Appendix D

Ecological Restoration Monitoring

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Abbreviations

AIBI	Amphibian Index of Biotic Integrity
BAP	Borrow Area Project
CC	Coefficient of Conservatism
DOE	U.S. Department of Energy
FACW	Facultative Wet
FPA	Former Production Area
FQAI	Floristic Quality Assessment Index
NPP	Northern Pine Plantation
OBL	Obligate
Ohio EPA	Ohio Environmental Protection Agency
PRE	Paddys Run East
VIBI	Vegetation Index of Biotic Integrity
WM1	Wetland Mitigation Phase I
WM2	Wetland Mitigation Phase II

Measurement Abbreviations

in^2	inches squared
m^2	meter squared

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D.1.0 Ecological Restoration Monitoring

Ecological restoration monitoring at the Fernald Preserve in 2012 involved both functional and implementation monitoring. Wetland communities were evaluated as part of functional monitoring. Implementation monitoring included characterization of the Paddys Run Tributary and Triangle Area restoration projects as well as a follow-up to the Natural Resource Trustee Resolution No. 3 projects. Species inventory activities also took place, including continued wetland amphibian surveys and evaluation of reptile and small mammal coverboards. The location of 2012 ecological monitoring activities is shown on Figure D–1.

Ecological restoration monitoring is required as a result of the natural resource damage settlement between U. S. Department of Energy (DOE), Ohio Environmental Protection Agency (Ohio EPA) and U.S. Department of Interior. The *Fernald Preserve Natural Resource Restoration Plan* (State of Ohio 2008) specifies ecological restoration monitoring requirements. The *Fernald Preserve Wetland Mitigation Monitoring Report* (DOE 2012a) included provisions to continue evaluation of wetland communities through the functional monitoring program. In addition to continuation of vegetation and amphibian surveys, water elevations continue to be monitored within mitigation wetlands.

D.2.0 Wetland Functional Phase Monitoring

Pursuant to the *Wetland Mitigation Monitoring Report*, functional phase monitoring in 2012 focused on created wetland communities. Wetland functional monitoring was expanded to include amphibian and hydrologic monitoring in addition to vegetation surveys. These surveys will allow for an evaluation of long-term trends in the development of wetland communities over time.

D.2.1 Vegetation Surveys

Vegetation data were collected pursuant to previous wetland mitigation vegetation surveys via fixed plot vegetation survey. Ten 10-meter by 10-meter modules are established and surveyed for species richness. The 10 plots are arranged to be representative of the vegetation within a particular wetland area. Usually, the fixed plot grid is laid out in a 2-module by 5-module pattern. However, this configuration can be altered if conditions warrant. For instance, a 1-module by 10-module pattern may be used to survey a long, narrow stretch of wetland vegetation along a shoreline. Four of the 10 modules are intensively monitored, with cover and biomass data collected in addition to species richness. Field procedures are documented in the *Fernald Preserve Ecological Monitoring Methods Plan and Procedures* (DOE 2013).

Fixed-plot surveys allow for several different comparisons. The species richness data is used in functional monitoring to compare mitigation wetlands to baseline conditions and reference sites. Vegetation Index of Biotic Integrity (VIBI) calculations are also used to evaluate longer term trends in mitigation wetlands. The VIBI is calculated using 10 metrics. Collected vegetation data are used to assign a score (0, 3, 7, 10) for each of the 10 metrics, which results in a composite score for a given wetland between 0 and 100. The *Wetland Mitigation Monitoring Plan* (DOE 2009) established that site wetland areas will be evaluated against the emergent wetland performance criteria.

Therefore, the VIBI metrics calculated from the collected vegetation data include the following:

- *Carex* Richness: The total number of species in the genus *Carex.*
- Dicot Richness: The total number of native species that are dicotyledons.
- Shrub Richness: The total number of native wetland shrubs.
- Hydrophyte Richness: The total number of native species that have a facultative wetland (FACW) or obligate (OBL) wetland indicator status.
- Annual/Perennial Ratio: The number of annual species divided by the number of perennial species.
- FQAI: The sum of Coefficient of Conservatism (CC) values is divided by the square root of the total number of species.
- Percent Sensitive Species: The sum of relative cover for all species with CC of 6 or higher.
- Percent Tolerant Species: The sum of relative cover for all species with CC of 2 or less. This includes non-native species, which are assigned a CC of 0.
- Percent Invasive Graminoids: The sum of the relative cover for reed canary grass (*Phalaris arundacea*), cattails (*Typha* spp.), and giant reed (*Phragmites australis*).
- Biomass: Average grams per square meter (m^2) of standing biomass samples. Four biomass samples were collected in each wetland basin; one from each of the four intensive modules.

Figures D–2A to D–2D show the location of fixed plot grids within each wetland basin evaluated. Data summaries for each of the wetland basins are provided in Table D–1. The wetland functional monitoring data comparison is provided in Table D–2, and a basin-by-basin comparison of VIBI scores is provided in Table D–3. Basin-specific species lists are included in Tables D–4 to D–26. The *Ohio Floristic Quality Assessment Index (FQAI) Database* is used to determine nativity status and CC values (Andreas 2004). An updated *National Wetland Plant List* (Lichvar 2012) is used to determine hydrophytic status. For functional monitoring, Table D–2 provides an evaluation of the five wetland project areas based on similar parameters collected for baseline and reference sites as well as previous monitoring efforts in 2003 and 2009. Since the Fernald Preserve wetlands are primarily emergent systems, the Open Water data sets are used to compare for both the baseline and reference sites. The baseline and reference site information was originally reported in the *2002 Consolidated Monitoring Report for Restored Areas* (DOE 2003). This information is now available as an appendix to the *Fernald Preserve Ecological Monitoring Methods Plan and Procedures* (DOE 2013). Note that the sampling effort in 2001 and 2002 was different from the fixed plot methodology used today. Original evaluations used a series of 1 m^2 quadrats to obtain herbaceous species richness and frequency data instead of species-specific cover. Therefore, Table D–2 limits parameters to those that are determined only through species richness.

Results from 2012 compare favorably with earlier data, and show continued progress over baseline conditions. The 2009 results are revised from when they were originally presented in the *Fernald Preserve 2010 Site Environmental Report* (DOE 2011). There are several reasons for this. First, new wetland indicator status lists were published by the U.S. Army Corp of Engineers (Lichvar 2012). These updated lists resulted in changes to Percent Hydrophytic calculations. Also, the database that ecological data is stored in can better consolidate and analyze field data. FQAI values were re-calculated after consolidating all basins within each wetland area. In 2009,

these values were averaged. This new methodology results in a higher FQAI score because a greater number of native species are used in the calculation.

While the vegetation surveys are useful in comparing to baseline and reference sites, there is potentially greater value in using the data to compare basins over time. VIBI scores have been calculated in 2009 and 2011 as part of wetland mitigation monitoring program. For the most part, the 2012 comparison in Table D–3 shows that there are no real trends that can be determined at this time. Results from FPAW7 have declined from 34 to 0 from 2009 to 2012. This is likely due to an increase in cattails (*Typha spp.*), which would influence several VIBI metrics. *Typha* species grew from less than 3 percent cover in 2009 (DOE 2010) to over 50 percent in 2012 (Table D–24). VIBI scores will be revisited in 2015.

D.2.2 Amphibian Surveys

Amphibian monitoring was conducted in 2012 as well. Table D–27 lists the amphibian species observed and Table D–28 compares Amphibian Index of Biotic Integrity (AIBI) scores for each basin in 2010, 2011, and 2012. These tables indicate that mitigated wetlands are sustaining habitat quality and function. Findings have been similar to those recorded in previous years with ambystomatid salamanders observed in wetlands that are located adjacent to established forest communities. The Former Production Area (FPA) had a significantly higher score than in previous years, as result of a surge in cricket frog frequencies.

D.2.3 Hydrological Monitoring

Hydrological monitoring consists of daily water level readings from shallow wells (i.e., piezometers) that were installed in late 2009. The location of piezometers within site wetlands is shown on Figures D–2A to D–2D. Hydrographs for each basin are provided in Figures D–3A to D–3W. Notes are provided on the hydrograph charts indicating when the piezometer was dry, or when data was not collected due to transducer failure. Results are as expected and show a similar pattern as previous years. Basins experience adequate soil saturation in winter and spring, followed by a drier period in the summer and fall. This pattern was observed even after the site experienced drought conditions in summer 2012. The influence of surface water is evident, as spikes in water elevations are observed in most basins following precipitation events in summer months. Three new piezometers were installed within the Paddys Run Tributary Project in 2012. Data from this area will be presented in the Site Environmental Report for 2013.

D.3.0 Implementation Monitoring

Implementation monitoring in 2012 included three areas: herbaceous cover and woody vegetation survival for the Paddys Run Tributary Project, herbaceous survey of the Triangle Area Project, and continued evaluation of the Natural Resource Trustee Resolution No. 3 Projects via herbaceous survey. Implementation project areas are shown on Figure D–1, with specific quadrat locations identified in Figures D–2A to D–2D. Herbaceous summary data is provided in Table D–29. Area-specific species lists are included as Tables D–30 to D–36. A summary of woody vegetation survival is provided in Table D–37. Each of these projects is discussed below.

Pursuant to the Natural Resource Restoration Plan, seeded areas are evaluated for two criteria: percentage of native species and total cover. Implementation monitoring goals include at least 50 percent native vegetation establishment and 90 percent total cover by the end of the first growing season following seeding. Seeded areas are evaluated via random sampling. All seeded areas are evaluated within each restoration project. Depending on the size of the restoration project, seeded areas may be grouped into habitat-specific subareas. For each distinct area, five 1 m^2 quadrats are randomly distributed and surveyed. Field personnel estimate the total cover and list all species present within each quadrat. Total cover is estimated by assigning cover class categories for each quadrat. A cover class of 1 indicates that only one or two individual plants are present. A cover class of 10 represents 95% to 99% vegetative cover. The data collected are used to determine total cover, percent native species composition, and relative frequency of native species, pursuant to the *Fernald Preserve Ecological Monitoring Methods Plan and Procedures* (DOE 2013).

For woody vegetation, all planted sapling trees and container-grown shrubs are evaluated for survival at the end of the first growing season following installation. This involved an assignment of one of four categories: alive, resprouting, vital, and dead or unaccounted. Trees and shrubs are considered "alive" when their main stem and/or greater than 50 percent of the lateral stems are viable. "Resprouting" trees and shrubs have a dead main stem, with one or more new shoots growing from the stem or the root mass. Plants are categorized as "vital" when less than 50 percent of its lateral branches are alive. "Dead" trees have no signs of life at all. "Trees that are "unaccounted" are considered dead. Only "alive" trees are counted as surviving. The woody vegetation goal is 80 percent survival following the first growing season.

D.3.1 Paddys Run Tributary

The goal of the Paddys Run Tributary Project is to create vernal pool breeding habitat for ambystomatid salamanders within a contiguous forest community. The project involved grading to create a vernal pool and installation of woody and herbaceous vegetation along Paddys Run Road. Over 1,100 balled and burlapped and container-grown trees and shrubs were planted within a four-acre area. An additional three acres were planted with bare root seedlings. Deer fence was installed around the four-acre planting area and all disturbed areas were seeded with either wetland or mesic prairie grass and forb mixes.

Establishment of herbaceous vegetation for the Paddys Run Tributary Project was generally acceptable (Table D–29). Both wetland and prairie seeding areas had greater than 50 percent native species composition. All but two quadrats scored a cover class of 10 (95% to 99% cover). The lower percent cover in these two quadrats was due to the fact that they are part of or adjacent to the emergent wetland area. This resulted in a lower cover class of 8 (50% to 75% cover).

The woody-vegetation survival rates for the Paddys Run Tributary Project is presented in Table D–37. In general, the large container and balled-and-burlapped trees performed well, along with wetland shrubs. Overall, woody vegetation did not meet the 80 percent survival goal in 2012. Most of the large trees and plants located near wetland areas survived much better than smaller vegetation that was installed in the former mesic prairie area. This is due to several factors. First, the Fernald Preserve was affected by drought conditions in early summer 2012. The monthly precipitation total for June 2012 was 2.48 inches, as measured at the Butler County,

Ohio, Regional Airport. This is the lowest June total since 2004. Site conditions were even drier. A rain gauge installed on Fernald Preserve property measured 1.14 inches of rain for June 2012.

The lack of rain resulted in the need to water planted vegetation. Due to the remote location of the project area, water had to be trucked to the field. Site personnel were required to irrigate individual large trees and wetland vegetation that were less tolerant of dry conditions. The primary wetland basin in the project area was also filled with water several times in an effort to ensure survival of herbaceous plants and emergent wetland shrubs. These focused efforts resulted in less irrigation of smaller plants and upland vegetation.

A second factor that influenced survival was the difficulty of finding smaller-sized vegetation in the months following installation. Planting Area A is located within a former mesic tallgrass prairie restoration area. The warm-season grasses that are seeded in the project area include big bluestem (*Andropogon gerardii*), indiangrass (*Sorghastrum nutans*), switchgrass (*Panicum virgatum*) and Canada wildrye (*Elymus canadensis*). These species often grow over 6 feet (2 meters) high. The project area was mowed, raked, and baled prior to the start of construction, but by the summer of 2012 much of the site was characterized by thick stands of vegetation. This meant the smaller 1- to 3-gallon container plants were difficult to locate in the field, either to water or to determine survival. Of the 1,155 plants installed, 368 were unaccounted for. These were conservatively counted as "dead" when calculating survival. If all unaccounted for plants were counted as "alive," then overall survival would be approximately 90 percent.

D.3.2 Triangle Area

The goal of the Triangle Area project was to expand prairie establishment at the Fernald Preserve. The Triangle Area, which measures 7 acres, is similar in setting and community to adjacent on-property grasslands that were successfully converted to mesic tall grass prairie. The seeding approach was consistent with other grassland establishment efforts at the Fernald Preserve. Existing cool season grasses were eradicated with two applications of glyphosate herbicide: one in the fall of 2011 and a second about 2 weeks prior to seeding in May 2012. Seeds were installed with a tractor-pulled seed drill. Originally, the entire seeding area was planned as a mesic prairie. Following a spring 2012 field walk down, the Natural Resource Trustees determined that a portion of the Triangle Area should be seeded with a wetland seed mix. Therefore, two monitoring sub-areas were evaluated (i.e., mesic prairie and wet mesic prairie).

Both native species and total cover goals for the Triangle Area project were met (Table D–29). Results from the Triangle Area Project are consistent with other prairie establishment efforts on Fernald Preserve property where topsoil is still intact. Native species include a combination of seeded grasses and forbs, along with volunteer species that are common in disturbed communities (Tables D–32 and D–33).

D.3.3 Resolution Number 3 Projects

The Resolution Number 3 Projects involved erosion repair, addition of soil amendment and seeding to establish mesic tallgrass prairie within three areas in the Former Production Area. They are entitled "Resolution Number 3" because that was the title of the documentation used by the Fernald Natural Resource Trustees to specify evaluation and repair of site restored areas.

Figure D–1 shows the location of these projects, which are known as the Solid Waste Landfill, the Haul Road, and the Prairie Area. In 2012, a second year of herbaceous surveys was conducted as required in the Natural Resource Restoration Plan. Five random quadrats were sampled from each of these areas to determine total cover and native species establishment. A summary of results is provided in Table D–29, with area-specific species lists included in Tables D–34 to D–36. Figures D–2A to D–2D illustrate the location of each quadrat within each area.

The Natural Resource Restoration Plan specifies a goal of 90 percent total cover and 50 percent native species establishment. The native species goal was met for all three areas; however, relative frequency of native species decreased in the Prairie Area to 33 percent. Non-native vegetation continues to establish in this area. Red top (*Agrostis gigantea*), Queen Anne's lace (*Daucus carota*) and english plantain (*Plantago lanceolata*) were found in all quadrats sampled (Table D–36). The total cover goal was not met for all three areas. Again, the Prairie Area experienced a decrease in total cover from 73 percent in 2011 (DOE 2012b) to 57 percent in 2012 (Table D–29). Continued management of this area will be necessary to establish mesic prairie species.

D.4.0 Species Inventory Activities

An effort was initiated in 2008 to inventory a variety of plant and animal species at the Fernald Preserve. This work assists with adaptive management of ecologically restored areas, adds to the local database of biological information, and provides opportunities for educational outreach.

Reptile and small mammal surveys were continued in 2012. Coverboards were placed around selected wetlands to attract small mammals and reptiles. These boards are single sheets of corrugated aluminum that absorb heat and provide shelter which in turn attract a variety of species. Species observations and frequency of occurrence remained fairly consistent compared to the previous 2 years; no new reptile or mammal species were observed in 2012.

The unexpected presence of ambystomatid salamanders under several coverboards in the spring resulted in the development of a new approach that focused more on salamander monitoring. A number of coverboards were relocated to the northern mitigation wetland areas (Figures D–2A and D–2B). In addition to the revised coverboard placement, alternative materials are being investigated. Four 14-in^2 white oak coverboards were placed in a uniform pattern alongside individual metal coverboards in select wetlands. Monitoring of this new board configuration began in September of 2012 and will continue through April of 2013. Findings will be presented in 2013, but thus far show that both ambystomatid and plethodon salamanders are utilizing coverboards. A total of four species have been observed under the coverboards with occasional observations of small mammals.

D.5.0 Activities in 2013

Monitoring activities in 2013 will focus on prairie functional monitoring, continued implementation monitoring of 2012 ecological restoration projects, and further investigation of coverboards for expanded amphibian monitoring. Project-specific species inventory activities will also continue.

Table D–1. Wetland Functional Monitoring Vegetation Summary

Basin	Size (Acres)	Total Species	Native Species	Non-Native Species	Percent Native Species	Average CC[a]	FQAI[b]	VIBI Score[c]
Wetland Mitigation Phase I								
WM1W1	1.00	42	32	9	76%	2.21	13.77	35
WM1W2	1.38	89	59	25	66%	1.78	16.12	71
WM1W3	0.93	53	39	12	74%	1.83	12.75	51
WM1W4	1.08	82	63	18	77%	1.78	15.86	67
WM1W5	0.27	43	27	16	63%	1.63	10.28	26
WM1W6	1.68	60	50	15	83%	1.95	15.24	61
WM1W7	0.77	33	25	7	76%	2.28	12.90	32
Wetland Mitigation Phase II								
WM2W1	0.94	45	34	8	76%	2.14	13.89	46
WM2W2	0.94	62	46	16	74%	2.04	15.50	55
WM2W3	1.19	69	56	12	81%	2.17	17.49	53
North Pines Plantation Enhancement								
NPPW4	2.24	46	38	7	83%	2.20	14.76	48
NPPW5	0.14	62	50	10	81%	2.22	16.94	51
Borrow Area								
BAPW2	3.35	55	46	9	84%	2.38	17.31	58
BAPW3	0.56	31	27	4	87%	1.86	9.83	30
BAPW4	1.30	50	36	12	72%	1.77	12.27	36
BAPW7	0.36	49	37	12	76%	1.96	13.71	43
BAPW9	0.83	45	35	7	78%	2.17	14.04	33
Former Production Area								
FPAW2	4.25	36	27	8	75%	1.76	10.29	26
FPAW4	1.20	29	25	4	86%	2.07	10.96	36
FPAW5	2.91	55	40	14	73%	2.09	15.38	41
FPAW7	2.47	16	12	4	75%	1.75	7.00	0
FPAW9	2.51	39	35	4	90%	2.38	14.89	55
PREW6	2.32	43	35	7	81%	2.23	14.07	47

[a]CC = Coefficient of Conservatism

[b]FQAI = Floristic Quality Assessment Index

[c]VIBI = Vegetative Index of Biotic Integrity

Table D–2. Wetland Functional Monitoring Comparison

Parameter	Restoration Project Area										Wetland		
	WM1		WM2		BAP		FPA		NPP		Baseline	Reference	WM1
Year	2009	2012	2009	2012	2009	2012	2009	2012	2009	2012	2002	2002	2003
Total Species	141	155	67	95	101	102	103	114	79	87	33	61	62
Native Species	99	111	52	76	75	77	82	88	62	81	17	55	49
Percent Native	70%	72%	78%	80%	74%	75%	80%	77%	78%	82%	48%	90%	79%
Average CC[a]	2.34	2.05	2.07	2.40	1.98	2.07	2.30	2.16	2.15	2.37	1.12	3.49	2.21
FQAI[b]	27.80	25.54	16.98	23.39	19.90	20.89	23.35	23.05	19.13	22.09	6.44	27.27	17.40
Percent Hydrophytic	50%	50%	55%	49%	50%	57%	50%	51%	57%	52%	24%	51%	64%

[a]CC = Coefficient of Conservatism

[b]FQAI = Floristic Quality Assessment Index

Table D–3. Wetland Mitigation Vegetation Index of Biotic Integrity (VIBI)

Restoration Project Area	Basin	Size (Acres)	Year		
			2009	2011	2012
Wetland Mitigation Phase I	WM1W1	1.00	40	39	35
	WM1W2	1.38	71	61	71
	WM1W3	0.93	61	46	51
	WM1W4	1.08	61	54	67
	WM1W5	0.27	26	32	26
	WM1W6	1.68	67	48	61
	WM1W7	0.77	54	42	32
	Wetland VIBI[a] Average		54	46	49
Wetland Mitigation Phase II	WM2W1	0.94	50	53	46
	WM2W2	0.94	43	49	55
	WM2W3	1.19	57	51	53
	Wetland VIBI[a] Average		50	51	51
North Pines Plantation Enhancement	NPPW4	2.24	51	58	48
	NPPW5	0.14	51	61	51
	Wetland VIBI[a] Average		51	60	50
Borrow Area	BAPW2	3.35	50	46	58
	BAPW3	0.56	32	42	30
	BAPW4	1.30	36	23	36
	BAPW7	0.36	50	50	43
	BAPW9	0.83	59	29	33
	Wetland VIBI[a] Average		45	38	40
Former Production Area	FPAW2	4.25	25	40	26
	FPAW4	1.20	50	18	36
	FPAW5	2.91	51	54	41
	FPAW7	2.47	34	13	0
	FPAW9	2.51	50	56	55
	PREW6	2.32	43	25	47
	Wetland VIBI[a] Average		42	34	34

[a]VIBI = Vegetative Index of Biotic Integrity

Table D–4. WM1W1 Wetland Vegetation Monitoring Data Summary

Total Species	42
Native Species	32
Non-Native (Adventive) Species	9
Average CC[a]	2.21
FQAI[b]	13.77

Species	Common Name	Type	CC[a]	Nativity	Wetland Indicator[c]	Relative Cover
Alisma subcordatum	SOUTHERN WATER-PLANTAIN	forb	2	native	OBL	0.294%
Asclepias incarnata	SWAMP MILKWEED	forb	4	native	OBL	0.149%
Carex comosa	BEARDED SEDGE	sedge	2	native	OBL	1.457%
Carex lurida	BOTTLEBRUSH SEDGE	sedge	3	native	OBL	1.457%
Carex vulpinoidea	FOX SEDGE	sedge	1	native	FACW	0.146%
Cephalanthus occidentalis	BUTTONBUSH	shrub	6	native	OBL	2.040%
Eleocharis erythropoda	RED-FOOTED SPIKE-RUSH	sedge	4	native	OBL	0.437%
Eleocharis obtusa	BLUNT SPIKE-RUSH	sedge	1	native	OBL	0.146%
Eleocharis palustris	SMALL'S SPIKE-RUSH	sedge	5	native	OBL	0.146%
Eupatorium perfoliatum	COMMON BONESET	forb	3	native	OBL	1.748%
Fraxinus pennsylvanica	GREEN ASH	tree	3	native	FACW	0.003%
Juncus effusus	SOFT RUSH	forb	1	native	OBL	0.583%
Juncus tenuis	PATH RUSH	forb	1	native	FAC	0.003%
Leersia oryzoides	RICE CUT GRASS	grass	1	native	OBL	0.437%
Lemna minor	COMMON DUCKWEED	forb	3	native	OBL	5.974%
Ludwigia palustris	WATER-PURSLANE	forb	3	native	OBL	13.113%
Lycopus americanus	AMERICAN WATER-HOREHOUND	forb	3	native	OBL	0.012%
Mimulus ringens	COMMON MONKEY-FLOWER	forb	4	native	OBL	0.291%
Parthenocissus quinquefolia	VIRGINIA CREEPER	vine	2	native	FACU	0.006%
Polygonum sp.	NDA[d]	forb	NDA[d]	native	NDA[d]	0.294%
Polygonum hydropiper	WATER-PEPPER	forb	1	native	OBL	0.003%
Polygonum hydropiperoides	MILD WATER-PEPPER	forb	6	native	OBL	1.020%
Rosa palustris	SWAMP ROSE	shrub	5	native	OBL	0.146%
Sagittaria latifolia	COMMON ARROWHEAD	forb	1	native	OBL	0.003%
Schoenoplectus tabernaemontani	SOFT-STEMMED BULRUSH	sedge	2	native	OBL	29.139%
Scirpus cyperinus	WOOL-GRASS	sedge	1	native	OBL	0.291%
Solidago canadensis	CANADA GOLDENROD	forb	1	native	FACU	0.291%
Solidago gigantea	SMOOTH GOLDENROD	forb	3	native	FACW	2.477%
Sparganium eurycarpum	GIANT BUR-REED	forb	4	native	OBL	3.060%
Utricularia vulgaris	COMMON BLADDERWORT	forb	6	native	OBL	0.146%
Verbena hastata	BLUE VERVAIN	forb	4	native	FACW	0.437%
Vitis sp.	NDA[d]	vine	NDA[d]	native	NDA[d]	0.003%
Agrostis gigantea	REDTOP	grass	0	adventive	FACW	0.006%
Cirsium arvense	CANADA THISTLE	forb	0	adventive	FACU	0.440%
Dipsacus fullonum	WILD TEASEL	forb	0	adventive	FACU	0.437%
Dipsacus laciniatus	CUT-LEAVED TEASEL	forb	0	adventive	UPL	0.146%
Hydrocotyle ranunculoides	BUTTERCUP-PENNYWORT	forb	0	adventive	OBL	2.477%
Mentha x piperata	PEPPERMINT	forb	0	adventive	FACW+	0.874%
Phragmites australis subsp. australis	GIANT REED	grass	0	adventive	FACW	0.291%
Polygonum persicaria	LADY'S THUMB	forb	0	adventive	FACW	0.003%
Typha x glauca	HYBRID CAT-TAIL	forb	0	adventive	OBL	29.139%
Unknown grass	UNKNOWN	grass	N/A[e]	N/A[e]	N/A[e]	0.437%

[a] CC = Coefficient of Conservatism
[b] FQAI = Floristic Quality Assessment Index
[c] see http://plants.usda.gov/wetinfo.html
[d] NDA = No Determination Available
[e] N/A = Not Applicable

Table D–5. WM1W2 Wetland Vegetation Monitoring Data Summary

Total Species	85
Native Species	59
Non-Native (Adventive) Species	25
Average CC[a]	1.78
FQAI[b]	16.12

Species	Common Name	Type	CC[a]	Nativity	Wetland Indicator[c]	Relative Cover
Agrimonia parviflora	SMALL-FLOWERED AGRIMONY	forb	2	native	FACW	1.040%
Alisma subcordatum	SOUTHERN WATER-PLANTAIN	forb	2	native	OBL	0.151%
Ambrosia artemisiifolia	COMMON RAGWEED	forb	0	native	FACU	0.006%
Andropogon gerardii	BIG BLUESTEM	grass	5	native	FAC	1.188%
Apocynum cannabinum	INDIAN HEMP	forb	1	native	FAC	0.003%
Asclepias incarnata	SWAMP MILKWEED	forb	4	native	OBL	0.302%
Asclepias syriaca	COMMON MILKWEED	forb	1	native	FACU	0.299%
Aster novae-angliae	NEW ENGLAND ASTER	forb	2	native	FACW-	0.006%
Aster pilosus	AWL ASTER	forb	1	native	UPL	0.151%
Bidens frondosa	DEVIL'S BEGGAR'S-TICK	forb	2	native	FACW	0.154%
Calystegia sepium	HEDGE BINDWEED	forb	1	native	FAC	0.006%
Carex annectens	YELLOW FOX SEDGE	sedge	3	native	FACW	1.481%
Carex comosa	BEARDED SEDGE	sedge	2	native	OBL	0.296%
Carex cristatella	CRESTED SEDGE	sedge	3	native	FACW	0.148%
Carex frankii	FRANK'S SEDGE	sedge	2	native	OBL	0.299%
Carex granularis	MEADOW SEDGE	sedge	3	native	FACW	0.154%
Carex hystericina	PORCUPINE SEDGE	sedge	5	native	OBL	0.003%
Carex lurida	BOTTLEBRUSH SEDGE	sedge	3	native	OBL	0.889%
Carex molesta	TROUBLESOME SEDGE	sedge	3	native	FAC	1.336%
Carex stricta	TUSSOCK SEDGE	sedge	5	native	OBL	1.037%
Carex vulpinoidea	FOX SEDGE	sedge	1	native	FACW	1.629%
Cephalanthus occidentalis	BUTTONBUSH	shrub	6	native	OBL	29.620%
Cyperus sp.	NDA[d]	sedge	NDA[d]	native	OBL	0.003%
Desmodium canadense	CANADA TICK-TREFOIL	forb	4	native	FACU	0.148%
Eleocharis erythropoda	RED-FOOTED SPIKE-RUSH	sedge	4	native	OBL	1.037%
Eleocharis obtusa	BLUNT SPIKE-RUSH	sedge	1	native	OBL	0.148%
Eleocharis palustris	SMALL'S SPIKE-RUSH	sedge	5	native	OBL	1.037%
Epilobium sp.	NDA[d]	forb	NDA[d]	native	NDA[d]	0.006%
Erigeron annuus	DAISY FLEABANE	forb	0	native	FACU	0.003%
Erigeron strigosus	ROUGH FLEABANE	forb	1	native	FACU	0.006%
Eupatorium altissimum	TALL BONESET	forb	0	native	UPL	0.148%
Eupatorium perfoliatum	COMMON BONESET	forb	3	native	OBL	0.299%
Euthamia graminifolia	FLAT-TOPPED GOLDENROD	forb	2	native	FACW	1.040%
Fraxinus pennsylvanica	GREEN ASH	tree	3	native	FACW	0.009%
Galium aparine	CLEAVERS	forb	0	native	FACU	0.598%
Humulus lupulus	COMMON HOPS	vine	2	native	FACU	0.154%
Juncus effusus	SOFT RUSH	forb	1	native	OBL	1.333%
Juncus tenuis	PATH RUSH	forb	1	native	FAC	1.777%
Leersia oryzoides	RICE CUT GRASS	grass	1	native	OBL	0.444%
Ludwigia palustris	WATER-PURSLANE	forb	3	native	OBL	1.777%
Lycopus americanus	AMERICAN WATER-HOREHOUND	forb	3	native	OBL	0.592%
Mimulus ringens	COMMON MONKEY-FLOWER	forb	4	native	OBL	0.148%
Panicum virgatum	SWITCH GRASS	grass	4	native	FAC	1.629%
Polygonum hydropiperoides	MILD WATER-PEPPER	forb	6	native	OBL	6.220%
Populus deltoides	EASTERN COTTONWOOD	tree	3	native	FAC	0.003%
Potamogeton nodosus	LONG-LEAVED PONDWEED	forb	3	native	OBL	0.148%
Rubus occidentalis	BLACK RASPBERRY	shrub	1	native	UPL	0.003%
Rudbeckia hirta	BLACK-EYED SUSAN	forb	1	native	FACU	0.296%
Schoenoplectus tabernaemontani	SOFT-STEMMED BULRUSH	sedge	2	native	OBL	1.037%
Scirpus atrovirens	GREEN BULRUSH	sedge	1	native	OBL	0.447%
Senna hebecarpa	NORTHERN WILD SENNA	forb	4	native	FACW	0.148%

Table D–5 (continued). WM1W2 Wetland Vegetation Monitoring Data Summary

Species	Common Name	Type	CC[a]	Nativity	Wetland Indicator[c]	Relative Cover
Solidago canadensis	CANADA GOLDENROD	forb	1	native	FACU	6.813%
Solidago gigantea	SMOOTH GOLDENROD	forb	3	native	FACW	0.148%
Sparganium eurycarpum	GIANT BUR-REED	forb	4	native	OBL	3.851%
Spartina pectinata	PRAIRIE CORD GRASS	grass	5	native	FACW	10.663%
Ulmus americana	AMERICAN ELM	tree	2	native	FACW	0.003%
Utricularia vulgaris	COMMON BLADDERWORT	forb	6	native	OBL	0.148%
Vernonia gigantea	TALL IRONWEED	forb	2	native	FAC	0.006%
Vitis vulpina	FROST GRAPE	vine	3	native	FAC	0.003%
Agrostis gigantea	REDTOP	grass	0	adventive	FACW	1.777%
Barbarea vulgaris	YELLOW ROCKET	forb	0	adventive	FAC	0.003%
Bromus inermis	HUNGARIAN BROME	grass	0	adventive	FACU	0.003%
Bromus japonicus	JAPANESE BROME	grass	0	adventive	FACU-	0.003%
Carduus nutans	NODDING THISTLE	forb	0	adventive	FACU	0.003%
Cirsium arvense	CANADA THISTLE	forb	0	adventive	FACU	0.151%
Cirsium vulgare	BULL THISTLE	forb	0	adventive	FACU	0.003%
Conium maculatum	POISON-HEMLOCK	forb	0	adventive	FACW	0.151%
Coronilla varia	CROWN-VETCH	forb	0	adventive	UPL	1.185%
Daucus carota	QUEEN-ANNE'S-LACE	forb	0	adventive	UPL	1.481%
Dipsacus fullonum	WILD TEASEL	forb	0	adventive	FACU	1.185%
Elaeagnus umbellata	AUTUMN-OLIVE	sm tree	0	adventive	FACU	0.148%
Festuca sp.	NDA[d]	grass	0	adventive	ND	0.444%
Hordeum jubatum	SQUIRREL-TAIL BARLEY	grass	0	adventive	FAC	0.450%
Lonicera maackii	AMUR HONEYSUCKLE	shrub	0	adventive	UPL	0.003%
Medicago lupulina	BLACK MEDICK	forb	0	adventive	FACU	0.003%
Melilotus officinalis	YELLOW SWEET-CLOVER	forb	0	adventive	FACU	0.003%
Mentha x piperata	PEPPERMINT	forb	0	adventive	FACW+	0.743%
Poa annua	ANNUAL BLUEGRASS	grass	0	adventive	FACU	0.444%
Polygonum persicaria	LADY'S THUMB	forb	0	adventive	FACW	0.444%
Pyrus communis	PEAR	sm tree	0	adventive	UPL	0.151%
Rosa multiflora	MULTIFLORA ROSE	shrub	0	adventive	FACU	0.450%
Rumex crispus	CURLY DOCK	forb	0	adventive	FAC	0.148%
Trifolium repens	WHITE CLOVER	forb	0	adventive	FACU	0.006%
Typha x glauca	HYBRID CAT-TAIL	forb	0	adventive	OBL	4.739%
Unknown	UNKNOWN	N/A[e]	N/A[e]	N/A[e]	N/A[e]	3.406%

[a] CC = Coefficient of Conservatism
[b] FQAI = Floristic Quality Assessment Index
[c] see http://plants.usda.gov/wetinfo.html
[d] NDA = No Determination Available
[e] N/A = Not Applicable

Table D–6. WM1W3 Wetland Vegetation Monitoring Data Summary

Total Species	53
Native Species	39
Non-Native (Adventive) Species	12
Average CC[a]	1.83
FQAI[b]	12.75

Species	Common Name	Type	CC[a]	Nativity	Wetland Indicator[c]	Relative Cover
Acer saccharinum	SILVER MAPLE	tree	3	native	FACW	0.002%
Alisma subcordatum	SOUTHERN WATER-PLANTAIN	forb	2	native	OBL	0.535%
Ambrosia artemisiifolia	COMMON RAGWEED	forb	0	native	FACU	0.004%
Apocynum cannabinum	INDIAN HEMP	forb	1	native	FAC	0.752%
Asclepias incarnata	SWAMP MILKWEED	forb	4	native	OBL	0.004%
Asclepias syriaca	COMMON MILKWEED	forb	1	native	FACU	0.002%
Carex comosa	BEARDED SEDGE	sedge	2	native	OBL	0.002%
Carex cristatella	CRESTED SEDGE	sedge	3	native	FACW	0.002%
Carex lurida	BOTTLEBRUSH SEDGE	sedge	3	native	OBL	0.428%
Carex sp.	NDA[d]	sedge	NDA[d]	native	NDA[d]	0.107%
Carex vulpinoidea	FOX SEDGE	sedge	1	native	FACW	0.002%
Cephalanthus occidentalis	BUTTONBUSH	shrub	6	native	OBL	23.773%
Eleocharis erythropoda	RED-FOOTED SPIKE-RUSH	sedge	4	native	OBL	0.857%
Eleocharis obtusa	BLUNT SPIKE-RUSH	sedge	1	native	OBL	0.535%
Epilobium coloratum	PURPLE-LEAVED WILLOW-HERB	forb	1	native	OBL	0.109%
Eupatorium perfoliatum	COMMON BONESET	forb	3	native	OBL	0.002%
Fraxinus pennsylvanica	GREEN ASH	tree	3	native	FACW	0.002%
Galium aparine	CLEAVERS	forb	0	native	FACU	0.006%
Geum canadense	WHITE AVENS	forb	2	native	FAC	0.216%
Juncus effusus	SOFT RUSH	forb	1	native	OBL	0.321%
Leersia oryzoides	RICE CUT GRASS	grass	1	native	OBL	0.535%
Ludwigia palustris	WATER-PURSLANE	forb	3	native	OBL	7.496%
Lycopus americanus	AMERICAN WATER-HOREHOUND	forb	3	native	OBL	3.213%
Mimulus ringens	COMMON MONKEY-FLOWER	forb	4	native	OBL	0.109%
Parthenocissus quinquefolia	VIRGINIA CREEPER	vine	2	native	FACU	0.004%
Polygonum sp.	NDA[d]	NDA[d]	NDA[d]	NDA[d]	NDA[d]	0.004%
Polygonum lapathifolium	DOCK-LEAVED SMARTWEED	forb	1	native	FACW+	0.428%
Polygonum punctatum	DOTTED SMARTWEED	forb	6	native	OBL	0.002%
Rubus occidentalis	BLACK RASPBERRY	shrub	1	native	UPL	0.002%
Schoenoplectus tabernaemontani	SOFT-STEMMED BULRUSH	sedge	2	native	OBL	48.724%
Senecio aureus	GOLDEN RAGWORT	forb	4	native	FACW	0.004%
Solidago canadensis	CANADA GOLDENROD	forb	1	native	FACU	0.535%
Solidago gigantea	SMOOTH GOLDENROD	forb	3	native	FACW	0.111%
Sparganium eurycarpum	GIANT BUR-REED	forb	4	native	OBL	2.249%
Spartina pectinata	PRAIRIE CORD GRASS	grass	5	native	FACW	0.643%
Ulmus americana	AMERICAN ELM	tree	2	native	FACW	0.004%
Viburnum dentatum	ARROW-WOOD	shrub	2	native	FAC	0.321%
Viola sp.	NDA[d]	forb	NDA[d]	native	NDA[d]	0.002%
Vitis riparia	RIVERBANK GRAPE	vine	3	native	FACW	0.004%
Carduus nutans	NODDING THISTLE	forb	0	adventive	FACU	0.321%
Cirsium arvense	CANADA THISTLE	forb	0	adventive	FACU	0.643%
Cirsium vulgare	BULL THISTLE	forb	0	adventive	FACU	0.002%
Daucus carota	QUEEN-ANNE'S-LACE	forb	0	adventive	UPL	0.004%
Dipsacus fullonum	WILD TEASEL	forb	0	adventive	FACU	0.107%
Lonicera maackii	AMUR HONEYSUCKLE	shrub	0	adventive	UPL	0.321%
Mentha x piperata	PEPPERMINT	forb	0	adventive	FACW+	2.570%
Poa annua	ANNUAL BLUEGRASS	grass	0	adventive	FACU	0.002%
Polygonum persicaria	LADY'S THUMB	forb	0	adventive	FACW	0.428%
Solanum carolinense	HORSE NETTLE	forb	0	adventive	FACU	0.002%
Taraxacum officinale	COMMON DANDELION	forb	0	adventive	FACU	0.002%
Typha x glauca	HYBRID CAT-TAIL	forb	0	adventive	OBL	3.105%
Unknown	UNKNOWN	N/A[e]	N/A[e]	N/A[e]	N/A[e]	0.321%
Unknown forb	UNKNOWN	forb	N/A[e]	N/A[e]	N/A[e]	0.117%

[a] CC = Coefficient of Conservatism
[b] FQAI = Floristic Quality Assessment Index
[c] see http://plants.usda.gov/wetinfo.html
[d] NDA = No Determination Available
[e] N/A = Not Applicable

Table D–7. WM1W4 Wetland Vegetation Monitoring Data Summary

Total Species	82
Native Species	63
Non-Native (Adventive) Species	18
Average CC[a]	1.78
FQAI[b]	15.86

Species	Common Name	Type	CC[a]	Nativity	Wetland Indicator[c]	Relative Cover
Agrimonia parviflora	SMALL-FLOWERED AGRIMONY	forb	2	native	FACW	0.232%
Alisma subcordatum	SOUTHERN WATER-PLANTAIN	forb	2	native	OBL	0.237%
Ambrosia artemisiifolia	COMMON RAGWEED	forb	0	native	FACU	0.237%
Andropogon gerardii	BIG BLUESTEM	grass	5	native	FAC	0.009%
Apocynum cannabinum	INDIAN HEMP	forb	1	native	FAC	0.687%
Asclepias incarnata	SWAMP MILKWEED	forb	4	native	OBL	2.276%
Asclepias syriaca	COMMON MILKWEED	forb	1	native	FACU	0.228%
Aster novae-angliae	NEW ENGLAND ASTER	forb	2	native	FACW-	0.005%
Bidens cernua	NODDING BEGGAR'S-TICK	forb	3	native	OBL	0.005%
Bidens frondosa	DEVIL'S BEGGAR'S-TICK	forb	2	native	FACW	0.228%
Calystegia sepium	HEDGE BINDWEED	forb	1	native	FAC	0.005%
Campsis radicans	TRUMPET-CREEPER	vine	1	native	FACU	0.228%
Carex annectens	YELLOW FOX SEDGE	sedge	3	native	FACW	0.919%
Carex blanda	COMMON WOOD SEDGE	sedge	1	native	FAC	0.005%
Carex comosa	BEARDED SEDGE	sedge	2	native	OBL	1.821%
Carex frankii	FRANK'S SEDGE	sedge	2	native	OBL	0.228%
Carex granularis	MEADOW SEDGE	sedge	3	native	FACW	0.005%
Carex hystericina	PORCUPINE SEDGE	sedge	5	native	OBL	1.821%
Carex lurida	BOTTLEBRUSH SEDGE	sedge	3	native	OBL	0.915%
Carex normalis	LARGE STRAW SEDGE	sedge	4	native	FACW	0.244%
Carex scoparia	POINTED BROOM SEDGE	sedge	3	native	FACW	0.244%
Carex sp.	NDA[d]	sedge	NDA[d]	native	NDA[d]	0.005%
Carex vulpinoidea	FOX SEDGE	sedge	1	native	FACW	2.276%
Cornus racemosa	GRAY DOGWOOD	shrub	1	native	FAC	0.228%
Decodon verticillatus	SWAMP LOOSESTRIFE	forb	6	native	OBL	1.593%
Desmodium canadense	CANADA TICK-TREFOIL	forb	4	native	FACU	0.005%
Eleocharis obtusa	BLUNT SPIKE-RUSH	sedge	1	native	OBL	1.142%
Elymus virginicus	VIRGINIA WILD RYE	grass	3	native	FACW	0.228%
Epilobium coloratum	PURPLE-LEAVED WILLOW-HERB	forb	1	native	OBL	0.005%
Erigeron annuus	DAISY FLEABANE	forb	0	native	FACU	0.005%
Erigeron strigosus	ROUGH FLEABANE	forb	1	native	FACU	0.014%
Eupatorium perfoliatum	COMMON BONESET	forb	3	native	OBL	0.910%
Euthamia graminifolia	FLAT-TOPPED GOLDENROD	forb	2	native	FACW	0.005%
Fraxinus pennsylvanica	GREEN ASH	tree	3	native	FACW	0.009%
Galium aparine	CLEAVERS	forb	0	native	FACU	0.018%
Geum canadense	WHITE AVENS	forb	2	native	FAC	0.460%
Juncus effusus	SOFT RUSH	forb	1	native	OBL	10.923%
Juncus tenuis	PATH RUSH	forb	1	native	FAC	0.009%
Juniperus virginiana	EASTERN RED CEDAR	tree	3	native	FACU	1.138%
Leersia oryzoides	RICE CUT GRASS	grass	1	native	OBL	0.455%
Ludwigia palustris	WATER-PURSLANE	forb	3	native	OBL	20.026%
Monarda fistulosa	WILD BERGAMOT	forb	3	native	FACU	0.005%
Nymphaea odorata	FRAGRANT WATER-LILY	forb	6	native	OBL	15.930%
Panicum virgatum	SWITCH GRASS	grass	4	native	FAC	0.005%
Parthenocissus quinquefolia	VIRGINIA CREEPER	vine	2	native	FACU	0.005%
Phytolacca americana	POKEWEED	forb	1	native	FACU	0.005%
Plantago rugelii	RUGEL'S PLANTAIN	forb	0	native	FAC	0.005%
Polygonum hydropiperoides	MILD WATER-PEPPER	forb	6	native	OBL	1.593%
Populus deltoides	EASTERN COTTONWOOD	tree	3	native	FAC	0.005%
Potamogeton nodosus	LONG-LEAVED PONDWEED	forb	3	native	OBL	0.228%
Rosa carolina	PASTURE ROSE	shrub	4	native	FACU	0.228%
Rubus occidentalis	BLACK RASPBERRY	shrub	1	native	UPL	0.455%
Rudbeckia laciniata	GREEN-HEADED CONEFLOWER	forb	6	native	FACW	0.005%

Table D–7 (continued). WM1W4 Wetland Vegetation Monitoring Data Summary

Species	Common Name	Type	CC[a]	Nativity	Wetland Indicator[c]	Relative Cover
Salix exigua	SANDBAR WILLOW	shrub	1	native	OBL	0.009%
Schoenoplectus tabernaemontani	SOFT-STEMMED BULRUSH	sedge	2	native	OBL	0.455%
Scirpus atrovirens	GREEN BULRUSH	sedge	1	native	OBL	2.276%
Scirpus cyperinus	WOOL-GRASS	sedge	1	native	OBL	0.683%
Solidago canadensis	CANADA GOLDENROD	forb	1	native	FACU	2.508%
Toxicodendron radicans	POISON-IVY	vine	1	native	FAC	0.228%
Verbena hastata	BLUE VERVAIN	forb	4	native	FACW	0.910%
Vernonia gigantea	TALL IRONWEED	forb	2	native	FAC	1.142%
Viburnum dentatum	ARROW-WOOD	shrub	2	native	FAC	0.910%
Vitis sp.	NDA[d]	vine	NDA[d]	native	NDA[d]	1.602%
Agrostis gigantea	REDTOP	grass	0	adventive	FACW	4.551%
Allium vineale	FIELD GARLIC	forb	0	adventive	FACU	0.228%
Barbarea vulgaris	YELLOW ROCKET	forb	0	adventive	FAC	0.014%
Bromus japonicus	JAPANESE BROME	grass	0	adventive	FACU-	0.687%
Carduus nutans	NODDING THISTLE	forb	0	adventive	FACU	0.005%
Cirsium arvense	CANADA THISTLE	forb	0	adventive	FACU	0.687%
Daucus carota	QUEEN-ANNE'S-LACE	forb	0	adventive	UPL	0.014%
Dipsacus fullonum	WILD TEASEL	forb	0	adventive	FACU	2.958%
Festuca sp.	ND	grass	0	adventive	ND	0.232%
Hydrocotyle ranunculoides	BUTTERCUP-PENNYWORT	forb	0	adventive	OBL	0.009%
Lonicera japonica	JAPANESE HONEYSUCKLE	vine	0	adventive	FACU	0.232%
Lonicera maackii	AMUR HONEYSUCKLE	shrub	0	adventive	UPL	2.276%
Melilotus officinalis	YELLOW SWEET-CLOVER	forb	0	adventive	FACU	0.005%
Phalaris arundinacea	REED CANARY GRASS	grass	0	adventive	FACW	0.005%
Pyrus communis	PEAR	sm tree	0	adventive	UPL	0.005%
Rumex crispus	CURLY DOCK	forb	0	adventive	FAC	0.460%
Trifolium pratense	RED CLOVER	forb	0	adventive	FACU	0.018%
Typha x glauca	HYBRID CAT-TAIL	forb	0	adventive	OBL	3.186%
Unknown forb	UNKNOWN	forb	N/A[e]	N/A[e]	N/A[e]	0.232%

[a] CC = Coefficient of Conservatism
[b] FQAI = Floristic Quality Assessment Index
[c] see http://plants.usda.gov/wetinfo.html
[d] NDA = No Determination Available
[e] N/A = Not Applicable

Table D–8. WM1W5 Wetland Vegetation Monitoring Data Summary

Total Species	43
Native Species	27
Non-Native (Adventive) Species	16
Average CC[a]	1.63
FQAI[b]	10.28

Species	Common Name	Type	CC[a]	Nativity	Wetland Indicator[c]	Relative Cover
Alisma subcordatum	SOUTHERN WATER-PLANTAIN	forb	2	native	OBL	0.005%
Andropogon gerardii	BIG BLUESTEM	grass	5	native	FAC	0.405%
Carex frankii	FRANK'S SEDGE	sedge	2	native	OBL	0.135%
Carex sp.	NDA[d]	sedge	NDA[d]	native	NDA[d]	0.135%
Carex vulpinoidea	FOX SEDGE	sedge	1	native	FACW	0.135%
Cyperus sp.	NDA[d]	sedge	NDA[d]	native	NDA[d]	1.214%
Eleocharis erythropoda	RED-FOOTED SPIKE-RUSH	sedge	4	native	OBL	1.888%
Eleocharis palustris	SMALL'S SPIKE-RUSH	sedge	5	native	OBL	0.405%
Fraxinus pennsylvanica	GREEN ASH	tree	3	native	FACW	0.138%
Juncus tenuis	PATH RUSH	forb	1	native	FAC	0.135%
Juniperus virginiana	EASTERN RED CEDAR	tree	3	native	FACU	0.405%
Leersia oryzoides	RICE CUT GRASS	grass	1	native	OBL	1.484%
Lemna minor	COMMON DUCKWEED	forb	3	native	OBL	0.005%
Lycopus americanus	AMERICAN WATER-HOREHOUND	forb	3	native	OBL	0.135%
Panicum virgatum	SWITCH GRASS	grass	4	native	FAC	1.349%
Phyla lanceolata	FOG-FRUIT	forb	3	native	OBL	0.003%
Phytolacca americana	POKEWEED	forb	1	native	FACU	0.003%
Plantago rugelii	RUGEL'S PLANTAIN	forb	0	native	FAC	0.003%
Polygonum hydropiperoides	MILD WATER-PEPPER	forb	6	native	OBL	0.135%
Populus deltoides	EASTERN COTTONWOOD	tree	3	native	FAC	2.023%
Salix exigua	SANDBAR WILLOW	shrub	1	native	OBL	20.502%
Schizachyrium scoparium	LITTLE BLUESTEM	grass	5	native	FACU	0.138%
Schoenoplectus tabernaemontani	SOFT-STEMMED BULRUSH	sedge	2	native	OBL	53.953%
Scirpus cyperinus	WOOL-GRASS	sedge	1	native	OBL	0.138%
Solidago canadensis	CANADA GOLDENROD	forb	1	native	FACU	1.484%
Sorghastrum nutans	INDIAN GRASS	grass	5	native	FACU	0.405%
Vitis sp.	NDA[d]	vine	NDA[d]	native	NDA[d]	0.003%
Agrostis gigantea	REDTOP	grass	0	adventive	FACW	0.135%
Cirsium arvense	CANADA THISTLE	forb	0	adventive	FACU	0.270%
Daucus carota	QUEEN-ANNE'S-LACE	forb	0	adventive	UPL	0.005%
Dipsacus fullonum	WILD TEASEL	forb	0	adventive	FACU	0.540%
Echinochloa crusgalli	BARNYARD GRASS	grass	0	adventive	FACU	0.003%
Lonicera japonica	JAPANESE HONEYSUCKLE	vine	0	adventive	FACU	1.079%
Lonicera maackii	AMUR HONEYSUCKLE	shrub	0	adventive	UPL	0.135%
Lysimachia nummularia	MONEYWORT	forb	0	adventive	FACW	0.003%
Plantago lanceolata	ENGLISH PLANTAIN	forb	0	adventive	FACU	0.003%
Polygonum convolvulus	BLACK BINDWEED	vine	0	adventive	FACU	0.003%
Polygonum persicaria	LADY'S THUMB	forb	0	adventive	FACW	0.944%
Rumex crispus	CURLY DOCK	forb	0	adventive	FAC	0.138%
Silene latifolia	WHITE CAMPION	forb	0	adventive	UPL	0.135%
Sonchus arvensis	FIELD SOW-THISTLE	forb	0	adventive	FACU	0.003%
Typha x glauca	HYBRID CAT-TAIL	forb	0	adventive	OBL	9.712%
Xanthium strumarium	COMMON COCKLEBUR	forb	0	adventive	FAC	0.135%

[a] CC = Coefficient of Conservatism
[b] FQAI = Floristic Quality Assessment Index
[c] see http://plants.usda.gov/wetinfo.html
[d] NDA = No Determination Available
[e] N/A = Not Applicable

Table D–9. WM1W6 Wetland Vegetation Monitoring Data Summary

Total Species	65
Native Species	50
Non-Native (Adventive) Species	15
Average CC[a]	1.95
FQAI[b]	15.24

Species	Common Name	Type	CC[a]	Nativity	Wetland Indicator[c]	Relative Cover
Alisma subcordatum	SOUTHERN WATER-PLANTAIN	forb	2	native	OBL	0.267%
Ambrosia artemisiifolia	COMMON RAGWEED	forb	0	native	FACU	0.005%
Andropogon gerardii	BIG BLUESTEM	grass	5	native	FAC	0.131%
Aster novae-angliae	NEW ENGLAND ASTER	forb	2	native	FACW-	0.003%
Calystegia sepium	HEDGE BINDWEED	forb	1	native	FAC	0.008%
Carex annectens	YELLOW FOX SEDGE	sedge	3	native	FACW	0.523%
Carex blanda	COMMON WOOD SEDGE	sedge	1	native	FAC	0.131%
Carex comosa	BEARDED SEDGE	sedge	2	native	OBL	0.523%
Carex cristatella	CRESTED SEDGE	sedge	3	native	FACW	0.523%
Carex frankii	FRANK'S SEDGE	sedge	2	native	OBL	2.484%
Carex granularis	MEADOW SEDGE	sedge	3	native	FACW	0.392%
Carex lurida	BOTTLEBRUSH SEDGE	sedge	3	native	OBL	1.046%
Carex sp.	NDA[d]	sedge	NDA[d]	native	NDA[d]	0.000%
Carex vulpinoidea	FOX SEDGE	sedge	1	native	FACW	1.046%
Cephalanthus occidentalis	BUTTONBUSH	shrub	6	native	OBL	16.345%
Cyperus sp.	NDA[d]	sedge	NDA[d]	native	NDA[d]	1.051%
Eleocharis erythropoda	RED-FOOTED SPIKE-RUSH	sedge	4	native	OBL	1.438%
Eleocharis obtusa	BLUNT SPIKE-RUSH	sedge	1	native	OBL	0.261%
Erigeron annuus	DAISY FLEABANE	forb	0	native	FACU	0.133%
Erigeron strigosus	ROUGH FLEABANE	forb	1	native	FACU	0.136%
Eupatorium perfoliatum	COMMON BONESET	forb	3	native	OBL	0.003%
Euthamia graminifolia	FLAT-TOPPED GOLDENROD	forb	2	native	FACW	0.392%
Fraxinus pennsylvanica	GREEN ASH	tree	3	native	FACW	0.136%
Geum canadense	WHITE AVENS	forb	2	native	FAC	0.003%
Juglans nigra	BLACK WALNUT	tree	5	native	FACU	0.003%
Juncus effusus	SOFT RUSH	forb	1	native	OBL	1.177%
Juncus tenuis	PATH RUSH	forb	1	native	FAC	4.184%
Juncus torreyi	TORREY'S RUSH	forb	3	native	FACW	0.133%
Leersia oryzoides	RICE CUT GRASS	grass	1	native	OBL	0.654%
Ludwigia palustris	WATER-PURSLANE	forb	3	native	OBL	1.307%
Lycopus americanus	AMERICAN WATER-HOREHOUND	forb	3	native	OBL	0.523%
Monarda fistulosa	WILD BERGAMOT	forb	3	native	FACU	0.003%
Panicum virgatum	SWITCH GRASS	grass	4	native	FAC	6.798%
Phyla lanceolata	FOG-FRUIT	forb	3	native	OBL	0.264%
Physocarpus opulifolius	NINEBARK	shrub	4	native	FACW	0.003%
Rudbeckia hirta	BLACK-EYED SUSAN	forb	1	native	FACU	0.131%
Schizachyrium scoparium	LITTLE BLUESTEM	grass	5	native	FACU	0.264%
Schoenoplectus tabernaemontani	SOFT-STEMMED BULRUSH	sedge	2	native	OBL	0.392%
Scirpus atrovirens	GREEN BULRUSH	sedge	1	native	OBL	0.523%
Scirpus cyperinus	WOOL-GRASS	sedge	1	native	OBL	0.003%
Scirpus pendulus	DROOPING BULRUSH	sedge	2	native	OBL	0.131%
Senna hebecarpa	NORTHERN WILD SENNA	forb	4	native	FACW	0.131%
Solidago canadensis	CANADA GOLDENROD	forb	1	native	FACU	35.300%
Solidago gigantea	SMOOTH GOLDENROD	forb	3	native	FACW	0.523%
Sorghastrum nutans	INDIAN GRASS	grass	5	native	FACU	0.131%
Spartina pectinata	PRAIRIE CORD GRASS	grass	5	native	FACW	2.223%
Toxicodendron radicans	POISON-IVY	vine	1	native	FAC	0.005%
Ulmus americana	AMERICAN ELM	tree	2	native	FACW	0.003%
Vernonia gigantea	TALL IRONWEED	forb	2	native	FAC	0.133%
Vitis vulpina	FROST GRAPE	vine	3	native	FAC	0.008%

Table D–9 (continued). WM1W6 Wetland Vegetation Monitoring Data Summary

Species	Common Name	Type	CC[a]	Nativity	Wetland Indicator[c]	Relative Cover
Agrostis gigantea	REDTOP	grass	0	adventive	FACW	0.523%
Allium vineale	FIELD GARLIC	forb	0	adventive	FACU	0.003%
Daucus carota	QUEEN-ANNE'S-LACE	forb	0	adventive	UPL	0.784%
Dipsacus fullonum	WILD TEASEL	forb	0	adventive	FACU	7.321%
Dipsacus laciniatus	CUT-LEAVED TEASEL	forb	0	adventive	UPL	1.310%
Festuca sp.	NDA[d]	grass	0	adventive	ND	0.005%
Lotus corniculatus	BIRD'S-FOOT TREFOIL	forb	0	adventive	FACU	1.569%
Phleum pratense	TIMOTHY	grass	0	adventive	FACU	0.003%
Pyrus communis	PEAR	sm tree	0	adventive	UPL	0.654%
Rosa multiflora	MULTIFLORA ROSE	shrub	0	adventive	FACU	0.784%
Rumex crispus	CURLY DOCK	forb	0	adventive	FAC	0.264%
Typha x glauca	HYBRID CAT-TAIL	forb	0	adventive	OBL	3.399%
Xanthium strumarium	COMMON COCKLEBUR	forb	0	adventive	FAC	0.005%
Unknown grass	UNKNOWN	grass	N/A[e]	N/A[e]	N/A[e]	1.441%
Unknown forb	UNKNOWN	forb	N/A[e]	N/A[e]	N/A[e]	0.008%

[a] CC = Coefficient of Conservatism
[b] FQAI = Floristic Quality Assessment Index
[c] see http://plants.usda.gov/wetinfo.html
[d] NDA = No Determination Available
[e] N/A = Not Applicable

Table D–10. WM1W7 Wetland Vegetation Monitoring Data Summary

Total Species	33
Native Species	25
Non-Native (Adventive) Species	7
Average CC[a]	2.28
FQAI[b]	12.90

Species	Common Name	Type	CC[a]	Nativity	Wetland Indicator[c]	Relative Cover
Alisma subcordatum	SOUTHERN WATER-PLANTAIN	forb	2	native	OBL	0.288%
Aster pilosus	AWL ASTER	forb	1	native	UPL	0.141%
Calamagrostis canadensis	CANADA BLUEJOINT	grass	4	native	OBL	1.414%
Carex annectens	YELLOW FOX SEDGE	sedge	3	native	FACW	0.283%
Carex comosa	BEARDED SEDGE	sedge	2	native	OBL	0.003%
Carex normalis	LARGE STRAW SEDGE	sedge	4	native	FACW	0.141%
Carex scoparia	POINTED BROOM SEDGE	sedge	3	native	FACW	0.141%
Carex vulpinoidea	FOX SEDGE	sedge	1	native	FACW	1.131%
Eclipta prostrata	YERBA-DE-TAJO	forb	3	native	FACW	0.990%
Eleocharis obtusa	BLUNT SPIKE-RUSH	sedge	1	native	OBL	2.262%
Eupatorium perfoliatum	COMMON BONESET	forb	3	native	OBL	0.144%
Iris versicolor	NORTHERN BLUE FLAG	forb	6	native	OBL	0.568%
Juncus effusus	SOFT RUSH	forb	1	native	OBL	2.262%
Juncus tenuis	PATH RUSH	forb	1	native	FAC	10.746%
Lemna minor	COMMON DUCKWEED	forb	3	native	OBL	0.144%
Panicum virgatum	SWITCH GRASS	grass	4	native	FAC	0.141%
Polygonum hydropiperoides	MILD WATER-PEPPER	forb	6	native	OBL	0.424%
Schizachyrium scoparium	LITTLE BLUESTEM	grass	5	native	FACU	0.141%
Schoenoplectus tabernaemontani	SOFT-STEMMED BULRUSH	sedge	2	native	OBL	0.144%
Scirpus atrovirens	GREEN BULRUSH	sedge	1	native	OBL	0.144%
Solidago canadensis	CANADA GOLDENROD	forb	1	native	FACU	1.980%
Sorghastrum nutans	INDIAN GRASS	grass	5	native	FACU	0.144%
Sparganium eurycarpum	GIANT BUR-REED	forb	4	native	OBL	2.121%
Spartina pectinata	PRAIRIE CORD GRASS	grass	5	native	FACW	39.591%
Vernonia gigantea	TALL IRONWEED	forb	2	native	FAC	0.141%
Agrostis gigantea	REDTOP	grass	0	adventive	FACW	0.566%
Cirsium arvense	CANADA THISTLE	forb	0	adventive	FACU	0.006%
Festuca sp.	ND	grass	0	adventive	ND	1.131%
Phragmites australis subsp. australis	GIANT REED	grass	0	adventive	FACW	1.131%
Polygonum persicaria	LADY'S THUMB	forb	0	adventive	FACW	1.697%
Rumex crispus	CURLY DOCK	forb	0	adventive	FAC	0.003%
Typha x glauca	HYBRID CAT-TAIL	forb	0	adventive	OBL	29.693%
Unknown	UNKOWN	tree	N/A[e]	N/A[e]	N/A[e]	0.141%

[a] CC = Coefficient of Conservatism
[b] FQAI = Floristic Quality Assessment Index
[c] see http://plants.usda.gov/wetinfo.html
[d] NDA = No Determination Available
[e] N/A = Not Applicable

Table D–11. WM2W1 Wetland Vegetation Monitoring Data Summary

Total Species	45
Native Species	34
Non-Native (Adventive) Species	8
Average CC[a]	2.14
FQAI[b]	13.89

Species	Common Name	Type	CC[a]	Nativity	Wetland Indicator[c]	Relative Cover
Alisma subcordatum	SOUTHERN WATER-PLANTAIN	forb	2	native	OBL	0.213%
Ambrosia artemisiifolia	COMMON RAGWEED	forb	0	native	FACU	0.008%
Asclepias incarnata	SWAMP MILKWEED	forb	4	native	OBL	0.209%
Aster pilosus	AWL ASTER	forb	1	native	UPL	0.004%
Campsis radicans	TRUMPET-CREEPER	vine	1	native	FACU	0.209%
Carex annectens	YELLOW FOX SEDGE	sedge	3	native	FACW	1.461%
Carex cristatella	CRESTED SEDGE	sedge	3	native	FACW	0.209%
Carex frankii	FRANK'S SEDGE	sedge	2	native	OBL	0.630%
Carex granularis	MEADOW SEDGE	sedge	3	native	FACW	0.209%
Carex lurida	BOTTLEBRUSH SEDGE	sedge	3	native	OBL	0.626%
Carex vulpinoidea	FOX SEDGE	sedge	1	native	FACW	2.087%
Cephalanthus occidentalis	BUTTONBUSH	shrub	6	native	OBL	0.626%
Eleocharis erythropoda	RED-FOOTED SPIKE-RUSH	sedge	4	native	OBL	8.138%
Equisetum arvense	FIELD HORSETAIL	fern	0	native	FAC	1.669%
Eupatorium maculatum	SPOTTED JOE-PYE WEED	forb	6	native	FACW	0.004%
Fraxinus pennsylvanica	GREEN ASH	tree	3	native	FACW	0.417%
Hamamelis virginiana	WITCH-HAZEL	sm tree	5	native	FACU	0.209%
Juncus tenuis	PATH RUSH	forb	1	native	FAC	0.209%
Leersia oryzoides	RICE CUT GRASS	grass	1	native	OBL	8.347%
Lemna minor	COMMON DUCKWEED	forb	3	native	OBL	0.004%
Ludwigia palustris	WATER-PURSLANE	forb	3	native	OBL	0.835%
Panicum virgatum	SWITCH GRASS	grass	4	native	FAC	3.339%
Phyla lanceolata	FOG-FRUIT	forb	3	native	OBL	0.209%
Platanus occidentalis	SYCAMORE	tree	7	native	FACW	0.209%
Populus deltoides	EASTERN COTTONWOOD	tree	3	native	FAC	0.209%
Potamogeton nodosus	LONG-LEAVED PONDWEED	forb	3	native	OBL	15.024%
Salix exigua	SANDBAR WILLOW	shrub	1	native	OBL	11.894%
Salix nigra	BLACK WILLOW	tree	2	native	OBL	0.209%
Schoenoplectus tabernaemontani	SOFT-STEMMED BULRUSH	sedge	2	native	OBL	0.209%
Scirpus atrovirens	GREEN BULRUSH	sedge	1	native	OBL	16.276%
Solidago canadensis	CANADA GOLDENROD	forb	1	native	FACU	0.209%
Sparganium eurycarpum	GIANT BUR-REED	forb	4	native	OBL	14.189%
Toxicodendron radicans	POISON-IVY	vine	1	native	FAC	0.417%
Verbena urticifolia	WHITE VERVAIN	forb	3	native	FAC	0.209%
Catalpa speciosa	NORTHERN CATALPA	tree	0	adventive	FACU	0.213%
Daucus carota	QUEEN-ANNE'S-LACE	forb	0	adventive	UPL	0.209%
Lysimachia nummularia	MONEYWORT	forb	0	adventive	FACW	0.213%
Melilotus officinalis	YELLOW SWEET-CLOVER	forb	0	adventive	FACU	0.004%
Plantago lanceolata	ENGLISH PLANTAIN	forb	0	adventive	FACU	0.004%
Polygonum convolvulus	BLACK BINDWEED	vine	0	adventive	FACU	0.209%
Solanum carolinense	HORSE NETTLE	forb	0	adventive	FACU	0.004%
Typha x glauca	HYBRID CAT-TAIL	forb	0	adventive	OBL	7.929%
Unknown forb	UNKNOWN	forb	N/A[e]	N/A[e]	N/A[e]	0.835%
Unknown grass	UNKNOWN	grass	N/A[e]	N/A[e]	N/A[e]	0.626%
Unknown sedge	UNKNOWN	sedge	N/A[e]	N/A[e]	N/A[e]	0.835%

[a] CC = Coefficient of Conservatism
[b] FQAI = Floristic Quality Assessment Index
[c] see http://plants.usda.gov/wetinfo.html
[d] NDA = No Determination Available
[e] N/A = Not Applicable

Table D–12. WM2W2 Wetland Vegetation Monitoring Data Summary

Total Species	62
Native Species	46
Non-Native (Adventive) Species	16
Average CC[a]	2.04
FQAI[b]	15.50

Species	Common Name	Type	CC[a]	Nativity	Wetland Indicator[c]	Relative Cover
Allium sp.	NDA[d]	forb	NDA[d]	NDA[d]	NDA[d]	0.004%
Acer negundo	BOX ELDER	tree	3	native	FAC	0.002%
Acer saccharinum	SILVER MAPLE	tree	3	native	FACW	0.002%
Acer saccharum	SUGAR MAPLE	tree	5	native	FACU	0.112%
Alisma subcordatum	SOUTHERN WATER-PLANTAIN	forb	2	native	OBL	3.511%
Ambrosia artemisiifolia	COMMON RAGWEED	forb	0	native	FACU	0.002%
Ammannia robusta	SESSILE TOOTH-CUP	forb	7	native	OBL	0.329%
Andropogon gerardii	BIG BLUESTEM	grass	5	native	FAC	0.768%
Asclepias incarnata	SWAMP MILKWEED	forb	4	native	OBL	0.768%
Aster pilosus	AWL ASTER	forb	1	native	UPL	0.112%
Baptisia australis	BLUE FALSE INDIGO	forb	6	native	FACU-	0.110%
Bidens frondosa	DEVIL'S BEGGAR'S-TICK	forb	2	native	FACW	0.219%
Carex annectens	YELLOW FOX SEDGE	sedge	3	native	FACW	0.110%
Carex frankii	FRANK'S SEDGE	sedge	2	native	OBL	1.097%
Carex granularis	MEADOW SEDGE	sedge	3	native	FACW	0.110%
Carex lurida	BOTTLEBRUSH SEDGE	sedge	3	native	OBL	0.219%
Carex sp.	NDA[d]	sedge	NDA[d]	native	NDA[d]	0.439%
Carex vulpinoidea	FOX SEDGE	sedge	1	native	FACW	0.439%
Cephalanthus occidentalis	BUTTONBUSH	shrub	6	native	OBL	1.097%
Cyperus sp.	NDA[d]	sedge	NDA[d]	native	NDA[d]	0.002%
Eleocharis erythropoda	RED-FOOTED SPIKE-RUSH	sedge	4	native	OBL	21.944%
Eleocharis obtusa	BLUNT SPIKE-RUSH	sedge	1	native	OBL	0.110%
Eleocharis palustris	SMALL'S SPIKE-RUSH	sedge	5	native	OBL	0.329%
Epilobium coloratum	PURPLE-LEAVED WILLOW-HERB	forb	1	native	OBL	1.097%
Erigeron strigosus	ROUGH FLEABANE	forb	1	native	FACU	0.004%
Eupatorium altissimum	TALL BONESET	forb	0	native	UPL	0.002%
Eupatorium serotinum	LATE-FLOWERING BONESET	forb	2	native	FAC	0.002%
Fraxinus pennsylvanica	GREEN ASH	tree	3	native	FACW	1.317%
Juncus tenuis	PATH RUSH	forb	1	native	FAC	0.329%
Leersia oryzoides	RICE CUT GRASS	grass	1	native	OBL	0.878%
Ludwigia palustris	WATER-PURSLANE	forb	3	native	OBL	1.426%
Panicum virgatum	SWITCH GRASS	grass	4	native	FAC	9.765%
Phyla lanceolata	FOG-FRUIT	forb	3	native	OBL	0.770%
Platanus occidentalis	SYCAMORE	tree	7	native	FACW	0.110%
Populus deltoides	EASTERN COTTONWOOD	tree	3	native	FAC	27.430%
Potamogeton nodosus	LONG-LEAVED PONDWEED	forb	3	native	OBL	0.658%
Prunella vulgaris	SELF-HEAL	forb	0	native	FAC	0.329%
Salix exigua	SANDBAR WILLOW	shrub	1	native	OBL	3.952%
Salix nigra	BLACK WILLOW	tree	2	native	OBL	4.498%
Schizachyrium scoparium	LITTLE BLUESTEM	grass	5	native	FACU	1.097%
Schoenoplectus tabernaemontani	SOFT-STEMMED BULRUSH	sedge	2	native	OBL	0.658%
Scirpus atrovirens	GREEN BULRUSH	sedge	1	native	OBL	0.329%
Scirpus pendulus	DROOPING BULRUSH	sedge	2	native	OBL	0.329%
Solidago canadensis	CANADA GOLDENROD	forb	1	native	FACU	1.097%
Verbena hastata	BLUE VERVAIN	forb	4	native	FACW	0.002%
Vitis sp.	NDA[d]	vine	NDA[d]	native	NDA[d]	0.110%

Table D–12 (continued). WM2W2 Wetland Vegetation Monitoring Data Summary

Species	Common Name	Type	CC[a]	Nativity	Wetland Indicator[c]	Relative Cover
Agrostis gigantea	REDTOP	grass	0	adventive	FACW	0.768%
Bromus japonicus	JAPANESE BROME	grass	0	adventive	FACU-	0.002%
Daucus carota	QUEEN-ANNE'S-LACE	forb	0	adventive	UPL	0.549%
Dipsacus fullonum	WILD TEASEL	forb	0	adventive	FACU	1.097%
Dipsacus laciniatus	CUT-LEAVED TEASEL	forb	0	adventive	UPL	0.110%
Festuca sp.	NDA[d]	grass	0	adventive	NDA[d]	0.658%
Lolium multiflorum	ITALIAN RYE	grass	0	adventive	NDA[d]	0.110%
Lysimachia nummularia	MONEYWORT	forb	0	adventive	FACW	0.219%
Melilotus officinalis	YELLOW SWEET-CLOVER	forb	0	adventive	FACU	0.002%
Plantago lanceolata	ENGLISH PLANTAIN	forb	0	adventive	FACU	0.002%
Polygonum persicaria	LADY'S THUMB	forb	0	adventive	FACW	0.002%
Solanum carolinense	HORSE NETTLE	forb	0	adventive	FACU	0.110%
Trifolium repens	WHITE CLOVER	forb	0	adventive	FACU	0.002%
Typha x glauca	HYBRID CAT-TAIL	forb	0	adventive	OBL	5.486%
Xanthium strumarium	COMMON COCKLEBUR	forb	0	adventive	FAC	0.329%
Unknown forb	UNKNOWN	forb	N/A[e]	N/A[e]	N/A[e]	2.526%

[a] CC = Coefficient of Conservatism
[b] FQAI = Floristic Quality Assessment Index
[c] see http://plants.usda.gov/wetinfo.html
[d] NDA = No Determination Available
[e] N/A = Not Applicable

Table D–13. WM2W3 Wetland Vegetation Monitoring Data Summary

Total Species	68
Native Species	55
Non-Native (Adventive) Species	12
Average CC[a]	2.16
FQAI[b]	17.49

Species	Common Name	Type	CC[a]	Nativity	Wetland Indicator[c]	Relative Cover
Acer negundo	BOX ELDER	tree	3	native	FAC	0.002%
Allium sp.	NDA[d]	forb	NDA[d]	NDA[d]	NDA[d]	0.198%
Alisma subcordatum	SOUTHERN WATER-PLANTAIN	forb	2	native	OBL	0.102%
Ambrosia artemisiifolia	COMMON RAGWEED	forb	0	native	FACU	0.100%
Andropogon gerardii	BIG BLUESTEM	grass	5	native	FAC	2.155%
Apocynum cannabinum	INDIAN HEMP	forb	1	native	FAC	0.100%
Asclepias incarnata	SWAMP MILKWEED	forb	4	native	OBL	0.588%
Aster pilosus	AWL ASTER	forb	1	native	UPL	0.006%
Baptisia australis	BLUE FALSE INDIGO	forb	6	native	FACU-	0.002%
Bidens connata	PURPLE-STEMMED BEGGAR'S-TICK	forb	3	native	FACW+	0.196%
Bidens frondosa	DEVIL'S BEGGAR'S-TICK	forb	2	native	FACW	0.002%
Calystegia sepium	HEDGE BINDWEED	forb	1	native	FAC	0.098%
Carex annectens	YELLOW FOX SEDGE	sedge	3	native	FACW	1.960%
Carex cristatella	CRESTED SEDGE	sedge	3	native	FACW	0.100%
Carex frankii	FRANK'S SEDGE	sedge	2	native	OBL	0.392%
Carex granularis	MEADOW SEDGE	sedge	3	native	FACW	0.296%
Carex lurida	BOTTLEBRUSH SEDGE	sedge	3	native	OBL	0.294%
Carex sp.	NDA[d]	sedge	NDA[d]	native	NDA[d]	0.196%
Carex vulpinoidea	FOX SEDGE	sedge	1	native	FACW	0.098%
Cephalanthus occidentalis	BUTTONBUSH	shrub	6	native	OBL	0.392%
Cyperus strigosus	STRAW-COLORED UMBRELLA-S.	sedge	1	native	FACW	0.294%
Eleocharis erythropoda	RED-FOOTED SPIKE-RUSH	sedge	4	native	OBL	14.696%
Eleocharis palustris	SMALL'S SPIKE-RUSH	sedge	5	native	OBL	0.686%
Erigeron strigosus	ROUGH FLEABANE	forb	1	native	FACU	0.294%
Eupatorium altissimum	TALL BONESET	forb	0	native	UPL	0.196%
Euthamia graminifolia	FLAT-TOPPED GOLDENROD	forb	2	native	FACW	0.490%
Fraxinus pennsylvanica	GREEN ASH	tree	3	native	FACW	1.078%
Iris versicolor	NORTHERN BLUE FLAG	forb	6	native	OBL	0.002%
Juncus anthelatus	BRANCHED RUSH	forb	4	native	FAC-	0.490%
Juncus tenuis	PATH RUSH	forb	1	native	FAC	0.982%
Juncus torreyi	TORREY'S RUSH	forb	3	native	FACW	0.100%
Juniperus virginiana	EASTERN RED CEDAR	tree	3	native	FACU	0.002%
Leersia oryzoides	RICE CUT GRASS	grass	1	native	OBL	1.176%
Ludwigia palustris	WATER-PURSLANE	forb	3	native	OBL	0.394%
Panicum virgatum	SWITCH GRASS	grass	4	native	FAC	5.585%
Penstemon digitalis	FOXGLOVE BEARD-TONGUE	forb	2	native	FAC	0.004%
Phyla lanceolata	FOG-FRUIT	forb	3	native	OBL	0.392%
Plantago rugelii	RUGEL'S PLANTAIN	forb	0	native	FAC	0.004%
Platanus occidentalis	SYCAMORE	tree	7	native	FACW	0.392%
Populus deltoides	EASTERN COTTONWOOD	tree	3	native	FAC	11.757%
Potamogeton nodosus	LONG-LEAVED PONDWEED	forb	3	native	OBL	2.253%
Prunella vulgaris	SELF-HEAL	forb	0	native	FAC	0.200%
Pycnanthemum tenuifolium	NARROW-LEAVED MOUNTAIN-MINT	forb	4	native	FAC	0.196%
Rhus sp.	NDA[d]	shrub	NDA[d]	native	NDA[d]	0.098%
Salix exigua	SANDBAR WILLOW	shrub	1	native	OBL	8.818%
Salix nigra	BLACK WILLOW	tree	2	native	OBL	1.078%
Schizachyrium scoparium	LITTLE BLUESTEM	grass	5	native	FACU	1.274%

Table D–13 (continued). WM2W3 Wetland Vegetation Monitoring Data Summary

Species	Common Name	Type	CC[a]	Nativity	Wetland Indicator[c]	Relative Cover
Schoenoplectus tabernaemontani	SOFT-STEMMED BULRUSH	sedge	2	native	OBL	0.588%
Scirpus atrovirens	GREEN BULRUSH	sedge	1	native	OBL	0.392%
Scirpus cyperinus	WOOL-GRASS	sedge	1	native	OBL	0.784%
Scirpus pendulus	DROOPING BULRUSH	sedge	2	native	OBL	2.451%
Solidago canadensis	CANADA GOLDENROD	forb	1	native	FACU	1.568%
Sorghastrum nutans	INDIAN GRASS	grass	5	native	FACU	0.100%
Spartina pectinata	PRAIRIE CORD GRASS	grass	5	native	FACW	0.686%
Toxicodendron radicans	POISON-IVY	vine	1	native	FAC	0.098%
Verbena urticifolia	WHITE VERVAIN	forb	3	native	FAC	0.100%
Agrostis gigantea	REDTOP	grass	0	adventive	FACW	0.980%
Daucus carota	QUEEN-ANNE'S-LACE	forb	0	adventive	UPL	0.200%
Dipsacus fullonum	WILD TEASEL	forb	0	adventive	FACU	0.196%
Dipsacus laciniatus	CUT-LEAVED TEASEL	forb	0	adventive	UPL	0.196%
Festuca sp.	NDA[d]	grass	0	adventive	NDA[d]	0.198%
Lonicera maackii	AMUR HONEYSUCKLE	shrub	0	adventive	UPL	0.098%
Lysimachia nummularia	MONEYWORT	forb	0	adventive	FACW	2.743%
Melilotus officinalis	YELLOW SWEET-CLOVER	forb	0	adventive	FACU	0.002%
Plantago lanceolata	ENGLISH PLANTAIN	forb	0	adventive	FACU	7.350%
Solanum carolinense	HORSE NETTLE	forb	0	adventive	FACU	0.002%
Typha x glauca	HYBRID CAT-TAIL	forb	0	adventive	OBL	19.203%
Xanthium strumarium	COMMON COCKLEBUR	forb	0	adventive	FAC	1.764%
Unknown forb	UNKNOWN	forb	N/A[e]	N/A[e]	N/A[e]	0.098%

[a] CC = Coefficient of Conservatism
[b] FQAI = Floristic Quality Assessment Index
[c] see http://plants.usda.gov/wetinfo.html
[d] NDA = No Determination Available
[e] N/A = Not Applicable

Table D–14. NPPW4 Wetland Vegetation Monitoring Data Summary

Total Species	46
Native Species	38
Non-Native (Adventive) Species	7
Average CC[a]	2.20
FQAI[b]	14.76

Species	Common Name	Type	CC[a]	Nativity	Wetland Indicator[c]	Relative Cover
Agrimonia parviflora	SMALL-FLOWERED AGRIMONY	forb	2	native	FACW	0.351%
Alisma subcordatum	SOUTHERN WATER-PLANTAIN	forb	2	native	OBL	0.354%
Ambrosia artemisiifolia	COMMON RAGWEED	forb	0	native	FACU	0.004%
Andropogon gerardii	BIG BLUESTEM	grass	5	native	FAC	0.004%
Asclepias incarnata	SWAMP MILKWEED	forb	4	native	OBL	0.351%
Aster pilosus	AWL ASTER	forb	1	native	UPL	0.004%
Bidens frondosa	DEVIL'S BEGGAR'S-TICK	forb	2	native	FACW	0.004%
Carex annectens	YELLOW FOX SEDGE	sedge	3	native	FACW	1.228%
Carex frankii	FRANK'S SEDGE	sedge	2	native	OBL	0.175%
Carex hystericina	PORCUPINE SEDGE	sedge	5	native	OBL	0.701%
Carex lurida	BOTTLEBRUSH SEDGE	sedge	3	native	OBL	4.209%
Eleocharis obtusa	BLUNT SPIKE-RUSH	sedge	1	native	OBL	0.351%
Eleocharis palustris	SMALL'S SPIKE-RUSH	sedge	5	native	OBL	1.228%
Epilobium coloratum	PURPLE-LEAVED WILLOW-HERB	forb	1	native	OBL	3.156%
Erechtites hieracifolia	PILEWORT	forb	2	native	FACU	1.754%
Eupatorium maculatum	SPOTTED JOE-PYE WEED	forb	6	native	FACW	0.877%
Eupatorium perfoliatum	COMMON BONESET	forb	3	native	OBL	8.593%
Eupatorium serotinum	LATE-FLOWERING BONESET	forb	2	native	FAC	0.877%
Euthamia graminifolia	FLAT-TOPPED GOLDENROD	forb	2	native	FACW	6.664%
Fraxinus pennsylvanica	GREEN ASH	tree	3	native	FACW	0.526%
Juncus effusus	SOFT RUSH	forb	1	native	OBL	6.313%
Juncus torreyi	TORREY'S RUSH	forb	3	native	FACW	0.351%
Leersia oryzoides	RICE CUT GRASS	grass	1	native	OBL	15.081%
Lemna minor	COMMON DUCKWEED	forb	3	native	OBL	6.138%
Ludwigia palustris	WATER-PURSLANE	forb	3	native	OBL	3.683%
Mimulus ringens	COMMON MONKEY-FLOWER	forb	4	native	OBL	2.981%
Oxalis stricta	COMMON YELLOW WOOD-SORREL	forb	0	native	FACU	0.004%
Polygonum punctatum	DOTTED SMARTWEED	forb	6	native	OBL	0.880%
Rosa palustris	SWAMP ROSE	shrub	5	native	OBL	6.138%
Sagittaria latifolia	COMMON ARROWHEAD	forb	1	native	OBL	0.175%
Schoenoplectus tabernaemontani	SOFT-STEMMED BULRUSH	sedge	2	native	OBL	2.459%
Scirpus atrovirens	GREEN BULRUSH	sedge	1	native	OBL	2.280%
Scirpus cyperinus	WOOL-GRASS	sedge	1	native	OBL	7.190%
Solidago canadensis	CANADA GOLDENROD	forb	1	native	FACU	3.858%
Spartina pectinata	PRAIRIE CORD GRASS	grass	5	native	FACW	7.365%
Ulmus americana	AMERICAN ELM	tree	2	native	FACW	0.175%
Verbena hastata	BLUE VERVAIN	forb	4	native	FACW	0.175%
Vernonia gigantea	TALL IRONWEED	forb	2	native	FAC	0.004%
Cirsium arvense	CANADA THISTLE	forb	0	adventive	FACU	0.004%
Polygonum persicaria	LADY'S THUMB	forb	0	adventive	FACW	0.526%
Rumex crispus	CURLY DOCK	forb	0	adventive	FAC	0.004%
Salix alba	WHITE WILLOW	tree	0	adventive	FACW	0.004%
Setaria glauca	YELLOW FOXTAIL GRASS	grass	0	adventive	FAC	0.004%
Typha x glauca	HYBRID CAT-TAIL	forb	0	adventive	OBL	1.403%
Xanthium strumarium	COMMON COCKLEBUR	forb	0	adventive	FAC	0.701%
Unknown grass	UNKNOWN	grass	N/A[e]	N/A[e]	N/A[e]	0.701%

[a] CC = Coefficient of Conservatism
[b] FQAI = Floristic Quality Assessment Index
[c] see http://plants.usda.gov/wetinfo.html
[d] NDA = No Determination Available
[e] N/A = Not Applicable

Table D–15. NPPW5 Wetland Vegetation Monitoring Data Summary

Total Species	62
Native Species	50
Non-Native (Adventive) Species	10
Average CC[a]	2.22
FQAI[b]	16.94

Species	Common Name	Type	CC[a]	Nativity	Wetland Indicator[c]	Relative Cover
Acer negundo	BOX ELDER	tree	3	native	FAC	0.008%
Agrimonia parviflora	SMALL-FLOWERED AGRIMONY	forb	2	native	FACW	0.410%
Ambrosia artemisiifolia	COMMON RAGWEED	forb	0	native	FACU	0.615%
Ammannia robusta	SESSILE TOOTH-CUP	forb	7	native	OBL	0.004%
Andropogon gerardii	BIG BLUESTEM	grass	5	native	FAC	2.666%
Asclepias incarnata	SWAMP MILKWEED	forb	4	native	OBL	0.205%
Aster pilosus	AWL ASTER	forb	1	native	UPL	1.440%
Carex annectens	YELLOW FOX SEDGE	sedge	3	native	FACW	3.692%
Carex cristatella	CRESTED SEDGE	sedge	3	native	FACW	0.209%
Carex frankii	FRANK'S SEDGE	sedge	2	native	OBL	6.564%
Carex granularis	MEADOW SEDGE	sedge	3	native	FACW	0.012%
Carex lurida	BOTTLEBRUSH SEDGE	sedge	3	native	OBL	2.256%
Carex molesta	TROUBLESOME SEDGE	sedge	3	native	FAC	0.820%
Carex sp.	NDA[d]	sedge	NDA[d]	native	NDA[d]	0.205%
Carex vulpinoidea	FOX SEDGE	sedge	1	native	FACW	0.004%
Cyperus strigosus	STRAW-COLORED UMBRELLA-S.	sedge	1	native	FACW	0.209%
Desmodium canadense	CANADA TICK-TREFOIL	forb	4	native	FACU	0.205%
Echinacea purpurea	PURPLE CONEFLOWER	forb	6	native	UPL	0.209%
Eleocharis erythropoda	RED-FOOTED SPIKE-RUSH	sedge	4	native	OBL	0.410%
Eleocharis obtusa	BLUNT SPIKE-RUSH	sedge	1	native	OBL	0.410%
Erigeron strigosus	ROUGH FLEABANE	forb	1	native	FACU	1.026%
Eupatorium perfoliatum	COMMON BONESET	forb	3	native	OBL	0.205%
Eupatorium serotinum	LATE-FLOWERING BONESET	forb	2	native	FAC	2.461%
Euthamia graminifolia	FLAT-TOPPED GOLDENROD	forb	2	native	FACW	4.512%
Fraxinus pennsylvanica	GREEN ASH	tree	3	native	FACW	1.846%
Geum canadense	WHITE AVENS	forb	2	native	FAC	0.004%
Juncus anthelatus	BRANCHED RUSH	forb	4	native	FAC-	2.256%
Juncus effusus	SOFT RUSH	forb	1	native	OBL	2.872%
Juncus sp.	NDA[d]	forb	NDA[d]	native	NDA[d]	0.615%
Juncus tenuis	PATH RUSH	forb	1	native	FAC	3.282%
Juncus torreyi	TORREY'S RUSH	forb	3	native	FACW	1.846%
Leersia oryzoides	RICE CUT GRASS	grass	1	native	OBL	8.204%
Lemna minor	COMMON DUCKWEED	forb	3	native	OBL	3.077%
Liatris spicata	SPIKED BLAZING-STAR	forb	7	native	FAC	1.231%
Ludwigia palustris	WATER-PURSLANE	forb	3	native	OBL	2.256%
Monarda fistulosa	WILD BERGAMOT	forb	3	native	FACU	0.213%
Panicum virgatum	SWITCH GRASS	grass	4	native	FAC	3.487%
Populus deltoides	EASTERN COTTONWOOD	tree	3	native	FAC	0.213%
Rudbeckia hirta	BLACK-EYED SUSAN	forb	1	native	FACU	0.820%
Sagittaria latifolia	COMMON ARROWHEAD	forb	1	native	OBL	0.004%
Schizachyrium scoparium	LITTLE BLUESTEM	grass	5	native	FACU	1.231%
Schoenoplectus tabernaemontani	SOFT-STEMMED BULRUSH	sedge	2	native	OBL	4.718%
Scirpus atrovirens	GREEN BULRUSH	sedge	1	native	OBL	4.923%
Scirpus pendulus	DROOPING BULRUSH	sedge	2	native	OBL	0.205%
Solidago canadensis	CANADA GOLDENROD	forb	1	native	FACU	4.102%
Spartina pectinata	PRAIRIE CORD GRASS	grass	5	native	FACW	17.024%
Toxicodendron radicans	POISON-IVY	vine	1	native	FAC	0.004%
Ulmus americana	AMERICAN ELM	tree	2	native	FACW	0.004%
Verbena hastata	BLUE VERVAIN	forb	4	native	FACW	0.205%
Vernonia gigantea	TALL IRONWEED	forb	2	native	FAC	0.410%

Table D–15 (continued). NPPW5 Wetland Vegetation Monitoring Data Summary

Species	Common Name	Type	CC[a]	Nativity	Wetland Indicator[c]	Relative Cover
Agrostis gigantea	REDTOP	grass	0	adventive	FACW	1.641%
Cirsium arvense	CANADA THISTLE	forb	0	adventive	FACU	0.004%
Daucus carota	QUEEN-ANNE'S-LACE	forb	0	adventive	UPL	0.410%
Dipsacus fullonum	WILD TEASEL	forb	0	adventive	FACU	1.436%
Echinochloa crusgalli	BARNYARD GRASS	grass	0	adventive	FACU	2.051%
Festuca sp.	NDA[d]	grass	0	adventive	ND	0.414%
Polygonum persicaria	LADY'S THUMB	forb	0	adventive	FACW	0.004%
Rumex crispus	CURLY DOCK	forb	0	adventive	FAC	0.004%
Trifolium repens	WHITE CLOVER	forb	0	adventive	FACU	0.205%
Xanthium strumarium	COMMON COCKLEBUR	forb	0	adventive	FAC	0.004%
Unknown grass	UNKNOWN	grass	N/A[e]	N/A[e]	N/A[e]	0.004%
Unknown	UNKNOWN GRASS	N/A[e]	N/A[e]	N/A[e]	N/A[e]	0.008%

[a] CC = Coefficient of Conservatism
[b] FQAI = Floristic Quality Assessment Index
[c] see http://plants.usda.gov/wetinfo.html
[d] NDA = No Determination Available
[e] N/A = Not Applicable

Table D–16. BAPW2 Wetland Vegetation Monitoring Data Summary

Total Species	55
Native Species	46
Non-Native (Adventive) Species	9
Average CC[a]	2.38
FQAI[b]	17.31

Species	Common Name	Type	CC[a]	Nativity	Wetland Indicator[c]	Relative Cover
Acalypha rhomboidea	RHOMBIC THREE-S. MERCURY	forb	0	native	FACU	0.002%
Alisma subcordatum	SOUTHERN WATER-PLANTAIN	forb	2	native	OBL	0.219%
Ambrosia artemisiifolia	COMMON RAGWEED	forb	0	native	FACU	0.114%
Ammannia robusta	SESSILE TOOTH-CUP	forb	7	native	OBL	0.002%
Amorpha fruticosa	FALSE INDIGO	forb	3	native	FACW	1.642%
Andropogon gerardii	BIG BLUESTEM	grass	5	native	FAC	0.985%
Asclepias incarnata	SWAMP MILKWEED	forb	4	native	OBL	0.221%
Aster pilosus	AWL ASTER	forb	1	native	UPL	0.002%
Carex annectens	YELLOW FOX SEDGE	sedge	3	native	FACW	2.518%
Carex frankii	FRANK'S SEDGE	sedge	2	native	OBL	0.657%
Carex hystericina	PORCUPINE SEDGE	sedge	5	native	OBL	0.328%
Carex lurida	BOTTLEBRUSH SEDGE	sedge	3	native	OBL	0.766%
Carex vulpinoidea	FOX SEDGE	sedge	1	native	FACW	0.109%
Cephalanthus occidentalis	BUTTONBUSH	shrub	6	native	OBL	0.766%
Cornus sp.	NDA[d]	NDA[d]	NDA[d]	native	NDA[d]	0.438%
Desmodium canadense	CANADA TICK-TREFOIL	forb	4	native	FACU	0.002%
Eleocharis erythropoda	RED-FOOTED SPIKE-RUSH	sedge	4	native	OBL	0.876%
Eleocharis obtusa	BLUNT SPIKE-RUSH	sedge	1	native	OBL	0.547%
Eleocharis palustris	SMALL'S SPIKE-RUSH	sedge	5	native	OBL	1.642%
Geum canadense	WHITE AVENS	forb	2	native	FAC	0.219%
Hamamelis virginiana	WITCH-HAZEL	sm tree	5	native	FACU	0.766%
Juncus anthelatus	BRANCHED RUSH	forb	4	native	FAC-	0.112%
Juncus tenuis	PATH RUSH	forb	1	native	FAC	0.109%
Leersia oryzoides	RICE CUT GRASS	grass	1	native	OBL	9.089%
Panicum virgatum	SWITCH GRASS	grass	4	native	FAC	54.191%
Phyla lanceolata	FOG-FRUIT	forb	3	native	OBL	0.109%
Physalis heterophylla	CLAMMY GROUND-CHERRY	forb	1	native	UPL	0.109%
Pilea pumila	CLEARWEED	forb	2	native	FACW	0.109%
Polygonum erectum	ERECT KNOTWEED	forb	1	native	FACU	0.004%
Polygonum hydropiper	WATER-PEPPER	forb	1	native	OBL	0.002%
Polygonum hydropiperoides	MILD WATER-PEPPER	forb	6	native	OBL	0.219%
Polygonum lapathifolium	DOCK-LEAVED SMARTWEED	forb	1	native	FACW+	0.219%
Populus deltoides	EASTERN COTTONWOOD	tree	3	native	FAC	0.219%
Potamogeton nodosus	LONG-LEAVED PONDWEED	forb	3	native	OBL	0.876%
Rudbeckia hirta	BLACK-EYED SUSAN	forb	1	native	FACU	0.766%
Sagittaria latifolia	COMMON ARROWHEAD	forb	1	native	OBL	0.438%
Salix nigra	BLACK WILLOW	tree	2	native	OBL	2.301%
Schizachyrium scoparium	LITTLE BLUESTEM	grass	5	native	FACU	0.766%
Schoenoplectus tabernaemontani	SOFT-STEMMED BULRUSH	sedge	2	native	OBL	1.863%
Scirpus atrovirens	GREEN BULRUSH	sedge	1	native	OBL	0.328%
Senna hebecarpa	NORTHERN WILD SENNA	forb	4	native	FACW	0.769%
Solidago canadensis	CANADA GOLDENROD	forb	1	native	FACU	0.002%
Sparganium eurycarpum	GIANT BUR-REED	forb	4	native	OBL	0.112%
Spartina pectinata	PRAIRIE CORD GRASS	grass	5	native	FACW	12.261%

Table D–16 (continued). BAPW2 Wetland Vegetation Monitoring Data Summary

Species	Common Name	Type	CC[a]	Nativity	Wetland Indicator[c]	Relative Cover
Ulmus americana	AMERICAN ELM	tree	2	native	FACW	0.109%
Verbena hastata	BLUE VERVAIN	forb	4	native	FACW	0.876%
Agrostis gigantea	REDTOP	grass	0	adventive	FACW	0.002%
Echinochloa crusgalli	BARNYARD GRASS	grass	0	adventive	FACU	0.328%
Polygonum persicaria	LADY'S THUMB	forb	0	adventive	FACW	0.112%
Rumex crispus	CURLY DOCK	forb	0	adventive	FAC	0.109%
Schoenoplectus mucronatus	RICEFIELD BULRUSH	sedge	0	adventive	OBL	0.002%
Solanum carolinense	HORSE NETTLE	forb	0	adventive	FACU	0.109%
Typha x glauca	HYBRID CAT-TAIL	forb	0	adventive	OBL	0.219%
Xanthium strumarium	COMMON COCKLEBUR	forb	0	adventive	FAC	0.328%
Unknown forb	UNKNOWN	forb	N/A[e]	N/A[e]	N/A[e]	0.004%

[a] CC = Coefficient of Conservatism
[b] FQAI = Floristic Quality Assessment Index
[c] see http://plants.usda.gov/wetinfo.html
[d] NDA = No Determination Available
[e] N/A = Not Applicable

Table D–17. BAPW3 Wetland Vegetation Monitoring Data Summary

Total Species	30
Native Species	26
Non-Native (Adventive) Species	4
Average CC[a]	1.86
FQAI[b]	9.83

Species	Common Name	Type	CC[a]	Nativity	Wetland Indicator[c]	Relative Cover
Alisma subcordatum	SOUTHERN WATER-PLANTAIN	forb	2	native	OBL	1.156%
Ambrosia artemisiifolia	COMMON RAGWEED	forb	0	native	FACU	0.197%
Bidens frondosa	DEVIL'S BEGGAR'S-TICK	forb	2	native	FACW	0.385%
Carex annectens	YELLOW FOX SEDGE	sedge	3	native	FACW	4.238%
Carex comosa	BEARDED SEDGE	sedge	2	native	OBL	0.578%
Carex cristatella	CRESTED SEDGE	sedge	3	native	FACW	0.578%
Carex frankii	FRANK'S SEDGE	sedge	2	native	OBL	1.156%
Carex lurida	BOTTLEBRUSH SEDGE	sedge	3	native	OBL	0.578%
Cornus sp.	NDA[d]	NDA[d]	NDA[d]	native	NDA[d]	0.193%
Cyperus sp.	NDA[d]	sedge	NDA[d]	native	NDA[d]	0.008%
Eleocharis erythropoda	RED-FOOTED SPIKE-RUSH	sedge	4	native	OBL	1.926%
Eleocharis obtusa	BLUNT SPIKE-RUSH	sedge	1	native	OBL	1.541%
Epilobium coloratum	PURPLE-LEAVED WILLOW-HERB	forb	1	native	OBL	0.193%
Juncus anthelatus	BRANCHED RUSH	forb	4	native	FAC-	1.541%
Juncus effusus	SOFT RUSH	forb	1	native	OBL	0.578%
Leersia oryzoides	RICE CUT GRASS	grass	1	native	OBL	4.238%
Ludwigia palustris	WATER-PURSLANE	forb	3	native	OBL	1.926%
Panicum virgatum	SWITCH GRASS	grass	4	native	FAC	17.338%
Phyla lanceolata	FOG-FRUIT	forb	3	native	OBL	0.385%
Polygonum sp.	NDA[d]	NDA[d]	NDA[d]	NDA[d]	NDA[d]	0.004%
Populus deltoides	EASTERN COTTONWOOD	tree	3	native	FAC	0.771%
Potamogeton nodosus	LONG-LEAVED PONDWEED	forb	3	native	OBL	40.456%
Salix exigua	SANDBAR WILLOW	shrub	1	native	OBL	0.193%
Salix nigra	BLACK WILLOW	tree	2	native	OBL	1.926%
Schoenoplectus tabernaemontani	SOFT-STEMMED BULRUSH	sedge	2	native	OBL	3.468%
Scirpus cyperinus	WOOL-GRASS	sedge	1	native	OBL	2.697%
Solidago canadensis	CANADA GOLDENROD	forb	1	native	FACU	0.193%
Bromus japonicus	JAPANESE BROME	grass	0	adventive	FACU-	0.193%
Dipsacus fullonum	WILD TEASEL	forb	0	adventive	FACU	0.385%
Najas minor	EURASIAN WATER-NYMPH	forb	0	adventive	OBL	6.743%
Typha x glauca	HYBRID CAT-TAIL	forb	0	adventive	OBL	4.238%

[a] CC = Coefficient of Conservatism
[b] FQAI = Floristic Quality Assessment Index
[c] see http://plants.usda.gov/wetinfo.html
[d] NDA = No Determination Available
[e] N/A = Not Applicable

Table D–18. BAPW4 Wetland Vegetation Monitoring Data Summary

Total Species	50
Native Species	36
Non-Native (Adventive) Species	12
Average CC[a]	1.77
FQAI[b]	12.27

Species	Common Name	Type	CC[a]	Nativity	Wetland Indicator[c]	Relative Cover
Alisma subcordatum	SOUTHERN WATER-PLANTAIN	forb	2	native	OBL	2.468%
Ambrosia artemisiifolia	COMMON RAGWEED	forb	0	native	FACU	0.176%
Asclepias incarnata	SWAMP MILKWEED	forb	4	native	OBL	0.705%
Aster pilosus	AWL ASTER	forb	1	native	UPL	0.007%
Bidens frondosa	DEVIL'S BEGGAR'S-TICK	forb	2	native	FACW	0.532%
Carex annectens	YELLOW FOX SEDGE	sedge	3	native	FACW	4.407%
Carex frankii	FRANK'S SEDGE	sedge	2	native	OBL	0.529%
Carex hystericina	PORCUPINE SEDGE	sedge	5	native	OBL	0.529%
Carex lurida	BOTTLEBRUSH SEDGE	sedge	3	native	OBL	0.529%
Carex vulpinoidea	FOX SEDGE	sedge	1	native	FACW	0.705%
Cyperus strigosus	STRAW-COLORED UMBRELLA-S.	sedge	1	native	FACW	0.176%
Eleocharis erythropoda	RED-FOOTED SPIKE-RUSH	sedge	4	native	OBL	1.058%
Eleocharis obtusa	BLUNT SPIKE-RUSH	sedge	1	native	OBL	1.058%
Eleocharis palustris	SMALL'S SPIKE-RUSH	sedge	5	native	OBL	0.176%
Erechtites hieracifolia	PILEWORT	forb	2	native	FACU	0.176%
Erigeron strigosus	ROUGH FLEABANE	forb	1	native	FACU	0.705%
Eupatorium serotinum	LATE-FLOWERING BONESET	forb	2	native	FAC	0.705%
Geum canadense	WHITE AVENS	forb	2	native	FAC	0.176%
Juncus anthelatus	BRANCHED RUSH	forb	4	native	FAC-	3.702%
Juncus effusus	SOFT RUSH	forb	1	native	OBL	3.702%
Juncus tenuis	PATH RUSH	forb	1	native	FAC	0.881%
Juncus torreyi	TORREY'S RUSH	forb	3	native	FACW	0.532%
Leersia oryzoides	RICE CUT GRASS	grass	1	native	OBL	3.702%
Lemna minor	COMMON DUCKWEED	forb	3	native	OBL	0.356%
Ludwigia palustris	WATER-PURSLANE	forb	3	native	OBL	7.051%
Mimulus ringens	COMMON MONKEY-FLOWER	forb	4	native	OBL	0.004%
Panicum virgatum	SWITCH GRASS	grass	4	native	FAC	22.035%
Phyla lanceolata	FOG-FRUIT	forb	3	native	OBL	0.004%
Populus deltoides	EASTERN COTTONWOOD	tree	3	native	FAC	0.176%
Potamogeton nodosus	LONG-LEAVED PONDWEED	forb	3	native	OBL	0.705%
Salix exigua	SANDBAR WILLOW	shrub	1	native	OBL	0.176%
Salix nigra	BLACK WILLOW	tree	2	native	OBL	1.234%
Schoenoplectus tabernaemontani	SOFT-STEMMED BULRUSH	sedge	2	native	OBL	6.699%
Scirpus atrovirens	GREEN BULRUSH	sedge	1	native	OBL	1.587%
Solidago canadensis	CANADA GOLDENROD	forb	1	native	FACU	0.180%
Verbena hastata	BLUE VERVAIN	forb	4	native	FACW	0.705%
Agrostis gigantea	REDTOP	grass	0	adventive	FACW	3.702%
Medicago lupulina	BLACK MEDICK	forb	0	adventive	FACU	0.004%
Najas minor	EURASIAN WATER-NYMPH	forb	0	adventive	OBL	0.529%
Plantago lanceolata	ENGLISH PLANTAIN	forb	0	adventive	FACU	0.176%
Polygonum persicaria	LADY'S THUMB	forb	0	adventive	FACW	0.007%
Potamogeton crispus	CURLY-LEAVED PONDWEED	forb	0	adventive	OBL	2.644%
Rumex crispus	CURLY DOCK	forb	0	adventive	FAC	0.004%
Taraxacum officinale	COMMON DANDELION	forb	0	adventive	FACU	0.176%
Trifolium pratense	RED CLOVER	forb	0	adventive	FACU	0.353%
Trifolium repens	WHITE CLOVER	forb	0	adventive	FACU	0.176%
Typha x glauca	HYBRID CAT-TAIL	forb	0	adventive	OBL	22.564%
Xanthium strumarium	COMMON COCKLEBUR	forb	0	adventive	FAC	0.705%
Unknown forb	UNKNOWN	forb	N/A[e]	N/A[e]	N/A[e]	0.008%
Unknown grass	UNKNOWN	grass	N/A[e]	N/A[e]	N/A[e]	0.705%

[a] CC = Coefficient of Conservatism
[b] FQAI = Floristic Quality Assessment Index
[c] see http://plants.usda.gov/wetinfo.html
[d] NDA = No Determination Available
[e] N/A = Not Applicable

Table D–19. BAPW7 Wetland Vegetation Monitoring Data Summary

Total Species	49
Native Species	37
Non-Native (Adventive) Species	12
Average CC[a]	1.96
FQAI[b]	13.71

Species	Common Name	Type	CC[a]	Nativity	Wetland Indicator[c]	Relative Cover
Alisma subcordatum	SOUTHERN WATER-PLANTAIN	forb	2	native	OBL	0.890%
Asclepias incarnata	SWAMP MILKWEED	forb	4	native	OBL	0.003%
Bidens frondosa	DEVIL'S BEGGAR'S-TICK	forb	2	native	FACW	0.890%
Carex annectens	YELLOW FOX SEDGE	sedge	3	native	FACW	2.076%
Carex cephalophora	OVAL-HEADED SEDGE	sedge	5	native	FACU	0.003%
Carex comosa	BEARDED SEDGE	sedge	2	native	OBL	3.263%
Carex frankii	FRANK'S SEDGE	sedge	2	native	OBL	0.151%
Carex molesta	TROUBLESOME SEDGE	sedge	3	native	FAC	0.148%
Carex normalis	LARGE STRAW SEDGE	sedge	4	native	FACW	0.148%
Carex vulpinoidea	FOX SEDGE	sedge	1	native	FACW	0.148%
Cephalanthus occidentalis	BUTTONBUSH	shrub	6	native	OBL	0.599%
Eleocharis erythropoda	RED-FOOTED SPIKE-RUSH	sedge	4	native	OBL	7.415%
Eleocharis obtusa	BLUNT SPIKE-RUSH	sedge	1	native	OBL	1.483%
Erigeron strigosus	ROUGH FLEABANE	forb	1	native	FACU	0.148%
Eupatorium perfoliatum	COMMON BONESET	forb	3	native	OBL	0.148%
Eupatorium serotinum	LATE-FLOWERING BONESET	forb	2	native	FAC	0.593%
Fraxinus pennsylvanica	GREEN ASH	tree	3	native	FACW	0.148%
Geum canadense	WHITE AVENS	forb	2	native	FAC	0.148%
Juncus effusus	SOFT RUSH	forb	1	native	OBL	2.076%
Juncus tenuis	PATH RUSH	forb	1	native	FAC	5.339%
Leersia oryzoides	RICE CUT GRASS	grass	1	native	OBL	0.890%
Lemna minor	COMMON DUCKWEED	forb	3	native	OBL	1.038%
Ludwigia palustris	WATER-PURSLANE	forb	3	native	OBL	1.483%
Mimulus ringens	COMMON MONKEY-FLOWER	forb	4	native	OBL	0.151%
Panicum virgatum	SWITCH GRASS	grass	4	native	FAC	5.784%
Populus deltoides	EASTERN COTTONWOOD	tree	3	native	FAC	0.445%
Potamogeton nodosus	LONG-LEAVED PONDWEED	forb	3	native	OBL	0.445%
Salix nigra	BLACK WILLOW	tree	2	native	OBL	0.890%
Schizachyrium scoparium	LITTLE BLUESTEM	grass	5	native	FACU	0.148%
Schoenoplectus tabernaemontani	SOFT-STEMMED BULRUSH	sedge	2	native	OBL	2.076%
Scirpus atrovirens	GREEN BULRUSH	sedge	1	native	OBL	2.224%
Scirpus cyperinus	WOOL-GRASS	sedge	1	native	OBL	3.263%
Scirpus pendulus	DROOPING BULRUSH	sedge	2	native	OBL	0.445%
Solidago canadensis	CANADA GOLDENROD	forb	1	native	FACU	0.003%
Sparganium eurycarpum	GIANT BUR-REED	forb	4	native	OBL	4.152%
Teucrium canadense	AMERICAN GERMANDER	forb	3	native	FACW	0.003%
Ulmus americana	AMERICAN ELM	tree	2	native	FACW	0.003%
Agrostis gigantea	REDTOP	grass	0	adventive	FACW	2.669%
Allium vineale	FIELD GARLIC	forb	0	adventive	FACU	0.003%
Cirsium arvense	CANADA THISTLE	forb	0	adventive	FACU	0.003%
Echinochloa crusgalli	BARNYARD GRASS	grass	0	adventive	FACU	0.003%
Festuca sp.	ND	grass	0	adventive	ND	0.445%
Najas minor	EURASIAN WATER-NYMPH	forb	0	adventive	OBL	42.265%
Potamogeton crispus	CURLY-LEAVED PONDWEED	forb	0	adventive	OBL	4.449%
Rumex crispus	CURLY DOCK	forb	0	adventive	FAC	0.300%
Trifolium hybridum	ALSIKE CLOVER	forb	0	adventive	FACU	0.003%
Trifolium pratense	RED CLOVER	forb	0	adventive	FACU	0.003%
Typha x glauca	HYBRID CAT-TAIL	forb	0	adventive	OBL	0.593%
Verbascum blattaria	MOTH MULLEIN	forb	0	adventive	FACU	0.003%

[a] CC = Coefficient of Conservatism
[b] FQAI = Floristic Quality Assessment Index
[c] see http://plants.usda.gov/wetinfo.html
[d] NDA = No Determination Available
[e] N/A = Not Applicable

Table D–20. BAPW9 Wetland Vegetation Monitoring Data Summary

Total Species	45
Native Species	35
Non-Native (Adventive) Species	7
Average CC[a]	2.17
FQAI[b]	14.04

Species	Common Name	Type	CC[a]	Nativity	Wetland Indicator[c]	Relative Cover
Alisma subcordatum	SOUTHERN WATER-PLANTAIN	forb	2	native	OBL	0.386%
Ammannia robusta	SESSILE TOOTH-CUP	forb	7	native	OBL	0.004%
Andropogon gerardii	BIG BLUESTEM	grass	5	native	FAC	0.193%
Asclepias incarnata	SWAMP MILKWEED	forb	4	native	OBL	1.930%
Aster pilosus	AWL ASTER	forb	1	native	UPL	0.004%
Bidens frondosa	DEVIL'S BEGGAR'S-TICK	forb	2	native	FACW	0.193%
Carex annectens	YELLOW FOX SEDGE	sedge	3	native	FACW	0.583%
Carex comosa	BEARDED SEDGE	sedge	2	native	OBL	27.017%
Carex frankii	FRANK'S SEDGE	sedge	2	native	OBL	0.579%
Carex vulpinoidea	FOX SEDGE	sedge	1	native	FACW	1.544%
Cephalanthus occidentalis	BUTTONBUSH	shrub	6	native	OBL	1.351%
Eleocharis erythropoda	RED-FOOTED SPIKE-RUSH	sedge	4	native	OBL	1.351%
Eleocharis obtusa	BLUNT SPIKE-RUSH	sedge	1	native	OBL	0.965%
Eupatorium serotinum	LATE-FLOWERING BONESET	forb	2	native	FAC	1.351%
Juncus effusus	SOFT RUSH	forb	1	native	OBL	0.579%
Juncus tenuis	PATH RUSH	forb	1	native	FAC	1.351%
Leersia oryzoides	RICE CUT GRASS	grass	1	native	OBL	2.702%
Lemna minor	COMMON DUCKWEED	forb	3	native	OBL	3.088%
Mimulus ringens	COMMON MONKEY-FLOWER	forb	4	native	OBL	0.004%
Panicum virgatum	SWITCH GRASS	grass	4	native	FAC	1.930%
Parthenocissus quinquefolia	VIRGINIA CREEPER	vine	2	native	FACU	0.579%
Polygonum hydropiper	WATER-PEPPER	forb	1	native	OBL	0.193%
Polygonum hydropiperoides	MILD WATER-PEPPER	forb	6	native	OBL	0.004%
Polygonum lapathifolium	DOCK-LEAVED SMARTWEED	forb	1	native	FACW+	0.193%
Populus deltoides	EASTERN COTTONWOOD	tree	3	native	FAC	0.193%
Potamogeton nodosus	LONG-LEAVED PONDWEED	forb	3	native	OBL	0.579%
Rudbeckia hirta	BLACK-EYED SUSAN	forb	1	native	FACU	1.351%
Salix nigra	BLACK WILLOW	tree	2	native	OBL	0.193%
Schoenoplectus tabernaemontani	SOFT-STEMMED BULRUSH	sedge	2	native	OBL	0.579%
Scirpus atrovirens	GREEN BULRUSH	sedge	1	native	OBL	0.579%
Scirpus cyperinus	WOOL-GRASS	sedge	1	native	OBL	17.368%
Senna hebecarpa	NORTHERN WILD SENNA	forb	4	native	FACW	0.004%
Solidago canadensis	CANADA GOLDENROD	forb	1	native	FACU	1.355%
Spartina pectinata	PRAIRIE CORD GRASS	grass	5	native	FACW	0.000%
Ulmus americana	AMERICAN ELM	tree	2	native	FACW	0.004%
Agrostis gigantea	REDTOP	grass	0	adventive	FACW	0.579%
Cirsium arvense	CANADA THISTLE	forb	0	adventive	FACU	2.702%
Echinochloa crusgalli	BARNYARD GRASS	grass	0	adventive	FACU	0.193%
Najas minor	EURASIAN WATER-NYMPH	forb	0	adventive	OBL	24.122%
Polygonum persicaria	LADY'S THUMB	forb	0	adventive	FACW	0.004%
Verbascum blattaria	MOTH MULLEIN	forb	0	adventive	FACU	0.583%
Xanthium strumarium	COMMON COCKLEBUR	forb	0	adventive	FAC	0.193%
Unknown cress	UNKNOWN	forb	N/A[e]	N/A[e]	N/A[e]	0.579%
Unknown forb	UNKNOWN	forb	N/A[e]	N/A[e]	N/A[e]	0.579%
Unknown	UNKNOWN	N/A[e]	N/A[e]	N/A[e]	N/A[e]	0.193%

[a] CC = Coefficient of Conservatism
[b] FQAI = Floristic Quality Assessment Index
[c] see http://plants.usda.gov/wetinfo.html
[d] NDA = No Determination Available

Table D–21. FPAW2 Wetland Vegetation Monitoring Data Summary

Total Species	36
Native Species	27
Non-Native (Adventive) Species	8
Average CC[a]	1.76
FQAI[b]	10.29

Species	Common Name	Type	CC[a]	Nativity	Wetland Indicator[c]	Relative Cover
Alisma subcordatum	SOUTHERN WATER-PLANTAIN	forb	2	native	OBL	0.877%
Ambrosia artemisiifolia	COMMON RAGWEED	forb	0	native	FACU	0.376%
Ammannia robusta	SESSILE TOOTH-CUP	forb	7	native	OBL	0.125%
Apocynum cannabinum	INDIAN HEMP	forb	1	native	FAC	0.128%
Asclepias incarnata	SWAMP MILKWEED	forb	4	native	OBL	0.125%
Bidens cernua	NODDING BEGGAR'S-TICK	forb	3	native	OBL	0.877%
Carex annectens	YELLOW FOX SEDGE	sedge	3	native	FACW	0.376%
Carex vulpinoidea	FOX SEDGE	sedge	1	native	FACW	2.255%
Cyperus strigosus	STRAW-COLORED UMBRELLA-S.	sedge	1	native	FACW	0.128%
Eleocharis erythropoda	RED-FOOTED SPIKE-RUSH	sedge	4	native	OBL	16.540%
Eleocharis obtusa	BLUNT SPIKE-RUSH	sedge	1	native	OBL	1.880%
Euphorbia maculata	SPOTTED SPURGE	forb	0	native	FACU-	0.125%
Leersia oryzoides	RICE CUT GRASS	grass	1	native	OBL	15.036%
Lemna minor	COMMON DUCKWEED	forb	3	native	OBL	0.125%
Ludwigia palustris	WATER-PURSLANE	forb	3	native	OBL	0.376%
Panicum virgatum	SWITCH GRASS	grass	4	native	FAC	2.381%
Polygonum hydropiper	WATER-PEPPER	forb	1	native	OBL	0.125%
Polygonum lapathifolium	DOCK-LEAVED SMARTWEED	forb	1	native	FACW+	0.376%
Populus deltoides	EASTERN COTTONWOOD	tree	3	native	FAC	6.390%
Potamogeton nodosus	LONG-LEAVED PONDWEED	forb	3	native	OBL	0.125%
Salix nigra	BLACK WILLOW	tree	2	native	OBL	6.265%
Schoenoplectus tabernaemontani	SOFT-STEMMED BULRUSH	sedge	2	native	OBL	0.752%
Scirpus atrovirens	GREEN BULRUSH	sedge	1	native	OBL	0.376%
Solidago canadensis	CANADA GOLDENROD	forb	1	native	FACU	16.414%
Sparganium eurycarpum	GIANT BUR-REED	forb	4	native	OBL	0.752%
Verbena hastata	BLUE VERVAIN	forb	4	native	FACW	1.378%
Wolffia sp.	NDA[d]	forb	NDA[d]	native	OBL	0.376%
Abutilon theophrasti	VELVETLEAF	forb	0	adventive	FACU	0.003%
Cirsium arvense	CANADA THISTLE	forb	0	adventive	FACU	0.003%
Dipsacus fullonum	WILD TEASEL	forb	0	adventive	FACU	0.376%
Echinochloa crusgalli	BARNYARD GRASS	grass	0	adventive	FACU	1.754%
Polygonum persicaria	LADY'S THUMB	forb	0	adventive	FACW	0.251%
Rumex crispus	CURLY DOCK	forb	0	adventive	FAC	0.125%
Schoenoplectus mucronatus	RICEFIELD BULRUSH	sedge	0	adventive	OBL	0.125%
Xanthium strumarium	COMMON COCKLEBUR	forb	0	adventive	FAC	20.424%
Unknown forb	UNKNOWN	forb	N/A[e]	N/A[e]	N/A[e]	1.880%

[a] CC = Coefficient of Conservatism
[b] FQAI = Floristic Quality Assessment Index
[c] see http://plants.usda.gov/wetinfo.html
[d] NDA = No Determination Available
[e] N/A = Not Applicable

Table D–22. FPAW4 Wetland Vegetation Monitoring Data Summary

Total Species	29
Native Species	25
Non-Native (Adventive) Species	4
Average CC[a]	2.07
FQAI[b]	10.96

Species	Common Name	Type	CC[a]	Nativity	Wetland Indicator[c]	Relative Cover
Agrimonia parviflora	SMALL-FLOWERED AGRIMONY	forb	2	native	FACW	0.399%
Ambrosia artemisiifolia	COMMON RAGWEED	forb	0	native	FACU	0.133%
Andropogon gerardii	BIG BLUESTEM	grass	5	native	FAC	0.133%
Apocynum cannabinum	INDIAN HEMP	forb	1	native	FAC	0.932%
Asclepias incarnata	SWAMP MILKWEED	forb	4	native	OBL	0.266%
Bidens frondosa	DEVIL'S BEGGAR'S-TICK	forb	2	native	FACW	0.266%
Carex annectens	YELLOW FOX SEDGE	sedge	3	native	FACW	1.331%
Carex comosa	BEARDED SEDGE	sedge	2	native	OBL	1.331%
Carex lurida	BOTTLEBRUSH SEDGE	sedge	3	native	OBL	0.399%
Carex vulpinoidea	FOX SEDGE	sedge	1	native	FACW	0.399%
Cyperus sp.	NDA[d]	sedge	NDA[d]	native	NDA[d]	0.003%
Eleocharis erythropoda	RED-FOOTED SPIKE-RUSH	sedge	4	native	OBL	14.645%
Eleocharis obtusa	BLUNT SPIKE-RUSH	sedge	1	native	OBL	6.124%
Epilobium coloratum	PURPLE-LEAVED WILLOW-HERB	forb	1	native	OBL	0.533%
Leersia oryzoides	RICE CUT GRASS	grass	1	native	OBL	14.112%
Lemna minor	COMMON DUCKWEED	forb	3	native	OBL	0.535%
Ludwigia palustris	WATER-PURSLANE	forb	3	native	OBL	39.940%
Monarda fistulosa	WILD BERGAMOT	forb	3	native	FACU	0.932%
Parthenocissus quinquefolia	VIRGINIA CREEPER	vine	2	native	FACU	0.133%
Polygonum lapathifolium	DOCK-LEAVED SMARTWEED	forb	1	native	FACW+	0.003%
Schoenoplectus tabernaemontani	SOFT-STEMMED BULRUSH	sedge	2	native	OBL	2.929%
Scirpus atrovirens	GREEN BULRUSH	sedge	1	native	OBL	2.130%
Solidago canadensis	CANADA GOLDENROD	forb	1	native	FACU	4.793%
Solidago rigida	STIFF GOLDENROD	forb	8	native	UPL	0.003%
Verbena hastata	BLUE VERVAIN	forb	4	native	FACW	2.396%
Hydrocotyle ranunculoides	BUTTERCUP-PENNYWORT	forb	0	adventive	OBL	2.263%
Polygonum persicaria	LADY'S THUMB	forb	0	adventive	FACW	0.003%
Typha x glauca	HYBRID CAT-TAIL	forb	0	adventive	OBL	2.929%
Xanthium strumarium	COMMON COCKLEBUR	forb	0	adventive	FAC	0.003%

[a] CC = Coefficient of Conservatism
[b] FQAI = Floristic Quality Assessment Index
[c] see http://plants.usda.gov/wetinfo.html
[d] NDA = No Determination Available
[e] N/A = Not Applicable

Table D–23. FPAW5 Wetland Vegetation Monitoring Data Summary

Total Species	55
Native Species	40
Non-Native (Adventive) Species	14
Average CC[a]	2.09
FQAI[b]	15.38

Species	Common Name	Type	CC[a]	Nativity	Wetland Indicator[c]	Relative Cover
Alisma subcordatum	SOUTHERN WATER-PLANTAIN	forb	2	native	OBL	0.517%
Ambrosia artemisiifolia	COMMON RAGWEED	forb	0	native	FACU	0.775%
Ammannia robusta	SESSILE TOOTH-CUP	forb	7	native	OBL	0.263%
Andropogon gerardii	BIG BLUESTEM	grass	5	native	FAC	1.033%
Apocynum cannabinum	INDIAN HEMP	forb	1	native	FAC	0.258%
Asclepias incarnata	SWAMP MILKWEED	forb	4	native	OBL	0.790%
Aster pilosus	AWL ASTER	forb	1	native	UPL	0.517%
Baptisia australis	BLUE FALSE INDIGO	forb	6	native	FACU-	0.258%
Bidens frondosa	DEVIL'S BEGGAR'S-TICK	forb	2	native	FACW	1.033%
Carex annectens	YELLOW FOX SEDGE	sedge	3	native	FACW	2.325%
Carex frankii	FRANK'S SEDGE	sedge	2	native	OBL	0.258%
Carex hystericina	PORCUPINE SEDGE	sedge	5	native	OBL	0.775%
Carex lurida	BOTTLEBRUSH SEDGE	sedge	3	native	OBL	6.199%
Cyperus bipartitus	UMBRELLA-SEDGE	sedge	3	native	OBL	0.263%
Cyperus strigosus	STRAW-COLORED UMBRELLA-S.	sedge	1	native	FACW	0.258%
Echinacea purpurea	PURPLE CONEFLOWER	forb	6	native	UPL	0.258%
Eleocharis obtusa	BLUNT SPIKE-RUSH	sedge	1	native	OBL	16.531%
Elymus canadensis	CANADA WILD RYE	grass	6	native	FACU	0.775%
Erigeron strigosus	ROUGH FLEABANE	forb	1	native	FACU	1.033%
Eupatorium perfoliatum	COMMON BONESET	forb	3	native	OBL	1.813%
Juncus anthelatus	BRANCHED RUSH	forb	4	native	FAC-	0.258%
Juncus effusus	SOFT RUSH	forb	1	native	OBL	0.258%
Juncus torreyi	TORREY'S RUSH	forb	3	native	FACW	3.874%
Lactuca biennis	TALL BLUE LETTUCE	forb	1	native	FAC	0.005%
Leersia oryzoides	RICE CUT GRASS	grass	1	native	OBL	1.555%
Lemna minor	COMMON DUCKWEED	forb	3	native	OBL	15.497%
Monarda fistulosa	WILD BERGAMOT	forb	3	native	FACU	0.258%
Panicum virgatum	SWITCH GRASS	grass	4	native	FAC	2.841%
Penstemon digitalis	FOXGLOVE BEARD-TONGUE	forb	2	native	FAC	0.775%
Phyla lanceolata	FOG-FRUIT	forb	3	native	OBL	0.258%
Populus deltoides	EASTERN COTTONWOOD	tree	3	native	FAC	0.258%
Ratibida pinnata	GRAY-HEADED CONEFLOWER	forb	5	native	UPL	0.775%
Rudbeckia hirta	BLACK-EYED SUSAN	forb	1	native	FACU	1.033%
Sagittaria latifolia	COMMON ARROWHEAD	forb	1	native	OBL	0.258%
Salix nigra	BLACK WILLOW	tree	2	native	OBL	0.517%
Schizachyrium scoparium	LITTLE BLUESTEM	grass	5	native	FACU	0.258%
Schoenoplectus tabernaemontani	SOFT-STEMMED BULRUSH	sedge	2	native	OBL	2.325%
Scirpus pendulus	DROOPING BULRUSH	sedge	2	native	OBL	0.258%
Solidago canadensis	CANADA GOLDENROD	forb	1	native	FACU	4.133%
Verbena hastata	BLUE VERVAIN	forb	4	native	FACW	1.808%

Table D–23 (continued). FPAW5 Wetland Vegetation Monitoring Data Summary

Species	Common Name	Type	CC[a]	Nativity	Wetland Indicator[c]	Relative Cover
Bromus japonicus	JAPANESE BROME	grass	0	adventive	FACU-	0.258%
Cirsium arvense	CANADA THISTLE	forb	0	adventive	FACU	0.258%
Cirsium vulgare	BULL THISTLE	forb	0	adventive	FACU	0.258%
Daucus carota	QUEEN-ANNE'S-LACE	forb	0	adventive	UPL	0.775%
Dipsacus fullonum	WILD TEASEL	forb	0	adventive	FACU	0.775%
Echinochloa crusgalli	BARNYARD GRASS	grass	0	adventive	FACU	0.258%
Medicago lupulina	BLACK MEDICK	forb	0	adventive	FACU	0.258%
Melilotus officinalis	YELLOW SWEET-CLOVER	forb	0	adventive	FACU	1.808%
Plantago lanceolata	ENGLISH PLANTAIN	forb	0	adventive	FACU	0.258%
Plantago major	COMMON PLANTAIN	forb	0	adventive	FAC	0.775%
Polygonum persicaria	LADY'S THUMB	forb	0	adventive	FACW	0.258%
Rumex crispus	CURLY DOCK	forb	0	adventive	FAC	0.258%
Typha x glauca	HYBRID CAT-TAIL	forb	0	adventive	OBL	3.874%
Xanthium strumarium	COMMON COCKLEBUR	forb	0	adventive	FAC	0.258%
Unknown grass	UNKNOWN	grass	N/A[e]	N/A[e]	N/A[e]	5.682%

[a] CC = Coefficient of Conservatism
[b] FQAI = Floristic Quality Assessment Index
[c] see http://plants.usda.gov/wetinfo.html
[d] NDA = No Determination Available
[e] N/A = Not Applicable

Table D–24. FPAW7 Wetland Vegetation Monitoring Data Summary

Total Species	16
Native Species	12
Non-Native (Adventive) Species	4
Average CC[a]	1.75
FQAI[b]	7.00

Species	Common Name	Type	CC[a]	Nativity	Wetland Indicator[c]	Relative Cover
Alisma subcordatum	SOUTHERN WATER-PLANTAIN	forb	2	native	OBL	0.756%
Ambrosia artemisiifolia	COMMON RAGWEED	forb	0	native	FACU	0.004%
Ammannia robusta	SESSILE TOOTH-CUP	forb	7	native	OBL	0.188%
Carex comosa	BEARDED SEDGE	sedge	2	native	OBL	0.188%
Eleocharis erythropoda	RED-FOOTED SPIKE-RUSH	sedge	4	native	OBL	7.142%
Eleocharis obtusa	BLUNT SPIKE-RUSH	sedge	1	native	OBL	6.014%
Leersia oryzoides	RICE CUT GRASS	grass	1	native	OBL	3.007%
Ludwigia palustris	WATER-PURSLANE	forb	3	native	OBL	0.376%
Panicum capillare	WITCH GRASS	grass	1	native	FAC	0.004%
Schoenoplectus tabernaemontani	SOFT-STEMMED BULRUSH	sedge	2	native	OBL	12.028%
Scirpus cyperinus	WOOL-GRASS	sedge	1	native	OBL	0.188%
Sparganium eurycarpum	GIANT BUR-REED	forb	4	native	OBL	16.915%
Amaranthus retroflexus	REDROOT	forb	0	adventive	FACU	0.188%
Echinochloa crusgalli	BARNYARD GRASS	grass	0	adventive	FACU	2.255%
Polygonum persicaria	LADY'S THUMB	forb	0	adventive	FACW	0.004%
Typha x glauca	HYBRID CAT-TAIL	forb	0	adventive	OBL	50.744%

[a] CC = Coefficient of Conservatism
[b] FQAI = Floristic Quality Assessment Index
[c] see http://plants.usda.gov/wetinfo.html
[d] NDA = No Determination Available
[e] N/A = Not Applicable

Table D–25. FPAW9 Wetland Vegetation Monitoring Data Summary

Total Species	39
Native Species	35
Non-Native (Adventive) Species	4
Average CC[a]	2.38
FQAI[b]	14.89

Species	Common Name	Type	CC[a]	Nativity	Wetland Indicator[c]	Relative Cover
Acer negundo	BOX ELDER	tree	3	native	FAC	0.003%
Alisma subcordatum	SOUTHERN WATER-PLANTAIN	forb	2	native	OBL	2.912%
Ambrosia artemisiifolia	COMMON RAGWEED	forb	0	native	FACU	0.006%
Ammannia robusta	SESSILE TOOTH-CUP	forb	7	native	OBL	0.139%
Apocynum cannabinum	INDIAN HEMP	forb	1	native	FAC	1.805%
Asclepias incarnata	SWAMP MILKWEED	forb	4	native	OBL	0.555%
Bidens cernua	NODDING BEGGAR'S-TICK	forb	3	native	OBL	0.971%
Bidens connata	PURPLE-STEMMED BEGGAR'S-TICK	forb	3	native	FACW+	2.773%
Bidens frondosa	DEVIL'S BEGGAR'S-TICK	forb	2	native	FACW	0.696%
Carex annectens	YELLOW FOX SEDGE	sedge	3	native	FACW	0.832%
Carex comosa	BEARDED SEDGE	sedge	2	native	OBL	2.080%
Carex scoparia	POINTED BROOM SEDGE	sedge	3	native	FACW	0.416%
Cephalanthus occidentalis	BUTTONBUSH	shrub	6	native	OBL	22.739%
Cornus racemosa	GRAY DOGWOOD	shrub	1	native	FAC	0.971%
Cyperus esculentus	YELLOW NUT-SEDGE	sedge	0	native	FACW	0.003%
Cyperus strigosus	STRAW-COLORED UMBRELLA-S.	sedge	1	native	FACW	0.006%
Eleocharis erythropoda	RED-FOOTED SPIKE-RUSH	sedge	4	native	OBL	7.210%
Eleocharis obtusa	BLUNT SPIKE-RUSH	sedge	1	native	OBL	1.248%
Epilobium coloratum	PURPLE-LEAVED WILLOW-HERB	forb	1	native	OBL	0.555%
Eupatorium maculatum	SPOTTED JOE-PYE WEED	forb	6	native	FACW	0.139%
Euthamia graminifolia	FLAT-TOPPED GOLDENROD	forb	2	native	FACW	0.139%
Fraxinus pennsylvanica	GREEN ASH	tree	3	native	FACW	0.555%
Ilex verticillata	WINTERBERRY	shrub	6	native	FACW	0.416%
Ludwigia palustris	WATER-PURSLANE	forb	3	native	OBL	11.092%
Panicum capillare	WITCH GRASS	grass	1	native	FAC	0.139%
Panicum virgatum	SWITCH GRASS	grass	4	native	FAC	19.412%
Phyla lanceolata	FOG-FRUIT	forb	3	native	OBL	0.141%
Populus deltoides	EASTERN COTTONWOOD	tree	3	native	FAC	2.912%
Salix exigua	SANDBAR WILLOW	shrub	1	native	OBL	0.416%
Salix nigra	BLACK WILLOW	tree	2	native	OBL	2.912%
Schoenoplectus tabernaemontani	SOFT-STEMMED BULRUSH	sedge	2	native	OBL	1.387%
Scirpus atrovirens	GREEN BULRUSH	sedge	1	native	OBL	1.525%
Scirpus cyperinus	WOOL-GRASS	sedge	1	native	OBL	0.416%
Spiraea tomentosa	STEEPLEBUSH	shrub	4	native	FACW	0.832%
Verbena hastata	BLUE VERVAIN	forb	4	native	FACW	0.139%
Echinochloa crusgalli	BARNYARD GRASS	grass	0	adventive	FACU	0.971%
Polygonum persicaria	LADY'S THUMB	forb	0	adventive	FACW	0.003%
Typha x glauca	HYBRID CAT-TAIL	forb	0	adventive	OBL	9.983%
Xanthium strumarium	COMMON COCKLEBUR	forb	0	adventive	FAC	0.557%

[a] CC = Coefficient of Conservatism

[b] FQAI = Floristic Quality Assessment Index

[c] see http://plants.usda.gov/wetinfo.html

[d] NDA = No Determination Available

[e] N/A = Not Applicable

Table D–26. PREW6 Wetland Vegetation Monitoring Data Summary

Total Species	43
Native Species	35
Non-Native (Adventive) Species	7
Average CC[a]	2.23
FQAI[b]	14.07

Species	Common Name	Type	CC[a]	Nativity	Wetland Indicator[c]	Relative Cover
Acer negundo	BOX ELDER	tree	3	native	FAC	0.099%
Acer saccharinum	SILVER MAPLE	tree	3	native	FACW	0.397%
Alisma subcordatum	SOUTHERN WATER-PLANTAIN	forb	2	native	OBL	0.993%
Ambrosia artemisiifolia	COMMON RAGWEED	forb	0	native	FACU	0.103%
Apocynum cannabinum	INDIAN HEMP	forb	1	native	FAC	0.300%
Asclepias incarnata	SWAMP MILKWEED	forb	4	native	OBL	0.397%
Boehmeria cylindrica	FALSE NETTLE	forb	4	native	OBL	0.298%
Carex annectens	YELLOW FOX SEDGE	sedge	3	native	FACW	0.993%
Carex cristatella	CRESTED SEDGE	sedge	3	native	FACW	0.794%
Carex frankii	FRANK'S SEDGE	sedge	2	native	OBL	0.298%
Carex scoparia	POINTED BROOM SEDGE	sedge	3	native	FACW	0.298%
Carex sp.	NDA[d]	sedge	NDA[d]	native	NDA[d]	5.957%
Cephalanthus occidentalis	BUTTONBUSH	shrub	6	native	OBL	0.099%
Eleocharis erythropoda	RED-FOOTED SPIKE-RUSH	sedge	4	native	OBL	5.163%
Eleocharis obtusa	BLUNT SPIKE-RUSH	sedge	1	native	OBL	1.191%
Erechtites hieracifolia	PILEWORT	forb	2	native	FACU	0.002%
Eupatorium serotinum	LATE-FLOWERING BONESET	forb	2	native	FAC	0.099%
Euthamia graminifolia	FLAT-TOPPED GOLDENROD	forb	2	native	FACW	0.099%
Ipomoea pandurata	POTATO-VINE	forb	2	native	FACU	0.002%
Leersia oryzoides	RICE CUT GRASS	grass	1	native	OBL	3.277%
Panicum virgatum	SWITCH GRASS	grass	4	native	FAC	0.993%
Penthorum sedoides	DITCH-STONECROP	forb	2	native	OBL	0.099%
Phyla lanceolata	FOG-FRUIT	forb	3	native	OBL	0.004%
Platanus occidentalis	SYCAMORE	tree	7	native	FACW	3.475%
Polygonum hydropiperoides	MILD WATER-PEPPER	forb	6	native	OBL	5.759%
Populus deltoides	EASTERN COTTONWOOD	tree	3	native	FAC	0.993%
Potamogeton nodosus	LONG-LEAVED PONDWEED	forb	3	native	OBL	0.099%
Salix nigra	BLACK WILLOW	tree	2	native	OBL	7.546%
Schoenoplectus tabernaemontani	SOFT-STEMMED BULRUSH	sedge	2	native	OBL	2.780%
Scirpus cyperinus	WOOL-GRASS	sedge	1	native	OBL	0.298%
Scirpus pendulus	DROOPING BULRUSH	sedge	2	native	OBL	0.298%
Solidago canadensis	CANADA GOLDENROD	forb	1	native	FACU	0.002%
Sparganium eurycarpum	GIANT BUR-REED	forb	4	native	OBL	0.298%
Toxicodendron radicans	POISON-IVY	vine	1	native	FAC	0.298%
Vitis sp.	NDA[d]	vine	NDA[d]	native	NDA[d]	0.099%
Agrostis gigantea	REDTOP	grass	0	adventive	FACW	0.099%
Dipsacus fullonum	WILD TEASEL	forb	0	adventive	FACU	0.099%
Najas minor	EURASIAN WATER-NYMPH	forb	0	adventive	OBL	3.475%
Phalaris arundinacea	REED CANARY GRASS	grass	0	adventive	FACW	4.170%
Schoenoplectus mucronatus	RICEFIELD BULRUSH	sedge	0	adventive	OBL	1.589%
Typha x glauca	HYBRID CAT-TAIL	forb	0	adventive	OBL	10.326%
Xanthium strumarium	COMMON COCKLEBUR	forb	0	adventive	FAC	36.241%
Unknown	UNKNOWN	N/A[e]	N/A[e]	N/A[e]	N/A[e]	0.099%

[a] CC = Coefficient of Conservatism
[b] FQAI = Floristic Quality Assessment Index
[c] see http://plants.usda.gov/wetinfo.html
[d] NDA = No Determination Available
[e] N/A = Not Applicable

Table D–27. Amphibian Monitoring Summary

Restoration Project Area	Wetland Area	Species and Number of Individuals										
		Cricket Frog (*Acris crepitans*)	Marbled Salamander (*Ambystoma opacum*)	Salamander Species (*Ambystomid sp*)	Tiger Salamander (*Ambystoma tigrinum*)	American and Fowlers Toad (*Anaxyrus species*)	Toad Species (*Anaxyrus sp*)	American Bull Frog (*Lithobates catesbeiana*)	Green Frog (*Lithobates clamitans*)	Northern Leopard Frog (*Lithobates pipiens*)	Frog Species (*Lithobates sp*)	Spring Peeper (*Pseudacris crucifer*)
Borrow Area (BAP)	BAPW2	0	0	0	0	0	0	0	2	1	2	0
	BAPW4	0	0	0	0	0	0	0	0	0	2	0
	BAPW7	0	0	0	0	0	0	1	1	0	0	0
Former Production Area (FPA)	FPAW2	0	0	0	0	0	0	0	0	0	9	0
	FPAW7	9	0	0	0	0	0	0	0	0	3	0
	FPAW9	20	0	0	0	0	1	0	0	0	11	0
	PREW6	8	0	0	0	0	0	0	2	2	82	1
Northern Pine Plantation Enhancement (NPP)	NPPW4	2	0	1	0	0	0	0	0	0	51	0
	NPPW5	53	0	0	0	0	0	5	0	0	55	0
Wetland Mitigation Phase I (WM1)	WM1W1	0	0	0	0	0	0	3	0	0	7	0
	WM1W4	1	0	0	0	0	0	1	2	0	141	0
	WM1W7	0	0	1	0	0	0	0	0	0	8	0
Wetland Mitigation Phase II (WM2)	WM2W1	13	0	0	0	0	0	3	1	0	22	1
	WM2W2	3	2	0	0	0	3	3	1	0	25	3
	WM2W3	0	0	1	1	0	0	1	3	1	9	0

Table D–28. Amphibian Index of Biotic Integrity

Restoration Project Area	AIBI Score[a]			
	Wetland Area	2010	2011	2012
Borrow Area (BAP)	BAPW2	0	0	10
	BAPW4	0	0	10
	BAPW7	0	13	10
Former Production Area (FPA)	FPAW2	0	13	10
	FPAW7	0	0	20
	FPAW9	0	10	20
	PREW6	13	13	13
Northern Pine Plantation Enhancement (NPP)	NPPW4	16	33	13
	NPPW5	24	0	16
Wetland Mitigation Phase I (WM1)	WM1W1	0	3	10
	WM1W4	13	3	13
	WM1W7	0	0	10
Wetland Mitigation Phase II (WM2)	WM2W1	3	13	20
	WM2W2	3	6	16
	WM2W3	16	19	16

[a] AIBI = Amphibian Index of Biotic Integrity

Table D–29. 2012 Implementation Monitoring Herbaceous Cover Data Summary

Restoration Project Area	Sub-Area	Total Species	Native Species	Percent Native Species	Percent Relative Frequency of Native Species	Percent Cover
Paddys Run Tributary	mesic prairie	30	19	63%	67%	97%
	wetland	31	19	61%	55%	83%
Triangle Area	wet mesic prairie	30	20	67%	68%	94%
	mesic prairie	31	20	65%	56%	97%
Former Production Area	Solid Waste Landfill	23	13	57%	51%	66%
	Haul Road	22	14	64%	57%	75%
	Prairie	21	11	52%	33%	57%

Table D–30. Implementation Monitoring 2012 Herbaceous Cover Data Summary Paddys Run Tributary Project—Mesic Prairie

Total Spp.:	30	**Mean CC[a]:**	1.03
Native Spp.:	19	**Average Cover:**	97%
Non-Native Spp.:	11	**FQAI[b]:**	5.66
Percent Native:	63%		

Species	Common Name	Type	CC[a]	Frequency (species/quadrat)	Relative Frequency
Acalypha virginica	VIRGINIA THREE-S. MERCURY	forb	0	0.8	8%
Acer negundo	BOX ELDER	tree	3	0.2	2%
Ambrosia artemisiifolia	COMMON RAGWEED	forb	0	1	10%
Andropogon gerardii	BIG BLUESTEM	grass	5	0.4	4%
Asclepias syriaca	COMMON MILKWEED	forb	1	0.2	2%
Aster pilosus	AWL ASTER	forb	1	0.2	2%
Conyza canadensis	HORSEWEED	forb	0	0.4	4%
Eclipta prostrata	YERBA-DE-TAJO	forb	3	0.2	2%
Erigeron strigosus	ROUGH FLEABANE	forb	1	0.2	2%
Galium aparine	CLEAVERS	forb	0	0.2	2%
Geum canadense	WHITE AVENS	forb	2	0.2	2%
Juncus tenuis	PATH RUSH	forb	1	0.2	2%
Oxalis stricta	COMMON YELLOW WOOD-SORREL	forb	0	0.4	4%
Panicum capillare	WITCH GRASS	grass	1	0.4	4%
Panicum virgatum	SWITCH GRASS	grass	4	0.4	4%
Populus deltoides	EASTERN COTTONWOOD	tree	3	0.2	2%
Solidago canadensis	CANADA GOLDENROD	forb	1	0.6	6%
Verbena urticifolia	WHITE VERVAIN	forb	3	0.2	2%
Vernonia gigantea	TALL IRONWEED	forb	2	0.2	2%
Cichorium intybus	**CHICORY**	forb	0	0.2	2%
Cirsium arvense	**CANADA THISTLE**	forb	0	0.2	2%
Conium maculatum	**POISON-HEMLOCK**	forb	0	0.2	2%
Euphorbia Vermiculata	**HAIRY SPURGE**	forb	0	0.2	2%
Festuca sp.	**ND[c]**	grass	0	0.2	2%
Plantago lanceolata	**ENGLISH PLANTAIN**	forb	0	0.4	4%
Polygonum persicaria	**LADY'S THUMB**	forb	0	0.4	4%
Rumex crispus	**CURLY DOCK**	forb	0	0.2	2%
Setaria sp.	**ND[c]**	grass	0	0.2	2%
Taraxacum officinale	**COMMON DANDELION**	forb	0	0.8	8%
Trifolium repens	**WHITE CLOVER**	forb	0	0.2	2%
			Native Species:	6.6	67%
			Non-Native Species:	3.2	33%

[a]CC= Coefficient of Conservatism
[b]FQAI= Floristic Quality Assessment Index
[c]ND= No Determination
Species in bold are non-native

Table D–31. Implementation Monitoring 2012
Herbaceous Cover Data Summary
Paddys Run Tributary Project—Wetland

Total Spp.:	31	**Mean CC[a]:**	1.34
Native Spp.:	19	**Average Cover:**	83%
Non-Native Spp.:	12	**FQAI[b]:**	7.49
Percent Native:	61%		

Species	Common Name	Type	CC[a]	Frequency (species/quadrat)	Relative Frequency
Acalypha virginica	VIRGINIA THREE-S. MERCURY	forb	0	0.8	7%
Acer saccharinum	SILVER MAPLE	tree	3	0.2	2%
Ambrosia artemisiifolia	COMMON RAGWEED	forb	0	0.4	4%
Andropogon gerardii	BIG BLUESTEM	grass	5	0.4	4%
Asclepias syriaca	COMMON MILKWEED	forb	1	0.2	2%
Aster pilosus	AWL ASTER	forb	1	0.2	2%
Cephalanthus occidentalis	BUTTONBUSH	shrub	6	0.4	4%
Cerastium sp.	ND[c]	forb	ND	0.2	2%
Conyza canadensis	HORSEWEED	forb	0	0.4	4%
Cyperus sp.	ND[c]	sedge	ND	0.2	2%
Desmodium canadense	CANADA TICK-TREFOIL	forb	4	0.2	2%
Epilobium angustifolium	FIREWEED	forb	7	0.2	2%
Eupatorium serotinum	LATE-FLOWERING BONESET	forb	2	0.2	2%
Oxalis stricta	COMMON YELLOW WOOD-SORREL	forb	0	0.4	4%
Populus deltoides	EASTERN COTTONWOOD	tree	3	0.2	2%
Rudbeckia hirta	BLACK-EYED SUSAN	forb	1	0.2	2%
Solidago canadensis	CANADA GOLDENROD	forb	1	0.4	4%
Verbena urticifolia	WHITE VERVAIN	forb	3	0.4	4%
Vernonia gigantea	TALL IRONWEED	forb	2	0.6	5%
Daucus carota	**QUEEN-ANNE'S-LACE**	forb	0	0.4	4%
Echinochloa crusgalli	**BARNYARD GRASS**	grass	0	0.6	5%
Festuca sp.	**ND[c]**	grass	0	0.6	5%
Melilotus officinalis	**YELLOW SWEET-CLOVER**	forb	0	0.4	4%
Phleum pratense	**TIMOTHY**	grass	0	0.2	2%
Plantago lanceolata	**ENGLISH PLANTAIN**	forb	0	0.6	5%
Polygonum aviculare	**COMMON KNOTWEED**	forb	0	0.4	4%
Polygonum persicaria	**LADY'S THUMB**	forb	0	0.4	4%
Setaria sp.	**ND[c]**	grass	0	0.2	2%
Solanum carolinense	**HORSE NETTLE**	forb	0	0.4	4%
Taraxacum officinale	**COMMON DANDELION**	forb	0	0.6	5%
Verbascum thapsus	**COMMON MULLEIN**	forb	0	0.2	2%
		Native Species:		6.2	55%
		Non-Native Species:		5.0	45%

[a]CC= Coefficient of Conservatism
[b]FQAI= Floristic Quality Assessment Index
[c]ND= No Determination
Species in bold are non-native

Table D–32. Implementation Monitoring 2012
Herbaceous Cover Data Summary
Triangle—Mesic Prairie

Total Spp.:	31	**Mean CC[a]:**	1.37
Native Spp.:	20	**Average Cover:**	97%
Non-Native Spp.:	11	**FQAI[b]:**	6.11
Percent Native:	65%		

Species	Common Name	Type	CC[a]	Frequency (species/quadrat)	Relative Frequency
Acalypha rhomboidea	RHOMBIC THREE-S. MERCURY	forb	0	0.2	2%
Ambrosia artemisiifolia	COMMON RAGWEED	forb	0	0.2	2%
Andropogon gerardii	BIG BLUESTEM	grass	5	0.2	2%
Apocynum cannabinum	INDIAN HEMP	forb	1	0.4	3%
Asclepias syriaca	COMMON MILKWEED	forb	1	0.2	2%
Aster pilosus	AWL ASTER	forb	1	0.2	2%
Bouteloua curtipendula	SIDE-OATS GRAMA GRASS	grass	8	0.4	3%
Campsis radicans	TRUMPET-CREEPER	vine	1	0.2	2%
Conyza canadensis	HORSEWEED	forb	0	0.4	3%
Desmodium canadense	CANADA TICK-TREFOIL	forb	4	0.4	3%
Lobelia inflata	INDIAN TOBACCO	forb	1	0.2	2%
Oxalis stricta	COMMON YELLOW WOOD-SORREL	forb	0	0.4	3%
Panicum virgatum	SWITCH GRASS	grass	4	0.6	5%
Physalis heterophylla	CLAMMY GROUND-CHERRY	forb	1	0.6	5%
Prunella vulgaris	SELF-HEAL	forb	0	0.2	2%
Solidago canadensis	CANADA GOLDENROD	forb	1	0.4	3%
Toxicodendron radicans	POISON-IVY	vine	1	0.4	3%
Verbena urticifolia	WHITE VERVAIN	forb	3	0.2	2%
Vernonia gigantea	TALL IRONWEED	forb	2	0.4	3%
Vitis sp.	ND[c]	vine	0	0.4	3%
Agrostis gigantea	**REDTOP**	grass	0	0.4	3%
Convolvulus arvensis	**FIELD BINDWEED**	forb	0	0.8	7%
Dactylis glomerata	**ORCHARD GRASS**	grass	0	0.2	2%
Daucus carota	**QUEEN-ANNE'S-LACE**	forb	0	1	8%
Dipsacus fullonum	**WILD TEASEL**	forb	0	0.8	7%
Echinochloa crusgalli	**BARNYARD GRASS**	grass	0	0.4	3%
Festuca sp.	**ND[c]**	grass	0	0.8	7%
Medicago lupulina	**BLACK MEDICK**	forb	0	0.2	2%
Phleum pratense	**TIMOTHY**	grass	0	0.2	2%
Plantago lanceolata	**ENGLISH PLANTAIN**	forb	0	0.2	2%
Plantago major	**COMMON PLANTAIN**	forb	0	0.2	2%
		Native Species:		6.60	56%
		Non-Native Species:		5.20	44%

[a]CC= Coefficient of Conservatism
[b]FQAI= Floristic Quality Assessment Index
[c]ND= No Determination
Species in bold are non-native

Table D–33. Implementation Monitoring 2012
Herbaceous Cover Data Summary
Triangle—Wet Mesic Prairie

Total Spp.:	30	**Mean CC[a]:**	1.37
Native Spp.:	20	**Average Cover:**	94%
Non-Native Spp.:	10	**FQAI[b]:**	7.49
Percent Native:	67%		

Species	Common Name	Type	CC[a]	Frequency (species/quadrat)	Relative Frequency
Acalypha virginica	VIRGINIA THREE-S. MERCURY	forb	0	0.8	6%
Apocynum cannabinum	INDIAN HEMP	forb	1	0.6	5%
Aster pilosus	AWL ASTER	forb	1	0.2	2%
Baptisia lactea	WHITE FALSE INDIGO	forb	8	0.2	2%
Bouteloua curtipendula	SIDE-OATS GRAMA GRASS	grass	8	0.4	3%
Campsis radicans	TRUMPET-CREEPER	vine	1	0.2	2%
Cephalanthus occidentalis	BUTTONBUSH	shrub	6	0.2	2%
Conyza canadensis	HORSEWEED	forb	0	0.6	5%
Desmodium canescens	HOARY TICK-TREFOIL	forb	4	0.4	3%
Erigeron strigosus	ROUGH FLEABANE	forb	1	0.6	5%
Lobelia inflata	INDIAN TOBACCO	forb	5	0.4	3%
Oxalis stricta	COMMON YELLOW WOOD-SORREL	forb	0	0.8	6%
Panicum virgatum	SWITCH GRASS	grass	4	0.2	2%
Parthenocissus quinquefolia	VIRGINIA CREEPER	vine	2	0.4	3%
Physalis sp.	ND[c]	forb	0	0.2	2%
Prunella vulgaris	SELF-HEAL	forb	0	0.2	2%
Solidago canadensis	CANADA GOLDENROD	forb	1	0.4	3%
Toxicodendron radicans	POISON-IVY	vine	1	0.6	5%
Vernonia gigantea	TALL IRONWEED	forb	2	0.8	6%
Vitis sp.	ND[c]	vine	0	0.2	2%
Cirsium arvense	**CANADA THISTLE**	forb	0	0.2	2%
Convolvulus arvensis	**FIELD BINDWEED**	forb	0	0.2	2%
Daucus carota	**QUEEN-ANNE'S-LACE**	forb	0	1	8%
Dipsacus fullonum	**WILD TEASEL**	forb	0	0.8	6%
Dipsacus laciniatus	**CUT-LEAVED TEASEL**	forb	0	0.2	2%
Echinochloa crusgalli	**BARNYARD GRASS**	grass	0	0.8	6%
Melilotus officinalis	**YELLOW SWEET-CLOVER**	forb	0	0.2	2%
Plantago lanceolata	**ENGLISH PLANTAIN**	forb	0	0.2	2%
Setaria sp.	**ND[c]**	grass	0	0.2	2%
Solanum carolinense	**HORSE NETTLE**	forb	0	0.2	2%
			Native Species:	8.4	68%
			Non-Native Species:	4.0	32%

[a]CC= Coefficient of Conservatism
[b]FQAI= Floristic Quality Assessment Index
[c]ND= No Determination
Species in bold are non-native

Table D–34. Implementation Monitoring 2012
Herbaceous Cover Data Summary
Former Production Area—Solid Waste Landfill

Total Spp.:	23	**Mean CC[a]:**	1.00
Native Spp.:	13	**Average Cover:**	66%
Non-Native Spp.:	10	**FQAI[b]:**	4.80
Percent Native:	57%		

Species	Common Name	Type	CC[a]	Frequency (species/quadrat)	Relative Frequency
Alopecurus sp.	ND[c]	grass	0	0.2	2%
Ambrosia artemisiifolia	COMMON RAGWEED	forb	0	0.6	6%
Aster pilosus	AWL ASTER	forb	1	0.8	9%
Erigeron annuus	DAISY FLEABANE	forb	0	0.2	2%
Erigeron strigosus	ROUGH FLEABANE	forb	1	0.2	2%
Eupatorium altissimum	TALL BONESET	forb	0	0.2	2%
Lactuca biennis	TALL BLUE LETTUCE	forb	1	0.2	2%
Monarda fistulosa	WILD BERGAMOT	forb	3	0.2	2%
Panicum virgatum	SWITCH GRASS	grass	4	0.4	4%
Ratibida pinnata	GRAY-HEADED CONEFLOWER	forb	5	0.2	2%
Rudbeckia hirta	BLACK-EYED SUSAN	forb	1	0.4	4%
Silphium perfoliatum	CUP-PLANT	forb	6	0.2	2%
Solidago canadensis	CANADA GOLDENROD	forb	1	1	11%
Bromus japonicus	**JAPANESE BROME**	grass	0	1	11%
Cichorium intybus	**CHICORY**	forb	0	0.2	2%
Daucus carota	**QUEEN-ANNE'S-LACE**	forb	0	1	11%
Dipsacus fullonum	**WILD TEASEL**	forb	0	0.2	2%
Medicago lupulina	**BLACK MEDICK**	forb	0	0.2	2%
Melilotus officinalis	**YELLOW SWEET-CLOVER**	forb	0	0.2	2%
Plantago lanceolata	**ENGLISH PLANTAIN**	forb	0	0.8	9%
Plantago major	**COMMON PLANTAIN**	forb	0	0.2	2%
Taraxacum officinale	**COMMON DANDELION**	forb	0	0.2	2%
Trifolium hybridum	**ALSIKE CLOVER**	forb	0	0.6	6%
			Native Species:	5	51%
			Non-Native Species:	5	49%

[a]CC= Coefficient of Conservatism
[b]FQAI= Floristic Quality Assessment Index
[c]ND= No Determination
Species in bold are non-native

Table D–35. Implementation Monitoring 2012
Herbaceous Cover Data Summary
Former Production Area—Haul Road

Total Spp.:	22	**Mean CC[a]:**	1.67
Native Spp.:	14	**Average Cover:**	75%
Non-Native Spp.:	8	**FQAI[b]:**	7.82
Percent Native:	64%		

Species	Common Name	Type	CC[a]	Frequency (species/quadrat)	Relative Frequency
Achillea millefolium	YARROW	forb	1	0.2	2%
Andropogon gerardii	BIG BLUESTEM	grass	5	0.2	2%
Aster pilosus	AWL ASTER	forb	1	0.8	9%
Echinacea purpurea	PURPLE CONEFLOWER	forb	6	0.2	2%
Elymus canadensis	CANADA WILD RYE	grass	6	0.8	9%
Erigeron annuus	DAISY FLEABANE	forb	0	0.6	6%
Erigeron strigosus	ROUGH FLEABANE	forb	1	0.2	2%
Eupatorium serotinum	LATE-FLOWERING BONESET	forb	2	0.6	6%
Lactuca biennis	TALL BLUE LETTUCE	forb	1	0.2	2%
Lactuca sp.	ND[c]	forb	ND[c]	0.2	2%
Ratibida pinnata	GRAY-HEADED CONEFLOWER	forb	5	0.2	2%
Rudbeckia hirta	BLACK-EYED SUSAN	forb	1	0.6	6%
Solidago canadensis	CANADA GOLDENROD	forb	1	0.4	4%
Sorghastrum nutans	INDIAN GRASS	grass	5	0.2	2%
Bromus japonicus	**JAPANESE BROME**	grass	0	0.2	2%
Daucus carota	**QUEEN-ANNE'S-LACE**	forb	0	1	11%
Medicago lupulina	**BLACK MEDICK**	forb	0	0.4	4%
Melilotus alba	**WHITE SWEET-CLOVER**	forb	0	0.6	6%
Plantago lanceolata	**ENGLISH PLANTAIN**	forb	0	1	11%
Plantago major	**COMMON PLANTAIN**	forg	0	0.4	4%
Trifolium pratense	**RED CLOVER**	forb	0	0.2	2%
Trifolium repens	**WHITE CLOVER**	forb	0	0.2	2%
			Native Species:	5	57%
			Non-Native Species:	4	43%

[a]CC= Coefficient of Conservatism
[b]FQAI= Floristic Quality Assessment Index
[c]ND= No Determination
Species in bold are non-native

Table D–36. Implementation Monitoring 2012
Herbaceous Cover Data Summary
Former Production Area—Prairie

Total Spp.:	21	**Mean CC[a]:**	2.38
Native Spp.:	11	**Average Cover:**	57%
Non-Native Spp.:	10	**FQAI[b]:**	10.88
Percent Native:	52%		

Species	Common Name	Type	CC[a]	Frequency (species/quadrat)	Relative Frequency
Achillea millefolium	YARROW	forb	1	0.2	2%
Andropogon gerardii	BIG BLUESTEM	grass	5	0.2	2%
Aster pilosus	AWL ASTER	forb	1	0.6	7%
Echinacea purpurea	PURPLE CONEFLOWER	forb	6	0.2	2%
Erigeron annuus	DAISY FLEABANE	forb	0	0.2	2%
Erigeron strigosus	ROUGH FLEABANE	forb	1	0.4	4%
Juncus tenuis	PATH RUSH	forb	1	0.4	4%
Panicum virgatum	SWITCH GRASS	grass	4	0.2	2%
Ratibida pinnata	GRAY-HEADED CONEFLOWER	forb	5	0.2	2%
Rudbeckia hirta	BLACK-EYED SUSAN	forb	1	0.2	2%
Solidago canadensis	CANADA GOLDENROD	forb	1	0.2	2%
Agrostis gigantea	**REDTOP**	grass	0	1	11%
Daucus carota	**QUEEN-ANNE'S-LACE**	forb	0	1	11%
Festuca sp.	**ND[c]**	grass	0	0.4	4%
Lolium multiflorum	**ITALIAN RYEGRASS**	grass	0	0.2	2%
Medicago lupulina	**BLACK MEDICK**	forb	0	0.4	4%
Melilotus alba	**WHITE SWEET-CLOVER**	forb	0	0.6	7%
Plantago lanceolata	**ENGLISH PLANTAIN**	forb	0	1	11%
Plantago major	**COMMON PLANTAIN**	forb	0	0.8	9%
Taraxacum officinale	**COMMON DANDELION**	forb	0	0.2	2%
Trifolium pratense	**RED CLOVER**	forb	0	0.6	7%
			Native Species:	3	33%
			Non-Native Species:	6	67%

[a]CC= Coefficient of Conservatism
[b]FQAI= Floristic Quality Assessment Index
[c]ND= No Determination
Species in bold are non-native

Table D–37. Implementation Monitoring 2012 Woody Vegetation Survival
Paddys Run Tributary

Species	Common Name	Quantity	Resprout	Vitality (<50% alive)	Dead or Unaccounted	Percent Survival
Acer rubrum	RED MAPLE	5	0	0	0	100%
Acer saccharum	SUGAR MAPLE	14	0	1	2	79%
Asimina triloba	PAWPAW	150	3	2	100	30%
Carpinus caroliniana	BLUE-BEECH	50	0	2	11	74%
Carya cordiformis	BITTERNUT HICKORY	50	1	4	20	50%
Carya ovata	SHAGBARK HICKORY	12	0	2	5	42%
Cephalanthus occidentalis	BUTTONBUSH	150	0	0	0	100%
Cornus amomum	SILKY DOGWOOD	150	0	0	16	89%
Fagus grandifolia	AMERICAN BEECH	75	1	7	64	4%
Lindera benzoin	SPICEBUSH	150	14	15	88	22%
Quercus bicolor	SWAMP WHITE OAK	7	0	0	0	100%
Quercus imbricaria	SHINGLE OAK	75	2	1	57	20%
Quercus macrocarpa	BUR OAK	75	0	1	11	85%
Quercus palustris	PIN OAK	15	0	0	3	80%
Quercus rubra	RED OAK	20	0	0	2	90%
Rosa palustris	SWAMP ROSE	150	1	0	27	81%
Ulmus americana	AMERICAN ELM	7	0	0	0	100%

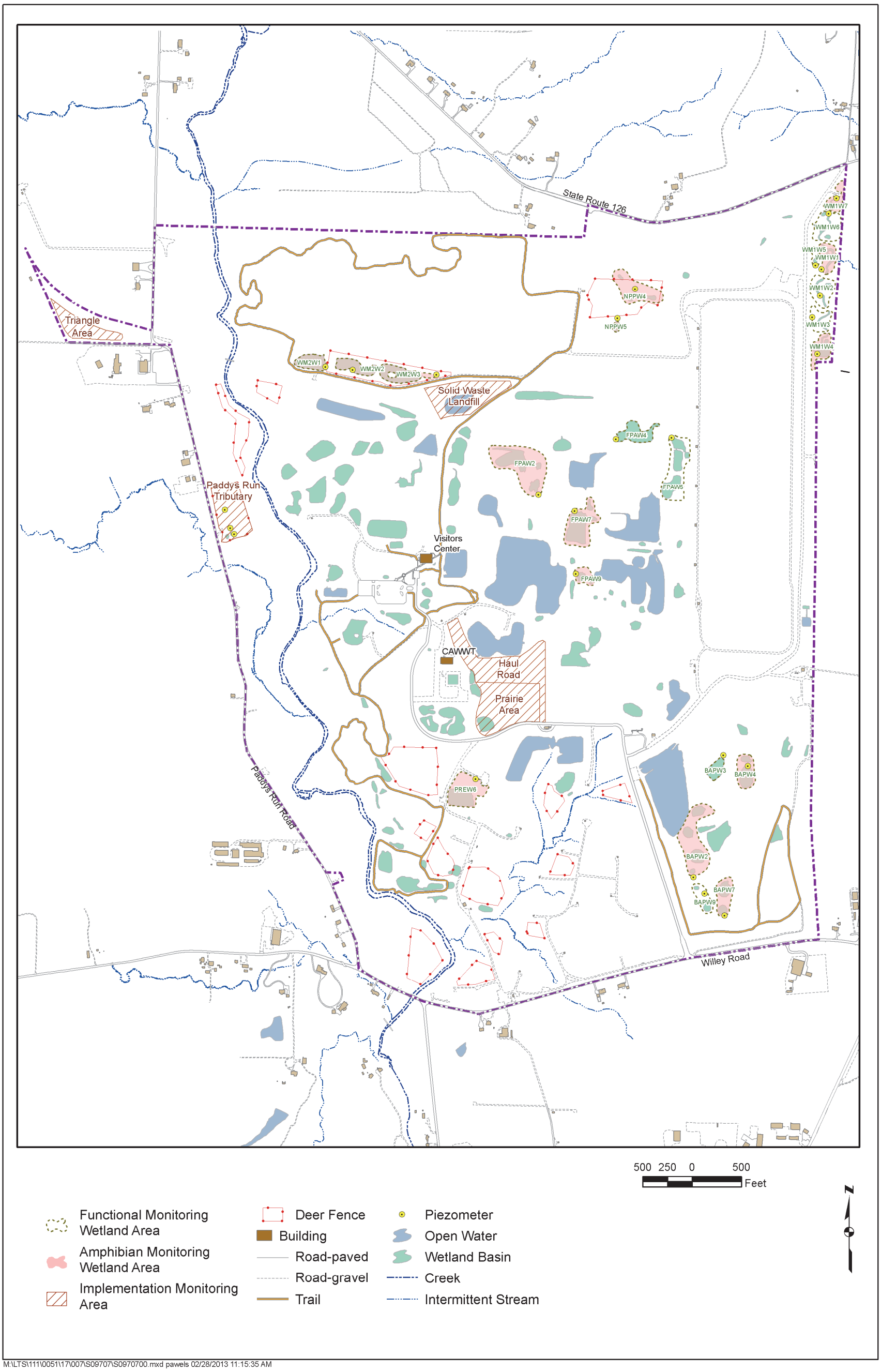

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Figure D–1. Ecological Monitoring Areas

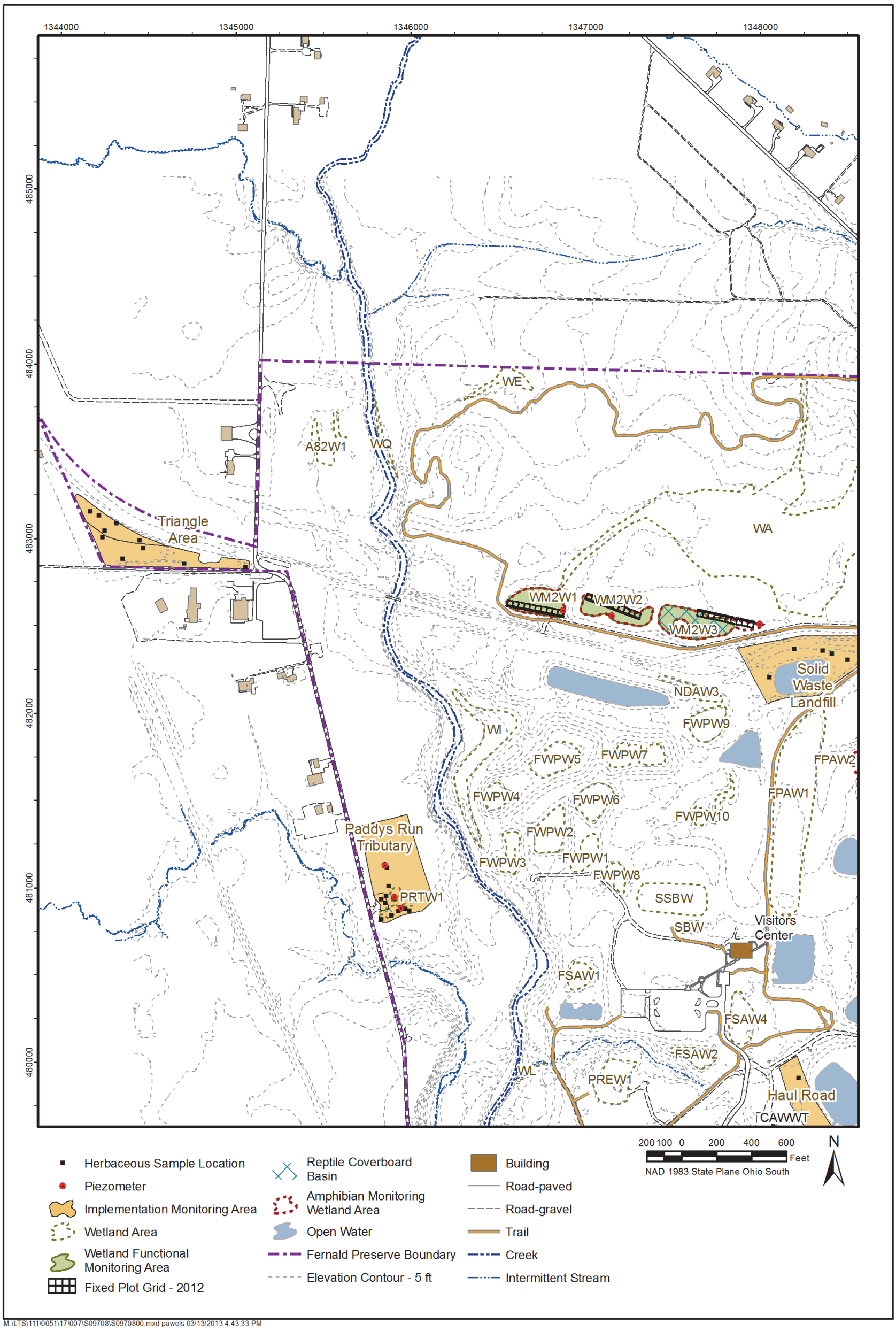

Figure D–2A. Ecological Monitoring Survey Areas—Northwest Site Quadrant

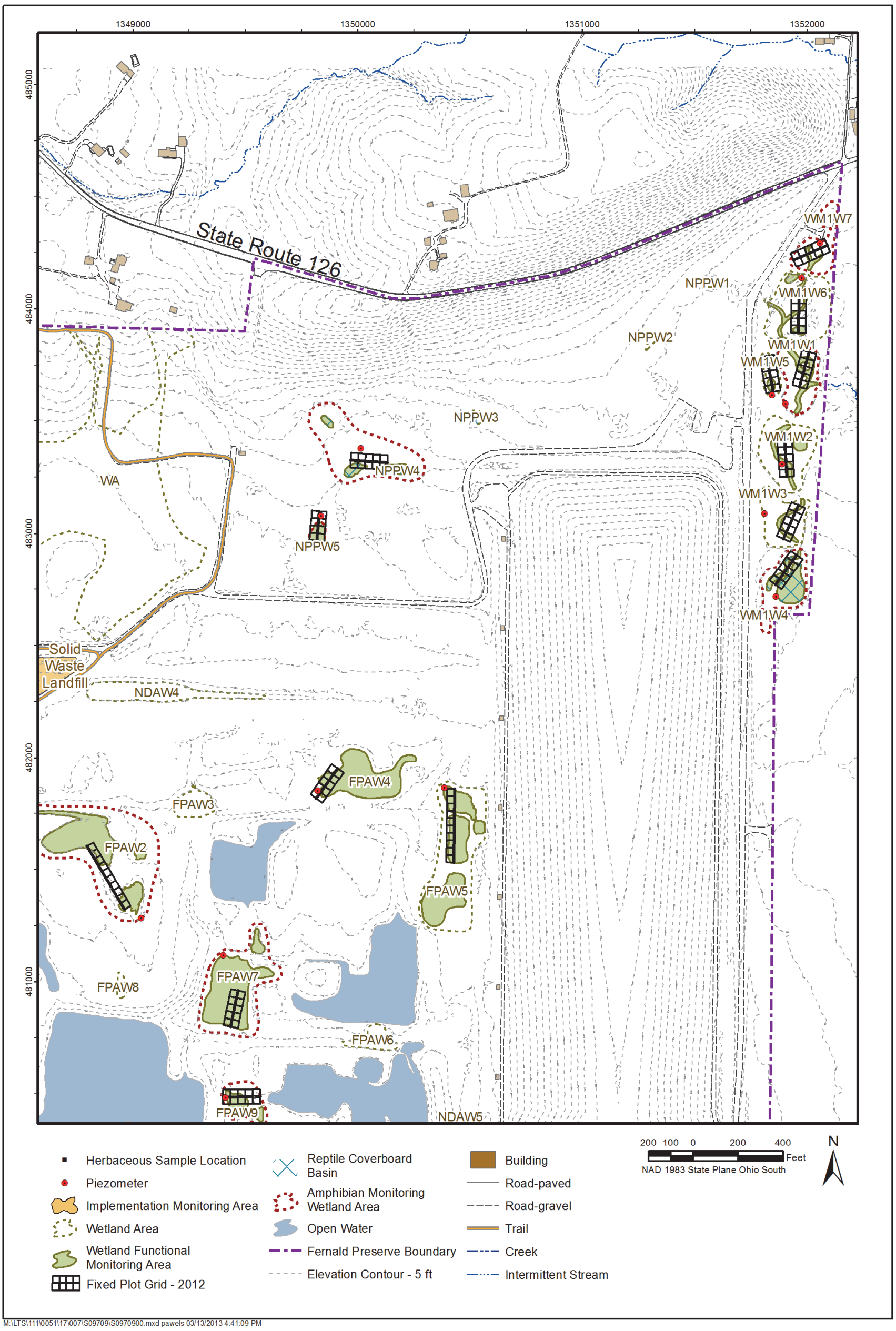

Figure D–2B. Ecological Monitoring Survey Areas—Northeast Site Quadrant

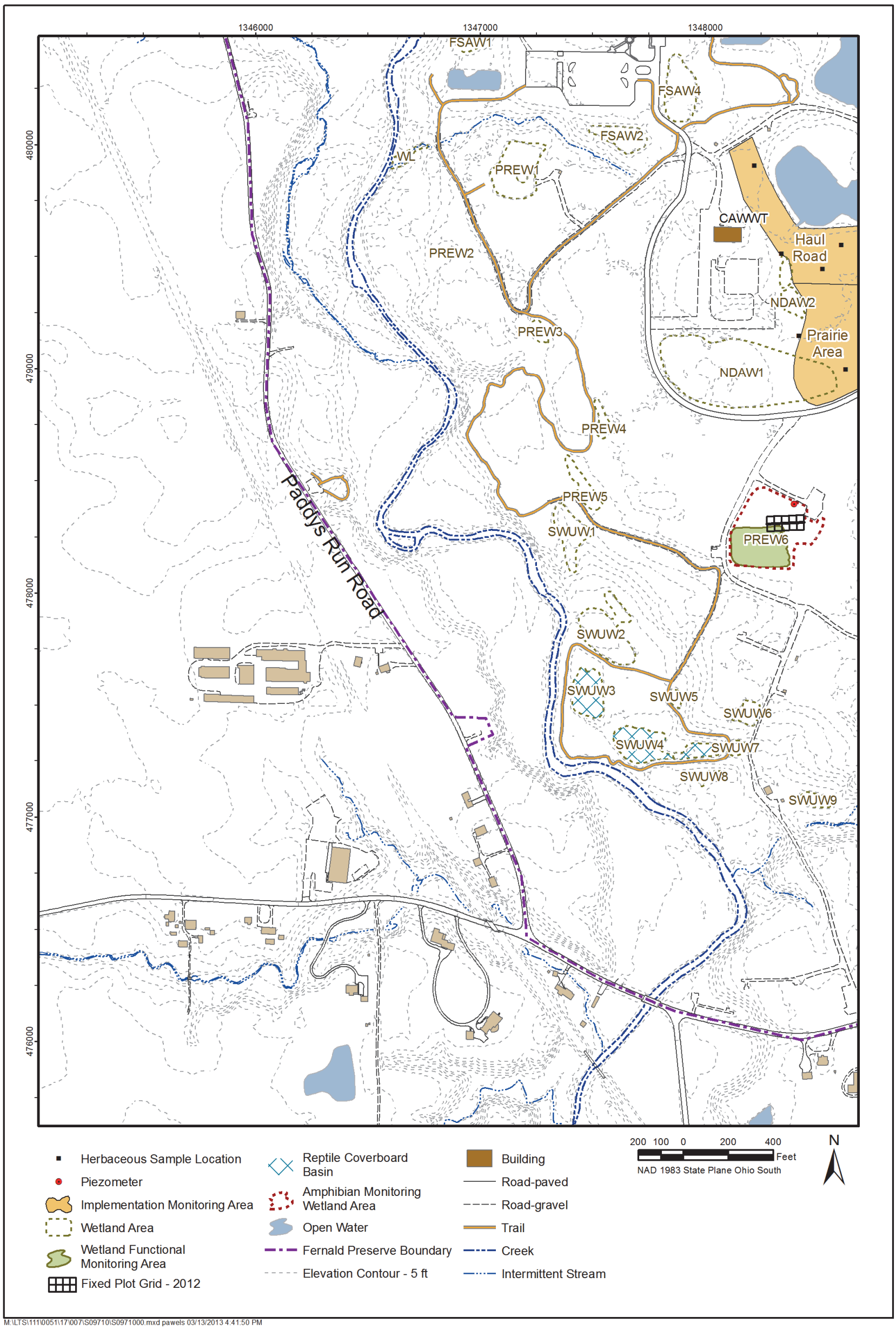

Figure D–2C. Ecological Monitoring Survey Areas—Southwest Site Quadrant

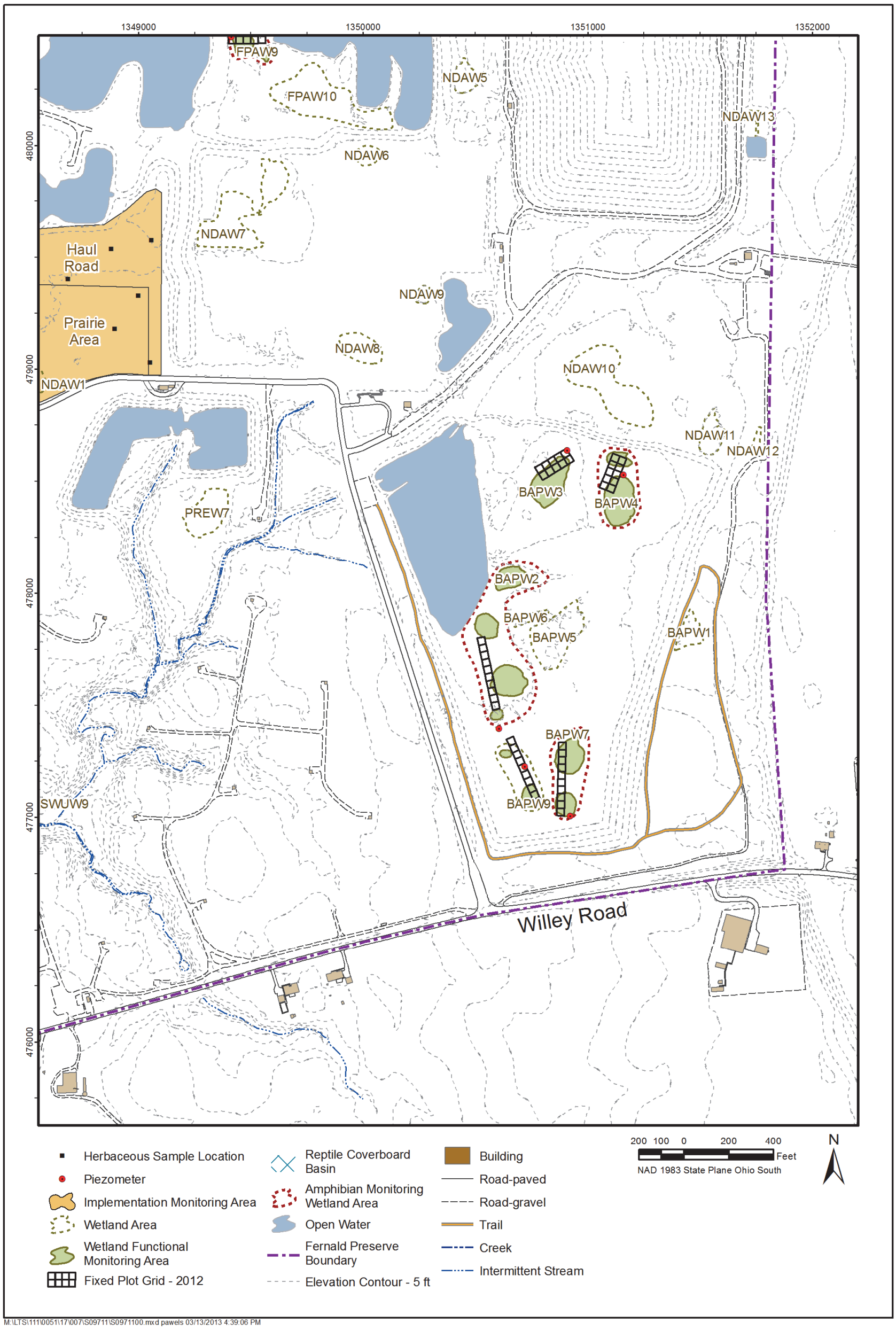

Figure D–2D. Ecological Monitoring Survey Areas—Southeast Site Quadrant

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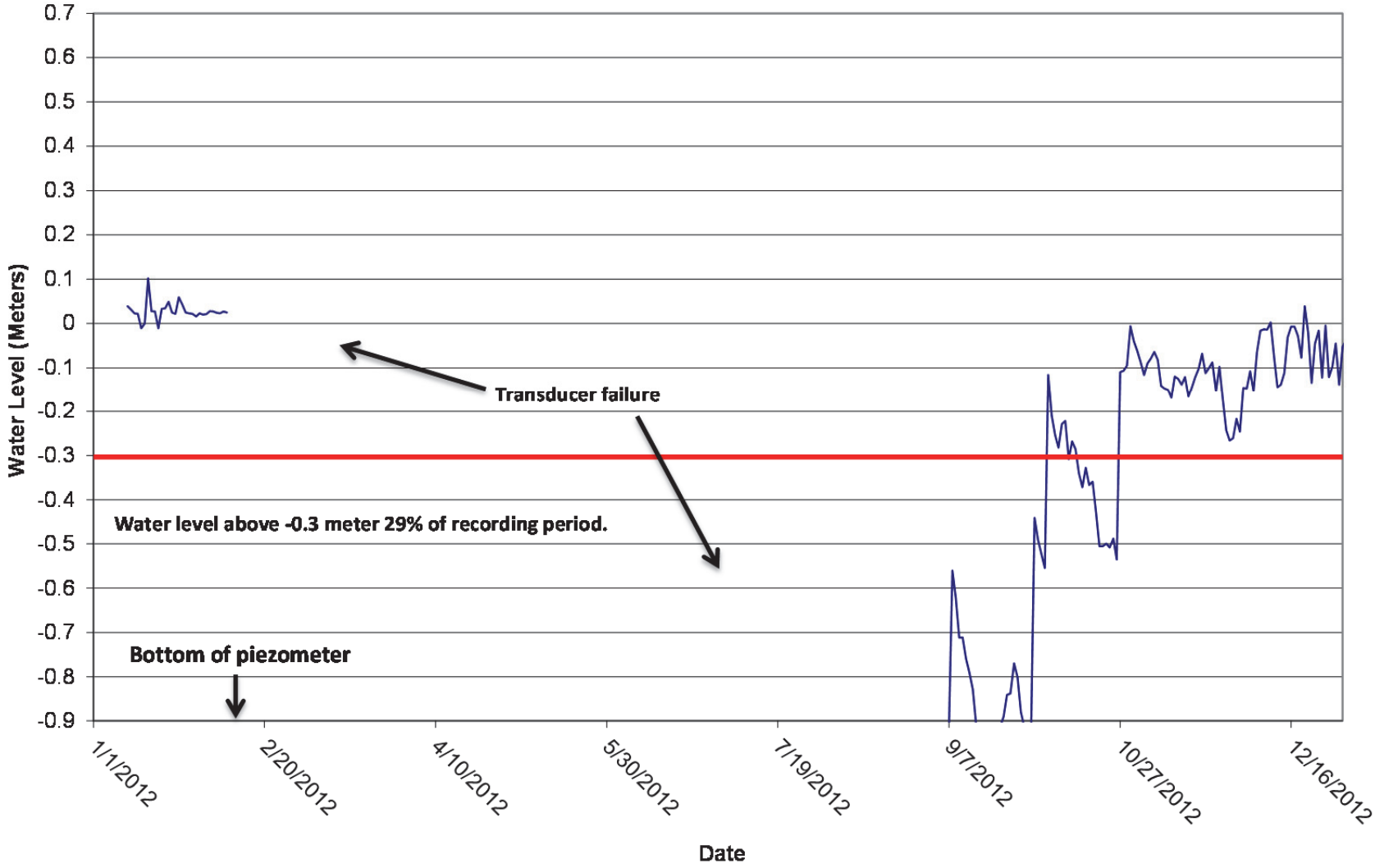

Figure D–3A. Wetland Area BAPW2 Hydrograph

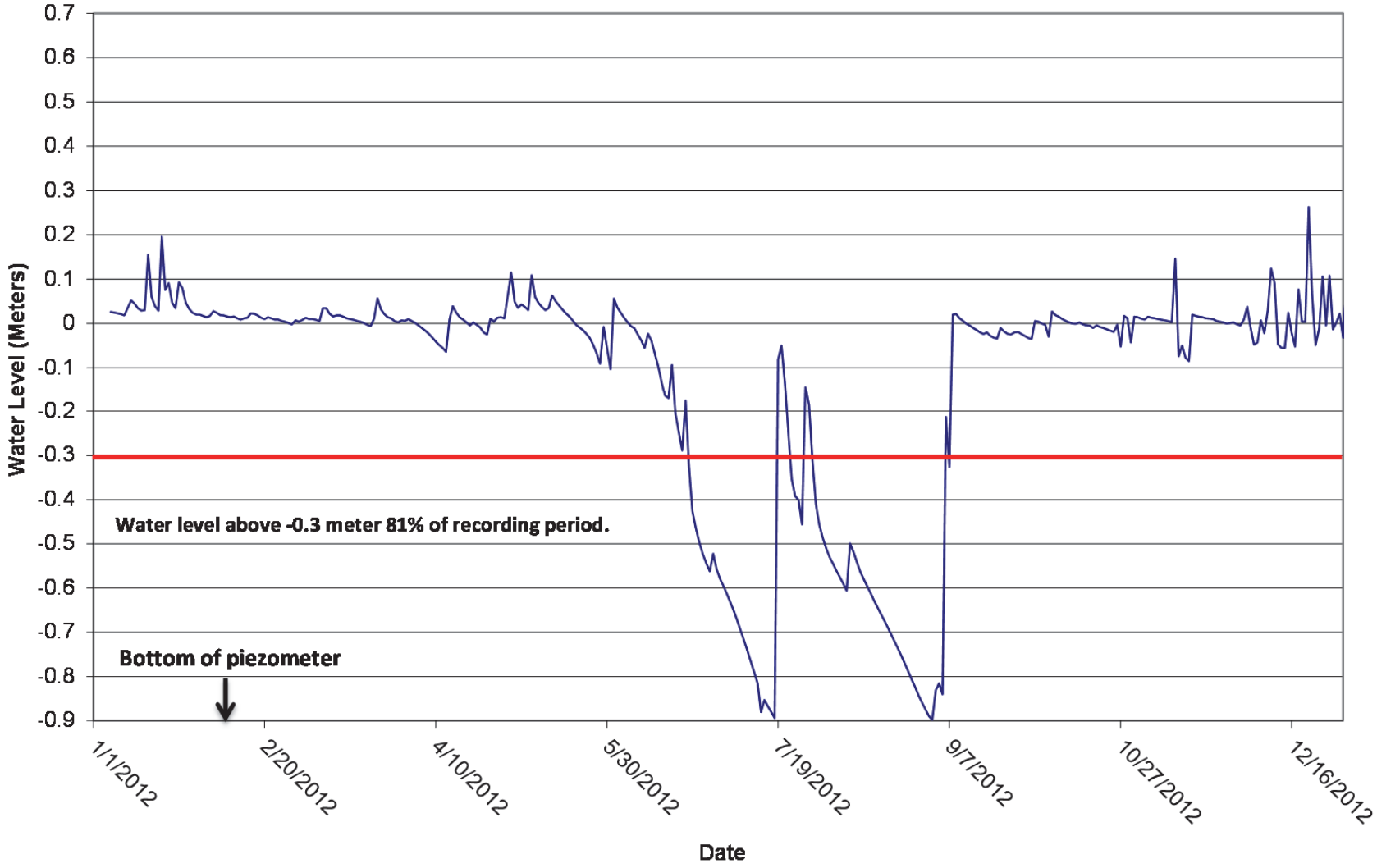

Figure D–3B. Wetland Area BAPW3 Hydrograph

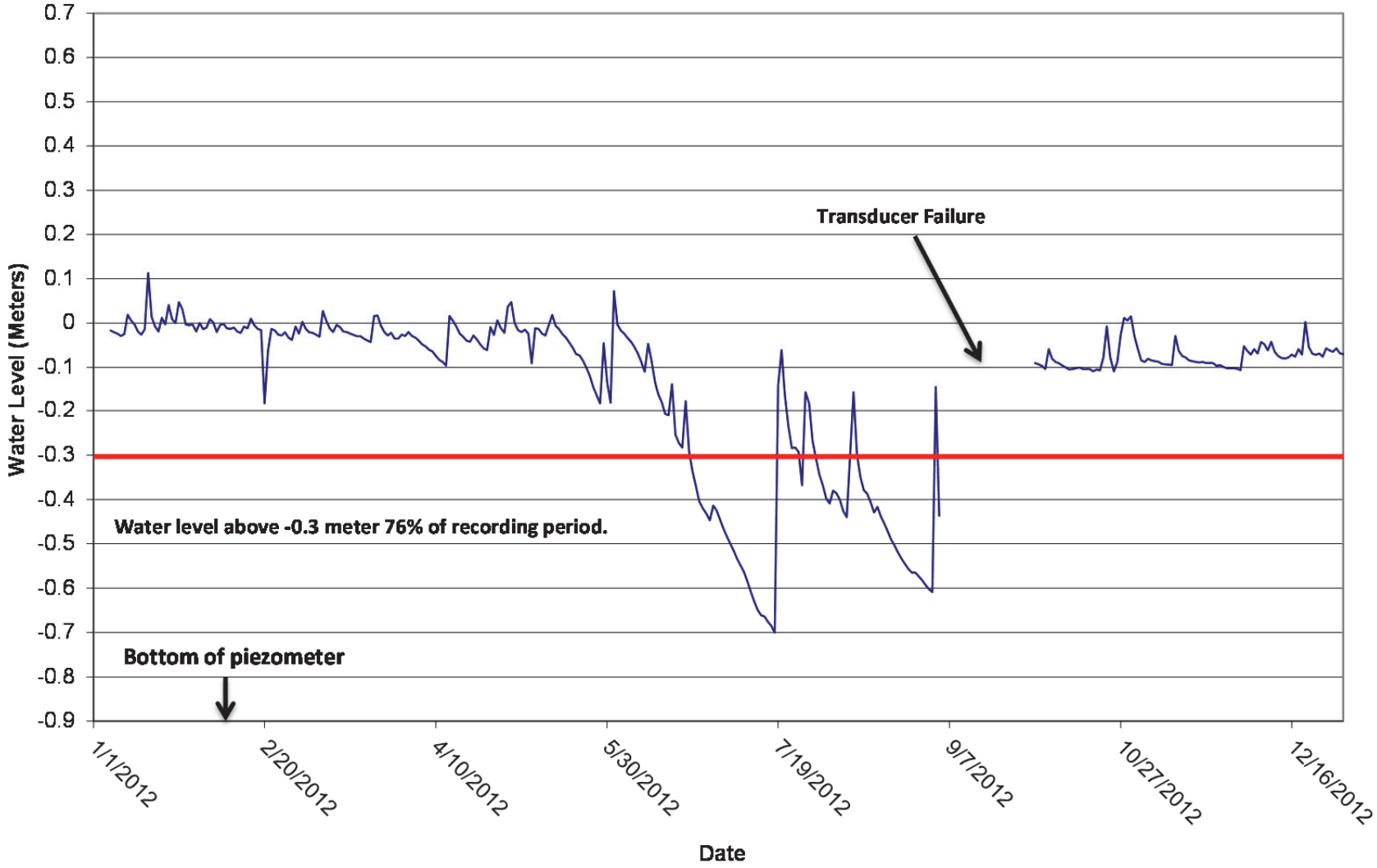

Figure D–3C. Wetland Area BAPW4 Hydrograph

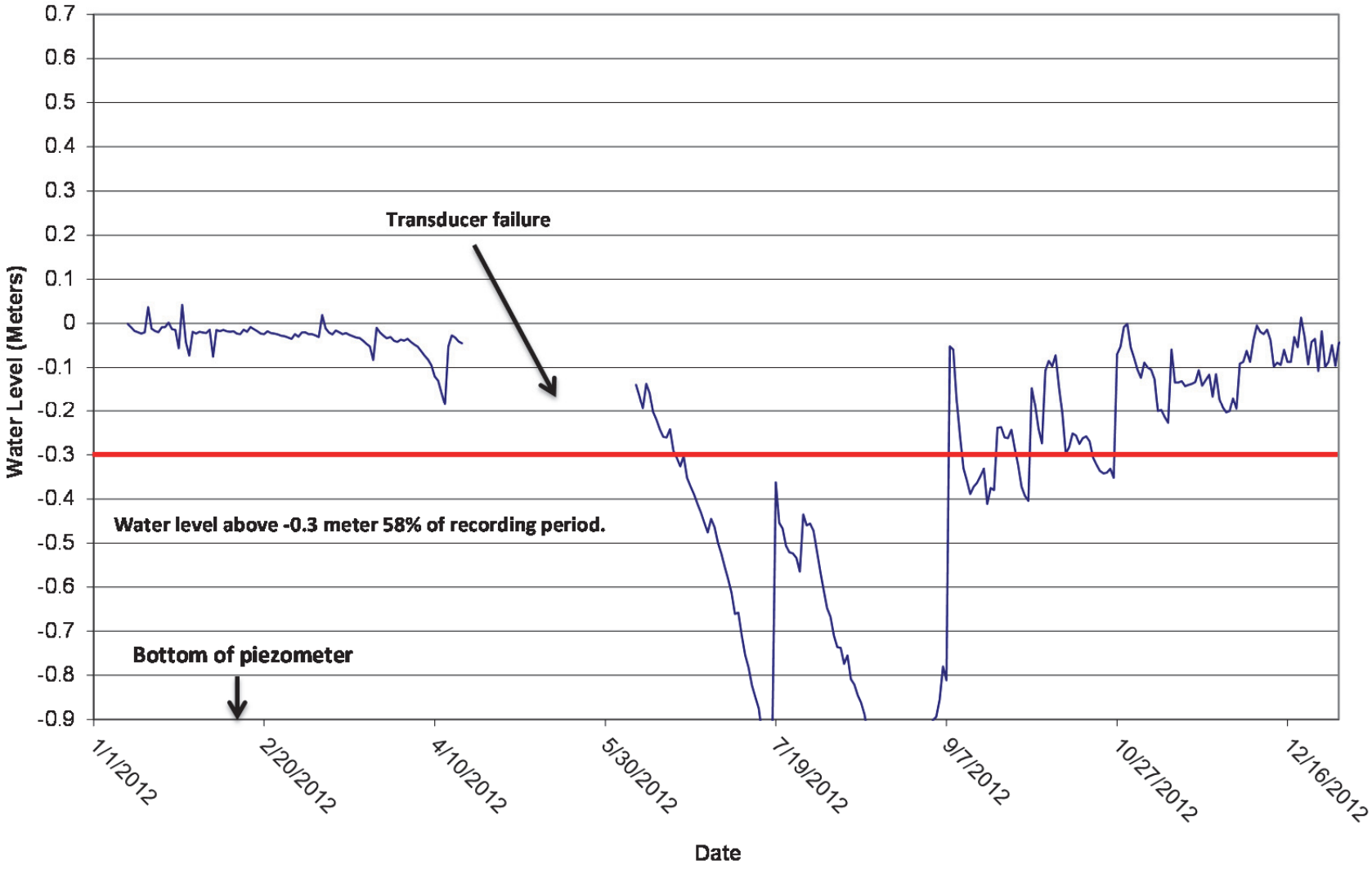

Figure D–3D. Wetland Area BAPW7 Hydrograph

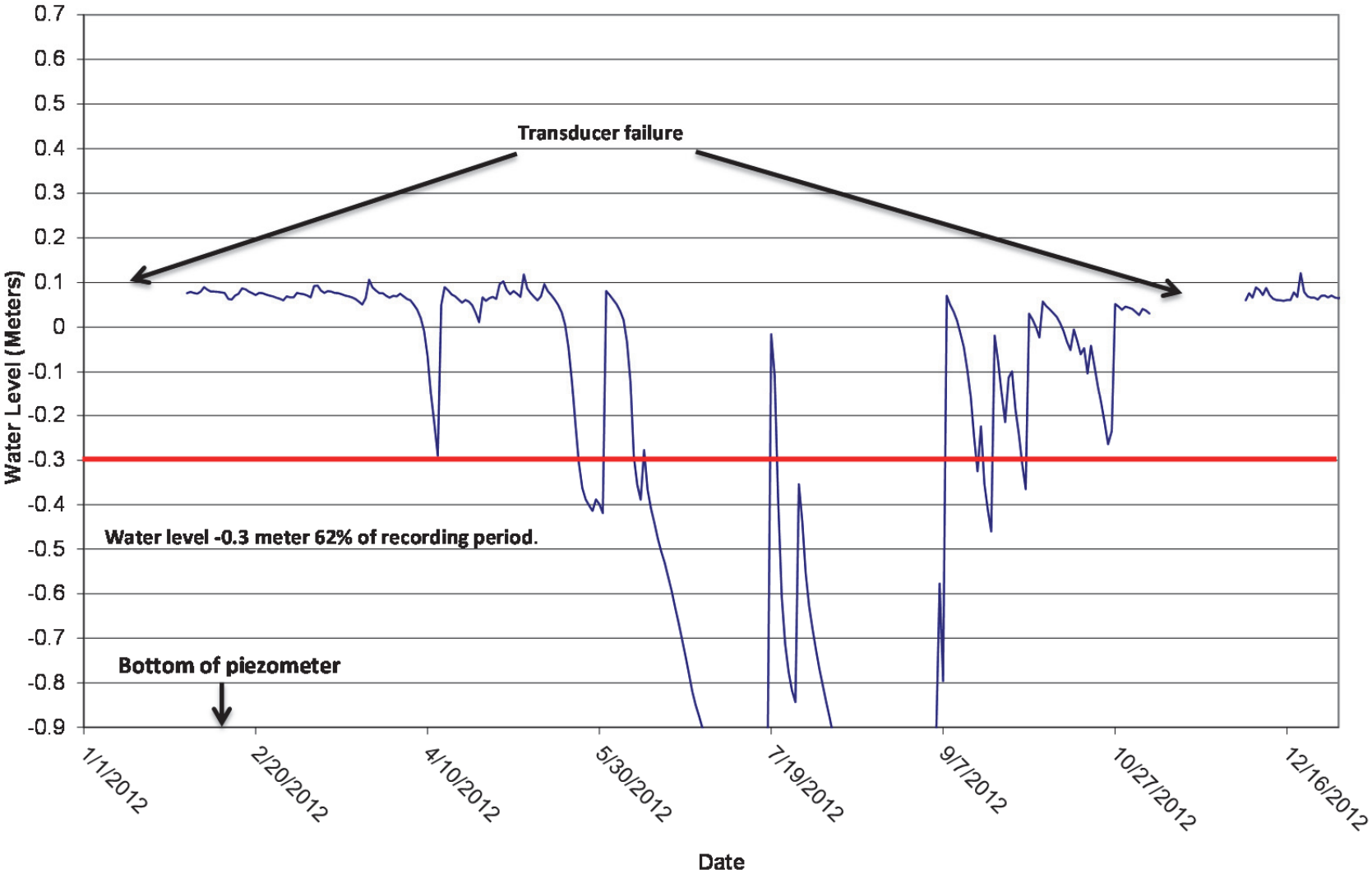

Figure D–3E. Wetland Area BAPW9 Hydrograph

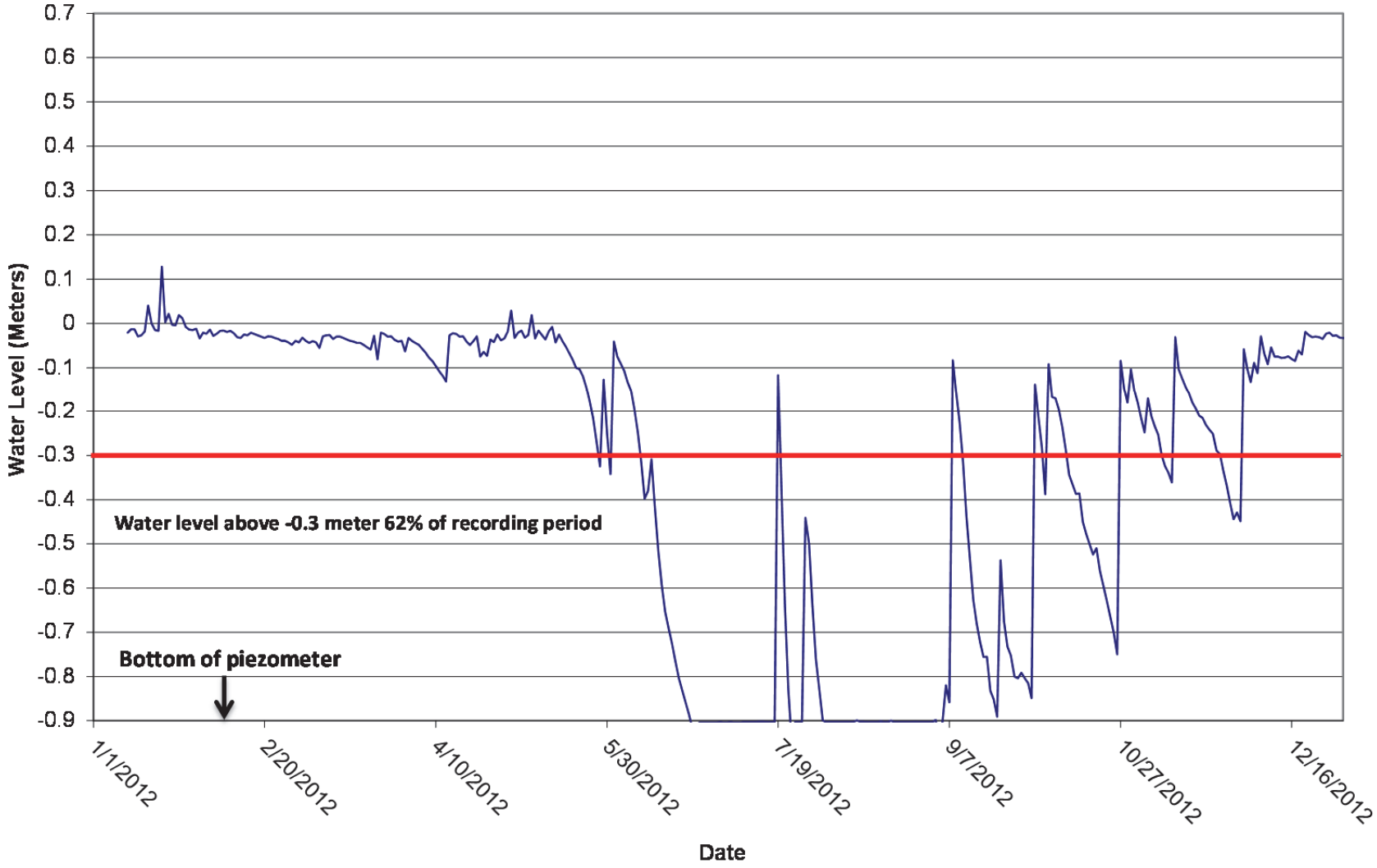

Figure D–3F. Wetland Area FPAW2 Hydrograph

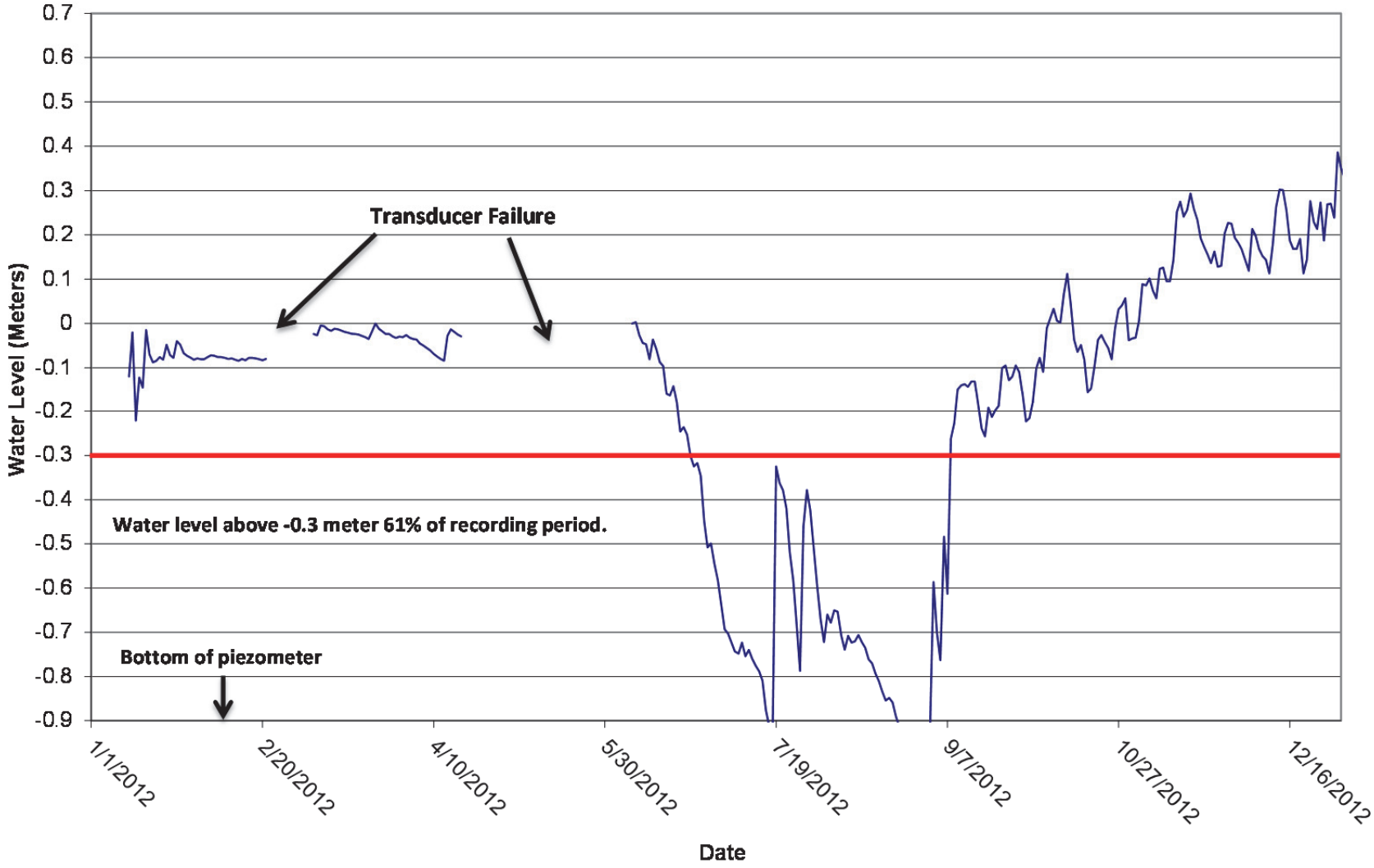

Figure D–3G. Wetland Area FPAW4 Hydrograph

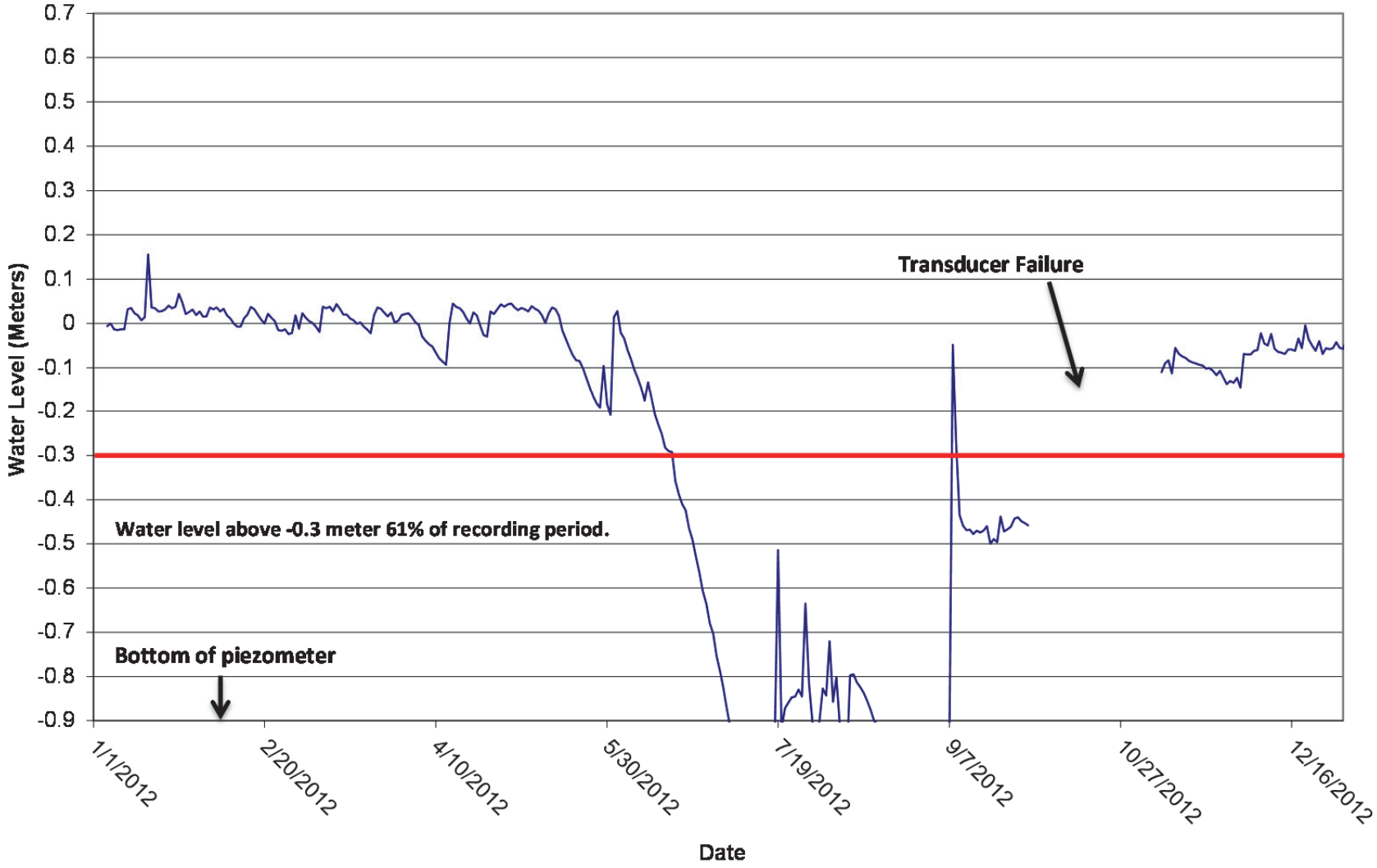

Figure D–3H. Wetland Area FPAW5 Hydrograph

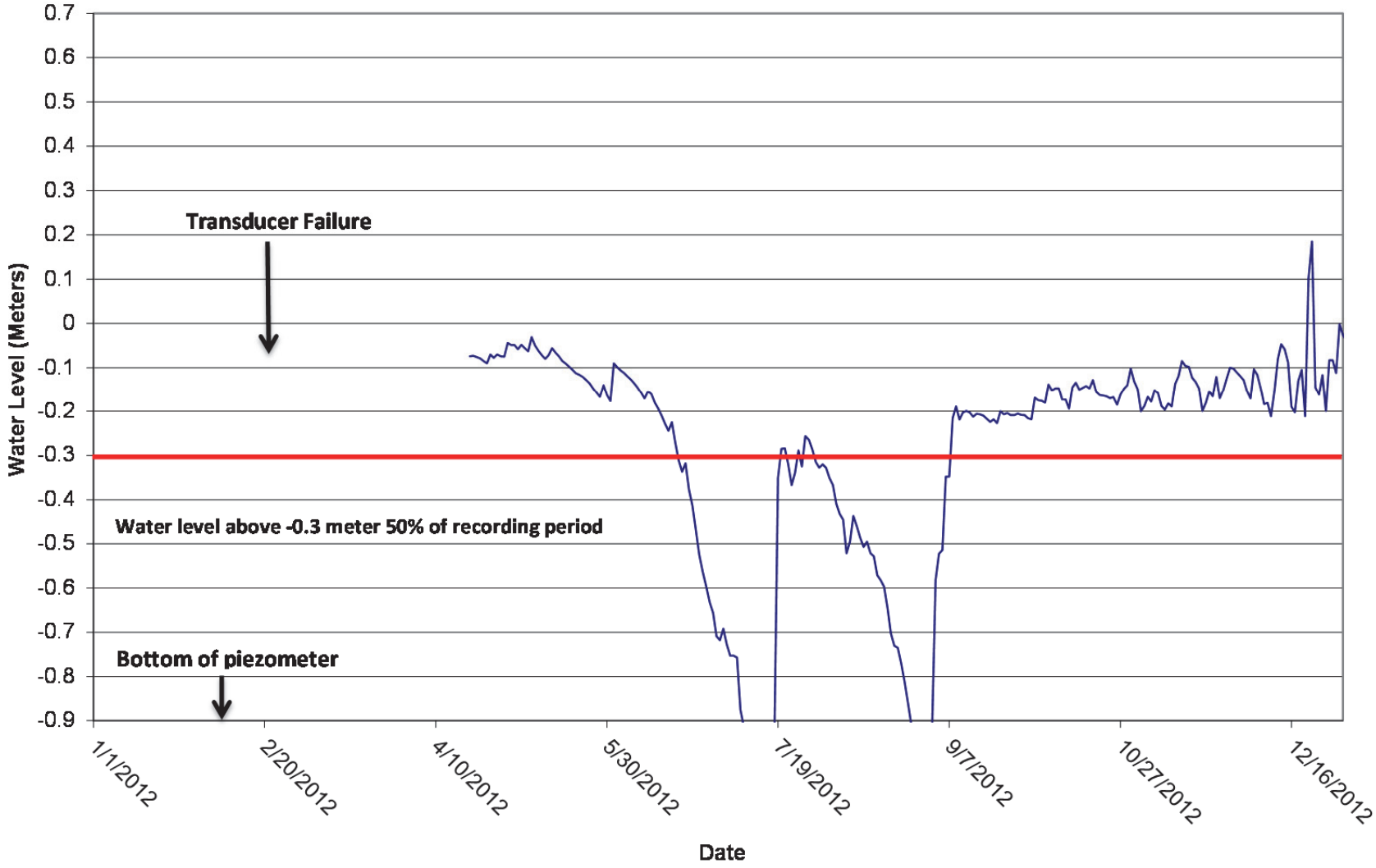

Figure D–3l. Wetland Area FPAW7 Hydrograph

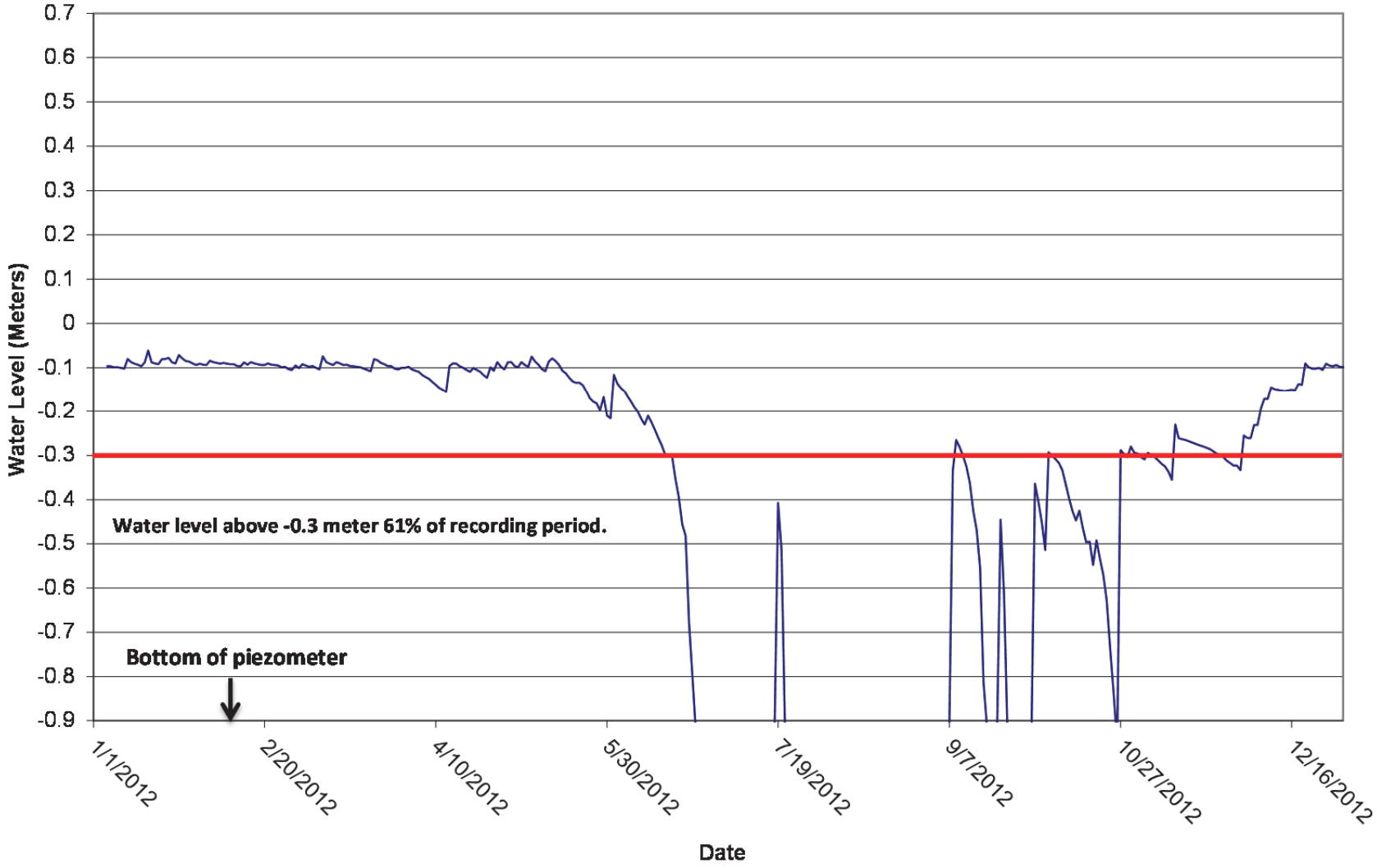

Figure D–3J. Wetland Area FPAW9 Hydrograph

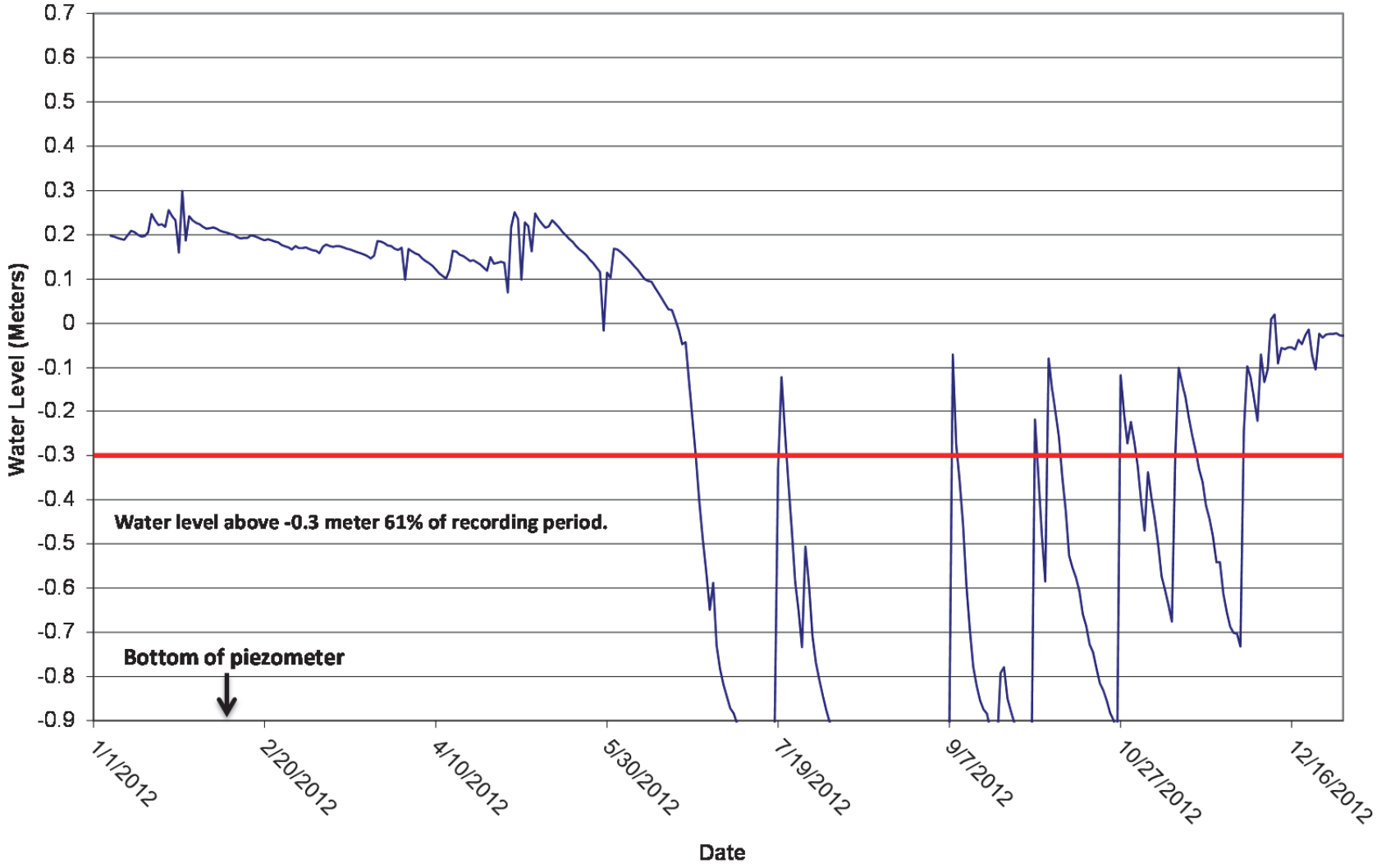

Figure D–3K. Wetland Area PREW6 Hydrograph

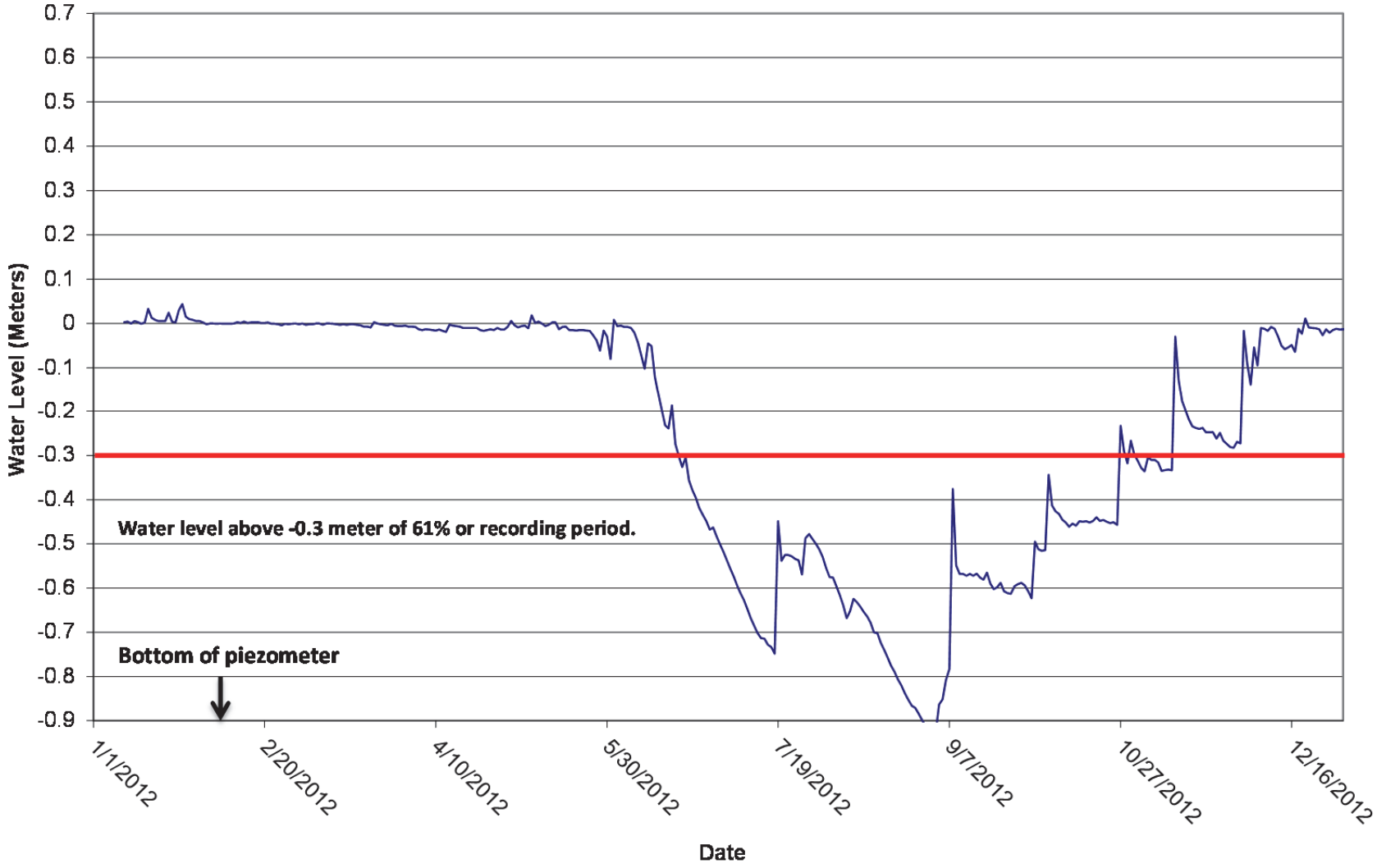

Figure D–3L. Wetland Area NPPW4 Hydrograph

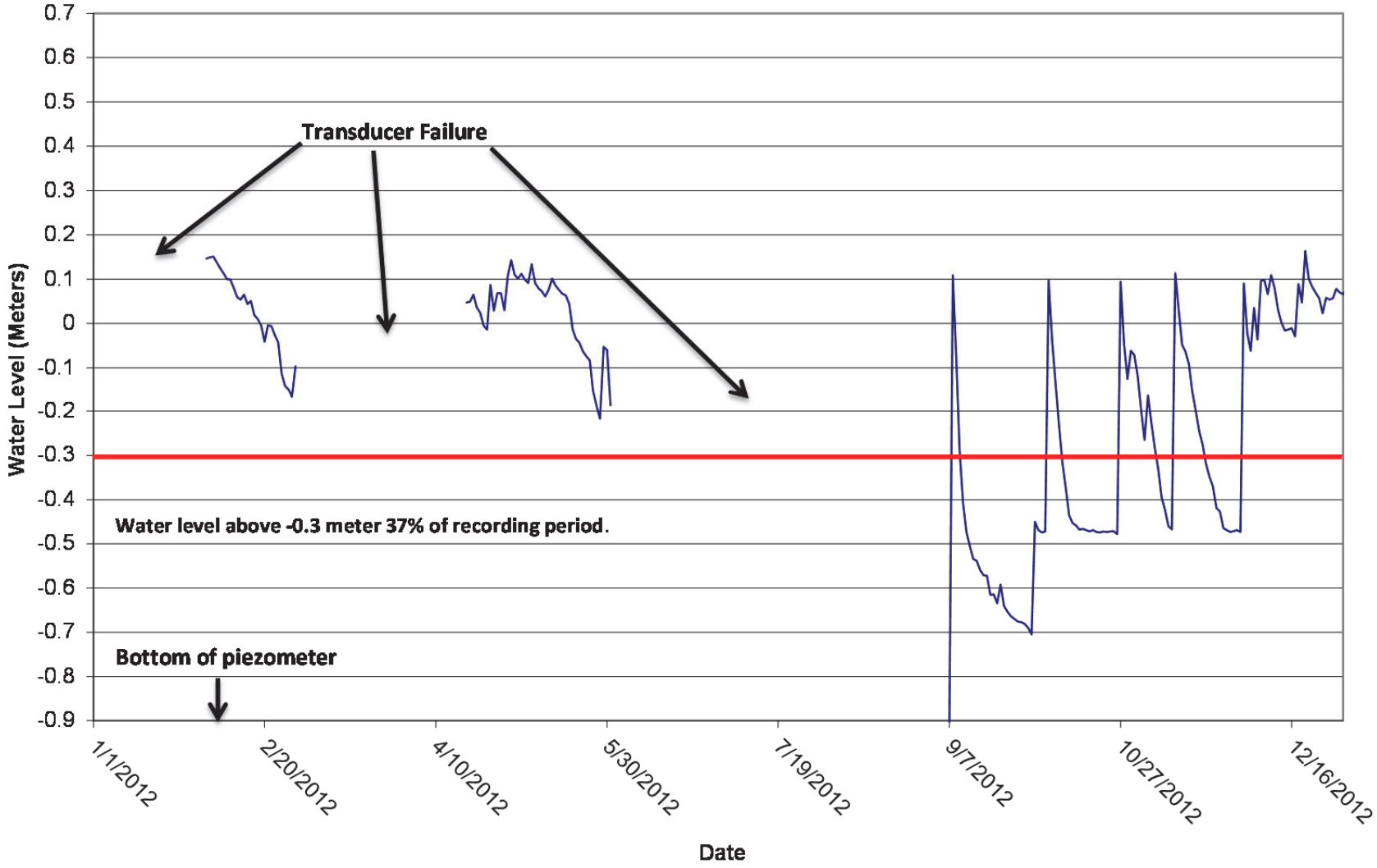

Figure D–3M. Wetland Area NPPW5 Hydrograph

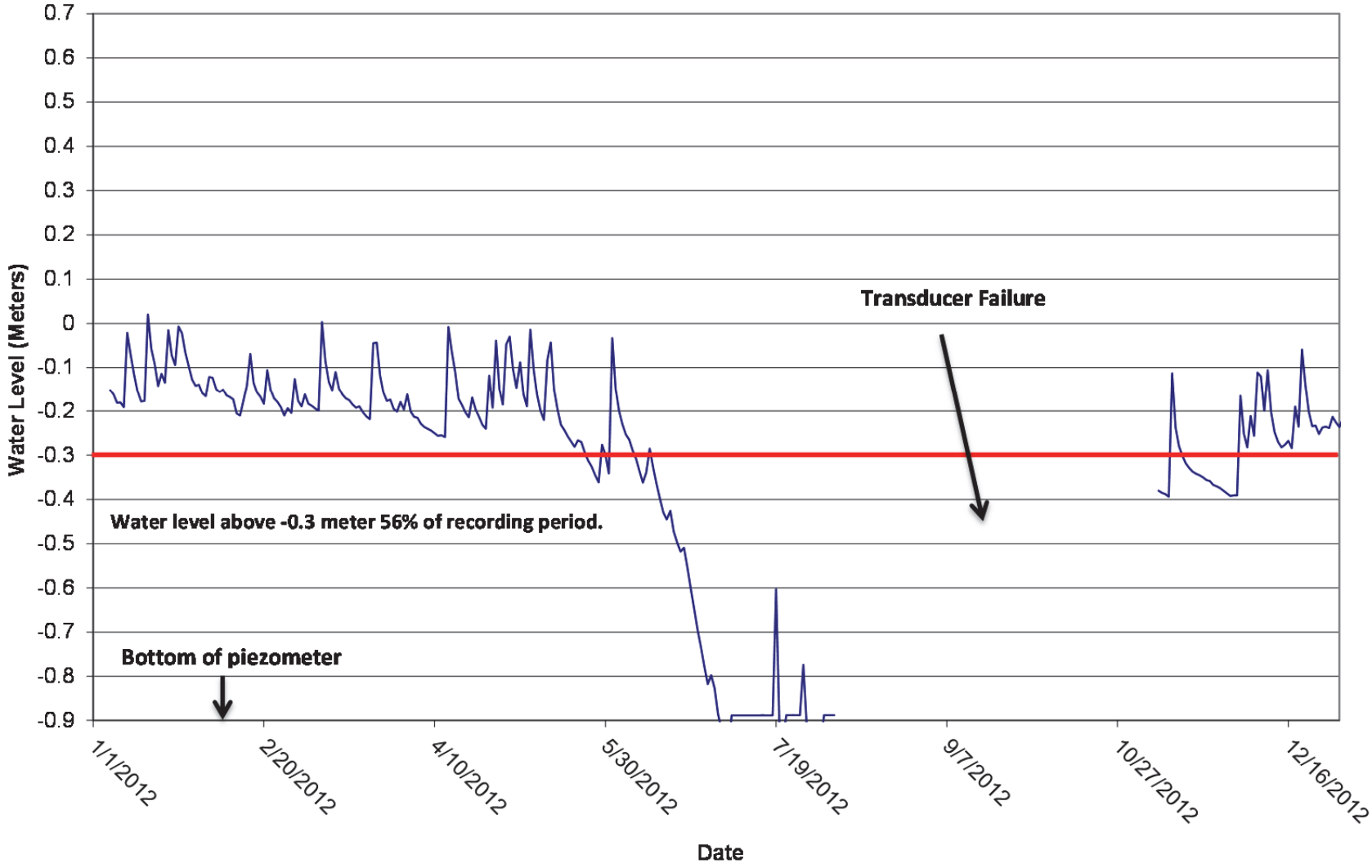

Figure D–3N. Wetland Area WM1W1 Hydrograph

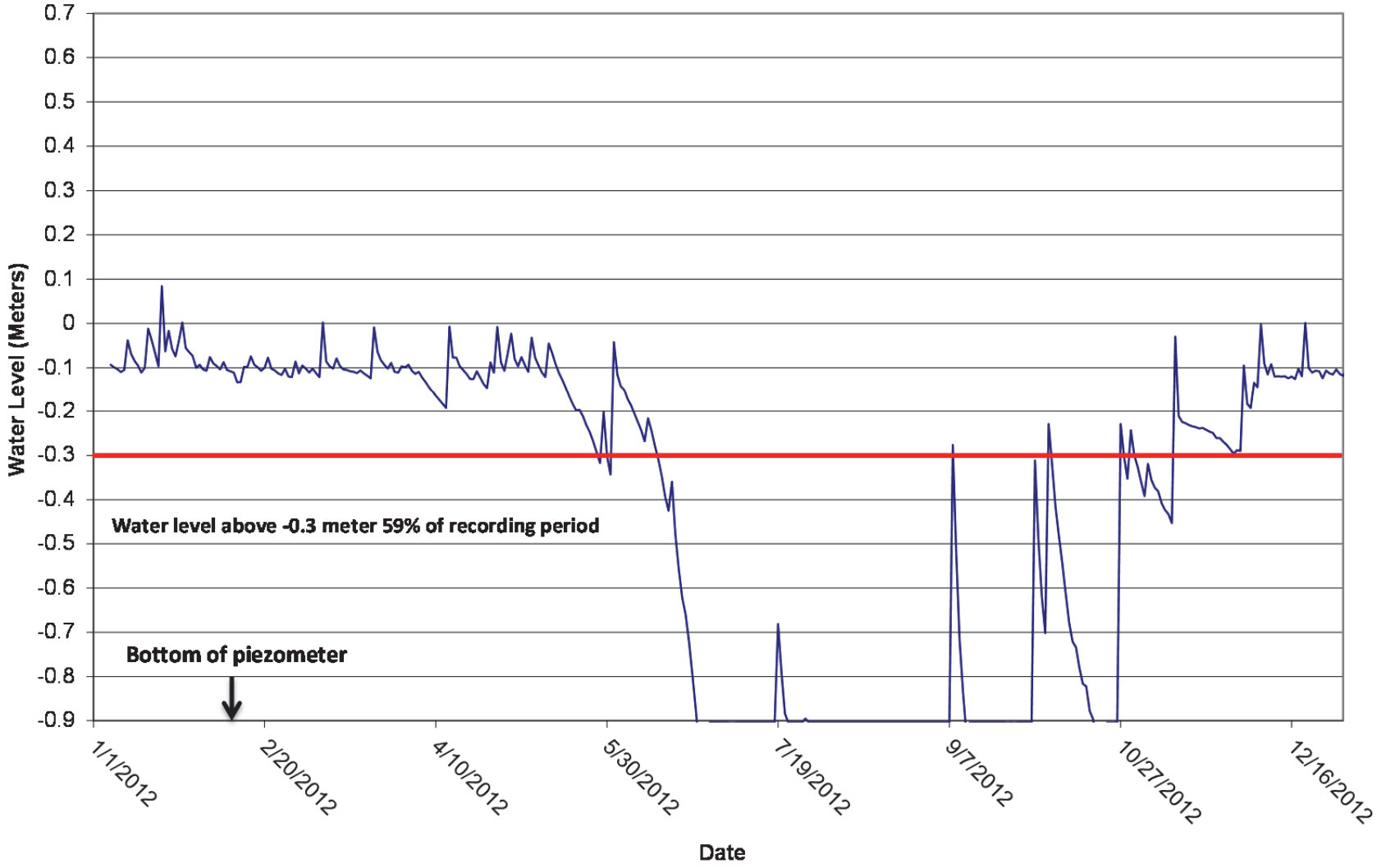

Figure D–3O. Wetland Area WM1W2 Hydrograph

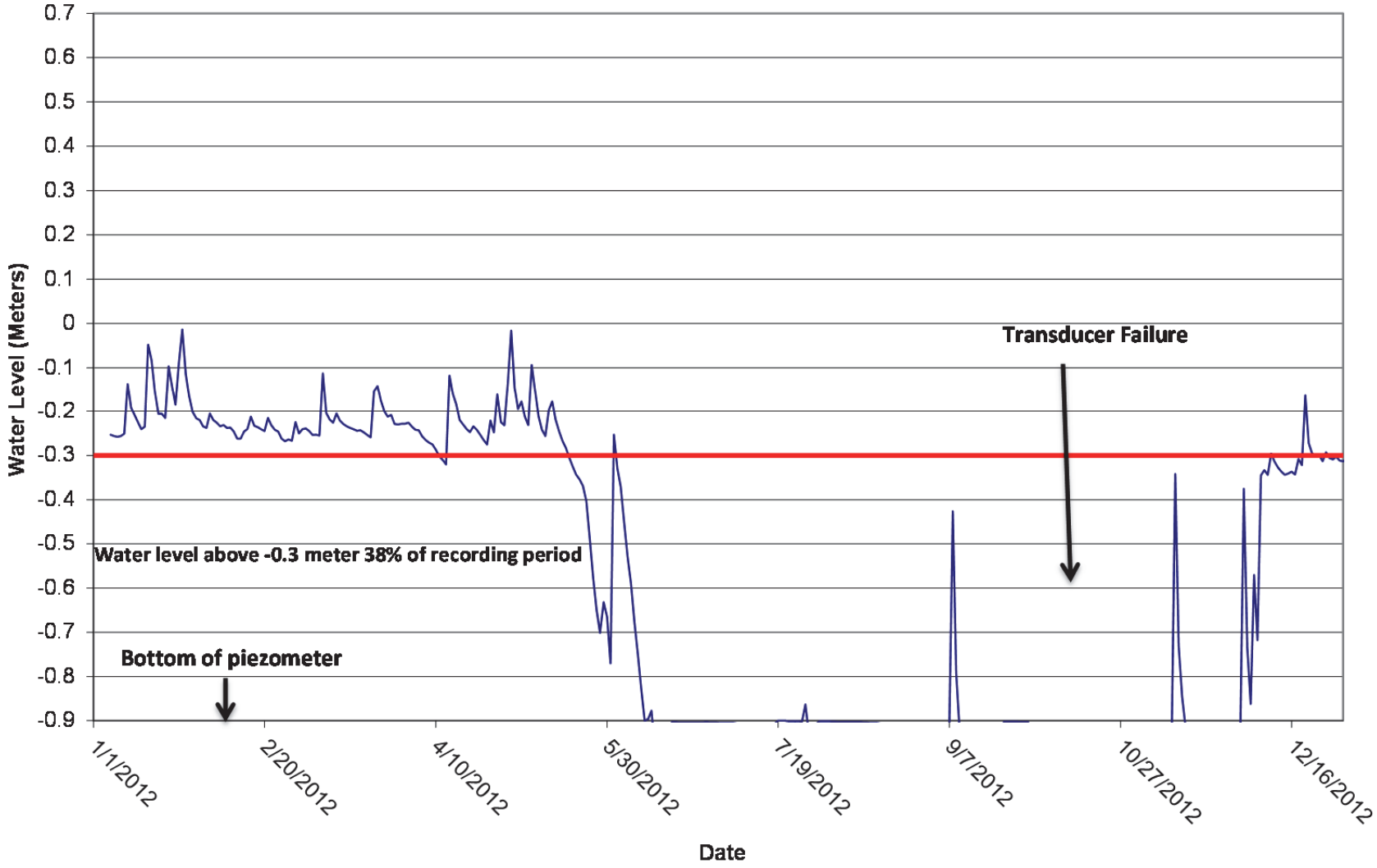

Figure D–3P. Wetland Area WM1W3 Hydrograph

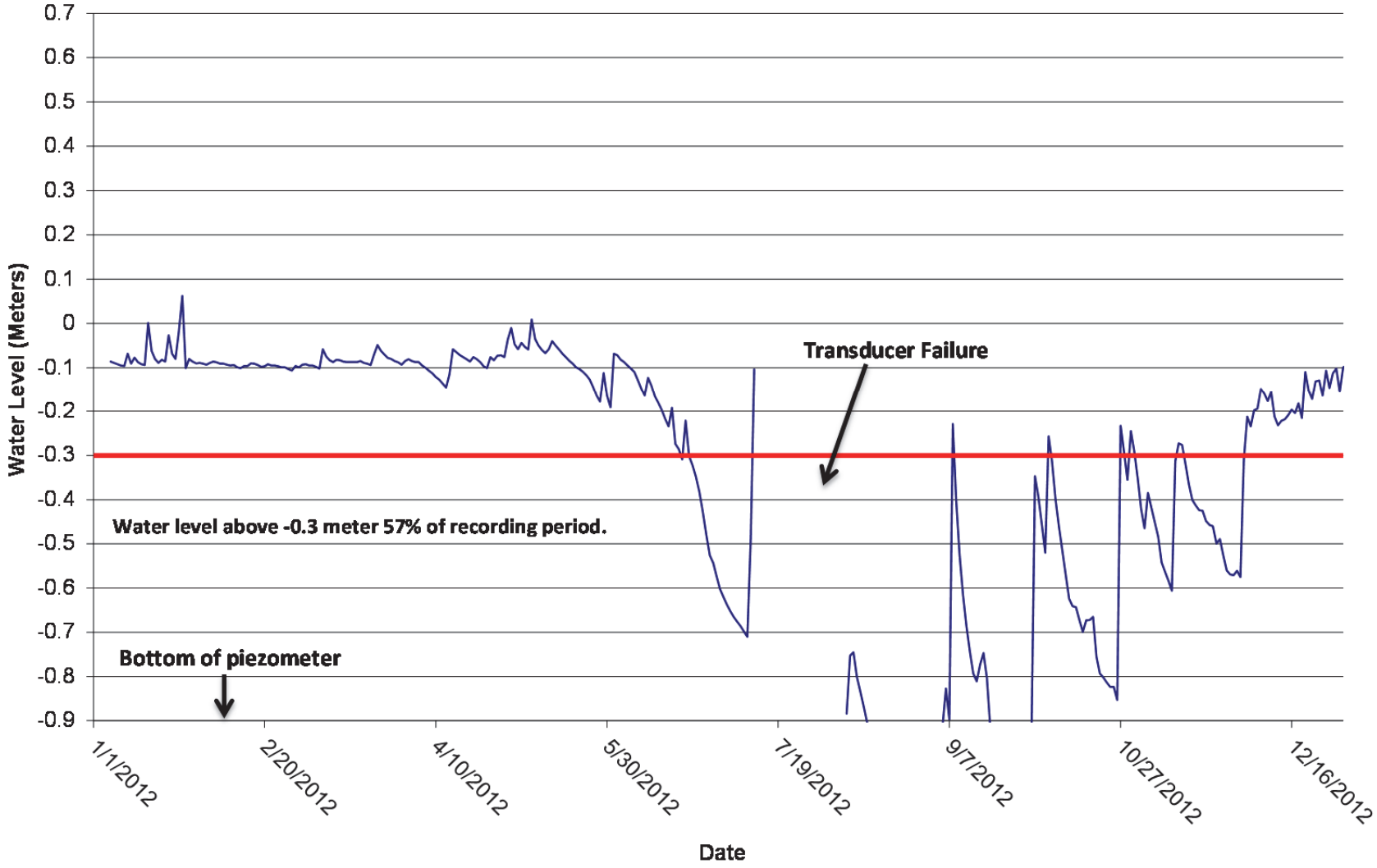

Figure D–3Q. Wetland Area WM1W4 Hydrograph

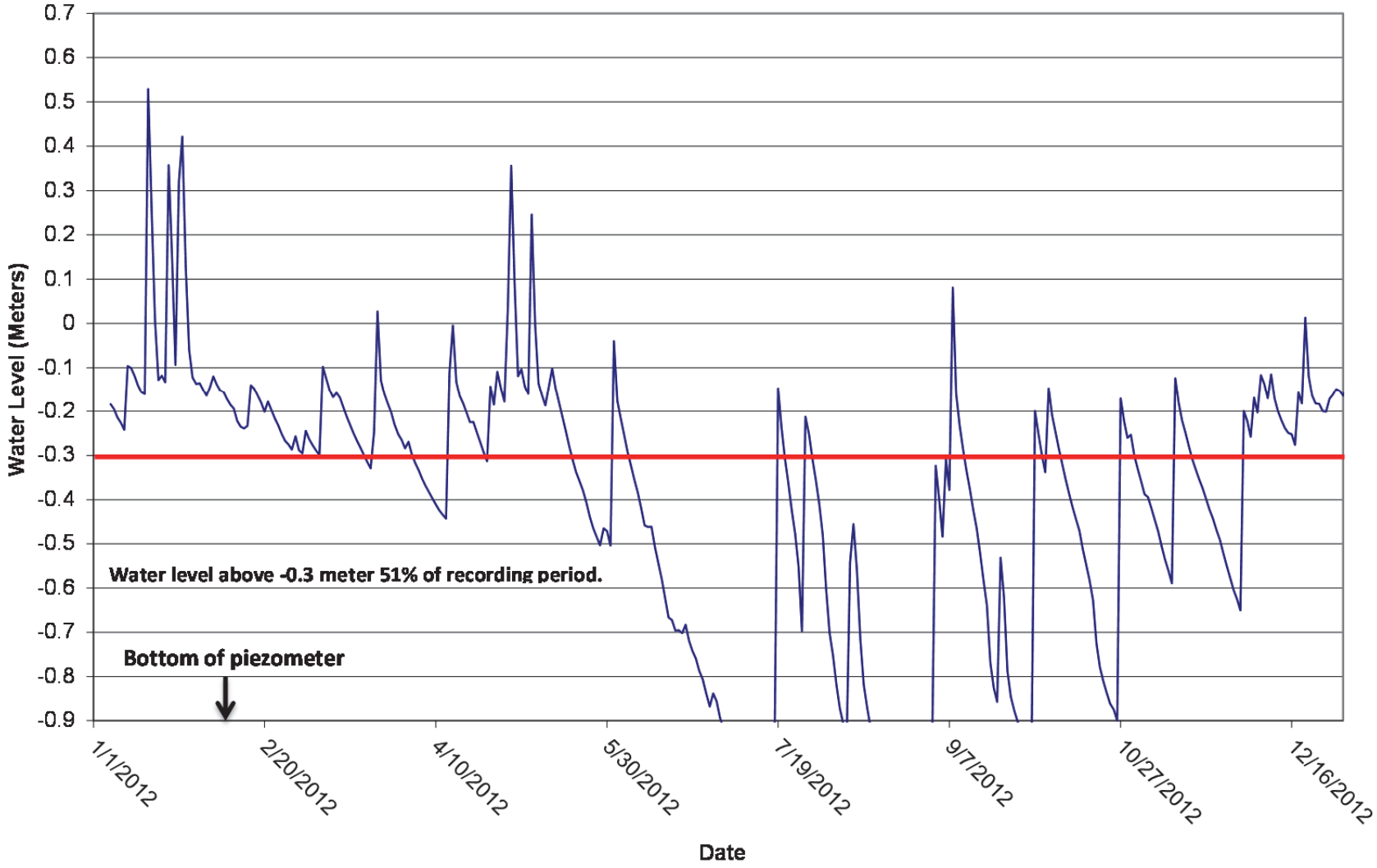

Figure D–3R. Wetland Area WM1W5 Hydrograph

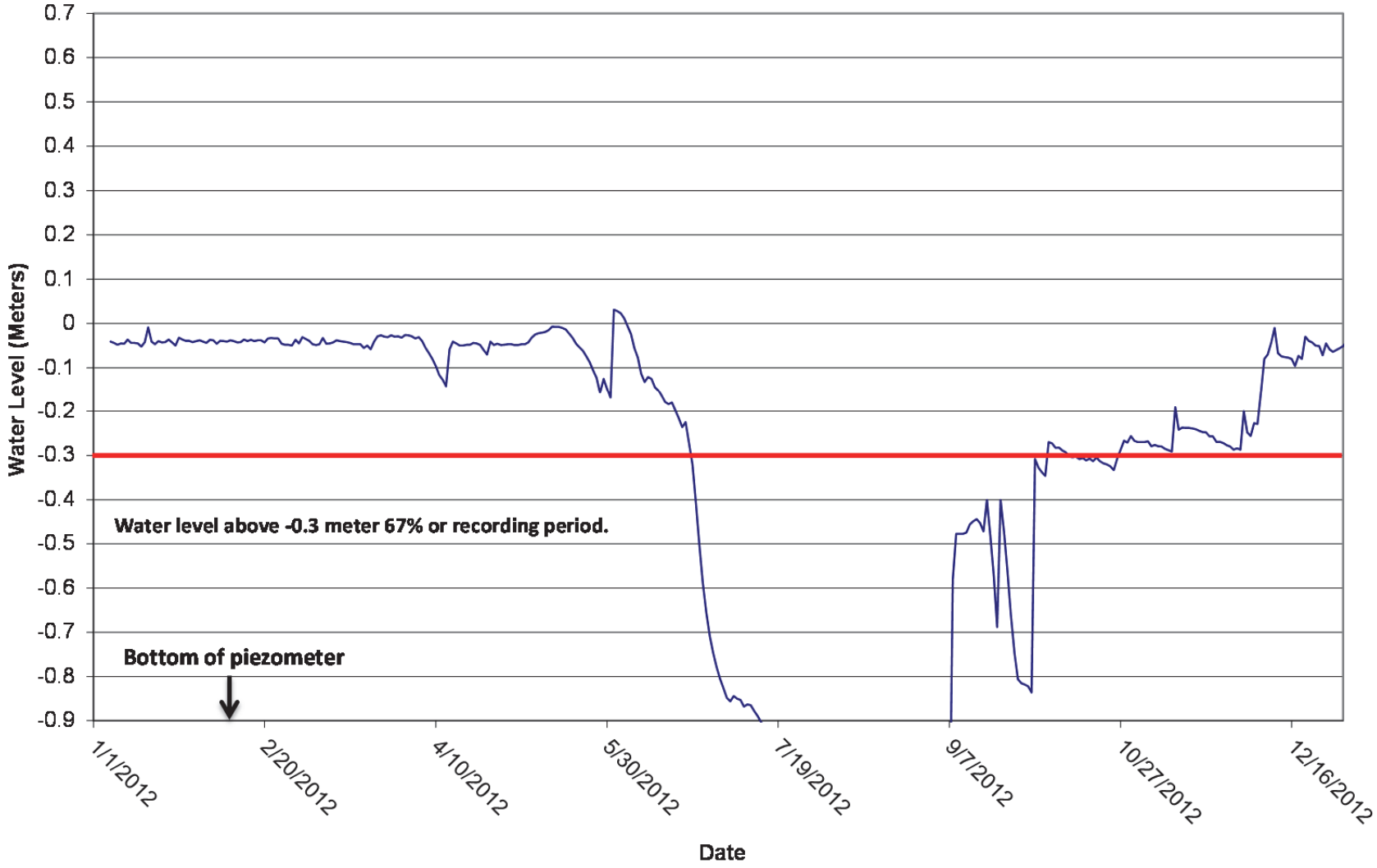

Figure D–3S. Wetland Area WM1W6 Hydrograph

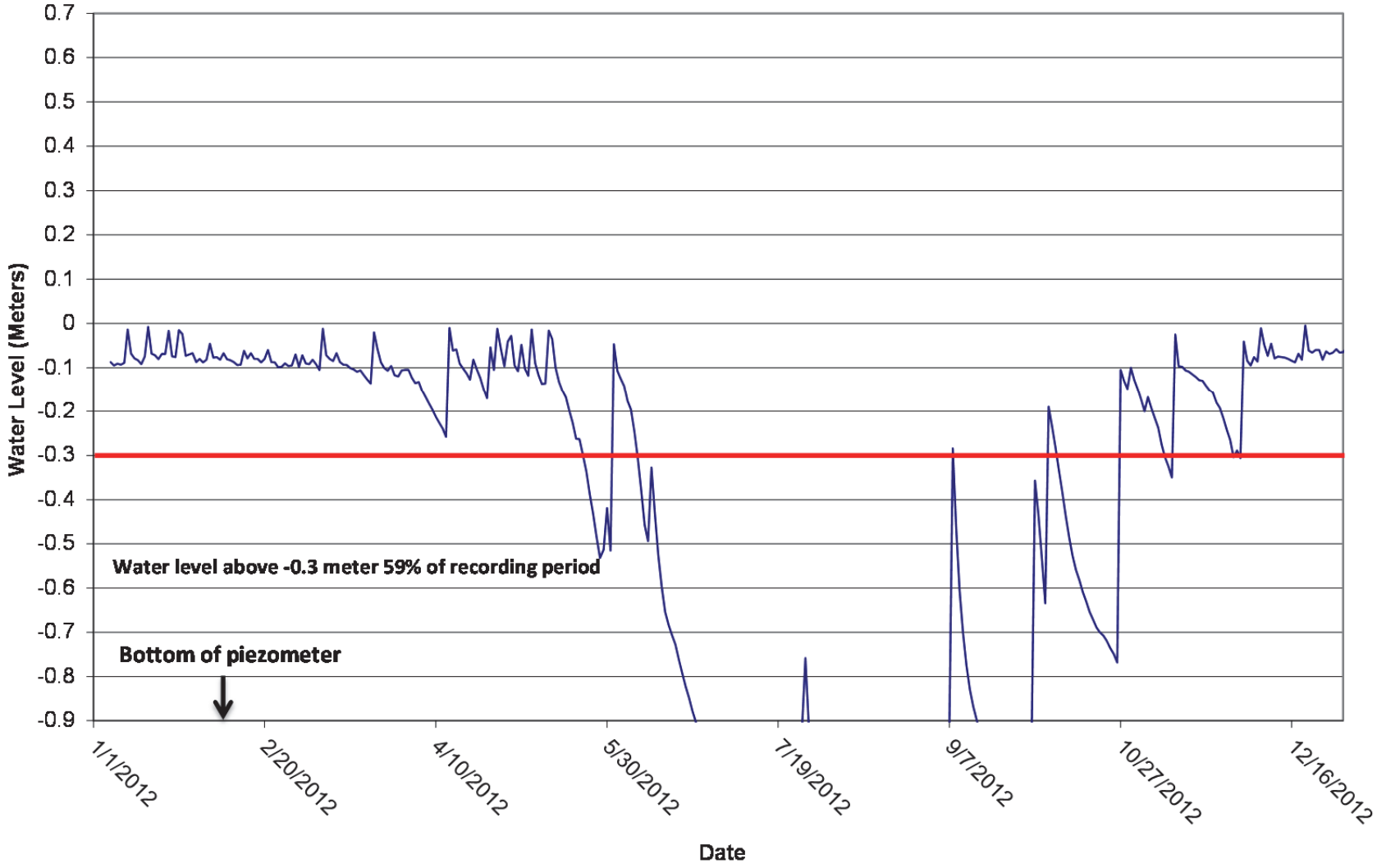

Figure D–3T. Wetland Area WM1W7 Hydrograph

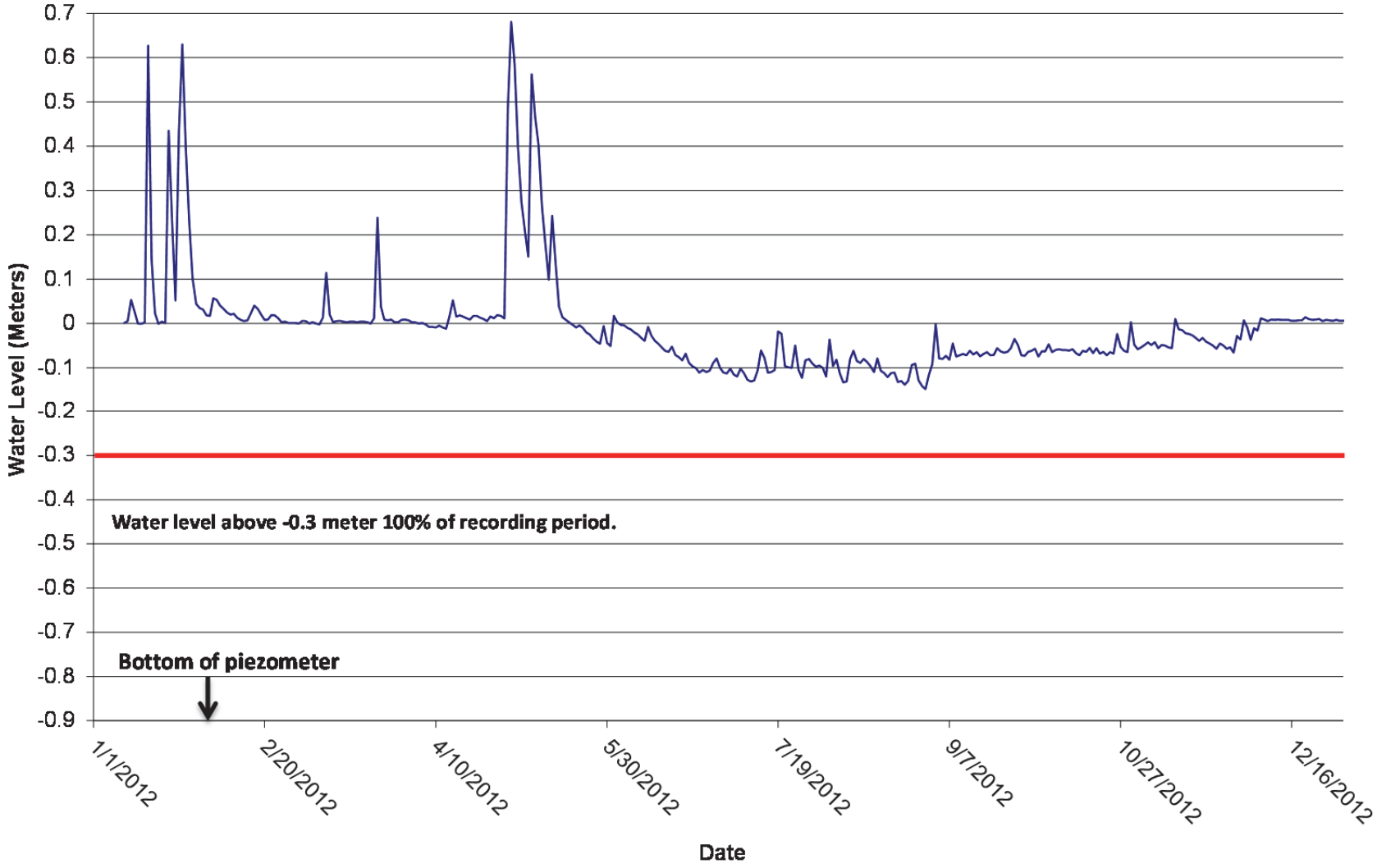

Figure D–3U. Wetland Area WM2W1 Hydrograph

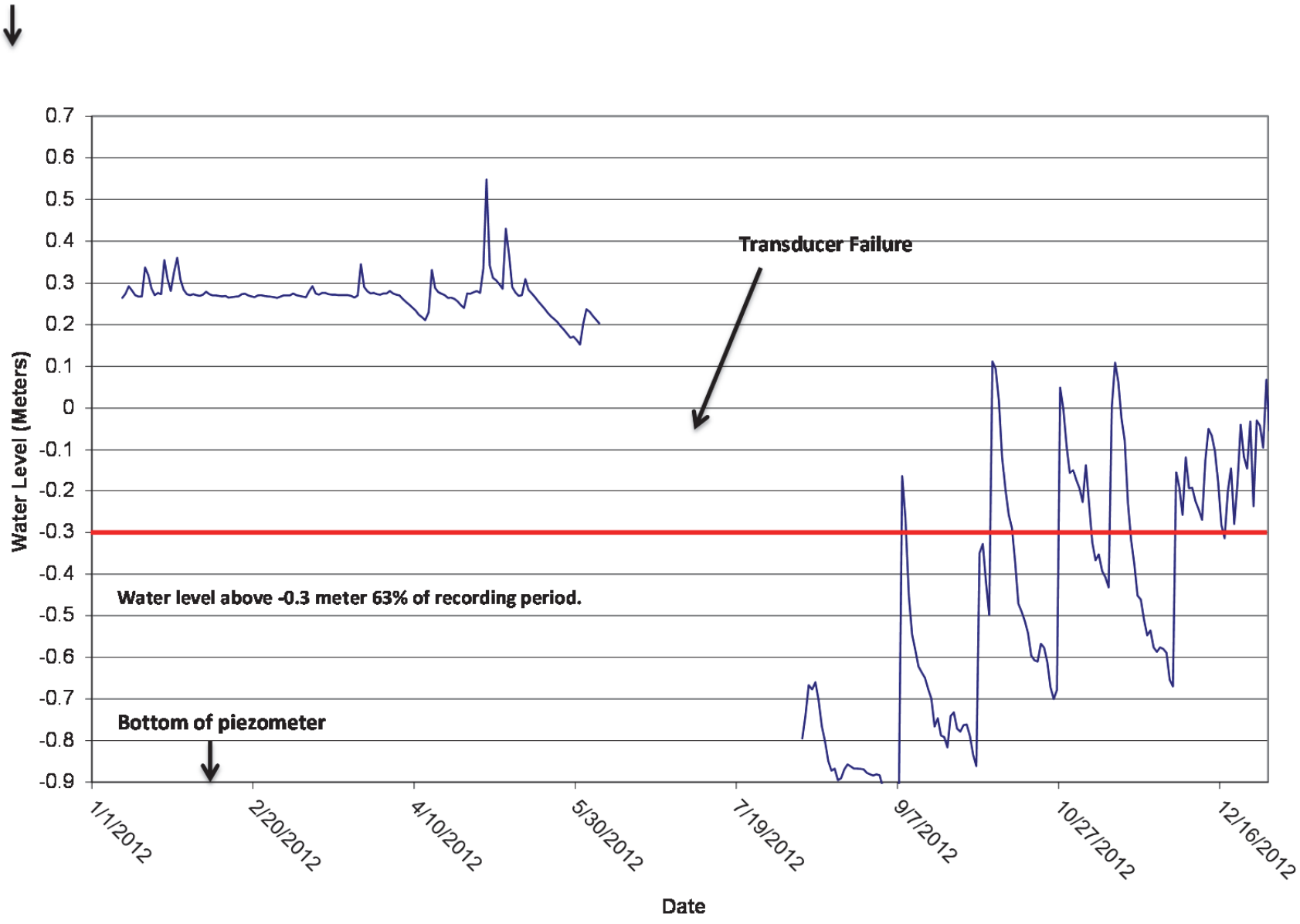

Figure D–3V. Wetland Area WM2W2 Hydrograph

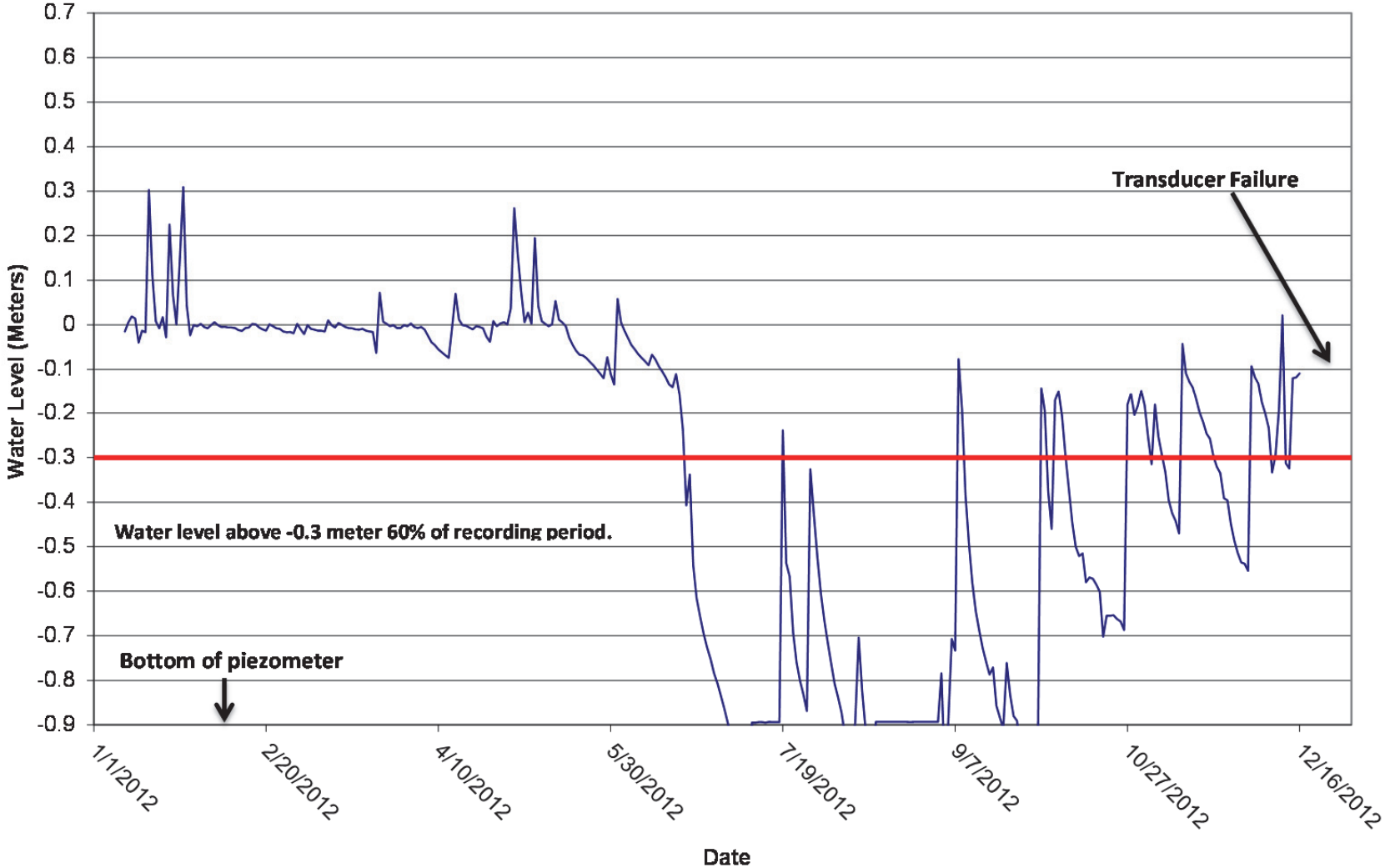

Figure D–3W. Wetland Area WM2W3 Hydrograph

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