

Dewatering Trench Work Plan

Thorium Remediation Project
Tulsa, Oklahoma

March 2004

Prepared by:

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For:



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3-31-04

Date:

Dewatering Trench Work Plan

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WORK PLAN

INSTALLATION OF SOCK DRAIN WITH STONE

Design Basis –

Trench depth is based on existing weathered shale elevations depicted in Figure 1, Dewatering Trench Stations and Depths. Based on this information the existing ground elevation will be leveled and graded to allow keying 4" – 5" into the weathered shale layer. As per design established by Mersino Trenching LLC., (MTLLC) the installation of approximately 3000 lf of a trenched tile dewatering system shall consist of three 1000 lf sections of perforated, sock cased corrugated 5" HDPE dewatering pipe with a sump at each end covered by approximately three feet (3') of 3/8" Class "A" washed stone to be utilized as the filter media. Backfilling operations will utilize excavated materials compacted and graded in place.

Procedure of Operation –

Prior to arrival at the jobsite all equipment will be decontaminated. The operator for Mersino Trenching LLC will unload the track machine off of the trailer. After the machine has been taken off of the trailer, the stone chute and stone hopper must be placed on the machine.

RECON will provide an excavator and operator to lift the stone chute (a long chute that attaches to the pipe box along top of the machine) to be pinned in place. After the chute is pinned in place the hopper will be lifted by the excavator and bolted in place on the brackets attached to the trencher.

The machine will then be tracked to the location of the first system to be installed.

Preparing for Installation of Dewatering System –

The first thing that needs to be done is to arrange everyone and every machine involved in one area.

The front-end loader, excavator & rock box needs to be set up right along side the trencher, and the stone piles have to be arranged close to the work site.

Before the operator starts trenching, the drainage pipe to be installed must be laid out along the work area. The pipe will be placed on a trailer that will be towed by a

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pickup truck. The trailer will be capable of spinning to make it easier to string out the pipe. Once the pipe is strung out along the area of the system, it can be fed into the machine. The machine has a pipe box attached to it on top of the chain boom. A solid piece of pipe will be fed manually into the pipe box from the bottom end. It will come out of the top and will lie towards the ground. When the solid pipe has been placed in the box, the drainage pipe will then be coupled to the solid pipe as to make it one continuous pipe, with a solid pipe coupled to the other end as well. When the pipe is hooked up installation can begin.

Installation of Dewatering System –

Once the pipe is strung out, the loaders are in place, and the stone is stockpiled close to the work zone, installation can begin.

The operator will start the engine on the trencher, and will begin turning the chain. The chain on the trencher has cutters that will do the digging. As the chain begins turning the operator will begin lowering his boom into the ground. Once he has started to lower his boom, the pipe will begin pulling itself into the ground.

After the chain boom is a few feet in the ground, the operator will then stop to allow the excavator to pour stone into the stone chute, and then in the hopper as well. This will allow stone to be placed into the cut right away. Now that the stone has been placed into the chute, the operator of the trencher can begin lowering his boom into the ground the rest of the way, keying into the weathered shale layer. As the boom reaches the desired depth, the operator will begin tracking the machine away from where it originally set in the ground. This will allow the pipe to pull itself into the ground. This will continue until the trencher reaches the end of the system.

Meanwhile, an excavator will fill the stone hopper with 3/8" Class A washed stone from a rock box being pulled by the excavator and continually filled by the front end loader. The excavator will continue to feed the trenching equipment until the machine reaches the end of the system. As the chain is turning in the ground it will bring up the soils out of the ground and place them back over the trench, backfilling the trench as it goes. After trench is compacted and graded to match existing ground, some additional excavated materials will be left on top of the ground upon completion, the materials will be stockpiled in a location that has positive drainage toward the retention pond.

Once the machine reaches the end of the system and the solid pipe has been laid in the ground for a few feet, the operator can raise his boom out of the ground. This will leave a solid pipe sticking out of the ground at each end. The purpose for the solid pipe is so that the dewatering can take place from the drainage pipe at the bottom of

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the cut, and not allow the system to suck air where it begins and ends. This procedure will be the same for each system installed.

Pumping of Dewatering Systems –

After the system(s) is installed, a 4" Wellpoint Pump will be placed at the desired end of the system(s) as per figure 5 and 8 in RECON's Work Plan. A short solid pipe will be coupled to the end of the system to allow it to reach the pump. After the temporary holding tanks are constructed the pump(s) will then be started up with the vacuum relief valve open (to allow slow build up of vacuum so the sock does not get plugged up). The contractor will then let the system pump for as long as desired before excavation. Water levels will be checked periodically through the existing piezometers/wells to monitor ground water levels.

Breakdown and Loading of MTLCC Trencher –

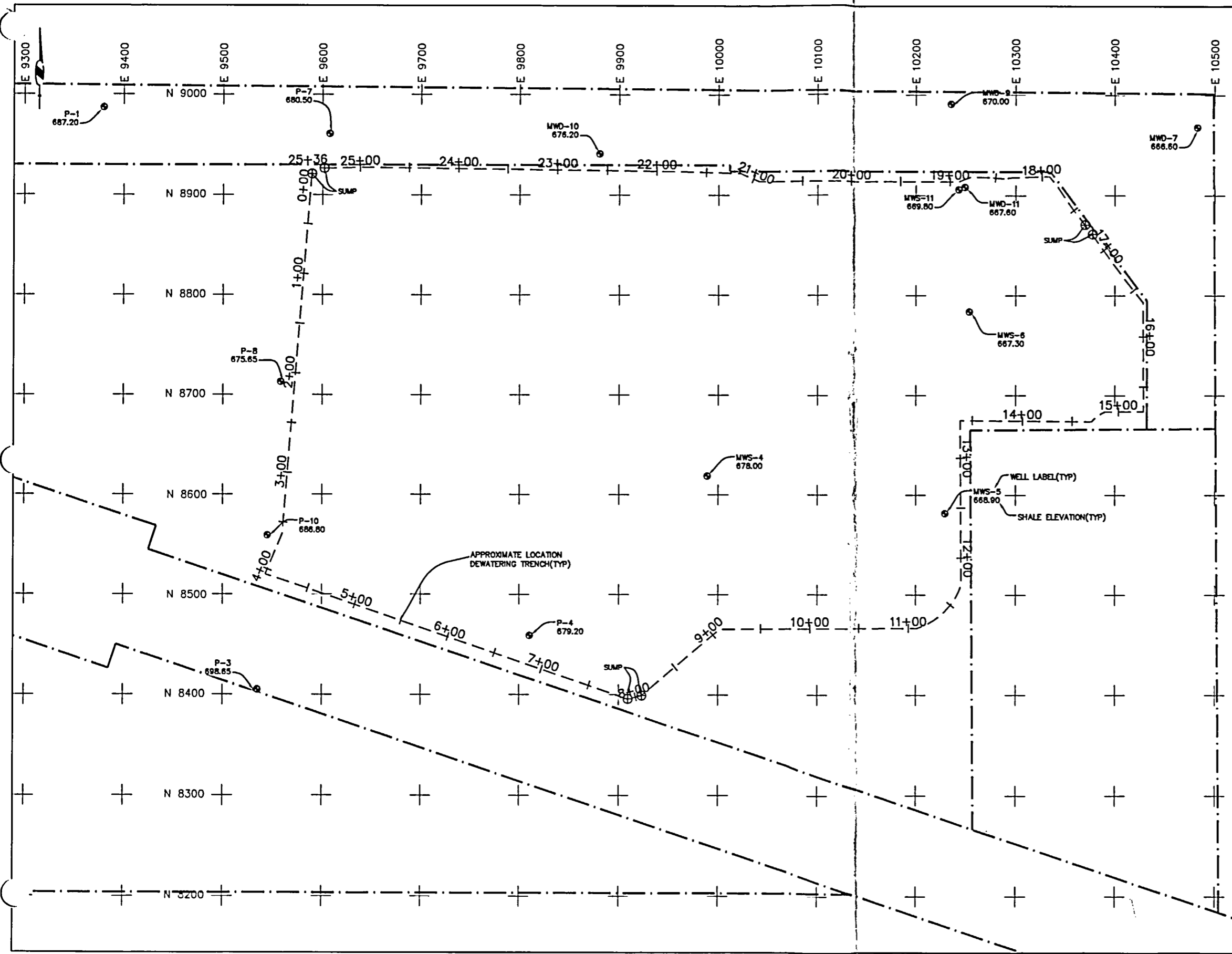
At the end of the installation of the dewatering systems, the contractor will use the excavator to remove the stone hopper and chute off of the trencher and load it back on the trailer. After the trencher is decontaminated and has passed the Unrestricted Release criteria as per the Radiation Health & Safety Plan (RHASP) the trencher will be loaded back onto the lowboy and chained down for transporting back to MTLCC's yard.

RECON will provide any necessary decontamination of the hopper, chute, service truck(s), trailer and machine.

MTLCC has agreed to adopt the Environmental Health & Safety Plan (EHASP) and RHASP plans set forth by RECON. The equipment that MTLCC will bring will be decontaminated prior to arrival on site.

When the dewatering trench can no longer be utilized RECON will cut off protruding piping six feet (6') below grade at each sump and cap the ends. RECON then will backfill, level and grade area.

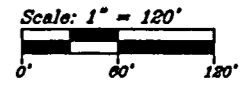
Figure 1



STATION	EXISTING	SHALE	DEPTH
0+00	702.00	679.98	22.02'
1+00	700.21	677.86	22.35'
2+00	696.22	676.00	20.22'
3+00	699.69	681.44	18.25'
4+00	702.51	689.26	13.25'
5+00	700.66	686.89	13.77'
6+00	700.33	683.93	16.40'
7+00	700.80	NO DATA	
8+00	698.53	NO DATA	
9+00	696.12	NO DATA	
10+00	694.46	NO DATA	
11+00	692.04	NO DATA	
12+00	694.54	NO DATA	
13+00	694.98	NO DATA	
14+00	688.77	NO DATA	
15+00	689.00	NO DATA	
16+00	689.34	NO DATA	
17+00	690.06	NO DATA	
18+00	691.09	667.65	23.44'
19+00	694.00	669.83	24.17'
20+00	692.68	671.67	21.01'
21+00	696.00	673.29	22.71'
22+00	695.10	674.97	20.13'
23+00	695.03	676.80	18.23'
24+00	694.80	677.88	16.92'
25+00	697.17	679.32	17.85'
25+36	702.00	679.81	22.19'

- PROPERTY LINE
- BM BENCH MARK
- - - DEWATERING TRENCH
- ⊕ SUMP LOCATION
- WELL LOCATION

NOTE:
 1. ALL SHALE ELEVATIONS WERE BASED ON GEOLOGICAL DATA DRAWINGS FROM A&M ENGINEERING AND ENVIRONMENTAL SERVICES, INC. DATED 5-8-1997, FIGURES 4-17 THRU 4-22.
 2. DEPTHS SHOWN IN LEGEND ONLY REFLECT FROM EXISTING ELEVATION TO TOP OF SHALE LAYER. EXCAVATION WILL BE AN ADDITIONAL 4-5 INCH KEY INTO THE WEATHERED SHALE LAYER.
 3. WHERE NO DATA WAS GIVEN OPERATOR WILL EXCAVATE UNTIL SHALE LAYER IS REACHED AND AN ADDITIONAL 4-5 INCH DEPTH FOR KEY INTO THE WEATHERED SHALE LAYER.
 4. EXISTING ELEVATIONS WILL CHANGE TO ALLOW KEY INTO WEATHERED SHALE LAYER.



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RECON

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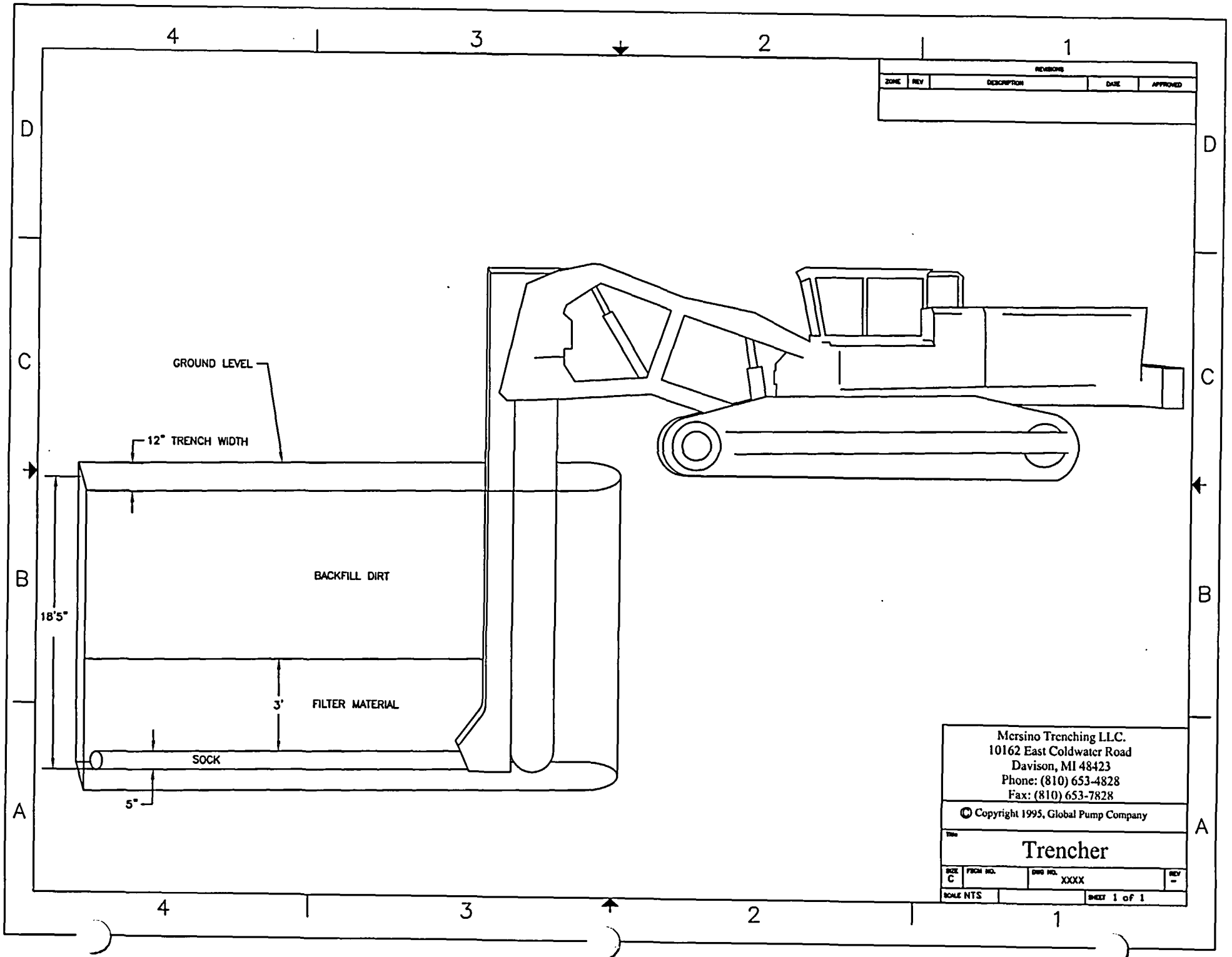
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TITLE: DEWATERING TRENCH STATIONS AND DEPTHS
 KAISER ALUMINUM
 Tulsa, Oklahoma

No.	Description	Date

SIGNED BY: _____

Figure 2



REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED

GROUND LEVEL

12" TRENCH WIDTH

BACKFILL DIRT

3' FILTER MATERIAL

SOCK

5"

18'5"

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Trencher

SIZE C	FROM NO.	DRG NO. XXXX	REV -
SCALE NTS		SHEET 1 of 1	