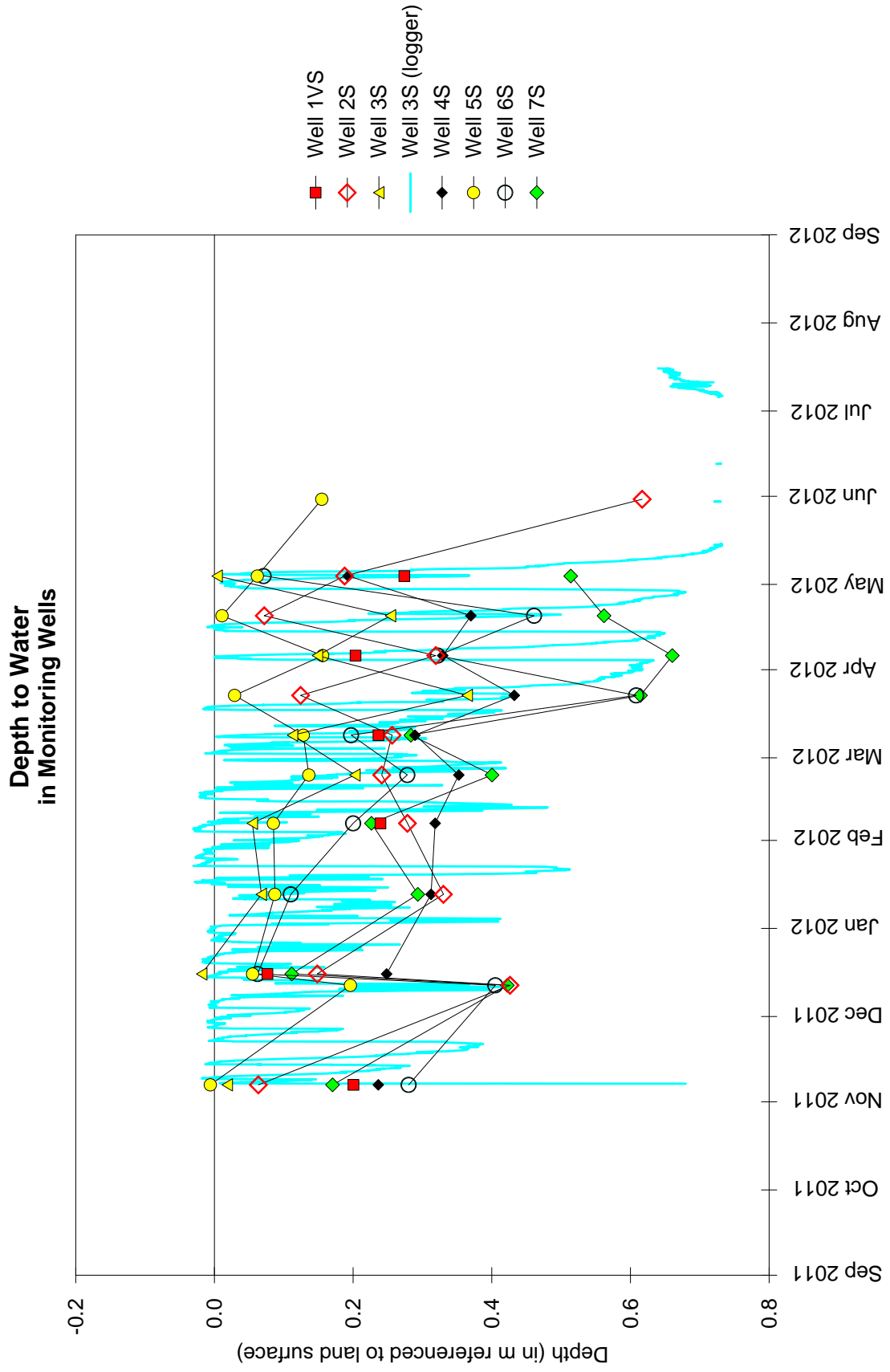


# **Coles County Wetland Mitigation Site** **September 1, 2011 through August 31, 2012**

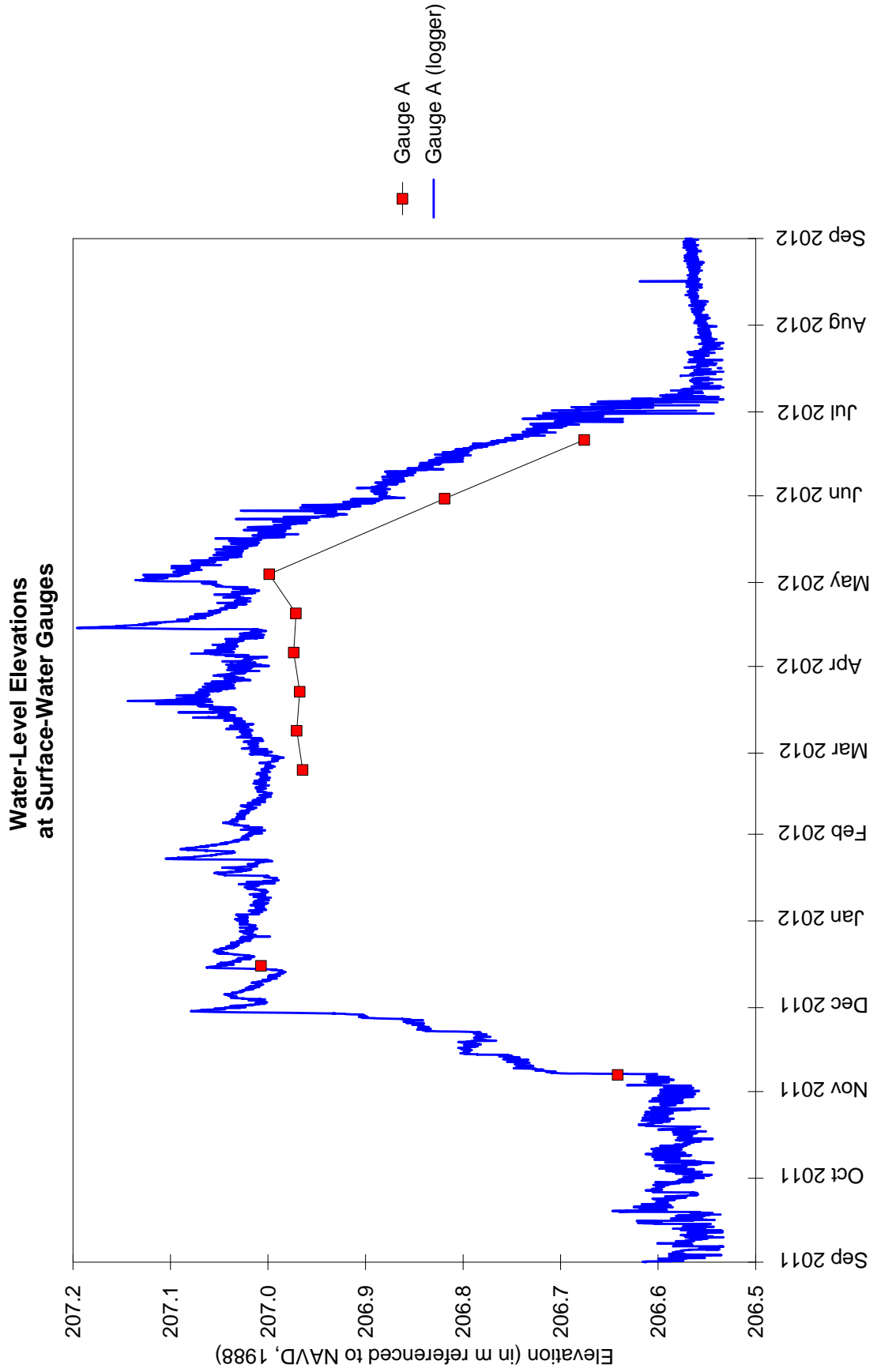




# **Coles County Wetland Mitigation Site** **September 1, 2011 through August 31, 2012**



**Coles County Wetland Mitigation Site  
September 1, 2011 through August 31, 2012**

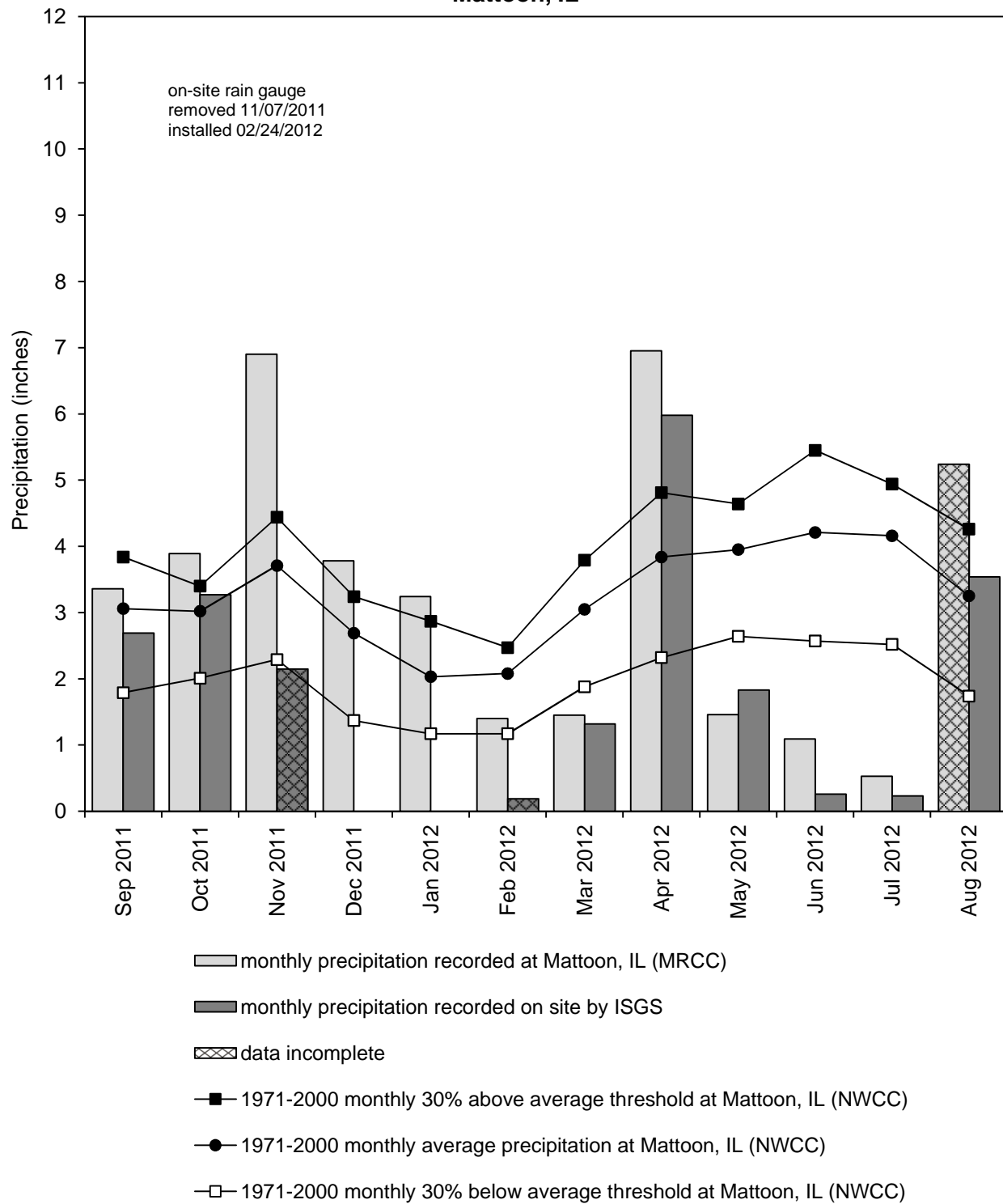




# Coles County Wetland Mitigation Site

## September 2011 through August 2012

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



**SWAN ROAD  
WETLAND MITIGATION SITE**

**ISGS #86**

TR 222

Sequence #12315

Perry County, near Tamaroa, Illinois

**Primary Project Manager: Melinda C. Higley**

**Secondary Project Manager: Jessica L. B. Monson**

**SITE HISTORY**

- April 2011: ISGS was tasked to monitor wetland hydrology at the site.
- May 2011: Water-level monitoring was initiated.

**WETLAND HYDROLOGY CALCULATION FOR 2012**

The target compensation area for the Swan Road wetland mitigation site is 0.29 ha (0.72 ac). Using the 1987 Manual (Environmental Laboratory 1987), 0.10 ha (0.24 ac) of the total site area of 0.43 ha (1.07 ac) satisfied wetland hydrology criteria for greater than 5% of the 2012 growing season and none of the site satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Using the 2010 Midwest Region Supplement (USACE 2010) to the 1987 Manual, 0.32 ha (0.78 ac) satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

- The median date that the growing season begins in nearby Du Quoin, Illinois, is April 5, and lasts 207 days (MRCC 2012); 5% of the growing season is 10 days, and 12.5% of the growing season is 26 days, according to the 1987 Manual. According to the 2010 Midwest Region Supplement, February 28 was the starting date of the 2012 growing season based on soil temperatures measured on site and at the ISGS soil temperature data logger at the nearby Pyramid Site EC25.
- Total precipitation for the monitoring period, as recorded in Du Quoin, Illinois, was 87% of normal and during spring 2012 (March through May) precipitation was 55% of normal.
- In 2012, well 1S satisfied wetland hydrology criteria for greater than 5% of the growing season, while none of the wells satisfied wetland hydrology criteria for greater than 12.5% of the growing season, according to the 1987 Manual. Further, all monitoring wells except 5S satisfied wetland hydrology for 14 or more consecutive days during the growing season, according to the 2010 Midwest Region Supplement.
- Surface water at Gauge A did not persist long enough to satisfy wetland hydrology criteria for either the 1987 Manual or the 2010 Midwest Region Supplement.

**PLANNED FUTURE ACTIVITIES**

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

## Swan Road Wetland Mitigation Site General Study Area and Vicinity

Map based on 2012 Farm Service Agency digital orthophotograph, Perry County, Illinois (USDA-FSA 2012)

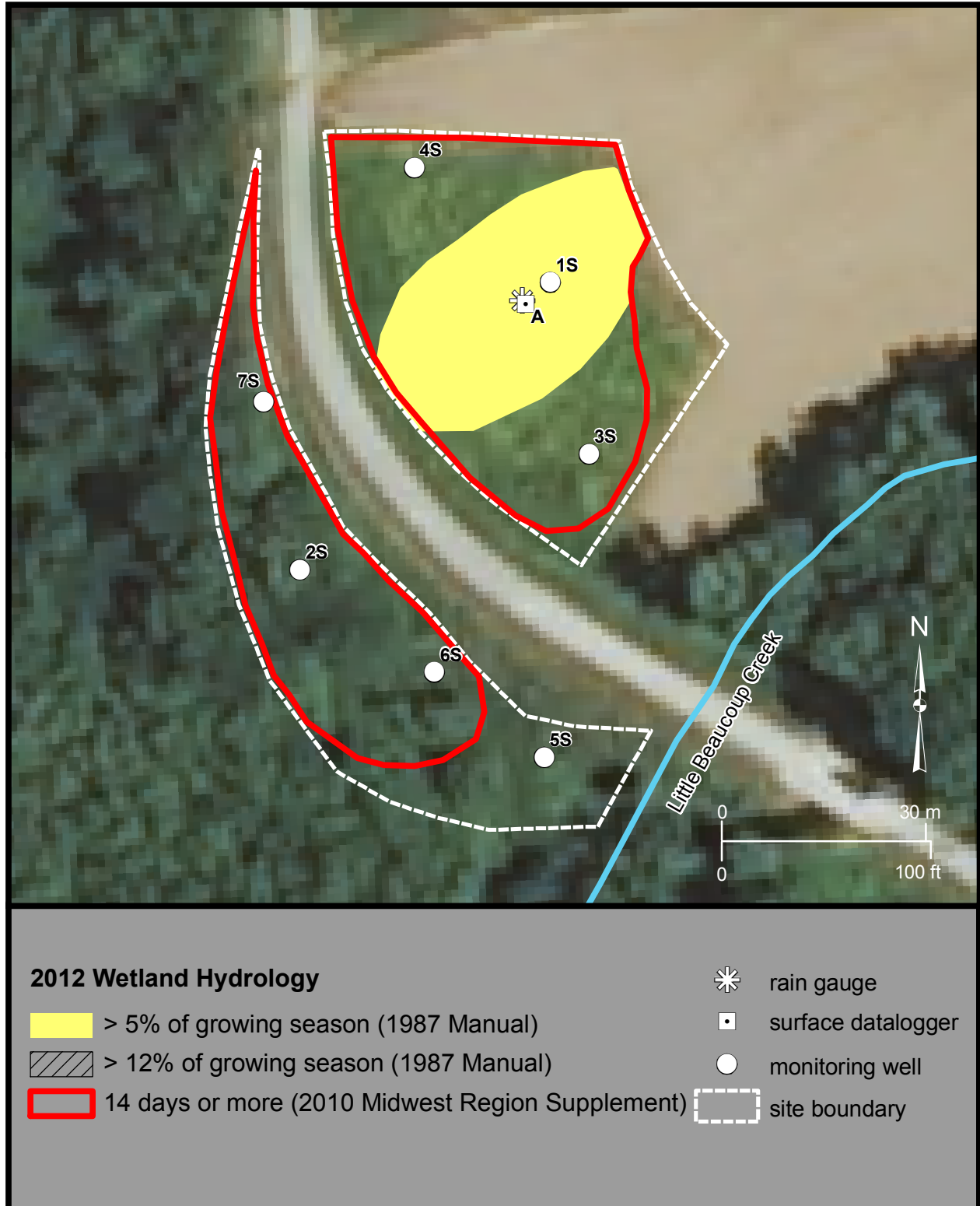


# Swan Road Wetland Mitigation Site

## Estimated Areal Extent of 2012 Wetland Hydrology

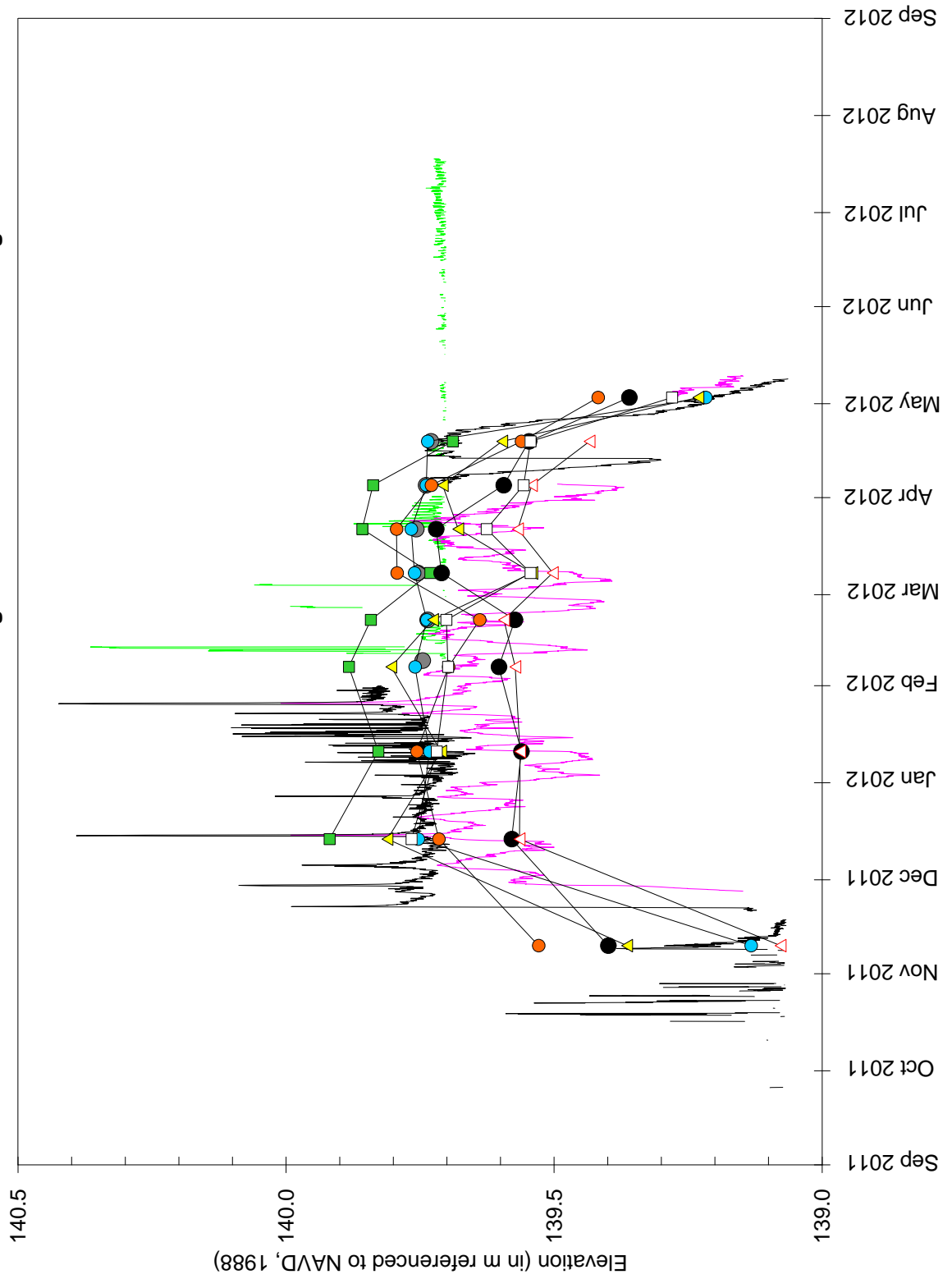
September 1, 2011 through August 31, 2012

Map based on 2012 Farm Service Agency digital orthophotograph, Perry County, Illinois (USDA-FSA 2012)



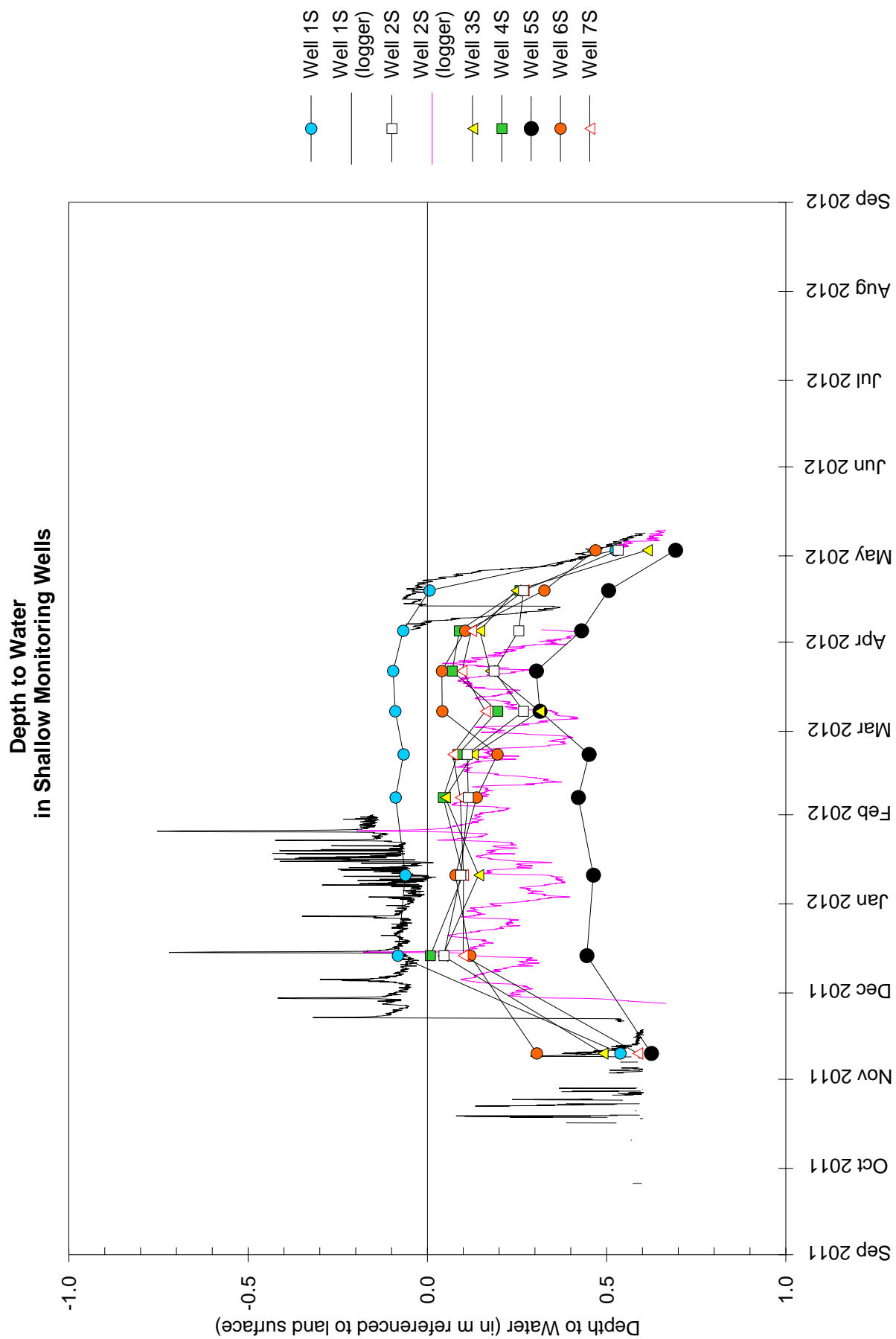
# **Swan Road Wetland Mitigation Site** **September 1, 2011 through August 31, 2012**

## **Water-Level Elevations** **in Shallow Monitoring Wells and a Surface-Water Gauge**





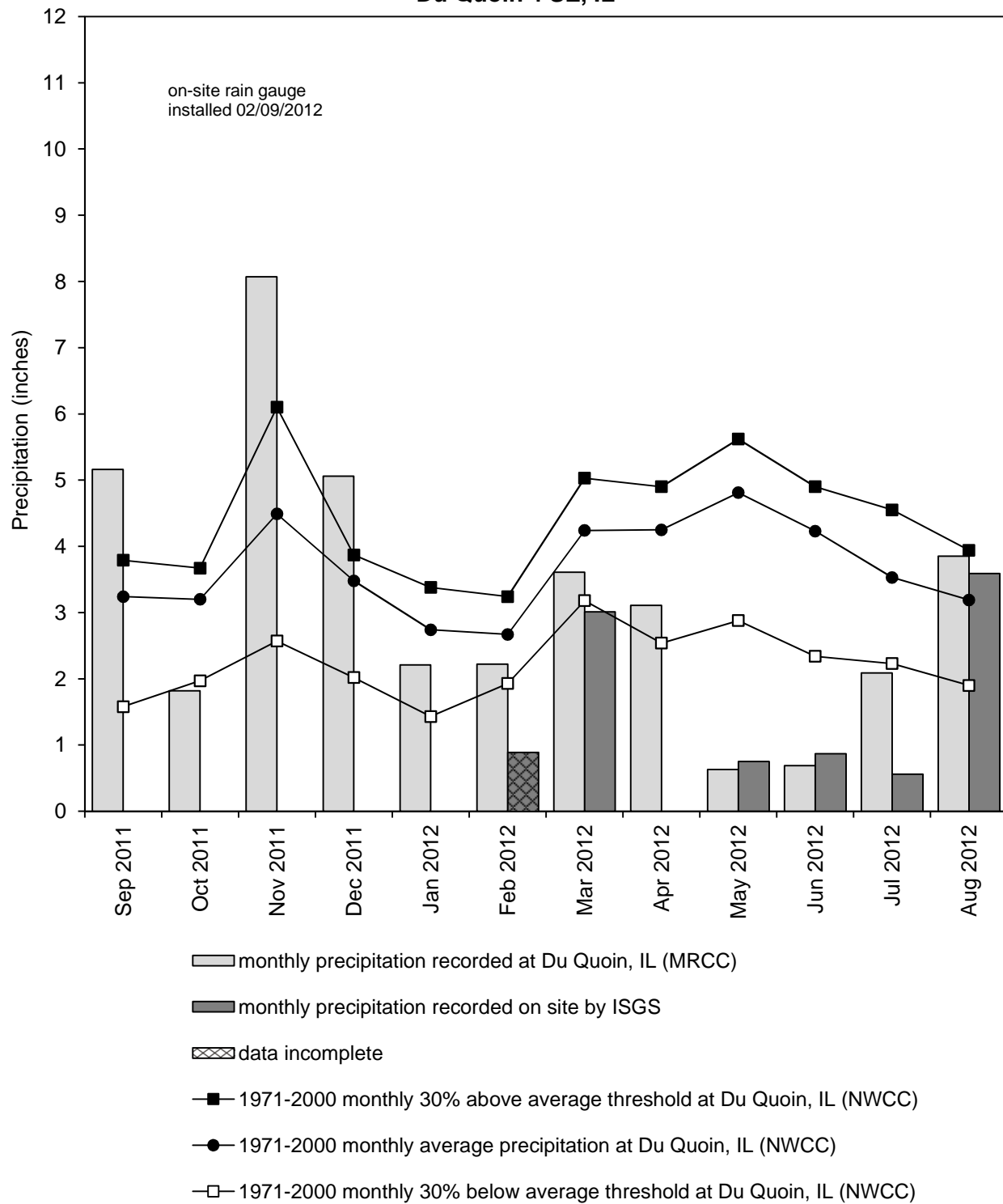
# **Swan Road Wetland Mitigation Site** **September 1, 2011 through August 31, 2012**



# Swan Road Wetland Mitigation Site

## September 2011 through August 2012

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





**HARRISBURG, SITE 3  
WETLAND MITIGATION SITE**

**ISGS #87**

US 45

FAP 332

Saline County, near Harrisburg, Illinois

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

**Secondary Project Manager: Jessica L. B. Monson**

**SITE HISTORY**

- August 2011: ISGS was tasked by IDOT to monitor the site for performance standards as outlined in the wetland compensation plan.
- February 2012: Post-construction water-level monitoring was initiated.

**WETLAND HYDROLOGY CALCULATION FOR 2012**

The target compensation area for the Harrisburg, Site 3 wetland mitigation site is 0.69 ha (1.70 ac). No portion of the 0.81-ha (2.00-ac) mitigation site satisfied wetland hydrology criteria for greater than 5% or for greater than 12.5% of the growing season, using the 1987 Manual (Environmental Laboratory 1987). Further, none of the site satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season, according to the 2010 Midwest Region Supplement (USACE 2010) to the 1987 Manual. These estimates are based on the following factors:

- The median date that the growing season begins in Harrisburg, Illinois, is April 1 and the season lasts 211 days (MRCC 2012). According to the 1987 Manual, 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, February 16 was the start date of the 2012 growing season based on soil temperatures measured at the site and data from the Illinois Climate Network station at Dixon Springs, Illinois (WARM 2012).
- Total precipitation at the Du Quoin, Illinois, weather station for the period from September 2011 through August 2012 was 87% of normal, and Spring 2012 (March through May) precipitation was 55% of normal.
- In 2012, no wells satisfied wetland hydrology criteria for greater than 5% or for greater than 12.5% of the growing season, according to the 1987 Manual. Furthermore, no wells satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season according to the 2010 Midwest Region Supplement.
- Gauge A indicated that surface water did not persist long enough to satisfy wetland hydrology criteria for greater than 5% or greater than 12.5% of the growing season, according to the 1987 Manual, or for 14 or more consecutive days during the growing season, according to the 2010 Midwest Region Supplement.

**ADDITIONAL INFORMATION**

- Restoration activities have not yet been completed at the site. Construction of a water control structure and tree planting are expected in Fall 2012.

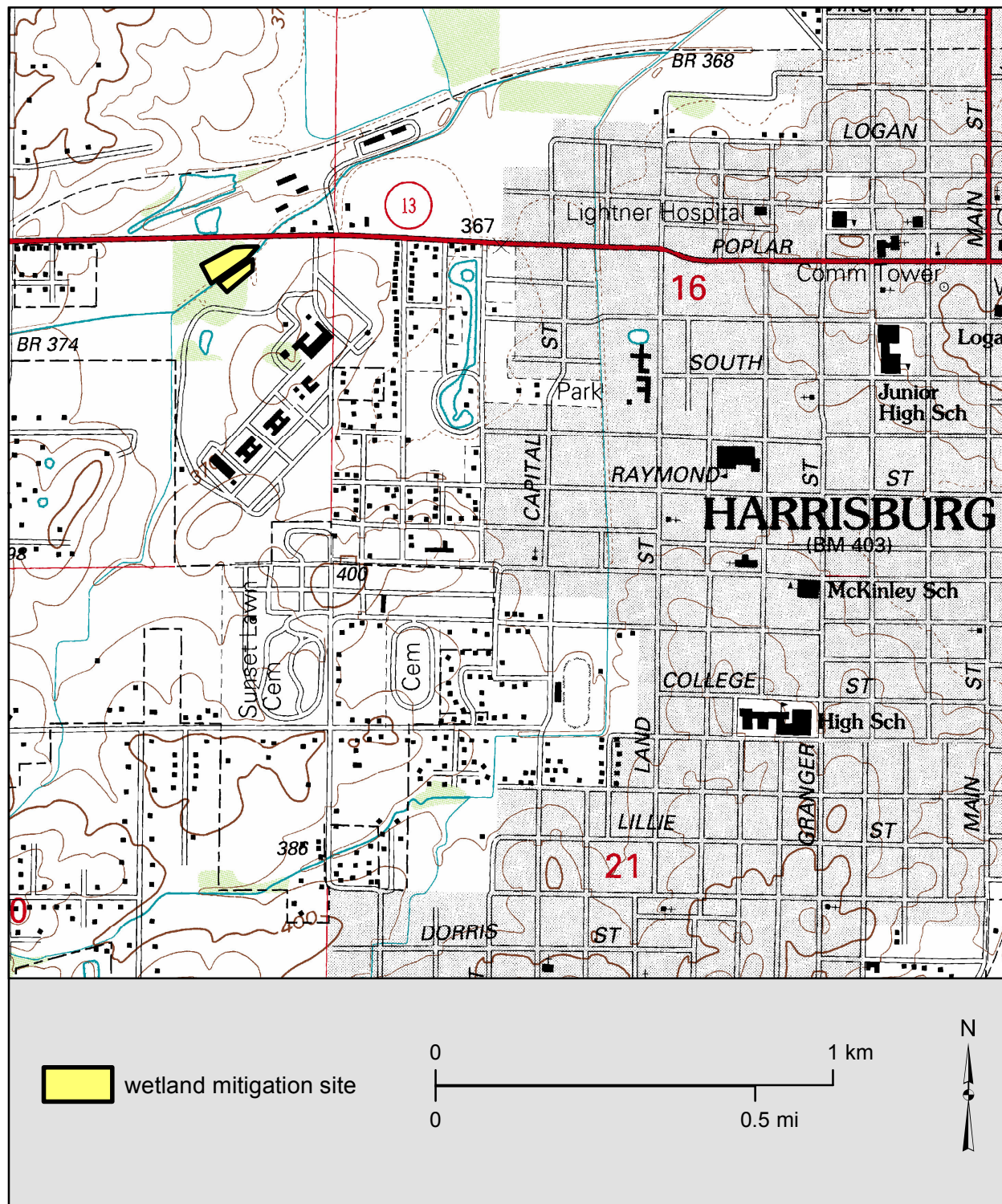
## PLANNED FUTURE ACTIVITIES

- Additional monitoring instruments will be installed after restoration activities have been completed.
- Water-level monitoring is expected to continue through 2017 or until no longer required by IDOT.

# Harrisburg, Site 3 Wetland Mitigation Site (US 45, 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



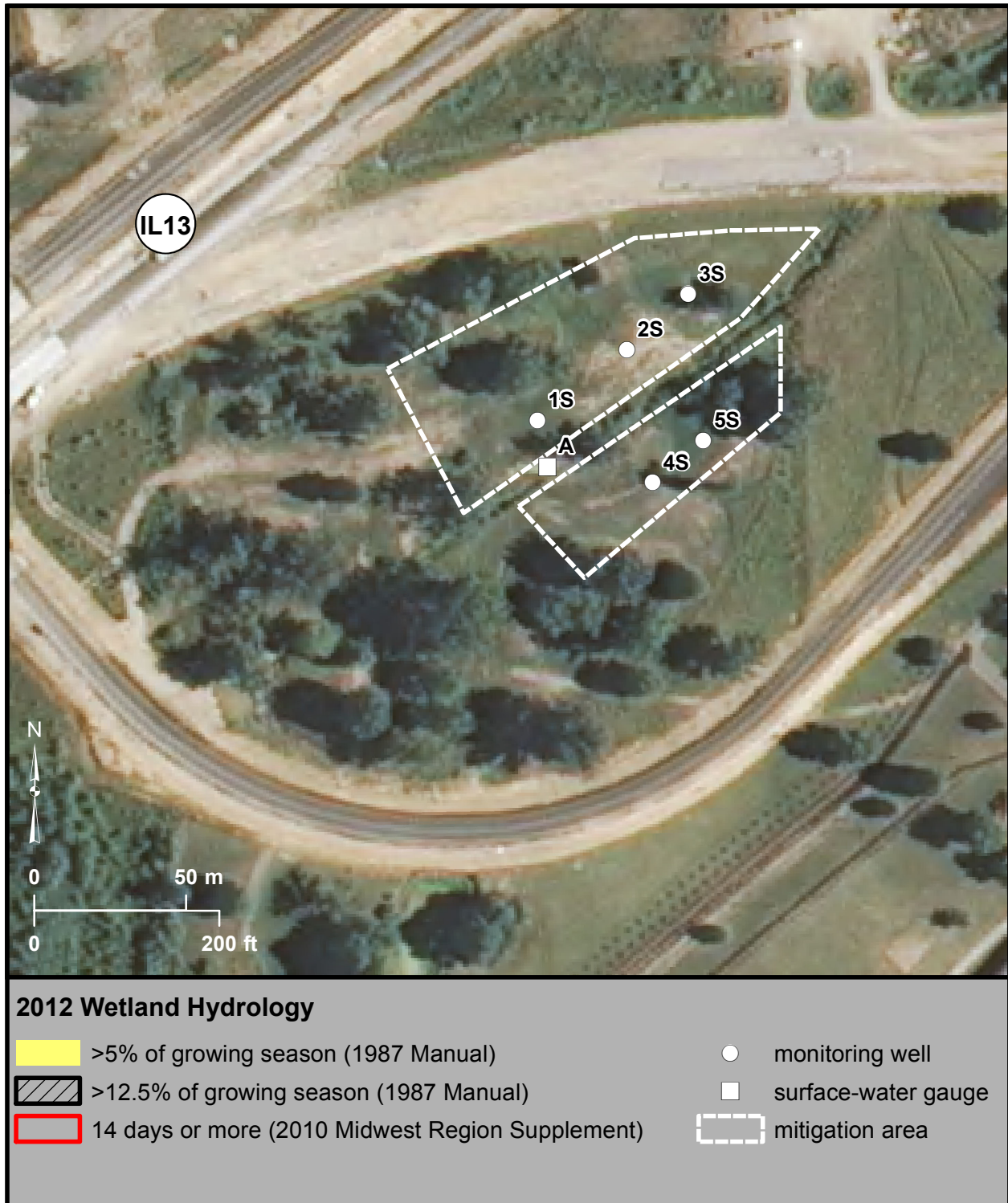


# Harrisburg, Site 3 Wetland Mitigation Site (US 45, FAP 332)

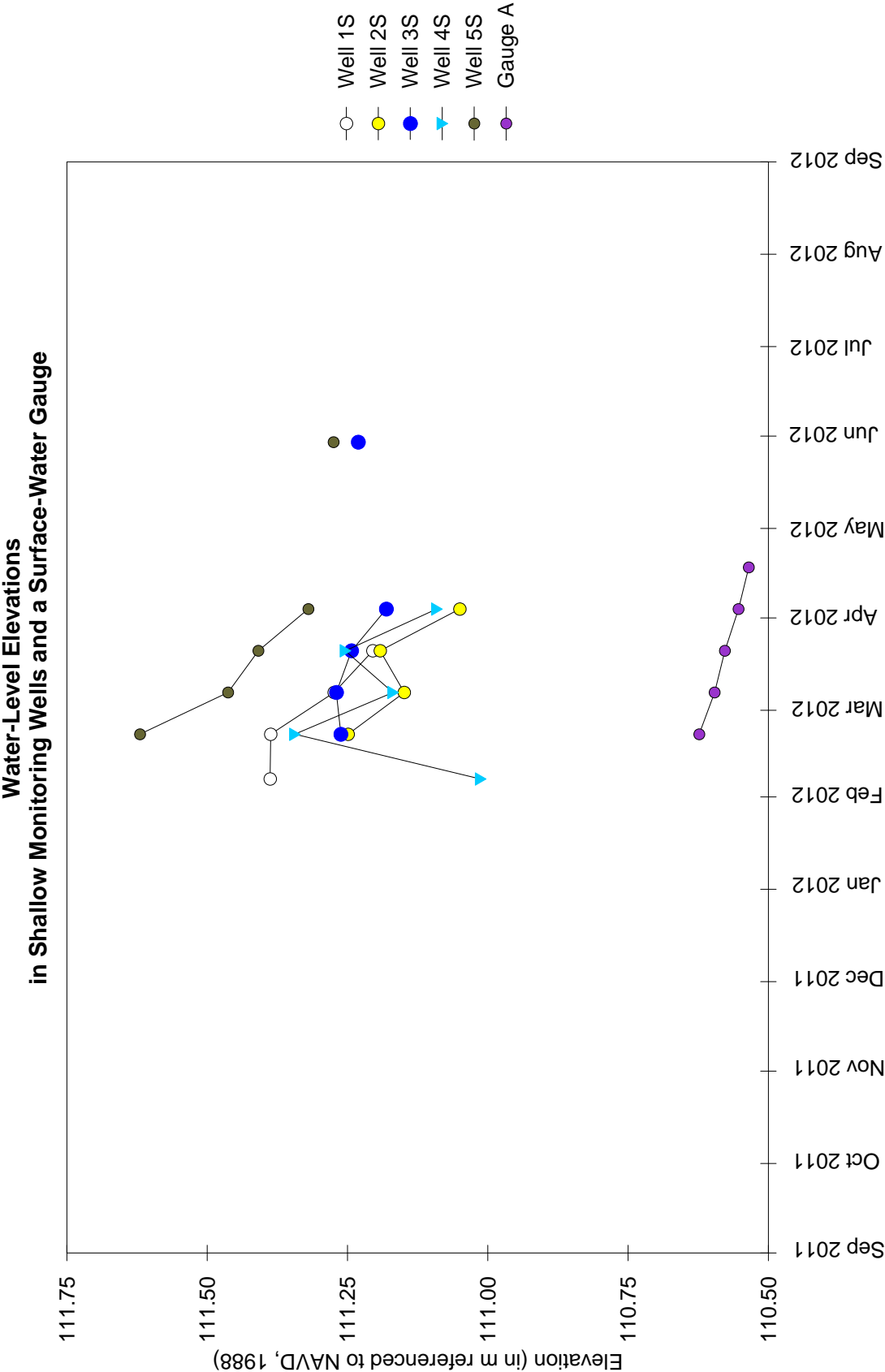
## Estimated Areal Extent of 2012 Wetland Hydrology

September 1, 2011 though August 31, 2012

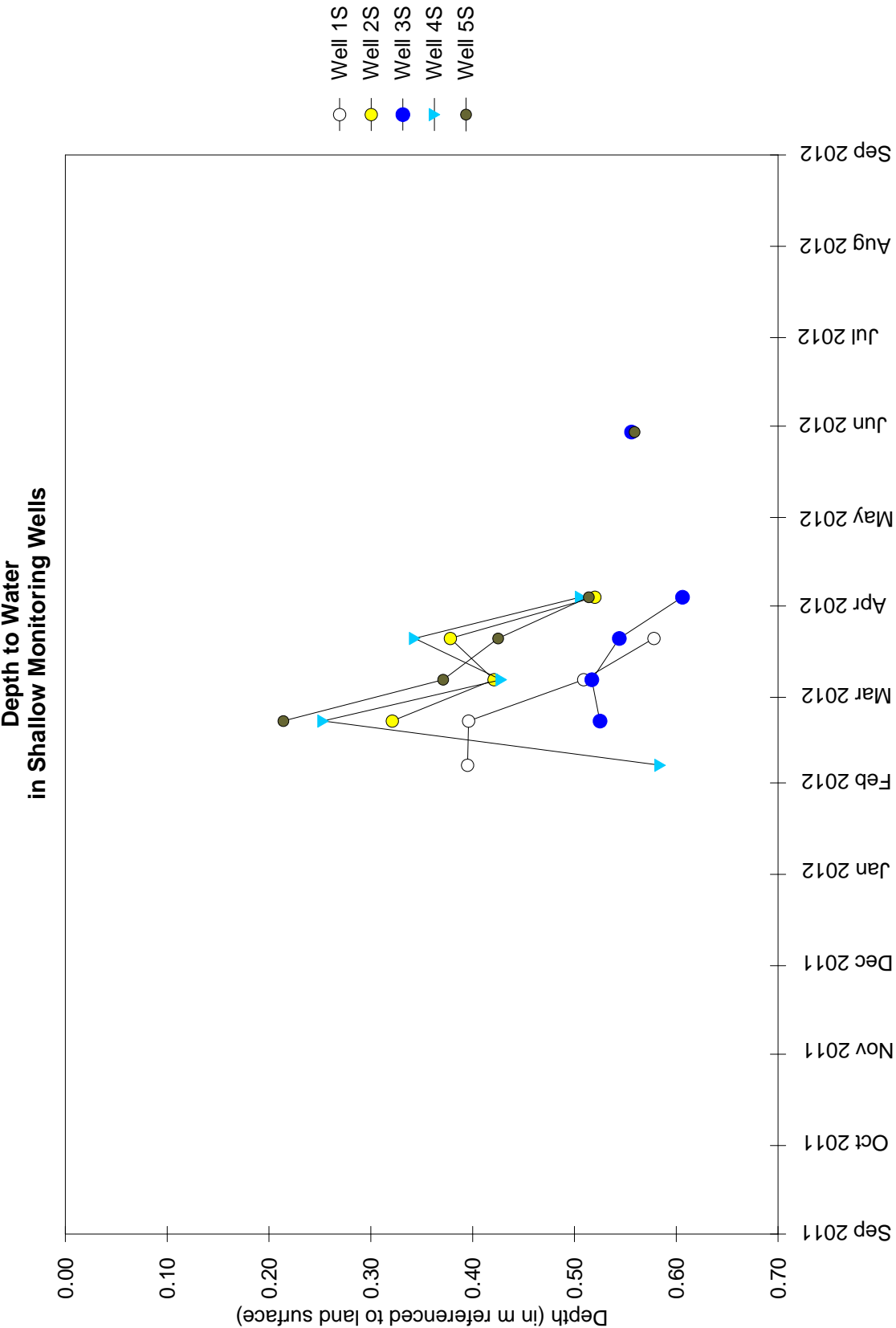
Map based on 2012 Farm Service Agency digital orthophotography, Saline County, Illinois (USDA-FSA 2012)



# Harrisburg, Site 3 Wetland Mitigation Site September 1, 2011 through August 31, 2012



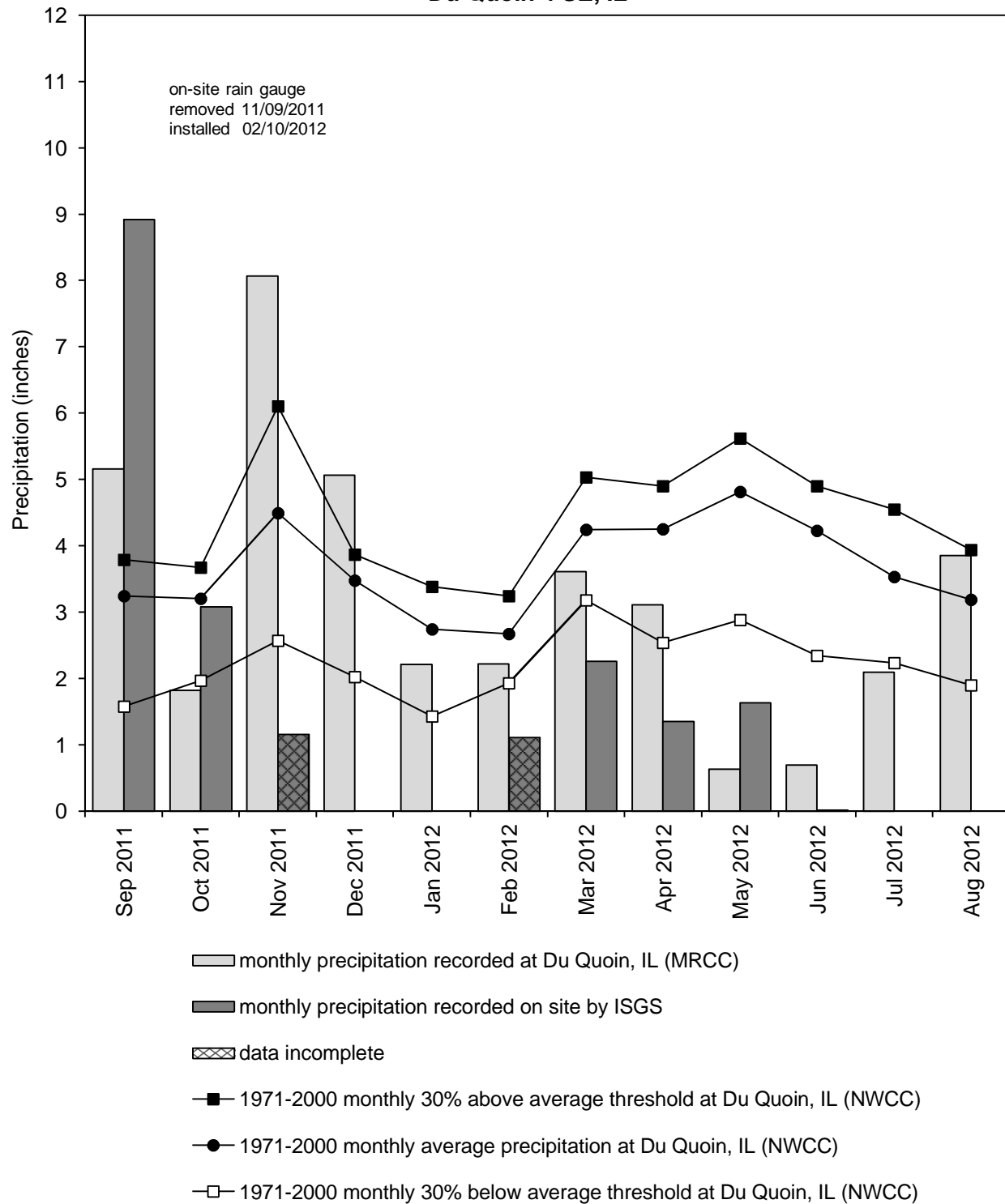
# Harrisburg, Site 3 Wetland Mitigation Site September 1, 2011 through August 31, 2012



# Harrisburg, Site 3 Wetland Mitigation Site

## September 2011 through August 2012

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





**GRANT CREEK NORTH  
WETLAND MITIGATION SITE**

**ISGS #88**

I-55

FAI 55

Will County, near Wilmington, Illinois

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

**Secondary Project Manager: Jessica R. Ackerman**

**SITE HISTORY**

- February 2012: ISGS was tasked by IDOT to monitor wetland hydrology.
- April 2012: ISGS installed a monitoring network.
- September 2012: Huddleston-McBride Land Drainage Company installed gate valves at strategic positions along active drainage tiles underlying the site.

**WETLAND HYDROLOGY CALCULATION FOR 2012**

The target compensation area for the Grant Creek North wetland mitigation site is 5.99 ha (14.80 ac). Using the 1987 Manual (Environmental Laboratory 1987), 9.48 ha (23.43 ac) of the total site area of 62.70 ha (155.00 ac) satisfied wetland hydrology criteria for greater than 5% of the 2012 growing season, while none of the site satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Using the 2010 Midwest Region Supplement (USACE 2010) to the 1987 Manual, 2.34 ha (5.78 ac) satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. However, monitoring was not initiated until April and acreage could have been larger. These estimates are based on the following factors:

- The median date that the growing season begins in Joliet, Illinois, is April 9, and the season lasts 209 days (MRCC 2012). According to the 1987 Manual, 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, March 6 was the starting date of the 2012 growing season based on soil temperatures measured at the nearby Morris Wetland Mitigation Bank (ISGS site #49).
- Total precipitation for the monitoring period at the Morris, IL, weather station was 80% of normal. During Spring 2012 (March through May), precipitation was 66% of normal. During an 11-day period in late April and early May 2012, 5.29 in. (13.44 cm) of precipitation was recorded at the site.
- In 2012, water levels measured in monitoring wells 8S, 10S, 12S, 13S, 14VS, 15S, 16VS, 18S, 19VS, 20VS, and 21VS satisfied wetland hydrology criteria for greater than 5% of the growing season, while no wells satisfied wetland hydrology criteria for greater than 12.5% of the growing season, according to the 1987 Manual. According to the 2010 Midwest Region Supplement, wells 8S, 14VS, 19VS, and 20VS also satisfied wetland hydrology criteria for 14 or more consecutive days of the growing season.
- Surface-water levels measured at Gauges A, B, and C indicated inundation at or below 159.94 m, 159.44 m, and 159.78 m (524.74 ft, 523.10 ft, and 524.21 ft), respectively, for greater than 5% of the growing season, while none of these gauges indicated inundation

for greater than 12.5% of the growing season, according to the 1987 Manual. Per the 2010 Midwest Region Supplement, surface-water levels measured at Gauges A and C indicated inundation at or below 159.83 m and 159.67 m (524.38 ft and 523.85 ft), respectively, for 14 or more consecutive days of the growing season, while Gauge B did not indicate inundation for 14 or more consecutive days of the growing season.

#### ADDITIONAL INFORMATION

- Unpublished water level data, recorded by the U.S. Forest Service on Grant Creek at West Patrol Road, shows that while the creek rose sharply on May 7, following several days of heavy rainfall, it did not overflow its banks and flood the site.
- Once treatment measures for undesirable vegetation are completed, the gate valves are scheduled to be closed with the goal of restoring more natural hydrologic patterns at the site.

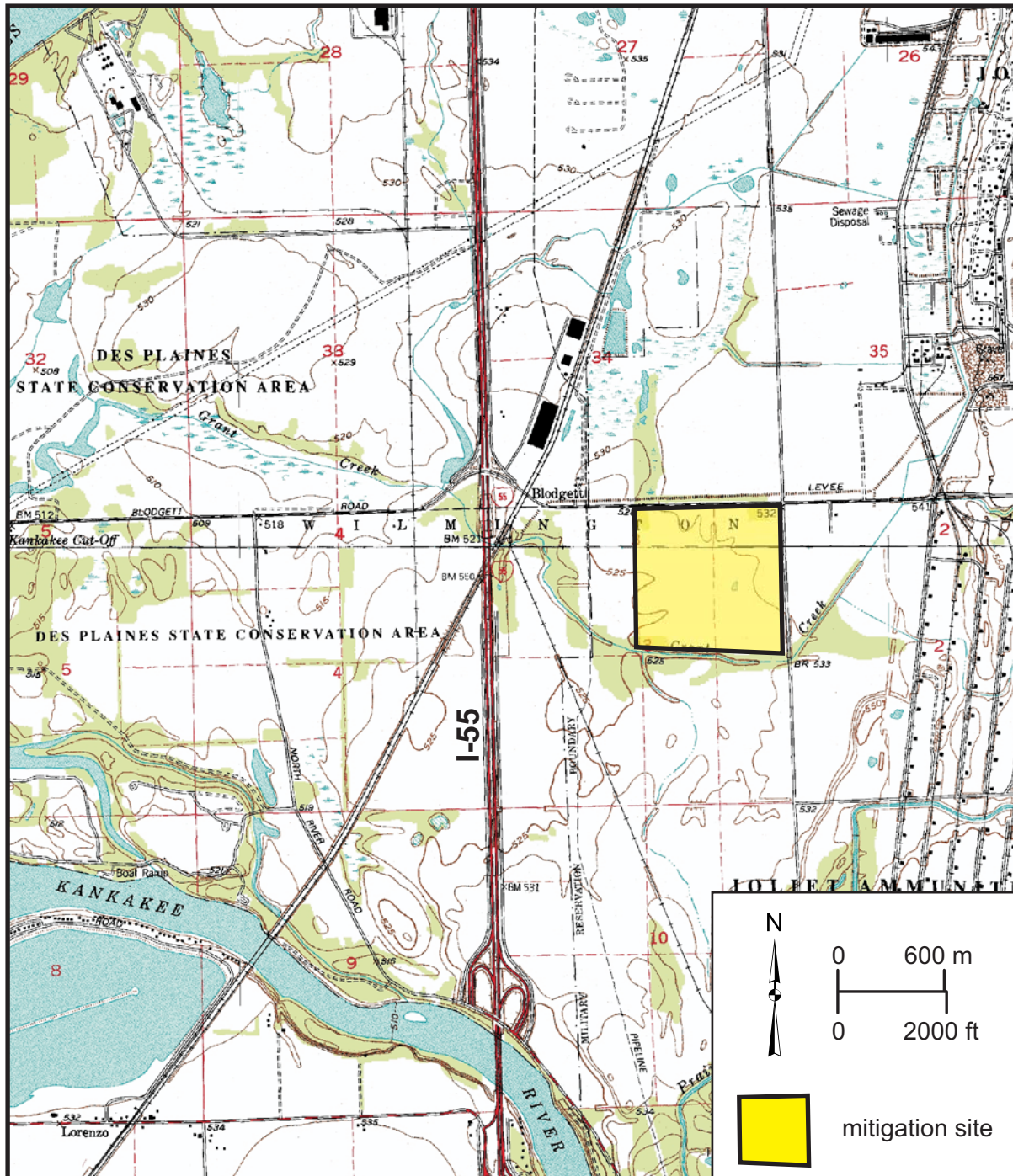
#### PLANNED FUTURE ACTIVITIES

- Once the gate valves on the drainage tiles are closed, additional monitoring instruments may be added to the site in order to better document any changes in hydrology.
- Monitoring will continue until no longer required by IDOT.

# Grant Creek North Wetland Mitigation Site (I-55, FAI 55)

## General Study Area and Vicinity

Map based on the USGS Topographic Series, Wilmington and Channahon, IL, 7.5-minute Quadrangle (USGS 1993). Contour intervals are 5 feet and 10 feet, respectively.



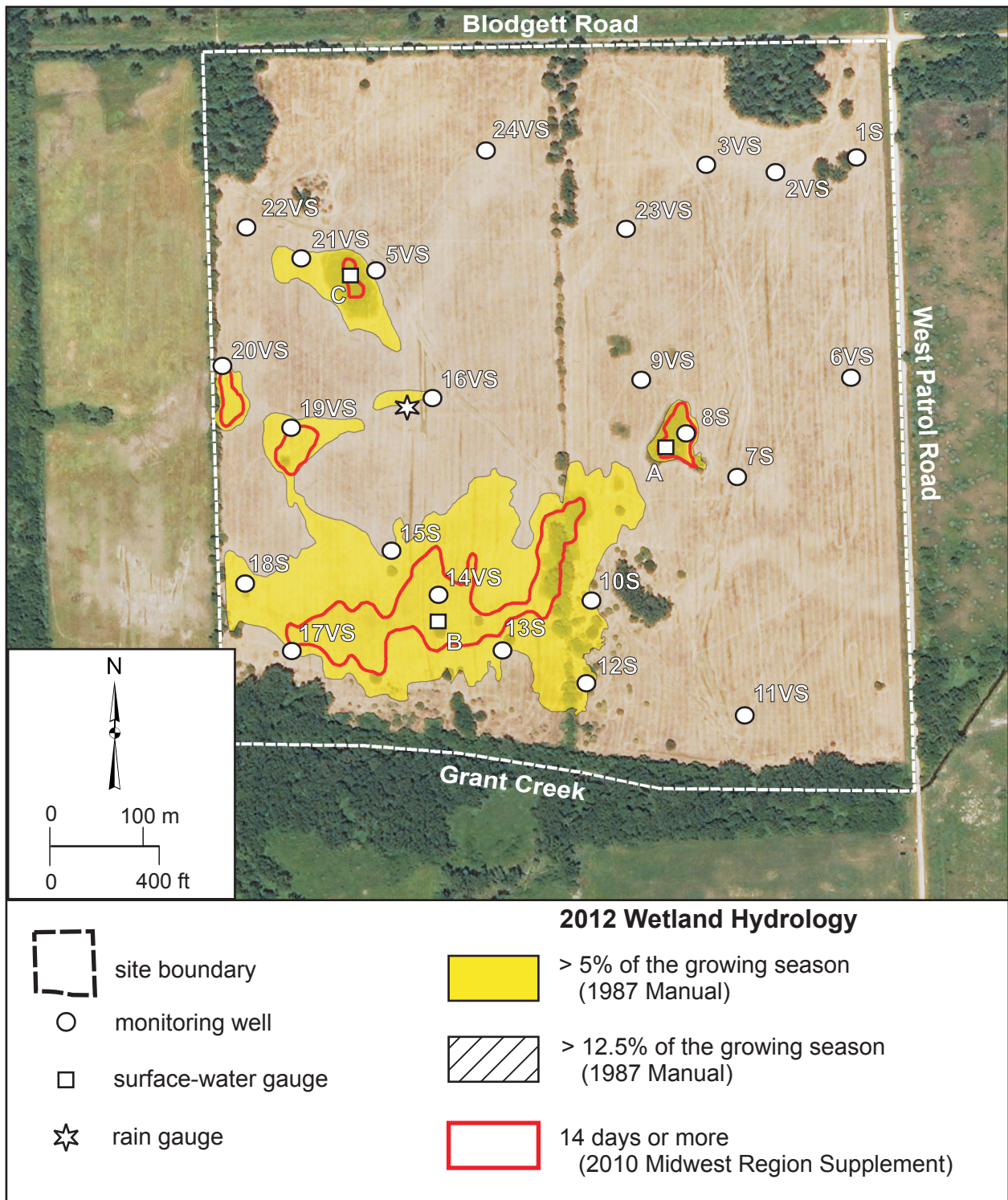


# Grant Creek North Wetland Mitigation Site (I-55, FAI 55)

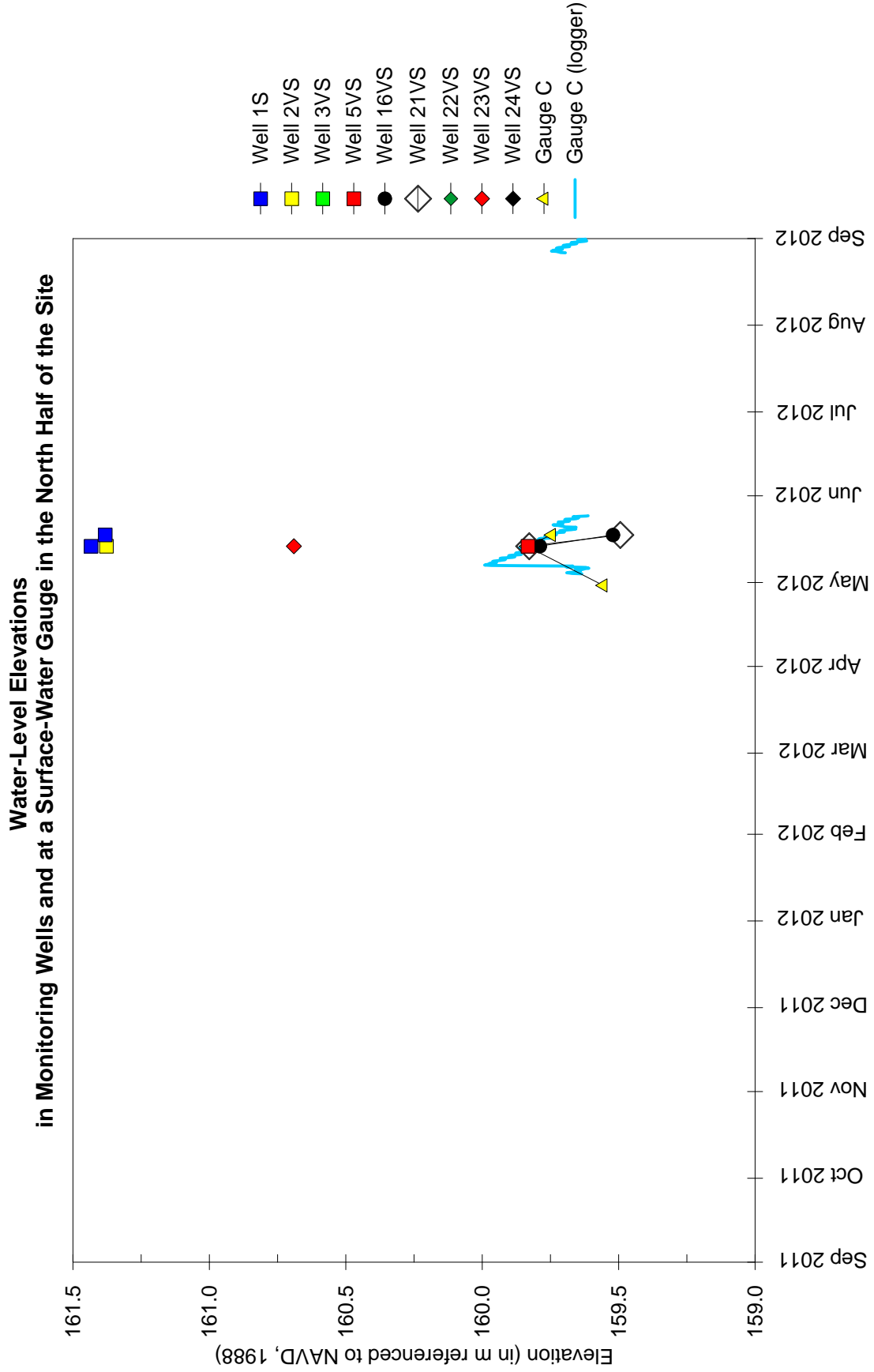
## Estimated Areal Extent of 2012 Wetland Hydrology

September 1, 2011 through August 31, 2012

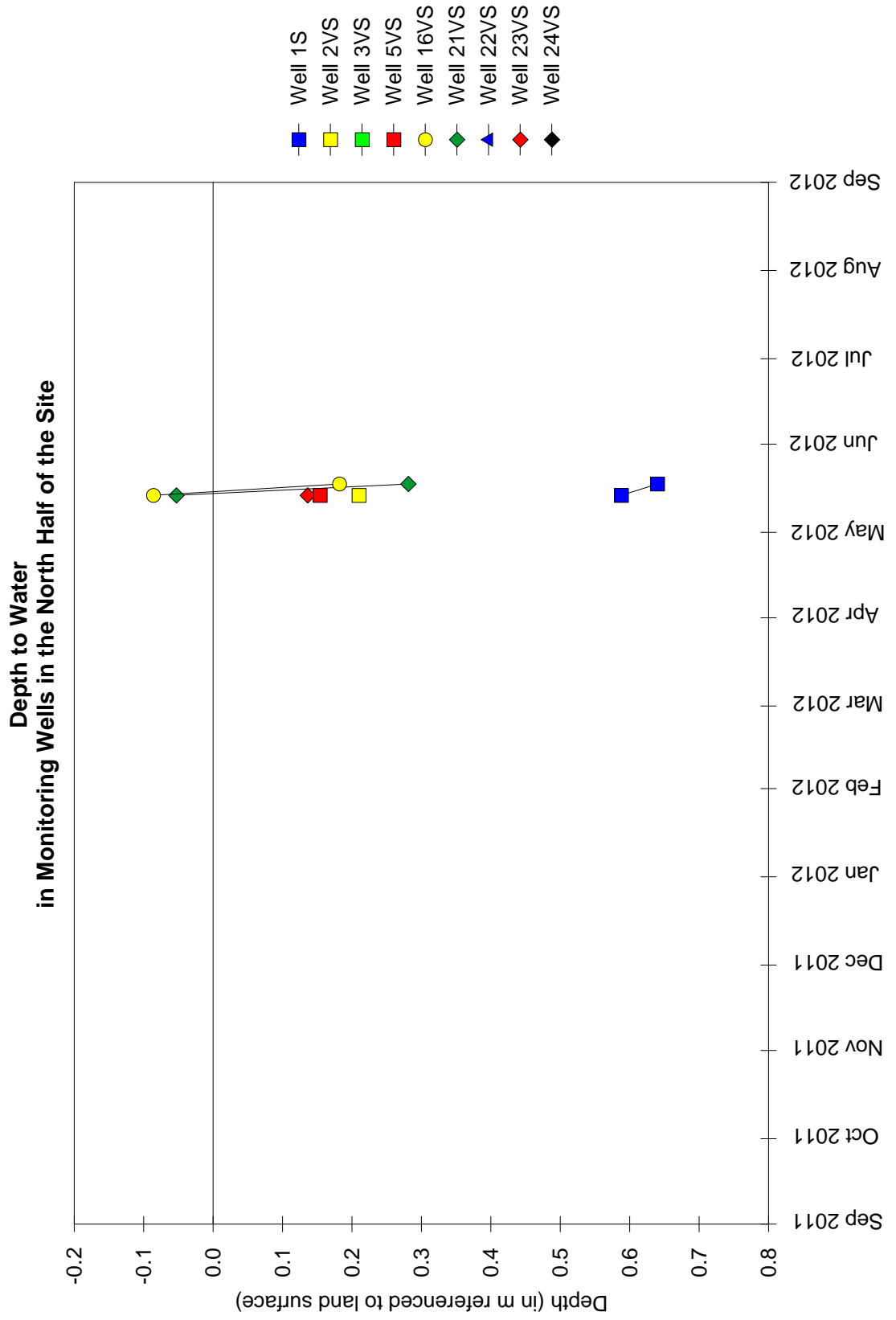
Map based on 2012 Farm Service Agency digital orthophotography, Will County, Illinois (USDA-FSA 2012)



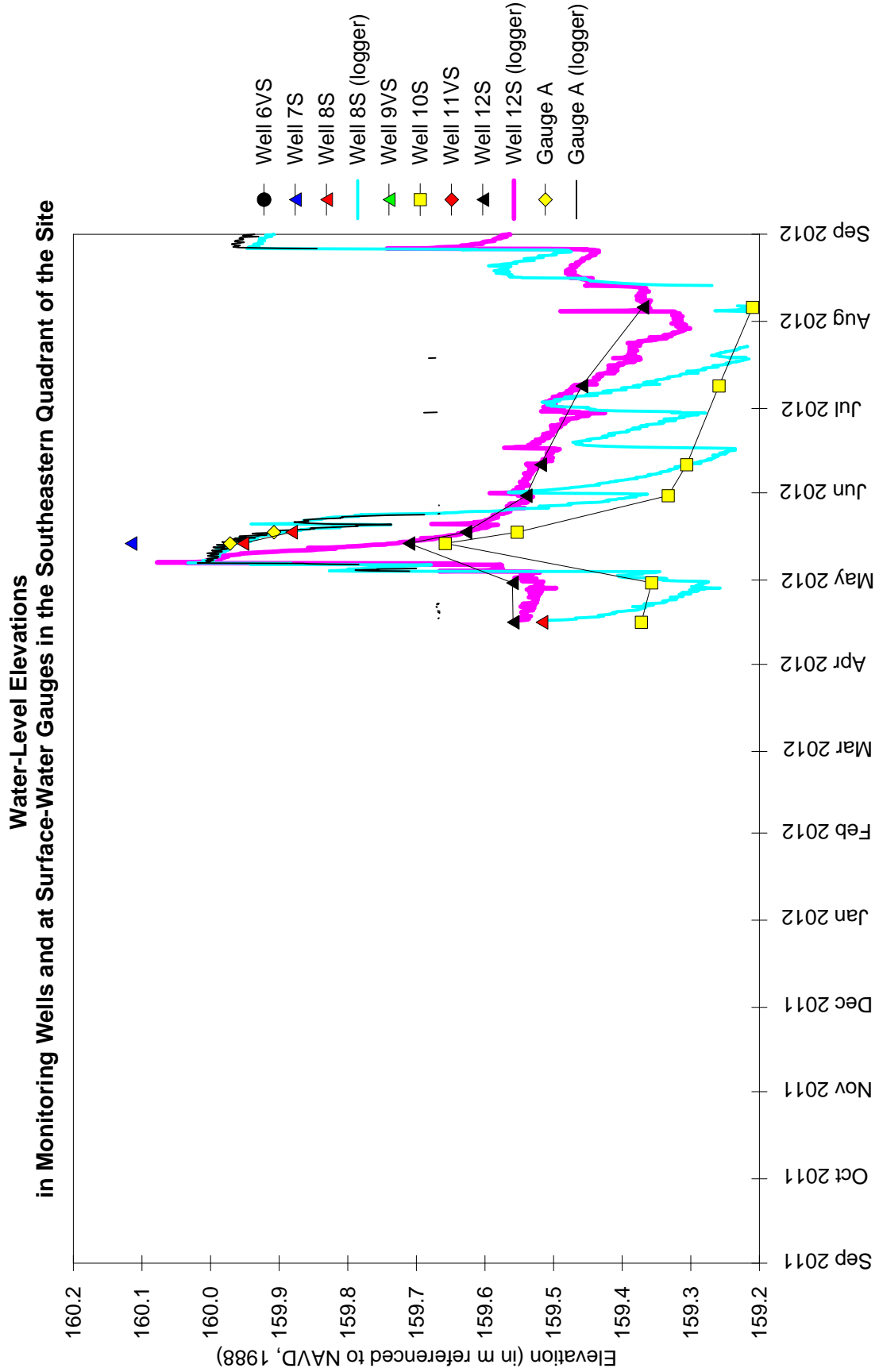
# **Grant Creek North Wetland Mitigation Site** **September 1, 2011 through August 31, 2012**



# **Grant Creek North Wetland Mitigation Site** **September 1, 2011 through August 31, 2012**

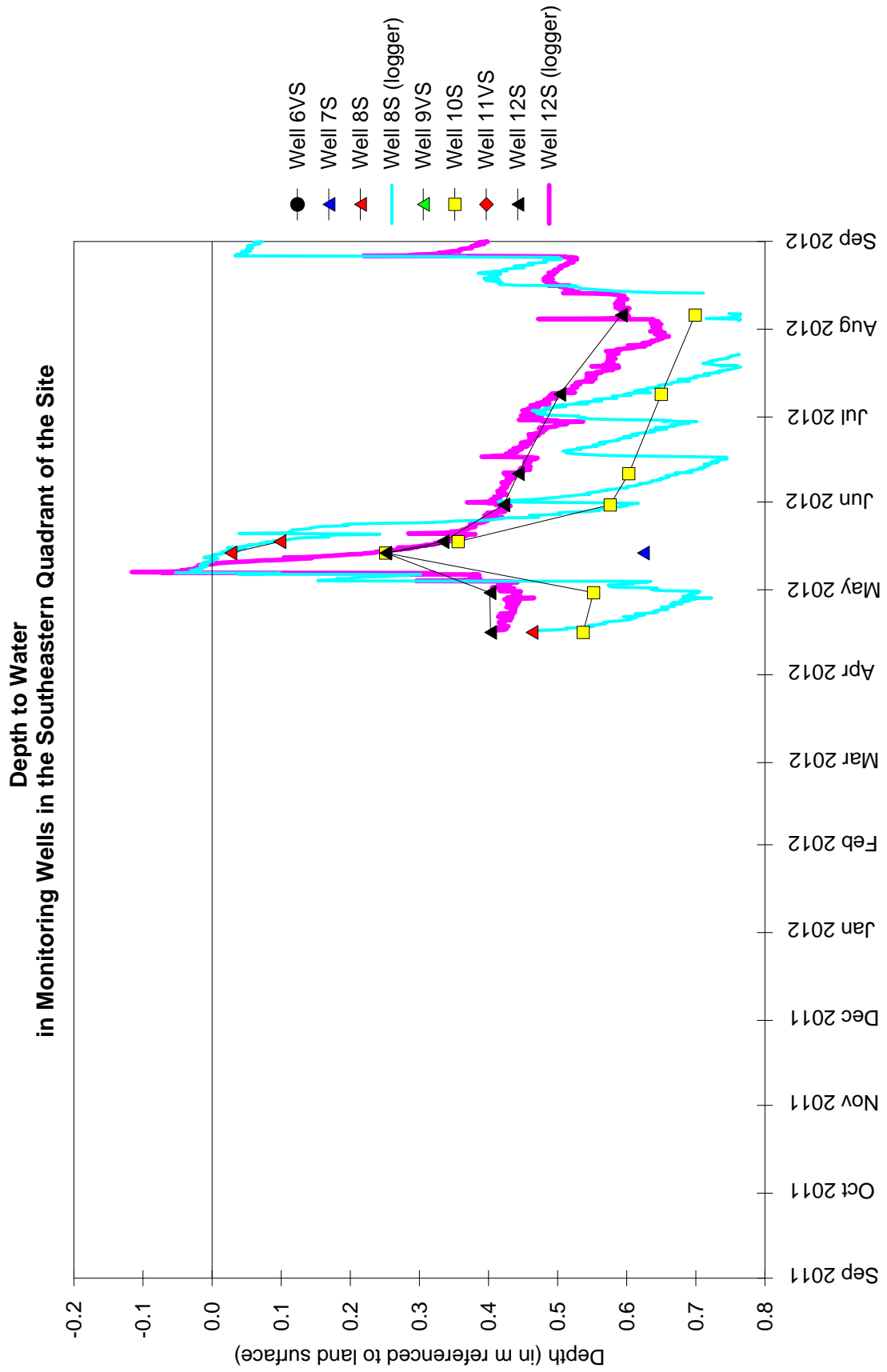


# Grant Creek North Wetland Mitigation Site September 1, 2011 through August 31, 2012

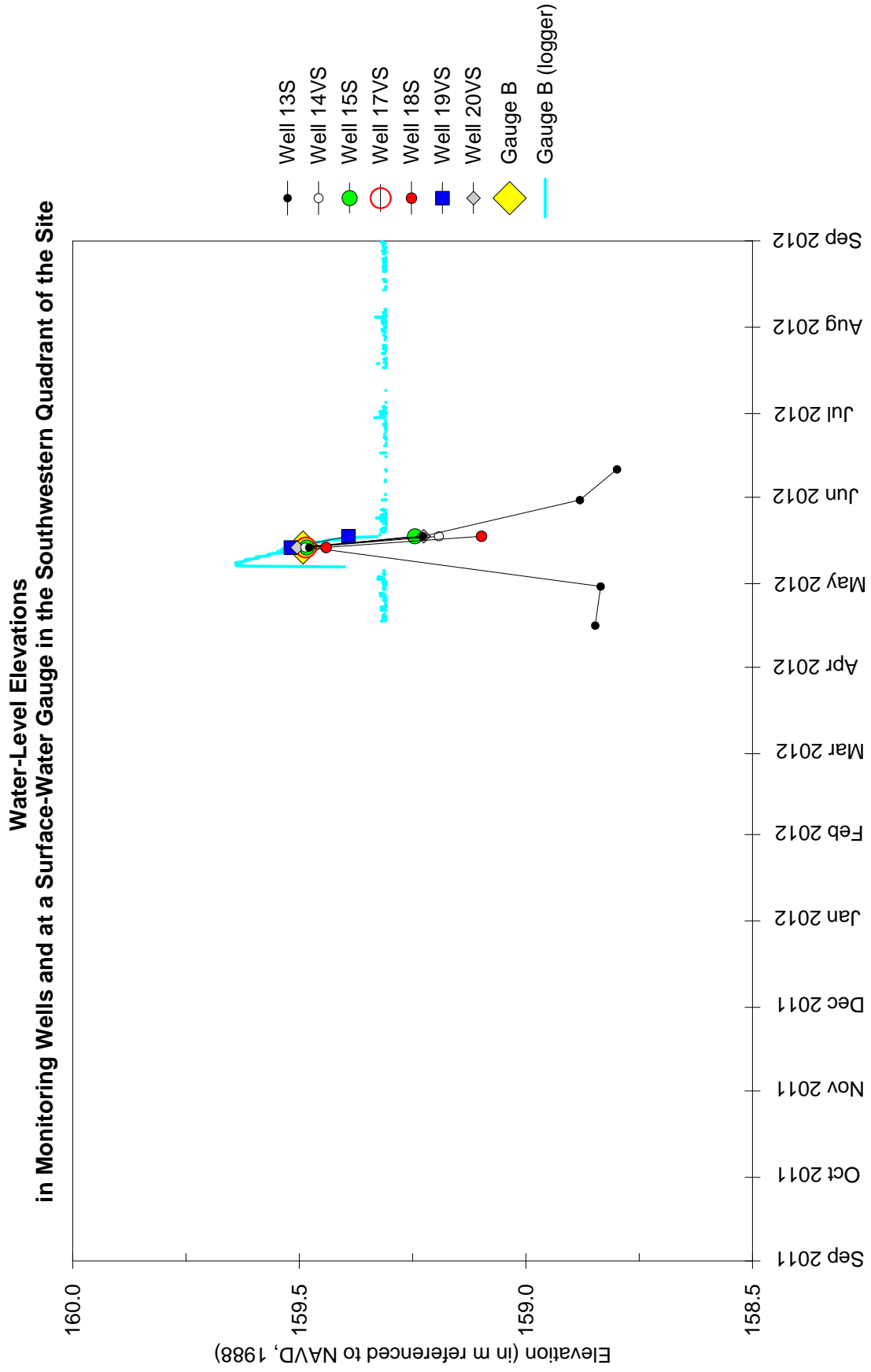




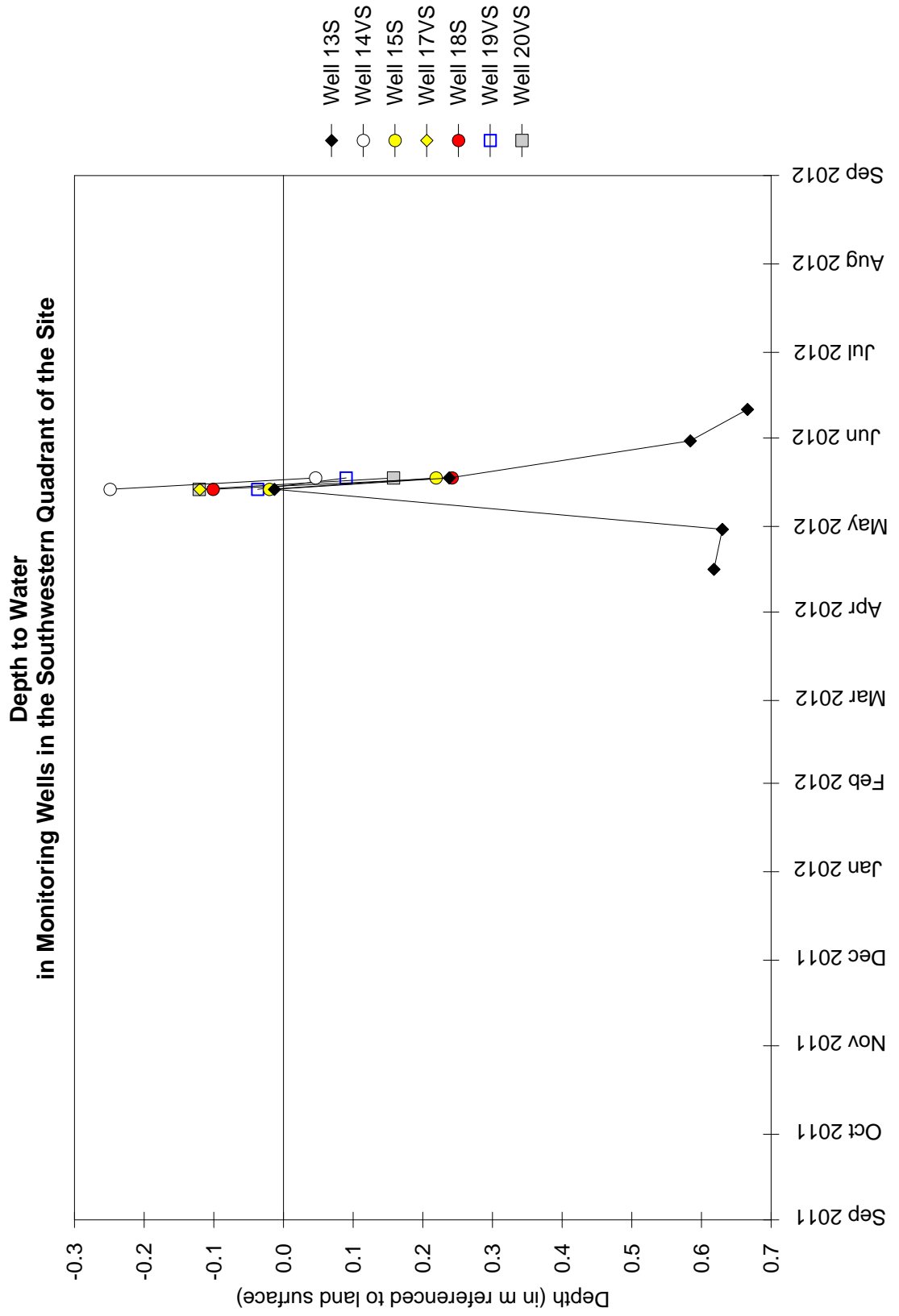
# **Grant Creek North Wetland Mitigation Site** **September 1, 2011 through August 31, 2012**



# Grant Creek North Wetland Mitigation Site September 1, 2011 through August 31, 2012

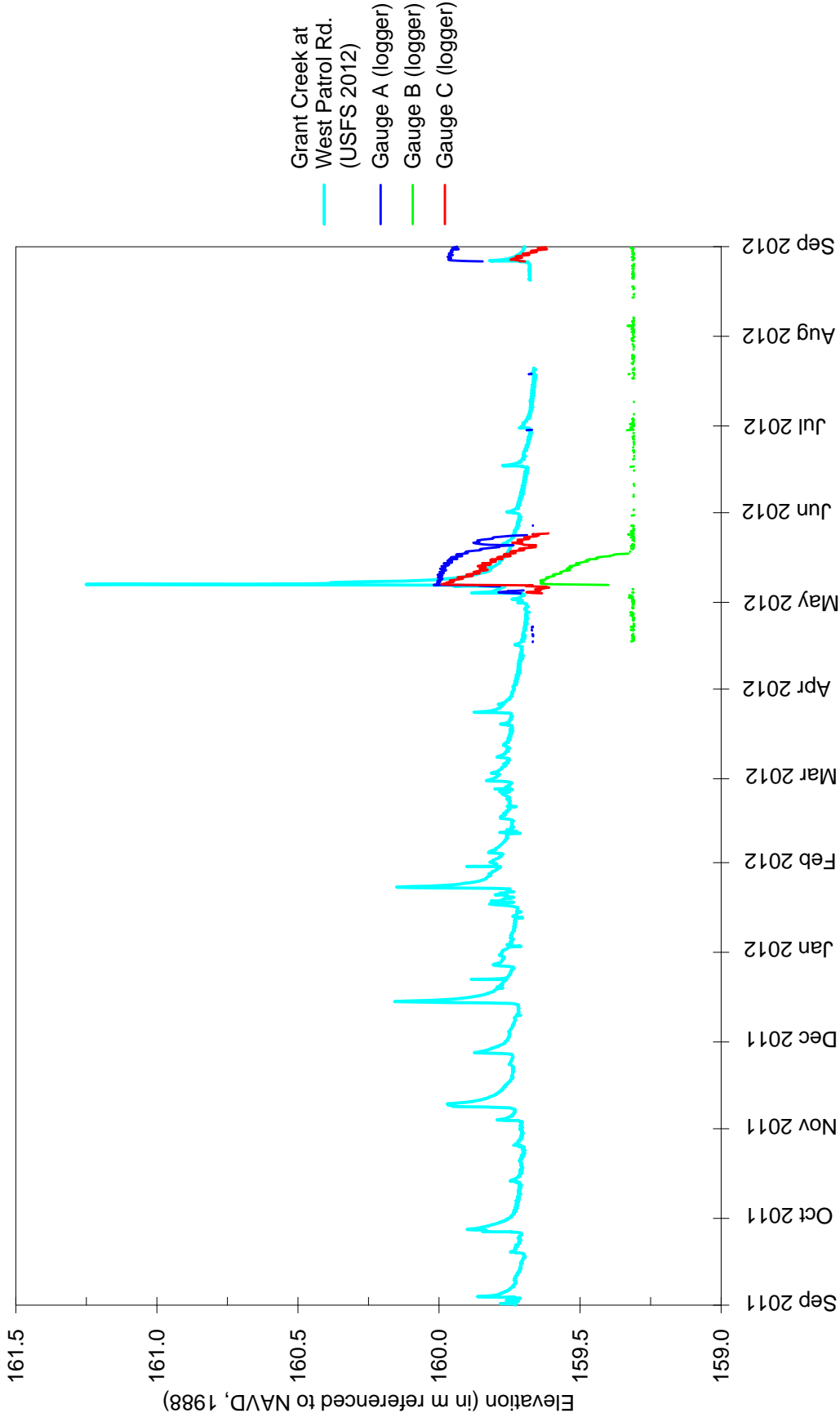


# **Grant Creek North Wetland Mitigation Site** **September 1, 2011 through August 31, 2012**



**Grant Creek North Wetland Mitigation Site**  
**September 1, 2011 through August 31, 2012**

Water-Level Elevations at Surface-Water Gauges



# **Grant Creek North Wetland Mitigation Site** **September 2011 through August 2012**

## **Total Monthly Precipitation Recorded on Site and at** **Channahon, IL and Morris, IL**

