MADISON COUNTY MINES SUPERFUND SITE

CATHERINE MINES AND SKAGGS TAILINGS SUBSITES
OPERABLE UNIT 05

FINAL
REMEDIAL DESIGN

MADISON COUNTY, MISSOURI

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

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40482281

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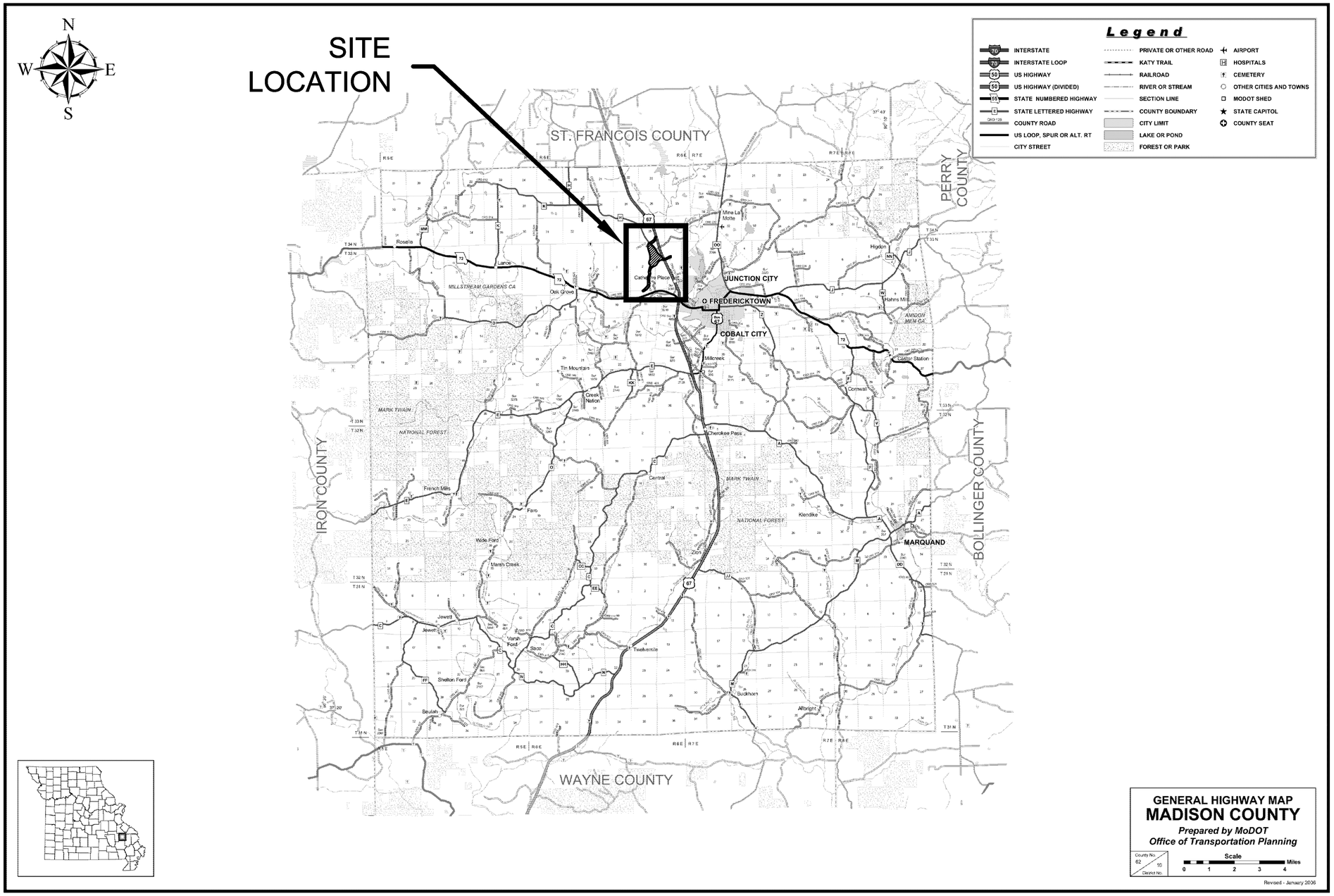
Date: 09/29/14
Project #: 044799
Drawn by: JLB/SNW
Design by: JLB/GEH
Check by: Review by: GEH

MADISON COUNTY MINES SUPERFUND SITE
CATHERINE MINES AND SKAGGS TAILINGS SUBSITES
OPERABLE UNIT 05

COVER SHEET

DRAWING NO.



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2 MILES 1 0 2 MILES
SCALE: 1" = 2 MILE

MADISON COUNTY MINES SUPERFUND SITE
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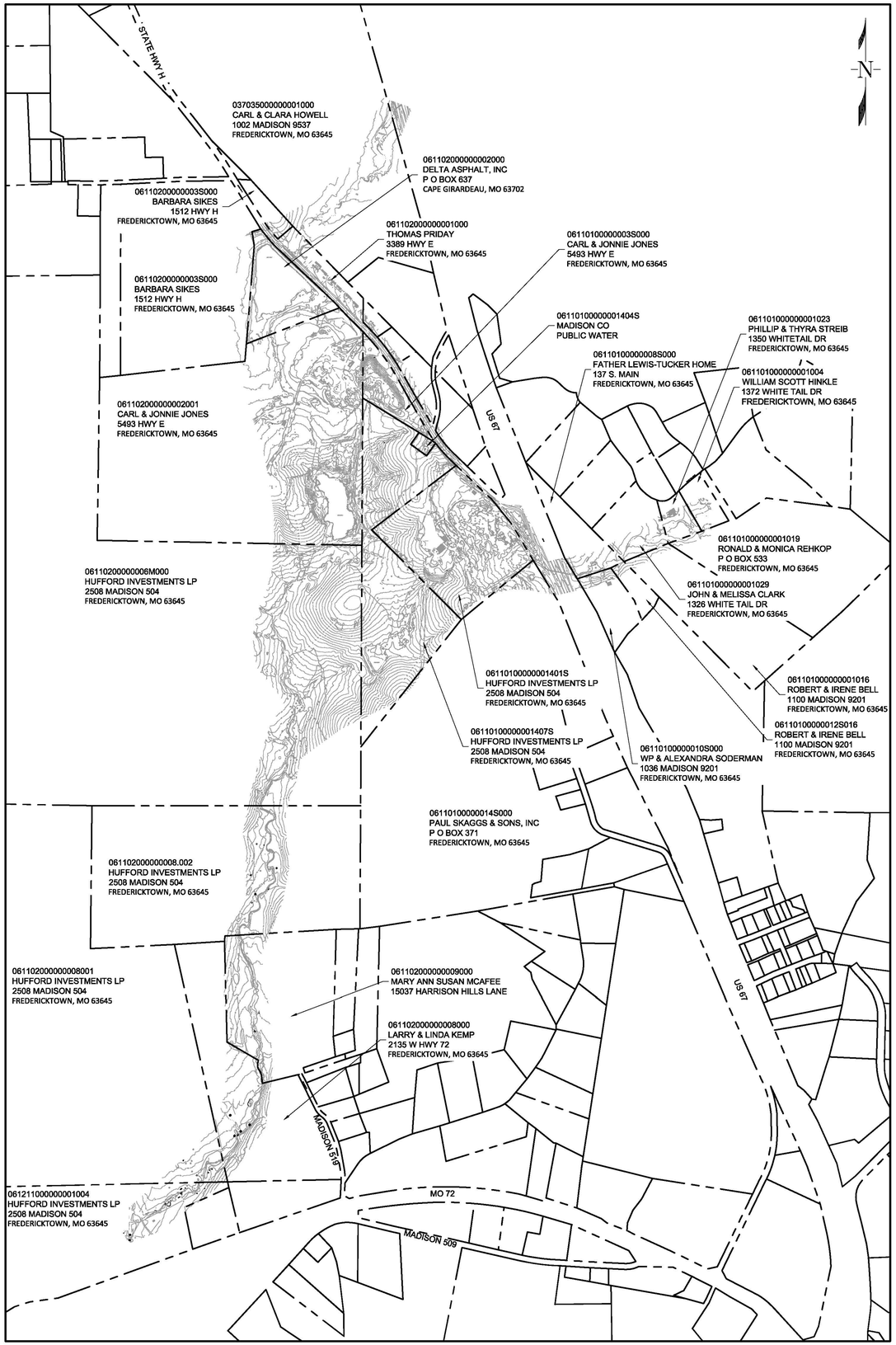
OPERABLE UNIT 05

LOCATION MAP

DRAWING NO.
G-001



SEQUENCE OF CONSTRUCTION

1. INSTALL EROSION AND SEDIMENT CONTROL MEASURES FOR AREA TO BE EXCAVATED. THE CONTRACTOR SHALL ONLY DISTURB 40 ACRES OF THE SITE AT A TIME. ONCE A 40 ACRE SECTION HAS BEEN DISTURBED IT SHALL BE STABILIZED PRIOR TO ANY ADDITIONAL AREA BEING DISTURBED.
2. THE CONTRACTOR SHALL MODIFY, IF NECESSARY, THE PROPOSED EROSION AND SEDIMENT CONTROLS BY STANDARD CONSTRUCTION MEANS AND METHODS WITH APPROVAL FROM THE OWNER OR ENGINEER.
3. CLEAR AND GRUB THE AREA TO BE EXCAVATED (INCLUDES ANY HAUL ROAD). VEGETATIVE MATERIAL SHALL BE DISPOSED OF OFF SITE AT AN APPROVED DISPOSAL FACILITY. UNLESS APPROVED BY THE EPA PROJECT MANAGER NO VEGETATIVE MATERIALS SHALL BE PLACED IN THE REPOSITORY.
4. EXCAVATE AREA TO GRADES SHOWN ON THE EXCAVATION GRADING PLANS. BEGIN EXCAVATION AT THE UPHILL PORTION OF THE AREA, WORKING TOWARDS THE DOWNHILL PORTION OF THE AREA.
5. TEST SOIL AT THE BOTTOM OF THE EXCAVATION IN ACCORDANCE WITH THE FIELD SAMPLING PLAN PREPARED BY BLACK AND VEATCH. IF SAMPLING SHOWS CONTAMINANTS ABOVE THE ACTION LEVELS FOR THE SITE, CONTINUE EXCAVATING AND RETEST SOIL UNTIL CONTAMINANTS ARE BELOW ACTION LEVELS.
6. REGRADE SITE TO ROUGHLY THE GRADES SHOWN ON THE FINAL GRADING PLANS. AT A MINIMUM THE FINISHED GRADES SHOULD PROVIDE POSITIVE DRAINAGE AND PREVENT WATER FROM PONDING ON THE SITE. IF POSSIBLE, MATERIAL NEEDED TO PROVIDE POSITIVE DRAINAGE CAN BE TAKEN FROM ONSITE PROVIDED CONTAMINANTS ARE BELOW ACTION LEVELS FOR THE SITE. IF NEEDED CONTRACTOR WILL BE RESPONSIBLE FOR IMPORTING FILL MATERIAL TO PROVIDE POSITIVE DRAINAGE.
7. PLACE 12 INCHES OF CLAY MATERIAL AND 6 INCHES OF TOPSOIL ON THE REPOSITORIES TO ACT AS A CAP.
8. WHEN FINISH GRADES HAVE BEEN MET THE CONTRACTOR SHALL FERTILIZE AND SEED AS SOON AS POSSIBLE PER PROJECT SPECIFICATIONS.

NOTES

1. EXISTING UTILITY LOCATIONS SHOWN ARE APPROXIMATE ONLY AND MAY NOT REFLECT FIELD CONDITIONS. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING UTILITIES PRIOR TO EXCAVATION. IF UTILITY LOCATIONS CONFLICT WITH EXCAVATION PLANS SHOWN, CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY.
2. THE CONTRACTOR SHALL NOT DISTURB OR BLOCK ACCESS TO OTHER FACILITIES AND AREAS ADJACENT TO THE SITE.
3. THE CONTRACTOR SHALL PROTECT EXISTING UTILITIES.
4. CONCRETE STRUCTURES ARE TO BE LEFT IN PLACE.
5. EXISTING MANHOLES IN THE CONSTRUCTION AREA SHALL BE MODIFIED TO MATCH THE FINAL GRADES.
6. EXISTING CONDITIONS SURVEY WAS PROVIDED BY ASI BASED ON AN AERIAL SURVEY PERFORMED IN MARCH 2014.
7. AT A MINIMUM A SURVEY SHALL BE PERFORMED AT THE BOTTOM OF EXCAVATION GRADES AND AT THE END OF THE REMEDIAL ACTION (FINAL GRADES) FOR VERIFICATION OF WORK PERFORMED. SURVEY DATA FOR THESE ITEMS SHALL BE COLLECTED UNDER THE SUPERVISION OF A PROFESSIONAL LAND SURVEYOR LICENSED IN THE STATE OF MISSOURI. THE PLS SHALL CERTIFY ALL SURVEY DATA AND VOLUMES.
8. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF TRAFFIC AND PROTECTION OF ROADS FOR TRANSPORTATION OF FILL MATERIAL ACROSS PUBLIC ROADWAYS.
9. THE CATHERINE SUBSITE IS AN OPERATING QUARRY. ALL MINE SAFETY AND HEALTH ADMINISTRATION (MSHA) REGULATIONS SHALL BE ADHERED TO.
10. MOVE ALL EXISTING GRAVEL STOCK PILES IN THE CATHERINE SUBSITE TO A LOCATION APPROVED BY THE EPA REPRESENTATIVE.
11. SAWDUST PILE IN THE SKAGGS SUBSITE TO REMAIN IN PLACE.
12. NO EXCAVATION ON SHEETS C-204 & C-205. NO GRADING ON SHEETS C-304& C-305. NO EROSION AND SEDIMENT CONTROL MEASURE ON SHEETS C-404 & C-405.
13. DRAWING COORDINATE SYTEM:
    HORIZONTAL - NAD83 MISSOURI STATE PLANES, EAST ZONE, US FOOT
    VERITICAL - NAVD 1988

EXISTING FEATURES

- *TREE*
- *TREE/BRUSH LINE*
- 945 — *MAJOR CONTOUR*
- *MINOR CONTOUR*
- x 928.2 — *SPOT ELEVATION*
- *H2O 927.7* — *WATER LEVEL*
- *SURFACE WATER/ DRAINAGE LINE*
- *PROPERTY LINE*
- *EXISTING STRUCTURE*
- *FENCE*
- *UTILITY POLE*
- *CONCRETE PAD*
- *CULVERT*
- *SIGN*
- *UNPAVED ROAD*
- *GUARD RAIL*
- US 67 — *PAVED ROAD*

PROPOSED FEATURES

- LOD — LIMIT OF DISTURBANCE
- CL — COMPOST LOG
- 1350 — MAJOR CONTOUR
- MINOR CONTOUR
- AREA TO BE FILLED AFTER EXCAVATION TO PROMOTE DRAINAGE
- REPOSITORY AREA. COVERED IN 18 INCH SOIL CAP.
- STABILIZED CONSTRUCTION ENTRANCE
- STONE FILTER RING
- ACCESS ROAD
- GRAVEL ROAD (REPOSITORY)
- GRAVEL ROAD (NON-REPOSITORY)
- STABILIZATION MATTING
- MONITORING WELL
- CULVERT , FLARED END SECTION AND RIP RAP

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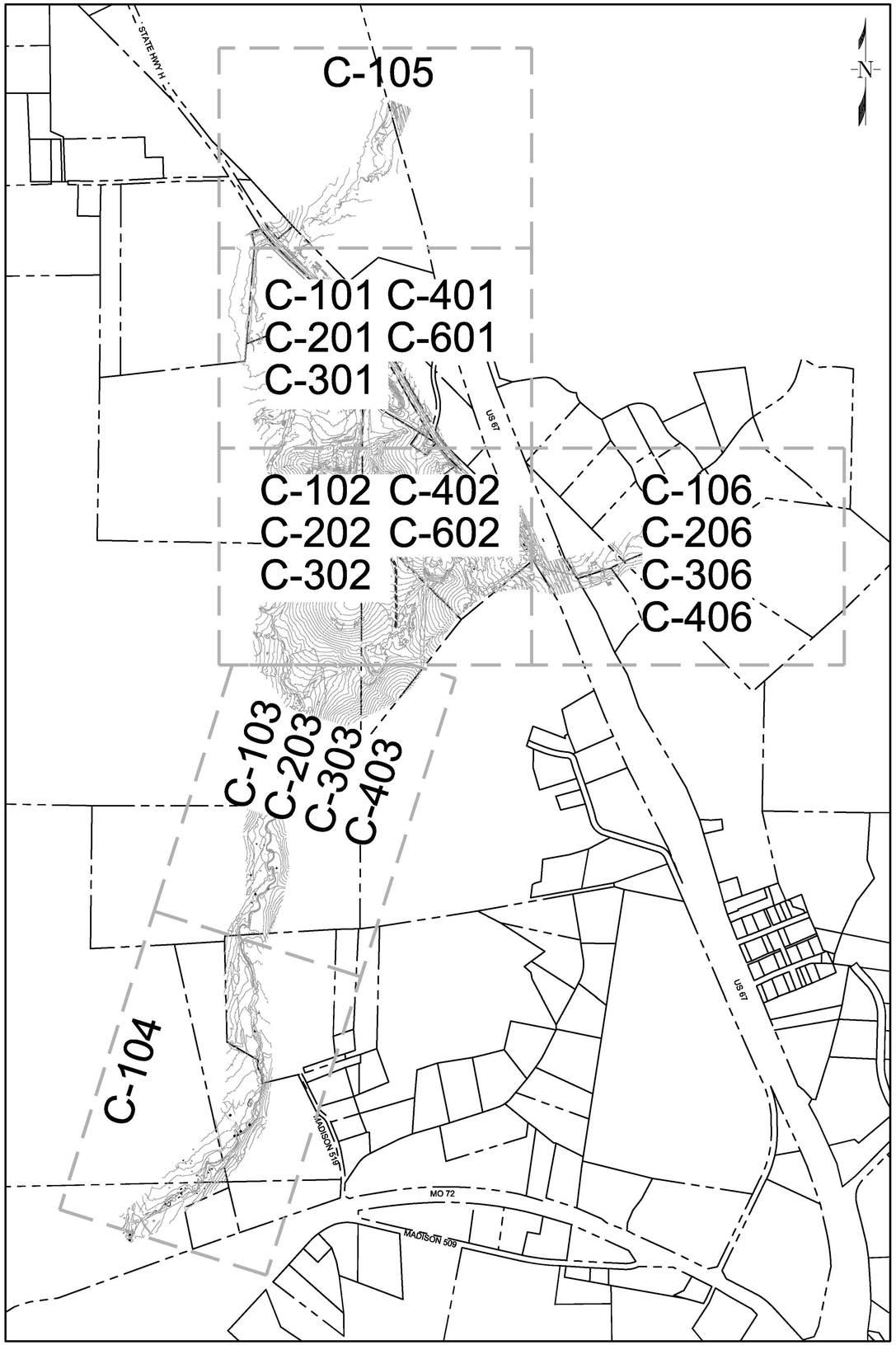
Project #: 04/799 | Design by: JLB/GEH | Review by: GEH
SCALE: 1" = 600' (0' 300' 600')

MADISON COUNTY MINES SUPERFUND SITE
CATHERINE MINES AND SKAGGS TAILINGS SUBSITES
OPERABLE UNIT 05

PARCEL INFORMATION AND LEGEND

DRAWING NO.
C-001



SHEET INDEX

DRAWING NO	DRAWING NAME
Cover	Cover Sheet
G-001	Location Map
C-001	Parcel Information and Legend
C-002	Site Key Plan and Sheet Index
C-101	Existing Conditions Catherine Site
C-102	Existing Conditions Skaggs Site
C-103	Existing Conditions Southern Tributary Sheet 1
C-104	Existing Conditions Southern Tributary Sheet 2
C-105	Existing Conditions Logtown Branch
C-106	Existing Conditions Eastern Tributary
C-201	Excavation and Grading Catherine Site
C-202	Excavation and Grading Skaggs Site
C-203	Excavation and Grading Southern Tributary Sheet 1
C-206	Excavation and Grading Eastern Tributary
C-301	Final Grading Catherine Site
C-302	Final Grading Skaggs Site
C-303	Final Grading Southern Tributary Sheet 1
C-306	Final Grading Eastern Tributary
C-401	Erosion and Sediment Control Catherine Site
C-402	Erosion and Sediment Control Skaggs Site
C-403	Erosion and Sediment Control Southern Tributary Sheet 1
C-406	Erosion and Sediment Control Eastern Tributary
C-501	Construction Details
C-502	Construction Details
C-503	Construction Details
C-504	Construction Details
C-601	Catherine Site Monitoring Well Locations
C-602	Skaggs Site Monitoring Well Locations

NOTE:
1. MISSOURI STATE PLANE COORDINATE SYSTEM, EAST ZONE, NORTH AMERICAN DATUM (NAD) 1983, (U.S. FEET)

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SCALE: 1" = 600'
600' 300' 0' 600'

MADISON COUNTY MINES SUPERFUND SITE
CATHERINE MINES AND SKAGGS TAILINGS SUBSITES
OPERABLE UNIT 05

SITE KEY PLAN PLAN
AND SHEET INDEX

DRAWING NO.
C-002

MATCH LINE SEE SHEET C-105

STATE HWY H

H2O 927.7

H2O 917.2

REPOSITORY BOUNDARY

RELOCATE GRAVEL STOCKPILES

REPOSITORY BOUNDARY

GRAVEL

EXISTING CULVERT

ACCESS ROAD TO REMAIN OPEN AT ALL TIMES

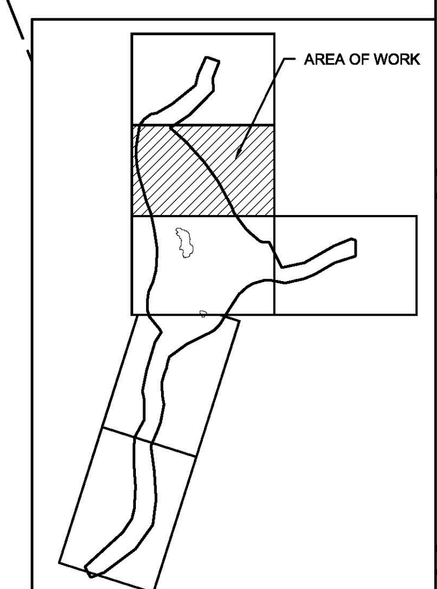
H2O 948.6

REPOSITORY BOUNDARY

RELOCATE GRAVEL STOCKPILES

ACCESS TO SKAGGS SITE

MATCH LINE SEE SHEET C-102



KEY PLAN

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SCALE: 1" = 100' (100' 50' 0' 100')

MADISON COUNTY MINES SUPERFUND SITE
CATHERINE MINES AND SKAGGS TAILINGS SUBSITES
OPERABLE UNIT 05

EXISTING CONDITIONS
CATHERINE SITE

DRAWING NO.
C-101

MATCH LINE SEE SHEET C-101

ACCESS ROAD

STATE HWY 74

H2O 889.1

GRAVEL

REPOSITORY BOUNDARY

GRAVEL

EXISTING POLE TO BE REMOVED

SAWDUST PILES TO REMAIN IN PLACE

ACCESS ROAD

H2O 880.6

MATCH LINE SEE SHEET C-106

MATCH LINE SEE SHEET C-103

AREA OF WORK

KEY PLAN

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SCALE: 1" = 100'

100' 50' 0' 100'

MADISON COUNTY MINES SUPERFUND SITE
CATHERINE MINES AND SKAGGS TAILINGS SUBSITES
OPERABLE UNIT 05

EXISTING CONDITIONS
SKAGGS SITE

DRAWING NO.
C-102

DRAWING NO.
C-103

EXISTING CONDITIONS
SOUTHERN TRIBUTARY
SHEET 1

MADISON COUNTY MINES SUPERFUND SITE
CATHERINE MINES AND SKAGGS TAILINGS SUBSITES
OPERABLE UNIT 05

Date:	Drawn by:	Check by:
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Project #:	Design by:	Review by:
044799	JLB/GEH	GEH

100' 50' 0' 100'
SCALE: 1" = 100'

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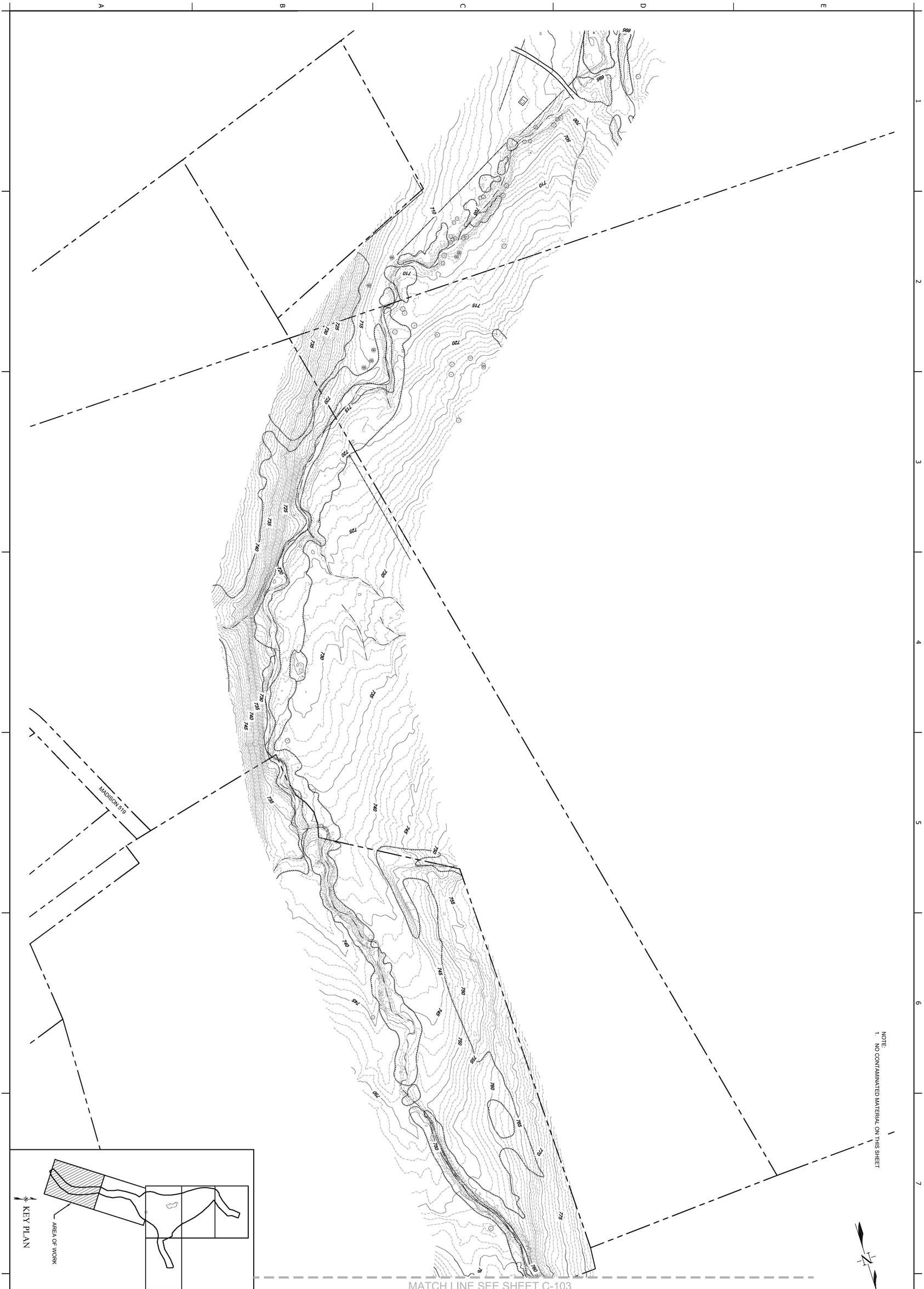

NOTE:
1. NO CONTAMINATED MATERIAL ON THIS SHEET

DRAWING NO.
C-104

EXISTING CONDITIONS
SOUTHERN TRIBUTARY
SHEET 2

MADISON COUNTY MINES SUPERFUND SITE
CATHERINE MINES AND SKAGGS TAILINGS SUBSITES
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100' 50' 0' 100'
SCALE: 1" = 100'

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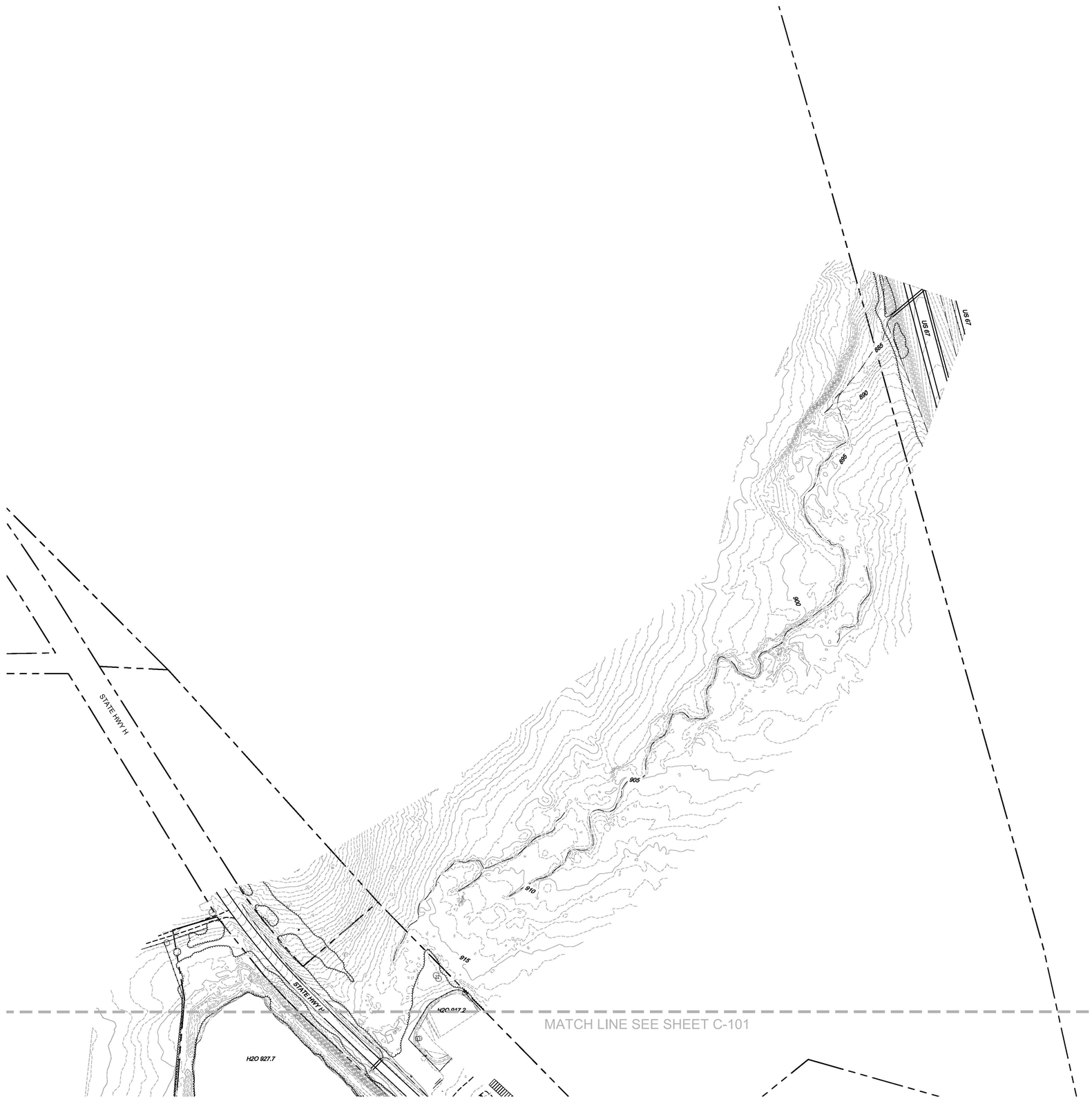

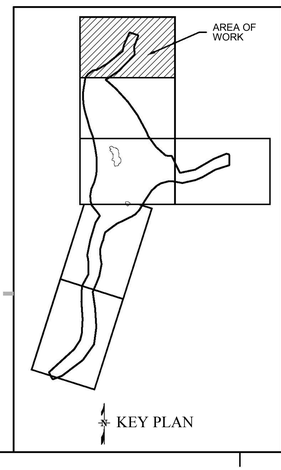

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100' 50' 0' 100'
SCALE: 1" = 100'

MADISON COUNTY MINES SUPERFUND SITE
CATHERINE MINES AND SKAGGS TAILINGS SUBSITES
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EXISTING CONDITIONS
LOGTOWN BRANCH

DRAWING NO.
C-105

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SCALE: 1" = 100'

MADISON COUNTY MINES SUPERFUND SITE
CATHERINE MINES AND SKAGGS TAILINGS SUBSITES
OPERABLE UNIT 05

EXISTING CONDITIONS
EASTERN TRIBUTARY

DRAWING NO.
C-106

MATCH LINE SEE SHEET C-205

1 C-504 30" CONCRETE FLARED END SECTION, INLET AND OUTLET

2 C-504 30LF-30" RCP @ 0.0100 FT/FT INVERT EL IN 930.3 FT

3 C-504 RIP RAP INLET AND OUTLET PROTECTION

1 C-504 24" CONCRETE FLARED END SECTION, INLET AND OUTLET

2 C-504 55LF-24" RCP @ 0.0200 FT/FT INVERT EL IN 948.0 FT

3 C-504 RIP RAP INLET AND OUTLET PROTECTION

7 C-501 REPOSITORY AREA CLEAN SOIL CAP (AROUND BUILDINGS)

REMOVE 18" EXISTING SOIL AND REPLACE WITH 18" SOIL CAP

6 C-501 GRAVEL ROADS (INSIDE REPOSITORIES)

1 C-504 36" CONCRETE FLARED END SECTION, INLET AND OUTLET

2 C-504 30LF-36" RCP @ 0.0100 FT/FT INVERT EL IN 937.8 FT

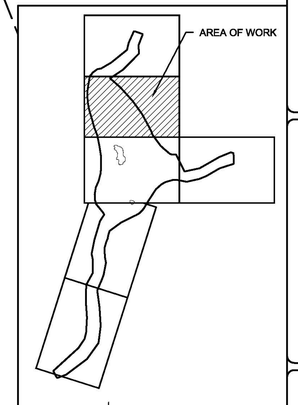
3 C-504 RIP RAP INLET AND OUTLET PROTECTION

REMOVE EXISTING CULVERT

5 C-501 GRAVEL ROADS (OUTSIDE REPOSITORIES)

ACCESS TO SKAGGS SITE

MATCH LINE SEE SHEET C-202



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1" = 100'

MADISON COUNTY MINES SUPERFUND SITE
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OPERABLE UNIT 05

EXCAVATION GRADING PLAN
CATHERINE SITE

DRAWING NO.
C-201

MATCH LINE SEE SHEET C-201

GRAVEL ROADS (INSIDE REPOSITORIES) 6 C-501

GRAVEL ROADS (OUTSIDE REPOSITORIES) 5 C-501

REPOSITORY AREA CLEAN SOIL CAP (AROUND BUILDINGS) 7 C-501

REMOVE 18" EXISTING SOIL AND REPLACE WITH 18" SOIL CAP

NO WORK TO TAKE PLACE INSIDE FENCED AREA

ACCESS ROAD

STATE HWY 11

H2O 889.1

H2O 880.6

MATCH LINE SEE SHEET C-206

MATCH LINE SEE SHEET C-203

AREA OF WORK

KEY PLAN

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SCALE: 1" = 100'

MADISON COUNTY MINES SUPERFUND SITE
CATHERINE MINES AND SKAGGS TAILINGS SUBSITES
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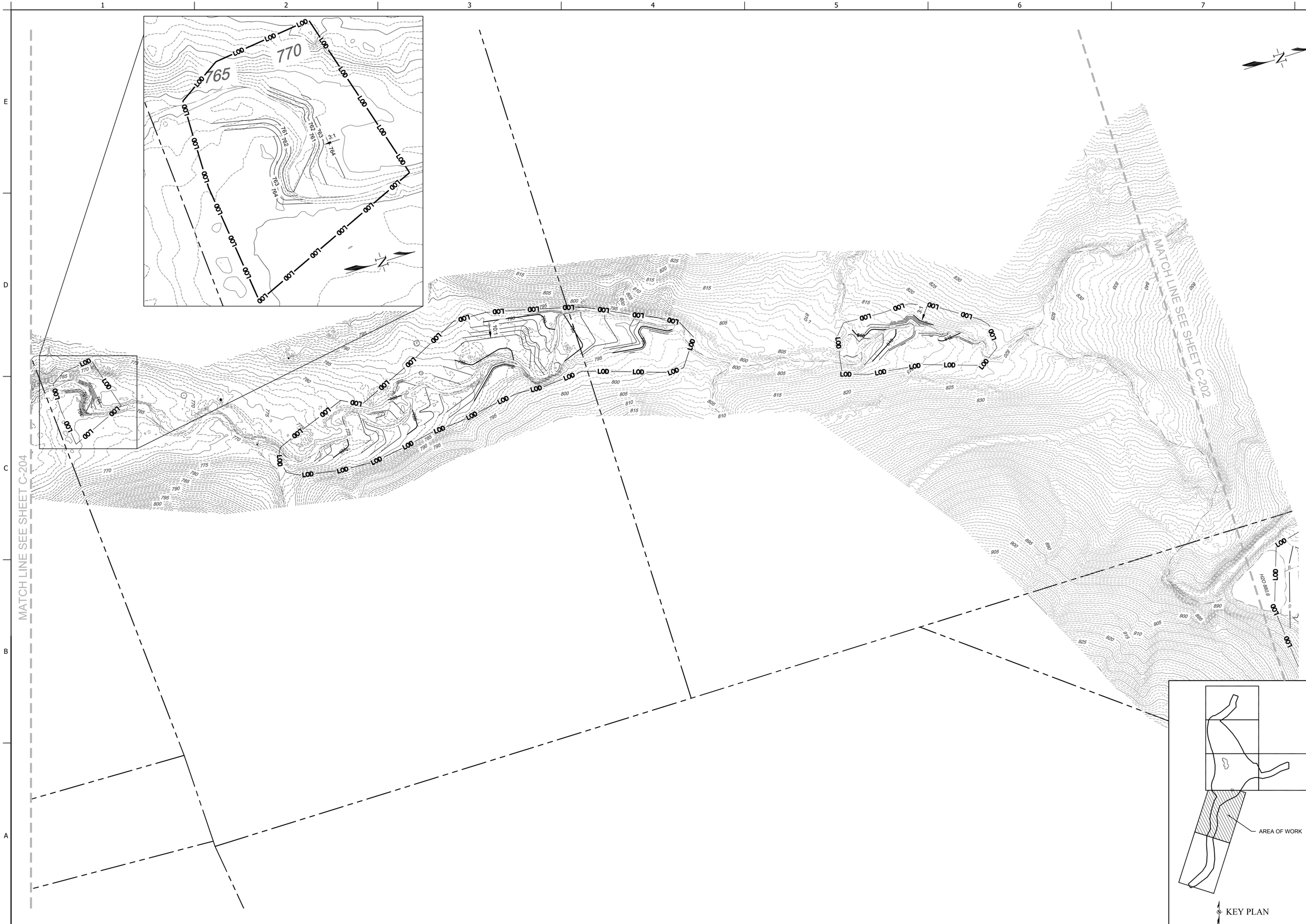
EXCAVATION GRADING PLAN
SKAGGS SITE

DRAWING NO.
C-202



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100' 50' 0' 100'
SCALE: 1" = 100'

MADISON COUNTY MINES SUPERFUND SITE
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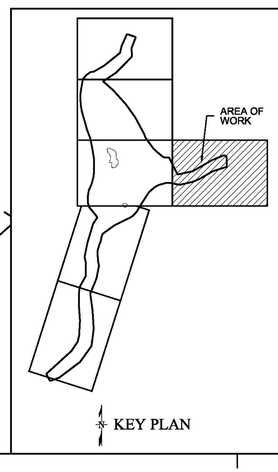
OPERABLE UNIT 05

EXCAVATION GRADING PLAN
SOUTHERN TRIBUTARY
SHEET 1

DRAWING NO.
C-203



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Rev.	Description	Date	Apr.
1	BID DOCUMENTS	09/29/14	---
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7	---	---	---
8	---	---	---

Date: 09/29/14
Project #: 04/799
Drawn by: JLB/SNM
Design by: JLB/GEH
Check by: ---
Review by: GEH

SCALE: 1" = 100'

MADISON COUNTY MINES SUPERFUND SITE
CATHERINE MINES AND SKAGGS TAILINGS SUBSITES
OPERABLE UNIT 05

EXCAVATION GRADING PLAN
EASTERN TRIBUTARY

DRAWING NO.
C-206

CATHERINE REPOSITORY
NORTH - SOUTH PROFILE

CATHERINE REPOSITORY
WEST - EAST PROFILE

30LF-30" RCP @ 0.0100 FT/FT
INVERT EL IN 930.0 FT

1 / C-504 55LF-24" RCP @ 0.0200 FT/FT
INVERT EL IN 948.0 FT

FILL AREA
TO DRAIN

GRADE SLOPE
AT 4:1

REPOSITORY AREA CLEAN
SOIL CAP (AROUND BUILDINGS)

REMOVE 18" EXISTING SOIL AND
REPLACE WITH 18" SOIL CAP

GRAVEL ROADS
(INSIDE REPOSITORIES)

GRADE SLOPE
AT 3.5:1

30LF-36" RCP @0.0100 FT/FT
INVERT EL IN 937.8 FT

GRAVEL ROADS
(OUTSIDE REPOSITORIES)

ACCESS TO
SKAGGS SITE

STATE HWY H

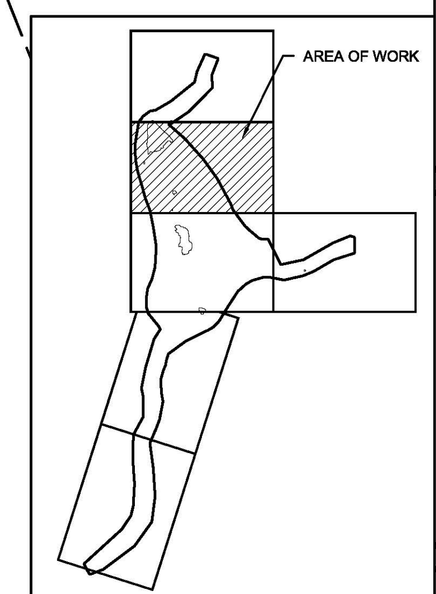
H2O 927.7

H2O 917.2

H2O 948.6

7:1

MATCH LINE SEE SHEET C-302



KEY PLAN

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Date: 09/29/14	Drawn by: JLB/SNW	Check by:	8	—	—	—
Project #: 044799	Design by: JLB/GEH	Review by: GEH	7	—	—	—
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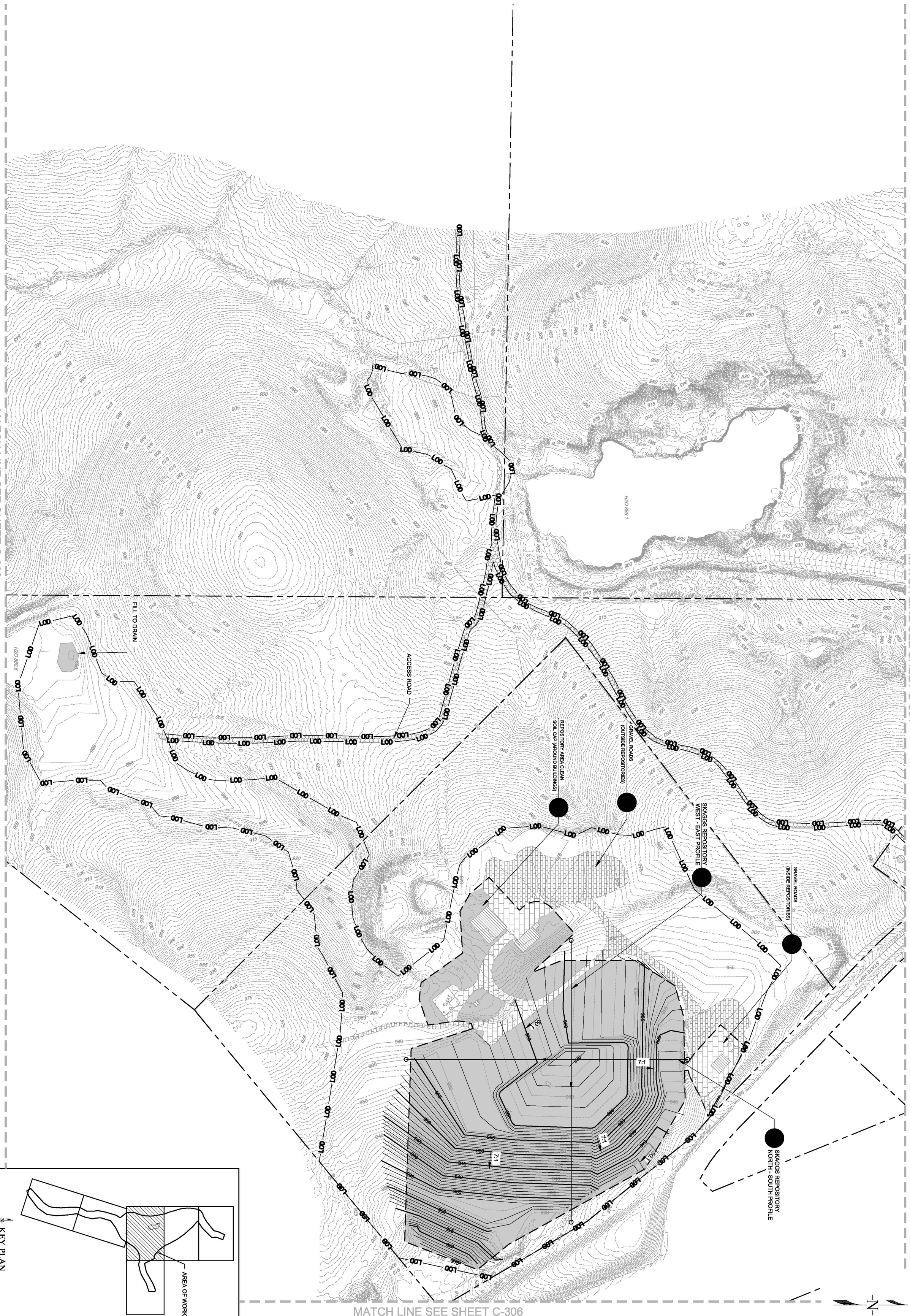
			Rev.	Description	Date	Apr.

SCALE: 1" = 100'

MADISON COUNTY MINES SUPERFUND SITE
CATHERINE MINES AND SKAGGS TAILINGS SUBSITES
OPERABLE UNIT 05

FINAL GRADING
CATHERINE SITE

DRAWING NO.
C-301



DRAWING NO. C-302

FINAL GRADING
SKAGGS SITE

MADISON COUNTY MINES SUPERFUND SITE
CATHERINE MINES AND SKAGGS TAILINGS SUBSITES
OPERABLE UNIT 05

Date:	Drawn by:	Check by:
09/29/14	JLB/SMM	
Project #:	Design by:	Review by:
044799	JLB/GEH	GEH

100' 50' 0' 100'
SCALE: 1" = 100'

Rev.	Description	Date	Apr.
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7		---	---
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1	BID DOCUMENTS	09/29/14	---

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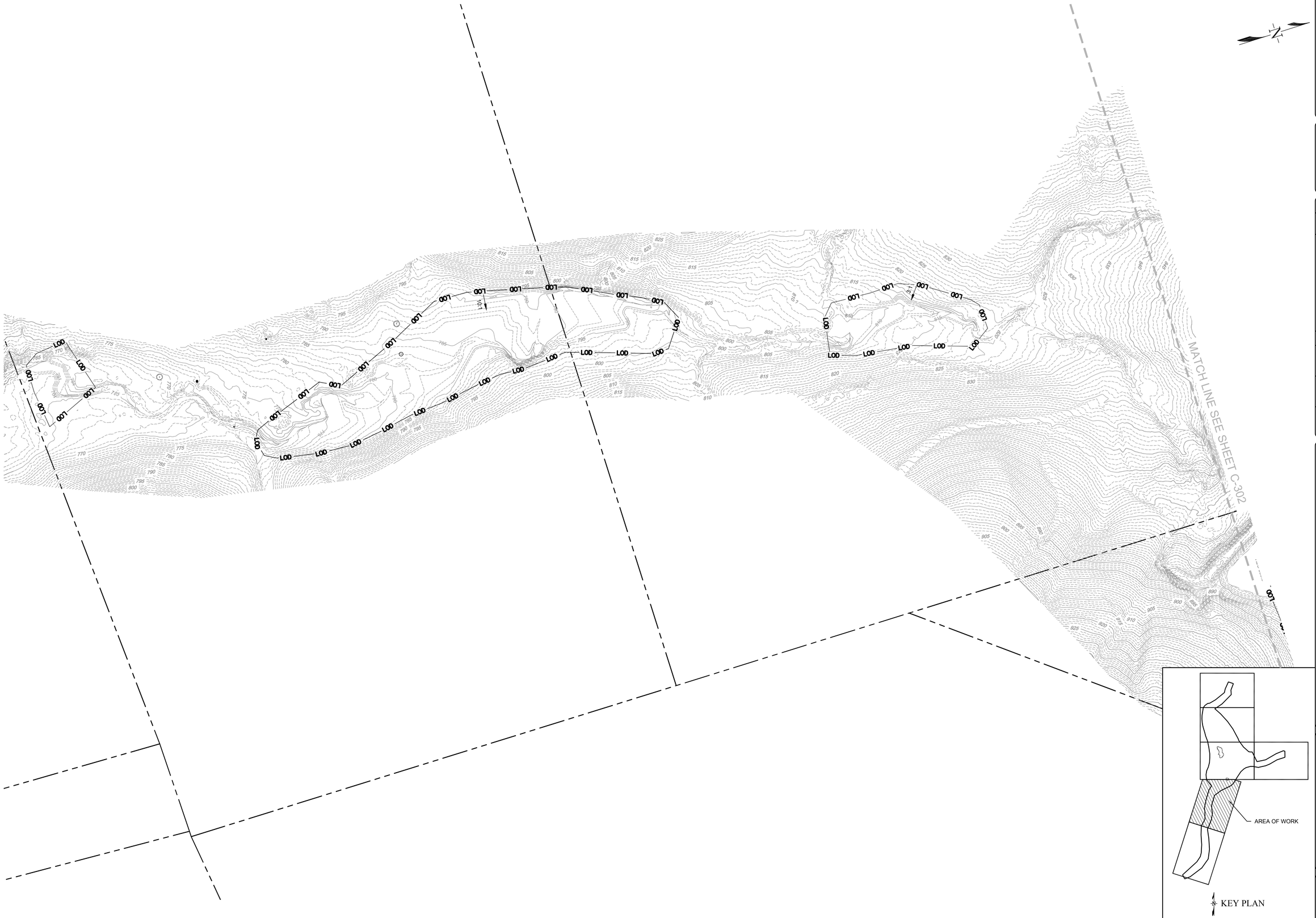
WEBSITE: WWW.BV.COM



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Date: 09/29/14	Drawn by: JLB/SMM	Check by:	8	---	---	---
Project #: 044799	Design by: JLB/GEH	Review by: GEH	7	---	---	---
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			1	BID DOCUMENTS	09/29/14	---
			Rev.	Description	Date	Apr.

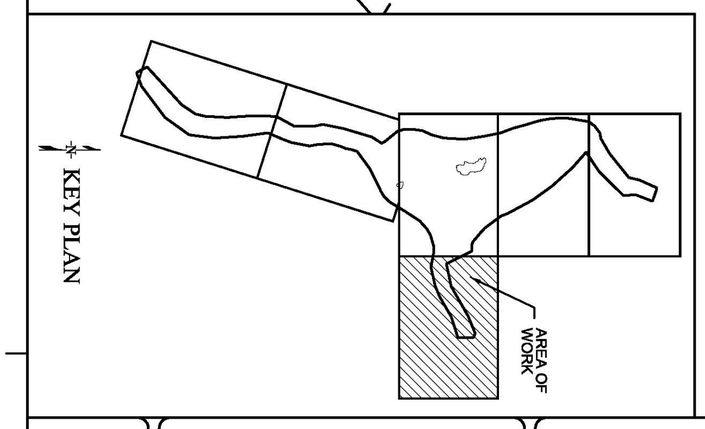
100' 50' 0' 100'
SCALE: 1" = 100'

MADISON COUNTY MINES SUPERFUND SITE
CATHERINE MINES AND SKAGGS TAILINGS SUBSITES
OPERABLE UNIT 05

FINAL GRADING
SOUTHERN TRIBUTARY 1

DRAWING NO.
C-303

MATCH LINE SEE SHEET C-302



DRAWING NO. C-306

FINAL GRADING
EASTERN TRIBUTARY

MADISON COUNTY MINES SUPERFUND SITE
CATHERINE MINES AND SKAGGS TAILINGS SUBSITES
OPERABLE UNIT 05

Date:	Drawn by:	Check by:
09/29/14	JLB/SMM	
Project #:	Design by:	Review by:
044799	JLB/GEH	GEH

100' 50' 0' 100'
SCALE: 1" = 100'

Rev.	Description	Date	Apr.
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7		---	---
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1	BID DOCUMENTS	09/29/14	---

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1 STABILIZED CONSTRUCTION ENTRANCE C-501

3 STONE FILTER RING C-501

4 COMPOST LOG C-501

1 STABILIZED CONSTRUCTION ENTRANCE C-501

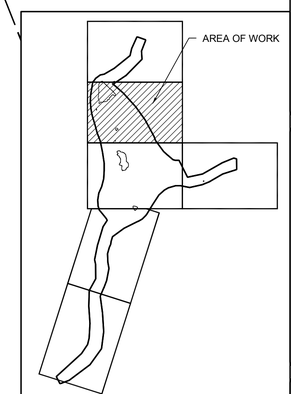
3 STONE FILTER RING C-501

3 STONE FILTER RING C-501

3 STABILIZATION MATTING C-502

ACCESS TO SKAGGS SITE

MATCH LINE SEE SHEET C-402



KEY PLAN

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Rev.	Description	Date	Apr.
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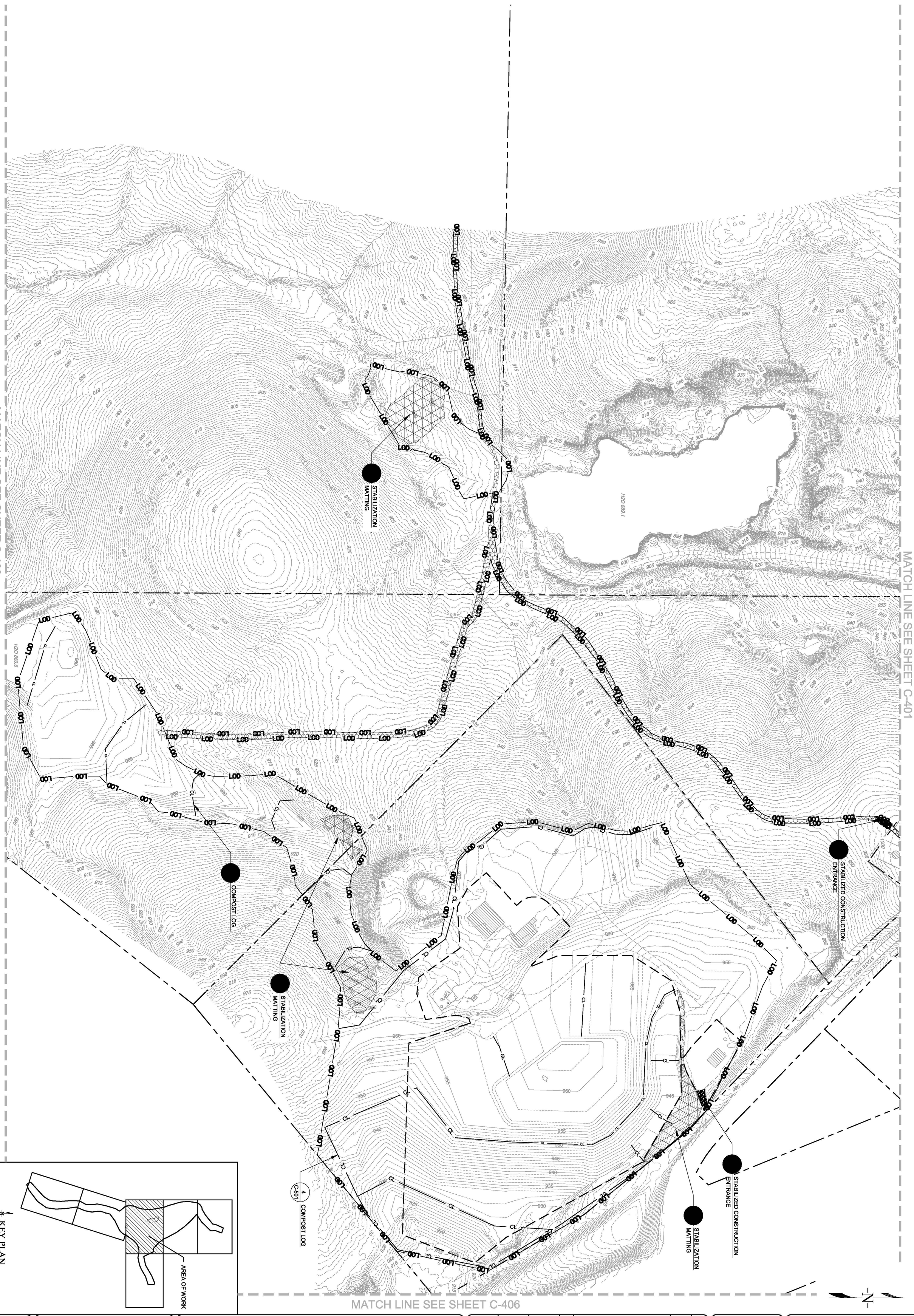
Date: 09/29/14 | Drawn by: JLB/SNM | Check by:
Project #: 044799 | Design by: JLB/GEH | Review by: GEH

SCALE: 1" = 100'

MADISON COUNTY MINES SUPERFUND SITE
CATHERINE MINES AND SKAGGS TAILINGS SUBSITES
OPERABLE UNIT 05

EROSION AND SEDIMENT CONTROL CATHERINE SITE

DRAWING NO. C-401



DRAWING NO. C-402

EROSION AND SEDIMENT CONTROL SKAGGS SITE

MADISON COUNTY MINES SUPERFUND SITE
CATHERINE MINES AND SKAGGS TAILINGS SUBSITES
OPERABLE UNIT 05

Date:	Drawn by:	Check by:
09/29/14	JLB/SMM	
Project #: 044799	Design by: JLB/GEH	Review by: GEH

100' 50' 0' 100'
SCALE: 1" = 100'

Rev.	Description	Date	Apr.
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1	BID DOCUMENTS	09/29/14	---

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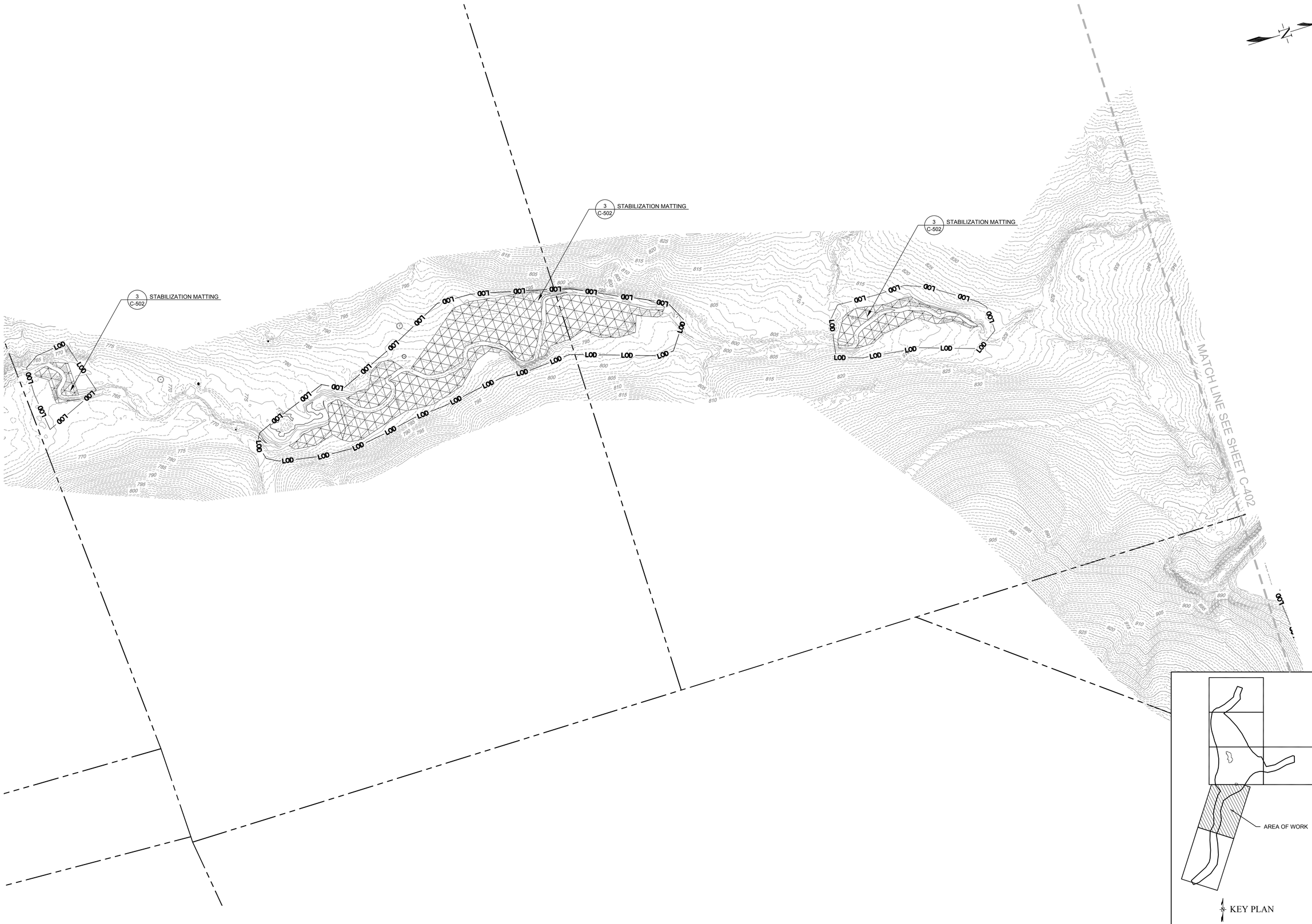

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1	BID DOCUMENTS	09/29/14	---

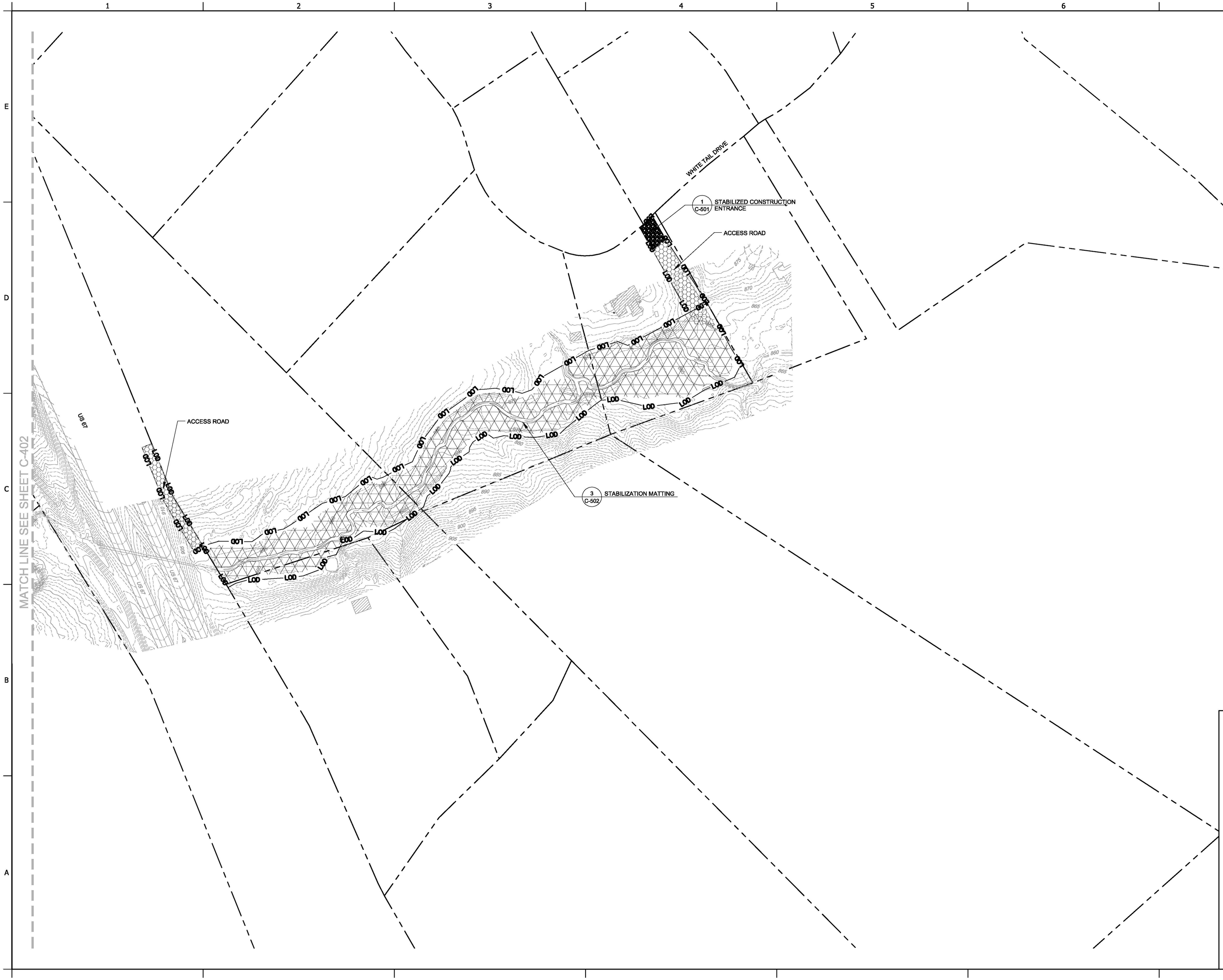
Date: 09/29/14	Drawn by: JLB/SMM	Check by:	
Project #: 044799	Design by: JLB/GEH	Review by: GEH	

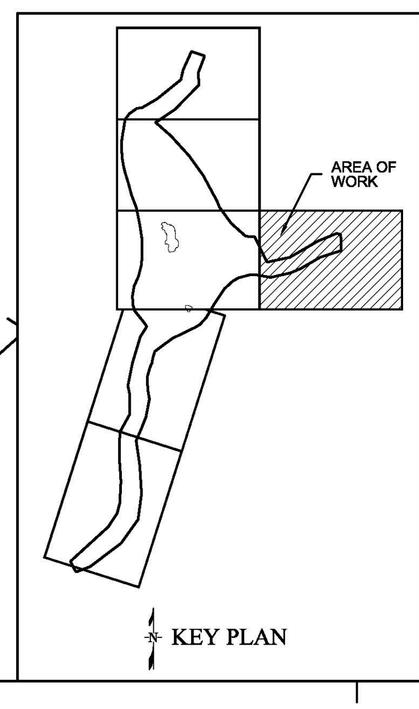
100' 50' 0' 100'
SCALE: 1" = 100'

MADISON COUNTY MINES SUPERFUND SITE
CATHERINE MINES AND SKAGGS TAILINGS SUBSITES
OPERABLE UNIT 05

EROSION AND
SEDIMENT CONTROL
SOUTHERN TRIBUTARY 1

DRAWING NO.
C-403





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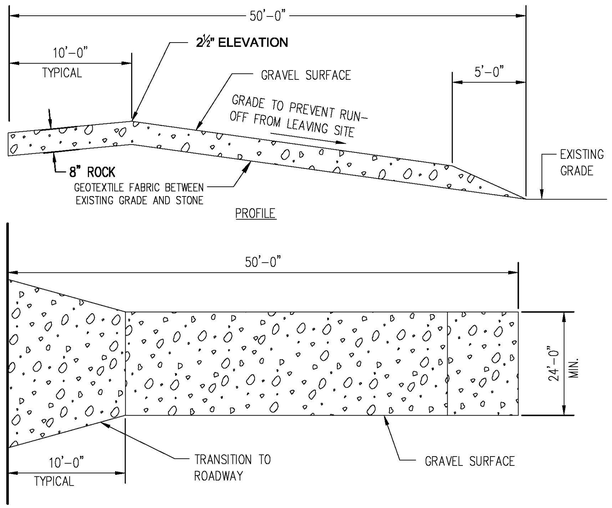
Date: 09/29/14
Project #: 044799
Drawn by: JLB/SNW
Design by: JLB/GEH
Check by: ---
Review by: GEH
SCALE: 1" = 100'

MADISON COUNTY MINES SUPERFUND SITE
CATHERINE MINES AND SKAGGS TAILINGS SUBSITES
OPERABLE UNIT 05

EROSION AND SEDIMENT CONTROL EASTERN TRIBUTARY

DRAWING NO.
C-406

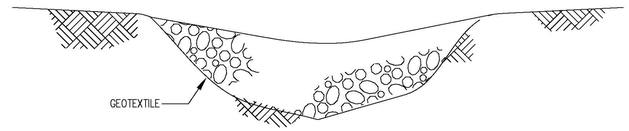


DETAIL: STABILIZED CONSTRUCTION ENTRANCE

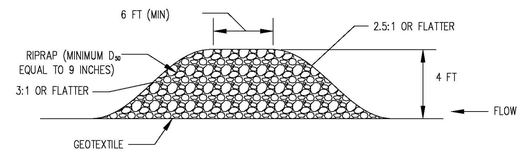
1 / C-501 SCALE: AS SHOWN

ENTRANCE NOTES

1. STONE SIZE: 3" TO 5" OPEN GRADE ROCK.
2. LENGTH: AS EFFECTIVE, BUT NOT LESS THAN 50'-0".
3. THICKNESS: NOT LESS THAN 8 INCHES.
4. WIDTH: NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS OR EGRESS.
5. WASHING: WHEN NECESSARY. WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO ROADWAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE WHICH DRAINS INTO AN APPROVED TRAP OR SEDIMENT BASIN. ALL SEDIMENTS SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH, OR WATER COURSE USING APPROVED METHODS.
6. MAINTENANCE: THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH SHALL PREVENT TRACING OR FLOWING OF SEDIMENT ONTO ROADWAYS. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED WASHED OR TRACKED ONTO ROADWAY SHALL BE REMOVED IMMEDIATELY.
7. DRAINAGE: ENTRANCE SHALL BE PROPERLY GRADED OR A DRAINAGE SWALE SHALL BE INCORPORATED TO PREVENT RUNOFF FROM LEAVING THE CONSTRUCTION SITE.



HEAD-ON VIEW OF ROCK DAM, FILTER FABRIC AND ABUTMENTS



CROSS SECTION OF ROCK DAM EMBANKMENT

NOTE:

COVER THE ENTIRE FOUNDATION, INCLUDING BOTH EARTH ABUTMENTS, WITH FILTER FABRIC, MAKING SURE THE UPSTREAM STRIPS OVERLAP THE DOWNSTREAM STRIPS AT LEAST 1 FT AND THE UPSLOPE IS KEYED IN.

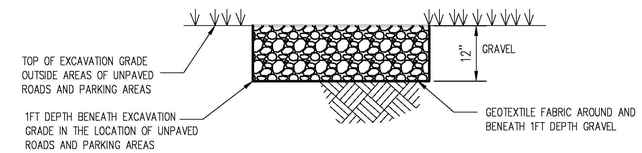
DIVERT CONSTRUCTION SITE RUNOFF FLOW INTO THE UPPER END OF THE BASIN USING TEMPORARY DIVERSIONS.

ROCK CHECK DAM SHALL BE CONSTRUCTED WITH CLEAN ROCK. A MINIMUM OF 50 PERCENT OF THE ROCK SHALL HAVE A DIAMETER OF 6 INCHES OR GREATER, WITH A MAXIMUM SIZE OF 9 INCHES. SILT FENCE OR AN EQUIVALENT FILTER FABRIC SHALL BE PLACED BENEATH THE ROCK CHECK DAM.

ROCK CHECK DAMS SHALL BE INSTALLED AS NEEDED WITH APPROVAL BY THE PROJECTS EPA REPRESENTATIVE.

DETAIL: ROCK CHECK DAM

2 / C-501 SCALE: AS SHOWN

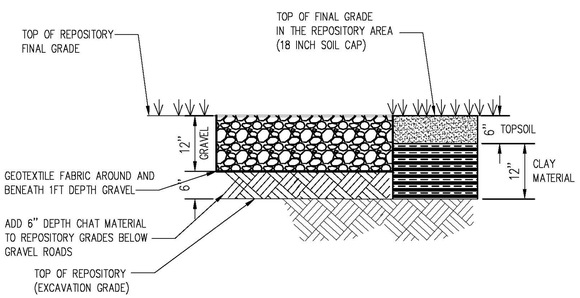


GRAVEL ROADS (OUTSIDE REPOSITORIES)

5 / C-501 SCALE: AS SHOWN

ALL UNPAVED ACCESS ROADS AND PARKING AREAS SHALL HAVE AN ADDITIONAL 1 FOOT DEPTH REMOVED BENEATH EXCAVATION GRADES. THE GEOTEXTILE FABRIC SHALL BE PLACED BENEATH 12 INCHES OF GRAVEL.

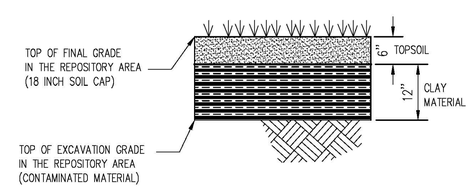
A MINIMUM OF 50 PERCENT OF THE ROCK SHALL HAVE A DIAMETER OF 1.5 INCHES OR GREATER, WITH A MAXIMUM SIZE OF 2.5 INCHES. SILT FENCE OR AN EQUIVALENT FILTER FABRIC SHALL BE PLACED BENEATH THE GRAVEL



GRAVEL ROADS (INSIDE REPOSITORIES)

6 / C-501 SCALE: AS SHOWN

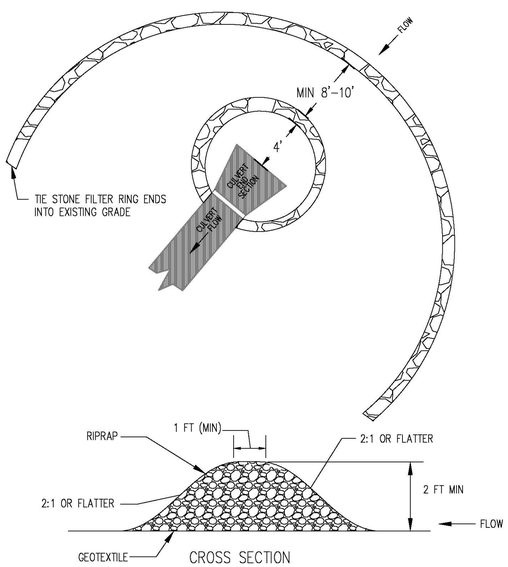
A MINIMUM OF 50 PERCENT OF THE ROCK SHALL HAVE A DIAMETER OF 1.5 INCHES OR GREATER, WITH A MAXIMUM SIZE OF 2.5 INCHES. SILT FENCE OR AN EQUIVALENT FILTER FABRIC SHALL BE PLACED BENEATH THE GRAVEL



REPOSITORY AREA CLEAN SOIL CAP (AROUND BUILDINGS)

7 / C-501 SCALE: AS SHOWN

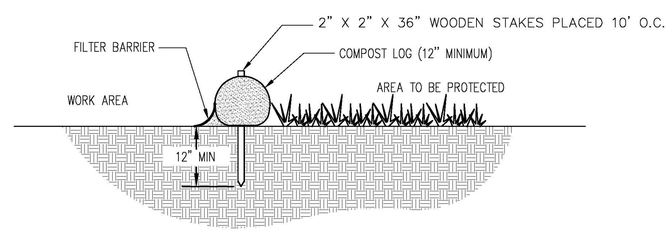
NOTE: ADDITIONAL REPOSITORIES HAVE BEEN PLACED WITHIN 50' OF STRUCTURES AND 20' OF "CONCRETE RUINS" WHERE THE SOIL WAS TESTED ABOVE ACTION LEVELS. 18 INCHES OF SOIL SHALL BE REMOVED AND REPLACED WITH THE TYPICAL 18 INCH REPOSITORY CAP MATERIAL.



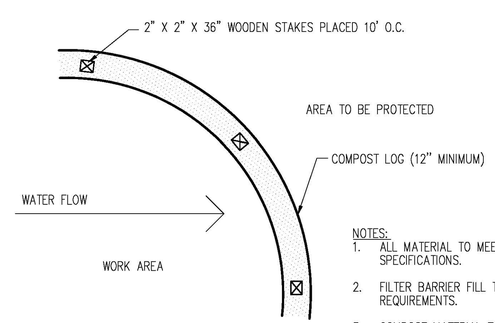
STONE FILTER RING SHALL BE CONSTRUCTED WITH CLEAN ROCK. A MINIMUM OF 50 PERCENT OF THE ROCK SHALL HAVE A DIAMETER OF 6 INCHES OR GREATER, WITH A MAXIMUM SIZE OF 9 INCHES. SILT FENCE OR AN EQUIVALENT FILTER FABRIC SHALL BE PLACED BENEATH THE STONE FILTER RING.

DETAIL: STONE FILTER RING

3 / C-501 SCALE: AS SHOWN



SECTION
NTS



PLAN
NTS

NOTES:
1. ALL MATERIAL TO MEET MANUFACTURER'S SPECIFICATIONS.
2. FILTER BARRIER FILL TO MEET APPLICATION REQUIREMENTS.
3. COMPOST MATERIAL TO BE DISPERSED ON SITE, AS DETERMINED BY ENGINEER. IT CAN BE SPREAD AS A FORM OF STABILIZATION PRIOR TO SEEDING.

DETAIL: COMPOST LOG

4 / C-501 SCALE: AS SHOWN
FILTREXX SOXX OR APPROVED EQUIVALENT

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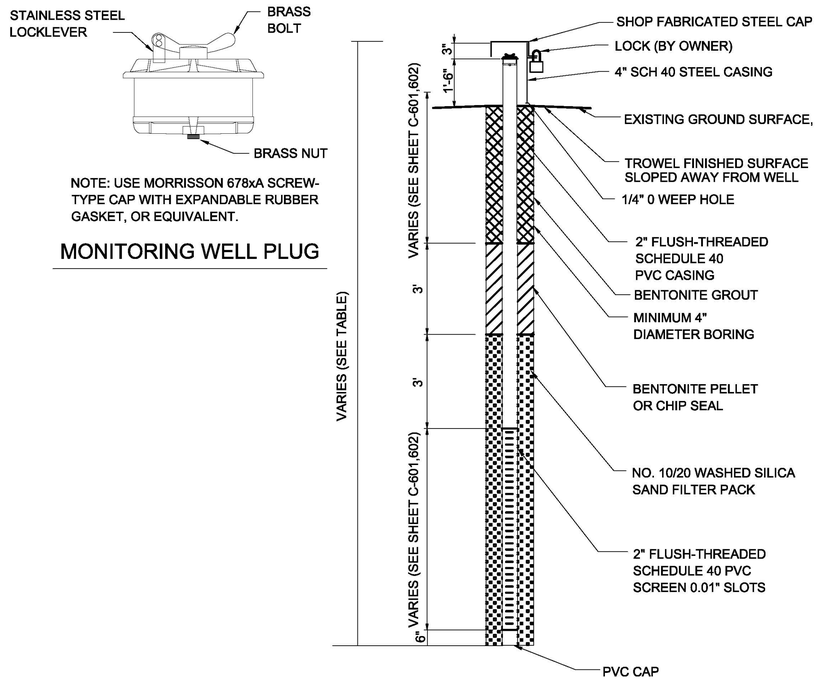
Date: 09/29/14 | Project #: 044799 | Drawn by: JLB/SNM | Design by: JLB/GEH | Review by: GEH | Check by:

MADISON COUNTY MINES SUPERFUND SITE
CATHERINE MINES AND SKAGGS TAILINGS SUBSITES
OPERABLE UNIT 05

CONSTRUCTION DETAIL

DRAWING NO.
C-501

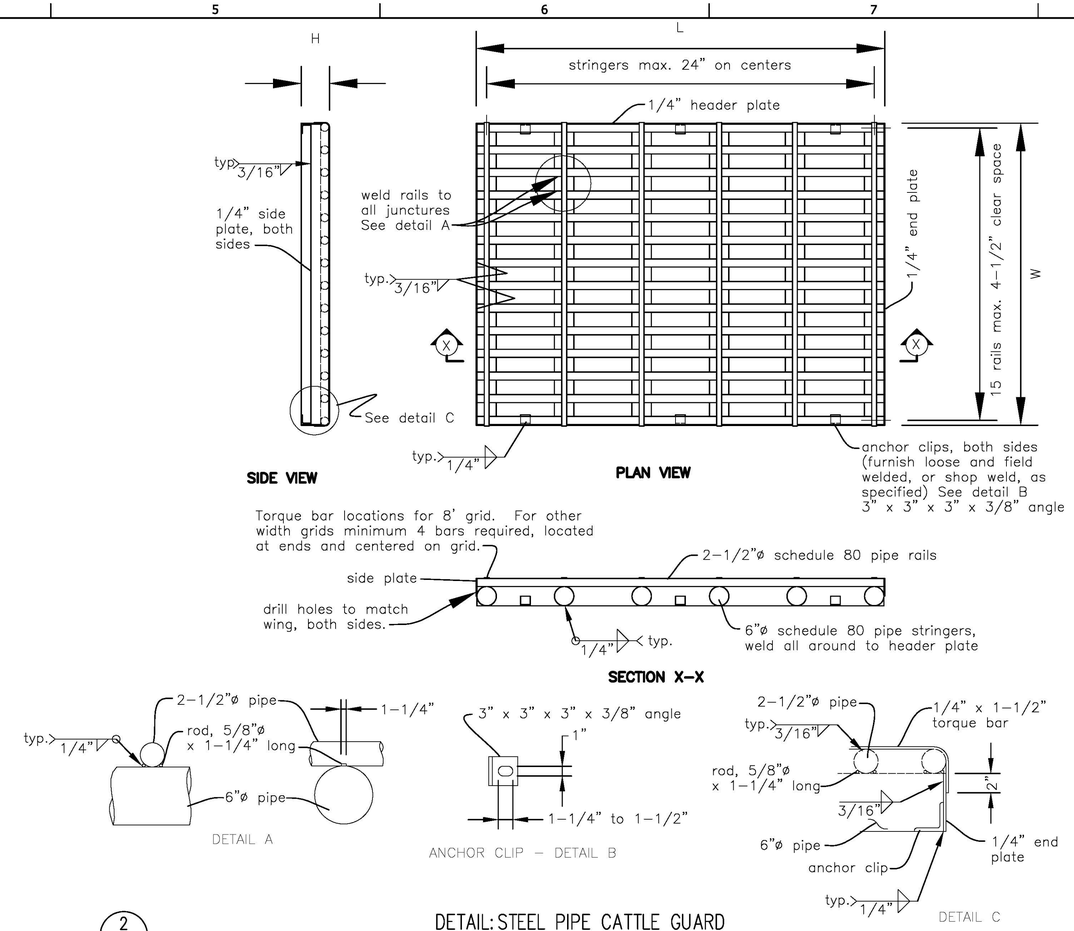


NOTE: USE MORRISSON 678xA SCREW-TYPE CAP WITH EXPANDABLE RUBBER GASKET, OR EQUIVALENT.

MONITORING WELL PLUG

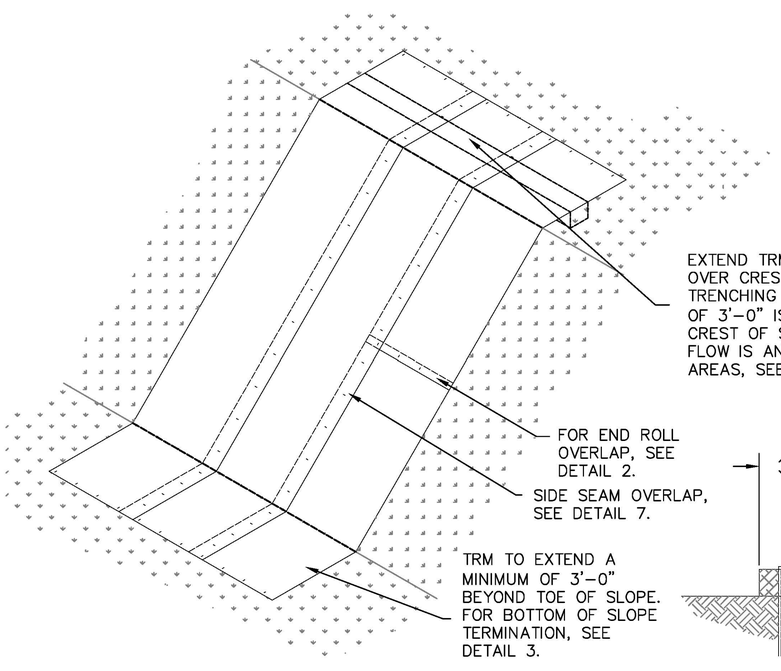
1 / C-502 DETAIL: MONITORING WELL

SCALE: AS SHOWN

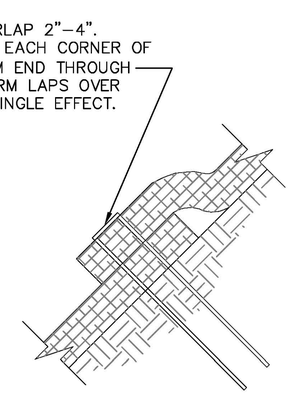


2 / C-502 DETAIL: STEEL PIPE CATTLE GUARD

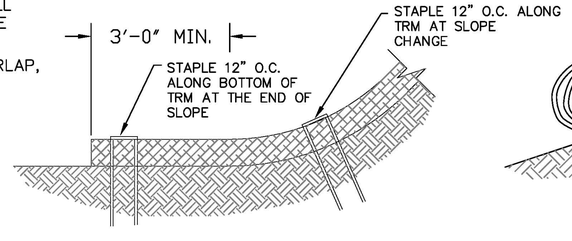
SCALE: AS SHOWN
LOCATION OF CATTLE GUARD TO BE DETERMINED BY BY EPA REPRESENTATIVE



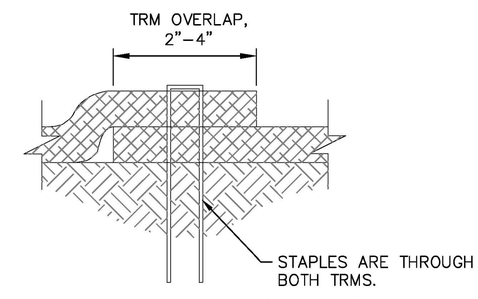
1. SLOPE DETAIL



2. END ROLL OVERLAP



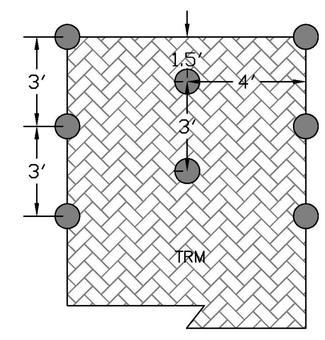
3. BOTTOM OF SLOPE TERMINATION



4. SIDE SEAM OVERLAP STAPLE DETAIL

5. SLOPE CREST ANCHOR METHOD "A" (NO TRENCH)

DO NOT NEED TO TRENCH TRM IN IF IT CAN BE EXTENDED A MINIMUM OF 3'-0" OVER THE CREST OF THE SLOPE.



1.1 STAPLES/SY

6. TYPICAL TRM STAPLE PATTERN GUIDE

STAPLE PLACEMENT

3 / C-502 DETAIL: STABILIZATION MATTING

SCALE: AS SHOWN

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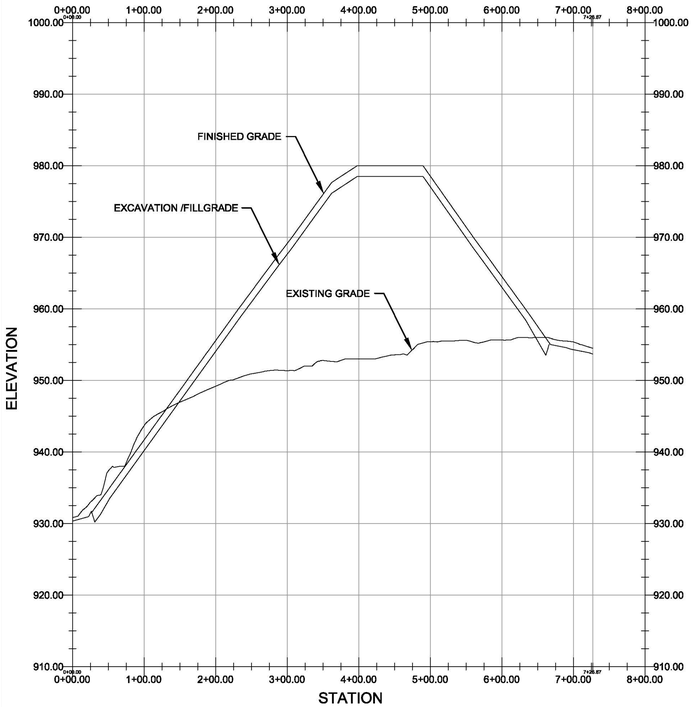
Date: 09/29/14 | Project #: 044799 | Drawn by: JLB/SNM | Design by: JLB/GEH | Check by: | Review by: GEH

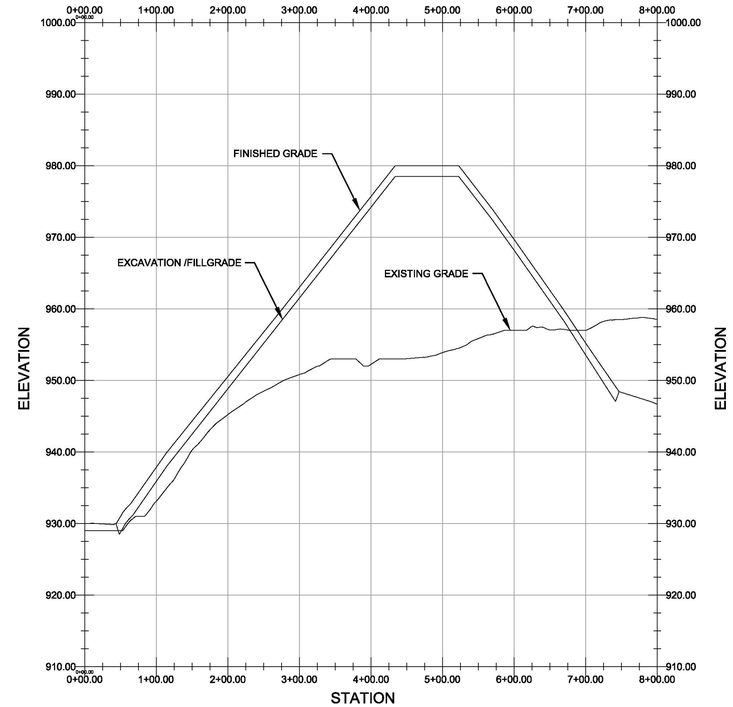
MADISON COUNTY MINES SUPERFUND SITE
CATHERINE MINES AND SKAGGS TAILINGS SUBSITES
OPERABLE UNIT 05

CONSTRUCTION DETAIL

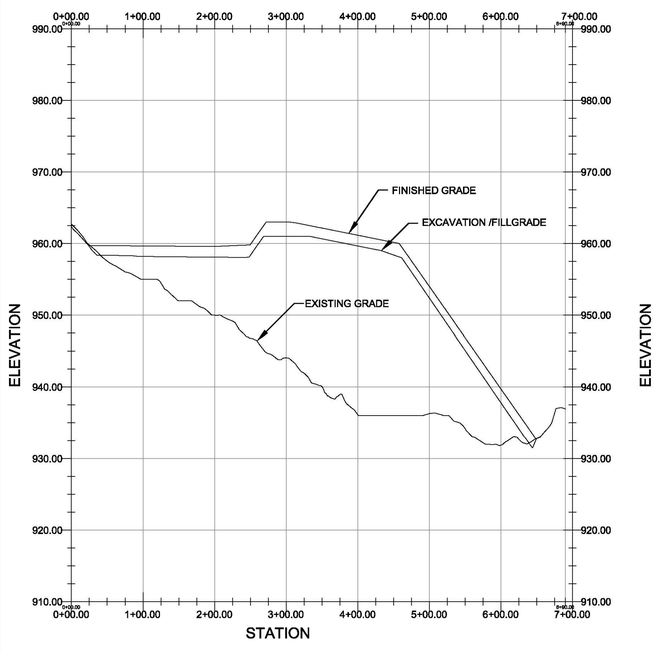
DRAWING NO.
C-502



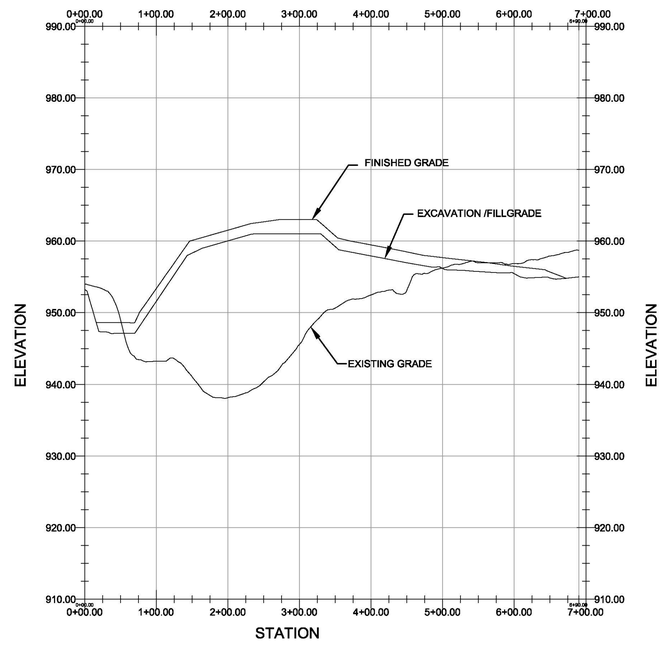
2 C-503 CATHERINE REPOSITORY WEST - EAST PROFILE
SCALE: HORIZONTAL, 1"=100'
VERTICAL, 1"=10'



3 C-503 CATHERINE REPOSITORY NORTH-SOUTH PROFILE
SCALE: HORIZONTAL, 1"=100'
VERTICAL, 1"=10'



4 C-503 SKAGGS REPOSITORY WEST - EAST PROFILE
SCALE: HORIZONTAL, 1"=100'
VERTICAL, 1"=10'



5 C-503 SKAGGS REPOSITORY NORTH-SOUTH PROFILE
SCALE: HORIZONTAL, 1"=100'
VERTICAL, 1"=10'

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			1	BID DOCUMENTS	09/29/14	—
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MADISON COUNTY MINES SUPERFUND SITE
CATHERINE MINES AND SKAGGS TAILINGS SUBSITES
OPERABLE UNIT 05

CONSTRUCTION DETAIL

DRAWING NO.
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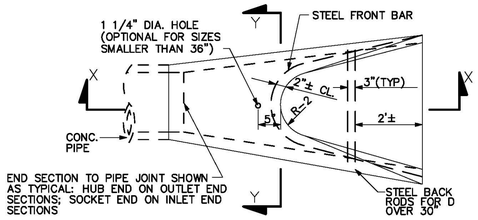
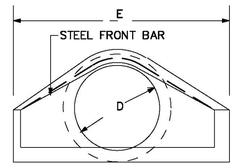
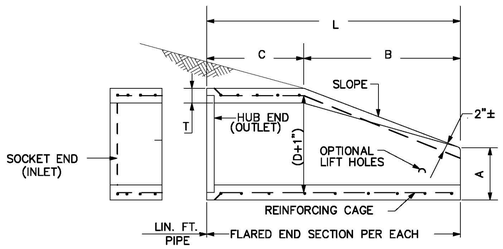


PLAN

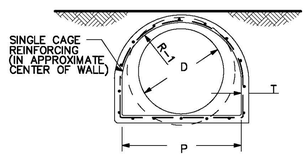


FRONT

NOTE:
DO NOT CUT CONCRETE PIPE. USE FULL LENGTH END SECTIONS ONLY. WARP SLOPE TO CONFORM WITH PIPE LENGTH AND END SECTION.



SECTION X–X



SECTION Y–Y

REINFORCING CAGE:

1. WIRE FABRIC HAVING SAME STEEL AREA AS INNER CAGE FOR CL. III PIPE, AASHTO M–170, BUT PLACED IN CENTER OF WALL.
2. ALTERNATE: #3 BARS SPACED 12"± LONGITUDINALLY WITH #2 BARS TRANSVERSELY AT 6" O.C. MAX. SPACING, SPOT WELDED OR TIED TO FORM CAGE.

NOTES:

CONTRACTOR WILL INFORM PRODUCER IF CONCRETE FLARED END SECTION IS FOR INLET OR FOR OUTLET END. SOCKET (TONGUE OR SPIGOT) END IS REQUIRED FOR INLETS. HUB (GROOVE OR BELL) END IS REQUIRED FOR OUTLETS. SOCKET TO SOCKET OR HUB TO HUB JOINT WILL NOT BE ACCEPTED UNLESS A REINFORCED CONCRETE COLLAR IS BUILT AROUND THE JOINT WITH NO PAYMENT BEING MADE FOR THE COLLAR. FLARED END SECTIONS SHALL BE JOINTED TO PIPE WITH ALL SPACE IN THE JOINT FILLED WITH PREFORMED PLASTIC GASKET (SEC.848).

WALL THICKNESS (T) IS SHOWN AS NOMINAL AND MAY BE INCREASED AT PRODUCERS OPTION FOR DESIRED JOINT DESIGN OR TO ALLOW A FLAT OUTSIDE BOTTOM ON THE FLARE, WITH INSIDE DIMENSIONS OF FLARE RETAINED AS SHOWN.
T = PIPE WALL THICKNESS (0.08330+1"± TYPICAL).

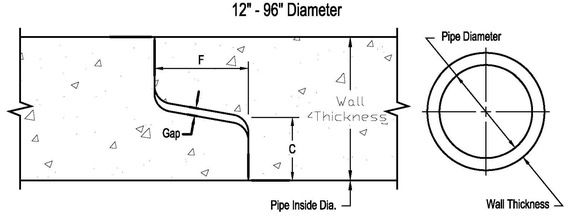
DIMENSIONS AND REINFORCING FOR CONCRETE FLARED END SECTIONS (± 1" TOLERANCE)

PIPE DIA.	FRONT BAR	BACK RODS	SLOPE	A	B	C	L	E	P	R–1	R–2
24"	1–#3x9'–10"	NOT REQ'D.	2.4:1	10"	3'–8"	2'–6"	6'–2"	4'–0"	2'–9"	1'–5"	1'–2"
30"	1–#4x11'–8"	NOT REQ'D.	2.4:1	12"	4'–6"	1'–8"	6'–2"	5'–0"	3'–1"	1'–6"	1'–3"
36"	1–#4x13'–10"	2'#4x6'–3"	2.4:1	15"	5'–3"	2'–11"	8'–2"	6'–0"	4'–0"	2'–0"	1'–8"

NOTE:
SPECIFIED REINFORCING IS MINIMAL AND MAY BE INCREASED AT PRODUCERS OPTION TO AID CASTING & HANDLING. ALTERNATE REINFORCEMENT PERMITTED IF ACCEPTABLE TO ENGINEER.

1 / C-504 DETAIL: CONCRETE FLARED END SECTION
SCALE: AS SHOWN

Reinforced Concrete Pipe
Tongue & Groove Joint
12" - 96" Diameter



Section Thru Joint

Section Thru Barrel

Table of Dimensions and Weights

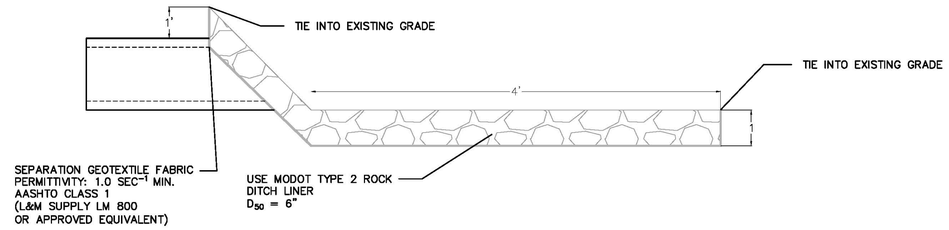
Pipe Inside Diameter (Inches)	Wall Thickness (Inches)	C (Inches)	F (Inches)	Gap (Inches)	Length (Feet)	Weight (Lbs./Ft.)
24	3	1 5/16	2 1/2	1/4	6, 8	265
30	3 1/2	1 1/2	2 3/4	9/32	6, 8	384
36	4	1 13/16	3	9/32	6, 8	524

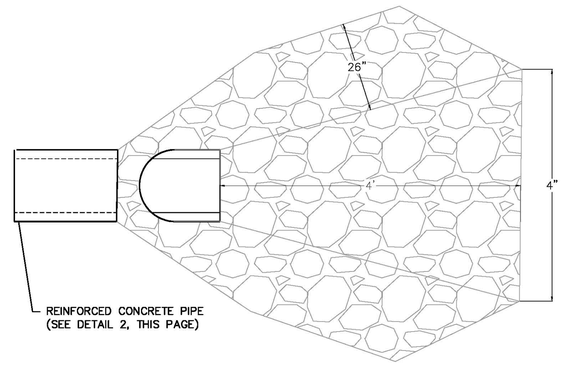
Pipe dimensions may vary depending on equipment availability.

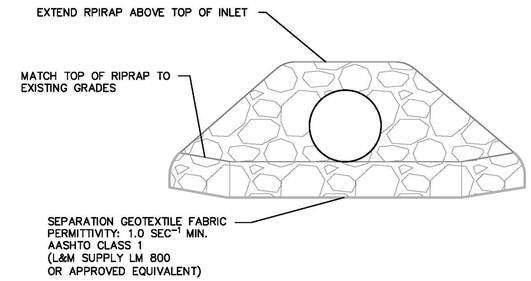
Notes:

1. Pipe manufactured to meet current ASTM specifications.

2 / C-504 REINFORCED CONCRETE PIPE
SCALE: AS SHOWN







3 / C-504 RIPRAP INLET AND OUTLET PROTECTION

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Project #: 047939 | Design by: JLB/GEH | Review by: GEH

MADISON COUNTY MINES SUPERFUND SITE
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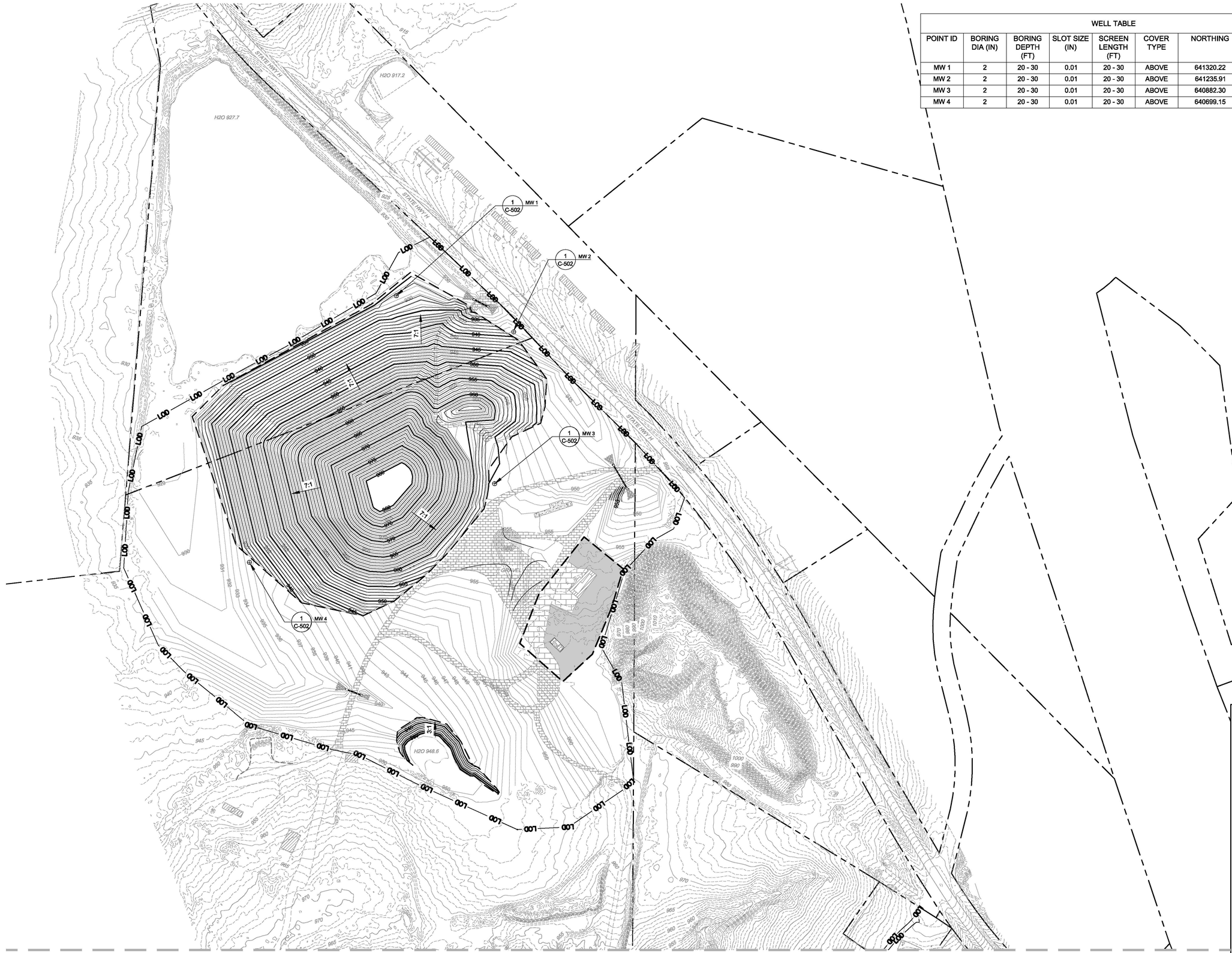
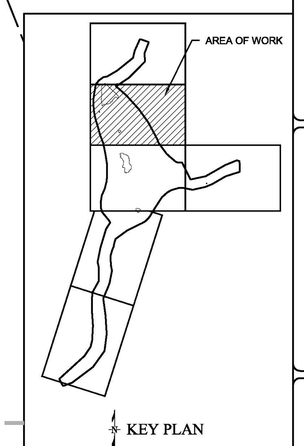
OPERABLE UNIT 05

CONSTRUCTION DETAIL

DRAWING NO.
C-504

WELL TABLE							
POINT ID	BORING DIA (IN)	BORING DEPTH (FT)	SLOT SIZE (IN)	SCREEN LENGTH (FT)	COVER TYPE	NORTHING	EASTING
MW 1	2	20 - 30	0.01	20 - 30	ABOVE	641320.22	866604.70
MW 2	2	20 - 30	0.01	20 - 30	ABOVE	641235.91	866878.09
MW 3	2	20 - 30	0.01	20 - 30	ABOVE	640882.30	866833.73
MW 4	2	20 - 30	0.01	20 - 30	ABOVE	640699.15	866262.37





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Project #: 0441799 | Design by: JLB/GEH | Review by: GEH

SCALE: 1" = 100' (100' 50' 0' 100')

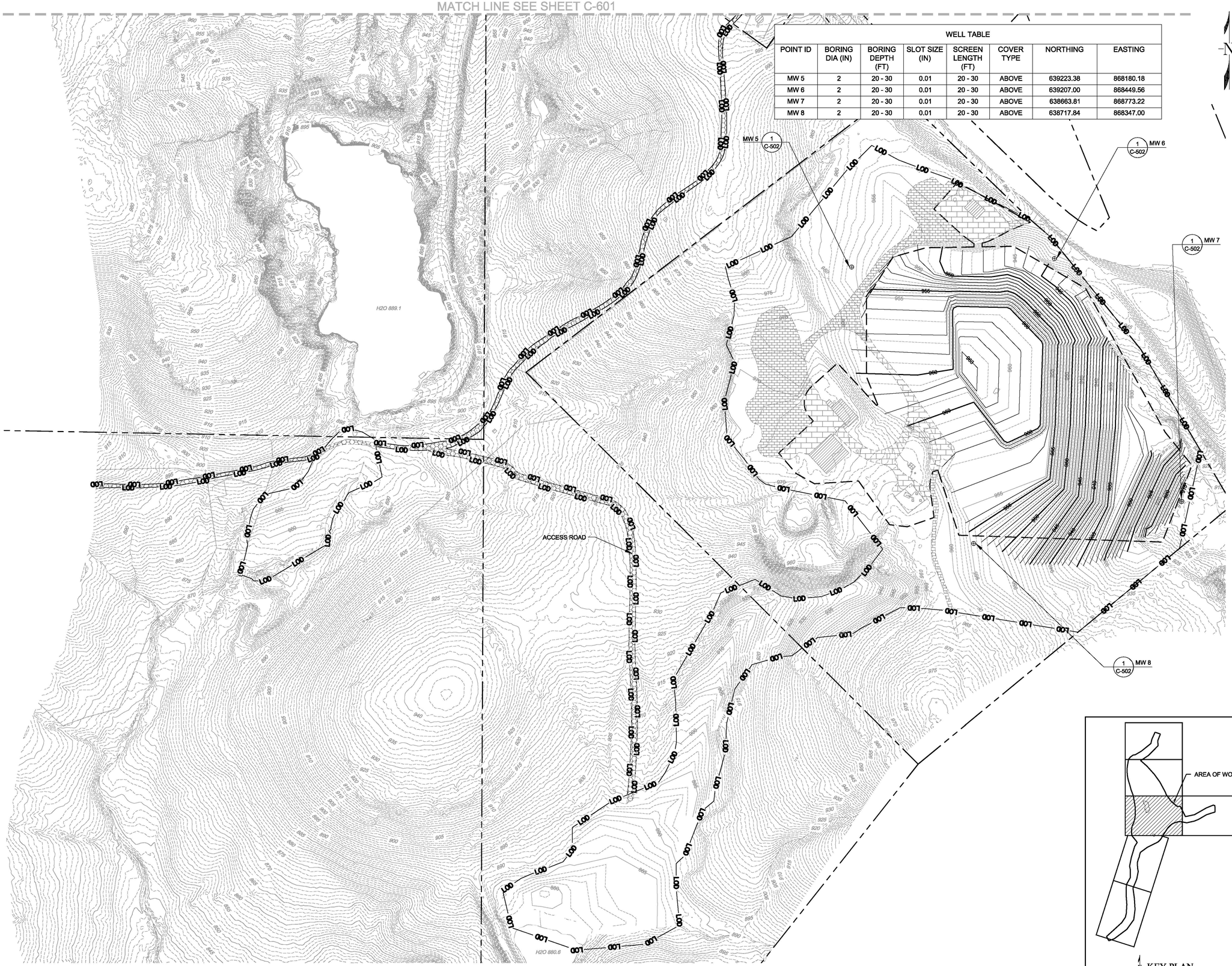
MADISON COUNTY MINES SUPERFUND SITE
CATHERINE MINES AND SKAGGS TAILINGS SUBSITES
OPERABLE UNIT 05

CATHERINE SITE
MONITORING WELLS

DRAWING NO.
C-601

MATCH LINE SEE SHEET C-601

WELL TABLE							
POINT ID	BORING DIA (IN)	BORING DEPTH (FT)	SLOT SIZE (IN)	SCREEN LENGTH (FT)	COVER TYPE	NORTHING	EASTING
MW 5	2	20 - 30	0.01	20 - 30	ABOVE	639223.38	868180.18
MW 6	2	20 - 30	0.01	20 - 30	ABOVE	639207.00	868449.56
MW 7	2	20 - 30	0.01	20 - 30	ABOVE	638663.81	868773.22
MW 8	2	20 - 30	0.01	20 - 30	ABOVE	638717.84	868347.00



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Date: 09/29/14
Project #: 044799
Drawn by: JLB/SNW
Design by: JLB/GEH
Review by: GEH
Check by:

SCALE: 1" = 100'

MADISON COUNTY MINES SUPERFUND SITE
CATHERINE MINES AND SKAGGS TAILINGS SUBSITES
OPERABLE UNIT 05

SKAGGS SITE
MONITORING WELLS

DRAWING NO.
C-602