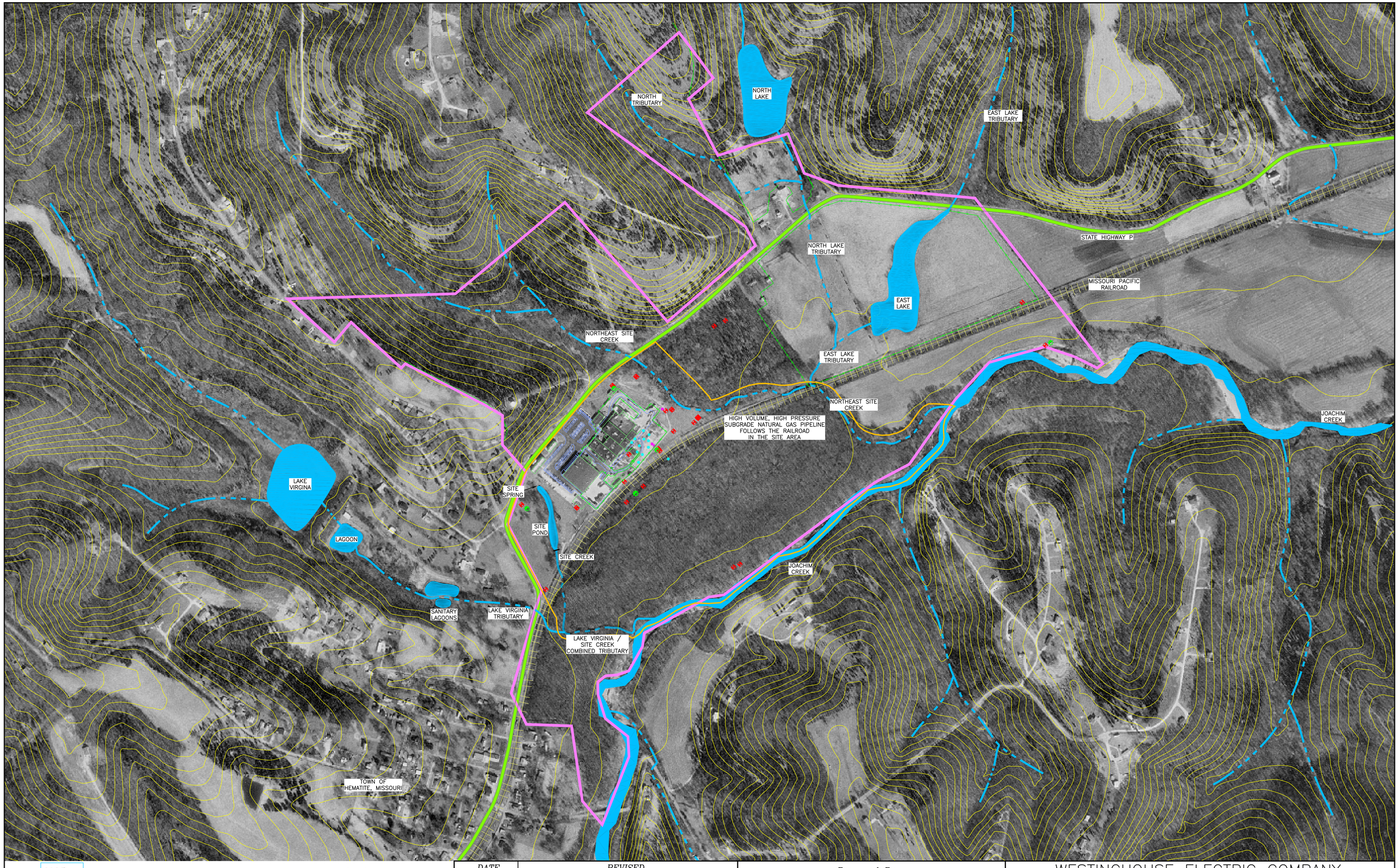
REMEDIAL INVESTIGATION
FEASIBILITY STUDY WORK PLAN
REVISION '0' FOR THE
WESTINGHOUSE ELECTRIC COMPANY
HEMATITE, MISSOURI
MAY 9, 2003
Prepared By:

LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and
Environmental Engineering Services
4850 Lemay Ferry Road, Suite 205
St. Louis, MO 63129
(314) 845-0535

PLATE	DESCRIPTION
1	SITE MAP
2	PLANT DETAIL MAP
3	PRELIMINARY INTERPRETATION OF AERIAL PHOTOGRAPHS
4	ELEVATION OF BEDROCK SURFACE (JEFFERSON CITY-COTTER DOLOMITE)
5	TOP OF ROUBIDOUX FORMATION ELEVATION MAP
6	JEFFERSON CITY-COTTER DOLOMITE POTENTIOMETRIC SURFACE AND OUTER AREA EXPLORATORY PLAN MAP
7	ROUBIDOUX FORMATION POTENTIOMETRIC SURFACE AND OUTER AREA EXPLORATORY PLAN MAP
8	SCHEMATIC GEOLOGIC CROSS-SECTION X-X'
9	SCHEMATIC GEOLOGIC CROSS-SECTION Y-Y'
10	POTENTIAL AREAS OF CONCERN
11	CHEMICAL AND HAZARDOUS MATERIAL STORAGE LOCATIONS
12	BUILDING AREA SANITARY DRAIN SYSTEM
13	BUILDING AREA STORM WATER SYSTEM
14	EXISTING MONITORING WELL/PIEZOMETER NETWORK AND PREVIOUS INVESTIGATIVE BORING LOCATIONS
15	PRIVATE WELLS IMPACTED BY VOC'S
16	PROPOSED LOCATIONS FOR JEFFERSON CITY-COTTER BACKGROUND WELL AND PROPOSED EXPLORATORY BORING PLAN
17	PROPOSED SURFACE WATER AND STREAM/POND SEDIMENT SAMPLING LOCATIONS
18	PROPOSED BORING, AND SAMPLING LOCATION FOR SITE POND & SUBGRADE, HIGH-PRESSURE NATURAL GAS PIPELINE
19	PROPOSED SURFACE SOIL SAMPLE AND TRENCH LOCATIONS FOR BURIAL PIT AREA
20	PROPOSED BORING LOCATIONS FOR EVAPORATION PONDS, FORMER SEPTIC LEACH FIELD & FORMER GAS STATION
21	PROPOSED BORING LOCATION MAP - SOILS BENEATH BUILDINGS
22	PROPOSED SAMPLE LOCATION MAP - LIMESTONE STORAGE/FILL AREAS
23	PROPOSED BORING & SAMPLING LOCATIONS FOR OUTDOOR & SHALLOW SURFACE AREAS, DEULS MOUNTAIN, CISTERN/BURN PIT AND RED ROOM ROOF BURIAL AREA
24	PROPOSED BORING AND SAMPLING LOCATIONS NEAR DOMESTIC WELL #3
25	GROSS GAMMA WALKOVER SURVEY (GWS)
26	PROPOSED AQUIFER TESTING AREA AND TEST CONFIGURATION



MISSOURI
QUADRANGLE LOCATION
AREA LOCATION

SOURCES:

DIGITAL ORTHOPHOTO: USGS, MARCH 1996
DIGITAL ELEVATION MODEL: USGS, JANUARY, 1964
BORING LOCATIONS: BURDINE, 1998–1999
PROPERTY BOUNDARY: ZAHNER & ASSOC., MAY, 2000

- APPROXIMATE PROPERTY BOUNDARY
- SITE BOUNDARY
- PERENNIAL STREAM
- INTERMITTENT STREAM
- 10–FOOT CONTOUR LINE
- FENCE LINE
- MONITORING WELL (WS–31)
- PIEZOMETER (PZ–1)
- PREVIOUS GEOPROBE BORING LOCATION (GWE–3)
- MONITORING WELL (RMC–9)

0 300
SCALE IN FEET

N

DATE	REVISED

Prepared By:

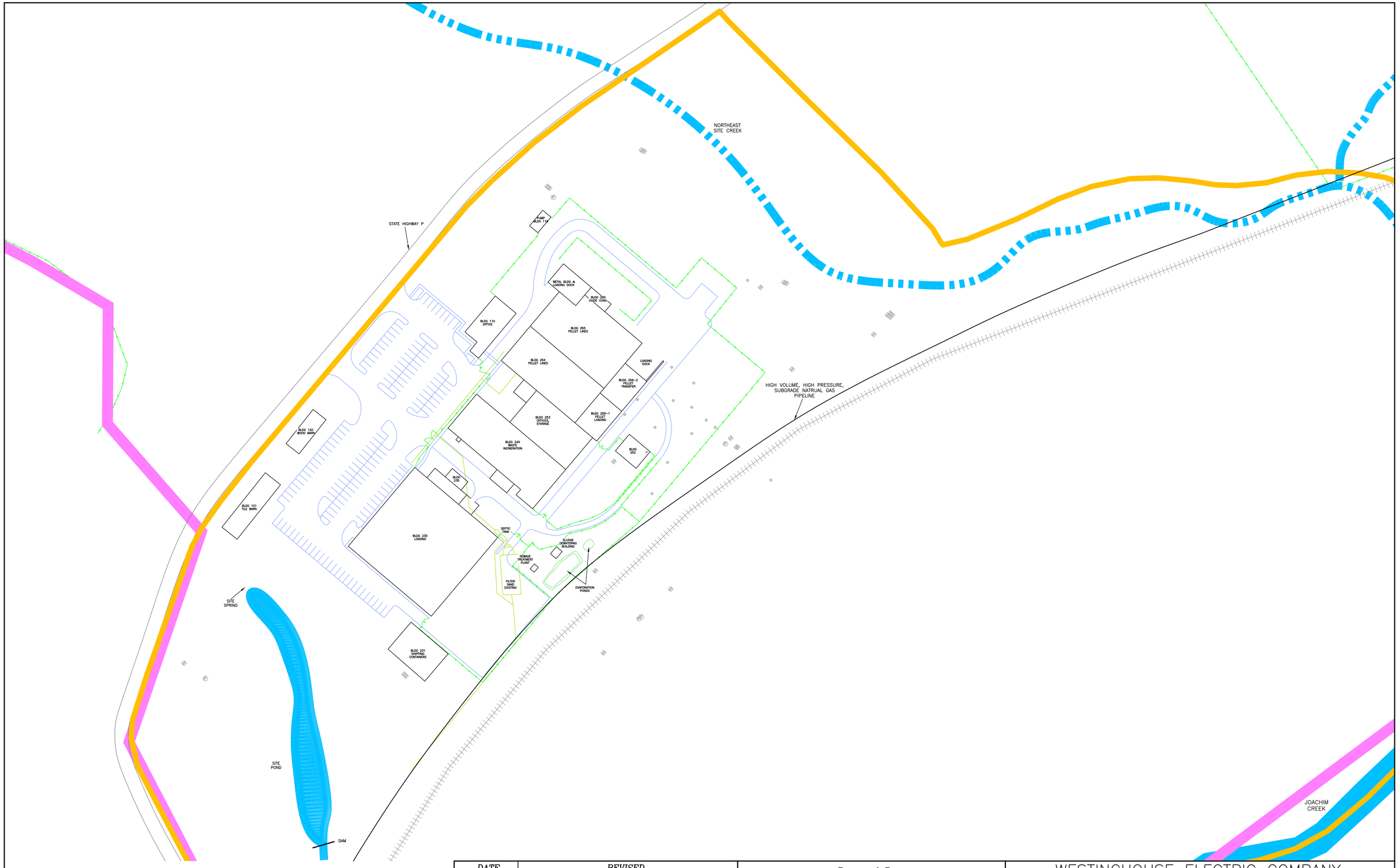
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground–Water and
Environmental Engineering Services
4850 Lemay Ferry Road, Suite 205
St. Louis, MO 63129
(314) 845–0535

WESTINGHOUSE ELECTRIC COMPANY

HEMATITE, MISSOURI FACILITY
HEMATITE, MISSOURI

SITE MAP

FILE:	Plate 1.dwg	*DATE:*	MAY 9, 2003	*PLATE:*	1 OF 26



APPROXIMATE PROPERTY BOUNDARY
SITE BOUNDARY
PERENNIAL STREAM
INTERMITTENT STREAM
FENCE LINE

0 75
SCALE IN FEET

N

SOURCES:

"AS-BUILT" AS PROVIDED BY WESTINGHOUSE/ABB
DIGITAL ELEVATION MODEL: USGS, JANUARY, 1964
BORING LOCATIONS: BURDINE, 1998-1999
PROPERTY BOUNDARY: ZAHNER & ASSOC., MAY, 2000

DATE	REVISED

Prepared By:

LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and
Environmental Engineering Services
4850 Lemay Ferry Road, Suite 205
St. Louis, MO 63129
(314) 845-0535

WESTINGHOUSE ELECTRIC COMPANY

HEMATITE, MISSOURI FACILITY
HEMATITE, MISSOURI

PLANT DETAIL MAP

FILE:	Plate 2.dwg	*DATE:*	MAY 9, 2003	*PLATE:*	2 OF 26

DISTRESSED VEGETATION 1975
DISTURBED AREA 1966
DISTURBED AREAS AND/OR DISTRESSED VEGETATION 1962
GRADED 1956
"IMPROVED" STREAM 1938
DISTURBED AREA 1990/1991
GRADED 1956
POSSIBLE GRADING ACTIVITIES ASSOCIATED WITH CURRENT BUILDING 1956
FOOTPATH OR DRAINAGE CHANNEL 1959
DISTURBED AREAS AND/OR DISTRESSED VEGETATION 1962
DISTURBED AREA 1990/1991
FOUR–FIVE "OUT" BUILDINGS 1954–1966
GRADING/DISTURBED AREAS 1959
DISTURBED AREA 1966
POSSIBLE POND IN 1960
DISTURBED AREA 1975
DISTURBED AREAS 1973
UNIMPROVED ROAD 1954
EAST LAKE CONSTRUCTED BETWEEN 1962 & 1966
DISTURBED AREA 1973
FENCE? 1954
DISTURBED AREAS AND/OR DISTRESSED VEGETATION 1962
TRAIL 1971
UNIMPROVED ROAD 1954–1956
SOUTH PART DISAPPEARS IN 1959
NORTH PART APPEARS AS FENCE LINE

MISSOURI
AREA LOCATION

APPROXIMATE PROPERTY BOUNDARY
SITE BOUNDARY
PERENNIAL STREAM
INTERMITTENT STREAM
10–FOOT CONTOUR LINE
FENCE LINE

MONITORING WELL (WS–31)
PIEZOMETER (PZ–1)
PREVIOUS GEOPROBE BORING LOCATION (GWE–3)
MONITORING WELL (RMC–9)

0 300
SCALE IN FEET

SOURCES:
DIGITAL ORTHOPHOTO: USGS, MARCH 1996
DIGITAL ELEVATION MODEL: USGS, JANUARY, 1964
BORING LOCATIONS: BURDINE, 1998–1999
PROPERTY BOUNDARY: ZAHNER & ASSOC., MAY, 2000

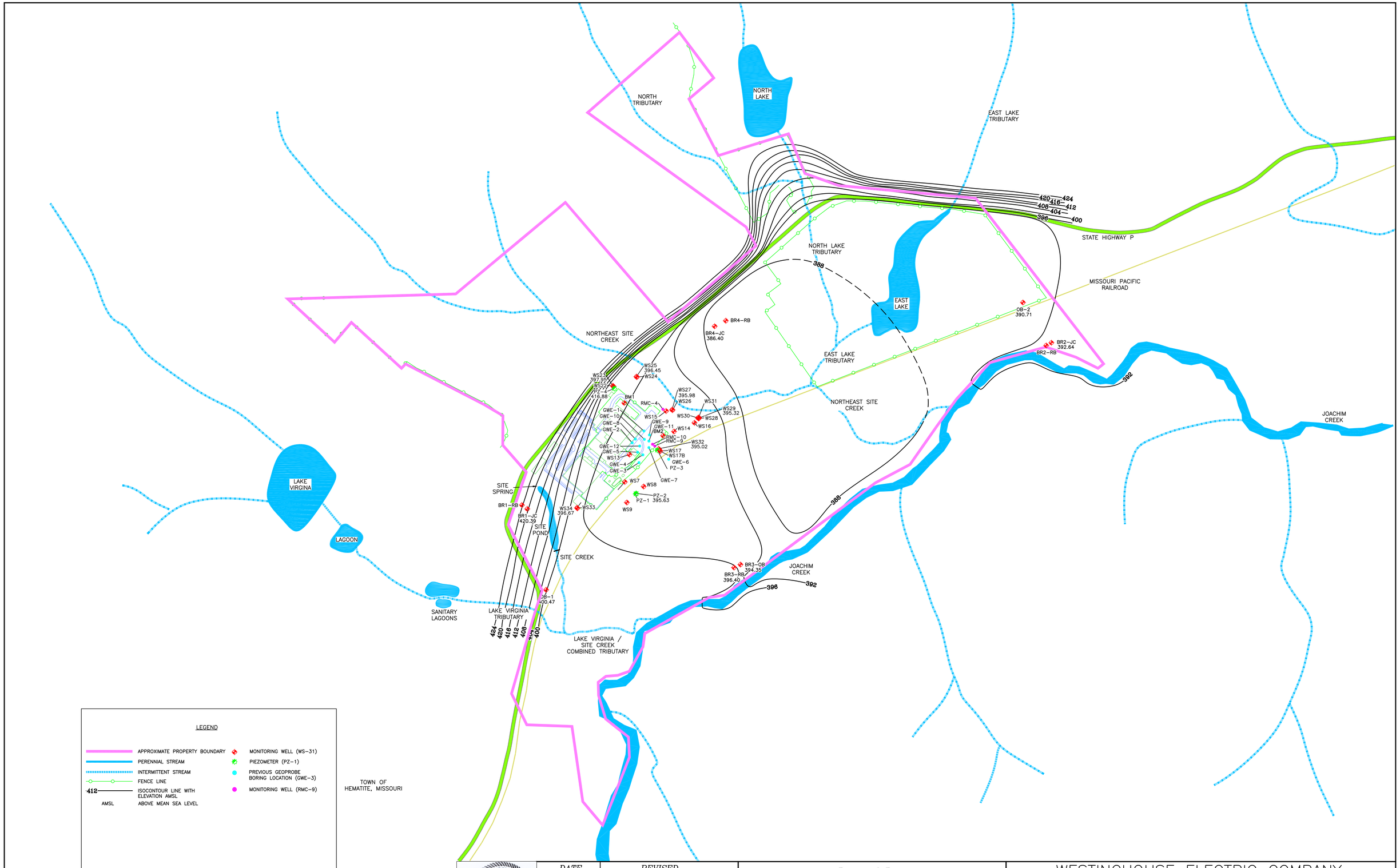
DATE	REVISED

Prepared By:
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground–Water and
Environmental Engineering Services
4850 Lemay Ferry Road, Suite 205
St. Louis, MO 63129
(314) 845–0535

WESTINGHOUSE ELECTRIC COMPANY
HEMATITE, MISSOURI FACILITY
HEMATITE, MISSOURI

INTERPRETATION OF AERIAL PHOTOGRAPHS

FILE: Plate 3.dwg | *DATE:* MAY 9, 2003 | *PLATE:* 3 OF 26



SOURCES:

BORING LOCATIONS: BURDINE, 1998-1999
PROPERTY BOUNDARY: ZAHNER & ASSOC., MAY, 2000

DATE	REVISED

Prepared By:

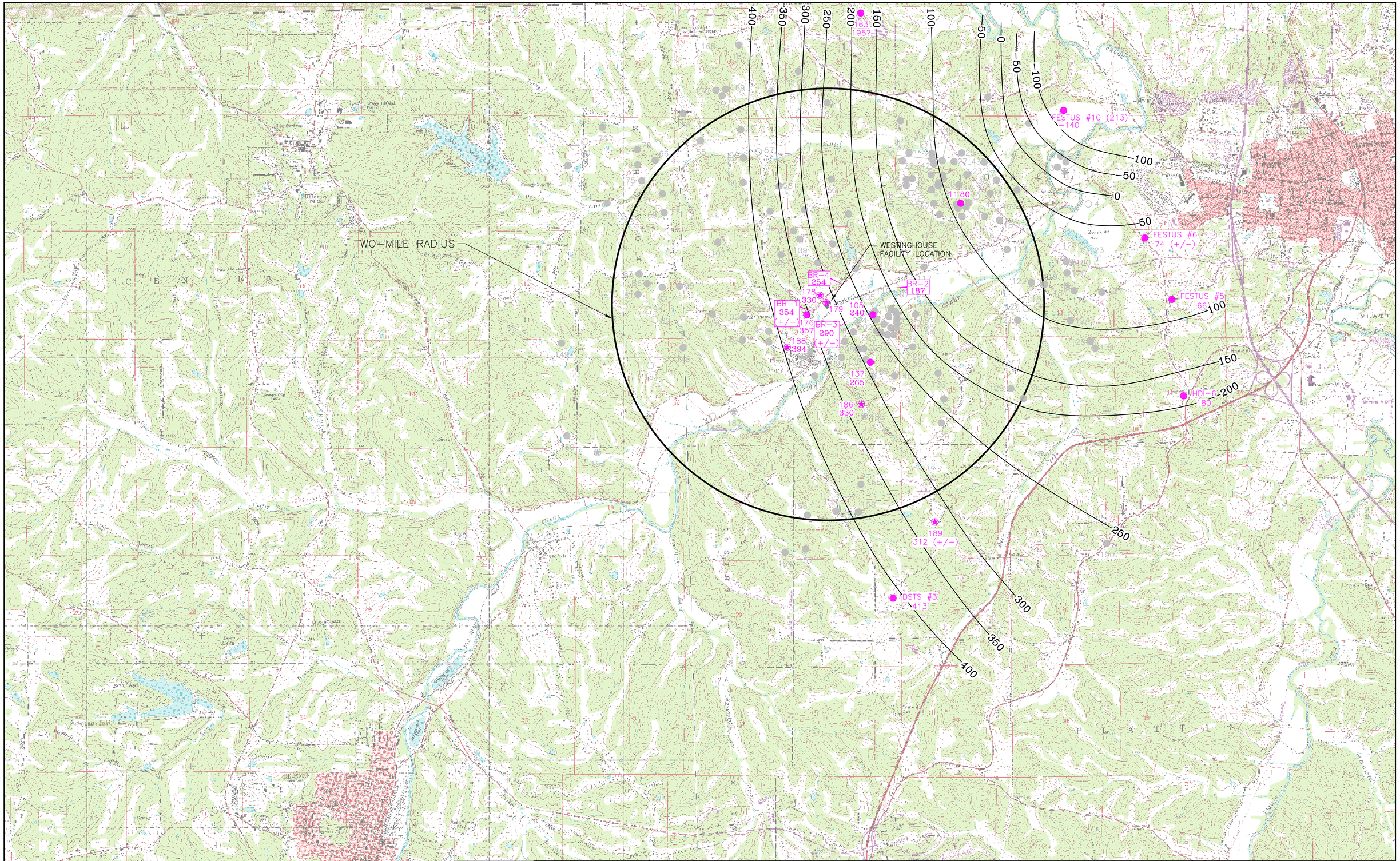
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and
Environmental Engineering Services
4850 Lemay Ferry Road, Suite 205
St. Louis, MO 63129
(314) 845-0535

WESTINGHOUSE ELECTRIC COMPANY

HEMATITE, MISSOURI FACILITY
HEMATITE, MISSOURI

ELEVATION OF BEDROCK SURFACE (JEFFERSON CITY-COTTER DOLOMITE)

FILE:	12WWP01Q.dwg	*DATE:*	MAY 9, 2003	*PLATE:*	4 OF 26



LEGEND

- ○ 125 — WELL LOCATION PRECISE TO 1/4 SECTION
- ◎ 130 — WELL LOCATION PRECISE TO 1/16 SECTION
- ◉ 186 — WELL LOCATION PRECISE TO 1/4 SECTION. GEOLOGIC LOG AVAILABLE.

NOTES:
ELEVATION DATUM IS MEAN SEA LEVEL (MSL)

SOURCE:
DESOTO QUADRANGLE, MISSOURI–JEFFERSON CO., 7.5 MINUTE SERIES
FESTUS QUADRANGLE, MISSOURI–JEFFERSON CO., 7.5 MINUTE SERIES

0 2000
SCALE IN FEET

STATE OF MISSOURI
JOHN L. BOGNAR
RG0007
REGISTERED GEOLOGIST

MISSOURI REGISTERED GEOLOGIST SEAL

DATE	REVISED

Prepared By:
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground–Water and
Environmental Engineering Services
4850 Lemay Ferry Road, Suite 205
St. Louis, MO 63129
(314) 845–0535

WESTINGHOUSE ELECTRIC COMPANY
HEMATITE MISSOURI FACILITY
HEMATITE, MISSOURI

TOP OF ROUBIDOUX FORMATION ELEVATION MAP

FILE: 12WWP01N.dwg | *DATE:* MAY 9, 2003 | *PLATE:* 5 OF 26

NORTH TRIBUTARY

NORTH LAKE

EAST LAKE TRIBUTARY

NORTH LAKE TRIBUTARY

EAST LAKE

STATE HIGHWAY P

MISSOURI PACIFIC RAILROAD

NORTHEAST SITE CREEK

EAST LAKE TRIBUTARY

NORTHEAST SITE CREEK

JOACHIM CREEK

LAKE VIRGINIA

LAGOON

SITE SPRING

SITE POND

SITE CREEK

SANITARY LAGOONS

LAKE VIRGINIA TRIBUTARY

LAKE VIRGINIA / SITE CREEK COMBINED TRIBUTARY

JOACHIM CREEK

DIRECTION OF FLOW GRADIENT 0.0047 FT/FT

PROPOSED DRILLING LOCATIONS DEPENDENT ON OUTCOME OF OUTER WELLS

AREA OF IMPACTED PRIVATE WELLS

TOWN OF HEMATITE, MISSOURI

NOTE:
GRADIENT CALCULATED FROM 416' TO 406' CONTOUR

LEGEND

- POTENTIAL EXTENT OF VOC'S IN OVERBURDEN
- POTENTIAL EXTENT OF VOC'S IN JEFFERSON CITY–COTTER
- POTENTIAL EXTENT OF Tc99 IN OVERBURDEN
- PROPOSED LOCATION OF JEFFERSON CITY–COTTER WELL
- PROPOSED LOCATION OF ROUBIDOUX WELL
- PROPOSED LOCATION OF OVERBURDEN WELL–SURFACE SOIL AND SUBSURFACE SOIL WILL BE COLLECTED AT THESE LOCATIONS
- APPROXIMATE PROPERTY BOUNDARY
- PERENNIAL STREAM
- INTERMITTENT STREAM
- FENCE LINE
- 412 — ISOCONTOUR LINE WITH ELEVATION FEET AMSL
- 416.88 — GROUND–WATER ELEVATION (FEET AMSL)
- GROUND–WATER FLOW DIRECTION
- AMSL — ABOVE MEAN SEA LEVEL
- MONITORING WELL (WS–31)
- PIEZOMETER (PZ–1)
- PREVIOUS GEOPROBE BORING LOCATION (GWE–3)
- MONITORING WELL (RMC–9)

0 300
SCALE IN FEET

N

SOURCES:

BORING LOCATIONS: BURDINE, 1998–1999
PROPERTY BOUNDARY: ZAHNER & ASSOC., MAY, 2000

STATE OF MISSOURI
JOHN L. BOGNAR
RG0007
REGISTERED GEOLOGIST

MISSOURI REGISTERED GEOLOGIST SEAL

DATE	REVISED

Prepared By:

LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground–Water and Environmental Engineering Services
4850 Lemay Ferry Road, Suite 205
St. Louis, MO 63129
(314) 845–0535

WESTINGHOUSE ELECTRIC COMPANY
HEMATITE, MISSOURI FACILITY
HEMATITE, MISSOURI

JEFFERSON CITY–COTTER DOLOMITE POTENTIOMETRIC SURFACE AND OUTER AREA EXPLORATORY PLAN MAP

FILE:	12WWP010.dwg	DATE:	MAY 9, 2003	PLATE:	6 OF 26

NOTE:
GRADIENT CALCULATED FROM 395' TO 365' CONTOUR

SOURCES:
BORING LOCATIONS: BURDINE, 1998-1999
PROPERTY BOUNDARY: ZAHNER & ASSOC., MAY, 2000

STATE OF MISSOURI
JOHN L. BOGNAR
RG0007
REGISTERED GEOLOGIST
MISSOURI REGISTERED GEOLOGIST SEAL

DATE	REVISED

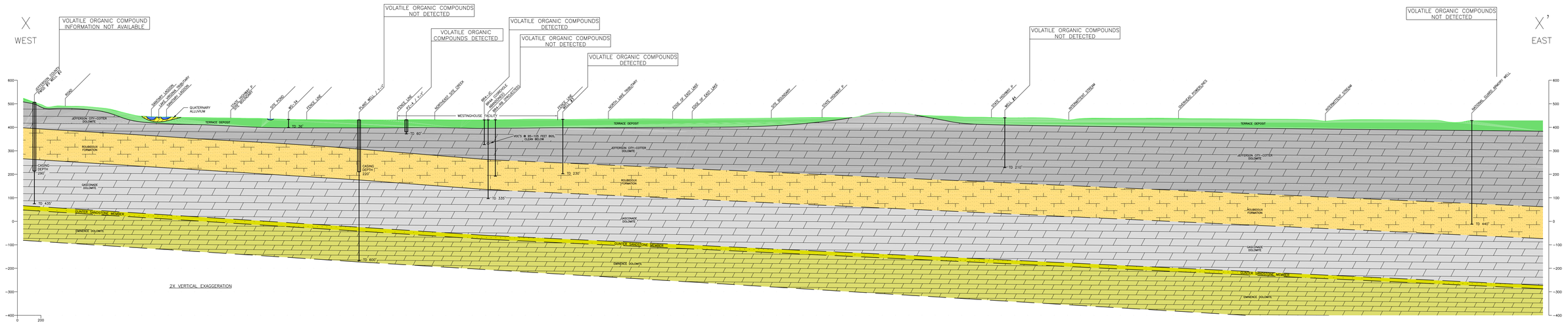
Prepared By:
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and Environmental Engineering Services
4850 Lemay Ferry Road, Suite 205
St. Louis, MO 63129
(314) 845-0535

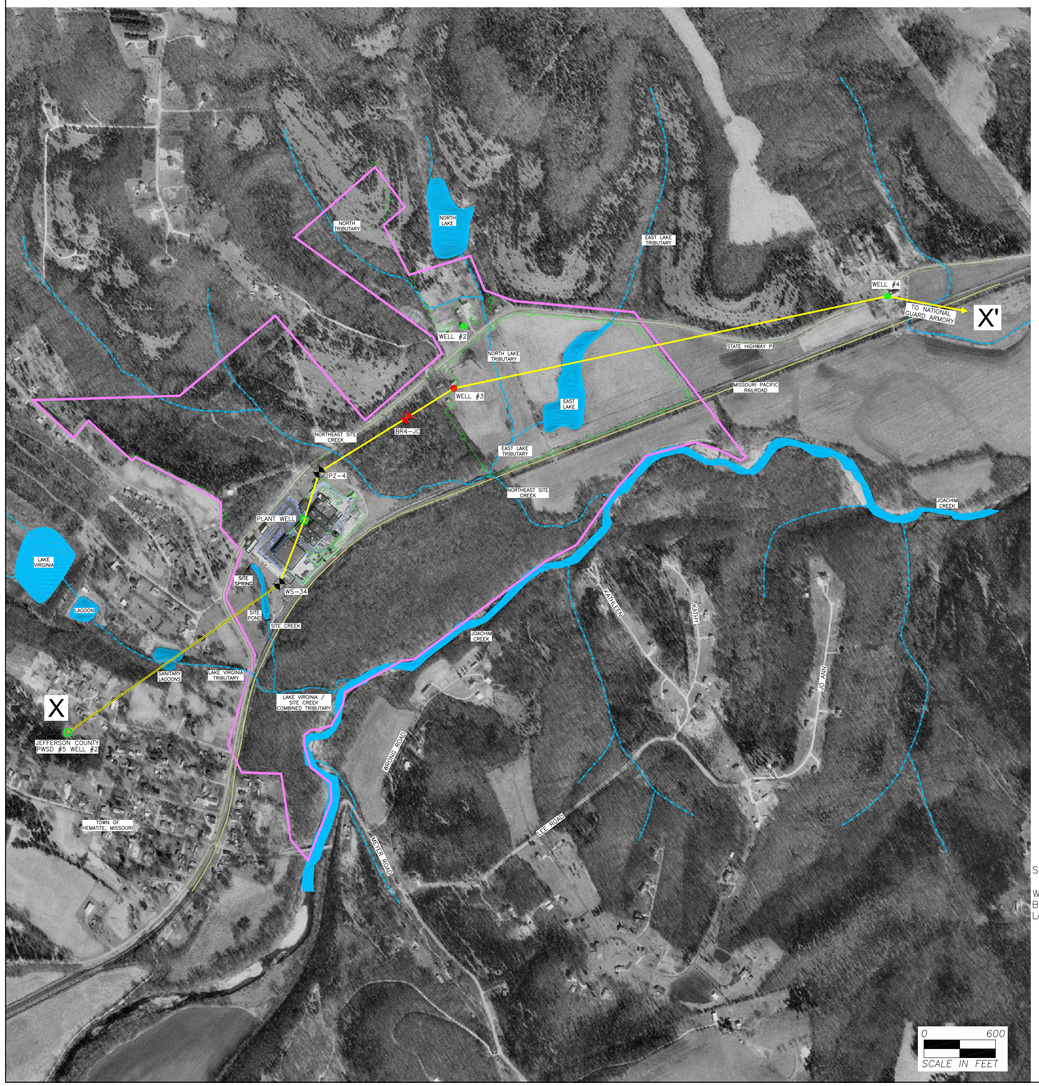
WESTINGHOUSE ELECTRIC COMPANY
HEMATITE, MISSOURI FACILITY
HEMATITE, MISSOURI

ROUBIDOUX FORMATION POTENTIOMETRIC SURFACE AND OUTER AREA EXPLORATORY PLAN MAP

FILE: 12WWP01P.dwg | *DATE:* MAY 9, 2003 | *PLATE:* 7 OF 26

SCHEMATIC GEOLOGIC CROSS–SECTION X–X'





SOURCES:

WELL CONSTRUCTION INFORMATION OBTAINED FROM MDNR/GSRAD COMPLETION RECORDS & BORING LOGS, ABB BORING LOGS, OR VERBAL INFORMATION PROVIDED BY WESTINGHOUSE. LABORATORY DATA FROM MDOHSS AND PDC LABORATORIES

LEGEND

— — — EXTRAPOLATED LINE, NO BORING INFORMATION

TD TOTAL DEPTH

APPLICATION FOR THIS DRAWING: DO NOT USE THIS DRAWING FOR ENGINEERING AND/OR DESIGN AND/OR CONSTRUCTION PURPOSES. FEATURES SHOWN ARE SCHEMATIC AND MAY NOT REPRESENT ACTUAL CONDITIONS.

STATE OF MISSOURI * JOHN C. BOGNAR * RG0007 REGISTERED GEOLOGIST

MISSOURI REGISTERED GEOLOGIST SEAL

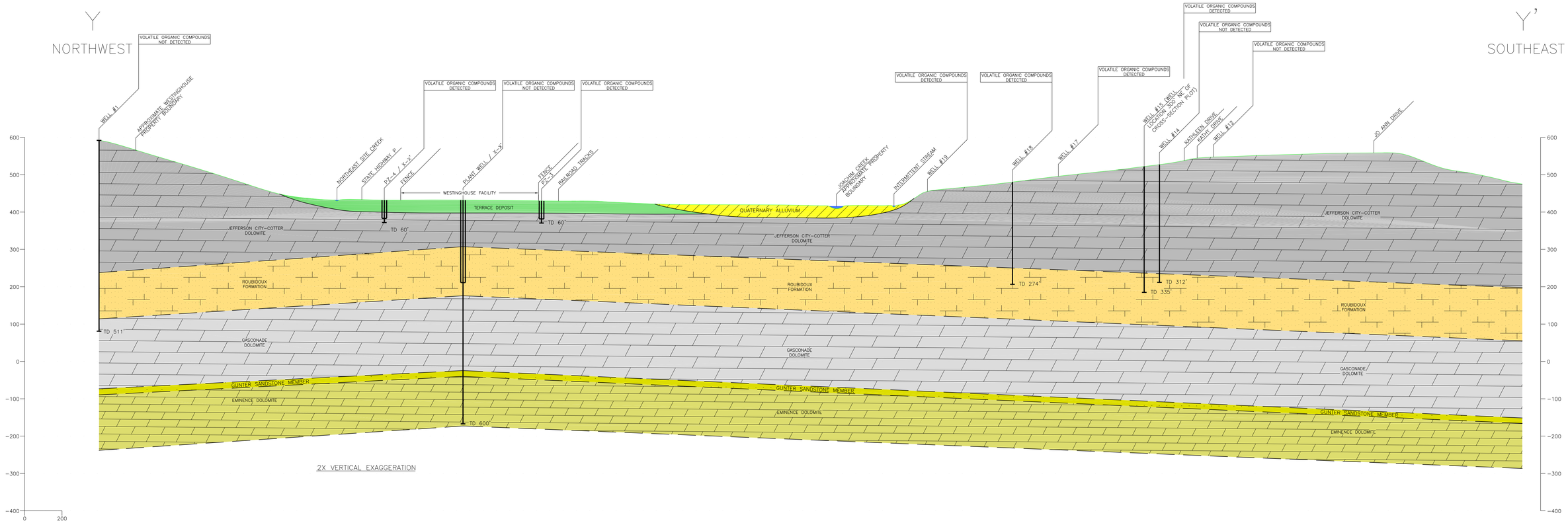
Prepared By:
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground–Water and Environmental Engineering Services
4850 Lemay Ferry Road, Suite 205
St. Louis, MO 63129
(314) 845–0535

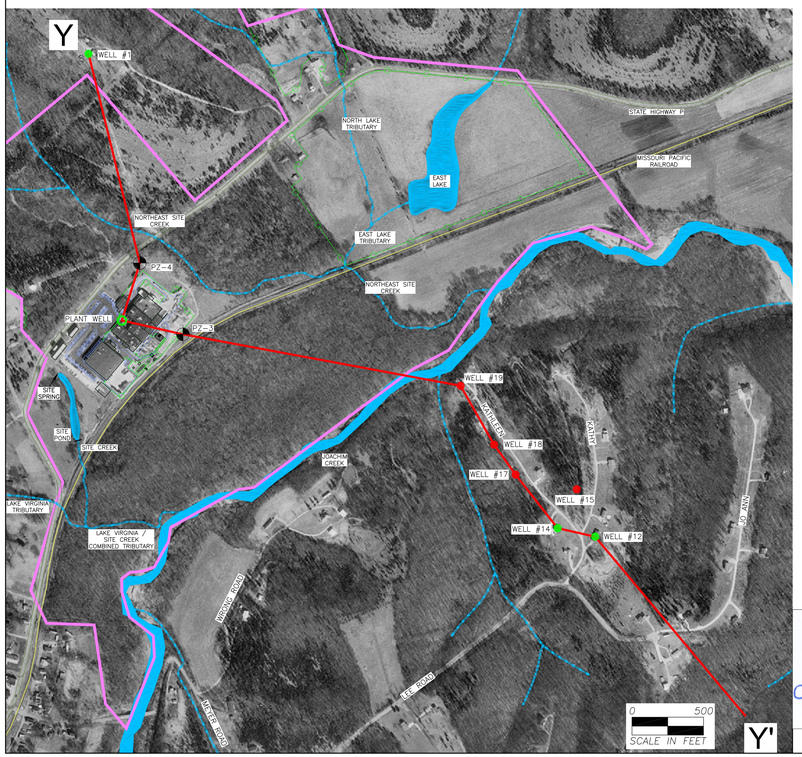
WESTINGHOUSE ELECTRIC COMPANY
HEMATITE, MISSOURI FACILITY
HEMATITE, MISSOURI

SCHEMATIC GEOLOGIC CROSS–SECTION X–X'

FILE:	12WWP01H.dwg	*DATE:*	MAY 9, 2003	*PLATE:*	8 OF 26

SCHEMATIC GEOLOGIC CROSS–SECTION Y–Y'





SOURCES:

WELL CONSTRUCTION INFORMATION OBTAINED FROM MDNR/GSRAD COMPLETION RECORDS & BORING LOGS, ABB BORING LOGS, OR VERBAL INFORMATION PROVIDED BY WESTINGHOUSE. LABORATORY DATA FROM MDOHSS AND PDC LABORATORIES

LEGEND

EXTRAPOLATED LINE, NO BORING INFORMATION

TD TOTAL DEPTH

APPLICATION FOR THIS DRAWING:
DO NOT USE THIS DRAWING FOR ENGINEERING AND/OR DESIGN AND/OR CONSTRUCTION PURPOSES. FEATURES SHOWN ARE SCHEMATIC AND MAY NOT REPRESENT ACTUAL CONDITIONS.

STATE OF MISSOURI
JOHN C. BOGNAR
RG0007
REGISTERED GEOLOGIST

MISSOURI REGISTERED GEOLOGIST SEAL

DATE	REVISED

Prepared By:

LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground–Water and
Environmental Engineering Services
4850 Lemay Ferry Road, Suite 205
St. Louis, MO 63129
(314) 845–0535

WESTINGHOUSE ELECTRIC COMPANY
HEMATITE, MISSOURI FACILITY
HEMATITE, MISSOURI

SCHEMATIC GEOLOGIC CROSS–SECTION Y–Y'

FILE:	12WWP01I.dwg	*DATE:*	MAY 9, 2003	*PLATE:*	9 OF 26

NORTH TRIBUTARY

NORTH LAKE

EAST LAKE TRIBUTARY

STATE HIGHWAY P

NORTH LAKE TRIBUTARY

MISSOURI PACIFIC RAILROAD

EAST LAKE

NORTHEAST SITE CREEK

LIMESTONE FILL AREA A

EAST LAKE TRIBUTARY

RED ROOM ROOF BURIAL AREA

NORTHEAST SITE CREEK

JOACHIM CREEK

CISTERN / BURN PIT

LIMESTONE FILL AREA C

DEUL'S MOUNTAIN

LIMESTONE PILE B

LAKE VIRGINIA

SITE SPRING

EVAPORATION PONDS

SEWAGE TREATMENT PLANT

SITE POND

LAGOON

SITE CREEK

JOACHIM CREEK

SANITARY LAGOONS

LAKE VIRGINIA TRIBUTARY

LAKE VIRGINIA / SITE CREEK COMBINED TRIBUTARY

LEGEND

NOTE: AREA BOUNDARIES ARE ROUGH APPROXIMATIONS.

- OUTDOOR & SHALLOW SURFACE AREAS
- BUILDINGS
- BURIAL PITS
- EVAPORATION PONDS
- FORMER LEACH FIELDS
- DOMESTIC WELL #3
- DEUL'S MOUNTAIN
- RED ROOM ROOF BURIAL AREA
- SURFACE WATER FEATURES
- NATURAL GAS PIPELINE
- JOACHIM CREEK BRIDGE
- LIMESTONE FILL AREAS
- POSSIBLE FORMER GASOLINE STATION
- APPROXIMATE PROPERTY BOUNDARY
- SITE BOUNDARY
- PERENNIAL STREAM
- INTERMITTENT STREAM
- FENCE LINE

AOC	Description
#1	Site Ground water
#2	Site Pond, Site Creek, and NE Creek
#3	Burial Pits
#4	Evaporation Ponds
#5	Former Leachfield/Sanitary Sewer
#6	Soils Beneath Buildings
#7	Limestone Storage & Fill
#8	Outdoor & Shallow Surface Area
#9	Former Gas Station
#10	Gas Pipeline
#11	Red Room Roof Burial Area
#12	Domestic Well #3
#13	Deul's Mountain
#14	Cistern Burn Pit
#15	Joachim Creek Bridge

0 300

SCALE IN FEET

N

SOURCES:

BORING LOCATIONS: BURDINE, 1998–1999
PROPERTY BOUNDARY: ZAHNER & ASSOC., MAY, 2000

DATE	REVISED

Prepared By:

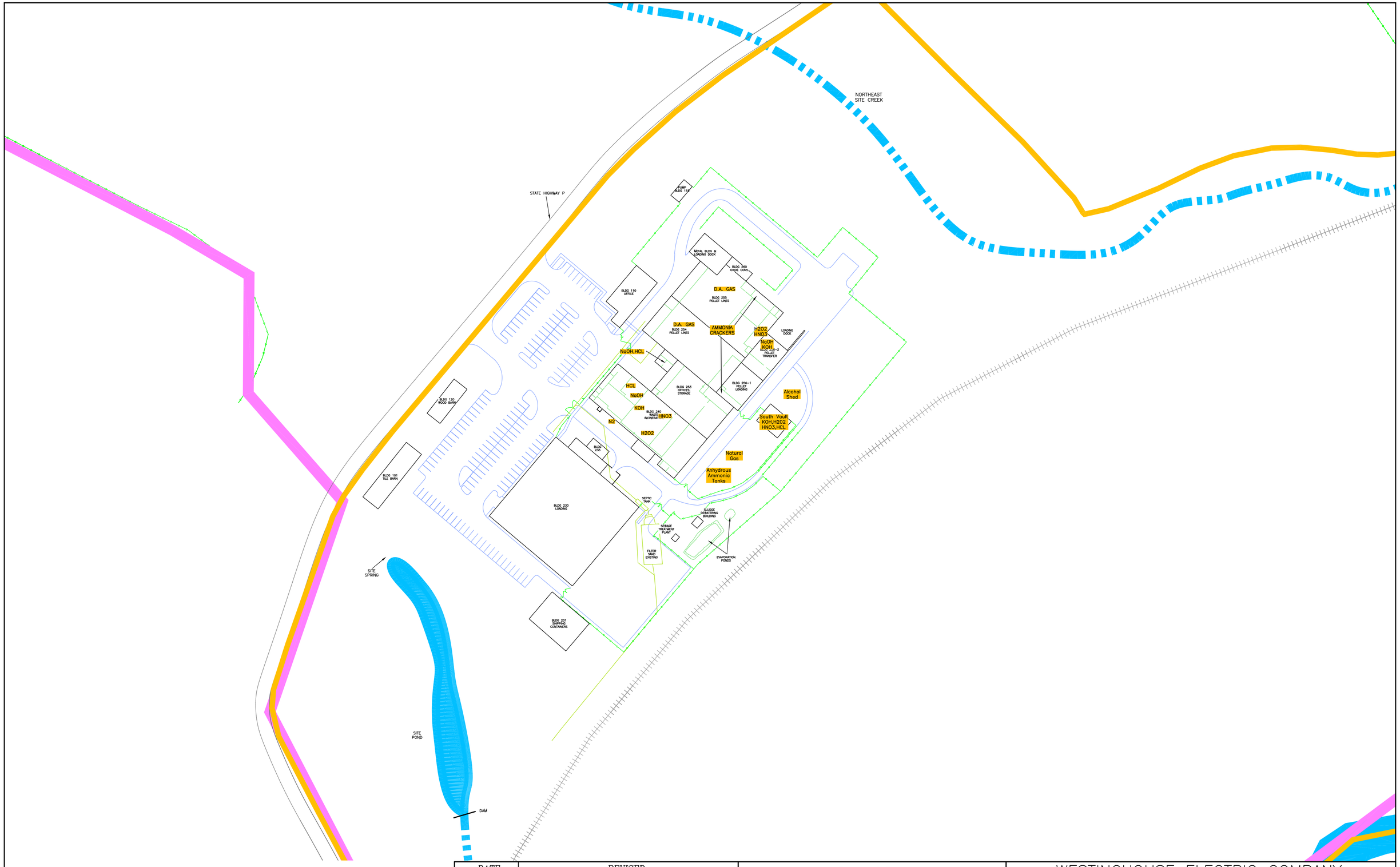
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground–Water and
Environmental Engineering Services
4850 Lemay Ferry Road, Suite 205
St. Louis, MO 63129
(314) 845–0535

WESTINGHOUSE ELECTRIC COMPANY

HEMATITE, MISSOURI FACILITY
HEMATITE, MISSOURI

POTENTIAL AREAS OF CONCERN

FILE: Plate 10.dwg | *DATE:* MAY 9, 2003 | *PLATE:* 10 OF 26



APPROXIMATE PROPERTY BOUNDARY
SITE BOUNDARY
PERENNIAL STREAM
INTERMITTENT STREAM
FENCE LINE

0 75
SCALE IN FEET

N

SOURCES:

"AS-BUILT" AS PROVIDED BY WESTINGHOUSE/ABB
PROPERTY BOUNDARY: ZAHNER & ASSOC., MAY, 2000

DATE	REVISED

Prepared By:

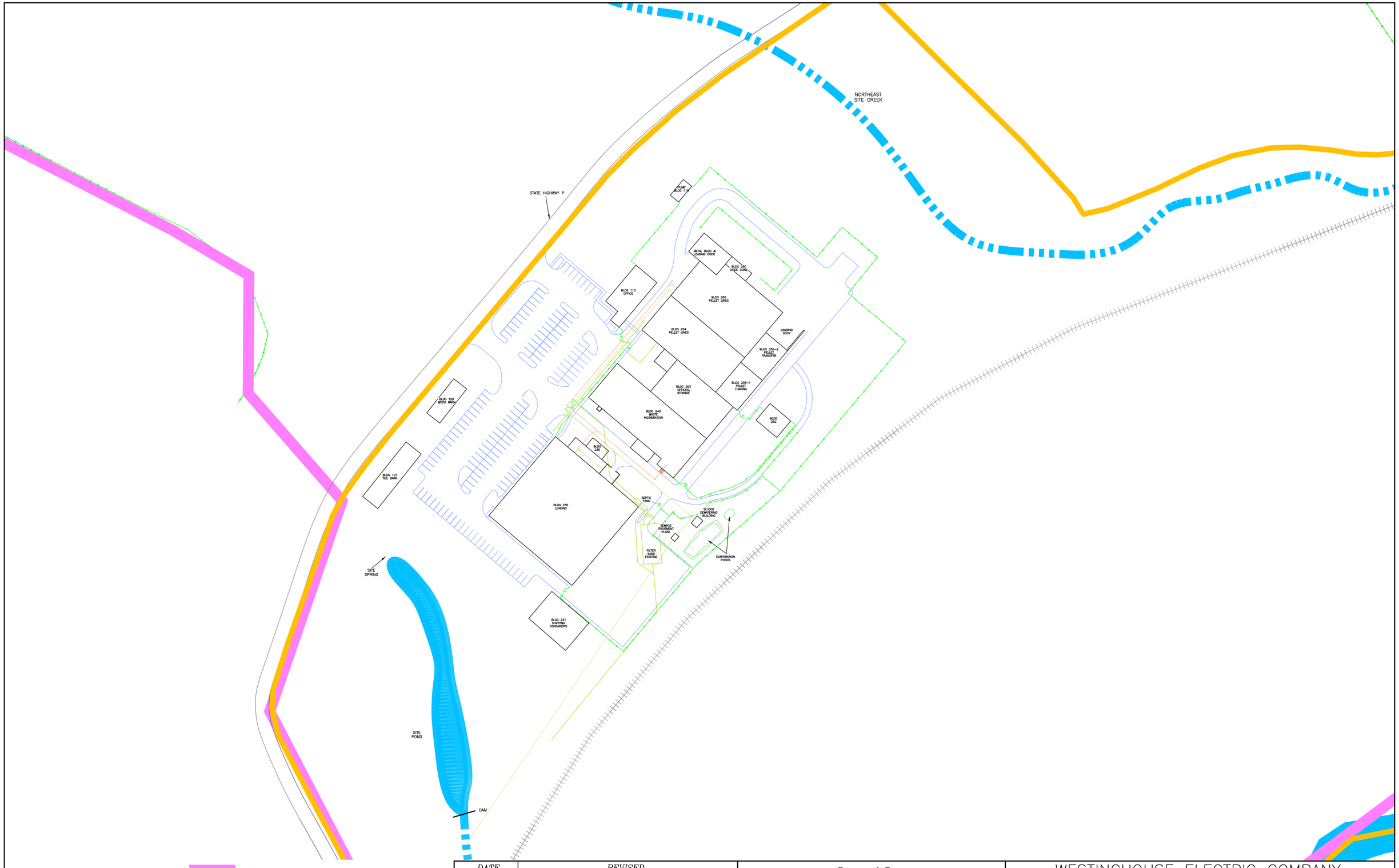
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and
Environmental Engineering Services
4850 Lemay Ferry Road, Suite 205
St. Louis, MO 63129
(314) 845-0535

WESTINGHOUSE ELECTRIC COMPANY

HEMATITE, MISSOURI FACILITY
HEMATITE, MISSOURI

CHEMICAL AND HAZARDOUS MATERIAL STORAGE LOCATIONS

FILE: Plate 11.dwg | *DATE:* MAY 9, 2003 | *PLATE:* 11 OF 26



APPROXIMATE PROPERTY BOUNDARY
SITE BOUNDARY
PERENNIAL STREAM
INTERMITTENT STREAM
SANITARY DRAIN LINE
EXPANSION SANITARY DRAIN LINE (AS-BUILT; NOT IN USE)
FENCE LINE

0 75
SCALE IN FEET

N

SOURCES:

"AS-BUILT" AS PROVIDED BY WESTINGHOUSE/ABB
PROPERTY BOUNDARY: ZAHNER & ASSOC., MAY, 2000

DATE	REVISED

Prepared By:

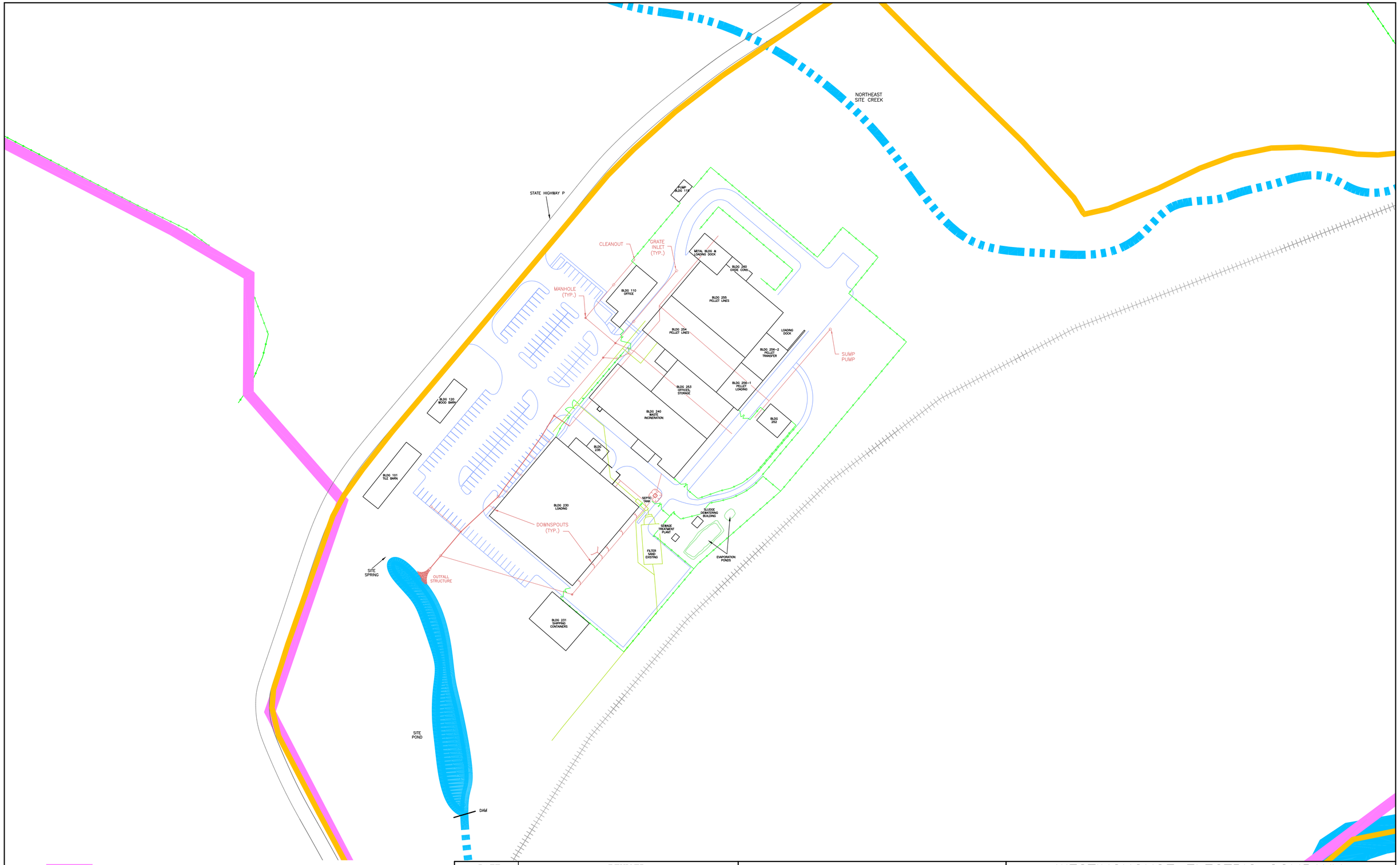
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and
Environmental Engineering Services
4850 Lemay Ferry Road, Suite 205
St. Louis, MO 63129
(314) 845-0535

WESTINGHOUSE ELECTRIC COMPANY

HEMATITE, MISSOURI FACILITY
HEMATITE, MISSOURI

BUILDING AREA SANITARY DRAIN SYSTEM

FILE: Plate 12.dwg | *DATE:* MAY 9, 2003 | *PLATE:* 12 OF 26



APPROXIMATE PROPERTY BOUNDARY
SITE BOUNDARY
PERENNIAL STREAM
INTERMITTENT STREAM
FENCE LINE
STORM DRAIN LINE
STORM DRAIN MAIN

0 75
SCALE IN FEET

N

SOURCES:

"AS-BUILTS" AS PROVIDED BY WESTINGHOUSE/ABB
PROPERTY BOUNDARY: ZAHNER & ASSOC., MAY, 2000

DATE	REVISED

Prepared By:

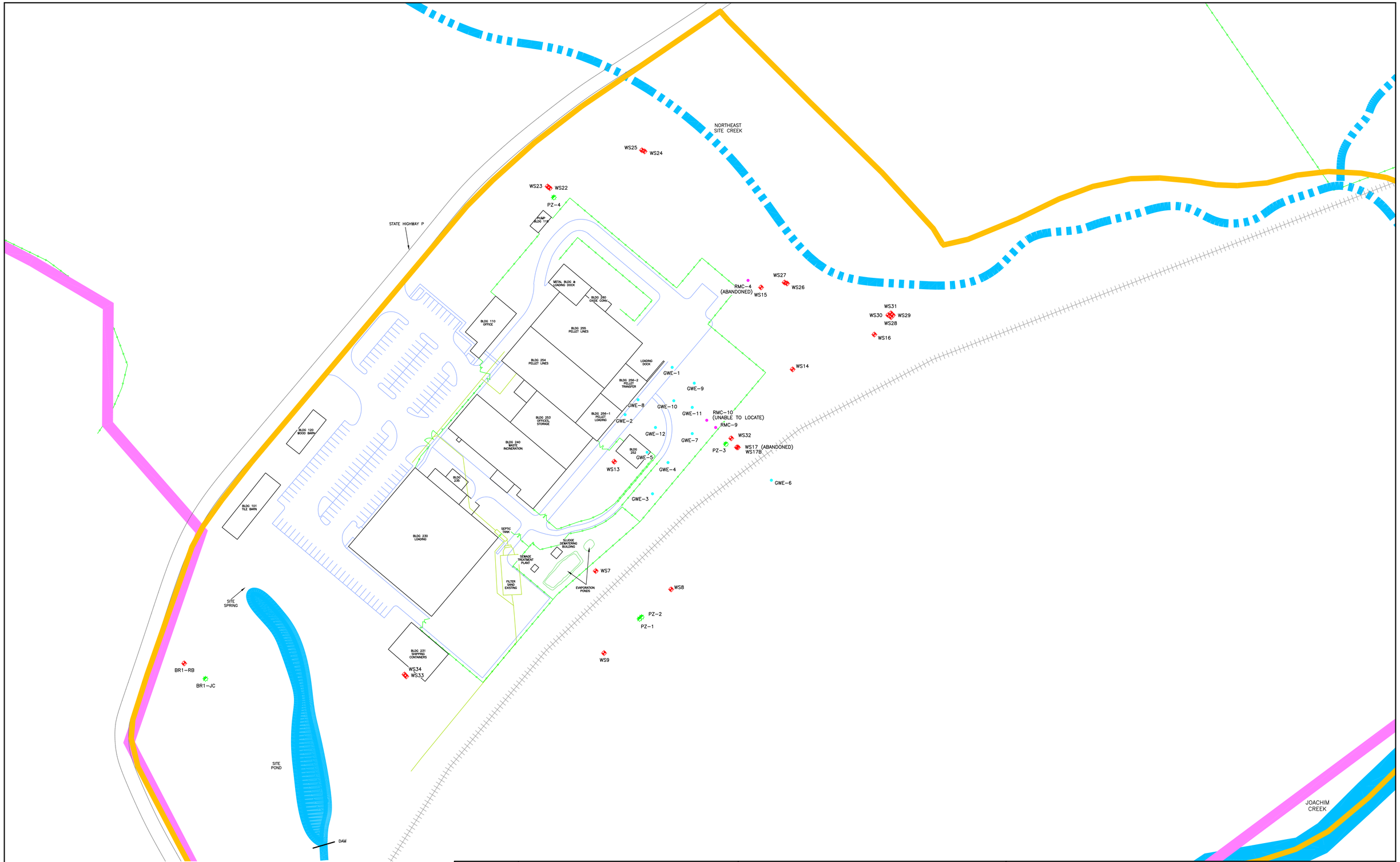
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and
Environmental Engineering Services
4850 Lemay Ferry Road, Suite 205
St. Louis, MO 63129
(314) 845-0535

WESTINGHOUSE ELECTRIC COMPANY

HEMATITE, MISSOURI FACILITY
HEMATITE, MISSOURI

BUILDING AREA STORM WATER SYSTEM

FILE: Plate 13.dwg | *DATE:* MAY 9, 2003 | *PLATE:* 13 OF 26



APPROXIMATE PROPERTY BOUNDARY
SITE BOUNDARY
PERENNIAL STREAM
INTERMITTENT STREAM
FENCE LINE

MONITORING WELL (WS-31)
PIEZOMETER (PZ-1)
ABANDONED GEOPROBE BORING LOCATION (GWE-3)
MONITORING WELL (RMC-9)

NOTE: EVAPORATION POND BORINGS NOT SHOWN. BORINGS BR2, BR3, BR4, OB1 AND OB2 ARE SHOWN ON PLATE 17.

0 75
SCALE IN FEET

N

SOURCES:

DIGITAL ORTHOPHOTO: USGS, MARCH 1996
DIGITAL ELEVATION MODEL: USGS, JANUARY, 1964
BORING LOCATIONS: BURDINE, 1998-1999
PROPERTY BOUNDARY: ZAHNER & ASSOC., MAY, 2000

DATE	REVISED

Prepared By:

LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and
Environmental Engineering Services
4850 Lemay Ferry Road, Suite 205
St. Louis, MO 63129
(314) 845-0535

WESTINGHOUSE ELECTRIC COMPANY

HEMATITE, MISSOURI FACILITY
HEMATITE, MISSOURI

EXISTING MONITORING WELL/PIEZOMETER NETWORK AND PREVIOUS INVESTIGATIVE BORING LOCATIONS

FILE:	Plate 14.dwg	*DATE:*	MAY 9, 2003	*PLATE:*	14 OF 26

NORTH TRIBUTARY
NORTH LAKE
EAST LAKE TRIBUTARY
STATE HIGHWAY P
NORTH LAKE TRIBUTARY
WELL #3
MISSOURI PACIFIC RAILROAD
EAST LAKE
NORTHEAST SITE CREEK
EAST LAKE TRIBUTARY
NORTHEAST SITE CREEK
JOACHIM CREEK
LAKE VIRGINIA
SITE SPRING
WELL #19
WELL #6
WELL #7
SITE POND
LAGOON
SITE CREEK
WELL #18
JOACHIM CREEK
WELL #16
WELL #17
WELL #15
SANITARY LAGOONS
LAKE VIRGINIA TRIBUTARY
LAKE VIRGINIA / SITE CREEK COMBINED TRIBUTARY
TOWN OF HEMATITE, MISSOURI

WELL #17 PRIVATE RESIDENCES WITH VOC'S DETECTED
APPROXIMATE PROPERTY BOUNDARY
SITE BOUNDARY
PERENNIAL STREAM
INTERMITTENT STREAM
10-FOOT CONTOUR LINE
FENCE LINE

0 300
SCALE IN FEET
N

SOURCES:
DIGITAL ORTHOPHOTO: USGS, MARCH 1996
DIGITAL ELEVATION MODEL: USGS, JANUARY, 1964
PROPERTY BOUNDARY: ZAHNER & ASSOC., MAY, 2000

DATE	REVISED

Prepared By:
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and
Environmental Engineering Services
4850 Lemay Ferry Road, Suite 205
St. Louis, MO 63129
(314) 845-0535

WESTINGHOUSE ELECTRIC COMPANY
HEMATITE, MISSOURI FACILITY
HEMATITE, MISSOURI

PRIVATE WELLS IMPACTED BY VOC'S

FILE: Plate 15.dwg | *DATE:* MAY 9, 2003 | *PLATE:* 15 OF 26

PROPOSED LOCATION OF BACKGROUND BORING
IN THE JEFFERSON CITY–COTTER DOLOMITE

NORTH TRIBUTARY
NORTH LAKE
EAST LAKE TRIBUTARY
STATE HIGHWAY P
NORTH LAKE TRIBUTARY
MISSOURI PACIFIC RAILROAD
EAST LAKE
NORTHEAST SITE CREEK
EAST LAKE TRIBUTARY
NORTHEAST SITE CREEK
HIGH VOLUME, HIGH PRESSURE SUBGRADE NATURAL GAS PIPELINE FOLLOWS THE RAILROAD IN THE SITE AREA
JOACHIM CREEK
LAKE VIRGINIA
SITE SPRING
SITE SPRING
SITE POND
LAGOON
SITE CREEK
JOACHIM CREEK
PROPOSED DRILLING LOCATIONS DEPENDENT ON OUTCOME OF OUTER WELLS
SANITARY LAGOONS
LAKE VIRGINIA TRIBUTARY
LAKE VIRGINIA / SITE CREEK COMBINED TRIBUTARY
TOWN OF HEMATITE, MISSOURI

APPROXIMATE PROPERTY BOUNDARY
SITE BOUNDARY
PERENNIAL STREAM
INTERMITTENT STREAM
FENCE LINE

PROPOSED LOCATION OF JEFFERSON CITY–COTTER WELL
PROPOSED LOCATION OF ROUBIDOUX WELL
PROPOSED LOCATION OF OVERBURDEN WELL–SURFACE SOIL AND SUBSURFACE SOIL WILL BE COLLECTED AT THESE LOCATIONS

0 300
SCALE IN FEET

N

SOURCES:
"AS–BUILTS" AS PROVIDED BY WESTINGHOUSE/ABB
BORING LOCATIONS: BURDINE, 1998–1999
PROPERTY BOUNDARY: ZAHNER & ASSOC., MAY, 2000

DATE	REVISED

Prepared By:
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground–Water and Environmental Engineering Services
4850 Lemay Ferry Road, Suite 205
St. Louis, MO 63129
(314) 845–0535

WESTINGHOUSE ELECTRIC COMPANY
HEMATITE, MISSOURI FACILITY
HEMATITE, MISSOURI

PROPOSED LOCATION FOR JEFFERSON CITY–COTTER BACKGROUND WELL AND PROPOSED EXPLORATORY BORING PLAN

FILE: Plate 16.dwg | *DATE:* MAY 9, 2003 | *PLATE:* 16 OF 26

NORTH TRIBUTARY
NORTH LAKE
EAST LAKE TRIBUTARY
STATE HIGHWAY P
NORTH LAKE TRIBUTARY
MISSOURI PACIFIC RAILROAD
EAST LAKE
OB-2
BR4-RB
BR4-JC
NORTHEAST SITE CREEK
BR2-JC
BR2-RB
EAST LAKE TRIBUTARY
NORTHEAST SITE CREEK
HIGH VOLUME, HIGH PRESSURE SUBGRADE NATURAL GAS PIPELINE FOLLOWS THE RAILROAD IN THE SITE AREA
JOACHIM CREEK
LAKE VIRGINIA
SITE SPRING
BR1-RB
BR1-JC
SITE POND
LAGOON
SITE CREEK
BR3-OB
BR3-RB
JOACHIM CREEK
OB-1
SANITARY LAGOONS
LAKE VIRGINIA TRIBUTARY
LAKE VIRGINIA / SITE CREEK COMBINED TRIBUTARY
TOWN OF HEMATITE, MISSOURI

APPROXIMATE PROPERTY BOUNDARY
SITE BOUNDARY
PERENNIAL STREAM
INTERMITTENT STREAM
10-FOOT CONTOUR LINE
FENCE LINE

PROPOSED SURFACE WATER SAMPLING LOCATIONS
PROPOSED STREAM/POND SEDIMENT SAMPLING LOCATIONS
CO-LOCATED BORING & SURFACE SOIL SAMPLING LOCATION
PROPOSED STREAM GAUGE LOCATIONS
PIEZOMETER LOCATION
BR1-JC
MONITORING WELL LOCATION
BR1-RB

0 300
SCALE IN FEET
N

SOURCES:
DIGITAL ORTHOPHOTO: USGS, MARCH 1996
DIGITAL ELEVATION MODEL: USGS, JANUARY, 1964
PROPERTY BOUNDARY: ZAHNER & ASSOC., MAY, 2000

DATE	REVISED

Prepared By:
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and
Environmental Engineering Services
4850 Lemay Ferry Road, Suite 205
St. Louis, MO 63129
(314) 845-0535

WESTINGHOUSE ELECTRIC COMPANY
HEMATITE, MISSOURI FACILITY
HEMATITE, MISSOURI

PROPOSED SURFACE WATER AND STREAM/POND SEDIMENT SAMPLING LOCATIONS

FILE: Plate 17.dwg | *DATE:* MAY 9, 2003 | *PLATE:* 17 OF 26

APPROXIMATE PROPERTY BOUNDARY
SITE BOUNDARY
PERENNIAL STREAM
INTERMITTENT STREAM
10-FOOT CONTOUR LINE
FENCE LINE

CO-LOCATED BORING & SURFACE SOIL SAMPLING LOCATION
PROPOSED SURFACE WATER SAMPLING LOCATION
PROPOSED STREAM SEDIMENT SAMPLING LOCATION
APPROXIMATE LOCATION OF SUBGRADE, HIGH PRESSURE NATURAL GAS MAIN

0 75
SCALE IN FEET

SOURCES:
DIGITAL ORTHOPHOTO: USGS, MARCH 1996
DIGITAL ELEVATION MODEL: USGS, JANUARY, 1964
PROPERTY BOUNDARY: ZAHNER & ASSOC., MAY, 2000

DATE	REVISED

Prepared By:
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and
Environmental Engineering Services
4850 Lemay Ferry Road, Suite 205
St. Louis, MO 63129
(314) 845-0535

WESTINGHOUSE ELECTRIC COMPANY
HEMATITE, MISSOURI FACILITY
HEMATITE, MISSOURI

PROPOSED BORING, AND SAMPLING LOCATIONS FOR SITE POND & SUBGRADE, HIGH PRESSURE NATURAL GAS MAIN

FILE:	*DATE:*	*PLATE:*
Plate 18.dwg	MAY 9, 2003	18 OF 26

NORTHEAST
SITE CREEK

STATE HIGHWAY P

PUMP
BLDG 119

METAL BLDG &
LOADING DOCK

BLDG 260
OXIDIZ CONV.

BLDG 110
OFFICE

BLDG 255
PELLET LINES

BLDG 254
PELLET LINES

LOADING
DOCK

BLDG 256-2
PELLET
TRANSFER

BLDG 256-1
PELLET
LOADING

BLDG 253
OFFICES,
STORAGE

BLDG 240
WASTE
INCINERATION

BLDG
252

BLDG
235

BLDG 120
WOOD BARN

BLDG 101
TILE BARN

BLDG 230
LOADING

SEPTIC
TANK

SLUDGE
DEWATERING
BUILDING

SEWAGE
TREATMENT
PLANT

FILTER
SAND
EXISTING

EVAPORATION
PONDS

SITE
SPRING

BLDG 231
SHIPPING
CONTAINERS

SITE
POND

DAM

JOACHIM
CREEK

PROPOSED TRENCH LOCATIONS

X PROPOSED SURFACE SOIL SAMPLE LOCATION

APPROXIMATE PROPERTY BOUNDARY

SITE BOUNDARY

PERENNIAL STREAM

INTERMITTENT STREAM

FENCE

0 75
SCALE IN FEET

N

SOURCES:

"AS-BUILTS" AS PROVIDED BY WESTINGHOUSE/ABB
BORING LOCATIONS: BURDINE, 1998-1999
PROPERTY BOUNDARY: ZAHNER & ASSOC., MAY, 2000

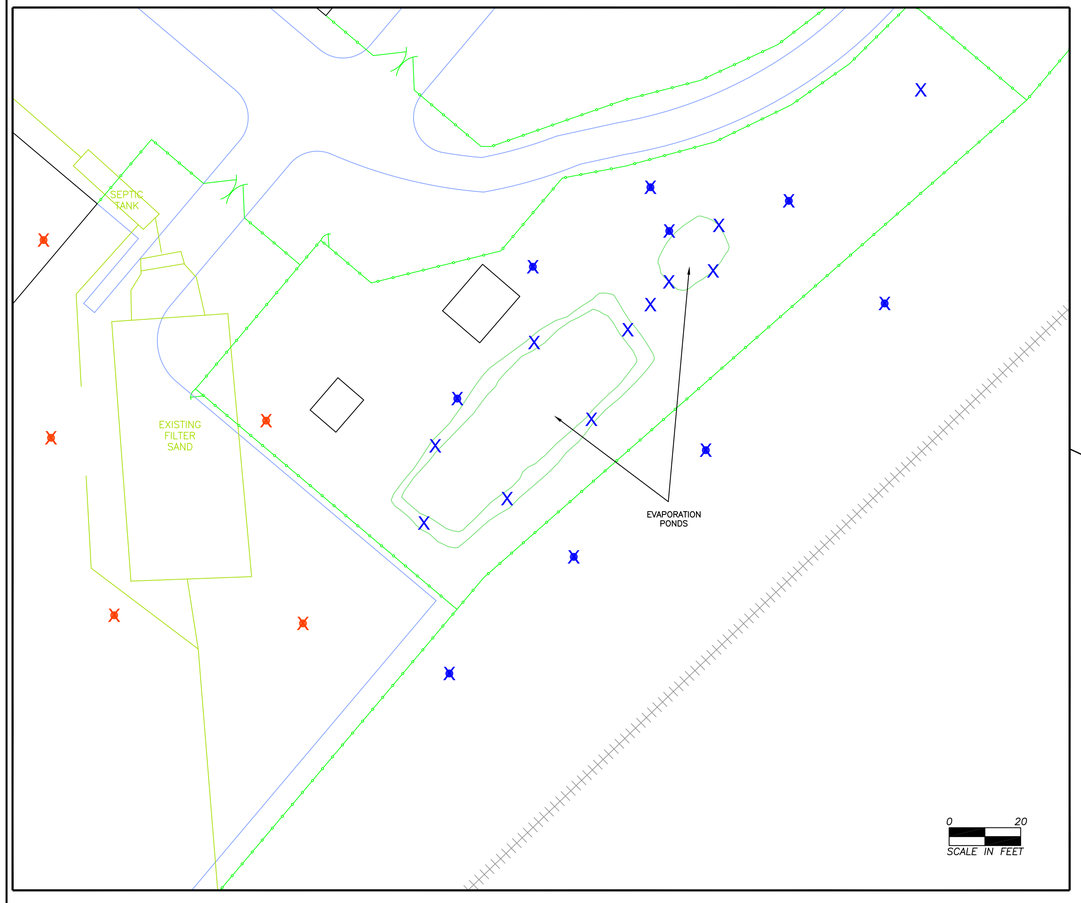
DATE	REVISED

Prepared By:
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and
Environmental Engineering Services
4850 Lemay Ferry Road, Suite 205
St. Louis, MO 63129
(314) 845-0535

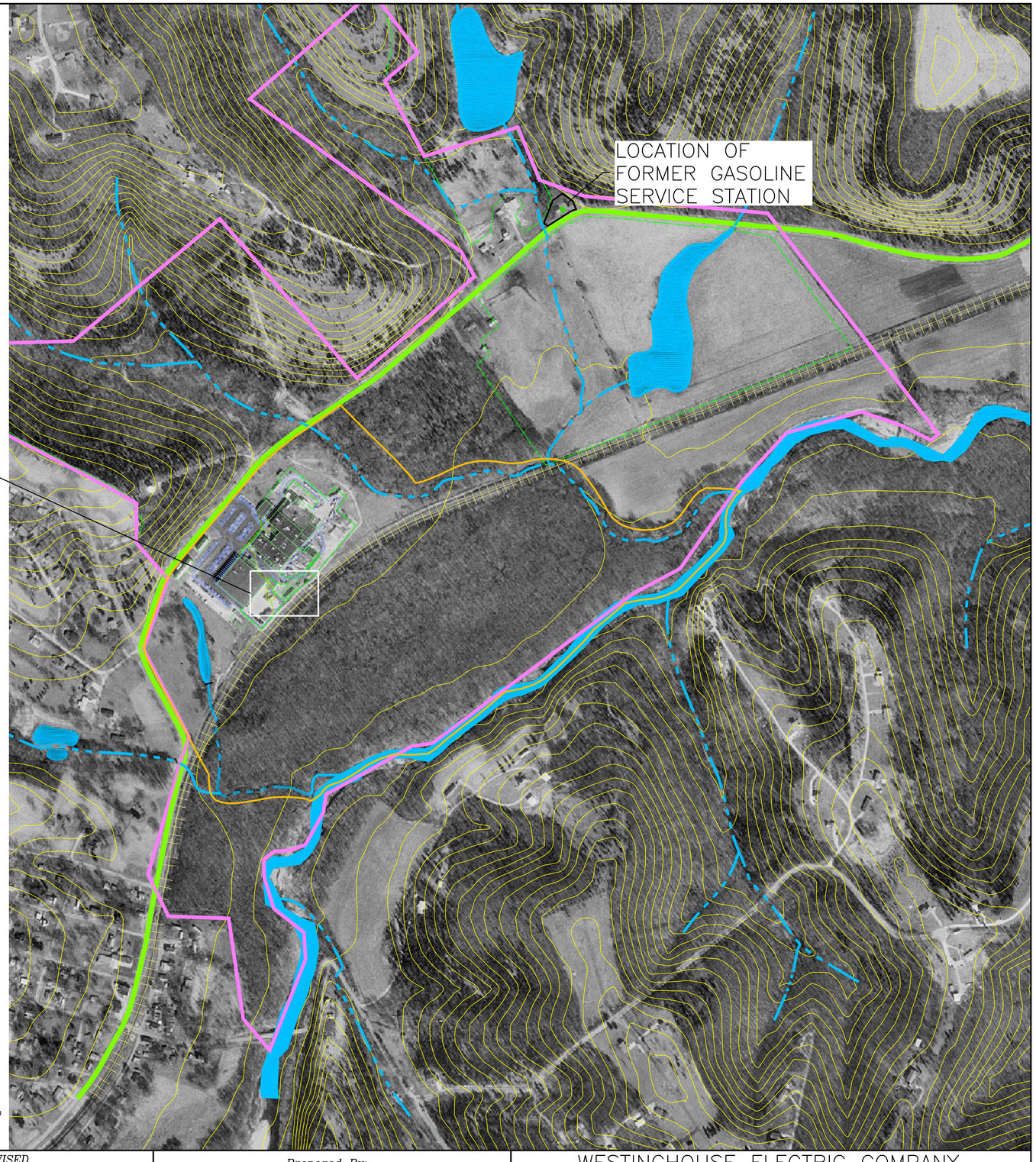
WESTINGHOUSE ELECTRIC COMPANY
HEMATITE, MISSOURI FACILITY
HEMATITE, MISSOURI

PROPOSED SURFACE SOIL SAMPLE AND TRENCH LOCATIONS FOR BURIAL PIT AREA

FILE:	Plate 19.dwg	*DATE:*	MAY 9, 2003	*PLATE:*	19 OF 26



EVAPORATION POND DETAIL



- APPROXIMATE PROPERTY BOUNDARY
- SITE BOUNDARY
- PERENNIAL STREAM
- INTERMITTENT STREAM
- 10-FOOT CONTOUR LINE
- FENCE LINE

- PROPOSED BORING LOCATION FOR EVAPORATION POND
- PROPOSED SURFACE SOIL SAMPLE LOCATION FOR EVAPORATION POND
- PROPOSED CO-LOCATED BORING AND SURFACE SOIL SAMPLE LOCATION FOR EVAPORATION POND
- PROPOSED BORING LOCATION FOR SEPTIC TANK LEACHFIELD
- PROPOSED SURFACE SOIL SAMPLE LOCATION ONLY FOR SEPTIC TANK LEACHFIELD
- PROPOSED CO-LOCATED BORING AND SURFACE SOIL SAMPLE LOCATION FOR SEPTIC TANK LEACHFIELD
- PROPOSED BORING LOCATION FOR FORMER GAS STATION

SOURCES:

"AS-BUILTS" AS PROVIDED BY WESTINGHOUSE/ABB
DIGITAL ORTHOPHOTO: USGS, MARCH 1996
DIGITAL ELEVATION MODEL: USGS, JANUARY, 1964
PROPERTY BOUNDARY: ZAHNER & ASSOC., MAY, 2000

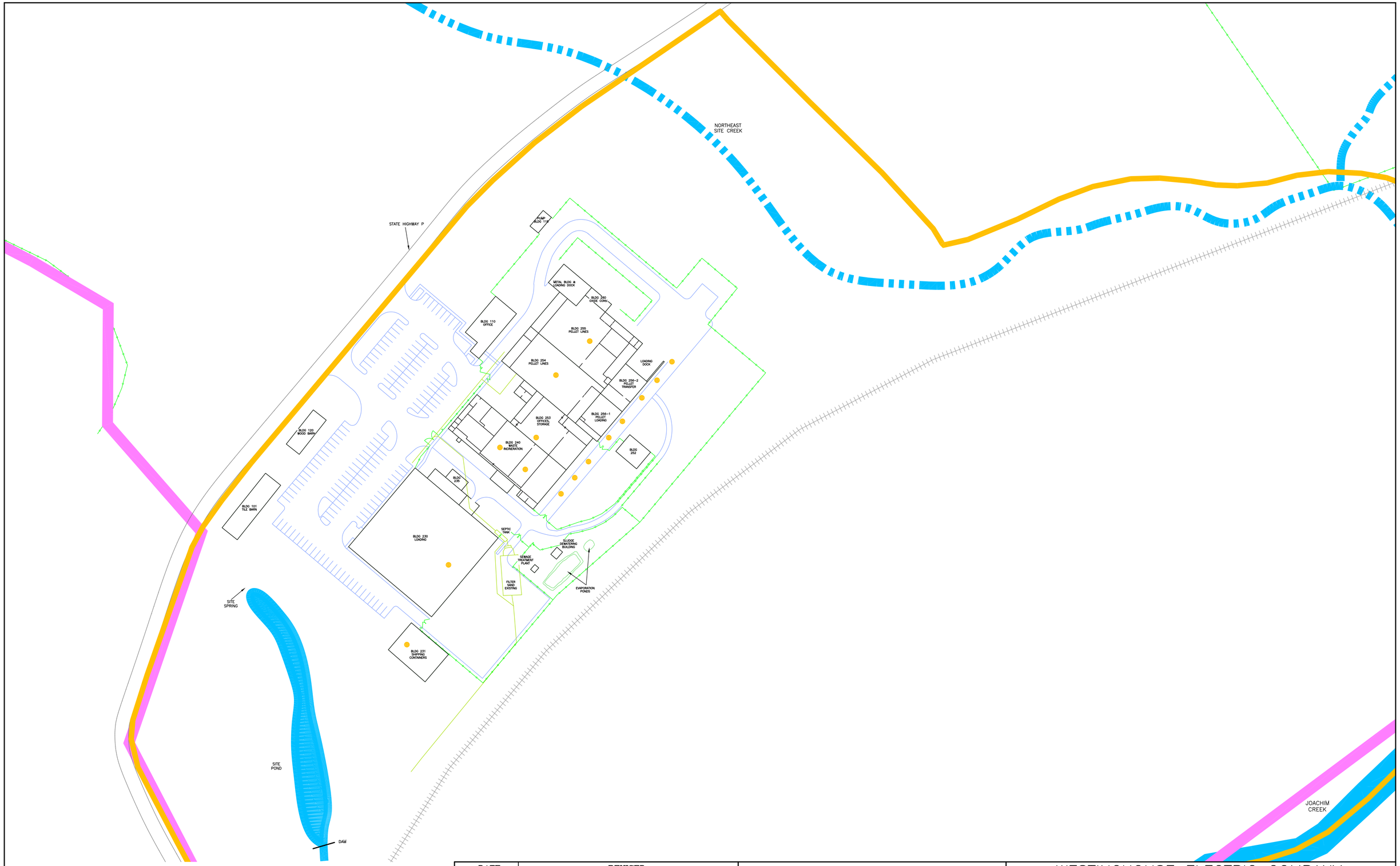
DATE	REVISED

Prepared By:
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and
Environmental Engineering Services
4850 Lemay Ferry Road, Suite 205
St. Louis, MO 63129
(314) 845-0535

WESTINGHOUSE ELECTRIC COMPANY
HEMATITE, MISSOURI FACILITY
HEMATITE, MISSOURI

PROPOSED BORING LOCATIONS FOR EVAPORATION PONDS, FORMER SEPTIC LEACH FIELD & FORMER GAS STATION

FILE:	Plate 20.dwg	*DATE:*	MAY 9, 2003	*PLATE:*	20 OF 26



APPROXIMATE PROPERTY BOUNDARY
SITE BOUNDARY
PERENNIAL STREAM
INTERMITTENT STREAM
FENCE
PROPOSED CO-LOCATED BORING AND SURFACE SOIL SAMPLE LOCATION

0 75
SCALE IN FEET

N

SOURCES:

"AS-BUILTS" AS PROVIDED BY WESTINGHOUSE/ABB
BORING LOCATIONS: BURDINE, 1998-1999
PROPERTY BOUNDARY: ZAHNER & ASSOC., MAY, 2000

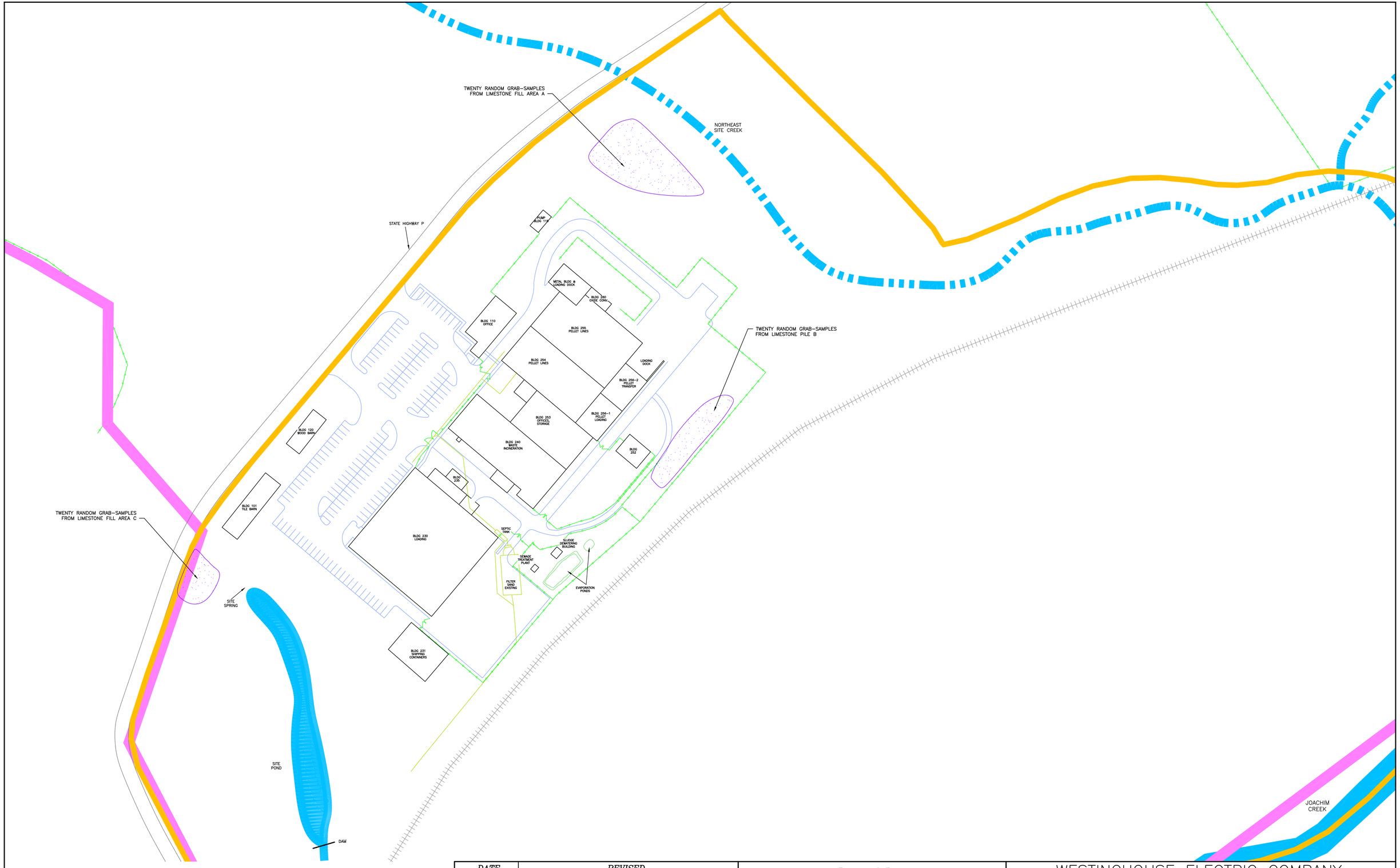
DATE	REVISED

Prepared By:
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and
Environmental Engineering Services
4850 Lemay Ferry Road, Suite 205
St. Louis, MO 63129
(314) 845-0535

WESTINGHOUSE ELECTRIC COMPANY
HEMATITE, MISSOURI FACILITY
HEMATITE, MISSOURI

PROPOSED BORING LOCATION MAP
SOILS BENEATH BUILDINGS

FILE:	Plate 21.dwg	*DATE:*	MAY 9, 2003	*PLATE:*	21 OF 26



SOURCES:

"AS-BUILTS" AS PROVIDED BY WESTINGHOUSE/ABB
BORING LOCATIONS: BURDINE, 1998-1999
PROPERTY BOUNDARY: ZAHNER & ASSOC., MAY, 2000

DATE	REVISED

Prepared By:

LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and
Environmental Engineering Services
4850 Lemay Ferry Road, Suite 205
St. Louis, MO 63129
(314) 845-0535

WESTINGHOUSE ELECTRIC COMPANY

HEMATITE, MISSOURI FACILITY
HEMATITE, MISSOURI

PROPOSED SAMPLE LOCATION MAP
LIMESTONE STORAGE/FILL AREAS

FILE:	Plate 22.dwg	*DATE:*	MAY 9, 2003	*PLATE:*	22 OF 26

NORTHEAST SITE CREEK

STATE HIGHWAY P

PUMP (BLDG 119)

METAL BLDG & LOADING DOCK

BLDG 260 OXIDE CONV.

BLDG 110 OFFICE

BLDG 255 PELLET LINES

BLDG 254 PELLET LINES

LOADING DOCK

BLDG 256-2 PELLET TRANSFER

BLDG 256-1 PELLET LOADING

BLDG 253 OFFICES, STORAGE

BLDG 240 WASTE INCINERATION

BLDG 252

BLDG 250

BLDG 120 WOOD BARN

BLDG 101 TLE MAIN

BLDG 230 LOADING

SEPTIC TANK

SLUDGE DEWATERING BUILDING

SEWAGE TREATMENT PLANT

FILTER SAND EXISTING

EVAPORATION PONDS

BLDG 231 SHIPPING CONTAINERS

DEUL'S MOUNTAIN (2 SURFACE SOIL SAMPLES)

RED ROOM ROOF BURIAL AREA (2 BORINGS & 5 SURFACE SOIL SAMPLES)

CISTERN / BURN PIT

SITE SPRING

SITE POND

DAM

JOACHIM CREEK

DEUL'S MOUNTAIN
RED ROOM ROOF BURIAL AREA
OUTDOOR AND SHALLOW SURFACE AREAS
CISTERN/BURN PIT
FENCE

APPROXIMATE PROPERTY BOUNDARY
SITE BOUNDARY
PERENNIAL STREAM
INTERMITTENT STREAM
PROPOSED CO-LOCATED BORING & SURFACE SOIL SAMPLE LOCATION
PROPOSED SURFACE SOIL SAMPLE LOCATION

0 75
SCALE IN FEET

N

SOURCES:
"AS-BUILTS" AS PROVIDED BY WESTINGHOUSE/ABB
BORING LOCATIONS: BURDINE, 1998-1999
PROPERTY BOUNDARY: ZAHNER & ASSOC., MAY, 2000

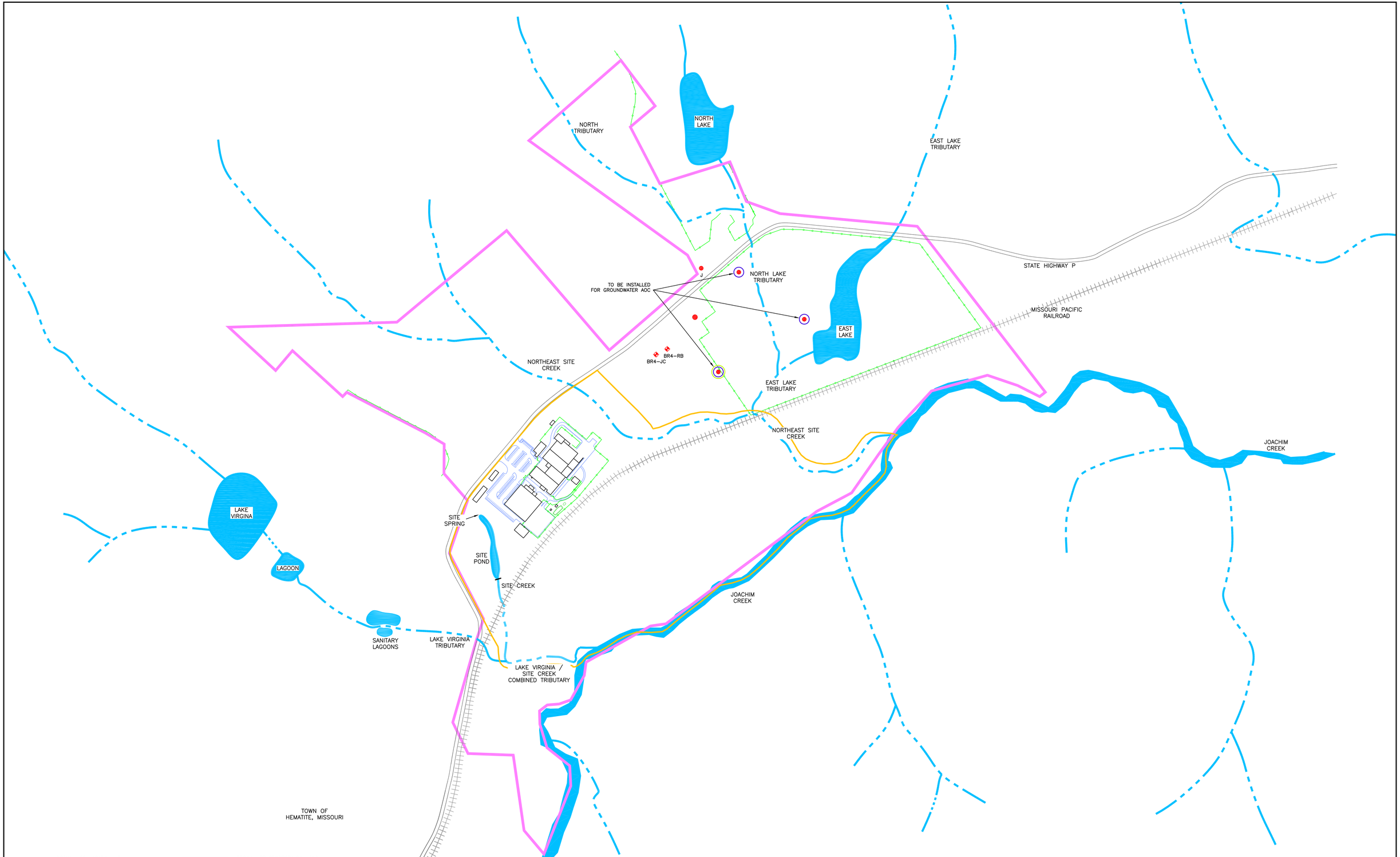
DATE	REVISED

Prepared By:
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and
Environmental Engineering Services
4850 Lemay Ferry Road, Suite 205
St. Louis, MO 63129
(314) 845-0535

WESTINGHOUSE ELECTRIC COMPANY
HEMATITE, MISSOURI FACILITY
HEMATITE, MISSOURI

PROPOSED BORING & SAMPLING LOCATIONS FOR OUTDOOR & SHALLOW SURFACE AREAS, DEUL'S MOUNTAIN, CISTERN/BURN PIT, & RED ROOM ROOF BURIAL AREA

FILE:	Plate 23.dwg	*DATE:*	MAY 9, 2003	*PLATE:*	23 OF 26



DATE	REVISED

Prepared By:

LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground–Water and
Environmental Engineering Services
4850 Lemay Ferry Road, Suite 205
St. Louis, MO 63129
(314) 845–0535

WESTINGHOUSE ELECTRIC COMPANY

HEMATITE, MISSOURI FACILITY
HEMATITE, MISSOURI

BORING, SAMPLING AND MONITORING WELL LOCATIONS NEAR DOMESTIC WELL #3

FILE:	*DATE:*	*PLATE:*
Plate 24.dwg	MAY 9, 2003	24 OF 26

100 PERCENT COVERAGE INSIDE THIS AREA

*10 PERCENT COVERAGE INSIDE THIS AREA

NOTE:
AREAS INCLUDED IN MAGNETOMETER SURVEY INCLUDE JOACHIM CREEK BRIDGE, RED ROOM ROOF BURIAL AREA, AIR PHOTO AREAS OF INTEREST, AND THE AUGMENTED BURIAL PIT GEOGRAPHICAL AREA.

* EACH LINE REPRESENTS A PATH 3 FEET IN WIDTH, SPACED 30 FEET APART FOR AN AREA EQUALLING 10% OF THE TOTAL LAND AREA INSIDE THE PROPERTY BOUNDARY. THE TOTAL LINEAR PATH LENGTH IS APPROXIMATELY 70 MILES.

TEN PERCENT GWS COVERAGE AREA

ONE-HUNDRED PERCENT GWS COVERAGE AREA

MAGNETOMETER SURVEY AREA

APPROXIMATE PROPERTY BOUNDARY

SITE BOUNDARY

PERENNIAL STREAM

INTERMITTENT STREAM

0 300
SCALE IN FEET

N

SOURCES:

PROPERTY BOUNDARY: ZAHNER & ASSOC., MAY, 2000

DATE	REVISED

Prepared By:
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and
Environmental Engineering Services
4850 Lemay Ferry Road, Suite 205
St. Louis, MO 63129
(314) 845-0535

WESTINGHOUSE ELECTRIC COMPANY
HEMATITE, MISSOURI FACILITY
HEMATITE, MISSOURI

GAMMA WALKOVER SURVEY (GWS) AND MAGNETOMETER SURVEY

FILE:	Plate 25.dwg	*DATE:*	MAY 9, 2003	*PLATE:*	25 OF 26

NORTH TRIBUTARY

NORTH LAKE

EAST LAKE TRIBUTARY

NORTH LAKE TRIBUTARY

EAST LAKE

NORTHEAST SITE CREEK

EAST LAKE TRIBUTARY

NORTHEAST SITE CREEK

LAKE VIRGINIA

LAGOON

SITE SPRING

SITE POND

SITE CREEK

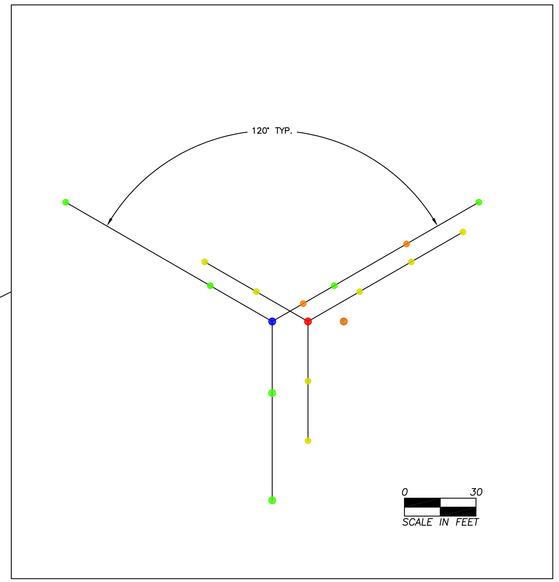
JOACHIM CREEK

SANITARY LAGOONS

LAKE VIRGINIA TRIBUTARY

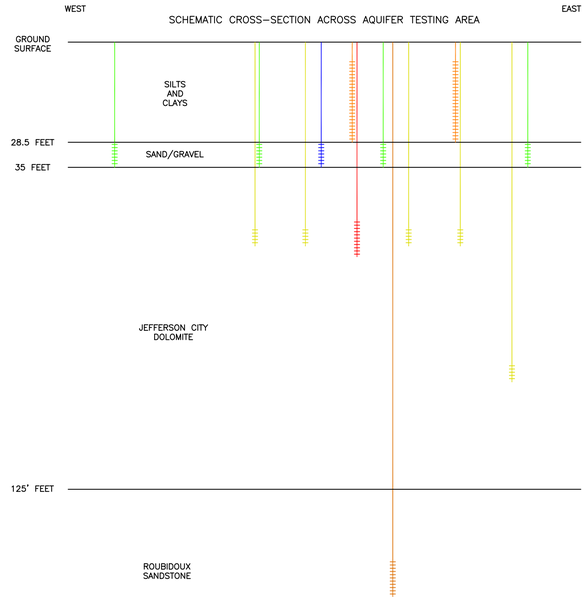
LAKE VIRGINIA / SITE CREEK COMBINED TRIBUTARY

TOWN OF HEMATITE, MISSOURI



LEGEND

- PUMPING TEST WELL IN THE SAND/GRAVEL UNIT OF THE DSCC
- PUMPING TEST WELL IN THE JEFFERSON CITY DOLOMITE
- OBSERVATION WELL IN THE SAND/GRAVEL UNIT OF THE DSCC
- OBSERVATION WELL IN THE JEFFERSON CITY DOLOMITE
- OBSERVATION WELL SCREENED ABOVE THE SAND/GRAVEL UNIT
- OBSERVATION/PUMPING WELL IN THE ROUBIDOUX SANDSTONE



VERTICAL SCALE: 1"=20'
HORIZONTAL SCALE: 1"=30'

APPROXIMATE PROPERTY BOUNDARY
SITE BOUNDARY
PERENNIAL STREAM
INTERMITTENT STREAM
FENCE LINE

0 300
SCALE IN FEET

N

SOURCES:

BORING LOCATIONS: BURDINE, 1998-1999
PROPERTY BOUNDARY: ZAHNER & ASSOC., MAY, 2000

STATE OF MISSOURI
JOHN L. BOGNAR
RG0007
REGISTERED GEOLOGIST

MISSOURI REGISTERED GEOLOGIST SEAL

DATE	REVISED

Prepared By:

LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and
Environmental Engineering Services
4850 Lemay Ferry Road, Suite 205
St. Louis, MO 63129
(314) 845-0535

WESTINGHOUSE ELECTRIC COMPANY
HEMATITE, MISSOURI FACILITY
HEMATITE, MISSOURI

PROPOSED AQUIFER TESTING AREA AND TEST CONFIGURATION

FILE: Plate 26.dwg | *DATE:* MAY 9, 2003 | *PLATE:* 26 OF 26