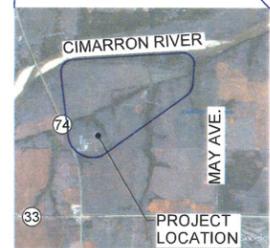


Cimarron Environmental Response Trust

Groundwater Remediation Logan County, Oklahoma

FEBRUARY 2021
120832

Preliminary Design Drawings



PROJECT LOCATION

ADDRESS:
100 NORTH HIGHWAY 74
GUTHRIE, OK 73044

LEGAL DESCRIPTION:
NE, NW, & SW 1/4 Sec. 12, T16N R4W
I.M., NE 1/4 Sec. 11, T16N R4W I.M.,
Sec. 1 & 2 South of River, T16N R4W I.M.



NOT TO SCALE

ONE OR TWO CHARACTER DISCIPLINE DESIGNATOR (MAY NOT BE PRESENT IF CALLOUT AND TITLE ARE ON DRAWINGS WITHIN THE SAME DISCIPLINE)

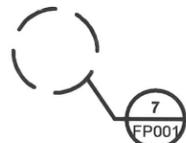
LETTER OR NUMBER DESIGNATOR

DRAWING SEQUENCE NUMBER INDICATES WHERE TITLE IS LOCATED (MAY NOT BE PRESENT IF CALLOUT AND TITLE ARE ON THE SAME DRAWING)

SECTION, DETAIL, AND ELEVATION SYMBOL IDENTIFIERS



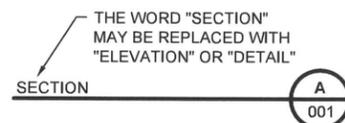
SECTION CALLOUT EXAMPLE



DETAIL CALLOUT EXAMPLE



ELEVATION CALLOUT EXAMPLE



SECTION, DETAIL, OR ELEVATION TITLE EXAMPLE

SECTION, DETAIL, AND ELEVATION IDENTIFICATION SYSTEM

GENERAL DRAWINGS

DWG. NO.	TITLE
	COVER-INDEX
BMCD-GWREMEDI-G001	GENERAL NOTES
BMCD-GWREMEDI-G002	NOTES, LEGEND AND ABBREVIATIONS

CIVIL DRAWINGS

DWG. NO.	TITLE
BMCD-GWREMEDI-C001	EXISTING CONDITIONS
BMCD-GWREMEDI-C002	OVERALL SITE PLAN AND SHEET LAYOUT KEY
BMCD-GWREMEDI-C003	PARTIAL SITE PLAN - NORTH
BMCD-GWREMEDI-C004	PARTIAL SITE PLAN - SOUTH
BMCD-GWREMEDI-C005	PARTIAL SITE PLAN - EAST
BMCD-GWREMEDI-C006	WESTERN AREA TREATMENT FACILITY GRADING PLAN AND LAYOUT
BMCD-GWREMEDI-C007	WESTERN AREA TREATMENT FACILITY SITE PLAN
BMCD-GWREMEDI-C008	WESTERN AREA TREATMENT INJECTION SKID LAYOUT
BMCD-GWREMEDI-C009	BURIAL AREA 1 TREATMENT FACILITY SITE PLAN
BMCD-GWREMEDI-C010	BURIAL AREA 1 TREATMENT INJECTION SKID
BMCD-GWREMEDI-C011	1206 DRAINAGE AREA REMEDIATION PLAN
BMCD-GWREMEDI-C012	UPLAND ACCESS ROADS
BMCD-GWREMEDI-C013	WESTERN ALLUVIAL ACCESS ROAD PLAN SHEET 1
BMCD-GWREMEDI-C014	WESTERN ALLUVIAL ACCESS ROAD PLAN SHEET 2
BMCD-GWREMEDI-C101	EXTRACTION TRENCH DETAILS
BMCD-GWREMEDI-C102	INJECTION TRENCH DETAILS - SHEET 1
BMCD-GWREMEDI-C103	INJECTION TRENCH DETAILS - SHEET 2
BMCD-GWREMEDI-C104	INJECTION TRENCH DETAILS - SHEET 3
BMCD-GWREMEDI-C105	PIPE & CONDUIT TRENCH SECTIONS - SHEET 1
BMCD-GWREMEDI-C106	PIPE & CONDUIT TRENCH SECTIONS - SHEET 2
BMCD-GWREMEDI-C107	OUTFALL DETAILS
BMCD-GWREMEDI-C108	MISCELLANEOUS DETAILS - SHEET 1
BMCD-GWREMEDI-C109	MISCELLANEOUS DETAILS - SHEET 2

CIVIL DRAWINGS CONTINUED

DWG. NO.	TITLE
BMCD-GWREMEDI-C110	MISCELLANEOUS DETAILS - SHEET 3
BMCD-GWREMEDI-C111	MISCELLANEOUS DETAILS - SHEET 4
BMCD-GWREMEDI-C200	WESTERN AREA TREATMENT FACILITY AND BURIAL AREA 1 SECTIONS, AND WATF UTILITY TRENCH PROFILE
BMCD-GWREMEDI-C300	STRUCTURAL GENERAL NOTES
BMCD-GWREMEDI-C301	STRUCTURAL FOUNDATION AND PLATFORM PLANS AND SECTIONS
BMCD-GWREMEDI-C302	STRUCTURAL STANDARD DETAILS

MECHANICAL DRAWINGS

DWG. NO.	TITLE
BMCD-GWREMEDI-M101	EXTRACTION WELL/SUMP AND VAULT DETAILS
BMCD-GWREMEDI-M102	INJECTION AND EXTRACTION WELL DETAILS
BMCD-GWREMEDI-M103	WESTERN AREA TREATMENT INJECTION SYSTEM LAYOUT
BMCD-GWREMEDI-M104	WESTERN AREA TREATMENT INJECTION SYSTEM ELEVATION
BMCD-GWREMEDI-M105	BURIAL AREA 1 TREATMENT INJECTION SYSTEM LAYOUT
BMCD-GWREMEDI-M201	CONSTRUCTION DETAILS INDEX - EXTRACTION WELLS/SUMPS
BMCD-GWREMEDI-M202	CONSTRUCTION DETAILS INDEX - INJECTION WELLS
BMCD-GWREMEDI-M203	PUMP SELECTION INDEX - EXTRACTION WELLS/SUMPS

PROCESS DRAWINGS

DWG. NO.	TITLE
BMCD-GWREMEDI-P001	P&ID NOTES AND LEGEND
BMCD-GWREMEDI-P101	WESTERN AREA GROUNDWATER EXTRACTION SYSTEM P&ID
BMCD-GWREMEDI-P102	BURIAL AREA 1 GROUNDWATER EXTRACTION SYSTEM P&ID
BMCD-GWREMEDI-P103	WESTERN AREA GROUNDWATER INJECTION SYSTEM P&ID - SHEET 1
BMCD-GWREMEDI-P104	WESTERN AREA GROUNDWATER INJECTION SYSTEM P&ID - SHEET 2
BMCD-GWREMEDI-P105	BURIAL AREA 1 GROUNDWATER INJECTION SYSTEM P&ID

PROCESS DRAWINGS CONTINUED

DWG. NO.	TITLE
BMCD-GWREMEDI-P201	WATER TREATMENT DESIGN BASIS SUMMARY - INFLUENT CHARACTERISTICS - PHASE I
BMCD-GWREMEDI-P201	WATER TREATMENT DESIGN BASIS SUMMARY - INFLUENT CHARACTERISTICS
BMCD-GWREMEDI-P202	WATER TREATMENT DESIGN BASIS SUMMARY - EFFLUENT CRITERIA - SHEET 1 - PHASE I
BMCD-GWREMEDI-P202	WATER TREATMENT DESIGN BASIS SUMMARY - EFFLUENT CRITERIA - SHEET 1
BMCD-GWREMEDI-P203	WATER TREATMENT DESIGN BASIS SUMMARY - EFFLUENT CRITERIA - SHEET 2
BMCD-GWREMEDI-P204	WATER TREATMENT DESIGN BASIS SUMMARY - INJECTION CRITERIA
BMCD-GWREMEDI-P205	GROUNDWATER EXTRACTION AND INJECTION FLOW RATE SUMMARY

ELECTRICAL DRAWINGS

DWG. NO.	TITLE
BMCD-GWREMEDI-E001	ELECTRICAL LEGEND AND ABBREVIATION
BMCD-GWREMEDI-E002	ELECTRICAL GENERAL NOTES
BMCD-GWREMEDI-E101	ELECTRICAL SINGLE LINE WATF
BMCD-GWREMEDI-E102	ELECTRICAL SINGLE LINE RTU PLATFORM
BMCD-GWREMEDI-E103	ELECTRICAL SINGLE LINE BA1
BMCD-GWREMEDI-E104	CABLE AND CONDUIT SCHEDULE - SHEET 1
BMCD-GWREMEDI-E105	CABLE AND CONDUIT SCHEDULE - SHEET 2
BMCD-GWREMEDI-E106	CABLE AND CONDUIT SCHEDULE - SHEET 3
BMCD-GWREMEDI-E107	PANELBOARD SCHEDULE
BMCD-GWREMEDI-E201	ELECTRICAL DETAIL SHEET 1 - CONNECTION DETAILS
BMCD-GWREMEDI-E202	ELECTRICAL DETAIL SHEET 2 - DUCT BANK DETAILS
BMCD-GWREMEDI-E203	ELECTRICAL DETAIL SHEET 3 - EQUIPMENT LOCATIONS
BMCD-GWREMEDI-E204	ELECTRICAL COMMUNICATION SYSTEM ARCHITECTURE - SHEET 1
BMCD-GWREMEDI-E205	ELECTRICAL COMMUNICATION SYSTEM ARCHITECTURE - SHEET 2

no.	date	by	ckd	description
A	2/22/21	EAA	JRH	ISSUED FOR PRELIMINARY DESIGN



PRELIMINARY - NOT
FOR CONSTRUCTION

Cover-Index

GENERAL NOTES:

1. THE PROJECT SITE IS OWNED BY ENVIRONMENTAL PROPERTIES MANAGEMENT, LLC. ADDRESS: 100 NORTH HIGHWAY 74, GUTHRIE, OK 73044, PHONE: 405-642-5152.
2. THE PROJECT ENGINEER AND CONTRACTOR IS BURNS & MCDONNELL ENGINEERING COMPANY, INC. ADDRESS: 9400 WARD PARKWAY, KANSAS CITY, MO 64114, PHONE: 816-333-9400.
3. THE SUBCONTRACTOR SHALL COORDINATE ACCESS DURING CONSTRUCTION WITH CONTRACTOR, OWNER AND ADJACENT PROPERTY OWNERS. TRAFFIC MANAGEMENT SHALL BE SUBJECT TO CONTRACTOR'S APPROVAL.
4. THE LOCATIONS OF UTILITIES SHOWN HAVE BEEN DETERMINED FROM AVAILABLE INFORMATION. THEREFORE, THE RELATIONSHIP BETWEEN PROPOSED WORK AND EXISTING UTILITIES SHALL BE CONSIDERED APPROXIMATE.
5. THE HORIZONTAL AND VERTICAL LOCATING OF ALL EXISTING ABOVE GROUND AND BELOW GROUND UTILITIES SHOWN ON THE PLANS ARE APPROXIMATE AND ARE NOT GUARANTEED. THE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR IDENTIFYING AND LOCATING ALL UTILITIES IN THE PATH OF AND ADJACENT TO THE PROPOSED WORK. PRIOR TO ANY CONSTRUCTION ACTIVITIES, THE SUBCONTRACTOR SHALL CALL OKLAHOMA ONE CALL AT OKIE811 OR 1-800-522-OKIE WITH SUITABLE NOTICE FOR THEIR LOCATING AND MARKING OF PUBLIC UTILITIES. SUBCONTRACTOR SHALL NOTIFY OWNER 48 HOURS IN ADVANCE OF ONE CALL NOTIFICATION. THE SITE IS GENERALLY NOT OCCUPIED.
6. THE CONSTRUCTION DRAWINGS REPRESENT THE FINISHED WORK. SUBCONTRACTOR SHALL BE RESPONSIBLE FOR ALL MEANS AND METHODS OF CONSTRUCTION. SUBCONTRACTOR SHALL FURNISH ALL LABOR, EQUIPMENT, MATERIALS, AND TOOLS NECESSARY TO COMPLETELY PERFORM THE WORK IN A SAFE, EXPEDITIOUS, AND PROFESSIONAL WORKMANLIKE MANNER. SUBCONTRACTOR SHALL COORDINATE SCHEDULE OF THE WORK WITH THE OWNER AND CONTRACTOR. SUBCONTRACTOR SHALL INSTALL EQUIPMENT AND MATERIALS PER MANUFACTURER'S RECOMMENDATIONS UNLESS NOTED OTHERWISE. THE SUBCONTRACTOR ACCEPTS FULL RESPONSIBILITY FOR PROPER HANDLING AND INSTALLATION OF EQUIPMENT AND MATERIALS.
7. SUBCONTRACTOR SHALL UNDERTAKE ALL NECESSARY MEASURES TO ENSURE SAFETY OF ALL PERSONS AND STRUCTURES AT THE SITE AND ADJACENT TO THE SITE. SUBCONTRACTOR SHALL BE RESPONSIBLE FOR ANY CLAIMS RESULTING FROM HIS/HER ACTIONS AND ACTIVITIES. VISITS TO THE SITE BY OWNER AND CONTRACTOR SHALL NOT RELIEVE THE SUBCONTRACTOR OF SUCH RESPONSIBILITY.
8. THE SUBCONTRACTOR SHALL ACCEPT FULL RESPONSIBILITY FOR EQUIPMENT, MATERIALS, AND TOOLS THROUGH PROJECT COMPLETION. THE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER SAFEGUARDING OF THE INSTALLATION AND MATERIALS/EQUIPMENT STORED ON THE SITE TO PREVENT THEFT, VANDALISM, OR DAMAGE. SUBCONTRACTOR SHALL STORE EQUIPMENT, MATERIALS, AND TOOLS IN A SECURE LOCATION (ON OR OFF-SITE).
9. SUBCONTRACTOR SHALL NOT DISTURB AREAS OUTSIDE OF THE PROJECT LIMITS UNLESS APPROVED IN ADVANCE BY THE CONTRACTOR.
10. SUBCONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL APPROPRIATE LICENSES AND TRADE PERMITS REQUIRED TO PERFORM THE WORK. SUBCONTRACTOR SHALL PROVIDE CERTIFICATES OF INSURANCE AND OTHER DOCUMENTATION REQUIRED BY JURISDICTIONAL AGENCIES BEFORE PERFORMING THE WORK.
11. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH OSHA REQUIREMENTS AND THE CIMARRON ENVIRONMENTAL RESPONSE TRUST SITE-SPECIFIC HEALTH & SAFETY PLAN (BURNS AND MCDONNELL).
12. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS.
13. THESE NOTES AND OTHER DRAWING NOTES CONTAINED HERewith ARE PROVIDED TO MEET SPECIFIC REQUIREMENTS AND TO SUPPLEMENT THE CONTRACT DOCUMENTS. THESE NOTES NEITHER REPLACE NOR OVERRIDE THE PROVISIONS AND REQUIREMENTS OF THE CONTRACT DOCUMENTS.
14. THESE DRAWINGS SHALL BE USED IN CONJUNCTION WITH ANY SHOP DRAWINGS PROVIDED BY SUPPLIERS. ALL SHOP DRAWINGS PROVIDED BY OTHERS SHALL BE SUBMITTED TO THE CONTRACTOR FOR REVIEW PRIOR TO THE FABRICATION OF MATERIAL OR THE PURCHASE OF NON-RETURNABLE STOCK. DIMENSIONAL REVIEW IS THE SUBCONTRACTOR'S RESPONSIBILITY.
15. UNKNOWN SITUATIONS OR CONDITIONS NOT COVERED IN THE CONTRACT DOCUMENTS MAY ARISE DURING CONSTRUCTION. IT IS THE RESPONSIBILITY OF THE SUBCONTRACTOR TO NOTIFY THE CONTRACTOR IF SUCH A CONDITION IS IDENTIFIED. THE PRESENCE OF OWNER, CONTRACTOR, OR THE MANUFACTURER'S REPRESENTATIVE AT THE PROJECT SITE DOES NOT RELIEVE THE SUBCONTRACTOR OF THE RESPONSIBILITY FOR A PROPER INSTALLATION.
16. ALL DIMENSIONS, ELEVATIONS, AND CONDITIONS SHALL BE VERIFIED IN THE FIELD BY THE SUBCONTRACTOR AND ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE CONTRACTOR FOR CLARIFICATION BEFORE PROCEEDING WITH THE AFFECTED PART OF WORK.
17. ALL WORK SHOWN IS IN APPROXIMATE LOCATIONS. THE SUBCONTRACTOR SHALL VISIT THE SITE AND FAMILIARIZE HIMSELF/HERSELF WITH THE EXISTING CONDITIONS BEFORE SUBMITTING HIS/HER BID.
18. SUBCONTRACTOR SHALL BE RESPONSIBLE FOR: 1) PROVIDING POTABLE WATER AND TEMPORARY SANITARY FACILITIES FOR SUBCONTRACTOR'S PERSONNEL, 2) FURNISH, INSTALL, AND MAINTAIN TEMPORARY UTILITIES FOR ADEQUATE CONSTRUCTION, SAFETY, AND SECURITY, 3) MODIFY, RELOCATE, AND EXTEND SYSTEMS AS WORK PROGRESSES, REPAIR DAMAGE CAUSED BY INSTALLATION OR USE OF TEMPORARY FACILITIES, AND 4) REMOVE TEMPORARY FACILITIES ON COMPLETION OF WORK OR UNTIL SERVICE OR FACILITIES ARE NO LONGER NEEDED OR ARE REPLACED BY AUTHORIZED USE OF COMPLETED PERMANENT FACILITIES.
19. THE SUBCONTRACTOR IS RESPONSIBLE FOR ESTABLISHING A STAGING AREA FOR MATERIALS AND EQUIPMENT. SUBCONTRACTOR'S STAGING AREA SHALL BE APPROVED BY CONTRACTOR OR OWNER. SUBCONTRACTOR'S STAGING AREA IS SUBJECT TO CHANGE AT THE DIRECTION OF CONTRACTOR OR OWNER AND MAY CHANGE BASED ON OPERATIONAL REQUIREMENTS OF THE PROJECT SITE.
20. REQUESTS FOR INFORMATION (RFIs) SHALL INCLUDE A DETAILED, LEGIBLE DESCRIPTION OF THE ITEM NEEDING INTERPRETATION. CONTRACTOR WILL REVIEW EACH RFI, DETERMINE ACTION REQUIRED, AND ISSUE A RESPONSE TO SUBCONTRACTOR.
21. SUBMITTALS SHALL BE APPROVED BY CONTRACTOR PRIOR TO THE INSTALLATION OF PRODUCTS ON-SITE. SUBCONTRACTOR'S INSTALLATION OF UNAPPROVED PRODUCTS IS AT SUBCONTRACTOR'S RISK AND COST.
22. SUBCONTRACTOR SHALL MIX CLEAN INJECTION TRENCH SPOILS WITH 1206 SPOILS UNTIL HOMOGENEOUS AND PLACE IN 12" LIFTS. SUBCONTRACTOR SHALL ALSO MIX CLEAN INJECTION TRENCH SPOILS WITH GETR-WU-02 SPOILS UNTIL HOMOGENOUS AND PLACE IN 12" LIFTS. RADIOLOGICAL TESTING WILL BE COMPLETED BY OTHERS AND IS SUBJECT TO APPROVAL BEFORE PROCEEDING TO THE NEXT LIFT. CONTRACTOR TO OBSERVE AND PROVIDE GUIDANCE.
23. IF ANY DISCREPANCIES ARE NOTED BETWEEN THESE CONSTRUCTION DOCUMENTS AND INFORMATION PROVIDED OR AN ERROR IS SUSPECTED, IT SHALL BE IMMEDIATELY REPORTED TO THE CONTRACTOR AND THE PROJECT MANAGER.
24. ALL ENVIRONMENTAL PERMITS APPLICABLE TO THE PROJECT MUST BE OBTAINED PRIOR TO THE START OF CONSTRUCTION.
25. ALL CONSTRUCTION ACTIVITY, INCLUDING OPERATION OF HEAVY MACHINERY, EXCAVATION, FILLING, GRADING, CLEARING OF VEGETATION, DISPOSAL OF WASTE, AND STOCKPILING OF MATERIAL MUST TAKE PLACE WITHIN THE APPROVED WORK AREA AS AGREED UPON BY CONTRACTOR.
26. AT A MINIMUM, THE SUBCONTRACTOR SHALL MAINTAIN THE INTEGRITY OF ALL CONSTRUCTION ACCESS ROADS AND WORK AREAS DURING CONSTRUCTION OF THE PROJECT IN ORDER TO MAINTAIN SAFE AND OPERABLE WORK CONDITIONS.
27. NOISE IMPACTS FROM CONSTRUCTION SHALL BE MINIMIZED AND MITIGATED TO THE EXTENT POSSIBLE. SUBCONTRACTOR SHALL MAINTAIN ALL EQUIPMENT IN GOOD OPERATING CONDITIONS AND ALL MOTORS AND ENGINES WILL BE MUFFLED ACCORDING TO MANUFACTURER'S SPECIFICATIONS AND WILL COMPLY WITH STATE ENVIRONMENTAL LAW.
28. FUGITIVE DUST RESULTING FROM CONSTRUCTION ACTIVITIES SHALL BE MINIMIZED TO THE MAXIMUM EXTENT PRACTICABLE BY IMPLEMENTING APPROPRIATE CONTROL MEASURES. DUST SHALL BE ELIMINATED FROM STOCKPILED SOILS, UNPAVED ROADS, ETC. BY THE APPLICATION OF WATER OR STONE, RESPECTIVELY, AS NECESSARY. A WATERING VEHICLE SHALL BE AVAILABLE FOR THE DURATION OF PROJECT ACTIVITIES, AND THROUGHOUT RESTORATION.
29. ALL INJECTION SUPPLY PIPE BENDS SHALL BE SWEEP FITTINGS.

CIVIL NOTES:

1. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
2. PRIOR TO FILL MATERIAL PROCUREMENT, SUBCONTRACTOR SHALL SUBMIT TO CONTRACTOR DOCUMENTATION DEMONSTRATING ALL IMPORTED FILL MATERIAL IS CLEAN (NOT CONTAMINATED) AND SUITABLE FOR USE IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS, AND PROJECT SPECIFICATIONS.
3. SUBCONTRACTOR SHALL RESTORE ALL DISTURBED AREAS TO A CONDITION EQUAL TO OR BETTER THAN PRE-CONSTRUCTION CONDITIONS. TREES SPECIFIED FOR REMOVAL SHALL NOT BE REPLACED.
4. SUBCONTRACTOR SHALL PROTECT THE WORK AREAS WITH APPROPRIATE FENCING, BARRICADES, AND SIGNAGE.
5. ALL WORK SHALL BE DONE TO THE LINES, SLOPES, THICKNESS, AND GRADES INDICATED IN THE CONTRACT DRAWINGS. ALL ESTABLISHED MONUMENTS, BENCHMARKS, REFERENCE POINTS, STAKES, AND OTHER CENTRAL POINTS SHALL BE PRESERVED BY THE SUBCONTRACTOR. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR IN WRITING OF BENCHMARKS, REFERENCE LINES, OR OTHER CONTROL POINTS WHICH MAY HAVE BEEN DISTURBED OR WHICH APPEAR TO BE OFF LINE OR GRADE.
6. DISTURBED AREAS SHALL BE SEEDED, FERTILIZED, AND STABILIZED (WITH VEGETATIVE MULCH) IN ACCORDANCE WITH THE ODOT COMMISSION SPECIFICATIONS. SEED MIXTURE SHALL BE IN ACCORDANCE WITH TABLE 735.1 OF THE ODOT COMMISSION CHAPTER 735. SUBMIT SEED MIXTURE TO CONTRACTOR FOR APPROVAL PRIOR TO APPLICATION. DISTURBED AREAS SHALL HAVE ESTABLISHED 90% VEGETATION COVERAGE TO BE ACCEPTABLE.

ACCESS ROAD NOTES

1. MIRAFI RS580i WOVEN GEOTEXTILE OR ENGINEER APPROVED EQUIVALENT SHALL BE PLACED ON THE PREPARED SUBGRADE AND STRETCHED AS TIGHT AND AS FLAT AS PRACTICAL.
2. THE GEOTEXTILE SHALL BE LAID IN THE DIRECTION OF CONSTRUCTION TRAFFIC AND PER MANUFACTURER'S RECOMMENDATIONS. GEOTEXTILE PANELS SHOULD BE OVERLAPPED BOTH SIDE-TO-SIDE AND END-TO-END. OVERLAP SHALL BE PER MANUFACTURER'S SPECIFICATIONS OR A MINIMUM OF 18-INCHES, WHICHEVER IS GREATER.
3. THE FIRST FIVE FEET OF PLACED GEOTEXTILE ON EACH LATERAL ADJACENT TO THE ACCESS ROAD SHALL BE CUT AND LAID AS A SEPARATE SECTION.
4. SOIL, ROCKS, OR PINS APPROVED BY ENGINEER CAN BE USED TO HOLD FABRIC EDGES AND OVERLAPS DOWN UNTIL THE AGGREGATE IS PLACED TO PREVENT IT FROM LIFTING DURING PLACEMENT OF THE FIRST AGGREGATE LIFT. ON CURVES, THE GEOTEXTILE MAY BE FOLDED OR CUT TO CONFORM TO THE CURVE.
5. THE INITIAL LIFT OF AGGREGATE SHALL BE PLACED, SPREAD AND COMPACTED ON THE GEOTEXTILE FABRIC IN A 6-INCH LIFT. DO NOT OPERATE EQUIPMENT DIRECTLY ON GEOTEXTILE FABRIC.
6. TO THE EXTENT POSSIBLE IN THE FLOODPLAIN (WAA), MAINTAIN EXISTING DRAINAGE PATTERNS WITH ROAD CONSTRUCTION AND GRADING WHILE PROVIDING POSITIVE DRAINAGE OF ROADS. SPOIL EXCESS MATERIAL ON EITHER SIDE OF NEW ROAD AND TAPER TO EXISTING GRADE WHERE POSSIBLE TO MAINTAIN DRAINAGE, OR SPOIL EXCESS MATERIAL IN THE AREA INDICATED ON THE DRAWINGS, OR AS APPROVED BY THE CONTRACTOR, AND RESTORE IN ACCORDANCE WITH NOTES ABOVE.
7. SEE SHEET C300 FOR CONCRETE NOTES.

COORDINATION AND COMMUNICATION:

1. SUBCONTRACTOR SHALL APPOINT A PRIMARY CONSTRUCTION SUPERINTENDENT, SUBJECT TO THE APPROVAL OF THE CONTRACTOR AND OWNER, WHO SHALL BE PRESENT ON THE CONSTRUCTION SITE AT ALL TIMES DURING WORKING HOURS AND ACCESSIBLE AT ALL TIMES WHILE WORK IS IN PROGRESS. WHEN THE SUBCONTRACTOR'S PRIMARY CONSTRUCTION SUPERINTENDENT IS NOT AVAILABLE ON THE CONSTRUCTION SITE, AN ALTERNATE REPRESENTATIVE SHALL BE PROVIDED. SUBCONTRACTOR SHALL PROVIDE NAMES AND CONTACT INFORMATION OF REPRESENTATIVES TO THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION ACTIVITIES. IN ACCORDANCE WITH SNM-928, SUBCONTRACTORS ARE PROHIBITED FROM ACCESSING THE SITE UNLESS SPECIFICALLY DESIGNATED CONTRACTOR OR OWNER PERSONNEL ARE PRESENT.
2. SUBCONTRACTOR IS RESPONSIBLE FOR SUBMITTING ALL PRELIMINARY AND UPDATED CONSTRUCTION PROGRESS SCHEDULES, PROCUREMENT SCHEDULES, SCHEDULE OF SUBMITTALS AND SCHEDULE OF VALUES WITH INPUT AND COMMITMENTS FROM SUBCONTRACTORS AND SUPPLIERS.
3. CONTRACTOR WILL SCHEDULE AND CONDUCT DAILY SAFETY MEETINGS AND WEEKLY PROGRESS MEETINGS. SUBCONTRACTOR SHALL BE PREPARED TO DISCUSS CURRENT CONSTRUCTION PROGRESS AND ANY ANTICIPATED FUTURE CHANGES TO SCHEDULE.
4. THE SUBCONTRACTOR SHALL COORDINATE ACCESS DURING CONSTRUCTION WITH CONTRACTOR, OWNER, AND ADJACENT SITE PROPERTY OWNERS.

CONSTRUCTION LAYOUT AND SURVEYING NOTES:

1. SUBCONTRACTOR SHALL PROVIDE NEATLY RED MARKED DRAWINGS IDENTIFYING ANY MODIFICATIONS TO THE CONTRACT DOCUMENTS AND INDICATING CONFORMANCE TO CONSTRUCTION RECORD CONDITIONS TO THE CONTRACTOR UPON COMPLETION OF THE WORK.
2. THE CONTRACTOR SHALL REVIEW COMPLETENESS, ACCURACY, AND FORMAT OF SUBMITTED RECORD DRAWINGS. IF THE RECORD DRAWINGS ARE CONSIDERED UNACCEPTABLE, THEY SHALL BE RETURNED TO THE SUBCONTRACTOR FOR CORRECTION AND RESUBMITTED AT SUBCONTRACTOR'S EXPENSE.
3. SUBCONTRACTOR SHALL MAKE AVAILABLE ALL SURVEYS IN AUTOCAD 2018 (OR NEWER) FORMAT AND SHALL PROVIDE SURVEY POINTS IN .CSV FILE FORMAT.
4. CONTRACTOR MAY DIRECT SUBCONTRACTOR TO ALTER THE ALIGNMENTS, LENGTHS, AND DEPTHS OF INJECTION AND EXTRACTION TRENCHES BASED ON FIELD OBSERVATION.
5. TOPOGRAPHY FEATURES AND AERIAL IMAGERY SHOWN ARE FROM A GROUND SURVEY DATED JULY 2014, AND AN AERIAL SURVEY DATED MAY 2014. TOPOGRAPHY UPDATED WITH GROUND SURVEY PERFORMED NOVEMBER 11, 2016 WITHIN BOUNDARIES INDICATED ON C001.

Scale For Microfilming
Millimeters
Inches

no.	date	by	ckd	description
A	1/8/21	EAA	JRH	ISSUED FOR PRELIMINARY DESIGN

PRELIMINARY - NOT FOR CONSTRUCTION



9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
OKLAHOMA FIRM LICENSEE NO. 421

date	detailed
JANUARY 2021	E. AHLEMEYER
designed	checked
B. WEIS	J. HESEMANN

**Cimarron Environmental Response Trust
GENERAL NOTES**

project	contract
120832	-
drawing	rev.
BMCD-GWREMED-G001	A
sheet 2	of 32 sheets
file G001 GEN-NOTES-AB.DWG	

EROSION CONTROL NOTES:

- SUBCONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLATION, MAINTENANCE, AND REMOVAL OF ALL EROSION CONTROL MEASURES REQUIRED AND AS A RESULT OF SUBCONTRACTOR'S ACTIVITIES. EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO COMMENCING CONSTRUCTION AT THE SITE.
- CONTRACTOR WILL PROVIDE THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP) TO SUBCONTRACTOR. SUBCONTRACTOR SHALL REVIEW SWPPP PRIOR TO PREPARING AND SUBMITTING A BID.
- SUBCONTRACTOR SHALL IMPLEMENT ADDITIONAL CONTROLS AS DIRECTED BY PERMITTING AGENCY, OWNER, OR CONTRACTOR. ADDITIONAL CONTROLS SHALL BE IMPLEMENTED AS DICTATED BY THE SITE CONDITIONS AT SUBCONTRACTOR'S EXPENSE THROUGHOUT ALL PHASES OF THE CONTRACT WORK. NOTIFY CONTRACTOR OF ANY DISTURBANCES THAT ARE BEYOND THE PLANNED LIMITS OF CONSTRUCTION ACTIVITIES.
- ALL EROSION CONTROL MEASURES SHALL BE MAINTAINED THROUGHOUT THE DURATION OF THE PROJECT. SUBCONTRACTOR SHALL REMOVE EROSION CONTROL FEATURES AT THE COMPLETION OF THE CONTRACT WORK IF SAID FEATURES ARE NOT BIODEGRADABLE. REMOVAL SHALL NOT OCCUR UNTIL VEGETATION OR PERMANENT CONTROL MEASURES HAVE BEEN ESTABLISHED.
- SUBCONTRACTOR SHALL MINIMIZE CLEARING TO THE EXTENT PRACTICAL.
- ADDITIONAL EROSION CONTROL MEASURES SHALL BE DEPLOYED DURING EXCAVATION ACTIVITIES CONDUCTED WITHIN THE BOUNDARIES OF FORMER URANIUM POND 1 AND 2 LIMITS, AS DETAILED ON THESE CONSTRUCTION DRAWINGS. POTENTIALLY IMPACTED SOIL REMOVED FROM THESE AREAS (DEFINED AS MATERIAL REMOVED FROM 6 FEET BELOW GROUND SURFACE AND ABOVE SANDSTONE A FOR URANIUM POND 1 AND 5 FEET BELOW GROUND SURFACE AND ABOVE SANDSTONE A FOR URANIUM POND 2) SHALL BE SEGREGATED FROM CLEAN SOIL AND STAGED WITH BMPs TO PREVENT SEDIMENT MIGRATION. ADDITIONAL BMPs SHALL BE DEPLOYED TO PREVENT STORM WATER RUN-OFF AND POTENTIALLY IMPACTED SOILS FROM ENTERING AND ACCUMULATING IN THE TRENCHES. SOIL MATERIAL ENTERING AND ACCUMULATING IN THE TRENCH SHALL BE REMOVED AND HANDLED AS POTENTIALLY IMPACTED MATERIAL. POTENTIALLY IMPACTED SOIL REMOVED SHALL BE PLACED BACK IN THE TRENCH AND BELOW THE MINIMUM IMPACTED MATERIAL DEPTH AS FOLLOWS:
 - GWI-UP1-03 AND GWI-UP1-04: POTENTIALLY IMPACTED SOIL IS DEFINED AS SOIL MATERIAL WITHIN THE FORMER URANIUM POND 1 LIMITS BELOW 6 FEET BELOW GROUND SURFACE AND ABOVE GRAVEL FILTER FABRIC.
 - GWI-UP2-01: POTENTIALLY IMPACTED SOIL IS DEFINED AS SOIL MATERIAL WITHIN THE FORMER URANIUM POND 2 LIMITS BELOW 5 FEET BELOW GROUND SURFACE AND ABOVE GRAVEL FILTER FABRIC.
- ALL LAND DISTURBING ACTIVITIES SHALL BE CONDUCTED IN ACCORDANCE WITH EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES AND STANDARDS. ALL TEMPORARY SEDIMENTATION AND EROSION CONTROL DEVICES SHALL BE INSTALLED AS SHOWN ON THE APPROVED PLAN AND THE SWPPP.
- SITE DRAINAGE PATTERNS, INCLUDING THE PROJECT SITE AND ADJACENT PROPERTIES SHALL BE MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD UNLESS OTHERWISE APPROVED BY THE CONTRACTOR.
- THE SUBCONTRACTOR SHALL MAINTAIN ALL SEDIMENTATION CONTROL DEVICES AND TAKE ANY PRECAUTIONARY MEASURES TO ENSURE THAT SEDIMENT DOES NOT ENTER ANY NATURAL STREAM CHANNEL LOCATED WITHIN THE SITE.
- GROUND COVER REQUIREMENTS SHALL BE FOLLOWED IN ADDITION TO STANDARD EROSION CONTROL REQUIREMENTS. THE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING A PERMANENT STAND OF VEGETATION ON ALL DISTURBED AREAS AND MEETING ALL FINAL STABILIZATION REQUIREMENTS.

WASTE MANAGEMENT NOTES:

- SUBCONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL, MANAGEMENT, LOADING, AND STORAGE OF WASTE MATERIALS ON-SITE, AND DISPOSAL OFF-SITE. WASTE MATERIALS INCLUDE:
 - WASTE AND CONSTRUCTION AND DEMOLITION DEBRIS.
 - WASH WATER ASSOCIATED WITH CONCRETE TRUCKS, VEHICLE CLEANING, AND EQUIPMENT CLEANING.
 - SUBCONTRACTOR SHALL NOT REMOVE WASTE MATERIALS FROM THE SITE WITHOUT OBTAINING WRITTEN APPROVAL FROM OWNER AND CONTRACTOR.
- SUBCONTRACTOR SHALL BE RESPONSIBLE FOR TRANSPORTATION, DISPOSAL, AND OBTAINING HAULING AND DISPOSAL PERMITS.
- SUBCONTRACTOR SHALL DISPOSE OF WASTE MATERIALS IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS.
- TREES AND BRUSH GENERATED DURING CLEARING AND GRUBBING ACTIVITIES SHALL BE STOCKPILED IN OWNER-APPROVED AREAS AND REMOVED FROM THE SITE.
- THE SUBCONTRACTOR SHALL REMOVE FROM THE SITE THOSE MATERIALS NOT INDICATED TO BE SALVAGED. ALL REMOVED MATERIALS SHALL BECOME THE PROPERTY OF THE SUBCONTRACTOR WHO SHALL LEGALLY DISPOSE OF THEM.
- SUBCONTRACTOR SHALL NOT REMOVE WASTE MATERIALS FROM THE SITE WITHOUT OBTAINING WRITTEN APPROVAL FROM OWNER AND CONTRACTOR.

LEGEND

	UTILITY TRENCH ALIGNMENT (APPLIES TO C002 ONLY)
	BURIED COMMUNICATION CONDUIT/ CABLE
	BURIED INSTRUMENTATION CONDUIT/ CABLE
	BURIED FIBER OPTIC CONDUIT/ CABLE
	BURIED ELECTRICAL CONDUIT/ CABLE
	GROUNDWATER EXTRACTION TRENCH
	BURIED GROUNDWATER EXTRACTION PIPE
	BURIED INJECTION WATER SUPPLY PIPE
	INJECTION TRENCH
	WATER SUPPLY LNE
	PROPERTY LNE
	EASEMENT
	BURIED WATER DISCHARGE PIPE
	EXISTING SURFACE ELEVATION CONTOUR
	PROPOSED SURFACE ELEVATION CONTOUR
	EXISTING FENCE
	PROPOSED FENCE
	EXISTING CHANNEL
	PROPOSED CHANNEL
	FUTURE OUTFALL LINE, BY OTHERS
	EDGE OF PROPOSED ACCESS ROAD AND LATERALS
	CLEARING LIMITS
	ACCESS ROAD C WITH STATION MARKS
	STRAW WATTLE
	EROSION CONTROL BLANKET
	EXTRACTION TRENCH SUMP
	INJECTION WELL
	EXTRACTION WELL
	EXISTING MONITOR WELL
	PROPOSED CLEANOUT (ARROW INDICATES DIRECTION OF CLEANOUT)

ABBREVIATIONS:

APPROX.	APPROXIMATE	SWPPP	STORMWATER POLLUTION PREVENTION PLAN
BA1	BURIAL AREA 1	TYP.	TYPICAL
BLDG.	BUILDING	UP	URANIUM POND
BMPs	BEST MANAGEMENT PRACTICES	U	URANIUM
C	CENTER LINE	VNSFS	VEOLIA NUCLEAR SOLUTIONS FEDERAL SERVICES
CMP.	CORRUGATED METAL PIPE	WA	WESTERN AREA
CP.	CONTROL POINT	WATF	WESTERN AREA TREATMENT FACILITY
CPP	CONTROL PANEL POWER	WU	WESTERN UPLAND
DIA.	DIAMETER	WAA	WESTERN ALLUVIAL AREA
DWG.	DRAWING	Y	YARD
E.	EAST		
EL.	ELEVATION		
EQ	EQUAL		
E.W.	EACH WAY		
EX. OR EXIST.	EXISTING		
FT.	FEET		
GE	GROUNDWATER EXTRACTION		
GETR	GROUNDWATER EXTRACTION TRENCH		
GW	GROUNDWATER INJECTION		
HDPE	HIGH DENSITY POLYETHYLENE		
INC.	INCORPORATED		
INJ.	INJECTION		
LAT	LATERAL		
MAX.	MAXIMUM		
MIN.	MINIMUM		
MISC.	MISCELLANEOUS		
N.	NORTH		
O.C.	OFF CENTER		
O.D.	OUTSIDE DIAMETER		
ODOT	OKLAHOMA DEPARTMENT OF TRANSPORTATION		
OG&E	OKLAHOMA GAS & ELECTRIC		
OSHA	OCCUPATIONAL SAFETY HEALTH ADMINISTRATION		
OZ.	OUNCE		
PSI	POUNDS PER SQUARE INCH		
PVC	POLYVINYL CHLORIDE		
R	RADIUS		
RFI	REQUEST FOR INFORMATION		
RTU	REMOTE TELEMETRY UNIT		
SP	SPACED		
S.Q	SQUARE		
ST.	STREET		
STA	STATION		

no.	date	by	ckd	description
A	3/31/20	BCW	RTB	ISSUED FOR 90% DESIGN

PRELIMINARY - NOT FOR CONSTRUCTION



9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
OKLAHOMA FIRM LICENSEE NO. 421

date	MARCH 2020	detailed	T. COLLINS
designed	B. WEIS	checked	R. BETTMENG

Cimarron Environmental Response Trust
NOTES, LEGEND AND ABBREVIATIONS

project	120832	contract	
drawing	BMCD-GWREMED-G002	rev.	A
sheet	3	of	32 sheets
file	G002 GEN-NOTES-AB.DWG		



GENERAL STRUCTURAL NOTES:

1. GENERAL:
 - A. THESE NOTES, AND OTHER DRAWING NOTES CONTAINED WITHIN, ARE PROVIDED TO MEET SPECIFIC REQUIREMENTS AND TO SUPPLEMENT THE CONTRACT SPECIFICATIONS. THESE NOTES NEITHER REPLACE NOR OVERRIDE THE PROVISIONS AND REQUIREMENTS OF THE CONTRACT SPECIFICATIONS.
 - B. SUBCONTRACTOR SHALL COORDINATE ALL STRUCTURAL WORK WITH WORK SHOWN ON ALL OTHER DRAWINGS.
 - C. SUBCONTRACTOR SHALL VERIFY ALL DIMENSIONS OF EXISTING CONSTRUCTION AND REPORT ANY DISCREPANCIES FROM THE CONTRACT DRAWINGS TO THE ENGINEER PRIOR TO COMMENCING WITH WORK. SCALING OF WORKING DIMENSIONS FROM THE STRUCTURAL DRAWINGS IS PROHIBITED.
 - D. CONTRACT DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE. SUBCONTRACTOR SHALL BE RESPONSIBLE FOR ALL MEANS AND METHODS OF CONSTRUCTION INCLUDING, BUT NOT LIMITED TO, SHORING AND TEMPORARY BRACING. SUBCONTRACTOR SHALL UNDERTAKE ALL NECESSARY MEASURES TO ENSURE SAFETY OF ALL PERSONS AND STRUCTURES AT THE SITE AND ADJACENT TO THE SITE. VISITS TO THE SITE BY THE OWNER OR THE CONTRACTOR SHALL NOT RELIEVE THE SUBCONTRACTOR OF SUCH RESPONSIBILITY.
 - E. IF CERTAIN FEATURES ARE NOT FULLY SHOWN OR CALLED FOR ON THE CONTRACT DRAWINGS OR SPECIFICATIONS, THEIR CONSTRUCTION SHALL BE OF THE SAME CHARACTER AS FOR SIMILAR CONDITIONS THAT ARE SHOWN OR CALLED FOR, WITH THE APPROVAL OF THE ENGINEER. WHERE SECTIONS VARY, CONTRACTOR SHALL PROVIDE FOR SMOOTH TRANSITIONS BETWEEN THEM, UNLESS NOTED OTHERWISE.
 - F. ALL PRODUCTS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS' WRITTEN INSTRUCTIONS AND RECOMMENDATIONS, UNLESS NOTED OTHERWISE.
2. DESIGN STANDARDS
 - A. PRINCIPAL CODE OF RECORD: INTERNATIONAL BUILDING CODE 2015 WITH MODIFICATIONS BY OKLAHOMA UNIFORM BUILDING CODE COMMISSION, EFFECTIVE DATE OF ADOPTION SEPTEMBER 17, 2018."
 - B. ASCE 7, MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES, 2010.
 - C. ACI 318, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE, 2014.
 - D. AISC 325, STEEL CONSTRUCTION MANUAL, 14th EDITION, 2011.
3. SPECIAL INSPECTIONS
 - A. REQUIRED IN ACCORDANCE WITH IBC SECTION 1704
 1. FREQUENCY: CONTINUOUS UNLESS SPECIFICALLY PERMITTED BY THE PRINCIPAL CODE OF RECORD TO BE PERIODIC.
 2. SPECIAL INSPECTOR: QUALIFIED PERSON HIRED BY CONTRACTOR WHO HAS DEMONSTRATED COMPETENCE TO THE SATISFACTION OF THE BUILDING OFFICIAL.
 3. WELDS SHALL BE INSPECTED AS REQUIRED FOR AWS D1.1/D1.M
4. DESIGN LOADS
 - A. RISK CATEGORY: III PER ASCE 7-10
 - B. LIVE LOADS PER ASCE 7-10
 1. FLOOR LIVE LOAD: 60 PSF
 - C. EQUIPMENT LOADS
 1. AS INDICATED FOR EQUIPMENT WEIGHING IN EXCESS OF 300 LBS. FRAMING AND FOUNDATIONS ARE DESIGNED FOR EQUIPMENT WHICH SATISFIES THE CONTRACT SPECIFICATIONS.
 2. IF EQUIPMENT FURNISHED IS HEAVIER THAN THE WEIGHTS INDICATED, OR REQUIRES STRUCTURAL CHANGES FOR ANY OTHER REASON, SUBCONTRACTOR SHALL PROVIDE ENGINEERING DESIGN CALCULATIONS AND ADDITIONAL STRUCTURAL WORK NECESSARY TO SUPPORT ALL LOADS IN ACCORDANCE WITH THE DESIGN STANDARDS SPECIFIED ABOVE, AT NO ADDITIONAL COST TO THE CONTRACTOR AND WITH NO INCREASE IN CONTRACT TIME.
 - D. SNOW LOAD PER ASCE 7-10
 1. GROUND SNOW LOAD: 10 PSF.
 2. FLAT-ROOF SNOW LOAD: 12.56 PSF.
 3. EXPOSURE FACTOR: FULLY EXPOSED
 4. RISK CATEGORY: III
 5. THERMAL FACTOR: 1.00
 - E. WIND LOAD PER ASCE 7-10
 1. ULTIMATE DESIGN WIND SPEED: 120 MPH 3-SECOND GUST.
 2. RISK CATEGORY: III
 3. EXPOSURE CATEGORY: C
 4. BUILDING CONDITION: OPEN, GCpi = 0.00
 5. TOPOGRAPHIC FACTOR: 1.0
 - F. SEISMIC LOAD PER ASCE 7-10
 1. MAXIMUM CONSIDERED EARTHQUAKE SPECTRAL RESPONSE ACCELERATIONS Ss = 0.223, S1 = 0.071.
 2. DESIGN EARTHQUAKE SPECTRAL RESPONSE ACCELERATIONS Sds = 0.238, Sd1 = 0.114.
 3. RISK CATEGORY: III.
 4. SITE CLASS: D.
 5. SEISMIC DESIGN CATEGORY: B
 6. BASIC SEISMIC FORCE RESISTING SYSTEM: STEEL ORDINARY CONCENTRICALLY BRACED FRAMES
 7. RESPONSE MODIFICATION COEFFICIENT: R = 3.25
 8. SEISMIC RESPONSE COEFFICIENT: Cs = 0.09
 9. DESIGN BASE SHEAR: 1.00 KIPS.
 10. ANALYSIS PROCEDURE: EQUIVALENT LATERAL FORCE
 - G. FLOOD LOAD PER ASCE 7-10
 1. BASE FLOOD ELEVATION = 14'-0" AT PLATFORM
 2. DESIGN FLOOD ELEVATION = 15'-0" AT PLATFORM
 3. WATER VELOCITY = 15 FT / S
 4. IMPACT ITEM WEIGHT = 1000 LBS
 5. IMPACT ITEM FORCE = 14 KIPS

5. GEOTECHNICAL INFORMATION
 - A. SOURCE: TERRACON CONSULTANTS, INC., CIMARRON WATER TREATMENT FACILITY, JANUARY 26, 2017
 - B. SITE PREPARATION
 1. EXCAVATION, FILL, AND BACKFILL SHALL BE IN ACCORDANCE WITH THE CONTRACT DRAWINGS AND SPECIFICATIONS, DIVISION 312000.
 2. SUBCONTRACTOR SHALL NOTIFY THE ENGINEER WHEN LOOSE OR SOFT SOILS ARE EXPOSED WHERE SLABS, MATS, OR FOOTINGS ARE TO BE PLACED SO THAT A DETERMINATION MAY BE MADE REGARDING IMPROVEMENT OF THIS POTENTIALLY UNDESIRABLE CONDITION.
 - C. SOIL CHARACTERISTICS
 1. UNIT WEIGHT: 114 PCF DRY.
 2. WATER TABLE DEPTH: ASSUME AT SURFACE FOR LATERAL EARTH PRESSURE AND BUOYANCY EFFECTS.
 - D. LATERAL EARTH PRESSURE
 1. AT-REST CONDITION, Ko: 55 PCF, EQUIVALENT FLUID.
 2. ACTIVE CONDITION, Ka: 40 PCF, EQUIVALENT FLUID.
 3. PASSIVE CONDITION, Kp: 360 PCF, EQUIVALENT FLUID.
 - E. SLAB, MAT, AND FOOTING DESIGN PARAMETERS
 1. MODULUS OF SUBGRADE REACTION: 125 PCI.
 2. ALLOWABLE BEARING CAPACITIES
 - a. GRAVITY LOADS: 2500 PSF.
 3. FROST DEPTH: 18"
 4. CONCRETE-SOIL COEFFICIENT OF FRICTION: 0.2.
 5. MINIMUM STABILITY FACTORS OF SAFETY
 - a. OVERTURNING: 1.5.
 - b. UPLIFT: 1.5.
 - c. SLIDING: 1.5.
6. MATERIALS: SEE THE CONTRACT SPECIFICATIONS FOR COMPLETE REQUIREMENTS AND COMPLY WITH ALL APPLICABLE OSHA REGULATIONS
 - A. REINFORCED CONCRETE: SECTIONS 03 30 00, 03 33 00
 1. REINFORCED CONCRETE SHALL BE PREPARED AND PLACED IN ACCORDANCE WITH ACI MANUAL OF CONCRETE PRACTICE.
 2. CONCRETE
 - a. MINIMUM 28-DAY COMPRESSIVE STRENGTH fc = 4,500 PSI, NORMAL WEIGHT.
 3. FORMWORK
 - a. SUBCONTRACTOR SHALL BE RESPONSIBLE FOR DESIGN, ENGINEERING, STRUCTURAL ADEQUACY, AND CONSTRUCTION OF ALL CONCRETE FORMWORK IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS.
 - b. COORDINATE ALL CONCRETE WORK WITH THE PLACEMENT OF PIPING, INSERTS, FLOOR DRAINS, AND OTHER EMBEDDED ITEMS INDICATED ON THE CONTRACT DRAWINGS OR IN THE CONTRACT SPECIFICATIONS.
 - c. ALL NEW OR EXISTING PIPING OR UTILITIES PASSING THROUGH NEW CONCRETE SHALL BE CAST-IN, UNLESS NOTED OTHERWISE. SEE OTHER DISCIPLINE DRAWINGS FOR SLEEVE DETAILS. SUBCONTRACTOR SHALL PROVIDE MEASURES TO ENSURE THAT SLEEVES REMAIN FREE OF DEBRIS AND WATER DURING CONSTRUCTION.
 - d. PROVIDE 3/4" CHAMFER STRIPS ON ALL EDGES OF EXPOSED CONCRETE, UNLESS NOTED OTHERWISE.
 - e. WITH THE EXPLICIT PRIOR APPROVAL IN WRITING OF THE ENGINEER, COLUMN AND WALL FOOTINGS MAY BE EARTH-FORMED USING UNDISTURBED NATIVE SOIL. PROVIDE A MINIMUM EXCAVATION WIDTH 4" GREATER THAN INDICATED, AND A DEPTH 2" GREATER THAN INDICATED.
 4. REINFORCING STEEL
 - a. BARS: ASTM A615 GRADE 60.
 - b. WELDED WIRE REINFORCEMENT: ASTM A1064.
 - c. ALL CONCRETE SHALL BE REINFORCED UNLESS SPECIFICALLY MARKED "NOT REINFORCED" OR "UNREINFORCED".
 - d. SUBCONTRACTOR SHALL DETAIL AND PLACE ALL REINFORCEMENT IN ACCORDANCE WITH ACI SP-86, ACI 301, ACI 318, AND CRSI MANUAL OF STANDARD PRACTICE.
 - e. MINIMUM CONCRETE CLEAR COVER OVER REINFORCEMENT SHALL BE AS FOLLOWS, UNLESS NOTED OTHERWISE:
 - (1) CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH: 3".
 - (2) CONCRETE EXPOSED TO EARTH OR WEATHER: #6 THROUGH #11 BARS - 2"; #5 AND SMALLER BARS, WELDED WIRE FABRIC - 1 1/2".
 - (3) CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH THE GROUND: SLABS AND WALLS - 3/4"; BEAMS AND COLUMNS, PRIMARY REINFORCEMENT, TIES, STIRRUPS, SPIRALS - 1 1/2"
 - f. EMBEDMENT AND LAP SPLICE LENGTHS FOR ALL REINFORCING STEEL BARS SHALL CONFORM TO THE TABLES SHOWN ON C302.
 - B. STEEL
 1. STEEL SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH AISC STEEL CONSTRUCTION MANUAL, 14th EDITION.
 2. TEMPORARY ERECTION BRACING SHALL BE DESIGNED AND PROVIDED BY THE SUBCONTRACTOR AS REQUIRED AND SHALL NOT BE REMOVED UNTIL ALL PERMANENT LATERAL-LOAD-RESISTING ELEMENTS AND CONNECTIONS ARE COMPLETELY INSTALLED.
 3. WIDE FLANGE SHAPES AND TEES: ASTM A992, Fy = 50 KSI.
 4. OTHER SHAPES, PLATES, AND THREADED RODS
 - a. ASTM A36, Fy = 36 KSI, UNLESS NOTED OTHERWISE.
 - b. ASTM A572 GRADE 50, Fy = 50 KSI, WHERE INDICATED AS "(50)".
 5. SQUARE AND RECTANGULAR HOLLOW STRUCTURAL SECTIONS: ASTM A500 GRADE B OR A1085, Fy = 50 KSI.
 6. ROUND HOLLOW STRUCTURAL SECTIONS: ASTM A500 GRADE B, Fy = 42 KSI OR C, Fy = 46 KSI.
 7. PIPE: ASTM A53 TYPE E OR S, GRADE B, Fy = 35 KSI.
 8. BOLTS
 - a. 3/4" DIAMETER ASTM F3125, GRADE A325, UNLESS NOTED OTHERWISE.
 - b. FRAMING CONNECTIONS: SNUG-TIGHTENED JOINTS WITH STANDARD HOLES, UNLESS NOTED OTHERWISE.
 - c. BRACING CONNECTIONS: SNUG-TIGHTENED JOINTS WITH STANDARD HOLES, UNLESS NOTED OTHERWISE.
 - d. ON ONE SIDE OF EACH DOUBLE CONNECTION OF BEAMS TO A COLUMN WEB OR A GIRDER WEB DIRECTLY OVER A COLUMN, PROVIDE A TEMPORARY SEAT ANGLE ATTACHED TO COLUMN OR GIRDER WEB AND TO BOTTOM FLANGE OF BEAM. MINIMUM SEAT CONNECTION SHALL BE L4x3x3/8 LLH WITH TWO 3/4" DIAMETER A307 OR A325-ST BOLTS EACH LEG. SINGLE AND DOUBLE STAGGERED CONNECTIONS ARE PROHIBITED WITHOUT THE EXPLICIT PRIOR APPROVAL IN WRITING OF THE STRUCTURAL ENGINEER OF RECORD.
 9. WELDING: IN ACCORDANCE WITH AWS D1.1 USING E70 ELECTRODE WITH LOW HYDROGEN.
 10. ALL DOUBLE ANGLE MEMBERS SHALL HAVE SPACER PLATES TO COMPLY WITH AISC PARAGRAPH E6.2.
 - a. THICKNESS: TO MATCH END GUSSET PLATES.
 - b. MINIMUM ATTACHMENT: CONNECT TO HEEL AND TOE OF EACH ANGLE USING 3/16" x 1" LONG FILLET WELDS.
 11. HEADED STUDS
 - a. COLD-FINISHED STEEL CONFORMING TO ASTM A108, GRADE 1015 OR 1020.
 - b. ALL STUDS LOCATED SO AS TO OBSTRUCT WALKING SURFACES OF BEAMS OR JOISTS SHALL BE FIELD INSTALLED.
 12. ANCHOR BOLTS
 - a. ASTM F1554 GRADE 36 UNLESS SPECIFICALLY NOTED.
 - b. LOCATE ANCHOR BOLTS ACCURATELY, SET WITH TEMPLATES, AND SECURELY HOLD IN POSITION WHILE PLACING CONCRETE. PROTECT IN-PLACE ANCHOR BOLTS FROM CONSTRUCTION ACTIVITY.
 - c. THE FOLLOWING ARE PROHIBITED WITHOUT THE EXPLICIT PRIOR APPROVAL IN WRITING OF THE STRUCTURAL ENGINEER OF RECORD:
 - (1) INSERTING ANCHOR BOLTS INTO FRESH OR PARTIALLY HARDENED CONCRETE.
 - (2) SUBSTITUTING POST-INSTALLED ANCHORS WHERE EMBEDDED ANCHOR BOLTS ARE INDICATED.
 - (3) REPAIRING, REPLACING, OR MODIFYING INSTALLED ANCHOR BOLTS.
 13. POST-INSTALLED ANCHORS
 - a. CONCRETE ANCHORS: STAINLESS STEEL MANUALLY EXPANDED (WEDGE) TYPE, UNLESS NOTED OTHERWISE.
 - b. ADHESIVE ANCHORS: ASTM A36 CARBON STEEL THREADED ROD WITH VINYL URETHANE METHACRYLATE RESIN ADHESIVE, UNLESS NOTED OTHERWISE.
 14. GROUT: CEMENTITIOUS NONSHRINK. MIN fc = 5000 PSI
 - C. STEEL BAR GRATING
 1. STEEL BAR GRATING SHALL BE FABRICATED AND INSTALLED IN ACCORDANCE WITH NAAMM MANUALS.
 2. MATERIAL: ASTM A1011, GALVANIZED OR A167 TYPE 304 STAINLESS.
 3. CONSTRUCTION: WELDED.
 4. MAIN BEARING BARS: AS REQUIRED BY DESIGN.
 5. CROSS BARS: AT 4" CENTERS.
 6. SURFACE: SERRATED.
 7. FABRICATE GRATING IN SECTIONS NOT GREATER THAN 5 FT WIDE.
 - D. DEFERRED SUBMITTAL ITEMS: PER IBC 2015 SECTION 107.3.4.1
 1. STEEL PLATFORM. REFER TO SPEC 055000.

- B. STRUCTURAL STEEL: SECTIONS 05 12 00
 1. STRUCTURAL STEEL SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH AISC STEEL CONSTRUCTION MANUAL, 14th EDITION.
 2. TEMPORARY ERECTION BRACING SHALL BE DESIGNED AND PROVIDED BY THE SUBCONTRACTOR AS REQUIRED AND SHALL NOT BE REMOVED UNTIL ALL PERMANENT LATERAL-LOAD-RESISTING ELEMENTS AND CONNECTIONS ARE COMPLETELY INSTALLED.
 3. WIDE FLANGE SHAPES AND TEES: ASTM A992, Fy = 50 KSI.
 4. OTHER SHAPES, PLATES, AND THREADED RODS
 - a. ASTM A36, Fy = 36 KSI, UNLESS NOTED OTHERWISE.
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 7. PIPE: ASTM A53 TYPE E OR S, GRADE B, Fy = 35 KSI.
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 - a. 3/4" DIAMETER ASTM F3125, GRADE A325, UNLESS NOTED OTHERWISE.
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 11. HEADED STUDS
 - a. COLD-FINISHED STEEL CONFORMING TO ASTM A108, GRADE 1015 OR 1020.
 - b. ALL STUDS LOCATED SO AS TO OBSTRUCT WALKING SURFACES OF BEAMS OR JOISTS SHALL BE FIELD INSTALLED.
 12. ANCHOR BOLTS
 - a. ASTM F1554 GRADE 36 UNLESS SPECIFICALLY NOTED.
 - b. LOCATE ANCHOR BOLTS ACCURATELY, SET WITH TEMPLATES, AND SECURELY HOLD IN POSITION WHILE PLACING CONCRETE. PROTECT IN-PLACE ANCHOR BOLTS FROM CONSTRUCTION ACTIVITY.
 - c. THE FOLLOWING ARE PROHIBITED WITHOUT THE EXPLICIT PRIOR APPROVAL IN WRITING OF THE STRUCTURAL ENGINEER OF RECORD:
 - (1) INSERTING ANCHOR BOLTS INTO FRESH OR PARTIALLY HARDENED CONCRETE.
 - (2) SUBSTITUTING POST-INSTALLED ANCHORS WHERE EMBEDDED ANCHOR BOLTS ARE INDICATED.
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 13. POST-INSTALLED ANCHORS
 - a. CONCRETE ANCHORS: STAINLESS STEEL MANUALLY EXPANDED (WEDGE) TYPE, UNLESS NOTED OTHERWISE.
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KANSAS CITY, MO 64114
816-333-9400
OKLAHOMA FIRM LICENSEE NO. 421

date	MARCH 2020	detailed	T. WILSON
designed	S. MORRIS	checked	S. CAMPBELL

Cimarron Environmental Response Trust
STRUCTURAL
GENERAL NOTES

project	120832	contract	
drawing	BMCD-GWREMED-C300	rev.	A
sheet	30	of	32 sheets
file	C300 STRUCTURAL GENERAL NOTES.DWG		

Millimeters
Scale For Microfilming
Inches

ABBREVIATIONS

EQUIPMENT & SPECIALTIES

BL	HIGH PRESSURE BLOWER
BOP/D	BOTTOM OF PIPE/DUCT
C	COMPRESSOR
CV	CHECK VALVE
EJ	EXPANSION JOINT, FLEXIBLE CONNECTOR
FAN	FAN OR LOW PRESSURE BLOWER
FOT/B	FLAT ON TOP/BOTTOM
HB	HOSE BIBB
MP	METERING PUMP
MOV	MOTOR OPERATED VALVE
MXR	MIXER
NOZ	NOZZLE
P	PUMP
PI	PRESSURE INDICATOR
PT	PRESSURE TRANSMITTER
QCU	QUICK CONNECT UNIT
REC	RECEIVER
RO	ORIFICE PLATE OR RESTRICTION DEVICE
SFI	SIGHT FLOW INDICATOR
SG	SIGHT GLASS
SLR	SILENCER
SOV	SOLENOID OPERATED VALVE
STR	STRAINER
TK	TANK
V	VESSEL
WTR	WATER TREATMENT (POLISHER, SOFTENER, DEMINERALIZER)
XM	MISCELLANEOUS MECHANICAL EQUIPMENT
XP	MISCELLANEOUS PIPING SPECIALTY

GENERAL

AG	ABOVEGROUND
BA1	BURIAL AREA #1
COMM	COMMUNICATION
CPP	CONTROL POWER PANEL
FC	FAIL CLOSED
FO	FAIL OPEN
FOP	FIBER OPTIC
FL	FAIL LAST POSITION
GAL	GALLON
HOA	HAND / OFF / AUTO
INSTR	INSTRUMENT
LSH	LEVEL SWITCH HIGH
LSL	LEVEL SWITCH LOW
MCC	MOTOR CONTROL CENTER
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
OD	OUTER DIAMETER
PB	PUSH BUTTON
PSIG	POUNDS PER SQUARE INCH GAUGE
RTU	REMOTE TERMINAL UNIT
SCFM	STANDARD CUBIC FEET / MINUTE
SCH	SCHEDULE
SP	SET POINT
UG	UNDERGROUND
LO	LOCKED OPEN
O/C	OPEN - CLOSE
QTY	QUANTITY
TYP	TYPICAL
UG	UNDERGROUND
V	VOLT
WA	WESTERN AREA

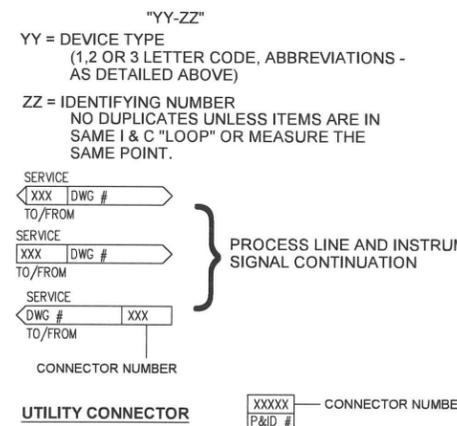
LINE CODES

CPR	COPPER PIPE
CS	CARBON STEEL
HDPE	HIGH-DENSITY POLYETHYLENE PIPE
GLV	GALVANIZED STEEL PIPE
PRH	PRESSURE HOSE
PVC	POLYVINYL CHLORIDE PIPE
DIP	DUCTILE IRON PIPE
SS	STAINLESS STEEL

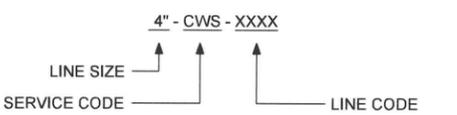
SERVICE CODES

CA	COMPRESSED AIR
EGW	EFFLUENT WATER
EXH	EXHAUST
EVP	EFFLUENT VAPOR
GW	GROUNDWATER
IGW	INFLUENT GROUNDWATER
INW	INFLUENT WATER
IVP	INFLUENT VAPOR
PRD	PRODUCT
VNT	VENT

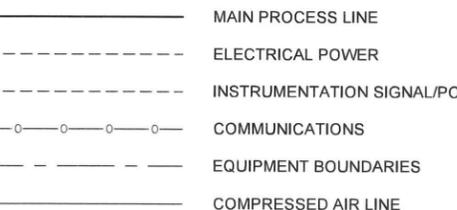
TAG NUMBERS



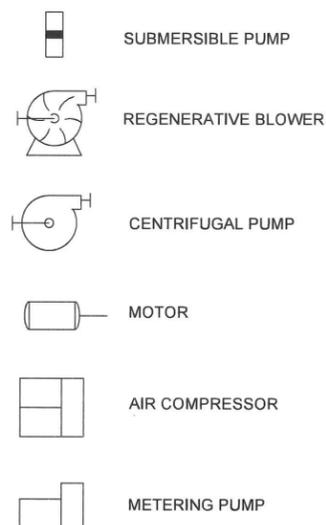
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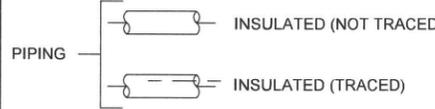
LINE DESIGNATION



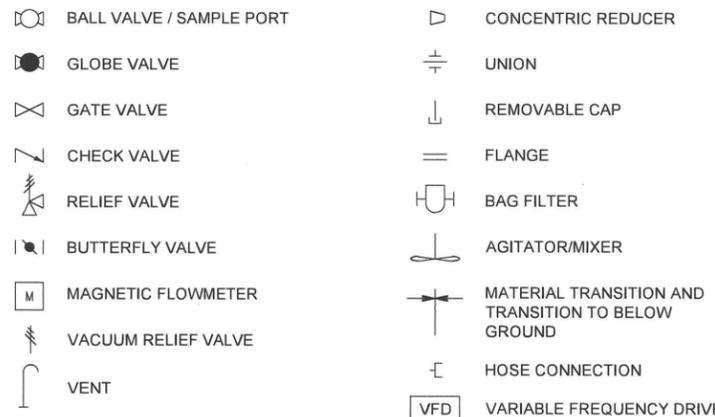
EQUIPMENT



INSULATION IDENTIFICATION



PIPING AND VALVE SYMBOLS



INSTRUMENTATION AND CONTROL LEGEND

LOCATION/ACCESSIBILITY	DISCRETE INSTRUMENTS	PLC	DISCRETE HARDWARE INTERLOCK
FIELD MOUNTED 1. FIELD OR LOCALLY MOUNTED. 2. ACCESSIBLE TO AN OPERATOR AT DEVICE.			
PRIMARY LOCATION NORMALLY ACCESSIBLE TO AN OPERATOR 1. CENTRAL OR MAIN CONTROL ROOM. 2. FRONT OF MAIN PANEL OR CONSOLE MOUNTED. 3. VISIBLE ON VIDEO DISPLAY. 4. ACCESSIBLE TO AN OPERATOR AT DEVICE OR CONSOLE.			

FIRST LETTER	SUCCEEDING LETTERS			
	MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION
A	ANALYSIS		ALARM	
B	BURNER, FLAME, COMBUSTION		USER'S CHOICE	USER'S CHOICE
C	USER'S CHOICE (TYPICALLY CONDUCTIVITY - ELECTRICAL)			CONTROL
D	USER'S CHOICE (TYPICALLY DENSITY OR SPECIFIC GRAVITY)	DIFFERENTIAL		
E	VOLTAGE		SENSOR (PRIMARY ELEMENT)	
F	FLOW RATE	RATIO (FRACTION)		
G	USER'S CHOICE OR GAUGING (DIMENSIONAL)		GLASS, VIEWING DEVICE	
H	HAND			HIGH
I	CURRENT (ELECTRICAL)		INDICATE	
J	POWER	SCAN		
K	TIME, TIME SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION
L	LEVEL		LIGHT	LOW
M	USER'S CHOICE (TYPICALLY MOISTURE OR HUMIDITY)	MOMENTARY		MIDDLE, INTERMEDIATE
N	USER'S CHOICE		USER'S CHOICE	USER'S CHOICE
O	USER'S CHOICE		ORIFICE, RESTRICTION	OPEN
P	PRESSURE, VACUUM		POINT (TEST) CONNECTION	
Q	QUANTITY OR HEAT DUTY	INTEGRATE, TOTALIZE		
R	RADIATION		RECORD	
S	SPEED, FREQUENCY	SAFETY		SWITCH
T	TEMPERATURE		TRANSMIT	THROUGH
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION
V	VIBRATION, MECHANICAL ANALYSIS			VALVE, DAMPER, LOUVER
W	WEIGHT, FORCE		WELL	
X	UNCLASSIFIED	X AXIS	UNCLASSIFIED	UNCLASSIFIED
Y	EVENT, STATE OR PRESENCE	Y AXIS		RELAY, COMPUTE, CONVERT
Z	POSITION, DIMENSION	Z AXIS		DRIVER, ACTUATOR, UNCLASSIFIED FINAL CONTROL ELEMENT

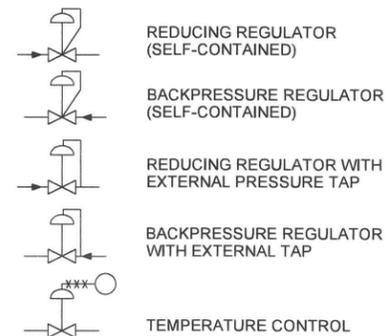
INSTRUMENT IDENTIFICATION (TYPICAL ALL INSTRUMENTS)



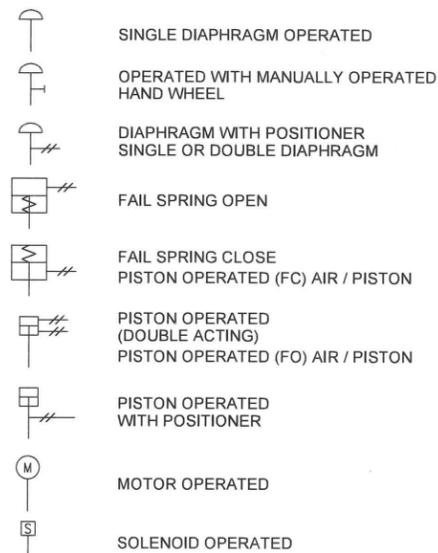
GENERAL NOTES

- LEGEND IS GENERAL IN NATURE AND MAY INDICATE MORE INFORMATION THAN IS APPLICABLE TO PROJECT. SEE PROJECT PLANS FOR SPECIFIC NOTES, SPECIFICATIONS, SYMBOLS, AND ABBREVIATIONS.
- MECHANICAL EQUIPMENT AND APPURTENANCES SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS, CONTRACT DOCUMENTS, INTERNATIONAL MECHANICAL AND PLUMBING CODES, AND APPLICABLE CODES AND REGULATIONS.
- ALL MECHANICAL EQUIPMENT SHALL BE LOCATED FOR UNOBSTRUCTED ACCESS TO UNIT ACCESS PANELS, CONTROLS, AND VALVING.

SELF ACTUATED VALVES



ACTUATORS



SINGLE LINE PIPING



no.	date	by	ckd	description
A	02/04/21	EAA	JRH	ISSUED FOR PRELIMINARY DESIGN

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9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
OKLAHOMA FIRM LICENSEE NO. 421

date	detailed
FEBRUARY 2021	E. AHLEMEYER
designed	checked
E. DULLE	J. HESEMANN

Cimmaron Environmental Response Trust
P&ID NOTES AND LEGEND

project	120832	contract	
drawing	BMCD-GWREMED-P001	rev.	A
sheet	1	of	11 sheets
file	P001.DWG		

STANDARD ELECTRICAL LEGEND

no.	date	by	ckd	description
A	03/31/20	ACH	SJD	ISSUED FOR 90% DESIGN

POWER	
	NON-FUSED DISCONNECT. SUBSCRIPT DENOTES AMPERE FRAME RATING AND NUMBER OF POLES. MH 4'-0" AFF UNLESS OTHERWISE NOTED.
	FUSED DISCONNECT. SUBSCRIPT DENOTES FUSE RATING AND NUMBER OF POLES.
	COMBINATION MOTOR STARTER. SUBSCRIPT DENOTES AMPERE FRAME RATING, POLES AND NEMA STARTER SIZE. MH 4'-0" AFF UNLESS OTHERWISE NOTED.
	CONTACTOR. SUBSCRIPT DENOTES AMPERE RATING AND NUMBER OF POLES. MH 4'-0" AFF UNLESS OTHERWISE NOTED
	MOTOR STARTER. MH 4'-0" AFF UNLESS OTHERWISE NOTED
	JUNCTION BOX
	CONDUIT TURNING UP
	CONDUIT TURNING DOWN
	CONDUIT CAPPED
	CONDUIT TEE
	CONDUIT COUPLING
	CONTROL OR POWER PANEL
	MANHOLE OR HANDHOLE PULL BOX
	ELECTRIC HEAT TRACING
	TRANSFORMER (T)
	ELECTRICAL PANELBOARD INSERT DENOTES PANEL NAME CONTROL POWER PANEL: CPP POWER OR DISTRIBUTION PANEL: PP, DP SWITCHGEAR: SG AUTOMATIC TRANSFER SWITCH: ATS PRE-WIRED CONTROL PANEL: PWCP PROGRAMMABLE LOGIC CONTROLLER: PLC

GROUNDING	
	GROUNDING CONDUCTOR BURIED OR CONCEALED
	GROUNDING CONDUCTOR EXPOSED
	LIQUID FLEXIBLE METAL CONDUIT
	WELDED GROUND CONNECTION
	COMPRESSION/BOLTED GROUND CONNECTION
	GROUND ROD - Ø3/4" x 10', COPPER CLAD
	GROUND TEST WELL
	PIGTAIL FOR EQUIPMENT/ STRUCTURE CONNECTION
	18" LIGHTNING AIR TERMINAL

MISCELLANEOUS	
	LEVEL TRANSMITTER
	TEMPERATURE TRANSMITTER
	THERMOSTAT
	PUMP
	TEMPERATURE INDICATOR
	TERMINAL BOX
	LEVEL INDICATOR
	FLOW METER
	FLOW TRANSMITTER
	PRESSURE TRANSMITTER
	PRESSURE SWITCH
	FLOW SWITCH
	LEVEL SWITCH
	EQUIPMENT TAG CALL OUT
	KEYED NOTE

ONE-LINE DIAGRAMS	
	DISCONNECT SWITCH, FUSED 30 = FRAME RATING 3P = POLES (20A) = FUSE AMPERE RATING
	DISCONNECT SWITCH, NON-FUSED 30 = FRAME RATING 3 = POLES
	MOLDED CASE CIRCUIT BREAKER OR MOTOR CIRCUIT PROTECTOR 15 = TRIP RATING (20) = FRAME RATING
	MOTOR # = MOTOR TAG 1 = HORSEPOWER (HP)
	GENERATOR
	AUTOMATIC TRANSFER SWITCH
	TRANSFORMER RATING 150 KVA
	GROUNDING WYE CONNECTED
	DELTA CONNECTED
	MOTOR STARTER AND OVERLOAD 0 - STARTER SIZE
	ELECTRIC HEATER
	UTILITY METER
	TRANSIENT VOLTAGE SURGE SUPPRESSION
	ELECTRICAL CABLE INSERT DENOTES CABLE NUMBER POWER: P CONTROL: C
	VARIABLE FREQUENCY DRIVE 1 = HORSEPOWER RATING (3R) = NEMA RATING
	FLOW TRANSMITTER
	ELECTRICAL TRANSITION VAULT E = ELECTRICAL VT = VAULT E-1 = TAG
	COMMUNICATION TRANSITION VAULT C = ELECTRICAL VT = VAULT C-1 = TAG
	PANELBOARD PP-1 = PP - PANELBOARD; 1-TAG [480] = VOLTAGE 1PH, 200A 3W = PHASE, BUS SIZE (AMP) WIRE CONFIGURATION 18kA = SHORT CIRCUIT CURRENT RATING MLO = MAIN LUG ONLY
	PANELBOARD PP-1 = PP - PANELBOARD; 1-TAG [480] = VOLTAGE 1PH, 200A 3W = PHASE, BUS SIZE (AMP) WIRE CONFIGURATION 18kA = SHORT CIRCUIT CURRENT RATING MCB = MAIN CIRCUIT BREAKER, [AMP RATING]
	PANELBOARD PP-1 [480] 1PH, 200A 3W 18kA MLO
	PANELBOARD PP-1 [480] 1PH, 200A 3W 18kA MCB [100A]

ELECTRICAL CALLOUT SYMBOLS

ONE OR TWO CHARACTER DISCIPLINE DESIGNATOR (MAY NOT BE PRESENT IF CALLOUT AND TITLE ARE ON DRAWINGS WITHIN THE SAME DISCIPLINE)

LETTER OR NUMBER DESIGNATOR

DRAWING SEQUENCE NUMBER INDICATES WHERE TITLE IS LOCATED (MAY NOT BE PRESENT IF CALLOUT AND TITLE ARE ON THE SAME DRAWING)

SECTION, DETAIL, AND ELEVATION SYMBOL IDENTIFIERS

THE WORD "SECTION" MAY BE REPLACED WITH "ELEVATION" OR "DETAIL"

SECTION, DETAIL, OR ELEVATION TITLE EXAMPLE

SECTION CALLOUT EXAMPLE

ELEVATION CALLOUT EXAMPLE

DETAIL CALLOUT EXAMPLE

SECTION, DETAIL, AND ELEVATION IDENTIFICATION SYSTEM

ELECTRICAL ABBREVIATIONS	
A	- AMPERE, AMP
AC	- AIR CONDITION
AF	- AMP FRAME
AFF	- ABOVE FINISHED FLOOR
AFG	- ABOVE FINISHED GRADE
A.I.	- ANALOG INPUT
ANLZ.	- ANALYZER
AT	- AMP TRIP
ATS	- AUTOMATIC TRANSFER SWITCH
APPROX	- APPROXIMATELY
BFG	- BELOW FINISHED GRADE
BOD	- BOTTOM OF DUCT
B	- BUZZER
C	- CONDUIT
CKT	- CIRCUIT
CL2	- CHLORINE
CONT	- CONTINUATION
CNTL	- CONTROL
CPP	- CONTROL POWER PANEL
CPU	- COMPUTER
CR	- CONTROL RELAY
DED	- DEDICATED
DCS	- DISTRIBUTED CONTROL SYSTEM
DIST	- DISTRIBUTION
DIV	- DIVISION
EC	- ELECTRICAL CONTRACTOR
ELEC	- ELECTRICAL
EM	- STANDBY, ALTERNATE POWER CIRCUIT
EMT	- ELECTRICAL METAL TUBING
ENCL	- ENCLOSURE
F	- FUSE
GD	- GRADE
G	- GROUND
GFI	- GROUND FAULT INTERRUPTER
GL	- GROUND LUG
GND	- GROUND
ID	- INSIDE DIAMETER
I/O	- INPUT / OUTPUT
KVA	- KILOVOLT AMPERE
KV	- KILOVOLT
KW	- KILOWATT
LFMC	- LIQUID TIGHT FLEX METAL CONDUIT
M	- MAGNETIC CONTACTOR
MAX	- MAXIMUM
MCB	- MOLDED CASE CIRCUIT BREAKER/MAIN
MCC	- MOTOR CONTROL CENTER
MCP	- MOTOR CIRCUIT PROTECTOR
MLO	- MAIN LUG ONLY
MIN	- MINIMUM
MPS	- MOTOR PROTECTION SWITCH
N2	- NITROGEN
NEC	- NATIONAL ELECTRIC CODE
NF	- NON FUSED
OD	- OUTSIDE DIAMETER
OEM	- ORIGINAL EQUIPMENT MANUFACTURER
P	- POLE
PC	- POWER CONNECTION BOX
PH	- PHASE
PLC	- PROGRAMMABLE LOGIC CONTROLLER
PP	- POWER PANEL
PVC	- POLYVINYL CHLORIDE
PWR	- POWER
R	- ALARM LIGHT
RGS	- RIGID GALVANIZED STEEL CONDUIT
RX	- RECEIVER
SP	- SPARE
SPD	- SURGE PROTECTIVE DEVICE
SW	- SWITCH
TB	- TERMINAL BLOCK
TEMP	- TEMPERATURE
TOS	- TOP OF STEEL
TYP	- TYPICAL
TX	- TRANSMITTER
UDS	- UTILITY DISTRIBUTION SYSTEM
UPS	- UNINTERRUPTIBLE POWER SUPPLY
UV	- ULTRA-VIOLET
V	- VOLT
VA	- VOLT AMPS
VAC	- VOLTAGE ALTERNATING CURRENT
VDC	- VOLTAGE DIRECT CURRENT
W	- WIRE, WATT
WP	- WEATHERPROOF
XFMR	- TRANSFORMER

INSTRUMENTATION ABBREVIATIONS	
C	- COMMON OR CONDUCTOR
CONC.	- CONCRETE
CR	- CONTROL RELAY
DC	- DIRECT CURRENT
DISC	- DISCONNECT
DWG	- DRAWING
FE	- FLOW ELEMENT
FIN.	- FINISH
FM	- FLOW METER
FT	- FLOW TRANSMITTER
I/O	- INPUT / OUTPUT
LSH	- LEVEL SWITCH HIGH
NC	- NORMALLY CLOSED
NO	- NORMALLY OPEN
NO.	- NUMBER
PT	- PRESSURE TRANSMITTER
PS	- PRESSURE SWITCH
REQ'D	- REQUIRED
TP	- TWISTED PAIR (CABLE)
TSP	- TWISTED SHIELDED PAIR (CABLE)
DC	- DIRECT CURRENT

Scale For Microfilming

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date	MARCH 2020	detailed	A. HIMES
designed	A. HIMES	checked	S. DEFRANCESCO

Cimarron Environmental Response Trust
ELECTRICAL LEGEND & ABBREVIATION

project	120832	contract	
drawing	BMCD-GWREMED-E001	rev.	A
sheet	1	of	14 sheets
file	E001.dwg		

GENERAL NOTES:

1. THESE GENERAL NOTES APPLY TO ALL DRAWINGS UNLESS OTHERWISE NOTED. ALL SYMBOLS AND ABBREVIATIONS SHOWN ARE NOT NECESSARILY USED.
2. THE EXACT LOCATION OF CONDUITS, DEVICES AND EQUIPMENT MAY DEVIATE FROM THE LOCATION INDICATED ON THESE DRAWINGS.
3. SUBCONTRACTOR SHALL FIELD ROUTE CONDUITS TO AVOID INTERFERENCE WITH OTHER EXISTING AND PROPOSED UTILITIES.
4. ALL WORK PERFORMED SHALL CONFORM TO ALL APPLICABLE CODES, INCLUDING BUT NOT LIMITED TO, THE LATEST VERSION OF THE NATIONAL ELECTRIC CODE ADOPTED BY AUTHORITIES HAVING JURISDICTION.
5. LABEL ALL ELECTRICAL EQUIPMENT INCLUDING BUT NOT LIMITED TO SAFETY SWITCHES, MOTOR STARTERS, COMBINATION STARTERS, AND CONTACTORS INSTALLED, WITH DESIGNATIONS AS SHOWN.
6. ABOVE GRADE CONDUIT SHALL BE 1" TRADE SIZE MINIMUM AND SHALL BE RGS TYPE AND BELOW GRADE CONDUIT SHALL BE 1" TRADE SIZE MINIMUM AND SHALL BE PVC (SCH 80), UNLESS OTHERWISE NOTED.
7. ALL 600 VOLT POWER WIRING SHALL BE TYPE XHHW-2 SINGLE CONDUCTOR IN CONDUIT ONLY. ALL CONTROL WIRING SHALL BE MINIMUM #14 AWG MULTI-CONDUCTOR TYPE XLPE. ALL INSTRUMENTATION WIRING SHALL BE #18 AWG MULTI-CONDUCTOR TYPE XLPE SHIELDED PAIRS UNLESS OTHERWISE STATED.
8. MINIMUM CONDUCTOR SIZE FOR 480 VOLT POWER CIRCUITS SHALL BE #10 AWG. MINIMUM CONDUCTORS SIZE FOR POWER AND LIGHTING CIRCUITS LESS THAN 480 VOLT SHALL BE #12 AWG.
9. PULL A GROUND WIRE TO EACH DEVICE AND PIECE OF EQUIPMENT. ALL EQUIPMENT AND DEVICES SHALL BE GROUNDED ACCORDING TO ARTICLE 250 OF THE NEC.
10. ALL CIRCUIT BREAKERS SHALL BE 15 AMP MIN, UNLESS OTHERWISE NOTED.
11. ELECTRICAL SUBCONTRACTOR IS RESPONSIBLE FOR MAKING FINAL ELECTRICAL CONNECTIONS TO ALL EQUIPMENT INSTALLED AND/OR RELOCATED, UNLESS OTHERWISE STATED ON THE DRAWING. SPECIFICALLY STATEMENT OF WORK FOR WESTERN AREA TREATMENT FACILITY STOPS AT DEMARCATION VAULT FOR SOURCE POWER, REFERENCE DRAWINGS E101 AND E102.
12. SIZE JUNCTION AND PULL BOXES PER NATIONAL ELECTRICAL CODE, UNLESS OTHERWISE NOTED.



no.	date	by	ckd	description
A	03/31/20	ACH	SJD	ISSUED FOR 90% DESIGN

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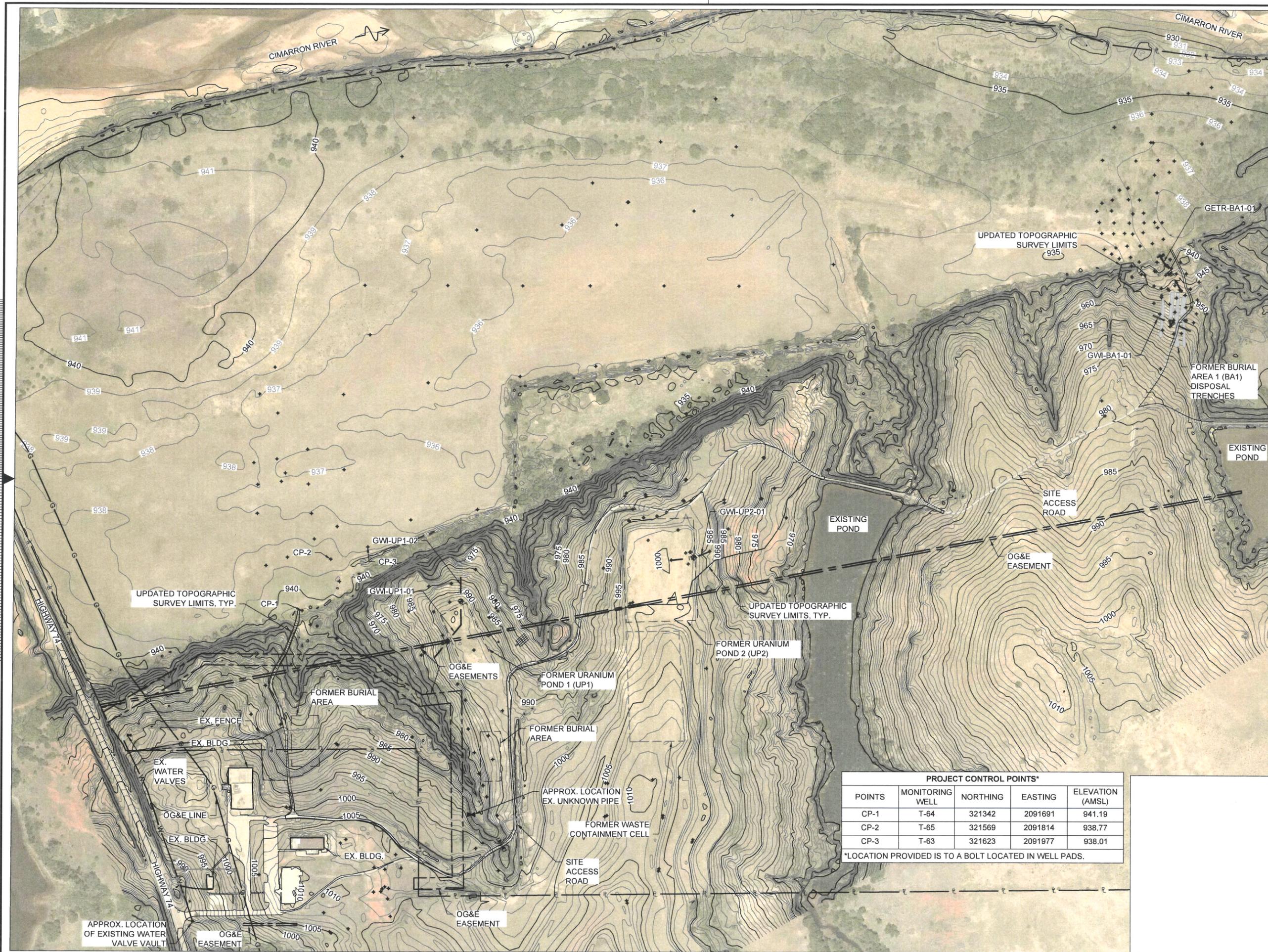


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date	detailed
MARCH 2020	A. HIMES
designed	checked
A. HIMES	S. DEFRANCESCO

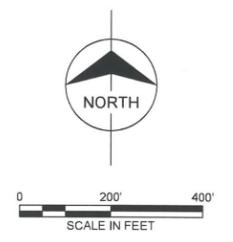
Cimarron Environmental Response Trust
 ELECTRICAL GENERAL NOTES

project	120832	contract	
drawing	BMCD-GWREMED-E002	rev.	A
sheet	2	of	14 sheets
file	E002.dwg		



Scale For Microfilming
 Millimeters
 Inches

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A	3/31/20	BCW	RTB	ISSUED FOR 90% DESIGN



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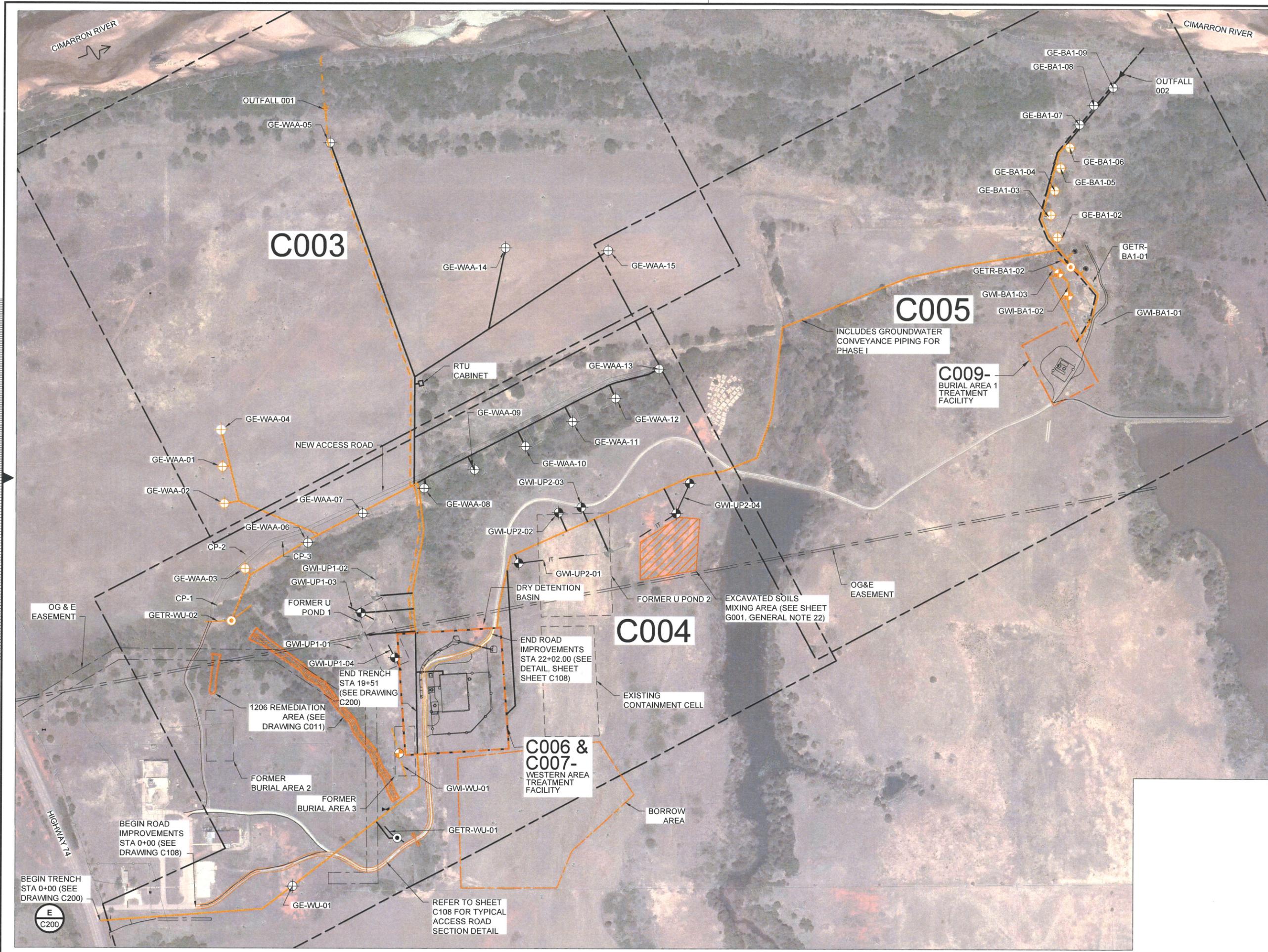
date	detailed
MARCH 2020	T. COLLINS
designed	checked
B. WEIS	R. BETTMENG

PROJECT CONTROL POINTS*				
POINTS	MONITORING WELL	NORTHING	EASTING	ELEVATION (AMSL)
CP-1	T-64	321342	2091691	941.19
CP-2	T-65	321569	2091814	938.77
CP-3	T-63	321623	2091977	938.01

*LOCATION PROVIDED IS TO A BOLT LOCATED IN WELL PADS.

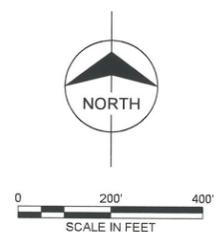
Cimarron Environmental Response Trust
 EXISTING CONDITIONS

project	contract
120832	-
drawing	rev.
BMCD-GWREMED-C001	A
sheet 4 of 32 sheets	
file C001 EXST COND.DWG	



no.	date	by	ckd	description
A	2/22/21	EAA	JRH	ISSUED FOR PRELIMINARY DESIGN

- NOTE:**
- PIPE & CONDUIT ALIGNMENT SHOWN REPRESENTS THE CENTERLINE OF TRENCH WHICH MAY CONTAIN WATER SUPPLY PIPES, GROUNDWATER INJECTION SUPPLY PIPES, GROUNDWATER EXTRACTION PIPES, DISCHARGE PIPING, ELECTRICAL POWER SUPPLY CABLE CONDUITS, FIBER OPTIC CONDUITS, AND COMMUNICATION CABLE CONDUITS, AS DETAILED. SEE SHEETS C003-C008 FOR INDIVIDUAL PIPE AND CABLE RUNS.
 - ORANGE COLOR DEPICTS PHASE I CONSTRUCTION.



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date	FEBRUARY 2021	detailed	E. AHLEMEYER
designed	B. WEIS	checked	J. HESEMANN

Cimarron Environmental Response Trust
 OVERALL SITE PLAN AND SHEET LAYOUT KEY

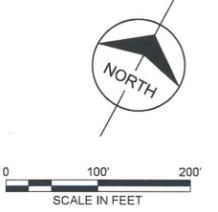
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drawing	BMCD-GWREMED-C002	rev.	A
sheet	5	of	32 sheets
file	C002 OVERALL SITE PLAN.DWG		

Scale For Microfilming
 Millimeters
 Inches



no.	date	by	ckd	description
A	2/16/21	EAA	JRH	ISSUED FOR PRELIMINARY DESIGN

- NOTES:**
- PIPE AND CONDUIT LINE SPACING HAS BEEN EXAGGERATED FOR CLARITY IN PARTIAL SITE PLANS. REFER TO TRENCH SECTION DETAILS FOR TYPICAL PIPE AND CONDUIT SPACING. FIELD ADJUSTMENTS OF TRENCH ROUTING TO AVOID CONFLICTS SHALL BE APPROVED BY ENGINEER.
 - REFER TO MECHANICAL AND ELECTRICAL SHEETS FOR DETAILS REGARDING APPLICABLE SITE PLAN COMPONENTS.
 - PROVIDE PULL BOXES EVERY 500' (MAX.) FOR ELECTRICAL AND INSTRUMENTATION CABLES.
 - INSTALL AIR RELEASE VALVES AT THE HIGH POINTS ON ALL PRESSURE WATER PIPE SYSTEMS. SEE AIR RELEASE VALVE DETAIL, SHEET C108.



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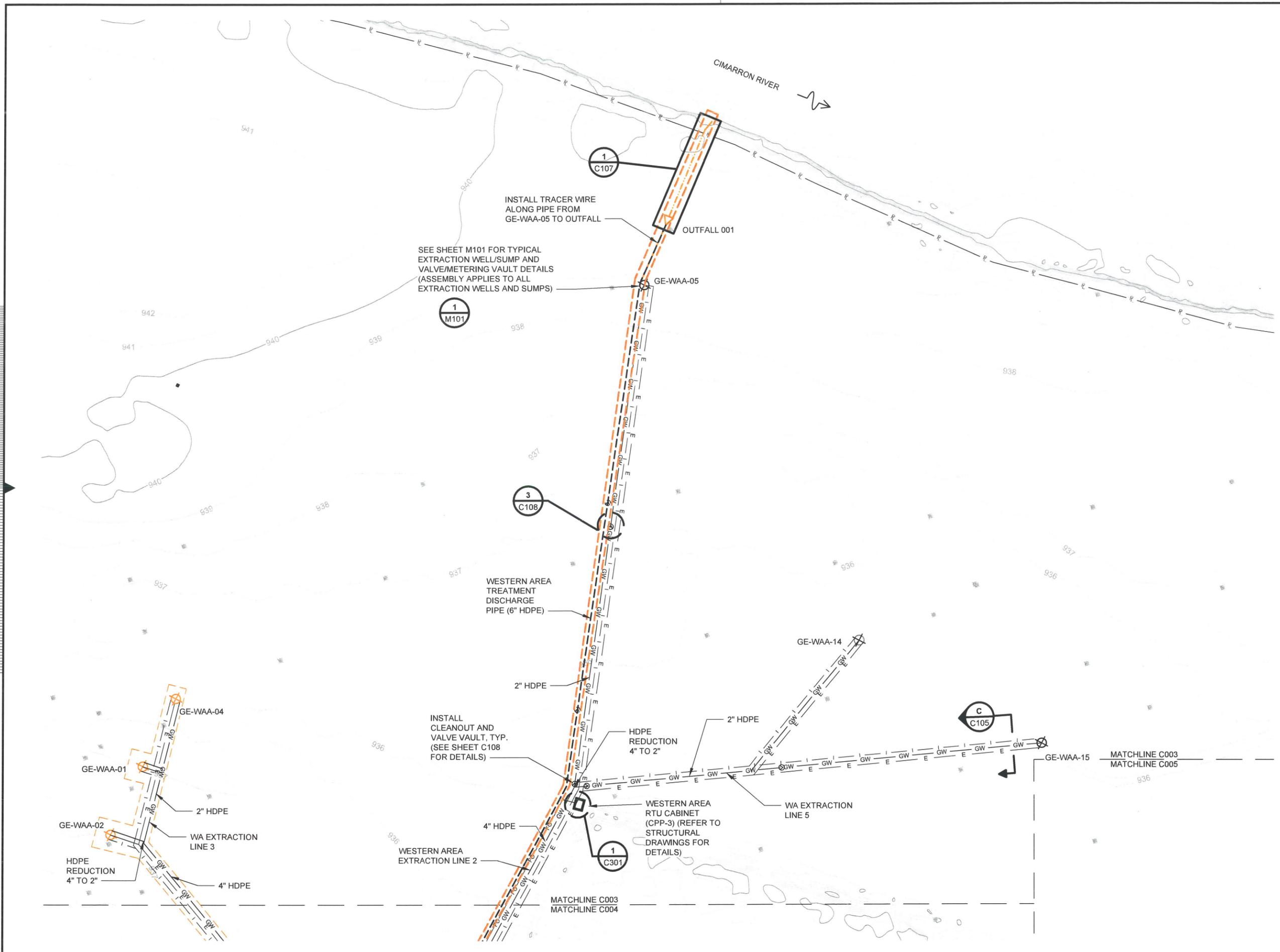


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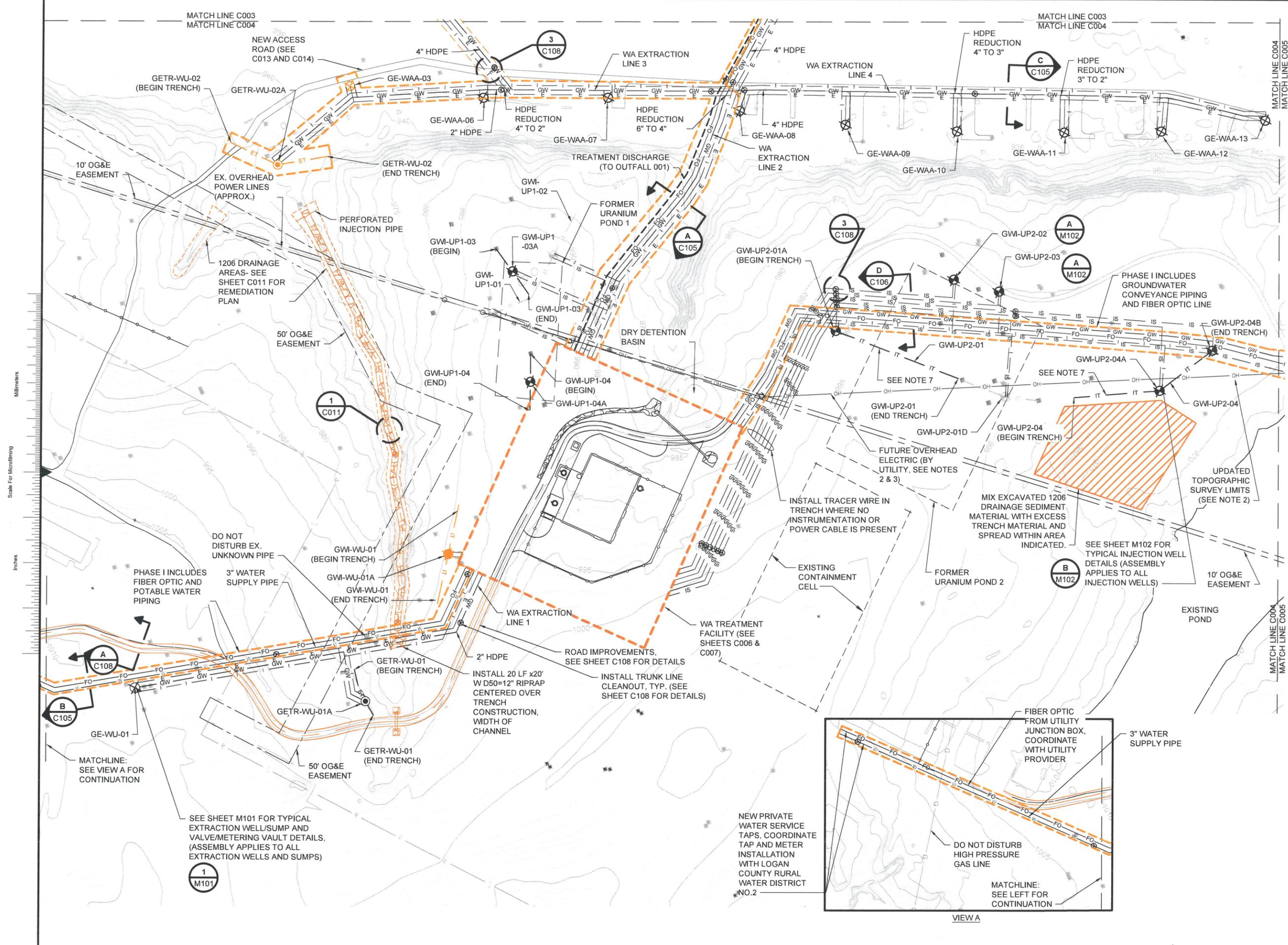
date	designed	detailed	checked
FEBRUARY 2021	B. WEIS	E. AHLEMEYER	J. HESEMANN

Cimarron Environmental Response Trust
PARTIAL SITE PLAN - NORTH

project	contract
120832	-
drawing	rev.
BMCD-GWREMED-C003	A
sheet 6	of 32 sheets
file C003 PART SITE - N.DWG	

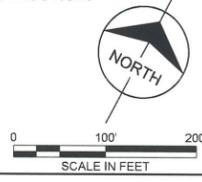


Scale For Microfilming
Inches
Millimeters



no.	date	by	ckd	description
A	2/22/21	EAA	JRH	ISSUED FOR PRELIMINARY DESIGN

- NOTES:**
- PIPE AND CONDUIT LINE SPACING HAS BEEN EXAGGERATED FOR CLARITY IN PARTIAL SITE PLANS, REFER TO TRENCH SECTION DETAILS FOR TYPICAL PIPE AND CONDUIT SPACING. FIELD ADJUSTMENTS OF PIPE ALIGNMENTS TO AVOID CONFLICTS SHALL BE APPROVED BY THE ENGINEER.
 - SUBCONTRACTOR SHALL CLEAR 15 FEET EACH SIDE ALONG FUTURE OVERHEAD POWER LINE ALIGNMENT.
 - FUTURE OVERHEAD POWER LINE EASEMENT HAS BEEN PRELIMINARILY APPROVED BY UTILITY (30' TOTAL WIDTH ALONG THE ALIGNMENT SHOWN).
 - REFER TO SHEETS C101-C104 FOR EXTRACTION AND INJECTION TRENCH DETAILS.
 - REFER TO MECHANICAL AND ELECTRICAL SHEETS FOR DETAILS REGARDING APPLICABLE SITE PLAN COMPONENTS.
 - PROVIDE PULL BOXES EVERY 500' (MAX.) FOR ELECTRICAL AND INSTRUMENTATION CONDUITS.
 - IMPERVIOUS TRENCH BARRIER SHALL BE INSTALLED ON THE SOUTH FACE OF GWI-UP2-01 AND ON THE SOUTH / SOUTHEAST FACE OF GWI-UP2-04.
 - INSTALL AIR RELEASE VALVES AT THE HIGH POINTS ON ALL PRESSURE WATER PIPE SYSTEMS. SEE AIR RELEASE VALVE DETAIL, SHEET C108.
 - REPAIR OR REPLACE ANY EXISTING FENCING THAT IS DAMAGED DURING CONSTRUCTION ACTIVITIES.
 - SUBCONTRACTOR SHALL INSTALL STRAW WATTLES DOWN GRADIENT OF ALL DISTURBED AREAS, INCLUDING TRENCHED AREAS.
 - NUMBER AND SIZE OF GROUNDWATER EXTRACTION CONVEYANCE LINES RUNNING FROM THE WAA TO THE WATF IS SUBJECT TO CHANGE DURING PHASE I 90% DESIGN.
 - ORANGE COLOR DEPICTS PHASE I CONSTRUCTION.



PRELIMINARY - NOT FOR CONSTRUCTION

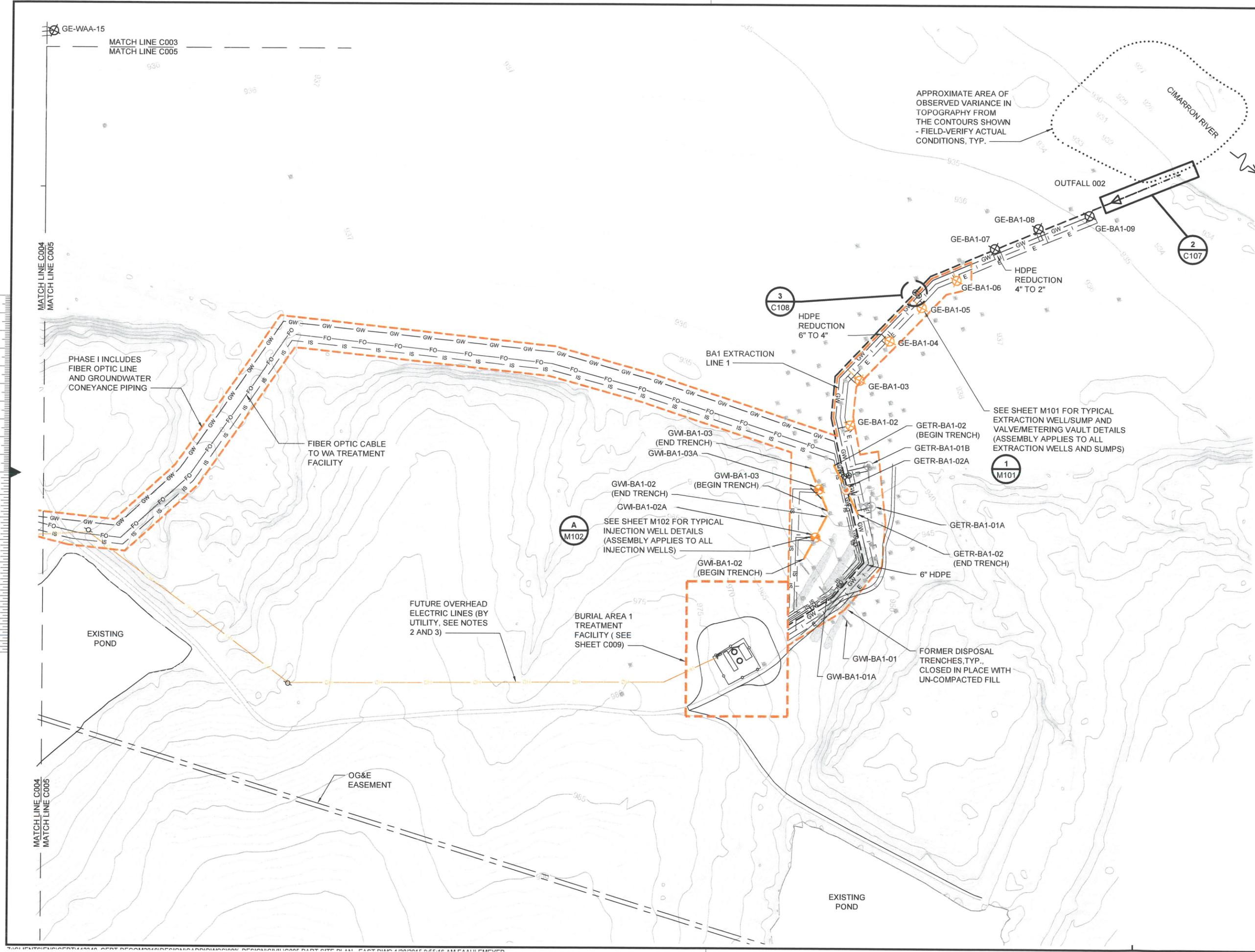


9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
OKLAHOMA FIRM LICENSEE NO. 421

date	detailed
FEBRUARY 2021	E. AHLEMEYER
designed	checked
B. WEIS	J. HESEMANN

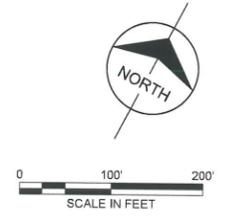
Cimarron Environmental Response Trust
PARTIAL SITE PLAN - SOUTH

project	contract
120832	-
drawing	rev.
BMCD-GWREMEDI-C004	A
sheet 7 of 32 sheets	file C004 PART SITE PLAN - SOUTH.DWG



no.	date	by	ckd	description
A	2/22/21	EAA	JRH	ISSUED FOR PRELIMINARY DESIGN

- NOTES:**
1. PIPE AND CONDUIT LINE SPACING HAS BEEN EXAGGERATED FOR CLARITY IN PARTIAL SITE PLANS, REFER TO TRENCH SECTION DETAILS FOR TYPICAL PIPE AND CONDUIT SPACING. FIELD ADJUSTMENTS TO AVOID CONFLICTS SHALL BE APPROVED BY THE ENGINEER.
 2. SUBCONTRACTOR SHALL CLEAR 15 FEET EACH SIDE ALONG FUTURE OVERHEAD POWER LINE ALIGNMENT.
 3. FUTURE OVERHEAD POWER LINE EASEMENT HAS BEEN PRELIMINARILY APPROVED BY UTILITY (30' TOTAL WIDTH ALONG THE ALIGNMENT SHOWN).
 4. REFER TO SHEETS C101-C104 FOR EXTRACTION AND INJECTION TRENCH DETAILS.
 5. REFER TO MECHANICAL AND ELECTRICAL SHEETS FOR DETAILS REGARDING APPLICABLE SITE PLAN COMPONENTS.
 6. PROVIDE PULL BOXES EVERY 500' (MAX.) FOR ELECTRICAL AND INSTRUMENTATION CONDUITS.
 7. INSTALL AIR RELEASE VALVES AT THE HIGH POINTS ON ALL PRESSURE WATER PIPE SYSTEMS. SEE AIR RELEASE VALVE DETAIL, SHEET C108.
 8. DO NOT DISTURB EXISTING MONITOR WELLS WITHOUT APPROVAL BY OWNER AND CONTRACTOR.
 9. ORANGE OUTLINE DEPICTS PHASE I CONSTRUCTION.



PRELIMINARY - NOT FOR CONSTRUCTION



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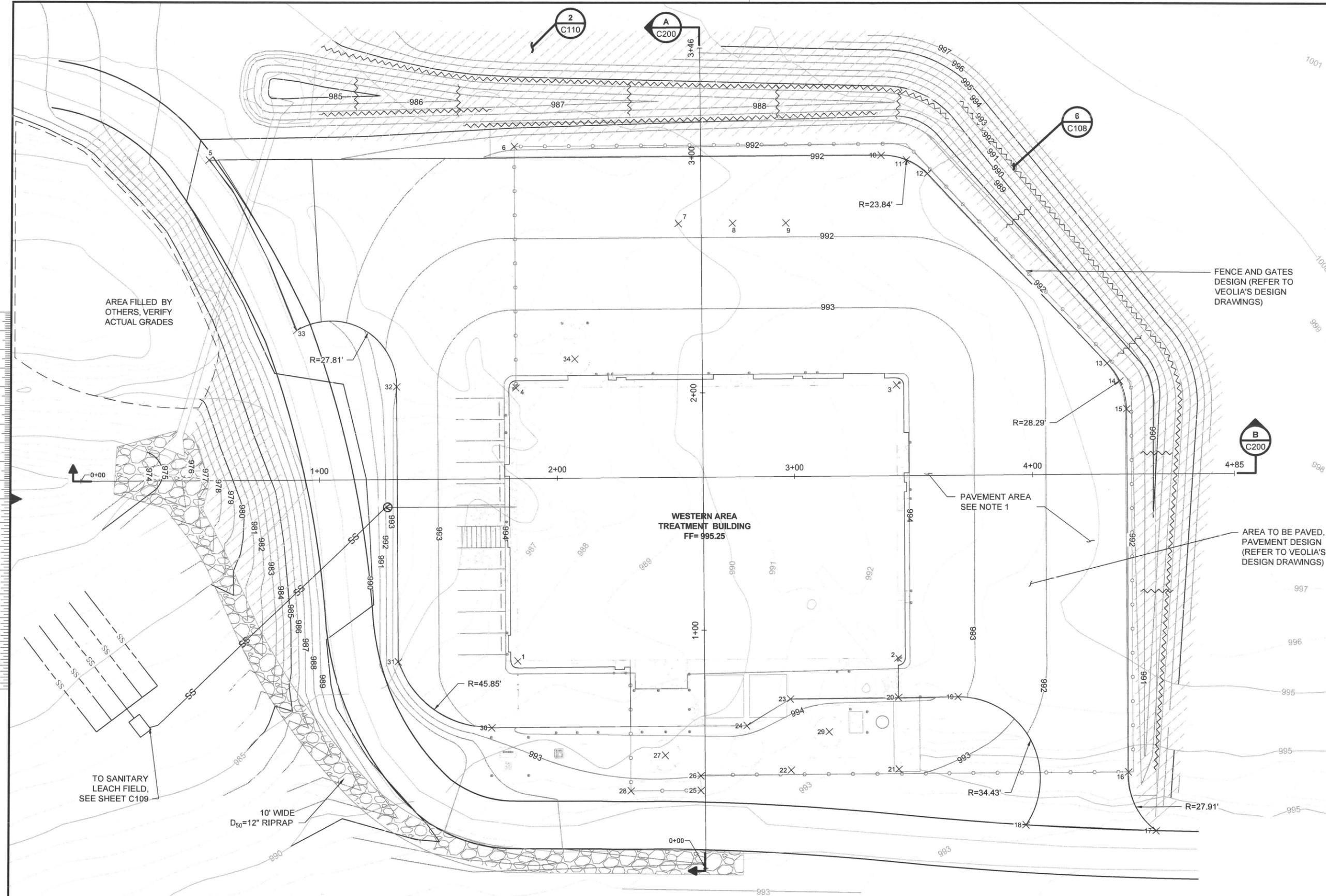
date	detailed
FEBRUARY 2021	E. AHLEMEYER
designed	checked
B. WEIS	J. HESEMANN

Cimarron Environmental Response Trust
PARTIAL SITE PLAN - EAST

project	contract
120832	-
drawing	rev.
BMCD-GWREMEDIATION-C005	A
sheet 8 of 32 sheets	
file C005 PART SITE PLAN - EAST.DWG	

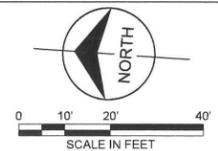
no.	date	by	ckd	description
A	2/16/21	EAA	JRH	ISSUED FOR PRELIMINARY DESIGN

- NOTES:**
- PAVEMENT TO BE SPECIFIED BY OTHERS. GRADES SHOWN WITHIN PAVEMENT AREA REPRESENT PAVEMENT SUBGRADE SURFACE (9.8" LOWER THAN FINISHED, PAVED SURFACE). REFER TO VNSFS DESIGN DRAWINGS FOR PAVEMENT DETAILS.
 - FOUNDATION LOCATIONS AND DIMENSIONS ARE APPROXIMATE. REFER TO VNSFS DESIGN DRAWINGS FOR FOUNDATION DETAILS.
 - CONTRACTOR SHALL APPROVE SUBGRADE PRIOR TO PAVEMENT CONSTRUCTION.



Scale For Microfilming
Millimeters
Inches

WESTERN AREA TREATMENT FACILITY GRADING PLAN AND LAYOUT



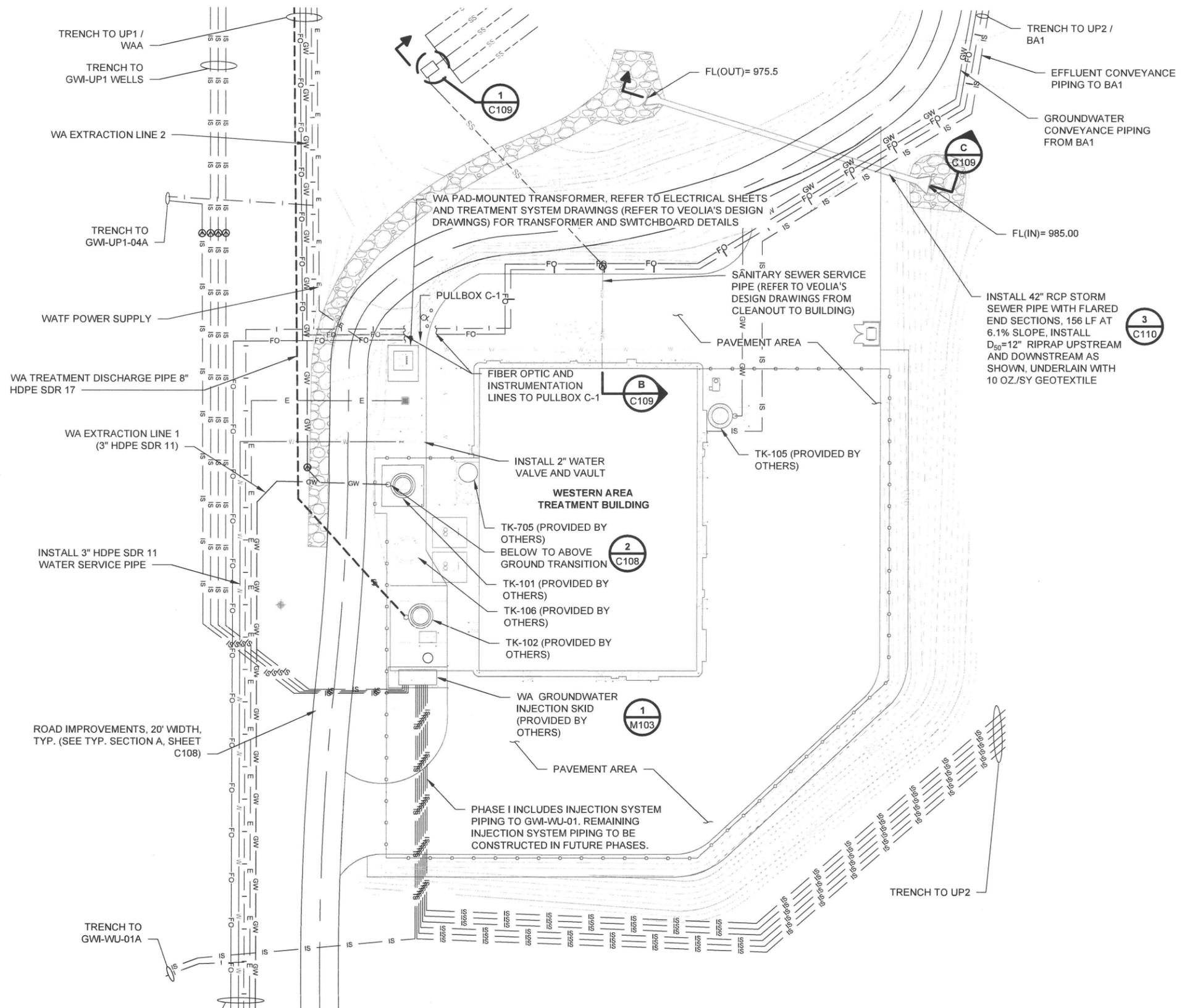
PRELIMINARY - NOT FOR CONSTRUCTION



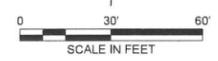
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
OKLAHOMA FIRM LICENSEE NO. 421

date	designed	detailed
FEBRUARY 2021	B. WEIS	E. AHLEMEYER
	checked	
	J. HESEMANN	

Cimarron Environmental Response Trust	
WESTERN AREA TREATMENT FACILITY GRADING PLAN AND LAYOUT	
project	contract
120832	-
drawing	rev.
BMCD-GWREMED-C006	A
sheet 9	of 32 sheets
file C006 WATF FAC GRADE PLAN.DWG	



WESTERN AREA TREATMENT FACILITY
SITE PLAN



no.	date	by	ckd	description
A	2/16/21	EAA	JRH	ISSUED FOR PRELIMINARY DESIGN

- NOTES:**
- PIPE AND CONDUIT LINE SPACING HAS BEEN EXAGGERATED FOR CLARITY IN PARTIAL SITE PLANS. REFER TO TRENCH SECTION DETAILS FOR TYPICAL PIPE AND CONDUIT SPACING. FIELD ADJUSTMENTS OF PIPE ALIGNMENTS TO AVOID CONFLICTS SHALL BE APPROVED BY THE ENGINEER.
 - SUBCONTRACTOR SHALL CLEAR 15 FEET EACH SIDE ALONG FUTURE OVERHEAD POWER LINE ALIGNMENT.
 - FUTURE OVERHEAD POWER LINE EASEMENT HAS BEEN PRELIMINARILY APPROVED BY UTILITY (30' TOTAL WIDTH ALONG THE ALIGNMENT SHOWN).
 - REFER TO MECHANICAL AND ELECTRICAL SHEETS FOR DETAILS REGARDING APPLICABLE SITE PLAN COMPONENTS.
 - REFER TO SHEETS C101-C104 FOR EXTRACTION AND INJECTION TRENCH DETAILS.
 - PROVIDE PULL BOXES EVERY 500' (MAX.) FOR ELECTRICAL AND INSTRUMENTATION CONDUITS.
 - REFER TO C006 AND C008 FOR FUTURE GRADING OF FACILITY AREAS.

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date	detailed
FEBRUARY 2021	E. AHLEMEYER
designed	checked
B. WEIS	J. HESEMANN

Cimarron Environmental Response Trust
WESTERN AREA TREATMENT FACILITY SITE PLAN

project	contract
120832	-
drawing	rev.
BMCD-GWREMEDI-C007	A
sheet 10	of 32 sheets
file C007 W AREA TREAT FAC SITE.DWG	

no.	date	by	ckd	description
A	3/31/20	BCW	RTB	ISSUED FOR 90% DESIGN

- NOTES:**
- PIPE AND CONDUIT LINE SPACING HAS BEEN EXAGGERATED FOR CLARITY IN PARTIAL SITE PLANS. REFER TO TRENCH SECTION DETAILS FOR TYPICAL PIPE AND CONDUIT SPACING. FIELD ADJUSTMENTS OF PIPE ALIGNMENTS TO AVOID CONFLICTS SHALL BE APPROVED BY THE ENGINEER.
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 - REFER TO C006 AND C008 FOR FUTURE GRADING OF FACILITY AREAS.

PRELIMINARY - NOT FOR CONSTRUCTION

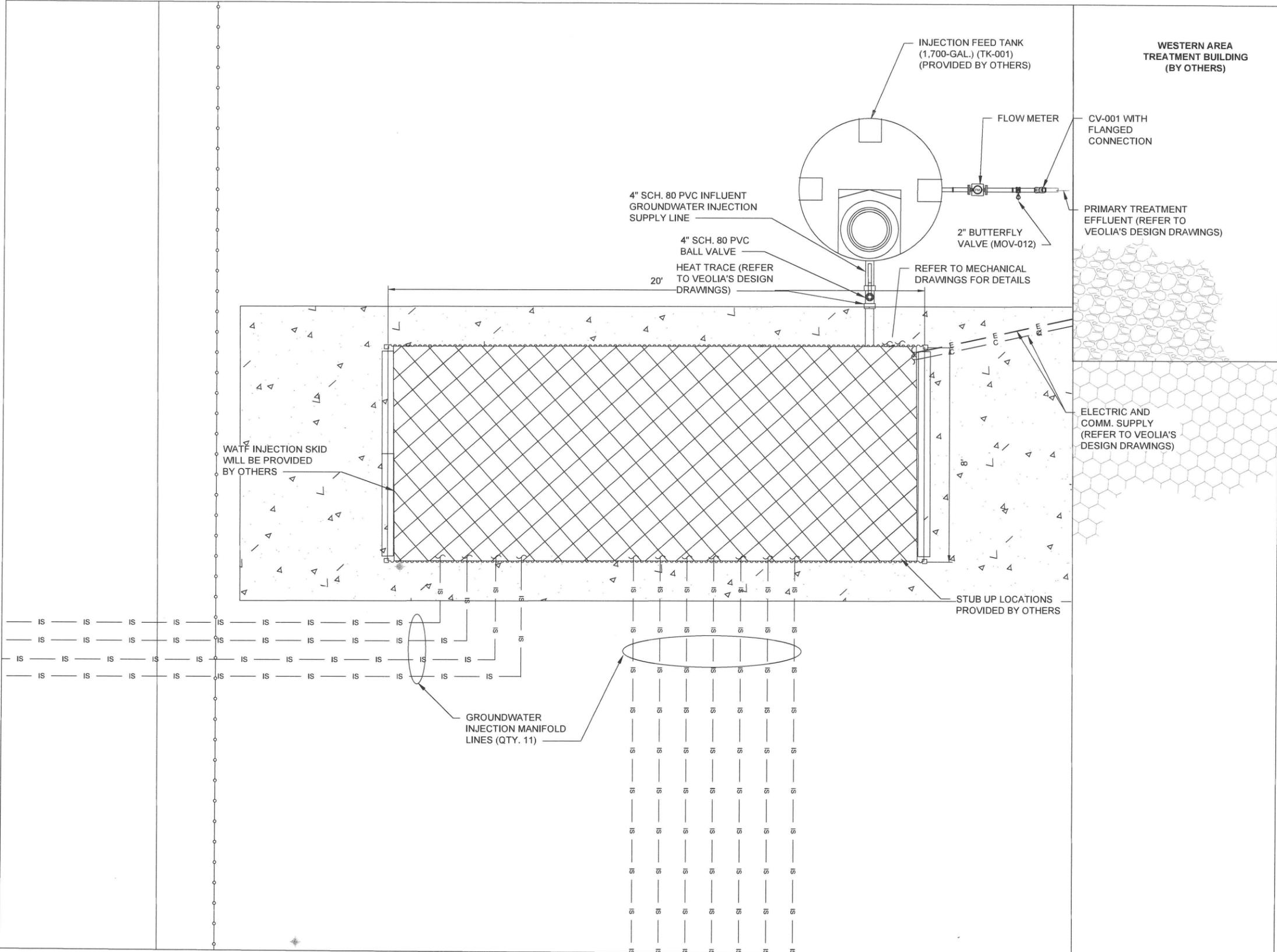


9400 WARD PARKWAY
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 816-333-9400
 OKLAHOMA FIRM LICENSEE NO. 421

date	MARCH 2020	detailed	T. COLLINS
designed	B. WEIS	checked	R. BETTMENG

Cimarron Environmental Response Trust
 WESTERN AREA TREATMENT
 INJECTION SKID LAYOUT

project	120832	contract	-
drawing	BMCD-GWREMED-C008	rev.	A
sheet	11	of	32 sheets
file	C008 W AREA TREAT FAC SITE_INJ_SKID.DWG		



**WESTERN AREA TREATMENT FACILITY
 INJECTION SKID LAYOUT**



Scale For Microfilming

Inches

Millimeters

no.	date	by	ckd	description
A	2/22/21	EAA	JRH	ISSUED FOR PRELIMINARY DESIGN

- NOTES:**
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 - PAVEMENT TO BE SPECIFIED BY VEOLIA GRADES SHOWN REPRESENT PAVEMENT SUBGRADE SURFACE (9.8' LOWER THAN FINISHED, PAVED SURFACE).

PRELIMINARY - NOT FOR CONSTRUCTION

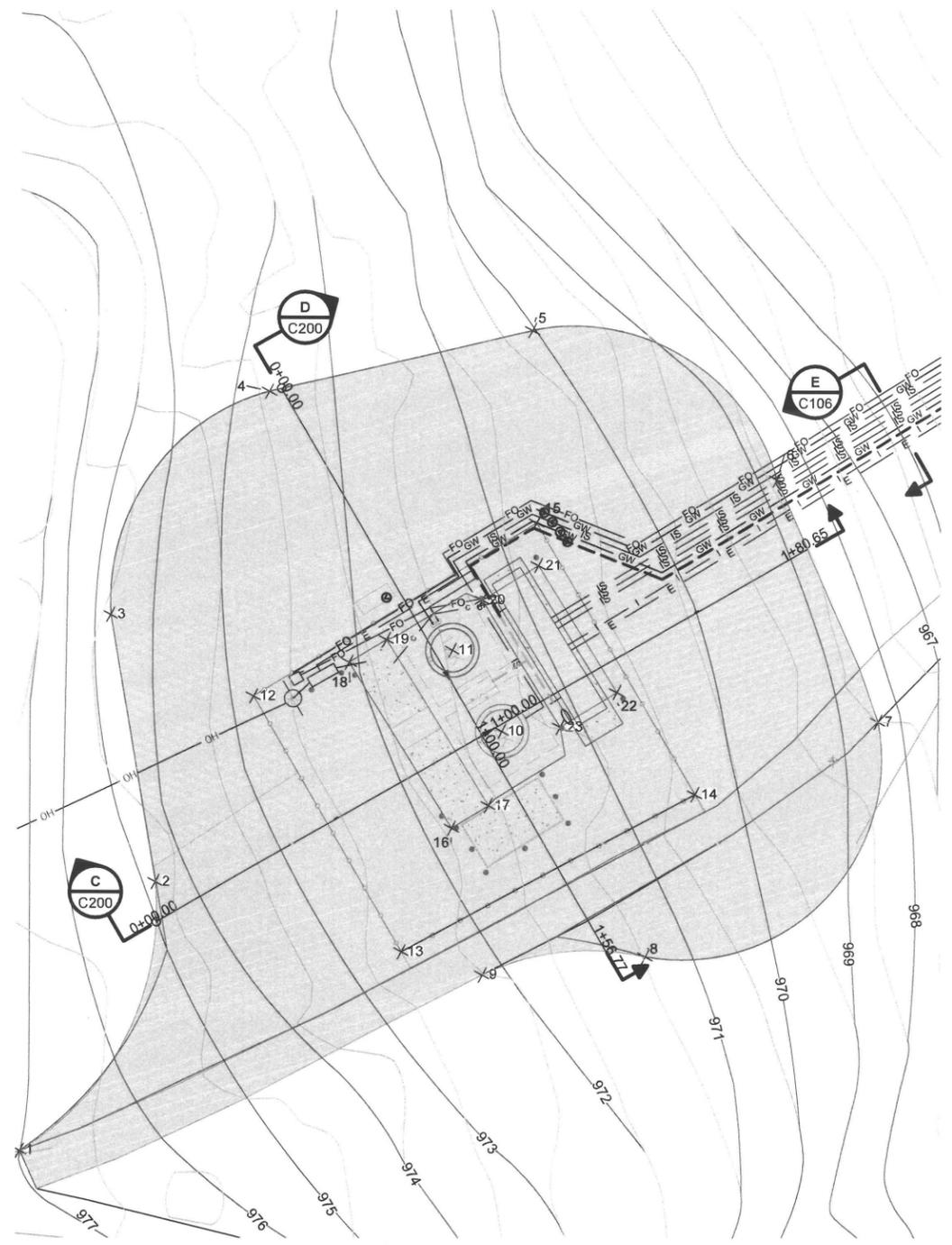


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OKLAHOMA FIRM LICENSEE NO. 421

date	detailed
FEBRUARY 2021	E. AHLEMEYER
designed	checked
B. WEIS	J. HESEMANN

Cimarron Environmental Response Trust
BURIAL AREA 1 TREATMENT FACILITY SITE PLAN

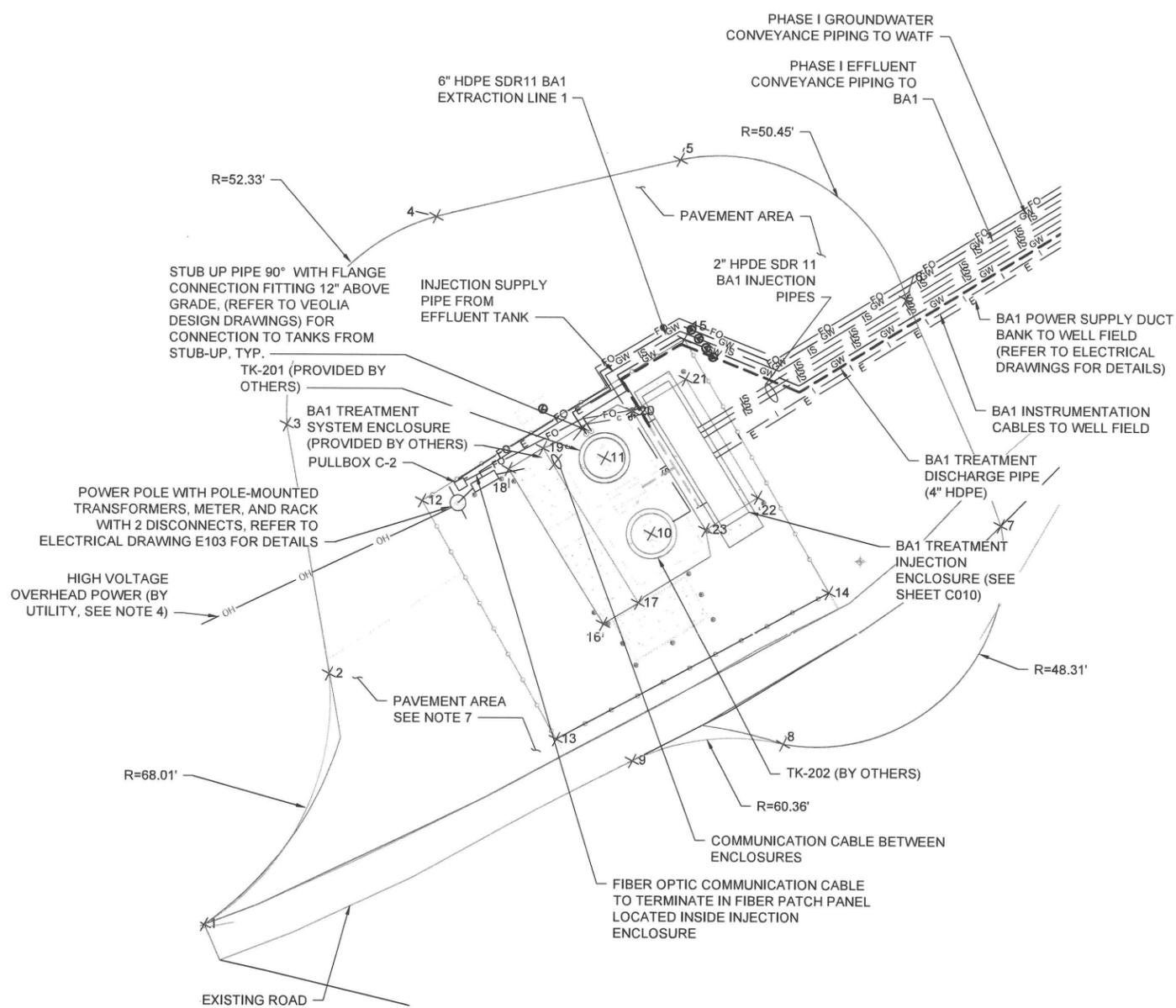
project	contract
120832	-
drawing	rev.
BMCD-GWREMED-C009	A
sheet 12 of 28 sheets	
file C009 BURIAL AREA 1 TREAT FAC.DWG	



BURIAL AREA 1 TREATMENT FACILITY GRADING PLAN



0 10' 20' 40'
SCALE IN FEET



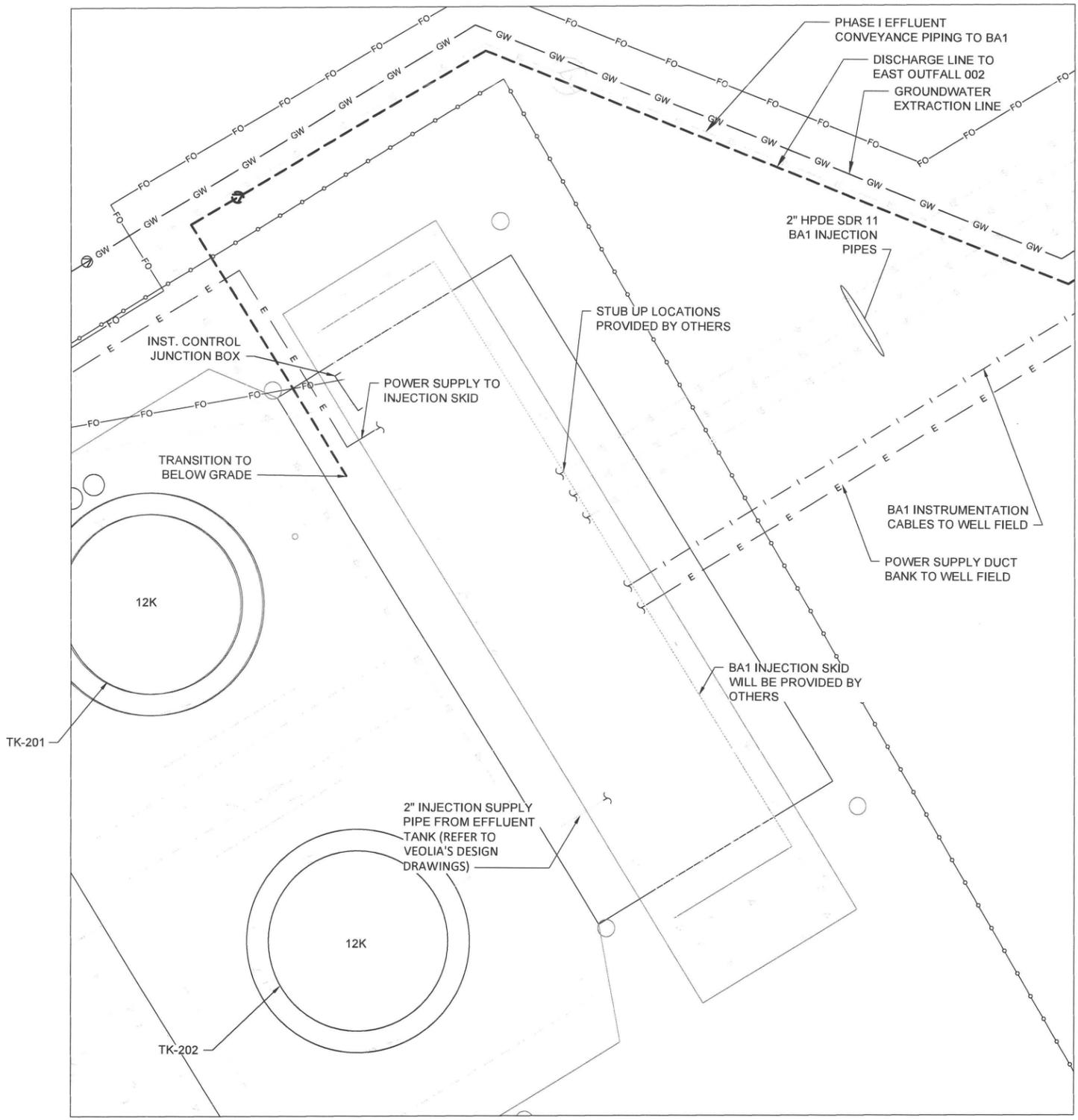
BURIAL AREA 1 TREATMENT FACILITY SITE PLAN



0 10' 20' 40'
SCALE IN FEET

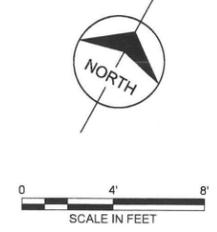
Millimeters
Scale For Microfilming
Inches

no.	date	by	ckd	description
A	2/22/21	EAA	JRH	ISSUED FOR PRELIMINARY DESIGN



Millimeters
Scale For Microfilming
Inches

BURIAL AREA 1 TREATMENT INJECTION SKID



- NOTES:**
- PIPE AND CONDUIT LINE SPACING HAS BEEN EXAGGERATED FOR CLARITY IN PARTIAL SITE PLANS. REFER TO TRENCH SECTION DETAILS FOR TYPICAL PIPE AND CONDUIT SPACING. FIELD ADJUSTMENTS OF PIPE ALIGNMENTS TO AVOID CONFLICTS SHALL BE APPROVED BY THE ENGINEER.
 - SUBCONTRACTOR SHALL CLEAR 15 FEET EACH SIDE ALONG FUTURE OVERHEAD POWER LINE ALIGNMENT.
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 - REFER TO SHEETS C101-C104 FOR EXTRACTION AND INJECTION TRENCH DETAILS.
 - PROVIDE PULL BOXES EVERY 500' (MAX.) FOR ELECTRICAL AND INSTRUMENTATION CONDUITS.
 - FUTURE GRADE CONTOURS PROVIDED BY OTHERS FOR REFERENCE ONLY. EARTHWORK FOR THESE FUTURE CONTOURS IS NOT INCLUDED IN THE SCOPE OF WORK DEPICTED IN THESE DRAWINGS.

PRELIMINARY - NOT FOR CONSTRUCTION



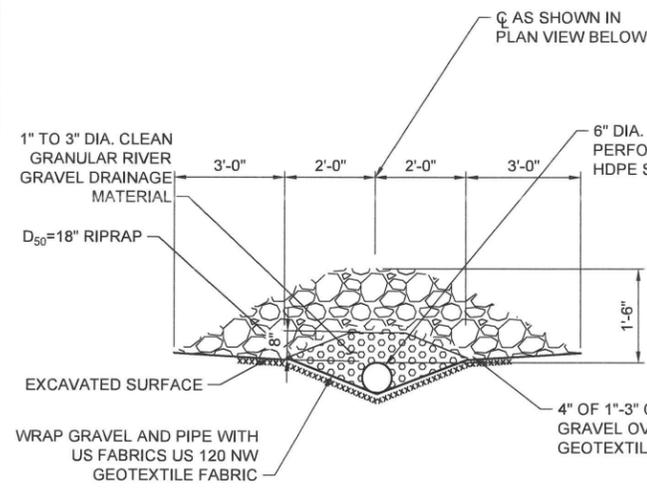
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
OKLAHOMA FIRM LICENSE NO. 421

date	detailed
FEBRUARY 2021	E. AHLEMEYER
designed	checked
B. WEIS	J. HESEMANN

Cimarron Environmental Response Trust
BURIAL AREA 1 TREATMENT
INJECTION SKID

project	contract
120832	-
drawing	rev.
BMCD-GWREMED-C010	A
sheet 13 of 32 sheets	file C010 BURIAL AREA 1 TREAT FAC_INJ_SKID.DWG

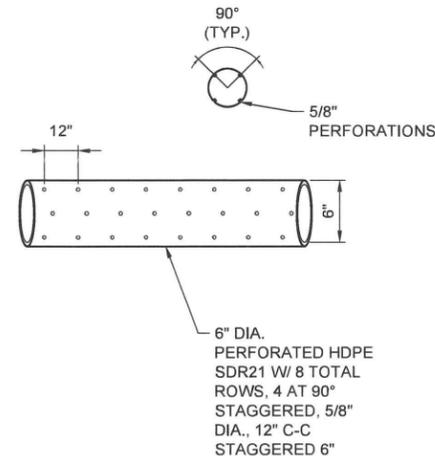
no.	date	by	ckd	description
A	3/31/20	BCW	RTB	ISSUED FOR 90% DESIGN



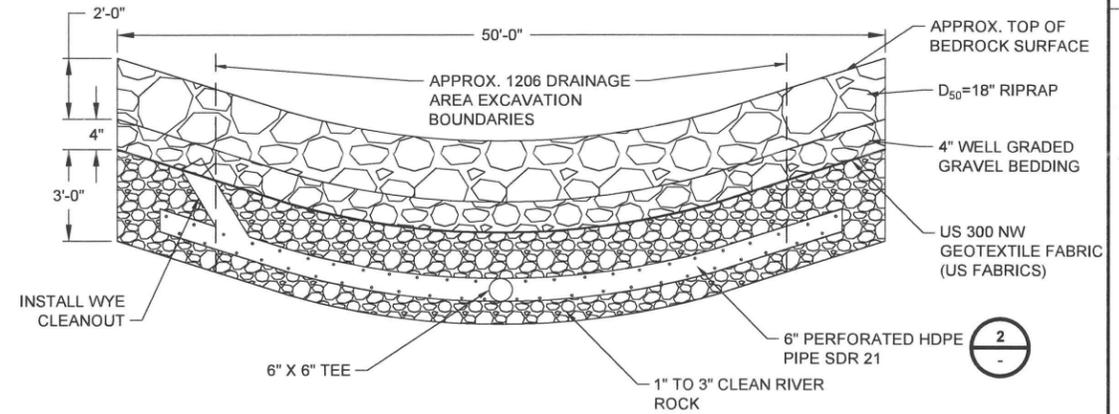
TYPICAL 1206 DRAINAGE AREA CHANNEL PIPE SECTION
NOT TO SCALE

NOTES:

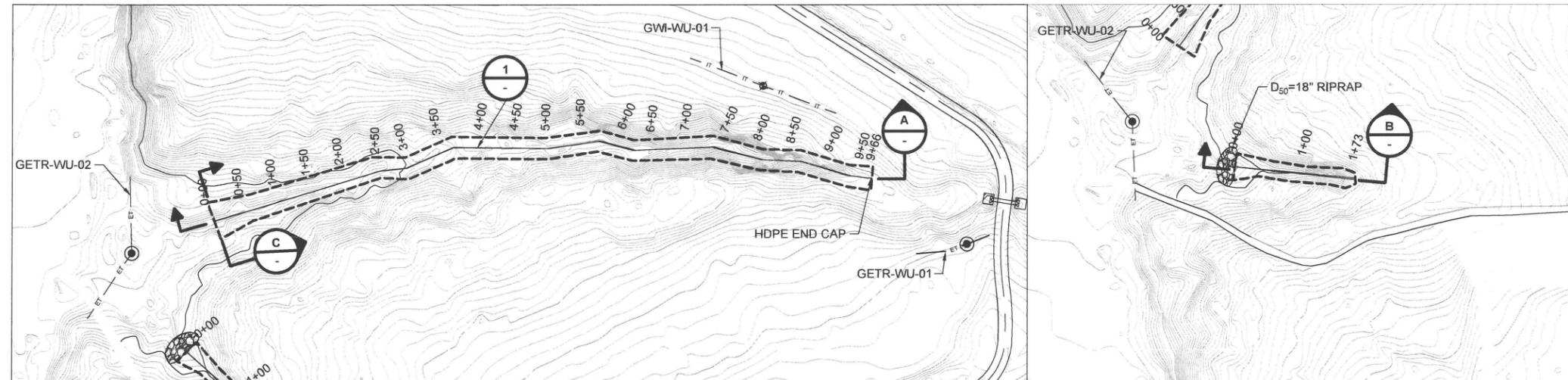
1. GENTLY PLACE RIPRAP OVER PIPE SECTION. DO NOT DROP RIPRAP ON DRAINAGE MATERIAL.
2. 1" TO 3" CLEAN GRAVEL SHALL HAVE LESS THAN 1% PASSING NO. 4 SIEVE. SUBMIT GRADATION TO ENGINEER PRIOR TO PROCUREMENT.



TYPICAL 1206 DRAINAGE AREA PIPE PERFORATION DETAIL
NOT TO SCALE

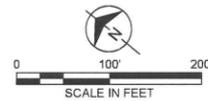


1206 INJECTION PIPE SECTION
NOT TO SCALE

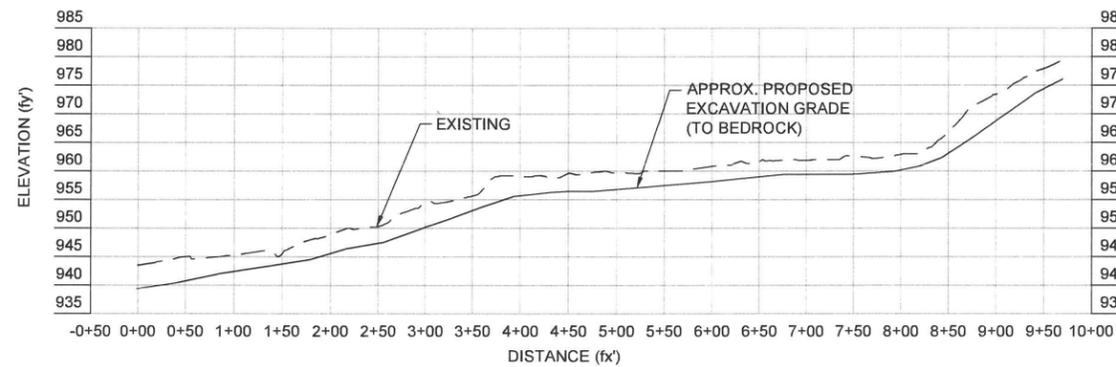


NOTES:

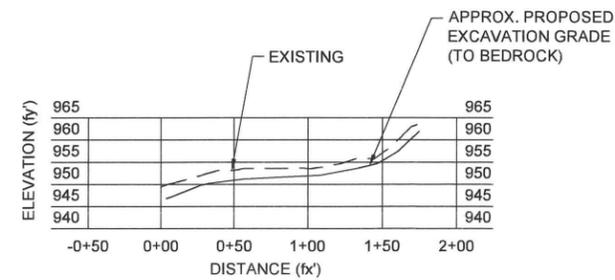
1. EXCAVATE AREAS SHOWN WITHIN BOUNDARY TO REMOVE ALL SEDIMENT TO BEDROCK. BOUNDARY SHOWN IS APPROXIMATE.
2. FROM BOUNDARY TAPER EXCAVATIONS TO EXISTING GRADES AT MAX 3H:1V SLOPE.
3. APPROX. EXCAVATION DEPTHS BASED ON LIMITED FIELD INVESTIGATION.



PLAN VIEW



EAST EXCAVATION PROFILE (APPROX.)



WEST EXCAVATION PROFILE (APPROX.)

SECTION VIEW

PRELIMINARY - NOT FOR CONSTRUCTION

BURNS & MCDONNELL

9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
OKLAHOMA FIRM LICENSEE NO. 421

date	detailed
MARCH 2020	T. COLLINS
designed	checked
B. WEIS	R. BETTMENG

Cimarron Environmental Response Trust
1206 DRAINAGE AREA
REMEDATION PLAN

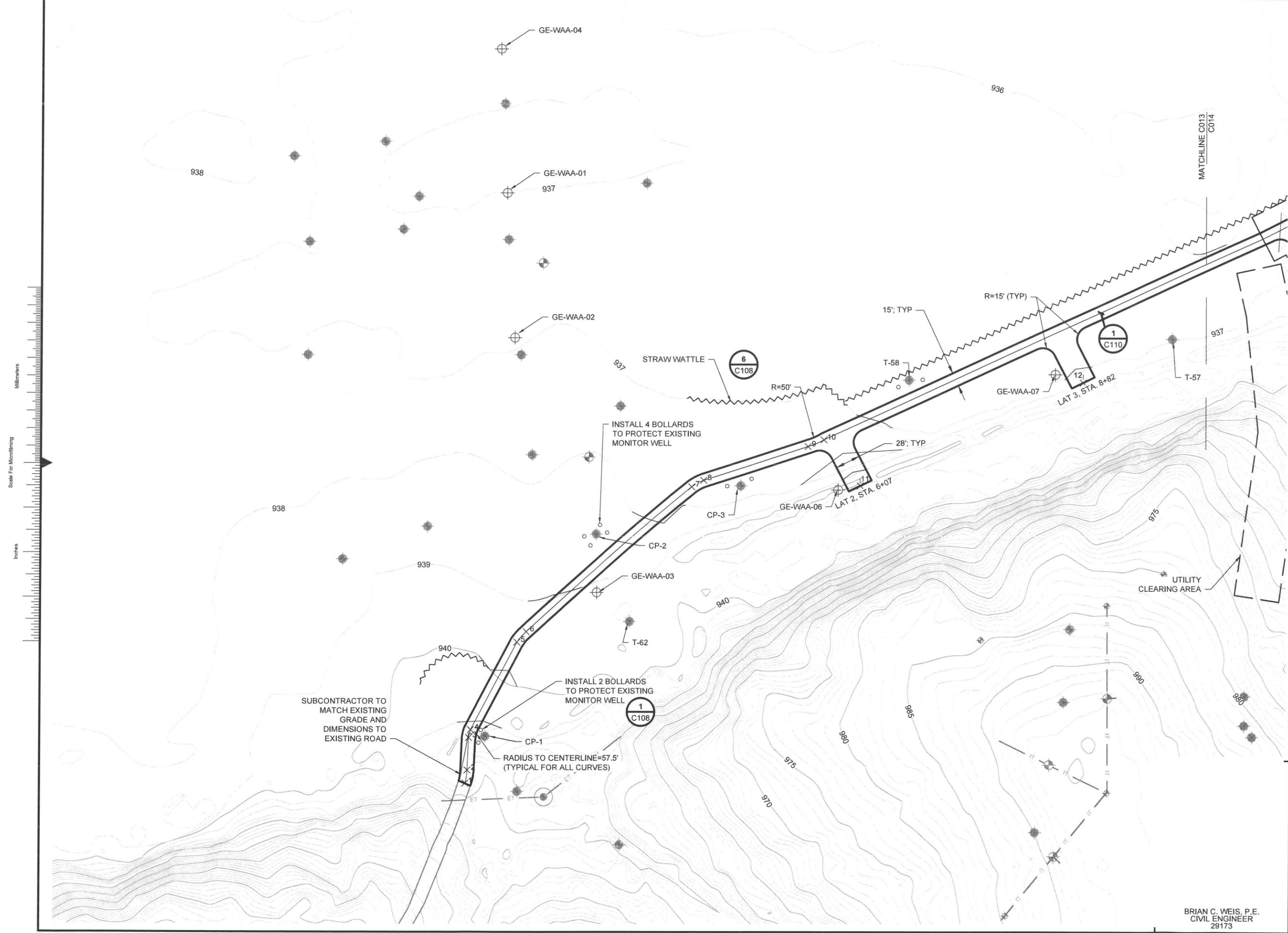
project	contract
120832	-

drawing	rev.
BMCD-GWREMCD-C011	A

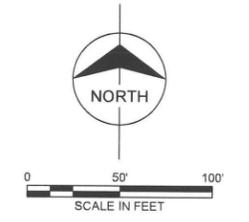
sheet 14 of 32 sheets
file C011 1206 DRAINAGE REM PLAN.DWG

no.	date	by	ckd	description
A	3/31/20	TMC	BCW	ISSUED FOR 90% DESIGN

- NOTES:**
1. TOPOGRAPHY AND AERIAL FEATURES SHOWN ARE FROM AN AERIAL SURVEY DATED MAY 2014.
 2. TOPOGRAPHY UPDATED WITH GROUND SURVEY PERFORMED NOVEMBER 11, 2016 WITHIN BOUNDARIES INDICATED.



Millimeters
Scale For Microfilming
Inches



**BURNS
MCDONNELL**

9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
OKLAHOMA FIRM LICENSEE NO. 421

date	MARCH 2020	detailed	T. COLLINS
designed	R. HAGER	checked	B. WEIS

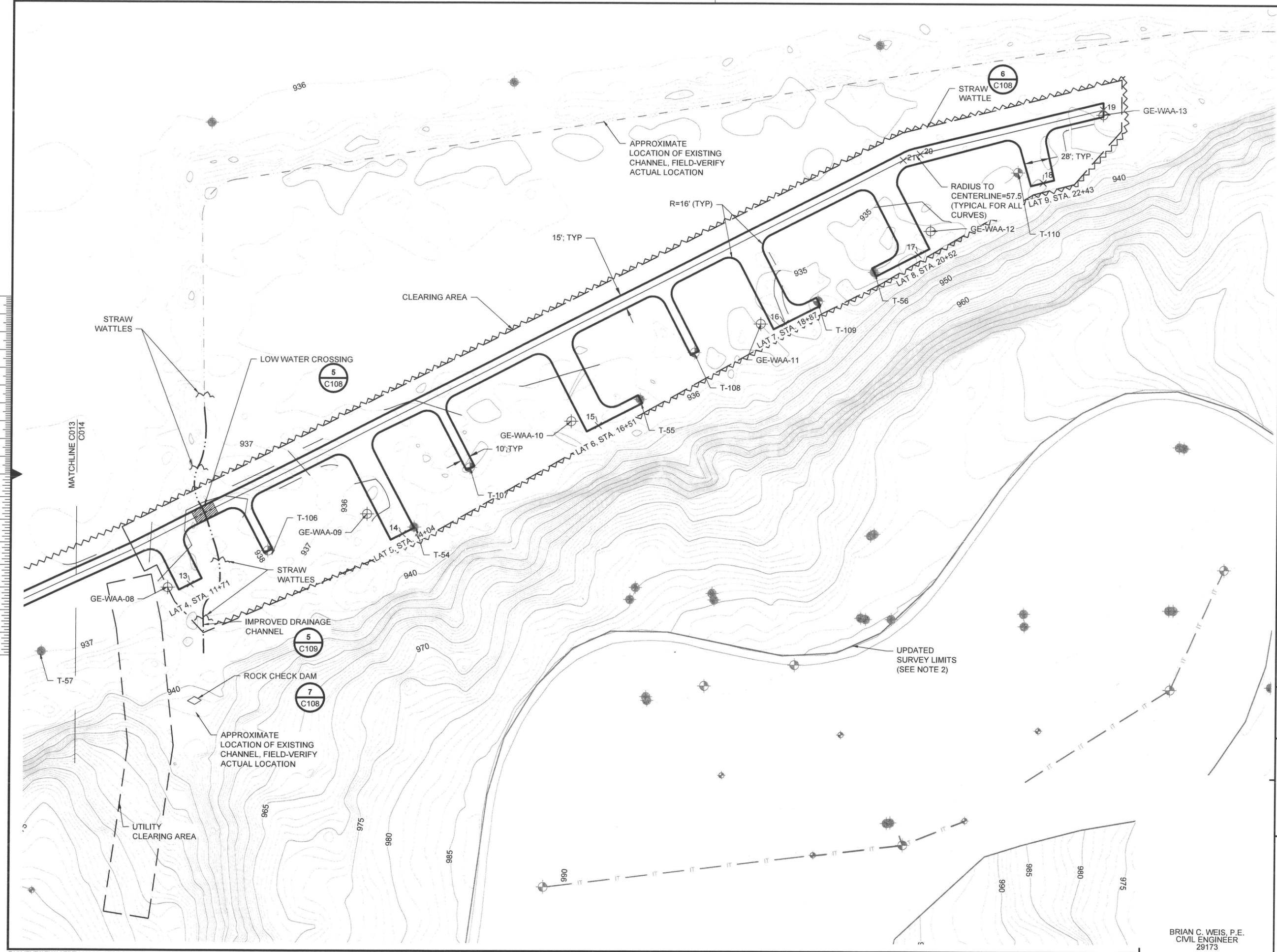
Cimarron Environmental Response Trust
WESTERN ALLUVIAL AREA ACCESS
ROAD PLAN SHEET 1

project	120832	contract	-
drawing	BMCD-GWREMED-C013	rev.	A
sheet	16	of	32
file	C013 & C014 ROAD CONTOURS.DWG		

BRIAN C. WEIS, P.E.
CIVIL ENGINEER
29173

no.	date	by	ckd	description
A	3/31/20	TMC	BCW	ISSUED FOR 90% DESIGN

- NOTES:**
1. TOPOGRAPHY AND AERIAL FEATURES SHOWN ARE FROM AN AERIAL SURVEY DATED MAY 2014.
 2. TOPOGRAPHY UPDATED WITH GROUND SURVEY PERFORMED NOVEMBER 11, 2016 WITHIN BOUNDARIES INDICATED.



Scale For Microfilming
Millimeters
Inches



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date	MARCH 2020	detailed	T. COLLINS
designed	R. HAGER	checked	B. WEIS

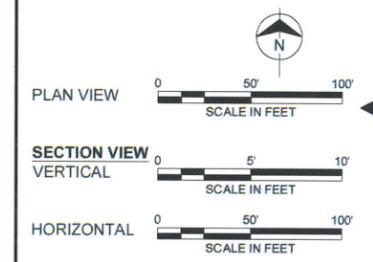
Cimarron Environmental Response Trust
WESTERN ALLUVIAL AREA ACCESS
ROAD PLAN SHEET 2

project	120832	contract	-
drawing	BMCD-GWREMED-C014	rev.	A
sheet	17	of	32
file	C013 & C014 ROAD CONTOURS.DWG		

BRIAN C. WEIS, P.E.
CIVIL ENGINEER
29173

no.	date	by	ckd	description
A	3/31/20	BCW	RTB	ISSUED FOR 90% DESIGN

- NOTES:**
- SUBSURFACE INFORMATION SHOWN IS BASED ON LIMITED INVESTIGATION AND IS PROJECTED TO THE TRENCH ALIGNMENT AT THE PROPOSED CONSTRUCTION LOCATION. SUBSURFACE INFORMATION SHOULD BE CONSIDERED APPROXIMATE.
 - 4" PERFORATED HDPE PIPE SHALL BE SLOPED TO PROVIDE POSITIVE DRAINAGE TO SUMPS.
 - REFER TO SHEET M101 FOR EXCAVATION WELL CONSTRUCTION DETAILS.
 - WHERE SILICA GRAVEL BACKFILL IS PROPOSED, TRENCH SHALL BE DEVELOPED BY JETTING WALLS WITH POTABLE WATER, AS DIRECTED BY CONTRACTOR.
 - STATIC GROUNDWATER ELEVATION ESTIMATED USING HIGHEST GROUNDWATER ELEVATIONS RECORDED AT MONITORING WELLS 1381, 1383, AND 1387 BETWEEN DECEMBER 2012 AND AUGUST 2016.
 - EXISTING GRADE SURVEYED 09/06/16.
 - SUMP LOCATIONS SHOWN ARE APPROXIMATE, FIELD VERIFY LOW POINT IN EXCAVATIONS FOR ACTUAL SUMP LOCATIONS.



PRELIMINARY - NOT FOR CONSTRUCTION

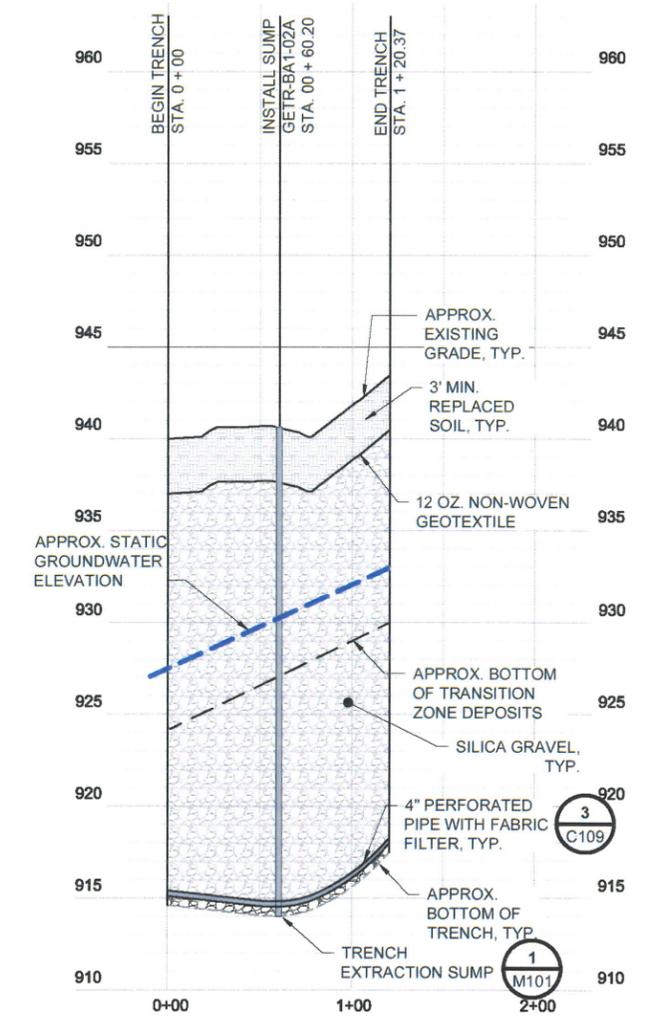
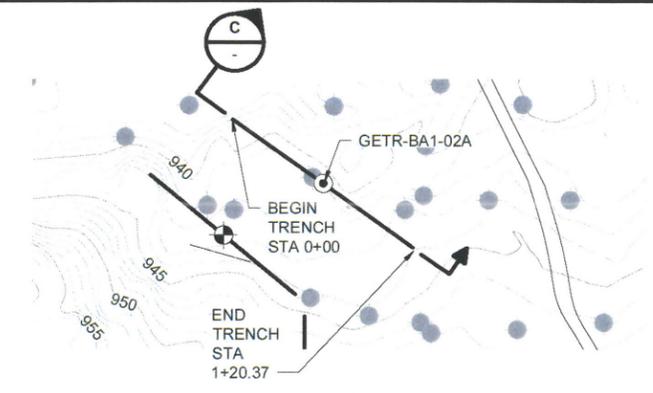


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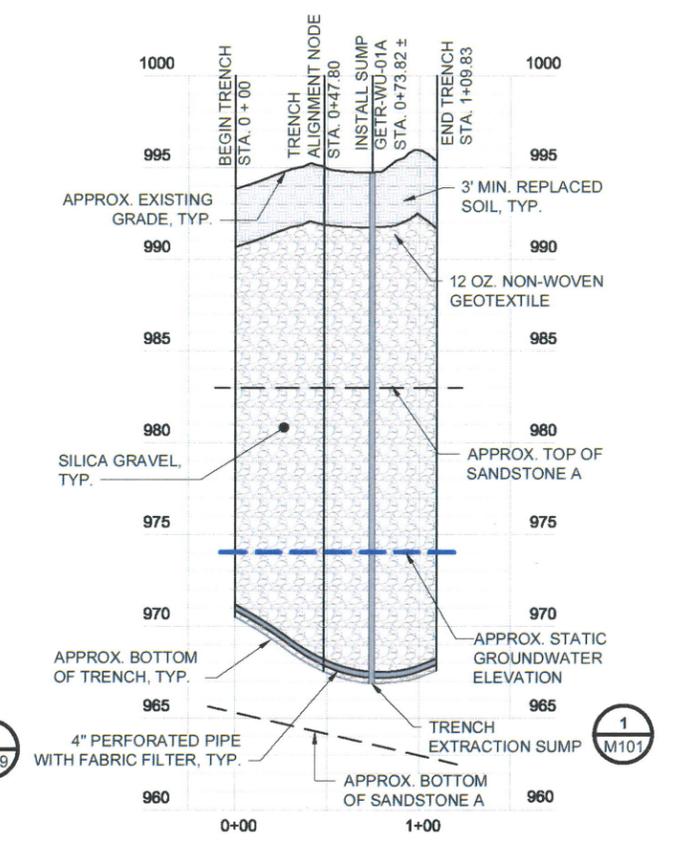
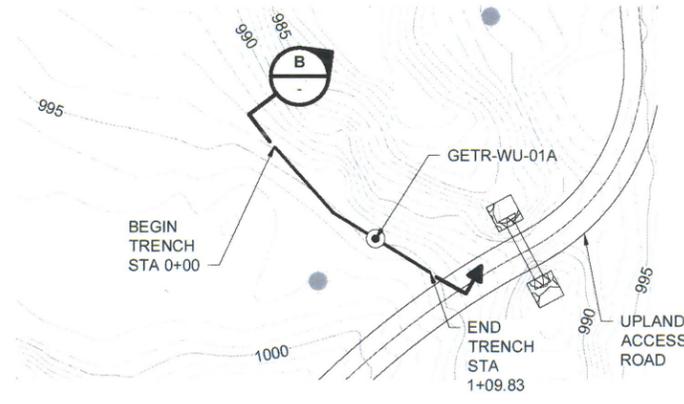
date	MARCH 2020	detailed	T. COLLINS
designed	B. WEIS	checked	R. BETTMENG

Cimarron Environmental Response Trust
EXTRACTION TRENCH DETAILS

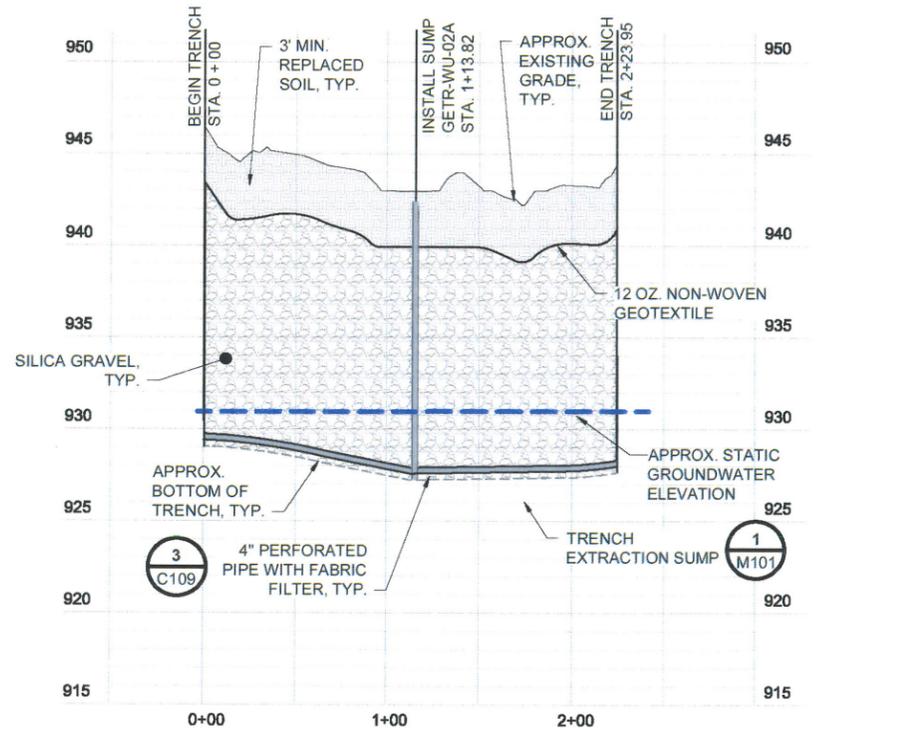
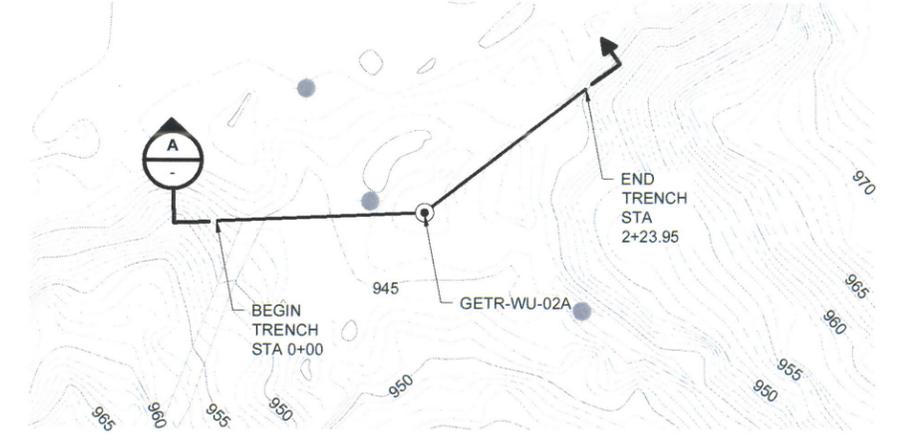
project	120832	contract	-
drawing	BMCD-GWREMEDI-C101	rev.	A
sheet	of 32	sheets	
file	C101 EXT TRN DET 1.DWG		



TRENCH COORDINATES GEOMETRY TABLE		
NORTHING	EASTING	DESCRIPTION
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322839.4518	2095445.1259	GETR-BA-02A
322804.3845	2095494.0382	END TRENCH

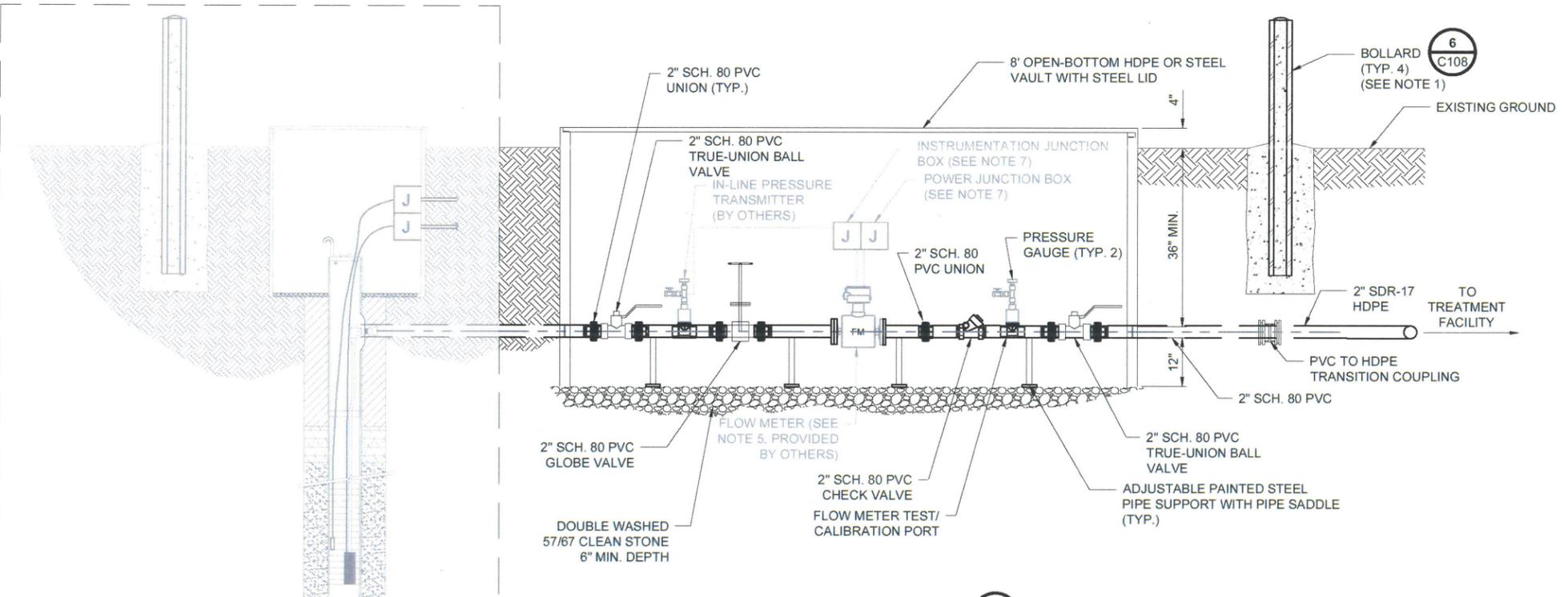


TRENCH COORDINATES GEOMETRY TABLE		
NORTHING	EASTING	DESCRIPTION
320372.0509	2092431.1189	BEGIN TRENCH
320336.1055	2092462.6999	TRENCH BEND
320322.1300	2092485.4101	GETR-WU-01A
320303.7550	2092515.2695	END TRENCH

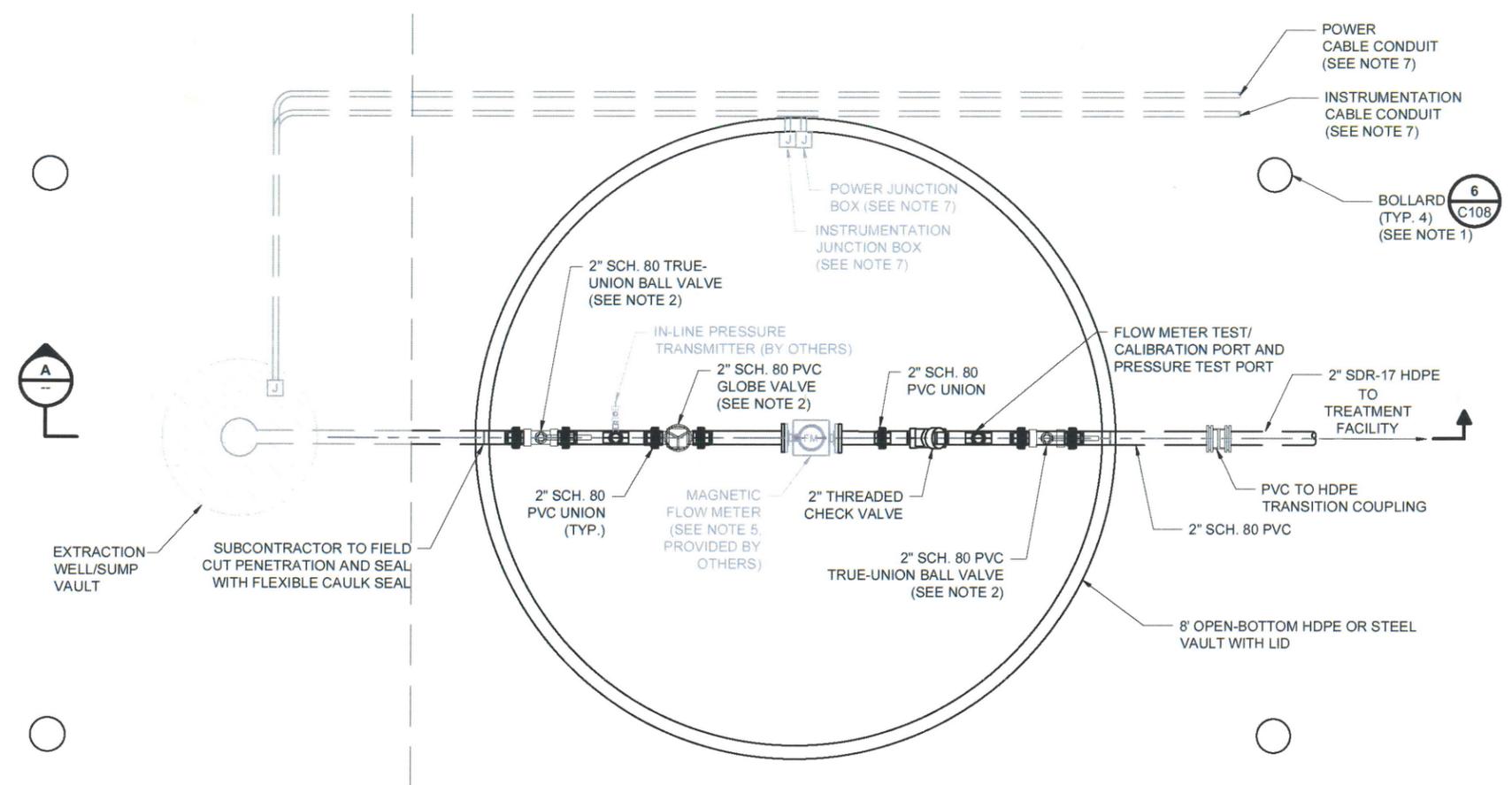


TRENCH COORDINATES GEOMETRY TABLE		
NORTHING	EASTING	DESCRIPTION
321269.4163	2091642.6156	BEGIN TRENCH
321274.0258	2091756.3395	GETR-WU-02A
321341.7341	2091843.2067	END TRENCH

Scale For Micromilling
Millimeters
Inches



SECTION A
TYPICAL EXTRACTION WELL/SUMP AND VALVE/METERING VAULT
 NOT TO SCALE



PLAN 1
TYPICAL EXTRACTION WELL/SUMP AND VALVE/METERING VAULT
 NOT TO SCALE

no.	date	by	ckd	description
A	03/31/20	EA	RH	ISSUED FOR 90% DESIGN

- NOTES:**
- SUBCONTRACTOR SHALL VERIFY QUANTITY AND LOCATION OF BOLLARDS WITH ENGINEER PRIOR TO CONSTRUCTION.
 - SUBCONTRACTOR SHALL ORIENT VALVE OPERATORS TO PREVENT INTERFERENCES WITH ADJACENT VAULT, PIPE, VALVES, AND FITTINGS.
 - EXTRACTION WELL AND TRENCH SUMP SCREEN AND CASING LENGTHS AND MATERIALS VARY. REFER TO DRAWING M102 AND M201 FOR EXTRACTION WELL AND TRENCH SUMP CONSTRUCTION DETAILS. REFER TO DRAWING C101 FOR TYPICAL EXTRACTION TRENCH PROFILES.
 - REFER TO PROCESS DRAWINGS FOR ADDITIONAL PIPE FITTINGS AND LAYOUT DETAILS.
 - INSTALL FLOW METER WITH A MINIMUM OF 5 STRAIGHT PIPE DIAMETERS UPSTREAM AND 2 STRAIGHT PIPE DIAMETERS DOWNSTREAM FROM THE ELECTRODE PLANE.
 - REFER TO SPECIFICATIONS FOR ADDITIONAL PIPE FITTINGS AND LAYOUT DETAILS.
 - REFER TO ELECTRICAL DRAWINGS FOR DETAILS.

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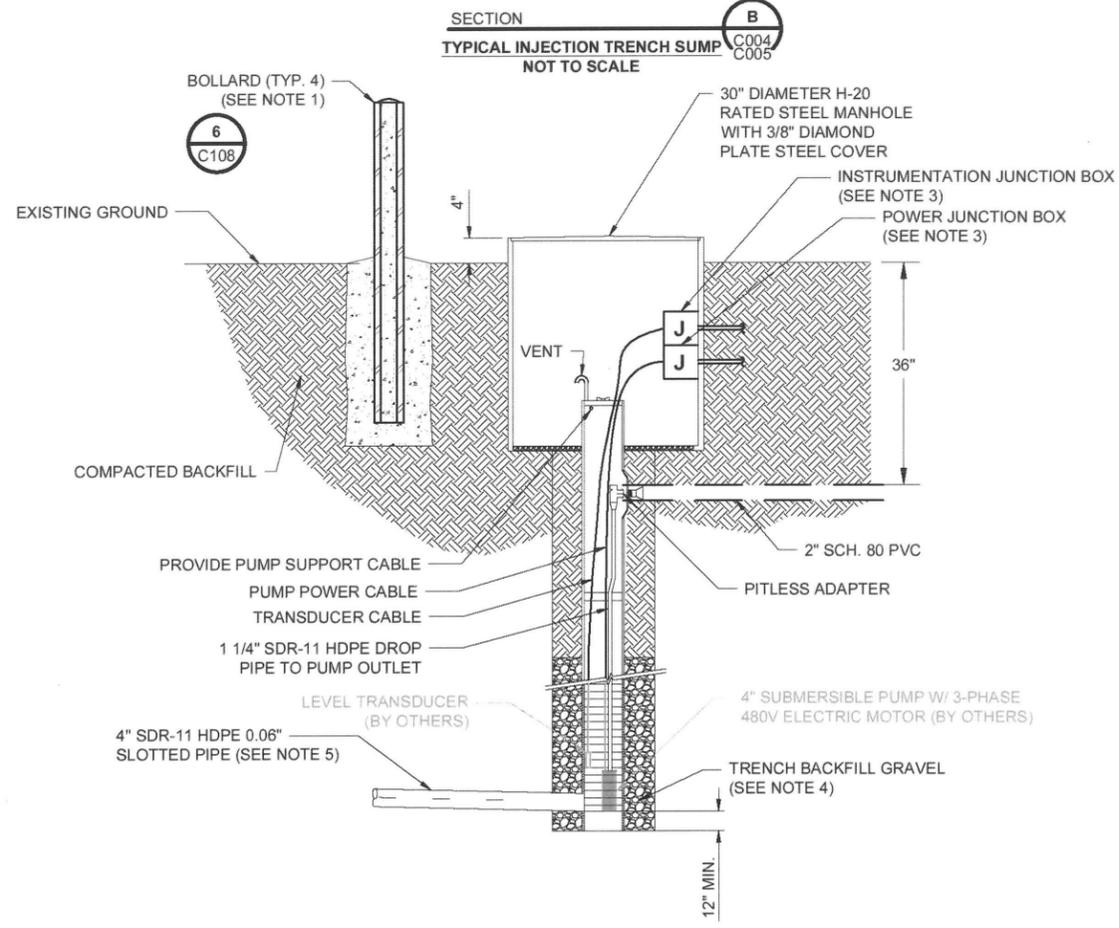
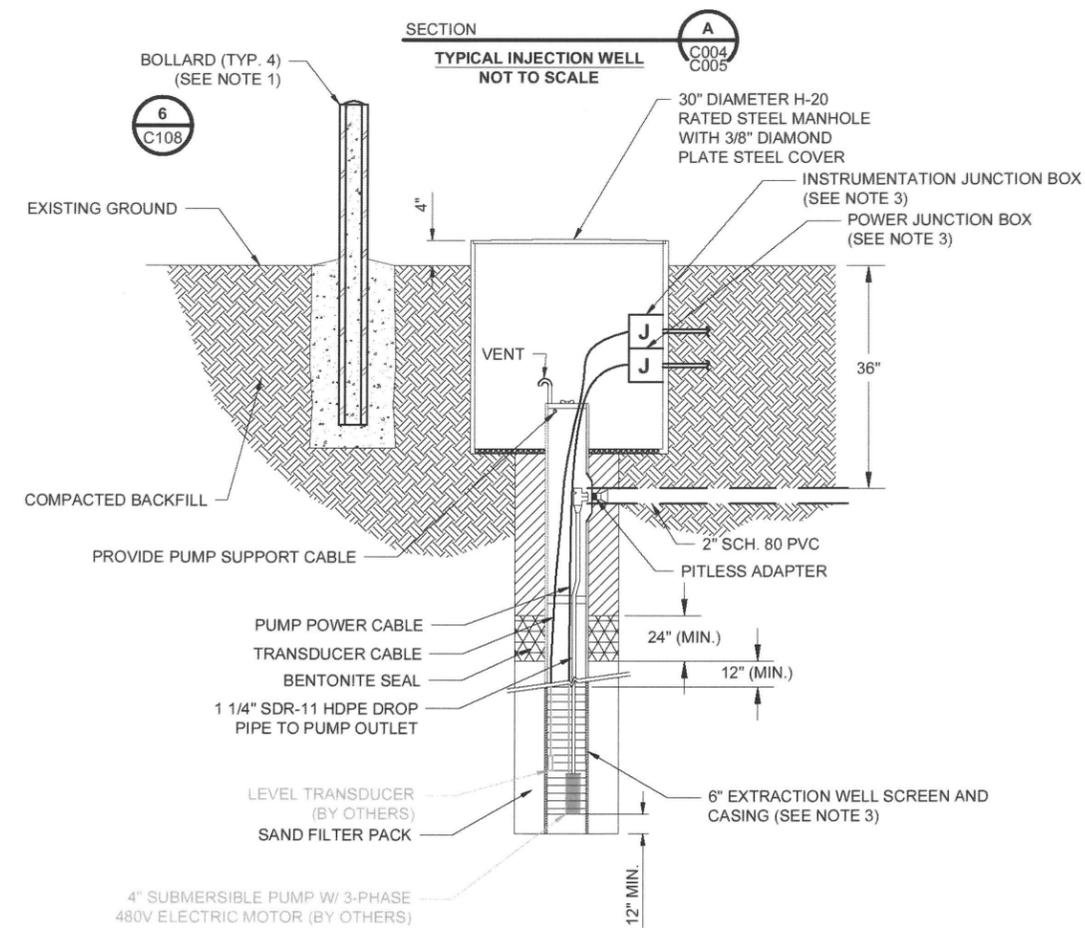
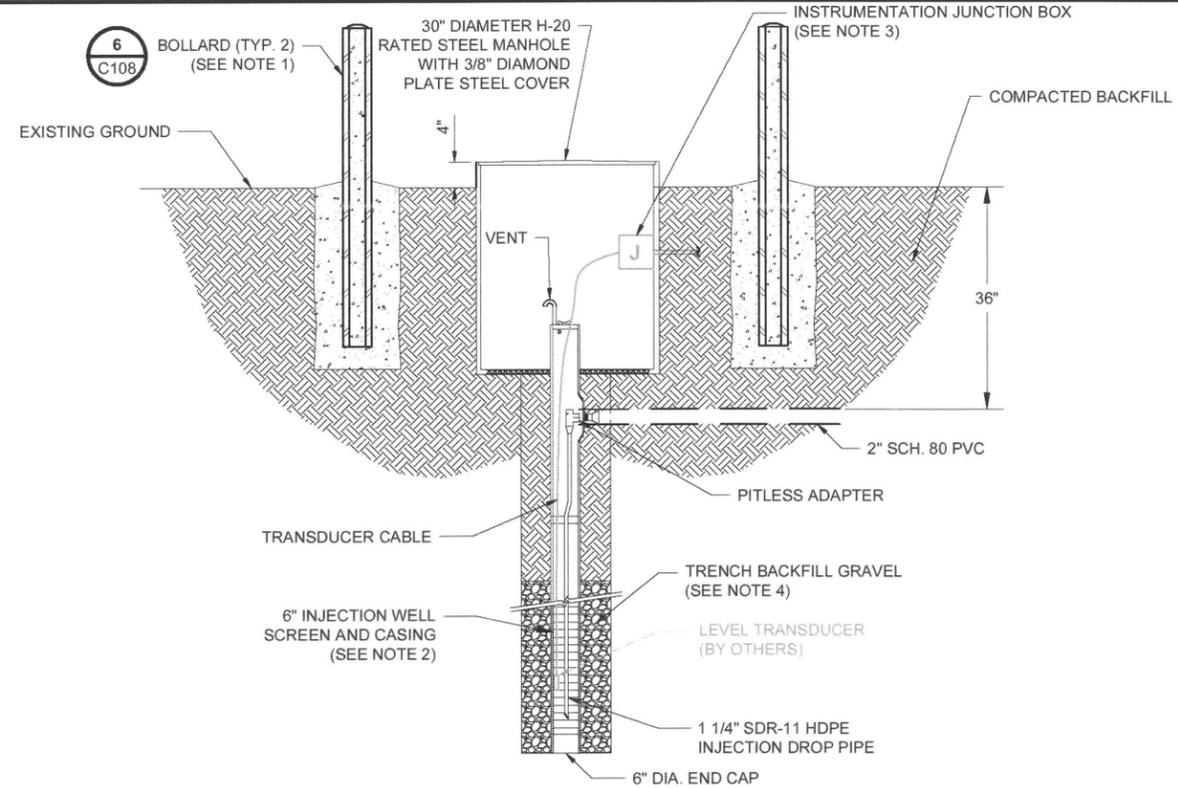
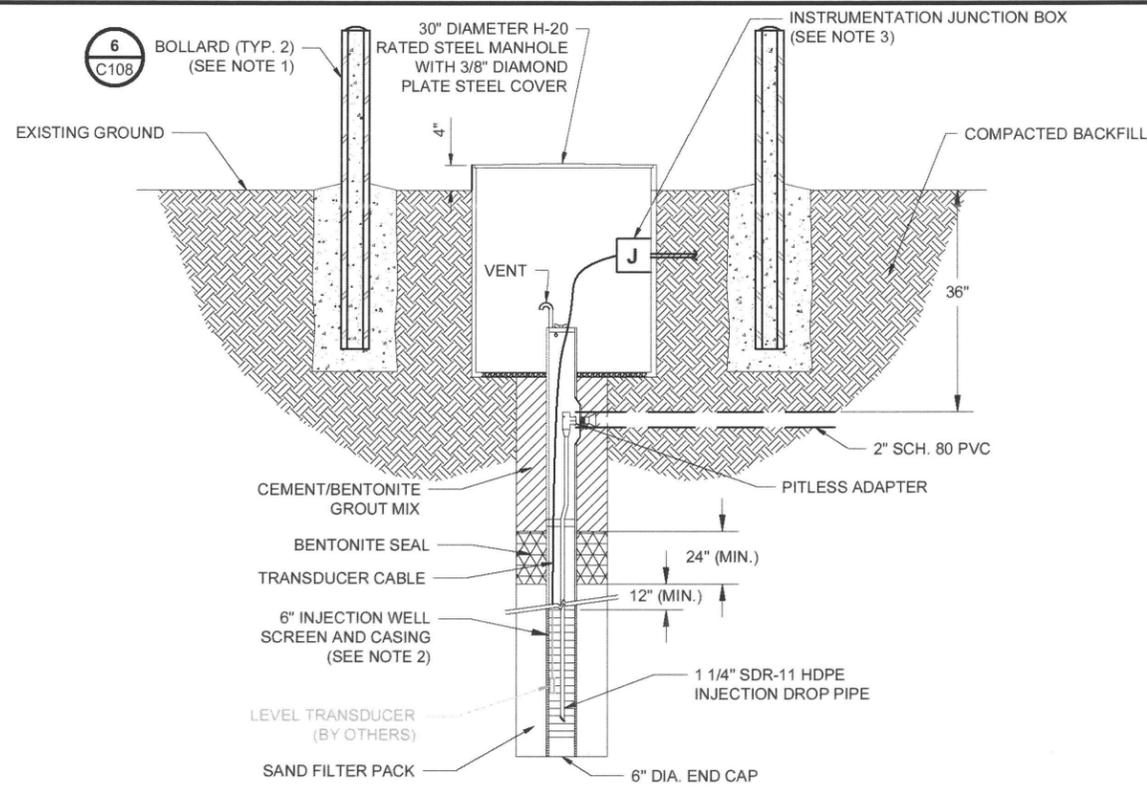
9400 WARD PARKWAY
 KANSAS CITY, MO 64114
 816-333-9400
 OKLAHOMA FIRM LICENSE NO. 421

date	detailed
MARCH 2020	E. AHLEMAYER
designed	checked
E. DULLE	R. HORMELL

Cimmarron Environmental Response Trust
 EXTRACTION WELL/SUMP AND VAULT DETAILS

project	contract
120832	
drawing	rev.
BMCD-GWREMED-M101	A
sheet 1 of 8 sheets	file M101.DWG

Millimeters
 Scale For Micromillim
 Inches



no.	date	by	ckd	description
A	03/31/20	EA	RH	ISSUED FOR 90% DESIGN

- NOTES:**
- SUBCONTRACTOR SHALL VERIFY QUANTITY AND LOCATION OF BOLLARDS WITH ENGINEER PRIOR TO CONSTRUCTION.
 - INJECTION WELL SCREEN AND CASING LENGTHS VARY. REFER TO DRAWING M202 FOR INJECTION WELL CONSTRUCTION DETAILS. REFER TO DRAWINGS C102 THROUGH C104 FOR TYPICAL INJECTION TRENCH PROFILES.
 - REFER TO ELECTRICAL DRAWINGS FOR DETAILS.
 - REFER TO DRAWING C101 THROUGH C104 FOR TRENCH CONSTRUCTION DETAILS.

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MARCH 2020	E. AHLEMEYER
designed	checked
E. DULLE	R. HORMELL

Cimarron Environmental Response Trust
INJECTION AND EXTRACTION WELL DETAILS

project	contract		
120832			
drawing	rev.		
BMCD-GWREMED-M102	A		
sheet	of	of	sheets
2	8		
file	M102.DWG		

Scale For Microfilming
Millimeters
Inches

WA Extraction Trench Construction Details								
Extraction Trench Sump ID	Total Depth of Sump (ft bgs)	Sump Diameter (inches)	Drop Pipe Diameter (inches)	Sump Material	Trench Drain Pipe Material	Trench Drain Pipe Diameter (inches)	Trench Drain Pipe Screen Slot Size (in)	Filter Pack
GETR-WU-01A	28	6	1.25	HDPE	SDR-11 HDPE	4	0.06	Gravel Backfill
GETR-WU-02A	17	6	1.25	HDPE	SDR-11 HDPE	4	0.06	Gravel Backfill

BA1 Extraction Trench Construction Details								
Extraction Trench Sump ID	Total Depth of Sump (ft bgs)	Sump Diameter (inches)	Drop Pipe Diameter (inches)	Sump Material	Trench Drain Pipe Material	Trench Drain Pipe Diameter (inches)	Trench Drain Pipe Screen Slot Size (in)	Filter Pack (see note 3)
GETR-BA1-01A	24	6	1.25	HDPE	SDR-11 HDPE	4	0.06	Gravel Backfill
GETR-BA1-01B	19	6	1.25	HDPE	SDR-11 HDPE	4	0.06	Gravel Backfill
GETR-BA1-02A	25	6	1.25	HDPE	SDR-11 HDPE	4	0.06	Gravel Backfill

WA Extraction Well Construction Details							
Extraction Well ID	Total Depth of Well (ft bgs)	Diameter (inches)	Drop Pipe Diameter (inches)	Well Material	Screened Interval Elevations (ft amsl)	Screen Slot Size (in)	Filter Pack
					(see note 1)		
GE-WAA-01	30	6	1.25	PVC	910-913; 917.5-927	0.025	Cemex 16x30
GE-WAA-02	30	6	1.25	PVC	910-911.5; 915.5-929.5	0.020	Cemex 20x40
GE-WAA-03	25	6	1.25	PVC	919-929.25	0.020	Cemex 20x40
GE-WAA-04	30	6	1.25	PVC	913.5-927	0.020	Cemex 20x40
GE-WAA-05	30	6	1.25	PVC	907-917	0.025	Cemex 16x30
GE-WAA-06	25	6	1.25	PVC	923-930.5	0.020	Cemex 20x40
GE-WAA-07	20	6	1.25	PVC	917-929.5	0.020	Cemex 20x40
GE-WAA-08	20	6	1.25	PVC	917.5-928.5	0.020	Cemex 20x40
GE-WAA-09	20	6	1.25	PVC	921-929	0.025	Cemex 16x30
GE-WAA-10	20	6	1.25	PVC	920-928.5	0.020	Cemex 20x40
GE-WAA-11	20	6	1.25	PVC	919.5-925	0.020	Cemex 20x40
GE-WAA-12	20	6	1.25	PVC	917.5-928.75	0.020	Cemex 20x40
GE-WAA-13	20	6	1.25	PVC	920-925	0.020	Cemex 20x40
GE-WAA-14	35	6	1.25	PVC	908-922	0.020	Cemex 20x40
GE-WAA-15	30	6	1.25	PVC	908.5-918.25	0.020	Cemex 20x40
GE-WU-01	80	6	1.25	PVC	928-943	0.020	Cemex 20x40

BA1 Extraction Well Construction Details							
Extraction Well ID	Total Depth of Well (ft bgs)	Diameter (inches)	Drop Pipe Diameter (inches)	Well Material	Screened Interval Elevations (ft amsl)	Screen Slot Size (in)	Filter Pack
					(see note 1)		
GE-BA1-02	20	6	1.25	PVC	916.5-927	0.025	Cemex 16x30
GE-BA1-03	23	6	1.25	PVC	919-924	0.020	Cemex 20x40
GE-BA1-04	27	6	1.25	PVC	910-923	0.020	Cemex 20x40
GE-BA1-05	28	6	1.25	PVC	907.5-910.5; 915.5-924	0.025	Cemex 16x30
GE-BA1-06	28	6	1.25	PVC	907.5-926	0.020	Cemex 20x40
GE-BA1-07	28	6	1.25	PVC	906.5-911; 918-923	0.020	Cemex 20x40
GE-BA1-08	30	6	1.25	PVC	905.5-913.75	0.020	Cemex 20x40
GE-BA1-09	28	6	1.25	PVC	909-913; 923-925.5	0.020	Cemex 20x40

no.	date	by	ckd	description
A	03/31/20	EA	RH	ISSUED FOR 90% DESIGN

- NOTES:**
1. WELLS WITH MULTIPLE SCREENED INTERVAL ELEVATIONS ARE SEPARATED BY A ZERO SLOT SCREEN.
 2. ACTUAL EXTRACTION TRENCH SCREEN LENGTHS AND DRAIN PIPE LENGTHS WILL BE DETERMINED AT TIME OF CONSTRUCTION.
 3. EXTRACTION TRENCH SUMPS GETR-BA1-01A AND B WERE INSTALLED DURING THE 2017 PILOT STUDY.
 4. EXTRACTION WELL GE-WU-01 SHALL BE INSTALLED USING AIR ROTARY METHODS AND REAMED TO A 10-INCH MINIMUM NOMINAL DIAMETER.

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9400 WARD PARKWAY
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816-333-9400
OKLAHOMA FIRM LICENSEE NO. 421

date	MARCH 2020	detailed	E. AHLEMEYER
designed	E. DULLE	checked	R. BETTMENG

Cimarron Environmental Response Trust
CONSTRUCTION DETAILS INDEX
EXTRACTION WELLS/SUMPS

project	120832	contract	
drawing	BMCD-GWREMED-M201	rev.	A
sheet	6	of	8 sheets
file	M201.DWG		

Scale For Microfilming

Millimeters

Inches

WA Extraction Pump Selections			
Extraction Well/Sump ID	Pump Selection	Motor Size (HP)	Pump Inlet Set Depth (ft amsl)
GETR-WU-01A	Grundfos 5S05-9	0.50	967.5
GETR-WU-02A	Grundfos 16S07-8	0.75	928.0
GE-WAA-01	Grundfos 25S15-9	1.5	918.25
GE-WAA-02	Grundfos 25S10-7	1.0	922.5
GE-WAA-03	Grundfos 25S15-9	1.5	926.0
GE-WAA-04	Grundfos 25S15-9	1.5	915.0
GE-WAA-05	Grundfos 25S15-9	1.5	909.5
GE-WAA-06	Grundfos 16S05-5	0.50	928.0
GE-WAA-07	Grundfos 25S10-7	1.0	919.0
GE-WAA-08	Grundfos 25S10-7	1.0	921.0
GE-WAA-09	Grundfos 25S10-7	1.0	923.0
GE-WAA-10	Grundfos 25S10-7	1.0	923.0
GE-WAA-11	Grundfos 25S15-9	1.5	922.0
GE-WAA-12	Grundfos 25S15-9	1.5	919.5
GE-WAA-13	Grundfos 16S07-8	0.75	921.5
GE-WAA-14	Grundfos 25S15-9	1.5	915.0
GE-WAA-15	Grundfos 25S15-9	1.5	911.0
GE-WU-01	Grundfos 5S05-9	0.50	930.0

BA1 Extraction Pump Selections			
Extraction Well/Sump ID	Pump Selection	Motor Size (HP)	Pump Inlet Set Depth (ft amsl)
GE-BA1-02	Grundfos 25S07-5	0.75	925.0
GE-BA1-03	Grundfos 25S07-5	0.75	920.5
GE-BA1-04	Grundfos 25S07-5	0.75	915.5
GE-BA1-05	Grundfos 25S07-5	0.75	918.0
GE-BA1-06	Grundfos 25S07-5	0.75	911.25
GE-BA1-07	Grundfos 25S07-5	0.75	909.0
GE-BA1-08	Grundfos 25S07-5	0.75	907.5
GE-BA1-09	Grundfos 25S07-5	0.75	911.0
GETR-BA1-01A	Grundfos 16S05-5	0.50	919.5
GETR-BA1-01B	Grundfos 16S05-5	0.50	919.5
GETR-BA1-02A	Grundfos 16S05-5	0.50	914.5

no.	date	by	ckd	description
A	03/31/20	EA	RH	ISSUED FOR 90% DESIGN

- NOTES:**
- REFER TO DRAWING P203 FOR ESTIMATED FLOW RATES.
 - EACH PUMP SHALL BE EQUIPPED WITH A SHROUD.

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date	MARCH 2020	detailed	E. AHLEMEYER
designed	E. DULLE	checked	R. BETTMENG

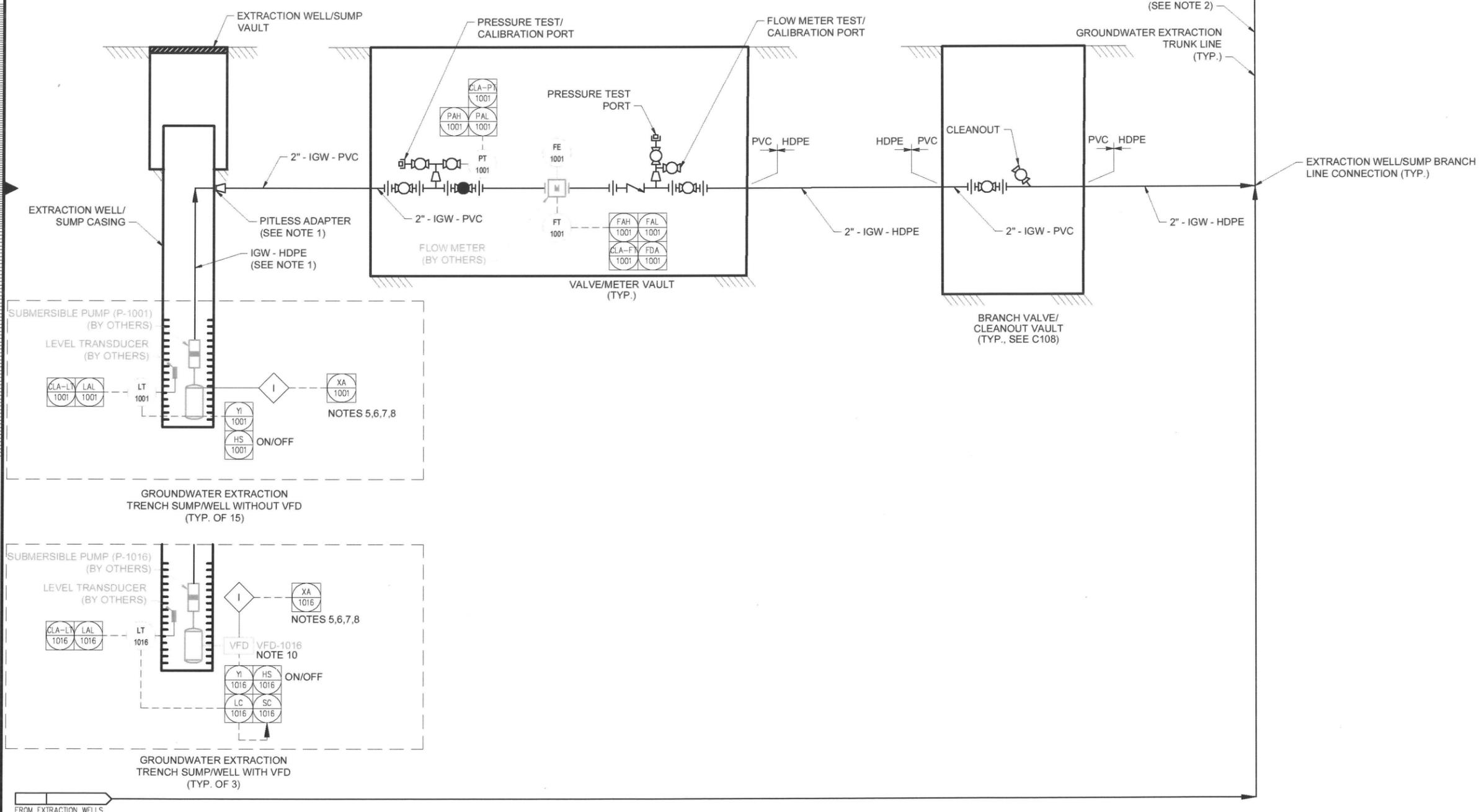
Cimarron Environmental Response Trust
 PUMP SELECTION INDEX
 EXTRACTION WELLS/SUMPS

project	120832	contract	
drawing	BMCD-GWREMED-M203	rev.	A
sheet	8	of	8 sheets
file	M203.DWG		

Scale For Microfilming
 Millimeters
 Inches

WATF EXTRACTION SYSTEM INSTRUMENTATION							
EXTRACTION WELL/SUMP ID	PHASE ¹¹	PUMP ID	VFD ID	PRESSURE TRANSMITTER ID	FLOW METER/ TRANSMITTER ID	LEVEL TRANSDUCER ID	
GE-WAA-01	PHASE I	P-1001	--	PT-1001	FT-1001	LT-1001	
GE-WAA-02	PHASE I	P-1002	--	PT-1002	FT-1002	LT-1002	
GE-WAA-03	PHASE I	P-1003	--	PT-1003	FT-1003	LT-1003	
GE-WAA-04	PHASE I	P-1004	--	PT-1004	FT-1004	LT-1004	
GE-WAA-05	PHASE II	P-1005	--	PT-1005	FT-1005	LT-1005	
GE-WAA-06	PHASE II	P-1006	--	PT-1006	FT-1006	LT-1006	
GE-WAA-07	PHASE II	P-1007	--	PT-1007	FT-1007	LT-1007	
GE-WAA-08	PHASE II	P-1008	--	PT-1008	FT-1008	LT-1008	
GE-WAA-09	PHASE II	P-1009	--	PT-1009	FT-1009	LT-1009	
GE-WAA-10	PHASE II	P-1010	--	PT-1010	FT-1010	LT-1010	
GE-WAA-11	PHASE II	P-1011	--	PT-1011	FT-1011	LT-1011	
GE-WAA-12	PHASE II	P-1012	--	PT-1012	FT-1012	LT-1012	
GE-WAA-13	PHASE II	P-1013	--	PT-1013	FT-1013	LT-1013	
GE-WAA-14	PHASE II	P-1014	--	PT-1014	FT-1014	LT-1014	
GE-WAA-15	PHASE II	P-1015	--	PT-1015	FT-1015	LT-1015	
GE-WU-01	PHASE II	P-1016	VFD-1016	PT-1016	FT-1016	LT-1016	
GETR-WU-01A	PHASE II	P-1017	VFD-1017	PT-1017	FT-1017	LT-1017	
GETR-WU-02A	PHASE I	P-1018	VFD-1018	PT-1018	FT-1018	LT-1018	

Scale For Microfilming
Millimeters
Inches



no.	date	by	ckd	description
A	01/13/21	AA	JRH	ISSUED FOR PRELIMINARY DESIGN

- NOTES:**
- REFER TO DRAWING M201 AND M203 FOR PUMP AND PIPING SPECIFICATIONS.
 - PIPE DIAMETERS VARY. REFER TO DRAWINGS C003 AND C004 FOR SPECIFIC PIPE DIAMETER INFORMATION.
 - REFER TO VFS-EPM-000-DWG-P-110 AND P-115.
 - REFER TO VFS-EPM-000-DWG-P-115.
 - LOW WELL WATER LEVEL; SHUT DOWN SUBMERSIBLE PUMP.
 - LOW/HIGH PRESSURE; SHUT DOWN SUBMERSIBLE PUMP.
 - LOW/HIGH WATER FLOW RATE; SHUT DOWN SUBMERSIBLE PUMP.
 - CEASE GROUNDWATER EXTRACTION MODE SIGNAL FROM TREATMENT BUILDING; SHUT DOWN SUBMERSIBLE PUMP.
 - THE FOLLOWING WILL BE PROVIDED BY OTHERS: SUBMERSIBLE PUMPS, VARIABLE FREQUENCY DRIVES, LEVEL TRANSDUCERS, PRESSURE TRANSMITTERS, AND FLOW METERS/TRANSMITTERS.
 - P-1016, P-1017, AND P-1018 ARE EQUIPPED WITH VARIABLE FREQUENCY DRIVES.
 - EQUIPMENT ASSOCIATED WITH PHASE II ASSUMES ALL PROPOSED INFRASTRUCTURE IS INSTALLED UPON COMPLETION OF PHASE I.

PRELIMINARY - NOT FOR CONSTRUCTION

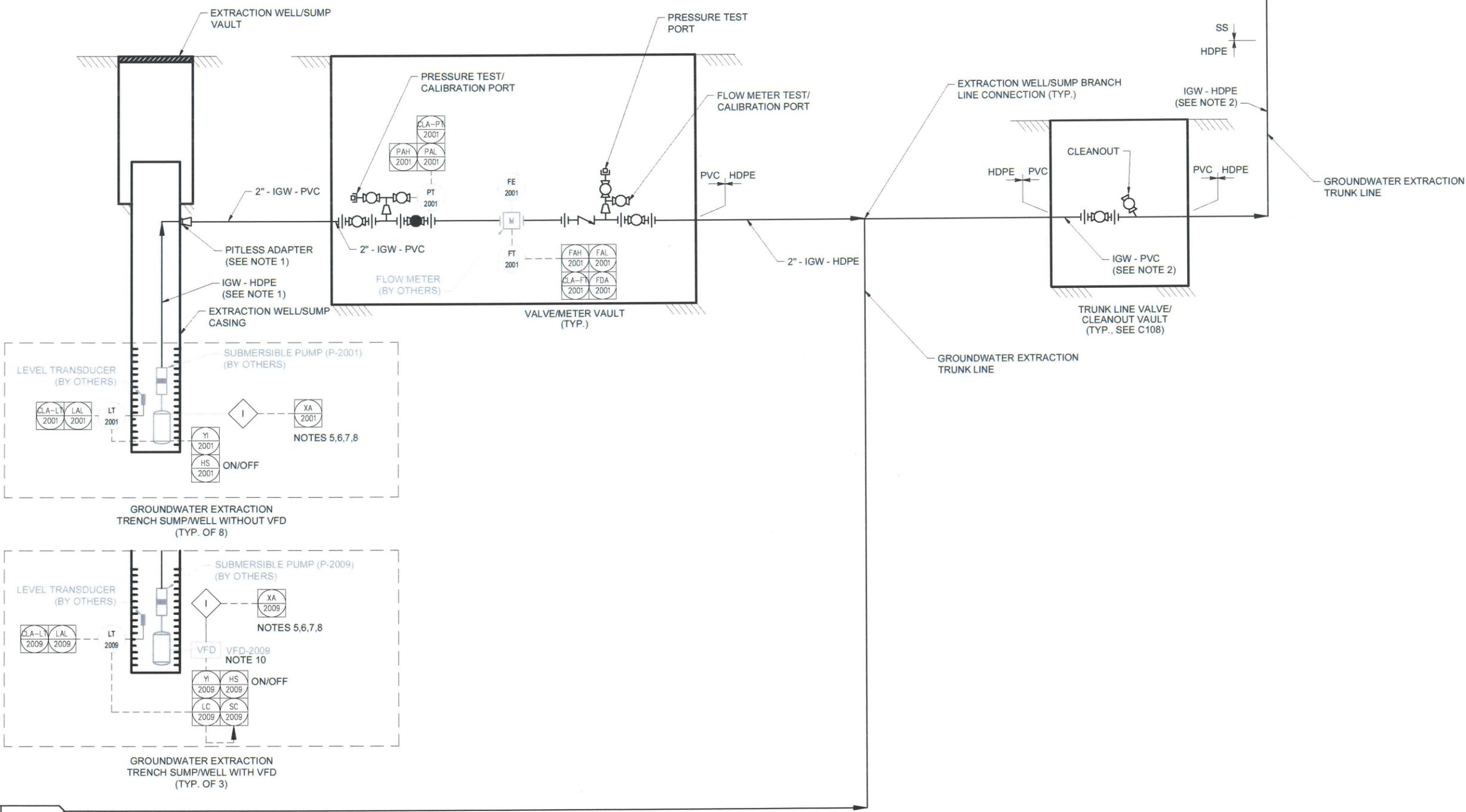
BURNS & MCDONNELL
 9400 WARD PARKWAY
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 816-333-9400
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date	JANUARY 2021	detailed	A. ANSTAETT
designed	E. DULLE	checked	J. HESEMANN

Cimarron Environmental Response Trust
 WESTERN AREA GROUNDWATER EXTRACTION SYSTEM P&ID

project	120832	contract	
drawing	BMCD-GWREMED-P101	rev.	A
sheet	2	of 11	sheets
file	P101_PHASE I & II.DWG		

BA1 EXTRACTION SYSTEM INSTRUMENTATION						
EXTRACTION WELL/SUMP ID	PHASE ¹¹	PUMP ID	VFD ID	PRESSURE TRANSMITTER ID	FLOW METER/ TRANSMITTER ID	LEVEL TRANSDUCER ID
GE-BA1-02	PHASE I	P-2001	--	PT-2001	FT-2001	LT-2001
GE-BA1-03	PHASE I	P-2002	--	PT-2002	FT-2002	LT-2002
GE-BA1-04	PHASE I	P-2003	--	PT-2003	FT-2003	LT-2003
GE-BA1-05	PHASE I	P-2004	--	PT-2004	FT-2004	LT-2004
GE-BA1-06	PHASE I	P-2005	--	PT-2005	FT-2005	LT-2005
GE-BA1-07	PHASE II	P-2006	--	PT-2006	FT-2006	LT-2006
GE-BA1-08	PHASE II	P-2007	--	PT-2007	FT-2007	LT-2007
GE-BA1-09	PHASE II	P-2008	--	PT-2008	FT-2008	LT-2008
GETR-BA1-01A	PHASE I	P-2009	VFD-2009	PT-2009	FT-2009	LT-2009
GETR-BA1-01B	PHASE I	P-2010	VFD-2010	PT-2010	FT-2010	LT-2010
GETR-BA1-02A	PHASE I	P-2011	VFD-2011	PT-2011	FT-2011	LT-2011



no.	date	by	ckd	description
A	01/13/21	AA	JRH	ISSUED FOR PRELIMINARY DESIGN

- NOTES:**
- REFER TO DRAWING M201 AND M203 FOR PUMP AND PIPING SPECIFICATIONS.
 - PIPE DIAMETERS VARY. REFER TO DRAWING C005 FOR SPECIFIC PIPE DIAMETER INFORMATION.
 - REFER TO VFS-EPM-000-DWG-P-210 AND P-215.
 - REFER TO VFS-EPM-000-DWG-P-215.
 - LOW WELL WATER LEVEL; SHUT DOWN SUBMERSIBLE PUMP.
 - LOW/HIGH PRESSURE; SHUT DOWN SUBMERSIBLE PUMP.
 - LOW/HIGH WATER FLOW RATE; SHUT DOWN SUBMERSIBLE PUMP.
 - CEASE GROUNDWATER EXTRACTION MODE SIGNAL FROM TREATMENT BUILDING; SHUT DOWN SUBMERSIBLE PUMP.
 - THE FOLLOWING WILL BE PROVIDED BY OTHERS: SUBMERSIBLE PUMPS, LEVEL TRANSDUCERS, PRESSURE TRANSMITTERS, AND FLOW METERS/TRANSMITTERS.
 - P-2009, P-2010 AND P-2011 ARE EQUIPPED WITH VARIABLE FREQUENCY DRIVES.
 - EQUIPMENT ASSOCIATED WITH PHASE II ASSUMES ALL PROPOSED INFRASTRUCTURE IS INSTALLED UPON COMPLETION OF PHASE I.

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date	detailed
JANUARY 2021	A. ANSTAETT
designed	checked
E. DULLE	J. HESEMANN

Cimmaron Environmental Response Trust
BURIAL AREA 1 GROUNDWATER EXTRACTION SYSTEM P&ID

project	contract
120832	
drawing	rev.
BMCD-GWREMEDI-P102	A
sheet 3 of 11 sheets	
file P102_PHASE I & II.DWG	

Scale For Microfilming
Millimeters
Inches

FROM EXTRACTION WELLS

no.	date	by	ckd	description
A	12/21/20	AA	JRH	ISSUED FOR PRELIMINARY DESIGN

Groundwater Extraction Process Stream	Designated Remediation Area	Flow Rates		Influent Characteristics ²																		
		Nominal gpm	Range gpm	U-235 Enrichment ¹ %	Total Uranium (Initial) µg/L	Total Uranium (Maximum) µg/L	Nitrogen, Nitrate-Nitrite (Initial) mg/L	Nitrogen, Nitrate-Nitrite (Maximum) mg/L	Fluoride (Initial) mg/L	Fluoride (Maximum) ³ mg/L	Tc-99 (Initial) ³ ng/L	Tc-99 (Maximum) ng/L	pH	LSI ²	RSI ²	Bicarbonate Alkalinity mg/L	Hydroxide Alkalinity			Phenolphthalein Alkalinity mg/L	Total Alkalinity mg/L	Aluminum µg/L
																	Carbonate Alkalinity mg/L	mg/L	mg/L			
BA1	"U>DCGL" AREA A	14	10 - 26	1.3	1720	1720	2.35	2.35	0.72	0.72	--	--	7.12	0.00	7.10	439.32	0.94	1.00	1.00	436.46	62.57	
	"U>DCGL" AREA B	66	30 - 90	1.3	1139	1139	0.27	0.27	0.49	0.49	--	--	7.09	0.16	6.76	460.92	1.53	1.00	1.00	462.96	80.59	
	"U<DCGL" AREA C	20	10 - 40	1.3	128.3	128.3	0.06	0.06	0.43	0.43	--	--	7.24	0.89	5.93	480.00	-	-	-	481.00	26.70	
WATF	WAA U>DCGL	99	60 - 120	2.9	147	147	38.1	38.1	2.27	2.3	0.0	14.51	6.96	-0.06	7.07	343.13	0.84	1.00	1.00	343.67	105.65	
	WU-1206 "NORTH"	8	3 - 15	2.9	304	304	38.6	--	7.03	7.0	--	--	7.05	0.25	6.55	579.50	1.26	1.00	1.00	580.50	-	

Groundwater Extraction Process Stream	Designated Remediation Area	Flow Rates		Influent Characteristics ²																	
		Nominal gpm	Range gpm	U-235 Enrichment ¹ %	Calcium µg/L	Chlorides ⁴ mg/L	Ferrous Iron mg/L	Iron µg/L	Magnesium µg/L	Manganese µg/L	Ortho-Phosphate mg/L	Potassium µg/L	Silica µg/L	Sodium ⁴ µg/L	Sulfate mg/L	TSS mg/L	TDS mg/L	TOC mg/L	Phosphorous mg/L	Methane mg/L	Temperature °C
BA1	"U>DCGL" AREA A	14	10 - 26	1.3	108831.03	20.43	0.40	545.93	49279.31	633.23	0.20	605.21	24072.41	30758.62	50.54	5.00	606.61	3.07	-	-	15.19
	"U>DCGL" AREA B	66	30 - 90	1.3	163440.00	73.38	0.75	763.78	61892.00	436.98	0.13	2133.20	26132.00	91940.00	266.42		985.04	3.79	-	-	15.29
	"U<DCGL" AREA C	20	10 - 40	1.3	186000.00	149.00	0.05	4740.00	64300.00	807.00	-	1930.00	26000.00	58400.00	338.00		1120.00	5.13	-	-	15.57
WATF	WAA U>DCGL	99	60 - 120	2.9	194200.00	99.37	0.05	107.53	77986.67	86.78	0.20	3346.67	22266.67	115640.00	369.13	1235.33	7.19	-	-	0.03	13.79
	WU-1206 "NORTH"	8	3 - 15	2.9	156500.00	17.85	-	204.50	57300.00	160.25	0.20	2439.00	-	84050.00	72.80	859.50	-	-	-	-	16.10

DEFINITIONS:

- BA1 - BURIAL AREA 1
- °C - DEGREES CELCIUS
- DCGL - DERIVED CONCENTRATION GOAL LEVEL
- gpm - GALLONS PER MINUTE
- LSI - LANGELIER SATURATION INDEX
- mg/L - MILLIGRAMS PER LITER
- ng - NANOGRAM PER LITER
- PBA - PROCESS BUILDING AREA
- RSI - RYZNER STABILITY INDEX
- s.u. - STANDARD UNITS
- TDS - TOTAL DISSOLVED SOLIDS
- TOC - TOTAL ORGANIC CARBON
- TSS - TOTAL SUSPENDED SOLIDS
- U - URANIUM CONCENTRATION
- µg/L - MICROGRAMS PER LITER
- µm - MICROMETER
- WAA - WESTERN ALLUVIAL AREA

GENERAL NOTES:

1. THE AVERAGES PRESENTED IN THIS SUMMARY ARE NOT NECESSARILY REPRESENTATIVE OF INFLUENT CHARACTERISTICS AT ALL TIMES. THE ACTUAL CHARACTERISTICS OF EACH PROCESS STREAM MAY VARY BASED ON THE GROUNDWATER EXTRACTION AND INJECTION COMPONENTS IN OPERATION AT ANY GIVEN TIME.
2. WITH THE EXCEPTION OF URANIUM, NITRATE, AND FLOURIDE CONCENTRATIONS, THE DATA USED TO PREPARE THIS SUMMARY IS LIMITED TO THE MOST RECENT GROUNDWATER ANALYTICAL RESULTS AVAILABLE FOR EACH SAMPLE LOCATION AND PARAMETER, AS SPECIFIED IN THE MS EXCEL® WORKBOOK FILE ENTITLED **2015-2-28 COMPREHENSIVE ANALYTICAL DATA**.
3. INFLUENT CHARACTERISTICS FOR EACH PROCESS STREAM WERE ESTIMATED BY AVERAGING CONCENTRATIONS REPORTED FOR MONITORING WELLS CONSIDERED REPRESENTATIVE OF EACH GROUNDWATER REMEDIATION AREA AND EXTRACTION STREAM.

¹PERCENT ENRICHMENT VALUES ARE FROM THE WORKBOOK FILE ENTITLED **URANIUM ACTIVITY VS MASS CONCENTRATION REV.A**.

²TOTAL ALKALINITY, CALCIUM AND TDS CONCENTRATIONS USED FOR LSI AND RSI CALCULATIONS AT EACH LOCATION WERE TAKEN FROM THE SAME SAMPLING EVENT WHICH OCCURRED IN EITHER 2004, 2005, OR 2007, DEPENDING ON THE LOCATION. TEMPERATURE AND PH VALUES USED FOR LSI AND RSI CALCULATIONS WERE TAKEN FROM THE 2015 SAMPLING EVENT AT EACH LOCATION.

³TC-99 INITIAL AND MAXIMUM CONCENTRATIONS ARE FROM THE WORKBOOK FILE ENTITLED **90% DESIGN WORKBOOK REV E (2-13-20)**

⁴SODIUM AND CHLORIDE CONCENTRATIONS IN GROUNDWATER EXTRACTED FROM WELLS LOCATED NEAR THE CIMARRON RIVER MAY BE SIGNIFICANTLY HIGHER THAN THE CONCENTRATIONS REPORTED FOR SITE MONITORING WELLS.

PRELIMINARY - NOT FOR CONSTRUCTION



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date	detailed
DECEMBER 2020	A. ANSTAETT
designed	checked
E. DULLE	J. HESEMANN

Cimmaron Environmental Response Trust
WATER TREATMENT DESIGN BASIS SUMMARY
INFLUENT CHARACTERISTICS - PHASE I

project	contract
120832	
drawing	rev.
BMCD-GWREMEDI-P201	A
sheet 7	of 11 sheets
file P201_REV 20201221.DWG	

Millimeters

Scale For Microfilming

Inches

Groundwater Extraction Process Stream	Designated Remediation Area	Flow Rates		Influent Characteristics ¹																	
		Nominal	Range	Total Uranium (Initial)	Total Uranium (Maximum)	Nitrogen, Nitrate-Nitrite (Initial)	Nitrogen, Nitrate-Nitrite (Maximum)	Fluoride (Initial)	Fluoride (Maximum)	pH	LSI ¹	RSI ¹	Bicarbonate Alkalinity	Carbonate Alkalinity	Hydroxide Alkalinity	Phenolphthalein Alkalinity	Total Alkalinity	Aluminum	Calcium	Chlorides ²	
		gpm	gpm	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	s.u.			mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	mg/L	
BA1	"U>DCGL" AREA A	14	10 - 26	1720	1720	2.35	2.35	0.72	0.72	7.12	0.00	7.10	439.32	0.94	1.00	1.00	436.46	80.59	108831.03	20.43	
	"U>DCGL" AREA B	66	30 - 90	1139	1139	0.27	0.27	0.49	0.49	7.09	0.16	6.76	460.92	1.53	1.00	1.00	462.96	62.57	163440.00	73.38	
	"U<DCGL" AREA C	20	10 - 40	34.7	34.7	0.06	0.06	0.43	0.43	7.24	0.89	5.93	480.00	-	-	-	481.00	26.70	186000.00	149.00	
WATF	WAA U>DCGL	99	60 - 120	147	147	35.8	35.8	2.27	2.3	6.96	-0.06	7.07	343.13	0.84	1.00	1.00	343.67	105.65	194200.00	99.37	
	WAA-WEST	10	10 - 30	58.6	58.6	10.2	10.2	0.45	0.5	7.32	0.10	7.01	359.33	-	-	-	360.67	-	135666.67	94.40	
	WAA "U<DCGL" EAST	20	20 - 60	51.1	51.1	72.2	72.2	0.45	0.4	7.25	-	-	-	-	-	-	324.00	-	-	61.60	
	WU-1206 "SOUTH"	4	1 - 5	62.0	62.0	11.57	11.57	1.00	1.00	7.40	-0.44	8.28	277.00	-	-	-	278.00	26.70	24700.00	3.72	
	WU-PBA	5	1 - 5	29.0	29.0	61.7	61.7	0.32	0.3	6.93	-	-	-	-	-	-	-	-	-	-	8.28
	WAA "BLUFF"	104	90 - 210	14.27	22.29	114	312.75	2.19	11.93	7.06	-0.43	7.55	290.00	-	-	-	285.33	16.55	182500.00	12.78	
	WU-1206 "NORTH"	8	3 - 15	304	304	38.6	38.6	7.03	7.0	7.05	0.25	6.55	579.50	1.26	1.00	1.00	580.50	-	156500.00	17.85	

Groundwater Extraction Process Stream	Designated Remediation Area	Flow Rates		Influent Characteristics ¹													Temperature °C	
		Nominal	Range	Ferrous Iron	Iron	Magnesium	Manganese	Ortho-Phosphate	Potassium	Silica	Sodium ²	Sulfate	TSS	TDS	TOC	Phosphorous		Methane
		gpm	gpm	mg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L		mg/L
BA1	"U>DCGL" AREA A	14	10 - 26	0.40	545.93	49279.31	633.23	0.20	605.21	24072.41	30758.62	50.54	≤15	606.61	3.07	-	-	15.19
	"U>DCGL" AREA B	66	30 - 90	0.75	763.78	61892.00	436.98	0.13	2133.20	26132.00	91940.00	266.42		985.04	3.79	-	-	15.29
	"U<DCGL" AREA C	20	10 - 40	0.05	4740.00	64300.00	807.00	-	1930.00	26000.00	58400.00	338.00		1120.00	5.13	-	-	15.57
WATF	WAA U>DCGL	99	60 - 120	0.05	107.53	77986.67	86.78	0.20	3346.67	22266.67	115640.00	369.13		1235.33	7.19	-	0.03	13.79
	WAA-WEST	10	10 - 30	0.05	346.50	38433.33	81.83	-	2930.00	17300.00	96200.00	169.23		944.00	-	-	-	14.85
	WAA "U<DCGL" EAST	20	20 - 60	-	100.00	-	28.60	-	-	-	-	270.00		-	4.09	-	0.03	14.97
	WU-1206 "SOUTH"	4	1 - 5	0.05	100.00	9130.00	18.90	-	1890.00	14700.00	15300.00	20.20		206.00	-	-	-	16.90
	WU-PBA	5	1 - 5	-	-	-	-	-	-	-	-	30.40		654.00	-	-	-	19.47
	WAA "BLUFF"	104	90 - 210	0.05	100.00	65550.00	9.04	-	3580.00	21050.00	52250.00	148.40		1281.50	5.91	-	-	13.39
	WU-1206 "NORTH"	8	3 - 15	-	204.50	57300.00	160.25	0.20	2439.00	-	84050.00	72.80		859.50	-	-	-	16.10

DEFINITIONS:

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- U - URANIUM CONCENTRATION
- µg/L - MICROGRAMS PER LITER
- UP1 - URANIUM POND #1 AREA
- UP2 - URANIUM POND #2 AREA
- WAA - WESTERN ALLUVIAL AREA
- WU - WESTERN UPLAND AREA

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date	detailed
JANUARY 2021	E. AHLEMEYER
designed	checked
E. DULLE	J. HESEMANN

Cimarron Environmental Response Trust
WATER TREATMENT DESIGN BASIS SUMMARY
INFLUENT CHARACTERISTICS - PHASE II

project	contract
120832	
drawing	rev.
BMCD-GWREMEDI-P201	A
sheet 7 of 11	sheets
file P201_PHASE II.DWG	