

ATTACHMENT 11
SUMP CONNECTION CONSTRUCTION PLAN

May 2016

0120-685-11-03

SUMP CONNECTION CONSTRUCTION PLAN

ATTACHMENT 11

**OTTAWA COUNTY FARMS LANDFILL
CONSTRUCTION PERMIT APPLICATION
COOPERSVILLE, MI**

PREPARED BY



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11 SUMP CONNECTION CONSTRUCTION PLAN

The purpose of this plan is to support the construction planning sequencing for the lateral expansion application prepared for the Ottawa County Farms (OCF) Landfill. More specifically, this plan addresses the connection of the existing leachate collection sumps located on the east end of Phases 1 & 2 to the expansion area Phase 9. Various elements of construction that require specific consideration in order to execute the sump connection construction include, but are not limited to, the following:

1. Waste excavation and handling;
2. Establishment of temporary leachate containment and removal controls
3. Excavation of soil berm;
4. Liner system construction and connection;
5. Fill sequencing after connection; and
6. Health and safety considerations.

It is anticipated that during the construction bidding process, prospective contractors will be asked to provide an implementation plan for the waste excavation and sump connection construction to obtain additional input on specific tasks or activities expected. The implementation plan should include a detailed construction sequencing or development plan.

This construction plan is intended to be flexible with regard to the means and methods by which the waste relocation, sump connection construction, and ancillary support activities are to be completed. The actual sequence or phasing of construction could be impacted by unforeseen site-specific conditions that may not become apparent until construction of the sump connections and/or Phase 9 commences.

11.1 WASTE EXCAVATION AND HANDLING

Waste excavation is necessary in order to expose and construct the bottom liner and leachate collection system tie-in between the existing Phases 1 & 2 and the adjacent Phase 9. Slope stability calculations were performed using XSTABL two-dimensional limit equilibrium slope stability software (Sharma 2011). Results of this preliminary slope stability evaluation indicate that a waste excavation with 3.5H:1V slope will provide a factor of safety near 1.4. Prior to commencing waste excavation activities for the construction of Phase 9, further evaluation of the waste excavation slope may be conducted to determine if a steeper angle could be acceptable. Additional evaluation may include the use of 3-dimensional analysis or site specific interface friction testing on samples collected from the existing liner components on the sideslope of Phases 1 and 2. Further excavation controls, such as the use of trench boxes or benching, will also be considered.

Waste materials to be excavated are expected to consist of general municipal solid waste, construction & demolition debris and/or special wastes. Prior to excavation commencing, site records will be

reviewed to determine if the area may contain disposed asbestos containing materials (ACM). Waste will be excavated by the contractor and hauled to the active working face for final disposal. The existing site conditions are shown on Figure 11-1. Proposed waste excavation contours around the Phase 1 & 2 sumps are indicated on Figure 11-2.

As waste is removed to excavation grades, a minimum of 12 inches of soil cover will be placed over exposed waste.

11.1.1 Landfill Gas and Odor Management

The waste excavation will impact the existing landfill gas collection and control system (GCCS) due to the presence of extraction wells, laterals and headers within the excavation area. Impacts to the existing GCCS will be mitigated appropriately to maintain compliance with the New Source Performance Standards (NSPS). This may include but is not necessarily limited to installing temporary wells and rerouting laterals and headers. Excavation of waste can introduce oxygen into the system which presents a fire risk. Care will be taken to limit vacuum on the gas extraction system until 12 inches of cover is placed.

Odors will be controlled by implementing a multi-faceted approach which may include continued landfill gas collection, placement of soil cover, masking or neutralization sprays and/or managing construction schedules so as to minimize the potential for odors (i.e. limiting excavation to winter months). An odor management plan will be required of the contractor(s) performing the waste excavation. This plan will include the following:

- 1) The City of Coopersville and Polkton Township will be notified in writing that a waste relocation project is starting at the Ottawa County Farms Landfill and unusual odors may be noticeable. The Ottawa County Farms Landfill requests that any complaints received by the Township and City be forwarded to landfill management at (616) 837-8195.
- 2) During the excavation, the contractor will, to the extent practical, keep surrounding gas wells connected to vacuum. No gas wells will be abandoned as a result of this project.
- 3) The contractor will be required to install either daily cover soil, or a foam cover material similar to RusFoam ADC. If needed, odor control granular additive will be added to the foam, which may be used upon the manufacturer's recommendation for this application.

11.1.2 Fugitive Dust Management

Excavation of waste can have inherent challenges with regard to managing fugitive dust, particularly due to the short term increase in truck traffic and construction equipment. Control measures will be implemented such that the construction activities do not contribute nuisance fugitive dust emissions. Control measures to be employed include, but are not limited to, frequent cleaning of paved haul roads,

routine maintenance of gravel roads, optimizing of haul routes, spraying the working area with water, tarping loads, etc. Fugitive dust control will be expected as part of the contractor implementation plan for the work.

11.2 LEACHATE CONTAINMENT AND REMOVAL

Once the waste is removed, the existing leachate removal system within the sump area will be removed. This will include the leachate collection sand on the inside face of the east berm, the pumps and sideslope riser, perimeter force main/sewer, and leachate removal piping as indicated on Figures 11-3 and 11-5.

The leachate removal pipes that enter the Phase 1 and 2 sumps will eventually be extended into a dedicated sump within Phase 9. The two northernmost cleanouts in Phase 1 will be extended to the north to provide for long term access. All other leachate collection pipes and their cleanouts will be inspected and/or jetted then fitted with an end cap. Inspection of these pipes will not be possible once they are covered by waste placement.

During construction the exposed sumps will be the collection point for leachate within their respective phases and also surface water that runs off the waste excavation slopes. It is important that temporary containment and leachate removal be installed in order to prevent the uncontrolled discharge to the environment. Temporary sand bags and a geomembrane rain flap (or similar containment) along the slope and floor of the sump connection excavation will provide containment of waste and liquid generated from the waste mass or existing leachate collection system. Detail 2 on Figure 11-6 provides a schematic of the temporary liquid containment berm.

Temporary leachate removal pumps and hoses will be utilized within the excavated sump and containment berm area during construction of liner components connecting Phases 1 & 2 with Phase 9. Continuous pumping and removal of leachate will take place throughout the sump connection construction to convey the liquids from the excavated sump area to the existing leachate forcemain by way of a new lift station to be installed near the northwest corner of the lateral expansion area. If necessary, temporary storage containers such as frac tanks may be used.

11.3 SOIL BERM EXCAVATION

Two sections of the existing liner components and soil berm located between Phases 1 & 2 and lateral expansion Phase 9 will need to be removed. This is necessary in order to connect the bottom liner and leachate collection systems. The soil berm will be excavated to the slopes and grades indicated on Figure 11-3 and extend to the top of the existing sump elevation in Phases 1 & 2. Excavated soil from

the berm may be used on site for daily cover needs, compacted soil liner (if suitable), or stockpiled with other excavated soil from the project area.

11.4 LINER SYSTEM CONSTRUCTION AND CONNECTION

After removing the soil berm, the bottom liner system of Phase 9 will be extended to the slopes and bottom of the berm cut slopes. The geosynthetic components will be overlapped and seamed between Phase 9 and Phases 1 and 2 in accordance with the CQA Plan.

The completed leachate collection system shown on Figure 11-4 will not be connected until the Phase 9 construction report is approved and allowed to begin receiving waste. At that time, the temporary rain flaps and sand bag containment berms will be removed and the leachate collection pipes will be connected as shown by Detail 3 on Figure 11-7. The former sump areas will be backfilled with a sand/bentonite mixture.

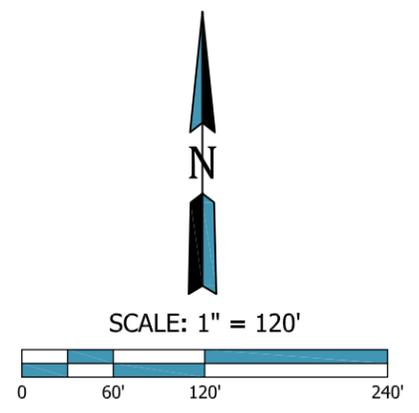
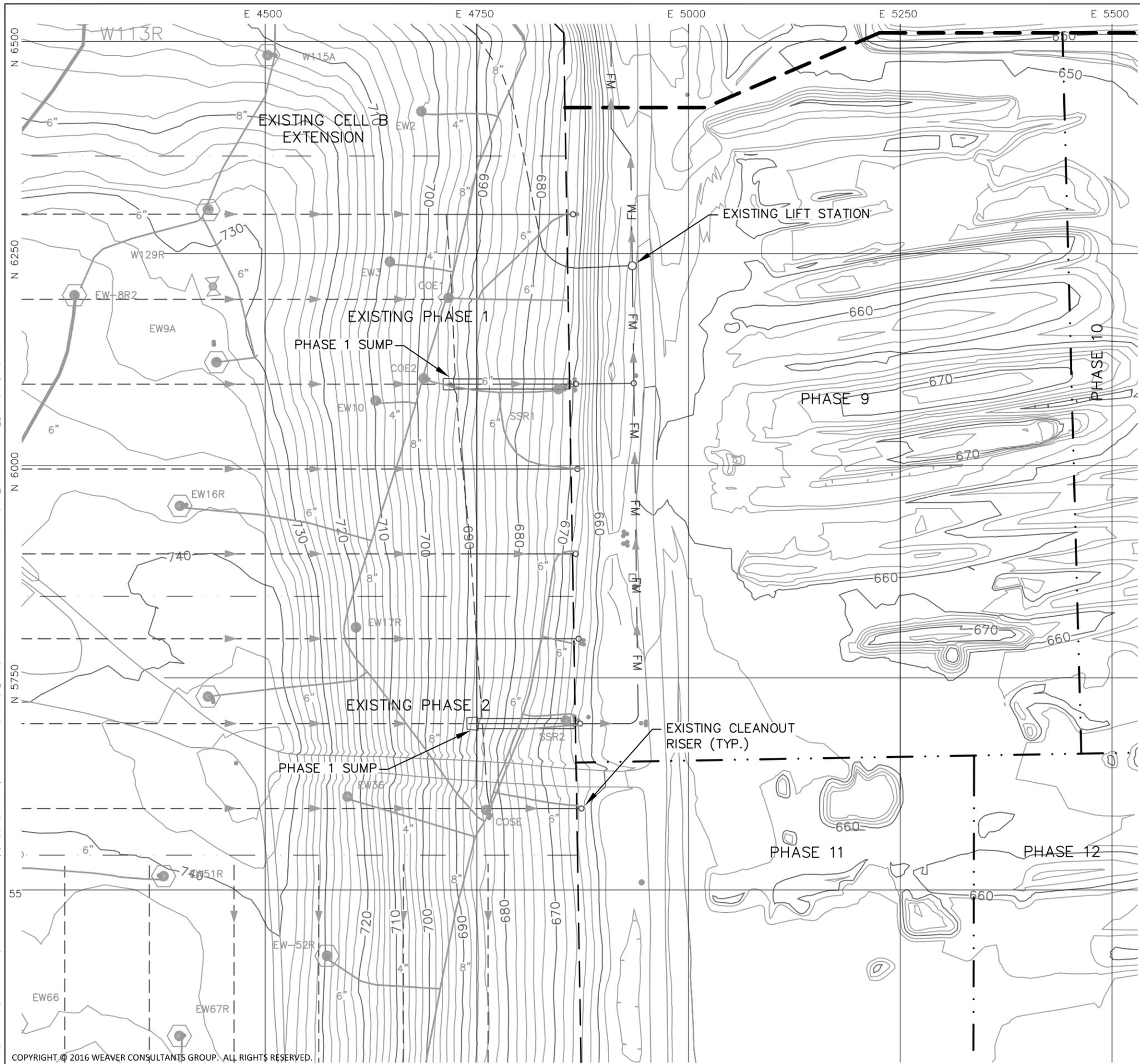
11.5 POST-CONSTRUCTION SEQUENCING

After the final pipe connections are made, the landfill operations will begin filling the sump connection area with incoming waste. Filling of the sump connection area may be performed concurrently or after a layer of select waste is placed across the entire floor of Phase 9, depending on incoming waste receipts and operational considerations.

11.6 HEALTH & SAFETY CONSIDERATIONS

The selected construction contractor will be required to prepare and execute a project specific Health & Safety Plan (HASP). Key elements of the HASP will address regular, ambient air monitoring/screening for explosive gases, hydrogen sulfide and volatile organic compounds, waste material handling, heavy equipment traffic, fugitive dust, and recognition of slope instability. Further, if ACM is previously determined to have been disposed within the area of waste excavation, specific measures for handling exposed or excavated ACM will also be incorporated into the implementation plan as well as the HASP.

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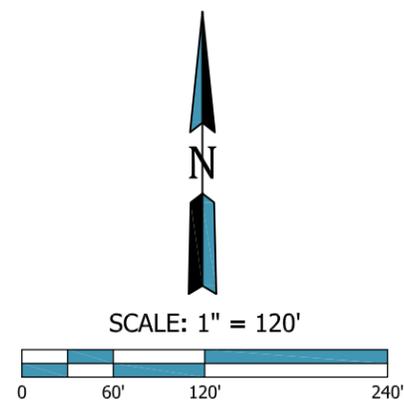
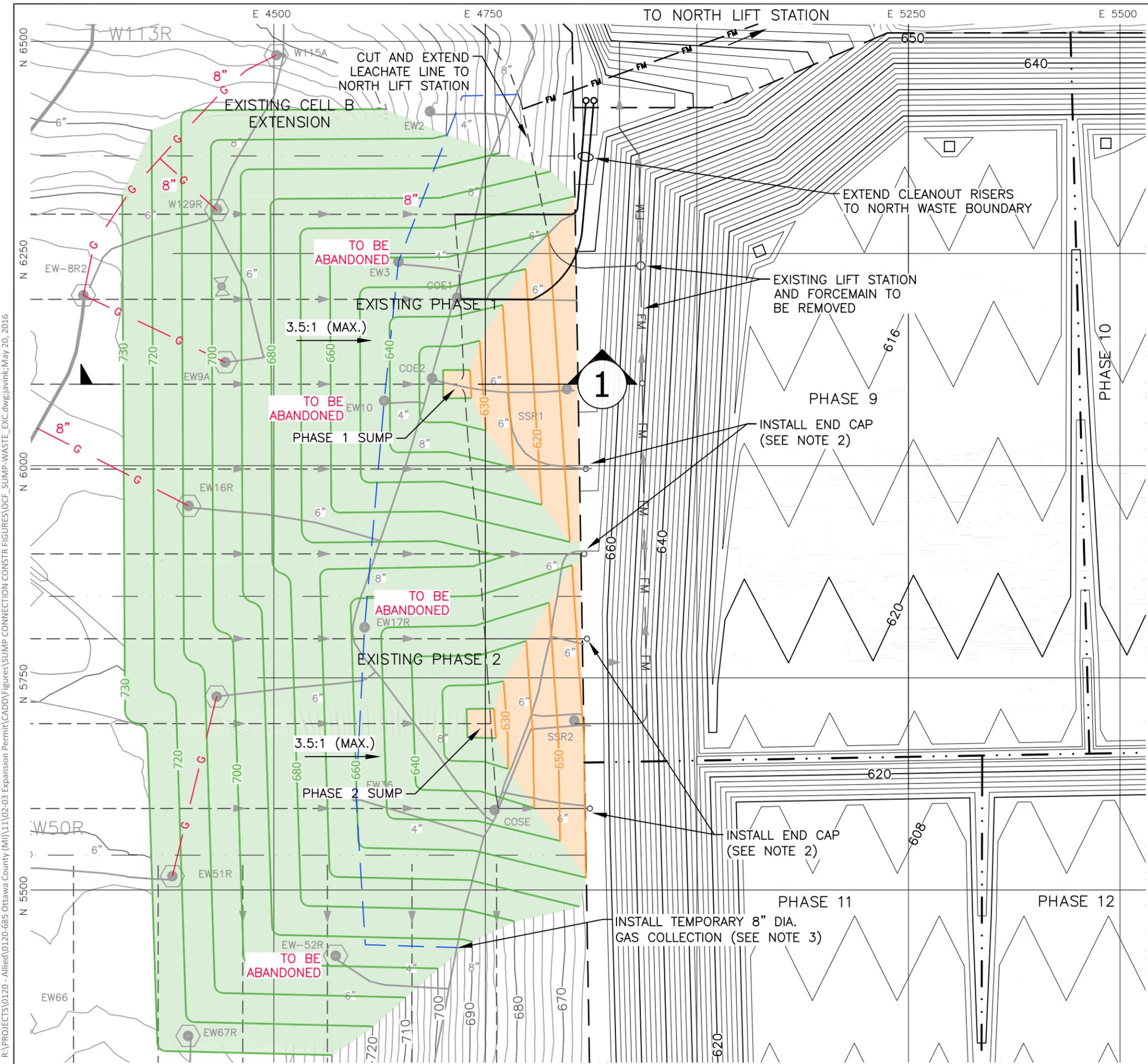
LEGEND

- PERMITTED SOLID WASTE BOUNDARY
- EXPANSION SOLID WASTE BOUNDARY
- PHASE BOUNDARY- EXISTING UNIT
- PHASE BOUNDARY- EXPANSION AREA
- 670 EXISTING CONTOUR (10 FT. INTERVAL)
- EXISTING CONTOUR (2 FT. INTERVAL)
- EXISTING LEACHATE COLLECTION PIPE
- FM EXISTING FORCEMAIN
- EXISTING GAS HEADER/LATERAL

NOTE:

1. EXISTING TOPOGRAPHICAL INFORMATION FROM AERIAL SURVEY PERFORMED BY COOPER AERIAL SURVEYS, CO., MARCH 30, 2016.

NO.	DATE	REVISION DESCRIPTION



LEGEND

- PROPERTY LINE
- - - PERMITTED SOLID WASTE BOUNDARY
- EXPANSION SOLID WASTE BOUNDARY
- - - PHASE BOUNDARY- EXISTING UNIT
- . . . PHASE BOUNDARY- EXPANSION AREA
- 670 EXISTING CONTOUR (10 FT. INTERVAL)
- 670 EXISTING CONTOUR (2 FT. INTERVAL)
- 670 EXPANSION TOP OF LINER CONTOUR
- 670 WASTE EXCAVATION CONTOUR
- 630 EXPOSED LINER CONTOUR
- FM EXISTING FORCEMAIN
- EXISTING LEACHATE COLLECTION PIPE
- G PROPOSED TEMPORARY GAS COLLECTION LATERAL
- PROPOSED HORIZONTAL GAS TRENCH

NOTE:

1. EXISTING TOPOGRAPHICAL INFORMATION FROM AERIAL SURVEY PERFORMED BY COOPER AERIAL SURVEYS, CO., MARCH 30, 2016.
2. LEACHATE COLLECTION CLEANOUTS THAT ARE NOT EXTENDED NORTH OR THROUGH TO PHASE 9 ARE TO BE INSPECTED AND/OR JETTED, THEN CAPPED.
3. INSTALL GAS COLLECTION LATERALS AS NEEDED TO GAS WELLS LOCATED WITHIN WASTE EXCAVATION.

PREPARED FOR:
 OTTAWA COUNTY
 LANDFILL, INC.
 15550 68TH AVE.
 COOPERSVILLE, MI
 OTTAWA COUNTY FARMS LANDFILL
 OTTAWA COUNTY, MICHIGAN

SUMP CONNECTION CONSTRUCTION PLAN
 WASTE EXCAVATION PLAN

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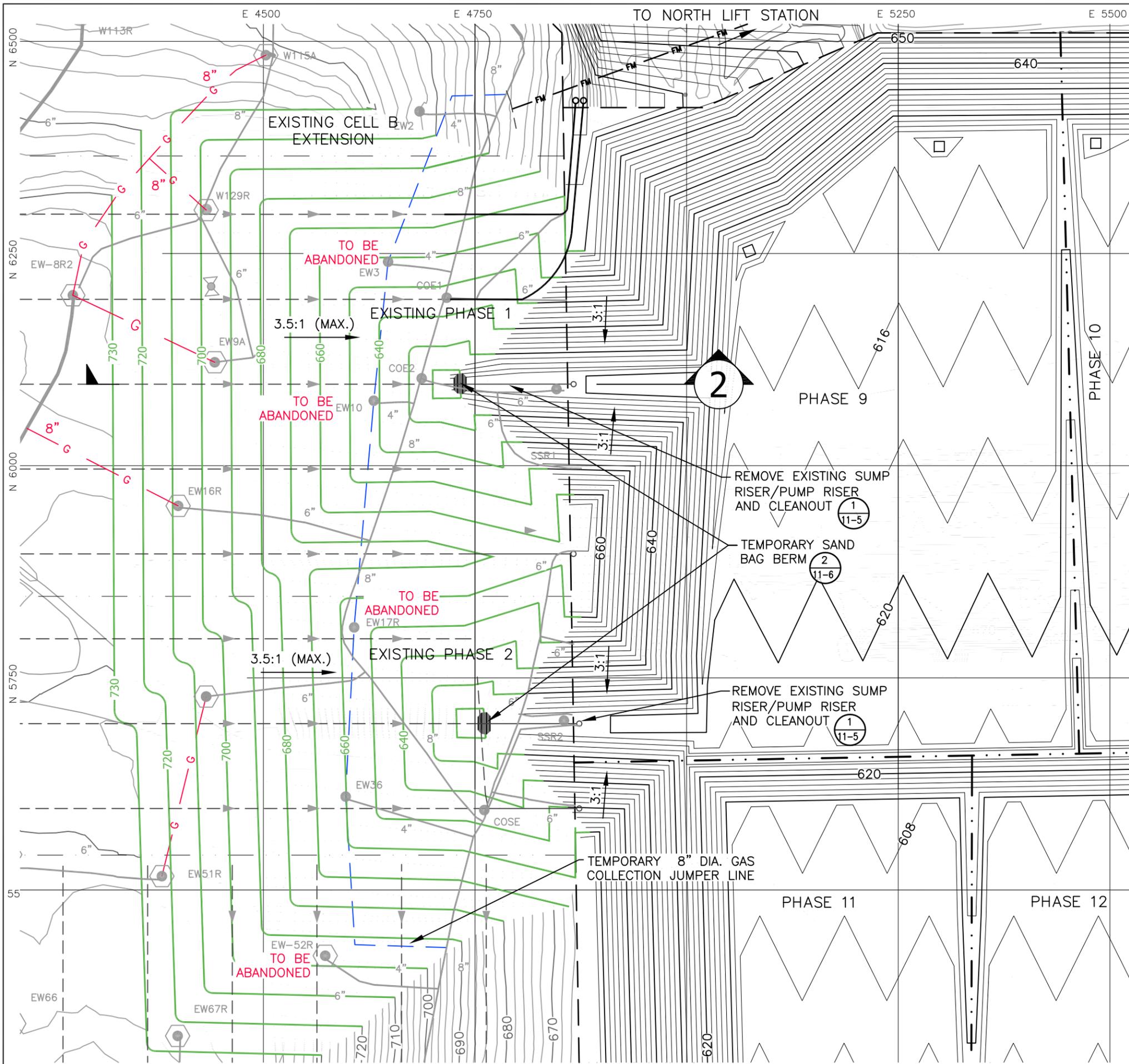
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FIGURE 11-2

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LEGEND

- PERMITTED SOLID WASTE BOUNDARY
- EXPANSION SOLID WASTE BOUNDARY
- PHASE BOUNDARY- EXISTING UNIT
- PHASE BOUNDARY- EXPANSION AREA
- 670 EXISTING CONTOUR (10 FT. INTERVAL)
- 670 EXISTING CONTOUR (2 FT. INTERVAL)
- 670 EXPANSION TOP OF LINER CONTOUR
- 670 WASTE EXCAVATION CONTOUR
- EXISTING LEACHATE COLLECTION PIPE
- G PROPOSED TEMPORARY GAS COLLECTION LATERAL
- PROPOSED HORIZONTAL GAS TRENCH

NOTE:

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3. INSTALL GAS COLLECTION LATERALS AS NEEDED TO GAS WELLS LOCATED WITHIN WASTE EXCAVATION.

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COOPERSVILLE, MI

**SUMP CONNECTION CONSTRUCTION PLAN
SIDESLOPE EXCAVATION PLAN**

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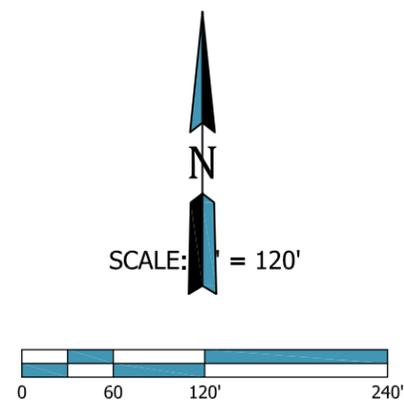
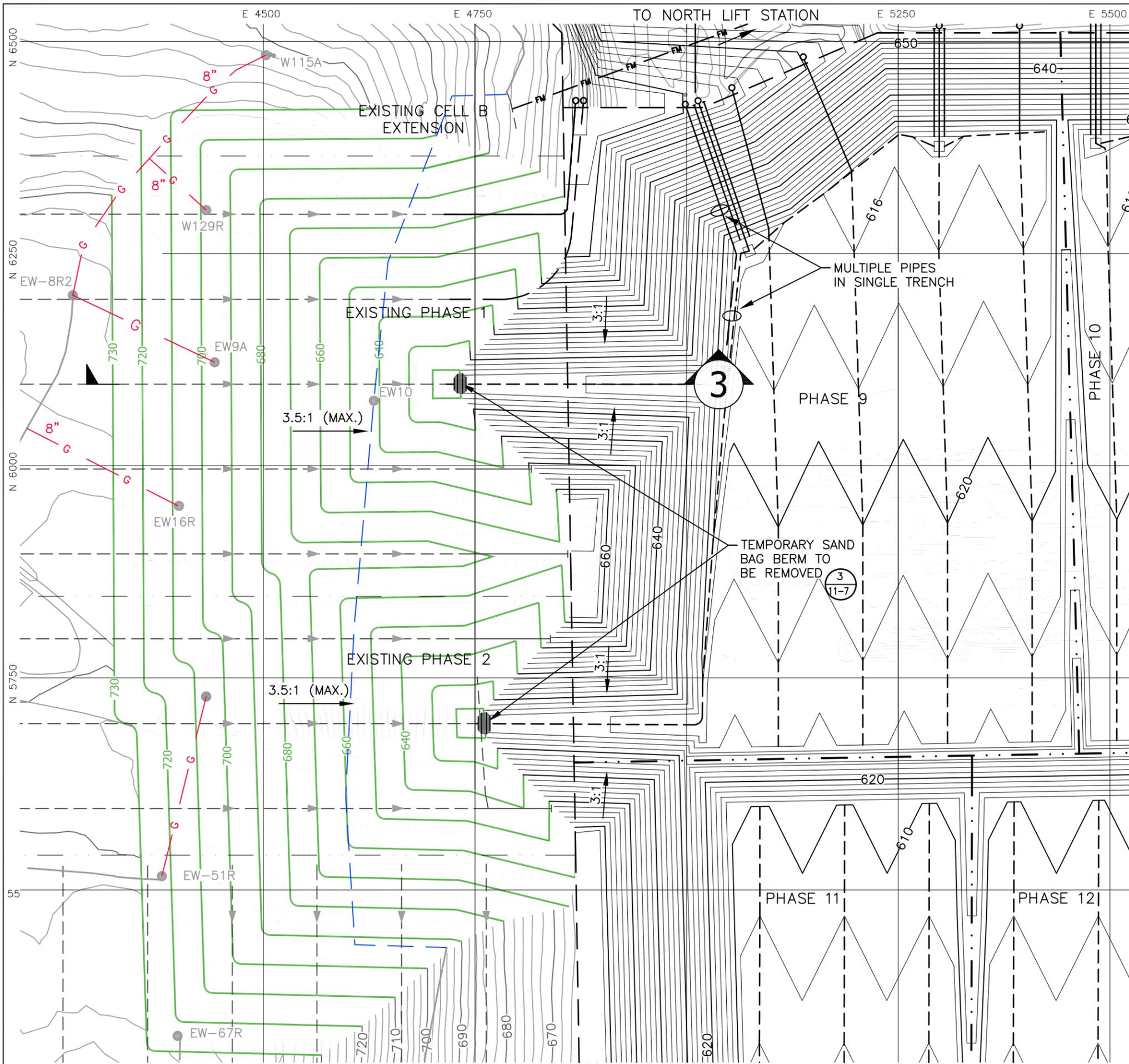
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FIGURE 11-3

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LEGEND

- PERMITTED SOLID WASTE BOUNDARY
- EXPANSION SOLID WASTE BOUNDARY
- - - PHASE BOUNDARY- EXISTING UNIT
- . . . PHASE BOUNDARY- EXPANSION AREA
- 670--- EXISTING CONTOUR (10 FT. INTERVAL)
- EXISTING CONTOUR (2 FT. INTERVAL)
- 670--- EXPANSION TOP OF LCS CONTOUR
- 670--- WASTE EXCAVATION CONTOUR
- LCS PIPE CLEANOUT RISER
- >--- EXISTING LEACHATE COLLECTION PIPE
- >--- EXPANSION LEACHATE COLLECTION PIPE
- G--- PROPOSED TEMPORARY GAS COLLECTION LATERAL
- >--- PROPOSED HORIZONTAL GAS TRENCH

NOTE:

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3. INSTALL GAS COLLECTION LATERALS AS NEEDED TO GAS WELLS LOCATED WITHIN WASTE EXCAVATION.

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SUMP CONNECTION CONSTRUCTION PLAN
LEACHATE COLLECTION SYSTEM CONNECTION
 OTTAWA COUNTY FARMS LANDELL
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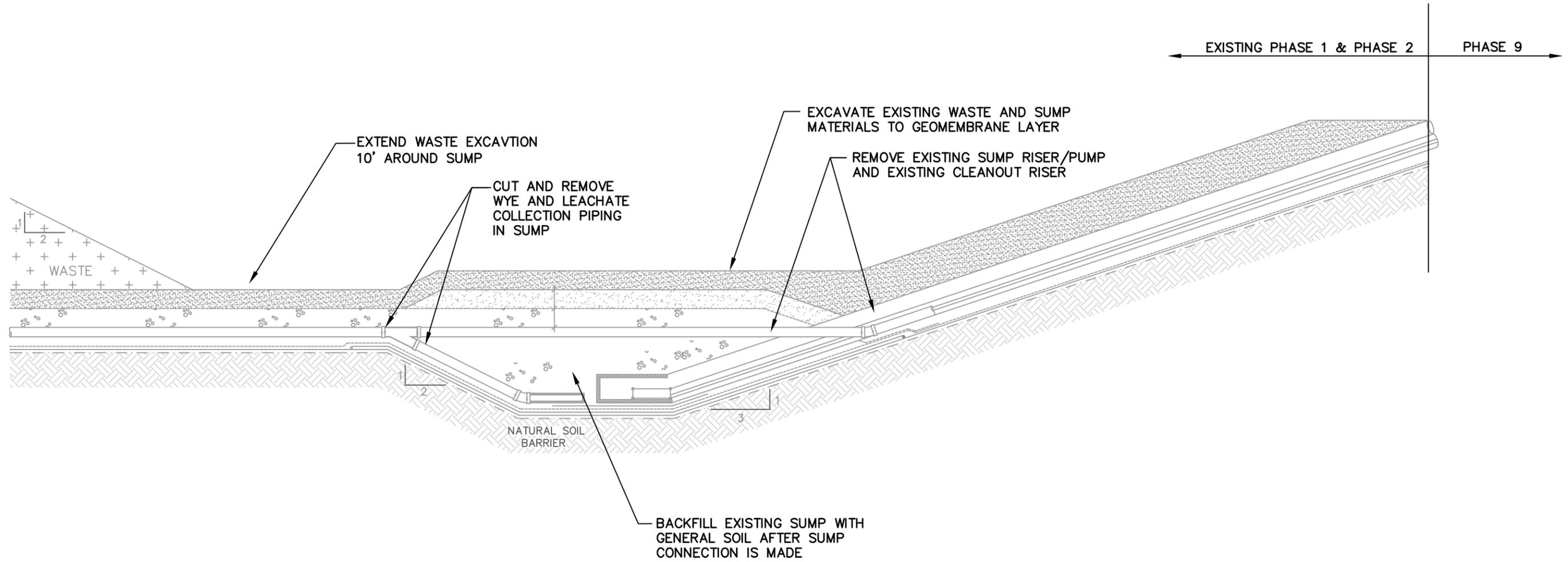
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FIGURE 11-4

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1 X-SECTION AT SUMP AFTER WASTE EXCAVATION
11-5 NO SCALE

NOTES:

1. AT PHASE 1 AND PHASE 2 SUMP LOCATIONS, EXCAVATE EXISTING WASTE AT 2:1 SLOPES AND ABANDON EXISTING SUMP RISERS AND PUMP. TIE-IN TO PHASE 9 LEACHATE COLLECTION SYSTEM.

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SUMP CONNECTION CONSTRUCTION PLAN
DETAILS - SHEET 1
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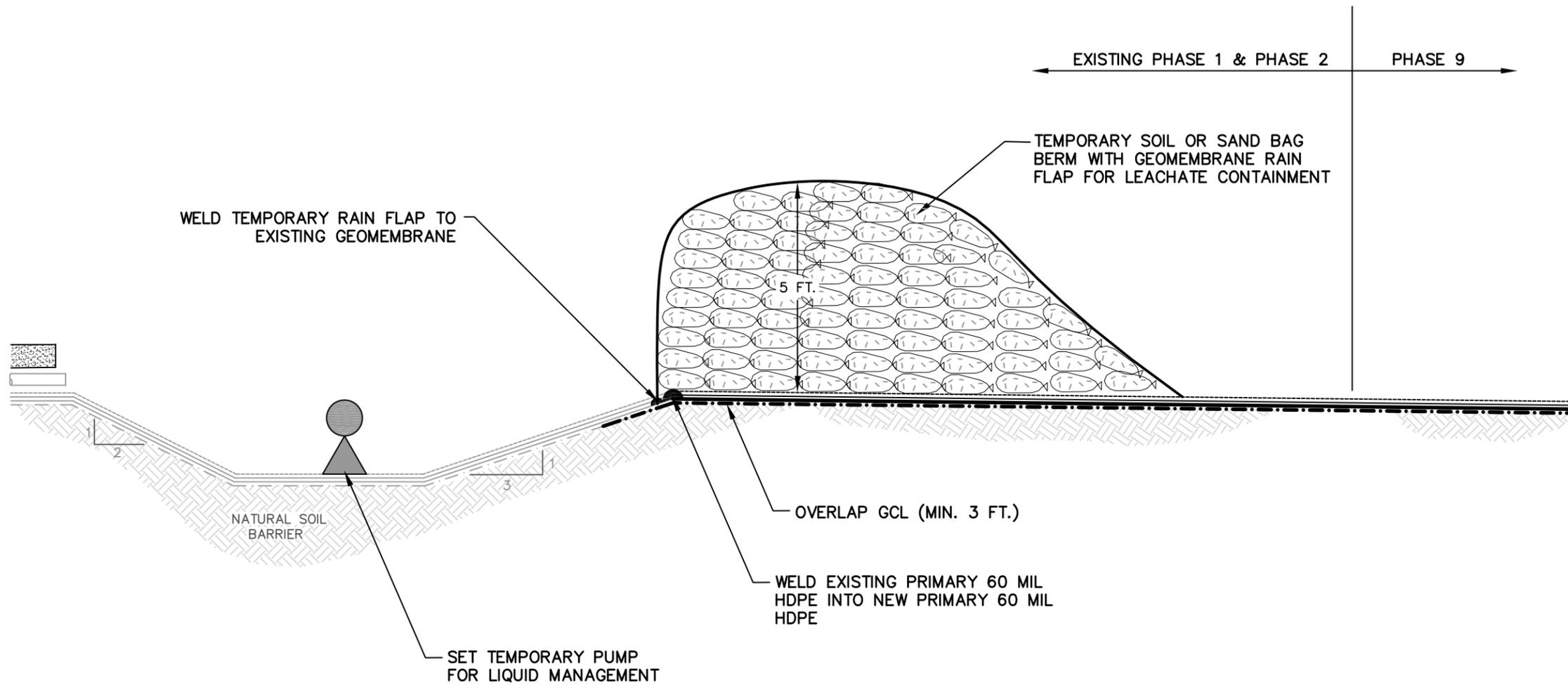
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FIGURE 11-5

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2 X-SECTION AT SUMP AFTER LINER INSTALLATION
11-6 NO SCALE

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SUMP CONNECTION CONSTRUCTION PLAN
DETAILS - SHEET 2
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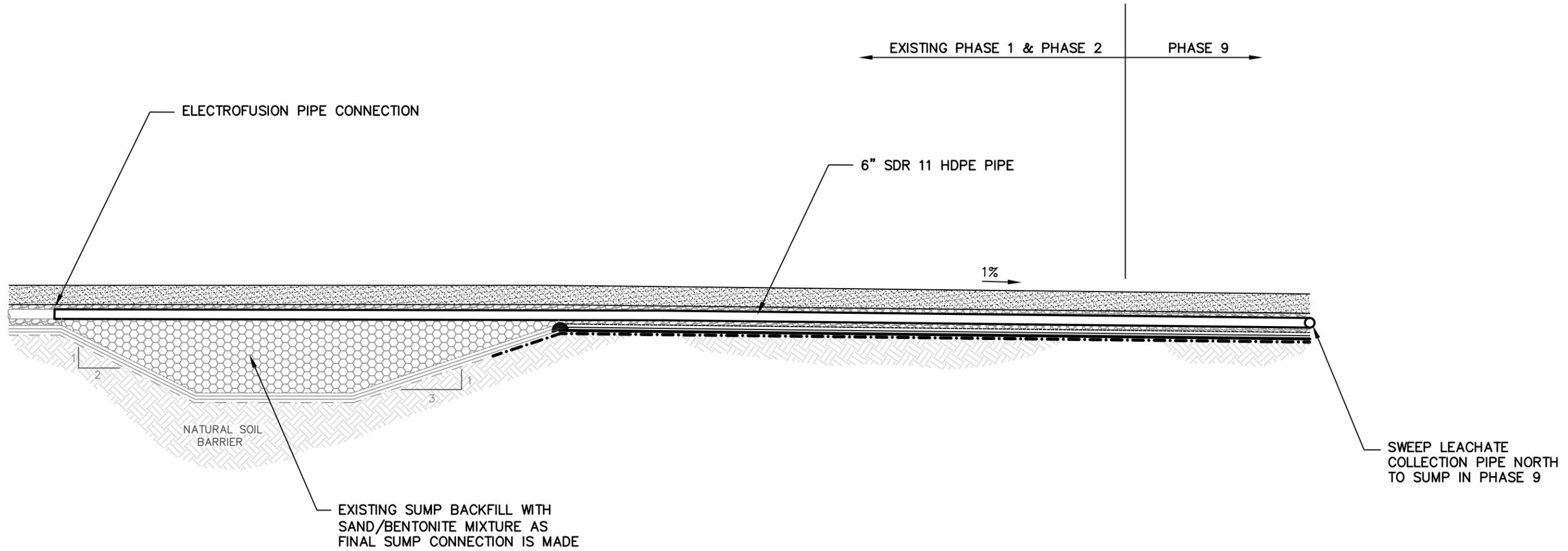
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FIGURE 11-6

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3 X-SECTION AT SUMP AFTER LEACHATE COLLECTION CONNECTION
11-7 NO SCALE

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FIGURE 11-7