INCIDENTAL TAKE AUTHORIZATION APPLICATION AND CONSERVATION PLAN: ILLINOIS CHORUS FROG (Pseudacris illinoensis)

Beardstown Sanitary District

Beardstown, Cass County, Illinois

Phase 2 WWTP Improvements

January 2016
Revised March 2016

JOB #11e2286

BENTON & ASSOCIATES INC

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IL DESIGN FIRM REGISTRATION NO.: 184-000852

EXECUTIVE SUMMARY

The purpose of this document is to describe the proposed Phase 2 Wastewater Treatment Plant Improvements of the Beardstown Sanitary District (BSD) and its potential effect on the Illinois Chorus Frog (pseudacris illinoensis). During the Beardstown Sanitary District's coordination with the Illinois Department of Natural Resources regarding the aforementioned project beginning in late 2011 and continuing through February 2014, it was determined by the Illinois Department of Natural Resources that protected resources were located within the vicinity of the proposed project, but adverse effects were unlikely, therefore consultation under 17 Ill. Adm. Code Part 1075 and 1090 was terminated. The proposed project was resubmitted for review on December 14, 2015 under IDNR Project Number 1605550. Subsequent review by IDNR determined that the proposed project is likely to have an adverse impact on the Illinois Chorus Frog and recommended the Beardstown Sanitary District to obtain Incidental Take Authorization (ITA) from the Departments Office of Resource Conservation. The information in this report came from various sources including Illinois Department of Natural Resources, Illinois Natural History Survey, United States Fish and Wildlife Service, and USDA Natural Resources Conservation Service, and from on-site survey of the proposed project area, potential habitat, and observation for the presence of Illinois Chorus Frogs.

This document shows that the possible taking of Illinois Chorus Frogs is incidental to the carrying out of the necessary Beardstown Sanitary District Phase 2 Wastewater Treatment Plant Improvements. This document also demonstrates that the potential impact will be minimal and explains the alternatives that were considered.

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A. USGS TOPOGRAPHICAL MAP – BEARDSTOWN QUADRANGLE
B. PROPOSED SITE, DIMENSION, AND PIPING PLANS
C. NRCS SOIL MAPS
D. NATIONAL WETLAND INVENTORY MAP
E. AERIAL PHOTO – MITIGATION AREA

1) DESCRIPTIONS

A) SITE DESCRIPTION: The site for the proposed improvements is located at the existing BSD wastewater treatment plant on the northwestern edge of the City of Beardstown, Cass County, IL approximately at 40º 00' 41" N & 90º 26' 30" W. The address for the Beardstown Sanitary District is 1016 West 6th Street, Beardstown, IL 62618. The wastewater treatment plant and proposed improvements site is owned, controlled, and operated by the BSD. The entire BSD site encompasses approximately 12 acres, of which, approximately 3 acres will have subsurface disturbance and/or alteration, and an additional 0.5 acre will have surface alteration and up to approximately 7 acres total could have surface disturbance due to construction activities. **Exhibit A** includes a USGS Beardstown Quadrangle topographical map and an excerpt of said map showing the location of the proposed project site. **Exhibit B** includes a proposed site plan and accompanying dimension and piping plans.

B) BIOLOGICAL DESCRIPTION: According the Illinois Natural History Survey website, the Illinois Chorus Frog (Pseudacris illinoensis) is a small (up to 4.7 cm SVL) tan to gray frog with dark brown or black lines on back, belly white and skin granular rather than smooth. Habitats include sand prairies and remnants such as sandy agricultural fields and waste areas. Sandy soils are required for the species to burrow underground. Ponded water is required for breeding pools during the spring when the species is above-ground. A site survey for the presence of Illinois Chorus Frogs was conducted by Adam Fox, Benton & Associates, Inc., on March 14, 2016 and began at 6:45 P.M. Approximately 0.8" of rainfall was recorded at the wastewater plant on March 13, 2016. The entire plant site was searched for the presence of ponded water that could potentially serve as breeding pools and for frogs. No ponded water was present on the site other than a few shallow puddles in the roadway and no frogs were observed. The river side of the levee contained area with ponded water and was also searched for the presence of frogs. The presence of fish was noted in the water, but no frogs of any species were observed. The site survey concluded at 8:15 P.M. (after dark) in order to listen for frogs that could be calling after dark. No Illinois Chorus Frogs, or frogs of any other species were heard. The site survey concluded at 8:15 P.M. and no evidence of the presence of Illinois Chorus Frogs was observed. It was noted that on the commute to the wastewater plant and on the return trip from the plant, frog calls were audibly evident in road ditches with standing water, ponds, creek bottoms, and swamp/wetland areas. Due to the lack of observing any frogs on site or hearing their calls, and that the presence of frog species was noted in several other areas near the City of Beardstown, it was concluded that very few, if any frogs of any species were present on the site at the time of the survey.

C) DESCRIPTION OF ACTIVITES: The activities that could possibly result in taking of the Illinois Chorus Frog are those that are required for the construction of the proposed improvements to the existing wastewater treatment plant. A general description of those activities includes construction and heavy equipment traffic, excavation for installation of subsurface utilities, excavation for construction of structures, and miscellaneous on-site activities related to construction. Suitable habitat for the frogs to burrow only exists on the very far north portion of the site and encompasses approximately 0.75 acres. Within said area, very minimal construction activity will occur. Construction in the sandy soil includes the installation of a 14" diameter force main totaling approximately 170 linear feet, a valve vault with a total footprint of

9’ x 9’ square, and the installation of electrical supply conduits totaling approximately 310 linear feet. Total subsurface disturbance and alteration of the sandy soil area is approximately 0.06 acre. Much of said area is previously developed as the headworks building and multiple treatment structures are located within the area as shown on **Exhibit B**. The majority of suitable habitat for the species is not located on, but adjacent to the project site as indicated by the expanded soil map included in **Exhibit C**, and a National Wetlands Inventory Map included as **Exhibit D**. Furthermore, conversations with Sheldon Fairfield, IDNR Impact Assessment Section, indicated that records of the frog’s presence do not exist on the site, but nearby, which corresponds with the information contained on the aforementioned maps. The construction project is anticipated to begin in the fall of 2016 and will last for a duration of approximately 18 months. By the time the frogs emerge from below ground in the spring months, barriers around the site perimeter will be in place, thereby minimizing the possibility of frogs entering into or travelling through during construction activities.

D) DESCRIPTION OF ANTICIPATED ADVERSE EFFECTS: Due to the location, current use, physical characteristics, and soil types of the site, the anticipated immediate adverse effects are expected to be minimal. Long-term adverse effects will also be minimized, if not eliminated, because the site, though structures will be constructed, will be returned to the same use and will be maintained the same as is currently practiced. The highest probability of adverse effects comes from the possibility of frogs entering in or travelling through the project area during construction activities. The only area on site that holds water for extended periods is the sludge lagoon, which is a concrete structure and not suitable frog habitat. The nearest ponded water is located northerly and westerly of the site and is on the opposite side of the levee and U.S. Highway 67, where no work or alteration will occur. Therefore, breeding ponds will not be effected by this project. As previously mentioned, approximately 0.06 acre of potential frog burrowing habitat (sandy soil) will be effected by construction, and permanent alteration of potential burrowing habitat is less than 0.01 acre.

2) MINIMIZATION AND MITIGATION MEASURES:

A) PLANS TO MINIMIZE THE AREA EFFECTED BY THE PROPOSED ACTION: Only the minimum area needed will be utilized for the construction of the proposed improvements and all work will take within the limits of the existing wastewater treatment plant site. Erosion control practices that will be utilized for construction will have the added benefit of aiding in deterring frogs from entering the project site. Temporary silt fence will be constructed around the perimeter of the construction site at the beginning of construction, prior to earthwork. Typical silt fence installation includes the bottom of the fence being installed approximately 6” below ground surface, and the fence extends above-ground 24”, thereby creating a physical barrier whereas the frogs cannot enter the construction site. It is estimated that because of above-mentioned existing site conditions and construction practices that between zero (0) and five (5) frogs will be taken as a result of this project. As previously mentioned, approximately 0.06 acre of potential frog burrowing habitat (sandy soil) will be effected by construction, and permanent alteration of potential burrowing habitat is less than 0.01 acre. Breeding habitat will not be effected by this project.

B) PLANS FOR MANAGEMENT OF THE AREA EFFECTED BY THE PROPOSED ACTION: After construction, the site will be maintained by the BSD. If the initial planting of grasses fails then additional plantings will be made to establish vegetation on the project site in order to return the site to its pre-construction condition, excepting those areas in which permanent structures will be constructed. The use and care of the site will be unchanged from current practices.

C) DESCRIPTION OF IMPLEMENTED MEASURES TO AVOID, MINIMIZE, AND MITIGATE THE EFFECTS OF THE PROPOSED ACTION: As stated above, areas on the site where there will be no permanent structures will be reseeded with native species of grasses. Temporary silt fence will be removed after construction is complete and vegetation is established. The site will be maintained as is currently practiced. With the exception of the above-mentioned 0.06 acre of potential frog burrowing habitat (sandy soil) that will be effected by construction, and permanent alteration of less than 0.01 acre, the remaining sandy soils that exist on the site will not be developed as a result of this project. As mitigation, an area located in the sandy soil at the north end of the site which is currently mowed and maintained will be set aside and allowed to grow up in native vegetation to serve as potential burrowing habitat. The area will be protected by the BSD and will be demarcated as Illinois Chorus Frog habitat with restrictive signage to prevent disturbance of the area. The area covers approximately 0.03 acres, which is three times the size of the sandy soil area that will be permanently altered by construction, and is located as shown on the attached **Exhibit E.**

D) PLANS FOR MONITORING THE EFFECTS OF MEASURES IMPLEMENTED: The BSD understands that there will be post construction monitoring required to ensure that the site returns to a condition similar to pre-construction.

E) ADAPTIVE MANAGEMENT PRACTICES: If the initial planting fails, the BSD shall make additional plantings until vegetation is established on the project site. If the presence of the species is verified on site during or following construction, measures will be taken to ensure the protection of the species.

F) <u>VERIFICATION OF FUNDING:</u> The funds needed to mitigate and minimize the impact on the Illinois Chorus Frog as stated in this document will be obtained along with funds that will be needed to complete the proposed improvements. The project will not be implemented without required funding established. These funds will be a combination of local funds, IEPA SRF loan and/or USDA-RD funds. The project cannot be implemented without adequate funding in place.

3) <u>DESCRIPTION OF ALTERNATIVE ACTION:</u>

A) NO ACTION: This alternative would leave the BSD with a wastewater plant that does not meet the effluent requirements of their NPDES Permit. Without the improvements, the plant will not be able to stay in compliance with regulatory agencies. The improvements will ensure that the plant treats wastewater properly and effectively and that the discharge from the plant is within compliance with permitting requirements. "No Action" is not an option.

B) WASTEWATER TREATMENT BY ANOTHER TREATMENT WORKS: Currently there are no other treatment works to accept the wastewater that is treated by the BSD.

C) NEW WASTEWATER TREATMENT PLANT IN THE CITY OF BEARDSTOWN: This option is not viable because there is not a site in the City of Beardstown that would feasibly fit the criteria needed. This option would require the acquisition of new property as well as the construction of additional infrastructure to accept and treat the wastewater. These factors make this alternative cost prohibitive and could force the customers of the BSD to carry an undue financial burden.

4) DATA / INFORMATION TO INDICATE NO REDUCTION OF SURVIVAL OF THE ILLINOIS CHORUS FROG: The proposed improvements are planned to be constructed at the existing wastewater treatment plant site. As stated above, due to the location, current use, physical characteristics, and soil types of the site, the anticipated adverse effects are expected to be minimal. Ponded water and recognized wetlands that are essential for breeding purposes do not exist on the site, but are located nearby as indicated by the National Wetlands Inventory Map included as **Exhibit D**. The absence of wetlands and ponded areas reduce the likelihood that frogs will inhabit the site. The highest anticipated threat to the frogs is the possibility of harm from travelling through the project site, which is minimized by the installation of silt fence around the site perimeter prior to construction. Life History information on the species indicates that the chorus frogs are only seen above ground during the spring breeding season and spend the remaining portions of the year below ground. Sand and sandy soils are required for the frogs to burrow below ground. According to the Natural Resources Conservation Service Soil Survey Maps included as **Exhibit C,** sandy soils encompass only 7.1% of the site, all of which is located at the far north end where much of the area consists of existing buildings and structures. That area is also where minimal work for this project will take place. The remaining 92.9% of the site is a combination of silt loam and silty clay loam. Therefore it is not anticipated that excavation will reduce the survival of the species because required soils for the frogs to burrow is minimal and is not located where the majority of the excavation work will occur. The expanded soil map included in **Exhibit C** indicates that significant amounts of sand and sandy soils are located adjacent to and within ½ mile of the site. It is anticipated that those areas are more likely to contain the frogs below ground. Those areas will not be disturbed as a result of this project and therefore the ideal habitat for the species which is located nearby will not be effected. Current records for Illinois Chorus Frogs exist sporadically throughout the sandy soil areas along the east side of the Illinois River in Scott, Morgan, Cass, and Mason Counties, as well as in other parts of the state. Therefore, due to the current records and the information in this Conservation Plan specifically pertaining to the proposed project and its possible effects on the species, the proposed project will not reduce the likelihood of the survival of the threatened species in the wild in the State of Illinois.

5) IMPLEMENTING AGREEMENT:

The following parties certify their legal authority to carry out their respective obligations and responsibilities under this conservation plan (listed below) and comply with all other applicable federal state and local regulations:

NAME	TITLE	NAME (PRINT)	SIGNATURE	DATE
Beardstown Sanitary District 1016 West 6th Street Beardstown, IL 62618	**OWNER**	GORDON TINGLEY	Gordon Tingley	2/11/16
Benton & Associates, Inc. 1970 W. Lafayette Jacksonville IL, 62650 1-217-245-4146	**ENGINEER**	JAMES HAGERTY	James Hagerty	2/10/16
TO BE DETERMINED DURING THE AWARD OF THE CONTRACT	**CONTRACTOR**			

PROJECT CHECK LIST			
Item	**Description**	**Responsible Party**	**Complete (Sign and Date)**
1	Permits	**OWNER**	
2	Verify Legal Access to Land	**OWNER**	
3	Mark Construction Limits	**ENGINEER**	
4	Silt Fence Installation	**CONTRACTOR**	
5	Construction of Improvements	**CONTRACTOR**	
6	Site Grading Finished	**CONTRACTOR**	
7	Seeding Finished	**CONTRACTOR**	
8	Complete As-Built Drawings of Site	**ENGINEER**	
9	Reseeding (if vegetation is not established)	**OWNER/ CONTRACTOR**	

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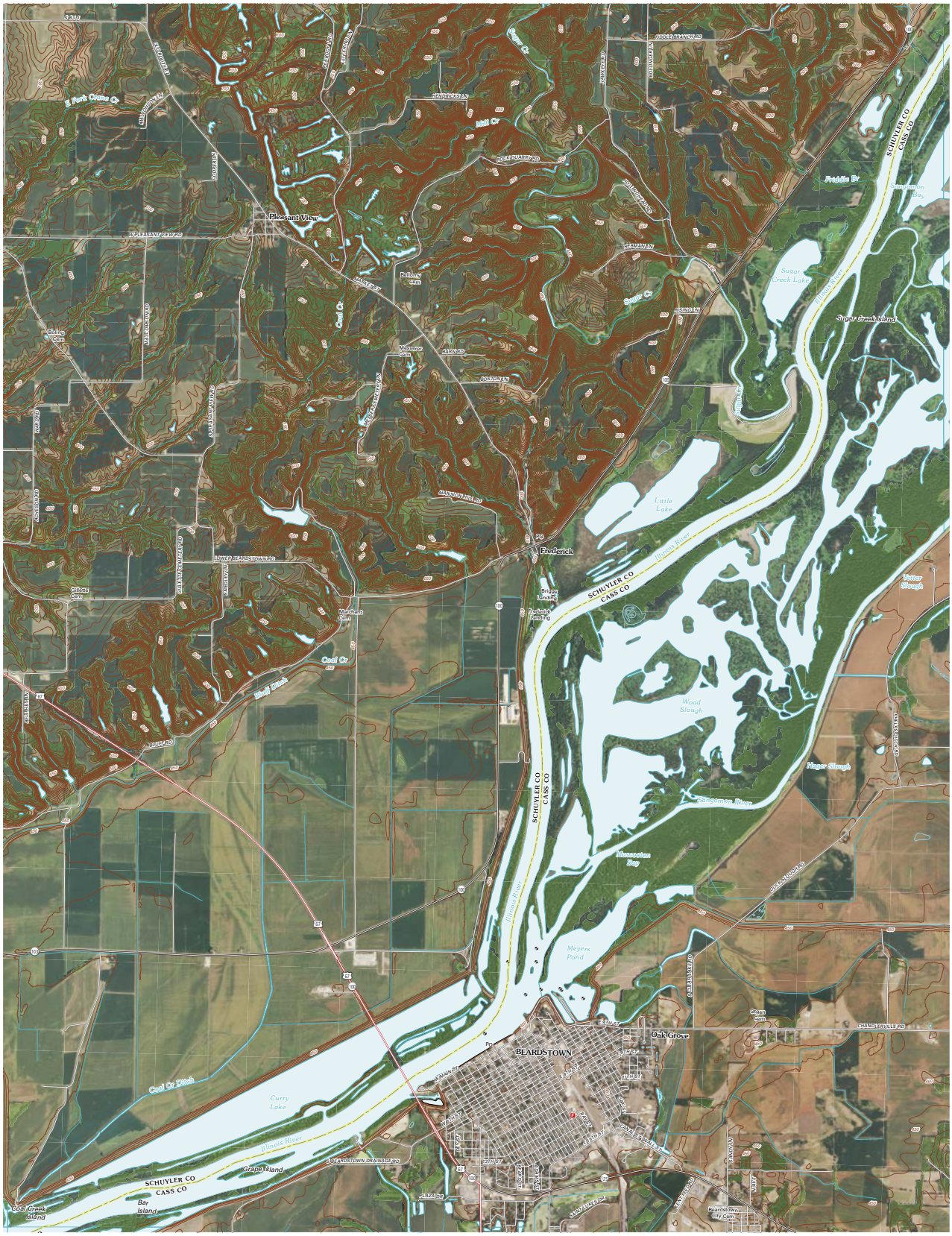
Note: This Implementing Agreement will be updated as tasks are completed and progress reports will be submitted to the Illinois Department of Natural Resources in January of each year of Incidental Take Authorization.

EXHIBIT A

U.S. DEPARTMENT OF THE INTERIOR
U. S. GEOLOGICAL SURVEY

The National Map US Topo

BEARDSTOWN QUADRANGLE
ILLINOIS
7.5-MINUTE SERIES



Produced by the United States Geological Survey
North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and 1 000-meter grid: Universal Transverse Mercator, Zone 15T
10 000-foot ticks: Illinois Coordinate System of 1983 (west zone)

Imagery.....NAIP, August 2011
Roads.....©2006-2011 TomTom
Names.....GNIS, 2011
Hydrography.....National Hydrography Dataset, 2011
Contours.....National Elevation Dataset, 2012
Boundaries.....Census, IBWC, IBC, USGS, 1972 - 2010

UTM GRID AND 2012 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

U.S. National Grid
100,000-m Square ID
YE
Grid Zone Designation
15T

SCALE 1:24 000

1 0.5 0 KILOMETERS 1 2
1000 500 0 METERS 1000 2000
1 0.5 0 MILES 1
1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000 FEET

CONTOUR INTERVAL 10 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

This map was produced to conform with the National Geospatial Program US Topo Product Standard, 2011.
A metadata file associated with this product is draft version 0.6.3

ILLINOIS
QUADRANGLE LOCATION

Rushville North	Ray	Astoria
Rushville South	Beardstown	Clear Lake
Camperstown	Annapolis West	Annapolis East

ADJOINING 7.5' QUADRANGLES

ROAD CLASSIFICATION
Interstate Route
US Route
Ramp
State Route
Local Road
4WD
Interstate Route
US Route
State Route

BEARDSTOWN, IL
2012

450
PO
BEAR
W MAIN ST
BEARDSTOWN SANITARY
DISTRICT PROJECT SITE
W 6TH ST
DEY ST
AINAGE RD
13TH ST
67
100
BEARD ST
PLAZA DR

EXHIBIT B

N

BEARDSTOWN SANITARY DISTRICT - 2014 FACILITY PLAN UPDATE
EXHIBIT 3 - CURRENT WASTEWATER TREATMENT PLANT PROPERTY MAP

BEARDSTOWN, ILLINOIS

#04e1432

BENTON & ASSOCIATES INC

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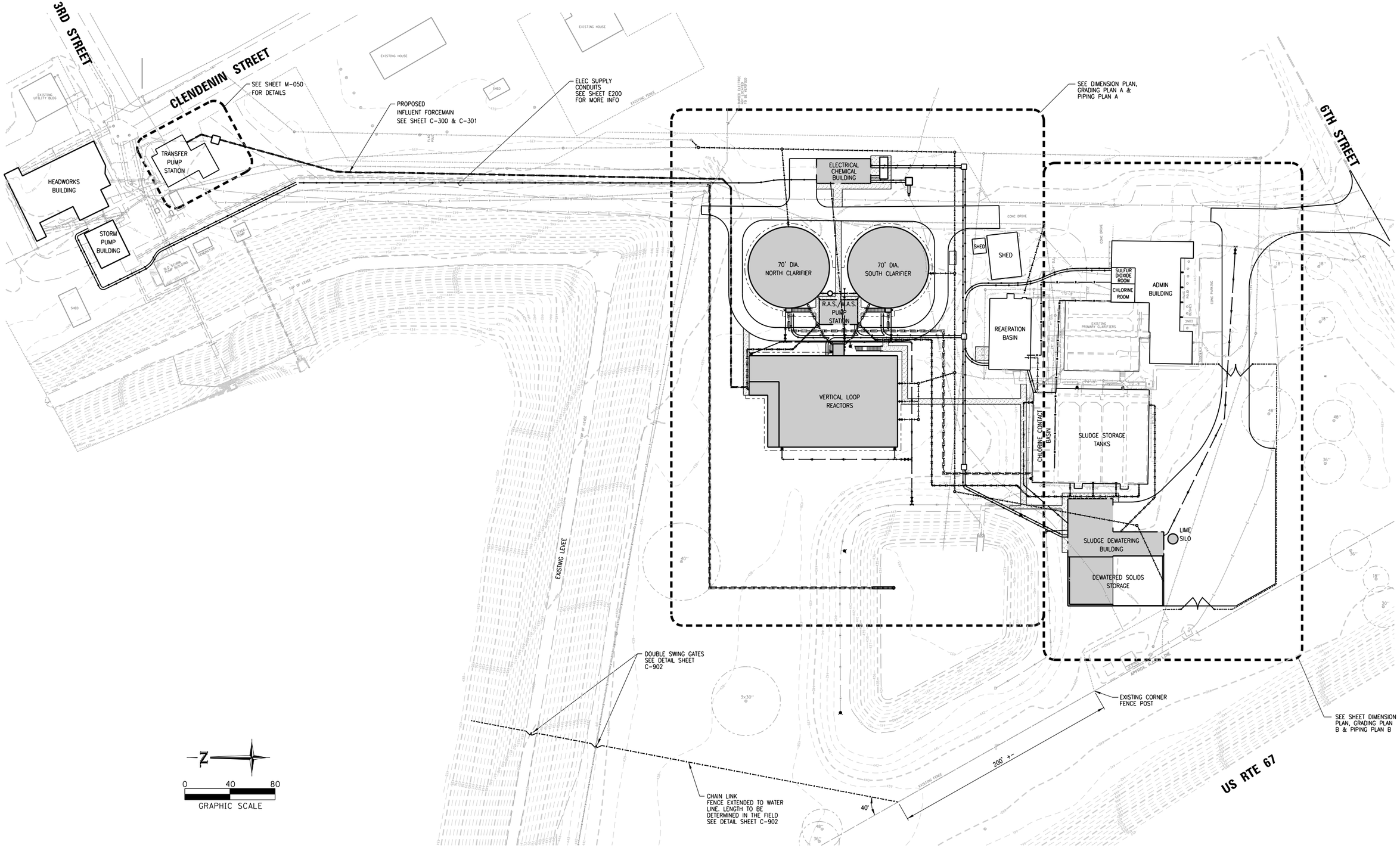

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No.	Description	Date	Appr.

Note: All scales represented on this sheet are based on 22x34 sheet size

NOT FOR CONSTRUCTION

Date:	December 2015
Designed by:	C. Jones
Drawn by:	S. Weber
Reviewed by:	W. Steeman
Approved by:	J. Hagerty

Permit Submittal

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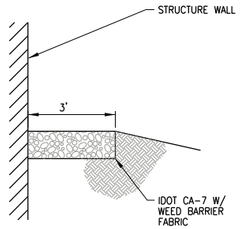
BEARDSTOWN SANITARY DISTRICT
BEARDSTOWN, ILLINOIS

WWTP IMPROVEMENTS - PHASE 2

OVERALL PROPOSED SITE PLAN

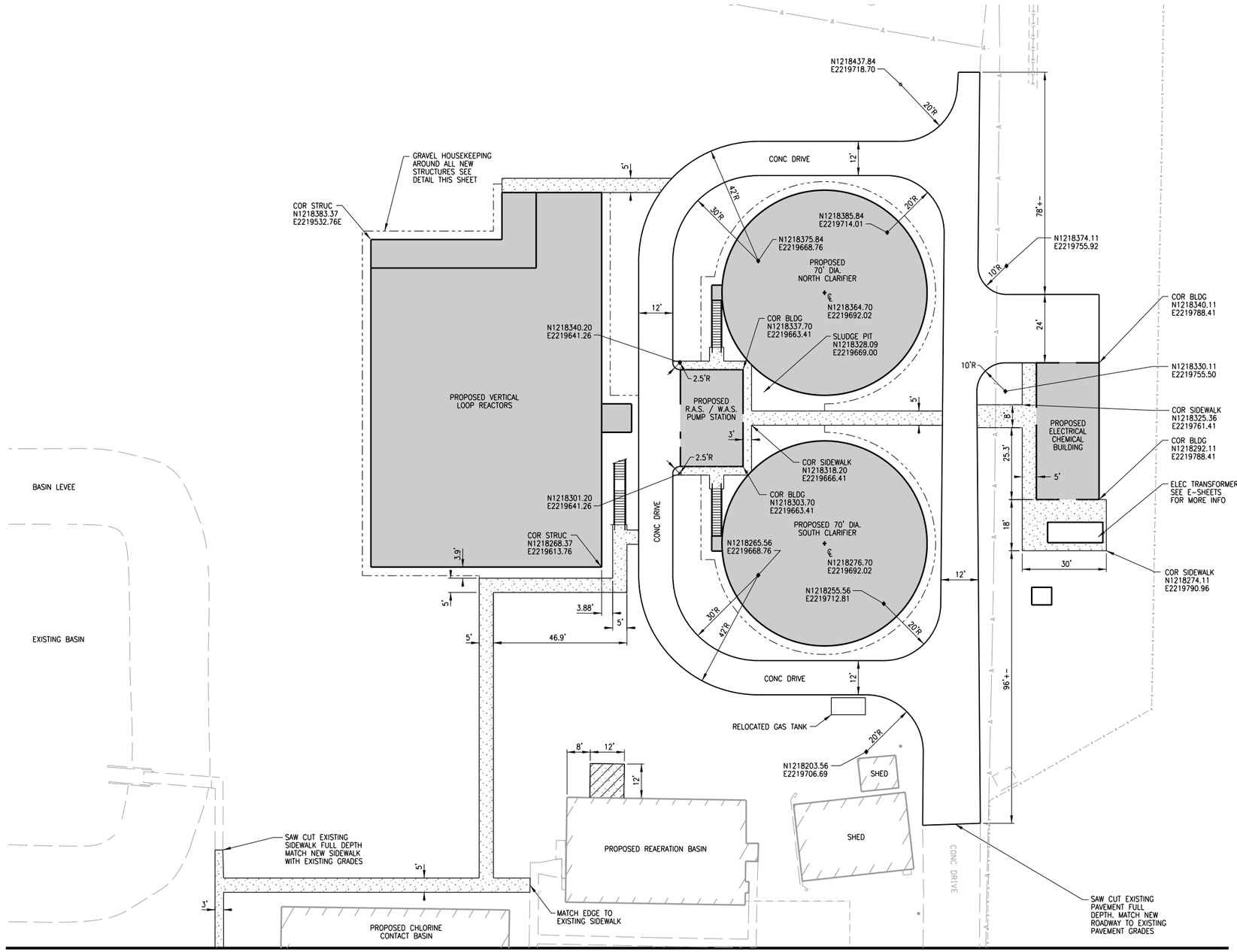
Job No. 11e2286

C-020



HOUSEKEEPING PAD DETAIL

N.T.S.



MATCH LINE **SEE SHEET C201**

N

0 20 40

GRAPHIC SCALE

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Note: All scales represented on this sheet are based on 22x34 sheet size

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BEARDSTOWN SANITARY DISTRICT
BEARDSTOWN, ILLINOIS

WWTP IMPROVEMENTS - PHASE 2

SITE DIMENSION PLAN A

Job No. 11e2286

C-200

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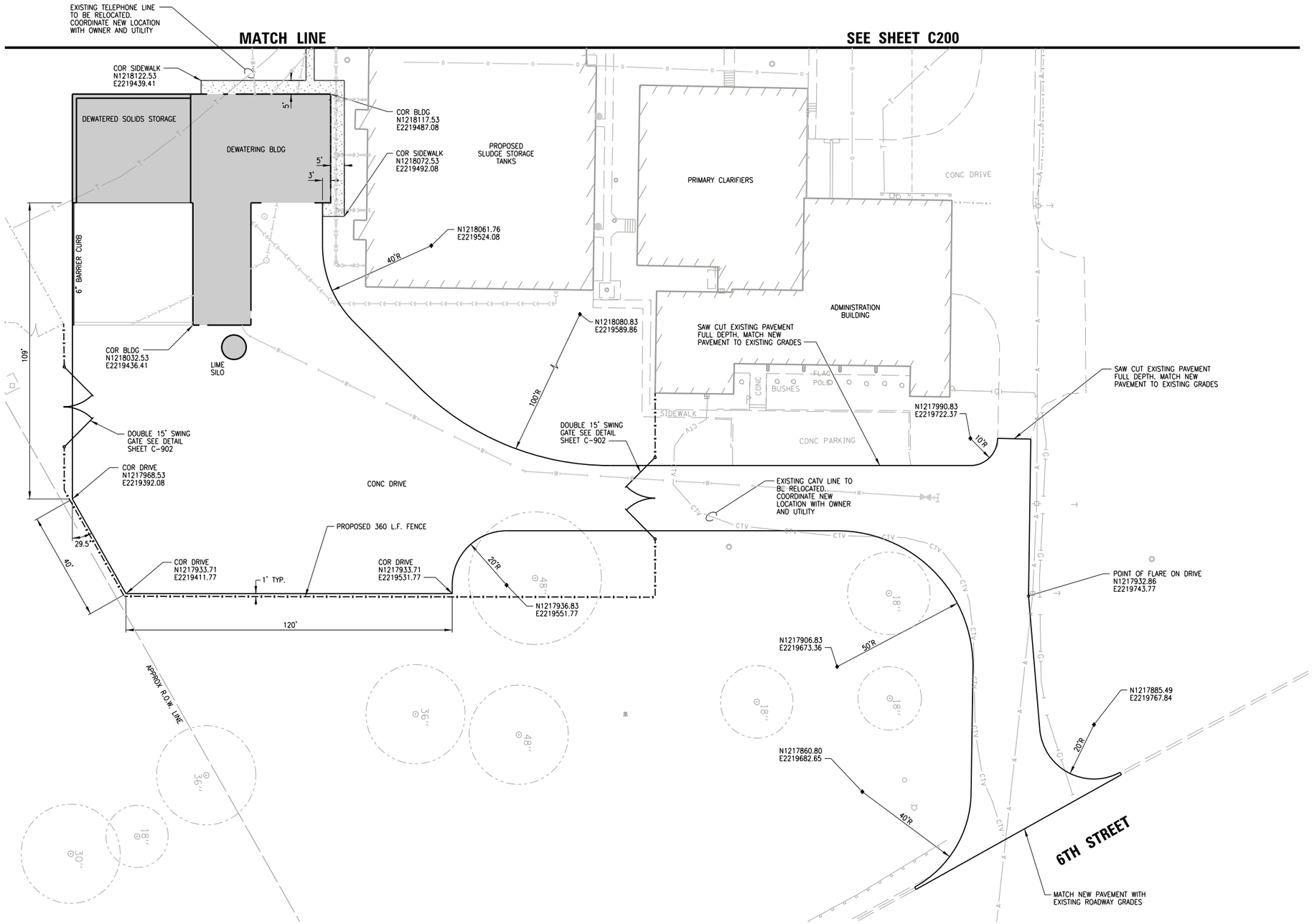

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BEARDSTOWN SANITARY DISTRICT
BEARDSTOWN, ILLINOIS

WWTP IMPROVEMENTS - PHASE 2

SITE DIMENSION PLAN B

Job No. 11e2286

C-201

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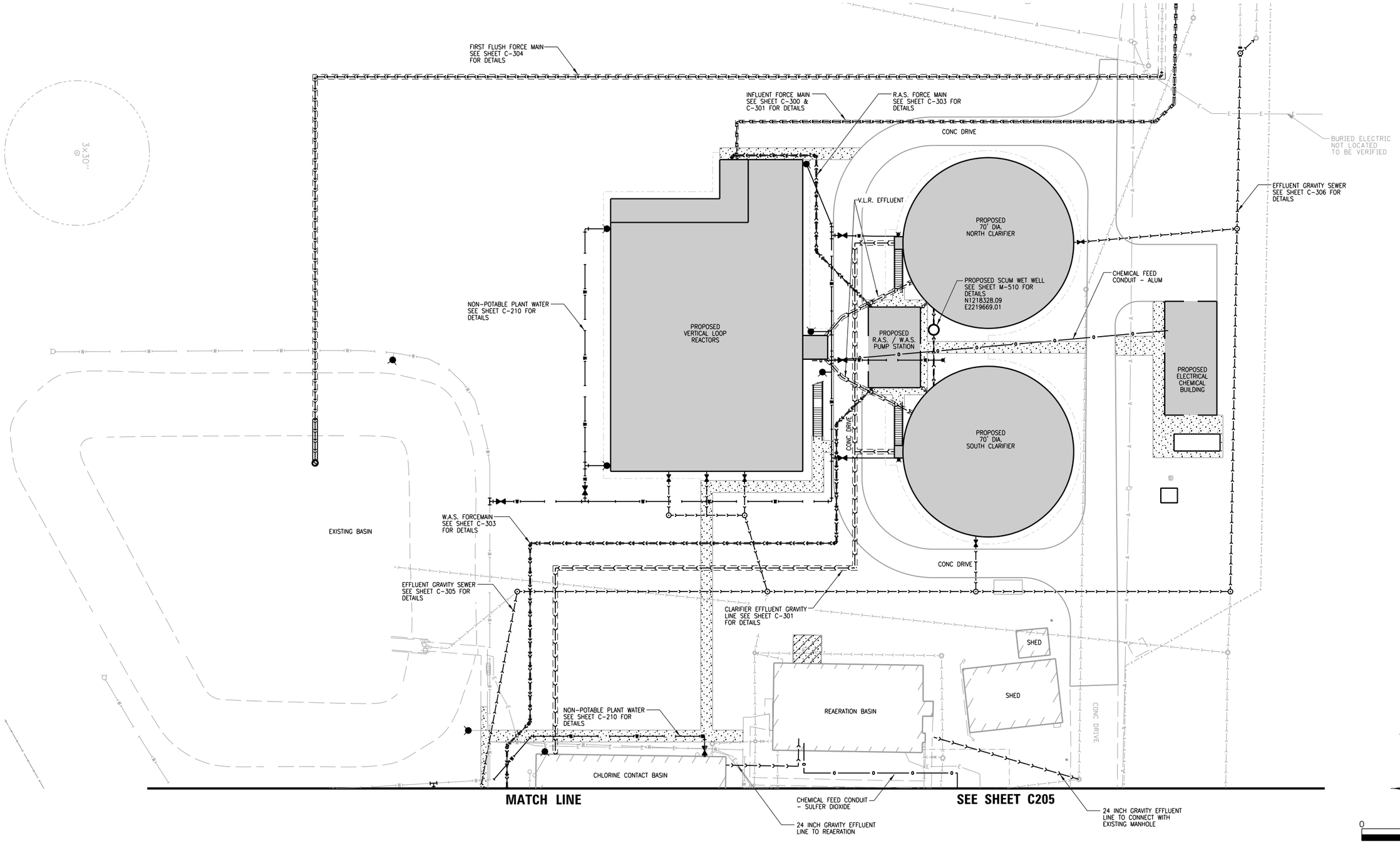

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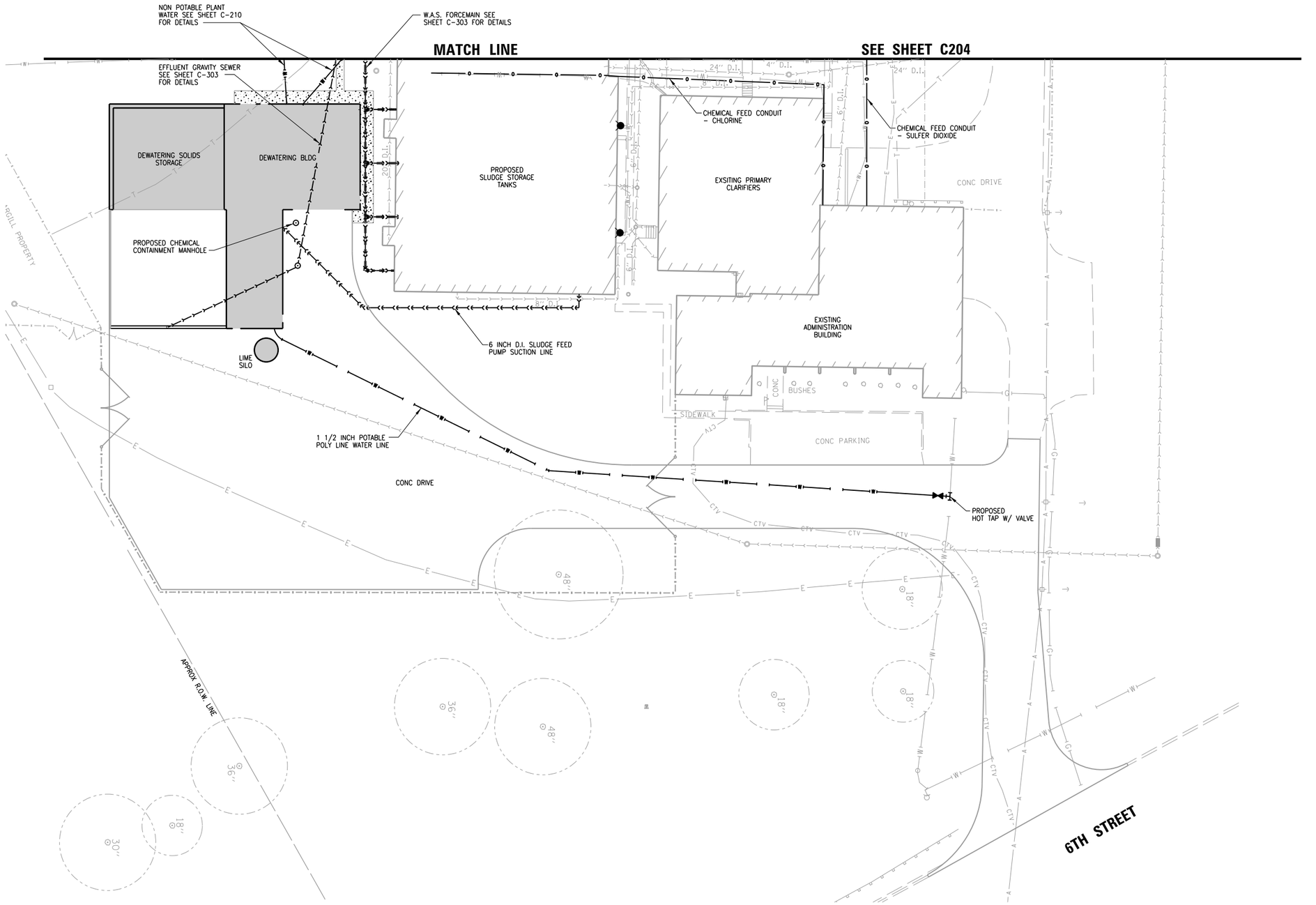
BEARDSTOWN SANITARY DISTRICT
BEARDSTOWN, ILLINOIS

WWTP IMPROVEMENTS - PHASE 2

PROPOSED PIPING PLAN A

Job No. 11e2286

C-204



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BEARDSTOWN SANITARY DISTRICT
BEARDSTOWN, ILLINOIS

WWTP IMPROVEMENTS - PHASE 2

PROPOSED PIPING PLAN B

Job No. 11e2286

C-205

EXHIBIT C

Soil Map—Cass County, Illinois
(Beardstown Sanitary District)

Map Scale: 1:2,470 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 35 70 140 210

Feet
0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Cass County, Illinois
Survey Area Data: Version 11, Sep 25, 2015

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

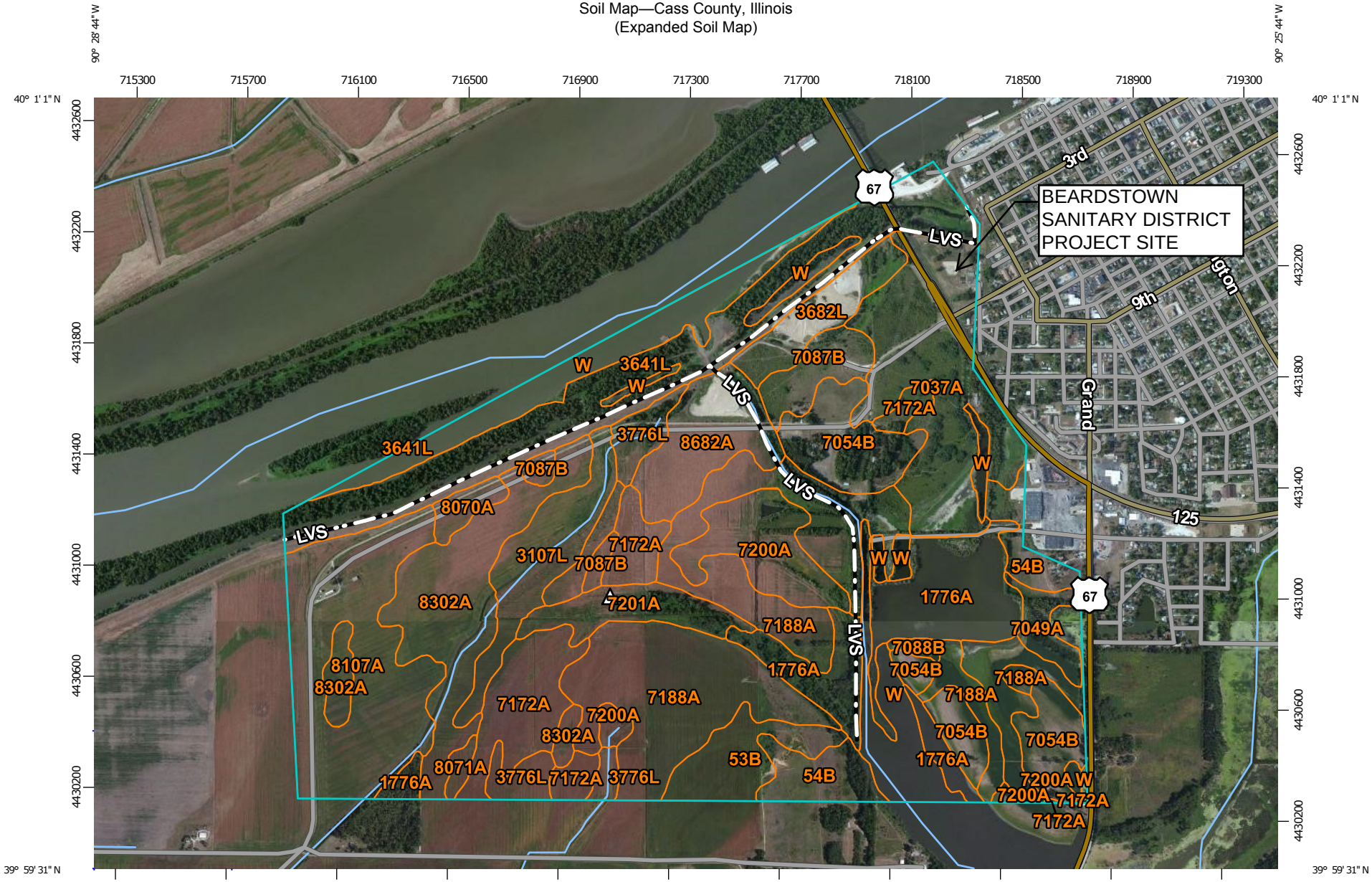
Date(s) aerial images were photographed: Aug 31, 2011—Oct 6, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Cass County, Illinois (IL017)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
54B	Plainfield sand, 1 to 7 percent slopes	0.9	7.1%
3641L	Quiver silty clay loam, 0 to 2 percent slopes, frequently flooded, long duration	0.7	6.0%
7037A	Worthen silt loam, 0 to 2 percent slopes, rarely flooded	10.6	86.9%
Totals for Area of Interest		**12.2**	**100.0%**

Soil Map—Cass County, Illinois
(Expanded Soil Map)



Map Scale: 1:19,600 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 250 500 1000 1500

Feet: 0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Cass County, Illinois
Survey Area Data: Version 11, Sep 25, 2015

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Nov 23, 2010—Oct 6, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Cass County, Illinois (IL017)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
53B	Bloomfield fine sand, 1 to 7 percent slopes	26.7	2.3%
54B	Plainfield sand, 1 to 7 percent slopes	32.4	2.8%
1776A	Comfrey loams, undrained, 0 to 2 percent slopes, commonly flooded	79.0	6.8%
3107L	Sawmill silty clay loam, 0 to 2 percent slopes, frequently flooded, long duration	38.5	3.3%
3302L	Ambraw clay loam, 0 to 2 percent slopes, frequently flooded, long duration	7.6	0.7%
3641L	Quiver silty clay loam, 0 to 2 percent slopes, frequently flooded, long duration	109.3	9.4%
3682L	Medway loam, 0 to 2 percent slopes, frequently flooded, long duration	24.1	2.1%
3776L	Comfrey clay loam, 0 to 2 percent slopes, frequently flooded, long duration	22.7	2.0%
7037A	Worthen silt loam, 0 to 2 percent slopes, rarely flooded	91.6	7.9%
7049A	Watseka loamy fine sand, 0 to 2 percent slopes, rarely flooded	11.4	1.0%
7054B	Plainfield sand, 1 to 7 percent slopes, rarely flooded	66.2	5.7%
7087B	Dickinson sandy loam, 2 to 5 percent slopes, rarely flooded	24.1	2.1%
7088B	Sparta loamy sand, 1 to 6 percent slopes, rarely flooded	2.6	0.2%
7172A	Hoopeston sandy loam, 0 to 2 percent slopes, rarely flooded	59.0	5.1%
7188A	Beardstown loam, 0 to 2 percent slopes, rarely flooded	159.1	13.7%
7200A	Orio loam, 0 to 2 percent slopes, rarely flooded	65.1	5.6%
7201A	Gilford fine sandy loam, 0 to 2 percent slopes, rarely flooded	23.9	2.1%
8070A	Beaucoup silty clay loam, 0 to 2 percent slopes, occasionally flooded	7.8	0.7%
8071A	Darwin silty clay, 0 to 2 percent slopes, occasionally flooded	3.4	0.3%

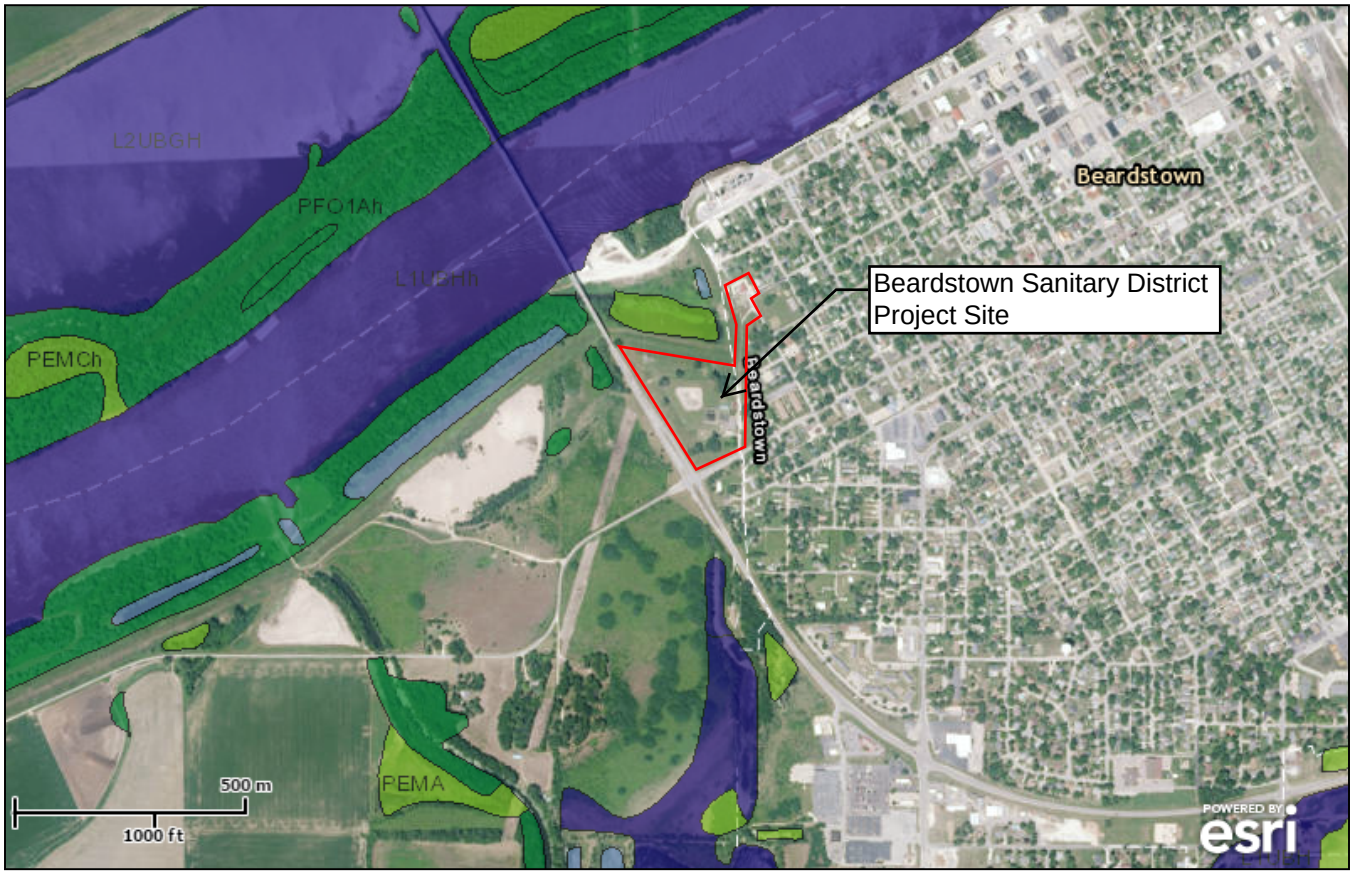
Cass County, Illinois (IL017)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
8107A	Sawmill silty clay loam, 0 to 2 percent slopes, occasionally flooded	96.8	8.4%
8302A	Ambraw clay loam, 0 to 2 percent slopes, occasionally flooded	79.4	6.9%
8682A	Medway loam, 0 to 2 percent slopes, occasionally flooded	39.8	3.4%
W	Water	86.9	7.5%
Totals for Area of Interest		**1,157.3**	**100.0%**

EXHIBIT D

U.S. Fish and Wildlife Service
National Wetlands Inventory

Beardstown Sanitary District

Jan 19, 2016



Wetlands

- Freshwater Emergent
- Freshwater Forested/Shrub
- Estuarine and Marine Deepwater
- Estuarine and Marine
- Freshwater Pond
- Lake
- Riverine
- Other

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

User Remarks:

EXHIBIT E

Google earth

feet 1000

meters 500