

**POST CLOSURE CARE PLAN
ASH PONDS 2 & 3 CLOSURE
VENICE POWER STATION
VENICE, ILLINOIS**

**Aquaterra Project Number 4923.10
November 2012**

Prepared For:

**Ameren Missouri
3700 South Lindbergh Boulevard
St. Louis, Missouri 63127**

AQUATERRA

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**POST CLOSURE CARE PLAN
ASH PONDS 2 & 3 CLOSURE
VENICE POWER STATION
NOVEMBER 2012**

1.0 INTRODUCTION

Aquaterra Environmental Solutions, Inc. (Aquaterra) was retained by Ameren Missouri (Ameren) to provide construction quality assurance (CQA) services during the construction of the final cover system and closure of Ash Ponds 2 & 3 at Ameren's Venice Power Station located in Venice, Illinois, and prepared a closure report. Additionally, a post closure care plan is to be submitted to the Illinois Environmental Protection Agency (IEPA) within 90 days of completion of the cover construction. The construction completion date is October 31, 2012.

1.1 Background

Ash Ponds 2 & 3 occupied a total of approximately 59 acres. Ash Ponds 2 & 3 were used to manage coal fly and bottom ash, oil fly ash, and low-volume wastes associated with generation of electric power at the Venice Power Plant. The ponds average approximately 25 to 30 feet deep and are unlined. Closure of Ash Ponds 2 & 3 included dewatering of the ponds and construction of final cover that included the following components:

- A 40-mil linear low-density polyethylene (LLDPE) geomembrane liner over the graded ash.
- Installation of a double-sided geocomposite drainage layer of a high-density polyethylene (HDPE) geonet laminated between geotextile layers on top of the 40-mil geomembrane liner.
- Placement of a 3-foot thick protective cover layer consisting of 2.5 feet of protective cover soil and 6 inches of topsoil on the HDPE geonet.
- Installation of pump stations.

The Closure Plan for Ash Ponds 2 & 3 was approved by the IEPA's Bureau of Water in correspondence dated May 6, 2011. As part of the Closure Plan, the IEPA required that a Post Closure Care Plan be included as part of the Closure Report. This Post Closure Care Plan is intended to meet the IEPA requirements. A copy of the IEPA's approval letter is included in Appendix A.

2.0 POST CLOSURE CARE

Aquaterra reviewed the components of the Post Closure Care Plan outlined in the IEPA-approved Closure Plan. The Closure Plan was approved by the IEPA's Bureau of Water in correspondence dated May 6, 2011 for the groundwater management zone described in the referenced plan. Per Section 5 of the Closure Plan, the following items are included as part of the Closure and Post Closure care:

- Construction of the final cover and other engineering structures.
- Documenting the construction of the final cover and other engineering structures in the Construction Quality Assurance (CQA) and Closure Report submitted under separate cover.
- Description of the post closure care activities identified in the Post Closure Maintenance of Cover System section of the Closure Plan.
- Description of the groundwater monitoring system included in the Closure Plan, as well as a description of the maintenance plan for the groundwater monitoring system.
- Description of the groundwater monitoring program described in the Closure Plan.
- Identification of the location of the monitoring wells used for the trend analyses.
- Description of the groundwater trend analysis methods.
- Proposal for maintenance and monitoring of a groundwater management zone as indicated in the Closure Plan.
- Description of the actions proposed to mitigate statistically significant increasing trends and the operations and maintenance program as indicated in the Closure Plan.
- Submittal of annual inspection, maintenance, and hydrogeologic reports.
- Submittal of a completion of post closure care activities report.

The post closure requirements include conducting quarterly final cover inspections and quarterly groundwater monitoring at the frequency listed in Table 3-3 of the approved Closure Plan. After five years of quarterly final cover inspections, groundwater monitoring, and required maintenance, the inspection and monitoring frequency may revert to semi-annual inspections and sampling for the next five years if the final cover is not compromised and no increasing groundwater concentrations attributable to the ash ponds are detected in the groundwater. After this second five year inspection and monitoring period, the inspection and monitoring frequency may be conducted on an annual basis provided that the final cover is not compromised and no increasing groundwater concentrations attributable to the ash ponds are detected. Annual inspections and monitoring will be conducted until the groundwater concentrations in the groundwater management zone

(GMZ) described in the Closure Plan meet the conditions described in Section 3.3 of the Closure Plan, and the IEPA approves a post closure care report releasing Ameren from further groundwater monitoring. A minimum of four years of monitoring are required after the sampling frequency is reduced to an annual basis per the Closure Plan.

Following completion of closure, the post closure inspections, monitoring and required maintenance will be summarized and included in the annual reports to the IEPA. Because groundwater monitoring under the approved Closure Plan began mid-year 2011, the first annual report will consist of six quarterly samples and be submitted by March 31, 2013, per the IEPA's June 2012 letter approving the later submittal date. A copy of the IEPA's letter is provided in Appendix A. The first annual report to be submitted by March 31, 2013 will include the first quarterly post closure inspection report covering the fourth quarter 2012 inspection and any maintenance activities. Subsequent annual reports will be provided by March 31 of each following year as required in Section 5.4 of the approved Closure Plan.

2.1 Final Cover Maintenance

The conditions requiring active maintenance are described in Section 5.2 of the Closure Plan and include:

- Filling of rills, gullies, and crevices six inches in depth or deeper.
- Recontouring areas susceptible to erosion.
- Repairing eroded and scoured drainage channels in the final cover and replacing damaged flexible membrane as needed.
- Filling and recontouring of low areas and depressions caused by settling to prevent ponding of water.
- Reseeding areas with more than 100 square feet of failed or eroded vegetation.
- Repairing any tears, rips, punctures or other damage to the flexible membrane.
- Removal of any woody species (i.e., trees and shrubs over 18-inches tall) that establish in the final cover.

Any areas needing repair will be documented on the quarterly inspection forms. A copy of an inspection form that contains the required information is provided in Appendix B. The inspection form, or a form with the comparable information, should be used during the cover inspections to note conditions that need maintenance. Any areas deemed to require maintenance will be corrected as soon as reasonably possible after identifying the area and type of repair needed. Any repairs to the final cover will be documented in the annual report, and the report will include the type of repair, surface area repaired, repair methods and materials, and photographic documentation of the repaired area(s).

2.2 Post Closure Groundwater Monitoring Network

The groundwater monitoring network will use the 12 monitoring wells listed in Section 2.3 and Table 3-1 of the Closure Plan. The 12 monitoring wells for the post closure monitoring are:

- MW-2
- MW-2D
- MW-3
- MW-3D
- MW-5
- MW-6
- MW-6D
- MW-8
- MW-9
- MW-10
- MW-11
- MW-11D

Monitoring wells MW-8 and MW-9 are considered upgradient monitoring wells for the ash ponds, and are further considered to be representative of background, off-site, groundwater quality. The other 10 monitoring wells are considered on-site monitoring wells, and will be used to demonstrate compliance within the GMZ. The approximate locations of the monitoring wells in the monitoring network are shown on Figure 3-1 of the Closure Plan. Six monitoring wells (MW-2D, MW-3D, MW-6D, MW-10, MW-11, and MW-11D) were installed in June 2011 to complete the groundwater monitoring network. Copies of the boring logs, monitoring well as-built diagrams, and development forms are provided in Appendix C. Additionally, 8 monitoring wells (MW-1, MW-2P, MW-4, MW-5P, MW-7, MW-7P, MW-8P, and MW-9P) were abandoned as part of the closure and final cover construction. The approximate locations of the abandoned monitoring wells are shown on Figure 1-2 and Figure 2-6 of the Closure Plan. A copy of the monitoring well location map is provided in Appendix C and a summary of monitoring well coordinates and elevations is provided in Table 1. Copies of the abandonment forms are also provided in Appendix C.

2.3 Post Closure Groundwater Monitoring Procedure and Monitoring Well Inspection

The post closure groundwater monitoring wells will be sampled on a quarterly basis for the first five years after closure of the ash ponds. The samples collected from the monitoring wells will be monitored for the parameters listed in Section 3.2 and in Table 3-2 of the Closure Plan. The list of parameters includes the constituents listed in 35 IAC 620410 for Class I Potable Resource Groundwater, except the radio nuclides. The samples will be collected following the procedures described in the Closure Plan, preserved according to proper preservation methods and described in the Closure Plan. The samples will be submitted to Ameren's laboratory under standard chain of custody procedure for analysis of

the required parameters. A consistent sampling procedure should be used for each sampling event to reduce the potential for false statistical increases.

As part of the sampling procedure, the monitoring wells will be visually inspected prior to sampling to evaluate the integrity of the monitoring wells and that the groundwater samples collected are representative of groundwater conditions. The following items will be noted on the monitoring well inspection form:

- Presence of clearly visible sign of well name.
- Condition of protective casing.
- Condition of concrete well pad around protective casing.
- Presence of locks on protective casing.
- Presence of inner well cap.
- Condition of inner piping.
- Internal obstructions.
- Total depth of well.
- Any items requiring maintenance.

A copy of the well inspection form is provided in Appendix D. Copies of the inspection forms will be included in the annual report. Any maintenance performed to maintain the function of the monitoring wells will be included in the annual report.

2.4 Applicable Groundwater Quality Standards

As described in Section 3.3 and Section 3.4 of the Closure Plan, the off-site groundwater quality standards are the Groundwater Quality Standards for Class I potable resource groundwater listed in 35 IAC 620.410, and the on-site groundwater quality standards will be the statistically derived upper prediction limits based on four quarters of groundwater sampling at each on-site monitoring well. To obtain a release from monitoring, the on-site groundwater quality must meet the Class I Groundwater Quality Standards listed in 35 IAC 620.410, or have stable concentrations with no statistically significant increasing trends, and an institutional control or other legal mechanisms are present to prohibit potable use of groundwater within the GMZ.

2.5 Compliance Evaluation

An evaluation of statistically significant trends will be conducted on an annual basis and included in the annual report of monitoring and maintenance activities. Trend analysis will be conducted on a minimum of four consecutive samples for each parameter at each

monitoring well. Trends will be evaluated using Sen's Slope Estimator or the Mann-Kendall Trend Analysis methods depending on the amount of groundwater data available as described in Section 3.4.2 of the Closure Plan.

If a statistically significant trend is verified for any of the parameters at any of the monitoring wells within the GMZ (i.e., on-site monitoring wells), an investigation to the cause of the statistically significant increase will be conducted. Investigation activities may include the following:

- More frequent cap inspections.
- Site reconnaissance for changes to the surrounding area.
- Evaluations of upgradient groundwater monitoring data.
- Possible increase in sampling frequency for the impacted monitoring well
- Possible hydrogeologic investigation if a cause of the statistically significant increasing trends cannot be determined.

The steps to investigate and mitigate statistically significant increases are presented in Section 3.4.2 of the Closure Plan.

2.6 Demonstration of Compliance

Compliance with post closure requirements will be demonstrated when four consecutive sampling events show stable or decreasing concentrations within the GMZ after switching the sampling frequency to an annual basis. Once the groundwater impacts within the GMZ either meet the Class I Groundwater Quality Standards in 35 IAC 620.410, or the impacts display decreasing or stable trends combined with an institutional control or other legal mechanisms to restrict groundwater use within the GMZ, Ameren may prepare a Post Closure Report requesting release from monitoring.

Table 1
Monitoring Well Elevation Summary
Ameren Venice Power Plant
Venice, Illinois

Monitoring Well	Latitude	Longitude	Elevations in feet MSL				Depth in feet below Top of Riser		
			Ground	Top of Well Pipe	Top of Screen	Bottom of Screen	Bottom of Well	Top of Screen	Bottom of Screen
MW-2	38-39-12.84	90-10-28.39	412.75	412.31	393.80	383.80	383.80	18.5	28.5
MW-2D	38-39-12.83	90-10-29.09	412.61	412.36	369.60	364.60	364.60	42.8	47.8
MW-2P	38-39-12.89	90-10-28.42	411.83		ABANDONED				
MW-3	38-39-03.34	90-10-30.0	411.41	410.91	396.60	386.60	386.60	14.3	24.3
MW-3D	38-39-03.40	90-10-30.0	411.70	411.48	369.70	364.70	364.70	41.8	46.8
MW-5	38-39-08.97	90-10-11.93	433.16	432.93	393.50	383.50	383.50	39.4	49.4
MW-5P	38-39-08.92	90-10-11.89	433.19		ABANDONED				
MW-6	38-39-02.24	90-10-18.17	433.56	433.09	391.80	381.80	381.80	41.3	51.3
MW-6D	38-39-02.24	90-10-18.09	433.85	433.55	369.90	364.90	364.90	63.7	68.7
MW-7	38-39-08.92	90-10-11.89	424.11		ABANDONED				
MW-8	38-39-14.68	90-10-08.46	416.50	416.27	383.40	373.40	373.40	32.9	42.9
MW-9	39-39-27.23	90-10-15.93	413.65	413.40	381.80	371.80	371.80	31.6	41.6
MW-10	38-39-34.84	90-10-33.78	422.11	424.99	391.10	381.10	381.10	33.9	43.9
MW-11	38-39-22.64	90-10-32.25	413.04	412.74	394.00	384.00	384.00	18.7	28.7
MW-11D	38-39-22.58	90-10-32.24	412.84	412.50	368.80	363.80	363.80	43.7	48.7

Notes:

Survey data provided by Ameren UE

Screen elevations from monitoring well construction diagrams and previous reports

APPENDIX A

IEPA CLOSURE PLAN APPROVAL

May 2011 Approval Letter



ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 North Grand Avenue East, P.O. Box 19276, Springfield, Illinois 62794-9276 • (217) 782-2829
James R. Thompson Center, 100 West Randolph, Suite 11-300, Chicago, IL 60601 • (312) 814-6026

PAT QUINN, GOVERNOR

DOUGLAS P. SCOTT, DIRECTOR

May 6, 2011

John C. Pozzo
Managing Supervising Engineer
1 Ameren Plaza
1901 Chouteau Ave.
St. Louis, Missouri 63103

Dear Mr. Pozzo:

The Illinois Environmental Protection Agency (Illinois EPA) has reviewed the Closure Plan Venice Power Plant Ash Ponds 2 & 3 (Closure Plan) dated February 14, 2011, submitted by Ameren, which contains a proposal to establish a Groundwater Management Zone (GMZ) at the Venice site.

The February 14, 2011 submission was amended by letter and revised Closure Plan pages dated March 25, 2011. The amendments reflect a reduction in size of the proposed GMZ that will limit the GMZ's extent to Ameren's property. Upon review of the Amended submittal, the depth to which the GMZ was to extend was not clear. In a letter dated April 25, 2011 Ameren clarified the intended depth of the GMZ, as discussed in the "Geology" Section (Section 2.2.1) of the amended Closure Plan. Ameren also corrected a 2011 date, which had erroneously been listed as 2010.

The Illinois EPA concurs that the Closure Plan, with the amendments and clarifications as discussed above, meets the conditions of 35 Ill. Adm. Code 620.250(a). Therefore, a GMZ is hereby established at the Venice Power Plant within the three dimensional area described in the Closure Plan. Ameren should initiate the Closure Plan at its earliest convenience.

If you have any question concerning this letter, please contact me or Lynn Dunaway of my staff at 217/785-4787.

Sincerely,

William E Buscher, P.G.
Manager, Hydrogeology and Compliance Unit
Groundwater Section
Division of Public Water Supplies
Bureau of Water

Rockford • 4302 N. Main St., Rockford, IL 61103 • (815) 987-7760

Elgin • 595 S. State, Elgin, IL 60123 • (847) 608-3131

Bureau of Land — Peoria • 7620 N. University St., Peoria, IL 61614 • (309) 693-5462

Collinsville • 2009 Mall Street, Collinsville, IL 62234 • (618) 346-5120

Des Plaines • 9511 W. Harrison St., Des Plaines, IL 60016 • (847) 294-4000

Peoria • 5415 N. University St., Peoria, IL 61614 • (309) 693-5463

Champaign • 2125 S. First St., Champaign, IL 61820 • (217) 278-5800

Marion • 2309 W. Main St., Suite 116, Marion, IL 62959 • (618) 993-7200

CC: Rick Cobb
Alan Keller
Darin LeCrone
Lynn Dunaway
Records Unit

June 2012 Modification Letter



ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 • (217) 782-3397

PAT QUINN, GOVERNOR

JOHN J. KIM, INTERIM DIRECTOR

June 1, 2012

John C. Pozzo
Managing Supervising Engineer
1 Ameren Plaza
1901 Chouteau Ave.
St. Louis, Missouri 63103

Dear Mr. Pozzo:

The purpose of this letter is to confirm discussions between Ameren and the Illinois Environmental Protection Agency (Illinois EPA) regarding minor revisions to the Closure Plan Venice Power Plant Ash Ponds 2 & 3 (Closure Plan) and Groundwater Management Zone (GMZ), dated February 14, 2011, which the Illinois EPA approved May 6, 2011.

Specifically the changes to the Venice Closure Plan are as follows:

- 1) Section 3.2.7 is modified such that Bill Buscher and Lynn Dunaway will be notified via e-mail of the availability of data following Ameren's receipt of analytical results from each quarter's sampling event. Upon notice of availability the data may be requested by the Illinois EPA, otherwise it will be submitted with the annual trend analysis described in Section 3.4.2.
- 2) Section 3.4.2 describes the method that will be used to demonstrate compliance under the GMZ. This Section states that the compliance demonstration will be "...based on a minimum of four consecutive samples...". Due to changes in the monitoring program pursuant to the GMZ, the first four consecutive samples will be completed mid-year instead of the end of the calendar year in coordination with the annual reporting requirement of March 31. To synchronize the annual reports and calendar years, the first annual report will include six consecutive sample results with the annual report to be submitted by March 31, 2013. Subsequent annual reports will be provided by March 31 of the following year as required in Section 5.4 of the Venice Closure Plan.

The Illinois EPA considers the modifications above to be part of the approved Venice Closure Plan as of the date of this letter.

If you have any question concerning this letter, please contact me or Lynn Dunaway of my staff at 217/785-4787.

Sincerely,

A handwritten signature in cursive script, appearing to read "William E. Buscher".

William E Buscher, P.G.
Manager, Hydrogeology and Compliance Unit
Groundwater Section
Division of Public Water Supplies
Bureau of Water

CC: Rick Cobb
Alan Keller
Darin LeCrone
Lynn Dunaway
Records Unit

APPENDIX B

SITE MAINTENANCE INSPECTION FORM

Ameren UE
Fly Ash Pond Final Cover Site Inspection

Facility Name: _____ Inspection Date: _____

Facility Address: _____

Inspection Conditions: _____

SECURITY & ACCESS	YES	NO	N/A	Comments
1. Is access controlled?				
2. Are "No Trespassing" signs posted?				
3. Is there evidence of trespassing?				
COVER & VEGETATION				
4. Is cover in acceptable condition?				
5. Is vegetation in acceptable condition?				
6. Is there any woody species of plant growing (i.e., trees and shrubs taller than 18")?				
7. Is there any area with more than 100 square feet of failed or eroded vegetation?				
8. Is there any erosion or sloughing of embankment slopes?				
DRAINAGE				
9. Are appropriate temporary runoff controls in place?				
10. Are there any rills, gullies, or crevices that are 6" or deeper?				
11. Are drainage channels in acceptable condition?				
12. Are there any low areas or depressions that could facilitate the ponding of water for extended periods of time?				
GEO-MEMBRANE				
13. Is there any exposed flexible membrane?				
14. If so is the flexible membrane damaged?				
PUMP STATION				
15. Are the pump station inlets free of debris?				
16. Are there any structural deficiencies at the pump station?				

N/A = Not Applicable

Item #	Comment
_____	_____
_____	_____
_____	_____
_____	_____

Additional Comments:

Inspector Signature: _____ Date: _____

APPENDIX C

MONITORING WELL DOCUMENTATION

Monitoring Well Location Map

GROUNDWATER MONITORING PROGRAM
WELL LOCATIONS
AMEREN VENICE ASH PONDS



- MW-10
- MW-9
- Proposed Groundwater Management Zone (approximate), see Appendix L of Closure Plan for exact location

On Site Compliance Well
Upgradient Monitoring Well

Boring Logs and Monitoring Well Records



SOIL BORING LOG INFORMATION

Page 1 of 3

Facility/Project Name Ameren - Venice Power Plant		License/Permit/Monitoring Number		Boring Number MW-2D	
Boring Drilled By: Name of crew chief (first, last) and Firm Chris Hebel Roberts Environmental Drilling, Inc.		Date Drilling Started 7/20/2011		Date Drilling Completed 7/21/2011	
Common Well Name MW-2D		Final Static Water Level 405.1 Feet (NAVD)		Surface Elevation 412.6 Feet (NAVD)	
				Borehole Diameter 8.3 inches	
Local Grid Origin ☒ (estimated: ☒) or Boring Location ☐		State Plane N, E S/C/N		Local Grid Location ☒ N ☒ E ☐ S ☐ W	
1/4 of T 1/4 of Section N, R		Lat ° ' "		Long ° ' "	
Facility ID		County Madison		State IL	
				Civil Town/City/ or Village Venice	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	Soil Properties					RQD/ Comments
								Compressive Strength (tsf)	Moisture Content	Liquid Limit	Plasticity Index	P 200	
			1	0 - 1.6' SILT: ML, <u>Blind Drilled to 20'</u> . Soil boring information presented from 0 to 20' is from MW-2. See Boring Log MW-2 for details.	ML								
			2	1.6 - 4.2' LEAN CLAY: CL, See Boring Log MW-2.	CL								
			3										
			4										
			5	4.2 - 20' POORLY-GRADED SAND: SP, See Boring Log MW-2.	SP								
			6										
			7										
			8										
			9										
			10										
			11										
			12										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature 	Firm Natural Resource Technology 23713 W. Paul Road, Suite D, Pewaukee, WI 53072	Tel: 262.523.9000 Fax: 262.523.9001
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Template: SOIL BORING - Project: 1949 GINT.GPJ

Boring Number MW-2D

Page 3 of 3

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)							Compressive Strength (tsf)	Moisture Content	Liquid Limit	Plasticity Index	P 200	
				32 - 35' No Sample.									
			33										
			34										
4	24	WOH 4 16 19	35	35 - 37' WELL-GRADED SAND: SW, brown (10YR 4/3), moist, fine to medium-grained sand. no silt.	SW								WOH = Weight of Hammer
SS	18.5		36	36.3' gray (2.5Y 5/1).									
			37	37 - 40' No Sample.									
			38										
			39										
5	24	WOH 2 2 6	40	40 - 42' WELL-GRADED SAND: SW, brown (10YR 4/3), moist, fine to medium-grained sand. no silt.	SW								
SS	24		41	41.1' - 41.4 laminated colors brown (10YR 4/3) and greenish gray (Gley 1 5/1).									
			42	41.4' greenish gray (Gley 1 5/1).									
			43	42 - 45' No Sample.									
			44										
6	24	WOH 20 24 38	45	45 - 49' WELL-GRADED SAND: SW, grayish brown (10YR 5/2), rounded grains. fine to coarse-grained quartz sand (trace coarse-grained feldspar and mafic minerals). no silt.									
SS	20		46	46.2' greenish gray (Gley 1 5/1).									
			47	47' grayish brown (10YR 5/2).	SW								
7	24	WOH 20 24 38	48										
SS	24		49	48.5' greenish gray (Gley 1 5/1).									
				49' End of Boring.									

WOH =
Weight of
Hammer



NATURAL
RESOURCE
TECHNOLOGY

SOIL BORING LOG INFORMATION

Page 1 of 3

Facility/Project Name Ameren - Venice Power Plant		License/Permit/Monitoring Number		Boring Number MW-3D	
Boring Drilled By: Name of crew chief (first, last) and Firm Jeffrey Crank Roberts Environmental Drilling, Inc.		Date Drilling Started 7/19/2011		Date Drilling Completed 7/20/2011	
Common Well Name MW-3D		Final Static Water Level 403.4 Feet (NAVD)		Surface Elevation 411.7 Feet (NAVD)	
				Borehole Diameter 8.3 inches	
Local Grid Origin ☒ (estimated: ☒) or Boring Location ☐		State Plane N, E S/C/N		Local Grid Location ☒ N ☒ E ☐ S ☐ W	
1/4 of T 1/4 of Section N, R		Lat ° ' " Long ° ' "		14047970.4 Feet ☐ S 2446981.2 Feet ☐ W	
Facility ID		County Madison		State IL	
				Civil Town/City/ or Village Venice	

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)							Compressive Strength (1sf)	Moisture Content	Liquid Limit	Plasticity Index	P 200	
			1	0 - 4.4' SILT: ML, <u>Blind Drilled to 13'</u> . Soil boring information presented from 0 to 13' is from MW-3. See Boring Log MW-3 for details.	ML								
			2										
			3										
			4										
			5	4.4 - 10.6' LEAN CLAY: CL, See Boring Log MW-3.	CL								
			6										
			7										
			8										
			9	10.6 - 11.1' POORLY-GRADED SAND: SP, See Boring Log MW-3. 11.1 - 13' SILT: ML, See Boring Log MW-3.	SP ML								
			10										
			11										
			12										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature 	Firm Natural Resource Technology 23713 W. Paul Road, Suite D, Pewaukee, WI 53072	Tel: 262.523.9000 Fax: 262.523.9001
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Template: SOIL BORING - Project: 1949 GINT.GPJ



Boring Number **MW-3D**

Page 2 of 3

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)							Compressive Strength (tsf)	Moisture Content	Liquid Limit	Plasticity Index	P 200	
1 SS	24 18	WOH 1	13	11.1 - 13' SILT: ML, See Boring Log MW-3. (continued)	ML			0.5					WOH = Weight of Hammer
			13 - 14' ELASTIC SILT: MH, brown (10YR 4/3), slow dilatency, low toughness, medium plasticity, dry, soft, homogeneous.	MH		0.25							
			14 - 15' POORLY-GRADED SAND: SP, brown (10YR 4/3), moist, very fine-grained sand (sugar sand), little silt, homogeneous.	SP									
			15 - 18' No Sample.										
2 SS	24 20	WOH 1	18	18 - 18.5' POORLY-GRADED SAND: SP, brown (10YR 4/3), moist, very fine-grained sand (sugar sand), little silt, homogeneous.	SP			0.3					
			18.5 - 19' ELASTIC SILT WITH SAND: (MH)s, very dark gray (10YR 3/1), slow dilatency, low toughness, medium plasticity, moist, some very fine-grained sand (sugar sand), homogeneous, soft.	(MH)s									
			19 - 20' POORLY-GRADED SAND: SP, dark grayish brown (10YR 4/2), moist, very fine-grained sand, trace silt, homogeneous, trace fine muscovite.	SP									
			20 - 23' No Sample.										
			21										
			22										
3 SS	24 17	WOH 1 2	23	23 - 25' POORLY-GRADED SAND: SP, dark grayish brown (10YR 4/2), moist, very fine-grained sand, trace silt, homogeneous, trace fine muscovite.	SP								
			23.5' - 24.5' few root fibers.										
			24.5' very dark gray (10YR 3/1).										
			25 - 28' No Sample.										
4 SS	24 16	WOH 1	28	28 - 30' POORLY-GRADED SAND: SP, very dark gray (10YR 3/1), wet, very fine-grained sand (sugar sand), some silt, trace root fibers, homogeneous.	SP								
			29' - 30' fine-grained sand, trace black wood pieces.										
			30 - 33' No Sample.										
			31										
			32										



Boring Number MW-3D

Page 3 of 3

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)							Compressive Strength (tsf)	Moisture Content	Liquid Limit	Plasticity Index	P 200	
				30 - 33' No Sample. (continued)									
5 SS	24 9	UN- 4	33	33 - 35' POORLY-GRADED SAND: SP, very dark gray (10YR 3/1), wet, fine-grained sand. trace black wood pieces. homogeneous.	SP								
			34										
			35	35 - 38' No Sample.									
			36										
			37										
6 SS	24 17	WOR 2 4	38	38 - 40' WELL-GRADED SAND: SW, dark gray (10YR 4/1), wet, fine to medium-grained sand (mostly medium, trace coarse sand and very fine gravel (subrounded to subangular grains)). rounded sand grains. homogeneous. no silt.	SW								
			39										
			40	40 - 43' No Sample.									
			41										
			42										
7 SS	24 15	3 8 9 11	43	43 - 47' WELL-GRADED SAND: SW, dark gray (10YR 4/1), wet, fine to medium-grained sand (mostly medium, trace coarse sand and very fine gravel (subrounded to subangular grains)). rounded sand grains. homogeneous. no silt.									
			44										
8 SS	24 24	1 4 8 12	45	45' - 46' few coarse-grained sand.	SW								
			46										
			47	47 - 47.5' No Sample.									
				47.5' End of Boring.									

WOR =
Weight of
Rod



SOIL BORING LOG INFORMATION

Page 1 of 4

Facility/Project Name Ameren - Venice Power Plant		License/Permit/Monitoring Number		Boring Number MW-6D	
Boring Drilled By: Name of crew chief (first, last) and Firm Jeffrey Crank Roberts Environmental Drilling, Inc.		Date Drilling Started 7/18/2011		Date Drilling Completed 7/19/2011	
Common Well Name MW-6D		Final Static Water Level 402.6 Feet (NAVD)		Surface Elevation 433.9 Feet (NAVD)	
				Borehole Diameter 8.3 inches	
Local Grid Origin ☒ (estimated: ☒) or Boring Location ☐		Local Grid Location			
State Plane N, E S/C/N		Lat ° ' "		☒ N ☒ E	
1/4 of T N, R		Long ° ' "		☐ S ☐ W	

Facility ID	County Madison	State IL	Civil Town/City/ or Village Venice
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Sample			Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	Soil Properties					RQD/ Comments			
Number and Type	Length Att. & Recovered (in)	Blow Counts						Compressive Strength (tsf)	Moisture Content	Liquid Limit	Plasticity Index	P 200				
			1	0 - 2.5' SILT: ML, <u>Blind Drilled to 48'</u> . Soil boring information presented from 0 to 48' is from MW-6. See Boring Log MW-6 for details.	ML											
			2													
			3	2.5 - 9' SILTY SAND: SM, See Boring Log MW-6.	SM											
			4													
			5													
			6													
			7	9 - 33' POORLY-GRADED SAND: SP, See Boring Log MW-6.	SP											
			8													
			9													
			10													
			11													
			12													

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature 	Firm Natural Resource Technology	Tel: 262.523.9000
	23713 W. Paul Road, Suite D, Pewaukee, WI 53072	Fax: 262.523.9001

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Boring Number MW-6D

Page 2 of 4

Sample			Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram		Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)	Blow Counts							Compressive Strength (tsf)	Moisture Content	Liquid Limit	Plasticity Index	P 200	
			13	9 - 33' POORLY-GRADED SAND: SP, See Boring Log MW-6. (continued)	SP									
			14											
			15											
			16											
			17											
			18											
			19											
			20											
			21											
			22											
			23											
			24											
			25											
			26											
			27											
			28											
			29											
			30											
			31											
			32											

Boring Number **MW-6D**

Page **3** of **4**

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)							Compressive Strength (tsf)	Moisture Content	Liquid Limit	Plasticity Index	P 200	
				9 - 33' POORLY-GRADED SAND: SP, See Boring Log MW-6. (continued)	SP								
			33	33 - 41' LEAN CLAY: CL, See Boring Log MW-6.									
			34										
			35										
			36										
			37		CL								
			38										
			39										
			40										
			41	41 - 46' SILTY SAND: to CLAYEY SAND: SM, See Boring Log MW-6.									
			42										
			43										
			44		SM								
			45										
			46	46 - 48' POORLY-GRADED SAND: SP, See Boring Log MW-6.									
			47		SP								
			48	48 - 50' POORLY-GRADED SAND: SP, very dark gray (10YR 3/1), moist, fine to medium-grained sand, trace coarse sand and fine gravel, rounded sand grains, homogeneous, trace silt.									
			49		SP								
			50	50 - 53' No Sample.									
			51										
			52										

1
SS

24
9

2
8
11
10



Page 1 of 3

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	Soil Properties					RQD/ Comments
Number and Type	Length Int. & Recovered (in)							Compressive Strength (tsf)	Moisture Content	Liquid Limit	Plasticity Index	P 200	
1 AUGER	24 24		1	0 - 2' TOPSOIL: dark brown (10YR 3/3), dry, trace fine gravel-sized pieces of anthracite coal.		↓ ↓ ↓ ↓ ↓							Hand dug with posthole digger to 2'.
2 SS	24 19	1 UNCL	2	2 - 3' FILL, WELL-GRADED SAND: SW, fine to medium-grained sand (mostly medium). few silt. homogeneous. strong diesel odor. sheen. NAPL wetting 2-2.5' (oil). some black fluid NAPL. 2.2' gravel sized piece of highly weathered cement containing green medium sand grains.	(FILL) SW								
3 SS	24 24	4 20 11	3	3 - 9' POORLY-GRADED SAND: SP, very dark grayish brown (10YR 3/2), dry, very fine-grained sand. trace silt. homogeneous. slight diesel odor. no sheen.									
4 SS	24 19	3 20 5	4	4' dark gray (10YR 3/1). no odor or visual evidence of NAPL below 4'.									
5 SS	24 22	1 9 8 4	5										
6 SS	24 18	1 15 10	6										
			7										
			8										
			9	9 - 9.25' POORLY-GRADED SAND: SP, cemented fine to medium-grained sand (grayish white to black). brittle (breaks off in chips). possibly fill material.	SP								
			10	9.25 - 9.5' POORLY-GRADED SAND: SP, fine to medium-grained sand (white and black grains). homogeneous. possibly fill material.	SP								
			11	9.5 - 10' POORLY-GRADED SAND: SP, very dark grayish brown (10YR 3/2), dry, native materials. very	SP								
			12										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

Firm	1. <i>Aluminum Company of America</i> (Alcoa) 2. <i>Aluminum Rolling Mills</i> (ARM) 3. <i>Aluminum Smelter</i> (ALSM) 4. <i>Aluminum Wire</i> (ALWIR) 5. <i>Aluminum Extrusion</i> (ALWIR) 6. <i>Aluminum Sheet</i> (ALWIR) 7. <i>Aluminum Pipe</i> (ALWIR) 8. <i>Aluminum Rod</i> (ALWIR) 9. <i>Aluminum Ingot</i> (ALWIR) 10. <i>Aluminum Cast</i> (ALWIR) 11. <i>Aluminum Die</i> (ALWIR) 12. <i>Aluminum Mill</i> (ALWIR) 13. <i>Aluminum Plant</i> (ALWIR) 14. <i>Aluminum Refinery</i> (ALWIR) 15. <i>Aluminum Smelter</i> (ALWIR) 16. <i>Aluminum Wire</i> (ALWIR) 17. <i>Aluminum Extrusion</i> (ALWIR) 18. <i>Aluminum Sheet</i> (ALWIR) 19. <i>Aluminum Pipe</i> (ALWIR) 20. <i>Aluminum Rod</i> (ALWIR) 21. <i>Aluminum Ingot</i> (ALWIR) 22. <i>Aluminum Cast</i> (ALWIR) 23. <i>Aluminum Die</i> (ALWIR) 24. <i>Aluminum Mill</i> (ALWIR) 25. <i>Aluminum Plant</i> (ALWIR) 26. <i>Aluminum Refinery</i> (ALWIR) 27. <i>Aluminum Smelter</i> (ALWIR) 28. <i>Aluminum Wire</i> (ALWIR) 29. <i>Aluminum Extrusion</i> (ALWIR) 30. <i>Aluminum Sheet</i> (ALWIR) 31. <i>Aluminum Pipe</i> (ALWIR) 32. <i>Aluminum Rod</i> (ALWIR) 33. <i>Aluminum Ingot</i> (ALWIR) 34. <i>Aluminum Cast</i> (ALWIR) 35. <i>Aluminum Die</i> (ALWIR) 36. <i>Aluminum Mill</i> (ALWIR) 37. <i>Aluminum Plant</i> (ALWIR) 38. <i>Aluminum Refinery</i> (ALWIR) 39. <i>Aluminum Smelter</i> (ALWIR) 40. <i>Aluminum Wire</i> (ALWIR) 41. <i>Aluminum Extrusion</i> (ALWIR) 42. <i>Aluminum Sheet</i> (ALWIR) 43. <i>Aluminum Pipe</i> (ALWIR) 44. <i>Aluminum Rod</i> (ALWIR) 45. <i>Aluminum Ingot</i> (ALWIR) 46. <i>Aluminum Cast</i> (ALWIR) 47. <i>Aluminum Die</i> (ALWIR) 48. <i>Aluminum Mill</i> (ALWIR) 49. <i>Aluminum Plant</i> (ALWIR) 50. <i>Aluminum Refinery</i> (ALWIR) 51. <i>Aluminum Smelter</i> (ALWIR) 52. <i>Aluminum Wire</i> (ALWIR) 53. <i>Aluminum Extrusion</i> (ALWIR) 54. <i>Aluminum Sheet</i> (ALWIR) 55. <i>Aluminum Pipe</i> (ALWIR) 56. <i>Aluminum Rod</i> (ALWIR) 57. <i>Aluminum Ingot</i> (ALWIR) 58. <i>Aluminum Cast</i> (ALWIR) 59. <i>Aluminum Die</i> (ALWIR) 60. <i>Aluminum Mill</i> (ALWIR) 61. <i>Aluminum Plant</i> (ALWIR) 62. <i>Aluminum Refinery</i> (ALWIR) 63. <i>Aluminum Smelter</i> (ALWIR) 64. <i>Aluminum Wire</i> (ALWIR) 65. <i>Aluminum Extrusion</i> (ALWIR) 66. <i>Aluminum Sheet</i> (ALWIR) 67. <i>Aluminum Pipe</i> (ALWIR) 68. <i>Aluminum Rod</i> (ALWIR) 69. <i>Aluminum Ingot</i> (ALWIR) 70. <i>Aluminum Cast</i> (ALWIR) 71. <i>Aluminum Die</i> (ALWIR) 72. <i>Aluminum Mill</i> (ALWIR) 73. <i>Aluminum Plant</i> (ALWIR) 74. <i>Aluminum Refinery</i> (ALWIR) 75. <i>Aluminum Smelter</i> (ALWIR) 76. <i>Aluminum Wire</i> (ALWIR) 77. <i>Aluminum Extrusion</i> (ALWIR) 78. <i>Aluminum Sheet</i> (ALWIR) 79. <i>Aluminum Pipe</i> (ALWIR) 80. <i>Aluminum Rod</i> (ALWIR) 81. <i>Aluminum Ingot</i> (ALWIR) 82. <i>Aluminum Cast</i> (ALWIR) 83. <i>Aluminum Die</i> (ALWIR) 84. <i>Aluminum Mill</i> (ALWIR) 85. <i>Aluminum Plant</i> (ALWIR) 86. <i>Aluminum Refinery</i> (ALWIR) 87. <i>Aluminum Smelter</i> (ALWIR) 88. <i>Aluminum Wire</i> (ALWIR) 89. <i>Aluminum Extrusion</i> (ALWIR) 90. <i>Aluminum Sheet</i> (ALWIR) 91. <i>Aluminum Pipe</i> (ALWIR) 92. <i>Aluminum Rod</i> (ALWIR) 93. <i>Aluminum Ingot</i> (ALWIR) 94. <i>Aluminum Cast</i> (ALWIR) 95. <i>Aluminum Die</i> (ALWIR) 96. <i>Aluminum Mill</i> (ALWIR) 97. <i>Aluminum Plant</i> (ALWIR) 98. <i>Aluminum Refinery</i> (ALWIR) 99. <i>Aluminum Smelter</i> (ALWIR) 100. <i>Aluminum Wire</i> (ALWIR)
-------------	--

Natural Resource Technology
23713 W. Paul Road, Suite D, Pewaukee, WI 53073
Tel: 414/224-1100 Fax: 414/224-1101

Tel: 262.523.9000
Fax: 262.523.9001

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Boring Number **MW-10**

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[illegible]



SOIL BORING LOG INFORMATION

Page 1 of 2

Facility/Project Name Ameren - Venice Power Plant		License/Permit/Monitoring Number		Boring Number MW-11	
Boring Drilled By: Name of crew chief (first, last) and Firm Jeffrey Crank Roberts Environmental Drilling, Inc.		Date Drilling Started 7/22/2011		Date Drilling Completed 7/22/2011	
		Drilling Method hollow stem auger			

Common Well Name MW-11		Final Static Water Level 406.5 Feet (NAVD)		Surface Elevation 413.0 Feet (NAVD)	
		Borehole Diameter 8.3 inches			

Local Grid Origin ☒ (estimated: ☒) or Boring Location ☐		Local Grid Location	
State Plane N, E S/C/N		☒ N ☒ E	
1/4 of T N, R		14049910.4 Feet ☐ S 2446742.2 Feet ☐ W	
Lat ° ' "		Long ° ' "	

Facility ID	County Madison	State IL	Civil Town/City/ or Village Venice
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Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)							Compressive Strength (tsf)	Moisture Content	Liquid Limit	Plasticity Index	P 200	
			0 1 2 3 4 5 6 7 8 9 10 11 12	0 - 5' No Sample. Blind Drilled to 29.5' . Soil boring information presented from 0 to 29.5' is from MW-11D. See Boring Log MW-11D for details.									
				5 - 5.5' SILTY SAND: SM, See Boring Log MW-11D.	SM								
				5.5 - 7' SILTY SAND: SM, See Boring Log MW-11D.	SM								
				7 - 10' No Sample. See Boring Log MW-11D.									
				10 - 12' POORLY-GRADED SAND: SP, See Boring Log MW-11D.	SP								

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature 	Firm Natural Resource Technology 23713 W. Paul Road, Suite D, Pewaukee, WI 53072	Tel: 262.523.9000 Fax: 262.523.9001
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Boring Number **MW-11**

Page 2 of 2

Sample			Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	Soil Properties					RQD/ Comments	
Number and Type	Length Att. & Recovered (in)	Blow Counts						Compressive Strength (tsf)	Moisture Content	Liquid Limit	Plasticity Index	P 200		
			13	12 - 15' No Sample. See Boring Log MW-11D.										
			14											
			15	15 - 17' POORLY-GRADED SAND: SP, See Boring Log MW-11D.	SP									
			16											
			17	17 - 20' No Sample. See Boring Log MW-11D.										
			18											
			19											
			20	20 - 22' POORLY-GRADED SAND: SP, See Boring Log MW-11D.	SP									
			21											
			22	22 - 25' No Sample. See Boring Log MW-11D.										
			23											
			24											
			25	25 - 26.8' POORLY-GRADED SAND: SP, See Boring Log MW-11D.	SP									
			26											
			27	26.8 - 27' SILTY SAND: SM, See Boring Log MW-11D. 27 - 29.5' No Sample. See Boring Log MW-11D.	SM									
			28											
			29	29.5' End of Boring.										



SOIL BORING LOG INFORMATION

Page 1 of 3

Facility/Project Name Ameren - Venice Power Plant		License/Permit/Monitoring Number		Boring Number MW-11D	
Boring Drilled By: Name of crew chief (first, last) and Firm Jeffrey Crank Roberts Environmental Drilling, Inc.		Date Drilling Started 7/21/2011		Date Drilling Completed 7/22/2011	
		Drilling Method hollow stem auger			

Common Well Name MW-11D		Final Static Water Level 405.7 Feet (NAVD)		Surface Elevation 412.8 Feet (NAVD)	
		Borehole Diameter 8.3 inches			

Local Grid Origin ☒ (estimated: ☒) or Boring Location ☐		Local Grid Location	
State Plane N, E S/C/N		Lat ° ' "	
1/4 of T N, R		Long ° ' "	
		14049904.3 Feet ☐ S 2446743.4 Feet ☐ W	

Facility ID		County Madison		State IL		Civil Town/City/ or Village Venice	
-------------	--	--------------------------	--	--------------------	--	--	--

Sample			Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)	Compressive Strength (tsf)							Moisture Content	Liquid Limit	Plasticity Index	P 200		
					0 - 5' No Sample.									
				1										
				2										
				3										
				4										
1 SS	24 19	WOH 11		5	5 - 5.5' SILTY SAND: SM, dark grayish brown (10YR 4/2), dry, some roots.	SM								WOH = Weight of Hammer
				6	5.5 - 7' SILTY SAND: SM, brown (10YR 4/3), wet, poorly graded very fine-grained sand (sugar sand). homogeneous.	SM								
				7	7 - 10' No Sample.									
				8										
				9										
2 SS	24 20	WOH 11		10	10 - 12' POORLY-GRADED SAND: SP, brown (10YR 4/3), wet, very fine-grained sand (sugar sand). homogeneous. trace silt. trace very fine muscovite.	SP								
				11	11' - 11.5' little silt.									
				12										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature 	Firm Natural Resource Technology 23713 W. Paul Road, Suite D, Pewaukee, WI 53072	Tel: 262.523.9000 Fax: 262.523.9001
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Boring Number **MW-11D**

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Boring Number MW-11D

Page 3 of 3

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)							Compressive Strength (tsf)	Moisture Content	Liquid Limit	Plasticity Index	P 200	
				32 - 35' No Sample.									
			33										
			34										
7 SS	24 16	WCH 3 9	35	35 - 35.4' POORLY-GRADED SAND: SP, dark greenish gray (5GY 4/1), wet, very fine-grained sand (sugar sand). trace to little silt. trace fine muscovite. homogeneous.	SP								
			36	35.4 - 35.6' ELASTIC SILT WITH SAND: (MH)s, dark greenish gray (5GY 4/1), slow dilatency, low toughness, medium plasticity, very fine-grained sand (sugar sand). very soft.	(MH)s								
			37	35.6 - 37' POORLY-GRADED SAND: SP, dark greenish gray (5GY 4/1), wet, very fine-grained sand (sugar sand). sand grain size increases with depth (very fine to fine to medium). trace to little silt. trace fine muscovite. homogeneous.	SP								
			38										
			39	37 - 40' No Sample.									
			40	40 - 42' WELL-GRADED SAND: SW, dark greenish gray (5GY 4/1), wet, fine to medium-grained sand. no silt. homogeneous.	SW								
8 SS	24 14	1 20 5	41										
			42	42 - 45' No Sample.									
			43										
			44										
9 SS	24 0	2 4 9 14	45	45 - 47' WELL-GRADED SAND: SW, dark greenish gray (5GY 4/1), wet, fine to medium-grained sand. no silt. homogeneous.	SW								
			46										
10 SS	24 21	7 3 6 8	47	47 - 49' WELL-GRADED SAND: SW, gray (10YR 5/1), wet, fine to coarse-grained sand (mostly medium rounded sand). no silt. trace very fine gravel (lithics).	SW								
			48										
			49	49 - 49.5' No Sample.									
				49.5' End of Boring.									

No Recovery.
Trace Amount of Identifiable Material in Tip of Split Spoon.

No Recovery.
Trace
Amount of
Identifiable
Material in
Tip of Split
Spoon.

AMEREN SERVICES			BORING MW-8			SHEET 1 of 1		
DATE STARTED 7/2/99			DATE COMPLETED 7/2/99			LOGGED BY BDC		
SURFACE EL. 416.4 (ft.)			DRILLING CONTRACTOR: WESI			DRILL METHOD: H.S.A.		

Depth (ft)	Graphic Log	N-Value	SOIL/ROCK DESCRIPTION	VAPOR CONCENTRATION Isobutylene Calibration Gas Equivalent Units (ppm)				COMMENTS	Depth (ft)
				10 ⁰	10 ¹	10 ²	10 ³		
0			Black to dk. gray black gravelly SAND; abundant cinders and brick frags; tr. glass.						0
			Brown v.f. sandy SILT; layer of cinders.						
			Olive gray brown clayey SILT; moist; massive.						
			Brown v.f. sandy SILT w/ so. clay; massive.						
10			Brown v.f. SAND grading to f.-m. SAND; dry.					▽ 11.5 ft.	10
			SAME; wet at 11.5 ft.					▽ 12.76 ft. after 6 days.	
			Brown clayey SILT w/ so. v.f. sand; rust brown nodules.						
			Brown SILT; very wet.						
20			Brown clayey SILT w/ so. v.f. sand; abundant iron staining along fractures & as nodules.						20
			Brown f.-m. SAND; wet; 4 in. thick seam of clayey silt w/ so. v.f. sand.						
			NO RECOVERY (sand likely).						
30			SAME; tr. organic rich laminations; turns all gray at base.						30
			SAME; gray.						
40			SAME w/ organics.						40
			End of Boring = 43.5'						
50									50

SOIL/ROCK BORING DATA		HYDROGEOLOGICAL INVESTIGATION	
 HANSON ENGINEERS INCORPORATED	<i>[Signature]</i> REVIEWED BDC	12-22-99 DATE	VENICE POWER PLANT AMEREN SERVICES VENICE, ILLINOIS
	APPROVED	12/22/99 DATE	
	JOB NO. 95S3085B		
		APPENDIX A-14	

AMEREN SERVICES			BORING MW-9			SHEET 1 of 1		
DATE STARTED 7/2/99		DATE COMPLETED 7/2/99		LOGGED BY BDC		SURFACE EL. 413.8 (ft.)		
DRILLING CONTRACTOR: WESI					DRILL METHOD: H.S.A.			

Depth (ft)	Graphic Log	N-Value	SOIL/ROCK DESCRIPTION	VAPOR CONCENTRATION Isobutylene Calibration Gas Equivalent Units (ppm)				COMMENTS	Depth (ft)
				10 ⁰	10 ¹	10 ²	10 ³		
0			Black sandy GRAVEL; abundant cinders & brick frags.						0
			Brown clayey SILT w/ so. sand & gravel; brick frags & ash; v. moist.						
			Dk. gray brown sandy GRAVEL w/ so. silt & clay; v. moist; cinders & brick frags.						
			Gray brown silty v.f. SAND w/ tr. clay; so. rust brown mottling; tr. cinders; zones that are brown; zones (up to 2 in. thick) w/ cinders.					8.1 ft.	
10			Brown v.f. sandy SILT w/ tr. clay; wet at 8.1 ft.					10.12 ft. after 6 days.	10
			Brown v.f. SAND w/ so. silt; wet.						
			SAME; so. clay from 14.5-15.1 ft. and 16.2-16.7 ft.; bedding visible; rust staining along bedding; zones w/ iron nodules.						
20			Brown silty v.f. SAND; becomes gray at 21.4 ft.; disseminated plant remains; becomes coarse at base.						
			Brown f.-m. SAND; wet; massive.						
			SAME.						
30									
			SAME; gray color.						
40			NO RECOVERY; appears to be sand.						
			End of Boring = 43.5'						
50									

SOIL/ROCK BORING DATA		HYDROGEOLOGICAL INVESTIGATION	
	<i>Ady</i> REVIEWED BDC	12-22-99 DATE	VENICE POWER PLANT AMEREN SERVICES VENICE, ILLINOIS
	APPROVED	12/22/99 DATE	
	JOB NO. 95S3085B		
		APPENDIX A-16	



MONITORING WELL CONSTRUCTION

Facility/Project Name Ameren - Venice Power Plant		Local Grid Location of Well 14048926.2 ft. ☒ N. ☒ S. 2447023.5 ft. ☒ E. ☒ W.		Well Name MW-2D	
Facility License, Permit or Monitoring No.		Local Grid Origin ☒ (estimated: ☒) or Well Location ☐ Lat. _____ Long. _____ or _____		Date Well Installed 07/21/2011	
Facility ID		St. Plane _____ ft. N. _____ ft. E. S/C/N		Well Installed By: (Person's Name and Firm) Chris Hebel	
Type of Well Well Code 12/pz		Section Location of Waste/Source 1/4 of _____ 1/4 of Sec. _____ T. _____ N. R. _____ ☐ E ☐ W		Roberts Environmental Drilling, Inc.	
Distance from Waste/Source ft. IL		Location of Well Relative to Waste/Source u ☐ Upgradient s ☐ Sidegradient d ☒ Downgradient n ☐ Not Known		Gov. Lot Number	

A. Protective pipe, top elevation	412.61 ft. MSL	1. Cap and lock?	☒ Yes ☐ No
B. Well casing, top elevation	412.36 ft. MSL	2. Protective cover pipe:	
C. Land surface elevation	412.6 ft. MSL	a. Inside diameter:	8.0 in.
D. Surface seal, bottom	410.6 ft. MSL or 2.0 ft.	b. Length:	1.0 ft.
12. USCS classification of soil near screen: GP ☐ GM ☐ GC ☐ GW ☐ SW ☒ SP ☐ SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐ Bedrock ☐		c. Material:	Steel ☒ Other ☐
13. Sieve analysis attached?	☐ Yes ☒ No	d. Additional protection?	☐ Yes ☒ No
14. Drilling method used:	Rotary ☐ Hollow Stem Auger ☒ Other ☐	If yes, describe:	
15. Drilling fluid used: Water ☒ 02 Air ☐ Drilling Mud ☐ 03 None ☐		3. Surface seal:	Bentonite ☐ Concrete ☒ Other ☐
16. Drilling additives used? ☐ Yes ☒		4. Material between well casing and protective pipe:	Bentonite ☐ Bentonite Chips ☒ Other ☐
Describe _____		5. Annular space seal:	a. Granular/Chipped Bentonite ☐ b. _____ Lbs/gal mud weight ... Bentonite-sand slurry ☐ c. _____ Lbs/gal mud weight ... Bentonite slurry ☐ d. 30 % Bentonite ... Bentonite-cement grout ☒ e. 10.3 Ft ³ volume added for any of the above f. How installed: Tremie ☒ Tremie pumped ☐ Gravity ☐
17. Source of water (attach analysis, if required): Potable Water		6. Bentonite seal:	a. Bentonite granules ☐ b. ☐ 1/4 in. ☐ 3/8 in. ☐ 1/2 in. Bentonite chips ☐ c. Baroid: Quick-Gel; Bentonite Slurry ☒ Other ☐
E. Bentonite seal, top	381.6 ft. MSL or 31.0 ft.	7. Fine sand material: Manufacturer, product name & mesh size	
F. Fine sand, top	_____ ft. MSL or _____ ft.	a. _____	
G. Filter pack, top	375.5 ft. MSL or 37.1 ft.	b. Volume added _____ ft ³	
H. Screen joint, top	369.6 ft. MSL or 43.0 ft.	8. Filter pack material: Manufacturer, product name & mesh size	
I. Well bottom	364.6 ft. MSL or 48.0 ft.	a. Unimin: Filtersil; Filtration Sand and Gravel, 4-200 mesh	
J. Filter pack, bottom	364.6 ft. MSL or 48.0 ft.	b. Volume added 2.5 ft ³	
K. Borehole, bottom	363.6 ft. MSL or 49.0 ft.	9. Well casing:	Flush threaded PVC schedule 40 ☒ Flush threaded PVC schedule 80 ☐ Other ☐
L. Borehole, diameter	8.3 in.	10. Screen material:	Schedule 40 PVC
M. O.D. well casing	2.38 in.	a. Screen Type:	Factory cut ☒ Continuous slot ☐ Other ☐
N. I.D. well casing	2.07 in.	b. Manufacturer _____	
		c. Slot size:	0.100 in.
		d. Slotted length:	5.0 ft.
		11. Backfill material (below filter pack):	None ☐ Slough: Unconsolidated Native Material ☒

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Date Modified: 8/1/2011

Signature

Firm

Natural Resource Technology
23713 W. Paul Road Pewaukee, WI 53072

Tel: 262.523.9000

Fax: 262.523.9001



MONITORING WELL CONSTRUCTION

Facility/Project Name Ameren - Venice Power Plant		Local Grid Location of Well 14047970.4 ft. ☒ N. ☐ S. 2446981.2 ft. ☒ E. ☐ W.		Well Name MW-3D	
Facility License, Permit or Monitoring No.		Local Grid Origin ☒ (estimated: ☒) or Well Location ☐ Lat. _____ Long. _____ or St. Plane _____ ft. N. _____ ft. E. S/C/N		Date Well Installed 07/20/2011	
Facility ID		Section Location of Waste/Source _____ 1/4 of _____ 1/4 of Sec. _____ T. _____ N, R. _____ ☐ E ☐ W		Well Installed By: (Person's Name and Firm) Jeffrey Crank	
Type of Well Well Code 12/pz		Location of Well Relative to Waste/Source ☐ u Upgradient ☐ s Sidegradient ☒ d Downgradient ☐ n Not Known		Gov. Lot Number	
Distance from Waste/Source ft. _____ IL				Roberts Environmental Drilling, Inc.	

A. Protective pipe, top elevation	411.70 ft. MSL	1. Cap and lock?	☒ Yes ☐ No
B. Well casing, top elevation	411.48 ft. MSL	2. Protective cover pipe:	
C. Land surface elevation	411.7 ft. MSL	a. Inside diameter:	8.0 in.
D. Surface seal, bottom	409.7 ft. MSL or 2.0 ft.	b. Length:	1.0 ft.
12. USCS classification of soil near screen: GP ☐ GM ☐ GC ☐ GW ☐ SW ☒ SP ☐ SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐ Bedrock ☐		c. Material:	Steel ☒ Other ☐
13. Sieve analysis attached?	☐ Yes ☒ No	d. Additional protection?	☐ Yes ☒ No If yes, describe: _____
14. Drilling method used:	Rotary ☐ Hollow Stem Auger ☒ Other ☐	3. Surface seal:	Bentonite ☐ Concrete ☒ Other ☐
15. Drilling fluid used: Water ☒ 0.2 Air ☐ Drilling Mud ☐ 0.3 None ☐		4. Material between well casing and protective pipe:	Bentonite ☐ Bentonite Chips ☒ Other ☐
16. Drilling additives used? ☐ Yes ☒		5. Annular space seal:	a. Granular/Chipped Bentonite ☐ b. _____ Lbs/gal mud weight ... Bentonite-sand slurry ☐ c. _____ Lbs/gal mud weight ... Bentonite slurry ☐ d. 30 % Bentonite ... Bentonite-cement grout ☒ e. 10.3 Ft ³ volume added for any of the above f. How installed: Tremie ☒ Tremie pumped ☐ Gravity ☐
Describe _____		6. Bentonite seal:	a. Bentonite granules ☐ b. ☐ 1/4 in. ☐ 3/8 in. ☐ 1/2 in. Bentonite chips ☐ c. Baroid: Quick-Gel; Bentonite Slurry ☒ Other ☐
17. Source of water (attach analysis, if required): Potable Water		7. Fine sand material: Manufacturer, product name & mesh size	a. _____ b. Volume added _____ ft ³
E. Bentonite seal, top	380.7 ft. MSL or 31.0 ft.	8. Filter pack material: Manufacturer, product name & mesh size	a. Unimin: Filtersil; Filtration Sand and Gravel, 4-200 mesh b. Volume added 2.5 ft ³
F. Fine sand, top	_____ ft. MSL or _____ ft.	9. Well casing:	Flush threaded PVC schedule 40 ☒ Flush threaded PVC schedule 80 ☐ Other ☐
G. Filter pack, top	375.7 ft. MSL or 36.0 ft.	10. Screen material:	Schedule 40 PVC
H. Screen joint, top	369.7 ft. MSL or 42.0 ft.	a. Screen Type:	Factory cut ☒ Continuous slot ☐ Other ☐
I. Well bottom	364.7 ft. MSL or 47.0 ft.	b. Manufacturer	_____
J. Filter pack, bottom	364.7 ft. MSL or 47.0 ft.	c. Slot size:	0.100 in.
K. Borehole, bottom	364.2 ft. MSL or 47.5 ft.	d. Slotted length:	5.0 ft.
L. Borehole, diameter	8.3 in.	11. Backfill material (below filter pack):	None ☐ Slough: Unconsolidated Native Material ☒
M. O.D. well casing	2.38 in.		
N. I.D. well casing	2.07 in.		

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Date Modified: 8/1/2011

Signature

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Natural Resource Technology
23713 W. Paul Road Pewaukee, WI 53072

Tel: 262.523.9000

Fax: 262.523.9001



MONITORING WELL CONSTRUCTION

Facility/Project Name Ameren - Venice Power Plant		Local Grid Location of Well 14047882.1 ft. ☒ N. ☐ S. 2447928.4 ft. ☒ E. ☐ W.		Well Name MW-6D	
Facility License, Permit or Monitoring No.		Local Grid Origin ☒ (estimated: ☒) or Well Location ☐ Lat. _____ Long. _____ or _____		Date Well Installed 07/19/2011	
Facility ID		St. Plane _____ ft. N. _____ ft. E. S/C/N		Well Installed By: (Person's Name and Firm) Jeffrey Crank	
Type of Well Well Code 12/pz		Section Location of Waste/Source _____ 1/4 of _____ 1/4 of Sec. _____ T. _____ N, R. _____ ☐ E ☐ W		Well Installed By: (Person's Name and Firm) Jeffrey Crank	
Distance from Waste/Source ft. _____		Location of Well Relative to Waste/Source u ☐ Upgradient s ☒ Sidegradient d ☐ Downgradient n ☐ Not Known		Gov. Lot Number _____	
State IL		_____		Roberts Environmental Drilling, Inc.	

A. Protective pipe, top elevation <u>433.85</u> ft. MSL		1. Cap and lock? ☒ Yes ☐ No	
B. Well casing, top elevation <u>433.55</u> ft. MSL		2. Protective cover pipe: a. Inside diameter: <u>8.0</u> in. b. Length: <u>1.0</u> ft. c. Material: Steel ☒ Other ☐	
C. Land surface elevation <u>433.9</u> ft. MSL		d. Additional protection? ☐ Yes ☒ No If yes, describe: _____	
D. Surface seal, bottom <u>431.9</u> ft. MSL or <u>2.0</u> ft.		3. Surface seal: Bentonite ☐ Concrete ☒ Other ☐	
12. USCS classification of soil near screen: GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☒ SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐ Bedrock ☐		4. Material between well casing and protective pipe: Bentonite ☐ Bentonite Chips ☒ Other ☐	
13. Sieve analysis attached? ☐ Yes ☒ No		5. Annular space seal: a. Granular/Chipped Bentonite ☐ b. _____ Lbs/gal mud weight ... Bentonite-sand slurry ☐ c. _____ Lbs/gal mud weight ... Bentonite slurry ☐ d. <u>30</u> % Bentonite ... Bentonite-cement grout ☒ e. <u>18.8</u> Ft ³ volume added for any of the above f. How installed: Tremie ☒ Tremie pumped ☐ Gravity ☐	
14. Drilling method used: Rotary ☐ Hollow Stem Auger ☒ Other ☐		6. Bentonite seal: a. Bentonite granules ☐ b. ☐ 1/4 in. ☐ 3/8 in. ☐ 1/2 in. Bentonite chips ☐ c. Baroid: Quick-Gel; Bentonite Slurry ☒ Other ☐	
15. Drilling fluid used: Water ☒ 0 2 Air ☐ Drilling Mud ☐ 0 3 None ☐		7. Fine sand material: Manufacturer, product name & mesh size a. _____ b. Volume added _____ ft ³	
16. Drilling additives used? ☐ Yes ☒		8. Filter pack material: Manufacturer, product name & mesh size a. Unimin: Filtersil; Filtration Sand and Gravel, 4-200 mesh b. Volume added <u>2.6</u> ft ³	
Describe _____		9. Well casing: Flush threaded PVC schedule 40 ☒ Flush threaded PVC schedule 80 ☐ Other ☐	
17. Source of water (attach analysis, if required): <u>Potable Water</u>		10. Screen material: <u>Schedule 40 PVC</u> a. Screen Type: Factory cut ☒ Continuous slot ☐ Other ☐ b. Manufacturer _____ c. Slot size: <u>0.100</u> in. d. Slotted length: <u>5.0</u> ft.	
E. Bentonite seal, top <u>381.1</u> ft. MSL or <u>52.8</u> ft.		11. Backfill material (below filter pack): None ☐ Slough: Unconsolidated Native Material ☒	
F. Fine sand, top _____ ft. MSL or _____ ft.			
G. Filter pack, top <u>376.1</u> ft. MSL or <u>57.8</u> ft.			
H. Screen joint, top <u>369.9</u> ft. MSL or <u>64.0</u> ft.			
I. Well bottom <u>364.9</u> ft. MSL or <u>69.0</u> ft.			
J. Filter pack, bottom <u>364.9</u> ft. MSL or <u>69.0</u> ft.			
K. Borehole, bottom <u>364.3</u> ft. MSL or <u>69.6</u> ft.			
L. Borehole, diameter <u>8.3</u> in.			
M. O.D. well casing <u>2.38</u> in.			
N. I.D. well casing <u>2.07</u> in.			

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Date Modified: 8/1/2011

Signature

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Natural Resource Technology
23713 W. Paul Road Pewaukee, WI 53072

Tel: 262.523.9000

Fax: 262.523.9001



MONITORING WELL CONSTRUCTION

Facility/Project Name Ameren - Venice Power Plant		Local Grid Location of Well 14051141.2 ft. ☒ N. ☐ S. 2446582.8 ft. ☒ E. ☐ W.		Well Name MW-10	
Facility License, Permit or Monitoring No.		Local Grid Origin ☒ (estimated: ☒) or Well Location ☐ Lat. _____ Long. _____ or St. Plane _____ ft. N. _____ ft. E. S/C/N		Date Well Installed 07/21/2011	
Facility ID		Section Location of Waste/Source 1/4 of _____ 1/4 of Sec. _____ T. _____ N, R. _____ ☐ E ☐ W		Well Installed By: (Person's Name and Firm) Jeffrey Crank	
Type of Well Well Code 12/pz		Location of Well Relative to Waste/Source u ☐ Upgradient s ☒ Sidegradient d ☐ Downgradient n ☐ Not Known		Gov. Lot Number	
Distance from Waste/Source ft.	State IL			Roberts Environmental Drilling, Inc.	

A. Protective pipe, top elevation	425.21 ft. MSL	1. Cap and lock?	☒ Yes ☐ No
B. Well casing, top elevation	424.99 ft. MSL	2. Protective cover pipe:	
C. Land surface elevation	422.1 ft. MSL	a. Inside diameter:	4.0 in.
D. Surface seal, bottom	420.1 ft. MSL or 2.0 ft.	b. Length:	6.0 ft.
12. USCS classification of soil near screen: GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☒ SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐ Bedrock ☐		c. Material:	Steel ☒ Other ☐
13. Sieve analysis attached?	☐ Yes ☒ No	d. Additional protection?	☒ Yes ☐ No
14. Drilling method used:	Rotary ☐ Hollow Stem Auger ☒ Other ☐	If yes, describe:	Three steel bumper posts.
15. Drilling fluid used: Water ☒ 02 Air ☐ Drilling Mud ☐ 03 None ☐		3. Surface seal:	Bentonite ☐ Concrete ☒ Other ☐
16. Drilling additives used?	☐ Yes ☒	4. Material between well casing and protective pipe:	Bentonite ☐ Sand ☐ Other ☒
Describe _____		5. Annular space seal:	a. Granular/Chipped Bentonite ☐ b. _____ Lbs/gal mud weight ... Bentonite-sand slurry ☐ c. _____ Lbs/gal mud weight ... Bentonite slurry ☐ d. 30 % Bentonite ... Bentonite-cement grout ☒ e. 7.1 Ft ³ volume added for any of the above
17. Source of water (attach analysis, if required): Potable Water		f. How installed:	Tremie ☒ Tremie pumped ☐ Gravity ☐
E. Bentonite seal, top	402.1 ft. MSL or 20.0 ft.	6. Bentonite seal:	a. Bentonite granules ☐ b. ☐ 1/4 in. ☐ 3/8 in. ☐ 1/2 in. Bentonite chips ☐ c. Baroid: Quick-Gel; Bentonite Slurry ☐ Other ☒
F. Fine sand, top	_____ ft. MSL or _____ ft.	7. Fine sand material: Manufacturer, product name & mesh size	a. _____ b. Volume added _____ ft ³
G. Filter pack, top	397.1 ft. MSL or 25.0 ft.	8. Filter pack material: Manufacturer, product name & mesh size	a. Unimin: Filtersil; Filtration Sand and Gravel, 4-200 mesh b. Volume added 3.7 ft ³
H. Screen joint, top	391.1 ft. MSL or 31.0 ft.	9. Well casing:	Flush threaded PVC schedule 40 ☒ Flush threaded PVC schedule 80 ☐ Other ☐
I. Well bottom	381.1 ft. MSL or 41.0 ft.	10. Screen material:	Schedule 40 PVC
J. Filter pack, bottom	381.1 ft. MSL or 41.0 ft.	a. Screen Type:	Factory cut ☒ Continuous slot ☐ Other ☐
K. Borehole, bottom	380.6 ft. MSL or 41.5 ft.	b. Manufacturer	_____
L. Borehole, diameter	8.3 in.	c. Slot size:	0.100 in.
M. O.D. well casing	2.38 in.	d. Slotted length:	10.0 ft.
N. I.D. well casing	2.07 in.	11. Backfill material (below filter pack):	None ☐ Slough: Unconsolidated Native Material ☒

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Date Modified: 8/1/2011

Signature

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Natural Resource Technology
23713 W. Paul Road Pewaukee, WI 53072Tel: 262.523.9000
Fax: 262.523.9001



MONITORING WELL CONSTRUCTION

Facility/Project Name Ameren - Venice Power Plant		Local Grid Location of Well 14049910.4 ft. ☒ N. ☒ S. 2446742.2 ft. ☒ E. ☒ W.		Well Name MW-11	
Facility License, Permit or Monitoring No.		Local Grid Origin ☒ (estimated: ☒) or Well Location ☐ Lat. _____ ' _____ " Long. _____ ' _____ " or St. Plane _____ ft. N. _____ ft. E. S / C / N		Date Well Installed 07/22/2011	
Facility ID		Section Location of Waste/Source 1/4 of _____ 1/4 of Sec. _____ T. _____ N. R. _____ ☐ E ☐ W		Well Installed By: (Person's Name and Firm) Jeffrey Crank	
Type of Well Well Code 12/pz		Location of Well Relative to Waste/Source u ☐ Upgradient s ☐ Sidegradient d ☒ Downgradient n ☐ Not Known		Gov. Lot Number	
Distance from Waste/Source ft. _____		State IL		Roberts Environmental Drilling, Inc.	

A. Protective pipe, top elevation <u>413.04</u> ft. MSL	1. Cap and lock? ☒ Yes ☐ No
B. Well casing, top elevation <u>412.74</u> ft. MSL	2. Protective cover pipe: a. Inside diameter: <u>8.0</u> in. b. Length: <u>1.0</u> ft. c. Material: ☒ Steel ☐ Other ☐
C. Land surface elevation <u>413.0</u> ft. MSL	d. Additional protection? ☐ Yes ☒ No If yes, describe: _____
D. Surface seal, bottom <u>411.0</u> ft. MSL or <u>2.0</u> ft.	3. Surface seal: ☐ Bentonite ☒ Concrete ☐ Other ☐
12. USCS classification of soil near screen: GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☒ SM ☒ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐ Bedrock ☐	4. Material between well casing and protective pipe: <u>Bentonite Chips</u> ☐ Bentonite ☒ Other ☐
13. Sieve analysis attached? ☐ Yes ☒ No	5. Annular space seal: a. Granular/Chipped Bentonite ☐ b. _____ Lbs/gal mud weight ... Bentonite-sand slurry ☐ c. _____ Lbs/gal mud weight ... Bentonite slurry ☐ d. <u>30</u> % Bentonite ... Bentonite-cement grout ☒ e. <u>4.3</u> Ft ³ volume added for any of the above f. How installed: ☒ Tremie ☐ Tremie pumped ☐ Gravity ☐
14. Drilling method used: Rotary ☐ Hollow Stem Auger ☒ Other ☐	6. Bentonite seal: a. Bentonite granules ☐ b. ☐ 1/4 in. ☐ 3/8 in. ☐ 1/2 in. Bentonite chips ☐ c. <u>Baroid: Quick-Gel; Bentonite Slurry</u> Other ☒
15. Drilling fluid used: Water ☒ 02 Air ☐ Drilling Mud ☐ 03 None ☐	7. Fine sand material: Manufacturer, product name & mesh size a. <u>Fine Sand</u> b. Volume added <u>0.5</u> ft ³
16. Drilling additives used? ☐ Yes ☒	8. Filter pack material: Manufacturer, product name & mesh size a. <u>Unimin: Filtersil; Filtration Sand and Gravel, 4-200 mesh</u> b. Volume added <u>2.8</u> ft ³
Describe _____	9. Well casing: ☒ Flush threaded PVC schedule 40 ☐ Flush threaded PVC schedule 80 ☐ Other ☐
17. Source of water (attach analysis, if required): <u>Potable Water</u>	10. Screen material: <u>Schedule 40 PVC</u> a. Screen Type: ☒ Factory cut ☐ Continuous slot ☐ Other ☐ b. Manufacturer _____ c. Slot size: <u>0.100</u> in. d. Slotted length: <u>10.0</u> ft.
E. Bentonite seal, top <u>401.0</u> ft. MSL or <u>12.0</u> ft.	11. Backfill material (below filter pack): ☐ None ☒ Slough: Unconsolidated Native Material
F. Fine sand, top <u>398.0</u> ft. MSL or <u>15.0</u> ft.	
G. Filter pack, top <u>396.0</u> ft. MSL or <u>17.0</u> ft.	
H. Screen joint, top <u>394.0</u> ft. MSL or <u>19.0</u> ft.	
I. Well bottom <u>384.0</u> ft. MSL or <u>29.0</u> ft.	
J. Filter pack, bottom <u>384.0</u> ft. MSL or <u>29.0</u> ft.	
K. Borehole, bottom <u>383.5</u> ft. MSL or <u>29.5</u> ft.	
L. Borehole, diameter <u>8.3</u> in.	
M. O.D. well casing <u>2.38</u> in.	
N. I.D. well casing <u>2.07</u> in.	

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Date Modified: 8/1/2011

Signature

Firm

Natural Resource Technology
23713 W. Paul Road Pewaukee, WI 53072

Tel: 262.523.9000

Fax: 262.523.9001



MONITORING WELL CONSTRUCTION

Facility/Project Name Ameren - Venice Power Plant		Local Grid Location of Well 14049904.3 ft. ☒ N. ☒ S. 2446743.4 ft. ☒ E. ☒ W.		Well Name MW-11D	
Facility License, Permit or Monitoring No.		Local Grid Origin ☒ (estimated: ☒) or Well Location ☐ Lat. _____ ' _____ " Long. _____ ' _____ " or St. Plane _____ ft. N. _____ ft. E. S/C/N		Date Well Installed 07/22/2011	
Facility ID		Section Location of Waste/Source 1/4 of _____ 1/4 of Sec. _____ T. _____ N. R. _____ ☐ E ☐ W		Well Installed By: (Person's Name and Firm) Jeffrey Crank	
Type of Well Well Code 12/pz		Location of Well Relative to Waste/Source u ☐ Upgradient s ☐ Sidegradient d ☒ Downgradient n ☐ Not Known		Gov. Lot Number	
Distance from Waste/Source ft. _____ IL				Roberts Environmental Drilling, Inc.	

A. Protective pipe, top elevation	412.84 ft. MSL	1. Cap and lock?	☒ Yes ☐ No
B. Well casing, top elevation	412.50 ft. MSL	2. Protective cover pipe:	
C. Land surface elevation	412.8 ft. MSL	a. Inside diameter:	8.0 in.
D. Surface seal, bottom	410.8 ft. MSL or 2.0 ft.	b. Length:	1.0 ft.
12. USCS classification of soil near screen: GP ☐ GM ☐ GC ☐ GW ☐ SW ☒ SP ☐ SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐ Bedrock ☐		c. Material:	Steel ☒ Other ☐
13. Sieve analysis attached?	☐ Yes ☒ No	d. Additional protection?	☐ Yes ☒ No
14. Drilling method used:	Rotary ☐ Hollow Stem Auger ☒ Other ☐	If yes, describe:	
15. Drilling fluid used: Water ☒ 0.2 Air ☐ Drilling Mud ☐ 0.3 None ☐		3. Surface seal:	Bentonite ☐ Concrete ☒ Other ☐
16. Drilling additives used? ☐ Yes ☒		4. Material between well casing and protective pipe:	Bentonite ☐ Bentonite Chips ☒ Other ☐
Describe _____		5. Annular space seal:	a. Granular/Chipped Bentonite ☐ b. _____ Lbs/gal mud weight ... Bentonite-sand slurry ☐ c. _____ Lbs/gal mud weight ... Bentonite slurry ☐ d. 30 % Bentonite ... Bentonite-cement grout ☒ e. 11.4 Ft ³ volume added for any of the above f. How installed: Tremie ☒ Tremie pumped ☐ Gravity ☐
17. Source of water (attach analysis, if required): Potable Water		6. Bentonite seal:	a. Bentonite granules ☐ b. ☐ 1/4 in. ☐ 3/8 in. ☐ 1/2 in. Bentonite chips ☐ c. Baroid: Quick-Gel; Bentonite Slurry ☒ Other ☐
E. Bentonite seal, top	380.8 ft. MSL or 32.0 ft.	7. Fine sand material: Manufacturer, product name & mesh size	
F. Fine sand, top	_____ ft. MSL or _____ ft.	a. _____ ft ³	
G. Filter pack, top	375.8 ft. MSL or 37.0 ft.	b. Volume added _____ ft ³	
H. Screen joint, top	368.8 ft. MSL or 44.0 ft.	8. Filter pack material: Manufacturer, product name & mesh size	
I. Well bottom	363.8 ft. MSL or 49.0 ft.	a. Unimin: Filtersil; Filtration Sand and Gravel, 4-200 mesh	
J. Filter pack, bottom	363.8 ft. MSL or 49.0 ft.	b. Volume added 2.8 ft ³	
K. Borehole, bottom	363.3 ft. MSL or 49.5 ft.	9. Well casing:	Flush threaded PVC schedule 40 ☒ Flush threaded PVC schedule 80 ☐ Other ☐
L. Borehole, diameter	8.3 in.	10. Screen material:	Schedule 40 PVC
M. O.D. well casing	2.38 in.	a. Screen Type:	Factory cut ☒ Continuous slot ☐ Other ☐
N. I.D. well casing	2.07 in.	b. Manufacturer _____	
		c. Slot size:	0.100 in.
		d. Slotted length:	5.0 ft.
		11. Backfill material (below filter pack):	None ☐ Slough: Unconsolidated Native Material ☒ Other ☐

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Date Modified: 8/1/2011

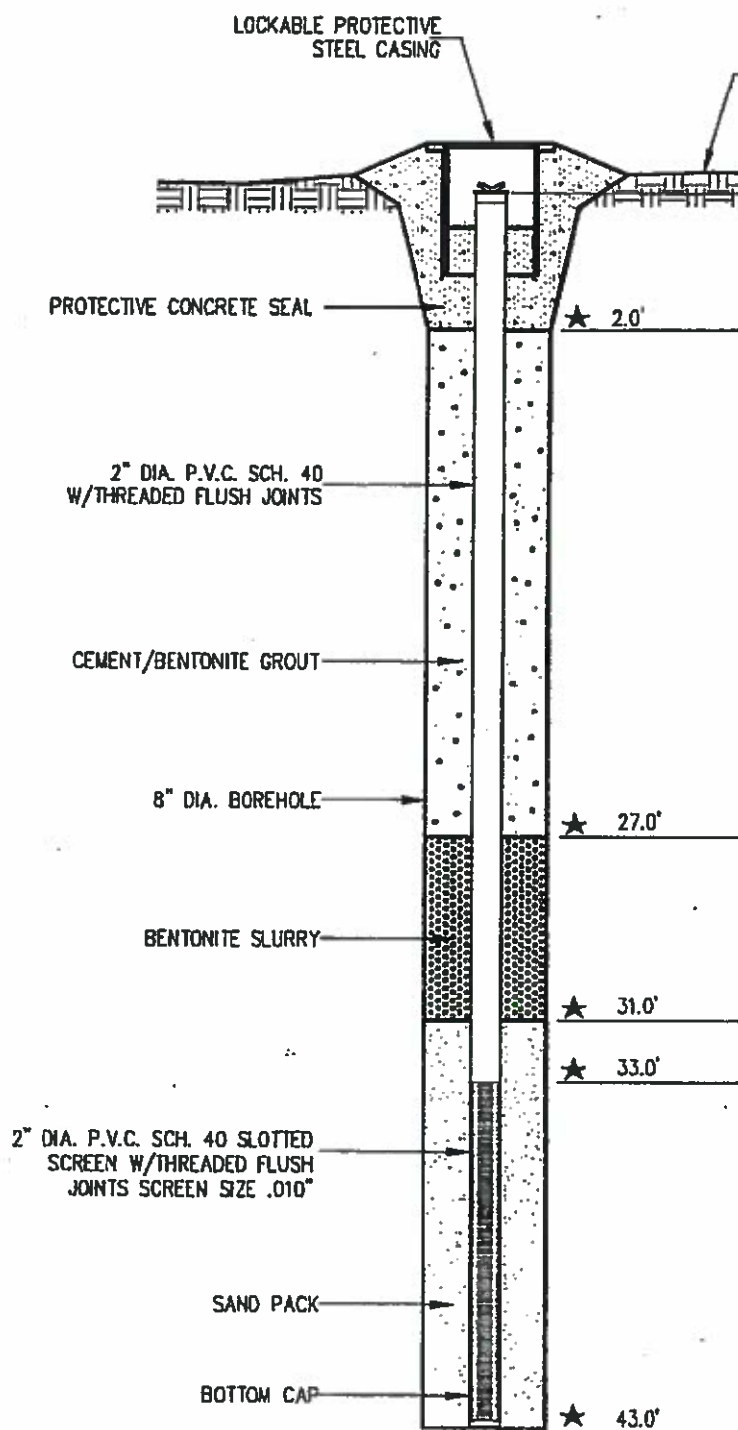
Signature

Firm

Natural Resource Technology
23713 W. Paul Road Pewaukee, WI 53072

Tel: 262.523.9000

Fax: 262.523.9001



WELL NUMBER MW-8
 DATE DRILLED 7-02-89
 DATE INSTALLED 7-02-89
 DRILLER WESTERN ENV. SERVICES
 DRILLING METHOD HOLLOW STEM AUGER
 COORDINATES _____
 GEOLOGIST/ENGINEER BRETT CARNEY
 VERTICAL DATUM: X
 ASSUMED _____ U.S.G.S. X
 ★ DEPTH BELOW GROUND SURFACE

NOT TO SCALE

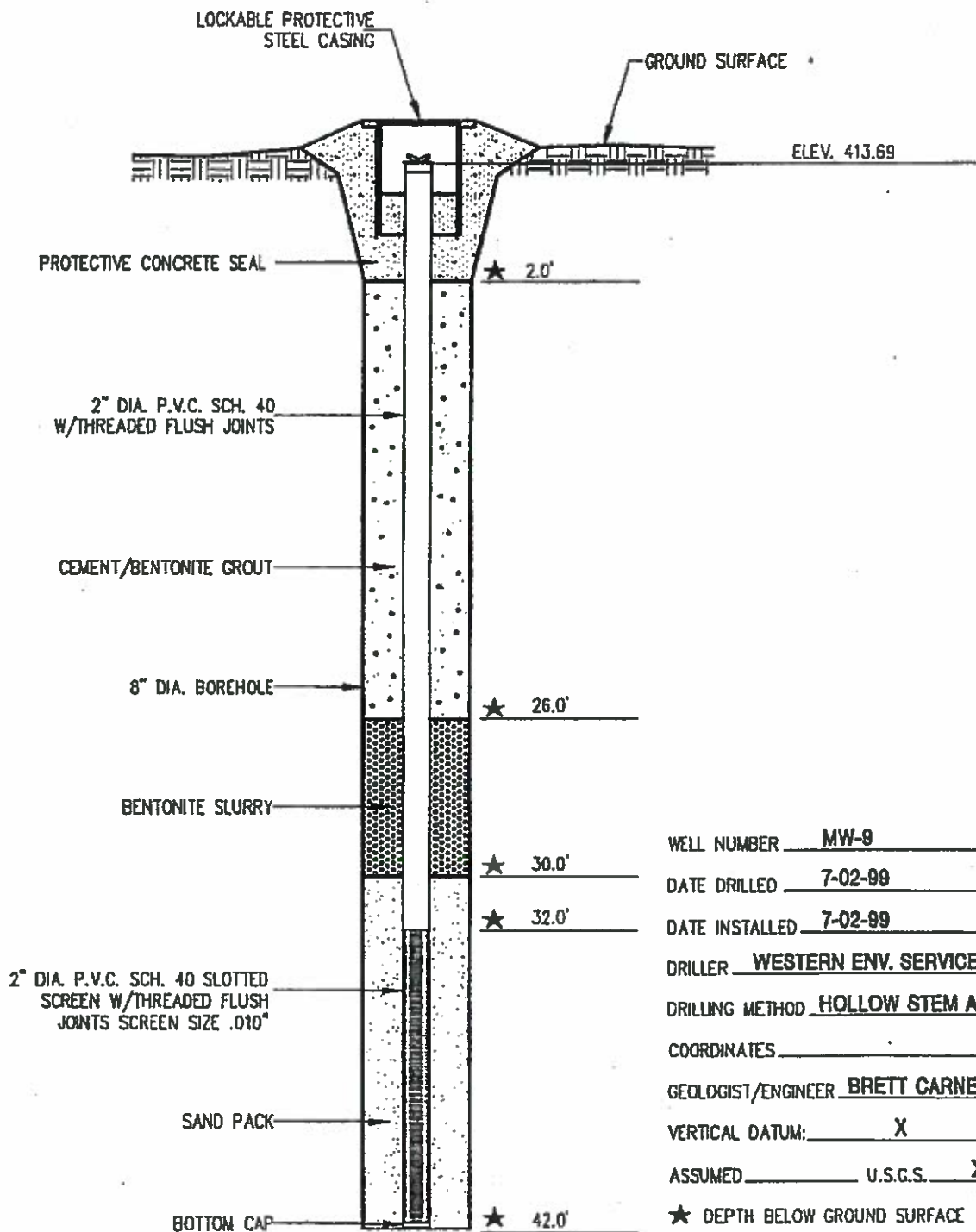


MONITORING WELL MW-8

HYDROGEOLOGICAL INVESTIGATION
 VENICE POWER PLANT
 AMEREN SERVICES
 VENICE, ILLINOIS

JOB NO. 95S3085B

APPENDIX B-9



WELL NUMBER MW-9
 DATE DRILLED 7-02-99
 DATE INSTALLED 7-02-99
 DRILLER WESTERN ENV. SERVICES
 DRILLING METHOD HOLLOW STEM AUGER
 COORDINATES _____
 GEOLOGIST/ENGINEER BRETT CARNEY
 VERTICAL DATUM: X
 ASSUMED _____ U.S.G.S. X
 ★ DEPTH BELOW GROUND SURFACE

NOT TO SCALE



MONITORING WELL MW-9

HYDROGEOLOGICAL INVESTIGATION
 VENICE POWER PLANT
 AMEREN SERVICES
 VENICE, ILLINOIS

JOB NO. 95S3085B

APPENDIX B-11

Well Development Records

MONITORING WELL DEVELOPMENT

Facility/Project Name Ameren - Venice Power Plant	County	Well Name MW-2D	
Facility License, Permit or Monitoring Number	State IL	Unique Well Number	Well Number

1. Can this well be purged dry? ☐ Yes ☒ No

2. Well development method:

- ☐ 4 1 surged with bailer and bailed
☐ 6 1 surged with bailer and pumped
☐ 4 2 surged with block and bailed
☐ 6 2 surged with block and pumped
☐ 7 0 surged with block, bailed, and pumped
☒ 2 0 compressed air
☐ 1 0 bailed only
☐ 5 1 pumped only
☐ 5 0 pumped slowly
☐ other _____

3. Time spent developing well **80.0 min.**

4. Depth of well (from top of well casing) **47.5 ft.**

5. Inside diameter of well **2.067 in.**

6. Volume of water in filter pack and well casing **12.6 gal.**

7. Volume of water removed from well **130.0 gal.**

8. Volume of water added (if any) **0.0 gal.**

9. Source of water added not applicable

10. Analysis performed on water added? ☐ Yes ☒ No
(If yes, attach results)

17. Additional comments on development:

Turbidity in well was initially dark grayish brown with fine sands. After 15 minutes of purging well turbidity became cloudy tan. After approximately 40 minutes of purging turbidity became a slight cloudy light tan. Purged for 10 well volumes.

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. 7.22 ft.	7.46 ft.
Date	b. 8/4/2011	8/4/2011
Time	c. 04:38 ☐ a.m. ☒ p.m.	05:58 ☐ a.m. ☒ p.m.
12. Sediment in well bottom	inches	inches
13. Water clarity	Clear ☐ 1 0 Turbid ☒ 1 5 (Describe) <u>Dark Grayish</u> <u>Brown with Fine</u> <u>Sand. After 5</u> <u>minutes of Purging</u> <u>Tan and Cloudy</u>	Clear ☐ 2 0 Turbid ☒ 2 5 (Describe) <u>Slight Light Tan</u> <u>Cloudiness</u>

Fill in if drilling fluids were used and well is at solid waste facility:

14. Total suspended solids **mg/l**

15. COD **mg/l**

16. Well developed by: Person's Name and Firm

Jacob Walczak

Natural Resource Technology

Facility Address or Owner/Responsible Party Address

Name: _____

Firm: Ameren

Street: 701 Main Street

City/State/Zip: Venice, IL 62090

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature: _____

Print Name: Jacob Walczak

Firm: Natural Resource Technology

MONITORING WELL DEVELOPMENT

Facility/Project Name Ameren - Venice Power Plant	County	Well Name MW-3D	
Facility License, Permit or Monitoring Number	State IL	Unique Well Number	Well Number

1. Can this well be purged dry? ☐ Yes ☒ No

2. Well development method:

- surged with bailer and bailed ☐ 4 1
- surged with bailer and pumped ☐ 6 1
- surged with block and bailed ☐ 4 2
- surged with block and pumped ☐ 6 2
- surged with block, bailed, and pumped ☐ 7 0
- compressed air ☒ 2 0
- bailed only ☐ 1 0
- pumped only ☐ 5 1
- pumped slowly ☐ 5 0
- other ☐

3. Time spent developing well **38.0 min.**

4. Depth of well (from top of well casing) **47.3 ft.**

5. Inside diameter of well **2.067 in.**

6. Volume of water in filter pack and well casing **14.8 gal.**

7. Volume of water removed from well **40.0 gal.**

8. Volume of water added (if any) **0.0 gal.**

9. Source of water added not applicable

10. Analysis performed on water added? ☐ Yes ☒ No
(If yes, attach results)

17. Additional comments on development:

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. 8.04 ft.	8.04 ft.
Date	b. 7/22/2011	7/22/2011
Time	c. 01:41 ☐ a.m. ☒ p.m.	02:19 ☐ a.m. ☒ p.m.

12. Sediment in well bottom inches inches

13. Water clarity	Clear ☐ 1 0	Clear ☒ 2 0
	Turbid ☒ 1 5	Turbid ☐ 2 5
	(Describe) <u>Dark Tannish</u>	(Describe) <u>Cloudy</u>
	<u>Brown</u>	<u>Immediately After</u>
	<u> </u>	<u>Surge than Clear</u>
	<u> </u>	<u> </u>
	<u> </u>	<u> </u>

Fill in if drilling fluids were used and well is at solid waste facility:

14. Total suspended solids mg/l mg/l

15. COD mg/l mg/l

16. Well developed by: Person's Name and Firm

Jacob Walczak

Natural Resource Technology

Facility Address or Owner/Responsible Party Address

Name:

Firm: Ameren

Street: 701 Main Street

City/State/Zip: Venice, IL 62090

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature:

Print Name: Jacob Walczak

Firm: Natural Resource Technology



MONITORING WELL DEVELOPMENT

Facility/Project Name Ameren - Venice Power Plant		County	Well Name MW-6D																					
Facility License, Permit or Monitoring Number		State IL	Unique Well Number	Well Number																				
1. Can this well be purged dry? ☐ Yes ☒ No 2. Well development method: <table><tr><td>surged with bailer and bailed</td><td>☐ 4 1</td></tr><tr><td>surged with bailer and pumped</td><td>☐ 6 1</td></tr><tr><td>surged with block and bailed</td><td>☐ 4 2</td></tr><tr><td>surged with block and pumped</td><td>☐ 6 2</td></tr><tr><td>surged with block, bailed, and pumped</td><td>☐ 7 0</td></tr><tr><td>compressed air</td><td>☒ 2 0</td></tr><tr><td>bailed only</td><td>☐ 1 0</td></tr><tr><td>pumped only</td><td>☐ 5 1</td></tr><tr><td>pumped slowly</td><td>☐ 5 0</td></tr><tr><td>other</td><td>☐ </td></tr></table>		surged with bailer and bailed	☐ 4 1	surged with bailer and pumped	☐ 6 1	surged with block and bailed	☐ 4 2	surged with block and pumped	☐ 6 2	surged with block, bailed, and pumped	☐ 7 0	compressed air	☒ 2 0	bailed only	☐ 1 0	pumped only	☐ 5 1	pumped slowly	☐ 5 0	other	☐	11. Depth to Water (from top of well casing) a. 30.95 ft. 30.95 ft. Date b. 7/22/2011 7/22/2011 Time c. ☐ a.m. ☒ p.m. ☐ a.m. ☒ p.m. 12. Sediment in well bottom inches inches 13. Water clarity Clear ☐ 1 0 Clear ☒ 2 0 Turbid ☒ 1 5 Turbid ☐ 2 5 (Describe) (Describe) Very Light Tan Clear Immediately After Surge Fill in if drilling fluids were used and well is at solid waste facility: 14. Total suspended solids mg/l mg/l 15. COD mg/l mg/l 16. Well developed by: Person's Name and Firm Jacob Walczak Natural Resource Technology		
surged with bailer and bailed	☐ 4 1																							
surged with bailer and pumped	☐ 6 1																							
surged with block and bailed	☐ 4 2																							
surged with block and pumped	☐ 6 2																							
surged with block, bailed, and pumped	☐ 7 0																							
compressed air	☒ 2 0																							
bailed only	☐ 1 0																							
pumped only	☐ 5 1																							
pumped slowly	☐ 5 0																							
other	☐																							
3. Time spent developing well 28.0 min.																								
4. Depth of well (from top of well casing) 68.6 ft.																								
5. Inside diameter of well 2.067 in.																								
6. Volume of water in filter pack and well casing 18.6 gal.																								
7. Volume of water removed from well 20.0 gal.																								
8. Volume of water added (if any) 0.0 gal.																								
9. Source of water added not applicable																								
10. Analysis performed on water added? ☐ Yes ☒ No (If yes, attach results)																								
17. Additional comments on development:																								

Facility Address or Owner/Responsible Party Address	I hereby certify that the above information is true and correct to the best of my knowledge.
Name: -	Signature: _____
Firm: Ameren	Print Name: Jacob Walczak
Street: 701 Main Street	Firm: Natural Resource Technology
City/State/Zip: Venice, IL 62090	

MONITORING WELL DEVELOPMENT

Facility/Project Name Ameren - Venice Power Plant	County	Well Name MW-10
Facility License, Permit or Monitoring Number	State IL	Unique Well Number
		Well Number

1. Can this well be purged dry? ☒ Yes ☐ No

2. Well development method:

- | | |
|---------------------------------------|--|
| surged with bailer and bailed | ☐ 4 1 |
| surged with bailer and pumped | ☐ 6 1 |
| surged with block and bailed | ☐ 4 2 |
| surged with block and pumped | ☐ 6 2 |
| surged with block, bailed, and pumped | ☐ 7 0 |
| compressed air | ☒ 2 0 |
| bailed only | ☐ 1 0 |
| pumped only | ☐ 5 1 |
| pumped slowly | ☐ 5 0 |
| other | ☐ <u> </u> |

3. Time spent developing well **40.0 min.**

4. Depth of well (from top of well casing) **44.0 ft.**

5. Inside diameter of well **2.067 in.**

6. Volume of water in filter pack and well casing **14.0 gal.**

7. Volume of water removed from well **18.0 gal.**

8. Volume of water added (if any) **0.0 gal.**

9. Source of water added not applicable

10. Analysis performed on water added? ☐ Yes ☒ No
(If yes, attach results)

17. Additional comments on development:

Water slowly recharges when purging is discontinued. 8/4/2011 - Third attempt at developing well was successful using air lift method. 7/22/2011 - First attempt was not successful (13 gallons of water removed then stopped producing water). 8/4/2011 - Second attempt whaler pump malfunctioned likely due to overload of silt in pump (12 gallons of water removed prior to pump failure).

		Before Development	After Development
11. Depth to Water (from top of well casing)	a.	18.63 ft.	20.02 ft.
Date	b.	8/4/2011	8/4/2011
Time	c.	☐ a.m. 12:56 ☒ p.m.	☐ a.m. 01:36 ☒ p.m.
12. Sediment in well bottom		inches	inches
13. Water clarity		Clear ☐ 1 0 Turbid ☒ 1 5 (Describe) <u>Dark Grayish Brown</u>	Clear ☒ 2 0 Turbid ☐ 2 5 (Describe) <u>Slightly Cloudy Immediately After Surge Then Clear</u>

Fill in if drilling fluids were used and well is at solid waste facility:

14. Total suspended solids mg/l mg/l

15. COD mg/l mg/l

16. Well developed by: Person's Name and Firm

Jacob Walczak

Natural Resource Technology

Facility Address or Owner/Responsible Party Address

Name:

Firm: Ameren

Street: 701 Main Street

City/State/Zip: Venice, IL 62090

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature:

Print Name: Jacob Walczak

Firm: Natural Resource Technology



MONITORING WELL DEVELOPMENT

Facility/Project Name Ameren - Venice Power Plant	County	Well Name MW-11
Facility License, Permit or Monitoring Number	State IL	Unique Well Number Well Number

1. Can this well be purged dry? ☐ Yes ☒ No

2. Well development method:

- | | |
|---------------------------------------|--|
| surged with bailer and bailed | ☐ 4 1 |
| surged with bailer and pumped | ☐ 6 1 |
| surged with block and bailed | ☐ 4 2 |
| surged with block and pumped | ☐ 6 2 |
| surged with block, bailed, and pumped | ☐ 7 0 |
| compressed air | ☒ 2 0 |
| bailed only | ☐ 1 0 |
| pumped only | ☐ 5 1 |
| pumped slowly | ☐ 5 0 |
| other | ☐ <u> </u> |

3. Time spent developing well 30.0 min.

4. Depth of well (from top of well casing) 29.0 ft.

5. Inside diameter of well 2.067 in.

6. Volume of water in filter pack and well casing 19.7 gal.

7. Volume of water removed from well 20.0 gal.

8. Volume of water added (if any) 0.0 gal.

9. Source of water added not applicable

10. Analysis performed on water added? ☐ Yes ☒ No
(If yes, attach results)

17. Additional comments on development:
Water was clear after 10 minutes of purging.

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. 6.28 ft.	6.42 ft.
Date	b. 8/4/2011	8/4/2011
Time	c. ☐ a.m. 02:54 ☒ p.m.	☐ a.m. 03:24 ☒ p.m.
12. Sediment in well bottom	inches	inches
13. Water clarity	Clear ☐ 1 0 Turbid ☒ 1 5 (Describe) <u>Tan to Brown</u>	Clear ☒ 2 0 Turbid ☐ 2 5 (Describe) <u>Clear Immediately After Surge</u>

Fill in if drilling fluids were used and well is at solid waste facility:

14. Total suspended solids mg/l mg/l

15. COD mg/l mg/l

16. Well developed by: Person's Name and Firm

Jacob Walczak

Natural Resource Technology

Facility Address or Owner/Responsible Party Address

Name:

Firm: Ameren

Street: 701 Main Street

City/State/Zip: Venice, IL 62090

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature:

Print Name: Jacob Walczak

Firm: Natural Resource Technology

Monitoring Well Abandonment Records



WELL/DRILLHOLE/BOREHOLE ABANDONMENT

(1) GENERAL INFORMATION		(2) FACILITY /OWNER INFORMATION			
Unique Well No.	Well ID No.	County	Facility Name		
			Ameren - Venice Power Plant		
Common Well Name <u>MW-1</u> Gov't Lot (if applicable)		Facility ID	License/Permit/Monitoring No.		
Grid Location 1/4 of 1/4 of Sec. ; T. R. ft. ☐ N. ☐ S. ft. ☐ E. ☐ W. Local Grid Origin ☒ (estimated: ☒) or Well Location ☐ Lat ° ' " Long ° ' " or State Plane ft. N. ft. E.		Street Address of Well <u>701 Main St</u> City, Village, or Town <u>Venice</u>			
Reason For Abandonment <u>Monitoring Network Adjustment</u>		Present Well Owner	Original Owner <u>Ameren</u>		
Unique Well No. of Replacement Well		Street Address or Route of Owner <u>701 Main Street</u> City, State, Zip Code <u>Venice, IL 62090</u>			
(3) WELL/DRILLHOLE/BOREHOLE INFORMATION		(4) PUMP, LINER, SCREEN, CASING, & SEALING MATERIAL			
Original Construction Date <u>4/16/1996</u> ☒ Monitoring Well ☐ Water Well ☐ Drillhole / Borehole Construction Type: ☒ Drilled ☐ Driven (Sandpoint) ☐ Dug ☐ Other (Specify) _____ Formation Type: ☒ Unconsolidated Formation ☐ Bedrock Total Well Depth (ft) <u>43.5</u> Casing Diameter (in.) <u>2.00</u> (From ground surface) Casing Depth (ft.) <u>43.5</u> Lower Drillhole Diameter (in.) <u>8.3</u> Was Well Annular Space Grouted? ☐ Yes ☐ No ☒ Unknown If Yes, To What Depth? _____ Feet Depth to Water (Feet) _____		Pump & Piping Removed? ☐ Yes ☐ No ☒ Not Applicable Liner(s) Removed? ☐ Yes ☒ No ☐ Not Applicable Screen Removed? ☐ Yes ☒ No ☐ Not Applicable Casing Left in Place? ☒ Yes ☐ No Was Casing Cut Off Below Surface? ☒ Yes ☐ No Did Sealing Material Rise to Surface? ☒ Yes ☐ No Did Material Settle After 24 Hours? ☐ Yes ☒ No If Yes, Was Hole Retopped? ☐ Yes ☒ No Required Method of Placing Sealing Material ☒ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped ☐ Screened & Poured ☐ Other (Explain) (Bentonite Chips) Sealing Materials ☒ Neat Cement Grout ☐ Sand-Cement (Concrete) Grout ☐ Concrete ☐ Clay-Sand Slurry ☐ Bentonite-Sand Slurry ☐ Chipped Bentonite			
(5) Sealing Material Used		From (Ft.)	To (Ft.)	Sacks Sealant	Mix Ratio or Mud Weight
Type III Portland Cement		Surface	43.5	1.75	6 gal water to 94 lbs of cement
(6) Comments _____					
(7) Name of Person or Firm Doing Sealing Work <u>Natural Resource Technology, Inc.</u>		Date of Abandonment <u>7/19/11</u>			
Signature of Person Doing Work		Date Signed <u>7/13/12</u>			
Street or Route <u>23713 W. Paul Road</u>		Telephone Number			
City, State, Zip Code <u>Pewaukee, WI 53072</u>					

Comments



WELL/DRILLHOLE/BOREHOLE ABANDONMENT

(1) GENERAL INFORMATION		(2) FACILITY /OWNER INFORMATION			
Unique Well No.	Well ID No.	Facility Name Ameren - Venice Power Plant			
Common Well Name MW-2P Gov't Lot (if applicable)		Facility ID	License/Permit/Monitoring No.		
Grid Location 1/4 of 1/4 of Sec. ; T. R. ft. ☐ N. ☐ S. ft. ☐ E. ☐ W. Local Grid Origin ☒ (estimated: ☒) or Well Location ☐ Lat ° ' " Long ° ' " or S C N State Plane ft. N. ft. E.		Street Address of Well 701 Main St City, Village, or Town Venice Present Well Owner Original Owner Ameren			
Reason For Abandonment Monitoring Network Adjustment of Replacement Well		Street Address or Route of Owner 701 Main Street City, State, Zip Code Venice, IL 62090			
(3) WELL/DRILLHOLE/BOREHOLE INFORMATION		(4) PUMP, LINER, SCREEN, CASING, & SEALING MATERIAL			
Original Construction Date 6/30/1999 ☒ Monitoring Well ☐ Water Well ☐ Drillhole / Borehole Construction Type: ☒ Drilled ☐ Driven (Sandpoint) ☐ Dug ☐ Other (Specify) Formation Type: ☒ Unconsolidated Formation ☐ Bedrock Total Well Depth (ft) 18.0 Casing Diameter (in.) 2.00 (From ground surface) Casing Depth (ft.) 18.0 Lower Drillhole Diameter (in.) 8.3 Was Well Annular Space Grouted? ☐ Yes ☒ No ☐ Unknown If Yes, To What Depth? Feet Depth to Water (Feet)		Pump & Piping Removed? ☐ Yes ☐ No ☒ Not Applicable Liner(s) Removed? ☒ Yes ☐ No ☐ Not Applicable Screen Removed? ☒ Yes ☐ No ☐ Not Applicable Casing Left in Place? ☐ Yes ☒ No Was Casing Cut Off Below Surface? ☐ Yes ☒ No Did Sealing Material Rise to Surface? ☒ Yes ☐ No Did Material Settle After 24 Hours? ☐ Yes ☒ No If Yes, Was Hole Retopped? ☐ Yes ☒ No Required Method of Placing Sealing Material ☒ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped ☐ Screened & Poured ☐ Other (Explain) (Bentonite Chips) Sealing Materials ☒ Neat Cement Grout ☐ Sand-Cement (Concrete) Grout ☐ Concrete ☐ Clay-Sand Slurry ☐ Bentonite-Sand Slurry ☐ Chipped Bentonite			
(5) Sealing Material Used		From (Ft.)	To (Ft.)	Sacks Sealant	Mix Ratio or Mud Weight
Type III Portland Cement		Surface	18.0	0.75	6 gal water to 94 lbs of cement
(6) Comments					
(7) Name of Person or Firm Doing Sealing Work Natural Resource Technology, Inc.		Date of Abandonment 7/19/11			
Signature of Person Doing Work		Date Signed 7/13/12			
Street or Route 23713 W. Paul Road		Telephone Number			
City, State, Zip Code Pewaukee, WI 53072					

Comments:



WELL/DRILLHOLE/BOREHOLE ABANDONMENT

(1) GENERAL INFORMATION		(2) FACILITY /OWNER INFORMATION			
Unique Well No.	Well ID No.	Facility Name			
		Ameren - Venice Power Plant			
Common Well Name	Gov't Lot (if applicable)	Facility ID	License/Permit/Monitoring No.		
MW-5P					
Grid Location		Street Address of Well			
1/4 of 1/4 of Sec. ; T. R.		701 Main St			
ft. ☐ N. ☐ S. ft. ☐ E. ☐ W.		City, Village, or Town			
Local Grid Origin ☒ (estimated: ☒) or Well Location ☐		Venice			
Lat ° ' " Long ° ' " or S C N		Present Well Owner	Original Owner		
State Plane ft. N. ft. E.			Ameren		
Reason For Abandonment		Street Address or Route of Owner			
Monitoring Network Adjustment	Unique Well No. of Replacement Well	701 Main Street			
		City, State, Zip Code			
		Venice, IL 62090			
(3) WELL/DRILLHOLE/BOREHOLE INFORMATION		(4) PUMP, LINER, SCREEN, CASING, & SEALING MATERIAL			
Original Construction Date 7/1/1999		Pump & Piping Removed? ☐ Yes ☐ No ☒ Not Applicable			
☒ Monitoring Well		Liner(s) Removed? ☐ Yes ☒ No ☐ Not Applicable			
☐ Water Well		Screen Removed? ☐ Yes ☒ No ☐ Not Applicable			
☐ Drillhole / Borehole		Casing Left in Place? ☒ Yes ☐ No			
If a Well Construction Report is available, please attach.		Was Casing Cut Off Below Surface? ☒ Yes ☐ No			
Construction Type:		Did Sealing Material Rise to Surface? ☒ Yes ☐ No			
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug		Did Material Settle After 24 Hours? ☐ Yes ☒ No			
☐ Other (Specify)		If Yes, Was Hole Retopped? ☐ Yes ☒ No			
Formation Type:		Required Method of Placing Sealing Material			
☒ Unconsolidated Formation ☐ Bedrock		☒ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped			
Total Well Depth (ft) 18.5 Casing Diameter (in.) 2.00		☐ Screened & Poured ☐ Other (Explain)			
(From ground surface) Casing Depth (ft.) 18.5		(Bentonite Chips)			
Lower Drillhole Diameter (in.) 8.3		Sealing Materials			
Was Well Annular Space Grouted? ☐ Yes ☒ No ☐ Unknown		☒ Neat Cement Grout			
If Yes, To What Depth? Feet		☐ Sand-Cement (Concrete) Grout			
Depth to Water (Feet)		☐ Concrete			
		☐ Clay-Sand Slurry			
		☐ Bentonite-Sand Slurry			
		☐ Chipped Bentonite			
(5)	Sealing Material Used	From (Ft.)	To (Ft.)	Sacks Sealant	Mix Ratio or Mud Weight
	Type III Portland Cement	Surface	18.5	0.75	6 gal water to 94 lbs of cement
(6) Comments					
(7) Name of Person or Firm Doing Sealing Work		Date of Abandonment			
Natural Resource Technology, Inc.		7/19/11			
Signature of Person Doing Work		Date Signed			
		7/13/12			
Street or Route		Telephone Number			
23713 W. Paul Road					
City, State, Zip Code					
Pewaukee, WI 53072					



WELL/DRILLHOLE/BOREHOLE ABANDONMENT

(1) GENERAL INFORMATION		(2) FACILITY /OWNER INFORMATION			
Unique Well No.	Well ID No.	County	Facility Name		
Common Well Name <u>MW-8P</u>		Gov't Lot (if applicable)	Ameren - Venice Power Plant		
Grid Location ____ 1/4 of ____ 1/4 of Sec. ____ ; T. ____ R. ____ ____ ft. ☐ N. ☐ S., ____ ft. ☐ E. ☐ W.		Facility ID	License/Permit/Monitoring No.		
Local Grid Origin ☒ (estimated: ☒) or Well Location ☐		Street Address of Well			
Lat ____ ° ____ ' ____ " Long ____ ° ____ ' ____ " or S C N		701 Main St			
State Plane ____ ft. N. ____ ft. E.		City, Village, or Town			
Reason For Abandonment		Venice			
Monitoring Network Adjustment	Unique Well No.	Present Well Owner	Original Owner		
	of Replacement Well	Ameren			
		Street Address or Route of Owner			
		701 Main Street			
		City, State, Zip Code			
		Venice, IL 62090			
(3) WELL/DRILLHOLE/BOREHOLE INFORMATION		(4) PUMP, LINER, SCREEN, CASING, & SEALING MATERIAL			
Original Construction Date <u>7/2/1999</u>		Pump & Piping Removed? ☐ Yes ☐ No ☒ Not Applicable			
☒ Monitoring Well		Liner(s) Removed? ☒ Yes ☐ No ☐ Not Applicable			
☐ Water Well		Screen Removed? ☒ Yes ☐ No ☐ Not Applicable			
☐ Drillhole / Borehole		Casing Left in Place? ☐ Yes ☒ No			
If a Well Construction Report is available, please attach.		Was Casing Cut Off Below Surface? ☐ Yes ☒ No			
Construction Type:		Did Sealing Material Rise to Surface? ☒ Yes ☐ No			
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug		Did Material Settle After 24 Hours? ☐ Yes ☒ No			
☐ Other (Specify) _____		If Yes, Was Hole Retopped? ☐ Yes ☒ No			
Formation Type:		Required Method of Placing Sealing Material			
☒ Unconsolidated Formation ☐ Bedrock		☒ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped			
Total Well Depth (ft) <u>16.0</u> Casing Diameter (in.) <u>2.00</u>		☐ Screened & Poured ☐ Other (Explain)			
(From ground surface)		(Bentonite Chips)			
Casing Depth (ft.) <u>16.0</u>		Sealing Materials			
Lower Drillhole Diameter (in.) <u>8.3</u>		☒ Neat Cement Grout			
Was Well Annular Space Grouted? ☐ Yes ☒ No ☐ Unknown		☐ Sand-Cement (Concrete) Grout			
If Yes, To What Depth? _____ Feet		☐ Concrete			
Depth to Water (Feet) <u>12.3</u>		☐ Clay-Sand Slurry			
		☐ Bentonite-Sand Slurry			
		☐ Chipped Bentonite			
(5) Sealing Material Used		From (Ft.)	To (Ft.)	Sacks Sealant	Mix Ratio or Mud Weight
Type III Portland Cement		Surface	12.5	0.5	6 gal water to 94 lbs of cement
(6) Comments <u>Once casing was removed slough immediately backfilled from 16.5 to 12.5'</u>					
(7) Name of Person or Firm Doing Sealing Work		Date of Abandonment			
Natural Resource Technology, Inc.		8/4/11			
Signature of Person Doing Work		Date Signed			
		7/13/12			
Street or Route		Telephone Number			
23713 W. Paul Road					
City, State, Zip Code					
Pewaukee, WI 53072					

Comments:



WELL/DRILLHOLE/BOREHOLE ABANDONMENT

(1) GENERAL INFORMATION			(2) FACILITY /OWNER INFORMATION			
Unique Well No.	Well ID No.	County	Facility Name Ameren - Venice Power Plant			
Common Well Name <u>MW-9P</u> Gov't Lot (if applicable)			Facility ID	License/Permit/Monitoring No.		
Grid Location ____ 1/4 of ____ 1/4 of Sec. ____ ; T. ____ R. ____ ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W. Local Grid Origin ☒ (estimated: ☒) or Well Location ☐ Lat ____ ° ____ ' ____ " Long ____ ° ____ ' ____ " or State Plane ____ ft. N. ____ ft. E.			Street Address of Well 701 Main St City, Village, or Town Venice Present Well Owner Original Owner Ameren			
Reason For Abandonment Monitoring Network Adjustment			City, State, Zip Code Venice, IL 62090			
Unique Well No. of Replacement Well						
(3) WELL/DRILLHOLE/BOREHOLE INFORMATION			(4) PUMP, LINER, SCREEN, CASING, & SEALING MATERIAL			
Original Construction Date <u>7/2/1999</u> ☒ Monitoring Well ☐ Water Well ☐ Drillhole / Borehole Construction Type: ☒ Drilled ☐ Driven (Sandpoint) ☐ Dug ☐ Other (Specify) _____ Formation Type: ☒ Unconsolidated Formation ☐ Bedrock Total Well Depth (ft) <u>16.0</u> Casing Diameter (in.) <u>2.00</u> (From ground surface) Casing Depth (ft.) <u>16.0</u> Lower Drillhole Diameter (in.) <u>8.3</u> Was Well Annular Space Grouted? ☐ Yes ☒ No ☐ Unknown If Yes, To What Depth? _____ Feet Depth to Water (Feet) <u>9.1</u>			Pump & Piping Removed? ☐ Yes ☐ No ☒ Not Applicable Liner(s) Removed? ☒ Yes ☐ No ☐ Not Applicable Screen Removed? ☒ Yes ☐ No ☐ Not Applicable Casing Left in Place? ☐ Yes ☒ No Was Casing Cut Off Below Surface? ☐ Yes ☒ No Did Sealing Material Rise to Surface? ☒ Yes ☐ No Did Material Settle After 24 Hours? ☐ Yes ☒ No If Yes, Was Hole Retopped? ☐ Yes ☒ No Required Method of Placing Sealing Material ☒ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped ☐ Screened & Poured ☐ Other (Explain) (Bentonite Chips) Sealing Materials ☒ Neat Cement Grout ☐ Sand-Cement (Concrete) Grout ☐ Concrete ☐ Clay-Sand Slurry ☐ Bentonite-Sand Slurry ☐ Chipped Bentonite			
(5) Sealing Material Used			From (Ft.)	To (Ft.)	Sacks Sealant	Mix Ratio or Mud Weight
Type III Portland Cement			Surface	9.0	0.4	6 gal water to 94 lbs of cement
(6) Comments <u>Once casing was removed slough immediately backfilled from 16.7 to 9'.</u>						
(7) Name of Person or Firm Doing Sealing Work Natural Resource Technology, Inc.			Date of Abandonment 8/4/11			
Signature of Person Doing Work			Date Signed 7/13/12			
Street or Route 23713 W. Paul Road			Telephone Number			
City, State, Zip Code Pewaukee, WI 53072						

Comments:



WELL/DRILLHOLE/BOREHOLE ABANDONMENT

(1) GENERAL INFORMATION		(2) FACILITY /OWNER INFORMATION			
Unique Well No.	Well ID No.	County	Facility Name		
Common Well Name <u>MW-AP-1A</u> Gov't Lot (if applicable)		Facility ID	License/Permit/Monitoring No.		
Grid Location ____ 1/4 of ____ 1/4 of Sec. ____ ; T. ____ R. ____ ____ ft. ☐ N. ☐ S., ____ ft. ☐ E. ☐ W.		Street Address of Well <u>701 Main St</u>			
Local Grid Origin ☒ (estimated: ☒) or Well Location ☐		City, Village, or Town <u>Venice</u>			
Lat ____ ° ____ ' ____ " Long ____ ° ____ ' ____ " or S C N		Present Well Owner	Original Owner <u>Ameren</u>		
State Plane ____ ft. N. ____ ft. E.		Street Address or Route of Owner <u>701 Main Street</u>			
Reason For Abandonment <u>Monitoring Network Adjustment</u>	Unique Well No. of Replacement Well	City, State, Zip Code <u>Venice, IL 62090</u>			
(3) WELL/DRILLHOLE/BOREHOLE INFORMATION		(4) PUMP, LINER, SCREEN, CASING, & SEALING MATERIAL			
Original Construction Date <u>9/17/1999</u>		Pump & Piping Removed? ☐ Yes ☐ No ☒ Not Applicable			
☒ Monitoring Well ☐ Water Well ☐ Drillhole / Borehole		Liner(s) Removed? ☒ Yes ☐ No ☐ Not Applicable			
If a Well Construction Report is available, please attach.		Screen Removed? ☒ Yes ☐ No ☐ Not Applicable			
Construction Type: ☒ Drilled ☐ Driven (Sandpoint) ☐ Dug ☐ Other (Specify) _____		Casing Left in Place? ☐ Yes ☒ No			
Formation Type: ☒ Unconsolidated Formation ☐ Bedrock		Was Casing Cut Off Below Surface? ☐ Yes ☒ No			
Total Well Depth (ft) <u>33.0</u> Casing Diameter (in.) <u>2.00</u> (From ground surface) Casing Depth (ft.) <u>33.0</u>		Did Sealing Material Rise to Surface? ☒ Yes ☐ No			
Lower Drillhole Diameter (in.) <u>8.3</u>		Did Material Settle After 24 Hours? ☐ Yes ☒ No			
Was Well Annular Space Grouted? ☐ Yes ☒ No ☐ Unknown		If Yes, Was Hole Retopped? ☐ Yes ☒ No			
If Yes, To What Depth? _____ Feet		Required Method of Placing Sealing Material ☒ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped ☐ Screened & Poured ☐ Other (Explain) (Bentonite Chips)			
Depth to Water (Feet) _____		Sealing Materials ☒ Neat Cement Grout ☐ Sand-Cement (Concrete) Grout ☐ Concrete ☐ Clay-Sand Slurry ☐ Bentonite-Sand Slurry ☐ Chipped Bentonite			
(5)	Sealing Material Used	From (Ft.)	To (Ft.)	Sacks Sealant	Mix Ratio or Mud Weight
	<u>Type III Portland Cement</u>	<u>Surface</u>	<u>33.0</u>	<u>1.25</u>	<u>6 gal water to 94 lbs of cement</u>
(6) Comments _____					
(7) Name of Person or Firm Doing Sealing Work <u>Natural Resource Technology, Inc.</u>		Date of Abandonment <u>7/19/11</u>			
Signature of Person Doing Work _____		Date Signed <u>7/13/12</u>			
Street or Route <u>23713 W. Paul Road</u>		Telephone Number _____			
City, State, Zip Code <u>Pewaukee, WI 53072</u>					

Comments:



Template: NRT ABANDONMENT - Project: 1949 GINT.GPJ



April 26, 2011

Project No. 113-84179

Mr. Glenn Eberhardt, PE
Career Engineer
Dam Safety & Hydro Engineering
Ameren Missouri
3700 S. Lindbergh Blvd., F-604
St. Louis, Missouri 63127

RE: ABANDONMENT OF MONITORING WELLS AT VENICE PLANT

Dear Mr. Eberhardt:

Golder Associates Inc. (Golder) has completed the sealing and abandonment of monitoring wells MW-7P and MW-7 located south of the Venice Power Plant on Terminal Railroad property. The monitoring wells were abandoned in accordance with Illinois Environmental Protection Agency (IEPA) and Illinois Department of Health (IDPH) regulations as outlined in Golder's *Proposal for Abandonment of Monitoring Wells at Venice Plant*, dated March 25, 2011. Abandonment was performed by Layne Western of Fenton, Missouri under supervision of a Golder engineer. Layne Western is a certified contractor for well installation and abandonment. Work was conducted on April 6, 2011.

1.0 WELL SEALING AND ABANDONMENT

Well construction records indicate monitoring well MW-7P was originally installed to a depth of 18 feet below ground surface. The total depth of MW-7P was measured for comparison to construction logs and the well was disinfected using a dilute chlorine solution. The concrete surface completion and the entire length of the MW-7P well casing were removed. The well was grouted with high-solids bentonite grout installed from the bottom of the well using a tremie pipe. The top two feet of the MW-7P hole was backfilled with surrounding soil.

Well construction records indicate monitoring well MW-7 was originally installed to a depth of 40 feet below ground surface and included the addition of cement to the bentonite grout seal. The use of cement during the original grouting procedure allowed for only the concrete surface completion and the top 2.5 feet of well casing to be removed during abandonment. The total depth of MW-7 was measured for comparison to construction logs and the well was chlorinated before sealing. MW-7 was grouted from the bottom up using a high-solids bentonite grout installed through a tremie pipe. The top two feet of the MW-7 hole was backfilled with surrounding soil. The procedure followed during the abandonment of MW-7 was consistent with the Illinois Water Well Construction Code requirements.

The locations of monitoring wells MW-7P and MW-7 are included as Figure 1 attached to this report.

All scrap well materials generated during abandonment were disposed in onsite dumpsters or on scrap piles as directed by plant personnel. No significant amount of soil cuttings were generated during each of the abandonments.

2.0 REPORTING

Layne Western has submitted IDPH well abandonment forms to the Madison County Department of Health as required. Copies of the completed well abandonment forms are provided as Attachment A.

Golder Associates Inc.
820 S. Main Street, Suite 100
St. Charles, MO 63301 USA
Tel: (636) 724-9191 Fax: (636) 724-9323 www.golder.com

Golder Associates: Operations in Africa, Asia, Australasia, Europe, North America and South America

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3.0 CLOSING

Should any information presented above require additional clarification, please contact the undersigned. Golder appreciates the opportunity to provide engineering support services to Ameren.

GOLDER ASSOCIATES INC.



Jared L. Wehde
Staff Engineer



Mark N. Haddock, P.E., R.G
Senior Engineer
Associate

Attachments:

Figure 1 – Well Abandonment Location Map
Attachment A – Completed IDPH Abandonment Forms

JLW/MNH

FIGURE 1
WELL ABANDONMENT LOCATION MAP



SOURCE: Terraserver Maps, image 2008, accessed March 2011.
 NOTE: Locations are approximate.

1200 0 1200
 SCALE FEET



SCALE	AS SHOWN
DATE	04/07/11
DESIGN	JLW
CADD	JLW
CHECK	MNH
REVIEW	MNH

WELL ABANDONMENT LOCATION MAP

FILE No.	11384179.1
PROJECT No.	113-84179

REV.	0
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PROJECT	Abandonment of Monitoring Wells Ameren Venice, Illinois
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FIGURE

1

ATTACHMENT A
COMPLETED IDPH ABANDONMENT FORMS

Print Form

WELL ID # MW-7

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
626 W. JEFFERSON ST.
SPRINGFIELD, IL 62761

WATER WELL SEALING FORM

PDF FILLABLE/SAVABLE

RETURN ALL COPIES TO IDPH OR
LOCAL HEALTH DEPARTMENT

This form shall be submitted to the Department or the local health department no more than 30 days when a water well boring or monitor log well is sealed. Such wells are to be sealed not more than 30 days after they are abandoned in accordance with the sealing requirements in the Illinois Water Well Construction Code. THE LOCAL HEALTH DEPARTMENT OR REGIONAL PUBLIC HEALTH DEPARTMENT MUST BE NOTIFIED AT LEAST 72 HOURS PRIOR TO SEALING.

1. Ownership (Name of Controlling Party) Ameren UE
2. Well Location: Well Site Address Main Street City Illinois Zip 62090
- Lot # N/A Land I.D.# N/A County Madison Township 2N
- Range 10W Section 2 SW Quarter of the NW Quarter of the SE Quarter
- GPS: North Degrees 38 Minutes 39 Seconds 0.42 West Degrees 90 Minutes 10 Seconds 19.65
- Report decimal minutes to minutes and seconds by multiplying the decimal part of the minutes by 60, e.g. latitude 38 degrees 48.07 minutes N would be latitude 38 degrees 48 minutes 4.2 seconds (0.07 x 60 = 4.2) N. Report GPS coordinates to the nearest 0.1 second.
3. Year Drilled 1999 4. Drilling Permit Number (and date, if known) Not Known
5. Type of Well Monitoring 6. Total Depth (ft.) 40 Diameter (in.) 2
7. Formation clear of obstruction Yes
8. Details of Plugging (bentonite, neat cement or other materials)
- | Filled with | From (ft.) | to (ft.) |
|-------------------------------------|------------|----------|
| Kind of plug <u>Bentonite Grout</u> | <u>40</u> | <u>2</u> |
| Filled with <u>Topsoil</u> | <u>2</u> | <u>0</u> |
| Kind of plug | | |
| Filled with | | |
| Kind of plug | | |
9. CASING RECORD Upper 2 feet of casing removed Yes 10. Date well was sealed Apr 6, 2011
11. Licensed water well driller or other person approved by the Department performing well sealing

Name

Todd R. Lat

Complete License Number

092-007665

Address

307 Concord Ct

City

Eldridge

State

IA

Zip Code

52748

This state agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 0863. Disclosure of this information is mandatory. This form has been approved by the Forms Management Center. IL 402-0031- Revised 5/09

Questions regarding the completion of this form should be directed to the local health department or the Illinois Department of Public Health 217-782-5830. TTY (for hearing impaired only) 800-547-0489.

Platform

WELL ID = MW-7P

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
525 W. JEFFERSON ST.
SPRINGFIELD, IL 62761



WATER WELL SEALING FORM

PDF FILLABLE/SAVABLE

RETURN ALL COPIES TO IDPH OR
LOCAL HEALTH DEPARTMENT

This form shall be submitted to the Department or the local health department no later than 30 days after a water well boring or monitoring well is sealed. Such wells are to be sealed no more than 30 days after they are abandoned in accordance with the sealing requirements in the Illinois Water Well Construction Code. THE LOCAL HEALTH DEPARTMENT OR REGIONAL PUBLIC HEALTH DEPARTMENT MUST BE NOTIFIED AT LEAST 48 HOURS PRIOR TO SEALING.

1. Ownership (Name of Controlling Party)

Ameren UE

2. Well Location: Well Site Address

Main Street

City

Illinois

Zip

62090

Lot #

N/A

Land I.D.#

N/A

County

Madison

Township

2N

Range

10W

Section

2

SW

Quarter of the

NW

Quarter of the

SE

Quarter

GPS: North

Degrees

38

Minutes

39

Seconds

0.45

West

Degrees

90

Minutes

10

Seconds

19.83

Report decimal minutes to minutes and seconds by multiplying the decimal part of the minutes by 60, e.g. latitude 38 degrees 46.07 minutes N would be latitude 38 degrees 46 minutes 4.2 seconds ($0.07 \times 60 = 4.2$) N. Report GPS coordinates to the nearest 0.1 second.

3. Year Drilled

1999

4. Drilling Permit Number (and date, if known)

Not Known

5. Type of Well

Monitoring

6. Total Depth (ft.)

18

Diameter (in.)

2

7. Formation clear of obstruction

Yes

8. Details of Plugging (bentonite, neat cement or other materials)

Filled with

Kind of plug

Bentonite Grout

From (ft.)

to (ft.)

From (ft.)

to (ft.)

Filled with

Topsoil

From (ft.)

to (ft.)

Kind of plug

From (ft.)

to (ft.)

Filled with

From (ft.)

to (ft.)

Kind of plug

From (ft.)

to (ft.)

9. CASING RECORD Upper 2 feet of casing removed

Yes

10. Date well was sealed

Apr 6, 2011

11. Licensed water well driller or other person approved by the Department performing well sealing

Name

Jedd R. List

Complete License Number

092-007665

Address

307 Concord Ct

City

Eldridge

State

IA

Zip Code

52748

This state agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 0863. Disclosure of this information is mandatory. This form has been approved by the Forms Management Center. IL 482-0631- Revised 5/08

Questions regarding the completion of this form should be directed to the local health department or the Illinois Department of Public Health 217-782-5830, TTY (for hearing impaired only) 800-547-0455.

APPENDIX D

MONITORING WELL INSPECTION FORM

Venice Groundwater Monitoring Field Data Worksheet

(Page 1 of 3)

Sample Date: ____/____/____

River Level: _____ feet

	Well #2	Well #2D	Well #3	Well #3D	Well #5	Well #6
Well name sign, lock, and inner cap present (note any deficiency)						
Casing and concrete pad in good condition (note any deficiency)						
Internal piping unobstructed and in good condition (note any deficiency)						
Water Level (±0.01 feet, from top of casing mark)						
Total Well Depth (±0.01 feet)						
Time purging began (24-hour clock)	____:____	____:____	____:____	____:____	____:____	____:____
Conductivity after 10 minutes $\mu\text{S}/\text{cm}$	_____	_____	_____	_____	_____	_____
Temperature $^{\circ}\text{C}$	_____	_____	_____	_____	_____	_____
Conductivity after 15 minutes ($\mu\text{S}/\text{cm}$)	_____	_____	_____	_____	_____	_____
Temperature $^{\circ}\text{C}$	_____	_____	_____	_____	_____	_____
If conductivity changed more than 10% between 10 and 15 minute samples, continue purging and measure conductivity every 5 minutes, until the conductivity changes less than 10% between samples.						
Final Conductivity, $\mu\text{S}/\text{cm}$	_____	_____	_____	_____	_____	_____
Time to reach final conductivity (min)	_____	_____	_____	_____	_____	_____
Temperature $^{\circ}\text{C}$	_____	_____	_____	_____	_____	_____
pH (on site) (±0.01)	_____	_____	_____	_____	_____	_____

Note any items requiring maintenance at any well, and report to supervisor after return to Lab Services.

Venice Groundwater Monitoring Field Data Worksheet

(Page 2 of 3)

	Well #6D	Well #8	Well #9	Well #10	Well #11	Well #11D
Well name sign, lock, and inner cap present (note any deficiency)						
Casing and concrete pad in good condition (note any deficiency)						
Internal piping unobstructed and in good condition (note any deficiency)						
Water Level (±0.01 feet, from top of casing mark)						
Total Well Depth (±0.01 feet)						
Time purging began (24-hour clock)	____:____	____:____	____:____	____:____	____:____	____:____
Conductivity after 10 minutes $\mu\text{S}/\text{cm}$	_____	_____	_____	_____	_____	_____
Temperature $^{\circ}\text{C}$	_____	_____	_____	_____	_____	_____
Conductivity after 15 minutes ($\mu\text{S}/\text{cm}$)	_____	_____	_____	_____	_____	_____
Temperature $^{\circ}\text{C}$	_____	_____	_____	_____	_____	_____
If conductivity changed more than 10% between 10 and 15 minute samples, continue purging and measure conductivity every 5 minutes, until the conductivity changes less than 10% between samples.						
Final Conductivity, $\mu\text{S}/\text{cm}$	_____	_____	_____	_____	_____	_____
Time to reach final conductivity (min)	_____	_____	_____	_____	_____	_____
Temperature $^{\circ}\text{C}$	_____	_____	_____	_____	_____	_____
pH (on site) (±0.01)	_____	_____	_____	_____	_____	_____

Sample collectors: _____

Note any items requiring maintenance at any well, and report
to supervisor after return to Lab Services.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000 1001 1002 1003 1004 1005 1006 1007 1008 1009 1010 1011 1012 1013 1014 1015 1016 1017 1018 1019 1020 1021 1022 1023 1024 1025 1026 1027 1028 1029 1030 1031 1032 1033 1034 1035 1036 1037 1038 1039 104

[illegible][illegible]

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100
1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	

[illegible]

Age Group	Percentage of Respondents
18-29	85%
30-49	80%
50-69	75%
70+	70%

