STATE OF MAINE
DEPARTMENT OF
ENVIRONMENTAL PROTECTION

PAUL R. LEPAGE
GOVERNOR

PAUL MERCER
COMMISSIONER

August 21, 2017

Kathy Zeigler
Director, Environmental Remediation
Mallinkrodt US LLC
444 McDonnell Boulevard
Hazelwood, Missouri 63042

RE: MDEP Acceptance of Landfill Ridge Area Closure Report dated February 3, 2017

Dear Ms. Zeigler:

MDEP accepts the reference document. The MDEP Project Teas has reviewed the referenced document and determines it to be complete and appropriate. We did not review the document in fine detail as much of the information was reviewed at a previous time during the planning and execution. This acceptance and determination does not prohibit MDEP from requesting additional information on the matter in the future.

MDEP appreciates Mallinckrodt's efforts throughout the Corrective Measure Implementation process and considers this closure report documentation of all the hard work put forth by you and your team. The remediation of the Landfill Ridge Area was no small task and resulted in a measurable improvement of our precious environment.

If you have any questions, comments or concerns, do not hesitate to contact me via phone (207) 530-1494 or email kyle.jellison@maine.gov.

Sincerely,

Digitally signed by Kyle R. Jellison
Date: 2017.08.21 11:08:44 -04'00'

Kyle Jellison, Project Manager
Division of Remediation
Bureau of Remediation and Waste Management

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Mallinckrodt US LLC

February 3, 2017

Mr. Chris Swain
Bureau of Remediation and Waste Management
Maine Department of Environmental Protection
17 State House Station
Augusta ME 04333

Subject: **Landfill Ridge Area Closure Report**
Orrington Remediation Site
Orrington, Maine

Dear Mr. Swain:

Please find enclosed the **Landfill Ridge Area Closure Report** for the Orrington Remediation Site. This Closure Report includes a summary of the remedial construction activities completed in accordance with the Landfill Ridge Corrective Measures Implementation (CMI) Plan – Rev 1 dated October 28, 2015. The report also summarizes the construction quality assurance (CQA) program, operations and submittals completed as part of the remedial work and related quality control documentation.

If you have questions or comments regarding this report please feel free to contact me at 314-281-5947.

Sincerely,

Kathy Zeigler

Kathy Zeigler
Remediation Program Manager

cc: Chris Greene, Geosyntec
John Weston, CDM Smith
Pat Duft, Mallinckrodt US LLC
Susanne Miller, DEP-Bangor

CQA REPORT

Landfill Ridge Area
Construction Closure Report

Orrington Remediation Site

Orrington, Maine

Prepared by:

CDM Smith, Inc.
25 Industrial Ave.
Chelmsford, MA 01824

Geosyntec Consultants, Inc.
289 Great Road, Suite 105
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Mallinckrodt US LLC

February 2017

CDM Smith Geosyntec consultants

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Acronyms and Definitions

ASTM	American Society of Testing Materials
Adam's	Adam's Hydroseed
BEP	Board of Environmental Protection
CDM	Camp Dresser & McKee
CDM Smith	CDM Smith, Inc.
CF1	Common Fill Type 1
CMI	Corrective Measures Implementation
CQA	Construction Quality Assurance
DEP	Department of Environmental Protection
DGG	Dense Graded Gravel
DS1	Drainage Sand Type 1
E&S	Erosion and Sediment
ECB	Erosion Control Blanket
Elemental mercury	refers to free beads or visible mercury
FDT	Field Density Test
ft	feet
Geosyntec	Geosyntec Consultants, Inc.
GWTP	Ground Water Treatment Plant (on-site)
HASP	Health and Safety Plan
mg/kg	milligrams per kilogram
MPS	Media Protection Standard
MQC	Manufacturers' Quality Control
Order	State of Maine Board of Environmental Protection Order
OSM	Onsite Reuse Material
PAMP	Perimeter Air Monitoring Plan
QA/QC	quality assurance/quality control
Report	The Landfill Ridge Area Closure Report
RFI	Requests for Information
RRP	Riprap
Site	Orrington Remediation Site
STF	Structural Fill
TOS	Topsoil
TSSA	Temporary Soil Stockpile Area

TQS	¾ Inch Stone
TRM	Turf Reinforcement Mat
Raven Industries	Raven Industries, Inc.
TenCate	TenCate Geosynthetics Americas
Tensar	Tensar Corporation, LLC

Section 1.
Introduction and Project Organization

1.1 Purpose

The purpose of this Landfill Ridge Area Construction Closure Report, herein referred to as the Report, is to summarize the construction activities, quality control (QC) documentation, and quality-assurance (QA) monitoring and QA documentation activities, collectively referred to as Closure Activities, performed by various members of the Project Team, identified in Section 1.3 below, during the Landfill Ridge Area Corrective Measures Implementation (CMI) construction at the Orrington Remediation Site (Site) located at 99 Industrial Way, Orrington, Maine, between October 20, 2015 and June 30, 2016. The Landfill Ridge area is shown in **Figure 1-1**. Requirements for the Landfill Ridge Area Closure Activities were set forth in the State of Maine Board of Environmental Protection (BEP) Order (Order) effective April 3, 2014, and the Landfill Ridge Area CMI Plan Revision 1 (CMI Plan) (2015a), dated October 28, 2015, which was approved on December 10, 2015, and other relevant contract documents herein referred to as the Project Documents, listed in Section 1.4.

1.2 Report Organization

The Landfill Ridge CQA Plan is organized as follows:

- Section 1 – Introduction and Project Organization;
- Section 2 – Summary of Construction Activities;
- Section 3 – Summary of CQA Program;
- Section 4 – CQA Work Activities;
- Section 5 – Conclusion; and
- Section 6 – References.

Documentation presenting the results of the CQA monitoring and testing activities performed by Geosyntec and record drawings are provided in the appendices to this report.

1.3 Project Team

Key stakeholders and companies for the Landfill Ridge Area CMI area presented below, along with their roles and responsibilities.

<u>Oversight Agency – Maine Department of Environmental Protection, Augusta, Maine</u>

The Maine Department of Environmental Protection (DEP) provided oversight of the remediation work including remediation construction activities, and provided feedback and approvals of the Project Documents submitted to them for review.

Owner – Mallinckrodt US LLC

The Owner of the Site is Mallinckrodt US LLC (Mallinckrodt). Mallinckrodt was responsible for the remediation of the Landfill Ridge Area CMI and contracted with the Remediation Project Manager to implement the Project Documents.

Remediation Project Manager – CDM Smith Inc., Boston, Massachusetts

CDM Smith Inc. (CDM Smith) was hired by Mallinckrodt to provide construction management services during the Landfill Ridge Area CMI activities. CDM Smith retained a Design Engineer, Remediation Contractor and a Construction Quality Assurance (CQA) Engineer to implement the Landfill Ridge Area CMI and perform the Closure Activities in accordance with the approved CMI Plan and the Order. CDM Smith constructed the Temporary Soil Stockpile Area (TSSA), provided health and safety oversight, and implemented the site-wide perimeter air monitoring plan (PAMP) (2015b).

Design Engineer, CQA Engineer and On-site Analytical Laboratory – Geosyntec Consultants, Acton, MA

Geosyntec Consultants (Geosyntec) prepared design documents presented in the Landfill Ridge Area CMI Plan and performed CQA activities in accordance with the Construction Quality Assurance Plan provided in the CMI Plan (2015a). Geosyntec was directly accessible to the Owner and the Remediation Project Manager for technical direction and issues relating to QC/QA activities during construction. The CQA Engineer was responsible for carrying out the field sampling, QC/QA oversight, and QC/QA documentation portion of the Closure Activities to ensure that the requirements of the Project Documents were met during construction. Geoysntec also operated and managed the Maine-certified On-site Analytical Laboratory during construction for confirmation sample analytical testing. Geosyntec also subcontracted off-site laboratory services to the following:

- Alpha Analytical (Alpha) of Westborough, Massachusetts was the CQA Engineer's off-site analytical test laboratory.
- CDM Smith Geotechnical Laboratory, Somerville, MA was the CQA Engineer's off-site Geotechnical Testing Laboratory with experience in the physical testing of soils, and is familiar with, and properly equipped to perform the geotechnical testing required by the CQA Plan.

Remediation Transportation and Disposal Contractor – US Ecology, Boise, Idaho

US Ecology was responsible for transporting and disposing of soils designated for offsite disposal. US Ecology was responsible for providing railcars for transportation, coordination with Pan-Am for picking up railcars, tracking railcars, weighing railcars, and preparing associated paperwork.

Ground Water Treatment Plant Operator - Woodard and Curran, Portland, Maine

Woodward and Curran operated the onsite ground water treatment plant (GWTP). Contact water from the construction activities was transported to the onsite GWTP for treatment prior to discharge in accordance with MEDES Permit ME0000C39.

Onsite Agency Representative – Techlaw, North Chelmsford, Massachusetts.

The Regulatory Agency Onsite Representative provided onsite oversight for the Regulatory Agency (Maine DEP) and coordinated with the CQA Engineer for confirmation sampling. Techlaw also subcontracted off-site laboratory services to the following:

- Katahdin Analytical Services of Scarborough, Maine was the Onsite Agency Representative's analytical test laboratory.

Remediation Contractor - Envirocon, Inc., Missoula, Montana

Envirocon performed the construction portion of the Closure Activities (not including construction of the TSSA) to satisfy the requirements of the Project Documents. Additionally, Envirocon performed construction quality control (QC) activities to document that materials and activities being completed were in accordance with the project specifications and drawings. The Remediation Contractor employed the services of subcontractors, coordinated material sources, and interfaced with the Remediation Project Manager and the CQA Engineer throughout the Closure Activities. Envirocon subcontracted the following companies to support the QC activities:

- CES, Inc. of Brewer, Maine was Envirocon's Maine Land Surveyor and provided survey control and as-built surveys of the remedial construction.
- S. W. Cole of Bangor, Maine was Envirocon's Geotechnical Test Laboratory and provided geotechnical soil testing on QC samples throughout construction.
- Adams Hydroseeding of Winterport, Maine was Envirocon's landscaping subcontractor and provided hydroseeding services.

1.4 Project Documents and Communication

The requirements for the Landfill Ridge Area Closure Activities are described in the following Project Documents:

- The State of Maine Board of Environmental Protection (BEP) Order (Order), effective April 3, 2014;
- *Landfill Ridge Area Corrective Measures Implementation (CMI) Plan Revision 1,* including construction specifications, CQA Plan, and drawings, prepared by Geosyntec and dated October 28, 2015, and subsequent revisions to address Maine DEP conditional approval comments including;
    - *Landfill Ridge Area CMI Plan, Orrington Remediation Site (Construction Drawings – Revision 2: Responses to Maine DEP comments received November/December 2015)*, prepared by Geosyntec dated December 16, 2015, and submitted to the Maine DEP on December 17, 2015;
    - Approval of the Final Landfill Ridge Area Confirmation Sampling Plan, received from the Maine DEP in an email dated December 18, 2015 and titled *"RE: Final Revised LF Ridge Drawings"*;
    - *Landfill Ridge Area CMI Plan, Orrington Remediation Site (Construction Drawings – Revision 3: Responses to Maine DEP comments received February 2016),* prepared by Geosyntec dated March 22, 2016;
    - *Landfill Ridge Area CMI Plan General Guidelines for Confirmation Sampling and Split Sampling Protocols*, prepared by Geosyntec and submitted to the Maine DEP on December 2, 2015;
- *Health and Safety Plan (HASP), Orrington Remediation Site,* prepared by CDM Smith Inc. dated October 9, 2014;
- *Perimeter Air Monitoring Plan (PAMP), Orrington Remediation Site,* prepared by CDM Smith Inc. dated July 22, 2015;
- *Contractor Construction Work Plans*, prepared by Envirocon, including:

  - *Excavation and Restoration Plan,* dated September17, 2015;
  - *Traffic Control Plan*, dated September 17, 2015;
  - *Spill Control and Countermeasures Contingency Plan,* dated August 20, 2015;
  - *Envirocon's Construction HASP,* dated July 29, 2015;
  - *Construction Water Management Plan,* dated September 29, 2015; and
  - *Work Zone Air Monitoring Plan,* dated September 17, 2015;
- *Construction Submittals*, prepared by Envirocon, and *Construction Submittal Responses*, prepared by Geosyntec; and
- *Contractor Requests for Information (RFIs)*, prepared by Envirocon, and *Responses to Contractor RFIs*, prepared by Geosyntec.

The CMI Plan and Contractor Construction Work Plans, as well as the HASP, PAMP, and Guidelines for Confirmation Sampling were previously submitted to the Maine DEP and are not included in this report.

The organization structure and lines of communications for the Project Team were set forth in the CQA Plan provided as an appendix in the CMI Plan (2015a). Members of the project team including CDM Smith, Envirocon, and Geosyntec held weekly construction progress meetings on site to review progress updates, address questions, and convey schedule updates. As part of the CQA Engineer responsibilities, Geosyntec issued daily field reports summarizing daily construction progress, QC/QA activities, and highlighting any matters requiring action. Daily Field Reports were issued to CDM Smith regularly, and are included in **Appendix A**. Additional communications made throughout the Closure Activities were documented in Contractor RFIs and subsequent responses, QC submittals and subsequent responses, CDM Smith daily reports, Envirocon daily field reports, monthly teleconferences with Maine DEP, and daily toolbox meetings.

Section 2.
Summary of Construction Activities

2.1 Permitting

Permitting requirements were summarized in the CMI Plan (2015). The following is a list of permits obtained for the Landfill Ridge Closure Activities:

- Maine General Permit – Category 1, approved by the US Army Corps of Engineers on June 10, 2015, for subtidal excavation near the Penobscot River;
- NRPA Permit-by-Rule – Category 13, approved by the Maine DEP on June 9, 2015, for work in and adjacent to wetlands and protected areas;
- Land Use Application (Shore land Protection), approved by Orrington Code Enforcement Officer on May 29, 2015, for work within 250 ft of the Penobscot River; and
- Construction General Permit, approved by the Maine DEP on September 7, 2015, for construction activity greater than 1 acre.
    - A Notification of Termination of this permit was submitted to the Maine DEP on October 17, 2016.

The general construction permit required weekly Erosion and Sediment Control inspection and reports. E&S reports are discussed in Section 4.3 below.

2.2 Scope of Activities

The CMI Plan (2015a) outlines details for the excavation of soils with mercury concentrations above the mercury MPS (e.g., materials required for off-site disposal) and restoration of the Landfill Ridge Area. Remedial construction in the Landfill Ridge Area included the following primary components in the general order in which they were executed:

- Pre-construction activities, site setup, clearing, TSSA construction, rail car loading area construction, and access road construction;
- Implementation of the Perimeter Air Monitoring Program (PAMP);
- Excavation, transportation, and disposal of materials required for off-site disposal;
- Survey and confirmation sampling of the excavation area;
- Backfilling the excavation to final grades;
- Construction of storm water management features including swales and the downchute, and slope protection features; and
- Surface stabilization of the final grading area.

A photographic log summarizing the major construction components is provided in **Appendix B**.

A partial conditional approval of the CMI Plan (2015a) was received from the Maine DEP on November 23, 2015. The partial approval allowed the start of excavation and confirmation sampling activities in the Landfill Ridge Area under the condition that excavation be limited to the excavation

areas under the proposed staging area. Full conditional approval of the CMI Plan (2015a) was received from the Maine DEP on December 10, 2015 and included five conditions. Those conditions were requirements for nailed geosynthetics for slope stabilization, confirmation sampling plans and procedures clarifications, and modifications to the PAMP. The conditions for confirmation sampling plans and procedure clarifications and modifications to the PAMP were incorporated into Revision 2 of the CMI Plan Drawings, and the requirement for nailed geosynthetics for slope stabilization was incorporated into Revision 3 of the CMI Plan Drawings, listed above in Section 1.4, which were submitted to the Maine DEP on December 16, 2015 and March 22, 2016. These revisions were subsequently incorporated into the Project Documents.

Envirocon mobilized to the Site on October 19, 2015 to commence pre-construction activities in advance of the conditional approval. After receipt of the partial conditional approval, Envirocon commenced excavation of the Landfill Ridge Area on November 23, 2015 in accordance with the conditions discussed above. Upon receipt of the full conditional approval on December 10, 2015, Envirocon began excavation outside of the areas under the proposed staging area. The following subsections describe the work Envirocon performed for each component of construction. **Table 2-1** summarizes the construction equipment Envirocon used for each component of construction.

2.2.1 Site Preparation and Pre-Construction Activities

As part of Site Preparation in October 2015, CDM Smith established the temporary soil stockpile area (TSSA) and paved the portions of the site access roads within the Plant Area. TSSA and rail car loading area construction was completed by October 26, 2015. Temporary erosion control socks were placed around the TSSA. CDM Smith implemented the site-wide PAMP (2015b) in October 2015, and updated the PAMP in accordance with the conditions of the approval letter dated December 10, 2015 in December 2015. PAMP stations were set up around the site at designated locations in advance of excavation and disposal activities. PAMP stations remained in place throughout construction activities.

Upon arrival, Envirocon established erosion and sediment (E&S) controls including silt fence, super silt fence, turbidity curtain, check dams, and coir fiber rolls prior to performing site work. Diversion berms and a roadway culvert were installed to divert storm water from entering the excavation area and minimize contact water. Envirocon then commenced stripping, clearing, and grubbing activities and began importing access road construction materials. Envirocon constructed an access road ramp and established a temporary access road with geogrid reinforcement leading from the Plant Area to the Landfill Ridge staging area as shown on the CMI Plan drawings. Envirocon mobilized one 21,000-gallon Rain for Rent ® fractionation tank and installed a 3 inch diameter HDPE pipeline from the fractionation tanks to the On-site Ground Water Treatment Plant (GWTP) for contact water management according to the Contact Water Management Contractor Work Plan. An exclusion zone and contaminant reduction zone were established in accordance with Envirocon's Contractor HASP. A temporary decontamination pad was established for use during excavation activities.

2.2.2 Excavation and Confirmation Sampling

Envirocon excavated 30,557 yd^3 of soil from the Landfill Ridge Area, based on a comparison of the existing conditions survey and the bottom of excavation survey, and relocated the material to the TSSA between November 23, 2015 and February 23, 2016. Envirocon commenced excavation upon receipt of the partial conditional approval received from the Maine DEP on November 23, 2015. Envirocon transported the soils to the TSSA where CDM Smith loaded the soil into railcars operated by US Ecology. Envirocon decontaminated haul trucks prior to exiting the exclusion zone. Soil was transported via railcar to offsite disposal facilities. Excavation of each excavation area (e.g., LR-1, LR-2, etc.) progressed generally from the east-to-west with lateral extent and uniform bottom elevations defined in the CMI Plan specifications and drawings (2015a). Materials requiring off-site disposal

(e.g., materials with mercury concentrations greater than the MPS) were segregated from Onsite Reuse Material (OSM) (e.g., material below the materials requiring off-site disposal, which were excavated to achieve final grades) during excavation, transport, and staging in the TSSA. OSM was excavated after completion of excavation of the materials above the MPS and used for backfill as described below.

Envirocon performed excavation dewatering during and after storm events and when groundwater was encountered within an excavation. Excavation dewatering was typically performed with 2 and 3 inch diameter trash pumps equipped with a geotextile-wrapped and/or perforated bucket inlet which transferred water to the fractionation tank. Excavation slopes were maintained by benching in accordance with the Contractor HASP, Site HASP, and applicable safety regulations.

Post-excavation confirmation samples were obtained from the excavation and the location of each sample was surveyed. Confirmation sample results were reviewed and discussed by Envirocon, CDM Smith, Geosyntec, TechLaw and the Maine DEP. Results were submitted to the Maine DEP for review and approval. Written approval from the Maine DEP was received indicating soils required for offsite disposal had been removed based on the results of the confirmation samples, and it was acceptable to backfill each area or group of areas. Additional details regarding confirmation sample results and approvals are provided later in this Report.

Envirocon was notified by Geosyntec and CDM Smith if confirmation sample results exceeded the mercury MPS. If the results exceeded the MPS, Envirocon performed additional excavation around the sample location. For bottom samples exceeding the MPS, a 20 ft wide by 20 ft long by 1 ft deep excavation centered on the sample location was performed by Envirocon and an additional confirmation sample at the bottom of that excavation was obtained and tested. For sidewall samples that exceeded the MPS, excavation between the two adjacent sidewall pre-design borings was advanced as shown on **Figure 4-1**. The excavations were extended approximately 6 ft beyond the original sidewall for SW-LR-23, 10 ft for SW-LR-11, 11 ft for SW-LR-25, and 11 ft for SW-LR-16/16A. Envirocon excavated and transported the additional material to the TSSA. Additional confirmation samples were obtained by Geosyntec, results were reviewed, and approvals were issued according to the methods described above. Once excavation for an area(s) was complete, Envirocon's surveyor (CES) obtained as-built survey information of the extents and elevations of the excavation.

2.2.3 Backfill

Backfill activities including material delivery, placement, and compaction occurred between December 19, 2015 and June 18, 2016. Envirocon began importing backfill material (i.e., Common Fill Type 1 (CF1)) on December 21, 2015. CF1 was either directly placed and compacted, or stockpiled within a completed excavation area. Envirocon obtained OSM material excavated from the Landfill Ridge area after removal of materials for off-site disposal was complete. OSM was stockpiled within completed excavation areas until use. The OSM was re-used in the Landfill Ridge Area as backfill primarily as the subgrade for the underdrain layer.

As described above, backfill of soil materials commenced upon receipt of approval from the Maine DEP. Backfill was placed in excavation areas in 12-inch thick loose lifts, moisture conditioned if necessary, and compacted. In locations where standing water, snow, or ice was observed on the excavation surface (e.g., due to runoff accumulation or groundwater), Envirocon dewatered the area by shoveling water or ice away from the area or by using 2-inch diameter pumps to dewater the area. Once ice, snow and water were removed from the area, backfilling commenced.

On February 25, 2016, construction activities were put on hold until the spring. Envirocon established a temporary sediment basin within the completed excavation area using geotextile, imported stone,

and temporary diversion berms constructed using OSM. CDM Smith performed general E&S maintenance from February 25, 2016 to May 9, 2016 when Envirocon resumed construction activities.

Upon remobilization in the Spring, Envirocon installed a 12-inch-thick underdrain layer in the Landfill Ridge Area using Drainage Sand Type 1 (DS1) material imported from an off-site borrow source. Envirocon imported DS1 material between October 20, 2015 and May 6, 2016 and began preparation of the underdrain subgrade layer on May 10, 2016. During subgrade preparation (e.g., installation of CF1 and OSM material), a saturated area was observed near the location of Swale 2. Envirocon addressed the saturated area by re-working the subgrade materials, and the wet spot dissipated after further monitoring of the area. Installation of the underdrain layer materials commenced on May 26, 2016. An 8 oz/yd^2 non-woven geotextile was placed on the underdrain layer and completed on June 13, 2016. Once complete, CES surveyed the top of the underdrain layer and Envirocon continued backfill placement above the underdrain layer to reach the final grades.

2.2.4 Slope Protection, Downchute, Swales, and Turf Reinforcement Mat Installation

In May 2016, Envirocon commenced construction of the riprap apron, slope protection area, downchute, and swales. During backfill activities, Envirocon established a working platform on the slope above the Reno Mattress slope protection area. The riprap apron and lower portion of the downchute was constructed first, then moving southeast along the site, the slope protection area, swales and downchute sections were established as backfill activities reached the target elevations. A portion of the existing slope approximately between El. 40 ft and El. 0 ft was cleared of trees and shrubs, and large stumps were cut down to the ground surface as necessary to allow for maximum surface contact between wire baskets and the slope. Wire baskets and 24 oz/yd^2 nonwoven geotextile were delivered to the site between February 26, 2016 and May 9, 2016, one roll of LLDPE geomembrane was delivered to the site on May 11, 2016, and 3-5-inch riprap and 4-8-inch riprap were imported to the site between May 18, 2016 and June 20, 2016. Envirocon assembled wire baskets for the Reno mattresses and gabion baskets behind the maintenance building and moved to the Landfill Ridge Area prior to installation.

Envirocon prepared the subgrade, excavated the riprap apron area, and installed the 24 oz/yd^2 nonwoven geotextile cushion over the downchute and slope protection area subgrade and in the riprap apron. Heavy riprap was then placed in the riprap apron. Elevations of the swale and downchute subgrade were then checked by Envirocon and Geosyntec to confirm positive drainage toward the downchute prior to geosynthetics installation. After confirming elevations, the 24 oz/yd^2 nonwoven geotextile was secured to the subgrade using pins and riprap material to prevent wrinkles. Envirocon then placed the 40-mil LLDPE geomembrane then the 24 oz/yd^2 nonwoven geotextile in each swale beginning with Swale 1. The geomembrane and geotextiles were secured in the swales using 3-5-inch riprap ballast. Geotextile panels were sewn and overlapped 6 inches where overlap exists. Metal pins were not used in swales where geomembrane was placed.

Envirocon placed Reno Mattresses and Gabion baskets along the downchute and slope protection areas, secured the baskets to the slope using temporary stakes, and then placed 3-5-inch riprap and 4-8-inch riprap in the baskets by hand. Gabion baskets in Swale 1 were installed on top of the non-woven geotextile. Slope protection Reno mattresses were then anchored to the Gabion anchor in Swale 1. Downchute and slope protection wire baskets were secured and closed after riprap was placed using ring fasteners and selvedge wire in accordance with the manufacturer's recommendations.

Turf Reinforcement Mats (TRMs) were installed along an area of steep slope to the west of Swale 1. TRMs were delivered to the Site between February 25, 2016 and May 9, 2016 and stored indoors. Envirocon deployed TRMs in disturbed areas according the CMI Plan drawings after completion of topsoil installation and seeding. TRMs were secured to the slope with 12-inch-long staples at the

staple pattern specified by the manufacturer, and that panel overlap was a minimum of 3-5 inches per the manufacturer's recommendations.

2.2.5 Revegetation and Restoration

In June 2016, Envirocon placed topsoil, erosion control blankets (ECBs), seed and fertilizer mix, and installed plantings after completing backfill activities. Envirocon imported topsoil between June 13, 2016 and June 30, 2016, and Envirocon's landscape subcontractor (Adam's Hydroseed) imported the ECBs and provided the hydroseed mix. Envirocon prepared the subgrade as part of the backfill activities previously described. The topsoil was placed directly on prepared subgrade and spread in one continuous lift generally from the northwest to the southeast of the Landfill Ridge Area and in areas adjacent to swales and the downchute. Topsoil was track-walked to loosen the soil prior to seeding.

Adam's Hydroseed began application of seed mix and fertilizer and installation of ECBs in areas not covered with riprap on June 21, 2016. ECBs were securely anchored to the slope after placing the seed mix according to the manufacturer's recommendations. Adam's Hydroseed and Envirocon installed small shrubs and trees on areas of the slope not covered with riprap and no steeper than 4H:1V.

2.3 Requests for Information

During construction activities, Envirocon issued requests for information (RFIs) for clarifications regarding the Project Documents. Responses to RFIs were prepared by Geosyntec. Response to RFIs are generally described below, listed in **Table 2-2,** and are presented in **Appendix C**.

Response to RFIs, and **Table 2-2**, are marked with either a "Yes (Y)" or "No (N)" indicating if the response includes a modification to the approved design as presented in the CMI Plan (2015). Four Responses to RFIs were marked (Y). Three of the four clarifications (RFIs 001, 003, and 004) were made to clarify questions on the approved design (referenced above), the fourth was a change to the access roadway design (reference Response to RFI 013). Twenty-Three Response to RFIs were marked as (N). For responses marked as (N), the issues were addressed in the field and additional guidance was given, if necessary, regarding the intent of the design.

Section 3.
Summary of CQA Program

3.1 Overview of CQA Program

The scope of CQA activities performed by Geosyntec during the Closure Activities included review of quality control (QC) documents, coordination of QC / CQA sampling and testing, obtaining and testing post-excavation confirmation samples, review of confirmation sample test results, and monitoring and documentation of the Remediation Contractor's work and any associated field CQA operations to ensure that work was performed according to the CMI Plan.

3.2 Field CQA Operations

Geosyntec monitored construction activities, reviewed QC documentation provided by Envirocon, reviewed QA test results collected by Geosyntec, and compared observations and construction progress to the requirements of the project documents. Geosyntec notified Envirocon when construction practices and/or QC/CQA results were not in compliance with the project documents. Envirocon then implemented appropriate corrective actions which were monitored and/or tested by Geosyntec.

The main components of the field CQA operations included:

- observing construction activity and performing tests for quality assurance inspection activities;
- verifying that the QC testing of materials was implemented in accordance with the CQA Plan, drawings, and specifications as presented in the CMI Plan (2015a);
- performing independent on-site inspections of the work to assess compliance with design criteria, drawings, and specifications;
- obtaining post-excavation confirmation samples in accordance with the Confirmation Sample Protocol and the drawings presented in the CMI Plan (2015a) and provided in the December 17, 2015 email to the Maine DEP;
- verifying that QC and CQA tests were conducted according the requirements of specifications and CQA Plan presented in the CMI Plan (2015a); and
- reporting the results of inspections and corrective actions to the Maine DEP.

Weekly meetings were held on site to discuss the following:

- health and safety;
- construction progress and schedule;
- site support activities (erosion and sediment control, dust, noise, traffic, air monitoring, trespassing, etc.);
- project management activities (e.g., status of submittals and RFIs); and
- additional project-related topics as necessary.

As previously mentioned, daily CQA activities and construction activities were documented by Geosyntec in Daily Field Reports, which are provided in **Appendix A**.

Section 4.
Summary of QC and CQA Activities

A description of the material prequalification process including QC document review, and CQA activities (as described in the section above) associated with remediation of the Landfill Ridge Area is provided below. Each section summarizes the scope of QC and QA activities associated with construction work performed.

4.1 Materials Pre-Qualification and QC Submittal Review

Envirocon provided contractor work plans, material QC information and/or samples of proposed materials, and as-built survey information in the form of submittals to CDM Smith and Geosyntec as required by the CMI Plan drawings and specifications (2015a). Geosyntec reviewed the submittals and generated corresponding submittal responses. Submittal responses marked as "Reviewed – no comments" or 'Comments as noted" were issued to CDM Smith and Envirocon. For submittal responses marked as "Revise and Resubmit" Envirocon revised the submittal according to the comments, and Geosyntec reviewed the updated submittal to verify the product met the requirements of the CMI Plan drawings and specifications (2015a). Submittals included imported soil, OSM, and riprap material source and QC result information, geosynthetics, E&S control materials, slope protection, downchute and swale materials, restoration and vegetation materials, contractor work plans, and as-built surveys.

A complete list of material pre-qualification and QC submittals, and corresponding responses are provided in **Table 4-1**. Below is a brief description of the prequalification and QC submittal review process relating to specific products. Further details are provided in the submittals and corresponding submittal responses provided in **Appendix D**.

Prior to delivery, imported soils and riprap were tested to conform to the analytical testing requirements of the Soil Use Plan and the requirements of the specifications provided in the CMI Plan (2015), and the requirements of the responses to RFIs listed in **Table 2-2**. Soils imported from off-site borrow sources were from either Thornton Construction's Pit 5 mine in Orrington, ME, or from Lane Construction's borrow source in Winterport, Maine. OSM was also tested according to those requirements prior to use. Envirocon or SW Cole collected QC samples of imported soil material and OSM either from the borrow source or as material was stockpiled on site and sent them to the SW Cole's geotechnical laboratory for testing based on the frequencies set forth in the specifications. For each soil and riprap material, the required test, the required test frequency, the total quantity of imported material (as determined by truck count volumes (i.e., loose volume)), required number of QC test results, the number of tests performed, the actual frequency at which the test was performed, and whether the QC test result was passing (e.g., met the requirements of the CMI Plan specifications and drawings (2015a)) are provided in **Table 4-2A**.

Product data sheets for the geosynthetics, E&S control, slope protection, downchute, revegetation, and planting materials listed above were submitted by Envirocon and evaluated by Geosyntec prior to material deliveries to the Site. Envirocon submitted product data sheet certifications for each geosynthetic material and roll-specific manufacturers' QC (MQC) test data for the geotextiles and geomembrane. In addition, several clarifications regarding material prequalification and QC requirements were made during this process and were recorded in the responses to RFIs for:

- RFI 002 – addressing the requirements for pipe pressure testing;

- RFI 014 – addressing the requirement for stone carbonate testing (requirement removed);
- RFI 021 – addressing the requirements for gabion and Reno mattress dimensions and layout;
- RFI 022 – addressing the requirement for non-woven geotextile under the staging area;
- RFI 023 – addressing the requirements for the seed mix; and
- RFI 026 and RFI 027 – addressing the requirements for plant species.

As discussed in Section 2.2 above, additional details regarding the response to RFIs, including the original RFIs, are summarized in **Table 2-2** and provided in **Appendix C**. Materials and products submitted as part of the material pre-qualification and QC submittal review process meet the requirements of the CMI Plan drawings and specifications (2015a) and the response to RFIs identified above.

4.2 Summary of CQA Activities

As mentioned in Section 3.2 above, primary components of the Field Oversight Activities include CQA materials testing, confirmation sampling, and monitoring and performing independent inspections of construction activities. The following subsections provide a summary of those activities performed by Geosyntec in the field during the Closure Activities.

4.2.1 CQA Laboratory Testing

Samples of imported soil materials and OSM, as listed in the section above, were obtained by on-site personnel from Geosyntec and sent to the CDM Smith GTS Laboratory for CQA testing in accordance with the CQA Plan included in the CMI Plan (2015a). Geosyntec reviewed the laboratory test results and verified whether they met the requirements of the CMI Plan specifications and drawings (2015a). The required CQA test, the test frequency, the total quantity of imported material (as determined by truck count volumes (i.e., loose volume)), required number of CQA test results, the number of CQA tests performed, the actual frequency at which the tests were performed, sample information, and whether the CQA test result was passing (e.g., met the requirements of the Project Documents) are provided for each soil in **Table 4-2B**. The actual frequency at which the CQA tests were performed is calculated in the same way as described in Section 4.1 above. Laboratory CQA test result reports are provided in **Appendix E.**

Organic content results from the initial Topsoil CQA sample ranged from 1.4% to 2.0% organic content by weight, and were lower than the required value of 4.0%. Geosyntec personnel subsequently obtained two additional samples of topsoil and had them tested for organic content. The additional organic content test results were 2.0% and 2.9%, and were below the required value. Envirocon was notified of the deficiency and has elected to defer corrective actions until the seed mix growth occurs and can be assessed. As of October 19, 2016, vegetation at the Landfill Ridge Area has preliminarily been established. Due to low organic content results for the topsoil, monitoring will continue in 2017 to assess vegetation growth and performance. Three quarter inch stone was utilized in the temporary decontamination pad construction. Three-quarter inch stone CQA samples were not obtained and the decontamination pad was subsequently removed.

Geosyntec evaluated CQA test results and testing procedures for imported soils relative to the clarifications made during the material pre-qualification and QC submittal review process mentioned above. Per response to RFI 014, stone carbonate CQA tests were not performed on Drainage Sand Type 1. Per response to RFI 013, CQA tests were not performed on Dense Graded Gravel.

4.2.2 Confirmation Sampling

Geosyntec monitored the excavation and relocation of soil required for off-site disposal, inspected active excavation areas for visual or beads of mercury, reviewed preliminary bottom and extent of excavation surveys provided by Envirocon, coordinated collection of the post-excavation confirmation samples, and reviewed the results. Prior to collecting samples, preliminary surveys were provided to Geosyntec by Envirocon to confirm the bottom of excavation elevations and extents of each excavation area were met. Geosyntec notified CDM Smith, Envirocon and Techlaw if there were any areas that required additional excavation to reach the target elevations and extent. Post-excavation confirmation samples were then collected and delivered to the Onsite Analytical Laboratory where they were entered into the project database and prepared for analytical testing. Split samples were created at the On-Site Analytical testing laboratory and provided to the Maine DEP off-site analytical laboratory or a 3rd party off-site analytical laboratory (Alpha Analytical), as required for samples identified ending in "-DEP", or as requested by the Maine DEP on-site representative (TechLaw), in accordance with the Confirmation Sampling Protocol described in Section 1.4 above. Results were provided to the Maine DEP via an online database, and through written correspondence prior to backfill activities, as described below.

Geosyntec collected bottom of excavation confirmation samples at 63 locations and sidewall confirmation samples at 34 locations in accordance with the CMI Plan (2015a) and the Final Confirmation Sampling Plan provided in the December 16, 2015 email to the Maine DEP. Bottom and sidewall confirmation sample locations are shown on the Bottom of Excavation As-Built Survey provided as **Figure 4-1**. Results of the confirmation sample testing performed for those original bottom and sidewall confirmation sample locations are summarized in **Table 4-3A**. Confirmation sample laboratory reports from the On-Site Analytical Laboratory and Alpha Analytical are provided in **Appendix F**.

For locations where confirmation samples exceeded the mercury MPS, Geosyntec, CDM Smith, Envirocon, and TechLaw identified the extents of additional excavation and performed additional excavation as was described in Section 2.1.2 above. The limits of excavation were discussed with TechLaw prior to performing the excavation. Geosyntec collected additional bottom of excavation confirmation samples at 8 locations, and additional sidewall confirmation samples at 5 locations where original confirmation samples exceeded the MPS. Bottom of excavation sample locations SB-LR-113-DEP, BS-LR-18, SB-LR-94-DEP, BS-LR-10, SB-LR-96-DEP, SB-LR-04-DEP, BS-LR-29, and SB-LR-107-DEP were re-sampled after the additional excavation due to original mercury concentrations greater than the MPS. Sidewall sample locations SW-LR-23, SW-LR-11, SW-LR-25, and SW-LR-16/16A were also resampled after the additional excavation due to original mercury concentrations exceeding the MPS. Results and details regarding the additional confirmation samples are provided in **Table 4-3B**, and On-Site Analytical laboratory and Alpha Analytical reports are provided in **Appendix F**.

Geosyntec evaluated the exceedances, and a description of the exceedances are provided for each re-sample in **Table 4-3B**. Sample result exceedances were due to a variety of factors including tree debris within the excavation area to extents of excavation not being reached prior to sampling.

Prior to backfilling, Geosyntec issued written requests to the Maine DEP summarizing each completed excavation area, relevant pre and post-excavation confirmation samples and their results. Maine DEP reviewed and approved each excavation area for backfill. A list of backfill notifications, excavation areas, approvals, and corresponding dates is provided in **Table 4-4**.

The horizontal and vertical extent of excavation is presented on the Landfill Ridge Bottom of Excavation As-Built Record Drawing submittal provided in **Figure 4-1**. Geosyntec received and reviewed the bottom of excavation survey and confirmed the accuracy of the confirmation sample and elevation information provided.

4.2.3 CQA Field Oversight Activities

CQA field oversight activities included routine inspection of E&S controls, construction activities, monitoring material deliveries, performing field density tests (FDTs) and thickness verifications for backfill materials, attending daily and weekly construction meetings, and coordinating confirmation sampling as discussed in the section above. As previously mentioned, a summary of the daily CQA activities is provided in the Geosyntec Daily Field Reports provided in **Appendix A**. A brief description of these CQA activities is provided below.

E&S controls inspections were performed by Geosyntec, CDM Smith, and Envirocon on a weekly basis and after each precipitation event accumulating ≥0.5 inches of rainfall. Forms completed by Geosyntec during E&S inspections are provided in **Appendix G.** Geosyntec notified Envirocon when areas requiring repair or improvement of the E&S control measures were identified during Geosyntec's inspections. Envirocon then performed necessary corrective actions (e.g., repair/replacement of silt fences and removal of sediment buildup). Based on Geosyntec's observations and daily field reports, Envirocon installed and maintained erosion and sediment controls in accordance with the requirements set forth in the Project Documents listed above.

Geosyntec monitored the placement, and compaction of OSM and import soil materials including:

- Structural Fill for the Landfill Ridge Area access roads, access road ramp, and staging area;
- Common Fill Type 1 for general backfill; and
- Drainage Sand Type 1 for the decontamination pad and the underdrain system; and
- Topsoil.

Geosyntec visually inspected the import materials to make sure they were free of undesirable constituents such as rubbish and large organic debris. Geosyntec inspected the subgrade prior to backfill material placement. FDTs and thickness verifications were performed for each lift of soil material to verify compaction and thicknesses met the requirements of the project documents. Thickness verifications were performed by visual monitoring and/or test holes at each location where an FDT was performed. **Table 4-2B** summarizes the number of FDT and thickness verification tests performed. FDT results were recorded for Structural Fill in **Table 4-5A**, and FDT and thickness verifications performed for Structural Fill are provided on **Figure 4-1**. FDT results for Common Fill Type 1 are presented in **Table 4-5B** and the FDT and thickness verification locations for each lift of Common Fill Type 1 are shown on **Figure 4-2A** through **Figure 4-2J**. FDT results for OSM are presented in **Table 4-5C** and the FDT and thickness verification locations for OSM are shown on **Figure 4-3A** through **Figure 4-3J**. If a FDT did not meet the requirements, the lift was recompacted and retested. If the FDT still did not meet the requirements the lift was moisture conditioned to add or remove moisture from the lift and the soil was recompacted and retested. If the lift failed a third time, then the lift was removed and the area was reworked with new material and recompacted before retesting.

Geosyntec provided oversight of the underdrain layer installation. Drainage Sand Type 1 material was placed in one continuous 12-inch-thick loose lift and compacted using a bulldozer and smooth drum roller. Geosyntec visually monitored and verified the thickness of the layer during placement, and no FDTs were required. Once the soil material installation was complete, Geosyntec monitored the placement of an 8 oz/yd^2 nonwoven geotextile separation layer on top of the underdrain and visually confirmed no damage to the geotextile. Nonwoven geotextile panels were overlapped by 6 inches and sewn per the specification requirements. Upon completion of the underdrain, Envirocon submitted the horizontal and vertical extent survey of the top of underdrain for review. The survey, shown on the Top of Underdrain As-Built Record Drawing is provided in **Figure 4-5.** Geosyntec compared the surveyed extent and top of underdrain elevations to the elevations and extent provided in the project

documents and verified the as-constructed underdrain elevations and limits met the elevations, dimensions, and configuration presented in the CMI Plan specifications and drawings (2015a) and subsequent response to RFIs discussed below.

During construction of the slope protection systems (Reno mattresses and TRMs), downchute and swale installations, Geosyntec monitored the preparation of subgrade, installation of 24 oz/yd^2 nonwoven geotextile cushion over the subgrade, construction of gabion anchor in Swale 1, installation of geomembrane in swales, assembly of wire baskets (Reno mattress and Gabions), placement of baskets, infill of riprap, placement of the TRMs and the anchoring of the slope protection systems. Geosyntec confirmed the following:

- elevations of the downchute and swales' subgrade met the minimum slopes indicated on the project drawings. Survey checks were performed with Envirocon in the field using Envirocon's Trimble GPS survey equipment;
- The 24 oz./yd2 nonwoven geotextile along downchute, swale, and slope protection areas was secured using pins (except in geomembrane-lined swales) to minimize the potential for wrinkles;
- 40-mil LLDPE geomembrane panels in swales were placed to prevent migration of water through panels;
- assembly and installation of the wire baskets, including fastening rings and selvedge wire in accordance with the manufacturer's installation guide and product specifications;
- infill of the 3-5 inch and 4-8-inch riprap (where appropriate) was performed so that damage to the wire baskets or geosynthetics did not occur;
- No oversize particles or deleterious materials were present in the riprap;
- seeding was placed prior to TRM installation; and
- TRMs were secured with 12-inch-long staples at the staple pattern specified by the manufacturer, and that panel overlap was a minimum of 3-5 inches per the manufacturers recommendations.

During revegetation and restoration activities, Geosyntec inspected revegetation and restoration materials as they were delivered and stored at the Site, monitored topsoil placement, evaluated the seed mix, monitored the installation of ECBs and plantings, and periodically observed the progress of vegetative growth. Geosyntec confirmed the following:

- Topsoil was placed in one continuous lift from the bottom of the slope to the top, and track walked prior to hydroseeding;
- Topsoil was free of brush, litter, or deleterious material prior to seeding and ECB installation; some of the topsoil lab results showed organic content slightly below the specified value, however, the establishment of the vegetation will continue to be monitored until such time that vegetation is well established, and if required, improvements/amendments to the vegetation and topsoil such as over-seeding, fertilizer, lime application, etc. will be made.
- Seed mix delivered to the site conformed with the mix submitted by Envirocon and reviewed by Geosyntec;
- ECBs were properly stored, and deployed after hydroseeding took place; and
- Plantings delivered to the site were in accordance with the plantings specified on the project drawings and subsequent response to RFIs discussed in Section 4.1 above.

After completion of the restoration and vegetation activities, the horizontal extent of the slope protection systems, downchute, swales, ECBs and restoration areas were submitted by Envirocon. Geosyntec reviewed the Final Restoration As-Built Survey Record Drawing provided in **Figure 4-6**, and verified that the surveyed extent of these items met the requirements set forth in the project documents and subsequent response to RFIs discussed below.

As discussed in Section 2.2 above, Envirocon issued RFIs requesting clarification of several aspects of the slope protection, downchute work. Response to RFIs are listed in **Table 2-2**, and responses, including the original RFIs are provided in **Appendix C.** In summary:

- RFIs 008, 020, and 020A - Constructed limits of the underdrain system were adjusted in the field during construction to ensure the underdrain system did not intersect Swale 5 and that positive drainage toward the connection of the underdrain with Swale 3 was provided.
- RFI 013 - Structural Fill material substituted for Dense Graded Gravel material in the construction of access roads and the staging area.
- RFIs 006, 007, 009, 011, and 019 – Clarifications made regarding disposal and removal of non-soil materials (e.g., large boulders, tree cuttings, debris, decommissioned well materials) from site preparation, clearing, grubbing, and excavation activities.
- RFI 021 – Summarizes clarifications to the slope protection and downchute systems (Reno and Gabion Mattress layouts).

Section 5.
Conclusions

Geosyntec observed the construction and implementation of the Landfill Ridge Area Corrective Measures Implementation (CMI) Plan (2015a) at the Orrington Remediation Site during the period of October 20, 2015 to June 29, 2016. During that time, CQA field personnel monitored excavation of soils required for disposal (e.g., soils with Hg > MPS) and restoration of the Landfill Ridge area including site grading, underdrain installation, downchute construction, and installation of slope protection measures.

Geosyntec CQA personnel collected bottom and sidewall confirmation samples from the completed excavation areas to verify MPS parameter concentrations were below the applicable limits. Requests for backfill approval were issued to the Maine DEP upon completion of confirmation sampling, and CQA personnel confirmed that approval for backfill of each area was issued by Maine DEP for the applicable areas as described above. CQA personnel verified that conformance and CQA testing were performed on the construction materials at the frequencies required in the Construction Documents, and that materials meeting the requirements set forth in the project documents were used for the remedy. CQA personnel correspondingly verified that conditions or materials identified as not conforming to the project documents were removed, replaced, repaired and/or retested, as described in this report.

The results of the CQA activities performed by Geosyntec document that the excavation and restoration of the Landfill Ridge Area was performed in accordance with the project documents and changes approved through the RFI process or as described herein.

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Principal, Project Manager

Scott M. Luettich, P.E.
CQA Engineer-of-Record
Maine PE No. 7452

Section 6.
References

CDM Smith, Inc. and Geosyntec Consultants, 2014a. Landfill Ridge Area Pre-Design Work Plan, Orrington Remediation Site, Orrington, Maine, November 18.

CDM Smith, Inc, and Geosyntec Consultants 2014b. Landfill Phase I Pre-Design Work Plan, Orrington Remediation Site, Orrington, Maine, December 10.

CDM Smith, Inc. and Geosyntec Consultants 2015a. Landfill Ridge Corrective Measures Implementation Plan Revision 1, Orrington Remediation Site, Orrington, Maine, October 28. [1]

CDM Smith, Inc. 2015b. Perimeter Air Monitoring Plan (PAMP), Orrington Remediation Site, Orrington Maine, July 22.

CDM Smith, Inc, and Geosyntec Consultants 2015c. Quality Assurance Project Plan, Revision 1, Orrington Remediation Site, Orrington, Maine, September 4.

Geosyntec Consultants and Maine DEP, 2015. Landfill Ridge Area CMI Plan General Guidelines for Confirmation Sampling and Split Sampling Protocols, December 2;

Maine BEP, 2014. Mallinckrodt US LLC et al. v. Department of Environmental Protection. April 3, 2014.

Maine DEP, 2008. Compliance Order: Designation of Uncontrolled Hazardous Substance Site and Order in the Matter of United States Surgical Corporation, Mallinckrodt LLC Concerning a Chloralkali Manufacturing Facility in Orrington, Penobscot County, Maine Formerly Owned and Operated by Mallinckrodt Inc., Proceeding Under 38 M.R.S.A. § 1365, Uncontrolled Hazardous Substance Sites Law; November 24.

[1] This reference for Landfill Ridge Corrective Measures Implementation Plan Revision 1 includes CMI Plan Drawing Revision 2 and Revision 3, which were incorporated to the Plan, as described in Section 1.4 of this report.

Table 2-1 - List of Construction Equipment
Landfill Ridge Area
Orrington Remediation Site
Orrington, ME

	Activity						
Envirocon	*Site Setup, E&S Controls*	*Excavation and Rail Car Loading of Soils with Concentrations > MPS*	*Backfill*	*Underdrain Installation*	*Slope Protection Installation*	*Downchute Installation*	*Revegetation and Restoration*
CAT 287 D Skid Steer	X		X	X	X	X	X
CAT 336F Excavator with GPS	X	X					
CAT 326F Excavator		X					
CAT 325C Long Reach Excavator					X	X	
CAT 730C Haul Truck with Tailgate		X					
CAT 725 Haul Truck with Tailgate		X					
CAT D3K Bulldozer			X	X			X
CAT CS56B Vibratory Smooth Drum Roller			X	X			
CASE CX31B Mini Excavator		X					
CDM Smith							
CAT Front End Loader		X					
Bobcat T598 Skid Steer	X						
CAT 305.5e mini excavator	X	X					
Hitachi 160LC excavator		X					

Table 2-2 - RFI Log
Landfill Ridge Area
Orrington Remeditation Site
Orrington, ME

RFI NUMBER	DESCRIPTION	DATE RECEIVED	DESIGN MODIFICATION	DATE SENT TO CDM	CMI Document Reference	COMMENTS
001	DRAWINGS - Extension of limit of work around decon pad	23-Oct-15	Y	30-Oct-15		IFC Rev 1 Drawings reflect change.
002	SPECS - Pipe Pressure Testing	23-Oct-15	N	30-Oct-15	Spec Section 02620-3.06	No changes
003	SPECS - Moisture Content	23-Oct-15	Y	30-Oct-15	Spec Section 02220-3.03 and 02220-3.05	Access road Spec Section updated to reflect Section 02200 and submitted to DEP w/ Revised CMI Plan.
004	SPECS - Check Dam Geotextile	27-Oct-15	Y	30-Oct-15		IFC Rev 1 Drawings reflect change.
005	DRAWINGS - Diversion Berm Section	27-Oct-15	N	30-Oct-15	Spec Section 02120-3.05A Drawings 7 and 16	Cross section of div berm channel must have min area of 12 ft^2.
006	FIELD CLARIFICATION - Large diameter trees	27-Oct-15	N	30-Oct-15	Spec Section 02140-3.02 A Drawing No. 2 Site Prep Note 9	Move to TSSA or location at direction of Rem. Proj. Manager
007	FIELD CLARIFICATION - Non-soil excavated material uncovered	27-Oct-15	N	30-Oct-15	Spec Section 02140-3.02 A Drawing No. 2 Site Prep Note 9	All clearing materials to be brought to TSSA.
008	DRAWINGS - Underdrain Construction, backfill above	27-Oct-15	N	30-Oct-15	Drawing No. 19, 20 Spec Cestion 02200-3.04	Detail 8 on Drawing 20 revised in CMI Plan Drawings submitted to DEP.
009	FIELD CLARIFICATION - abandon well B-309-01	28-Oct-15	N	30-Oct-15	Drawing No. 4	Well abandonded. Remediation Project Manager to remove abandoned materials
010	SPECS - Topsoil Arsenic levels	29-Oct-15	N	6-Nov-15	Spec Section 02200 / Soil Use Plan	Arsenic Levels with respect to topsoil source.
011	FIELD CLARIFICATION - Existing stone wall	29-Oct-15	N	6-Nov-15	Spec Section 02140-3.02 A Drawing No. 2 Site Prep Note 9	-
012	DRAWINGS - Extents of Restoration	29-Oct-15	N	6-Nov-15	Spec Section 02100 / Drawing No. 15	-
013	DRAWINGS - Access Road Material Change	9-Nov-15	Y	11-Nov-15	Drawing No. 20 Detail 1	Discussed in Field and at construciton meeting
014	SPECS - Stone carbonate testing	13-Nov-15	N	1-Dec-15	Spec Section	Requirement for test removed.
015	DRAWINGS - preconstruction survey	19-Nov-15	N	1-Dec-15	All Plan view drawings	-
016	SPECS - Survey Tolerance	8-Dec-15	N	18-Dec-15	02100 and 13020	discussed in field w/ Envirocon
017	FIELD CLARIFICATION - Sump standpipe	17-Dec-15	N	24-Dec-15	Spec Sec 02200, Detail 5 DWG 20	discussed in field with Envirocon/CDM
018	FIELD CLARIFICATION - Ledge	17-Dec-15	N	24-Dec-15	Spec Section 13020	Survey shallow bedrock
019	FIELD CLARIFICATION - large boulders in excavation	21-Dec-15	N	24-Dec-15	02140, Drawing 2	not to be placed in critical areas
020	DRAWINGS - Underdrain Construction, Surface	27-Jan-16	N	5-Feb-16	Spec Sec 02100, Drawing No. 12, 19 and RFI 008 + Response	Underdrain surface does not currently daylight to swale and flow should be downslope
021	DRAWINGS - Reno and Gabion Mattress	6-Feb-16	N	26-Feb-16	Spec Sec 02771, Drawing No. 18, 21, Submittal Response No 008R1	Proposed items and meet layout requirements, diaphragms perpendicular to flow for mattresses

Table 2-2 - RFI Log
Landfill Ridge Area
Orrington Remeditation Site
Orrington, ME

RFI NUMBER	DESCRIPTION	DATE RECEIVED	DESIGN MODIFICATION	DATE SENT TO CDM	CMI Document Reference	COMMENTS
022	DRAWINGS- Non woven Geotextile under staging area	27-Apr-16	N	4-May-16	Spec Sec 02710, Drawings 7 and 20	Supplemental geotextile evaluated for use
023	DRAWINGS- Supplemental seed mix	2-May-16	N	5-May-16	Spec Sec 02920, Drawing 15	No Change to required mix.
024	DRAWINGS- staging area soil	25-May-16	N	25-May-16	Drawing 20	Common Fill placed in staging area
025	DRAWINGS- regrading plan	16-Jun-16	N	23-Jun-16	Drawing 12	Drawings clarified
026	Plant Species	27-Jun-16	N	28-Jun-16	Drawing 15	Defer to RFI 027 Response
027	Plantings	27-Jun-16	N	28-Jun-16	Drawing 15	Dogwood acceptable, Shadblow variant acceptable.

Table 4-1 - Submittal Log
Landfill Ridge Area
Orrington Remeditation Site
Orrington, ME

REFERENCE NO.	SUBMITTAL TITLE	REVISION	DATE APPOVED SUBMITTAL RECEIVED	SPEC SECTION	DATE APPROVED SUBMITTAL RETURNED TO CDM	COMMENTS
001	Submittal Log	0	31-Jul-15	-	25-Aug-15	Minor updates needed
002R1	Silt Fence	1	1-Sep-15	02120	15-Sep-15	
003R1	Super Silt Fence	1	2-Sep-15	02120	4-Sep-15	
004R1	Turbidity Curtain	1		02120	-	Email dated 9/14/2015; product unoffically submitted and agreed upon. Product meets specifications
005	Geotextiles	0	18-Aug-15	02710	25-Aug-15	Spec should be annotated for error on AOS.
006	Fiber Roll	0	18-Aug-15	02120	25-Aug-15	9" diameter required; Netting must be UV degradable
007R2	Excavation and Restoration Plan-final	2	17-Sep-15	-	18-Sep-15	Sent for MEDEP approval on (9/25/2015). DEP Comments received on (10/8/2015) RTC and revised plan submitted with CMI Plan on 0/28/2015
008R1	Reno Mattress	1	10-Sep-15	02772	16-Sep-15	Product switched to Macaferri
009R1	Gabion Mattress	1	10-Sep-15	02772	16-Sep-15	Product switched to Macaferri
010	Erosion Control Blanket - Swales	0	19-Aug-15	02120	25-Aug-15	Netting should be photodegradable; must last 24 months
011R1	Erosion Control Blanket - slopes	1	14-Sep-15	02120	15-Sep-15	coconut, not straw, but meets intent
012	Biaxial Geogrid TYPE2A	0	18-Aug-15	02760	25-Aug-15	
013R1	Traffic Control Plan	1	21-Sep-15	01500	9-Nov-15	
014	Spill Control and Countermeasures Contingency Plan	0	21-Aug-15	01200	4-Sep-15	CDM contact information will need to be updated
015	Orrington HASP-draft	0	20-Aug-15	01200	4-Sep-15	Not subject to review
016R3	Construction Water Management Plan	3	30-Sep-15	02140	1-Oct-15	submitted to DEP on (10/1/2015); DEP comments received on (10/19/2015); RTC and revised plan submitted with CMI Plan on 10/28/2015
017R2	Air Monitoring Plan	2	20-Oct-15	02050	9-Nov-15	
018	JHA's	0	15-Sep-15	01200	-	Not subject to review
020R2	Common Fill analytical Second Source	2	5-Nov-15	02200	11-Nov-15	

Table 4-1 - Submittal Log
Landfill Ridge Area
Orrington Remeditation Site
Orrington, ME

REFERENCE NO.	SUBMITTAL TITLE	REVISION	DATE APPOVED SUBMITTAL RECEIVED	SPEC SECTION	DATE APPROVED SUBMITTAL RETURNED TO CDM	COMMENTS
021R1	Clean topsoil analytical	1	8-Dec-15	02200	18-Dec-15	
021A	Topsoil QC results 2	0	7-Jun-16	02200	13-Jun-16	
022R2	DGA analytical	2	30-Oct-15	02200	30-Oct-15	need confirmation analytical is from same source as Rev0 and Rev1
023R1	Structual Fill analytical	1	20-Oct-15	02200	23-Oct-15	
025R1	Drainage Sand	1	9-Nov-15	02200	11-Nov-15	
026	40 mil Liner	0	22-Oct-15	-	11-Nov-15	
027	Suveyor Qualifications	0	3-Nov-15	02100	9-Nov-15	
027A	Survey calibration records	0	22-Jun-16	02100	28-Jun-16	
028	PE Pipe for Road Crossing culvert	0	3-Nov-15	02620	9-Nov-15	
029	3/4 - inch Stone	0	12-Nov-15	02200	1-Dec-15	
030	Structural Fill - QC results	0	5-Nov-15	02200	11-Nov-15	
030A	Structural Fill - QC results 2	0	11-Nov-15	02200	1-Dec-15	
030B	Structural Fill - QC results 3	0	27-May-16	02200	7-Jun-16	

Table 4-1 - Submittal Log
Landfill Ridge Area
Orrington Remeditation Site
Orrington, ME

REFERENCE NO.	SUBMITTAL TITLE	REVISION	DATE APPOVED SUBMITTAL RECEIVED	SPEC SECTION	DATE APPROVED SUBMITTAL RETURNED TO CDM	COMMENTS
031	4-inch to 12-inch Riprap	0	9-Nov-15	02240	11-Nov-15	
032	15-inch to 24-inch Heavy Riprap	0	10-Nov-15	02240	1-Dec-15	
033	PE Pipe leak test results	0	17-Nov-15	02620	1-Dec-15	
034	Pre-construction survey	0	10-Nov-15	02100	1-Dec-15	
035	As-built survey, bottom of excavation elevations	0	7-Jan-16	02100	19-Jan-16	
036	Common Fill Type 1 - QC Results	0	7-Jan-16	02200	19-Jan-16	
036A	Common Fill Type 1 - QC Results 2	0	19-Jan-16	02200	27-Jan-16	
036B	Common Fill Type 1 - QC Results 3	0	22-Jan-16	02200	27-Jan-16	
036C	Common Fill Type 1 - QC Results 4	0	3-Feb-16	02200	4-Feb-16	
036D	Common Fill Type 1 - QC Results 5	0	25-Jan-16	02200	4-Feb-16	
036E	Common Fill Type 1 - QC Results 6	0	25-Jan-16	02200	4-Feb-16	
036F	Common Fill Type 1 - QC Results 7	0	3-Feb-16	02200	4-Feb-16	
036G	Common Fill Type 1 - QC Results 8	0	3-Feb-16	02200	4-Feb-16	
036H	Common Fill Type 1 - QC Results 9	0	12-May-16	2200	16-May-16	
036I	Common Fill Type 1 - QC Results 10	0	6-Jun-16	02200	7-Jun-16	
036J	Common Fill Type 1 - QC Results 11	0	6-Jun-16	02200	7-Jun-16	
036K	Common Fill Type 1 - QC Results 12	0	6-Jun-16	02200	7-Jun-16	
036L	Common Fill QC Results 13	0	22-Jun-16	02200	22-Jun-16	
037R2	Bottom of Excavation As-Built	2	14-Apr-16	02100	15-Apr-16	
038	On-site Reuse Material QC Results	0	23-Mar-16	02200	11-Apr-16	
039R1	Non-woven geotextile MQC data	1	29-Apr-16	02710	4-May-16	Ref. RFI 022

Table 4-1 - Submittal Log
Landfill Ridge Area
Orrington Remeditation Site
Orrington, ME

REFERENCE NO.	SUBMITTAL TITLE	REVISION	DATE APPOVED SUBMITTAL RECEIVED	SPEC SECTION	DATE APPROVED SUBMITTAL RETURNED TO CDM	COMMENTS
039A	24 oz nonwoven geotextile-additional roll	0	15-Jun-16	02710	21-Jun-16	
040	Alt. Geomembrane 40 Mil textured LLDPE	0	19-Apr-16	-	21-Apr-16	
041	Erosion Control Blanket	0	19-Apr-16	02120	26-Apr-16	
042	Turf Reinforcement Mat	0	19-Apr-16	Drawing No. 15	26-Apr-16	
043R1	MQC GM 40 mil LLDPE	0	29-Apr-16	-	5-May-16	MQC data submitted as 043 is acceptable, revised response
044	3-inch to 5-inch Riprap	0	13-May-16	02240	16-May-16	
045	4-inch to 8-inch Riprap	0	13-May-16	02240	16-May-16	
046	OSM QC Results 1	0	17-May-16	02200	18-May-16	
047	OSM QC Results 2	0	23-May-16	02200	7-Jun-16	
048	OSM QC Results 3	0	23-May-16	02200	7-Jun-16	
049	Drainage Sand Type 1 - QC Result 2	0	24-May-16	02200	27-May-16	
050	OSM QC Results 4	0	31-May-16	02200	7-Jun-16	
051	Underdrain survey	0	28-Jun-16	02100	1-Jul-16	
052	Seed and Fertilizer	0	14-Jun-16	02929	17-Jun-16	
053	Vegetation support	0	7-Jun-16	02920	17-Jun-16	
054	Planting layout	0	22-Jun-16	-	22-Jun-16	
055	Letter of Substantial completion	0	7-Jul-16	01700	19-Jul-16	
056R1	Final Restoration Surface As-built	0	11-Aug-16	02100	23-Aug-16	
057	OSM QC Results 5	0	12-Jul-16	02200	18-Jul-16	

Table 4-2A - Soils QC Test Results Tracking
Landfill Ridge Area
Orrington Remediation Site
Orrington, ME

TEST	FREQUENCY OF TESTING REQUIRED	MATERIAL AMOUNT[1]	NUMBER OF TESTS REQUIRED[2]	NUMBER OF TESTS PERFORMED	FREQUENCY OF TESTING PERFORMED (YD^3/TEST)	SAMPLE NAME	DATE COLLECTED	DATE RESULTS RECEIVED	PASSING (Y/N)	SUBMITTAL RESPONSE NO.	COMMENTS
Common Fill Type 1											
Grain Size	1,000 yd^3	14,264 yd^3	14	14	1000	0-1000 CY	12/22/2015	1/7/2016	Y	036	
						1000-2000 CY	10/14/2015	11/4/2015	Y	020R2	
						2000-3000 CY	1/15/2016	1/21/2016	Y	036B	
						3000-4000 CY	1/20/2016	1/22/2016	Y	036C	
						4000-5000 CY	1/15/2016	1/19/2016	Y	036A	
						5000-6000 CY	1/20/2016	1/22/2016	Y	036D	
						6000-7000 CY	1/20/2016	1/22/2016	Y	036E	
						7000-8000 CY	2/1/2016	2/3/2016	Y	036F	
						8000-9000 CY	2/1/2016	2/3/2016	Y	036G	
						9000-10000 CY	4/21/2016	5/12/2016	Y	036H	
						10000-11000 CY	5/31/2016	6/3/2016	Y	036I	
						11000-12000 CY	5/31/2016	6/3/2016	Y	036J	
						12000-13000 CY	5/31/2016	6/3/2016	Y	036K	
						13000-14000 CY	6/21/2016	6/21/2016	Y	036L	
Moisture Content	1,000 yd^3	14,264 yd^3	14	14	1000	0-1000 CY	12/22/2015	1/7/2016	Y	036	
						1000-2000 CY	10/14/2015	11/4/2015	Y	020R2	
						2000-3000 CY	1/15/2016	1/21/2016	Y	036B	
						3000-4000 CY	1/20/2016	1/22/2016	Y	036C	
						4000-5000 CY	1/15/2016	1/19/2016	Y	036A	
						5000-6000 CY	1/20/2016	1/22/2016	Y	036D	
						6000-7000 CY	1/20/2016	1/22/2016	Y	036E	
						7000-8000 CY	2/1/2016	2/3/2016	Y	036F	
						8000-9000 CY	2/1/2016	2/3/2016	Y	036G	
						9000-10000 CY	4/21/2016	5/12/2016	Y	036H	
						10000-11000 CY	5/31/2016	6/3/2016	Y	036I	
Moisture Content	1,000 yd^3	14,264 yd^3	14	14	1000	11000-12000 CY	5/31/2016	6/3/2016	Y	036J	
						12000-13000 CY	5/31/2016	6/3/2016	Y	036K	
						13000-14000 CY	6/21/2016	6/21/2016	Y	036L	
Standard Proctor	5,000 yd^3	14,264 yd^3	3	3	4800	0-5000 CY	1/15/2016	1/19/2016	Y	036A	
						5000-10000 CY	4/21/2016	5/12/2016	Y	036H	
						10000-15000 CY	10/14/2015	11/4/2015	Y	020R2	
Analytical Testing/ Clean Fill Certification	1/source	14,264 yd^3	1	1	N/A	Common Fill Pit 5	10/14/2015	11/4/2015	Y	020R2	
Drainage Sand Type 1											
Grain Size	1,000 yd^3	1,614 yd^3	2	2	800	0-1000 CY	10/2/2015	11/6/2015	Y	025	
						1000-2000 CY	5/18/2016	5/24/2016	Y	049	
Moisture Content	1,000 yd^3	1,614 yd^3	2	2	800	0-1000 CY	10/2/2015	11/6/2015	Y	025	
						1000-2000 CY	5/18/2016	5/24/2016	Y	049	

Table 4-2A - Soils QC Test Results Tracking
Landfill Ridge Area
Orrington Remediation Site
Orrington, ME

TEST	FREQUENCY OF TESTING REQUIRED	MATERIAL AMOUNT[1]	NUMBER OF TESTS REQUIRED[2]	NUMBER OF TESTS PERFORMED	FREQUENCY OF TESTING PERFORMED (YD^3/TEST)	SAMPLE NAME	DATE COLLECTED	DATE RESULTS RECEIVED	PASSING (Y/N)	SUBMITTAL RESPONSE NO.	COMMENTS
Permeability	1,000 yd^3	1,614 yd^3	2	2	800	0-1000 CY	10/2/2015	11/6/2015	Y	025	
						1000-2000 CY	5/18/2016	5/24/2016	Y	049	
Standard Proctor	5,000 yd^3	1,614 yd^3	1	2	800	0-1000 CY	10/2/2015	11/6/2015	Y	025	
						1000-2000 CY	5/18/2016	5/24/2016	Y	049	
Carbonate Content	1/source	1,614 yd^3	1	1	N/A	Sand Pit 5	10/2/2015	11/6/2015	Y	025	
Analytical Testing/ Clean Fill Certification	1/source	1,614 yd^3	1	1	N/A	Sand Pit 5	10/2/2015	11/6/2015	Y	025	
Topsoil											
Grain Size	1,000 yd^3	1,868 yd^3	2	2	900	0-1000 CY	10/2/2015	12/8/2015	Y	021R1	
						1000-2000 CY	5/13/2016	5/27/2016	Y	021A	
Organic Content	1,000 yd^3	1,868 yd^3	2	2	900	0-1000 CY	10/2/2015	12/8/2015	Y	021R1	
						1000-2000 CY	5/13/2016	5/27/2016	Y	021A	
pH	1,000 yd^3	1,868 yd^3	2	2	900	0-1000 CY	10/2/2015	12/8/2015	Y	021R1	
						1000-2000 CY	5/13/2016	5/27/2016	Y	021A	
Analytical Testing/ Clean Fill Certification	1/source	1,868 yd^3	1	1	N/A	Topsoil Pit 5	10/2/2015	12/8/2015	Y	021R1	
Structural Fill											
Grain Size	1,000 yd^3	3,808 yd^3	4	4	1000	0-1000 CY	10/2/2015	10/20/2015	Y	023R1	
						1000-2000 CY	11/2/2015	11/15/2015	Y	030	
						2000-3000 CY	11/9/2015	11/11/2015	Y	030A	
						3000-4000 CY	5/25/2016	5/26/2016	Y	030B	
Moisture Content	1,000 yd^3	3,808 yd^3	3	3	1300	0-1000 CY	10/2/2015	10/20/2015	Y	023R1	
						1000-2000 CY	11/2/2015	11/15/2015	Y	030	
						2000-3000 CY	11/9/2015	11/11/2015	Y	030A	
Standard Proctor	5,000 yd^3	3,808 yd^3	1	2	1900	0-1000 CY	10/2/2015	10/20/2015	Y	023R1	
						1000-2000 CY	11/2/2015	11/15/2015	Y	030	
Analytical Testing/ Clean Fill Certification	1/source	3,808 yd^3	1	1	N/A	Structural Fill Pit 5	10/2/2015	10/20/2015	Y	023R1	
Dense Graded Gravel											
Grain Size	1,000 yd^3	322 yd^3	1	1	300	NA	NA	NA	NA	NA	Not used, reference RFI 013
Moisture Content	1,000 yd^3	322 yd^3	1	1	300	NA	NA	NA	NA	NA	Not used, reference RFI 013
Standard Proctor	5,000 yd^3	322 yd^3	1	1	300	NA	NA	NA	NA	NA	Not used, reference RFI 013

Table 4-2A - Soils QC Test Results Tracking
Landfill Ridge Area
Orrington Remediation Site
Orrington, ME

TEST	FREQUENCY OF TESTING REQUIRED	MATERIAL AMOUNT[1]	NUMBER OF TESTS REQUIRED[2]	NUMBER OF TESTS PERFORMED	FREQUENCY OF TESTING PERFORMED (YD^3/TEST)	SAMPLE NAME	DATE COLLECTED	DATE RESULTS RECEIVED	PASSING (Y/N)	SUBMITTAL RESPONSE NO.	COMMENTS
Analytical Testing/ Clean Fill Certification	1/source	322 yd^3	1	1	N\	NA	NA	NA	NA	NA	Not used, reference RFI 013
3/4" Stone											
Grain Size	1,000 yd^3	102 yd^3	1	1	100	0-1000 CY	11/12/2015	11/12/2015	Y	029	
Carbonate Content	1/source	102 yd^3	1	NR	N/A	NA	NA	NA	NA	NA	Waived, reference RFI 014
Riprap											
4" to 12" Riprap											
Grain Size	Certification/ source	232 tons	1	1	N/A	4"-12" Riprap	NA	11/11/2015	Y	031	
4" to 8" Riprap											
Grain Size	Certification/ source	598 tons	1	1	N/A	4"-8" Riprap	NA	5/12/2016	Y	045	
3" to 5" Riprap											
Grain Size	Certification/ source	334 tons	1	1	N/A	3"-5" Riprap	NA	5/12/2016	Y	044	
Heavy Riprap											
Grain Size	Certification/ source	123 tons	1	1	N/A	Heavy Riprap	NA	11/10/2015	Y	032	
Onsite Reuse Material[3]											
Moisture Content	1,000 yd^3	4552 yd^3	5	5	900	0-1000 CY	5/12/2016	5/16/2016	Y	046	
						1000-2000 CY	5/17/2016	5/23/2016	Y	047	
						2000-3000 CY	5/17/2016	5/23/2016	Y	048	
						3000-4000 CY	5/26/2016	6/2/2016	Y	050	
						4000-5000 CY	6/20/2016	7/11/2016	Y	057	
Standard Proctor	5,000 yd^3	4552 yd^3	1	5	900	0-1000 CY	5/12/2016	5/16/2016	Y	046	
						1000-2000 CY	5/17/2016	5/23/2016	Y	047	
						2000-3000 CY	5/17/2016	5/23/2016	Y	048	
						3000-4000 CY	5/26/2016	6/2/2016	Y	050	
						4000-5000 CY	6/20/2016	7/11/2016	Y	057	
Analytical Testing/ Clean Fill Certification	5,000 yd^3	4552 yd^3	1	1	4600	On-site Re-use Material	2/26/2016	3/23/2016	Y	038	

Notes:
1. For all materials, the amount presented in the Material Amount column refers to the volume of material delivered from off site sources (i.e., loose volume) and not the volume of in-place material (i.e., compacted volume), with the exception of Onsite Reuse Material, therefore volume estimates are conservative.
2. The required number of tests is based on the testing frequency provided in the project Specifications (which refers to in place volumes as calculated by survey comparison), and represents the required number of tests based on in-place volumes as determined by survey.
3. The amount of Onsite Reuse Material was calculated based on truck counts by Envirocon.
4. NA = Not Applicable; NR = Not Required

Table 4-2B - Soils QA Test Results Tracking
Landfill Ridge Area
Orrington Remediation Site
Orrington, ME

TEST	FREQUENCY OF TESTING REQUIRED	MATERIAL AMOUNT[1]	NUMBER OF TESTS REQUIRED[2]	NUMBER OF TESTS PERFORMED	FREQUENCY OF TESTING PERFORMED (YD^3/TEST)	SAMPLE NAME	DATE COLLECTED	DATE RESULTS RECEIVED	PASSING (Y/N)	COMMENTS
Common Fill Type 1										
Grain Size	10,000 yd^3	14,264 yd^3	2	2	7100	CF1-LR-151221-001	12/21/2015	12/21/2015	Y	Reference Appendix E-1
						CF1-LR-160121-001	1/21/2016	1/21/2016	Y	Reference Appendix E-1
Moisture Content	10,000 yd^3	14,264 yd^3	2	2	7100	CF1-LR-151221-001	12/21/2015	12/21/2015	Y	Reference Appendix E-1
						CF1-LR-160121-001	1/21/2016	1/21/2016	Y	Reference Appendix E-1
Standard Proctor	10,000 yd^3	14,264 yd^3	2	2	7100	CF1-LR-151221-001	12/21/2015	12/21/2015	Y	Reference Appendix E-1
						CF1-LR-160121-001	1/21/2016	1/21/2016	Y	Reference Appendix E-1
In-Place Density/ Moisture Content	10,000 ft^2	385,128 ft^2/9 lifts	85	93	4100	--	--	--	--	Reference Table 4-4B
Thickness Verification	200 ft grid	385,128 ft^2/9 lifts	85	93	4100	--	--	--	--	Reference Table 4-4B
Drainage Sand Type 1										
Grain Size	10,000 yd^3	1,614 yd^3	1	1	1600	DS1-LR-20160526-001	5/26/2016	5/26/2016	Y	Reference Appendix E-1
Moisture Content	10,000 yd^3	1,614 yd^3	1	1	1600	DS1-LR-20160526-001	5/26/2016	5/26/2016	Y	Reference Appendix E-1
Permeability	10,000 yd^3	1,614 yd^3	1	1	1600	DS1-LR-20160526-001	5/26/2016	5/26/2016	Y	Reference Appendix E-1
Carbonate Content	10,000 yd^3	1,614 yd^3	1	NR	NR	N/A	N/A	N/A	N/A	Waived, reference RFI 014
Thickness Verification	5/acre/lift	31,707 ft^2	1	Visual	N/A	--	--	--	--	
Topsoil[3]										
Grain Size	10,000 yd^3	1,868 yd^3	1	1	1900	TS-LR-20160615-001	6/15/2016	6/15/2016	Y	Reference Appendix E-1
Organic Content	10,000 yd^3	1,868 yd^3	1	5	400	TS-LR-20160615-001	6/15/2016	6/24/2016	N	Reference Appendix E-1
						TS-LR-20160615-001	6/15/2016	6/28/2016	N	Reference Appendix E-1
						TS-LR-20160615-001	6/15/2016	6/28/2016	N	Reference Appendix E-1
						TS-LR-20160707-001	7/7/2016	7/11/2016	N	Reference Appendix E-1
						TS-LR-20160707-002	7/7/2016	7/11/2016	N	Reference Appendix E-1
pH	10,000 yd^3	1,868 yd^3	1	1	1900	TS-LR-20160615-001	6/15/2016	6/24/2016	Y	Reference Appendix E-1
Thickness Verification	200 ft grid	84,100 ft^2	2	Visual	N/A	--	--	--	--	
Structural Fill										
Grain Size	10,000 yd^3	3,808 yd^3	1	1	3800	STF-LR-151030-001	10/30/2015	10/30/2015	Y	Reference Appendix E-1
Moisture Content	10,000 yd^3	3,808 yd^3	1	1	3800	STF-LR-151030-001	10/30/2015	10/30/2015	Y	Reference Appendix E-1
Standard Proctor	10,000 yd^3	3,808 yd^3	1	1	3800	STF-LR-151030-001	10/30/2015	10/30/2015	Y	Reference Appendix E-1

Table 4-2B - Soils QA Test Results Tracking
Landfill Ridge Area
Orrington Remediation Site
Orrington, ME

TEST	FREQUENCY OF TESTING REQUIRED	MATERIAL AMOUNT[1]	NUMBER OF TESTS REQUIRED[2]	NUMBER OF TESTS PERFORMED	FREQUENCY OF TESTING PERFORMED (YD^3/TEST)	SAMPLE NAME	DATE COLLECTED	DATE RESULTS RECEIVED	PASSING (Y/N)	COMMENTS
In-Place Density/ Moisture Content	10,000 ft^2/ lift	2 200 ft^2 areas, 15 lifts	15	32	100	--	--	--	--	Reference Table 4-4A
Thickness Verification	200 ft grid/ lift	2 200 ft^2 areas, 15 lifts	30	32	100	--	--	--	--	Reference Table 4-4A
Dense Graded Gravel										
Grain Size	10,000 yd^3	322 yd^3	1	1	300	DGG-LR-151103-001	11/3/2015	11/3/2015	Y	Reference Appendix E-1
Moisture Content	10,000 yd^3	322 yd^3	1	1	300	DGG-LR-151103-001	11/3/2015	11/3/2015	Y	Reference Appendix E-1
Standard Proctor	10,000 yd^3	322 yd^3	1	1	300	DGG-LR-151103-001	11/3/2015	11/3/2015	Y	Reference Appendix E-1
In-Place Density/ Moisture Content	10,000 ft^2/ lift	N/A	N/A	NR	N/A	N/A	N/A	N/A	N/A	Not used, reference RFI 013
Thickness Verification	200 ft grid/ lift	N/A	N/A	NR	N/A	N/A	N/A	N/A	N/A	Not used, reference RFI 013
3/4" Stone[4]										
Riprap[5]										
Onsite Reuse Material[6]										
Standard Proctor	10,000 yd^3	4,552 yd^3	1	1	4600	OSM-LR-160517-001	5/17/2016	5/17/2016	Y	Reference Appendix E-1
In-Place Density/ Moisture Content	10,000 ft^2/ lift	122,904 ft^2/ 10 lifts	12	27	4600	--		--	--	Reference Table 4-4C
Thickness Verification	200 ft grid/ lift	122,904 ft^2/ 10 lifts	10	27	4600	--		--	--	Reference Table 4-4C

Notes:

1. For all materials, the amount presented in the Material Amount column refers to the volume of material delivered from off site sources (i.e., loose volume) and not the volume of in-place material (i.e., compacted volume), with the exception of Onsite Reuse Material, therefore volume estimates are conservative.
2. The required number of tests is based on the testing frequency provided in the project CQA Plan, and represents the required number of tests based on in-place volumes as determined by survey.
3. Organic content results for QA testing of topsoil are discussed in section 4.1.1
4. 3/4" Stone was used only in the construction of the check dam cores which are temporary E&S controls; therefore QA testing was evaluated and not performed.
5. No results are given for Riprap because QA testing was not required.
6. The amount of Onsite Reuse Material was calculated based on truck counts provided by Envirocon.
7. NA = Not Applicable; NR = Not Required

Table 4-3A - Confirmation Sample Summary Table - Original Samples
Landfill Ridge Area
Orrington Remediation Site
Orrington, ME

Location ID	Date Collected	Area	Orig. Ground Surface El[2] (ft)	Start Elevation[3] (ft)	End Elevation[2] (ft)	DMA Hg (mg/kg)	DMA Qual	Alpha Hg (mg/kg)	Alpha Qual	TechLaw Hg (ug/g)	Passing (Y/N)	Comments
SB-LR-21-DEP	02/16/2016	LR-14	N/A	67.1	67.1	0.298	U			0.150	Y	
SB-LR-107-DEP	02/11/2016	LR-15	N/A	61.4	61.4	2.117		1.5		4.08	N	Sample exceeded MPS when tested at Tech Law's offsite Lab, additional excavation and sampling occurred, results in Table 4-3B.
SB-LR-44-DEP	02/11/2016	LR-15	N/A	61.4	61.4	0.263	U			ND	Y	
SW-LR-17	02/11/2016	LR-15	52.8	50.8	50.8	1.208		0.86		0.604	Y	DEP Split
SW-LR-17A	02/11/2016	LR-15	52.8	52.3	51.3	1.705		2.1		ND	Y	DEP Split
BS-LR-07	02/09/2016	LR-11	N/A	64.8	64.8	0.264	U				Y	
BS-LR-08	01/15/2016	LR-6	N/A	77.4	77.4	0.267	U				Y	
BS-LR-09	12/14/2015	LR-4	N/A	78.7	78.7	0.269	U				Y	
BS-LR-10	12/16/2015	LR-3	N/A	76.7	76.7	13.314	J				N	Above MPS, sample taken near tree debris in excavation, additional excavation and sampling occurred, results in Table 4-3B.
BS-LR-11	12/10/2015	LR-3	N/A	76.7	76.7	0.290	U				Y	
BS-LR-12	12/14/2015	LR-5	N/A	83.1	83.1	0.280	U				Y	
BS-LR-13	12/14/2015	LR-4	N/A	78.7	78.7	1.678		2.1			Y	
BS-LR-14	12/16/2015	LR-3	N/A	76.7	76.7	0.288	U				Y	
BS-LR-15	12/10/2015	LR-3	N/A	76.7	76.7	0.292	U				Y	
BS-LR-16	12/14/2015	LR-4	N/A	78.7	78.7	0.298	U				Y	
BS-LR-17	12/10/2015	LR-4	N/A	78.7	78.7	0.312	U				Y	
BS-LR-18	12/10/2015	LR-3	N/A	76.7	76.7	6.211					N	Above MPS, sample taken in tree debris in excavation, additional excavation and sampling occurred, results in Table 4-3B.
BS-LR-19	12/10/2015	LR-4	N/A	78.7	78.7	0.297	U				Y	
BS-LR-20	12/08/2015	LR-5	N/A	83.1	83.1	0.276	U				Y	
BS-LR-21	12/08/2015	LR-5	N/A	83.1	83.1	0.275	U			ND	Y	DEP Split
BS-LR-22	01/15/2016	LR-6	N/A	77.4	77.4	0.375	J			0.156	Y	DEP Split
BS-LR-23	02/02/2016	LR-19	N/A	70.3	70.3	0.269	U				Y	
BS-LR-24	01/27/2016	LR-18	N/A	68.5	68.5	0.394	J				Y	
BS-LR-26	02/11/2016	LR-16	N/A	63.6	63.6	0.259	U				Y	
BS-LR-06	02/16/2016	LR-17	N/A	66.1	66.1	0.307	U				Y	
BS-LR-25	02/02/2016	LR-17	N/A	66.1	66.1	0.268	U				Y	
BS-LR-27	02/16/2016	LR-17	N/A	67.1	67.1	0.323	U			0.15	Y	DEP Split
BS-LR-29	02/16/2016	LR-17	N/A	64.7	64.7	2.858				0.12	N	DEP Split, additional excavation and sampling occurred, results in Table 4-3B.
SW-LR-15	02/16/2016	LR-17	71.2	68.2	68.2	0.29	U				Y	
SW-LR-15A	02/16/2016	LR-17	71.2	70.2	69.2	0.28	U				Y	
SB-LR-61-DEP	02/16/2016	LR-17	N/A	69.1	69.1	0.273	U			0.267	Y	
BS-LR-30	02/17/2016	LR-23	N/A	72.7	72.7	0.281	U			0.316	Y	DEP Split
BS-LR-31	02/09/2016	LR-23	N/A	72.7	72.7	0.278	U				Y	
BS-LR-28	02/16/2016	LR-25	N/A	66.1	66.1	0.284	U			0.267	Y	DEP Split
SB-LR-07-DEP	02/16/2016	LR-25	N/A	66.1	66.1	0.282	U			ND	Y	
BS-LR-05	02/16/2016	LR-26	N/A	69.1	69.1	0.297	U			0.04 U	Y	DEP Split
SB-LR-49-DEP	02/16/2016	LR-26	N/A	66.1	66.1	0.284	U			0.120	Y	
SB-LR-102-DEP	02/16/2016	LR-27	N/A	70.3	70.3	0.27	J			ND	Y	
SW-LR-14	02/18/2016	LR-27	77.5	77.0	76.0	0.272	U				Y	
SW-LR-14A	02/18/2016	LR-27	77.5	75.5	75.5	0.282	U				Y	
BS-LR-04	2/19/2016	LR-28	82.6	72.0	72.0	0.294	U				Y	

Table 4-3A - Confirmation Sample Summary Table - Original Samples
Landfill Ridge Area
Orrington Remediation Site
Orrington, ME

Location ID	Date Collected	Area	Orig. Ground Surface El[2] (ft)	Start Elevation[3] (ft)	End Elevation[2] (ft)	DMA Hg (mg/kg)	DMA Qual	Alpha Hg (mg/kg)	Alpha Qual	TechLaw Hg (ug/g)	Passing (Y/N)	Comments
SW-LR-13	2/19/2016	LR-28	70.5	70.0	69.0	0.275	U				Y	
SB-LR-108-DEP	12/14/2015	LR-4	N/A	78.7	78.7	0.353	U			0.310	Y	
SB-LR-109-DEP	12/14/2015	LR-4	N/A	78.7	78.7	0.284	U			ND	Y	
SB-LR-10-DEP	01/27/2016	LR-18	N/A	68.5	68.5	0.319	U			0.306	Y	
SB-LR-110-DEP	12/14/2015	LR-5	N/A	83.1	83.1	0.280	U			0.346	Y	
SB-LR-111-DEP	12/08/2015	LR-5	N/A	83.1	83.1	0.287	U			0.130	Y	
SB-LR-112-DEP	12/08/2015	LR-5	N/A	83.1	83.1	0.297	U			0.110	Y	
SB-LR-113-DEP	12/02/2015	LR-1	N/A	81.5	81.5	2.737	J+	2.4		2.42	N	sample taken prior to completion of area, area excavation completed and re-sampled, results in Table 4-3B.
SW-LR-13A	2/19/2016	LR-28	70.2	68.2	68.2	0.270	U				Y	
SB-LR-11-DEP	02/02/2016	LR-20	N/A	73.6	73.6	0.283	U			0.046	Y	
SB-LR-01-DEP	02/16/2016	LR-29	N/A	75.6	75.6	0.329	J			0.316	Y	
SB-LR-25-DEP	01/06/2016	LR-9	N/A	72.9	72.9	0.267	U			0.364	Y	
SB-LR-77-DEP	2/19/2016	LR-30	79.3	73.6	73.6	0.276	U			ND		
SB-LR-27-DEP	01/19/2016	LR-12	N/A	71.6	71.6	1.020				0.453		
SW-LR-12	2/19/2016	LR-30	80.2	79.0	78.0	0.277	U					
SB-LR-45-DEP	01/28/2016	LR-11	N/A	64.8	64.8	0.281	U			ND	Y	
SW-LR-24	2/19/2016	LR-30	87.3	84.0	83.0	0.264	U				Y	
SW-LR-25	2/19/2016	LR-30	69.1	66.8	66.8	2.512				2.27	N	DEP Split, additional excavation and sampling occurred, results in Table 4-3B.
SB-LR-68-DEP	01/19/2016	LR-8	N/A	70.2	70.2	0.387	J			0.266	Y	
SB-LR-70-DEP	01/15/2016	LR-21	N/A	84.8	84.8	0.984				1.71	Y	
SB-LR-86-DEP	02/02/2016	LR-6	N/A	77.4	77.4	0.267	U			ND	Y	
SB-LR-93-DEP	12/18/2015	LR-3	N/A	76.7	76.7	0.368	J			0.370	Y	
SB-LR-94-DEP	12/18/2015	LR-3	N/A	76.7	76.7	6.392					N[4]	Above MPS, sample taken near tree debris in excavation, additional excavation and sampling occurred, results in Table 4-3B.
SB-LR-96-DEP	12/14/2015	LR-3	N/A	76.7	76.7	3.620					N[4]	sample taken prior to completion of area, additional excavation and sampling occurred, results in Table 4-3B.
BS-LR-32	2/19/2016	LR-31	86.3	78.6	78.6	0.277	U				Y	
SW-LR-01	12/01/2015	LR-1	85.5	83.5	82.5	0.302	U				Y	
SW-LR-02	12/01/2015	LR-4	82.8	79.8	78.8	0.302	U				Y	
SW-LR-03	12/01/2015	LR-5	84.1	84.1	83.1	0.315	U				Y	
SW-LR-04	11/24/2015	LR-5	84.1	84.1	83.1	0.297	U	0.15			Y	
SW-LR-05	12/15/2015	LR-5	84.1	84.1	83.1	0.280	U				Y	
SW-LR-06	02/01/2016	LR-6	82.4	78.4	77.4	0.280	U				Y	
SW-LR-07	02/01/2016	LR-6	82.4	78.4	77.4	0.277	U				Y	
SB-LR-04-DEP	2/19/2016	LR-33	85.3	79.8	79.8	18.761				12.3	N	Above MPS, additional excavation and sampling occurred, results in Table 4-3B.
BS-LR-03	2/19/2016	LR-34	85.5	75.4	75.4	0.278	U				Y	
SW-LR-22	2/19/2016	LR-34	85.6	78.7	77.7	0.268	U				Y	
SW-LR-22A	2/19/2016	LR-34	85.5	76.7	75.7	0.264	U				Y	
SB-LR-26-DEP	2/19/2016	LR-35	86.1	81.8	81.8	0.260	U			0.120	Y	
BS-LR-33	2/19/2016	LR-36	85.8	83.7	83.7	0.267	U				Y	
SB-LR-98-DEP	2/19/2016	LR-36	85.1	83.0	83.0	0.263	U			ND	Y	
BS-LR-01	2/19/2016	LR-37	86.9	83.3	83.3	0.282	U				Y	
BS-LR-02	2/19/2016	LR-37	85.8	83.2	83.2	0.268	U			0.059	Y	DEP Split

Table 4-3A - Confirmation Sample Summary Table - Original Samples
Landfill Ridge Area
Orrington Remediation Site
Orrington, ME

Location ID	Date Collected	Area	Orig. Ground Surface El[2] (ft)	Start Elevation[3] (ft)	End Elevation[2] (ft)	DMA Hg (mg/kg)	DMA Qual	Alpha Hg (mg/kg)	Alpha Qual	TechLaw Hg (ug/g)	Passing (Y/N)	Comments
SB-LR-116-DEP	2/19/2016	LR-37	84.7	83.4	83.4	0.284	U			0.120	Y	
SW-LR-08	2/19/2016	LR-37	86.6	86.0	85.0	0.347	J				Y	
SW-LR-09	2/19/2016	LR-37	86.7	86.0	85.0	0.390	J				Y	
SW-LR-10	2/19/2016	LR-37	86.7	86.0	85.0	0.266	U				Y	
SW-LR-11	2/19/2016	LR-37	82.3	82.2	82.2	3.881					N	Above MPS, additional excavation and sampling occurred, results in Table 4-3B..
SW-LR-23	2/19/2016	LR-37	81.4	81.1	81.1	4.645					N	Above MPS, additional excavation and sampling occurred, results in Table 4-3B..
SW-LR-18	12/14/2015	LR-2	82.0	81.0	80.0	0.272	U				Y	
SW-LR-18A	12/21/2015	LR-2	82.0	72.0	71.3	0.260	UJ				Y	
SW-LR-19	11/30/2015	LR-1	85.5	83.5	82.5	1.817					Y	
SW-LR-20	12/10/2015	LR-3	85.6	80.6	79.6	0.276	U				Y	
SW-LR-21	11/24/2015	LR-5	84.1	84.1	83.1	1.366		0.89			Y	
SW-LR-16	02/16/2016	LR-38	53.8	51.8	51.8	22.234					N	Above MPS, additional excavation and sampling occurred, results in Table 4-3B..
SW-LR-16A	02/16/2016	LR-38	53.8	53.3	52.3	33.962					N	Above MPS, additional excavation and sampling occurred, results in Table 4-3B..
SW-LR-26	01/29/2016	LR-19	85.8	81.8	80.8	0.269	U				Y	
SW-LR-26A	01/29/2016	LR-19	85.8	72.8	71.8	0.278	U				Y	

Notes:

1. Data provided in the above table is based on the daily confirmation sample results issued from the project database.
2. "Original Ground Surface El. Is not applicable to bottom samples. For sidewall samples, original ground surface represents the elevation used to calculate the "Start Elevation" and "End Elevation" sampling intervals.
3. "Start Elevation" and "End Elevation" represent bottom of excavation elevations for Post-excavation Bottom Samples (e.g., samples beginning "SB" and "BS").
   For sidewall samples (e.g., samples beginning "SW") those entries represent the Start and End elevations for which the sample was taken.
   Start and End elevations for sidewall samples are chosen based on the maximum Hg concentration of near-by pre-excavation confirmation samples.
4. TechLaw results for samples SB-LR-94-DEP and SB-LR-96-DEP were not received. However, testing by the onsite laboratory indicated that the Hg concentration of these samples exceeded the MPS. Therefore, additional excavation and resampling were required.

Table 4-3B - Confirmation Sample Summary Table - Additional Samples
Landfill Ridge Area
Orrington Remediation Site
Orrington, ME

Location ID	Date Collected	Area	Orig. Ground Surface El[2] (ft)	Start Elevation[3] (ft)	End Elevation (ft)	DMA Hg (mg/kg)	DMA Qual	Alpha Hg (mg/kg)	Alpha Qual	TechLaw Hg (ug/g)	Passing (Y/N)	Comments
SB-LR-107A-DEP	2/19/2016	LR-15	65.5	55.9	55.9	0.264	U			0.227	Y	Resample of SB-LR-107-DEP, sample taken after additional excavation
BS-LR-10A	12/17/2015	LR-3	N/A	76.7	76.7	0.276	U				Y	Resample of BS-LR-10, Sample taken after additional excavation
BS-LR-18A	12/16/2015	LR-3	N/A	76.7	76.7	2.307		2.4			N	Resample of BS-LR-18, Sample taken after additional excavation in tree debris area. Above MPS, additional excavation performed
BS-LR-18B	12/30/2015	LR-3	N/A	76.7	76.7	0.284	U				Y	Resample of BS-LR-18A, Sample taken from additional excavation of tree debris around BS-LR-18A.
BS-LR-35	02/17/2016	LR-17	62.5	60.5	60.5	0.264	U				Y	Additional confirmation sample point added for LR-38, LR-17 slope area
BS-LR-29A	2/22/2016	LR-17	69.7	60.1	60.1	0.263	U			0.04 U	Y	Resample of BS-LR-29, DEP Split, sample taken after additional excavation
SB-LR-113A-DEP	12/07/2015	LR-1	N/A	81.5	81.5	0.288				0.260	Y	Resample of SB-LR-113 which was taken prior to completion of area, excavation complete and sample taken
SW-LR-25A	2/23/2016	LR-30	69.8	67.8	66.8	0.266	U			ND	Y	Resample of SW-LR-25, DEP Split, sample taken after additional excavation up to tree line.
SB-LR-94A-DEP	12/18/2015	LR-3	N/A	76.7	76.7	0.405	J			0.698	Y	Resample of SB-LR-94-DEP, Sample taken from additional excavation of tree debris.
SB-LR-96A-DEP	01/07/2016	LR-3	N/A	76.7	76.7	0.276	U			ND	Y	Resample of SB-LR-96-DEP which was taken prior to completion of excavation, excavation completed and this sample was taken
SB-LR-04A-DEP	2/22/2016	LR-33	85.3	78.4	78.4	1.428	J+			58	N	Resample of SB-LR-04-DEP, sample taken after additional excavation and TechLaw result exceeded MPS, additional sample SB-LR-04B taken, tested to check Techlaw result, then additional excavation performed.
SB-LR-04B-DEP[4]	2/25/2016	LR-33	85.3	78.4	78.4	1.549					N	Resample of SB-LR-04A-DEP. This sample taken prior to additional excavation due to TechLaw Result, additional excavation was then performed
SB-LR-04C-DEP[4]	2/25/2016	LR-33	85.3	76.6	76.6	0.290	U				Y	Resample of SB-LR-04B, Sample taken after additional excavation
SW-LR-11A	2/23/2016	LR-37	80.9	80.9	79.9	0.293	U			0.054	Y	Resample of SW-LR-11, DEP Split, sample taken after additional excavation.
SW-LR-23A	2/23/2016	LR-37	80.8	80.8	79.8	0.290	U				Y	Resample of SW-LR-23, taken after additional excavation
BS-LR-34	02/17/2016	LR-38	63.0	61.0	61.0	0.271	U				Y	Additional confirmation sample point for LR-38, LR-17 slope area

Table 4-3B - Confirmation Sample Summary Table - Additional Samples
Landfill Ridge Area
Orrington Remediation Site
Orrington, ME

Location ID	Date Collected	Area	Orig. Ground Surface El[2] (ft)	Start Elevation[3] (ft)	End Elevation (ft)	DMA Hg (mg/kg)	DMA Qual	Alpha Hg (mg/kg)	Alpha Qual	TechLaw Hg (ug/g)	Passing (Y/N)	Comments
SW-LR-16B	2/22/2016	LR-38	46.8	45.8	44.8	6.935					N	Resample of SW-LR-16, taken after additional excavation on slope and bottom of LR-17 and LR-38.
SW-LR-16C	2/22/2016	LR-38	46.8	43.8	43.8	0.264	U			0.093	Y	Resample of SW-LR-16, DEP Split, taken after additional excavation performed to max reach of excavator on slope.
SW-LR-16D	2/23/2016	LR-38	46.2	42.8	42.8	0.258	U				Y	Resample of SW-LR-16B, taken after addt'l excavation performed to max reach of excavator on slope

Notes:

1. Data provided in the above table is based on the daily confirmation sample results issued from the project database.
2. "Original Ground Surface El. Is not applicable to bottom samples. For sidewall samples, original ground surface represents the elevation used to calculate the "Start Elevation" and "End Elevation" sampling intervals.
3. "Start Elevation" and "End Elevation" represent bottom of excavation elevations for Post-excavation Bottom Samples (e.g., samples beginning "SB" and "BS").
For sidewall samples (e.g., samples beginning "SW") those entries represent the Start and End elevations for which the sample was taken.
Start and End elevations for sidewall samples are chosen based on the maximum Hg concentration of near-by pre-excavation confirmation samples.
4. TechLaw results for samples SB-LR-04B-DEP and SB-LR-04C-DEP were not received. Discussion with the DEP on-site inspector indicated that the result for SB-LR-04B-DEP exceeded the MPS, requiring further excavation and resampling. Further discussion indicated that the result for SB-LR-04C-DEP was below the MPS.

Table 4-4 - Backfill Request and Approval Log
Landfill Ridge Area
Orrington Remediation Site
Orrington, ME

Area	Request Submitted	Request Approved	NOTES
LR-1	12/11/2015	12/14/2015	
LR-2	1/8/2016	1/8/2016	
LR-3	1/5/2016	1/7/2016	
LR-4	12/18/2015	12/18/2015	
LR-5	12/11/2015 12/18/2015	12/14/2015 12/18/2015	
LR-6	1/21/2016 2/4/2016	1/25/2016 2/5/2016	
LR-7	1/21/2016	1/25/2016	
LR-8	1/21/2016	1/25/2016	
LR-9	1/8/2016 1/21/2016	1/8/2016 1/25/2016	
LR-10	1/21/2016	1/25/2016	
LR-11	2/2/2016 2/11/2016	2/3/2016 2/11/2016	
LR-12	1/21/2016	1/25/2016	
LR-13	2/4/2016	2/5/2016	
LR-14	3/15/2016	4/1/2016	
LR-15	2/15/2016 3/15/2016	4/1/2016	original request not approved, resubmitted
LR-16	2/15/2016 3/15/2016	4/1/2016	original request not approved, resubmitted
LR-17	2/4/2016 3/15/2016	2/5/2016 4/1/2016	
LR-18	1/28/2016	1/29/2016	
LR-19	2/4/2016	2/5/2016	
LR-20	2/4/2016	2/5/2016	
LR-21	2/25/2016	4/1/2016	
LR-22	3/15/2016	4/1/2016	
LR-23	3/15/2016	4/1/2016	
LR-24	3/15/2016	4/1/2016	
LR-25	3/15/2016	4/1/2016	
LR-26	3/15/2016	4/1/2016	
LR-27	3/15/2016	4/1/2016	
LR-28	3/15/2016	4/1/2016	
LR-29	3/15/2016	4/1/2016	
LR-30	3/15/2016	4/1/2016	
LR-31	3/15/2016	4/1/2016	
LR-32	3/15/2016	4/1/2016	
LR-33	3/15/2016	4/1/2016	
LR-34	3/15/2016	4/1/2016	
LR-35	3/15/2016	4/1/2016	
LR-36	3/15/2016	4/1/2016	
LR-37	3/15/2016	4/1/2016	
LR-38	3/15/2016	4/1/2016	

Notes:

1. Backfill requests were submitted to the Maine DEP upon receiving validated confirmation sample results with concentrations less than the MPS.
2. Validated confirmation sample results include results obtained from the On-site Laboratory and, in some cases Alpha Analytical Laboratory.
3. Backfill requests were submitted to the Maine DEP via email correspondance on the date listed above.
4. Backfill approvals were received from the Maine DEP via email correspondance on the date listed above.

Table 4-5A - Structural Fill Field Density Tests
Landfill Ridge Area
Orrington Remeditation Site
Orrington, ME

Material Name: Structural Fill (STF)					**Specifications and Test Information:**	
Test date	**Proctor Sample ID**	**Optimum Moisture (%)**	**Maximum Dry Density (lb/ft^3)**	**Source (-)**	**Gauge Type/ID:**	Troxler 3430/Serial No. 27418
					Max Lift Thickness:	12 inches
10/12/2015	Proctor STF-1	6.5	136.2	Thornton Pit 5	**Minimum Compaction Percent**	95
11/3/2015	Proctor STF-2	6.8	134.3	Thornton Pit 5	**Moisture Content Range:**	+
10/30/2015	Proctor STF-4	9.9	131.2	Thornton Pit 5	**Moisture Correction Factor:**	

Date	**FDT Test No.**	**Test Location**	**Probe Depth/Lift No.**	**Field Density Test Results**			**Pass**	**Fail**	**Retest**	**Laboratory**
				Field Moisture Content	**Dry Unit Weight**	**Percent Compaction**				**Target 95% Density**
(-)	**(-)**	**(ref grid)**	**(inch)/(Lift)**	**(%)**	**(lb/ft^3)**	**(%)**				**(lb/ft^3)**
10/30/2015	AR-STF-01	LR Access Ramp	4 in/#1	4.6	116.8	89%		x	AR-STF-01R1	124.6
10/30/2015	AR-STF-01R1	LR Access Ramp	4 in/#1	5.0	120.6	92%		x	AR-STF-01R2	124.6
10/30/2015	AR-STF-01R2	LR Access Ramp	4 in/#1	4.8	127.2	97%	x			124.6
10/30/2015	AR-STF-01R3	LR Access Ramp	4 in/#1	3.9	124.6	95%	x			124.6
11/2/2015	AR-STF-01R4	LR Access Ramp	4 in/#1	6.0	125.6	96%	x			124.6
11/2/2015	AR-STF-01R5	LR Access Ramp	4 in/#1	5.9	126.5	96%	x			124.6
11/2/2015	AR-STF-01R6	LR Access Ramp	2 in/#1	5.5	137	100%	x			124.6
11/2/2015	AR-STF-01R7	LR Access Ramp	4 in/#1	5.9	126.8	97%	x			124.6
11/2/2015	AR-STF-01R8	LR Access Ramp	6 in/#1	5.2	142.7	100%	x			124.6
11/2/2015	AR-STF-02	LR Access Ramp	6 in/#1	5.2	139.5	100%	x			124.6
11/3/2015	AR-STF-03	LR Access Ramp	6 in/#2	8.5	132.7	99%	x			127.6
11/3/2015	AR-STF-04	LR Access Ramp	6 in/#3	5.3	132	98%	x			127.6
11/3/2015	AR-STF-05	LR Access Ramp	6 in/#4	7.3	135.8	100%	x			127.6
11/3/2015	AR-STF-06	LR Access Ramp	6 in/#5	7.7	132	98%	x			127.6
11/3/2015	AR-STF-07	LR Access Ramp	6 in/#6	5.1	135.4	100%	x			127.6
11/4/2015	AR-STF-08	LR Access Ramp	6 in/#7	6.6	132.2	98%	x			127.6
11/4/2015	AR-STF-09	LR Access Ramp	6 in/#8	8.2	138.3	100%	x			127.6
11/4/2015	AR-STF-10	LR Access Ramp	6 in/#9	6.8	134.5	100%	x			127.6
11/4/2015	AR-STF-11	LR Access Ramp	6 in/#10	5	134.4	100%	x			127.6
11/5/2015	AR-STF-12	LR Access Ramp	6 in/#11	4.9	135.5	100%	x			127.6
11/5/2015	AR-STF-13	LR Access Ramp	4 in/#12	6.6	136.6	100%	x			127.6
11/6/2015	AR-STF-14	Rd. (0'-500') 110'	6 in/#1	5.5	131.8	98%	x			127.6
11/6/2015	AR-STF-15	Rd. (0'-500') 300'	6 in/#1	5.2	134.1	100%	x			127.6
11/6/2015	AR-STF-16	Rd. (0'-500') 300'	6 in/#2	4.8	136	100%	x			127.6
11/6/2015	AR-STF-17	Rd. (0'-500') 110'	6 in/#2	5.1	135.4	100%	x			127.6
11/11/2015	DivBerm-STF-01	At turnaround	6 in/#1	5.5	135.7	100%	x			127.6
11/11/2015	DivBerm-STF-02	Near MW-411-B1	6 in/#1	4.5	131.2	98%	x			127.6
11/11/2015	DivBerm-STF-03	108 ft from culvert	6 in/#1	6.8	131.1	98%	x			127.6
11/11/2015	DivBerm-STF-04	28 ft from decon pad	6 in/#1	4.5	131.6	98%	x			127.6
2/19/2016	AR-STF-18	Rd. (LR-6)	6 in/#1	8.4	130.9	97%	x			127.6
5/12/2016	SA-SFT-01	LR-5 south	6 in/#1	7.4	122.9	92%		x	SA-SFT-02	127.6
5/13/2016	SA-SFT-02	LR-5 south	6 in/#1	6.8	129.6	97%	x			127.6
5/13/2016	SA-SFT-03	LR-4 South	6 in/#1	6.3	135.6	100%	x			127.6
5/13/2016	SA-SFT-04	LR-4 North	6 in/#1	7.8	129.8	97%	x			127.6
6/14/2016	SA-SFT-05	LR-1/LR-4	6 in/#1	4.7	126.7	94%		x	SA-SFT-06	127.6
6/15/2016	SA-SFT-06	LR-1/LR-4	6 in/#1	5.8	135.2	100%	x			127.6

Notes:

1.) Retest indicates the previous test failed compaction. Retests corresponding to a failed density test are listed in order below the first failed test until a "Pass" result is obtained.

2.) Proctor STF-4 is a QA sample.

Table 4-5B - Common Fill Type 1 Field Density Tests
Landfill Ridge Area
Orrington Remeditation Site
Orrington, ME

Material Name: Common Fill Type 1 (CF1)					**Specifications and Test Information:**	
Test Date	**Proctor Sample ID**	**Optimum Moisture (%)**	**Maximum Dry Density**	**Source (-)**	**Gauge Type/ID:**	Troxler 3430/Serial No. 27418
					Max Lift Thickness:	12 inches
10/14/2015	Proctor CF1-1	7.0	133.9	Thornton Pit5	**Minimum Compaction Percent:**	95
12/21/2015	Proctor CF1-2	9.5	130.7	Thornton Pit5	**Moisture Content Range:**	+
1/15/2016	Proctor CF1-3	9.0	127.1	Thornton Pit5	**Moisture Correction Factor:**	
1/21/2016	Proctor CF1-4	7.6	132.1	Thornton Pit5		
4/22/2016	Proctor CF1-5	10.8	125	Thornton Pit5		

Date	**FDT Test No.**	**Test Location**	**Probe Depth/Lift No.**	**Field Density Test Results**			**Pass**	**Fail**	**Retest**	**Laboratory**
				Field Moisture Content	**Dry Unit Weight**	**Percent Compaction**				**Target 95% Density**
(-)	**(-)**	**(ref grid)**	**(inch)/(Lift)**	**(%)**	**(lb/ft^3)**	**(%)**				**(lb/ft^3)**
12/21/2015	CF1-01	LR-5	6/1	6.1	136.1	100%	x			127.2
12/21/2015	CF1-02	LR-5	6/1	6.0	130.9	98%	x			127.2
12/22/2015	CF1-03	LR-4	6/1	7.1	126.1	96%		x	CF1-04	124.2
12/22/2015	CF1-04	LR-4	6/1	7.2	127.4	97%	x			124.2
12/22/2015	CF1-05	LR-4	6/1	8.6	128.2	98%	x			124.2
12/22/2015	CF1-06	LR-4	6/2	6.5	125.7	96%		x	CF1-07	124.2
12/22/2015	CF1-07	LR-4	6/2	7.1	130.8	100%	x			124.2
12/22/2015	CF1-08	LR-4	6/3	7.2	135.1	100%	x			124.2
1/9/2016	CF1-09	LR-4	6/4	9.3	122.0	93%		x	CF1-10	124.2
1/9/2016	CF1-10	LR-4	6/4	9.1	124.1	95%		x	CF1-11	124.2
1/9/2016	CF1-11	LR-4	6/4	9.0	128.5	98%	x			124.2
1/9/2016	CF1-12	LR-1	6/1	7.9	124.7	95%	x			124.2
1/9/2016	CF1-13	LR-4	6/5	7.3	122.7	94%		x	CF1-14	124.2
1/9/2016	CF1-14	LR-4	6/5	7.2	125.5	96%		x	CF1-15	124.2
1/9/2016	CF1-15	LR-4	6/5	7.3	118.2	90%		x	CF1-16	124.2
1/9/2016	CF1-16	LR-4	6/5	8.5	127.4	97%	x			124.2
1/9/2016	CF1-17	LR-3	6/1	9.7	121.7	93%		x	CF1-18	124.2
1/9/2016	CF1-18	LR-3	6/1	10.0	123.0	94%		x	CF1-19	124.2
1/9/2016	CF1-19	LR-3	6/1	8.5	115.0	88%		x	CF1-20	124.2
1/9/2016	CF1-20	LR-3	6/1	5.2	119.4	91%		x	CF1-21	124.2
1/9/2016	CF1-21	LR-3	6/1	6.0	121.1	93%		x	CF1-22	124.2
1/9/2016	CF1-22	LR-3	6/1	6.1	117.7	90%		x	CF1-23	124.2
1/9/2016	CF1-23	LR-3	6/1	4.6	120.1	92%		x	CF1-24	124.2
1/9/2016	CF1-24	LR-3	6/1	4.6	124.0	95%		x	CF1-33	124.2
1/13/2016	CF1-25	LR-2 (north)	6/1	8.3	124.3	95%		x	CF1-26	124.2
1/13/2016	CF1-26	LR-2 (north)	6/1	8.0	128.6	98%		x	CF1-27	124.2
1/13/2016	CF1-27	LR-2 (north)	6/1	8.4	118.0	90%		x	CF1-28	124.2
1/13/2016	CF1-28	LR-2 (north)	6/1	8.6	133.2	100%	x			124.2
1/13/2016	CF1-29	LR-2 (north)	6/2	11.1	132.8	100%	x			124.2
1/14/2016	CF1-30	LR-2 (north)	6/3	6.9	123.3	94%		x	CF1-32	124.2
1/14/2016	CF1-31	LR-3	6/2	7.1	119.6	92%		x	CF1-35	124.2
1/14/2016	CF1-32	LR-2 (north)	6/3	8.5	124.8	95%	x			124.2
1/14/2016	CF1-33	LR-2 (south)	6/1	7.4	110.4	84%		x	CF1-34	124.2
1/14/2016	CF1-34	LR-2 (south)	6/1	7.6	115.0	88%		x	CF1-36	124.2
1/14/2016	CF1-35	LR-3	6/2	7.0	113.2	87%		x	CF1-41	124.2
1/14/2016	CF1-36	LR-2 (south)	6/1	6.7	107.9	83%		x	CF1-37	124.2
1/15/2016	CF1-37	LR-2 (south)	6/1	7.0	114.9	90%		x	CF1-38	120.7
1/15/2016	CF1-38	LR-2 (south)	6/1	6.3	116.0	91%		x	CF1-39	120.7
1/15/2016	CF1-39	LR-2 (south)	6/1	7.5	125.3	99%	x			120.7
1/15/2016	CF1-40	LR-2 (north)	6/4	7.7	125.7	99%	x			120.7
1/15/2016	CF1-41	LR-3	6/2	6.7	113.8	90%		x	CF1-42	120.7
1/15/2016	CF1-42	LR-3	6/2	7.8	127.0	100%	x			120.7
1/15/2016	CF1-43	LR-2 (south)	6/2	6.5	131.5	100%	x			120.7
1/15/2016	CF1-44	LR-2 (north)	6/5	5.8	132.3	100%	x			120.7
1/18/2016	CF1-45	LR-2 (south)	6/3	7.5	116.3	92%		x	CF1-46	120.7
1/18/2016	CF1-46	LR-2 (south)	6/3	6.3	123.4	97%	x			120.7
1/18/2016	CF1-47	LR-2 (south)	6/3	7.2	126.7	100%	x			120.7
1/18/2016	CF1-48	LR-2 (south)	6/4	5.6	128.4	100%	x			120.7

Table 4-5B - Common Fill Type 1 Field Density Tests
Landfill Ridge Area
Orrington Remeditation Site
Orrington, ME

Date	FDT Test No.	Test Location	Probe Depth/Lift No.	Field Density Test Results			Pass	Fail	Retest	Laboratory
				Field Moisture Content	Dry Unit Weight	Percent Compaction				Target 95% Density
(-)	(-)	(ref grid)	(inch)/(Lift)	(%)	(lb/ft^3)	(%)				(lb/ft^3)
1/18/2016	CF1-49	LR-2 (south)	6/5	8.7	126.1	99%	x			120.7
1/18/2016	CF1-50	LR-2 (south)	6/6	7.6	126.9	100%	x			120.7
1/22/2016	CF1-51	LR-8	6/1	4.7	123.5	93%		x	CF1-52	125.5
1/22/2016	CF1-52	LR-8	6/1	5.3	124.1	94%		x	CF1-53	125.5
1/22/2016	CF1-53	LR-8	6/1	5.1	118.9	90%		x	CF1-54	125.5
1/22/2016	CF1-54	LR-8	6/1	5.0	129.8	98%	x			125.5
1/22/2016	CF1-55	LR-8/LR-7	6/2	5.9	134.7	100%	x			125.5
1/25/2016	CF1-56	LR-8/LR-7	6/3	5.2	129.4	98%	x			125.5
1/25/2016	CF1-57	LR-8/LR-7	6/4	5.3	126.9	96%	x			125.5
1/25/2016	CF1-58	LR-8/LR-7	6/4	6.2	128.8	98%	x			125.5
1/25/2016	CF1-59	LR-8/LR-7	6/5	6.0	124.6	94%		x	CF1-60	125.5
1/25/2016	CF1-60	LR-8/LR-7	6/5	6.0	128.3	97%	x			125.5
1/26/2016	CF1-61	LR-8/LR-7	6/6	5.9	118.0	89%		x	CF1-62	125.5
1/26/2016	CF1-62	LR-8/LR-7	6/6	6.2	102.9	78%		x	CF1-63	125.5
1/26/2016	CF1-63	LR-8/LR-7	6/6	5.7	119.6	91%		x	CF1-64	125.5
1/26/2016	CF1-64	LR-8/LR-7	6/6	6.5	119.5	90%		x	CF1-65	125.5
1/26/2016	CF1-65	LR-8/LR-7	6/6	5.9	127.3	96%	x			125.5
1/26/2016	CF1-66	LR-8/LR-7	6/7	7.0	126.1	95%	x			125.5
1/26/2016	CF1-67	LR-8/LR-7	6/8	5.0	133.2	100%	x			125.5
1/26/2016	CF1-68	LR-6	6/1	5.0	127.7	97%	x			125.5
1/26/2016	CF1-69	LR-8/7/6/2	6/1	5.9	116.1	88%		x	CF1-70	125.5
1/26/2016	CF1-70	LR-8/7/6/2	6/1	5.8	125.0	95%	x			125.5
1/26/2016	CF1-71	LR-8/7/6/2	6/1	5.6	128.4	97%	x			125.5
1/28/2016	CF1-72	LR-11 (north)	6/1	5.0	127.4	96%	x			125.5
1/28/2016	CF1-73	LR-11 (south)	6/1	5.4	123.2	93%		x	CF1-74	125.5
1/28/2016	CF1-74	LR-11 (south)	6/1	5.0	131.3	99%	x			125.5
1/28/2016	CF1-75	LR-11 (north)	6/2	4.7	127.7	97%	x			125.5
1/28/2016	CF1-76	LR-11 (north)	6/2	4.7	128.5	97%	x			125.5
1/28/2016	CF1-77	LR-11 (north)	6/2	5.0	132.5	100%	x			125.5
1/28/2016	CF1-78	LR-18	6/1	6.2	129.1	98%	x			125.5
1/28/2016	CF1-79	LF-11 (north)	6/3	5.6	125.2	95%	x			125.5
1/28/2016	CF1-80	LF-11 (south)	6/3	4.9	119.7	91%		x	CF1-82	125.5
1/29/2016	CF1-81	LF-11 (north)	6/3	5.0	127.2	96%	x			125.5
1/29/2016	CF1-82	LF-11 (south)	6/3	5.3	123.9	94%		x	CF1-86	125.5
1/29/2016	CF1-83	LR-18	6/2	5.7	126.0	95%	x			125.5
1/29/2016	CF1-84	LR-18	6/2	6.0	130.2	99%	x			125.5
1/29/2016	CF1-85	LF-11 (north)	6/4	5.3	121.7	92%		x	CF1-88	125.5
1/29/2016	CF1-86	LF-11 (south)	6/3	6.2	123.0	93%		x	CF1-89	125.5
1/29/2016	CF1-87	LR-18	6/3	5.8	126.9	96%	x			125.5
1/29/2016	CF1-88	LF-11 (north)	6/4	6.3	123.9	94%		x	CF1-91	125.5
1/29/2016	CF1-89	LF-11 (south)	6/3	6.1	129.2	98%	x			125.5
1/29/2016	CF1-90	LR-18	6/3	5.8	128.7	97%	x			125.5
1/29/2016	CF1-91	LR-11 (north)	6/4	5.8	128.1	97%	x			125.5
1/29/2016	CF1-92	LR-18	6/4	5.9	127.9	97%	x			125.5
2/1/2016	CF1-93	LR-11/12	6/5	4.9	124.0	94%		x	CF1-94	125.5
2/1/2016	CF1-94	LR-11/12	6/5	5.2	130.8	99%	x			125.5
2/1/2016	CF1-95	LR-11/12	6/6	5.4	135.4	100%	x			125.5
2/1/2016	CF1-96	LR-11/12	6/7	5.8	130.5	99%	x			125.5
2/3/2016	CF1-97	LR-11	6/1	4.6	129.8	98%	x			125.5
2/3/2016	CF1-98	LR-11	6/1	7.8	129.3	98%	x			125.5
2/3/2016	CF1-99	LR-11	6/2	6.5	130.1	98%	x			125.5
2/3/2016	CF1-100	LR-11	6/3	5,7	127.2	96%	x			125.5
2/3/2016	CF1-101	LR-11	6/4	5.5	132.1	100%	x			125.5
2/3/2016	CF1-102	LR-11	6/5	7.1	129.9	98%	x			125.5
2/10/2016	CF1-103	LR-17	6/1	6.2	132.6	100%	x			125.5

Table 4-5B - Common Fill Type 1 Field Density Tests
Landfill Ridge Area
Orrington Remeditation Site
Orrington, ME

Date	FDT Test No.	Test Location	Probe Depth/Lift No.	Field Density Test Results			Pass	Fail	Retest	Laboratory
				Field Moisture Content	Dry Unit Weight	Percent Compaction				Target 95% Density
(-)	(-)	(ref grid)	(inch)/(Lift)	(%)	(lb/ft^3)	(%)				(lb/ft^3)
2/10/2016	CF1-104	LR-17	6/1	6.6	126.3	96%	x			125.5
2/10/2016	CF1-105	LR-17	6/1	7.3	127.1	96%	x			125.5
2/11/2016	CF1-106	LR-17	6/2	6.2	120.1	91%		x	CF1-108	125.5
2/11/2016	CF1-107	LR-17	6/2	7.2	125.9	95%	x			125.5
2/11/2016	CF1-108	LR-17	6/2	6.6	127.4	96%	x			125.5
2/11/2016	CF1-109	LR-17	6/3	6.6	130.2	99%	x			125.5
2/12/2016	CF1-110	LR-19	6/1	7.0	118.7	90%		x	CF1-111	125.5
2/12/2016	CF1-111	LR-19	6/1	7.0	115.1	87%		x	CF1-132	125.5
2/17/2016	CF1-112	LR-6 (South)	6/1	10.9	125.2	95%	x			125.5
2/17/2016	CF1-113	LR-6 (South)	6/1	11.4	114.5	87%		x	CF1-114	125.5
2/17/2016	CF1-114	LF-6 (South)	6/1	7.1	132.3	100%	x			125.5
2/18/2016	CF1-115	LF-6 (South)	6/1	8.2	128.9	98%	x			125.5
2/18/2016	CF1-116	LF-6 (South)	6/2	7.4	122.3	93%		x	CF1-117	125.5
2/18/2016	CF1-117	LF-6 (South)	6/2	7.5	127.1	96%	x			125.5
2/18/2016	CF1-118	LF-6 (South)	6/3	6.0	122.9	93%		x	CF1-119	125.5
2/18/2016	CF1-119	LF-6 (South)	6/3	6.9	124.2	94%		x	CF1-120	125.5
2/18/2016	CF1-120	LF-6 (South)	6/3	6.1	126.5	96%	x			125.5
2/18/2016	CF1-121	LF-6 (South)	6/4	7.1	126.2	96%	x			125.5
2/19/2016	CF1-122	LF-6 (South)	6/5	6.1	125.0	95%	x			125.5
2/19/2016	CF1-123	LF-6 (South)	6/5	6.3	128.3	97%	x			125.5
2/19/2016	CF1-124	LF-6 (South)	6/6	5.7	126.4	96%	x			125.5
2/19/2016	CF1-125	LR-4	6/6	7.8	127.6	97%	x			125.5
2/19/2016	CF1-126	LR-4	6/7	8.4	128.6	97%	x			125.5
5/12/2016	CF1-127	LR-5 (South)	6/2	7.4	122.9	93%		x	CF1-128	125.5
5/13/2016	CF1-128	LR-5 (South)	6/2	6.8	129.6	98%	x			125.5
5/13/2016	CF1-129	LR-4 (South)	6/8	6.3	135.6	100%	x			125.5
5/13/2016	CF1-130	LR-4 (North)	6/8	7.8	129.8	98%	x			125.5
6/15/2016	CF1-131	LR-2/LR-6/LR-8/LR-17	6/7	5.8	130.7	100%		x	CF1-133	118.8
6/15/2016	CF1-132	LR-18/LR-7/LR-13/LR-19/LR-20/LR-21	6/9	6.3	127.5	100%		x	CF1-134	118.8
6/15/2016	CF1-133	LR-2/LR-6/LR-8/LR-17	6/7	10.3	130.5	100%	x			118.8
6/15/2016	CF1-134	LR-18/LR-7/LR-13/LR-19/LR-20/LR-21	6/9	9.5	133.3	100%	x			118.8
6/16/2016	CF1-135	LR-1/LR-3	6/2	7.5	136.7	100%		x	CF1-136	118.8
6/16/2016	CF1-136	LR-1/LR-3	6/2	12.8	121.7	97%	x			118.8
6/16/2016	CF1-137	LR-11/LR-17/LR-10/LR-9/LR-14	6/6	9.0	129.7	100%	x			118.8
6/16/2016	CF1-138	LR-18/LR-25/LR-26/LR-13	6/5	9.1	128.6	100%	x			118.8
6/17/2016	CF1-139	LR-1/LR-3	6/3	10.0	127.4	100%	x			118.8
6/17/2016	CF1-140	LR-6/LR-7/LR-8/LR-18/LR-20	6/8	9.4	120.0	96%	x			118.8
6/17/2016	CF1-141	LR-1/LR-3	6/4	10.9	127.4	100%	x			118.8
6/17/2016	CF1-142	LR-6/LR-7/LR-8/LR-18/LR-20	6/9	9.6	120.2	96%	x			118.8
6/17/2016	CF1-143	LR-1/LR-3	6/5	10.4	130.0	100%	x			118.8

Table 4-5B - Common Fill Type 1 Field Density Tests
Landfill Ridge Area
Orrington Remeditation Site
Orrington, ME

Date	FDT Test No.	Test Location	Probe Depth/Lift No.	Field Density Test Results			Pass	Fail	Retest	Laboratory
				Field Moisture Content	Dry Unit Weight	Percent Compaction				Target 95% Density
(-)	(-)	(ref grid)	(inch)/(Lift)	(%)	(lb/ft^3)	(%)				(lb/ft^3)
6/17/2016	CF1-144	LR-6/LR-7/LR-8/LR-18/LR-20	6/10	10.1	129.3	100%	x			118.8
6/17/2016	CF1-145	LR-18/LR-7/LR-13/LR-19/LR-20/LR-21	6/10	9.0	119.3	95%	x			118.8
6/20/2016	CF1-146	LR-1/LR-3	6/6	9.2	128.9	100%	x			118.8
6/20/2016	CF1-147	LR-6/LR-4	6/9	9.2	128.1	100%	x			118.8
6/20/2016	CF1-148	LR-1/LR-3	6/7	9.4	128.8	100%	x			118.8
Notes:										

Table 4-5C - Onsite Reuse Material Field Density Tests
Landfill Ridge Area
Orrington Remeditation Site
Orrington, ME

Material Name: Onsite Reuse Material (OSM)					**Specifications and Test Information:**	
Test Date	**Proctor Sample ID**	**Optimum Moisture (%)**	**Maximum Dry Density (lb/ft3)**	**Source (-)**	**Gauge Type/ID:**	Troxler 3430/Serial No. 27418
					Max Lift Thickness:	12 inches
5/13/2016	Proctor OSM-1	6.6	136	On Site	**Minimum Compaction Percent:**	95
5/20/2016	Proctor OSM Avg-1	8.1	130	On Site	**Moisture Content Range:**	+
5/23/2016	Proctor OSM Avg-2	8.6	129.8	On Site	**Moisture Correction Factor:**	

Date	**FDT Test No.**	**Test Location**	**Probe Depth/Lift No.**	**Field Density Test Results**			**Pass**	**Fail**	**Retest**	**Laboratory**
				Field Moisture Content	**Dry Unit Weight**	**Percent Compaction**				**Target 95% Density**
(-)	**(-)**	**(ref grid)**	**(inch)/(Lift)**	**(%)**	**(lb/ft^3)**	**(%)**				**(lb/ft^3)**
5/16/2016	OSM-01	LR-22/LR-23/LR-34	6/1	9.1	124	91%		x	OSM-02	129.2
5/16/2016	OSM-02	LR-22/LR-23/LR-34	6/1	8.4	123	90%		x	OSM-03	129.2
5/16/2016	OSM-03	LR-22/LR-23/LR-34	6/1	10.3	124.8	92%		x	OSM-04	129.2
5/16/2016	OSM-04	LR-22/LR-23/LR-34	6/1	10.3	125.1	92%		x	OSM-05	129.2
5/17/2016	OSM-05	LR-22/LR-23/LR-34	6/1	8.5	128.3	94%		x	OSM-06	129.2
5/17/2016	OSM-06	LR-22/LR-23/LR-34	6/1	9.2	127	93%		x	OSM-07	129.2
5/17/2016	OSM-07	LR-22/LR-23/LR-34	6/1	11	129.2	95%		x	OSM-08	129.2
5/17/2016	OSM-08	LR-22/LR-23/LR-34	6/1	9.4	131.1	96%		x	OSM-09	129.2
5/17/2016	OSM-09	LR-13/LR-19/LR-20/LR-21	6/1	8.4	129.7	95%	x			129.2
5/17/2016	OSM-10	LR-22/LR-23/LR-34	6/1	9.7	127.6	94%		x	OSM-11	129.2
5/17/2016	OSM-11	LR-22/LR-23/LR-34	6/1	10	124.9	92%		x	OSM-12	129.2
5/17/2016	OSM-12	LR-22/LR-23/LR-34	6/1	7.2	130.6	96%	x			129.2
5/17/2016	OSM-13	LR-13/LR-19/LR-20/LR-21	6/2	9.1	125	92%		x	OSM-14	129.2
5/17/2016	OSM-14	LR-13/LR-19/LR-20/LR-21	6/2	8.1	120.5	89%		x	OSM-15	129.2
5/17/2016	OSM-15	LR-13/LR-19/LR-20/LR-21	6/2	9.2	125.3	92%		x	OSM-16	129.2
5/17/2016	OSM-16	LR-13/LR-19/LR-20/LR-21	6/2	8.6	125.8	93%		x	OSM-17	129.2
5/17/2016	OSM-17	LR-13/LR-19/LR-20/LR-21	6/2	8	120.9	89%		x	OSM-18	129.2
5/17/2016	OSM-18	LR-13/LR-19/LR-20/LR-21	6/2	8.6	131.4	97%	x			129.2
5/18/2016	OSM-19	LR-22/LR-23/LR-34	6/2	6.9	133.0	98%	x			129.2

Table 4-5C - Onsite Reuse Material Field Density Tests
Landfill Ridge Area
Orrington Remeditation Site
Orrington, ME

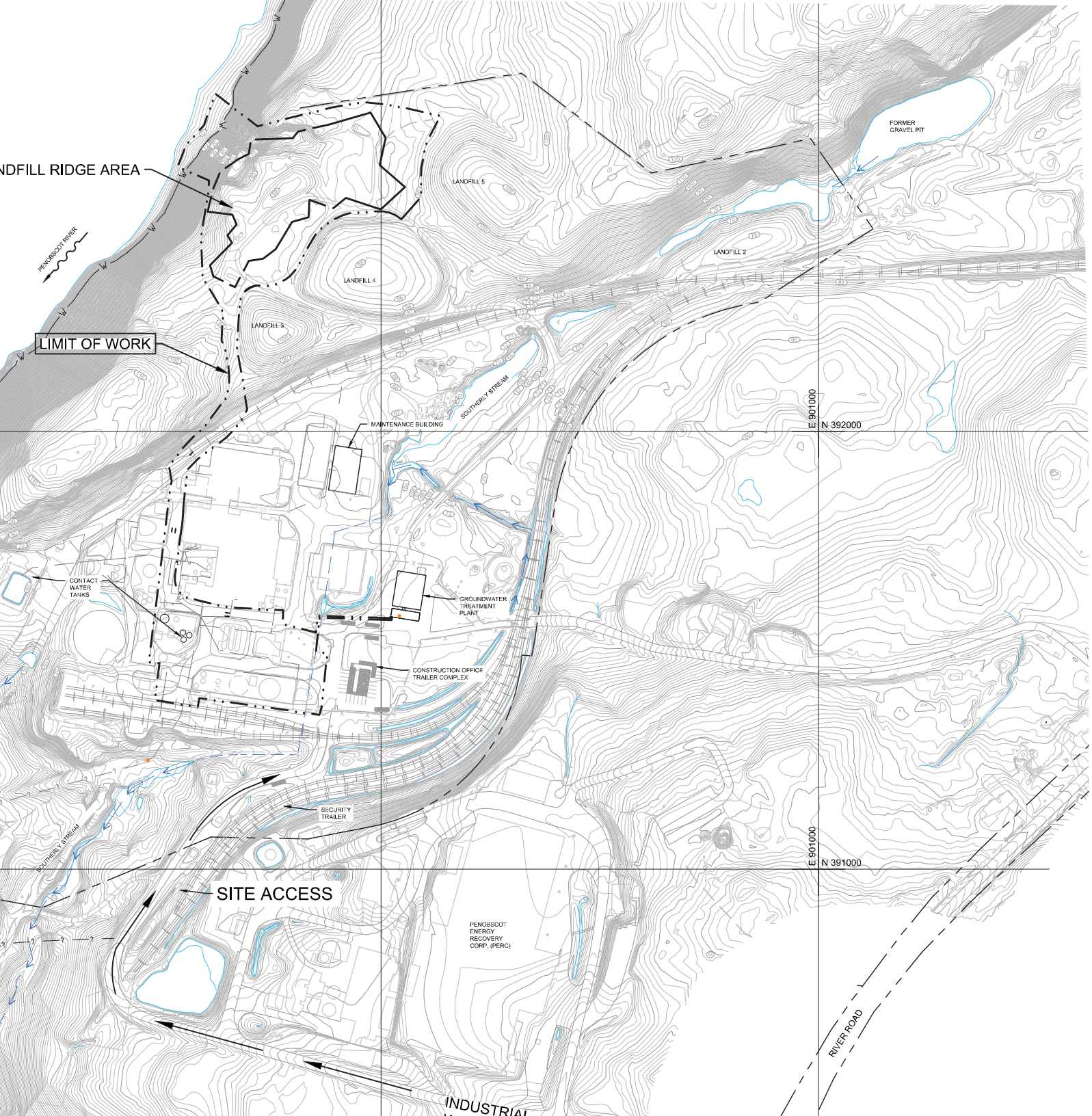
Date	FDT Test No.	Test Location	Probe Depth/Lift No.	Field Density Test Results			Pass	Fail	Retest	Laboratory
				Field Moisture Content	Dry Unit Weight	Percent Compaction				Target 95% Density
(-)	(-)	(ref grid)	(inch)/(Lift)	(%)	(lb/ft^3)	(%)				(lb/ft^3)
5/18/2016	OSM-20	LR-13/LR-19/LR-20/LR-21	6/3	8.3	129.4	95%	x			129.2
5/18/2016	OSM-21	LR-13/LR-19/LR-20/LR-21	6/4	7.8	127.7	94%		x	OSM-24	129.2
5/18/2016	OSM-22	LR-22/LR-23/LR-34	6/3	8.3	129.0	95%		x	OSM-23	129.2
5/18/2016	OSM-23	LR-22/LR-23/LR-34	6/3	7.8	132.3	97%	x			129.2
5/18/2016	OSM-24	LR-13/LR-19/LR-20/LR-21	6/4	7.0	128.4	94%		x	OSM-25	129.2
5/18/2016	OSM-25	LR-13/LR-19/LR-20/LR-21	6/4	6.2	132.5	97%	x			129.2
5/18/2016	OSM-26	LR-13/LR-19/LR-20/LR-21	6/5	6.1	128.6	95%		x	OSM-28	129.2
5/18/2016	OSM-27	LR-22/LR-23/LR-34	6/4	5.2	130.4	96%	x			129.2
5/18/2016	OSM-28	LR-13/LR-19/LR-20/LR-21	6/5	5.2	133.3	98%	x			129.2
5/19/2016	OSM-29	LR-13/LR-19/LR-20/LR-21	6/6	7.6	130.3	96%	x			129.2
5/19/2016	OSM-30	LR-22/LR-23/LR-34	6/5	7.5	127.8	94%		x	OSM-31	129.2
5/19/2016	OSM-31	LR-22/LR-23/LR-34	6/5	5.5	125.6	92%		x	OSM-35	129.2
5/19/2016	OSM-32	LR-37	6/1	5.1	138.1	100%	x			129.2
5/19/2016	OSM-33	LR-13/LR-19/LR-20/LR-21	6/7	6.9	130.1	96%	x			129.2
5/19/2016	OSM-34	LR-13/LR-19/LR-20/LR-21	6/8	7.3	126.2	93%		x	OSM-37	129.2
5/19/2016	OSM-35	LR-22/LR-23/LR-34	6/5	5.0	121.9	90%		x	OSM-36	129.2
5/19/2016	OSM-36	LR-22/LR-23/LR-34	6/5	5.7	124.1	91%		x	OSM-38	129.2
5/19/2016	OSM-37	LR-13/LR-19/LR-20/LR-21	6/8	7.2	126.3	93%		x	OSM-43	129.2
5/19/2016	OSM-38	LR-22/LR-23/LR-34	6/5	6.9	124.6	92%		x	OSM-39	129.2
5/19/2016	OSM-39	LR-22/LR-23/LR-34	6/5	5.9	118.7	87%		x	OSM-40	129.2
5/19/2016	OSM-40	LR-22/LR-23/LR-34	6/5	5.7	120.5	89%		x	OSM-41	129.2
5/19/2016	OSM-41	LR-22/LR-23/LR-34	6/5	6.2	120.9	89%		x	OSM-44	129.2
5/20/2016	OSM-42	LR-37	6/2	5.1	135.8	100%	x			129.2

Table 4-5C - Onsite Reuse Material Field Density Tests
Landfill Ridge Area
Orrington Remeditation Site
Orrington, ME

Date	FDT Test No.	Test Location	Probe Depth/Lift No.	Field Density Test Results			Pass	Fail	Retest	Laboratory
				Field Moisture Content	Dry Unit Weight	Percent Compaction				Target 95% Density
(-)	(-)	(ref grid)	(inch)/(Lift)	(%)	(lb/ft^3)	(%)				(lb/ft^3)
5/20/2016	OSM-43	LR-13/LR-19/LR-20/LR-21	6/8	5.7	131.5	100%		x	OSM-46	123.5
5/20/2016	OSM-44	LR-22/LR-23/LR-34	6/5	10.0	122.1	94%		x	OSM-47	123.5
5/20/2016	OSM-45	LR-7	6/1	7.1	128.5	99%	x			123.5
5/23/2016	OSM-46	LR-7/LR-13/LR-19/LR-20/LR-21	6/8	5.9	123.3	95%		x	OSM-48	123.3
5/23/2016	OSM-47	LR-22/LR-23/LR-34	6/5	8.7	120.1	93%		x	OSM-50	123.3
5/23/2016	OSM-48	LR-7/LR-13/LR-19/LR-20/LR-21	6/8	6.2	129.1	99%		x	OSM-49	123.3
5/23/2016	OSM-49	LR-7/LR-13/LR-19/LR-20/LR-21	6/8	6.6	129.5	100%	x			123.3
5/23/2016	OSM-50	LR-22/LR-23/LR-34	6/5	10.3	119.0	92%		x	OSM-51	123.3
5/23/2016	OSM-51	LR-22/LR-23/LR-34	6/5	9.1	119.4	92%		x	OSM-52	123.3
5/23/2016	OSM-52	LR-22/LR-23/LR-34	6/5	8.8	122.5	94%		x	OSM-53	123.3
5/23/2016	OSM-53	LR-22/LR-23/LR-34	6/5	6.5	120.3	93%		x	OSM-54	123.3
5/23/2016	OSM-54	LR-22/LR-23/LR-34	6/5	9.2	123.5	95%	x			123.3
5/24/2016	OSM-55	LR-2/LR-6/LR-8	6/1	5.2	126.7	98%		x	OSM-60	123.3
5/24/2016	OSM-56	LR-7/LR-13/LR-19/LR-20/LR-21	6/9	5.4	126.0	97%		x	OSM-59	123.3
5/24/2016	OSM-57	LR-22/LR-23/LR-34	6/6	5.0	126.6	98%		x	OSM-58	123.3
5/24/2016	OSM-58	LR-22/LR-23/LR-34	6/6	4.3	121.7	94%		x	OSM-63	123.3
5/24/2016	OSM-59	LR-7/LR-13/LR-19/LR-20/LR-21	6/9	5.4	124.3	96%		x	OSM-61	123.3
5/24/2016	OSM-60	LR-2/LR-6/LR-8	6/1	5.3	123.6	95%		x	OSM-62	123.3
5/25/2016	OSM-61	LR-7/LR-13/LR-19/LR-20/LR-21	6/9	9.3	123.4	95%	x			123.3
5/25/2016	OSM-62	LR-2/LR-6/LR-8	6/1	8.1	133.4	100%	x			123.3
5/25/2016	OSM-63	LR-22/LR-23/LR-34	6/6	8.6	123.5	95%	x			123.3
5/25/2016	OSM-64	LR-1	6/1	8.5	125.0	96%	x			123.3
5/25/2016	OSM-65	LR-1	6/2	9.4	130.2	100%	x			123.3
6/14/2016	OSM-66	LR-17/LR-11/LR-16/LR-14/LR-10/LR-9/LR-15/LR-38	6/1	6.6	135.5	100%	x			123.3
6/14/2016	OSM-67	LR-26/LR-24/LR-25/LR-18	6/1	10.3	125.7	97%	x			123.3

Table 4-5C - Onsite Reuse Material Field Density Tests
Landfill Ridge Area
Orrington Remeditation Site
Orrington, ME

Date	FDT Test No.	Test Location	Probe Depth/Lift No.	Field Density Test Results			Pass	Fail	Retest	Laboratory Target 95% Density
				Field Moisture Content	Dry Unit Weight	Percent Compaction				
(-)	(-)	(ref grid)	(inch)/(Lift)	(%)	(lb/ft^3)	(%)				(lb/ft^3)
6/14/2016	OSM-68	LR-29/LR-23/LR-28	6/2	9.0	125.2	96%	x			123.3
6/16/2016	OSM-68	LR-19,LR-23, LR-22, LR-20, LR-21, LR-24	6/10	6.9	130.5	100%	x			123.3
6/17/2016	OSM-69	LR-25/LR-26/LR-24/LR-13/LR-18	6/2	5.7	120.2	93%		x	OSM-71	123.3
6/17/2016	OSM-70	LR-34/LR-22/LR-23/LR-29/LR-13/LR-29	6/7	5.7	121.0	93%		x	OSM-72	123.3
6/17/2016	OSM-71	LR-25/LR-26/LR-24/LR-13/LR-18	6/2	10.9	127.4	98%	x			123.3
6/17/2016	OSM-72	LR-34/LR-22/LR-23/LR-29/LR-13/LR-29	6/7	7.5	117.2	90%		x	OSM-73	123.3
6/17/2016	OSM-73	LR-34/LR-22/LR-23/LR-29/LR-13/LR-29	6/7	9.2	128.0	99%	x			123.3
6/20/2016	OSM-74	LR-34/LR-33/LR-22	6/8	10.2	116.2	90%		x	OSM-75	123.3
6/20/2016	OSM-75	LR-34/LR-33/LR-22	6/8	9.6	124.7	96%	x			123.3



LEGEND

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- FENCE LINE
- ROADWAY
- RAILROAD
- LANDFILL RIDGE REM
- INDUSTRIAL SEWER
- SOUTHERLY STREAM
- SOUTHERLY STREAM

0 150' 300'

SCALE IN FEET

NOTES:

1. THE SITE IS LOCATED AT 99 INDUSTRIA
2. EXISTING TOPOGRAPHY AND SITE FEA CONDUCTED BY THE JAMES W. SEWAL CDMSMITH DRAWING "38410C_MASTER IS NAD83 (NORTH AMERICAN DATUM 19 THE VERTICAL DATUM IS NAVD 88 (NOR
3. HISTORICAL INVESTIGATION LOCATION OBTAINED FROM VARIOUS HISTORICAL
4. THIS FIGURE WAS ADAPTED FROM FIG PLAN REV 1 DRAWING SET DATED 2015

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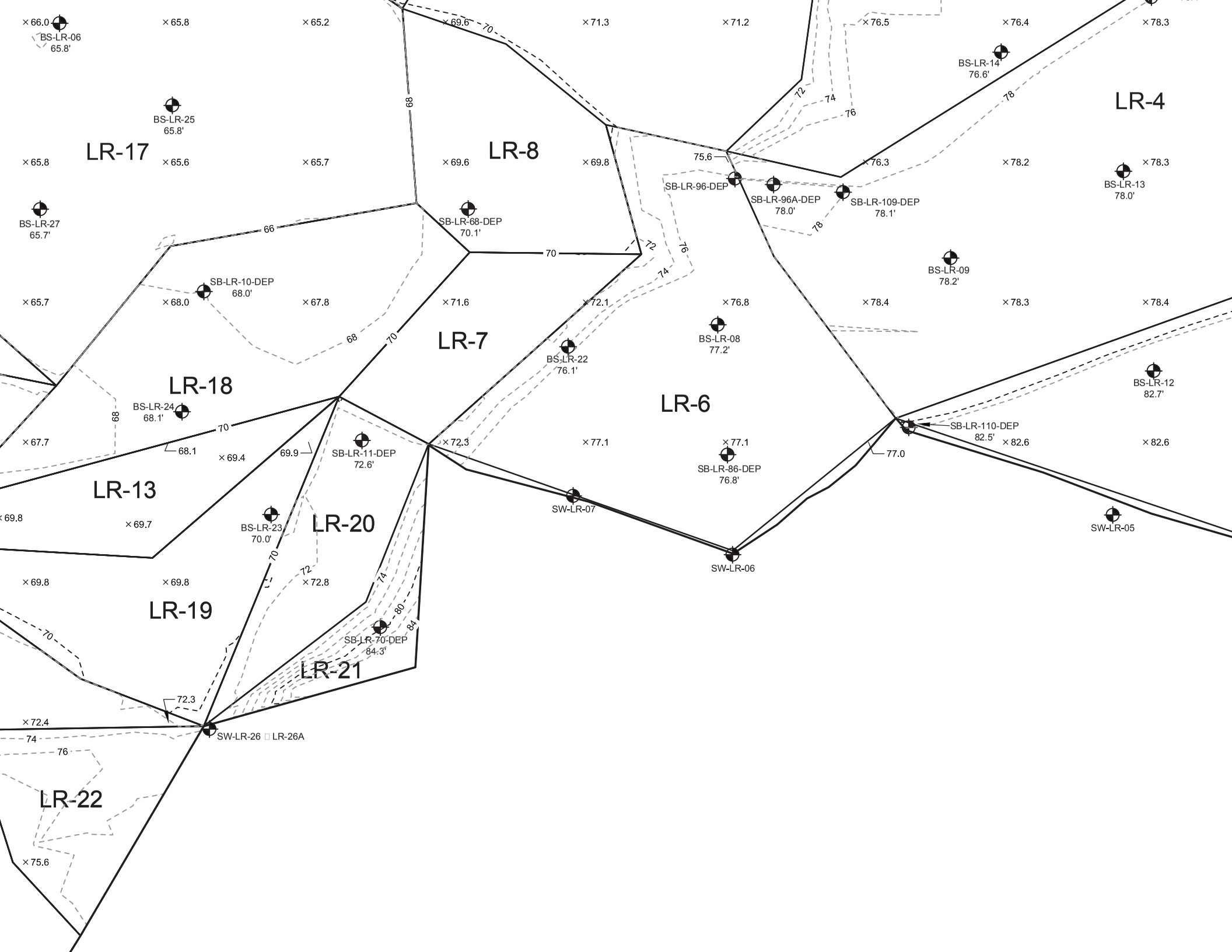
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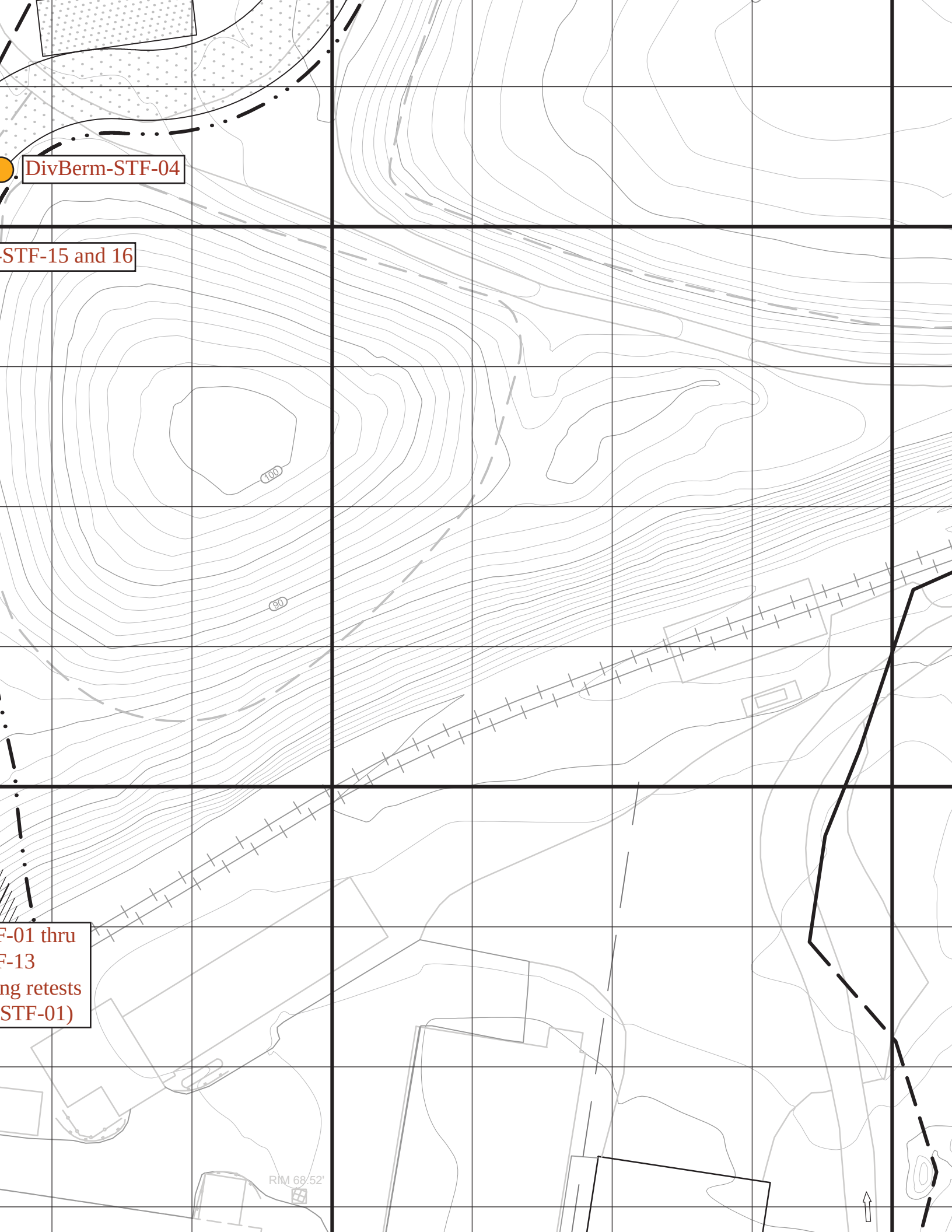
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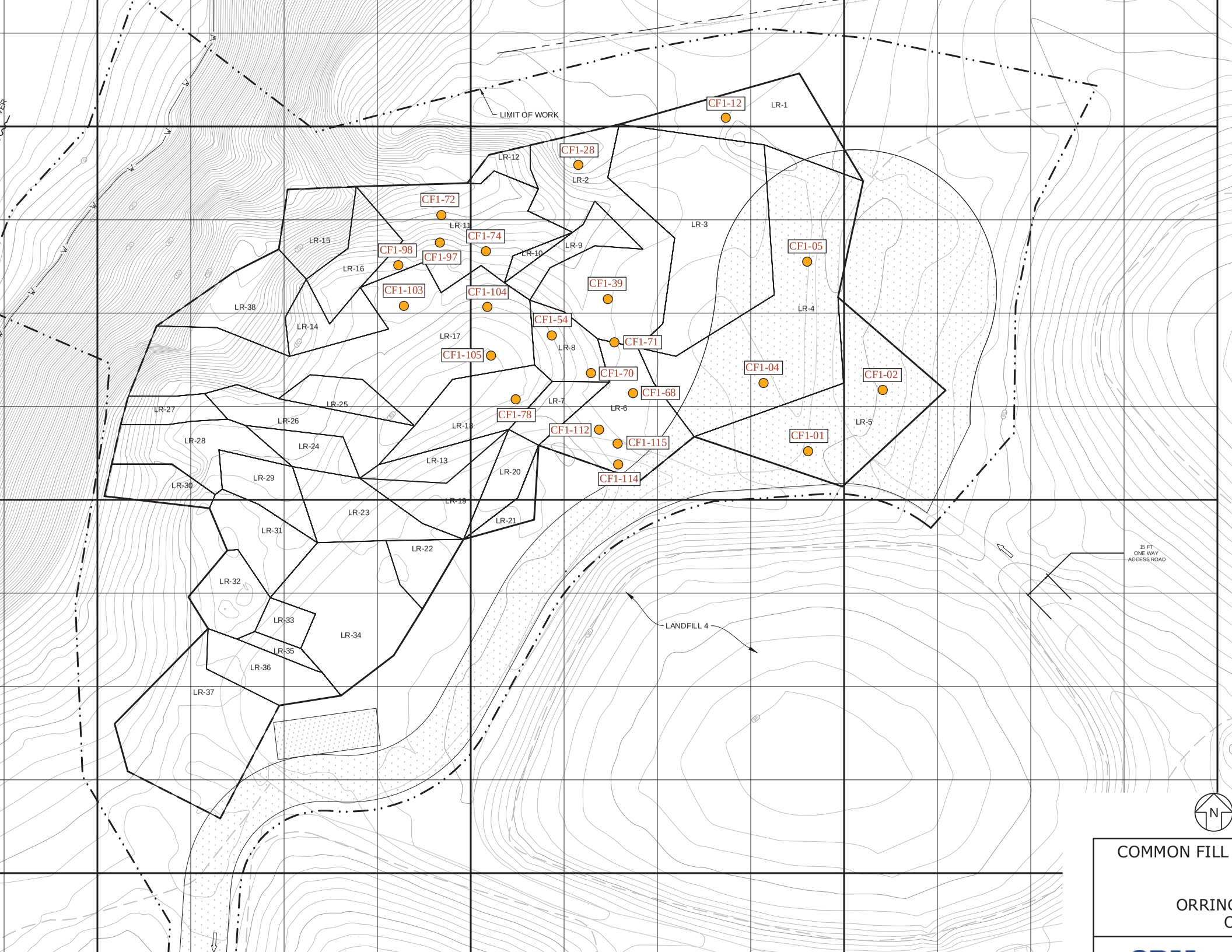
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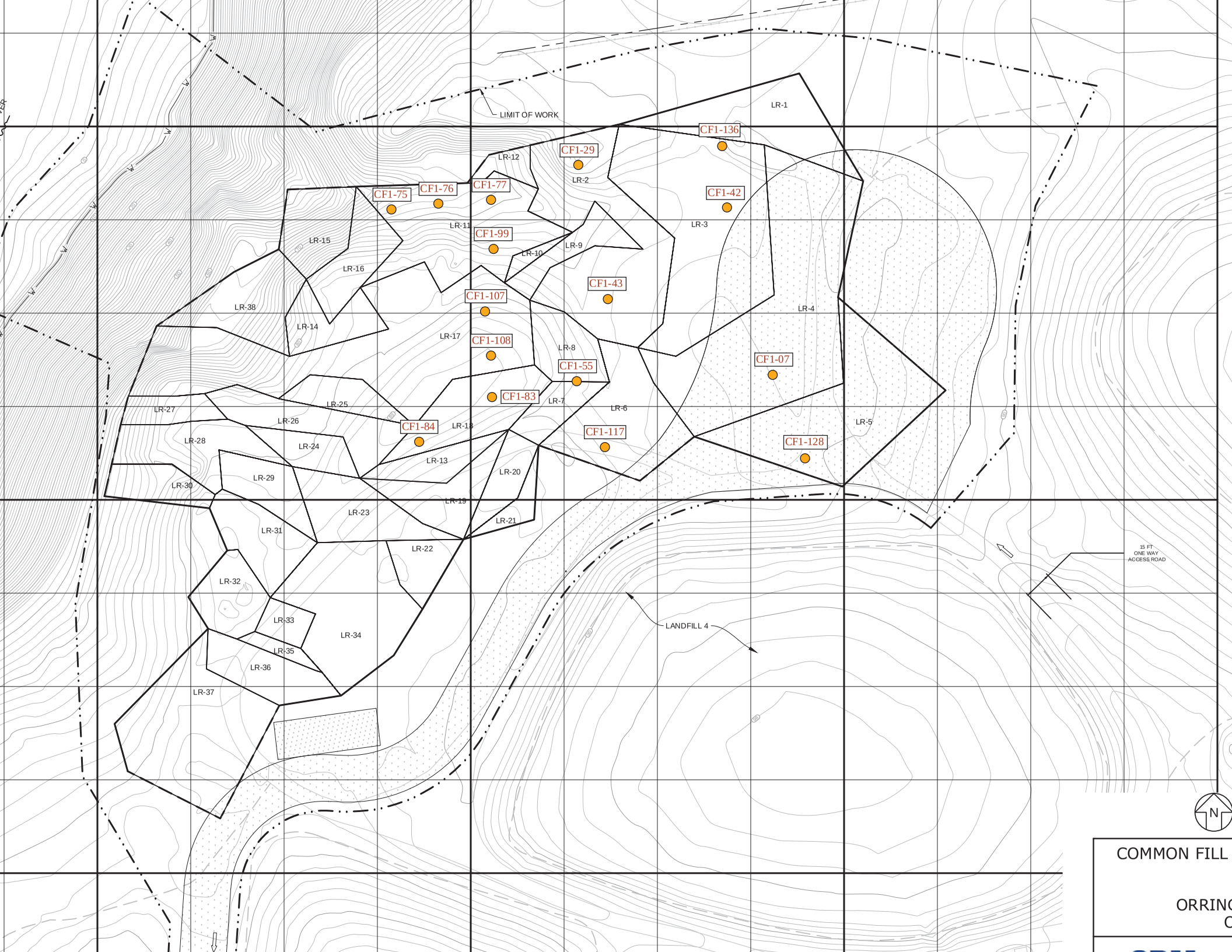
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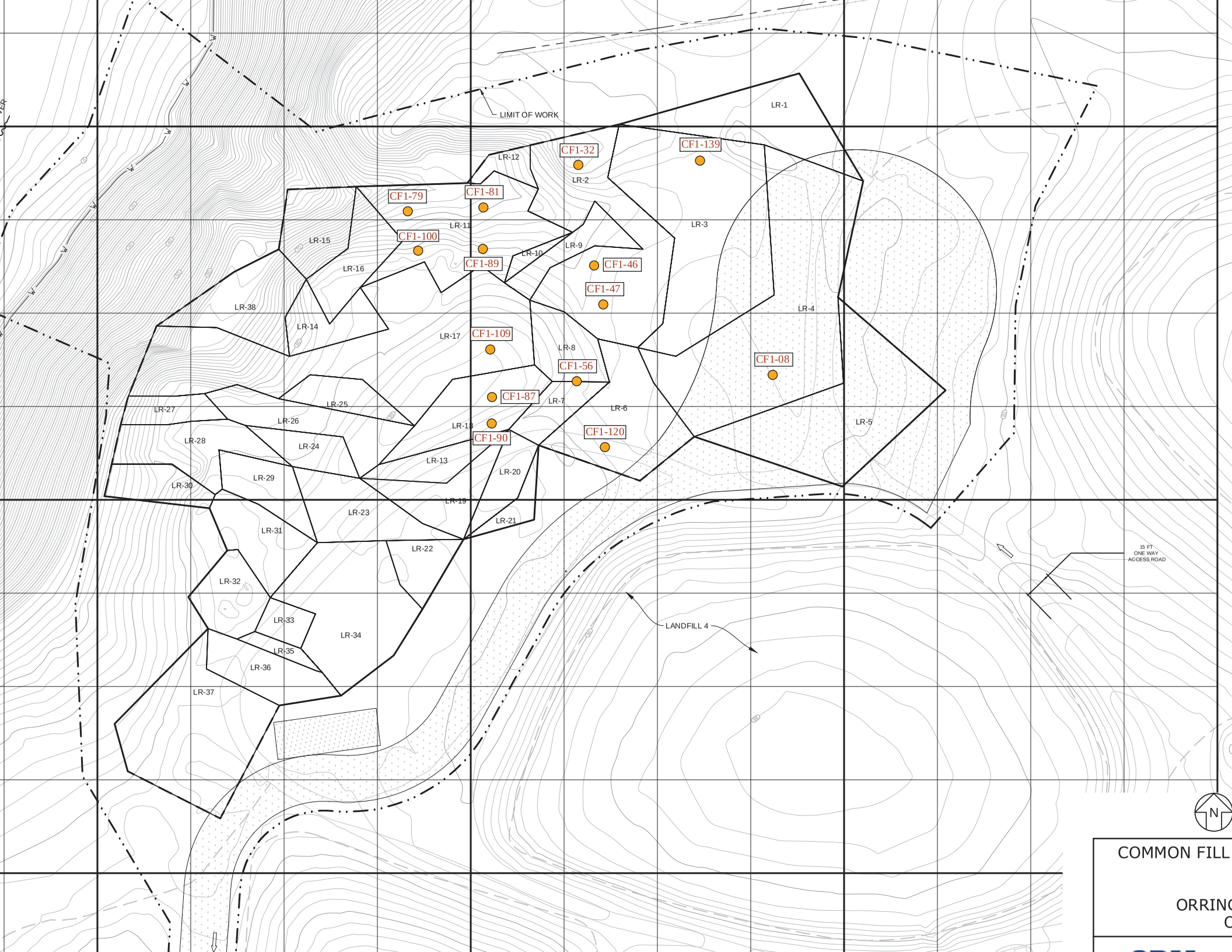
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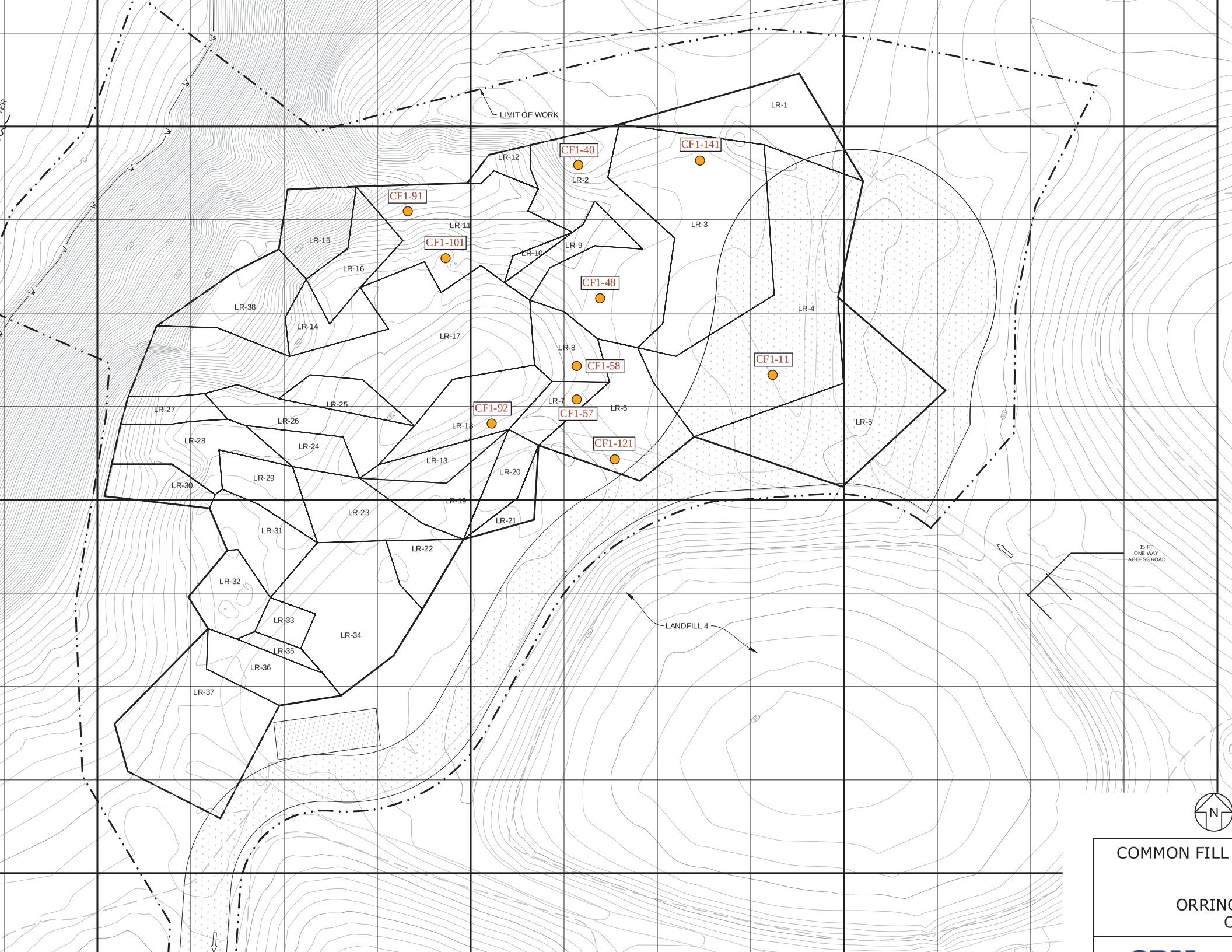
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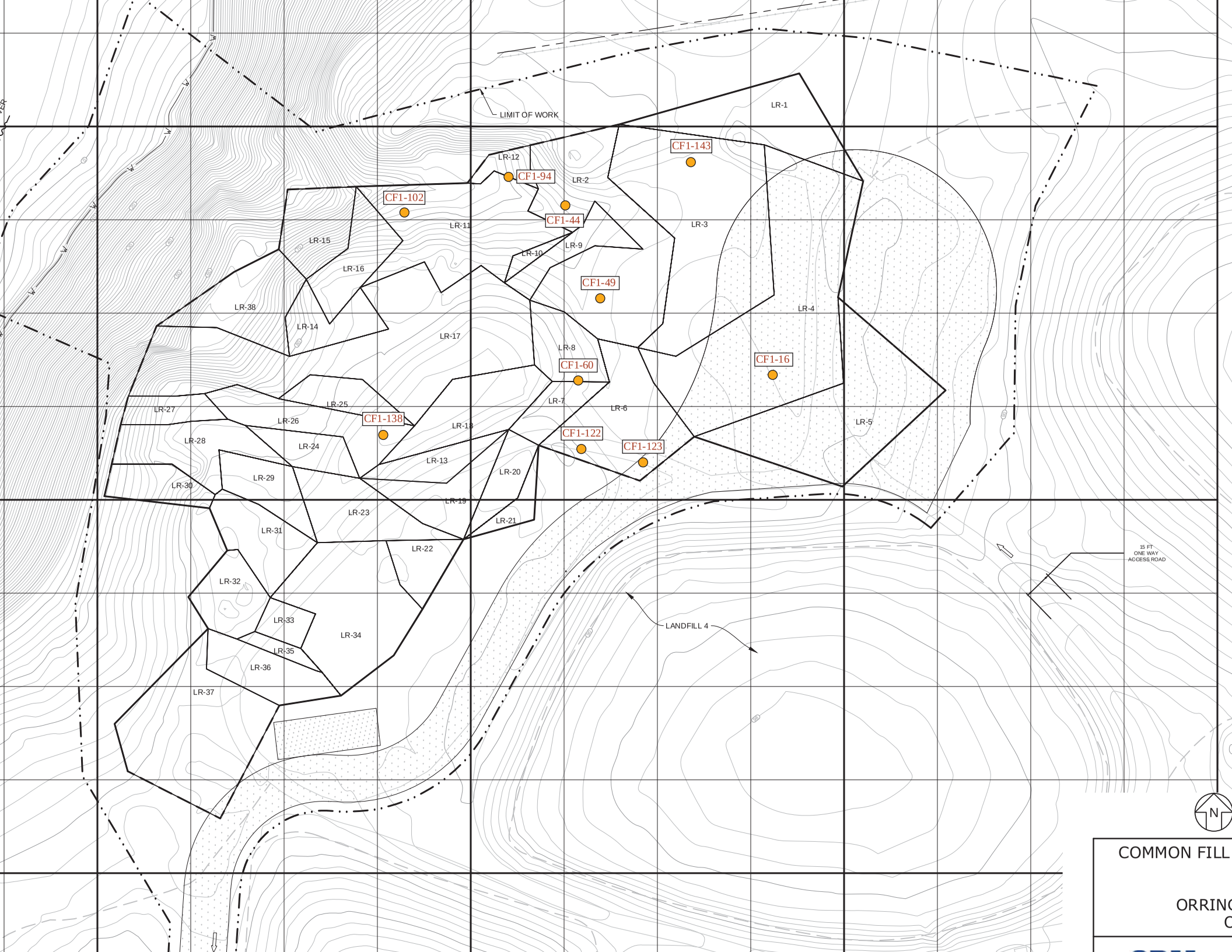
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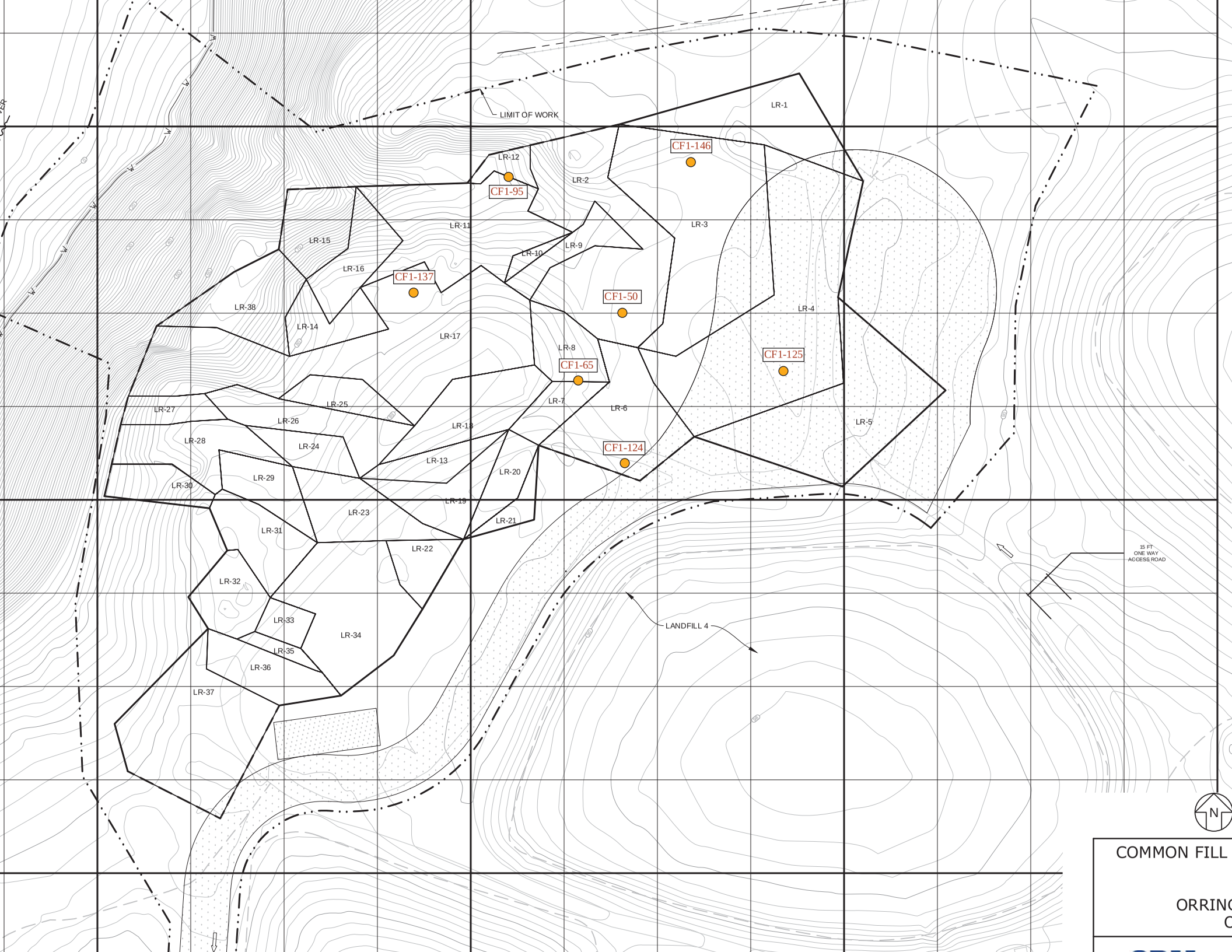
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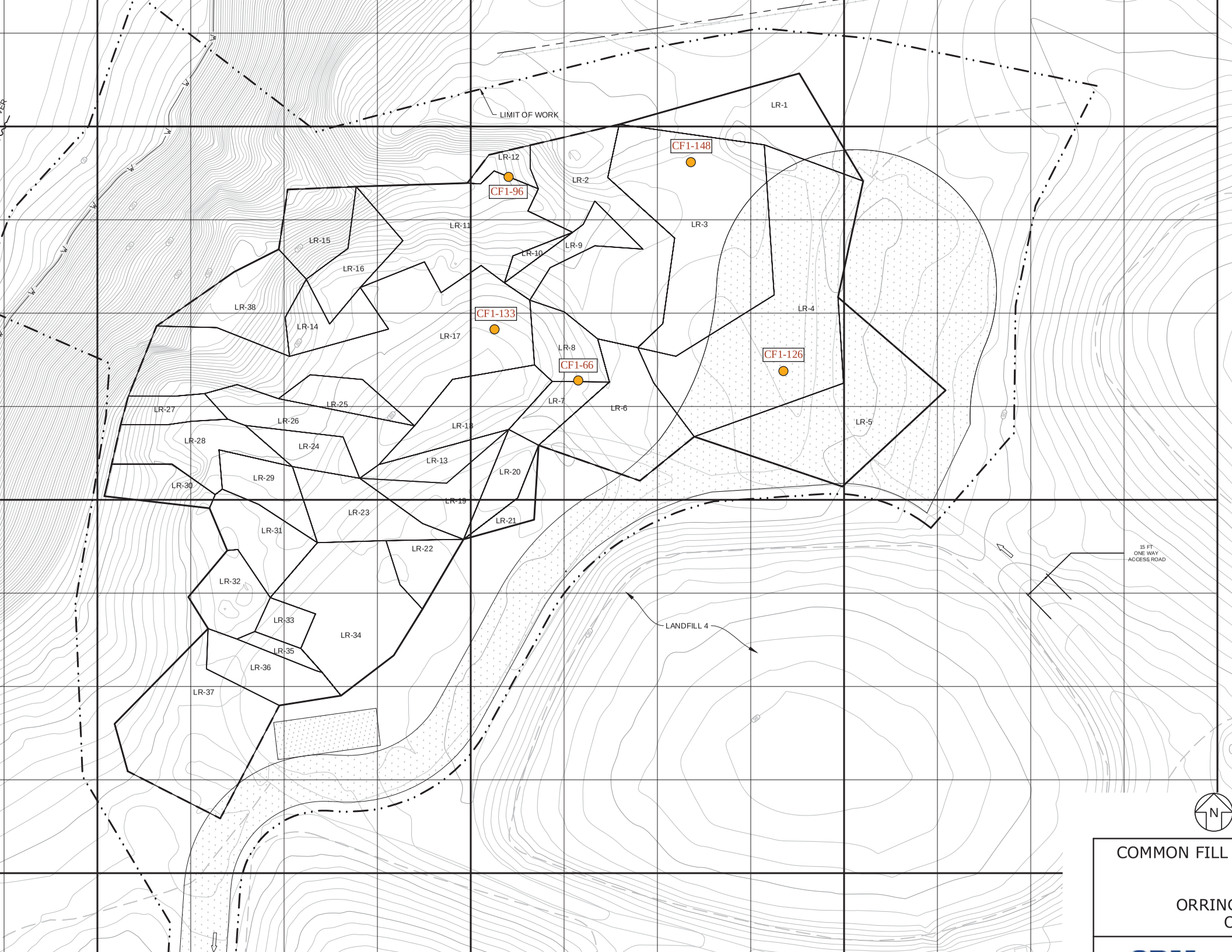
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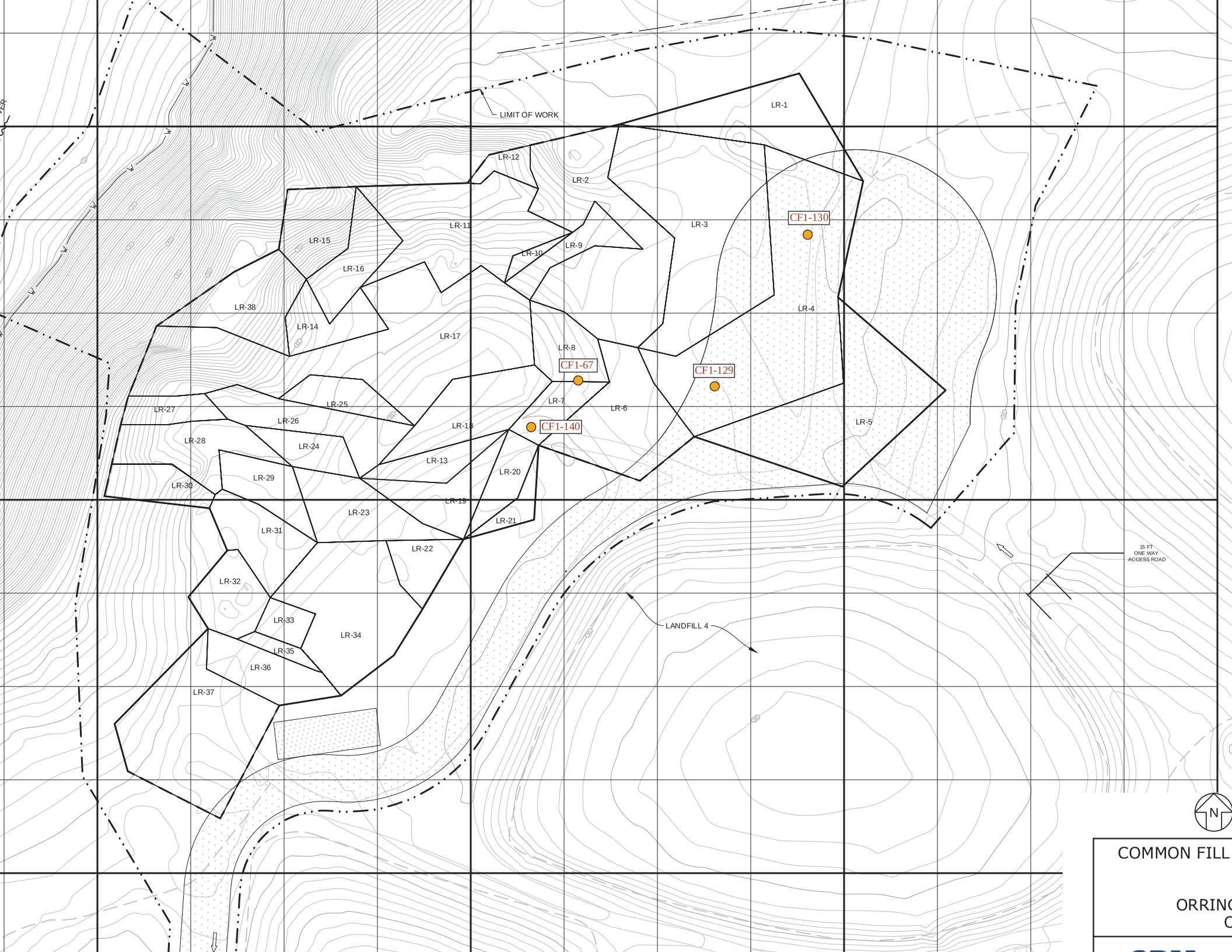
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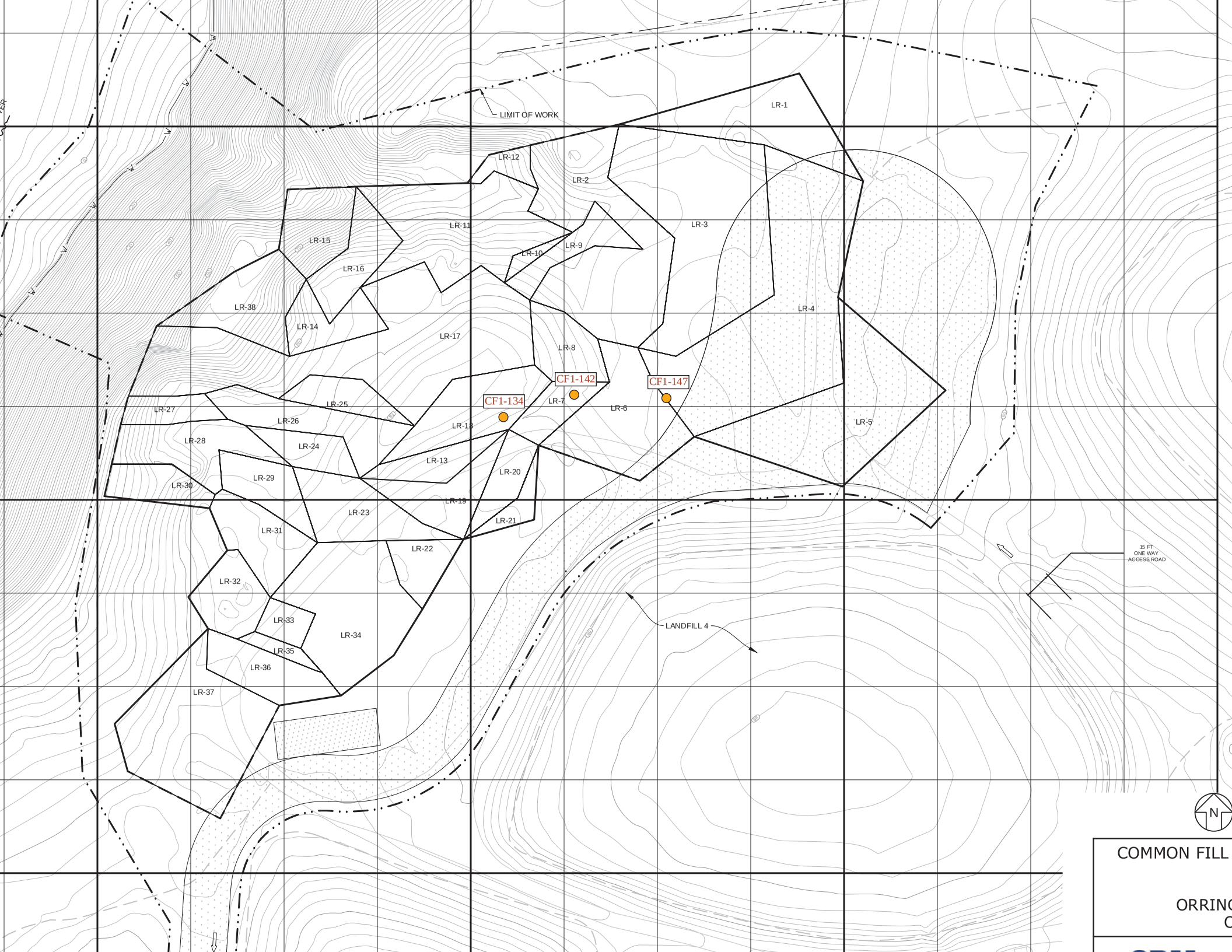
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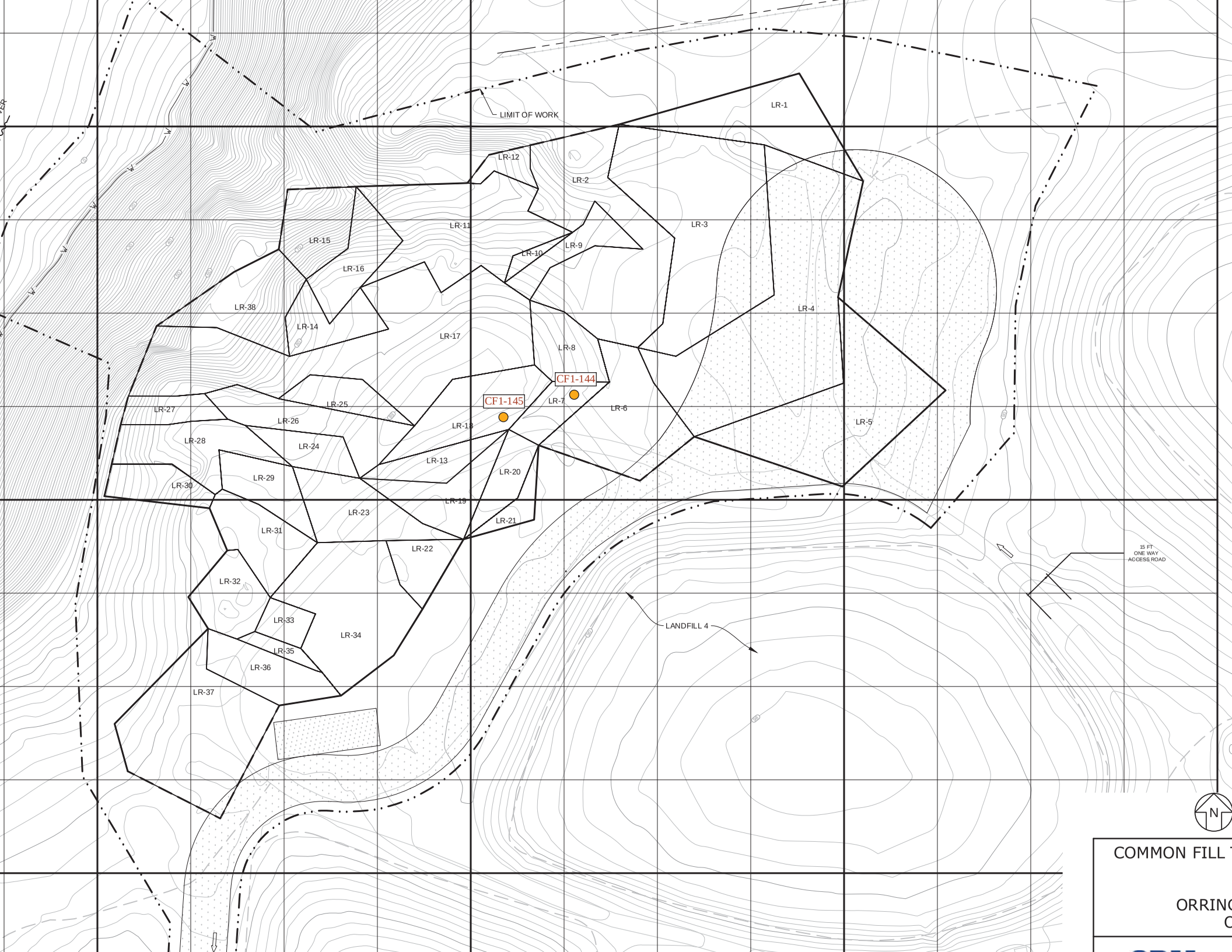
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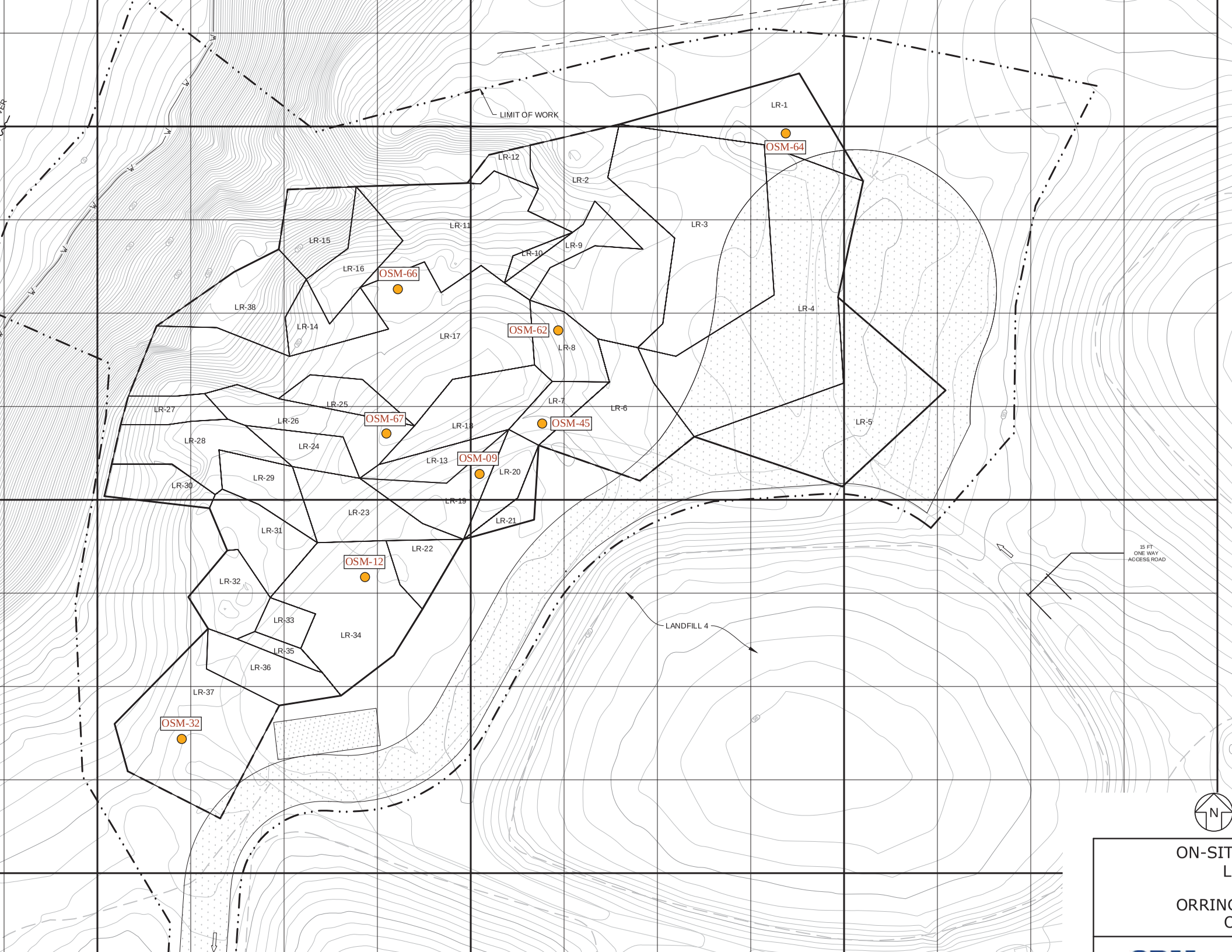
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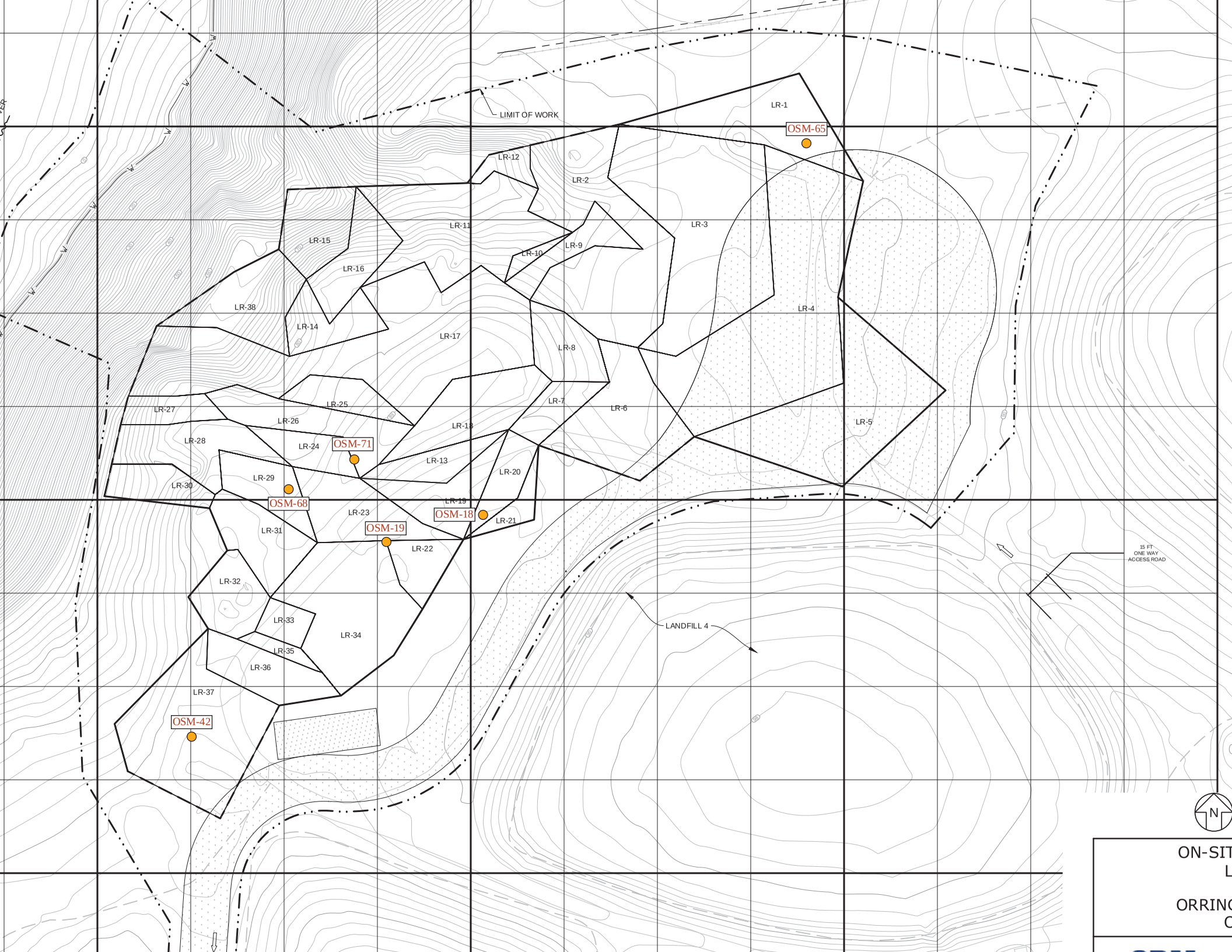
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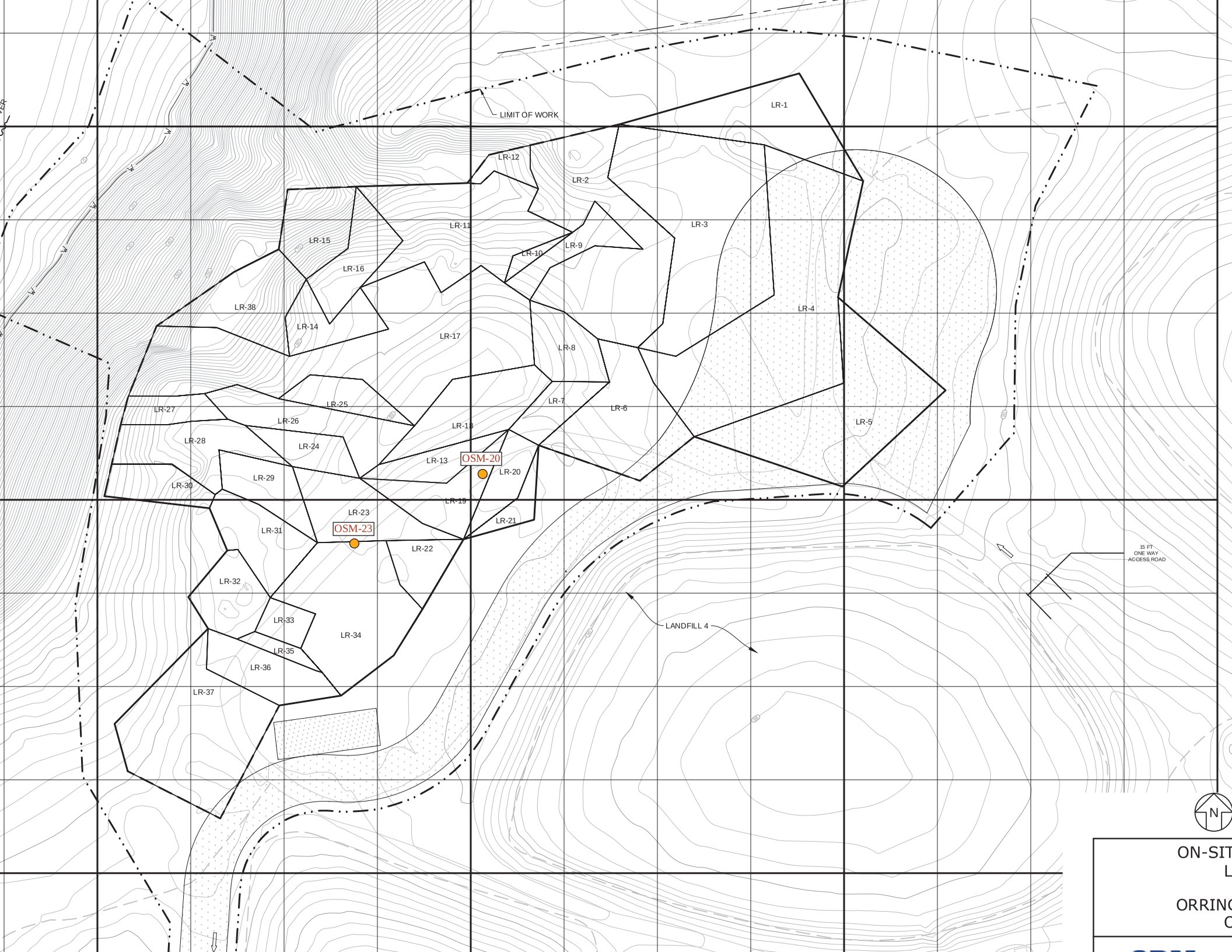
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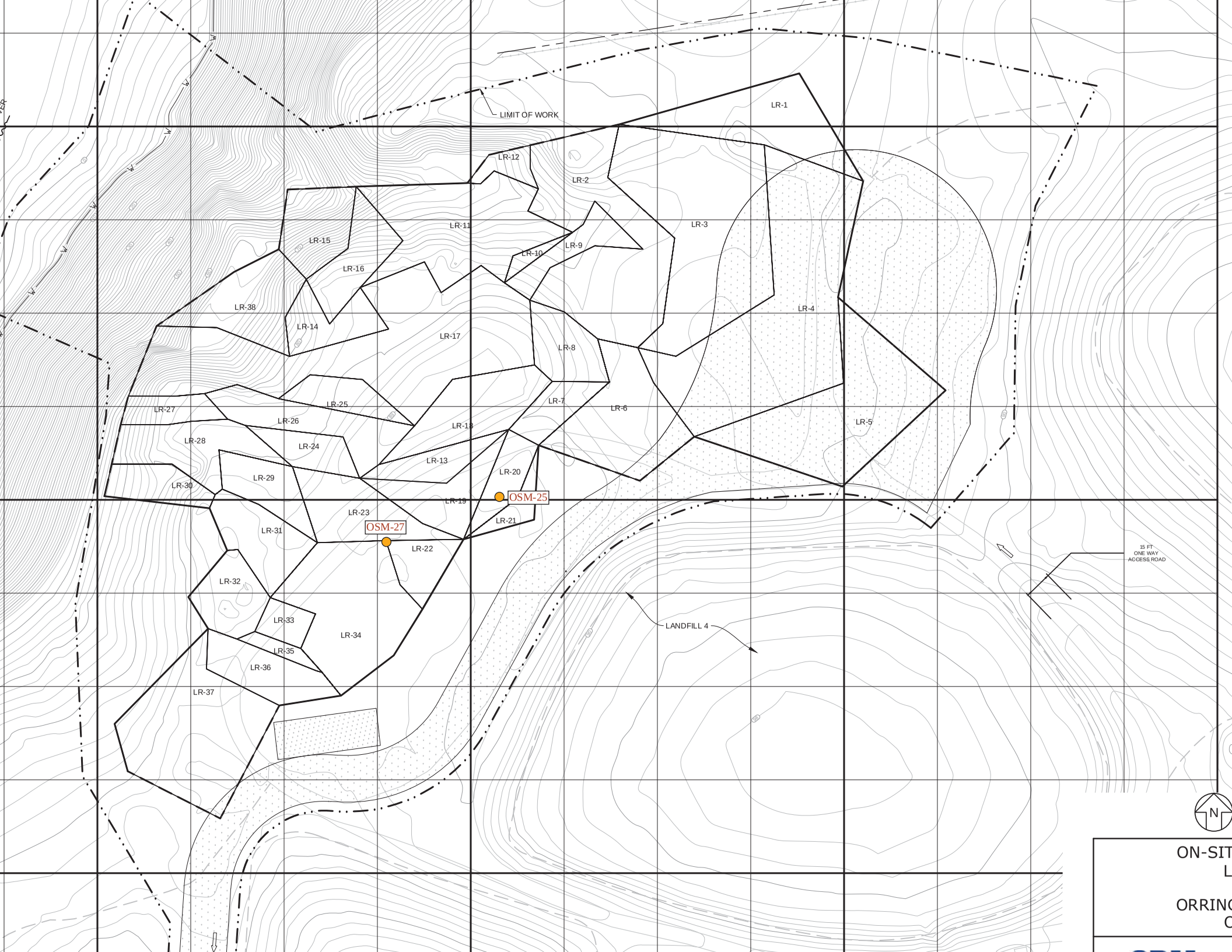
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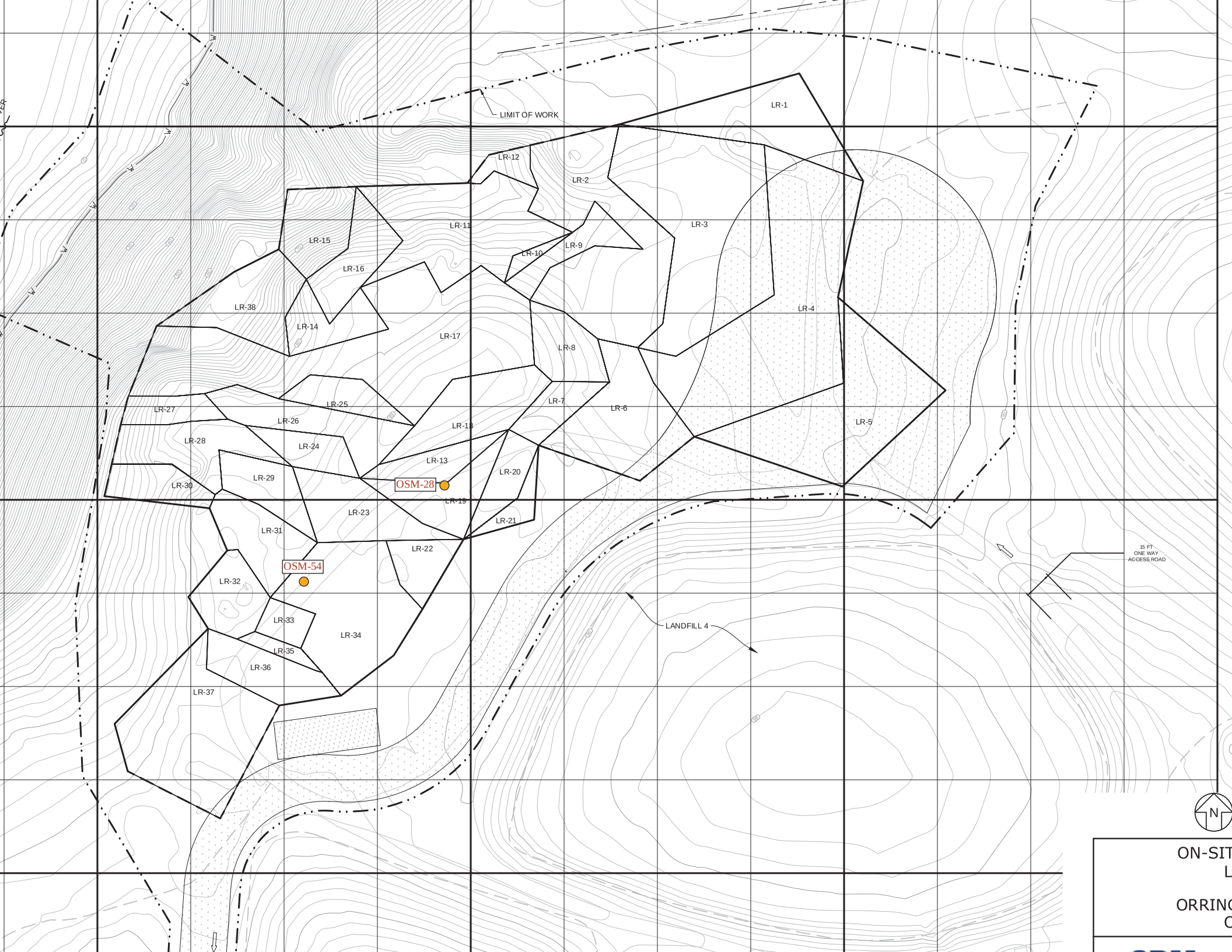
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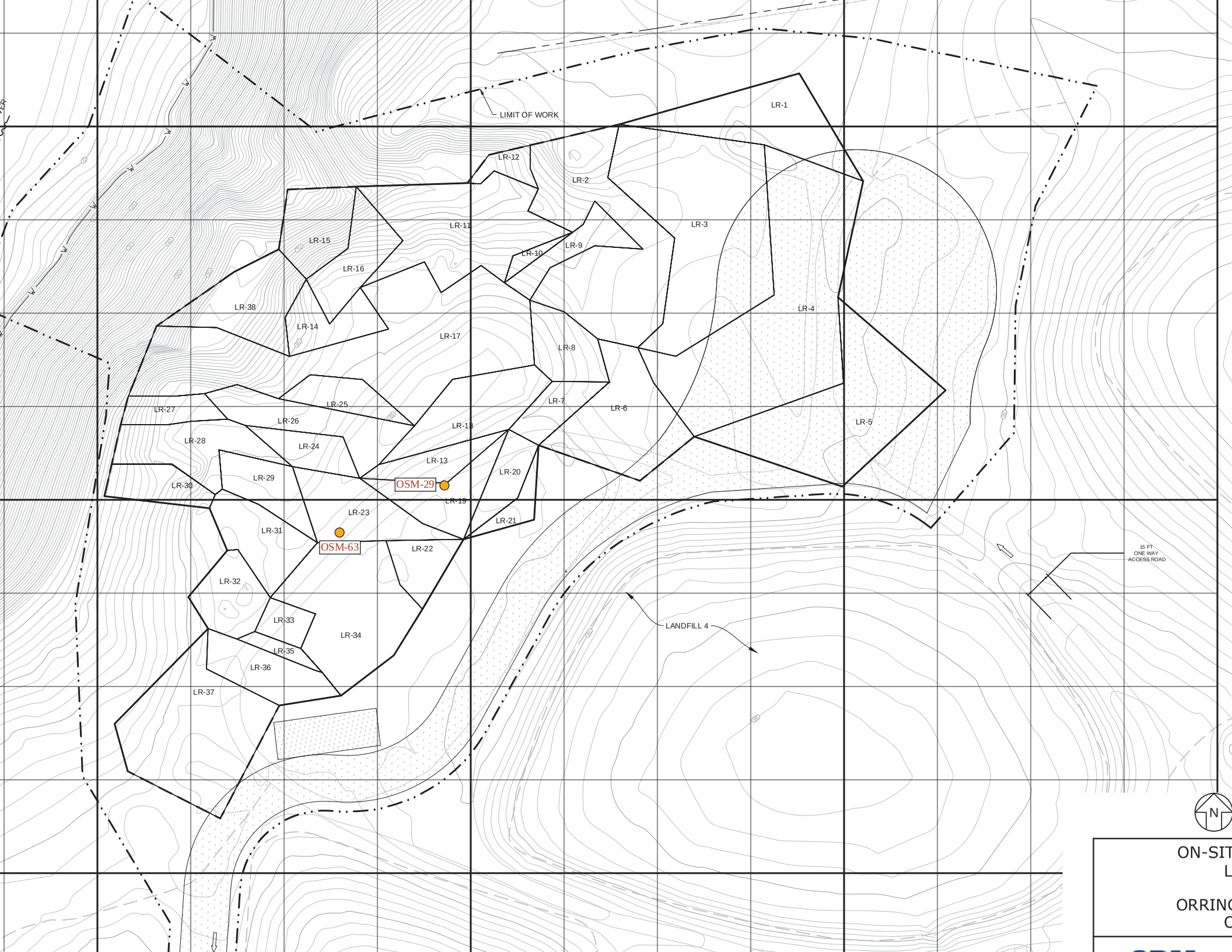
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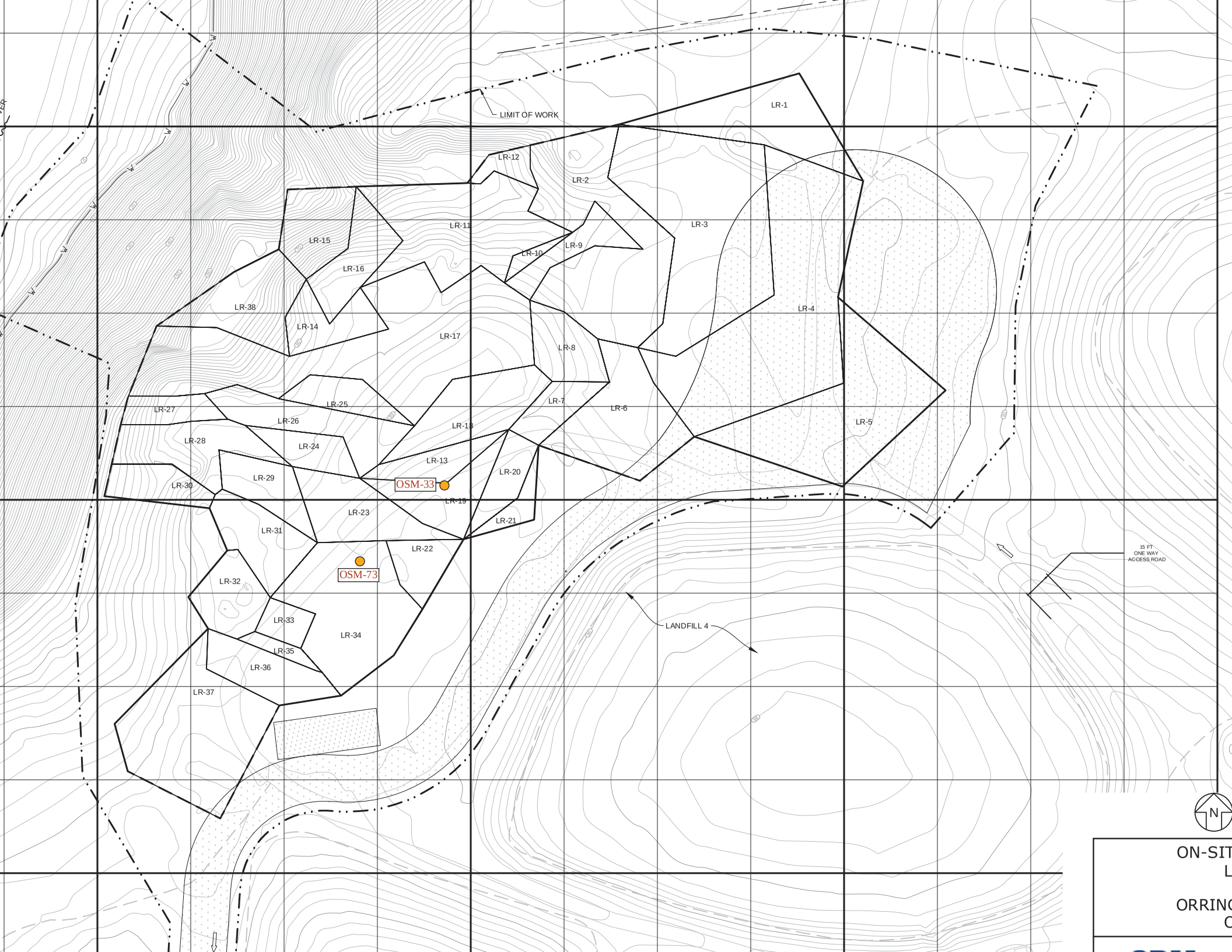
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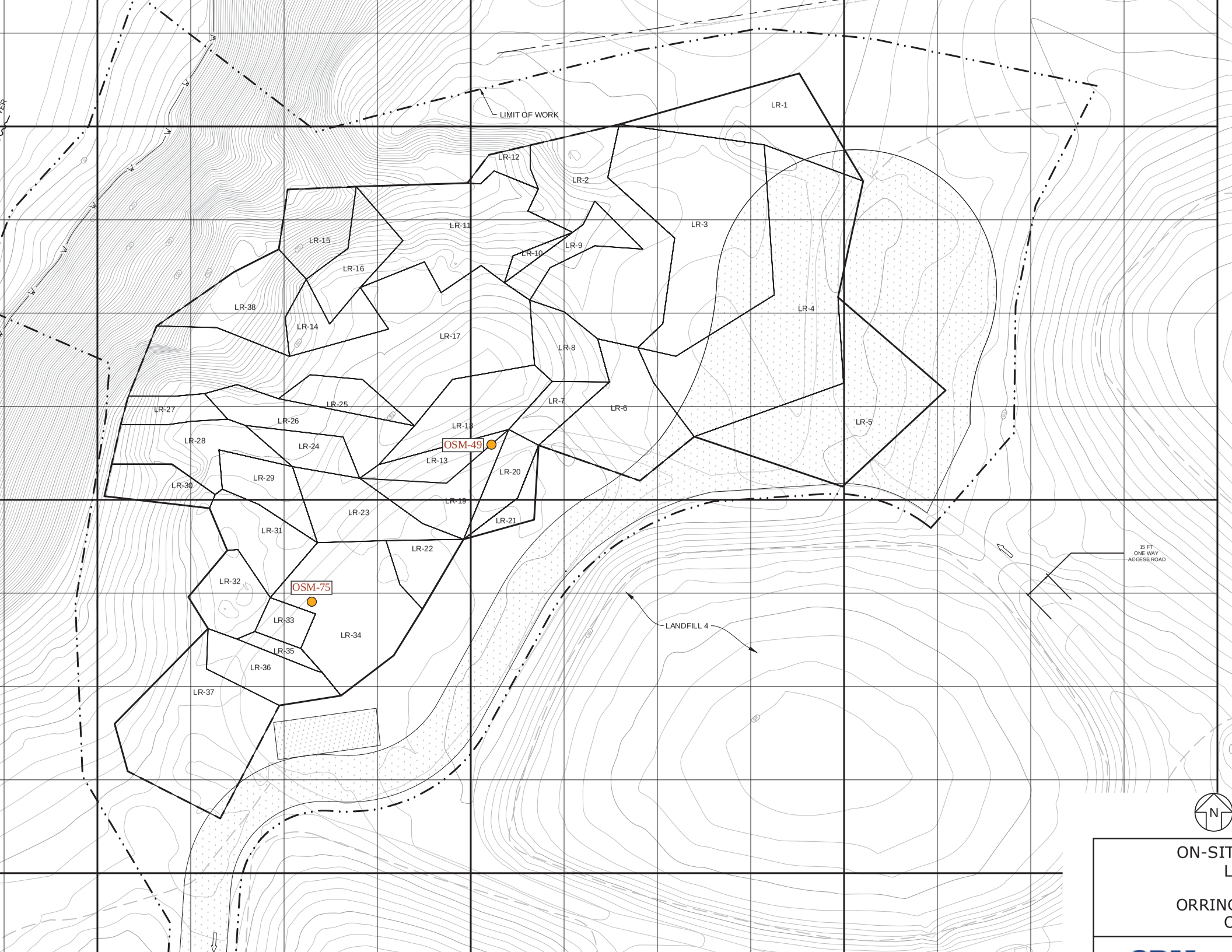
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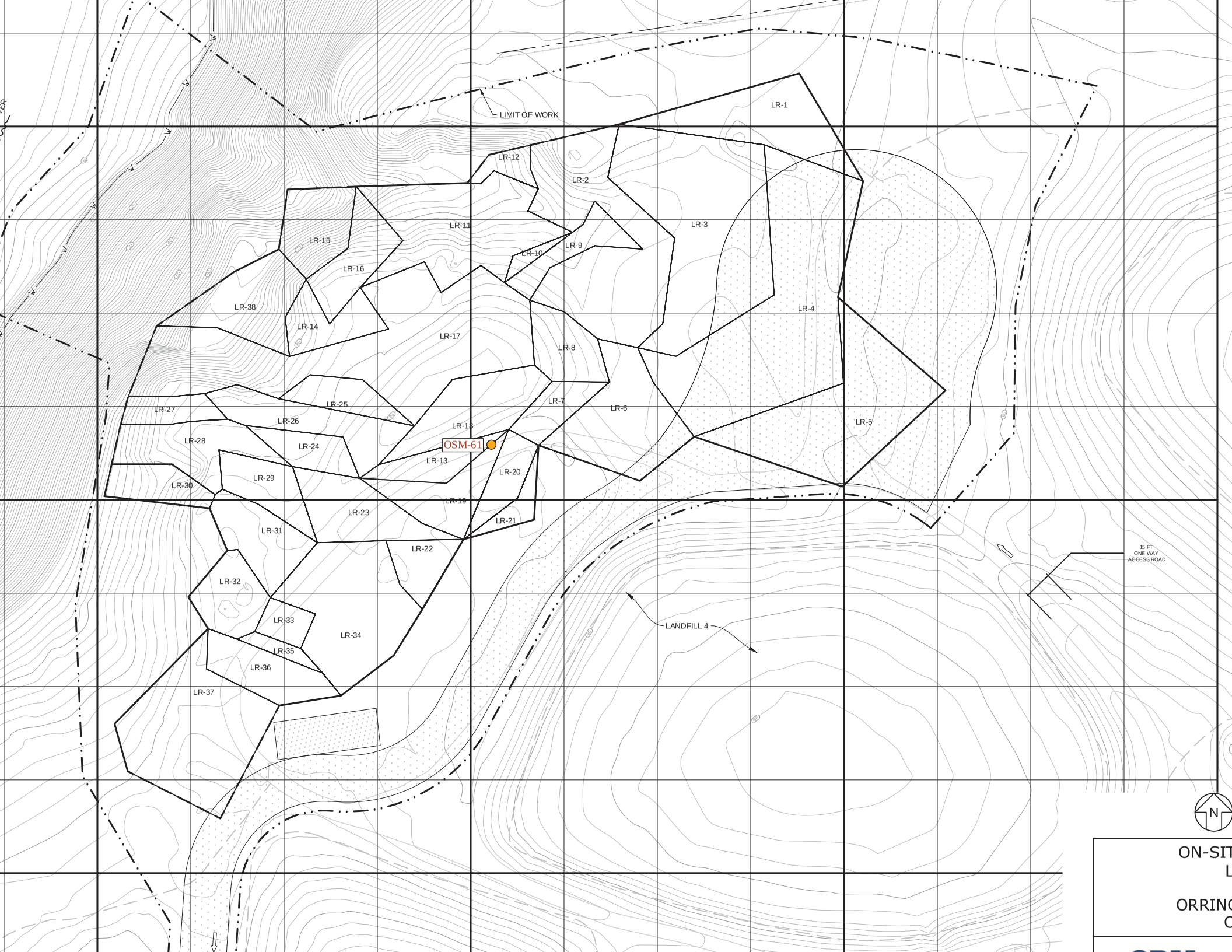
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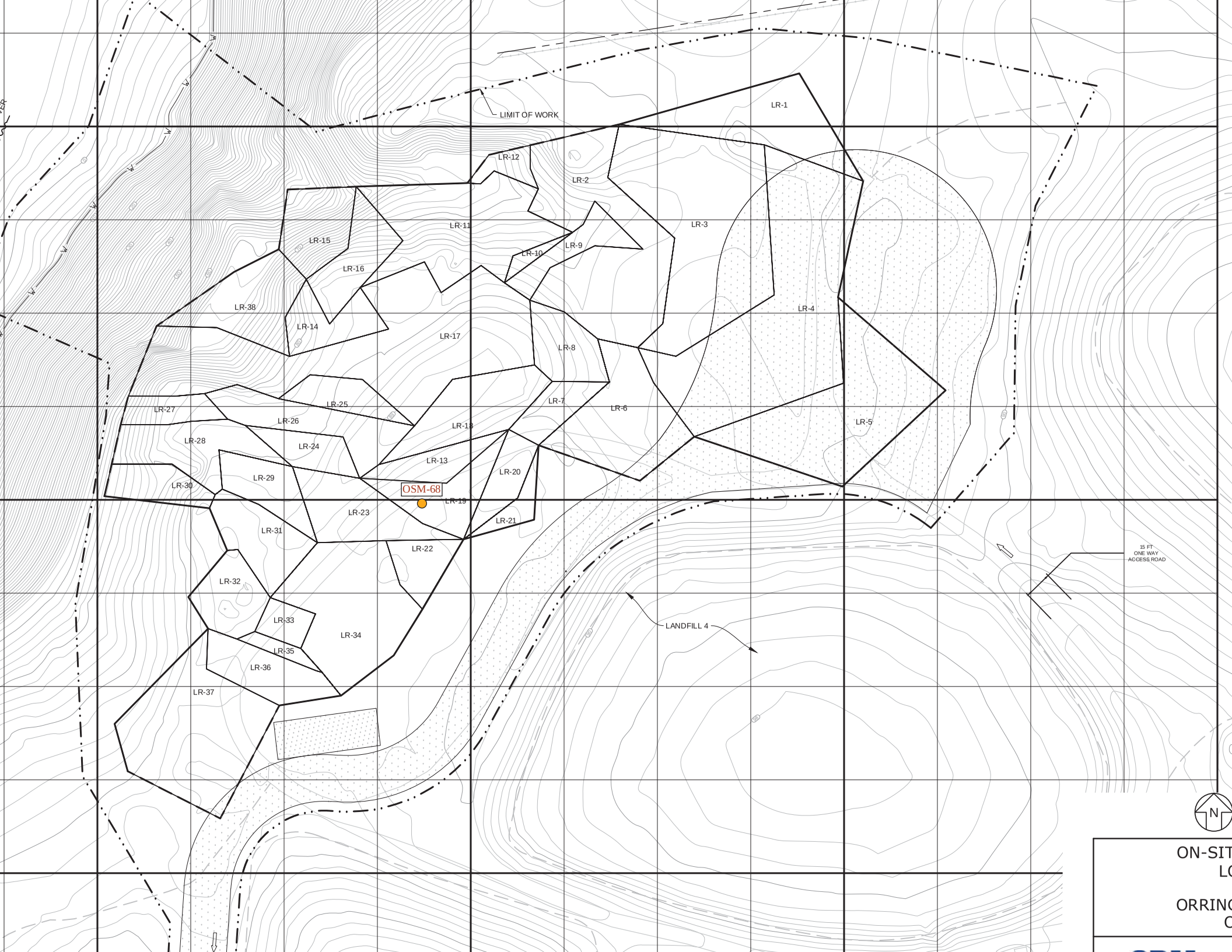
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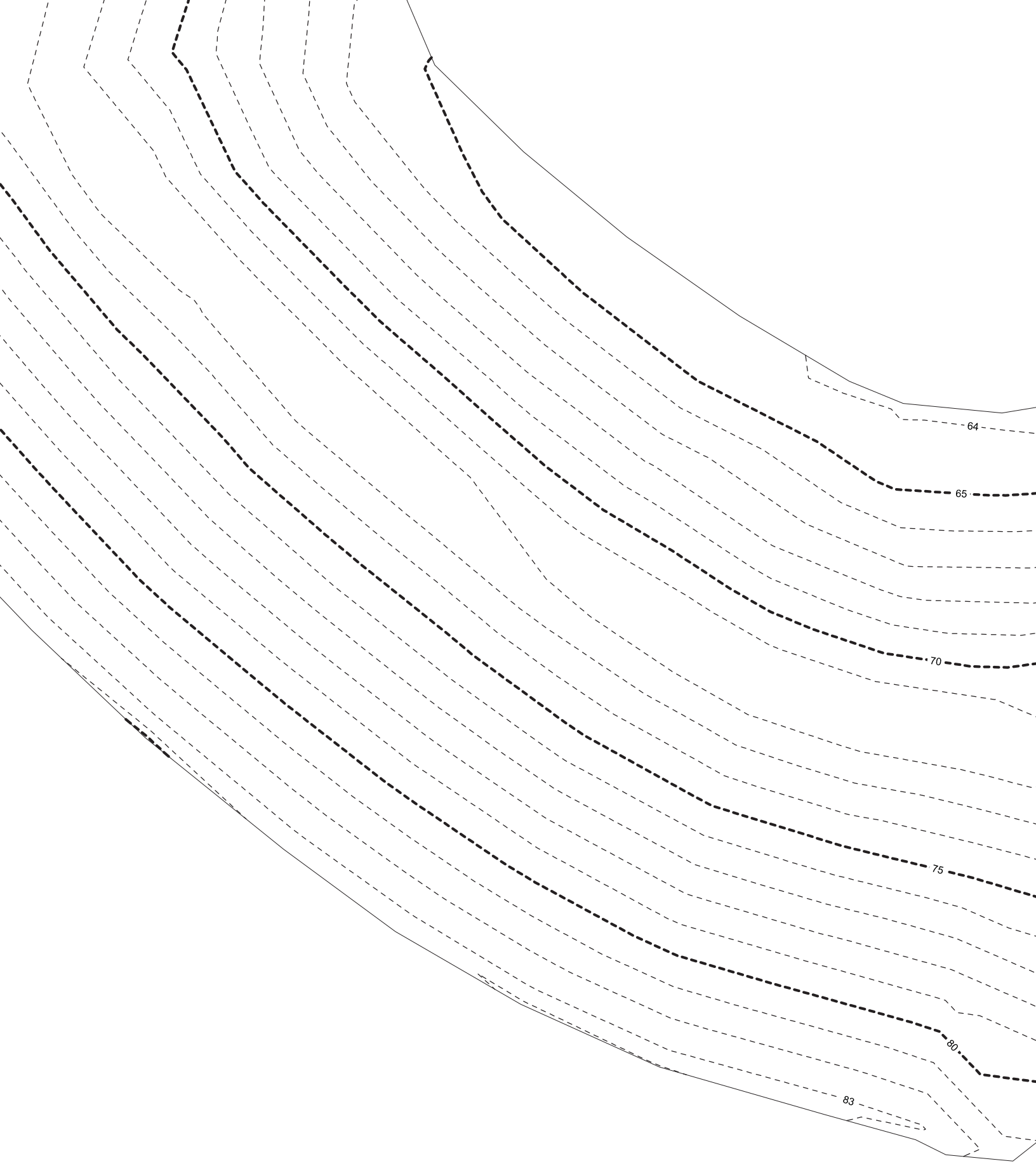
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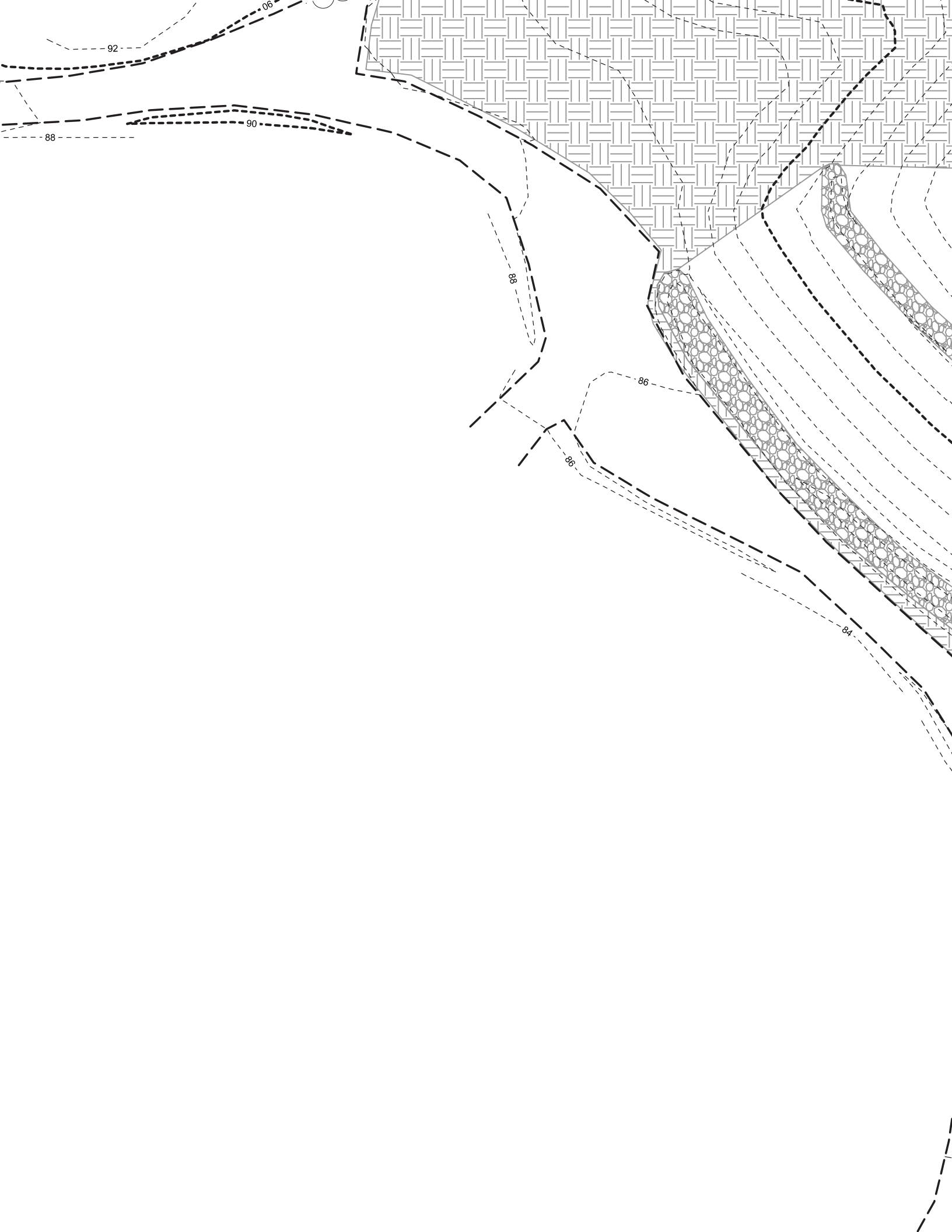
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