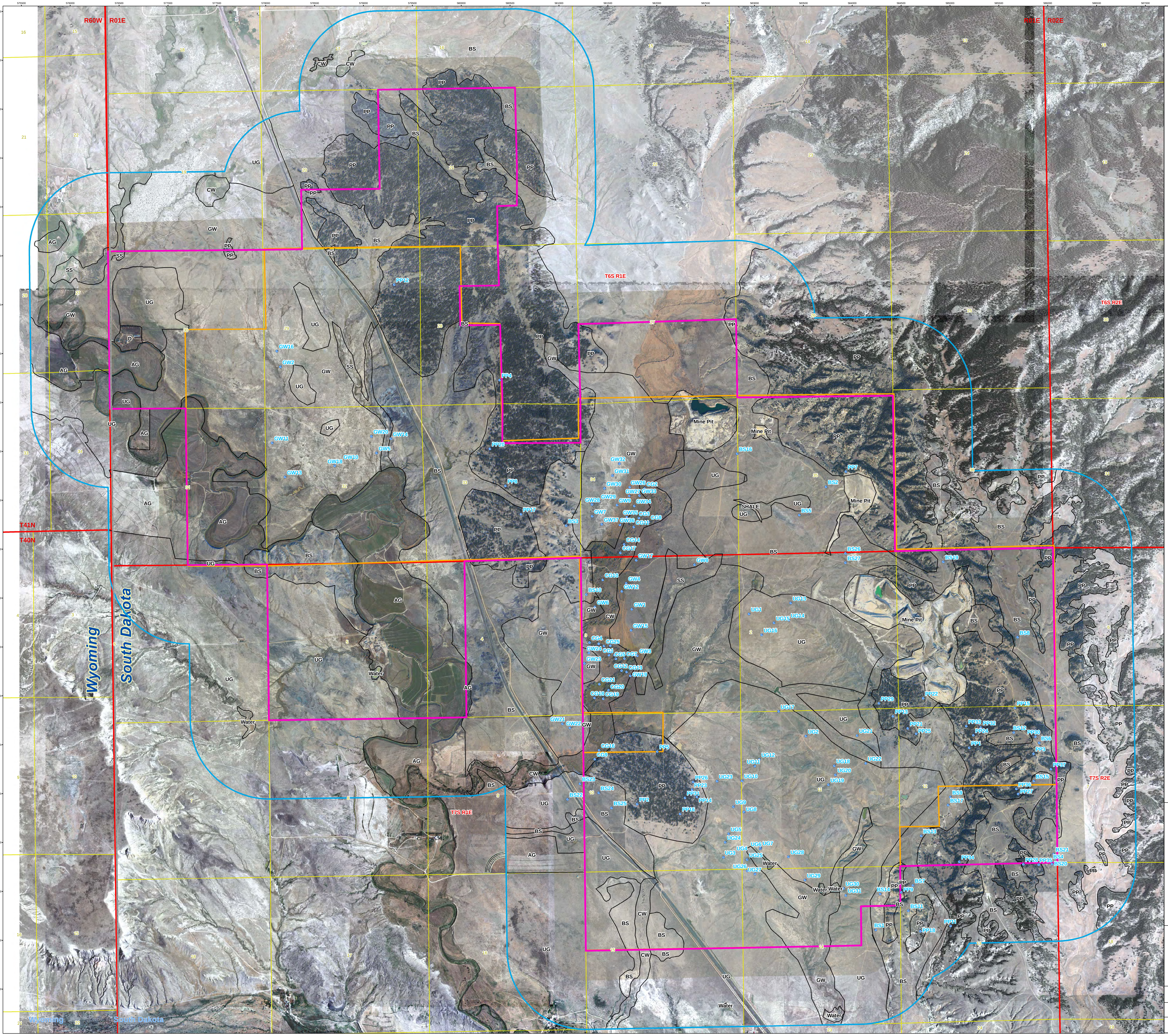
United States Nuclear Regulatory Commission Official Hearing Exhibit

In the Matter of:	POWERTECH USA, INC. (Dewey-Burdock In Situ Uranium Recovery Facility)

ASLBP #:	10-898-02-MLA-BD01		
Docket #:	04009075		
Exhibit #:	APP-015-H-00-BD01	**Identified:**	8/19/2014
Admitted:	8/19/2014	**Withdrawn:**	
Rejected:		**Stricken:**	
Other:			



Legend

Vegetation Communities Permit Boundary

AG: Agricultural Grassland (780.79 acres)
BS: Big Sagebrush Shrubland (2,501.56 acres)
CW: Cottonwood Gallery (240.60 acres)
GW: Greesewood Shrubland (2,190.45 acres)
PP: Ponderosa Pine Woodland(2,183.76 acres)
SS: Silver Sagebrush Shrubland (119.49 acres)
UG: Upland Grassland (2,187.56 acres)

●	Vegetation Sample Sites
◯	Vegetation Communities
▭	Project Boundary
▭	Project Boundary 1/2 Mi Buffer
▭	Project Boundary for Field Survey
▭	Sections
▭	TWN/RNG
▭	State Boundary

N

0 0.125 0.25 0.5
Miles

NAD - 1983 UTM, Zone 13N

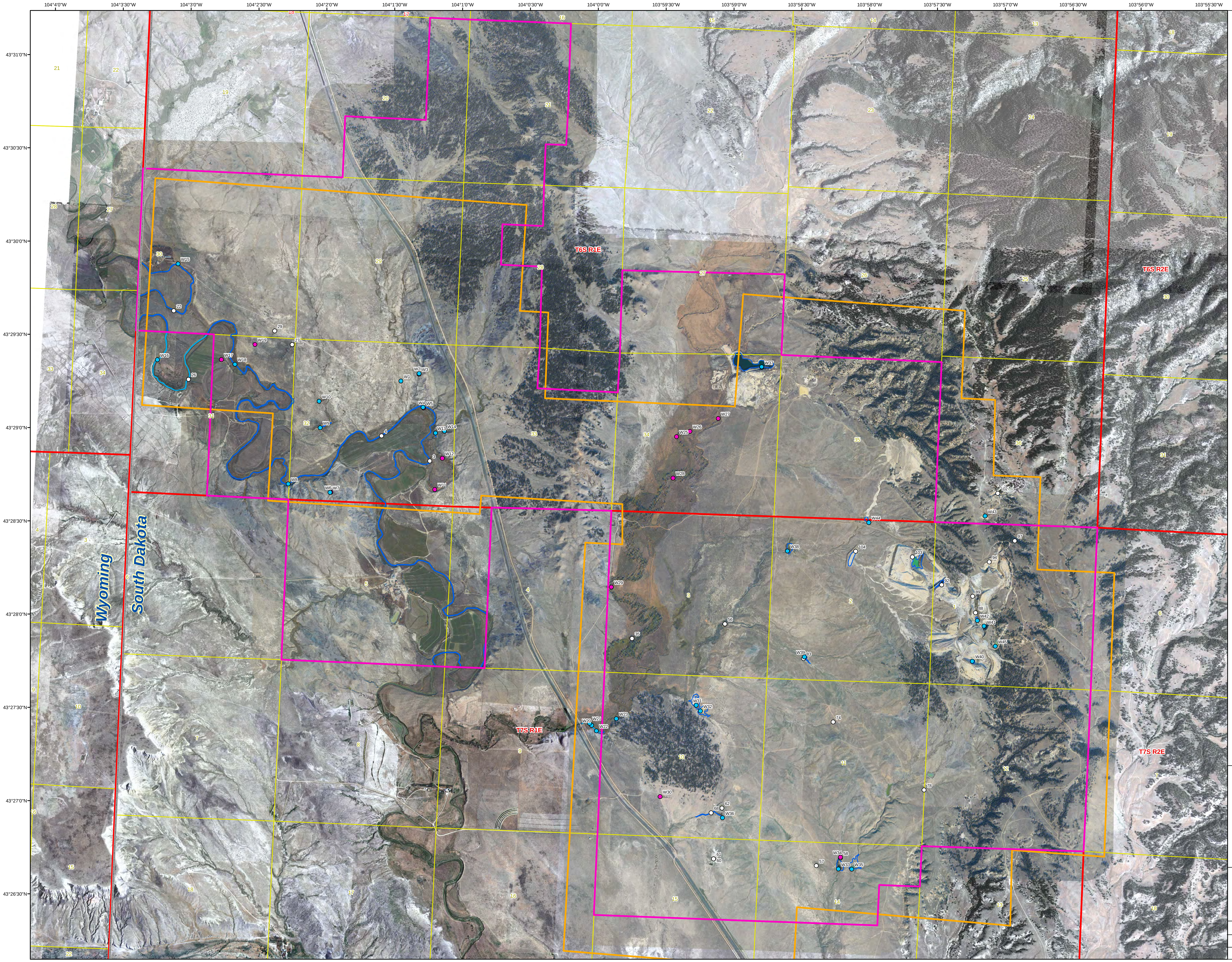
1 inch equals 1,050 feet

Vegetation Communities Map

Dewey-Burdock Project
South Dakota

BKS Environmental Associates, Inc.

Created By:	BKS Environmental - Tracy Spelts	Plate 2.8-1
Date:	11/11/08	
Map File:	DeweyBurdock_Veg_Map_ v10_11112008.mxd	



Wetland Assessment Map

Dewey Burdock Project
South Dakota

BKS Environmental Associates, Inc.

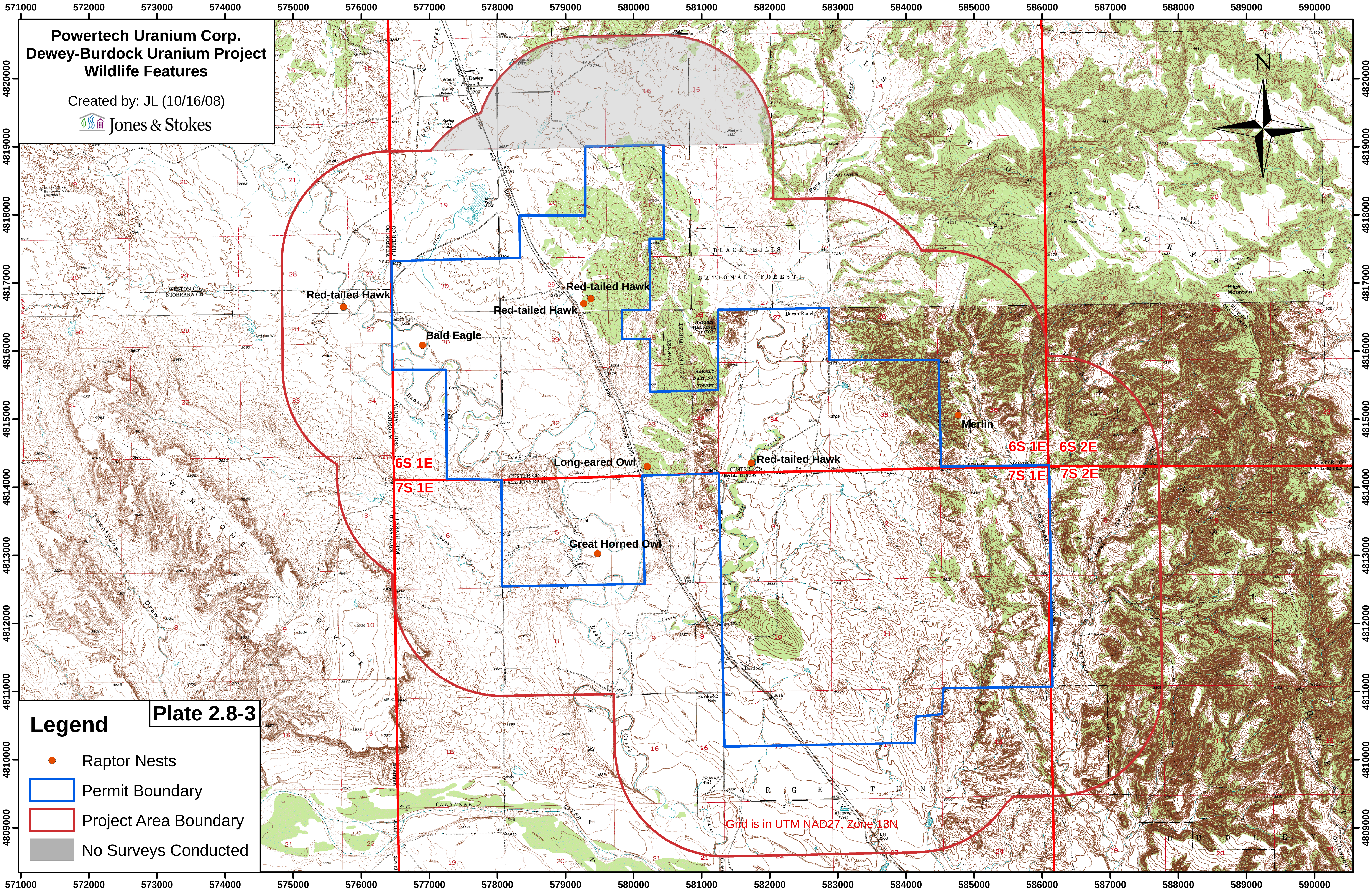
Created By:	BKS Environmental Associates	Plate **2.8-2**
Date:	11/4/08	
Map File:	Wetland_Map_V11.mxd	

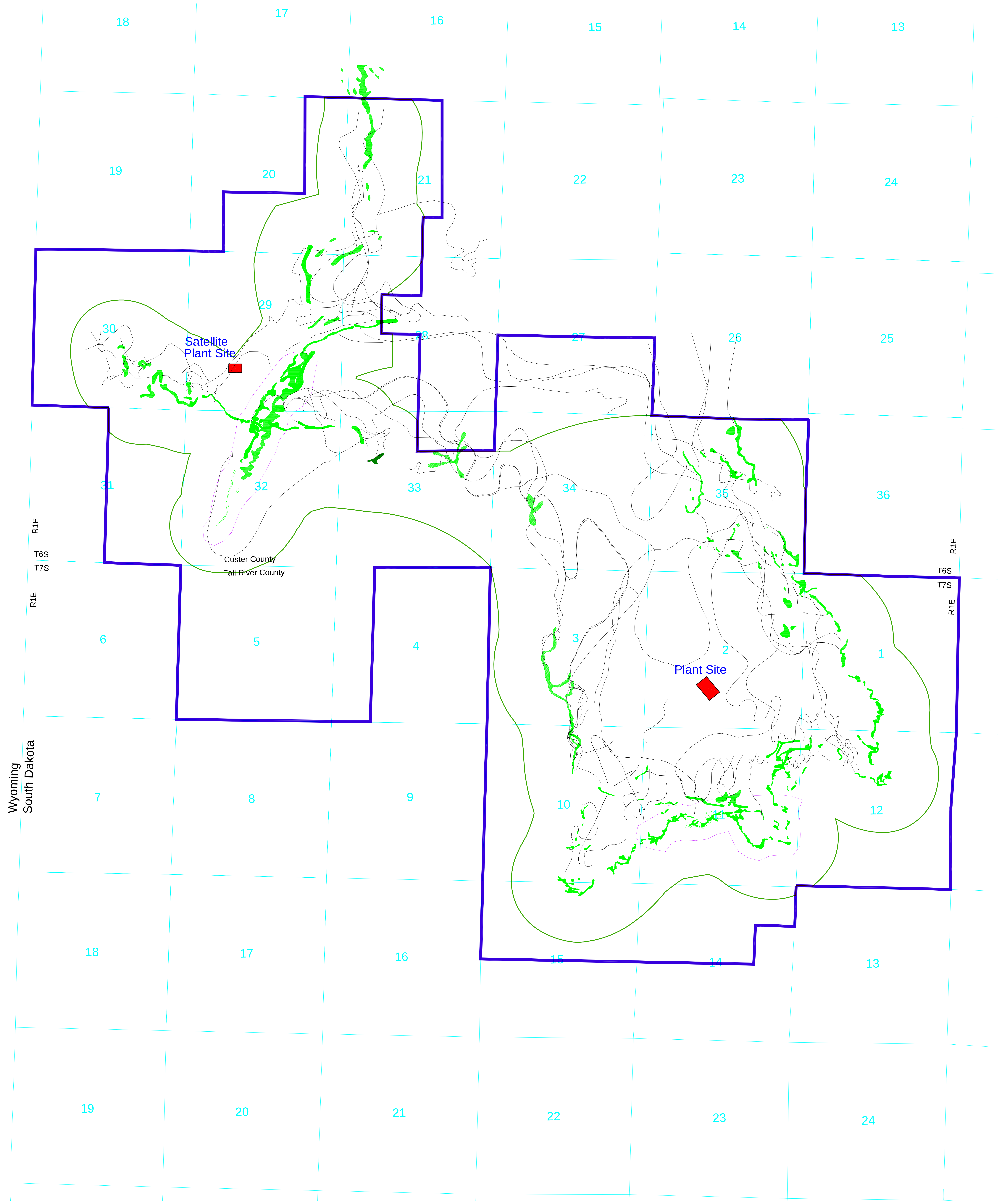
Powertech Uranium Corp.
Dewey-Burdock Uranium Project
Wildlife Features

Created by: JL (10/16/08)

Jones & Stokes

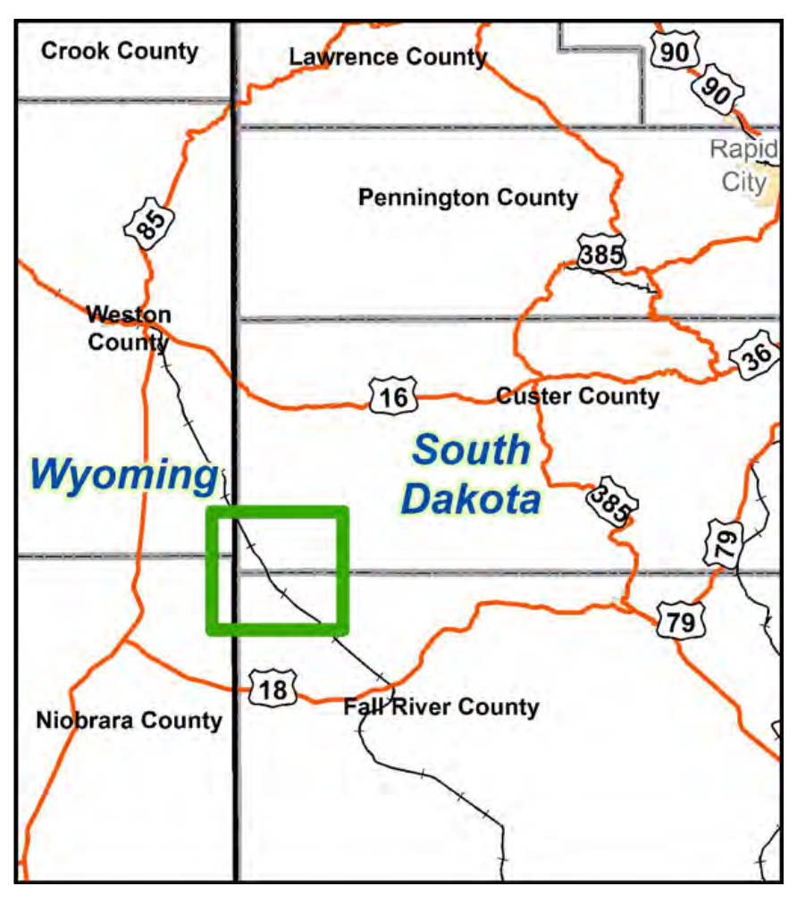
Plate 2.8-3





Legend

- 🟩 Inyan Kara Aquifer Exemption Boundary
- 🟩 Inyan Kara Ore
- ○ Initial Well Field Monitoring Well Rings
- 🟥 Processing Plant Sites
- 🟦 Permit Boundary
- ~ TVA Data - Uranium Roll Front Deposits



N

Feet

0 500 1,000 2,000 3,000 4,000

0 250 500 1,000

Meters

CONSULTANT

REVISIONS				
#	DRAWN	CHECKED	APPROVED	DATE

REF 333

CHECK SCALES

If this bar does not measure 1 inch this map is not at its original scale

Arch E 36" x 48"

Powertech (USA) Inc.

Plate 3.1-1

Aquifer Exemption Boundaries Proposed in 2009

PLOT DATE 15-Dec-2013

DATE 14-Dec-2013

PROJECT Dewey-Burdock Project

DRAWN S. Hetrick

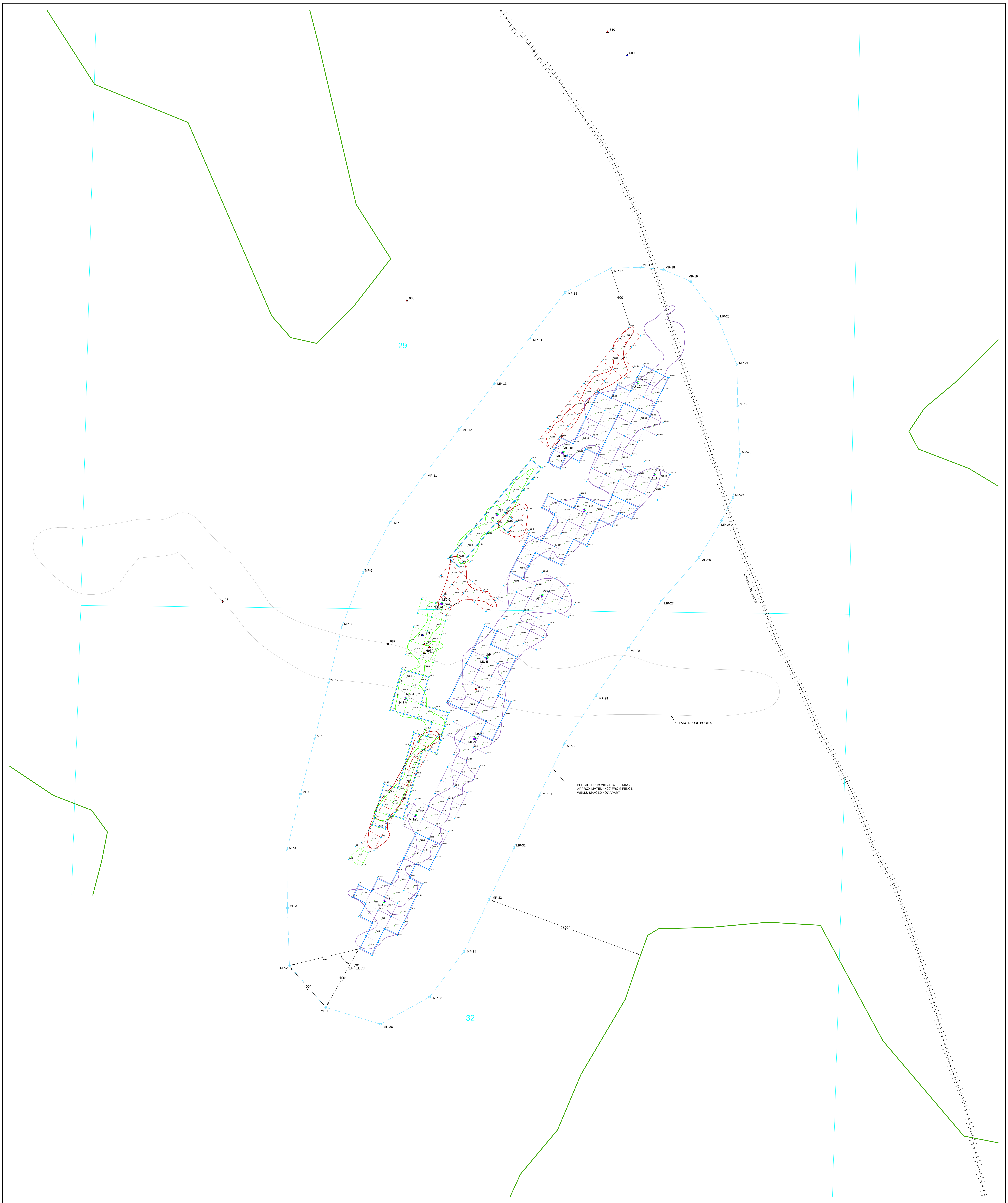
CHECKED W. Mays

COORDS NAD 27, South Dakota State Plane South (feet)

SCALE 1" = 1000'

FILENAME k:\powertech\11185\acad\dwgs_final_tr\aqexbounds.dwg

OF



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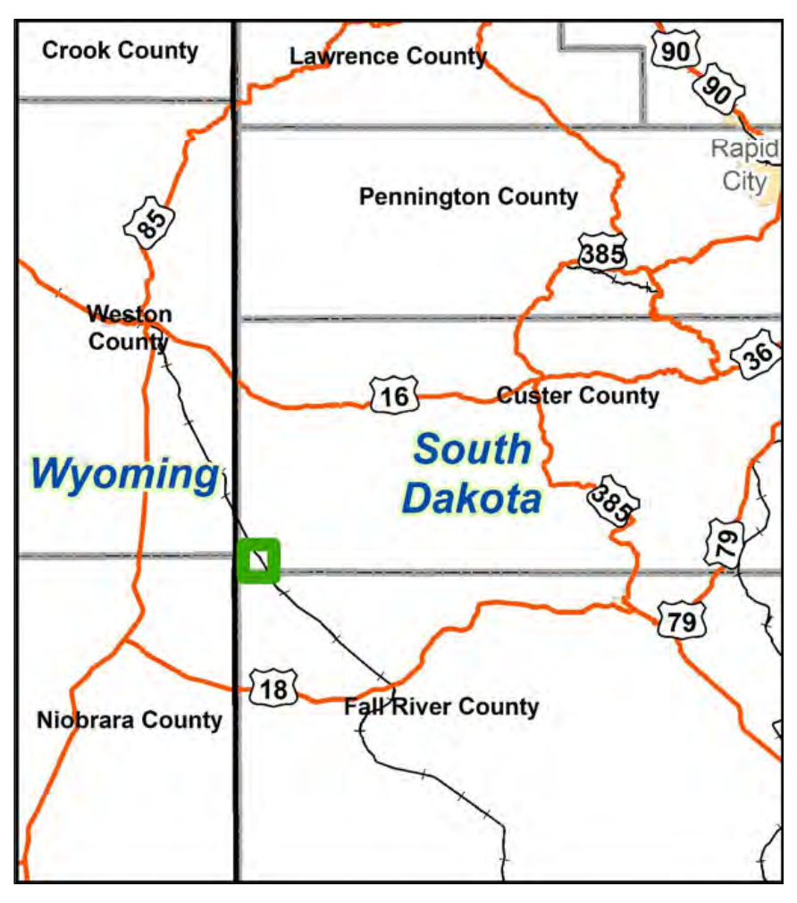
0 50 100 200
Meters



N

LEGEND:

- F13 Horizon
- F12 Horizon
- F11 Horizon
- PERIMETER MONITORING WELL
- OVERLYING MONITORING WELL
- UNDERLYING MONITORING WELL
- AQUIFER EXEMPTION BOUNDARY

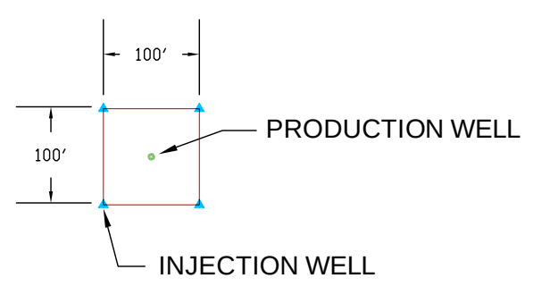
WELL LEGEND:

AQUIFER (color)

- ● ALLUVIUM
- ● INYAN KARA
- ● FALL RIVER
- ● FUSON SHALE
- ● LAKOTA (CHILSON)
- ● SUNDANCE
- ● UNKNOWN

WELL USE (symbol)

- ⌖ DOMESTIC
- ◇ STOCK
- ⬠ UNUSED DOMESTIC
- ○ UNUSED STOCK
- △ MONITORING



ONSITE WELLS	
TYPE	QTY
INJECTION (IXX-XXX)	355
PRODUCTION (PXX-XXX)	200
OVERLYING MONITORING (MO-X) 1 EVERY 4 ACRES	12
UNDERLYING MONITORING (MU-X) 1 EVERY 4 ACRES	12
PERIMITER MONITORING (MP-XX)	35

CONSULTANT

REF 323

CHECK SCALES

If this bar does not measure 1 inch this map is not at its original scale

Arch E 36" x 48"

REVISIONS				
#	DRAWN	CHECKED	APPROVED	DATE

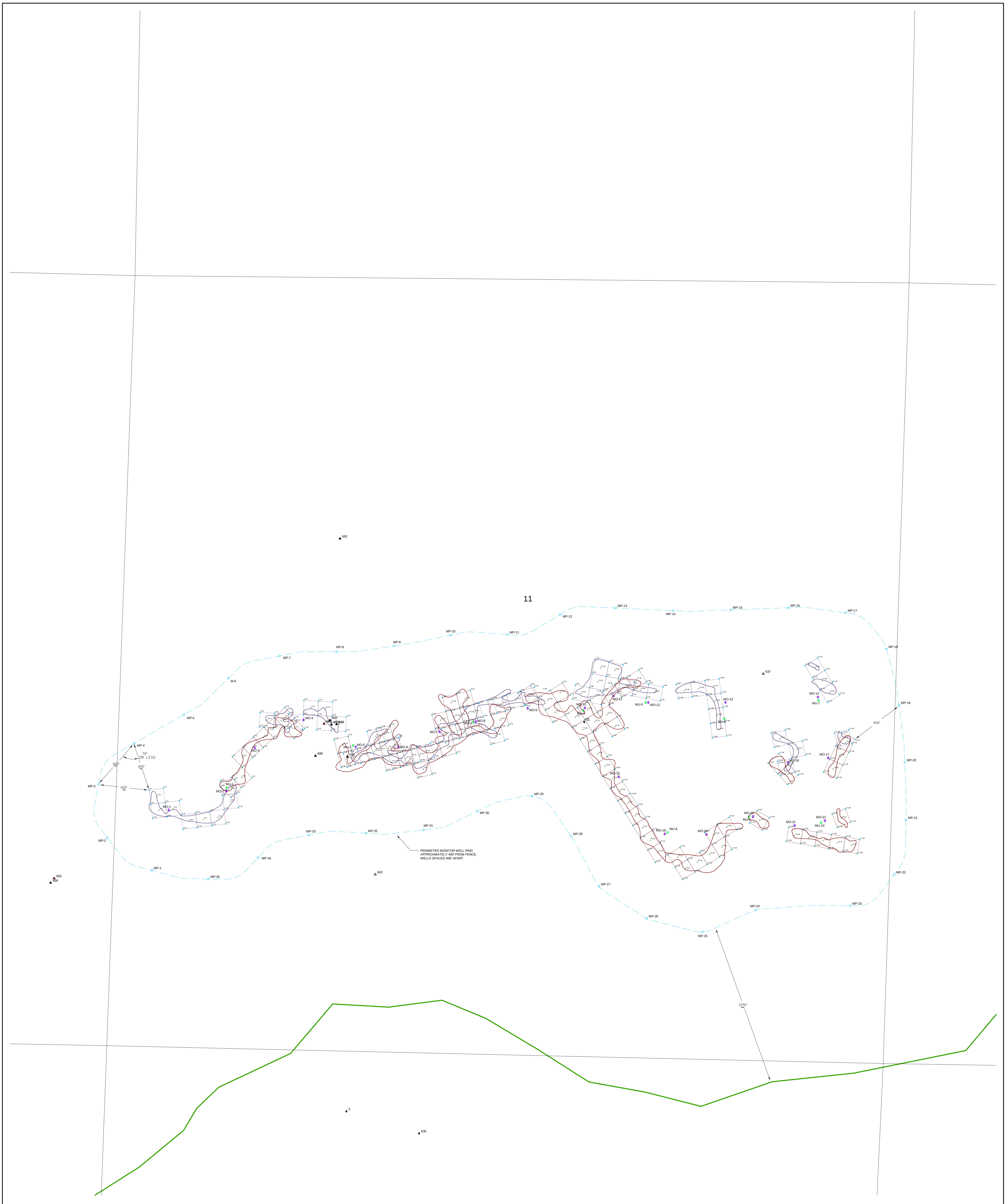
POWERTECH (USA) INC.

Plate 3.1-2

Typical Well Field Layout
Dewey Area
Custer County, South Dakota

PLOT DATE 15-Dec-2013
DATE 15-Dec-2013
PROJECT Dewey-Burdock Project
DRAWN Cadd Services (JGM)
CHECKED W. Mays
COORDS NAD 27, South Dakota State Plane South (feet)
SCALE 1" = 200'
FILENAME k:\powertech\11185\acad\dwgs_final_tr\nrc-deweymineunitmaps100.dwg

1Bii(a)
OF



LEGEND:

- L3 Horizon
- L2 Horizon
- PERIMETER MONITORING WELL
- OVERLYING MONITORING WELL
- UNDERLYING MONITORING WELL
- AQUIFER EXEMPTION BOUNDARY

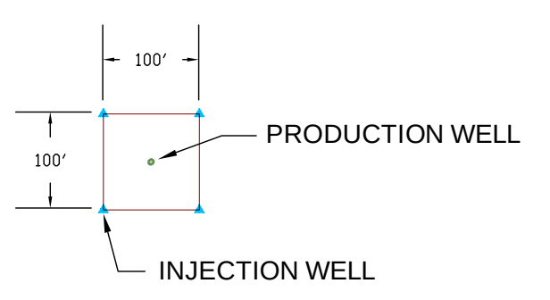
WELL LEGEND:

AQUIFER (color)

- ● ALLUVIUM
- ● INYAN KARA
- ● FALL RIVER
- ● FUSON SHALE
- ● LAKOTA (CHILSON)
- ● SUNDANCE
- ● UNKNOWN

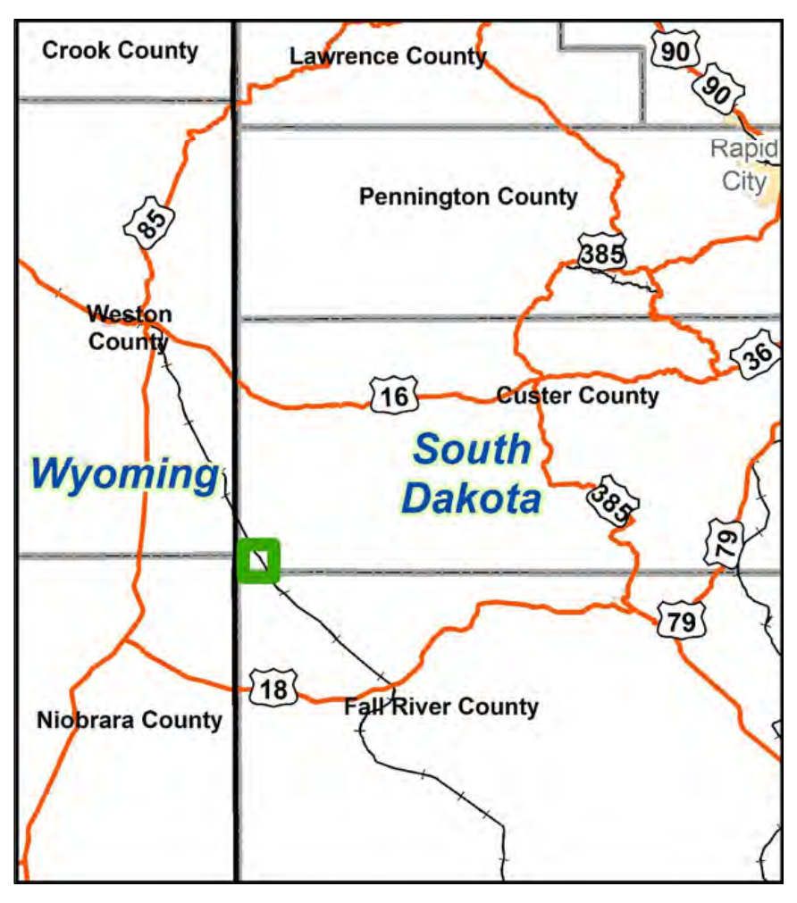
WELL USE (symbol)

- ⌖ DOMESTIC
- ◇ STOCK
- ⬠ UNUSED DOMESTIC
- ○ UNUSED STOCK
- △ MONITORING



ONSITE WELLS

TYPE	QTY
INJECTION (IX-XXX)	295
PRODUCTION (PX-XXX)	126
OVERLYING MONITORING (MO-X) 1 EVERY 3 ACRES	22
UNDERLYING MONITORING (MO-X) 1 EVERY 8 ACRES	10
PERIMITER MONITORING (MP-XX)	35



N

Feet
0 100 200 400 600 800
0 50 100 200
Meters

CONSULTANT	
REF	325
CHECK SCALES If this bar does not measure 1 inch this map is not at its original scale	
Arch E	36" x 48"

REVISIONS

#	DRAWN	CHECKED	APPROVED	DATE

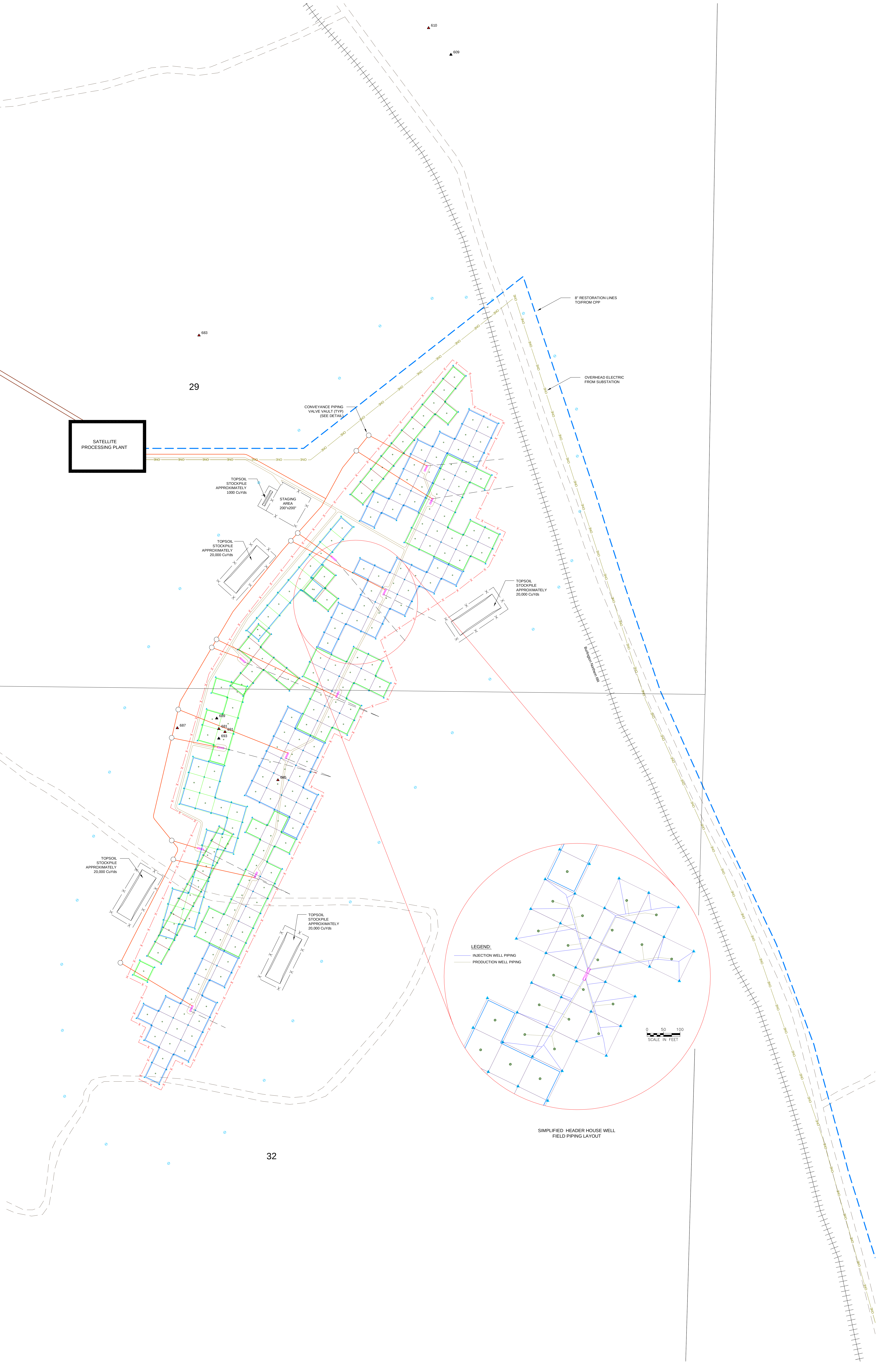
Powertech (USA) Inc.

Plate 3.1-3

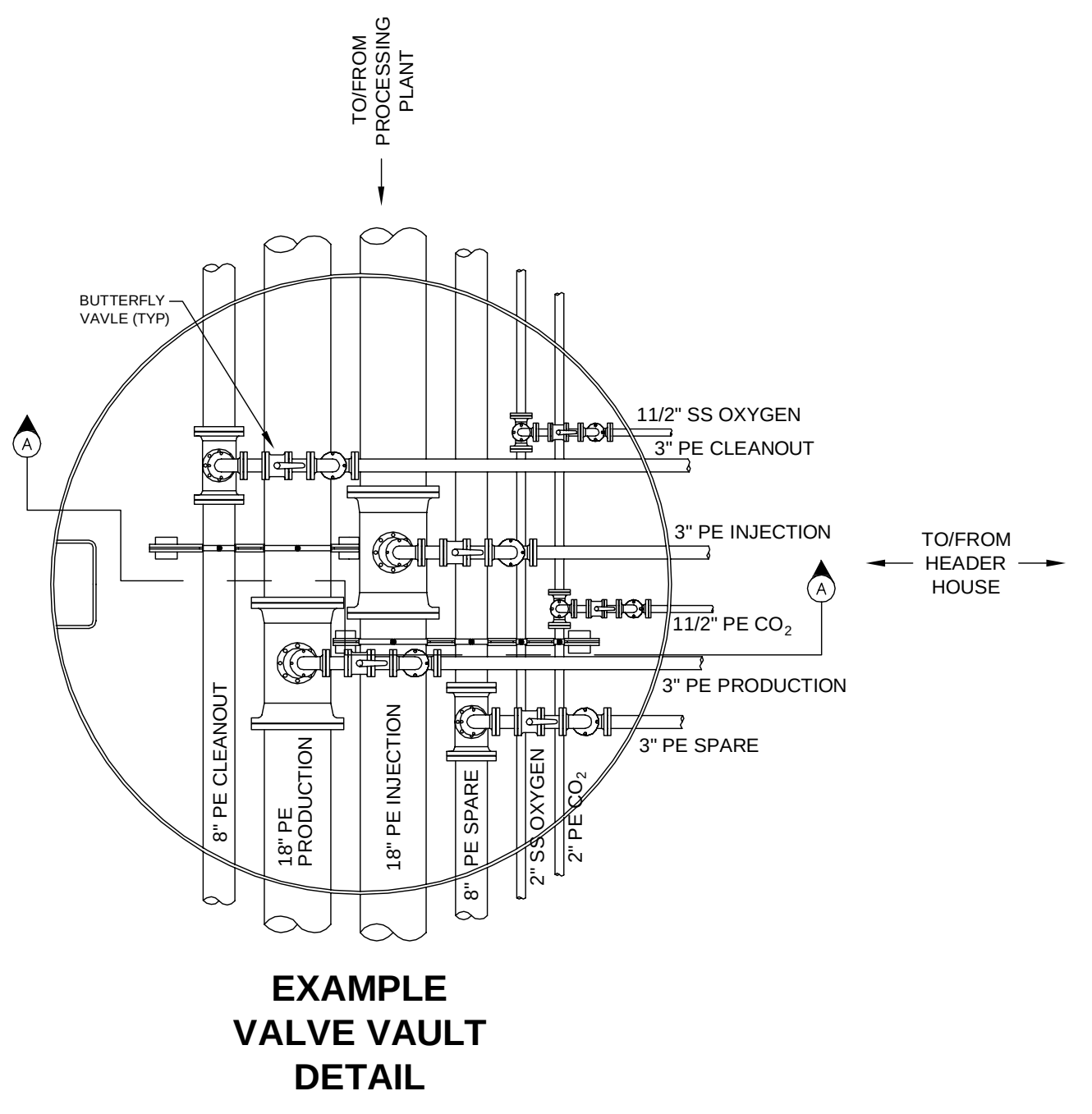
Typical Well Field Layout
Burdock Area
Fall River County, South Dakota

PLOT DATE	16-Dec-2013	DATE	16-Dec-2013	PROJECT	Dewey-Burdock
DRAWN	Cadd Services (JGM)	CHECKED	W. Mays	COORDS	NAD 27, South Dakota State Plane South (feet)
SCALE	1" = 200'	FILENAME	k:\powertech\11185\acad\dwgs_final_tr\nrc-burdockmineunitmaps100.dwg		

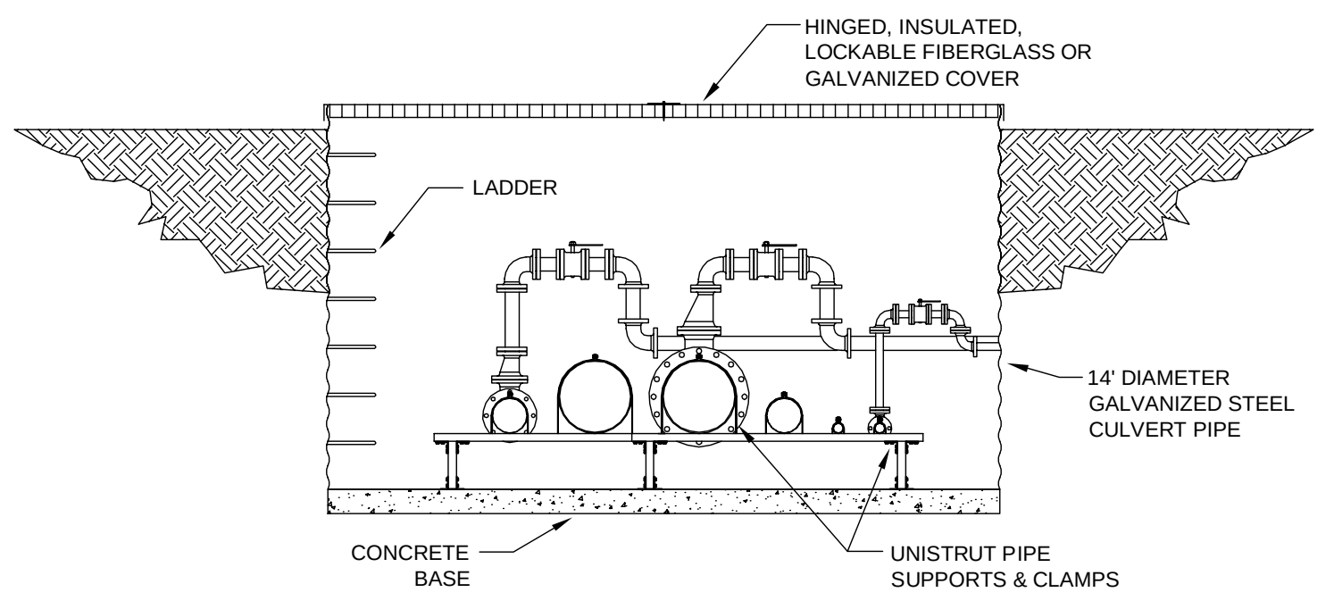
1Bii(d)
OF



SIMPLIFIED HEADER HOUSE WELL FIELD PIPING LAYOUT



EXAMPLE VALVE VAULT DETAIL



EXAMPLE SECTION A-A

LEGEND:

🟦🟩	HEADER HOUSE WELL FIELD BOUNDARY
▭	HEADER HOUSE
—OhE—	OVERHEAD ELECTRIC
— —	UNDERGROUND ELECTRIC
—	CONVEYANCE PIPING
═	NEW ACCESS ROAD
═ ═	EXISTING ROAD
—x—x—	FENCE

WELL LEGEND:

AQUIFER (color)

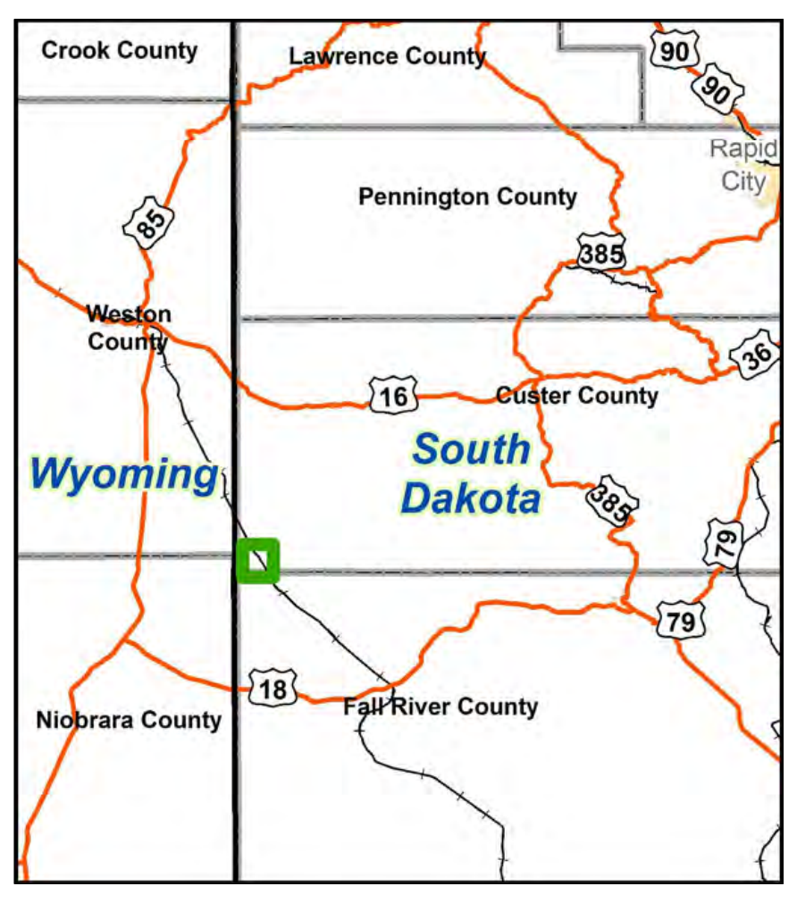
●	ALLUVIUM
●	INYAN KARA
●	FALL RIVER
●	FUSON SHALE
●	LAKOTA (CHILSON)
●	SUNDANCE
●	UNKNOWN

WELL USE (symbol)

⊕	DOMESTIC
◊	STOCK
⬠	UNUSED DOMESTIC
○	UNUSED STOCK
△	MONITORING

PRODUCTION WELL

INJECTION WELL



N

Feet
0 100 200 400 600 800
0 50 100 200
Meters

CONSULTANT

REF 324

CHECK SCALES

If this bar does not measure 1 inch this map is not at its original scale

Arch E 36" x 48"

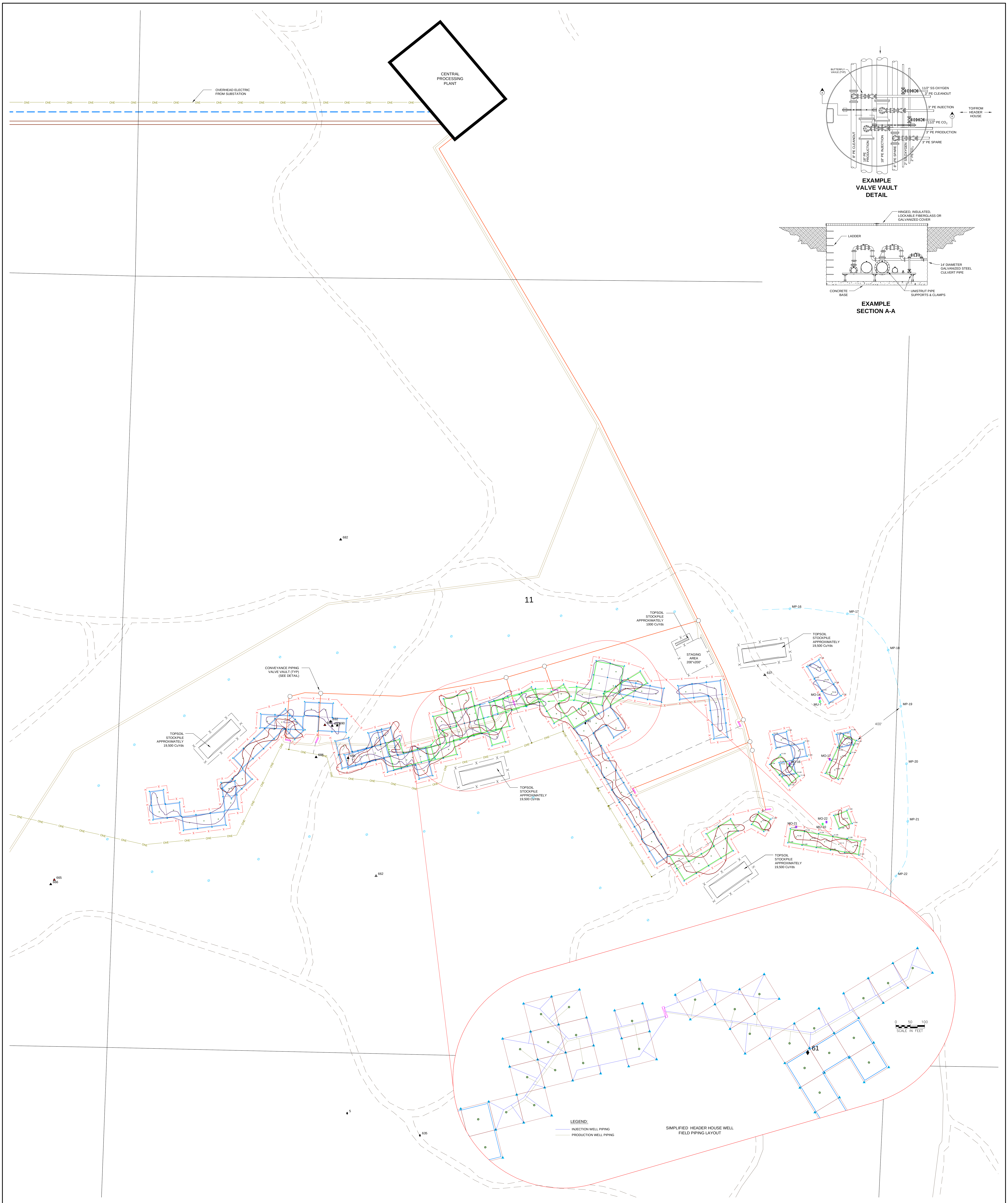
REVISIONS				
#	DRAWN	CHECKED	APPROVED	DATE

Powertech (USA) Inc.

Plate 3.1-4

Typical Well Field and Header House Layout Dewey Area

PLOT DATE 17-Dec-2013	DATE 16-Dec-2013	PROJECT Dewey-Burdock	1Bii(c)
DRAWN Cadd Services (JGM)	CHECKED W. Mays	COORDS NAD 27, South Dakota State Plane South (feet)	
SCALE 1" = 200'	FILENAME k:\powertech\11185\acad\dwgs_final_tr\nrc-deweymineunitmaps100.dwg		OF



Feet
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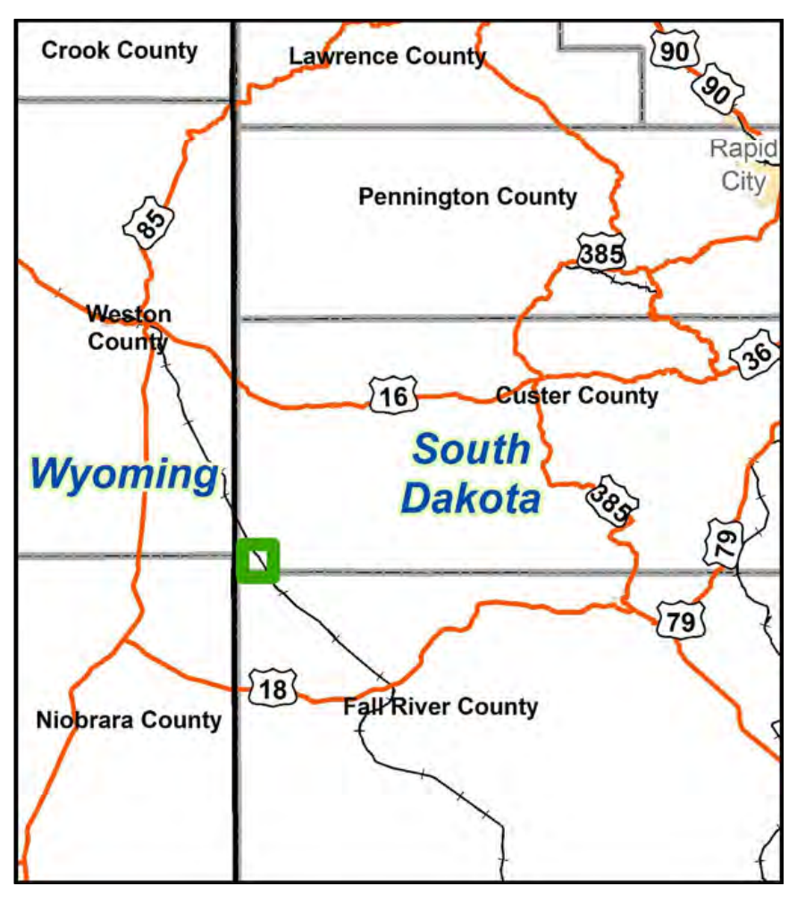
Meters



N

LEGEND:

- ▭ HEADER HOUSE WELL FIELD BOUNDARY
- ⊠ HEADER HOUSE
- —OhE— OVERHEAD ELECTRIC
- — — UNDERGROUND ELECTRIC
- —— CONVEYANCE PIPING
- ═ NEW ACCESS ROAD
- = = EXISTING ROAD
- —x—x— FENCE

WELL LEGEND:

AQUIFER (color)

- ● ALLUVIUM
- ● INYAN KARA
- ● FALL RIVER
- ● FUSON SHALE
- ● LAKOTA (CHILSON)
- ● SUNDANCE
- ● UNKNOWN

WELL USE (symbol)

- ⌖ DOMESTIC
- ◊ STOCK
- ⬠ UNUSED DOMESTIC
- ○ UNUSED STOCK
- △ MONITORING

PRODUCTION WELL

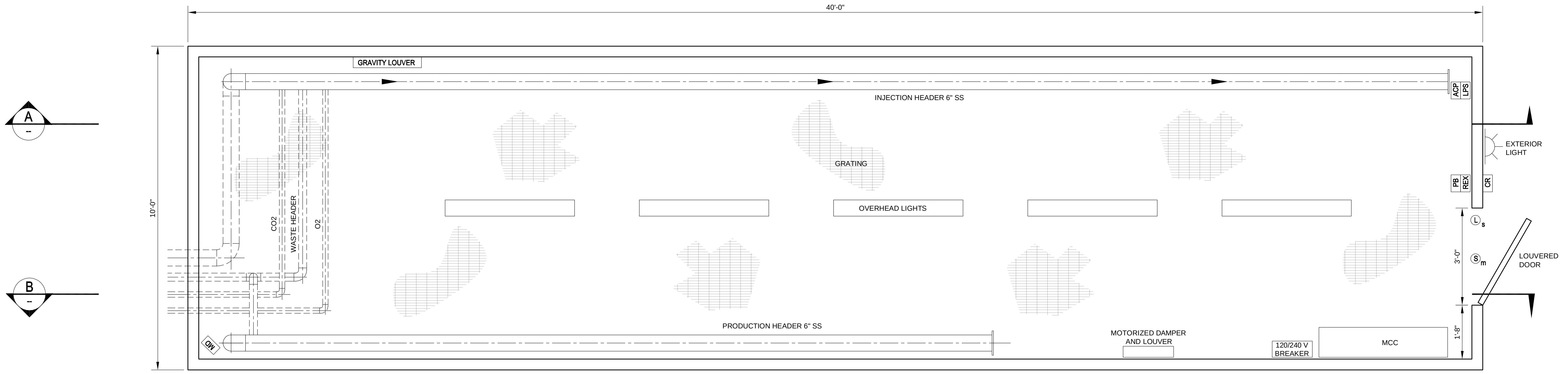
INJECTION WELL

CONSULTANT				
REF 326	REVISIONS			
	# DRAWN	CHECKED	APPROVED	DATE
CHECK SCALES If this bar does not measure 1 inch this map is not at its original scale	PLOT DATE 17-Dec-2013	DATE 16-Dec-2013	PROJECT Dewey-Burdock Project	
	DRAWN Cadd Services (JGM)	CHECKED W. Mays	COORDS NAD 27, South Dakota State Plane South (feet)	1Bii(b)
Arch E 36" x 48"	SCALE 1" = 200'	FILENAME k:\powertech\11185\acad\dwgs_final_tr\nrc-burdockmineunitmaps100_3_1-5.dwg		OF

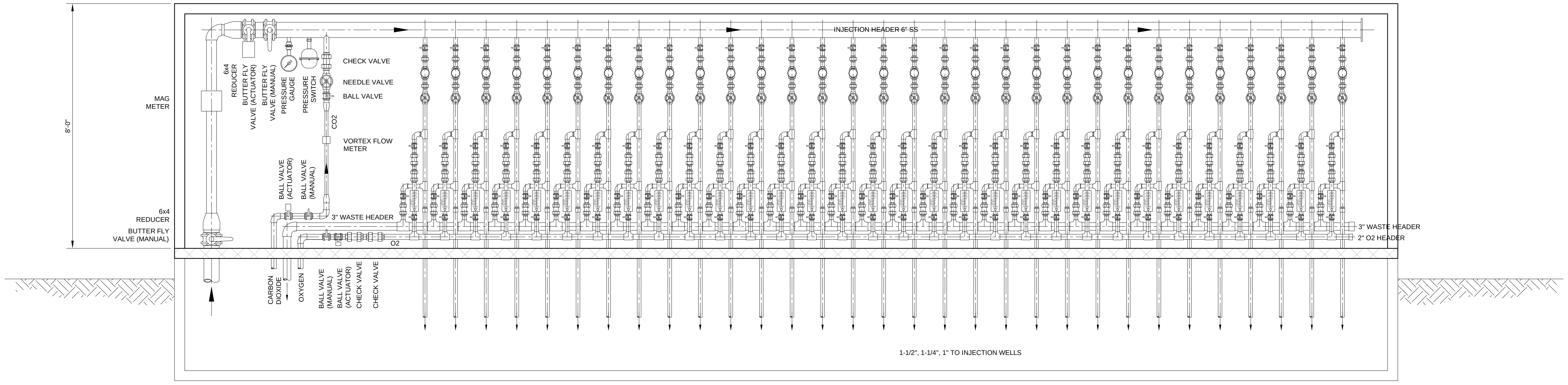
POWERTECH (USA) INC.

Plate 3.1-5

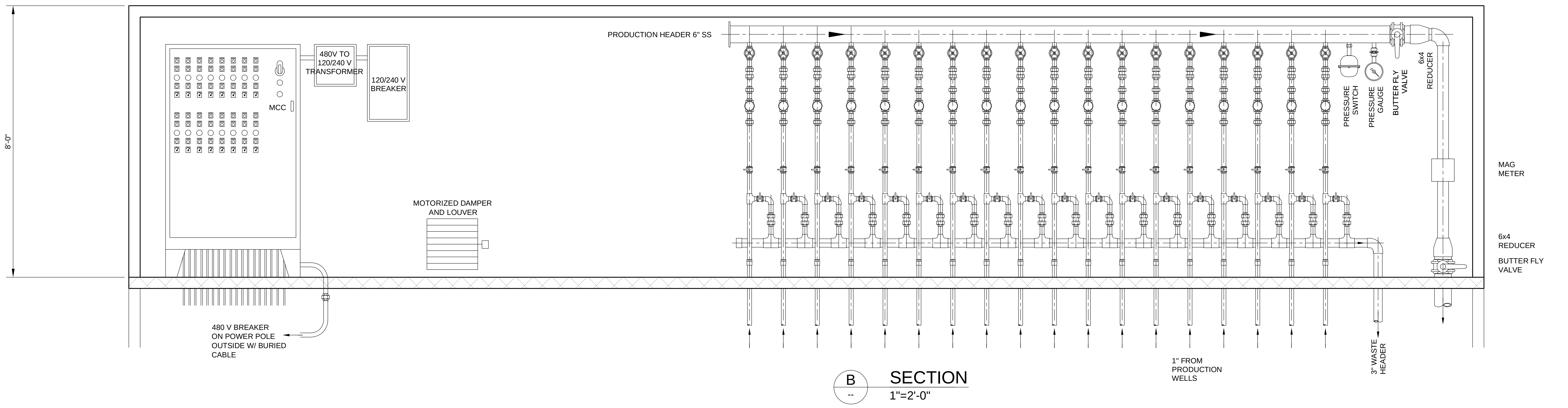
Typical Well Field and Header House Layout Burdock Area



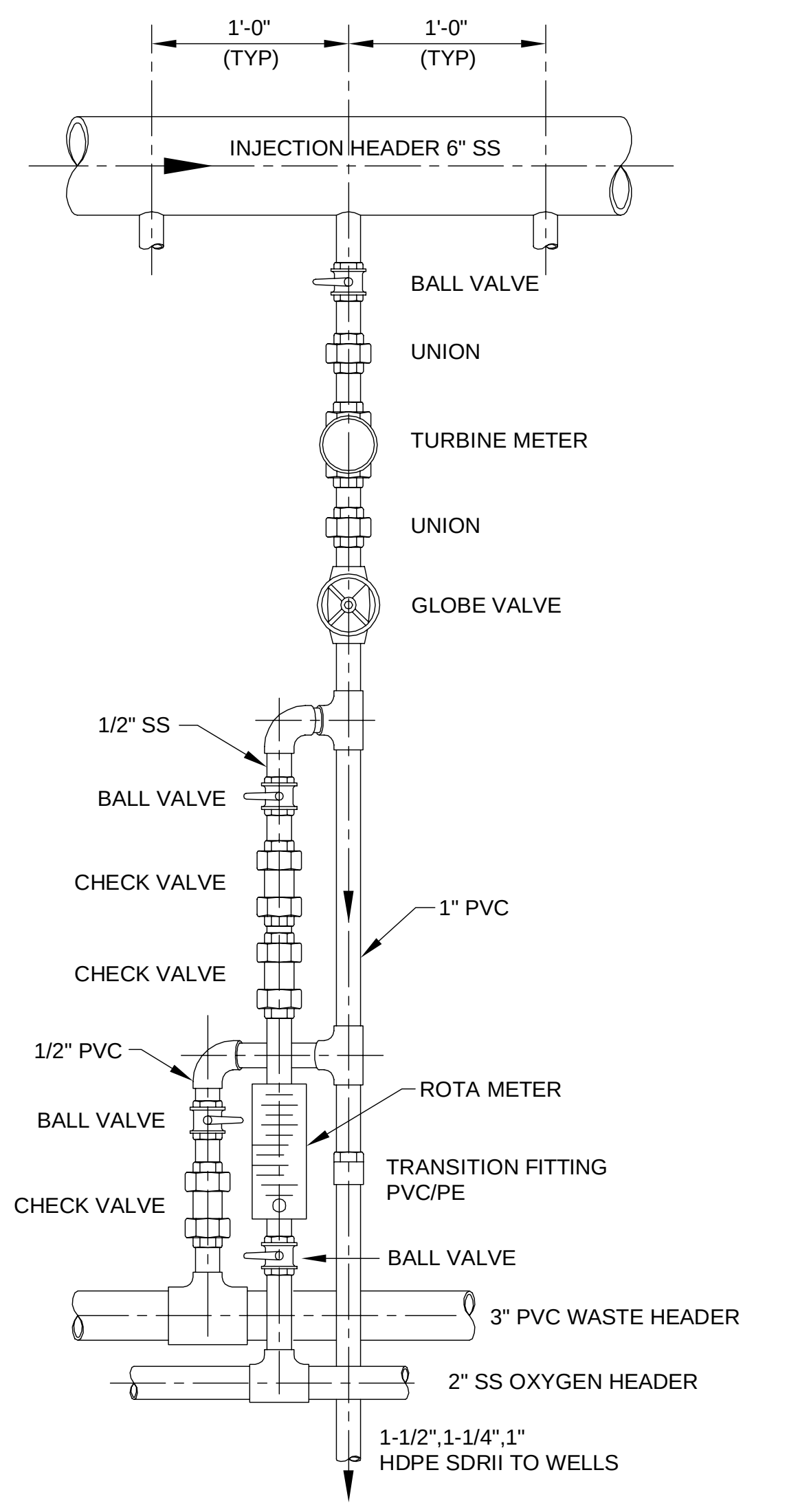
PLAN
1"=2'-0"



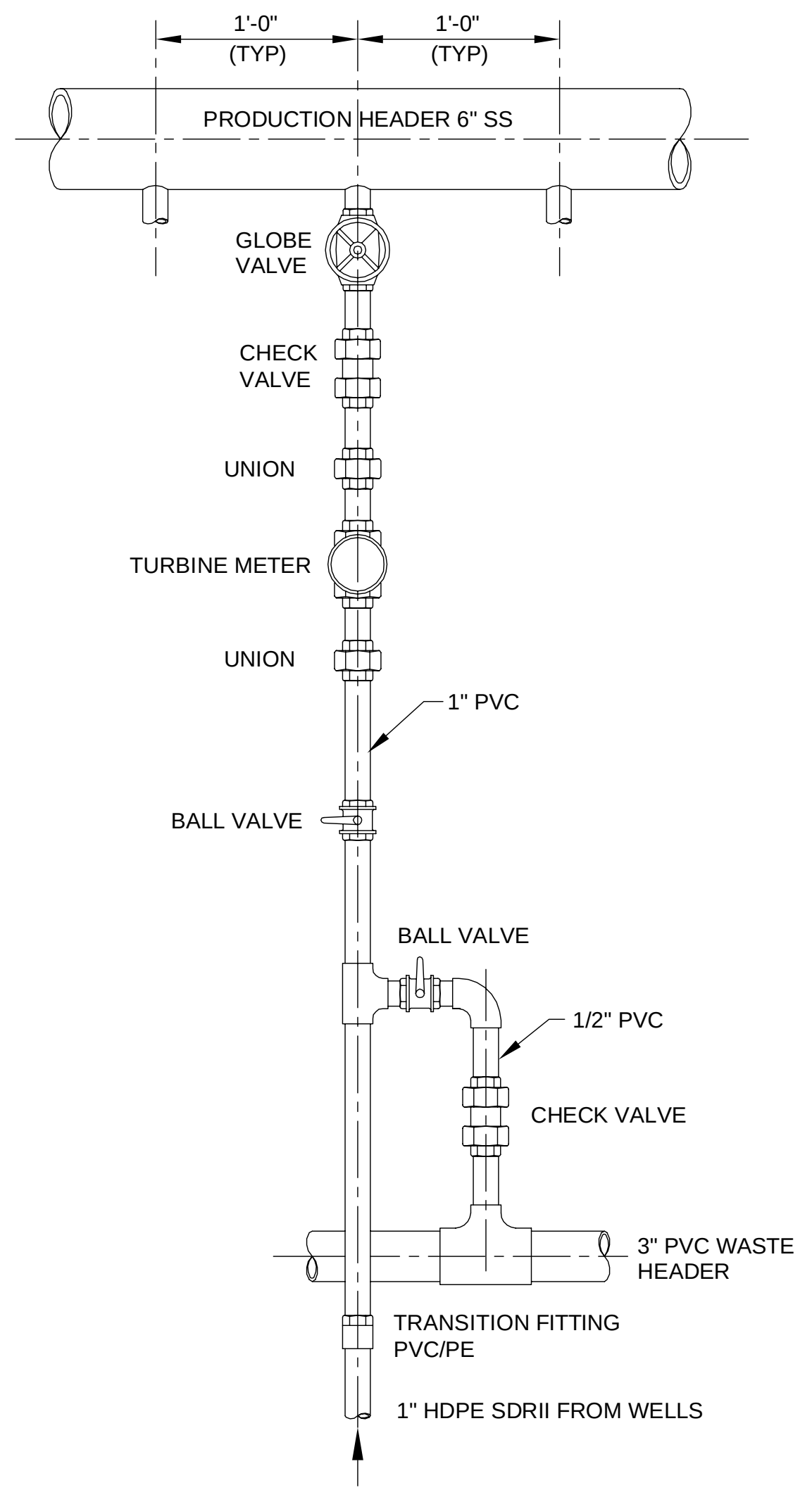
A
--
SECTION
1"=2'-0"



B
--
SECTION
1"=2'-0"



INJECTION HEADER DETAIL
1"=1'-0"



PRODUCTION HEADER DETAIL
1"=1'-0"

LEGEND

MD	MOTION DETECTOR
ACP	ACCESS CONTROL PANEL
LPS	LOCK POWER SUPPLY
REX	REQUEST-TO-EXIT DETECTOR
PB	PUSH BUTTON RE-ARM MOTION DETECTOR
CR	CARD READER
Ⓛs	ELECTRONIC STRIKE LOCK
Ⓢm	DOOR STATUS SWITCH

0 1.5 3
SCALE IN FEET

CONSULTANT

REF R976

CHECK SCALES

If this bar does not measure 1 inch this map is not at its original scale

Arch E 36" x 48"

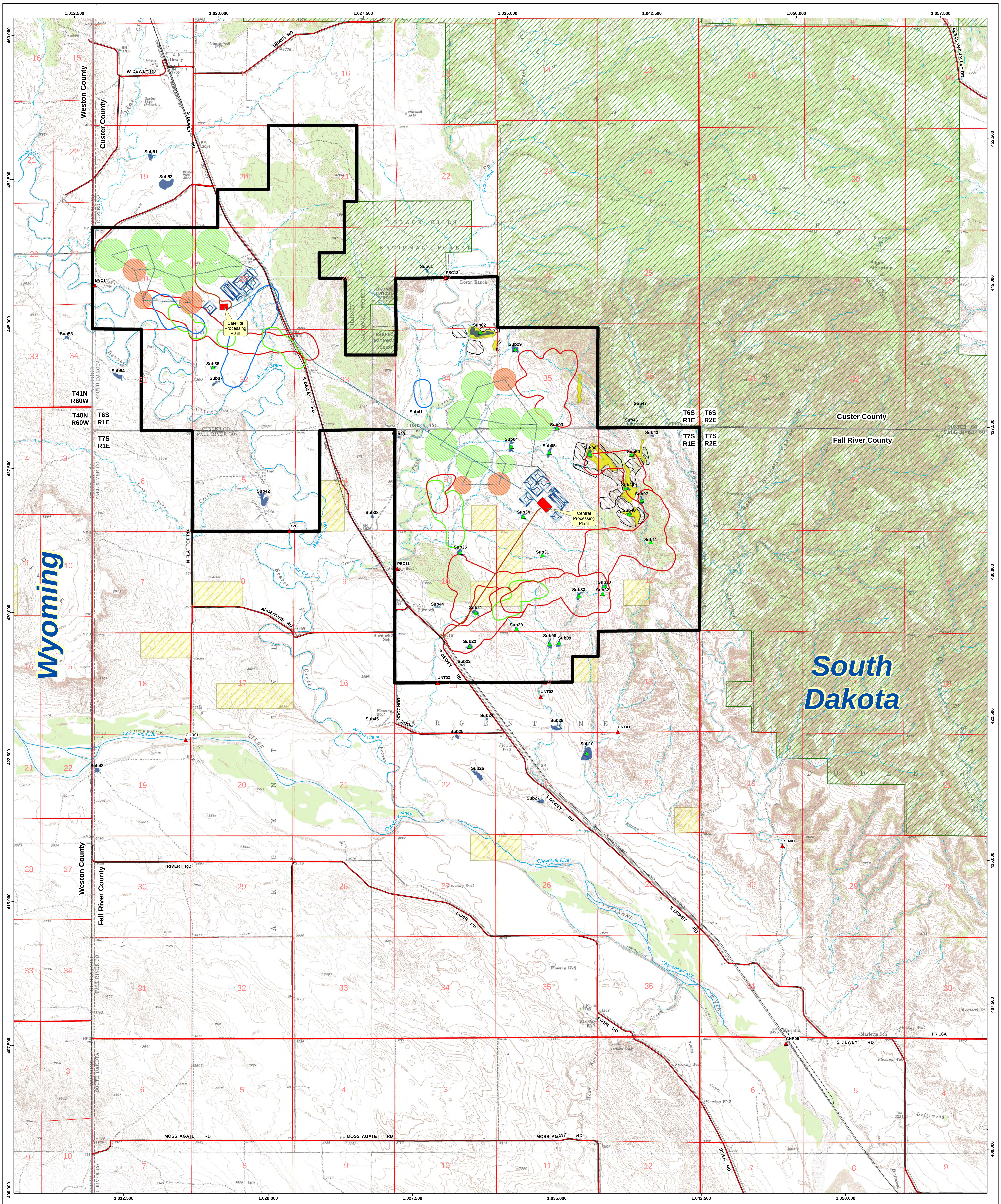
REVISIONS

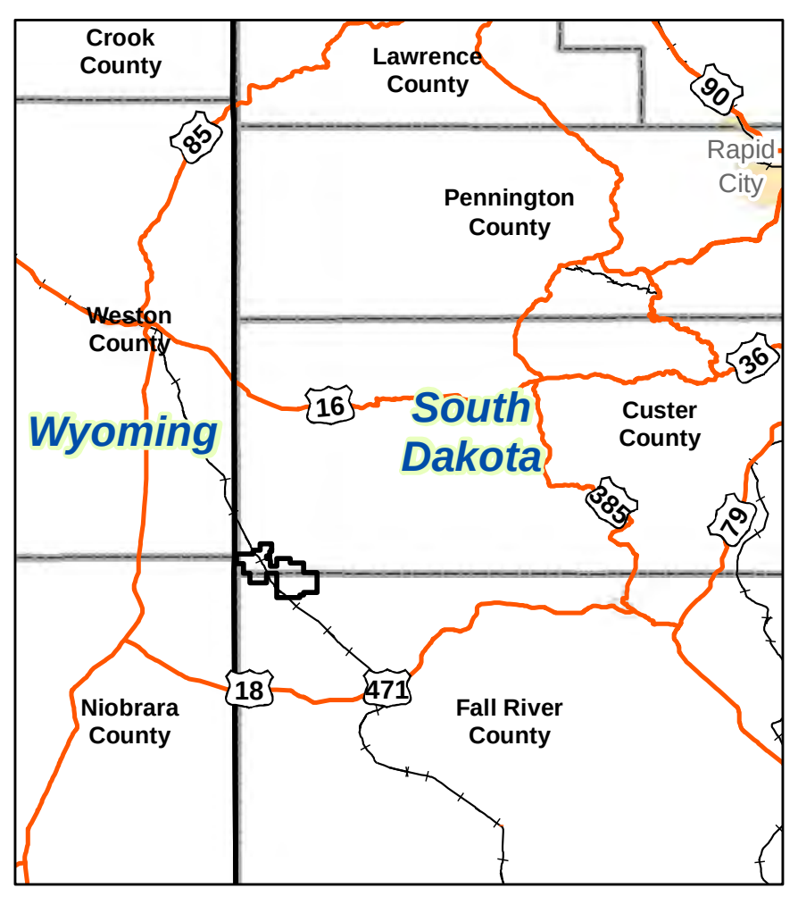
#	DRAWN	CHECKED	APPROVED	DATE

POWERTECH (USA) INC.

Plate 3.1-6
Typical Header House
100' and 70' Well Field

PLOT DATE 16-Dec-2013	DATE 16-Dec-2013	PROJECT Dewey-Burdock Project	
DRAWN JGM	CHECKED JM	COORDS None	
SCALE As Shown	FILENAME k:\powertech\11185\acad\dwgs_final_tr\header house.dwg		OF





Feet
0 1,500 3,000 4,500 6,000
0 250 500 1,000 1,500 2,000
Meters

N

Legend

- 🟩 Operational Impoundment Sample Sites
- 🟥 Operational Stream Sampling Sites
- Impoundments
- Project Boundary
- BLM Land
- Black Hills National Forest
- Ephemeral Streams
- Perennial Streams
- 🟥 Processing Plants
- Existing Roads Used for Access
- Access Roads
- BNSF Railroad
- County Roads
- Pipelines
- Open Pit Uranium Mines
- Spoil Piles
- Land Application
- Standby Land Application
- Ponds

Potential Well Field Areas

- Lower Fall River
- Upper Chilson
- Middle/Lower Chilson

CONSULTANT

REF 991

CHECK SCALES

If this bar does not measure 1 inch this map is not at its original scale

Arch E 36" x 48"

REVISIONS

#	DRAWN	CHECKED	APPROVED	DATE

PLOT DATE 14-Dec-2013
DATE 14-Dec-2013
DRAWN S. Hetrick
PDF FILE R991_OpSurfH2OMonLoc.pdf
CHECKED J. Mays
CAD FILE P:\Dewey-Burdock\Submittals\WWC NRC TR RAI June 2011\Exhibit 5.7-1.mxd
COORDS NAD 27, South Dakota State Plane South (feet)

Powertech (USA) Inc.

Plate 5.7-1

Operational Surface Water Monitoring Locations

Dewey-Burdock Project